PART 4

STANDARD MODIFICATIONS

AND SPECIAL PROVISIONS

to the

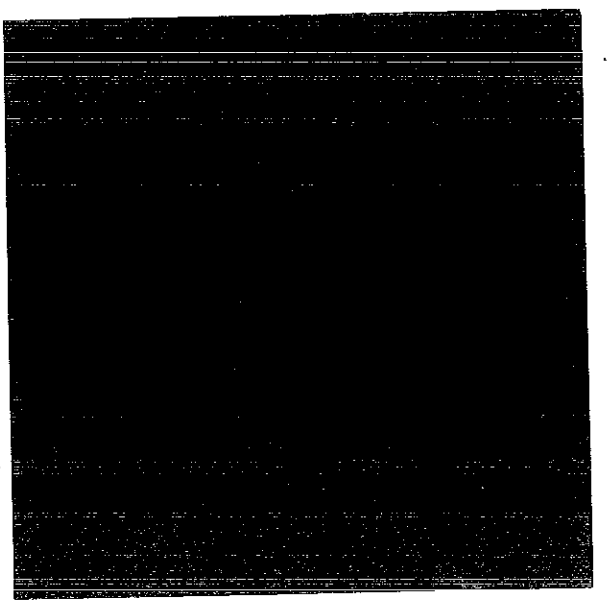
STATE OF ALASKA

SPECIFICATIONS

for

HIGHWAY CONSTRUCTION

2004 STANDARD SPECIFICATIONS



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)

SECTION 102

BIDDING REQUIREMENTS AND CONDITIONS

Standard Modification

102-1.05 PREPARATION OF BID. Modify the second sentence in the third paragraph, after: "If a bidder is a corporation, the bid must be signed by a corporate officer," add: or agent. E18(6/30/04)

SECTION 105

CONTROL OF WORK

Special Provisions

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

ALASKA DIGLINE, INC. Locate Call Center Anchorage Area..... 278-3121 Statewide 800-478-3121 who will notify the following:
ACS
Alaska Fiberstar
Alaska Railroad Corp
Anchorage Water & Wastewater
AT&T Alascom, Inc.
Chugach Electric Assoc
DOT Street Lights, State of Alaska
Enstar Natural Gas
GCI Communications
MOA Street Maintenance Dept MFS
Municipality of Anchorage
Municipal Light & Power

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

The following specific coordination requirements apply:

Anchorage Water and Wastewater Utility (AWWU): The Contractor shall schedule and coordinate preconstruction and post-construction inspections of AWWU facilities in the project area. The Contractor shall call AWWU Field Services at 562-2762 to obtain a point of contact. At least fourteen (14) calendar days prior to beginning construction, the Contractor shall notify the AWWU point of contact in writing. A copy of the notice shall be provided to the Engineer.

The Contractor shall furnish traffic control to facilitate both inspections and for any work required to correct deficiencies noted during the inspections. The Engineer, Contractor, and AWWU shall witness the condition and location of each AWWU facility anticipated to be impacted by the project. The Contractor shall have no claim that AWWU facilities were deficient prior to construction except for deficiencies specifically listed in the record of the preconstruction inspection. If preconstruction deficiencies are noted, the Contractor shall coordinate with AWWU so that AWWU or the Contractor, at AWWU's option, may correct the deficiencies.

During construction, the Contractor shall protect and maintain all AWWU plant impacted by the project in operable condition during all phases of construction. Following construction, the Engineer, Contractor, and AWWU shall verify the condition of each AWWU facility within the project limits. Any deficiencies noted during the post-construction inspection, (other than deficiencies noted in the pre-construction inspection record which had not previously been corrected) shall be corrected by the Contractor at the Contractor's expense.

In conjunction with working around and/or adjusting the Water Utility water valves, the Contractor shall exercise due care. Before commencement of work by the Contractor, the Water Utility shall check deficiencies that may exist in any valve or valve box. The Engineer and Contractor shall witness the condition and location of each valve or valve box. Failure to participate in the inspection by the Contractor will results in his forfeiting all rights to deny damages at a later date 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.

Manhole and valve box adjustments will need to be made to existing AWWU facilities. This work will be performed by the Department's Contractor.

AWWU's Engineering Planning Section, 564-2765, shall be contacted a minimum of five (5) days before construction to request a preconstruction inspection for existing facilities. The Department's Contractor will be responsible for furnishing traffic control and personnel to assist AWWU while performing the preconstruction inspection. When construction is substantially complete, the Contractor shall contact AWWU's Engineering Planning Section to schedule a post construction inspection, to inspect the existing facilities to determine if any damage was done to existing facilities.

Coordination by the Department's Contractor with AWWU will be required. The AWWU contact is Brian Baus at (907) 564-2765.

Municipal Light and Power: ML&P owns and operates an electrical vault at 10th Avenue and E Street, approximate Plan Station 300+76, 4.75 RT.

ML&P will perform a pre-construction inspection of the vault and lid. Following final grading, but prior to placement of the asphalt, ML&P will again inspect the vault and determine if adjustment to match finish pavement grade is required.

If adjustments are necessary, ML&P will require (7) seven days to complete the work.

Following final paving, ML&P will perform a final inspection of the vault to ensure there is no construction damage.

ML&P's contact is Tom Chinhart at 907-263-5283. ML&P will require two (2) weeks or fourteen (14) calendar days advance written notification prior to beginning the work.

Coordinate with Municipal Light and Power (ML&P) work to be completed by ML&P for the C Street and 7th Avenue traffic signal. Contact Kevin Flemming (263-5212) at ML&P to coordinate the work.

In addition to the preconstruction conference, contact the ML&P representatives shown above at least two weeks prior to the start of construction activities. Schedule both pre and post construction inspections of ML&P facilities in the project area.

The Contractor shall furnish all traffic control necessary to facilitate inspections and for any work required to correct deficiencies noted during the inspections. This work shall adhere to the plans, the requirements of Section 643, and approved traffic control plans. Traffic control and flagging used to facilitate utility work will be measured and paid according to Section 643.

The contractor shall provide all required cutting, removing of pavement, excavation, backfill, and replacement of asphalt and/or concrete sidewalk and curb and gutter to facilitate work performed by both AWWU and ML&P. This work is subsidiary to Items 690(1) through 690(9).

(10/012/06) LA

Standard Modification

105-1.16 FINAL ACCEPTANCE AND RECORD RETENTION. Modify the first paragraph, Item 4., after: "DOLWD" add: and State Department of Revenue. (6/30/04)E19

105-1.17 CLAIMS FOR ADJUSTMENT AND DISPUTES. Add the following: Appeals to the superior court under AS 36.30.685 must be filed in the third judicial district. (3/21/01)R93

SECTION 106

CONTROL OF MATERIAL

Special Provisions

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

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

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

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

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

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

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

Take whatever steps are necessary to ensure that manufacturing processes for each covered product comply with this provision. Non-conforming products shall be replaced at no expense to the State. Failure to comply may also subject the Contractor to default and/or debarment. False statements may result in criminal penalties prescribed under Title 18 US Code Section 1001 and 1020. (02/07/05)R13

Standard Modification

106-1.02 MATERIAL SOURCES.

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

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

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

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

4. e. Excluded Material Sources. Replace the paragraph with the following: Some material sources may not be considered acceptable regardless of location or ownership. The bid documents may identify some material sources excluded from use. The Department reserves the right to exclude a material sources or any portion of a material source, at any time after Contract award, that is determined by material testing to be unsuitable for use on the project. E24(1/1/06)

SECTION 107

LEGAL RELATIONS AND RESPONSIBILITY TO PUBLIC

Special Provisions

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

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

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

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

ADEC 05-WW-240-009 dated September 14, 2004.

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

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

107-1.11 PROTECTION AND RESTORATION OF PROPERTY AND LANDSCAPE. Add the following: If required water for construction purpose from a nonmunicipal water source, obtain a Temporary Water Use Permit from the Water Resource Manager, and provide a copy to the Engineer. The Water Resource Manager is with the Department of Natural Resources in Anchorage and may be contacted at (907) 269-8624. (05/29/02)R7M98

Add the following subsection:

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. (12/13/02)R261M98

SECTION 109

MEASUREMENT AND PAYMENT

Special Provisions

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. (1/27/00)R14

109-1.06 PROGRESS PAYMENTS. Add the following: Failure to submit schedules according to subsection 108-1.03, Prosecution and Progress will result in withholding an amount equal to 5 percent of the total amount earned from subsequent progress payments. The Engineer, upon receipt of current schedules from the Contractor, will release this amount.

Failure to comply with the requirements of the National Pollutant Discharge Elimination System (NPDES) General Permit for Alaska, as indicated under Section 641, Erosion, Sediment, and Pollution Control, will result in withholding an amount equal to 5 percent of the total amount earned from subsequent progress payments. This amount will be released by the Engineer upon satisfactory completion of the requirements of the permit.
(02/04/02)R137A

109-1.08 FINAL PAYMENT. Add the following sentence to the first paragraph:
The Department will not process the final estimate until the Contractor completes Items 1 through 4 in the first paragraph of subsection 105-1.16. E11(6/30/04)

Add the following Section:

SECTION 120

DISADVANTAGED BUSINESS ENTERPRISE (DBE) PROGRAM

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. 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 the Department deems appropriate. The Department also considers failure to comply with this section to be so serious as to justify debarment action as provided in AS 36.30.640(4).

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

120-3.01 DETERMINATION OF COMPLIANCE.

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

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

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

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

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

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

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

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

   c. **Good Faith Effort Documentation.** Summary of Good Faith Effort Documentation (Form 25A332A and attachments) and DBE Contact Reports

(Form 25A321A) if the Contractor submits less DBE utilization on Form 25A325C than is required to meet the DBE Utilization Goal. If accepted by the Department, this lower DBE utilization becomes the new DBE Utilization Goal. If the bidder cannot demonstrate the ability to meet the DBE Utilization Goal, and cannot document the minimum required Good Faith Efforts (as outlined in Subsection 120-3.02 below), the Contracting Officer will determine the bidder to be not responsible.

3. Phase III - Construction.

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

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

c. **DBE Replacement.** If a DBE replacement is approved by the Engineer, replace the DBE with another DBE for the same work in order to fulfill its commitment under the DBE Utilization Goal. In the event 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.

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

d. **DBE Utilization Goal.** The DBE Utilization Goal will be adjusted to reflect only that amount of the DBE's work that cannot 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 the following actions constitutes insufficient Good Faith Effort.

a. Consideration of all subcontractable items. The bidder shall, at a minimum, seek DBE participation for each of the subcontractable items upon which the DBE goal

was established as identified by the Department (on Form 25A324) prior to bid opening. It is the bidder's responsibility to make the work listed on the subcontractable items list available to DBE firms, to facilitate DBE participation.

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

c. Notification to all active DBEs listed for a given region in the Department's most current DBE Directory at least 7 calendar days prior to bid opening. The bidder must give the DBEs no less than 5 days to respond. The bidder may reject DBE quotes received after the deadline. Such a deadline for bid submission by DBEs will be consistently applied. DBEs certified to perform work items identified on Form 25A324 must be contacted to solicit their interest in participating in the execution of work with the Contractor. Each contact with a DBE firm will be logged on a Contact Report (Form 25A321A).

d. Non-competitive DBE quotes may be rejected by the bidder. Allegations of non-competitive DBE quotes must be documented and verifiable. A DBE quote that is more than 10 percent 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 decision on reconsideration will be made by the DBE Liaison Officer.

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

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

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

120-3.03 COMMERCIALLY USEFUL FUNCTION (CUF).

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

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

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

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

b. A DBE trucking firm certified and performing work in a transportation/hauling category is restricted to credit for work performed with its own trucks and personnel certified with the CRO prior to submitting a bid to a contractor for DBE trucking. The DBE trucking firm must demonstrate that it owns all trucks (proof of title and/or registration) to be credited for work and that all operators are employed by the DBE trucking firm. A DBE trucking firm that does not certify its trucks and personnel that it employs on a job will be considered a broker of trucking services and limited to credit for a broker. (This does not effect the CUF of that same firm, when performance includes the hauling of materials for that work.)

