PART 4

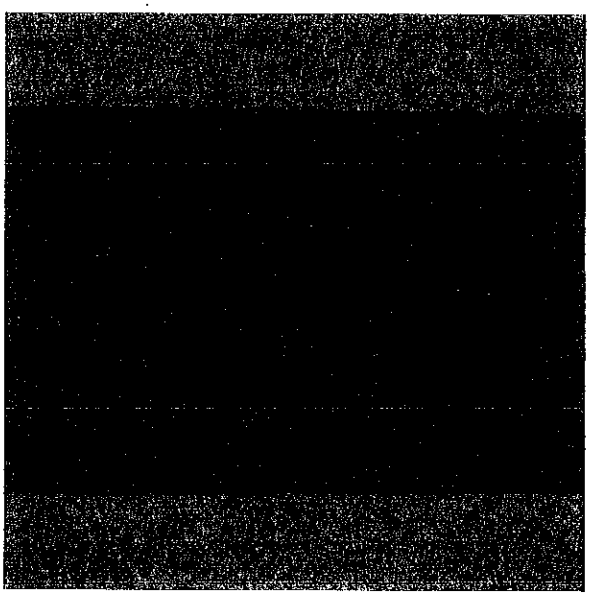
STANDARD MODIFICATIONS

AND SPECIAL PROVISIONS

to the STATE OF ALASKA

STANDARD SPECIFICATIONS
FOR
HIGHWAY CONSTRUCTION

2004



LAKE OTIS PARKWAY, ABBOTT ROAD TO 68TH AVE and
88TH AVE, TOLOFF STREET TO LAKE OTIS PARKWAY
MGS-0001(354)/57433

SECTION 101

DEFINITIONS AND TERMS

Standard Modifications

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)

Replace the definition of PLANS and with the following: **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 Modifications

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 subsection106-1.02 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(06/30/04)

SECTION 105

CONTROL OF WORK

Standard Modifications

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.
Anchorage Area..... 278-3121
Statewide.....800-478-3121
Who will notify the following:

- ACS
- Aircraft Service International Group
- Alaska Fiber Star
- Alaska Native Medical Center
- Alaska Railroad Corp.
- Anchorage School District
- Anchorage Water & Wastewater
- AT&T Alascom
- Chugach Electric Assoc.
- City of Wasilla
- ENSTAR Natural Gas
- GCI
  Kanas
- Homer Electric Assoc.
- Marathon Oil
- Matanuska Electric Assoc.
- Matanuska Telephone Assoc.
- Municipality of Anchorage
  Street Maintenance Department.
- Municipal Light & Power
- Phillips Alaska, Inc.
- Telalaska
  Alyeska Cable
  Eyecom, Inc.
  Interior Telecom.
  Mukluk Telecom.
- Tesoro Alaska Pipeline
- Unocal
- United Utilities
- Yukon Telephone
- State of Alaska DOT/PF
  Anchorage M&O Street Lights

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 two (2) week work plan, or not required by the contract.

The utility shall give the Contractor, through the Engineer, fifteen (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 will not be required to work in more than one location at a time and will be allowed to complete a specific section of work before beginning with another section.

Relocation or adjustment of underground utility appurtenances will 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.

CHUGACH ELECTRIC ASSOCIATION (CEA): CEA owns and operates power lines for distribution within the project limits. When working near CEA facilities, adhere to the requirements of "Electrical Facility Clearance Requirements" attached to these specifications in an appendix.

Lake Otis Pkwy: CEA has power lines crossing and paralleling Lake Otis Pkwy, including power drops for traffic signal operations. Conflicts occur at the intersection with Lore Road that will require relocation by CEA. Two poles in conflict with

improvements will be retired and replaced with poles installed outside the area of conflict to accommodate the overhead crossing of Lake Otis:

Pole to be retired	Pole to be installed
~Sta. 149+46, 36' left	~Sta. 149+20, 35' left
~Sta. 150+55, 35' left	~Sta. 151+02, 35' left

An overhead crossing of Lore Road, east of Lake Otis will also be affected by the pole retirement for the Lake Otis crossing. Approximately 125' of overhead cable will be retired and replaced underground between new poles installed at the following locations:

~Sta. 104+70, 52' right
~Sta. 106+75, 52' right

Additional underground cabling will be installed long the north side of Lore Road to connect with a new vault and switch cabinet and to the new pole located near Sta. 150+55, 35' left.

The existing load center located near Sta. 147+86, 29' left, will be relocated to Sta. 138+14, 32 left (Lake Otis stationing). Conduit and cable providing service to this load center will be extended from the existing location to the new location by CEA.

Allow 20 days for work along Lore Road.

88th Ave: CEA has a service drop located north of 88th Avenue, east of Lake Otis. This pole near Sta. 21+50, 35' left, occurs within the proposed right turn lane and will be retired by CEA once new service from a location outside the project limits is in place. Allow 1 day for this work

72nd Ave: CEA has overhead facilities along the east side of Lake Otis Parkway. A power pole supporting the overhead facilities is located in the northeast corner of E. 72nd Ave and Lake Otis Parkway near Sta. 180+52, 36' left. This pole will be retired and a new pole will be placed in line to the north. Existing underground cable running from the existing pole east to a splice point near Sta. 183+42, 40' left, will be relocated. New cable will run from the splice point to the new pole located near Sta. 180+52, 58' left. Allow 8 days for this work.

A guy anchor for an overhead line terminating at a pole near Sta. 177+85, 28' left, is in conflict with channelization improvements. The pole and anchor will be retired and relocated approximately 17' north. This relocation work along with relocation work described earlier will be performed by CEA. Allow 2 days for this work.

In addition, the load center serving the signal for 72nd Avenue will be relocated to approximately Sta. 118+53.1, 91' right (Lake Otis stationing). Conduit and cable providing service to this load center will be extended from the existing location to the new location by CEA. Allow 1 day for this work.

A copy of CEA's **Electrical Facility Clearance Requirements** is included in Appendix H to the Special Provisions to familiarize Contractors with safe excavation methods while working close to electrical facilities.

The contact for CEA is Gary Meadows, Manager, Distribution Construction (office tel. 762-4618, cell 242-2191).

ENSTAR NATURAL GAS COMPANY (ENSTAR): Enstar has a 4" plastic distribution line along the east side of Lake Otis, approximately 37' to 44' right, throughout the project limits. Distribution lines varying in size from 1" to 4" cross Lake Otis in several locations. A 2" line crosses Lake Otis along the south side of 88th Avenue. Proposed improvements along Lake Otis should not affect existing gas lines. Proposed improvements along 88th Avenue, between Lake Otis and Arlon Street, have been designed to avoid conflict with this gas line. Locate and protect distribution lines and any service lines from construction activity.

72nd Ave: Enstar has a 2" plastic line running along the south side of 72nd Avenue. This line will be relocated outside the roadway. The new line will tie into the existing crossing near Station 175+95 along the north edge of right-of-way. The line will cross 72nd Ave. to the south edge of right-of-way near Station 178+50 and will then extend to tie into the existing line near Station 179+58. Allow 6 days for this work.

A copy of Enstar's **Safety Requirements for Excavation Adjacent to Natural Gas Pipelines** is included in Appendix G to the Special Provisions to familiarize Contractors with safe excavation methods while working close to gas pipelines.

The contact for Enstar is Drew Smith, 264-3744.

ALASKA COMMUNICATIONS SYSTEMS TELECOMMUNICATIONS (ACS): Alaska Communication Systems (ACS) owns and operates telecommunication facilities within the project area. ACS facilities (both fiber optic and copper cable) parallel Lake Otis Pkwy on the east side and cross Lake Otis Pkwy at the following locations:

- Underground (UG) crossing north of Abbott Road in 4" PVC conduit
- Crossing south of 88th Ave in easement near Station 62+73
- UG crossing from MH in southeast corner of East 84th Avenue and Lake Otis Pkwy to easement on west side

Proposed improvements along Lake Otis Pkwy should result in no conflicts with ACS telecommunication facilities. Locate and protect these facilities from construction activity.

76th Ave (Lore Road): ACS has overhead cable attached to CEA poles along the north side of Lore Road. Existing poles will be relocated and new poles installed. ACS will relash aerial guy strand to the relocated poles while retiring the aerial cable. ACS will

bury ~95 feet of cable east of Lake Otis from CEA's new pole location to a splice point. Allow 3 days for this work.

72nd Ave: ACS has overhead and underground facilities along the north side of 72nd Avenue. ACS has an overhead cable terminating on a pole located north of 72nd Avenue near Sta. 177+85, 28' left. ACS will relocate this pole approximately 17' north with a new anchor.

ACS has underground cable along the north side of 72nd Avenue east of Lake Otis Pkwy. Approximately 260 feet of this cable will be relocated along the relocated electrical cable to accommodate road work.

Allow 20 days for work along 72nd Avenue.

The contact for ACS is Greg Schmid, 564-1820.

GENERAL COMMUNICATIONS INC. (GCI): GCI owns and operates coaxial cable telecommunication lines paralleling Lake Otis Parkway along the east side with crossings at the following locations:

- Crossing south of East 88th Avenue in easement near Station 62+73
- Crossing north of East 76th Ave. (Lore Road)
- Crossing north of East 72nd Ave.

GCI facilities should be unaffected by the proposed improvements along Lake Otis Pkwy. These facilities should be located and protected from construction activity.

88th Ave: GCI has no facilities within the project area of 88th Ave.

76th Ave (Lore Road): GCI has an underground cable on the north side of the west leg of 76th Ave. Locate and protect.

72nd Ave: GCI has an underground fiber optic (FO) cable along 72nd Ave each side of Lake Otis. West of Lake Otis the FO cable begins along the south side, then crosses near Station 179+14. The cable continues east along the north side beyond the project limits of 72nd Ave. Relocation of the FO cable will be required for ~643 feet east of Lake Otis.

Coaxial cable will also require relocation along 72nd Ave east of Lake Otis. Trench work will begin ~ 326 feet south of 72nd, along Lake Otis, and will continue for ~981 feet along 72nd Ave.

Allow 6 days for GCI relocation work.

The contact for GCI is Joe Whittaker, 229-9176.

ANCHORAGE WATER AND WASTEWATER UTILITY (AWWU): The Municipality of Anchorage (MOA) owns and operates a water system providing service in the Lake Otis Pkwy project area. Facilities parallel and cross Lake Otis Pkwy and 88th Avenue. AWWU has an existing PRV vault west of the intersection of Lake Otis Pkwy and 88th Ave, within a skewed crossing of 88th Ave, that is being upgraded under the AWWU 88th Avenue Intertie project. The intertie project includes a large transmission main extending from the existing 48-inch main in Spruce Street, north of a vault located at 88th Ave and Spruce Street, along 88th Ave to the existing PRV west of the Lake Otis Pkwy. The AWWU improvements began in 2005 (with all underground work within the Lake Otis and 88th Avenue project limits completed) and are scheduled for completion in 2006. Verify with AWWU that all work is completed. If not, coordinate between projects.

Water mains will not be affected by resurfacing or curb ramp improvements, but appurtenances such as valve boxes and fire hydrants will require adjustment or relocation based on the final grade of the roadway pavement and the final layout of curb ramps.

The MOA owns and operates a sanitary sewer system providing service along Lake Otis Pkwy in several intervals. AWWU facilities within 88th Ave include a 16-inch SS main within the southern lane of 88th Ave, east of Lake Otis Pkwy. This main tees into a SSMH located approximately 23' right of centerline near Lake Otis Station 65+92, connecting to the Lake Otis Pkwy 24-inch SS main. Other SS facilities are located within the 88th Ave project. Roadway resurfacing and curb ramp 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. The AWWU contact is Brian Baus, 564-2765.

ALPAT WATER UTILITY (ALPAT): ALPAT is a private water utility with facilities along East 88th Avenue and its side streets west of Lake Otis. Coordination with ALPAT will be required in areas where their valve boxes are affected by construction activities:

Station 14+39, ~40' right
Station 16+50, ~64' right

Coordinate with ALPAT to conduct a joint inspection of facilities before work begins in the area. Give ALPAT 48 hours notification of a proposed inspection meeting.

Provide valve box pieces/parts as required to accommodate adjustments to ALPAT facilities.

The contact for ALPAT is David Kranich, 222-4084.

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

1. 88th Ave Reconstruction Project (88th Ave Water Trans Main):
   AWWU Project #0000002551,
   AWWU Project Manager – Greg Garney, phone 564-2784

2. 84th Ave Upgrade - Lake Otis Pkwy to Spruce St:
   MOA Project #02-002
   MOA Project Manager – Steve Gillette, phone 343-8173

3. Lake Otis Parkway and 68th Avenue Intersection Highway Safety Improvement Project.
   MOA Project Manager - Lee Coop, phone 343-8406

4. Abbott Loop Extension
   ADOT&PF Project #56559
   ADOT&PF Project Manager – Jim Childers, phone 269-0544
   ADOT&PF Resident Engineer – Mike Gault, phone 269-0450

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.
(02/01/00)R175M98

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)

Special Provisions

105-1.13 MAINTENANCE DURING CONSTRUCTION. Add the following: Inspect and clean storm drain sumps and petroleum manholes during the construction season and before winter shutdowns. *** Deleted Text *.**

(02/01/00)R4M98

Replace the third paragraph with the following: Unless specified under these special provisions, the Engineer may suspend the work when adverse winter weather conditions make it impractical to secure the desired results. The Contractor is responsible for all maintenance costs during the winter suspension period, unless all of the provisions of this section are fulfilled. If the Engineer determines that all required conditions are met, the Department will perform the routine winter maintenance during the winter suspension period, until you are ordered to resume work. During the winter suspension period, routine winter maintenance shall include and is restricted to the following:

1. Maintaining the traveled way and/or detour surface;
2. Maintaining drainage facilities, except final cleaning of storm drains; and
3. Maintaining access to abutting properties

The Department will assume no other responsibilities.

The Engineer will issue a letter of "Acceptance for Winter Maintenance" that lists all portions of the work that the Department will maintain during the winter suspension period. The Contractor is responsible for maintaining all other portions of the work. The Department will not accept maintenance responsibilities for incomplete work adjacent to roads accepted for winter maintenance.

If, in the opinion of the Engineer, the Contractor has completed all of the following requirements, then the Department will assume winter maintenance responsibilities as outlined above.

The Contractor shall stage all operations to assure the work is sequenced in a manner such that suitable maintenance conditions are established prior to the winter suspension period. Suitable maintenance conditions are determined by the Engineer and include, but are not limited to, a safe, smooth, and unobstructed travel way through the construction area (at or near the final grade of the proposed work), well-established and functional drainage facilities, and proper access to abutting properties and display the following characteristics prior to winter suspension:

1. Pave areas in their final condition as part of the contract.
2. Pave drainage ways with curb and gutter, valley gutter, paved shoulders or paved swales in their final condition as a part of the contract. For temporary drainage

facilities to be accepted for winter maintenance, Contractor shall provide functional collection points included in the project design.

3. Illumination, traffic signals, and signing are in proper working order.
4. Return to full operation all existing roads affected by the work.

The Contractor shall meet with the Engineer during the week prior to September 15th to outline the work to be completed before winter suspension. At the meeting, the Contractor shall provide a written plan describing the work to be completed prior to the winter suspension period, including an updated progress schedule, clear definitions of the work underway and the proposed condition of each element of the Work at the time of the anticipated winter suspension.

Prior to winter suspension, the Contractor shall, at his own expense, do all work necessary to establish suitable maintenance conditions. The Contractor shall then schedule a field review for acceptance by the Engineer for winter maintenance. Within two days following the field review, the Engineer will prepare a punch list of deficiencies the Contractor shall correct prior to acceptance for winter maintenance. In order to relieve Contractor's responsibility for winter maintenance costs, Contractor shall correct all items on the punch list by October 10th to the satisfaction of the Engineer. During this period, the Contractor may continue the work in a manner that results in suitable conditions for winter maintenance.

If, after September 20th, the Contractor has not presented a written winter suspension plan, or at any time in the opinion of the Engineer the Contractor does not appear to be preparing the work for winter suspension in a reasonable manner, or if the Contractor fails to correct punch list items for winter suspension, the Engineer will:

1. Direct the Contractor to complete the work required to prepare for winter suspension at the Contractor's expense; or
2. Direct the Contractor to complete all winter maintenance that may be necessary in deficient areas at the Contractor's expense; or
3. Complete the work required to prepare for winter suspension with the Department's forces or a separate contractor at the Contractor's expense; or
4. Complete any or all winter maintenance with the Department's forces or a separate contractor at Contractor's expense.

Costs incurred by the Department due to the Contractor's failure to prepare the work for winter suspension shall be borne by the Contractor.

All existing roads affected by this project shall remain in full and safe operation for the benefit of the traveling public throughout the winter suspension period.

Standard Modification

105-1.16 FINAL ACCEPTANCE AND RECORD RETENTION. Modify the first paragraph, Item 4., after: "DOLWD" add: and State Department of Revenue. (06/30/04)E19

Special Provision

105-1.17 CLAIMS. Add the following Any appeal 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)S13

Standard Modification

106-1.02 MATERIAL SOURCES.

1. a. General. Within Item a. delete text and replace with: Utilize Useable Excavation according to subsection104-1.04 before using material sources listed in subsection106-1.02.4. 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 subsection104-1.04 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)

Special Provisions

106-1.02 LOCAL MATERIAL SOURCES. Add the following under Item 1. General. "Hard Aggregate" or sources having aggregate whose Nordic Abrasion values specified in Section 703 can be obtained from but not limited to the following:

1. Cantwell, Alaska or on the Denali Highway (contact Regional Geologist Craig Boeckman 269-6200 for details on location and ownership)

2. Glacier NW Pioneer Aggregate site in Dupont, WA (http://www.glaciernw.com)

3. CEWE LTD Coquitlam, BC (http://www.cewe.com)

Standard Modification

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 Interim Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Alaska Region, February 2006. 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.

The Contractor shall provide a copy to the Engineer, of all permits or clearances received before Contractor's use of any site outside the project limits. Additionally, the Contractor shall provide the Engineer a written statement that the Contractor has obtained all necessary permits or clearances. The Contractor shall also provide a written statement to the Engineer listing agencies or offices contacted that responded that required no additional action from the Contractor.

The Contractor shall obtain an Endangered and Threatened Species Clearance from the U.S. Fish and Wildlife Service for sites being used outside the project limits.

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.
(05/29/02)R7M98

107-1.07 ARCHAEOLOGICAL OR HISTORICAL DISCOVERIES. Change the first sentence to the following: When operations encounters historic or prehistoric artifacts, burials, remains of dwelling sites, paleontological remains, (shell heaps, land or sea mammal bones or tusks, or other items of historical significance), cease operations immediately and notify the Engineer. (05/29/02)R7M98

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

107-1.11 PROTECTION AND RESTORATION OF PROPERTY AND LANDSCAPE.
Add the following: If required water for construction purpose from a non-municipal 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)R7M98

Add the following: Before work, the Contractor shall schedule a walk-thru of the project with the City Horticulturist to review potential impacts to existing landscape materials (tress, shrubs and groundcovers). The Contractor shall outline measures for physical protection, such as fencing around the tree driplines. If physical protection is not feasible, the Contractor shall provide provisions for relocation and/or replacement of impacted landscape materials. No payment will be made for protection of existing landscape materials. This work will be considered a subsidiary contract obligation.

Add the following: In regards to the roadway work adjacent to Lake Otis Parkway, from Station 66+50 to Station 68+50 Left (Parcels Nos. 5 & 6), commonly referred to as the Car Wash, the following requirements shall be incorporated into the Contractor's Work Plan:

1. The Contractor shall provide the Car Wash with 10-days written notice of intent to begin reconstruction of the driveway approach to the business and shall paint survey locates that show the most westerly extent of driveway apron area to be disturbed during the driveway reconstruction.

2. The Car Wash will obtain the services of a mechanical contractor to locate, sawcut, and disconnect that part of the existing glycol heated system that lies beneath the driveway apron that is to be reconstructed. The mechanical contractor shall coordinate with the Contractor in order to accomplish this disconnection process. (This step may require that the Contractor assist the mechanical contractor with certain concrete removal operations after the sawcutting is performed to allow proper disconnection.)

3. Once the existing glycol piping beneath the driveways has been disconnected by the mechanical contractor the Contractor will remove and dispose of the remaining apron concrete out to the curb, and the disconnected glycol piping beneath it, and any insulation found. The Contractor will then regrade the driveway in preparation for the reconstruction of the driveway apron at the new grade. (The extent of this regrading shall be coordinated with the mechanical contactor in order to allow the new insulation and glycol piping to be installed at a proper depth.)

4. Once regrading is completed by the Contractor, the mechanical contractor will install the new insulation and glycol piping on the newly graded driveway foundation. Upon completion of this work, the mechanical contractor will pressure test the system in the presence of the Contractor and the Engineer.

5. Upon the completion of successful pressure testing, the Contractor shall pour the new concrete apron in the presence of the mechanical contractor and the Engineer.

Add the following: In regards to the roadway work adjacent to 72nd Avenue, from about Station 180+25 to Station 183+70 Left (Parcel No. 4), commonly referred to as the Sisters of Perpetual Adoration, the following requirements shall be incorporated into the Contractor's Work Plan:

1. The driveway shall not be blocked during installation of the landscaping.

2. Use of the portion of the parking lot in the temporary construction permit area shall only be used for activities in support of the replacement landscaping installation as noted in the Special Agreement Memorandum and its use for that purpose is limited to such activities as loading and unloading of materials and equipment. No equipment shall be stored in the parking lot and no materials will be stockpiled in the parking lot unless specifically approved in advance in writing by the Permitter. Any parking of vehicles in the parking lot during the landscaping activities shall be approved in advance by the Permitter. This permit shall not be used in support of landscaping activities within the road right-of-way or within the slope easement.

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

108-1.03 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. See also Section 646. (12/13/02)R261M98

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

1. Long Lead Items. The Contractor shall provide the Engineer with copies of purchase orders for electrical items (poles, mast arms, and load centers) within 20 calendar days after receipt of Notice to Proceed. Include the estimated delivery date to Anchorage, Alaska for electrical items in the Purchase Order.

   Upon delivery of electrical items, the Contractor shall provide a copy of the delivery order to the Engineer. The Contractor has 45 days from delivery of electrical items to complete associated work. If the project is not completed within the 45 days, liquidated damages will be assessed at 25% of values according to subsection108-1.07 Failure to Complete on Time.

   The Contractor is responsible for maintenance of the project until Contract Time is suspended or the project is completed.

