STATE OF ALASKA
DEPARTMENT OF TRANSPORTATION AND PUBLIC FACILITIES

STANDARD SPECIFICATIONS
FOR
AIRPORT CONSTRUCTION

Kodiak Airport
RSA Extension
Project Number 53587
AIP Number 3-02-0158-017-2014
And
Devils Creek Culvert Repair
Project Number 57474
AIP Number 3-02-0158-01x-201x

(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
CSPP	*Construction Safety and Phasing 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)*
SPCD	*Safety Plan Compliance Document*
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 AND PHASING PLAN (CSPP). ~~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 minimum requirements 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.

RETAINAGE. A percentage of a payment established in advance under a contract or subcontract to be withheld from a progress payment due on the contract or subcontract. Payment or a percentage of payment withheld for unsatisfactory performance is not retainage.

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.~~

SAFETY PLAN COMPLIANCE DOCUMENT (SPCD). A document prepared by the Contractor that details how the Contractor will comply with the CSPP.

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).

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.

e. **Builder's Risk Insurance**: coverage on an "All Risk" completed value basis for any building that is part of the work, including "quake and flood", and all materials, supplies, and equipment that are intended for specific installation in the Project while such materials, supplies, and equipment are

located at the project site, in transit from port of arrival to project site and while temporarily located away from the project site.

The State of Alaska shall be named as an additional insured on policies required by paragraphs **b** thru **e** 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~~ in accordance with policy provisions, 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.

30-11 ESCROW OF BID DOCUMENTATION. Furnish a legible copy of the Bid documentation and an affidavit, as instructed in writing by the Contracting Officer. Bid documentation consists of written documentation of quantity takeoffs, construction schedules on which the bid is based, cost estimates, rates of production and progress, assumptions, calculations, quotes from subcontractors and suppliers, and information used to prepare the Bid for this project.

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

Meet the following requirements:

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

b. **Affidavit.** Submit directly to the Contracting Officer a signed and certified affidavit attesting that;

(1) the affiant has examined the bid documentation and that it includes all documents used to prepare the bid;

(2) the sealed container contains all bid documentation submitted;

(3) the escrow materials were relied on to prepare the bid; and

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

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

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

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

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

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

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

d. **Failure to Provide Bid Documentation.** Refusal or failure to provide bid documentation or affidavit renders the bid non-responsive. Failure or refusal to provide subcontractor bid documentation will result in subcontract disapproval.

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

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

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

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

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;

(a). Request locates from all utilities having facilities in the area a minimum of seven (7) days prior to excavation. Utility company telephone numbers are as follows:

Locate Call Center 278-3121 (Anchorage) or 800-478-3121 (Statewide). The locate call center will contact the following utilities directly:

Alaska Communications System (ACS) (Telephone)
General Communications, Inc. (GCI) (Telephone)
Kodiak Electric Association (KEA) (Power)

Kodiak Electric Association (KEA) owns and operates the electrical distribution facilities within the project limits.

(b). Contact the following utilities directly:

ISC Kodiak Facilities Engineering Division, 1-907-487-5320 (Water and Sewer)

A digging permit is required a minimum of ten (10) working days prior to excavating on the ISC Kodiak complex or requiring assistance in locating underground utilities. A utility outage permit is required a minimum of three (3) working days prior to a utility outage on the ISC Kodiak complex. Outages may not include Sundays or Holidays. If either permit is needed, the Permit Coordinator may be contacted at 1-907-487-5320, x217.

(c). The FAA has various navigational aids and other equipment in operation at Kodiak Airport. The approximate location of the power cables, 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 at 800-478-2139 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;

(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 energized high voltage underground electric lines or conductors conforms to all applicable laws and safety requirements of the utility owner;

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

(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.

The contractor shall ~~S~~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.

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

(1) Department of the Army, permit #POA-2006-1144, Chiniak Bay, dated March 12, 2014.
(2) Alaska Department of Fish and Game, permit #FH 14-II-0037, dated March 6, 2014., with permit amendment, dated March 24, 2014.

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 and maintain all required permits, clearances, certifications, determinations, approvals, and licenses as required by applicable laws and regulations and as necessary for performance of its obligations under the Contract;

c. Obtain written permission from any property owners or lessees with an interest in the property for the Contractor to access and use the property as necessary for performance of the Contractor's obligations under the Contract; and

d. Provide all of the following to the Engineer:

(1) All permits, clearances, certifications, determinations, approvals, and licenses necessary to use the site for its intended purpose(s);

(2) A written statement that all permits, clearances, certifications, determinations, approvals, and licenses necessary have been obtained;

(3) Written evidence that the Contractor has contacted all of the relevant agencies and that no additional permits, clearances, certifications, determinations, approvals, or licenses 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. 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*, 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.

The Airport has hazardous area barriers (timber type with flashers) available for use on this project. If the Contractor chooses to utilize these barriers, he shall be responsible for providing flags and for batteries for flashers in accordance with Section P-670, Hazardous Area Barriers.

Two lighted runway closure markers are being purchased under Item P-671, Illuminated Runway Closure Marker, for use on this project. The Contractor shall be responsible for maintaining the markers to include,

but not limited to, inspection, maintenance and repair, replacing lamps and supplying fuel. Following the project, the markers shall be returned to serviceable condition. The Contractor shall repair any damage to the lighted runway closure markers, service the generators, and replace the light bulbs. The lighted runway closure markers shall become the property of the Airport.

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; and.

(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 REQUIREMENTS.

A. Security Program for Kodiak Airport

This section applies to operations within Kodiak Airport.

The Contractor shall comply with Kodiak Airport's security requirements. The Contractor and its personnel shall comply with the 'Airport Ground Vehicle Operating Training Guide,' which is available on request. The Contractor and its personnel shall obtain security clearances, obtain badges, and complete security training pertinent to the area of the airport on which the Contractor will be working.

The Contractor shall maintain the security of Airport Operations Areas (AOAs) at all times. The Contractor shall indemnify and hold harmless the State for any fines levied against the State by the Transportation Security Administration (TSA) for failure to maintain the security in the area of construction, for failure to maintain security at all points of entry used for construction into the AOA, for failure to comply with the identification program described in this subsection, and for failure to comply with the Kodiak Airport security requirements as a result of any act, default, or omission of the Contractor or its personnel.

The Contractor shall be responsible for preventing unauthorized access to the AOA through the construction site~~-~~. The contractor shall maintain ~~-~~perimeter gates by either locking the gates or providing attendants who ensure that only authorized persons and vehicles are admitted through perimeter gates into the AOA. The Contractor shall secure openings in fencing, which would allow access to the AOA, either by securing the fence in such a manner that would prevent unauthorized access to the AOA or provide attendants who ensure that only authorized persons and vehicles are admitted to the AOA.

The Contractor shall instruct attendants designated to control access points into the AOA ~~-~~on the proper procedures for identifying authorized persons ~~-~~and vehicles.

The Contractor shall be responsible for maintaining, as a minimum, a six (6) foot clear zone on both sides of any perimeter fence line wherever the Contractor or any authorized representative ~~thereof~~ works, stages equipment, or stores material.

a. Identification of Persons

TSA Regulations require the airport operator to control access and prevent unauthorized persons from entering Air Operations Areas (AOAs). In accordance with this requirement, the airport operator has established a security and identification system (the S~~s~~ystem) with procedures regarding how to authorize or deny access to the AOAs and how to identify and control persons while in these areas.

The System, developed and adopted by the airport operator, is the only identification system recognized as authority to allow Contractor personnel to enter restricted AOAs. Any person found in restricted areas not in compliance with this System shall be removed from the area and action shall be taken against violators as appropriate under applicable State and Federal Law. ~~Alaska State Statutes or Alaska Administrative Codes.~~

(1) Control Authority

The Airport Manager has been delegated authority for approving issuance, system control, implementation, and accountability of the System.

Proper individual identification badges and vehicle permits must be obtained through the Airport Manager before attempting to enter the airport grounds.

Applicants for Airport identification Badges must present either a current US Passport or two types of identification; one state and one federal. For example, a valid Alaska Driver's License, or Alaska State ID and a Social Security Card must be presented to the Airport Manager.

An individual identification badge shall be used by each Contractor employee granted access to the airport 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.

(2) Badge Issuance Controls

No person may be issued an individual identification badge unless the following actions are completed:

(a) The employer of the person to receive an individual identification badge submits a written request to the Airport Manager requesting badge issuance. The application form for Airport identification shall be an original letter, shall be on company letterhead stationery, and shall include the following provisions:

Original signature of authorized company representative.

Requests submitted to the Airport Manager for identification badges must be approved and signed by an authorized individual from DOT/PF Aviation Construction.

The request form/letter will be considered valid for 30 days from the date it was originally signed and dated.

(b) Prior to issuance of an individual identification badge, the employee to be badged shall complete the badge application form at the Airport Manager's office and affirm that they understand and shall abide by the appropriate rules required for access onto the AOA. Each application shall be submitted to the TSA for a Security Threat Assessment (STA) prior to receiving an individual identification badge. A STA can take from 72 hours to 3 weeks to complete.

Upon receiving clearance from TSA, through the STA process, the employee shall attend security training, based on the area of the airport in which the employee will be working. Security training shall be scheduled in advance through the Airport Manager's office. Upon completion of the required security training, an individual identification badge will be issued.

(c) Employers are responsible for the maintenance of records necessary to ensure the retrieval of individual identification badges and final employee clearance by the Airport Manager upon termination of employment. Whenever a badged person's employment is terminated, for any reason whatsoever, the employer shall recover the individual identification badge, locks, keys and any other airport property entrusted to that individual and return those items to the Airport Manager with evidence of changes to access codes and locks as necessary to prevent access by the terminated individual to secure areas. All individual identification badges must be returned to the Airport Manager within five (5) days of the employee's termination date.

(d) Should an employee lose his/her individual identification badge, he/she shall immediately notify his/her employer, who shall then immediately notify the Airport Manager. Pursuant to TSA regulations, a written report of the lost individual identification badge shall be filed with the Airport Manager's office.

The Airport Manager will confirm by telephone that the employee is currently employed before reissuing an individual identification badge.

(e) The airport operator requires each employer and individual identification badge holder to agree to abide by the provisions of this identification system. The employer shall designate one or more persons to act as the activity badge control officer and as the point of contact for coordination in matters of badge system administration and security matters.

(3) Restricted Area Access Controls

(a) The airport operator is responsible for preventing unauthorized access to AOAs. Therefore, no person is permitted access to air operations areas unless that person is badged by the airport operator and his/her individual identification badge signifies that he/she has access to the area. All individual identification badges must be worn on the outermost garment above the waist.

(b) Individual identification badges issued for construction projects only are called construction badges. The word "TEMPORARY" is written on the bottom front of the badge inside a gray bar. Construction badges shall only be valid in the immediate construction area and in the direct routes to and from the construction area. Failure to properly wear the badges or improper use of the construction badge(s) may result in confiscation of the badge(s) by the Airport Manager, removal from the AOA, and civil penalties imposed. The construction badge has an expiration date and is valid for a particular construction project only. The construction badge must be returned to the company immediately upon completion of the job, project, or badge expiration date, whichever is sooner. Lost badges must be reported immediately to the employer and the Airport Manager.

(c) Any crossings of the AOA security fence shall require coordination with the Airport Manager prior to opening any AOA access gate. The Contractor is responsible for providing a ~~flagman~~ flagger at any unsecured AOA access gate used to haul materials to and from the construction site, waste disposal area, or to any area where the Contractor's equipment must traverse within the AOA. These ~~flagmen~~ flaggers shall obtain training from the Airport Manager relative to the access requirements into the AOA. The ~~flagmen~~ flagger shall stop unauthorized access to the AOA and permit only badged personnel, marked and permitted vehicles, or properly escorted personnel in accordance with the System. The Airport Manager shall be contacted immediately if an unauthorized person enters the gate. In addition, ~~flagmen~~ flaggers shall be required at areas where the Contractor's equipment must cross active runways or taxiways to ensure that trucks hauling materials to and from the job safely yield right of way to aircraft. The Contractor shall provide a two way radio so that the ~~flagmen~~ flaggers shall continuously monitor the CTAF when the Contractor is hauling across or working in close proximity of an active runway or taxiway.

b. Identification of Vehicles

TSA Regulations require the airport operator to control access and prevent unauthorized vehicles from entering AOAs. In compliance with this requirement, the airport operator has established procedures to authorize or deny access to the AOAs and to identify and control vehicles while in restricted areas.

(1) Vehicle Identification Standards

All Contractor vehicles requiring access to the AOAs shall display a temporary ramp access permit as issued and instructed by the Airport Manager.

Temporary ramp permits must be turned back to the Airport Manager upon completion of work or expiration of the ramp permit(s), whichever is sooner.

(2) Area of Authorization

Contractor vehicles are only authorized in the areas where their contract work is being performed and on the access routes to and from that area.

(3) Authorized Vehicles

Any Contractor vehicle is authorized when it is within its area of authorization, the temporary permits are properly displayed, and all occupants have proper individual identification badges properly displayed.

In order to maintain an accountability for all badges issued, it shall be required that the Contractor be responsible for physically collecting and turning into the Airport Manager any and all outstanding badges/permits no longer used for the construction project; to include construction badges and vehicle ramp permits.

c. Fees for Badges and Permits

A fee of $25.00 shall be charged to the Contractor for each badge or permit the Contractor is issued; $50.00 will be charged to the Contractor for each replacement of a lost badge; $50.00 will be charged to the Contractor for each badge and permit not returned upon expiration –or completion of the project, whichever is sooner. No badge or permit shall be reissued until fees are paid and a replacement request letter is received. All fees shall be paid by the Contractor as subsidiary to the construction contact.

B. Security Program for USCG Station - Kodiak

This section is applicable for operations within USCG Base Kodiak.

1. Provide Contracting Officer Technical Representative/Construction Inspector (COTR/CI) with a list of all employees, representatives, and subcontractors, including name, age, and address of each. All employees will be required to obtain security passes from the Base Security. Passes must be carried at all times when on Base and returned to the COTR/CI at the completion of the work. Violation of facility regulations may result in a forfeiture of individual passes.