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

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

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

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

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

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

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

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

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

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

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

5) The cost of the goods and services will be reasonable and competitive with the cost of the goods and services outside the DBE program within Alaska. Materials or supplies needed as a regular course of the Contractor's operations such as fuel, maintenance, office facilities, portable bathrooms, etc. are not creditable.

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

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

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

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

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

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

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

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

   1) increasing the participation of other DBEs on the project;
   2) documenting Good Faith Efforts (Subsection 120-3.02, items c through h); or
   3) by a combination of the above.

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

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

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

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

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

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

The DBE Utilization Goal will be adjusted to reflect only that amount of the defaulted DBE's work that cannot 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 percent of the monies actually paid to the DBE under the contract for creditable work and materials in accordance with 49 CFR 26.55.

2. Credit for the CUF of a subcontractor is 100 percent 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 percent 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 percent 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 percent 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 percent 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 percent of the premium cost.

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

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

If the Contractor fails to utilize the DBEs listed on Form 25A325C as scheduled or fails to submit required documentation to verify proof of payment or documentation requested by the Department to help in the determination of CUF, the Department will consider this to be unsatisfactory work. If the Contractor fails to utilize Good Faith Efforts to replace a DBE, regardless of fault (except for subsection 120-3.04 item 3), the Department will also consider this unsatisfactory work. Unsatisfactory work may result in disqualification of the Contractor from future bidding under subsection 102-1.13 and withholding of progress payments consistent with subsection 109-1.06. (11/17/00)S33

SECTION 202

REMOVAL OF STRUCTURES AND OBSTRUCTIONS

Special Provisions

202-3.05 REMOVAL OF PAVEMENT, SIDEWALKS, AND CURBS. Add the following: Pavement removed may be used for embankment construction if it is not exposed at the completed embankment surface. The maximum allowable dimension of the broken asphalt pieces is 6 inches.

Obtain a solid waste disposal permit from DEC or use a site previously approved by DEC for disposal of removed asphalt if not using it in the embankment. A DEC permitting officer in Anchorage may be contacted at (907) 269-7590. (03/29/01)R84USC

202-4.01 METHOD OF MEASUREMENT. Delete this Subsection and add the following: Work required under this section will not be measured for payment.

202-5.01 BASIS OF PAYMENT. Delete this Subsection and add the following: Work required under this section will not be paid for directly, but will be subsidiary to Item Numbers 690(1), 690(2), 690(3), 690(4), 690(5), 690(6), 690(7), 690(8), and 690(9).

SECTION 203

EXCAVATION AND EMBANKMENT

Special Provisions

203-1.01 DESCRIPTION. Add the following: Ditch linear grading shall consist of the final shaping of designated ditches and slopes for drainage by grading with a small dozer, motor grader, or other suitable means approved by the Engineer. (02/26/03)R20USC02

203-4.01 METHOD OF MEASUREMENT. Delete this Subsection and add the following: Work required under this section will not be measured for payment.

203-5.01 BASIS OF PAYMENT. Delete this Subsection and add the following: Work required under this section will not be paid for directly, but will be subsidiary to Item Numbers 690(1), 690(2), 690(3), 690(4), 690(5), 690(6), 690(7), 690(8), and 690(9).

SECTION 301

AGGREGAT 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 upon a roller pattern. 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.

(11/05/02)R176USC02LA

301-4.01 METHOD OF MEASUREMENT. Delete this Subsection and add the following: Work required under this section will not be measured for payment.

301-5.01 BASIS OF PAYMENT. Delete this Subsection and add the following: Work required under this section will not be paid for directly, but will be subsidiary to Item Numbers 690(1), 690(2), 690(3), 690(4), 690(5), 690(6), 690(7), 690(8), and 690(9).

Replace Section 401 with the following:

SECTION 401

ASPHALT CONCRETE PAVEMENT

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

MATERIALS

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

TABLE 401-1
HOT MIX ASPHALT DESIGN REQUIREMENTS

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

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

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

Target values for gradation in the Job Mix Design must be within the broad band limits shown in Table 703-3, for the type of hot mix asphalt specified. For acceptance testing, hot mix asphalt concrete mixture will have the full tolerances in Table 401-2 applied. Except the tolerances for the No. 200 sieve, the tolerance limits will apply even if they fall outside the broad band limits shown in Table 703-3. The tolerance limits for the No. 200 sieve will be confined by the broad band shown in Table 703-3. Tolerance limits will not be applied to the largest sieve specified.

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

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

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

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

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

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

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

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

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

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

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

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

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

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

Furnish the following documents at delivery:

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

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

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

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

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

CONSTRUCTION REQUIREMENTS

401-3.01 WEATHER LIMITATIONS. Do not place the hot mix asphalt on a wet surface, on an unstable/yielding roadbed, when the base material is frozen, or when weather conditions prevent proper handling or finishing of the mix. Do not place hot mix asphalt unless the roadway surface temperature is 40 °F or warmer.

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 per 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 FOPT for AASHTO T 329.

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

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

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

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

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

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

401-3.12 PLACING AND SPREADING. Place the hot mix asphalt upon the approved surface, spread, strike off, and adjust surface irregularities. Use asphalt pavers to distribute hot mix asphalt, including leveling courses. 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 his 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 accordance with WAQTC FOP for AASHTO T 166/T 275 using a 6-inch diameter core. (Acceptance testing for density of leveling course or temporary pavement is not required.)

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

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

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

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

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 in accordance with WAQTC FOP for AASHTO T 166/T 275.

In the top layer seal 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 and evaluated for joint density.

Longitudinal joints will be evaluated for acceptance according to subsection 401-4.05.

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

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 other pay items.

401-4.01 METHOD OF MEASUREMENT. Work required under this section will not be measured for payment. The Engineer's acceptance will constitute measurement.

401-4.02 ACCEPTANCE SAMPLING AND TESTING. 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.

401-5.01 BASIS OF PAYMENT. Work required under this section will not be paid for directly, but will be subsidiary to Item Numbers 690(1), 690(2), 690(3), 690(4), 690(5), 690(6), 690(7), 690(8), and 690(9).

R199USC04(06/07/06) LA

SECTION 406
RUMBLE STRIPS

Special Provisions

406-1.01 DESCRIPTION. Form a series of indentations into both shoulders of the pavement and clean up debris where indicated on the Plans.

406-2.01 MATERIALS. None.

CONSTRUCTION REQUIREMENTS

406-3.01 MILLING. Construct rumble strips with a milling machine. The pavement should be compacted and be at a temperature below 80 degrees Fahrenheit. Make the edges of the indentation straight, smooth, and free of spalling.

Keep the travel lanes free of milling debris. Clean milling debris off pavement. Do not allow debris to impede road drainage or enter any waterways. Collect and dispose of milling debris outside the project limits or dispose as directed by the Engineer.

Construct finished rumble strips to the following dimensions:

Length of indentation:	18 inches +/- 2 inches
Width of indentation:	1-1/4 inch +/- 3/8 inch (at pavement surface)
Depth:	¾ inch +/- ¼ inch

(02/20/03)ES02 DOWL

406-4.01 METHOD OF MEASUREMENT. Delete this Subsection and add the following: Work required under this section will not be measured for payment.

406-5.01 BASIS OF PAYMENT. Delete this Subsection and add the following: Work required under this section will not be paid for directly, but will be subsidiary to Item Numbers 690(1), 690(2), 690(3), 690(4), 690(5), 690(6), 690(7), 690(8), and 690(9).

SECTION 603
CULVERTS AND STORM DRAINS

Special Provisions

603-2.01 MATERIALS. Delete the second paragraph and substitute the following: Furnish either Corrugated Steel Pipe (CSP) or Reinforced Concrete Pipe. Corrugated Polyethylene Pipe is not allowed.
(08/27/03)R42USC LA

603-4.01 METHOD OF MEASUREMENT. Delete this Subsection and add the following: Work required under this section will not be measured for payment.

603-5.01 BASIS OF PAYMENT. Delete this Subsection and add the following: Work required under this section will not be paid for directly, but will be subsidiary to Item Numbers 690(1), 690(2), 690(3), 690(4), 690(5), 690(6), 690(7), 690(8), and 690(9).

SECTION 604
MANHOLES AND INLETS

Special Provisions

604-3.01 CONSTRUCTION REQUIREMENS. Add the following: At C Street and 7th Avenue, notify Municipal Light and Power at least five (5) days before adjusting the electrical vault manhole.

604-4.01 METHOD OF MEASUREMENT. Delete this Subsection and add the following: Work required under this section will not be measured for payment.

604-5.01 BASIS OF PAYMENT. Delete this Subsection and add the following: Work required under this section will not be paid for directly, but will be subsidiary to Item Numbers 690(1), 690(2), 690(3), 690(4), 690(5), 690(6), 690(7), 690(8), and 690(9).

SECTION 608
SIDEWALKS

Special Provisions

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

This work also includes the reinstallation of tree grates in the new sidewalk at the intersection of L Street and 13th Avenue.
(2/22/06) DOWL

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 T-17)	
Marshall Stability, pounds, min.	1,000
Percent Voids, Total Mix	2-5
Compaction, Blows/side	50

(02/01/00)R47USC

Add the following:

3. **Patterned Concrete**
   - a. **Concrete Imprinting System: "Bomanite Running Bond Brick" Concrete imprinting system available from Bomanite Corporation, Palo Alto, California, (415) 321-0718, or approved equal, shall be used according to manufacturer's recommendations.**
   - b. **Concrete: Concrete mix for imprinted colored concrete shall conform to Section 501 for Class A concrete.**
   - c. **Coloring Materials: Bomacron Color Hardener, heavy duty grade available from Bomanite Corporation, or approved equal, shall be applied to the concrete according to these specifications and manufacturer's recommendations. Contractor shall use imprinted, colored concrete color "Red Clay" or any approved equal.**
   - d. **Curing Compound: Bomanite Curing Compound available from Bomanite Corporation, or approved equal, shall be used according to manufacturer's recommendations.**

608-3.01 CONCRETE SIDEWALKS Delete the fifth, sixth, and seventh paragraphs and replace with the following. Expansion joints shall be placed along all structures and about all features that project into, through, or against the concrete. An expansion joint shall be constructed at the intersection of

sidewalks; between sidewalk crossings and sidewalks; between curbs and sidewalks (except parallel curb); and at the beginning and end of curb returns. Joint filler material shall extend the full width of the structure and shall be cut to such dimensions that the base of the expansion joint shall extend to the subgrade and the top shall be depressed not less than 1/4-inch nor more than one-half 1/2-inch below the finished surface of the concrete. The material shall be of one (1) piece in the vertical dimension and shall be securely fastened in a vertical position to the existing concrete face against which fresh concrete is to be placed. After the concrete has set, the expansion joints shall be filled flush to the finish concrete surface with an approved joint sealer.

Before sealing, the joint shall be cleaned of all dirt, gravel, concrete mortar, and other extraneous material. Sealing shall be done in a neat workmanlike manner.

Transverse dummy joints, cut to 1/3 the depth of the concrete prior to the final set of the concrete and 1/8-inch wide, shall be tooled in the sidewalks at intervals of five feet. Where the sidewalk adjoins the curb (parallel to it), contraction joints in the sidewalk and curb shall be made to match where practicable.

608-3.03 CURB RAMPS. Delete subsection and replace with the following: Construct curb ramps according to the details and 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.(1/01/06) E25

Add the following subsection:

608-3.04 DECTECTABLE WARNINGS. Construct detectable warnings according to the details and the locations shown on the Plans. Install cast in place tactile tiles integral with new construction. Install either molded in place epoxy systems, or remove the ramp and replace it with new concrete and integrally attached tactile tile, when retro-fitting existing cured concrete ramps. Install tile so there are no vertical changes in grade exceeding 0.25 inches or horizontal gaps exceeding 0.5 inches. Align pattern on a square grid in the predominate direction of travel. Detectable warnings are made of composite materials, safety yellow color, slip resistant, with truncated dome pattern.

Detectable warnings shall be manufactured and installed according to the Americans with Disabilities Act Accessible Guideline.
(1/01/06) E25

608-3.05 ASPHALT PATHWAYS AND MEDIANS. Construct asphalt pathways and medians according to subsection 608-3.02, Asphalt Sidewalks. (06/11/02)R256USC

Add the following subsection:

608-3.06 PATTERNED CONCRETE.

