STATE OF ALASKA
DEPARTMENT OF TRANSPORTATION AND PUBLIC FACILITIES

STANDARD SPECIFICATIONS
FOR
AIRPORT CONSTRUCTION

Ted Stevens Anchorage International Airport
ANC Gate E21
Project No. AIP ?-??-????-???-????/52339

(Advisory Circular 150/5370-10, Standards for Specifying Construction of Airports, as modified, and approved by the Federal Aviation Administration for Airport Improvement Program contracts in Alaska)

NOTE: Special Provisions for each project are marked as changes to the text of the Standard Specifications. Deleted text is identified by strikethrough. Additions are underlined.

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DEFINITIONS AND TERMS

10-01 GENERAL. The following terms and definitions apply in these Specifications. If a term is not defined, the ordinary, technical, or trade meanings for that term shall apply, within the context in which it is used.

Titles and headings of sections, subsections, and subparts are intended for convenience of reference and will not govern their interpretation. Working titles which have a masculine gender, such as "workman" and "flagman" and the pronouns and adjectives "he", "his" and "him" are utilized in the contract documents for the sake of brevity, and are intended to refer to persons of either sex. Any reference to a specific requirement of a numbered paragraph of the contract specifications or a cited standard shall be interpreted to include all general requirements of the entire section, specification item, or cited standard that may be pertinent to such specific reference.

Cited publications refer to the most recent issue, including interim publications, in effect on the date of the Invitation To Bid, unless specified by year or date.

These Specifications are written to the Bidder or Contractor. Unless otherwise noted, all actions required by the specifications are to be performed by the Bidder, the Contractor, or the Contractor's agent.

Some portions of these Specifications are written using imperative mood, abbreviated format, incomplete sentences, and/or active voice to communicate the Contractor's responsibilities in a direct and concise manner. Omission of words or phrases such as "a," "an," "the," "the Contractor shall," "unless otherwise specified," or "unless otherwise directed" is intentional. Interpret the Contract as if they were included.

For all Specification language except the General Contract Provisions, whenever anything is, or is to be, done, if, as, or, when, or where "acceptable, accepted, approval, approved, authorized, determined, designated, directed, disapproved, ordered, permitted, rejected, required, satisfactory, specified, submit, sufficient, suitable, suspended, unacceptable, unsatisfactory, or unsuitable," the expression is to be interpreted as if it were followed by the words "by the Engineer" or "to the Engineer."

10-02 ACRONYMS. Wherever the following abbreviations are used in these Specifications or on the Plans, they are to be construed the same as the respective expression represented:

AAC	*Alaska Administrative Code*
AASHTO	American Association of State Highway and Transportation Officials
AC	*FAA Advisory Circular*
ACI	American Concrete Institute
AIA	American Institute of Architects
AIP	Airport Improvement Program
AKOSH	Alaska Occupational Safety and Health
ANSI	American National Standards Institute
AOA	Air Operations Area
AS	*Alaska Statute*
ASDS	*Alaska Sign Design Specifications*
ASTM	American Society for Testing & Materials
ATM	Alaska Test Method (See *Alaska Test Methods Manual*)
CFR	Code of Federal Regulations
CSP	Construction Safety Plan
CTAF	Common Traffic Advisory Frequency
DOLWD	Alaska Department of Labor and Workforce Development
DOT&PF	Alaska Department of Transportation and Public Facilities
EPA	Environmental Protection Agency

FAA	Federal Aviation Administration
FOP	Field Operating Procedure (See *Alaska Test Methods Manual*)
FSS	Flight Service Station
ICEA	Insulated Cable Engineers Association (formerly IPCEA)
MRP	*Mining and Reclamation Plan*
NEC	*National Electrical Code*
NEMA	National Electrical Manufacturers Association
NOTAMs	*Notices to Airmen*
SSAC	*DOT&PF Standard Specifications for Airport Construction*
SSPC	Society for Protective Coatings
SPCC	*Spill Prevention, Control, and Countermeasure (Plan)*
SWPPP	*Storm Water Pollution Prevention Plan*
TCP	*Traffic Control Plan*
UL	Underwriters Laboratory
WAQTC	Western Alliance for Quality in Transportation Construction (See *Alaska Test Methods Manual*)

10-03 DEFINITIONS.

ACCEPTANCE SAMPLING AND TESTING. Sampling and testing performed by the State of Alaska, or its designated agent, to evaluate acceptability of the final product. This is also called verification sampling and testing when specifically used to validate the contractor's data.

ACCESS ROAD. The right-of-way, the roadway, and all improvements constructed thereon connecting the airport to another public thoroughfare.

ADDENDA. Clarifications, corrections, or changes to the Plans, Specifications, or other Contract documents issued graphically or in writing by the Department after the advertisement but prior to bid opening.

ADVERTISEMENT. The public announcement, as required by law, inviting bids for specified work or materials.

AGREED PRICE. An amount negotiated between the Department and the Contractor after Contract award for additional work performed or additional materials supplied under the Contract.

AIR OPERATIONS AREA (AOA). Any area of the airport used or intended to be used for the landing, takeoff, surface maneuvering, or parking of aircraft. An air operation area shall include such paved or unpaved areas, that are used or intended to be used for the unobstructed movement of aircraft, in addition to its associated runway, ~~runway safety area,~~ taxiway, ~~taxiway safety area and~~ or apron.

AIRPORT. An area of land or water that is used or intended for use for the landing and takeoff of aircraft, and any appurtenant areas that are used or intended for use for airport buildings or other airport facilities or right of way, together with airport buildings and facilities.

AIRPORT IMPROVEMENT PROGRAM (AIP). A grant-in-aid program, administered by the FAA.

ALASKA TEST METHODS MANUAL. The materials testing manual used by the Department. It contains Alaska Test Methods, WAQTC Test Methods, WAQTC FOPs for AASHTO Test Methods, and Alaska Standard Practices for evaluating test results and calibrating testing equipment.

APPENDICES. Supplemental contract documents.

AWARD. Acceptance of the successful bid by the Department. The award is effective upon execution of the Contract by the Contracting Officer.

BASE COURSE. One or more layers of specified material placed on a subbase or subgrade to support a surface course.

BID. The bidder's offer, on the prescribed forms, to perform the specified work at the prices quoted.

BID BOND. A type of bid guaranty.

BIDDER. An individual, firm, corporation, joint venture, or any acceptable combination of individuals and entities submitting a bid for the advertised work.

BID GUARANTY. The security furnished with a bid to guarantee that the bidder will enter into a contract if the Department accepts the bid.

CALENDAR DAY. Every day shown on the calendar, beginning and ending at midnight.

CHANGE ORDER. A written order by the Department to the Contractor making changes to the Contract, within its general scope, and establishing the basis of payment and time adjustment, if any, for the work affected.

COMMON TRAFFIC ADVISORY FREQUENCY (CTAF). A designated frequency for the purpose of carrying out airport advisory practices while operating to or from an airport that does not have a control tower or an airport where the control tower is not operational. CTAF is identified in appropriate aeronautical publications such as the current *Alaska Flight Information Supplement*, a civil/military flight information publication issued by FAA every 56 days.

COMPLETION DATE. The date on which all Contract work is specified to be completed.

CONSTRUCTION. Physical activity by the Contractor or any Subcontractor using labor, materials or equipment within the Project, or within material sources planned for use on the Project.

CONSTRUCTION SAFETY PLAN (CSP). ~~A Contract document that specifies methods of controlling the operations of the Contractor, subcontractors, and suppliers so as to provide for (1) safety of workers, equipment, and public, (2) the movement of aircraft in the Air Operations Areas of the airport, and (3) the least inconvenience to traffic.~~ A plan that sets forth guidelines for operational safety on airports during construction.

CONTINGENT SUM. A method for paying for a Contract bid item reserved by the Department for specified contingencies. The Contractor shall perform Contingent Sum work only upon the Directive of the Engineer. The basis of payment for Contingent Sum work shall be specified in the Contract or the Directive.

CONTRACT. The written agreement between the Department and the Contractor setting forth the obligations of the parties for the performance and completion of the work.

The Contract includes the Invitation To Bid, Bid Form, Standard Specifications, Special Provisions, Plans, Bid Schedule, Contract Forms, Contract Bonds, Addenda, and any Change Orders, Interim Work Authorizations, Directives, or Supplemental Agreements that are required to complete the work in an acceptable manner, all of which constitute one instrument.

CONTRACTING OFFICER (PROCUREMENT OFFICER). The person authorized by the Commissioner of the Department to enter into and administer the Contract on behalf of the Department. The Contracting Officer has authority to make findings, determinations, and decisions with respect to the Contract and, when necessary, to modify or terminate the Contract. The Contracting Officer is identified on the Invitation To Bid.

CONTRACT ITEM (PAY ITEM). A specifically described item of Contract work listed on the Bid Schedule or in a Change Order.

CONTRACTOR. The individual, firm, corporation, joint venture, or any acceptable combination of individuals and entities contracting with the Department for performance of the Contract.

CONTRACT TIME. The time allowed under the Contract, including authorized time extensions, for the completion of all work by the Contractor. Contract time may be specified either in calendar days or by completion date.

CONTROLLING ITEM. Any feature of the work considered at the time by the Engineer: (1) essential to the orderly completion of the work and (2) a feature which, if delayed, will delay the time of completion of the Contract (such as an item of work on the critical path of a network schedule).

COST. Amounts actually incurred by the Contractor in the performance of the Contract that are (a) actually reflected in contemporaneously maintained accounting or other financial records and (b) supported by original source documentation. Costs are to be stated in U.S. dollars.

CULVERT. A pipe or arch half pipe, that provides an opening under the embankment.

DAY. Calendar day unless preceded by the word "working".

DEPARTMENT. The State of Alaska Department of Transportation and Public Facilities.

DIRECTIVE. A written communication to the Contractor from the Engineer enforcing or interpreting a Contract requirement or ordering commencement or suspension of an item of work already established in the Contract.

DRAINAGE SYSTEM. The system of pipes, ditches, and structures by which surface or subsurface waters are collected and conducted from the airport area.

ENGINEER. The authorized representative of the Department's Contracting Officer. The Engineer is responsible for administration of the Contract.

EQUIPMENT. All machinery, tools, apparatus, and supplies necessary to preserve, maintain, construct, and complete the work.

EQUITABLE ADJUSTMENT. An increase or decrease in Contract price or time calculated according to the terms of this Contract.

EXTRA WORK. An item of work not provided for in the Contract as awarded but found essential by the Engineer for the satisfactory completion of the Contract within its intended scope.

FEDERAL AVIATION ADMINISTRATION (FAA). Branch of the U.S. Department of Transportation. When used to designate a person, FAA shall mean the Administrator or their duly authorized representative.

FEDERAL SPECIFICATIONS. The Federal Specifications and Standards, Commercial Item Descriptions, and supplements, amendments, and indices thereto which are prepared and issued by the General Services Administration (GSA) of the Federal Government. They may be obtained from the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402. Refer to the following website to determine the status of replaced Federal Specifications: http://apps.fss.gsa.gov/pub/fedspecs/index.cfm

HIGHWAY, STREET, OR ROAD. A general term denoting a public way used by vehicles and pedestrians, including the entire area within the right-of-way.

HOLIDAYS. State of Alaska legal holidays are:

1. New Year's Day - January 1
2. Martin Luther King, Jr. Day - Third Monday in January
3. Presidents' Day - Third Monday in February
4. Seward's Day - Last Monday in March
5. Memorial Day - Last Monday in May

6. Independence Day - July 4
7. Labor Day - First Monday in September
8. Alaska Day - October 18
9. Veteran's Day - November 11
10. Thanksgiving Day - Fourth Thursday in November
11. Christmas Day - December 25
12. Every Sunday
13. Every day designated by public proclamation by the President of the United States or the governor as a legal holiday.

If a holiday listed above falls on a Saturday, Saturday and the preceding Friday are both legal holidays for officers and employees of the state. If the holiday falls on a Sunday, except (12) above, Sunday and the following Monday are both legal holidays (See AS 44.12).

INDEPENDENT ASSURANCE (IA). Activities that are an unbiased and independent evaluation of all the sampling and testing (or inspection) procedures used in the quality assurance program. [IA provides an independent verification of the reliability of the acceptance (or verification) data obtained by the agency and the data obtained by the contractor. The results of the IA testing or inspection are not to be used as a basis of acceptance. IA provides information for quality system management.]

INSPECTOR. The Engineer's representative authorized to make detailed inspections of Contract performance and materials.

INTERIM WORK AUTHORIZATION. A written order by the Engineer initiating changes to the Contract, within its general scope, until a subsequent Change Order is executed.

INVITATION TO BID. The advertisement for bids for all work or materials on which bids are required.

LABORATORY. The official testing laboratories of the Department or such other laboratories as may be designated by the Engineer.

LIGHTING. A system of fixtures providing or controlling the light sources used on or near the airport or within the airport buildings. The field lighting includes all luminous signals, markers, floodlights, and illuminating devices used on or near the airport or to aid in the operation of aircraft landing at, taking off from, or taxiing on the airport surface.

MAJOR CONTRACT ITEM. A Contract item with a total value of 5 percent or more of the Contract award amount.

MATERIALLY UNBALANCED BID. A mathematically unbalanced bid that either (a) gives rise to a reasonable doubt that it will ultimately result in the lowest overall cost to the Department, even though it may be the lowest bid or (b) is so unbalanced as to be tantamount to allowing a significant advance payment.

MATERIALS. Substances specified for use in the construction of the project.

MATERIALS CERTIFICATION LIST (MCL). Also referred to as "Aviation Materials Certification List". A list of materials for which the Contractor shall submit certifications to the Engineer. The MCL is included in the Contract documents as an appendix.

MATHEMATICALLY UNBALANCED BID. A bid (a) where each pay item fails to carry its share of the cost of the work plus the bidder's overhead and profit, or (b) based on nominal prices for some pay items and enhanced prices for other pay items.

MINOR CONTRACT ITEM. A Contract item with a total value of less than 5 percent of the Contract award amount.

NON-FROST SUSCEPTIBLE. Stone, gravel or sand, that contains 6 percent or less material passing the No. 200 screen as determined by sieve analysis performed with WAQTC FOP for AASHTO T27/T 11 on the minus 3-inch material, and has a plastic index of 6 or less as determined by WAQTC FOP for AASHTO T 90.

NOTICE OF INTENT TO AWARD. The written notice by the Department announcing the apparent successful bidder and establishing the Department's intent to award the Contract when all required conditions are met.

NOTICE TO PROCEED. Written notice to the Contractor to begin the Contract work.

ORIGINAL GROUND (OG). The ground surface prior to the start of work.

PAVEMENT STRUCTURE. The combination of subbase, base course, and surface course placed on a subgrade to support and distribute the traffic load. Some layers may not be present, see Plans.

PAYMENT BOND. The security furnished by the Contractor and the Contractor's Surety to guarantee payment of all persons who supply labor and material in prosecution of the work provided for in the contract.

PERFORMANCE BOND. The security furnished by the Contractor and the Contractor's Surety to guarantee performance and completion of the work provided for in the contract.

PLANS. The Department's contract drawings, profiles, typical cross sections, and supplemental drawings or reproductions showing the location, character, dimensions, and details of the work.

PRECONSTRUCTION CONFERENCE. A meeting between the Contractor and the Engineer to discuss the project before the Contractor begins the work.

PROCESS CONTROL. See quality control.

PROFILE. The vertical elevation of the surface of the layer at the location indicated. It is typically indicated at the longitudinal centerline of the top layer of pavement on the runway, taxiway, apron, or roadway. On a material or fabrication it may be used to indicate a shape, or a thickness of material or thickness of a coating.

PROJECT. (a) The specific section of the airport or other property and related facilities on which construction is to be performed, or (b) the work that is to be performed under the Contract whether completed or partially completed.

QUALITY ASSURANCE (QA). (1) All those planned and systematic actions necessary to provide confidence that a product or facility will perform satisfactorily in service; or (2) making sure the quality of a product is what it should be. [QA addresses the overall process of obtaining the quality of a service, product, or facility in the most efficient, economical, and satisfactory manner possible. Within this broad context, QA includes the elements of quality control, independent assurance, acceptance, dispute resolution, etc. The use of the term QA/QC or QC/QA is discouraged and the term QA should be used. QA involves continued evaluation of the activities of planning design, development of plans and specifications, advertising and awarding contracts, construction, and maintenance, and the interactions of these activities.]

QUALITY ASSURANCE SPECIFICATIONS. Specifications that require contractor quality control and agency acceptance activities throughout production and placement of a product. Final acceptance of the product is usually based on a statistical sampling of the measured quality level for key quality characteristics. [QA specifications typically are statistically based specifications that use methods such as random sampling and lot-by-lot testing, which let the contractor know if the operations are producing an acceptable product.]

QUALITY CONTROL (QC) also called PROCESS CONTROL. The system used by a contractor to monitor, assess and adjust their production or placement processes to ensure that the final product will meet the specified level of quality. Quality control includes sampling, testing, inspection and corrective action (where required) to maintain continuous control of a production or placement process.

RESOURCES. Labor, equipment, materials, supplies, tools, transportation, and supervision necessary to perform the work.

RESPONSIBLE BIDDER. A bidder that the Department determines has the skill, ability, financial resources, legal capacity to contract, equipment, required licenses, integrity, satisfactory record of performance and that is otherwise fully capable of performing the Contract.

RESPONSIVE BID. A bid that the Department determines conforms in all material respects with the solicitation for bids.

RIGHT-OF-WAY. Land or property or an interest in property available for a project. The uses allowed in portions of right-of-way may be restricted.

RUNWAY. The area of the airport prepared for the landing and takeoff of aircraft.

RUNWAY SAFETY AREA (RSA). A defined surface surrounding the runway prepared or suitable for reducing the risk of damage to airplanes in the event an aircraft undershoots, overshoots, or departs from the runway.

SECURITY PLAN. A Contract document that specifies methods of controlling the operations of the Contractor, subcontractors, and suppliers so as to provide for (1) security of workers, equipment, and public, (2) security of aircraft in the Air Operations Areas of the airport, and (3) security of the Airport property.

SPECIAL PROVISION. Addition or revision that amends or supersedes the Standard Specifications and is applicable to an individual project.

SPECIALTY ITEM. A Contract item identified in the Contract that requires highly specialized knowledge, abilities, or equipment not ordinarily available in the type of contracting organizations qualified and expected to bid on the contract.

SPECIFICATIONS. General term applied to all Contract terms, conditions, directions, provisions, and requirements.

STANDARD SPECIFICATIONS. A book or electronic file of specifications approved by the Department for general application and repetitive use.

STATE. The State of Alaska, acting through its authorized representative.

STRUCTURE. Bridge, building, catch basin or inlet, cribbing, culvert, electrical duct, flexible and rigid pavements, handholes, junction boxes, lighting fixture and base, manhole, navigational aid, retaining wall, storm and sanitary sewer lines, transformer, underdrain, vault, visual aid, water line, and other manmade features of the airport that may be encountered in the work and not otherwise classified herein.

SUBBASE. Layer of specified material between the subgrade and base course.

SUBCONTRACTOR. Individual or legal entity to whom or to which the Contractor sublets part of the Contract.

SUBGRADE. The soil or embankment upon which the pavement structure is constructed.

SUBSIDIARY. Work or material not measured or paid for directly. Compensation for such work is included in the payment for other items of work.

SUBSTANTIAL COMPLETION. The point at which the project (1) can be safely and effectively used by the public without further delays, disruption, or other impediments; and (2) pavement structure, shoulder,

drainage, sidewalk, permanent signing and markings, guardrail and other traffic barrier, fencing, safety appurtenance, structures, utilities, lighting, bridge deck and parapet work, and guidance systems for aircraft is complete.

For projects built in phases the work is substantially complete when it is ready for the subsequent project.

SUPERINTENDENT. The Contractor's authorized representative in responsible charge of the work.

SUPPLEMENTAL AGREEMENT. Negotiated written agreement between the Department and the Contractor authorizing performance of work beyond the general scope of, but in conjunction with, the original Contract. Supplemental agreements are new procurements under the State Procurement Code, AS 36.30.

SURETY. Corporation, partnership, or individual, other than the Contractor, executing a bond furnished by the Contractor.

SURFACE COURSE. Top homogenous layer of the pavement structure. It is designed to withstand the wear of traffic and the disintegrating effects of climate. Sometimes called the wearing course.

TAXIWAY. The portion of the air operations area of an airport that has been designated for movement of aircraft to and from runways or aircraft parking areas.

TAXIWAY SAFETY AREA (TSA). A defined surface alongside the taxiway prepared or suitable for reducing the risk of damage to an airplane unintentionally departing the taxiway.

TRAFFIC CONTROL PLAN (TCP). ~~A Contract document that specifies methods of routing pedestrian and/or vehicular traffic through or around a construction area, including specifying the location of all traffic control devices, for work outside the air operations area.~~ Also referred to as "Highway Traffic Control Plan". A drawing or drawings indicating the method or scheme for safely guiding and protecting motorists, pedestrians, bicyclists, and workers in a highway traffic control zone. The TCP depicts the highway traffic control devices and their placement and times of use.

UTILITY. Line, facility, or system for producing, transmitting, or distributing communications, power, electricity, light, heat, gas, oil, crude products, water, steam, waste, storm water not connected with highway drainage, or other similar commodity, including a publicly owned fire or police signal system, street lighting system, or railroad which directly or indirectly serves the public. Also means Lighting as defined in this subsection. Also means a utility company, inclusive of any subsidiary.

VERIFICATION SAMPLING AND TESTING. See ACCEPTANCE SAMPLING AND TESTING.

WORK. Depending on the context, (a) The act of furnishing all resources for the project and performing all duties and obligations required by the Contract or (b) the physical construction, facility or end–product that is contemplated under the Contract, whether completed or partially completed.

WORKING DAYS. Calendar days, except Saturdays and state holidays.

WORKING DRAWINGS. Stress sheets, shop drawings, erection plans, falsework plans, framework plans, cofferdam plans, bending diagrams for reinforcing steel, wiring diagrams and schematics, traffic control plans, or any other supplementary plans or similar data which the Contractor is required to submit to the Engineer for approval.

SECTION 20

BIDDING REQUIREMENTS AND CONDITIONS

20-01 QUALIFICATION OF BIDDERS. A bidder shall:

a. On wholly state-funded projects, submit evidence of Contractor Registration, under AS 08.18, and valid Alaska Business License at the time designated for bid opening;

b. On federal-aid projects, submit evidence of Alaska Business License and Contractor Registration prior to award; and

c. When requested, submit a completed Contractor's Questionnaire (Form 25D-8) stating previous experience in performing comparable work, business and technical organization, financial resources, and equipment available to be used in performing the work.

All firms desiring to participate in DOT&PF construction projects must register annually by submitting a completed Bidder Registration (Form 25D-6).

The bidder must be registered as an Electrical Administrator, or must employ a person whose Electrical Administrator's license is assigned to the bidder, under AS 08.40 at the time of award.

20-02 CONTENTS OF BID PACKAGE. Upon request, the Department will furnish prospective bidders with a bid package, at the price stated in the Invitation To Bid.

The bid package includes the following:

a. Location and description of the project;

b. Estimates of quantities of work and materials to be furnished;

c. Schedule of contract items for which bid prices are invited;

d. Time in which the work must be completed

e. Amount of the bid guaranty;

f. Date, time, and place for the bid opening;

g. Plans and specifications; and

h. Bid forms.

Unless otherwise stated in the bid package, the Plans, Specifications, permits, forms and any other documents designated in the bid package are considered a part of the bid whether attached or not.

20-03 INTERPRETATION OF QUANTITIES IN BID SCHEDULE. Bid prices shall be based on the estimated quantities shown in the bid schedule. Quantities of work to be done and materials to be furnished are approximate and are prepared only for the comparison of bids. These quantities may increase, decrease, or be eliminated. Payment for unit price items will be made for the actual accepted quantities of work performed and materials furnished under the Contract, as determined using the method of measurement specified in the Contract.

20-04 EXAMINATION OF PLANS, SPECIFICATIONS, SPECIAL PROVISIONS, AND WORK SITE. Bidders shall examine the work site and all Contract documents before preparing a bid. Submitting a bid is a binding representation that the bidder has examined the work site, is aware of the conditions to be encountered, and has examined and understands all of the Contract documents, including plans and specifications. Bidders shall examine the bidding requirements listed under Subsection 50-06 Utilities.

The records of geotechnical investigations including boring logs, test results, geology data reports, soil reports, material site reports, and geotechnical reports included in a bid package or made accessible to bidders or Contractors, are for information purposes only. These records are not part of the Contract. These records indicate subsurface conditions only at specific locations and times, and only to the depths penetrated. They do not necessarily reflect variations in soil, rock or groundwater conditions that may exist between or outside such locations. Actual conditions may differ from what is shown in the records. Material sources referenced in these records may not contain materials of sufficient quantity or quality to meet project requirements. The accessibility of these records does not constitute approval, nor guarantee suitability of soils or sources, or the rights to use sources for this project, except as specifically provided in Subsections 60-02.d.(2) Mandatory Sources and 60-02.d.(3) Designated Sources. The records shall not substitute for independent investigation, interpretation, or judgment of the bidder or contractor. The Department is not responsible for any interpretation or conclusion drawn from its records by the bidder or Contractor.

Bidders and Contractors shall examine Subsection 60-02 Material Sources for further information about material source development.

Any questions about bidding procedures, site conditions, or Contract requirements must be submitted in writing to the persons designated on the Invitation To Bid. Questions must be submitted in sufficient time to get a reply before submitting a bid. No oral responses or other oral statements are binding on the Department. Any response to a material question shall be issued by addendum sent to all bidders.

20-05 PREPARATION OF BID. Bids shall only be submitted on the forms furnished by the Department or legible copies of the Department's forms. All entries shall be legible and in ink or type. Bidders shall:

a. Enter all prices required on the Bid Schedule, in figures;

b. Enter a unit price for each contract item for which a quantity is given;

c. Enter the products of the respective unit prices and quantities in the column provided;

d. Enter lump sum prices for lump sum contract items in the column(s) provided; and

e. Enter the total amount of all contract items for the basic bid and, when specified, any alternates.

When a bid item contains a choice to be made by the bidder, the bidder shall indicate a choice according to the Specifications for that item. No further choice is permitted.

The bid must be signed in ink by the person or persons authorized to sign the Contract for the bidder. If a bidder is a corporation, the bid must be signed by a corporate officer or agent with authority to bind the corporation. If a bidder is a partnership, a partner must sign. If the bidder is a joint venture, each principal member must sign. If a bidder is a sole proprietorship, the owner must sign. Each person signing the bid must initial any changes made to entries on the bid forms.

For multiple-project bid openings, bidders may limit the total dollar amount or number of projects to be accepted by completing the following statement and adding it to the Bid Form for at least one of the projects being bid. The Department will then determine which of the low bids it will accept, up to the total indicated.

"We wish to disqualify all of our successful bids at this bid opening which exceed the total of $_____ or ____ contracts and hereby authorize the Department to determine which bids to disqualify, based on this limit."

20-06 NONRESPONSIVE BIDS.

a. A bid shall be rejected as nonresponsive if it:

(1) Is not properly signed by an authorized representative of the bidder in ink and in a legally binding manner;

(2) Contains unauthorized additions, conditional or alternative bids, or other irregularities that make the bid incomplete, indefinite, or ambiguous;

(3) Includes a reservation of the right to accept or reject any award, or to enter into a contract pursuant to an award, except for an award limitation under Subsection 20-05;

(4) Fails to include an acceptable bid guaranty with the bid;

(5) Is materially unbalanced; or

(6) Fails to meet any other material requirement of the Invitation To Bid.

b. A bid may be rejected as nonresponsive, in the Department's discretion, if it:

(1) Is not typed or completed in ink;

(2) Fails to include an acknowledgement of receipt of each addendum by assigned number and date of issue; or

(3) Is missing a bid price for any pay item, except when alternate pay items are authorized.

20-07 BID GUARANTY. Bids shall be accompanied by a bid guaranty in the amount specified on the Invitation To Bid. The guaranty shall be unconditionally payable to the State of Alaska and shall be in the form of an acceptable Bid Bond (Form 25D-14), or a certified check, cashier's check, or money order.

The surety of a Bid Bond may be any corporation or partnership authorized to do business in Alaska as an insurer under AS 21.09. A legible power of attorney shall be included with each Bid Bond.

An individual surety will not be accepted as a bid guaranty.

20-08 DELIVERY OF BIDS. Bids shall be submitted in the envelope furnished by the Department, or one of the same general size and shape that has the same identifying information. The envelope shall clearly indicate its contents and the designated address, as shown on the Invitation to Bid. Bids for other work may not be included in the envelope. Electronic or faxed bids will not be considered, unless specifically called for in the Invitation to Bid.

20-09 WITHDRAWAL OR REVISION OF BIDS. Bidders may withdraw or revise a bid in writing delivered by mail or by fax, provided that the designated office receives the withdrawal or revision before the time set for opening of bids. Revisions shall be submitted on the forms furnished by the Department or legible copies of the Department's forms.

Revisions shall include both the modification of the unit bid price and the total modification of each item modified, but shall not reveal the amount of the total original or revised bids.

20-10 PROTEST OF INVITATION TO BID. An interested party, as defined in AS 36.30.699, may protest an Invitation to Bid before the bid opening according to AS 36.30.560 and AS 36.30.565. Submit a protest to the Contracting Officer.

20-11 ADDENDA REQUIREMENTS. The Department will issue addenda if it determines, in its discretion, that clarifications or changes to the Contract documents or bid opening date are needed. The Department may send addenda by any reasonable method such as mail, courier, fax, or may post the addenda on its web site. Unless picked up in person or included with the bid documents, addenda or notice that an addenda has been issued will be addressed to the individual or company to whom bidding documents were issued and sent to the address or fax number on the plan holders' list. Notwithstanding the Department's efforts to distribute addenda, bidders are responsible for ensuring that they have received all addenda affecting the Invitation To Bid. Bidders must acknowledge all addenda received, either on the Bid Form or by fax prior to the scheduled time of bid opening. If a bidder received no addenda, the bidder shall enter "None" on the Bid Form.

20-12 RECEIPT AND OPENING OF BIDS. The Department will only consider bids, revisions, and withdrawals received before the scheduled time of bid opening.

Bids will be opened and read publicly at the time and place indicated in the Invitation to Bid. The Department is not responsible for prematurely opening or failing to open bids that are improperly addressed or identified.

20-13 RESPONSIBILITY OF BIDDERS. The Department may find a bidder is nonresponsible for any one of the following reasons, but is not limited in its responsibility analysis to the following factors:

a. Evidence of bid rigging or collusion;

b. Fraud or dishonesty in the performance of previous contracts;

c. More than one bid for the same work from an individual, firm, or corporation under the same or different name;

d. Unsatisfactory performance on previous or current contracts;

e. Failure to pay, or satisfactorily settle, all bills due for labor and material on previous contracts;

f. Uncompleted work that, in the judgment of the Department, might hinder or prevent the bidder's prompt completion of additional work, if awarded;

g. Failure to reimburse the state for monies owed on any previous contracts;

h. Default under previous contracts;

i. Failure to submit evidence of registration and licensing;

j. Failure to comply with any qualification requirements of the Department;

k. Engaging in any activity that constitutes a cause for debarment or suspension under the State Procurement Code (AS 36.30) or submitting a bid during a period of debarment;

l. Failure to satisfy the responsibility standards set out in state regulations;

m. Lack of skill, ability, financial resources, or equipment required to perform the contract; or

n. Lack of legal capacity to contract.

Nothing contained in this section deprives the Department of its discretion in determining the lowest responsible bidder.

20-14 FOREIGN TRADE RESTRICTION. The Contractor by submission of an offer and/or execution of a contract, certifies that it:

a. Is not owned or controlled by one or more citizens or nationals of a foreign country included in the list of countries that discriminate against U.S. firms published by the Office of the United States Trade Representative (USTR);

b. Has not knowingly entered into any contract or subcontract for this project with a contractor that is a citizen or national of a foreign country on said list, or is owned or controlled directly or indirectly by one or more citizens or nationals of a foreign country on said list; and

c. Has not procured any product nor subcontracted for the supply of any product for use on the project that is produced in a foreign country on said list.

Unless the restrictions of this clause are waived by the Secretary of Transportation according to 49 CFR 30.17, no contract shall be awarded to a contractor who is unable to certify to the above. If the Contractor knowingly procures or subcontracts for the supply of any product or service of a foreign country on the said list for use on the project, the FAA may direct, through the Department, cancellation of the contract at no cost to and with no damages available from the Department or the Federal government.

The Contractor shall incorporate this provision for certification without modification in each contract and in all lower tier subcontracts. The Contractor shall require subcontractors to provide immediate written notice to it if the subcontractor learns that its certification was erroneous, or has become erroneous, by reason of changed circumstances. The Contractor may rely upon the certification of a prospective subcontractor unless it has knowledge that the certification is erroneous.

The Contractor shall provide immediate written notice to the Department if the Contractor learns that its certification or that of a subcontractor was erroneous when submitted or has become erroneous by reason of changed circumstances.

This certification is a material representation of fact upon which reliance was placed when making the award. If it is later determined that the Contractor or subcontractor knowingly rendered an erroneous certification, the FAA may direct, through the Department, cancellation of the contract or subcontract for default at no cost to, and with no damages available from, the Department or the Federal Government.

Nothing contained in the foregoing shall be construed to require establishment of a system of records in order to render, in good faith, the certification required by this provision. The knowledge and information of a contractor is not required to exceed that which is normally possessed by a prudent person in the ordinary course of business dealings.

This certification concerns a matter within the jurisdiction of an agency of the United Stated of America and the making of a false, fictitious, or fraudulent certification may render the maker subject to prosecution under Title 18, United States Code, Section 1001.

SECTION 30

AWARD AND EXECUTION OF CONTRACT

30-01 CONSIDERATION OF BIDS. After the bids are opened and read, the bids will be mathematically checked and compared on the basis of the sum of the products of the bid schedule quantities and the unit bid prices. The unit bid prices govern if there is an error in extending the unit bid prices, or in totaling the extensions, or if an extension is missing. The results of the bid comparisons will be made available to the public as soon as practicable.

Until the Award, the Department may reject any or all bids, waive minor informalities or advertise for new bids without liability to any bidder if the Department, in its discretion, determines that to do so is in the best interests of the state.

A bidder may request withdrawal of a bid after opening and before the Award only according to AS 36.30.160(b) and State procurement regulations. Submit the request to the Contracting Officer.

An interested party, as defined in AS 36.30.699, may protest a proposed Award of contract as per AS 36.30.560 and AS 36.30.565. Submit the protest to the Contracting Officer.

30-02 SUBCONTRACTOR LIST. The apparent low bidder shall submit a completed Subcontractor List, Form 25D-5, within five working days following receipt of written notification by the Department that it is the low bidder.

An apparent low bidder who fails to submit a completed Subcontractor List form within the time allowed will be declared nonresponsible and may be required to forfeit the bid security. The Department will then consider the next lowest bidder for award of the Contract.

If a bidder fails to list a subcontractor, or lists more than one subcontractor for the same portion of work, and the value of that work is in excess of one-half of one percent of the total bid amount, the bidder agrees to perform that portion of work without a subcontractor and represents that it is qualified to perform that work.

A bidder who lists as a subcontractor another contractor who, in turn, sublets the majority of the work required under the Contract, violates this subsection.

A bidder or Contractor may, without penalty, replace a listed subcontractor who:

a. Fails to comply with licensing and registration requirements of AS 08.18;

b. Fails to obtain a valid Alaska business license;

c. Files for bankruptcy or becomes insolvent;

d. Fails to execute a subcontract for performance of the work for which the subcontractor was listed, and the bidder acted in good faith;

e. Fails to obtain bonding acceptable to the Department;

f. Fails to obtain insurance acceptable to the Department;

g. Fails to perform the subcontract work for which the subcontractor was listed;

h. Must be replaced to meet the bidder's required state or federal affirmative action requirements;

i. Refuses to agree or abide with the bidder's labor agreement; or

j. Is determined by the Department to be not responsible.

In addition to the circumstances described above, a Contractor may in writing request permission from the Department to add a new subcontractor or replace a listed subcontractor. The Department will approve the request if it determines in writing that allowing the addition or replacement is in the best interest of the State.

A bidder or Contractor shall submit a written request to add a new subcontractor or replace a listed subcontractor to the Contracting Officer a minimum of five working days before the date the new subcontractor is scheduled to begin work on the construction site. The request must state the basis for the request and include supporting documentation acceptable to the Contracting Officer.

If a bidder or Contractor violates this Subsection, the Contracting Officer may:

a. Cancel the Contract after Award without any damages accruing to the Department; or

b. After notice and a hearing, assess a penalty on the bidder or Contractor in an amount not exceeding 10 percent of the value of the subcontract at issue.

30-03 AWARD OF CONTRACT. The Department will award the Contract to the lowest responsible and responsive bidder unless it rejects all bids. The Department will notify all bidders in writing of its intent to award.

The Department will notify the successful bidder in writing of its intent to award the Contract and request that certain required documents, including the Contract Form, bonds, and insurance be submitted within the time specified. The successful bidder's refusal to sign the Contract and provide the requested documents within the time specified may result in cancellation of the notice of intent to award and forfeiture of the bid security.

If an award is made, it will be made as soon as practicable and usually within 40 days after bid opening. Award may be delayed due to bid irregularities or a bid protest, or if the award date is extended by mutual consent. Bids shall be valid for 120 days after bid opening, and may be extended by mutual consent.

For AIP contracts, no award shall be made until the FAA has concurred in the Department's recommendation to make such award and has approved the Department's proposed contract to the extent that such concurrence and approval are required by 49 CFR Part 18.

30-04 RETURN OF BID GUARANTY. The Department will return bid guaranties, other than bid bonds:

a. To all except the two lowest responsive and responsible bidders, as soon as practicable after the opening of bids; and

b. To the two lowest responsive and responsible bidders immediately after Contract award.

30-05 PERFORMANCE AND PAYMENT BONDS. The successful bidder shall furnish all required Performance and Payment Bonds on forms provided by the Department for the sums specified in the Contract. If no sum is specified, the successful bidder shall comply with AS 36.25.010. The Surety on each bond may be any corporation or partnership authorized to do business in the state as an insurer under AS 21.09 or two ~~responsible~~ individual sureties approved by the Contracting Officer.

If individual sureties are used, two individual sureties must each provide the Department with security assets located in Alaska equal to the ~~specified~~ penal amount of each bond. ~~The net worth and the total value of the security assets of each individual surety shall not be less than the penal amount of the bond. In addition, each individual Surety, upon the Department's request, shall execute an affidavit if individual surety on a form provided by the Department. Each individual surety affidavit contains a Certificate of Sufficiency that must be signed by an official of an institution having full knowledge of assets and responsibilities of the~~

~~Surety.~~ Any costs incurred by the Contractor and the individual Surety are subsidiary and shall be borne by the Contractor or the individual Surety. In no event will the Department be liable for these costs.

Individual sureties shall provide security by one, or a combination, of the following methods:

a. **Escrow Account.** An escrow account with a federally insured financial institution, in the name of the Department. Acceptable securities include, but are not limited to, cash, treasury notes, bearer instruments having a specific value, or money market certificates.

~~**b. First Deed of Trust.** A first deed of trust with the Department named as beneficiary, against the unencumbered value of real property or an agreement by a second party, including deeds of trust, mortgage, lien, or judgment interests to subrogate their interests to the Department in the real property offered by the individual Surety. A title insurance policy, with the Department as a named beneficiary, and a current (within three months) professional appraisal or assessed valuation is required to ascertain the true value of the property offered as collateral. Fire and casualty insurance, with the Department as a named insured, and in limits and coverages acceptable to the Contracting Officer, are required if buildings or other valuable improvements are involved. The appraiser must acknowledge in writing that the appraisal is prepared for the benefit of the Department and the Department has the right to rely on its contents. The deed of trust must be recorded in the recording office where the property is located.~~

b. **Irrevocable Letters of Credit.** Irrevocable letters of credit with a financial institution approved by the Contracting Officer.

c. **Cashiers or Certified Check.** A cashier's check or certified check made payable to the State of Alaska issued by financial institutions approved by the Contracting Officer.

These bonds and security assets, as applicable, shall remain in effect for 12 months after the date of final payment or, if longer, until all obligations and liens under this Contract are satisfied, including, but not limited to, obligations under Subsection 70-19.

The Department may, in its discretion, notify the bonding company or Surety of any potential default or liability.

The Contractor shall substitute, within five working days, another bond or surety acceptable to the Department if an individual Surety or the Surety on any bond furnished in connection with the Contract:

a. Becomes insolvent or is declared bankrupt;
b. Loses its right to do business in any state affecting the work;
c. Ceases to meet Contract requirements;
d. Fails to furnish reports of financial condition upon request; or
e. Otherwise becomes unacceptable to the Department.

When approved by the Contracting Officer, the Contractor may replace:

a. An individual surety with a corporate surety; or
b. Posted collateral with substitute collateral.

Failure to maintain the specified bonds or to provide substitute bonds when required under this section may be grounds for withholding contract payments until substitute bonding is obtained, and may, in the Department's discretion, be grounds for declaring the Contractor in default.

30-06 INSURANCE REQUIREMENTS. The Contractor shall provide evidence of insurance with an insurance carrier or carriers satisfactory to the Department covering injury to persons and property suffered by the State of Alaska or by a third party as a result of operations under this contract by the Contractor or by any subcontractor. The Contractor's insurance shall provide protection against injuries to all employees of

the Contractor and the employees of any subcontractor engaged in work under this Contract. All insurance policies shall be issued by insurers that (i) are permitted to transact the business of insurance in the State of Alaska under AS 21 and (ii) have a financial rating acceptable to the Department. The Contractor shall notify the Engineer, in writing, at least 30 days before cancellation of any coverage or reduction in any limits of liability.

Where specific limits and coverages are shown, it is understood that they shall be the minimum acceptable. The requirements of this subsection shall not limit the Contractor's indemnity responsibility under Subsection 70-13. Additional insurance requirements specific to this contract are contained in the Special Provisions, when applicable.

The Contractor shall maintain the following policies of insurance with the specified minimum coverages and limits in force at all times during the performance of the Contract:

a. **Workers' Compensation:** as required by AS 23.30.045, for all employees of the Contractor engaged in work under this Contract. The Contractor shall be responsible for Workers' Compensation Insurance for any subcontractor who performs work under this Contract. The coverage shall include:

   (1) Waiver of subrogation against the state;

   (2) Employer's Liability Protection at $500,000 each accident/each employee and $500,000 policy limit;

   (3) "Other States" endorsement if the Contractor directly utilizes labor outside of the State of Alaska;

   (4) United States Longshore and Harbor Workers' Act Endorsement, whenever the work involves activity over or about navigable water; and

   (5) Maritime Employer's Liability (Jones Act) Endorsement with a minimum limit of $1,000,000, whenever the work involves activity from or on a vessel on navigable water.

b. **Commercial General Liability:** on an occurrence policy form covering all operations with combined single limits not less than:

   (1) $1,000,000 Each Occurrence;

   (2) $1,000,000 Personal Injury;

   (3) $2,000,000 General Aggregate; and

   (4) $2,000,000 Products-Completed Operations Aggregate.

c. **Automobile Liability:** covering all vehicles used in Contract work, with combined single limits not less than $1,000,000 each occurrence.

d. **Umbrella Coverage:** for Contract amounts over $5,000,000 not less than $5,000,000 umbrella or excess liability. Umbrella or excess policy shall include products liability completed operations coverage and may be subject to $5,000,000 aggregate limits. Further, the umbrella or excess policy shall contain a clause stating that it takes effect (drops down) in the event the primary limits are impaired or exhausted.

The State of Alaska shall be named as an additional insured on policies required by paragraphs **b** thru **d** above. All of the above insurance coverages shall be considered to be primary and non-contributory to any other insurance carried by the State of Alaska, whether through self-insurance or otherwise.

In any contract or agreement with subcontractors performing work, the Contractor shall require that all indemnities and waivers of subrogation it obtains, and any stipulation to be named as an additional insured it obtains, shall also be extended to waive rights of subrogation against the State of Alaska and to add the State of Alaska as an additional named indemnitee and as an additional insured.

The apparent low bidder shall furnish evidence of insurance for worker's compensation, commercial general liability, automobile liability, and umbrella coverage (if required) to the Department before award of the Contract. Provide evidence of all other insurance coverages required under this Contract prior to commencement of work. The evidence shall be issued to the Department and shall be either a certificate of insurance or the policy declaration page with all required endorsements attached and must:

a. Denote the type, amount, and class of operations covered;
b. Show the effective (and retroactive) dates of the policy;
c. Show the expiration date of the policy;
d. Include all required endorsements;
e. Be executed by the carrier's representative; and
f. If a certificate of insurance, include the following statement:

"This is to certify that the policies described herein comply with all aspects of the insurance requirements of (Project Name and Number). The insurance carrier agrees that it shall notify the Engineer, in writing, at least 30 days before cancellation of any coverage or reduction in any limits of liability."

The Department's acceptance of deficient evidence of insurance does not constitute a waiver of Contract requirements.

Failure to maintain the specified insurance or to provide substitute insurance if an insurance carrier becomes insolvent, is placed in receivership, declares bankruptcy, or cancels a policy may be grounds for withholding Contract payments until substitute insurance is obtained, and may, in the Department's discretion, be sufficient grounds for declaring the Contractor in default.

30-07 EXECUTION AND APPROVAL OF CONTRACT. The successful bidder shall execute and return the Contract Form and all other required documents to the Department within the time specified, or within 15 days after receipt by the bidder if no time is specified. A contract is awarded only after it has been signed by the Contracting Officer.

30-08 FAILURE TO EXECUTE CONTRACT. If the successful bidder fails to appropriately execute and return the Contract Form and other documents within time specified, as required above, the Department may cancel the intent to award and keep the bid guaranty. The Department will then, in its discretion, award the Contract to the next lowest responsive and responsible bidder or readvertise the work.

30-09 ORAL STATEMENTS. The written terms of the Contract are binding. No oral statement of any person shall, in any manner or degree, modify or otherwise affect, change, or amend the terms of the Contract.

30-10 INTEGRATED CONTRACT. This Contract is an integrated document and contains the complete agreement and understanding of the parties. There are no unwritten agreements or understandings between the parties. Changes ordered or agreed upon, Directives given, or Equitable Adjustments issued under this Contract, and all other matters affecting the Contract, must be in writing in order to be binding and effective.

SECTION 40

SCOPE OF WORK

40-01 INTENT OF CONTRACT. The intent of the Contract is to provide for the construction and completion of every detail of the described work. The Contractor shall furnish all labor, material, supervision, equipment, tools, transportation, supplies, and other resources required to complete the work in the time specified and according to the Contract.

40-02 CHANGES.

a. **Within Contract Scope.** The Engineer may order changes within the general scope of the Contract at any time, and without notice to sureties, including altering, ordering additions to, or ordering deletions of quantities of any item or portion of the work. These changes shall be made by a written Change Order and shall not invalidate the Contract or release the sureties.

   (1) If the change does not materially differ in character or unit cost from specified Contract work, the Contractor shall perform the work at the original contract measurement methods and prices, subject to the provisions of Subsection 90-04.

   (2) If the change is materially different in character or unit cost from that specified in the Contract, a new Contract Item will be established, and an equitable adjustment to Contract price and Contract time shall be calculated by one of the following methods:

      (a) The Engineer and Contractor agree upon an adjustment to Contract price and Contract time, and the Engineer issues a change order for the described work;

      (b) The Engineer requires the Contractor to proceed with the described work, with an adjustment to contract price and contract time, calculated by time and materials basis under Subsection 90-05, and the Engineer issues a change order for the work. The Contractor shall keep complete daily records of the cost of such work; or

      (c) The Engineer may issue a unilateral Change Order requiring the Contractor to proceed with the work with an adjustment to the payment amount or Contract time based on the Engineer's estimate of reasonable value. The Contractor shall keep complete daily records of the cost of such work.

   (3) If the Engineer eliminates a Contract item, the Contractor shall accept compensation under Subsection 90-09.

b. **Outside Contract Scope.** Changes determined to be outside the general scope of the Contract shall be made only by Supplemental Agreement issued according to AS 36.30 and the State's procurement regulations. Additional bonding or insurance may be required.

c. **Cost and Pricing Data.** Before a Change Order or Supplemental Agreement covering work for which there is no established Contract price will be approved, the Contractor shall submit detailed cost or pricing data regarding the changed work. The cost or pricing data shall include an itemization of production rates and all costs including labor, materials, and equipment required for the work. The Contractor shall certify that the data submitted are, to the best of its knowledge and belief, accurate, complete, and current as of a mutually agreed date and that the data will continue to be accurate and complete during the performance of the changed work.

40-03 DIFFERING SITE CONDITIONS. The Contractor shall immediately notify the Engineer in writing and specifically describe the alleged differing site condition if the Contractor discovers:

a. Subsurface or latent physical conditions at the site, differing materially from those shown in the Contract documents, that could not have been discovered by a careful examination of the site; or

b. Unknown physical conditions at the site, of an unusual nature, differing materially from those ordinarily encountered and generally recognized as inherent in work of the character provided for in the Contract.

Failure to give the Engineer immediate written notice of the alleged differing site condition as required under this section constitutes a waiver of any future claim arising from or relating to the alleged differing site condition.

Unless otherwise directed by the Engineer, the Contractor shall leave the affected area undisturbed and suspend work in that area until the Engineer investigates the conditions.

If the Engineer finds that such conditions differ materially and increase or decrease the cost of, or the time required for, performance of the Contract, the Engineer will prepare a Change Order for an Equitable Adjustment to the Contract. The Contractor shall cooperate with the Engineer's preparation of the Change Order.

If the Contractor and the Engineer are unable to reach an agreement concerning the alleged differing site condition, the Contractor may file a claim under Subsection 50-17.

The Contractor shall keep accurate and detailed records of the actual cost of the work done as a result of the alleged differing site condition and shall allow the Engineer access to those records. Failure to keep records, to provide the Engineer with access to those records, or to give the notice required above will bar any recovery for the alleged differing site condition.

40-04 USE OF MATERIALS FOUND ON THE WORK. Before using borrow, the Contractor shall utilize Useable Excavation to construct the embankment layer on the project. Useable Excavation is stone, gravel, sand, or other material that is determined suitable by the Engineer, and that is encountered within the lines and grades of the project. For excavating the Useable Excavation and constructing the embankment with Useable Excavation, the Contractor shall be paid only the unit bid price for excavation. Hauling, placing, compacting and other activities required to construct the embankment with Useable Excavation shall be subsidiary to excavation, and the Contractor shall not be paid additional sums for those activities. The Engineer may approve the use of borrow when Useable Excavation is not available.

The Engineer may authorize the Contractor to use the Useable Excavation for Contract items other than construction of embankment, and the Contractor shall be paid both for the excavation of the Useable Excavation and for the other Contract Item for which it is acceptably used. If this action results in a shortage of embankment material:

a. The Contractor shall replace the Useable Excavation used for Contract items other than embankment, on a yard for yard basis with borrow acceptable to the Engineer; and

b. This replacement shall be at the Contractor's expense and at no additional cost to the Department. The Contractor shall pay any royalties required for the borrow.

The Contractor shall not excavate or remove any material that is within the project limits but outside the lines and grades, without written authorization from the Engineer.

In the event the Contractor has processed material from state-furnished sources in excess of the quantities required for performance of the Contract, the Department may retain possession of the surplus processed

materials, including any waste material produced as a by-product, without obligation to pay the Contractor for processing costs. When the surplus materials are in a stockpile, the Engineer may direct the Contractor to leave the materials in the stockpile, level the stockpile(s) or remove the materials and restore the premises to a satisfactory condition at no additional cost to the Department.

The Contractor may temporarily use material from a structure that is designated to be removed to erect a new structure, but shall not cut or otherwise damage such material without the Engineer's approval.

40-05 MAINTENANCE OF TRAFFIC. It is the explicit intention of the Contract that the safety of aircraft, the public, the airport's equipment and personnel, and the Contractor's equipment and personnel, shall be the most important consideration. It is understood and agreed that the Contractor shall provide for the free and unobstructed movement of aircraft in the air operations areas of the airport, except as specifically provided in this Contract, with respect to its own operations and the operations of all its subcontractors. It is further understood and agreed that the Contractor shall provide for the uninterrupted operation of visual and electronic signals (including power supplies thereto) used in the guidance of aircraft, whenever the airport is open to the arrival or departure of aircraft.

With respect to the Contractor's own operations and the operations of all the Contractor's subcontractors, the Contractor shall provide marking, lighting, and other acceptable means of identifying: personnel; equipment; vehicles; storage areas; and any work area or condition that may be hazardous to the operation of aircraft, fire-rescue equipment, maintenance vehicles, or support vehicles at the airport.

When the Contract requires the maintenance of vehicular traffic on an existing roadway, the Contractor shall keep such roadway open to all traffic, and shall provide such maintenance as may be required to accommodate traffic and to keep the roadway smooth and even. The Contractor shall furnish, erect, and maintain barricades, warning signs, ~~flagpersons~~flaggers, and other traffic control devices in reasonable conformity with the *Manual on Uniform Traffic Control Devices for Streets and Highways* (published by the United States Government Printing Office) and the *Alaska Traffic Manual Supplement*, unless otherwise specified by the Department. The Contractor shall also construct and maintain in a safe condition any temporary connections necessary for ingress to and egress from abutting property or intersecting roadways, and as required in Subsection 50-13.

The Contractor shall make their own estimate of all labor, materials, equipment, and incidentals necessary for providing the maintenance of aircraft and vehicular traffic as specified in this subsection.

The cost of maintaining the aircraft and vehicular traffic specified in this subsection shall not be measured or paid for directly, but shall be subsidiary to the various contract items, except that G-700, G-710, and P-670 pay items, if included in the bid schedule, will pay directly for the traffic control measures and hazardous area barriers that are specifically described for payment under those items.

40-06 REMOVAL OF EXISTING STRUCTURES. The Contractor shall leave in place, work around and protect from damage existing structures encountered within the project lines and grades; unless such existing structures are to be removed, demolished, relocated, or salvaged.

Should the Contractor encounter an existing structure (above or below ground) in the work for which the disposition is not indicated on the Plans, the Contractor shall notify the Engineer prior to disturbing such structure. The Engineer will determine the disposition of existing structures so encountered according to the provisions of the contract.

The cost of working around and protecting existing structures, or removing existing structures including landfill waste fees, shall not be measured or paid for directly, but shall be subsidiary to the various contract items.

Structures that may be encountered within the project lines and grades shall be utilized in the work, and shall remain the property of the owner when so utilized in the work, unless otherwise indicated in the Contract.

40-07 CLEANUP. The Contractor shall remove all rubbish, solid waste, temporary structures, excess materials, and equipment from the project site, from state owned materials sources, and from all work areas before project completion.

40-08 VALUE ENGINEERING PROPOSALS BY CONTRACTOR.

a. **Purpose and Scope.** The purpose of this section is to encourage the Contractor to propose changes to Contract designs, materials, or methods based on the Contractor's experience and ingenuity. The Value Engineering Proposals (VEPs) contemplated are those that may result in immediate savings to the Department under this Contract without impairing essential functions and characteristics of the Project, including, but not limited to: service life, economy of operation, ease of maintenance, desired appearance, and safety. Cost savings on this project resulting from VEPs offered by the Contractor and accepted by the Department shall be shared equally between the Contractor and the Department.

   The following are not eligible for value engineering proposals: changes in the basic design of a pavement type, runway and taxiway lighting, visual aids, hydraulic capacity of drainage facilities, or changes in grade or alignment that reduce the geometric standards of the project.

b. **Submitting Proposals.** All VEPs must be in writing. The Contractor shall submit the following with each VEP:

   (1) A statement that the proposal is submitted as a Value Engineering Proposal under subsection 40-08;

   (2) A description of the difference between the existing Contract requirements and the proposed change, stating the comparative advantages and disadvantages of each, including effects on service life, economy of operations, ease of maintenance, desired appearance, and safety;

   (3) Drawings or specifications that show the proposed revisions relative to the original Contract requirements. The Contractor may submit schematics for conceptual approval of the proposal;

   (4) A detailed and complete cost estimate comparing the original estimated costs for performing the work under the existing Contract and under the proposed VEP;

   (5) A summary of the Contractor's development costs for the VEP, including costs for designing, testing, preparing and submitting the VEP;

   (6) A description and estimate of added costs the Department may incur in implementing the VEP, such as review, testing and evaluation of the VEP and Contract administration costs;

   (7) A date by which the Department must make a decision to obtain the cost savings projected in the VEP. The date identified must allow a reasonable time for the Department to conduct an adequate review and evaluation of the VEP and process a Change Order without affecting the Contractor's schedule;

   (8) A statement of the probable effect the VEP would have on the Contract completion time. The Department's approval of the VEP shall not change the Contract completion date unless a change to the completion date is specifically provided for in the Change Order authorizing the VEP; and

   (9) A description of any previous use or testing of the proposed change and the conditions and results. If the proposal was previously submitted on another Department project, indicate the date, project name and number, and the action taken by the Department.

c. **Conditions.** VEPs will be considered only when all of the following conditions are met:

(1) The Contractor has not based any bid prices on the anticipated acceptance of a VEP. If the VEP is rejected, the Contractor shall complete the work at the Contract prices.

(2) VEPs, regardless of their approval status, become the property of the Department. The Contractor shall submit VEPs without use or disclosure restrictions. The Department shall have the right to use, duplicate or disclose the VEP and any data necessary to use the VEP on the Project, on any other project, and on any other Contracts. The Contractor shall identify any trade secret information, patented materials or proprietary processes that restrict use of the VEP.

(3) The Department is the sole judge as to whether a VEP qualifies for consideration and evaluation. It may reject any VEP that does not allow a reasonable time for adequate review and evaluation by the Department or that requires excessive time or costs for review, evaluations, or investigations, or which is not consistent with the Department's design standards and policies, safety considerations, land use restrictions, permit stipulations, right-of way limitations, or other essential criteria for the project. The Department may reject a VEP without obligation to the Contractor if it contains proposals that are already under consideration by the Department or that have already been authorized for the Contract.

(4) If additional information is needed to evaluate a VEP, the Contractor shall provide it in a timely manner. Failure to do so may result in rejection of the VEP.

(5) The Contractor may submit VEPs for an approved subcontractor if the Department makes reimbursement to the Contractor.

(6) If the Contractor hires a design professional to prepare the proposal, that professional must seal the documents and provide evidence of Professional Liability Insurance with limits acceptable to the Department.

(7) The Contractor shall not implement proposed changes before the Department accepts the VEP.

(8) The Department shall not consider VEPs to share in cost savings due to changes previously ordered or authorized under other Contract sections or for work already done.

(9) The Engineer shall reject all unsatisfactory work resulting from an accepted VEP. The Contractor shall remove all rejected work or materials, and shall reconstruct the work under the original Contract at the Contractor's sole expense under Subsection 50-11.

(10) Reimbursement for modifications to the VEP to adjust field or other conditions is limited to the total amount of the original Contract bid prices.

(11) The Department shall not be held liable for costs or delays due to the rejection of a VEP, including but not limited to the Contractor's development costs, loss of anticipated profits and increased material, labor or overhead costs.

d. **Processing.**

(1) The Engineer shall accept or reject the VEP, in writing, by the date the Contractor specifies, unless extended by mutual consent. If rejected, the Engineer will explain the reasons for rejection. A VEP may be rejected if the Contractor allows the Department insufficient time to adequately review and evaluate it.

(2) The Contractor may withdraw or modify a VEP at any time before it is accepted.

(3) If the VEP is approved in concept (without final drawings and specifications), the Department may either undertake the re-design itself or issue the Contractor a limited notice to proceed, subject to mutual agreement, authorizing the final design. The notice to proceed will include reference to any pertinent design criteria, Department policies, and other limitations on the design or construction methods. Approval in concept does not constitute acceptance of the VEP and will not obligate the Department to accept or pay for the final design.

(4) If the final VEP is accepted, the Engineer will issue a Change Order under Subsection 40-02 incorporating the VEP into the Contract.

e. Payment. If the Department accepts the VEP, payment will be authorized as follows:

(1) The Department will make a direct payment for the changed work at the unit or lump sum agreed prices in the Change Order. Such prices will include reimbursement of the Contractor's costs to develop and submit the VEP, including overhead and profit.

(2) In addition, the Department will share the net savings with the Contractor in a separate lump sum contract item, VEP Incentive, GCP-40a. The amount of the VEP incentive will be equal to 50 percent of the net savings to the Department. The net savings are the difference between the original Contract price for the affected work and the cost of the revised work. For the purpose of this calculation, the cost of the revised work will include costs the Department may incur as a result of the VEP, such as review of the proposal, testing and evaluation, and added Contract administration costs. These costs will be estimated and agreed to in the Change Order.

(3) The VEP Incentive, contract item GCP-40a, will be paid on a prorated basis as the revised work is performed.

SECTION 50

CONTROL OF WORK

50-01 AUTHORITY OF THE ENGINEER. The Engineer has immediate charge of the engineering details of the project and is responsible for Contract administration. The Engineer has authority to reject defective material and suspend work being performed improperly. The Engineer has authority to accept completed work, issue Directives, issue Interim Work Authorizations, issue Change Orders, and recommend Contract payments.

The Engineer will decide all questions about the quality and acceptability of the materials furnished and the work performed by the Contractor, the Contractor's rate of progress, Contract interpretation and all other questions relating to Contract performance.

The Engineer has authority to suspend work for reasons listed under Subsection 80-06. If the suspension is to protect workers or the public from imminent harm, the Engineer may orally order the suspension of work. Following an oral order of suspension, the Engineer will promptly give written notice of suspension. In other circumstances, the Engineer will give the Contractor written notice of suspension before suspension of work. A notice of suspension will state the defects or reasons for a suspension, the corrective actions required to stop suspension, and the time allowed to complete corrective actions. If the Contractor fails to take the corrective action within the specified time, the Engineer may:

a. Suspend the work until it is corrected; and
b. Employ others to correct the condition and deduct the cost from the Contract amount.

The Engineer may, at reasonable times, inspect any part of the plant or place of business of the Contractor or any subcontractor that is related to Contract performance, including private or commercial plants, shops, offices, or other places of business.

The Engineer may audit all books and records related to performance of the Contract, whether kept by the Contractor or a subcontractor, including cost or pricing data submitted under Subsection 40-02.

50-02 PLANS AND WORKING DRAWINGS. The Department shall provide the Contractor at least two full size sets of the conformed Plans and Contract including Special Provisions. If cross-sections are available, one set will be provided if requested in writing by the Contractor. The Contractor shall keep a complete set of these documents available on the project site at all times.

The Contractor shall supplement structure plans with working drawings that include all details that may be required to adequately control the work and that are not included in the Plans furnished by the Department. The Contractor shall not perform work or order materials until the working drawings for such work, or for changes, are approved by the Engineer.

The Contractor shall submit to the Engineer for approval five sets of any required preliminary detail or working drawings. The project name and number shall be stated in the title block for all drawings, as shall the state bridge number, when applicable. The Contractor shall use full-size (22"x34") white paper with dark blue or black lines on all working and detail drawings.

The Contractor shall submit drawings to the Engineer in time to allow for review and correction before beginning the work detailed in the drawing. The Engineer shall return one set of these drawings, either approved or marked with corrections to be made, and shall retain the other sets.

Although the Contractor shall conduct its operations according to the approved working drawings, the Engineer's approval of working drawings does not change the Contract requirements or release the Contractor of the responsibility for successful completion of the work.

The Contractor is responsible for the accuracy of dimensions and details and for conformity of the working drawings with the Plans and Specifications. The Contractor shall indicate clearly on the working drawings any intended deviations from the Plans and Specifications and itemize and explain each deviation in the Contractor's transmittal letter. The Engineer may order the Contractor to comply with the Plans and Specifications at the Contractor's sole expense if the approved working drawings deviate from the Plans and Specifications and the Contractor failed to itemize and explain the deviations in the Contractor's transmittal letter.

Once the Contractor receives approval of the working drawings, the Contractor shall furnish to the Engineer:

a. Enough additional copies to provide eight approved sets of prints;
b. One set of reproducible transparencies (polyester film); and
c. If requested, an electronic file in AutoCAD drawing interchange format (.DXF).

The Contractor shall include the cost of furnishing all working drawings in the Contract price.

50-03 CONFORMITY WITH PLANS AND SPECIFICATIONS. Work performed and materials furnished shall conform to the Plans, Specifications and approved Working Drawings, and be within specified tolerances. When tolerances are not specified, the Engineer will determine the limits allowed in each case.

All work or material not conforming to the Plans, Specifications, and approved Working Drawings is considered unacceptable unless the Engineer finds that reasonably acceptable work has been produced. In this event, the Engineer may allow non-conforming work or material to remain in place, but at a reduced price. The Engineer will document the basis of acceptance and payment by Change Order, unless the contract specifies a method to adjust the price of that item.

The failure of the Department to strictly enforce the Contract in one or more instances does not waive its right to do so in other or future instances.

50-04 COORDINATION OF PLANS, SPECIFICATIONS, AND SPECIAL PROVISIONS. These Standard Specifications, Plans, Special Provisions, and all supplementary documents are essential parts of the Contract. They are intended to complement each other and describe and provide for a complete project. A requirement occurring in one is as binding as if occurring in all.

In case of conflict, calculated dimensions will govern over scaled dimensions. In the event that any of the following listed contract documents conflict with another listed contract document, the order of precedence is (with **a.** having precedence over **b.**, and **b.** having precedence over **c.**, etc.):

a. Special Provisions
b. Plans
c. Standard Specifications
d. Materials testing standards
e. FAA Advisory Circulars

The Contractor shall not take advantage of any apparent error or omission in the Contract documents. The Contractor may not base a claim for additional compensation or Contract time on a patent error, omission, or conflict in the Contract documents. The Contractor shall notify the Engineer immediately of any apparent errors or omissions in the Contract documents. The Engineer will make any corrections or interpretations necessary to fulfill the intent of the Contract.

50-05 COOPERATION BY CONTRACTOR. The Contractor shall give the work the constant attention necessary for its progress, and shall cooperate fully with the Engineer, Department staff, and other contractors in every way possible.

The Contractor shall employ, as its agent, a competent superintendent thoroughly experienced in the type of work being performed and capable of reading and thoroughly understanding the Plans and Specifications. The Contractor shall ensure that the superintendent is available at all times to receive and execute Directives and other instructions from the Engineer, to supervise workers and to coordinate the work of subcontractors. The Contractor shall give the superintendent full authority to supply the resources required. The Contractor shall furnish superintendence regardless of the amount of work sublet.

50-06 UTILITIES.

a. **Bid Considerations.** Bidders shall include in their bid the cost of:

(1) Providing uninterrupted operation of visual and electronic signals, including power supplies and Lighting used in the guidance of aircraft, whenever the airport is open to the arrival or departure of aircraft;

(2) All utility work that is specified in the Contract as work to be performed by the Contractor;

(3) Working around or through all permanent and temporary utilities shown on the Plans, in both their present and adjusted positions;

(4) Accommodating the removal, adjustment, or relocation of utilities shown on the Plans by entities other than the Contractor;

(5) Construction and removal of temporary utilities, to provide temporary utility service during the construction or repair of a permanent utility; and

(6) Other utility work not specifically identified as compensable in Subparagraph d Compensation.

The Department will show the approximate locations of utilities it knows to be within the work zone on the Plans. Bidders shall expect that the location, elevation and nature of utilities may vary from what is shown on the Plans and shall factor those contingencies into the bid price. Additional utilities may exist that are not shown on the Plans. Compensation related to utilities not shown on the plans will only be available according to Subparagraph d Compensation.

When an entity other than the Contractor is to remove, adjust, or relocate any utility, the applicable completion dates or specific calendar days to complete the removal, adjustment, or relocation may be stated in the Special Provisions. If no date is stated in the Special Provisions, the Contractor shall work cooperatively with the utility owner during the Project.

b. **Cooperation with Utility Owners.** The Contractor assumes the obligation of coordinating their activities with utility owners, and shall cooperate with utility owners to facilitate removal, adjustment, or relocation operations, avoid duplication of work, and prevent unnecessary interruption of services. When a utility owner is identified in the Contract as being responsible for removing, adjusting, or relocating a utility, the Contractor shall give the utility owner 15 days advance written notice regarding the dates when the utility owner is required to begin and end operations.

The Contractor shall cooperate with utility owners to determine a utility progress schedule for all parties' utility work. The Contractor shall submit the schedule to the Engineer before beginning that portion of utility work. The Contractor shall update the utility progress schedule monthly and shall note time delays and their cause.

Utility owners are not required to work in more than one location at a time, and shall be allowed to complete a specific section of work prior to commencing another section. Utility owners will not normally perform adjustment or relocation of underground utilities when the ground is frozen. Utility owners may prohibit the Contractor, through the Engineer, from working near utilities when the ground is frozen.

The Department has sole discretion to grant permits for utility work within the state right-of-way. The Contractor shall allow parties with utility permits to work and make excavations in the project.

If utility owners do not complete their work in a timely manner, the Engineer may direct the Contractor to temporarily relocate the utilities, to construct new utilities, or to make necessary repairs to complete the utility work.

c. Utility Work. The Contractor shall:

(1) Make all necessary arrangements with utility owners to locate all utilities that may be within an area of work before excavation in that area, according to AS 42.30.400;

You are responsible for requesting locates from all utilities having facilities in the area. Initiate locates for the following utilities by contacting the Locate Call Center at 278-3121 or 800-478-3121:

Alaska Communications Systems
Anchorage Water and Wastewater Utility
Chugach Electric Association
Enstar Natural Gas Company
GCI
Municipal Traffic Operations
ASIG Flight Service
Tesoro Alaska Pipeline Company

In addition, contact the following utilities separately and individually for locates of their utility lines. All costs associated with this work are considered subsidiary to other pay items and no separate payment will be made.

ANC Field Maintenance	266-2425
ANC Field Maintenance, Electric (Ron Silva)	266-2423
FAA (Greg Tatum)	271-6783

When your operations are anticipated to occur within 3 feet of an underground electrical line according to locates provided by the owning Utility, advise the owning Utility in writing at least 24 hours in advance of the work. In the notice, indicate the location and duration of the work to be performed.

The FAA has various navigational aids and other equipment in operation at ANC. The approximate location of the power cable, control cables and equipment is shown on the plans. There may be cables and equipment that are not shown on the plans. Contact the FAA for locates prior to excavation.

(2) Provide right-of-way staking and construction staking with lines and grades before excavation in that area;

(3) Prevent damage to utilities or utility property within or adjacent to the project;

(4) Carefully uncover utilities where they intersect the work;

Work around existing underground utilities. When utility lines are found in areas of excavation, hand dig pot-holes every 100 feet along the cable to maintain visibility of the cable. This hand work is subsidiary to the item(s) of work being performed that require this service.

(5) Immediately stop excavating in the vicinity of a utility and notify the Engineer and the utility owner if an underground utility is discovered that was not field marked or was inaccurately field marked;

(6) Promptly notify the utility owner and the Engineer in the event of accidental interruption of utility service, and cooperate with the utility owner and the Engineer until service is restored;

(7) Take all precautions necessary to protect the safety of workers and the public when performing work involving utilities;

(8) Follow an approved traffic control plan;

(9) Keep the length of open trench excavation to a minimum, backfill trenches as work is completed;

(10) Cover open trenches with metal plates capable of bearing traffic where traffic will cross trenches;

(11) Maintain continuous utility service and install temporary utility systems where needed;

(12) Ensure all excavation conforms to AS 42.30.400 – 42.30.490;

(13) Ensure all excavation and utility work conforms to excavation requirements in 29 CFR 1926, Subpart P, and confined space requirements in 29 CFR 1926.21(b)(6);

(14) Ensure all work undertaken near energized high voltage overhead electrical lines or conductors conforms to AS 18.60.670, AS 18.60.675, AS 18.60.680 or other applicable law;

(15) Ensure all work undertaken near gas lines and energized high voltage underground electric lines or conductors conforms to all applicable laws and safety requirements of the utility owner;

When working near Chugach Electric Association facilities, adhere to the requirements in *Electrical Facility Clearance Requirements* attached to these specifications as an appendix or available from the utility owner.

When working near ENSTAR Natural Gas Company facilities, adhere to the requirements in *Safety Requirements for Excavation Adjacent to Natural Gas Pipelines* attached to these specifications as an appendix or available from the utility owner.

(16) When required by the utility owner, provide for a cable watch of overhead power, underground power, telephone, and gas;

Provide an attendant whose sole responsibility is to perform as a safety observer while equipment is operating such that any part is capable of reaching within 15 feet of an electrical or gas line. Providing a safety observer for a utility watch will not be paid for separately, but is considered subsidiary to the item(s) of work being performed that require these services.

(17) Obtain plan approval from the local fire authority, and provide for the continued service of fire hydrants, before working around fire hydrants;

(18) Do all pressure testing or camera testing required to verify utility acceptance in a timely manner; and

(19) Coordinate the Storm Water Pollution Prevention Plan (SWPPP) (Section P-157) with their work and the utility companies' work.

d. Compensation.

(1) Except as otherwise specifically provided in this Subparagraph d, no equitable adjustment will be paid by the Department:

(a) Due to any variations in location, elevation, and nature of utilities shown on the Plans, or the operation of removing, adjusting, or relocating them;

(b) For any delays, inconvenience, or damage sustained as a result of interference from utility owners, interference from utilities, or interference from the operation of removing, adjusting, or relocating utilities; or

(c) For any adjustments or relocations of utilities requested for the Contractor's convenience.

(2) Except as otherwise specifically provided in this Subparagraph d, the Engineer will issue a Change Order with equitable adjustment if:

(a) Utilities not shown on the Plans require removal, adjustment, or relocation;

(b) Conflicts occur between utilities not shown on the Plans and other necessary work; or

(c) Conflicts due to the required elevation of a utility occur between new and existing utilities that are both shown on the Plans.

(3) When the Contractor damages utilities, the utility owner may choose to repair the damage or require the Contractor to repair the damage. When the Contractor damages utilities:

(a) No equitable adjustment will be paid by the Department, and the Contractor shall be solely responsible for repair costs and expenses, when:

1. The Contractor failed to obtain field locates before performing the work that resulted in the damage;

2. The utility was field located by the utility owner or operator, and the field locate is accurate within 24 horizontal inches if the utility is buried 10 feet deep or less, or the field locate is accurate within 30 horizontal inches if the utility is buried deeper than 10 feet;

3. The plan profile or the field locate does not indicate or inaccurately indicates the elevation of a buried utility;

4. The utility is visible in the field; or

5. The Contractor could otherwise reasonably have been aware of the utility.

(b) The Engineer will issue a Change Order with an equitable adjustment for the cost of repairing damage if:

1. The field locate by the owner or operator of a buried utility erred by more than 24 horizontal inches if the utility is buried 10 feet deep or less, or 30 horizontal inches if the utility is buried deeper than 10 feet;

2. The utility was not shown on the Plans or other Contract documents, and the Contractor could not reasonably have been expected to be aware of the utility's existence; or

3. The Contractor made a written request for a field locate according to AS 42.30.400, the utility owner did not locate the utility according to AS 42.30.410, and the Contractor

could not reasonably have been expected to be aware of the utility's existence or location.

(4) If a delay is caused by a utility owner, is beyond the control of the Contractor, and is not the result of the Contractor's fault or negligence, the Engineer may issue a Change Order with an equitable adjustment to contract time, but no equitable adjustment will be made for the cost of delay, inconvenience or damage. Additional contract time may be granted if the cause of delay is because a utility owner is to perform utility work:

(a) By dates stated in the Special Provisions, and the utility work is not completed by the dates stated; or

(b) In cooperation with the Contractor, and the utility owner does not complete the work in a timely manner, based on a written progress schedule agreed upon by the Contractor and the utility owner.

(5) If the Engineer orders the Contractor to make necessary construction or repairs due to incomplete utility work by utility owners, the Contractor will be paid as specifically provided for in the Contract, or the Engineer will issue a Change Order with equitable adjustment.

e. Cooperation with Airport Management and FAA. The Contractor shall coordinate their activities and cooperate with the Airport Management and the FAA, and shall provide 45 days advance written notice to them before working on utilities in the Air Operations Area. When the work of this contract requires the closing of a runway that has visual or navigational aids, interruption of service to these aids, or displacement of a threshold, allow sufficient advance notice (through the Engineer) for the FAA to deactivate/activate these devices. Comply with subsection 80-04d FAA Systems Operations Control Center notification requirements. The Contractor shall include and cooperate with Airport Management, the FAA, and the Engineer, in determining a utility progress schedule for work on the Airport Property. The Contractor shall provide to the Engineer daily written updates of all actions that may effect the operation of visual and electronic signals, lighting, or power supplies, used in the guidance of aircraft.

The Contractor shall submit a written plan to repair damaged utilities to the Engineer, and shall follow the plan when repairing damaged utilities. The plan shall identify repair personnel or subcontractors. The Contractor shall not work on or adjacent to utilities unless repair personnel are available to repair damaged utilities. Personnel repairing utilities shall be licensed for the work required, and shall have the tools and material required to repair damaged utilities within the time limits required.

When damage affects, or may in the Engineer's opinion affect, the function of navigational or visual aids, the Contractor shall repair damage within two hours. When damage affects, or may in the Engineer's opinion affect, the function of utilities, the Contractor shall repair the damage within 24 hours.

50-07 COOPERATION BETWEEN CONTRACTORS. The Department may, at any time, contract for and perform other or additional work on or near the Project. The Contractor shall allow other contractors reasonable access across or through the Project.

The Contractor shall cooperate with other contractors working on or near the Project, and shall conduct work without interrupting or inhibiting the work of other contractors. All contractors working on or near the Project shall accept all liability, financial or otherwise, in connection with their Contract. No claim shall be made by the Contractor or paid by the Department for any inconvenience, delay, damage or loss of any kind to the Contractor due to the presence or work of other contractors working on or near the Project.

The Contractor shall coordinate and sequence the work with other contractors working within the same project limits. The Contractor shall properly join the work with work performed by other contractors and shall perform the work in the proper sequence to that of the others. The Contractor shall arrange, place, and

dispose of materials without interfering with the operations of other contractors on the same project. The Contractor shall defend, indemnify and save harmless the Department from any damages or claims caused by inconvenience, delay, or loss that the Contractor causes to other contractors.

50-08 SURVEY CONTROL. The Department will provide sufficient horizontal and vertical control data to establish the planned lines, grades, slopes, shapes, and structures. The Contractor shall provide all additional survey work to maintain control during the project. The survey work shall meet the requirements set forth in the *Alaska Construction Surveying Requirements*.

The Contractor shall provide all survey work including, but not limited to: project layout, cross sections, slope stakes, grade stakes, as-built measurements, and quantity measurements. Immediately upon completion of initial cross sections, the Contractor shall furnish reduced and checked survey notes to the Engineer. From time to time throughout the work, as requested by the Engineer, the Contractor shall take appropriate sections and shall provide the Engineer with reduced and checked notes from which quantity calculations for progress payment purposes can be accomplished. Notes shall be kept in a neat, orderly, and legible form according to professional surveying practices.

Upon completion of each phase of the work, the Contractor shall furnish the Engineer with all necessary measurements for completion of the as-built drawings. The Contractor shall include identification and location of project features where actual locations differ from locations shown on the Plans. All original survey notes and field books shall become the property of the Department and shall be delivered to the Engineer as a condition to final payment on this contract.