2. Contact Base Security regarding regulations concerning vehicle passes. Provide a complete list of over the road vehicles and construction equipment to the Base Security. Include the make, model, year build, and identifying marks of each vehicle. All over-the-road vehicles must have current, valid registration and proof of insurance. All drivers must have a valid driver's license.

SECTION 80

PROSECUTION AND PROGRESS

80-01 SUBCONTRACTING 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 subcontracts, 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 subcontract 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 subcontracting, 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. The Contractor shall ensure that for all subcontracts (agreements):

(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 are included in all subcontracts;

(4) A clause is included requiring the Contractor to pay the subcontractor for satisfactory performance according to AS 36.90.210 and within eight (8) working days after receiving payment from the Department from which the subcontractor is to be paid;

(5) A clause is included requiring the Contractor to pay the subcontractor interest, according to AS 45.45.010(a), for the period beginning the day after the required payment date and ending on the day payment of the amount due is made;

(6) A clause is included requiring the Contractor to pay the subcontractor all retainage due under the subcontract, within eight (8) working days after final payment is received from the Department, or after the notice period under AS 36.25.020(b) expires, whichever is later;

(7) A clause is included requiring the Contractor to pay interest on retainage, according to AS 36.90.250 and AS 45.45.101(a);

(8) Other required items listed in Form 25D-042 are included in the subcontracts;

(9) The subcontractors pay current prevailing rate of wages as per Subsection 60-04 and file certified payrolls with the Engineer and DOLWD for all work performed on the project; and

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

b. The Contractor shall ensure that for all lower tier subcontracts (agreements between subcontractors and lower tier subcontractors):

(1) The required prompt payment provisions of AS 36.90.210 are included in all lower tier subcontracts;

(2) A clause is included requiring the subcontractor to pay the lower tier subcontractor for satisfactory performance according to AS 36.90.210, and within eight (8) working days after receiving payment from the Department from which the subcontractor is to be paid;

(3) A clause is included requiring the subcontractor to pay the lower tier subcontractor interest, according to AS 45.45.010(a), for the period beginning the day after the required payment date and ending on the day payment of the amount due is made;

(4) A clause is included requiring the subcontractor to pay the lower tier subcontractor all retainage due under the subcontract, within eight (8) working days after final payment is received from the Department, or after the notice period under AS 36.25.020(b) expires, whichever is later;

(5) A clause is included requiring the subcontractor to pay the lower tier subcontractor interest on retainage, according to AS 36.90.250 and AS 45.45.101(a);

(6) Other required items listed in Form 25D-042 are included in the lower tier subcontracts;

(7) The lower tier subcontractors pay current prevailing rate of wages as per Subsection 60-04 and file certified payrolls with the Engineer and DOLWD for all work performed on the project; and

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

c. The following will be considered as subcontracting, unless performed by the Contractor:

(1) **Roadside Production**. Roadside 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.

d. 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.

e. **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-opeator'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.~~

This project will be funded in two phases as Notice to Proceed #1 (NTP #1) for the RSA Extension and Notice to Proceed #2 (NTP #2) for the Devils Creek Culvert Repair. It is the Department's intent to award the

entire Contract. The work covered by NTP #1 is fully funded. The Department will issue NTP #1 authorizing construction to begin and indicating the date when Contract time will begin. -The Contractor shall not begin construction before the effective date of NTP #1. The Contractor shall notify the Engineer at least 48 hours before construction begins at the project site. The Department will, in its sole discretion, refuse to pay for construction begun before the effective date of the NTP #1.

NTP #2 will be issued when the remainder of the funding becomes available. If funding does not become available by May 1, 2015, NTP #2 will not be issued (unless a date extension is mutually agreed upon by the Department and the Contractor) and the work will be deleted from the Contract by change order at no cost to the Department. If NTP # 2 is issued, the Contractor shall not begin construction of NTP #2 work before the effective date of NTP #2. -The Contractor shall notify the Engineer at least 48 hours before construction begins at the project site. -The Department will, in its sole discretion, refuse to pay for construction of NTP #2 begun before the effective date of NTP #2.

The items and estimated percent that will be paid on those items are as follows:

PAY ITEM NUMBER	PAY ITEM DESCRIPTION	UNIT	NTP No. 1	NTP No. 2
D-701a(1)	PE PIPE, 18"	L.F.	50	
D-701a(2)	PE PIPE, 24"	L.F.	54	
G-100a	MOBILIZATION AND DEMOBILIZATION	L.S.	94%	6%
G-115a	WORKER MEALS AND LODGING, OR PER DIEM	L.S.	88%	12%
G-130a	FIELD OFFICE	L.S.	75%	25%
G-130b	FIELD LABORATORY	L.S.	80%	20%
G-130g	NUCLEAR TESTING EQUIPMENT STORAGE SHED	EACH	1	
G-130h	STORAGE CONTAINER	EACH	1	
G-130j	ENGINEERING COMMUNICATIONS	C.S.	77%	23%
G-131a	ENGINEERING TRANSPORTATION (TRUCK)	EACH	6	0
G-135a	CONSTRUCTION SURVEYING BY THE CONTRACTOR	L.S.	89%	11%
G-135b	EXTRA THREE PERSON SURVEY PARTY	HOUR	50	20
G-150a	EQUIPMENT RENTAL, DOZER (70hp MINIMUM)	HOUR	50	
G-200a	CONTRACTOR QUALITY CONTROL PROGRAM	L.S.	83%	17%
G-300a	CPM SCHEDULING	L.S.	100%	
G-700a	AIRPORT FLAGGER	C.S.	92%	8%
G-710a	HIGHWAY TRAFFIC MAINTENANCE	L.S.	100%	
G-710b	HIGHWAY FLAGGER	C.S.	100%	

G-710c	HIGHWAY TRAFFIC PRICE ADJUSTMENT	C.S.	100%	
G-710d	HIGHWAY TRAFFIC CONTROL	C.S.	100%	
G-715c	WILDLIFE MONITORING	C.S.	100%	
L-100ap	SPARE PARTS	L.S.	100%	
L-100c(1)	HIGH INTENSITY RUNWAY EDGE AND THRESHOLD LIGHT, L-862 and L-862E	EACH	21	
L-100c(2)	HIGH INTENSITY RUNWAY EDGE AND THRESHOLD LIGHT LENS, L-862 AND L-862E	EACH	3	
L-100e	TAXIWAY EDGE LIGHT, L-861T	EACH	22	
L-100h	REMOVE RUNWAY AND TAXIWAY LIGHT	EACH	41	
L-100n	AIRPORT SIGN, Type L-858	EACH	4	
L-100r	TEMPORARY RUNWAY LIGHTING SYSTEM	L.S.	100%	
L-107a	8-FOOT LIGHTED WIND CONE, IN PLACE	EACH	1	
L-108a	UNDERGROUND CABLE #8 AWG, COPPER, 5KV FAA TYPE "C", L-824	L.F.	3250	
L-108c	# 6 BARE COPPER GROUND CONDUCTOR	L.F	2850	
L-108g	GROUND ROD	EACH	5	
L-110a	2-INCH RIGID STEEL CONDUIT	L.F.	435	
L-110g	2-INCH PE CONDUIT	L.F.	2250	
L-135K	FOUNDATION AND UTILITIES FOR FAA EQUIPMENT	L.S.	100%	
P-151b	CLEARING	L.S.	100%	
P-152ae	DITCH LINING	TON		320
P-152ak	SLOPE LINING	TON	500	
P-152i(1)	BORROW (<6% NO. 200)	TON	505000	
P-152i(2)	BORROW (<10% NO. 200)	TON	675800	1355
P-152r	SUBGRADE PREPARATION	S.Y.	9600	1280
P-154b	SUBBASE COURSE	TON	73500	
P-157a	ESCP ADMINISTRATION	L.S.	50%	50%
P-157b	TEMPORARY EROSION, SEDIMENT, AND POLLUTION CONTROL	C.S.	50%	50%
P-157f	WITHHOLDING	C.S.		

P-157g	SWPPP MANAGER	L.S.	50%	50%
P-160a	EXCAVATION OF PAVEMENT (AC)	S.Y.		320
P-161b	RECYCLED ASPHALT PAVEMENT	C.Y.	2600	30
P-162a	PAVEMENT COLD PLANING	S.Y.	3200	
P-164a	HYDRODEMOLITION	S.Y.		1600
P-164b	SCARIFICATION	S.Y.		700
P-165a(1)	REMOVAL OF STRUCTURES (RSA EXTENSION)	L.S.	100%	
P-165a(1)	REMOVAL OF STRUCTURES (DEVILS CREEK)	L.S.		100%
P-181a	CONCRETE ARMOR UNITS (2.65 TON)	EACH	2600	
P-185a	PRIMARY ARMOR STONE (PA-12000)	TON	81700	
P-185b	UNDERLAYER STONE (U-700)	TON	41000	
P189b	GABIONS (STAINLESS STEEL)	C.Y.	940	
P-209b	CRUSHED AGGREGATE BASE COURSE	TON	5600	
P-401a	HOT MIXED ASPHALT, TYPE II, Class A	TON	5300	
P-401b	HOT MIXED ASPHALT PRICE ADJUSTMENT	C.S.	100%	
P-401c	ASPHALT CEMENT, PG 52-28	TON	295	
P-511a	MICROSILICA MODIFIED CONCRETE	S.Y.		1600
P-511b	EPOXY-BONDED EPOXY MORTAR	S.Y.		750
P-555a(1)	INSTALL EMAS BED (RUNWAY 7)	L.S.	100%	
P-555a(2)	INSTALL EMAS BED (RUNWAY 36)	L.S.	100%	
P-556a	EMAS SNOW REMOVAL EQUIPMENT (TYPE I)	EACH	1	
P-603a	TACK COAT, STE-1	TON	5	
P-610g	STEEL REINFORCEMENT	L.F.		7000
P-620c	RUNWAY AND TAXIWAY PAINTING	L.S.	100%	
P-620f	PAINTED MARKING REMOVAL	L.S.	100%	
P-621b	SAW CUT GROOVES	L.S.	100%	
P-640a	SEGMENTED CIRCLE (PANEL TYPE)	L.S.	100%	
P-670b	FLASHER UNIT FOR TIMBER BARRIER	EACH	75	

P-670c	FLAG	EACH	75	
P-671c	ILLUMINATED RUNWAY CLOSURE MARKER	EACH	2	
P-684a	FLOATING SILT CURTAIN	L.F.	4100	

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 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 Safety Plan Compliance Document (SPCD)~~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.

   In order to protect migratory birds, the Contractor shall perform vegetation clearing in accordance with the USFWS Recommended Time Periods for Avoiding Vegetation Clearing in Alaska. See: http://www.fws.gov/alaska/fisheries/fieldoffice/anchorage/pdf/vegetation_clearing.pdf. No vegetation shall be cleared during the times recommended in the above document, unless the Contractor performs a bird survey to confirm that birds are not nesting in (or adjacent to) the area to be disturbed. The Contractor shall coordinate with the Engineer before performing the bird survey.

b. **Construction Safety.**

   (1) Construction Safety and Phasing Plan (CSPP). ~~A CSP~~ This document is included within the contract documents when attached as Appendix D. The CSPP specifies minimum requirements for operational safety during construction activities.

   (2) Safety Plan Compliance Document (SPCD). When the contract documents include a CSPP, the Contractor shall submit to the Engineer a SPCD in accordance with ~~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.* The SPCD shall include a general statement that the Contractor has read and will abide by the CSPP and shall include the Contractor's

name, the title of the project CSPP, the approval date of the CSPP, and a reference to any supplemental information (example statement: "I , Name of Contractor , have read the Title of Project CSPP, approved on Date, and will abide by it as written and with the following additions as noted:"). The supplemental information in the SPCD should be written to match the format of the CSPP indicating each subject by corresponding CSPP subject number and title. If no supplemental information is necessary for any specific subject, the statement, "No supplemental information," should be written after the corresponding subject title. The SPCD should not duplicate information in the CSPP. No deviations or modifications may be made to the approved CSPP or SPCD unless approved in writing by the Engineer.

The Contractor shall implement all necessary CSPP and SPCD 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 CSPP and SPCD 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 CSPP and SPCD, and that the subcontractors and suppliers implement and maintain all necessary safety measures.

The CSPP and SPCD 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 Engineer. The Contractor shall provide written notice to the Airport Management, FAA, and 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 Contractor shall prepare a NOTAMs on a form provided by the Department, and submit the form through the Engineer to the Airport Management 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 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. As an alternate contact if ~~I~~f the primary contact is unavailable, contact the Chairman of Long Term Outage Committee, Operations Engineering Section, FAA Airways Facilities Division at (907) 271-5800~~5552~~.

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.

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

(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. **Timing of In-Water Work.** In-water construction work will be excluded from April 1 to July 15 to avoid impacts to aquatic species. In-water work is defined as any work below the high tide line (Elevation 11.7 ft).

g. **Hot Mixed Asphalt Plant.** The HMA plant shall not be located on airport property.

h. **Endangered Species.** Wildlife observers will monitor for endangered and candidate species in accordance with Section G-715, Wildlife Monitoring.

i. **Barge Travel.** Project related barge travel shall avoid areas with high densities of endangered or threatened species to the extent practicable, avoid sea lion rookeries and major haul out areas, and avoid anchoring in high-density kelp stands. The Cliff Point-Cliff Island-Zaimka Island area shall be avoided by barges hauling to the site during the winter. See these and other requirements contained in Appendix E, Permits.

j. **Raptor Nest Surveys.** The Department will conduct a pre-construction raptor nest survey and if Bald Eagle nests are found during the survey, the Contractor will follow National Bald Eagle Management Guidelines.

k. **Construction Lighting**. Limitations for construction lighting are contained in Appendix E, Permits.