Patterned Concrete shall be used in the medians at Site A-1 Old Seward Highway & E. 48th Avenue.

Installation of the patterned concrete shall only be performed by a licensed contractor as certified by the manufacturer. Submit license and material information to the Engineer before placement of the patterned concrete.

The installation of patterned concrete shall be performed in dry weather with temperatures above 32 Degree Fahrenheit.

The concrete shall be spread uniformly between the forms and thoroughly compacted with a steel shod strikeboard. After the concrete has been thoroughly compacted and leveled, it shall be floated with wooden floats.

Color hardener shall then be applied evenly to the plastic surface by the dry-shake method using a minimum of 60 pounds per 100 square feet. It shall be applied in tow or more shakes, floated after each shake, and finished with a steel float.

While the concrete is still in the plastic stage of set, the "Bomanite" imprinting tools shall be applied in conformance with the manufacturer's specifications to make a desired patterned surface. The patterns shall be "Running Brick Bond" or approved equal.

Bomacron Color Curing Compound, thinned in the proportion of one part cure to one part mineral spirits (paint thinner), shall then be applied uniformly with a roller or sprayer immediately after imprinting. The coverage shall be approximately 600 to 650 square feet per gallon of unthinned curing compound.

At times when the air temperature is at or near freezing, the slab shall instead be cured using a suitable curing blanket, and the slab shall later be sealed with Bomanite Color Curing Compound at such time as 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 a minimum of five days.

608-4.01 METHOD OF MEASUREMENT. Delete this Subsection and add the following: Work required under this section will not be measured for payment.

608-5.01 BASIS OF PAYMENT. Delete this Subsection and add the following: Work required under this section will not be paid for directly, but will be subsidiary to Item Numbers 690(1), 690(2), 690(3), 690(4), 690(5), 690(6), 690(7), 690(8), and 690(9).

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SECTION 615
STANDARD SIGNS

Special Provisions

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.

Delete the first paragraph of Item 2, including subitems 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.

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

   c. Non-Illuminated Overhead Signs with White Legends on Green Backgrounds: Use Type IX reflective sheeting for legends and background. Create the legend in one of the following ways:
      (1) Cut border and legend from white Type IX reflective sheeting and adhere to a green Type IX background, or
      (2) Cut stencil of border and legend out of green transparent acrylic film and use transparent adhesive to overlay the film on a white Type IX reflective background.

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

Add the following paragraph:

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

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

The warranty shall stipulate 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.
(1/1/06) E26

615-3.01 CONSTRUCTION REQUIREMENTS. Replace the sixth sentence in item 7 and substitute the following:

Deliver sign panels, posts and hardware to the Municipal salvage yard. Contact Don Carlson at 343-4384 prior to delivery.

Add the following:

Item 15. At 8th Ave. and E St. and 8th Ave. and G St., overhead sign structures shall be a signal pole and mast arm assembly.

a. Excavating and Backfilling. Excavate as required for the installation of foundations. Avoid unnecessary damage to streets, sidewalks, landscaping, and other improvements.

Do not excavate wider than necessary for the proper installation of foundations. Do not perform excavation until immediately before installing reinforcing steel and other appurtenances.

Place the material from the excavation where it will not cause damage or obstruction to vehicular and pedestrian traffic or interfere with surface drainage. Dispose of all surplus excavated material according to Subsection 203-3.01.

Backfill excavations according to Section 204.

Keep excavations after backfilling well-filled and maintained in a smooth and well-drained condition until permanent repairs are made.

b. Removing and Replacing Improvements. Replace or reconstruct improvements damaged by your operations such as sidewalks, curbs, gutters, pavement, base material, lawns and plants, and other improvements that are removed or broken with the same kind of material as found on the work, or with materials of equal or better quality. Leave the new work in satisfactory and serviceable condition.

Whenever a part of a square or slab of existing sidewalk, curb and gutter, or driveway is broken or damaged, remove the entire square, section, or slab and reconstruct the concrete as above specified.

Before removing the sidewalk, driveways, or pavement material, sawcut the outline of all areas to be removed in concrete sidewalks, driveways, and in pavements through completely with a saw. Make cuts neat and true and prevent shatter outside the removal area.

c. Cast-in-Place Foundations. Cast-in-place foundations in drilled holes.

1. Form the top 12 inches of pole foundations and give the top a smooth steel trowel finish.

2. If subsurface conditions prevent completing a drilled hole, and when approved, use a corrugated metal pipe (CMP) form as a substitute for the drilled hole. Consider the savings in concrete to offset the cost of supplying and installing the CMP form. No additional payment will be made for the CMP formed foundation.

3. When a CMP is used, over-excavate the area around the form enough to allow for proper compaction around the form. Perform backfill operations according to Section 204. Do not use water for drilling operations or for any other purpose where it may enter the hole.

4. Place Class A concrete meeting Section 501. Place reinforcing steel meeting Section 503. If required, use corrugated steel pipe that is at least 14 gage, meeting Subsection 707-2.01.

5. Drill holes or use forms that are vertical and true to the locations shown in the Plans. When foundation excavation is complete, but before placing the concrete, remove all loose material to ensure that the foundation rests on firm, undisturbed ground.

6. Place and secure the reinforcing steel cage symmetrically about the vertical axis and securely block it to clear the sides of the foundation. Use a template to securely support all anchor bolt assemblies so they do not move during concrete placement.

7. Do not permit surface water to enter the hole. Before placing concrete, remove all water that may have infiltrated in the hole. Thoroughly moisten both the forms and the ground before placing concrete. Pour each foundation in one continuous pour.

8. Install the bottoms of the bottom leveling nuts as shown on the plans and details. Generously lubricate the bearing surface and internal threads of all top nuts with beeswax and tighten the top nuts according to the anchor bolt tightening procedure included in the contract

9. Install frangible couplings according to the manufacturers written installation instructions. Use shims furnished by the coupling manufacturer.

10. Provide new foundations and anchor bolts of the proper type and size . Install the anchor bolts on a bolt circle that matches the base plate.

d. Welding. Conform to Subsection 504-3.01.8, and the requirements of the individual items.

e. Repairing Damaged Finishes. Repair damage to galvanized coatings in conformance with AASHTO M 36

f. Signal Pole Installation. Install signal poles with the centerline of the pole plumb. Provide a 1-inch drain hole in the grouted base. Run this drain from the center of the foundation to outside of the grouted area.

615-4.01 METHOD OF MEASUREMENT. Delete this Subsection and add the following: Work required under this section will not be measured for payment.

615-5.01 BASIS OF PAYMENT. Delete this Subsection and add the following: Work required under this section will not be paid for directly, but will be subsidiary to Item Numbers 690(1), 690(2), 690(3), 690(4), 690(5), 690(6), 690(7), 690(8), and 690(9).

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. Prepare slopes for seed by "walking" a dozer transversely up and down the slopes, or by grading with a scarifying slope board, as determined by the Engineer. The resultant indentations shall be perpendicular to the fall of the slope. Complete slope preparation as soon as topsoil is placed on the slopes. Rounding the top and bottom of the slopes is acceptable to facilitate tracking and to create a pleasing appearance, but do not disrupt drainage flow lines.

618-3.02 SEEDING SEASONS. Add the following: Seeding shall be performed between May 15 and August 15.

618-3.03 APPLICATION. Add the following: Apply seed, mulch, and fertilizer as follows per acre. Apply seed and mulch in one application if using the hydraulic method. Apply fertilizer with the hydraulic method.

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

Do not remove the required tags from the seed bags.

For seeding at Tenth Avenue, L Street, and 48th Avenue intersections, substitute "Nugget" Kentucky bluegrass for slender wheatgrass. (10/27/05)DOWL

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. (11/06/02)R52USC

618-4.01 METHOD OF MEASUREMENT. Delete this subsection and add the following: Work required under this section will not be measured for payment.

618-5.01 BASIS OF PAYMENT. Delete this subsection and add the following: Work required under this section will not be paid for directly, but will be subsidiary to Item Numbers 690(1), 690(2), 690(3), 690(4), 690(5), 690(6), 690(7), 690(8), and 690(9). (02/22/06)DOWL

SECTION 621
PLANTING, TREES, AND SHRUBS

Special Provisions

621-1.01 DESCRIPTION. Delete this subsection in its entirety and substitute the following: This work shall consist of collecting, furnishing, planting, transplanting, and maintaining trees, shrubs, and other plants on prepared areas as shown and scheduled on the Plans.

Add the following subsection:

621-1.02 QUALIFICATIONS FOR LANDSCAPE CONTRACTOR. The Contractor shall provide documentation which verifies the experience of the Landscape Contractor performing the work described in this section and maintaining landscaping projects comparable in scope, materials, and diversity in three (3) construction projects and one (1) maintenance project within the last five (5) years prior to the bid date of this project. This experience shall only include projects from cold climate states or provinces and three (3) shall be from South-central Alaska. The Contractor shall demonstrate experience in landscape installation, tree and shrub planting and transplanting.

Add the following subsection:

621-1.04 SUBMITTALS. The Landscape Contractor performing the work shall meet the following minimum requirements and shall submit the necessary documentation to show compliance to the Engineer for review and approval:

1. Project Experience: Documentation shall be submitted with the Bid Proposal that lists three (3) construction and (1) maintenance projects completed by the Landscape Contractor under the same company name that are similar in scope, landscape materials, plant materials, methods of installation, and maintenance to the project in the Plans and Specifications. The list shall include at a minimum the dates, type, description, and amount of work performed and the name and telephone number of a contact person at the agency or entity for which the work was performed.

2. Personnel: A list of proposed key personnel including the name of the superintendent and his assistant(s) who will direct the actual installation shall be submitted to the Engineer fourteen (14) days after Notice to Proceed. The list of personnel shall be accompanied with a resume from the superintendent and his assistant(s). The superintendent shall be assigned full time to this project during installation.

   The superintendent and his assistant shall have a minimum of five (5) years experience in directing landscape projects prior to the bid date of this project three (3) of which shall have been in Alaska. The resumes shall include the following information and demonstrate compliance with any requirements requested:

   1.) Number of years of continuous relevant experience in landscaping projects. Significant projects shall be listed in the resume.

2.) Recent relevant landscaping, vegetation restoration, including project description, date of work, individual's role on the project, and one reference for each project.

The Engineer shall have the right to approve or reject the personnel based on the qualifications as submitted. Upon approval, the Landscape Contractor, the superintendent and his assistant(s) shall be authorized to work on this project. The Engineer may suspend work if the Contractor substitutes unauthorized Landscape Contractor for authorized Landscape Contractor or unauthorized personnel for authorized personnel during construction without approval. If work is suspended due to such substitutions, the Contractor shall be fully liable for additional costs resulting from the suspension of work and no adjustments in Contract time resulting from suspension of work shall be allowed.

621-2.03 LIMESTONE. Add the following: Limestone shall be applied at a rate determined by the Engineer, as described in Subsection 726, in Table 726-1, and based on the soil analysis tests provided by the Contractor for the topsoil used for this project.

621-2.06 STAKES. Add the following: Stakes shall be installed as shown on Plans.

621-2.07 TREE WOUND DRESSING. Delete this subsection in its entirety.

Add the following subsection:

621-3.02 ADVANCE PREPARATION AND CLEANUP. Add the following: Areas that 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 between 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. Delete Items 1 and 2 and substitute the following:

1. Plant Season.

   a. Locally grown: The Engineer may authorize transplanting at any time during the growing season if favorable conditions are present.

   b. Imported: Handle and transplant out-of-state plants, according to the nursery recommendations.

2. Excavation.

   a. Topsoil shall be kept separate from subsoil and shall be rendered loose and friable. Any material detrimental to plant growth shall be separated and disposed at approved locations.

   b. Planting pits for trees and shrubs shall be in accordance with the details shown on the Plans.

   Delete paragraphs (c.) and (d.).