The cost of surveying is to be subsidiary to the items of work for which surveying is required, except where a pay item for specified surveying work is included in the bid schedule.

50-09 DUTIES OF THE INSPECTOR. The Department's inspectors are authorized to examine all work done and materials furnished, but cannot approve work or materials. Only the Engineer can approve work or materials. The inspectors can reject work or materials until any issues can be referred to and decided by the Engineer. The inspectors may not alter or waive any Contract requirements, issue instructions contrary to the Contract or act as foremen for the Contractor.

50-10 INSPECTION OF WORK. All materials and each part and detail of the work shall be subject to inspection by the Department. The Contractor shall allow safe access to all parts of the work and provide information and assistance to the Engineer to ensure a complete and detailed inspection.

Any work done or materials used without inspection by an authorized Department representative may be ordered removed and replaced at the Contractor's expense, unless the Department failed to inspect after being given reasonable written notice that the work was to be performed.

The Contractor shall remove and uncover portions of finished work when directed. After inspection, the Contractor shall restore the work to Contract requirements. The cost to uncover and restore work shall be at the Contractor's expense, except the Department will pay the cost to uncover and restore work if (1) an authorized Department representative had previously inspected the work or the Contractor had provided reasonable prior written notice that the work was to be performed and (2) the Department finds the uncovered work to be acceptable. If the Department finds the uncovered work to be unacceptable, the cost to correct the work, or remove and replace the work, shall be at the Contractor's expense.

Representatives of Contract funding agencies have the right to inspect the work. This right does not make that entity a party to the Contract and does not interfere with the rights of parties to the Contract.

The Department's observations, inspections, tests and approvals shall not relieve the Contractor from properly fulfilling its Contract obligations and performing the work according to the Contract. Work that has been inspected but contains latent or hidden defects shall not be deemed acceptable even though it has been inspected and found to be according to the Contract.

The State of Alaska Department of Labor may require electrical inspection of Public Structures. The Contractor shall request inspection by contacting the Electrical Inspector in Anchorage, Alaska, Phone (907) 269-4925. The Contractor shall request inspection a minimum of two weeks prior to the expected date of inspection being needed. If more than one item requires inspection, the Contractor shall submit a list to the Engineer and Electrical Inspector, with dates for all stages that requires inspection. The Department has no control over or responsibility for the timing of inspections by the Electrical Inspector.

50-11 REMOVAL OF UNACCEPTABLE AND UNAUTHORIZED WORK. All work that does not conform to the requirements of the Contract shall be deemed unacceptable by the Engineer, unless otherwise determined acceptable under Subsection 50–03. The Contractor shall correct, or remove and replace, work or material that the Engineer deems unacceptable, as ordered by the Engineer and at no additional cost to the Department.

The Contractor shall establish necessary lines and grades before performing work. Work done before necessary lines and grades are established, work done contrary to the Department's instructions, work done beyond the limits shown in the Contract, or any extra work done without authority, will be considered as unauthorized and shall not be paid for by the Department, and may be ordered removed or replaced at no additional cost to the Department.

If the Contractor fails to promptly correct, remove, or replace unacceptable or unauthorized work as ordered by the Engineer, the Engineer may employ others to remedy or remove and replace the work and will deduct the cost from the Contract payment.

50-12 LOAD RESTRICTIONS. The Contractor shall comply with all vehicle legal size and weight regulations of 17 AAC 25 and the *Administrative Permit Manual,* and shall obtain permits from the DOT&PF Division of Measurement Standards & Commercial Vehicle Enforcement before moving oversize or overweight equipment on a state highway.

The Engineer may permit oversize and overweight vehicle movements within the project limits provided the Contractor submits a written request and an acceptable Traffic Control Plan. No overloads will be permitted on a pavement, base or structure that will remain in place in the completed project. The Contractor shall be responsible for all damage done by their equipment due to overloads, and for damage done by a load placed on a material that is curing and has not reached adequate strength to support the load.

50-13 MAINTENANCE DURING CONSTRUCTION. The Contractor shall maintain the airport and related airport facilities located within the project from the date construction begins until the Contractor receives a letter of substantial completion (definition in Subsection 10-03). The Contractor shall maintain these areas continually and effectively on a daily basis, with adequate resources to keep them in satisfactory condition at all times. The Contractor shall maintain those areas outside the project that are affected by the work, such as haul routes, detour routes, structures, material sites, and equipment storage sites during periods of their use.

Avoid placing foreign objects and debris (FOD) or any debris capable of causing damage to aircraft landing gears or propellers or of being ingested in jet engines on surfaces in active aircraft movement areas. Ensure that all loose material and debris has been removed from the sides of equipment and haul vehicles prior to travel on airport or road surfaces. Keep all active runway, taxiway, and apron areas free of materials spilled by your operations. Clean spilled materials off of closed runways, taxiways, or aprons prior to opening these areas to aircraft. If FOD is spilled on an active runway, taxiway, or apron, remove it immediately. The Engineer reserves the right to suspend all hauling operations until FOD is removed from active aircraft movement areas. Hauling time lost due to the suspended haul will not be considered reason to extend contract time or reason for a claim. The Engineer will allow hauling to continue when the spilled material is cleaned up to his satisfaction. FOD preventative measures and FOD cleanup of runways, taxiways, haul routes, and equipment is subsidiary to the contract and no additional payment will be made.

The Engineer may relieve the Contractor of this maintenance responsibility for specified portions of the project:

a. During a seasonal suspension of work. Approximately one month prior to seasonal suspension of work, the Contractor shall hold a preliminary meeting with the Engineer and Airport Management to outline the work the Contractor expects to complete before shut down and the condition the project is to be left in. The Contractor shall then schedule a field review for acceptance by the Department for winter maintenance. At the field review a punch list shall be prepared for implementation prior to acceptance. In order for the Contractor to be relieved of winter maintenance responsibility, the surface of all embankments shall be properly crowned for drainage and all edge lighting shall be in good working order. After acceptance for winter maintenance and until the Contractor resumes construction operations, maintenance of the facility agreed upon will be the responsibility of the Department; or

b. Following partial acceptance (Subsection 50-14).

The Department is responsible for routine snow removal and ice control only on those portions of the project that the Department accepts for maintenance.

The Contractor shall maintain previously constructed work until a subsequent course, layer, or structure covers that work. The Contractor shall repair damage done to the work as described in Subsection 70-15.

All costs of maintenance work during construction and before the project is accepted as substantially complete shall be subsidiary to the prices bid on the various contract items, and the Contractor will not be paid an additional amount for such work.

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

a. Suspend the work until corrective maintenance is completed;

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

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

50-14 PARTIAL ACCEPTANCE. The Contractor may submit a written request for partial acceptance of a geographically separate unit of the project. The Engineer will accept the unit in writing before project completion if the Engineer inspects the unit and finds that the unit is substantially complete to Contract requirements, and acceptance is in the best interest of the State.

The Contractor may submit a written request for partial acceptance of a completed useable portion of the project. The Engineer may, in their discretion, accept the portion in writing before project completion if the Engineer performs an inspection of the portion and finds that the portion is substantially complete to Contract requirements, and acceptance is in the best interest of the State.

Partial acceptance of the unit or portion neither voids nor alters any Contract terms.

50-15 PROJECT COMPLETION. The Contractor shall notify the Engineer, in writing, upon substantial completion of all work provided for under the Contract. The Engineer will then schedule and conduct the final inspection. If the inspection discloses that any work is incomplete or unsatisfactory, the Engineer will give the Contractor a list of work items that must be completed or corrected to reach substantial completion and to reach final completion. The Contractor shall promptly complete or correct any work determined unsatisfactory by the final inspection and request a re-inspection.

The Engineer will identify the date of substantial completion in a letter of substantial completion. The letter of substantial completion will relieve the Contractor of further maintenance responsibility except as listed under Subsection T-901-3.4 Maintenance of Seeded Areas. The letter of substantial completion will not stop Contract time or relieve the Contractor of the obligation to fully complete the work as required by the Contract specifications.

When all physical work and cleanup provided for under the Contract is found to be complete, except for work specified under Subsection T-901-3.4 Maintenance of Seeded Areas, the Engineer will issue a letter of project completion. Project completion stops the Contract time, but does not relieve the Contractor of any other Contract obligations.

50-16 FINAL ACCEPTANCE AND RECORD RETENTION. The Department will issue the letter of Final Acceptance after all of the following:

a. Project completion;

b. Receipt of all certificates, as-builts, warranties, and other required documents;

c. Receipt of the Contractor's Release, with no exceptions;

d. Certification of payment of payroll and revenue taxes by DOLWD and State Dept. of Revenue; and

e. Final payment under the Contract.

Final Acceptance will release the Contractor from further Contract obligations, except those:

a. Specified under Subsection 70-19;

b. Required by law or regulation; or

c. Continuing obligations established by provisions of this Contract, such as warranty, guaranty, indemnity, insurance, or bond.

The Contractor and the subcontractors shall maintain all books and records relating to performance of the Contract for three years after the date of final payment of the Contract and each subcontract.

50-17 CLAIMS. The Contractor shall notify the Engineer as soon as the Contractor becomes aware of any act or occurrence that may form the basis of a claim for additional compensation or an extension of Contract time or of any dispute regarding a question of fact or interpretation of the Contract. The Engineer has no obligation to investigate any fact or occurrence that might form the basis of a claim or to provide any additional compensation or extension of Contract time unless the Contractor notifies the Engineer in a timely manner of all facts the Contractor believes form the basis for the claim.

If the claim or dispute is not resolved by agreement within seven days of the date the Engineer is notified by the Contractor, the Contractor shall within the next fourteen days submit an Intent to Claim in writing to the Engineer.

If the Contractor believes additional compensation or time is warranted, the Contractor shall immediately begin keeping complete, accurate, and specific daily records concerning every detail of the potential claim including actual costs incurred, and shall give the Engineer access to any such records and furnish the Engineer copies, if requested. Equipment costs must be based on the Contractor's internal rates for ownership, depreciation, and operating expenses and not on published rental rates.

The Contractor shall submit a written claim to the Contracting Officer within 90 days after the date the Contractor became aware of the basis of the claim or should have known of the basis of the claim, whichever is earlier. The Contracting Officer will issue written acknowledgement of the receipt of the claim.

The Contractor waives any right to claim if the Engineer was not notified properly or afforded the opportunity to inspect conditions or monitor actual costs or if the Claim is not filed on the date required.

a. The written Claim must include all of the following:

(1) The act, event, or condition giving rise to the claim;

(2) The Contract provisions that apply to the claim and that provide for the requested relief;

(3) The item or items of Contract work affected and how they were affected;

(4) The specific relief requested, including Contract time if applicable, and the basis upon which it was calculated;

(5) Revised progress schedules under Subsection 80–03; and

(6) A certification signed by the Contractor that the claim is made in good faith, that the supporting cost and pricing data are accurate and complete to the best of the Contractor's knowledge and belief, and that the amount requested accurately reflects the Contract adjustment that the Contractor believes is due.

b. The claim, in order to be considered, must show:

(1) That the Contractor suffered damages or delay;

(2) The damages or delay were caused by the act, event, or condition listed in the claim; and

(3) That the Contract entitled the Contractor for relief due to the act, event, or condition specified in the Claim.

The Department may request the Contractor to provide additional information relating to the claim at any time before issuing a decision. The Contractor shall provide the Department with the requested additional information within 30 days of receiving a request. Failure to furnish the additional information may be regarded as a waiver of the claim.

The Contracting Officer will issue a decision within 90 days of receipt of all information relating to the claim. The time for the Contracting Officer to issue a decision may be extended according to AS 36.30.620.

The Contracting Officer's decision is final and conclusive unless the Contractor delivers a notice of appeal to the Commissioner within 14 days of receipt of the decision. The Contractor shall also serve a copy of the notice of appeal on the Contracting Officer.

Appeals from a Contracting Officer's decision shall be decided according to the State Procurement Code's appeal procedures, including AS 36.30.625, AS 36.30.627, AS 36.30.630, and AS 36.30.631.

Criminal and civil penalties authorized under AS 36.30.687 (including, but not limited to, forfeiture of all claimed amounts) may be imposed on the Contractor if the Contractor makes or uses a misrepresentation in support of a claim, or defrauds or attempts to defraud the Department at any stage of prosecuting a claim under this Contract.

SECTION 60

CONTROL OF MATERIAL

60-01 SOURCE OF SUPPLY AND QUALITY REQUIREMENTS. The Contractor shall furnish all materials required to complete the work except those specified to be furnished by the Department. The Contractor shall supply materials that are new and that meet Contract requirements. All manufactured materials shall be delivered and stored in their original containers and shall show the manufacturer's name, brand, and identifying number.

The Contractor shall furnish airport lighting equipment that conforms to the requirements of cited materials specifications. In addition, where an FAA specification for airport lighting equipment is cited in the Plans or Specifications, the Contractor shall furnish such equipment that is certified and listed under AC 150/5345-53, *Airport Lighting Equipment Certification Program*.

The Contractor shall notify the Engineer of proposed sources of materials at least 30 days before shipment, and shall submit to the Engineer and to the Department's State Materials Engineer a complete list of materials to be purchased from suppliers sufficiently in advance of fabrication or shipment to permit the Department to inspect the materials.

The Department's inspectors may inspect any materials, including those originating outside Alaska, at the supply source or other locations. Materials may be conditionally approved at the supply source or other location, but are subject to field inspection and may be ordered removed under Subsection 50-11 if they do not conform to Contract requirements. Inspectors are authorized to reject materials that do not conform to specifications until any issues can be referred to and decided by the Engineer. Inspectors will report their actions to the Engineer.

The Contractor shall submit a manufacturer's certificate of compliance for each item listed on the Material Certification List. The Engineer may authorize the use of materials based on a manufacturer's certificate of compliance, see Subsection 60-05. Materials incorporated into the project on the basis of a manufacturer's certificate of compliance may be tested at any time, whether in place or not, and, if they do not conform to Contract specifications, they may be rejected and ordered removed under Subsection 50-11.

The Engineer may authorize the use of materials listed in the Department's *Qualified Products List*. Materials incorporated into the project on the basis of the *Qualified Products List* may be tested at any time, whether in place or not, and, if they do not conform to Contract specifications, they may be rejected and ordered removed under Subsection 50-11.

The Contractor may request substitution of specified materials with equivalent materials. Requests for substitution shall be submitted to the Engineer, and shall include a manufacturer's statement that certifies, for each lot delivered:

a. Conformance to the specified performance, testing, quality or dimensional requirements; and

b. Suitability for the use intended in the Contract work.

The Engineer will determine the acceptability of a proposed substitute for use in the project. If a substitute is approved, a Change Order will be executed. The Department is never required to accept substitution. The Contractor shall not incorporate substitute materials into the project without written approval from the Engineer. The Engineer may test substitute materials at any time, whether in place or not, and, if the substitute materials do not meet Contract specifications, they may be rejected and ordered removed under Subsection 50-11.

60-02 MATERIAL SOURCES.

a. **General.** The Contractor shall:

(1) Utilize Useable Excavation according to Subsection 40-04 before using material sources listed in Subsection 60-02.d. 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;

(2) Produce a sufficient quantity of materials meeting the specifications to complete the project;

(3) As a subsidiary cost: clear and grub, strip, drill and blast, excavate, crush, sort, blend, screen, wash, stockpile, haul, and rehandle material as needed to produce and deliver the specified product;

(4) Determine the type of equipment and methods to be used;

(5) Expect variations in material quality within the deposits, and procure material only from acceptable portions of the deposit, regardless of source ownership; and

(6) Prevent erosion, sedimentation, and pollution within a materials source.

The Contractor agrees that:

(7) The costs to explore and develop material sources, including all production effort, are subsidiary to the cost of providing the specified material;

(8) The Engineer may order the Contractor to procure material only from certain portions of the source and may reject material from other portions of the source that does not conform to the specifications; and

(9) All material required may not be procurable from any one source and the Contractor may need to change between sources. That contingency is to be factored into the unit bid price for the Contract Item.

b. **Inspection and Acceptance.** The Contractor shall perform sampling and testing during materials processing and placement according to its Quality Control Plan (Subsection 60-03.a.) and shall obtain acceptable material samples from locations designated within the source.

The Department will sample and test materials to determine the quality of the source, at its expense, as part of its Acceptance Testing (Subsection 60-03.b.). The Department will reject materials when the samples do not meet specifications. The Department may reject a proposed materials site when samples do not meet specifications.

c. **Awareness Training.** The operator of the Contractor's sand and gravel surface mine or other similar materials source shall provide Site-Specific Hazard Awareness Training in compliance with 30 CFR 46.11 for all the Engineer's personnel before beginning operations. All other workers shall be given training in compliance with 30 CFR 46 before exposure to mine hazards. The training must be offered at each surface mine that will be used to supply processed aggregates. A qualified person must provide the training. The training shall be according to the operator's written training plan approved by the Mine Safety and Health Administration, covering the following items:

(1) Site-specific health and safety risks;
(2) Recognition and avoidance of hazards;
(3) Restricted areas;

(4) Warning and evacuation signals;
(5) Evacuation and emergency procedures;
(6) Other special safety procedures; and
(7) A site tour.

The Contractor shall require the Engineer's personnel to sign the *Visitor's Log Book* upon completion of the training to indicate that training was provided. Training is a subsidiary cost.

d. Type of Sources. The Contractor shall utilize Useable Excavation according to Subsection 40-04 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:

(1) Contractor-Furnished Sources. For a material source that is a commercial plant as defined in Subsection 80-01.c.(1) the Contractor shall:

(a) Acquire the necessary rights and permits to obtain material from a commercial plant;

(b) Pay as subsidiary costs all related costs to obtain and use material from the source; and

(c) Be solely responsible for the quality and quantity of materials.

For all Contractor-Furnished sources that are not a commercial plant, the Contractor shall:

(d) Acquire the necessary rights and permits to take materials from the sources including state-owned sources that are not under the Department's control;

(e) Pay as subsidiary costs all related costs to obtain, develop, and use the sources, including but not limited to permit costs and mineral royalties;

(f) Be solely responsible for quality and quantity of materials; and

(g) Obtain all necessary rights, permits, and plan approvals before clearing or disturbing the ground in the material source.

No equitable adjustment or other compensation will be made for any additional costs, including increased length of haul, if the Contractor:

(h) Chooses to change material sources for any reason;

(i) Is unable to produce a sufficient quantity or quality of materials from Contractor-Furnished sources; or

(j) Encounters unexpected, unforeseen, or unusual conditions within Contractor-Furnished sources.

(2) Mandatory Sources. The Department may identify material sources in the Contract from which the Contractor is required to take a specified quantity of material. No other source will be permitted for that portion of material unless prior approval is obtained from the Engineer. The Contract will specifically define these sources as Mandatory Sources and define rights and

stipulations for each site. The Department will provide a materials report that estimates quality and quantity of material for these sources.

The Contractor acknowledges that samples from within a source may not be representative of the entire source. The Contractor must expect variations of quality and quantity within the source and shall factor that contingency into the unit bid price for the material. No equitable adjustment will be paid for variations encountered within the source.

If it is subsequently found that the quality or quantity of material producible from a Mandatory Source is not as represented by the materials report, and a change of source is necessary for that reason alone, a Change Order with equitable adjustment will be made.

(3) Designated Sources. The Department may identify material sources in the Contract which are available to the Contractor but which the Contractor is not required to use. The Contract will specifically define these sources as Designated Sources and define rights and stipulations for each site. The Department will provide a materials report that estimates quality and quantity of material for these sources.

The Contractor acknowledges that samples from within a source may not be representative of the entire source. The Contractor must expect variations of quality and quantity within the source and shall factor that contingency into the unit bid price for the material. No equitable adjustment will be paid for variations encountered within the source.

If the Contractor elects to use a Designated Source, and it is subsequently found that the quality and quantity of material producible from that source is not as represented by the materials report, and a change of source is necessary for that reason alone, a Change Order with equitable adjustment will be made. If the Contractor chooses to change between or among sources for any other reason than quantity or quality of material, no equitable adjustment will be paid.

(4) Available Sources. The Department may identify other material sources that are available for use for the project by the Contractor. The Contract will specifically define these sources as Available Sources. The Department makes no guarantee as to quality or quantity of material in Available Sources. The Contractor is responsible for determining the quality and quantity of material, and if additional sources are needed. The Contractor shall be responsible for identifying the rights and stipulations for each site with the owner of the site.

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 any assumptions the Contractor makes based on this data, and for exploring all Available Sources to the Contractors satisfaction.

The Department makes no representation, guarantees, or warranty whatsoever, expressed or implied, as to:

(a) The quality or quantity of materials producible from an Available Source, even if such information is indicated in a Materials Report or Soils Investigation Report;

(b) Whether boring logs, test results or data reliably represent current existing subsurface conditions;

(c) Whether interpretations of the boring logs, test results, or other data are correct;

(d) Whether moisture conditions and indicated water tables vary from those found at the time borings were made;

(e) Whether the ground at the location of the borings was physically disturbed or altered after the boring was made; and

(f) The condition, materials, or proportions of the materials between borings, regardless of any subsurface information the Department may make available.

The availability of subsurface information from the Department shall not relieve the Contractor from any risks, or of any duty to make on-site examinations and investigations, or of any other responsibility under the Contract or as may be required by law.

No equitable adjustment will be made if the quality and quantity of material available from an Available Source is not as represented in any information provided by the Department, nor if a change of source is necessary for any other reason whatsoever. The use of Available Sources is entirely at the Contractor's option and the Contractor bears all risk associated with their decision to use an Available Source.

(5) Excluded Material Sources. 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 any material source 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.

e. Rights, Permits and Plan Approvals for Material Sources. Before disturbing the site of a material source, the Contractor shall acquire and pay for all necessary rights, permits and plan approvals indicated in this Subsection and in Subsection 70-02. For each material site the Contractor shall:

(1) Acquire approval for a Mining and Reclamation Plan (MRP) or receive an exemption, according to AS 27.19. The MRP shall include:

(a) Plan and cross-sectional views of the site;

(b) Applicable boundaries or property lines;

(c) Areas and depths to be developed;

(d) Locations of access roads, stripping, sorting, and waste piles, crushing and plant sites, stockpile sites, drainage features, erosion and pollution control features; and

(e) Condition the Contractor will leave the site after the materials extraction is completed, including reseeding.

(2) Submit a SWPPP as required by Section P-157.

After completing work in a materials source, the Contractor shall finish and grade work areas to a neat, acceptable condition according to the approved MRP. Reclamation of a Contractor-furnished source will be in accord with the Contractor's MRP.

60-03 TESTING AND ACCEPTANCE. Materials are subject to inspection and testing by the Department at any time before, during, or after they are incorporated into the project. Use of untested materials is at the Contractor's risk. The Contractor shall remove and replace unacceptable material according to Subsection 50-11.

a. QUALITY CONTROL. The Contractor is responsible for the quality of construction and materials used in the work. Quality control is process control, and includes all activities that ensure that a product meets Contract specifications. Contractor quality control is subsidiary to the applicable items unless a contract item for Quality Control is established on the bid schedule.

The Contractor shall implement a Quality Control Program in conformance with Section GCP-100, Contractor Quality Control Program.

b. ACCEPTANCE TESTING. The Department has the exclusive right and responsibility for determining the acceptability of the construction and incorporated materials.

The Department will sample materials and perform acceptance tests at its expense. Copies of tests will be furnished to the Contractor upon request. When material is sampled by other than DOT&PF personnel or their agent(s), the sampling must be witnessed by, and possession of the sample immediately transferred to, DOT&PF personnel or their agent(s).

The Contractor shall not rely on the Department's acceptance testing for its quality control. The Department's acceptance testing is not a substitute for the Contractor's quality control. The Engineer may retest materials that have failed the Department's acceptance test, but is not required to do so.

Acceptance sampling and testing frequencies may be located in the Appendix to these Specifications, and are incorporated into the Contract.

60-04 PLANT INSPECTION. The Department may periodically inspect manufacturing methods, manufactured lots and materials at the source of production. The Department may approve, conditionally approve, or reject them.

The Contractor shall:

a. Notify the Department of the production and fabrication schedule at least 30 days before beginning work on any item requiring inspection, and notify the Department 48 hours before beginning production or fabrication;

b. Give the inspector full and safe access to all parts of the plant used to manufacture or produce materials; and

c. Cooperate fully and assist the inspector during the inspection.

Materials may be rejected if the Department requests a plant inspection and the materials are produced or fabricated without a plant inspection. The materials may be tested at any time before final acceptance, whether in place or not, and whether approved at a plant inspection or not. If the materials do not meet Contract specifications, they may be rejected and ordered removed under Subsection 50-11. If rejected materials are incorporated into the project, the Department may require those materials to be removed and replaced at the Contractor's expense under Subsection 50-11.

60-05 CERTIFICATES OF COMPLIANCE. The Engineer may authorize the use of certain materials or assemblies based on a manufacturer's certificate of compliance. The certificate must state that the material or assembly fully complies with Contract requirements, include the project name and number, and be signed by the manufacturer. The certificate must accompany each lot of the materials or assemblies delivered to the project and must clearly identify the lot.

The Contractor shall submit a manufacturer's certificate of compliance, as required, for each item listed on the Materials Certification List (MCL) included in the Contract documents. The Contractor shall submit additional manufacturer's certificates of compliance if required by the Contract or by the Engineer. If the Specifications require a material certification that is not listed on the MCL, the Engineer reserves the right to add it.

Materials or assemblies incorporated into the project on the basis of a manufacturer's certificate of compliance may be tested at any time, whether in place or not, and, if they do not meet Contract specifications, they may be rejected and ordered removed under Subsection 50-11. The Engineer may

refuse permission to incorporate materials or products into the project based on a manufacturer's certificate of compliance that does not meet specifications.

60-06 STORAGE OF MATERIALS. Materials shall be stored to preserve their quality and fitness for the work, and so they can be readily inspected. Materials inspected before storage may be inspected again, before or after being incorporated into the project. The Contractor shall:

a. Use only approved portions of the project site for storage of materials and equipment or plant operations;

b. Provide any additional space needed for such purposes without extra compensation;

c. Restore Department-owned or controlled storage and plant sites to their original condition without extra compensation;

d. Obtain the landowner's or lessee's written permission before storing material on private property, and furnish copies of the permission to the Engineer, if requested; and

e. Restore privately owned or leased storage sites, without extra compensation from the Department, to their original condition or as agreed to between the Contractor and the private owner.

60-07 DEPARTMENT-FURNISHED MATERIAL. Material furnished by the Department will be made available to the Contractor at a state yard or delivered at the locations specified in the Special Provisions.

The Contractor shall include the cost of handling and placing all materials after they are delivered in the Contract price for the item in connection with which they are used. The Contractor is responsible for all material delivered to the Contractor. Deductions will be made from any monies due the Contractor to make good shortages and deficiencies from any cause whatsoever, for any damage that may occur after delivery, and for demurrage charges.

60-08 SUBMITTAL PROCEDURE. The Contractor shall complete a Submittal Register, and shall submit it to the Engineer on forms provided by the Department. The Submittal Register shall list all working drawings, ~~catalog cuts, manufacturer's certifications, quality control testing plans,~~ schedules of work and other items required to be submitted to the Department by the Contractor including but not limited to Storm Water Pollution Prevention Plan, Quality Control Program, Progress Schedule, Utility Repair Plan, Blasting Plan, Mining Plan, annual EEO reports, DBE payment documentation and subcontracts. The register shall be filled out sequentially by bid item and shall allow at least three spaces between bid items. The intent of the Submittal Register is to provide a blueprint for the smooth flow of specified project documents.

Submit catalog cuts and manufacturer's certifications to the Engineer for review as required by the Materials Certification List (MCL) or by the Contract. The Engineer will track material submittals using the MCL. Choose materials or equipment in the L series of bid items that are FAA certified under AC 150/5345-53, Airport Lighting Equipment Certification Program; except for items not certified such as beacon towers and electrical duct. The Engineer will approve the L series bid items that meet contract requirements and are FAA certified under this AC without further review. For materials other than L series, you may submit for approval a material that is listed on the Qualified Products List, and if that material meets Contract requirements, the Engineer will grant approval without further review.

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

Each copy of each submittal shall include a Submittal Summary sheet. The Contractor may use forms provided by the Department or a similar form of the Contractor's choice as approved by the Department. The Contractor shall sign submittals and submit them to the Engineer. The Department will review submittals

within 30 days after they are received. The Department will return submittals to the Contractor as either: approved, conditionally approved with the conditions listed, or rejected with the reasons listed. The Contractor may resubmit a rejected submittal to the Engineer with more information or corrections. The Department will review resubmittals within 30 days after they are received. The Contractor shall not order material or use working drawings that have not been approved by the Department. The Contractor shall be responsible for timely submittals. Failure by the Department to review submittals within the time given may be the basis for a request for extension of Contract time but not for additional compensation.

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

60-09 BUY AMERICAN STEEL AND MANUFACTURED PRODUCTS.

a. The Contractor agrees that only domestic steel and manufactured products will be used by the contractor, subcontractors, material, men, and suppliers in the performance of this contract, as defined below.

b. The following terms apply to this clause:

(1) Steel and Manufactured Products. As used in this clause, steel and manufactured products include (1) those produced in the United States or (2) a manufactured product produced or manufactured in the United States, if the cost of its components mined, produced or manufactured in the United States exceeds 60% of the cost of all its components and final assembly has taken place in the United States. Components of foreign origin of the same class or kind as the products referred to in subparagraphs c.(1) or c.(2) shall be treated as domestic.

(2) Components. As used in this clause, components means those articles, materials, and supplies incorporated directly into steel and manufactured products.

(3) Cost of Components. This means the costs for production of the components, exclusive of final assembly labor costs.

c. Buy American Certificate. Execution and submission of the Buy American Certificate Form 25D-061, is required according to sections 30-07 and 30-08. If there are no exceptions to be listed on the certificate, the bidder shall enter "NONE" on the first line.

If exceptions are listed on the Buy American Certificate, they shall meet at least one of the following criteria for the certificate to be considered appropriately executed:

(1) Those products or materials that the U.S. Department of Transportation has determined, under the *Aviation Safety and Capacity Expansion Act of 1990*, are not produced in the United States in sufficient and reasonably available quantities and of a satisfactory quality. (The current list is included on the back of Form 25D-061.)

(2) Those products or materials where the U.S. Department of Transportation has determined, under the *Aviation Safety and Capacity Expansion Act of 1990*, that domestic preference would be inconsistent with the public interest.

(3) Where inclusion of domestic material will increase the cost of the overall project contract by more than 25%.

60-10 OPERATION AND MAINTENANCE MANUALS. The Contractor shall provide operation and maintenance manuals for equipment and systems incorporated in the work. The Contractor shall submit one set of all manuals 60 days prior to substantial completion for review by the Department. The Contractor shall make corrections noted by the Department, and submit 5 complete sets of manuals 14 days prior to substantial completion.

The Contractor shall submit the manuals in neatly bound hard cover loose-leaf three ring binders. Include project name, Contractor's/Subcontractor's name, address and telephone number on each cover. Prepare data in the form of an instruction manual with a table of contents and a tabbed fly leaf for each section.

The Contractor shall provide a separate section for each product or system installed which includes the following:

a. Description of each unit or system and the component parts. Identify function, normal operating characteristics, and limiting conditions. Include performance curves, with engineering data and tests. Systems shall include:

(1) Heating System
(2) Fuel Oil Storage and Supply System
(3) Runway Lighting System

b. Product data with each sheet marked to clearly identify the specific products, component parts, and data applicable to installation. Delete inapplicable information. Product data shall include:

(1) Lighting Fixtures
(2) Wiring Devices
(3) Electric Power Distribution Components
(4) Runway Lighting System Components
(5) Thaw Wire and Heat Trace System Components
(6) Fuel Tank Capacity Diagram (converting stick readings at 6-inch vertical increments to gallons)

c. Include drawings to supplement product data and illustrate relations of component parts of equipment and systems. Show control and flow diagrams. Provide copies of all approved shop drawings. Drawings shall include:

(1) Equipment Storage Building Plans
(2) Electrical Equipment Enclosure Plans
(3) Runway Lighting One-line Control and Power Diagrams
(4) Electric Power One-line Diagrams
(5) Electric Power Panel Directories
(6) Thaw Wire and Heat Trace Systems

d. Type text as required to supplement product data and show logical sequence of operations for each procedure, incorporating the manufacturer's instructions.

e. Operating procedures to include start-up, break-in, and routine normal operating instructions and sequences. Include regulation, control, stopping, shut-down, and emergency instructions. Include any special operating instructions. Include reprogramming instructions for all programmable equipment. Systems shall include:

(1) Runway Lighting System
(2) Heating System
(3) Fuel Oil Storage and Distribution System

f. Maintenance requirements and repair data. Include routine procedures. Provide a guide for troubleshooting, disassembly, repair, and reassembly. Provide alignment, adjusting, and checking instructions. Maintenance and repair data shall include:
(1) Heating System
(2) Fuel Oil Storage and Distribution System

g. Supplies and replacement parts. For each item of equipment and each system list names, addresses, and telephone numbers of subcontractors and suppliers. Provide local source of supplies and replacement parts with complete nomenclature and commercial number of replacement parts. Provide a copy of manufacturer's recommended spare parts list for applicable equipment. Provide data for:

(1) Lamps for Runway Lighting System
(2) Lamps for Lighting Fixtures
(3) Fuel Oil System

h. Warranties. Include copies of warranties.

i. Tests. Include logs of all tests performed.

SECTION 70

LEGAL RELATIONS AND RESPONSIBILITY TO PUBLIC

70-01 LAWS TO BE OBSERVED. The Contractor shall keep fully informed of, observe, and comply with all federal, state, and local laws, ordinances, and regulations, and all orders and decrees of bodies or tribunals having any jurisdiction or authority, that in any manner affect those engaged or employed on the work or which in any way affect the conduct of the work.

In addition to all other laws, the Contractor shall fully comply with all laws, regulations and permits issued by agencies of the United States and the State of Alaska when working in, over or adjacent to wetlands, tidelands, anadromous fish streams, eagle nests, navigable waters, or coastal waters.

In addition to other laws, the Contractor shall ensure that all work in, over or adjacent to navigable waters is conducted so that free navigation of the waterways is not obstructed and that existing navigable depths are not impaired, except as allowed by the U.S. Coast Guard and the U.S. Army Corps of Engineers.

The Contractor and the Surety shall defend, indemnify, and hold harmless the state and its representatives against any claim or liability related to violations of any laws, ordinances, regulations, orders, decrees or permits by the Contractor, the Contractor's agents, the Contractor's employees, a subcontractor at any tier, or a supplier or service provider.

The Contractor has the affirmative duty to keep informed of and comply with all laws. The Contractor is not entitled to and shall not rely on any Department employee's interpretation, whether oral or written, of any law, ordinance, regulation, order, or decree, or any permit issued by an agency other than the Department.

70-02 PERMITS, LICENSES, AND TAXES. The terms, conditions, and stipulations in permits obtained either by the Department or by the Contractor are made a part of this Contract.

The Department will:

a. Secure permits and licenses that the Department determines are required for the construction of the proposed project, and the use of mandatory sources, designated sources and designated waste disposal areas for the proposed project; and

b. Modify Department-acquired permits during the performance of the contract, if deemed necessary by the Engineer.

The Contractor shall:

a. Acquire any permits and licenses required to complete the project that are not acquired by the Department;

b. Provide qualified professionals to collect data or perform studies necessary to acquire permits for the use of sites not previously permitted;

c. Give all notices required for the prosecution of the work;

d. Abide by all permits and licenses whether acquired by the Department or by the Contractor;

e. Notify the Engineer promptly if any activity cannot be performed as specified in the permits, and cease conducting the activity until permit modifications or any required additional permits are obtained;

f. Obtain modifications to permits acquired by the Contractor;

g. Pay all charges, fees and taxes; and

h. Provide proof of payment of all taxes before the Department makes final payment.

The Contractor shall not work in areas that are not permitted for use by the Contract. Before working in an area not previously permitted for use by the Contract, the Contractor shall:

a. Contact all government agencies having possible or apparent permit authority over that area;

b. Obtain all required permits, clearances, and licenses from those agencies;

These permits and clearances may include, but are not limited to: APDES General Permit, State Historic Preservation Officer approval; Department of Natural Resources Coastal Consistency Determination, Title 16 Material Site Reclamation, and Temporary Water Use Permits; Department of Environmental Conservation Section 401 Certification, Solid Waste Disposal Site and Construction Camp Permits; Department of Fish and Game Special Area Permits; U.S. Fish and Wildlife Service Threatened and Endangered Species clearance; U.S. Corps of Engineers Section 404/10 Permits; city or local government development permits and flood hazard permits; and the permission of the property owner or lessee.

c. Obtain permission from any property owners or lessees with an interest in the property; and

d. Provide all of the following to the Engineer:

(1) All permits or clearances necessary to use the site for its intended purpose(s);

(2) A written statement that all permits or clearances necessary have been obtained;

(3) Written evidence that the Contractor has contacted all of the relevant agencies and that no additional permits are required on the part of the Contractor, including at a minimum the name of the agency and staff person contacted, the date contacted, and result of coordination; and

(4) A plan that identifies how the site will be finally stabilized and protected.

The Engineer may reject a proposed site if the Contractor fails to provide any of the above information or to demonstrate that a proposed site can be finally stabilized to eliminate future adverse impacts on natural resources and the environment.

70-03 PATENTED DEVICES, MATERIALS AND PROCESSES. If the Contractor employs any design, device, material, or process covered by patent, trademark, or copyright, the Contractor shall obtain and provide the Engineer with a copy of a suitable legal agreement with the patentee or owner.

The Contractor and the Surety shall defend, indemnify, and hold harmless the state and its representatives and any affected third party or political subdivision from any claim, cause of action, and damages for infringement arising from or relating to the Contractor's use of a patented design, device, material, process, trademark, or copyright.

70-04 WAGE RATES. The Contractor and all subcontractors shall pay the current prevailing rate of wages as per AS 36.05.010 and this Contract. On federally funded projects the Contractor and all subcontractors shall pay the higher of the appropriate wage rates published by the Alaska Department of Labor and the U.S. Department of Labor, for each individual job classification. The Contractor and all subcontractors shall file certified payroll with the Alaska Department of Labor and Workforce Development (DOLWD) and with the Engineer for all work performed on the project.

Before beginning work the Contractor shall file a Notice of Work with DOLWD and pay all required fees. After finishing work the Contractor shall file a Notice of Completion with DOLWD and pay all additional fees required by increases in the Contract amount.

70-05 FEDERAL PROVISIONS. The Contractor shall:

a. Observe all federal laws, rules, regulations and grant requirements applicable to the project; and

b. Allow appropriate federal officials access to inspect the work.

The federal government is not a party to the Contract. The Contractor agrees that federal inspections will not form the basis for any claim against the federal government or the State for interference with the rights of the Contract parties.

70-06 SANITARY, HEALTH, AND SAFETY PROVISIONS. The Contractor shall provide and maintain neat and sanitary accommodations for employees that meet all federal, state and local requirements.

The Contractor shall comply with federal, state, and local laws, rules, and regulations concerning construction safety and health standards, including U.S. Mine Safety and Health Administration rules when the project includes pit or quarry operations.

The Contractor shall not expose the public to, or require any workers to work under, conditions that are unsanitary, hazardous, or dangerous to health or safety.

The Contractor is responsible for ensuring all workers are adequately protected. The Contractor shall have a safety and health management program that complies with AKOSH requirements, and includes:

a. A worksite hazard analysis;

b. A hazard prevention and control plan including personal protective equipment and safe work procedures required for specific tasks;

c. New employee training and periodic worker training regarding safety and health;

d. Regular safety meetings with written documentation of attendance, safety topics discussed, worker safety complaints, and corrective actions taken; and

e. A designated safety officer, employed by the Contractor, who monitors the construction site and is responsible for implementing the safety and health management program.

The Contractor and Surety shall defend, indemnify and hold harmless the State of Alaska from all claims, causes of action and judgments arising from or relating to the Contractor's failure to comply with any applicable federal, state or local safety requirement, regulation or practice, whether or not listed above.

70-07 ARCHAEOLOGICAL OR HISTORICAL DISCOVERIES. When the Contractor's operation encounters prehistoric artifacts, burials, remains of dwelling sites, paleontological remains, shell heaps, land or sea mammal bones, tusks, or other items of historical significance, the Contractor shall:

a. Immediately cease operations at the site of the find;

b. Immediately notify the Engineer of the find; and

c. Not disturb or remove the finds or perform further operations at the site of the finds until directed by the Engineer.

The Engineer will issue an appropriate Change Order if the Engineer orders suspension of the Contractor's operations or orders the Contractor to perform extra work in order to protect an archaeological or historical find.

70-08 PUBLIC CONVENIENCE AND SAFETY, AND RAILWAY PROVISIONS. The Contractor shall control its operations and those of its subcontractors and all suppliers, to assure the least inconvenience to the traveling public. Under all circumstances, safety shall be the most important consideration.

The Contractor shall maintain the free and unobstructed movement of aircraft, airport personnel and vehicular traffic in the AOA, except as specifically provided in this Contract. The Contractor's operations and those of its subcontractors and all suppliers, shall be done according to subsection 40-05 and shall limit operations for the convenience and safety of the traveling public as specified in subsection 80-04.

The Contractor shall conduct all operations on or near a railroad according to the Contract, any contract between the Department and the railroad, and any permits issued by the railroad. The Department shall obtain permits for hauling materials across railroad tracks at locations specified in the Contract. If the Contractor desires additional crossings, the Contractor shall obtain any required permits at the Contractor's expense.

70-09 BARRICADES, WARNING SIGNS AND HAZARD MARKINGS, AND TRAFFIC CONTROL PLAN. The Contractor shall furnish, erect, and maintain all barricades, warning signs and markings for hazards necessary to protect the public and the work. It shall be the Contractor's responsibility to maintain markers at all times to separate areas closed to aircraft from adjacent areas that are open to aircraft. When used during periods of darkness, such barricades, warning signs and hazard markings shall be suitably illuminated. Barricades, warning signs, and markings for hazards that are in the air operations area shall be a maximum of 18 inches high. Barricades shall be spaced not more than 25 feet apart.

For public vehicular and pedestrian traffic, the Contractor shall furnish, erect, and maintain barricades, warning signs, lights and other traffic control devices in conformity with the *Manual on Uniform Traffic Control Devices for Streets and Highways* (published by the United States Government Printing Office) and the *Alaska Traffic Manual Supplement* ~~(published by the Department)~~, and according to the Traffic Control Plan.

When the work requires closing an airport operations area of the airport or portion of such area, the Contractor shall furnish, erect and maintain temporary markings and associated lighting conforming to the requirements of AC 150/5340-1, *Standards for Airport Markings*, and according to the Construction Safety Plan.

For work within the airport property, the Contractor shall furnish, erect, and maintain markings and associated lighting of open trenches, excavations, temporary stockpiles, and parked construction equipment that may be hazardous to the operation of emergency, fire-rescue, maintenance or support vehicles on the airport in conformance to AC 150/5370-2, *Operational Safety on Airports During Construction*.

The Contractor shall identify each motorized vehicle or piece of construction equipment in conformance to AC150/5370-2.

Open-flame type lights shall not be permitted within the air operations areas of the airport.

Submit a traffic control plan for approval a minimum of five (5) calendar days prior to any work except surveying.

Ensure that the traffic control plan is developed, set-up, and maintained by the American Traffic Safety Services Association (ATSSA) or the International Municipal Signal Association (IMSA) certified work site supervision. The cost of plans, signs, permanent construction signs, channelization devices, and marking to meet this requirement is an obligation subsidiary to other items. No separate payment will be made.

Provide an individual on call 24 hours a day for emergency maintenance of Airport Hazard Lighting and Barricades. Inform the Airport Safety Dispatcher, telephone 266-2415 or 266-2575, of the individual's name and telephone number. The individual is required to provide an on-site response within 30 minutes of receiving notice from the Airport Safety Dispatcher or Airport Operations. Upon failure of the designated individual to be available to receive notice or respond accordingly, Airport Safety or Airport Operations has authority to remedy the emergency and to collect the cost from any monies due or to become due the Contractor.

All labor, materials, equipment, replacement parts, batteries, tools and other items necessary to maintain the barriers, flags, and lights are subsidiary to the contract and no separate payment will be made.

70-10 USE OF EXPLOSIVES. The Contractor shall obey all laws, regulations and permits applicable to using, handling, loading, transporting, or storing explosives. When using explosives, the Contractor shall take utmost care not to endanger life, property, new construction, or existing portions of the project and facilities that are to remain in place after the project is complete.

The Contractor shall provide notice to property owners, the traveling public, and utility companies in the vicinity before using explosives. The Contractor shall provide a minimum of three working days notice to the Federal Aviation Administration and the airport manager. The Contractor shall notify police and fire authorities in the vicinity before transporting or using explosives. The Contractor shall provide notice sufficiently in advance to enable all potentially affected parties to take whatever steps they may deem necessary to protect themselves and their property from injury or damage. The Contractor shall not use explosives on or near airport property until a Notices to Airmen (NOTAMs) has been issued. Each new use of explosives may require a separate NOTAMs to be issued. The Contractor shall not use electric blasting caps within 1,000 feet of the airport property.

The Contractor is liable for all property damage, injury, or death resulting from the use of explosives on the project. The Contractor and Surety shall indemnify, hold harmless, and defend the State of Alaska from all claims related to the use of explosives on the project, including claims from government agencies alleging that explosives were handled, loaded, transported, used, or stored improperly.

70-11 PROTECTION AND RESTORATION OF PROPERTY AND LANDSCAPE.

a. **Property Marks.** The Contractor shall:

   (1) Be responsible for and protect from disturbance all land monuments and property marks until the Engineer has approved the witnessing or otherwise referenced their locations; and

   (2) Not move such monuments or marks without the Engineer's approval.

b. **Damage to Property.** The Contractor shall:

   (1) Be responsible for all damage to public or private property resulting from any act, omission, neglect, or misconduct in the manner or method of executing the work;

   (2) Be responsible for all damage to public or private property resulting from defective work or materials at any time, before, during, or after project completion; and

   (3) Restore all such damaged property to a condition similar or equal to that existing before the damage occurred, at no additional cost to the Department.

c. **Protection of Natural Resources.** The Contractor shall:

   (1) Conduct work in a manner that minimizes disturbance to and protects natural resources in compliance with all federal, state, and local laws and regulations;

(2) When working near designated wetlands, as defined by the Corps of Engineers, place no fill, nor operate equipment outside the permitted area;

(3) When working in or near designated anadromous fish streams, as defined by AS 41.14.840 and AS 41.14.870, place no fill or dredge material, nor operate equipment, within or on the banks of the stream (including fording) except as permitted by the State Fish Habitat Permit issued for the project; and

(4) Not refuel and service equipment within 100 feet of wetlands and/or other water bodies.

d. **Hazardous Materials.** Hazardous materials include but are not limited to petroleum products, oils, solvents, paints, lead based paints, asbestos, and chemicals that are toxic, corrosive, explosive, or flammable. Except as otherwise specified in this Contract, the Contractor shall:

(1) Not excavate, nor use for fill, any material at any site suspected of or found to contain hazardous materials or petroleum fuels;

(2) Not raze and remove, or dispose of structures that contain asbestos or lead-based paints;

(3) Not stockpile, nor dispose of, any material at any site suspected of or found to contain hazardous materials or petroleum;

(4) Report immediately to the Engineer any known or suspected hazardous material discovered, exposed, or released into the air, ground, or water during construction of the project;

(5) Report any containment, cleanup, or restoration activities anticipated or performed as a result of such release or discovery;

(6) Handle and dispose of hazardous material with properly trained and licensed personnel who follow an approved Hazardous Material Control Plan as per Section P-157. Dispose of hazardous material according to federal, state and local laws and regulation.

(7) Store, handle and dispose of hazardous material that the Contractor or subcontractors brought to or used on the project, at no additional cost to the Department.

e. **Protected Areas.** The Contractor shall not use land from any park, recreation area, wildlife or waterfowl refuge, or any historical site located inside or outside of the project limits for excess fill disposal, staging activities, equipment or material storage, or for any other purposes unless permitted by the Contract or unless all permits and clearances necessary for such work have been obtained by the Contractor as detailed in Subsection 70-02.

f. **Solid Waste.** The Contractor shall remove all debris, trash, and other solid waste from the project site as soon as possible and according to the Alaska Department of Environmental Conservation Solid Waste Program.

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

h. **Material Disposal Sites.** Offsite disposal areas may be at locations of the Contractor's choice, provided the Contractor obtains from the owner of such land written permission for such dumping

and a waiver of all claims against the State for any damage to such land which may result therefrom, together with all permits required by law for such dumping. A copy of such permission, waiver of claims, and permits shall be filed with the Engineer before commencing work on private property. The Contractor's selected disposal sites shall also be inspected and approved by the Engineer prior to use of the sites.

70-12 FOREST PROTECTION. The Contractor shall:

a. Comply with all laws and regulations of the United States and the State of Alaska, local governments, or other authorities governing the protection of forests and the carrying out of work within forests;

b. Keep forest areas in an orderly condition;

c. Dispose of all refuse and obtain permits for the construction and maintenance of all construction camps, stores, warehouses, residences, latrines, cesspools, septic tanks, and other structures according to the requirements of the supervising authorities;

d. Take all reasonable precautions to prevent and suppress forest fires;

e. Require workers and subcontractors, both independently and at the request of officials, to do all reasonably within their power to prevent and suppress and to assist in preventing and suppressing forest fires; and

f. Make every possible effort to notify the appropriate forestry agency at the earliest moment of the location and extent of any forest fire.

70-13 RESPONSIBILITY FOR DAMAGE CLAIMS. The Contractor shall indemnify, hold harmless, and defend the State of Alaska and its agents and employees from any and all claims or actions for injuries or damages whatsoever sustained by any person or property that arise from or relate to, directly or indirectly, the Contractor's performance of the Contract; however, this provision has no effect if, but only if, the sole proximate cause of the injury or damage is the Department's negligence.

This Contract does not create a third party benefit to the public or any member of the public, nor does it authorize any person or entity not a party to this Contract to maintain a suit based on this Contract or any term or provision of the Contract, whether for personal injuries, property damage, or any other claim or cause of action.

70-14 OPENING SECTIONS OF THE PROJECT TO TRAFFIC. The Engineer may, at their discretion, order the Contractor to open sections of the work to traffic prior to completion of the entire project. Openings under this section shall not constitute (a) acceptance of the opened sections or any other part of the work or (b) a waiver of any other provision of the Contract.

The Engineer may establish a time period for completing any features of the opened section of work that are behind schedule.

The Contractor shall:

a. Maintain the opened portions of the work without additional compensation;

b. Perform all necessary repairs or renewals on the opened sections of the work without additional compensation;

c. Conduct the remainder of the work with minimum interference to traffic; and

d. Maintain barricades and other safety devices required by AC 150/5370-2, *Occupational Safety on Airports During Construction*, to provide separation of opened and closed sections of the project.

70-15 CONTRACTOR'S RESPONSIBILITY FOR WORK. The Contractor shall be responsible for implementing all preventative measures necessary to protect, prevent damage, and repair damage to the work from all causes at no additional cost to the Department. This duty continues from the date construction begins until the date specified in a letter of Substantial Completion or Partial Acceptance of a specific section of the project. Where there is a Partial Acceptance, the duty ends only as to the accepted portion of the work. This duty continues during periods of suspended work, except in specific sections the Department has agreed to maintain under Subsection 50-13.a. Seasonal Suspension of Work.

The Contractor shall rebuild, repair, restore, and make good all losses or damages to any portion of the work including that caused by vandalism, theft, accommodation of public traffic, and weather. The Department will only be responsible for loss or damage due to unforeseeable causes beyond the control of and without the Contractor's fault or negligence, such as Acts of God, the public enemy, and governmental authorities.

In case of suspension of work from any cause, the Contractor shall take such precautions as may be necessary to prevent damage to the work or facilities affected by the work. This will include providing for drainage and erecting any necessary temporary structures, signs, or other facilities and maintaining all living material such as plantings, seedings, and soddings.

70-16 RESERVED.

70-17 FURNISHING RIGHT-OF-WAY. The Department will secure all necessary right-of-way or property in advance of construction. Any exceptions will be indicated in the Contract.

70-18 PERSONAL LIABILITY OF PUBLIC OFFICIALS. There shall be no liability upon the Engineer and their authorized representatives, either personally or as officials of the state, in carrying out any of the provisions of this Contract, or in exercising any power or authority granted to them by or within the scope of the Contract, it being understood that in all such matters the Engineer and their authorized representatives act solely as agents and representatives of the State. The Contractor shall bring no suit related to or arising under this Contract naming as defendants any State officer, employee or representative in either their personal or official capacities, and shall include a prohibition to that effect in all subcontracts entered into for this Project.

70-19 NO WAIVER OF LEGAL RIGHTS. The Department shall not be precluded nor estopped by any measurement, estimate, or certificate made either before or after the completion and acceptance of the work and payment, from showing the true amount and character of the work performed and materials furnished by the Contractor, nor from showing that any measurement, estimate, or certificate is untrue or is incorrectly made, nor that the work or materials do not in fact conform to the Contract.

The Department shall not be precluded nor estopped, notwithstanding any measurement, estimate, or certificate and payment, from recovering from the Contractor or the Contractor's Sureties, or both, such damages as it may sustain by reason of the Contractor's failure to comply with the terms of the Contract.

Neither the acceptance by the Department, or by any representative of the Department, nor any payment for or acceptance of the whole or any part of the work, nor any extension of time, nor any possession taken by the Department, shall operate as a waiver by the Department of any portion of the Contract or of any right of the Department to damages. A waiver by the Department of any breach of the Contract shall not be held to be a waiver of any other subsequent breach.

70-20 GRATUITY AND CONFLICT OF INTEREST. The Contractor shall not extend any loan, gratuity, or gift of money of any form whatsoever to any employee of the Department, nor will the Contractor rent or purchase any equipment or materials from any employee of the Department or to the best of the Contractor's knowledge from any agent of any employee of the Department. The Contractor shall execute and furnish the Department an affidavit certifying that the Contractor has complied with this section before final acceptance.

70-21 SECURITY.

a. Security Program

The following information will guide you through the security requirements and procedures at Ted Stevens Anchorage International Airport (ANC). ANC has assigned oversight for compliance with all procedures and requirements to Airport Operations. Departments within Airport Operations have specific responsibilities which are defined in greater detail below.

Note: critical contact phone numbers
Airport Operations: 266-2600
Airport Badge Office 266-2409
Airport Dispatch 266-2415

Due to the ever-changing nature of security requirements please contact the Airport Security Manager at 266-2522 for any clarification you may need.

The Transportation Security Administration (TSA) requires ANC to control access and prevent unauthorized persons from entering Air Operations Areas (AOA). In compliance with this requirement, the airport operator has established procedures to authorize or deny access to the AOA and to identify and control persons while in these areas.

b. Inspections and Fines

The Contractor shall be liable for any fines levied against the State, by the TSA, resulting from actions of the Contractor, or those whom the Contractor is responsible for, that cause a failure in the maintaining of security in the area of construction, to include any points of entry into the Air Operations Area (AOA) utilized for the construction project. Failure to maintain security will also include failure to abide by the Airport badge identification program or other requirements pertaining to the security of the AOA.

Contractor personnel are subject to random checks for compliance with the badging and permit regulations. These checks may be conducted by Airport Police, Airport Operations and the TSA.

In order to maintain accountability for all Airport identification badges issued, the Contractor is responsible for physically collecting and returning to the Airport Badge Office all outstanding badges no longer used for the construction project. Proof of return is State Receipt issued by the Airport Badge Office.

A non-refundable fine of $300.00 will be levied against the Contractor for each badge not returned within five (5) days of badge expiration or completion of the project, whichever is sooner.

Temporary ramp permits must be turned back into the Airport Badge Office within five (5) days of completion of work or expiration of the ramp permit(s), whichever is sooner. There is a non-refundable fine of $50.00 for each permit not returned.

Final payment to the Contractor will be withheld pending the return of all badges and vehicle permits to the Airport Badge Office and the settlement of all charges due ANC Accounting.

c. AOA Entry Control

The Contractor is responsible for preventing unauthorized access to the AOA by way of the construction site. This includes maintaining ANC perimeter gates and doors in either a locked condition or attended by appropriately badged persons who ensure that only authorized personnel or vehicles are admitted through them into the AOA. Any opening of the AOA security fence requires prior coordination with Airport Operations. Contact Airport Operations at 266-2600.

Those persons designated to control access points into the AOA shall be instructed by Airport Operations in the proper procedures of identification requirements for persons and vehicles. These procedures are specific to each contract and may change during different phases of the contract.

The Contractor will provide these persons with the capability to communicate directly with Airport Operations and Airport Dispatch.

The Contractor will be responsible for maintaining, as a minimum, a six (6) foot clear zone on both sides of any perimeter fence line affected by the Contractor or any authorized representative.

d. Airport Identification Badges

The Airport Identification Badge, developed and adopted by ANC, is the only identification system recognized as authority to enter the Security Identification Display Area (SIDA) and Sterile Areas of the airport. Only persons identified by this system are permitted access. All Airport Identification Badges must be worn on the outermost garment above the waist.

Any person found in the SIDA or Sterile Area, not in compliance with this program, will be removed from the area and action will be taken against violators as appropriate under Alaska State Statute or Alaska Administrative Code.

Control Authority

1. ANC has delegated authority for approving issuance, system control, implementation, and accountability of this program to the Airport Badge Office.

2. An individually - assigned Airport Identification Badge will be used by each Contractor employee granted access to the airport SIDA, Sterile Area or other airport restricted areas for construction projects. It does not grant access to aircraft and is valid only for the area in which their construction is actually taking place and the approved routes to and from that area.

e. Badge Issue Procedures

All fingerprint, security threat assessment (STA) and badge requests must be authorized through the Project Manager. Detailed instructions and applicable paperwork will be given to the Project Manager and the Contractor prior to requests being submitted to the Badge Office.

Badge Office general information:

Office Location: 6040 DeHaviland Avenue, next to the Airport Police and Fire Building and across the street from the Post Office on Postmark Drive.

Office hours: Monday through Friday from 7:00 a.m. to 4:00 p.m. Closed holidays.

Contact phone number: 907-266-2409

Security and Ramp Driver's Training: Monday through Friday at 8:00 a.m. for walk-ins and groups of 3 or fewer individuals. Larger groups may be scheduled through the Badge Office for Tuesday or Thursday at 1:00 p.m. It is advised that you check in for training 30 minutes prior to the scheduled class time as class size is limited.

The fingerprinting fee is $40.00, STA fee is $20.00 and the badge fee is $40.00. Payment is required at time of service for each. All fees shall be paid by the Contractor as an incidental cost. These fees are subject to change with a 30 day notice.

Badging is a two step process.

1. The first step is that each person requiring an Airport Identification Badge must submit to a FBI fingerprint based Criminal History Records Check (CHRC) and a STA. If the CHRC shows no TSA disqualifying criminal offense within the preceding ten years from the date of fingerprint submission and the TSA clears the individual for the STA, the Project Manager is notified via email and the person may proceed to step two. Allow one to two weeks for this process to take place.

2. Step two is the Security and Ramp Driver Training and badge issuance. This training is available at the Airport Badge Office, see the times above. The actual training takes approximately 30 minutes for badge requests without a Ramp Driver's License and 60 minutes for those individuals requesting a Ramp Driver's License and, or Escort Authorization. Individuals requesting a Ramp Driver's License will be required to pass a written test. Upon successful completion of step two, an Airport Identification Badge may be issued.

In lieu of an Airport Identification Badge, for those employees working in the same area together, there needs to be only one employee with an Airport Identification Badge, with Escort Authorization, while the other employees in the area may be issued a visitor badge. Note: there must be an Airport I.D. Badged employee monitoring them at all times. This person must have Escort Authority indicated on their badge. A person using a visitor badge is not required to view the training video, but is expected to follow all regulations while on the restricted areas of the airport. Contractors utilizing escorts and visitor badges must receive prior approval from Airport Operations or the Airport Security Manager.

Any falsifications can result in revocation of the badges for the individual in question, and any fines incurred from the violations will be passed to the responsible party.

Per TSA regulations badges must be issued within 30 days of receiving notification the individual is cleared for badging.

Upon issuing an Airport Identification Badge, each badged employee will be issued a set of airport rules and regulations they shall be held responsible for while working in restricted areas of the airport.

An Alaska Public Safety Information Network records check may be made on the employee, to include checking current driver's license status for ramp license requests.

The Contractor shall be responsible for the maintenance of records necessary to ensure the retrieval of badges from employees and subcontractor(s).

1. Whenever a badged person's employment authorized by the Contractor is terminated, the Contractor is responsible for immediately recovering the ID badge and returning it to Airport Badge and Vehicle Permit Office within five (5) days of an employee's termination date or the completion of the project, whichever is sooner.

2. When someone terminates employment, the Contractor shall immediately notify the Airport Badge Office so the badge can be deactivated. If termination is outside of the normal working hours, the Contractor shall immediately notify Airport Dispatch at 266-2415 of the termination.

Should an employee lose his or her I.D. Badge, they should immediately notify their employer, who shall then immediately notify the Airport Badge Office. If lost after normal business hours, then it should be reported to Airport Dispatch. The Badge Office will confirm the employee's employment

status prior to reactivation of a badge reported lost, then found by the owner. If requested, a replacement badge will not be issued until a replacement request letter is received and the $50.00 lost badge fee is paid. This is a separate fee from the non-refundable fine of $300.00 applied to non-returned badges. If a replacement badge is issued for a lost badge, and the $50.00 fee paid, the Contractor will not be charged the non-refundable fine of $300.00.

The Airport Operator requires each Contractor and badge holder to agree to abide by the provisions of this identification program. The Contractor shall designate one or more persons to act as the authorized point of contact for coordination in matters of badge program administration and security.

f. Vehicle Access On AOA

As stated previously, the TSA requires the Airport Operator to control access into and prevent unauthorized vehicles from entering the AOA. In compliance with this requirement, the Airport Operator has established procedures to authorize or deny access to the AOA and to identify and control vehicles while within the AOA.

Proper individual identification, ramp driver's licenses, and vehicle permits must be obtained through Airport Badge Office before attempting to enter the AOA.

g. Vehicle Identification Standards

All Contractor vehicles requiring access to the AOA shall display a company logo and temporary ramp permit as issued and instructed by Airport Badge Office. All permit requests must come through and be authorized by the Project Manager.

h. Authorized Vehicles

Contractor vehicles are authorized onto the AOA only when within its area of authorization, to include access routes to and from the constructions site and required vehicle permits are properly displayed, and all occupants have the required airport identification properly displayed.

SECTION 80

PROSECUTION AND PROGRESS

80-01 SUBLETTING OF CONTRACT. The Contractor shall submit a Contractor Self Certification for Subcontractors and Lower Tier Subcontractors, Form 25D-042, before the Contractor or any subcontractor sublets, sells, transfers, assigns, or otherwise disposes of the Contract or any portion of the Contract. The Department has authority to review subcontracts and to deny permission to sublet work. The Department may penalize the Contractor for false statements or omissions made in connection with Form 25D-042.

The Contractor shall perform, with the Contractor's own organization, work amounting to at least 30 percent of the difference between the original Contract price and the price of designated Specialty Items. For the purpose of this Subsection, work is defined as the dollar value of the services, equipment, materials, and manufactured products furnished under the Contract. The Engineer will determine the value of the subcontracts based on Contract unit prices or upon reasonable value, if entire items are not subcontracted.

The Department's consent to the subletting, sale, transfer, assignment, or disposal of all or a part of the Contract shall not relieve the Contractor and the Surety of responsibility for fulfillment of the Contract or for liability under the bonds regardless of the terms of the transfer or sublet approvals.

a. Submittals. The Contractor shall ensure ~~that for all~~ the following for each subcontract~~s~~ (agreement~~s~~):

(1) The Department is furnished with one completed Contractor Self certification, Form 25D-042~~, for each subcontract~~;

(2) The subcontractors have submitted a Bidder Registration, Form 25D-6;

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

(4) The subcontractors pay current prevailing rate of wages as per Subsection 70-04 Wage Rates and file certified payrolls with the Engineer and DOLWD for all work performed on the project.~~; and~~

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

(6) The Department is furnished with two copies of the subcontract signed by both parties and including item descriptions and prices of subcontracted work before the subcontracted work begins.

b. Work that is Subcontracting. The following will be considered as subcontracting, unless performed by the Contractor:

(1) Roadside or Onsite Production. Roadside or onsite production of crushed stone, gravel, and other materials with portable or semi-portable crushing, screening, or washing plants set up or reopened in the vicinity of the project to supply materials for the project, including borrow pits used exclusively or nearly exclusively for the project.

(2) Temporary Plants. Production of aggregate mix, concrete mix, asphalt mix, other materials, or fabricated items from temporary batching plants, temporary mixing plants, or temporary factories

that are set up or reopened in the vicinity of the project to supply materials exclusively or nearly exclusively for the project.

(3) Hauling. Hauling from the project to roadside production, temporary plants, or commercial plants, from roadside production or temporary plants to the project, from roadside production or temporary plants to commercial plants, and all other hauling not specifically excluded in this subsection.

(4) Other Contractors. All other contractors working on the project site under contract with the Contractor are considered subcontractors unless specifically excluded in this subsection.

c. Work that is not Subcontracting. The following will not be considered as subcontracting, but the Contractor shall comply with the prompt payment provisions of AS 36.90:

(1) Commercial Plants. The purchase of sand, gravel, crushed stone, crushed slag, batched concrete aggregates, ready-mixed concrete, asphalt paving mix, and any other material or fabrication produced at and furnished from established and recognized commercial plants that sell to both public and private purchasers.

(2) Hauling. Delivery of materials from a commercial plant to a different commercial plant, and delivery from a commercial plant to the project site by vehicles owned and operated by the commercial plants or by commercial freight companies that have a contract with the commercial plant. Commercial freight companies are trucking or hauling companies that deliver multiple types of materials to multiple clients, both public and private, on an established route and on a recurrent basis.

(3) Contractors' General Business. Work within permanent home offices, branch plants, fabrication plants, tool yards, and other establishments that are part of a contractor's or subcontractor's general business operations.

d. Owner-Operators. Hauling of materials for the project by bona fide truck owner-operators who are listed as such on the certified payroll of the Contractor or approved subcontractor is not considered subcontracting for purposes of AS 36.30.115.

The Contractor shall ensure that the required prompt payment provisions of AS 36.90.210 are included in contracts with owner-operators.

The Contractor shall collect and maintain at the project site current and valid copies of the following to prove that each trucker listed is a bona fide owner-operator:

(1) Alaska Driver's License with appropriate CDL class and endorsements;

(2) Business license for trucking with supporting documents that list the driver as the business owner or corporate officer;

(3) Documents showing the driver's ownership interest in the truck, including copies of:

(a) Truck registration; and

(b) Lease (if truck is not registered in driver's name or in the name of the driver's company).

The Contractor shall maintain legible copies of these records for a period of at least three years after final acceptance of the project.

Owner-operators must qualify as independent contractors under the current Alaska Department of Labor's criteria. Owner-operators may be required to show:

(1) The owner-operator's right to control the manner in which the work is to be performed;

(2) The owner-operator's opportunity for profit or loss depending upon their managerial skill;

(3) The owner-operator's investment in equipment or materials required for their task, or the employment of helpers;

(4) Whether the service rendered requires a special skill;

(5) The degree of permanence of the working relationship; and

(6) Whether the service rendered is an integral part of the owner-operator's business.

The status of owner-operators is subject to evaluation throughout the project period. If the criteria for an independent contractor are not met, the Contractor shall submit amended payrolls listing the driver as an employee subject to all labor provisions of the Contract.

The Contractor shall issue each owner-operator a placard in a form approved by the Engineer that identifies both the truck driver and the vehicle. The placard shall be prominently displayed on the vehicle so that it is visible to scale operators and inspectors.

Not withstanding the Department's definitions of contracting and subcontracting, the Contractor shall be responsible for determining and complying with all federal and state laws and regulations regarding contracting, subcontracting, and payment of wages. The Contractor shall promptly pay any fines or penalties assessed for violations of those laws and regulations, and shall promptly comply with the directives of any government agency having jurisdiction over those matters.

80-02 NOTICE TO PROCEED. The Department will issue a Notice to Proceed authorizing construction to begin and indicating the date when Contract time will begin. The Contractor shall not begin construction before the effective date of the Notice to Proceed. The Department will, in its sole discretion, refuse to pay for construction begun before the effective date of the Notice to Proceed. The Contractor shall notify the Engineer at least 48 hours before construction begins at the project site.

80-03 PROSECUTION AND PROGRESS. The Contractor shall meet with the Engineer at the regional construction office for a preconstruction conference before beginning construction. The Contractor shall submit the following documents to the Engineer at least five working days before the preconstruction conference:

a. A Critical Path Method (CPM) Schedule is required, in a format acceptable to the Engineer, showing the order in which the work will be carried out and the contemplated dates on which the Contractor and subcontractors will start and finish each of the salient features of the work, including any scheduled periods of shutdown. Indicate any anticipated periods of multiple-shift work in the CPM Schedule. If revisions to the proposed CPM Schedule are required, make them promptly. Promptly submit a revised CPM Schedule if there are substantial changes to your schedule, or upon request of the Engineer.~~A progress schedule, in a format acceptable to the Engineer, showing the order in which the Contractor proposes to carry out the work and the contemplated dates on which the Contractor and the subcontractors will start and finish each of the salient features of the work, including any scheduled periods of shutdown. The schedule shall indicate the anticipated hours of operation and any anticipated periods of multiple-shift work.~~

b. A list showing anticipated dates for procurement of materials and equipment, ordering of articles of special manufacture, furnishing of plans, drawings and other data required under Subsections GCP-50-02 and GCP-60-08, and for other events such as inspection of structural steel fabrication.

c. A list showing all proposed subcontractors and material suppliers.

d. A Submittal Register, according to Subsection GCP-60-08.

e. A Construction Phasing plan, when required under Section G-300.

f. A Storm Water Pollution Prevention Plan, a Hazardous Material Control Plan, and a Spill Prevention Control and Countermeasure Plan, with the line of authority and designated field representatives, as required under Section P-157.

g. A letter designating the Contractor's Project Superintendent, defining that person's responsibility and authority, and providing a specimen signature.

h. A letter designating an Equal Employment Opportunity Officer and a Disadvantaged Business Enterprise Officer, and designating those person's responsibilities and authority.

i. A Quality Control Plan, as required under Sections GCP-60-03 and GCP- 100

j. A letter designating a Safety Officer for workers, and designating that person's responsibilities and authority.

k. A Traffic Control Plan, as required under Subsection GCP-70-09 and Section G-710.

l. A Utility Repair Plan, as required under Subsection GCP-50-06.e.

The Contractor shall provide adequate materials, labor and equipment to ensure the completion of the project according to the Plans and Specifications. The work shall be performed as vigorously and as continuously as weather conditions or other interferences may permit. The Contractor shall take into consideration and make due allowances at the Contractor's expense for foreseeable delays and interruptions to the work such as unfavorable weather, frozen ground, equipment breakdowns, shipping delays, quantity overruns, utility work, permit restrictions, and other foreseeable delays and interruptions. The Contractor shall identify these allowances on the progress schedule.

The Contractor shall adjust forces, equipment and work schedules as necessary to ensure completion of the work within the Contract time, and shall notify the Engineer at least 24 hours before resuming suspended operations. Upon a substantial change to the work schedule or when directed by the Engineer, the Contractor shall submit a revised progress schedule in the form required, including a written explanation for each revision made in the schedule or methods of operation.

The Engineer's review or approval of the documents, plans, and schedules provided by the Contractor under this section shall not change the Contract requirements, release the Contractor of the responsibility for successful completion of the work or relieve the Contractor of the duty to comply with applicable laws. The Engineer's review or approval of schedules shall not indicate agreement with any assertions of delay or claims by the Contractor.

It is the Contractor's responsibility to prepare and submit documents that satisfy all applicable contract requirements. By reviewing and approving the Contractor's documents, the Department does not warrant that following the Contractor's documents will result in successful performance of the work. The Department's failure to discover defects in the Contractor's documents, the assumptions upon which they are based or conditions that prevent the Contractor from performing the work as indicated in the documents will not entitle the Contractor to additional compensation or time. If the Contractor becomes aware of any act or occurrence that may form the basis of a claim for additional compensation or an extension of time, it must specifically advise the Engineer of these conditions according to Subsection 50-17.

80-04 LIMITATION OF OPERATIONS. The Contractor shall not open up work to the detriment of work already started. The Contractor shall minimize interference with traffic within the project. The Contractor shall not stop or otherwise impede traffic outside the project limits without the Engineer's prior written permission.

The Engineer may require the Contractor to finish a section of work in progress before starting additional sections if the Engineer determines it is necessary for the convenience of the public or the Department.

The Contractor shall control its operations and the operations of its subcontractors and all suppliers, so as to provide for the least inconvenience to traffic and the free and unobstructed movement of aircraft in the Air Operations Areas of the airport, except as specifically provided in this Contract. Under all circumstances, safety shall be the most important consideration.

a. **Environmental Limitations.** The Contractor shall comply with all environmental commitments, permit stipulations, and construction limitations, in the Contract permits and specifications. These may include time periods in which certain construction activities are not allowed. The Contractor shall avoid disturbing wetlands unless permitted to do so. The Contractor shall avoid disturbing threatened and endangered species, historic sites, and hazardous materials sites.

   To prevent impacts to migratory birds, the following construction activities are prohibited between April 15 and July 31:

   (1) Clearing of vegetation.
   (2) Fill placement over vegetated areas.
   (3) Excavation of vegetated areas.
   (4) Other construction activities that cause disturbance of vegetation.

   The prohibited activities specified in (1) through (4) above do not apply if the vegetated areas have been sufficiently disturbed or altered (e.g. by grubbing, excavation, fill placement or use of plastic or other materials that will cover the nesting habitat) prior to April 15 to eliminate the nesting habitat.

b. **Construction Safety Plan (CSP).** A CSP is included within the contract documents when attached as Appendix D. The CSP specifies minimum requirements for operational safety during construction activities. The Contactor shall conduct operations according to the CSP and the provisions set forth within the current version of AC 150/5370-2, *Operational Safety on Airports During Construction.* No deviations or modifications may be made to the approved CSP unless approved in writing by the Engineer.

   The Contractor shall implement all necessary CSP measures prior to commencement of any work activity. The Contractor shall conduct daily checks of its workers, equipment, and construction methods to assure compliance with the CSP measures. The Contractor shall document the checks in writing and sign them. Documented checks shall be available for inspection by the Engineer.

   The Contractor is responsible for the conduct of all subcontractors and suppliers it employs on the project. The Contractor shall assure that all subcontractors and suppliers are made aware of the requirements of the CSP, and that the subcontractors and suppliers implement and maintain all necessary safety measures.

   The CSP will indicate areas within airport property boundaries that may be used for material stockpile, and will indicate the maximum height of stockpile allowed. The Contractor shall obtain prior approval from the Engineer before using other areas within airport property. The Engineer may limit stockpile heights or equipment heights in any area, either inside or outside of airport property, based on requirements in the ACs or other factors necessary to ensure the free and unobstructed operation of aircraft.

c. **Security Plan.** When required by the Contract, the Contractor shall control its operations and the operations of its subcontractors and all suppliers so as to provide for the security of the Airport. The Contactor's operations shall be conducted according to the Security Plan and the provisions set forth within the current version of DOT/FAA/AR-00/52, *Recommended Security Guidelines for Airport Planning and Construction.* No deviations or modifications may be made to the approved Security Plan unless approved in writing by the Engineer.

d. Notification. When the work requires the Contractor to conduct its operations within an Air Operations Area of the airport, the work shall be coordinated with ~~Airport Management, the FAA Flight Service Station, and~~the Airport Operations Center through the Engineer. The Contractor shall provide written notice to the ~~Airport Management, FAA, and~~Airport Operations Center through the Engineer, at least 45 days before working in the Air Operations Area. The Contractor shall copy to the Engineer all correspondence with ~~Airport Management and FAA~~the Airport Operations Center.

The Contractor shall prepare a NOTAMs on a form provided by the Department, and submit the form through the Engineer to the ~~Airport Management~~Airport Operations Center at least 72 hours prior to: closure or change in the Air Operations Area; or startup, resumption, cessation of, or change in construction activity that affects aircraft operations.

The Contractor shall not close an Air Operations Area until a NOTAMs has been issued by ~~Airport Management~~the Airport Operations Center or by FAA, until the Engineer has authorized the Contractor to work there, and until the necessary temporary marking and associated lighting is in place as provided in Subsection 70-09.

For questions, the primary FAA contact is the FAA Systems Operations Control Center at (800) 478-2139. If the primary contact is unavailable, contact the Chairman of Long Term Outage Committee, Operations Engineering Section, FAA Airways Facilities Division at ~~(907) 271-5552~~(907) 271-5800.

Notify Airport Operations through the Engineer to coordinate construction and haul activities and comply with their instructions concerning apron closures and the movement of construction equipment, men, and materials in the vicinity of existing ramp areas, runways, or taxiways. Notification is required at least 48 hours (plus weekend hours) in advance of any planned closure or change.

Contacts. The ADOT&PF Project Engineer will be the central point of contact between the Contractor, the ANC Operations Center, and the FAA.

Project Engineer	**Airport Operations Center**
TBD	Tim Lufkin, Operations Construction Coordinator
ADOT&PF Aviation Construction	Ted Stevens Anchorage International Airport
P.O. Box 196900	P.O. Box 196960
Anchorage, Alaska 99519-6900	Anchorage, Alaska 99519-6960
Telephone TBD	Telephone (907) 266-2615 (24 hr)
Cellular TBD	Cellular (907) 266-2615
FAX TBD	FAX (907) 266-2646

Other Contacts (Note: primary contact is Airport Operations Center through the Engineer):

Dan Frisby, Field Maintenance Manager	Ron Silva, Field Electrician
Ted Stevens Anchorage International Airport	Ted Stevens Anchorage International Airport
P.O. Box 196960	P.O. Box 196960
Anchorage, Alaska 99519-6960	Anchorage, Alaska 99519-6960
Telephone (907) 266-2427	Telephone (907) 266-2423
Cellular (907) 748-2302	Cellular (907) 227-9475
FAX (907) 266-2677	FAX (907) 266-2122

Contact the FAA Systems Operations Control Center at least 45 days prior to:

(1) Closing a runway.

(2) Re-opening a closed runway.

(3) Interrupting service or removing visual or navigational aids.

(4) Displacing a runway threshold.

e. **Work Procedures and Communications within the Airport Operations Area.** Vehicles, equipment and materials shall never be parked or left standing on runways, runways safety areas, and taxiways open to aircraft. In Air Operations Areas, all vehicles shall be equipped with a functional flashing amber hazard light and all obstructions except stakes or hazard markers shall be removed during non-working hours. The Contractor shall remove construction equipment from and otherwise clear the runway and the designated Runway Safety Areas for operation of regularly scheduled airline flights. The Contractor shall remain continuously informed regarding flight schedule times.

Do not allow your labor force or equipment to interfere with the operation of aircraft on any runway or taxiway. **Aircraft always have the right of way.** Do not park vehicles or equipment or leave materials standing within 300 feet of an active runway or within 150 feet of an active taxiway or taxi lane. When work is to be performed within the limits specified, ensure that the runway or taxiway is closed to aircraft or maintain radio contact with the tower. Minimize time in restricted areas. Provide responsible personnel, such as a foreman, for radio communication.

