United States Department of the Interior
Bureau of Indian Affairs
Navajo Regional Office
P.O. Box 1060
Gallup, New Mexico 87305-1060

IN REPLY REFER TO:

NOTICE TO BIDDER: Your attention is directed to FAR Clause 52.229-03 entitled Federal, State, and Local Taxes. Local taxes are also to include the Navajo Nation Tribal Taxes for construction work on the Navajo Indian Reservation. Bidders are responsible to inquire of any and all Tribal Taxes that may be applicable to this solicitation. For more information regarding Tribal Taxes contact: The Navajo Nation, Office of the Navajo Tax Commission, P.O. Box 1903, Window Rock, Arizona, 86515, (928) 871-6681 or 6683.

SPECIFICATION FOR PROJECT(S): N21(3) 2&4

GRADE, DRAINAGE, AGGREGATE BASE, HOT ASPHALTIC CO/AONCRETE AND MISCELLANEOUS CO/AONSTRUCTION OF 7.269 km OF ROADWAY LOCATED IN KAIBITO, ARIZONA; NAVAJO INDIAN RESERVATION

THIS SOLICITATION IS FOR A TOTAL SET ASIDE P.L. 93-638 SELF DETERMINATION CO/AONTRACT

CO/AONSTRUCTION TO BE PERFORMED ACCO/AOR/AOTRDING TO THE STANDARD SPECIFICATIONS FOR CO/AONSTRUCTION OF ROADS AND BRIDGES ON FEDERAL HIGHWAY PROJECTS - "2003 EDITION"

ISSUED BY: NAVAJO REGIONAL OFFICE
GALLUP, NEW MEXICO/AO 87305

SECTION III - SPECIAL CO/AONTRACT REQUIREMENTS
rev:06/21/11

Clause Number and Title — Page

SPECIAL CO/AONTRACT REQUIREMENTS

rev: 06/21/11

1. Requirements for Execution of Surety Bonds

Each surety company bond (performance and payment) which purports to have been executed by an agent or attorney-in-fact, for the corporate surety, is required to have submitted with it a power of attorney to the signatory agent or attorney-in-fact, and executed by the corporate surety upon a date reasonably approximate to the date to the bond. Such power of attorney shall in each instance be retained with the bond.

2. Modification Proposal - Cost Breakdown

The Contractor, in connection with any proposal he makes for a contract modification, shall upon request furnish a price breakdown, itemized as required by the Contracting Officer/ Awarding Official (CO/AO) along with a complete breakdown of the original unit bid price as requested by the CO/AO. Unless otherwise directed, the breakdown shall be in sufficient detail to permit an analysis of all material, labor, equipment, subcontract, and overhead costs, as well as profit, and shall cover all work involved in the modification, whether such work was deleted, added, or changed. Any amount claimed for subcontractors shall be supported by a similar price breakdown. In addition, if the proposal includes a time extension, a justification thereof shall also be furnished. The proposal, together with the price breakdown and time extension justification, shall be furnished by the date specified by the CO/AO.

3. Contractor Safety Program Requirements

The Contractor shall establish a safety program, which shall include at a minimum the following requirements:

A) Safety Program Submittal:

Within 30 days following the awarding of a contract, the Contractor shall submit in writing to the Contracting Officer's or Awarding Official's Representative (COR/AOTR) a proposed comprehensive safety program (in accordance with 48 CFR , Clause 52.236-13) for review for contract compliance. The Contractor's safety program shall show detail policies, procedures and plans that will be implemented to ensure the safety and health of employees and visitors at the job site. The Contractor shall prepare a list of major hazards associated with the contract work and provide in the safety program means to minimize the hazards.

B) Pre-Construction Safety Meeting:

A representative of the Contractor shall meet with COR/AOTR and staff prior to the start of construction to review the safety program and discuss implementation of health and safety provisions pertinent to the work under contract. The Contractor should be prepared to discuss, in detail, the measures to be taken to control the hazards associated with the major phases of the work under contract. This meeting shall be devoted mainly to a discussion of the manner in which the Contractor intends to administer the health and safety program, delegation of responsibility for implementing the program, and a determination of what shall be presented in the written safety program.

C) Contractor Housekeeping Requirement:

Good housekeeping, including provision and facilities for routine scrap removal, shall be maintained in all areas within the Contractor's scope of operation. Any and all garbage shall be stored and removed to a certified landfill off the reservation.

D) Contractor Contamination Requirement:

Handling, storage, and disposal of hazardous materials of any nature shall be carried out in a manner so as not to contaminate or pollute public and/or private property, water supplies, rivers, lakes, reservoirs, streams, or the atmosphere. Disposal of all materials, including waste, garbage, and sewage, shall comply with all local, tribal, state, and federal regulations.

4. Hours and Days of Work

A. The performance time allowed under this contract is based on a forty-hour workweek. The Contractor shall provide a minimum **14**-calendar day **written** advance notice to the Contracting Officer of the actual work schedule, affording adequate opportunity to respond and to schedule Government personnel. Work on Saturdays, Sundays, Government and/ or Tribal holidays is not contemplated, however the Contractor shall make every effort to inform (**in writing**) the Government of his intentions concerning work on weekends and/or holidays (at least 14 calendar days in advance) so that the Government may accommodate the work (requiring inspection and/or oversight) or respond otherwise.

The Contractor is required to update his construction schedule and submit (to the CO/AO) for review and approval if the work outside the normal 40 hours workweek exceeds 2 weeks and it must be approved prior to the work beginning.

B. In no case shall work be performed on holidays and/or weekends without the approval of the CO/AO. The Contractor shall be allowed to work on items of this contract that do not require government inspection and/or oversight at any time including Saturdays, Sundays, and holidays during the construction period shown herein provided the Contractor inform the CO/AO in **writing** within the time frame specified above. Any costs associated with government inspections and/or oversight on weekends and holidays or as a result of contractor induced delays or mistakes in the work, shall be deducted from the progress payments in accordance with 4(C) below. The Contractor may dispute the deductions, in writing, to the CO/AO in accordance with 4(C).

Except for quality control, any quantities of work (as reflected in the bid schedule) that is completed outside the normal work week shall be measured and paid for at the contract unit price bid provided the work meets the requirements of this contract. With respect to the quality control item unless agreed to by the CO/AO in writing quality control hours incurred as a result of contractor induced delays, mistakes, or QC work not authorized by the AOTR (in writing) will not be paid for.

C. The CO/AOR/AOTR/AOTR shall prepare a detailed breakdown of government expenses incurred as a result of government personnel working in excess of the normal 40 hour work week to accommodate the contractor and shall submit this report to the CO/AO

(with a copy to the contractor) for reimbursement through a progress payment adjustment. The CO/AO shall notify the contractor 10 working days in advance of making the adjustment in the next progress payment so that the Contractor is given the opportunity to review the report and any expenses claimed. Should the Contractor dispute the government expense report, the disputed items shall be submitted to the CO/AO in writing within the time frame given by the CO/AO and the CO/AO shall make a final determination (within 20 working days of receipt of the disputed items).

D. The Contractor shall submit to the CO/AO the name and legal address of each supervisor to be employed under this contract prior to his entrance on duty. Copies shall be provided to the CO/AO for their records.

5. Water

Water sources used for this project shall be subject to the laws and regulations imposed by the permitting agency. Any costs associated with obtaining such permits shall be borne by the Contractor. A copy of this permit shall be furnished to the COR/AOTR prior to construction. In no case may sewer lagoon water be used until the Contractor can show that the water will comply with the requirements of the Navajo EPA and the Clean Water Act and that a testing procedure to follow is outlined in the overall safety plan to insure compliance.

6. Borrow and Aggregate Materials

Contractor Furnished Source:

The Contractor shall be solely responsible for the location, surveying, permits, and associated costs for all borrow and aggregate material sources either within or outside of any Indian Reservation. The Contractor shall provide copies of all permits to the CO/AO through the COR/AOTR for their records. All activities associated with borrow and aggregate material sources on the Navajo Reservation shall be subject to applicable Federal and Tribal laws. The Government is not responsible for the lack of material within the source to complete the items of work in this contract. All expenses associated with obtaining necessary permits shall be the contractor's responsibility. The contract time shall only be extended (under a negotiated written modification) if the Contractor in obtaining permits requiring Government review and/or approval, which delays the Contractor. A delay caused by Tribal or other local permitting processes is the responsibility of the Contractor. Written proof is required to substantiate any contractor delays.

The Contractor shall perform aggregate quality tests on three (3) representative samples (i.e. 3 samples for the Contractor and 3 for the Government) for each proposed source and for each change in source. A source is defined as the land area from which material will be removed and represented by the aggregate quality samples. The selection of samples representing the source shall be the responsibility of the Contractor including all associated equipment, and labor. The Contractor shall notify the COR/AOTR before opening the test hole within the source so that the COR/AOTR or his elected representative will have the opportunity to observe the test hole opening and subsequent sampling. The COR/AOTRmay perform verification testing on the Government's split samples, the costs of which shall be the responsibility of the Government.

The material sampled shall be tested by an AASHTO certified testing laboratory. The Contractor shall submit the test results to the COR/AOTR. The cost of all sampling and testing shall be borne by the Contractor. The COR/AOTR may direct the contractor to re-test the material source based on

government test results. The costs of any re-testing shall be borne by the Contractor, unless such tests substantiate the contractor's original results, in which case the Government will reimburse the contractor for the costs of re-testing.

The Contractor shall be responsible for all testing during the crushing and screening operations.

Should the source contain insufficient material to meet the contract needs or should it become necessary for the Contractor, to change and/or select a new source, the Contractor shall be solely responsible for all costs and delays to the contract, unless such change is due to negligent actions of the Government.

The Contractor shall be solely responsible for obtaining archeological and environmental clearances for his haul roads, material sources, and construction yards including all permits and associated costs. The Contractor shall be responsible for providing adequate traffic control on all haul roads in accordance with the MUTCD latest edition. The Contractor shall construct and/or maintain all haul roads into and from the source to the project. Any existing Government owned roads damaged by the Contractor's negligence or failure to abide by load restrictions shall be restored to original condition at the Contractor's expense. All haul road construction, maintenance (including dust control), traffic control including flaggers, and improvements will not be measured for payment but shall be considered a subsidiary obligation of the Contractor under the contract items requiring borrow and/or aggregate material.

The Contractor shall be solely responsible for obtaining archeological and environmental clearances for his plant site, haul roads, and construction yard including all necessary permits. The plant, haul roads, and construction yard development and maintenance shall not be measured for payment but shall be considered a subsidiary obligation of the Contractor under other contract items. Copies of such clearances and permits shall be furnished upon request of the CO/AO.

Commercial and/or other Material Source:

The Contractor shall adhere to the requirements under these "Special Contract Requirements" with the following stipulations applied:

A. The Contractor shall advise the COR/AOTR (at least 5 working days in advance) of materials to be furnished from commercial sources.

B. The Contractor shall, upon request, furnish aggregate quality test results from the proposed commercial source. This requirement will be considered fulfilled if the submittals for the product supplied contain the required information. The COR/AOTR shall be afforded the opportunity to obtain verification test samples if requested.

7. Payment to Contractor

Payments to the Contractor shall be made within fourteen (14) calendar days after each progress pay estimate is approved by the Navajo Region Division of Transportation (NRDOT) office and CO/AO. The progress pay estimate must include copies of the actual field book measurements taken, for each item of work requesting payment on, for verification by the COR/AOTR. Unless other methods of payment are agreed to in writing, it is the responsibility of the Contractor (Superintendent) and COR/AOTR to agree upon the amount of work and/or quantities in place which will be the basis of the progress payment invoicing (see section 109 of FP-03 supplemental

specification). The Contractor (Superintendent) shall prepare a progress pay estimate, sign the estimate, and forward the estimate reflecting the agreed upon work for a given pay period to the COR/AOTR with all supporting documentation. The COR/AOTR will verify the pay estimate by signing and forwarding the estimate to the NRDOT and Contracting Officer within 3 working days of receipt. If the COR/AOTR or NRDOT Manager cannot validate the estimate, then the estimate shall be returned back to the Contractor for corrections and a new invoice prepared and submitted.

8. Determination and Extension of Contract Time

The **290 calendar** days allowed for the performance of the contract is based on the work to be performed and weather conditions that are normally anticipated in the area that may prevent work**.** The **290** calendar days required to complete the work as specified takes into consideration **120** calendar days for weather conditions normal to the project area and provides adequate time for shutdowns during normal weather conditions including **1** winter suspension(s), and holidays. Time extensions because of weather conditions shall not be granted except in cases of unusually severe weather or "Acts of Nature" unanticipated by this contract.

The Contractor shall be required to obtain and submit, to the CO/AO, climatological data for the area of the project, covering at least a ten year period, to receive consideration for any contention of unusually severe weather and time extension.

9. Shop Drawings and Certifications

The Contractor will be required to furnish certificate(s) of compliance (i.e. production certification) along with valid test reports, for all cements, fly ash, precast products, PVC pipe, corrugated steel, structural steel and hardware, reinforcing steel, asphaltic materials, wood posts and hardware for guardrailing, all permanent timber materials, aluminum signing materials, pavement markings and paints, traffic sign paint, paints and coatings for structural steel, high strength bolts, seed, piling, and other materials calling for painted surfaces, any other materials which require fabrication or materials taken from outside of the project limits, and for materials specifically requiring certificates of compliances by the construction plans or specifications. The Contractor shall be responsible to assure that the certificates of compliance have the following minimum requirements prior to submittal:

- the name and address of the manufacturer and/or supplier,
- the material production date,
- the project number (may be indicated on Contractor's cover letter),
- the contract number (may be indicated on Contractor's cover letter),
- a printed or written description of the end product or end use (as shown in the construction plans, specifications, or approved shop drawings),
- applicable sizes or dimensions of materials,
- printed or written statements as to what Contract specification the material is in conformance to (as specified in the FP-03, Contract plans and specifications, and/or approved shop drawings) with proper AASHTO or equivalent ASTM test results, heat numbers, and specified limits.

Certificates of compliance for material that do not conform to the specified AASHTO or equivalent ASTM specification shall not be submitted under the Submittal Transmittal Review and Approval Form, but shall be submitted by the Contractor under a Letter of Request for Substitution with justification to include a comparison of the proposed substitute material specification to the specified material specification showing equal to or better performance. The materials may not be used on the project until such time as the submission has been reviewed and accepted, in writing, by the Regional DOT Manager, through the CO/AO as an equivalent substitution. The certificates of compliance shall be submitted directly from the supplier, through the Prime Contractor, to the Regional DOT Manager (via the COR/AOTR) for review and approval prior to the materials being incorporated into the work. Certificates of compliance not containing all of the minimum requirements listed above, or certificates of compliance not conforming to the specified material specifications (ie; substitutions) which are submitted under the Submittal Transmittal Review and Approval Form, will not be reviewed by the Government and will be returned to the Contractor as DISAPPROVED. Full payment will not be made for work incorporating materials that require certificates of compliance until the material supplied on the project is matched by heat number or other identifying number to approved certificates of compliance by Quality Control subcontractor and COR/AOTR. Materials supplied on the project that cannot be matched by heat number or other identifying number to approved certificates of compliance, or that are incorporated into the work prior to certificate of compliance approval, shall not be paid for.

The Contractor shall furnish product certifications for all other small quantity items which include fencing items, sign posts, delineators, object markers, reflective tabs, pavement markers, air entraining agents, concrete additives, joint materials, fertilizer, erosion control items, geotextiles, and any other products purchased off the shelf from a supplier. The certificates of compliance shall clearly identify the AASHTO/ASTM/or other specified standard test each product meets (as called for in the contract) as issued by the manufacturer.

Electrical items meeting UL approval, and underground utility materials meeting ASTM or AWWA specifications and so certified or stamped on the product, will require no further certificates of compliance.

The Contractor may furnish material purchased in bulk or left over from previous projects by submitting a product certification or certificate of compliance for the current project as outlined above.

The Contractor shall provide three (3) sets of shop drawings (full D size) and one set of electronic files in AUTOCAD 2011 or Microstation V8i compatible format on CD for all bridge structural members and hardware, guardrail and barriers, cattleguards and hardware, wing bracing, retained earth walls, and any pre-cast or fabricated concrete or steel materials called for in the contract for review and approval prior to fabrication directly to the Regional DOT Manager. The Contractor shall allow at least four (4) weeks, from the time the shop drawings are received, for review and approval. The Regional DOT Manager shall reply to the Contractor's shop plans either as "**Approved for Fabrication**," "**Approved as Marked**," or "**Resubmit/Disapproved**".

Approval of any and all shop plans, drawings, TCPs, SWPPPs, etc. is rendered as a service only and is not considered a guarantee of measurements, quantities, and/or dimensions, nor shall it be considered as relieving the Contractor from complying with the contract specification and design plans.

10. Furnishing of a Contractor Field Testing Laboratory

The Contractor shall furnish, at a location convenient to the project site or asphalt plant site, a field laboratory equipped with all necessary test equipment with accessories and all incidentals including utilities and sanitary facilities to satisfy the testing and inspection services required by this contract.

Use equipment that has been calibrated within the last 6 months of issuance of this contract, and that is applicable to the contract requirements. Tag all necessary equipment indicating the date of last inspection, inspector, and calibration number.

The laboratory, utilities (including all associated monthly costs), accessories, and all equipment required by the contract requirements including furnishing of a laboratory site shall be included in the unit price bid for mobilization or applicable bid item for quality control sampling, testing, and inspection as reflected in the bid schedule.

No work requiring testing shall be permitted until the Contractor has furnished the above and the laboratory is ready to accept samples for testing by furnishing the following:

1. Description of the calibrated equipment including calibration number, model number, serial number and/or other acceptable identification.

2. Identification of the individual(s) who performed the calibration of the equipment.

3. Description of the procedure used to calibrate all the equipment to be used on this contract.

11. Furnishing of Field Office and Sanitary Facilities

The Contractor shall furnish, at locations convenient to the project site, one weatherproof building for the exclusive use of Government personnel for use as a field office. The building shall have, as a minimum, outside dimensions of 8 feet in width by 30 feet in length having a minimum ceiling height of 7 feet, at least two operable windows and two lockable doors, and adequate supply of 110 volt, 60 cycle electricity and phone service with fax capability for lighting, operating of office and computer equipment, and shall be heated and air-conditioned. Portable toilet facilities, serviced at least weekly, shall be furnished by the Contractor and removed when no longer required. In addition to the above general requirements for the building, the Contractor shall furnish a water supply for drinking, which shall be delivered either in a continuous pressurized system or an elevated gravity flow system of adequate capacity to fully support the facility being provided. The furnishing of the above facility (including utilities) shall be included in the unit price bid for mobilization.

12. Asphalt Shipments

All asphalt shipments to the project shall be in sealed tankers and this seal shall **only** be removed by an authorized representative of the Quality Control Manager. Any tanker with a broken seal or no seal shall be rejected and removed from the project.

When the bid schedule calls for payment of bituminous materials by the ton, the quantity used shall be determined by certified weight tickets accompanying each load subject to correction when bituminous material has been lost, wasted, or otherwise not incorporated into the work. Asphalt shipments shall be weighed across the project scales before and after unloading when requested by the COR/AOTR. Should the project scales determine a weight less than the certified weight tickets show, the lesser quantity will be the pay quantity. Each weight ticket shall be clearly referenced to accompanying bill of lading and certified laboratory analysis report.

13. Load Restrictions

The total gross vehicle weight imposed on this project under this contract or any other Navajo Area route by any vehicle or combination of vehicles shall be as follows:

The Navajo Tribe has adopted vehicle weight limits that are more restrictive than those in the states of New Mexico, Utah, and Arizona. The weight limits of the Navajo Tribe shall apply to all BIA Navajo Regional roads and bridges within the Navajo Reservation unless a lesser limit is posted; then the lesser limit shall apply regardless of when the lesser limit was posted. Under certain circumstances, these limits may be exceeded, but only when the Contractor has applied for and received an approved permit to do so issued by the BIA Navajo Regional Office, Division of Transportation. The Contractor may make application for a permit to exceed weight limits from the Regional Road Maintenance Engineer.

The State and Counties respective laws set the weight limits for roads under the jurisdiction of the counties and states. The Contractor is required to haul within these limits unless he has a permit from the applicable jurisdiction to haul above those limits. The Contractor shall be solely responsible for all damages to roads and bridges caused by hauling above the legal limits including any Subcontractors under this contract. All damages, regardless of jurisdiction, shall be repaired at the Contractor's expense to the satisfaction of the owner's standards and/or directives.

Title 14 - Chapter 4, Sections 607 & 608 of the Navajo Tribal Code as it relates to vehicle load limits is referenced (in metric) herein for the Contractor's convenience.

Section 607. Load limits on Single-axles, wheels and tires

a) The gross weight imposed on the highway by the wheels of any one (1) axle of any one (1) axle of a vehicle shall not exceed 9809 kg, nor shall any one (1) wheel carry a load in excess of 4995 kg. A tandem axle **cannot** carry load in excess of 15,585 kg.

b) No wheel equipped with pneumatic, solid rubber, or cushion tires shall carry a load in excess of 272 kg for every 25mm of tire width. The width of pneumatic tires shall be taken at the manufacturer's rating. The width of solid rubber and cushion tires shall be measured at the flange of the rim.

Section 608. Gross weight of vehicles and loads

(a) Subject to the weight limits imposed in section 607, the total gross weight with load of a vehicle or combination of vehicles with two or more consecutive axles shall not exceed the gross weight given for the respective distance between the first and last axles of measured longitudinally to the nearest 0.3 meters, as set forth in the following table:

Distance (D)	Load (L)	Distance (D)	Load (L)	Distance (D)	Load (L)
1.2	14,512	2.7	15,419	4.3	19,592
1.5	14,512	3.0	15,873	4.6	19,955
1.8	14,512	3.3	16,190	4.9	20,317
2.1	14,512	3.7	16,508	5.2	20,680
2.4	14,966	4.0	16,825	5.5	21,043

D = Distance in meters (m) between first and last axles of group of axles.
L = Allowable load in kilograms (kg) on group of axles.

(b) The total gross weight with load imposed on the highway by any vehicle or combination of vehicles where the distance between the first and last axles is more than 5.45 meters shall not exceed that given for the respective distance given in the following table:

Distance (D)	Load (L)	Distance (D)	Load (L)	Distance (D)	Load (L)
5.8	21,406	8.8	26,599	11.9	30,839
6.1	21,769	9.1	26,984	12.2	31,746
6.4	22,131	9.4	27,370	12.5	32,653
6.7	22,494	9.7	27,755	12.8 – 15.5	32,780
7.0	22,857	10.0	28,140	15.8	33,379
7.3	23,220	10.4	28,526	16.1	33,741
7.6	25,057	10.7	28,911	16.4	34,104
7.9	25,442	11.0	29,297	16.8	34,467
8.2	25,828	11.3	29,682	17.0 & over	34,830
8.5	26,213	11.6	30,068		

D = Distance in meters (m) between first and last axles of vehicle.
L = Allowable load in kilograms (kg) of vehicle.

(c) The distance between axles shall be measured to the nearest (0.3m). When s fraction is exactly one-half foot (152mm) the next larger whole number shall be used.

The Contractor shall be responsible for all damages caused by his or her supplier's hauling units on any State and Bureau owned highway. All damages shall be repaired at the Contractor's expense to their original condition.

14. Plans and Specifications

Due to excessive costs incurred by the Government in printing, the Government will no longer be providing plans and specifications for its projects to suppliers and/or subcontractors. Only one set of C size plans and contract specifications will be provided to each bidder. The Government shall provide a maximum of 5 full sized (D size) or 5 half sized (C size) sets of plans upon request to the Contractor who is awarded a contract. In addition or in lieu of plans sets, the Government shall furnish one full sized and/or one half-size set of reproducible or electronic media in Acrobat (*.PDF) or Autocad Release 2011/Microstation V8i format from which the Contractor may produce hard copy drawings.

Any Prime Contractor bidding on Government contracts is responsible for providing its Subcontractors and Suppliers with information relating to their respective disciplines for cost proposals. Any misinterpretation or incorrect bids made to the Prime Contractor by the Subcontractor or Suppliers will not relieve the prime Contractor of his obligation to honor the contract and bid proposal.

15. Archeological Requirements

The Contractor shall be responsible for all environmental and archaeological requirements as outlined in both the Navajo Nation Historic Preservation (HPD) Office Programmatic Agreement for archeological discovery procedures, and NEPA regulations as may be described in this contract and/or shown on the design plans. Archeological sites shown on the plans are not to be disturbed by any construction equipment. The Contractor shall insure that no equipment comes within 5 meters of any known sites identified on the plans. Any mitigation measures that may be called for in this contract to protect archeological sites and/or environmental concerns during construction shall be paid for under the appropriate bid items shown. For those archaeological sites that are within the roadway right-of-way (i.e. refer to design plans) the contractor shall conduct the grading operations ONLY with an archeologist present and paid for under bid item 10707-1000. The contractor shall contact Mrs. Marie Dineyazhe, HPD Roads Archeology Manager, if any new discoveries are found. For further information, the Contractor shall call the HPD office at (928)871-7688. If any unknown arch sites are discovered during construction, all work in the area must stop. It will be the responsibility of the government to mitigate any new discovery in accordance with section 106 of the NHPA.

16. Construction Requirements:

A. The contractor is not permitted to park heavy equipment within 15 meters of existing drainage washes to prevent the leakage of oils or other toxic materials from entering the waters of the United States. The contractor is required to inspect all heavy construction equipment each day to insure all equipment is free of leaks and have a mitigation plan in place in case a toxic spill does occur. Any inadvertent discharge of toxic materials by the contractor's equipment and operations shall result in an immediate halt of work until the Contractor cleans up all spills and/or leaks in accordance

with the EPA regulations at his entire expense. The Contractor shall also be required to immediately notify the BIA Safety Officer and Navajo Regional Environmental Scientist when such spills or leaks occur.

B. When drainage work is called for, all drainage structure installations shall be performed during low to no flow periods of runoff to minimize water quality impacts to the fullest extent possible.

C. In no case shall any grading or drainage structure installations or other ground disturbing work begin until the contractor's Storm Water Pollution Prevention Plan (SWPPP) has been reviewed, accepted through the CO/AO and implemented by the Contractor as required in this contract. The Contractor is required to file a Notice of Intent with USEPA on the forms provided in Section (K) and as discussed in paragraph (17) below. The Contractor shall provide courtesy copies of the approved SWPPP to the Navajo Nation Environmental Protection Agency (NNEPA).

D. Waste concrete and/or hot mix shall be disposed of in accordance with EPA regulations off the project site. In no case shall any wasting or stockpiling of concrete and/or hot mix be allowed within the project limits.

E. The Contractor shall provide a parking area for employee's private vehicles. Private vehicles are not to be parked within the road right-of-way that is open to public traffic nor shall they be parked within 15 meters of drainage washes or known archeological sites. Vehicles may be parked outside the right-of-way limits provided the Contractor is given permission by the land user or tribe or may park the vehicles within the Contractor's construction yard.

F. No work involving testing and inspection may take place until the Contractor's Quality Control Plan is reviewed and accepted by the COR/AOTR & Regional DOT Manager.

G. The Contractor shall coordinate all utility relocations (where applicable) with the utility owners in accordance with section 107.02 as incidental obligations under this contract.

H. When earthwork is called for, the Contractor shall stockpile the existing top soil for use in re-vegetation of borrow pits and roadway slopes to the fullest extent possible, when required in the bid schedule or other permit requirements issued under tribal regulations.

I. The Contractor's camp site and construction yard shall be kept clean and free of litter at all time to prevent debris and litter from entering bodies of

water. All trash will be disposed of in accordance with EPA regulations and all camp sites and construction yards shall be restored to their pre-construction condition or better at project completion in conformance with the permit requirements and tribal laws.

J. Oils, lubricant, fuel, and hydraulic fluids shall be stored in sealed containers or in facilities that meet EPA regulations for prevention of environmental contamination.

K. Other requirements as outlined in Section (k) of this contract.

L. **Substantial Completion** will ONLY be given by the CO/AO when the project is complete such that it can be safely and effectively used by the public without further delays, disruption, or other impediments as recommended by the COR/AOTR during a substantial completion inspection. For conventional bridge and highway work, this is the point at which all road grading, bridge deck, parapet, pavement structure, shoulder, drainage, sidewalk, permanent signing and markings, traffic barrier, safety appurtenance, utility, and lighting work is complete and meets all the contract requirements.

M. **Final Acceptance** will be given when all work is completed (including any punch list of items) and the COR/AOTR determines and schedules a final acceptance inspection with the Contractor, CO/AO, and Regional DOT Representatives as appropriate. With the exception of any work accepted as final, in writing by the CO/AO, the Contractor is still responsible for all the work until a final acceptance is given by the CO/AO based on recommendations from the COR/AOTR.

17. Environmental Requirements:

Certain environmental clearances and permits are attached in Part VII, Section (k) of these contract documents as reflected in the design plans in accordance with section 107.01. The Government shall be responsible for those mitigation measures required by the NEPA documents that are not covered in this contract. The Contractor is responsible for all environmental permits associated with the Contractor's construction operations.

Both the Contractor and COR/AOTR are jointly responsible for filing Notice **of Intent** (unless otherwise directed by the CO/AO or as defined elsewhere in this contract) under the National Pollution Discharge Elimination System (NPDES) permit requirements to USEPA. Under this permit process the contractor is required and shall:

A. Prepare for review and approval, by the COR/AOTR & Regional DOT Manager, a Storm Water Pollution Prevention Plan (SWPPP) per section

157 and the requirements in section (k) for any and all ground disturbing activities.

B. When the SWPPP is approved, the COR/AOTR will file **Notice of Intent** as the owner and a copy of the notice shall be provided to the contractor to file with his Notice.

C. Once the Contractor receives notice that his SWPPP is approved, he shall, with assistance from the COR/AOTR, prepare the contractor NPDES Permit **Notice of Intent** form in section (k) and shall mail to the USEPA along with the COR/AOTR **Notice of Intent** form no later than 48 hours prior to beginning of actual construction. The address is as follows:

Regular U.S. Mail Delivery
Storm Water Notice of Intent
Mail Code 4203M
U.S. EPA
1200 Pennsylvania Avenue
Washington, DC 20460

Overnight/Express Mail Delivery
Storm Water Notice of Intent
Room 7329
U.S. EPA
1201Constitution Avenue
Washington, DC 20004

The USEPA will mail back a copy of the permit for the project and a copy shall be furnished to the COR/AOTR and Regional DOT Manager to insure compliance.

D. At completion of the project and final inspection has been performed, the Contractor shall then prepare and submit to the USEPA a **Notice of Termination** with a copy submitted to the COR/AOTR and Regional DOT Manager to insure compliance.

(Note: The above forms can also be obtained from the USEPA's home page on the Internet: **http://www.epa.gov/npdes/stormwater/cgp**)

BID SCHEDULE

Revised: June 1, 2011

The Bid must be submitted on the Unit Price Schedule without modification.

The bid takes into consideration Amendments, called ADDENDUM, to the plans and specifications, the receipt of which should be acknowledged in the space provided on the reverse of Solicitation, Offer and Award, SF-1442 form.

UNIT PRICE SCHEDULE
SCOPE-OF-WORK

The proposed work consists of furnishing all labor, material, equipment and incidentals necessary for construction of 7.269 km of grade and drainage work, placement of aggregate base course, hot asphaltic concrete pavement, and miscellaneous construction in accordance with the specification and design drawings for Project N21(3)2,4.

The quantities listed for each item is estimated and the Unit Price is applicable to each as given in the Bid Schedule below. The final pay quantity measurements shall be rounded to the significant figures given in this bid schedule for the final pay estimate.

Payment for work performed on Items furnished will be made in accordance with Sub-Section 109.05, Scope of Payments of FP-03.

ITEM NUMBER	DESCRIPTION	QUANTITY	UNITS	UNIT PRICE	ESTIMATED AMOUNT
10707-0000	Archaeological Field Services	30	Man Hr		
10901-0000	Extra & Miscellaneous Work Under Section 109.02(m)	All Req'd	Lump Sum	$150,000.00	$150,000.00
15101-0000	Mobilization	All Req'd	Lump Sum	$	$
15201-0000	Construction survey and staking	All Req'd	Lump Sum	$	$
15301-0000	Contractor Quality Control	11122	Man Hr	$	$
15701-0000	Temporary Erosion Control	All Req'd	Lump Sum	$	$
15708-1000	Temporary Straw Mulching	13.39	ha	$	$
20102-0000	Clearing & Grubbing	All Req'd	Lump Sum	$	$
20304-1000	Removal of Structures & Obstructions	All Req'd	Lump Sum	$	$
20401-0000	Roadway Excavation	98534	m^3	$	$
20425-2000	Furrow Ditches, Ditch Blocks	43	m	$	$
20443-2000	Earthen dike/berms, type "B"	84	m	$	$
20601-0000	Development of Water Supply	39.72	M-liter	$	$
21102-2000	Roadway Obliteration, method 2	All Req'd	Lump Sum	$	$
21301-4000	Subgrade Stabilization with RoadBond EN-1, 152mm depth	5202	m^2	$	$
25101-2000	Placed Rip rap, Class 2	923	m^3	$	$

25110-2000	Grouted Rip rap, Class 2	20	m^3	$	$
30101-2000	Untreated Aggregate Base, Grade "D"	32896	t	$	$
40201-0800	Hot Asphaltic Concrete Pavement, Class B, Grade "B"	13576	t	$	$
40502-0800	Asphalt Cement, Grade PG 64-22	815	t	$	$
41101-5000	Asphalt Prime Coat, Grade MC-70	108	t	$	$
60201-0810	610 mm Corrugated Steel Pipe Culvert	710.66	m	$	$
60201-1810	2134 mm Corrugated Steel Pipe Culvert	44.81	m	$	$
60202-0510	711mm x 508mm Corrugated Steel Pipe-Arch	65.88	m	$	$
60202-0610	889mm x 610mm Corrugated Steel Pipe-Arch	244.54	m	$	$
60210-0810	End Section for 610 mm Pipe Culvert	40	Each	$	$
60210-1810	End Section for 2134 mm Pipe Culvert	2	Each	$	$
60211-0910	End Section for 711mm x 508mm CSPA	12	Each	$	$
60211-1010	End Section for 889mm x 610mm CSPA	26	Each	$	$
60701-1000	Remove, Clean & Stockpiling CSPC	38	m	$	$
61901-0100	Fencing, Woven Wire	2055	m	$	$
61901-1000	Barbed-Wire Fencing, 5-Strand	12937	m	$	$
61902-1400	Gate, Type 1	3	Each	$	$
61903-0300	Cattleguard, 2290 mm (intermediate) 1 Unit	1	Each	$	$
61903-0310	Cattleguard, 4900 mm 2 Unit with gate	7	Each	$	$
61903-0710	Cattleguard, 7190 mm 3 Unit with gate	8	Each	$	$
61903-1010	Cattleguard, 9480 mm 4 Unit with gate	2	Each	$	$
61903-1011	Cattleguard, 9480 mm 4 Unit without gate	6	Each	$	$
61903-1211	Cattleguard, 11770 mm 5 Unit without gate	1	Each	$	$
62101-0000	Right-of-Way Monument	33	Each	$	$
62102-0000	Reference Marker	23	Each	$	$
62510-1000	Seeding, Dry Method	13.39	ha	$	$
62901-1100	Erosion Control Matting, Type IV	1987.22	m^2	$	$
63302-0002	Sign Installation, 1 Post & Hardware: 3.35 kg/m	9.66	m^2	$	$
63302-0003	Sign Installation, 1 Post & Hardware: 4.10 kg/m	1.44	m^2	$	$
63302-0010	Sign Installation, 2 Post & Hardware: 2.98 kg/m	19.34	m^2	$	$
63302-0013	Sign Installation, 2 Post & Hardware: 4.46 kg/m	2.00	m^2	$	$
63308-2000	Object Marker, type glass fiber, Type 2	44	Each	$	$
63309-0010	Delineators, type glass fiber, Type "1a"	50	Each	$	$
63309-0020	Delineators, type glass fiber, Type "1b"	19	Each	$	$
63318-1000	Milepost, 1 Post & Hardware: 2.98 kg/m	20	Each	$	$
63401-1510	Pavement Markings, Type "H", solid yellow	3081	m	$	$
63401-1520	Pavement Markings, Type "H", solid white	14055	m	$	$
63401-1610	Pavement Markings, Type "H", broken yellow	6642	m	$	$

63405-3260	Pavement Markings, "STOP" bar, Type "H",	17	Each	$	$
63501-0000	Temporary Traffic Control	All Req'd	Lump Sum	$	$
63502-3000	Temporary Traffic Control, raised pavement marker (yellow)	3232	Each	$	$
63509-1000	Flagger	16290	Man Hour	$	$
			Total Amount Bid========>		$

SECTION K
Environmental & Archeological Clearance Requirements
R/W Terms & Conditions

4/11/06

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

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

NNHPD NO. **HPD-98-495.1**
OTHER PROJECT NO.
DCD3 05-107

PROJECT TITLE: **(Addendum to HPD#98-495) "A Cultural Resource Inventory for the Proposed Improvement of 10.12 acre Extension of an Existing Gravel Pit near Kaibeto, Coconino County, Arizona**

LEAD AGENCY: BIA/NR

SPONSOR: Frieda Sage, Chapter President, Kaibeto Chapter, PO Box 1761, Kaibeto, Arizona 86053

PROJECT DESCRIPTION: The proposed undertaking will consist of an additional 6.0 acres of an existing gravel pit which is needed to mine the Navajo Route 21 road project. The total area of effect is 6.0 acres. Ground disturbance will be intensive and extensive with the use of heavy equipment.