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

4. Transplanting. Add the following:

Transplanting of existing trees shall include healthy plant material from areas to be demolished. The plant material shall be healed-in in the temporary nursery and replanted at locations shown on Plans as the project progresses.

a. Transplanting shall provide for the number and type of plants shown on Plans as part of the landscape installation. Contractor shall mark the individual trees and shrubs to be transplanted for approval by the Engineer.

b. In case the Contractor can't provide the required number of transplanted plants in acceptable condition at the time of replanting the Engineer shall allow a substitution of maximum 15 percent of the total amount of each type. The substitution shall be new plant material of the same species in the largest size specified for the project.

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.

6. Wrapping. Delete this paragraph in its entirety.

7. 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 establishment period.

621-3.04 PERIOD OF ESTABLISHMENT. Delete the first sentence and substitute the following: Period of establishment shall extend for two (2) full growing seasons after acceptance of all work described in this section and under Sections 618, 620, and 623.

One full growing season shall be defined as the period between May 1 and September 30 for the purpose of this Contract. The work under Section 621 will only be accepted as fully complete for period of establishment requirement purposes, no partial acceptance will be given. The two (2) full growing season period of establishment starts 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.

621-3.05 CLEANUP. Add the following: Planted trees and shrubs shall be kept clean of litter and garbage.

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 water all trees and shrubs 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 prior to 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 right after flowers drop off or decay. Damaged trees or those that constitute health or safety hazards shall be pruned as directed by the Owner's Representative 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 fertilizer in accordance with Section 621-2.02 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 in accordance with the fertilizer manufacturer's instructions. Fertilizer shall be well-watered in immediately after application. The Contractor shall notify the Engineer in writing four working days prior to applying any fertilizers. Written notice shall state the time and location of fertilizer application.

Table 621-1
Maintenance Fertilizer Schedule

Plant Type	Fertilizer	Application Rate
Coniferous Trees	8-32-16	1/3 lb for each 1 inch of Caliper
Deciduous Trees	8-32-16	1/3 lb for each 1 inch of Caliper
Shrubs and Ground Cover	8-32-16	7 lbs per 1,000 square feet

621-4.01 METHOD OF MEASUREMENT. Delete this Subsection and add the following: Work required under this section will not be measured for payment.

621-5.01 BASIS OF PAYMENT. Delete this Subsection and add the following: Work required under this section will not be paid for directly, but will be subsidiary to Item Numbers 690(1), 690(2), 690(3), 690(4), 690(5), 690(6), 690(7), 690(8), and 690(9).

ADDENDUM No. 1
ATTACHMENT No. 4

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. Delete this Subsection and add the following: Work required under this section will not be measured for payment.

639-5.01 BASIS OF PAYMENT. Delete this Subsection and add the following: Work required under this section will not be paid for directly, but will be subsidiary to Item Numbers 690(1), 690(2), 690(3), 690(4), 690(5), 690(6), 690(7), 690(8), and 690(9).

Delete Section 641 in its entirety and substitute the following:

SECTION 641

EROSION, SEDIMENT, AND POLLUTION CONTROL

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. The Department describes common BMPs in its *Alaska Storm Water Pollution Prevention Plan Guide.*

2. ESCP (Erosion and Sediment Control Plan). The general plan for control of project-related erosion and sedimentation. 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. Notice of Intent to commence ground-disturbing activities under the NPDES General Permit filed electronically.

6. eNOT. Notice of Termination of coverage under the NPDES General Permit filed electronically.

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 eNOIs 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 under the NPDES General Permit. The SWPPP is developed by the Contractor and describes site-specific controls and management of issues identified for the project. The approved SWPPP replaces the ESCP.

641-1.03 SUBMITTALS. For all projects submit 2 copies each of your SWPPP and HMCP to the Engineer for approval. Submit 1 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 certifications, and be signed according to 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 5 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 1 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 Department will transmit the Department's eNOI to the EPA. Allow adequate time for state and federal processing, prior to commencing ground-disturbing activities.

The active status eNOIs, 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. Follow the format presented in the *Alaska Storm Water Pollution Prevention Plan Guide.* The plan must include both erosion control and sediment control measures. The plan must address first preventing erosion, then minimizing erosion, and finally trapping sediment before it leaves the project site.

The 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 by a licensed Professional Engineer, 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.

Postings.

On projects with 1 acre or more of ground disturbing activity, do not begin ground-disturbing work until the EPA has acknowledged receipt of your eNOI and Department's eNOI, and has listed them as active status. The EPA will post the status of the eNOIs 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 ground disturbing work until authorized by the Engineer.

Post at the construction site:
1. NPDES Permit number, if available, and a copy of the eNOI,
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.

Inspections.

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 every 7 days and within 24 hours of the end of a storm exceeding an intensity of 1/2 inch in 24 hours as measured on 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

   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 1 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 state Form 25D-100, with 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. The Contractor 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.

Record Retention.

Keep the SWPPP up to date at all times. The SWPPP shall denote the location, date of installation, date maintenance was performed, and the date of removal for BMPs. It shall also contain copies of inspection reports and amendments.

Maintain the following records as part of the SWPPP:
1. Dates when major grading activities occur;
2. Dates when construction activities temporarily or permanently cease on a portion of the site; and
3. Dates when stabilization measures are initiated.

Provide the Engineer with copies of SWPPP revisions, up dates, records, and inspection reports at least weekly.

Retain copies of the SWPPP, and all other records required by the NPDES General Permit, for at least 3 years from the date of final stabilization.

Amendments.

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 7 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 7 days.

Stabilize all areas disturbed after the seeding deadline within 7 days of the temporary or permanent cessation of ground-disturbing activities.

Notice of Termination.

Submit a signed eNOT to EPA and a copy to the Engineer:
1. When the project site (including all material sources, disposal sites, etc.) has been finally stabilized and all storm water discharges from construction activities authorized by this permit have ceased, or

2. When 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.

Failure to:
1. Pursue work required by the approved SWPPP,
2. Respond to inspection recommendations and/or deficiencies in the SWPPP, or
3. Implement erosion and sedimentation controls identified by the Engineer,

will result in a permanent price adjustment under Item 641(5) Erosion and Pollution Control Price Adjustment of $500 per day for each day of non-action. 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:

Items 641(2) and (4) will be measured as specified in the contract or directive authorizing the work.

641-5.01 BASIS OF PAYMENT. The Bid Schedule will include either items 641(1), (2), and (5) or items 641(1), (3), (4), and (5).

1. Item 641(1) Erosion and Pollution Control Administration. At the contract lump sum price for administration of 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(2) Temporary Erosion and Pollution Control. At the prices specified in the Contract or as provided in the Directive authorizing the work to install and maintain temporary erosion, sedimentation, and pollution control measures.

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

4. Item 641(4) Temporary Erosion and Pollution Control Amendments. At the prices specified in the Directive for extra, additional, or unanticipated work to install and maintain temporary erosion, sedimentation, and pollution control measures. All work paid under this Item will be shown as amendments to the original approved SWPPP or HMCP.

5. Item 641(5) Erosion and Pollution Control Price Adjustment. The Engineer will assess a fee of $500 per day of non-action according to Subsection 641-3.01. 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 costs 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. The Contractor is responsible for the payment of the Contractor's fines.

Temporary erosion and pollution control measures that are required at Contractor-furnished sites are subsidiary.

Work that is paid for directly or indirectly under other pay items will not be measured and paid for under this Section, including but not limited to dewatering, shoring, bailing, installation and removal of temporary work pads, temporary accesses, temporary drainage pipes and structures, 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(2) Temporary Erosion and Pollution Control	Contingent 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

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SECTION 643
TRAFFIC MAINTENANCE

Special Provisions

643-1.03 TRAFFIC CONTROL PLAN. Replace the last paragraph with the following: A waiver may be requested of regulation 17 AAC 25 regarding oversize and overweight vehicle movements within this project in writing. If the waiver is approved, movements of oversize and overweight vehicles in or near traffic within the project limits will be done according to the provisions of an approved Traffic Control Plan. Maintain a 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.

Standard Modifications

643-2.01 MATERIALS. Under Item 16. Flagger Paddles, replace the last sentence with the following: Use reflective sheeting that meets AASHTO M 268 Type VIII or IX. Use background colors of fluorescent orange on one side and red on the other side. E29(3/15/06)

Special Provisions

643-2.01 MATERIALS. Add the following:

17. Flexible Markers. Refer to subsection 606-2.01 Materials.

Standard Modifications

643-3.01 GENERAL CONSTRUCTION REQUIREMENTS. Add the following: Immediately notify the Engineer of a traffic related accident that occurs within the project limits as soon as becoming aware of the accident. (03/15/06)E29

Special Provisions

643-3.01 GENERAL CONSTRUCTION REQUIREMENTS. Add the following: Whenever construction activity encroaches onto the safe route in a traffic control zone, station a flagger at the encroachment to assist pedestrians and bicyclists past the construction activity.

Maintain business accesses during flagging operations.

643-3.02 ROADWAY CHARACTERISTICS DURING CONSTRUCTION. Add the following: Traffic may be maintained on a continuous gravel surface for 1,000 feet.

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". E29(3/15/06)

Special Provisions

643-3.04 TRAFFIC CONTROL DEVICES.
Delete the first sentence of the eighth paragraph and substitute the following: Items paid under this Section remain the Contractor's property unless stated otherwise.

Add the following to item 1. Embankments.: Close trenches and excavations at the end of each continuous work shift.

Add the following to item 3. Fixed Objects.: Remove obstructions greater than 4 inches above the nominal foreslope grade at the end of each continuous work shift.

Delete item 4.b. and replace with the following: Flagger Certification by ATSSA

Delete item 6 and replace with the following:

6. Street Sweeping. Keep free of loose material paved portions of the roadway and haul routes open to the public, including sections of roadway off the project where the Contractor's operations have deposited loose material using a street sweeper that can collect materials rather than eject them to the shoulder of the road.

7. Power Brooming. Keep free of loose material paved portions of the roadway and haul routes open to the public, including sections of roadway off the project where the Contractor's operations have deposited loose material using a power broom that can eject them to the shoulder of the road.

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. Replace the first sentence with the following: When existing conditions adversely affect the public's safety or convenience, the Contractor will receive an oral notice. A written notice will follow the oral notice according to subsection 105-1.01 Authority of

the Engineer.

Add the following after the second sentence: In no case shall this time exceed 24 hours.

643-3.06 TRAFFIC PRICE ADJUSTMENT. Add the following: Failure to maintain an acceptable infrastructure or traffic control plan will result in a price adjustment equal to 100 percent of the applicable rate shown in Table 643-1, for the time the roadway or pedestrian facility is in an unacceptable condition.

Delete Table 643-1 and substitute the following:

TABLE 643-1

ADJUSTMENT RATES

Published ADT	Dollars/Minute of Delay/Lane
0-5,000	$30
5,001+	$40

643-3.08 CONSTRUCTION SEQUENCING. Delete the last sentence and substitute the following: Unless otherwise determined by the Engineer and on an approved Traffic Control Plan (TCP), do not restrict traffic Monday through Friday between 0600 to 0830 and 1530 to 1830.

Obtain a list of prescheduled special activity event utilitzing the downtown area from the Municipality of Anchorage. Corrdinate work activities to ensure that prescheduled activities are not interrupted through the construction zone. This plan shall be submitted as a TCP to the Engineer for approval 15 days before the prescheduled event.

The intersection of C Street and 7th Avenue may be closed for one weekend, from 2100 on a Friday to 0600 on a Monday, to complete all work associated with conduit crossing, pavement removal and repaving.

Obtain the local school bus schedule and coordinate his work effort to ensure the school busses are not delayed through the construction zone. This plan shall be submitted as a TCP to the Engineer for approval before the implementation of the school bus coordination plan.

643-3.09 INTERIM PAVEMENT MARKINGS. In the second paragraph, delete the words "or cover them with black removable preformed marking tape."

Replace the first sentence in the last paragraph with the following: Apply final pavement markings according to subsection 670-3.01, Construction Requirements of these Special Provisions.