108-1.07 FAILURE TO COMPLETE ON TIME. Delete Table 108-1 and the 1st sentence of the 1st paragraph and substitute the following: For each calendar day that the work remains incomplete after the interim completion date or the final completion date, the liquidated damages per day given in the table below shall be deducted from any monies due the Contractor.

COMPLETION LEVEL OR PHASE	COMPLETION DATE OR TIME LIMT	DAILY CHARGE
Phases 1-3	October 15, 2007	$1,250
Phase 4	October 15, 2007	$1,000
Phase 5 and Final	45 calendar days / July 1, 2008	$2,500

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

109-1.07 PAYMENT FOR MATERIAL ON HAND. Add the following: The location of stockpiled materials for payment in acceptable storage facilities off the project will be in Alaska, at a location acceptable to the Engineer. (09/01/89)R16

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 subsection105-1.16. (06/30/04)E11

Add the following Section:

SECTION 120

DISADVANTAGED BUSINESS ENTERPRISE (DBE) PROGRAM

Special Provisions

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 Engineer makes the determination of CUF 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 according to 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 Subsection120-3.02 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 according to §§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 subsection120-3.02 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 the Engineer approves a DBE replacement, 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 judgement to replace a DBE. If the Contractor is unable to find replacement DBE participation and has adequately performed and documented the Good Faith Effort expended according to Subsection120-3.02.

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) before 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 before 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. The bidder may reject non-competitive DBE quotes. 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.

2. **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. The bidder must exercise such an opportunity 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 DBE Liaison Officer will make the decision on reconsideration.

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 according to 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 before 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) Unless the Engineer's approval is given before subletting, use the same unit of measure as contained in the Bid Schedule for subcontract work, with the exception of truck hauling.

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, according to 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 (Subsection120-3.02, Items c through h) to replace it with one from a currently certified DBE for that same work or service through subcontractor substitution (Subsection103-1.01); 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 (Subsection120-3.02, 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 according to items c through h of Subsection120-3.02 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 according to 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 Subsection120-3.04 item 3), the Department will also consider this unsatisfactory work.

Unsatisfactory work may result in disqualification of the Contractor from future bidding under Subsection102-1.13 and withholding of progress payments consistent with Subsection109-1.06.

(11/17/00)S 33

SECTION 202

REMOVAL OF STRUCTURES AND OBSTRUCTIONS

Special Provisions

202-1.01 DESCRIPTION. Add the following: This work also consists of pavement planing as specified in this section. (2/28/01)R143USC

202-3.06 PAVEMENT PLANING. Add the following Subsection: Remove existing asphalt concrete pavement by cold planing at locations shown on the Plans. The surface of the pavement after Planing on Lake Otis Parkway shall be uniformly rough grooved or ridged.

If the pavement removed from the existing roadway is not to be used as Item 301 Aggregate Base Course then the Planed material shall be removed and stockpiled. **Stockpile unused portions of planed material from 88th Avenue at the Anchorage maintenance yard located at Tudor Road. Coordinate with John Mendenhall, Anchorage Area Maintenance Foreman at (907) 338-1426 for acceptance of material and desired location of stockpile.** Stockpile **unused** planed material **from remaining roadways, including Lake Otis Parkway,** at the Municipality of Anchorage maintenance yard. Coordinate with Dan Southard, Street Maintenance Manager, at 343-8277 for acceptance of material and desired location of stockpile.

Planed material not acceptable to the maintenance chief will be disposed of in an acceptable manner or incorporated into the road structural prism as directed by the Engineer. Disposal areas shall be outside the project limits and according to Subsection202-3.05, Removal of Pavement, Sidewalks and Curbs. For disposal of waste asphalt pavement, the Contractor shall obtain a solid waste disposal permit from the State of Alaska Department of Environmental Conservation (DEC) or use a site previously approved by DEC for disposal of removed asphalt. A DEC permitting officer in Anchorage may be contacted at 269-7590. Obtain written permission of the property owner before disposal.

During the planing operation, sweep the streets with mechanical sweepers equipped with vacuum and water sprinkling devices to control dust and remove all loosened material from the planed areas. The removal operation shall follow within 50 feet of the planing machine.

Do not allow traffic to travel on surfaces that have an abrupt longitudinal planed edge greater than 2 inches. In the event that it is necessary to route traffic across such edges, an asphalt concrete transition 2 feet in width shall be placed adjacent to the edge and to all gutters.

Maintain a tolerance of 0.1 foot between adjacent passes by the planer.

Remove existing asphalt concrete pavement overlay from gutters adjacent to the area being planed.

The existing curb and gutter not designated for removal shall not be damaged or disturbed. Any damage caused by the planing operation shall be removed and replaced by the Contractor at his expense.

The planing machine shall be specifically designed for the removal of bituminous pavement without the addition of heat. The cutting drum shall be a minimum of 5 feet wide and shall be equipped with cutting teeth placed in a variable lacing pattern to produce the desired finish.

The planing machine shall have the following capabilities:

1. operating speeds from 0 to 40 feet per minute,
2. self propelled,
3. able to spray water at the cutting drum to minimize dust,
4. able to remove material next to the gutter,
5. designed so that the operator can at all times observe the planing operation without leaving the controls,
6. adjustable as to slope and depth,
7. longitudinal grade control automatically actuated by the use of a 30 foot ski, and
8. able to cut up to 3 inches without producing fumes or smoke.

Provide a smaller machine to trim areas that are inaccessible to the larger machine at manholes, valve covers, curb returns, and intersections.

Add the following subsection:

202-3.07 ADJUST MONITORING WELL. Adjust existing monitoring well by raising or lowering flush mount housing, and removable watertight lid. Lowering the top of steel casing and cap shall be accomplished by cutting and removing a portion of the existing steel casing. Raising the top of steel casing and cap shall be accomplished by welding a short pipe section to the existing steel casing. The new casing section shall match existing. Top of steel casing should be 4" above finished grade. Place soil around flush mount housing and removable watertight lid and grade at 2:1 slope away from top of flush mount housing or as directed by the Engineer. The finished grade shall be constructed so that there is positive drainage away from the monitoring well in all directions. Contractor shall exercise caution, as there could be flammable or hazardous materials present.

202-5.01 BASIS OF PAYMENT. After the third paragraph, add the following:

Item 202(15A) At the contract price per square yard. Payment is full compensation for mechanical sweepers during planing operations, removal of pavement from the gutter and stockpile of planed material per subsection 202-3.06.

Replace any Loop detectors damaged by the planing operation according to Section 660. Replace damage loop detectors at no additional expense to the Department. If loops are encountered within the planing depth specified in the plans, their replacement will be measured and paid as Item 660(11) Traffic Loop (or under Section 109-1.05, Compensation For Extra Work).

2/28/01)R143USC

Item 202(21) At the contract price per unit specified.

Payment will be made under:

Pay Item	**Pay Unit**
202(6A) Removal of Storm Drain Manholes	Each
202(15A) Pavement Planing, 1.5-inch depth	Square Yard
202(21) Adjust Monitoring Well	Each

SECTION 203

EXCAVATION AND EMBANKMENT

Special Provision

203-3.01 GENERAL. Add the following: Wait a minimum of 48 hours after staking is complete before commencing excavation activities. The Engineer, after staking by the Contractor, may adjust stationing of sections for best fit without additional compensation to the Contractor.

Add the following Subsections:

203-3.07 WATER SAMPLING. If the water table is encountered during excavation of a contaminated material area, the Contractor will be required to retain an independent test laboratory to collect water samples from the water table at the locations directed by the Engineer. Samples shall be tested, or stored for future testing at the Engineer's option, according to the appropriate current EPA test methods. Samples not tested by project completion may be disposed. Transmit the results in writing directly to the Engineer.

During excavation, samples shall be taken and tested at intervals as directed by the Engineer (ie: hourly, daily, or weekly) depending on the adjacent operation. After completion of the work final samples shall be obtained and tested.

203-3.08 CONTAMINATED MATERIAL TESTING. This work shall consist of testing soils for contaminants. Each truckload of soil imported from a suspected site or other locations at the direction of the Engineer shall be examined for contamination.

According to Subsection203-3.09, Excavation of Contaminated Material, the Contractor shall retain an independent test laboratory to conduct the following tests:

1. Field Tests

    a. Organic Vapor Analyzer (OVA) Analysis
    b. Visual Analysis (Petroleum Odor)

2. Laboratory Tests

    a. Volatile Aromatic Hydrocarbons
    b. Total Petroleum Hydrocarbons

The Contractor shall verbal give the test results to the Engineer immediately. The Contractor shall transmit the test results in writing directly to the Engineer.

The Contractor shall obtain the services of a hazardous waste professional to conduct field testing using an organic vapor analyzer (OVA) or equivalent equipped with a photoionizing detector (PID), or other approved DEC instrument. The Contractor shall submit the name of the hazardous waste professional to the Engineer at the preconstruction conference. The hazardous waste professional shall be available at all times hauling is in progress to conduct the required field tests.

The hazardous waste professional shall sample and test according to standard DEC approved testing procedures. If an OVA response indicates the presence of any contamination, the soils will have failed the test and will be designated as contaminated. If no response is observed, the soil will be examined for odor. If a petroleum odor is detected, the soils will fail the test and will be designated as contaminated. If no petroleum odor is detected, the soil will be considered to have passed field criteria.

The hazardous waste professional shall be responsible for ensuring soils exhibiting an OVA response that indicate the presence of any contamination, or soils exhibiting characteristics of fuel contamination (i.e. odor, sheen, or stain), are identified to the Engineer.

Contaminated material will not be accepted for borrow and shall be immediately removed from the site.

The OVA will be calibrated at the beginning and end of each day and after every four (4) hours of use.

203-3.09 EXCAVATION OF CONTAMINATED MATERIAL. This work shall consist of removing and disposing of fuel contaminated soils encountered during the excavation. Disposal of fuel contaminated soils shall be at a location approved by the Engineer.

1. Determining Limits of Contaminated Soil. The exact limits of potential contaminated soil within the excavation can not be determined until the material is exposed. Once exposed, the soil shall be tested according to Subsection203-3.08, Contaminated Material Testing. Testing will verify the contamination levels in the soils and determine if the soils can be disposed of as unclassified excavation or if they will require special handling. Soils that have a response from photoionizing detector or equivalent instrument of 1 part per million or more above background are considered to be "contaminated" and will require special handling and shall be disposed of according to this Subsection.

2. Worker Health and Safety. Before the excavation of any soils identified as contaminated, the Contractor shall assure the personnel working in the area of potential contamination have received the State of Alaska, Department of Labor, Health and Safety Training. The Contractor shall provide the Engineer a list of the personnel and subcontractors that will be working within the area identified as being potentially contaminated.

The Contractor shall notify personnel and subcontractors, before their beginning work at the site, they will be working in an area identified as being potentially contaminated with petroleum fuel.

3. Contaminated Soil Removal and Segregation. In the event the Contractor must stockpile contaminated soil, a liner, cover and temporary fencing will be required. The size and location of the liner shall be as approved by the Engineer. The Contractor shall cover and secure the stockpile at the end of each work day. The Contractor shall be responsible for removal of the stockpile liner, safety fence, and cover once the fuel contaminated soil is removed.

   The method of disposal shall be according to Department of Environmental Conservation guidelines for reducing BTEX or TPH in soils. Additional testing required at the disposal site shall be done according to Subsection203-3.08, Contaminated Material Testing, unless otherwise directed by the Engineer.

   Before the Contractor backfilling the excavation, random samples from the excavation (bottom and sides) shall be taken for confirmation testing. Backfill within the limits of planned excavation shall meet the requirements for the item of work involved. Backfill outside plan excavation limits shall meet the requirements of Select Material, Type C or better.

4. Responsibility. With respect to preexisting hazardous substances or contaminated materials in the project area, nothing in this contract is intended to impose upon the Contractor, or to require the Contractor to assume, the status under state or federal environmental law of a facility owner or operator, or an owner or generator of those preexisting hazardous substances or contaminated materials. The Contractor is advised, however, the Contractor shall assume the responsibility to obtain administrative approvals and to coordinate the activities with the Alaska Department of Environmental Conservation and/or any federal agency having jurisdiction, to carefully abide by the applicable laws, regulations, and the terms of any administrative approvals, and to otherwise use environmentally sound management practices such that the Contractor does not, as a result of its own actions, become a facility owner or operator, or an owner or generator of hazardous substances by reason of an unpermitted release of hazardous substances.

203-4.01 METHOD OF MEASUREMENT. Add the following:

Water sampling and contaminated material testing shall be reimbursed based on paid receipts for the authorized sampling and testing.

Providing a hazardous waste professional to test for contaminated soils will not be measured for payment. Testing soils to determine contamination will be measured for payment under Item 203(29), Contaminated Material Testing.

Item 203(28), Fuel Contaminated Soil Special Handling, will be measured for payment on a time and materials basis according to Subsection109-1.05, Compensation for Extra Work on Time and Materials Basis. Backfilling within the plan excavation limits will not be measured for payment but will be subsidiary to the respective items of work. Backfilling outside plan excavation limits will measured for payment as embankment construction.

203-5.01 BASIS OF PAYMENT. Add the following: Payment for authorized water sampling and contaminated material testing will be made on the receipts for authorized tests plus 15 percent, and shall be considered full compensation for the labor, equipment, and materials required to obtain samples and have tests performed. A change order will not be required to initiate water sampling or contaminated material testing.

Excavating and disposing of fuel contaminated soil will be paid under Item 203(28), Fuel Contaminated Soil Special Handling. The Contractor will be paid on a time and materials basis for authorized Work according to Subsection109-1.05. Backfilling within plan excavation limits will be paid for under the items of work involved at the prices bid for that work. Backfilling outside plan excavation limits will be paid for as embankment construction according to this Section.

No separate payment will be made for providing the hazardous waste professional, this will be subsidiary to Item 203(29), Contaminated Material Testing.

Add the following pay items:

Pay Item	Pay Unit
203(28) Fuel Contaminated Soil Special Handling	Contingent Sum
203(29) Contaminated Material Testing	Contingent Sum
203(30) Water Sampling	Contingent Sum

(06/21/04)R149USC04

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)

SECTION 301

AGGREGATE BASE AND SURFACE 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.

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: 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)R176USC02

Replace Section 401 with the following:

SECTION 401

HOT MIX ASPHALT AND SURFACE TREATMENTS

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.

Prelevel areas of the existing pavement on the Highway that have been marked by the Engineer. The marked preleveling areas may vary from those indicated in 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.

No testing is required for the preleveling material. The Engineer will inspect and accept this material.

Standard Modification

Contractor Mix Design. If a bid item for Job Mix Design, Item 401(8), appears in the contract, perform a Job Mix Design following the requirements specified above. The Job Mix Design must be stamped with the seal of, dated by, and signed by a Professional Engineer registered in the State of Alaska. Furnish the Job Mix Design to the Engineer at least 15 working days before the production of asphalt concrete mixture. Submit samples to the Engineer, upon request, for Job Mix Design verification testing. Do not produce asphalt concrete mixture for payment until the Job Mix Design is approved.

E50(01/27/07)

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.

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. The Contractor shall fill ruts with Preleveling Hot Mix Asphalt, Type IV, Class B.

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.

Use pneumatic tire rollers to compact Preleveling Hot Mix Asphalt Concrete, Type IV, Class B.

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 401-4.05.

401-3.15 SURFACE TOLERANCE. Rutted pavement sections that have been Preleveled with Hot Mix Asphalt, Type IV, Class B shall be tested after rolling at selected locations using a 10 foot straightedge. Correct variations from the testing edge, between any two contacts, of more than 3/16 inch. The preleveling material shall be no greater than 1/2 inch higher than the existing pavement at the edges.

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 according to the 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.

Item 401(14) will be measured by the lane station. A lane **station** is defined as 12 **feet** wide containing two ruts **100 feet** long.

Crack Repair. Repair of cracks shall be measured by the foot of crack length, cleaned and sealed, from end to end independent of crack width or depth. Leveling course material used for repair of cracks, depressions and pavement peeling shall be measured by the ton of material placed.

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 (and for 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 in accordance with 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 in accordance with 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.

401-4.03 EVALUATION OF MATERIALS FOR ACCEPTANCE. The following method of price adjustment will be applied to each type of Hot Mix Asphalt for which 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. 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: $\Sigma (x^2)$ = 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 = $70 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.

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.

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 408(3) Asphalt Price Adjustment, 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.

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.

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.
    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.

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

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.

Price adjustments will not apply to:

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

Payment for furnishing and installing joint adhesive will be paid as 401(9) Longitudinal Joint Adhesive and Sealing.

The anti-stripping additive and asphalt cement required for preleveling the highway shall be subsidiary to Item 401(14) Asphalt Concrete, Type IV, Class B.

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.

The Engineer will assess a fee of $2,500.00 under Item 401(6) Asphalt Price Adjustment, 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:

Pay Item	Pay Unit
401(1A) Hot Mix Asphalt, Type II; Class A	Ton
401(2) Asphalt Cement, Grade PG 52-28	Ton
401(6) Asphalt Price Adjustment	Contingent Sum
401(9) Longitudinal Joint Adhesive and Sealing	Linear Foot
401(10A) Repair of Crack, all widths	Linear Foot
401(12) Repair - Leveling Course	Ton
401(14A) Preleveling, Hot Mix Asphalt, Type IV; Class B	Lane Station

R199USC04(02/21/07)

Standard Modification

Add the following:

401-5.02 ASPHALT MATERIAL PRICE ADJUSTMENT.

Asphalt Material Price Adjustment. This subsection provides a price adjustment for asphalt material by: (1) additional compensation to the contractor or (2) 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, 401 thru 408, 608, and 609.

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 in the bid schedule of Sections described in Item 1; and

   b. There is more than a seven and one half percent (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 bi-monthly on the first and third Friday of each month, and will remain in effect from the day of calculation until the next bi-monthly 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 x IB)] x Q
   For a decrease exceeding 7.5%, deduction from contract = [(IB – IPP) – (0.075 x IB)] x Q

Where:

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

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

IPP = Index at Pay Period: the Bi-monthly 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.

7. Basis of payment is:

Pay Item	**Pay Unit**
401(15) Asphalt Material Price Adjustment	Contingent Sum

E55(5/01/07)

Add the following Section:

SECTION 408

HOT MIX ASPHALT (SUPERPAVE)

408-1.01 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.

408-2.01 COMPOSITION OF MIXTURE - JOB MIX DESIGN. Meet the requirements of Table 408-1 for the Job Mix Design performed in accordance with AASHTO R35 except evaluation of moisture sensitivity will determined by ATM 414 and not AASHTO T283.

TABLE 408-1
Hot Mix Asphalt Design Requirements

Design ESALs, millions	0.3 to < 3
Rut Index, max. ATM 419	3

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 broadband limits shown in Table 703-3, for the type of hot mix asphalt specified. For acceptance testing, hot mix asphalt will have the full tolerances in Table 408-2 applied. Except for the No. 200 sieve, the tolerance limit will apply even if falling outside 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 hot asphalt produced from different plants.

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 and the requirements of Table 408-1 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 408-1 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.

408-2.02 AGGREGATES. Conform to subsection 703-2.04.
Use a minimum of 3 stockpiles for crushed hot mix asphalt aggregate (coarse, intermediate, and fine). Place blend material or mineral filler, if any, in separate piles. Additional stockpiles may be required for some material sources to create a Design Aggregate Structure that meets the volumetric requirements of the mix design procedures.

408-2.03 ASPHALT MATERIALS. Conform to subsection 702-2.01, if not specified use PG 64-28.

Provide test reports for each batch of asphalt cement showing conformance to the specifications in Section 702 before delivery to the project. Storage tanks used for the batch shall be noted on the test report, the anti-strip additives required by the mix design shall 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 approval of the Engineer.

Shipping documents shall include the following:

1. Manufacturers certificate of compliance, subsection 106-1.05
2. Conformance test results of 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 materials loaded
6. Type and percent of anti-strip added.

408-2.04 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 percent of the aggregate shall remain coated when tested according to ATM 414.

408-2.05 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 retest under subsection 408-4.02.

Submit a paving and plant control plan at the pre paving meeting to be held a minimum of 5 working days before beginning the 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

408-3.01 WEATHER LIMITATIONS. Do not place 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. Do not place mix after September 15 unless approved by the Engineer in writing.

408-3.02 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.

408-3.03 BITUMINOUS MIXING PLANTS. Meet AASHTO M156. 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.

408-3.04 HAULING EQUIPMENT. Haul hot mix asphalt in trucks having 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 haul vehicle, when directed.

408-3.05 ASPHALT PAVERS. Use self propelled asphalt pavers having a heated vibratory screed. Control with grade and cross slope using 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 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.

Equip the paver with a means of preventing the segregation of the coarse aggregate particles from the remainder of the bituminous plant mix when the 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.

408-3.06 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 asphalt concrete mixtures and reverse without backlash.

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

408-3.07 PREPARATION OF EXISTING SURFACE. Prepare the existing surfaces to conform 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 tamp in place. Clean, wash, and sweep existing paved surfaces of loose material.

Preparation of milled surface.

- Prelevel remaining ruts, pavement delaminations, or depressions having a depth greater than ½ inch with Asphalt Concrete, Type IV (Section 401). 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, Class B (Section 401). Notify the Engineer of pavement areas that might be considered thin or unstable during pavement

Existing paved surfaces shall be must be approved by the Engineer before tack is applied. Clean existing paved surfaces of loose material

Before placing the hot mix asphalt, uniformly coat contact surfaces of curbing, gutters, saw cut pavement, cold joints, manholes, and other structures with tack coat material meeting Section 402. Allow tack coat to break before placement of hot mix asphalt on these surfaces.

408-3.08 PREPARATION OF ASPHALT. Provide a continuous supply of asphalt cement shall be supplied to the mixer at a uniform temperature, within the allowable mixing temperature range noted in the approved mix design.

408-3.09 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 TM 6 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 containing soot or fuel is considered unacceptable according to subsection 105-1.11.

408-3.10 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.

408-3.11 TEMPORARY STORAGE OF ASPHALT CONCRETE MIXTURE. 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.

408-3.12 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 concrete mixture, including leveling courses.

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 thermal profile data will become part of the project record and shared with the Contractor. The Contractor shall immediately adjust his laydown procedures to correct the problem.

Use hand tools to spread, rake, and lute the hot mix asphalt concrete mixture 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.

408-3.13 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 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.

408-3.14 JOINTS. Minimize the number of joints. Place and compact the hot mix asphalt to ensure a continuous bond, texture, and smoothness between adjacent panels of 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 the layer with a power saw or other method approved by the Engineer, or use a removable bulkhead.