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. **Interim Complete Date**. All work in phases 1B and 2C shall be substantially complete by November 30, 2015, or liquidated damages will apply in accordance with subsection 80-07b. - Failure to Attain Interim Completion Date.

d. **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:

(1) Failure to correct unsafe conditions for the workers or the public;

(2) Adverse weather that is not unusually severe;

(3) Failure to carry out Contract provisions;

(4) Failure to carry out orders given by the Engineer; or

(5) 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.

e. 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.

a. **Failure to Open Runway to Air Traffic.** For each flight between the hours of 6:30 a.m. and 6:30 p.m. that is required to divert to another airport by the Contractor's failure to open the runway to air traffic, liquidated damages will be assessed according to Table 80-2. These liquidated damages do not apply to Runway 18/36 during phase 2C when closure of Runway 18/36 is allowed.

TABLE 80-2
LIQUIDATED DAMAGES
FOR EACH FLIGHT DIVERTED OR DELAYED

AIRCRAFT TYPE	LIQUIDATED DAMAGES
Passenger Jet	$25,000

Freight Carrier	$10,000
All Others	$1,500

b. **Failure to Attain Interim Completion Date.** For each calendar day after November 30, 2015 that phases 1B and 2C are not substantially complete, a sum of fifteen thousand dollars and no cents ($15,000) per day will be deducted from any moneys otherwise due the Contractor.

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.~~ The barge displacement method will not be allowed.

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.

Contractor's failure to pay subcontractors, or subcontractor's failure to pay lower tier subcontractors, according to prompt payment provisions required under Subsection 80-01 is considered unsatisfactory performance.

The Department will not withhold payment as retainage but may withhold payment for unsatisfactory performance. If satisfactory progress is being made and subcontractors are paid according to Subsection 80-01 and AS 36.90.210, 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 or payment for satisfactory work by a subcontractor or lower tier subcontractor is not paid according to Subsection 80-01, the Engineer may withhold up to 100 percent of the total amount earned from subsequent progress payments. The Engineer may withhold up to 200 percent of the estimated cost to complete final punch list items for unsatisfactory performance until those items are complete. The Engineer will notify the Contractor in writing within eight (8) working days of a request for a progress payment of the reasons why part or all of the payment is being withheld for unsatisfactory performance and what actions may be taken by the Contractor to receive full payment.

Payments of withheld amounts will be made in accordance with AS 36.90.200. No interest will be paid to the Contractor for amounts withheld for unsatisfactory performance except if the Department fails to pay the amount withheld within twenty one (21) calendar days after the Contractor satisfactorily completes the remedial actions identified by the Engineer, as provided in AS 36.90.200(e).

The Contractor shall pay interest on retainage withheld from subcontractors, and at an interest rate according to AS 36.90.250 and AS 45.45.010(a).

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 D-701 STORM DRAINS AND CULVERTS

DESCRIPTION

701-1.1 This item shall consist of the construction of pipe culverts and storm drains according to these Specifications and in reasonably close conformity with the lines and grades shown on the Plans.

MATERIALS

701-2.1 Materials shall meet the requirements shown on the Plans and specified below.

701-2.2 PIPE. The pipe shall be of the type called for on the Plans and shall be according to the following appropriate requirements.

Metallic Coated Corrugated Steel Pipe (Type I, IR or II)	AASHTO M 36
Galvanized Steel Corrugated Structural Plates and Fasteners for Pipe, Pipe-Arches, and Arches	ASTM A 761
Polymer Precoated Corrugated Steel Pipe for Sewers and Drains	ASTM A 762
Post-Coated and Lined (Bituminous or Concrete) Corrugated Steel Sewer and Drainage Pipe	ASTM A 849
Steel Sheet, Zinc and Aramid Fiber Composite Coated for Corrugated Steel Sewer, Culvert, and Underdrain Pipe	ASTM A 885
Corrugated Aluminum Alloy Culvert Pipe	ASTM B 745
Non-Reinforced Concrete Pipe	ASTM C 14
Reinforced Concrete Pipe	ASTM C 76
Reinforced Concrete D-Load Pipe	ASTM C 655
Reinforced Concrete Arch Pipe	ASTM C 506
Reinforced Concrete Elliptical Pipe	ASTM C 507
Precast Reinforced Concrete Box Sections	ASTM C 789 and C 850
Poly (Vinyl Chloride) Ribbed Drain Pipe & Fittings Based on Controlled Inside Diameter	ASTM F 794
Poly (Vinyl Chloride) (PVC) Corrugated Sewer Pipe With a Smooth Interior and Fittings	ASTM F 949
Bituminous-Coated Corrugated Metal Pipe and Pipe Arches	AASHTO M 190
Bituminous-Coated Corrugated Aluminum Alloy Culvert Pipe	AASHTO M 190 and M 196
Bituminous-Coated Structural Plate Pipe, Pipe Arch, and Arches	AASHTO M 167 and M 243
Aluminum Alloy Structural Plate for Pipe, Pipe Arch, and Arches	AASHTO M 219
Polyvinyl Chloride (PVC) Pipe	ASTM D 3034
Corrugated Polyethylene Drainage Tubing	AASHTO M 252
Corrugated Polyethylene Pipe, 300 mm to 1200 mm Diameter	AASHTO M 294
Poly (Vinyl Chloride) (PVC) Profile Wall Drain Pipe and Fittings Based on Controlled Inside Diameter	AASHTO M 304

701-2.3 CONCRETE. Concrete for pipe cradles shall have a minimum compressive strength of 2,000 psi at 28 days and conform to the requirements of AASHTO M 157.

701-2.4 RUBBER GASKETS. Rubber gaskets for rigid pipe shall conform to the requirements of ASTM C 443. Rubber gaskets for PVC pipe and polyethylene pipe shall conform to the requirements of ASTM F 477. Rubber gaskets for zinc-coated steel pipe and precoated galvanized pipe shall conform to the requirements of ASTM D 1056, for the ``RE'' closed cell grades.

701-2.5 JOINT MORTAR. Pipe joint mortar shall consist of one part portland cement and two parts sand. The portland cement shall conform to the requirements of AASHTO M 85, Type I. The sand shall conform to the requirements of AASHTO M 45.

701-2.6 JOINT FILLERS. Poured filler for joints shall conform to the requirements of AASHTO M 324.

701-2.7 PLASTIC GASKETS. Plastic gaskets shall conform to the requirements of AASHTO M 198(Type B).

701-2.8 CULVERT MARKER POSTS. Provide posts made of durable glass fiber and resin reinforced material flexible to -40° F, resistant to impact and ultraviolet light, "T" in cross section, 3.75 inch wide x 72 inches long, and color blue. Provide Carsonite CUM-375 utility marker or approved equal.

701-2.9 CLASS B BEDDING. Use one of the following materials:

a. Suitable material as defined in specification subsection P-152-2.3, except that 100% of the material will pass a 1 inch sieve.

b. P-208 Aggregate Surface Course (when included in this contract).

c. P-209 Crushed Aggregate Base Course (when included in this contract).

701-2.10 END SECTIONS. End sections for metal pipe must be of the same material as the pipe.

CONSTRUCTION METHODS

701-3.1 EXCAVATION. The width of the pipe trench shall be sufficient to permit satisfactory jointing of the pipe and thorough tamping of the bedding material under and around the pipe, but it shall not be less than the external diameter of the pipe plus 6 inches on each side. The trench walls shall be approximately vertical.

Where rock, hardpan, or other unyielding material is encountered, the Contractor shall remove it from below the foundation grade for a depth of at least 12 inches or 1/2 inch for each foot of fill over the top of the pipe (whichever is greater) but for no more than 75% of the nominal diameter of the pipe. The width of the excavation shall be at least 1 foot greater than the horizontal outside diameter of the pipe. The excavation below grade shall be backfilled with selected fine compressible material, such as silty clay or loam, and lightly compacted in layers not over 6 inches in uncompacted depth to form a uniform but yielding foundation.

Where a firm foundation is not encountered at the grade established, due to soft, spongy, or other unstable soil, the unstable soil shall be removed and replaced with approved ~~granular~~ Class B bedding material for the full trench width. The Engineer shall determine the depth of removal necessary. The ~~granular~~ Class B bedding material shall be compacted to provide adequate support for the pipe.

The excavation for pipes that are placed in embankment fill shall not be made until the embankment has been completed to a height above the top of the pipe as shown on the Plans.

701-3.2 BEDDING. The pipe bedding shall conform to the class specified on the Plans. When no bedding class is specified or detailed on the Plans, the requirements for Class B bedding shall apply.

a. **Rigid Pipe.** Class A bedding shall consist of a continuous concrete cradle conforming to the plan details.

   Class B bedding shall consist of a bed of granular material having a thickness of at least 6 inches below the bottom of the pipe and extending up around the pipe for a depth of not less than 30% of the pipe's vertical outside diameter. The layer of bedding material shall be shaped to fit the pipe for at least 10% of the pipe's vertical diameter and shall have recesses shaped to receive the bell of bell and spigot pipe. ~~The bedding material shall be sand or selected sandy soil, all of which passes a 3/8 inch sieve and not more than 10% of which passes a No. 200 sieve.~~

b. **Flexible Pipe.** For flexible pipe, the bed shall be roughly shaped to fit the pipe, and a bedding blanket of sand or fine granular material shall be provided as follows:

Pipe Corrugation Depth, in.	Minimum Bedding Depth, in.
½	1
1	2
2	3
2-1/2	3-1/2

c. **PVC and Polyethylene Pipe.** For PVC and polyethylene pipe, the bedding material shall consist of Class B bedding. ~~coarse sands and gravels with 100% passing the 3/4 inch sieve. For pipes installed under paved areas, no more than 12% of the material shall pass the No. 200 sieve. For all other areas, no more than 50% of the material shall pass the No. 200 sieve.~~ The bedding shall have a thickness of at least 6 inches below the bottom of the pipe and extend up around the pipe for a depth of not less than 50% of the pipe's vertical outside diameter.

701-3.3 LAYING PIPE. The pipe laying shall begin at the lowest point of the trench and proceed upgrade. The lower segment of the pipe shall be in contact with the bedding throughout its full length. Bell or groove ends of rigid pipes and outside circumferential laps of flexible pipes shall be placed facing upgrade.

Paved or partially lined pipe shall be placed so that the longitudinal center line of the paved segment coincides with the flow line.

Elliptical and elliptically reinforced pipes shall be placed with the manufacturer's top of pipe mark within five degrees of a vertical plane through the longitudinal axis of the pipe.

701-3.4 JOINING PIPE. Joints shall be made with (1) portland cement mortar, (2) portland cement grout, (3) rubber gaskets, (4) plastic gaskets, or (5) coupling bands.

Mortar joints shall be made with an excess of mortar to form a continuous bead around the outside of the pipe and shall be finished smooth on the inside. Molds or runners shall be used for grouted joints in order to retain the poured grout. Rubber ring gaskets shall be installed to form a flexible watertight seal.

a. **Concrete Pipe.** Concrete pipe may be either bell and spigot or tongue and groove. The method of joining pipe sections shall be such that the ends are fully entered and the inner surfaces are reasonably flush and even. Joints shall be thoroughly wetted before mortar or grout is applied.

b. **Metal Pipe.** Metal pipe shall be firmly joined by form fitting bands conforming to the requirements of ASTM A 760 for steel pipe and AASHTO M 36 for aluminum pipe.

c. **PVC and Polyethylene Pipe.** Joints for PVC and polyethlyene pipe shall conform to the requirements of ASTM D 3212 when water tight joints are required. Joints for PVC and polyethlyene pipe shall conform to the requirements of AASHTO M 304 when soil tight joints are required. Fittings for polyethylene pipe shall conform to the requirements of AASHTO M 252 or M 294.

701-3.5 BACKFILLING. Pipes shall be inspected before any backfill is placed; any pipes found to be out of alignment, unduly settled, or damaged shall be removed and relaid or replaced at the Contractor's expense.

~~Material for backfill shall be fine, readily compactable soil, or granular material selected from the excavation or a source of the Contractor's choosing. It shall not contain frozen lumps, chunks of highly plastic clay, or other objectionable material. Material for backfill shall be 100% passing a 2-inch sieve, 95-100% passing a 1/2-sieve, and 0-5% passing a No. 4 sieve.~~

Use backfill that is suitable material as defined in subsection P-152-2.3 except that:

a. 100% of the material placed within 1 foot of the pipe will pass a 3 inch sieve.

b. If the pipe is placed in or under the structural section, construct the backfill according to the material and construction requirements of the specifications for the applicable lift of material (P-154, P-208, P-209).

When the top of the pipe is even with or below the top of the trench, the backfill shall be compacted in layers not exceeding 6 inches on both sides of the pipe and shall be brought up 1 foot above the top of the pipe or to natural ground level, whichever is greater. Care shall be exercised to thoroughly compact the backfill material under the haunches of the pipe. Material shall be brought up evenly on both sides of the pipe.

When the top of the pipe is above the top of the trench, the backfill shall be compacted in layers not exceeding 6 inches and shall be brought up evenly on both sides of the pipe to 1 foot above the top of the pipe. The width of backfill on each side of the pipe for the portion above the top of the trench shall be equal to twice the pipe's diameter or 12 feet, whichever is less.

For PVC and polyethylene pipe, the backfill shall be placed in two stages; first to the top of the pipe and then at least 12 inches over the top of the pipe. The backfill material shall meet the requirements of Subsection 701-3.2c.

All backfill shall be compacted to the density required under Item P-152.

701-3.6 CULVERT MARKER POSTS. Install culvert marker posts at each culvert inlet and outlet. Drive posts to 18 inches minimum embedment.

METHOD OF MEASUREMENT

701-4.1 PIPE. The length of pipe will be measured in linear feet of pipe in place, completed, and approved. It will be measured along the centerline of the pipe from end or inside face of structure to the end or inside face of structure, whichever is applicable. The several classes, types and size will be measured separately. All fittings and end sections will be included in the length of the pipe being measured.

701-4.2 CONCRETE. The volume of concrete for pipe cradles to be paid for will be the number of cubic yards of concrete which is completed in place and accepted.

701-4.3 ROCK. The volume of rock to be paid for will be the number of cubic yards of rock excavated. No payment will be made for the cushion material placed for the bed of the pipe.

701-4.4 CULVERT MARKER POSTS. Culvert marker posts will not be measured for payment.