Standard Modification

Add the following new subsection:

643-3.11. HIGH VISIBILITY CLOTHING. Ensure workers within project limits wear an outer visible surface or layer that complies with the following requirements:

1. Tops.

   Wear fluorescent vests, jackets, or coverall tops at all times. Furnish each vest, jacket, or coverall top with at least one 360 degree horizontal retroreflective band around the torso; and two vertical retroreflective bands that begin at the horizontal band or lower in front, reach over the shoulder, and end at the horizontal band or lower in back. Furnish each jacket and coverall top with two horizontal retroreflective bands on each sleeve; one above and one below the elbow.

2. Bottoms.

   Wear fluorescent red-orange pants or coverall bottoms during nighttime work (sunset to sunrise). Worksite traffic supervisors, employees assigned to traffic control duties, and flaggers wear fluorescent orange-red pants or coverall bottoms at all times. Furnish each pants or coverall bottom with two horizontal retroreflective bands on each leg.

3. Raingear.

   Raingear tops and bottoms, when worn as the outer visible surface or layer, shall conform to the requirements listed in this subsection 643-3.11.

4. Exceptions.

   When workers are inside an enclosed compartment of a vehicle, they are not required to wear high visibility clothing.

5. Standard.

   High visibility garments shall conform to the requirements of ANSI/ISEA 107-2004, Class 2 for tops or Class E for bottoms, and Level 2 retroreflective material.

   Retroreflective bands are made of material conforming to either:

   a. A 2 inch wide strip, fluorescent yellow-green color, made of retroreflective microprisms; or
   b. A 2 inch wide strip, silver color, made of retroreflective lenses bonded to a durable cloth backing; and on 2 long edges apply 1 inch wide strips, fluorescent yellow-green color, made of durable cloth material. Total width of band is 4 inch.

6. Labeling.

Garments shall be labeled according to Section 10.2 of ANSI/ISEA-107-2004; except garments may be labeled to conform to ANSI/ISEA 107-1999 until 1/1/08.

7. Condition.

Furnish and maintain vests, jackets, coveralls, rain gear, hard hats, and other apparel in a neat, clean, and presentable condition. Maintain retroreflective material to Level 2 standards. (3/15/06)E29

Special Provision

643-4.01 METHOD OF MEASUREMENT.

Replace the second sentence of Item 2 with the following: Special Construction Signs are measured by the total area of legend bearing sign panel, as determined under subsection 615-4.01 and compensation for a 24 hour period shall be made under Construction Signs in the Traffic Control Rate Schedule.

Add the following: No measurement required to provide a 24-hour toll free (1-800-###-####) "hotline road report" telephone with a prerecorded message, and weekly notices with daily updates. Work will be subsidiary to Item 643(1) or 643(2), Traffic Maintenance.

Standard Modification

643-5.01 BASIS OF PAYMENT. Add the following: Payment for high visibility clothing for workers is subsidiary to other items. (3/15/06)E29

Special Provision

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

TRAFFIC CONTROL RATE SCHEDULE

Traffic Control Device	Pay Unit	Unit Rate
Construction Signs	Each/Day	$5.00
Special Construction Sign	Square Foot	$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	$.75
Portable Changeable Message Board Sign	Calendar Day	$150.00
Temporary Sidewalk Surfacing	Square Foot	$1.15
Flexible Markers	Each	$50.00
Removal of Pavement Markings	Foot	$1.25
Temporary Guardrail	Foot	$21.00

The Engineer will pay for Item 643(15) Flagging on a contingent sum basis at the rate of $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 subsection 109-1.05 Compensation for Extra Work. (02/10/06)R222USC04

Delete Item 643(15) and substitute the following:

Pay Item	Pay Unit
643(15) Flagging	Contingent Sum

(02/10/06)R222USC04

SECTION 646

CPM SCHEDULING

Special Provisions

646-2.01 SUBMITTAL OF SCHEDULE. Replace this Subsection with the following: Submit a detailed initial CPM Schedule at the preconstruction conference for the Engineer's acceptance as set forth below.

The construction schedule for the entire Project shall not exceed the specified contract time. Allow the Engineer fourteen (14) days to review the initial CPM Schedule. Revise promptly. The finalized CPM Schedule must be completed and accepted before beginning work on the Project.

646-3.01 REQUIREMENTS AND USE OF SCHEDULE.

Delete item 2. 60-Day Preliminary Schedule.

Delete the first sentence of item 3. Schedule Updates. and substitute the following: Hold job site progress meetings with the Engineer for the purpose of updating the CPM Schedule. Meet with the Engineer monthly or as deemed necessary by the Engineer. (12/13/02)R261M98

646-4.01 METHOD OF MEASUREMENT. Delete this Subsection and add the following: Work required under this section will not be measured for payment.

646-5.01 BASIS OF PAYMENT. Delete this Subsection and add the following: Work required under this section will not be paid for directly, but will be subsidiary to Item Numbers 690(1), 690(2), 690(3), 690(4), 690(5), 690(6), 690(7), 690(8), and 690(9).

SECTION 660

SIGNALS AND LIGHTING

Special Provisions

660-2.01 MATERIALS.

1. Equipment List(s) and Drawings. Delete item a in its entirety and the last sentence in item d and substitute the following:

   a. Materials on the *Approved Products List*: The Approved 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.

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 foundation and conduit excavations immediately before and during embedding and backfilling operations. Backfill excavations with materials that meet the following requirements

a. Backfill foundations with material that meets the requirements of Selected Material, Type A that passes through a 3 inch sieve.
b. Within the limits of the typical section, embed conduits and backfill trenches using material that meets the requirements of the lift where it is located, reusing excavated materials if it meets the requirements of the applicable lift,
c. In other locations, embed conduits and backfill trenches using material that meets the requirements of Selected Material, Type C, reusing excavated materials if it meets this requirement.
d. Import, when ordered, embedment and backfill materials that satisfy the preceding materials requirements.

Embed conduit(s) between two 6 inch lifts of material gleaned free of rocks exceeding a 1 inch maximum dimension. Grade and compact the first lift to provide a surface that continuously contacts the assembled conduit run.

Within 6 feet of paved surfaces and around foundations, backfill in uniform layers no more than 6 inches deep and compact each layer according to subsection 203-3.04. In other locations, compaction may be as approved by the Engineer.

4. Welding. Complete welding according to subsection 504-3.01.8. Welding and approved shop drawings.

Submit shop drawings of the proposed work with the welding plans for approval. The shop drawings shall include material specifications, component dimensions, the types of welds that will be made, and the proposed type and extent of weld inspection.

Repair the holes, which were used to mount equipment, in reused poles and mast arms by welding in disks flush with the adjoining surface. For the disk material, use steel that matches the ASTM designation, grade, and thickness of the steel used to

fabricate each pole. Cut disks that match the dimensions of the hole being repaired from pieces of steel plate bent to match the pole's radius at the hole. Grind the welds smooth and flush with the adjoining pole and disk surfaces. Repair the damaged finish according to subsection 660-3.01.8.

5. Removing and Replacing Improvements. The Contractor shall complete the following work at the Contractor's expense.

   a. Remove improvements that block completion of the work detailed in the Plans as specified herein.
   b. Reconstruct with new materials the 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.

   Nonreusable improvements consist of cast in place items, including: asphalt concrete pavement, sidewalks, curb and gutter, lawns, and traffic markings. Reusable improvements include the items that were made before installation. Crushed aggregate base material may not be used as backfill in the base course if excavation depth exceeds the thickness of the base course.

   Complete reconstruction work, including materials, according to the applicable sections of the Alaska SSHC, and leave the work in a satisfactory and serviceable condition. In completing the reconstruction work, match the alignments, widths, thicknesses, shapes, sizes, cross sections, and finishes of the existing improvements.

   If removing a portion of sidewalk or curb and gutter, remove an entire segment between the weakened plane contraction joints or between an expansion joint and a weakened plane contraction joint.

   Before removing a segment of Portland or asphalt cement concrete material, cut completely through the material with a saw along the outline of the area to be removed. Make cuts neat and true and prevent shatter outside the area removed.

   To replace lawns, leave the top of the backfilled excavation low enough to install 4 inches of compacted topsoil. Match the top of the topsoil with the bottom of the vegetative mat. Apply seed and keep the seeded areas watered according to Section 618.

   Remove, keep alive, and replant trees, shrubs, and plants according to Section

621. Replace the trees, shrubs, and plants that do not survive with plants of like size and type.

6. Salvaging and Reusing Electrical Equipment. When the Plans include existing electrical equipment scheduled for removal or relocation, remove and store the equipment listed in the following paragraph without damaging it. Deliver removed equipment not scheduled for reuse to the nearest District Maintenance Station or place specified in the Plans or Special Provisions. Notify the district superintendent or person specified by telephone one-week before planned delivery date.

Salvage the controller assemblies, signal heads, mounting brackets, luminaires, lighting standards, signal posts and poles, mast arms, optical detectors, load centers, light emitting diode optical units, and the lids of junction boxes scheduled for removal and other materials scheduled for relocation. The Contractor shall replace at the Contractor's expense salvaged equipment damaged or destroyed before or during delivery or reinstallation.

Controller assemblies and load centers include the cabinet and equipment contained in the cabinet before Contract award.

Remove from the highway right-of-way materials associated with the equipment removed or relocated and not scheduled for reuse, including conduits, junction boxes, conductors, and foundations. Raze the tops of foundations abandoned in place according to subsection 660-3.02. Fill the holes left by removing junction boxes and foundations with Selected mMaterial, Type A, and compact as directed.

With approval, after removing conductors, buried conduits that do not interfere with other construction may be abandoned in place with a credit taken by the Department. Remove the ends of abandoned conduits from the junction boxes that will remain in service.

Within 15 days of the Notice to Proceed, complete an inventory of the materials that will be salvaged in the presence of the Engineer. Note the location and condition of the materials. When material specified for reuse is found in an unserviceable condition, the Engineer will determine whether to repair it or replace it with new material, which will be paid for as extra work under subsection 109-1.05. Retain a copy of the inventory and give the original documents to the Engineer.

When the Plans specify reinstalling existing equipment at new locations and installing State furnished equipment, complete the following work at the Contractor's expense:

a. For poles, install new foundations, furnishing the new nuts, bolts, washers, and conduits needed to complete the installations.

b. For lighting poles, install new illumination tap wires and fused disconnect kits.

c. For luminaires, clean the luminaires inside and out and install new lamps of the same wattage.

d. For signal heads, furnish and install the mounting brackets needed to complete the relocation, and clean the signal heads inside and out.

e. For poles and undisturbed poles from which the Plans specify removing equipment, repair the holes that were made to mount equipment according to subsection 660-3.01.4. Welding and repair the finishes according to subsection 660-3.01.8.

When ordered, the Engineer will pay for repairing damaged finishes on existing equipment according to subsection 660-3.01.8 as extra work.

If deciding to use new equipment rather than reusing the equipment specified, notify the Engineer of the change and include a submittal according to subsection 660-2.01.1.

7. Field Tests. Electrical circuits must pass the following tests before the Engineer will accept the work for payment. Perform these tests in the presence of the Engineer, and document the results of each test on a per circuit basis. Retain a copy of test results and give the original documents to the Engineer. Furnish equipment needed to perform these tests.

Replace or repair at the Contractor's expense, and in an approved manner, faulty materials and work revealed by these tests. After making repairs, repeat tests on the repaired circuit and continue this process until circuits have passed required tests. The Department reserves the right to have the Contractor retest circuits, and to use the retest results to accept or reject individual circuits.

a. Grounds. Before completing the circuitry and functional tests, physically examine conduits ends, junction box lids, load centers, and the foundations for signal posts and poles, lighting poles, and controller cabinets to ensure the grounding system required by subsections 660-3.06 and 661-3.01 has been installed and splices and connections are mechanically firm.

b. Continuity. Test each loop detector circuit for continuity at the roadside junction box before splicing the loop detector to the lead-in cable. Each loop detector must have a resistance less than 0.5 ohms.

After splicing the loop detectors to the lead-in cables, test each pair at the controller or detector cabinet. Each pair must have a value less than 5

ohms for single pair lead-in cables and 10 ohms for multipair lead-in cables. The continuity test ohm reading at the cabinet must be greater than the ohm reading measured for the loop detector at the junction box.

c. Insulation Resistance (megohm) Test. Complete this test to verify the integrity of each conductor's insulation after pulling the conductors and cables into position and before terminating the conductors. At 500 volts DC, each conductor's insulation shall measure a minimum resistance of 100 megohms or the minimum specified by the manufacturer. With single conductors, complete the test between each conductor and ground. In each multiconductor cable, complete the test between conductors and between each conductor and ground.