LAND STATUS: Tribal Trust
CHAPTER: **Kaibeto**
LOCATION: T36N, R12E - Sec. 25; Big Whisker Well Quadrangle, Coconino County, Arizona G&SRPM&B
PROJECT ARCHAEOLOGIST: **Roger Walkenhorst & Olsen John**
NAVAJO ANTIQUITIES PERMIT NO.: NTC
DATE INSPECTED: **02/23/06**
DATE OF REPORT: 03/03/06
TOTAL ACREAGE INSPECTED: **11.34 ac**
METHOD OF INVESTIGATION: Class III pedestrian inventory with transects spaced 15 m apart.

LIST OF CULTURAL RESOURCES FOUND: **(1) Site (AZ-K-40-49); (1) Burial; (3) Traditional Cultural Properties (TCP)**
LIST OF ELIGIBLE PROPERTIES: **(1) Site (AZ-K-40-49)**
LIST OF NON-ELIGIBLE PROPERTIES: **(1) Burial & (3) TCP's**
LIST OF ARCHAEOLOGICAL RESOURCES: **(1) Site (AZ-K-40-49)**

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

Site AZ-K-40-49:
1. Site will be flagged by a qualified archaeologist prior to ground disturbing activities.
2. Site will be avoided by all ground disturbing activities by a minimum of 50-ft.
3. Site will be monitored by a qualified archaeologist during ground disturbing activities.
4. A brief letter/report documenting the result of the monitoring will be submitted to NNHPD, Compliance Section within 30 days of completion of the monitoring.

(1) Burial:
1. Burial will be avoided by all ground disturbing activities by a minimum of 100-ft.
2. Prior to ground disturbing activities, the burial will be flagged, temporarily fenced and foreman will be shown the location of the burial by a qualified archaeologist.
3. Burial will be monitored by a qualified archaeologist during fencing & ground disturbing activities.
4. A brief letter/report documenting the result of the monitoring will be submitted to NNHPD, Compliance Section, within 30 days of completion of the monitoring.

(3) TCP's
1. All TCP's will be avoided by ground disturbing activities by a minimum of 100-ft.
2. Prior to ground disturbing activities, all three TCP's will be flagged, temporarily fenced, and the foreman will be shown the locations by a qualified archaeologist.
3. TCP's will be monitored by a qualified archaeologist during fencing & ground disturbing activities.
4. A brief letter/report documenting the result of the monitoring will be submitted to NNHPD, Compliance Section, within 30 days of completion of the monitoring.

HPD-48-495.1/DCD3 05-107

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

FORM PREPARED BY: TAMARA BILLIE
FINALIZED: March 22, 2006

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

Alan S. Downer, Navajo Nation Historic Preservation Officer — Date 3-28-06

Navajo Region Approval: Yes X No ____

Regional Director — Date 4/7/06

THE
NAVAJO
NATION

P.O. BOX 9000 • WINDOW ROCK, ARIZONA 86515 • (520) 871-6000

ALBERT A. HALE
PRESIDENT

THOMAS E. ATCITTY
VICE PRESIDENT

HISTORIC PRESERVATION DEPARTMENT, ROADS PLANNING PROGRAM, FLAGSTAFF OFFICE
124 N. SAN FRANCISCO STREET, SUITE E, FLAGSTAFF, ARIZONA 86001

July 17, 1996

Wilson Barber, Jr.
Area Director
BIA-NAO
P.O. Box 1060
Gallup, New Mexico 87305-1060

Attention: Wilfred Frazier, Area Road Engineer

RE: Archaeological and Ethnographic Assessment of Sites along Navajo Route N21, Tonalea to Kaibeto by Peter W. Bungart and David O. Ortiz (Draft-July 1995); NNAD 93-292; NTM-77-78.4

Dear Mr. Barber:

In accordance with Stipulation 5 of our Programmatic Agreement . . . for Cultural Resource Management Projects Conducted Under the Auspices of the Navajo Nation Historic Preservation Department, Roads Planning Section, within the Boundaries of the Navajo Nation, the above-referenced draft report and compliance form is provided for review and comment. This report documents the results of the archaeological and ethnographic assessment and presents a site specific archaeological testing plan. Comparision of the compliance form and the consultant's recommendations of eligibility and effect will show that the Navajo Nation does not entirely agree with the consultant's recommendations. For those sites that require archaeological testing to assess significance, we are recommending that the consultant use essentially the same testing plan they proposed for extent testing.

If we do not hear from you within 30 days of receipt of this document, we will assume that you do not have any comments. Please contact me at 505/863-9349 if you have any questions. Thank you.

Sincerely,

Joseph Nixon, Manager

JN/ns FLG-96.096
enc. 1
xc. N9101 contract file/Flagstaff

RECEIVED
JUL 18 1996
ADMINISTRATION
NAVAJO AREA OFFICE

RECEIVED
JUL 23 1996
NAVAJO AREA ROADS

CULTURAL RESOURCES COMPLIANCE FORM

NAVAJO NATION HISTORIC PRESERVATION DEPARTMENT
P.O. BOX 4950
WINDOW ROCK, ARIZONA 86515

ROUTING:	COPIES TO:	NNHPD No.: NTM-77-78
AZ	SHPO	Other Project Numbers:
x	ACHP	BIA-NAO-BOR No. N21-33411
x	BIA Real Property MGT/330	NNAD Report Nos. 93-292; 93-043
x	Wilfred Frazier, BIA-NAO-BOR	
x	Kee Yazzie, BIA-BOR, Western Agency	
x	HPD-Roads Planning Program, Flagstaff Office	
x	Pueblo of Acoma, Governor's Office	
x	Pueblo of Laguna, Governor's Office	
x	Pueblo of Zia, Governor's Office	
x	Pueblo of Zuni, Heritage and Historic Preservation Office	
x	Hopi Tribe, Cultural Preservation Office	
x	San Juan Southern Paiute Tribe, President's Office	

PROJECT TITLE:

(1) Archaeological and Ethnographic Assessment of Sites along Navajo Route N21, Tonalea to Kaibeto by Peter W. Bungart and David O. Ortiz (Draft-July 1995); NNAD 93-292; NTM-77-78.4

(2) A Cultural Resources Inventory of the First Eight Miles of N-21 Road, Tonalea Chapter, Coconino County, Tonalea, Arizona by Paige G. Phifer (03/15/93); NNAD 93-043; NTM-77-78.3

(3) Report on 12 October 1992 Site Visit to Navajo Route 21 (N21) from Kaibito to Tonalea, Arizona, Kaibito and Tonalea Chapters by Karen Ritts-Benally (06/28/93); NTM-77-78.2

(4) Archaeological Survey Report of a Proposed Road Between Red Lake and Kaibito, Arizona N-21(1)2&4 - N21F, by Benjamin M. Foose, III (08/30/78); NTM-77-78

LEAD AGENCY: Bureau of Indian Affairs, Navajo Area Office

SPONSOR: Bureau of Indian Affairs, Navajo Area Office, Branch of Roads

PROJECT DESCRIPTION: The proposed undertaking consists of the realignment, construction, and paving of Navajo Route 21. This undertaking is ≈22.3 miles (≈35.9 km) long, with a right-of-way width of 200 feet (60.96 m). The road connects Arizona State Highway 160, at its junction at Tonalea, with Navajo Route 6331, also known as the Kaibeto Spur. This termination point is ≈1 mile (1.6 km) south of the junction of Arizona State Highway 89 and N6331. Ground disturbance will be intensive and extensive.

LAND STATUS: Navajo Tribal Trust (portion of road located on the Big Whisker Well 1981 and Gopher Spring 1982 USGS Quadrangles is currently within the Bennett Freeze pursuant to Federal District Court Order 1996)

CHAPTERS: Tonalea and Kaibeto

LOCATION: Land District 2, Western Navajo Agency, Coconino County, Arizona; Unplatted. Projection from the Gila and Salt River Meridian and Baseline, undertaking is within Townships 34,35, 36, & 37 North, Range 12, 12.5, & 13 East. Tonalea 1970 (rev. 1982), Big Whisker Well 1981, Gopher Spring 1982, & Kaibito 1981 USGS 7.5' Quadrangles)

PROJECT ARCHAEOLOGISTS:
(1) Peter W. Bungart, Miranda Warburton
(2) Paige G. Phifer, Judith Touchette
(3) Paige Phifer, Judith Touchette, Denise Copeland
(4) Laurence E. Vogler, Benjamin M. Foose, III

PROJECT ETHNOGRAPHERS:
(1) David O. Ortiz, Cordell Tulley
(2) Cordell Tulley
(3) Karen Ritts-Benally
(4) None

NAVAJO ANTIQUITIES PERMIT NO.:
(1) Navajo Tribal Code
(2) Navajo Tribal Code
(3) Navajo Tribal Code
(4) Federal Antiquities Act, Permit 77-AZ-070 & Navajo Tribal Consent to Issuance of Antiquities Permit, No 33

DATES INSPECTED:
(1) 02/07/94 - 03/11/94
(2) 11/04/92 - 02/12/93
(3) 10/12/92
(4) 03/7/78 - 08/29/78

DATE OF REPORT:
(1) 07/95 (Draft)
(2) 03/15/93 (Final)
(3) 06/28/93 (Final)
(4) 08/30/78 (Final)

TOTAL ACREAGE INSPECTED:
(1) 541 acres (219 ha)
(2) 220 acres (89 ha)
(3) 0

(4) 555.7 acres (224.9 ha)

METHOD OF INVESTIGATION:
(1) Archaeological Methods: Sites were located by researching previous cultural resource investigations done for this and other nearby undertakings; through a reassessment of the original project area and previously recorded sites and isolated occurrence. The project area was investigated through pedestrian inventory with transects spaced ≈15 meters apart. Each site was mapped (or existing site maps were amended as necessary) using a Brunton pocket transit, mounted on a tripod, and a 50 m tape, and site forms were completed. All forms and maps were field verified. Preliminary artifact analysis was completed on all sites in the field.

ETHNOGRAPHIC METHODS: Information regarding the location of possible traditional cultural properties, historical sites, and burial sites was collected through contacts, interviews, and site visits with chapter officials and other knowledgeable people living in the vicinity of the project area. Previously collected documentation was reviewed for possible historical sites, TCPs, and burial sites located within the project area. Each site was mapped (or existing site maps were amended as necessary) using a Brunton pocket transit, mounted on a tripod, and a 50 m tape, and site forms were completed. All forms and maps were field verified.

(2) Previously recorded sites were rechecked for locational and content accuracy, as well as eligibility. If needed, sites were rerecorded and mapped. The project area was investigated through pedestrian inventory with transects spaced ≈15 meters apart. Sites were recorded and mapped using a Silva Ranger hand-held compass and a 100 meter tape. Interviews with local residents were conducted to identify any traditional cultural properties or burials located within the project area.

(3) Preliminary ethnographic information on the overall size and potential complexity of the project was estimated by driving along the existing road in a motorized vehicle. The numbers of visible residential clusters, in-use sites that appeared likely to be impacted by the road project; potential historic properties, sacred sites, traditional cultural properties and/or burial sites were noted. Only occasional stops were made to look more carefully at a potential site.

(4) One individual walked on either side of the staked ℄, surveying the 100-foot wide swath on each side of the ℄ in a zip-zag fashion. Field numbers were assigned to each sites, site forms were filled out, and sketch maps were made.

CULTURAL RESOURCES FOUND:
(1) 55 (including some previously located resources)
(2) 16 (including some previously located resources)
(3) 11
(4) 42

Note: Since the information provided in Bungart & Ortiz 1995 contains the most recent and accurate information regarding the resources within the project area, the following lists of properties are based upon this report.

LIST OF ELIGIBLE PROPERTIES: 26
AZ-J-48-31
AZ-J-48-34
AZ-K-25-22
AZ-K-25-23
AZ-K-25-24
AZ-K-25-25
AZ-K-25-26
AZ-K-25-27
AZ-K-25-30
AZ-K-25-33
AZ-K-25-35
AZ-K-25-37
AZ-K-25-39
AZ-K-40-02
AZ-K-40-03
AZ-K-40-05
AZ-K-40-06
AZ-K-40-07
AZ-K-40-08
AZ-K-40-09
AZ-K-40-11
AZ-K-40-12
AZ-K-40-16
AZ-K-40-19 prehistoric component only
AZ-K-41-03
In-use Property 1

LIST OF POTENTIALLY ELIGIBLE PROPERTIES: 11
AZ-K-25-21
AZ-K-25-28
AZ-K-25-29
AZ-K-25-31
AZ-K-40-13
AZ-K-40-17
AZ-K-40-20

AZ-K-40-21
AZ-K-40-22
AZ-K-40-23
AZ-K-40-24

LIST OF NON-ELIGIBLE PROPERTIES: 20
AZ-J-48-31
AZ-J-48-32
AZ-J-48-33
AZ-K-25-32
AZ-K-25-34
AZ-K-25-36
AZ-K-25-38
AZ-K-25-41
AZ-K-25-42
AZ-K-40-01
AZ-K-40-04
AZ-K-40-10
AZ-K-40-14
AZ-K-40-15
AZ-K-40-19 historical component only
AZ-K-40-25
AZ-K-41-02
Burial 1
Burial 2
Burial 3

LIST OF ARCHEOLOGICAL RESOURCES: 33
AZ-J-48-34
AZ-K-25-21
AZ-K-25-22 prehistoric component only
AZ-K-25-23
AZ-K-25-24 prehistoric component only
AZ-K-25-25 prehistoric component only
AZ-K-25-26
AZ-K-25-27
AZ-K-25-28
AZ-K-25-29
AZ-K-25-30
AZ-K-25-31
AZ-K-25-33
AZ-K-40-01
AZ-K-40-02
AZ-K-40-03
AZ-K-40-05
AZ-K-40-06
AZ-K-40-07

AZ-K-40-08
AZ-K-40-09
AZ-K-40-11 prehistoric component only
AZ-K-40-12
AZ-K-40-13
AZ-K-40-16
AZ-K-40-17
AZ-K-40-19 prehistoric component only
AZ-K-40-20
AZ-K-40-21
AZ-K-40-22
AZ-K-40-23
AZ-K-40-24
AZ-K-41-03

EFFECT/CONDITIONS OF COMPLIANCE: In accordance of Stipulation 3 of the document entitled "*A Programmatic Agreement Among the Navajo Nation, the Bureau of Indian Affairs-Navajo Area Office, the Advisory Council on Historic Preservation, the Arizona State Historic Preservation Officer, the New Mexico State Historic Preservation Officer, and the Utah State Historic Preservation Officer for Cultural Resource Management Projects Conducted Under the Auspices of the Navajo Nation Historic Preservation Department, Roads Planning Section, Within the Boundaries of the Navajo Nation,*" the Navajo Nation Historic Preservation Department has determined that the undertaking will have **no adverse effect** on historic properties provided that the conditions set forth in the following tables are adhered to, and that the treatment plan (Bungart & Ortiz 1995 [and as revised in final report]) is implemented prior to commencement of construction in the vicinity of the sites mentioned.

HISTORIC PROPERTIES THAT REQUIRE ARCHAEOLOGICAL TREATMENT
PRIOR TO INITIATION OF CONSTRUCTION ACTIVITIES

Site Number	Location Relative to ROW, Inclusive Station Numbers, Treatment Recommendations
AZ-J-48-34	Inside ROW @ 1088+89.23-1113+00; test for extent; complete data recovery
AZ-K-25-21	Inside ROW @ 353+00-353+73.62; test for (1) significance & (2) extent; complete data recovery
AZ-K-25-22	Inside ROW @ 332+00-335+00; test prehistoric component for extent & complete data recovery; information potential of historic component exhausted by this recording
AZ-K-25-23	Inside ROW @ 267+00-268+00; test for extent & complete data recovery

AZ-K-25-24 Inside ROW @ 256+00-259+00; test prehistoric component for extent & complete data recovery; remove historical corral remnants from area of potential effect

AZ-K-25-25 Prehistoric component inside ROW @ 211+00-212+00; test prehistoric component for extent & complete data recovery; historical component outside ROW

AZ-K-25-26 Inside ROW @ 207+00; test component for extent & complete data recovery

AZ-K-25-27 Inside ROW @ 146+00-148+00; BIA to constrict ROW 20 meters E. If this is not possible, test for extent & complete data recovery.

AZ-K-25-28 Inside ROW @ 140+00; test for (1) significance & (2) extent; complete data recovery

AZ-K-25-29 Inside ROW @ 133+00-135+00; test for (1) significance & (2) extent; complete data recovery

AZ-K-25-30 Inside ROW @ 36+00; test for extent & complete data recovery

AZ-K-25-31 Inside ROW @ 156+00-158+00; test for (1) significance & (2) extent; complete data recovery

AZ-K-25-33 Inside ROW @ 156+00-158+00; BIA to constrict ROW to 184' wide by moving the 100'L edge 16' to the west. Most of the site will thus be avoided. Complete testing of portion of site remaining in ROW for extent and data recovery if necessary.

AZ-K-25-35 Outside ROW @ ≈160+00; no treatment necessary

AZ-K-40-02 Inside ROW @ 862+61.55-866+00; test for extent & complete data recovery

AZ-K-40-03 Inside ROW @ 156+00-158+00; test for extent & complete data recovery

AZ-K-40-05 Inside ROW @ 776+00-782+00. If BIA constricts ROW to 134' wide by moving the 100'R edge 66' to E (℄ will be moved slightly E), F1 & F2 will not be effected. Test F3 and rest of site within ROW for (1) significance & (2) extent; complete data recovery

AZ-K-40-06 Inside ROW @ 770+00-771+00; test for extent & complete data recovery

AZ-K-40-07 Inside ROW @ 764+00-765+50; test for extent & complete data recovery

AZ-K-40-08 Inside ROW @ 748+00; test for extent & complete data recovery

AZ-K-40-09 Inside ROW @ 651+00-652+00; test for extent & complete data recovery

AZ-K-40-11 Inside ROW @ 561+00-562+00; test prehistoric component for extent & complete data recovery; consultants 10 & 21 will move historical remains outside area of potential effect

AZ-K-40-13 Inside ROW @ 529+00; test for (1) significance & (2) extent; complete data recovery

AZ-K-40-16 Inside ROW @ 504+00-505+00; test for extent & complete data recovery

AZ-K-40-17	Inside ROW @ 463+00; test for (1) significance & (2) extent; complete data recovery
AZ-K-40-19	Inside ROW @ 543+00-545+00; To completely avoid the site, BIA will constrict ROW to 134' wide by moving the 100'R edge 66' to the east (℄ will be moved slightly E). BIA will then stabilize ROW edge/hill slope to prevent future erosion prior to initiation of construction activities. If this treatment measure cannot be complied with, the site must be tested for extent and data recovery must be completed.
AZ-K-40-20	Inside ROW @ 521+00-523+00; test for (1) significance & (2) extent; complete data recovery
AZ-K-40-21	Inside ROW @ 470+00-471+00; test for (1) significance & (2) extent; complete data recovery
AZ-K-40-22	Inside ROW @ 466+00-467+00; test for (1) significance & (2) extent; complete data recovery
AZ-K-40-23	Inside ROW @ 519+00; test for (1) significance & (2) extent; complete data recovery
AZ-K-40-24	Inside ROW @ 515+00-516+00; test for (1) significance & (2) extent; complete data recovery
AZ-K-41-03	Inside ROW @ 926+00-928+00; test for extent & complete data recovery

PROPERTIES, RESOURCES, & BURIALS THAT REQUIRE PROTECTIVE FENCING OR DISMANTLING PRIOR TO INITIATION OF CONSTRUCTION ACTIVITIES, OR MONITORING DURING CONSTRUCTION ACTIVITIES

Site Number	Location Relative to ROW, Inclusive Station Numbers, Treatment Recommendations
AZ-K-48-31	Outside ROW @ ≈1155+00; next-of-kin requests that a Navajo person monitor construction in vicinity of site. BIA will notify HPD-Roads Planning Program and Consultant 3 prior to initiation of construction activity in vicinity.
AZ-K-25-24	Inside ROW @ 256+00-259+00; BIA to remove corral remnants from ROW and pile neatly outside the area of potential effect
AZ-K-25-32	Inside ROW @ 326+00; BIA to dismantle structure and pile neatly outside the area of potential effect
AZ-K-25-36	Outside ROW @ ≈190+00; BIA to either fence edge of ROW in vicinity of chaha'oh or fence the gravesite
AZ-K-25-37	Outside ROW @ ≈200+00; erect permanent 100'R ROW fence prior to construction activities, tapering it 7-10 m E
AZ-K-25-39	Inside ROW @ 255+00; Consultant 6 will remove feature from ROW. Notify him prior to initiation of construction in vicinity.
AZ-K-25-42	Inside ROW @ 320+00-321+00; If any features remain, BIA to remove them from ROW and pile them neatly outside the area of potential effect.

AZ-K-40-11	Inside ROW @ 561+00-562+00; Consultants 10 & 21 will move remains outside the area of potential effect. BIA will notify them prior to initiation of construction in vicinity.
AZ-K-40-25	Inside ROW @ 633+00-634+00; If any features remain, BIA to remove them from ROW and pile them neatly outside the area of potential effect.
In-Use Property 1	Inside ROW @ 426+00-462+00; BIA will erect a temporary fence to protect trees during construction activities. Consultants 1, 10, & 21 will move fence posts themselves. BIA to notify Consultants 1, 10, & 21 prior to construction in vicinity.
Burial 1	Inside ROW @ 255+00; the vicinity of the area will be tested to locate remains. If found, remains will be reburied close to the original location as possible, outside the area of potential effect. Archaeological contractor to notify Consultant 6 prior to testing.
Burial 2	Inside ROW @ 448+00; next-of-kin requested that a Mormon missionary move the cradleboard remains outside ROW; notify Consultant 1 when construction nears burial place. BIA to notify HPD before construction reaches the area so that HPD can arrange for treatment pursuant to the next-of-kin's wishes.

In the event of a discovery ("discovery" means any previously unidentified or incorrectly identified cultural resources including but not limited to archaeological deposits, human remains, or locations reportedly associated with Native American religious/traditional beliefs or practices), all operations in the immediate vicinity of the discovery must cease and the Navajo Nation Historic Preservation Department must be notified at 520-871-6437.

FORM PREPARED BY: Nina Swidler
FINALIZED: June 24, 1996

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

Alan Downer
Navajo Nation Historic Preservation Officer

7/9/96
Date

Agency Approval: Yes X No ___

for Wilson Barber, Jr.
Area Director, BIA-NAO

July 12, 1996
Date

FINDING OF NO SIGNIFICANT IMPACT
ENVIRONMENTAL ASSESSMENT DOCUMENT EA-96-105
LOCATION: B.O.P.- T34N, R13E, Unplatted
E.O.P.- T37N, R12E, Unplatted
Projection from the Gila and Salt River Meridian and Baseline
N21 - Tonalea to Kaibeto, Coconino County, Arizona

The proposed action is the realignment, construction and paving of Navajo Route 21, project N21(1)2&4, a 21.0 mile (33.8k), 200-foot (60.96m) wide road project, which will encompass 509.1 acres (206.0 hectares). The project is sponsored by the Navajo Area Office, Branch of Roads, P.O. Box 1060, Gallup, New Mexico, 87301.

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

The following references, incorporated in the project environmental assessment document, serve as the basis for this decision:

1. Agency and public involvement was solicited, and environmental issues relative to the development of the N21 road construction project were identified. Alternative courses of action and mitigation measures were developed in response to environmental concerns and issues.

2. The EA disclosed the environmental consequences of the proposed action and the "no action" alternative. One other alternative (gravel surface) was considered but eliminated.

3. The Navajo Department of Agriculture was consulted for reclamation and seeding recommendations which were provided on August 19, 1998 (see Appendix E).

4. Potential impacts to flood plains and wetlands by the proposed project have been evaluated in accordance with Executive Orders 11988 and 11990. During a site visit on May 9, 1996, a few dry washes without riparian vegetation were noted. No seeps or springs were observed on or near the project area (see Biological Survey Report in Appendix C). The described action will have no effect on wetlands, riparian areas, flood plains, or other sensitive areas.

5. CWA 401 - In compliance with the Clean Water Act, as amended, Section 401 consultation was conducted with the U.S. Environmental Protection Agency. Conditional water quality certification was issued by the U.S.E.P.A. on November 21, 1997, for use of Nationwide Permit 14, under which this proposed project would be authorized (see documentation in Appendix F).

6. CWA 402(p)- In compliance with the Clean Water Act, as amended, Section 402(p), Storm Water Pollution Protection, a notice of intent for storm water discharges associated with construction activities was filed with the U.S. Environmental Protection Agency by the Bureau of Indian Affairs, Navajo Area Office, Branch of Roads. The permit number is AZR10A341 (see Appendix F).

6. CWA 404 - In compliance with the Clean Water Act, as amended, the Army Corp of Engineers was consulted regarding Section 404 Determination. The Army Corps of Engineers determined that the proposed road could be constructed under the authority of Nationwide Permit No. 14, Road Crossings (see documentation in Appendix F).

7. In compliance with the National Historic Preservation Act of 1966, as amended, Section 106 Consultation, and 36 CFR 800.9 (b), a cultural resources assessment, including traditional cultural properties, was performed for the proposed project by the Navajo Nation Historic Preservation Department (NNHPD) which issued Cultural Resource Compliance Form (CRCF), NNHPD NO. NTM-77-78.6.7&8. The proposed undertaking will have **no effect** on historic

properties provided that the conditions outlined in the CRCF mentioned above are adhered to, and that the treatment plan is implemented prior to commencement of construction in the vicinity of sites (see CRCF in Appendix D).

In the event of a discovery [discovery means any previously unidentified or incorrectly identified cultural resources including, but not limited to, archaeological deposits, human remains, or locations reportedly associated with Native American religious/traditional beliefs or practices] all operations in the immediate vicinity of the discovery must cease, and the Navajo Nation Historic Preservation Department must be notified at (520) 871-7132.

8. In compliance with the Endangered Species Act, informal consultation was held with the Navajo Nation Natural Heritage Program and the U.S. Fish and Wildlife Service. Ten animal and nine vegetative species of concern that have the potential to occur in the region of the project area were identified by the two agencies mentioned above. A biological survey was performed on May 9, 1996, by SWCA biologists. No threatened, endangered, or sensitive species were observed on the project site or surrounding area (see Biological Survey Report in Appendix C).

9. Impacts to public health and safety would be positive due to safer driving conditions resulting from the improved road (EA, Part V.I.).

10. In accordance with the Resource Conservation and Recovery Act, Subtitle C, hazardous materials/waste will be mitigated through implementation of the standard best management practices (EA, Part V.)

11. In accordance with the Resource Conservation and Recovery Act, Subtitle D, non-hazardous solid waste will be mitigated through implementation of the standard best management practices (EA, Part V.).

12. Cumulative effects are considered negligible. Any potential negative impacts can be lessened or alleviated by responsible application of best management practices incorporated into the final design plans. Paving of N21 is an important step toward creating a modern and safe transportation system for the Navajo Nation.

13. In accordance with the President's Executive Order 12898 on Environmental Justice, impacts to minority and low-income populations and communities have been evaluated, as have impacts to Indian Trust Resources (EA, Part V.I).

14. The proposed action would improve the economic and social conditions of the affected Indian communities. The N21 road construction project is supported by the Tonalea, Kaibeto, and Red Lake Chapters. The Hopi Tribe granted approval for construction of the road (see support documents in Appendix A).

Area NEPA Coordinator

December 28, 1999
Date

COE Section 404
Permit #14. Linear Transportation Projects

2002 Nationwide Permit General Conditions:

1. Navigation. No activity may cause more than a minimal adverse effect on navigation.

2. Proper Maintenance. Any structure or fill authorized shall be properly maintained, including maintenance to ensure public safety.

3. Soil Erosion and Sediment Controls. Appropriate soil erosion and sediment controls must be used and maintained in effective operating condition during construction, and all exposed soil and other fills, as well as any work below the ordinary high water mark or high tide line, must be permanently stabilized at the earliest practicable date. Permittees are encouraged to perform work within waters of the United States during periods of low-flow or no-flow.

4. Aquatic Life Movements. No activity may substantially disrupt the necessary life-cycle movements of those species of aquatic life indigenous to the waterbody, including those species that normally migrate through the area, unless the activity's primary purpose is to impound water. Culverts placed in streams must be installed to maintain low flow conditions.

5. Equipment. Heavy equipment working in wetlands must be placed on mats, or other measures must be taken to minimize soil disturbance.

6. Regional and Case-By-Case Conditions. The activity must comply with any regional conditions that may have been added by the Division Engineer (see 33 CFR 330.4(e)) and with any case specific conditions added by the Corps or by the state or tribe in its Section 401 Water Quality Certification and Coastal Zone Management Act consistency determination.

7. Wild and Scenic Rivers. No activity may occur in a component of the National Wild and Scenic River System; or in a river officially designated by Congress as a "study river" for possible inclusion in the system, while the river is in an official study status; unless the appropriate Federal agency, with direct management responsibility for such river, has determined in writing that the proposed activity will not adversely affect the Wild and Scenic River designation, or study status. Information on Wild and Scenic Rivers may be obtained from the appropriate Federal land management agency in the area (e.g., National Park Service, U.S. Forest Service, Bureau of Land Management, U.S. Fish and Wildlife Service).

8. Tribal Rights. No activity or its operation may impair reserved tribal rights, including, but not limited to, reserved water rights and treaty fishing and hunting rights.

9. Water Quality. (a) In certain states and tribal lands an individual 401 Water Quality Certification must be obtained or waived (See 33 CFR 330.4(c)).

(b) For NWPs 12, 14, 17, 18, 32, 39, 40, 42, 43, and 44, where the state or tribal 401 certification (either generically or individually) does not require or approve water quality management measures, the permittee must provide water quality management measures that will ensure that the authorized work does not result in more than minimal degradation of water quality (or the Corps determines that compliance with state or local standards, where applicable, will ensure no more than minimal adverse effect on water quality). An important component of water quality management includes stormwater management that minimizes degradation of the downstream aquatic system, including water quality (refer to General Condition 21 for stormwater management requirements). Another important component of water quality management is the establishment and maintenance of vegetated buffers next to open waters, including streams (refer to General Condition 19 for vegetated buffer requirements for the NWPs).

This condition is only applicable to projects that have the potential to affect water quality. While appropriate measures must be taken, in most cases it is not necessary to conduct detailed studies to identify such measures or to require monitoring.

10. Coastal Zone Management. In certain states, an individual state coastal zone management consistency concurrence must be obtained or waived (see 33 CFR 330.4(d)).

11. Endangered Species. (a) No activity is authorized under any NWP which is likely to jeopardize the continued existence of a threatened or endangered species or a species proposed for such designation, as identified under the Federal Endangered Species Act (ESA), or which will destroy or adversely modify the critical habitat of such species. Non-federal permittees shall notify the District Engineer if any listed species or designated critical habitat might be affected or is in the vicinity of the project, or is located in the designated critical habitat and shall not begin work on the activity until notified by the District Engineer that the requirements of the ESA have been satisfied and that the activity is authorized. For activities that may affect Federally-listed endangered or threatened species or designated critical habitat, the notification must include the name(s) of the endangered or threatened species that may be affected by the proposed work or that utilize the designated critical habitat that may be affected by the proposed work. As a result of formal or informal consultation with the FWS or NMFS the District Engineer may add species-specific regional endangered species conditions to the NWPs.

(b) Authorization of an activity by a NWP does not authorize the "take" of a threatened or endangered species as defined under the ESA. In the absence of separate authorization (e.g., an ESA Section 10 Permit, a Biological Opinion with "incidental take" provisions, etc.) from the USFWS or the NMFS, both lethal and non-lethal "takes" of protected species are in violation of the ESA. Information on the location of threatened and endangered species and their critical habitat can be obtained directly from the offices of the USFWS and NMFS or their world wide web pages at http://www.fws.gov/r9endspp/endspp.html and http://www.nfms.noaa.gov/prot_res/overview/es.html respectively.

12. Historic Properties. No activity which may affect historic properties listed, or eligible for listing, in the National Register of Historic Places is authorized, until the District Engineer has complied with the provisions of 33 CFR part 325, Appendix C. The prospective permittee must notify the District Engineer if the authorized activity may affect any historic properties listed, determined to be eligible, or which the prospective permittee has reason to believe may be eligible for listing on the National Register of Historic Places, and shall not begin the activity until notified by the District Engineer that the requirements of the National Historic Preservation Act have been satisfied and that the activity is authorized. Information on the location and existence of historic resources can be obtained from the State Historic Preservation Office and the National Register of Historic Places (see 33 CFR 330.4(g)). For activities that may affect historic properties listed in, or eligible for listing in, the National Register of Historic Places, the notification must state which historic property may be affected by the proposed work or include a vicinity map indicating the location of the historic property.