BASIS OF PAYMENT

701-5.1 Payment will be made at the contract unit price per linear foot for each kind of pipe of the type and size designated; at the contract unit price per cubic yard of concrete for pipe cradles; and at the contract unit price per cubic yard for rock excavation. Culvert marker posts will not be paid for directly, but will be subsidiary to pipe items.

Payment will be made under:

Item D-701a	(Type) Pipe, (Diam.) inch - per linear foot
Item D-701b	Concrete for pipe cradles - per cubic yard
Item D-701c	Rock excavation - per cubic yard

MATERIAL REQUIREMENTS

AASHTO M 36	Corrugated Steel Pipe, Metallic-Coated, for Sewers and Drains

AASHTO M 45	Aggregate for Masonry Mortar
AASHTO M 85	Portland Cement
AASHTO M 157	Ready-Mixed Concrete
AASHTO M 190	Bituminous-Coated Corrugated Metal Culvert Pipe and Pipe Arches
AASHTO M 196	Corrugated Aluminum Alloy Culverts and Underdrains
AASHTO M 198	Joints for Circular Concrete Sewer and Culvert Pipe Using Flexible Watertight Gaskets
AASHTO M 219	Aluminum Alloy Structural Plate for Pipe, Pipe-Arches, and Arches
AASHTO M 243	Field Applied Coating of Corrugated Metal Structural Plate for Pipe, Pipe-Arches, and Arches
AASHTO M 252	Corrugated Polyethylene Drainage Tubing
AASHTO M 294	Corrugated Polyethylene Pipe, 300 to 1200 mm Diameter
AASHTO M 304	Poly (Vinyl Chloride) (PVC) Profile Wall Drain Pipe and Fittings Based on Controlled Inside Diameter
AASHTO M 324	Joint and Crack Sealants, Hot Applied, for Concrete and Asphalt Pavements
ASTM A 761	Steel Galvanized, Corrugated Structural Plates and Fasteners for Pipe, Pipe-Arches, and Arches
ASTM A 762	Precoated (Polymeric) Galvanized Steel Sewer and Drainage Pipe
ASTM A 849	Post-Coated and Lined (Bituminous or Concrete) Corrugated Steel Sewer and Drainage Pipe
ASTM A 885	Steel Sheet, Zinc and Aramid Fiber Composite Coated for Corrugated Steel Sewer, Culvert, and Underdrain Pipe
ASTM B 745	Corrugated Aluminum Alloy Culvert Pipe
ASTM C 14	Concrete Sewer, Storm Drain, and Culvert Pipe
ASTM C 76	Reinforced Concrete Culvert, Storm Drain, and Sewer Pipe
ASTM C 443	Joints for Circular Concrete Sewer and Culvert Pipe, Using Rubber Gaskets
ASTM C 506	Reinforced Concrete Arch Culvert, Storm Drain, and Sewer Pipe
ASTM C 507	Reinforced Concrete Elliptical Culvert, Storm Drain and Sewer Pipe
ASTM C 655	Reinforced Concrete D-Load Culvert, Storm Drain and Sewer Pipe
ASTM C 700	Vitrified Clay Pipe, Extra Strength, Standard Strength, and Perforated
ASTM C 789	Precast Reinforced Concrete Box Sections for Culverts, Storm Drains, and Sewers

ASTM C 850	Precast Reinforced Concrete Box Sections for Culverts, Storm Drains, and Sewers with Less than 2 feet of Cover
ASTM D 1056	Flexible Cellular Materials--Sponge or Expanded Rubber
ASTM D 3034	Type PSM Poly (Vinyl Chloride) (PVC) Sewer Pipe and Fittings
ASTM D 3212	Joints for Drain and Sewer Plastic Pipes Using Flexible Elastomeric Seals
ASTM F 477	Elastomeric Seals (Gaskets) for Joining Plastic Pipe
ASTM F 794	Poly (Vinyl Chloride) Ribbed Drain Pipe & Fittings Based on Controlled Inside Diameter
ASTM F 949	Poly (Vinyl Chloride) (PVC) Corrugated Sewer Pipe With a Smooth Interior and Fittings

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-115 WORKER MEALS AND LODGING, OR PER DIEM

DESCRIPTION

115-1.1 This item consists of complying with the Alaska Department of Labor and Workforce Development (DOLWD) requirements for Worker Meals and Lodging, or Per Diem; as described in their ~~July 25, 2005~~May 10, 2013 memo WHPL #197(A4) and the State Laborer's and Mechanic's Minimum Rates of Pay (current issue).

Ensure subcontractors comply with the DOLWD requirements. The direct internet address is http://www.labor.state.ak.us/lss/pamp600.htm.

Ensure facilities meet the Alaska Administrative Code 8 AAC 61.1010 and 8 AAC 61.1040 Occupational Safety and Health Standards, 18 AAC 31 Alaska Food Code, and U. S. Code of Federal Regulations 29 CFR Section 1910.142 Temporary Labor Camps.

Do not consider the cost of Meals and Lodging or Per Diem in setting wages for the worker or in meeting wage requirements under AS 23.10.065 or AS 36.05.

METHOD OF MEASUREMENT

115-2.1 Progress payments for Worker Meals and Lodging, or Per Diem will be computed as equivalent to the percentage, rounded to the nearest whole percent, of the original contract amount earned.

BASIS OF PAYMENT

115-3.1 Payment will be made at the contract lump sum price for Worker Meals and Lodging, or Per Diem. This price and payment shall be full compensation for all costs associated with this item.

Payment will be made under:

Item G-115a Worker Meals and Lodging, or Per Diem - 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, Part 26, the opportunity to participate fairly with other contractors in the performance of contracts financed with federal funds. The Contractor and subcontractors shall not discriminate on the basis of race, color, national origin, or sex in the performance of this contract. The Contractor will carry out applicable requirements of 49 CFR Part 26 in the award and administration of US DOT assisted contracts.

120-1.2 INTERPRETATION. This section implements 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 is a material breach of contract, which may result in contract termination or other remedy as DOT&PF deems appropriate. Failure to comply with this section is justification for debarment action as provided in AS 36.30.640(4).

120-1.4 DEFINITIONS AND TERMS.

a. **Administrative Reconsideration.** A process by which the low bidder may request reconsideration when the Department determines the Good Faith Effort (GFE) requirements have not been met.

b. **Broker.** A certified DBE for the delivery of creditable materials, supplies, equipment, transportation/hauling, insurance, bonding, etc., within its certified category, that is necessary to complete the project. A broker of materials certified in a supply category must be responsible for scheduling the delivery of materials and ensuring that the materials meet specifications before credit will be given.

c. **Civil Rights Office.** The Department's Civil Rights Office. (CRO)

d. **Contract Compliance Officer.** Individual within the CRO with the authority to administer the Department's compliance programs.

e. **Disadvantaged Business Enterprise.** A Disadvantaged Business Enterprise (DBE) which is a for-profit small business concern that is certified in accordance with 49 CFR Part 26 and listed in the Alaska DBE Directory.

f. **DBE Key Employee.** A permanent, year-round employee of the DBE and whose name is on file with the CRO as a key employee. A key employee may act as an on-site representative when the owner is not on-site.

g. **DBE Utilization Goal.** The percent of work to be performed by certified DBEs. The goal is established by the Department and specified in the contract.

h. **DBE Officer.** Individual designated in writing as a representative of the Contractor concerning DBE issues.

i. **Manufacturer.** A DBE certified in a supply category that changes the shape, form, or composition of original material in some way. The DBE must provide that altered material to the general public or the construction industry at large on a regular basis.

j. **Race Conscious Participation.** DBE participation used to meet a specified DBE Utilization Goal.

k. **Race Neutral Participation.** DBE participation that is in excess of the specified DBE Utilization Goal or participation that does not count towards this goal.

l. **Regular Dealer.** A DBE certified in a supply category who operates in a manner consistent with industry practice and who:

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

(4) a person may be a regular dealer in such bulk items as petroleum products, steel, cement, gravel, stone, or asphalt without owning, operating, or maintaining a place of business, if the person both owns and operates distribution equipment for the products. Any supplementing of regular dealers' own distribution equipment shall be by a long-term lease agreement and not on an ad hoc or contract-by-contract basis.

m. **Commercially Useful Function.** DBE performs a commercially useful function when it is responsible for execution of the work of the contract and is carrying out its responsibilities by actually performing, managing, and supervising the work involved. The DBE must also 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.

120-2.1 MEETING THE DBE UTILIZATION GOAL. A DBE's proposed work may be used to demonstrate the successful bidder's ability to meet the DBE Utilization Goal before Contract award. The DBE must be certified in a category covering the Commercially Useful Function to be performed at the time of listing on Form 25A-325C (DBE Utilization Report).

A bidder may meet the DBE Utilization Goal through (1) the participation of certified DBE firms, or (2) documentation of required GFE (Subsection 120-3.1), or (3) a combination of participation and GFE to be eligible for contract award.

DBE participation on contingent sum items will count as Race Neutral DBE participation and not towards fulfilling a minimum DBE Utilization Goal.

120-3.1 DETERMINATION OF COMPLIANCE.

a. **Phase I-Bid.** All DBE GFEs must be completed prior to bid opening.

b. **Phase II-Award.** The apparent low bidder shall submit evidence of DBE commitment(s) within five working days after receipt of written notification by the Department of the successful low bid. The

apparent low bidder may not supplement its DBE efforts after opening, nor offer new or additional DBE participation after submitting the DBE Utilization Report (Form 25A-325C).

(1) **Written DBE Commitment.** Complete Form 25A-326 for each DBE subcontractor.

(2) **DBE Utilization Report.** Submit a completed DBE Utilization Report Form 25A-325C. All listed DBEs must be certified in the appropriate work categories prior to bid opening to be used to meet the DBE contract goal.

(3) **GFE Documentation.** Submit a completed Summary of Good Faith Effort Documentation Form 25A-332A (with attachments) and Contract Report Form 25A-321A if the DBE Utilization Goal is not met on Form 25A-325C.

If the bidder cannot meet the DBE Utilization Goal, and cannot document the minimum required GFE (as specified below), the Contracting Officer will determine the bidder to be not responsible.

120-3.2 GOOD FAITH EFFORT (GFE).

a. **GFE Criteria.** When a bidder fails to meet DBE Utilization Goal, the CRO will use the following criteria to judge whether they have demonstrated sufficient GFE to be eligible for award of the contract.

(1) **Consider All Subcontractable Items.** Before bid opening, the bidder shall, at a minimum, seek DBE participation for each of the subcontractable items with an established DBE goal as identified on Form 25A-324. It is the bidder's responsibility to facilitate DBE participation by making the work listed on the subcontractable items list available to DBE firms.

If the bidder cannot achieve the DBE Utilization Goal, then the bidder should also consider other items not listed that could be subcontracted to DBEs.

(2) **Initial DBE Notification.** All DBEs listed in the Department's Plan Holders Self-Registration List for the particular project being bid must be contacted at least seven calendar days prior to bid opening. For GFE purposes, DBEs certified to perform the work items identified on Form 25A-324 and listed as mandatory contact on the Department's Plan Holders Self-Registration List, must be contacted to solicit their interest. Each contact with a DBE firm must be logged on a Contact Report, Form 25A-321A.

The bidder must give DBEs at least seven calendar days to quote. The bidder may reject DBE quotes received after the deadline. Responsive DBE quotes must be accepted unless they are determined non-competitive. Deadline for quote submission and responsiveness determinations for DBEs and non-DBEs must be consistently applied.

The only acceptable methods of initial and follow up notification are:

(a) By fax with a confirmation receipt of successful transmission to the DBE's fax number listed in the DBE Directory. A fax transmission without receipt of successful transmission is unsatisfactory.

(b) By email with confirmation of successful receipt to the DBE's email address listed in the DBE Directory. Email without confirmation of successful receipt is unsatisfactory.

(c) By telephone solicitation with a record of the date and time of the telephone call made to the DBE's telephone number listed in the DBE Directory. Telephone solicitation without a record of date and time is unsatisfactory.

(3) **Non-Competitive DBE Quotes.** DBE quotes more than 10 percent higher than an accepted non-DBE quote will be deemed non-competitive, provided they are for the exact same work or service.

All evidence in support of a non-competitive quote determination must be provided at the time of the GFE submittal. When a DBE quote is rejected as being non-competitive, the work must be performed by the non-DBE subcontractor whose quote was used to provide the basis of the determination. Payments received by the non-DBE subcontractor during the execution of the Contract shall be consistent with the accepted quote. This does not preclude increases due to change documents issued by the Department.

(4) **Assistance To DBEs.** Contractors must provide DBEs with:

(a) Information about bonding or insurance required by the bidder.
(b) Information about securing equipment, supplies, materials, or related assistance or services.
(c) Adequate information about the requirements of the contract regarding the specific item of work or service sought from the DBE.

(5) **Follow-up DBE Notifications.** If there is no response from the initial DBE notification, you must contact the DBE(s) again to determine if they will be quoting. For acceptable forms of notification and required documentation see 120-3.2, subsection a(2) items (a) through (c).

Failure to submit a quote by the deadline is 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.

(6) **GFE Evaluation.** Subsections (1) through (5) must be completed for a GFE based submission to be considered. Failure to perform and document actions contained in subsections (1) through (5) constitutes insufficient GFE. After submitting a GFE, bidders may only clarify efforts taken before opening. No new efforts or additional DBE participation is permitted after opening.

b. **Administrative Reconsideration.** 49 CFR Part 26.53(d) provides an opportunity for administrative reconsideration when the Department determines that GFE is insufficient. This opportunity must be exercised within three working days of notification that GFEs were unsatisfactory. For reconsideration, the bidder must provide written documentation or argument concerning efforts to meet the DBE Utilization Goal. No new or additional contact information may be provided. Only contact information the bidder provided in support of its initial request for a GFE determination by the CRO may be presented to support the request for administrative reconsideration.

The process for an Administrative Reconsideration is as follows:

(1) The bidder will have the opportunity to meet with the DBE Liaison Officer in person to discuss the issue. If so desired, the bidder must be ready to meet with the DBE Liaison Officer within four working days of receipt of notice that it failed to meet the requirements of this subsection.

(2) The DBE Liaison Officer will render a written decision and provide notification to the bidder within four working days after the meeting. The written decision will explain the basis for finding.