After splicing the loops to the shielded pairs in the lead-in cables, measure each pair in the lead-in cables at the controller or detector cabinet between one conductor and the cabinet ground rod.

d. Inductance Test. Measure each detector loop and lead-in cable system at the controller or detector cabinet. The inductance must be in the range of 50 to 500 microhenries.

e. Circuit. Energize every signal indication circuit with lamps installed before installing the load switches.

f. Functional. Perform the following tests on each signal and lighting system after the component circuits have satisfactorily passed the tests for continuity, grounding, insulation integrity, and circuitry.

1) For each new traffic signal system, complete at least 24 hours of flashing operation, followed by not less than 5 days of continuous, satisfactory operation. The Engineer may decide to omit the flashing portion of the test for modified signal systems and for new signals that replaced existing signals that remained in operation during the construction phase.

If the Engineer omits flashing operation and the system performs unsatisfactorily, correct the condition and repeat the test until the system runs for five days with continuous, satisfactory operation.

Begin the signal functional tests between 9:00 a.m. and 2:00 p.m. on any day, except a Friday, Saturday, Sunday, a legal holiday, or the day before the legal holiday.

Before each system turn on, aim signal faces according to subsection 660-3.08 and ensure equipment specified in the Plans is

installed and operable, including: pedestrian signals and push buttons; signal backplates and visors; vehicle detectors; highway lighting; and regulatory, warning, and guide signs.

2) Perform the functional test for each highway lighting system and sign illumination system until the systems burn continuously 5 days without the photocell, followed by a 5 day operational test using the photocell.

3) Perform the functional test for each flashing beacon system for not less than 5 days of continuous, satisfactory operation.

4) Perform a continuous 5 day burning test on each pedestrian overpass and underpass lighting system before final acceptance.

A shut down of the electrical system due to a power interruption does not constitute discontinuity of the functional test if the system functions normally when power is returned.

8. Repairing Damaged Finishes. Examine new, reused, and State furnished equipment for damage to its finish before putting the equipment into service. Repair the damaged finishes found according to the following:

a. Galvanized. Repair damaged areas more than 12 inches away from welds and slip fit areas, by applying a minimum 7.8 mils of zinc based alloy applied according to ASTM A780.

If the damaged areas are within 12 inches of welds and slip fit areas, make the repair by applying a minimum 7.8 mils of zinc rich paint applied according to ASTM A780.

b. Painted. Repair damage to painted finishes according to the following

(1) Wash the equipment with a stiff bristle brush using a solution containing two tablespoons of heavy-duty detergent powder per gallon of water. After rinsing, wire brush surfaces to remove poorly bonded paint, rust, scale, corrosion, grease, or dirt. Remove dust or residue remaining after wire brushing before priming.

(2) Factory or shop cleaning methods may be used for metals if equal to the methods specified herein.

(3) Immediately after cleaning, coat bare metal with pretreatment, vinyl wash primer, followed by 2 prime coats of zinc chromate primer for metal.

(4) Give signal equipment, excluding standards, a spot finishing coat on newly primed areas, followed by 1 finishing coat over the entire surface.

(5) Give nongalvanized standards 2 spot finish coats on newly primed areas.

Paint coats may be applied either by hand brushing or by approved spraying machines. Perform the work in a neat and workmanlike manner. The Engineer reserves the right to require the use of brushes for the application of paint, should the work done by the paint spraying machine prove unacceptable.

Add the following new item 9:

9. Regulations and Code. Complete work according to the standards of the NEC, the NESC, and local safety codes as adopted and amended by the authority having jurisdiction.

660-3.02 FOUNDATIONS. Under item 1. Cast-in-Place Foundations., add the following to the first paragraph: Locate the tops of traffic signal post and pole foundations flush with the adjacent finished: walkway, shoulder, or surrounding ground.

1. Cast-in-Place Foundations. In subparagraph f, revise the second sentence to read: Before placing the form or reinforcing steel cage, remove loose material from the bottom of the hole to ensure the foundation rests on firm, undisturbed ground.

In the second sentence of sub-item i delete "prior to grouting." and substitute "before attaching the skirt."

In the first sentence of sub-item j, delete "concrete pile caps" and substitute "foundations"

Delete item k and add the following new items k and l:

k. Install the bottoms of the bottom leveling nuts in a level plane within 1 inch of the top of foundations. Adjust all nuts until their tops form a level plane. Install one washer on top of all leveling nuts and, after setting the pole on these washers, install one washer under all top nuts.

Bring 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°) 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.

2. Pile Foundations. Add the following new item g:

g. Use no more than one splice per foundation. Locate the splice at least 7 feet from the top of pile.

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 2 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 2 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.

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.

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 R10-4B (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.

Install an R10-101 sticker, The Meaning of Pedestrian Signals, on each pole with one or two pedestrian push buttons. With two pedestrian push buttons on a pole, install the sticker between and above the R10-4B signs. With one pedestrian push button, install the sticker directly above the R10-4B sign.

660-3.09 MAINTAINING EXISTING AND TEMPORARY ELECTRICAL SYSTEMS. Delete this subsection in its entirety and substitute the following: This work consists of protecting and maintaining the existing and temporary electrical systems during the life of the contract. The work includes: locating, repairing, replacing, adjusting, realigning, cleaning, and relocating components of traffic signals, lighting systems, and flashing beacons to keep them wholly operational and positioned according to the following specifications.

Furnish the Engineer with the name and phone number of the person who will maintain the existing and temporary electrical facilities at the Preconstruction Conference. Make

this person available at times until the date of Acceptance for Traffic and Maintenance and provide labor, materials, and equipment this person may need to complete repairs ordered by the Engineer.

When beginning work, the Engineer will notify the Contractor and the local maintenance agencies in writing of the transfer of maintenance responsibilities, providing an effective date and time. Maintenance does not include replacing defective equipment or repairing equipment damaged before the transfer of maintenance responsibility. Therefore, before starting work on the project, inventory the condition of the existing equipment with the Engineer and document the damaged and defective equipment. If beginning work before providing the Engineer with an inventory, the Contractor waives the right to claim extra compensation when the Engineer later finds damaged or defective equipment.

Keep components of the existing and temporary electrical systems operational during the progress of the work, except when the Engineer allows shutdowns to alter or remove the systems. The Engineer will consider these systems operational when no damaged or defective equipment is found in service, components are clean, located, and aligned as specified herein, and photoelectric controls operate the lighting systems. The State will pay for electricity used to operate the systems, if the public benefits from their operation. Furnish replacement equipment compatible with equipment used in the Central Region.

Begin work to repair, replace, adjust, realign, clean, and/or relocate components of an affected system within one hour when ordered by the Engineer. If work is not complete, the Engineer may have outside forces complete the repairs and deduct the amount billed from monies due the Contractor.

Records. When working on a traffic signal system, print a record of work performed in the diary found in each controller cabinet. Make sure each entry includes

1. The dates and times beginning and completing work, and the names of the crewmembers completing the work.

2. The characteristics of the equipment failure or faulty operation evident before repair.

3. The changes made or corrective actions taken.

4. The printed name and signature of the person responsible for making the repairs or changes.

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. On projects outside the MOA, send controller equipment to the MOA for testing and complete work specified inside controller cabinets.

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 subsection 660-3.07, 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:

Work required under this section and not shown in the bid schedule will not be measured for payment

660-5.01 BASIS OF PAYMENT. Add the following: 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:

a. Excavation, bedding, and backfill to install the components shown in the Plans. Dewatering excavations is subsidiary to completion of the excavation work.

b. Removing and repairing existing improvements to complete the work, unless other items in the contract cover the repairs.

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

The Engineer will pay for the disposal of surplus and unusable excavation and for imported backfill and bedding material at respective contract unit prices, or as extra work if the contract does not include these items.

The cost of repairing damage to finishes on new equipment is subsidiary.

The cost of maintaining the existing and keeping the temporary electrical system fully operational is subsidiary to 660 items included in the Contract.

Payment will be made under:

Pay Item	Pay Unit
660(26) Signal System Timing and Adjustments	Contingent Sum

R66USC04(7/07/06) TEC/LA

Add the following Section:

SECTION 662

SIGNAL INTERCONNECT

Special Provisions

662-1.01 DESCRIPTION. This item consists of the work required to furnish and install signal interconnect in conduit between the controller assemblies shown on the Plans along the route indicated or on a route as directed by the Engineer.

662-1.02 REGULATIONS AND CODE. Complete the work according to these Specifications and Section 660, Signals and Lighting.

662-2.01 MATERIALS. Submit the materials for review and approval according to the requirements of item 1. Equipment List and Drawings. of subsection 660-2.01, Materials.

Furnish a 25 pair #19 telephone cable conforming to REA Specification PE-39 for the interconnect cable. Install the interconnect cable in a 2-inch Galvanized Rigid Steel conduit.

Encapsulate completed splices in waterproof reenterable type splice kits of the same type used for loop lead-in cable splices. REA Bulletin 344-2 entitled "Lists of Materials Acceptable for use on Telephone Systems of REA Borrowers" provides a list of acceptable splice materials.

662-2.03 JUNCTION BOX. Furnish precast, reinforced concrete junction boxes conforming to the sizes and details shown on the Plans. Install junction box lids made of cast iron.

662-3.01 CONSTRUCTION REQUIREMENTS. The signal interconnect consists of cable, conduit, junction boxes, other necessary hardware required to complete the item, cable splicing, and the termination of conductors on terminal blocks.

Install the polyethylene conduits at least 30 inches below finished grade.

Install junction boxes at all abrupt changes in conduit alignment and on 300 foot maximum centers. Angle points and curves with delta angles greater than 45 degrees constitute an abrupt change. Install Type 1A junction boxes, except when splicing interconnect cables together. Complete the interconnect cable splices in Type II or III junction boxes. Complete the splices in accordance with Rural Electrification Administration (REA) Specification PC-2 for splicing telephone cables. The Contractor shall determine the locations for making signal interconnect splices. The Engineer, however, will not allow splices to be made at low points in the terrain or the bottom of

sag vertical curves. Keep splices in the interconnect cable to an absolute minimum and get the splice locations approved by the Engineer beforehand.

662-3.02 EXCAVATING AND BACKFILLING. Backfill the excavations according to Section 204.

The Engineer will not allow ripping or plowing for installation of conduit. Backfill around the polyethylene conduit with a 6 inch lift of material free of rocks exceeding a 1 inch maximum dimension.

662-4.01 METHOD OF MEASUREMENT. Item 662(3) shall not be measured for payment. The Engineer's acceptance will constitute measurement.

662-5.01 BASIS OF PAYMENT. Payment for Item 662(3) will be full compensation for all labor, equipment, and materials required to complete the work shown on the plans and described in the specifications. (06/21/06)R67USC02 TEC/LA

Payment will be made under:

Pay Item	Pay Unit
662(3) Signal Interconnect Complete	Lump Sum

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.

670-3.01 CONSTRUCTION REQUIREMENTS. Delete all paragraphs under item 4. Methyl Methacrylate Pavement Markings. and substitute the following:

a. General. 15 days before starting work meet with the Engineer for a prestriping meeting. At this meeting, do the following:

1. Furnish a striping schedule showing areas and timing of work, placing materials and the Traffic Control Plans to be used.
2. Discuss placement of materials, potential problems.
3. Discuss work plan at off ramps, on ramps and intersections.
4. Discuss material handling procedures.
5. Provide copies of the manufacturer's installation instructions and copies of the Material Safety Data Sheets.

b. Manufacturer's Representative. Provide the services of a manufacturer's representative (the "Manufacturer's Representative"). Ensure the Manufacturer's Representative observes the application of the pavement marking materials. Cooperate with the Manufacturer's Representative and the Engineer to ensure that the materials are placed according to these Specifications and the manufacturer's recommended procedures.

c. Manufacturer Certified Installers. Install methyl methacrylate pavement markings using only striping installers certified by the marking materials manufacturer for the specific striping material and method. Submit these certifications to the Engineer at the Preconstruction Conference.

d. Preparation. Prepare the roadway surface to receive methyl methacrylate according to these Specifications and the manufacturer's recommendations. Clean and dry the roadway surface. Completely remove contaminants such as dirt, loose asphalt, curing agents, surface oils, or existing road marking materials before applying pavement marking material.

e. Application. Apply methyl methacrylate marking material according to these

For longitudinal markings use truck mounted automatic extrusion equipment capable of installing a double centerline and a single shoulder line in a single pass. Use automatic bead applicators that place a uniform layer of beads on the lines. Hand units will not be allowed.

