PART 4

STANDARD MODIFICATIONS

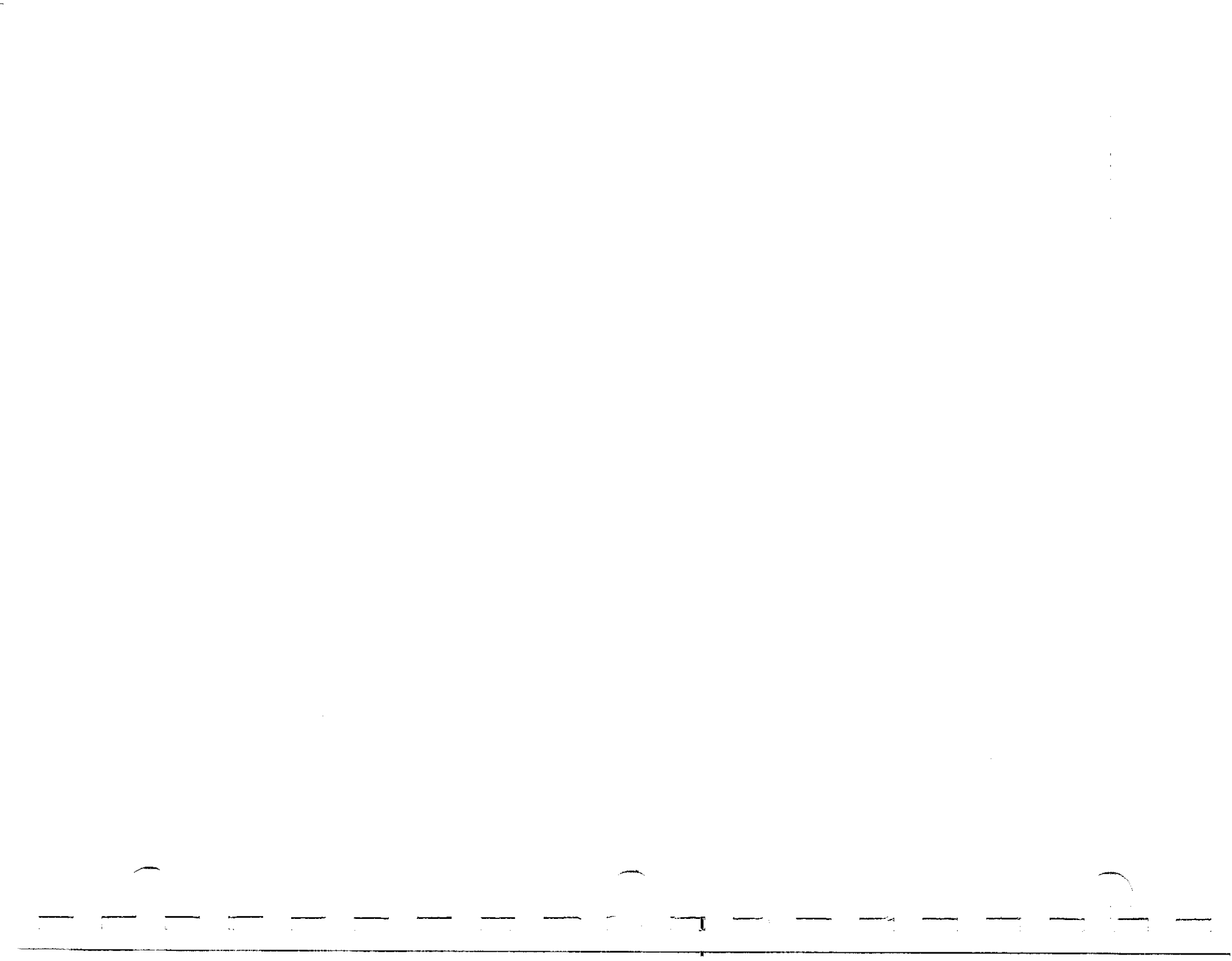
AND SPECIAL PROVISIONS

to the STATE OF ALASKA

STANDARD SPECIFICATIONS
FOR
HIGHWAY CONSTRUCTION
2004 (USC)

OLD GLENN HIGHWAY
FIRE LAKE TO SOUTH BIRCHWOOD LOOP ROAD

STP-0558 (6) / 58061



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SECTION 101
DEFINITIONS AND TERMS

Standard Modification

101-1.03 DEFINITIONS. Replace the definitions of SUBGRADE with the following:

SUBGRADE. The soil or embankment upon which the pavement structure is constructed.
E22(1/1/06)

Delete text of PLANS and replace with:

PLANS. The Department's Contract drawings, profiles, typical cross sections, standard drawings, and supplemental drawings or reproductions showing the location, character, dimensions, and details of the work.
E32(01/27/07)

Add the following definition:

QUALIFIED PRODUCTS LIST. A list of companies and products that the Department has found conforms to the SSHC.
E36(01/27/07)

SECTION 102
BIDDING REQUIREMENTS AND CONDITIONS

Standard Modification

102-1.04 EXAMINATION OF PLANS, SPECIFICATIONS, SPECIAL PROVISIONS, AND WORK SITE. Replace the second paragraph with the following: The records of geotechnical investigations including boring logs, test results, geology data reports, soil reports, material site reports, and geotechnical reports included in a bid package or made accessible to bidders or Contractors, are for information purposes only. These records are not part of the Contract. These records indicate subsurface conditions only at specific locations and times, and only to the depths penetrated. They do not necessarily reflect variations in soil, rock, or groundwater conditions that may exist between or outside such locations. Actual conditions may differ from what is shown in the records. Material Sources referenced in these records may not contain materials of sufficient quantity or quality to meet project requirements. The accessibility of these records does not constitute approval, nor guarantee suitability of soils or sources, or the rights to use sources for this project, except as specifically provided in subsections 106-1.02.4.b Mandatory Sources and 106-1.02.4.c Designated Sources. The records shall not substitute for independent investigation, interpretation, or judgment of the bidder or Contractor. The Department is not responsible for any interpretation or conclusion drawn from its records by the bidder or Contractor.

Bidders and Contractors shall examine subsection 106-1.02 Material Sources for further information about material source development.

E23(1/1/06)

102-1.05 PREPARATION OF BID. Modify the second sentence in the third paragraph, after: "If a bidder is a corporation, the bid must be signed by a corporate officer," add: or agent.

E18(6/30/04)

SECTION 103
AWARD AND EXECUTION OF CONTRACT

Special Provisions

Add the following subsection:

103-1.11 ESCROW OF BID DOCUMENTATION. Furnish a legible copy of the Bid documentation and an affidavit, as instructed in writing by the Contracting Officer. Bid documentation consists of written documentation of quantity takeoffs, construction schedules on which the bid is based, cost estimates, rates of production and progress, assumptions, calculations, quotes from subcontractors and suppliers, and information used to prepare the Bid for this project.

Obtain and furnish the same level of bid documentation, for each subcontractor, supplier or fabricator with a subcontract or agreement exceeding $200,000, regardless of tier. Seal each entity's documentation in separate envelopes, labeled with the entity's name and address, submission date, and project name and number. Include a cover letter or quote signed by a responsible party.

Meet the following requirements:

1. Submitting Bid Documentation. Place bid documentation in a sealed container clearly marked "Bid Documentation" and labeled with the bidder's name and address, submission date, and project name and number. Deliver the sealed container to the Department designated document depository for safekeeping.

2. Affidavit. Submit directly to the Contracting Officer a signed and certified affidavit attesting that

   a. the affiant has examined the bid documentation and that it includes all documents used to prepare the bid,

   b. the sealed container contains all bid documentation submitted,

   c. the escrow materials were relied on to prepare the bid, and

   d. should a dispute arise, the Contractor's rights to use bid preparation documentation other than those in escrow are waived.

3. Access and Use of Escrow Documents. The bid documentation will remain in escrow, without access by either party, except as otherwise provided herein. In the event the Contractor (1) provides notice of intent to claim, (2) a claim, (3) a contract change order, or (4) initiates contract related litigation, the Department may obtain copies of the bid documentation as provided herein.

Both parties will submit to the Depository and copy to each other a list of personnel that are authorized to access the escrow documents. Use forms provided by the Depository.

Upon request the Depository will set the time and place for access to escrow documents, will monitor the escrow documents review, and will arrange for a method of copying escrow documents. Access to escrow documents shall require at least 5 days advance written notice so that the other party has the opportunity to witness the escrow review, examination and use. There is no requirement that both parties witness the escrow document review, but if one party is absent then the review must occur in the presence of a neutral third party observer to be designated by the Depository.

Notwithstanding paragraph five below, the Department will be allowed: to make copies of escrow documentation (whether hard copy, electronic, or otherwise); to use and review copies consultants directly involved in the subject dispute.

Distribution is not authorized except as related to resolution of a dispute. The Department will be allowed to incorporate pertinent copies as supporting documentation in significant contract change orders, contractual disputes, and the settlement of disputed claims.

The Department is not liable for any Contractor costs associated with escrow review and use.

4. Failure to Provide Bid Documentation. Refusal or failure to provide bid documentation or affidavit renders the bid nonresponsive. Failure or refusal to provide subcontractor bid documentation will result in subcontract disapproval.

5. Confidentiality of Bid Documentation. Materials held in escrow are the Contractor's property. Except as otherwise provided herein, the escrow materials cannot be released without the Contractor's approval.

6. Cost and Escrow Instruction. The Department pays to store escrowed materials and instructs the depository regarding escrow.

7. Payment. Include within the overall Contract bid price costs to comply with this subsection.

8. Return of Escrow Documentation. The original escrow documents will be returned to the Contractor once litigation is concluded, outstanding claims are resolved, the Contractor has completed the Contract, and the Department receives an executed Contractor's Release (Form 25D-117) with no exceptions listed.

ES11(1/01/06)

SECTION 105
CONTROL OF WORK

Standard Modification

105-1.02 PLANS AND WORKING DRAWINGS. In the third paragraph delete: "(24"x36")" and replace with: (22"x34")

105-1.03 CONFORMITY WITH PLANS AND SPECIFICATIONS. In the first sentence of the first paragraph after: "Work performed and materials furnished shall conform to the Plans and Specifications" add: and approved Working Drawings,

In the first sentence of the second paragraph after: "Work or material not conforming to the Plans and Specifications" add: and approved Working Drawings,

E33(01/27/07)

Special Provisions

105-1.06 COOPERATION WITH UTILITIES. Add the following: Request locates from all the utilities having facilities in the area. Use the Alaska Digline, Inc. Locate Call Center for the following utilities:

ALASKA DIGLINE, INC. Locate Call Center Anchorage: 811 who will notify the following:
ACS Aircraft Service International Group Alaska Fiberstar Alaska Native Hospital Alaska Railroad Corp Anchorage School District Anchorage Water & Wastewater Alyeska Cable AT&T Alascom, Inc. City of Wasilla Chugach Electric Assoc DOT Street Lights, State of Alaska Enstar Natural Gas Eyecom TV/Interior Telephone GCI Communications Homer Electric Assoc. Interior Telecom Marathon Oil

Matanuska Electric Assoc
Matanuska Telephone Assoc
MOA Street Maint. Dept MFS
Technologies, inc.
Tesoro Alaska Pipeline
Mukluk Telephone Association
Municipality of Anchorage
Municipal Light & Power
Phillips Petroleum
PTI
Telalaska
Unocal United
Utilities
Yukon Telephone

Call the following utilities and agencies directly:

Contact the Central Region Maintenance & Operations Office at (907) 269-0760 to obtain the appropriate District Superintendent's phone number for this project.

There are various utility appurtenances located within the project limits. Utilities scheduled for relocation are addressed in the following utility specific sections.

Right of Way and/or Construction surveying is required before utility relocation.

Payment will be made as follows:

1. Subsidiary to Item 642(1), Construction Surveying, if the Contractor is required to provide the surveying as part of the contract an/or

2. Under Item 642(3), Three Person Survey Party, if the construction or Right of Way staking required by the utility is either in advance of the 2 week work plan, or not required by the contract.

The utility shall give the Contractor, through the Engineer, 15 calendar days advance written notice for required staking.

(09/01/04)R3

Provide the Utility Companies fifteen (15) calendar days advance written notice of the time you have the relocations described below scheduled to begin. The Utility Companies shall not be required to work in more than one location at a time and shall be allowed to complete a specific section of work before beginning with another section.

Relocation or adjustment of underground utility appurtenances shall not normally be performed when the ground is frozen. In addition, the utility companies may prohibit the Contractor, through the Engineer, from working near the utility's facilities when the ground is frozen.

When utility company facilities are not proposed for relocation, use locate information to determine the final location of construction elements such as excavation limits, pole locations and other underground activities to avoid conflict with existing utilities.

Specific coordination requirements for the utilities are included below:

MATANUSKA ELECTRIC ASSOCIATION (MEA): MEA has existing buried and overhead primary circuits running within the Old Glenn Highway (OGH) corridor. Some of these facilities are located in easements outside the highway right-of-way; others are located within the right-of-way. Allow time for MEA to relocate facilities as noted:

1. Existing OH power poles (4) in conflict with the proposed pedestrian loop at approx. Stations 256+75 to 265+00. MEA will remove and replace four existing poles with longer poles for clearance over the embankment and path of the pedestrian loop.

   MEA will require a minimum of four (4) calendar days to complete this work.

2. Existing OH power poles (2) are in conflict with the proposed pedestrian improvements (left) and sanitary sewer trench excavation (right) at approx. Station 287+90. MEA will remove the pole on the right; they will remove and relocate the pole on the left approximately 20 feet, outside construction slope limits.

   MEA will require a minimum of two (2) calendar days to complete this work.

3. Existing OH power poles (2) are in conflict with slope limits for the proposed pedestrian improvements (left) and slope limits (right) at MEA's crossing near Station 299+60. MEA will remove the pole on the right; they will remove and relocate the pole on the left approximately 8 feet, outside construction slope limits.

   Existing OH power poles (2) are in conflict with realignment of South Birchwood Loop Road. MEA will remove the pole and guy located ~ Station 304+50, 108' left. MEA will remove and relocate the pole and guy ~ Station 304+38, 52' right approximately 10' south. An overhead connection with guy will be made from the new pole to an existing pole located ~ Station 303+25, 209' left.

   MEA will require a minimum of four (4) calendar days to complete the work described.

Contact: MEA Director of Engineering, (907) 761-9274 or 761-9280. The MEA fax number for written notification is (907) 761-9339.

GENERAL COMMUNICATIONS, INC. (GCI): GCI has existing buried and overhead cable and fiber optics running within the Old Glenn Highway (OGH) corridor. Some of these facilities are located in easements outside the highway right-of-way; others are located within the right-of-way. GCI will be relocating facilities located on existing MEA poles requiring relocation:

1. GCI will lash new strand and coax cables between approx. Stations 255+00 to 271+00 on the left once MEA has installed new power poles. This area requires longer poles to clear the embankment for the proposed pedestrian loop. Following cutover, GCI will remove existing aerial strand and coax cable.

   GCI will require six (6) calendar days to complete this work once MEA pole installation is complete.

2. GCI will transfer aerial facilities from the existing MEA power pole in conflict with the proposed pedestrian improvements at approx. station 299+70, left, to MEA's new pole.

   GCI will require one (1) calendar day to complete this work once MEA pole installation is complete.

3. GCI has an OH crossing on MEA power poles that are in conflict with the proposed realignment of SBLR and will be removed. GCI will relocate their OH crossing once MEA completes their new pole placement and crossing. This work covers the area from approx. Station 303+20 left to 304+30 right.

   GCI will require one (1) calendar day to complete this work once MEA pole installation is complete.

Contact: GCI Project Manager, (907) 229-9176.

ENSTAR NATURAL GAS COMPANY (ENSTAR): ENSTAR relocation work will be conducted within the Old Glenn Highway project limits and will need to be coordinated with the Contractor's work.

1. An existing service connection crosses the highway near Sta. 220+80. This crossing is in conflict with the proposed roadway improvements. ENSTAR will relocate this service to be fed from an extension of 2 inch pipe from Station 217+40 Lt. to Station 222+50 Lt. This relocation will eliminate the roadway crossing. ENSTAR will require a minimum of five (5) calendar days to complete this work.

2. The existing gas main from Station 222+50 Rt. to Station 234+50 Rt. is in conflict with the proposed roadway improvements and will be relocated. ENSTAR will require a minimum of seven (7) calendar days to complete this work. A portion of this work will be relocated in front of a proposed retaining walls and will require coordination with retaining wall construction.

3. The existing gas main from Station 234+50 Rt. to Station 247+10 Rt. is in conflict with the proposed roadway improvements and will be relocated. ENSTAR will require a minimum of seven (7) calendar days to complete this work. A portion of this work will be relocated in front of proposed retaining walls and will require Contractor coordination with wall construction.

4. The existing gas main from Station 247+10 Rt. to Station 247+60 Lt. (crossing the road) is in conflict with the proposed roadway improvements and will be relocated. ENSTAR will require a minimum of two (2) calendar days to complete this work.

5. The existing gas facilities from approximate Station 251+25 to 261+80 Lt are in conflict with the proposed roadway improvements and will be relocated. ENSTAR will require a minimum of seven (7) calendar days to complete this work.

6. The existing gas facilities from approximate Station 251+25 to 261+80 Rt are in conflict with the proposed roadway improvements and will be relocated. ENSTAR will require a minimum of seven (7) calendar days to complete this work.

7. The existing gas facilities from Station 261+80 to 275+25 Lt are in conflict with the proposed roadway and pedestrian improvements and will be relocated. ENSTAR will require a minimum of seven (7) calendar days to complete this work.

8. The existing gas facilities from Station 261+80 to 275+25 Rt are in conflict with the proposed roadway and pedestrian improvements and will be relocated. ENSTAR will require a minimum of seven (7) calendar days to complete this work.

9. The existing gas facilities from Station 275+25 to Station 286+45 Lt are in conflict with the proposed roadway improvements and will be relocated. ENSTAR will require a minimum of six (6) calendar days to complete this work.

10. The existing gas facilities from Station 275+25 to Station 286+45 Rt are in conflict with the proposed roadway improvements and will be relocated. ENSTAR will require a minimum of six (6) calendar days to complete this work.

11. The existing gas facilities from Station 286+45 to Station 297+75 Lt are in conflict with the proposed roadway improvements and will be relocated. ENSTAR will require a minimum of six (6) calendar days to complete this work.

12. The existing gas facilities from Station 286+45 to Station 297+75 Rt are in conflict with the proposed roadway improvements and will be relocated. ENSTAR will require a minimum of six (6) calendar days to complete this work.

13. The existing gas facilities from Station 297+75 to Station 313+00 Lt are in conflict with the proposed roadway and will be relocated. ENSTAR will require a minimum of seven (7) calendar days to complete this work.

14. The existing gas facilities from Station 297+75 to Station 313+00 Rt are in conflict with the proposed roadway and will be relocated. ENSTAR will require a minimum of seven (7) calendar days to complete this work.

15. The existing gas facilities from Station 313+00 to the end of project Lt are in conflict with the proposed roadway improvements and will be relocated. ENSTAR will require a minimum of two (2) calendar days to complete this work.

16. The existing gas facilities from Station 313+00 to the end of project Rt are in conflict with the proposed roadway improvements and will be relocated. ENSTAR will require a minimum of two (2) calendar days to complete this work.

Much of the relocation work identified for ENSTAR will be done in coordination with MTA relocation within a joint trench. Refer to MTA coordination for additional information.

When working near Enstar Natural Gas facilities, adhere to the requirements set forth in "Safety Requirements for Excavation Adjacent to Natural Gas Pipelines", attached to these specifications as an appendix.

Contact: ENSTAR Construction Site Manager, (907) 334-7730 or (907)748-1938 (cell).

MATANUSKA TELEPHONE ASSOCIATION (MTA): Conflicts exist with MTA lines within the project limits. MTA will be relocating telecommunications facilities.

1. The existing 25 pr and 600 pr cables between Station 217+34 to Station 220+35 Lt., are in conflict with proposed construction slope limits along OGH and with realignment of W. Lake Ridge Drive. The existing crossing of the OGH with the 600pr cable near Station 219+92 is in conflict road embankment construction and guardrail installation. The 25 pr bale will be abandoned. On the left side of the road, the 600 pr cable will be routed about 10' inside the western ROW. MTA will relocate the crossing using a bore near Station 220+36. Approximately 128' of 100 pr cable will be run from the crossing point backstation at a location about 103' right of centerline.

   MTA will require twelve (12) calendar days to complete this work.

2. The existing 600pr cable running from Station 235+66 Rt. to Station 250+32 Lt (crossing the road near Station 248+60) is in conflict with embankment construction, guardrail installation and proposed retaining walls. MTA will relocate this cable outside the slope limits up to approximately Sta. 240+60. Between Sta. 240+60 to 247+60, the cable will be relocated under the proposed pathway, in front of the proposed retaining walls. The cable will then wrap along the south side of Don Circle to a ped near Sta. 247+12. **The portion of cable proposed for relocation in front of proposed retaining walls will require Contractor coordination. Existing telecommunication facilities will be impacted by the Contractor's work but cannot be relocated until the Contractor has completed retaining wall construction.**

   A 900 pr cable will be placed from that ped, west along Don Circle, then will cross OGH ~ Sta. 247+60 by boring to ~45' left. The 900 pr cable will cross East Lake Ridge Drive (ELRD) then turn north about 5' inside ELRD for ~200' to an existing ped. A spare 1.25" duct will be placed with the 900 pr installation and will be terminated ~60 south of the

900 pr ped termination. An additional 50' of duct will be placed west of the ELRD alignment.

An existing fiber optic cable (36 count) is located along the east side of Fish Hatchery Road and crosses OGH near Sta. 235+82. This fiber will be potholed for the proposed pipe crossing of Fish Hatchery Road and the crossing of OGH (particularly near proposed guardrail installation) to determine alignment and depth of fiber. If required, the fiber duct will be exposed and "warped" to minimize conflict with storm drain construction. If the resulting final depth of fiber is less than 36 inches, the ducts will be exposed through the impacted area and encapsulated in concrete.

MTA will require twenty-two (22) calendar days to complete this work.

3. A 50pr cable along the south side of OGH from Don Circle to a crossing of OGH near 268+16 is in conflict with construction slope limits and a proposed pedestrian undercrossing structure. This cable will be replaced and the crossing of the OGH relocated back station to ~ Sta. 251+48. A 100 pr cable will be placed from a ped near Sta. 250+32, 200' left to the new OGH crossing where it will be bored through the roadway. The cable will then follow ~5' inside ROW to a ped near Sta. 255+40, 165' right. From that point a 25 pr cable will be placed generally ~ 5' inside ROW to ~ Sta. 265+12. Service cables will be installed from a ped located at the 25 pr cable terminus.

   Existing fiber and 100 pr cable located within an easement left of OGH from ~ Sta. 267+68 to Sta. 269+24 are in conflict with a proposed culvert crossing an approach. MTA will expose the fiber and cable and relocate both to a new alignment along proposed ROW. MTA will install a new handhole on the east end of this relocated run to capture fiber slack.

   MTA will require seven (7) calendar days to complete this work.

4. The existing telecommunication facilities at approx Station 288+50 may be in conflict with proposed approach (driveway) realignment. MTA will pothole this location to determine alignment and depth of their facilities. If required, MTA will expose sufficient cable to obtain slack to eliminate conflict with the driveway cut.

   MTA will require three (3) calendar days to complete this work.

5. The existing telecommunication facilities at approx Station 300+43 through Station 302+45, Rt. are in conflict with proposed roadway excavation. MTA will relocate the 25pr cable approximately 5' inside the ROW.

   MTA will require four (4) calendar days to complete this work.

6. The existing 25 pr cable from approx. Station 304+50 to Station 304+90, Rt. may be in conflict with proposed improvements to Henkins Road. MTA will pot hole to determine

alignment and depth of the cable. If required, their existing cable crossing Henkins Road will be encapsulated in concrete.

MTA will require three (3) calendar days to complete this work.

7. The existing telecommunication facilities from approx Station 12+70 (South Birchwood Lp) to Station 307+83 (OGH), Lt. are in conflict with proposed roadway improvements, including realignment of South Birchwood Lp. MTA will relocate 600 pr cable outside construction slope limits on the south side of SBLR. MTA will relocate their 36 count fiber and their 600 pr cable crossing of SBLR to a joint bored crossing near Sta. 15+00. The 600 pr cable will tie in near Sta. 14+65, 65' left. The 36 fiber will continue along OGH about 110' left of centerline to a handhole near Sta. 307+83.

   MTA will require nineteen (19) calendar days to complete this work.

8. The existing 300 pr cable from approx. Station 308+68 to Station 320+57, right is in conflict with proposed construction slope limits. MTA will relocate the cable using a 95' then 80' offset from centerline to Sta. 320+57. There the cable will be bored through the roadway to tie in with existing facilities.

   MTA will require twenty-two (22) calendar days to complete this work.

Much of the relocation work identified for MTA will be done in coordination with ENSTAR relocation within a joint trench. Refer to ENSTAR coordination for additional information.

Contact: MTA OSP Engineering Supervisor, (907) 761-2544

ANCHORAGE WATER AND WASTEWATER UTILITY (AWWU): AWWU owns and operates a sewer system providing service in the Old Glenn project area. Facilities parallel and cross the Old Glenn Highway from the Beginning of Project up to ~Station 253+75. Roadway improvements will not affect sanitary sewer mains but will require adjustment of manholes based on final grade of roadway pavement.

Coordination with AWWU will be required.

Contact: AWWU Project Manager 564-2763.

105-1.07 COOPERATION BETWEEN CONTRACTORS. Add the following: The following other project(s) may be under construction concurrently with this project:

1. AWWU Northern Communities Water and Sewer Improvements – South Birchwood Loop Road Force Main, Old Glenn Highway to Chugach High School

Coordinate traffic control, construction, and material hauling operations with the prime contractor of the above projects to minimize impacts on the traveling public, and to minimize conflicts with the work being performed under the other contracts.

Standard Modification

105-1.13 MAINTENANCE DURING CONSTRUCTION. Add the following at the end of this subsection: Costs of maintenance work during construction and before the project is accepted as substantially complete shall be subsidiary to the prices bid on the various Contract items, and the Contractor will not be paid an additional amount for such work.

If in the Engineer's opinion, the Contractor at any time fails to provide adequate maintenance, the Engineer will notify the Contractor of such noncompliance. The notification will specify the areas or structures for which there is inadequate maintenance, the corrective maintenance required, and the time allowed to complete corrective maintenance. If the Contractor fails to take the corrective action within the specified time, the Engineer may:

1. Suspend the work until corrective maintenance is completed;

2. Assess a traffic price adjustment against the Contract Amount when an adjustment rate is specified in the Contract; and

3. Employ others for corrective maintenance and deduct the cost from the Contract amount.

E33(01/27/07)

105-1.16 FINAL ACCEPTANCE AND RECORD RETENTION. Modify the first paragraph, Item 4., after: "DOLWD" add: and State Department of Revenue.

E19(6/30/04)

Special Provisions

105-1.17 CLAIMS. Add the following: Appeals to the superior court under AS 36.30.685 must be filed in the Third Judicial District.

(3/21/01)R93

SECTION 106
CONTROL OF MATERIAL

Standard Modification

106-1.01 SOURCE OF SUPPLY AND QUALITY REQUIREMENTS. In fifth paragraph, in two places remove the text: "Approved Products List" and replace with: *Qualified Products List*
E36(01/27/07)

Special Provisions

106 1.01 SOURCE OF SUPPLY AND QUALITY REQUIREMENTS. Add the following:

Buy America Provision. Comply with the requirements of 23 CFR 635.410, Buy America Requirements, and shall submit a completed Material Origin Certificate, Form 25D-60, before award of the contract.

Steel and iron products which are incorporated into the work, shall be manufactured in the United States except that minor amounts of steel and iron products of foreign manufacture may be used, provided the aggregate cost of such does not exceed one tenth of one percent (0.001) of the total contract amount, or $2500, whichever is greater. For the purposes of this paragraph, the cost is the value of the products as they are delivered to the project including freight.

"Manufactured in the United States" means that all manufacturing processes starting with the initial mixing and melting through the final shaping, welding, and coating processes must be undertaken in the United States. The definition of "manufacturing process" is smelting or any subsequent process that alters the material's physical form, shape or chemical composition. These processes include rolling, extruding, machining, bending, grinding, drilling, etc. The application of coatings, such as epoxy coating, galvanizing, painting or any other coating that protects or enhances the value of steel or iron materials shall also be considered a manufacturing process subject to the "Buy America Requirements."

Buy America does not apply to raw materials (iron ore), scrap, pig iron, and processed, pelletized and reduced iron ore. It also does not apply to temporary steel items (e.g., temporary sheet piling, temporary bridges, steel scaffolding, and falsework). Further, it does not apply to materials that remain in place at the Contractor's convenience (e.g., sheet pilings, and forms).

The North American Free Trade Agreement (NAFTA) does not apply to the Buy America requirement. There is a specific exemption within NAFTA (article 1001) for grant programs such as the Federal-aid highway program.

When steel and iron products manufactured in the United States are shipped to a foreign country where non-steel or iron products are installed on or in them (e.g., electronic components in a steel cabinet), the steel and iron is considered to meet the requirements of this subsection.

Take whatever steps are necessary to ensure that manufacturing processes for each covered product comply with this provision. Non-conforming products shall be replaced at no expense to the State. Failure to comply may also subject the Contractor to default and/or debarment. False statements may result in criminal penalties prescribed under Title 18 US Code Section 1001 and 1020.

(02/07/05)R13

Standard Modification

106-1.02 LOCAL MATERIAL SOURCES.

1. a. General. Within Item a. delete text and replace with: Utilize Useable Excavation according to subsection 104-1.04 before using material sources listed in subsection 106-1.02.4. When there is insufficient useable excavation furnish additional required materials from sources of the Contractor's choice, except that the Contractor shall use a mandatory source when identified in the Contract.

4. Type of Sources. Replace the first paragraph with the following: The Contractor shall utilize Useable Excavation according to subsection 104-1.04 before using material sources listed in this subsection. When there is insufficient Useable Excavation, the Contractor shall furnish additional required materials from sources of the Contractor's choice, except that the Contractor shall use a mandatory source when identified in the Contract.

When there is insufficient Useable Excavation, the Contractor shall supply additional required material from the following sources:

4. d. Available Sources. Replace the second paragraph with the following: When the Department furnishes copies of existing boring logs, test results, or other data in its possession concerning Available Sources, the Contractor is responsible for determining the accuracy and completeness of this data, for assumptions the Contractor makes based on this data, and for exploring Available Sources to the Contractor's satisfaction.

4. e. Excluded Material Sources. Replace the paragraph with the following: Some material sources may not be considered acceptable regardless of location or ownership. The bid documents may identify some material sources excluded from use. The Department reserves the right to exclude a material sources or any portion of a material source, at any time after Contract award, that is determined by material testing to be unsuitable for use on the project.

E24(1/1/06)

Add new subsection 106-1.08:

106-1.08 SUBMITTAL PROCEDURE. The Contractor shall complete a Submittal Register, and shall submit it to the Engineer on forms provided by the Department. The intent of the

Submittal Register is to provide a blueprint for the smooth flow of specified project documents. The Contractor shall fill it out sequentially by bid item and allow at least three spaces between bid items. The Submittal Register shall list working drawings, schedules of work, and other items required to be submitted to the Department by the Contractor including but not limited to: Progress Schedule, anticipated dates of material procurement, Construction Phasing Plan, Traffic Control Plan, Storm Water Pollution Prevention Plan, Quality Control Program, Utility Progress Schedule, Blasting Plan, Mining Plan, annual EEO reports, DBE payment documentation and subcontracts.

The Contractor shall submit materials (product) information to the Engineer for review, as required by the Materials Certification List and the Contract.

The number of copies required for submittals may be included in the specifications for individual bid items. If the number of copies of a submittal is not otherwise specified, three copies shall be required. On each sheet submitted to the Department, including working drawings, catalog cuts, manufacturer's certifications, etc., space shall be provided for Contractor and Department review stamps.

Each copy of each submittal shall include a Submittal Summary sheet. The Contractor may use forms provided by the Department or a similar form of the Contractor's choice as approved by the Department. The Contractor shall sign submittals and submit them to the Engineer. The Department will review submittals within 30 days after they are received. The Department will return submittals to the Contractor as either: approved, conditionally approved with the conditions listed, or rejected with the reasons listed. The Contractor may resubmit a rejected submittal to the Engineer with more information or corrections. The Department will review resubmittals within 30 days after they are received.

The Contractor shall not order material or use working drawings that have not been approved by the Department. The Contractor shall be responsible for timely submittals. Failure by the Department to review submittals within the time given may be the basis for a request for extension of Contract time but not for additional compensation.

Payment for a specific Contract item will not be made until the Department has received the Submittal Register for all items and approved all required submittals for that specific Contract item.

When material invoices, freight bills and mill certificates are submitted, they shall provide sufficient information for the Engineer to identify the date, company and location of invoice (bill, certificate); project name and number where material will be incorporated; manufacturer, product number, quantity and cost.

E34(01/27/07)

SECTION 107
LEGAL RELATIONS AND RESPONSIBILITY TO PUBLIC

Special Provisions

107-1.02 PERMITS, LICENSES AND TAXES. Add the following: Obtain a written statement from the State Historic Preservation Officer stating that material disposal, extraction, stockpiling or staging, on off project site, is not expected to impact cultural resources. The State Historic Preservation Officer is with the Department of Natural Resources in Anchorage, and may be contacted at (907) 269-8715. If cultural resources are discovered during construction activities, stop work at that site and notify the Engineer.

Provide a wetland specialist able to conduct wetlands determinations and delineations according to the Corps of Engineers 1987 Wetland Delineation Manual. The wetland specialist shall conduct the determination and delineations of sites outside the project limits or not previously permitted, impacted by the Contractor's operations. These delineations will be subject to Corps of Engineers approval.

Provide the Engineer a copy of permits or clearances received before using sites outside the project limits. Additionally, provide the Engineer a written statement that permits or clearances have been obtained. Also provide a written statement to the Engineer listing agencies or offices contacted that responded that no additional action is required.

Add the following: The Department has received the following permits on the Contractor's behalf:

1. The Alaska Department of Environmental Conservation (ADEC), Division of Water issued a Storm Water Disposal Non-objection letter (No. 08-WW-058-046) dated March 18, 2008 to allow changes to the Municipal storm drainage system.

2. The Alaska Department of Natural Resources (ADNR), Office of habitat Management and Permitting (OHMP) Title 41 Permit (No. 08-II-0057) was issued on March 28, 2008 for work in Fire Creek. This ADNR Title 41 Permit expires December 31, 2009.

3. The Municipality of Anchorage (MOA), Department of Public Works, Flood Hazard Permit (No 08-0002-00) was issued on April 10, 2008 for work in Fire Creek.

4. A U.S. Army Corps of Engineers (COE) Nationwide 3 permit (No. 2008-28) was issued on March 20, 2008 for work in wetlands. The COE Permit expires on March 19, 2013.

Provide information to comply with the US Environmental Protection Agency National Pollutant Discharge Elimination System (NPDES) General Permit for Alaska to discharge storm water from the construction site. Refer to Section 641, Erosion, Sediment, and Pollution Control for requirements for this permit.

A Municipality of Anchorage (MOA) Right-of-Way Use permit will be required. The Municipality will require a copy of the approved Traffic Control Plan and a copy of the Notice to Proceed from the Contractor.

107-1.11 PROTECTION AND RESTORATION OF PROPERTY AND LANDSCAPE.

Add the following: If required water for construction purpose from a nonmunicipal water source, obtain a Temporary Water Use Permit from the Water Resource Manager, and provide a copy to the Engineer. The Water Resource Manager is with the Department of Natural Resources in Anchorage and may be contacted at (907) 269-8624.

(05/29/02)R7

Standard Modification

107-1.11 PROTECTION AND RESTORATION OF PROPERTY AND LANDSCAPE.

Add the following paragraphs:

7. Restoring Areas. Areas used by the Contractor, including haul routes, shall be restored to their original condition after the Contractor's operations are completed. The original condition of an area shall be determined as follows: Before beginning operations, the Engineer and the Contractor shall inspect each area and haul route that will be used by the Contractor and take photographs to document their condition. After construction operations are completed, the condition of each area and haul route will be compared to the earlier photographs. Before demobilization the Contractor shall repair damages attributed to its operations. The Contractor agrees that costs associated with repairs shall be subsidiary to other items of work and will not be paid for directly.

8. Material Disposal Sites. Offsite disposal areas may be at locations of the Contractor's choice, provided the Contractor obtains from the owner of such land written permission for such dumping and a waiver of all claims against the State for any damage to such land which may result there from, together with permits required by law for such dumping. A copy of such permission, waiver of claims, and permits shall be filed with the Engineer before beginning work on private property. The Contractor's selected disposal sites shall also be inspected and approved by the Engineer before use of the sites.

E35(01/27/07)

Special Provisions

Add the following subsection:

107-1.21 FEDERAL AFFIRMATIVE ACTION. The Federal Equal Employment Opportunity, Disadvantaged Business Enterprise, and On-the-Job Training affirmative action program requirements that are applicable to this Contract are contained in the project Special Provisions and Contract Forms, and may include:

Disadvantaged Business Enterprise (DBE) Program	Section 120
Training Program	Section 645
Federal EEO Bid Conditions	Form 25A-301
EEO-1 Certification	Form 25A-304
DBE Subcontractable Items	Form 25A-324
ADOT&PF Training Program Request	Form 25A-310
Training Utilization Report	Form 25A-311
Contact Report	Form 25A-321A
DBE Utilization Report	Form 25A-325C
Summary of Good Faith Effort Documentation	Form 25A-332A
Required Contract Provisions, Federal-Aid Contracts	Form 25D-55

In addition to the sanctions provided in the above references, non-compliance with these requirements is grounds for withholding of progress payments.

(01/22/02)S80

SECTION 108
PROSECUTION AND PROGRESS

Special Provisions

108-1.01 SUBLETTING OF CONTRACT. Delete paragraph four and replace with the following: Submit the Contractor Self Certification for Subcontractors and Lower Tier Subcontractors, Form 25D-042, before the Contractor or a subcontractor sublets any portion of the Contract. The certification will be accepted by the Department in lieu of written approval of subcontracts. The Department maintains the authority to review subcontracts, require prior written approval of subcontracts, and to deny permission to sublet work. The Department may penalize the Contractor for false statements or omissions made in connection with Form 25D-042.

1. The Contractor shall ensure the following for each subcontract (agreement):

   a. The Department is furnished with one completed Contractor Self certification, Form 25D-042, and two copies of the subcontract signed by both parties and including item descriptions and prices of subcontracted work before the subcontracted work begins;

   b. The subcontractors have submitted a Bidder Registration, Form 25D-6;

   c. The required prompt payment provisions of AS 36.90.210, as well as other items listed in Form 25D-042, are included in the subcontracts;

   d. The subcontractors pay current prevailing rate of wages according to subsection 107-1.04 and file certified payrolls with the Engineer and DOLWD for work performed on the project; and

   e. Upon receipt of a request for more information regarding subcontracts, the requested information is provided to the Department within 5 calendar days.

R57(01/02/08)

108-1.03 PROSECUTION AND PROGRESS. Delete the last sentence of the first paragraph and substitute the following: Submit the following at the Preconstruction Conference:

Delete item 1. A progress schedule. and substitute the following:

1. A Critical Path Method (CPM) Schedule is required, in a format acceptable to the Engineer, showing the order the work will be carried out and the contemplated dates the Contractor and subcontractors will start and finish each of the salient features of the work, including scheduled periods of shutdown. Indicate anticipated periods of multiple shift work in the CPM Schedule. Revise to the proposed CPM Schedule promptly. Promptly submit a revised CPM Schedule if there are substantial changes to the schedule, or upon request of the Engineer.

(12/13/02)R261

108-1.06 CONTRACT TIME, EXTENSION OF CONTRACT TIME AND SUSPENSION OF WORK. Add the following:

5. Interim Completion. The Contractor must substantially complete the following work by the completion date specified:

   a. Sanitary Sewer Manhole installation. By August 01, 2009.

      Substantially complete in accordance with the Plans and Section 604 of these Specifications.

   b. Sanitary Sewer System installation. By August 01, 2009.

      Substantially complete in accordance with the Plans and Section 626 of these Specifications.

   Failure to complete the work listed above by or before the listed completion date will result in the assessment of liquidated damages at 20% of the daily amount shown in Table 108-1, *Daily Charge for Liquidated Damages for Each Calendar Day of Delay,* for each calendar day between the completion date and the calendar date when the work is substantially complete.

SECTION 109
MEASUREMENT AND PAYMENT

Special Provisions

109-1.02 MEASUREMENT OF QUANTITIES. Under subtitle Electronic Computerized Weighing System item (1) add the following to the end of the first sentence: ", CD, or a USB device."

109-1.05 COMPENSATION FOR EXTRA WORK. Under item 3. Equipment, item a. add the following to the second paragraph: The rental rate area adjustment factors for this project shall be as specified on the adjustment maps for the Alaska - South Region.

(4/31/05)R14

Standard Modification

109-1.08 FINAL PAYMENT. Add the following sentence to the first paragraph: The Department will not process the final estimate until the Contractor completes Items 1 through 4 in the first paragraph of subsection 105-1.16.

E11(6/30/04)

Add the following Section:

SECTION 120
DISADVANTAGED BUSINESS ENTERPRISE (DBE) PROGRAM

Standard Modification

120-1.01 DESCRIPTION. The work consists of providing Disadvantaged Business Enterprises (DBEs), as defined in Title 49, CFR (Code of Federal Regulations), Part 26, with the opportunity to participate on an equitable basis with other contractors in the performance of contracts financed in whole, or in part, with federal funds. The Contractor or subcontractor shall not discriminate on the basis of race, color, national origin, or sex in the performance of this contract. The Contractor shall carry out applicable requirements of 49 CFR Part 26 in the award and administration of USDOT assisted contracts.