When the contract work requires the Contractor to work within an Air Operations Area of the airport on an intermittent basis (intermittent opening and closing of all or a portion of the Air Operations Area), the Contractor shall maintain constant communications as hereinafter specified, immediately obey all instructions to vacate the Air Operations Area, and immediately obey all instructions to resume work in such Air Operations Area. Failure to maintain the specified communications or to obey instructions shall be cause for suspension of the Contractor's operations in the Air Operations Area, with no damages available from the Department, until the satisfactory conditions are provided. The Contractor shall establish and maintain communication or monitor communications with the appropriate radio facility as prescribed in the following:

(1) **Airports With Control Towers:** At those airports with control towers, the Contractor shall comply with the instructions of the airport controller. The Contractor shall continuously monitor 2-way radio communication on the appropriate ground control frequency. The Contractor shall furnish a liaison radio operator and 2-way radio communication with each work party located within the Air Operations Area. Ensure that all persons communicating with the control tower are trained by Airport Operations in radio communication procedures.

(2) **Airports Without Control Towers:**

(a) **With a Flight Service Station:** When the airport has an operating FSS, the Contractor shall comply with the instructions of a FSS Employee, a pilot, or a pilot's representative. The Contractor shall continuously monitor by 2-way radio the *Common Traffic Advisory Frequency* (CTAF) published in the current *Alaska Flight Information Supplement*. The Contractor shall furnish a liaison radio operator and 2-way radio communication with each work party located within the Air Operations Area.

(b) **Without a Flight Service Station:** At those airports without an operating FSS, the Contractor shall comply with the instructions of a FSS Employee, a pilot, or a pilot's representative. The Contractor shall continuously monitor by 2-way radio the *Common Traffic Advisory Frequency* (CTAF) published in the current *Alaska Flight Information Supplement*. The Contractor shall furnish 2-way radio communication with each work party located within the Air Operations Area and arrange for all communication with aircraft through one liaison radio operator.

f. **Haul Routes and Hauling Restrictions.** Reconstruction of roads affecting access to areas around ANC may take place during the duration of this project. Haul routes may require adjustment and delays may be encountered. Plan your work accordingly. Claims due to delays caused by such

projects will not be considered. Confine your vehicles to the haul routes and work areas shown on the plans. Alternate haul routes require approval by the Engineer and the Airport Operations Center prior to use. The operator of any vehicle hauling material or equipment on the project is required to possess an Engineer approved map of the designated project haul route. The operator is required to present the map to any Department employee upon request. Any driver failing to display the map will be required to cease work until their vehicle is equipped with a copy of the approved map.

Any person working on the project that hauls material or equipment outside of the designated haul route will have their Ramp Operator's License suspended for the duration of the project. Any vehicle used on the project to haul material or equipment outside of the designated haul route will have its Ramp Access Permit suspended for the duration of the project. Operating unloaded vehicles is considered a haul.

Photographs, video tape, or the written testimony of residents living near Northern Lights Boulevard will be considered adequate proof of individual vehicles hauling outside of the project's designated haul route. For this project, the legal load on Northern Lights Boulevard is zero (0).

Refer to subsection GCP 50-12 for additional legal load restrictions.

You are responsible for the maintenance and restoration of all roads that are utilized for hauling purposes in the construction of this project. Condition of haul routes before and after construction will be documented in accordance with subsection GCP 70-11 and by a joint inspection with the Engineer, Contractor, and ANC Operations. Return road conditions to at least their original condition upon completing the work. The Department will not make final payment until all haul routes are restored to at least their original condition. Provide water or other dust palliative and appropriate distribution equipment as required for dust control on haul routes and work areas.

Assign one laborer with a hand broom to sweep off excess material that accumulates on the outside of trucks during loading. Each truck will be hand swept before leaving the work areas.

Comply with the requirements of subsection GCP 50-13 to avoid placing foreign objects and debris (FOD) or any debris capable of causing damage to aircraft landing gears or propellers or of being ingested in jet engines on surfaces in active aircraft movement areas. Maintain a sweeper truck at the job site at all times to clean loose material immediately if it is spilled on any runway or taxiway. Cleaning spilled material from adjacent taxiways, taxi lanes or ramp areas is of primary concern to the ANC Operations Center. Therefore, upon discovery of spilled material on the haul route that you are not cleaning up, the Engineer or his representative will present a hand written memo to your on-site foreman or superintendent stating the location of the spilled material and the time of the memo. You will then have thirty (30) minutes to complete cleanup operations after being notified of the spill. Failure to complete cleanup operations within thirty (30) minutes of receipt of the memo or failure to maintain a sweeper truck at the job site will result in institution of an order from the Engineer for you to cease all hauling operations. If you fail to meet these conditions, the Department reserves the right to hire another contractor to accomplish cleanup activities and to reduce the contract amount by this cost plus costs incurred by the Department to implement the cleanup contract.

Clean all runway and taxiway lights prior to opening to aircraft.

g. Utilities. Comply with subsection GCP 50-06 regarding your responsibility to notify utilities, secure all utility locates, and maintain uninterrupted service of existing utilities as a subsidiary obligation. Ensure that all lighting systems, telecommunications, and control cables remain in operation continuously throughout the construction period except as noted in the plans and specifications. Facilities that are directly related to work items for this project may be placed out of service only as long as necessary to make the alterations as shown on the plans. Obtain permission from the Engineer before taking any of the above facilities out of service. Provide at least 72 hours final notice to the Airport Operations Center through the Engineer before placing any airport lighting or NAVAIDS out of service. Notify ANC Airfield Maintenance (266-2425) when work is expected to begin for de-

energizing any circuit. Upon completion of each stage, notify ANC Airfield Maintenance before energizing that portion of the system.

Coordinate requests to temporarily remove any other underground utilities from service with the Engineer.

h. **After Hours.** During non-working hours, remove all materials that are subject to being blown onto active areas of the airport.

Thirty (30) minutes before shutting down construction operations for each day, coordinate through the Engineer, a joint inspection of the construction site with the Airport Operations Center.

i. **Staging Areas.** Locations for Contractor staging areas are shown on the plans. These locations are for your exclusive use for the full time that you are working on the project. No utilities are available at the sites.

Use of staging areas is limited to the storage of construction equipment and supplies used for construction under this contract. Drip pans are required for all powered equipment parked on unpaved surfaces.

Prior to occupying a staging area, mark the staging area limits with lath and flagging. Arrange for a joint inspection with the Engineer and ANC Operations to record the original condition of the staging area. Marking of the staging areas is subsidiary to item G-135a, Construction Surveying by the Contractor. Final payment is subject to the stipulation that each staging area is regraded and reseeded as required to restore to original condition as noted in the initial joint inspection or as approved by the Engineer. Restoration of staging areas is considered subsidiary and no additional payment will be made.

Concrete and asphalt plants or crushers are not permitted on airport property.

80-05 CHARACTER OF WORKERS, METHODS, AND EQUIPMENT. The Contractor shall employ sufficient labor and equipment to complete the work required under the Contract and to complete it on time.

The Contractor shall ensure that all workers on the project have the skills and experience necessary to properly perform their assigned work. Workers engaged in special work or skilled work shall have sufficient experience in that work and in the operation of the equipment required to properly perform that work.

The Contractor shall comply with any written order by the Engineer to remove workers, who, in the opinion of the Engineer, violate operational regulations, violate construction safety plan requirements, violate security plan requirements, perform the work in an unskilled manner, who are intemperate or disorderly, or who jeopardize the safety of the public, other workers or Engineer's personnel. The Contractor shall allow removed workers to return to the project only with the Engineer's written permission. The Engineer may suspend the work if the Contractor fails to furnish suitable and sufficient personnel necessary to perform the work, or fails to remove any worker at the Engineer's order.

The Contractor shall not use prisoner labor on the project.

The Contractor shall use equipment of the appropriate size and mechanical condition to produce the specified quality and quantity of work by the means specified in the Contract, if any, and shall ensure that the equipment does not damage roadways or property.

The Contractor shall ensure all equipment, materials, and articles incorporated into the work are new and of the specified quality, unless the Contract specifically permits otherwise.

The Contractor shall provide the Engineer with a list of all powered equipment that will be used on the project, showing the make, model, year, capacity, horsepower, and related information. The Contractor shall

update this list when equipment is added or removed from the work site, but need not update more frequently than weekly.

When the methods and equipment to be used by the Contractor are not prescribed by the contract, the Contractor is free to use any method, means or equipment that is satisfactory to produce the specified work in conformity with the Contract, except as provided above. At the request of the Engineer, the Contractor shall demonstrate that the method, means and equipment chosen will produce the work specified in the Contract in the time allowed under the Contract. The Contractor shall bear all costs and impacts associated with any means, methods and equipment chosen by the Contractor. No suggestion, statement or observation from the Engineer or other Department representatives shall alter this responsibility.

If the Contract specifies a particular method, means or type of equipment for performance of the work, the Contractor must use that method, means or equipment unless the Contractor first requests, in writing, permission to alter the Contract requirement and receives prior written approval from the Engineer. The written request shall include a full description of the methods and equipment proposed and of the reasons for desiring to make the change. If approval is given, it will be on the condition that the Contractor will be fully responsible for producing work in conformity with contract requirements. If, after trial use of the substituted methods or equipment, the Engineer determines that the work produced does not meet contract requirements, the Contractor shall discontinue the use of the substitute method or equipment and shall complete the remaining work with the specified methods and equipment. The Contractor shall remove any deficient work and replace it with work of specified quality, or take such other corrective action as the Engineer may direct. No change will be made in basis of payment for the contract items involved, nor in contract time, as a result of authorizing a change in methods or equipment under this subsection, except as specifically provided under Subsection 40-08.

80-06 CONTRACT TIME, EXTENSION OF CONTRACT TIME AND SUSPENSION OF WORK. Contract time will be specified in Calendar Days or by specific Completion Date.

a. Calendar Days. When the contract time is specified on a calendar days basis, all work under the Contract shall be completed within the number of calendar days specified. If no starting day is specified in the Contract, the count of Contract time begins on the day following receipt of the Notice to Proceed by the Contractor.

Calendar days shall continue to be counted against Contract time until and including the date of project completion. Calendar days shall not be counted during the period from November 1 through April 30, except for days that the Contractor is working on the project site.

b. Completion Date. When the contract time is specified on a completion date basis, all work under the Contract shall be completed by the specified completion date.

c. Reasons for Suspension of Work and Extension of Contract Time. The Department may order a suspension of work for any reason listed in Items c.(1) through c.(16).

The Department shall not pay additional compensation, but may extend Contract time only, if there are delays in the completion of controlling items of work from unforeseeable causes that are beyond the Contractor's control and are not the result of the Contractor's fault or negligence, including:

(1) Acts of God;

(2) Acts of the public enemy;

(3) Fires;

(4) Floods;

(5) Epidemics;

(6) Quarantine restrictions;

(7) Strikes;

(8) Freight embargoes;

(9) Unusually severe weather;

(10) According to Subsection 50-06.d.(4), delays by utility owners beyond completion dates specified in the Special Provisions for relocating or adjusting utilities and related facilities; or

(11) Delays of subcontractors, suppliers and fabricators from unforeseeable causes beyond the control of the subcontractors, suppliers or fabricators and that are not the fault of the subcontractors, suppliers or fabricators, including those causes listed in this Subparagraph c, Items (1) through (10).

No additional Contract time or additional compensation will be allowed due to delays caused by or suspensions ordered due to:

(12) Failure to correct unsafe conditions for the workers or the public;

(13) Adverse weather that is not unusually severe;

(14) Failure to carry out Contract provisions;

(15) Failure to carry out orders given by the Engineer; or

(16) Failure to timely obtain materials, equipment, or services.

The Contractor shall notify the Engineer as soon as the Contractor becomes aware of any act or occurrence that may form the basis of a request for a time extension under this section. The Contractor shall submit a request for a time extension to the Engineer within 10 days of the act or occurrence, and if an agreement is not reached, the Contractor may submit a Claim under Subsection 50-17.

The time allowed in the Contract, as awarded, is based on performing the original estimated quantities of work set out in the bid schedule. An assertion that insufficient time was originally specified shall not constitute a valid reason for extension of contract time. If satisfactory fulfillment of the Contract requires extra work, the Department may extend Contract time on a basis commensurate with the amount and difficulty of the extra work, provided that the extra work is for a controlling item.

d. Suspension of Work. The Engineer will suspend work on the project, in whole or in part, for such periods and for such reasons as the Engineer determines to be reasonable, necessary, in the public interest, or for the convenience of the Department.

(1) The Engineer will issue a written order to suspend, delay, or interrupt all or any part of the work. The Contractor shall not be compensated for the suspension, delay, or interruption if it is imposed for a reasonable time under the circumstances.

(2) Unless another Contract section specifically provides otherwise, the Contractor will be compensated by equitable adjustment for a suspension, delay, or interruption of the work only if:

(a) The period of suspension, delay, or interruption is for an unreasonable time under the circumstances and another Contract section allows compensation in the event of a

suspension, delay, or interruption of the work under the circumstances that actually caused the suspension, delay, or interruption; or

(b) The delay, suspension, or interruption results from the Department's failure to fulfill a contractual obligation to the Contractor within the time period specified in the Contract or, if no time period is specified, within a reasonable time.

(3) No equitable adjustment will be made under this subsection for any suspension, delay, or interruption of the work if the Contractor's performance would have been suspended, delayed, or interrupted by any other cause for which:

(a) The Department is not responsible under the Contract, including the Contractor's fault or negligence; or

(b) An equitable adjustment is either provided for or excluded under any other section of this Contract.

(4) Claims for equitable adjustments under this section shall be filed under Subsection 50-17 except that:

(a) The Contractor must give written notice of intent to claim no later than 20 days after the event giving rise to the delay, suspension, or interruption; and

(b) The claim may not include any costs incurred more than 20 days before the Contractor files the Contractor's written notice of intent to claim.

80-07 FAILURE TO COMPLETE ON TIME. For each calendar day that the work is not substantially complete after the expiration of the Contract time or the completion date has passed, the Engineer shall deduct the full daily charge corresponding to the original Contract amount shown in Table 80-1 from progress payments.

For each calendar day that the work is substantially complete but the project is not complete, after the expiration of the Contract time or the completion date has passed, the Engineer shall deduct 20 percent of the daily charge corresponding to the original Contract amount shown in Table 80-1 from progress payments.

If no money is due the Contractor, the Department may recover these sums from the Contractor, from the Surety, or from both. These are liquidated damages and not penalties. These charges shall reimburse the Department for its additional administrative expenses incurred due to the Contractor's failure to complete the work within the time specified.

TABLE 80-1
DAILY CHARGE FOR LIQUIDATED DAMAGES
FOR EACH CALENDAR DAY OF DELAY

Original Contract Amount		**Daily Charge**
From More Than	To and Including	
$ 0	$ 100,000	$ 300
100,000	500,000	550
500,000	1,000,000	750
1,000,000	2,000,000	1,000
2,000,000	5,000,000	1,500
5,000,000	10,000,000	2,500
10,000,000	---------	3,000

Permitting the Contractor to continue work after the Contract time has elapsed or the completion date has passed does not waive the Department's rights to collect liquidated damages under this section.

80-08 DEFAULT OF CONTRACT. The Contracting Officer will give a written Notice of Default to the Contractor and the Surety if the Contractor:

a. Fails to begin work under the Contract within the time specified;

b. Fails to perform the work with sufficient workers, equipment, or materials to ensure the prompt completion of the work;

c. Performs the work unsuitably or neglects or refuses to remove materials or to replace rejected work;

d. Discontinues the prosecution of the work;

e. Fails to resume work that has been discontinued within a reasonable time after notice to do so;

f. Becomes insolvent except that if the Contractor declares bankruptcy, termination shall be according to the Federal Bankruptcy Code. In the event that the Contractor declares bankruptcy, the Contractor agrees that the Contract will be assumed by the Surety in a timely manner so as to complete the Contract by the date specified in the Contract;

g. Allows any final judgment to stand against the Contractor unsatisfied for a period of 60 days;

h. Makes an assignment for the benefit of creditors, without the consent of the Engineer;

i. Fails to comply with applicable minimum wage or civil rights requirements;

j. Is a party to fraud, deceit, misrepresentation, or malfeasance in connection with the Contract; or

k. Fails to perform the work in an acceptable manner for any other cause whatsoever.

The written Notice of Default will include a notice to cure and will establish a date by which the cure must be completed. The Contracting Officer may allow more time to cure than originally stated in the Notice to Default if the Contracting Officer deems it to be in the best interests of the Department. Failure to cure the delay, neglect, or default within the time specified in the Contracting Officer's Notice of Default authorizes the Department to terminate the contract. The Department will provide the Contractor and the Contractor's Surety with a written Notice of Termination.

After the Notice of Termination is issued, the Department may take over the work without further notice; may complete it by itself, by contract or otherwise; and may take possession of and use materials, appliances, equipment, or plant on the work site necessary for completing the work.

The Department may transfer the obligation to perform the work from the Contractor to the Surety. In that event, the Surety shall submit its plan for completion of the work, including any contracts or agreements with third parties for completion, to the Department for approval before beginning work. The Surety must follow the Contract requirements for approval of subcontracts, except that the limitation on percent of work subcontracted will not apply. On receipt of the transfer notice, the Surety shall take possession of all materials, tools, equipment, and appliances at the work site, employ an appropriate work force, and complete the Contract work as specified. The Contract specifications and requirements shall remain in effect, except that the Department will make subsequent Contract payments directly to the Surety. The Contractor forfeits any right to claim for the work and is not entitled to receive any further balance of the amount to be paid under the Contract.

The Contractor and the Contractor's Surety are jointly and severally liable for any damage to the Department resulting from the Contractor's delay, neglect, or default, whether or not the Department terminates the

Contractor's right to prosecute the work. The Department's damages include any increased costs incurred by the Department in completing the work or paying for the work to be completed. The Department's rights and remedies are in addition to any other rights and remedies provided by law or under the Contract.

If, after notice of termination of the Contractor's right to proceed under this clause, it is determined that the Contractor was not in default, or that the default was excusable, the rights and obligations of the parties will be determined under Subsection 80-09, Termination for Convenience.

80-09 TERMINATION FOR CONVENIENCE.

a. Notice. The Contracting Officer may terminate the Contract in whole or in part due to:

(1) Executive Orders of the President of the United States or the Governor of the State of Alaska with respect to the prosecution of war or the interest of national defense, or any disaster declaration.

(2) Restraining orders or injunctions by a court of competent jurisdiction affecting prosecution of the work based on acts or omissions of persons or agencies other than the Contractor.

(3) Any reason determined by the Contracting Officer to be in the best interest of the Department.

The Contracting Officer will issue a written Notice of Termination to the Contractor. The Notice of Termination shall state the extent to which performance of work under the Contract is terminated, the effective date of the termination, and for which of the above-listed reasons the Contract is terminated.

b. Required Actions. Unless otherwise directed by the Contracting Officer, upon receipt of a Notice of Termination the Contractor shall immediately:

(1) Stop work as directed in the Notice.

(2) Place no further orders or subcontracts for materials, services, or facilities except as approved to complete work not terminated.

(3) Terminate all orders and subcontracts for the terminated work.

(4) Accomplish either (a) or (b) below as directed by the Contracting Officer:

(a) Assign to the Department all right, title and interest in any terminated orders or subcontracts. The Contracting Officer will settle all claims on the terminated orders or subcontracts.

(b) Settle any outstanding liabilities and claims arising from termination of orders and subcontracts. Settlements must be limited to costs allowed under this Section.

(5) Submit to the Contracting Officer a list, certified as to quantity and quality, of all materials acquired or produced for incorporation into the project and that are properly allocable to the terminated portion of the project, exclusive of items disposed of under Subsection 80-09.b.(6), below.

(6) Dispose of materials in the Contractor's possession or control that were acquired or produced but not incorporated into the project as of the termination date as directed by the Contracting Officer under either (a) or (b) below:

(a) Transfer title and deliver the materials to the Department. The Department will pay for the materials at the actual cost delivered to the project or storage site, including transportation charges, to which cost 15% will be added.

(b) Sell the materials. Credit will not have to be extended to prospective purchasers.

The Contractor may acquire the materials if the Contracting Officer approves the sale price and the Contractor meets any other conditions prescribed by the Contracting Officer.

At the sole discretion of the Contracting Officer, the proceeds of any sale, transfer, or disposition of materials may be:

(a) Applied to reduce any payments to be made by the Department under the Contract;
(b) Credited to the cost of the work; or
(c) Paid in any other manner as directed.

(7) Deliver to the Department completed or partially completed plans, drawings, information, and other property required to be furnished under the Contract.

(8) Take all necessary actions and comply with all directives to protect contract-related property in which the Department has or may acquire an interest.

(9) Complete work not terminated.

The Contractor shall proceed immediately with performance of the above obligations notwithstanding any delay in determining or adjusting the amount of any item or reimbursable cost under this clause.

c. Claim. The Contractor shall submit any termination claim to the Contracting Officer within 90 days after the effective date of termination, unless the date for submitting a claim is extended in writing by the Contracting Officer.

(1) Without duplication of any amount paid for under Subsection 80-09.b., the claim may be for the total of:

(a) Costs incurred in performing the terminated work from the date of Contract award to the effective date of the termination subject to the provisions of 80-09.c.(2) regarding reimbursement of equipment costs and 80-09.c.(3) regarding unallowable items.

(b) Payments approved by the Contracting Officer under 80-09.b.(4)(b) to settle the termination claims of suppliers and subcontractors to the extent not covered under 80-09.c.(1)(a).

(c) Reasonably incurred costs for:

1. Accounting, legal, clerical, and other costs reasonably necessary for preparation of the termination claim and settlement negotiations, excluding costs incurred after the date an appeal is filed with the Appeals Officer under 80-09.h.

2. Settling subcontractor and supplier claims, excluding the amounts of those settlements paid under 80-09.c.(1)(b).

(d) Reasonable profit on the costs included in Subsection 80-09.c.(1)(a) based on the Contractor's bid rate for profit or as determined under any other reasonable accounting method. However, if it appears that the Contractor would have sustained a loss on the entire Contract had it been completed, the Contracting Officer will allow no profit and will reduce the settlement to reflect the indicated rate of loss under Subsection 80-09.d. The Department will not pay profit on costs included in Subsections 80-09.c.(1)(b) and 80-09.c.(1)(c).

(2) Equipment claims will be reimbursed as follows:

(a) Contractor-owned equipment usage, based on the Contractor's ownership and operating costs for each piece of equipment as determined from the Contractor's accounting records. Do not base equipment claims on published rental rates.

(b) Idle time for Contractor-owned equipment, based on the Contractor's internal ownership and depreciation costs. Idle equipment time is limited to the actual period of time equipment is idle as a direct result of the termination, not to exceed 30 days. Operating expenses will not be included for payment of idle equipment time.

(c) Rented equipment, based on reasonable, actual rental costs. Equipment leased under "capital leases" as defined in Financial Accounting Standard No. 13 will be considered Contractor-owned equipment. Equipment leased from an affiliate, division, subsidiary or other organization under common control with the Contractor will be considered Contractor-owned equipment, unless the affiliate, division, subsidiary or other organization has an established practice of leasing to unaffiliated lessees.

(3) The following costs are not payable under a termination settlement agreement or Contracting Officer's determination of the termination claim, or on appeal:

(a) Loss of anticipated profits or consequential or compensatory damages.

(b) Unabsorbed home office overhead (also termed "General & Administrative Expense") related to ongoing business operations.

(c) Bidding and project investigative costs.

(d) Direct costs of repairing equipment to render it operable for use on the terminated work.

d. Adjustment for Loss. If the Contractor would have sustained a loss on the entire Contract had it been completed, the Department will not pay the Contractor more than the total of:

(1) The amount due for termination claim costs under Subsection 80-09.c.(1)(c); plus

(2) The remainder of the total allowable claim amount due reduced by multiplying the remainder by the ratio of (a) the total contract price to (b) the remainder plus the estimated cost to complete the entire Contract; minus

(3) All disposal and other credits, all advance and progress payments and all other amounts previously paid under the Contract.

e. Deductions. In arriving at the amount due under this Subsection, the Department will deduct:

(1) All previous payments made before termination;

(2) Any claim which the Department may have against the Contractor;

(3) The proceeds of the sale or transfer of any materials, supplies, or other items acquired for the terminated work and not otherwise recovered by or credited to the Department;

(4) All partial payments made under this Section; and

(5) Any adjustment for loss determined under Subsection 80-09.d.

f. Agreed Settlement. The Contractor shall make every effort to arrive at a claim settlement with the Contracting Officer that is fair to both parties, that reflects the reasonable and allocable incurred

costs allowable under Subsection 80-09.c, that includes a profit under Subsection 80-09.c.(1)(d) or, where appropriate, a loss adjustment under Subsection 80-09.d., and that takes into account the Contractor's reasonable business judgment in performing the work.

The total settlement, whether determined under this Subsection 80-09.f. or under Subsection 80-09.g., exclusive of the costs listed in Subsection 80-09.c.(1)(c), may not exceed the total contract price as reduced by previous payments made and the contract price of work not terminated.

If an agreement is reached in whole or in part, the Department will amend the contract and will pay the agreed amount.

g. **Determined Settlement.** If the Contractor fails to submit a termination claim within the time allowed, or if an agreement is not reached on the amount due, the Contracting Officer may determine in a Contracting Officer's Decision, the amount due under Subsection 80-09 on the basis of information available to the Department.

h. **Right of Appeal.** The Contractor may appeal a Contracting Officer's Decision within the time and in the manner specified in Subsection 50-17.

i. **Partial Payments.** In the sole discretion of the Contracting Officer, the Department may make partial payments against costs incurred by the Contractor in connection with the terminated portion of the Contract. The sum of these partial payments will not exceed the Contracting Officer's estimate of the total amount that will be due as a result of the termination. The estimate will be based on available information. The Contracting Officer may adjust the estimate as additional information becomes available. If the Contracting Officer orders an audit of the Contractor's financial or project records, the Contracting Officer may decline to make partial payments until the audit is completed.

j. **No Waiver of Rights.** The termination of work by the Department does not affect or extinguish any of the rights of the Department against the Contractor or the Contractor's Surety then existing or which may thereafter accrue. Any retention or payment of monies by the Department due under the terms of the Contract will not release the Contractor or the Contractor's Surety from the contractual obligations or warranties made under Subsection 70-19 or elsewhere in the Contract.

k. **Retaining Records.** The Contractor shall unless otherwise provided for in the Contract or by applicable statute, keep all books, records, documents, and other evidence bearing on the Contractor's cost and expenses under the Contract and relating to the work terminated for a period of 3 years after final settlement under this Contract. Records must be made available to the Department at the Contractor's office and at all reasonable times.

l. **Definitions.** In this Subsection 80-09, the term "cost" and the term "expense" mean a monetary amount in U.S. Dollars actually incurred by the Contractor, actually reflected in the Contractor's contemporaneously maintained accounting or other financial records and supported by original source documentation.

m. **Cost Principles.** The Department may use the federal cost principles at 48 CFR §§ 31.201-1 to 31.205-52 (or succeeding cost principles for fixed price contracts) as guidelines in determining allowable costs under this Subsection to the extent they are applicable to airport construction contracts and consistent with the specifications of this Contract. The provisions of this contract control where they are more restrictive than, or inconsistent with, these federal cost principles.

SECTION 90

MEASUREMENT AND PAYMENT

90-01 GENERAL. Wherever the Contract provides that certain work is subsidiary or it is without extra compensation, the payment for that work is included in the payment for other items of work, and no further or additional payment shall be made for that work.

When more than one type of material or work is specified for a pay item, letter or numeric suffixes included within parentheses following the pay item number are used to differentiate the types.

Lump sum items will not be measured for payment. The Contractor shall accept the bid amount for a lump sum item as complete payment for all work necessary to complete that item. Quantities shown for lump sum items are approximate. No adjustment in the lump sum price will be made if the quantity furnished is more or less than the estimated quantity unless the Contract specifically states otherwise.

90-02 MEASUREMENT OF QUANTITIES. All work completed under the Contract will be measured using the U.S. Customary system of measure. The Engineer may agree for purposes of making progress payments to use a method of measurement other than the methods described below. However, all final payments for quantities will be calculated using one or more of the methods of measurement described below and in the applicable pay item section. Unless otherwise specified, work will be measured as follows:

a. **Acre (43,560 ft^2).** Horizontally, unless specified on the ground surface. No deductions will be made for individual fixtures with an area of 500 ft^2 or less.

b. **Contingent Sum.** Measured as specified in the Contract or Directive authorizing the work. The method of payment may include: (1) a lump sum basis, (2) a price multiplied by the units of work performed, (3) a pay adjustment based on the quality of work, or (4) a deduction from the contract amount.

c. **Cubic Yard (yd^3).** At the location specified using one of the following methods:

   (1) **Average End Area.** End area is the calculated area between original ground cross section and either the design cross section or at the Engineer's discretion the final cross section. Volume of material is calculated using the average of end areas multiplied by the distance along centerline between end areas. In extreme cases where most of the earthwork lies along a single horizontal curve the Engineer may compute volume using the average of end areas multiplied by the distance along centroid of cross section between end areas.

   (2) **Three-Dimensional.** Where it is impractical to measure material by cross sectioning due to erratic location of isolated deposits, acceptable methods involving three-dimensional measurements may be used.

   (3) **Neat Line.** Structures will be measured according to neat lines shown on the Plans or as altered to fit field conditions.

   (4) **Nominal.** Volume calculated as nominal width times nominal thickness times the average length of each piece.

   (5) **Weight.** With the Engineer's written approval, material that is specified to be measured by volume may be weighed and converted to volume for payment purposes. The Engineer will determine the appropriate conversion factors. When liquid asphalt is a pay item, ASTM D 4311 will be used to convert from weight to volume at 60 °F.

d. **Cubic Yard Vehicle Measure (CYVM).** Material measured by volume in the hauling vehicle will be measured at the point of delivery. Vehicles may be of any acceptable size or type provided that the volume of the actual contents may be readily and accurately determined. Vehicles shall be loaded to the measured vehicle volume. If vehicles are not loaded to the measured vehicle volume, the Engineer at their discretion, may apply a percentage of full factor to the measured volume. Loads shall be leveled when directed. No payment will be made for loads that exceed the legal capacity of the vehicle.

e. **Linear Foot (LF).** From end to end, in place, parallel to the centerline of the item or ground surface on which the items are placed.

f. **Thousand Feet Board Measure (MBM).** Nominal volume based on nominal widths and thickness times actual extreme length of each piece. One board foot = 1 ft^2 X 1 inch thick.

g. **Thousand Gallon (MGal).** By one of the following methods:

   (1) Measured or calibrated volume tank;

   (2) Metered volume, using a certified calibrated meter; or

   (3) Weighed under this subsection and converted to volume, using a specified or approved conversion factor.

h. **Mile.** From end to end, measured horizontally along centerline.

i. **Pound.** Using a certified scale or the net weight of packaged material as labeled by the manufacturer. The Engineer will accept nominal weights for standard manufactured items, unless otherwise specified. The Engineer will accept industry-established manufacturing tolerances, unless otherwise specified.

j. **Square Foot (ft^2).** Parallel to the surface being measured. No deductions will be made for individual fixtures with an area of 1 ft^2 or less. Transverse measurement for area computations will be the neat dimensions shown on the Plans or as directed by the Engineer.

k. **Square Yard (yd^2).** Parallel to the surface being measured. No deductions will be made for individual fixtures with an area of 1 yd^2 or less. Transverse measurement for area computations will be the neat dimensions shown on the Plans or as directed by the Engineer.

l. **Station (100 feet).** Horizontally, parallel to centerline.

m. **Ton (2,000 pounds).** By one of the following methods:

   (1) Commercial Weighing System. Permanently installed and certified commercial scale that meets the requirements for the project weighing system.

   (2) Project weighing system. As specified under Subsection G-130.

   (3) Invoices. If bulk material is shipped by truck or rail and is not passed through a mixing plant, furnish a supplier's invoice with net weight or volume converted to weight. Periodic check weighing may be required.

   Trucks used to haul material being paid for by weight shall be weighed empty at least once daily and at such times as directed. Each truck shall bear a plainly legible identification mark.

Due to possible variations in the specific gravity of the aggregates, the measured weight may vary from the weight used to estimate bid quantity, and no adjustment in contract unit price will be made because of such variation.

If material is shipped by rail, the certified car weight may be accepted provided that only the actual weight of material is paid for. Car weights will not be acceptable for material to be passed through mixing plants.

Net certified scale weights or weights based on certified volumes in the case of rail shipments may be used as a basis of measurement, subject to correction when material has been lost, wasted, or otherwise not incorporated into the work.

When materials are shipped by truck or transport, net certified weights or volume, subject to correction for loss or foaming, may be used for computing quantities, in the Engineers discretion.

All aggregate paid by weight shall be less than 2% over optimum moisture.

(4) Barge Displacement Method. When the barge displacement method is proposed the Contractor shall furnish water loading charts, certified by a Professional Engineer for all barges utilized in the hauling of the material. If barge hauled material is stockpiled, loss shall be estimated by the Engineer and shall be deducted from the total weight measured to allow for stockpile loss. Any material wasted or lost between the barge and the point where it is placed in final position shall be estimated and the loss deducted by the Engineer.

When standard manufactured items are specified such as fence, wire, plates, rolled shapes, pipe conduit, etc., and these items are identified by unit weight, section dimensions, etc., such identification will be considered to be nominal weights or dimensions. Unless more stringently controlled by tolerances in cited specifications, manufacturing tolerances established by the industries involved will be accepted.

90-03 SCOPE OF PAYMENT. The Department will make payment at the Contract price or prices for each item shown on the bid schedule or as modified by change order with specified price adjustments. The Contractor shall accept the Contract prices as full and complete payment for (a) furnishing all equipment, materials, tools, and labor necessary to complete the work in a complete and acceptable manner, and for (b) all of the Contractor's risk, loss, damage, or expense of whatever character arising from or relating to the work and performance of the work.

90-04 COMPENSATION FOR ALTERED QUANTITIES. Payment to the Contractor for unit price items shall be made only for the actual quantities of work performed and accepted or materials furnished, in conformance with the Contract. When the accepted quantities of work or materials vary from the quantities stated in the bid schedule, the Contractor shall accept payment at the original Contract unit prices for the quantities of work and materials furnished, completed and accepted as payment in full. Payment at the Contract unit price shall compensate the Contractor for all costs, expenses, and profit that the Contractor is entitled to receive for the altered quantities, except as provided below:

a. When the final quantity of a Major Contract Item varies more than 25 percent above or below the bid quantity, either party to the Contract may receive an equitable adjustment in the Contract unit price of that item. If the final quantity of work is:

(1) Greater than 125 percent of the bid quantity, the equitable adjustment will be made only for those units that are in excess of 125 percent of the bid quantity.

(2) Less than 75 percent of the bid quantity, the equitable adjustment will be made for those units of work done and accepted, except that the total payment for the item shall not exceed 75 percent of the total amount bid for the item.

Except as provided above and in Subsection 40-02, no allowance shall be made for any increased expenses, loss of expected reimbursement, or loss of anticipated profits suffered or claimed, either directly from alterations in quantities or indirectly from unbalanced allocations among the contract items on the part of the bidder and subsequent loss of expected reimbursements, or any other causes.

90-05 COMPENSATION FOR EXTRA WORK ON TIME AND MATERIALS BASIS. When the Engineer orders extra work to be performed on a time and materials basis, compensation will be computed as follows:

a. Labor. Based on the sum of **(1)** through **(6)**:

(1) Total hours worked times the straight time rate of pay. The rates of pay are those indicated on the certified payroll for all labor and foremen in direct charge of the specific operations. Rates shall not exceed those for comparable labor currently employed on the project, and shall not include general superintendence.

(2) Overtime hours worked times the difference between the overtime rate and the straight time rate. No markup is allowed.

(3) Fringe benefit rate times the total hours worked. Fringe benefits include Health and Welfare, Pension Fund, etc., when such amounts are required by collective bargaining agreement or other employment contracts generally applicable to the classes of labor employed on the project.

(4) Workers' Compensation Insurance at 8 percent of (1). The actual net rate may be used if it exceeds 10 percent and if proof of rates is furnished within 30 days of the completion of the extra work.

(5) Either subsistence and travel allowances or prorated camp costs. If an employee is due and receives subsistence or camp privileges on their days off, divide that cost by the number of days worked that week and add to their daily subsistence entitlement. If the employee did not work an entire day on time and materials work, prorate the entitlement for the hours worked on time and materials.

(6) Markup at 35 percent of the sum of (1), (3), (4), and (5). This includes and shall fully compensate the Contractor for all overhead and profit, including general superintendence, additional bond, property damage liability insurance, unemployment insurance contributions, social security and other taxes, administrative overhead costs, and profit.

b. Materials. Actual invoiced material and delivery costs plus 15 percent markup. The material must be approved and incorporated into the work. The Contractor shall furnish to the Engineer proof of payment for materials used in the work plus applicable transportation charges. For Contractor-produced materials, certify in writing the Contractor's actual direct costs, the quantities used, and attach cost spreadsheets and production documentation to verify the costs.

c. Equipment. Includes machinery and special equipment (other than small tools) necessary for the work and authorized by the Engineer. No additional compensation will be made for overhead, profit, maintenance, service, repairs, fuels, lubricants, or replacement parts.

(1) Hourly Rental Rate. Based on rental rates in the current edition and appropriate volume of the *Rental Rate Blue Book for Construction Equipment*, published by PRIMEDIA Information, Inc., 1735 Technology Drive, Suite 410, San Jose, CA 95110-1313.

The regular hourly rental rate is equal to the equipment rate plus the estimated hourly operating cost. These rates apply for equipment used during the Contractor's regular shift of 10 hours per day. No markup is allowed.

The equipment rate is equal to the age adjusted monthly rate for the basic equipment plus the age adjusted monthly rate for applicable attachments, both divided by 176, and multiplied by the regional adjustment factor. The equipment rate is per hour.

The age adjusted monthly rate is that resulting from application of the age adjustment formula, to eliminate replacement cost allowances in machine depreciation and contingency cost allowances.

Only the attachments required for the time and materials work will be included.

(2) **Hourly Overtime Rate.** Half of the equipment rate plus the full estimated hourly operating cost. The overtime rate will apply to hours the equipment is used in excess of 10 hours per day, either on the Contractor's normal work or on time and materials, and either on single or multiple shifts. No markup is allowed.

(3) **Hourly Stand-by Rate.** Half of the equipment rate, for equipment ordered on stand-by during the Contractor's normal work shift, not to exceed eight hours per day. No operating costs or markup is allowed.

(4) **Unlisted Equipment.** For equipment not listed in The Blue Book, the Contractor and the Engineer may agree to a rate before extra work is begun. If agreement is not reached, the Engineer has authority to establish a rate based on similar equipment in the Blue Book or prevailing commercial rates. No markup is allowed.

(5) **Leased or Rented Equipment.** Equipment that must be rented or leased specifically for work required under this section and authorized in writing by the Engineer shall be paid at invoice price plus 15 percent markup.

Equipment rented or leased for other work under the Contract and used for work under this section shall be paid based on c.(1), (2), and (3). (above) with no markup, except that the adjusted monthly rate is the monthly rate determined directly from the submitted rental or lease agreement.

(6) **Transportation of Equipment.** The actual cost of moving equipment to and from the work site. To receive reimbursement for transportation of equipment, the Contractor shall obtain the equipment from the nearest approved source and use the equipment exclusively for time and materials work. Payment for move-out will not exceed the amount of the move-in. No markup is allowed, except on operator's wages.

Basis of payment:

(a) If by common carrier: paid freight bill or invoice.

(b) If hauled with the Contractor's own resources: hourly rental rate for hauling unit plus operator wages.

(c) If equipment must be moved under its own power: half of the normal hourly rental rate plus operator's wages.

d. Work by a Subcontractor or Owner-Operator. For time and materials work performed by an approved subcontractor or owner-operator under items **a.** through **c.** above, the Contractor will receive a 5 percent markup for administrative costs. No percentage will be paid on work covered under bid items in the original Contract. No percentage over the amount covered above will be paid for work done by a lower tier subcontractor.

e. **Work by a Specialty Subcontractor.** The Contractor shall obtain the Engineer's advance agreement that the specialty item needed is beyond the Contractor's ability or expertise or that of the Contractor's other subcontractors. For work on a specialty item performed by an approved specialty subcontractor, the Contractor will receive the approved invoice cost of work or service plus a 15 percent markup for administrative costs.

f. **Records.** The Engineer will maintain a daily record of labor, equipment and materials utilized in the extra work. The Engineer will present this record to the Contractor at the end of each day's work for verification and signature.

g. **Compensation.** Payment for time and materials work will be made in the progress estimate following receipt of the verified daily records and all required supporting information from the Contractor. If, at any time, a unit price or lump sum basis of compensation is agreed to for work being performed under this subsection, that compensation will be set forth in writing as a Change Order.

90-06 PROGRESS PAYMENTS. The Department will make monthly progress payments to the Contractor based on estimates of the value of work performed and materials on hand under Subsection 90-07. At the Departments discretion, a progress payment may be made twice monthly if the value of the estimate exceeds $10,000.

If satisfactory progress is being made, the Engineer will authorize 100 percent payment for the estimated value of work accomplished, less any authorized deductions.

If the Engineer finds that satisfactory progress is not being made, the Engineer may withhold up to 10 percent of the total amount earned as retainage from subsequent progress payments. The Engineer may withhold up to 200 percent of the estimated cost to complete final punch list items as retainage until those items are complete. The Engineer will notify the Contractor in writing within eight working days of a request for a progress payment of the reasons why part or all of the payment is being withheld as retainage and what actions may be taken by the Contractor to receive full payment.

Payments of withheld amounts will be made according to AS 36.90.200. No interest will be paid on amounts withheld as retainage.

90-07 PAYMENT FOR MATERIAL ON HAND.

a. **Partial Payment.** The Engineer will make partial payment for materials designated for incorporation into the work. The material shall:

   (1) Meet Contract requirements;

   (2) Be delivered and stockpiled at the project or other approved location;

   (3) Be supported by invoices, freight bills, and other required information; and

   (4) Not be living or perishable.

b. **Payment Requests.** The Contractor shall make each payment request in writing and:

   (1) List stockpiled items, quantities of each, and stockpile location(s);

   (2) Certify that materials meet the applicable Contract specifications;

   (3) For purchased materials, attach copies of invoices, freight bills, and manufacturer's published storage recommendations;

(4) For Contractor-produced materials, attach production statements showing quantities and dates produced and copies of process quality control test results; and

(5) Include other information requested by the Engineer.

c. Storage Conditions. The Contractor shall protect material from damage or loss while in storage. The Contractor shall:

(1) Physically separate stockpiled materials from other materials at the storage location;

(2) Clearly label materials with the project name and number; and

(3) Store materials per the manufacturer's recommendations.

If storage conditions become unsatisfactory, liens are filed on any materials, or the storage location is changed without approval, the Engineer will deduct any previous payments made for such materials.

d. Method of Payment. The Engineer will include payments for acceptably stockpiled materials in the progress estimate following receipt of the Contractor's written request and all required documentation. The Engineer will:

(1) Pay for materials purchased by the Contractor at the delivered cost but not to exceed 85% of the Contract amount for those items.

(2) Pay for materials produced by the Contractor at up to 50% of the Contract amount for those items.

(3) Deduct the Department's cost to inspect materials stored off the limits of the project.

(4) Deduct partial payment quantities as they are incorporated into the project.

The Contractor shall release and discharge the Department from any liability for damages or delays related to the storage or transport of, and to the payment for, material on hand.

The Department's payment for material on hand will not constitute final acceptance by the Department.

90-08 FINAL PAYMENT. When the project has been completed as provided in Subsection 50-15, the Engineer will prepare the final estimate of the quantities of the various classes of work performed. All prior progress estimates and payments shall be subject to correction in the final estimate and payment. The final estimate will not be processed until the Alaska Department of Labor and Workforce Development has verified that final payment can be released. The Department will not process the final estimate until the Contractor completes Items **a** through **d** in the first paragraph of Subsection 50-16.

If the Contractor approves the final estimate, or does not file a claim within 90 days of receiving the final estimate, the estimate shall be processed for final payment. Final payment shall consist of the entire sum found to be due after deducting all previous payments and all amounts to be retained or deducted under the provisions of the Contract. Failure to file a claim within 90 days of receiving the final estimate is a waiver of any and all claims relating to or arising from the final estimate.

When the Contractor approves the final estimate and executes the Contractor's Release form, final payment will be processed.

The Contractor may reserve any unresolved claims that were timely filed according to Subsection 50-17 by listing those claims as exceptions on the Contractor's Release. Any claims listed as exceptions that were not

filed before the Contractor executes the final estimate will be considered null and void. Any claims filed in a timely manner but not listed on the Contractor's Release are waived and deemed released.

If the Contractor fails or declines to approve the final estimate within 90 days but does not file any claims, the Department will consider the estimate approved and process the estimate for final payment. Any subsequently raised claims will be considered null and void.

90-09 ELIMINATED ITEMS. When the Contractor is notified of the elimination of a minor Contract item, the Contractor will be reimbursed for actual work performed and all direct costs incurred before notification. In no case will any payment be made for loss of anticipated profits or overhead.

Should it become necessary to eliminate a major Contract item, an equitable adjustment will be made and the Contract modified in writing accordingly.

SECTION 100

CONTRACTOR QUALITY CONTROL PROGRAM

100-01 GENERAL. The Contractor shall assure that all materials and completed construction conform to contract Plans, technical specifications and other requirements, whether manufactured by the Contractor, or procured from subcontractors or vendors. When required, the Contractor shall establish, provide, and maintain an effective Quality Control Program that details the methods and procedures that will be used. Although guidelines are established and certain minimum requirements are specified herein and elsewhere in the contract technical specifications, the Contractor shall assume full responsibility for accomplishing the stated purpose.

The intent of this section is to enable the Contractor to establish a necessary level of control that will:

a. Adequately provide for the production of acceptable quality materials.

b. Provide sufficient information to assure both the Contractor and the Engineer that the specification requirements can be met.

c. Allow the Contractor as much latitude as possible to develop their own standard of control.

The Contractor shall be prepared to discuss and present, at the preconstruction conference, their understanding of the quality control requirements. The Contractor shall not begin any construction or production of materials to be incorporated into the completed work until the Quality Control Program has been reviewed by the Engineer. No partial payment will be made for materials subject to specific quality control requirements until the Quality Control Program has been reviewed.

The quality control requirements contained in this section and elsewhere in the contract technical specifications are in addition to and separate from the acceptance testing requirements. Acceptance testing requirements are the responsibility of the Engineer.

100-02 DESCRIPTION OF PROGRAM.

a. General Description. The Contractor shall establish a Quality Control Program to perform inspection and testing of each item of work for which it is required by the technical specifications, including those performed by subcontractors. This Quality Control Program shall ensure conformance to applicable specifications and Plans with respect to materials, workmanship, construction, finish, and functional performance. The Quality Control Program shall be effective for control of all construction work performed under this Contract and shall specifically include surveillance and tests required by the technical specifications, in addition to other requirements of this section and any other activities deemed necessary by the Contractor to establish an effective level of quality control.

b. Quality Control Program. The Contractor shall describe the Quality Control Program in a written document which shall be reviewed by the Engineer prior to the start of any production, construction, or off-site fabrication. The written Quality Control Program shall be submitted to the Engineer for review at least 5 calendar days before the preconstruction conference.

The Quality Control Program shall be organized to address, as a minimum, the following items:

a. Quality control organization;

b. Project progress schedule;

c. Submittals schedule;

d. Inspection requirements;

e. Quality control testing plan;

f. Documentation of quality control activities; and

g. Requirements for corrective action when quality control and/or acceptance criteria are not met.

The Contractor is encouraged to add any additional elements to the Quality Control Program that he/she deems necessary to adequately control all production and/or construction processes required by this contract.

100-03 QUALITY CONTROL ORGANIZATION. The Contractor's Quality Control Program shall be implemented by the establishment of a separate quality control organization. An organizational chart shall be developed to show all quality control personnel and how these personnel integrate with other management/production and construction functions and personnel.

The organizational chart shall identify all quality control staff by name and function, and shall indicate the total staff required to implement all elements of the Quality Control Program, including inspection and testing for each item of work. If necessary, different technicians can be utilized for specific inspection and testing functions for different items of work. If an outside organization or independent testing laboratory is used for implementation of all or part of the Quality Control Program, the personnel assigned shall be subject to the qualification requirements of Subsection 100-03a and 100-03b. The organizational chart shall indicate which personnel are Contractor employees and which are provided by an outside organization.

The quality control organization shall consist of the following minimum personnel:

a. Program Administrator. The Program Administrator shall be a full-time employee of the Contractor, or a consultant engaged by the Contractor. The Program Administrator shall have a minimum of 5 years of experience in airport and/or highway construction and shall have had prior quality control experience on a project of comparable size and scope as the contract.

Additional qualifications for the Program Administrator shall include at least one of the following requirements:

(1) Professional engineer with 1 year of airport paving experience acceptable to the Engineer.

(2) Engineer-in-training with 2 years of airport paving experience acceptable to the Engineer.

(3) An individual with 3 years of highway and/or airport paving experience acceptable to the Engineer, with a Bachelor of Science Degree in Civil Engineering, Civil Engineering Technology or Construction.

(4) Construction materials technician certified at Level III by the National Institute for Certification in Engineering Technologies (NICET).

(5) Highway materials technician certified at Level III by NICET.

(6) Highway construction technician certified at Level III by NICET.

(7) A NICET certified engineering technician in Civil Engineering Technology with 5 years of highway and/or airport paving experience acceptable to the Engineer.

The Program Administrator shall have full authority to institute any and all actions necessary for the successful implementation of the Quality Control Program to ensure compliance with the contract Plans and technical specifications. The Program Administrator shall report directly to a responsible officer of the construction firm. The Program Administrator may supervise the Quality Control Program on more than one project provided that person can be at the job site within 2 hours after being notified of a problem.

b. Quality Control Technicians. A sufficient number of quality control technicians necessary to adequately implement the Quality Control Program shall be provided. These personnel shall be either engineers, engineering technicians, or experienced craftsman with qualifications in the appropriate field equivalent to NICET Level II or higher construction materials technician or highway construction technician and shall have a minimum of 2 years of experience in their area of expertise.

The quality control technicians shall report directly to the Program Administrator and shall perform the following functions:

(1) Inspection of all materials, construction, plant, and equipment for conformance to the technical specifications, and as required by Section 100-05.

(2) Performance of all quality control tests as required by the technical specifications and Section 100-06.

Certification at an equivalent level, by a state or nationally recognized organization will be acceptable in lieu of NICET certification.

c. Staffing Levels. The Contractor shall provide sufficient qualified quality control personnel to monitor each work activity at all times. Where material is being produced in a plant for incorporation into the work, separate plant and field technicians shall be provided at each plant and field placement location. The scheduling and coordinating of all inspection and testing must match the type and pace of work activity. The Quality Control Program shall state where different technicians will be required for different work elements.

100-04 SUBMITTALS SCHEDULE. The Contractor shall submit a detailed listing of all submittals (e.g., mix designs, material certifications) and shop drawings required by the technical specifications. The listing can be developed in a spreadsheet format and shall include:

a. Specification item number;

b. Item description;

c. Description of submittal;

d. Specification Subsection requiring submittal; and

e. Scheduled date of submittal.

100-05 INSPECTION REQUIREMENTS. Quality control inspection functions shall be organized to provide inspections for all definable features of work, as detailed below. All inspections shall be documented by the Contractor as specified by Section 100-07.

Inspections shall be performed daily to ensure continuing compliance with contract requirements until completion of the particular feature of work. These shall include the following minimum requirements:

During plant operation for material production, quality control test results and periodic inspections shall be utilized to ensure the quality of aggregates and other mix components, and to adjust and control mix proportioning to meet the approved mix design and other requirements of the technical specifications. All

equipment utilized in proportioning and mixing shall be inspected to ensure its proper operating condition. The Quality Control Program shall detail how these and other quality control functions will be accomplished and utilized.

During field operations, quality control test results and periodic inspections shall be utilized to ensure the quality of all materials and workmanship. All equipment utilized in placing, finishing, and compacting shall be inspected to ensure its proper operating condition and to ensure that all such operations are in conformance to the technical specifications and are within the plan dimensions, lines, grades, and tolerances specified. The Program shall document how these and other quality control functions will be accomplished and utilized.

100-06 QUALITY CONTROL TESTING PLAN. As a part of the overall Quality Control Program, the Contractor shall implement a quality control testing plan, as required by the technical specifications. The testing plan shall include the minimum tests and test frequencies required by the technical specification Item, as well as any additional quality control tests that the Contractor deems necessary to adequately control production and/or construction processes.

The testing plan can be developed in a spreadsheet fashion and shall, as a minimum, include the following:

a. Specification item number (e.g., P-401);

b. Item description (e.g., Plant Mix Bituminous Pavements);

c. Test type (e.g., gradation, grade, asphalt content);

d. Test standard (e.g., ASTM or AASHTO test number, as applicable);

e. Test frequency (e.g., as required by technical specifications or minimum frequency listed in appendix C when requirements are not stated);

f. Responsibility (e.g., plant technician); and

g. Control requirements (e.g., target, permissible deviations).

The testing plan shall contain a statistically-based procedure of random sampling for acquiring test samples according to ASTM D 3665. The Engineer shall be provided the opportunity to witness quality control sampling and testing.

All quality control test results shall be documented by the Contractor as required by Section 100-07.

100-07 DOCUMENTATION. The Contractor shall maintain current quality control records of all inspections and tests performed. These records shall include factual evidence that the required inspections or tests have been performed, including type and number of inspections or tests involved; results of inspections or tests; nature of defects, deviations, causes for rejection, etc.; proposed remedial action; and corrective actions taken.

These records must cover both conforming and defective or deficient features, and must include a statement that all supplies and materials incorporated in the work are in full compliance with the terms of the contract. Legible copies of these records shall be furnished to the Engineer daily. The records shall cover all work placed subsequent to the previously furnished records and shall be verified and signed by the Contractor's Program Administrator.

Specific Contractor quality control records required for the contract shall include, but are not necessarily limited to, the following records:

a. Daily Inspection Reports. Each Contractor quality control technician shall maintain a daily log of all inspections performed for both Contractor and subcontractor operations on a form acceptable to the

Engineer. These technician's daily reports shall provide factual evidence that continuous quality control inspections have been performed and shall, as a minimum, include the following:

(1) Technical specification item number and description;

(2) Compliance with approved submittals;

(3) Proper storage of materials and equipment;

(4) Proper operation of all equipment;

(5) Adherence to Plans and technical specifications;

(6) Review of quality control tests; and

(7) Safety inspection.

The daily inspection reports shall identify inspections conducted, results of inspections, location and nature of defects found, causes for rejection, and remedial or corrective actions taken or proposed.

The daily inspection reports shall be signed by the responsible quality control technician and the Program Administrator. The Engineer shall be provided at least one copy of each daily inspection report on the work day following the day of record.

b. Daily Test Reports. The Contractor shall be responsible for establishing a system which will record all quality control test results. Daily test reports shall document the following information:

(1) Technical specification item number and description;

(2) Test designation;

(3) Location;

(4) Date of test;

(5) Control requirements;

(6) Test results;

(7) Causes for rejection;

(8) Recommended remedial actions; and

(9) Retests.

Test results from each day's work period shall be submitted to the Engineer prior to the start of the next day's work period. When required by the technical specifications, the Contractor shall maintain statistical quality control charts. The daily test reports shall be signed by the responsible quality control technician and the Program Administrator.

100-08 CORRECTIVE ACTION REQUIREMENTS. The Quality Control Program shall indicate the appropriate action to be taken when a process is deemed, or believed, to be out of control (out of tolerance) and detail what action will be taken to bring the process into control. The requirements for corrective action shall include both general requirements for operation of the Quality Control Program as a whole, and for individual items of work contained in the technical specifications.

The Quality Control Program shall detail how the results of quality control inspections and tests will be used for determining the need for corrective action and shall contain clear sets of rules to gauge when a process is out of control and the type of correction to be taken to regain process control.

When applicable or required by the technical specifications, the Contractor shall establish and utilize statistical quality control charts for individual quality control tests. The requirements for corrective action shall be linked to the control charts.

100-09 INSPECTION BY THE ENGINEER. All items of material and equipment shall be subject to inspection by the Engineer at the point of production, manufacture or shipment to determine if the Contractor, producer, manufacturer or shipper maintains an adequate quality control system in conformance with the requirements detailed herein and the applicable technical specifications and Plans. In addition, all items of materials, equipment and work in place shall be subject to inspection by the Engineer at the site for the same purpose.

Inspection by the Engineer does not relieve the Contractor of performing quality control inspections of either on-site or off-site Contractor's or subcontractor's work.

100-10 NONCOMPLIANCE.

a. The Engineer will notify the Contractor of any noncompliance with any of the foregoing requirements. The Contractor shall, after receipt of such notice, immediately take corrective action. Any notice, when delivered by the Engineer or their authorized representative to the Contractor or their authorized representative at the site of the work, shall be considered sufficient notice.

b. In cases where quality control activities do not comply with either the Contractor's Quality Control Program or the contract provisions, or where the Contractor fails to properly operate and maintain an effective Quality Control Program, as determined by the Engineer, the Engineer may:

(1) Order the Contractor to replace ineffective or unqualified quality control personnel or subcontractors.

(2) Order the Contractor to stop operations until appropriate corrective action is taken.

SECTION 110

METHOD OF ESTIMATING PERCENTAGE OF MATERIAL WITHIN SPECIFICATION LIMITS (PWL)

110-01 GENERAL. When the Specifications provide for acceptance of material based on the method of estimating percentage of material within specification limits (PWL), the PWL will be determined according to this section. All test results for a lot will be analyzed statistically to determine the total estimated percent of the lot that is within specification limits. The PWL is computed using the sample average (X) and sample standard deviation (Sn) of the specified number (n) of sublots for the lot and the specification tolerance limits, L for lower and U for upper, for the particular acceptance parameter. From these values, the respective Quality index(s), QL for Lower Quality Index and/or QU for Upper Quality Index, is computed and the PWL for the lot for the specified n is determined from Table 1. Analysis of test results will be based on an Acceptable Quality Level (AQL) of 95.0% and a contractor's risk of 5.0% unless otherwise specified. AQL may be viewed as the lowest percent within the specification limits of a material that is acceptable as a process average and receive 100% pay. The Contractor's risk is the probability that when the Contractor is producing material at exactly the AQL, the materials will receive less than 1.00 pay factor.

There is some degree of uncertainty (risk) in the measurement for acceptance because only a small fraction of production material (the population) is sampled and tested. This uncertainty exists because all portions of the production material have the same probability to be randomly sampled. The Contractor's risk is the probability that material produced at the acceptable quality level is rejected or subjected to a pay adjustment. The Department's risk is the probability that material produced at the rejectable quality level is accepted.

IT IS THE INTENT OF THIS SECTION TO INFORM THE CONTRACTOR THAT, IN ORDER TO CONSISTENTLY OFFSET THE CONTRACTOR'S RISK FOR MATERIAL EVALUATED, PRODUCTION QUALITY (USING POPULATION AVERAGE AND POPULATION STANDARD DEVIATION) MUST BE MAINTAINED AT THE ACCEPTABLE QUALITY SPECIFIED OR HIGHER. IN ALL CASES, IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO PRODUCE AT QUALITY LEVELS THAT WILL MEET THE SPECIFIED ACCEPTANCE CRITERIA WHEN SAMPLED AND TESTED AT THE FREQUENCIES SPECIFIED.

110-02 METHOD FOR COMPUTING PWL. The computational sequence for computing PWL is as follows:

a. Divide the lot into n sublots according to the acceptance requirements of the specification.

b. Locate the random sampling position within the sublot according to the requirements of the specification. Make a measurement at each location, or take a test portion and make the measurement on the test portion according to the testing requirements of the specification.

c. Discard outliers as determined by ATM SP-7.

d. Find the sample average (X) for all remaining sublot values within the lot by using the following formula:

$$X = (x_1 + x_2 + x_3 + \ldots x_n) / n$$

Where:
X = Sample average of all sublot values within a lot
x_1, x_2 = Individual sublot values
n = Number of sublots

e. Find the sample standard deviation (S_n) by use of the following formula:

$$S_n = [(d_1^2 + d_2^2 + d_3^2 + \ldots d_n^2)/(n-1)]^{1/2}$$

Where:
S_n = Sample standard deviation of the number of sublot values in the set
$d_1, d_2, \ldots$ = Deviations of the individual sublot values $x_1, x_2, \ldots$ from the average value X
that is: $d_1 = (x_1 - X)$, $d_2 = (x_2 - X) \ldots d_n = (x_n - X)$
n = Number of sublots

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

f. For single sided specification limits (i.e., L only), compute the Lower Quality Index Q_L by use of the following formula:

$$Q_L = (X - L) / Sn$$

Where:
L = specification lower tolerance limit
Q_L = Lower Quality Index

Estimate the percentage of material within limits (PWL) by entering Table 1 with Q_L, using the column appropriate to the total number (n) of measurements. Q_L is rounded to the nearest hundredth.

g. For double sided specification limits (i.e. L and U), compute the Quality Indexes Q_L and Q_U by use of the following formulas:

$$Q_L = (X - L) / S_n \quad \text{and} \quad Q_U = (U - X) / S_n$$

Where:
L and U = specification lower and upper tolerance limits. Limits for the largest sieve specified will be plus 0% and minus 1%.
Q_L = Lower Quality Index
Qu = Upper Quality Index

QL and QU are rounded to the nearest hundredth.

Estimate the percentage of material between the lower (L) and upper (U) tolerance limits (PWL) by entering Table 1 separately with Q_L and Q_U, using the column appropriate to the total number (n) of measurements, and determining the percent of material above P_L and percent of material below P_U for each tolerance limit. Determine the PWL by use of the following formula:

$$PWL = (P_U + P_L) - 100$$

Where:
P_L = percent within lower specification limit
P_U = percent within upper specification limit

EXAMPLE OF PWL CALCULATION

(This is an example PWL determination of five random samples from Lot 1. Cores for mat density are used for this example. Follow the same basic procedure for all acceptance criteria requiring a PWL calculation.)

Project: Example Project
Test Item: Item 401a, Lot 1

1. Densities of five random core samples from Lot 1 (n = 5).
   x_1 (D-1) = 93
   x_2 (D-2) = 94
   x_3 (D-3) = 92
   x_4 (D-4) = 95
   x_5 (D-5) = 95

2. Calculate average density (X) for Lot 1.
   $X = (x_1 + x_2 + x_3 + x_4 + x_5)/n$
   $X = (93 + 94 + 92 + 95 + 95)/5$
   X = 93.8 percent density

3. Calculate the standard deviation (S_n) for Lot 1.
   $S_n = [(\{x_1-X\}^2+\{x_2-X\}^2+\{x_3-X\}^2+\{x_4-X\}^2+\{x_5-X\}^2)/n-1)]^{1/2}$
   $S5 = [(\{93-93.8\}^2+\{94-93.8\}^2+\{92-93.8\}^2+\{95-93.8\}^2+\{95-93.8\}^2)/5-1]^{1/2}$
   $S5 = [(0.64+0.04+3.24+1.44+1.44)/4]^{1/2}$
   $S5 = [1.70]^{1/2}$
   S5 = 1.30

4. Calculate the lower Quality Index (Q_L) for Lot 1. (L = Lower specification limit.)
   $Q_L = (X - L)/S_n$
   $Q_L = (93.8-92)/1.30$
   $Q_L = 1.38$

5. Calculate the upper Quality Index (QU) for Lot 1. (U = Upper specification limit.)
   $Q_U = (U - X)/S_n$
   $Q_U = (98-93.8)/1.30$
   $Q_U = 3.23$

6. Determine the percent within lower specification limits (P_L) from Table 1.
   For n = 5 and QL = 1.38, PL = 94

7. Determine the percent within upper specification limits (PU) from Table 1.
   For n = 5 and Q_U = 3.23, P_U = 100

8. Calculate mat density PWL for LOT 1.
   $PWL = (P_L + P_U) - 100$
   $PWL = (94 + 100) - 100$
   PWL = 94

TABLE 1. Table for Estimating Percent of Lot Within Limits (PWL)

For negative values of Q_U or Q_L, use absolute values of Q_U or Q_L and determine P_U or P_L from the table. The P_U or P_L associated with the negative Q_U or Q_L value is equal to 100 minus the table value of P_U or P_L.

P_U or P_L	n = 3	n = 4	n = 5	n = 6	n = 7
	Upper or Lower Quality Index (Q_U or Q_L)				
100	1.16-50.0	1.48-50.0	1.68-50.0	1.81-50.0	1.90-50.0
99	-	1.45-1.47	1.61-1.67	1.71-1.80	1.77-1.89
98	1.15	1.42-1.44	1.55-1.60	1.63-1.70	1.68-1.76
97	-	1.39-1.41	1.50-1.54	1.56-1.62	1.60-1.67
96	1.14	1.36-1.38	1.45-1.49	1.50-1.55	1.53-1.59
95	-	1.33-1.35	1.40-1.44	1.44-1.49	1.47-1.52
94	1.13	1.30-1.32	1.36-1.39	1.39-1.43	1.41-1.46
93	-	1.27-1.29	1.32-1.35	1.34-1.38	1.36-1.40
92	1.12	1.24-1.26	1.28-1.31	1.30-1.33	1.31-1.35
91	1.11	1.21-1.23	1.24-1.27	1.25-1.29	1.26-1.30
90	1.10	1.18-1.20	1.20-1.23	1.21-1.24	1.21-1.25
89	1.08-1.09	1.15-1.17	1.16-1.19	1.17-1.20	1.17-1.20
88	1.07	1.12-1.14	1.13-1.15	1.13-1.16	1.13-1.16
87	1.05-1.06	1.09-1.11	1.09-1.12	1.09-1.12	1.09-1.12
86	1.04	1.06-1.08	1.06-1.08	1.05-1.08	1.05-1.08
85	1.02-1.03	1.03-1.05	1.02-1.05	1.02-1.04	1.01-1.04
84	1.01	1.00-1.02	0.99-1.01	0.98-1.01	0.98-1.00
83	0.98-1.00	0.97-0.99	0.96-0.98	0.95-0.97	0.94-0.97
82	0.97	0.94-0.96	0.92-0.95	0.91-0.94	0.91-0.93
81	0.94-0.96	0.91-0.93	0.89-0.91	0.88-0.90	0.87-0.90
80	0.92-0.93	0.88-0.90	0.86-0.88	0.85-0.87	0.84-0.86
79	0.90-0.91	0.85-0.87	0.83-0.85	0.81-0.84	0.81-0.83
78	0.88-0.89	0.82-0.84	0.79-0.82	0.78-0.80	0.77-0.80
77	0.85-0.87	0.79-0.81	0.76-0.78	0.75-0.77	0.74-0.76
76	0.83-0.84	0.76-0.78	0.73-0.75	0.72-0.74	0.71-0.73
75	0.80-0.82	0.73-0.75	0.70-0.72	0.69-0.71	0.68-0.70
74	0.77-0.79	0.70-0.72	0.67-0.69	0.66-0.68	0.65-0.67
73	0.75-0.76	0.67-0.69	0.64-0.66	0.63-0.65	0.62-0.64
72	0.72-0.74	0.64-0.66	0.61-0.63	0.60-0.62	0.59-0.61
71	0.69-0.71	0.61-0.63	0.58-0.60	0.57-0.59	0.56-0.58
70	0.66-0.68	0.58-0.60	0.55-0.57	0.54-0.56	0.53-0.55
69	0.63-0.65	0.55-0.57	0.52-0.54	0.51-0.53	0.50-0.52
68	0.60-0.62	0.52-0.54	0.48-0.51	0.48-0.50	0.47-0.49
67	0.57-0.59	0.49-0.51	0.46-0.47	0.45-0.47	0.45-0.46
66	0.53-0.56	0.46-0.48	0.44-0.45	0.42-0.44	0.42-0.44
65	0.50-0.52	0.43-0.45	0.41-0.43	0.40-0.41	0.39-0.41
64	0.47-0.49	0.40-0.42	0.38-0.40	0.37-0.39	0.36-0.38
63	0.44-0.46	0.37-0.39	0.35-0.37	0.34-0.36	0.33-0.35
62	0.40-0.43	0.34-0.36	0.32-0.34	0.31-0.33	0.31-0.32
61	0.37-0.39	0.31-0.33	0.29-0.31	0.28-0.30	0.28-0.30
60	0.33-0.36	0.28-0.30	0.26-0.28	0.26-0.27	0.25-0.27
59	0.30-0.32	0.25-0.27	0.24-0.25	0.23-0.25	0.22-0.24
58	0.26-0.29	0.22-0.24	0.21-0.23	0.20-0.22	0.20-0.21
57	0.23-0.25	0.19-0.21	0.18-0.20	0.17-0.19	0.17-0.19
56	0.19-0.22	0.16-0.18	0.15-0.17	0.15-0.16	0.14-0.16
55	0.15-0.18	0.13-0.15	0.12-0.14	0.12-0.14	0.12-0.13
54	0.12-0.14	0.10-0.12	0.09-0.11	0.09-0.11	0.09-0.11
53	0.08-0.11	0.07-0.09	0.07-0.08	0.06-0.08	0.06-0.08
52	0.05-0.07	0.04-0.06	0.04-0.06	0.04-0.05	0.04-0.05
51	0.01-0.04	0.01-0.03	0.01-0.03	0.01-0.03	0.01-0.03
50	0.00	0.00	0.00	0.00	0.00

P_U or P_L	n = 8	n = 9	n = 10 to 11	n = 12 to 14	n = 15 to 18
	Upper or Lower Quality Index (Q_U or Q_L)				
100	1.96-50.0	2.01-50.0	2.05-50.0	2.10-50.0	2.15-50.0
99	1.82-1.95	1.85-2.00	1.87-2.04	1.92-2.09	1.94-2.14
98	1.71-1.81	1.73-1.84	1.75-1.86	1.78-1.91	1.80-1.93
97	1.62-1.70	1.64-1.72	1.66-1.74	1.68-1.77	1.69-1.79
96	1.55-1.61	1.56-1.63	1.57-1.65	1.59-1.67	1.60-1.68
95	1.48-1.54	1.49-1.55	1.50-1.56	1.51-1.58	1.52-1.59
94	1.42-1.47	1.43-1.48	1.44-1.49	1.45-1.50	1.45-1.51
93	1.37-1.41	1.37-1.42	1.38-1.43	1.38-1.44	1.39-1.44
92	1.31-1.36	1.32-1.36	1.32-1.37	1.33-1.37	1.33-1.38
91	1.26-1.30	1.27-1.31	1.27-1.31	1.27-1.32	1.28-1.32
90	1.22-1.25	1.22-1.26	1.22-1.26	1.22-1.26	1.23-1.27
89	1.17-1.21	1.17-1.21	1.18-1.21	1.18-1.21	1.18-1.22
88	1.13-1.16	1.13-1.16	1.13-1.17	1.13-1.17	1.13-1.17
87	1.09-1.12	1.09-1.12	1.09-1.12	1.09-1.12	1.09-1.12
86	1.05-1.08	1.05-1.08	1.05-1.08	1.05-1.08	1.05-1.08
85	1.01-1.04	1.01-1.04	1.01-1.04	1.01-1.04	1.01-1.04
84	0.97-1.00	0.97-1.00	0.97-1.00	0.97-1.00	0.97-1.00
83	0.94-0.96	0.94-0.96	0.93-0.96	0.93-0.96	0.93-0.96
82	0.90-0.93	0.90-0.93	0.90-0.92	0.90-0.92	0.89-0.92
81	0.87-0.89	0.87-0.89	0.86-0.89	0.86-0.89	0.86-0.88
80	0.83-0.86	0.83-0.86	0.83-0.85	0.83-0.85	0.82-0.85
79	0.80-0.82	0.80-0.82	0.80-0.82	0.79-0.82	0.79-0.81
78	0.77-0.79	0.77-0.79	0.76-0.79	0.76-0.78	0.76-0.78
77	0.74-0.76	0.73-0.76	0.73-0.75	0.73-0.75	0.72-0.75
76	0.71-0.73	0.70-0.72	0.70-0.72	0.70-0.72	0.69-0.71
75	0.67-0.70	0.67-0.69	0.67-0.69	0.67-0.69	0.66-0.68
74	0.64-0.66	0.64-0.66	0.64-0.66	0.63-0.66	0.63-0.65
73	0.61-0.63	0.61-0.63	0.61-0.63	0.60-0.62	0.60-0.62
72	0.58-0.60	0.58-0.60	0.58-0.60	0.58-0.59	0.57-0.59
71	0.56-0.57	0.55-0.57	0.55-0.57	0.55-0.57	0.54-0.56
70	0.53-0.55	0.52-0.54	0.52-0.54	0.52-0.54	0.51-0.53
69	0.50-0.52	0.49-0.51	0.49-0.51	0.49-0.51	0.49-0.50
68	0.47-0.49	0.47-0.48	0.46-0.48	0.46-0.48	0.46-0.48
67	0.44-0.46	0.44-0.46	0.44-0.45	0.43-0.45	0.43-0.45
66	0.41-0.43	0.41-0.43	0.41-0.43	0.41-0.42	0.40-0.42
65	0.39-0.40	0.38-0.40	0.38-0.40	0.38-0.40	0.38-0.39
64	0.36-0.38	0.36-0.37	0.35-0.37	0.35-0.37	0.35-0.37
63	0.33-0.35	0.33-0.35	0.33-0.34	0.32-0.34	0.32-0.34
62	0.30-0.32	0.30-0.32	0.30-0.32	0.30-0.31	0.30-0.31
61	0.28-0.29	0.27-0.29	0.27-0.29	0.27-0.29	0.27-0.29
60	0.25-0.27	0.25-0.26	0.25-0.26	0.24-0.26	0.24-0.26
59	0.22-0.24	0.22-0.24	0.22-0.24	0.22-0.23	0.22-0.23
58	0.20-0.21	0.19-0.21	0.19-0.21	0.19-0.21	0.19-0.21
57	0.17-0.19	0.17-0.18	0.17-0.18	0.17-0.18	0.16-0.18
56	0.14-0.16	0.14-0.16	0.14-0.16	0.14-0.16	0.14-0.15
55	0.12-0.13	0.11-0.13	0.11-0.13	0.11-0.13	0.11-0.13
54	0.09-0.11	0.09-0.10	0.09-0.10	0.09-0.10	0.09-0.10
53	0.06-0.08	0.06-0.08	0.06-0.08	0.06-0.08	0.06-0.08
52	0.04-0.05	0.04-0.05	0.04-0.05	0.04-0.05	0.04-0.05
51	0.01-0.03	0.01-0.03	0.01-0.03	0.01-0.03	0.01-0.03
50	0.00	0.00	0.00	0.00	0.00

ITEM F-162 CHAIN-LINK FENCE

DESCRIPTION

162-1.1 This item shall consist of furnishing and erecting a chain-link fence and gates according to these specifications and the details shown on the Plans.

MATERIALS

162-2.1 FABRIC. Chain-link fabric shall meet AASHTO M 181, 9-gage thickness, Type I (zinc-coated steel), Class ~~C or~~ D coating, and 2-inch mesh.

162-2.2 BARBED WIRE. Barbed wire shall meet AASHTO M 280, Design Number 12-4-5-14R, Standard Grade, Coating Type Z, and Coating Class 3.

162-2.3 POSTS, RAILS AND BRACES. Line posts, rails, and braces shall be galvanized steel pipe, or equivalent galvanized roll-formed sections, and meet AASHTO M 181, Type I, Grade 1 or Grade 2.

The dimensions of the posts, rails, and braces shall be as shown on the Plans.

162-2.4 GATES. Gate frames shall consist of galvanized steel pipe, or equivalent galvanized roll-formed sections, and shall meet AASHTO M 181, Type I, Grade 1 or Grade 2. The fabric shall be of the same type material as used in the fence.

162-2.4.1 CANTILEVER SLIDE GATE MANUFACTURERS. Gate manufacturer shall certify gate is manufactured in compliance with ASTM F2200-05, Standard Specification for Automated Vehicular Gate Construction.

Gate manufacturer shall provide independent certification as to the use of a documented Welding Procedure Specification and Procedure Qualification Record to insure conformance to the AWS D1.1 welding code. Upon request, Individual Certificates of Welder Qualification documenting successful completion of the requirements of the AWS D1.1 code shall also be provided.

Gate manufacturer shall provide structural calculations for the gate, prepared and stamped by a registered Professional Engineer. Design shall be based upon the American Institute of Steel Construction Steel Construction Manual, Allowable Stress Design. Limit deflection at the free end to 2 inches. In addition to the self-weight of the gate and components including chain link fence fabric, include a uniformly distributed load of 15 pounds per linear foot applied to the top chord of the gate to account for miscellaneous items that may be added at a later date.

162-2.4.2 CANTILEVER SLIDE GATE DIMENSIONS. Structural Cantilever Slide Gate dimensions shall be as shown on the detail drawings.

162-2.4.3 CANTILEVER SLIDE GATE CONSTRUCTION DETAILS. The gate frame shall be fabricated from round steel alloy. The gate frame may be manufactured in multiple horizontal pieces or sections, and spliced in the field. Provide intermediate members as necessary to provide rigid construction, free from sag or twist.

The steel pipe members of the opening portion of the frame shall have a minimum size of not less than 1.90" o.d. and wall thickness not less than 0.120". The intermediate vertical members shall be sized per structural requirements. All steel gate parts including frame, latches, stops, hinges, keepers and accessories shall be galvanized.

The gate frame shall have two separate semi-enclosed tracks. The track member is to be located on each side of the top primary member. When interlocked with and welded to the top member, it forms a composite structure with the top of the gate frame. Welds to be placed alternately along the top and side of the track.

The gate frame is to be supported from the track by four (4) swivel type, self-aligning, 4-wheeled, sealed lubricant, ball-bearing truck assemblies with stainless steel races. Each truck is to be attached to a hot dipped, galvanized steel hanger bracket which in turn is to be attached to a 6" O.D. support post. The bottom of each support post is to be equipped with a pair of 3" UHMW guide wheels.

Provide diagonal cross-bracing, consisting of 3/8" diameter adjustable-length truss rods, where necessary to obtain frame rigidity without sag or twist.

The gate shall be supplied with chain link fence fabric. Gate filler shall extend the entire length of the gate (including the clear opening and counterbalance).

162-2.4.4 POSTS. Double support posts shall be minimum 6" O.D. round galvanized steel in accordance with ASTM F 1184-03. All posts shall be supported in concrete footings as shown on the detail drawings.

162-2.4.5 FINISH. Gate to be galvanized steel. Gate posts shall be galvanized. All hardware shall be either aluminum or galvanized.

162-2.5 WIRE TIES AND TENSION WIRES. Wire ties for use in conjunction with a given type of fabric shall be of the same material and coating weight identified with the fabric type. Tension wire shall meet AASHTO M 181, Type I, Class 3 coating.

162-6 MISCELLANEOUS FITTINGS AND HARDWARE. Miscellaneous steel fittings and hardware shall meet AASHTO M 181, Type I, Grade 1 Barbed wire support arms shall withstand a load of 250 pounds applied vertically to the outermost end of the arm.

162-2.7 CONCRETE. Concrete shall be of a commercial grade with a minimum 28-day compressive strength of 2,500 psi or an approved, pre-mixed, sacked concrete.

162-2.8 MARKING. Each roll of fabric shall carry a tag showing the kind of base metal, kind of coating, the gage of the wire, the length of fencing in the roll, and the name of the manufacturer. Posts, wire, and other fittings shall be identified as to manufacturer, kind of base metal, and kind of coating.