(3) The finding of the DBE Liaison Officer cannot be appealed to the U.S. DOT.

120-3.3 DBE CREDITABLE AND NON CREDITABLE WORK.

a. DBE Creditable Work. The Commercially Useful Function work items and creditable dollar amounts shown on the DBE Utilization Report, Form 25A-325C, shall be included in any subcontract, purchase order or service agreement with that DBE.

b. DBE Decertification.

(1) If a DBE performing a Commercially Useful Function loses it DBE certification at any time prior to execution of a subcontract, purchase order or service agreement, as the result of a determination of ineligibility pursuant to 49 CFR Part 26.87, the work of that firm will not be credited toward the DBE Utilization Goal and the Contractor must either:

(a) meet the contract goal by subcontracting with an eligible DBE firm or demonstrate a GFE to do so; or

(b) continue with the decertified DBE and find other work not already committed to DBEs in an amount that meets or exceeds the DBE Utilization Goal.

(2) If a DBE performing a Commercially Useful Function loses its DBE certification after execution of a subcontract, purchase order or service agreement, as the result of a determination of ineligibility pursuant to 49 CFR Part 26.87, the de-certified DBE may continue to perform, and the work may be credited toward the DBE Utilization Goal.

(3) If a DBE goes out of business and cannot perform the work, the Contractor must meet the contract goal by subcontracting with an eligible DBE firm or demonstrate a GFE to do so.

The provisions of 120-3.3(c) Termination of a DBE and 120-3.3 (d) DBE Replacement or Substitution do not apply to this section.

A Contractor must notify the CRO within one business day if they become aware of any change in a DBE's circumstances that might lead to a DBE's decertification.

c. Termination of a DBE.

(1) In accordance with 49 CFR 26.53(f)(1) the Contractor shall not terminate a DBE without good cause and the prior written consent of the Engineer. For purposes of this paragraph, good cause includes the following circumstances:

(a) DBE defaults on their obligation for any reason;

(b) The DBE fails or refuses to perform the work of its subcontract in a way consistent with normal industry standards. Provided, however, that good cause does not exist if the failure or refusal of the DBE to perform its work on the subcontract results from the bad faith or discriminatory action of the Contractor;

(c) The DBE fails or refuses to meet the Contractor's reasonable, nondiscriminatory bond requirements;

(d) The DBE becomes bankrupt, insolvent, or exhibits credit unworthiness;

(e) The DBE is ineligible to work on public works projects because of suspension and debarment proceedings pursuant 2 CFR Parts 180, 215, and 1,200 or applicable state law;

(f) The Engineer determines that the DBE is not a responsible contractor;

(g) The DBE voluntarily withdraws from the project and provides a written notice of its withdrawal;

(h) The DBE is ineligible to receive DBE credit for the type of work required;

(i) A DBE owner dies or becomes disabled with the result that the DBE is unable to complete its work; or

(j) Other documented good cause that the Engineer determines compels the termination of the DBE, provided that good cause does not exist if the Contractor seeks to terminate a DBE it relied upon to obtain the contract so that the Contractor can self-perform the work for which the DBE was engaged or so that the Contractor can substitute another DBE or non-DBE after contract award.

(2) The Contractor must give written notice to the DBE of its intent to request to terminate and/or substitute, and the reason for the request. The request to terminate and/or substitute must be submitted to the Engineer.

(3) The Contractor must give the DBE five working days to respond to the written notice. Any response from the DBE must be submitted to the Engineer.

(4) DBEs that are terminated must be replaced or substituted in accordance with 120-3.2(d).

d. DBE Replacement or Substitution.

(1) The Contractor shall submit to the Engineer a written request to replace or substitute a DBE who fails or refuses to execute a written subcontract or who is terminated under 120-3.3(c). If approved, the Contractor shall, at a minimum, replace or substitute the DBE with another eligible DBE for the same work in order to fulfill its commitment under the DBE Utilization Goal.

(2) If the Contractor cannot obtain replacement DBE participation, the DBE Utilization Goal will not be adjusted. However, the Engineer may consider the following criteria as satisfying that portion of DBE participation that cannot be replaced.

(a) The Contractor was not at fault or negligent and that the circumstances surrounding the replacement or substitution 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 GFE expended in accordance with Subsection 120-3.2; or

(c) It is too late in the project to provide any real subcontracting opportunities for DBEs.

If the Engineer agrees that additional DBE participation is not available, the DBE may be replaced or substituted with a non-DBE or the Contractor may self-perform the work.

120-3.4 COMMERCIALLY USEFUL FUNCTION.

a. Creditable Work. Measuring the DBE Utilization Goal will be based upon the actual dollars paid to the DBEs for creditable Commercially Useful Function work on this project. This is determined by the Engineer in accordance with this Section.

Commercially Useful Function is limited to:

(1) Prime Contractors;

(2) Subcontractors;

(3) Manufacturers;

(4) Regular Dealers;

(5) Brokers; or

(6) Joint Ventures

b. **Determination of Commercially Useful Function.** In order for the Commercially Useful Function work of the DBE to be credited toward the goal, the Contractor will ensure that the DBE is certified in the appropriate category at the time of the submittal of the subcontract, or the issuance of a purchase order or service agreement. Subcontracts, purchase orders, and service agreements shall be consistent with the written DBE commitment.

(1) The Commercially Useful Function 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) The following factors will be used in determining whether a DBE trucking company is performing a Commercially Useful Function:

(a) The DBE must be responsible for the management and supervision of the entire trucking operation for which it is performing on a particular contract, and there cannot be a contrived arrangement for the purpose of meeting DBE goals.

(b) The DBE must itself own and operate at least one fully licensed, insured, and operational truck used on the contract.

(c) The DBE receives credit for the total value of the transportation services it provides on the contract using trucks it owns, insures, and operates using drivers it employs.

(3) The Contractor will receive credit for the Commercially Useful Function 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 Commercial Useful Function and potential DBE credit.

(4) 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 Commercially Useful Function criteria may be credited toward the DBE Utilization Goal.

(5) DBE work shall conform to the following requirements to be a Commercially Useful Function:

(a) It 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) It 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 on-Site Representative will be at the work site and responsible for the work. Leased equipment may also be used, provided the DBE has exclusive use of the equipment and it is operated by a driver the DBE employs. In remote locations or rare situations, a DBE may use equipment and/or personnel from the Contractor or its affiliates. Should this situation arise, a prior arrangement must be in place. The duration of the arrangement must be short term and prior written approval from the Engineer must be obtained.

(d) The manner in which the work is sublet or performed will conform to standard 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 (and 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 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 their delivery and fully responsible for ensuring that they meet specifications. The cost of materials purchased from the contractor or its affiliates is not creditable.

(f) Subcontract work, with the exception of truck hauling, shall be sublet by the same unit of measure as is contained in the Bid Schedule unless approved in advance by the Engineer.

(g) The DBE will control all business administration, accounting, billing and payment transactions. The Contractor cannot perform these functions for the DBE.

In accordance with AS 36.30.420(b), the Engineer may inspect the offices of the DBE and audit their records to assure compliance.

c. **Rebuttal of Finding of No Commercially Useful Function.** Consistent with the provisions of 49 CFR Part 26.55(c)(4)&(5), before the Engineer makes a final finding that no Commercially Useful Function has been performed by a DBE, the Engineer will coordinate transmittal of the presumptive finding to the Contractor, who will in-turn, notify the DBE. The Contractor will provide the DBE the opportunity to provide rebuttal information. The Contractor shall present the information to the Engineer.

The Engineer will make a final determination on whether the DBE is performing a Commercially Useful Function. Under no circumstances will the Contractor take any action with respect to the DBE until the final determination is made. The Engineer's decisions on Commercially Useful Function matters are subject to review by the Department, but are not administratively appealable to the U.S. DOT.

d. **Monthly Required Reporting.** On a monthly basis, the Contractor shall submit the Monthly Summary of Disadvantaged Business Enterprise Participation, Form 25A-336, to the Engineer. Reports are due by the 15th of the following month. Also attach copies of canceled checks or bank statements that identify payer, payee, and amount of transfer to verify payment information shown on the form.

120-4.1 DETERMINING DBE CREDIT. The Contractor is entitled to count toward the DBE Utilization Goal those monies actually paid to certified DBEs for Commercially Useful Function 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 Commercially Useful Function of a DBE prime contractor is 100 percent of the monies actually paid to the DBE under the contract for creditable work and materials in accordance with 49 CFR Part 26.55.

b. Credit for the Commercially Useful Function of a subcontractor is 100 percent of the monies actually paid to the DBE under the subcontract for creditable work and materials.

c. Credit for the Commercially Useful Function of a subcontractor performing hauling/transportation is 100 percent of the monies actually paid to the DBE under the subcontract for creditable work for those firms certified in the 100 percent credit category. Credit for the Commercially Useful Function of a subcontractor performing hauling/transportation is 5 percent of the monies actually paid to the DBE under the subcontract for creditable work for those firms certified in the 5 percent credit category.

d. Credit for the Commercially Useful Function of a manufacturer is 100 percent of the monies paid to the DBE for the creditable materials manufactured.

e. Credit for the Commercially Useful Function of a regular dealer of a creditable material, product, or supply is 60 percent of its value. The value is the actual cost paid to the DBE not to exceed the bid price for such item.

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

g. Credit for the Commercially Useful Function of a broker performed by a DBE certified in a bonding or insurance category is limited to a reasonable brokerage fee, not to exceed 5 percent of the premium cost.

h. Credit for the Commercially Useful Function 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 JV agreement, as certified by the CRO. The DBE joint venture partner will be responsible for performing all of the work as delineated in the certified JV agreement.

120-5.1 ACHIEVEMENT OF DBE GOALS. 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 proof of payment, requested documentation, or otherwise cooperate with a DBE review or investigation, the Department will consider this to be unsatisfactory work. If the Contractor fails to utilize GFE to replace or substitute a DBE, regardless of fault (except for Subsection 120-3.3(d)(2)(c)), the Department will also consider this unsatisfactory work. Unsatisfactory work may result in disqualification of the Contractor from future bidding under Subsection GCP 20-13 and withholding of progress payments consistent with Subsection GCP 90-06.

ITEM G-130 SERVICES TO BE FURNISHED BY THE CONTRACTOR

DESCRIPTION

130-1.1 This work consists of furnishing and maintaining facilities specified in the Contract and listed in the bid schedule for the Department's project administrative personnel to use during the project. Facilities must be fully usable for the specified service. Maintain facilities adequately to preserve their utility. Services include heat, electricity, water and any others required to operate the facility. All facilities remain your property when you complete the work. Locate the sites and acquire all permits required unless otherwise shown on the Plans or specified.

REQUIREMENTS

130-2.1 FIELD OFFICE. ~~Furnish and maintain a suitable office for the Engineer to use during construction. If this office is part of your building, completely partition it from the rest of the structure and provide a separate outside door equipped with a lock. Provide a suitable stove or other heating device with fuel. Furnish adequate electrical lighting and 120-volt, 60-cycle power. Construct the office with at least 500 square foot of floor space and at least 60 square foot of window area, along with adequate ventilation. Provide at least 12 linear feet of shelf space. Equip the field office with sanitary facilities. Provide janitorial services at least weekly. Furnish two private telephone lines~~ with voice/data capability ~~for the exclusive use of the Engineer. Furnish a telephone connected to the first line and the second line is to be available for a~~ dedicated ~~facsimile machine/dial-up~~ or a shared facsimile/~~Internet connection. Provide~~ a broadband ~~Internet connection with send and receive data capability supporting 56~~ a transmission capacity of at least 200 ~~kilobytes per second or higher data transfer rate~~ in at least one direction~~.~~

~~Computers and facsimiles for State personnel are furnished by the State.~~
~~All long distance calls made by State personnel and the Internet service provider will be paid by the State. Local calls and all connection fees shall be paid by the Contractor.~~

~~Provide at least one designated handicap parking space. Make the field office accessible according to the requirements of Americans with Disabilities Act Accessibility Guidelines (ADAAG).~~

~~Make the field office available for occupancy two weeks before commencing work on the project through one week after Project Completion.~~

Furnish and maintain a suitable office for the Engineer, available for occupancy for 2 weeks before beginning work, through 30 days after issuance of the notice of project completion. The following office requirements shall be met:

- **a.** ~~1.~~ A minimum of 1000 square feet of floor area. The office shall be divided so that it contains an office room separated by a closable door. The office room shall have a minimum of 160 square feet of floor area.
- **b.** ~~2.~~ A thermostatically controlled interior heating system with necessary fuel.
- **c.** ~~3.~~ Adequate electrical lighting and 120 volt, 60 hertz power, with a minimum of 6 electrical outlets.
- **d.** ~~4.~~ A minimum of 100 square feet of window area and adequate ventilation.
- **e.** ~~5.~~ Adequate parking for a minimum of 10 vehicles, with one handicap parking space meeting the requirements of Americans with Disabilities Act Accessibility Guidelines (ADAAG).
- **f.** ~~6.~~ Attach indoor plumbing with sanitary lavatory facilities and potable drinking water.
- **g.** ~~7.~~ Two private telephone lines with voice/data capability for the exclusive use of the Engineer. One line is to be available for a dedicated facsimile or a shared facsimile / internet connection. Provide a broadband internet connection with a transmission capacity of at least 200 kilobytes per second or higher. Computers and facsimile machines will be furnished by the State.
- **h.** ~~8.~~ If a part of the Contractor's building, it shall be completely partitioned off from the balance of the structure and provided with a separate outside door equipped with a lock.

i. ~~9.~~ Weekly janitorial service consisting of emptying trash receptacles, vacuuming office area, and cleaning restroom and counter areas.