13. Notification. (a) Timing; where required by the terms of the NWP, the prospective permittee must notify the District Engineer with a preconstruction notification (PCN) as early as possible. The District Engineer must determine if the notification is complete within 30 days of the date of receipt and can request additional information necessary to make the PCN complete only once. However, if the prospective permittee does not provide all of the requested information, then the District Engineer will notify the prospective permittee that the notification is still incomplete and the PCN review process will not commence until all of the requested information has been received by the District Engineer. The prospective permittee shall not begin the activity:

(1) Until notified in writing by the District Engineer that the activity may proceed under the NWP with any special conditions imposed by the District or Division Engineer; or

(2) If notified in writing by the District or Division Engineer that an Individual Permit is required; or

(3) Unless 45 days have passed from the District Engineer's receipt of the complete notification and the prospective permittee has not received written notice from the District or Division Engineer. Subsequently, the permittee's right to proceed under the NWP may be modified, suspended, or revoked only in accordance with the procedure set forth in 33 CFR 330.5(d)(2).

(b) Contents of Notification: The notification must be in writing and include the following information:

(1) Name, address and telephone numbers of the prospective permittee;

(2) Location of the proposed project;

(3) Brief description of the proposed project; the project's purpose; direct and indirect adverse environmental effects the project would cause; any other NWP(s), Regional General Permit(s), or Individual Permit(s) used or intended to be used to authorize any part of the proposed project or any related activity. Sketches should be provided when necessary to show that the activity complies with the terms of the NWP (Sketches usually clarify the project and when provided result in a quicker decision.);

(4) For NWPs 7, 12, 14, 18, 21, 34, 38, 39, 40, 41, 42, and 43, the PCN must also include a delineation of affected special aquatic sites, including wetlands, vegetated shallows (e.g., submerged aquatic vegetation, seagrass beds), and riffle and pool complexes (see paragraph 13(f));

(5) For NWP 7 (Outfall Structures and Maintenance), the PCN must include information regarding the original design capacities and configurations of those areas of the facility where maintenance dredging or excavation is proposed;

(6) For NWP 14 (Linear Transportation Projects), the PCN must include a compensatory mitigation proposal to offset permanent losses of waters of the US and a statement describing how temporary losses of waters of the US will be minimized to the maximum extent practicable;

(7) For NWP 21 (Surface Coal Mining Activities), the PCN must include an Office of Surface Mining (OSM) or state-approved mitigation plan, if applicable. To be authorized by this NWP, the District Engineer must determine that the activity complies with the terms and conditions of the NWP and that the adverse environmental effects are minimal both individually and cumulatively and must notify the project sponsor of this determination in writing;

(8) For NWP 27 (Stream and Wetland Restoration Activities), the PCN must include documentation of the prior condition of the site that will be reverted by the permittee;

(9) For NWP 29 (Single-Family Housing), the PCN must also include:

(i) Any past use of this NWP by the Individual Permittee and/or the permittee's spouse;

(ii) A statement that the single-family housing activity is for a personal residence of the permittee;

(iii) A description of the entire parcel, including its size, and a delineation of wetlands. For the purpose of this NWP, parcels of land measuring 1/4-acre or less will not require a formal on-site delineation. However, the applicant shall provide an indication of where the wetlands are and the amount of wetlands that exists on the property. For parcels greater than 1/4-acre in size, a formal wetland delineation must be prepared in accordance with the current method required by the Corps. (See paragraph 13(f));

(iv) A written description of all land (including, if available, legal descriptions) owned by the prospective permittee and/or the prospective permittee's spouse, within a one mile radius of the parcel, in any form of ownership (including any land owned as a partner, corporation, joint tenant, co-tenant, or as a tenant-by-the-entirety) and any land on which a purchase and sale agreement or other contract for sale or purchase has been executed;

(10) For NWP 31 (Maintenance of Existing Flood Control Facilities), the prospective permittee must either notify the District Engineer with a PCN prior to each maintenance activity or submit a five year (or less) maintenance plan. In addition, the PCN must include all of the following:

(i) Sufficient baseline information identifying the approved channel depths and configurations and existing facilities. Minor deviations are authorized, provided the approved flood control protection or drainage is not increased;

(ii) A delineation of any affected special aquatic sites, including wetlands; and,

(iii) Location of the dredged material disposal site;

(11) For NWP 33 (Temporary Construction, Access, and Dewatering), the PCN must also include a restoration plan of reasonable measures to avoid and minimize adverse effects to aquatic resources;

(12) For NWPs 39, 43 and 44, the PCN must also include a written statement to the District Engineer explaining how avoidance and minimization for losses of waters of the US were achieved on the project site;

(13) For NWP 39 and NWP 42, the PCN must include a compensatory mitigation proposal to offset losses of waters of the US or justification explaining why compensatory mitigation should not be required. For discharges that cause the loss of greater than 300 linear feet of an intermittent stream bed, to be authorized, the District Engineer must determine that the activity complies with the other terms and conditions of the NWP, determine adverse environmental effects are minimal both individually and cumulatively, and waive the limitation on stream impacts in writing before the permittee may proceed;

(14) For NWP 40 (Agricultural Activities), the PCN must include a compensatory mitigation proposal to offset losses of waters of the US. This NWP does not authorize the relocation of greater than 300 linear-feet of existing serviceable drainage ditches constructed in non-tidal streams unless, for drainage ditches constructed in intermittent non-tidal streams, the District Engineer waives this criterion in writing, and the District Engineer has determined that the project complies with all terms and conditions of this NWP, and that any adverse impacts of the project on the aquatic environment are minimal, both individually and cumulatively;

(15) For NWP 43 (Stormwater Management Facilities), the PCN must include, for the construction of new stormwater management facilities, a maintenance plan (in accordance with state and local requirements, if applicable) and a compensatory mitigation proposal to offset losses of waters of the US. For discharges that cause the loss of greater than 300 linear feet of an intermittent stream bed, to be authorized, the District Engineer must determine that the activity complies with the other terms and conditions of the NWP, determine adverse environmental effects are minimal both individually and cumulatively, and waive the limitation on stream impacts in writing before the permittee may proceed;

(16) For NWP 44 (Mining Activities), the PCN must include a description of all waters of the US adversely affected by the project, a description of measures taken to minimize adverse effects to waters of the US, a description of measures taken to comply with the criteria of the NWP, and a reclamation plan (for all aggregate mining activities in isolated waters and non-tidal wetlands adjacent to headwaters and any hard rock/mineral mining activities);

(17) For activities that may adversely affect Federally-listed endangered or threatened species, the PCN must include the name(s) of those endangered or threatened species that may be affected by the proposed work or utilize the designated critical habitat that may be affected by the proposed work; and

(18) For activities that may affect historic properties listed in, or eligible for listing in, the National Register of Historic Places, the PCN must state which historic property may be affected by the proposed work or include a vicinity map indicating the location of the historic property.

(c) Form of Notification: The standard Individual Permit application form (Form ENG 4345) may be used as the notification but must clearly indicate that it is a PCN and must include all of the information required in (b)(1)-(18) of General Condition 13. A letter containing the requisite information may also be used.

(d) District Engineer's Decision: In reviewing the PCN for the proposed activity, the District Engineer will determine whether the activity authorized by the NWP will result in more than minimal individual or cumulative adverse environmental effects or may be contrary to the public interest. The prospective permittee may submit a proposed mitigation plan with the PCN to expedite the process. The District Engineer will consider any proposed compensatory mitigation the applicant has included in the proposal in determining whether the net adverse environmental effects to the aquatic environment of the proposed work are minimal. If the District Engineer determines that the activity complies with the terms and conditions of the NWP and that the adverse effects on the aquatic environment are minimal, after considering mitigation, the District Engineer will notify the permittee and include any conditions the District Engineer deems necessary. The District Engineer must approve any compensatory mitigation proposal before the permittee commences work. If the prospective permittee is required to submit a compensatory mitigation proposal with the PCN, the proposal may be either conceptual or detailed. If the prospective permittee elects to submit a compensatory mitigation plan with the PCN, the District Engineer will expeditiously review the proposed compensatory mitigation plan. The District Engineer must review the plan within

45 days of receiving a complete PCN and determine whether the conceptual or specific proposed mitigation would ensure no more than minimal adverse effects on the aquatic environment. If the net adverse effects of the project on the aquatic environment (after consideration of the compensatory mitigation proposal) are determined by the District Engineer to be minimal, the District Engineer will provide a timely written response to the applicant. The response will state that the project can proceed under the terms and conditions of the NWP. If the District Engineer determines that the adverse effects of the proposed work are more than minimal, then the District Engineer will notify the applicant either:

(1) That the project does not qualify for authorization under the NWP and instruct the applicant on the procedures to seek authorization under an Individual Permit;

(2) that the project is authorized under the NWP subject to the applicant's submission of a mitigation proposal that would reduce the adverse effects on the aquatic environment to the minimal level; or

(3) that the project is authorized under the NWP with specific modifications or conditions. Where the District Engineer determines that mitigation is required to ensure no more than minimal adverse effects occur to the aquatic environment, the activity will be authorized within the 45-day PCN period. The authorization will include the necessary conceptual or specific mitigation or a requirement that the applicant submit a mitigation proposal that would reduce the adverse effects on the aquatic environment to the minimal level. When conceptual mitigation is included, or a mitigation plan is required under item (2) above, no work in waters of the US will occur until the District Engineer has approved a specific mitigation plan.

(e) Agency Coordination: The District Engineer will consider any comments from Federal and state agencies concerning the proposed activity's compliance with the terms and conditions of the NWPs and the need for mitigation to reduce the project's adverse environmental effects to a minimal level.

For activities requiring notification to the District Engineer that result in the loss of greater than 1/2-acre of waters of the US, the District Engineer will provide immediately (e.g., via facsimile transmission, overnight mail, or other expeditious manner) a copy to the appropriate Federal or state offices (USFWS, state natural resource or water quality agency, EPA, State Historic Preservation Officer (SHPO), and, if appropriate, the NMFS). With the exception of NWP 37, these agencies will then have 10 calendar days from the date the material is transmitted to telephone or fax the District Engineer notice that they intend to provide substantive, site-specific comments. If so contacted by an agency, the District Engineer will wait an additional 15 calendar days before making a decision on the notification. The District Engineer will fully consider agency comments received within the specified time frame, but will provide no response to the resource agency, except as provided below. The District Engineer will indicate in the administrative record associated with each notification that the resource agencies' concerns were considered. As required by section 305(b)(4)(B) of the Magnuson-Stevens Fishery Conservation and Management Act, the District Engineer will provide a response to NMFS within 30 days of receipt of any Essential Fish Habitat conservation recommendations. Applicants are encouraged to provide the Corps multiple copies of notifications to expedite agency notification.

(f) Wetland Delineations: Wetland delineations must be prepared in accordance with the current method required by the Corps (For NWP 29 see paragraph (b)(9)(iii) for parcels less than (1/4-acre in size). The permittee may ask the Corps to delineate the special aquatic site. There may be some delay if the Corps does the delineation. Furthermore, the 45-day period will not start until the wetland delineation has been completed and submitted to the Corps, where appropriate.

14. Compliance Certification. Every permittee who has received NWP verification from the Corps will submit a signed certification regarding the completed work and any required mitigation. The certification will be forwarded by the Corps with the authorization letter and will include:

(a) A statement that the authorized work was done in accordance with the Corps authorization, including any general or specific conditions;

(b) A statement that any required mitigation was completed in accordance with the permit conditions; and

(c) The signature of the permittee certifying the completion of the work and mitigation.

15. Use of Multiple Nationwide Permits. The use of more than one NWP for a single and complete project is prohibited, except when the acreage loss of waters of the US authorized by the NWPs does not exceed the acreage limit of the NWP with the highest specified acreage limit (e.g. if a road crossing over tidal waters is constructed under NWP 14, with associated bank stabilization authorized by NWP 13, the maximum acreage loss of waters of the US for the total project cannot exceed 1/3-acre).

16. Water Supply Intakes. No activity, including structures and work in navigable waters of the US or discharges of dredged or fill material, may occur in the proximity of a public water supply intake except where the activity is for repair of the public water supply intake structures or adjacent bank stabilization.

17. Shellfish Beds. No activity, including structures and work in navigable waters of the US or discharges of dredged or fill material, may occur in areas of concentrated shellfish populations, unless the activity is directly related to a shellfish harvesting activity authorized by NWP 4.

18. Suitable Material. No activity, including structures and work in navigable waters of the US or discharges of dredged or fill material, may consist of unsuitable material (e.g., trash, debris, car bodies, asphalt, etc.) and material used for construction or discharged must be free from toxic pollutants in toxic amounts (see section 307 of the CWA).

19. Mitigation. The District Engineer will consider the factors discussed below when determining the acceptability of appropriate and practicable mitigation necessary to offset adverse effects on the aquatic environment that are more than minimal.

(a) The project must be designed and constructed to avoid and minimize adverse effects to waters of the US to the maximum extent practicable at the project site (i.e., on site).

(b) Mitigation in all its forms (avoiding, minimizing, rectifying, reducing or compensating) will be required to the extent necessary to ensure that the adverse effects to the aquatic environment are minimal.

(c) Compensatory mitigation at a minimum one-for-one ratio will be required for all wetland impacts requiring a PCN, unless the District Engineer determines in writing that some other form of mitigation would be more environmentally appropriate and provides a project-specific waiver of this requirement. Consistent with National policy, the District Engineer will establish a preference for restoration of wetlands as compensatory mitigation, with preservation used only in exceptional circumstances.

(d) Compensatory mitigation (i.e., replacement or substitution of aquatic resources for those impacted) will not be used to increase the acreage losses allowed by the acreage limits of some of the NWPs. For example, 1/4-acre of wetlands cannot be created to change a 3/4-acre loss of wetlands to a 1/2-acre loss associated with NWP 39 verification. However, 1/2-acre of created wetlands can be used to reduce the impacts of a 1/2-acre loss of wetlands to the minimum impact level in order to meet the minimal impact requirement associated with NWPs.

(e) To be practicable, the mitigation must be available and capable of being done considering costs, existing technology, and logistics in light of the overall project purposes. Examples of mitigation that may be appropriate and practicable include, but are not limited to: reducing the size of the project; establishing and maintaining wetland or upland vegetated buffers to protect open waters such as streams; and replacing losses of aquatic resource functions and values by creating, restoring, enhancing, or preserving similar functions and values, preferably in the same watershed.

(f) Compensatory mitigation plans for projects in or near streams or other open waters will normally include a requirement for the establishment, maintenance, and legal protection (e.g., easements, deed restrictions) of vegetated buffers to open waters. In many cases, vegetated buffers will be the only compensatory mitigation required. Vegetated buffers should consist of native species. The width of the vegetated buffers required will address documented water quality or aquatic habitat loss concerns. Normally, the vegetated buffer will be 25 to 50 feet wide on each side of the stream, but the District Engineers may require slightly wider vegetated buffers to address documented water quality or habitat loss concerns. Where both wetlands and open waters exist on the project site, the Corps will determine the appropriate compensatory mitigation (e.g., stream buffers or wetlands compensation) based on what is best for the aquatic environment on a watershed basis. In cases where vegetated buffers are determined to be the most appropriate form of compensatory mitigation, the District Engineer may waive or reduce the requirement to provide wetland compensatory mitigation for wetland impacts.

(g) Compensatory mitigation proposals submitted with the "notification" may be either conceptual or detailed. If conceptual plans are approved under the verification, then the Corps will condition the verification to require detailed plans be submitted and approved by the Corps prior to construction of the authorized activity in waters of the U.S.

(h) Permittees may propose the use of mitigation banks, in-lieu fee arrangements or separate activity-specific compensatory mitigation. In all cases that require compensatory mitigation, the mitigation provisions will specify the party responsible for accomplishing and/or complying with the mitigation plan.

20. Spawning Areas. Activities, including structures and work in navigable waters of the US or discharges of dredged or fill material, in spawning areas during spawning seasons must be avoided to the maximum extent practicable. Activities that result in the physical destruction (e.g., excavate, fill, or smother downstream by substantial turbidity) of an important spawning area are not authorized.

21. Management of Water Flows. To the maximum extent practicable, the activity must be designed to maintain preconstruction downstream flow conditions (e.g., location, capacity, and flow rates). Furthermore, the activity must not permanently restrict or impede the passage of normal or expected high flows (unless the primary purpose of the fill is to impound waters) and the structure or discharge of dredged or fill material must withstand expected high flows. The activity must, to the maximum extent practicable, provide for retaining excess flows from the site, provide for maintaining surface flow rates from the site similar to preconstruction conditions, and provide for not increasing water flows from the project site, relocating water, or redirecting water flow beyond preconstruction conditions. Stream channelizing will be reduced to the minimal amount necessary, and the activity

must, to the maximum extent practicable, reduce adverse effects such as flooding or erosion downstream and upstream of the project site, unless the activity is part of a larger system designed to manage water flows. In most cases, it will not be a requirement to conduct detailed studies and monitoring of water flow.

This condition is only applicable to projects that have the potential to affect waterflows. While appropriate measures must be taken, it is not necessary to conduct detailed studies to identify such measures or require monitoring to ensure their effectiveness. Normally, the Corps will defer to state and local authorities regarding management of water flow.

22. Adverse Effects From Impoundments. If the activity creates an impoundment of water, adverse effects to the aquatic system due to the acceleration of the passage of water, and/or the restricting its flow shall be minimized to the maximum extent practicable. This includes structures and work in navigable waters of the US, or discharges of dredged or fill material.

23. Waterfowl Breeding Areas. Activities, including structures and work in navigable waters of the US or discharges of dredged or fill material, into breeding areas for migratory waterfowl must be avoided to the maximum extent practicable.

24. Removal of Temporary Fills. Any temporary fills must be removed in their entirety and the affected areas returned to their preexisting elevation.

25. Designated Critical Resource Waters. Critical resource waters include, NOAA-designated marine sanctuaries, National Estuarine Research Reserves, National Wild and Scenic Rivers, critical habitat for Federally listed threatened and endangered species, coral reefs, state natural heritage sites, and outstanding national resource waters or other waters officially designated by a state as having particular environmental or ecological significance and identified by the District Engineer after notice and opportunity for public comment. The District Engineer may also designate additional critical resource waters after notice and opportunity for comment.

(a) Except as noted below, discharges of dredged or fill material into waters of the US are not authorized by NWPs 7, 12, 14, 16, 17, 21, 29, 31, 35, 39, 40, 42, 43, and 44 for any activity within, or directly affecting, critical resource waters, including wetlands adjacent to such waters. Discharges of dredged or fill materials into waters of the US may be authorized by the above NWPs in National Wild and Scenic Rivers if the activity complies with General Condition 7. Further, such discharges may be authorized in designated critical habitat for Federally listed threatened or endangered species if the activity complies with General Condition 11 and the USFWS or the NMFS has concurred in a determination of compliance with this condition.

(b) For NWPs 3, 8, 10, 13, 15, 18, 19, 22, 23, 25, 27, 28, 30, 33, 34, 36, 37, and 38, notification is required in accordance with General Condition 13, for any activity proposed in the designated critical resource waters including wetlands adjacent to those waters. The District Engineer may authorize activities under these NWPs only after it is determined that the impacts to the critical resource waters will be no more than minimal.

26. Fills Within 100-Year Floodplains. For purposes of this General Condition, 100-year floodplains will be identified through the existing Federal Emergency Management Agency's (FEMA) Flood Insurance Rate Maps or FEMA-approved local floodplain maps.

(a) Discharges in Floodplain; Below Headwaters. Discharges of dredged or fill material into waters of the US within the mapped 100-year floodplain, below headwaters (i.e. five cfs), resulting in permanent above-grade fills, are not authorized by NWPs 39, 40, 42, 43, and 44.

(b) Discharges in Floodway; Above Headwaters. Discharges of dredged or fill material into waters of the US within the FEMA or locally mapped floodway, resulting in permanent above-grade fills, are not authorized by NWPs 39, 40, 42, and 44.

(c) The permittee must comply with any applicable FEMA-approved state or local floodplain management requirements.

27. Construction Period. For activities that have not been verified by the Corps and the project was commenced or under contract to commence by the expiration date of the NWP (or modification or revocation date), the work must be completed within 12-months after such date (including any modification that affects the project).

For activities that have been verified and the project was commenced or under contract to commence within the verification period, the work must be completed by the date determined by the Corps. For projects that have been verified by the Corps, an extension of a Corps approved completion date maybe requested. This request must be submitted at least one month before the previously approved completion date.

Permit #14. Linear Transportation Projects:

Activities required for the construction, expansion, modification, or improvement of linear transportation projects (e.g., roads, highways, railways, trails, airport runways, and taxiways) in waters of the United States. For linear transportation projects in non-tidal waters, the discharge cannot cause the loss of greater than 1/2-acre of waters of the United States. For linear transportation projects in tidal waters, the discharge cannot cause the loss of greater than 1/3-acre of waters of the United States. Any stream channel modification, including bank stabilization, is limited to the minimum necessary to construct or protect the linear transportation project; such modifications must be in the immediate vicinity of the project. This NWP also authorizes temporary structures, fills, and work necessary to construct the linear transportation project. Appropriate measures must be taken to maintain normal downstream flows and minimize flooding to the maximum extent practicable, when temporary structures, work, and discharges, including cofferdams, are necessary for construction activities, access fills, or dewatering of construction sites. Temporary fills must consist of materials, and be placed in a manner, that will not be eroded by expected high flows. Temporary fills must be removed in their entirety and the affected areas returned to preconstruction elevations. The areas affected by temporary fills must be revegetated, as appropriate.

This NWP cannot be used to authorize non-linear features commonly associated with transportation projects, such as vehicle maintenance or storage buildings, parking lots, train stations, or aircraft hangars.

Notification: The permittee must submit a pre-construction notification to the district engineer prior to commencing the activity if:

(1) The loss of waters of the United States exceeds 1/10 acre; or
(2) there is a discharge in a special aquatic site, including wetlands. (See general condition 27.) (Sections 10 and 404)

Note: Some discharges for the construction of farm roads or forest roads, or temporary roads for moving mining equipment, may qualify for an exemption under Section 404(f) of the Clean Water Act (see 33 CFR 323.4).

Best Management Practices
Navajo Regional Division of Transportation

In order to avoid, reduce, or mitigate potentially adverse impacts during the construction of this project, the Navajo Regional Division of Transportation and Contractor will incorporate the following best management practices into the project specifications (to the fullest extent possible):

1. Construct the project in accordance with the Manual for Standard Specifications for Construction of roads on Federal Highway Projects (FP-03), and in compliance with all applicable Navajo Tribal and Federal laws, codes, safety regulations, and executive orders.

2. The BIA Contractor avoid any increase in sedimentation of bodies of water on or near the project by preparing and implementing a Storm Water Pollution Prevention Plan (SWPPP). The Contractor will implement the SWPPP prior to any ground disturbing activities. Adjustments in the SWPPP, during construction, shall be coordinated with the BIA Project Manager to insure compliance with the Clean Water Act.

3. The BIA Contractor shall stockpile the existing top soil for uses in re-vegetation of borrow pits and roadway slopes in accordance with the FP-03 and contract specification.

4. The cut and fill volumes will be balanced as much as possible to avoid the use of borrow sources and all slopes shall be rounded to blend into the existing terrain. All disturbed ground on the project will be disked, seeded, mulched, and re-vegetated as called for in the specification.

5. Construction hours will be between 6:00 am and 8:00 pm, Monday through Saturday, (weather permitting). In high wildlife use areas, an alternate construction schedule may be used in consultation with the Navajo Fish & Wildlife Department and/or Us Fish & Wildlife Department.

6. The Contractor's camp and equipment storage area will be kept clean and free of litter at all times, to prevent debris and litter from entering bodies of water. All trash will be disposed of in accordance with EPA regulations and all camp sites and equipment storage areas will be restored to their natural condition at project completion (in accordance with Navajo Tribal permit requirements).

7. The Contractor will daily inspect all construction equipment for leaks and notify the BIA CO/AOR/AOTR/Project Manger on the removal of leaking equipment from the project site until the leaking equipment is repaired and spills cleaned up to the satisfaction of the Project Manager and Environmental Quality Office.

8. All oils, fuels, lubricants, and hydraulic fluids, will be kept in sealed, storage

containers and or facilities that meet EPA regulations for preventing contamination of the environment.

9. Damage to trees and shrubs outside of the construction limits will be replaced by the Contractor at his expense as directed by the Project Manager.

10. Parking and staging areas will be limited to the construction limits. Utilization of existing roads for detours, storage of equipment, and the hauling of materials and water, will be used to the fullest extent possible. Storage areas within the construction limits, will utilize existing disturbed areas and be kept as small as possible.

11. The installation of drainage structures will be undertaken in such fashion so as to minimize soil erosion and to provide for a minimum of 12 inches of cover over the pipe as measured from the roadway shoulder.

12. Structural replacements will be performed during periods of low-or-no flow periods to minimize water quality impacts. No dumping of waste concrete will be allowed on the project site unless authorized by the AO/CO/AO and a detailed plan for storing waste on the project is submitted for review and approval. Such plan must include a properly designed, lined, and maintained containment pit located on high flat ground at least 15 meters from any drainage washes and other environmental/ archeological sites as shown on the design plans. Any and all waste, excess concrete, and asphalt materials stored in a containment pit will be disposed of (off site) in accordance to EPA regulations and the FP-03.

13. The Contractor will acquire Navajo water-use and aggregate material permits through the BIA and Navajo Tribal process, and follow all requirements of such permits, including royalties and environmental protection.

14. The Navajo Regional Division of Transportation and construction Contractor will acquire and comply with the following regulations regarding the Federal Clean Water Act:

a) Section 404 permit
b) Water Quality (Section 402) Certification
c) National Pollution Discharge Elimination System (NPDES) permit and the Storm Water Pollution Prevention Plan

15. Comply with all mitigation requirements concerning archaeological sites on or near the project site as defined in the compliance documents as reflected in the design plans.

REVISIONS & SUPPLEMENTAL SPECIFICATIONS TO DIVISION 100 THRU 700 OF:

"STANDARD SPECIFICATIONS FOR CO/AONSTRUCTION OF ROADS AND BRIDGES ON FEDERAL HIGHWAY PROJECTS"

(FP-2003)

SECTION 101 - TERMS, FORMAT, AND DEFINITIONS

101. 04 **Definitions:** Add and/or replace the following terms with their respective definitions:

Contracting Officer's Representative (COR).-- The COR is the duly authorized representative of the Contracting Officer (CO), and will act for the CO in administering the contract. The COR's duties and responsibilities are delineated by letter from the CO to the COR with a copy sent to the Contractor.

Engineer. -- Wherever the term "Engineer" is used in Division 100, the construction plans, or elsewhere in the specifications, it is changed to read "Awarding Official".

Sub-Contracting Officer's Representative (Sub-COR).-- The Sub-COR is the assistant field representative (Project Engineer/ Project Manager) of the COR whose duties and responsibilities are delineated by letter from the CO to the Sub-COR with a copy sent to the Contractor.

Awarding Official (AO). The AO is the duly authorized representative of the government who is authorized to enter into contracts and agreements and is responsible for awarding of P.L. 93-638 construction contracts and the administering thereof including determination of findings, issuing cure notices, contract terminations, and stop work order. Under P.L. 93-638 contracts, the term CO referred to in the FP-2003 means the AO.

Awarding Official's Technical Representative (AOTR).-- The AOTR is the duly authorized representative of the AO, and will act for the AO in administering the P.L. 93-638 contract through written delegation. The AOTR's duties and responsibilities are delineated by letter from the AO to the AOTR with a copy sent to the Contractor. Under P.L. 93-638 contracts, the term "AOTR" referred to in the FP-2003, Special Contract Requirements, supplemental specification, and construction plans means the Awarding Official's Technical Representative.

Major Floods. Major floods are define as wide spread flooding encompassing and inundating an area of 1300 hectares or more with water and debris within and adjacent to the project site.

Substantial Completion. Substantial Completion Will ONLY be given by the CO/AOwhen the project is complete such that it can be safely and effectively used by the public without further delays, disruption, or other impediments as recommended by the COR/AOTR during a substantial completion inspection. For conventional bridge and highway work, this is the point at which all road grading, bridge deck, parapet, pavement structure, shoulder, drainage, sidewalk, permanent signing and markings, traffic barrier, safety appurtenance, utility, and lighting work is complete and meets all the contract requirements.

Final Acceptance. Will be given when all work is completed (including any punch list of items) and the COR/AOTR determines and schedules a final acceptance inspection with the Contractor, CO/AO, and Regional DOT Representatives as appropriate. With the exception of any work

accepted as final, in writing by the CO/AO, the Contractor is still responsible for all the work until a final acceptance is given by the CO/AO based on recommendations from the COR/AOTR.

The definition for the word “Unsuitable” is superseded with the following:

Unsuitable or Deleterious Material - Material not capable of creating stable foundations, embankments, drainage structure installations, retaining wall construction, or roadbeds. Unsuitable material may include muck, sod, or soils with high organic and/or high PH (low resistivity) contents depending upon the materials proposed use on the project.

Staked Limits – Staked limits is the final subgrade catch points as reflected on the government furnished staking notes as adjusted by the surveyor to fit actual field conditions.

SECTION 103- SCOPE OF WORK

Subsection 103.03 is superseded with the following:

103.03 Changes, Differing Site Conditions, and Variation in Estimated Quantities.

The following FAR Clauses are supplemented with the following:

Any adjustments in contract time and cost because of changes, differing site conditions, or variation in estimated quantities shall be in accordance with section 108.03 for the following:

Changes. - See Contract Clause 52.243-4.
Differing Site Conditions. - See Contract Clause 52.236-2
Variation in Estimated Quantities. - See Contract Clause 52.211-18

103.05 Partnering.

The third paragraph is superseded with the following:

If the partnering offer is accepted, mutually agree with the Government on the level of organizational involvement and the need for a professional to facilitate the partnering process. The Contractor shall engage a qualified facilitator and other resources for key Contractor and Government staff to attend a partnership development and team-building workshop at least 30 days prior to given Notice to Proceed•. Hold additional progress meetings upon mutual agreement.

To insure that all the work under this contract including any special contract requirements are adequately addressed and properly coordinated, attendance at the first partnering meeting shall include the Contractor's Construction Manager, Project Superintendent, Project Foremen, Sub-contractor representatives, Supplier representatives, QCM, Alternate QCM and QC Inspectors/Technicians. The Government key personnel that may attend the first partnering meeting are Awarding Official, COR/AOTR Project Manager, Agency monitoring crew, Regional staff engineers and/or technicians. The above key personnel shall attend any other subsequent meeting(s) deemed necessary by both parties.

The Government will invite utility owners, environmental and archeological staff to the first partnering meeting and/or any other subsequent meeting(s) deemed necessary.

Add the following new subsection:

103.06 Value Engineering. Follow the requirements of FAR Clause 52.248-3 Value Engineering Construction.

Before undertaking significant expenditures, provide the CO/AO with a written description of the value engineering change proposal (VECP) concept. Within 14 days, the CO/AO will inform the Contractor as to whether the concept appears to be viable or if the concept is unacceptable. If the CO/AO indicates that the concept appears to be viable, prepare and submit the formal VECP proposal.

104.04 Coordination of Contract Documents:

The last sentence is superseded with the following:

The contract documents govern in the following order:

(a) P.L. 93-638 Part 900 (J)
(b) 25 CFR Part 170, as amended
(c) Federal Acquisition Regulations
(d) Special Contract Requirements
(e) Supplemental Specifications
(f) Standard Specifications
(g) Plans

SECTION 106 - ACCEPTANCE OF WORK

106.01 Conformity with Contract Requirements.

Add the following:

All applicable sections in the latest edition (as referenced in the FP-03) with updates of the Federal Lands Highway, Field Materials Manual (FLHFM) shall apply to the work under this contract. If any requirements in the FLHFM conflict in either the FP-03, or these supplemental specifications, then the FP-03 and these supplemental specifications shall prevail.

106.04 Measured or Tested Conformance.

The second paragraph of this section is superseded with the following:

Results from Contractor inspection or testing shall have values within the specified tolerances or specification limits. Results from Government verification testing and inspection (as specified in the contract) shall be used to support or reject the work incorporated into the project as specified within the tolerances and/or specified limits within the contract. When no tolerance values are identified in the contract, the work shall be inspected, tested, and accepted based on customary manufacturing and construction standards.

106. 05 Statistical Evaluation of Work for Acceptance and Determination of Pay Factor (Value of Work).

The first sentence of paragraph (a) is superseded with the following:

(a) General. For work accepted based on statistical evaluation, both the Government and Contractor assume some risk. Unless otherwise specified in the contract, it is the responsibility of the COR/AOTR and/or Navajo Region Division of Transportation (NRDOT) Manager to conduct the analysis described and furnish the Contractor with the results that shall be used for determination of acceptance of the work and pay factors based under this section.

SECTION 107 - LEGAL RELATIONS AND RESPONSIBILITY TO THE PUBLIC

107.02 Protection and Restoration of Property and Landscape.

Add the following to paragraph three:

Unless otherwise modified in writing by the CO/AO, the construction clearing limits shall be (depending upon the type of project) the cut or fill limits shown on the plan and profile drawings, or staking notes provided plus 3 meters, or the new Typical Section width plus 3 meters for pavement rehabilitation projects. At bridges, culverts, furrow ditches, turnouts, existing road obliteration, fencing or other structures the limits shall be the minimum needed to construct the improvement as determined by the COR/AOTR. In no case shall any work be done outside the right-of-way limits without prior approval from the Navajo Region Division of Transportation (NRDOT) Manager and CO/AO.

Only remove vegetation that is necessary to construct the project and all its features. The Contractor shall use due care in his clearing and grubbing operations so as not to destroy vegetation that is not required for removal to the fullest extent possible.

107.06 Contractor's Responsibility for Work.

The third paragraph is superseded with the following:

The Government will only be responsible for losses, injuries, and damage cause by declared enemies and terrorists of the United States Government and cataclysmic natural phenomenon such as tornadoes, earthquakes, major floods, and other federally declared natural disasters by the United States Government. The Government will only be responsible for costs attributable to repairing or replacing damaged work. The Government will not be responsible for delay costs, impact costs, or extended overhead costs.

108.04 Failure to Complete Work on Time.

Add the following to Paragraph two:

Under this P. L. 93-638 contract, the Contractor shall include Liquidated Damages Clauses in their subcontracts and assess Liquidated Damages in the amount specified in Table 108-1 to any sub-contractor for each day beyond the time allowed to complete the contract work, until final acceptance of the work is given. The Liquidated Damages shall be assessed when the entire work cannot be completed due to delays as a result of any actions or inactions taken by any sub-contractor. The Government•s share of these damages shall be paid (through a contract modification adjustment) to offset the costs incurred as a result of the delays. The Government•s share shall be based on government project expenditures reports furnished by the COR/AOTR through the AO.

Paragraph three is deleted.

108.05 Stop Order.

Paragraph two is superseded with the following:

No adjustment in contract time or amount will be made for stop work orders issued under **(a)** or **(b)**. An adjustment in contract time, as provided by FAR Clause 52.249-10 Default (Fixed-Price Construction) may be made when the Contractor is able to demonstrate that the weather was unusually severe based on the most recent 10 years of certified historical data provided by the Contractor.

SECTION 109 - MEASUREMENT AND PAYMENT

109. 01 Measurement of Work.

Add the following:

The metric unit of measure shall prevail in both measurement and payment of items as shown in the bid schedule. However this does not preclude the contractor from furnishing the English units equivalent for materials incorporated into the work from suppliers. The contractor shall be responsible for any misalignment and any other problems arising out of such conversions.