162-2.9 GATE LOCKS. Gate locks shall be provided for each gate and shall be brass, restricted keyway padlocks with a shackle that is 3/8 inch in diameter having a closed clearance of 2-1/4 inches. The locks shall have control key removable cores and each lock shall have a separate replacement core. All cores shall be keyed differently. The Contractor shall provide 4 keys per lock, and 2 core-removal keys.

162-2.10 KEYLESS LOCKS. When specified, a changeable combination lock shall be furnished with pedestrian gates. The keyless lock shall have a 4- or 5-digit mechanism and shall be an Ilco Unican Model 1011 or approved equal. A sign, 12 inches by 12 inches, shall be securely mounted on the inside of the gate. The sign shall be shielded from view from outside of the gate by means of a hinged 12-inch by 12-inch cover or other means approved by the Engineer. The cover shall have the legend "LIFT AND RECORD COMBINATION FOR REENTRY". The sign shall be aluminum sheet with white reflective coating. Letters shall be black and a minimum of 3/4 inch tall.

CONSTRUCTION METHODS

162-3.1 GENERAL. The fence shall be constructed according to the details on the Plans and as specified herein using new materials. The Contractor shall be responsible for establishing the fence alignment as

shown on the Plans. After the fence line has been staked and prior to fence installation, the Contractor shall review the alignment with the Engineer and make required adjustments to avoid conflicts.

162-3.2 CLEARING FENCE LINE. All trees, brush, stumps, logs, and other debris which would interfere with the proper construction of the fence in the required location shall be removed a minimum width of 10 feet on each side of the fence centerline before starting fencing operations.

162-3.3 INSTALLING POSTS. All end posts, corner posts and pull posts shall be set in concrete at the required dimensions and depths and at the spacing shown on the Plans. Line posts may be either set in concrete as shown on the Plans or driven a minimum of 5 feet embedment. Pull posts shall have a maximum spacing of 250 feet.

Posts shall be spaced as shown on the Plans but in no case shall spacing be more than 10 feet. The post holes shall be in proper alignment so that there is a minimum of 3 inches of concrete on all sides of the posts. The concrete shall be thoroughly compacted around the posts by tamping or vibrating and shall have a smooth finish slightly higher than the ground and sloped to drain away from the posts. All posts shall be set plumb and to the required grade and alignment. No materials shall be installed on the posts, nor shall the posts be disturbed in any manner within 7 days after the individual post footing is completed.

Should rock be encountered at a depth less than the planned embedment depth, a hole 2 inches larger than the greatest dimension of the posts shall be drilled to a depth of 12 inches. After the posts are set, the remainder of the drilled hole shall be filled with grout, composed of one part Portland cement and two parts mortar sand. Any remaining space above the rock shall be filled with concrete in the manner described above.

In lieu of drilling, the rock may be excavated to the required embedment depth.

162-3.4 INSTALLING TOP RAILS. The top rail shall be continuous and shall pass through the post tops. The coupling used to join the top rail lengths shall allow for expansion.

162-3.5 INSTALLING BRACES. Horizontal brace rails, with diagonal truss rods and turnbuckles, shall be installed at all terminal posts.

162-3.6 INSTALLING FABRIC. The wire fabric shall be firmly attached to the posts and braced in the manner shown on the Plans. All wire shall be stretched taut and shall be installed to the required elevations. The fence shall generally follow the contour of the ground, with the bottom of the fence fabric no less than 1 inch or more than 4 inches from the ground surface. Grading shall be performed where necessary to provide a neat appearance.

At locations of small natural swales or drainage ditches and where it is not practical to have the fence conform to the general contour of the ground surface, longer posts may be used and multiple strands of barbed wire stretched thereon to span the opening below the fence. The vertical clearance between strands of barbed wire shall be 6 inches or less.

162-3.7 ELECTRICAL GROUNDS. Electrical grounds shall be installed along the fence between gate openings and at intervals not exceeding 500 feet. Electrical grounds shall also be installed where a power line passes over the fence. The ground shall be accomplished with a copper clad rod 8 feet long and a minimum of 5/8 inch diameter driven vertically until the top is 6 inches below the ground surface. A No. 6 solid copper conductor shall be clamped to the rod and to the fence in such a manner that each element of the fence is grounded.

162-3.8 CANTILEVER SLIDE GATE INSTALLATION. Equipment in this section shall be installed in strict accordance with the company's printed instructions unless otherwise shown on the contract drawings.

The gate and installation shall conform to GSA FS RR-F-191/2 (rev D), Chain Link Fence Gates standards for single cantilever slide gates, Type III, wheel sliding gate.

162-3.9 CANTILEVER SLIDE GATE SYSTEM VALIDATION. The complete system shall be adjusted to assure it is performing properly.

The system shall be operated for a sufficient period of time to determine that the system is in proper working order. Demonstrate all gate sequences of operation as described on the drawings.

For operated gate systems - test and explain safety features.

Each system feature and device is a separate component of the gate system.

Read and follow all instructions for each component.

Ensure that all instructions for mechanical components, safety devices and the gate operator are available for everyone who will be using the gate system.

The warning signs shipped with the gate operator must be installed in prominent position on both sides of the gate.

Ensure the owner is clear with regard to the safety points concerning the basic operational guidelines of the safety features of the gate operator system. These safety points are listed in the gate operator manual and must be read prior to system use.

162-3.10 WELDING. All welds on the gate frame and pile support foundations shall conform to Welding Procedure Specification and Procedure Qualification Record to insure conformance to the AWS D1.1 Structural Welding Code. All individual welders shall be certified to welding code AWS D1.1 for structural steel and D1.2 for aluminum.

162-3.10.1 WELD TESTING. All welds shall be 100% visually inspected. Additionally, 25% of welds shall be tested by ultrasonic, magnetic particle or dye penetrant methods. Defective welds shall be repaired in accordance with approved procedures.

162-3.11 REMOVE FENCE. Remove fence in areas shown on Plans. Unless otherwise directed by the Engineer, all removed components become the Contractor's property for disposal off airport property.

METHOD OF MEASUREMENT

162-4.1. Chain-link fence will be measured along the top of the fence from center to center of end posts, excluding the length occupied by gate openings.

162-4.2. Gates will be measured as complete units.

162-4.3. Removal of fence will be measured along the finished grade line of the fence from center to center of end posts.

BASIS OF PAYMENT

162-5.1 Payment will be made at the contract unit price per linear foot for fence and per each for gates.

Work and materials involved in clearing and disposal of material along the fence line, rock excavation, and ground rod installation are subsidiary.

Payment will be made under:

Item F-162a	8' Chain-Link Fence - per linear foot
Item F-162b	(Width) Single Swing Gate - per each
Item F-162c	(Width) Double Swing Gate - per each
Item F-162d	20' Single Cantilever Gate - per each
Item F-162e	(Width) Double Cantilever Gate - per each
Item F-162f	3' Pedestrian Gate (w/Keyless Lock) - per each
Item F-162k	Remove Fence – per linear foot

MATERIAL REQUIREMENTS

AASHTO M 181 Chain-Link Fence

AASHTO M 280 Metallic-Coated (Carbon) Steel Barbed Wire

UL 325 Underwriters Laboratory Gate Operator Requirements, Class II

ASTM F 2200-05 Standard Specification for Automated Vehicular Gate Construction.

ASTM F 1184-03 Standard Specification for Industrial and Commercial Horizontal Slide Gates, Type II, Class 2.

American Welding Society AWS D1.1 Structural Welding Code.

ASTM A 123 Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel.

162-6.1 Product Data. Provide manufacturer's catalog cuts with printed specifications and installation instructions for cantilevered slide gates. Furnish detailed sequence of operation (description of system) of motorized gate operating system. Furnish two (2) copies of operation and maintenance data covering the installed products.

162-6.2 Shop Drawings. Supply shop drawings for cantilevered slide gates showing the relationship of gate system with other work. Include details of all major components to be provided. Include complete details of gate construction, gate height, and post spacing dimensions.

162-6.3 Certifications. Cantilevered slide gate in compliance with ASTM F 2200-05, Standard Specification for Automated Vehicular Gate Construction. Certificates for welders and welding process.

ITEM F-170 STEEL BOLLARD

DESCRIPTION

170-1.1 This item consists of replacing and/or installing new steel bollards as shown on the plans or as directed by the Engineer.

MATERIALS

170-2.1 Use materials that conform to the following:

a. **Steel Pipe.** Use standard weight, Grade B, galvanized, welded, or seamless pipe meeting ASTM A-53.

b. **Concrete.** Use commercial grade concrete with a minimum 28-day compressive strength of 2,500 psi or an approved, pre-mixed, sacked concrete.

c. **Paint.** Use single component, moisture cure, polyurethane (SC-MC-U) zinc primer. Use single component, moisture cure, alipahtic polyurethane (SC-MC-ALIP-U) safety yellow paint for the top coats.

d. **Retroreflective Bands.** Use flexible high intensity sheeting, pressure sensitive type, cut to form 6-inch wide reflector bands meeting AASHTO M 268, Type III-A. Use sheeting with a smooth sealed outer surface.

CONSTRUCTION REQUIREMENTS

170-3.1 Install bollards plumb, in hand or mechanically dug holes, backfilled with the specified material, and thoroughly compacted to the satisfaction of the Engineer.

170-3.2 Painting. Paint bollards with one coat of primer and two top coats of safety yellow. Ensure that the surfaces are free of all oil, grease, dirt, abrasive residues, and all other foreign substances prior to application of coatings. Maintain the surface to be coated at a minimum temperature of 5 degrees F above the dew point for the duration of coating application. Adhere to these preparation requirements in addition to any requirements by the coating manufacturer. Repair any nicks, scratches or other paint damage resulting from shipping and handling at the site.

170-3.3 Reflective Bands. Apply a minimum of two white retroreflective bands placed 3-4 inches from the top with a maximum of 6 inches between the bands.

METHOD OF MEASUREMENT

170-4.1

a. **Lump Sum.** No measurement of quantities will be made.

b. **Unit Prices.** By the number of bollards specified, installed and accepted as completed units in place. Where replacement is specified, each unit shall include removal and installation.

BASIS OF PAYMENT

170-5.1 Payment will include all labor, equipment, materials, and personnel to complete the work described in the plans.

Payment will be made under:

Item F-170a Steel Bollard - per each
Item F-170b Steel Bollards - per lump sum

ITEM F-171 POWER GATE OPERATORS

DESCRIPTION

171-1.1 Provide a complete and operational power gate operating system, with controls, designed and manufactured to operate as an integral system with the cantilever gate as located and shown on the plans.

MATERIALS

171-2.1 APPROVALS. Obtain approval of all materials or equipment proposed to use or incorporate in the work. Submit to the Engineer five (5) complete listings of materials and equipment specified herein and on the plans. Prepare the list to clearly identify the material or equipment by item, name, or designation used and indicate where specified. Provide submittals neatly bound, clearly indexed, and include applicable catalog numbers, cuts, wiring diagrams, performance data, operation and maintenance manuals, etc., for all material or equipment specified. In addition, whenever called for elsewhere in these Specifications include in the submittal certificates of compliance, manufacturer's instructions and/or shop drawings, or proposed construction or installation procedures.

171-2.2 COMPONENTS. Provide major components to include a new Uninterruptable Power Supply (UPS), ~~load center~~distribution panel board, gate operator, ~~radio~~ access control and keypad system, cable, conduit, circuit breakers, and connectors. Provide NEMA approved electrical components. Provide testing of the gate operators and control systems before shipment from the factory.

a. **Gate Operator.** 1 horsepower minimum, 240 volts, single phase, capable of instant reversing, and adjustable time delay relay from 1/2 to 180 seconds for closing, UL 325 listed, mechanical braking within NEMA 3R enclosure. ~~Link Controls model XGSL (with the safety edge option)~~ Chamberlain Group, Inc. Model SL595 Heavy Duty, Harsh Environment, or approved equal.

b. ~~**Key Pad System.** Provide complete keypad systems designed to be impervious to the local environmental conditions. Install at each automated gate. Include any required power supplies and interfaces for a self-contained remote unit capable of handling at least two keypads.~~

~~Provide for each gate, 2 each keypads and terminal or interface to be controlled by either the radio or keypad systems. Digital Key Model 1050 Industrial Access or approved equal.~~

~~Include time delay relays, adjustable from 1/2 to 180 seconds for each system.~~

c. ~~**Radio Control System.** Provide complete radio control system. Include any required power supplies and interfaces for self contained remote units.~~

~~Provide radio receiver system designed to be impervious to local environmental conditions.~~

~~Provide system that interfaces with the keypad system and designed to be controlled by either method.~~

~~Provide for each gate operator, 12 each adjustable frequency transmitters, Pulsar Control or approved equal.~~

d. ~~**Load Center**~~**Panel Board**. ~~Provide enclosure for housing equipment, NEMA 12 lockable type, including an interior panel. Minimum size 36" x 24" x 10. Hoffman or approved equal. Provide enclosure sized large enough to house panel, radio, keypad interface, power supply, and relays.~~

Size distribution center to accommodate the equipment indicated in the ~~load center~~ ~~wiring~~ electrical one-line diagram and panel schedule on the plans.

Provide panel board rated as shown on the plans, single phase, 3- wire, and sized to provide all circuits and spares indicated. Provide branch breakers of bolt in type. Install panel board in the enclosure.

e. **Conductors for secondary systems in conduits.** Provide copper, 600 volt Type XHHW, black (phase conductors) and white or yellow (neutral).

f. **Rigid steel conduit.** Provide standard weight (schedule 40) steel pipe, galvanized on the outside and finished with 40 mil PVC exterior coating and with interior finished with a coating of urethane, Robroy Industries or approved equal. Provide fittings that meet the same specifications as the conduit.

g. **Flexible metal conduit.** Provide liquid tight Anaconda Type 'EF' or approved equal.

h. **Marker tape.** Provide yellow polyethylene plastic, printed "Caution Buried Electric Line Below", Allen System or approved equal.

i. **Tapes.**

(1) Pipe Sealing Tape: Scotch No. 48, Teflon pipe sealing tape or approved equal.

(2) Corrosion Preventive Tape: Scotch No. 43 or approved equal.

(3) Electrical Insulating Tape: Scotch No. 88 or approved equal.

j. **Ground conductor.** Provide stranded bare copper, #6 AWG.

k. **Ground rods.** Provide 3/4" x 10' copper clad steel.

l. **Concrete.** Provide commercial grade concrete with a minimum 28-day compressive strength of 2,500 psi or an approved, pre-mixed, sacked concrete.

m. **Trench Backfill.** Use material of the type shown on the plans.

n. **Access Control System** Provide a complete and operation gate access control system compatible with the existing Airport AMAG access control system, including gate obstruction lighting, vehicle loop detectors, manual push button control stations, and proximity card readers.

Cabinets: NEMA 3R (outdoor) with continuous-hinge cover with flush latch, unless otherwise indicated.

1. Steel, finished inside and out with manufacturer's standard enamel.
2. Key latch.
3. Metal barriers to separate wiring of different systems and voltage.

The processor shall be a programmable logic controller.

The controller shall have a sufficient number of digital inputs to connect the devices shown in the drawings, plus a minimum of 20% additional spare inputs for future expansion.
All inputs shall be optically isolated.

The controller shall have a sufficient number of digital outputs to connect the devices shown in the drawings, plus a minimum of 20% additional spare outputs for future expansion.

The outputs shall be relay type, 120 VAC, 5A rated, and have either internal short-circuit protection or be externally fused.
Controller shall be Allen-Bradley Micrologix 1400 or approved equal.

o. **Card Reader.** Provide contactless smart card reader that comply with the following 13.56MHz-related standards to ensure product compatibility and predictability of performance:
   1. ISO 15693

   The contactless smart card reader shall provide the ability to read card access data stored in the secure access control sector/application area of the ISO 15693 HID iCLASS card.

   Contactless smart card reader shall provide universal compatibility with most access control systems by outputting card data in compliance with the SIA AC-01 Wiegand standard.

   Contactless smart card reader shall meet the following environmental specifications:
   a) Operating temperature: -22 to 150 degrees F (-30 to 65 degrees C)
   b) Operating humidity: 5% to 95% relative humidity non-condensing
   c) Weatherized design suitable to withstand harsh environments
   d) Certified rating of IP55
   e) Contactless smart card reader cabling requirements shall be:
   f) Cable distance: (Wiegand): 500 feet (150m) w/18 AWG and 100 feet (30.5m) w/22 AWG
   g) Cable type: 9-conductor w/overall shield
   h) Card reader shall be HID Global iCLASS Model R90 or approved equal.

p. **CCTV Camera.** Provide exterior surveillance cameras designed for commercial/industrial, 24/hr/7 day-a-week/365days-year use.

   The camera shall be based upon standard components and proven technology using open and published protocols.

   Provide fixed lens, high resolution, IP based, color network cameras mounted in vandal resistant enclosures. The cameras shall incorporate the following:
   a) High quality 1/3" progressive scan imaging sensors.
   b) Dedicated video compression chips and be equipped with a minimum of 128MB Flash memory and 256MB Random Access Memory.
   c) Customer specific settings including statically assigned IP address, time & date, event functionality, and video configuration shall be stored in a non-volatile memory and shall not be lost during power outages or soft reset.
   d) The camera shall be able to deliver high-quality video resolutions up to 1920x1080 pixels over IP networks.
   e) Provide Compression Support: Motion JPEG, MPEG-4, and/or H.264 etc.
   f) Allow transmission of images at up to 12 frames per second in resolutions up to 1240x1024.
   g) Power Source: PoE: IEEE 802.3af 24 VAC, 7-24 VDC max 6 W
   h) Operate in a temperature range of -40°F to +113°F.
   i) Shall contain a built in web server accessible in a standard browser environment.
   j) Support both fixed IP addresses and dynamically assigned IP addresses provided by a Dynamic Host Control Protocol (DHCP) server.
   k) Allow for automatic detection of the camera based on UPnP and Bonjour when using a PC with an operating system supporting this feature.
   l) Provide support for both IPv4 and IPv6.
   m) Be equipped with an integrated event functionality, which can be trigged by: External inputs, Video Motion Detection, Audio Detection, Schedule.
   n) Be equipped with a high quality lens providing images down to minimum illumination/light sensitivity of 1 lux color, 0.2 lux B/W.

o) Enclosures are to be IP-66 rated and equipped with pre-mounted heaters and blower fan(s), and all required mounting hardware.

CCTV Cameras shall be Axis Q1755-E Network Cameras or approved equal.

q. **Uninterruptable Power Supply.** Provide a 10KVA, 240 volt single-phase UPS. The UPS shall be a solid-state system designed to provide regulated and conditioned sinusoidal power to both linear and non-linear type loads. The UPS and batteries shall be designed to fit into a NEMA 3R enclosure intended for outdoor installations.

The UPS system shall be initially provided as a single-module, non-redundant system. The UPS shall be field-upgradeable for power rating (shown on drawings) additional parallel capacity or for redundant operation. Provide with the following options (minimum):
1. External Matching Battery Cabinets.
2. Maintenance Bypass Cabinet.

The UPS module and batteries shall be housed in a single freestanding NEMA 3R enclosure. Front access only shall be required for installation, adjustments, and expedient servicing. All components shall have a modular design and quick disconnect means to facility field service.

Mechanical Construction: The UPS unit is comprised of an input rectifier, battery charger, inverter, bypass, and battery consisting of the appropriate number of sealed battery modules, and shall be housed in a single freestanding enclosure. The UPS cabinet shall be cleaned, primed, and painted with the manufacturer's standard color. Casters and leveling feet shall be provided as standard.

The user interface shall be an internal four line twenty-character LCD display for alarm/configuration information.

Battery Type: Sealed, Maintenance-Free, Lead-Acid

UPS Holdover Time (Runtime): Each UPS system shall have a minimum holdover time of 90 minutes.

Battery Recharge Time: Base UPS system consisting of six (6) battery strings will have a recharge time of max. 1.75 hours to 95% usable capacity @ nominal line after a full load discharge (30 kVA).

Battery Protection:
1. Short Circuit Protection: Over-current protection shall protect the batteries from all short circuit fault conditions.

2. Battery Module Protection: Internal battery circuit breaker shall be provided.

3. Under-voltage Protection:
   a. Inverter cutoff voltage: Battery operation shall be terminated when the battery voltage drops to the 1.67 VPC set point.
   b. Protective shutdown voltage: Inverter shall shutdown after 1 minute when the battery voltage drops below 1.7 VPC volts-per-cell typical.

4. Over-voltage Protection: If the UPS system's battery bus voltage exceeds the predetermined set point then the UPS will disable the charger and alarm a high battery condition.
UPS system shall be OnLine Power Harsh Environment UPS (HE-UPS) or approved equal.

CONSTRUCTION REQUIREMENTS

171-3.1 GENERAL. Install gate operator and control systems as shown on the plans and in accordance with the manufacturer's instructions. Perform work in conformance with the NEC, the National Fire Protection Association, and all State and local codes. Locate new gate operators, fixtures, conduit, cables, etc., as shown on the plans and/or as directed by the Engineer.

171-3.2 TRENCHING, EXCAVATION, AND BACKFILLING. Trenches or excavations may be excavated manually or with mechanical equipment of standard manufacture specifically designed for excavating or trenching. Do not use blades of road patrols or graders to excavate the trenches.

Ensure that excavations for the placement or construction of items associated with the electrical work are of sufficient size to permit the placement or construction of the full width, length, and depth of the structure or object and the layer of bedding material, whenever bedding is required. Such items include, but are not limited to, foundations, footings, slabs, pads, manholes, handholes, ducts and/or duct banks, light base assemblies or outing stakes. Use the specified backfill material as shown on the plans.

Excavate the walls of trenches as near vertical as practical with smooth bottom, and free of frost susceptible material, pools of water, trash or debris. Control drainage in the vicinity of the trenches to prevent the runoff of surface water in the trenches. Promptly pump to remove any water accumulated in the trenches.

Provide trenches for burial of cable or conduit of sufficient width to provide a minimum 3 inches of lateral clearance between the conduit and trench walls on both sides or provide the lateral clearance as shown on the plans. Provide sufficient depth so that the top of the cable or conduit is a minimum of 18 inches below finish grade or to the depth indicated on the plans, when installed; and graded to slope as required.

Before placing any conduit in the trenches, remove all rocks or stones larger than 2 inches in diameter from the bottom of the trench. Tamp the trench bottom by filling or cutting away as required, to provide uniform conduit grades, sloping towards outlets, as shown on the plans. Call for inspection of the trenches by the Engineer before placing conduit.

Backfilling. Before backfilling, cover the conduit with a 3 to 6 inch layer of approved backfill or bedding material as shown on the plans. Begin backfilling of the trenches after the conduit is installed and inspected and approved for backfilling by the Engineer. Thoroughly tamp the initial cover layer. Backfill the remainder of the trench with approved materials as shown on the plans, placed in 6-inch layers. Compact each layer to the density of the adjacent undisturbed ground and/or to the satisfaction of the Engineer. Backfill completely to the level of the adjacent surface. For trenches and excavations in areas where a surface layer of gravel, rock, or other material differing from subgrade has previously been placed, fill the upper part of the trench with the same material salvaged from the excavating or scripted from the adjoining surface. Provide at least 6 inches of surfacing material in the trench. For trenches in existing asphalt concrete, resurface the trench with a minimum 3-inch depth of an approved, pre-mixed, sacked concrete.

Restore all surface areas disturbed and/or damaged by trenching, excavation, sorting of materials, or any other construction related activities to their original condition except as stated above. Replace surfacing or cover material with new material of the same type of material removed. Accomplish restoration and/or removal and replacement of surfacing as required under this item at no additional cost to the State.

171-3.3 GROUNDING. Install grounding electrodes and grounding conductors as shown on the plans.

171-3.4 TESTING. Furnish all necessary labor, materials, equipment, appliances and power for conducting and performing tests of materials, equipment and/or systems. Begin tests after the work has been inspected and approved by the Engineer. Tabulate, sign, and date all test results on reproducible

test sheets. No work will be accepted until all the applicable tests are performed successfully with satisfactory results and test sheets delivered to the Engineer.

Repair and/or remove and replace materials, equipment and/or systems that do not test satisfactorily. Retest after repair or replacement.

Test and demonstrate to the Engineer the following:

a. Circuits are properly connected in accordance with applicable wiring diagrams.

b. Power and control circuits are continuous and free from short circuits.

c. Circuits are free from unspecified grounds.

d. Resistance to ground of all ungrounded 600 volt multiple circuit conductors is not less than ten megohms when tested with a 1,000 volt megger.

e. Circuits are operable. Demonstration to include operation of each control and switch 10 times.

171-3.5 INSPECTION. Notify the Engineer and request inspection at least 48 hours prior to installing cables, conduit, concrete or lighting fixtures, making any splices, or covering any buried or concealed work. Immediately correct any deficiencies found during the inspection.

171-3.6 RECORD DOCUMENTS. Maintain at the project site a complete set of contract plans, Specifications, and approved changes to the contract documents. In addition to the above, maintain a separate complete set of electrical drawings for as-built purposes. Note all changes upon these as-builts along with the date and authority approving the change.

On the as-built drawings, show locations of all items such as lights, conduit, handholes, etc., including any existing active lines encountered. Show dimensions from roadway and taxiway centerlines or other permanent objects. Include complete wiring diagrams, (both power and control), identifying terminals, cables, and connections.

171-3.7 GUARANTEE. Guarantee that all materials or workmanship found defective within one year of final acceptance will be replaced at the your expense, promptly upon notification and to the satisfaction of the Department.

METHOD OF MEASUREMENT

171-4.1 A. Unit Prices. The quantity to be paid for will be the number of units installed, complete, in place, acecpted, and ready for operation. ~~Measured as a complete unit to include radio and keypad system, gate operator, poles, load center with panel, relays, all wire and conduit, grounding rods, ground conductors, concrete footings, excavation, bedding, backfill, marker tape, concrete bases, all testing and all other incidentals necessary for an approved and operational power gate operator system installation~~.

BASIS OF PAYMENT

171-5.1 At the contract unit price per each for the completed and accepted system.

Payment will be made under:

Item F-171a	Power Gate Operator System - per each
Item F-171c	Access Control System – per each
Item F-171d	Card Reader – per each
Item F-171e	CCTV Camera – per each
Item F-171f	Uninterruptable Power Supply – per each

Item F-171g Panel Board – per each

ITEM G-100 MOBILIZATION AND DEMOBILIZATION

DESCRIPTION

100-1.1 This item consists of preparatory work and operations, including but not limited to operations necessary to move personnel, equipment, supplies and incidentals to the project site; to establish offices, buildings and other facilities, except as provided under Section G-130; to perform all other work and operations, including costs incurred, before beginning work on the project; and to complete similar demobilization activities, including submittals such as as-builts, certificates, payrolls, civil rights reports, equipment warranties, etc.

METHOD OF MEASUREMENT

100-2.1 Payment for mobilization and demobilization will be made in partial payments as follows:

a. Up to sixty percent of the amount bid for mobilization and demobilization may be paid when equipment and supplies are landed in serviceable condition at the project site and other necessary preparations have been completed so that work can commence on other pay items.

b. The remaining balance will be paid as contractor facilities are dismantled and equipment is removed from the airport property, with the final increment paid upon completion of demobilization or as approved by the Engineer.

The Department reserves the right to require submittal of invoices, receipted bills, payrolls, and other appropriate documents to justify any or all payments under this item.

BASIS OF PAYMENT

100-3.1 Payment will be made at the contract lump sum price for mobilization and demobilization. This price and payment shall be full compensation for all costs associated with this item.

Payment will be made under:

Item G-100a Mobilization and Demobilization - per lump sum

ITEM G-120 DISADVANTAGED BUSINESS ENTERPRISE (DBE) PROGRAM
(Federal-Aid Contracts)

120-1.1 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 funding through the United States Department of Transportation (USDOT). The Contractor or subcontractor shall not discriminate on the basis of race, color, national origin, or sex in the performance of this contract. The Contractor shall carry out applicable requirements of 49 CFR Part 26 in the award and administration of USDOT-assisted contracts.

120-1.2 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.

120-1.3 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).

120-1.4 DEFINITIONS AND TERMS. The following definitions will apply.

a. **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.

b. **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.

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

   (1) 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;

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

   (3) has been certified by the Department according to 49 CFR, Part 26.

d. **DBE Key Employee.** Permanent employees identified by the DBE owner in its certification file in the Department's Civil Rights Office (CRO).

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

f. **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.

g. **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.

h. **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 the CRO to independently verify this contact.

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

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

(2) keeps an inventory in an amount appropriate for the type of work using that product; and

(3) 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

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

120-2.1 UTILIZATION GOAL. The DBE Utilization Goal for this contract is shown on Form 25A-324 (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 25A-325C (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 120-3.2 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 25A-325C will be reduced proportionately.

120-3.1 DETERMINATION OF COMPLIANCE.

a. **Phase I - Bid.** Each bidder must register with the CRO annually according to §§26.11 & 26.53(b)(2)(iv) of 49 CFR, Part 26. Use Form 25D-6. No contract may be awarded to a bidder that has not registered.

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

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

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

(b) The dollar amount of participation by the DBE firm;

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

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

(2) **DBE Utilization Report.** Form 25A-325C listing the certified DBEs to be used to meet the DBE Utilization Goal.

(3) **Good Faith Effort Documentation.** Summary of Good Faith Effort Documentation (Form 25A-332A and attachments) and DBE Contact Reports (Form 25A-321A) if the Contractor submits less DBE utilization on Form 25A-325C than is required to meet the DBE Utilization Goal. If accepted by the Department, this lower DBE utilization becomes the new DBE Utilization Goal. If the bidder cannot demonstrate the ability to meet the DBE Utilization Goal, and can not document the minimum required Good Faith Efforts (as outlined in Subsection 120-3.2 below), the Contracting Officer will determine the bidder to be not responsible.

c. Phase III - Construction.

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

(2) **DBE Creditable Work.** The CUF work items and creditable dollar amounts shown for a DBE on the DBE Utilization Report (Form 25A-325C) shall be included in any subcontract, purchase order or service agreement with that DBE.

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

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

(b) If the Contractor is unable to find replacement DBE participation and has adequately performed and documented the Good Faith Effort expended according to Subsection 120-3.2.

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

120-3.2 GOOD FAITH EFFORT.

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

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

(1) 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 25A-324) 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.

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

(3) Notification to all active DBEs listed for a given region in the Department's most current DBE Directory at least 7 calendar days prior to bid opening. The bidder must give the DBEs no less than five days to respond. The bidder may reject DBE quotes received after the deadline. Such a deadline for bid submission by DBEs will be consistently applied. DBEs certified to perform work items identified on Form 25A-324 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 25A-321A).

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

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

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

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

(8) 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 25A-321A).

(9) Items (3) through (8) 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.

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

written documentation or argument concerning the issue of whether it met the goal or made adequate good faith efforts to do so.

(1) The decision on reconsideration will be made by the DBE Liaison Officer.

(2) 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.

(3) 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.

(4) The result of the reconsideration process is not administratively appealable to USDOT.

120-3.3 COMMERCIALLY USEFUL FUNCTION (CUF).

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

(1) regular dealer;
(2) manufacturer;
(3) broker;
(4) subcontractor;
(5) joint-venture; or
(6) prime contractor.

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

(1) 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.

(2) 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.)

(3) The DBE is certified in the appropriate category at the time of

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

(b) 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).

(4) 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.

(5) 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.

(6) The work of the DBE firm must meet the following criteria when determining when CUF is being performed by the DBE:

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

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

(c) 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.

(d) 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.

(e) 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.

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

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

(7) On a monthly basis, the Contractor shall report on Form 25A-336 (Monthly Summary of DBE Participation) to the CRO 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.

c. 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

(1) withdrawing the subcontract, purchase order or service agreement from the decertified DBE and expending Good Faith Effort (Subsection 120-3.2, Items (3) through (8) to replace it with one from a currently certified DBE for that same work or service through subcontractor substitution (GCP Subsection 30-01); or

(2) 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

(a) increasing the participation of other DBEs on the project;
(b) documenting Good Faith Efforts [Subsection 120-3.2, items (3) through (8)]; or
(c) by a combination of the above.

d. 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 CRO to the Contractor, who will notify the DBE firm.

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

120-3.4 DEFAULT OF DBE. In the event that a DBE firm under contract or to whom a purchase order or similar agreement has been issued defaults on their work for whatever reason, the Contractor shall immediately notify the Engineer of the default and the circumstances surrounding the default.

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

a. 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

b. The Contractor is unable to find replacement DBE participation at the same level of DBE commitment and has adequately performed and documented the Good Faith Effort expended according to items **(3)** through **(8)** of Subsection 120-3.2 for the defaulted work; or

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

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

120-4.1 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:

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

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

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

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

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

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

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

h. 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.

120-5.1 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 25A-325C 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 120-3.4 item c.), the Department will also consider this unsatisfactory work. Unsatisfactory work may result in disqualification of the Contractor from future bidding under GCP Subsection 20-13 and withholding of progress payments consistent with GCP Subsection 90-06.

ITEM G-135 CONSTRUCTION SURVEYING AND MONUMENTS

DESCRIPTION

135-1.1 GENERAL. Perform surveying and staking essential for the completion of the project and perform the necessary calculations required to accomplish the work in conformance with the Plans and Specifications and standard survey and engineering practices.

Furnish and install survey monuments and monument cases in conformance with the Plans or as directed.

135-1.2 DEFINITIONS.

a. **Monument:** A fixed physical object marking a point on the surface of the earth; used to commence or control a survey; mark the boundaries of a parcel of land; or the centerline of a right-of-way corridor. Monuments will be Primary or Secondary, as shown on the Plans.

b. **Point:** An identified spot located on the surface of the earth. For purposes of this definition, a point can be a PK nail, wooden hub, rebar, large nail or other structure capable of being utilized as a marker.

c. **Witness Corner:** A material mark or point usually placed on a property or survey line, at a known distance from a property corner or other survey point. A witness corner is employed to witness the location of a corner/point that cannot be monumented at its true location.

d. **Reference Monument:** A material mark or point placed at a known distance and direction from a property corner or other survey point, usually not on a property or survey line. A reference monument is employed to perpetuate a corner/point that cannot be monumented at its true location or where the corner monument is subject to destruction.

e. **Surveyor:** The Contractor's Professional Land Surveyor, currently registered in the State of Alaska.

MATERIALS

135-2.1 MONUMENT CASES. Castings shall conform to AASHTO M 105, Class 30A. Castings shall be coated with a bituminous damp-proof coating. Bolting tops shall be used.

135-2.2 PRIMARY MONUMENT. A minimum 2-inch diameter nonferrous pipe at least 30 inches long, with a minimum 4-inch flange at the bottom and having magnets attached at the top and bottom. A minimum 2-1/4-inch diameter nonferrous metal cap must be permanently attached to the top. Mark the cap around the outside edge with the words "STATE OF ALASKA DOT&PF". Permanently stamp every monument with the Surveyor's registration number, the year set, and the point/corner identification. Orient cap so that the data may be read facing up-station.

135-2.3 SECONDARY MONUMENT. A minimum 5/8-inch x 30-inch rebar with a 2-inch aluminum cap attached to the top. Permanently stamp every secondary monument with the Surveyor's registration number and the year set.

CONSTRUCTION REQUIREMENTS

135-3.1 GENERAL. Use competent, qualified personnel and suitable equipment for the layout work required and furnish traffic control, stakes, templates, straight-edges and other devices necessary for establishing, checking and maintaining the required points, lines and grades.

Furnish computer services to accomplish the work. Check data received from the computer for completeness and accuracy. As soon as practical after completion of the work, and in no case later than acceptance of the

project, deliver field books, computer forms and computer output data to the Engineer. This data becomes the property of the Department.

Supervise construction surveying personnel. Correct errors resulting from the operations of said personnel at Contractor expense. The Contractor is responsible for the accuracy of the work.

Work classified as Land Surveying under AS 08.48, and work involving the location, control, and monumentation of construction centerline and right-of-way, shall be performed by or under the responsible charge of a Professional Land Surveyor.

Follow the Department's Construction Surveying Requirements.

Ensure that the contract surveyor contacts the Department survey manager prior to performing survey work under this item.

DOT&PF Central Region Survey Manager
(907) 269-0558 (Phone)
(907) 269-0600 (Facsimile)

The Department will provide sufficient centerline or reference thereto, and at least one benchmark to enable the establishment of planned elevations and centerline.

Keep field notes in standard hardbound notebooks in a clear, orderly, and neat manner consistent with Departmental procedures, including titles, numbering, and indexing. Make field books available for inspection by the Engineer's project personnel at any time. Legible copies of the reduced field notes shall be made daily. Store the field books in the Engineer's Project Office during periods of non-use. Copies of the field books shall be kept in a separate secure location.

Perform the following:

a. Staking necessary to delineate clearing and/or grubbing limits.

b. Cross sections necessary for determination of excavation and embankment quantities, including intermediate and/or remeasure cross sections as needed. Take cross sections after clearing and grubbing has been completed.

c. Slope staking.

d. Staking of signs, culverts, minor drainage structures and other appurtenances, including the necessary checking to establish the proper location and grade to best fit the conditions on site.

e. Bridge staking.

f. Setting finishing stakes.

g. Measurement of pay quantities that require measurement.

h. Staking of right-of-way and material source limits ~~as deemed necessary~~.

i. Staking, referencing and other actions required to preserve or restore land monuments and property corners.

j. As-built surveying as required under Section 50-08 Survey Control. Tie as-built measurements and locations to project horizontal and vertical survey control.

k. Asphalt pavement surveying necessary to comply with subsection P-401-5.2 acceptance criteria for smoothness and grade of finished asphalt pavement surfaces.

l. Staking and hubbing of bottom of excavation and the top of each layer in the pavement structure.

m. Provide interim calculations for measured items to the Engineer prior to progress payments for each specific item. Ensure that the calculations are completed, checked, and signed by the person in responsible charge of the work.

~~j.~~**n.** Other surveying and staking necessary to complete the project.

Notify the Engineer immediately if a Department-established reference point is discovered to be in error or a reset point is not in ~~harmonious~~ relationship to the adjacent centerline points.

Furnish a notekeeper to record field survey notes, including documentation for quantity computations for payment. Ensure that the notekeeper is thoroughly familiar with generally accepted standards of good survey notekeeping practice and the Department's Construction Surveying Requirements.

The Engineer may randomly spot check the Contractor's surveys, staking, and computations. After the survey or staking has been completed, provide the Engineer with a minimum of 72 hours notice before performing work, and furnish the appropriate data, to allow for random spot checking. The Department assumes no responsibility for the accuracy of the work.

Measure, compute, and plot all field-measured pay item quantities, including but not limited to excavation and disposal of asphalt cement concrete (AC), portland cement concrete (PCC) pavement, and classified/unclassified excavation volumes. Stake for measurement and calculation of excavation quantities after AC and PCC pavement removal. Submit a proposed method of measuring and computing volumes to the Engineer in writing for approval before performing any field work under this item.

Provide item quantities, including computations and plots to the Engineer prior to payment for each specific item. The Department will review and accept or modify the quantities provided.

Digital terrain modeling (DTM) may be used in determining earthwork quantities as an alternative to before and after cross sections by average end area if the Engineer has agreed in writing to the DTM method prior to commencement of any field work. If DTM is approved and used, provide plotted cross-sections on 50-foot stations with elevations, offsets and computed end areas in square feet for each section prior to earthwork payments for each item. Provide these cross-sections and associated data for the entire area of earthwork computations along with the terrain model.

Accomplish staking in accordance with the following:

a. Perform the topographic survey by grid or cross section method of surveying 25 feet beyond the project match lines. Take elevation shots at 25-foot intervals, at all terrain breaks, and at topographic features.

b. Record and locate all baselines and connect them to the project's centerline, both horizontally and vertically.

c. Upon completion of the before and after survey, provide the Engineer a grid layout sheet showing the baseline, stations and all spot elevations.

d. Provide the Engineer a contour map of the original ground and an identical size map showing the final elevations with 0.5 foot contour intervals. Provide the Engineer with plotted cross-sections for each station grid with elevations and offsets shown.

e. At the end of each day's work, hand deliver a copy of the downloaded raw data from the data collector, in hard copy form, to the Engineer. This hard copy will be signed by the Contractor or Surveyor. If editing is deemed necessary, show all changes in an amended hard copy.

Provide the above products to the Engineer before payment will be made for that work. Provide as-builts and electronic data to the Engineer prior to final inspection.

135-3.2 CROSS-SECTION SURVEYS. When required, obtain right-angle cross sections to the construction centerline at the interval detailed in the Department's Construction Surveying Requirements.

The following will be supplied by the Department:

a. Construction Plans and Specifications.
b. Design Cross Sections, if any.
c. State of Alaska Land Survey Monument Record forms.
d. Department's Construction Surveying Requirements. One copy.
e. Design centerline grades.

The following shall be required of the Contractor:

a. Field Books (Level, Cross-Section, Slope Stake, etc.). Use "Rite-in-the-Rain" or similar weather resistant hardbound field books. Field books become the property of the Department upon completion of the work.

b. Label the books and number the pages. Make a heading in the appropriate book (date, weather, names and duties of crew members) at the beginning of each day's work.

c. Update the index of the appropriate book at the end of each day's work.

d. Reduce, check, and adjust level notes.

e. The notekeeper shall compute the cross-section level notes and slope stake catches and a different crew member shall check the computation on a continual basis in the field.

f. Enter the grade data, shoulder width and/or ditch distance, stationing, slope, etc., in the slope stake books.

g. Maintain the position and identifying marks of slope stakes and reference points until used for their intended purpose.

h. Correct errors by drawing a line through them and writing the correct entry directly above. Erasures will not be allowed.

i. Return field books and copies of the field books to the Project office at the end of each work day or as directed.

j. Provide copies of grade sheets and temporary bench mark elevations to the Engineer 48 hours before beginning work on unclassified excavation or embankment.

k. The Contractor's survey crews shall comply with approved traffic control plans. Coordinate crew activities with the Worksite Traffic Supervisor.

l. Keep a survey Party Chief diary, and give a copy of the diary to the Engineer each day. The diary shall contain the following information:

(1) Date.

(2) Weather.
(3) Crew members' names and duties.
(4) Type and location of work performed.
(5) Hours worked.
(6) Type of equipment used (brand) and date equipment was double centered or "peg" test was performed.
(7) Signature of person in responsible charge.

m. Submit the survey field notes, for the specific area, relating to monument referencing, before beginning clearing, grubbing or excavation.

n. Draw cross-sections and complete quantity calculations for all earthwork quantities.

135-3.3 MONUMENTS. Install primary and secondary monuments, as called for in the Plans, at the positions established by the Department. Prior to the start of construction, reference monuments, to include property markers/corners and accessories, that may be disturbed or buried during construction. In addition, reference monuments designated for referencing on the Plans. Prepare and record Monument Record Forms in the appropriate Recorder's Office before disturbing monuments. Monument Record Forms may be obtained from the Engineer. Re-establish monuments in their original position before completion of the project. Prepare and file a Monument Record Form for each reestablished monument.

Keep records and report to the Engineer evidence that a monument has been disturbed and is no longer reliable or cannot be located and is presumed to be missing. Establish a minimum of two in-line reference points, or three swing-tie reference points in situations where in-line referencing is not desirable. Set reference points outside of the construction limits. Measure distances from the monument to the nearest 0.01 foot. Record referencing of monuments in a separate field book stamped by the Surveyor.

Replace existing monuments disturbed by construction with Primary or Secondary Monuments meeting the requirements of Subsections 135-2.1 through 3. When it is impractical to establish a monument in its original position, install a witness corner (WC). Place the WC to a property corner on the property line when the other property corner that defines said line is existing or there has been sufficient retracement to define said line. In other cases, place a reference monument (RM) perpendicular to the centerline at the station of the original position and at a distance from the original position measured in whole feet.

Those monuments found that are not shown on the Plans will be recognized by the Engineer when the following is provided by the Surveyor: Field notes identifying type and location of the monument, and a description of the point the monument marks, with the reason to preserve its location. Monuments not shown on the Plans will be considered additional work and paid by Item G-135b, ~~Conditional~~ Extra Three Person Survey Party.

The Surveyor shall complete a State of Alaska Land Survey Monument Record form for each primary and secondary monument referenced, removed, installed, relocated or replaced. Provide the required survey information on the form according to statutory requirements, including section, township and range. Meet requirements for recording at the District Recorder's Office in which the project is located for each monument record. Deliver conforming copies of the recorded forms to the Engineer before monument removal or disturbance, and after setting any final monuments requiring monument records.

Set each monument and monument case accurately to lines established at the required location and in a manner as to ensure being held firmly in place. Set existing monuments and monument cases to be adjusted to new elevations in the manner and at the elevations directed.

Primary Airport Control (PAC) and Secondary Airport Control (SAC) monuments are present in the project area as shown on the Plans. This control is important and if disturbed, must be reestablished by the Contracting Agency. For this reason, the Contractor is required to employ all reasonable measures to preserve the existing control monuments in an undisturbed condition. If any PAC or SAC is disturbed by the Contractor's actions, the Contractor shall reimburse the State of Alaska for the cost of replacing monuments,

performing geodetic surveys and related data processing, and filing the completed survey with the National Geodetic Surveys office. The estimated cost for reestablishing a disturbed monument is approximately $50,000, but costs will vary depending on location, season, availability of staff, and other factors.

135-3.4 OFFICE ENGINEERING. Calculate finish grades for the embankments as specified according to Plans and/or Specifications. Use information available in the field, on as-builts, or as provided by the Engineer. This work shall be performed by or under the responsible charge of a Professional Land Surveyor or a Professional Engineer currently Registered in the State of Alaska.

135-3.5 FINAL TRAVERSE. Within 30 days after the Engineer receives a letter stating that construction activities that may disturb the monuments have ceased, the Surveyor shall run a final closed traverse to verify the positional accuracy of installed survey monuments. Tie into the traverse the primary and secondary monuments placed or replaced and undisturbed Department-provided control points. Meet the requirements of a secondary monument for traverse points established during this work. The Surveyor shall sign and stamp a letter that lists each monument and its coordinates. The letter shall certify that the monuments are each located within 0.1 foot of their proposed position based on the project survey control points provided by the Department. Deliver the certification letter and field notes for this work to the Engineer.

135-3.6 EXTRA THREE PERSON SURVEY PARTY. This pay item is for extra, additional, or unanticipated work made necessary by changes in the project. Work performed under pay item G-135b may include field work, office engineering, or any work described under the construction requirements of item G-135.

135-3.7 FINISH GRADE CHECKING. Perform all survey work required to verify that the finished surface of all asphalt concrete pavement meets the requirements for grade as specified in subsection P-401-5.2, f(4), Grade Acceptance Criteria. Multiple surveys may be necessary in areas that require reworking.

METHOD OF MEASUREMENT

135-4.1 The work will be measured according to Section GCP-90, as directed by the Engineer, and as follows:

- **a.** Lump Sum. No measurement of quantities will be made.
- **b.** Hour. By the number of hours, as directed by the Engineer and as recorded by certified payrolls.
- **c.** Contingent Sum. As specified by the Engineer in the Directive authorizing the work.

BASIS OF PAYMENT

135-5.1 Pay Items include all necessary personnel, equipment, transportation, and supplies to accomplish the work described in the Contract, or as directed by the Engineer.

Pay Item G-135a Construction Surveying by the Contractor, includes all Contractor surveying work described in the Contract.

Pay Item G-135b Extra Three Person Survey Party, includes payment by the hour for extra, additional or unanticipated work made necessary by changes in the project. Adjustment according to GCP-90-04 is not allowed for this pay item. Work accomplished by a three person survey party will be paid at 100% of the contract unit price, by a two person survey party at 75% of the contract unit price, or by a one person survey party at 32% of the contract unit price, for Pay Item G-135b.

Pay Item G-135c Monuments by the Contractor, includes all monument work described in the Contract.

Pay ItemG-135d Extra Surveying by the Contractor, includes payment according to a Directive from the Engineer authorizing the work. This pay item is for extra, additional, or unanticipated work made necessary by changes in the project.

Payment will be made under:

Item G-135a	Construction Surveying by the Contractor - per lump sum
Item G-135b	Extra Three Person Survey Party - per hour
Item G-135c	Monuments by the Contractor - per lump sum
Item G-135d	Extra Surveying by the Contractor – per contingent sum

G-150 EQUIPMENT RENTAL

DESCRIPTION

150-1.1 This item consists of furnishing construction equipment, operated, fueled and maintained, on a rental basis for use in construction of the proposed improvements and in performing work incidental to construction at the direction of the Engineer as such work is generally defined in these Plans and Specifications. Construction equipment is defined as that equipment actually used for performing the items of work specified and shall not include support equipment such as, but not limited to, hand tools, power tools, electric power generators, welders, small air compressors and other shop equipment needed for maintenance of the construction equipment.

REQUIREMENTS

150-2.1 EQUIPMENT FURNISHED. The construction equipment to be provided under this contract shall be that shown in the Special Provisions and/or the bid schedule supplemented by such non-rental maintenance equipment and support equipment as the Contractor elects to provide. The equipment shall be of modern design and in good working condition and shall be maintained in good working condition throughout the life of the project. All equipment to be used in the construction of this project as noted in the Bid Schedule shall be made available for inspection by the Engineer prior to its shipment to the project site. Each item of equipment shall have company numbers clearly displayed for ready identification. The Engineer shall have the authority to prohibit the use of rental payment for any equipment which is not maintained in good working condition or which has a production capacity below construction industry standards.

150-2.2 EQUIPMENT OPERATORS. Equipment operators shall be competent and experienced and shall be capable of operating the equipment to its capacity. The Contractor shall replace those operators who, in the opinion of the Engineer, misconduct themselves, either on the job or in the community, or are incompetent or negligent in the operation of the equipment.

150-2.3 HOURS OF OPERATION AND TIMEKEEPING. The Engineer shall begin recording time for payment each shift when the equipment begins work on the project. Time during which the equipment is being serviced or repaired shall not be included. The stated equipment rental rates shall apply only to that time during which the equipment is actively engaged in construction, as directed by the Engineer. No standby payment will be made for any piece of equipment prior to, during the life of, or after the project has been completed. "Stuck Time" payment shall be made for each piece of equipment that becomes stuck while actively engaged in construction work on the airport and shall be limited to 1 hour per shift for each piece of equipment that becomes stuck.

150-2.4 CONSTRUCTION METHODS. The work shall be constructed according to the Plans, Special Provisions and as directed by the Engineer.

METHOD OF MEASUREMENT

150-3.1 The serial number and brief description of each item of equipment listed in the bid schedule will be recorded by the Engineer, and they will record the number of hours, or fractions thereof to the nearest one-quarter hour, during which the equipment is actively engaged in construction of the project. The furnishing and operating of equipment of heavier type, larger capacity, or higher horsepower than specified will not entitle the Contractor to any extra compensation over their applicable contract unit price. Each day's activity will be recorded on a separate sheet or sheets, which shall be verified and signed by the Contractor's representative at the end of each shift, and a copy will be provided to the Contractor's representative. No idle time will be recorded unless authorized by the Engineer.

BASIS OF PAYMENT

150-4.1 Payment will be made at the contract unit price bid for equipment rental per hour. This payment shall be full compensation for all fuel, operator's and mechanic's wages, parts, tools, maintenance items, shop equipment, camp, camp personnel wages, and all other incidentals necessary to keep the equipment in good condition and available for work on the project. No payment for equipment standby time resulting from unfavorable weather, or any other reason, is implied or intended and no payment therefore will be made by the Department. No payment will be made separately or directly for embankments.

Payment will be made under:

Item G-150a Equipment Rental (65 HP Dozer) - per hour

ITEM G-300 CRITICAL PATH METHOD (CPM) SCHEDULING

DESCRIPTION

300-1.1 Provide and maintain a Critical Path Method (CPM) progress schedule for the project. Use the schedule in coordinating and monitoring of all work under the Contract including activity of subcontractors, manufacturers, suppliers, and utility companies, and reviews by the Department. Update the CPM schedule, as required.

Provide work plans.

SUBMITTAL OF SCHEDULE

300-2.1 Submit a detailed initial CPM Schedule at the pre-construction conference for the Engineer's acceptance as set forth below.

The construction schedule, for the entire project, may not exceed the specified contract time.

Allow the Engineer 14 days to review the initial CPM Schedule. If revisions are required, make them promptly. The finalized CPM Schedule must be completed and accepted prior to commencement of any work on the project.

REQUIREMENTS AND USE OF SCHEDULE

300-3.1

a. **Schedule Requirements.** Prepare the CPM schedule as a Precedence Diagram Network developed in the activity-on-node format which includes:

   (1) Activity description

   (2) Activity duration

   (3) Resources required for each of the project activities, including:

      (a) Labor (showing work days per week, holidays, shifts per day, and hours per shift)

      (b) Equipment (including the number of units of each type of equipment)

      (c) Materials.

   Show on the activity-on-node diagram the sequence and interdependence of all activities required for complete performance of all items of work under this Contract, including shop drawing submittals and reviews and fabrication and delivery activities.

   No activity duration may be longer than 15 work days without the Engineer's approval.

   The Engineer reserves the right to limit the number of activities on the schedule.

   Consider that schedule float time is shared equally with the Department.

   The contract completion time will be adjusted only for causes specified in this Contract.

   As determined by CPM analysis, only delays in activities which affect milestone dates or contract completion dates will be considered for a time extension.

b. **Schedule Updates.** 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. Review progress and verify finish dates of completed activities, remaining duration of uncompleted activities, and any proposed logic and/or time estimate revisions. Submit a revised CPM schedule within 5 working days after this meeting showing the finish dates of completed activities and updated times for the remaining work, including any addition, deletion, or revision of activities required by Contract modification.

c. **Work Plans.** In addition to the CPM schedule, submit a work plan every 2 weeks during construction, detailing your proposed operations for the forthcoming two weeks. Include:

(1) Work activities
(2) Manpower involved by trade
(3) Work hours
(4) Equipment involved
(5) Location of the work to be performed

METHOD OF MEASUREMENT

300-4.1 Section 90.

BASIS OF PAYMENT

300-5.1 At the lump sum price for CPM Scheduling.

Payment will be made under:

Item G-300a CPM Scheduling - per lump sum

ITEM G-700 TRAFFIC CONTROL FOR AIRPORTS

DESCRIPTION

700-1.1 Provide suitably equipped airport flagger(s) with no other assigned duties to monitor and control the Contractor's personnel and equipment crossing or occupying any portion of the Air Operations Area of the airport, as required under Section 80-04 Limitation of Operations. Provide flaggers to maintain vehicular traffic on an existing road, street, or highway during performance of your work that is not otherwise provided for in the contract, as required under Section 40-05 Maintenance of Traffic.

REQUIREMENTS

700-2.1 Furnish airport flaggers and all necessary equipment. Equip each airport flagger assigned to an aircraft operations area with a two-way radio that broadcasts and receives on the ANC Tower and Ground Control Frequencies (118.3 MHz and 121.9 MHz)~~designated Common Traffic Advisory Frequency (CTAF) for the project airport as found in the Alaska Supplement of the United States Government Flight Information Publication~~. Provide each airport flagger with a two-way radio to contact construction equipment and other airport flaggers on the project. Equip each airport flagger for vehicular traffic control with a flagging paddle that conforms to the requirements of the Alaska Traffic Manual.

Locate each airport flagger at a position as shown on the Plans or as described in the Safety Plan, or at an alternate location as directed by the Engineer. Ensure that each airport flagger maintains their assigned post at all times. Airport flagger positions will be adjusted as conditions warrant.

METHOD OF MEASUREMENT

700-3.1 Airport flagger will be measured by the hour for the actual number of hours that each airport flagger performed as directed by the Engineer.

BASIS OF PAYMENT

700-4.1 Payment will be made at the contract unit price for each Airport Flagger per hour. The hourly rate for Airport Flagger is set at $48.00 per hour for this contract. The Engineer does not require a change order/directive for this pay item.

Payment will be made under:

Item G-700a Airport Flagger - per contingent sum

ITEM L-110 UNDERGROUND ELECTRICAL DUCT

DESCRIPTION

110-1.1 This item shall consist of underground electrical ducts installed according to this specification at the locations and according to the dimensions, designs, and details shown in the Plans. This item shall include the installation of all underground electrical ducts or underground conduits. It shall also include all trenching, marking, backfilling, removal, and restoration of any paved areas; manholes, concrete encasement, mandreling installation of steel drag wires and duct markers, capping, and the testing of the installation as a completed duct system ready for installation of cables, to the satisfaction of the Engineer.

EQUIPMENT AND MATERIALS

110-2.1 GENERAL. All equipment and materials covered by referenced specifications shall be subject to acceptance through manufacturer's certification of compliance with the applicable specification when so requested by the Engineer.

110-2.2 BITUMINOUS FIBER DUCT. Bituminous fiber duct and fittings shall conform to the requirements of UL Standard 543.

- **a.** Type I, for concrete encasement.
- **b.** Type II, for direct burial.

110-2.3 ASBESTOS CEMENT DUCT. Asbestos cement duct and fittings shall conform to the requirements of Fed. Spec. W-C-571 and shall be one of the following, as specified in the proposal:

- **a.** Type I, for concrete encasement.
- **b.** Type II, for direct burial.

110-2.4 STEEL CONDUIT. Rigid steel conduit and fittings shall conform to the requirements of UL Standard 6, 514, and 1242.

110-2.5 CONCRETE. Concrete shall conform to Item P-610, Structural Portland Cement Concrete, 1 inch maximum size coarse aggregate.

110-2.6 PLASTIC CONDUIT. Plastic conduit and fittings shall conform to the requirements of Fed. Spec. W-C-1094 Type I, suitable for underground use either directly in the earth or encased in concrete. The conduit shall be one of the following as shown on the Plans:

- **a.** Underground Plastic Duct shall be rigid, non-metallic, conduit, Schedule 40 PVC conforming to UL Standard 651 and NEMA TC-2, nominal size as indicated on the Plans. All fittings such as elbows, couplings, connectors, expansion joints, adapters, etc., used in the installation shall be Schedule 40 PVC conforming to UL Standard 514 and NEMA TC-3.

- **b.** Underground Plastic Duct shall be Type III, rigid, HDPE pipe, schedule 40. The material shall have a cell classification of 334420C or better according to ASTM D 3350, and shall have a third party, nationally recognized testing lab listing. The nominal size shall be as indicated on the Plans ~~with a minimum wall thickness of 5/32 inch~~. All fittings such as saddle fittings, elbows, couplings, connectors, adapters, etc., used in the installation shall be HDPE and shall be of the same material as the duct.

110-2.7 FLEXIBLE METAL CONDUIT. Flexible metal conduit shall be water-tight, listed for exposed or direct bury per UL-360, as a grounding conductor per NEC Article 351-9, and rated for temperatures between -67 °F and +220 °F.

110-2.8 TAPES.

a. Pipe sealing tape shall be Teflon, "Scotch" No. 48 or approved equal.
b. Corrosion preventive tape shall be "Scotch" No. 50 or approved equal.

CONSTRUCTION METHODS

110-3.1 GENERAL. The Contractor shall install underground ducts at the approximate locations indicated in the airport layout plans. The Engineer shall indicate specific locations as the work progresses. Ducts shall be of the size, material, and type indicated in the Plans or specifications. Where no size is indicated in the Plans or specifications, the ducts shall be not less than 3 inches inside diameter. All duct lines shall be laid so as to grade toward handholes, manholes and duct ends for drainage. Grades shall be at least 3 inches per 100 feet. On runs where it is not practicable to maintain the grade all one way, the duct lines shall be graded from the center in both directions toward manholes, handholes, or duct ends. Pockets or traps where moisture may accumulate shall be avoided.

Seal all joints in the rigid steel conduit runs with Teflon pipe sealing tape applied to the threaded couplings. Wrap the completed joint with 2 layers of corrosion preventative tape, 1/2 lapped and extending 1-1/2 inches on both sides of the joints.

After the conduit run has been completed, pull a standard flexible mandrel not less than 12 inches long, having a diameter approximately 1/4 inch less than the inside diameter of the conduit, through the entire length of the conduit run, after which a brush with stiff bristles of at least the diameter of the inside of the conduit shall be pulled through the entire length of the conduit run to make certain that no particles of earth, sand, or gravel have been left in the line.

All ducts installed shall be provided with a No. 10 gauge galvanized iron or steel drag wire for pulling the permanent wiring. Sufficient length shall be left in manholes or handholes to bend the drag wire back to prevent it from slipping back into the duct. Where spare ducts are installed, as indicated on the Plans, the open ends shall be plugged with removable tapered plugs, designed by the duct manufacturers, or with hardwood plugs conforming accurately to the shape of the duct and having the larger end of the plug at least 1/4 inch greater in diameter than the duct.

All ducts shall be securely fastened in place during construction and progress of the work and shall be plugged to prevent seepage of grout, water, or dirt. Any duct section having a defective joint shall not be installed.

All ducts, except steel conduit, installed under runways, taxiways, aprons, and other paved areas shall be encased in a concrete envelope.

Where turf is well established and the sod can be removed, it shall be carefully stripped and properly stored.

Trenches for ducts may be excavated manually or with mechanical trenching equipment. Walls of trenches shall be essentially vertical so that a minimum of shoulder surface is disturbed. Blades of road patrols or graders shall not be used to excavate the trench. The Contractor shall ascertain the type of soil or rock to be excavated before bidding. All excavation shall be unclassified.

Trenches for burial of duct or conduit shall be of sufficient width to provide a minimum of 2 inches of lateral clearance between the duct or conduit and trench walls on both sides ~~as shown on the Plans~~. Trenches for burial of duct or conduit shall be of sufficient depth as to assure 1.5 feet minimum duct or conduit burial depth below finished grade, plus ~~2~~ 4 inches minimum of below duct or conduit bedding ~~as shown on the Plans~~, plus adequate over excavation depth as required to slope and grade all duct or conduit installations to drain toward light bases or hand holes.

~~The bottom of all trenches shall be sloped and lined with a layer of bedding material of minus 1/4 inch material that is not less than 2 inches in depth, before placing any duct or conduit in the trenches. Bedding~~

~~material shall be, sand, gravel, crushed aggregate, or other suitable material containing no organic, frozen, or other deleterious material.~~

Excavate foundations, footings, slabs, pads, manholes, handholes, ducts and/or duct banks, or light base assemblies so as to permit the placing or construction of the full width, length, and depth of the structure or object and the layer of bedding material, whenever bedding is required.

110-3.2 DUCTS ENCASED IN CONCRETE. Unless otherwise shown in the Plans, concrete-encased ducts shall be installed so that the top of the concrete envelope is not less than 1.5 feet below the finished subgrade where installed under runways, taxiways, aprons, or other paved areas, and not less than 1.5 feet below finished grade where installed in unpaved areas. Ducts under paved areas shall extend at least 3 feet beyond the edges of the pavement or 3 feet beyond any underdrains which may be installed alongside the paved area. Trenches for concrete-encased ducts shall be opened the complete length before concrete is laid so that if any obstructions are encountered, proper provisions can be made to avoid them. All ducts for concrete encasements shall be placed on a layer of concrete not less than 3 inches thick prior to its initial set. Where two or more ducts are encased in concrete, the Contractor shall space them not less than 1-1/2 inches apart (measured from outside wall to outside wall) using spacers applicable to the type of duct. As the duct laying progresses, concrete not less than 3 inches thick shall be placed around the sides and top of the duct bank. End bells or couplings shall be installed flush with the concrete encasement where required.

When specified, the Contractor shall reinforce the bottom side and top of encasements with steel reinforcing mesh or fabric or other approved metal reinforcement. When directed, the Contractor shall supply additional supports where the ground is soft and boggy, where ducts cross under roadways, or where otherwise shown on the Plans under such conditions, the complete duct structure shall be supported on reinforced concrete footings, piers, or piles located at approximately 5-foot intervals.

When clay or soapstone ducts are specified, they shall be installed with concrete encasement as described above. Clay conduit shall be of the single-bore type. Where the self-centering socket-joint type of single clay duct is used, conduit shall be built up, tier by tier, and separated only by sufficient mortar or fine aggregate concrete to bed the ducts evenly and fill all voids between ducts. Single ducts shall be jointed together and the joints grouted with Portland cement mortar. A suitable gasket (of rubber or other approved material) shall first be placed in the receptacle end of the duct, prior to the joining operation, in order to exclude all mortar from the duct.

Where the square bore butt joint type of clay duct, single or multicell, is used, sections shall be aligned with at least 4 steel dowel pins and joints wrapped with duct tape 6 inches wide and lapped 6 inches. All joints in a bank of single-bore ducts shall be staggered, beginning evenly from the manhole or handhole, by means of short lengths 6, 8, 9, 12, and 15 inches long. Cement mortar shall be troweled around each and every joint. Voids in the duct bank, caused by the external shape of the corners of the conduit, shall also be filled with mortar. The joining and joints of soapstone duct shall be done according to the manufacturer's recommendations.

110-3.3 DUCTS WITHOUT CONCRETE ENCASEMENT. Trenches for single-duct lines shall be not less than 6 inches nor more than 12 inches wide, and the trench for 2 or more ducts installed at the same level shall be proportionately wider. Trench bottoms for ducts without concrete encasement shall be made to conform accurately to grade so as to provide uniform support for the duct along its entire length.

Where PE (HDPE) or steel conduit is specified, place a layer of bedding material, at least 4 inches thick (loose measurement) in the bottom of the trench to bed the duct. Use bedding material that meets the requirements for the applicable lift of material (P-152, P-154, P-208, P-209) except that 100% of the bedding material will pass a 1 inch sieve.

~~A~~ Where conduit other than PE or steel is specified, a layer of sand, at least 4 inches thick (loose measurement) shall be placed in the bottom of the trench as bedding for the duct. The bedding material shall consist of sand, and it shall contain no particles that would be retained on a 1/4-inch sieve. The bedding material shall be tamped until firm.

Unless otherwise shown in Plans, ducts for direct burial shall be installed so that the tops of all ducts are at least 1.5 feet below the finished grade.

When two or more ducts are installed in the same trench without concrete encasement, they shall be spaced not less than 2 inches apart (measured from outside wall to outside wall) in a horizontal direction and not less than 6 inches apart in a vertical direction.

Trenches shall be opened the complete length before duct is installed so that if any obstructions are encountered, proper provisions can be made to avoid them.

110-3.4 PVC CONDUIT. Install PVC conduit where indicated on the Plans.

Fabricate the conduit runs as recommended by the conduit manufacturer. Make all joints square, tight, and leakproof. Do not allow bends or breaks in the joints. Use only solvents and cements, which are specifically recommended by the conduit manufacturer. Join together the complete run between each light base alongside the trench. Place in the trench and connect to the base assembly after the minimum cure time of the joint cement has elapsed and after inspection and approval is granted by the Engineer.

Make field cuts of the conduit true and square with a tool or lathe designed for the purpose. Debur and ream the conduit as required.

Bend PVC conduit at the job site only with a "Hot Box" or as recommended by the conduit manufacturer. Heat the conduit uniformly to obtain smooth bends without overheating. Conduit with a brown appearance shall not be used. Conduit with extremely sharp bends, kinks in the bends or which exhibits a significant visual defect shall not be used.

Install expansion fittings in each run of conduit between light base assemblies, at spacing not exceeding 60 feet. The expansion fitting shall be of the same manufacturer as the conduit and shall be installed according to the manufacturer's instruction. Expansion joints shall be installed a maximum of 10 feet from the edge light bases or hand holes and shall be installed with joints 1/4 inch expanded, resulting in a minimum requirement of four expansion joints per 190-foot run of conduit.

After the conduit run has been completed, pull a standard flexible mandrel not less than 12 inches long, having a diameter approximately 1/4 inch less than the inside diameter of the conduit, through the entire length of the conduit run, after which a brush with stiff bristles of at least the diameter of the inside of the conduit shall be pulled through the entire length of the conduit run to make certain that no particles of earth, sand, or gravel have been left in the line.

110-3.5 HDPE CONDUIT. Assemble high-density polyethylene conduit into runs on the surface and install in trenches after coupling of the section. Butt-weld the duct using the manufacturer's recommended procedures and equipment. Assure that the conduit is open, continuous and free of water and debris prior to installing cable. In underground conduit, pull a stiff bristle brush through the entire length of the conduit run immediately prior to the cable being installed.

110-3.6 DUCT MARKERS. Place marker tape 0.5 foot below final grade or below bottom of Crushed Aggregate Base Course in paved areas for the full length of the trenches above all ducts installed as indicated on the Plans.

When called for in the Plans, the location of the ends of all ducts shall be marked by a concrete slab marker 2 feet square and 4 inches thick extending approximately 1 inch above the surface. The markers shall be located above the ends of all ducts or duct banks, except where ducts terminate in a handhole, manhole, or building.

The Contractor shall impress the word "DUCT" on each marker slab, and shall also impress on the slab the number and size of ducts beneath the marker. The letters shall be 4 inches high and 3 inches wide with width of stroke 1/2 inch and 1/4 inch deep or as large as the available space permits.

110-3.7 BACKFILLING. Backfill only after the duct has been placed, inspected and accepted by the Engineer.

After concrete-encased ducts have been properly installed and the concrete has had time to set, the trench shall be backfilled in at least two layers with excavated material not larger than 2 inches in diameter and thoroughly tamped and compacted to at least the density of the surrounding undisturbed soil. If necessary to obtain the desired compaction, the backfill material shall be moistened or aerated as required. If duct is placed in the structural section (P-154, P-208, P-209) of a pavement such as for a runway or taxiway, the Contractor shall construct the backfill according to the specifications for the material in which the duct is placed.

Trenches shall not be excessively wet and shall not contain pools of water during backfilling operations.

The trench shall be completely backfilled and tamped level with the adjacent surface: except that, when sod is to be placed over the trench, the backfilling shall be stopped at a depth equal to the thickness of the sod to be used, with proper allowance for settlement.

Any excess excavated material shall be removed and disposed of according to instructions issued by the Engineer.

For ducts without concrete envelope, ~~sand~~ bedding material shall be placed around the ducts and carefully tamped around and over them with hand tampers. ~~Sand shall be non-frost susceptible with no particle larger than 1/4 inch.~~ Use bedding material that conforms to the requirements specified in subsection 110-3.3 for the type of conduit that is used. ~~Sand~~ Bedding material shall be placed to provide a minimum of ~~2~~ 4 inches of cover when compacted over and to the sides of the duct. The remaining trench may be filled with regular run of excavated material and thoroughly tamped as specified above. If duct is placed in the structural section (P-154, P-208, P-209) of a pavement such as for a runway or taxiway, the Contractor shall construct the backfill according to the specifications for the material in which the duct is placed.

110-3.8 RESTORATION. Where sod has been removed, it shall be replaced as soon as possible after the backfilling is completed. All areas disturbed by the trenching, storing of dirt, cable laying, pad construction and other work shall be restored to its original condition. The restoration shall include any necessary topsoil, fertilizing, liming, seeding, sprigging, or mulching. All such work shall be performed according to the FAA Standard Turfing Specifications. The Contractor shall be held responsible for maintaining all disturbed surfaces and replacements until final acceptance.

METHOD OF MEASUREMENT

110-4.1 Underground duct shall be measured by the linear foot of duct installed, measured in place, completed, and accepted. Separate measurement shall be made for the various types and sizes.

Items shown as lump sum will not be measured for payment.

BASIS OF PAYMENT

110-5.1 Payment will be made at the contract unit price for each type and size of single-way or multi-way duct completed and accepted. This price shall be full compensation for furnishing all materials and for all preparation, assembly, and installation of these materials, and for all labor, equipment, tools, and incidentals necessary to complete this item.

Payment will be made under:

	Item L-110a	~~2-1/8~~ 2-inch Rigid Steel Conduit - per linear foot
	Item L-110b	~~2-1/8~~ 2-inch Rigid Steel Conduit - per lump sum
	Item L-110c	2-inch PVC Conduit - per linear foot
	Item L-110d	2-inch PVC Conduit - per lump sum
	Item L-110e	1-~~1/4~~ inch PVC Conduit - per linear foot
	Item L-110f	1-~~1/4~~ inch PVC Conduit - per lump sum
	Item L-110g	2-inch PE Conduit - per linear foot
	Item L-110h	2-inch PE Conduit - per lump sum
	Item L-110i	Multi-Way Duct in Concrete (# of conduit) - per linear foot
	Item L-110j	Multi-Way Duct in Concrete (# of conduit) - per lump sum

MATERIAL REQUIREMENTS

Fed. Spec. W-C-571	Conduit and Fittings, Nonmetal, Rigid; (Asbestos-Cement or Fire-Clay Cement), (For Electrical Purposes)
Fed. Spec. W-C-1094	Conduit and Fittings; Nonmetallic, Rigid, (Plastic)
UL Standard 6	Rigid Metal Conduit
UL Standard 514	Fittings for Conduit and Outlet Boxes
UL Standard 543	Impregnated-Fiber Electrical Conduit
UL Standard 1242	Intermediate Metal Conduit

ITEM L-160 ELECTRICAL LOAD CENTERS

DESCRIPTION

160-1.1 Furnish and install load center assemblies at the locations indicated in the Plans. Modify existing load centers when indicated.

Use load centers of the following types as shown on the load center detail sheets:

Type 1:	Pad mounted with underground service (large)
Type 1A:	Pad mounted with underground service (small)
Type 2:	Post mounted with underground service
Type 3:	Pole mounted with overhead service

MATERIALS

160-2.1 Conform to the standards of NEC, the NESC, and local safety codes as adopted and amended by the authority having jurisdiction. Use materials that conform to applicable NEMA and ANSI standards, the Materials Certification List, the Plans, specifications, and the following:

a. Concrete. Provide commercial grade concrete with a minimum 28-day compressive strength of 2,500 psi or an approved, pre-mixed, sacked concrete.

b. Grout. Use non-shrink, non-corrosive, non-metallic, cement-based grout meeting ASTM C-1107, Type C. Meet the requirements of ATM 520. Develop a 28-day compressive strength of 9,000 psi.

c. Wood Posts. Construction grade, 6 x 6 inch nominal dimension S4S Douglas Fir, Hem-Fir, Western Larch, Western Hemlock, Mountain Hemlock or Southern Pine meeting *Standard Grading and Dressing Rules*, West Coast Lumber Inspection Bureau. Treat posts using preservatives and treatment processes in accordance with AASHTO M133 and *Best Management Practices for the Use of Treated Wood in Aquatic Environments* (BMPs), published by the Western Wood Preservers Institute, 601 Main Street, Suite 405, Vancouver, WA 98660 (Phone: 800-279-9663).

d. Load Center. NEMA 3R enclosure constructed of zinc-coated A60 finish sheet steel per ASTM A 653 and ASTM A 924, with no external screws, bolts, or nuts.

Shop coat cabinet components with a 2-part urethane paint undercoat and 2-part urethane finish coats. Finish coats must be standard white for removable panels and non-gloss silver-gray, closely matching FSS No. 5950 Color No. 36622, for the enclosure.

The load center must be labeled as a unit by an approved independent electrical testing laboratory (such as UL, ETL, CSA, etc.) defined by ANSI Standard Z34.1 *Third-Party Certification Programs for Products Processes and Services* and conform to applicable published standards noted herein, the Plans, and Special Provisions. The load center must be labeled as service entrance equipment.

e. Panelboards. Load panels in load centers must conform to FSS W-P-115C, Type 1 - Circuit Breaker Panelboards; UL 67 - *Panelboards*; and NEMA PB1 - *Panelboards with Molded Case Circuit Breakers*. The rated voltage of the panels must be as noted on the load center summary in the Plans, 120/240 volts or 240/480 volt single phase or 120/208 volt or 277/480 volt three-phase. The ampacity rating of panels must not be less than the ampacity noted on the load center summary, 100 amps minimum, at rated voltage.

f. **Circuit Breakers.** Use bolt-in type circuit breakers with a copper bus. Provide separate neutral and ground busses. The series rated interrupting capacity of the circuit breakers in the panels must not be less than shown on the load center summary, or 10,000 AIC minimum, at rated voltage.

Use circuit breakers that are molded-case thermal-magnetic types with single-trip indicating switch handle. They must have an enclosed toggle type operating mechanism with quick-make/quick-break action and have a trip-free disconnect from the switch handle that will prevent the contacts from being held in the closed position. The circuit breakers must have the frame size, interrupting capacities, and trip rating clearly marked on the breaker. Multi-pole circuit breakers must have a common trip mechanism. Contacts must be silver alloy enclosed in an arc quenching chamber. Overload trip ratings must be self compensating for ambient temperatures from 14 °F to 140 °F. Circuit breakers must be 240 or 277 volt maximum rated for 120/240/277 volt circuits, which ever is applicable, and have an interrupting capacity (RMS - symmetrical) of not less than 10,000 amperes. They must have not less than 480 volt rated for circuits above 277 volts and have an interrupting capacity (R.M.S.- symmetrical) of not less than 14,000 amperes.

g. **Contactor.** Electrically-held type consisting of an operating coil, a laminated armature, contacts, and terminals. Contacts must be fine silver, silver alloy, or superior alternative material rated to switch the specified load, 30 ampere minimum at rated voltage, and be normally open, unless otherwise noted. Contactor coils must be rated for operation at 240 VAC.

h. **Meters.** Equip all meter sockets mounted in Type-1 and Type-1A load centers with internal mounted meters with manual circuit closing devices. The devices may be either the link or lever type. Do not use the horn and sliding types. Equip all load centers with internal mounted meters with safety sockets (that is, provisions for de-energizing the meter jaws). The test section cover must be sealable with a 0.047-inch stainless steel bail.

i. **Transformers.** Transformers in load centers containing load panels of different nominal voltages must be isolated winding type with primary and secondary voltages and KVA ratings as noted on the Plans. Transformers must carry rated volt amperes continuously without exceeding a 240 °F temperature rise above a 100 °F ambient temperature.

Where installed outside of the load center enclosure, use a non-ventilated transformer fabricated from aluminum, stainless steel, or galvanized steel and filled with high-melting point, thermal setting, or epoxy insulating compounds to prevent moisture from entering the winding enclosure. Coat enclosures fabricated from sheet metal with moisture-resistant paint. Insulate transformer leads with non-hygroscopic material and extend them 9 inches beyond the winding chamber seal.

j. **Conductors.** Stranded copper with either type XHHW-2 or RHW insulation.

k. **Conduit.** Galvanized rigid conduit made of mild steel meeting UL standard UL-6.

l. **Terminals.** Size all terminals according to the amperage ratings of the conductor used. They must be suitable for termination of copper and aluminum conductors.

m. **Photoelectric Controls.** Use photoelectric controls rated for operation at 240 VAC.

n. **Galvanizing.** Hot-dip galvanize all anchor bolts, nuts, washers, tie-rods, clamps, and other miscellaneous ferrous parts in conformance with AASHTO M 232. After galvanizing, ensure that the bolt threads accept galvanized standard nuts without requiring tools or causing removal of protective coatings.

Galvanize rigid metal conduit in conformance with AASHTO M 232.

Hot-dip galvanize structural steel shapes, plates, bars and their products according to AASHTO M 111.

Repair damage to galvanized coatings per AASHTO M 36.

o. **Equipment List(s) and Drawings.** Within 30 days after the Contract award, submit 8 collated copies of a portfolio of equipment and materials proposed for installation to the Department for review and approval. Include a table of contents in the portfolio(s) that includes each item's intended use(s) and the following:

(1) **Materials on the *Approved Products List*:** A description that includes product name, manufacturer, model or part number, and the conditions listed for approval.