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 6 inches from the edge of the stripe.

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

On the final lift, seal the vertical edge of pavement with Crafco Pavement Joint Adhesive No. 34524, Deery Cold Joint Adhesive, or approved equal before completing the longitudinal joint by paving against it. Apply a 1/8 inch, thick band of joint adhesive over the cold mat 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 that 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 and free of moisture. Longitudinal joint sealing shall be per 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 and evaluated for joint density.

Longitudinal joints will be evaluated for acceptance according to subsection 408-4.05.

408-3.15 SURFACE TOLERANCE. The Engineer will test the finished surface after final rolling at selected locations using a 10-foot or straightedge. Correct variations from the testing edge, between any two contacts, greater than 1/4 inch.

The Engineer will measure the surface smoothness of the top layer of hot mix asphalt 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 Asphalt Concrete 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 previously 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.

408-3.16 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. Coat edges with a tack coat meeting Section 402 and allow to cure. Place and compact fresh hot mix asphalt according to subsection 408-3.13 to grade and smoothness requirements.

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

408-4.01 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 antistripping additive.

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

Asphalt Price Adjustment. Calculated by quality level analysis under subsection 408-4.03.

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 AASHTO 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.

   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 cement 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 cement content specified in the Job Mix Design.

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

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

Longitudinal Joint and Joint Adhesive. By the lineal foot.

408-4.02 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 408-4.03, 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 5000 tons, the Contract quantity will be considered 1 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 quantities of 300 tons or greater will be treated as an individual sublot. The lot will be evaluated for price adjustment according to subsection 408-4.03 except as noted.

For Contract quantity of less than 1,500 tons, (or for 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 Content. Hot mix asphalt 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 WAQTC FOP for AASHTO T168 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 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 AASHTO 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. Cut 6 inch diameter core samples for assurance testing as directed 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 408-2 may be requested provided the quality control requirements of 408-2.05 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, when gradation or asphalt cement content are determined from the same sample retesting for gradation or asphalt cement content 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 the 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 408-4.03. Asphalt cement pay reduction factors for each sample will be determined from Table 408-4. 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 408(3) Asphalt Price Adjustment.

408-4.03 EVALUATION OF MATERIALS FOR ACCEPTANCE. The following method of price adjustment will be applied to each type of Hot Mix Asphalt for which the contract quantity equals or exceeds 1,500 ton, except as defined in subsection 408-4.02.

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 hot mix asphalt. If a test results fail to meet specifications, no payment will be made and the cost of the testing will be subtracted under Item 408(3) Asphalt Price Adjustment. 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 a sieve size on a gradation 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. 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 all 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: $\Sigma (x^2)$ = 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 408-2. 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 408-2
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
Density %	92	98

Note 1.Tolerances for the No. 200 sieve may not exceed the broadband 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 408-3 gives the weight factor (f) for each sieve size and asphalt cement content.

TABLE 408-3
WEIGHT FACTORS

Sieve Size	Type I	Type II, V, VH	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 per ton = $55 per ton

Table 408-4
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				0.71-0.87	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	>1.076
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 408-4

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 408(3) Asphalt Price Adjustment, 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.

408-4.04 EVALUATION OF PAVEMENT FOR 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 (408-4.03)
PQ = Final quantity of Hot Mix Asphalt
PrI = Final measured hot mix asphalt smoothness, inches/mile
SF = Smoothness Factor

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

The smoothness price adjustment will be applied under Item 408(3) Asphalt Price Adjustment.

408-4.05 EVALUATION OF LONGITUDINAL JOINTS FOR ACCEPTANCE. 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 averages of the joint densities on a project and determined as follows:

1. If project average joint density is less than 91% MSG, the following disincentives apply:

   Longitudinal joint density price adjustment equal to $3.00 per lineal foot is deducted under Item 408(3) Asphalt Price Adjustment.

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

   Longitudinal joint density price adjustment equal to $1.50 per lineal foot is added under Item 408(3) Asphalt Price Adjustment.

408-5.01 BASIS OF PAYMENT. Anti-stripping additives and tack coat are subsidiary to the hot mix asphalt.

Payment for furnishing and installing joint adhesive and sealing pavement adjacent to the joints will be paid as 408(4) Longitudinal Joint Adhesive and Sealing.

The accepted quantity will be paid for at the adjusted contract unit price for the pay item listed below, complete in place.

The Asphalt Price Adjustment will be the sum of the price adjustments for each lot, and for fees accrued for failure to cut cores and/or backfill voids left by sampling in the allotted time as outlined in subsection 408-4.02.

The Engineer will assess a mix design fee of $2,500.00 under Item 408(3) Asphalt Price Adjustment for each mix design subsequent to the first approved Job Mix Design for each Type and Class of Hot Mix Asphalt specified.

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 408(3) Asphalt Price Adjustment.

Price adjustments will not apply to:

1. Asphalt Concrete Mixture for leveling course
2. Temporary Pavement

Payment will be made under:

Pay Item No.	Pay Item	Pay Unit
408(1A).	Hot Mix Asphalt, Type V	Ton
408(2)	Asphalt Cement, PG 64-28	Ton
408(3)	Asphalt Price Adjustment	Contingent Sum
408(4)	Longitudinal Joint Adhesive and Sealing	Linear Foot

R274USC04(01/24/07)

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.

Replace Section 511 with the following Section:

SECTION 511

RETAINING WALLS

Special Provisions

511-1.01 DESCRIPTION. Construct or reconstruct one or more of the following retaining wall systems at locations shown on the plans:

1. Timber Retaining Wall

TIMBER RETAINING WALL

1. General

A. This work shall consist of removing and salvaging part of an existing railroad tie/timber retaining wall, removal and disposal of excavated materials, and design and construction of a replacement timber wall as shown on the plans. Construction of the new timber wall shall include preparation of a suitable gravel foundation or footing, installation of new or salvaged timber, placement and compaction of backfill. The existing wall is located at the southeast quadrant of Lake Otis Parkway and 72nd Avenue.

B. Replace existing materials damaged during the removal, salvage, and reconstruction of the timber retaining wall with new timber materials, matching size and appearance.

511-2.01 MATERIALS.

TIMBER RETAINING WALL

1. Materials.

A. Replace existing materials damaged during the removal, salvage, and reconstruction of the timber retaining wall with new timber materials, matching size and appearance.

511-3.01 CONSTRUCTION.

TIMBER RETAINING WALL

1. Clearing And Grubbing. Clear and grub to conform to the applicable portions of Section 201.

2. **Excavation.** Make excavations for retaining walls large enough to allow working space for compacting backfill. Dispose of excess excavated material away from the project area.

3. **Reconstructing Timber Retaining Wall.**

a. Carefully remove and salvage existing timber/railroad tie retaining wall units to the lines and grades shown on the plans. Submit complete working drawings for the reconstructed timber wall according to the provisions in Subsection105-1.02 of the Standard Specifications. Verify the existing ground elevations at the site before preparing the final working drawings. Allow the Engineer 2 weeks to review the working drawings after a complete set of working drawings are submitted.

b. All new timber/railroad ties shall be pressure treated, grade#1. Timber/ railroad ties shall be straight or slightly bowed, and have at least three good sides. The ties shall be solid with no visible dry rot, only a minor amount of splitting or cracking, and no plates or spikes attached.

c. All spikes shall be 60d or equivalent, corrosion resistant, and driven into predrilled holes. Spikes shall be of sufficient length to penetrate the base member a minimum of 2".

d. Member joints shall be staggered a minimum of 3 to 6 inches from joints of the layers above and below.

e. Treat all end cuts with an acceptable wood preservative.

f. Method of construction and height shall be similar to existing.

g. Countersink all rebar at joints.

h. All spikes, connectors, and tieback materials shall be corrosion resistant.

i. When directed by the Engineer, cut threaded connectors flush with bolts. File burrs.

j. Backfill shall be placed in such a manner as to avoid any damage or disturbances of the wall materials or misalignment of the timber wall units. Any wall materials that become damaged during the removal and installation process shall be removed and replaced at the Contractor's expense. The Contractor shall correct any misalignment or distortion of the timber wall units due to placement of backfill outside the limits of this specification.

k. Use a lightweight mechanical tamper, roller, or vibratory system with at least three passes to achieve compaction within 3 feet of the face of the wall.

l. Protect all structures, fences, trees, shrubbery, etc...to remain during the work. Remove and dispose from the site all cuttings, excavated, salvaged, and unused materials. After completing the work, restore the site as nearly as possible to its original condition.

511-4.01 METHOD OF MEASUREMENT.

Reconstruct timber retaining wall will not be measured for payment.

511-5.01 BASIS OF PAYMENT.

Reconstruct timber retaining wall at the contract lump sum price for all labor and materials to reconstruct the timber retaining wall as shown in the plans.

Payment will be made under:

Pay Item	Pay Unit
511(4) Reconstruct Timber Retaining Wall	Lump Sum

SECTION 604

MANHOLES AND INLETS

Special Provisions

604-3.01 CONSTRUCTION REQUIREMENTS. Add the following after the first paragraph: Any proposed access manhole that falls within a concrete sidewalk or asphalt pathway must have a lid with a rough cobbled grit surface, or be specifically designed to hold a minimum of 1-inch of concrete or asphalt, as applicable.

Under the heading "Reconstruct existing manhole by using one or more of the following methods," add the following:

8. Remove and dispose of the existing reducing slab and adjustment rings and install a new cover slab.

Add the following: Notify the Engineer a minimum of five (5) days before removing the frame and grate. The Engineer will notify M&O and have an M&O representative physically identify frames and grates to be salvaged. Deliver frames and grates designated to be salvaged to the local Municipality of Anchorage M&O yard. Frames and grates not designated for salvage shall become the Contractor's property.

If manhole metal castings or dust pans and lids are removed for adjustment, AWWU will provide new replacement materials to the Contractor. These items are available for pickup at AWWU's warehouse. Contact Brian Baus at 564-2765, 3 working days in advance of need to schedule pickup.

When installing new pipe in an existing manhole, cleanly cut a hole by approved means at the invert elevation given on the Plans and 2 inches larger than the outside diameter of the new pipe. Then, grout joint with non-shrinking cement mortar.

Curb inlet structures shall have a 3-inch formed hole approximately 2 feet below the top of casting on the project centerline side to provide for direct drainage during subgrade construction to avoid embankment saturation. Keep the openings functional. This may require temporary dikes, RMC extensions, etc., as necessary. Fill these holes with grout upon final paving.

Cast standard drainage structure steps during structure pour or install them before concrete hardens.

Add the following: Probe the manholes with a calibrated bar. If 50% or more of the manhole sump is filled with the debris, remove the debris. Remove debris from catch basins and inlets regardless of the quantity of debris. No more than 5%-10% of debris should remain. Remove debris (sticks, plastic bags) blocking culvert inlets and outlets. Record the

date of inspection, the depth of sediments, and whether the manhole was cleaned or not in a grid map book provided by the Engineer.

The Contractor shall provide equipment that is capable of cleaning storm drains. The equipment shall be inspected and accepted by the Engineer before use on this project. The Contractor shall provide traffic control while cleaning storm drains.

The work shall include disposal of silt, trash, debris and other material removed from the system. This material may be disposed at the Municipality of Anchorage Hazardous Materials Waste Disposal site.

604-4.01 METHOD OF MEASUREMENT. Add the following: Frames, grates, and lids will not be measured for payment.

Add the following: Item 604(20) Clean Drainage System, will be measured in the manner specified in the directive authorizing the work.

604-5.01 BASIS OF PAYMENT. Add the following: Frames, grates and lids are subsidiary to the drainage structure. (09/11/03)R43USC02

Add the following: 604(20) Clean Drainage System, will be made on a time and materials basis according to subsection109-1.05, Compensation for Extra Work. Traffic Control provided to clean storm drains will be paid under the 643 items.

Delete Item 604(1) Storm Sewer Manhole and add the following pay items:

Pay Item	Pay Unit
604(1A) Storm Drain Manhole, Type I	Each
604(1B) Storm Drain Manhole, Type II	Each
604(1C) Storm Drain Manhole, Type III	Each
604(20) Clean Drainage System	Contingent Sum

SECTION 605

UNDERDRAINS

605-4.01 METHOD OF MEASUREMENT. Add the following:

Adjust Existing Subdrain Cleanout. Measurement will be the number of cleanouts adjusted for final grade only.

605-5.01 BASIS OF PAYMENT. Add the following:

Pay Item	Pay Unit
605(8) Adjust Existing Subdrain Cleanout	Each

SECTION 607

FENCES

Special Provisions

607-1.01 DESCRIPTION. Add the following: Moose protection fence consist of steel T posts, cable ties, and nylon netting.

607-2.01 MATERIALS. Add the following: Painted steel T posts shall meet AASHTO M281-96.

Netting will be black nylon with 1-3/4 inch diamond openings. The mesh thickness of the netting shall be 1/16 inch and will have a 125-pound minimum tensile strength. The netting shall have 5/16 inch black polyester rope border.

Cable ties will be colored black, 8-inch long, and rated for a 120-pound minimum tensile strength.

607-3.01 CONSTRUCTION REQUIREMENTS. Add the following: Moose protection fence shall be installed as shown on the plans. Secure each end of the netting border to steel T posts in three locations with cable ties.

607-4.01 METHOD OF MEASUREMENT. Add the following: Moose protection fence will be measured by each installed fence protecting one tree and shall include all installation and disposal of unusable or unsuitable materials for the fence. Where moose protection fence encompasses more than one tree, measurement shall remain the same with payment per tree enclosed.

607-5.01 BASIS OF PAYMENT. Add the following: Payment for moose protection fence shall include all labor, materials and equipment necessary to install and remove the fence.

Add the following pay item:

Pay Item	Pay Unit
607(20) Moose Protection Fence	Each

SECTION 608

SIDEWALKS

Special Provisions

608-1.01 DESCRIPTION. Add the following: This work also consists of constructing asphalt pathway(s) in conformance with the Plans.

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

2. Asphalt Sidewalk and Asphalt Pathway

Asphalt Cement, PG 52-28	subsection 702-2.01
Aggregate, Type II or III	subsection 703-2.04
Mix Design Requirements (ATM 417)	
Marshall Stability, pounds, min.	1,000
Percent Voids, Total Mix	2-5
Compaction, Blows/side	50

(01/24/07)R47USC

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 WARNINGS. 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 same type of detectable warning tile throughout the project. Install the following:

1. Armor-Tile ADA-C Series tactile detectable warning tile made of composite materials, brick red 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.

Detectable warnings shall be manufactured and installed according to the Americans with Disabilities Act Accessibility Guidelines. E40(1/27/07)

Special Provisions

608-3.05 RETROFIT CURB RAMP. Provide labor, materials, and equipment necessary to upgrade existing curb ramps to current ADA design criteria. This work shall include removal and replacement of the existing curb ramp and adjacent improvements (curb and gutter, sidewalk, pathway and asphalt pavement) at locations shown on the Plans. Remove and replace additional existing improvements (curb and gutter, sidewalk, pathway, and asphalt pavement) when directed by Engineer to allow for a better match to existing improvements. Once work to remove the existing curb ramp commences, you will have 6 days to remove the existing curb ramp and construct a new curb ramp in accordance with ADA criteria and details shown on the Plans. If the Contractor does not complete the work on that curb ramp within 6 days, a price adjustment will be assessed to the Contractor as indicated in subsection 643-3.06 Traffic Price Adjustment. The traffic price adjustment will not be applied to removing and replacing existing curb ramps located along 88th Avenue, and at the intersections of Lake Otis Parkway and 88th Avenue, Lake Otis Parkway and Lore Road, and Lake Otis Parkway and 72nd Avenue.

Adjust existing junction box to top of finished grade as required to comply with ADA criteria. Adjustment of junction box will not be measured and shall be considered a subsidiary obligation to Section 660 pay items.

608-3.06 ASPHALT PATHWAY. Construct asphalt pathways and asphalt medians according to Subsection 608-3.02, Asphalt Sidewalks.

608-3.07 IMPRINTED COLORED CONCRETE. Imprinted colored concrete shall be a cast-in-place, colored, textured and imprinted architectural concrete paving as manufactured by Bomanite Corporation, P.O. Box 599, Madera, California 93639-0599, 559-673-2411, www.bomanite.com. Substitutions may be allowed with prior written approval from the Engineer.

1. Description. Imprinted concrete includes:
   a. Materials: Welded wire fabric (WWF), concrete, color hardener, curing compound, and sealer.
   b. Special imprinting and texturing tools.
   c. Concrete placement and finish.
   d. Color hardener and release agent placement.
   e. Curing treatment.
   f. Sealer application.

2. References and Standards. Install Bomanite/Bomacron imprinted concrete in accordance with the standards and specifications of Bomanite Corporation and the American Concrete Institute (ACI).

3. Related Work.
   a. Preparation work, include sub-grade preparation, finish grading, placing and setting screeds, and furnishing and placement of welded wire fabric.
   b. Provide and place concrete with integral color.
   c. Provide and apply color hardener. Bomanite Color Hardener is a colored dry powder, used to color the concrete surface while promoting increased concrete abrasion resistance and color steadfastness.
   d. Provide and apply liquid release agent. Bomanite Liquid Release is a clear liquid used to facilitate release of the imprinting tools from concrete surface.
   e. Provide and apply Bomacron imprinting tools.
   f. Provide and apply curing treatment. Bomanite Con-Shield will help prevent deterioration and spalling from deicing salts used in freeze/thaw conditions. Bomanite Con-Shield will also increase the abrasion resistance of finished Bomacron surface.
   g. Provide and apply membrane forming sealer. Bomanite Hydrolock, as membrane forming sealer, meets all EPA VOC Laws and Regulations.

4. Quality Assurance.
   a. The Bomanite contractor shall provide a qualified foreman or supervisor who has a minimum of 3 years experience with imprinted and textured concrete, and who has successfully completed at least 5 Bomanite/ Bomacron imprinted concrete installations of high quality and similar in scope to that specified herein. Evidence that the contractor is qualified to complete the project in a workman like manner as specified herein shall be submitted to and approved by the engineer.
   b. All Bomanite work shall comply with the current specifications and quality standards issued by Bomanite Corporation.
   c. The Bomanite contractor shall provide a job site sample (referee sample) of 100 square feet minimum to be approved by the engineer prior to start of construction. Said sample shall be the standard for the balance of the work installed, and shall be protected against damage until final approval from the engineer. Unsightly or poorly finished surfaces will be considered basis for rejection of the work involved.

5. Concrete Mix Design.
   a. Use Class A concrete that meets the requirements of Section 501, Structural Concrete..
   b. Do not use calcium chloride in mix.
   c. Slump Range: 4" to 5". Higher slumps shall be achieved by using water reducing or plasticizing admixtures, not by adding water.
   d. Use Bomanite integral colored admixture.

6. Coloring, Imprinting, Curing and Sealing Materials.
   a. Bomanite Integral Color: The concrete shall be colored with the following integral color: **Apricot.**

b. Bomacron Color Hardener: The following Bomacron Color Hardener color shall be applied to all concrete surfaces to be imprinted and textured: **Harvest Amber.**

c. Pattern: The following Bomacron pattern shall be used: **Running Bond Regular Slate.** All imprinting tools used in the execution of this project shall be manufactured by Bomanite Corporation.

d. Reinforcement: Use 6x6 W1.4xW1.4 steel welded wire fabric.

e. Curing and densifier: The concrete shall receive a cure treatment utilizing Bomanite Con-Shield.

f. Sealer: Concrete slabs shall be sealed in accordance with the manufacturer's recommendations using Bomanite Hydrolock.

7. Installation Procedures.

a. The area to receive Bomanite/Bomacronintegrally colored concrete imprinted concrete shall have the sub-grade prepared and compacted in accordance with 608-3.01 Concrete Sidewalks.

b. Provide and install 6x6 W1.4xW1.4 steel welded wire fabric.

c. Control joints and/or expansion joints shall be provided in accordance with Section 608, Sidewalks and the guidelines established by the American Concrete Institute. The contractor shall advise the engineer to determine the best location for these joints to minimize the visibility of the joints and to minimize unsightly cracking.

d. The concrete shall be placed and screeded to the finish grade, and floated to a uniform surface using standard finishing techniques.

e. Bomanite Color Hardener shall be applied evenly to the troweled surface prior to imprinting.

f. Bomanite Liquid Release agent shall be applied evenly to the troweled surface prior to imprinting.

g. While the concrete is still in its plastic stage of set, imprinting tools shall be applied to the surface.

h. Bomanite Con-Shield shall be applied to Bomacron after Bomanite Liquid Release has dissipated.

i. After the initial curing period, the surface of the slab shall be sealed.

At times when the air temperature is at or near freezing, the concrete slab shall instead be cured using a suitable curing blanket, and if possible, the slab shall later be sealed with Bomanite Hydrolock when the temperature is safely above freezing.

If, at any time during the curing period, any of the forms are removed, a coat of curing compound shall be applied immediately to the exposed surface. Additional coats shall be applied if the Engineer determines that the coverage is not adequate. The concrete shall be cured for the minimum period of time set forth below.

Type I Portland Cement Concrete	5 days
Type III Portland High Early Strength Cement Concrete	3 days

j. Protect adjacent improvements such as sidewalks, and curb and gutter from color stains. When directed by the Engineer, remove surface stains caused by your work to the satisfaction and approval by the Engineer.

Standard Modification

608-4.01 METHOD OF MEASUREMENT. Delete fifth paragraph beginning with: "Curb Ramp" and replace with the following:

Curb Ramp. By each installation, complete in place, including detectable warnings, ramp runs, backing curbs, flares, and landings necessary to provide a single street level access. E40(01/27/07)

Special Provisions

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

Asphalt Pathways and Medians. By the ton of asphalt concrete according to Section 109, Measurement and Payment. Asphalt cement will not be measured for payment. Additional asphalt pavement used for matching existing surfaces such as paved parking lots behind a new sidewalk/pathway will be measured and paid under this Section. (01/24/07)R47USC

Imprinted Colored Concrete. Exclusive of curb, by the square yard of finished surface, complete in place, including reinforcement.

608-5.01 BASIS OF PAYMENT. Add the following: Asphalt cement for Asphalt Pathway and Asphalt Pathways and Medians will not be paid for separately, but will be subsidiary to respective pay items.

Embankment and bed course materials will be furnished, placed and paid under Sections 203 and 301, respectively. (01/24/07)R47USC

Add the following: Obliteration of existing asphalt pathway shown on the Plans for realignment of the pathway will be subsidiary to Item 202(2) Removal of Pavement.