120-1.02 INTERPRETATION. It is the intent of this section to implement the requirements of 49 CFR, Part 26, and the Department's federally approved DBE Program.

120-1.03 ESSENTIAL CONTRACT PROVISION. Failure to comply with the provisions of this section will be considered a material breach of contract, which may result in the termination of this contract or such other remedy as ADOT&PF deems appropriate. The Department also considers failure to comply with this section to be so serious as to justify debarment action as provided in AS 36.30.640(4).

120-1.04 DEFINITIONS AND TERMS. The following definitions will apply.

1. Broker. A DBE certified by the Department that arranges for the delivery or provision of creditable materials, supplies, equipment, transportation/hauling, insurance, bonding, etc., within its certified category, that is necessary for the completion of the project. A broker of materials certified in a supply category must be responsible for scheduling the delivery of materials and fully responsible for ensuring that the materials meet specifications before credit will be given.

2. Commercially Useful Function (CUF). The execution of the work of the Contract by a DBE carrying out its responsibilities by actually performing, managing, and supervising the work involved using its own employees and equipment. The DBE shall be responsible, with respect to materials and supplies used on the Contract, for negotiating price, determining quality and quantity, ordering the material, and installing (where applicable) and paying for the material itself. To determine whether a DBE is performing a commercially useful function, an evaluation of the amount of work subcontracted, industry practices, whether the amount the firm is to be paid under the Contract is commensurate with the work it is actually performing and the DBE credit claimed for its performance of the work. Other relevant factors will be considered. The determination of CUF is made by the Engineer after evaluating the way in which the work was performed during the execution of the Contract.

3. Disadvantaged Business Enterprise (DBE). An enterprise which is a for-profit small business concern

   a. that is at least 51 percent owned by one or more individuals who are both socially and economically disadvantaged or, in the case of a corporation, in which 51 percent of the stock is owned by one or more such individuals;

   b. whose management and daily business operations are controlled by one or more of the socially and economically disadvantaged individuals who own it; and

   c. has been certified by the Department in accordance with 49 CFR, Part 26.

4. DBE Key Employee. Permanent employees identified by the DBE owner in its certification file in the Department Civil Rights Office.

5. DBE Utilization Goal. The percent of work to be performed by certified DBEs that is established by the Department and specified in the Contract.

6. Good Faith Efforts. Efforts by the bidder or Contractor to achieve a DBE goal or other requirement of 49 CFR Part 26, by their scope, intensity, and appropriateness to the objective, that can reasonably be expected to fulfill the program requirement.

7. Manufacturer. A DBE certified by the Department in a supply category that changes the shape, form, or composition of original material in some way and then provides that altered material to the project and to the general public or the construction industry at large on a regular basis.

8. Notification. For purposes of soliciting DBE participation on a project and to count toward a contractor's Good Faith Efforts, notification shall be by letter or fax transmission, with a return receipt requested or successful transmission report. Telephonic contact with a DBE may be allowed, however it shall be based on the ability of Civil Rights staff to independently verify this contact.

9. Regular Dealer. A DBE certified by the Department in a supply category that

   a. maintains an in-house inventory on a regular basis of the particular product provided to this project; and

   b. keeps an inventory in an amount appropriate for the type of work using that product; and

   c. offers that inventory for sale to the general public or construction industry at large (private and public sectors), not just supplied as needed on a project by project basis during the construction season, except where the product requires special or heavy equipment for delivery and the DBE possesses and operates this equipment on a regular basis throughout the construction season in order to deliver the product to the general public or construction industry at large. If the distribution

equipment is rented or leased, it must be on a repetitive, seasonal basis; and may additionally

d. fabricate (assembles large components) for use on a construction project, consistent with standard industry practice, for delivery to the project.

120-2.01 UTILIZATION GOAL. The DBE Utilization Goal for this contract is shown on Form 25A324 (DBE Subcontractable Items) as a percentage of the total basic bid amount. A DBE may be considered creditable towards meeting the DBE Utilization Goal at time of Contract award, if the DBE is certified by the Department in a category covering the CUF to be performed at the time of listing on Form 25A325C (DBE Utilization Report).

A bidder shall demonstrate the ability to meet the DBE Utilization Goal or perform and document all of the required Good Faith Efforts under Subsection 120-3.02 in order to be eligible for award of this Contract.

If the quantity of work of a bid item involving a DBE firm is reduced by the Department, the DBE Utilization Goal on Form 25A325C will be reduced proportionately.

120-3.01 DETERMINATION OF COMPLIANCE

1. Phase I - Bid. Each bidder must register with the Civil Rights Office annually in accordance with §§26.11 & 26.53(b)(2)(iv) of 49 CFR, Part 26. No contract may be awarded to a bidder that is not registered.

2. Phase II - Award. The apparent low bidder will provide the following within 15 days of receipt of notice of intent to award:

   a. **Written DBE Commitment.** Written commitments from DBEs to be used on the project. The written commitment shall contain the following information:

      1) A description of the work that each DBE will perform;

      2) The dollar amount of participation by the DBE firm;

      3) Written documentation of the bidder/offeror's commitment to use a DBE subcontractor whose participation it submits to meet a contract goal; and

      4) Written confirmation from the DBE that it is participating in the contract as provided in the prime Contractor's commitment.

   b. **DBE Utilization Report.** Form 25A325C listing the certified DBEs to be used to meet the DBE Utilization Goal.

   c. **Good Faith Effort Documentation.** Summary of Good Faith Effort Documentation (Form 25A332A and attachments) and DBE Contact Reports (Form 25A321A) if the Contractor submits less DBE utilization on Form 25A325C than is required to meet the DBE Utilization Goal. If accepted by the Department, this lower DBE utilization becomes the new DBE Utilization Goal.

If the bidder cannot demonstrate the ability to meet the DBE Utilization Goal, and can not document the minimum required Good Faith Efforts (as outlined in subsection 120-3.02 below), the Contracting Officer will determine the bidder to be not responsible.

3. Phase III - Construction.

a. **Designation of DBE/EEO Officer.** At the preconstruction conference, the Contractor shall submit, in writing, the designation of a DBE/EEO officer.

b. **DBE Creditable Work.** The CUF work items and creditable dollar amounts shown for a DBE on the DBE Utilization Report (Form 25A325C) shall be included in any subcontract, purchase order or service agreement with that DBE.

c. **DBE Replacement.** If a DBE replacement is approved by the Engineer, the Contractor shall replace the DBE with another DBE for the same work in order to fulfill its commitment under the DBE Utilization Goal. In the event that the Contractor cannot obtain replacement DBE participation, the Engineer may adjust the DBE Utilization Goal if, in the opinion of the Engineer and the Civil Rights Office, both of the following criteria have been met:

1) The Contractor has not committed any discriminatory practice in its exercise of good business judgment to replace a DBE.

2) If the Contractor is unable to find replacement DBE participation and has adequately performed and documented the Good Faith Effort expended in accordance with Subsection 120-3.02.

d. **DBE Utilization Goal.** The DBE Utilization Goal will be adjusted to reflect only that amount of the DBE's work that can not be replaced.

120-3.02 GOOD FAITH EFFORT

1. **Good Faith Effort Criteria.** The Contracting Officer will use the following criteria to judge if the bidder, who has not met the DBE Utilization Goal, has demonstrated sufficient Good Faith Effort to be eligible for award of the contract.

Failure by the bidder to perform and document all of the following actions constitutes insufficient Good Faith Effort.

a. Consideration of all subcontractable items. The bidder shall, at a minimum, seek DBE participation for each of the subcontractable items upon which the DBE goal was established as identified by the Department (on Form 25A324) prior to bid opening. It is the bidder's responsibility to make the work listed on the subcontractable items list available to DBE firms, to facilitate DBE participation.

b. If the bidder can not achieve the DBE Utilization Goal using the list of available DBE firms based on the subcontractable items list, then the bidder may consider other items that could be subcontracted to DBEs.

c. Notification to all active DBEs listed for a given region in the Department's most current DBE Directory at least 7 calendar days prior to bid opening. The bidder must give the DBEs no less than five days to respond. The bidder may reject DBE quotes received after the deadline. Such a deadline for bid submission by DBEs will be consistently applied. DBEs certified to perform work items identified on Form 25A324 must be contacted to solicit their interest in participating in the execution of work with the Contractor. Each contact with a DBE firm will be logged on a Contact Report (Form 25A321A).

d. Non-competitive DBE quotes may be rejected by the bidder. Allegations of non-competitive DBE quotes must be documented and verifiable. A DBE quote that is more than 10.0% higher than the accepted non-DBE quote will be deemed non-competitive, provided the DBE and non-DBE subcontractor quotes are for the exact same work or service. Bidders must have a non-DBE subcontractor quote for comparison purposes. Such evidence shall be provided in support of the bidder's allegation. Where the bidder rejects a DBE quote as being non-competitive under this condition, the work must be performed by the non-DBE subcontractor and payments received by the non-DBE subcontractor during the execution of the Contract shall be consistent with the non-DBE's accepted quote. This does not preclude increases as a result of Change documents issued by the Department.

e. Provision of assistance to DBEs who need help in obtaining information about bonding or insurance required by the bidder.

f. Provision of assistance to DBEs who need help in obtaining information about securing equipment, supplies, materials, or related assistance or services.

g. Providing prospective DBEs with adequate information about the requirements of the Contract regarding the specific item of work or service sought from the DBE.

h. Follow-up of initial notifications by contacting DBEs to determine whether or not they will be bidding. Failure to submit a bid by the project bid opening or deadline by the bidder is de facto evidence of the DBE's lack of interest in bidding. Documentation of follow-up contacts shall be logged on the Contact Report (Form 25A321A).

i. Items c through h will be utilized to evaluate any request from the Contractor for a reduction in the DBE Utilization Goal due to the default or decertification of a DBE and the Contractor's subsequent inability to obtain additional DBE participation.

1. **Administrative Reconsideration.** Under the provisions of 49 CFR. Part 26.53(d), if it is determined that the apparent successful bidder has failed to meet the requirements of this subsection, the bidder must indicate whether they would like an opportunity for administrative reconsideration. Such an opportunity must be exercised by the bidder within 3 calendar days of notification it has failed to meet the requirements of this

subsection. As part of this reconsideration, the bidder must provide written documentation or argument concerning the issue of whether it met the goal or made adequate good faith efforts to do so.

a. The decision on reconsideration will be made by the DBE Liaison Officer.

b. The bidder will have the opportunity to meet in person with the DBE Liaison Officer to discuss the issue of whether it met the goal or made adequate good faith efforts to do so. If a meeting is desired, the bidder must be ready, willing and able to meet with the DBE Liaison Officer within 4 days of notification that it has failed to meet the requirements of this subsection.

c. The DBE Liaison Officer will render a written decision on reconsideration and provide notification to the bidder. The written decision will explain the basis for finding that the bidder did or did not meet the goal or make adequate good faith efforts to do so.

d. The result of the reconsideration process is not administratively appealable to US DOT.

120-3.03 COMMERCIALLY USEFUL FUNCTION (CUF).

1. **Creditable Work.** Measurement of attainment of the DBE Utilization Goal will be based upon the actual amount of money received by the DBEs for creditable CUF work on this project as determined by the Engineer in accordance with this Section. CUF is limited to that of a:

   a. regular dealer;
   b. manufacturer;
   c. broker;
   d. subcontractor;
   e. joint-venture; or
   f. prime contractor.

2. **Determination of Commercially Useful Function**. In order for the CUF work of the DBE to be credited toward the goal, the Contractor will ensure that all of the following requirements are met:

   a. The CUF performed by a DBE certified in a supply category will be evaluated by the Engineer to determine whether the DBE performed as either a broker, regular dealer, or manufacturer of the product provided to this project.

   b. A DBE trucking firm certified and performing work in a transportation/hauling category is restricted to credit for work performed with its own trucks and personnel certified with the CRO prior to submitting a bid to a contractor for DBE trucking. The DBE trucking firm must demonstrate that it owns all trucks (proof of title and/or registration) to be credited for work and that all operators are employed by the DBE trucking firm. A DBE trucking firm that does not certify its

trucks and personnel that it employs on a job will be considered a broker of trucking services and limited to credit for a broker. (This does not effect the CUF of that same firm, when performance includes the hauling of materials for that work.)

c. The DBE is certified in the appropriate category at the time of

1) the Engineer's approval of the DBE subcontract, consistent with the written DBE commitment; and

2) the issuance of a purchase order or service agreement by the Contractor to a DBE performing as either a manufacturer, regular dealer, or broker (with a copy to the Engineer).

d. The Contractor will receive credit for the CUF performed by DBEs as provided in this Section. Contractors are encouraged to contact the Engineer in advance of the execution of the DBE's work or provision of goods or services regarding CUF and potential DBE credit.

e. The DBE may perform work in categories for which it is not certified, but only work performed in the DBE's certified category meeting the CUF criteria may be credited toward the DBE Utilization Goal.

f. The work of the DBE firm must meet the following criteria when determining when CUF is being performed by the DBE:

1) The work performed will be necessary and useful work required for the execution of the Contract.

2) The scope of work will be distinct and identifiable with specific contract items of work, bonding, or insurance requirements.

3) The work will be performed, controlled, managed, and supervised by employees normally employed by and under the control of the certified DBE. The work will be performed with the DBE's own equipment. Either the DBE owner or DBE key employee will be at the work site and responsible for the work.

4) The manner in which the work is sublet or performed will conform to standard, statewide industry practice within Alaska, as determined by the Department. The work or provision of goods or services will have a market outside of the DBE program (must also be performed by non-DBE firms within the Alaskan construction industry). Otherwise, the work or service will be deemed an unnecessary step in the contracting or purchasing process and no DBE credit will be allowed.

There will be no DBE credit for lower-tier non-DBE subcontract work.

5) The cost of the goods and services will be reasonable and competitive with the cost of the goods and services outside the DBE program within

Alaska. Materials or supplies needed as a regular course of the Contractor's operations such as fuel, maintenance, office facilities, portable bathrooms, etc. are not creditable.

The cost of materials actually incorporated into the project by a DBE subcontractor is creditable toward the DBE goal only if the DBE is responsible for ordering and scheduling the delivery of creditable materials and fully responsible for ensuring that the materials meet specifications.

6) All subcontract work, with the exception of truck hauling, will be sublet by the same unit of measure as is contained in the Bid Schedule unless prior written approval of the Engineer is obtained.

7) The DBE will control all business administration, accounting, billing, and payment transactions. The prime contractor will not perform the business, accounting, billing, and similar functions of the DBE. The Engineer may, in accordance with AS 36.30.420(b), inspect the offices of the DBE and audit the records of the DBE to assure compliance.

g. On a monthly basis, the Contractor shall report on Form 25A336 (Monthly Summary of DBE Participation) to the Department Civil Rights Office the payments made (canceled checks or bank statements that identify payor, payee, and amount of transfer) for the qualifying work, goods and services provided by DBEs.

3. **Decertification of a DBE.** Should a DBE performing a CUF become decertified during the term of the subcontract, purchase order, or service agreement for reasons beyond the control of and without the fault or negligence of the Contractor, the work remaining under the subcontract, purchase order, or service agreement may be credited toward the DBE Utilization Goal.

Should the DBE be decertified between the time of Contract award and the time of the Engineer's subcontract approval or issuance of a purchase order or service agreement, the work of the decertified firm will not be credited toward the DBE Utilization Goal. The Contractor must still meet the DBE Utilization Goal by either

a. withdrawing the subcontract, purchase order or service agreement from the decertified DBE and expending Good Faith Effort (Subsection 120-3.02, Items c through h) to replace it with one from a currently certified DBE for that same work or service through subcontractor substitution (Subsection 103-1.01); or

b. continuing with the subcontract, purchase order or service agreement with the decertified firm and expending Good Faith Effort to find other work not already subcontracted out to DBEs in an amount to meet the DBE Utilization Goal through either

1) increasing the participation of other DBEs on the project;

2) documenting Good Faith Efforts (Subsection 120-3.02, items c through h); or

3) by a combination of the above.

4. **DBE Rebuttal of a Finding of no CUF.** Consistent with the provisions of 49 CFR, Part 26.55(c)(4)&(5), before the Engineer makes a final finding that no CUF has been performed by a DBE firm the Engineer will coordinate notification of the presumptive finding through the Civil Rights Office to the Contractor, who will notify the DBE firm.

   The Engineer, in cooperation with the Civil Rights Office, may determine that the firm is performing a CUF if the rebuttal information convincingly demonstrates the type of work involved and normal industry practices establishes a CUF was performed by the DBE. Under no circumstances shall the Contractor take any action against the DBE firm until the Engineer has made a final determination. The Engineer's decisions on CUF matters are not administratively appealable to US DOT.

120-3.04 DEFAULT OF DBE. In the event that a DBE firm under contract or to whom a purchase order or similar agreement has been issued defaults on their work for whatever reason, the Contractor shall immediately notify the Engineer of the default and the circumstances surrounding the default.

The Contractor shall take immediate steps, without any order or direction from the Engineer, to retain the services of other DBEs to perform the defaulted work. In the event that the Contractor cannot obtain replacement DBE participation, the Engineer may adjust the DBE Utilization Goal if, in the opinion of the Engineer, the following criteria have been met:

1. The Contractor was not at fault or negligent in the default and that the circumstances surrounding the default were beyond the control of the Contractor; and

2. The Contractor is unable to find replacement DBE participation at the same level of DBE commitment and has adequately performed and documented the Good Faith Effort expended in accordance with items c through h of Subsection 120-3.02 for the defaulted work; or

3. It is too late in the project to provide any real subcontracting opportunities remaining for DBEs.

The DBE Utilization Goal will be adjusted to reflect only that amount of the defaulted DBE's work that can not be replaced.

120-4.01 METHOD OF MEASUREMENT. The Contractor will be entitled to count toward the DBE Utilization Goal those monies actually paid to certified DBEs for CUF work performed by the DBE as determined by the Engineer. The Contractor will receive credit for the utilization of the DBEs, as follows:

1. Credit for the CUF of a DBE prime contractor is 100% of the monies actually paid to the DBE under the contract for creditable work and materials in accordance with 49 CFR 26.55.

2. Credit for the CUF of a subcontractor is 100% of the monies actually paid to the DBE under the subcontract for creditable work and materials. This shall include DBE trucking firms certified as a subcontractor and not a broker. Trucks leased from another DBE firm shall also qualify for credit and conforms to the provisions of 49 CFR 26.55(d).

3. Credit for the CUF of a manufacturer is 100% of the monies paid to the DBE for the creditable materials manufactured.

4. Credit for the CUF of a regular dealer of a creditable material, product, or supply is 60% of its value. The value will be the actual cost paid to the DBE but will not exceed the bid price for the item.

5. Credit for the CUF of a broker performed by a DBE certified in a supply category for providing a creditable material, product or supply is limited to a reasonable brokerage fee. The brokerage fee will not exceed 5% of the cost of the procurement contract for the creditable item.

6. Credit for the CUF of a broker performed by a DBE certified in the transportation/hauling category for arranging for the delivery of a creditable material, product or supply is limited to a reasonable brokerage fee. The brokerage fee will not exceed 5% of the cost of the hauling subcontract.

7. Credit for the CUF of a broker performed by a DBE certified in a bonding or insurance category for arranging for the provision of insurance or bonding is limited to a reasonable brokerage fee. The brokerage fee will not exceed 5% of the premium cost.

8. Credit for the CUF of a joint venture (JV) (either as the prime contractor or as a subcontractor) may not exceed the percent of the DBE's participation in the joint venture agreement, as certified for this project by the Department. The DBE joint venture partner will be responsible for performing all of the work as delineated in the certified JV agreement.

120-5.01 BASIS OF PAYMENT. Work under this item is subsidiary to other contract items and no payment will be made for meeting or exceeding the DBE Utilization Goal.

If the Contractor fails to utilize the DBEs listed on Form 25A325C as scheduled or fails to submit required documentation to verify proof of payment or documentation requested by the Department to help in the determination of CUF, the Department will consider this to be unsatisfactory work. If the Contractor fails to utilize Good Faith Efforts to replace a DBE, regardless of fault (except for Subsection 120-3.04 item 3), the Department will also consider this unsatisfactory work. Unsatisfactory work may result in disqualification of the Contractor

from future bidding under Subsection 102-1.13 and withholding of progress payments consistent with Subsection 109-1.06.

(11/17/00)S33

SECTION 201
CLEARING AND GRUBBING

Special Provisions

201-3.01 GENERAL. Add the following: The Engineer will review and accept the clearing limits set by the Contractor. Any subsequent changes made by the Engineer in setting the clearing limits will not be cause for extra payment and will be subsidiary to Item 201(3B) Clearing and Grubbing.

Timber with a 5 inch diameter or larger at breast height shall be cut into 8-foot lengths, de-limbed, and stacked at locations approved by the Engineer for public removal. These locations shall be adjacent to the nearest side street or other approved site which does not create a traffic hazard due to lack of adequate parking for the public. The Contractor will notify the public of the availability of the timber once it has been stacked. The Contractor shall schedule the clearing and grubbing work so as to provide 2 weeks for the public to access those areas of the project where such timber is available prior to completion of the clearing and grubbing work in those areas. The Contractor shall dispose of the timber left by the public after the 2 week time period.

The Contractor shall perform the work necessary to preserve and/or restore land monuments and property corners from damage. A land monument or property corner that is disturbed shall be restored according to Section 642 at the Contractor's expense. An undisturbed area 5 foot in diameter may be left around existing monuments and property corners. A list of land monuments and property corners is shown on the Right of Way maps.

201-4.01 METHOD OF MEASUREMENT. Add the following: The work required to cut, de-limb and stack timber for public removal and to preserve and restore land monuments and property corners will be subsidiary to Item 201(3B) Clearing and Grubbing.

(06/10/04)R107

SECTION 202
REMOVAL OF STRUCTURES AND OBSTRUCTIONS

Special Provisions

202-1.01 DESCRIPTION. Add the following: ***deleted*** **The property acquired from the Chugiak Alaska Kingdom Hall of Jehovah's Witness church located in the vicinity of Sta. 271+80 Lt. has an existing on-site septic system. The work will include removal of the ***deleted*** underground septic tank, septic related appurtenances, removal of septic tank contents (septage) and disinfection of the septic tank's interior. The associated septic leach field will be abandoned in place. Existing leach field cleanout standpipes will be cut off below grade and the resulting holes will be backfilled. The Contractor may encounter the existing copper water service line and well pump electrical service cable to the church during excavation operations. Both of these services will be deactivated prior to the Contractor's operations on this parcel. Removal of segments of these water and electric service facilities will be included in this work as directed by the Engineer.**

The Chugiak Alaska Kingdom Hall of Jehovah's Witnesses church structure will be removed under a separate contract. The structure, foundation, water treatment system components, related appurtenances and debris will be removed by June 15th, 2009.

The work under this section will also include removal of an underground septic tank and related appurtenances located at approximately Sta. 263+14 Rt. This work includes removal of septic tank contents (septage), disinfection of septic tank's interior and removal of the associated leach field where disturbed by sewer service, pathway and pathway retaining wall construction activities. Anecdotal evidence suggests the septic tank is a cylindrical structure approximately 4-feet in diameter and 6.6-feet in length. The approximate septic tank location is as shown on the Plans. Removal of septic tank shall not begin until the adjacent sewer main conduit has been constructed and is operational and the sewer service connection to serve property has been made.

This work will also include the removal of gas pipe and the abandonment of existing groundwater wells.

The work will also include removal of existing roadway embankment water depth monitoring (piezometer) wells located within the project limits. Well cap castings shall be removed during pavement removal. PVC piezometer tubing shall be removed during excavation and backfill operations.

202-2.01 MATERIALS. Add the following:

Backfill	Subsection 703-2.07 (Selected Material, Type C)
Lime	Calcium Hydroxide Ca(OH)2, also referred to as "hydrated lime"

202-3.01 GENERAL. Add the following: Contractor shall coordinate disconnection and reconnection of sewer service with the property owner and the Anchorage Water and Wastewater Utility.

202-3.05 REMOVAL OF PAVEMENT, SIDEWALKS AND CURBS. Add the following: Remove and stockpile all existing and temporary asphalt pavement for reuse as Item 301(1) Aggregate Base Course or Item 306(1) ATB.

Asphalt material not used as specified above shall be removed from the project and stockpiled at the Municipality of Anchorage gravel pit located along the Eagle River Correctional Frontage Road near the Hiland Overpass. Contact Scott Schnell, MOA Supervisor for Eagle River/Chugiak area at (907) 694-3487 to coordinate acceptance of material and desired location of stockpile. Material not acceptable to the maintenance chief will be disposed of in an acceptable manner.

Obtain a solid waste disposal permit from DEC or use a site previously approved by DEC for disposal of removed asphalt if not using it in the embankment. A DEC permitting officer in Anchorage may be contacted at (907) 269-7590.

(3/29/01)R84

Add the following subsections:

202-3.06 SEPTIC TANK REMOVAL. This work will be in accordance with Department of Environmental Conservation (DEC) regulations. Excavate down to lid of each manhole riser to gain access to septic tank. Prior to removing any septage from the tank, agitate the sludge at the bottom of the tank for 15 minutes. This may be accomplished by pumping liquid from the tank into a transport truck, then reversing the process and pumping the liquid back into the tank. Repeat this operation at each of the manhole risers.

Pump equal volumes of septage from each manhole riser until most liquid is removed from the tank. Septage shall be pumped into a watertight container and transported to Anchorage for ultimate disposal at a location approved by the Anchorage Water & Wastewater Utility (AWWU). Care shall be exercised in transporting the septage such that no spillage occurs during transport or disposal. Contractor shall obtain all permits required by local, state, and federal agencies for the transportation of septage to the disposal location in Anchorage. Contractor shall obtain authorization and pay all fees associated with disposal of septage to the AWWU system.

Place barricades, safety netting, safety tape, and/or other safety devices as necessary around each manhole riser to prevent accidental entry of persons into septic tank while conducting work.

Prepare a "Milk-of-Lime" solution by adding calcium hydroxide to water in the following proportion: 1-pound of calcium hydroxide to 1-gallon of water. Mix thoroughly. CAUTION! Contractor shall review calcium hydroxide Material Safety Data Sheets (MSDS) and adhere to the *Precautions for Safe Handling and Use* and the *Control Measures.*

After septage has been removed from tank, pour equal amounts of Milk-of-Lime into the manhole risers. Add in quantities adequate to produce a pH of 12 after 2 hours of contact with any septage remaining in the tank.

Disconnect piping at all tank openings and cap openings. Remove all pipes, tank appurtenances, tank and any wastewater saturated soils, as determined by the Engineer, removed or remaining in

the trench area and dispose of at a facility permitted to receive waste material of this type. Care shall be exercised in transporting this material so that spillage does not occur during transportation and disposal. Backfill the resulting excavation to original grade with Selected Material, Type C. Place in uniform layers of not more than 12-inches in depth and compact to 95% of maximum density in accordance with subsection 203-3.03.

202-3.07 LEACH FIELD REMOVAL. Excavate pipe and drain rock a minimum of 1 foot below existing field, or as directed by Engineer, and dispose of at a facility permitted to receive waste material of this type. Care shall be exercised in transporting this material so that spillage does not occur during transportation and disposal.

Prepare a "Milk-of-Lime" solution by adding calcium hydroxide to water in the following proportion: 1-pound of calcium hydroxide to 1-gallon of water. Mix thoroughly. CAUTION! Contractor shall review calcium hydroxide Material Safety Data Sheets (MSDS) and adhere to the Precautions for Safe Handling and Use and the Control Measures. This must also be addressed in the Stormwater Pollution Prevention Plan. Thoroughly spray exposed soils within excavated area with "Milk-of-Lime" solution.

Backfill the resulting excavation to original grade with Selected Material, Type C. Place in uniform layers of not more than 12-inches in depth and compact to 95% of maximum density in accordance with subsection 203-3.03.

202-3.08 GROUND WATER WELL ABANDONMENT. This work will be in accordance with Municipality of Anchorage (MOA) well decommissioning regulations as stipulated under Anchorage Municipal Code (AMC) Title 15 Environmental Protection.

202 3.09 REMOVAL OF PIPE. Add the following: During project construction, ENSTAR Natural Gas Company will abandon existing gas pipelines. Follow the procedures given in subsection 105 1.06 Cooperation With Utilities, when working around gas pipelines until they have been abandoned. Once the pipelines are abandoned, remove abandoned natural gas pipe within the right of way that are in conflict with the work and dispose of pipes off the project limits.

202-5.01 BASIS OF PAYMENT. Add the following: Item 202(16). At the contract unit price for the length of pipe removed, regardless of size. Payment includes full compensation for labor, materials, and equipment required to remove and dispose of the pipes as shown in the Plans.

Item 202(23). At the contract unit price for each well capped according to MOA & DEC regulations.

Payment will be made under:

Pay Item No.	Pay Item	Pay Unit
202(16)	Removal of Gas Pipe	Linear Foot
202(23)	Ground Water Well Abandonment	Each

SECTION 203
EXCAVATION AND EMBANKMENT

Special Provisions

203-1.01 DESCRIPTION. Add the following: Ditch linear grading shall consist of the final shaping of designated ditches, slopes and culvert invert areas for drainage by grading with a small dozer, motor grader, or other suitable means approved by the Engineer.

Add the following subsection:

203-3.06 TRENCH BLASTING. Drill, load, and shoot a series of line holes along the pipe trench. This is to be used in areas where normal excavation equipment and effort cannot accomplish the excavation. "Normal excavation equipment and effort" is defined as that level of power and effort as is attainable from a 235 Caterpillar Backhoe or equivalent.

This work shall only be performed where approved by the Engineer.

Blasting Plan: Prior to commencement of drilling, submit a Blasting Plan prepared by a qualified Blaster. Include the details of test blasting, controlled blasting and production blasting. Include station limits, date and time of each blast, layout details of each blast, trade names, types and sizes of explosives and accessories, delay sequences of the blast holes, powder factors and depth of drill holes. Submit a revised Blasting Plan any time there is a change in the drilling or blasting methods.

Blaster: Use a qualified blaster licensed or otherwise authorized under all applicable federal, state and local laws or regulations to possess, transport, store and use explosives of the type used on the Project. Provide the Blaster's resume and copies of all applicable licenses to the Engineer with the Blasting Plan. Have the Blaster on site during all loading and blasting operations. Require the Blaster to take responsible charge for safety procedures as set forth below and to maintain a detailed record for each day of blasting work.

Pre-Blast Conference: Hold a pre-blasting meeting at the jobsite prior to commencement of any drilling and blasting operations with the Contractor, the Blaster and representatives of the Engineer. Discuss the Blasting Plan and visit such specific sites as are necessary to familiarize the participants with the details of the blasting operations.

Safety: Submit a Safety Plan that includes descriptions of road closures, warning signals, and plans for notification of affected local, state and federal agencies. Discuss in the Safety Plan methods for protection of life and health, public and private property, new work or existing work on the project, nearby structures, wetlands, water and wildlife. Hold a safety meeting prior to commencement of blasting operations to address safety issues.

203-4.01 METHOD OF MEASUREMENT.

Add the following:

9. Item 203(20). Trench Blasting for Water/Sewer Utilities shall be measured by the linear foot along the centerline of the trench, regardless of the depth of excavation. The unit price per linear foot shall include trench blasting required for construction of all water and sewer appurtenances including water valves, fire hydrant assemblies, water services, sewer manholes, sewer cleanouts, and sewer services.

   Payment for rock removal by drilling and blasting will be made only when exploratory drilling or attempts to excavate have shown that material cannot be excavated without blasting. In neither situation shall the Contractor be entitled to additional compensation for delays and/or unforeseen conditions due to the presence or absence of rock.

10. Ditch linear grading will not be measured. This work will be subsidiary to Item 611(1B) Riprap, Class II.

203-5.01 BASIS OF PAYMENT. Add the following: Unit bid prices for trench blasting for water/sewer utilities will be full compensation for labor, equipment and services necessary to drill and blast rock in preparation for utility trench excavation and backfill.

Payment will be made under:

Pay Item No.	Pay Item	Pay Unit
203(20)	Trench Blasting for Water/Sewer Utilities	Linear Foot

SECTION 204
STRUCTURE EXCAVATION FOR CONDUITS AND MINOR STRUCTURES

Standard Modification

204-3.01 CONSTRUCTION REQUIREMENTS. In the first sentence of paragraph four, delete: "bedding and"

E37(01/27/07)

Special Provisions

204-3.01 CONSTRUCTION REQUIREMENTS. Add the following after the third paragraph: Excavation, bedding, backfill, and compaction for culverts outside the roadbed may be visually inspected and approved by the Engineer.

R204(2/6/08)

204-5.01 BASIS OF PAYMENT. Delete the third paragraph and replace with the following: When item 204(1), Structure Excavation, does not appear in the bid schedule, structure excavation required to complete other items of work is subsidiary except that excavation and disposal of unsuitable material required from below a plane 12 inches below the invert elevation of conduits and 18 inches below the bottom of structures will be paid for as extra work.

SECTION 301
AGGREGATE BASE COURSE

Special Provisions

301-2.01 MATERIALS. Add the following after the first sentence: Recycled asphalt material (RAM) may be substituted for aggregate base course, inch for inch, if the following conditions are met:

1. RAM shall be crushed or processed to 100 percent by weight passing the 1.5 inch sieve and 95-100 percent by weight passing the 1 inch sieve.

2. The gradation of the extracted aggregate shall meet the following:

Sieve	Percent Passing by Weight
1 inch	100
3/4 inch	70-100
3/8 inch	42-90
No. 4	28-78
No. 16	11-54
No. 50	5-34
No. 100	3-22
No. 200	2-12

3. The asphalt content shall be 2.5 - 5.0 percent by weight of the RAM.

(01/24/07)R176

301-3.01 PLACING. Add the following: Base course material used for the sidewalk and pathway foundation shall be placed with a "Layton box" or similar equipment capable of providing a specified depth with a uniform surface.

(09/01/89)R26

301-3.03 SHAPING AND COMPACTION. Add the following: Areas with less than 4 inches of aggregate base course shall be watered compacted to the satisfaction of the Engineer. Field densities will not be performed in these areas.

If recycled asphalt material is substituted for aggregate base course, the following conditions shall be met:

1. Density acceptance will be based determined by control strip method ATM 412. Use a test strip with a vibratory compactor with a minimum dynamic force of 40,000 pounds. The optimum density will be determined by the Engineer using a nuclear densometer gauge to monitor the test strip. Adequate water shall be added to aid compaction.

2. After the appropriate coverage with the vibratory compactor, a minimum of 6 passes with a pneumatic tire roller shall be completed. Tires shall be inflated to 80 psi (± 5 psi), and the roller shall have a minimum operating weight per tire of 3,000 pounds.

301-5.01 BASIS OF PAYMENT. Add the following: If recycled asphalt material is substituted for aggregate base course, it will be paid for as Item 301(1) Aggregate Base Course at the unit price shown on the bid schedule for that item.

(01/24/07)R176

SECTION 306
ASPHALT TREATED BASE COURSE

Special Provisions

306-2.01 MATERIALS. Delete items 1 and 2 and replace with the following:

1. Aggregate. Conform to subsection 703-2.04.

2. Asphalt. The total residual asphalt cement may be a combination of PG 52-28 and the asphalt binder in the existing asphalt or only PG 52-28. Documentation and conformance is only required for PG 52-28. The Engineer may conditionally accept asphalt cement at the source. Provide a manufacture's certificate of compliance, according to subsection 106-1.05, and test results of applicable quality requirements of Section 702 before shipping the material.

Add the following:

4. Recycled Asphalt Pavement (RAP). Process existing pavement removed under subsection 202-3.05 so material passes the 1 ½ inch sieve. Stockpile the material separately from the crushed aggregates for pavement aggregates. Perform one gradation and one asphalt content test for every 0.5 ton of RAP or a minimum of 10 sets of tests which ever is greater.

CONSTRUCTION REQUIREMENTS

306-3.01 COMPOSITION OF MIXES. Replace this subsection with the following: If recycled materials are used, submit process control data of the RAP and of the asphalt concrete aggregates supporting proposed job mix design gradations.

At least 15 calendar days before the production, submit the following to the Engineer:

1. A letter stating the location, size, and type of mixing plant, the proposed gradation for the Job Mix Design, gradations for individual stockpiles with supporting process control information, and the blend ratio of each aggregate stockpile and RAP. The proposed gradation of the virgin aggregate must meet the requirements of Table 703-3, Type II. Submit gradation and asphalt content process control data of RAP for the Job Mix Design.

2. Provide representative samples of each of the aggregates in the blend. Sample sizes: 100 pounds of each intermediate and/or coarse aggregate, 200 pounds of fine aggregate, 25 pounds of blend sand, and 200 pounds of RAP.

3. A minimum of three 1 gallon samples of asphalt cement proposed for use in the mixture, including the name of the product, the manufacturer, test results as required in Section

702, manufacturer's certificate of compliance according to Section 106, and a temperature viscosity curve for the asphalt cement.

4. A 0.5 pint sample of the anti strip additive proposed, including the name of product, manufacturer, and manufacturer's data sheet, and current Materials Safety Data Sheet (MSDS).

From this information, the Engineer will establish the Job Mix Design using ATM T-417, which will become a part of the Contract. The Job Mix Design shall meet the requirements of Type II, Class B in Table 401-1, Asphalt Concrete Mix Design Requirements, except Voids in Mineral Aggregate (VMA) and Dust/Asphalt ratio specifications do not apply. RAP may be used in the mixture. The design minimum residual asphalt content (RAP residual plus PG 52-28) is 5 percent by weight of total mix and with 1/4 percent antistrip by weight of PG 52-28. The Job Mix Design will specify the design aggregate gradation, gradation of virgin aggregate blend, percent of residual asphalt cement, percentage of RAP, and mixing and compaction temperature ranges.

Submit changes in the Job Mix design warranted by changes in the source of asphalt cement, the source of aggregates, aggregate quality, aggregate gradations, or blend ratios, in the same manner as the original submittal. A new Job Mix Design will only apply to asphalt concrete mixture produced after submitting the new aggregate gradation.

Approved Job Mix Designs will have the full tolerances shown in Table 401-2 applied and will not be limited to the broad band listed in Table 703-3.

306-3.02 WEATHER LIMITATIONS. Delete the requirements of this subsection and substitute the following: Apply the requirements of subsection 401-3.01.

306-3.03 STOCKPILING. Delete this subsection in its entirety.

306-3.04 EQUIPMENT. Add the following: Apply the requirements of subsection 401-3.02 to equipment.

Add the following to item 1.:

1. If recycled materials are used, the asphalt plant shall combine RAP with asphalt concrete aggregates to produce a hot recycled asphalt treated base mixture.

Delete subsections 306-3.05 and 306-3.06 and substitute the requirements of subsections 401-3.08 and 401-3.09.

Delete subsections 306-3.08 and 306-3.09 and substitute the requirements of subsections 401-3.12 and 401-3.13.

Apply the requirements of subsections 401-3.07, 401-3.10, and 401-3.11.

Add the following subsection:

306-3.12 PATCHING DEFECTIVE AREAS. Remove ATB that becomes contaminated with foreign material, is segregated, or is determined to be defective. Do not skin patch. Remove defective materials for the full thickness of the course. Cut the pavement so that edges are vertical, the sides are parallel to the direction of traffic and the ends are skewed between 15-25 degrees. Coat edges with a tack coat conforming to Section 402 and allow to cure. Place and compact fresh ATB to grade and smoothness requirements.

306-4.01 METHOD OF MEASUREMENT. Change the third paragraph to read:

Antistrip additive. Will not be measured for payment, the cost of the antistrip additive will be subsidiary to Item 306(1) ATB.

Add the following subsection:

306-4.02 ACCEPTANCE SAMPLING AND TESTING. The Department has the exclusive right and responsibility for determining the acceptability of materials incorporated into the project. The Engineer will perform acceptance sampling and testing. The Engineer will make the results of the acceptance testing available to the Contractor within seven working days from the date of sampling. Sample the blended virgin aggregate at the cold feed. The Contractor may select the sample location of mix to determine the asphalt content.

Within 24 hours of final rolling, cut one 6 inch diameter core, full depth, from the finished mat to determine density according to WAQTC FOP for AASHTO T166/T275. Neatly cut the sample using a core drill at the randomly selected location marked by the Engineer. Use a core extractor to prevent damage to the core. Do not cut a sample over a bridge deck.

Apply Tolerances shown in Table 401-2 to test results to determine compliance with mix design.

The Engineer will test for density, gradation, and asphalt content as specified in subsection 401-4.02; however, the price adjustments of Section 401 will not apply.

306-5.01 BASIS OF PAYMENT. Add the following: Antistrip shall not be paid separately but shall be subsidiary to and included in the Item 306 (1) ATB. If the Mix Design requires more than 5% asphalt cement, only the quantity in excess of 5% shall be paid for at the Contract unit price for Item 401(2) Asphalt Cement, Grade PG 52-28.

Patching defective areas shall be subsidiary to Item 306(1) ATB.

(02/05/03)R226

Replace Section 401 with the following:

SECTION 401
HOT MIX ASPHALT AND SURFACE TREATMENTS

Special Provisions

401-1.01 DESCRIPTION. Construct one or more layers of plant-mixed hot asphalt concrete pavement on an approved surface, to the lines, grades, and depths shown on the Plans.

MATERIALS

401-2.01 COMPOSITION OF MIXTURE - JOB MIX DESIGN. Meet the requirements of Table 401-1 for the Job Mix Design performed according to ATM 417.