130-2.2 FIELD LABORATORY. Furnish and maintain a field laboratory for the Engineer to use exclusively throughout the contract. Provide a completely functional installation two weeks before commencing construction work through one week after Project Completion.

a. **Site.** Grade and compact a site for the lab acceptable to the Engineer. Locate and level the structure on this site. If subsequent ground movement causes an unlevel or unstable condition, re-level or re-locate the facility as directed.

b. **Main Lab.** Provide a weatherproof structure suitable to field test construction materials, with the following minimum functional requirements:

(1) Floor space of 300 square foot.
(2) Two 10 square foot windows that open and lock.
(3) Lockable door(s).
(4) Work bench(es), 30 inches X 16 feet total, 3 feet high.
(5) Shelf space, 12 inches X 16 feet.
(6) One 20-inch deep sink with attached faucet and approved drain.
(7) A ~~gravity-fed~~ 250-gallon tank with jet pump or pressurized constant water supply of acceptable quality
~~(7)~~(8) Provide potable drinking water.
~~(8)~~(9) Electrical service and facilities as follows:

(a) Electrical current, 120/240 V, single phase (ac), 60-cycle on 24-hour basis.
(b) Wiring system to support a ~~40~~60-amp user load demand. At least one 120V,15-amp, lighting circuit, ~~and~~ two 20-amp outlet circuits with GFI protection, and one 240V 20-amp outlet circuit for a Barnstead/Thermolyne NCAT Asphalt Content Tester Model # F85930 (outlet configuration as directed by the Engineer)..
(c) Outlets, six duplex outlets conveniently spaced around the lab, consistent with local codes.
(d) Lights, switch by door and either four 100-watt incandescent or eight 40-watt fluorescent.
(e) Exhaust fan, minimum 5 cubic feet per second.
~~(e)~~(f) Two private telephone lines with voice/data capability for the exclusive use of the Engineer. One line is to be available for a dedicated facsimile or a shared facsimile / internet connection. Provide a broadband internet connection with a transmission capacity of at least 200 kilobytes per second or higher. Computers and facsimile machines will be furnished by the State.

~~(9)~~(10) Heating equipment suitable to maintain a uniform 70 ºF room temperature.
~~(10)~~(11) Storage cabinet, 3 ft X 3 ft X 3 ft, lockable, securely fixed to an inside wall with a hinged door opening outward.
~~(11)~~(12) Office desk and 2 chairs.

If the lab is a mobile unit mounted on axles and wheels, block the structure under the frame so that the wheels do not touch the ground and the blocking rests firmly on the prepared site.

The Lab shall have sanitary lavatory facilities with weekly cleaning service.

c. **Auxiliary Lab.** Provide a separate weatherproof shed within 20 feet of the main lab structure with the following minimum functional requirements:

(1) Floor 8 ft X 12 ft, ceiling height 8 ft.
(2) Door 48 inches wide and window 5 square foot that opens, both lockable.

(3) Electrical service and facilities as in b.(8), except for the following:

(a) Lighting fixtures, 2 ea.
(b) Outlets, 3 conveniently spaced around the structure.
(c) Wiring system with each circuit GFI protected to satisfy a 20-amp user load demand.

(4) Work table 3 ft X 20 in X 3 ft high, capable of supporting 250 pounds and affixed to an inside wall as directed.

(5) Concrete-slab floor, 8 ft X 8 ft X 4 inches thick, cast-in-place or pre-cast. Install anchor bolts in the floor to accommodate the mounting pattern of the Gilson sieving machine at a location as directed.

(a) Comply with a. above for slab foundation requirements.
(b) Found the slab directly on the prepared site.

d. Access. For all types of installations, if the entryway is located higher than a single 7-inch rise, provide the following:

(1) Stairway, 36-inch width X 11-inch tread X 7-inch rise.
(2) Landing, 4 ft X 4 ft centered on the entryway.
(3) Handrail(s) firmly affixed to the stairway.

e. Lab Equipment and Services. Provide the following:

(1) Propane necessary for the lab operation, including two 100-lb tanks, regulators, hoses, fittings, and incidentals for a functional system.

(2) Specialized sampling equipment such as belt templates or belt sampling devices as required.

(3) Fuel and power necessary to continuously operate the facilities.

130-2.3 CURING SHED. Furnish and maintain a suitable weather tight shed for curing concrete test cylinders, with a suitable box or bins for curing concrete test cylinders.

Provide a box large enough or enough bins to contain at least 6 test cylinders from each pour that the Contractor proposes to make during any 28-day period. Use a box or bins at least 18 inches high and constructed of sturdy wood. Line the box or bins with a canvas or plastic liner to help retain moisture in the sand. Construct a lid to provide access to the box or bins.

Provide suitable heating to maintain the temperature in the box (or shed) between 60 and 80 °F at all times when curing the test cylinders. In addition, provide a suitable room thermometer in the shed to check the temperature.

Provide enough sand at the shed to fill the box or bins to be used for curing and enough water to keep the sand in the box or bins moist during the curing period.

130-2.4 CAMP FACILITIES. Furnish and maintain suitable camp facilities for Department employees and other authorized personnel. The Special Provisions will list an estimated number of employees.

Provide the following camp facilities:

a. Lodging (Bunkhouse and Bedding)
b. Meals (Mess Hall and Kitchen)
c. Sanitary and Other Facilities

Provide all camp facilities according to the applicable chapters of the State of Alaska Department of Labor, *Occupational* and *Industrial Structures Code*, and the State of Alaska Department of Environmental Conservation, *Food Service Regulations.*

Camp facilities for your employees, that meet these requirements, may also be used for State employees.

These Specifications do not exclude the use of roadhouses or lodges located near the project that are available for your use. The Engineer may approve a roadhouse, lodge, or camp, providing the accommodations conform with contract requirements.

Provide camp facilities for use by State employees and other authorized personnel while you are engaged in work at the project site, or in material sources used to supply materials to this project.

Department employees and other authorized personnel must sign a meal and/or lodging sheet after each meal and each night's lodging.

When you use camp facilities, completely remove and dispose of all garbage and/or trash piles, cesspools, septic tanks and leach fields as required by applicable laws and regulations and as directed.

130-2.5 SCALES. When the bid schedule calls for payment for material by weight, ~~other than the barge displacement method,~~ provide one of the following:

a. **Commercial weighing system.** Permanently installed commercial scales.
b. **Project weighing system.** Acceptable automatic digital scales and scale house.

Provide scales that record weight at least to the nearest 100 pounds. Maintain scale accuracy to within 0.5% of the correct weight throughout the range of use.

Do not use spring balances.

Do not use belt conveyor scales to determine pay weight. You may use belt conveyor scales to proportion plant blends and mixtures if the scales meet the general requirements for weighing equipment and are calibrated according to the manufacturer's instructions.

You may use batch weights to determine pay quantities when the batching equipment includes an approved and certified automatic weighing, cycling, and monitoring system. <u>If doing so, tare trucks at least once per day or more as directed by the Engineer, and provide proof that their loaded weight does not exceed highway load limits.</u>

Install and maintain platform scales with the platform level and rigid bulkheads at each end. Use a platform long enough to permit simultaneous weighing of all axle loads of the hauling vehicle, including coupled vehicles.

Maintain the accuracy of scales according to the specifications, tolerances and regulations for commercial weighing and measuring devices contained in the National Bureau of Standards, Handbook 44, as adopted by Alaska Statute, Section 45.75.050.(d). All commercial scales are subject to approval according to the Weights and Measures Act, AS 45.75. Have scales reinspected, as directed, to ensure their accuracy, and sealed to prevent tampering or other adjustment after certification.

Provide a weatherproof housing for platform scales to protect the recording equipment and allow the scale operator convenient access to the weigh indicator, scale computer, ticket printer, and the sequential printer. Furnish sanitary lavatory facilities, heating, adequate electrical lighting and 120-volt, 60-cycle power for the scale house.

Furnish competent scale operators to operate the system.

Weighing System: Provide an electronic computerized weighing system (ECWS) with the following capabilities:

a. Computer.

(1) Provide a scale computer that can store project numbers and all pay item descriptions for multiple projects and products that are weighed with the scale system.

Use a computer with a self-reading scale system that includes the scale load cell, a sealed direct reading weight indicator, scale computer, ticket printer, and sequential printer, and can record a complete shift's transaction on a 3.5-inch high-density diskette or other approved storage media.

(2) The scale computer must store the following for each hauling vehicle used on the project:

(a) Vehicle identification number marked on the vehicle
(b) Tare weight
(c) Maximum allowable gross vehicle weight (MAVW)

Make sure the scale operator tares vehicles at least once a day. Perform additional tares, as directed, during hauling operations. Perform tares in the presence of the Engineer, when requested.

The Engineer will ~~calculate the~~ check Contractor provided MAVW for each vehicle (using truck measurements provided by the Contractor) and list all vehicles and their MAVW(s) in the scale house. The MAVW is either the maximum allowable legal weight determined by the Engineer when you cannot haul overloads in the traffic stream, or the manufacturer's recommended maximum allowable gross vehicle weight as certified by the Contractor when vehicles are allowed to haul overloads.

The scale operator should only use MAVWs that the Engineer has provided in writing. Do not issue any tickets to a vehicle until the Engineer provides the MAVW.

(3) During weighing operations, the ECWS should compare each vehicle's gross weight to its MAVW. If the vehicle exceeds its MAVW, the system must alert the scale operator that an "overload" exists. The system should not issue a ticket.

(4) Provide a battery backup for the computer and protection for power surges or brown outs. The computer system must retain all stored data during a power outage and must operate during a power outage to allow you to shut down the hard drive without losing information.

b. Tickets. Furnish a ticket printer that prints a legible, serially numbered weigh ticket for the Engineer with the following information on each ticket in the order listed. All weights must be at least to the nearest 100 pounds:

(1) Project number
(2) Item number and description
(3) Date weighed
(4) Time weighed
(5) Ticket number
(6) Vehicle Identification Number
(7) MAVW
(8) Gross weight
(9) Tare weight

(10) Net weight
(11) Subtotal item net weight for each haul unit since start of shift
(12) Accumulated item net weight for all haul units since start of shift

After printing, the weigh ticket must automatically advance to a perforation so it can be torn off and handed to the driver.

Manually weigh and record weights for up to 48 hours during a printer malfunction or break-down, when the Engineer gives you prior written authorization. The manual weighing operation must meet all other contract requirements.

Unless the Engineer gives prior written authorization, you will not receive payment for any material weighed without using the ECWS.

c. **Sequential Printer.** Provide a sequential printer that prints out all transactions (keystrokes) made by the computer concurrently with the ticket printer. For permanent commercial scales, the printer may print at the end of the company's daily shift with the Engineer's approval. The printer must print all scales transactions including tares, voided tickets, and data changes made by the scale operator. The printer must allow for advancing the paper manually so that the scale operator can write notes on the paper when special situations occur, such as voided tickets, incorrect vehicle identification number used, etc. The scale operator should also note these special situations in the Scales Diary.

Submit the printout to the Engineer at the end of each shift. You will not receive payment for any hauled material until the printout is submitted.

d. **Data Diskettes.** Provide the Engineer with a 3.5-inch high-density diskette or other approved storage media at the end of the shift. Record all ticket information produced during the shift. Store data in an approved format.

Download data from the permanent commercial vendor scale computer hard drive directly to a disk at the end of the shift. Do not convert or manipulate data. Provide conversion programs and training so that you can convert data into the information the Engineer requires.

If the diskette is not completely usable, then correct, construct, or reconstruct the data file. Use the sequential printout or other information as a data source, as directed. You will not receive payment for hauled material on a given date until you deliver an accurate "daily" data file to the Engineer. If the Engineer gives you written permission to weigh without the ECWS for a minor equipment failure, construct an acceptable data file as described above.

e. **Scale Diary.** The Scale Diary is a computer printout or bound book provided by the Engineer. The scale person must complete the Scale Diary and include the following information: dates of action, type of material, source, time the scale opened and time the scale closed, times of scale balance, ticket sequence, time the haul for each material started and stopped, voided ticket numbers, vehicle identification numbers, times of tare and tare weights, and the scale person's signature. Also include the following information on any scale used to weigh materials for payment:

(1) Owner of the scales and scale locations.

(2) Manufacturer's name, model serial number, maximum capacity, and type of scales (single beam, double beam, self-reading, etc.).

(3) Date(s) the scales were installed and/or adjusted.

(4) Scale service company inspections and accuracy checks (attach copy).

(5) Division of Measurement Standards inspections and ~~accuracy checks~~ certifications (attach copy).

(6) Time and dates of notification of any malfunctions.

The Scale Diary remains the Engineer's property.

Submit the Scale Diary to the Engineer at the end of each shift. You will not receive payment for any hauled material until you deliver the Scale Diary to the Engineer.

The system must generate a report, either during or at the end of the day or shift, that summarizes the number of loads and total net weight for each date, project, and product. Submit the original report at the end of each shift.

You will not receive payment for any material hauled in a vehicle that does not conform to the requirements of Subsection 50-12, Load Restrictions, and this Subsection. Dump material from non-conforming vehicles until they conform, then reweigh the vehicles.

When a weighing device indicates less than true weight, you will not receive additional payment for material previously weighed and recorded. When a weighing device indicates more than true weight, all material received after the last previously correct weighing accuracy test will be reduced by the percentage of error that exceeds 0.5%.

If the Engineer incurs extra construction engineering expenses from checking non-machine data entries or other data irregularities, the total value of those expenses will be deducted from the value of the contract item before payment.

Platform scales, scale house and the ECWS remain your property after you complete the work.

130-2.6 NUCLEAR TESTING EQUIPMENT STORAGE SHED. Design, furnish and maintain a weatherproof, heated, and ventilated nuclear densometer/testing equipment storage shed for the Engineer to use exclusively throughout the contract. Install the building at least 15-feet from an occupied area at a location approved by the Engineer. Install the shed before commencement of construction activities and maintain it until one week after project completion. Provide sufficient floor area for the nuclear testing equipment and a portable electric heater to maintain a minimum room temperature of 50 °F in freezing weather. Design the building with enough floor area to provide sufficient clearance between the equipment, heater, and combustibles. Provide a commercial grade metal-clad exterior entrance door of 3'-0" min width by 6'-8" height with dead-bolt lockset. Hang the door so that hinge pins are not accessible from the exterior. Provide the Engineer with 2 keys to control access. Provide a 5/16" welded steel security chain securely attached inside the structure with tamperproof hardware for the Engineer to secure the testing equipment. Provide 120-volt, 60-cycle power, an interior light, and a wall receptacle for the heater. Secure the structure to the ground with tamperproof anchors to resist wind loads and prevent unauthorized movement of the building. The nuclear testing equipment storage shed remains the property of the Contractor. Remove the shed from the site following project completion.