Concrete and tactile warning bumps used in the construction of curb ramps are subsidiary to item 608(6A) Retrofit Curb Ramp.

The welded wire fabric (WWF) and referee sample is subsidiary to item 608(25) Imprinted Colored Concrete.

Add the following pay items:

Pay Item	**Pay Unit**
608(6A) Retrofit Curb Ramp	Each
608(7) Asphalt Pathway	Ton
608(25) Imprinted Colored Concrete	Square Yard

SECTION 609

CURBING

Special Provisions

609-3.02 CAST-IN-PLACE CONCRETE CURBING. Add the following to the sixth paragraph: Concrete placed by the extrusion or slip-form process shall have a slump of less than 2 inches. (11/06/02)R202USC02

609-5.01 BASIS OF PAYMENT. Add the following pay item:

Pay Item	Pay Unit
609(21) 12 inch Curb	Linear Foot

SECTION 615

STANDARD SIGNS

Special Provision

615-2.01 MATERIALS. Under item 1. delete the first sentence and substitute the following: Unless Shop Drawings have been provided in the Contract, submit shop drawings for signs that require the use of the Alaska Sign Design Specifications (ASDS), the Department of Transportation and Public Facilities - Sign Face Fabrication Requirements, and the Alaska Traffic Manual, letter width and spacing charts for approval before fabrication.

Standard Modification

615-2.01 MATERIALS. Delete the first paragraph of Item 2, including sub-items a., b., and c. and replace with:

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

   a. Orange Background Signs: Use either Type II or Type III orange reflective sheeting or use Type VII or Type IX fluorescent orange reflective sheeting. For temporary installations place reflective sheeting on sheet aluminum, plastic, or plywood panels. Roll Up Signs: Use 3M series RS 24, Reflexite Marathon Orange, or approved equal (based on durability and reflectivity, as determined by the Engineer). Use flexible signs with fluorescent reflective sheeting that is Type VI or better.
   E41(01/27/07)

   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: 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 that: 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. E26(1/1/06)

615-2.01 MATERIALS. In Item 2.a. Orange Background Signs, add: Roll Up Signs: Use 3M series RS 24, Reflexite Marathon Orange, or approved equal (based on durability and reflectivity, as determined by the Engineer). Use flexible signs with fluorescent reflective sheeting that is Type VI or better. E41(01/27/07)

Special Provisions

615-3.01 CONSTRUCTION REQUIREMENTS. Add the following to item 7: Deliver sign panels, posts and hardware to the local Municipality of Anchorage Maintenance Shop. Notify Dan Southard at 343-8277 one week before your planned delivery date.

615-3.02 SIGN PLACEMENT AND INSTALLATION. Add the following: Do not remove existing signs without authorization from the Engineer.

615-5.01 BASIS OF PAYMENT. Delete the first sentence and substitute the following: Sign posts, bases, mounting hardware, and concrete used for sign bases are subsidiary.

(11/06/02)R50USC02

Add the following: No separate payment for keeping existing signs in service until they are no longer needed or temporary relocation of existing signs will be made. This work is subsidiary to Item 615(1) Standard Sign.

Payment for removal of existing sign post foundations or work required to abandon them in place will not be made, but shall be subsidiary to Items 615(2) Remove and Relocate Existing Sign and 615(6) Salvage Sign.

(07/20/06)USKH

Clearing brush around existing signs is subsidiary to 615 pay items.

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.

Standard Modification

618-3.01 SOIL PREPARATION. 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.

Special Provisions

618-3.03 APPLICATION. Add the following: Apply seed, mulch, and fertilizer as follows. 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, apply at the same application rate. (01/27/07)R52USC

Standard Modifications

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.

Special Provisions

618-3.04 MAINTENANCE OF SEEDED AREAS. Add the following:

The Contractor shall protect seeded areas from damage from all traffic, whether people, animals, on or off road vehicles, or any other causes which may damage newly seeded and maintained surfaces. Contractor shall repair damaged surfaces by re-grading, reseeding (including all specified amendments), as directed by the Engineer, at no additional cost to the Owner. The Contractor shall otherwise maintain seeded areas in a satisfactory condition until Final Acceptance of the Work.

Contractor shall maintain seeded areas during the establishment and maintenance period. This period will commence on the day seeding operations are completed and extend for a period of sixty (60) days. If a satisfactory stand of grass has not been established at the end of the sixty-day period, the maintenance period shall be extended until such time as a satisfactory stand is established. A satisfactory stand of grass shall be as follows: lawn areas shall be a uniform deep green in color with 200 grass plants per square foot minimum. Bare spots may be a maximum of 6 inches square and the total bare spots shall not exceed 2 percent of the total seeded area. If the maintenance period extends beyond October 1, a winter suspension of work will be issued and the maintenance period will resume on May 15 of the following year and shall continue until the sixty days is complete or a satisfactory stand of grass is established.

Contractor shall apply one application of fertilizer (22-11-11) at the rate of 7 lbs. per 1,000 sq. ft. 30 days after application of seed, or just before winter suspension. Fertilizer shall be applied in such a fashion that new lawns are not burnt in the process.

Watering of seed shall be started immediately after completion of seeding an area. Water shall be applied to supplement rainfall at a rate sufficient to ensure moist soil conditions to a minimum 1-inch depth throughout the germination period. Runoff and puddling shall be prevented. Watering trucks shall not be driven over turf areas, unless otherwise directed. Watering of other adjacent areas or plant material shall be prevented.

Mowing of lawn areas shall be a maintenance requirement through the establishment and maintenance period. When lawns reach a height of 5-inches, lawns shall be mowed to a height of 3-inches.

If, at the end of the 60-day establishment and maintenance period, the turf areas are not satisfactory and the Contractor does not take action within 10 days to correct the deficiencies,

the Engineer may arrange to have seeding done by others and withhold payment for the original seeding. Any costs incurred by the Contractor for maintenance during the establishment and maintenance period is borne by the Contractor, and no additional payment will be made.

Standard Modifications

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.

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)

Special Provisions

618-5.01 BASIS OF PAYMENT. Add the following: Seeding by the Pound. Seed, water, fertilizer, maintenance, and replacement are subsidiary.

SECTION 620

TOPSOIL

Special Provisions

620-1.01 DESCRIPTION. Delete paragraph in its entirety and substitute the following: This work consists of furnishing and placing topsoil for seed areas and in planting beds.

620-3.01 PLACING. Add the following: Topsoil shall be evenly spread to a minimum depth of 4 inches after settlement on all areas to be seeded as described in Section 618.

Topsoil shall be a minimum depth of 12 inches after settlement on all areas to be established as planting beds for trees or shrubs as shown on the Plans or as directed by the Engineer.

Contractor shall achieve settlement by rolling the topsoil with a water-filled drum approved by the Engineer.

Compacting soil by track walking will not be allowed.

620-4.01 METHOD OF MEASUREMENT. Delete paragraph in its entirety and substitute the following: Measurement of 4"depth topsoil shall be the number of square yard units measured to the nearest unit on the ground surface and seeded. Stockpiling and re-handling of topsoil during stripping operations, or during placement shall not be measured for payment. Topsoil for planting beds will not be measured separately for payment and shall be considered subsidiary to Pay Items in Section 621.

Add the following: Limestone, if required, will not be measured for payment, but will be subsidiary to Item 620(1), Topsoil. (11/06/02)R53USC02

620-5.01 BASIS OF PAYMENT. Delete pay item 620(1) and substitute the following:

Pay Item	**Pay Unit**
620(1) Topsoil, Class A	Square Yard

SECTION 621

PLANTING TREES AND SHRUBS

Special Provisions

621-2.07 TREE WOUND DRESSING. Delete this subsection and replace with the following:

621-2.07 LANDSCAPE EDGING. Landscape edging shall be fabricated of 6063 – T6 alloy aluminum with a mill finish. Edging shall be of 16-foot lengths, with a thickness of 3/16 inch and a height of 5-1/2-inch. Sections to include (5) 12-inch aluminum stakes. Sections to include a 4-inch stakeless snapdown connection system to interlock adjacent sections. Overall installation shall be as per manufacturer's recommendations. An acceptable product is CleanLine Aluminum Landscape Edging, as manufactured by Permaloc Corporation, Holland, MI 1-800-356-9660

621-2.08 MULCH. Add the following: Wood chip mulch shall consist of spruce, Douglas fir, or hemlock bark. It shall be graded to conform to the following:

Sieve Designation	Percent, By Loose Volume
1 inch	95 min.
¼ inch	55 max.

The wood chip mulch shall not contain resin, tannin, or other compounds in quantities that are detrimental to plant life. Wood chip mulch shall be spread evenly in all planting beds at 3 inch depth.

621-3.02 ADVANCE PREPARATION AND CLEANUP. Delete the 2nd paragraph and replace with the following: Areas which receive group plantings shall be laid out as shown on Plans. Contractor shall mark these areas individually with flags, or other approved methods to delineate planting areas. Engineer shall approve the shape, size, location and general layout of planting areas before the work may proceed.

Contractor shall stake or mark with other approved methods the location of individual trees within each planting area for approval by the Engineer.

621-3.03 PLANTING. Replace paragraphs b-d in Item 2 with the following:

2. Excavation.

   b. Trees and Shrubs shall be planted as shown on the Plans and as directed on site by the Engineer. Dig planting holes within the planting bed areas. Firmly tamp the base of the planting hole to assure plants will no settle to lower than their proper planting depth.

3. Pruning. Delete the last two sentences of paragraph b in their entirety.

5. Placing Plants.

Add the following to paragraph a.: Trees and Shrubs shall be planted as shown on the Plans and as directed on site by the Engineer.

Delete paragraph b and substitute the following: Balled and burlapped plants, plants in wire baskets or containers shall be handled by the earth ball, container, or basket and not by the plant itself. Wire baskets, and burlap shall be clipped and laid flat on the bottom of the planting pit as indicated on the Plans. Containers shall be removed from the site. The Engineer may reject any plants whose rootballs collapse during planting

7. Wrapping. Delete this paragraph in its entirety.

8. Staking and Guying. Delete paragraphs a, b, and c in their entirety and add the following: Contractor shall stake trees as shown on Plans and as directed by the Engineer. The stakes and guys shall be maintained during construction and the establishment period to prevent damage to the trees. All stakes and guys shall be removed at the end of the period of establishment.

Add the following subsection:

9. Certified Arborist. The Contractor shall retain the services of an arborist certified by the International Society of Arboriculture or the American Association of Nurserymen whose experience and qualifications are acceptable to the Engineer. The arborist's resume detailing current certifications, memberships in industry organizations, work experience in the industry and references shall be submittedat least 10 calendar days before the delivery of plant material. The certified arborist shall oversee quality assurance of trees, their installation and shall inspect trees for health and vigor. Specifically,the arborist shall carry out the following:

a. Inspect the tree planting process to assure that planting techniques meet the specifications of the Contract documents and match standard industry practices.

b. Inspect the plantings after installation is complete to assure that they are ready to be accepted by the Engineer and ready for the maintenance schedule to begin.

c. Inspect plantings twice during the growing season during Plant Establishment Period for any needed maintenance, such as watering, pruning, or removal of dead, dying, or untreatable diseased trees.

d. After acceptance, the arborist shall inspect the trees at least twice the growing season each year of the Plant Establishment period for any needed

maintenance, such as watering, pruning, removal of dead,dying, or untreatable diseased trees.

621-3.04 PERIOD OF ESTABLISHMENT. Delete the first sentence and substitute the following: The period of establishment for trees and shrubs shall extend for one complete growing season. One full growing season shall be defined as the period between May 1 and September 30 for the purpose of this Contract. The one full growing season period of establishment begins on May 1st after the acceptance of the work as complete. Partial growing seasons will not be counted against the one full growing season requirement. The plant establishment period applies to all planting beds, trees, and shrubs.

Standard Modification

621-3.04 PERIOD OF ESTABLISHMENT. Add the following second paragraph: 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 according to subsection 105-1.16.

E43(01/27/07)

Special Provisions

621-3.05 CLEANUP. Add the following: Planted trees, shrubs, and seeded areas shall be kept clean of litter and garbage during the growing season.

621-3.06 PLANT REPLACEMENTS. Delete the last sentence and substitute the following: Plants shall be replaced following the same details and specifications as used in the original plans. Plants which are dead or dying shall be replaced immediately during the months of June through September. Plants dead at the end of the growing season shall be replaced at the beginning of the following season.

621-3.07 MAINTENANCE. Delete the paragraph and substitute with the following: Maintenance includes the care of all Trees and Shrubs during the period of establishment, including the non-growing season. Specific work includes watering, pruning, weeding, pest control, and protection of planted areas. At the beginning and end of each growing season, the Engineer and Contractor shall undertake a joint inspection to review conditions and document any changes in maintenance or acceptance of plantings.

1. Watering. The Contractor shall deep water all trees and shrubs twice each week to maintain the plants in a healthy, vigorous growing condition. The root zone of plants shall be kept moist at all times.

2. Disease Control. The Contractor shall apply pesticides, insecticides, or other disease-control methods as necessary to maintain plant health. Permission of the Engineer

and appropriate permits for the application of insecticides from the Alaska Department of Environmental Conservation must be obtained before the application of any regulated products.

3. Pruning. Prune all plant materials, with appropriate pruning techniques, to remove dead or dying wood and to improve the shape and or vigor of the plants. Cuts shall not be painted. Pruning of flowering trees shall be scheduled to occur immediately after flowers drop off or decay. Damaged trees or those that constitute health or safety hazards shall be pruned as directed by the Project Engineer at any time of the year. Evergreens are not to be pruned without the approval of the Engineer.

4. Fertilizing. Trees and Shrubs shall receive an application of 8-32-16 fertilizer. The application shall occur between May 15 and June 15 of each growing season following planting. The fertilizer tablets shall be placed near the root zone according to the fertilizer manufacturer's instructions. Fertilizer shall be well-watered in immediately after application. The Contractor shall notify the Engineer in writing 4 working days before applying any fertilizers. Written notice shall state the time and location of fertilizer application.

621-4.01 METHOD OF MEASUREMENT. Delete this entire subsectionand substitute the following: Measurement of new Trees and Shrubs shall be by the actual number planted and maintained according to the Plans and Specifications, and as accepted by the Engineer. Furnishing and installing topsoil backfill mix, staking and guying, arborist review, fertilizing, disposal of unsuitable and surplus material, water for maintenance used, and all work required during the one full growing season period of establishment shall not be paid for separately, but shall be subsidiary to Pay Items. Landscape edging will be measured by the linear foot installed with no additional payment for overlaps. Wood Chip Mulch shall be measured by the square yard placed around trees and in shrub beds to the depth indicated on Plans.

621-5.01 BASIS OF PAYMENT. Delete second paragraph.

Add the following: Partial payments of up to 70% of full amount may be authorized for Items 621(1 and 2) at the time of acceptance. The balance shall be paid at the completion of the period of establishment.

The accepted quantities will be paid for at the contract price, per unit of measurement, for all labor material and equipment required to furnish and install the pay items listed below and appearing in the bid schedule.

Delete the pay item table and substitute the following:

Pay Item	Pay Unit
621(1A) Trees (Sorbus aucuparia – 2-1/2" Cal.)	Each
621(1B) Trees (Prunus virginiana 'Shubert Select' – 2-1/2" Cal.)	Each
621(1C) Trees (Picea pungens – 5'-6" Ht.)	Each
621(2A) Shrubs (Cotoneaster lucidus - 24" Ht.)	Each
621(2B) Shrubs (Picea ablies nidiformis – 18" Ht.)	Each
621(2C) Shrubs (Rosa rugosa 'Theresa Bugnet' - 24" Ht.)	Each
621(2D) Shrubs (Spiraea x bumalda 'Goldflame' – 18" Ht.)	Each
621(2E) Shrubs (Syringa villosa – 36" Ht.)	Each
621(5) Landscape Edging	Linear Foot
621(6A) Wood Chip Mulch	Square Yard

SECTION 622

REST AREA FACILITIES

Special Provisions

MATERIALS. Add the following:

622-2.13 EXISTING BENCHES AND TRASH RECEPTACLES. Provide all material, including galvanized steel anchor hardware, required to complete the items of Relocate Bus Stop Bench and Relocate Trash Receptacle. This material shall be considered subsidiary to these pay items.

Add the following subsection:

622-3.08 RELOCATING BENCHES AND TRASH RECEPTACLES. Salvage, store, and install existing bench and trash receptacle at locations shown in the plans.

Remove and salvage designated benches and trash receptacles without damage. Replace at your expense any of the above-mentioned rest area appurtenances that has been damaged or destroyed by your operations.

As directed, repair or replace damaged existing benches or trash receptacles that are to be relocated or reused in place. The Engineer will determine the extent of repairs or replacements. The Department will pay for the repairs or replacements ordered as extra work according to Subsection 109-1.05. Refinish metal materials according to Subsection 660-3.01.8

The bus stop benches and trash receptacles shall be placed on a Portland cement concrete pad. Unless otherwise indicated on the plans, the concrete pad for the benches shall be a minimum of 6 inches deep, 40 inches wide, and 86 inches long. The concrete pad for the trash receptacles shall be a minimum of 6 inches deep and 24 inches square. If necessary, increase the size of the pad to ensure that the concrete pad is sized to accommodate the rest area appurtenance being installed. Maintain 3 inches minimum edge clearance from center of concrete anchor/bolt to edge of concrete.

Securely anchor benches and trash receptacles to new concrete pad foundation with galvanized steel or stainless steel concrete anchors/bolts. Anchors/bolts shall be sized to match mounting holes.

622-4.01 METHOD OF MEASUREMENT. Add the following:

Item 622(15), Relocate Bus Stop Bench. By each complete unit installed and functional.

Item 622(16), Relocate Trash Receptacle. By each complete unit installed and functional.

622-5.01 BASIS OF PAYMENT. Add the following:

622(17) Bus Stop Bench and 622(18) Trash Receptacle. The contract price includes all materials, labor, equipment and incidentals required to complete the installation. Removal and disposal of existing concrete pad shall be measured and paid for under Item 202(3), Removal of Sidewalk. Installation of concrete mounting pads shall be measured and paid for under Item 608(1B), Concrete Sidewalk, 6 Inches Thick.

Pay Item	Pay Unit
622(15) Relocate Bus Stop Bench	Each
622(16) Relocate Trash Receptacle	Each

SECTION 626

SANITARY SEWER SYSTEM

Special Provisions

626-1.01 DESCRIPTION. Add the following: For the purposes of these Special Provisions "AWWU" shall mean the Anchorage Water and Wastewater Utility at (907) 564-2765.

In conjunction with working around and/or adjusting the Water Utility cleanouts, the Contractor shall exercise due care. Before beginning work by the Contractor, the Water Utility shall check and correct deficiencies that may exist in cleanouts. The Engineer and Contractor shall witness the condition and location of each cleanout. 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 the Water Utility 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 Contractors responsibility to protect and maintain cleanouts in an operable condition during all phases of construction. If at any time after the inspection as outlined above the Water Utility finds a cleanout damaged or rendered inoperable by the Contractor, the Contractor shall repair them at the Contractor's own expense.

For manholes requiring adjustment or reconstruction, AWWU will provide new sanitary sewer manhole metal castings, dust pans and lids to the Contractor. These items are available for pickup at AWWU's warehouse. Contact Brian Baus at 564-2765, 3 working days in advance of need to schedule pickup.

626-4.01 METHOD OF MEASUREMENT. Add the following:

Adjust Sanitary Sewer Cleanout. Measurement will be the number of cleanouts adjusted for final grade only.

626-5.01 BASIS OF PAYMENT. Add the following:

Pay Item	Pay Unit
626(18) Adjust Sanitary Sewer Cleanout	Each

SECTION 627

WATER SYSTEM

Special Provisions

627-1.01 DESCRIPTION. Add the following: Coordinate a preconstruction inspection of the AWWU and ALPAT facilities located within the limits of the project before construction activity begins and a post construction inspection after paving operations are complete. Any deficiencies found during the preconstruction inspection of the AWWU and ALPAT facilities and before the Contractor begins work on the project will be AWWU or ALPAT responsibility to correct.

Replace AWWU main valve box top section and lids within the projects limits with AWWU supplied materials. To obtain these materials contact Brian Baus (564-2765) in the AWWU Planning office 3 working days in advance. The Contractor is responsible for providing valve box pieces/parts necessary to adjust ALPAT facilities.

627-201 MATERIALS. Add the following: AWWU will supply the Main Valve Box Top Sections and Lids required for AWWU facilities on the project.

CONSTRUCTION REQUIREMENTS

627-3.01 GENERAL. Add the following: Contact Brian Baus at AWWU in writing a minimum of three working days in advance of construction activities to schedule a preconstruction inspection of the AWWU valves and valve boxes. Provide the Engineer a copy of the written notices. The Contractor shall furnish the required traffic control and personnel to assist AWWU while locating and performing the preconstruction and post construction inspections. Both the Contractor and the Engineer shall witness the condition and location of each valve and/or valve box.

Contact David Kranich at ALPAT in writing a minimum of three working days in advance of construction activities to schedule a preconstruction inspection of the ALPAT valves and valve boxes. Provide the Engineer a copy of the written notices. The Contractor shall furnish the required traffic control, if any, and personnel to assist ALPAT while locating and performing the preconstruction and post construction inspections. Both the Contractor and the Engineer shall witness the condition and location of each valve and/or valve box.

The Contractor forfeits the right to deny damages done by the Contractor or agents during the course of work if the Contractor fails to participate in this inspection. It is the Contractor's responsibility to protect and maintain valves and valve boxes in an operable condition during construction. If AWWU or ALPAT finds valves or valve boxes damaged or rendered inoperable after the above inspection and before final inspection the Contractor shall repair the valves and/or valve boxes at the Contractor's expense.

Contact Brian Baus (564-2765) 3 working days in advance to schedule the pick up of AWWU supplied materials for the project.

If service connection locates are required, call the Locate Center to request locates.

627-5.01 BASIS OF PAYMENT. Add the following: The Contract price for item 627(10) includes removing and replacing the existing valve boxes shown on the Plans with AWWU supplied materials, except for valve boxes that are part of the ALPAT system. Any intermediate adjustments required are subsidiary as well. Payment also includes full compensation for the transporting the AWWU supplied valve box and lids to the project site from the AWWU warehouse. Payment also includes adjusting existing ALPAT valve boxes shown on the plans and any material necessary to complete this work.