109.02 Measurement Terms and Definitions.

Subparagraph (a) is superseded with the following:

(a) Contract quantity. The quantity to be paid is the quantity shown in the bid schedule (designated as "CQ") and is the final quantity to be paid. The contract quantity will be adjusted for authorized changes that affect the quantity or for errors made in computing this quantity. If there is evidence that a quantity specified as a "*contract quantity*" is incorrect, submit calculations, drawings, or other evidence indicating why the quantity is in error and request, in writing, that the quantity be adjusted.

Add the following subjection:

(m) Contingent sum. Perform the work only when authorized by written change 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 bid price is designated "contingent sum", the quantity is designated as "All".

109. 03 Weighing Procedures and Devices.

Add the following:

All scales shall be re-certified annually or after each time they are moved, or as directed in writing by the CO/AO. Provide current scale certification documents to the COR/AOTR or Sub-COR/AOTR.

The first sentence of subparagraph **(c)** is superseded with the following:

Furnish, erect, and maintain acceptable scales.

Paragraphs 6 and 7 of subparagraph **(c)** are superseded with the following:

For pay quantities based on weight, an automatic printer hooked up to the scales shall be provided that shall provide the following information for each weighing, or manually weigh and record masses with the same information below:

(1) Project Number
(2) Item number and description
(3) Date
(4) Time
(5) Ticket number
(6) Haul unit number
(7) Gross Weight (haul unit and mass); to the nearest 50 kilograms
(8) Tare Weight (haul unit); to the nearest 50 kilograms
(9) Net Weight (mass); to the nearest 50 kilograms
(10) Accumulated total net mass for all haul units since the beginning of the shift

The Contractor shall weigh the empty weight of vehicles with full fuel tanks hauling materials weighed on platform scales at the start of the day's operations, then at noon time. If the vehicle is replaced with another one during the operations, then the new vehicle shall be weighed empty with full fuel tanks and at the end of the day's operations.

Paragraph 8, in subparagraph **(c)** is superseded with the following:

Furnish competent scale operator(s) to operate the system when materials are Contractor-furnished from his own pit/source. Otherwise, the Contractor's commercial supplier shall furnish a competent scale operator(s) when materials are furnished from a commercial pit/source.

Add the following to paragraph 10 in subparagraph **(c)**:

The Contractor's QCM shall furnish the certified Accumulated Total Net Mass record to the COR/AOTR the following workday.

109.04 Receiving Procedures.

The last paragraph is superseded with the following:

Use an approved format/form for the delivery record(s), which must be part of the Quality Control Plan. Furnish the original record(s) and a written certification of the delivery to the QCM with a copy to the COR/AOTR or Sub-COR/AOTR at the end of each shift. If any delivery report(s) does not contain the signature of the spread person or missing delivery report(s) cannot be found, or missing loads cannot be accounted for, the material shall not be paid for.

109.05 Scope of Payment.

Add the following to subparagraph (b):

This also includes work that is identified in the contract specifications as being incidental to other items of work or work called for in the specifications for which a bid items is not provided.

109.06 Price of Adjustments.

Paragraph **(b)(2) – Overhead** is superseded with the following:

(2) Overhead. The overhead rate(s) that apply to the prime Contractor under this contract is 30% of the total direct labor costs. For all subcontract work, identify overhead rate(s) and provide

supporting data, which justifies the rate(s). List the types of costs, which are included in overhead. Identify the cost pool(s) to which overhead is applied. Apply the overhead to the appropriate pool.

Limit Contractor overhead applied to subcontractor payments to 5 percent of such payments unless a higher percentage is justified.

Paragraph **(b) (3)-Profit** is superseded with the following:

(3) Profit. Except when precluded by the FAR, the profit shall be 8% of the total direct costs reflecting the efficiency and economy of the Contractor and subcontractors in performing the work, the contract risk type, the work difficulty, and management effectiveness and diversity.
For work priced after all or most of the work is performed, profit is limited by statute to 10 percent of the total direct cost provided this rate can be justified.

Add the following paragraph to subparagraph **(b) Postwork pricing**:

(4) Bonding. The rate charged by any Contractor or subcontractor under this contract is 1% of the total cost of the work or any modification work unless a higher rate can be justified.

Paragraph 109.06(b)(1)c is superseded with the following:

(c) Equipment. Provide a complete descriptive listing of equipment including the make, model, and year of manufacture. Support rented or leased equipment costs with invoices. Determine allowable ownership and operating costs for contractor- and sub-contractor-owned equipment as follows:

(1) Use actual equipment cost data when such data can be acceptably determined from the Contractor's or sub-Contractor's ownership and operating cost records taking into account depreciation.

(2) When actual costs cannot be determined, use the rates shown in the *"Blue" or "Green Book"* (where applicable) published by Data Quest for the area where costs are incurred. Adjust the rates for used equipment and for other variable parameters used in the schedules.

(3) Compute proposed standby costs from acceptable ownership records or when actual costs cannot be determined, according to the Blue or Green Books. Do not exceed 8 hours in any 24-hour period or 40 hours in any calendar week. Do not include standby for periods when the equipment would have otherwise been in an idle status or for equipment that was not in operational condition.

Add subparagraph **(c)** as follows:

(c) Construction Price adjustments. The AO will consider price adjustments for material and other subcontractor price increases during the life of the contract based on a detailed price adjustment written request from the Contractor with supporting documentation.

109.08 Progress Payments.

Subparagraph (b) is superseded with the following:

(b) Closing date and invoice submittal date. On the first (1st) of each month or the following work day should the date fall on a weekend or holiday, the Contractor may elect (in accordance with the special contract requirements) to have the COR/AOTR prepare and submit a pay estimate to the Contractor for approval on a form acceptable to both the Contractor and Government. However, no payment can be submitted to the billing office without the COR/AOTR agreeing with the work accepted in place and the quantities reviewed and approved by the COR/AOTR for use in the progress payment preparation as outlined in subparagraph (c) below.

Subparagraph (c)

Add the following subparagraph (c)(9):

> **(9)** The pay estimate will be reviewed and approved (in writing) by both the Contractor's and government's field representative (COR/AOTR) prior to submission to the NRDOT Office for approval and processing. Any errors found in the pay estimate by NRDOT staff shall result in the progress pay estimate being returned to the Contractor and/or COR/AOTR for corrections and re-submission.

Subparagraph (c)(2) is superseded with the following:

> **(2)** A tabulation of total quantities, applicable calculations, and unit prices of work accomplished or completed, and accepted, on each pay item as of the closing date shall be provided to the COR/AOTR or SubCOR/AOTR to validate (by closing date) the pay estimate request. Do not include any quantities unless field note documentation and calculations for those quantities was submitted by the closing date. Do not include quantities of work involving material for which test reports required under Sections 153 or 154 or certifications required by Subsection 106.03 are, or will be, past due as of the closing date unless otherwise agreed to by the COR/AOTR.

Subparagraph (d) is superseded with the following:

(d) Government's receiving report. The Government's receiving report will be developed using the measurement notes received by the QCM and determined acceptable by the COR/AOTR. Within 7 days after the closing date, the CO/AO and/or COR/AOTR will be available by appointment at the Government's designated office to advise the Contractor of quantities and unit prices appearing on the Government's receiving report.

Progress payments may include partial payment for material to be incorporated in the work, provided the material meets the requirements of the contract and that the Contractor includes in his request, a signed statement from the COR/AOTR that the materials have been inspected and appear to meet the project specifications and match the quantities given in the pay estimate.

Add the following to subparagraph **(f) Partial payments**:

For stockpiled aggregates, the Contractor's request must include test results indicating compliance with the specifications to verify the request. The materials must be delivered on or in the vicinity of the project site and/or stored in acceptable (secured) storage places to be considered for partial payment.

109.09 Final Payment.

Add the following to paragraph two (2):

Final payment of the contract should be made no later than **120 days** from the date of **Final Acceptance** and verification of final pay records.

rev:01/05/10

SECTION 152 - CONSTRUCTION SURVEY AND STAKING

152.01 Description:

The following sentence supersedes the first sentence of the second paragraph:

Personnel, equipment, material, and survey notes shall conform to the following:

Subparagraph (a) is superseded with the following:

(a) Personnel. Furnish a technically qualified survey crew capable of performing the work in a timely and accurate manner. The survey crew shall be under the supervision of a Registered Land Surveyor (RLS) with a survey crew supervisor having at least 10 years of experience in highway construction survey and staking. The survey crew supervisor shall be on the project at all times during the survey and staking of each item of work and during the measurement of each pay item. The Contractor shall furnish résumé's on all members of the survey crew and the RLS to the NRDOT Division Manager, through the COR/AOTR for review and approval prior to any survey work being performed. Changes in survey crew members, during construction, will require prior approval before they can come on to the project.

Add subparagraph (d) to the second paragraph:

(d) Survey Notes. Furnish survey notes for the Survey and Staking Requirements:

(1) Roadway cross-sections. Furnish the original and final cross-sections taken of the roadway excavation and embankment, channel, parking areas, and clearly defined borrow areas and boundaries, in both original and final position in electronic format with the feature label coding table file used (if the government furnished coding .xin file table format is not used). The Contractor shall submit the cross section and staked alignment survey data in ASCII format consisting of Point Number, Northing, Easting, Elevation, and Feature Code (P, N, E, Z, C) that identifies ground points, break lines, and centerline alignment strings with the Digital Terrain Model (*.DTM or *.XML) file capable of being read in the InRoads 8.8 software. The Contractor shall prepare graphical planemetric and cross section plots of both the original and final cross-section data in AutoCAD 2005 (*.DWG) or Microstation V8 (*.DGN) file format and review them AND ALL SURVEY DATA for errors before submitting all the data to the COR/AOTR.

Under no circumstance shall any ground disturbing activities or base course be allowed until all the cross-section data has been collected, reviewed, and accepted in writing by the COR/AOTR through the AO/CO.

(2) Slope stakes and references. Furnish slope staking and reference notes in hand written field books or electronic files in the same format provided to the Contractor by the government. Slope stake notes shall be provided in accordance with section 152.03(c).

(3) Drainage structures. The Contractor shall submit for approval graphical plots of the revised drainage structure lengths to fit the existing field conditions on maximum size 279 mm x 432 mm (11" x 17") sheets as well as in AutoCAD 2005 (*.DWG) or Microstation V8 (*.DGN) file format.

(4) Other survey and staking requirements. Furnish other survey and staking notes in hand written field books in an agreed upon format with the COR/AOTR and the QCM.

152.02 General:

Add the following paragraph after the first paragraph:

The Contractor is authorized to proceed with construction survey and staking prior to approval of the overall Quality Control Plan. The work may be in the presences of a representative of the CO/AO. The QCP plan herein must be complied with during all the survey work. The Contractor shall notify the AOTR/COR at least one week before the actual surveying is to begin to allow the government time to have a representative on site.

The following sentence supersedes the first sentence of the fifth paragraph:

Before surveying or staking, discuss and coordinate the following with the COR/AOTR:

The sixth paragraph is superseded with the following:

Survey and establish controls within the tolerances shown in Table 152-1. The Contractor shall recheck all government furnished control point data prior to staking the alignment and other features. A report shall be provided to the COR/AOTR on the control point checks in a format and method agreed to with the COR/AOTR and NRDOT P&D Branch Surveyor. Once the control point data is verified and within the tolerances, the alignment can then be staked and the data furnished in (*.alg) Inroads format to the COR/AOTR with all the cross section, staking, and DTM data. During Construction, any survey data that does not meet the tolerance requirements or is not in close conformance with the government furnished staking notes **MUST** be immediately reported to the COR/AOTR for further direction to resolve the problem.

The following paragraph supersedes the seventh paragraph:

The Contractor shall prepare field notes in an agreed upon format with the COR/AOTR and the Quality Control Manager (QCM) for the various bid items requiring survey measurements. The RLS shall review and certify the original copies of all survey notes at least weekly unless otherwise directed in writing by the COR/AOTR. All original survey notes (certified by the RLS) shall be submitted through the QCM to the COR/AOTR and become the property of the Government upon completion of project.

The Government will withhold payment in the event the Contractor fails to furnish survey notes and calculations that measure and demonstrate work performed. The Contractor's submittal of their survey notes should have no errors outside the specified

tolerances otherwise; the Government will send back the submittal for corrections at the entire expense of the Contractor.

152.03 Survey and Staking Requirements:

Add the following paragraphs to subparagraph (b) Roadway cross-sections:

During roadway slope staking, the Contractor shall field survey the **original** ground cross-sections, and/or existing pavement surface between centerline alignment and the proposed and/or existing right-of-way limits, to the maximum interval station and point spacing specified under 152.03(b) and Table 152-1. The Contractor shall QC check the data and submit the **original** ground cross-section survey data, with the RLS certification to the COR/AOTR for review and approval.

Perform the same procedure as outlined above for the **final** as-built subgrade cross-sections (subgrade blue-top), up to the construction catchpoint limits (including all cut/fill slope sections) prior to placement of aggregate base course material. The data must exclude any waste or other stock piles within the right-of-way limits. The Contractor shall furnish the final as-built subgrade cross-section survey data with the RLS certification to the COR/AOTR for review and acceptance. Do not begin any ABC or paving work until the survey data is reviewed and accepted by the government in writing through the CO/AO.

(c) Slope stakes and references. Add the following to subparagraph:

When earthwork is called for in the contract documents, submit the revised, government furnished, hard copy slope stake notes at completion of the slope staking operations to the COR/AOTR & QCM for review and approval. The slope stake notes shall reflect the actual measurements in the field in red pencil or pen unless otherwise agreed to in writing between the Contractor and COR/AOTR.

Any substantial deviations in the staking from what is shown on the government furnished staking notes must **immediately** be reported to the COR/AOTR for corrective measures to be taken.

Subparagraph (g) is superseded with the following:

(g) Drainage structures.

The Contractor shall stake drainage structures to fit existing field conditions. The location of the structures may differ from that shown on the design plans. Perform the following:

(q) Slope stake the entire project according to **Subsection 152.03(c)**. The COR/AOTR and Contractor Quality Control Manager (QCM), shall review with the surveyor, the slope stakes at each drainage structure locations to verify the inlet and outlet locations, elevations, and skew of the proposed drainage structure (insuring that the drainage structures are not below the existing flow-line).

(r) After the COR/AOTR and QCM agree with the location geometry, obtain the original ground profile along centerline of each structure including a distance of 20 meters upstream and downstream along the flow-line.

(s) Using engineering software (i.e. AutoCAD, Microstation, etc.) plot the original ground cross-section and overlay the "as staked" roadway template with the appropriate skew on top of the original ground cross-section. Based upon these combined cross-sections, determine the structure invert elevations at the inlet and outlet. Plot the structure profile on the combined cross-section drawing. Calculate the total length of structure required and round up to the nearest 610 mm (2 ft) increment along the skew angle. When calculating pipe invert elevations and lengths, the lengths of any pipe end sections shall be subtracted from the total required pipe length per NRDOT guidelines furnished upon written request.

(t) Perform the same procedure as outlined in (3) above for drainage pipes under the turnouts and driveways.

(u) Plot the final structure profiles on to the existing ground/proposed roadway template cross-sections for all drainage structures. These profiles shall be on maximum size 279 mm x 432 mm (11" x 17") sheets to a scale provided by the COR/AOTR. Assemble all pertinent structure information, into a spreadsheet acceptable to the COR/AOTR, from the profiles, including station, length without end section(s), number of end sections, size of structure, number of structures per station, skew, invert elevations at inlet, roadway centerline, and outlet, roadway template distances and elevations, project number, contract number, current date, and name of person who prepared the document. Submit the complete revised structure list spreadsheet, including the final structure profiles, signed by the Prime Contractor, to the NRDOT Manager, through the COR/AOTR for review and approval.

(6) After the revised structure list is approved by the CO/AO and prior to installing the drainage structures, the Contractor shall stake the final structure location and give the COR/AOTR three (3) business days to review the locations. Any structure location problems noted as a result of survey errors by the COR/AOTR shall be corrected at no additional cost to the government.

Add the following subparagraph:

(m) For rehabilitation projects, the Contractor shall re-locate all existing right-of-way monuments (as reflected in the **existing** right-of-way map) and insure the "*English*" stationing is placed on the reference markers (i.e. angle irons) as defined in the bid schedule. For new road construction projects, and if bid items are shown in the bid schedule for installation of new right-of-way monuments and/or reference markers, stake the right-of-way monuments as shown in the design plans and label the reference markers with stationing in metric. Stamp or furnish the true state plane coordinates and elevations (to 3 significant figures) on the brass caps for all right-of-way monuments in metric regardless of the type of project unless directed otherwise by the COR/AOTR.

152.05 Acceptance:

Add the following paragraph:

The Contractor's quality control inspection personnel shall make all the computations (with detailed and clear sketches as determined by the COR/AOTR and/or Sub-COR/AOTR) for any items of work requiring measurements based on the survey data provided (except for the final earthwork items as outlined in Subsection 204.16) or for periods for which progress payments are requested and record these calculations and sketches in bound inspection books. These calculations shall be reviewed and certified by the QCM and two copies forwarded to the COR/AOTR for further review and processing.

152.05 Measurement:

Add the following paragraph:

All work outlined and required in this section, including surveying for roadway construction, bridge construction, slope staking, retaining walls, reference and clearing and grubbing staking, centerline re-establishment, blue topping, drainage structure survey and staking, grade finishing stakes (subgrade and aggregate base), right-of-way monument and marker location surveying and staking, quantity measurements, and miscellaneous surveying and staking shall be measured by the lump sum.

152.06 Payment:

This section is superseded with the following:

The accepted quantities, measured as provided in Section 152.05, Measurement, above, will be paid at the contract price per unit of measurement for the pay item listed below and as shown in the bid schedule beginning with the Notice to Proceed issued. Payment will be full compensation for the work prescribed in Section 152, Construction Survey and Staking.

When the bid schedule does not contain a bid item for Construction Survey and Staking, then it shall be considered incidental obligations to completion of the items of work described in the bid schedule.

Item 15201, as measured above, will be paid as follows:

(a) 40% of the lump sum, will be paid following completion of the control point and alignment data verification, existing cross-section surveys, and slope staking work and furnish copies of these staking notes to the COR/AOTR hard copy and electronic format through the QCM for review and approval before payment is made.

(b) An additional 25% of the lump sum, will be paid following complete staking of the drainage structures and approval of the revised drainage structure list submittal in accordance with the outline under **Subsection 152.03(g) Drainage structures**.

(c) An additional 25% of the lump sum, will be paid following completion of the final subgrade cross-sections taken and furnished the survey data to the COR/AOTR in the format outlined under **Subsection 152.01(d) Survey Notes**. Once reviewed and approved by the government, payment shall be made.

(d) The remaining 10% of the lump sum, will be paid when the staking and surveying needed for all other items of work are completed and the Contractor submits all the original survey field books to the COR/AOTR.

Payment will be made under:

	Pay Item	Pay Unit
15201-0000	Construction Survey and Staking	Lump Sum

rev:08/29/10

Survey Quality Control Plan
BIA Project N21(3)2&4 Kaibito, Az

The Construction Surveyor/ Party Chief ("Surveyor"), shall furnish technically qualified surveyors capable of performing the work in a timely, accurate and professional manner. The field crews shall be under the supervision of a Professional Land Surveyor with a minimum of 10 years experience in highway construction staking. Each member of the survey crew will have highway construction knowledge in performing GEOMETRIC computations. Crew members will assist and check the party chief in performing calculations and interpretations of the plans. Construction survey and staking will be performed within the tolerances specified in Table 152-1, and in accordance with section 152 of the FP-03 and the contract documents. All survey information will be forwarded to the BIA and critical attention be made to any potential changed to the construction plans.

Check shots on the horizontal and vertical control points will be taken, at a minimum, at the beginning and end of each instrument setup, or GPS session. This procedure will minimize errors due to installment "setting" and/or "drifting" satellite progression, or simple identifying the wrong point. Each instrument set-up will be verified by checking into two vertical benchmarks to ensure that the proper benchmark and elevation is being utilized and by measuring the distance to the "backsite" and one other control point to insure horizontal accuracy. All survey instruments will be well maintained and checked for proper adjustment on a regular basis.

The "Surveyor" shall develop a reporting form to ensure the Government and NECA that all of the survey data in conformance to the contract requirements. This form will be signed by the Field Supervisor and submitted along with the weekly reports and survey notes to the COR/AOTR and the QCM on a weekly basis for review and approval.

At the beginning of each instrument set-up, or GPS session, "Surveyor" will spot check previously established positions for horizontal and vertical accuracy. This will provide and independent check on both the previously staked and the position and instrument session. Miscellaneous items such as cattle guards, turnouts, guardrail, paved waterways' etc. will be checked by station/offset.

Independent checks by BIA agency supervisors will check the accuracy and reinforce this Quality Control Plan. "Surveyor" will schedule locations for BIA perform the independent checks. Any variation, between the "Surveyor" and BIA surveys should be brought to the attention of our field supervisor or party chief. Any discrepancies shall first be discussed among "Surveyor" and BIA. Discrepancies should be resolved in the field if all possible.

This Quality Control Plan has been written to correspond with Section 152 of the specifications. Various sections of the specifications are discussed with specifics related to this project.

Section 152.02 Requirements:

Before any work begins, the Surveyor shall discuss and coordinate with the COR/AOTR :

1. Surveying & Staking methods to be used;
2. Stake markings and their meaning;
3. Grade control for each course of material;
4. Referencing and project control points (bench marks);

5.Structure control; and
6.Any other procedures, calibrations, and controls necessary for the work to be carried out

Prior to the beginning of construction, the centerline alignment, horizontal and vertical control and design grade initially provided by the Government will be field checked and confirmed prior to beginning any other survey work with a verification report provided to the COR/AOTR and the BIA Regional Surveyor. "SURVEYOR" will notify NECA and the Government immediately if the said references do not meet the required tolerances in Table 152-1. No further staking will be performed until the Government has approved the verification report.

The "SURVEYOR" will collect all existing ground and (if required) existing ground on borrow pits and field check all data using GPS and/or conventional field equipment and process the survey data with surveying software into files that can be encoded in the AutoCad 2009 platform and InRoads v8i format per section 152.01(d). All duplicate points and lines shall be cleaned up prior to generating a digital terrain model of the existing and final subgrade/ground. The "Surveyor" will perform conventional optical differential level loops on all vertical benchmarks (i.e. control point data) furnished by the Government to verify that the reported elevations fall within the tolerances. The "SURVEYOR" will hold all control point elevations furnished by the Government, provided it meets the tolerances of plus or minus ten millimeters (10mm).

GPS equipment will be used for horizontal verification and staking out of the sub grade. This work will include an independent network check using Government provided control points and one National Geodetic Survey (NGS) control monuments. Once the network is complete, a minimum of a six point horizontal: vertical calibration will be developed not exceeding 4 kilometers for localizing from grid to ground. All Calibrations will be recorded electronically and a hard copy will be provided to the Government.

All vertical BMs will be verified by performing optical differential levels. A tolerance of plus or minus 10 mm will be allowed. In the course of running differential levels, a daily collimation test (peg test) will be run to avoid errors.

When using conventional and total station equipment, the "Surveyor" will perform weekly collimation tests which shall consist of a Compensator test, HA/HV test, and Trunnion Axis Tilt test using the manufactures specification.

Any inconsistency with the Government's alignment, control and or grade shall be brought to the attention of NECA and the Government (COR/AOTR) prior to continuing any surveys or construction.

Bi-monthly meetings (during construction) shall be scheduled with NECA and the COR/AOTR to discuss all surveying activities and changes in activities as listed in Section 152.02(a) through (f), and the Tolerances listed in Table 152- 1. All field notes shall be scanned to PDF format and also submitted in hard copy. All field notes shall be marked in red for changes made in the field for adjustment to fit actual field ground conditions.

The project will be divided into multiple sections and field staked according to the Government furnished slope staking notes. All subgrade staking (red top) shall be staked by GPS, conventional total station and/or optical level surveying equipment in accordance with Table 152-1. All finish grades (blue top) shall be staked by conventional total station and/or optical level surveying equipment accordance with Table 152-1. A Governmental field check shall be scheduled for the slope staking and to resolve any non-tolerance issues. In the event that issues are not resolved, no field survey will continue until arrangements have been made with the Government.

Section 152-03 Surveying and Staking Requirements:

(a) Control Points:

Horizontal and vertical BIA control points will be located upon the start of the project. The points will be verified to within acceptable limits per table 152-1 and a detailed summary submitted for review. This also includes temporary benchmarks established along the project area.

The “Surveyor” shall perform all horizontal and vertical construction and control surveys in a professional manner utilizing “self-checking” procedures (i.e. use of conventional total station or GPS setting up on one known control point and fore sighting or back sighting another known control point). Horizontal control and layout surveys will utilize a minimum of two control points. A GPS calibration will be developed initially using Government supplied horizontal and vertical control points utilizing a minimum of six (6) horizontal and six (6) vertical control points. Prior to establishing this calibration, vertical and horizontal control points will be checked and referenced off of the project site. Once an acceptable GPS calibration is developed, it will be used exclusively for the remainder of the project.

Any update to control datum will comply with Table 152-1.

SAMPLE OF RTK FIELD CO/AONTROL CHECK: THIS EXHIBIT SHOWS THE RESULTS OF A FIELD CHECK OF OUR LOCALIZATION CO/AOMPUTATIONS.

PT	BIA North(m)	BIA East(m)	BIA Elev(m)	PT	RTK North(m)	RTK East(m)	RTK Elev(m)	North Diff	East Diff	Height Diff	CO/AODE
23	562986.4	238585.3	1844.246	70	562986.4	238585.3	1844.257	0	0	-0.011	SCP301
10	562884	238631	1844.967	68	562884	238631	1844.974	0.026	0	-0.007	SCP3000
10	562884	238631	1844.967	480	562884	238631	1844.985	0.025	0.003	-0.018	CK_68
22	562881.5	238716.5	1843.5	60	562881.5	238716.5	1843.432	0.022	0.007	0.068	SCP300
11	562836.1	238659.2	1844.517	66	562836.1	238659.2	1844.513	0.019	0.005	0.004	SCP1
12	562827.4	238556.1	1846.781	72	562827.4	238556.1	1846.778	0.006	0.005	0.003	SCP2
13	562740.2	238538.4	1846.486	74	562740.2	238538.3	1846.492	-0.008	0.018	-0.006	SCP2A
14	562725.2	238482	1847.754	76	562725.2	238482	1847.757	0.011	0.018	-0.003	SCP3
15	562674.9	238497.8	1847.671	78	562674.8	238497.8	1847.672	0.012	0.009	-0.001	SCP4
20	562619.3	238477.4	1849.218	84	562619.3	238477.4	1849.218	0	0	0	SCP5
20	562619.3	238477.4	1849.218	148	562619.3	238477.4	1849.23	0.01	0.007	-0.012	CK_84

SAMPLE OF RTK FIELD CENTERLINE CO/AONTROL CHECK: THIS EXHIBIT SHOWS THE RESULTS OF A FIELD CHECK OF OUR LOCALIZATION CO/AOMPUTATIONS.

Point	Ground North(m)	Ground East(m)	Action	Point	BIA North(m)	BIA East(m)	North Diff	East Diff	Center Sta
161	562896.1	238652.6	SET	1	562896.1	238652.6	-0.005	-0.01	POB 0+000.000
159	562880.7	238639.9	SET	2	562880.7	238639.9	-0.004	-0.002	BOP 0+019.980
157	562828.5	238597.2	SET	3	562828.5	238597.2	0.002	-0.007	PC 0+087.400
155	562767.5	238551.6	SET	5	562767.5	238551.6	0.003	-0.007	PT 0+163.590
154	562634.8	238461	SET	6	562634.8	238461	-0.004	0.007	PC 0+324.290
152	562611.8	238462.5	SET	8	562611.8	238462.5	-0.005	0.001	PT 0+3493.090
150	562591.1	238480.9	SET	9	562591.1	238480.9	-0.007	-0.001	POE 0+376.770

SAMPLE OF DIFFERENTIAL LEVEL LOOP CO/AONTROL CHECK:

RTK PT#	RTK Elevation (m)	BIA PT#	BIA Elevation (m)	RTK Height Difference	RTK PT#	SL Elevation (m)	SL Height Difference	RTK VS SL Height Difference
84	1849.218	SCP5	1849.218	0	20	1849.218	0	0
82	1849.497	SCP200	1849.483	0.014	19	1849.484	-0.001	0.013
80	1849.617	SCP6	1849.626	-0.009	18	1849.625	0.001	-0.008
90	1849.742	BASE			90	1849.746		-0.004
78	1847.672	SCP4	1847.671	0.001	15	1847.663	0.008	0.009
76	1847.757	SCP3	1847.754	0.003	14	1847.744	0.01	0.013
74	1846.492	SCP2A	1846.486	0.006	13	1846.476	0.01	0.016
72	1846.778	SCP2	1846.781	-0.003	12	1846.768	0.013	0.01
68	1844.974	SCP3000	1844.967	0.007	10	1844.965	0.002	0.009
66	1844.513	SCP1	1844.517	-0.004	11	1844.498	0.019	0.015
60	1843.432	SCP300	1843.5	-0.068	22	1843.481	0.019	-0.049
70	1844.257	SCP301	1844.246	0.011	23	1844.23	0.016	0.027

(b) Roadway Cross-Sections:

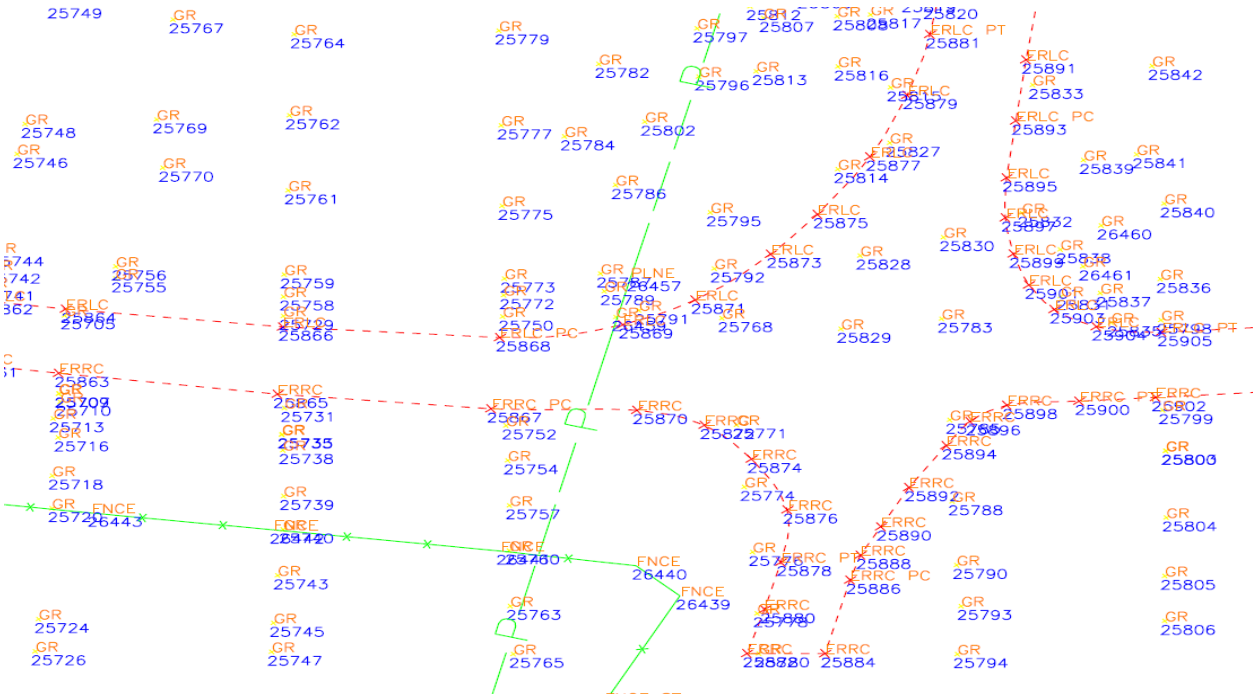
Roadway cross sections will be taken at a maximum spacing of 20 meters along tangent of roadway and every 10 meters along curve of roadway sections. Each cross section shall be located based on known control points with all breaks or changes noted.

All topographic terrain breaks will be classified as break lines and all topographic flat surfaces will be classified as ground points. All break lines will be measured and recorded in a continuous pattern. The data points will be numbered in a sequential order and all break lines will be coded to best describe feature and stringed separately (i.e. TW, BB, DL, FL, etc.). Any topographic breaks within 5 meters of the 20 meter station increment will be measured and recorded. The project will be treated as single DTM with regards to data processing. All cross section data shall be formatted in an ASCII delimited point file (Point Number, Northing, Easting, Elevation and Code) and submitted to the Government along with an electronic copy of the survey raw data file. A complete description of the feature codes used for the breaklines and other point data will be provided to the Government in a Microsoft Word or Excel file that encompasses the entire feature code library. All survey data will be converted into a DTM using Bentley InRoads Survey V8i or equivalent. A planimetric drawing for plan and profile and cross sections in 20m increments shall be prepared using AutoCad v.2009 or equivalent to check the data (i.e. breaklines and other point features) before submission. The drawing will be used to correct any common geometry errors resulting from duplicate line features and survey data points in the data files.

SAMPLE OF SURVEY CROSS SECTION DATA IN ASCII FORMAT

5009,562748.586,226201.669,1907.62,TOEL ST
5016,562761.356,226177.938,1907.86,TOEL
5019,562766.636,226156.843,1907.74,TOEL
5025,562773.642,226134.921,1907.98,TOEL
5047,562793.013,226045.727,1907.98,TOEL ST
5048,562788.462,226063.213,1907.87,TOEL
5049,562786.385,226076.845,1907.61,TOEL
5050,562784.637,226083.787,1907.39,TOEL
5051,562779.541,226099.846,1907.32,TOEL
5052,562768.373,226102.379,1907.31,TOEL
5053,562765.775,226104.285,1906.96,TOEL
5054,562761.967,226114.021,1906.78,TOEL
5055,562770.319,226105.855,1906.68,TOEL ST
5056,562773.88,226108.926,1906.38,TOEL
5064,562781.127,226106.864,1907.7,TOEL ST
5065,562785.257,226090.849,1907.68,TOEL
5068,562789.308,226075.723,1907.85,TOEL
5069,562792.694,226060.411,1907.96,TOEL
5072,562795.618,226046.363,1908.1,TOEL
5116,562796.318,226045.005,1908.17,TOEL ST
5118,562799.192,226025.045,1908.35,TOEL
5127,562801.807,226007.887,1908.62,TOEL
5130,562803.345,225989.244,1908.84,TOEL
5137,562806.272,225961.669,1909.49,TOEL
5140,562805.696,225940.881,1909.71,TOEL
5145,562805.533,225921.438,1909.84,TOEL

SAMPLE OF SURVEY CROSS SECTION DATA PROCESSED IN TGO. INROADS, OR OTHER EQUIVALENT SOFTWARE:



(c) Slope Stakes and References:

The "Surveyor" shall field stake the project according to the Government's slope stake notes. In the event that field stakes require field adjustments due to terrain changes, the "SURVEYOR" will make the necessary field adjustments and redline all changes in their slope stake field book and on the Government furnished staking notes. If field adjustments become too extreme (i.e. catch points exceeding 305 mm from the reported slope stake notes, elevations exceeding 152mm, or slopes exceed the typical section slope for a given height criteria), the "Surveyor" will notify NECA and the Government (COR/AOTR) immediately prior to continuing any more field surveying.