(2) **Materials Not on the *Approved Products List*:** Catalog cuts that include the manufacturer's name, type of product, size, model number, conformance specifications, and other data as may be required, including manufacturer's maintenance and operations manuals, or sample articles.

(3) **Materials Not Requiring Certification:** Incidental materials incorporated into the work (such as nuts, ties, bolts, washers, etc.) must meet all applicable Specifications and be installed per all manufacturer's recommendations. Certification is not needed unless required by the Special Provisions or requested by the Engineer.

CONSTRUCTION REQUIREMENTS

160-3.1 Install load centers at the location and position shown on the Plans. Any deviation from the plan location must be coordinated with and approved by the serving utility and the Engineer.

Furnish conduit, conductors, contactors, breakers, transformers, and all other necessary materials at all new and modified load centers to complete the installation.

Install a rigid metal conduit of the size shown in the Plans at a 30-inch depth from the load center and extend it to a location 2 feet from the power source. Install a pull rope in the conduit, cap the end, and mark the terminus with a 2- x 4-inch stake or 1-inch rebar, 3 feet long. Extend the end of the stake or bar 1 inch above the ground. When the servicing utility requires the complete conduit and weather head to be in place on the designated service pole, furnish and install all materials required by the utility. The additional work and materials are subsidiary to the load center bid item.

Where the service is to be installed on a utility-owned pole, coordinate the positioning of the riser and service equipment with the service utility.

House circuit breakers, switches, and contactors in a NEMA 3R type enclosure listed by an approved independent electrical testing laboratory as service equipment with a hinged and locking front cover. Indelibly label panel covers with the circuit number. Legend plates, labels, and signs must be engraved plastic or metal fastened with screws, non-cold-susceptible adhesive, or component mounting hardware.

Size and wire load center cabinets to serve the combination of highway lighting, traffic signal, and thaw wire circuits shown in the Plans. Each cabinet must be a single box subdivided to form compartments as required. Include hinged lockable door(s) or panel cover(s) with provision for a padlock with a 5/16-inch diameter shackle for each compartment. Circuit breaker ratings must be as shown in the load center summary for each location.

Wire and equip load centers with commonly metered thaw wire and lighting circuits with separate contactors, selector switches, and terminal blocks for lighting and thaw wire circuits. Control the thaw wires as described in Item D-760.

Where a meter is required, furnish and install a meter socket that is acceptable to the serving utility, complete with sealing rings. Do not mount the meter socket on doors or removable panels.

Load centers containing contactors must have contactor control switches mounted in the load distribution section. Control switches for systems having automatic controls (for example, photo cell, thermostats, or time controls) must be 3-position types with the positions labeled "On", "Off" and "Auto". Control switches for manual control only must be a 2-position type with positions labeled "On" and "Off". Label each switch to identify function being controlled.

Mount transformer fuses in dead-front fuse holders with lighted blown fuse indicators, where required. Label them to indicate function and fuse amp rating.

Install a 3/4-inch x 10-foot copper clad ground rod inside the base readily accessible thru the removable cover, or adjacent supporting post. Connect ground rod to neutral bus with a soft-drawn copper conductor sized per NEC, No. 6 AWG minimum. Bond all non-current carrying metal parts of the load center to the ground bus.

Locate the photo cell for lighting control on the nearest light standard or top of the load center as shown on the load center summary. Orient it to the unobstructed northern sky. Submit for approval the method of attachment of the conduit to the load center. Use a 5-conductor No. 14 AWG wire to connect the photo cell to the load center. When the photo cell is on a lighting standard with a slip base or frangible coupling style base, use an approved break-away disconnect in the base of the light standard. Restrain the cable in a similar manner as the lumination cable in the pole base.

Provide a typed circuit directory for each load panel inside of the load center door, protected with a plastic cover, describing each circuit, with even and odd numbered circuit breaker positions shown on separate parts of the directory. Provide a power and control one-line diagram protected by a laminated plastic cover inside the load center. Include the following information on the directory and one-line diagram: Load center identification (A, B, etc.), Project Name, Project number (Federal/State) and Service Voltage.

METHOD OF MEASUREMENT

160-4.1 By the actual number of load centers, modified load centers, and transformers completed and accepted shown on the Plans or as directed.

BASIS OF PAYMENT

160-5.1 Load circuits, consisting of conduits and conductors attached to the load centers and photoelectric controls, and terminations of field wiring, are subsidiary to other items of work.

Payment will be made under:

Item L-160a	Load Center, Type 1 – per each
Item L-160b	Load Center, Type 1A – per each
Item L-160c	Load Center, Type 2 – per each
Item L-160d	Load Center, Type 3 – per each
Item L-160e	Modify Load Center – per each
Item L-160f	Transformer, [Size] KVA – per each

ITEM P-152 EXCAVATION AND EMBANKMENT

DESCRIPTION

152-1.1 This item consists of excavation, hauling, embankment (or waste disposal), placement, grading and compaction of all materials required to construct runway safety areas, taxiway safety areas, runways, taxiways, aprons, drainage, buildings, roadways, parking, and other work. Construct according to the specifications, and conform to the dimensions and typical sections shown on the Plans.

MATERIALS

152-2.1 MATERIAL DEFINITIONS. The Contract will designate material to be removed from within the project lines and grades as classified excavation (common, rock or muck) or as unclassified excavation. Material obtained from outside the project lines and grades is borrow.

All material shall be described as defined below, but no quantity of material shall be defined or paid in more than one category:

a. **Unclassified Excavation.** All material, regardless of its nature, which is not paid for under another contract item. May include common, rock or muck.

b. **Common Excavation.** Suitable material such as silt, sand, gravel, and granular material that does not require blasting or ripping. Not rock or muck.

c. **Rock Excavation.** Rock that cannot be excavated without blasting or ripping, and boulders containing a volume of more than 0.5 cubic yard.

d. **Muck Excavation.** Soil, organic matter, and other material not suitable for embankment or foundation material, including material that will decay or produce subsidence in the embankment such as stumps, roots, logs, humus, or peat.

e. **Drainage Excavation.** Excavation made for the primary purpose of controlling drainage including: intercepting, inlet or outlet ditches; temporary levee construction; or any other type as shown on the Plans.

f. **Borrow.** Suitable material that is required for the construction of embankment or for other portions of the work. Borrow material shall be obtained from sources within the limits of the airport property but outside the project lines and grades, or from sources outside the airport property.

g. **Foundation Soil.** In-situ soil or undisturbed ground.

152-2.2 UNSUITABLE MATERIAL. Material that doesn't meet the testing criteria for suitable material. Material containing vegetable or organic matter, such as muck, peat, organic silt, or sod is considered unsuitable for use in embankment construction. Material that is contaminated by hazardous substances, including fuel or oil, in greater quantity than state and federal standards allow is considered unsuitable for use.

152-2.3 SUITABLE MATERIAL. Suitable material may be obtained from classified excavation, unclassified excavation, or borrow. The Engineer will approve material as "suitable" for use in embankment when the material meets the following criteria:

a. Sand, rock, gravel, silt, concrete, asphalt pavement, and other inorganic material;

b. Gradation of 100% by weight passing 6 inch screen; and

c. Meets definition of Non-Frost Susceptible in Subsection GCP 10-03, except delete "6%" and replace with "10%" (passing No. 200 screen).

The Engineer may, in their discretion, approve oversize material as "suitable" for use in embankment when the material meets the following criteria:

a. Sand, rock, gravel, silt, concrete, asphalt pavement, and other inorganic material;

b. Gradation of 100% by weight passing 24 inch screen;

c. Meets definition of Non-Frost Susceptible in Subsection GCP 10-03, except delete "6%" and replace with "10%" (passing No. 200 screen); and

d. Rock is well graded with an even distribution of rock sizes, and can be compacted with a minimal amount of voids.

CONSTRUCTION METHODS

152-3.1 GENERAL. Perform all necessary clearing and grubbing in accordance with Item P-151, and construction surveying in accordance with Item G-135, including staking of lines and grades, prior to beginning excavation, grading, and embankment operations in any area.

The suitability of material to be placed in embankments shall be subject to approval by the Engineer. Material with organics, when approved by the Engineer as suitable to support vegetation, may be used on top of the embankment slope.

Unsuitable material shall be disposed of in waste areas shown on the Plans or in locations acceptable to the Engineer. Material contaminated by hazardous substances shall require special handling and disposal, performed according to Subsection GCP 70-11.d. and using methods acceptable to the Engineer.

a. **Waste Areas.** All waste areas shall be graded to allow positive drainage of the area and of adjacent areas. The surface elevation of waste areas shall not extend above the surface elevation of adjacent usable areas of the airport, unless specified on the Plans or approved by the Engineer. Unsuitable material shall not be left in windrows or piles, and shall not extend into the Obstacle-Free Zone (as defined in AC 150/5300-13, Subsection 306).

   All waste areas shall be protected from erosion according to the SWPPP. Areas where seeding is called for, in which the top layer of soil material has become compacted, by hauling or other activities of the Contractor shall be scarified and disked to a depth of 4 inches, in order to loosen and pulverize the soil.

   The Contractor shall obtain all permits required for placing waste in areas they choose, and which are not covered by Department obtained permits. When the Contractor is required to locate a disposal area outside the airport property limits at his/her own expense, he shall obtain and file with the Engineer, permission in writing from the property owner for the use of private property for this purpose.

b. **Utility Work.** Utility work shall be performed, and compensation claims for utility work made, according to Subsection GCP 50-06. If it is necessary to work thorough or around existing utilities or associated structures, the Contractor shall be responsible for and shall take all necessary precautions to preserve the utilities or provide temporary services. When utilities not shown on the Plans are encountered, the Contractor shall immediately notify the Engineer, and the Engineer will determine the disposition of the utility. The Contractor shall, at no additional cost to the Department, satisfactorily repair or pay the cost of all damage to utilities or associated structures which may result from any of the Contractor's operations.

152-3.2 EXCAVATION. No excavation shall be started until the Contractor has construction surveyed the work, including staking the lines and grades, and the Engineer has reviewed stakes, elevations and measurements of the ground surface. As required in GCP 40-04, all Useable Excavation of suitable material shall be used in the formation of embankment or for other purposes shown on the Plans. All unsuitable material shall be disposed of in waste areas as shown on the Plans or as directed by the Engineer.

When the volume of the Useable Excavation exceeds that required to construct the embankments to the grades indicated, the excess material shall be used to grade the areas of ultimate development or disposed of as directed. When the volume of Useable Excavation is not sufficient for constructing the fill to the grades indicated, borrow shall be used to make up the deficiency.

The grade shall be maintained so that the surface is well drained at all times. When necessary, temporary drains and drainage ditches shall be installed to intercept or divert surface water that may affect the work. All temporary drains and drainage ditches shall be constructed and maintained according to the SWPPP.

In cuts, all loose or protruding rocks on the back slopes shall be scaled or otherwise removed to line of finished grade of slope. All cut-and-fill slopes shall be uniformly dressed to the slope, cross section, and alignment shown on the Plans or as directed by the Engineer.

a. **Selective Grading.** When selective grading is required, the more suitable material as designated by the Engineer shall be used in constructing the upper layers of the embankment or pavement structure. If, at the time of excavation, it is not possible to place this material in its final location, it shall be stockpiled in approved areas.

b. **Undercutting.** Rock, shale, hardpan, loose rock, boulders, or other material unsatisfactory for runways, taxiways, safety areas, subgrades, roads, shoulders, or any areas intended for turfing shall be excavated to a minimum depth of 12 inches, or to the depth directed by the Engineer, below the top of subgrade. Muck, peat, matted roots, or other yielding material that is unsatisfactory for foundation soil compaction, shall be removed to the depth specified. Unsuitable materials shall be disposed of at locations shown on the Plans. The excavated area shall be refilled with suitable material, obtained from the grading operations or borrow areas and thoroughly compacted as specified. Where rock cuts are made and refilled with suitable material, any pockets created in the rock surface shall be drained according to the details shown on the Plans. The material removed will be paid as Unclassified Excavation.

c. **Overbreak.** Overbreak, including slides, is that portion of any material displaced or loosened beyond the finished work, as planned or authorized by the Engineer. The Engineer shall determine if the displacement of such material was unavoidable and their decision shall be final. All overbreak shall be graded or removed by the Contractor and disposed of as directed; however, payment will not be made for the removal and disposal of overbreak which the Engineer determines as avoidable. Unavoidable overbreak that must be removed will be paid as Unclassified Excavation.

d. **Removal of Structures and Utilities.** The Contractor shall accomplish the removal of existing structures and utilities that are specified to be removed or demolished, except when another entity is identified in the Contract to accomplish the work. All existing structural foundations shall be excavated and removed to a depth at least 2 feet below the top of subgrade or as indicated on the Plans, and the material disposed of as directed. Holes left after removing foundations shall be backfilled with suitable material and compacted as specified. The material will be paid as Unclassified Excavation.

e. **Foundation Soil Compaction Requirements.** In areas of excavation, the top 6 inches of foundation soil under areas serving aircraft or vehicle traffic loadings shall be compacted to a density of not less than ~~100% for non-cohesive soils (95% for cohesive soils)~~ 95% of the maximum density as determined by WAQTC FOP for AASHTO T 99/T 180 or ATM 212. The in-place field density and moisture content shall be determined according to WAQTC FOP for AASHTO T 310. ~~The in-place~~

~~moisture shall be determined by WAQTC FOP for AASHTO T 255/T 265 when using other than the nuclear gauge method for density.~~

Compaction of the foundation soil is a subsidiary cost to excavation.

The Engineer may direct the Contractor to over excavate foundation soil that is soft or compresses excessively, and to backfill excavation with compacted suitable material. The material will be paid as Unclassified Excavation.

f. Blasting. Blasting will not be permitted on airport property. ~~only when proper precautions are taken for the safety of all persons, the work, and the property. The Contractor is responsible for blasting operations including the requirements of Subsection GCP 70-10. All damage done to the work or property shall be repaired at the Contractor's expense. All operations of the Contractor in connection with the transportation, storage, and use of explosives shall conform to all federal, state, local regulations, explosive manufacturers' instructions, and approved permits.~~

~~The Contractor shall submit a Safety Plan that includes descriptions of road and runway closures, warning signals; and plans for notification of affected local, state, and federal agencies, the airport manager, and other interested parties. Discuss in the Safety Plan methods for protection of life and health, public and private property, new work or existing work on the project, nearby structures, wetlands, waters and wildlife. When working within airport property include an emergency response contingency to clear runways of debri, to repair damaged navigational or visual aids; and get a NOTAMs before blasting. Hold a safety meeting prior to commencement of blasting operations to address safety issues.~~

~~In each distinct blasting area the Contractor shall submit a blasting plan, prepared by a qualified blaster, to the Engineer. This plan must consist of hole size, depth, spacing, burden, type of explosives, type of delay sequence, maximum amount of explosive on any one delay period, depth of rock, and depth of overburden if any. The maximum explosive charge weights per delay included in the plan shall not be increased without submitting a revised blasting plan to the Engineer.~~

~~When blasting on airport property, the Safety Plan and the Blasting Plan shall conform to Executive Order 7400.2GE *Procedures for Handling Airspace Matters*, Chapter 27, and AC 150/5370-2 *Operational Safety on Airports During Construction*.~~

~~The Contractor shall keep a record of each blast fired, its date, time, and location; the amount of explosives used, maximum explosive charge weight per delay period, and, where necessary, seismograph records identified by instrument number and location. These records shall be made available daily to the Engineer.~~

~~The Engineer will keep the submitted plans and records, and has authority to review and reject plans.~~

152-3.3 BORROW SOURCES. Borrow sources within the airport property are identified on the Plans. Excavation of borrow on airport property shall be made only at these identified locations and within the lines and grades staked.

Borrow sources outside of airport property may be identified in the Contract according to GCP 60-02. The Contractor shall furnish additional borrow sources if necessary.

Removal of overburden and waste material, permit costs, mineral royalties, and other costs of material source development are subsidiary and shall be included in the unit price for borrow.

152-3.4 DRAINAGE EXCAVATION. Drainage excavation for intercepting, inlet or outlet drains; for temporary levee construction; or for any other type as designed or as shown on the Plans. The work shall be performed in the proper sequence with the other construction and according to the SWPPP. All suitable material shall

be placed in fills; unsuitable material shall be placed in waste areas or as directed. Intercepting ditches shall be constructed prior to starting adjacent excavation operations. All necessary work shall be performed to secure a finish true to line, elevation, and cross section.

The Contractor shall maintain ditches constructed on the project to the required cross section and shall keep them free of debris or obstructions until the project is accepted.

152-3.5 PREPARATION OF EMBANKMENT AREA. Where an embankment is to be constructed to a height of 4 feet or less, or where the embankment supports asphalt or concrete paving, all sod and vegetable matter shall be removed from the surface upon which the embankment is to be placed, and the cleared surface shall be completely broken up by plowing or scarifying to a minimum depth of 6 inches. Compact this area as indicated in Subsection 152-3.2.e.

When new embankment is placed against existing embankments or on slopes steeper than 4:1, the existing ground shall be continuously benched over the areas as the work is brought up in layers. Benching shall be of sufficient width to permit placing of material and compacting operations. Each horizontal cut shall begin at the intersection of the original ground and the vertical side of the previous bench. Material thus cut out and deemed suitable shall be blended and incorporated into the new embankment.

No direct payment shall be made for the work performed under this section. The necessary clearing and grubbing and the quantity of excavation removed will be paid for under the respective items of work.

152-3.6 FORMATION OF EMBANKMENTS. Embankments shall be formed in successive horizontal layers of not more than 8 inches in loose depth for the full width of the cross section, unless otherwise approved by the Engineer.

The grading and compaction operations shall be conducted, and the various soil strata shall be placed, to produce an embankment as shown on the typical cross section or as directed by the Engineer. Materials such as brush, hedge, roots, stumps, grass and other unsuitable material, shall not be incorporated or buried in the embankment.

a. **Suspension of Operations.** Operations on earthwork shall be suspended at any time when satisfactory results cannot be obtained because of rain, freezing, moisture content or other unsatisfactory conditions of the field. The Contractor shall drag, blade, or slope the embankment to provide proper surface drainage.

b. **Soft Foundations.** When embankments are to be constructed across wet or swampy ground, which will not support the weight of heavy hauling and spreading equipment, the Contractor shall use methods of embankment construction, and use hauling and spreading equipment, that will least disturb the soft foundation (defined as having a California Bearing Ratio less than 3). When soft foundations are encountered, and when approved by the Engineer, the lower part of the fill may be constructed by dumping and spreading successive vehicle loads in a uniformly distributed layer of a thickness not greater than that necessary to support the vehicle while placing subsequent layers, after which the remainder of the embankment shall be constructed in layers and compacted as specified. The Contractor shall not be required to compact the soft foundation, and at the Engineer's option, may not be required to clear and grub.

c. **Moisture.** The material in the layer being placed shall be within ±2% of optimum moisture content before rolling to obtain the prescribed compaction. In order to achieve a uniform moisture content throughout the layer, wetting or drying of the material and manipulation shall be performed when necessary. Should the material be too wet to permit proper compaction or rolling, all work on all of the affected portions of the embankment shall be delayed until the material has dried to the required moisture content. Watering of dry material to obtain the proper moisture content shall be done with approved equipment that will sufficiently distribute the water. Sufficient equipment to furnish the required water shall be available at all times.

d. **Compaction.** Rolling operations shall be continued until the embankment is compacted to not less than 95% of maximum density as determined by WAQTC FOP for AASHTO T 99/T 180 or ATM 212. Under all areas serving aircraft or vehicle traffic loadings, the embankment shall be compacted ~~to the depth shown on the Plans and~~ to a density of not less than 100% of the maximum density as determined by WAQTC FOP for AASHTO T 99/T 180 or ATM 212. The in-place field density and moisture content shall be determined according to WAQTC FOP for AASHTO T 310. ~~The in-place moisture shall be determined by WAQTC FOP for AASHTO T 255/T 265 when using other than the nuclear gauge method for density.~~

Keep dumping and rolling areas separate. Do not cover any layer by another until the proper density is obtained.

During construction of the embankment, the Contractor shall route their equipment at all times, both when loaded and when empty, over the layers as they are placed and shall distribute the travel evenly over the entire width of the embankment. The equipment shall be operated in such a manner that hardpan, cemented gravel, clay, or other chunky soil material will be broken up into small particles and become incorporated with the other material in the layer.

In the construction of embankments, layer placement shall begin in the deepest portion of the fill and progress in layers approximately parallel to the finished pavement grade line. Stones or fragmentary rock larger than 3 inches in their greatest dimensions will not be allowed in the top 6 inches of the embankment.

e. **Oversize Material.** At the Engineer's discretion and direction, the Contractor may use oversize material or rockfill, as defined in Subsection 152-2.3, in the embankment. Place material in layers up to 2 feet thick. Fill voids with finer material. Level and smooth each layer with suitable leveling equipment. Use compaction equipment and construction methods that can form a dense, well-compacted embankment. Do not use oversize material within 2 feet of the top of finished subgrade.

Rock or boulders larger than 2 feet in thickness shall either be disposed of outside the excavation or embankment areas, in places and in the manner designated by the Engineer; or they may be crushed to less than 2 feet thickness and used in the embankment.

f. **Subsidiary Costs.** Excavation and embankment is a single pay item; there will be no separate measurement or payment. The costs for material source development, blasting, excavation, hauling, placing in layers, compacting, disking, watering, mixing, sloping, grading, and other necessary operations for construction of embankments, are subsidiary and shall be included in the contract unit prices for excavation, borrow, or other pay items.

g. **Frozen Material.** Frozen material shall not be placed in the embankment nor shall embankment be placed upon frozen material, unless this construction method is identified in the special provisions, or is part of a Contractor's Progress Schedule that the Engineer has approved.

152-3.7 FINISHING AND PROTECTION OF SUBGRADE. After the subgrade has been substantially completed, the full width shall be conditioned by removing any soft or other unstable material that will not compact properly. The resulting areas and all other low areas, holes or depressions shall be brought to finish subgrade elevation with suitable material. Scarifying, blading, rolling and other methods shall be performed to provide a thoroughly compacted subgrade, whose top is shaped to the lines and grades shown on the Plans.

Grading of the top of subgrade shall be performed so that it will drain readily. The Contractor shall take all precautions necessary to protect the subgrade from damage. The Contractor shall limit hauling over the finished subgrade to that which is essential for construction purposes.

All ruts, ponds or rough places that develop in a completed subgrade shall be repaired, smoothed and recompacted before another layer is placed on top of the subgrade.

No subbase, or surface course shall be placed on the subgrade until the subgrade has been approved by the Engineer. Erosion and sediment control shall be done according to the SWPPP. Work described in this subsection is subsidiary and shall be included in the contract unit prices.

152-3.8 RESERVED

152-3.9 TOLERANCES. In those areas upon which a subbase or base course is to be placed, the top of the subgrade shall be of such smoothness that, when tested with a 12-foot straightedge applied parallel and at right angles to the centerline, it shall not show any deviation in excess of 1/2 inch, or shall not be more than 0.05 foot from true grade as established by grade hubs or pins. Any deviation in excess of these amounts shall be corrected by loosening, adding, or removing materials; reshaping; and recompacting by watering and rolling.

On Runway Safety Areas, intermediate and other designated areas, the surface shall be of such smoothness that it will not vary more than 0.10 foot from true grade as established by grade hubs. Any deviation in excess of this amount shall be corrected by loosening, adding or removing materials, and reshaping.

METHOD OF MEASUREMENT

152-4.1 The quantity of unclassified excavation, common excavation, rock excavation, and muck excavation, will be measured in cubic yards of excavated material, measured in its original position. Pay quantities will be computed to the neat lines staked, by the method of average end areas of materials acceptably excavated. Measurement will not include the quantity of materials excavated without authorization beyond project lines and grades, or the quantity of material used for purposes other than those directed or approved by the Engineer. Excavation will not be measured for work included in items 162, 170, 171, and 620. Excavation required for installation of these items shall be incidental to the individual pay items.

With the Engineer's written approval, excavation may be measured by any method described in Subsection 152-4.2.

152-4.2 The quantity of Borrow material to be paid will be by calculated by one of the following methods of measurement, as described in the Bid Schedule.

If Borrow is paid by source volume, the quantity will be measured in cubic yards of material, measured in its original position at the borrow source, after stripping of overburden and waste. Pay quantities will be computed by the method of average end areas from cross sections taken before and after borrow excavation. No shrink or swell factor will be used.

If Borrow is paid by design volume, the quantity will be measured in cubic yards of material, measured in its final compacted position. Pay quantities will be computed by the method of average end areas, as determined from original ground cross sections before placement (after clearing and grubbing) and to the neat lines staked and verified by the Engineer after placement. No allowance will be made for subsidence of the subgrade or for material placed outside the staked neat line limits. The quantity to be paid for will be the cubic yards of material placed and accepted in the completed embankment. No shrink or swell factor will be used.

If Borrow is paid by weight, the quantity will be measured in tons, by weighing system or by barge displacement method.

BASIS OF PAYMENT

Excavation and embankment (or waste disposal) is a single pay item. The costs for material source development, blasting, excavation, hauling, placing in layers, compacting, disking, watering, mixing, sloping, grading, and other necessary operations for construction of embankments, or waste disposal, are subsidiary and shall be included in the contract unit prices.

152-5.1 For "Unclassified Excavation" payment will be made at the contract unit price per cubic yard.

152-5.2 For "Common Excavation" payment will be made at the contract unit price per cubic yard.

152-5.3 For "Rock Excavation" payment will be made at the contract unit price per cubic yard.

152-5.4 For "Muck Excavation" payment will be made at the contract unit price per cubic yard.

152-5.5 For "Drainage Excavation" payment will be made at the contract unit price per cubic yard.

152-5.6 For "Borrow" payment will be made at the contract unit price per cubic yard. If by weight, payment will be made at the contract unit price per ton.

Payment will be made under:

Item P-152a	Unclassified Excavation - per cubic yard
Item P-152a(1)	Common Excavation - per cubic yard
Item P-152b	Rock Excavation - per cubic yard
Item P-152c	Muck Excavation - per cubic yard
Item P-152d	Drainage Excavation - per cubic yard
Item P-152e	Reserved
Item P-152f	Reserved
Item P-152g	Reserved
Item P-152h(1)	Borrow measured at Source- per cubic yard
Item P-152h(2)	Borrow measured in Final Position- per cubic yard
Item P-152i	Borrow - per ton

TESTING REQUIREMENTS

ATM 212	Standard Density of Coarse Granular Materials using the Vibratory Compactor
WAQTC FOP for AASHTO T 99/T 180	Moisture-Density Relations of Soils
WAQTC FOP for AASHTO T 255/T 265	Moisture Content of Aggregate and Soils
WAQTC FOP for AASHTO T 310	In-place Density and Moisture Content of Soil and Soil-Aggregate by Nuclear Methods

ITEM P-154 SUBBASE COURSE

DESCRIPTION

154-1.1 This item shall consist of a subbase course composed of granular materials constructed on a prepared subgrade or underlying course according to these Specifications, and in conformity with the dimensions and typical cross section shown on the Plans.

MATERIALS

154-2.1 MATERIALS. The subbase material shall consist of hard durable particles or fragments of granular aggregates. This material will be mixed or blended with fine sand, clay, stone dust, or other similar binding or filler materials produced from approved sources. This mixture must be uniform and shall comply with the requirements of these Specifications as to gradation, soil constants, and shall be capable of being compacted into a dense and stable subbase. The material shall be free from vegetable matter, lumps or excessive amounts of clay, and other objectionable or foreign substances. ~~The coarse aggregate shall have a minimum degradation value of 40 when tested according to ATM 313 and a percent of wear not more than 50 at 500 revolutions as determined by AASHTO T 96.~~ Pit-run material may be used, provided the material meets the requirements specified.

Aggregate gradation shall meet the requirements of Table 1, determined according to WAQTC FOP for AASHTO T 27/T11.

TABLE 1. AGGREGATE GRADATION REQUIREMENTS

Sieve designation (Square opening)	**Percentage by weight passing sieves**
3 inch	90-100
No. 4	20-55
~~No. 8~~	~~30-70~~
~~No. 50~~	~~0-30~~
No. 200	0-6

The percent passing the No. 200 sieve will be determined on minus 3-inch material.

The portion of the material passing the No. 40 sieve shall have a liquid limit of not more than 25 and a plasticity index of not more than 6 when tested according to WAQTC FOP for AASHTO T 89 and T 90.

The gradations shall be well graded from coarse to fine and shall not vary from the low limit on one sieve to the high limit on the adjacent sieves, or vice versa.

CONSTRUCTION METHODS

154-3.1 GENERAL. The subbase course shall be placed where designated on the Plans or as directed by the Engineer. The material shall be shaped and thoroughly compacted within the tolerances specified.

Granular subbases which, due to grain sizes or shapes, are not sufficiently stable to support the movement of construction equipment, shall be mechanically stabilized to the depth necessary to provide such stability as directed by the Engineer. The mechanical stabilization shall principally include the addition of a fine-grained medium to bind the particles of the subbase material sufficiently to furnish a bearing strength, so that the course will not deform under the traffic of the construction equipment. The addition of the binding medium to the subbase material shall not increase the soil constants of that material above the limits specified.

154-3.2 PREPARING UNDERLYING COURSE. Before any subbase material is placed, the underlying course shall be prepared and conditioned as specified. The course shall be checked and accepted by the Engineer before placing and spreading operations are started.

To protect the subgrade and to ensure proper drainage, the spreading of the subbase shall begin along the centerline of the pavement on a crowned section or on the high side of pavements with a one-way slope.

154-3.3 MATERIALS ACCEPTANCE IN EXISTING CONDITION. When the entire subbase material is secured in a uniform and satisfactory condition, such approved material may be moved directly to the spreading equipment for placing. The material may be obtained from gravel pits, stockpiles, or may be produced from a crushing and screening plant with the proper blending. The materials from these sources shall meet the requirements for gradation, quality, and consistency. The moisture content of the material shall be approximately that required to obtain maximum density. The final operation shall be blading or dragging, if necessary, to obtain a smooth uniform surface true to line and grade.

154-3.4 GENERAL METHODS FOR PLACING. When materials from several sources are to be blended and mixed, the subbase material, together with any blended material, shall be thoroughly mixed prior to placing on grade.

The subbase course shall be constructed in layers. Any layer shall be not less than 3 inches nor more than 8 inches of compacted thickness. The material, as spread, shall be of uniform gradation with no pockets of fine or coarse materials. No material shall be placed in snow or on a soft, muddy, or frozen course.

When more than one layer is required, the construction procedure described herein shall apply similarly to each layer.

During the placing and spreading, sufficient caution shall be exercised to prevent the incorporation of subgrade, shoulder, or foreign material in the subbase course mixture.

154-3.5 FINISHING AND COMPACTING. After spreading or mixing, the subbase material shall be thoroughly compacted. Sufficient compactors shall be furnished to adequately handle the rate of placing and spreading of the subbase course. The moisture content of the material shall be approximately that required to obtain maximum density.

The field density of the compacted material shall be not less than 100% of the maximum density, as determined according to WAQTC FOP for AASHTO T 99/T 180 or ATM 212. ~~According to~~ The in-place field density and moisture content shall be determined according to WAQTC FOP for AASHTO T 310.

The course shall not be rolled when the underlying course is soft or yielding or when the rolling causes undulation in the subbase. When the rolling develops irregularities that exceed 1/2 inch when tested with a 12-foot straightedge, the irregular surface shall be loosened and then refilled with the same kind of material as that used in constructing the course and again rolled as required above.

Along places inaccessible to rollers, the subbase material shall be tamped thoroughly with mechanical or hand tampers.

Watering during rolling, if necessary, shall be in the amount and by equipment approved by the Engineer. Water shall not be added in such a manner or quantity that free water will reach the underlying layer and cause it to become soft.

154-3.6 SURFACE TEST. After the course is completely compacted, the surface shall be tested for smoothness and accuracy of grade and crown; any portion found to lack the required smoothness or to fail in accuracy of grade or crown shall be scarified, reshaped, recompacted, and otherwise manipulated as the Engineer may direct until the required smoothness and accuracy is obtained. The finished surface shall not vary more than 1/2 inch when tested with a 12-foot straightedge applied parallel with, and at right angles to, the centerline.

154-3.7 PROTECTION. Work on subbase course shall not be conducted during freezing temperature nor when the subgrade is wet. When the subbase material contains frozen material or when the underlying course is frozen, the construction shall be stopped.

154-3.8 MAINTENANCE. Following the final shaping of the material, the subbase shall be maintained throughout its entire length by the use of standard motor graders and rollers until, in the judgment of the Engineer, the subbase meets all requirements and is acceptable for the construction of the next course.

METHOD OF MEASUREMENT

154-4.1 Subbase Course will be weighed by the ton or measured by the cubic yard in final position according to Subsection GCP-90-02.

Subbase materials will not be included in any other excavation quantities.

BASIS OF PAYMENT

154-5.1 Subbase Course will be paid for at the contract price, per unit of measurement, accepted in place. If the following pay items are absent from the bid schedule, no payment will be made. All work, materials, and equipment required to complete the work will be subsidiary.

Hauling and placing of these materials is subsidiary.

Payment will be made under:

Item P-154a	Subbase Course - per cubic yard
Item P-154b	Subbase Course - per ton

TESTING REQUIREMENTS

~~AASHTO T 96~~	~~Resistance to Degradation of Small-Size Coarse Aggregate by Abrasion and Impact in the Los Angeles Machine~~
ATM 212	Standard Density of Coarse Granular Materials using the Vibratory Compactor
~~ATM 313~~	~~Degradation Value of Aggregate~~
WAQTC FOP for AASHTO T 27/T 11	Sieve Analysis of Aggregates & Soils
WAQTC FOP for AASHTO T 89	Liquid Limit of Soils
WAQTC FOP for AASHTO T 90	Plastic Limit and Plasticity Index of Soils
WAQTC FOP for AASHTO T 99/T 180	Moisture-Density Relations of Soils
WAQTC FOP for AASHTO T 310	In-Place Density and Moisture Content of Soil and Soil-Aggregate by Nuclear Methods

ITEM P-157 EROSION, SEDIMENT, AND POLLUTION CONTROL

157-1.1 DESCRIPTION. Provide project administration and Work relating to control of erosion, sedimentation, and discharge of pollutants, according to this section and applicable local, state, and federal requirements, including the Construction General Permit.

157-1.2 DEFINITIONS. These definitions apply only to Section P-157.

Alaska Certified Erosion and Sediment Control Lead (AK-CESCL). A person who has completed training, testing, and other requirements of and has received certification as an AK-CESCL from an AK-CESCL Training Program. The Department recognizes AK-CESCLs as "qualified personnel" required by the CGP. An AK-CESCL must be recertified every three years.

Alaska Department of Environmental Conservation (ADEC). The state agency authorized by EPA to administer the Clean Water Act's National Pollutant Discharge Elimination System.

Alaska Pollutant Discharge Elimination System (APDES). Administered by ADEC.

Best Management Practices (BMPs). Temporary or permanent structural and non-structural devices, schedules of activities, prohibition of practices, maintenance procedures, and other management practices to prevent or minimize the discharge of pollutants to waters of the United States. BMPs also include, but are not limited to, treatment requirements, operating procedures, and practices to control plant site runoff, spillage or leaks, sludge or waste disposal, or drainage from material storage.

Certified Professional in Erosion and Sediment Control (CPESC). Individual having training, expertise, and experience in controlling erosion and sedimentation as provided and certified by EnviroCert International, Inc.

Clean Water Act (CWA). Federal Water Pollution Control Act (33 U.S.C. 1251 et seq.).

Consent Decree. A decree entered by the United States District Court for the District of Alaska on September 21, 2010, regarding implementation of the CGP by the Operators at Department of Transportation and Public Facilities Construction Projects, with stipulated penalties for non-compliance.

This document is available online at:
http://www.dot.state.ak.us/stwddes/desenviron/resources/stormwater.shtml

Construction Activity. Physical activity and support activity by the Contractor, subcontractor or utility company at the Project; that may result in erosion, sedimentation, or a discharge of pollutants in storm water. Construction Activity includes, but is not limited to, soil disturbing activities (e.g. clearing, grading, excavating); and construction materials or equipment storage or maintenance (e.g. material piles, borrow area, concrete truck washdown, fueling); and other industrial storm water directly related to the construction process (e.g. concrete or asphalt batch plants).

Construction General Permit (CGP). Authorizes storm water discharges from construction activities where those discharges enter surface waters of the United States or a municipal separate storm water system leading to surface waters of the United States subject to the conditions set forth in the permit.

Electronic Notice of Intent (eNOI & NOI). Submitted to ADEC, to apply to obtain coverage under the CGP. Make submittals in electronic form; provide paper copy only where specified herein or requested.

Electronic Notice of Termination (eNOT & NOT). Submitted to ADEC, to end coverage under the CGP. Make submittals in electronic form; provide paper copy only where specified herein or requested.

Erosion and Sediment Control Plan (ESCP). The Department's project specific document that illustrates measures to control erosion and sediment on the project. The ESCP provides bidders with the basis for cost estimating and guidance for developing an acceptable Storm Water Pollutant Prevention Plan (SWPPP).

Final Stabilization. As defined in the CGP.

Hazardous Material Control Plan (HMCP). The Contractor's detailed project specific plan for prevention of pollution from storage, use, transfer, containment, cleanup, and disposal of hazardous material (including, but are not limited to, petroleum products related to construction activities and equipment). The HMCP is included as an appendix to the SWPPP.

Operator(s). The party or co-parties associated with a regulated activity that has responsibility to obtain storm water permit coverage. "Operator" for the purpose of the CGP and in the context of storm water associated with construction activity, means any party associated with a construction project that meets either of the following two criteria:

1. The party has operational control over construction plans and specifications, including the ability to make modifications to those plans and specifications; or
2. The party has day to day operational control of those activities at a project which are necessary to ensure compliance with a SWPPP for the site or other permit conditions (e.g. they are authorized to direct workers at a site to carry out activities required by the SWPPP or comply with other permit conditions).

Pollutant. Any substance or item meeting the definition of pollutant contained in 40 CFR 122.2.

Project Zone. The physical area provided by the Department for Construction. The Project Zone includes project staging and equipment areas, areas of utility work associated with the project, and material and disposal sites; when those areas and sites are provided by the Department.

Records. Any record, report, information, document, or photograph required to be created or maintained pursuant to the requirements of, the CGP, the CGP storm water requirements of the Clean Water Act; or applicable local, state, and federal laws and regulations regarding document preservation.

Spill Prevention, Control and Countermeasure Plan (SPCC Plan). The Contractor's detailed plan for petroleum spill prevention and control measures, which meet the requirements of 40 CFR 112.

Spill Response Field Representative. The Contractor's representative with authority and responsibility for managing, implementing, and executing the HMCP and SPCC Plan, and other applicable federal, state, and local laws and regulations related to hazardous materials.

Storm Water Pollution Prevention Plan (SWPPP). The Contractor's detailed project specific plan to minimize erosion and contain sediment within the Project Zone, and to prevent discharge of pollutants that exceed applicable water quality standards. The SWPPP includes, but is not limited to, amendments, records of activities, inspection schedules and reports, qualifications of key personnel, and all other documentation, required by the CGP and this specification, and other applicable local, state, and federal laws and regulations.

Subcontractor Spill Response Coordinator. The subcontractor's representative with authority and responsibility for coordinating the subcontractor's activities in compliance with the HMCP and SPCC.

Subcontractor SWPPP Coordinator. The Subcontractor's representative with authority to direct the subcontractor's work, and who is responsible for coordination with the Superintendent and SWPPP Manager, and for the Subcontractor's compliance with the SWPPP.

Superintendent. The Contractor's duly authorized representative in responsible charge of the work. The Superintendent has responsibility and authority for the overall operation of the Project and for Contractor furnished sites and facilities directly related to the Project.

SWPPP Amendment. A revision or document that adds to, deletes from, or modifies the SWPPP.

SWPPP Manager. The Contractor's qualified representative who conducts Inspections and has authority to suspend work and to implement corrective actions required for CGP compliance.

SWPPP Preparer. The Contractor's qualified representative who is responsible for developing the initial SWPPP.

Utility Spill Response Coordinator. The Utility's representative with authority and responsibility for coordinating the utility's activities in compliance with HMCP and SPCC Plan.

Utility SWPPP Coordinator. The Utility's representative with authority to direct the Utility's work, and who is responsible for coordination with the Superintendent and SWPPP Manager, and for the Utility's compliance with the SWPPP.

157-1.3 PLAN AND PERMIT SUBMITTALS. For plans listed in subsection GCP-80-03, paragraph f, use the Contractor submission and Department review deadlines identified in this section.

Partial and incomplete submittals will not be accepted for review. Any submittal that is re-submitted or revised after submission, but before the review is completed, will restart the submittal review timeline.

1. SWPPP. Submit three hard copies of the SWPPP to the Project Engineer (Engineer) for approval. Deliver these documents to the Engineer at least 21 calendar days before beginning Construction Activity. Organize and bind the SWPPP and related documents for submittal according to the requirements of subsection P-157-2.1, paragraph 2.

   The Department will review the SWPPP submittals within 14 calendar days after they are received. Submittals will be returned to the Contractor, and marked as either requiring revisions or as approved by the Department. The 14 day review period will restart when the contractor submits to the Engineer the revised SWPPP. Upon the Engineers' approval, also provide an electronic copy on CD or Portable Document Format (.pdf) of the complete SWPPP and related documents.

   Sign and certify the Department-approved SWPPP.

2. HMCP. Submit an electronic copy and three hard copies of the HMCP, as an appendix to the SWPPP, to the Engineer for approval. The HMCP submittal and review timeline, and signature requirements are the same as the SWPPP.

3. SPCC Plan. When a SPCC Plan is required under subsection P-157-2.3, submit an electronic copy and three signed hard copies of the SPCC Plan to the Engineer. Deliver these documents to the Engineer at least 21 calendar days before beginning Construction Activity. The Department reserves the right to review the SPCC Plan and require modifications.

4. CGP Coverage. Following Department approval of the SWPPP and prior to beginning Construction Activity, submit an eNOI with the required fee to ADEC for coverage under the Construction General Permit (CGP). Submit a copy of the eNOI to the Engineer when the eNOI is submitted to ADEC.

Construction Activity shall not begin until the conditions listed in subsection P-157-3.1, paragraph 1 are completed.

The Engineer will provide the Contractor with a copy of the Department's eNOI. Include the Department's eNOI in the SWPPP.

5. Ending CGP Coverage. Within 30 days after the Engineer has determined that Final Stabilization has been established in the Project Zone, submit an eNOT to ADEC and submit a copy of this eNOT to the Engineer. The Department will then submit an eNOT to ADEC and a copy to the Contractor.

6. ADEC SWPPP Review. When CGP, Part 5.13 requires ADEC SWPPP review:
   a. Transmit a copy of the Department-approved SWPPP to ADEC using delivery receipt confirmation;
   b. Transmit a copy of the delivery receipt confirmation to the Engineer within seven (7) calendar days of receiving the confirmation;
   c. Include a copy of delivery receipt confirmation in the SWPPP;

7. Local Government SWPPP Review. When CGP, Part 5.13 requires local government review:
   a. Transmit a copy of the Department-approved SWPPP to local government, with the required fee using delivery receipt confirmation;
   b. Transmit a copy of the delivery receipt confirmation to the Engineer within seven (7) calendar days of receiving the confirmation;
   c. Transmit a copy of any comments by the local government to the Engineer within seven (7) days of receipt;
   d. Amend the SWPPP as necessary to address local government comments and transmit SWPPP Amendments to the Engineer within seven (7) days of receipt of the comments; and
   e. Include a copy of local government SWPPP review letter in the SWPPP.

157-1.4 PERSONNEL QUALIFICATIONS. The SWPPP Preparer must meet at least one of the following qualifications:

- Current certification as a Certified Professional in Erosion and Sediment Control (CPESC)
- Current certification as AK-CESCL, and at least three years experience in erosion and sediment control (provide documentation including project names, project timelines, and work responsibilities demonstrating the experience requirement)
- Professional Engineer registered in the State of Alaska with current certification as AK-CESCL

The Superintendent must meet all the following qualifications:

- Current certification as AK-CESCL
- Duly authorized representative, as defined in the CGP, Appendix F, Part 1.12.3

The SWPPP Manager must hold current certification as AK-CESCL.

The Department accepts people holding any of the following certificates as equivalent to AK-CESCL, if the certificates are current according to the sponsoring organization's policies and in no case more than three years old:

- CPESC, Certified Professional in Erosion and Sediment Control
- CISEC, Certified Inspector in Sediment and Erosion Control
- CESCL, Washington Department of Ecology Certified Erosion and Sediment Control Lead (Through Nov. 30, 2011 only. Will not be accepted as an equivalent substitution after Nov. 30, 2011)

157-1.5 SIGNATURE/CERTIFICATION REQUIREMENTS AND DELEGATIONS.

1. eNOI and eNOT. The eNOI and eNOT must be signed and certified by a responsible corporate officer according to CGP Appendix F, Part 1.12.2. Signature and certification authority for the eNOI and eNOT cannot be delegated.

2. Delegation of Signature Authority for Other SWPPP Documents and Reports. Use Form 25D-108 to delegate signature authority and certification authority to the Superintendent position, according to CGP Appendix F, Part 1.12.3, for the SWPPP. Inspection reports and other reports required by the CGP. The Engineer will provide the Department's delegation Form 25D-107, which the Contractor must include in the SWPPP.

3. Subcontractor Certification. Subcontractors must certify that they have read and will abide by the CGP and the conditions of the project SWPPP.

157-1.6 RESERVED.

157-1.7 RESPONSIBILITY FOR SWPPP PERMIT COVERAGE.

1. The Department and the Contractor are jointly responsible for permitting and permit compliance within the Project Zone, including concurrent utility relocation activities as outlined in subsection GCP-50-06.

2. The Contractor is responsible for permitting and permit compliance outside the Project Zone. The Contractor has sole responsibility for compliance with ADEC and other applicable federal, state, and local requirements, and for securing all necessary clearances, rights, and permits. Areas where the Contractor has sole responsibility for compliance shall not be incorporated or covered under the Project SWPPP, but will require a separate SWPPP and eNOI as part of a larger project, unless specifically prohibited by ADEC. If the area must be covered by the industrial storm water permit, note that there is a 30-day waiting period for the eNOI to become active. Document the name of each operator, and the locations of these areas in the Project SWPPP.

3. An entity that owns or operates, a commercial plant (as defined in subsection GCP-80-01, paragraph c.) or material source or disposal site outside the Project Zone, is responsible for permitting and permit compliance. The Contractor has sole responsibility to verify that the entity has a permit and is complying with their permit. Subsection GCP-70-02 describes the requirement to obtain permits, and to provide permit documents to the Engineer.

4. The Department is not responsible for permitting or permit compliance, and is not liable for fines resulting from noncompliance with permit conditions:

   a. In areas outside the Project Zone; and
   b. For commercial plants, commercial material sources, and commercial disposal sites.

5. A Utility company is not an Operator when utility relocation is performed concurrently with the Project, as outlined in subsection GCP-50-06. The Department maintains operational control over the Utility's plans and specifications for coordination with project construction elements, and the Contractor has day-to-day control over the various utility construction activities that occur in support of the Project. A Utility company is considered a subcontractor for concurrent relocation.

   After the Contractor has an active NOI for the Project, a Utility Company performing advance relocation work no longer has Operator status and files the NOT for the Utility Company's SWPPP covering only the completed utility work. Remaining utility relocation work is included in and performed under the Project SWPPP.

157-2.1 SWPPP REQUIREMENTS.

1. SWPPP Preparer and Pre-Construction Site Visit.

   The SWPPP shall be prepared by a SWPPP preparer that is qualified according to the requirements of this specification. The SWPPP shall include the SWPPP Preparer's name, qualifications (including the expiration date of any certifications), title and company name.

   The SWPPP Preparer must conduct a pre-construction inspection at the Project site before Construction Activity begins. The SWPPP Preparer must be accompanied by the Contractor and Engineer.

   During the pre-construction inspection, the SWPPP Preparer must identify, or if a draft of the SWPPP has already been prepared verify that the SWPPP fully addresses and describes:

   a. Opportunities to phase construction activities;
   b. Appropriate BMPs and their sequencing; and
   c. Sediment controls that must be installed prior to beginning Construction Activities.

   Document the SWPPP Preparer's pre-construction inspection in the SWPPP on Form 25D-106, SWPPP Pre-Construction Site Visit, including the names of attendees and the date.

2. Developing the SWPPP.

   Use the Department's ESCP as a starting point for developing the SWPPP. The approved SWPPP replaces the ESCP.

   Develop the SWPPP according to the EPA's SWPPP Template for Authorized States with additional information as required.

   When using the EPA's SWPPP template:

   - In Section 3 (Good Housekeeping), add a subsection to describe dedicated asphalt plants and/or dedicated concrete plants, give their locations and identify the BMPs that will be used to minimize pollutants from them. If there are no dedicated asphalt or concrete plants, then state that in the SWPPP.

   - Include the following appendices:

     - Appendix A – General Location Map
     - Appendix B – Site Maps
     - Appendix C – Construction General Permit
     - Appendix D – NOI(s) and Acknowledgement Letter from State
     - Appendix E – Inspection Reports
     - Appendix F – Corrective Action Log
     - Appendix G – SWPPP Amendment Log
     - Appendix H – Subcontractor Certifications/Agreements
     - Appendix I – Grading and Stabilization Activities Log
     - Appendix J – Training Log
     - Appendix K – Delegation of Authority
     - Appendix L – Additional Information (i.e. Department acquired permits, Contractor acquired permits)

   - Add appendices for:

- Appendix M – Endangered Species Act and historic preservation documents
  - Use the documents obtained by the Department, see SWPPP Considerations and Contents below
- Appendix N – HMCP
- Appendix O – BMP Descriptions/Drawings
- Appendix P – SWPPP Preparer's Site Visit
- Appendix Q – Personnel qualification & training certifications for:
  - Superintendent
  - SWPPP Preparer
  - SWPPP Manager
  - Department Engineer and Storm Water Inspector
  - Qualified personnel must be described in a list with names and dates in positions
- Appendix R – Rainfall logs
- Appendix S – Correspondence with ADEC and local government including:
  - ADEC delivery receipt of SWPPP
  - ADEC SWPPP review letter
  - ADEC non-domestic wastewater plan review non-objection letter when required (use the letter obtained by the Department)
  - Local SWPPP review letter when required
- Appendix T – NOT forms

- Use the following Department forms for recording information in the SWPPP:

  - SWPPP Amendment Log ..... (25D-114)
  - SWPPP Certification for Contractor ..... (25D-111)
  - SWPPP Construction Site Inspection Report ..... (25D-100 Parts 1&2)
  - SWPPP Corrective Action Log ..... (25D-112)
  - SWPPP Daily Record of Rainfall ..... (25D-115)
  - SWPPP Delegation of Signature Authority – Contractor ..... (25D-108)
  - SWPPP Grading and Stabilization Activities Log ..... (25D-110)
  - SWPPP Pre-Construction Site Visit ..... (25D-106)
  - SWPPP Subcontractor Certification ..... (25D-105)
  - SWPPP Training Log ..... (25D-125)
  - SWPPP Delegation of Signature Authority – DOT&PF ..... (25D-107)
  - SWPPP Certification for DOT&PF ..... (25D-109)
  - SWPPP Delayed Action Item Report ..... (25D-113)

  Department forms are updated annually and available on the Internet at:

  http://www.dot.state.ak.us/stwddes/dcsconst/resources.shtml#

Compile the SWPPP in three ring binders with tabbed and labeled dividers for each section and appendix.

3. SWPPP Considerations and Contents.

The SWPPP must provide erosion and sediment control measures for all Construction Activity. The SWPPP must consider the activities of the Contractor and all subcontractors and utility companies performing work for the Project. The SWPPP must describe the roles and responsibilities of the Contractor, subcontractors, utility companies, and the Department with regard to implementation of the SWPPP. The SWPPP must identify all operators for the Project, and identify the areas:

a. Over which each operator has operational control; and
b. Where the Department and Contractor are co-operators.

The SWPPP must identify specific areas where potential erosion, sedimentation, or pollution may occur. The potential for wind erosion and erosion at drainage structures must be addressed. Include in the "Stabilize Soils" section of the SWPPP, a description of how you will minimize the amount of disturbed and un-stabilized ground in the fall season and how you will stabilize areas when it is close to or past the seasonal time of snow cover or frozen conditions. Include a plan for complete temporary stabilization for seasonal suspension of work and final stabilization. Refer to CGP, Appendix A, for definitions of Final Stabilization.

Describe BMPs in the SWPPP and in SWPPP Amendments, including source controls, sediment controls, discharge points, and all temporary and permanent stabilization measures. Describe the design, placement, installation, and maintenance of each BMP, using words and drawings as appropriate. Provide a citation to the BMP Manual or publication used as a source for the BMP, including the title of the BMP Manual or publication, the author (individual or agency), and date of publication. If no published source was used to select or design a BMP, then the SWPPP or SWPPP amendment must state that "No published BMP manual was used for this design." Include a drawing and description when designing a BMP.

Describe the sequence and timing of activities that disturb soils and of BMP implementation and removal. Phase earth disturbing activities to minimize un-stabilized areas, and to achieve temporary or final stabilization quickly. Whenever practicable construct un-stabilized areas directly into final stabilization.

Identify the inspection schedule in the SWPPP. Inspections shall be conducted at least once every seven days during construction.

The SWPPP must cite and incorporate applicable requirements of the Project permits, environmental commitments, and commitments related to historic preservation. Make additional consultations or obtain permits as necessary for Contractor specific activities which were not included in the Department's permitting and consultation.

Keep the SWPPP current by noting installation, modification, and removal of BMPs, and by using amendments, SWPPP amendment logs, inspection reports, corrective action logs, records of grading and stabilization, and any other records necessary to document storm water pollution prevention activities and to satisfy the requirements of the CGP and this specification. See subsection P-157-3.3 for more information.

4. Recording Personnel and Contact Information in the SWPPP.

Include in the SWPPP copies of the AK-CESCL cards for the Superintendent and SWPPP Manager, and for any acting Superintendent and acting SWPPP Managers. If the Superintendent or SWPPP Manager is replaced permanently or temporarily, by an acting Superintendent or acting SWPPP Manager; record in the SWPPP the names of the replacement personnel, the date of the replacement, and for temporary personnel their beginning and ending dates.

Provide 24 hour contact information for the Superintendent and SWPPP Manager. The Superintendent and SWPPP Manager must have 24 hour contact information for all Subcontractor and Utility SWPPP Coordinators.

The Department will provide Records of AK-CESCL cards for the Engineer and the SWPPP Inspectors, and names and dates they are acting in that position. Include the Department's Records in the SWPPP.

157-2.2 HMCP REQUIREMENTS. Prepare the HMCP for prevention of pollution from storage, use, containment, cleanup, and disposal of all hazardous material, including petroleum products related to construction activities and equipment. Include the HMCP as an appendix to the SWPPP. Compile Material Safety Data Sheets in one location and reference that location in the HMCP.

Designate a Contractor's Spill Response Field Representative with 24 hour contact information. Designate a Spill Response Coordinator for each subcontractor or utility. The Superintendent and Contractor's Spill Response Field Representative must have 24 hour contact information for each Subcontractor and Utility Spill Response Coordinators.

List and give the location and estimated quantities of hazardous materials (including materials or substances listed in 40 CFR 117 and 302, and petroleum products) to be used or stored on the Project. Hazardous materials must be stored in covered storage areas. Include secondary containment for all hazardous material storage areas.

Identify the locations where fueling and maintenance activities will take place, describe the activities, and list controls to prevent the accidental spillage of petroleum products and other hazardous materials. Controls include placing absorbent pads or other suitable containment under fill ports while fueling and under equipment during maintenance or repairs. Secondary containment must be installed under all stationary equipment that contains petroleum products.

List the types and approximate quantities of response equipment and cleanup materials available on the Project. Include a list and location map of cleanup materials, at each different work site and readily available off site (materials sources, material processing sites, disposal sites, staging areas, etc). Spill response materials must be stored in sufficient quantity at each work location, appropriate to the hazards associated with that site.

Describe procedures for containment and cleanup of hazardous materials. Describe a plan for the prevention, containment, cleanup, and disposal of soil and water contaminated by spills. Describe a plan for dealing with contaminated soil and water encountered during construction.

Describe methods of disposing of waste petroleum products and other hazardous materials generated by the Project, including routine maintenance. Identify haul methods and final disposal areas. Assure final disposal areas are permitted for hazardous material disposal.

Describe methods of complying with the requirements of 18 AAC 75 and AS 46, Oil and Hazardous Substances Pollution Control. Include contact information for reporting hazardous materials and petroleum product spills to the Engineer and reporting to federal, state, and local agencies.

157-2.3 SPCC PLAN REQUIREMENTS. Prepare and implement an SPCC Plan when required by 40 CFR 112; when both of the following conditions are present on the Project:

- Oil or petroleum products from a spill may reach navigable waters (as defined in 40 CFR 112); and

- Total above ground storage capacity for oil and any petroleum products is greater than 1,320 gallons (not including onboard tanks for fuel or hydraulic fluid used primarily to power the movement of a motor vehicle or ancillary onboard oil-filled operational equipment, and not including containers with a storage capacity of less than 55 gallons)

Reference the SPCC Plan in the HMCP and SWPPP.

157-2.4 RESPONSIBILITY AND AUTHORITY OF THE SUPERINTENDENT AND SWPPP MANAGER. The Superintendent is responsible for the overall operation of the Project and all Contractor furnished sites and facilities directly related to the Project. The Superintendent shall sign and certify the SWPPP, Inspection reports, and other reports required by the CGP, except the NOI and NOT. The Superintendent may not delegate the task or responsibility of signing and certifying the SWPPP submitted under subsection P-157-1.3, paragraph 1, Inspection reports, and other reports required by the CGP.

The Superintendent may assign certain duties to the SWPPP Manager; those duties may include:

1. Ensuring Contractor's compliance with the SWPPP and CGP;
2. Ensuring the control of erosion, sedimentation, or discharge of pollutants;
3. Directing and overseeing installation, maintenance, and removal of BMPs;
4. Performing Inspections; and
5. Updating the SWPPP including adding amendments and forms.

The Superintendent and SWPPP Manager shall be knowledgeable in the requirements of this section, the SWPPP, CGP, BMPs, HMCP, SPCC Plan, environmental permits, environmental commitments, and historic preservation commitments.

The Superintendent and SWPPP Manager shall have the Contractor's complete authority to suspend Construction Activities that do not conform to the SWPPP or CGP.

157-2.5 MATERIALS. Use materials suitable to withstand hydraulic, wind, and soil forces, and to control erosion and trap sediments according to the requirements of the CGP and the Specifications.

Use an Oregon Scientific RGR126 Wireless Rain Gauge with Temperature, or Taylor 2751 Digital Wireless Rain Gauge with Thermometer, or approved equivalent.

157-3.1 CONSTRUCTION REQUIREMENTS.

Comply with the requirements of the SWPPP and CGP.

1. Before Construction Activity may Begin.

    - The SWPPP Preparer, Contractor, and Engineer must visit the Project, the visit must be documented in the SWPPP, and the SWPPP must be developed (or amended) with findings from the visit
    - The SWPPP must be approved by the Engineer
    - The Contractor must be authorized to begin construction activity by the Engineer
    - Submit Department approved SWPPP to ADEC
    - The Project eNOIs for the Department and for the Contractor, as well as any other eNOIs if there are additional operators, must be listed as Active Status on the ADEC website

    Post notices containing the following information:

    - Copy of all eNOIs related to this project
    - Name and phone number of SWPPP Manager
    - Where the SWPPP is located

    Post notices on the outside wall of the Contractor's project office, and near the main entrances of the construction project. Protect postings from the weather and locate so the public can read them without obstructing construction activities (for example, at an existing pullout). Do not use retro-reflective signs for the SWPPP posting. Do not locate SWPPP signs in locations where the signs may be confused with traffic control signs or devices.

    Install an outdoor rain gauge in an approved and readily accessible location on the Project.

    Install sediment controls and other BMPs that must be placed prior to the initiation of Construction Activity.

2. During Construction.

Include SWPPP Subcontractor Certifications as an appendix to the SWPPP. Coordinate with subcontractors and utility companies doing work in the Project Zone so BMPs, including temporary and permanent stabilization are installed, maintained, and protected from damage.

Provide on-going training to employees, utilities, and subcontractors, on control measures at the site and applicable storm water pollution prevention procedures. Document on the SWPPP Training Log, Form 25D-125, the dates and attendees to these trainings. Include the SWPPP Training Log as an appendix to the SWPPP.

Place absorbent pads or other suitable containment under fill ports while fueling and under equipment during maintenance or repairs. Install secondary containment under all stationary equipment that contains petroleum products.

Keep the SWPPP current (refer to subsection P-157-2.1, paragraph 3, SWPPP Considerations and Contents).

3. Pollutant and Hazardous Materials Reporting Requirements.

If there has been an incident of non-compliance with the CGP that may endanger health or the environment, immediately report the incident to ADEC according to the CGP, Appendix F. Notify the Engineer immediately and to the extent possible coordinate reports to ADEC with the Engineer. The report must include:

- A description of the noncompliance and its causes
- The exact dates and times of noncompliance
- If not yet corrected the anticipated time the project will be brought back into compliance
- The corrective action taken or planned to reduce, eliminate and prevent reoccurrence

Report spills of petroleum products or other hazardous materials to the Engineer and as required by law. Use the HMCP and SPCC Plan (if available) for contact information to report spills to regulatory agencies.

4. Corrective Action and Maintenance of BMPs.

Implement corrective action:

- If an incident of non-compliance with the SWPPP, or CGP is identified
- If an Inspection identifies the SWPPP or any part of the SWPPP is ineffective in preventing erosion, sedimentation or the discharge of pollutants
- If the Engineer determines the SWPPP or any part of the SWPPP is ineffective in preventing the erosion, sedimentation, or the discharge of pollutants
- If any BMP is damaged, undercut, or unable to effectively perform the intended function
- Before sediment or debris fills any BMP (including sediment traps, ponds and silt fences) to 50% of its design storage capacity (or manufacturer's specifications, whichever is lower)
- Whenever there is a change in conditions, design, construction, operation, or maintenance that could result in erosion, sedimentation, or the discharge of pollutants

Implement corrective actions so that all of the following time requirements are satisfied:

- Corrective action is completed as soon as possible
- Corrective action is completed before the next storm event
- Corrective action is completed in time to protect water quality

- Corrective action is completed no later than the end of the day, six calendar days following the day of an Inspection identifying the need for corrective action

If a corrective action is not implemented within the time requirements of this section, document the situation in the SWPPP, notify the Engineer and implement alternative BMPs as soon as possible.

5. Stabilization.

Stabilization may be accomplished using temporary or permanent measures. Initiate stabilization of disturbed areas, stockpiles, disposal sites, and of erodible aggregate layers so that all of the following conditions are satisfied:

- As soon as practicable
- As soon as necessary to avoid erosion, sedimentation, or the discharge of pollutants
- As identified in the SWPPP
- No later than 14 days after the temporary or permanent cessation of land-disturbing activities on a portion of the site, according to the CGP

Land may be disturbed and stabilized multiple times during a project. Coordinate work to minimize the amount of area open at any one time. Do not disturb more area than you can stabilize with the resources available.

The Contractor is responsible for control measures associated with stockpiles.

Temporarily stabilize from wind and water erosion portions of disturbed soils, portions of stockpiles, and portions of disposal sites, that are not in active construction. Temporary stabilization measures may require a combination of measures including but not limited to vegetative cover, mulch, stabilizing emulsions, blankets, mats, soil binders, non-erodible cover, dust palliatives, or other approved methods.

6. Ending SWPPP Activities and SWPPP Maintenance.

The Engineer will determine SWPPP activities have ended when all of the following requirements are met:

- Land disturbing activities have ceased
- Final Stabilization has been achieved (including at Department furnished material sources, disposal sites, staging areas, equipment areas, etc.)
- Temporary BMPs have been removed

Submit eNOT after written notice from the Engineer and according to subsection P-157-1.3, paragraph 5.

The Department will provide a copy of its eNOT to the contractor for inclusion in the SWPPP.

7. Transmit final SWPPP.

Transmit one copy of the final SWPPP, including all amendments and appendixes, to the Engineer when the project eNOTs are filed. Transmittal must be both electronic and hard copy.

157-3.2 SWPPP DOCUMENTS, LOCATION ON-SITE AND RECORD RETENTION. Keep the approved SWPPP, HMCP and SPCC Plan at the on-site project office. If there is not an on-site project office, keep the documents at a locally available location approved by the Engineer. Provide the Department with copies of all Records.

Retain Records and a copy of the SWPPP, for at least three years after the date of eNOT. If EPA or ADEC inspects the project, issues a Notice of Violation (NOV), or begins investigation for a potential NOV before the retention period expires, retain the SWPPP and all Records related to the SWPPP and CGP until at least three years after EPA and/or ADEC has determined all issues related to the investigation are settled.

157-3.3 SWPPP INSPECTIONS, AMENDMENTS, REPORTS, AND LOGS. Perform Inspections, prepare Inspection reports, and prepare SWPPP amendments in compliance with the SWPPP and the CGP. Update SWPPP Corrective Action Log, SWPPP Amendment Log, SWPPP Grading and Stabilization Logs, and SWPPP Daily Record of Rainfall forms.

1. Inspection during Construction.

   Inspections shall be conducted at least once every seven (7) days.

   Following a storm event of 1/2" or greater rainfall in a 24 hour period recorded at the project site rain gauge, the responsible parties should conduct an informal inspection of the Project to ensure all BMP's are working properly and perform any necessary corrective actions as soon as possible.

   Inspections required by the CGP and SWPPP must be performed by the Contractor SWPPP Manager and the Department SWPPP Inspector jointly, unless impracticable. For this paragraph, "impracticable" means when both inspectors must fly to a remote area in the winter or when one inspector is sick or unable to travel to the site due to weather. When this is the case, the Operator who conducts the Inspection must provide a copy of the Inspection report to the other Operator within three days of the Inspection date and document the date of the report transmittal.
2. Inspection Reports.

   Use only the DOT&PF SWPPP Construction Site Inspection Report, Form 25D-100 to record Inspections. Changes or revisions to Form 25D-100 are not permitted. Complete all fields included on the Inspection report form; do not leave any field blank.

   Unless otherwise directed or approved by the Engineer, insert as the date each corrective action will be completed by the date that is (1) six calendar days after the date of the Inspection, or (2) a date that complies with the time requirements listed in subsection P-157-3.1, paragraph 4, whichever is sooner. The Superintendent must provide the report to the Engineer the same day.

   Prior to the Engineer certifying the report, submit electronic copies of the SWPPP Inspection Report, Working Site Maps/Plan Sheets, SWPPP Amendment Log, SWPPP Amendments since the last Inspection, SWPPP Corrective Action Log, SWPPP Grading and Stabilization Logs, and SWPPP Daily Record of Rainfall forms as directed by the Engineer for Quality Assurance review.

   Quality Assurance has two (2) working days to review the reports. As directed by the Engineer, correct all items and complete certification with the signature of the Superintendent within one (1) working day. The Engineer will review and certify the report and return the original to the Contractor within one (1) working day.

   If subsequent corrections to the dually signed Inspection report are needed, document the corrections in a supplement that addresses only the omitted or erroneous portions of the original Inspection report. The Superintendent and the Engineer must both sign and certify the supplement.

3. Inspection before Seasonal Suspension of Work.

   Conduct an Inspection before seasonal suspension of work to confirm BMPs are installed, functioning and Project Zone is 100% temporarily stabilized, according to the requirements of the SWPPP and CGP.

4. Reduced Inspection Frequencies.

Conduct Inspections according to the inspection schedule indicated in the approved SWPPP. Any change in inspection frequency must be approved by the Engineer, and beginning and ending dates documented as an amendment to the SWPPP.

Inspection frequency during winter work or seasonal suspension of work may be reduced to at least one Inspection every month if approved by the Engineer and either of the following requirements is met:

- The entire site is temporarily stabilized, or
- Runoff is unlikely due to winter conditions (e.g. the site is covered with snow, ice or the ground is frozen, and water flow or seepage is not likely to occur)

The Engineer may waive winter monthly Inspection requirements until one month before thawing conditions are expected to result in a discharge, if all the following requirements are met:

- Frozen conditions are anticipated to continue for more than one month
- Land disturbance activities have been suspended

Historical weather information is available at:
http://www.wrcc.dri.edu/summary/climsmak.html

The Engineer may waive requirements for updating the Grading and Stabilization Activities Log and Daily Record of Rainfall during seasonal suspension of work. If so, resume collecting and recording weather data on the Daily Record of Rainfall form one month before thawing conditions are expected to result in runoff. Resume recording land disturbance and stabilization activities on the Grading and Stabilization Activities Log when Construction Activity resumes.

5. Stabilization before Seasonal Thaw.

Construction Activities within the Project Zone must be stabilized with appropriate BMPs prior to seasonal thaw. Seasonal thaw is the annual (first) recurrence of snow and ice melting after a prolonged period of freezing conditions.

6. Inspection before Project Completion.

Conduct Inspection to ensure Final Stabilization is complete throughout the Project, and temporary BMPs that are required to be removed are removed. Temporary BMPs that are biodegradable and are specifically designed and installed with the intent of remaining in place until they degrade, may remain in place after project completion.

7. Items and Areas to Inspect.

Conduct Inspections of the areas required by the CGP and SWPPP.

8. SWPPP Amendments and SWPPP Amendment Log.

The Superintendent and the SWPPP Manager are the only persons authorized to amend the SWPPP and update the SWPPP Amendment Log, Form 25D-114. The Superintendent or the SWPPP Manager must sign amendments to the SWPPP and updates to the SWPPP Amendment Log.

SWPPP Amendments must be approved by the Engineer.

Amendments must occur:

- Whenever there is a change in design, construction operation, or maintenance at the construction site that has or could cause erosion, sedimentation or the discharge of pollutants that has not been previously addressed in the SWPPP
- If an Inspection identifies that any portion of the SWPPP is ineffective in preventing erosion, sedimentation, or the discharge of pollutants
- Whenever an Inspection identifies a problem that requires additional or modified BMPs
- Whenever a BMP is added, removed, or modified
- If the Inspection frequency is modified (note beginning and ending dates)
- When there is a change in personnel who are named in the SWPPP, according to subsection P-157-2.1, paragraph 4

Amend the SWPPP narrative as soon as practicable after any change or modification, but in no case, later than seven (7) calendar days following identification of the need for an amendment. Every SWPPP Amendment must be dated. Cross-reference the amendment number with the Corrective Action Log or SWPPP page number, as applicable. When a BMP is modified or added, describe the BMP according to subsection P-157-2.1, paragraph 3.

Keep the SWPPP Amendment Log current. Prior to performing each scheduled Inspection, submit to the Engineer a copy of the pages of the Amendment Log that contain new entries since the last submittal. Include copies of any documents amending the SWPPP.

Keep the SWPPP Amendment Log as an appendix to the SWPPP.

9. Drawings.

Document planned SWPPP activities such as installation and removal of BMPs, by making notes in the SWPPP drawings. Include the date and the recording person's initials by these notes.

10. Corrective Action Log.

The Superintendent and SWPPP Manager are the only persons authorized to make entries on the SWPPP Corrective Action Log, Form 25D-112.

Modification or replacement of a BMP, installation of a new BMP, or overdue maintenance (after a sediment trap exceeds 50% of design capacity) is a corrective action and must be documented on the Corrective Action Log.

After each Inspection report has been signed and certified, update the corrective action log to include all corrective actions noted on the inspection report.

After the corrective action has been accomplished, note the action taken, and date and initial the entry.

Keep the Corrective Action Log current and submit a copy to the Engineer prior to performing each scheduled SWPPP Inspection.

Keep the Corrective Action Log as an appendix to the SWPPP.

11. Grading and Stabilization Log.

The Superintendent and SWPPP Manager are the only persons authorized to date and initial entries on the SWPPP Grading and Stabilization Activities Log, Form 25D-110. Use the SWPPP Grading and Stabilization Activities Log, to record land disturbance and stabilization activities.

Keep the Grading and Stabilization Activities Log current and submit a copy to the Engineer prior to performing each scheduled SWPPP Inspection.

Keep the Grading and Stabilization Activities Log as an appendix to the SWPPP.

12. Daily Record of Rainfall.

Use SWPPP Daily Record of Rainfall, Form 25D-115, to record weather conditions at the Project. Update the form daily and include the initials of the person recording each day's entry. Submit a copy to the Engineer prior to performing each scheduled Inspection.

Keep the Daily Record of Rainfall as an appendix to the SWPPP.

157-3.4 RESERVED.

TABLE 157-2, RESERVED.

157-3.5 NON-COMPLIANCE. The Engineer has authority to suspend work and withhold monies, for an incident of non-compliance with the CGP or SWPPP. If the suspension is to protect workers, the public, or the environment from imminent harm, the Engineer may orally order the suspension of work. Following an oral order of suspension, the Engineer will promptly give written notice of suspension. In other circumstances, the Engineer will give the Contractor written notice of suspension before suspension of work. A notice of suspension will state the defects or reasons for a suspension, the corrective actions required to stop suspension, and the time allowed to complete corrective actions. If the Contractor fails to take the corrective action within the specified time, the Engineer may:

1. Suspend the work until corrective action is completed;
2. Withhold monies due the Contractor until corrective action is completed;
3. Assess Price Adjustments against the Contract Amount;
4. Employ others to perform the corrective action and deduct the cost from the Contract amount.

Reasons for the Engineer to take action under this section include but are not limited to failure to:

- Meet requirements of the CGP, SWPPP, or other permits, laws, and regulations related to erosion, sediment, or pollution control and perform the duties according to the requirements of Item P-157 including but not limited to:

  - Perform SWPPP Administration
  - Perform timely Inspections
  - Update the SWPPP
  - Transmit SWPPP, Inspection reports, and other SWPPP forms that are updated weekly to the Engineer
  - Maintain effective BMPs to control erosion, sedimentation, and pollution in accordance with the SWPPP, the CGP, and applicable local, state, and federal requirements

Price Adjustments depend on the non-compliance issue, and range from $750 to $5,000 per occurrence with additional Price Adjustments for each day until compliance is achieved.

Price Adjustment for an incident of non-compliance that results in violation, as determined by the Engineer, will be withheld from the pay estimate pending billing from the Department to the Contractor. These are Liquidated Damages which represent violation penalties or fines assessed to the Department by Regulatory Agencies. After separate payment is received by the Department from the Contractor

satisfying violation penalties, the equal amount of Price Adjustment withheld will be released in the next pay estimate.

Regulatory agencies may separately penalize or fine the Contractor and/or the Department for much higher amounts for Permit violations (for example federal penalties may be up to $37,500 per day per violation and state penalties may be up to $100,000 per violation). The Contractor is responsible for the payment of any and all penalties and fines levied against the Department or Contractor by other entities (including agencies).

No additional Contract time or additional compensation will be allowed due to delays caused by the Engineer's suspension of work under this subsection.

157-4.1 METHOD OF MEASUREMENT. Section 90, Item T-901, Item T-908, Item P-680, and as follows:

Items P-157b and P-157d will be measured as specified in the Contract or Directive authorizing the work.

Item P-157e will be measured and deductions determined by the Department.

157-5.1 BASIS OF PAYMENT. See subsection P-157-3.5 Failure to Perform Work, for additional work and payment requirements.

Item P-157a Erosion, Sediment, and Pollution Control Administration. At the contract lump sum price for administration of all work under this Section. Includes, but is not limited to, SWPPP and HMCP and SPCC Plan preparation, agency fees for SWPPP reviews, SWPPP Manager, SWPPP amendments, pre-construction Inspections, Inspections, monitoring, reporting, and Record keeping or copying Records related to the SWPPP and required by the CGP, and Record retention.

Work required by the HMCP and SPCC Plan including hazardous material storage, containment, removal, cleanup and disposal, are subsidiary to Pay Item P-157a Erosion, Sediment and Pollution Control Administration.

The SWPPP Manager and rain/temperature gauge are subsidiary to Pay Item P-157a.

Item P-157b Temporary Erosion, Sediment, and Pollution Control. At the contingent sum prices for all labor, supervision, material, equipment, and incidentals to install, maintain, remove, and dispose of approved temporary erosion, sedimentation, and pollution control BMPs required to implement the SWPPP and SPCC Plan. Prices for this item will be for time and materials according to subsection GCP-90-05, or by mutual agreement between the Engineer and Contractor.

Item P-157c Temporary Erosion, Sediment, and Pollution Control. At the contract lump sum price for all labor, supervision, material, equipment, and incidentals to install, maintain, remove, and dispose of temporary erosion, sedimentation, and pollution control BMPs identified in the SWPPP and SPCC Plan.

Item P-157d Temporary Erosion, Sediment, and Pollution Control by Directive. At the contingent sum prices specified in the Directive using time and materials to authorize the work, for all labor, supervision, materials, equipment, and incidentals to install, maintain, remove and dispose of temporary erosion, sedimentation, and pollution control BMPs. Prices for this item will be for time and materials according to subsection GCP-90-05, or by mutual agreement between the Engineer and Contractor. All additional Erosion, Sediment, and Pollution Control Administration necessary due to this item will not be paid for separately but will be subsidiary to other bid items.

Item P-157e SWPPP Price Adjustment. Withholding according to subsection P-157-3.5 and Liquidated Damages equal to any penalties and fines levied against the Department by local, state or federal agencies for pollutant violations, including violations of the CWA, CGP, and any other Permit, except when due to the Department's sole negligence. The Contractor is also responsible for the payment of any

and all penalties and fines levied against the Department or Contractor by entities (including agencies) other than the Department.

Work under other pay items. Work that is paid for directly or indirectly under other pay items will not be measured and paid for under Item P-157. This work includes but is not limited to:

- Dewatering
- Shoring
- Bailing
- Permanent seeding
- Installation and removal of temporary work pads
- Temporary accesses
- Temporary drainage pipes and structures
- Diversion channels
- Settling impoundment
- Filtration

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

Work at the Contractor's Expense. Temporary erosion, sediment, and pollution control measures that are required due to carelessness, negligence, or failure to install temporary or permanent controls as scheduled or directed by the Engineer, or for the Contractor's convenience, are at the Contractor's expense.

Payment will be made under:

Item P-157a Erosion, Sediment, and Pollution Control Administration – per Lump Sum
Item P-157b Temporary Erosion, Sediment, and Pollution Control – per Contingent Sum
Item P-157c Temporary Erosion, Sediment, and Pollution Control – per Lump Sum
Item P-157d Temporary Erosion, Sediment, and Pollution Control by Directive – per Contingent Sum
Item P-157e SWPPP Price Adjustment - per Contingent Sum

ITEM P-160 EXCAVATION OF PAVEMENT

DESCRIPTION

160-1.1 Excavate, haul, and dispose of existing asphalt cement concrete (AC) pavement and portland cement concrete (PCC) pavement.

CONSTRUCTION REQUIREMENTS

160-2.1 Perform the work for this item according to the following instructions.

a. **Excavation.** Excavate to the minimum depth necessary for removal of existing pavement where shown on the Plans. Saw cut where shown on the Plans.

b. **Disposal.** Excavated pavement material becomes the property of the Contractor. Remove excavated material to an approved disposal site off of airport property in accordance with applicable Federal and State regulations.

c. **Drainage.** Maintain drainage at all times. Install temporary drains and drainage ditches to intercept or divert surface water that may affect the prosecution or condition of the work.