TABLE 401-1
HOT MIX ASPHALT DESIGN REQUIREMENTS

DESIGN PARAMETERS	CLASS "A"	CLASS "B"
Stability, pounds	1800 min.	1200 min.
Flow, 0.01 inch	8-14	8-16
Voids in Total Mix, %	3-5	3-5
Compaction, number of blows each side of test specimen	75	50
Percent Voids Filled with Asphalt (VFA)	65-75	65-78
Asphalt Content, min. %	5.0	5.0
Dust-asphalt ratio*	0.6-1.4	0.6-1.4
Voids in the Mineral Aggregate (VMA), %, min.		
Type I	12.0	11.0
Type II	13.0	12.0
Type III, IV	14.0	13.0

*Dust-asphalt ratio is the percent of material passing the No. 200 sieve divided by the percent of effective asphalt (calculated by weight of mix).

The approved Job Mix Design will specify the target values for gradation, the target value for asphalt cement content, the Maximum Specific Gravity (MSG) of the hot mix asphalt, the additives, and the allowable mixing temperature range.

Target values for gradation in the Job Mix Design must be within the broad band limits shown in Table 703-3, for the type of hot mix asphalt specified. For acceptance testing, hot mix asphalt concrete mixture will have the full tolerances in Table 401-2 applied. Except the tolerances for the No. 200 sieve, the tolerance limits will apply even if they fall outside the broad band limits

shown in Table 703-3. The tolerance limits for the No. 200 sieve will be confined by the broad band shown in Table 703-3. Tolerance limits will not be applied to the largest sieve specified.

Do not produce hot mix asphalt for payment until the Engineer approves the Job Mix Design. Do not mix asphalt produced from different plants.

Use Hot Mix Asphalt Type II, Class B, minimum, for temporary pavement.

Submit the following to the Engineer at least 15 days before the production of hot mix asphalt:

1. A letter stating the location, size, and type of mixing plant, the proposed gradation for the Job Mix Design, gradations for individual stockpiles with supporting process quality control information, and the blend ratio of each aggregate stockpile. The proposed gradation must meet the requirements of Table 703-3 for each type of hot mix asphalt specified in the Contract.

2. Representative samples of each aggregate (coarse, intermediate, fine, and blend material and/or mineral filler, if any) in the proportions required for the proposed mix design. Furnish a total of 500 pounds of material.

3. Five separate 1-gallon samples of the asphalt cement proposed for use in the hot mix asphalt. Include name of product, manufacturer, test results of the applicable quality requirements of subsection 702-2.01, manufacturer's certificate of compliance according to subsection 106-1.05, a temperature viscosity curve for the asphalt cement or manufacturer's recommended mixing and compaction temperatures, and current Material Safety Data Sheet.

4. One sample, of at least 1/2 pint, of the anti-strip additive proposed, including name of product, manufacturer, and manufacturer's data sheet, and current Material Safety Data Sheet.

The Engineer will then evaluate the material and the proposed gradation using ATM 417 and the requirements of Table 401-1 for the appropriate type and class of hot mix asphalt specified and establish the approved Job Mix Design that will become a part of the Contract.

No payment for hot mix asphalt for which a new Job Mix Design is required, will be made until the new Job Mix Design is approved. Approved changes apply only to hot mix asphalt produced after the submittal of the changes.

Changes. Failure to achieve results conforming to Table 401-1 or changes in the source of asphalt cement, source of aggregates, aggregate quality, aggregate gradation, or blend ratio, will require a new Job Mix Design. Submit changes and new samples in the same manner as the original submittal.

401-2.02 AGGREGATES. Conform to subsection 703-2.04.

Use a minimum of three stockpiles for crushed hot mix asphalt aggregate (coarse, intermediate, and fine). Place blend material or mineral filler, if any, in a separate pile.

401-2.03 ASPHALT CEMENT. Provide the grade of asphalt cement specified in the Contract meeting the applicable requirements of Section 702. If not specified, use PG 52-28.

Provide test reports for each batch of asphalt cement showing conformance to the specifications in Section 702 before delivery to the project. Require that the storage tanks used for each batch be noted on the test report, the anti-strip additives required by the mix design be added during load out for delivery to the project, and a printed weight ticket for anti-strip is included with the asphalt cement weight ticket. The location where anti-strip is added may be changed with the written approval of the Engineer.

Furnish the following documents at delivery:

1. Manufacturer's certificate of compliance (106-1.05).
2. Conformance test reports for the batch (Section 702).
3. Batch number and storage tanks used.
4. Date and time of load out for delivery.
5. Type, grade, temperature, and quantity of asphalt cement loaded.
6. Type and percent of anti-strip added.

401-2.04 ANTI-STRIP ADDITIVES. Use anti-strip agents in the proportions determined by ATM 414 and included in the approved Job Mix Design. At least 70% of the aggregate must remain coated when tested according to ATM 414.

401-2.05 PROCESS QUALITY CONTROL. Sample and test materials for quality control of the hot mix asphalt according to subsection 106-1.03. Provide copies of these test results to the Engineer within 24 hours.

Failure to perform quality control forfeits the Contractor's right to a retest under subsection 401-4.02.

Submit a paving and plant control plan at the pre-paving meeting to be held a minimum of 5 working days before initiating paving operations. Address the sequence of operations and joint construction. Outline steps to assure product consistency, to minimize segregation, and to prevent premature cooling of the hot mix asphalt. Include a proposed quality control testing frequency for gradation, asphalt cement content, and compaction.

CONSTRUCTION REQUIREMENTS

401-3.01 WEATHER LIMITATIONS. Do not place the hot mix asphalt on a wet surface, on an unstable/yielding roadbed, when the base material is frozen, or when weather conditions

prevent proper handling or finishing of the mix. Do not place hot mix asphalt unless the roadway surface temperature is 40 °F or warmer.

(01/02/08)R199

Place the top layer of paving or surface course between May 1 and August 15. Place bottom and middle layers of asphalt, leveling courses, and treated bases according to the limitations of this subsection.

(07/03/03)S90

401-3.02 EQUIPMENT, GENERAL. Use equipment in good working order and free of hot mix asphalt buildup. Make equipment available for inspection and demonstration of operation a minimum of 24 hours before placement of hot mix asphalt.

401-3.03 ASPHALT MIXING PLANT. Meet AASHTO M 156. Use an asphalt plant designed to dry aggregates, maintain accurate temperature control, and accurately proportion asphalt cement and aggregates. Calibrate the asphalt plant and furnish copies of the calibration data to the Engineer at least 4 hours before hot mix asphalt production.

Provide a scalping screen at the asphalt plant to prevent oversize material or debris from being incorporated into the hot mix asphalt.

Provide a tap on the asphalt cement supply line just before it enters the plant (after the 3-way valve) for sampling asphalt cement.

Provide aggregate and asphalt cement sampling conditions meeting OSHA safety requirements.

401-3.04 HAULING EQUIPMENT. Haul hot mix asphalt in trucks with tight, clean, smooth metal beds, thinly coated with a minimum amount of paraffin oil, lime water solution, or an approved manufactured asphalt release agent. Do not use petroleum fuel as an asphalt release agent.

Cover the hot mix asphalt in the hauling vehicle, when directed.

401-3.05 ASPHALT PAVERS. Use self-propelled pavers equipped with a heated vibratory screed. Control grade and cross slope with automatic grade and slope control devices. Use an erected string line, a 30-foot minimum mobile stringline (ski), or other approved grade follower, to automatically actuate the paver screed control system. Use grade control on either (a) both the high and low sides or (b) grade control on the high side and slope control on the low side.

Equip the paver with a receiving hopper having sufficient capacity for a uniform spreading operation. Equip the hopper with a distribution system to place the hot mix asphalt uniformly in front of the screed.

Use a screed assembly that produces a finished surface of the required smoothness, thickness and texture without tearing, shoving or displacing the hot mix asphalt. Heat and vibrate screed

extensions. Place auger extensions within 20 inches of the screed extensions or according to written manufacturer's recommendations.

Equip the paver with a means of preventing the segregation of the coarse aggregate particles from the remainder of the bituminous plant mix when that mix is carried from the paver hopper back to the paver augers. The means and methods used shall be approved by the paver manufacturer and may consist of chain curtains, deflector plates, or other such devices and any combination of these.

The following specific requirements apply to the identified bituminous pavers:

(1) Blaw-Knox bituminous pavers shall be equipped with the Blaw-Knox Materials Management Kit (MMK).

(2) Cedarapids bituminous pavers must have been manufactured in 1989 or later.

(3) Caterpillar bituminous pavers shall be equipped with deflector plates.

The use of a "Layton Box" or equivalent towed paver is allowed on bike paths, sidewalks, and driveways.

401-3.06 ROLLERS. Use both steel-wheel (static or vibratory) and pneumatic-tire rollers. Operate rollers according to manufacturer's instructions. Avoid crushing or fracturing of aggregate. Use rollers designed to compact hot mix asphalt and reverse without backlash.

Use fully skirted pneumatic-tire rollers with a minimum operating weight of 3000 pounds per tire.

401-3.07 PREPARATION OF EXISTING SURFACE. Prepare existing surfaces conforming to the Plans and Specifications. Before applying tack coat to the existing surface, clean out loose material from cracks in existing pavement wider than 1 inch in width full depth then fill using asphalt concrete tamped in place. Clean, wash, and sweep existing paved surfaces of loose material.

Preparation of a milled surface,

- Prelevel remaining ruts, pavement delaminations, or depressions having a depth greater than ½-inch with Asphalt Concrete, Type IV. No density testing is required for the leveling course material. The Engineer will inspect and accept this material.
- If planing breaks through existing pavement remove 2 inches of existing base and fill with Asphalt Concrete, Type II. Notify the Engineer of pavement areas that might be considered thin or unstable during pavement removal.

Existing surface must be approved by the Engineer before applying tack coat. Clean existing pave surfaces of loose material.

Before placing the hot asphalt mix, uniformly coat contact surfaces of curbing, gutters, sawcut pavement, cold joints, manholes, and other structures with tack coat material meeting Section 402.

Allow prime coat to cure and emulsion tack coat to break before placement of hot mix asphalt on these surfaces.

401-3.08 PREPARATION OF ASPHALT. Provide a continuous supply of asphalt cement to the asphalt mixing plant at a uniform temperature, within the allowable mixing temperature range.

401-3.09 PREPARATION OF AGGREGATES. Dry the aggregate so the moisture content of the hot mix asphalt, sampled at the point of acceptance for asphalt cement content, does not exceed 0.5% (by total weight of mix), as determined by WAQTC FOP for AASHTO T 329.

Heat the aggregate for the hot mix asphalt to a temperature compatible with the mix requirements specified.

Adjust the burner on the dryer to avoid damage to the aggregate and to prevent the presence of unburned fuel on the aggregate. Hot mix asphalt concrete containing soot or fuel is considered unacceptable according to subsection 105-1.11.

401-3.10 MIXING. Combine the aggregate, asphalt cement and additives in the mixer in the amounts required by the Job Mix Design. Mix to obtain 98% coated particles when tested according to AASHTO T 195.

For batch plants, put the dry aggregate in motion before addition of asphalt cement.

Mix the hot mix asphalt within the temperature range determined by the Job Mix Design.

401-3.11 TEMPORARY STORAGE. Silo type storage bins may be used, provided that the characteristics of the hot mix asphalt are not altered. Signs of visible segregation, heat loss, changes from the Job Mix Design, change in the characteristics of asphalt cement, lumpiness, or stiffness of the hot mix asphalt are causes for rejection.

401-3.12 PLACING AND SPREADING. Place the hot mix asphalt upon the approved surface, spread, strike off, and adjust surface irregularities. Use asphalt pavers to distribute hot mix asphalt, including leveling courses. The maximum compacted lift thickness allowed is 3 inches.

During placement, the Engineer may evaluate the hot mix asphalt immediately behind the paver for temperature uniformity. Areas with temperature differences more than 25°F lower than the surrounding hot mix asphalt are likely to produce areas of low density. Any thermal images and/or thermal profile data will become part of the project record and shared with the Contractor. The Contractor shall immediately adjust laydown procedures to correct the problem.

Use hand tools to spread, rake, and lute the hot mix asphalt in areas where irregularities or unavoidable obstacles make the use of mechanical spreading and finishing equipment impracticable.

When the section of roadway being paved is open to traffic, pave adjacent traffic lanes to the same elevation within 24 hours. Place approved material against the outside pavement edge when the drop off exceeds 2 inches.

When multiple lifts are specified in the Contract, do not place the final lift until all lower lifts throughout that section, as defined by the Paving Plan, are placed and accepted.

Do not pave against new Portland concrete curbing until it has cured for at least 72 hours.

Place hot mix asphalt over bridge deck membranes according to Section 508 and the manufacturer's specifications.

401-3.13 COMPACTION. Thoroughly and uniformly compact the hot mix asphalt by rolling. In areas not accessible to large rollers, compact with mechanical tampers or trench rollers.

The target value for density is 94% of the maximum specific gravity (MSG), as determined by WAQTC FOP for AASHTO T 209. For the first lot of each type of hot mix asphalt, the Job Mix Design will determine the MSG. For additional lots, the MSG will be determined by the sample from the first sublot of each lot.

Acceptance testing for density will be performed in according to WAQTC FOP for AASHTO T 166/T 275 using a 6-inch diameter core. (Acceptance testing for density of leveling course or temporary pavement is not required.)

Do not leave rollers or other equipment standing on hot mix asphalt that has not cooled sufficiently to prevent indentation.

401-3.14 JOINTS. Minimize the number of joints. Place and compact the hot mix asphalt to ensure a continuous bond, texture, and smoothness between adjacent sections of the hot mix asphalt.

Remove to full depth improperly formed joints resulting in surface irregularities, replace with new hot mix asphalt, and thoroughly compact.

Precut pavement removal to a neat line with a power saw or by other method approved by the Engineer.

Form transverse joints by saw cutting back on the previous run to expose the full depth of layer with a power saw or other method approved by the Engineer or use a removable bulkhead. Skew transverse joints between 15-25 degrees.

Offset the longitudinal joints in one layer from the joint in the layer immediately below by at least 6 inches. Align the joints of the top layer at the centerline or lane lines. Where preformed

marking tape striping is required, offset the longitudinal joint in the top layer not more than 12 inches from the edge of the stripe.

Uniformly coat joint surfaces below the final lift with tack coat conforming to Section 703 before placing any fresh HMA against the joint.

Before placing an adjacent panel of hot mix asphalt to form a joint in the top layer, apply Crafco Pavement Joint Adhesive No. 34524 Deery Cold Joint Adhesive or approved equal, to the edge of the existing panel. Edge surface preparation, application temperature, thickness, and method shall be according to manufacturer's recommendations.

For the top layer of hot mix asphalt, the minimum specification limit for longitudinal joint density is 91% of the MSG of the panel completing the joint. Cut one 6 inch diameter core centered on the longitudinal joint at each location the panel completing the joint is cored for acceptance density testing. Density will be determined according to WAQTC FOP for AASHTO T 166/T 275.

For areas that fail to achieve the prescribed joint density seal the surface of the longitudinal joints with Asphalt Systems GSB-78 or approved equal, while the hot mix asphalt is clean, free of moisture, and before traffic marking. Longitudinal joint sealing shall be according to the manufacturer's recommendations and an application rate of 0.15 gallons per square yard. Apply the sealant at least 12 inches wide centered on the longitudinal joint.

Hot lapped joints formed by paving in echelon must be completed while the mat temperature is over 150□F. These joints do not need to be tacked and will be measured but not evaluated for joint density.

Longitudinal joints will be evaluated for acceptance according to subsection 401-4.03.

401-3.15 SURFACE TOLERANCE. The Engineer will test the finished surface after final rolling at selected locations using a 10 foot straightedge. Correct variations from the testing edge, between any two contacts of more than 1/4 inch.

The Engineer will measure the surface smoothness of the top layer of asphalt concrete pavement in the driving lanes with an inertial profiler before final acceptance of the project. Remove and replace, or grind smooth any area of final pavement surface that does not meet straight edge tolerances. Costs associated with meeting surface tolerances are subsidiary to the Hot Mix Asphalt pay item.

After completion of corrective work, the Engineer will measure the pavement surface in the driving lanes a second time for a smoothness price adjustment. No measurements will be taken in turn lanes, lane transitions, or within 25 feet of the existing pavement at the project beginning and end.

Smoothness will be measured in both wheel paths of each lane and reported as profilograph results (PrI) filtered with a 0.2 inch blanking band. Report PrI as a job average for all measured lanes, calculated to the nearest 0.1 inch.

401-3.16 PATCHING DEFECTIVE AREAS. Remove hot mix asphalt that becomes contaminated with foreign material, is segregated, or is in any way determined to be defective. Do not skin patch. Remove defective hot mix asphalt for the full thickness of the course. Cut the pavement so that edges are vertical, the sides are parallel to the direction of traffic and the ends are skewed between 15-25 degrees. Coat edges with a tack coat meeting Section 402 and allow to cure. Place and compact fresh hot mix asphalt according to subsection 401-3.13 to grade and smoothness requirements.

Costs associated with patching defective areas are subsidiary to the Hot Mix Asphalt pay item.

401-4.01 METHOD OF MEASUREMENT. Section 109 and the following:

Hot Mix Asphalt.

a) By weighing. No deduction will be made for the weight of asphalt cement or anti stripping additive.

b) By the area of final hot mix asphalt surface.

Asphalt Price Adjustment. Calculated by quality level analysis under subsection 401-4.03.

Asphalt Cement. By the ton, as follows.

1. Percent of asphalt cement for each sublot multiplied by the total weight represented by that sublot. ATM 405 or WAQTC FOP for AASTHO T 308 will determine the percent of asphalt cement. The same tests used for the acceptance testing of the sublot will be used for computation of the asphalt cement quantity. If no acceptance testing is required, the percent of asphalt cement is the target value for asphalt cement in the Job Mix Design.

2. Supplier's invoices minus waste, diversion and remnant. This procedure may be used on projects where deliveries are made in tankers and the asphalt plant is producing hot mix asphalt for one project only.

   The Engineer may direct, at any time, that tankers be weighed in the Engineers presence before and after unloading. If the weight determined at the project varies more than 1% from the invoice amount, payment will be based on the weight determined at the project.

   Any remnant or diversion will be calculated based on tank stickings or weighing the remaining asphalt cement. The Engineer will determine the method. The weight of asphalt cement in waste hot mix asphalt will be calculated using the target value for asphalt cement as specified in the Job Mix Design.

Method 1 will be used for determining asphalt quantity unless otherwise directed in writing. The procedure initially used will be the one used for the duration of the project. No payment will be made for any asphalt cement more than 0.4% above the optimum asphalt content specified in the Job Mix Design.

Job Mix Design. When specified, Contractor furnished Job Mix Designs will be measured at one per hot mix asphalt class and type.

Temporary Pavement. By weighing. No deduction will be made for the weight of asphalt cement or anti-stripping additive.

Longitudinal Joint Adhesive and Sealing. By the linear foot of longitudinal joint.

Preleveling. By weighing. No deduction will be made for the weight of asphalt cement or anti stripping additive.

401-4.02 ACCEPTANCE SAMPLING AND TESTING. The quantity of each class and type of hot mix asphalt produced and placed will be divided into lots and the lots evaluated individually for acceptance.

A lot will normally be 5,000 tons. The lot will be divided into sublots of 500 tons, each randomly sampled and tested for asphalt cement content, density, and gradation according to this subsection. If the project has more than 1 lot, and less than 8 additional sublots have been sampled at the time a lot is terminated, either due to completion of paving operations or the end of the construction season (winter shutdown), the material in the shortened lot will be included as part of the prior lot. The price adjustment computed, according to subsection 401-4.03, for the prior lot will include the samples from the shortened lot.

If 8 or 9 samples have been obtained at the time a lot is terminated, they will be considered as a lot and the price adjustment will be based on the actual number of test results (excluding outliers) in the shortened lot.

If the contract quantity is between 1,500 tons and 4,999 tons, the contract quantity will be considered one lot. The lot will be divided into sublots of 500 tons and randomly sampled for asphalt cement content, density, and gradation according to this subsection except that a determination for outliers will not be performed. Hot mix asphalt quantities of less than 300 tons remaining after dividing the Contract quantity into sublots will be included in the last sublot. Hot mix asphalt quantities of 300 tons or greater will be treated as an individual sublot. The lot will be evaluated for price adjustment according to subsection 401-4.03 except as noted.

For Contract quantity of less than 1,500 tons (also for approaches and temporary pavement), hot mix asphalt will be accepted for payment based on the Engineer's approval of a Job Mix Design and the placement and compaction of the hot mix asphalt to the specified depth and finished surface requirements and tolerances. The Engineer reserves the right to perform any testing required in order to determine acceptance. Remove and replace any hot mix asphalt that does not conform to the approved JMD.

Samples collected at the plant from dry batched aggregates, the conveyor system, or the asphalt cement supply line shall be taken by the Contractor in the presence of the Engineer. The Engineer will take immediate possession of the samples.

1. Asphalt Cement. Hot mix samples taken for the determination of asphalt cement content will be taken randomly from behind the screed before initial compaction, at the end of the auger, or from the windrow according to WATC FOP for AASHTO T 168 and ATM 403, as directed by the Engineer. Hot mix asphalt samples taken for the determination of both asphalt cement content and gradation will be taken randomly from behind the screed before initial compaction or from the windrow according to WAQTC FOP for AASHTO T 168 and ATM 403.

   Two separate samples will be taken, one for acceptance testing and one held in reserve for retesting if applicable. At the discretion of the Engineer, asphalt cement content will be determined according to ATM 405 or WAQTC FOP for AASHTO T 308.

2. Aggregate Gradation.

   a. Drum Mix Plants. Samples taken for the determination of aggregate gradation from drum mix plants will be from the combined aggregate cold feed conveyor via a diverter device, or from the stopped conveyor belt according to WAQTC FOP for AAHSTO T2, or from the same location as samples for the determination of asphalt cement content. Locate diverter devices for obtaining aggregate samples from drum mix plants on the conveyor system delivering combined aggregates into the drum. Divert aggregate from the full width of the conveyor system and maintain the diverter device to provide a representative sample of aggregate incorporated into the hot mix asphalt. Two separate samples will be taken, one for acceptance testing and one held in reserve for retesting if applicable. The aggregate gradation for samples from the conveyor system will be determined according to WAQTC FOP for AASHTO T 27/T 11. For hot mix asphalt samples, the gradation will be determined according to WAQTC FOP for AASHTO T 30 from the aggregate remaining after the ignition oven (WAQTC FOP for AASHTO T 308) has burned off the asphalt cement.

   b. Batch Plants. Samples taken for the determination of aggregate gradation from batch plants will be from the same location as samples for the determination of asphalt cement content, or from dry batched aggregates according to WAQTC FOP for AASHTO T 2. Two separate samples will be taken, one for acceptance testing and one held in reserve for retesting if applicable. Dry batched aggregate gradations will be determined according to WAQTC FOP for AASHTO T 27/T 11. For hot mix asphalt samples, the aggregate gradation will be determined according to WAQTC FOP for AASHTO T 30 from the aggregate remaining after the ignition oven (WAQTC FOP for AASHTO T 308) has burned off the asphalt cement.

3. Density. Cut full depth core samples from the finished hot mix asphalt within 24 hours after final rolling. Neatly cut one 6 inch diameter core sample with a core drill at each location marked by the Engineer. Use a core extractor to prevent damage to the core. The Engineer will determine the density of the core samples according to WAQTC FOP for AASHTO T 166/T 275. Do not core hot mix asphalt on bridge decks. Backfill and compact voids left by coring with new hot mix asphalt within 24 hours.

   Cores for longitudinal joint density shall be centered on the longitudinal joint at each location the panel completing the joint is cored for mat density acceptance testing.

4. Retesting. A retest of any sample outside the limits specified in Table 401-2 may be requested provided the quality control requirements of 401-2.05 are met. Deliver this request in writing to the Engineer within 7 days of receipt of the initial test result. The Engineer will mark the sample location for the density retest within a 2 foot radius of the original core. The original test results will be discarded and the retest result will be used in the price adjustment calculation regardless of whether the retest result gives a higher or lower pay factor. Only one retest per sample is allowed. Except for the first lot, gradation and asphalt cement content are determined from the same sample, retesting for gradation or asphalt cement from the first sublot of a lot will include retesting for the MSG; when separate samples are used, retesting for asphalt cement content will include retesting for MSG.

5. Asphalt Cement.

   The lot size for asphalt cement will normally be 200 tons. If a project has more than one lot and the remaining asphalt cement quantity is less than 150 tons, it will be added to the previous lot and that total quantity will be evaluated for price adjustment as one lot. If the remaining asphalt cement quantity is 150 tons or greater, it will be sampled, tested and evaluated as a separate lot.

   If the contract quantity of asphalt cement is between 85 – 199 tons, the contact quantity will be considered as one lot and sampled, tested, and evaluated according to this subsection. Quantities of asphalt cement less than 85 tons will be accepted based on manufacturer's certified test reports and certification of compliance.

   Asphalt cement will be sampled according to WAQTC FOP for AASHTO T 40, tested for conformance to the specifications in Section 702, and evaluated for price adjustment in accordance with 401-4.03. Asphalt cement pay reduction factors for each sample will be determined from Table 401-4. Three separate samples from each lot will be taken, one for acceptance testing, one for Contractor retesting, and one held in reserve for referee testing if applicable.

   The total asphalt cement price adjustment is the sum of the individual lot price adjustments and will be subtracted under Item 401(6) Asphalt Price Adjustment - Quality.

401-4.03 EVALUATION OF MATERIALS FOR ACCEPTANCE. The following method of price adjustment will be applied to each type of Hot Mix Asphalt when the contract quantity equals or exceeds 1,500 tons, except as specified in subsection 401-4.02.

Acceptance test results for a lot will be analyzed collectively and statistically by the Quality Level Analysis method as specified in subsection 106-1.03 to determine the total estimated percent of the lot that is within specification limits.

The price adjustment is based on the lower of two pay factors. The first factor is a composite pay factor for hot mix asphalt that includes gradation and asphalt cement content. The second factor is for density.

A lot containing hot mix asphalt with less than a 1.00 pay factor will be accepted at an adjusted price, provided the pay factor is at least 0.75 and there are no isolated defects identified by the Engineer. A lot containing hot mix asphalt that fails to obtain at least a 0.75 pay factor will be considered unacceptable and rejected under subsection 105-1.11.

The Engineer will reject hot mix asphalt that appears to be defective based on visual inspection. A minimum of two samples will be collected from the rejected hot mix asphalt and tested if requested. If test results are within specification limits, payment will be made for the hot mix asphalt. If any of the test results fail to meet specifications, no payment will be made and the cost of the testing will be subtracted under Item 401(6) Asphalt Price Adjustment - Quality. Costs associated with removal and disposal of the rejected hot mix asphalt are subsidiary to the Hot Mix Asphalt pay item.

Outlier Test. Before computing the price adjustment, the validity of the test results will be determined by SP-7, the Standard Practice for Determination of Outlier Test Results. Outlier test results will not be included in the price adjustment calculations.

When gradation and asphalt cement content are determined from the same sample, if any size on the gradations test or the asphalt cement content is an outlier, then the gradation test results and the asphalt cement content results for that sublot will not be included in the price adjustment. The density test result for that sublot will be included in the price adjustment provided it is not an outlier also.

If the density test result is an outlier, the density test result will not be included in the price adjustment, however, the gradation and asphalt cement content results for that sublot will be included provided neither is an outlier.

When gradation and asphalt cement content are determined from separate samples, if any sieve size on the gradation test is an outlier, then the gradation test results for that sample will not be included in the price adjustment. The asphalt cement content and density test results for that sublot will be included in the price adjustment provided neither is an outlier. If the asphalt cement content test result is an outlier, it will not be included in the price adjustment but the gradation and density test results for the sublot will be included provided neither is an outlier. If

the density test result is an outlier, it will not be included in the price adjustment but the gradation and asphalt cement content test results will be included provided neither is an outlier.

Quality Level Analysis. Pay factors are computed as follows:

1. Outliers (determined by SP-7), and any test results on material not incorporated into the work, are eliminated from the quality level analysis.

   The arithmetic mean ($\bar{x}$) of the remaining test results is determined: $\bar{x} = \frac{\Sigma x}{n}$

   Where Σ = summation of

   x = individual test value to x_n

   n = total number of test values

   $\bar{x}$ is rounded to the nearest tenth for density and sieve sizes except the No. 200 sieve. $\bar{x}$ is rounded to the nearest hundredth for asphalt cement content and the No. 200 sieve.

2. The sample standard deviation(s), after the outliers have been excluded, is computed:

$$s = \sqrt{\frac{n\Sigma(x^2) - (\Sigma x)^2}{n(n-1)}}$$

   Where: Σ (x2) = sum of the squares of individual test values.
   $(\Sigma x)^2$ = square of the sum of the individual test values.

   The sample standard deviation (s) is rounded to the nearest hundredth for density and all sieve sizes except the No. 200 sieve. The sample standard deviation (s) is rounded to the nearest 0.001 for asphalt cement content and the No. 200 sieve.

   If the computed sample standard deviation (s) is <0.001, then use s = 0.20 for density and all sieves except the No. 200. Use s = 0.020 for asphalt cement content and the No. 200 sieve.

3. The USL and LSL are computed. For aggregate gradation and asphalt cement content, the Specification Limits (USL and LSL) are equal to the Target Value (TV) plus and minus the allowable tolerances in Table 401-2. The TV is the specification value specified in the approved Job Mix Design. Specification tolerance limits for the largest sieve specified will be plus 0 and minus 1 when performing PWL calculations. The TV for density is 94% of the maximum specific gravity (MSG), the LSL is 92% of MSG and the USL is 98%.

TABLE 401-2
LOWER SPECIFICATION LIMIT (LSL) & UPPER SPECIFICATION LIMIT (USL)

Measured Characteristics	LSL	USL
3/4 inch sieve	TV-6.0	TV+6.0
1/2 inch sieve	TV-6.0	TV+6.0
3/8 inch sieve	TV-6.0	TV+6.0
No. 4 sieve	TV-6.0	TV+6.0
No. 8 sieve	TV-6.0	TV+6.0
No. 16 sieve	TV-5.0	TV+5.0
No. 30 sieve	TV-4.0	TV+4.0
No. 50 sieve	TV-4.0	TV+4.0
No. 100 sieve	TV-3.0	TV+3.0
No. 200 sieve[1]	TV-2.0	TV+2.0
Asphalt %	TV-0.4	TV+0.4
Mat Density %	92	98

Note 1.Tolerances for the No. 200 sieve may not exceed the broad band limits in Table 703-3.

4. The Upper Quality Index (Q_U) is computed: $Q_U = \frac{USL - \bar{x}}{s}$

Where: USL = Upper Specification Limit

Q_U is rounded to the nearest hundredth.

5. The Lower Quality Index (Q_L) is computed: $Q_L = \frac{\bar{x} - LSL}{s}$

Where: LSL = Lower Specification Limit

Q_L is rounded to the nearest hundredth.

6. P_U (percent within the upper specification limit which corresponds to a given Q_U) is determined. See subsection 106-1.03.

7. P_L (percent within the lower specification limit which corresponds to a given Q_L) is determined. See subsection 106-1.03.

8. The Quality Level (the total percent within specification limits) is determined for aggregate gradation, asphalt cement content, and density.

Quality Level = $(P_L + P_U) - 100$

9. Using the Quality Levels from Step 8, the lot Pay Factor is determined for Density (DPF) and gradation and asphalt cement content pay factors (PF) from Table 106-2. The maximum pay factor for the largest sieve size specification for gradation is 1.00.

10. The Composite Pay Factor (CPF) for the lot is determined using the following formula:

$$CPF = \frac{[f_{3/4\ inch}\ (PF_{3/4\ inch}) + f_{1/2\ inch}\ (PF_{1/2\ inch}) + \ldots f_{ac}\ (PF_{ac})]}{\Sigma f}$$

The CPF is rounded to the nearest hundredth.

Table 401-3 gives the weight factor (f) for each sieve size and asphalt cement content.

TABLE 401-3
WEIGHT FACTORS

Sieve Size	Type I	Type II	Type III
	Factor "f"	Factor "f"	Factor "f"
1 inch sieve	4		
3/4 inch sieve	4	4	
1/2 inch sieve	4	5	4
3/8 inch sieve	4	5	5
No. 4 sieve	4	4	5
No. 8 sieve	4	4	5
No. 16 sieve	4	4	5
No. 30 sieve	4	5	6
No. 50 sieve	4	5	6
No. 100 sieve	4	4	4
No. 200 sieve	20	20	20
Asphalt Cement Content, %	40	40	40

The price adjustment will be based on either the CPF or DPF, whichever is the lowest value. The price adjustment for each individual lot will be calculated as follows:

Price Adjustment = [(CPF or DPF)* -1.00] x (tons in lot) x (PAB)

* CPF or DPF, whichever is lower.

PAB = Price Adjustment Base = $133 per ton

The total asphalt concrete price adjustment is the sum of all price adjustments for each lot and will be adjusted under Item 401(6) Asphalt Price Adjustment - Quality.

EVALUATION OF ASPHALT CEMENT

Asphalt cement will be randomly sampled and tested every 200 tons and evaluated for price adjustment. If the last sample increment is 100 tons or less, that quantity of asphalt cement will be added to the quantity represented by the previous sample and the total quantity will be evaluated for price adjustment. If the last sample increment is greater than 100 tons, it will be sampled, tested and evaluated separately. Asphalt cement pay reduction factors for each sample will be determined from Table 401-4.

The total asphalt cement price adjustment is the sum of the individual sample price adjustments and will be subtracted under Item 401(6) Asphalt Price Adjustment - Quality.

Table 401-4
ASPHALT CEMENT PAY REDUCTION FACTORS
(Use the single, highest pay reduction factor)

	Spec	Pay Reduction Factor (PRF)								
		0	**0.04**	**0.05**	**0.06**	**0.07**	**0.08**	**0.1**	**0.25**	**Reject or Engr Eval**
Tests On Original Binder										
Viscosity	<3 Pa-s	≤3		>3						
Dynamic Shear	>1.00 kPa	>1.00		0.88-0.99				0.71-0.89	0.50-0.70	<0.50
Toughness	>110 in-lbs	>93.5	90.0-93.4	85.0-89.9	80.0-84.9	75.0-79.9	70.0-74.9			<70.0
Tenacity	>75 in-lbs	>63.8	61.0-63.7	58.0-60.9	55.0-57.9	52.0-54.9	48.0-51.9			<48.0
Tests On RTFO										
Mass Loss	<1.00 %	<1.00		1.001-1.092				1.093-1.184	1.185-1.276	>1.276
Dynamic Shear	>2.20 kPa	>2.20		1.816-2.199				1.432-1.815	1.048-1.431	<1.048
Test On PAV										
Dynamic Shear	<5000 kPa	<5000		5001-5289				5290-5578	5579-5867	>5867
Creep Stiffness, S	<300 MPa	<300		301-338				339-388	389-450	>450
Creep Stiffness, m-value	>0.300	>0.300		0.287-0.299				0.274-0.286	0.261-0.273	<0.261
Direct Tension	>1.0 %	>1.0		0.86-0.99				0.71-0.85	0.56-0.70	<0.56

Asphalt Cement Price Adjustment for each sample = 5 x PAB x Qty X PRF
PAB = Price Adjustment Base
Qty = Quantity of asphalt cement represented by asphalt cement sample
PRF = Pay Reduction Factor from Table 401-4

Asphalt Cement Appeal Procedure. Once notified of a failing test result of an asphalt cement sample, the Contractor has 21 days to issue a written appeal. The appeal must be accompanied by all of the Contactor's quality control test results and a test result of Contactor's sample of this lot tested by an AASHTO accredited asphalt laboratory (accredited in the test procedure in

question). The Engineer will review these test results and using ASTM D3244 determine a test value upon which to base a price reduction.

If the Contractor challenges this value, then the referee sample held by the Engineer will be sent to a mutually agreed upon independent AASHTO accredited laboratory for testing. This test result will be incorporated into the ASTM D3244 procedure to determine a test value upon which to base a price reduction. If this final value incurs a price adjustment, the Contractor under Item **401(6)** Asphalt Price Adjustment - **Quality** shall pay the cost of testing the referee sample.

The total Asphalt Price Adjustment is the sum of all the price adjustments for each lot and will be included in 401(6) Asphalt Price Adjustment - Quality.

EVALUATION OF PAVEMENT SMOOTHNESS.

The top layer of hot mix asphalt will be measured according to 401-3.15 and evaluated for a smoothness price adjustment. The Engineer will calculate the smoothness price adjustment as follows:

Smoothness Price Adjustment = PAB x PQ x SF
PAB = Price Adjustment Base (401-4.03)
PQ = Final quantity of Hot Mix Asphalt, tons
PrI = Final measured hot mix smoothness, inches/mile
SF = Smoothness Factor

If the PQ is less than 1,500 tons, the SF = 0
If the PQ is 1,500 to 5,000 tons, the SF = 0.1333 – (0.01666 x PrI)
If the PQ is greater than 5,000 tons, the SF = 0.0666 – (0.0083 x PrI)

The smoothness price adjustment will be applied under Item 401(6) Asphalt Price Adjustment - Quality.

EVALUATION OF LONGITUDINAL JOINT DENSITY. Longitudinal joint density price adjustments apply when hot mix asphalt quantities are equal to or greater than 1,500 tons. A longitudinal joint density price adjustment for the top layer will be based on the average of all the joint densities on a project and determined as follows:

1. If project average joint density is less than 91% MSG, apply the following disincentive:
    a. Longitudinal joint density price adjustment equal to $3.00 per lineal foot is deducted under Item 401(6) Asphalt Price Adjustment - Quality.
    b. Sections of longitudinal joint represented by cores with less than 91% density shall be surface sealed according to subsection 401-3.14.

2. If project average joint density is greater than 92% MSG apply the following incentive:

Longitudinal joint density price adjustment equal to $1.50 per linear foot is added under Item 401(6) Asphalt Price Adjustment - Quality.

The longitudinal joint price adjustment will be included in Item 401(6) Asphalt Price Adjustment - Quality.

401-4.04 ASPHALT MATERIAL PRICE ADUSTMENT – UNIT PRICE.

This subsection provides a price adjustment for asphalt material by:

(a) additional compensation to the Contractor or

(b) a deduction from the Contract amount.

1. This provision shall apply to asphalt material meeting the criteria of Section 702, and is included in items listed in the bid schedule of Sections 306, 307, 308, 318, 401 thru 409.

2. This provision shall only apply to cost changes in asphalt material that occur between the date of bid opening and the date the asphalt material is incorporated into the project.

3. The asphalt material price adjustment will only apply when:

   a. There is more than 500 tons of asphalt material (the sum of all asphalt materials) in the bid schedule of Sections described in Item 1; and

   b. There is more than a 7.5% increase or decrease in the Alaska Asphalt Material Price Index, from the date of bid opening to the date the asphalt material is incorporated into the project.

4. As used in this subsection, the Alaska asphalt material price index is calculated bimonthly on the first and third Friday of each month, and will remain in effect from the day of calculation until the next bimonthly calculation. The Alaska asphalt material price index is posted on the Department's Statewide Materials website, and calculated according to the formula posted there.

5. Price adjustment will be cumulative and calculated with each progress payment. Use the price index in effect on the last day of the pay period, to calculate the price adjustment for asphalt material incorporated into the project during that pay period. The Department will increase or decrease payment under this Contract by the amount determined with the following asphalt material price adjustment formula:

   For an increase exceeding 7.5%, additional compensation = $[(IPP - IB) - (0.075 \times IB)] \times Q$

   For a decrease exceeding 7.5%, deduction from contract = $[(IB - IPP) - (0.075 \times IB)] \times Q$

   Where:

Q = Quantity of Asphalt Material incorporated into project during the pay period, in tons

IB = Index at Bid: the bimonthly Alaska asphalt material price index in effect on date of bid, in dollars per ton

IPP = Index at Pay Period: the bimonthly Alaska asphalt material price index in effect on the last day of the pay period, in dollars per ton

6. Method of measurement for determining Q (quantity) is the weight of asphalt material that meets the criteria of this subsection and is incorporated into the project. The quantity does not include aggregate, mineral filler, blotter material, thinning agents added after material qualification, or water for emulsified asphalt.

401-5.01 BASIS OF PAYMENT.

Asphalt cement, anti-strip additives for Item 401(3) Temporary Hot Mix Asphalt, or for hot mix asphalt for leveling course is subsidiary to item 401(3).

Sealing the surface of longitudinal joints according to subsection 401-3.12 will be subsidiary to 401 items.

Asphalt cement, anti stripping additives, tack coat, and crack sealing (401-3.07) are subsidiary to the hot mix asphalt unless specified as pay items.

Item 401(6) Asphalt Price Adjustment – **Quality** will not apply to:

1. Hot Mix Asphalt for leveling course
2. Temporary Hot Mix Asphalt
3. Hot Mix Asphalt for Approaches

Failure to cut core samples within the specified period will result in a deduction of $100.00 per sample per day. Failure to backfill voids left by sampling within the specified period will result in a deduction of $100.00 per hole per day. The accrued amount will be subtracted under Item 401(6) Asphalt Price Adjustment - Quality.

The Engineer will assess a fee of $2,500.00 under Item 401(6) Asphalt Price Adjustment - Quality, for each mix design subsequent to the approved Job Mix Design for each Type and Class of Hot Mix Asphalt specified.

Payment will be made under:

deleted

Pay Item No.	Pay Item	Pay Unit
401(1)	Hot Mix Asphalt, Type II; Class B	Ton
401(2)	Asphalt Cement, Grade PG 52-28	Ton
401(6)	Asphalt Price Adjustment - Quality	Contingent Sum
401(10)	Asphalt Material Price Adjustment – Unit Price	Contingent Sum

(01/02/08)R199

ADDENDUM NO. 1
ATTACHMENT NO. 5

SECTION 504
STEEL STRUCTURES

Standard Modification

504-3.01 FABRICATION. Delete subsection 8. in its entirety and replace with the following:

8. Welding. Perform welding and Nondestructive Examination (NDE) as specified or shown on the Plans. Conform to the ANSI/AASHTO/AWS Bridge Welding Code D1.5 when welding new steel bridge girders, beams and stringers. Conform to the Structural Welding Code AWS D1.1 when welding all other steel structures.