The "Surveyor" will reset all slope staking that may have been removed or is in conflict with construction activities.

All subgrade staking will be staked by GPS, conventional total station and/or optical level surveying equipment meeting the tolerances of Table 152-1. All finish grades will be staked by conventional total station and/or optical level surveying equipment meeting the tolerances of Table 152-1.

Sample Government Marked up Staking Notes:

Station:	38+120.000							14.13	
Feature		LFill 1	LSP	L_Subgr	Subgr_CL	R_Subgr	RSP	RFill1 10.20	
Elevation	F 0.625	1909.783	1910.408	1910.853	1911.435	1911.900	1911.455	~~1910.034~~	F 1.421
Offset	@ 2.499	13.251	10.752	8.082	0.000	6.465	9.135	14.819	@ 5.684
Slope	-25.00%	-25.00%	-16.67%	-7.20%		7.20%	-16.67%	-25.00%	-25.00%
Station:	38+140.000								
Feature		LFill 1	LSP	L_Subgr	Subgr_CL	R_Subgr	RSP	RFill1	
Elevation	F 0.705	1909.934	1910.639	1911.084	1911.666	1912.131	1911.686	1910.839	F 0.846
Offset	@ 2.818	13.570	10.752	8.082	0.000	6.465	9.135	12.521	@ 3.386
Slope	-25.00%	-25.00%	-16.67%	-7.20%		7.20%	-16.67%	-25.00%	-25.00%
Station:	38+160.000							13.69	
Feature		LFill 1 10.27	LSP 13.15	L_Subgr	Subgr_CL	R_Subgr	RSP	RFill1 10.78	
Elevation	F 0.734	19~~10.135~~	1910.869	1911.314	1911.896	1912.361	1911.916	19~~10.654~~	F 1.263
Offset	@ 2.935	13.687	10.752	8.082	0.000	6.465	9.135	14.186	@ 5.051
Slope	-25.00%	-25.00%	-16.67%	-7.20%		7.20%	-16.67%	-25.00%	-25.00%
Station:	38+180.000							14.13	
Feature		LFill 1 10.29	LSP 13.99	L_Subgr	Subgr_CL	R_Subgr	RSP	RFill1 10.89	
Elevation	F 0.912	19~~10.180~~	1911.097	1911.542	1912.124	1912.590	1912.145	~~1910.769~~	F 1.375
Offset	@ 3.647	14.400	10.752	8.082	0.000	6.465	9.135	14.636	@ 5.501
Slope	-25.00%	-25.00%	-16.67%	-7.20%		7.20%	-16.67%	-25.00%	-25.00%
Station:	38+200.000								
Feature		LFill 1	LSP	L_Subgr	Subgr_CL	R_Subgr	RSP	RFill1	
Elevation	F 0.968	1910.305	1911.274	1911.719	1912.300	1912.766	1912.321	1910.950	F 1.371
Offset	@ 3.873	14.625	10.752	8.082	0.000	6.465	9.135	14.619	@ 5.484
Slope	-25.00%	-25.00%	-16.67%	-7.20%		7.20%	-16.67%	-25.00%	-25.00%
Station:	38+220.000	10.60	13.87					14.45	
Feature		LFill 1	LSP	L_Subgr	Subgr_CL	R_Subgr	RSP	RFill1 11.09	
Elevation	F 0.921	19~~10.456~~	1911.377	1911.822	1912.404	1912.870	1912.425	~~1910.983~~	F 1.442
Offset	@ 3.684	14.437	10.752	8.082	0.000	6.465	9.135	14.902	@ 5.767
Slope	-25.00%	-25.00%	-16.67%	-7.20%		7.20%	-16.67%	-25.00%	-25.00%

(d) Clearing and Grubbing Limits:

Clearing and grubbing limits will be staked in conjunction with determining the existing right-of-way lines along the project. The clearing/grubbing limits (catch point location plus one meter) will be staked in accordance Section 201 of the FP 03. The right-of-way will be staked with flagging (lath) on (1m) wooden stake during the cross section survey based on the data provided by the government from the right-of-way plats. All clearing and grubbing will be staked based on established control and calibration procedures.

Any potential project encroachment outside the right-of-way for culverts, cut or fill slopes shall be brought to the attention of the BIA if not already noted in the design plans. No construction outside of the right-of-way will occur without specific authorization from the BIA.

(e) Centerline Reestablishment:

Upon the Government acceptance of the "Surveyor" centerline alignment verification, the "Surveyor" will field stake the centerline using wooden stakes and lath to properly identify the alignment. Stakes will

be set every 10 meter interval along the horizontal alignment curvatures and every 20 meter interval along the horizontal alignment tangents.

(f) Grade Finishing Stakes:

The "SURVEYOR" will field stake all finish grades in accordance with the grades provided by the Government (i.e. P&P sheets and slope staking notes). All finish grades will be staked by conventional total station and/or optical level surveying equipment in accordance with Table 152-1. The "Surveyor" will use standard wood pegs and brushes to mark the subgrade and the top of aggregate. Stakes will be set at10 meter intervals along the curved alignments and at 20 meter intervals along the horizontal alignment tangents.

(g) Culverts:

The "Surveyor" will stake all culvert locations in accordance to the grades provided by the Government's slope staking notes following the BIA NRDOT Planning & Design Branch guidelines. Due to terrain changes caused by seasonal runoff, the culvert size and location may change. Prior to any pipe staking, the "SURVEYOR" will conduct the following:

1) Reference the topographic cross section survey and reestablish a ground profile from the culvert centerline extending 20 meters beyond the preliminary design inlet and outlet.

2) Field stake the catch points at the 20 meter station interval before and after the pipe location and at each inlet and outlet culvert pipe.

3) Set reference points to determine pipe skew and depth.

4) Create a standard profile and cross section along the culvert centerline in 6 or 8 equal distances (5 to 10 meters apart) beginning 20 meters from the inlet and ending 20 meters from the outlet of the culvert location. The "SURVEYOR" will label the culvert size, length, grade, elevations and degree of skew.

5) Create a detailed drawing to scale in AutoCad illustrating the profile and cross sections for each culvert pipe location on 11" X 17" format conforming to section 152.03(g) of the FP-03 and submit to the Government for approval.
6) Upon the Government's acceptance, the "SURVEYOR" will provide all surveying stakes referencing the drainage, controls, and culvert inlet and outlet locations for the Contractor.

(g) Bridges: (When Required)

The "Surveyor" will set a minimum of four No. 5 rebars for horizontal and vertical control to construct the bridge structure and superstructure components to the tolerances in table 152-1. Bridge staking will be performed with a 3 to 5 second total station and differential levels, to ensure the tight tolerances that bridges (prefab iron and concrete structures, ie., pier, bent and abutment) require. Set the centerline for all peirs, bents, and abutments. All piers, bents and abutment corners will be cross checked with a steel tape adjusted for temperature correction for horizontal accuracy. All elevations associated with the bridge will be determined by differential elevations to ensure the vertical accuracy and tolerance. Pier cap cutoff elevations will be performed with a differential level. The outside face of concrete on the abutments will be staked on offsets with cuts and fills to the top and bottom of the structures. The pier wall at the center of the bridge will be staked on offsets with cuts and fills to the top and bottom of the structure.

The toe of the riprap will be staked and "as-built" with a total station to determine both horizontal and vertical location before backfilling begins. The bridge beams will be staked with offsets to each end of the beams for proper alignment, once the bearing pads and beams are in place the diaphragm locations will be marked on the top of the beams.

The "as-builts" (other than those done during road construction) will be updated to reflect the "as-built" geometric location of the bridge.

(h) Retaining Walls: (When Required)

The "SURVEYOR" will set a No. 5 rebar for all horizontal and vertical control datums to construct the retaining wall. Survey and record profile measurements along the face of the proposed wall, 2 meters in front of the wall face, and 5 meters along the length of the wall. The "SURVEYOR" shall survey and record cross sections 5 meters apart at every major terrain break.

(i) Borrow and Waste Sites:

All horizontal and vertical control points will be established prior to any excavations or spoil displacements. The General Contractor **must** clear and grub the borrow limits prior to measuring and recording all topographical cross section data.

The "SURVEYOR" will set at least two (2) No. 5 rebar for all horizontal and vertical control datums to survey and record the initial baseline, site limits, clearing limits and cross section grid points. The "SURVEYOR" shall survey and record initial and final grid cross sections for the project and follow the same procedure as Section 152.03 for verifying the data before submission to the Government.

(j) Permanent Monuments and Markers:

The "SURVEYOR" will set 4 initial swing-tie reference points for each location of all permanent monuments. The "SURVEYOR" will stake out and mark each monument at the centerline point using GPS and/or conventional survey equipment using the coordinates provided by the Government. The "SURVEYOR" will measure and record (in bound survey books) each centerline point. All measurements will be in accordance with Section 152, Table 152-1. The data will then be provided to the Government for future reference.

(l) Miscellaneous Survey Staking:

The "SURVEYOR" will perform all surveying, staking, and recording of data for establishing the layout and control of the following (but not limited to);

1) Approach roads and trails;
2) Curb and gutter;
3) Waterways;
4) Parking areas;
5) Special ditches;
6) Turf or seeding and mulching limits;
7) Signs, delineators and object markers;
8) Pavement markers.
9) Utilities
10) Ditches

11) Guard rails

The “Surveyor” will consult with the COR/AOTR and the BIA regional office on issues arising that require assistance beyond the Surveyor’s control.

SECTION 153- CONTRACTOR QUALITY CONTROL

153.01 Description.

This paragraph is superseded with the following:

This work consists of the Contractor furnishing an AASHTO certified laboratory to obtain samples for quality control testing, perform tests for Contractor quality control, provide construction inspections, enforce contract specifications, ensure construction plans are followed and exercise management control to ensure that all items of work conform to the contract requirements. This Section supplements FAR Clause 52.246-12, Inspection of Construction.

153.02 Contractor Quality Control Plan.

The first paragraph is superseded with the following:

Twenty-one (21) calendar days prior to construction work, the Contractor shall submit a written Quality Control Plan (QCP), which includes all subcontractors, and suppliers/fabricators of major construction components, and subcontracted surveying services for review and approval. The Contractor shall not be allowed to begin construction on major items of work until the Navajo Region Division of Transportation (NRDOT) Manager has approved all QCP's. With prior approval, submission of a quality control plan for major items of work not immediately scheduled to begin may be deferred. Subsequent submission of deferred QCP major items shall require 14 days for review and approval.

The only construction work that is authorized to proceed prior to the approval of the QCP is mobilization of storage and office trailers, temporary utilities, and any other work that does not require sampling, testing, and/or inspection.

(a) Process control testing.

This subparagraph is superseded with the following:

A Testing Plan and Log (examples shall be provided upon request) that includes the tests required, referenced by the FP specification section number and paragraph number requiring the test, the frequency, and the person responsible for each test.

Provide the name(s) of the person(s) in the QC organization authorized to review and certify submittals prior to approval by the CO/AO.

(b) Inspection/control procedures.

The first sentence is superseded with the following:

Provide a comprehensive and detailed inspection plan for <u>each item of work</u> showing each construction requirement criteria by phase, with cross-references to the contract drawings and specifications, and the results from the action taken by the Quality Control Manager. A sample of an acceptable format for providing the information required shall be provided upon request.

While use of this specific format is not required, any other format used shall contain the same information. Address each of the following subjects in each phase of construction for each item of work:

(3) Production phase. Add the following subparagraph (d):

(d) Inspect materials and/or assemblies accepted under subsection 106.03 Certification to ensure that the materials comply with all contract requirements. Furnish the results of the inspection, along with the production certifications or commercial certifications (as applicable) to the NRDOT Manager and COR/AOTR prior to incorporating the materials into the work. This requirement includes fabrication of bridge girders, concrete or steel cattleguards, steel corrugated pipes, steel guardrail sections, etc.

(d) Personnel qualifications.

Subparagraph **(1)** and **(2)** of this subsection are superseded with the following:

(1) Quality Control Manager. Designate a qualified Quality Control Manager (QCM). **A QCM shall be at the project site at all times to manage and carry out the Quality Control Plan (QCP)**. The QCM shall be a full time employee of the Contractor's independent accredited testing laboratory who will work with and take direction from the COR/AOTR. The duties and responsibility the QCM shall have on this contract is managing, monitoring, implementing and as necessary, adjusting the processes to assure quality of the QCP. The QCM may perform inspection and testing on a periodic basis, verifying quantities for progress payments, and issuing of written non-conformance orders to the Contractor. The QCM is required to attend and participate in the preconstruction meetings, partnering meetings, conduct the QC meetings for the work at least once weekly, perform the three phases of control, perform submittal review, ensure testing and inspections are performed, ensure construction plans are followed, review construction plans for errors or conflicts that may arise with testing and inspection procedures, and prepare QC certifications and documentation required in this contract. The QCM shall report (through a written non-compliance order) any deficiencies in the work directly to an officer of the Contractor's firm and the government COR/AOTR or Sub-COR/AOTR. Furthermore, it is the QCMs responsibility to enforce all "non-compliance orders" issued by the COR/AOTR to the contractor and/or QCM. The QCM shall also stop work for the purpose of unsafe conditions. **The QCM shall not be the same individual as, nor be subordinate to, the project superintendent or the Contractor's project manager.**

The QCM shall be a graduate of a two to four year accredited engineering technology program in an Engineering discipline with a minimum of five (5) years experience as a highway construction superintendent, inspector, project manager, or construction manager and one year experience as a QCM on similar size and type construction contracts which included the major trades that are part of this contract as reflected in the person's resume to be included in the QCP. Or a civil engineering technician with at least 8 years of progressive experience in highway/bridge construction which includes basic surveying knowledge (i.e. read slope-stakes, use of a hand level, etc.), basic sampling and testing of materials, project record keeping, interpretation of plans and specifications, performed inspections on various components in highway/bridge construction, basic knowledge of traffic safety and the MUTCD, first aid, performed final measurement(s) of contract items, prepared as-built plans, knowledge of OSHA and other safety requirements and be currently certified by the National Institute for Certification in Engineering Technologies (NICET), Level III or higher in the subfield of Highway Materials or Highway Construction or an equivalent certification program as reflected in the person's resume to be included in the QCP.

Designate a “stand-in QCM” to act on behalf and serve only in the absence of the QCM at the project site for **no more** than two (2) working days due to unforeseen circumstances. The qualifications for the “stand-in QCM” must meet the requirements for an inspector and must be an approved inspector assigned to the project.

Designate an Alternate QCM for the project. The qualification requirements for the Alternate QCM shall be the same as for the QCM. The Designated Alternate QCM shall only act on behalf and perform the duties of the QCM during his/her absence from the project site for a period not to exceed two weeks due to unforeseen circumstances. If the original QCM can not return to the project site after one week; a new “stand-in” QCM shall immediately be submitted for approval to take over the QCM responsibilities.

By being designated the “stand-in” QCM or Designated Alternate QCM does not mean the person can freely come onto the project site and conduct any testing and/or inspection. They must properly submit a completed **“Submittal, Transmittal, Review and Approval Form”** and current certifications to the NRDOT Manager for review and approval if they are to perform and conduct any testing and/or inspection work. Such testing and inspection work must be in the field for which the person is certified ONLY.

As a part of the QCP, provide a letter signed by an officer of the Contractor's firm appointing the QCM, “stand-in QCM”, and Alternate QCM stating that he/she is responsible for managing and implementing the QC plan as described in this contract. Include in this letter the QCM, “stand-in QCM”, and Alternate QCM authority to reject and direct the removal and replacement of non-conforming work and materials and to stop work for the purpose of unsafe conditions.

(2) The Contractor shall provide for approval the names, authorities, résumé’s, and relevant experience of all personnel directly responsible for the testing and inspection. **The Contractor shall work cooperatively with the QC personnel to accommodate the inspection and testing requirements.** The inspectors, record keeper, and testing technicians must meet the following:

(a) Inspector. Inspectors who perform inspection work shall be civil engineering technicians with at least 2 year of experience in inspection of highway/bridge construction or similar construction which includes basic sampling and field testing of materials, welding, basic surveying, use simple plans and specifications, read topographic maps or be currently certified by NICET, Level I (or equivalent certification program) or higher in the sub-field of Highway Construction or an equivalent certification program. The Inspector is responsible for performing daily inspection and testing (i.e. compaction tests) of the work in place that he/she is **certified** for (i.e. structural welding, false work, embankment construction, pipe installations, nuclear gage operation, etc.) and prepares inspection and testing reports as outlined in the QCP. The Inspector is further responsible for reporting any deficiencies back to the QCM and Sub-COR/AOTR. The Inspector shall not be allowed to inspect more items of work at one time than can be adequately accomplished in a day without sacrificing quality of the inspections and/or testing.

(b) Record Keeper. A record keeper who performs record keeping shall be person with at least one (1) year of experience, preferably in construction project filing; Be computer literate (Excel, Word, etc.); have basic knowledge in mathematics (computation of lengths, areas, etc.) unit conversion (English to Metric), ability to prepare agendas, minutes, track quantity estimates, update quantities daily and log data accurately into project records; **thoroughly knowledgeable in the government’s records management requirements** through on-the-job training from the COR/AOTR/Sub-COR/AOTR. The record keeper shall also distribute records to the appropriate personnel on this project.

(c) Quality Testing Technician (Soils & Aggregates). Quality Testing Technicians who perform actual sampling and testing of soils and aggregates shall have 2 years or more of recent job experience and the following:

(1) Certified under a State DOT "Technician Training and Certification Program (TTCP)" in the field of soils and aggregates or other state/industry certification program in the field of soils and aggregates or;

(d) Quality Testing Technician (Hot Mix). Quality Testing Technicians who perform actual sampling and testing of hot asphaltic concrete shall have 3 years or more of recent job experience and the following:

(1) Certified under a State DOT "Technician Training and Certification Program (TTCP)" in the field of asphalt/asphaltic concrete.

(e) Quality Testing Technician (Concrete). Quality Testing Technicians who perform actual sampling and testing of concrete shall have 1 year or more of recent job experience and the following:

(1) Certified under the American Concrete Institute (ACI), "Concrete Field Testing Technician, Grade I".

The Testing Technician, under the direction of the QCM, is solely responsible for testing of materials **within their expertise**. Under no circumstance shall a Testing Technician/QC Inspector be performing tests outside their qualifications. Should the QCP identify a Testing Technician and/or Inspector to be performing both testing and inspection, they shall not perform outside their qualifications.

Add the following subparagraphs:

(f) Submittal transmittal, review, approval, and record keeping. Procedural requirements for transmittal, review, approval, and record keeping of submittals (Log of Submittals) shall be the responsibility of the Contractor consistent with the NRDOT format that shall be provided upon request. While use of the NRDOT specific forms and/or formats is not required, any other format used shall contain the same information. This form shall only be used for material certifications, shop drawings, mix designs, test/inspection reports, and résumé's for QCP staff.

> The Contractor or his elected representative shall prepare, in accordance with FAR 52.236-21, *Specifications and Drawings for Construction*, and Special Contract Requirements, 3 hard copies of all Shop Drawings and one electronic copy (AutoCAD 2004 or compatible software programs as per NRDOT requirements) with Certifications and submit to the NRDOT Manager through the COR/AOTR for approval (unless otherwise instructed). Each submittal shall be accompanied with a Transmittal, Review, and Approval form (sample of acceptable form may be provided upon request) signed by the Contractor. Clearly mark each item proposed to be incorporated into the contract and identify in the submittals, with cross-references to the contract specifications and drawings, so as to identify clearly the use for which it is intended. Each submittal shall be certified by the Contractor. The Contractor's certification shall be worded as follows:
>
> "***It is herby certified, to the best of my knowledge, that the (document) (equipment) (material) shown and marked in this submittal is that proposed to be incorporated into***

Contract Number _____, and is in compliance with the Contract specifications and drawings, and is submitted for Government approval."

Certified by _____ Date _____

The person signing the certification shall be the Project Superintendent or one who is designated in writing by the Contractor as having the authority. The signature shall be in original ink. Stamped signatures are not acceptable.

(g) Manpower needs. The QCM shall coordinate with the COR/AOTR/Sub-COR/AOTR and Project Superintendent and agree on the level of inspection and testing man power needed for each week's work or operation in order for the COR/AOTR to measure and pay for the testing and inspection work under this section.

The CO/AO reserves the right to require changes in the QCP, QC personnel, and operations as necessary to ensure the specified quality of work to be performed in a safe manner. The Contractor can propose changes to the QC personnel by submitting a completed **"Submittal, Transmittal, Review and Approval Form"**, along with complete résumé's of personnel to be added or replaced on the QC staff to the NRDOT Manager**, a minimum of seven (7) calendar days prior to a proposed change**. The resume and any proposed changes must be approved by the NRDOT Manager prior to implementation. Non-compliance with this requirement shall result in no payment for the hours claimed.

(h) Resumes. A résumé of all QC staff shall be included in the QCP and must be very specific and detailed on the duration/dates of past and current education, work experience, duties and current certifications that relate to field of work that is specified in this contract. Copies of current certifications shall be included with the resume. The resume of any proposed Quality Control Manager, Inspector, Record Keeper and/or Quality Control Testing Technician shall meet the requirements as outlined in this section.

The Government reserves the right to contact past employers and/or interview any member of the QC organization at any time in order to verify his/her submitted resume and/or qualifications.

To minimize project disruption, and to maintain harmony, communication and project record keeping, the designated QCM, Inspectors, and Quality Control Testing Technicians shall stay with their assigned task/work until their respective task/work and records are completed to the satisfaction of the COR/AOTR/Sub-COR/AOTR. No QC personnel shall perform work on any other project/contract without the express written consent of the COR/AOTR/Sub-COR/AOTR.

All QC personnel whose duties require them to drive a vehicle during there assigned duties, under this contract, must comply with a driving policy consistent with the BIA's driving policies and must possess a valid State driver's license.

153.03 Testing.

Add the following subparagraphs:

(a) Quality Control Laboratory.

Provide an AASHTO accredited testing laboratory qualified to perform sampling, testing, and inspection required by this contract. Only the AASHTO accredited testing laboratory identified and approved in the Contractor's Quality Control Plan shall perform sampling, testing and inspection on the project.

(b) Accredited Laboratories

The acceptable accreditation programs are the American Association of State Highway and Transportation Officials (AASHTO) program, and the Cement and Concrete Reference Laboratory (CCRL). Furnish to the NRDOT Manager Accreditation documentation including, a copy of the Certificate of Accreditation, and Scope of Accreditation. The scope of the laboratory's accreditation shall include the test methods required by the contract.

(c) Inspection of Testing Laboratories

The testing laboratory facilities and records may be subject to inspection by the Contracting Officer and/or NRDOT Manager. Records subject to inspection include equipment inventory, equipment calibration dates and procedures, library of test procedures, audit and inspection reports by agencies conducting laboratory evaluations and certifications, testing and management personnel qualifications, test report forms, and the internal QC procedures.

(d) Test Results

Cite applicable contract requirements, tests or analytical procedures used. Provide **all original** actual test results and **worksheets.** Include a statement that the item tested or analyzed conforms or fails to conform to specified requirements. Conspicuously stamp the cover sheet for each report in large red letters "CONFORMS" or "DOES NOT CONFORM"" to the specification requirements, whichever is applicable. Test results shall be signed by a testing laboratory representative authorized to sign certified test reports. Furnish the **original** signed reports, certifications, and other documentation to the COR/AOTR/Sub-CO/AOR/AOTR/Sub-AOTR within one (1) calendar day after the performance of the test. Furnish a summary report of field tests at the end of each week in a format to the satisfaction of the COR/AOTR/Sub-CO/AOR/AOTR/Sub-AOTR. Attach a copy of the weekly summary report to the last daily Contractor Quality Control Report of each month.

If an Inspector or Quality Control Testing Technician performs work, but has not been approved on the QCP personnel list, all test results and/or inspection work performed and hours claimed by the non-approved Inspector or Quality Control Testing Technician shall be rejected. The rejected work shall comply with Section 106-Acceptance of Work, Subsection 106.01 Conformity with Contract Requirements. The work hours claimed shall not be paid for.

153.04 Records.

Add the following to the first paragraph:

In accordance with the Government's Records Management requirements, the QCM and Contractor Superintendent shall be **responsible** for the measurement of quantities (including all verification of calculations, sketches, etc.) of all items of work in accordance with **Subsection 109.01** and these measurements (quantities and calculations) kept in chronological order and in bound record books (bound books can be the steel strapped press board type or survey/lab grade) in a format agreed to by both the QCM and COR/AOTR\Sub-COR/AOTR. **These record books shall be updated daily throughout the life of this contract**. The measurements for accepted work shall be based on material certifications, testing reports, inspection reports, and any other appropriate documents that have been reviewed and verified by the COR/AOTR\Sub-COR/AOTR in writing. Copies of material measurements shall be furnished to the COR/AOTR\Sub-COR/AOTR and Contractor for review, approval, and preparation of progress pay estimates. Any **errors/mistakes** found by the COR/AOTR\Sub-COR/AOTR shall be corrected immediately by the **QCM** as

outlined in this subsection and in accordance with the Special Contract Requirements 4(b) unless the Contractor can clearly show documentation otherwise.

The quantities, sketches, calculations entered into the quantity books shall be done in a neat and legible fashion. Any mistakes shall be scratched out with one red ink line and corrections shown above or below the figure, red lined out, with the writer initializing off and dating the corrections. **Under no circumstance shall erasure of errors or white out corrections be made in any book.**

The QCM is also responsible for all inspection reports, test records, correspondence, material certifications, as-builts, etc. in accordance with the BIA Record's Management policies, procedures, and requirements. These records must be kept in and approved format and secured bound book (i.e. survey quality note books). **No 3 ring binders allowed. Under no circumstances shall any QC personnel alter any previous report(s) without notifying the COR/AOTR\Sub-COR/AOTR first and the COR/AOTR initials off on the corrections.**

Allow unrestricted access by the government for inspection and review of the quantity and other record book(s) at all times.

Revise the certification statement by adding "*by the Contractor*" between the words "*certified*" and "*that*".

Add the following subparagraph:

(a) As-built drawings. The QCM is required to keep the as-built drawings updated on a daily basis and accurately marked to show all deviations, which have been made from the original contract drawings. The QCM shall initial each deviation and each revision.

The QCM shall maintain, at the job site, one set of full-size contract drawings labeled "***As-Built***" (either in AutoCAD format or red lined hard copy) marked in legible red pencil to show any deviations which have been made to the contract drawings, including buried or concealed construction and utility features revealed during the course of construction. The QCM shall record horizontal and vertical locations of buried utilities that differ from the contract drawings. Show the size, manufacturer's name, model number, capacity, and electrical power characteristics of the equipment installed. These drawings shall be available for review by the CO/AO and/or COR/AOTR\Sub-COR/AOTR at all times. **No progress payment(s) shall be considered for item 15301 if marked prints are not shown to be current and request for final contract payments shall not be approved until the required drawings are delivered to the COR/AOTR\Sub-COR/AOTR in hard copy or electronic AutoCAD format within three (3) calendar days after the Final Inspection date.**

Upon submittal of the as-built plans to the COR/AOTR , the QCM shall provide a certification statement to the following:

> "***It is herby certified, to the best of my knowledge, that the As-Built Plans marked and documented are accurate and herein complies with the requirements in Contract Number _____, and are in compliance with the Contract specifications and are submitted for Government review and approval."***

Certified by _____ Date _____

(b) Project Records for Audit. The QCM and COR/AOTR shall jointly determine a format for project record keeping while being consistent with the BIA Records Management requirements. This format must include contract item quantities, material certifications, and any other information deemed necessary and related to the contract item for audit purposes and conform to

the BIA records management requirements. The QCM shall review all project documents and final quantities for each item of work in this contract and submit the final **original** quantity books, inspection records, material certifications, test records, log of submittals, etc. and the "As-Built" construction plans to the COR/AOTR for final audit purposes within **3** calendar days **after** the Final Inspection date or just prior to the final acceptance inspection if agreed to by the COR/AOTR. The COR/AOTR (in conjunction with the BIA Audit Engineer) will review the final quantity books and all other records for completeness within 30 days of receiving such documents. As an incidental obligation of the Contractor, the QCM shall be made available for meeting with the COR/AOTR and/or BIA Audit Engineer to answer any questions relating to the final quantities and/or project records. Any project file records (quantity book(s), "As-Built" construction plans, inspection reports, material certifications, etc.) that are found to be incomplete or lacking information shall be returned to the QCM and Contractor for corrections at the entire expense of the Contractor. The QCM shall be available and in contact with the BIA Audit Engineer during this review stage to insure compliance with audit requirements until the audit has been completed.

153.06 Measurement

Supersede this subsection as follows:

Measure Contractor Quality Control, including sampling, testing, and inspection by the Man Hours or Lump Sum as shown on the bid schedule.

Measurement by the Man-Hour for payment shall include the following:

1. A detailed daily confirmation report prepared by the QCM indicating the number of hours worked each day on the project of all QC staff subject to the review and approved by the COR/AOTR. This report shall be submitted to the COR/AOTR at the end of each days work with a weekly summary.

2. Only those Inspectors/Testing Technicians, and QCM actually on the project performing work (or work at a fabrication plant) under this section during the contract time period based on the date of the Notice to Proceed notice issued by the CO/AO.

Man-hours **not measured** for payment include the following:

1. QC inspection and testing man-hours during period(s) of project shutdowns, period after "Contract Ending" date, time outside the normal work day used in performing retesting of work due to QC personnel mistakes (i.e. improper testing methods, defective equipment, or improper use of equipment) or lack of keeping all records current as outlined herein (for example catch-up paperwork from previous work day(s) or correcting mistakes).

2. Any other testing and/or inspection of Contractor's work beyond the Final Inspection date shall be considered incidental obligations of the Contractor and those QC hours shall not be measured for payment.

3. The project records and "As-Built" construction plans shall be released to the COR/AOTR within 3 calendar days **after** the Final Inspection date. Measurement of QC hours shall cease upon the Final Inspection date.

4. Travel time for each inspector/tester and QCM (i.e. from the main office to the project or from temporary living quarters to the project and return) including travel time for an inspector, tester or QCM to deliver samples to the central laboratory and back to the project site or temporary living quarters shall be considered incidental obligations under terms of this contract.

5**.** All other QC Central Laboratory/Office personnel performing indirect work on this project (i.e. such as administrative staff, Materials Engineers, Project Manager, other geotechnical staff, etc.) shall be considered incidental obligations under the terms of this contract unless specifically addressed in a contract modification for purposes of addressing a specific problem unknown to both the contractor and government.

6**.** QC Central Laboratory personnel performing any quality tests (including but not limited to) aggregate base coarse, mineral aggregate, aggregate gradations, soil classifications, PIs, lime stabilization mix designs, hot mix designs, and concrete mix designs. Concrete cylinder breaks, TSR's and any other test(s) that are more cost effective to the government to be perform elsewhere or required inspections of structural members at fabrication plants will not be measured for payment unless otherwise agreed to in writing between the NRDOT Manager and Contractor and that such work is specifically and clearly identified in the approved QCP. Project QC personnel performing any quality sampling and testing (i.e. borrow pits, aggregate pits, etc.) during the contract period shall be considered incidental obligations under the terms of this contract.

7. Any QC personnel that are not identified on the approved QCP or subsequent revised and approved QCPs.

Add the following subsection:

153.07 Payment

The accepted quantity, measured as provided above, will be paid at the contract price per unit of measurement for the pay item listed below that is shown in the bid schedule. Payment will be full compensation for the work prescribed in this Section. See Subsection 109.05.

When the Contractor Quality Control is based by the "lump sum" including sampling, testing, and inspection then it shall be paid as follows:

(a) 10 percent of the lump sum, not to exceed 0.5 percent of the original contract amount, will be paid after all the Contractor Quality Control Plan is approved and all the testing and inspection facilities are in place, qualified sampling, testing and inspection personnel are identified, and the work being tested has started.

(b) Payment for the remaining portion of the lump sum will be prorated based on the total work of all other bid items completed.

When the Contractor Quality Control is based on Man-Hours, the COR/AOTR will make progress payments, in accordance with section 153.06, at the contract price per unit of measurement for the pay items listed below and as shown on the bid schedule. Any hours claimed for work beyond the contract ending date as shown in these contract documents (including any extensions approved by the CO/AO) shall not be measured for payment. If the contract time is extended then this action by the CO/AO will be taken into consideration when establishing the new contract ending date so that valid QC hours would be paid for during this extended period. It

is only after this time expires that the QC hours will not be measured for payment as technically the contract is ended.

Payment will be full compensation for the work prescribed in this section unless otherwise described herein and in the special contact requirements.

Payment for all or part of this item of work may be retained, if the Government cannot agree on the hours claimed, or verification testing or inspection invalidates the Contractor testing or inspection work.

Payment will be made under:

Pay Item	**Pay Unit**
15301-0000 Contractor Quality Control	Man-Hrs
15302-0021 Contractor Quality Control	Lump Sum

SECTION 154--CONTRACTOR SAMPLING AND TESTING

154.01 Description.

This paragraph is superseded with the following:

This work consists of obtaining samples for testing and reporting required test results. There is no contract pay item for this work. This work does not include Contractor quality control testing required under Section 153. However, include the work required under this Section in the Section 153 Quality Control Plan (QCP).

154.02 Sampling.

The second sentence of the first paragraph is superseded with the following:

The sampling schedules and times shall be determined and provided by the Contractor's QCM using a random number system. Provide the schedules at least seven (7) calendar days before the work begins.

The first sentence of the second paragraph is superseded with the following:

The Contractor's QCP shall include a very specifically written method of sampling materials from a final processed windrow on the roadway, aggregate stockpile(s), behind a "jersey spreader", behind a chip spreader, out of a haul truck or any other acceptable method the Contractor is using to place or spread aggregate materials. Include sampling aggregates at the crushing site and/or hot plant site.

Add the following:

Splitting: A riffle sample splitter shall be used that meets AASHTO T-248. The QCP shall include a very specific written method of splitting and the number of splits the aggregate materials will take. Immediately perform splits of samples upon receiving the material. Furnish approved containers for the Navajo Region Division of Transportation's (NRDOT) portion of split samples. Label NRDOT samples to include project number, contract number, pay item number, material type, sample number, date sampled, time sampled, station location, distance left or right of centerline location, name of person sampling, name of person witnessing sampling and type of test required on sample. The Sub-COR/AOTR will take possession of the BIA samples.

Allow the COR/AOTR and/or Regional NRDOT staff engineer/technician the opportunity to witness all sampling and splitting.

154.03 Testing.

This subsection is superseded with the following:

The Contractor's Quality Control Testing Technician or Inspector shall perform all tests required by the Sampling and Testing Tables for all applicable work. Allow the COR/AOTR and/or NRDOT staff the opportunity to witness all testing. Testing of trial samples may be required to demonstrate testing competence.

Use equipment that is calibrated and meets the applicable testing requirements of the contract. Tag all necessary equipment indicating the date of last inspection, inspector, and calibration number.

The COR/AOTR may check equipment to verify condition and calibration. The Contractor shall repair or replace equipment not meeting applicable requirements.

Submit documentation supporting the calibration of all necessary equipment **before actual testing**. Include the following:

1. Description of the equipment calibrated or verified, including model number, serial number, or other acceptable identification.