The contractor shall install guard posts at each new or relocated hydrant installation in accordance with the "Hydrant Guard Posts" detail in the plans. If, in the opinion of the Engineer, the guard posts are not to be installed, they shall be delivered to the Anchorage Water and Wastewater Utility storage yard. Measurement and payment for guard posts shall be incidental to 627 bid items.

The pre and post inspections are subsidiary to item 627(10) and no separate payment shall be made. Traffic control required for the pre and post inspections shall be paid under the specific 643 Items.

Pay Item	Pay Unit
627(5B) Fire Hydrant Installation, Double Pumper	Each

SECTION 635

INSULATION BOARD

Special Provisions

635-4.01 METHOD OF MEASUREMENT. Delete this Subsectionin its entirety and substitute the following: By the cubic foot of insulation board, in place based on the nominal dimensions or the materials, or by the square foot of insulation board with the required "R" value in its final position, including transitions, regardless of thickness, complete and accepted.

Sand blanket material is subsidiary.

(08/23/00)R57USC

635-5.01 BASIS OF PAYMENT. Add the following: Payment will be made under:

Pay Item	Pay Unit
635(2) Insulation Board, R=9	Square Foot

Delete this Section in its entirety and substitute the following:

SECTION 639

DRIVEWAYS

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 639 items. (05/09/02)R58M98

Payment will be made under:

Pay Item	Pay Unit
639(6) Approach	Each

Delete this Section 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 non-structural 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 all 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, all 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 commence 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 prior to ground-disturbing activities for the project.

8. SPCC Plan (Spill Prevention, Control and Countermeasure). 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 your 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. For all projects submit three copies each of your SWPPP and HMCP to the Engineer for approval. Submit one copy of your SPCC Plan (if required under Subsection 641-2.03) to the Engineer. Sign all 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 you as either requiring modification, or as approved by the Department. The approved SWPPP must contain all certifications, and be signed in accordance with the Standard Permit Conditions of the NPDES General Permit. You must receive an approved SWPPP before you submit your eNOI to the EPA.

For projects that disturb five acres or more of ground, submit a copy of your 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 your signed eNOI to EPA. Submit copies of your signed eNOI receipt to the Engineer and to ADEC. Transmit proof of your ADEC submission to the Engineer. The Municipality of Anchorage and the Department will transmit their eNOIs to the EPA. Allow adequate time for state and federal processing, prior to commencing 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 your 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 for all projects. Use the Department's ESCP to develop a SWPPP based on your scheduling, equipment, and use of alternative BMPs. The SWPPP Preparer must visit the project site prior to 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.

Your SWPPP must follow the format presented in Appendix A of *Developing Your Storm Water Pollution Prevention Plan* (EPA, January 2007) found at www.epa.gov.npdes/swpppguide

The plan must address your site-specific controls and management plan for the construction site as well as for all material sites, waste disposal sites, haul roads, and other affected areas, public or private. The plan must also incorporate all the requirements of the project permits.

Specify the line of authority and designate your 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 all hazardous materials, including office materials, to be used and/or stored on site, and their estimated quantities. Detail your 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 all controls to prevent the accidental spillage of oil, petroleum products and other hazardous materials.

Detail your 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 your plan for the prevention, containment, cleanup, and disposal of soil and water contaminated by accidental spills. Detail your plan for dealing with unexpected contaminated soil and water encountered during construction.

Specify the line of authority and designate your 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 that is certified, stamped with the seal of, dated by, and signed by a licensed Professional Engineer registered in Alaska, when required by 40 CFR 112, including:

1. When oil spills may reach navigable waters; and
2. Your total above ground oil storage capacity is greater than 1,320 gallons.

Comply with 40 CFR 112 and address the following issues in your 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.

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 your NOI, the Municipality of Anchorage's NOI, and the Department's NOI, and has listed all of them 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.

Post at the construction site:

1. NPDES Permit number, if available, and a copy of the NOI,
2. Name and phone number of your 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 any major side street, and the Project Office.

Comply with all requirements of the approved HMCP, the submitted SPCC Plan, and all 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 all discharges of petroleum products and/or other materials hazardous to the land, air, water, and organic life forms. Perform all 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 your SPCC Plan.

Comply with all requirements of the NPDES General Permit, implement all temporary and permanent erosion and sediment control measures identified in the SWPPP, and ensure that the SWPPP remains current. Maintain all temporary and permanent erosion and sediment control measures in effective operating condition.

Coordinate your BMPs with all Utility Companies doing work in the project area.

Perform inspections and prepare inspection reports in compliance with the project SWPPP and the NPDES General Permit.

1. Joint Inspections. Prior to 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. Prior to 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 (February 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 non-compliance

   Where a report does not identify any incidents of non-compliance, certify that the facility is in compliance with the SWPPP and NPDES General Permit. You and the Engineer will sign the report according to the Standard Permit Conditions of the NPDES General Permit. Include all reports as an appendix to the SWPPP.

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 all BMPs. It shall also contain copies of all 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 all SWPPP revisions, up dates, records, and all inspection reports at least weekly.

Retain copies of the SWPPP, and all 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.

Submit amendments to the SWPPP to correct problems identified as a result of any:

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 all areas disturbed after the seeding deadline within seven days of the temporary or permanent cessation of ground-disturbing activities.

For projects that disturb one acre or more of land, submit your signed eNOT to EPA with a copy to the Engineer when the Engineer notifies you that:

1. The Project site (including all material sources, disposal sites, etc.) has been finally stabilized and that all 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.

If you fail 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 your earthwork operations and withhold monies due on current estimates for such earthwork items until all aspects of the work are coordinated in a satisfactory manner.

If you fail to pursue the work required by the approved SWPPP, respond to inspection recommendations and/or deficiencies in the SWPPP, or implement erosion and sedimentation controls identified by the Engineer you will be assessed a permanent price adjustment of $500 per day for each day of non-action, under Item 641(5) Erosion and Pollution Control Price Adjustment . In addition, the Engineer may, after giving you written notice, proceed to perform such work and deduct the cost thereof, including project engineering costs, from your progress payments under item 641(5).

641-4.01 METHOD OF MEASUREMENT. Section 109 and as follows:

Item 641(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) 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 all 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(3) Temporary Erosion and Pollution Control. At the lump sum price shown on the bid schedule to install and maintain all temporary erosion, sedimentation, and pollution control measures required to complete the project per plan and in accordance with the BMP, the ESCP and the original approved SWPPP and HMCP.

3. 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. All work paid under this Item will be shown as amendments to the original approved SWPPP or HMCP.

4. Item 641(5) Erosion and Pollution Control Price Adjustment. The total value of this contract will be adjusted as specified in Subsection 641-3.01. In addition, a price adjustment equivalent to any penalties levied against the Department by the EPA or any other state and/or 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 shall be the actual cost of any 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 any price adjustments will be released by the Engineer upon satisfactory completion of the requirements of the NPDES General Permit. You are responsible for the payment of your own 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, diversion channels, etc.

Perform temporary erosion and pollution control measures that are required due to your negligence, carelessness, or failure to install permanent controls as a part of the work as scheduled or ordered by the Engineer, or for your convenience, at your own expense.

Permanent erosion and pollution control measures will be measured and paid for under other contract items, when shown on the bid schedule.

Payment will be made under:

PAY ITEM	PAY UNIT
641(1) Erosion and Pollution Control Administration	Lump Sum
641(3) Temporary Erosion and Pollution Control	Lump Sum
641(4) Temporary Erosion and Pollution Control Amendments	Contingent Sum
641(5) Erosion and Pollution Control Price Adjustment	Contingent Sum

(04-16-07)RS

SECTION 642

CONSTRUCTION SURVEYING AND MONUMENTS

Special Provisions

642-1.02 DEFINITIONS: Add the following definition:

6.Closed Traverse: A survey traverse which starts and ends upon Department provided control whose relative positions have been determined by other surveys of equal or higher order of accuracy. Monuments re-established from original references will be considered Department provided control. A closed traverse will require multiple angles and distances to and from each station.

642-2.01 MATERIALS. Add the following:

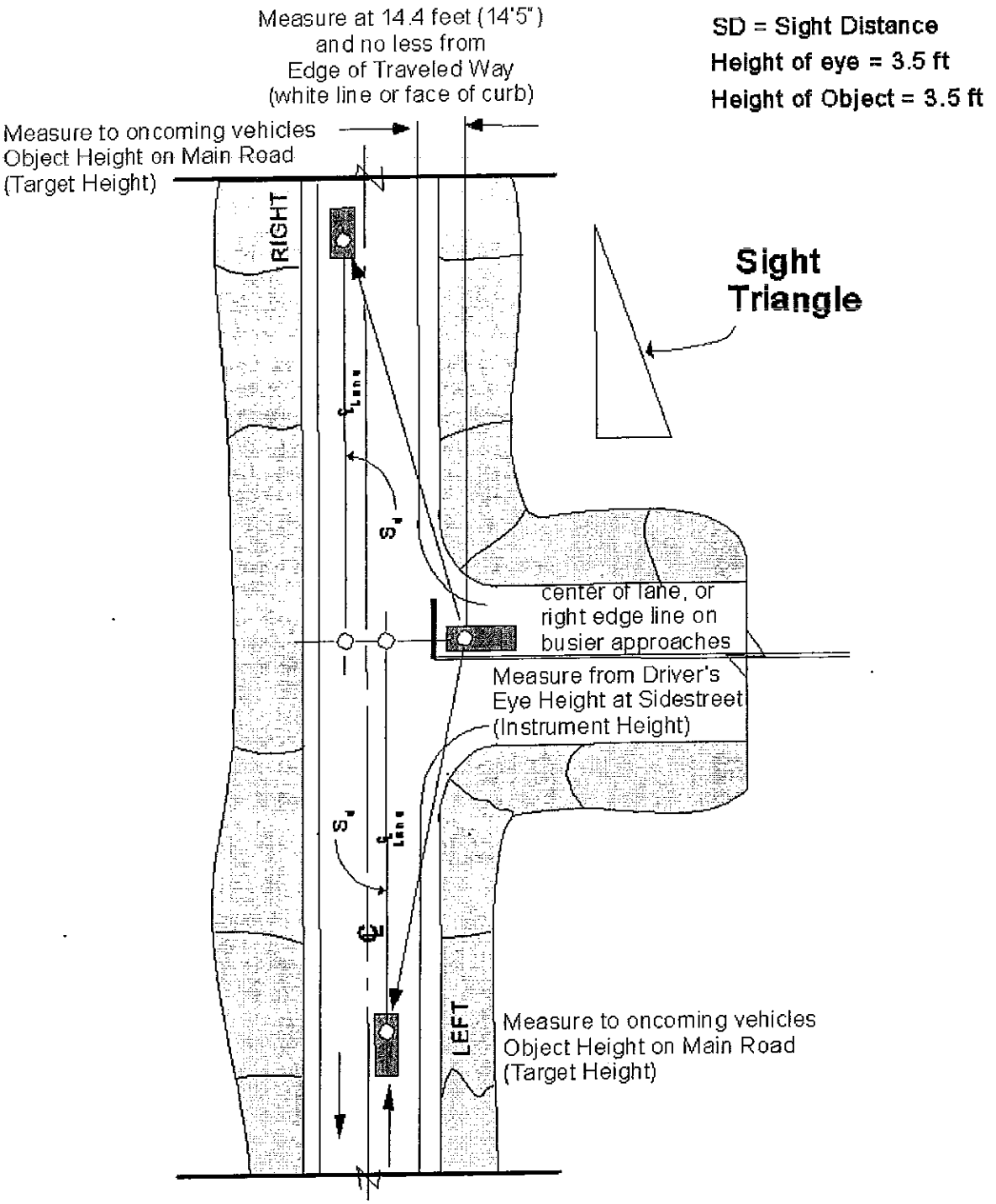
Digital Measuring Instrument: Nu-metrics, Nitestar DMI (www.nu-metrics.com)

642-3.01 GENERAL: Add the following sentence to the paragraph that starts, "When the Department has not established…": Without prior written approval of the Survey Manager for the Region in which the project is located, the use of GPS is not an acceptable method for directly establishing project centerline monuments or the direct re-establishing of any missing Department provided control points.

Replace the second sentence in item 2 with the following: Cross section before or after clearing, but before grubbing and before removal work.

Add the following after item 10: 11. Measure and document the actual intersection sight distance triangles at public intersections and driveways. Measure this after the paving, guardrail, and other work affecting intersection sight distance has been completed. List the actual sight distance available up to 650-feet. Note locations with greater than 650-feet of sight distance as "650'+". Measure sight distance triangles as shown in the following figure by setting up an instrument at the driver's eye location. Provide the results in a table format as shown. Include remarks in a "notes" column, relating any minor obstacles or observations which may assist in improving sight distance. Certify and record the results on standard "letter" sized paper and provide two copies to the Engineer at least two (2) weeks prior to submitting shop drawings for permanent signing. The Engineer will forward one (1) copy to the Regional Traffic Engineer. The Regional Traffic Engineer's office will take up to two (2) weeks to review and require any additional warning signs for intersections or driveways as needed.

INTERSECTION SIGHT DISTANCE SURVEYING



Intersection Sight Distance Survey Table

ROAD NAME:_____

Stationing FROM:_____

DATE:_____

TO: _____

Surveyor:_____

Public Approach or Estimated Driveway Station	Posted Speed Limit (Main Rd)	Sight Distance Back (Left)	Sight Distance Ahead (Right)	Remarks

Other Notes:

1.
2.
3.

Accepted By: _____ Date: _____

DOT/PF Project Engineer

Intersection Warning Signing
Review Checked By:_____ Date: _____

DOT/PF Regional Traffic Engineer

642-3.02 CROSS SECTION SURVEYS: Delete the text of item 13 and replace with the following: Submit the survey field notes and completed Monument of record forms for the specific area, relating to monument referencing, before beginning clearing, grubbing, or excavation.

642-3.03 MONUMENTS: Delete the first and second paragraph and the first sentence of the third paragraph and replace with the following: Install primary and secondary monuments, as called for in the Plans at the positions determined by the Department. Reference all property markers/corners, monuments or accessories that may be disturbed or buried during construction. Monument of Record forms, available from the Project Engineer, shall be completed and submitted to the Project Engineer for acceptance and recording by the Departments Survey/Locations section before any ground disturbing activity. Before the completion of the project, reestablish any disturbed property markers/corners, monuments or accessories from the original references in their original position and submit completed Monument of Record forms to the Project Engineer for acceptance and recording by the Departments Survey / Locations section.

Keep records and report to the Project Engineer evidence that a monument has been disturbed and is no longer reliable or cannot be located and is presumed to be lost or obliterated. Establish a minimum of two in-line reference points to all monuments identified for referencing on the Departments Right-of-Way plans or Survey Control sheet. In situations where in-line references are not practical three swing-tie reference points will be accepted. Set references outside of the Right-of-Way limits. Measure all distances to the nearest 0.01 foot. Record referencing of monuments in a separate field book stamped by the Surveyor. It is the Surveyors statutory responsibility to reference any other monuments that may be destroyed during construction whether or not they are identified on the Right-of-Way plans or Survey Control sheet. Without prior written approval of the Survey Manager for the Region in which the project is located, the use of GPS is not an acceptable method for referencing monuments.

Replace existing monuments disturbed by construction from the original references established before construction with Primary or Secondary monuments meeting the requirements of sub-section 642-3.01. Monuments re-established from original reference will not require a final traverse. Any monument that cannot be re-established from original references will require a final traverse as defined by 642-1.02.

Delete the fourth sentence in the paragraph that begins"The Surveyor must complete and stamp..." The sentence to be deleted begins " Deliver conforming copies of the ...".

Standard Modification

642-3.04 OFFICE ENGINEERING: Delete the third sentence and replace with: Perform the work by, or under the responsible charge of, a person registered in the State of Alaska as a Professional Land Surveyor or a Professional Engineer.
(05/01/07) E 53

642-3.05 FINAL TRAVERSE: Delete the first two sentences and add the following: Within 30 days after the Project Engineer receives a letter stating that construction activities that may disturb the monuments has ceased the Surveyor shall run a final closed traverse, as defined by See 642-1.02. The closed traverse will begin and end on the two closest centerline monuments on either side of the monument to be established. The centerline monuments being used to begin and end the traverse must either be undisturbed originals, or have been re-established from original references.

(07/05/05)R61USC02

642-4.01 METHOD OF MEASUREMENT. Add the following:

Item 642(15) Intersection Sight Distance Measurement. By each intersection measured, only after the certified and recorded results have been accepted by the Engineer.

642-5.01 BASIS OF PAYMENT. Add the following:

Add the following pay item:

Pay Item	Pay Unit
642(15) Intersection Sight Distance Measurement	Each

SECTION 643

TRAFFIC MAINTENANCE

Special Provisions

643-1.01 DESCRIPTION. Add the following as a third paragraph: Illuminate construction activities listed in Table 643-3 during hours of night work on roads open to the public within project limits.

(03/15/06)ES14

643-1.02 DEFINITIONS. Add the following paragraphs after paragraph titled "Construction Phasing Plan":

Balloon Light: Light surrounding by a balloon-like enclosure kept inflated by pressurized air or helium, and producing uniform light through 360 horizontal degrees. The top half of the balloon enclosure shall be constructed of an opaque material.

Night Work: Work occurring between sunset and sunrise on all days except the "No Lighting Required" period shown in the table below:

Latitude	No Lighting Required		Nearby
(degrees)	Start	End	Cities
< 61	Lighting Required All Year		Everything S of Hope
61	June 11	July 1	Anchorage, Valdez, Girdwood, Wasilla, Palmer, Glennallen
62	June 2	July 13	Talkeetna
63	May 27	July 17	Cantwell, Paxson, McGrath
64	May 22	July 21	Delta Junction, Nome, Tok
65	May 18	July 25	Fairbanks
66	May 14	July 29	Circle City
67	May 10	August 2	Coldfoot, Kotzebue
68	May 7	August 6	Galbraith Lake
69	May 3	August 9	Happy Valley
70	April 30	August 12	Deadhorse
71	April 27	August 15	Barrow
72	April 24	August 19	

(03/15/06)ES14

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 minimum12 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. (02/10/06)R222USC04

643-1.04. WORKSITE TRAFFIC SUPERVISOR. Add the following to Item 2. Duties:

i. Supervise lighting of Night Work.

(03/15/06)ES14

Standard Modification

643-2.01 MATERIALS. Under Item 16. Flagger Paddles, delete the last sentence and replace with: 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(05/01/07)

Special Provisions

643-2.01 MATERIALS. Add the following:

17. Flexible Markers. Refer to subsection606-2.01 Materials.

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

643-3.01 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(05/01/07)

Special Provisions

643-3.02 ROADWAY CHARACTERISTICS DURING CONSTRUCTION. Add the following: Pave lanes next to the median first. Pave lanes next to exit and entrance ramps last. Place a temporary 12:1 sloped wedge of asphalt concrete against the abrupt pavement edge on lanes next to exit and entrance ramps. Do not open the roadway to traffic until slope wedges are in place.

Standard Modification

643-3.04 TRAFFIC CONTROL DEVICES. In the sixth paragraph and also in Item 4.b., delete: "ATTSA" and replace with: ATSSA (American Traffic Safety Services Association).

E56(05/01/07)

Special Provisions

643-3.04 TRAFFIC CONTROL DEVICES. Add the following paragraph after the first paragraph: The Contractor shall furnish and erect three special permanent construction public information signs. Place these signs near the Lake Otis Parkway BOP and EOP, and the BOP for 88th Avenue. Get location approval from the Engineer before erecting these signs. At a minimum, these signs shall contain the project name, approximate completion date, and phone numbers for the project hotline, resident engineer, and the contractor. These signs shall be a minimum of 48" x 96" in size. Submit sign layout for approval by the Engineer before fabricating.

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.

Change items 7 and 8 to 8 and 9 respectively.

Add the following:

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. 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
0-9,999	$30
10,000+	$40

643-3.07 MAINTENANCE OF TRAFFIC DURING SUSPENSION OF WORK. Delete the first, second, and third paragraphs and substitute the following: Unless listed in the "Acceptance for Winter Maintenance" letter, the Contractor is responsible for maintaining the work during the winter suspension period.

643-3.08 CONSTRUCTION SEQUENCING. Delete the last sentence and substitute the following: Unless otherwise determined by the Engineer and on an approved Traffic Control Plan (TCP), do not restrict traffic during the times listed below.

Lane Restrictions

Lake Otis Parkway: 0500 hours to 2000 hours daily.

88th Avenue: Monday through Friday 0630 hours to 0830 hours and 1600 hours to 1830 hours.

School Coordination Plan

Obtain the local school bus schedule and coordinate his 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.

Closures:

The Contractor will be allowed one weekend closure for the Abbott Road and Lake Otis Parkway intersection for paving, median, curb and gutter, and electrical work.

The Contractor will be allowed two weekend closures for each of the following intersections:

1. Lake Otis Parkway and Lore Road – paving, median, curb and gutter, and electrical work.

2. Lake Otis Parkway and 72nd Avenue – paving, median, curb and gutter, and electrical work.

The closures shall be from Friday at 2200 hours to Monday at 0500 hours.

Construction Phasing:

Lake Otis Parkway
All work on Phases 1-3 shall be completed by October 15, 2007. Work on Phases 1 – 3 shall not occur on more than 1 phase at a time.

Phase 1 – Complete all work on Lake Otis Parkway from 68th Avenue to Lore Road, Lore Road, and 72nd Avenue, except planing, crack repair, final lift paving, and final striping. This shall include, but is not limited to: prelevling; installation of underground traffic signal components; sign installation; and median, curb ramp retrofit, curb and gutter, storm drain, and bus turnout construction.

Phase 2 -Complete all work on Lake Otis Parkway from 88th Avenue to Lore Road, except planing, crack repair, final lift paving, and final striping. This shall include, but is not limited to: prelevling; sign installation; and median, curb ramp retrofit, curb and gutter, turn lane, and bus turnout construction.

Phase 3 -Complete all work on Lake Otis Parkway from Abbott Road to 88th Avenue and 88th Avenue from Arlon Street to Bell Circle, except planing, crack repair, final lift paving, and final striping. This shall include, but is not limited to: prelevling; installation of underground traffic signal components; sign installation; and median, curb ramp retrofit, curb and gutter, storm drain, and turn lane construction.

88th Avenue
Phase 4 - Reconstruct 88th Avenue from Toloff Street to Arlon Street. This shall include, but is not limited to: sign installation; underground illumination components; and median, curb and gutter, storm drain, and turn lane construction. This work shall be completed October 15, 2007.