   At least 30 days before welding, submit for approval a welding plan that has been signed and stamped by a Certified Welding Inspector (CWI) responsible for Quality Control (QC) and consisting of the following documents:

   a. Quality Control personnel qualifications listing CWI number;

   b. Welding Procedure Specifications (WPS) using forms in AWS D1.1, Sample Welding Forms;

   c. Procedure Qualification Records (PQR) when applicable, using forms in AWS D1.1, Sample Welding Forms;

   d. Welder Performance Qualification Records (WPQR) using forms in AWS D1.1, Sample Welding Forms with the documentation of current welder certification;

   e. Sample daily inspection sheet; and

   f. Type and extent of NDE to be conducted, as required in the specifications.

Perform Quality Control inspection necessary to ensure the materials and workmanship meet the requirements of the contract documents. Use a CWI for welding inspection.

Correct deficiencies in materials and workmanship revealed by Quality Control and Quality Assurance inspections without additional compensation.

Furnish completed Quality Control inspection documents to the Engineer and to the Quality Assurance representative designated by the State (when designated).

Meet Charpy V-notch impact test requirements as shown on the Plans and according to Sections 715 and 716; except that the impact energy values for filler metals must not be less than that of the base metals to be joined, when tested at the same temperature as the base metal.

E39(01/27/07)

SECTION 505
PILING

Special Provisions

505-1.01 DESCRIPTION. Add the following: This work shall also include construction of a detention pond sheet pile outlet control structure (weir) in conformance with the Plans.

505-2.01 MATERIALS. Add the following:

Steel Structures	Section 504

CONSTRUCTION REQUIREMENTS

505-3.05 MINIMUM PENETRATION. Replace this subsection with the following: Pile tip elevation will be per Plans. Contractor will excavate to 1 foot below proposed pile tip elevation, as shown on the Plans ***deleted***. Excavation and embankment will be in accordance with Section 203. Excavation limits will be per the Plans and backfill will meet the requirements of subsection 703-2.07 Selected Material, Type A except that all material must pass a 3" sieve.

505-4.01 METHOD OF MEASUREMENT. Delete the fifth item, Sheet Piles. And replace with the following:

Sheet Pile Outlet Control Structure. Will be paid in accordance with Section 109 and will not be measured.

505-5.01 BASIS OF PAYMENT. Delete the Sheet Piles. item and replace with the following:

Sheet Pile Outlet Control Structure. The contract price includes full compensation for furnishing all labor, materials, tools, equipment, and incidentals and for doing all work involved in constructing the sheet pile outlet control structure; including sheet pile, pile driving, steel pile cap, and all parts of or appurtenances to the sheet pile outlet control structure, complete in place, as shown on the Plans, as provided in the Standard Specifications, Standard Modifications and these Special Provisions, and as directed by the Engineer.

Excavation and embankment will be furnished, placed and paid under Section 203.

Payment will be made under:

Pay Item No.	Pay Item	Pay Unit
505(12)	Sheet Pile Outlet Control Structure	Lump Sum

Delete this section in its entirety and substitute the following:

SECTION 511
MECHANICALLY STABILIZED EARTH (MSE) WALL

511-1.01 DESCRIPTION. This work shall consist of Welded Wire - Mechanically Stabilized Earth (WW-MSE) retaining wall constructed in accordance with these specifications and in reasonably close conformity with the lines, grades, design and dimensions shown on the Plans or established by the Engineer. The WW-MSE retaining wall shall consist of metallic welded wire facing connected to metallic soil reinforcements that are placed at 24 inch maximum lifts. The front face of the wall shall contain a layer of topsoil and seeding and have appropriate backing materials in order to restrain backfill and topsoil. The following is the list of acceptable WW-MSE systems for this project. At the Contractor's option, one of the following acceptable WW-MSE systems may be constructed:

"Terratrel – MSE Wire Wall (Permanent)" of the Reinforced Earth Company
1 Orchard Road, Suite 220
Lake Forest, CA 92630
Phone: (949) 587-3060
www.reinforcedearth.com

"Welded Wire Wall" of Hilfiker Retaining Walls
P.O. Box 2012
Eureka, CA 95502-2012
Phone: (707) 443-5093

Use only one WW-MSE wall system for installation on this project. Use of multiple systems will not be allowed. Design of the WW-MSE wall system shall conform to the requirements of the current AASHTO LRFD Bridge Design Specifications, Fourth Edition, 2008, as required on the Plans, and in these special provisions.

Submit complete working drawings for the selected wall system in accordance with the provisions in Subsection 105-1.02, "Plans and Working Drawings" of the Standard Specifications. Verify the existing ground elevations at the site before preparing the final working drawings. Working drawings shall contain all information required for the proper construction of the wall system and any required revisions or additions to drainage or other facilities. Supplement working drawings with calculations for each particular installation. The working drawings and calculations shall be sealed and signed by an Engineer who is licensed as a Civil Engineer in the State of Alaska. Allow the Engineer 3 weeks (21 calendar days) to review the working drawings and calculations. Preliminary or partial submittals of working drawings and calculations will not be accepted.

Heights, lengths, and depths of the WW-MSE wall system may vary slightly from, but shall not be less than those of the WW-MSE walls shown on the Plans. The height and length to be used

for any system shall be the minimum for the system that will effectively retain the earth behind the structure for the loading conditions, contours, profile, or slope lines shown on the Plans. In addition, if the Plans show limiting parameters for the systems, the system shall conform to those parameters. The construction of the WW-MSE wall system shall conform to the details on the approved working drawings.

511-2.01 MATERIALS. Furnish materials for the WW-MSE retaining walls conforming to the following.

GENERAL. Purchase and/or manufacture the facing elements, soil reinforcements, backing materials, attachment devices, joint filler, and all other necessary components from sources listed in these Specifications and as shown on the Contract Plans. Do not use materials not conforming to the Plans, Specifications or from sources not listed in the Contract documents without written authorization from the Engineer.

Use fabricated and furnished materials for the WW-MSE wall system on this project conforming to the wall manufacturer's requirements of the selected WW-MSE system, and to the applicable design and construction sections of the AASHTO LRFD Bridge Design Specifications, Fourth Edition (2008). Materials shall be furnished for a 75 year design life.

1. Welded Wire Facing and Soil Reinforcement. Welded wire mesh shall be shop fabricated of cold drawn steel wire conforming to the minimum requirements of ASTM A-82 and shall be welded into the finished mesh fabric in accordance with ASTM A-185. Wire mesh shall be commercially hot-dip galvanized at 2.0 oz./SF, per ASTM A-123. Any damage done to the mesh galvanization prior to installation shall be repaired in an acceptable manner and provide a galvanized coating comparable to that provided by ASTM A-123.

   Soil reinforcements shall be metallic, in the form of strips, bar mats, or welded wire mesh, and qualify as "inextensible" per U.S. DOT Federal Highway Administration (FHWA) MSE guidelines (2001).

2. WW-MSE Backfill Materials. All WW-MSE backfill materials used in the structure volume shall be free (less than 1 percent as determined by ATM 203), from organic or otherwise deleterious materials and shall conform to the gradation requirements of Selected Material, Type A with a maximum size of 3-inches or less as determined by WAQTC FOP for AASHTO T27/T11. The material shall have a sodium sulfate soundness loss of less than 10 percent after four cycles, as determined in accordance with AASHTO T 104.

The WW-MSE backfill materials shall also meet the following electrochemical requirements:

Requirements		Test Methods
Resistivity	>3,000 ohm-cm	AASHTO T 288
pH	5 – 10	AASHTO T 289
Chlorides	<100 parts per million	AASHTO T 291
Sulfates	<200 parts per million	AASHTO T 290

If the resistivity is greater or equal to 5000 ohm-cm, the chloride and sulfates requirements may be waived.

3. Topsoil and Seeding. Topsoil shall meet provisions of Section 620, and Seeding shall be applied according to Section 618 of the Standard Specifications.

4. Geotextile Filter Fabric. Meeting provisions of Subsection 729-2.02, "Geotextile, Subsurface Drainage," Class 2, of the Standard Specifications.

5. Acceptance of Material. Furnish to the Engineer a Certificate of Compliance certifying that all of the WW-MSE system materials comply with the applicable Contract Specifications. A copy of all test results performed by the Contractor necessary to assure Contract compliance shall also be furnished to the Engineer.

   Acceptance will be based on the Certificate of Compliance, accompanying test reports, and visual inspection by the Engineer. Additional testing may be required by the Engineer. If in the opinion of the Engineer, materials furnished for the WW-MSE system do not meet the requirements as specified above, they will be rejected and shall be replaced at the Contractor's expense. Final approval and acceptance of the WW-MSE wall system will be subject to field inspection by the Engineer.

511-3.01 CONSTRUCTION REQUIREMENTS.

1. Wall Excavation and Foundation Preparation. Excavate and prepare the foundation in conformance with Section 205, "Excavation, Backfill and Foundation Fill for Structures" in the Standard Specifications. All excavation cuts and slopes shall be in accordance with governing safety regulations.

   Grade the foundation for the structure level for a width equal to or exceeding the length of reinforcement elements plus one (1) foot or as shown on the Plans. Compact the foundation soil prior to wall construction, except as noted below and where constructed on rock, with a minimum of two passes with a vibratory drum compactor. Remove any foundation soils found to be unsuitable and replace with backfill as per Section 205 and as shown on the Plans.

2. Wall Erection. Provide an on-site representative from the proprietary wall system being used to assist the Contractor and Engineer during the erection of the wall. The services of the representative shall be at no additional cost to the State.

   Soil reinforcements, facing, and applicable backing materials, shall be placed in successive horizontal lifts in the sequence shown on the plans as backfill placement proceeds. As backfill and topsoil material is placed behind the facing, maintain the facing in proper position by means of permanent or temporary bracing according to the wall supplier's recommendations.

   Vertical and horizontal alignment tolerance shall not exceed one and a half (1 ½) inches when measured at the junction of the wire facing and soil reinforcement along a 10-foot straight edge. The maximum outward bulge of the face between the reinforcement layers shall not exceed one and a half (1 ½) inches.

3. Backfill Placement. Backfill placement shall closely follow erection of each course of reinforcement mats. Backfill shall be placed in such a manner as to avoid any damage or disturbance to the wall materials or misalignment of the facing. Check plumb and tolerances at the face prior to placement of the next reinforcement lift. Any wall materials, which become damaged or disturbed during backfill placement, shall be either removed and replaced at the Contractor's expense or corrected, as directed by the Engineer.

   The backfill placement will be performed in accordance with Subsection 203-3.03 and -3.04 of the Standard Specifications. Compact backfill to 95 percent of the maximum density as determined by WAQTC FOP for AASHTO T99/T180 or ATM 212. Backfill shall be placed in complete horizontal lifts. The maximum lift thickness after compaction shall not exceed eight (8) inches. The Contractor shall decrease this lift thickness, if necessary, to obtain the desired density. Field density will be determined in accordance with WAQTC FOP for AASHTO T310.

   Achieve compaction within three (3) feet of the back face of the wall facing with at least three (3) passes of a lightweight mechanical tamper, roller or vibratory system.

   At the end of each day's operation, slope the last level of backfill away from the wall facing to rapidly direct water runoff away from the wall face. In addition, do not allow surface runoff from adjacent areas to enter the wall construction site.

511-4.01 METHOD OF MEASUREMENT. WW-MSE Retaining Walls will be measured by the square feet area of wall face. Wall height will be measured along the vertical projection of the wall face. Regardless of the type of system actually constructed, the square foot area for payment will be based on the height and length of each section of WW-MSE retaining wall shown on the Plans which was constructed. The height of each section will be taken as the difference in elevation on the outer face from the bottom of the lowermost reinforcement to the top of the uppermost reinforcement, based on the approved Working Drawings. Tapered wall

sections will be measured using the average height resulting from the height measured at each end of the tapered section.

511-5.01 BASIS OF PAYMENT. The Contract price paid per square foot of WW-MSE wall face for WW-MSE Retaining Walls shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals and for doing all work involved in constructing the earth retaining structure; including structure excavation, soil reinforcements, welded wire facing, applicable backing materials, and all parts of or appurtenances to the earth reinforcement system, complete in place, as shown on the Plans, as provided in the Standard Specifications, Standard Modifications and these Special Provisions, and as directed by the Engineer.

Structure Excavation is subsidiary to the WW-MSE Wall to the extent shown on the Plans. Duplication of measurement or payment under Section 205 will not be allowed.

WW-MSE Backfill is paid for under Section 203. Topsoil and Seeding are paid for under Sections 620 and 618, respectively.

Payment will be made under:

Pay Item No.	Pay Item	Pay Unit
511(1)	Mechanically Stabilized Earth Wall	Square Foot

SECTION 602
STRUCTURAL PLATE PIPE

Special Provisions

602-2.01 MATERIALS. Add the following:

Concrete Section 501

602-5.01 BASIS OF PAYMENT. Add the following:

Concrete cap beam and collar is subsidiary to pay item 602(2) Structural Plate Pipe Arch 13'-10" Span, 12'-2" Rise, Gauge 12.

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SECTION 603
CULVERTS AND STORM DRAINS

Special Provisions

603-1.01 DESCRIPTION. Add the following:

This work shall also consist of installing culvert marker posts.

603-2.01 MATERIALS. Add the following:

Steel Culvert Baffles	Section 504
Culvert Lining Material, Class A	Section 611

Delete the second paragraph and substitute the following:

When Item 603(17-xx), Pipe, is listed in the bid schedule, furnish either Corrugated Steel Pipe (CSP) or Reinforced Concrete Pipe. Corrugated Polyethylene Pipe is not allowed. End Sections for Metal Pipe must be of the same material as the pipe.

Add the following: Culvert marker posts shall meet the requirements of subsection 730-2.05, Flexible Delineator Posts. The color shall be blue with no other markings. The 2.5 inch by 6 foot post shall be rectangular in cross-section with reinforcing ribs capable of a minimum bending radius of 9 inches.

Add the following subsection:

603-3.06 CULVERT MARKER POSTS. Culvert marker posts shall be installed on the approach side of storm drain outfalls 30 inches and smaller, field inlets not in paved parking lots, all end sections to cross culverts, or as directed by the Engineer. Forty-two inches of post shall remain above the ground after driving.

603-4.01 METHOD OF MEASUREMENT. Add the following: Culvert marker posts will not be measured for payment.

Steel culvert baffles and culvert lining material, class A will not be measured for payment.

603-5.01 BASIS OF PAYMENT. Delete the second paragraph and replace with the following: Excavation, bedding, and backfill are subsidiary to the 603(17-xx) Pipe pay items.

Add the following: Culvert marker posts will not be paid for directly, but will be subsidiary to pipe items.

(08/27/03)R42

Steel culvert baffles and culvert lining material, Class A will not be paid for directly, but will be subsidiary to item 603(17-60) 60 Inch Pipe.

SECTION 604
MANHOLES AND INLETS

Special Provisions

604-1.01 DESCRIPTION. Add the following: All Sanitary Sewer Manholes shall be substantially complete by the interim completion date shown in Section 108. For the purpose of the Sanitary Sewer Manholes, "substantial completion" shall mean all work complete except for height adjustment of frame and cover to final grade.

604-2.01 MATERIALS. Add the following: Grates for curb inlet catch basins shall have "vaned" slots, be certified as bicycle-safe by the manufacturer, and meet the requirements of the applicable standard drawing.

Delete Items 604(1) Storm Sewer Manhole and 604(2) Sanitary Sewer Manhole. Add the following pay items:

Payment will be made under:

Pay Item No.	Pay Item	Pay Unit
604(1A)	Storm Sewer Manhole, Type I	Each
604(2A)	Sanitary Sewer Manhole, Type A	Each

SECTION 606
GUARDRAIL

Special Provisions

606-2.01 MATERIALS. Delete "Flexible Markers" in its entirety and substitute the following:

Flexible Markers. Use flexible markers with an overall length of 72 inches. The marker shaft shall have a coil spring at the bottom and a flag at the top. The shaft and spring shall be one piece and made from galvanized spring steel. The flexible marker shall have an orange HDPE flag which provides approximately 20 square inches of surface area. Use stainless or galvanized steel attaching hardware. The following is an example of an acceptable flexible marker:

Model:	FF2
Manufacture:	Nordic Fiberglass, Inc. P.O. Box 27 Highway 75 South Warren, MN 56762
Phone:	(218) 745-5095
Fax:	(218) 745-4990
E-mail:	www.nordicfiberglass.com

If using another brand, submit specifications to the Engineer for approval prior to ordering the markers.

(04/06/06)R45

606-3.01 GENERAL. Replace the second sentence of the first paragraph with the following: Conform to these Specifications and the Standard Drawings with the following exception. Modify Standard Drawing G-20.10 to only allow an offset of 1.5 feet for the ET-2000.

(05/12/04)R266

606-3.02 POSTS. Delete the first two numbered items in this subsection and substitute the following:

1. Exclusive of end treatments, use one type of post in each run of guardrail.

606-3.06 REMOVAL AND RECONSTRUCTION OF GUARDRAIL. Add the following: Guardrail removed and to be replaced with new guardrail shall have the entire new run installed within 14 calendar days after removal.

Guardrail located within 50 feet of bridge ends shall have the new guardrail installed by the end of the shift in which the existing guardrail is removed.

(04/06/06)R45

606-3.07 REMOVAL AND DISPOSAL OF EXISTING GUARDRAIL. Delete the last sentence and substitute the following: Notify the Engineer a minimum of 5 days before removing guardrail for disposal. The Engineer will notify ADOT&PF M&O (907-338-1466) and have a M&O representative physically identify portions of guardrail to be salvaged. Deliver guardrail and associated hardware designated for salvage to the ADOT&PF M&O yard located at 5300 East Tudor Road. Remaining items removed becomes the Contractor's property.

(06/12/03)R259

Add the following subsections:

606-3.09 FLEXIBLE MARKERS. For each slotted rail terminal, a flexible marker shall be attached to the extreme piece of rail. The flexible markers shall be attached using hardware and attachment methods recommended by the manufacturer.

606-3.10 LENGTH OF NEED VERIFICATION. After shaping the slopes and staking the proposed guardrail locations, notify the Engineer to field verify the beginning and ends. The Engineer will approve the staked location of the guardrail before installation. The Engineer may determine additional guardrail is necessary and the Contractor shall comply without delay.

(04/06/06)R45

SECTION 608
SIDEWALKS

Special Provisions

608-1.01 DESCRIPTION. Add the following: This work also consists of constructing asphalt pathway(s) and median(s) to conform to the Plans.

608-2.01 MATERIALS. Delete paragraph number 2 and substitute the following:

2. Asphalt Sidewalk and Asphalt Pathway

Asphalt Cement, PG52-28	Subsection 702-2.01
Aggregate, Type II or III	Subsection 703-2.04

Mix Design Requirements (ATM T-17)

Marshall Stability, pounds, min.	1,000
Percent Voids, Total Mix	2-5
Compaction, Blows/side	50

(05/22/07)R47

Standard Modification

608-3.03 CURB RAMPS. Delete subsection in its entirety and replace with the following: Construct curb ramps according to the details and the locations shown on the Plans. Follow the construction requirements of subsection 608-3.01. Give the exposed concrete surface a coarse broom finish. Install detectable warnings.

Add new subsection:

608-3.04 DETECTABLE WARNING TILES. Construct detectable warning tiles according to the details and the locations shown on the Plans.

Construct detectable warnings according to the details and the locations shown on the Plans. Install detectable warning tile by embedding tile flanges into cast in place concrete construction so there are no vertical changes in grade exceeding 0.25 inch or horizontal gaps exceeding 0.5 inch. Align pattern on a square grid in the predominant direction of travel.

Install the following at curbed side street approaches:

1. Armor-Tile ADA-C Series tactile detectable warning tile made of composite materials, safety yellow color, slip resistant surface, full length flanges on bottom, and truncated dome pattern;

2. Cast iron, yellow polymer soaked or black asphalt dip finish, with slip resistant surface, with handle or flange on bottom, and with truncated dome pattern; or

3. Approved equal.

When detectable warning tiles are indicated in the Plans for asphalt pathway crossings at uncurbed approaches, install Top Mark or approved equal heat activated glue down 12" x 24" panels according to the manufacturer's instructions full width of the path as shown in the Plans.

For each style of approach (curbed or uncurbed) install the same type of detectable warning tile throughout the project. Furnish and install detectable warning tiles according to the Americans with Disabilities Act Accessible Guideline.

E40(01/27/07)

Special Provisions

Add the following subsection:

608-3.05 ASPHALT PATHWAY. Construct asphalt pathway according to subsection 608-3.02, Asphalt Sidewalks.

(05/22/07)R47

Standard Modification

608-4.01 METHOD OF MEASUREMENT.

Delete the fifth paragraph beginning with "Curb Ramp" and replace with the following:

Curb Ramp. By each installation, complete in place, including ramp runs, backing curbs, flares, and landings necessary to provide a single street level access.

E40(01/27/07)

Special Provisions

608-4.01 METHOD OF MEASUREMENT. Add the following:

Asphalt Pathway. By the ton of asphalt concrete according to Section 109, Measurement and Payment. Asphalt cement will not be measured for payment.

(01/24/07)R47

Detectable Warning Tiles. Will be measured by the square foot complete in place.

608-5.01 BASIS OF PAYMENT. Add the following: Backing curb is subsidiary to 608(6) Curb Ramp.

Asphalt cement for Asphalt Pathway will not be paid for separately, but will be subsidiary to Item 608(7) Asphalt Pathway.

Embankment and bed course materials will be furnished, placed and paid under Sections 203 and 301, respectively.
(05/22/07)R47

Payment will be made under:

Pay Item No.	Pay Item	Pay Unit
608(7)	Asphalt Pathway	Ton
608(10)	Detectable Warning Tiles	Square Foot

SECTION 611
RIPRAP

Special Provision

611-2.01 MATERIALS. Add the following after the first sentence: Apparent specific gravity will be determined by WAQTC FOP for AASHTO T85.

R277 (11/07/05)

Add the following item:

5.	Culvert Lining Material, Class A	Meet the following requirements: 8 inch maximum size 25-75% passing the 3 inch sieve 5-10% passing the **No**. 4 sieve

Adjust as necessary, the amount of material passing the 3 inch sieve to simulate the natural alluvial material at the site.

Use round and durable stones. Percents are by weight passing a given sieve as determined by WAQTC FOP for AASHTO T27/T11.

SECTION 615
STANDARD SIGNS

Standard Modification

615-2.01 MATERIALS.

Delete the first paragraph of Item 2, including subitems a., b., c., and replace with:

2. Sign Fabrication. Use Type IV reflective sheeting (for lettering symbols, borders, and background) on sheet aluminum panels for all signs except the following:

   a. Orange Background Signs. Use Type IX fluorescent orange reflective sheeting placed on sheet aluminum panels, except:

      For temporary installations the reflective sheeting may be placed on aluminum, plastic, or plywood sheet panels.

      For flexible signs (Roll-Up Signs) use fluorescent reflective sheeting Type VI or better (based on durability and reflectivity, as determined by the Engineer). Roll-Up Sign – 3M Series RS 24, Reflexite Marathon Orange, or approved equal.

   b. Railroad Crossbucks and Vertical Crossbuck Supports: Use white Type VIII or Type IX reflective sheeting for background of sign and strips.

   c. Non-Illuminated Overhead Signs with White Legends on Green Backgrounds: Use Type IX reflective sheeting for legends and background. Create the legend in one of the following ways:

      (1) Cut border and legend from white Type IX reflective sheeting and adhere to a green Type IX background, or

      (2) Cut stencil of border and legend out of green transparent acrylic film and use transparent adhesive to overlay the film on a white Type IX reflective background.

   d. Fluorescent Yellow-Green School Area Signs: Use Type VIII or Type IX reflective sheeting for background.

Add the following paragraph:

Reflective Sheeting Warranty. Supply manufacturer's warranty for reflective sheeting, including retention of fluorescent yellow-green (measured according to ASTM E 2301) for ten years according to the following criteria:

Minimum Fluorescent Luminance Factor	Y_F: 20%
Minimum Total Luminance Factor	Y_T: 35%

The warranty shall stipulate: If the sheeting fails to meet the minimum fluorescence values within the first 7 years from the date of fabrication, the manufacturer shall, at the manufacturer's expense, restore the sign surface to its original effectiveness. If the reflective sheeting fails to meet the minimum fluorescence values within the 8th through the 10th year from the date of fabrication, the manufacturer shall, at the manufacturer's expense, provide enough new replacement sign sheeting to the Department to restore the sign surface to its original effectiveness.

R615(06/17/08)

615-3.01 CONSTRUCTION REQUIREMENTS.

Add the following to Item 7. after the first paragraph:

Contractor will deliver signs identified for salvage to the ADOT M&O Station at 5300 E. Tudor Road.

SECTION 618
SEEDING

Special Provisions

618-1.01 DESCRIPTION. Add the following: Topsoil and seed new or disturbed slopes and other areas directed by the Engineer. Track the soil and apply seed, mulch, fertilizer, and water. Provide a living ground cover on slopes as soon as possible.

618-2.01 MATERIALS. Add the following to the list of material specifications:

Mulch	Subsection 727-2.01

618-3.01 SOIL PREPARATION. Add the following: Apply seed as detailed in subsection 618-3.03 immediately after the shaping of the slopes. Cover all slopes to be seeded with topsoil according to Section 620. Complete slope preparation as soon as topsoil is placed on the slopes. (01/27/07)R52

Standard Modification

Delete the fourth paragraph and replace with the following:

Roughen the surface to be seeded by grooving the soil in a uniform pattern that is perpendicular to the fall of the slope. Use one or more of the following grooving methods prior to the application of seed:

1. Manual raking with landscaping rakes;
2. Mechanical track walking with track equipment; or
3. Mechanical raking with a scarifying slope board. Form one inch wide grooves spaced no more than six inches apart.

Rounding the top and bottom of slopes to facilitate tracking or raking and to create a pleasant appearance is acceptable, but disrupting drainage flow lines is not.

618-3.02 SEEDING SEASONS. Add the following: Seed disturbed areas that require seeding within 14 days of the permanent cessation of ground disturbing activities in that area.

Seed between May 15 and August 15, or obtain written approval from the Engineer to seed at a different date.

618-3.03 APPLICATION. Delete the first three sentences and replace with: Apply seed mix, fertilizer, and mulch (if required) at the rate specified in the Special Provisions. If no seed mix, seed mix application rate, or fertilizer rate are specified in the special provisions, use the recommendations of the Alaska Department of Natural Resources (ADNR) and the Revegetation Manual for Alaska.

Do not seed areas of bedrock, plant beds, and areas indicated on the plans as "no seeding".

Water and fertilizer required for application are subsidiary to the Seeding bid item.
E42(01/27/07)

Special Provision

Add the following: Apply seed, mulch, and fertilizer as follows per acre. Apply seed and mulch in one application if using the hydraulic method. Apply fertilizer with the hydraulic method.

Component	Ingredients	Application Rate (per MSF)
Seed	Slender Wheatgrass (Wainwright) Red Fescue (Arctared) Annual Ryegrass (Lolium)	0.50 lbs. 0.40 lbs. 0.10 lbs. Total = 1.00 lbs
Soil Stabilizer Slope $\leq$ 3:1 Slope >3:1	 Mulch Mulch with tackifier	 46 lbs. 45-58 lbs.
Fertilizer	20-20-10	12.0 lbs.

Do not remove the required tags from the seed bags.

Upon the Engineer's approval, Nortran Tufted Hairgrass may be used as a substitute for Slender Wheatgrass (Wainwright) if Slender Wheatgrass (Wainwright) is commercially unavailable. If this substitution is made, at the same application rate.
(01/27/07)R52

Standard Modification

Delete subsection 618-3.04 in its entirety, and add the following new subsections:

618-3.04 MAINTENANCE AND WATERING. Protect seeded areas against traffic by approved warning signs or barricades. Repair surfaces gullied or otherwise damaged following seeding. Maintain seeded areas in a satisfactory condition until final acceptance of work.

Water and maintain seeded areas. Water applied by this subsection is a paid Contract item. If, in the opinion of the Engineer, too much water is being applied, reduce amount of water as directed.

Reseed areas not showing evidence of satisfactory growth within 3 weeks of seeding. Bare patches of soil more than 10 square feet in area must be reseeded. Erosion gullies over 4 inches

deep must be filled and reseeded. Fill the entire erosion gully to surrounding grade, even the portions less than 4 inches deep.

Contact ADNR for advice or corrective measures, when seeded areas are not showing evidence of satisfactory growth. The Contractor is responsible for retracking, reseeding, refertilizing and remulching areas that do not show satisfactory growth, and those actions are subsidiary.

618-3.05 ACCEPTANCE. During final inspection the Engineer will perform a visual inspection of seeding to determine final stabilization. During the visual inspection each station and each side of the road will be considered a separate area. The Engineer will accept seeding that has become a vegetative matt with 70% cover density in the inspection area.

Reseed areas that are not acceptable to the Engineer.

618-3.06 PERIOD OF ESTABLISHMENT. Establishment periods extend for one complete growing season following acceptable seeding. Employ possible means to preserve the new vegetative matt in a healthy and vigorous condition to ensure successful establishment. Reseed areas that do not meet the specifications. Watering and reseeding after the final inspection are subsidiary.

The Engineer may, but is not required to, determine the Project is complete except for the period of establishment, and issue a letter of final acceptance. After final acceptance, work or materials due under this subsection during any remaining period of establishment are considered warranty obligations that continue to be due following final acceptance in accordance with subsection 105-1.16.

618-4.01 METHOD OF MEASUREMENT. After Seeding by the Pound, delete text and replace with: By the weight of dry seed acceptably seeded and maintained.

618-5.01 BASIS OF PAYMENT. Delete paragraphs beginning: "Seeding by the Acre" and "Seeding by the Pound" and replace with:

Seeding by the Acre. Payment is for established vegetative matt. Soil preparation, fertilizer, and water required for hydraulic method are subsidiary.

Seeding by the Pound. Payment is for established vegetative matt. Soil preparation, fertilizer, and water required for hydraulic method are subsidiary.

Add new pay description:

Water for Seeding. Water applied for growth of vegetative matt. Water for hydraulic seeding, fertilizing or mulching is subsidiary. Water after project completion is subsidiary.

E42(01/27/07)

Delete this Section in its entirety and substitute the following:

SECTION 626
SANITARY SEWER SYSTEM

626-1.01 DESCRIPTION. Construct sanitary sewers and appurtenances to conform to the Plans. This Section refers to conduit used for sanitary sewers as "sewer conduit." For the purposes of these Special Provisions "AWWU" shall mean the Anchorage Water and Wastewater Utility, Engineering Division at (907) 564-2785. This work shall include the installation, flushing, and testing of sanitary sewer systems for acceptance by AWWU. The Contractor shall also provide record drawings according to the conditions prescribed herein.

The Contractor shall conduct a subsurface exploratory drilling investigation to determine existing rock depth along surveyed grid network covering sanitary sewer conduit area to be excavated.

Sanitary Sewer System shall be substantially complete by the interim completion date shown in Section 108. For the purpose of the Sanitary Sewer System, "substantial completion" shall mean all work complete except for Sewer Service Connections.

626-2.01 MATERIALS.

Materials shall conform to the following:

1. Sanitary Sewer Conduit: Subsection 707-2.05 (Ductile iron pipe, Class 52)
2. Sewer Service Connection: Subsection 707-2.05 (Ductile iron pipe, Class 52)
3. Sanitary Sewer Force Main Conduit: High Density Polyethylene (HDPE), SDR 11

   The conduit and fitting material shall have a cell classification of 355434C in accordance with ASTM D3350. In addition, the material must exceed 1,000 hours when tested in accordance with the Ring Environmental Stress Crack Resistance Test (Radar Ring Test) with fewer than 20 percent failures. Also, the extruded conduit shall have impact strength greater than 3 cubic feet/inch when tested in accordance with ASTM D256 (Izod Pendulum Test).

   The conduit shall be homogeneous throughout and free of visible cracks, holes, foreign inclusions or other injurious defects. It shall be uniform in color, opacity, density and other physical properties.

   HDPE conduit and fittings shall conform to all applicable provisions and requirements of the latest of AWWA C901 and AWWA C906 and, by inclusion, all appropriate standards referenced therein.

   Flange connections shall be one-piece, molded, SDR11 (minimum) polyethylene adapters with stainless steel backup ring. Backup ring shall be Type 316 stainless steel with Class

150, ANSI 16.5 standard drilling. Flange connections shall have a minimum pressure rating equal to or greater than that of the HDPE conduit. Nuts, bolts and washers shall be Stainless Steel (Type 316).

Rubber gaskets for flange connections shall be full face type SBR elastomer per ANSI/AWWA C111/A21.11 and shall be 1/8" thick. Gaskets shall be U.S. Pipe FULL FACE FLANGE-TYTE Gasket or equal.

4. Electrofusion Couplings: Electrofusion couplings shall be one-piece construction, tubular, and of the same material as the adjacent HDPE pipe. Couplings shall have attached around the circumference at each end a fusion wire which when energized shall provide a complete watertight fusion weld. Fusion wires are factory attached and with sufficient lead for connection to factory supplied power converter. Couplings shall be capable of sustaining pipeline pressure without damage and shall conform to ASTM F1055. Couplings shall be Frialen Electrofusion System distributed by Friatec, Inc, or approved equal.

5. Conduit Bedding:

   a. Ductile Iron Conduit:

      4-inch Conduit and Smaller: subsection 703-2.07 (Selected Material, Type A, with 100% of particles passing the 1-inch sieve)

      Conduit Larger Than 4-inch: subsection 703-2.07 (Selected Material, Type A, with 100% of particles passing the 2-inch sieve)

   b. HDPE Conduit:

      HDPE Conduit Bedding material shall conform to the following gradation:

U.S. STANDARD SIEVE SIZE	CUMULATIVE PERCENT PASSING BY WEIGHT
1/2"	100
3/8"	85 - 100
No. 4	10 - 30
No. 8	0 - 10
No. 16	0 - 5

626-3.01 CONSTRUCTION REQUIREMENTS.

Complete the sanitary sewer system and make sure it operates properly at the time of acceptance of the work. Furnish and install all subsidiary parts not shown on the Plans or specified in this Section that are necessary to complete the sanitary sewer system.

Meet the applicable provisions of Sections 201, 204, and 603 for all clearing and grubbing, excavation, bedding, backfill, conduit, and appurtenances.

If sewer conduit is directly connected to or supported by rigid structures such as manholes, it must have a joint located 5 feet or less from the point of connection or support.

Lay sewer conduit accurately to the staked line and grade. Install all service connections as indicated on the Plans. Provide suitable fittings and adapters when connecting existing service sewers.

Both line and grade shall be checked and recorded in a field book for each piece of conduit and appurtenance installed. Adjustments to line and grade shall be done by scraping away or filling the earth under the body of the conduit and not by blocking or wedging up.

The Contractor shall have survey instruments such as transit and level for transferring alignment and grades from offset hubs. The Contractor shall also employ a person who is qualified to use such instruments and who shall have the responsibility of placing and maintaining such construction guides. The Contractor shall furnish to the Engineer a copy of the surveyor's record notes for the newly installed conduit and appurtenances. The practice of placing backfill over a section of conduit to provide a platform for the instruments shall be subject to the approval of the Engineer.

Clean all foreign matter from sewer conduit. Keep water out of trenches until joints are completed. Plug or cover open ends of conduit and fittings when work is not in progress to keep out foreign matter and rodents.

Join conduit according to manufacturer's recommendations, or as detailed on the Plans.

Remove trench sheeting and bracing above the elevation of the conduit. Do not pull, remove, or disturb sheeting below the conduit.

A lowering of water conduits 2 inches and smaller shall be included under the conditions set forth in the Special Provisions for the moving and relocation of utilities occupying space within the area of construction. With the approval of the Engineer, the Contractor may lower water conduits 2 inches in diameter and smaller, but separate payment shall not be made for such lowering. The cost shall be subsidiary to other sanitary sewer items.

Suspension of Work. AWWU, through the Engineer, reserves the right to suspend the sanitary sewer installation at any time that the Contractor fails to meet the requirements set forth herein until such time as the Contractor makes the necessary corrections. Suspensions of work will not entitle the Contractor to an extension of time for the completion of the project, and will not entitle the Contractor to extra payment for costs incurred.

Verification of Existing Utilities. At a sufficient distance before encountering a known obstacle or conduit or tying into an existing conduit, the Contractor shall expose and verify the exact location of the obstacle or conduit so proper alignment and/or grade may be determined before the conduit sections are laid in the trench and backfilled.

The cost incurred for removal and realignment of backfilled conduit sections due to improper verification methods shall be borne by the Contractor.

Conduit that has the grade or joint disturbed after laying shall be taken up and relaid. Water shall be kept out of the trench until the jointing is complete.

Sanitary Sewer Conduit:

Exploratory Drilling Investigation. The Contractor shall conduct a subsurface exploratory drilling investigation to determine existing rock depth along surveyed grid network area to be excavated. The exploratory drilling shall occur along the entire sanitary sewer conduit alignment at a minimum of 50-foot intervals to determine the need for rock removal.

Provide written record of the investigation including location, by station and offset, and determined rock depth at each probe location.

Excavation. No more than 200 feet of trench shall be open at any time while constructing the sanitary sewer conduit, unless authorization is obtained from the Engineer. Trench excavations shall be backfilled to original grade at the end of each working day, except that a "bell hole" leaving the end of the conduit exposed may be left open provided it is properly signed and barricaded.

Conduit Wrap. The outside of ductile iron and conduit, fittings and other appurtenances used in sewer construction shall be encased with 1 layer of 8 mil thick polyethylene film. The polyethylene encasement shall be installed using Method A of ANSI/AWWA C105/A21.5 as described below:

Method A

1. Cut polyethylene tube to a length approximately 2 feet longer than the length of the conduit section. Slip the tube around the conduit, centering it to provide a 1 foot overlap on each adjacent conduit section and bunch it accordion fashion lengthwise until it clears the conduit.

2. Lower the conduit into the trench and make up the conduit joint with the preceding section of conduit. A shallow bell hole must be made at the joints to facilitate installation of the polyethylene tube.

3. After assembling the conduit joint and testing the bonded joint, make the overlap of the polyethylene tube. Pull the bunched polyethylene from the preceding length of conduit, slip it over the end of the new length of conduit, and secure in place. Then slip the end of the polyethylene from the new conduit section over the end of the first wrap until it overlaps the joint at the end of the preceding length of conduit. Secure the overlap in place. Take up the slack width to make a snug, but not tight fit along the barrel of the conduit, securing the fold at quarter points.

4. Repair rips, punctures, or other damage to the polyethylene with adhesive tape or with a short length of polyethylene tube cut open, wrapped around the pipe, and secured in place. Proceed with installation of the next section of conduit in the same manner.

Bedding. All sanitary sewer conduit and sewer services shall be bedded in material conforming to the requirements of Conduit Bedding for ductile iron conduit. Install bedding material as shown on the Plans. Bedding material shall be placed in uniform layers of not more than 12 inches in depth and compacted to 95% of maximum density in accordance with subsection 203-3.03.

Drop Connections. Conduit and fittings used in the construction of drop connections shall conform to the requirements of Subsection 707-2.05 (Ductile iron pipe, Class 52), and shall be constructed in accordance with the Plans and Standard Details.

Sanitary Sewer Force Main:

HDPE conduit for sanitary sewer force main shall be butt-fused in accordance with ASTM F2620. The use of electro-fusion couplings to join HDPE conduit may be allowed upon written approval of the Engineer. Contractor shall as-built the exact location of any installed electro-fusion coupling.

The individual who performs the butt-fusion shall have written certification from an HDPE pipe manufacturer stating he has successfully completed an 8-hour (minimum) certification class on butt-fusion techniques and procedures. In addition, this individual shall have fused a combined total of more than 5,000 feet of HDPE conduit in diameters 4-inches and larger. Prior to commencement of Work, submit a copy of the certification and written documentation of welder experience detailing project location, diameter of fused conduit, and length of fused conduit for each applicable project.

The Contractor shall ensure that each joint is fused at the temperature and pressure recommended by the conduit manufacturer in order to achieve the maximum pressure rating for that joint. All butt-fused joints for HDPE conduit and fabricated fittings shall be documented by a computer datalogger that records pressure and temperature applied at each fused joint, along with the date and time the joint was fused. Computer printouts and electronic data for each fitting shall be submitted to the Engineer prior to installation of the fitting. All fittings for the Project shall be labeled with a unique identifier that corresponds with the fusion computer printouts for each fitting. Computer printouts, electronic data, and the Project station for each field fused joint shall be submitted to the Engineer at the end of each work shift.

Contractor shall inspect the HDPE conduit for damage immediately prior to joining. Damage is defined as gouges exceeding 10% of the conduit wall thickness, kinked conduit sections, conduit sections flattened to more than 5% of the original diameter, or any abrasion or cutting of the inside surface of the piping. Damaged portions of piping shall be cut out and discarded.

The handling of the joined conduit shall be in such a manner that the conduit is not damaged. Ropes, fabric or rubber-protected slings, or straps shall be used when handling conduit. Chains, cables, or hooks inserted into the conduit ends shall not be allowed. Two slings spread apart shall be used for lifting each length of conduit. Slings for handling the joined conduit shall not be positioned at butt-fused joints. Sections of the joined conduit with cuts or gouges exceeding 10% of the conduit wall thickness, kinked sections, or sections flattened to more than 5% of the original diameter shall be cut out and discarded, and the ends of the conduit rejoined.