2. Identification of the individual performing the calibration or verification.

3. Identification of the calibration or verification procedure used.

4. The calibration number for each calibration.

154.04 Records.

This subsection is superseded with the following:

Record test results on approved acceptable forms containing all the information as required in 154.02. Furnish to the COR/AOTR all original completed forms with original test results and work sheets. When tests are on material being incorporated in the work, report all test result(s) and original completed form(s) within 24 hours of date of test. **Payment for work will be delayed or work suspended until test results are provided.**

154.06 Measurement.

This paragraph is superseded with the following:

Do not measure Contractor sampling and testing for payment.

154.07 Payment.

This subsection is deleted in its entirety.

SECTION 155 -SCHEDULES FOR CONSTRUCTION CONTRACTS

155.02 General.

The first sentence of the third paragraph is superseded with the following:

Use the Bar Chart Method (BCM) as described below to develop the construction schedule for the total contracted work.

155.03 Bar Chart Method (BCM).

Add the following subparagraph (c):

(c) Submit **3 copies** of the construction schedule at the preconstruction conference. Allow **14 days** for acceptance or rejection of the construction schedule or a revised schedule. If rejected, submit a revised schedule within 5 days. **Do not begin work,** except mobilization, survey staking, and traffic control work, without an accepted construction schedule**.** The Contractor shall update this Construction Schedule as necessary (during the life of the project) to reflect any delays, change in schedules, and revisions to activities shown and furnish a copy to the COR/AOTR and/or NRDOT Manager when necessary for review and approval/disapproval back to the Contractor through the CO/AO. The preparing, furnishing and updating of this bar chart schedule shall not be measured for payment but shall be a subsidiary obligation of the Contractor. Failure to provide the government with an updated construction schedule, for review and acceptance prior to continuation of work, may result in the CO/AO issuing a stop work order.

Review and acceptance of any and all construction schedules is rendered as a service only and is not considered a guarantee of the work being completed within the contract time or will not result in delays as a result of the work under the schedule(s), nor shall it be considered as relieving the Contractor from complying with the specifications and other requirements in this contract.

155.04 Critical Path Method (CPM). This subsection is deleted in it's entirety.

155.09 Payment.

This subsection is superseded with the following:

The development and updating of the construction schedule will not be measured for payment but shall be considered an incidental obligation of the Contractor under this contract.

156.03 Accommodating Traffic During Work.

The first paragraph is superseded with the following:

The Contractor shall prepare a Traffic Control Plan (TCP) in accordance with Section 635, the MUTCD latest edition, and the details shown in the construction drawings and submit for review and acceptance. Accommodate traffic according to the approved TCP, the MUTCD, Section 635, and this section.

156.08 Traffic and Safety Supervisor.

The first sentence of the first paragraph is superseded with the following:

Provide a traffic and safety supervisor who is certified by a federal or other acceptable certification program. Provide current copies of the certifications to the COR/AOTR for review and approval.

Section 157. - SOIL EROSION CONTROL

157.01 Description.

This paragraph is superseded with the following:

This work consists of developing a **Storm Water Pollution Prevention Plan** (SWPPP), implementing and maintaining this plan to control erosion, pollution, sediment, and runoff during the construction of the project, use of borrow pit, haul roads, construction yards, and aggregate/soil stockpiles.

157.03 General.

The second paragraph is superseded with the following:

The storm water pollution, erosion, sediment, and runoff control details in the contract plans reflect special measures to be considered in the SWPPP for the project. The Contractor shall prepare and submit to the NRDOT Manager a SWPPP in compliance with all 401, 402, and NPDES permit applicable requirements (in full details, hand sketches not allowed) and reflecting the requirements in the contract plans and specifications in such detail that the plan will adequately address the potential for erosion of soil and other pollutants into the waters of the USA, on the entire project, due to each phase of the Contractor's grading and drainage operations. The SWPPP must be prepared by a **qualified registered professional engineer or a qualified storm water pollution prevention specialist** with the certificates and registration incorporated into the SWPPP. The SWPPP shall show measures to control erosion, runoff, sediment, and pollutants (to the fullest extent possible) and shall further address the following:

1. Measures to be taken at the toe of fill slopes (i.e. silt fencing, straw bales, etc.) that have the potential of eroding into the waters of the USA. This includes all slopes steeper than 1:3. However, this does not preclude the use of erosion control measures taken on slopes flatter than 1:3 depending upon the soil type and it's erosive potential as directed by the COR/AOTR.

2. Measures to be taken in cut sections to preserve the back slopes and shoulder ditches from eroding into the waters of the USA. This includes placement of silt fencing spaced every 60 meters maximum (or as shown on the plans) in the cut ditches. Place straw bales along the upper ridge lines of the cut slopes or use of wattles to redirect runoff away from cut slopes. **The use of straw bales in cut ditches is not permitted**. See also subsection 157.04(H).

3. Measures to be taken to protect all live streams, lakes, ponds, creeks, and wetlands from sediment infiltration in accordance with the contract plans and 404 wetland permit and EA requirements.

4. Details of sediment control structures (facilities) and locations where runoff is temporarily being diverted from its natural course;

A. Structures utilizing compacted earth material shall be composed of material free of roots, woody vegetation, excessive rocks, and other objectionable materials. The construction shall be in accordance with section 157.06(b).

B. The slopes of any settling basin shall be 1:3 or flatter. All settling basins shall have safety fence (1.2 meters in height snow fence or equivalent) enclosing them.

C. Measures for maintaining all sediment control facilities at all times of the day and night.

5. Measures for diversion dikes to be constructed at the end of each day's operation, as necessary, around all drop inlets to divert runoff into existing sediment basins (traps) or into outfall chutes.

6. Measures to install permanent erosion and sediment controls as soon as practical when sections of final grading and drainage work are complete.

7. Other erosion and pollution control measures and permits required due to the nature of the contractor's construction sequencing and procedures including temporary turf establishment, temporary mulching, type of erosion control materials to be used, and installation procedures for such things as (but not limited to) :

A) Protection of soil and aggregate stockpiles.
B) Protection of temporary cut and fill slopes
C) Protection for detour roads.
D) Temporary watering ponds.
E) Protection of top soils.
F) Protection of waters from pollutants

8. A **Construction Sequencing Plan** (CSP) that addresses each phase and location of the grubbing, grading, and drainage work to take place over the course of the contract.

The erosion and pollution control measures installed shall remain in place and be continuously maintained until the permanent measures (i.e. seeding and mulching of slopes, outlet protections, channel lining, etc) are completed. The Contractor can remove any SWPPP features at their discretion once all the permanent erosion control features are in place and accepted for those completed areas of the project. Failure to properly maintain the SWPPP may result in a violation of the Clean Water Act with possible fines levied by the USEPA. The Contractor shall have 5 working days from given notice of non-compliance to correct the problems. Failure to bring the work under this section into compliance within 5 working days of non-compliance notice will be cause for the Government to begin deducting the prorated progress payments for this work from the contract.

If field conditions change as a result of the contractor's construction operation which causes the SWPPP to be ineffective, then the Contractor shall revise the SWPPP and resubmit for review and approval. No work within the areas of deficiencies, identified by the QC inspector's and/or BIA project management personnel, shall be allowed until the revised SWPPP is approved and implemented.

Any deviations to the approved SWPPP shall be requested in writing at least 14 calendar days before implementation for review and approval. Minor adjustments in the approved SWPPP are allowed to meet actual field conditions. Any major deviation from the approved SWPPP will result in a notice of violation of the Clean Water Act where fines may be levied by the USEPA.

If the COR/AOTR finds that the SWPPP is not providing sufficient erosion control protection, the Contractor shall be required to stop all work in the area and revise his SWPPP to address the problems immediately and when the revised SWPPP is approved, immediately implement the changes.

Allow 30 calendar days for review and approval of the initial SWPPP in accordance with Subsection 104.03.

157.04 Controls and Limitations on Work.

The first paragraph is superseded with the following:

Before grubbing and grading work begin, the contractor shall construct all pollution, erosion, and sediment control measures around the area to be worked on including any perimeter erosion and sediment control measures. This shall include the construction of sediment traps, filter barriers, diversion dikes, silt fencing, and settling structures as required by the approved SWPPP.

Paragraph three is superseded with the following:

Construct erosion control and sediment control measures as follows:

A) Construct temporary erosion controls in incremental stages as construction proceeds in accordance with the **Construction Sequencing Plan** (CSP).

B) Construct temporary slope drains, diversion channels, and earth berms to protect disturbed areas and slopes as reflected in the approved erosion control plan.

C) Apply permanent turf establishment (i.e. seeding & mulching) in accordance with section 625 on sections of completed slopes and other disturbed areas within 10 days of final grading.

D) Construct temporary outlet protection on all new and existing culverts and other drainage structures in accordance with the details shown in the contract plans and the approved SWPPP.

E) Construct permanent erosion controls (as shown in the contract plans and specifications) including waterway linings, slope treatments, gabions, riprap, and permanent sediment traps within 20 days of completion of the roadbed and/or drainage structures.

F) Apply permanent turf establishment and landscaping to finished slopes and ditches according to section 624 through 629 as required.

G) Construct and maintain erosion controls on and around all soil and aggregate stockpiles within the project limits to prevent soil loss into the waters of the USA.

H) During each day's grading operations, shape and roughen all embankment slopes to minimize and control erosion from storm runoff as follows:

1. For cut and fill slopes run a bulldozer or other approved track equipment up and down the slope to create grouser tracks parallel to the roadway leaving small

(approximately 51mm in depth) valleys in which water can be trapped (see design drawings for further details). This work is an incidental obligation of the contractor under item 15701-0000.

2. 2. Place straw mulch under bid item 15708-1000 (as required) to cover all completed slopes (and other disturbed areas) that cannot be traced under (1) above. Crimp the mulch by running a crimping tiller up and down the slope or use a polymer tacifier if crimping is not possible. This method of slope protection shall also be used when permanent seeding, under bid item 62510-1000, cannot be completed within 10 days of final grading. Placing of straw mulch, tacifier, and crimping shall be an incidental obligation of the Contractor under item 15708-1000. The mulch shall be applied at a rate of 4500kg/ha. Apply tacifier at a rate of between 44-67kg/ha or as recommended by the manufacturer.

157.12 Inspection and Reporting.

The first paragraph is superseded with the following:

The **qualified** Erosion Control Representative (ECR) assigned by the Contractor in writing, responsible for implementation of the SWPPP shall inspect, and report on all erosion control features and facilities at least once every week, within 24 hours after more than 10mm of rain event in a 24-hour period, and as required by the approved SWPPP and/or US EPA permitting requirements. The Contractor Erosion Control Specialist responsible for the preparation of the SWPPP shall perform monthly inspections with the COR/AOTR and ECR of the project and provide a report of his findings to the COR/AOTR within 3 days after the inspection.

157.13 Maintenance and Cleanup. The third paragraph is superseded with the following:

Remove and dispose of all remaining temporary erosion control measures (SWPPP) two weeks prior to final inspection and clean up all debris. Remove and dispose of erosion control measures according to subsection 203.05.

157.15 Measurement.

Add the following:

It is estimated that approximately 200 meters of silt fence, and 100 meters of straw bales and/or wattles or sand bags will be required for the project. However, this does not preclude the Contractor from using any or all of the other measures shown in the design plans and/or measures required in the Contractor's SWPPP as a result of the construction sequencing. Those measures required by the Contractor's SWPPP shall be included in the unit price bid for erosion control.

Temporary straw mulching shall be measured by the hectare (ha) in place. Any secondary applications or touch ups as directed by the COR/AOTR shall not be measured for payment but shall be incidental obligations under this items of work.

157.16 Payments.

Add the following:

When the bid schedule does not contain a bid item for this work, it shall be considered incidental obligations of the contractor under other bid items of work where no additional payment shall be made.

When soil erosion control is bid by the Lump Sum, payment shall be made as follows:

(A) 25 percent of the Lump Sum, not to exceed 0.5% of the original contract amount shall be paid after all required erosion control measures sufficient to begin construction as determined by the COR/AOTR are in place.

(B) Payment for the remaining portion of the Lump Sum shall be prorated based on the total work completed, provided the additional and necessary erosion control measures are constructed, maintained, and accepted.

Payment will be made under:

Pay Item	**Pay Unit**
15701-0000 Soil Erosion Control	Lump Sum
15708-1000 Temporary Straw Mulching	Hectare

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SECTION 203.- REMOVAL OF STRUCTURES & OBSTRUCTIONS

203.01 Description.

Add the following paragraph:

This work shall include the complete removal of structures as shown in the design plans, including all appurtenances.

203.03 Salvaging Material.

The third paragraph is superseded with the following:

Stockpile salvageable material in a location as directed by the COR/AOTR or Sub-COR/AOTR for BIA Agency Road Maintenance pickup unless otherwise specified in the design plans. Unsalvageable material shall be disposed of in accordance with section 203.05 of the Standard Specifications and as modified below.

All existing pipe culverts and/or pipe arches, cattle guards, and fencing shall be removed, cleaned, and stockpiled in a location designated in the design plans. This work shall be included in the unit price bid under the appropriate bid items shown in the bid schedule.

203. 04 Removing Material.

The first paragraph is superseded with the following:

Saw cut sidewalks, curbs, pavements, and structures when partial removal is required. All saw cut edges shall be protected until the new material is placed up against the exposed edges. If the saw cut edges are damaged (i.e. chipped, broken, crumbling, or loses its underlying support) shall, as an incidental obligation, be repairs by the Contractor by saw cutting the damaged edges/sections again to a smooth clean face to accept the new material .

Add the following to the end of the second paragraph:

Miscellaneous structures designated for removal shall be removed at the locations and to the depths shown in the design plans and/or as directed by the COR/AOTR. These structures shall be disposed of in accordance with section 203.05 (as applicable) and as directed in the design plans.

Any existing PCC curbing shall be broken up to minus 152mm size, reprocess with other embankment material for shoulder and/or roadway construction requiring additional embankment material. Any excess or pulverized pavement materials can be used as part of the embankment construction or used for turnout construction as directed by the COR/AOTR provided the milled material is grades to minus 75mm size.

Any concrete foundation bases from any and all existing fence posts called for removal shall be removed and disposed of in accordance with section 203.05 (as applicable).

When bridge removal is required under this contract, remove the existing piles to 1 meter below the flow line at the piers unless the existing piles interfere with the new construction; in which case the piles must be removed to the extent necessary to allow for the new construction. All existing abutment piles shall be removed to the extent necessary to allow for the new construction without interference. Salvage bridge material designated by the COR/AOTR or Sub-COR/AOTR and stockpile in a location, on the project, convenient for BIA maintenance pickup unless otherwise noted in the design plans. Remove all concrete walls and exposed footings to natural ground.

203. 05 Disposing of Material.

The first paragraph of subparagraph **(c)** is superseded with the following:

(c) Bury. Bury non-hazardous debris in trenches or pits in approved areas within the ROW. Do not bury debris near underground utilities, beneath drainage ditches, or in any areas subject to free flowing water.

Add the following sub-section:

(e) Utilization. Stone, masonry, asphalt pavement and/or concrete debris may be incorporated into embankment provided the material is broken into minus 152mm (longest dimension) pieces and placed at least 1 meter below the subgrade surface. Stone, masonry, asphalt pavement and/or concrete debris shall not be place in embankment where piling is to be driven.

Stone, masonry, and/or concrete debris may be incorporated into riprap provided the material meets the requirements of riprap rock, including hardness and gradation.

Removal of hazardous materials not identified in the design plans or specifications shall be in accordance with section 109.02(m).

SECTION 204- EXCAVATION AND EMBANKMENT

204.04 Preparation for Roadway Excavation and Embankment Construction.

Add the following:

Earthwork construction requiring compaction shall not be performed unless the air temperature is 4° C and rising (taking into account the wind chill factor) and the top 305mm of ground and/or roadway embankment (including all backfill previously placed) temperature is a minimum of 4°C in the shade. The COR/AOTR shall make the final determination (in writing) as to whether earthwork construction can proceed or not.

204. 07 Subexcavation:

The first sentence is superseded with the following:

Excavate unsuitable material and replace with select borrow meeting the requirements of section 704.07 to a depth of 610mm from existing subgrade or natural ground, and to the limits designated by the COR/AOTR. The sub-excavation work shall be measured and paid for at the contract unit price for Roadway Excavation, item 20401-0000, as applicable. The select borrow shall be measured and paid for at contract price for item 20403-0000 as applicable. When items for roadway excavation or select borrow is not in the bid schedule, measurement and payment shall be in accordance with section 109.02(m) or other approved payment and measurement methods.

204. 10 Embankment Construction:

(b) Embankment Construction within the roadway prism.

The first sentence, in the first paragraph, is superseded with the following:

Within the roadway prism, place earth embankment in horizontal layers not exceeding 300 millimeters loose measurement.

Add the following:

In no case shall any embankment lift material be placed upon frozen, muddy, or unstable natural ground or existing embankment. If existing subgrade or natural ground is wet and/or unstable due to conditions not attributable to the contractor's operations, it shall be plowed and/or scarified to a depth of 457mm and aerated before compacting (in accordance with section 204.11) as directed by the COR/AOTR. This work shall be measured and paid for under the roadway excavation items in the bid schedule. When items for roadway excavation is not in the bid schedule, measurement and payment shall be in accordance with section 109.02(m) or other approved methods. Any subgrade and/or natural ground that is wet or unstable as a result of the contractor's construction operations shall be stabilized as described above at the Contractor's entire expense.

204. 11 Compaction:

Add the following to 204.11(b):

The contractor shall compact the following materials listed below until a uniform density of not less than 95% of maximum density is obtained as determined in accordance with 204.11(a), (b), or (c) :

(1) Material placed in all embankment layers in accordance with section 204.10.

(2) Scarified material in the upper layer of existing ground in accordance with section 204.06 and 204.09 respectively:

(1) Under the subgrade in cut sections.
(2) Under embankments in fill sections.

204.13 Sloping, Shaping, and Finishing:

The first 3 sentences of subsection 204.13(d) are superseded with the following:

Remove all material larger than 150mm from the top 305 mm of finished roadbed and replace it as required with suitable material. The top surface of the finished subgrade shall not vary more than +/-15mm from finished blue top staking in both transverse (full width of roadway) and longitudinal directions (every 20 meter station maximum) and be continuously maintained in accordance with section 156 for public traffic until project completion. Continuously maintain all roadside ditches for proper drainage until final acceptance of project.

204.15 Acceptance: Add the following to the second paragraph:

All government computed final earthwork quantities shall be based on approved Contractor furnished final cross sections taken on the roadway, channel, borrow areas with clearly defined boundary areas, and roadway prism cut and embankment sections in the final position provided in electronic data files specified in section 152. Any over built roadway typical embankments and/or cuts (not authorized by the COR/AOTR) shall be deducted from the final earthwork quantities. The NRDOT Highway Design Section will take the Contractor's final survey data to determine the final earthwork quantities and furnish the results to the COR/AOTR and Contractor through the CO/AO.

204.16 Measurement:

Subparagraph (c)(1) is superseded with the following:

(1) Include the following volumes in embankment construction:

Roadway embankments that are in reasonable close conformance with the contract typical sections.

Material used to backfill sub-excavated areas, holes, pits, and other depressions.

Material used to restore obliterated roadbeds to original contours.

Material used for dikes, turnouts, and ditch blocks not paid under separate bid items.

204.17 Payment:

Add the following paragraph:

For periodic progress payment purposes, contract bid items for roadway excavation and borrow can be done by an approved load count method as agreed to (**in writing**) by the Contractor and COR/AOTR and NRDOT Division Manager.

Table 204-1, Sampling and Testing Requirements shall be used as written, except the requirements for the "Top of Subgrade" material is superseded with the following:

Table 204-1
Sampling and Testing Requirements

Material or Product	Type of Acceptance (Subsection)	Characteristic	Test Methods Specifications	Sampling Frequency	Point of Sampling	Split Sample	Reporting Time
Top of Subgrade (204.11)	Measured and tested for conformance (106.04)	Compaction	AASHTO T 310 or other approved procedures	1 per 2000 m^2	In-place	-	Before placing next layer
		Classification	AASHTO M 145	1 per 152 m	Top 305mm	Yes, when requested	Before placing next layer
		Sulfate Content[2]	AASHTO T 290	1 per 152 m	Center of lane; staggered	Yes, when requested	Before placing next layer

(2) Determine the sulfate content of <u>all</u> soils with soil classification of A-6 and A-7 when lime stabilization work is called for in the plans. If the soils have sulfate content of 2500 ppm or more, the Contractor shall take additional soil samples to determine limits of the high sulfate content soil area(s). The soils with high sulfate content shall be used to determine a lime/soil mix design under Section 213.

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SECTION 205- ROCK BLASTING

205.01 Description.

The first paragraph is superseded with the following:

The work consists of fracturing rock and constructing stable final rock cut faces using controlled and/or production blasting and non-blasting techniques as may be required by environmental requirements.

205.08 Blasting.

Add the following subparagraph:

(e) non-Blasting. Free each drill hole of obstructions for the entire depth. Place non-toxic expansive chemical agent into each hole and cover with approved stemming material.

Use non-toxic type expansive chemical agents to fracture the rock in accordance with the manufacturer's recommendations.

205.11 Measurement.

Add the following:

If no item is shown in the bid schedule for rock blasting, then all rock blasting shall be considered incidental to the earthwork items shown under section 204.

SECTION 206- WATERING

Add this new section as follows:

206.01 Description.

This work shall consist of developing an adequate water supply and applying water for all contract items that require water, hauling, and applying water including turf establishment. This work shall also include furnishing and applying water for the control of dust caused by the contractor's operations and public traffic within the construction zones only and in a conservative manner (i.e. only apply water for dust control caused by the contractor's operations and public traffic use in those location on the project as identified and directed by the COR/AOTR in accordance with section 158).

206. 03 General.

Water shall be applied at the project locations, in the amounts, and during the hours, including nights, and approved shutdowns, as directed by the COR/AOTR and in a **conservative manner**. Water shall be applied by means of a pressure-type distributor or pipe lines equipped with a spray system that will insure a uniform application of water in the quantities necessary.

206. 05 Measurement.

No measurement of quantities will be made when the Bid Schedule contains a lump sum pay item for the development of water supply.

When the bid schedule contains quantities based by the M-liter (1,000,000 liters) then the actual verified quantity used per pay estimate shall be paid for. Measurement for payment shall be based upon a load count method where each water truck to be used on the project shall be weighed (by certified scales) empty and full to determine the capacity of each truck in liters. The scale man shall certify the volume of the trucks and provide a certification with volume calculations to the COR/AOTR for review and approval prior to each truck used on the project. The Contractor shall then provide the QCM and COR/AOTR with daily load counts of water used on the project. Any truck left (at the end of each day) with water in the tank shall not be measured for payment until all the water is used on work the following day. Only water actually used on the project shall be measured for payment that was authorized by the COR/AOTR.

206. 06 Payment.

The contract lump sum amount will be paid in accordance with the following partial payments when the bid schedule contains a "Lump Sum" item:

A) 50 percent of the total contract lump sum bid amount will be paid for developing an adequate water supply.

B) The remaining 50 percent of the total contract lump sum bid amount will be paid on a prorated basis in accordance with the job progress.

When the Bid Schedule does not contain an Item for Watering, then Watering shall be considered incidental to the earthwork, road reconditioning, and/or paving items shown and no additional payment shall be made.

Payment will not be made for watering not directed by the COR/AOTR.

Payment will be made under:

Pay Item	Pay unit
20601-0000 Development of Water Supply.....	M-Liter

SECTION 209- STRUCTURE EXCAVATION AND BACKFILL

209.04 General.

The last sentence is superseded with the following:

Compact the foundation in accordance to Subsection 209.11.

209.09 Bedding.

Add the following:

Soil classification reports shall be submitted to the COR/AOTR for review and approval prior to use of the bedding material.

209. 10 Backfill.

(b) Pipe culverts.

Add the following:

Soil classification reports shall be submitted to the COR/AOTR for review and approval prior to use of the backfill material. Backfilling and compaction shall meet the temperature requirements of section 204.04.

Table 209-1 is superseded with the following:

Table 209-1
Sampling and Testing Requirements

Material or Product	Type of Acceptance (Subsection)	Characteristic	Test Methods Specifications	Sampling Frequency	Point of Sampling	Reporting Time
Backfill material (704.03)	Measured and tested for conformance (106.04)	Gradation/Soil classification	AASHTO T27 & T11/ AASHTO M 145	1 per soil type	Source of material	Before using in work
		Moisture-density	AASHTO T 99, method C	1 proctor curve per week or installation; to be determined by COR/AOTR/Sub-COR/AOTR	Source of material	Before using in work
		Compaction	AASHTO T 310 or other approved procedures	3 per lift	In-place	Before placing next layer
		Resistivity[2]	AASHTO T 288	1 per soil type	Source of material	Before using in work
Bedding material (704.02)	Measured and tested for conformance (106.04)	Gradation/Soil classification	AASHTO T27 & T11/ AASHTO M 145	1 per soil type	Source of material	Before using in work
		Moisture-density	AASHTO T99, method C	1 proctor curve per week or installation; to be determined by COR/AOTR/Sub-COR/AOTR	Source of material	Before using in work
		Compaction	AASHTO T 310 or other approved procedures	3 per lift	In-place	Before placing next layer
		Resistivity[2]	AASHTO T 288	1 per soil type	Source of material	Before using in work
Foundation fill (704.01)	Measured and tested for conformance (106.04)	Gradation/Soil classification	AASHTO T27 & T11/ AASHTO M 145	1 per soil type	Source of material	Before using in work
		Moisture-density	AASHTO T99, method C	1 proctor curve per week or installation; to be determined by COR/AOTR/Sub-COR/AOTR	Source of material	Before using in work
		Compaction	AASHTO T 310 or other approved procedures	3 per lift	In-place	Before placing next layer
Unclassified borrow (704.06)	Measured and tested for conformance (106.04)	Gradation/Soil classification	AASHTO T27 & T11/ AASHTO M 145	1 per soil type	Source of material	Before using in work
		Moisture-density	AASHTO T99, method C	1 proctor curve per week or installation; to be determined by COR/AOTR/Sub-COR/AOTR	Source of material	Before using in work
		Compaction	AASHTO T 310 or other approved procedures	3 per lift	In-place	Before placing next layer
		Resistivity[2]	AASHTO T 288	1 per soil type	Source of material	Before using in work

(1) Minimum of 5 points per proctor. (2) Only required for backfill of steel drainage structures called for in the bid schedule in accordance with section 704.

SECTION 211-ROADWAY OBLITERATION

211.01 **Description.**

Add the following subparagraph:

All roadway obliterations shall be performed within the right-of-way limits unless otherwise directed by the construction plans or specifications.

211.05 **Measurement.**

Add the following:

When the bid schedule contains no item for Roadway Obliteration, then this work shall be incidental to the earthwork items shown.

SECTION 251 - RIP RAP

251.03 General.

Add the following:

Steel stakes, for wire enclosed riprap, shall be fabricated to the required lengths from L102x102x10mm angles as shown on the plans for minor drainage structures. All bridge embankment riprap shall also be anchored with the L102x102x10mm angles.

Tie wire shall be 3.8mm wire with Medium Temper Class 3 coating. Hexagonal woven mesh and wire ties shall conform to ASTM A 641/A 641M specifications with Class 3 zinc coating.

251.04 Placed Riprap.

Add the following definition:

Placed riprap shall also be defined as “loose riprap”.

Subsection 251.07 is superseded with the following:

251.07 Wire-Enclosed Riprap.

Wire enclosed riprap shall consist of mats or baskets fabricated from wire mesh, filled with stone, connected together and anchored to the slope or channel.

A foundation bed shall be excavated in accordance with section 209, and in accordance with the plans or as directed by the COR/AOTR.

Embankment construction for wire enclosed riprap shall be in accordance with section 204.

Wire fabric shall be laid and rock shall be laid on the wire fabric in close contact to avoid excessive voids. The thickness and dimensions shall conform to the details shown on the plans.

The wire fabric shall be stretched over the top of the rock with the top and bottom of the wire fabric laced through the rock with galvanized wire ties to obtain a tight fitting mat. The wire fabric shall consist of woven fencing material having a Class 3 zinc coating in conformance with section 710.02.

All open spaces between the trench walls and the wire enclosed riprap mat shall be backfilled with the excavated material from the trench. This backfill material shall be thoroughly tamped to 95% in accordance with AASHTO T-99, method C.

The finished surfaces of the riprap shall be in reasonably close conformity with the lines and grades shown on the construction plans as adjusted in the field by the COR/AOTR.

Any unsuitable or unstable material encountered during foundation bed preparation (not attributable to the contractor's operations) shall be replaced as directed by the COR/AOTR. This work shall be paid for in accordance with section 109.02(m).

Subsection 251.08 is superseded with the following:

251.08 Acceptance.

See Table 251-1 for sampling and testing requirements.

Rock for riprap will be evaluated under Subsection 106.02 and 106.03.

Rock placement for riprap will be evaluated under Subsections 106.02 and 106.04.

Structure excavation and backfill will be evaluated under Section 209.

Geotextile will be evaluated under Section 207.

Material for grout will be evaluated under Subsections 106.02 and 106.03. Grout will be evaluated under Subsections 106.02 and 106.04. Grout placement will be evaluated under Subsection 106.02.

Subsection 251.09 is superseded with the following:

251.09 Measurement.

Measure the Section 251 items listed in the bid schedule according to Subsection 109.02 and the following as applicable.

All wire mesh, steel stakes, tie wire, and installation described in section 251.07 above shall be included in the unit price bid for Wire Enclosed Riprap.

Foundation bed excavation shall be considered incidental obligations of the Contractor except as otherwise defined under section 251.07.

Embankment construction shall be measured and paid for in accordance with section 204 and the appropriate bid items shown in the bid schedule.

Measure all types of riprap by the cubic meter in place.

Add the following new subsection:

251.10 Payment.

The accepted quantities will be paid at the contract unit price per unit of measurement for the Section 251 pay items listed in the bid schedule. Payment will be full compensation for the work prescribed in this Section. See Subsection 109.05.

Table 251-1
Sampling and Testing Requirements

Material or Product	Type of Acceptance (Subsection)	Characteristic	Test Methods Specifications	Sampling Frequency	Point of Sampling	Split Sample	Reporting Time
Riprap (705.02)	Measured and tested for conformance (106.04)	Apparent specific gravity & absorption	AASHTO T 85	1 per material type	Source of material	Yes, when requested	Before using in work
		Coarse durability index	AASHTO T 210	"	"	"	"
		Sodium sulfate soundness	AASHTO T 104	"	"	"	"
		LA abrasion	AASHTO T 96	"	"	"	"
		Gradation	AASHTO T 27 & T 11 or other methods	1 per material type	Source of material	"	Before using in work
		Gradation	AASHTO T27 & T11 or other methods	1 per 400m^3	Plan location(s)	Yes, when requested	Following work day after test
Grout	Measured and tested for conformance (106.04)	Making test specimens Compressive strength[2]	AASHTO T 22 & T 23	1 sample per installation[1]	Plan location(s)	Yes, when requested	2 work days after tests

1. Sample consists of two (2) test specimens.
2. The compressive strength shall be the average of two (2) test specimens.

SECTION 301--UNTREATED AGGREGATE CO/AOURSES

301.03 General.

Paragraph one is superseded with the following:

Seven (7) calendar days before the placement of any aggregate base material, the Contractor shall notify the COR/AOTR or Sub-COR/AOTR in writing advising the area(s) and location(s) where the base material will be placed. Immediately, prepare the final roadbed surface according to Section 204 or 303 as applicable. The COR/AOTR and/or Sub-COR/AOTR, QCM, and Contractor shall jointly check the final roadbed surface area(s) and location(s) for any defects. If defective areas are noted, correct all areas with moisture/density control. The above construction personnel shall recheck the entire final roadbed surface area(s). When approved and accepted by the government, the Contractor can place aggregate base material. The Contractor shall place aggregate base material **only** at government approved area(s) and location(s).

Paragraph two and three are deleted.

301.04 Mixing and Spreading.

Add the following:

The aggregate base material shall be placed on an approved, firm and stable roadbed in a continuous uniform layer or windrow. The layer or windrow shall be of such size that when spread and compacted the thickness of the finished layer shall conform to the nominal thickness shown on the plans or a thickness determined by the COR/AOTR or Sub-COR/AOTR.

Aggregate base shall be constructed on a dry, unfrozen surface where the air temperature is 4E C and rising (taking into account the wind chill factor) and the top 305mm of finished subgrade must be 4EC minimum in the shade. The COR/AOTR shall make the final determination as to whether the work can proceed.

When the weather conditions (just prior to aggregate base placement) is projected to be foggy, showers, rain, snow, or the surface temperature drops below 4E C such that the ground is freezing (i.e. appearance of frost), no aggregate base course materials shall be placed.

Where aggregate base course is placed on geotextile materials, in order to prevent damage to the geotextile materials, the Contractor shall not process the bottom 51mm (2-inches) of the lower lift.

301.06 Surface Tolerance.

The first paragraph is superseded with the following:

Grade finishing stakes are required during the placement process. Finish the final surface to within 10mm from staked line and grade elevations. The surface tolerance shall be checked by the string line method. Defective areas or surface deviations that do not meet the above tolerance shall be corrected. If spot dumping of base material is necessary to meet the staked line and grade elevation(s), this material shall be added to the existing base material by scarifying down 76mm

(3-inches), mix, blend, and process with moisture/density control (as required under subsection 301.05). Finish to the staked lines and grade elevation(s) and recheck for surface tolerance. This work shall be considered incidental obligations of the Contractor.

301.07 Maintenance.

Add the following:

This work shall be performed during construction and periods of suspended work as required under Subsection 107.06.

If the roadway with aggregate base course in place is used by traffic before the final surfacing is placed, it shall be maintained in a safe and adequate manner as directed by the COR/AOTR/Sub-COR/AOTR. Prior to the placement of the next base course layer, pavement layer or application of the prime coat, the aggregate base course in-place shall be checked (by QCM, COR/AOTR/Sub-COR/AOTR and Contractor) for defective areas. If defective areas are found, these areas shall be corrected to meet the requirements of subsections 301.05 and 301.06. This work shall be incidental obligations of the Contractor and no additional payment shall be made.

301.08 Acceptance.

The second paragraph is superseded with the following:

Aggregate gradation and surface course plasticity index shall be evaluated under Subsection 106.04 Measured or Tested Conformance. Other aggregate quality properties will be evaluated under Subsection 106.02 and 106.04.

Subparagraph **(a)** is superseded with the following:

(a) Aggregate gradation. The upper and lower specification limits are the values shown in Grading (D), Table 703-2 as modified in these supplemental specifications.

Materials, which fail to meet the aggregate gradation specification limits, shall be corrected by the Contractor by adding coarse and/or fine aggregate to bring the material into specification limits. The Contractor's Quality Control Testing Technician shall sample and test the corrected processed material. Repeat the corrective work until the aggregate base course gradation is within the upper and lower specification limits under Grading (D). Once the Contractor can show compliance with the contract requirements, then the material on the roadway, including any added aggregates shall be paid for at the full contract unit price. No separate payment for the added labor, overhead, traffic control, and equipment costs for adding coarse and/or fine aggregates shall be made but shall be an incidental obligation of the Contractor to bring the aggregate base course into contract aggregate gradation specification.

(b) Plasticity index. See table 301-1 for acceptance quality characteristics category.