Phase 5 – Final Paving. This shall include planing and crack repair on Lake Otis Parkway and final paving and striping on Lake Otis Parkway, 72nd Avenue, Lore Road, and 88th Avenue. This work shall be conducted between May 17, 2008 and July 1, 2008

These phasing sequences represent a general outline and do not include all work necessary to fulfill the contract. Installation of the above ground signal components may fall outside of these phases. In this case, traffic signal installation shall be completed according to subsection 108-1.06.

Construction sequencing shall be coordinated with the Bragaw-Abbott Loop Extension project. It is anticipated there will be short periods (weekends, etc.) when all the Abbott Loop traffic will be shifted to Lake Otis between Abbott Road and 68th. If coordination conflicts arise, the Abbott Loop project will have priority over this project.

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.

Add the following new subsection:

643-3.10 LIGHTING OF NIGHT WORK
Illuminate the night work areas specified in Table 643-2 to the light levels specified.

Table 643-3 does not provide a comprehensive list of operations that require lighting. Provide lighting for other operations when necessary.

Table 643-3
Night Work Illumination Level and Area of Coverage

Type of Work or Equipment	**Lighting Configuration**
Paving, Milling, Striping, Pavement Marking Removal, Rumble Strip Installation	At least 2 machine-mounted balloon lights with a cumulative wattage of at least 4000 watts. Provide additional lights or wattage if necessary to provide complete coverage.
Rolling, pavement sweeping	At least 4 sealed beam halogen lamps in the front and four in the back. Each should be at least 55 watts.
Flagging	Two balloon lights of at least 2000 watts each located within 30 feet of the normal flagger location. Locate one on the right side of the road beyond the flagger and the other on the left side of the road in front of the flagger.
Truck Crossings (meaning where haul vehicles cross or enter a road):	Two balloon lights of at least 2000 watts each located on the main road, one on the far right side of the intersection, the other on the near left. Locate lights within 30 feet of the edges of the side street. If there is a flagger at the crossing, locate the lights to also meet the requirements for flagging.
1) with roads with ADTs over 10,000 or 2) that are controlled by portable traffic signals or flaggers	

Use balloon lighting as the main light sources. Do not use floodlights without prior approval by the Engineer. When approved, install floodlighting in a manner that minimizes glare for motorists, workers, and residents living along the roadway. Locate, aim, louver, and/or shield light sources to achieve this goal.

The Engineer shall be the sole judge of when glare is unacceptable, either for traffic or for adjoining residences. When notified of unacceptable glare, modify the lighting system to eliminate it.

If the Contractor fails to meet required lighting equipment or provides lighting that creates unacceptable glare at any time, the Contractor shall cease the operations that requires illumination until the condition is corrected.

Lighting equipment shall be in good operating condition and in compliance with applicable OSHA, NEC, and NEMA codes.

Provide suitable brackets and hardware to mount lighting fixtures and generators on machines and equipment. Design mountings so lights can be aimed and positioned as necessary to reduce glare. Locate mounting brackets and fixtures so they don't interfere with

the equipment operator or overhead structures. Connect fixtures securely in a manner that minimizes vibration.

Ensure ground, trailer, and equipment mounted light towers are sturdy and freestanding without the aid of guy wires. Towers shall be capable of being moved to keep pace with the construction operation. Position ground and trailer mounted towers and trailers to minimize the risk of being impacted by traffic on the roadway or by construction traffic or equipment.

Raise trailer or equipment mounted lights to maximum height, except do not exceed the clearance required for overhead objects such as overhead signals, overhead signs, trees, aerial utilities, or bridges. Aim and adjust lights to provide the required light levels. Provide uniform illumination on the hopper, auger, and screed areas of pavers. Illuminate the operator's controls on all machines uniformly.

Furnish each side of non-street legal equipment with a minimum of 75 square inches high intensity retroreflective sheeting in each corner, so at least 150 square inches of sheeting is visible from each direction. Provide red sheeting on the rear of the equipment and yellow sheeting elsewhere.

Existing street and highway lighting and conventional vehicle headlights do not eliminate the need for the Contractor to provide lighting meeting the requirements of Table 643-2.

Provide sufficient fuel, spare lamps, spare generators, and qualified personnel to ensure that all required lights operate continuously during nighttime operations. Ensure generators have fuel tanks of sufficient capacity to permit operation of the lighting system for a minimum of 12 hours. In the event of failure of the lighting system, discontinue the operation until the required level and quality of illumination is restored.

Maintain a supply of at least 20 emergency flares for use in the event of emergency or unanticipated situations. Comply with local noise ordinances.

Install all post-mounted electroliers located within the clear zone, on NCHRP 350-compliant breakaway bases. (03/15/06)ES14

Standard Modification

Add the following new subsection:

643-3.11. HIGH VISIBILITY GARMENTS. Ensure all workers within project limits wear outer garments that are highly visible and comply with the following requirements:

1. Standards.
   Use high visibility garments conforming to the requirements of ANSI/ISEA 1072004, 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 1072004; except you may use previously purchased garments labeled in conformance with ANSI/ISEA 1071999 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 bottom at all times.

5. Outer Raingear.
Wear raingear tops and bottoms conforming to the requirements of this Subsection 6433.11.

Special Provision

6. Exceptions.
When workers are inside an enclosed compartment of a vehicle or within a traffic control set-up on an approved TCP as approved by the Engineer, they are not required to wear high visibility garments.

Standard Modifications

7. Condition.
Furnish and maintain all vests, jackets, coveralls, rain gear, hard hats, and other apparel in a neat, clean, and presentable condition. Maintain retroreflective material to Level 2 standards.

Payment for high visibility garments for workers is subsidiary to other traffic contract items.

(05/01/07)E56

Special Provision

643-3.12 TEMPORARY ELECTROLIERS.

Location. When the Contract includes Item 643(40) Temporary Electrolier, install temporary electroliers at the following locations:

1. Along roadway segments that are illuminated when beginning work and the following conditions apply:
   a. Maintaining traffic on the subgrade, portions of the new pavement structure, or on the existing pavement.

b. The permanent lighting system cannot be operational beforehand.
c. When, because of grading operations, a vehicle is within 4 inches of ground clearance and 5 feet between the tires would snag on the existing foundations, or the tops of the existing foundations are more than 8 inches below the grade of the surrounding embankment.

2. At locations specified by the Engineer, including
   a. Along detours and diversions, and
   b. Along traveled ways that transition from one typical section to another, and
3. At temporary traffic signals.
4. At the locations shown in the Plans.

Lighting Plan. The Department will not require lighting from midnight June 7 to midnight July 5. Make temporary electroliers operational by sunset on the day replacing or retiring the existing system, or open a roadway and/or detour to traffic.

Submit a Plan for each temporary electrolier system to the Engineer for review and approval before implementing. Allow at least two weeks for review. Provide temporary electroliers on the far right side of approaches at signalized intersections. Luminaires and mast arms may be installed on the signal poles when they do not conflict with other overhead utilities. Along roadways, choose one of the following options for temporary lighting Plan:

1. When one is included, use the temporary lighting Plan detailed in the Plans.
2. On roadways with existing lighting, provide new foundations and install poles and mast arms sized to keep the existing luminaires in their existing positions horizontally and vertically over the roadway. In this case, no lighting design is required.
3. Design temporary lighting system using the Contractor's choice of luminaires, including the luminaires of the permanent lighting system. Use a layout pattern, mounting height, and luminaire offset and spacing that provide a light distribution that conforms to AASHTO's "An Informational Guide for Roadway Lighting" illuminance method of design. Design the system for the roadway's functional class as specified in the Department's Annual Traffic Volume Report.

Furnish and install materials and miscellaneous hardware required to provide a functional lighting system, including foundations, branch circuitry, and electrical load centers. Size the branch conductors to provide a maximum 5% voltage drop at the most remote luminaire. Materials shall conform to the Specifications. The illumination cables may only be directly buried if the cables are listed for direct burial.

Poles. Use any of the following poles.

1. Existing light poles found within the project limits that are in suitable condition for reuse as determined by the Engineer and scheduled to be removed.
2. Poles from the permanent lighting system.
3. The following new poles may be furnished, if a minimum of 30 feet in elevation between a luminaire and the edge of traveled way is maintained.
   a. ANSI Class 4 wood poles. Installed outside the clear zone during winter

shutdown. To determine the clear zone, see subsection 1130.02 of the Alaska DOT/PF Highway Preconstruction Manual.

b. Steel, aluminum, or fiberglass poles that meet design criteria for 80 mile per hour wind speeds according to AASHTO's 1994 edition of the "Standard Specifications for Structural Supports for Highway Signs, Luminaires, and Traffic Signals".

c. Poles that are part of the temporary signal systems.

Furnish temporary electrolier service between October 1 through May 15 and located within the clear zone, with an approved yielding type base. Approved yielding bases consist of FHWA approved slip bases, transformer bases, or frangible couplings. Install wood poles and other fixed base poles outside the clear zone or behind guardrail or portable concrete barrier that protects against another hazard.

Install temporary electroliers, in service at any time from May 15 through September and located within the clear zone, with approved yielding bases or with fixed bases shielded by 30 feet of barrier and an FHWA approved end treatment. Provide 2 feet of clearance between the barrier and pole. Consider the costs of furnishing the barrier and an end treatment a subsidiary obligation of Item 643(40) Temporary Electrolier. Replace fixed base poles that are located within the clear zone and that will remain in service after October 1 with yielding base poles at no expense to the State.

Load Centers.

Use any of 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 the 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".

643-3.13 TEMPORARY SIGNAL SYSTEMS. Provide temporary traffic signals at the intersections of Lake Otis Parkway and Abbott Road; and Lake Otis Parkway and 88th Avenue. Move traffic through these intersections with fully functional traffic signals, except during shutdowns to change from one system to another. The Engineer will limit temporary signal system shutdowns to the times when traffic restrictions are allowed in subsection 643-3.08, Construction Sequencing. Use flag-control to control the flow of traffic during these shutdowns.

Traffic Control Plan. Submit a Traffic Control Plan for each temporary signal system to the Engineer for approval before implementation. Include the same number of signal heads, signal phases, pedestrian pushbuttons, signs, pavement markings, etc. found in the signal system being replaced or modified in the Plan, plus the following details.

1. A scale drawing of the intersection that includes lanes, their widths, and auxiliary lane pocket lengths.
2. The location of signal poles, controller cabinet, and the load center that will feed the temporary signal system.
3. The location, sizes, and type of each signal head.

Temporary Signal Systems. May consist of a combination of the existing systems, relocated components of the existing systems, guyed wood poles, and parts of the permanent signal system.

1. Install temporary controller assemblies on Type III junction boxes.
2. Suspend traffic signals from messenger cables provided mounted with standard span wire hangers and secure them with a second cable to prevent misalignment in a wind. Leave sufficient signal cable slack at each pole to provide for drip loops and to allow realignment of each signal head.
3. Use a minimum of two circuits to energize the signals of each phase that include two or more signal faces. The Engineer will allow splices only at the terminal blocks in the signal faces.

Whenever temporary signals include a span wire attached to a permanent signal pole, install a guy on the permanent pole and provide protective collars to prevent chafe damage. Exclude poles with breakaway bases in span wire supported signal systems.

Maintain fully actuated traffic signals during the normal course of construction by installing loop detectors or a video detection system.

The Engineer will use Municipality of Anchorage (MOA) signal maintenance personnel for certain work inside controller cabinets. Prepare the controller cabinet in accordance with Subsection 660-3.11 Signal System Timing and Adjustments.

Special Provisions

643-4.01 METHOD OF MEASUREMENT. Add the following:

2. Replace the second sentence 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.

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.

Item 643(20_) Temporary Detour will not be measured for payment

Standard Modification

643-5.01 BASIS OF PAYMENT. Add the following: Payment for high visibility clothing for workers is subsidiary to other items. (1/01/06)E28

Special Provisions

Temporary Signal System Complete will be paid for under Pay Item 660(7_). Pay Item 660(7_) Temporary Signal System Complete will not include payment 660(25) Controller Cabinet Preparation and 660(26) Signal System Timing and Adjustments. This work will be paid for under their respective items.

Special Provisions

643-5.01 BASIS OF PAYMENT. Add the following:
The Engineer does not require a change order/directive for Item 643(25) Traffic Control.

Add the following:

16. Work Zone Illumination. Payment for work zone illumination and any required adjustments to work zone illumination is subsidiary to other items. (03/15/06)ES14

17. Temporary Detour: The lump sum payment for Items 643(20_) Detour will consist of all traffic control devices, flaggers, pilot cars, and subsidiary items necessary to implement the detour. Warning lights, high-level warning devices, vertical panels, and sign supports required for traffic control devices are subsidiary.

TRAFFIC CONTROL RATE SCHEDULE

Traffic Control Device	Pay Unit	Unit Rate
Construction Signs	Each/Day	$5.00
Special Construction Sign	Square Foot	$20.00
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	$2.50
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
Interim Pavement Markings		
Painted Markings	Foot	$0.30
Removable Preformed Markings	Foot	$0.65
Temporary Raised Pavement Markings	Each	$0.90
Word or Symbol Markings	Each	$40.00
Preformed Marking Tape	4"X 1 Foot	$1.50

The Engineer will pay for Item 643(15) Flagging on a contingent sum basis at the rate of $38/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 subsection109-1.05 Compensation for Extra Work.

Delete Item 643(15) and substitute the following:

Pay Item	**Pay Unit**
643(15) Flagging	Contingent Sum
643(20A) Temporary Detour at Lake Otis Parkway and Abbott Road	Lump Sum
643(20B) Temporary Detour at Lake Otis Parkway and 88th Avenue	Lump Sum
643(20C) Temporary Detour at Lake Otis Parkway and Lore Road	Lump Sum
643(20D) Temporary Detour at Lake Otis Parkway and 72nd Avenue	Lump Sum
643(40) Temporary Electrolier	Each

(01/04/06)R222USC04

SECTION 644

SERVICES TO BE FURNISHED BY THE CONTRACTOR

Special Provisions

644-2.01 FIELD OFFICE. Delete this Subsectionin its entirety and substitute the following: Furnish and maintain a suitable office for the Engineer, available for occupancy from two (2) weeks before commencing work, through thirty (30) days after issuance of the notice of project completion as defined in Subsection105-1.15. The following office requirements shall be met:

1. A minimum of 1,000 square feet of floor area. The office area shall be divided so that it contains an office room separated by a closable door. The office room shall have a minimum of 160 square feet of floor area.

2. A thermostatically controlled interior heating system with necessary fuel.

3. Adequate electrical lighting and 120 volt, 60 hertz power, with a minimum of six (6) electrical outlets.

4. A minimum of 100 square feet of window area and adequate ventilation.

5. Adequate parking for a minimum of sixteen (16) vehicles, with one handicap parking space meeting the requirements of Americans with Disabilities Act Accessibility Guidelines (ADAAG).

6. Attached indoor plumbing with sanitary lavatory facilities and potable drinking water provided.

7. Four telephone service lines available at the office location. One of the lines provided is to be available for a facsimile machine/dial-up Internet connection. Provide Internet connection with send and receive data capability supporting 56 kilobytes per second or higher data transfer rate.

8. If a part of the Contractor's building, it shall be completely partitioned off from the balance of the structure and provided with a separate outside door equipped with a lock.

9. Located within three (3) miles of the project.

10. Weekly janitorial service consisting of emptying trash receptacles, vacuuming office area and cleaning restrooms and counter areas.

11. Provide one mobilization and one demobilization of the Engineer's office equipment and furniture from Anchorage.

644-4.01 BASIS OF PAYMENT. Add the following: Long distance calls made by State personnel and the Internet service provider will be paid by the State. Local calls and connection fees shall be paid by the Contractor.

(01/11/07)R63USC

Add the following Section:

SECTION 645

TRAINING PROGRAM

Special Provisions

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 before 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 you 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 you where the apprentices/trainees are concurrently employed on the project and you do one or more of the following: 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.

Before 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 two (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 you, 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 before 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 you. 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 your judgment, an apprentice/trainee becomes proficient enough to qualify as a journey worker before the end of the prescribed training period and you employ 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. You must 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 according to 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 you subcontract a portion of the work, you 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 you; compliance or non-compliance with these provisions rests with you and sanctions and/or damages, if any, shall be applied to you according to Subsection645-5.01, Basis of Payment.

645-4.01 METHOD OF MEASUREMENT. You 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 your 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 your discretion, graduates early and is employed as a journey worker according to the provisions of Subsection645-3.01, you will receive payment only for those hours of training actually provided.

This payment will be made regardless of any other training program funds you may receive, unless such other funding sources specifically prohibit you 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.

Non-compliance 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 all training programs approved for the project. No payment or partial payment will be made to you if you fail to do any of 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 you have failed, by the end of the project, to provide the required number of hours of training and have failed to submit acceptable good faith efforts documentation which establishes why you were unable to do so, you 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.

Payment will be made under:

Pay Item	**Pay Unit**
645(1) Training Program, 2 Trainees/Apprentices	Labor Hour

(10/29/91)S16

SECTION 646

CPM SCHEDULING

Special Provisions

646-2.01 SUBMITTAL OF SCHEDULE Replace this subsectionwith 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 updating the CPM Schedule. Meet with the Engineer monthly, or as deemed necessary by the Engineer.

(12/13/02)R261M98

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 according to 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 all 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 each 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.

All 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.

All equipment shall be fully operated, which shall be understood to include the operators, oilers, tenders, fuel, oil, air hose, lubrication, repairs, maintenance, insurance, and all 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. All 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 commence, 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 according to 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 all 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.

Payment will be made under:

Pay Item	Pay Unit
64(1) Wide Pad Dozer, 65 hp Minimum	Contingent Sum

(08/24/05)R15USC

SECTION 660

SIGNALS AND LIGHTING

Standard Modification

660-2.01 MATERIALS. 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)

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).

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. In addition, submit two complete sets of all electrical related plan sheets. The Engineer will deliver one copy each to MOA Signal Electronics and MOA Street Light Maintenance.

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 remains after completing backfill work and excavated material not meeting the requirements of Selected Material, Type C, as defined in subsection 703-2.07.

Dewater 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 nonreusable 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 all traffic signal items; such as controller assemblies, signal equipment and flasher equipment not scheduled for reuse to the MOA Traffic Signal Warehouse at 5923 Rowan St. Signal poles and mast arms shall be delivered to the MOA Traffic Signal Pole Yard at 3rd and Orca St. Allow MOA maintenance personnel to select the equipment and pole items they would like to salvage, and dispose of all remaining equipment and pole items. Contact Bill Sosnowski, Foreman at 343-8355 one week before your tentative 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.

Existing electroliers located along 88th Avenue are owned and maintained by Chugach Electric Association (CEA). Contact and coordinate with CEA prior to disconnecting and removing electroliers identified in the plans to be removed or salvaged. Removed electroliers shall be delivered to the CEA pole yard. Allow CEA personnel to select the electrolier items they would like to salvage, and dispose of all remaining items.

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.

6. 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.

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.

1) 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 two 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 non-galvanized standards two 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 all 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 (60^0) turn, while preventing the leveling nuts from turning.

l. Attach a #4 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 4 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.

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 subsurface conditions prevent the successful completion of the work, install the conduit(s) by boring or drilling methods without additional compensation.

4. Sweep both rigid metal and polyethylene conduits through the open bottom of junction boxes by installing 90-degree rigid metal elbows on the ends of conduit runs. To each elbow, install a nipple that terminates 5 to 12 inches above the bottom edge of each junction box.

5. Install the tails of loop detectors without elbows through the walls of junction boxes at elevations that ensure the loops drain into the box. Extend the ends a minimum of 2 inches beyond the inside wall of the box.

6. Drill a 3/8 inch drain hole in the bottom of the lower straight section of elbows and in the bottom of conduits at the low points of conduit runs. Smooth the edges of the drilled holes on the inside of elbows to prevent scraping the conductors. Cover the holes with a wrap of approved filter cloth secured with two self-clinching nylon cable ties.

7. Keep conduits clean. Install grounding bushings and approved plastic insert type plugs on the ends of conduit runs before backfilling around the conduit ends.

8. At the low points of conduit runs, install sumps containing a minimum two cubic-feet of coarse concrete aggregate material that conforms to subsection 703-2.02. Compact the aggregate sumps as directed to prevent settlement of the trench backfill.

9. Install conduits that must cross existing facilities such as storm drain pipes, duct systems, and other underground utilities at the minimum depths specified, going under the facilities if necessary. Install additional drains and aggregate sumps at the low spots, if any.

10. Position conduits in trenches, junction boxes, and foundations to provide clearances of at least 2½ inches around 2 inch conduits and at least 2 inches around conduits larger than 2 inches.

11. Fabricate rigid metal conduits less than 10 feet long from standard lengths of conduit. Cut conduits squarely to ensure the threading die starts squarely on the conduit. Cut the same number of threads as found on the factory threaded ends. Ream the inside of conduit ends cut in the shop or field to remove burrs and sharp edges. Do not use slip joints or pieces of running thread pipe.

12. Coat drilled holes, shop and field cut threads, and the areas with damaged zinc coating with zinc rich paint.

13. When standard couplings cannot be used to join conduit components, use approved threaded unions.

14. Bury a continuous strip of 4 mils thick, 6 inch wide polyethylene marker tape above underground conduit runs. Install the tape 9 inches (± 3 inches) below finished grade, using two strips side by side to mark road crossings. Furnish tapes with a black legend on a red background.

15. If encountering obstructions during jacking or drilling operations, obtain approval

and cut small holes in the pavement to clear the obstruction. Locate the bottom inside face of the bore pit no closer than the catch point of a 1¼ to 1 slope (a horizontal to vertical ratio) from the edge of pavement. Do not leave these pits unattended until installing an approved means of protection.

16. When the Plans specify using polyethylene conduit, install RMC in structures and foundations, between type 2 and 3 load centers and the nearest junction box, and on the surfaces of poles and other structures.

17. In foundations, install 90 degree elbows and conduits of the size and quantity shown on the Plans. Extend the conduits a maximum of 2 inches above the top of the foundations for posts and poles with breakaway bases and 4 inches above the top of foundations for fixed base structures.

18. Seal conduits leading to electrical equipment mounted on soffits, walls, and other locations below the grade of the serving junction box with an approved duct sealing compound.

19. Install expansion fittings in conduits that cross expansion joints.

20. Install a polypropylene pull rope with a minimum 200 pound tensile strength in future use or spare conduits, and reinstall the plugs. Double back at least two feet of pull rope into both ends of each conduit.