The use of electrofusion couplings to join HDPE piping may be allowed upon written approval of the Engineer. Contractor shall as-built the exact location of any installed electrofusion coupling. Perform installation of electrofusion couplings in accordance with these Specifications and the manufacturer's written instructions, using the manufacturer's recommended tools and materials. At all times, protect the fusion site from inclement weather and provide recommended ambient temperatures for proper electrofusion. Check pipe roundness and if out-of-round conditions exist and exceed the manufacturer's requirements, re-rounding clamps shall be used to bring the pipe back into a round condition. Cut both pipe ends square with a pipe cutter and clean both ends to remove dirt, mud and other debris. Completely scrape and clean the pipe ends to remove oxidation and other contaminates. Use only appropriate scraping tools as recommended by the coupling manufacturer and follow the manufacturer's recommended scraping procedures. If the inside of the coupler or the pipe surfaces become contaminated prior to fusing, clean thoroughly with a clean lint free towel and isopropyl alcohol (consult coupling manufacturer for appropriate minimum percentage) and allow to dry before assembling. Pipes shall have a maximum gap of 1/8-inch between pipe ends. A fusion control box which can scan the barcode provided on the electrofusion coupling shall be used to ensure proper installation. Contractor shall observe the manufacturer's procedure for pre-heating or temperature specific fusion times. Initiate fusion cycle and verify when complete. Check melt indicators, if equipped. Note the cooling time and mark the time when the clamping time has elapsed on the pipe. As-built the exact location of the coupling.

Conduit that has the grade or joint disturbed after laying shall be taken up and relaid. Water shall be kept out of the trench until the jointing is completed.

Conduit ends left for future connections shall be plugged or capped as shown on the Plans, or as directed by the Engineer.

All sanitary sewer force main conduit shall be bedded in material conforming to the requirements of Conduit Bedding for HDPE conduit. Install bedding material as shown on the Plans. Bedding material shall be placed in uniform layers of not more than 12-inches in depth and compacted to 95% of maximum density in accordance with subsection 203-3.03.

All sheeting and bracing used in excavation shall be removed by the Contractor following the completion of work.

626-3.02 TESTING. The Contractor shall clean and flush installed sanitary sewer conduit and force main conduit before testing and final inspection. The Contractor shall notify the Engineer 48 hours in advance (two working days) before a test. The Engineer and AWWU shall be present during tests. Two hours notice in advance of the scheduled time shall be given to the Engineer if the test is to be postponed or cancelled.

The Contractor shall furnish tools, equipment, and labor necessary to complete the tests and shall verify from observations, or preliminary tests, that each conduit conforms with this specification before requesting AWWU to observe and record the actual leakage.

If the conduit installation fails to meet test requirements, the Contractor shall determine at the Contractor's expense the source of leakage, and shall repair (if the extent and type of repairs proposed by the Contractor are acceptable) or replace defective materials or workmanship. The completed conduit installation shall meet the requirements of this Section before being considered acceptable.

The Engineer may require the Contractor to repair obvious leaks even though the total length of the test section falls within the maximum allowable leakage of the test used.

No test section shall exceed 1,000 linear feet, unless approved by AWWU in writing.

Flushing. Flushing shall be coordinated with AWWU. Newly constructed sanitary sewer conduit and force main conduit shall be "open-bore" flushed to remove foreign matter to the satisfaction of AWWU. A detailed plan for cleaning of the lines shall be submitted to the Engineer for review and approval before commencement of work.

"Open-bore" flushing shall be accomplished before hydrostatic testing. The Contractor shall furnish, install, and remove all fittings and conduit necessary to perform the flushing. Contractor shall provide water supply for "Open-bore" flushing.

Flushing shall be considered subsidiary to this work and no separate payment shall be made.

Sanitary Sewer Conduit Testing. Sanitary sewer conduit installed shall be subject to either an infiltration test or an exfiltration test. In those areas where, in the opinion of AWWU, the water table is high enough to subject the conduit to a satisfactory infiltration test, it is not anticipated that an exfiltration test shall be required. In checking leakage, there will be no allowance made for external hydrostatic head. Where in the opinion of AWWU the water table is not high enough to provide a satisfactory infiltration test, an exfiltration test shall be required.

The type of test, either infiltration or exfiltration, shall be determined by AWWU. The Contractor shall have the option of choosing only one method (air or water) of testing for each section tested. Testing shall be considered a subsidiary obligation under this Contract and extra payment will not be allowed for this portion of work.

Wyes, tees, or ends of side sewer stubs and service connections shall be plugged or capped, and the plug or cap shall be securely fastened to withstand the internal test pressures. Such plugs or caps shall be readily removable and their removal shall provide a socket suitable for extending the lateral connection.

Infiltration Test. Infiltration testing may be allowed at AWWU's option when the natural ground water table is 6 feet above the crown of the higher end of the test section. The maximum allowable limit for infiltration shall not exceed the rate of 50 gallons per inch diameter per mile per 24 hours.

Exfiltration Test (Using Water). On completion of a section of sanitary sewer between manholes, or otherwise, the ends of conduit shall be plugged, including service connections, and the conduit subjected to hydrostatic pressure. Generally testing is to be conducted after backfilling, before resurfacing, and after service connections are made.

A minimum head of 6 feet of water above the crown at the upper end of the test section shall be maintained for a period of 4 hours, during which time it will be presumed that full absorption of the conduit body has taken place and thereafter for a further period of 1 hour for the actual test of leakage. During this 1 hour period the measured loss shall not exceed the rate of 50 gallons per inch diameter per mile per 24 hours.

Exfiltration Test (Using Air). The Contractor shall furnish facilities and personnel for conducting the test under the observation of AWWU. The equipment and personnel shall be subject to their approval. The Contractor may desire to make an air test before backfilling for the Contractor's purpose. However, the acceptance air test shall be made after backfilling has been completed, and compacted.

Immediately following the conduit cleaning, the sanitary sewer shall be tested with low pressure air. Air shall be slowly supplied to the plugged pipe installation until the internal air pressure reaches 4.0 pounds per square inch greater than the average back pressure of ground water that may submerge the conduit. At least 2 minutes shall be allowed for temperature stabilization before proceeding further.

The conduit shall be considered acceptable when tested at an average pressure of 4.0 psi greater than the average back pressure of ground water that may submerge the conduit, if:

The total rate of air loss from a test section in its entirety between manholes or between manhole and cleanout structures does not exceed 2.0 cubic feet per minute, or the following table may be used as a guideline for a satisfactory test by air for conduit sizes shown:

Conduit Diameter	Allowable Pressure Drop in 10 Minutes
8 inches	2.7 psi
10 inches	2.1 psi
12 inches	1.8 psi
16 inches	1.4 psi
18 inches	1.2 psi
24 inches	0.9 psi
48 inches	0.5 psi

Pressure gauges shall be incremented in not more than ½ pound increments for accurate tests.

Safety braces shall be required to hold plugs in place and to prevent the sudden release of the compressed air. Due to the large forces exerted by an escaping plug during the testing of the conduit, workmen shall not be allowed in the manholes in which plugs have been placed while tests are being conducted. The Contractors testing equipment shall be arranged in such a manner that a pressure relief device will prohibit the pressure in the test section from exceeding 10 psi.

Check of Line and Grade. After backfilling and cleaning, but before final acceptance, sanitary sewer conduit, excluding service connections, may be checked for line and grade by closed circuit television. A full circle of light must be seen and no conduit misplaced in line or grade. Excess deviation shall be corrected by the Contractor at the Contractor's expense before final acceptance of the conduit.

The Contractor shall, upon completion of work involved, notify the Engineer in writing of completion and request a semi final inspection of the project. This inspection will be performed in the presence of the Engineer, AWWU, and the Contractor. Copies of a list of deficiencies, if any, indicated by the inspection will be furnished to the Contractor by the Engineer for remedial action. When corrective action has been completed, the Contractor shall notify the Engineer, and at that time an acceptance inspection will be performed.

The Contractor shall take precautions to allow no sewage to enter the sanitary sewer until it has been inspected, tested and accepted for operation and maintenance by AWWU. Deviations shall require written approval. The new sewer conduit may be tested and inspected in incremental runs, manhole to manhole.

Sanitary Sewer Force Main Conduit Testing. Installed force main conduit shall be subject to a hydrostatic test:

Hydrostatic Testing. A hydrostatic test shall be conducted on newly constructed sewer force main conduit after flushing in the presence of the Engineer and AWWU according to the requirements of AWWA C-600, unless modified in the following Special Provisions. The Contractor, at the Contractor's option, may either use a pressure test or a leakage test.

The Contractor shall furnish assistance, equipment, labor, materials and supplies (except the test pressure gauge) necessary to complete the test to the satisfaction of AWWU.

Before testing, air shall be expelled from the conduit. If permanent air vents are not located at high points, the Contractor shall install corporation cocks at such points so air can be expelled as the conduit is slowly filled with water.

Hydrostatic testing will be performed through test copper. Use of service connections for testing will not be allowed.

Before applying pressure, all conduit and all components in the test section shall be restrained and the trench section backfilled to original grade.

The maximum test duration is eight (8) hours including time to pressurize, time for initial expansion, time at test pressure and time to depressurize the test section. If the test is not completed due to leakage, equipment failure, or for any other reason, depressurize the test section completely and allow it to relax for at least eight (8) hours before pressurizing the conduit test section again. Contractor shall repair any portion of the force main conduit which leaks or which fails to pass the hydrostatic test at the Contractor's expense.

The newly installed HDPE sewer force main shall be hydrostatically tested to the rated operating pressure of the conduit. The rated operating pressure of HDPE SDR 11 conduit is 160 psi. Hydrostatic test pressure shall be 160 psi. Gradually pressurize the test section to test pressure and maintain test pressure for four (4) hours. During the initial expansion phase, HDPE will expand slightly. Additional test liquid will be required to maintain pressure. It is not necessary to monitor the amount of water added during the initial expansion phase. Immediately following the initial expansion phase, reduce test pressure by 10 psi and stop adding test liquid. If there are no visible leaks and the test pressure remains steady (within 5% of the target value) for one (1) hour, the sewer force main shall be deemed as having passed the test.

Cracked or defective conduit, gaskets, mechanical joints, or fittings discovered as a consequence of the hydrostatic tests shall be removed and replaced with sound material at the Contractor's expense. The test shall then be repeated until the results are satisfactory.

In the instance where the sewer force main connection is made to a presently installed sewer conduit, the Contractor shall suitably seal off the outlet leading to the presently installed conduit before making field tests.

HDPE Joint Lab Testing. A maximum of two (2) joints selected at random by the Engineer may be tested for compliance with ASTM D638 as a quality control measure. Specimens to be tested shall be obtained by cutting the force main conduit at least 12-inches on each side of a field-made joint. Contractor shall then rejoin the ends of the conduit and work may proceed. Costs for removal and repair of butt-fused joints shall be borne by the Contractor. All lab costs associated with testing of butt-fused joints will be borne by the Owner.

626-3.03 RECORD DRAWINGS AND WORKING DRAWINGS. A complete and accurately dimensioned record of deviations, deletions, additions and alterations from and to the Contract Plans and Specifications shall be maintained by the Contractor to indicate the work as it is actually installed. This record drawing information shall be recorded on a print of the Plans affected, and on the applicable pages of the Specifications with supplementary notes. This record drawing set of Plans and Specifications shall be kept by the Contractor showing record conditions of conduit and appurtenances installed. Conduit and appurtenances shall be referenced by sewer stationing or force main stationing, showing design line and grade, and record line and grade.

When this sanitary sewer system is completed, the Contractor shall certify the accuracy of the construction survey notes and of each revision on the Plans and in the Specifications by written signature endorsement, and deliver them to the Engineer before final acceptance by the Anchorage Water & Wastewater Utility.

626-4.01 METHOD OF MEASUREMENT.

Sanitary Sewer Conduit. For slopes of 10% or less, by the length of the horizontal projection of the conduit from center to center of manholes or cleanouts. For slopes of more than 10%, by the length along the centerline of the conduit from center to center of manholes or cleanouts.

Sanitary Sewer Force Main Conduit. For slopes of 10% or less, by the length of the horizontal projection of the conduit from center to center of manholes, cleanouts, or fittings. For slopes of more than 10%, by the length along the centerline of the conduit from center to center of manholes, cleanouts, or fittings. No deduction in length will be made for fittings or manholes.

Sewer Service Connection. By the number of sewer services installed.

Drop Connection. By the number of drop connections installed.

Sanitary Sewer As Builts. By lump sum. No measurement will be made.

626-5.01 BASIS OF PAYMENT.

The contract price for Sanitary Sewer Conduit shall include piping, conduit wrap, flushing, pressure testing, and exploratory drilling investigation.

The contract price for Sanitary Sewer Force Main Conduit shall include piping, fittings, bends, blind flanges, caps, HDPE flange adapters, electrofusion couplings, tracer wire, flushing, and pressure testing.

The contract price for Sewer Service Connection shall include locating existing sewer services and disconnection and reconnection of existing service (if appropriate); piping, fittings, adapters, cleanouts, or other necessary appurtenances; conduit wrap; protection of existing utilities; restoration of existing drainage patterns; removal and replacement of existing culverts, guardrail, fences, landscaping, and other public or private improvements; finish grading; and cleanup. Fittings and appurtenances not specifically identified for payment under a separate pay item but required for normal completion of a Sewer Service Connection will be considered subsidiary and shall be included in the cost of the Sewer Service Connection.

The contract price for Drop Connection shall include piping, fittings, bends, and concrete.

Excavation, furnishing and placing bedding material, and backfill is subsidiary.

Providing pumping of effluent during construction will not be paid for separately, but will be subsidiary to the sewer improvements.

Branch connections and service fittings are subsidiary.

Payment for sewer manholes will be made under Item 604(2A) Sanitary Sewer Manhole, Type A.

If required, trench blasting shall be paid under Item 203(20) Trench Blasting for Water/Sewer Utilities.

Payment will be made under:

Pay Item No.	Pay Item	Pay Unit
626(1-18)	18-inch Sanitary Sewer Conduit, Class 52	Linear Feet
626(1B-12)	12-inch Sanitary Sewer Force Main Conduit, HDPE SDR 11	Linear Feet
626(2)	Sewer Service Connection	Each
626(3)	Drop Connection	Each
626(10)	Sanitary Sewer As Builts	Lump Sum

Delete this Section in its entirety and substitute the following:

SECTION 627
WATER SYSTEM

627-1.01 DESCRIPTION. Furnish and place water main improvements and replacements, including all appurtenances, as shown on the Plans or specified in this Section.

The term "water conduit" refers to all conduits used for water mains. The term "service pipe" refers to service lines.

For the purposes of these Special Provisions "AWWU" shall mean the Anchorage Water and Wastewater Utility, Engineering Division at (907) 564-2785. This work shall include the installation, testing, flushing, and chlorination or hand cleaning of water systems for acceptance by AWWU. The Contractor shall also provide record drawings according to the conditions prescribed herein.

In conjunction with working around and/or adjusting the AWWU water valves, the Contractor shall exercise due care. Before beginning work by the Contractor, AWWU will check and correct deficiencies that may exist in valves or valve boxes. The Engineer and Contractor shall witness the condition and location of each valve or valve box. Failure to participate in the inspection by the Contractor will result in his forfeiting rights to deny damages later during the course of the work. Notice that the Contractor is ready for the above inspection shall be in writing to AWWU and shall be submitted giving at least 48 hours notice. The Contractor shall furnish a copy of the notice to the Engineer.

It shall be the Contractor's responsibility to protect and maintain valves and valve boxes in an operable condition during all phases of construction. If at any time after the inspection as outlined above AWWU finds a valve or valve box damaged or rendered inoperable by the Contractor, the Contractor shall repair them at the Contractor's own expense.

The locations of the existing water utility shown on the Plans are not exact. The Contractor shall be responsible for all work required to locate the existing water mains for connection as shown on the Plans. No additional compensation shall be allowed for discrepancies in the water utility locations.

Materials in direct contact with potable water shall be approved for that use by the National Sanitation Foundation (NSF) according to NSF Standard 61. Piping, flux and solder used in construction of the water system shall be lead free.

627-2.01 MATERIALS.

Materials shall conform to the following:

1. Water Main Conduit: High Density Polyethylene (HDPE), SDR 11

The conduit and fitting material shall have a cell classification of 355434C in accordance with ASTM D3350. In addition, the material must exceed 1,000 hours when tested in accordance with the Ring Environmental Stress Crack Resistance Test (Radar Ring Test) with fewer than 20 percent failures. Also, the extruded conduit shall have impact strength greater than 3 cubic feet/inch when tested in accordance with ASTM D256 (Izod Pendulum Test). The material shall be listed by the NSF.

The conduit shall be homogeneous throughout and free of visible cracks, holes, foreign inclusions or other injurious defects. It shall be uniform in color, opacity, density and other physical properties.

HDPE conduit and fittings shall conform to all applicable provisions and requirements of the latest of AWWA C901 and AWWA C906 and, by inclusion, all appropriate standards referenced therein.

Flange connections shall be one-piece, molded, SDR11 (minimum) polyethylene adapters with stainless steel backup ring. Backup ring shall be Type 316 stainless steel with Class 150, ANSI 16.5 standard drilling. Flange connections shall have a minimum pressure rating equal to or greater than that of the HDPE conduit. Nuts, bolts and washers shall be Stainless Steel (Type 316).

Rubber gaskets for flange connections shall be full face type SBR elastomer per ANSI/AWWA C111/A21.11 and shall be 1/8" thick. Gaskets shall be NSF Standard 61 certified for use in potable water systems. Gaskets shall be U.S. Pipe FULL FACE FLANGE-TYTE Gasket or equal.

2. Electrofusion Couplings: Electrofusion couplings shall be one-piece construction, tubular, and of the same material as the adjacent HDPE pipe. Couplings shall have attached around the circumference at each end a fusion wire which when energized shall provide a complete watertight fusion weld. Fusion wires are factory attached and with sufficient lead for connection to factory supplied power converter. Couplings shall be capable of sustaining pipeline pressure without damage and shall conform to ASTM F1055. Couplings shall be Frialen Electrofusion System distributed by Friatec, Inc, or approved equal.

3. Service Pipe: Subsection 707-2.06

4. Corporation Stops and Curb Stops: Subsection 712-2.09

5. Valve Boxes: Subsection 712-2.11

6. Gate Valves: Gate valves shall be iron body, resilient-seated valves with non-rising stems for water supply service, manufactured in accordance with AWWA C509. Gate valves shall have a two (2) inch square operating nut, and shall open counterclockwise. Unless otherwise detailed on the Drawings, valve and valve/pipe interface shall be flanged type connections conforming to AWWA C110.

Nuts, bolts, and washers shall be Stainless Steel, Type 316. Carbon steel galvanized or zinc plated nuts, bolts, and washers shall not be allowed.

Interior and exterior valve coating shall be Fusion Bonded Epoxy (FBE) in accordance with AWWA C550. If integrity of FBE coating is damaged during shipping or installation, Contractor shall field repair FBE in accordance with manufacturer's recommendations. Submit manufacturer's recommendations for field repair of FBE.

7. Fire Hydrants: Fire hydrants shall conform to the requirements of ANSI/AWWA C502 for Dry Barrel Fire Hydrants. Fire hydrants shall be Mueller Super Centurian or equal. Fire hydrants shall include the following:

   a. Fire hydrants shall be single pumper hydrants.

   b. Fire hydrants shall be supplied with 5.25-inch main valve opening.

   c. Fire hydrants shall be furnished with a 6-inch flanged type connection conforming to AWWA C110.

   d. Fire hydrants shall be furnished with two 2.5-inch hose connections and one 4.5-inch pumper connection.

   e. Unless otherwise required, all hydrants shall be furnished with a barrel length that will allow a minimum burial depth of 10 feet over top of pipe.

   f. The main valve shall be of the compression type, where water pressure holds the main valve closed permitting easy maintenance or repair of the entire barrel assembly from above the ground without the need of a water shut-off.

   g. Fire hydrants shall be furnished with a breakaway flange which allows both barrel and stem to break clean upon impact from any angle. Traffic flange design must be such that repair and replacement can be accomplished above ground.

   h. Painting and coating shall be in accordance with cited AWWA specifications. After installation, the hydrant section from the traffic flange to the top of the operating nut shall be painted "Caterpillar Yellow".

   i. Operating and nozzle nuts shall be pentagon shaped with 1.5-inch point to flat measurements.

   j. Hose nozzle threading shall be in conformance with NFPA #194 for National (America) Standard Fire Hose Coupling Screw Threads.

   k. All working parts shall be bronze or non-corrosive metal in accordance with the requirements of ANSI/AWWA C502.

   l. Hydrants shall be right hand opening (clockwise).

   m. Hydrants shall be non-draining.

n. Hydrant nuts, bolts, and washers shall be Stainless Steel, Type 316. Carbon steel galvanized or zinc plated nuts, bolts, and washers shall not be allowed.

o. Fire hydrant leg piping shall be HDPE SDR 11.

8. HDPE Conduit Bedding:

U.S. STANDARD SIEVE SIZE	CUMULATIVE PERCENT PASSING BY WEIGHT
1/2"	100
3/8"	85 - 100
No. 4	10 - 30
No. 8	0 - 10
No. 16	0 - 5

9. Galvanic Anodes: Anodes shall be High Potential Cast Magnesium Anodes. Anodes utilized for the galvanic anode system installation shall be prepackaged magnesium style anodes weighing twenty pounds bare and seventy pounds packaged.

Anodes shall be packaged in a low resistive backfill consisting of 75% gypsum, 20% bentonite and 5% sodium sulfate.

Anodes shall be provided with No. 10 AWG stranded copper, single conductor cable with HMWPE insulation. Lead wire cable shall be rated for 600 volts and designed for direct burial application.

627-3.01 GENERAL. AWWU, through the Engineer, reserves the right to suspend the water system installation at any time that the Contractor fails to meet the requirements set forth herein until such time as the Contractor makes the necessary corrections. Suspensions of work will not entitle the Contractor to an extension of time for the completion of the project, and will not entitle him to extra payment for costs incurred.

If construction or excavation require the removal of existing privately owned facilities on the provided water easements, the Contractor shall be responsible for coordinating with the owner and for reestablishing lawns, driveways, parking lots, etc., at unit bid prices, where applicable. Restorative work will be completed as soon as practicable after the installation, but in no case shall the time exceed 2 weeks.

Complete the water system and make sure it operates properly at the time of acceptance of the work. Furnish and install all incidental parts not shown on the Plans or specified in this Section that are necessary to complete the water system.

Meet the applicable provisions of Sections 201, 204, and 603 for all clearing and grubbing, excavation, bedding, backfill, conduit, and appurtenances.

Consult the Plans for estimated locations of existing sewers, water mains and other utilities near the construction. Use this data for information only. The Department does not guarantee their accuracy. Confirm and mark the exact locations of all existing utilities before starting work so proper alignment and/or grade may be determined before the pipe sections are laid in the trench and backfilled.

Before removing or disrupting service to fire hydrants, the Contractor shall contact the local Fire Department at least 48 hours in advance of any construction.

The Contractor shall notify affected property owners, the Engineer, the local Fire Department and AWWU 72 hours before interruption of water service. The Contractor shall provide temporary service to those property owners with disrupted water service if the interruption exceeds 6 hours.

The Contractor shall provide necessary fittings, valves, temporary connections or appurtenances necessary in order to maintain the water distribution system. Costs involved in service changeovers and providing temporary water service shall be subsidiary. The Contractor shall be responsible for damages incidental to interruption of service that may be due to the Contractor's operations.

Before water system installation, the Contractor shall submit for review to the Engineer a detailed plan for the installation of the new water system and for removal/abandonment of existing water systems that are to be removed or abandoned, if any. The plan shall be of sufficient detail to clearly indicate the proposed work sequence, schedules, and disruption of water service.

HDPE Joints. HDPE conduit and fittings shall be butt-fused in accordance with ASTM F2620. The use of electro-fusion couplings to join HDPE conduit may be allowed upon written approval of the Engineer. Contractor shall as-built the exact location of any installed electro-fusion coupling.

Butt-fusing Experience. The individual who performs the butt-fusion shall have written certification from an HDPE pipe manufacturer stating he has successfully completed an 8-hour (minimum) certification class on butt-fusion techniques and procedures. In addition, this individual shall have fused a combined total of more than 5,000 feet of HDPE conduit in diameters 4-inches and larger. Prior to commencement of Work, submit a copy of the certification and written documentation of his/her experience detailing project location, diameter of fused piping, and length of fused conduit for each applicable project.

Rights In and Use of Materials Found on the Work Site. Unless specifically addressed otherwise in these special provisions, existing water valves, tees, bends, and conduit (including ductile iron pipe) removed but not reinstalled, and declared "salvageable materials" shall become the property of the Contractor.

Final Acceptance. The Contractor shall, upon completion of work involved, notify the Engineer in writing of completion and request a pre-final inspection of the project. This inspection will be

performed in the presence of the Engineer, AWWU, and the Contractor. Copies of a list of deficiencies indicated by this inspection will be furnished to the Contractor for remedial action. When corrective action has been completed, the Contractor shall notify the Engineer, and an acceptance inspection will be performed.

627-3.02 INSTALLATION OF CONDUIT. Install conduit and fittings according to these Specifications or the manufacturer's recommendations. Lay conduit to the grades and lines shown on the Plans. However, at a sufficient distance before encountering a known obstacle or tying into an existing conduit, the Contractor shall expose and verify the exact location of the obstacle or conduit so proper alignment and/or grade may be determined before the conduit sections are laid in the trench and backfilled. The costs incurred for removal and realignment of backfilled conduit sections due to improper verification methods shall be borne by the Contractor.

Remove all foreign matter from conduit interiors before lowering conduit into the trench. When work is not in progress, securely close all open ends of conduit and fittings to keep out trench water, earth, rodents or other substances.

Keep trenches dry to avoid laying conduit in water. Do not lay conduit when weather or trench conditions are unsuitable. Keep water away from new joints, until the joint materials have hardened.

Use methods to cut conduit that will produce tight joints and will not damage the conduit.

The horizontal and vertical bending radius for HDPE conduit shall not be less than the minimum bending radius recommended by the piping manufacturer.

All HDPE water conduit shall be bedded in material conforming to the requirements of HDPE Conduit Bedding. Install bedding material as shown on the Plans. Bedding material shall be placed in uniform layers of not more than 12 inches in depth and compacted to 95% of maximum density in accordance with Subsection 203-3.03.

The Contractor shall ensure that each joint is fused at the temperature and pressure recommended by the conduit manufacturer in order to achieve the maximum pressure rating for that joint. All butt-fused joints for HDPE conduit and fabricated fittings shall be documented by a computer datalogger that records pressure and temperature applied at each fused joint, along with the date and time the joint was fused. Computer printouts and electronic data for each fitting shall be submitted to the Engineer prior to installation of the fitting. All fittings for the Project shall be labeled with a unique identifier that corresponds with the fusion computer printouts for each fitting. Computer printouts, electronic data, and the Project station for each field fused joint shall be submitted to the Engineer at the end of each work shift.

Contractor shall inspect the HDPE conduit for damage immediately prior to joining. Damage is defined as gouges exceeding 10% of the conduit wall thickness, kinked conduit sections, conduit sections flattened to more than 5% of the original diameter, or any abrasion or cutting of the inside surface of the conduit. Damaged portions of conduit shall be cut out and discarded.

The handling of the joined conduit shall be in such a manner that the conduit is not damaged. Ropes, fabric or rubber-protected slings, or straps shall be used when handling conduit. Chains, cables, or hooks inserted into the conduit ends shall not be allowed. Two slings spread apart shall be used for lifting each length of conduit. Slings for handling the conduit shall not be positioned at butt-fused joints. Sections of the conduit with cuts or gouges exceeding 10% of the conduit wall thickness, kinked sections, or sections flattened to more than 5% of the original diameter shall be cut out and discarded, and the ends of the conduit rejoined.

The use of electrofusion couplings to join HDPE piping may be allowed upon written approval of the Engineer. Contractor shall as-built the exact location of any installed electrofusion coupling. Perform installation of electrofusion couplings in accordance with these Specifications and the manufacturer's written instructions, using the manufacturer's recommended tools and materials. At all times, protect the fusion site from inclement weather and provide recommended ambient temperatures for proper electrofusion. Check pipe roundness and if out-of-round conditions exist and exceed the manufacturer's requirements, re-rounding clamps shall be used to bring the pipe back into a round condition. Cut both pipe ends square with a pipe cutter and clean both ends to remove dirt, mud and other debris. Completely scrape and clean the pipe ends to remove oxidation and other contaminates. Use only appropriate scraping tools as recommended by the coupling manufacturer and follow the manufacturer's recommended scraping procedures. If the inside of the coupler or the pipe surfaces become contaminated prior to fusing, clean thoroughly with a clean lint free towel and isopropyl alcohol (consult coupling manufacturer for appropriate minimum percentage) and allow to dry before assembling. Pipes shall have a maximum gap of 1/8-inch between pipe ends. A fusion control box which can scan the barcode provided on the electrofusion coupling shall be used to ensure proper installation. Contractor shall observe the manufacturer's procedure for pre-heating or temperature specific fusion times. Initiate fusion cycle and verify when complete. Check melt indicators, if equipped. Note the cooling time and mark the time when the clamping time has elapsed on the pipe. As-built the exact location of the coupling.

A maximum 0.2 foot deviation from design alignment and elevation will be allowed. Both line and grade shall be checked and recorded in a field book for each piece of conduit and appurtenance installed. Adjustments to line and grade shall be done by scraping away or filling the earth under the body of the pipe and not by blocking or wedging up.

The Contractor shall have survey instruments such as transit and level for transferring alignment and grades from offset hubs. The Contractor shall also employ a person who is qualified to use such instruments and who shall have the responsibility of placing and maintaining such construction guides. The Contractor shall furnish to the Engineer a copy of the surveyor's record notes for the newly installed conduit and appurtenances. The practice of placing backfill over a section of conduit to provide a platform for the instruments shall be subject to the approval of the Engineer.

Conduit that has the grade or joint disturbed after laying shall be taken up and relaid. Water shall be kept out of the trench until the jointing is completed.

All sheeting and bracing used in excavation shall be removed by the Contractor following the completion of the work.

627-3.03 FIRE HYDRANTS. Hydrants shall be installed in accordance with the Plans and Standard Details. Hydrant construction includes leg and barrel pipe, fire hydrant, auxiliary gate valve, valve box, anode, and guard posts.

Hydrant legs shall be installed level. The hydrant barrel shall be installed plumb.

Install galvanic anode as shown on the Plans and as specified herein.

Install tape coat on exterior of hydrant lower barrel, hydrant base (shoe), and HDPE flange adapter as shown on the Plans. Prepare surfaces by hand-removing all loose dirt, dust, or other foreign matter that may interfere with the tape adhesion. Power tool cleaning of the surfaces is not required.

Ensure hydrant barrel, shoe, and HDPE flange adapter surfaces are clean and dry prior to beginning coating application. Lightly abrade surface of HDPE flange adapter to allow tape to bond. Apply a thin coat of primer to the surfaces. Spiral wrap the tape with a 50% overlap. Wrap tape continuously between lower hydrant barrel, shoe, and HDPE flange adapter. While wrapping, press air pockets out and smooth all lap seams. Furnish and install profiling mastic as required to tape around flanges. Tape coat, primer materials, and profiling mastic shall be products of the same manufacturer.

AWWU Operations Division will adjust fire hydrants to final grade at no cost to the Contractor. The Contractor shall provide AWWU with a minimum of seventy-two (72) hours notice, excluding non-working days, to coordinate fire hydrant adjustment. The Contractor shall be responsible for access to the hydrant location and all trench excavation, dewatering, and backfill operations prior to, during, and after the fire hydrants are adjusted by AWWU personnel. The cost for coordinating and providing trenching operations are incidental to the fire hydrant installation.

Install four guard posts at each hydrant installation in accordance with Standard Detail 60.08, with the following exception: the dimension from the vertical face of the hydrants to the center of the posts shall be increased to 3-feet as opposed to the specified 2-feet. If, in the opinion of the Engineer, the guard posts are not to be installed, they shall be delivered to the AWWU Operations and Maintenance Facility.

On the face of the fire hydrant directly below the bonnet flange, paint the direction and distance (to the nearest 0.1-foot) to the auxiliary valve box in 2-inch black lettered stencils.

Hydrants installed but not available for use shall be covered with burlap and securely tied.

627-3.04 VALVES. Valves shall be installed where shown in the Plans. Valves shall have the interiors cleaned of all foreign matter before installation. If the valve is at the end of the line, it shall be plugged before backfilling. Before installation, the valve shall be inspected by the

Contractor, in the open and closed positions to ascertain that all parts are in good working condition.

Galvanic anode installation shall be accomplished as shown on the Plans and as specified herein. The following is a list of general procedures utilized for typical installation of galvanic anodes.

1. Anode Installation: Anodes shall be installed 12 to 36-inches from the side wall of the valves, to a centerline depth in-line with the approximate horizontal plane of the valve. Exact anode location shall be shown on the record drawings.

   Anodes shall be installed at valves and fire hydrants as shown on the Plans.

2. Lead Wire Connection to Valves: The No. 10 AWG HMWPE lead wires shall be attached to the valves as shown on the Plans. Lead wire connection to the valve flange shall utilize a mechanical connection as shown on the Plans.

3. Backfilling: Extreme care shall be taken so as not to damage the anodes or lead wires during backfill procedures.

627-3.05 VALVE BOXES. Valve boxes shall be installed over the valves as shown on the Plans, with base section centered over the operating nut of the valve and resting on well compacted backfill. Top section shall be set so as to allow equal movement above and below finished grade. Final elevation to be ¼ inch below finished grade of pavement unless otherwise directed. Top of base section shall be approximately on line with nut at top of valve stem, and the entire assembly shall be plumb.

Install tape coat on exterior of valve boxes and valve box base sections as shown on the Plans. Prepare surfaces by hand-removing all loose dirt, dust, or other foreign matter that may interfere with the tape adhesion. Power tool cleaning of the surfaces is not required.

Ensure valve box and base section surfaces are clean and dry prior to beginning coating application. Apply a thin coat of primer to the surfaces. Spiral wrap the tape with a 50% overlap. Wrap tape continuously between valve box and base section. While wrapping, press air pockets out and smooth all lap seams.

Tape coat and primer materials shall be products of the same manufacturer.

In areas where running sand is encountered, provisions shall be made to restrict sand from entering the bottom section of the valve box.

Adjust existing valve boxes by raising or lowering to conform to the final grade and the details shown on the Plans.

Mark valve boxes with markers consisting of 2.5-inch diameter galvanized steel pipe, 7 feet in length, with 3 feet buried in the ground. Paint markers "Caterpillar Yellow" and paint 2-inch stenciled black numerals showing the distance and direction to the valve box. Markers shall be

located on the nearest property line, due north, south, east, or west of the valve box at a maximum distance of 50 feet, unless otherwise directed by the Engineer. Markers are not required where valve boxes are located in paved areas. Markers shall be labeled:

VB (feet) (direction)

The Contractor shall expose all valve boxes for pre-final and final inspection. After final inspection of the valves located in unpaved areas, sawdust shall be poured directly over the valve box lid and covered with gravel to facilitate location in the future.

627-3.06 TESTING WATER SYSTEM. The Contractor shall notify the Engineer in writing 48 hours in advance (2 working days) before tests. The Engineer and AWWU shall be present during tests. Two hours notice in advance of the scheduled time shall be given to the Engineer if the test is to be postponed or canceled.

1. Flushing. Flushing shall be coordinated with AWWU. Newly constructed water conduit shall be "open-bore" flushed to remove foreign matter to the satisfaction of AWWU. A detailed plan for cleaning of the lines shall be submitted to the Engineer for review and approval before commencement of work. Flushing shall be conducted prior to all water service connections.

   "Open-bore" flushing shall be accomplished before hydrostatic testing and disinfection. "Open-bore" flushing shall occur at all extremities including stubouts and dead-ends. The Contractor shall furnish, install, and remove all fittings and conduit necessary to perform the flushing. Under no circumstances will "open-bore" flushing through hydrants or reduced outlets be permitted.

   Contractor shall provide potable water supply for testing water conduit between water Sta 825+07 and water Sta 842+77. This section of water conduit will not be connected to AWWU distribution system as part of this project.

   Flushing of newly installed conduit shall be accomplished between the hours of 1:00 AM and 6:00 AM, unless otherwise authorized by AWWU. Flushing shall be considered incidental to this work and no separate payment shall be made.

2. Hydrostatic Testing. A hydrostatic test shall be conducted on newly constructed water conduit after flushing, in the presence of the Engineer and AWWU according to the requirements of AWWA C-600, unless modified in the following special provisions. The Contractor, at the Contractor's option, may either use a pressure test or a leakage test. All service connections shall be complete prior to hydrostatic testing.

   The Contractor shall furnish assistance, equipment, labor, materials and supplies (except the test pressure gauge) necessary to complete the test to the satisfaction of AWWU.

Before testing, air shall be expelled from the conduit. If permanent air vents are not located at high points, the Contractor shall install corporation cocks at such points so air can be expelled as the conduit is slowly filled with water.

Hydrostatic testing will be performed through test copper. Use of service connections for testing will not be allowed.

Before applying pressure, all conduit and all components in the test section shall be restrained and the trench section backfilled to original grade.

The maximum test duration is eight (8) hours including time to pressurize, time for initial expansion, time at test pressure and time to depressurize the test section. If the test is not completed due to leakage, equipment failure, or for any other reason, depressurize the test section completely and allow it to relax for at least eight (8) hours before pressurizing the test section again. Contractor shall repair any portion of the force main piping which leaks or which fails to pass the hydrostatic test at no expense to the Owner.

The newly installed HDPE conduit shall be hydrostatically tested to the rated operating pressure of the pipe. The rated operating pressure of HDPE SDR 11 piping is 160 psi. Hydrostatic test pressure shall be 160 psi. Gradually pressurize the test section to test pressure and maintain test pressure for four (4) hours. During the initial expansion phase, HDPE conduit will expand slightly. Additional test liquid will be required to maintain pressure. It is not necessary to monitor the amount of water added during the initial expansion phase. Immediately following the initial expansion phase, reduce test pressure by 10 psi and stop adding test liquid. If there are no visible leaks and the test pressure remains steady (within 5% of the target value) for one (1) hour, the water system shall be deemed as having passed the test.

Cracked or defective conduit, gaskets, mechanical joints, or fittings discovered as a consequence of the hydrostatic tests shall be removed and replaced with sound material at the Contractor's expense. The test shall then be repeated until the results are satisfactory.

In the instance where the water conduit connection is made to a presently installed water conduit, the Contractor shall suitably seal off the outlet leading to the presently installed conduit before making field tests.

HDPE Joint Lab Testing. A maximum of two (2) joints selected at random by the Engineer may be tested for compliance with ASTM D638 as a quality control measure. Specimens to be tested shall be obtained by cutting the conduit at least 12-inches on each side of a field-made joint. Contractor shall then rejoin the ends of the conduit and work may proceed. Costs for removal and repair of butt-fused joints shall be borne by the Contractor. All lab costs associated with testing of butt-fused joints will be borne by the Owner.

627-3.07 DISINFECTION OF WATER LINES. The newly constructed water system shall be disinfected, including valves, hydrants, and services and any portion of the existing connection

system that might have become contaminated during construction activities. Disinfection shall be accomplished after completion of pressure and/or leakage tests in accordance with AWWA C651 Disinfecting Water Mains. Disinfection shall be conducted with water services installed and connected to the main.

Chlorine shall be used for disinfection, and shall be applied only by one of the following methods:

1. liquid chlorine gas and water mixture,
2. direct chlorine gas feed, or
3. calcium hypochlorite and water mixture.

Calcium hypochlorite shall be comparable to commercial products known as HTH, Perchloren or Machochlor. The chlorinating agent shall be applied at the beginning of the section adjacent to the feeder connection, ensuring treatment of the entire line. Water shall be fed slowly into the new conduit with chlorine applied in amounts to produce a dosage of 40 to 50 ppm. Application of the chlorine solution shall continue until the required dosage is evident at all extremities of the newly-laid conduit.

Chlorine gas-water mixture shall be applied by means of a solution-feed chlorinating device. Chlorine gas shall be fed directly from a chlorine cylinder equipped with a suitable device for regulating the rate of flow and effective diffusion of gas within the conduit. Calcium hypochlorite shall be injected or pumped into the water conduit. During the chlorination process, intermediate valves and accessories shall be manipulated so that the strong chlorine solution in the conduit being treated will not flow back into the conduit supplying the water. Hydrostatic testing of water conduit containing the chlorine mixture will not be allowed.

A residual of not less than 5 ppm chlorine shall be produced in all parts of the water conduit and retained for a minimum period of 24 hours, after which it shall be flushed from the conduit at its extremities until the replacement water tests are equal chemically and bacteriologically to those of the permanent source of supply. In no instance will a water conduit be chlorinated before "open-bore" flushing.

CHLORINATION

Conduit Diameter	Dosage (oz. per 100 feet)
4-inch	0.6 oz.
6-inch	1.35 oz.
8-inch	2.75 oz.
10-inch	4.30 oz.
12-inch	6.19 oz.
16-inch	11.00 oz.

The above table is to be used as a guide for chlorinating mains by the calcium hypochlorite and water mixture method. The given dosage per 100 feet results in a chlorine solution of 40 to 50 ppm. This dosage takes into account that Contractors most frequently use granular HTH, which is 65 percent pure. If another chlorinating agent is used, the dosage must be adjusted. Caution should be exercised against producing too high a concentration of chlorine in the conduit.