For Transverse markings legends, symbols, and transverse markings use manual or automatic application equipment. Stencils or extruders are required to form sharply defined markings

For inlaid applications use grooving equipment that produces a dry cut. Use vacuum shrouded equipment or other equally effective containment procedures. Install markings in the same work shift as the grooving operation.

(1) Longitudinal Markings Surface Applied. Apply markings for lane lines, edge lines, and centerlines to yield a minimum thickness of 90 mils as measured from the surface of the pavement. Use Type B material, as specified in subsection 712-2.17.Use Type B material, as specified in subsection 712-2.17.

(2) Longitudinal Extruded Markings Inlaid. Apply markings for lane lines, edge lines, and centerlines to yield a thickness of 250 mils as measured from the surface of the pavement. Use Type b material. Groove the area for the inlaid markings to a depth of 250 mils.

(3) Transverse and Symbol Markings Inlaid. Apply markings for onlys, arrows, stop bars, gore stripes, railroad symbols, and cross walks to yield a thickness of 250 mils as measured from the surface of the pavement. Use Type C material, as specified in subsection 712-2.17. Use Type C material, as specified in subsection 712-2.17. Groove the area for inlaid marking to a depth of 250 mils.

(4) Traverse and Symbol Markings Surface Applied. Apply markings for onlys, arrows, stop bars, gore stripes, and cross walks to yield a thickness of 120 mils as measured from the surface of the pavement. Use Type C material.Use Type C material.

f. Disposal of Waste. Waste material becomes the Contractor's property. This includes grindings and removed marking material. Do not dispose of or store stripe removal wastes material or asphalt grindings on State property. Dispose of waste material according to applicable Federal, State, and local regulations.

g. Sampling. On the form provided by the Engineer 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. Thickness of material and 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.

(2) For other longitudinal applications, measure the thickness of the lines (above the pavement surface), at the time of application, every 300 feet.

(3) For surface applied transverse markings measure the thickness in three locations for each marking.

(4) Inspect the markings initially, and again two weeks after placement, to ensure the material has cured properly. Remove soft spots or abnormally darkened areas and replace with material meeting specifications.

(5) Measure the retroreflecivity of each transverse marking at three locations, and of each line at intervals not to exceed 1,500 feet. Take these measurements using a Delta LTL2000 Retrometer, a 100 foot retro-reflectometer, or approved similar device. Perform testing within 72 hours of curing.

The Engineer may elect to use the Contractors 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 markings are applied, unless otherwise directed. Use vacuum shrouded equipment or other equally effective containment procedures.

Add the following subsection:

670-3.07 TOLERANCES FOR METHYL METHACRYLATE 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 planed alignment.
7. Double Stripes. ± ¼ inches
8. Thickness of surface applied. Minimum specified to a maximum of + 30 mils.
9. Depth of Inlay Slot. Minimum 250 mils to a maximum of 290 mils.
10. Thickness of Inlaid Marking Material. Fill inlay area completely from the bottom of

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

Methyl methacrylate pavement markings applied by any method will be unacceptable if:

1. The marking is not straight or wide enough.
2. The thickness of the line is not uniform or less than specified.
3. The top of the line is not smooth and uniform.
4. The material is uncured.
5. The material blackens or is inconsistent in color.
6. The inlay slot is not ground to the specified depth.
7. The inlay slot is not filled to the specified depth.
8. The edge of the markings are not clear cut and free from overspray.
9. The reflective elements are not properly embedded.
10. The markings exhibit poor adhesion.
11. The retro-reflectivity of the markings is less than specified.
12. The color is not as specified.

Perform repairs using equipment similar to the equipment initially used to place the materials. Do not perform repairs in a "patch-work" manner. If more than one repair is required in a single 300 foot section, grind and repair the entire section.

670-4.01 METHOD OF MEASUREMENT. Delete this Subsection and add the following: Work required under this section will not be measured for payment. The Engineer may measure marking thickness to ensure conformance to specifications. Thickness will be measured from the top of the marking to the top of the pavement surface. Marking material place in a depression left by pavement line removal will not be included in measuring the thickness of the line.

670-5.01 BASIS OF PAYMENT. Delete this Subsection and add the following: Work required under this section will not be paid for directly, but will be subsidiary to Item Numbers 690(1), 690(2), 690(3), 690(4), 690(5), 690(6), 690(7), 690(8), and 690(9).

(01/04/06)R246usc04 LA

Add the following Section:

SECTION 690

INTERSECTION IMPROVEMENTS

Special Provisions

690-1.01 DESCRIPTION. Provide all necessary materials, labor and equipment to construct improvements as shown in the plans.

690-2.01 MATERIALS. Use materials that conform to Division 700, the Plans, Specifications, and the following:

Aggregate	Section 301
Asphalt Concrete Pavement	Section 401
Structural Concrete	Section 501
Culverts and Strom Drains	Section 603
Manholes and inlets	Section 604
Sidewalks	Section 608
Curbing	Section 609
Standard Signs	Section 615
Topsoil	Section 620
Construction Surveying and Monuments	Section 642
Signals and Lighting	Section 660
Painted Traffic Markings	Section 670

690-3.01 CONSTRUCTION REQUIREMENTS. Construct improvements to conform to the plans, details shown on the plans, and all applicable sections of the specifications.

690-4.01 METHOD OF MEASUREMENT. Items 690(1) through 690(9) will not be measured for payment. The Engineer's acceptance will constitute measurement.

690-5.01 BASIS OF PAYMENT. Payment for items 690(1) through 690(9) will be full compensation for all labor, equipment, and materials required to complete the work shown on the plans and described in the specifications. Items of work that do not appear in the bid schedule are subsidiary to pay items 690(1) through 690(9).

Payment will be made under:

Pay Item	Pay Unit
690(1) Curb Bulb at 6th Ave. and I St.	Lump Sum
690(2) Signal Pole Assemblies and Overhead Signs	Lump Sum
690(3) Curb Bulbs at C St. and 7th Ave.	Lump Sum
690(4) Median at Northern Lights Blvd. and Rose St.	Lump Sum
690(5) Median at Old Seward Hwy. and Telephone Ave./38th Ave.	Lump Sum
690(6) Site A-1, Old Seward Hwy and 48th Ave	Lump Sum
690(7) Site A-2, Northern Lights Blvd & Bragaw St	Lump Sum
690(8) Site A-3, 10th Ave & C St and E St	Lump Sum
690(9) Site A-4, L Street - 5th to 13th Ave	Lump Sum

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**	**90, 2 face**	**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 712

MISCELLANEOUS

Special Provisions

712-2.17 METHYL METHACRYLATE PAVEMENT MARKINGS. Delete the first and second paragraphs under item 1. Quality Requirements: and substitute with the following: Use a marking material formulated for the application type specified. Use a marking material manufactured from new materials and free from dirt and other foreign material. Use a methyl methacrylate based resin system for part "A". Use benzoyl peroxide system for part "B".

Extruded application: Material formulated for extruded application with factory intermix beads and anti skid aggregate, and additional surface applied beads.

2. Performance Properties: Add the following:

1. Color: Yellow, PR-1 chart, 33538 Federal Yellow. White, minimum daylight reflectance of 84.

712-2.18 GLASS BEADS FOR METHYL METHACRYLATE PAVEMENT MARKINGS. Delete the bead table and substitute the following: Use the type and amount of beads specified in writing by the marking material manufacturer necessary to meet the performance requirements.
(01/04/06)R246usco04

SECTION 724

SEED

Special Provisions

724-2-02. MATERIALS. Delete Table 724-1 and substitute with 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.

(11/06/02) R52USC

Delete this Section, except for Table 726-1 and substitute the following:

SECTION 726

TOPSOIL

Special Provisions

726-2.01 TOPSOIL. Furnish topsoil that is representative of the existing, natural organic blanket of the project area. Perform a quality test, as defined by ATM 201, on the soil to determine the organic content of the soil. Supply the results to the Engineer.

Soil with an organic content of 5 percent or more may be reused and spread on the finished slopes where topsoil is noted on the plans. Remove roots, stumps, unnatural material, and rocks greater than 3 inch in diameter from the organic material before it is graded onto the finished slope.

Soil with an organic content of less than 5 percent cannot be used as topsoil for the project. In this case, furnish topsoil consisting of a natural friable surface soil without admixtures of undesirable subsoil, refuse, or foreign materials having an organic content of 5 percent or more, as determined by ATM 201. The material shall be reasonably free from roots, clods, hard clay, rocks greater than 3 inches in diameter, noxious weeds, tall grass, brush, sticks, stubble or other litter, and shall be free draining and nontoxic. Notify the Engineer of the location topsoil is to be furnished at least 30 calendar days before delivery of topsoil to the project from that location. The Engineer will inspect the topsoil and its sources before approval will be granted for its use. (04/01/05)R208USC

SECTION 730

SIGN MATERIALS

Special Provisions

730-2.04 SIGN POSTS. Add the following item:

7. Structural Tubing and W-Shape Beams.

   a. Structural tubing shall conform to either ASTM A500, grade B, or ASTM A501. The tubing shall be square and of the dimensions called for in the Plans with 0.2 inch thick walls. 0.4 inch diameter holes shall be drilled as required to permit mounting of the sign.

   b. W-shape beams shall conform to ASTM A36.

   c. Structural tubing and W shape beams shall be hot dip galvanized according to 1.b. of this subsection. Damaged and abraded tubes and beams shall be repaired according to 1.c. of this subsection.

(06/22/04) 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.

   A registered professional engineer shall design the structures and provide stamped shop drawings and calculations. Submit the stamped drawings and calculations for each pole to the Engineer for approval. Design for stresses on the completed structure with hardware in place.

   a. In the stamped calculations, indicate the edition of Standard Specifications to which the poles are being designed and provide the input data used to design each pole and mast arm, including: design wind speed, cross section shape, yield strengths of the component materials, dimensions of the pole components, and a summary of the loads used.

   b. On the stamped shop drawings, provide design wind speed and the details for building the poles and mast arms, including: materials specifications, slip fit joint dimensions, pole component dimensions, welds that will be made, and the welding inspection that will be done.

   Submit the mill certifications for the steel items (piles, plates, bolts, and other related items) to the Engineer for approval.

   Design poles for 100 mph winds with a 1.3 gust factor.

   Design each electrolier to support a sign with an area of 16 square feet with its centroid located 14 feet above the base of the pole.

2. Fabrication. Fabricate signal and lighting structures from tapered steel tubes with a round or 16 sided cross section. Orient hand holes located near the base of poles to face downstream of traffic flow.

   Provide traffic signal poles, lighting poles, and signal mast arms in lengths evenly divisible by 5 feet.

Furnish poles and mast arms up to 40 feet long in one piece. Poles and mast arms longer than 40 feet may be furnished in one piece or in two segments with a slip type field splice. For slip type joints, provide a minimum overlap of two feet or 1.5 times the inside diameter of the female section whichever is larger. In mast arms, locate these splices at least one foot away from the Plan location of signal heads and signs. In signal poles, locate the edge of the female section at least 6 inches above the top of the signal mast arm connection.

Fabricate tubes with walls up to ½ inch thick from the prequalified base metals listed in AWS D1.1 and which feature maximum yield strengths of 70,000 psi. 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.

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
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

Replace subsection 740-2.04 with the following:

740-2.04 HIGH TOWER POLES.

1. Design. Design and fabricate high tower lighting poles to conform to the 2001 Edition of AASHTO *Standard Specifications for Structural Supports for Highway Signs, Luminaires and Traffic Signals* with interim revisions.