301.09 Measurement.

Add the following:

When the bid schedule calls for the aggregate base course to be measured by the metric ton, only the natural moisture in the material will be included for payment. Should the Contractor add

water before weighing (prewet), then the weight of the added moisture shall be deducted by the COR/AOTR and QCM before payment is made.

No separate measurement or payment for the corrective work (i.e. additional labor, overhead, traffic control, and equipment costs) shall be made but shall be an incidental obligation of the Contractor to bring the aggregate base course into contract aggregate gradation specification. Once the material has been corrected to meet the specifications, then the material on the roadway shall be measured for payment at full contract price.

Any aggregate base material that is wasted, wasted along the shoulders, used for over-built roadway prism sections, material not used on the project and/or is not a part of the aggregate base course design roadway typical shall not be measured for payment. The COR/AOTR and QCM shall determine and use a method of measuring the waste; measure any aggregate base used on over-built roadway sections and make the appropriate adjustments in the quantities before payments are made.

301.10 Payment.

The first paragraph is superseded with the following:

The accepted quantities, measured as provided above, will be paid at the contract unit price bid of which price and payment will be full compensation for the work prescribed in this section. See Subsection 109.05.

Roadbed preparation/reconditioning will be measured and paid for as specified under Section 204, 212, and/or 303, and/or 408 as applicable and as specified in the design plans. If there is no pay item in the bid schedule for roadbed preparation/reconditioning, then this work shall be considered incidental to completion of the project and no additional payment will be made.

Table 301-1, Sampling and Testing is superseded with the following:

Table 301-1
Sampling and Testing Requirements

Material or Product	Type of Acceptance Subsection)	Characteristic	Test Methods Specifications	Sampling Frequency	Point of Sampling	Split Sample	Reporting Time
Aggregate source quality 703.05 (a) & (b) or 703.05 (a) & (c)	Measured and tested for conformance (106.04)	LA abrasion (coarse)	AASHTO T 96	1 per type & source of material	Source of material	Yes, when requested	Before using in work
		Sodium sulfate soundness loss (coarse & fine)	AASHTO T 104	"	"	"	"
		Durability index (coarse & fine)	AASHTO T 210	"	"	"	"
		Fractured faces	ASTM D 5821	1 per type & source of material	Source of material	Yes, when requested	Before using in work
Base course grading C,D & E or Subbase grading A & B or Surface course aggregate	Measured and tested for conformance (106.04)	Gradation	AASHTO T 27 & T 11	1 per 400t	From windrow or roadbed after processing	Yes	Before using in work
		Liquid limit	AASHTO T 89 AASHTO T 90	1 per 400t	"		Before using in work
		Plasticity index [1]	AASHTO T 180, method D [2]	1 per 400t	"		Before using in work
		Moisture-density (max. density)		1 per week	"		Before using in work
		Compaction	AASHTO T 310, direct transmission	1 per 400t	In-place [3]		Before placing next layer
		Fractured faces	ASTM D 5821	1 per 1000t	From windrow or roadbed after processing		Before using in work
		Final thickness	Appropriate test by Contractor	1 per 400t	From windrow or roadbed after processing		Before placing next layer

1. The plasticity index shall be tested on the surface course aggregates only.
2. Minimum of 5 points per proctor.
3. At least one compaction test for all COR/AOTR corrected areas and turnouts shall be required. These tests shall meet the requirements under Section 301.

SECTION 402. - HOT ASPHALT CO/AONCRETE PAVEMENT BY HVEEM OR MARSHALL MIX DESIGN METHOD

402.01 Description.

Add to the first paragraph:

This work shall include repairing and patching any potholes or irregularities in the existing surface as delineated and directed by the COR/AOTR. Remove and dispose of unsuitable material to a depth of 50mm; patch with hot asphalt concrete pavement.

The last paragraph is superseded with the following:

Antistrip additive shall be Type 3, Hydrated Lime as referenced in Subsection 702.08.

402.03 Composition of Mixture (Job-Mix Formula).

The first paragraph is superseded by the following:

Furnish mixtures of aggregate, asphalt, and antistrip additive (if required) that meet the applicable aggregate gradation in Table 703-4 and design parameters provided under Table 402-1, as amended below and is capable of being placed and compacted as specified.

(b) Submission.

The first paragraph is superseded by the following:

Submit written job-mix formula and three (3) copies of asphaltic concrete mix design in accordance with AASHTO T 245 - Resistance to Plastic Flow of Bituminous Mixtures Using Marshall Apparatus, compacted at 50 blows, for review and approval at least 28 calendar days before production. Include the location of all commercial mixing plants to be used and a separate job-mix formula, if applicable. Include a signed statement prepared by the testing laboratory that certifies the proposed job-mix formula meets the requirements of the contract and can be compacted in the field during production to meet contract requirements.

The percentage of asphalt binder, by weight, to be added to the aggregate shall be between 5 to 7% of the total weight of the asphaltic concrete mixture. The percentage of hydrated lime to be added to the aggregate shall be between 1-2% by dry weight of aggregate. The mix design shall include graphs which contain at least four (4) asphalt contents versus the air voids, voids in mineral aggregate (VMA), flow, Marshall stability, maximum theoretical unit weight, Marshall unit weight, and voids filled with asphalt. For each job-mix formula submit the following:

Table 402-1
Asphalt Concrete Mix Requirements

Marshall – AASHTO T 245	**CLASS B**
1. Stability, N (lbs.)	8896 (2000)
2. Flow, 0.25 mm (0.01 inch)	1.5 -3.8 (6-15)
3. Percent Air Voids[1]	3 - 5
4. Voids in Mineral Aggregate, % Minimum	See **Table 402-2**
5. Compaction, number of blows each end of test specimen	50
Root-Tunnicliff – ASTM D 4867	
1. Tensile Strength Ratio, % minimum	70
Dust-Asphalt Ratio[2]	0.6--1.3

[1] The percent of air voids are based on AASHTO T 166, AASHTO T 209, and AASHTO T 269. Maximum density will be based on AASHTO T 209. If the water absorption test value is greater than **2.0%,** the Rice density must be determined using the "dry-back" method.

[2] Dust-asphalt ratio is defined as the percent of material passing the 75 :m sieve divided by the percent of asphalt (Calculated by weight of mix).

402.03 (1) Aggregate and mineral filler.

Add the following:

(f) All worksheets for all the aggregate specific gravity data (individual and combined), coarse and fine durability, sand equivalent (AASHTO T-176) on the untreated composite sample, absorption, and asphalt absorption.

(g) Worksheet of Root-Tunnicliff tensile strength ratio test per ASTM D 4867.

(h) The percentage of mineral filler to be added into the mix based on the dry weight of aggregate.

(i) Material safety data sheets for the mineral filler.

402.03 (2) Asphalt binder.

Add the following under 401.03(b) (2):

(f) The specific gravity of the asphalt cement.

402.03 (c) Verification.

(1) Aggregate gradations.

Add the following under 401.03 (c)(1):

The Contractor's aggregate quality is verified if the CO/AO's results are above the minimum specification limits.

Add the following subparagraph:

(7) Tensile strength ratio (TSR). The Contractor's percent retained strength result is verified if the CO/AO's/AO's result is above the minimum specification value as shown in Table 402-1.

402.03 (d) Changes and re-submissions.

This subsection is superseded with the following:

If approved, the Government will issue **Job-Mix Formula No.1** (with an effective date) and a target value for the percent passing each sieve size for the aggregate blend, target value for the asphalt cement content, the mixing and compaction temperature ranges, and the asphalt concrete mix requirements as specified under Table 402-1.

Approval of the job mix formula, by the Government, does not relieve the Contractor of his obligation to furnish a quality mix that meets the specifications and other contract requirements. This includes the addition or lack thereof of antistrip additives or mineral filler as submitted in the Contractor's mix design.

If the job-mix formula and mix design is rejected or a material source is changed, submit a new mix design

and job-mix formula for acceptance. The CO/AO will review the new job-mix formula and/or mix design and may perform verification testing as specified under Subsection 402.03 (c).

Changes to an approved job-mix formula or target value(s) require approval before production. Up to 21 calendar days will be required to evaluate a change.

Approved changes in target value(s) or job-mix formula will result in issuance of a new **Job- Mix Formula Number** with an effective date. The maximum number of changes in target value(s) or job-mix formula is **three (3)**. Any requested changes above three (3) shall require submittal of a complete new mix design as described under 401.03 and Table 401-1 of the supplemental specifications and will be subject to verification testing as specified under 402.03 (c).

Add the following new subsection:

(f) Control of asphaltic concrete mixtures during construction.

The Contractor's hot asphaltic concrete pavement mixture placed each day shall be tested, evaluated and accepted in accordance with Subsection 402.17. The CO/AO will perform verification testing. If the Contractor's test results do not meet the requirements under Subsection 402.17 and/or fails to submit test results to the COR/AOTR on the first acceptance sample within one (1) day after the sample is taken, the Contractor shall suspend all work on this portion of the contract until a written corrective action plan is submitted for approval to the CO/AO and/or the test results are submitted to the COR/AOTR.

If the CO/AO's test results do not verify the Contractor's test results, the CO/AO's test results will be used for acceptance in accordance with Subsection 106.04 and Subsection 402.17. If the asphaltic concrete pavement mixture is rejected, the mixture shall be removed from the project site. Failure or refusal of the Contractor to remove the rejected control strip shall be grounds for the CO/AO to either withhold any and all progress payments under the contract and/or Default of contract.

The Contractor's QC laboratory shall determine the maximum theoretical density (AASHTO T-209), air voids, voids in mineral aggregate (VMA), flow, Marshall stability, and Marshall unit weight on the **second acceptance sample**. The sample shall be taken every other day within one (1) weeks production beginning with the first day of full production. "Dry back" test method on maximum theoretical density specimen shall be performed if the approved hot mix design included this test method. Test results shall be given to the COR/AOTR within one (1) day after the sample is taken.

The Contractor's QC laboratory shall determine the Root-Tunnicliff tensile strength ratio (TSR) test on the **second acceptance sample**. The sample shall be taken every other day within one (1) weeks production beginning with the first day of full production. Test results shall be given to the COR/AOTR within **three (3)** days after sampling.

402.04 Mixing Plant.

Add:

The requirements under Subsection 401.04 (b) (2) Stockpiling procedures is superseded with the following:

Aggregate shall be separated by size into at least three (3) separate stockpiles.

402.07 Weather Limitations.

The requirements under Subsection 401.07 are superseded with the following:

Place hot asphalt concrete pavement between **March 1 to December 1** of the calendar year **only**, unless the CO/AO approves the Contractor's written request to place hot mix before or after the above dates. The

Contractor must provide a written justification with his request. Approval by the Contracting Officer will be on a weekly basis. Place hot asphalt concrete pavement on a dry, unfrozen surface when the air temperature in the shade is above 5ºC (40ºF) and rising and the temperature of the road surface in the shade conforms to Table 401-2, as amended:

Table 401-2
Asphalt Concrete Mix Placement Temperature

Compacted Lift Thickness ≤ 50mm	
Road Surface Temperature, ºF (ºC)	Minimum Lay-Down Temperature[1] ºF (ºC)
< 50 (10)	[2]
50 (10)	295 (146)
60 (16)	285 (141)
70 (21)	280 (138)
80 (27)	270 (132)
≥ 90 (32)	265 (129)

[1] In no case shall the asphalt concrete mix be heated above the temperature specified in the approved mix design.

[2] **PAVING NOT ALLOWED.**

402.08 Asphalt Preparation.

The second paragraph under Subsection 401.08 is **deleted**.

402.09 Aggregate Preparation.

The requirements, under Subsection 401.09, are superseded with the following:

The first paragraph is superseded with the following:

When hydrated lime is used, it shall be added to and mixed with damp aggregates in a pugmill before entering the dryer drum. The combined cold feed aggregate shall contain a minimum of two (2) percent moisture above SSD at the time the lime is mixed with the aggregates. The pugmill shall be a twin shaft, have a minimum length of 2.4 m and the shaft paddles shall have a minimum diameter of 610 mm. The bottom of the pugmill shall conform to the configuration of the shaft. The hydrated lime shall be added to the aggregates such that loss of lime is minimal or non-existent. Placement of the lime on an open conveyor belt shall not be permitted. Placement of the lime on an enclosed conveyor belt that does not permit blowing or loss of the lime is acceptable.

The lime shall be weighed across a weigh belt or an approved alternative weighing system, with a weigh totalizing system before entry into the pugmill. The pugmill shall be located in the aggregate delivery system at a location where the mixed material can be readily inspected on a belt

before entry into the drum. The pugmill shall be capable of effective mixing in the full range of the asphaltic concrete production rates.

A positive signal system and a limit switch device shall be installed in the plant at the point of introduction of the lime. The positive signal system shall be placed between the metering device and the dryer drum and utilized during production whereby the mixing shall automatically be stopped if the lime is not being introduced into the mixture.

Regardless of the weighing system used, the lime metering system or device shall be provided with a means for continuous automatic recording and a log or printout shall be given to the COR/AOTR on a **daily** basis for each day's asphaltic concrete production.

402.12 Production Start Up Procedures.

The second paragraph under Subsection 401.12 (b) Control strip is superseded with the following:

On the first day of production, produce nine (9) truck loads of mix to construct a control strip, one-lane wide, and at the designated lift thickness. Construct the control strip on the project at an approved location.

Subparagraphs (1) and (2) in paragraph three are superseded with the following:

The control strip is accepted at a pay factor of 1.00 if all test results as outlined under **(1)**, **(2)** and **(3)** are within specification limits:

(1) Asphalt content and aggregate gradation. The Contractor's QC laboratory technician shall sample the 3rd, 5th and 7th truck load. These acceptance samples shall be tested and evaluated according to Subsection 402.17. The asphalt content upper and lower specification limits are the approved job- mix formula target value ± 0.4 percent. The aggregate gradation upper and lower specification limits are the approved job-mix formula target values plus or minus the allowable deviations shown in Table 703-4.

(2) Compaction. Take nuclear density readings behind each roller pass to determine the roller pattern necessary to achieve required density without damaging the mix. At a minimum of 10 locations within the control strip, take nuclear density readings, cut 5 core samples according to AASHTO T230, Method B. Test cores and evaluate the density test results according to Subsection 402.17. The density lower specification limit is **91%** of the maximum specific gravity (density). Furnish the COR/AOTR with the nuclear gauge readings and correlations of the readings to the core specific gravities.

(3) Marshall air voids, stability, flow, VMA, Root-Tunnicliff tensile strength ratio (TSR), sand equivalent, and Rice testing. Determine the specific gravity, stability, flow, air voids, VMA, maximum density (Rice), TSR (includes the Freeze/Thaw cycle), and dust/asphalt ratio on an acceptance sample from the control strip. The sand equivalent shall be determined in accordance with Table 402-1. The Marshall air voids, stability, flow, VMA, Root-Tunnicliff tensile strength ratio, sand equivalent test results will be evaluated according to Subsection 402.17.

The fourth paragraph of 401.12(b) is superseded with the following:

If the control strip does not meet the above requirements under **(1)**, **(2)** and **(3)**; the control strip will be rejected **by the COR/AOTR in accordance with Subsection 402.17**. **If rejected, the rejected control strip shall be removed immediately off the project site.** Failure or refusal of the Contractor to remove the rejected control strip shall be grounds for the CO/AO to either withhold any and all progress payments under the contract and/or Default of contract. Once the

control strip is removed the Contractor can construct another control strip in the same location as the previous control strip. No other control strip can be constructed until the rejected control strip is completely removed off the project site. An accepted control strip will remain in place and will be accepted and measured as a part of the completed pavement. Tests used for accepted control strip will not be included in the evaluation for payment according to Subsection 106.05. The NRDOT Manager will make a recommendation to the COR/AOTR for acceptance/non-acceptance of a control strip based on test data. When a control strip is accepted, full production can begin.

402.13 Placing and Finishing.

Add the following under Subsection 401.13:

(a) Segregation. The bituminous mixture shall be transported and placed on the roadway without

segregation. All segregated areas behind the paver shall be removed immediately upon discovery and replaced with specification material. If more than 4.6 square meter (50 square feet) of segregated pavement is ordered removed and replaced in any one continuous 152 meter (500 linear feet) of paver width, laydown operations shall be discontinued until the source of segregation has been found and corrected.

The COR/AOTR and QCM will determine the extent of segregated areas. The bituminous mixture shall be determined to be segregated when the percent passing the 4.75mm (No.4) sieve varies from the percent specified in the JMF by more than 9%. Segregated areas shall be corrected at the Contractor's own expense (this includes the QC Testing Technician sampling and testing the segregated area(s) for contract compliance).

402.14 Compacting.

The second sentence of the second paragraph under Subsection 401.14 is superseded with the following:

Compact to a pavement specific gravity (density) that is no less than 91.0% of the maximum specific gravity (density) determined according to AASHTO T 209.

402.16 Pavement Smoothness/Roughness.

(b) International roughness index (IRI).

The first paragraph is superseded with the following:

For Type III or Type IV pavement roughness, furnish an inertial profiler conforming to AASHTO PP 50 and validated according to AASHTO PP 51. At least 21 days before use, submit results showing the inertial profiler conforms to AASHTO PP 51. Furnish personnel to operate the inertial profiler according to AASHTO PP 52. The COR/AOTR\Sub-AOTR will observe its operation. Measure the profile in the middle portion of each lane. Submit raw data files to the NRDOT Manager.

(d) Defective area correction.

The first paragraph is superseded with the following:

The Contractor’s profiler subcontractor shall locate all the corrective areas using the data from the Contractor’s profilograph. Correct defective areas from (a) (b) and (c) above. Corrective action shall consist of one or more of the following as determined by the COR/AOTR and Government engineers. **The corrective work shall be at no cost to the Government**:

1. Remove and replace the surface course.

2. Place an asphaltic concrete overlay course at least 2 times as thick as the maximum sized aggregate in the asphaltic mixture.

3. Grind the pavement surface with equipment that is diamond-tipped saw blades on a horizontal grinding head which cuts or grinds asphalt concrete leaving a corduroy surface behind. The type of equipment to be used shall be submitted in writing to the CO/AO for approval. The thickness of the remaining pavement shall not be less than 9.5 mm less than the lift thickness. Cores may be required to verify the remaining thickness at no cost to the Government. The final pavement surface shall be uniform in appearance to the surrounding pavement. A fog seal or micro slurry seal may be required to protect the pavement surface; the COR/AOTR and Government Engineers will make final determination.

Upon completion of corrective work, re-measure corrected areas according to (b) above. The roughness value obtained will replace the original. Submit the raw data to the NRDOT Manager.

402.17 Acceptance.

The third paragraph is superseded with the following:

Asphalt binder will be evaluated and accepted under Subsections 106.03(a), 106.04 (as amended) and 702.09 (as amended).

(b) Aggregate gradation. Add the following:

When hydrated lime is used in the approved job-mix formula, the final aggregate gradation shall include the lime. Cold-feed samples shall be taken at the hot plant for aggregate gradation. AASHTO T 27 is modified for cold-feed aggregate samples that contain lime. The cold-feed sample with lime shall not be oven dried. Immediately, the sample shall be split into two or three smaller test samples. Determine the initial wet mass of a split sample. Using a separate split sample, determine the moisture content. The dry mass (before sieve analysis testing) shall be determined by the following equation:

$$\text{Dry Mass} = \frac{\text{Wet Mass}}{[1 + (\%\ \text{Moisture})\ ] \times 100}$$

(c) Density. This subparagraph is superseded with the following:

The lower specification limit is **91%** of the maximum specific gravity (density) determined according to AASHTO T 166 and AASHTO T 209 as part of the job-mix formula evaluation specified in Subsection 402.03.

The Government may elect to accept the pavement density by the use of a properly calibrated nuclear gauge in accordance with ASTM D2950. If this method is chosen by the Government, the Contractor shall be advised.

Using the cores, determine and report the pavement thickness in accordance with ASTM D 3549. Label and deliver the cores to the COR/AOTR after testing.

Add the following new subparagraph to Subsection 402.17:

(e) Root-Tunnicliff tensile strength ratio test. The Root-Tunnicliff tensile strength ratio test will be evaluated under Subsection 106.04. See Table 402-3, of the contract supplemental specifications, for minimum sampling and testing requirements. The lower acceptance limit is **70%**.

(f) VMA. The lower specification limit is the value shown in Table 402-2.

(g) Marshall air voids, stability, and flow. The upper and lower specification limits for the air voids and flow are the values shown in Table 402-1. The lower specification limit for the stability is the value shown in Table 402-1.

(h) Sand equivalent. The lower specification limit is **55%**.

Add the following to Subsection 401.17:

The hot asphaltic concrete pavement will not be accepted under any acceptance provisions of Subsection 106.02 to 106.05 if <u>any</u> of the following conditions exist:

1. The asphalt cement pay factor(s) are in the "No Pay or Remove Category" or;

2. The Root-Tunnicliff tensile strength ratio test does not meet the minimum acceptance limit of **70%** and the Marshall air voids, VMA, flow and stability do not meet the upper and/or lower specification limits as shown in Table 402-1 or;

3. Any of the pay factors for the asphalt content, gradation, density and pavement smoothness are less than 0.75; the materials shall be removed and rejected. Any asphalt binder, antistrip additive, and/or

mineral filler in asphaltic concrete pavement, that has been rejected, shall also be subject to rejection regardless of whether the material meets specification or not.

4. Control strip(s) and/or any hot asphaltic concrete pavement placed that is rejected shall be removed immediately off the project site. Any asphalt cement, antistrip additive and/or mineral filler in the asphaltic concrete pavement mixture shall also be rejected regardless of whether the material meets specification or not.

402.18 Measurement.

Add the following:

When the bid schedule does not contain a bid item for asphalt binder, antistrip additive, and/or mineral filler, then these items of work shall be considered incidental to item 40201.

Asphalt binder will be measured by the metric ton. Measurement shall be based on the Contractor's daily tank stab volume measurements at 15ºC (60ºF) or correct the volume used to 15ºC (60ºF) using recognized standard correction factors. Only asphalt binder used and accepted in the hot asphaltic concrete pavement mixture shall be measured for payment.

Hot asphaltic concrete pavement mixture used for repairing and patching any potholes or irregularities on the existing surface shall not be measured for payment but shall be considered a subsidiary obligation of the Contractor under this Section.

402.19 Payment.

Add the following:

The accepted quantities of asphalt binder, measured as provided above, will be paid at the contract unit bid price.

Table 402-3
Sampling and Testing Requirements

Material or Product	Type of Acceptance (Subsection)	Characteristic	Category	Test Methods Specifications	Sampling Frequency	Point of Sampling	Split Sample	Reporting Time
Aggregate source quality	Measured and tested for conformance (106.04)	LA abrasion (coarse)	—	AASHTO T 96	1 per type & source of material	Source of Material	Yes	Before Producing
		Sodium sulfate soundness loss (coarse & fine)	—	AASHTO T 104	"	"	"	"
		Sand equivalent	—	AASHTO T 176, alternate method no. 2, reference method	"	"	"	"
Asphalt concrete (mix design)	Measured and tested for conformance (106.04)	Gradation	—	AASHTO T 27 & T 11	1 per submitted mix design	Stockpiles	Yes	28 days before producing
		Voids	—	AASHTO T 209	"	"	"	"
		TSR	—	ASTM D 48867	"	"	"	"
Aggregates (production)	Measured and tested for conformance (106.04)	Gradation	—	AASHTO T 27 & T 11	1 per 6 hours of production but not less than 2 per day	Flowing aggregate stream (bin or belt discharge) or off of conveyor belt	Yes, when requested	End of shift
		Sand equivalent	—	AASHTO T 176, alternate method no. 2, reference method,	1 per type & source of material	"	"	"
		Fractured faces	—	ASTM 5821	"	"	"	"
		Sample for job-mix formula verification	—	Subsection 401.03	1 per aggregate stockpile	"	—	21 days before approval of job-mix formula

Table 402-3 (continued)
Sampling and Testing Requirements

Material or Product	Type of Acceptance (Subsection)	Characteristic	Category	Test Methods Specifications	Sampling Frequency	Point of Sampling	Split Sample	Reporting Time
Asphalt binder	Measured and tested for conformance (106.04)	Quality	—	Subsection 702.01	1 per submitted source & mix design First 4 loads; every 25th load thereafter	In line between tank & mixing plant	2 – 1-L samples provided to the government	—
Asphalt concrete mixture (all)	Measured and tested for conformance (106.04) & Section 105	Mix temperature	—	—	First load & every other load thereafter	Hauling vehicle before dumping or windrow before picking up	—	Upon completing test
Hot asphalt concrete pavement (control strip)	Statistical (106.05)	Gradation		AASHTO T 11, & T 27	3 minimum	Cold-feed belt at Hot Plant	Yes	4 hours
		TSR		ASTM D4867	Subsection 402.03 (f)	Ditto	---	Upon completion
		Marshall properties		AASHTO T 245	Subsection 402.03 (f)	Ditto	---	Upon completion
		4.75 mm	I					
		2.36 mm	I					
		300 µm	I					
		75 µm	I					
		Other specified sieves	II					
		Asphalt content	I	AASHTO T 287	"	"	"	"

Table 402-3 (continued)
Sampling and Testing Requirements

Material or Product	Type of Acceptance (Subsection)	Characteristic	Category	Test Methods Specifications	Sampling Frequency	Point of Sampling	Split Sample	Reporting Time
Hot asphalt concrete pavement (control strip)	Statistical (106.05)	Core density[1]	I	AASHTO T 166 & T 209	At least 5 samples per control strip	In-place	Cores to COR/AOTR after determining specific gravity & compaction	—
Hot asphalt concrete pavement (production)	Statistical (106.05)	Gradation		AASHTO T 287, T 11, & T 27	1 per 700 t	Cold-feed belt at Hot Plant	Yes	4 hours
		TSR		ASTM D 4867	Subsection 402.03 (f)	Ditto	---	Upon
		Marshall		AASHTO T 245	Subsection 402.03 (f)	Ditto	---	completion
		properties						
		4.75 mm	I	"	"	"	"	"
		2.36 mm	I					
		300 µm	I	"	"	"	"	"
		75 µm	I					
		Other specified sieves	II	"	"	"	"	"
		Asphalt content	I		"	"	"	
		Core density[1]	I	AASHTO T 166 & T 209	"	In-place	Cores to COR/AOTR after determining specific gravity	24 hours
Hot asphalt concrete mixture (final surface)	Statistical (106.05)	Type I & II smoothness	I	FLH T 504	See Subsection 401.16 & 402.16	See Subsection 401.16 & 402.16	—	14 days after final paving

Table 402-3 (continued)
Sampling and Testing Requirements

Material or Product	Type of Acceptance (Subsection)	Characteristic	Category	Test Methods Specifications	Sampling Frequency	Point of Sampling	Split Sample	Reporting Time
Hot asphalt concrete pavement (final surface)	Measured and tested for conformance (106.04)	Type III & IV Roughness	—	AASHTO PP 50, PP 51, & PP 52	See Subsection 401.16	See Subsection 401.16	—	14 days after final paving

(1) Cut core sample from the compacted pavement according to AASHTO T 230, method B. Fill and compact the sample holes with asphalt concrete mixture. Cores shall be 102 millimeters in diameter. Perform specific gravity and thickness tests on cores and deliver to AOTR/Sub-AOTR after testing is completed. Label cores and protect from damage due to handling or alteration due to temperature during storage or transfer.

SECTION 411 - ASPHALT PRIME CO/AOAT

411.01 Description.

Add:

The Contractor shall allow themselves enough time to complete the prime coat and sand blotting work (if needed) **before the end of the normal work day and/or 40 hour work week** so that local and public traffic will travel and use the primed section of roadway without any delay and damage to the primed surface. No prime coat work shall be allowed after 1:00 p.m.

411.03 Equipment.

This subsection is superseded with the following:

(a) Asphalt Distributor. Furnish an asphalt distributor as follows:

(1) Capable of heating asphalt evenly.
(2) Adjustable full circulating spray bar up to 4.6 m (15 ft) width. Bar extensions shall be full circulating. Test spray bar at various heights to establish proper rate of application. The spray bar shall maintain the set height within 20 mm (13/16 in) during each spray run.
(3) Apply uniform unbroken spread of asphalt and positive acting control values that quickly open and close in one operation. Uniformly apply asphalt over the full width within 0.08 L/m² (0.02gal/yd²) of the target spread rate. The distributor shall be equipped with hand hose and nozzle attachment to be used for inaccessible spotting areas.
(4) Thermometer for measuring the asphalt temperature in the tank.
(5) Bitumeter that registers rate of travel in feet per minute, trip and total distance in feet.
(6) Pump for circulating the asphalt material in the spray bar, tank and for pumping the material through the spray bar or hand spray.
(7) Pressure gage, pump, calibrated tachometer or other approved device for controlling the application rate of asphalt material. Furnish a certification of the calibrated tachometer to the COR/AOTR. The certification must be current and shall not be more than (1) year old from the date and month when the Contractor plans to use the asphalt distributor.
(8) Calibrated tank with gage or other approved means of accurately determining the quantity of asphalt material in the tank. Furnish a certification and/or properly calibrated chart of the tank to the COR/AOTR. The certification must be current and shall not be more than (1) year old from the date and month when the Contractor plans to use the asphalt distributor.

(9) Maintenance of distributor and booster tanks such that no dripping of asphalt material shall occur from any part of the equipment.

The COR/AOTR and/or QCM shall order the use of any distributor truck discontinued that does not comply with the above requirements or that fails to produce a satisfactory application of asphalt material as specified herein.

411.04 Surface Preparation.

This subsection is superseded with the following:

Seven (7) calendar days before the placement of the prime coat, the Contractor shall notify the COR/AOTR (in writing) advising the area(s) and location(s) where the prime coat will be placed. Immediately, prepare the final surface to be primed according to Subsection 301.04, 301.05, 301.06 and 301.07 and **Table 301-1**. The COR/AOTR, QCM and Contractor's Superintendent shall jointly check the final surface area(s) before the placement of the prime coat. If defective areas are noted, correct all areas. The above same project personnel shall recheck the entire final surface area(s). When approved and accepted by the COR/AOTR, the Contractor can place the prime coat. The Contractor shall place prime coat **only** at the COR/AOTR approved area(s) and location(s).

411.05 Weather Limitations.

This subsection is superseded with the following:

The prime coat shall be applied only when the surface to be treated is not frozen, dry, or slightly damp, when the atmospheric temperature in the shade is 10°C (50°F) or more for a constant period of 30 minutes; when the weather is not foggy or rainy; when no sandstorms are present; and when the wind velocity is less than 24kph (15mph) as determined by the COR/AOTR. When the atmospheric and surface temperature is below 10°C (50°F) for a constant period of 30 minutes, no prime coat work shall be performed.

411.06 Asphalt Application.

The first and second paragraphs are superseded with the following:

Before the prime coat is applied, the Contractor shall apply water to the surface to aid the penetration of the prime coat. Apply prime coat according to Subsection 409 at a rate of 0.45 (0.10gal/yd^2) to 2.25 (0.30gal/yd^2) liters per square meter for optimum penetration. The QCM and COR/AOTR shall jointly determine the optimum application rate based upon test section(s). Unless otherwise shown on the design plans or directed by the COR/AOTR, the prime coat shall be applied to the surface of the aggregate base course from hinge point to hinge point of roadway including all turnouts.

The Contractor shall maintain one-way traffic on the un-primed portion of the roadway with flaggers, and when necessary with pilot car(s) including driver. The traffic shall be allowed through the construction zone at a speed not to exceed 32kph (20mph).

The Contractor shall be required to furnish and maintain a traffic control plan including Type II barricades, warning signs, and any other traffic control devices (as required by the MUTCD manual, latest edition) for both daytime and nighttime one-way traffic. The cost for the traffic control shall be included in the unit price bid for Item 63501.

The applied prime coat shall be allowed time to penetrate (to a minimum time period determined jointly by the COR/AOTR and QCM); which includes locations impossible to detour (i.e. turnouts, cross roads with no alternate detour, etc.). No traffic shall be permitted on the primed surface and no blotter material shall be applied during the initial penetration cure period. Care shall be taken to prevent the accumulation of dust or soil on the freshly applied prime coat.

After the initial cure period, traffic may be allowed (as determined jointly by the COR/AOTR and QCM) to be routed over the primed portion of roadway provided a blotter material is spread uniformly across the surface at a rate of 2.7kg/m^2 (5 lb/yd^2) to cover any unabsorbed or excess bitumen so as to prevent pickup by vehicles, or to minimize damage by rain before complete penetration. The blotter material shall be spread with a mechanical spreader if hand methods cannot achieve a uniform distribution of blotter material as directed by the COR/AOTR. Blotter material shall be spread in such a manner that no truck wheel(s) shall travel on wet, unabsorbed or excess bitumen.

At locations that are impossible to detour, sufficient time shall be allowed for the prime coat to penetrate and cure. The determination of "*sufficient time*" shall be jointly determined by the QCM and COR/AOTR. Blotter material shall only be permitted and applied **after** the QCM and COR/AOTR have jointly determined the "*sufficient time*" for the initial cure period.

411.07 Acceptance.

The fourth paragraph is superseded with the following:

Surface preparation shall be performed and evaluated under Section 301.

411.08 Measurement.

This subsection is superseded with the following:

Measure the prime coat asphalt by the metric ton or by the liter.

When certified project weigh scales are available, each distributor truckload shall be weighed across the project scales before and after each load application(s). For payment purposes, a weight ticket shall be made for each distributor truck load.

When certified project weigh scales are not available, measurement of prime coat shall be by the liter as required under **Subsection 109.02 Measurement Terms and Definitions (h) Liter (L), FP-2003** and converted to metric tons using appropriate conversion factors and/or certified weight ticket (s) from the refinery.

Regardless of which measurement is used above, the QCM shall determine daily quantity used, wasted, and/or used elsewhere-including application rates, which shall be part of the project records. Wasted quantities and those quantities used elsewhere shall not be measured for payment.

No measurement for traffic control (which includes pilot car(s) with driver) shall be made but shall be included in the contract unit price for contract Item 63501. Flaggers will be paid for under a separate bid item shown in the bid schedule.

No measurement for blotter material, equipment, labor and incidentals shall be made but shall be considered incidental to contract Item 41101.

SECTION 601 - MINOR CONCRETE STRUCTURES

601.03 Concrete Composition.

Subparagraph (g) is superseded with the following:

(g) Target values for concrete air content. Include the proposed range of air content for concrete to be incorporated into the work. Describe the methods by which air content will be monitored and controlled. Provide acceptable documentation that the slump and compressive strength of the concrete are within specified limits throughout the full range of proposed air content.

Add:

(j) Unit weight of concrete.

The compressive strength in table 601-1 is superseded with the following:

Minimum 28-day compressive strength, Mpa …… 20.7

601.07 Acceptance.

The third and last paragraphs are superseded with the following:

Portland cement concrete shall be evaluated for acceptance based on the concrete mixture's slump, air content, unit mass, and temperature per subsection 106.04.

Concrete compressive strength shall be evaluated under Subsection 106.05 for 25 cubic meters or more concrete placed and subsection 106.04 for less than 25 cubic meters of concrete placed. The lower specification limit is the minimum required compressive strength at 28 days specified in the contract.

Construction (including batching, placing, finishing, and curing concrete) will be evaluated under Subsections 106.02 and 106.04.

601.08 Measurement.

Add:

Reinforcing steel will not be measured for payment but shall be considered incidental to the work described in this section.