After final flushing and before placing new water mains in service, Contractor shall sample and test every 1,000 feet of new conduit in accordance with AWWA C651 Disinfecting Water Mains to show the absence of coliform organisms. A second set of samples shall be taken at the same locations after a period of at least 24 hours. The new water main shall not be put in service until both sets of samples are found to be satisfactory. If a sample indicates the presence of coliform organisms, repeat disinfection for all portions of the water system. Provide a copy of all test results to the Engineer.

After completion of testing, test and air vent copper pipe shall be removed and the corporation stop closed at the main in the presence of the Engineer and AWWU. In addition, a visual inspection for leaks will be performed in the presence of the Engineer.

Costs for repeat disinfection and flushing shall be subsidiary.

After completion of flushing, testing and disinfection, Contractor shall remove all water from the HDPE conduit between water Sta 825+07 and water Sta 842+77.

627-3.08 RECORD DRAWINGS AND WORKING DRAWINGS. A complete and accurately dimensioned record of all deviations, deletions, additions and alterations from and to the contract Plans and Specifications shall be maintained by the Contractor to indicate the work as actually installed. This record drawing information shall be recorded on a print of the Plans affected and on the applicable pages of the Specifications with supplementary notes. This record set of Plans and Specifications shall be kept by the Contractor showing record conditions of all conduit and appurtenances installed. Conduit and appurtenances shall be referenced by stationing, showing design line and grade, and as-built line and grade.

When the water system is completed, the Contractor shall certify the accuracy of the construction survey notes and of each revision on the Plans and in the Specifications by written signature endorsement, and deliver them to the Engineer before final acceptance of the system by AWWU.

627-4.01 METHOD OF MEASUREMENT.

1. HDPE Water Conduit. For slopes of 10% or less, by the linear foot of the horizontal projection of the conduit from center to center of fittings and valves as shown on the Plans. For slopes of more than 10%, by the linear foot along the centerline of the conduit from center to center of fittings or valves as shown on the Plans. No deduction in length will be made for fittings or valves.

2. Fire Hydrant Installation. By the number of fire hydrants installed.

3. Water Service Connection. By the number of water services installed, regardless of size.

4. Valves, Valve Boxes and Markers. The quantity to be paid will be the actual number of valves, including valve boxes and marker posts, of each class and size furnished, installed, and accepted.

5. Waterline As Builts. By lump sum. No measurement will be made.

627-5.01 BASIS OF PAYMENT.

The contract price for HDPE Water Conduit shall include piping, fittings, tees, reducers, crosses, bends, couplings, blind flanges, caps, HDPE flange adapters, HDPE thrust anchors, electrofusion couplings, tracer wire, flushing, pressure testing, and disinfection.

The contract price for Fire Hydrant Installation includes fire hydrant, hydrant barrel and leg piping, tee in the main, HDPE flange adapters, auxiliary gate valve and valve box, anode, tape coating, and guard posts installation.

The contract price for Water Service Connection includes installation of a curb stop or water valve, valve box, service pipe, anode, and connection to a new or existing water main with a service saddle and corporation stop, as shown on the Plans.

The contract price for Valves, Valve Boxes and Markers includes valve, HDPE flange adapters, valve box, anode, tape coating, and marker.

Excavation, furnishing and placing bedding material, and backfill is subsidiary.

Any costs involved in service changeovers and providing temporary water service are subsidiary.

If required, trench blasting shall be paid under Item 203(20) Trench Blasting for Water/Sewer Utilities.

Payment will be made under:

Pay Item No.	Pay Item	Pay Unit
627(1-6)	6-inch HDPE Water Conduit, SDR 11	Linear Feet
627(1-16)	16-inch HDPE Water Conduit, SDR 11	Linear Feet
627(5)	Fire Hydrant Installation	Each
627(8)	Water Service Connection	Each
627(9-6)	Install 6-inch Gate Valve	Each
627(9-16)	Install 16-inch Gate Valve	Each
627(20)	Waterline As Builts	Lump Sum

SECTION 635
INSULATION BOARD

Special Provisions

635-4.01 METHOD OF MEASUREMENT. Delete subsection in its entirety and substitute the following:

By the square foot of insulation board in place, regardless of thickness.

Sand blanket material is subsidiary.

635-5.01 BASIS OF PAYMENT. Delete subsection in its entirety and substitute the following:

At the contract unit price shown in the bid schedule.

Payment will be made under:

Pay Item No.	Pay Item	Pay Unit
635(2)	Insulation Board, R-20	Square Foot

Delete this Section in its entirety and substitute the following:

SECTION 639
APPROACHES

Special Provisions

639-1.01 DESCRIPTION. Construct approaches, residential or commercial driveways at the locations shown in the Plans.

639-2.01 MATERIALS. Use materials that conform to the standards for the main roadway.

639-3.01 CONSTRUCTION. Construct driveways and approaches to the dimensions shown on the Plans.

639-4.01 METHOD OF MEASUREMENT. By the number of driveways and approaches constructed as shown on the Plans or as directed. Pavement removal and excavation required beyond the limits of the adjacent mainline will be subsidiary.

639-5.01 BASIS OF PAYMENT. At the contract unit price shown in the bid schedule. The contract unit price for driveways and approaches shall be full compensation for furnishing equipment and labor necessary to complete the work as specified.

Materials required to construct driveways and approaches will be paid for separately under the respective items listed in the bid schedule.

Native material meeting the minimum requirements of Selected Material, Type C will not be paid for directly, but will be considered subsidiary to Item 639(6) Approach.

(05/09/02)R58

Payment will be made under:

Pay Item No.	Pay Item	Pay Unit
639(6)	Approach	Each

Delete Section 641 in its entirety and substitute the following:

SECTION 641
EROSION, SEDIMENT, AND POLLUTION CONTROL

Special Provisions

641-1.01 DESCRIPTION. Plan, provide, inspect, and maintain control of erosion, sedimentation, water pollution, and hazardous materials contamination.

641-1.02 DEFINITIONS.

1. BMP (Best Management Practices). A wide range of project management practices, schedules, activities, or prohibition of practices, that when used alone or in combination, prevent or reduce erosion, sedimentation, and/or pollution of adjacent water bodies and wetlands. BMP include temporary or permanent structural and nonstructural devices and practices. Common BMP can be found on the EPA website: *National Menu of Storm Water Best Management Practices*. [www.epa.gov/npdes/stormwater/menuofbmps]

2. ESCP (Erosion and Sediment Control Plan). The ESCP is a project specific document that illustrates measures to control erosion and sediment problems on a project. The ESCP normally consists of a general narrative and a map or site plan. It is developed by the Department and included in the project plans and specifications. It serves as a resource for bid estimation and a framework from which the Contractor develops the project SWPPP.

3. Final Stabilization. A point in time when ground disturbing activities are complete and permanent erosion and sediment controls are established and functional. The stabilized site is protected from erosive forces of raindrop impact and water flow. Typically, unpaved areas except graveled shoulders, crushed aggregate base course, or other areas not covered by permanent structures are protected by either a uniform blanket of perennial vegetation (at least 70% cover density) or equivalent permanent stabilization measures such as riprap, gabions or geotextiles.

4. HMCP (Hazardous Material Control Plan). The Contractor's detailed plan for prevention of pollution that stems from the use, containment, cleanup, and disposal of hazardous material, including petroleum products generated by construction activities and equipment.

5. eNOI. Electronic Notice of Intent to begin construction activities under the NPDES General Permit. Use EPA Form 3510-9 found at www.epa.gov/npdes/stormwater/enoi

6. eNOT. Electronic Notice of Termination of coverage under the NPDES General Permit. Use EPA Form 3510-13 found at www.epa.gov/npdes/stormwater/cgp

7. NPDES General Permit. The Storm Water General Permit for Large and Small Construction Activities, issued by the Environmental Protection Agency (EPA) under the National Pollutant Discharge Elimination System (NPDES). It requires an approved SWPPP and NOIs listed as active status by the EPA before ground disturbing activities for the project.

8. SPCC Plan (Spill Prevention, Control, and Countermeasure) Plan. The Contractor's detailed plan for oil spill prevention and control measures, that meets the requirements of 40 CFR 112.

9. SWPPP (Storm Water Pollution Prevention Plan). The Contractor's plan for erosion and sediment control and storm water management. The SWPPP is developed by the Contractor and identifies specific areas where erosion may occur, describes site specific controls to prevent erosion and manage sediment and establishes a record of the installation and removal of these controls. The approved SWPPP replaces the ESCP.

641-1.03 REFERENCES.

The following websites have up to date information about erosion, sediment and pollution control.

Developing the SWPPP. EPA. January 2007. Includes a SWPPP template in WORD [www.epa.gov/npdes/swpppguide]

National Menu of Storm Water Best Management Practices. EPA. [www.epa.gov/npdes/stormwater/menuofbmps]

International Erosion Control Association website [www.ieca.org/Resources/Resources.asp]

Construction Industry Compliance Assistance Center website [www.CICAcenter.org/bmps.html]

641-1.04 SUBMITTALS. Submit two copies each of the SWPPP and HMCP to the Engineer for approval. Submit one copy of the SPCC Plan (if required under subsection 641-2.03) to the Engineer. Sign submittals. Deliver these documents to the Engineer.

The Department will review the SWPPP and HMCP submittals within 14 calendar days. Submittals will be returned to the Contractor as either requiring modification, or as approved by the Department. The approved SWPPP must contain certifications, and be signed according to the Standard Permit Conditions of the NPDES General Permit. Approval of the SWPPP must be received before submitting the eNOI to the EPA.

For projects that disturb five acres or more of ground, submit a copy of the approved and signed SWPPP, with the required permit fee to the Alaska Department of Environmental Conservation (ADEC) Storm Water Coordinator. Transmit proof of this submission to the Engineer.

For projects that disturb one acre or more, submit the signed eNOI to EPA. Submit copies of the signed eNOI receipt to the Engineer and to ADEC. Transmit proof of the ADEC submission to

the Engineer. The Department will transmit the Department's NOI to the EPA. Allow adequate time for state and federal processing, before beginning ground disturbing activities.

The active status NOIs, approved SWPPP, approved HMCP, and submitted SPCC Plan (when required) become the basis of the work required for the project's erosion, sediment, and pollution control.

Submit the signed eNOT to EPA with a copy to the Engineer when notified by the Engineer that the Project is stabilized. The Department will transmit the Department's eNOT to the EPA.

641-2.01 STORM WATER POLLUTION PREVENTION PLAN (SWPPP) REQUIREMENTS. Prepare a Storm Water Pollution Prevention Plan. Use the Department's ESCP to develop a SWPPP based on scheduling, equipment, and use of alternative BMPs. The SWPPP Preparer must visit the project site before preparing the SWPPP. The plan must include both erosion control and sediment control measures. The plan must address first preventing erosion, then minimizing erosion, and finally trapping sediment before it leaves the project site.

The SWPPP must follow the format presented in Appendix A of *Developing Your Storm Water Pollution Prevention Plan* (EPA, January 2007) found at:

http://cfpub.epa.gov/npdes/stormwater/swppp.cfm.

The plan must address site specific controls and management plan for the construction site as well as for material sites, waste disposal sites, haul roads, and other affected areas, public or private. The plan must also incorporate the requirements of the project permits.

Specify the line of authority and designate a field representative for implementing SWPPP compliance.

641-2.02 HAZARDOUS MATERIAL CONTROL PLAN (HMCP) REQUIREMENTS. Prepare a HMCP for the handling, storage, cleanup, and disposal of petroleum products and other hazardous substances. (See 40 CFR 117 and 302 for listing of hazardous materials.)

List and give the location of hazardous materials, including office materials, to be used and/or stored on site, and estimated quantities. Detail a plan for storing these materials as well as disposing of waste petroleum products and other hazardous materials generated by the project.

Identify the locations where storage, fueling, and maintenance activities will take place, describe the maintenance activities, and list controls to prevent the accidental spillage of oil, petroleum products, and other hazardous materials.

Detail procedures for containment and cleanup of hazardous substances, including a list of the types and quantities of equipment and materials available on site to be used.

Detail a plan for the prevention, containment, cleanup, and disposal of soil and water contaminated by accidental spills. Detail a plan for dealing with unexpected contaminated soil and water encountered during construction.

Specify the line of authority and designate a field representative for spill response and one representative for each subcontractor.

641-2.03 SPILL PREVENTION, CONTROL AND COUNTERMEASURE (SPCC) PLAN REQUIREMENTS. Prepare and implement a SPCC Plan when required by 40 CFR 112, including:

Control

Prepare and implement a SPCC Plan when required by 40 CFR 112, including:

1. When oil spills may reach navigable waters; and
2. Total above ground oil storage capacity is greater than 1,320 gallons.

Prevention and Countermeasures

Comply with 40 CFR 112 and address the following issues in the SPCC Plan:

1. Operating procedures that prevent oil spills;
2. Control measures installed to prevent a spill from reaching navigable waters; and
3. Countermeasures to contain, clean up, and mitigate the effects of an oil spill.

Self certify the SPCC Plan if the total above ground oil storage capacity is 10,000 gallons or less, and the requirements for self certification in 40 CFR 112 is met. Otherwise the SPCC Plan must be certified, stamped with the seal of, dated by, and signed by a Professional Engineer registered in the State of Alaska.

641 3.01 CONSTRUCTION REQUIREMENTS. On projects with 1 acre or more of ground disturbing activity, do not begin construction activities until the EPA has acknowledged receipt of the Contractor's NOI and Department's NOI, and has listed both as active status. The EPA will post the status of the NOIs on the EPA website. On projects with less than 1 acre of ground disturbing activity, where submittal of an eNOI to EPA is not required, do not begin construction activities until authorized by the Engineer.

Postings.

Post at the construction site:

1. NPDES Permit number, if available, and a copy of the NOI,
2. Name and phone number of the Contractor's local contact person, and
3. Location of a SWPPP available for viewing by the public.

The above notices must be posted at publicly accessible locations. At a minimum post notices at the BOP, EOP, near the intersection of the highway with a major side street, and the Project Office.

Comply with requirements of the approved HMCP, the submitted SPCC Plan, and state and federal regulations that pertain to the handling, storage, cleanup, and disposal of petroleum products or other hazardous substances. Contain, clean up, and dispose of discharges of petroleum products and other materials hazardous to the land, air, water, and organic life forms. Perform fueling operations in a safe and environmentally responsible manner. Comply with the requirements of 18 AAC 75 and AS 46, Oil and Hazardous Substances Pollution Control. Report oil spills as required by federal, state and local law, and as described in the SPCC Plan.

Comply with requirements of the NPDES General Permit, implement temporary and permanent erosion and sediment control measures identified in the SWPPP, and ensure that the SWPPP remains current. Maintain temporary and permanent erosion and sediment control measures in effective operating condition.

Coordinate BMPs with Utility Companies doing work in the project area.

Inspections

Perform inspections and prepare inspection reports to comply with the project SWPPP and the NPDES General Permit.

1. Joint Inspections. Before start of construction, conduct a joint on site inspection with the Engineer, the SWPPP Preparer, and the Contractor's field representative to discuss the implementation of the SWPPP.

   Conduct the following additional joint on site inspections with the Engineer:

   a. During construction, inspect the following at least once every seven days and within 24 hours of the end of a storm exceeding ½ inch in 24 hours (as recorded at or near the project site):

      (1) Disturbed areas that have not been finally stabilized

      (2) Areas used for storage of erodible materials that are exposed to precipitation

      (3) Sediment and erosion control measures

      (4) Locations where vehicles enter or exit the site

      (5) Offsite materials sources and waste sites

      (6) Staging and equipment storage areas.

   b. During construction, the SWPPP preparer shall review the Project Site, Materials Sites, Waste Sites, and the SWPPP for conformance with the NPDES General

Permit at least once per month and after every major change in earth disturbing activities for compliance with the General Permit.

c. Before winter shutdown, to ensure that the site has been adequately stabilized and devices are functional.

d. At project completion, to ensure final stabilization of the project.

2. Winter Inspections. During winter shutdown, conduct inspections at least once every month and within 24 hours of a storm resulting in rainfall of 1/2 inch or greater. The Engineer may waive monthly inspection requirements until one month before thawing conditions are expected to result in a discharge, if all of the following requirements are met:

   a. Below freezing conditions are anticipated to continue for more than one month.

   b. Land disturbance activities have been suspended.

   c. The beginning and ending dates of the waiver period are documented in the SWPPP.

3. Inspection Reports. Prepare and submit, within three working days of each inspection, a report on the DOT&PF SWPPP Inspection Report Form (April 2007). At a minimum the report will contain the following information:

   a. A summary of the scope of the inspection

   b. Name(s) of personnel making the inspection

   c. The date of the inspection

   d. Observations relating to the implementation of the SWPPP

   e. Any actions taken as the result of the inspection

   f. Incidents of noncompliance

   Where a report does not identify any incidents of noncompliance, certify that the facility is in compliance with the SWPPP and NPDES General Permit. The Contractor and the Engineer will sign the report according to the Standard Permit Conditions of the NPDES General Permit. Include reports as an appendix to the SWPPP.

Record Retention

Keep the SWPPP up to date at all times. The SWPPP shall denote the location, date of installation, date maintenance was performed, and the date of removal for BMPs. It shall also contain copies of inspection reports and amendments.

Maintain the following records as part of the SWPPP:

1. Dates when major grading activities occur;

2. Dates when construction activities temporarily or permanently cease on a portion of the site; and
3. Dates when stabilization measures are initiated.
4. Daily precipitation as measured from an on site rain gauge.

Provide the Engineer with copies of SWPPP revisions, up dates, records, and inspection reports at least weekly.

Retain copies of the SWPPP and other records required by the NPDES General Permit for at least three years from the date of final stabilization.

If unanticipated or emergency conditions threaten water quality, take immediate suitable action to preclude erosion and pollution.

Amendments

Submit amendments to the SWPPP to correct problems identified as a result of:

1. Storm or other circumstance that threatens water quality, and
2. Inspection that identifies existing or potential problems.

Submit SWPPP amendments to the Engineer within seven days following the storm or inspection. Detail additional emergency measures required and taken, to include additional or modified measures. If modifications to existing measures are necessary, complete implementation within seven days.

Stabilize areas disturbed after the seeding deadline within seven days of the temporary or permanent cessation of ground disturbing activities.

Notice of Termination

For projects that disturb one acre or more of land, submit the signed eNOT to EPA with a copy to the Engineer when the Engineer notifies that:

1. The Project site (including material sources, and disposal sites) has been finally stabilized and that storm water discharges from construction activities authorized by this permit have ceased, or

2. The construction activity operator (as defined in the NPDES General Permit) has changed.

641-4.01 METHOD OF MEASUREMENT. Section 109 and as follows:

Items 641(2) and (4) will be measured as specified in the Contract or directive authorizing the work.

641-5.01 BASIS OF PAYMENT. The Bid Schedule will include either items 641(1), (2), and (5) or items 641(1), (3), (4), and (5).

1. Item 641(1) Erosion and Pollution Control Administration. At the Contract lump sum price for administration of work under this Section. Includes, but is not limited to, plan preparation, plan amendments and updates, inspections, monitoring, reporting, and record keeping.

2. Item 641(2) Temporary Erosion and Pollution Control. At the prices specified in the Contract or as provided in the Directive authorizing the work to install and maintain temporary erosion, sedimentation, and pollution control measures.

3. Item 641(3) Temporary Erosion and Pollution Control. At the lump sum price shown on the bid schedule to install and maintain temporary erosion, sedimentation, and pollution control measures required to complete the project according to Plan and with the BMP, the ESCP, and the original approved SWPPP and HMCP.

4. Item 641(4) Temporary Erosion and Pollution Control Amendments. At the prices specified in the Directive for extra, additional, or unanticipated work to install and maintain temporary erosion, sedimentation, and pollution control measures. Work paid under this Item will be shown as amendments to the original approved SWPPP or HMCP.

5. Item 641(5) Erosion and Pollution Control Price Adjustment. The total value of this Contract will be adjusted as specified in the following Failure section. In addition, a price adjustment equivalent to penalties levied against the Department by the EPA or other state and federal agencies for violations of the Clean Water Act and the NPDES General Permit will be made if the Department is issued a Notice of Violation (NOV) by these agencies. This price adjustment is the actual cost of fines levied against the Department. An amount equal to the maximum fine for the violation will be withheld temporarily until the actual cost of the fine is known. The difference, excluding price adjustments will be released by the Engineer upon satisfactory completion of the requirements of the NPDES General Permit. The Contractor is responsible for the payment of the Contractor's fines.

Temporary erosion and pollution control measures that are required at Contractor furnished sites are subsidiary.

Work that is paid for directly or indirectly under other pay items will not be measured and paid for under this Section, including but not limited to dewatering, shoring, bailing, installation and removal of temporary work pads, temporary accesses, temporary drainage pipes and structures, and diversion channels.

Perform temporary erosion and pollution control measures that are required due to negligence, carelessness, or failure to install permanent controls as a part of the work as scheduled or ordered by the Engineer, or for the Contractor's convenience, at the Contractor's expense.

Permanent erosion and pollution control measures will be measured and paid for under other Contract items, when shown on the bid schedule.

Failure

If the Contractor fails to coordinate temporary or permanent stabilization measures with the earthwork operations in a manner to effectively control erosion and prevent water pollution, the Engineer may suspend earthwork operations and withhold monies due on current estimates for such earthwork items until aspects of the work are coordinated in a satisfactory manner.

If there is failure to:

1. Pursue the work required by the approved SWPPP,
2. Respond to inspection recommendations and/or deficiencies in the SWPPP, or
3. Implement erosion and sedimentation controls identified by the Engineer,

the Contractor will be assessed a permanent price adjustment of $500 per day for each day of nonaction, under Item 641(5) Erosion and Pollution Control Price Adjustment. In addition, the Engineer may, after giving written notice, proceed to perform the work and deduct the cost thereof, including project engineering costs, from progress payments under item 641(5).
(04/19/07)R272

Payment will be made under:

Pay Item No.	Pay Item	Pay Unit
641(1)	Erosion and Pollution Control Administration	Lump Sum
641(2)	Temporary Erosion and Pollution Control	Contingent Sum
641(5)	Erosion and Pollution Control Price Adjustment	Contingent Sum

SECTION 642
CONSTRUCTION SURVEYING AND MONUMENTS

642-2.01 MATERIALS. Add the following:

Digital Measuring Instrument: Nu-metrics, Nitestar DMI (www.nu-metrics.com)

642-3.01 GENERAL. Add the following:

11. Document the Stationing of the beginning and ending of existing passing zones before work that will remove or obliterate the existing striping. Measure, as outlined below, sight distance for passing zones after the base course layer or pavement milling has been accepted. Use Table 642-1 to establish Minimum Passing Sight Distance. Move forward alongside the centerline or edge of traveled way in order to spot check and discover locations where the Minimum Passing Sight Distance drops below what is required for 10 MPH over the posted speed limit. Record the sight distance for each station location that falls below the posted speed limit plus 10 MPH. Continue to record the sight distance for each station location until the sight distance drops below what is required for the posted speed limit. Stations observed to exceed the values required for posted speed limit plus 10 MPH should be marked as "Pass" or "+". Stations observed to fall below the values required for the posted speed limit should be marked as "Fail" or "-".

    Measure from the roadway edge of traveled way, using a 3.5 foot object height (or "instrument height") at 100 foot station marks looking ahead to a 3.5 foot target height at the edge of traveled way for opposing traffic. Provide a list of each station result for each direction of travel along the roadway edge of traveled way. Certify and record the results on standard "letter" sized paper and provide 2 copies to the Engineer at least two weeks before laying out final pavement markings.

    The Engineer will forward one copy of the existing and proposed sight distance measurements on the form provided herein, to the Regional Traffic Engineer. Table 642-1 does not automatically ensure passing striping will be provided. The Regional Traffic Engineer's office will take up to two weeks to review and approve pass/no pass striping against operating speeds for the roadway before installation, using Table 642-1 and the Alaska Traffic Manual as a guide. No pass striping zones shall be at least 500 feet in length. Passing striping shall be long enough to meet the distances in Table 642-1. Passing striping will not extend into a segment of road without minimum sight distance.

TABLE 642-1
PASSING SIGHT DISTANCE

Operating Speed (mph)	Minimum Passing Sight Distance (ft)
25	450
30	500
35	550
40	600
45	700
50	800
55	900
60	1,000
65	1,100
70	1,200

Passing Sight Distance Survey Table

ROAD NAME:_____

Stationing FROM:_____ DATE:_____

TO:_____ Surveyor:_____

Project Station	Posted Speed Limit	Direction of Travel	Sight Distance Ahead	Remarks

Other Notes:

1.
2.
3.

Accepted By: _____ Date: _____

DOT/PF Project Engineer

Passing Sight Distance
Review Checked By: _____ Date: _____

DOT/PF Regional Traffic Engineer

642-4.01 METHOD OF MEASUREMENT. Add the following:

Item 642(16) Passing Sight Distance Measurement. By the number of stations on the project measured separately along centerline, once for each direction, only after the certified and recorded results have been accepted by the Engineer.

642-5.01 BASIS OF PAYMENT. Add the following pay item:

Pay Item No.	Pay Item	Pay Unit
642(16)	Passing Sight Distance Measurement	Station

(3/22/06)R61

SECTION 643
TRAFFIC MAINTENANCE

Special Provisions

643-1.03 TRAFFIC CONTROL PLAN. Replace the last paragraph with the following: A waiver may be requested of regulation 17 AAC 25 regarding oversize and overweight vehicle movements within this project in writing. If the waiver is approved, movements of oversize and overweight vehicles in or near traffic within the project limits will be done according to the provisions of an approved Traffic Control Plan. Maintain a minimum 12 foot lateral separation between the nonstreet legal vehicles and the motoring public. The Traffic Control plan shall specify the traffic control devices required for these operations.

(05/25/07)R222

Standard Modification

643-2.01 MATERIALS. Under Item 16. Flagger Paddles, replace the last sentence with the following: Use reflective sheeting that meets AASHTO M 268 Type VIII or IX. Use background colors of fluorescent orange on one side and red on the other side.

E56(5/01/07)

Special Provisions

643-2.01 MATERIALS.

Replace item 12. with the following:

12. Portable Changeable Message Board Signs. Use truck or trailer mounted portable changeable message board signs with a self contained power supply for the sign and with the following features:
    a. Message sign panel large enough to display 3 lines of 18-inch high characters.
    b. Ten character display per message line.
    c. Fully programmable message module.
    d. Remote control Cellular, Wireless RF, Landline.
    e. A waterproof, lockable cover for the controller keyboard.
    f. Capacity for electric/hydraulic sign raising or lowering.
    g. Radar over speed detection.
    h. Variable flash and sequence rates.
    i. LED display, using ITE Amber/Yellow.
    j. The capacity for a minimum of 150 Pre Programmed messages.
    k. Operate with a battery pack a minimum of 55 hours under full load.

Add the following:

17. Flexible Markers. Refer to Subsection 606-2.01 Materials.

(05/25/07)R222

Standard Modification

643-3.01 GENERAL CONSTRUCTION REQUIREMENTS. Add the following: Immediately notify the Engineer of any traffic related accident that occurs within the project limits as soon as you, an employee, or a subcontractor becomes aware of the accident.

E56(5/01/07)

Special Provisions

643-3.01 GENERAL CONSTRUCTION REQUIREMENTS. Add the following: Whenever construction activity encroaches onto the safe route in a traffic control zone, station a flagger at the encroachment to assist pedestrians and bicyclists past the construction activity.

Maintain business accesses during flagging operations.

Standard Modification

643-3.04 TRAFFIC CONTROL DEVICES.

In the sixth paragraph and also in Item 4.b., delete: "ATTSA" and replace with "ATSSA".

E56(5/01/07)

Special Provisions

643-3.04 TRAFFIC CONTROL DEVICES.

Delete the first sentence of the eighth paragraph and substitute the following: Items paid under this Section remain the Contractor's property unless stated otherwise.

Add the following to item 1. Embankments.: Close trenches and excavations at the end of each continuous work shift.

Add the following to item 3. Fixed Objects.: Remove obstructions greater than 4 inches above the nominal foreslope grade at the end of each continuous work shift.

Delete item 4.b. and replace with the following: Flagger Certification by ATSSA

Delete item 6. and replace with the following:

6. Street Sweeping. Keep free of loose material paved portions of the roadway and haul routes open to the public, including sections of roadway off the project where the

Contractor's operations have deposited loose material using a street sweeper that can collect materials rather than eject them to the shoulder of the road.

7. Power Brooming. Keep free of loose material paved portions of the roadway and haul routes open to the public, including sections of roadway off the project where the Contractor's operations have deposited loose material using a power broom that can eject them to the shoulder of the road.

Delete item 8. and change item 7 to 8.

Add the following:

9. Portable Changeable Message Board Signs. The price listed in the bid schedule shall be full compensation for purchase and maintenance of 2 units during construction. After project completion deliver the units to the DOT&PF Anchorage Maintenance Yard.

   Also furnish the additional number (beyond the 2 listed above) of Portable Changeable Message Board Sign units detailed on the approved TCP. The price listed on the bid schedule shall be full compensation for maintenance of these units during construction.

10. ET-2000 LET. The price listed in the Traffic Control Rate Schedule will be full compensation for the purchase, installation, maintenance during construction, removal and salvaging the ET-2000 LET unit(s). Deliver the salvaged unit(s) to the nearest DOT &PF Maintenance and Operations' district office, or as directed by the Engineer.

643-3.05 AUTHORITY OF THE ENGINEER. Replace the first sentence with the following: When existing conditions adversely affect the public's safety or convenience, the Contractor will receive an oral notice. A written notice will follow the oral notice according to subsection 105-1.01 Authority of the Engineer.

Add the following after the second sentence: In no case shall this time exceed 24 hours.

643-3.06 TRAFFIC PRICE ADJUSTMENT. Add the following: Failure to maintain an acceptable infrastructure or traffic control plan will result in a price adjustment equal to 100 percent of the applicable rate shown in Table 643-1, for the time the roadway or pedestrian facility is in an unacceptable condition.

Delete Table 643-1 and substitute the following:

TABLE 643-1
ADJUSTMENT RATES

Published ADT	Dollars/Minute of Delay/Lane
0-5,000	$30
5,001+	$40

643-3.08 CONSTRUCTION SEQUENCING. Delete the last sentence and substitute the following: Full, long term closures of the highway will be allowed between W. Lake Ridge Drive and Stephanie Boulevard in accordance with the Traffic Phasing Plan & Detour Route in the Plans.

With the exception of the full, long term highway closures and unless otherwise determined by the Engineer and on an approved Traffic Control Plan (TCP), do not restrict traffic during the times listed below.

1. No traffic restrictions between 0600 to 0800 and 1600 to 1800 Monday through Friday.

Lane restrictions, if allowed shall be conducted so that no more than a 5 minute accumulated stopped delay, 40 vehicles, or 1/8 mile (660 feet) of traffic is detained, whichever occurs first, before releasing the detained motorists. During paving operations a 10 minute stopped delay, 80 vehicles, or 1/4 mile (1,320 feet) of traffic detained, will be allowed for motorists except school buses. If a queue of traffic develops at a stop, the entire queue must be emptied to include the last car that entered the queue at the time the queue was released.

Obtain the local school bus schedule and coordinate work efforts to ensure the school buses are not delayed through the construction zone. This plan shall be submitted, as a TCP, to the Engineer for approval before the implementation of the school bus coordination plan.

643-3.09 INTERIM PAVEMENT MARKINGS. In the second paragraph, delete the words "or cover them with black removable preformed marking tape."

Replace the first sentence in the last paragraph with the following: Apply final pavement markings according to subsection 670-3.01, Construction Requirements of these Special Provisions.

Standard Modification

Add the following new subsection:

643-3.11. HIGH VISIBILITY CLOTHING. Ensure workers within project limits wear an outer visible surface or layer that complies with the following requirements:

1. Standards.

   Use high visibility garments conforming to the requirements of ANSI/ISEA 107-2004, Class 2 for tops or Class E for bottoms, and Level 2 retroreflective material.

2. Labeling.

   Use garments labeled in conformance with Section 11.2 of ANSI/ISEA 107-2004; except you may use previously purchased garments labeled in conformance with ANSI/ISEA 107-1999 until 1/1/08.

3. Tops.

Wear high visibility vests, jackets, or coverall tops at all times.

4. Bottoms.

Wear high visibility pants or coverall bottoms during nighttime work (sunset to sunrise). Worksite traffic supervisors, employees assigned to traffic control duties, and flaggers wear high visibility pants or coverall bottoms at all times.

5. Outer Raingear.

Wear raingear tops and bottoms conforming to requirements of in this subsection 643-3.11.

6. Exceptions.

When workers are inside an enclosed compartment of a vehicle, they are not required to wear high visibility clothing.

7. Condition.

Furnish and maintain vests, jackets, coveralls, rain gear, hard hats, and other apparel in a neat, clean, and presentable condition. Maintain retroreflective material to Level 2 standards.

Special Provision

643-4.01 METHOD OF MEASUREMENT.

Replace the second sentence of Item 2 with the following: Special Construction Signs are measured by the total area of legend bearing sign panel, as determined under subsection 615-4.01 and compensation for a 24 hour period shall be made under Construction Signs in the Traffic Control Rate Schedule.

Add the following: No measurement required to provide a 24-hour toll free (1-800-###-####) "hotline road report" telephone with a prerecorded message, and weekly notices with daily updates. Work will be subsidiary to Item 643(1) or 643(2) Traffic Maintenance.
(05/25/07)R222

Replace item 12. with the following:

12. Portable Changeable Message Board Signs. By the 24-hour period for each sign (beyond 2), as shown on an approved TCP and displaying an approved message.

Standard Modification

643-5.01 BASIS OF PAYMENT. Add the following: Payment for high visibility garments for workers is subsidiary to other items.

E56(05/01/07)

Special Provision

643-5.01 BASIS OF PAYMENT. Replace item 12. with the following:

12. Portable Changeable Message Board Signs. Two (2) will be subsidiary to pay item 643(3) Permanent Construction Signs.

    Additional signs required by the TCP will be paid at the contract price and will include all resources required to furnish, move, and operate the sign.

Special Provisions

Add the following: The Engineer does not require a change order/directive for Item 643(25) Traffic Control.

TRAFFIC CONTROL RATE SCHEDULE

Traffic Control Device	Pay Unit	Unit Rate
Construction Signs	Each/Day	$5.00
Special Construction Sign	Square Foot	$24.00
Type II Barricade	Each/Day	$ 3.00
Type III Barricade	Each/Day	$ 10.00
Traffic Cone or Tubular Marker	Each/Day	$ 1.00
Drums	Each/Day	$ 3.00
Sequential Arrow Panel	Each/Day	$55.00
Portable Concrete Barrier	Each	$60.00
Temporary Crash Cushion / ET-2000 LET	Each	$3,000.00
Pilot Car	Hour	$65.00
Watering	M-Gallon	$20.00
Street Sweeping	Hour	$150.00
Power Broom	Hour	$75.00
Plastic Safety Fence	Foot	$.75
Portable Changeable Message Board Sign	Calendar Day	$150.00
Temporary Sidewalk Surfacing	Square Foot	$1.15
Flexible Markers	Each	$50.00
Removal of Pavement Markings	Foot	$1.25
Temporary Guardrail	Foot	$21.00

The Engineer will pay for Item 643(15) Flagging on a contingent sum basis at the rate of $41/hour. The Engineer does not require a change order/directive for the flagging pay item. Flagging associated with Change Order work will be paid at the prices according to subsection 109-1.05 Compensation for Extra Work.

Delete Item 643(15) and substitute the following:

Pay Item No.	Pay Item	Pay Unit
643(15)	Flagging	Contingent Sum

(05/25/07)R222

SECTION 644
SERVICES TO BE FURNISHED BY THE CONTRACTOR

Special Provisions

644-2.01 FIELD OFFICE. Delete this section in its entirety and substitute the following: The Project will utilize an existing building located within the project limits for a field office. Modifications will be required to make this building suitable for the intended purpose. The following modifications and requirements shall be met two weeks prior to the beginning of work and shall continue through 30 days after the issuance of the notice of project completion as defined in subsection 105-1.15:

1. Install two ADA compliant access ramps, one replacing the three stair steps leading from the front yard to the deck and the second replacing the six steps leading from the front door into the ground floor of the building. Provide one handicap parking space with sign.

deleted

2. Use a certified water hauler to provide potable drinking water as required insuring there is uninterrupted water service for the length of the project.

deleted

3. Provide 4 telephone service lines to the building. One of the lines shall be capable of transmitting and receiving facsimiles. Provide a DSL internet connection with a send and receive capability rate of at least 56 kilobytes per second or higher.

4. Weekly janitorial service consisting of emptying all trash receptacles, vacuuming all spaces and cleaning the restrooms and counter areas.

5. Provide one over-head accessible trash dumpster approximately 6'x 6'x 5' in size with weekly disposal service for the length of the contract.

6. Provide one mobilization and demobilization of the Engineers office equipment and furniture from Anchorage.

Standard Modification

644-2.02 FIELD LABORATORY. Add the following to the end of the second sentence of the first paragraph: through one week after Project Completion.

E44(01/27/07)

Special Provisions

644-2.02 FIELD LABORATORY.

Delete sub-item g of item 2 and substitute the following:

g. 500 gallon capacity tank with a pressure pump or a commercial pressurized system.

Replace item 6. a. with the following:

a. Supply 240 volt, 60 hertz power, a 100 pound propane bottle, and a 500 gallon capacity water tank with a pressure pump or a commercial pressurized system for a State provided portable asphalt lab at a location designated by the Engineer.

Add the following:

7. Provide one mobilization and one demobilization of the Engineer's laboratory equipment from Anchorage.

(01/11/07)R63

644-3.01 METHOD OF MEASUREMENT.

This item will not be measured for payment. The Engineers acceptance will constitute measurement.

Standard Modification

644-4.01 BASIS OF PAYMENT. Add the following items:

Lump Sum Items. Payment for lump sum items will be made as follows:

1. A percentage of the lump sum amount, to be determined by the Engineer, will be paid as full compensation for furnishing the facility at the site.

2. The balance of the lump sum amount will be prorated over the anticipated active construction period with a portion included as part of each interim payment, for maintenance, repairs, providing all utilities, and for removing it from the site. If anticipated construction period changes, the final increment will be held until final payment.

E44(01/27/07)

Special Provisions

Add the following: Long distance calls made by State personnel and the will be paid by the State. Local calls, connection fees and Internet service provider fees shall be paid by the Contractor.

Electricity, propane, and water supplied for the State provided portable asphalt lab will not be paid for separately, but will be subsidiary to Item 644(2) Field Laboratory.

(01/11/07)R63

Add the following Section:

SECTION 645
TRAINING PROGRAM

Special Provision

645-1.01 DESCRIPTION. This Training Special Provision implements 23 CFR 230, Subpart A, Appendix B.

As part of the Equal Employment Opportunity Affirmative Action Program, provide on-the-job training aimed at developing full journey status in the type of trade or job classification involved. The number of individuals to be trained and the number of hours of training to be provided under this contract will be as shown on the bid schedule.

645-2.01 OBJECTIVE. Training and upgrading of minorities and women toward journey status is the primary objective of this program. Enroll minorities and/or women, where possible, and document good faith efforts prior to the hire of non-minority males in order to demonstrate compliance with this Training Special Provision. Specific good faith efforts required under this Section for the recruitment and employment of minorities and women are found in the Federal EEO Bid Conditions, Form 25A-301, items 7.b, 7.c, 7.d, 7.e, 7.i, 7.j and 7.l, located in the "yellow pages" of this document.

645-3.01 GENERAL. Determine the distribution of the required number of apprentices/trainees and the required number of hours of training among the various work classifications based upon the type of work to be performed, the size of the workforce in each trade or job classification, and the shortage of minority and female journey workers within a reasonable area of recruitment.

Training will be provided in the skilled construction crafts unless the Contractor can establish before contract award that training in the skilled classifications is not possible on a project; if so, the Department may then approve training either in lower level management positions such as office engineers, estimators, and timekeepers, where the training is oriented toward construction applications, or in the unskilled classifications, provided that significant and meaningful training can be provided. Some offsite training is permissible as long as the training is an integral part of an approved training program and does not comprise a significant part of the overall training.

Credit for offsite training hours indicated above may only be made to the Contractor where the apprentices/trainees are concurrently employed on the project and one or more of the following occurs: contribute to the cost of the training, provide the instruction to the apprentice/trainee, or pay the apprentice's/trainee's wages during the offsite training period.

Where feasible, 25 percent of apprentices or trainees in each occupation shall be in their first year of apprenticeship or training.

Prior to award of the contract, submit Form 25A-311, Training Utilization Report, indicating the training program to be used, the number of apprentices/trainees to be trained in each selected classification, the number of hours of training to be provided, and the anticipated starting time for training in each of the classifications.

Training must begin within 2 weeks of the anticipated start date(s); unless otherwise authorized by a Directive. Such authorization will be made only after submission of documentation by the Contractor, and approval by the Engineer, of efforts made in good faith which substantiate the necessity for a change.

Contractors may use a training program approved by the U.S. Department of Labor, Bureau of Apprenticeship & Training (USDOL/BAT), or one developed by the Contractor and approved prior to contract award by the Alaska Department of Transportation and Public facilities (ADOT&PF) Training Program Representative, using Form 25A-310.

The minimum length and type of training for each classification will be established in the training program selected by the Contractor. Training program approval by the Department for use under this Section is on a project by project basis.

It is expected that each apprentice/trainee will begin training on the project as soon as feasible after start of work utilizing the skill involved and remain on the project as long as training opportunities exist or until training has been completed. It is not required that apprentices/trainees be continuously employed for the duration of the contract.

If, in the Contractor's judgment, an apprentice/trainee becomes proficient enough to qualify as a journey worker before the end of the prescribed training period and the Contractor employs that individual as a journey worker in that classification for as long as work in that area remains, the individual's training program will be considered completed and the balance of training hours required for that apprentice/trainee shall be waived.