21. The Contractor may install conduits larger than the sizes specified. If used, it must be for the entire length of the run. Reducing couplings or bushings are not allowed. Complete work associated with installing conduits larger than specified without extra compensation.

22. Clean existing conduits that will remain in service using a heavy duty air compressor that delivers at least 125 cubic feet of air per minute at a pressure of 110 pounds per square inch. Clean the conduits before pulling in new cables and after removing cables specified to be removed or replaced as follows:

    a. When the conduits contain cables that will remain in service, leave the cables in place during the cleaning, and
    b. Ream empty conduits with a mandrel or cylindrical wire brush before blowing them out with compressed air.

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.
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

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.

Add the following line to Table 660-1 under subitem a. of item 9.

LOOP DETECTOR NUMBER	COLORED PAIR
Usually a spare pair	Orange and Black

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 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, 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 4 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.

Until each traffic signal and/or flashing beacon goes into operation, keep the vehicular and pedestrian signal faces covered with beige colored canvas shirts sized to fit the signal faces shown in the Plans. Each signal shirt shall feature elasticized openings that fit over the visors and at least two straps to secure it to the signal. Provide shirts with a legend that reads "out of service" and a center section that allows an operator to see the indications during system tests.

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. Signal Pole Installation. Install signal poles with a slight rake by plumbing the side of the pole opposite the mast arm just above the base plate. Tighten the nuts on the anchor bolts as described in subsection 660-3.02k.

   Cover the gap between the foundation and base plate by installing a metal skirt around the base plate, secured with stainless steel sheet metal screws.

3. Vehicular Signal Head Installation. With two piece mast arms, do not install signal heads within 12 inches on either side of the slip type field splice.

   Attach each side mounted terminal compartment with two ½" x 13 bolts, with washers, threaded into holes tapped into the side of the pole at the location shown on Standard Drawing T-30. Install the vertical pipe members plumb.

   When installing 5-section vertically stacked signal heads on the sides of poles, secure the vertical pipe to the pole using a steel conduit hanger mounted 6 inches below the top horizontal pipe.

   Aim through phase vehicular signal faces at a point located a distance from the face as shown in Table 660-2. If two through signal faces are not visible from this point at a height of 42 inches above finished grade, consult the Engineer for corrective measures.

TABLE 660-2	
THROUGH PHASE SIGNAL FACE AIMING POINTS	
85th Percentile Speed (mph)	Minimum Visibility Distance (feet)
20	175
25	215
30	270
35	325
40	390
45	460
50	540
55	625
60	715

4. Pedestrian Signal and Push Button Installation. Orient pedestrian signal faces at the center of the crosswalk on the opposite side of the street. Attach each clamshell bracket with two ½" x 13 bolts threaded into holes tapped into the side of the pole. Install a spacer, furnished by the bracket manufacturer, on each bolt.

Install the push button on the crosswalk side of the pole. Install R10-3B (R or L) push button signs above each push button. Furnish signs with the arrow pointing in the direction of the appropriate crosswalk. When channel is used for mounting push button signs, tap the top and bottom sign bolts into the pole.

For new installations, mount push buttons 42" above walking surface as indicated in the Plans.

For all existing pedestrian push buttons located within the project limits to remain, the push buttons shall meet current Federal American with Disabilities Act (ADA) guidelines. The centerline of the push button shall be mounted 36 to 42 inches above the clear ground space for approach. Adjust push button height if located outside the acceptable height range.

The push button shall be mounted adjacent to a clear ground space or a landing on the pedestrian access route leading to the crosswalk. The clear ground space shall be at least 32 inches by 54 inches, shall slope no more than 1:48 in any direction. Where adjacent to a parallel curb ramp, the push button shall be within 10 inches of the walking surface, measured horizontally, from backing curb edge to push button face.

5. 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.

6. Flashing Beacon Installation. When the Plans specify using the flasher in a signal controller cabinet to energize beacons, furnish a two pole, fused block with built in fuse pullers and two fuses to protect the flasher. Furnish and leave 5 feet of cable in the cabinet. Others will install the fused block and terminate the beacon cables.

7. Wood Pole Installation. Place the poles in the ground to at least 6 feet deep or as noted in the Plans, whichever is deeper.

   After setting each pole in the ground, backfill the space around the pole with selected earth or sand, free of rocks 4 inches and larger, or deleterious material. Place the material in layers approximately 4 inches thick and thoroughly compact them with mechanical tampers.

   Furnish poles that provide a minimum vertical clearance of 21 feet between the pavement and low point of overhead conductor.

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.

If the existing lighting systems is not kept fully operational as specified herein, the Engineer will reduce the payments under Item 660(22) Illumination Price Adjustment.

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.

The Engineer will limit signal system shutdowns to the hours traffic restrictions allowed in subsection 643-3.08, Construction Sequencing. During shutdowns, use flag persons to control traffic. Provide local traffic enforcement and maintenance agencies 24-hour notice before shutting down a traffic signal system.

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.

Alignment. During the various phases of construction, shift the signal heads to keep them aligned horizontally and vertically with the approaches according to the following:

1. For overhead signals located 53 feet and more from the stop line, maintain 17.5 feet to 21.5 feet of clearance between the traveled way and the bottom of each signal. For closer signals refer to the MUTCD for maximum clearances.

2. For side mounted signals, maintain nine feet to 11 feet of clearance between the traveled way and the bottom of the signal.

3. Align overhead signals controlling a single lane with the center of the lane.

4. Align overhead signals controlling two or more lanes with the lane lines separating the lanes.

5. When the horizontal angle to the side mounted far right signal exceeds 20°, relocate this signal to an overhead location. Measure the angle 10 feet back from the stop line on the lane line between the two farthest left through lanes.

   i. With two or more through lanes, center one signal head over each lane.

   ii. With one through lane and protected permitted signal phasing, leave the five section signal over the lane line and center the signal to be relocated over the through lane.

   iii. Otherwise, install the relocated signal 8 feet to the right of the signal centered over the through lane.

6. For pedestrian signals, maintain 7 to 9 feet between the traveled way and the bottom of each pedestrian signal.

7. Aim signal heads according to Table 660-2 found in subsection 660-3.08, Signal and Lighting Structures.

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.

Add the following subsection:

660-3.11 SIGNAL SYSTEM TIMING AND ADJUSTMENTS. The Engineer will use Municipality of Anchorage (MOA) signal maintenance personnel for certain work inside controller cabinets. Before MOA personnel arrive to terminate conductors, ensure terminal connectors are attached to conductor ends and paired loop detector conductors and cables are labeled as specified in subsection 660-3.05, Wiring.

Controller Cabinet Preparation. Ship the traffic controller cabinet(s) and equipment to the Municipality of Anchorage Traffic Signal Electronics Shop at 3650 E. Tudor Road, Building C. MOA will inspect cabinet wiring, burn in signal equipment, customize cabinets for desired operation, and test the equipment according to subsection660-3.07, Shop Tests.

1. Loop Detector Wiring. Municipality of Anchorage Traffic Signal Maintenance (MOA Signal Maintenance) will test and connect paired loop detector conductors to the terminal blocks.
2. Control Cable Wiring. When modifying an operational signal system or controller assembly, MOA Signal Maintenance will connect control cables within the controller cabinet to the terminal blocks.
3. Timing Adjustments. During construction, MOA Signal Maintenance may adjust the system and intersection operational timing to accommodate project conditions.
4. Interconnect Wiring. MOA Signal Maintenance will test and connect interconnect wiring to the terminal blocks.

660-4.01 METHOD OF MEASUREMENT. Add the following:

Item 660(13B), Electrolier and Foundation Removal. By each complete unit, removed.

Item 660(22), Illumination Price Adjustment. By the mile for each roadway with all or part of its illumination system inoperative. A divided roadway is considered one roadway. Ramps are considered a separate roadway. The Engineer will measure each unlit section less than one mile long as one mile.

660-5.01 BASIS OF PAYMENT. Add the following: Pay Item 660(1_) Traffic Signal System Complete will not include payment for 660(11) Traffic Loop, 660(25) Controller Cabinet Preparation, and 660(26) Signal System Timing and Adjustments. This work will be paid under their respective items.

Payment for 660(1_) Traffic Signal System Complete includes all labor, equipment and materials required to provide a fully functional traffic signal including but not limited to:

General Construction Requirements, Foundations, Conduit, Junction Boxes, Wiring, Bonding and Grounding, Signal and Lighting Structures, Maintaining Temporary and Existing Electrical Systems, Traffic Controller Assemblies, Vehicle and Pedestrian Indications, Pushbutton Assemblies, Emergency Vehicle Preemption Systems, and Auxiliary & Test Equipment.

All equipment must be new and not remanufactured or rebuilt.

Payment for 660(7_) Temporary Signal System Complete includes all labor, equipment and materials required to implement a functioning temporary signal system necessary to construct modifications to an existing traffic signal. This item includes work described under Subsection 643-3.13, Temporary Signal Systems.

Payment for Item 660(13B) Electrolier and Foundation Removal includes full compensation for:

a. Removal of the foundation to at least 1 foot below existing ground.
b. Removal and disposal of existing branch circuit conductors,
c. Removal and disposal of existing junction boxes,

d. Removal, salvage, and delivery of all junction box lids,
e. Removal, salvage, and delivery of all slip and transformer base assemblies and the poles and mast arms specified to be salvaged, and
f. Removal and disposal of all luminaires and the poles and mast arms specified to be disposed of.

Payment for 660(17_) Traffic Signal System Modifications Complete includes all labor, equipment and materials required to implement modifications to an existing traffic signal. This item may include any of the items included in the Traffic Signal System Complete item.

Where indicated in the plans, the contractor shall install guard posts to protect the controller cabinet from being accidentally struck from an errant motor vehicle in accordance with the "Hydrant Guard Posts" detail in the plans. Stake and seek approval of proposed guard post locations from Municipality of Anchorage Traffic Signal Maintenance Section prior to installation. Measurement and payment for guard posts shall be incidental to 660 lump sum bid items.

The Engineer will pay Item 660(25) Controller Cabinet Preparation, based on paid receipts plus 15 percent for authorized work performed, and expenses incurred, by the Municipality of Anchorage Traffic Signal Maintenance Section. A directive will not be required to initiate payment for work performed under Item 660(25). The Contractor shall pay all costs of the Municipality for re-testing of work or equipment that fails to comply with the Plans and Specifications.

The Engineer will pay Item 660(26) Signal System Timing and Adjustments, based on paid receipts plus 15 percent for authorized work performed by the Municipality of Anchorage. A directive will not be required to initiate payment for work performed under Item 660(26). Pay costs of the Municipality retesting equipment that fails to comply with the Plans and Specifications.

The amount bid for an item shall include full compensation for:

1. All excavation, bedding, and backfill to install the components shown in the Plans. Dewatering excavations is a subsidiary obligation of completing the excavation work.

2. Removing and repairing existing improvements to complete the work, the repairs of which are not covered by other items in the contract.

3. All work associated with installing loop detectors, including: saw cutting, asphalt removal, aggregate base course, tack coating, and installing new asphalt concrete.

4. Measuring and adjusting the height of all existing pedestrian pushbuttons located within the project limits to meet current Federal American with Disabilities Act (ADA) standards.

The Engineer will pay for the disposal of all surplus and unusable excavation and for all imported backfill and bedding material at their 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.

For each mile of roadway with existing lighting systems that is not kept fully operational, the Engineer will deduct $1275.00 per day from the payments due the Contractor.

Payment will be made under:

Pay Item	**Pay Unit**
660(1A) Traffic Signal System Complete at Lake Otis Parkway & Lore Road	Lump Sum
660(1B) Traffic Signal System Complete at Lake Otis Parkway & 72nd Avenue	Lump Sum
660(3B) Bus Stop Lighting System Complete	Lump Sum
660(3C) Pedestrian Lighting System Complete	Lump Sum
660(7A) Temporary Signal System Complete at Lake Otis Parkway and Abbott Road	Lump Sum
660(7B) Temporary Signal System Complete at Lake Otis Parkway and 88th Avenue	Lump Sum
660(13B) Electrolier and Foundation Removal	Each
660(17A) Traffic Signal Modifications Complete at Lake Otis Parkway and Abbott Road	Lump Sum
660(17B) Traffic Signal Modifications Complete at Lake Otis Parkway and 88th Avenue	Lump Sum
660(17C) Traffic Signal Modifications Complete at 88th Avenue and Toloff Street	Lump Sum
660(17D) Traffic Signal Modifications Complete at Lake Otis Parkway and 80th Avenue	Lump Sum
660(18) Adjust Junction Box	Each
660(22) Illumination Price Adjustment	Contingent Sum
660(25) Controller Cabinet Preparation	Contingent Sum
660(26) Signal System Timing and Adjustments	Contingent Sum

R66USC04(4/4/07)

SECTION 661

ELECTRICAL LOAD CENTERS

Special Provision

661-1.01 DESCRIPTION. Add the following to the first paragraph: This work shall also include removing existing load centers, and all additional work and materials as noted or detailed on the Plans.

Standard Modifications

661-2.01 MATERIALS. Under Item 1. change title by removing: "Materials on the *Approved Products List:*" and replace with: Materials on the *Qualified Products List*: E36(01/27/07)

Under Item 2. 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)

Special Provisions

661-3.01 CONSTRUCTION REQUIREMENTS. Add the following:
When disconnecting and removing existing load centers, the Contractor shall take all necessary safety precautions as detailed in subsection 660-3.01.2 Safety Precautions.

661-4.01 METHOD OF MEASUREMENT. Add the following:
Item 661(7), Remove Existing Load Center By each unit; removed and disposed or salvaged as directed.

Add the following pay item:

Pay Item	Pay Unit
661(7) Remove Existing Load Center	Each

SECTION 670

TRAFFIC MARKINGS

Special Provisions

670-1.01 DESCRIPTION. Delete this subsection in its entirety and substitute the following: This work consists of furnishing, preparing and placing pavement markings at the locations shown on the Plans or as directed. Meet these Specifications and the applicable portions of the Alaska Traffic Manual.

670-2.01 MATERIALS. Add the following: Submit a manufacturer certification for the preformed marking tape to certify that the materials furnished conform to these specifications.

670-3.01 CONSTRUCTION REQUIREMENTS. Delete all paragraphs under item 2. Preformed Marking Tapes (PMT). and substitute the following:

a. General. 15 days before starting work meet with the Engineer for a pre-striping 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 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 and Manufacturer Certified Installers. Contractor shall be certified by the manufacturer as an approved installer of retroreflective preformed patterned pavement tape traffic markings, or Contractor shall provide the services of a manufacturer's representative (Manufacturer's Representative). In the latter case, Contractor shall ensure the Manufacturer's Representative observes all aspects of the application of the pavement marking materials. In all cases, Contractor shall cooperate with the Manufacturer's Representative and the Engineer to ensure the retroreflective preformed patterned pavement tape traffic markings are placed according to these specifications and the manufacturer's recommendations. Manufacturer's Representative shall be present continuously for each day of striping for each project.

c. Preparation. Contractor shall prepare the roadway areas to receive the retroreflective preformed patterned pavement tape traffic markings in accordance with these specifications and the manufacturer's recommendations.

d. Application. Contractor shall apply retro-reflective preformed patterned pavement tape traffic markings with equipment designed and capable of properly applying and inlaying or grooving in pavement markings at the point and time of application approved by the Manufacturer's Representative for the type of pavement marking being applied.

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.

e. 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 wastes material or asphalt grindings on State or Municipal property. Dispose of waste material according to applicable Federal, State, and local regulations.

f. Sampling. On the form provided by the Engineer, record the following readings, and the locations where they were taken using project stationing, and submit them to the Engineer within 24 hours for evaluation. Depth of slot are measured from the surface of the pavement.

(1) For inlay applications, record the depth of the slot every 300 feet during the grinding operation.

The Engineer may elect to use the Contractor's readings or perform additional sampling.

670-3.04 PAVEMENT MARKING REMOVAL. Add the following: Coordinate removal work with construction activity. Remove pavement markings the same day permanent and interim markings are applied, unless otherwise directed. Use vacuum shrouded equipment or other equally effective containment procedures.

Add the following subsection:

670-3.08 TOLERANCES FOR INLAID PREFORMED MARKING TAPE PAVEMENT MARKINGS.

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. ± ¼ inches

8. Depth of Groove cut into pavement. The groove shall be cut with carbide or diamond tipped cutting blades to a depth of 0.100 inches (100 mils) ± 0.010 inches (10 mils).

If it is determined that the material is being placed is not to specification, make immediate adjustments to correct the problem.

Inlaid preformed marking tape pavement markings will be unacceptable if:

1. The marking is not straight or wide enough.
2. The material blackens or is inconsistent in color.
3. The inlay slot is not cut to the specified depth.
4. The markings exhibit poor adhesion.
5. The retro-reflectivity of the markings is less than specified.
6. 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.

670-4.01 METHOD OF MEASUREMENT. Delete Items 2 and 3 and replace with the following:

2. Square Foot Basis. Transverse pavement marking lines, stop bars, cross walks and gore stripes will be measured by nominal width times actual length.

3. Each. Symbol pavement markings only's and arrow's will be measured on a unit basis with each separate word or symbol constituting a unit.

Add the following:

4. Foot Basis: Longitudinal Pavement Markings, inlaid applied, will be measured by the linear foot of 4-inch wide line. Wider striping will be measured in multiples of 4 inches.

670-5.01 BASIS OF PAYMENT. Add the following: 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.
- Traffic control to facilitate repair of permanent markings.

Milling for installation of the inlaid preformed marking tape is subsidiary to 670 items. Payment includes costs associated with this item, including the removal of millings.

Traffic control required for the installation of the permanent and interim pavement markings are subsidiary to Section 643 items of work.

Interim pavement markings required for all phases of the construction of the roadway is subsidiary to Section 643 items of work.

Payment will be made under:

Pay Item	**Pay Unit**
670(6A) PMT Pavement Markings Longitudinal Inlaid	Linear Foot
670(6B) PMT Pavement Markings Only and Arrow Inlaid	Each
670(6C) PMT Transverse Markings Inlaid	Square Foot

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SECTION 702

ASPHALT MATERIALS

Special Provisions

702-2.01 ASPHALT CEMENTS. Add the following. Performance Graded Asphalt Binder shall conform to the requirements of AASHTO MP1 and the additional properties defined by AASHTO T-53 and ASTM D5801 assigned to each grade.

	Performance Graded Asphalt Cement		
	PG 52-28	PG 58-28	PG 64-28
Softening Point AASHTO T-53	(none)	120 °F	125°F
Toughness min. ASTM D5801	(none)	110 inch-lb.	110 inch-lb.
Tenacity min. ASTM D5801	(none)	75 inch-lb.	75 inch-lb.

(10/26/05)R199USC04

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

(06/07/06)R199usc04

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		80, 1 face	98, 2 face	98, 2 face
Thin-Elongated Pieces, max % 1:5 1:3	ATM 306	 8 20	 8 -	 3 8	 3 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

(06/05/06)R199usc04

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.

SECTION 707

METAL PIPE

Standard Modification

Delete Subsection707-2.07 and replace with the following:

707-2.07 GALVANIZED STEEL WATER CONDUIT. Meet the following:

Galvanized Pipe ASTM A 53 or ASTM A 120, galvanized per AASHTO M 111

Galvanized Fittings ASTM A 234 galvanized per AASHTO M 232.

(06/30/04)E17

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

712-2.14 PREFORMED PAVEMENT MARKING TAPE. Delete this subsection in its entirety and replace with the following:

1. General Requirements:

   a. Contractor shall furnish retroreflective preformed patterned pavement tape traffic markings which are manufactured and formulated from new material and are free from defects and imperfections that might adversely affect the serviceability of the finished product. Contractor shall furnish pavement traffic markings free from dirt and other foreign material such as, but not limited to, surface oils or existing road marking material.

   b. The preformed patterned markings shall consist of white or yellow films with clear and/or yellow-tinted microcrystalline ceramic beads incorporated to provide immediate and continuing retroreflection. These films shall be manufactured without the use of lead chromate pigments or other similar, lead-containing chemicals.

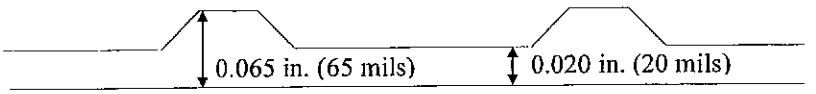
   c. Preformed words and symbols shall conform to the applicable shapes and sizes as outlined in the Alaska Traffic Manual.

   d. The preformed markings shall adhere to asphaltic cement concrete and Portland cement concrete by a pre-coated pressure sensitive adhesive. The pavement traffic markings shall be capable of application on new, dense and open-graded asphalt concrete wearing courses during the paving operation in accordance with the manufacturer's instructions. For asphalt concrete pavement, the pavement traffic markings shall be applied in grooves cut into the pavement. After application, the markings shall be immediately ready for traffic. Contractor shall furnish the proper surface preparation adhesives to be applied at the time of application, all equipment necessary for proper application, and manufacturer's recommendations for application that will assure effective product performance.

   e. The markings shall be highly durable, retroreflective, pliant polymer

materials designed for longitudinal, transverse, and symbol/legend markings subjected to high traffic volumes and severe wear conditions such as shear action from crossover or encroachment on typical longitudinal configurations such as edge lines and lane lines and typical transverse configurations such as stop bars and crosswalks.

f. Thickness: The patterned material without adhesive shall have a minimum caliper of 0.065 inches (65 mils) at the thickest portion of the patterned cross-section and a minimum caliper of 0.020 inches (20 mils) at the thinnest portion of the cross-section.



g. Contractor shall furnish retroreflective preformed patterned pavement traffic markings 3M Stamark Tape Series 380I ES manufactured by:

3M Traffic Safety systems Division
3M Center, Bldg 0225-05-S-08
St. Paul, MN 55144
Phone: 800-553-1380
Email: www.3M.com/tss

Local contact:

3M Alaska
11151 Calaska Circle
Anchorage, AK 99515
Phone: 907-522-5200
Fax: 907-868-5283

or an approved equal.

2. Performance Requirements:

a. Retroreflectivity. The retroreflective preformed patterned pavement traffic markings shall maintain a minimum retroflectivity of 100 millicandelas per square foot per foot-candle [(mcd/SF)/fc] throughout the warranty period.

The method for establishing the retroreflectivity of the pavement traffic markings is defined as:

If retroreflectivity becomes a concern at any time during the warranty period, the Engineer, Contractor, and the Manufacturer's Representative will conduct a visual night inspection to identify areas of the pavement traffic marking installation that appear to be below the specified minimum retained retroreflectance values. Areas that appear to be below the minimum retained retroreflectance value shall be identified as zones of measurement. Zones of measurement will be at least 300 feet in length.