METHOD OF MEASUREMENT

160-3.1 Section 90. Where portland cement concrete pavement is overlain by asphalt concrete pavement, the asphalt concrete pavement will not be measured separately and will be considered portland cement concrete pavement for payment purposes.

BASIS OF PAYMENT

160-4.1 At the contract unit price for excavation and disposal of pavement materials for either AC or PCC pavement. If the following pay items are absent from the bid schedule, no payment will be made. All work, materials, and equipment required to complete the work will be subsidiary.

Payment will be made under:

Item P-160a Excavation of Pavement (AC) – per square yard

Item P-160b Excavation of Pavement (PCC) – per square yard

ITEM P-208 AGGREGATE SURFACE COURSE

DESCRIPTION

208-1.1 This item consists of an aggregate surface course composed of crushed or uncrushed coarse aggregate bonded with either soil or fine aggregate or both. It shall be constructed on a prepared course according to these Specifications and to the dimensions and typical cross section shown on the Plans.

MATERIALS

208-2.1 GENERAL. Aggregates shall consist of hard, durable particles or fragments of stone or gravel mixed or blended with sand, stone dust, or other similar binding or filler materials produced from approved sources. The aggregate shall be free from vegetation, lumps, or excessive amounts of clay and other objectionable substances. The coarse aggregate shall have a minimum degradation value of 45 when tested according to ATM 313. The aggregate shall have a percent of wear not more than 50 at 500 revolutions as determined by AASHTO T 96 and shall not show evidence of disintegration nor show loss greater than 12% when subjected to 5 cycles of sodium sulfate accelerated soundness test using AASHTO T 104.

208-2.2 CRUSHED AGGREGATE SURFACE COURSE. The aggregates shall consist of both fine and coarse fragments of crushed stone or crushed gravel mixed or blended with sand, screenings, or other similar approved materials. The material shall consist of hard, durable particles or fragments of stone and shall be free from excess soft or disintegrated pieces, dirt, or other objectionable matter.

The fractured particles in the finished product shall be as uniform as practicable. At least 75% by weight of material retained on the No. 4 sieve shall have one or more fractured faces, when tested according to WAQTC FOP for AASHTO ~~TP 61~~ T 335.

If necessary to meet this requirement, or to eliminate an excess of fine, uncrushed particles, the gravel shall be screened before crushing.

208-2.3 UNCRUSHED AGGREGATE SURFACE COURSE. This material may consist of natural pit-run aggregate. However, screening, blending, ripping, washing, and/or necessary mixing of the material or other processing may be necessary to meet the gradation and performance requirements of this specification.

208-2.4 GRADATION. The gradation of the uncrushed or crushed material shall meet the requirements of the gradations indicated in Table 1, when tested according to WAQTC FOP for AASHTO T 27/T 11.

TABLE 1. AGGREGATE GRADATION REQUIREMENTS

Sieve Designation(Square Openings)	Percentage by weight passing sieves For E-1
1.0 in.	100
3/4 in.	70-100
3/8 in.	50-85
No. 4	35-65
No. 8	20-50
No. 50	15-30
No. 200	8-15

The specified gradations represent the limits of suitability of aggregate for use from the sources of supply. The final gradations decided on, within the specified limits, shall be well graded from coarse to fine and shall not vary from the low limit on one sieve to the high limit on the adjacent sieves, or vice versa.

The portion of the material passing the No. 40 sieve shall have a liquid limit not more than 25 and a plasticity index not more than 6, when tested according to WAQTC FOP for AASHTO T 89 and T 90.

208-2.5 FINES FOR BLENDING. If additional fine material is necessary, it shall be obtained from approved sources and uniformly blended with the aggregate at the crushing plant, the mixing plant, or as approved by the Engineer. Silt, stone dust, or other similar fine material may be used as binder.

CONSTRUCTION METHODS

208-3.1 (Not Used)

208-3.2 PREPARING UNDERLYING COURSE. The underlying course will be checked and accepted by the Engineer before placing and spreading operations are started. Any ruts or soft areas shall be corrected and compacted to the required density before placing aggregate surface course.

To protect the underlying course and to ensure proper drainage, the spreading of the aggregate surface course shall begin along the centerline on a crowned section or on the high side of sections with a one-way slope.

208-3.3 METHODS OF PRODUCTION.

a. **Plant Mix.** When selected by the Contractor and approved by the Engineer, the material shall be uniformly mixed in an approved plant.

b. **Travel Plant.** When the use of a traveling plant is approved by the Engineer, the plant shall mix the materials in a single pass. If needed to achieve optimum moisture, water shall be thoroughly mixed with the aggregates during this operation.

   If using a windrow-type of travel plant, the windrows shall be placed parallel to the embankment centerline. The windrow volume shall be sufficient to cover exact areas as planned. The windrow contents shall produce a mixture of the required gradation and bonding qualities.

   If using a travel plant that mixes previously spread aggregates in-place, the material shall have been spread in such thickness and proportions as may be handled by the machine to develop a course of the thickness of each layer and of the gradation required.

c. **Materials of Proper Gradation.** Material which meets the requirements for quality, gradation, and consistency, and which contains approximately the proper moisture for compaction, may be placed directly on the grade, without further mixing.

   Any minor deficiency or excess of moisture may be corrected by surface watering or by aeration. Some mixing or manipulation may be required immediately preceding compacting to obtain the required moisture content.

208-3.4 PLACING. The surface course shall be constructed without segregation of the aggregate. The material shall be placed in uniform, equal-depth layers, each not exceeding 6 inches of compacted depth. No material shall be placed in snow or on a soft uncompacted, muddy, or frozen course.

During the mixing and spreading process, sufficient caution shall be exercised to prevent the incorporation of subgrade, subbase, or shoulder material in the surface course mixture.

~~The Contractor shall install test strips of aggregate surface course with minimum dimensions of 100 feet by 16 feet by typical section thickness in an area heavily traveled by construction equipment, as approved by the Engineer. The stability and compaction characteristics of the material will be observed. The percentage of material passing the No. 200 sieve will be varied within the limits specified in the gradation in the Special Provisions while the stability and compaction are investigated.~~

~~The test strip results will be used to define the final gradation to be placed on the project based on the stability characteristics. Once the optimum percentage of fines passing the No. 200 sieve has been determined, it shall not vary more than ±2% from the optimum. Separate test strips are required for aggregate surface course from each materials source, if more than one source is used.~~

~~No aggregate surface course shall be placed on the project, other than in the test strips, until the Engineer has determined which percentage of fines performs most satisfactorily and results in the best stability. Test strip material accepted by the Engineer will be measured for payment.~~

208-3.5 COMPACTION. Immediately upon completion of the spreading operations, the aggregate shall be thoroughly compacted to the required density. The moisture content of the material shall be approximately that required to obtain maximum density.

208-3.6 ACCEPTANCE SAMPLING AND TESTING FOR DENSITY. The surface course will be accepted for density when the field density is not less than 95% of the maximum density, as determined according to WAQTC FOP for AASHTO T99/T 180 or ATM 212. The in-place field density and moisture content will be determined according to WAQTC FOP for AASHTO T 310. If the specified density is not attained, the material shall be reworked and/or recompacted until the specified density is reached.

208-3.7 FINISHING. The surface of the aggregate surface course shall be finished by blading or with automated equipment specifically designed for this purpose.

In no case shall thin layers of material be added to the top of surface course to meet grade. If the compacted elevation of the top layer is 0.05 foot or more below grade, it shall be scarified to a depth of at least 3 inches, new material added, and the layer shall be blended and compacted to bring it to grade. If the finished surface is above plan grade, it shall be cut back to grade and recompacted.

208-3.8 SURFACE TEST. After the course has been completely compacted, the surface will be tested by the Engineer for smoothness and accuracy of grade and crown. The finished grade elevation shall not vary more than 0.05 foot from the design elevation. The finished surface shall not vary more than 3/8 inch from a 12-foot straightedge when applied to the surface parallel with, and at right angles to, the centerline. Any portion lacking the required smoothness or failing in accuracy of grade or crown shall be corrected to within the specified tolerances.

208-3.9 PROTECTION. Work on the surface course shall not be accomplished during freezing temperatures or when the subgrade is wet. When the aggregates contain frozen materials or when the underlying course is frozen, the construction shall be stopped.

Hauling equipment may be routed over completed portions of the surface course, provided no damage results and provided that such equipment is routed over the full width of the surface course to avoid rutting or uneven compaction. However, the Engineer in charge will have full and specific authority to stop all hauling over completed or partially completed surface course when, in their opinion, such hauling is causing damage. Any damage resulting to the surface course from routing equipment over the surface course shall be repaired by the Contractor at their own expense.

208-3.10 MAINTENANCE. Following the completion of the aggregate surface course, the Contractor shall satisfactorily remove all blue tops, fill and compact the voids, and perform all maintenance work on this surface until final acceptance unless otherwise stated in the Specifications. The surface course shall be properly drained at all times.

METHOD OF MEASUREMENT

208-4.1 Aggregate Surface Course will be weighed by the ton or measured by the cubic yard in final position according to Subsection GCP-90-02.

BASIS OF PAYMENT

208-5.1 Aggregate Surface Course will be paid for at the contract price, per unit of measurement, accepted in place. If the following pay items are absent from the bid schedule, no payment will be made. All work, materials, and equipment required to complete the work will be subsidiary.

Payment will be made under:

Item P-208a	Crushed Aggregate Surface Course - per cubic yard
Item P-208b	Uncrushed Aggregate Surface Course - per cubic yard
Item P-208c	Crushed Aggregate Surface Course - per ton
Item P-208d	Uncrushed Aggregate Surface Course - per ton

TESTING REQUIREMENTS

AASHTO T 96	Resistance to Degradation of Small-Size Coarse Aggregate by Abrasion and Impact in the Los Angeles Machine
AASHTO T 104	Soundness of Aggregate by Use of Sodium Sulfate or Magnesium Sulfate
ATM 212	The Standard Density of Coarse Granular Materials Using the Vibratory Compactor
ATM 313	The Degradation Value of Aggregates
WAQTC FOP for AASHTO T 27/T 11	Sieve Analysis of Aggregates & Soils
WAQTC FOP for AASHTO T 89	Liquid Limit of Soils
WAQTC FOP for AASHTO T 90	Plastic Limit and Plasticity Index of Soils
WAQTC FOP for AASHTO T 99/T 180	Moisture-Density Relations of Soils
WAQTC FOP for AASHTO T 310	In-Place Density and Moisture Content of Soil and Soil-Aggregate by Nuclear Methods
WAQTC FOP for AASHTO ~~TP 61~~ T 335	Percentage of Fracture in Coarse Aggregate

ITEM P-209 CRUSHED AGGREGATE BASE COURSE

DESCRIPTION

209-1.1 This item consists of a base course composed of crushed aggregates constructed on a prepared course according to these Specifications and to the dimensions and typical cross section shown on the Plans.

MATERIALS

209-2.1 AGGREGATE. Aggregates shall consist of clean, sound, durable particles of crushed stone or crushed gravel and shall be free from vegetable matter, excess coatings of clay, silt, and other objectionable materials and shall contain no clay balls.

Fine aggregate passing the No. 4 sieve shall consist of fines from the operation of crushing the coarse aggregate. If necessary, fine aggregate may be added to produce the correct gradation. The fine aggregate shall be produced by crushing stone and gravel that meet the requirements for wear and soundness specified for coarse aggregate.

The crushed aggregate portion which is retained on the No. 4 sieve shall have at least 75% by weight with 2 fractured faces as determined by WAQTC FOP for AASHTO ~~TP 61~~ T 335.

The percentage of wear shall not be greater than 45% when tested according to AASHTO T 96. The sodium sulfate soundness loss shall not exceed 12%, after 5 cycles, when tested according to AASHTO T 104. Aggregates shall have a minimum degradation value of 45 when tested according to ATM 313.

The fraction passing the No. 40 sieve shall have a liquid limit no greater than 25 and a plasticity index of not more than 4 when tested according to WAQTC FOP for AASHTO T 89 and T 90. The fine aggregate shall have a minimum sand equivalent value of 35 when tested according to WAQTC FOP for AASHTO T 176.

a. **Sampling and Testing.** The Engineer will sample aggregates for quality testing before the start of production. The Engineer, at no expense to the Contractor, will make all tests necessary to determine whether aggregate quality is in compliance with the specifications.

   The Engineer will sample aggregates for acceptance according to WAQTC FOP for AASHTO T 2, and test aggregates for acceptance according to WAQTC FOP for AASHTO T 27/T 11.

b. **Gradation Requirements.** The gradation of the final mixture shall fall within the range indicated in Table 1, when tested according to WAQTC FOP for AASHTO T 27/T 11. The final gradation shall be continuously well graded from coarse to fine and shall not vary from the low limit on one sieve to the high limit on an adjacent sieve or vice versa.

TABLE 1. REQUIREMENTS FOR GRADATION OF AGGREGATE

Sieve Designation (Square Openings)	Percentage by weight passing sieves	
	C-1	D-1
1-1/2 in	100	--
1.00 in	70-100	100
3/4 in	60-90	70-100
3/8 in	45-75	50-80
No.4	30-60	35-65
No. 8	22-52	20-50
No. 50	8-30	8-30
No. 200	0-6	0-6

Note: Unless otherwise specified, Gradation D-1 shall be used.

CONSTRUCTION METHODS

209-3.1 PREPARING UNDERLYING COURSE. Placing and spreading operations shall not commence until the underlying course has been accepted, in writing, by the Engineer. Any ruts or soft areas shall be corrected and compacted to the required density before placing the base course. Crushed aggregate base course shall not be placed on frozen material.

209-3.2 MIXING. The aggregate shall be uniformly blended during crushing operations or mixed in a plant. The plant shall blend and mix the materials to meet the Specifications.

209-3.3 PLACING. The crushed aggregate base material shall be placed on the approved subgrade in uniform, equal-depth layers, each not exceeding 6 inches of compacted depth.

The previously constructed layer shall be cleaned of loose and foreign material prior to placing the next layer. The surface of the compacted material shall be kept moist until covered with the next layer.

209-3.4 COMPACTION. Immediately upon completion of the spreading operations, the aggregate shall be thoroughly compacted to the required density. The moisture content of the material shall be approximately that required to obtain maximum density.

209-3.5 ACCEPTANCE SAMPLING AND TESTING FOR DENSITY. Base course will be accepted for density when the field density is not less than 100% of the maximum density, as determined according to WAQTC FOP for AASHTO T 99/T 180 or ATM 212. The in-place field density and moisture content will be determined according to WAQTC FOP for AASHTO T 310. If the specified density is not attained, the material shall be reworked and/or recompacted until the specified density is reached.

209-3.6 FINISHING. The surface of the aggregate base course shall be finished by blading or with automated equipment specifically designed for this purpose.

In no case shall thin layers of material be added to the top of base course to meet grade. If the compacted elevation of the top layer is 0.05 foot or more below grade, it shall be scarified to a depth of at least 3 inches, new material added, and the layer shall be blended and compacted to bring it to grade. If the finished surface is above plan grade, it shall be cut back to grade and recompacted.

209-3.7 SURFACE TEST. After the course has been completely compacted, the surface will be tested by the Engineer for smoothness and accuracy of grade and crown. The finished surface shall not vary more than 3/8 inch from a ~~12~~ 10-foot straightedge when applied to the surface parallel with, and at right angles to, the centerline. Any portion lacking the required smoothness or failing in accuracy of grade or crown shall be corrected to within the specified tolerances.

209-3.8 THICKNESS CONTROL. The thickness of the finished base course will be determined by the Engineer by taking before and after elevation measurements, or by depth tests, at random locations. The completed thickness of the base course shall be within 1/2 inch of the design thickness. Where the thickness is deficient by more than 1/2 inch, it shall be corrected to within the specified tolerances.

209-3.9 MAINTENANCE. The base course shall be maintained in a condition that will meet all specification requirements until the work is accepted. Equipment used in the construction of an adjoining section may be routed over completed portions of the base course, provided no damage results and provided that the equipment is routed over the full width of the base course to avoid rutting or uneven compaction.

METHOD OF MEASUREMENT

209-4.1 Crushed Aggregate Base Course will be weighed by the ton or measured by the cubic yard in final position according to Subsection GCP-90-02.

BASIS OF PAYMENT

209-5.1 Crushed Aggregate Base Course will be paid for at the contract price, per unit of measurement, accepted in place. If the following pay items are absent from the bid schedule, no payment will be made. All work, materials, and equipment required to complete the work will be subsidiary.

Payment will be made under:

Item P-209a	Crushed Aggregate Base Course - per cubic yard
Item P-209b	Crushed Aggregate Base Course - per ton

TESTING REQUIREMENTS

ATM 212	Determining the Standard Density of Coarse Granular Materials Using the Vibratory Compactor
ATM 313	Degradation Value of Aggregates
AASHTO T 96	Resistance to Degradation of Small-Size Coarse Aggregate by Abrasion and Impact in the Los Angeles Machine
AASHTO T 104	Soundness of Aggregate by Use of Sodium Sulfate or Magnesium Sulfate
WAQTC FOP for AASHTO T 2	Sampling Aggregates
WAQTC FOP for AASHTO T 27/T 11	Sieve Analysis of Aggregates & Soils
WAQTC FOP for AASHTO T 89	Liquid Limit of Soils
WAQTC FOP for AASHTO T 90	Plastic Limit and Plasticity Index of Soils
WAQTC FOP for AASHTO T 99/T 180	Moisture-Density Relations of Soils
WAQTC FOP for AASHTO T 176	Sand Equivalent
WAQTC FOP for AASHTO T 310	In-Place Density and Moisture Content of Soil and Soil-Aggregate by Nuclear Methods
WAQTC FOP for AASHTO ~~TP 61~~ T 335	Percentage of Fracture in Coarse Aggregate

209-3.8 THICKNESS CONTROL. The thickness of the finished base course will be determined by the Engineer by taking before and after elevation measurements, or by depth tests, at random locations. The completed thickness of the base course shall be within 1/2 inch of the design thickness. Where the thickness is deficient by more than 1/2 inch, it shall be corrected to within the specified tolerances.

209-3.9 MAINTENANCE. The base course shall be maintained in a condition that will meet all specification requirements until the work is accepted. Equipment used in the construction of an adjoining section may be routed over completed portions of the base course, provided no damage results and provided that the equipment is routed over the full width of the base course to avoid rutting or uneven compaction.

METHOD OF MEASUREMENT

209-4.1 Crushed Aggregate Base Course will be weighed by the ton or measured by the cubic yard in final position according to Subsection GCP-90-02.

BASIS OF PAYMENT

209-5.1 Crushed Aggregate Base Course will be paid for at the contract price, per unit of measurement, accepted in place. If the following pay items are absent from the bid schedule, no payment will be made. All work, materials, and equipment required to complete the work will be subsidiary.

Payment will be made under:

Item P-209a	Crushed Aggregate Base Course - per cubic yard
Item P-209b	Crushed Aggregate Base Course - per ton

TESTING REQUIREMENTS

ATM 212	Determining the Standard Density of Coarse Granular Materials Using the Vibratory Compactor
ATM 313	Degradation Value of Aggregates
AASHTO T 96	Resistance to Degradation of Small-Size Coarse Aggregate by Abrasion and Impact in the Los Angeles Machine
AASHTO T 104	Soundness of Aggregate by Use of Sodium Sulfate or Magnesium Sulfate
WAQTC FOP for AASHTO T 2	Sampling Aggregates
WAQTC FOP for AASHTO T 27/T 11	Sieve Analysis of Aggregates & Soils
WAQTC FOP for AASHTO T 89	Liquid Limit of Soils
WAQTC FOP for AASHTO T 90	Plastic Limit and Plasticity Index of Soils
WAQTC FOP for AASHTO T 99/T 180	Moisture-Density Relations of Soils
WAQTC FOP for AASHTO T 176	Sand Equivalent
WAQTC FOP for AASHTO T 310	In-Place Density and Moisture Content of Soil and Soil-Aggregate by Nuclear Methods
WAQTC FOP for AASHTO ~~TP 61~~ T 335	Percentage of Fracture in Coarse Aggregate

ITEM P-401 PLANT HOT MIX ASPHALT

DESCRIPTION

401-1.1 This item shall consist of mineral aggregate and asphalt cement, mixed in a central mixing plant and placed on a prepared surface according to these Specifications; and shall conform to the lines, grades, thicknesses, and typical cross sections shown on the Plans. Each layer shall be constructed to the depth, typical section, or elevation required by the Plans and shall be rolled, finished, and approved before the placement of the next layer.

401-1.2 ACRONYMS.

AASHTO	American Association of State Highway and Transportation Officials
ATM	Alaska Test Method
CPF	Composite Pay Factor
DPF	Density Pay Factor
HMA	Hot Mix Asphalt
JMD	Job Mix Design
MSG	Theoretical Maximum Specific Gravity
PAB	Price Adjustment Base
PRF	Pay Reduction Factor
RAP	Reclaimed Asphalt Pavement
TV	Target Value
WAQTC	Western Alliance for Quality in Transportation Construction

401-1.3 DEFINITIONS. These definitions apply only to Section P-401.

1. **Panel.** The paving pass between joints or between a joint and an edge.

MATERIALS

401-2.1 AGGREGATE. Aggregates shall consist of crushed stone or crushed gravel with or without sand or other inert finely divided mineral aggregate. The portion of materials retained on the No. 4 sieve is coarse aggregate. The portion passing the No. 4 sieve and retained on the No. 200 sieve is fine aggregate, and the portion passing the No. 200 sieve is mineral filler. Remove all natural fine aggregates passing the No. 4 sieve before crushing aggregates for hot mix asphalt. Separate the crushed aggregate into a minimum of three stockpiles, blend mineral filler or natural sand if necessary to produce the Job Mix Design gradation for hot mix asphalt.

a. **Coarse Aggregate.** Coarse aggregate shall consist of sound, tough, durable particles, free from adherent films of matter that would prevent thorough coating and bonding with the asphalt cement and be free from organic matter and other deleterious substances. The percentage of wear shall not be greater than 40% when tested according to AASHTO T 96. The sodium sulfate soundness loss shall not exceed 10%, or the magnesium sulfate soundness loss shall not exceed 13%, after 5 cycles, when tested according to AASHTO T 104. The aggregate shall have a minimum degradation value of 30 when tested according to ATM 313.

   The blended coarse aggregate shall have at least 90% by weight 2 fractured faces as determined by WAQTC FOP for AASHTO ~~TP 61~~ T 335 and contain not more than 8%, by weight, of flat and elongated particles, when tested according to ATM 306. The ratio of the calipers used to determine flat and elongated particles will be set to 1:5.

   The blended coarse aggregate for hot mix asphalt, Type V, shall have at least 98% by weight 2 fractured faces as determined by WAQTC FOP for AASHTO T 335 and contain not more than 8% and 20%, by weight, of flat and elongated particles with the ratio of the calipers set to 1:5 and 1:3 respectively as determined by ATM 306.

b. **Fine Aggregate.** Fine aggregate shall consist of clean, sound, durable, angular shaped particles produced by crushing stone, slag, or gravel that meets the requirements for wear and soundness specified for coarse aggregate. The aggregate particles shall be free from coatings of clay, silt, or other objectionable matter and shall contain no clay balls.

Natural (nonmanufactured) sand may be used to obtain the gradation of the aggregate blend or to improve the workability of the hot mix asphalt. The amount of sand to be added shall be adjusted to produce hot mix asphalt conforming to requirements of this specification. The fine aggregate shall not contain more than 20% natural sand by weight of total aggregates. The fine aggregate for hot mix asphalt, Type V, shall not contain more 10% natural sand by weight of total aggregates.

The blended fine aggregate shall have a liquid limit of not more than 25 and a plasticity index of not more than 6 when tested according to WAQTC FOPs for AASHTO T 89 and AASHTO T 90, and sand equivalent values of 35 or greater when tested according to WAQTC FOP for AASHTO T 176.

c. **Sampling.** The Engineer will sample according to WAQTC FOP for AASHTO T 2 for coarse and fine aggregate, and according to AASHTO T 127 for mineral filler.

401-2.2 MINERAL FILLER. If filler, in addition to that naturally present in the aggregate, is necessary, it shall meet the requirements of AASHTO M 17.

401-2.3 ASPHALT CEMENT. Asphalt cement shall meet the following property requirements:

TABLE 1. ASPHALT CEMENT PROPERTY REQUIREMENTS

Performance Grade AASHTO M 320	Mix Design Class	Softening Point AASHTO T 53	Toughness ASTM D 5801	Tenacity ASTM D 5801
PG 52-28	A, B	N/A	N/A	N/A
PG 58-28	C, D	120° F, min.	110 in lbs, min.	75 in lbs, min.
PG 64-34~~28~~	E, F, S	125° F, min.	110 in lbs, min.	75 in lbs, min.

The Contractor shall furnish a vendor's certificate of compliance and certified test reports for each lot of asphalt cement shipped to the project. The test reports shall also note the storage tanks used for each lot. Anti-strip additives required by the job mix design shall be added during load out for delivery to the project and a printed weight ticket for anti-strip shall be included with the asphalt cement weight ticket. The location where anti-strip is added may be changed with the written approval of the Engineer.

The following documents shall be furnished at delivery:

a. Manufacturer's certificate of compliance.
b. Certified test reports for the lot.
c. Lot number, storage tanks, and shipping containers (if applicable) used.
d. Date and time of load out for delivery.
e. Type, grade, temperature, and quantity of asphalt cement loaded.
f. Type and percent of anti-strip added.

All excess asphalt cement shall remain the property of the Contractor. Removal of excess asphalt cement from the project area is subsidiary to the contract and no separate payment will be made.

401-2.4 PRELIMINARY MATERIAL ACCEPTANCE. Prior to delivery of materials to the job site, the Contractor shall submit certified test reports to the Engineer for the following materials:

a. **Coarse Aggregate.**
   (1) Percent of wear.
   (2) Soundness.
   (3) Degradation.
   (4) Percent of fracture.
   (5) Percent of flat and elongated particles.

b. **Fine Aggregate.**
   (1) Liquid limit.
   (2) Plastic index.
   (3) Sand equivalent.
   (4) Uncompacted void content for hot mix asphalt, Type V.

c. **Mineral Filler.**
   (1) Gradation
   (2) Plastic Index
   (3) Organic content

d. **Asphalt Cement.** The certification(s) shall show the appropriate test(s) for each material, the test results, and a statement that the material meets the specification requirement.

The Engineer will collect samples for testing, prior to and during hot mix asphalt production, to verify the quality of the materials and to ensure conformance with the applicable specifications.

COMPOSITION

401-3.1 COMPOSITION OF HOT MIX ASPHALT. The hot mix asphalt shall be composed of a mixture of well-graded aggregate, mineral filler if required, and asphalt cement. The several aggregate fractions shall be sized, handled in a minimum of three separate size stockpiles (coarse, intermediate, fine), and combined in such proportions that the resulting mixture meets the grading requirements of the job mix design.

401-3.2 JOB MIX DESIGN. No hot mix asphalt for payment shall be produced until a job mix design (JMD) has been approved by the Engineer. The hot mix asphalt (HMA) shall be designed using procedures contained in ATM 417, "Chapter 5, *Marshall Method of Mix Design*, of the Asphalt Institute's Manual Series No. 2 (MS-2), *Mix Design Methods for Asphalt Concrete*", and shall meet the requirements of Tables 2 and 3.

The hot mix asphalt, Type V, shall be designed using procedures contained in AASHTO R-35 and shall meet the requirements of Table 4. Upon completion of the JMD, determine the Marshall stability and Marshall air voids at the design asphalt cement content using a 75-Blow Marshall from procedures contained in ATM 417.

Anti-stripping agent shall be added to the asphalt cement in the amount determined by ATM 414. Anti-stripping agent is subsidiary to the asphalt cement pay item.

Contractor Furnished Job Mix Design. The Contractor may elect to furnish JMDs for each Type and Class of HMA specified. The Department will furnish all JMDs for hot mix asphalt, Type V. The JMDs shall be submitted in writing by the Contractor to the Engineer at least 15 calendar days prior to the start of paving operations and shall include as a minimum:

a. Target gradation – percent passing each sieve size.
b. Optimum asphalt cement content.
c. Asphalt cement performance grade.
d. Number of blows of hammer compaction per side of molded specimen.

e. Mixing temperature range – from temperature-viscosity relationship, or manufacturers recommendations.
f. Compaction temperature range.
g. Plot of the combined gradation on the Federal Highway Administration (FHWA) 45 power gradation curve.
h. Graphical plots of stability, flow, air voids, voids in the mineral aggregate, and unit weight versus asphalt cement content.
i. Percent natural sand.
j. Percent fractured faces.
k. Percent flat and elongated.
l. Brand and percentage of antistrip agent (if required).
m. Theoretical Maximum Specific Gravity (MSG).
n. Signature of a Professional Engineer registered in the State Of Alaska.

The Engineer has authority to review submitted JMDs and to reject JMDs that do not meet specifications. The Contractor shall submit samples to the Engineer, upon request, for JMD verification testing.

Department Designed Job Mix Design. The JMD may be designed by the Department. The Contractor shall submit representative samples of all materials at least 15 calendar days prior to the start of paving operations along with the hot mix asphalt target gradation and aggregate blend ratio.

The Contractor shall:
a. Furnish representative samples from each aggregate size group in the proportions required for the proposed JMD gradation for a total of 500 pounds. Include gradations for the individual aggregate stockpiles and supporting process control information.
b. Furnish 5 separate 1-gallon samples of the asphalt cement proposed for use in the JMD with conformance test reports, a Manufacturer's certificate of compliance, current Material Safety Data Sheet (MSDS), and a temperature-viscosity relationship or Manufacturer's recommended mixing and compaction temperatures.
c. Furnish a minimum of one-half pint of the anti-strip additive proposed for use in the JMD with Manufacturer's data sheet and current MSDS.

The Department will furnish one JMD, that meets specifications, for each Type and Class of HMA specified. If additional JMDs are required, the Engineer will assess a fee of $2,500.00 under Contract Item P-401b, Hot Mix Asphalt Price Adjustment, for each additional JMD furnished.

Job Mix Design Requirements.

TABLE 2. MIX DESIGN REQUIREMENTS

Test Property	Class A, C, E Pavements Designed for Aircraft Gross Weights of 60,000 Lbs. or More or Tire Pressures of 100 Psi or More	Class B, D, F Pavements Designed for Aircraft Gross Weight Less Than 60,000 Lbs. or Tire Pressure Less Than 100 Psi
Number of blows	75	50
Stability, pounds	2150	1350
Flow, 0.01 inch	10-14	10-18
Air voids %	2.8-4.2	2.8-4.2
Voids in mineral aggregate, %, min.	See Table 3	See Table 3
Asphalt Cement Content, %, min. @ 4% Air voids	5.0	5.0

TABLE 3. MINIMUM PERCENT VOIDS IN MINERAL AGGREGATE

Maximum Particle Size Inch	Voids in Mineral Aggregate, %, Minimum
1/2	14.0
3/4	13.0
1	12.0

TABLE 4 HOT MIX ASPHALT TYPE V MIX DESIGN REQUIREMENTS

Mix Design Class S Pavements for gross aircraft weights of 60,000 pounds or more.	
Test Property	**Design Criteria ¾" Nominal Maximum Aggregate Size**
Initial Number of Gyrations (N_{ini})	8
Design Number of Gyrations (N_{des})	75
Maximum Number of Gyrations (N_{max})	130
Air voids @ N_{des}	4
Voids in Mineral Aggregate @ N_{des}, %	13.0 min.
Voids filled with Asphalt @ N_{des}, %	65-78
Dust to effective asphalt ratio	0.6 -1.2
Uncompacted Void Content	45 min
% G_{mm} @ N_{ini}	≤ 90.50
% G_{mm} @ N_{max}	≤ 98.00
Asphalt Cement Content, %, min. @ 4.0% VTM	5.0
Marshall Stability 75 blow (average of 3 specimens)	Report
Marshall Air Voids – 75 blow (average of 3 specimens)	Report
Rut Index, Max., ATM 419	3

The mineral aggregate shall be of such size that the percentage composition by weight, as determined by laboratory screens, will conform to the gradation or gradations specified in Table 45 when tested according to WAQTC FOP for AASHTO T 27/T 11.

The gradations in Table 45 represent the limits that shall determine the suitability of aggregate for use from the sources of supply. The aggregate, as selected (and used in the JMD), shall have a gradation

within the limits designated in Table 45 and shall not vary from the low limit on one sieve to the high limit on the adjacent sieve, or vice versa, but shall be well graded from coarse to fine when tested according to WAQTC FOP for AASHTO T 27/T 11.

For acceptance testing, the asphalt cement content and aggregate gradation from the JMD will have the full tolerance limits for individual measurements as specified in Table 67 applied. Except for the No. 200 sieve, the limits apply even if they fall outside the master grading band in Table 45. The limits for the No. 200 sieve will be confined by the master grading band in Table 45. Tolerance limits will not be applied to the largest sieve specified.

The maximum size aggregate used shall not be more than one-half of the thickness of the layer being constructed.

TABLE 45. HOT MIX ASPHALT AGGREGATE

Sieve Size	Percentage by Weight Passing Sieves			
	Type I 1.00 inch max	Type II 0.75 inch max	Type III 0.50 inch max	Type V 0.75 inch max
1 in.	100	--	--	--
3/4 in.	80-90	100	--	100
1/2 in.	60-84	75-90	100	65-90
3/8 in.	48-78	60-84	80-90	55-80
No. 4	28-63	33-70	44-81	40-60
No. 8	14-55	19-56	26-70	≤45
No.16	9-44	10-44	16-59	≤ 35
No.30	6-34	7-34	9-49	≤ 25
No.50	5-24	5-24	6-36	≤ 20
No.100	4-16	4-16	4-22	≤ 12
No.200	3-87	3-87	3-87	3-8

The aggregate gradations shown are based on aggregates of uniform specific gravity. The percentages passing the various sieves shall be corrected when aggregates of varying specific gravities are used, as indicated in the Asphalt Institute Manual Series No. 2 (MS-2), Appendix A.

Changing the Job Mix Design. If the HMA fails to conform to Table 2 and 3, or if there are changes in the source of asphalt cement, source of aggregates, aggregate quality, aggregate gradation, or blend ratio, then a new JMD may be required by the Engineer. The Contractor shall submit changes and new samples, when required or directed, in the same manner as the original submittal.

No payment for material for which a new JMD is required, will be made until the new JMD is approved. Approved changes apply only to asphalt mixture produced after the submittal of the changes.

401-3.3 RECYCLED HOT MIX ASPHALT. Recycled hot mix asphalt shall consist of reclaimed asphalt pavement (RAP), aggregate, mineral filler if necessary, asphalt cement, and recycling agent if necessary. Recycled hot mix asphalt may be used for all layers except the top layer.

The RAP shall be of a consistent gradation and asphalt content. The Contractor may obtain the RAP from the job site or from a Contractor supplied source.

All new aggregates used in the recycled hot mix asphalt shall meet the requirements of Subsection 401-2.1. New asphalt cement shall meet the requirements of Subsection 401-2.3. Recycling agents shall meet the requirements of AASHTO R 14.

The recycled hot mix asphalt shall be designed using procedures contained in the Asphalt Institute's Manual Series Number 20 (MS-20), *Asphalt Hot-Mix Recycling*, in conjunction with MS-2 and ATM 417.

The JMD shall meet the requirements of Subsection 401-3.2. In addition to the requirements of Subsection 401-3.2, the JMD shall indicate the percent of RAP, the percent and performance grade of new asphalt cement, the percent and grade of recycling agent (if used), and the properties (including the performance grade) of the asphalt cement blend.

The Contractor shall submit documentation to the Engineer, indicating that the mixing equipment proposed for use is adequate to mix the percent of RAP shown in the JMD and meet all local and national environmental regulations.

The recycled hot mix asphalt will be evaluated separately but will be sampled, tested, and paid for the same as hot mix asphalt.

401-3.4 TEST SECTION. Prior to full production, the Contractor shall prepare and place a test section consisting of a quantity of hot mix asphalt that conforms to the JMD. The location of the test section will be shown on the Plans, or as directed by the Engineer. The test section shall be 300 feet long, 20 to 40 feet wide, placed in two lanes, with a longitudinal cold joint. The test section shall be of the same thickness specified for the construction of the layer that it represents. The underlying surface or pavement structure upon which the test section is to be constructed shall be the same as the remainder of the project represented by the test section. The equipment used in construction of the test section shall be the same type and weight to be used on the remainder of the project represented by the test section.

Three random samples of the hot mix asphalt will be taken by the Engineer and tested by the Department for aggregate gradation and asphalt cement content according to Subsection 401-5.1. The three samples will be evaluated according to Subsection 401-8.1.a., except a determination for outliers will not be performed. If the Composite Pay Factor is less than 1.00, the test section is unacceptable.

Three 6-inch diameter core samples shall be cut from the finished hot mix asphalt by the Contractor, at the locations marked by the Engineer. The core samples will be tested by the Department for density according to Subsection 401-5.1. The Target Value for mat density is 94% of the theoretical maximum specific gravity (MSG) of the JMD. The three samples will be evaluated according to Subsection 401-8.1.a., except a determination for outliers will not be performed. If the Density Pay Factor is less than 1.00, the test section is unacceptable.

Three longitudinal joint cores centered on the longitudinal joint shall be cut by the Contractor, at the locations marked by the Engineer. The core samples will be tested by the Department according to Subsection 401-5.1. The Target Value for joint density is 92% of the JMD MSG. If the average density of the three joint cores is below ~~90~~ 91%, the test section is unacceptable.

If the initial test section is unacceptable, the Contractor shall make necessary adjustments to the JMD, plant operation, placing procedures, or compaction efforts. Additional test sections, as required, shall be constructed and evaluated for conformance to the specifications. All sections that are not acceptable shall be removed at the Contractor's expense.

Full production shall not begin until an acceptable test section has been constructed and approved by the Engineer.

The Department will not pay for hot mix asphalt and asphalt cement, in test sections that are not acceptable, except the initial test section. The initial test section whether acceptable or unacceptable, and any subsequent test section that is acceptable, will be paid for at the contract unit prices for hot mix asphalt and asphalt cement. Test sections will be evaluated separately and not as part of a lot.

Hot mix asphalt quality control testing shall be performed by the Contractor at the start of plant production and in conjunction with the calibration of the plant for the JMD. If aggregates produced by the plant do not satisfy the gradation requirements or produce hot mix asphalt that meets the JMD, then it will be necessary to reevaluate and redesign the JMD using plant-produced aggregates. Specimens should be prepared and the optimum asphalt cement content determined in the same manner as for the original

design tests. If the Department redesigns the JMD the Contractor will be assessed a fee according to Subsection 401-3.2.

401-3.5 TESTING LABORATORY. The laboratory used to develop the JMD shall meet the requirements of ASTM D 3666. A certification signed by the manager of the laboratory stating that it meets these requirements shall be submitted to the Engineer prior to the start of construction. The certification shall contain as a minimum:

a. Qualifications of personnel; laboratory manager, supervising technician, and testing technicians.
b. A listing of equipment to be used in developing the job mix design.
c. A copy of the laboratory's quality control system.
d. Evidence of participation in the AASHTO Materials Reference Laboratory (AMRL) program

CONSTRUCTION METHODS

401-4.1 WEATHER LIMITATIONS. Hot mix asphalt shall not be placed upon a wet surface, when the base material is frozen, or when the surface temperature of the underlying layer is less than specified in Table ~~5~~6. The top layer of hot mix asphalt must be placed before September 15th unless approved in writing by the Engineer.

TABLE ~~5~~6. BASE TEMPERATURE LIMITATIONS

Mat Thickness	Base Temperature (Minimum)
Greater than 1 inch	40 °F
1 inch or less	50 °F

401-4.2 HOT MIX ASPHALT PLANT. Plants may not be placed on airport property. Plants used for the preparation of hot mix asphalt shall conform to the requirements of AASHTO M 156 with the following changes:

a. Truck Scales. The hot mix asphalt shall be weighed on approved certified scales furnished by the Contractor, or on certified public scales at the Contractor's expense. Scales shall be inspected and sealed as often as the Engineer deems necessary to assure their accuracy. Scales shall conform to the requirements of Subsection G-130-2.5.

b. Testing Facilities. The Contractor shall provide laboratory facilities at the plant or job site for the Contractor's quality control testing, according to Subsection 401-6.2.

c. Inspection of Plant. The Engineer shall have access, at all times, to all areas of the plant for checking adequacy of equipment; inspecting operation of the plant: verifying weights, proportions, and material properties; and checking the temperatures maintained in the preparation of the hot mix asphalt.

d. Storage Bins and Surge Bins. Delete provision 5 of AASHTO M 156. Use of surge bins or storage bins for temporary storage of hot mix asphalt will be permitted as follows:

(1) The hot mix asphalt may be stored in surge bins for not longer than 3 hours.

(2) The hot mix asphalt may be stored in insulated storage bins for not longer than 24 hours.

The bins shall be such that hot mix asphalt drawn from them meets the same requirements as hot mix asphalt loaded directly into trucks.

If the Engineer determines that there is an excessive amount of heat loss, segregation or oxidation of the hot mix asphalt, no storage will be allowed.

e. **Sampling Locations.** Provide a tap on the asphalt cement supply line just before it enters the plant (after the 3-way valve) for sampling asphalt cement. Aggregate and asphalt cement sampling locations shall meet OSHA safety requirements.

f. **Scalping Screen.** A scalping screen shall be provided on the hot mix asphalt plant to prevent oversize material or debris from being incorporated into the hot mix asphalt.

401-4.3 HAULING EQUIPMENT. Trucks used for hauling hot mix asphalt shall have tight, clean, and smooth metal beds. To prevent the hot mix asphalt from adhering to them, the truck beds shall be lightly coated with a minimum amount of paraffin oil, lime solution, or other approved material. Each truck shall have a suitable cover to protect the mixture from adverse weather. When necessary, to ensure that the mixture will be delivered to the site at the specified temperature, truck beds shall be insulated or heated and covers shall be securely fastened, as directed by the Engineer.

401-4.4 HOT MIX ASPHALT PAVERS. Hot mix asphalt pavers shall be self-propelled, with an activated screed, heated as necessary, and shall be capable of spreading and finishing layers of hot mix asphalt which will meet the specified thickness, width, smoothness, and grade. The paver shall have sufficient power to propel itself and the hauling equipment without adversely affecting the finished surface.

The paver shall have a receiving hopper of sufficient capacity to permit a uniform spreading operation. The hopper shall be equipped with a distribution system to place the hot mix asphalt uniformly in front of the screed without segregation. The screed shall effectively produce a finished surface of the required evenness and texture without tearing, shoving, or gouging the hot mix asphalt layer.

If an automatic grade control device is used, the paver shall be equipped with a control system capable of automatically maintaining the specified screed elevation. The control system shall be automatically actuated from either a reference line and/or through a system of mechanical sensors or sensor-directed mechanisms or devices that will maintain the paver screed at a predetermined transverse slope and at the proper elevation to obtain the required surface. The transverse slope controller shall be capable of maintaining the screed at the desired slope within plus or minus 0.1%.

The controls shall be capable of working in conjunction with any of the following attachments:

a. Ski-type device of not less than 30 feet in length.
b. Taut stringline (wire) set to grade.
c. Short ski or shoe.
d. Laser control.

401-4.5 ROLLERS. The Contractor shall use rollers of the vibratory, steel wheel, and pneumatic-tired type. Pneumatic-tired rollers shall be fully skirted. Rollers shall be in good condition, capable of operating at slow speeds to avoid displacement of the hot mix asphalt. The number, type, and weight of rollers shall be sufficient to compact the hot mix asphalt to the required density while it is still in a workable condition.

The use of equipment that causes excessive crushing of the aggregate, pickup of the mix, washboard, uneven compaction, or other undesirable results, will not be permitted.

401-4.6 PREPARATION OF ASPHALT CEMENT. The asphalt cement shall be heated in a manner that will avoid local overheating and provide a continuous supply of the asphalt cement to the mixer at a uniform temperature. The temperature of the asphalt cement delivered to the mixer shall be sufficient to provide for adequate coating of the aggregate particles, but shall not exceed 335 °F or exceed manufacturers' recommendations.

401-4.7 PREPARATION OF MINERAL AGGREGATE. The aggregate for the hot mix asphalt shall be heated and dried prior to introduction into the mixer. The maximum temperature and rate of heating shall be such that no damage occurs to the aggregates. The temperature of the aggregate and mineral filler

shall not exceed 350 °F when the asphalt cement is added. Particular care shall be taken that aggregates high in calcium or magnesium content are not damaged by overheating. The temperature shall not be lower than is required to obtain complete coating and uniform distribution on the aggregate particles and to provide hot mix asphalt of satisfactory workability.

401-4.8 PREPARATION OF HOT MIX ASPHALT. The aggregates and the asphalt cement shall be weighed or metered and introduced into the mixer in the amount specified by the JMD.

The combined materials shall be mixed until the aggregate obtains a uniform coating of asphalt cement and is thoroughly distributed throughout the hot mix asphalt. For batch plants, the wet mixing time shall be the shortest time that will produce a satisfactory mixture, but not less than 25 seconds. For continuous mix plants, the minimum mixing time shall be determined by dividing the weight of its contents at operating level by the weight of the mixture delivered per second by the hot plant. The mixing time for all plants shall be established by the Contractor, based on the procedure for determining the percentage of coated particles described in AASHTO T 195, for each individual plant and for each type of aggregate used. The mixing time will be set to achieve a minimum of 98% coated particles. The moisture content of all hot mix asphalt upon discharge shall not exceed 0.5% of the total weight of hot mix asphalt, as determined by WAQTC FOP for AASHTO T 329.

401-4.9 PREPARATION OF THE UNDERLYING SURFACE. Immediately before placing the hot mix asphalt, the underlying layer shall be cleaned of all dust and debris. A prime coat or tack coat shall be applied according to Sections P-602 or P-603, if required by the contract Specifications.

401-4.10 TRANSPORTING, PLACING, AND FINISHING. The hot mix asphalt shall be transported from the mixing plant to the site in vehicles conforming to the requirements of Subsection 401-4.3. Deliveries shall be scheduled so that placing and compacting of hot mix asphalt is uniform with minimum stopping and starting of the paver. Adequate artificial lighting shall be provided for night placements. Hauling over freshly placed hot mix asphalt will not be permitted until it has been compacted, as specified, and allowed to cool to ambient temperature. The Contractor may elect to use a material transfer vehicle to deliver hot mix asphalt to the paver.

Upon arrival, the hot mix asphalt shall be placed to the full width by a hot mix asphalt paver. It shall be struck off in a uniform layer of such depth that, when the work is completed, it shall have the required thickness and conform to the grade and contour indicated. The speed of the paver shall be regulated to eliminate pulling and tearing of the hot mix asphalt mat. Unless otherwise permitted, placement of the hot mix asphalt shall begin along the centerline of a crowned section or on the high side of areas with a one-way slope. The hot mix asphalt shall be placed in consecutive adjacent strips having a minimum width of 20 feet except where edge lanes require less width to complete the area.

The hot mix asphalt shall be placed and initial breakdown compaction started at a surface temperature greater than 235 °F. Compaction shall be finished before the surface temperature reaches 160 °F.

On areas where irregularities or unavoidable obstacles make the use of mechanical spreading and finishing equipment impractical, the hot mix asphalt may be spread by hand tools.

401-4.11 COMPACTION OF MIXTURE. After placing, the hot mix asphalt shall be thoroughly and uniformly compacted by rolling. The surface shall be compacted as soon as possible when the hot mix asphalt has attained sufficient stability so that the rolling does not cause undue displacement, cracking or shoving. The sequence of rolling operations shall be at the discretion of the Contractor. The speed of the rollers shall, at all times, be sufficiently slow to avoid displacement of the hot mix asphalt and be effective in compaction. Any displacement occurring as a result of reversing the direction of the roller, or from any other cause, shall be corrected at once.

Sufficient rollers shall be furnished to handle the output of the plant. Rolling shall continue until the surface is of uniform texture, true to grade and cross section, and the required field density is obtained.

To prevent adhesion of the hot mix asphalt to the roller, the wheels shall be kept properly moistened (and scrapers used), but excessive water will not be permitted.

In areas not accessible to the roller, the hot mix asphalt shall be thoroughly compacted with hand operated compaction equipment.

401-4.12 JOINTS. The formation of all joints shall be made in such a manner as to ensure a continuous bond and obtain the required density. All joints shall have the same texture as other sections of the layer and meet the requirements for smoothness and grade.

The longitudinal joint in one layer shall offset the longitudinal joint in the layer immediately below by at least 12 inches; however, the joint in the top layer shall be at the centerline of the pavement. Transverse joints in one layer shall be offset by at least 10 feet from transverse joints in the previous layer. Transverse joints in adjacent lanes shall be offset a minimum of 10 feet.

The roller shall not pass over the unprotected end of the freshly laid hot mix asphalt except when necessary to form a transverse joint. When forming a transverse joint, it shall be made by means of placing a bulkhead or by tapering the layer. The tapered end shall be cut back to its full depth and width on a straight line to expose a vertical face prior to placing additional hot mix asphalt. When forming a transverse joint in the final lift, apply Crafco Pavement Joint Adhesive No. 34524, or Deery Cold Joint Adhesive, or approved equal, to the joint surface before placing any fresh hot mix asphalt against the joint.

All longitudinal joints in the final lift shall be formed in such a manner that the joint meets density requirements of this specification. Joints that are irregular, damaged, uncompacted or otherwise defective shall be cut back to expose a clean, sound surface. When forming a longitudinal joint in the final lift, apply Crafco Pavement Joint Adhesive No. 34524, or Deery Cold Joint Adhesive, or approved equal, to the joint surface before to placing any fresh hot mix asphalt against the joint. Joint edge preparation, and joint adhesive application temperature, thickness, and method shall be per the manufacturer's recommendations.

Joint sealant shall be applied over joints in the final lift of hot mix asphalt according to Subsection 401-5.2.f.(2). Joint sealant shall be applied over joints in the final lift formed by two panels of hot mix asphalt composed of different type or class of mix; or of new against existing hot mix asphalt pavement. Joint surface preparation, joint sealant application temperature, thickness, and method shall be per the manufacturer's recommendations.

All costs associated with joint preparation, applying joint sealant, and applying joint adhesive are subsidiary to the hot mix asphalt pay item.

401-4.13 SURFACE REQUIREMENTS AND TOLERANCE. The finished surfaces of the hot mix asphalt shall not vary more than the requirements of Subsection 401-5.2.f.(4).

The finished surface of asphalt concrete paving shall match dimensions shown on the Plans for horizontal alignment and width, profile grade and elevation, crown slope, and paving thickness. Water shall drain without puddles, across the pavement surface. The surface shall be of uniform texture and without ridges, humps, depressions, and roller marks. The surface shall be free of raveling, cracking, tearing, rutting, asphalt cement bleeding, and aggregate segregation. The asphalt concrete mixture shall be free of foreign material, uncoated aggregate and oversize aggregate.

Any finished surface area that does not meet the requirements of this Subsection is deemed unacceptable according to Subsection GCP 50-11. The Engineer will determine whether the unacceptable asphalt concrete mixture shall either be corrected, or removed and replaced. Submit correction methods to the Engineer for approval prior to correction work commencing. Skin patching shall not be allowed. This work is subsidiary and shall be done at the Contractor's expense.

MATERIAL ACCEPTANCE

401-5.1 ACCEPTANCE SAMPLING AND TESTING. All acceptance sampling and testing necessary to determine conformance with the requirements specified in this section will be performed by the Engineer at no cost to the Contractor. Testing organizations performing these tests will meet the requirements of ASTM D 3666.

Hot Mix Asphalt lots. The quantity of each type of hot mix asphalt produced and placed will be divided into lots and the lots evaluated individually for acceptance. The Department has the exclusive right and responsibility for determining the acceptability of all materials incorporated into the project. The results of the acceptance testing performed by the Engineer will be made available to the Contractor.

5,000 ton lot size. A lot of hot mix asphalt will be 5,000 tons, except as noted below. The lot will be divided into 10 equal sublots of 500 tons, each randomly sampled and tested for asphalt cement content, density and gradation according to this subsection.

If the project has more than 1 lot, and if less than 8 additional sublots have been sampled at the time a lot is terminated, either due to completion of paving operations or the end of the construction season (winter shutdown), the material in the shortened lot will be included as part of the prior lot and the price adjustment computed for the prior lot will include the samples from the shortened lot.

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

1,500 to 4,999 ton lot size. If the total Contract quantity of hot mix asphalt is between 1,500 tons and 4,999 tons, the total Contract quantity will be considered one lot. The lot will be divided into sublots of 500 tons and randomly sampled for asphalt cement content, density and gradation according to this subsection except a determination for outliers will not be performed. The lot will be evaluated for price adjustment according to Subsection 401-5.2 except as noted.

Hot mix asphalt quantities of less than 300 tons remaining after dividing the last lot into sublots will be included in the last sublot. Hot mix asphalt quantities of 300 tons or greater will be treated as an individual sublot.

Under 1,500 ton lot size. If the total Contract quantity of hot mix asphalt is less than 1,500 tons, or for approaches, pathways, and temporary pavement, the hot mix asphalt will be accepted for payment based on: the Engineer's approval of a JMD, placement and compaction of the hot mix asphalt to the specified thickness and density, meeting finished surface requirements and tolerances, and material testing.

The Engineer reserves the right to perform any testing required in order to determine acceptance. Hot mix asphalt that does not conform to the approved JMD shall be removed and replaced, or at the Engineer's discretion a pay adjustment will be made according to Subsection GCP 50-03. Removal and replacement of defective hot mix asphalt shall be at no additional cost to the Department.

Joint lot size. The lot size for longitudinal joint density in the final lift of hot mix asphalt will be the total length of longitudinal joint constructed by a lot of hot mix asphalt.

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

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

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

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

Two separate samples will be taken, one for acceptance testing and one held in reserve for retesting if applicable.

(2) Aggregate Gradation. Samples for the determination of aggregate gradation will be taken randomly, as directed by the Engineer, according to WAQTC FOP for AASHTO T 2. Two separate samples will be taken, one for acceptance testing and one held in reserve for retesting if applicable. The samples will be taken from one of the following locations:

(a) The same location as specified for the determination of asphalt cement content;

(b) For hot mix asphalt drum plants from the combined aggregate cold feed conveyor via a diverter device, a sampling device, or from the stopped conveyor belt. Diverter devices shall divert aggregate from the full width of the conveyor system and shall be maintained to provide a representative sample of aggregate incorporated into the hot mix asphalt; or

(c) For hot mix asphalt batch plants from the dry batched aggregates in a manner that provides a representative sample of aggregate incorporated into the hot mix asphalt.

(3) Density. A separate set of random numbers, different from those used for mix acceptance, will be used to determine acceptance density locations. The Contractor shall cut full depth core samples ~~with a diameter of six inches,~~ from the finished HMA within 24 hours of final rolling. Neatly cut one 6-inch-diameter core sample with a core drill at each location marked by the Engineer. Use a core extractor to prevent damage to the core. Backfill and compact voids left by coring with new HMA within 24 hours. Densities will not be measured at milled edge of existing pavement. ~~The Contractor shall cut one core sample from each HMA mat sublot, and core samples from the longitudinal joint in locations described below, for density acceptance testing. In addition, six-inch diameter core samples for assurance testing shall be cut as directed by the Engineer. The core samples shall be neatly cut by a core drill at the random locations marked by the Engineer. A core extractor shall be used to prevent damage to the cores. All holes left by sampling shall be backfilled with new hot mix asphalt and compacted within 24 hours of sampling.~~ Failure to cut core samples or backfill the holes left by sampling within the specified period will result in a deduction of $100.00 per sample/hole per day. The accrued amount will be subtracted under Item P-401b, Hot Mix Asphalt Price Adjustment.

Core samples for mat density shall not be taken closer than one foot from a transverse or longitudinal joint.

Core samples for longitudinal joint density shall be centered on the ~~longitudinal joint of~~ intersection at the top ~~layer~~ surface of the two new hot mix asphalt panels, at ~~each location~~

the same station where the panel completing the joint is cored for mat density acceptance testing. Cores shall be taken by the Contractor in the presence of the Engineer. The Engineer will take immediate possession of the samples.

(4) Asphalt Cement Property. Asphalt cement will be randomly sampled for acceptance testing according to WAQTC FOP for AASHTO T 40. Three separate samples from each lot will be taken, one for acceptance testing, one for Contractor retesting, and one held by the Engineer in reserve for referee testing if applicable.

b. Testing.

(1) Asphalt Cement Content. At the direction of the Engineer, the asphalt cement content will be determined according to ATM 405 or WAQTC FOP for AASHTO T 308. The method selected will be used for the duration of the project, including retests if applicable.

(2) Aggregate Gradation. Cold feed or dry batched aggregate gradations will be tested according to WAQTC FOP for AASHTO T 27/T 11. Hot mix asphalt gradations will be determined according to WAQTC FOP for AASHTO T 30 from aggregate remaining after the ignition oven (WAQTC FOP for AASHTO T 308) has burned off the asphalt cement.

(3) Density. The Target Value for mat density will be ~~94%~~95% of the MSG for all mixes except Type V, Class S which will have a target value of 96% of the MSG as determined by WAQTC FOP for AASHTO T 209. For the first lot of hot mix asphalt, the MSG will be determined by the JMD. For additional lots, the MSG will be determined from the randomly selected sample from the first sublot. The Target Value for longitudinal joint density in the final lift will be 92% of the MSG of the panel completing the joint. No adjustment will be made to the MSG or any other material property, due to application of joint adhesive, in evaluating joint density.

Core samples will be tested according to WAQTC FOP for AASHTO T 166/T 275.

(4) Asphalt Cement Property. Asphalt cement will be tested for conformance to the requirements specified in Subsection 401-2.3 and evaluated for acceptance according to Subsection 401-8.2.

401-5.2 ACCEPTANCE CRITERIA.

a. General. Acceptance will be based on the following characteristics of the hot mix asphalt as well as the implementation of the Contractor's Quality Control plan:

(1) Aggregate gradation
(2) Asphalt cement content
(3) Mat density
(4) Longitudinal Joint density
(5) Thickness
(6) Smoothness
(7) Asphalt Cement Property

Aggregate gradation, asphalt cement content, and mat density will be evaluated for acceptance on a lot basis using the method of estimating percentage of material within specification limits (PWL). Acceptance using PWL considers the variability (standard deviation) of the material and the testing procedures, as well as the average (mean) value of the test results to calculate the percentage of material that is above the lower specification tolerance limit (L) or below the upper specification tolerance limit (U).

Thickness will be evaluated by the Engineer for compliance according to Subsection 401-5.2.f.(3). Acceptance for smoothness will be based on the criteria contained in Subsection 401-5.2.f.(4).

The Engineer may at any time reject and require the Contractor to dispose of any batch of hot mix asphalt which is rendered unfit for use due to contamination, segregation, incomplete coating of aggregate, or improper mix temperature. Such rejection may be based on only visual inspection or temperature measurements. In the event of such rejection, the Contractor may request that a representative sample of the rejected hot mix asphalt be tested. If all test results are within tolerance limits, payment will be made for the hot mix asphalt at the contract unit price. If any of the test results fall outside of the tolerance limits, no payment will be made on the batch of rejected hot mix asphalt, and the cost of the testing will be subtracted under Contract Item P-401b, Hot Mix Asphalt Price Adjustment. The batch of rejected hot mix asphalt will be evaluated separately and not as part of a lot. All costs associated with disposal of rejected hot mix asphalt are the responsibility of the Contractor.

b. **Aggregate Gradation, Asphalt Cement Content.** Evaluation for acceptance of each lot of plant-produced hot mix asphalt for aggregate gradation and asphalt cement content will be based on PWL.

c. **Mat Density.** Evaluation for acceptance of each lot of in-place hot mix asphalt for mat density will be based on PWL.

d. **Longitudinal Joint Density.** Evaluation for acceptance of each lot of in-place final lift hot mix asphalt for longitudinal joint density will be based on the average of the longitudinal joint densities within the lot.

e. **Percentage of Material Within Specification Limits (PWL).** The PWL will be determined according to procedures specified in Section 110 of the General Provisions. The sample average (X) is rounded to the nearest tenth for density and all sieves except the No. 200, and to the nearest hundredth for asphalt cement content and the No. 200 sieve. The sample standard deviation (S_n) is rounded to the nearest hundredth for density and all sieve sizes except the No. 200 sieve. The sample standard deviation (S_n) is rounded to the nearest .001 for asphalt content and the No. 200 sieve. The specification tolerance limits (L) and (U) are contained in Table ~~6~~7.

f. **Acceptance Criteria.**

(1) **Mat Density, Aggregate Gradation, and Asphalt Cement Content.** Acceptance and payment for the lot will be determined according to Subsection 401-8.1.

(2) **Longitudinal Joint Density.** For the final lift of hot mix asphalt, ~~if the average longitudinal joint density of a lot is less than 90%,~~ the longitudinal joint shall be sealed with Asphalt Systems GSB-78, or approved equal, while the hot mix asphalt is still clean, free of moisture, and before striping. All costs associated with sealing the joints are subsidiary to the hot mix asphalt pay item. Longitudinal joint lots will be evaluated for payment according to Subsection 401-8.3.

Longitudinal joint sealing shall be per the sealant manufacturer's recommendations. The sealant application shall be at least 6 inches wide and centered on the longitudinal joint.

(3) **Thickness.** Thickness will be evaluated for compliance by the Engineer to the requirements shown on the Plans. Measurements of thickness will be made by the Engineer using the cores extracted from the mat for each sublot for density measurement.

(4) **Smoothness.** The finished surfaces of the hot mix asphalt shall not vary more than 1/4 inch for the surface layer when tested with a ~~12~~10-foot straightedge. High points may be ground off, but skin patching will not be allowed.

(5) Asphalt Cement Property. Acceptance and payment for asphalt cement will be determined according to Subsection 401-8.2.

g. Outliers. All individual tests for asphalt cement content, aggregate gradation, and mat density will be checked for outliers (test criterion) according to ATM SP-7 except as noted in Subsection 401-5.1. Outliers will be discarded, and the PWL will be determined using the remaining test values.

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

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

TABLE ~~6~~7. LOWER SPECIFICATION TOLERANCE LIMIT (L) AND UPPER SPECIFICATION TOLERANCE LIMIT (U)

Measured Characteristics	L	U
3/4 in. sieve	TV -6.0	TV +6.0
1/2 in. sieve	TV -6.0	TV +6.0
3/8 in. sieve	TV -6.0	TV +6.0
No. 4 sieve	TV -6.0	TV +6.0
No. 8 sieve	TV -6.0	TV +6.0
No. 16 sieve	TV -5.0	TV +5.0
No. 30 sieve	TV -4.0	TV +4.0
No. 50 sieve	TV -4.0	TV +4.0
No. 100 sieve	TV-3.0	TV +3.0
No. 200 sieve	TV-2.0	TV +2.0
Asphalt Cement %	TV-0.4	TV+0.4
Mat Density *	92%	98%
Joint Density	~~90~~ 91%	98%

TV (Target Value) = Job Mix Design value for gradation and asphalt cement content.
* Mat Density for Type V, Class S: change values to L=93 and U=99

401-5.3 RETESTS.

a. General. Retesting of a sample which is outside the limits specified in Table ~~6~~ 7, will be allowed if requested by the Contractor, in writing, within 7 days of receipt of the final test of the lot ~~after receiving the written test results from the Engineer~~. Only one retest per sample will be permitted. The Engineer will mark the sample location for the density retest within a two-foot radius of the original core. The original test result will be discarded and the retest result will be used in the price adjustment calculation regardless of whether the retest result gives a higher or lower pay factor.

Except for the first lot, when gradation and asphalt cement content are determined from the same sample, retesting for gradation or asphalt cement content from the first sublot of a lot will include retesting for the MSG; when separate samples are used, retesting for asphalt cement content will include retesting for the MSG.

(1) A redefined PWL will be calculated for the lot.
(2) The cost for resampling shall be borne by the Contractor.

b. Payment for Resampled Lots. The redefined PWL for a lot will be used to calculate the payment for that lot according to Table ~~7~~8.

401-5.4 LEVELING COURSE. Any layer identified in the Plans as a leveling course, or any base layer approved by the Engineer for truing and leveling, shall meet the requirements of Subsections 401-3.2 and 401-5.2b, but will not be subject to the density requirements of Subsections 401-5.2.c and 401-5.2.d. The leveling layer shall be compacted with the same effort used to achieve density of the test section. The truing and leveling layer shall not exceed a nominal thickness of 1-1/2 inches.

CONTRACTOR QUALITY CONTROL

401-6.1 GENERAL. The Contractor shall develop a Quality Control Program according to the General Contract Provisions Section GCP-100, except that Subsection GCP-100-03 will not apply when Hot Mix Asphalt Contract quantities are less than 5,000 tons. The program shall address all elements that affect the quality of the hot mix asphalt including, but not limited to:

a. Mix Design	**f.** Mixing and Transportation
b. Aggregate Grading	**g.** Placing and Finishing
c. Quality of Materials	**h.** Joints
d. Stockpile Management	**i.** Compaction
e. Proportioning	**j.** Surface smoothness

The Contractor shall submit a paving and plant control plan at the pre-paving meeting scheduled by the Engineer a minimum of 5 working days before paving operations begin. The plan shall specifically address the sequence of operations and joint construction. In addition, steps to ensure product consistency, to minimize segregation, and to prevent premature cooling of the hot mix asphalt shall be addressed.

401-6.2 TESTING LABORATORY. The Contractor shall provide a fully equipped hot mix asphalt laboratory located at the plant or job site.

The effective working area of the laboratory shall be a minimum of 150 ft^2 with a ceiling height of not less than 7.5 feet. Lighting shall be adequate to illuminate all working areas. It shall be equipped with heating and air conditioning units to maintain a temperature of 70 °F ± 5 °F.

Laboratory facilities shall be kept clean and all equipment shall be maintained in proper working condition. The Engineer shall be permitted unrestricted access to inspect the Contractor's laboratory facility and witness quality control activities. The Engineer will advise the Contractor in writing of any noted deficiencies concerning the laboratory facility, equipment, supplies, or testing personnel and procedures. When the deficiencies are serious enough to be adversely affecting test results, the incorporation of the materials into the work will be suspended immediately and will not be permitted to resume until the deficiencies are satisfactorily corrected.

401-6.3 QUALITY CONTROL TESTING. The Contractor shall perform all quality control tests necessary to control the production and construction processes applicable to these Specifications and as set forth in the Quality Control Program. The testing program shall include, but not necessarily limited to, tests for the control of asphalt cement content, aggregate gradation, temperatures, aggregate moisture, field

compaction, and surface smoothness. All testing shall be according to the standard procedures specified in the contract and the options selected by the Engineer. A Quality Control Testing Plan shall be developed as part of the Quality Control Program.

a. **Asphalt Cement Content.** A minimum of four asphalt cement content tests shall be performed per lot according to Subsection 401-5.1b(1).

b. **Gradation.** Aggregate gradations shall be determined a minimum of four times per lot according to WAQTC FOP for AASHTO T 30 or WAQTC FOP for AASHTO T 27/T 11.

c. **Moisture Content of Aggregate.** The moisture content of aggregate used for production shall be determined a minimum of twice per lot according to WAQTC FOP for AASHTO T 255/T 265.

d. **Moisture Content of Hot Mix Asphalt.** The moisture content of the hot mix asphalt shall be determined a minimum of twice per lot according to WAQTC FOP for AASHTO T 329.

e. **Temperatures.** Temperatures shall be checked, at least four times per lot, at necessary locations to determine the temperatures of the dryer, the asphalt cement in the storage tank, the hot mix asphalt at the plant, and the hot mix asphalt at the job site.

f. **In-Place Density Monitoring.** The Contractor shall conduct any necessary testing to ensure that the specified density is being achieved. A nuclear gauge may be used to monitor the hot mix asphalt density according to WAQTC TM 8.

g. **Additional Testing.** Any additional testing that the Contractor deems necessary to control the process may be performed at the Contractor's option.

h. **Monitoring.** The Engineer reserves the right to monitor any or all of the above testing.

401-6.4 SAMPLING. When directed by the Engineer, the Contractor shall sample and test any hot mix asphalt that appears inconsistent with similar material being sampled, unless such material is voluntarily removed and replaced or deficiencies corrected by the Contractor. All sampling shall be according to standard procedures specified.

401-6.5 CONTROL CHARTS. The Contractor shall maintain linear control charts both for individual measurements and range (i.e., difference between highest and lowest measurements) for aggregate gradation and asphalt cement content.

Control charts shall be posted in a location satisfactory to the Engineer and shall be kept current. As a minimum, the control charts shall identify the project number, the contract item number, the test number, each test parameter, the Action and Suspension Limits applicable to each test parameter, and the Contractor's test results. The Contractor shall use the control charts as part of a process control system for identifying potential problems and assignable causes before they occur. If the Contractor's projected data during production indicates a problem and the Contractor is not taking satisfactory corrective action, the Engineer may suspend production or acceptance of the material.

a. **Individual Measurements.** Control charts for individual measurements shall be established to maintain process control within tolerance for aggregate gradation and asphalt cement content. The control charts shall use the JMD target values as indicators of central tendency for the following test parameters with associated Action and Suspension Limits:

CONTROL CHART LIMITS FOR INDIVIDUAL MEASUREMENTS

Sieve	Action Limit	Suspension Limit
3/4 in.	0%	0%
1/2 in.	+/-6%	+/-9%
3/8 in.	+/-6%	+/-9%
No. 4	+/-6%	+/-9%
No. 16	+/-5%	+/-7.5%
No. 50	+/-3%	+/-4.5%
No. 200	+/-2%	+/-3%
Asphalt Cement Content	+/-0.45%	+/-0.70%

The action and suspension limits for the largest sieve specified are 0%.

b. Range. Control charts for range shall be established to control process variability for the test parameters and Suspension Limits listed below. The range shall be computed for each lot as the difference between the two test results for each control parameter. The Suspension Limits specified below are based on a sample size of n = 4.

CONTROL CHART LIMITS BASED ON RANGE
(Based on n = 4)

Sieve	Suspension Limit
1/2 in.	14%
3/8 in.	14%
No. 4	14%
No. 16	11%
No. 50	8%
No. 200	4.5%
Asphalt Cement Content	1%

c. Corrective Action. The Quality Control Plan shall indicate that appropriate action shall be taken when the process is believed to be out of tolerance. The Plan shall contain sets of rules to gauge when a process is out of control and detail what action will be taken to bring the process into control. As a minimum, a process shall be deemed out of control and production stopped and corrective action taken, if:

(1) One point falls outside the Suspension Limit line for individual measurements or range; or
(2) Two points in a row fall outside the Action Limit line for individual measurements.

METHOD OF MEASUREMENT

401-7.1 Hot Mix Asphalt. The quantity of hot mix asphalt will be measured by the number of tons used in the accepted work, based on recorded truck scale weights. No deduction will be made for the weight of asphalt cement in the hot mix asphalt.

401-7.2 Asphalt Cement. The quantity of asphalt cement will be measured by the number of tons used in the accepted hot mix asphalt, determined as follows:

a. Supplier's invoices minus waste, diversion and excess left over. This method may be used on projects where deliveries are made in sealed tankers and the plant is producing material for one project only. Method b. will be used to compute left over. Waste and diversion will be computed in a manner determined by the Engineer.

b. Volume measure (tank stickings) of actual daily uses. It is the Contractor's responsibility to notify the Engineer whenever material is to be added to the calibrated volume measure or whenever material from the volume measure is to be used for work other than that specified in this contract.

c. Percent of asphalt cement for each sublot as determined by ATM 405 or WAQTC FOP for AASHTO T 308 multiplied by the weight represented by that sublot. The same tests used for acceptance testing of asphalt cement content will be used for calculation of the asphalt cement quantity. If retesting of a sample for asphalt cement content is performed, the retest result will be used for calculating the asphalt cement quantity.

Method c. will be used for determining asphalt cement quantity unless otherwise directed in writing by the Engineer. No payment will be made for a portion of asphalt cement that is more than 0.4% above the optimum asphalt cement content specified in the JMD. When acceptance testing is not required because of the small quantity of hot mix asphalt used, the percent of asphalt cement used in the calculation will be the optimum asphalt cement content specified in the JMD.

The method initially used will be used for the duration of the project.

401-7.3 Longitudinal Joint. The quantity of joint will be measured by the lineal foot of longitudinal joint in the accepted top layer. A joint is defined as the vertical intersection of two new hot mix asphalt panels. Transverse joints in any layer, and longitudinal joints in underlying layers, are not included. Joints next to buildings, sidewalks, existing asphalt pavement, or curb and gutter are not included.

BASIS OF PAYMENT

401-8.1 HOT MIX ASPHALT. Payment for an accepted lot of hot mix asphalt will be made at the contract unit price per ton for hot mix asphalt. The quantity of hot mix asphalt paid for will not exceed 105 percent of the weight determined on the basis of average core density, the specified neat line thickness, and the completed area of hot mix asphalt.

The Engineer will adjust Contract Item P-401b ~~for hot mix asphalt according to~~ Hot Mix Asphalt Price Adjustment according to Subsection 401-8.1.a.

The price will be compensation for furnishing all materials, for all preparation, mixing, placing, and compaction of these materials, and for all labor, equipment, tools, and incidentals necessary to complete the item.

a. Basis of Adjusted Payment for Hot Mix Asphalt. The total hot mix asphalt price adjustment is the sum of the individual lot price adjustments, and will be added or deducted under Item P-401b, Hot Mix Asphalt Price Adjustment.

The lot Pay Factors for density, gradation and asphalt cement content are determined from Table ~~7~~8 using Percent Within Limits (PWL) calculated from Section 110 of the General Provisions. The tolerance limits for the largest sieve specified will be plus 0 and minus 1 when performing PWL calculations. The maximum pay factor for the largest sieve size for gradation will be 1.00. The price adjustment will be based on the Composite Pay Factor (CPF) for asphalt cement content and aggregate gradation or the Density Pay Factor (DPF), whichever is the lowest value. CPF and DPF is rounded to the nearest hundredth. Table ~~8~~9 is used to determine the weight factor (f) for each sieve size and asphalt cement content.

The hot mix asphalt Composite Pay Factor (CPF) is computed for asphalt cement content and all sieves using the following formula:

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

TABLE ~~7~~ 8. PRICE ADJUSTMENT SCHEDULE

Percentage of Material Within the Specification Limit (PWL)	Pay Factor (PF)
96-100	1.05
90-95	0.01 PWL + 0.10
75-89	0.005 PWL + 0.55
55-74	0.014 PWL - 0.12
Below 55	0*

* If the Composite Pay Factor or the Density Pay Factor falls below 0.65, the lot shall be removed and replaced. If the Engineer decides that the lot can be left in place, the Pay Factor for the lot will be 0.50.

TABLE ~~8~~ 9. WEIGHT FACTORS

Sieve Size	Type I	Type II and Type V	Type III
	Factor "f"	Factor "f"	Factor "f"
1 in.	4		
¾ in.	4	4	
½ in.	4	5	4
3/8 in.	4	5	5
No. 4	4	4	5
No. 8	4	4	5
No. 16	4	4	5
No. 30	4	5	6
No. 50	4	5	6
No. 100	4	4	4
No. 200	20	20	20
Asphalt %	40	40	40

The price adjustment for each individual lot will be calculated as follows:

Price Adjustment = [(CPF or DPF)* -1] x (tons in lot) x (PAB)

PAB = Price Adjustment Base per ton (for mix including asphalt cement)

~~PAB for Hot Mix Asphalt with PG 52-28 = $45.00~~

~~PAB for Hot Mix Asphalt with PG 58-28 = $55.00~~

~~PAB for Hot Mix Asphalt with PG 64-28 = $60.00~~

PAB = Price Adjustment Base =$133.00 per ton Hot Mix Asphalt Type II, Class B

* Composite Pay Factor (CPF) or Density Pay Factor (DPF), whichever is lower value.

401-8.2 ASPHALT CEMENT. Payment for an accepted lot of asphalt cement will be made at the contract unit price per ton for asphalt cement.

The Engineer will adjust Contract Item P-401b for asphalt cement property according to Subsection 401-8.2.a. The Engineer will adjust Contract Item P-401b for asphalt cement content according to Subsection 401-8.1.a.

The price will be compensation for furnishing all materials, labor, equipment, tools, and incidentals necessary to complete the item.

a. **Basis of Adjusted Payment for Asphalt Cement Property.** Asphalt cement property pay reduction factors for each lot will be determined from Table ~~9~~ 10. The total asphalt cement price adjustment is the sum of the individual lot price adjustments, and will be deducted under Item P-401b, Hot Mix Asphalt Price Adjustment.

TABLE ~~9~~ 10. ASPHALT CEMENT PROPERTY PAY REDUCTION FACTORS
(Use the single, highest pay reduction factor)

	Spec	Pay Reduction Factor (PRF)								
		0	0.04	0.05	0.06	0.07	0.08	0.10	0.25	Reject or Engr Eval
Tests On Original Binder										
Viscosity	≤3 Pa-s	≤3		>3						
Dynamic Shear	≥1.00 kPa	≥1.00		0.88-0.99				0.71-0.87	0.50-0.70	<0.50
Toughness	≥110 in-lbs	≥93.5	90.0-93.4	85.0-89.9	80.0-84.9	75.0-79.9	70.0-74.9			<70.0
Tenacity	≥75 in-lbs	≥63.8	61.0-63.7	58.0-60.9	55.0-57.9	52.0-54.9	48.0-51.9			<48.0
Tests On RTFO										
Mass Loss	≤1.00 %	≤1.00		1.001-1.092				1.093-1.184	1.185-1.276	>1.276
Dynamic Shear	≥2.20 kPa	≥2.20		1.816-2.199				1.432-1.815	1.048-1.431	<1.048
Test On PAV										
Dynamic Shear	≤5000 kPa	≤5000		5001-5289				5290-5578	5579-5867	>5867
Creep Stiffness, S	≤300 Mpa	≤300		301-338				339-388	389-450	>450
Creep Stiffness, m-value	≥0.300	≥0.300		0.287-0.299				0.274-0.286	0.261-0.273	<0.261
~~Direct Tension~~	~~≥1.0 %~~	~~≥1.0~~		~~0.86-0.99~~				~~0.71-0.85~~	~~0.56-0.70~~	~~<0.56~~

Asphalt Cement Property Price Adjustment for each lot = 5 x PAB x Qty X PRF (Always a deduct.)

PAB = Price Adjustment Base (See Subsection 401-8.1.a.)
Qty = Quantity of asphalt cement represented by lot
PRF = Pay Reduction Factor from Table ~~9~~10

~~Failing asphalt cement test results will be re-evaluated if requested. Submit a written request within 14 calendar days of receiving a failing asphalt cement test result. Include all quality control test results for the project and the test results from an AASHTO accredited laboratory for the Contractor sample collected at the same time the sample for acceptance testing was collected. All costs associated with this testing are subsidiary to the Hot Mix Asphalt pay item. Accreditation will be in the applicable test methods. The Engineer will review the data and decide if the price reduction remains.~~

~~The Engineer's decision may be contested, in which case the referee sample will be sent to a mutually agreed upon independent AASHTO accredited laboratory for testing. The resulting test results will be binding. If the sample fails to meet specifications, all costs associated with this testing will be deducted under Item P-401b, Hot Mix Asphalt Price Adjustment.~~

Asphalt Cement Appeal Procedure. Once notified of a failing test result of an asphalt cement sample, you may elect to submit a written appeal within 21 days. The appeal must be accompanied by all contractor quality control test results and a test result of your sample of this lot tested by an asphalt laboratory that is AASHTO accredited in the test procedure in question. All costs associated with this testing are subsidiary

to the Hot Mix Asphalt pay item. The Engineer will review these test results and use ASTM D 3244 to determine a test value upon which to base a price reduction. If you challenge this value, then the referee sample held by the Engineer will be sent to a mutually agreed upon independent AASHTO accredited laboratory for testing. This test result will be incorporated into the ASTM D 3244 procedure to determine a test value upon which to base a price reduction. If this final value incurs a price adjustment, the results are binding and you will pay for the cost of testing the referee sample as a deduction under item P-401b Hot Mix Asphalt Price Adjustment.