Furnish each ADOT&PF training program trainee a copy of the program (Form 25A-310) to be followed during training on the project, and with a written certification showing the type and length of training completed on the project. Existing USDOL/BAT apprentices should already have a copy of their program. No employee shall be employed for credit as an apprentice/trainee in a classification in which that employee has previously worked at journey status or has previously completed a training course leading to journey status.

Periodically review the training and promotion potential of minority and women employees and shall encourage eligible employees to apply for such training and promotion.

Provide for the maintenance of records and the furnishing of periodic reports documenting the progress of each apprentice/trainee. Submit Form 25A-313 by the 15th of each month and provide each ADOT&PF trainee written evaluation reports for each unit of training provided as established on Form 25A-310.

645-3.02 WAGES. Trainees in ADOT&PF approved training programs will be paid prevailing Davis-Bacon fringe benefits plus at least 60 (but less than 100) percent of the appropriate minimum journey rate specified in the contract for the first half of the training period, at least 75 (but less than 100) percent for the third quarter of the training period, and at least 90 (but less than 100) percent for the last quarter of the training period. Trainee wages shall be identified on Form 25A-310. Apprentices in USDOL/BAT training programs shall be paid in accordance with their approved program. Beginning wages of each trainee/apprentice enrolled in a Section 645 Training Program on the project shall be identified on Form 25A-312.

645-3.03 SUBCONTRACTS. In the event a portion of the work is subcontracted, the Engineer shall determine how many, if any, of the apprentices/trainees are to be trained by the subcontractor. Any such subcontracts shall include this Section 645, Form 25A-311 and Form 25A-310, where appropriate. However, the responsibility for meeting these training requirements remains with the Contractor; compliance or non-compliance with these provisions rests with the Contractor and sanctions and/or damages, if any, shall be applied to the Contractor according to subsection 645-5.01, Basis of Payment.

645-4.01 METHOD OF MEASUREMENT. The Contractor will be credited for each approved apprentice/trainee employed on the project and reimbursed on the basis of hours worked, as listed in the certified payrolls. There shall be no credit for training provided under this Section before the Contractor's submittal and approval by the Engineer of Form 25A-312 for each apprentice/trainee trained under this Section. Upon completion of each individual training program, no further measurement for payment shall be made.

645-5.01 BASIS OF PAYMENT. Payment will be made at the contract unit price for each hour of training credited. Where a trainee or apprentice, at the Contractor's discretion, graduates early and is employed as a journey worker according to the provisions of subsection 645-3.01, the Contractor will receive payment only for those hours of training actually provided.

This payment will be made regardless of other training program funds the Contractor may receive, unless such other funding sources specifically prohibits the Contractor from receiving other reimbursement.

Payment for training in excess of the number of hours specified on the approved Form 25A-311, may be made only when approved by the Engineer through Change Order.

Noncompliance with these specifications shall result in the withholding of progress payments until good faith efforts documentation has been submitted and acceptable remedial action has been taken.

Payment will be at the end of the project following the completion of training programs approved for the project. No payment or partial payment will be made if the Contractor fails to do the following and where such failure indicates a lack of good faith in meeting these requirements:

1. provide the required hours of training (as shown on the approved Form 25A-311),

2. train the required number of trainees/apprentices in each training program (as shown on the approved Form 25A-311), or

3. hire the apprentice/trainee as a journey worker in that classification upon completion of the training program for as long as work in that area remains.

Failure to provide the required training damages the effectiveness and integrity of this affirmative action program and thwarts the Department's federal mandate to bring women and minorities into the construction industry. Although precise damages to the program are impractical to calculate, they are at a minimum, equivalent to the loss to the individuals who were the intended beneficiaries of the program. Therefore, where the Contractor has failed, by the end of the project, to provide the required number of hours of training and has failed to submit acceptable good faith efforts documentation which establishes why the Contractor was unable to do so, the Contractor will be assessed an amount equal to the following damages to be deducted from the final progress payment:

Number of hours of training not provided, times the journey worker hourly scale plus benefits. The journey worker scale is that for the classification identified in the approved programs.
(10/29/91)S16

Payment will be made under:

Pay Item No.	Pay Item	Pay Unit
645(1)	Training Program, 6 Trainees/Apprentices	Labor Hour

SECTION 646
CPM SCHEDULING

Special Provisions

646-2.01 SUBMITTAL OF SCHEDULE. Delete this Subsection in its entirety and replace with the following: Submit a detailed initial CPM Schedule at the preconstruction conference for the Engineer's acceptance as set forth below.

The construction schedule for the entire Project shall not exceed the specified contract time. Allow the Engineer 14 days to review the initial CPM Schedule. Revise promptly. The finalized CPM Schedule must be completed and accepted before beginning work on the Project.

646-3.01 REQUIREMENTS AND USE OF SCHEDULE. Delete item 2. 60-Day Preliminary Schedule.

Delete the first sentence of item 3. Schedule Updates. and substitute the following: Hold job site progress meetings with the Engineer for the purpose of updating the CPM Schedule. Meet with the Engineer monthly or as deemed necessary by the Engineer.
(12/13/02)R261

Add the following Section:

SECTION 647
EQUIPMENT RENTAL

Special Provisions

647-1.01 DESCRIPTION. This item consists of furnishing construction equipment, operated, fueled and maintained, on a rental basis for use in construction of extra or unanticipated work at the direction of the Engineer. Construction equipment is defined as that equipment actually used for performing the items of work specified and shall not include support equipment such as, but not limited to, hand tools, power tools, electric power generators, welders, small air compressors and other shop equipment needed for maintenance of the construction equipment.

The work is to be accomplished under the direction of the Engineer, and the Contractor's operations shall at all times be in accordance with the Engineer's instructions. These instructions by the Engineer shall be to the Contractor's supervisory personnel only, not to the operators or laborers. In no case shall these instructions by the Engineer be construed as making the Department liable for the Contractor's responsibility to prosecute the work in the safest and most expeditious manner.

647-2.01 EQUIPMENT FURNISHED. In the performance of this work, the Contractor shall furnish, operate, maintain, service, and repair equipment of the numbers, kinds, sizes, and capacities set forth on the Bid Schedule or as directed by the Engineer. The operation of equipment shall be by skilled, experienced operators familiar with the equipment.

The kinds, sizes, capacities, and other requirements set forth shall be understood to be minimum requirements. The number of pieces of equipment to be furnished and used shall be, as the Engineer considers necessary for economical and expeditious performance of the work. The equipment shall be used only at such times and places as the Engineer may direct.

Equipment shall be in first class working condition and capable of full output and production. The minimum ratings of various types of equipment shall be as manufactured and based on manufacturer's specifications. Alterations will not be considered acceptable in achieving the minimum rating. Equipment shall be replaced at any time when, in the opinion of the Engineer, their condition is below that normal for efficient output and production.

Equipment shall be fully operated, which shall be understood to include the operators, oilers, tenders, fuel, oil, air hose, lubrication, repairs, maintenance, insurance, and incidental items and expenses.

647-2.02 EQUIPMENT OPERATORS AND SUPERVISION PERSONNEL. Equipment operators shall be competent and experienced and shall be capable of operating the equipment to its capacity. Personnel furnished by the Contractor shall be, and shall remain during the work hereunder, employees solely of the Contractor.

The Contractor shall furnish, without direct compensation, a job superintendent or Contractor's representative together with such other personnel as are needed for Union, State, or Federal requirements and in servicing, maintaining, repairing and caring for the equipment, tools, supplies, and materials provided by the Contractor and involved in the performance of the work. Also, the Contractor shall furnish, without direct compensation, such transportation as may be appropriate for the personnel.

647-3.01 CONSTRUCTION REQUIREMENTS. The performance of the work shall be according to the instructions of the Engineer, and with recognized standards and efficient methods.

The Contractor shall furnish equipment, tools, labor, and materials in the kinds, number, and at times directed by the Engineer and shall begin, continue, and stop any of the several operations involved in the work only as directed by the Engineer.

Normally, the work is to be done when weather conditions are reasonably favorable, 6 days per week, Mondays through Saturdays, holidays excepted.

The Engineer will begin recording time for payment each shift when the equipment begins work on the project. The serial number and brief description of each item of equipment listing in the bid schedule and the number of hours, or fractions thereof to the nearest one quarter hour, during which equipment is actively engaged in construction of the project shall be recorded by the Engineer. Each day's activity will be recorded on a separate sheet or sheets, which shall be verified and signed by the Contractor's representative at the end of each shift, and a copy will be provided to the Contractor's representative.

647-4.01 METHOD OF MEASUREMENT. The number of hours of equipment operation to be paid for shall be the actual number of hours each fully operated specified unit of equipment, or each fully operated specified combination of units of equipment, is actually engaged in the performance of the specified work on the designated areas in accordance with the instruction of the Engineer. The pay time will not include idle periods, and no payment will be made for time used in oiling, servicing, or repairing of equipment, or in making changeovers of parts to the equipment. Travel time to or from the project, will not be authorized for payment.

647-5.01 BASIS OF PAYMENT. Payment for Item 647(1) Wide Pad Dozer, 65 hp Minimum will be paid on a contingent sum basis at the rate of $125/hour on a per hour basis at the rate shown on the bid schedule. This shall be full compensation for furnishing, operating, maintaining, servicing and repairing the equipment, and for incidental costs related to the equipment. Furnishing and operating of equipment of heavier type, larger capacity, or higher wattage than specified will not entitle the Contractor to any extra compensation.

(08/24/05)R15

Payment will be made under:

Pay Item No.	Pay Item	Pay Unit
647(1)	Wide Pad Dozer, 65 HP Minimum	Contingent Sum

SECTION 660
SIGNALS AND LIGHTING

Special Provisions

660-2.01 MATERIALS.

1. Equipment List(s) and Drawings. Delete item a in its entirety and the last sentence in item d and substitute the following:

   a. Materials on the *Qualified Products List:* The *Qualified Products List* does not apply to the 660 items. Provide catalog cuts of materials to the Engineer for review and approval.

   d. Materials Not Requiring Certification: Only submit these materials for review and approval if they are included on the Materials Certification List (MCL).

   Under Item 1.b. change title by removing: "Materials Not on the Approved Products List:" and replace with: Materials Not on the *Qualified Products List:*

E36(01/27/07)

2. As-Built Plans. Add the following:

   The Engineer will deliver one copy each to State Maintenance and Operations; Technical Services; and attach the appropriate sheets of the last set in clear plastic envelopes to the inside of each controller assembly and load center.

CONSTRUCTION REQUIREMENTS

660-3.01 GENERAL. Delete items 3 through 8 in their entirety and substitute the following:

3. Excavating and Backfilling. Complete excavation and backfill required to install the signal and lighting components embedded in the roadway as shown in the Plans, including foundations, conduits, junction boxes, and loop detectors. Provide traffic control to complete this work according to the requirements of Section 643. Place excavated materials where it will not interfere with surface drainage.

   Support and protect conduits and utilities scheduled to remain in service when encountering them during excavation.

   Excavate trenches wide enough to install the number of conduits specified side by side, to provide clearances of at least 2½ inches around 2 inch conduits and at least 2 inches around conduits larger than 2 inches, and to compact the bedding and backfill materials according to these specifications.

To install conduits, excavate trenches deep enough to allow for 6 inches of bedding material, the depth of the largest conduit, and the minimum burial depth specified between the top of the conduit and finished grade of the ground above the conduit. Keep the longitudinal profile of trench bottoms free of irregularities that would prevent the assembled conduit run from continuously contacting the top of the bedding material.

Dispose of, according to subsection 203-3.01, excavated materials that remain after completing backfill work and excavated material not meeting the requirements of Selected Material, Type C, as defined in subsection 703-2.07.

Dewater foundation and conduit excavations immediately before and during embedding and backfilling operations. Backfill excavations with materials that meet the following requirements

a. Backfill foundations with material that meets the requirements of Selected Material, Type A that passes through a 3 inch sieve.

b. Within the limits of the typical section, embed conduits and backfill trenches using material that meets the requirements of the lift where it is located, reusing excavated materials if it meets the requirements of the applicable lift,

c. In other locations, embed conduits and backfill trenches using material that meets the requirements of Selected Material, Type C, reusing excavated materials if it meets this requirement.

d. Import, when ordered, embedment and backfill materials that satisfy the preceding materials requirements.

Embed conduit(s) between two 6 inch lifts of material gleaned free of rocks exceeding a 1 inch maximum dimension. Grade and compact the first lift to provide a surface that continuously contacts the assembled conduit run.

Within 6 feet of paved surfaces and around foundations, backfill in uniform layers no more than 6 inches deep and compact each layer according to subsection 203-3.04. In other locations, compaction may be as approved by the Engineer.

4. Welding. Complete welding according to subsection 504-3.01.8. Welding and approved shop drawings.

Submit shop drawings of the proposed work with the welding plans for approval. The shop drawings shall include material specifications, component dimensions, the types of welds that will be made, and the proposed type and extent of weld inspection.

Repair the holes, which were used to mount equipment, in reused poles and mast arms by welding in disks flush with the adjoining surface. For the disk material, use steel that matches the ASTM designation, grade, and thickness of the steel used to fabricate each pole. Cut disks that match the dimensions of the hole being repaired from pieces of steel plate bent to match the pole's radius at the hole. Grind the welds smooth and flush with

the adjoining pole and disk surfaces. Repair the damaged finish according to subsection 660-3.01.8.

5. Removing and Replacing Improvements. The Contractor shall complete the following work at the Contractor's expense.

   a. Remove improvements that block completion of the work detailed in the Plans as specified herein.

   b. Reconstruct with new materials the non-reusable improvements the Contractor removed to complete the work, unless other items in the contract cover the improvements.

   c. Replace with new materials the reusable items damaged by the Contractor, that are specified for reuse.

   d. Reconstruct with new materials improvements that the Contractor damaged or removed, that do not conflict with the work and are not scheduled for removal.

   Non-reusable improvements consist of cast in place items, including: asphalt concrete pavement, sidewalks, curb and gutter, lawns, and traffic markings. Reusable improvements include the items that were made before installation. Crushed aggregate base material may not be used as backfill in the base course if excavation depth exceeds the thickness of the base course.

   Complete reconstruction work, including materials, according to the applicable sections of the Alaska SSHC, and leave the work in a satisfactory and serviceable condition. In completing the reconstruction work, match the alignments, widths, thicknesses, shapes, sizes, cross sections, and finishes of the existing improvements.

   If removing a portion of sidewalk or curb and gutter, remove an entire segment between the weakened plane contraction joints or between an expansion joint and a weakened plane contraction joint.

   Before removing a segment of Portland or asphalt cement concrete material, cut completely through the material with a saw along the outline of the area to be removed. Make cuts neat and true and prevent shatter outside the area removed.

   To replace lawns, leave the top of the backfilled excavation low enough to install 4 inches of compacted topsoil. Match the top of the topsoil with the bottom of the vegetative mat. Apply seed and keep the seeded areas watered according to Section 618.

   Remove, keep alive, and replant trees, shrubs, and plants according to Section 621. Replace the trees, shrubs, and plants that do not survive with plants of like size and type.

6. Salvaging and Reusing Electrical Equipment. When the Plans include existing electrical equipment scheduled for removal or relocation, remove and store the equipment listed in the following paragraph without damaging it. Deliver removed equipment not scheduled for reuse to the nearest District Maintenance Station or place specified in the Plans or

Special Provisions. Notify the district superintendent or person specified by telephone one-week before planned delivery date.

Salvage the controller assemblies, signal heads, mounting brackets, luminaires, lighting standards, signal posts and poles, mast arms, optical detectors, load centers, light emitting diode optical units, and the lids of junction boxes scheduled for removal and other materials scheduled for relocation. The Contractor shall replace at the Contractor's expense salvaged equipment damaged or destroyed before or during delivery or reinstallation.

Controller assemblies and load centers include the cabinet and equipment contained in the cabinet before Contract award.

Remove from the highway right-of-way materials associated with the equipment removed or relocated and not scheduled for reuse, including conduits, junction boxes, conductors, and foundations. Raze the tops of foundations abandoned in place according to subsection 660-3.02. Fill the holes left by removing junction boxes and foundations with selected material type A and compact as directed.

With approval, after removing conductors, buried conduits that do not interfere with other construction may be abandoned in place with a credit taken by the Department. Remove the ends of abandoned conduits from the junction boxes that will remain in service.

Within 15 days of the Notice to Proceed, complete an inventory of the materials that will be salvaged in the presence of the Engineer. Note the location and condition of the materials. When material specified for reuse is found in an unserviceable condition, the Engineer will determine whether to repair it or replace it with new material, which will be paid for as extra work under subsection 109-1.05. Retain a copy of the inventory and give the original documents to the Engineer.

When the Plans specify reinstalling existing equipment at new locations and installing State furnished equipment, complete the following work at the Contractor's expense.

a. For poles, install new foundations, furnishing the new nuts, bolts, washers, and conduits needed to complete the installations.
b. For lighting poles, install new illumination tap wires and fused disconnect kits.
c. For luminaires, clean the luminaires inside and out and install new lamps of the same wattage.
d. For signal heads, furnish and install the mounting brackets needed to complete the relocation, and clean the signal heads inside and out.
e. For poles and undisturbed poles from which the Plans specify removing equipment, repair the holes that were made to mount equipment according to subsection 660-3.01.4. Welding and repair the finishes according to subsection 660-3.01.8.

When ordered, the Engineer will pay for repairing damaged finishes on existing equipment according to subsection 660-3.01.8 as extra work.

If deciding to use new equipment rather than reusing the equipment specified, notify the Engineer of the change and include a submittal according to subsection 660-2.01.1.

7. Field Tests. Electrical circuits must pass the following tests before the Engineer will accept the work for payment. Perform these tests in the presence of the Engineer, and document the results of each test on a per circuit basis. Retain a copy of test results and give the original documents to the Engineer. Furnish equipment needed to perform these tests.

Replace or repair at the Contractor's expense, and in an approved manner, faulty materials and work revealed by these tests. After making repairs, repeat tests on the repaired circuit and continue this process until circuits have passed required tests. The Department reserves the right to have the Contractor retest circuits, and to use the retest results to accept or reject individual circuits.

a. Grounds. Before completing the circuitry and functional tests, physically examine conduits ends, junction box lids, load centers, and the foundations for signal posts and poles, lighting poles, and controller cabinets to ensure the grounding system required by subsections 660-3.06 and 661-3.01 has been installed and splices and connections are mechanically firm.

b. Continuity. Test each loop detector circuit for continuity at the roadside junction box before splicing the loop detector to the lead-in cable. Each loop detector must have a resistance less than 0.5 ohms.

After splicing the loop detectors to the lead-in cables, test each pair at the controller or detector cabinet. Each pair must have a value less than 5 ohms for single pair lead-in cables and 10 ohms for multipair lead-in cables. The continuity test ohm reading at the cabinet must be greater than the ohm reading measured for the loop detector at the junction box.

c. Insulation Resistance (megohm) Test. Complete this test to verify the integrity of each conductor's insulation after pulling the conductors and cables into position and before terminating the conductors. At 500 volts DC, each conductor's insulation shall measure a minimum resistance of 100 megohms or the minimum specified by the manufacturer. With single conductors, complete the test between each conductor and ground. In each multiconductor cable, complete the test between conductors and between each conductor and ground. After splicing the loops to the shielded pairs in the lead-in cables, measure each pair in the lead-in cables at the controller or detector cabinet between one conductor and the cabinet ground rod.

d. Inductance Test. Measure each detector loop and lead-in cable system at the controller or detector cabinet. The inductance must be in the range of 50 to 500 microhenries.

e. Circuit. Energize every signal indication circuit with lamps installed before installing the load switches.

f. Functional. Perform the following tests on each signal and lighting system after the component circuits have satisfactorily passed the tests for continuity, grounding, insulation integrity, and circuitry.

1) For each new traffic signal system, complete at least 24 hours of flashing operation, followed by not less than 5 days of continuous, satisfactory operation. The Engineer may decide to omit the flashing portion of the test for modified signal systems and for new signals that replaced existing signals that remained in operation during the construction phase.

If the Engineer omits flashing operation and the system performs unsatisfactorily, correct the condition and repeat the test until the system runs for five days with continuous, satisfactory operation.

Begin the signal functional tests between 9:00 a.m. and 2:00 p.m. on any day, except a Friday, Saturday, Sunday, a legal holiday, or the day before the legal holiday.

Before each system turn on, aim signal faces according to subsection 660-3.08 and ensure equipment specified in the Plans is installed and operable, including: pedestrian signals and push buttons; signal backplates and visors; vehicle detectors; highway lighting; and regulatory, warning, and guide signs.

2) Perform the functional test for each highway lighting system and sign illumination system until the systems burn continuously 5 days without the photocell, followed by a 5 day operational test using the photocell.

3) Perform the functional test for each flashing beacon system for not less than 5 days of continuous, satisfactory operation.

4) Perform a continuous 5 day burning test on each pedestrian overpass and underpass lighting system before final acceptance.

A shut down of the electrical system due to a power interruption does not constitute discontinuity of the functional test if the system functions normally when power is returned.

8. Repairing Damaged Finishes. Examine new, reused, and State furnished equipment for damage to its finish before putting the equipment into service. Repair the damaged finishes found according to the following:

a. Galvanized. Repair damaged areas more than 12 inches away from welds and slip fit areas, by applying a minimum 7.8 mils of zinc based alloy applied according to ASTM A780.

If the damaged areas are within 12 inches of welds and slip fit areas, make the repair by applying a minimum 7.8 mils of zinc rich paint applied according to ASTM A780.

b. Painted. Repair damage to painted finishes according to the following

(1) Wash the equipment with a stiff bristle brush using a solution containing two tablespoons of heavy-duty detergent powder per gallon of water. After rinsing, wire brush surfaces to remove poorly bonded paint, rust, scale, corrosion, grease, or dirt. Remove dust or residue remaining after wire brushing before priming.

(2) Factory or shop cleaning methods may be used for metals if equal to the methods specified herein.

(3) Immediately after cleaning, coat bare metal with pretreatment, vinyl wash primer, followed by 2 prime coats of zinc chromate primer for metal.

(4) Give signal equipment, excluding standards, a spot finishing coat on newly primed areas, followed by 1 finishing coat over the entire surface.

(5) Give nongalvanized standards 2 spot finish coats on newly primed areas.

Paint coats may be applied either by hand brushing or by approved spraying machines. Perform the work in a neat and workmanlike manner. The Engineer reserves the right to require the use of brushes for the application of paint, should the work done by the paint spraying machine prove unacceptable.

Add the following new item 9:

9. Regulations and Code. Complete work according to the standards of the NEC, the NESC, and local safety codes as adopted and amended by the authority having jurisdiction.

660-3.02 FOUNDATIONS. Under item 1. Cast-in-Place Foundations., add the following to the first paragraph: Locate the tops of traffic signal post and pole foundations flush with the adjacent finished: walkway, shoulder, or surrounding ground.

1. Cast-in-Place Foundations. In subparagraph f, revise the second sentence to read: Before placing the form or reinforcing steel cage, remove loose material from the bottom of the hole to ensure the foundation rests on firm, undisturbed ground.

In the second sentence of sub-item i, delete "prior to grouting." and substitute "before attaching the skirt."

In the first sentence of sub-item j, delete "concrete pile caps" and substitute "foundations"

Delete item k and add the following new items k and l:

k. Install the bottoms of the bottom leveling nuts in a level plane within 1 inch of the top of foundations. Adjust all nuts until their tops form a level plane. Install one washer on top of all leveling nuts and, after setting the pole on these washers, install one washer under all top nuts.

Bring leveling nuts (bottom nuts) to full bearing on the bottom of the base plate.

Generously lubricate the bearing surface and internal threads of top nuts with beeswax. Tighten all top nuts to a "snug" condition. Use a click-type torque wrench to apply 600 foot-pounds of torque to the "snug" top nuts.

After torquing the top nuts, use a hydraulic wrench to rotate all top nuts an additional one sixth (60°) turn, while preventing the leveling nuts from turning.

l. Attach a 6 AWG, bare, solid copper wire as a grounding electrode conductor to the #4 spiral bar in the reinforcing steel cage. Use an irreversible compression connector or cadweld to make the attachment. Protect the attachment during concrete placement. In foundations that lack reinforcing steel cages, install 21 feet of coiled 6 AWG, bare, solid copper wire as the grounding electrode. Route the conductor to protrude near the top, center of the foundations. Slide a minimum 6 inch long, nonmetallic, protective sleeve over the conductor. Allow 1 inch of the sleeve and 24 inches of conductor to protrude from the foundations.

2. Pile Foundations. Delete subparagraphs a. through f. and substitute the following:

Pile foundations will not be used.

Replace subsection 660-3.03 with the following:

660-3.03 CONDUIT. Electrical conductors shall be installed in conduit, except for overhead wiring, wiring inside poles, and when otherwise specified. Use rigid metal conduits (RMC) and fittings for raceways, including bored casings, except when the Plans specify using polyethylene conduits. Install conduits of the sizes specified along the routes detailed on the Plans. When routing is not shown, route conduits as directed by the Engineer.

1. Install conduits at least 30 inches below the finished grade of the ground above the conduit, except conduits that will be sealed under a minimum 4 inch thick Portland cement concrete sidewalk may be installed a minimum of 18 inches below the top back of curb or surface above the conduit, whichever is lower.

2. Install conduits that cross unpaved areas and paved roadways that will be overlaid in excavated trenches. Excavate, bed conduits, and backfill trenches according to subsection 660-3.01.3, Excavating and Backfilling.

3. Install conduit(s) under paved roadways and approaches that will not be overlaid by boring or drilling methods. Jacking conduits into position is allowed. However, if

23. When modifying existing conduit runs, complete the work as required for new installations using the same sizes and types of conduit. When extending existing conduits, add no more than 90 degrees of horizontal bend to the extension.

24. When installing a junction box in a continuous run of existing conduit, remove a length of conduit in each conduit run and complete the work of installing the conduits, elbows, and nipples as required for a new installation.

25. When adjusting existing junction boxes to a new grade, remove cables and replace the nipples as required to provide the clearances specified for new installations.

26. Remove the ends of abandoned conduits from junction boxes that will remain in service.

27. When Plans call for connecting polyethylene conduit to RMC use an electrofusion coupler rated for direct bury application. The coupler must be rated for same wall thickness as the adjoining conduits. Thread the ends of the RMC with the same number of threads as found on the factory threaded ends of RMC. Ream the inside of conduit ends cut in the shop or field to remove burrs and sharp edges.

Replace subsection 660-3.04 with the following:

660-3.04 JUNCTION BOXES. Install precast reinforced concrete junction boxes of the types specified. For junction boxes that contain traffic signal conductors, furnish cast iron lids with the word TRAFFIC inscribed into them. For junction boxes that contain lighting conductors exclusively, furnish cast iron lids with the word LIGHTING inscribed into them.

Junction Box Location

When shown, install junction boxes at the station and offset locations specified. When lateral locations are not specified, install junction boxes 8 feet from the face of curb or edge of pavement. If the 8 feet offset falls:

1. In a pedestrian facility separated less than 7 feet from the roadway face of curb or edge of pavement, increase the offset and install the junction boxes on the backside of the facility. When lacking the right of way to install junction boxes outside the pathway, install at locations as directed, avoiding curb ramps, curb ramp landings, and the middle of walkways.
2. In a pedestrian facility separated at least 7 feet from the roadway face of curb or edge of pavement, reduce the offset and install the junction box next to the facility.
3. Outside the right of way, install the boxes just inside the right of way line.
4. In a raised median, install junction boxes near the center of the median.
5. In a ditch bottom or area that collects drainage, install the junction boxes at locations as directed.
6. Behind guardrails that shield slopes steeper than 3:1 (a horizontal to vertical ratio), install junction boxes between posts and at least 5 feet back from the face of rail.

Do not pull conductors into conduits until the following conditions are met:

a. The prescribed clearances around conduit ends are provided,

b. Crushed rock sumps are installed under junction boxes,

c. Conduit ends protrude above the bottom of junction boxes within the prescribed range,

d. New conduits are free of material that became lodged in them during the completion of the work,

e. Reused conduits are cleaned according to subsection 660-3.03,

f. Junction boxes are set to grade, and

g. Grounding bushings are installed on the ends of metallic conduits.

Delete item 3 in its entirety and substitute the following:

3. Pull, as a unit, the conductors specified to be installed into clean conduits, leaving existing conductors that will remain in service in place.

Delete items 11 and 12 in their entirety and substitute the following:

11. Encapsulate illumination cable splices in rigid 2 piece plastic molds filled with an insulating and sealing epoxy resin. Furnish molds large enough to complete the splices and encase the cable jackets in the epoxy resin. Furnish molds rated for 600 volts AC operation and feature fill and vent funnels for epoxy resin. Fill the splice mold bodies with epoxy resin that is resistant to weather, aromatic and straight chain solvents, and that will not sustain combustion.

    When approved by the Engineer, 1 splice may be used in the following cases;

    a. An in-line splice may be used when a planned cable run exceeds the length available from the manufacturer on a single spool of cable.

    b. In a run of 1,000 liner feet or more.

    When a cable is spliced it shall occur within an appropriately sized j-box or in the base of an electrolier designed for said splice.

12. Encapsulate loop lead-in and telemetry cable splices in rigid, transparent, PVC molds filled with reenterable polyurethane electrical insulating and sealing compound. Furnish splice kits rated for 1000 volts AC operation and direct burial.

    Provide reuseable four piece molds that are held together with stainless steel hose clamps. Two pieces form a cylinder and two flexible end caps seal the ends and allow the conductor entry. Use molds with dimensions suitable for the splice made, encase the cable jackets, and have fill and vent funnels.

    Insert a loose woven polyester web that allows a full ¼ inch of insulating compound to flow between the splice and the inside of the mold. Fill the PVC molds with reenterable

7. On top of underground utilities or storm drains, install the junction boxes at locations as directed.

Longitudinally, install junction boxes adjacent to the loop detectors or pole they serve, except avoid installing type 1A junction boxes in driveways and in locations subject to use by heavy trucks. When shown near the ends of medians, install junction boxes at least 10 feet from the median end. When the offsets for electroliers and flashing beacon posts place them near the junction boxes that serve them, install the junction boxes on the side of the electroliers and posts downstream of traffic flow.

Limitations

Limit the distance between adjacent junction boxes to the following dimensions:

1. 400 feet for conduits that contain signal interconnect cable only.
2. 300 feet for conduits that exclusively contain two loop lead-in cables.
3. 300 feet for conduits that contain a single cable other than signal interconnect.
4. 190 feet for conduits that contains more than one cable.

When establishing junction box spacing a bare ground conductor is not considered a cable.

If the preceding limitations require installing additional junction boxes not shown on the Plans, the Engineer will pay for them as extra work, otherwise, installing additional junction boxes will be at the Contractor's expense.

After grading the roadside, vertically adjust those junction boxes that do not conform to the following criteria. In unpaved areas that will not be seeded, in areas adjacent to pedestrian facilities, and in paved medians, install the tops of junction boxes 1 inch below finished grade. In seeded areas, install the tops of junction boxes to 2 inches below the seeded surface.

Bond junction box lids to an equipment grounding conductor according to subsection 660-3.06. Attach the jumpers to the lids with brass or stainless steel hardware.

Install a stone drain under each junction box. Drains shall consist of coarse aggregate for concrete that conforms to subsection 703-2.02. Minimum drain dimensions include an 18" depth and a length and width equal to those of the junction box it drains. Compact the aggregate material as directed to prevent junction box settlement.

In every new and reused junction box, install an electronic marker that consists of an antenna encapsulated in a 4 inch diameter red polyethylene ball. Furnish markers that conform to the American Public Works Association standards for locating power. Markers shall respond to locator devices up to 5 feet away, work at all temperatures, and contain no internal power source.

660-3.05 WIRING. Delete the second paragraph in its entirety and substitute the following:

Conditions

polyurethane electrical insulating and sealing compound that cures transparent, is nontoxic, is noncorrosive to copper, and does not support fungi or mold growth.

Add the following items:

18. Retrofit reused poles with new tap wires, fused disconnect kits, and fuses.

19. Whenever conductors can not be terminated as specified in the Plans in circuit breakers due to size, splice a piece of #8 AWG power conductor onto the end of each conductor using an overlap type, irreversible compression connector. Insulate the splice with heat shrink tubing. Complete the splice in the space between the top of the load center foundation and the bottom of the cabinet. Limit the length of the #8 AWG conductor to 5 feet.

Replace subsection 660-3.06 with the following:

660 3.06 BONDING AND GROUNDING. Bond and ground branch circuits according to the NEC and the following requirements. Make noncurrent carrying but electrically conductive components, including: metal conduits, junction box lids, cabinets, transformer cases, and metal posts and poles, mechanically and electrically secure to an equipment grounding conductor. Make fixtures mounted on metal poles, including signal components and luminaires, mechanically and electrically secure to the pole.

Install grounding bushings with insulated throats on the ends of metallic conduits.

Install a bare stranded copper wire for the equipment grounding conductor in conduits, except those conduits installed for future use. Install size 8 AWG conductors, unless indicated otherwise, except in those conduits that contain circuit conductors larger than 8 AWG. In this case, install a wire equal in size to the largest circuit conductor. Attach the grounding conductors to the grounding bushings, leaving 12 inches of slack between each bushing. Connect grounding conductors together using irreversible compression type connectors to form a fully interconnected and continuous grounding system.

Retrofit existing spare conduits that will contain new cables exclusively with new grounding bushings. When the Plans require installation or removal of conductors from existing conduits, retrofit with new grounding conductors sized according to the preceding paragraph.

Bond junction box lids to the grounding conductor using copper braid with a cross sectional area equal to an 8 AWG conductor and eyelets spaced at 6 inch intervals. Connect bonding jumpers to the grounding conductors using irreversible compression type connectors. Replace missing or damaged conduit and junction box lid bonding jumpers.

Join the equipment grounding conductors from the conduits to the 6 AWG grounding electrode conductor using irreversible compression connectors at Portland cement concrete foundations. For pile foundations, attach the equipment grounding conductor from the conduit to the pile cap adapter with a listed mechanical grounding connector.

When installing signal poles, signal posts, and lighting standards with frangible coupling bases, run a 4 feet long grounding conductor from the grounding bushing on the conduit to the grounding lug located in the hand hole of each pole.

Bond slip base type standards and pedestals by using 2 conductors from the conduit, one attached with a ground rod clamp to an anchor bolt and the other connected to the grounding lug located in the hand hole of each pole.

Ground one side of the secondary circuit of a transformer.

Install a ¾ inch by 10 feet copper clad ground rod inside each controller cabinet foundation and a 6 AWG bare stranded copper wire for the grounding electrode conductor.

Replace subsection 660-3.08 with the following:

660-3.08 SIGNAL AND LIGHTING INSTALLATION REQUIREMENTS. Install signal and lighting equipment according to the details shown on the Plans and the following:

Apply antiseizing compound to the following fasteners: frangible couplings, mechanical grounding connectors, bolts that secure hand hole covers and signal mounting hardware to poles and mast arms. Remove the fasteners from luminaire mounting brackets, fused disconnect kits, grounding bushings, and signal faces which secure the visors, and apply antiseizing compound to these fasteners before completing the installation.

Before passing conductors through the holes made in posts, poles, and mast arms for wireways, remove the burrs and sharp edges from the inside and outside of these holes.

When not shown in the Plans, determine the shaft lengths of lighting and signal poles and signal mast arm connector plate locations to provide the plan mounting heights of luminaires and traffic signal heads.

Furnish work to install foundations for relocated poles, including: conduit, excavation, reinforcing steel, class A concrete, anchor bolts, nuts, and washers.

1. Electrolier Installation. Before installing electroliers, check the socket position of each luminaire to verify it matches the position indicated in the instructions for the light distribution type shown on the Plans.

   Install electroliers with mast arms with a slight rake by plumbing the side of the pole opposite the mast arm. After the pole has been plumbed, level the luminaire as recommended by the manufacturer.

   Install electroliers without mast arms with the centerline of the pole plumb.

2. Underpass Lighting System Installation. Mount the luminaires as detailed on the drawings to orient the axis of the lamp perpendicular to the axis of the underpass.

660-3.09 MAINTAINING EXISTING AND TEMPORARY ELECTRICAL SYSTEMS. Delete this subsection in its entirety and substitute the following: This work consists of protecting and maintaining the existing and temporary electrical systems during the life of the contract. The work includes: locating, repairing, replacing, adjusting, realigning, cleaning, and relocating components of traffic signals, lighting systems, and flashing beacons to keep them wholly operational and positioned according to the following specifications.

Furnish the Engineer with the name and phone number of the person who will maintain the existing and temporary electrical facilities at the Preconstruction Conference. Make this person available at times until the date of Acceptance for Traffic and Maintenance and provide labor, materials, and equipment this person may need to complete repairs ordered by the Engineer.

When beginning work, the Engineer will notify the Contractor and the local maintenance agencies in writing of the transfer of maintenance responsibilities, providing an effective date and time. Maintenance does not include replacing defective equipment or repairing equipment damaged before the transfer of maintenance responsibility. Therefore, before starting work on the project, inventory the condition of the existing equipment with the Engineer and document the damaged and defective equipment. If beginning work before providing the Engineer with an inventory, the Contractor waives the right to claim extra compensation when the Engineer later finds damaged or defective equipment.

Keep components of the existing and temporary electrical systems operational during the progress of the work, except when the Engineer allows shutdowns to alter or remove the systems. The Engineer will consider these systems operational when no damaged or defective equipment is found in service, components are clean, located, and aligned as specified herein, and photoelectric controls operate the lighting systems. The State will pay for electricity used to operate the systems, if the public benefits from their operation. Furnish replacement equipment compatible with equipment used in the Central Region.

Begin work to repair, replace, adjust, realign, clean, and/or relocate components of an affected system within one hour when ordered by the Engineer. If work is not complete, the Engineer may have outside forces complete the repairs and deduct the amount billed from monies due the Contractor.

Records. When working on a traffic signal system, print a record of work performed in the diary found in each controller cabinet. Make sure each entry includes

1. The dates and times beginning and completing work, and the names of the crewmembers completing the work.
2. The characteristics of the equipment failure or faulty operation evident before repair.
3. The changes made or corrective actions taken.
4. The printed name and signature of the person responsible for making the repairs or changes.

Locate existing conduit runs, buried cables, junction boxes, and underground utilities before starting work that may damage these facilities or interfere with these systems.

Where roadways remain open to traffic and the work includes modifying the existing lighting systems, energize the modified circuit by sunset on the same day the Contractor retires the original circuit.

Relocate or replace signal poles, lighting standards, sign poles, flashing beacon poles, load centers, and controller cabinets whenever reducing clearance from the traveled way to less than 6 feet.

When no longer required, salvage original and Department provided equipment according to the Plans and item 6. Salvaging or Reusing Electrical Equipment found in subsection 660-3.01, and remove other materials used in the temporary systems from the project.

660 5.01 BASIS OF PAYMENT. Add the following:

The amount bid for an item shall include full compensation for:

a. Excavation, bedding, and backfill to install the components shown in the Plans. Dewatering excavations is subsidiary to completion of the excavation work.

b. Removing and repairing existing improvements to complete the work, unless other items in the contract cover the repairs.

The Engineer will pay for the disposal of surplus and unusable excavation and for imported backfill and bedding material at respective contract unit prices, or as extra work if the contract does not include these items.

The cost of repairing damage to finishes on new equipment is subsidiary.

The cost of maintaining the existing and keeping the temporary electrical system fully operational is subsidiary to 660 items included in the Contract.

Payment will be made under:

Pay Item No.	Pay Item	Pay Unit
660(3)	Highway Lighting System Complete on Old Glenn Highway	Lump Sum
660(12)	Pedestrian Underpass Lighting System Complete	Lump Sum

R66(4/17/07)

SECTION 661
ELECTRICAL LOAD CENTERS

Special Provisions

661-2.01 MATERIALS. Add the following under Load Center:

Requirements

Use the following load centers to energize the temporary lighting and signal systems. Provide work needed to modify load centers to provide functional temporary lighting and signal systems according to the NEC.

1. Permanent load centers installed in their plan location.

2. Existing load centers scheduled to remain intact until completion of the project. Relocate and reuse existing load centers only if approved.

3. Approved temporary load centers with photoelectrical controlled lighting circuits. Provide a temporary load center when retiring an existing load center that is not approved, and when approved load centers are unavailable.

Approved load centers include load centers UL labeled as Service Equipment, or UL labeled as Industrial Control Equipment and marked "Suitable for use as service equipment".

Under Meters, add the following: Furnish meter sockets and landing pads rated for 200 ampere services.

Add the following:

Ground Rods. Furnish one piece ¾" diameter by 10 feet long copper clad steel rods.

Ground Rod Clamps. Furnish one piece bronze clamps with a hex head setscrew that are suitable for direct burial and for use with copper clad ground rods.

Under Photoelectric Controls, delete the first sentence and substitute the following:

Use three wire photoelectric controls that directly switch a circuit from one conductor to another. Furnish two piece photoelectric controls that consist of a plug-in photoelectric control unit and a locking type receptacle set in a cast aluminum adapter.

Furnish photoelectric control units that consist of a light sensitive element connected directly to a normally closed, single-pole, single-throw, control relay free of intermediate amplification. For highway lighting, use horizontal or zenith type sensing units that:

a. Operate at voltages between 120 and 277 volts AC, 60 Hz,
b. Handle loads up to 1,800 volt-amperes
c. Operate at temperatures from -40 °F to +150 °F
d. Consume less than 10 watts of power
e Feature a 3-prong, EEI-NEMA standard, twist-lock plug
f Turn-on between 1 and 5 footcandles and turn-off at light levels between 1.5 and 5 times those at turn-on.

Measurements must meet the procedures in EEI-NEMA Standards for Physical and Electrical Interchangeability of Light-Sensitive Control Devices Used in the Control of Roadway Lighting.