Table 601-2 is superseded with the following:

Table 601-2
Sampling and Testing Requirements

Material or Product	Property or Characteristic	Category	Test Methods or Specifications	Frequency	Sampling Point
Concrete	Slump	–	AASHTO T 119	1 per load [2]	Discharge stream at point of placement [1]
	Air content	–	AASHTO T 152 or AASHTO T 196	1 per load [2]	Discharge stream at point of placement [1]
	Unit weight	–	AASHTO T 121	1 per load [2]	Discharge stream at point of placement [1]
	Temperature	–	Thermometer	First load	Discharge stream at point of placement [1]
	Making test specimens Compressive strength [4]	II	AASHTO T 23 AASHTO T 22	1 set per 25 m^3 but not less than 1 set each day [3]	Discharge stream at point of placement [1]

(1) Sample according to AASHTO T 141 except composite samples is not required.

(2) See Subsection 552.09(b) (3).

(3) Cast at least 4 compressive strength test cylinders and carefully transport the cylinders to the job site curing facility.

(4) A single compressive strength test result is the average result from 2 cylinders cast from the same load and tested at 28 days.

SECTION 602 - CULVERTS AND DRAINS

602.01 Description:

This section is superseded with the following:

This work consists of constructing culverts, drains, and cast-in-placed concrete box culverts.

602.02 Material:

Add the following:

Concrete for cast-in-place box culverts 552
Corrugated Steel (metal) Pipe culverts.....707.02

602.03 General:

Add the following:

Aluminum coated pipe shall meet the requirements of AASHTO M 274 Type II. All Aluminum structural plate pipe shall meet the requirements of AASHTO M 219M.

602.05 Add the following:

When cutting of pipe is necessary, either in the field or at the fabrication plant, the cut sections shall be cleaned and re-galvanized at the fabrication plant or treated with a manufacturer approved metallic paint coating in the field. The Contractor shall provide all materials certifications for review and approval prior to use of field paint coating of pipe.

602.08 Acceptance:

The first paragraph is superseded with the following:

Material for culverts, drains, and cast-in-place concrete box culverts furnished will be evaluated under Subsections 106.02 and 106.03.

The second paragraph is superseded with the following:

Installation for culverts, drains, and cast-in-place concrete box culverts will be evaluated under Subsections 106.02 and 106.04.

602.09 Measurement

Add the following:

Wing walls for the cast-in-place concrete box culverts will not be measured for payment but will be considered a subsidiary obligation of the Contractor covered under the work for this section.

SECTION 607 - CLEANING, RECONDITIONING AND REPAIRING EXISTING DRAINAGE STRUCTURES

607.06 **Reconditioning Drainage Structures:**

Add the following:

When called for in the design plans, the Contractor shall remove sections of existing multi-plate culvert, in a neat manner such that any new extensions will fit with clean straight lines. Dispose of all removed sections to an approved dumpsite off the project limits.

607.07 **Acceptance:**

Add the following:

The Contractor shall not be paid for removed, cleaned and stockpiled culverts that were damaged, during removal, in a negligent manner. It is the Contractor's responsibility to show that due care was taken during the removal, cleaning, and stockpiling of existing culverts which shall include an inspection, with the COR/AOTR, prior to removal of culverts so that both the COR/AOTR and Contractor can agree in writing on what actual culverts can be removed without damage. Those culverts that cannot be removed without damage will be extracted in the most cost effective means possible, as determined by the Contractor, and a price reduction for item 60701 shall be submitted and negotiated through the CO/AO.

SECTION 617. - GUARDRAIL

617.05 Terminal Sections.

Add the following:

Use ET-Plus or equivalent breakaway terminals only for guardrail installations.

617.10 Measurement.

The second paragraph is superseded with the following:

Guardrail for roadway shoulders (including asphaltic curbing where applicable) shall be measured by the linear meter beginning at the centerline of the first terminal connector post to the last terminal connector post of the guard railing at the opposite end complete in-place and accepted including the breakaway terminal section assembly, ET-2000 Plus or equivalent, SGR04b, Type PDE02.

Add the following:

Approach guardrail for bridges (including asphaltic curbing where applicable) shall be measured by the linear meter, from the centerline of the first post of the breakaway terminal section to the beginning of the bridge railing complete in-place and accepted, including the breakaway terminal section assembly, Rubrail and Rubrail connection hardware and all W-Beam connection hardware to the concrete barrier, unless otherwise noted on the contract plans or bid schedule.

SECTION 619 - FENCES, GATES, AND CATTLE GUARDS

619.03 Fences and Gates:

Add the following:

Remove and replace existing fence at locations specified on the design plans and/or as designated by the COR/AOTR and replace with new fence material. Salvage fence material, as determined by the COR/AOTR, shall be cleaned (including the removal of any concrete from posts) and stockpile/deliver to a storage site as called for in the design plans unless otherwise directed by the COR/AOTR.

When the design plans call for cutting of an existing fence, the Contractor shall install end posts, as per the fencing details, at ends of existing fence, which are to remain unless there are existing end posts, in-place, that can retain the wire tension as directed by the COR/AOTR. These end posts are to be installed and wire securely attached, prior to cutting the existing fence, regardless of whether or not the fence will be reinstalled or not. This will prevent lose in tension of the remaining fence.

At location of drainage structures greater than 1219mm in width and height, the right-of-way fence shall tapper in at a 45 ^{o} angle from the Right-of-way line and run over the top of the drainage structure with wing bracing unless specific design details show otherwise. The fence over the top of the drainage structure must be set outside the clear recovery zone and in a fill depth sufficient to set the posts to the required depth.

619.04 Grounding Fences.

Add the following:

Grounding of fence line at all overhead power lines crossings shall be done only after the Contractor has notified the utility owner at least 10 days in advance of work.

Paragraph two is superseded with the following:

Where electric lines run parallel or nearly parallel and within 6 meters of the fence line, ground the fence at each end or gate post or at intervals not to exceed 250 meters.

619.05 Remove and Reset Fence.

Add the following:

The location and length of fencing to be removed and/or reset shall be as called for in the design plans. Otherwise the COR/AOTR will determine the location and lengths during construction where applicable. The Contractor shall supply new materials to replace removed and un-reusable existing fencing and/or posts as required to reattach fence line to its new or existing position under section 109.02(m).

619.07 Cattle Guards.

(d) Painting

Add the following to this subparagraph:

The top coat of paint for all cattle guards shall be Highway Safety Yellow or equivalent, as approved by the COR/AOTR and NRDOT Division Manager.

619.09 Acceptance.

Add the following:

Temporary fence construction for livestock control shall be considered incidental to completion of the project and no separate payment shall be made.

619.10 Measurement.

Add the following:

When the bid schedule does not provide a bid item for temporary fence and/or the work described in this section, then the work shall be considered incidental to completion of the project and no measurement shall be made.

Installation of ground wires under 619.04 shall be included in the unit price bid for the fencing items shown in the bid schedule.

SECTION 625 -TURF ESTABLISHMENT

625.02 Material.

Add the following:

The seed shall be delivered to the project site in standard, sealed, undamaged containers. Each container shall be labeled in accordance with the U.S. Department of Agriculture rules and regulations under the Federal Seed Act. Labels shall indicate the variety or strain of seed, the percentage of germination, purity and weed content, and the date of analysis which shall not be more than nine (9) months prior to the delivery date.

Seed shall consist of the type shown in section 625.07 below. Application rates of seed as specified are for Pure Live Seed (PLS). PLS is determined by multiplying the sum of the germination and hard or dormant seed by the purity.

Weed content shall not exceed 0.5%.

625.03 Turf Establishment Season.

Add the following:

Seeding and mulching shall be performed immediately following final slope grading to the fullest extent possible. If seeding cannot be performed at final grading, then refer to section 157.04, subparagraph (H.2) for further requirements. In no case shall permanent non-dormant seeding and mulching be performed during the months of November 15 through March 15. Dormant seeding may take place during November 1st to December 15th.

625.04 Preparing Seedbed.

The second sentence of the first paragraph is superseded with the following:

Remove all weeds, sticks, high stone concentration areas with stones of 75mm in size or larger, and other debris detrimental to application, growth, or maintenance of the turf. If there is a substantial amount of rock/stone larger than 75mm in size that requires removal prior to seeding, then this additional work shall be compensable in accordance with section 109.02(m).

Add the following:

Seedbed preparation shall be accomplished with a disc harrow, chiseling tool or with other equipment, which will provide an even mixture of fertilizer into the soil.

Tillage will not be required on slopes of 2:1 or steeper. However, such slopes shall be fertilized, seeded and mulched as required. Tillage operation shall be performed so as to produce a soil surface that is rough, firm and free of clods.

Tillage shall be performed across the slope when practical. No work shall be done when the moisture content of the soil is unfavorable.

In areas, which, in the opinion of the COR/AOTR, are too rocky to till without drastically disturbing the completed roadway sections, the COR/AOTR will approve a reduction of tillage accordingly.

625.05 Watering.

This section is superseded with the following:

Watering is not required for the seeding on this project.

625.06 Fertilizing.

Add the following:

All areas to be seeded shall have ammonium phosphate, at a rate of 56 kg per Ha, uniformly applied to the surfaces to be seeded and tilled into a minimum of 76mm of the surface.

625.07 Seeding.

Add the following:

Seeding shall be accomplished by the Dry Method.

After the tillage is completed and accepted by the COR/AOTR, seed shall be planted by drill, except that on slopes too steep or rocky, seed may be broadcast provided that it is covered by dragging, hand raking or other approved methods. The type of seed and pure live seed rate is as follows:

Species	Cultivar	Kg PLS per Hectares
Alkali Sacaton	Native	2.25
Galleta	Viva	2.25
Indian Rice Grass	Paloma	2.25
Western Wheatgrass	Arriba	3.37
Created Wheatgrass	Ephraim	3.37
Scarlot Globemallow		0.56
	Total	14.05kg/Ha

Seed shall be planted approximately 6mm deep, with a maximum depth of 13mm. The distance between the drilled furrows shall not be more than 203mm. If the furrow openers on the drill exceed 203 mm, the area shall be drilled twice. Seeding shall be done with grass seeding equipment with double disc openers, depth bands, packer wheels or drag chains, rate control attachments, seed boxes with agitators and separate boxes for small seed.

Seed of different sizes shall be sowed from at least two separate boxes adjusted or set to provide the seeding rate specified above.

625.08 Mulching:

The first sentence is superseded with the following:

Apply straw mulch at a rate of 4500kg/Ha after seeding by the following methods:

625.11 Method of Measurement.

The first sentence is superseded with the following:

Measure the seeding by the hectare, on the ground surface, or by the slurry. Fertilizer and mulching shall not be measured for payment but shall be considered a subsidiary obligation of the Contractor covered under the work for this section.

Bid Item	Description	Units
62510-1000	Seeding, dry method	Hectare

rev:03-29-09

SECTION 633. - PERMANENT TRAFFIC CONTROL

633.01 Description.

The second paragraph is superseded with the following:

All permanent traffic control signs shall be fabricated out of aluminum only.

633.03 General.

Add the following:

Any existing signs which require removal (prior to the installation of the permanent signs) due to construction activity shall be temporarily reset as directed by the COR/AOTR. The Contractor shall notify the COR/AOTR three (3) working days prior to sign removal. This work shall be incidental to the construction bid item to which the sign removal was required.

633. 06 Delineators and Object Markers.

Add the following:

Delineator posts and all Type II object markers shall be flexible type fabricated out of reinforced fiber glass, and able to withstand repeated vehicular impact and provide resistance to ultraviolet light. The posts shall be as shown on the design plans. Type II object markers and signs shall be fabricated in accordance with the manufacturers specifications.

Type III object markers shall be mounted on 2.98kg/m steel posts with the marker fabricated out of aluminum.

633.09 Measurement.

Add the following:

The Type 1a & 1b delineators, Type II, and Type III object markers and posts shall be measured as a sign system, respectively.

The milepost markers shall be measured as a sign system.

Section 634.- PERMANENT PAVEMENT MARKINGS

634.01 Description.

Add the following:

The Contractor shall provide temporary traffic control in accordance with Section 635.- Temporary Traffic Control and the approved traffic control plan.

634.03 General.

Add the following:

Permanent pavement markings **shall begin no earlier than 5 days and no later than (2) weeks <u>after completion</u>** of the asphalt pavement, fog seal, and/or chipseal work unless otherwise agreed to by the COR/AOTR in writing. If the Contractor fails to comply with the above, the CO/AO will withhold all pending and future progress payments under this contract until the Contractor complies with this requirement.

The third paragraph is superseded with the following:

At least **7 days** before applying pavement markings, furnish a written copy of the markings manufacturer's recommendations for use. A field demonstration shall be conducted **before** the Contractor is authorized to place permanent pavement markings to verify the adequacy of the manufacturer's recommendations, equipment compliance, application rates of the traffic markings and beads. The field demonstration shall be 30 meter for the white traffic markings with glass beads and 60 meter for the yellow markings with glass beads meeting the contract requirements under this section. Cease demonstration after placement of pavement markings until the demonstration is evaluated and accepted.

The field demonstration is accepted if the manufacturer's recommendations are verified and the application rates of the traffic markings and glass beads are within the contract specification limits.

Repeat the field demonstration until an acceptable demonstration is produced. See Subsection 106.01 for the disposition of material in unacceptable demonstration(s). Accepted field demonstrations shall remain in place and will be accepted and measured as a part of the completed work. When a field demonstration is accepted, full production may begin.

If the Contractor changes manufacturer or if the marking operation is producing unsatisfactory results, the field demonstration procedures shall be repeated as necessary until the desired results are achieved.

The Contractor shall ensure that all paint and other markings sampling and handling procedures are performed in accordance with the following where applicable:

1. Drums of markings shall have tamper proof seals as required under Subparagraph **634.03(b) Drum Seals**;

2. The markings and bead tanks on the striping machine shall be empty, unless the Contractor provides a *Letter of Transfer for Markings* from a previous BIA /State project as required under Subparagraph **634.03(f) Letter of Transfer for Markings**;

3. Settled pigment shall be re-disbursed before loading markings as required under Subparagraph **634.03(a) Re-disbursement of Settled Markings**;

4. The Contractor shall strap the tanks as described in Subparagraph **634.03(e) Volume Control Requirements**.

Add the following subparagraphs:

(a) Re-disbursement of Settled Markings. When markings have settled excessively, the Contractor shall re-disburse the settled pigments at the bottom of the markings drums with a mixing device before pumping or loading into the striping unit so that excess pigments are not left on the bottom of the markings drums. Thinner shall not be allowed to be pumped into the markings tanks.

(b) Drum Seals. Drums of markings used on Government projects shall be sealed at the point of manufacture and consecutively numbered with tamper proof seals. These seals shall only be removed with the COR/AOTR present at the time of actual use. Drums with broken seals shall not be accepted.

(c) Equipment. The traffic markings and beads shall be placed on the pavement by a spray type, self propelled pavement marking machine, except that temporary striping during construction may be placed with other equipment designed for application of markings, or beads.

The machine shall be capable of applying clear-cut 102mm lines. The machine shall be equipped with an air-operated glass bead drop-in dispenser controlled by the spray gun mechanism. The machine shall be equipped with a mechanical device capable of placing a broken reflectorized centerline stripe having a 3.0 meter length and 9 meter gap between stripes.

The dispenser shall be capable of placing the glass spheres immediately into the markings line as it is applied to the pavement in such a manner as to provide satisfactory marking and delineation.

(d) Measurement Devices. A method of measuring the actual volume of markings and beads in the tanks shall be provided on the tanks either by strap measurement or other externally approved gauging methods.

The Contractor shall provide current certification of calibration of all marking equipment at least 7 calendar days before the field demonstration for review and approval.

(e) Volume Control Requirements. The volume of markings and glass beads in place shall be measured by the quantity per kilometer method or by the use of markings and beads gauges.

The Contractor shall strap the tanks before beginning striping operations and again after **1 kilometer** has been striped or if the striping machine is equipped with air atomized spray units (not airless) and markings and bead gauges, the volume may be determined by said gauges.

The volume shall be measured again at the beginning and end of each day. This information shall be given to the COR/AOTR.

(f) Letter of Transfer for Markings. The markings and bead tanks of the striper must be **empty** before filling for the beginning of the striping operations for the project, unless a *Letter of Transfer for Markings* has been obtained.

Paint markings or glass beads left over in the striping truck tank can be transferred from one BIA project by providing a *Letter of Transfer for Markings* which shall include the following information:

1. The quantity left in the tanks;

2. The BIA project it is coming from, including the termini and project name;

3. The project it is going to;

4. The date;

5. The batch number the markings came from;

6. The seal numbers of the markings in the tank;

7. The previous COR/AOTR's signature.

(g) Tolerance Requirements for Placing Markings & Beads. The finished lines shall be smooth, aesthetically acceptable and free from undue waviness. The finished marking material shall be rectangular in shape with well defined edges.

(h) Repair & Replacement of Unacceptable or Damaged Striping. If the markings are not adhering to the existing pavement, the Contractor shall **REMOVE** the striping (under an approved method) and shall **RESTRIPE** the existing pavement. All damage to the pavement markings because of the Contractor's negligence or failure to maintain traffic control shall be **repaired at no additional cost to the Government**.

634.08 Thermoplastic Markings (Type H and I).

Add the following:

When thermoplastic paint is applied to concrete surfaces, the concrete surface shall be primed and sealed in accordance with the paint manufactures recommendations prior to application of the paint. A copy of the primer and sealer material specifications shall be provided to the COR/AOTR for review and approval prior to application.

634.13 Measurement.

This subsection is superseded with the following:

Measure the Section 634 items listed in the bid schedule according to Subsection 109.02 and the following.

Measure the pavement markings by the meter. The number of meters of lines applied will be measured along the centerline of each 102mm wide line applied regardless of color. Broken or dotted pavement lines will be measured from end to end of the line including gaps. Solid pavement lines will be measured from end to end of each continuous line. For line widths other than 102mm, the measured length of line is adjusted by the ratio of the required width to 102mm times the length measured.

SECTION 635 - TEMPORARY TRAFFIC CONTROL

635.03 General.

Add the following:

The construction plans will show Temporary Traffic Control Details of general requirements. After award of contract, the Contractor shall be required to develop his Traffic Control Plan (TCP) in accordance with the details shown in the design plans and the *Manual on Uniform Traffic Control Devices for Streets and Highways*, latest edition, and amendments.

The Contractor shall submit (at least 21 calendar days prior to the **Notice to Proceed**) his TCP in full professionally developed details using the Government's traffic control details as a guide, to the COR/AOTR and NRDOT Division Manager for review. Neat hand drawn sketches will be accepted for emergency addendums to the original TCP ONLY with written justification. The Contractor assumes full responsibility and expense for errors and/or omissions in the TCP regardless of whether the plan was reviewed by the Government before the errors and/or omissions were discovered or after. The Contractor is also responsible for insuring a TCP that meets the contract requirements is in hand before construction begins. Failure to insure the TCP meets the contract requirements may result in a "Stop Work" order to be filed with the Contractor.

The NRDOT Division Manager will review and return the TCP within 14 calendar days, after receipt of the new TCP from the Contractor, stating either "Accepted", "Accepted as Noted", or "Resubmit".

Once the NRDOT Division Manager has notified the Contractor that the TCP has been accepted for use on the project, it will be the responsibility of the Contractor to implement and maintain the TCP prior to construction so as to accommodate traffic safely. The TCP shall be in force at all times during construction and at all locations where construction equipment is being used within the roadway prism. This shall include the area 457 meters (1500 feet) preceding the beginning of project and 457 meters (1500 feet) beyond the end of project.

Should the Contractor elect to perform other minor shoulder or corrective work outside the zone of the accepted TCP, or at various other work zones, it will be the Contractor's responsibility to provide additional traffic control (warning signs, barrels, barricades, flaggers, etc.) to direct traffic in a safe manner in accordance with the MUTCD manual as directed by the COR/AOTR. Any additional traffic control required shall be considered incidental to completion of project and no additional payment shall be made.

The latest edition of the MUTCD manual is incorporated by reference into the Contractor's TCP. In cases of inconsistencies between the Contractor's TCP and what the MUTCD manual requires, the provisions of the MUTCD shall govern.

The Bureau of Indian Affairs (BIA) Safety Manager and/or the Contracting Officer's Representative will make periodic inspections of the project and report to the Contracting Officer regarding the Contractor's compliance with his TCP.

Failure by the Contractor to comply with his TCP, or perform work which could be dangerous to the safety of the traveling public (without proper traffic control devices) shall be just cause for the Contracting Officer to issue a "Stop Order" per section 108.05 for immediate corrective action to be taken.

When the Contractor has taken satisfactory corrective action, a written order to resume work shall be issued as required. The Contractor shall not be entitled to any extension of contract time; any claims for damages or to any excess cost by reason of the stop order and/or suspension orders. Failure of the Contracting officer to order suspension of any or all work in progress shall not relieve the Contractor of his responsibilities or obligations defined herein.

Flagging, signing, and any other traffic control required on haul routes from material pits and all detour roads shall not be measured for payment, but shall be considered a subsidiary obligation of the Contractor where the cost shall be included in the appropriate bid items.

Add the following subparagraphs:

(j) Any existing side routes (i.e. roads outside the project r/w) used as detours for road and drainage structure construction shall be properly signed and maintained (in a safe manner) at least twice per week in accordance with sections 212, 107 and 156. These existing side routes proposed for use as detour roads shall not be modified without the Contractor first obtaining proper permits to do so. The use and maintenance of these side routes shall be included in the unit price bid for item 63501-0000.

(k) Any proposed detour roads (within the project r/w) as shown on the contractor's TCP shall be constructed, maintained, and signed in accordance with sections 212, 107.01, and 156. It shall be the responsibility of the contractor to adequately design and install any and all drainage structures for such detour roads that cross existing washes including obtaining all necessary permits. All proposed temporary drainage structures shall be shown on the contractor's TCP and ECP. The construction, maintenance, and subsequent removal and restoration work of proposed detour roads shall be included in the unit price bid for item 63501-0000.

635.07.1 Construction Signs:

Add the following:

All sign sheeting shall have a reflectivity in accordance with section 718.01 as modified in these supplemental specifications.

635.09 Flaggers.

Add the following:

Copies of the Flaggers certifications must be current (in accordance with the certification program criteria) and provided to the COR/AOTR for review and acceptance at the time the NTP is given. Flaggers that have **current** certification from other federally approved flagger certification programs (i.e. states, counties, and tribal safety programs) may be allowed provided the Contractor submits documentation that the program is recognized and approved by either the FHWA, TRB, or ATSSA. Flaggers with training certificates are **not allowed**.

635.25 Acceptance.

Add the following:

Any damaged traffic control devices used on the project that is considered ineffective for its intended use (by the COR/AOTR) shall be replaced at the Contractor's expense. Should the Contractor neglect or refuse to replace any traffic control device that the COR/AOTR considers damaged to the extent that it no longer serves as an effective traffic control device (through a "noncompliance work order"), then the CO/AO shall issue a "stop work order" in accordance with section 108.05 until the Contractor has complied with the CO/AO directive.

635.26 Measurement.

The sixth paragraph is superseded with the following:

Measure flaggers by the Man-Hours for each hour the flagger(s) are actually performing flagging work within the project limits. Round portions of an hour up to the half hour for pay estimates. Flagger hours in excess of 40 hours in a week will not be measured for payment unless approved by the COR/AOTR in writing. Hours of flaggers attending meetings not related to traffic safety, haul roads, or attending to placement or removal of traffic control devices shall not be measured for payment.

SECTION 702.- ASPHALT MATERIAL

702.09 Evaluation Procedures for Asphalt.

(c) Sampling procedures.

Paragraph (2) is superseded with the following:

(2) Asphalt initially discharged into storage tanks on the project.

Take one 4 liter sample from the line between shipping container (tanker) and the storage tank to be tested under (d) below only.

Add the following:

(d) Testing. The testing of performance grade asphalt binder shall be under AASHTO M320.

> **(1)** The first **four (4) delivery loads** and for **each 25th load thereafter** shall be tested for **all of the properties** and reported to the AOTR within 14 calendar days after the sample date.

(e) Acceptance. Acceptance of the asphalt binder is when all the specified properties for the asphalt binder in AASHTO M 320 are met.

Section 703.- AGGREGATE

703.05 Subbase, Base, and Surface Course Aggregate.

(b) Subbase or base aggregate.

(1) Gradation Table 703-2

Table 703-2 is superseded with the following:

Table 703-2
Aggregate Base Gradation

Sieve Size	Percent by Mass Passing Designated Sieve, AASHTO T 27 & T11
37.5mm (1½-inch)	100
25mm (1-inch)	80 – 100
19mm (3/4-inch)	65 – 80
9.5mm (3/8-inch)	40 – 65
4.75mm (No.4)	30 – 50
425µm (No.40)	8 – 30
75µm (No.200)	2 – 12

(c) Surface course aggregate.

The statistical procedures and allowable deviations do not apply.

703.07 Hot Asphalt Concrete Pavement Aggregate.

(a) Coarse aggregate (retained on a 4.75-millimeter sieve).
Add:

(5) Adherent coating on the aggregate,
FLH T 512 0.5% maximum

(6) Percent Carbonates in Aggregate,
Arizona Test Method ARIZ 238a Maximum 75%

The last paragraph is deleted.

703.10 Asphalt Surface Treatment Aggregate.

Add:

(i) Density, AASHTO T 19MMin. 1100 kg/m³ (70 lbs./ft³)

(j) Coating and stripping of bitumen-aggregate

Mixtures, AASHTO T 182Min. 95%

Table 703-7 is superseded with the following:

Table 703-7
Target Value Ranges for
Single and Multiple Course Surface Treatment Aggregate Gradation

Sieve Size	Percent by Mass Designated Sieve (AASHTO T 27 & T 11)
	Grading Designation – Special
12.5mm (1/2-inch)	100 **(1)**
9.5mm (3/8-inch)	70-85 (3)
6.3mm (1/4-inch)	0-15 (5)
4.75mm (No.4)	0-5 (3)
2.36mm (No.8)	0-2 (1)
75µm (No.200)	0-1 (1)

(1) Statistical procedures do not apply.
( ) The value in the parentheses is the allowable deviation (±) from the target values.

703.13 Blotter.

This subsection is superseded with the following:

Furnish sound durable particles of sand, gravel or crushed stone conforming to the following:

Table 703-13
Blotter Material Gradation

Sieve Size	Percent Passing by Weight, AASHTO T 27 & T 11
9.5mm (3/8-inch)	100
1.18mm (No.16)	40 – 80
75µm (No.200)	0 – 10

(a) Plastic limit, AASHTO T90 Non-plastic

(b) Free of organic matter and clay balls.

PERCENT CARBONATES IN AGGREGATE
(An Arizona Method)

SCO/AOPE:

1. (a) This test method describes the procedure for determining the percentage of carbonates in aggregate. A combination of hydrogen peroxide and nitric acid is used to react with the carbonates.

   (b) 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.

   (c) Metric (SI) units and values are shown in this test method with English units and values following in parentheses. Values given for metric and English units may be numerically equivalent (soft converted) for the associated units, or they may be given as rounded or rationalized values (hard converted). Either the metric or English units along with their corresponding values shall be used in accordance with the applicable specifications. See Appendix A2 of the Arizona Materials Testing Manual for additional information on the metric system.

   (d) See Appendix A1 of the Arizona Materials Testing Manual for information regarding the procedure to be used for rounding numbers to the required degree of accuracy.

APPARATUS AND MATERIALS:

2. Requirements for the frequency of equipment calibration and verification are found in Appendix A3 of the Arizona Materials Testing Manual. Apparatus and materials for this test procedure shall consist of the following:

   (a) Drying apparatus--Any suitable device capable of drying samples at a temperature of 110ºC plus or minus 5ºC (230ºF plus or minus 9ºF).

   (b) 100 mL heavy duty beaker.

   (c) Hydrogen Peroxide (3% solution) - H_2O_2.

   (d) Nitric Acid (concentrated)--HNO_3.

   (e) Distilled water.

   (f) A balance or scale capable of measuring the maximum weight to be determined and conforming to the requirements of AASHTO M 231, except the readability and sensivity of any

balance or scale utilized shall be at least 0.1 gram.
(g) Neutral Litmus Paper.

(h) Glass or Plastic Stirring Rod.

SAMPLE PREPARATION:

3. Prepare the sample according to the following:

(a) For material samples from stockpile(s), obtain a representative 300 gram plus or minus 10 gram sample of plus 4.75 mm (No.4) material. Wash the sample over a 4.75 mm (No.4) sieve and discard minus 4.75 mm (No.4) material.

(b) For uncrushed material samples, obtain a representative sample and crush to appropriate grading. Obtain a representative 300 gram plus or minus 10 gram sample of plus 4.75 mm (No.4) material.

(c) The prepared sample shall be oven dried to constant weight at 110ºC plus or minus 5ºC (230ºF plus or minus 9ºF).

TEST PROCEDURE:

4. (a) Allow sample to cool and place in a tared 1000 mL beaker. Weigh and record the weight of aggregate as the "weight of original sample" or "A" to the nearest 0.1 gram.

(b) Under a fume hood, add approximately 300 ml of H_2O_2 (3% solution) and stir. When the bubbling subsides, begin adding small amounts (approximately 10 ml) of concentrated HNO_3 to the beaker. Bubbling will be vigorous as the carbonates are being dissolved. Stir occasionally.

(c) When the bubbling has ceased and addition of HNO_3 causes no more bubbles, begin to wash by decantation, using distilled water. Care shall be taken not to lose any of the coarse aggregate. Wash by decantation at least 4 times. At this point, neutral litmus paper in the water should show only slight pink.

(d) Decant the water and oven dry to constant weight at 110ºC plus or minus 5ºC (230ºF plus or minus 9ºF).

(e) Let cool, weigh, and record the weight of aggregate as the "weight of non-reactive aggregate" or "B" to the nearest 0.1 gram.

CALCULATIONS:

5. (a) Calculate the percent of carbonates as follows:

$$\text{Percent of Carbonates} = \frac{A-B}{A} \times 100$$

Where: A = weight of original sample

B = weight of non-reactive aggregate

(b) Report the percent of carbonates to the nearest 1%.

Section 704.- SOIL

704.02 Bedding Material.

Add the following subparagraph:

(c) Resistivity, AASHTO T 288	≥2000 ohm-cm, Min.
(d) pH, AASHTO T289	≥ 6.0

Volcanic ash type material for bedding shall not be used.

704.03 Backfill Material.

(a) For all structures and pipes other than plastic pipes.

Add the following to this subparagraph:

(c) Resistivity, AASHTO T 288	≥2000 ohm-cm, Min.
(d) pH, AASHTO T289	≥ 6.0

Volcanic ash type material for backfill shall not be used.

704.06 Unclassified Borrow.

This subsection is superseded with the following:

Furnish granular material free of excess moisture, muck, frozen lumps, roots, sod, or other deleterious material. Material composed of lava or volcanic cinder is disallowed as borrow material. Material shall conform to the following:

(a) Maximum dimension	600 mm
(b) Soil classification, AASHTO M 145	A-1, A-3, or A-2-4

If unclassified borrow is used as bedding and/or backfill material under Section 209, the material shall also conform to 704.02 and 704.03.

Section 705. - ROCK

705.02.1 Riprap Rock.

This subsection is superseded with the following:

Furnish hard, durable, angular and/or rounded rock that is resistant to weathering and water action and free of organic or other unsuitable material. Do not use shale, rock with shale seams, or other fissile or fissured rock that may break into smaller pieces in the process of handling and placing. Conform to the following unless the material is coming from a source previously tested for and met the quality requirements for other contract items:

(a) Apparent specific gravity, AASHTO T 85	2.50 min.
(b) Absorption, AASHTO T 85	4.2% max.
(c) Coarse durability index, AASHTO T 210	50 min.
(d) Gradation for the class specified	Table 705-1

SECTION 710 - FENCE AND GUARDRAILS

710.01 Barbed Wire:

Add the following:

Stays for barbed wire fences shall conform to the requirements of ASTM A 641, and shall have a coated diameter of at least 0.142 inch (3.6 mm), shall be class 1, and soft temper.

Tie wire, wire fasteners or wire clips for fastening barbed wire to steel posts shall have a coated diameter of 0.120 inch (3.0 mm) or greater and shall be Class 1, soft temper, and meet the requirements of ASTM A 641.

All woven wire shall conform to the requirements of AASHTO M 279 Design 832-6-14 $^{1}/_{2}$, grade 125.

Section 713 - ROADSIDE IMPROVEMENT MATERIAL

713.13 Bales.

This section is superseded with the following:

(a) Straw bales. Furnish bales tied with either commercial quality baling wire or string. Conform to the following:
(1) Straw Subsection 713.05(a)
(2) Approximate length 1 meter
(3) Shape rectangular
(4) Approximate mass 30 kilograms
(b) Wood excelsior bales. Furnish bales of curled wood excelsior. Tie the bales with either a commercial bailing wire, plastic, or string. Conform to the following:
(1) Approximate dimensions 400 by 450 by 900 mm
(2) Approximate mass 33 kilograms

The straw bales must be furnished weed free to the fullest extent possible given the available sources.

713.16 Silt Fence.

This section is superseded with the following:

Furnish a combination of the following material constructed as specified and in close conformance with the design plans. If approved, variations may be furnished to accommodate pre-manufactured fences and field conditions and accepted practices.

(a) Posts. Furnish 75-millimeter diameter wood or 1.86-kilogram per meter steel fence posts.
(b) Supports. Furnish 2.03-millimeter steel wire with a mesh spacing of 150 by 150 millimeters or a prefabricated polymeric mesh of equivalent strength.
(c) Geotextile. Conform to Subsection 714.01 and Table 714-5 as applicable.
(d) Height. Minimum height above the ground is 760 millimeters. Minimum embedment depth is 150 millimeters.

718.01 Retroreflective Sheeting.

Add the following:

Retroreflective sheeting materials proposed shall be Type II or better per Table 718-3 below, with certifications, for all signs shall be submitted for review and approval prior to ordering the materials.

718.11 Letters, Numerals, Arrows, Symbols, and Borders.

Add the following:

The letters, numerals, arrows, symbols, borders, etc. shall be applied in accordance with subsection 718.11 (b) Type L-3 (Direct Applied Characters) having a Class 2 adhesive, and as shown on the design plans.

Table 718-3

Sign Color	Sheeting Type (ASTM D 4956)[1]				Additional Criteria
	Beaded Sheeting			Prismatic Sheeting	
	I	II	III	III, IV, VI, VII, VIII, IX, X	
White on Green	W*; G≥7	W*; G≥15	W*; G≥25	W≥250;G≥25	Overhead
	W*; G≥7	W≥120;G≥15			Ground Mounted
Black on Yellow or Black on Orange	Y*;O*	Y≥50;O≥50			2
	Y*;O*	Y≥75;O≥75			3
White on Red	W≥35;R≥7				4
Black on White	W≥50				

1) The minimum maintained retroreflectivity leverls shown in this table are in units of cd/lx/m² measured at an observation angle of 0.2° and an entrance angle of -4.0°

2) For test and fine symbol signs measuring at least 1200 mm (48 in) and for all sizes of bold symbol signs

3) For test and fine symbol signs measuring less than 1200 mm (48 in)

4) Minimum Sign Contrast Ratio ≥ 3:1 (white retorreflectivity ÷red retroreflectivity)