130-2.7 STORAGE CONTAINER. Furnish, transport and maintain a weathertight, lockable, steel enclosed 20 foot long X 8 foot wide X 8 foot high wooden floored container for the storage of the Department's materials, supplies and testing equipment (but not nuclear equipment). Provide twenty equally spaced fastening points on the interior walls that are capable of securing the Department's contents. Door opening dimensions of the storage container shall be greater than 60 square feet. Supply necessary equipment to lift and move container with minimal disturbance to the Department's contents. The container shall not be moved by skidding or hook lift. The Contractor shall be listed as the shipper on all documents listing and acknowledging receipt of the Department's goods for shipment.

Deliver an empty and clean container to the Regional Materials Laboratory, or location acceptable to the Engineer, three weeks prior to transporting to the project site. Allow 7 days for the Department to load the container. Transport the loaded container to the project site. Set up container at a location approved by the Engineer prior to commencing construction work.

Provide electrical service and other facilities as follows:

- **a.** Electrical current, 120V (ac), 60 cycle on a 24 hour a day basis.
- **b.** Wiring system to support a 20 amp user load demand.
- **c.** 2 GFI protected outlets conveniently spaced on the interior walls.
- **d.** Four 100 watt incandescent or eight 40 watt fluorescent lights located for maximum illumination.
- **e.** Provide a stairway with railing, built to meet the International Building Code, if there is more than 12-inch difference in floor entry and existing ground elevation.

Return the container to the Regional Materials Laboratory, or location acceptable to the Engineer, upon project completion. Allow 7 days for the Department to unload the container. The storage container remains your property after you complete the work.

METHOD OF MEASUREMENT

130-3.1 MEAL. By each meal served to authorized personnel, based on signed meal sheets.

130-3.2 LODGING. By each night's lodging received by authorized personnel based on signed lodging sheets.

130-3.3 NUCLEAR TESTING EQUIPMENT STORAGE SHED. By the number of storage sheds specified, to include all components, installed and accepted as completed units and ready for equipment storage.

130-3.4 STORAGE CONTAINER. By the number of storage containers specified, to include all components, installed and accepted as completed units and ready for materials and equipment storage.

BASIS OF PAYMENT

130-4.1 LUMP SUM ITEMS. Payment for Items G-130a, G-130b and G-130c will be made as follows:

- **a.** A percentage of the lump sum amount, to be determined by the Engineer, will be paid as full compensation for furnishing the facility at the site.

- **b.** The balance of the lump sum amount will be prorated over the anticipated active construction period with a portion included as part of each interim payment, for maintenance, repairs, providing all utilities, and for removing it from the site. If anticipated construction period changes, the final increment will be held until final payment.

Item G-130a Field Office, includes initial telephone and Internet service costs to provide operational connections.

130-4.2 MEAL. Includes all labor, materials, tools, equipment and supplies required to provide meals to all authorized personnel assigned to, or associated with, the project.

130-4.3 LODGING. Includes all labor, materials, tools, equipment and supplies required to provide lodging for all authorized personnel assigned to, or associated with, the project.

130-4.4 NUCLEAR TESTING EQUIPMENT STORAGE SHED. At the contract unit price to include all labor, materials, tools, equipment and supplies required to furnish and install the shed before commencement of construction, to maintain it for the duration of the project and to remove the shed and electrical service after project completion. Electrical service and utility costs are subsidiary to this item.

130-4.5 STORAGE CONTAINER. At the contract unit price to include all labor, materials, tools, equipment and supplies required to deliver the storage shed to the regional office for loading, to deliver it to the project office, to install it before commencement of construction, to maintain it for the duration of the project, to remove the shed and electrical service after project completion, to deliver it to the regional office for unloading, and to remove the storage shed. Electrical service and utility costs are subsidiary to this item.

130-4.6 SCALES. Furnishing the following is subsidiary: platform scales, scale operators, tickets, scale house, and the ECWS, including all supplies such as weigh tickets, paper, printer ribbons, diskettes, etc., and all maintenance and repair services necessary to keep the system functional.

130-4.7 ENGINEERING COMMUNICATIONS. When pay item G-130j is included in the bid schedule, payment of periodic telephone and Internet charges for State personnel is based on paid receipts from the service provider plus 15 percent. When pay item G-130j is absent from the bid schedule, the State will pay the service provider directly for the periodic charges.

Payment will be made under:

Item G-130a	Field Office - per lump sum
Item G-130b	Field Laboratory - per lump sum
Item G-130c	Curing Shed - per lump sum
Item G-130d	Meal - per each
Item G-130e	Lodging - per each
Item G-130f	Reserved
Item G-130g	Nuclear Testing Equipment Storage Shed – per each
Item G-130h	Storage Container – per each
Item G-130ij	Engineering Communications - per contingent sum

ITEM G-131 ENGINEERING TRANSPORTATION

DESCRIPTION

131-1.1 Furnish and maintain vehicles for the exclusive use of the Engineer and their staff throughout the duration of the project.

REQUIREMENT

131-2.1 Provide the specified number of the following vehicle types:

a. Truck. Full-size four wheel drive pickup with crew cab or sport utility vehicle. Less than 3 model years old, in good condition and with less than 36,000 miles on the odometer. Equip vehicles with mud/snow tires, strobe beacons (Whelen 360 or equivalent) and two-way radios set on the airport CTAF (Common Traffic Advisory Frequency).

b. ATV. All-terrain vehicle, 4x4, 300 cc minimum, with a 500-lb capacity trailer. Less than 3 model years old, in good condition. Equip with securely attached two-way radio set on the airport CTAF (Common Traffic Advisory Frequency). Equip with a rotating beacon or strobe light.

c. Snowmachine. A snowmachine with 440 cc minimum engine size, and with a 500-lb capacity sled. Less than 3 model years old, in good condition.

d. Boat. An aluminum boat 20 foot long, and rated to carry a minimum of 1000 pounds. A motor capable of moving the loaded boat at 20 mph. Less than 3 model years old, in good condition.

The Contractor shall furnish all fuels and maintenance. The Contractor is responsible for normal wear and tear, and any other incidental damage, including broken windshields, that might arise during the Departments operation and use.

The Department is responsible for physical damage to any vehicle provided under this section if proximately caused by its negligent operation. The Department will provide non-owned auto liability insurance providing third party liability coverage for any accident during the Department's operation and use.

Obtain the Engineer's approval of vehicles prior to their shipment to the site. Vehicles remain the property of the Contractor and shall be removed from the site following the completion of the work.

METHOD OF MEASUREMENT

131-3.1 Lump sum items will not be measured for payment.

The quantity of per each items will be the number of vehicles provided and maintained for use for the duration of the project at the contract unit price.

BASIS OF PAYMENT

131-4.1 Payment will be made as follows:

a. A percentage of the contract unit price, to be determined by the Engineer, will be paid as full compensation for furnishing the vehicles at the site.

b. The balance of the contract unit price will be prorated over the anticipated active construction period, with a portion included as part of each interim payment, for maintenance, fuel and repairs, and for removing vehicles from the site. If the anticipated construction period changes, the final increment will be held until final payment.

Payment will be made under:

Item G-131a	Engineering Transportation (Truck) - per each
Item G-131b	Engineering Transportation (ATV) - per each
Item G-131c	Engineering Transportation (Snowmachine) - per each
Item G-131d	Engineering Transportation (Boat) - per each
Item G-131e	Engineering Transportation - per lump sum

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) 269-0538 (Phone)
(907) 269-0556 (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

ITEM 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, [Type] - per hour

ITEM G-200 CONTRACTOR QUALITY CONTROL PROGRAM

DESCRIPTION

200-1.1 Perform work as described in Section 100 Contractor Quality Control Program.

REQUIREMENTS

200-2.1 The requirements for this work are described in Section 100 Contractor Quality Control Program.

METHOD OF MEASUREMENT

200-3.1 This item will not be measured for payment. The Engineers acceptance of the work constitutes measurement of this item.

BASIS OF PAYMENT

200-4.1 Propose a schedule percentage of payment of the lump sum based upon your implementation of the quality control program. In this schedule of payment provide a detailed list of items to be completed prior to payment of each scheduled payment. The Engineer may modify in part or reject in its entirety the proposed schedule of payment by the Contractor. In any case, the Engineer will be the final authority in determining the schedule of payment and the acceptance of the work.

Payment will be made under:

Item G-200a Contractor Quality Control Program - per lump sum

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~~weekly, 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

300-3.2 Schedule Submittal Adjustment

A schedule submittal adjustment will be assessed for each Day that the Contractor fails to:

(a) Submit an approvable CPM Schedule
(b) Submit an approvable CPM Schedule update

When required by the Contract.

The Schedule Submittal Adjustment Rates are shown in Table 300-1.

Table 300-1 Schedule Submittal Adjustment Rates

Submittal	Adjustment
CPM Schedule	$650.00
CPM Schedule Update	$120.00

Schedule submittal adjustments will be deducted from the amount(s) due or to become due the Contractor; and shall be reflected on the next progress payment that is processed.

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.

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 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 $52.00 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 G-710 TRAFFIC CONTROL FOR ROADS, STREETS, AND HIGHWAYS

710-1.1 DESCRIPTION. Protect and control traffic during the contract. Furnish, erect, maintain, replace, clean, move and remove the highway traffic control devices required to ensure the public's safety. Perform all administrative responsibilities necessary to implement this work.

Maintain all public corridors affected by the work in a smooth and passable condition. Construct and maintain approaches, crossings, intersections, and other necessary features throughout the project for the life of the contract.

710-1.2 ACRONYMNS AND DEFINITIONS.

a. **ATM.** When used in this section, ATM stands for the *Alaska Traffic Manual*, which is the MUTCD with the *Alaska Traffic Manual Supplement*.

b. **Highway.** A main direct road. Used throughout this section for the sake of brevity, the word "highway" also applies to roads and streets.

c. **Highway Traffic Control Zone.** A portion of a construction project, haul route, utility work, or similar operation that affects traffic and requires highway traffic control to safely guide and protect motorists, pedestrians, bicyclists, or workers, outside of the AOA.

d. **Highway Traffic Control Plan (TCP).** A drawing or drawings indicating the method or scheme for safety 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.

e. **Traffic.** The movement of vehicles, ATV's, equipment, pedestrians, and bicyclists through public corridors, construction areas, utility work, or similar operations.

710-1.3 Highway Traffic Control Plan. Design and implement an approved TCP before beginning work within a highway traffic control zone.

The TCP includes, but is not limited to, signs, barricades, traffic cones, plastic safety fence, special signs, warning lights, highway flaggers, temporary lighting, temporary roadways and all other items required to direct traffic through or around the highway traffic control zone according to these Specifications and the ATM. Address in the TCPs, placement of highway traffic control devices, including location, spacing, size, mounting height and type. Include code designation, size, and legend per the ATM and the ASDS.

When a TCP is included in the Plans, use it, modify it, or design an alternative TCP. When a TCP is omitted from the Plans, provide one according to this Section and the ATM.

Submit new or modified TCPs to the Engineer for approval. Allow 1 week for the Engineer to review any TCP or each subsequent correction. You may change an approved TCP during construction provided you allow 48 hours for review and the Engineer approves the changes.

Certify by signature of the Worksite Traffic Supervisor that all TCPs conform with the ATM and Specifications. The Engineer will not accept the TCP without Worksite Traffic Supervisor's certification. Have your superintendent review and sign all TCPs before you submit them.

In all TCPs you submit, include the periods for which the TCP will be in effect. Provide the name and 24-hour telephone number of the Worksite Traffic Supervisor.

The TCPs, Plans, and Standard Drawings show the minimum required number of highway traffic control devices. If unsafe conditions occur, the Engineer may require additional highway traffic control devices.

Use of equipment in a highway traffic control zone must conform to an approved TCP, including all highway traffic control devices these operations require.

Rural projects that are off the NHS and the Alaska Highway System require a waiver per 17 AAC 25.800 to operate oversize and overweight vehicles ~~outside the project limits~~ off of airport property.

710-1.4 WORKSITE TRAFFIC SUPERVISOR. Provide a Worksite Traffic Supervisor responsible for maintaining 24-hour traffic operations.

a. Qualifications. Ensure the Worksite Traffic Supervisor understands ATM requirements, the Plans, the Specifications, your proposed operations, and is certified as one of the following:

(1) Worksite Traffic Supervisor certified by the American Traffic Safety Services Association (ATSSA).

(2) Level One Signs and Markings Specialist certified by the International Municipal Signal Association (IMSA).

Item (2) requires documentation of at least 12 months of supervisory-level worksite highway traffic control or 12 months of responsible charge of such work. "Responsible charge" means that the Worksite Traffic Supervisor has been accountable for selecting devices and placing them in the highway traffic control system, or for continued system operation. The Worksite Traffic Supervisor satisfies this requirement if they have supervised persons performing this labor.

Renew certification no less frequently than every 4 years, and be able to show their certification anytime they are on the project.

b. Duties.

(1) Prepare the TCPs and public notices and coordinate highway traffic control operations between the Project Superintendent and the Engineer.

(2) Physically inspect the condition and position of all highway traffic control devices used on the project at least once each day and once each night. Ensure that highway traffic control devices work properly, are clean and visible, and conform to the approved TCP. Complete and sign a detailed written report of each inspection on the form provided by the Engineer within 24 hours.

(3) Supervise the repair or replacement of damaged or missing highway traffic control devices.

(4) Review and anticipate highway traffic control needs. Make available proper highway traffic control devices necessary for safe and efficient traffic movement.

(5) Review work areas, equipment storage, and traffic-safety material handling and storage.

(6) Hold traffic safety meetings with superintendents, foremen, subcontractors, and others as appropriate before beginning construction, prior to implementing a new TCP, and as directed. Invite the Engineer to these meetings. Conduct monthly open house public meetings to discuss the TCP and construction phasing.

(7) Supervise all highway traffic control workers and highway flaggers.