Receptacles. Furnish twist lock type, phenolic resin receptacles set in one of the following cast-aluminum adapters.

a. For photoelectric controls installed on signal poles and load centers, furnish a mounting adapter with a threaded connection that fits conduit outlet bodies threaded for ½ inch rigid metal conduit, General Electric model MB-PECTL or approved equal.
b. For photoelectric controls installed atop lighting poles (with mast arms), furnish a pole top adapter: equipped with a terminal block, made to slip over the ends of poles 3½ to 4½ inches in outside diameter, and secured by set-screws, General Electric model PTA-PECTL or approved equal.

Furnish 3-inch wide screens that reach the top of photoelectric control units to prevent artificial light from interfering with normal photoelectric control operation. Furnish screens constructed of 0.063-inch minimum thick aluminum meeting ASTM B 209, alloy 3003-H14.

Under Equipment List(s) and Drawings, replace item 1, item 2 title, and the last sentence in item 3 with the following:

1. Materials on the *Qualified Products List*: The *Qualified Products List* does not apply to the 661 items. Provide catalog cuts of materials to the Engineer for review and approval.

2. Materials Not on the *Qualified Products List:*

3. Materials Not Requiring Certification: Only submit these materials for review and approval if they are included on the Materials Certification List (MCL).

661-3.01 CONSTRUCTION REQUIREMENTS. Delete the 11th paragraph, and substitute the following: Install two ground rods at least 10 feet apart at each load center. Connect the neutral bus to the ground rods with a soft drawn bare copper conductor sized per the NEC, 6 AWG minimum. Bond non-current carrying metal parts in each load center to the ground bus. At Type 1 load centers, install one ground rod inside the base, readily accessible though the removable

cover, and the second ground rod outside the base. Route the grounding electrode conductor to the second ground rod through one of the knockouts.

Delete the 12th paragraph, and substitute the following: Install photoelectric controls at the locations indicated. Orient photoelectric control units to face the north sky. Install a screen to prevent artificial light from interfering with normal photoelectric control operation.

For photoelectric controls installed on load centers, install a Myers hub in a cabinet wall shielded from traffic. To the hub, attach an assembly that consists of a type LB conduit body, a length of conduit, and a type C conduit body. Fabricate the conduit at least 3 feet long and locate the photoelectric control a foot above the top of the load center. Mount the photoelectric control adapter on the type C conduit body. Install a conduit hanger to brace the top of the conduit.

For photoelectric controls installed on signal poles, install a Myers hub in the center of the rain cap. Attach a type C conduit body to the hub with a close nipple. Mount the photoelectric control adapter on the conduit body. Use five conductor 14 AWG wire to connect the photoelectric control to the load center.

For photoelectric controls installed on electroliers, install a pole top adapter. When the photoelectric control is on a lighting standard with a slip base or frangible coupling style base, use an approved breakaway disconnect in the base of the light standard. Restrain the cable in a similar manner as the illumination cable in the pole base. Use five conductor 14 AWG wire to connect the photoelectric control to the load center.

661-5.01 BASIS OF PAYMENT. Add the following: Include payment for the following work in Item 661(3) Load Center, Type 2.

1. Removing existing load centers being replaced with new load centers, their foundations, and ground rods.

2. Paying fees charged by the serving utility for disconnecting, reconnecting, and acquiring new services.

Payment of fees required by the local authority for an electrical inspection and the costs of correcting the deficiencies noted during the inspection shall be considered subsidiary to the Section 661 items.

SECTION 670
TRAFFIC MARKINGS

Special Provisions

670-1.01 DESCRIPTION. Add the following: Furnish and place Durable Pavement Markings as shown on the Plans and as directed.

Durable Pavement Marking (DPM) Types:

1. Preformed Marking Tape (PMT)
2. Methyl Methacrylate (MMA)

Use the DPM type specified on the plans and in the specifications. Where DPM type is not specified use only PMT or only MMA.

670 3.01 CONSTRUCTION REQUIREMENTS.

2. Preformed Marking Tapes (PMT). Apply the PMT material as directed by the manufacturer using the appropriate inlay method either (a) or (b) below.

   Store PMT materials between 60°F and 85°F for at least 24 hours before installation. During installation, maintain field stockpiles at the required storage temperature.

   a. Hot Inlay Method: Use this method for applying PMT to new hot asphalt pavements where the temperature of the mat is above 140 □F. Embed the pavement markings in the asphalt concrete surface with a conventional steel wheeled roller. Apply when the surface temperature of the mat is the warmest possible without deforming the marking. The minimum allowable surface temperature, taken within 3/8 inch of the top of the mat is 140°F.

      If the application of the PMT materials falls behind the paving operation to the extent that the markings are not being applied at the minimum acceptable temperature, slow the paving operation to match the rate of the marking laydown. Resume full paving operations after demonstrating that skilled personnel are available to install the markings within the required temperature limits.

   b. Cold Inlay Method: Use this method for applying PMT to existing pavements where the temperature of the mat is below 140°F. Ensure the surface is clean and dry and is at least 60°F and rising. Cut a groove below the surface of the asphalt to the dimensions shown on the Plans or as recommended by the manufacturer. The bottom of the groove shall have a smooth flat finish. Accomplish this by using a gang stacked cutting heads having diamond tipped cutting blades. Provide a space between each blade. The rise between the finished groove and the blades shall be 10 mils. Broom the surface clean. Remove dust using compressed air. Apply a coat of primer/adhesive activator according to the manufacture's

recommendations. Install and roll the markings with a minimum 200 pound pneumatic roller.

c. Disposal of Waste. Waste material becomes the Contractor's property. This includes grindings and removed marking material. Do not dispose of or store stripe removal waste material or asphalt grindings on State property. Dispose of waste material according to applicable Federal, State, and local regulations.

Delete No. 4 and substitute the following:

4. Methyl Methacrylate Pavement Markings (MMA).

a. General. 15 days before starting work meet with the Engineer for a prestriping meeting. At this meeting, do the following:

(1) Furnish a striping schedule showing areas and timing of work, placing materials and the Traffic Control Plans to be used.

(2) Discuss placement of materials, potential problems.

(3) Discuss work plan at off ramps, on ramps and intersections.

(4) Discuss material handling procedures.

(5) Provide copies of the manufacturer's installation instructions and copies of the Material Safety Data Sheets.

b. Manufacturer's Representative. Provide the services of a manufacturer's representative (the "Manufacturer's Representative"). Ensure the Manufacturer's Representative observes the application of the pavement marking materials. Cooperate with the Manufacturer's Representative and the Engineer to ensure that the materials are placed according to these Specifications and the manufacturer's recommended procedures.

c. Manufacturer Certified Installers. Install methyl methacrylate pavement markings using only striping installers certified by the marking materials manufacturer for the specific striping material and method. Submit these certifications to the Engineer at the Preconstruction Conference.

d. Preparation. Prepare the roadway surface to receive methyl methacrylate according to these Specifications and the manufacturer's recommendations. Clean and dry the roadway surface. Completely remove contaminants such as dirt, loose asphalt, curing agents, surface oils, or existing road marking materials before applying pavement marking material.

e. Application. Apply methyl methacrylate marking material according to these Specifications and the manufacturer's recommendations. Use equipment designed and capable of properly mixing at the point and time of application and approved by the manufacturer for the type of product being installed.

SURFACE APPLIED

(1) Longitudinal Markings. Apply markings for lane lines, edge lines, and centerlines to yield a minimum thickness of 60 mils as measured from the surface of the pavement.

Use truck mounted automatic equipment capable of installing a double centerline and a single shoulder line in a single pass. Use automatic bead applicators that place a uniform layer of beads on the lines. Hand units will not be allowed.

(2) Transverse and Symbol Markings. Apply markings for ONLY(s), arrows, stop bars, gore stripes, railroad symbols, and cross walks to yield a thickness of 120 mils as measured from the surface of the pavement.

For Transverse markings legends, symbols, and transverse markings use manual or automatic application equipment. Stencils or extruders are required to form sharply defined markings.

INLAID

(1) Longitudinal Markings. Groove the area for the inlaid markings to a depth of 250 mils. Apply markings for lane lines, edge lines, and centerlines to yield a thickness of 250 mils measured flush with the pavement surface.

(2) Transverse and Symbol Markings. Groove the area for inlaid markings to a depth of 250 mils. Apply markings for ONLY(s), arrows, stop bars, gore stripes, railroad symbols, and cross walks to yield a thickness of 250 mils measured flush with the pavement surface.

For inlaid applications use grooving equipment that produces a dry cut. Use vacuum shrouded equipment or other equally effective containment procedures. Install markings in the same work shift as the grooving operation.

f. Disposal of Waste. Waste material becomes the Contractor's property. This includes grindings and removed marking material. Do not dispose of or store stripe removal waste material or asphalt grindings on State property. Dispose of waste material according to applicable Federal, State, and local regulations.

g. Sampling. On the form provided by the Engineer, record the following readings, and the locations where taken using project stationing, and submit to the Engineer within 24 hours for evaluation. Measure thickness of material and depth of slot from the surface of the pavement.

1) For inlay applications, record the depth of the slot every 300 feet during the grinding operation.

2) For other longitudinal applications, measure the thickness of the lines (above the pavement surface), at the time of application, every 300 feet.

3) For surface applied transverse markings measure the thickness in three locations for each marking.

4) Inspect the markings initially, and again two weeks after placement, to ensure the material has cured properly. Remove soft spots or abnormally darkened areas and replace with material meeting specifications.

5) Measure the retroreflectivity of each transverse marking at three locations and of each line at intervals not to exceed 500 feet. Take measurements using a Delta LTL2000 Retrometer, a 100 foot retro-reflectometer, or approved similar device. Perform testing within 72 hours of curing.

The Engineer may elect to use the Contractor's readings or perform additional sampling.

Add the following: Refer to the Survey Field Books identifying the no passing zones (see subsection 642-3.01)

670-3.04 PAVEMENT MARKING REMOVAL. Add the following: Coordinate removal work with construction activity. Remove pavement markings the same day permanent markings are applied, unless otherwise directed. Use vacuum shrouded equipment or other equally effective containment procedures.

Replace subsection 670-3.06 with the following subsection:

670-3.06 TOLERANCES FOR LANE STRIPING.

1. Length of Stripe. ± 2 inches.
2. Width of Stripe. ± 1/8 inch.
3. Lane Width. ± 4 inches from the width shown in the Plans.
4. Stripes on Tangent. Do not vary more than 1 inch laterally within a distance of 100 feet when using the edge of the stripe as a reference.
5. Stripes on Curves. Uniform in alignment with no apparent deviations from the true curvature.
6. All Stripes. Keep the center of the stripe within 4 inches from the planned alignment.
7. Double Stripes. ± 1/4 inch.
8. Thickness of surface applied (MMA). Minimum specified to a maximum of + 30 mils.
9. Depth of Inlay Slot (MMA). Minimum specified to a maximum of +40 mils.
10. Thickness of Inlaid Marking Material (MMA). Fill inlay area completely from the bottom of the inlay to the surface of the pavement.

If it is determined that the material is being placed too thin, or otherwise not to specification, make immediate adjustments to correct the problem.

Durable pavement markings applied by any method will be unacceptable if:

1. The marking is not straight or wide enough.
2. The thickness of the line is not uniform or less than specified (MMA).
3. The top of the line is not smooth and uniform.
4. The material is uncured.
5. The material blackens or is inconsistent in color.
6. The inlay slot is not ground to the specified depth.
7. The inlay slot is not filled to the specified depth (MMA).
8. The edge of the markings is not clear cut and free from overspray (MMA).
9. The reflective elements are not properly embedded.
10. The markings exhibit poor adhesion.
11. The retro-reflectivity of the markings is less than specified.
12. The color is not as specified.

Perform repairs using equipment similar to the equipment initially used to place the materials. Do not perform repairs in a "patch work" manner. If more than one repair is required in a single 300 foot section, grind and repair the entire section.

Add the following subsections:

670-3.07 CONTRACTOR'S WARRANTY. Provide a warranty that Durable Pavement Marking (DPM) will stay in place and maintain a minimum retroreflectivity of 150 millicandles for the white lines and 125 millicandles for the yellow lines. The period of the warranty shall be 2 years.

The warranty period will start on the date that the Engineer accepts the work and authorizes payment.

The warranty shall state that the Contractor will repair or replace, at the discretion of the Department and at no additional cost to the Department, DPM that fails to bond or drops below the required minimum retroreflectivity within 6 months of the request.

When the Department makes written request to the Contractor for repair or replacement, the warranty period will stop until the requested repair(s) or replacement(s) are made and accepted.

1. Reflectivity. If reflectivity becomes a concern during the warranty period, the Engineer will measure the retroreflectivity of the area in question using a Mirolux 12, 100 foot retroreflectometer, or similar device. The roadway surface will not be cleaned in preparation for taking readings, but areas of obvious contamination or debris will be avoided.

2. Color Stability. The DPM shall retain color throughout the warranty period. Compare yellow striping to the PR-1 chart, and meet 33538 Federal Yellow. White striping shall have a minimum daylight reflectance of 84 throughout the Warranty period.

3. Adhesion. For the purpose of the warranty a cumulative 5% or greater loss of line due to nonadhesion or any 325 foot segment of marking shall constitute failure of the material in that segment.

4. Care of the Work Before the Warranty Period. Monitor the installation until the beginning of the warranty period. If any tape comes up or becomes dislodged before the Warranty is in effect, replace it with specified material at no cost to the Department.

5. Replacement of PMT. Inlay PMT as specified in 670-3.01 Construction Requirements 2.b. Cold Inlay Method.

6. Replacement of Methyl Methacrylate. Replace pavement markings as specified in 670-3.01 Construction Requirements 4.e. Application.

670-4.01 METHOD OF MEASUREMENT. Add the following: Measure thickness from the top of the marking to the top of the pavement surface. Marking material placed in a depression left by pavement line removal will not be included in measuring the thickness of the line.

Delete No. 2 and 3 and replace with the following:

2. Square Foot Basis. Measure transverse pavement marking lines, stop bars, cross walks and gore stripes by nominal width times actual length. This does not include 24 inch wide lines required for Railroad Markings.

3. Each. Measure symbol pavement markings ONLY(s) and arrows on a unit basis with each separate word or symbol constituting a unit. Measure Railroad Markings by the complete unit shown for each lane of travel.

Add the following No. 4:

4. Foot Basis. Measure Longitudinal Pavement Markings, surface applied or inlaid, by the linear foot of 4 inch wide line. Measure wider striping in multiples of 4 inches.

670-5.01 BASIS OF PAYMENT. Add the following: When using DPM, payment includes furnishing the Warranty. Payment for the installation of the DPM will be limited to 80% of the amount due until the Department has received a signed Warranty.

There will be no separate or additional payment for the following:

- Over-runs of material caused by the variation of the gradation of the asphalt.
- Additional material required to achieve the thickness specified an open graded pavement.

Work and materials associated with traffic markings are subsidiary to 670 items, including:

- Milling for installation of the inlaid markings including the removal of millings
- Temporary traffic markings and removal of conflicting markings, including repair of the roadway surface, milled surface or otherwise
- Traffic Control required for the installation of permanent and temporary traffic markings, removal of conflicting markings, and repairs

Payment will be made under:

Pay Item	No Pay Item	Pay Unit
670(13A)	Durable Pavement Markings, Longitudinal Surface Applied	Linear Foot
670(13G)	Durable Pavement Markings, Only and Arrow Inlaid	Each

R248 (03/26/08)

ADDENDUM NO. 1
ATTACHMENT NO. 10

Add the following Section:

SECTION 690
UTILITY POTHOLING

Special Provisions

690 1.01 DESCRIPTION. **Determine and record the horizontal and vertical location of subsurface utilities using a vacuum extract truck.**

690-2.01 MATERIALS.

Backfill Material **Use aggregate conforming to Aggregate Base Course, Grading D-1**

Asphalt Patch Material **Use Asphalt Concrete Type II, Class B**

690-3.01 CONSTRUCTION. **Submit the utility potholing schedule to the Engineer and utility companies at least 5 days before starting potholing. Remove materials using a vacuum-extract truck to expose and identify the utilities. Survey the location and elevation of the utilities using the project horizontal and vertical control. Log as-built information at each pothole location.**

Backfill immediately after the Engineer accepts the logged data. Backfill and compact the first six vertical inches using the excavated material or other approved materials. Backfill and compact the remaining pothole void using Aggregate Base Course, Grading D-1. If the pothole is located in a paved area, provide a pavement patch using Asphalt Concrete Type II, Class B material of the thickness equal to the adjacent asphalt concrete.

Immediately contact the Engineer and the affected utility if utility facilities are damaged during the potholing operations. Costs associated with repairing damaged utilities will be borne by the Contractor.

690-3.02 AS-BUILTS. **Maintain a complete log of pothole information, including station, offset, elevation, utility types/size encountered, date of potholing operation, groundwater elevation, and other pertinent data. Submit the completed log to the Engineer within two working days following the start of the pothole excavation.**

690-4.01 METHOD OF MEASUREMENT. **Measure Vac-Extract Pothole by the total number of locations verified and accepted. Other related work, including but not limited to, removal of pavement, backfilling, pavement patching, shoring, labor, and surveying will not be paid separately, but shall be subsidiary to the Item. Potholing for the Contractors information and not shown on the Plans or directed by the Engineer will be the Contractors responsibility and will not be paid.**

690-5.01 BASIS OF PAYMENT. **Payment for Item 690(1) Vac-Truck Pothole will be paid on a contingent sum basis at the rate of $450/each for the locations shown in the Plans or as directed by the Engineer. The price for Vac-Truck Potholing includes full compensation for furnishing equipment, labor and materials necessary to complete the work as specified. Payment will be based on the verified and accepted log. Payment will not be made for potholing not listed in the verified log, or for exposing utilities during the course of other excavation.**

Payment will be made under:

Pay Item No.	Pay Item	Pay Unit
690(1)	Vac-Truck Pothole	Contingent Sum

SECTION 701
HYDRAULIC CEMENT

701-2.03 GROUT. Add to end of last sentence: from specimens made according to ATM 507.
E30(3/15/06)

SECTION 703
AGGREGATES

Special Provisions

703-2.03 AGGREGATE FOR BASE. Delete Table 703-2 and substitute the following:

TABLE 703-2
AGGREGATE FOR UNTREATED BASE
Percent Passing By Weight

Sieve Designation	Grading C-1	Grading D-1	Grading E-1
1 ½ inch	100		
1 inch	70-100	100	100
¾ inch	60-90	70-100	70-100
3/8 inch	45-75	50-79	50-85
No. 4	30-60	35-58	35-65
No. 8	22-52	20-47	23-50
No. 30	10-33	10-26	13-31
No. 50	6-23	6-19	10-26
No. 200	0-6	0-6	8-15

Replace subsection 703-2.04 with the following:

703-2.04 AGGREGATE FOR ASPHALT CONCRETE PAVEMENT.

Coarse Aggregate (retained on the No. 4 sieve). Crushed stone or crushed gravel consisting of sound, tough, durable rock of uniform quality. Remove natural fines passing a #4 sieve before crushing aggregates for Type V or VH asphalt concrete mixtures. Free from clay balls, organic matter, and other deleterious material. Not coated with dirt or other finely divided mineral matter. Meet the following requirements (note A or B indicate class of mix, see Table 401-1), the Engineer may modify the fracture requirements if the hard aggregate sources stated in 106-1.02 do not meet specifications:

		Type IIA, IV	Type I, IIB, III	Type V	Type VH
LA Wear, % max	**AASHTO T 96**	**45**	**45**	**45**	**45**
Degradation Value, min	**ATM 313**	**30**	**30**	**30**	**30**
Sodium Sulfate Loss % max (5 cycles)	**AASHTO T 104**	**9**	**9**	**9**	**9**
Fracture, min %	**WAQTC FOP for AASHTO TP61**	**90, 2 face**	***90, 2 face***	**98, 2 face**	**98, 2 face**
Thin-Elongated Pieces, max %					
1:5	**ATM 306**	**8**	**8**	**3**	**3**
1:3		**20**	**-**	**8**	**8**
Nordic Abrasion, max.%	**ATM 312**			**12**	**8**
Absorption, max. %	**AASHTO T85**	**2.0**	**2.0**	**2.0**	**2.0**

TABLE 703-3
BROAD BAND GRADATIONS FOR ASPHALT CONCRETE PAVEMENT AGGREGATE

Percent Passing by Weight

SIEVE	GRADATION				
	Type I	Type II	Type III	Type IV	Type V, VH
1 inch	100				
¾ inch	80-90	100			100
½ inch	60-84	75-90	100	100	65-80
3/8 inch	48-78	60-84	80-90	80-95	48-60
No. 4	28-63	33-70	44-81	55-70	30-45
No. 8	14-55	19-56	26-70	35-50	20-30
No. 16	9-44	10-44	16-59	20-40	≤ 22
No. 30	6-34	7-34	9-49	15-30	≤ 17
No. 50	5-24	5-24	6-36	10-24	≤ 14
No. 100	4-16	4-16	4-22	5-15	≤ 12
No. 200	3-8	3-8	3-8	3-8	3-8

Fine Aggregate (passing the #4 sieve). Meet the quality requirements of AASHTO M 29, including S1.1, Sulfate Soundness.

For Type IV, V and VH mixes, remove natural fines passing a #4 sieve before crushing aggregates for this asphalt concrete mixture. Consist entirely of aggregate produced from

aggregate crushing process and be non-plastic as determined by WAQTC FOP for AASHTO T 90, and meets the following:

Property	Test Method	Requirement
Fine Aggregate Angularity	AASHTO T 304	45% min.

(01/02/08)R199

SECTION 710
FENCE AND GUARDRAIL

Special Provisions

710-2.03 CHAIN LINK FABRIC. Change Class D coating to Class C coating.
(9/13/04)R275

SECTION 712
MISCELLANEOUS

Standard Modification

712-2.06 FRAMES, GRATES, COVERS, AND LADDER RUNGS. In Gray iron castings, delete text and replace with: AASHTO M 306 and AASHTO M 105, Class 35B.

E46(01/27/07)

Special Provisions

712-2.17 METHYL METHACRYLATE PAVEMENT MARKINGS. Delete the first and second paragraphs under item 1. Quality Requirements: and substitute with the following: Use a marking material formulated for the application type specified. Use a marking material manufactured from new materials and free from dirt and other foreign material. Use a methyl methacrylate based resin system for part "A". Use benzoyl peroxide system for part "B".

Extruded application: Material formulated for extruded application with factory intermix beads and anti skid aggregate, and additional surface applied beads.

2. Performance Properties: Add the following:

   1. Color: Yellow, PR-1 chart, 33538 Federal Yellow. White, minimum daylight reflectance of 84.

712-2.18 GLASS BEADS FOR METHYL METHACRYLATE PAVEMENT MARKINGS. Delete the bead table and substitute the following: Use the type and amount of beads specified in writing by the marking material manufacturer necessary to meet the performance requirements such as Swarco, Swarcolux beads.

(01/04/06)R246

SECTION 719
STEEL, GRAY-IRON AND MALLEABLE-IRON CASTINGS

Standard Modification

719-2.02 GENERAL REQUIREMENTS. In Gray-Iron Castings, delete text and replace with: AASHTO M 306 and AASHTO M 105, Class 35B.

E47(01/27/07)

SECTION 724
SEED

Special Provisions

724-2-02. MATERIALS. Delete Table 724-1 and substitute the following:

TABLE 724-1
SEED REQUIREMENTS

SPECIES	Sproutable Seed*, %, Min.
Arctared Red Fescue	78
Egan American Sloughgrass	67
Norcoast Bering Hairgrass	71
Nortran Tufted Hairgrass	71
Wainwright Slender Wheatgrass	88
Alyeska Polargrass	71
Bluejoint	71
Tilesy Sagebrush	71
Tundra Glaucous Bluegrass	76
Gruening Alpine Bluegrass	72
Nugget Kentucky Bluegrass	76
Beach Wildrye	70
Annual Ryegrass	76
Perennial Ryegrass	76

* Sproutable Seed is the mathematical product of Germination and Purity.

(01/27/07)R52

Delete this Section, except for Table 726-1 and substitute the following:

SECTION 726
TOPSOIL

Special Provisions

726-2.01 TOPSOIL. Furnish topsoil that is representative of the existing, natural organic blanket of the project area. Perform a quality test, as defined by ATM 203, on the soil to determine the organic content of the soil. Supply the results to the Engineer.

Soil with an organic content of 5 percent or more may be reused and spread on the finished slopes where topsoil is noted on the plans. Remove roots, stumps, unnatural material, and rocks greater than 3 inch in diameter from the organic material before it is graded onto the finished slope.

Soil with an organic content of less than 5 percent cannot be used as topsoil for the project. In this case, furnish topsoil consisting of a natural friable surface soil without admixtures of undesirable subsoil, refuse, or foreign materials having an organic content of 5 percent or more, as determined by ATM 203. The material shall be reasonably free from roots, clods, hard clay, rocks greater than 3 inches in diameter, noxious weeds, tall grass, brush, sticks, stubble or other litter, and shall be free draining and nontoxic. Notify the Engineer of the location topsoil is to be furnished at least 30 calendar days before delivery of topsoil to the project from that location. The Engineer will inspect the topsoil and its sources before approval will be granted for its use.

(11/27/07)R208

SECTION 730
SIGN MATERIALS

Special Provisions

730-2.04 SIGN POSTS. Add the following item:

7. Structural Tubing and W Shape Beams.

   a. Structural tubing shall conform to either ASTM A500, grade B, or ASTM A501. The tubing shall be square and of the dimensions called for in the Plans with 0.2 inch thick walls. 0.4 inch diameter holes shall be drilled as required to permit mounting of the sign.

   b. W-shape beams shall conform to ASTM A36.

   c. Structural tubing and W shape beams shall be hot dip galvanized according to 1.b. of this subsection. Damaged and abraded tubes and beams shall be repaired according to 1.c. of this subsection.

(06/22/04)R81

SECTION 740
SIGNALS AND LIGHTING MATERIALS

Special Provisions

Replace subsection 740-2.02 with the following:

740-2.02 SIGNAL AND LIGHTING POLES.

1. Design. Design and fabricate highway lighting and traffic signal structures with pole shaft lengths to 65 feet long to conform to the 1994 Edition of AASHTO Standard Specifications for Structural Supports for Highway Signs, Luminaires and Traffic Signals with interim revisions. For the design and fabrication of high tower poles, see subsection 740-2.04.

   A registered professional engineer shall design the structures and provide stamped shop drawings and calculations. Submit the stamped drawings and calculations for each pole to the Engineer for approval. Design for stresses on the completed structure with hardware in place.

   a. In the stamped calculations, indicate the edition of Standard Specifications to which the poles are being designed and provide the input data used to design each pole and mast arm, including: design wind speed, cross section shape, yield strengths of the component materials, dimensions of the pole components, and a summary of the loads used.

   b. On the stamped shop drawings, provide design wind speed and the details for building the poles and mast arms, including: materials specifications, slip fit joint dimensions, pole component dimensions, welds that will be made, and the welding inspection that will be done.

   Submit the mill certifications for the steel items (piles, plates, bolts, and other related items) to the Engineer for approval.

   Design poles for 100 mph winds with a 1.3 gust factor.

   Design each electrolier to support a sign with an area of 16 square feet with its centroid located 14 feet above the base of the pole.

2. Fabrication. Fabricate signal and lighting structures from tapered steel tubes with a round or 16 sided cross section. Orient hand holes located near the base of poles to face downstream of traffic flow.

   Provide traffic signal poles, lighting poles, and signal mast arms in lengths evenly divisible by 5 feet.

Furnish poles and mast arms up to 40 feet long in one piece. Poles and mast arms longer than 40 feet may be furnished in one piece or in two segments with a slip type field splice. For slip type joints, provide a minimum overlap of two feet or 1.5 times the inside diameter of the female section whichever is larger. In mast arms, locate these splices at least one foot away from the Plan location of signal heads and signs. In signal poles, locate the edge of the female section at least 6 inches above the top of the signal mast arm connection.

Fabricate tubes with walls up to ½ inch thick from the prequalified base metals listed in AWS D1. Fabricate elements greater than ½ inch thick from steel that conforms to ASTM A 709 and meets the Fracture Critical Impact Test requirements for zone 3. The Department will not accept structures that contain or are made with laminated steel elements.

Fabricate each tube from no more than 2 pieces of steel. When using 2 pieces, place the longitudinal welded seams directly opposite one another. Place the welded seams on adjacent sections to form continuous straight seams from the base to the top of the pole.

When tenons are needed to install traffic signals and luminaires, make them from two inch nominal schedule 40 pipe that conforms to ASTM A 53 Grade B.

Fabricate 10 feet long signal posts from 11 US Standard Gage sheet steel. Fabricate each post with a minimum inside diameter of five inches at the base plate. Use a 3½-inch long piece of four inch nominal schedule 40 pipe that conforms to ASTM A 53 Grade B as a post-top adapter.

The Department does not allow holes made for lifting purposes in the ends of tubular segments, except in the free ends of luminaire mast arms. To add lift points, weld them to the tube opposite the longitudinal seam weld on the outside of female segments and on the inside of male segments. Before shipment, remove lift points added to the outside of the tubes, grind the area smooth with the base metal, and hot stick repair the finish according to subsection 660-3.01.8.a. Lift points added to the inside of tubes in place may be left in place.

Hot dip galvanize lighting and signal structures to meet AASHTO M 111 and these specifications. Completely submerge pole and mast arm segments in one dip in a kettle of concentrated zinc ammonium chloride flux solution heated to 130° F, then completely submerge in one dip in a separate kettle of prime western grade zinc heated to approximately 825° F. Galvanize bolts and fasteners to meet AASHTO M 232.

After the poles and mast arms are galvanized, remove all excess zinc from all drip lines and points and the surfaces of all tube ends that form slip type joints to provide a smooth finish.

The Department will reject poles and mast arms that are:

a. Not fabricated according to these specifications or the approved shop drawings,

b. Bowed with sweeps exceeding ¾ inch throughout the length of the pole, mast arm, or segment, if furnishing a 2 piece pole or mast arm,

c. Out of round. Sections are out of round when the diameters of round members or the dimension across the flats of multisided members exceed 2 percent of the dimension specified on the shop drawings.

Fabricate pile cap adapters from grade X42 steel line pipe that conforms to API 5L and from steel plate that conforms to ASTM A 709 Grade 50. Attach the anchor plate to the pile section with a complete joint penetration (CJP) weld. Fabricate the anchor plate to match the base plate of the lighting standard.

3. Welding. Perform welding to conform to subsection 504-3.01 8. Welding and the following:

a. Make welds continuous. Grind exposed welds flush with the base metal at slip joints, the length of the slip fit joint plus one half diameter of the female section.

b. Use partial joint penetration (PJP) welds in longitudinal seams. PJP welds must provide at least 60% penetration.

c. Use CJP groove welds to connect base plates to tubes with walls 5/16 inch thick and thicker. When CJP groove welds are used, the designer may use additional fillet welds when deemed necessary.

d. Use socket type joints with two fillet welds to connect base plates to tubes with walls less than 5/16 of an inch thick.

e. On steels 5/16 of an inch thick and thicker, inspect 100% of CJP welds by either radiography (RT) or ultrasound (UT).

f. Inspect a random 25% of PJP and fillet welds by magnetic particle (MT). If a defect is found, inspect 100% of the PJP and fillet welds made to fill the order. In steels less than 1/8 inch thick, complete the tests according to AWS D1.3.

g. Only visually inspect welds made on luminaire mast arms.

4. Miscellaneous. Finish the edges of poles and mast arms to conform to the following requirements. Before hot dip galvanizing, neatly round the following features to the radius specified

a. On holes through which electrical conductors pass, provide a 1/16 inch radius on both the entrance and exit edges,

b. On pole base plates, provide a 1/8 inch radius on edges along which plate thickness is measured and a smooth finish on all other exposed edges,

c. On the ends of tubes that form slip type joints, complete the following tasks on the two surfaces that contact one another. First, provide 1/16 inch radii on the inside and outside edges of the female and male segments, respectively. Then for the length of the joint plus 6 inches grind down welds until they feature a radius concentric with the mating surface and remove material protruding from the two surfaces, and

d. Grind exposed welds flush with the base metal, except fillet welds and seam welds on top of mast arms. Grinding seam welds on multisided poles is not required, except in slip type joints.

Provide caps to cover the free ends of poles and mast arms.

Identify critical information for poles and arms with visible permanent aluminum tags that contain the information shown in Table 740-1. The measurements shown are for illustration purposes only. Use tags large enough to include required information using ¼ inch high text, 3/8 inch of space between successive lines of text, and at least 3/8 inch of space between the edges of the tag and the text. Secure the tags with two 1/8 inch blind rivets at the base of poles and the under side of mast arms. If furnishing a two piece signal mast arm with slip type joint, mark both pieces with the same message.

TABLE 740-1
POLE MARKINGS

Note: *Italic type indicates additional Tag Markings if poles have 2 luminaire or 2 signal mast arms.*

	MEASUREMENTS	TAG MARKINGS
Signal Poles		
a) Signal mast arm length	45 ft./*55 ft.*	SMA 45/*SMA 55*
b) Luminaire mast arm length	22 ft./*18 ft.*	LMA 22/*LMA 18*
c) Pole height	36 ft.	PH 36
d) Intersection number (if more than one) -pole number		1 - P 4
e) Sum of signal mast arm moments about centerline of signal pole		SM 4000/*SM 3200*
f) Design wind speed	100 mph	DWS 100
Light Poles		
a) Luminaire mast arm length	15 ft./*15 ft.*	LMA 15/*LMA 15*
b) Pole height	37 ft.	PH 37
Signal Mast Arm		
a) Mast arm length	40 ft.	SMA 40
b) Intersection number (if more than one) -pole number		1 - P 4
c) Sum of signal mast arm moments about centerline of signal pole		SM 3740

TABLE 740-1 POLE MARKINGS		
Note: *Italic type indicates additional Tag Markings if poles have 2 luminaire or 2 signal mast arms.*		
	MEASUREMENTS	**TAG MARKINGS**
d) Design wind speed	100 mph	DWS 100
Luminaire Mast Arm		
a) Mast arm length	18 ft.	LMA 18
b) Pole number (if unique arm design)		P 4

740-2.05 CONDUCTORS. Replace Table 740-2 with the following:

TABLE 740-2
CONDUCTOR TERMINATION TABLE

CONDUCTORS PER CABLE	CIRCUIT	WIRE COLOR	AWG. NO.	BAND LEGEND
7	Vehicle Red Vehicle Yellow Vehicle Green Common Neutral Spare Spare Spare	Red Orange Green White White/Black Black Blue	14	Head No.
7	Vehicle Red Arrow Vehicle Yellow Arrow Vehicle Green Arrow Common Neutral Spare Spare Spare	Red Orange Green White White/Black Black Blue	14	Head No.
7	Vehicle Red Vehicle Yellow Vehicle Green Common Neutral Spare Vehicle Yellow Arrow Vehicle Green Arrow	Red Orange Green White White/Black Black Blue	14	Head No.
4	Pedestrian Don't Walk Pedestrian Walk Common Neutral Spare	Red Green White Black	14	Head No.

TABLE 740-2
CONDUCTOR TERMINATION TABLE

CONDUCTORS PER CABLE	CIRCUIT	WIRE COLOR	AWG. NO.	BAND LEGEND
4	Pedestrian Pushbutton Neutral Spare Spare	Black White Red Green	14	Head No.
5	Photo Electric Control Load to Contactor Neutral Spare Spare	Black Red White Orange Green	14	PEC
3	Flashing Beacon Neutral Spare	Black White Red	14	Head No.
3	Preemption Neutral Spare	Black White Red	20	"PRE"
3	Preemption Confirmation Neutral Spare	Black White Red	14	"PRECON"
3	Highway Luminaire Highway Luminaire Highway Luminaire Spare	Black Red White	8 or 6	Circuit No. Circuit No.
3	Service to Controller Neutral Spare	Black White Red	6 or 4	"SIG" No Band No Band
3	Sign Luminaire Sign Luminaire Sign Spare	Black Red White	8	SIGN SIGN

Replace subsection 740-2.06 with the following:

740-2.06 ELECTRICAL CONDUIT AND FITTINGS. Unless specified otherwise, use rigid metal conduit and fittings for raceways. Furnish galvanized rigid type conduit and elbows that conform to UL-6 and are manufactured of mild steel according to ANSI C80.1. Furnish third party certified fittings designed for rigid metal conduit.

For loop detectors, use Schedule 80 polyvinyl chloride (PVC) conduit that conforms to UL-651. Use PVC fittings meeting NEMA TC 3.

When polyethylene conduits are specified in the Plans, use a smooth wall, schedule 40, high-density polyethylene (HDPE) pipe that conforms to UL 651 B.

Furnish insulated throat grounding bushings made of malleable iron or steel with a mechanically galvanized or zinc plated finish. Grounding lugs shall either be an integral part of the bushing or consist of an attached tin plated copper saddle. Grounding lugs shall feature a stainless steel screw, the centerline of which falls within 20 degrees of conduit centerline. The bushings furnished shall also feature a stainless steel or brass mounting screw that locks the bushing onto the conduit end.

Furnish conduit outlet bodies and their covers with a hot dip galvanized finish and stainless steel screws. For loop detectors, furnish type X bodies and, for photoelectric control installation, furnish types C and LB conduit bodies.

When Myers hubs are specified, furnish rain tight, grounding type hubs made of malleable iron with a hot dip or mechanically galvanized finish.

At expansion joints, provide watertight expansion fittings capable of the following movements without damaging the conduits attached to it or the conductors that pass through it. The movements include: axial expansion or contraction to ¾ inch, angular misalignments in any direction to 30 degrees, and parallel misalignment of the conduits to ¾ inch. The fittings shall also include a braided copper bonding jumper equal to an 8 AWG conductor, bushings to prevent scraping the conductors, and a smooth inner sleeve that maintains a constant diameter regardless of conduit alignment.

Replace subsection 740-2.18 with the following:

740-2.18 ROADWAY LUMINAIRES. Furnish luminaires that conform to the following specifications and provide the light distributions specified. When luminaire performance criteria are specified, luminaires shall also:

- Meet or exceed the minimum initial light levels indicated.
- Provide light distribution uniformity ratios and veiling luminance ratios equal to or less than the maximums indicated.

When luminaire performance criteria are specified, submit the following information for each luminaire type and light distribution type specified: luminaire specifications, the lumen output of the lamps that will be furnished, and current electronic photometric data to the Engineer for approval. Furnish the photometric data in Illuminating Engineering Society (I.E.S.) format. The Engineer will use software that calculates light levels and uniformity ratios according to the American National Standard Practice for Roadway Lighting, A.N.S.I./I.E.S RP-8 to verify each luminaire provides the light levels, uniformities, and veiling luminance ratios specified.

When cut off distributions are specified, furnish luminaires with flat glass lenses and a full cutoff light distribution as defined in the American National Standard Practice for Roadway Lighting, A.N.S.I./I.E.S RP-8, dated 2000.

Furnish each luminaire with a high pressure sodium lamp of the wattage specified and matching ballast with an input voltage equal to circuit voltage. Furnish roadway lighting lamps that feature a rated life of 24,000 hours based on 10 hours per start and ballasts that conform to subsection 740-2.21.

Luminaries General

Install luminaires that feature:

1. Corrosion resistant enclosures with gray paint finish and space for the ballast.
2. Third party certification for use in wet locations.
3. Glass lenses, unless polycarbonate resin refractors are specified.
4. Terminal blocks for attaching the illumination tap conductors.
5. Aluminum reflectors with an ALZAK or ALGLAS finish.
6. Optical components free of substances that affect photometric performance, e.g. paint.
7. Housings cast with no provision for a photoelectric control receptacle.
8. Airtight reflector and lens units that breathe through activated charcoal filters and include elastomer gaskets to seal the gap between the two components. Gasket material must withstand the temperatures involved and be securely held in place.
9. Plug in starting aids in fixtures with lamps through 400 watts.

Luminaries – Cobrahead

Each cobrahead luminaire shall also include:

1. An easily removed hinged door used exclusively for mounting the ballast.
2. A second door that frames the lens, hinges on the house side, and fastens on the street side with an automatic type latch.
3. A four bolt mounting brackets that fit 2 inch nominal diameter standard pipe and feature a center pivot for leveling the luminaire.

Offset luminaires shall also include knuckle style pole top adapters that are sized to fit 2 inch nominal diameter standard pipe and feature a wire way meeting NEC requirements for installing three size 10 AWG conductors between the pole and the terminal block located in the luminaire.

Lenses.

When polycarbonate resin lenses are specified, furnish lenses the fabricator certifies conforms to the following criteria.

1. The lenses are molded in a single piece from virgin polycarbonate resin.
2. The lenses are free from cracks, blisters, burns, and flow lines, and furnished with the natural molded surface.

3. The lenses are of uniform density throughout and free from air, gas, or moisture pockets, and uncured areas.

4. The lenses are transparent with a clear bluish tint, produced from ultraviolet stabilized resin to reduce the effects of ultraviolet radiation on their color properties.

5. The resins used meet the requirements for the self extinguishing classification of ASTM D 635 and feature a minimum impact strength, Izod notched of 12 foot pounds per inch when tested according to ASTM D 256, Method A, using a 1/8 inch by ½ inch bar molded according to ASTM recommended practice.

740-2.23 UNDERPASS LIGHTING SYSTEM. Delete the 1st paragraph, and substitute the following: Use underpass luminaires that have vandal-resistant surface-mounted fixtures installed in galvanized welded steel enclousre as detailed in the plans. The lamp must be a medium base socket, 70W, clear, ANSI/NEMA C78.1355, horizontal mount, high pressure sodium type. The lamp must provide a minimum of 15000 initial lumens with a rated life of 24,000+ hours based on a minimum burn period of 3 hours.

R98(04/05/07)