401-8.3 LONGITUDINAL JOINT. The cost for all joints is subsidiary to hot mix asphalt, no payment will be made.

The Engineer will adjust Contract Item P-401b for longitudinal joint density according to Subsection 401-8.3.a.

The subsidiary cost includes furnishing all materials, labor, equipment, tools, and incidentals necessary to complete the item.

a. **Basis of Adjusted Payment for Longitudinal Joints.** Longitudinal joint density lots in the top layer that average less than ~~90~~91% of MSG will be assessed a price adjustment of $5.00 per foot. The accrued amount will be deducted under Item P-401b, Hot Mix Asphalt Price Adjustment.

   Longitudinal joint density lots in the top layer that average greater than ~~92~~91% of MSG will have an incentive of $1.00 per foot applied. The accrued amount will be added under Item P-401b, Hot Mix Asphalt Price Adjustment.

401-8.4 PAYMENT. Payment will be made under:

Item P-401a	Hot Mix Asphalt Type II, Class B - per ton
Item P-401b	Hot Mix Asphalt Price Adjustment - contingent sum
Item P-401c	Asphalt Cement PG 52-28 - per ton

TESTING REQUIREMENTS

WAQTC FOP for AASHTO T 2	Sampling Aggregates
WAQTC FOP for AASHTO T 27/T 11	Sieve Analysis of Aggregate and Soils
WAQTC FOP for AASHTO T 30	Mechanical Analysis of Extracted Aggregate
WAQTC FOP for AASHTO T 40	Sampling Bituminous Materials
WAQTC FOP for AASHTO ~~TP 61~~ T 335	Percentage of Fracture in Coarse Aggregate
WAQTC FOP for AASHTO T 89	Liquid Limit of Soils
WAQTC FOP for AASHTO T 90	Plastic Limit and Plasticity Index of Soils
WAQTC FOP for AASHTO T 166/T 275	Bulk Specific Gravity and Percent Compaction of Bituminous Mixes
WAQTC FOP for AASHTO T 168	Sampling Bituminous Mixes
WAQTC FOP for AASHTO T 176	Sand Equivalent
WAQTC FOP for AASHTO T 209	Maximum Specific Gravity of Bituminous Mixes

WAQTC FOP for AASHTO T 255/T 265 Moisture Content of Aggregate and Soils

WAQTC FOP for AASHTO T 308 Asphalt Binder Content of Bituminous Mixes by Ignition Method

WAQTC FOP for AASHTO T 329 Moisture Content of Hot-Mix Asphalt (HMA) by Oven Method

WAQTC TM 8 In-Place Density of Bituminous Mixes using the Nuclear Moisture-Density Gauge.

ATM 306 Flat and Elongated

ATM 313 Degradation Value of Aggregate

ATM 405 Asphalt Cement Content of Asphalt Concrete Mixtures by the Nuclear Method

ATM 414 Anti-Strip Requirements of Hot Mix Asphalt

ATM 417 Hot Mix Asphalt Design by the Marshall Method

ATM SP-7 Determination of Outlier Test Results

AASHTO T 53 Softening Point of Bitumen (Ring-and-Ball Apparatus)

AASHTO T 96 Resistance to Degradation of Small-size Coarse Aggregate by Abrasion and Impact in the Los Angeles Machine

AASHTO T 104 Soundness of Aggregate by Use of Sodium Sulfate or Magnesium Sulfate

AASHTO T 127 Sampling and Amount of Testing of Hydraulic Cement

AASHTO M 156 Requirements for Mixing Plants for Hot-Mixed, Hot-Laid Bituminous Paving Mixtures

AASHTO T 195 Determining Degree of Particle Coating of Bituminous-Aggregate Mixtures

AASHTO M 320 Performance-Graded Asphalt Binder

ASTM D 3244 Utilization of Test Data to Determine Conformance with Specifications

ASTM D 5801 Test Method for Toughness and Tenacity of Bituminous Materials

The Asphalt Institute *Mix Design Methods for Asphalt Concrete Manual No. 2 (MS-2)*

The Asphalt Institute *Hot-Mix Recycling Manual No. 20 (MS-20)*

MATERIAL REQUIREMENTS

AASHTO R 14 Classifying Hot-Mix Recycling Agents

AASHTO M 17 Mineral Filler for Bituminous Paving Mixtures

ITEM P-603 TACK COAT

DESCRIPTION

603-1.1 This item shall consist of preparing and treating an asphalt or concrete surface with liquid asphalt material according to these Specifications and in reasonably close conformity to the lines shown on the Plans.

MATERIALS

603-2.1 MATERIALS. Tack coat material shall be either cutback asphalt, emulsified asphalt, or tar and shall conform to the requirements of Table 1. The type, grade, controlling specification, and application temperature of tack coat to be used shall be specified by the Engineer.

TABLE 1. MATERIAL

Type and Grade	Specification	Application Temperature °F	Application Rate gal/yd^2
Emulsified Asphalt			
SS-1, SS-1h	AASHTO M 140	75-130	0.05 to 0.16
CSS-1, CSS-1h	AASHTO M 208	75-130	0.05 to 0.16
STE-1	\1\	68-140	0.08 to 0.10
Cutback Asphalt			
RC-70	ASTM D 2028	120-160	0.05 to 0.16
Tar			
RTCB 5, RTCB 6	AASHTO M 52	60-120	0.05 to 0.16

\1\ STE-1 shall meet the following specifications: Viscosity, Sabolt Furol at 77 °F of 30 max., when tested under AASHTO T 59. Particle charge test of Positive when tested under AASHTO T 59 (If particle charge test is inconclusive, material having a max. pH value of 6.7 will be acceptable). Storage Stability, 1 day 1% max when tested under AASHTO T 59. Demulsibility, 35 mil 0.8% Dioctyl Sodium Sulfosuccinate Solution 25 minimum when tested under AASHTO T 59. Sieve test maximum of 0.10% when tested under AASHTO T 59. Oil distillate, by volume of emulsion, of 5% maximum when tested under AASHTO T 59. Residue of 45% minimum when tested under AASHTO T 59. Penetration at 77 °F, 100 gm, 5 sec. of 100 minimum, 200 maximum when tested under ASTM D 5. Ductility at 77 °F of 40 cm minimum when tested under ASTM D 113. Solubility in trichloroethylene of 97.5% minimum

CONSTRUCTION METHODS

603-3.1 WEATHER LIMITATIONS. The tack coat shall be applied only when the existing surface is dry and the surface temperature is above 40 °F. The temperature requirements may be waived, but only when so directed by the Engineer.

603-3.2 EQUIPMENT. The Contractor shall provide equipment for heating and applying the tack coat.

The distributor shall be designed, equipped, maintained, and operated so that tack coat at even heat may be applied uniformly on variable widths of surface at the specified rate. The allowable variation from the specified rate shall not exceed 10%. Distributor equipment shall include a tachometer, pressure gages, volume-measuring devices or a calibrated tank, and a thermometer for measuring temperatures of tank

contents. The distributor shall be self-powered and shall be equipped with a power unit for the pump and full circulation spray bars adjustable laterally and vertically.

A power broom and/or blower shall be provided for any required cleaning of the surface to be treated.

603-3.3 APPLICATION OF TACK COAT. Immediately before applying the tack coat, the full width of surface to be treated shall be swept with a power broom and/or airblast to remove all loose dirt and other objectionable material.

Emulsified asphalt shall be applied a sufficient time in advance of the paver to ensure that all water has evaporated before any of the overlying mixture is placed on the tacked surface.

The tack coat material including vehicle or solvent shall be uniformly applied with an asphalt distributor at the rate specified in Table 1, depending on the condition of the existing surface. The type of material and application rate shall be approved by the Engineer prior to application.

Following the application, the surface shall be allowed to cure without being disturbed for such period of time as may be necessary to permit drying out and setting of the tack coat. This period shall be determined by the Engineer. The surface shall then be maintained by the Contractor until the next course has been placed. Suitable precautions shall be taken by the Contractor to protect the surface against damage during this interval.

603-3.4 CONTRACTOR'S RESPONSIBILITY. Samples of the tack coat material that the Contractor proposes to use, together with a statement as to its source and character, must be submitted and approved before use of such material begins. The Contractor shall require the manufacturer or producer of the tack coat to furnish material subject to this and all other pertinent requirements of the contract. Only satisfactory materials so demonstrated by certified tests, shall be acceptable.

The Contractor shall furnish the vendor's certified test reports for each carload, or equivalent, of tack coat shipped to the project. The report shall be delivered to the Engineer before permission is granted for use of the material. The furnishing of the vendor's certified test report for the material shall not be interpreted as a basis for final acceptance. All such test reports shall be subject to verification by testing samples of material received for use on the project.

603-3.5 FREIGHT AND WEIGH BILLS. Before the final estimate is allowed, the Contractor shall file with the Engineer receipted bills when railroad shipments are made, and certified weigh bills when materials are received in any other manner, of the tack coat actually used in the construction covered by the contract. The Contractor shall not remove tack coat from the tank car or storage tank until the initial outage and temperature measurements have been taken by the Engineer, nor shall the car or tank be released until the final outage has been taken by the Engineer. Copies of freight bills and weigh bills shall be furnished to the Engineer during the progress of the work.

METHOD OF MEASUREMENT

603-4.1 Tack coat will be measured by the ton according to Subsection GCP-90-02.

BASIS OF PAYMENT

603.5-1 Payment will be made at the contract unit price per ton of accepted material. If the following pay items are absent from the bid schedule, no payment will be made. All work, materials, and equipment required to complete the work will be subsidiary.

Payment will be made under:

Item P-603a Tack Coat [Grade] - per ton

TESTING REQUIREMENTS

AASHTO T 59	Testing Emulsified Asphalts
ASTM D 5	Penetration of Bituminous Materials
ASTM D 113	Ductility of Bituminous Materials

MATERIAL REQUIREMENTS

AASHTO M 52	Tar for Use in Road Construction
AASHTO M 140	Emulsified Asphalt
AASHTO M 208	Cationic Emulsified Asphalt
ASTM D 633	Volume Correction Table for Road Tar
ASTM D 2028	Liquid Asphalt (Rapid-Curing Type)

ITEM P-610 STRUCTURAL PORTLAND CEMENT CONCRETE

DESCRIPTION

610-1.1 This item shall consist of plain or reinforced structural portland cement concrete, prepared and constructed according to these Specifications, at the locations and of the form and dimensions shown on the Plans.

MATERIALS

610-2.1 GENERAL. Only approved materials, conforming to the requirements of these Specifications, shall be used in the work. They may be subjected to inspection and tests at any time during the progress of their preparation or use. The source of supply of each of the materials shall be approved by the Engineer before delivery or use is started. Representative preliminary samples of the materials shall be submitted by the Contractor, when required, for examination and test. Materials shall be scored and handled to insure the preservation of their quality and fitness for use and shall be located to facilitate prompt inspection. All equipment for handling and transporting materials and concrete must be clean before any material or concrete is placed therein.

In no case shall the use of pit-run or naturally mixed aggregates be permitted. Naturally mixed aggregate shall be screened and washed, and all fine and coarse aggregates shall be stored separately and kept clean. The mixing of different kinds of aggregates from different sources in one storage pile or alternating batches of different aggregates will not be permitted.

610-2.2 COARSE AGGREGATE. The coarse aggregate shall meet the requirements of AASHTO M 80, Class B.

Coarse aggregate shall be well graded from coarse to fine, and shall meet AASHTO M 43, Number 57 or 67, when tested according to WAQTC FOP for AASHTO T 27/T 11.

610-2.3 FINE AGGREGATE. The fine aggregate shall meet the requirements of AASHTO M 6, Class A.

The fine aggregate shall be well graded from fine to coarse, and shall meet the requirements of AASHTO M 6, Table 1, when tested according to WAQTC FOP for AASHTO T 27/T 11.

Blending will be permitted, if necessary, in order to meet the gradation requirements for fine aggregate. Fine aggregate deficient in the percentage of material passing the No. 50 sieve may be accepted, provided that such deficiency does not exceed 5% and is remedied by the addition of pozzolanic or cementitious materials other than portland cement, as specified in 610-2.6 on admixtures, in sufficient quantity to produce the required workability as approved by the Engineer.

610-2.4 CEMENT. Cement shall conform to the requirements of AASHTO M 85.

The Contractor shall furnish manufacturer's certified test reports for each carload, or equivalent, of cement shipped to the project. The report shall be delivered to the Engineer before permission to use the cement is granted. All such test reports shall be subject to verification by testing sample materials received for use on the project.

610-2.5 WATER. The water used in concrete shall be potable and free from sewage, oil, acid, strong alkalies, vegetable matter, and clay and loam. If the water is of questionable quality, it shall be tested according to AASHTO T 26.

610-2.6 ADMIXTURES. The use of any material added to the concrete mix shall be indicated on the mix design approved by the Engineer. Before approval of any material, the Contractor shall be required to submit

the results of complete physical and chemical analyses made by an acceptable testing laboratory. Subsequent tests shall be made of samples taken by the Engineer from the supply of the material being furnished or proposed for use on the work to determine whether the admixture is uniform in quality with that approved.

Pozzolanic admixtures shall be fly ash or raw or calcined natural pozzolans meeting the requirements of AASHTO M 295.

Air-entraining admixtures shall meet the requirements of AASHTO M 154. Air-entraining admixtures shall be added at the mixer in the amount necessary to produce the specified air content.

Water-reducing, set-controlling admixtures shall meet the requirements of AASHTO M 194, Type A water-reducing, or Type D water-reducing and retarding. Water-reducing admixtures shall be added at the mixer separately from air-entraining admixtures according to the manufacturer's printed instructions.

610-2.7 PREMOLDED JOINT MATERIAL. Premolded joint material for expansion joints shall meet the requirements of AASHTO M 213.

610-2.8 JOINT FILLER. The filler for joints shall meet the requirements of Item P-605.

610-2.9 STEEL REINFORCEMENT. Reinforcing shall consist of Deformed and Plain Billet-Steel Bars conforming to the requirements of AASHTO M 31, Welded Steel Wire Fabric conforming to the requirements of AASHTO M 55, Welded Deformed Steel Fabric conforming to the requirements of AASHTO M 221, or Bar Mats conforming to the requirements of AASHTO M 54, as shown on the Plans.

610-2.10 COVER MATERIALS FOR CURING. Curing materials shall conform to one of the following specifications:

~~AASHTO M 171~~	~~Waterproof Paper for Curing concrete~~
~~AASHTO M 171~~	~~Polyethylene Sheeting for Curing Concrete~~
AASHTO M 171	Sheet Materials for Curing Concrete
AASHTO M 148, Type 1 or 2	Liquid Membrane-Forming Compounds for Curing Concrete

CONSTRUCTION METHODS

610-3.1 GENERAL. The Contractor shall furnish all labor, materials, and services necessary for, and incidental to, the completion of all work as shown on the drawings and specified herein. All machinery and equipment owned or controlled by the Contractor, which they propose to use on the work, shall be of sufficient size to meet the requirements of the work, and shall be such as to produce satisfactory work; all work shall be subject to the inspection and approval of the Engineer.

610-3.2 CONCRETE COMPOSITION. The concrete shall develop a minimum compressive strength of 3,600 psi in 28 days as determined by test cylinders made according to WAQTC FOP for AASHTO T 23 and tested according to AASHTO T 22. The concrete shall contain not less than 564 pounds of cement per cubic yard. The concrete shall contain 5% of entrained air, plus or minus 1%, as determined by WAQTC FOP for AASHTO T 152 and shall have a slump of not more than 4 inches as determined by WAQTC FOP for AASHTO T 119.

610-3.3 ACCEPTANCE SAMPLING AND TESTING. Concrete for each structure will be accepted on the basis of the compressive strength specified in Subsection 610-3.2. The concrete will be sampled according to WAQTC TM 2. Compressive strength specimens will be made according to WAQTC FOP for AASHTO T 23 and tested according to AASHTO T 22.

The Engineer will make the actual tests on the specimens at no expense to the Contractor.

610-3.4 PROPORTIONING AND MEASURING DEVICES. When package cement is used, the quantity for each batch shall be equal to one or more whole sacks of cement. The aggregates shall be measured separately by weight. If aggregates are delivered to the mixer in batch trucks, the exact amount for each mixer charge shall be contained in each batch compartment. Weighing boxes or hoppers shall be approved by the Engineer and shall provide means of regulating the flow of aggregates into the batch box so that the required and exact weight of aggregates can be readily obtained.

610-3.5 CONSISTENCY. The consistency of the concrete shall be checked by the slump test specified in WAQTC FOP for AASHTO T 119.

610-3.6 MIXING. Concrete may be mixed at the construction site, at a central point, or in truck mixers. The concrete shall be mixed and delivered according to the requirements of AASHTO M 157.

610-3.7 MIXING CONDITIONS. The concrete shall be mixed only in quantities required for immediate use. Concrete shall not be mixed while the air temperature is below 40 °F without permission of the Engineer. If permission is granted for mixing under such conditions, aggregates or water, or both, shall be heated and the concrete shall be placed at a temperature not less than 50 °F nor more than 100 °F. The Contractor shall be held responsible for any defective work, resulting from freezing or injury in any manner during placing and curing, and shall replace such work at their expense.

Retempering of concrete by adding water or any other material shall not be permitted.

The delivery of concrete to the job shall be in such a manner that batches of concrete will be deposited at uninterrupted intervals.

610-3.8 FORMS. Concrete shall not be placed until all the forms and reinforcements have been inspected and approved by the Engineer. Forms shall be of suitable material and shall be of the type, size, shape, quality, and strength to build the structure as designed on the Plans. The forms shall be true to line and grade and shall be mortar-tight and sufficiently rigid to prevent displacement and sagging between supports. The Contractor shall bear responsibility for their adequacy. The surfaces of forms shall be smooth and free from irregularities, dents, sags, and holes.

The internal ties shall be arranged so that, when the forms are removed, no metal will show in the concrete surface or discolor the surface when exposed to weathering. All forms shall be wetted with water or with a nonstaining mineral oil which shall be applied shortly before the concrete is placed. Forms shall be constructed so that they can be removed without injuring the concrete or concrete surface. The forms shall not be removed before the expiration of at least 30 hours from vertical faces, walls, slender columns, and similar structures; forms supported by falsework under slabs, beams, girders, arches, and similar construction shall not be removed until tests indicate that at least 80% of the design strength of the concrete has developed.

610-3.9 PLACING REINFORCEMENT. All reinforcement shall be accurately placed, as shown on the Plans, and shall be firmly held in position during concreting. Bars shall be fastened together at intersections. The reinforcement shall be supported by approved metal chairs. Shop drawings, lists, and bending details shall be supplied by the Contractor when required.

Reinforcing bars shall be bent cold and shall conform accurately to the shape and dimensions shown on the diagram. In no case shall the radius of any bend be less than 4 times the diameter of the bar.

Place reinforcement as indicated on the Plans or as hereinafter specified. Rigidly block and wire in place, using metal or plastic supports or concrete blocks and securely tie at each intersection with annealed iron wire of at least 1/8 inch.

Do not splice bars at points not indicated on the Plans except with the consent of the Engineer. Such splices shall be at the points of minimum tensile stress and the lap shall be not less than 36 bar diameters.

Verify the quantity, size, and shape of the reinforcement against the structure drawings and make necessary corrections to the bar lists and bending schedules before ordering. Errors in the bar lists and/or bending schedules shall not be cause for adjustment of the contract prices.

If reinforcing bars are to be welded, follow AWS D12.1.

610-3.10 EMBEDDED ITEMS. Before placing concrete, any items that are to be embedded shall be firmly and securely fastened in place as indicated. All such items shall be clean and free from coating, rust, scale, oil, or any foreign matter. The embedding of wood shall be avoided. The concrete shall be spaded and consolidated around and against embedded items.

610-3.11 PLACING CONCRETE. All concrete shall be placed during daylight, unless otherwise approved. The concrete shall not be placed until the depth and character of foundation, the adequacy of forms and falsework, and the placing of the steel reinforcing have been approved. Concrete shall be placed as soon as practical after mixing and in no case later than 1 hour after water has been added to the mix. The method and manner of placing shall be such to avoid segregation and displacement of the reinforcement. Troughs, pipes, and chutes shall be used as an aid in placing concrete when necessary. Dropping the concrete a distance of more than 5 feet, or depositing a large quantity at one point, will not be permitted. Concrete shall be placed upon clean, damp surfaces, free from running water, or upon properly consolidated soil.

The concrete shall be compacted with suitable mechanical vibrators operating within the concrete. When necessary, vibrating shall be supplemented by hand spading with suitable tools to assure proper and adequate compaction. Vibrators shall be manipulated so as to work the concrete thoroughly around the reinforcement and embedded fixtures and into corners and angles of the forms. The vibration at any joint shall be of sufficient duration to accomplish compaction but shall not be prolonged to the point where segregation occurs. Concrete deposited under water shall be carefully placed in a compact mass in its final position by means of a tremie, a closed bottom dump bucket, or other approved method and shall not be disturbed after being deposited.

610-3.12 CONSTRUCTION JOINTS. When the placing of concrete is suspended, necessary provisions shall be made for joining future work before the placed concrete takes its initial set. For the proper bonding of old and new concrete, such provisions shall be made for grooves, steps, keys, dovetails, reinforcing bars or other devices as may be prescribed. The work shall be arranged so that a section begun on any day shall be finished during daylight of the same day. Before depositing new concrete on or against concrete which has hardened, the surface of the hardened concrete shall be cleaned by a heavy steel broom, roughened slightly, wetted, and covered with a neat coating of cement paste or grout.

610-3.13 EXPANSION JOINTS. Expansion joints shall be constructed at such points and of such dimensions as may be indicated on the drawings. The premolded filler shall be cut to the same shape as that of the surfaces being joined. The filler shall be fixed firmly against the surface of the concrete already in place in such manner that it will not be displaced when concrete is deposited against it.

610-3.14 DEFECTIVE WORK. Any defective work disclosed after the forms have been removed shall be immediately removed and replaced. If any dimensions are deficient, or if the surface of the concrete is bulged, uneven, or shows honeycomb, which in the opinion of the Engineer cannot be repaired satisfactorily, the entire section shall be removed and replaced at the expense of the Contractor.

610-3.15 SURFACE FINISH. All exposed concrete surfaces shall be true, smooth, free from open or rough spaces, depressions, or projections. The concrete in horizontal plane surfaces shall be brought flush with the finished top surface at the proper elevation and shall be struck-off with a straightedge and floated. Mortar finishing shall not be permitted, nor shall dry cement or sand-cement mortar be spread over the concrete during the finishing of horizontal plane surfaces.

When directed, the surface finish of exposed concrete shall be a rubbed finish. If forms can be removed while the concrete is still green, the surface shall be pointed and wetted and then rubbed with a wooden float

until all irregularities are removed. If the concrete has hardened before being rubbed, a carborundum stone shall be used to finish the surface. When approved, the finishing can be done with a rubbing machine.

610-3.16 CURING AND PROTECTION. All concrete shall be properly cured and protected by the Contractor. The work shall be protected from the elements, flowing water, and from defacement of any nature during the building operations. The concrete shall be cured as soon as it has sufficiently hardened by covering with an approved material. Water-absorptive coverings shall be thoroughly saturated when placed and kept saturated for a period of at least 3 days for Type III Portland Cement and at least 7 days for Type I or Type II Portland Cement Concrete. All curing mats or blankets shall be sufficiently weighted or tied down to keep the concrete surface covered and to prevent the surface from being exposed to currents of air. Where wooden forms are used, they shall be kept wet at all times until removed to prevent the opening of joints and drying out of the concrete. Traffic shall not be allowed on concrete surfaces for 7 days after the concrete has been placed.

610-3.17 DRAINS OR DUCTS. Drainage pipes, conduits, and ducts that are to be encased in concrete shall be installed by the Contractor before the concrete is placed. The pipe shall be held rigidly so that it will not be displaced or moved during the placing of the concrete.

610-3.18 COLD WEATHER PROTECTION. When concrete is placed at temperatures below 40 °F, the Contractor shall provide satisfactory methods and means to protect the mix from injury by freezing. The aggregates, or water, or both, shall be heated in order to place the concrete at temperatures between 50 and 100 °F.

610-3.19 FILLING JOINTS. All joints which require filling shall be thoroughly cleaned, and any excess mortar or concrete shall be cut out with proper tools. Joint filling shall not be started until after final curing and shall be done only when the concrete is completely dry. The cleaning and filling shall be carefully done with proper equipment and in a manner to obtain a neat looking joint free from excess filler.

METHOD OF MEASUREMENT

610-4.1 Portland cement concrete will be measured by the number of cubic yards of concrete complete in place and accepted. In computing the volume of concrete for payment, the dimensions used will be those shown on the Plans or ordered by the Engineer. No measurements or other allowances will be made for forms, falsework, cofferdams, pumping, bracing, expansion joints, or finishing of the concrete. No deductions will be made for the volumes of reinforcing steel or embedded items. When the pay items shown below are absent from the bid schedule, no measurement for payment will be made.

610-4.2 Reinforcing steel will be measured by the calculated theoretical number of pounds placed, as shown on the Plans, complete in place and accepted. The unit weight used for deformed bars will be the weight of plain square or round bars of equal nominal size. If so indicated on the Plans, the weight to be paid for will include the weight of metal pipes and drains, metal conduits and ducts, or similar materials indicated and included.

BASIS OF PAYMENT

610-5.1 Payment will be made at the contract unit price per cubic yard for structural portland cement concrete and ~~per pound for reinforcing steel~~. If the following pay items are absent from the bid schedule, no payment will be made. All work, materials, and equipment required to complete the work will be subsidiary to those items referencing item P-610.

Payment will be made under:

Item P-610a	Structural Portland Cement Concrete - per cubic yard
Item P-610b	Steel Reinforcement - per pound
Item P-610c	Standard Curb – per linear foot

TESTING REQUIREMENTS

AASHTO T 22	Compressive Strength of Cylindrical Concrete Specimens
AASHTO T 26	Quality of Water to be used in Concrete
WAQTC FOP for AASHTO T 23	Making & Curing Concrete Test Specimens in the Field
WAQTC FOP for AASHTO T 27/T 11	Sieve Analysis of Aggregates & Soils
WAQTC FOP for AASHTO T 119	Slump of Freshly Mixed Concrete
WAQTC FOP for AASHTO T 152	Air Content of Freshly Mixed Concrete by the Pressure Method
WAQTC TM 2	Sampling Freshly Mixed Concrete

MATERIAL REQUIREMENTS

AASHTO M 6	Fine Aggregate for Portland Cement Concrete
AASHTO M 31	Deformed and Plain Billet-Steel Bars for Concrete Reinforcement
AASHTO M 43	Sizes of Aggregate for Road and Bridge Construction
AASHTO M 54	Fabricated Deformed Steel Bar Mats for Concrete Reinforcement
AASHTO M 55	Steel Welded Wire Reinforcement, Plain, for Concrete
AASHTO M 80	Coarse Aggregate for Portland Cement Concrete
AASHTO M 85	Portland Cement
AASHTO M 148	Liquid Membrane-Forming Compounds for Curing Concrete
AASHTO M 154	Air-Entraining Admixtures for Concrete
AASHTO M 157	Ready-Mixed Concrete
AASHTO M 171	Sheet Materials for Curing Concrete
AASHTO M 194	Chemical Admixture for Concrete
AASHTO M 213	Preformed Expansion Joint Fillers for Concrete Paving and Structural Construction (Nonextruding and Resilient Bituminous Types)
AASHTO M 221	Steel Welded Wire Reinforcement, Deformed, for Concrete
AASHTO M 295	Coal Fly Ash and Raw or Calcined Natural Pozzolan for Use as a Mineral Admixture in Concrete
AWS D12.1	Recommended Practices for Welding Reinforcing Steel, Metal Inserts and Connections in Reinforced Concrete Construction

ITEM P-620 RUNWAY AND TAXIWAY PAINTING

DESCRIPTION

620-1.1 This item shall consist of the painting of numbers, markings, and stripes on the surface of runways, taxiways, paved roadways, and aprons, according to these Specifications and at the locations shown on the Plans, or as directed by the Engineer. This item includes removal of existing painted markings from pavement surfaces as shown on the plans or as designated by the Engineer. Complete this work within the limitations of the project safety and phasing plans.

MATERIALS

620-2.1 MATERIALS ACCEPTANCE. The Contractor shall furnish manufacturer's certified test reports for materials shipped to the project. The certified test reports shall include a statement that the materials meet the specification requirements. The reports can be used for material acceptance or the Engineer may perform verification testing. The reports shall not be interpreted as a basis for payment. The Contractor shall notify the Engineer upon arrival of a shipment of materials to the site. Provide manufacturer certification that each product does not contain mercury, lead, hexavalent chromium, halogenated solvents, nor any carcinogen as defined in 29 CFR 1910.1200 in amounts exceeding permissible limits as specified in relevant Federal Regulations.

620-2.2 PAINT. Paint shall be waterborne or solvent base according to the requirements of Subsection 620-2.2, a. or b. Paint shall be furnished in white (37925) and yellow (33538 or 33655) according to Federal Standard No 595. Paint shall be furnished in Type II (fast drying time for no-pick-up) when tested according to ASTM D 711.

a. **Waterborne.** Paint shall meet the requirements of Federal Specification TT-P-~~1952D~~1952E, Type II.

b. **Solvent Base.** Paint shall meet the requirements of Federal Specification ~~A-A-2886A~~ A-A-2886B, Type II, or the State of Alaska DOT&PF maintenance specification for "Traffic Paint - No-Heat Instant Dry Pavement Marking Material".

620-2.3 REFLECTIVE MEDIA. Glass beads shall meet the requirements of Fed. Spec. TT-B-1325, Type I, gradation A. Glass beads shall be treated with adhesion promoting and/or flotation coatings as specified by the manufacturer of the paint.

CONSTRUCTION METHODS

620-3.1 WEATHER LIMITATIONS. The painting shall be performed only when the surface is dry and when the surface temperature is at least 40 °F and rising and the pavement surface temperature is at least 5 °F above the dew point.

620-3.2 EQUIPMENT. Equipment shall include the apparatus necessary to properly clean the existing surface, a mechanical marking machine, a bead dispensing machine, and such auxiliary hand-painting equipment as may be necessary to satisfactorily complete the job.

The mechanical marker shall be an atomizing spray-type marking machine suitable for application of traffic paint. It shall produce an even and uniform film thickness at the required coverage and shall apply markings of uniform cross sections and clear-cut edges without running or spattering and without over spray.

620-3.3 PREPARATION OF SURFACE. Immediately before application of the paint, the surface shall be dry and free from dirt, grease, oil, laitance, or other foreign material which would reduce the bond between the paint and the pavement. The area to be painted shall be cleaned by sweeping and blowing or by other methods as required to remove all dirt, laitance, and loose materials. Areas which cannot be satisfactorily

cleaned by brooming and blowing shall be scrubbed as directed with a 10% solution of tri-sodium phosphate or an equally suitable solution. After scrubbing, the solution shall be rinsed off and the surface dried prior to painting.

620-3.4 LAYOUT OF MARKINGS. The proposed markings shall be laid out in advance of the paint application. The locations of markings to receive glass beads shall be shown on the Plans. Space control points at such intervals to ensure accurate location of all markings. Provide an experienced technician to supervise the location, alignment, layout dimensions, and application of the paint.

620-3.5 APPLICATION. Paint shall be applied at the locations and to the dimensions and spacing shown on the Plans. Paint shall not be applied until the layout and condition of the surface have been approved by the Engineer.

The edges of the markings shall not vary from a straight line more than 1/2 inch in 50 feet, and the marking dimensions and spacings shall be within the following tolerances:

Dimension and Spacing	Tolerance
Less than 36 inches	1/2 inch
36 inches to 6 feet	1 inch
6 feet to 60 feet	2 inches
Over 60 feet	3 inches

The paint shall be mixed and applied according to the manufacturer's instructions. The addition of thinner will not be permitted. The paint shall be applied to the pavement with a marking machine at the rate shown in Table 1

TABLE 1. APPLICATION RATES FOR PAINT AND GLASS BEADS

Paint Type	Paint, ft^2/gal maximum	Glass Beads lb/gal of paint (±2 oz.)
Waterborne	80	7
Solvent Base	80	~~7~~ 6

Pavement shall cure for 7 days or as directed by the Engineer before painting. If pavement is opened to traffic before the pavement curing period is complete, apply paint in two coats. Apply the first coat at least 12 hours after paving is completed at 25 percent of the total application rate. Apply the remaining 75 percent following pavement curing time and after pavement grooving operations in affected areas. The direction of the second application shall be 180 degrees from the first to ensure complete coverage. Apply glass beads, if required, in the second coat only.

Pressure apply the glass beads on the marked areas at the locations shown on the Plans using a mechanical dispenser mounted not more than 12 inches behind the paint dispenser. Beads shall be applied at the rate shown in Table 1 and shall adhere to the cured paint or all marking operations shall cease until corrections are made.

All emptied containers shall be returned to the paint storage area for checking by the Engineer. The containers shall not be removed from the airport or destroyed until authorized by the Engineer.

620-3.6 PROTECTION. After application of the paint, all markings shall be protected from damage until the paint is dry. All surfaces shall be protected from excess moisture and/or rain and from disfiguration by spatter, splashes, spillage, or drippings of paint.

620-3.7 PAINTED MARKING REMOVAL. Where indicated, use high pressure water or sand blasting to remove all visible indications of existing painted markings from pavement surfaces. Do not paint over existing

markings. Remove pavement markings to the fullest extent possible without materially damaging the pavement surface, color, or texture. Collect and dispose of all loose or waste material as needed to prevent interference with drainage or to prevent dusty conditions under traffic, wind, or propellers.

METHOD OF MEASUREMENT

620-4.1 RUNWAY AND TAXIWAY PAINTING BY UNIT AREA. ~~The quantity of runway and taxiway markings to be paid for will be the number of square feet of painting and the number of pounds of reflective media, performed according to the Specifications and accepted by the Engineer.~~ If runway and taxiway painting by unit area appears in the bid schedule, then new painted markings will be so measured.

620-4.2 REFLECTIVE MEDIA. If reflective media by unit weight appears in the bid schedule, then this material will be so measured.

620-4.3 RUNWAY AND TAXIWAY PAINTING BY LUMP SUM. If a lump-sum item appears in the bid schedule, new painted markings will not be measured for payment. In this case, reflective media (glass beads) as indicated on the plans are subsidiary to the item.

620-4.4 PAINTED MARKING REMOVAL. Painted marking removal will be measured by area acceptably completed with the following exception. If painted marking removal is absent from the bid schedule, no measurement will be made and this item will be subsidiary to painting. If a lump sum item appears in the bid schedule, painted marking removal will not be measured for payment.

BASIS OF PAYMENT

620-5.1 Payment will be made at the respective contract unit or lump sum price for the pay items listed below that appear in the bid schedule.~~per square foot for runway and taxiway painting and per pound for reflective media.~~ When Item P-620e is not in the bid schedule, painted marking removal is subsidiary to the painting.

Payment will be made under:

Item P-620a	Runway and Taxiway Painting - per square foot
Item P-620b	Reflective Media - per pound
Item P-620c	Runway and Taxiway Painting - per lump sum
Item P-620e	Painted Marking Removal - per square foot

TESTING REQUIREMENTS

ASTM C 371	Wire-Cloth Sieve Analysis of Nonplastic Ceramic Powders
ASTM D 92	Flash and Fire Points by Cleveland Open Cup
ASTM D 711	No-Pick-Up Time of Traffic Paint
ASTM D 968	Abrasion Resistance of Organic Coatings by Falling Abrasive
ASTM D 1652	Epoxy Content of Epoxy Resins
ASTM D 2074	Total Primary, Secondary, and Tertiary Amine Values of Fatty Amines by Alternative Indicator Method
ASTM D 2240	Rubber Products-Durometer Hardness

ASTM G 53	Operating Light and Water-Exposure Apparatus (Florescent UV-Condensation Type) for Exposure of Nonmetallic Materials.
Federal Test Method Standard No. 141	Paint, Varnish, Lacquer and Related Materials; Methods of Inspection, Sampling and Testing

MATERIAL REQUIREMENTS

Alaska DOT/PF Yellow	Traffic Paint - No-Heat Instant Dry Pavement Marking Material; White and
ASTM D 476	Titanium Dioxide Pigments
Code of Federal Regulations	40 CFR Part 60, Appendix A, 29 CFR Part 1910.1200
Code of Federal Regulations	29 CFR Part 1910.1200 – Hazard Communications
Commercial Item Description (CID) ~~A-A-2886A~~ A-A-2886B	Paint, Traffic, Solvent Based
Fed. Spec. TT-B-1325	Beads (Glass Spheres) Retroreflective
Fed. Spec. TT-P-~~1952D~~1952E	Paint, traffic and Airfield Marking, Waterborne
Federal Standard 595	Colors used in Government Procurement

ITEM T-901 SEEDING

DESCRIPTION

901-1.1 This work consists of preparing the ground and applying seed and fertilizer in conformance with the Plans and Specifications.

The intent of this work is to provide a living vegetative cover in the areas indicated on the Plans and to maintain the cover for the term of the Contract.

MATERIALS

901-2.1 SEED. Furnish the seed mixture listed in the ~~Special Provisions.~~ below.

Seed Type	Application Rate
Norcoast Bering Hairgrass	24 lbs. per acre
Arctared red fescue	16 lbs. per acre
Annual Ryegrass	4 lbs. per acre
Total Seed Mix	44 lbs. per acre

Apply mulch (refer to Item T-908 for requirements) at a rate of 2000 lbs per acre based on dry weight.

Meet the applicable requirements of the State of Alaska Seed Regulations, 11 AAC 34, Articles 1 and 4.

Meet or exceed 95% pure seed and 74% germination, with annual ryegrass germinating within 7 days.

Furnish 4 signed copies of a report for each lot of seed, certifying it has been tested by an approved laboratory within 9 months of date of seed application. Submit these certifications no later than 10 days prior to seeding. Include the following in each certification:

a. name and address of laboratory
b. date of test
c. lot number
d. seed name
e. percent pure seed
f. percent germination
g. percent weed content
h. percent inert matter

901-2.2 FERTILIZER. Furnish a 20-20-10 fertilizer containing no cyanamid compounds or hydrated lime. Tolerances of the chemical ingredients shall be plus or minus 2%.

Use standard commercial fertilizer supplied separately or in mixtures, and in moisture proof containers. Mark each container with the total net weight and with the manufacturer's guaranteed analysis of the contents showing the percentage for each ingredient.

CONSTRUCTION METHODS

901-3.1 SOIL PREPARATION. Clear all areas to be seeded of stones 4 inches in diameter and larger and of all sticks, stumps, noxious weeds, and other debris or irregularities that might interfere with the seeding operation, growth of grass, or subsequent maintenance of the grass covered areas.

Just prior to seeding, roughen the surface of all areas to be seeded by track-walking transversely up and down the slopes or using a scarifying slope board. Round the top and bottom of the slopes, when necessary,

to facilitate tracking and to create a pleasing appearance, but do not disrupt drainage flow lines. Where fill is adjacent to wetlands, keep the equipment entirely on the fill slope.

901-3.2 SEEDING SEASONS. Seed and fertilize between May 15 and August 15.

Do not seed during windy conditions or when climatic conditions or ground conditions would hinder placement or proper growth.

901-3.3 APPLICATION. Apply seed and fertilizer at the rates specified: 44 lbs per acre for seed and 450 lbs per acre for fertilizer ~~in the Special Provisions~~. Use ~~either of~~ the following methods:

a. Hydraulic Method.

(1) Mix a slurry of seed, fertilizer, water, and other components as required by the ~~Special Provisions~~application rate specified.. Add seed to the slurry mixture no more than 30 minutes before application.

(2) Use hydraulic seeding equipment that will maintain a continuous agitation and apply a homogeneous mixture through a spray nozzle. The pump must produce enough pressure to maintain a continuous nonfluctuating spray that will reach the extremities of the seeding area, without causing damage to the seed bed. Use a hose attachment to reach areas where a fixed nozzle cannot reach.

(3) ~~If mulch material is required, add it~~ Add Mulch to the water slurry in the hydraulic seeder after adding the proportionate amounts of seed and fertilizer.

(4) Apply slurry at a rate that distributes all materials evenly.

~~**b. Dry Method.**~~

~~**(1)** Use mechanical spreaders, seed drills, landscape seeders, cultipacker seeders, fertilizer spreaders, or other approved mechanical spreading equipment.~~

~~**(2)** Moisten the soil prior to the application of seed and fertilizer and immediately afterwards.~~

~~**(3)**~~**(5)** ~~Mix or rake the seed and fertilizer into the seed bed to a depth of 1/2 inch, unless mulch material is to be applied immediately.~~

901-3.4 MAINTENANCE OF SEEDED AREAS. Protect seeded areas against traffic using approved warning signs or barricades. Promptly repair surfaces that are gullied or otherwise damaged following seeding by regrading and reseeding, as directed. Maintain seeded areas in a satisfactory condition until final inspection and acceptance of the work.

Keep temporary erosion control measures in place until the vegetation is accepted.

Water the seeded areas, as required, for proper germination and growth. Use equipment that can acceptably water all seeded areas without vehicular traffic on seeded areas.

Reseed any seeded areas not showing evidence of satisfactory growth, as directed.

Final acceptance will be based on the following criteria and must provide 70% vegetative coverage of the seeded area. If seeding is completed by July 15th, coverage must be attained by September 30th. If seeding is completed by August 15th, coverage must be attained by June 15th of the following season. Final acceptance will be based on the Engineers approval.

METHOD OF MEASUREMENT

901-4.1 The work will be measured according to Subsection 90-02, and as follows:

a. **Seeding by the acre.** By the area of ground surface acceptably seeded, fertilized, and maintained. Required reseeding is subsidiary.

b. **Seeding by the pound.** By the weight of seed acceptably placed. Fertilizer is subsidiary. Mulching is subsidiary. Any other work required will be measured separately.

c. **Water for maintenance.** By the M-gal (1,000 gallons) acceptably placed. Use a conversion factor of 8.34 pounds per gallon, if measured by weight. Use a conversion factor of 7.48 gallons per cubic foot, if measured by volume.

BASIS OF PAYMENT

901-5.1 At the contract unit price per unit of measure for the pay items listed below that appear on the bid schedule.

Water for hydraulic application of seed mixtures is subsidiary. Water for maintenance is subsidiary except when it is listed in the bid schedule.

Mulching ~~will be measured and paid for~~ as further described under Item T-908 is subsidiary to seeding.

Payment will be made under:

Item T-901a	Seeding - per acre
Item T-901b	Seeding - per pound
Item T-901c	Water for Maintenance - per M-gal

ITEM T-908 SOIL STABILIZATION

DESCRIPTION

908-1.1 This work consists of furnishing, placing, and maintaining soil stabilization material where shown on the Plans.

MATERIALS

908-2.1 MULCH. Virgin/recycled wood fiber, recycled paper (wood cellulose), or an acceptable blend containing up to 50% recycled paper, with the following characteristics:

a. Contains no growth or germination inhibiting factors.

b. Will remain in uniform suspension in water under agitation and will blend with grass seed, fertilizer and other additives to form a homogeneous slurry, when required.

c. Will form a uniform, blotter-like ground cover on application, having moisture absorption and percolation properties and the ability to cover and hold grass seed in contact with soil.

d. Will not form a hard crust upon drying.

e. Dyed a suitable color to facilitate inspection of its placement.

Ship the mulch in packages of uniform weight (plus or minus 5%) bearing the name of the manufacturer and the air-dry weight content.

Use a commercial tackifier on all slopes 4:1 or steeper Use the amount recommended by the manufacturer.

908-2.2 ROLLED MATTING. Use materials that conform to one of the following standards:

a. Unbleached single jute yarn. Use yarn that is loosely twisted and not varying in thickness more than one-half its normal diameter. Furnish jute mesh in rolled strips conforming to the following requirements.

(1) Width: 45 to 48 inches, ± 1 inch.
(2) 78 warp-ends per width of cloth (minimum).
(3) 41 weft-ends per yard (minimum).
(4) Weight: 1.22 pounds per linear yard, ± 5%

b. Knitted Straw Matting. Commercially manufactured erosion control blanket. Use netting which is biodegradable. Straw shall be from oats, wheat, rye, rice, or other approved grain crops that are free from noxious weeds, mold, or other objectionable material. May contain coconut or other natural fiber to reinforce the straw. Follow the manufacturer's published recommendations.

908-2.3 STAPLES. U-shaped staples for anchoring matting, approximately 6 inches long and 1 inch wide. Machine-made: No. 11 gage or heavier steel wire. Hand-made: 12-inch lengths of No. 9 gage or heavier steel.

CONSTRUCTION REQUIREMENTS

908-3.1 SURFACE PREPARATION. Smooth the surface and backfill all gullies and potholes before application. Remove all sticks and other foreign matter that prevents contact of the mulch or matting and the soil. Ensure that the surface is moist at the time of placement. If area is to be seeded, soil preparation shall conform to Section 901-3.1.

908-3.2 APPLICATION. Apply soil stabilization material at the rate specified in the Special Provisions. For mulch, apply at a rate of 2000 lbs per acre based on dry weight. If seeding is specified, complete the application of mulch or matting within 24 hours after seed is placed. Staple matting every 5 feet at overlapped joints and edges or as recommended by the manufacturer. Do not use vehicles or equipment which cause rutting or displacement of the subgrade or topsoil.

908-3.3 MAINTENANCE. Reshape and reseed any damaged areas and repair the mulch or matting as required.

Maintain the mulch or matting until all work on the project is complete and accepted.

METHOD OF MEASUREMENT

908-4.1 By the square yard, according to Subsection GCP-90-02, acceptably placed. Water, maintenance, and repair are subsidiary. When no item for mulching appears on the bid schedule, mulching will be subsidiary to Item T-901.

BASIS OF PAYMENT

908-5.1 At the contract unit price per unit of measure for the pay items listed below that appear on the bid schedule.

Payment will be made under:

Item T-908a	Mulching - per square yard
Item T-908b	Rolled Matting - per square yard

Appendix A

Ted Stevens Anchorage International Airport
ANC Gate E21

Project No. AIP ?-??-????-????/52339

Erosion and Sediment Control Plan & Stormwater Construction Site Inspection Report Form

Included in this Appendix are the Stormwater Construction Site Inspection Report form. This document has been included for the Contractor's information. The Stormwater Construction Site Inspection Report form will be used for storm water site inspections during construction.

EROSION & SEDIMENT CONTROL PLAN

South Airpark Drive

Gate E21 Security Entrance

#52339

Prepared For:

State of Alaska
Department of Transportation and Public Facilities
Ted Stevens Anchorage International Airport
Central Region, Aviation Design

March 2011

SITE EVALUATION, ASSESSMENT & PLANNING

GENERAL

The Gate E21 Security Entrance Construction project is located at Ted Stevens Anchorage International Airport (ANC) in Anchorage, Alaska (USGS Quad A-8). CRW Engineering Group, LLC (CRW) and the Alaska Department of Transportation and Public Facilities (ADOT&PF), Ted Stevens International Airport (ANC) have developed this Erosion and Sediment Control Plan (ESCP) based on the knowledge of existing site conditions, construction sequencing, available material and equipment, and other relevant factors. The purpose of this plan is to provide a guide to prevent sediment-laden water from discharging to receiving waters or to intercept and treat water prior to discharging to receiving waters.

The anticipated area of ground disturbance is 0.29 acres; therefore a Notice of Intent is not required to be filed with the Alaska State Department of Environmental Conservation (ADEC) Alaska Pollutant Discharge Elimination System (APDES) Construction General Permit for Discharges from Large and Small Construction Activities, January 31, 2010.

The ESCP contains information regarding the construction site that may be used by the Contractor in developing a specific SWPPP, in accordance with Section 641 – Erosion, Sediment, and Pollution Control. Actual construction methods, timing, materials, and equipment used by the selected contractor may vary from the assumptions used in preparation of this ESCP.

NATURE OF CONSTRUCTION ACTIVITY

The scope of work includes removal of an existing guard shack and installation of a two sets of sliding security gates with electrical controls for operation via card readers and cameras. Improvements also include drainage swale maintenance and pavement overlay of South Aircraft Drive. The project is expected to be completed by Fall 2011.

EXISTING CONDITIONS

CLIMATE

The Anchorage Bowl is a transitional climate zone influenced by both maritime and continental weather patterns that result in constantly changing weather. Average annual precipitation is 15.9 inches. Average summer temperatures range from 59 to 65. Winter temperatures range from 8 to 21.

SOILS, SLOPES, VEGETATION

The majority of the work is within a developed road corridor and within the paved roadway or along the gravel shoulders. Topography is generally flat. There are existing drainage swales adjacent to the east and west sides of the roadway. The swales are vegetated with grasses.

DRAINAGE

Existing drainage is via two drainage swales along the east and west sides of South Airpark Drive. Surface water runoff from the roadway flows into the swales. The swales carry the water south to a culvert where it enters into

the existing storm water collection systems including ditches, swales, and inlets. Upon completion of the project, surface drainage will be restored to its previous condition. There is no increase in impervious surfaces.

Receiving Waters and Wetlands

Potential receiving waters are Lake Hood/Lake Spenard Lake and Cook Inlet. There are no wetlands or other waters of the U.S adjacent to the construction site.

Lake Hood/Lake Spenard is classified as an impaired water body subject to Total Maximum Daily Load (TMDL) requirements for fecal coliform (EPA September 30, 1997). Runoff from the construction project is not expected to impact the fecal coliform levels of this lake.

Endangered Species Certification

According to the Anchorage Fish and Wildlife Field Office Endangered Species Act Consultation Guide, there are no listed species in the Anchorage Bowl (http://ecos.fws.gov/tess_public/pub/stateListingAndOccurrenceIndividual.jsp?state=AK).

Historic Preservation

There are no known historic, archeological, architectural, or cultural resources along the existing storm drain alignment or in the project's area of Potential Effect. In the unlikely event that cultural, archaeological, or historic sites are discovered during construction, the State Historic Preservation Office (SHPO) will be contacted and work will be stopped until written clearance from SHPO is received.

Construction Activities

Construction Site Estimates

Total Project Area	1.2 Acres
Disturbed Area	0.29 Acres
Percentage Impervious Area Prior to and After Construction	90 % 90%

Sequence of Construction Activities

The Contractor's construction sequencing and timely installation of appropriate erosion and sediment control measures should be planned to minimize the area of unstabilized soils at any one time. The approved SWPPP will address the activities planned for each area of the project as it is opened up for construction. The generalized concept for construction sequence of activities includes:

1. Appropriate erosion control and sediment controls shall be in place prior to grading, excavating, or stockpiling of erodible materials.
2. Inspect and maintain erosion and sediment control measures until final stabilization occurs.
3. Remove any temporary erosion and sediment controls after each disturbed area is permanently stabilized or erodible stockpiles are removed.
4. Provide topsoil and initiate grass growth at the earliest possible opportunity for disturbed areas that are not to be paved.

Potential Sources of Pollution

Potential sources of sediment to stormwater runoff may include:

- Removal of asphalt and disturbance of underlying soils

- Trenching and backfill
- Ditch regrading for maintenance
- Top soil and grading in preparation for final stabilization

Construction activities and materials that could have the potential to contribute pollutants other than sediments to stormwater runoff include but are not limited to:

- Vehicle and equipment fluids such as oil, grease, fuel, and coolants
- Materials associated with paving operations
- Pavement markings
- General site litter

Allowable Non-Stormwater Discharge

Non-stormwater discharges are allowable under the CPG and may include:

- Landscape irrigation

Sources of non-stormwater discharges associated with the Contractor's activities must included in the SWPPP, with preventative measures, to control erosion and sediment discharge.

Control Measures

The Contractor is responsible for developing a construction schedule that incorporates sediment and pollution control practices to control pollutants from being discharged in the stormwater. Ground disturbance should be kept to a minimum necessary to perform the work. Only as much soil should be exposed as the Contractor has manpower, equipment, and supplies necessary to effectively control erosion and sedimentation. The plan shall address both temporary and permanent control measures including installation and maintenance requirements. Erosion and sediment control plans are shown in the plan set.

Temporary Best Management Practices (BMPs)

Erosion and sediment controls are structural measures to reduce sediment discharges from construction areas. Sediment controls are designed to intercept and settle out soil particles that have been detached and transported by the force of water. Temporary controls shall be removed upon final stabilization and termination of construction activities.

Vegetative Cover

Grass and other surface vegetation slows down stormwater sheet flow and captures sediments. Maintain undisturbed areas of vegetation between sediment sources and drainage channels and structures. Avoid clearing surface vegetation not actually required for proper construction of the work. Avoid clearing vegetation before it is necessary.

Covering

Surfaces exposed during construction, including uncovered fill and temporary stockpiles of imported material, shall be covered or stabilized if left undisturbed for more than 14 days. Soil materials with less than 6 percent passing the #200 sieve in stockpiles or on slopes of less than 3 percent maybe exempt from this requirement as long as perimeter controls are in place (like straw wattles). Cover materials may be rolled plastic or other rolled materials

designed for such purposes. Such materials must be firmly affixed to the ground to prevent being removed by or becoming airborne in the wind. Cover may also consist of seeding and mulching.

Sediment Barriers

Straw wattles should be placed at the south end of South Airpark Drive to prevent sediment from entering the cross culvert that directs storm water to the east and west of Tug Road. Straw wattles, fiber rolls or compost socks should be used to keep sediment from migrating from soil stockpiled areas or any other area where the vegetative buffer is not sufficient to prevent sediment migration. Linear sediment barriers must be regularly inspected and maintained.

Temporary Seeding and Mulching

T within 14-days, on portions of the site where construction activities have temporarily or permanently ceased. Stabilization practices may include temporary seeding, permanent seeding, mulching, geotextiles, vegetative buffer strips, protection of trees, preservation of mature vegetation, and other appropriate measures.

Street Sweeping

On-site and off-site paved roads used by construction equipment must be cleaned of an excess mud, dirt or rock resulting from construction activities. Roadways will be inspected a minimum of once a day.

Good Housekeeping Practices:

The provisions of the ECSP shall ensure and demonstrate compliance with the applicable State and/or local waste management regulations. The contractor shall implement appropriate good housekeeping skills to include at a minimum:

- Proper material handling and storage areas.
- Proper fueling and maintenance practices. Fuels and lubricants will be stored off-site.
- Develop a Hazardous Waste Management Plan. If contaminated or hazardous materials are encountered during construction, all work in the vicinity of the project will cease. ADEC will be contacted and work will not resume until a corrective action plan is approved and implemented by ADEC.
- Develop a Spill Prevention and Control Plan. Fueling and service vehicles shall be equipped with materials to immediately contain, and commence clean up of spilled fuels and other petroleum products. Accidental spills from fueling operations will be responded to and reported in accordance with applicable regulations.
- Proper containers for waste and garbage. Waste materials will be disposed off-site at an authorized facility.
- On-site portable sanitation facilities will be provided.

Final Stabilization

The Contractor shall initiate final stabilization as soon as possible to reduce the length of time the soil surface is exposed to precipitation and runoff. All disturbed ground areas that are not repaved shall be seeded and mulched.

Inspections and Maintenance

The Contractor will use and maintain, in good and effective operating conditions vegetation, erosion and sediment control measures and other protective measures. Inspections shall be conducted at least once every seven days.

Following a storm event of 1/2" or greater rainfall in a 24 hour period recorded at the project site rain gauge, the responsible parties should conduct an informal inspection of the Project to ensure all BMP's are working properly and perform any necessary corrective actions as soon as possible.

Inspectors must hold a current certification as an AK CESCL or equivalent and ADOT&PF SWPPP Construction Site Inspection Report, Form 25D-100 must be used to record inspections. Each inspection shall include, but shall not be limited to, all areas of the site disturbed by construction activity and areas used for staging or storage of materials that are exposed to precipitation. Vehicles and construction equipment shall be inspected for fluid leaks. Inspectors shall look for evidence of, or the potential for, pollutants entering the storm water conveyance system. Sedimentation and erosion control measures identified in the SWPPP shall be observed to ensure proper operation. Discharge locations shall be inspected to ascertain whether erosion control measures are effective in preventing significant impacts to waters of the United States, where accessible. Where discharge locations are inaccessible, nearby downstream locations shall be inspected to the extent that such inspections are practicable. Locations where vehicles enter or exit the site shall also be inspected for evidence of off-site sediment tracking.

Prior to the Engineer certifying the inspection report, electronic copies of the SWPPP Inspection Report, Working Site Maps/Plan Sheets, SWPPP Amendment Log, SWPPP Amendments since the last Inspection, SWPPP Corrective Action Log, SWPPP Grading and Stabilization Logs, and SWPPP Daily Record of Rainfall forms as directed by the Engineer must be submitted for Quality Assurance review. A record of each inspection and of any actions taken shall be retained as part of the SWPPP for at least three years from the date.

Record Keeping

The SWPPP shall be amended whenever there is a change in personnel, design, BMPs, construction, operation, or maintenance at the construction site that has or could have a significant effect on the discharge of pollutants to water of the U.S. not previously addressed in the SWPPP. The SWPPP shall also be amended during inspections or investigations by site staff, local, state or federal officials, if it is determined that the SWPPP is ineffective in eliminating or significantly minimizing pollutants in storm water discharges from the construction site. Record keeping includes but is not limited to:

- Drawings: document planned SWPPP activities such as installation and removal of BMPs, by making notes in the SWPPP drawings. Include the date and the recording person's initials by these notes.
- Modification or replacement of a BMP, installation of a new BMP, or overdue maintenance (after a sediment trap exceeds 50% of design capacity) is a corrective action and must be documented on the SWPPP Corrective Action Log, Form 25D-112.
- Keep the SWPPP Grading and Stabilization Activities Log, Form 25D-110 current and submit a copy to the Engineer prior to performing each scheduled SWPPP Inspection.
- Use SWPPP Daily Record of Rainfall, Form 25D-115, to record weather conditions at the Project. Update the form daily and include the initials of the person recording each day's entry. Submit a copy to the Engineer prior to performing each scheduled Inspection.

The Superintendent and the SWPPP Manager are the only persons authorized to amend the SWPPP and update the SWPPP Amendment Log, Form 25D-114.

The Superintendent or the SWPPP Manager must sign amendments to the SWPPP and updates to the SWPPP Amendment Log. SWPPP Amendments must be approved by the Engineer. Amend the SWPPP narrative as soon as

practicable after any change or modification, but in no case, later than seven (7) calendar days following identification of the need for an amendment. All logs shall be appended to the SWPPP.

STATE OF ALASKA
DEPARTMENT OF TRANSPORTATION AND PUBLIC FACILITIES

SWPPP CONSTRUCTION SITE INSPECTION REPORT

General Information		
Project Name		
Date of Inspection	**Date:**	**Start/End Times:**
DOT&PF Project Number		
Location		
NOI Tracking No.	**Contractor's:**	**DOT&PF's:**
Inspector's Names	**Contractor:**	**DOT&PF (if joint):**
Inspector's Titles	**Contractor:**	**DOT&PF:**
Inspector's Contact Information	**Contractor:**	**DOT&PF:**
Inspector's Qualifications (AK-CESCL certification number)	**Contractor:**	**DOT&PF:**
Inspector's Qualifications (AK-CESCL expiration date)	**Contractor:**	**DOT&PF:**
Describe present phase of construction		

Type of Inspection:
☐ Regular ☐ Post-storm event ☐ Reduced inspection frequency period

Weather Information

Has there been a storm event since the last inspection? ☐ Yes ☐ No
If yes, provide:
Estimated Storm Start Date & Time:
Estimated Storm Duration (hrs):
Approximate Amount of Precipitation (in):

Weather at time of this inspection?
☐ Clear ☐ Cloudy ☐ Rain ☐ Sleet ☐ Fog ☐ Snowing ☐ High Winds ☐ Other:

Temperature:

Site-specific BMPs

- ***BMP*** *- Describe and give the location of the structural and non-structural BMPs identified in your SWPPP in the BMP column below (add as many BMPs as necessary on the continuation sheets. Include areas that are required to be inspected by the CGP, such as material storage areas that are exposed to precipitation.*
- ***BMP Installed*** *– If a BMP should be installed at the current phase of the project and you marked "No" in the "BMP Installed" column, then you must check "Yes" in the "BMP Action Required?" column*
- ***BMP Action Required?*** *- .If a BMP needs repair, modification, replacement, maintenance or a new BMP is needed or a SWPPP amendment is needed, then a BMP Action is required.*
- ***BMP Action Required, Complete by Date*** *- Before certifying the report, fill in the date when the BMP Action can reasonably be expected to be completed. When a BMP Action is NOT required, leave the "Complete by Date" blank.*
- ***Describe BMP Action, if Needed*** *– Anytime you check "Yes" for "BMP Action Required", then you must also fill in the "Describe BMP Action" column.*
- ***Delayed Action Item Report*** *- When a BMP Action is required and the Complete by Date is not met, you must then fill out the Delayed Action Item Report to explain why the date was not met Keep the Delayed Action Item Report in the SWPPP.*
- ***Corrective Action Log*** *- When a BMP Action is required as noted in this report, you must also enter all the information for this action in the Corrective Action Log.*

	BMP & Location	BMP Installed?	BMP Action Required?	Describe BMP Action, if Needed
1		☐ Yes ☐ No	☐ Yes ☐ No Complete by Date:	
2		☐ Yes ☐ No	☐ Yes ☐ No Complete by Date:	
3		☐ Yes ☐ No	☐ Yes ☐ No Complete by Date:	
4		☐ Yes ☐ No	☐ Yes ☐ No Complete by Date:	
5		☐ Yes ☐ No	☐ Yes ☐ No Complete by Date:	
6		☐ Yes ☐ No	☐ Yes ☐ No Complete by Date:	
7		☐ Yes ☐ No	☐ Yes ☐ No Complete by Date:	
8		☐ Yes ☐ No	☐ Yes ☐ No Complete by Date:	

	BMP & Location	BMP Installed?	BMP Action Required?	Describe BMP Action, if Needed
9		☐ Yes ☐ No	☐ Yes ☐ No Complete by Date:	
10		☐ Yes ☐ No	☐ Yes ☐ No Complete by Date:	
11		☐ Yes ☐ No	☐ Yes ☐ No Complete by Date:	
12		☐ Yes ☐ No	☐ Yes ☐ No Complete by Date:	
13		☐ Yes ☐ No	☐ Yes ☐ No Complete by Date:	
14		☐ Yes ☐ No	☐ Yes ☐ No Complete by Date:	
15		☐ Yes ☐ No	☐ Yes ☐ No Complete by Date:	
16		☐ Yes ☐ No	☐ Yes ☐ No Complete by Date:	
17		☐ Yes ☐ No	☐ Yes ☐ No Complete by Date:	
18		☐ Yes ☐ No	☐ Yes ☐ No Complete by Date:	
19		☐ Yes ☐ No	☐ Yes ☐ No Complete by Date:	
20		☐ Yes ☐ No	☐ Yes ☐ No Complete by Date:	
21		☐ Yes ☐ No	☐ Yes ☐ No Complete by Date:	

- *Please use continuation sheets (Form 25D-100 Part 2) if there are additional BMPs to list.*

Overall Site Issues

- ***BMP or Activity*** *-- These are some general site issues that must be assessed during inspections.*
- ***Implemented?*** *– If a BMP or activity should be implemented at the current phase of the project and you check "No", then you must mark "Yes" in the "Corrective Action Required?" column.*
- ***Corrective Action Required?*** *- When maintenance or some other corrective action is required, check "Yes" in this column.*
- ***Corrective Action Required, Complete by Date*** *- When a corrective action is required, before certifying the report, fill in the date when the corrective action can reasonably be expected to be completed. When a corrective action is NOT required, leave the "Complete by Date" blank.*
- ***Describe Corrective Action, if Needed*** *– Anytime you check "Yes" in the "Corrective Action Required?" column, you must fill in the "Describe Corrective Action" column as well.*
- ***Delayed Action Item Report*** *– When a Corrective Action is required and the Complete by Date is not met, you must then fill out the Delayed Action Item Report to explain why the date was not met. Keep the Delayed Action Item Report in the SWPPP.*
- ***Corrective Action Log*** *- When a Corrective Action is required as noted in this report, you must also enter all the information for this action in the Corrective Action Log.*

	BMP or Activity	Implemented?	Corrective Action Required?	Describe Corrective Action and Location, if Needed
1	Have stabilization measures been initiated on slopes and disturbed areas not actively being worked?	☐ Yes ☐ No	☐ Yes ☐ No Complete by Date:	
2	Are natural resource areas (e.g., streams, wetlands, mature trees, etc.) required by the SWPPP to be delineated in the field, identified with barriers or markings?	☐ Yes ☐ No	☐ Yes ☐ No Complete by Date:	
3	Are perimeter controls and sediment barriers adequately installed (keyed into substrate) and maintained?	☐ Yes ☐ No	☐ Yes ☐ No Complete by Date:	
4	Are storm drain inlets properly protected?	☐ Yes ☐ No	☐ Yes ☐ No Complete by Date:	
5	Are the construction exits preventing sediment from being tracked into the street?	☐ Yes ☐ No	☐ Yes ☐ No Complete by Date:	
6	Is trash/litter from work areas collected and placed in covered dumpsters?	☐ Yes ☐ No	☐ Yes ☐ No Complete by Date:	
7	Are washout facilities (e.g., paint, concrete) available, clearly marked, and maintained?	☐ Yes ☐ No	☐ Yes ☐ No Complete by Date:	

	BMP or Activity	Implemented?	Corrective Action Required?	Describe Corrective Action and Location, if Needed
8	Are vehicle and equipment fueling, cleaning, and maintenance areas free of spills, leaks, or any other deleterious material?	☐ Yes ☐ No	☐ Yes ☐ No Complete by Date:	
9	Are materials that are potential stormwater contaminants stored inside or under cover?	☐ Yes ☐ No	☐ Yes ☐ No Complete by Date:	
10	Are non-stormwater discharges (e.g., wash water, dewatering) properly controlled?	☐ Yes ☐ No	☐ Yes ☐ No Complete by Date:	

	Overall Site Issue	Answer to Question	Corrective Action Required?	Describe Corrective Action and Location, if Needed
1	At the time of inspection, are the discharge points and receiving waters free of pollutant discharges (sediment deposits, sediment plume or oil sheen)? (See continuation page for list of discharge points)	☐ Yes ☐ No	☐ Yes ☐ No Complete by Date:	
2	Since the last inspection, are the discharge points and receiving waters free of evidence that pollutants had left the project site (for example, sediment deposits, oily residue)? (See continuation page for list of discharge points)	☐ Yes ☐ No	☐ Yes ☐ No Complete by Date:	
3	Has Spill Response kit been used since the last inspection? If yes, has stock been maintained?	☐ Yes ☐ No	☐ Yes ☐ No Complete by Date:	
4	Are any additional BMPs needed?	☐ Yes ☐ No	☐ Yes ☐ No Complete by Date:	
5	(Other)	☐ Yes ☐ No	☐ Yes ☐ No Complete by Date:	

Scope of Inspection		

Did you inspect all areas of the project that are required to be inspected by the CGP (areas disturbed by construction activity, areas used for storage of materials that are exposed to precipitation, discharge locations and locations where vehicles enter or exit the site)?	☐ Yes ☐ No	If you did not inspect any required areas, list those locations here and explain why they weren't inspected.

- *Check the box below if the project is in compliance with the CGP and the SWPPP:*

☐ **I certify that on the date of this inspection, this project was found to be in compliance with the terms of its Storm Water Pollution Prevention Plan and the current Construction General Permit.**

- *If there are incidences of non-compliance, then do not check the box above.*
- *When you don't check the box above, then you must describe each incident of non-compliance and the actions that are needed to bring the project into compliance.*
- *If there is an Action Item described in the non-compliance box that does not already have a "Complete by Date" assigned elsewhere in this report, then add a completion date within the box.*

Non-Compliance
Incidence of Non-compliance:
Action Item and Complete by Date:

CERTIFICATION STATEMENT

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

Contractor's Duly Authorized Representative

Print name: _____

Title: Superintendent

AK-CESCL Certification Number: _____

Signature _____

Date _____

DOT&PF's Duly Authorized Representative

Print Name: _____

Title: Project Engineer

AK-CESCL Certification Number: _____

Signature _____

Date _____

State of Alaska Department of Transportation & Public Facilities
Statewide Design & Engineering Services

SWPPP SUBCONTRACTOR CERTIFICATION

Project Name
Project Number:
Project Location:

Operator(s): _____

As a subcontractor, you are required to comply with the Stormwater Pollution Prevention Plan (SWPPP) for any work that you perform on-site. Any person or group who violates any condition of the SWPPP may be subject to substantial penalties or loss of contract. You are encouraged to advise each of your employees working on this project of the requirements of the SWPPP. A copy of the SWPPP is available for your review at the office trailer.

Each subcontractor engaged in activities at the construction site that could impact stormwater must be identified and sign the following certification statement:

I certify under the penalty of law that I have read and understand the terms and conditions of the SWPPP for the above designated project and agree to follow the BMPs and practices described in the SWPPP.

This certification is hereby signed in reference to the above named project:

Company: _____

Address: _____ Telephone Number: _____

Type of Construction Service Provided: _____

Printed Name: _____
Title: _____
Company: _____

Signature: _____

Date: _____

Form 25D-105 (3/10)

State of Alaska Department of Transportation & Public Facilities
Statewide Design & Engineering Services

SWPPP PRE-CONSTRUCTION SITE VISIT

Project Name:
Project Number:
Date of Site Visit:

1. PERSONS CONDUCTING THE VISIT

Name:		**Name:**	
Title:		Title:	
Company:		Company:	
Name:		**Name:**	
Title:		Title:	
Company:		Company:	
Name:		**Name:**	
Title:		Title:	
Company:		Company:	

2. SWPPP PREPARER STATEMENTS AND SIGNATURE:

		Yes	No
1.	Did you identify or verify opportunities to phase construction activities at the project?	☐	☐
2.	Did you identify or verify appropriate BMPs and their sequencing for the project?	☐	☐
3.	Did you identify or verify which sediment controls must be installed at the project poor to commencing construction activities (as defined by the CGP)?	☐	☐

If you answered NO to any of the questions above, explain:

Printed Name: _____
Title: _____
Company: _____

Signature: _____

Date: _____

STATE OF ALASKA
DEPARTMENT OF TRANSPORTATION AND PUBLIC FACILITIES

SWPPP DELEGATION OF SIGNATURE AUTHORITY FOR CGP DOCUMENTS – DOT&PF

Project Name:

I, *(REGIONAL DIRECTOR'S NAME)* hereby designate the Project Engineer assigned to *(Project Name)* to be the DOT&PF duly authorized representative for the purpose of overseeing compliance with the APDES Construction General Permit, at the *(Project Name)* construction site. By signing this authorization, I confirm that I meet the requirements to make such a designation as set forth in Appendix F, Subsection 1.12.2 of ADEC's Construction General Permit (CGP), and that the designee above meets the definition of a "duly authorized representative" as set forth in Appendix F, Subsection 1.12.3.

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Name: _____

Title: Regional Director

Signature: _____

Date: _____

STATE OF ALASKA
DEPARTMENT OF TRANSPORTATION AND PUBLIC FACILITIES

SWPPP DELEGATION OF SIGNATURE AUTHORITY FOR CGP DOCUMENTS -- CONTRACTOR

Project Name:

I, *(Contractor's responsible corporate officer)*hereby designate the project superintendant assigned to *(Project Name)* to be *(Contractor's company name)'s* duly authorized representative for the purpose of overseeing compliance with the APDES Construction General Permit, at the *(Project Name)* construction site. By signing this authorization, I confirm that I meet the requirements to make such a designation as set forth in Appendix F, Subsection 1.12.2 of ADEC's Construction General Permit (CGP), and that the designee above meets the definition of a "duly authorized representative" as set forth in Appendix F, Subsection 1.12.3.

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Name: _____

Title: _____

Company: _____

Signature _____

Date_____

STATE OF ALASKA
DEPARTMENT OF TRANSPORTATION AND PUBLIC FACILITIES

SWPPP CERTIFICATION FOR DOT&PF

Project Name:

Operator: Alaska Department of Transportation and Public Facilities,

[FILL IN YOUR REGION OR DIVISION]

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Name:

Duly Authorized Representative in accordance with Appendix F, Part 1.12, APDES General Permit for Discharges From Large and Small Construction Activities

Title: Project Engineer

Date: _____

Signature: _____

STATE OF ALASKA
DEPARTMENT OF TRANSPORTATION AND PUBLIC FACILITIES

SWPPP GRADING & STABILIZATION ACTIVITIES LOG PAGE __

Project Name:

Date Grading Activity Initiated/ Initials	Description of Grading Activity and Location	Date Grading Activity Ceased (Indicate Temporary or Permanent)/ Initials	Date When Stabilization Measures are Initiated/ Initials	Description of Stabilization Measure

Form 25D-110 (3/10)

STATE OF ALASKA
DEPARTMENT OF TRANSPORTATION AND PUBLIC FACILITIES

SWPPP CERTIFICATION FOR CONTRACTOR

Project Name:

Operator:

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Name: _____

Duly Authorized Representative in accordance with Appendix F, Part 1.12
APDES

General Permit for Discharges From Large and Small Construction Activities

Title: _____

Date: _____

Signature: _____

STATE OF ALASKA
DEPARTMENT OF TRANSPORTATION AND PUBLIC FACILITIES

SWPPP CORRECTIVE ACTION LOG

PAGE ____

Project Name:

Inspection Date	Description of Corrective Action Needed	Date Action Taken / Responsible Person

Form 25D-112 (3/10)

STATE OF ALASKA
DEPARTMENT OF TRANSPORTATION AND PUBLIC FACILITIES

SWPPP DELAYED ACTION ITEM REPORT

Project name _____

DOT&PF NOI Tracking # _____

Date completing this form _____

Person completing this form _____

BMP Action or Corrective Action description and location

_____

_____

Date of inspection report that identified a BMP Action or Corrective Action was needed _____

"Complete by Date" on that inspection report _____

Reason(s) why the BMP Action or Corrective Action was not completed as scheduled

_____

New "Complete by Date" _____

Date the BMP Action or Corrective Action was actually completed _____

If the BMP Action or Corrective Action is not completed by the new date written above, then complete another Delayed Action Item Report.

Person recording the action completion _____ Date _____

STATE OF ALASKA
DEPARTMENT OF TRANSPORTATION AND PUBLIC FACILITIES

SWPPP AMENDMENT LOG PAGE ____

Project Name:

Amendment Number	Description of the Amendment	Date of Amendment	Amendment Prepared by

Form 25D-114 (3/10)

STATE OF ALASKA
DEPARTMENT OF TRANSPORTATION AND PUBLIC FACILITIES

SWPPP DAILY RECORD OF RAINFALL PAGE ____

Project Name:

Date	Precipitation, inches	Comments	Initials

Form 25D-115 (3/10)

State of Alaska Department of Transportation & Public Facilities
Statewide Design & Engineering Services

SWPPP TRAINING LOG

Project Name
Project Number:
Project Location:

Instructor's Name(s): _____

Instructor's Title(s): _____

Course Location: _____ Date: _____

Course Length (hours): _____

Storm water Training Topic: *(check as appropriate)*

- ☐ Erosion Control BMPs
- ☐ Sediment Control BMPs
- ☐ Non-Storm Water BMPs
- ☐ Emergency Procedures
- ☐ Good Housekeeping BMPs

Specific Training Objective: _____

Attendee Roster: *(attach additional pages as necessary)*

No.	Name of Attendee	Company
1		
2		
3		
4		
5		
6		
7		
8		
9		
10		

Appendix B

Ted Stevens Anchorage International Airport
ANC Gate E21

Project No. AIP ?-??-????-????/52339

Construction Survey Requirements

Alaska
Department of
Transportation
and
Public Facilities

Alaska Construction Surveying Requirements (US Customary Units)

Alaska Construction Surveying Requirements (US Customary Units)

Table of Contents

1. Survey accuracy requirements

Third order survey

- ✓ Use a 1/5000 horizontal closure.
- ✓ Use an angle closure of $30\sqrt{N}$ seconds, where N equals the number of angles in the traverse.
- ✓ An Alaska-registered professional land surveyor must perform or supervise replacement of survey monuments (property, USGS, USC&GS, BLM, etc.) or establishment of monuments (including centerline).
- ✓ All monument work must comply with AS 34.65.040 and meet standards in the latest version of the Alaska Society of Professional Land Surveyors' *Standards of Practice Manual.*
- ✓ The allowable vertical error for misclosure is $e = 0.05\sqrt{M}$ e = maximum misclosure in feet, M = length of the level circuit in miles.

Table 1—Survey accuracy requirements (in feet)

	Stationing	HI	Closure	Horizontal Angle	Distance To center line	Grade
Additional cross sections	1.0	0.01	0.04	**	0.1	0.1
Benches		0.01	0.02			
Blue tops***	1.0	0.01	0.04		0.1	0.02
Bridges	*	0.01	0.02			0.01
Centerline	*			*		
Clearing & Grubbing	1.0				1.0	
Culverts	1.0	0.01	0.04	**	0.1	0.1
Curb & gutter	1.0	0.01	0.02		0.1	0.02
Grade stakes	1.0				0.1	0.1
Guardrail	1.0				0.1	
Manholes, catch basins & inlets	1.0	0.01	0.02		0.1	0.02
Monuments	*			*		
Red tops***	1.0	0.01	0.02		0.1	0.05
Riprap	1.0	0.1	0.04		1.0	0.1
Signs	1.0				0.1	
Slope stakes & RP's	1.0	0.01	0.04	**	0.1	0.1
Under drains & sewer	1.0	0.01	0.02		0.1	0.02

* Third order survey
**Right angle prism or transit angles from center line
*** Use blue tops for top of base course and red tops for the bottom of base course.