The retroreflectivity of the areas in question or zones of measurement will then be measured using a portable retroreflectometer conforming to the ASTM E-1710 test method for CEN-prescribed geometry of 1.05° observation and 88.76° entrance angles.

b. Color Stability. The preformed patterned pavement traffic markings shall consist of white or yellow films with pigments selected and blended to conform to standard highway colors.

c. Adhesion. The retroreflective preformed patterned pavement traffic marking shall not have a loss of area or significant movement due to non-adhesion greater than a cumulative 10 percent on any 300-foot segment of the installation throughout the warranty period. A loss or significant movement greater than a cumulative 10 percent shall constitute an adhesion failure of the material in that segment.

The definition of and the responsibility for adhesion failures are:

- Loss of traffic markings due to excessive wear or damage to the pavement surface such as localized or widespread shaving or scraping of a substantial depth of the top surface of the pavement caused by snow plowing is not an adhesion failure.

- If adhesion failure occurs during the warranty period, then the Contractor shall provide labor and material to replace the failed pavement traffic markings at the discretion of the Engineer.

d. Durability. The retroreflective preformed patterned pavement traffic marking shall not have a loss of area due to lack of durability greater than a cumulative 10 percent on any 300-foot segment of the traffic marking installation throughout the warranty period. A loss greater than a cumulative 10 percent shall constitute a durability failure of the material in that segment.

The definition of and the responsibility for adhesion failures are:

- Loss of traffic markings due to excessive wear or damage to the pavement surface such as localized or widespread shaving or scraping of a substantial depth of the top surface of the pavement caused by snow plowing is not a durability failure.

- If a durability failure occurs during the warranty period, then the Contractor shall provide labor and material to replace the failed pavement traffic markings to meet the requirements for retroreflectivity, color stability, adhesion and durability at the discretion of the Engineer.

3. Warranty Requirements.

a. Contractor shall furnish retroreflective preformed patterned pavement tape traffic markings that carries a manufacturer's 24-month warranty. Contractor shall provide a copy of the manufacturer's warranty to the Engineer a minimum of 5 working days before commencing application of the traffic markings. Manufacturer's warranty shall include the following:

Manufacturer's warranty shall provide that all longitudinal pavement traffic markings shall maintain the performance requirements for retroreflectivity, color stability, adhesion and durability as detailed in Subsection 2. Performance Requirements, above.

The warranty shall state that the manufacturer and/or Contractor shall repair or replace, at the sole discretion of the Engineer and at no additional cost to the State or to the Municipality, all pavement traffic markings that fail to meet the terms of the warranty.

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. (01/04/06)R246usco04

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

724-2.01 DESCRIPTION. Add the following: Each species of seed to be supplied separately and **not** as mixtures. Mark each container with the weight and with the manufacturer's guaranteed analysis of the contents showing the percentage for each ingredient contained therein.

724-2.02 MATERIALS. Delete Table 724-1 in its entirety 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)R52USC

SECTION 726

TOPSOIL

Special Provisions

726-2.01 TOPSOIL. Delete item (2.) and (3.) and replace with the following:

Topsoil shall conform to the following requirements; as tested using the procedures included in ASTM D422, ASTM D2974 and AASHTO T267. Topsoil Mix shall conform to the following:

Topsoil Composition

Organic Materials: Not less than 40% or more than 60% by volume. (15-20% by weight)

Silt: Not less than 20% by volume. (50-60% by weight)

Sand: Not less than 20% or more than 30% by volume.(20-30% by weight)

Delete the table for grading requirements in item 3 and substitute the following:

TOPSOIL, CLASS A
GRADING REQUIREMENTS

Sieve	Percent Passing
3 inch	-
1/2 inch	100
No. 4	95-100
No.16	64-90
No. 200	30-60

* Determined by loss on ignition of oven dried sample according to ALASKA FOP for AASHTO T 267

(06/09/03)R139USC

Delete last paragraphs and table and replace with the following:

The Contractor shall submit to the Engineer, 10 working days before final placement, a soil analysis for particle size, nutrient content and organic content, before any topsoil shall be accepted for this project. The Engineer may test the topsoil at any time to verify compliance with the topsoil analysis. If the supplied topsoil does not meet specifications in this section, the Contractor shall supply new topsoil of a quality required to meet the section standards.

The application rate of the fertilizer and limestone shall be based on soil analysis test so that the total natural and applied chemical constituents are as follows:

Nitrogen	21-35 PPM
Phosphoric Acid	11-20 PPM
Potassium	76-150 PPM
Limestone	Sufficient to attain a pH of 6.0-6.5

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.

   d. 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)R81USC04

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.

Standard Modification

All working drawings and calculations must be stamped with the seal of, dated by, and signed by a Professional Engineer registered in the State of Alaska. Submit the working drawings and calculations for each pole to the Engineer for approval. Design for all stresses on the completed structure with all hardware in place. Show the design wind loads, projected areas, wind drag coefficients, material properties, and other design information on the working drawings. Include a summary of the loads used in each pole's design.

E54(05/01/07)

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 (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 on 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 Percent of CJP welds by either radiography (RT) or ultrasound (UT).
f. Inspect a random 25 percent 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

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**
c) Sum of signal mast arm moments about centerline of signal pole		SM 3740
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.
5	Pedestrian Don't Walk Pedestrian Walk Common Neutral Spare Spare	Red Green White Orange Black	14	Head No.

TABLE 740-2
CONDUCTOR TERMINATION TABLE

CONDUCTORS PER CABLE	CIRCUIT	WIRE COLOR	AWG. NO.	BAND LEGEND
5	Photo Electric Control Load to Contactor Neutral Spare Spare	Black Red White Orange Green	14	PEC
3	Pedestrian Pushbutton Neutral Spare	Black White Red	14	Head No.
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	"PRECO N"
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, 4, or 3	"SIG" No Band No Band
3	Sign Luminaire Sign Luminaire Sign Spare	Black Red White	8	SIGN SIGN

Replace Item 7. with the following:

7. Detector Loops. Use No. 14 AWG conductors for detector inductive loops that meet IMSA Specification 51-3, Type RHW/USE, or IMSA Specification 51-5, when called for on the Plans or specified in the Special Provisions.

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.

740-2.11 CONTROLLER CABINET. Add the following to the first paragraph of subpart (1) of subitem c. Cabinet Wiring. of item 1. Standard Features.: Furnish controller cabinets wired to accommodate five 4 channel inductive loop detector units and two 2 channel inductive loop detector units.

Replace bullet (e) of subpart (3) Field Terminal Blocks of subitem c. Cabinet Wiring. of item 1. Standard Features.: On the right side of controller cabinets, install two 16 position bus bars, for terminating the equipment grounding and neutral conductors used inside the cabinets. On the left side of the controller cabinets, install two 32 position bus bars, for terminating the equipment grounding and neutral conductors from field wiring.

Replace the first three sentences of subpart (5) Light Fixture. of subitem D. Cabinet Accessories. of item 1. Standard Features. with the following: Mount a third party certified, incandescent luminaire on the inside of each cabinet near the top edge of the door opening. Install white porcelain, surface mounted lamp holders that fit medium base lamps and are rated for a minimum 600 watts and 250 volts ac. Furnish each lamp holder with a 100 watt soft white incandescent lamp.

Add the following to subitem b. Manual Phase Selector Controls of item 2. Special Features.: Furnish controller cabinets with test switches for vehicle phases 1-8 and pedestrian phases 2,4,6 and 8.

Replace the last sentence of the second paragraph of subitem c. Coordination "Remote/Time of Day/Free" Switch of item 2. Special Features. with the following: Furnish controller cabinets with a "Remote/Time of Day/Free" switch.

740-2.12 STANDARD AUXILIARY EQUIPMENT. Under item 3. Conflict Monitors, add the following:

d. Supply conflict monitors with an RS-232 serial port that allows the monitor to download information through an external dial up modem or to a personal computer using the Microsoft Windows NT operating system.

740-2.13 SPECIAL AUXILIARY EQUIPMENT.

Add the following after item 5. Special Logic.:

6. Opticom Priority Control System. Install the following components of the 3M Company's Opticom Priority Control System according to 3M's written installation instructions at the signalized intersections listed on the Plans.

   Install the quantity of model 711, 721, and 722 optical detectors on the signal pole mast arms shown on the Plans. Before installing the detectors, gain approval of their final lateral location from the Engineer. See the Plans for installation details.

   Install Model 138 Optical detector lead in cable between the end of each signal mast arm and the controller cabinet. Furnish enough slack in these cables for them to extend 2 feet beyond the end of each signal mast arm and to leave 10 feet of slack in the controller cabinet. Seal both ends of each lead in cable with mastic lined, heat shrink tubing end caps.

   Before attaching the conductors to the optical detectors, strip the insulation for the conductors and attach four conductors to ground in the controller cabinet. Attach the signal cable to the confirmation light. The Municipality of Anchorage Signal Maintenance Section (MOA Signal Maintenance) will tie down the conductors in the controller cabinet under Item 660(26) Signal Timings and Adjustments.

Furnish each controller cabinet with a Model 754 phase selector, a Model 760 card rack, and an Opticom Panel Assembly, U.S. Traffic Corporation part number 103303. The panel assembly interfaces the card rack to the controller cabinet. Furnish new controller assemblies with these parts installed by the controller assembly manufacturer. To retrofit existing controller assemblies, deliver the parts to MOA Signal Maintenance, who will install the parts under Item 660(26) Signal Timings and Adjustments.

7. Traffic Logging System. Furnish, and others will install in the controller cabinet, a stand-alone unit that collects, time stamps, and stores data in an unattended manner. The traffic logging system shall conform to the following:

   a. Operation. The unit shall accept a new operating program, operational parameters, and the date and time stamp from a personal computer, downloaded through an RS-232 cable. The use of replaceable proms to change the operational program is unacceptable. Data collection shall be automatic and not require an operator to reset or start operation.

      In the event of a power interruption, data collection shall automatically restart at the proper time. Other than, the current sample being collected, the unit shall not lose stored data because of the power interruption. At power up or at the restoration of power after an outage, the unit shall log the date and time at the start of data collection.

      The unit shall maintain the operating program, data storage, and date/time for a minimum of 5 years from when power is removed from the unit. The internal program/data size shall be a minimum of 32,000 bytes.

   b. Input Interface. The unit shall have a minimum of 28 inputs. Furnish new and existing controller cabinet only with a loose Detector Systems TLS-1-C1 interface cable to connect the unit to the output of the loop detector units. The Municipality of Anchorage's Signal Maintenance Section will install the interface cable in the controller cabinets under Item 660(26) Signal System Timing and Adjustments. Do not furnish new controller cabinets with a built in interface panel.

   c. Output Interface. Furnish units with an RS-232 serial port that allows a user to download and upload directly between the unit and a personal computer using the Microsoft Windows NT operating system or the external dial-up multi-port modem.

Provide the following special auxiliary equipment with each controller unit/cabinet:

1. Inductive Loop Detectors. Provide 5-four channel amps and 2-two channel amps with each controller cabinet.
2. Local coordination Units.

3. System Modem/Interface Unit. Provide Integral modem compatible with the MOA computerized traffic control system.
4. Preemption Units. Provide Opticom Priority Control System as described above.
5. Traffic Logging System.
6. Provide time clock with down time accumulator.
7. Conditional service.

740-2.14 VEHICULAR SIGNAL HEADS. Replace the first sentence of Item 1. b. with the following:

Use red, yellow, and green LED signal modules that meet the requirements of Chapter 2a of *Equipment and Material Standards of the ITE* (Publication ST-0017A), Vehicle Traffic Control Signal Heads (VTCHS2), and the following:

Replace item 4 with the following and add item 5:

4. Backplates. Backplates shall not be louvered. Install backplates around vehicular signal faces except post-mounted flashers. Furnish backplates constructed of 0.063 inch minimum thickness aluminum alloy sheet meeting ASTM B 209, alloy 3003-H14. For those backplates fabricated from 2 or more pieces of sheeting, furnish them fastened together with 3/16" aluminum rivets or bolts peened after assembly.

   For traffic signals that consist of all 8 inch or all 12 inch signal sections, furnish 5 or 5½ inch wide backplates regardless of where the signals are installed, i.e. on mast arms, on top of posts, or on the sides of poles.

   For traffic signals that consist of combinations of vertically stacked 8 and 12 inch signal sections, furnish backplates with nominal borders of 8 inch for the 8 inch sections and 5 inch for 12 inch sections.

   Furnish backplates with the back and front faces factory finished with 2 coats of dark olive green enamel and 2 coats of flat black enamel, respectively.

5. Signal Mounting Hardware: Furnish elevator plumbizers, elbow pipe fittings, and post top adapters (without a terminal compartment) with integral serrated contacts that feature 72 teeth.

   Provide signal heads that will be mounted on mast arms or pipe tenons with ferrous or bronze elevator plumbizers.

   For signal faces installed on the sides of poles, furnish signal frames that consist of watertight assemblies of 1½ inch nominal diameter standard steel pipe, malleable iron or brass pipe fittings, and bronze terminal compartments. The side of the terminal compartment opposite the door shall feature a saddle shape for

wobble free-mounting on round poles and include a cable guide and two holes for mounting the compartment.

Furnish vehicular signal frames with a horizontal dimension between the center of the terminal compartment and the axis of the adjacent signal face of 22 inches in side mounted frames and 11 inches in post top installations.

Post top adapters shall slip fit over 4 inch nominal standard pipe and feature two rows of three cadmium plated steel setscrews. Furnish post top adapters with terminal compartments, except one way signal heads may be installed on adapters without a terminal compartment provided the adapters include offset openings. Provide post top adapters without a terminal compartment made of cast iron.

Furnish terminal compartments with a terminal block containing 12 poles, each with two screw type terminals. Each terminal must accommodate at least three 14 AWG conductors. Provide terminal compartments with a rain tight door that provide ready access to the terminal block.

For mounting each terminal compartment, furnish two ½" x 13 hot dip galvanized bolts that conform to ASTM A 325 and two ½" hot dip galvanized washers that conform to ASTM F 436

740-2.15 PEDESTRIAN SIGNALS. Add the following as item 12: Furnish pedestrian signals side mounted on poles with a 2 piece, hinge connected, cast aluminum clamshell bracket that mounts directly between the pole and the side of the housing. The bracket shall fit round poles with outside diameters of 4.5 inches and greater without wobbling and allow a minimum rotation of ±15 degrees when mounted on a 4.5 inch O.D. pole. The bracket shall feature a rain-tight terminal compartment and include a 12 position terminal block. Installed, the bracket shall take less than three inches of space between the housing and pole.

For mounting each clamshell bracket, furnish two ½" x 13 hot dip galvanized bolts that conform to ASTM A 325 and two spacers provided by the bracket manufacturer to keep the bolt head clear of the recess that holds the nut in a through bolted installation.

Replace subsection 740-2.17 with the following:

740-2.17 FLASHING BEACONS. Furnish beacons that consist of one or more traffic signal sections meeting the requirements of subsection 740-2.14 Vehicular Signal Heads. See the Plans for the number, size and color of the signal sections required for each beacon.

Use the flasher in signal controller cabinets to energize beacons that flash continuously and are installed near traffic signals. Otherwise, each flashing beacon controller assembly consists of the following 120 volt ac equipment housed in a NEMA 3R enclosure: a

circuit breaker, a radio interference suppressor, a transient voltage suppressor, a NEMA type 3 flasher, neutral and ground busses, and terminal blocks.

Controller assemblies for school zone speed limit sign beacons shall also include a time switch and a second 120 volt ac circuit breaker that protects a thermostat and heater.

The NEMA 3R enclosure shall feature a single shelf and a top hinged cover with a hasp and staple for sealing and locking the cabinet door.

The radio interference and transient voltage suppressors shall meet the requirements of subsections 740-2.11.1.d.(3) and (4), respectively.

Use a solid state NEMA Type 3 flasher meeting the requirements of NEMA Standard TS 1-1989, Traffic Control Systems.

Use 20 ampere, 600 volt barrier type phenolic terminal blocks with plated brass screw type terminals and integral strips can be marked with a pen or pencil.

Furnish an RTC Manufacturing model AP41-L time switch complete with wiring harness, or an approved, calendar programmable, solid-state time switch with liquid crystal display, keyboard, input/output port, and wiring harness. The approved time switch shall:

1. Operate on line voltages from 95 to 135 volts ac, operate in temperatures from -22° F to 165° F, and include a capacitor that provides 48 hours of back up power to retain programming and time when the unit is disconnected from ac voltage.
2. Include a backlit display and provide 2 lines of alphanumeric legend with 16 characters per line. The display shall automatically prompt the operator while programming the device through the keyboard for ease of use.
3. Include an input/output port and keyboard activated special functions that transfer the program to other units and download the program to a printer for a hard copy record of the program.
4. Automatically compensate for changes in Daylight Savings Time and leap years and include a keyboard activated special function to quickly change the dates for the begin and end of Daylight Savings Time.
5. Provide at least 10 basic plans for daily and/or weekly use and at least 200 program steps that are equally divided amongst the actual number of basic plans. Each program step shall be assignable to a single day, weekend, weekday, or every day. The time switch shall also include 20 plans that activate the basic plans to provide one year of time based control.
6. Include at least 4 single pole double throw, relay controlled outputs rated for 15 amperes of resistive load at 115 volts ac. Each pole shall be independently activated for steady on or momentary on and be manually switched on through the keyboard.

When a signal controller cabinet flasher is used to energize a beacon, furnish a two pole, fused block with built in fuse pullers to protect the flasher. Furnish third party certified blocks that hold 13/32" x 1-1/2" midget ferrule fuses, are rated for 30 amperes, and feature tubular screw terminals

that accommodate conductors to 8 AWG. Furnish blocks with two fast acting, 3 ampere (BAF-3) fuses and flat bases that can be directly mounted on a dead panel.

Replace subsection 740-2.18 with the following:

740-2.18 ROADWAY LUMINAIRES. Furnish luminaires that conform 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 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.

Luminaires - 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 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.

Luminaires – 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 bracket that fits 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.

When the Plans specify shielding areas from illumination, install light shields on luminaires on high tower poles whose templates touch the shielded areas. Provide shields that limit light levels to 0.1 footcandle or less at the right of way line. Whenever stock shields fail to limit light levels to the 0.1 footcandle level, hire the luminaire manufacturer to custom design and fabricate shields. If the first generation of custom fabricated shields fail to limit light levels to the 0.1 footcandle level, the Engineer may waive the 0.1 footcandle requirement.

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.

Delete subsection 740-2.20, Illumination Control, in its entirety.

Add the following subsection:

740-2.24 BUS STOP LIGHTING SYSTEM. Furnish and install electroliers that conform the following specifications:

1. Globe: Made of clear polycarbonate.
2. Reflector: Made of spun Aluminum, mechanically secured.
3. Lamp: 100watt, metal halide, ED ½ bulb, mogul base.
4. Optics: A round prismatic borosilicate thermo resistant refractor.
5. Guard: Made of aluminum rods, .840" (21mm) O.D. mechanically secured c/w clear acrylic louvers.
6. Locking System: "Rotomatic" made of cast aluminum, quarter turn system c/w independent pressure points, providing secure anchorage.
7. Ballast: 100 watt MH, high power factor of 90% or better, primary voltage 240, -30F (-34C) lamp starting capacity, c/w quick disconnect plug.
8. Housing: Made of cast aluminum, mechanically secured.
9. Arm: Made of bent aluminum tubing, 2 3/6" (60mm) O.D. welded to the adaptor.
10. Block Adaptor: Made of cast aluminum, welded to the central tubing.
11. Central Tubing: Made of aluminum, 4" (120mm) O. D. c/w a tenon penetrating 12" (305mm) inside the pole, mechanically secured.
12. Pole: Made of aluminum, 4" (102mm) O.D., .220" (5mm) wall thickness, welded to the anchor plate.
13. Access Door: Made of aluminum, covering an opening of 4" x 6", giving access to a ground lug and fused splice connectors.
14. Base Cover: Made of a two-piece cast aluminum component, mechanically secured.
15. Wiring: Included from luminaire to the top of the bracket, exceeding the latter by a minimum of 6" (152mm).
16. Gasketing: Neoprene and/or silicone gasketing applied.
17. Hardware: All exposed screws will be stainless steel.
18. Finish: An application of a thermosetting polyester powder coat paint applied by means of an electrostatic process, color Turquoise Green (RAL 6016).

Bus stop electrolier shall include the following components, as manufactured by Lumec, or approved equal.

Component	Model No.
Luminaire	100MH-CAND5L-PC-C-RR5-240-COLTX-LMS11701A 100MH-CAND5L-PC-C-RR5-480-COLTX-LMS11701A
Bracket	LMS1170A-1A-COLTX
Pole	APR4U-12-LBC1-COLTX-LMS1170A

Add the following subsection:

740-2.25 PEDESTRIAN LIGHTING SYSTEM. Furnish and install electroliers that conform the following specifications:

1. Globe: Made of clear acrylic.
2. Reflector: Hydroformed and anodized, mechanically secured.
3. Lamp: 100 watt, metal halide, ED ½ bulb, mogul base.
4. Optics: Sealsafe optical system (IP66).
5. Locking System: Toolfree access to lamp and electrical components.
6. Ballast: 100 watt MH, high power factor of 90% or better, primary voltage 240, -30F (-34C) lamp starting capacity, c/w quick disconnect plug.
7. Housing: Made of cast aluminum, mechanically secured.
8. Provide stainless steel accents.
9. Arm: none.
10. Pole: Use material made of steel.
11. Access Door: Made of aluminum or steel, covering an opening of 4" x 9", giving access to a ground lug and fused splice connectors.
12. Base Cover: Made of a two-piece cast aluminum component, mechanically secured.
13. Wiring: Included from luminaire to the top of the bracket, exceeding the latter by a minimum of 6".
14. Gasketing: Neoprene and/or silicone gasketing applied.
15. Hardware: All exposed screws will be stainless steel.
16. Finish: An application of a thermosetting polyester powder coat paint applied by means of an electrostatic process over hot dipped galvanizing, color Blue Green (GN4TX).

Pedestrian electrolier shall include the following components, as manufactured by Lumec, or approved equal.

Component	Model No.
Luminaire	100MH-2V-240-ST-6N4TX
Pole	CAL6-12-S

The plans will indicate the number of electroliers, pole height, and operating voltage.

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Standard Modification

Remove the text: "*Approved Products List*" and replace with: *Qualified Products List*
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