   A registered professional engineer shall design the structures and provide stamped shop drawings and calculations. Submit the stamped drawings and calculations for each pole to the Engineer for approval. Design for stresses on the completed structure with hardware in place.

   a. In the stamped calculations, indicate the edition of Standard Specifications to which the poles are being designed and provide the input data used to design each pole, 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 the criteria to which the poles are designed and the details for building the poles, including: materials specifications, slip fit joint dimensions, dimensions of the tube segments and other components, the total weight of each segment, the welds that will be made, and the welding inspection that will be done.

   The pole manufacturer shall submit a pole installation plan that details the work required to assemble each pole, the locations of timber supports during and after pole assembly. Submit this plan with the stamped plans and calculations.

   Submit the mill certifications for steel items (piles, plates, bolts, and other related items) to the Engineer for approval.

   Design high tower poles for a 50 year design life and the basic wind speed shown in the 2001 AASHTO Standard Specifications for Structural Supports or for 100 mph, whichever is greater. Use a gust effect factor of 1.14.

   For fatigue design, use fatigue category I importance factors for lighting poles, and design poles that taper less than 0.14 inches of diameter per foot to resist the effects of vortex shedding.

   Furnish poles fabricated from tapered steel tubes with a round, 16 sided, or 12 sided cross section. Use no more than four tapered tube segments with slip type field splices to form each pole. For the slip type joints, provide a minimum overlap of 24 inches or 1.5 times the inside diameter of the female section whichever is larger.

   Furnish poles that allow the luminaire ring to descend within five feet of the base plate.

Design poles to support a load that consists of the lowering device and ten luminaires equipped with light shields. Use the following values for these components.

Component	Effective Projected Area	Weight
One lowering device	8.6 ft^2	309 lbs
Ten luminaires	21.5 ft^2	617 lbs
Ten light shields	30.0 ft^2	22 lbs

2. Fabrication. Provide a reinforced rectangular hand hole that provides an opening large enough to install the winch assembly.

Provide a detachable door over the hand hole frame including hinges, nuts to fasten the door to the frame, and a neoprene gasket to provide a watertight seal around the frame. Provide for a locking mechanism for the hand hole door.

Fabricate the reinforced rectangular hand hole to provide maintenance access to the integral luminaire lowering device with a minimum clearance of 12 inches and a maximum clearance of 18 inches between the top of the base plate and the bottom of the hand hole opening.

Fabricate the base plate to match the bolt circle diameter and the quantity and size of anchor bolts of the foundation detailed on the Plans. The anchor bolts conform to ASTM F 1554, Grade 55 with Supplemental Impact Test Requirements of Section S4. The distance from bottom of the leveling nut to the top of the concrete of the anchor bolts will not exceed one inch.

Install a hook to the left of the hand hole for storing the winch control cable away from the top of the foundation. Provide a 1 inch wide hook that features rounded edges, a 1½ inch radius, and 3 inches between the low point and free end of the hook.

Fabricate tubes with walls up to ½ inch thick from the prequalified base metals listed in AWS D1.1 and which feature maximum yield strengths of 70,000-psi. 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.

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 segments to form continuous straight seams from the base to the top of the pole. The Department will not accept poles and mast arms made with laminated steel elements.

The Department does not allow holes made for lifting purposes in the ends of tubular segments. To add lift points, weld them at least 12 inches away from welds on the outside of female segments and on the inside of male segments. Before shipment, remove added lift points, grind the area smooth with the base metal, and hot stick repair the finish according to subsection 660-3.01.8.a.

Provide the mounting brackets needed to install the luminaire ring lowering device, including the winch assembly, associated hardware, and the masthead assembly.

Around the top of each pole, provide a stabilizer system that prevents the luminaire ring from swinging freely when the top of the ring is within 24 inches of being fully docked in the masthead fitting. The stabilizer system shall consist of at least three crooked F shaped brackets located symmetrically around each pole. The brackets shall form a tapered bottom section and a parallel top section that restricts ring movement. Bolt each bracket to two channels welded to the pole shaft. With the Eagle lowering device, locate the brackets between the wheels that line the luminaire ring. Design and fabricate the brackets from stainless steel tubing to withstand the load and wind speed used to design the poles. The installed brackets shall just fit through a circle two inches smaller in diameter than the inside diameter of the luminaire ring.

3. Welding. Perform welding to conform to subsection 504-3.01 8. Welding and the following:
   a. Make welds continuous.

   b. Use CJP groove welds on longitudinal seams within six inches of CJP circumferential welds.

   c. In the ends of those segments that form a slip type joint, provide CJP longitudinal seam welds at least 12 inches longer than the length of the joint.

   d. 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.

   e. Use socket type joints with two fillet welds to connect the pole top plates to tubes with walls less than 5/16 inch thick.

   f. Use partial joint penetration (PJP) welds in longitudinal seams between the segments of CJP welds. PJP welds must provide at least 60% penetration.

   g. Use PJP and fillet welds to attach hand-hole frames to the tube.

   h. On steels 5/16 inch thick and thicker, inspect 100 Percent of CJP welds by either radiography (RT) or ultrasound (UT).

   j. 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.

   Weld tags on the ends of segments that form slip type joints to facilitate field assembly. Locate the tags to ensure segment alignment when the tags are aligned. Attach the tags at least 12 inches away from the slip type joint. Include the shop drawing number to which the poles are fabricated and pole length on the tag.

4. Miscellaneous. Finish poles to meet the following requirements. Before they are galvanized, 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 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 six inches do two things: grind down welds until a radius concentric is feature 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.

5. Rejection. The Department will reject poles containing segments that

   a. Are not fabricated according to these specifications and the approved shop drawings,

   b. Are bowed with sweeps exceeding ¾ inch throughout the length of the segment,

   c. Are out of round. Segments 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.

   d. Do not provide the minimum overlap of 24 inches or 1.5 times the inside diameter of the female section, whichever is larger, in the slip type field splices when the pole is assembled.

6. Galvanization. Hot dip galvanize pole segments and attachments to meet AASHTO M 111 and these specifications. Completely submerge pole 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 excess zinc from drip lines and points and the surfaces of tube ends that form slip type joints to provide a smooth finish.

740-2.05 CONDUCTORS. Replace Table 740-2 with the following:

TABLE 740-2
CONDUCTOR TERMINATION TABLE

CONDUCTORS PER CABLE	CIRCUIT	WIRE COLOR	AWG. NO.	BAND LEGEND
7	Vehicle Red Vehicle Yellow Vehicle Green Common Neutral Spare Spare Spare	Red Orange Green White White/Black Black Blue	14	Head No.
7	Vehicle Red Arrow Vehicle Yellow Arrow Vehicle Green Arrow Common Neutral Spare Spare Spare	Red Orange Green White White/Black Black Blue	14	Head No.
7	Vehicle Red Vehicle Yellow Vehicle Green Common Neutral Spare Vehicle Yellow Arrow Vehicle Green Arrow	Red Orange Green White White/Black Black Blue	14	Head No.
4	Pedestrian Don't Walk Pedestrian Walk Common Neutral Spare	Red Green White Black	14	Head No.
4	Pedestrian Pushbutton Neutral Spare Spare	Black White Red Green	14	Head No.
5	Photo Electric Control Load to Contactor Neutral Spare Spare	Black Red White Orange Green	14	PEC
3	Flashing Beacon Neutral	Black White	14	Head No.

TABLE 740-2
CONDUCTOR TERMINATION TABLE

CONDUCTORS PER CABLE	CIRCUIT	WIRE COLOR	AWG. NO.	BAND LEGEND
	Spare	Red		
3	Preemption Neutral Spare	Black White Red	20	"PRE"
3	Preemption Confirmation Neutral Spare	Black White Red	14	"PRECON"
3	Highway Luminaire Highway Luminaire Highway Luminaire Spare	Black Red White	8 or 6	Circuit No. Circuit No.
3	Service to Controller Neutral Spare	Black White Red	6 or 4	"SIG" No Band No Band
3	Sign Luminaire Sign Luminaire Sign Spare	Black Red White	8	SIGN SIGN

Replace 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.

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 items:

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.

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.

Luminaries General

Install luminaires that feature:

1. Corrosion resistant enclosures with gray paint finish and space for the ballast.
2. Third party certification for use in wet locations.
3. Glass lenses, unless polycarbonate resin refractors are specified.
4. Terminal blocks for attaching the illumination tap conductors.
5. Aluminum reflectors with an ALZAK or ALGLAS finish.
6. Optical components free of substances that affect photometric performance, e.g. paint.
7. Housings cast with no provision for a photoelectric control receptacle.
8. Airtight reflector and lens units that breathe through activated charcoal filters and include elastomer gaskets to seal the gap between the two components. Gasket material must withstand the temperatures involved and be securely held in place.
9. Plug in starting aids in fixtures with lamps through 400 watts.

Luminaries – Cobrahead

Each cobrahead luminaire shall also include:

1. An easily removed hinged door used exclusively for mounting the ballast.
2. A second door that frames the lens, hinges on the house side, and fastens on the street side with an automatic type latch.
3. A four bolt mounting brackets that fit 2 inch nominal diameter standard pipe and feature a center pivot for leveling the luminaire.

Offset luminaires shall also include knuckle style pole top adapters that are sized to fit 2 inch nominal diameter standard pipe and feature a wire way meeting NEC requirements for installing three size 10 AWG conductors between the pole and the terminal block located in the luminaire.

High Tower Luminaire.

1. A 1,000 watt, high pressure sodium lamp that provide 140,000 minimum initial lumens.
2. A side entry 4 bolt mounting bracket designed for 2 inch nominal diameter pipe with provision for leveling the luminaire.
3. A die cast aluminum housing attached to the mounting bracket, which provides a weather tight enclosure for the ballast and terminal block and is readily removable without removing the luminaire from the bracket arm.
4. A cover and reflector that readily detaches from the mounting bracket without removing the luminaire from the bracket arm.
5. A double fused 480 volt ballast with fuses sized by the luminaire manufacturer.
6. A hinged lens compatible with add on light shields.
7. A stainless steel lamp clamp to prevent lamps from loosening, which is separate from the socket.

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.

740-2.22 HIGH TOWER LUMINAIRE LOWERING SYSTEM. Delete this subsection in its

entirety and substitute the following: Furnish an integral luminaire lowering device that is compatible with the high tower design and consists of a head frame assembly, luminaire ring assembly, and winch assembly complete with electric motor.

Provide a technician employed by the lowering device manufacturer, who has a minimum three years experience installing the lowering device, to

1. Teach each crew that assembles the lowering device how to complete the work on the first pole,
2. Oversee the assembly work on the next three poles or until the technician can assure the Engineer the crew can correctly assemble the lowering devices,
3. Teach each crew how to initially adjust each lowering device on the first pole installed,
4. Oversee the adjustment work on the next three installed poles or until the technician can assure the Engineer the crew can correctly adjust the lowering devices,
5. Come back to teach each new crew how to assemble and adjust the lowering system components, if the installation crews change, and
6. Make intermediate and final adjustments to all lowering devices installed under the contract at three, six, and twelve month intervals after the State has accepted the high tower poles.

Furnish a complete service manual with instructions on installation, operation, and maintenance for each lowering device, winch assembly, and power drive system furnished on the project.

Install one of the following high mast lowering devices wired for a single circuit, rated 480 VAC single phase, on each high tower pole shown on the Plans. Furnish all power cords with four #8 AWG conductors.

Furnish each luminaire ring assembly with guide cones (Millerbernd) or tapered positioning pins (Eagle) painted a safety orange color for their full length. Use a 2 component, water borne epoxy paint with gloss finish that can be applied to galvanized steel and provides a tough, abrasion resistant coating rated for exterior use. Complete work according to the paint manufacturer's written instructions, including: preparing the surfaces and tinting, mixing, and applying the paint.

Manufacturer	Model No.	Options to be furnished
Eagle High Mast Lighting Co.	ELC-XX-GV	Hot dip galvanized masthead assembly and transition plate, and integral motor
Millerbernd Manufacturing	SSLD-2	Integral winch and motor assembly

The Plans will indicate the number of luminaires on each pole, each pole's height, and whether FAA approved obstruction lights are required. (4/24/06)R98USC04