1. Survey frequency requirements

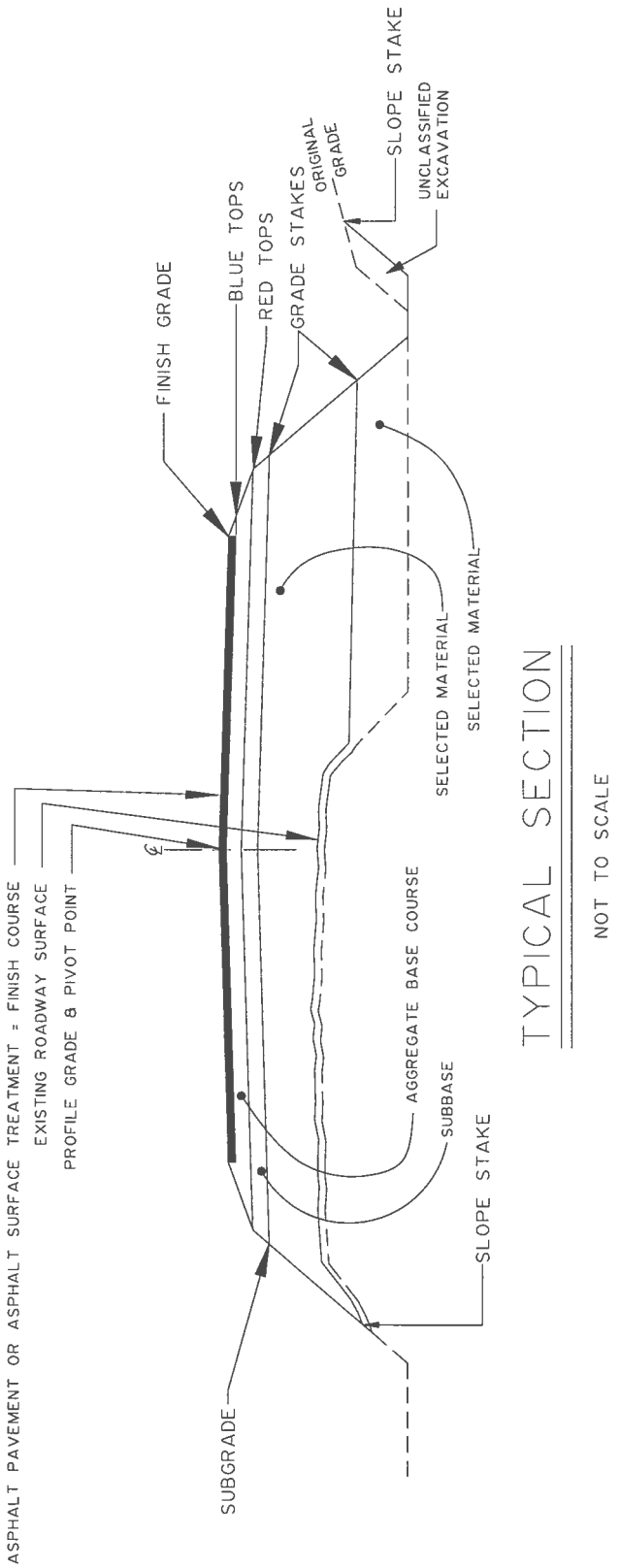
Table 2—Survey frequency requirements (in feet)

	Tangents	Curves	Interchange ramps	Stake each per plan	See special instructions on sample notes
Additional cross sections	*	*	*		
Bench marks					X
Blue tops	100	100**	25		X
Blue tops within 100 feet both sides of railroad track crossings and bridge approaches	25	25	25		X
Bridges				X	X
Center line	100	100**	25		
Clearing	100	100**	25		X
Culverts				X	X
Curb and gutter	25	25	25		
Grade stakes	100	100**	50		
Guardrail	25	25	25		
Manholes, catch basins & inlets				X	
Monuments				X	
Red tops	100	100**	25		X
Riprap	50	50	50		
Signs				X	
Slope stake / cross sections	100	100**	25		X
Under drains and sewers	50	25	25		

* Establish additional cross sections and slope stakes at all breaks in topography and where structures begin and end.

**Curves shall be staked on 50-foot stations if the curve is greater than six degrees.

2. Typical Section Drawing



TYPICAL SECTION

NOT TO SCALE

3. Survey point materials requirements

- ✓ These are minimum requirements; larger sizes may be necessary.
- ✓ Use only stakes with planed sides.

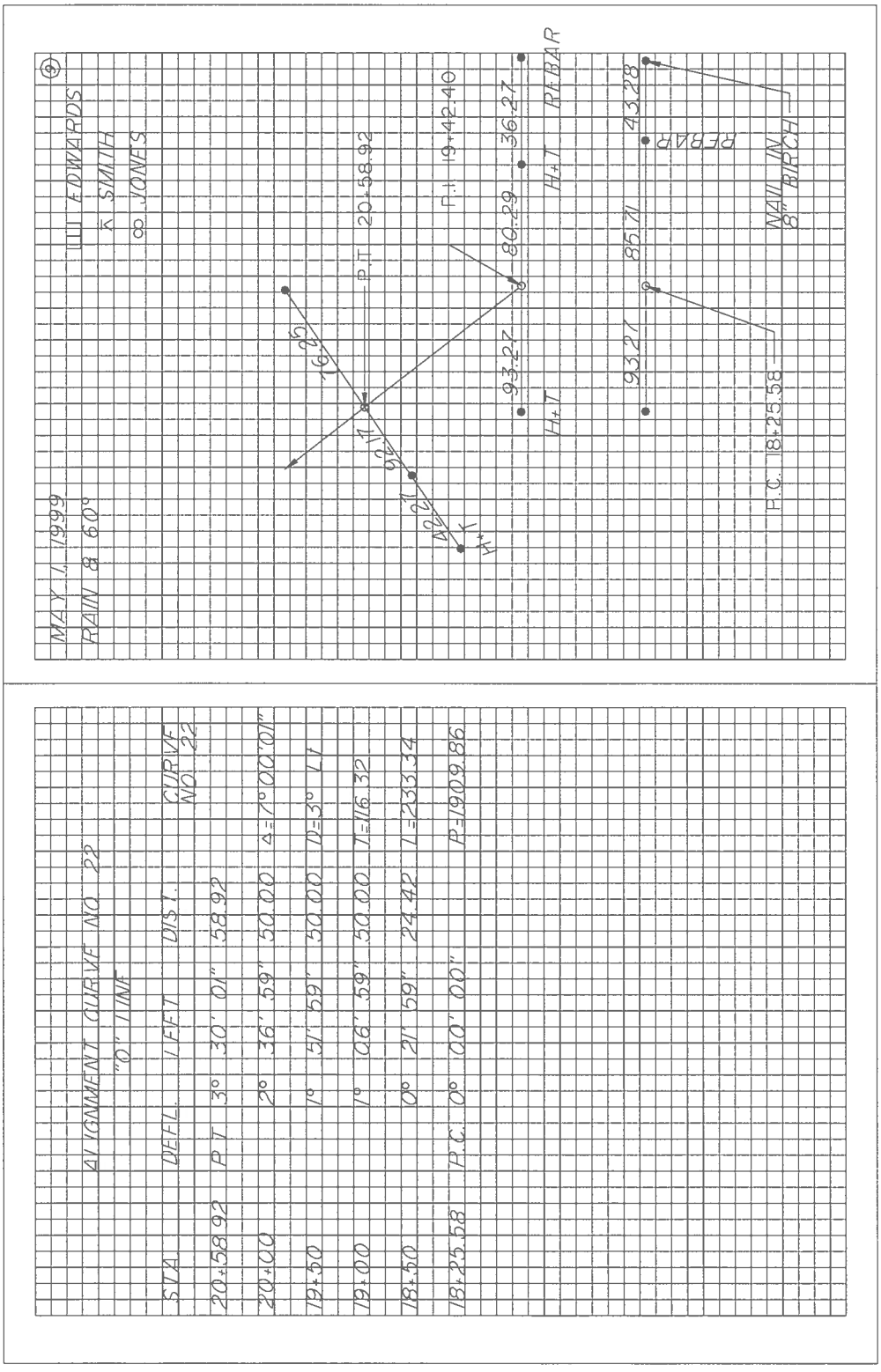
Table 3—Survey point materials requirements

	24" lath or whiskers	2" x 2" x 8" hub	2" x 2" x 12" hub	1" x 2" x 18" stake	1" x 2" x 24" stake	48" lath	Hub and tack	40d nail	60d nail	½" x 24" rebar
Benchmarks									X	
Blue tops	X	X								
Centerline P.C., P.T., P.O.T.			X	X			X *			X*
Centerline reference points			X	X			X *			X *
Centerline station				X				X		
Clearing						X				
Culvert stake			X		X	X				
Culvert stake references			X		X	X				
Curb and gutter			X		X		X			
Guardrail								X		
Major structures			X	X *	X *	X	X *			X *
Red tops	X	X								
Signs						X				
Slope stake					X	X				
Slope stake references			X		X	X				

* Optional depending on conditions, and to be determined by the Project Engineer.

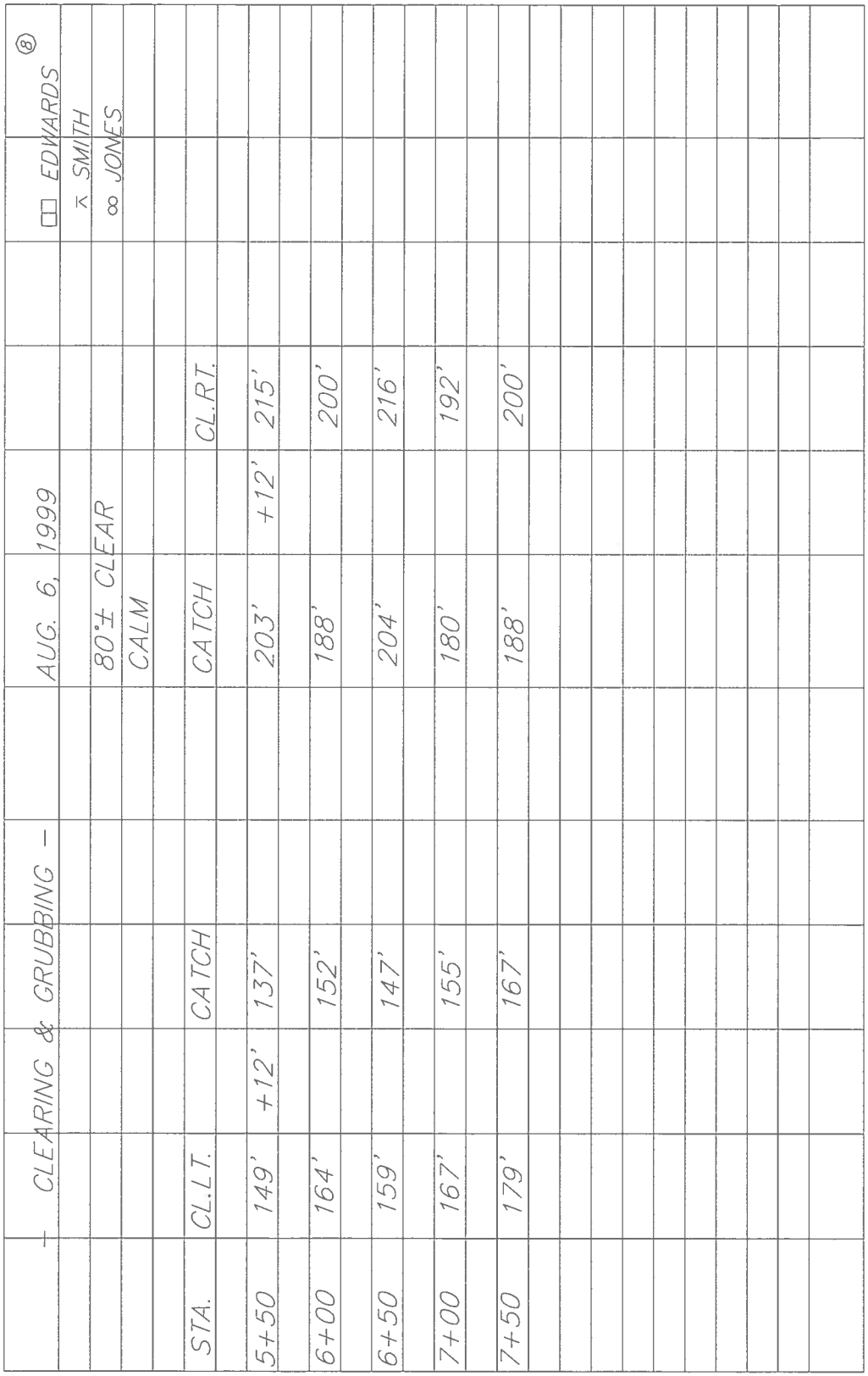
4. Typical alignment notes

- ✓ The Chief of Parties must prepare the alignment book before actual staking.
- ✓ Don't use swing ties for reference points.
- ✓ Use three point right angle ties, two to the right and one left, or vice versa.
- ✓ Reference P.C., P.I., P.T., and P.O.T.



5. Typical clearing notes

- ✓ Exclude areas not needing clearing.
- ✓ Draw a diagram as required to show unusual or confusing areas.



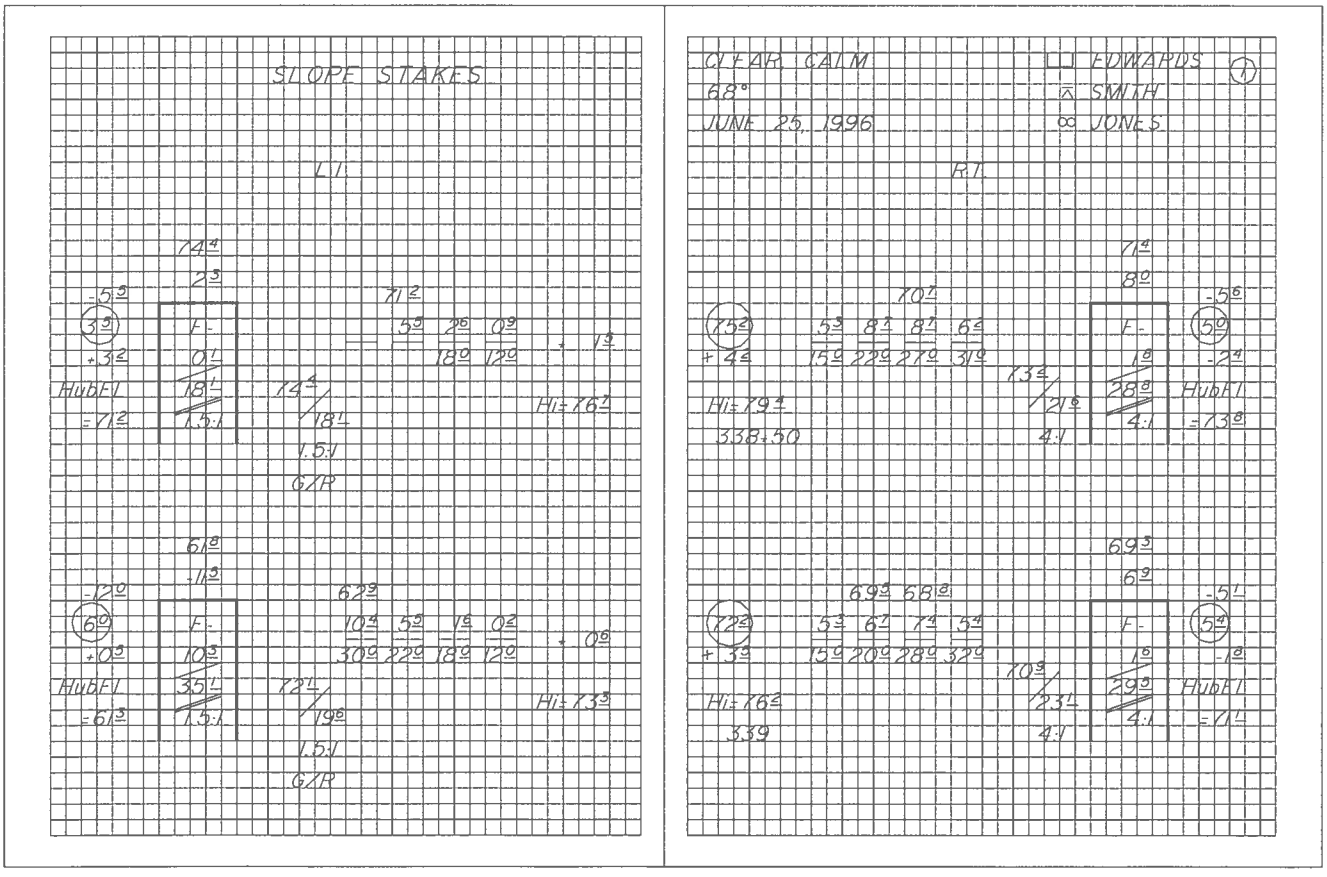
6. Typical level notes

- ✓ Balance back sights and foresights.
- ✓ Establish all benchmarks and take the centerline profile before doing any staking involving elevations.
- ✓ Don't set benchmarks in utility poles.
- ✓ Don't use side shots on benchmarks.
- ✓ Use the turn through method when establishing benchmarks.
- ✓ Re-check benchmarks after each major freeze/thaw cycle and/or any environmental event that may change the benchmark elevation.
- ✓ Do not use double rodding.
- ✓ Run separate level loops between all benchmarks.
- ✓ Set benchmarks in trees of at least six-inch diameter, unless approved by the Project Engineer.
- ✓ Correct errors in benchmark elevations so they will not affect the elevations of succeeding benchmarks.
- ✓ Consult with the Project Engineer before placing benchmarks in areas of permafrost or other unstable ground.
- ✓ Establish benchmarks at intervals and locations consistent with good engineering practice, and generally not more than 1000 feet.
- ✓ Completely describe benchmarks when establishing or re-establishing their elevation. Give centerline stationing, offset, benchmark projection, and observable benchmark characteristics. When checking into or out of benchmarks, note the book and page number that contains the most recent elevation establishment for that benchmark.
- ✓ Write the station on the top twelve inches facing centerline, with numerals a minimum of one inch in height.

STA.	BS+	HI	FS−		ELEV.	45°± CLEAR WARM CALM				⊼ ◫	(23) EDWARDS
						WILD 413579		3-23-90		⊕	SMITH
TBM #101											
6+72					161.309		Nail in	base of	12" Spruce		
								85' 10" LT.		6+72	
	3.877	165.186									
6+00			1.95		163.24						
6+25			2.32		162.87						
6+50			2.96		162.23						
T.P.			3.246		161.940						
	1.103	163.043									
6+75			2.31		160.73						
7+00			2.56		160.48						
T.P.			2.823		160.220						
	2.332	162.552									
							Nail in	base of	18" stump		
TBM #102			1.143		161.409		60' 4" RT		7+21	Elev.	161.413

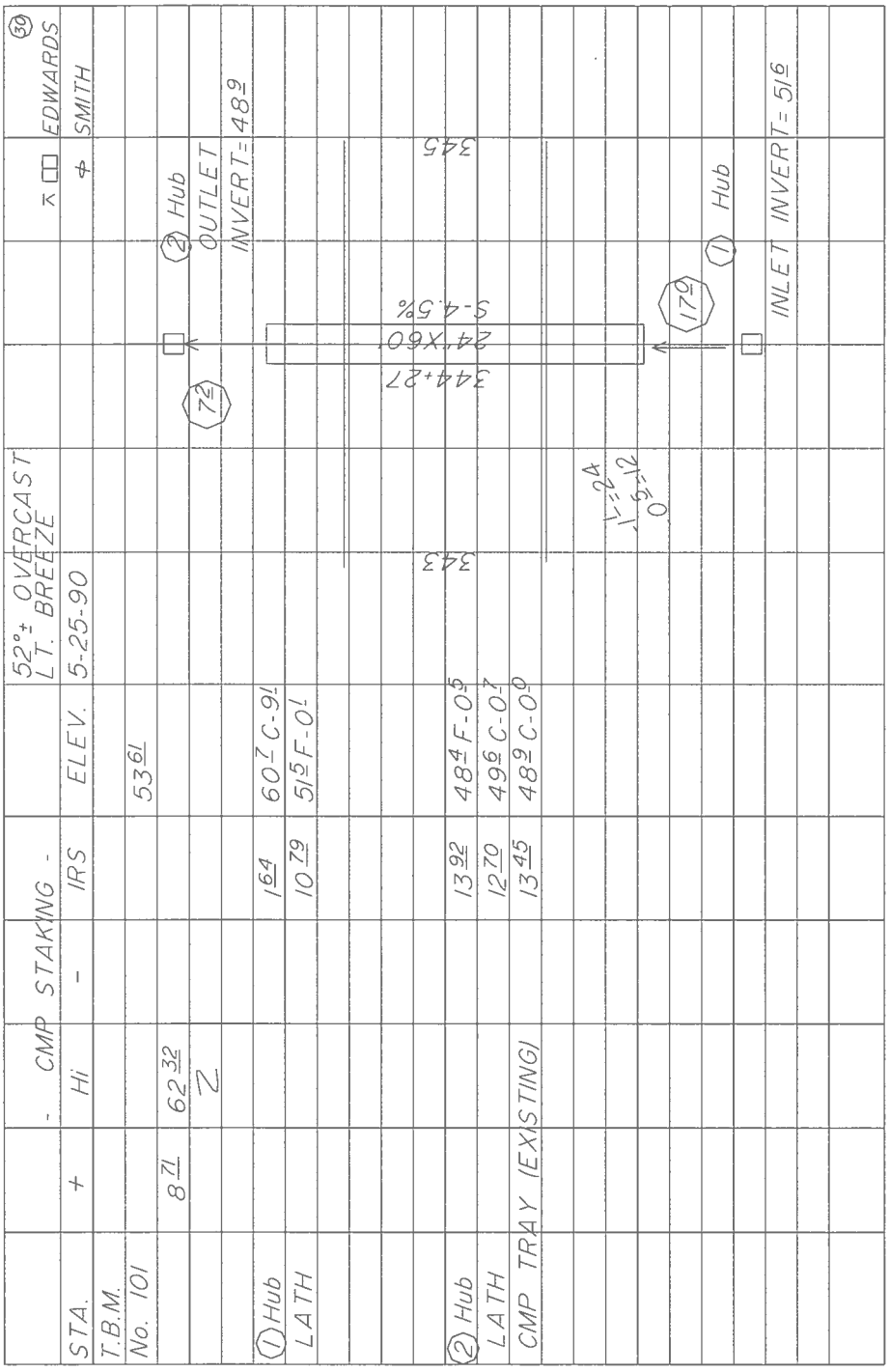
7. Typical slope stake notes

- ✓ Enter the station, elevations, shoulder distance or ditch distances, and slope in the slope stake book before staking begins.
- ✓ In areas where slides or overbreak are anticipated, extend the sections beyond the construction limits.
- ✓ Slope-stake each section that is cross-sectioned.
- ✓ Final re-cross sections are required where there are overbreaks, undercuts, etc. Re-cross section book and page numbers shall be noted on the original cross-section and slope staking page for the relevant stations.
- ✓ Use a hand level only for one turn up or down from the instrument.
- ✓ Clearly note hand level turns.
- ✓ Use a reference point that is 10-20 feet beyond the slope stake.
- ✓ The reference point must show the cut or fill to the slope stake and must include the slope stake information.
- ✓ Slope stake all abrupt changes in typical sections.
- ✓ Position all laths to face centerline.
- ✓ Include at least the following information on the stake: (1) where to begin the cut or fill (2) the slope ratio (3) the depth of cut or height of fill and (4) the station.

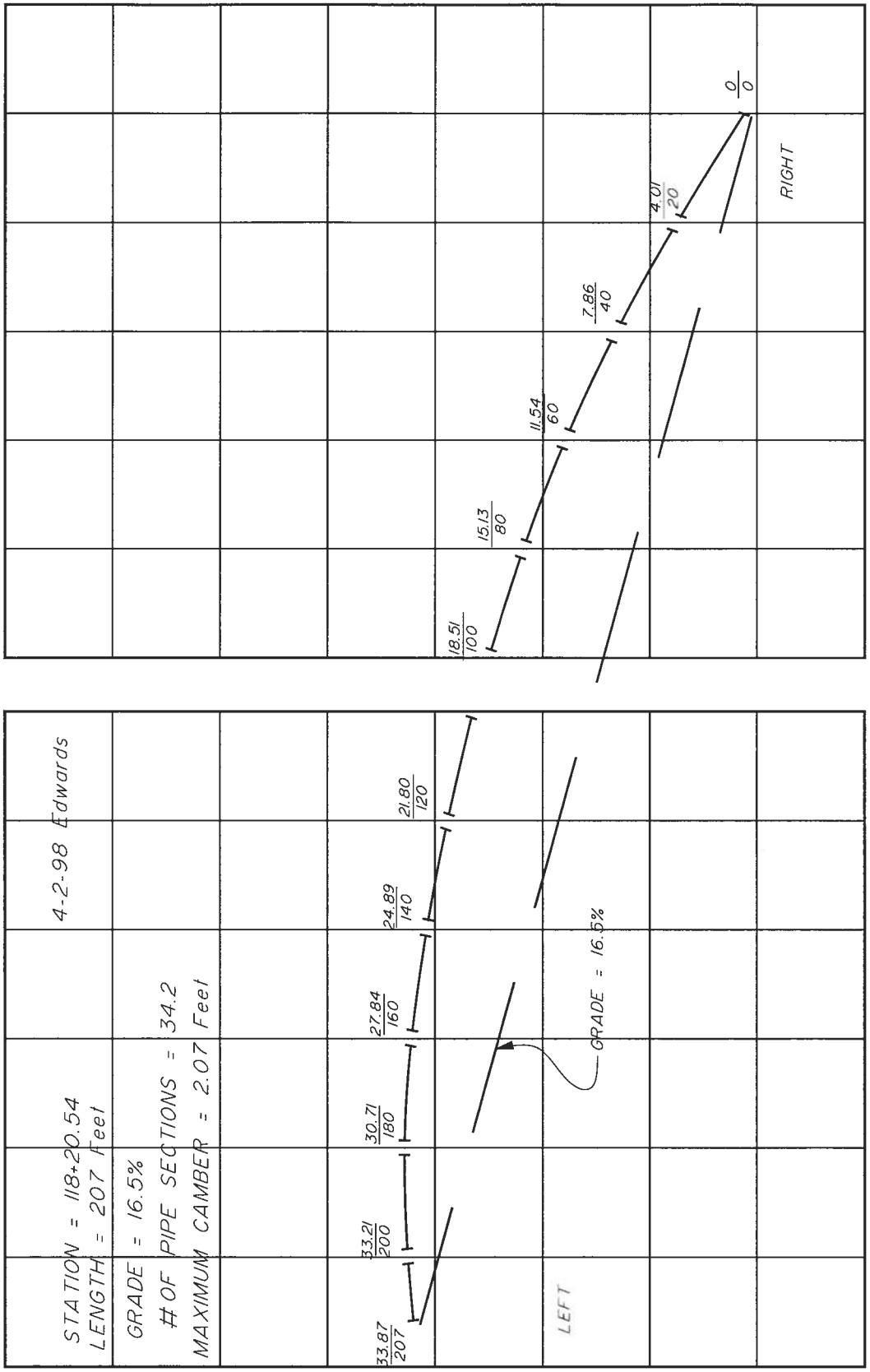


8. Typical culvert notes

- ✓ Show at least the following information on culvert stakes
  - station
  - size
  - length
  - type of pipe (e.g., 24" x 80' CMP)
  - cut or fill from top of hub to inlet & outlet
  - skew angle
  - horizontal distance from hub to end of pipe
  - gradient of pipe
  - drop of pipe
- ✓ Ensure that all culverts have a minimum camber equal to 1% of the length of the pipe, unless the Project Engineer directs otherwise.
- ✓ Develop a culvert camber diagram showing each section of pipe and its elevation and offset.

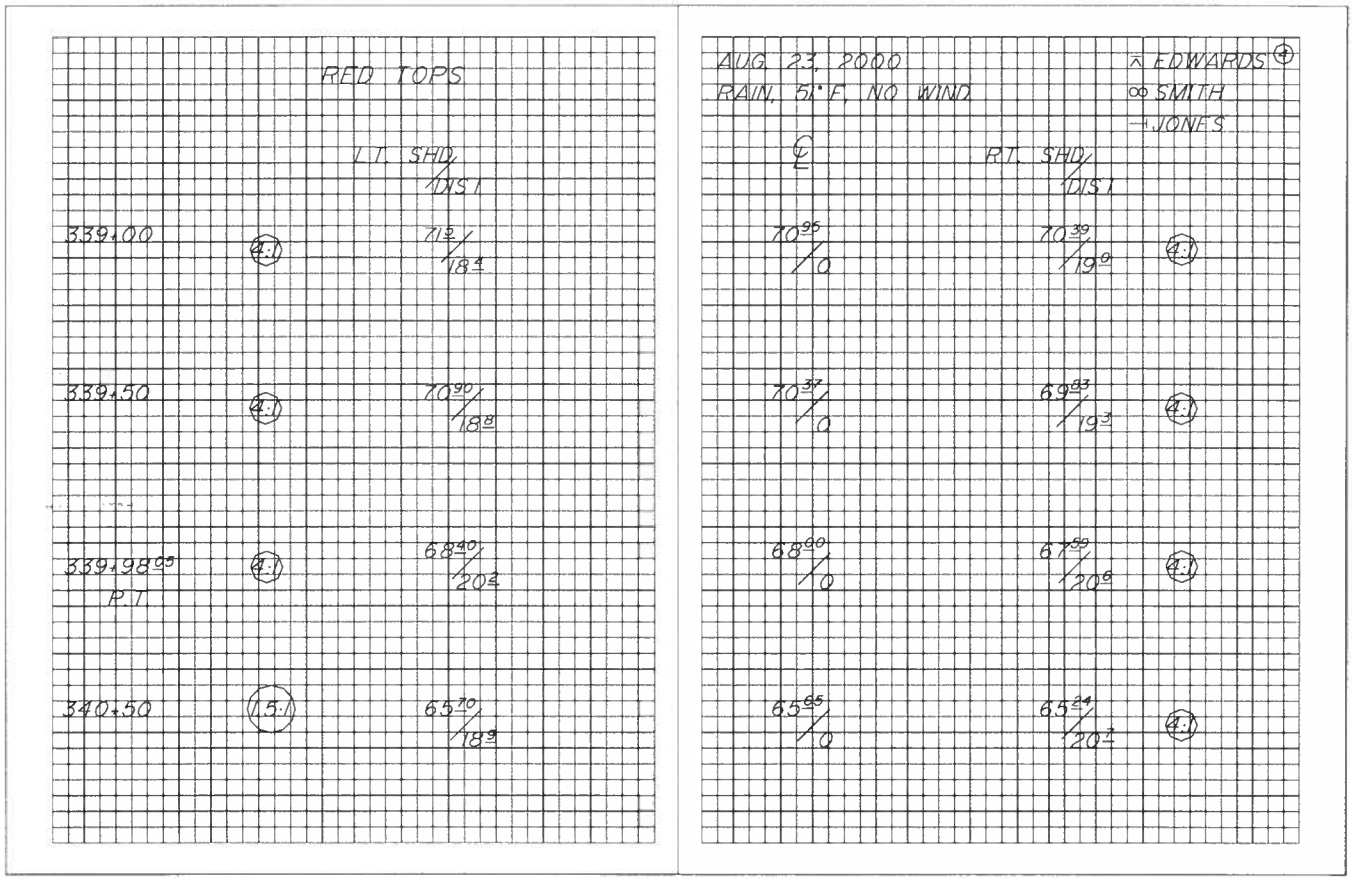


9. Typical culvert camber diagram



10. Typical blue or red tops and grade stake notes

- ✓ Place blue and red tops at each break in typical section and on centerline.
- ✓ Use blue tops for top of base course.
- ✓ Use red tops for the bottom of the base course.
- ✓ Evenly space red/blue tops at and between crown section break points with a maximum spacing of 25 feet between red/blue tops.
- ✓ Establish horizontal control from centerline references and vertical control from benchmarks.
- ✓ Place blue tops at the same interval as slope stakes.
- ✓ Stake all curve transitions.



Appendix C

Ted Stevens Anchorage International Airport
ANC Gate E21

Project No. AIP ?-??-????-????/52339

Materials Sampling and Testing Frequency

Table IX, Materials, Sampling & Testing Frequency, Airports in US Customary Units

Material	Type of Sample	Sample Size	Type of Tests	Frequency	Remarks
Excavation	Acceptance	(5)	Gradation, P.I., Moisture (or visual description if organic)	1 per 5,000 C.Y. waste or undesignated waste cut	Number consecutively EX-W-1. No need to test, if waste is designated on plans.
Embankment (4)	Acceptance	(5)	Standard Density	As required by change in material	Number consecutively BM-SD-1 or EX-SD-1
			Field Density (1)	1 per 1,500 C.Y. or 1 per 3,000 Tons	Number consecutively BM-D-1 or EX-D-1.
			Gradation, P.I., and Deleterious (visual)	1 per 5,000 C.Y. or 1 per 10,000 Tons (4)	Number consecutively BM-G-1 or EX-G-1.
	Independent Assurance	(5)	Standard Density (2)	1 per source	Use numbers that correspond to acceptance samples. Include field test results with sample.
			Field Density (1)	1 per 15,000 C.Y. or 1 per 30,000 Tons	
			Gradation, P.I., and Deleterious (visual)	1 per 50,000 C.Y. or 1 per 100,000 Tons	
Bedding and Backfill for Structures (Drainage Items, Ducts, Conduits, etc.)	Acceptance	(5)	Standard Density	As required by change in material	Use numbers that correspond to acceptance samples. Include field test results with sample.
			Field Density (1)	(3)	
			Gradation, P.I., and Deleterious (visual)	1 per source or as required by change in material	

General: Independent Assurance **(IA)** Testing may be waived when Acceptance Testing is performed in DOT&PF Regional Laboratories accredited in the specified test method. When DOT&PF Regional Laboratories perform Acceptance Testing, they may also perform the IA Testing if using different personnel and equipment than was used for the Acceptance Testing.

(1) If material is impractical to test for field density, document quantity and/or area by reporting percent oversize and compactive effort used on a proper density acceptance form. IA Testing is not required when material (as shown by gradation testing) is Too Coarse to Test **(TCTT)**.
(2) Required when Standard Density test is run in the field.
(3) One density per structure (pipe, conduit, manhole, catch basin, inlet, utility vault, etc.), with a minimum of one density per 100 lineal feet of trench (for pipes, conduits, buried cables, etc.) installed. Perform densities within 18 inches of the structure or outside diameter of the pipe.
(4) P.I. tests shall be performed on the first five samples at the start of production from any source. If these tests indicate the material to be non-plastic, additional tests need only be performed on the IA samples. The Regional Quality Assurance Engineer **(RQE)** or Regional Materials Engineer **(RME)** may reduce the number of tests required if the source is known to have no value for liquid limit and be non-plastic.
(5) See the specified test method for minimum sample size.

Material	Type of Sample	Sample Size	Type of Tests	Frequency	Remarks
Subbase Course	Quality	150 lbs.	L.A. Wear, Degradation	1 per source prior to use	Allow minimum of 14 days for testing and transport. Number consecutively Q-SB-1
	Acceptance	(6)	Standard Density	1 per source and as required based on changes in material	Number consecutively SB-SD-1
			Field Density (1)	1 per 1,000 C.Y. or 1 per 2,000 Tons	Number consecutively SB-D-1
			Gradation, LL & P.I., and Deleterious	1 per 2,500 C.Y. or 1 per 5,000 Tons (3)	Number consecutively SB-G-1
	Independent Assurance	(6)	Standard Density (2)	1 per source	Use numbers that correspond to acceptance samples. Include field test results with sample.
			Field Density (1)	1 per 10,000 C.Y. or 1 per 20,000 Tons	
			Gradation, LL & P.I., and Deleterious	1 per 25,000 C.Y. or 1 per 50,000 Tons	
Aggregate Surface Course and Crushed Aggregate Base Course	Quality	150 lbs.	L.A. Wear, Degradation, Soundness	1 per source prior to use	Allow minimum of 14 days for testing and transport. Number consecutively Q-SC-1 or Q-BC-1
	Acceptance	(6)	Standard Density	1 per source and as required based on changes in material	Number consecutively SC-SD-1 or BC-SD-1
			Field Density	1 per 500 C.Y. or 1 per 1,000 Tons	Number consecutively SC-D-1 or BC-D-1
			Gradation, LL & P.I., SE, Fracture, Deleterious	1 per 1,000 C.Y. or 1 per 2,000 Tons (3) (4) (5)	Number consecutively SC-G-1 or BC-G-1
	Independent Assurance	(6)	Standard Density (2)	1 per source	Use numbers that correspond to acceptance samples. Include field test results with sample.
			Field Density	1 per 5,000 C.Y. or 1 per 10,000 Tons	
			Gradation, LL & P.I., SE, Fracture, Deleterious	1 per 10,000 C.Y. or 1 per 20,000 Tons	

(1) If material is impractical to test for field density, document quantity and/or area by reporting percent oversize and compactive effort used on a proper density acceptance form. IA testing is not required when material (as shown by gradation testing) is TCTT.
(2) Required when Standard Density is run in the field.
(3) P.I. tests shall be performed on the first five samples at the start of production from any source. If these tests indicate the material to be non-plastic, additional tests need only be performed on the IA samples. The RQE or RME may reduce the number of tests required if the source is known to have no value for liquid limit and be non-plastic.
(4) Fracture: If the first ten tests indicate the fracture to be 5% or more above specification, additional tests need only be performed on the IA samples.
(5) SE: If the first five tests indicate the material meets specification for Sand Equivalent **(SE)**, additional tests need only be performed on the IA samples. The SE test is not required for Aggregate Surface Course.
(6) See the specified test method for minimum sample size.

Material	Type of Sample	Sample Size	Type of Tests	Frequency	Remarks
Plant Hot Mix Asphalt and Asphalt Treated Base Course	Quality	150 lbs. Aggregate	L.A. Wear, Degradation, Soundness	1 per source prior to use	Allow 25 days for testing and transport
	Mix Design	500 lbs. (7) Aggregate 5 one gallon cans of AC 1 pint of Anti Strip	Mix Design (1) (2) Sand Equivalent (SE), Flat & Elongated (F&E), Fracture	1 per source and as required by changes in material	Allow 15 days or contract specified time for mix design and testing after receiving contractor's proposed gradation. Contact the Regional Materials Laboratory to see if submitting the asphalt cement or anti-strip is necessary.
	Acceptance	(1) (8)	MSG (Maximum Specific Gravity)	1 per Lot (1) (9)	From Mix Design for the first lot and then from the first sublot of each additional lot.
			Mat Density ,Gradation, Oil Content, LL & P.I., Fracture, F&E, SE, Deleterious, Thickness	1 per 500 Ton sublot (3) (4) (5) (9)	Ross Count (AASHTO T 195, Coating Test) as required by RQE or RME.
			Joint Density	(1) (9)	Top Lift (1)
	Independent Assurance	(8)	MSG	1 per project minimum	Required when MSG is run in the field.
			Mat Density, Gradation, Oil Content, LL & P.I., Fracture, F&E, SE	1 per 5,000 Tons	Use numbers that correspond to acceptance samples. Include field test Results with sample.
	Information	30 lbs.	3-Marshall Biscuits or 2-Gyratory samples	1 per Mix Design Minimum (9)	Compare results to Mix Design
Asphalt Cement	Quality	See Remarks	(1)	1 per each grade and source prior to use	Manufacturer's certification required
	Acceptance	Three 1- Quart Cans		1 per 50,000 gals. or 1 per 200 Tons	Sampled on project. Test for anti-strip if required by RQE or RME

(1) Refer to project specifications.
(2) Recommendations regarding anti-strip requirements must be determined for each mix design.
(3) P.I. tests shall be performed on the first five samples at the start of production from any source. If these tests indicate the material to be non-plastic, additional tests need only be performed on the IA samples. The RQE or RME may reduce the number of tests required if the source is known to have no value for liquid limit and be non-plastic.
(4) Fracture: If the first ten tests indicate the fracture to be 5% or more above spec, additional tests need only be performed on the IA samples.
(5) SE: If the first five tests indicate the material meets specification for Sand Equivalent (SE), additional tests need only be performed on the IA samples.
(6) Flat and Elongated (F&E) tests shall be performed on the first five samples from any source. For known sources, the RQE or RME may waive this requirement.
(7) For multiple stockpiles, proportion each stockpile sample to the proposed Job Mix Design blend ratio.
(8) See the specified test method for minimum sample size.
(9) May not be applicable to Asphalt Treated Base Course. Refer to project specifications.

Table IX, Materials Sampling & Testing Frequency for Airports in US Customary Units

Material	Type of Sample	Sample Size	Type of Tests	Frequency	Remarks
Liquid Asphalt for: a. Prime Coat b. Tack Coat c. Seal Coats d. Asphalt Surface Treatment	Quality	See Remarks	Type and Grading	1 per each grade and source prior to use	Manufacturer's certification required
	Acceptance	1 Gallon in plastic jug	(1)	1 per 50,000 gallons or 1 per 200 Tons	Sample must be tested by Lab that did not test material for Quality. Material sampled prior to dilution
Aggregate for Seal Coats and Surface Treatments	Quality	150 lbs. Aggregate	L.A. Wear, Soundness, Degradation	1 per source prior to use	Allow 25 days for testing and transport Test for anti-strip if required by RQE or RME
	Acceptance	(4)	Gradation, Fracture, Flat & Elongated (F&E), Deleterious (visual)	1 per 500 Tons (2) (3)	May be taken from stockpile or production
	Independent Assurance		Gradation, Fracture, F&E, Deleterious (visual)	1 per 5,000 Tons	
Portland Cement Concrete (a) Cement (b) Water (c) (CA) Coarse Aggregate (d) (FA) Fine Aggregate	Quality (a) Cement (b) Water (c) CA (d) FA	(a) Two 1- gallon cans	See Remarks	1 per shipment (5)	Allow 40 days for testing and transport. Manufacturer's certification required.
		(b) ½ gal. in glass jar	See remarks	1 per source	Allow 20 days for testing or potable water accepted by Project Engineer
		(c) 100 lbs.	Deleterious Substances, L.A. Wear, Soundness	1 per source	Allow 25 days for testing and transport
		(d) 25 lbs.	Deleterious Substances, Soundness	1 per source	Allow 25 days for testing and transport
Portland Cement Concrete (a) Cement (b) Water (c) Coarse Aggregate (d) Fine Aggregate (e) Admixtures	Mix Design Submittal (1) (6)	(a) 1 sack (b) None (c) 330 lbs. (d) 110 lbs. (e) 1 qt. each	Mix Design Verification (6)	1 per source prior to use	Manufacturer's certifications and aggregate test reports required. For verification of Contractor-furnished mix design, allow 40 days for testing and transport.

(1) Refer to project specifications.
(2) Fracture: If the first ten tests indicate the fracture to be 5% or more above specification, additional tests need only be performed on the IA samples.
(3) Flat and Elongated (F&E) tests shall be performed on the first five samples from any source. For known sources, the RQE or RME may waive this requirement.
(4) See the specified test method for minimum sample size.
(5) Cement stored in silos or bins over six months, or in bags over two months, may require re-testing, see project specifications.
(6) When 4x8 cylinders are used for strength data, an average of 4 is required.

Material	Type of Sample	Sample Size	Type of Tests	Frequency	Remarks
Concrete Continued:					
Coarse Aggregate	Acceptance	(4)	Gradation, Deleterious (visual), Flat & Elongated (6)	1 per 200 C.Y. (6)	Number consecutively CA-G-1
Fine Aggregate			Gradation, Deleterious (visual), Fineness Modulus	1 per 200 C.Y.	Number consecutively FA-G-1
Mix		As required by test method	Slump, % Air, Cement factor, Water/Cement Ratio, Unit Weight/Yield	1 per ½ days pour (1) or 1 per 200 C.Y.	(2)
		Cylinders or beams	Compressive strength or Flexural strength (3)	1 per ½ days pour (1) or 1 per 200 C.Y.	Mold two (6x12) or three (4x8) cylinders. Test at 28 days. (2) (5)
	Information	Cylinders or beams	Compressive strength or Flexural strength (3)	As required (e.g. for 7 day break)	Mold two (6x12) or three (4x8) cylinders "As Required" for strength data.
Coarse Aggregate	Independent Assurance	(4)	Gradation, Deleterious, Flat & Elongated (6)	1 per 2,000 C.Y. with minimum of 1 per project if over 100 C.Y. is placed	Mold two (6x12) or three (4x8) Cylinders if acceptance cylinders are not tested in Regional Lab. Numbers correspond to acceptance samples. Include field test results with sample.
Fine Aggregate			Gradation, Deleterious (visual), Fineness Modulus		
Mix		As required by test method	Slump, % Air, Cement factor, Water/Cement Ratio, Unit Weight	1 per 2,000 C.Y.	
		Cylinders or beams	Compressive strength or Flexural strength (3)	1 per 2,000 C.Y.	

(1) Half day's pour considered to be 6 hours or less.
(2) Commercial sources, which are periodically inspected, do not have to be tested if day's total quantity of concrete placement is less than 5 C.Y. as determined by the Project Engineer. Placement reports summarizing all minor pours will be completed.
(3) Only required when strength criteria is included for the item.
(4) See the specified test method for minimum sample size.
(5) Non-structural or minor concrete construction, 1 set minimum per project is recommended.
(6) Refer to project specifications. Flat and Elongated (F&E) tests shall be performed on the first five samples from any source. For known sources, the RQE or RME may waive this requirement.

Material	Type of Sample	Sample Size	Type of Tests	Frequency	Remarks
Misc. Hardware	Quality	(1)		1 per pay item or assembly, min.	Approved by designated authority; reference MCL.
Concrete Reinforcing Steel	Quality	(2)		1 for each type, grade and size in a shipment	Approved by designated authority; reference MCL.
Joint Sealer, Joint Filler, and Curing Materials for Concrete	Quality	1 Quart for each liquid (see remarks)	(1) See remarks	1 per type	Project Engineer documentation if on QPL. If not on QPL, manufacturer's certification or sample for testing.
Porous Backfill	Acceptance	(3)	Gradation and Deleterious (visual)	1 per source or as required by change in material	Number consecutively PB-G-1
Topsoil	Quality	15 lbs.	Organic content, Gradation, pH	1 per source prior to use	Allow 15 days for testing and transport
	Acceptance	(3)	Gradation	1 per 15,000 square yards or 1 per 2,500 cubic yards	Number consecutively TS-G-1
Lighting Equipment	Quality and Acceptance	Within 30 days following award of the contract, the contractor shall submit to the Project Engineer for approval a complete list of material and equipment that is proposed to be used for this item. The data shall include catalog cuts, diagrams, test reports, manufacturers' certifications, etc. The above data shall be submitted in eight sets. Any proposed deviation from the plans shall also be submitted.			

(1) Certificates of Compliance per Specifications GCP 60
(2) Mill Test Reports to include heat numbers, fabrication date, physical and chemical properties.
(3) See the specified test method for minimum sample size.

Minor Quantities

A. Portland Cement Concrete. Concrete for the following items may be accepted on the basis of an approved mix design and placement reports documenting batch information and pour location, time, and quantity. Under this system arrangements should be made for the producer to state on the delivery ticket accompanying each load of concrete, the class of concrete being furnished, the weights of cement, aggregates and water used in the batch, and the time of batching. Use only State-tested aggregates and cement, or supplier certified cement, approved by the RQE, RME, or Statewide Materials Engineer (SME). Each pour must be documented on a Concrete Placement Report.

1. Sidewalks - not to exceed 150 square yards per day.
2. Curb and gutter, not to exceed approximately 250 lineal feet per day
3. Slope paving and headers.
4. Paved Ditches and flumes.
5. Manhole bases, Catch Basins, Inlets and Inspection Holes.
6. Small culvert headwalls and Miscellaneous Drainage Structures.
7. Fence Post Footings.
8. Sign Post footings.
9. Cable Markers
10. Electrical Duct encasement and markers
11. Electrical vault, light or signal boxes

B. Small Quantities of Miscellaneous Materials. The primary documentation of delivery and placement may be the Project Materials Report.

1. Aggregates—not to exceed 500 Tons per item per project.
2. Asphalt/Aggregate Mixtures—not to exceed 1,500 Tons per approved mix design.
3. Bituminous Material—not to exceed 85 Tons per project.
4. Paint—not to exceed 20 Gallons per project. Acceptance to be based on weights and analysis on the container label.
5. Masonry Items—Subject to checking of nominal size and visual inspection. Not to exceed 100 pieces.
6. Plain concrete or clay pipe— not to exceed100 lineal feet.
7. Topsoil—not to exceed 600 square yards.

Appendix D

Ted Stevens Anchorage International Airport
ANC Gate E21

Project No. AIP ?-??-????-????/52339

Safety Plan

Ted Stevens Anchorage International Airport (ANC)
ANC Gate E21

Project No. 52339
AIP No. ?-??-???? -????

SAFETY PLAN

I. INTRODUCTION

The following is the Safety Plan to be used during construction activity at Ted Stevens Anchorage International Airport..

The purpose of the plan is to present information needed for operation of the airport and construction so that there is a minimum of disruption to operations of air and ground traffic and so the construction project can be completed in the shortest time possible.

Work to be accomplished on this project includes the following:

* Provide four (4) new card reader controlled access gates across South Airpark Drive for street vehicles entering and exiting the Air Operations Area (AOA) at Gate E21;
* Provide three (3) new CCTV cameras;
* Construct new roadway drainage ditches;
* Resurface South Aircraft Drive from the E21 Gate to the approach radius of the North Tug Road.

II. CONTACTS AND NOTIFICATIONS

A. Chain of Notification

The ADOT&PF Project Engineer will be the central point of contact between the Contractor, ANC, Lake Hood Seaplane Base, Airport Operations and the FAA.

TBD, P.E.
Project Manager
Telephone (907)
FAX (907)

TBD, Project Engineer
Telephone (907)
FAX (907)

The following person will be the point of contact with the FAA in matters relating to the FAA facilities at ANC and Lake Hood Seaplane Base:

Gregory Tatum, (907)271-6783

B. Issuance of Notices to Airmen (NOTAM's)

The Airport Operations Center will issue NOTAM's for the airport. The following person, or his designated representative, has authority to issue NOTAM's and shall be the point of contact for required issuance's, updates and cancellations:

Tim Lufkin, Operations Construction Coordinator
Telephone (907) 266-2615
FAX (907) 266-2646

C. Radio Frequencies

Air Traffic Control Tower (ATCT) – 118.3 MHz
Ground Control (GC) – 121.9 MHz

D. Emergency Services

Airport Police, Rescue and Fire Fighting – 266-2411

III. CONSTRUCTION ACTIVITIES

A. Scheduling of Work

Work is expected to begin in June of 2011 and be completed by September 1, 2011.

B. Haul Routes

Haul routes and staging areas for equipment and materials are shown in the project plans. Other haul routes must be coordinated and approved by the ADOT&PF Project Engineer.

C. Location of Flaggers

Flaggers will be utilized as following:

1. Where construction activity is being conducted within 200' of an open runway.
2. Where construction activity is being conducted in close proximity to operating aircraft and the Engineer determines that a flagger is needed.
3. Where construction activity requires one-lane traffic through the guard post area.

Generally, flaggers will not be positioned at taxiway crossings and along haul routes unless safety concerns occur during construction.

Flaggers stationed within 200' of an open runway will be equipped with radio communication on the CTAF frequency.

D. Utility Line Location

The Contractor will request locates from all the utilities having facilities in the project area. Their telephone numbers are as follows:

Locate Call Center (Statewide)	1-800-478-3121
Anchorage Area	278-3121
FAA	(907)271-6783

There may be FAA cables and equipment that are not shown on the construction drawings. The Contractor will contact the FAA for locates prior to excavation and/or stockpiling as appropriate.

Where the Contractor's operations meet any of the following conditions, the Contractor will advise the owning Utility in writing at least 24 hours in advance of the work.

1. Operations anticipated to be within 10 feet of an overhead electrical line.
2. Operations anticipated to be within three feet of an underground electrical, gas, water or sewer according to locates provided by the owning utility.
3. Operations requiring use of equipment which is capable of coming within 10 feet of an overhead electrical line.

The notice will indicate the location and duration of the work to be performed.

The Contractor will provide an attendant whose sole responsibility is to perform as a safety observer while equipment is operating such that any part is capable of reaching within 15 feet of an overhead line or the equipment is digging or drilling within 3 foot of a buried utility line.

All existing utilities in service at the start of the project will remain in service. The Contractor will be required to repair any damage caused to utilities by the Contractor's operations at no cost to the Department.

There may be various utility appurtenances located within the project limits. The Contractor is required to cooperate with the utilities and coordinate his work schedule to allow them access to the project for their adjustments and/or relocations.

The Contractor is required to work around aboveground and underground utility facilities, either existing or relocated, throughout the project unless advised by the utility that the facility is abandoned in place.

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

E. Borrow Pit Location on Airport Property

There are no borrow pits on ANC property.

F. Marking and Lighting of Excavations, Open Trenches and Other Hazardous Areas

Open excavations, trenches and hazardous areas will be marked with barricades visible at night or other times of reduced visibility as determined by Airport Operations. Barricades will be placed along the Project Limits where aircraft are operating or around other portions of the work that may be deemed hazardous by the Engineer. Barricades will be placed to protect portions of the project site left open for baggage-handling equipment or other aircraft service vehicles and personnel. Taxiway lights removed along active movement areas shall be replaced temporarily with lighted barricades as shown in the plans and described below.

Barricades will be 12" x 12" by 8' timbers, spaced approximately 8' apart. Each barricade will be painted for high visibility and marked with both a flag and flashing light.

IV. AIR OPERATIONS AREA

A. Restriction of Aircraft Activity and Vehicular Access into the Air Operation Areas

Construction activity will occur on South Aircraft Drive around and within the existing E21 Guard Post. This will require lane closures along South Aircraft Drive. The following criteria will be followed in construction activities.

* Vehicular access to the Guard Post must remain active at all times;
* Personnel operating the E21 Guard Post must have unfettered access at all times, both to the work site and within the Guard Post;
* Construction activity will occur within the Guard Post. Existing equipment within the Post (card readers, etc.) must remain operational at all times;
* The use of one lane traffic with flaggers will be allowed with the stipulation that vehicle flow will pass next to the existing Guard Post;
* At no time will aircraft within the AOA be delayed due to construction activities without approval from the Engineer.

B. Runway and Taxiway Safety Areas

The safety area for Runway 7L/25R is 500' wide and 1000' beyond the end of each runway. The Taxiway K safety area width is 262'. No equipment will be allowed to operate within the runway or taxiway safety area.

C. Runways and Taxiways Object Free Areas

The object free area for Runway &I/25R is 800' and 386' for Taxiway K. No equipment will be allowed to operate within the runway or taxiway object free area.

D. Aircraft Operations in the Vicinity of Work Sites

The Contractor will be required to give way to all taxing aircraft.

V. SECURITY PROGRAM

More detailed security information and requirements are included in Section 70-21 of the contract documents.

The contractor is responsible for preventing unauthorized access to the AOA by way of the construction site and is responsible for maintaining, at a minimum, vehicular access to the E21 Guard Post.. This also includes maintaining ANC perimeter gates and doors in either a locked condition or attended by appropriately badged persons who ensure that only authorized personnel or vehicles are admitted through them into the AOA. Those persons designated to control access points into the AOA shall be instructed by Airport Operations in the proper procedures of identification requirements for persons and vehicles. These procedures are specific to each contract and may change during different phases of the

contract. The Contractor will provide these persons with the capability to communicate directly with Airport Operations and/or Airport Dispatch.

Any opening of the AOA security fence requires prior coordination with Airport Operations. Contact Airport Operations at 266-2600. Work on the perimeter fence required by this job, and the temporary removal of and then reinstatement of areas to the AOA, will require the Contractor to implement specific security measures that will be communicated to the Contractor by Airport Operations. The contractor will need to install security fence which shall be inspected and approved by the Engineer prior to the removal for any existing perimeter fence. The contractor shall remove all wildlife and FOD from the area between the new security fence and the existing perimeter fence to the satisfaction of the Engineer prior to removal of the existing perimeter fence.

The Transportation Security Administration (TSA) requires ANC to control access and prevent unauthorized persons from entering Air Operations Areas (AOA). In compliance with this requirement, the airport operator has established procedures to authorize or deny access to the AOA and to identify and control persons while in these areas.

The contractor shall be liable for any fines levied against the State, by the Transportation Security Administration (TSA), resulting from actions by the contractor, or those whom the contractor is responsible for, that cause a failure in the maintaining of security in the area of construction, to include any points of entry into the Air Operations Area (AOA) utilized for the construction project. Failure to maintain security will also include failure to abide by the airport badge identification program or other requirements pertaining to the security of the AOA.

The Airport Identification Badge, developed and adopted by ANC, is the only identification system recognized as authority to enter the Security Identification Display Area (SIDA) and Sterile Areas of the airport. Only persons identified by this system have permitted access. All Airport Identification Badges must be worn on the outermost garment above the waist.

An individually - assigned Airport Identification Badge will be used by each Contractor employee granted access to the airport SIDA, Sterile Area, or other airport restricted areas for construction projects. It does not grant access to aircraft and is valid only for the area in which their construction is actually taking place and the approved routes to and from that area.

In lieu of an Airport Identification Badge, for those employees working in the same area together, there needs to be only one employee with an Airport Identification Badge, with Escort Authorization, while the other employees in the area may be issued a visitor badge. Note: there must be an Airport I.D. Badged employee monitoring them at all times. This person must have Escort Authority indicated on their badge. A person using a visitor badge is expected to follow all regulations while on the restricted areas of the airport. Contractors utilizing escorts and visitor badges must receive prior approval from Airport Operations or the Airport Security Manager.

The contractor shall be responsible for the maintenance of records necessary to ensure the retrieval of badges from employees and subcontractor(s}. The Contractor shall designate

one or more persons to act as the authorized point of contact for coordination in matters of badge program administration and security.

Should an employee lose his or her I.D. Badge, they should immediately notify their employer, who shall then immediately notify the Airport Badge Office at 266-2409. If lost after normal business hours, then it should be reported to Airport Dispatch at 266-2415.

For specific job sites, the Airport may authorize the use of an access list. An airport badged individual would be responsible for checking each individual entering the work area against the list. Use of such a list is limited and solely at the discretion of the Airport.

Due to the ever-changing nature of ANC security requirements, please contact the Airport Security Manager at 266-2522 for any changes, updates or additional requirements.

Appendix E

Ted Stevens Anchorage International Airport
ANC Gate E21

Project No. AIP ?-??-????-????/52339

Not Used

Appendix F

Ted Stevens Anchorage International Airport
ANC Gate E21

Project No. AIP ?-??-????-????/52339

Not Used

Appendix G

Ted Stevens Anchorage International Airport
ANC Gate E21

Project No. AIP ?-??-????-????/52339

Not Used

Appendix H

Ted Stevens Anchorage International Airport
ANC Gate E21

Project No. AIP ?-??-????-????/52339

Not Used

Appendix I

Ted Stevens Anchorage International Airport
ANC Gate E21

Project No. AIP ?-??-????-????/52339

Aviation Materials Certification List

AVIATION MASTER MATERIALS CERTIFICATION LIST

Project Name ANC Gate E21

Project Number 52339

Project Engineer Signature

Unshaded boxes indicate who approves the material submittals.

If two boxes are not shaded, either approving authority may be used.

* Unshaded boxes under the QPL do not indicate that the materials are on that list. They indicate materials with potential for being on the QPL once qualified.

Materials Item or Test Requirement	Specification	Construction			Design			Statewide		Manufacturer/ Remarks	Materials Certificate Location e.g. Binder #
		Airport Lighting Equipment Certification Program	Project Engineer	Regional Materials or QA Engineer	Civil Design Engineer of Record	Building Design Engineer of Record	Electrical Design Engineer of Record	Qualified Products List * (QPL)	State Materials or QA Engineer		
F-162 CHAIN-LINK FENCE											
Fabric	F-162-2.1										
Barbed Wire	F-162-2.2										
Posts, Rails, and Braces	F-162-2.3/Plans										
Gates	F-162-2.4										
Wire Ties And Tension Wires	F-162-2.5										
Misc. Fittings And Hardware	F-162-2.6										
Concrete Mix Design	F-162-2.7										
Pre-mixed Sacked Concrete (Sac-Crete)	F-162-2.7										
Gate Locks	F-162-2.9										
Keyless Locks	F-162-2.10										
F-170 STEEL BOLLARD											
Steel Pipe	F-170-2.1a										
Concrete Mix Design	F-170-2.1b										
Pre-mixed Sacked Concrete (Sac-Crete)	F-170-2.1b										
Paint	F-170-2.1c										
Retroreflective Bands	F-170-2.1d										
F-171 POWER GATE OPERATORS											
Gate Operator	F-171-2.2a										
Load Center	F-171-2.2d										
Conductors	F-171-2.2e										

Materials Item or Test Requirement	Specification	Construction			Design			Statewide		Manufacturer/ Remarks	Materials Certificate Location e.g. Binder #
		Airport Lighting Equipment Certification Program	Project Engineer	Regional Materials or QA Engineer	Civil Design Engineer of Record	Building Design Engineer of Record	Electrical Design Engineer of Record	Qualified Products List * (QPL)	State Materials or QA Engineer		
Rigid Steel Conduit	F-171-2.2f										
ITEM L-110 UNDERGROUND ELECTRICAL DUCT											
Underground Plastic Conduit											
Rigid, non-metallic conduit Schedule 40 PVC	L-110-2.6 a.										
ITEM L-160 ELECTRICAL LOAD CENTERS											
Panelboards	L-160-2.1e										
Circuit Breakers	L-160-2.1f										
Conductors	L-160-2.1j										
Conduit	L-160-2.1k										
ITEM P-401 PLANT HOT MIX ASPHALT PAVEMENT											
Mix Design	P-401-3.2										
Joint Adhesive	P-401-4.12										
Longitudinal Joint Sealant	P-401-5.2 f.(3)										

Materials Item or Test Requirement	Specification	Construction			Design			Statewide		Manufacturer/ Remarks	Materials Certificate Location e.g. Binder #
		Airport Lighting Equipment Certification Program	Project Engineer	Regional Materials or QA Engineer	Civil Design Engineer of Record	Building Design Engineer of Record	Electrical Design Engineer of Record	Qualified Products List * (QPL)	State Materials or QA Engineer		
P-610 STRUCTURAL PORTLAND CEMENT CONCRETE											
Concrete Mix Design	P-610-3.2										
Premolded Joint Material	P-610-2.7										
Joint Filler	P-605										
Steel Reinforcement	P-610-2.9										
Cover Materials for Curing											
Waterproof paper	P-610-2.10										
Polyethylene Sheeting	P-610-2.10										
Liquid Membrane-Forming	P-610-2.10										
P-620 RUNWAY AND TAXIWAY PAINTING											
Paint, Waterborne											
White	P-620-2.2										
Yellow	P-620-2.2										
Solvent Base	P-620-2.2										
White	P-620-2.2										
Yellow	P-620-2.2										
Reflective Media, Combined Cert. with Paint	P-620-2.3										
T-901 SEEDING											
Seed	T-901-2.1/Special Provisions										
Fertilizer	T-901-2.2										
T-908 SOIL STABILIZATION											
Mulch	T-908-2.1										
Rolled Matting											
Unbleached Jute Yarn	T-908-2.2 a.										
Knitted Straw Matting	T-908-2.2 b.										
Staples	T-908-2.3										

Appendix J

Ted Stevens Anchorage International Airport
ANC Gate E21

Project No. AIP ?-??-????-????/52339

Not Used

Appendix K

Ted Stevens Anchorage International Airport
ANC Gate E21

Project No. AIP ?-??-????-????/52339

Not Used

Appendix L

Ted Stevens Anchorage International Airport
ANC Gate E21

Project No. AIP ?-??-????-????/52339

Not Used

Appendix M

Ted Stevens Anchorage International Airport
ANC Gate E21

Project No. AIP ?-??-????-????/52339

Not Used

Appendix N

Ted Stevens Anchorage International Airport
ANC Gate E21

Project No. AIP ?-??-????-????/52339

Underground Utility Requirements

ELECTRICAL FACILITY CLEARANCE REQUIREMENTS

The following requirements have been developed to help provide a safer work site to those personnel working adjacent to Chugach's electrical facilities and to protect Chugach facilities that are located in the area of work being done by State or Municipal entities and private construction and maintenance projects.

A. NOTIFICATION

It is recommended that Chugach be informed of construction/maintenance activities as early as possible in the design process and be included in timely plan reviews. Any work that needs to be performed on Chugach facilities must have prior Chugach approval.

1. Overhead Facilities

Any work in the proximity of overhead power lines shall be preceded by a call to Chugach at 762-7659 or 762-7669, 48 hours in advance, to notify the Line Construction and Maintenance Department of the planned work and be in compliance with 29CFR1926 (a) (15), and A.S. 18.60.670. If equipment, tools, machinery, or material must work in proximity closer than the minimum clearances outlined in 29CFR1926 (a) (15), and A.S. 18.60.670, the requirements of A.S. 18.60.680 shall be complied with before work can proceed. All necessary arrangements to be made with Chugach by the requesting party for compliance with A.S. 18.60.680 shall be arranged in advance of the project start date.

2. Underground Facilities

Alaska Statutes, 42.30.400 through 42.30.490, Anchorage Municipal Code, 24.40 and 26.90, and 29CFR1926, Subpart P place requirements on contractors who will be excavating around or adjacent to underground utilities. Advance notification requirements, underground facility locates, and the responsibilities for protection of utility facilities by contractors are specified in these regulations. All requests for locates of Chugach underground facilities are to be made through the "Locate Call Center" at 278-3121. In addition, prior to excavating, Chugach shall be contacted 48 hours in advance at 762-7659 or 762-7669.

Locate surface markings are only reasonably accurate to +/- two (2) feet. As a general rule, Chugach requires hand-digging within two (2) feet of locate marks but in some cases may require three (3) or four (4) feet, depending on the actual facility involved and field conditions at the project site. Maintaining locate marks is the responsibility of the party requesting the locate. Chugach may charge for re-locating and re-marking facilities that were previously marked.

B. UNDERGROUND CABLE EXCAVATION

1. Any excavation which is within a three (3) foot radius of a cable and parallels a cable for a distance greater than twenty (20) feet in length (see Section H-1 below) may require relocation of that cable. Excavations shorter in length and/or closer may also require relocation. At a minimum, cables that will require exposure must be exposed by hand-digging only, and by a qualified person under the employ of a qualified electrical contractor. See Drawing No. F-062388 attached.

2. Any excavation, such as a trench which crosses cable(s), shall be limited to twenty (20) feet in width and have provisions for the exposed cable to be supported every two (2) feet on a cross beam in such a manner that the outer cable cover shall not be damaged in any way. The cable support work and excavation within the three (3) foot radius (see Section H-1) shall be done by a qualified person under the employ of a qualified electrical contractor.

   NOTE: When excavation must occur within the limits specified in B.1, and B.2, above, reasonable efforts will be made by Chugach to de-energize the direct buried cable if system conditions and personnel requirements allow. Even if the cable has been de-energized, a "Cable Watch" by a qualified person under the employ of a qualified contractor is still required. To request the de-energization of the cable, contact Chugach at 762-7659 or 762-7669 during business hours. Requests must be made three (3) working days in advance of the outage date requested. After hours, contact Chugach's Power Control Center at 762-4660.

   Under no circumstances will Chugach allow any of its underground cable(s) to remain energized after it has been exposed, unless it is protected by supplementary mechanical protection approved by Chugach or unless a qualified person is on site at all times.

3. Should any cable be exposed by non-qualified personnel, Chugach must be immediately contacted for field investigation before work may resume in the immediate area of such exposed cable.

   Chugach recognizes that reasonable continuation of work may be required around energized underground cables after Chugach inspects the site. When this occurs, it is the responsibility of the construction contractor working at the site to arrange for qualified personnel as well as payment of the costs of said personnel and/or equipment. Chugach will neither arrange for, nor provide qualified personnel to satisfy this requirement unless it determines it is in its best interest on a case-by-case basis. Where Chugach is otherwise forced to subsequently take steps to ensure the safety of the site, it will advise the construction contractor that it will pass these costs to the construction contractor.

4. In all cases, a final minimum burial depth of 40 to 60 inches (depending on the operating voltage) for primary cable and 30 inches for secondary cable shall be

maintained. If, however, existing Federal, State, or Municipal permit conditions require depths in excess of the 40 inches, then the cable shall be buried at the depth required in the permit. The depth is measured from the top of the conductor(s) to final grade at the shallowest depth. Burial shall be in compliance with Chugach Std. SUR2-3 through 6 (supplied upon request).

5. Projects which increase the final grade over Chugach facilities that are not intended to be placed deeper shall require relocation of those facilities if the depth of burial of the cables exceeds 60" from final grade of the project.

6. In addition to the foregoing, excavations near transmission underground cables will require the following:

   a) Excavation Parallel to Transmission Voltage Level Power Lines: Chugach will require its Locate Contractor to notify excavators when a locate request includes the locating of cables that exceed 25kV Distribution Voltages.

   When excavation is planned that will come within close proximity (ten (10) feet), expose, parallel or undermine sections of Chugach's Transmission Underground Cables, special precaution and safety consideration must be taken. These cables operate at voltages in excess of 34,000 volts and up to 230,000 volts phase-to-phase. These cables provide power to tens of thousands of Chugach customers and require extraordinary protection. The following guidelines shall apply:

   Chugach Operations Department shall be contacted at (907) 762-7655 in advance of the planned excavation at least three (3) business days prior to beginning excavation. Chugach requires that a qualified person (see Sec. H-7 for definition of a qualified person) be on site at all times during excavation activity that comes within ten (10) feet of any transmission cable. The contractor shall arrange and pay for a qualified person from Chugach or, with approval, from one of Chugach's approved and qualified contractors (see Section H-6 for definition of a qualified contractor). Excavations closer than ten (10) feet shall require exposure of the cables at the intersecting point or at intervals of not less than every twenty-five (25) feet for parallel excavations by qualified personnel to determine the exact location of the cable prior to machine excavation as allowed by law.

   Because of the high voltage, excavations within ten (10) feet of a transmission cable can expose unqualified workers to extremely unsafe conditions. Prior planning by the excavator with coordination through Chugach and Chugach approval of construction activity within ten (10) feet of transmission cable is required.

   Chugach shall approve, in advance, any plan for directional drilling, boring, pile driving or other type of "trenchless" construction in the vicinity of its transmission cables prior to any construction activity.

Chugach may require a special locate utilizing Ground Penetrating Radar to locate critical facilities.

C. STRUCTURE EXCAVATION

1. Equipment Pads or Vaults

Temporary excavation is allowed with a maximum slope of 1:1 beginning three (3) feet from the exterior edge of a concrete pad or vault. The final grade shall consist of a level area radiating out a minimum of four (4) feet, measured from the exterior edge of the pad or vault, and a maximum slope of 2:1 beginning from that four (4) foot distance from the exterior edge of the pad or vault. For both temporary and final grade situations, a level area extending ten (10) feet out from the edge of the concrete pad in front of equipment doors or access panels is necessary. Refer to Drawing No. F-062388 attached.

If the slope cannot be maintained at the grades specified above, additional protection such as barriers or piling is required. All shoring and excavation (closer than the above limits) shall be done by a qualified person(s) under the employ of a qualified electrical contractor.

2. Concrete-Encased Duct

Excavation under a concrete-encased duct requires a method designed and certified by an Alaska-registered civil engineer and approved by Chugach. Installation of the temporary shoring or bracing shall be done under the supervision of a qualified person under the employ of a qualified electrical contractor.

D. POLE/GUY ANCHOR EXCAVATION

Excavation beginning no closer than a three (3) foot radius from a pole or guy anchor in stable soil conditions or a ten (10) foot radius from a pole or guy anchor in organic/unstable soil conditions is allowed, provided the slope from that point does not exceed 1:1. Refer to Drawing No. F-062388 attached.
Excavation closer than the limits defined above or within the above guidelines for more than one consecutive pole requires shoring of each pole. Pole shoring shall conform to Chugach specifications XP-X/Y (steel pile shoring) or XM40/XM40A (wood pole shoring) as approved by Chugach for the specific excavation. Specifications will be supplied upon request. All work for installing the piles must be performed within the OSHA guidelines. Shoring by other methods requires prior approval by Chugach on a case-by-case basis.

Any excavation that may expose the pole butt requires a structural analysis of the pole shoring method. The analysis shall be performed by an Alaska-licensed

professional engineer familiar with electrical transmission and distribution design standards in use by Chugach.

All shoring and excavation (closer than the above limits) shall be done by a qualified person under the employ of a qualified electrical contractor.

E. RELOCATION REQUIRED

Where protection of the cable and structures cannot be maintained, as required in Sections A, B, and C, relocation of those facilities will be required prior to the intended work and at the contracting agency's expense.

F. BACKFILL

Replacement backfill for electrical facilities must be in accordance with Chugach specifications and done by a qualified person under the employ of a qualified electrical contractor.

A damaged underground facility may not be reburied until it is repaired or re-ed to the satisfaction of Chugach.

G. INSPECTION AND APPROVAL

All work on or in the immediate vicinity of Chugach facilities, such as backfilling, temporary support, shoring, and relocations are subject to prior approval and inspection by Chugach. On large projects where inspection time is substantial, all costs for inspection shall be the responsibility of the agency or entity contracting for the work. Reimbursement to Chugach shall be in accordance with Chugach's tariff, Section 8.

Any questions or approvals involving these requirements should be addressed to the attention of the Chugach Line Operations and Maintenance Manager at 762-7659.

H. MISCELLANEOUS

1. Depending on the soil type, depth and length of the excavation, type of Chugach facility involved, and the certainty of the cable locate, excavations can be approved within a two (2) foot radius of cable on a case-by-case basis.

2. Stable soil conditions are defined as all dry and non-organic. Soil conditions shall be evaluated and approved on a case-by-case basis by Chugach. The evaluation will be done using 29CFR1926, Subpart P, "*Excavations*" as a guide.

3. Excavation, except as noted, shall be defined as mechanically done by a backhoe, scraper, grader, auger, or other piece of equipment.

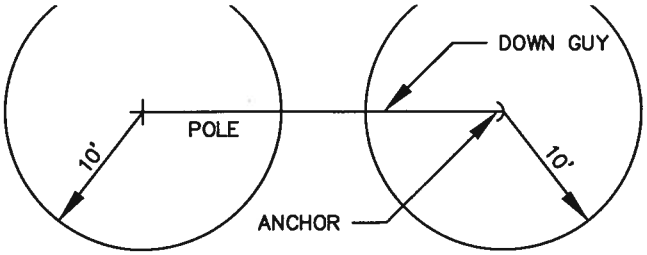
4. Cables are defined as insulated cable whether buried directly or in conduit. The guidelines for cables also include 600-Volt pedestals and other small electrical apparatus associated with cable but not included under pads or vaults.

5. Spare conduit is not included in these provisions except to the extent of providing temporary support when exposed and inspected by Chugach prior to the placement of proper backfill.

6. Chugach defines a *qualified electrical contractor* as a contractor registered in the State of Alaska who has an Electrical Administrator's License in the Outside Linework category; or who has an employee with an Electrical Administrator's License in the same category registered with the contractor.

7. Chugach defines a *qualified person* as a journeyman lineman who holds a current Certificate of Fitness in the Journeyman Lineman category issued by the State of Alaska.

8. Chugach defines *hand-digging* as the removal of soil with hand tools or with an air-knife tool (compressed air jet).

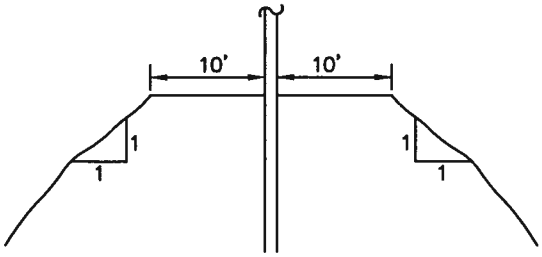


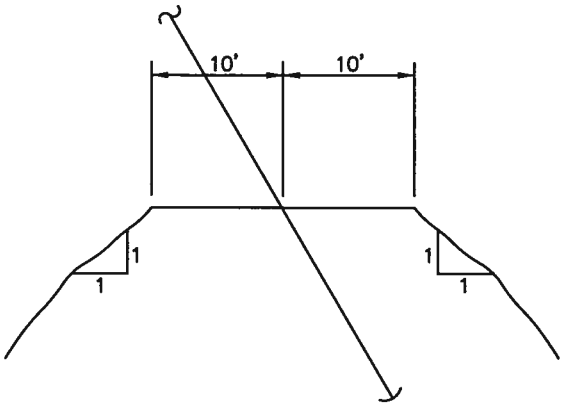
PLAN

(RADIUS OF UNDISTURBED SOIL)

NOTE:

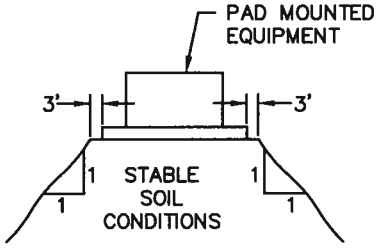
FOR VERY UNSTABLE SOIL CONTACT CHUGACH ELECTRIC.





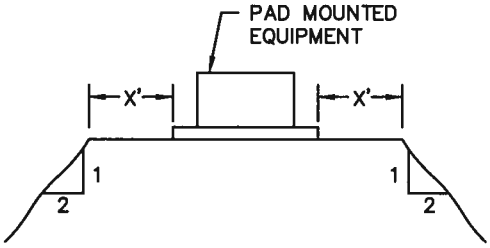
PROFILE

POLES/GUYS



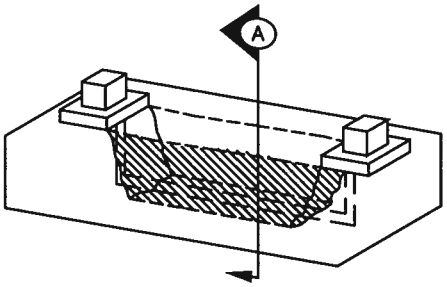
DURING CONSTRUCTION

SUPPLEMENTAL SUPPORT REQUIRED FOR EXCAVATIONS WITHIN 5' OF PADMOUNTED EQUIPMENT LOCATED ON UNSTABLE SOIL CONTACT CHUGACH ELECTRIC

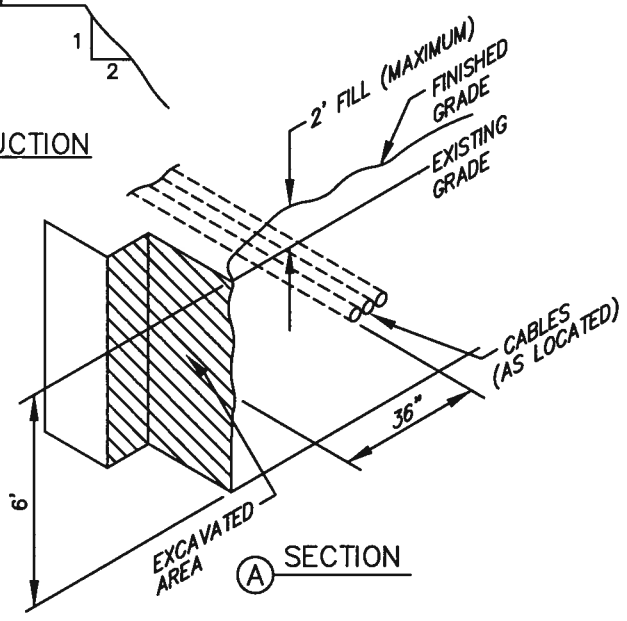


AFTER CONSTRUCTION

X': 10' ON DOOR/ACCESS SIDES. 4' ON OTHER SIDES.



PARALLEL EXCAVATION



STRUCTURES/CABLES

REV. NO.: 3 DATE: 1/28/98

Standards Engineer: _____

Mgr., Dist. Engineering: _____

Mgr., Const. & Maint.: _____

Dir., T&D Services Div.: _____

Chugach Electric Association Inc.

EXCAVATION LIMITS

DEFINITION OF LIMITS REQUIRING NO ADDITIONAL STRUCTURAL SUPPORT

DRAWING NUMBER F-062388

SHEET 1 OF 1

J:\CEA\STANDARD\DIST\F-06388.DWG 2/11/98