(8) Certify that all highway flaggers are certified as required by subsection 710-3.4c. Submit a copy of all highway flagger certifications to the Engineer.

MATERIALS

710-2.1 Provide highway traffic control devices meeting the following requirements:

a. **Signs.** Use signs, including sign supports, that conform to Section P-661, the ATM, the ASDS, and AASHTO M 268. Make orange background signs from sheet aluminum, and use Type II or Type III orange reflective background sheeting on projects advertised before 1/01/2007, or use Type VIII or Type IX fluorescent orange reflective background sheeting at any time.

   (1) Construction Signs: Regulatory, guide, or construction warning signs designated in the ASDS.

   (2) Permanent Construction Signs: As designated on the Plans or an approved TCP.

   (3) Special Construction Signs: All other signs are Special Construction Signs. Neatly mark the size of each sign on its back in 3-inch black numerals.

b. **Portable Sign Supports.** Use wind-resistant sign supports with no external ballasting. Use sign supports that can vertically support a 48 X 48 inch highway traffic control sign at the height above the adjacent roadway surface required by the ATM.

c. **Barricades and Vertical Panels.** Use barricades and vertical panel supports that conform to the ATM. Use Type III Barricades at least 8 feet long. Use reflective sheeting that meets AASHTO M 268 Type II or III.

d. **Warning Lights.** Use Type A (low intensity flashing), Type B (high intensity flashing) or Type C (steady burn) warning lights that conform to the ATM.

e. **Drums.** Use plastic drums that conform to the requirements of the ATM. Use reflective sheeting that meets AASHTO M 268 Type II or III.

f. **Traffic Cones and Tubular Markers.** Use reflectorized traffic cones and tubular markers that conform to the requirements of the ATM. Use traffic cones and tubular markers at least 28 inches high. Use reflective sheeting that meets AASHTO M 268 Type II or III.

g. **Plastic Safety Fence.** Use 4 foot high construction orange fence manufactured by one of the following companies, or an approved equal:

   (1) "Safety Fence" by Services and Materials Company, Inc., 2200 South "J" Street, Elwood, Indiana, 46036. Phone (800) 428-8185.

   (2) "Flexible Safety Fencing" by Carsonite, 1301 Hot Springs Road, Carson City, Nevada, 89706. Phone (800) 648-7974.

   (3) "Warning Barrier Fence" by Plastic Safety Systems, Inc. P.O. Box 20140, Cleveland, Ohio, 44120. Phone (800) 662-6338.

h. **Flagger Paddles.** Use flagger paddles with 24 inches wide by 24 inches high sign panels, 8 inch Series C lettering (see ASDS for definition of Series C), and otherwise conform to the ATM. Use reflective sheeting that meets AASHTO M 268 Type VIII or IX. Use background colors of fluorescent orange on one side and red on the other side.

710-2.2 CRASHWORTHINESS. Submit documentation, that all highway traffic control devices conform to the requirements of National Cooperative Highway Research Program (NCHRP) Report 350 (Test Level 3).

CONSTRUCTION METHODS

710-3.1 GENERAL CONSTRUCTION REQUIREMENTS. Keep the work, and portions of the project affected by the work, in good condition to accommodate traffic safely. Provide and maintain highway traffic control devices and services ~~inside and outside the project limits~~ on and off of airport property within the highway traffic control zone, day and night, to guide traffic safely.

Unless otherwise provided in this Section, keep all roadways, business accesses, and pedestrian facilities open to traffic. Obtain the Engineer's approval before temporarily closing residential, commercial, or street approaches. Provide access through the project for emergency vehicles and school and transit buses. Properly sign and/or flag all locations where you must redirect or stop the traveling public.

Stop your equipment at all points of intersection with the traveling public unless an approved TCP shows otherwise.

Operate flood lighting at night according to the ATM. Adjust flood lighting so that it does not shine into oncoming traffic.

Provide and maintain safe routes for pedestrians and bicyclists through or around highway traffic control zones at all times, except when regulations prohibit pedestrians or bicyclists.

Immediately notify the Engineer of any traffic related accident that occurs ~~within the project limits~~ within the highway traffic control zone as soon as you, an employee, or a subcontractor becomes aware of the accident.

710-3.2 ROADWAY CHARACTERISTICS DURING CONSTRUCTION. Obtain an approved TCP before reducing existing roadway lane and shoulder widths before starting construction. Maintain a clear area with at least 2 feet between the edge of traveled way and the work area. Use barricades, traffic cones, or drums to delineate this area. Place highway traffic control devices on the work side of the clear area. Space them according to the ATM.

If you are allowed to maintain traffic on an unpaved surface, conduct construction to provide a smooth and even surface that public traffic can use at all times. Properly crown the roadbed surface for drainage. Before beginning other grading operations, place sufficient fill at culverts and bridges to permit traffic to cross smoothly and unimpeded. Use part-width construction techniques when routing traffic through roadway cuts or over embankments under construction. Excavate the material or place it in layers. Alternate construction activities from one side to the other. Route traffic over the side opposite the one under construction.

You may detour traffic when the Plans or an approved TCP allows it. Maintain detour routes so that traffic can proceed safely. When detours are no longer required, obliterate the detour. Topsoil and seed appropriate areas.

If you cannot maintain two-way traffic on the existing roadway or detour, you may use half-width construction or a road closure if it is shown on an approved TCP. Make sure the TCP indicates closure duration and conditions. Schedule roadway closures so you do not delay school buses and peak-hour traffic. For road closures, post closure-start and road-reopen times at the closure site, within view of waiting traffic.

710-3.3 PUBLIC NOTICE. Make sure the Worksite Traffic Supervisor gives notices of major changes, delays, lane restrictions, or road closures to local officials and transportation organizations, including but not necessarily limited to:

a. Local Police Department
b. Local Fire Department
c. Local Government
d. School and Transit Authorities
e. Local Emergency Medical Services

f. Local Media (newspapers, radio, television)
g. U.S. Postal Service
h. Major Tour Operators

710-3.4 HIGHWAY TRAFFIC CONTROL DEVICES. Before starting construction, erect permanent and temporary highway traffic control devices required by the approved TCPs. Use highway traffic control devices only when they are needed. The Engineer will determine advisory speeds when necessary.

During hours of darkness when required by the approved TCP use flashing warning lights to mark obstructions or hazards and steady-burn lights for channelization.

Use only one type of highway traffic control device in a continuous line of delineating devices, unless otherwise noted on an approved TCP. Use drums or Type II barricades for lane drop tapers.

During non-working hours and after completing a particular construction operation, remove all unnecessary highway traffic control devices. Store all unused highway traffic control devices in a designated storage area, which does not present a nuisance or visual distraction to traffic. If sign panels are post mounted and cannot be readily removed, cover them entirely with either metal or plywood sheeting.

Keep signs, drums, barricades, and other devices clean at all times.

Use only highway traffic control devices that meet the requirements of the "Acceptable" category in ATSSA "Quality Standards for Work Zone Traffic Control Devices".

Immediately replace any devices provided under this Section that are lost, stolen, destroyed, inoperable or deemed unacceptable while used on the project.

All items paid under this Section remain your property unless otherwise stated. Remove them after completing the project.

a. **Embankments.** Install plastic drums, barricades, tubular markers, plastic safety fence, and cones as specified on the Plans or TCPs to delineate open trenches, ditches, other excavations and hazardous areas when they exist along the roadway for more than one continuous work shift.

b. **Fixed Objects.** Use flashing warning lights on all vehicles when they are working within 15 feet of the edge of traveled way. Use emergency flashers, flashing strobes or rotating beacons.

   Locate private vehicles, idle construction equipment, construction material stockpiles and other items deemed by the Engineer to be fixed objects at least 30 feet from the edge of traveled way at all times. Do not park equipment in medians.

   If you cannot meet the preceding restrictions because of land features or lack of right-of-way, park equipment as far away as practical but at least 15 feet from the edge of traveled way, as approved by the Engineer. Use drums or Type II barricades with flashing warning lights to delineate parked equipment. These highway traffic control devices are subsidiary.

c. **Highway Flagger.** Furnish trained and competent highway flaggers and all necessary equipment, including lighting of the highway flagger position during nighttime operations, to control traffic through the highway traffic control zone. The Engineer will approve each highway flagger operation before it begins and direct adjustments as conditions change.

   Highway flaggers must be certified by one of the following:

   (1) Flagging Level I Certification by IMSA
   (2) Flagger Certification by ATSSA

Acceptable substitutions for items (1) and (2) are certified ATSSA Worksite Traffic Supervisors, IMSA Work Zone Traffic Safety Specialists, IMSA Signs and Markings Specialists and ATSSA Flagger Instructors.

Renew highway flagger training and certification no less frequently than every 4 years. Highway flaggers must be able to show their flagger certification anytime they are on the project.

Highway flaggers must maintain their assigned posts at all times, unless another qualified highway flagger relieves them, or you no longer need to flag traffic. Remove, fully cover, or lay down flagger signs when no highway flagger is present. Keep the highway flaggers' area free of encumbrances, such as parked vehicles, so that highway flaggers can be seen easily.

Provide approved equipment for two-way radio communications between highway flaggers when they are not in plain, unobstructed view of each other.

d. Watering. Furnish, haul, and place water for dust control, as directed. Use water trucks that can provide a light-water spray to control dust. The Engineer will control water application.

If you take water from a lake, stream, or other natural water body, first obtain a water removal permit from the Alaska Department of Natural Resources. Comply with the Alaska Department of Fish and Game screening requirements for all water removal operations.

710-3.5 AUTHORITY OF THE ENGINEER. When the Engineer believes existing conditions may adversely affect the traveling public's safety and/or convenience, you will receive a written notice. The notice will state the defect(s), the corrective action(s) required, and the time required to complete such action(s) not to exceed 24 hours. If you fail to take corrective action(s) within the specified time, the Engineer will immediately close down the offending operations until you correct the defect(s). The Engineer may require outside forces to correct unsafe conditions. The cost of work by outside forces will be deducted from any monies due under the terms of this Contract.

710-3.6 HIGHWAY TRAFFIC PRICE ADJUSTMENT. A Highway Traffic Price Adjustment, under Item G-710c, will be assessed for unauthorized lane closures or lane reductions. Highway Traffic Price Adjustments are liquidated damages representing highway user costs. The Highway Traffic Price Adjustment Rate is a deduction from the Contract amount of $30 per minute for unauthorized lane closure or lane reduction, per lane.

Authorized lane closures and/or lane reductions are those shown in the Contract, an approved TCP, or authorized in writing. Unauthorized lane reductions include unacceptable driving surfaces, such as severe bumps, ruts, washboarding, potholes, excessive dust or mud, and non-conforming, dirty, or out of place highway traffic control devices. The Engineer will make the sole determination as to whether the roadway, trail, or pedestrian facility is acceptable for full unimpeded use by the public. Failure to maintain an acceptable infrastructure or highway traffic control plan will result in a price adjustment equal to 100 percent of the Highway Traffic Price Adjustment Rate, for the time the roadway, trail, or pedestrian facility is in an unacceptable condition.

710-3.7 MAINTENANCE OF TRAFFIC DURING SUSPENSION OF WORK. Approximately one month before you suspend work for the season, schedule a preliminary meeting with the Engineer to outline the work you expect to complete before shutdown and the anticipated roadway condition. Schedule a field review with the Department for winter maintenance acceptance. At the field review the Engineer will prepare a punch list for implementation before acceptance.

To be relieved of winter maintenance responsibility, leave all roads with a smooth and even surface for public use at all times. Properly crown the roadbed surface for drainage and install adequate safety facilities.

After the project is accepted for winter maintenance and until you are ordered to resume construction operations, the Department is responsible for maintaining the facility. The Department will accept

maintenance responsibility only for portions of the work that are open to the public, as determined by the Engineer. The Department will not accept maintenance responsibility for incomplete work adjacent to accepted roads. You are responsible for maintaining all other portions of the work. The Engineer will issue a letter of "Acceptance for Winter Maintenance" that lists all portions of the work that the Department will maintain during a seasonal work suspension. You retain all contractually required maintenance responsibilities until you receive this letter.

If you suspend work due to unfavorable weather (other than seasonal) or due to your failure to correct unsafe conditions, carry out Contract provisions, or carry out the Engineer's orders, you must bear all costs for highway traffic maintenance during the suspended period.

When you resume work, replace or renew any work or materials lost or damaged during temporary use. If the Department caused damage during winter suspension, payment will be made for repairs by unit pay item or in accord with Subsection GCP-90-05, Compensation for Extra Work. When the Engineer directs, remove any work or materials used in the temporary maintenance. Complete the project as though work has been continuous.

710-3.8 CONSTRUCTION SEQUENCING. The construction sequencing is detailed in these provisions, the Special Provisions, and the Plans. You may propose alternative construction sequencing.

Throughout the project, maintain the existing roadway configuration (such as the number of lanes and their respective widths) except for restrictions to traffic allowed in the Special Provisions or on the Plans, and addressed through approved TCPs. A restriction to traffic is any roadway surface condition, work operation, or highway traffic control that reduces the number of lanes or impedes traffic. Obtain an approved TCP before restricting traffic.

Obtain the local school bus schedule and coordinate your work to ensure the school buses are not delayed through the highway traffic control zone. Submit this plan, as a TCP, to the Engineer for approval before implementation.

710-3.9 INTERIM PAVEMENT MARKINGS – RESERVED.

710-3.10 LIGHTING OF NIGHT WORK – RESERVED.

710-3.11 HIGH VISIBILITY GARMENTS. Ensure all workers within ~~project limits~~ the highway traffic control zone wear outer garments that are highly visible and comply with the following requirements:

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

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

c. **Raingear.** Raingear tops and bottoms, when worn as the outer visible garment, conform to the requirements listed in this Subsection 710-3.11.

d. **Exceptions.** When workers are inside an enclosed compartment of a vehicle, they are not required to wear high visibility garments.

e. **Standards.** All high visibility garments conform to the requirements of ANSI/ISEA 107-2004, Class 2 for tops or Class E for bottoms, and Level 2 retroreflective material.

Retroreflective bands are made of material conforming to either:

(1) A two inch wide strip, fluorescent yellow-green color, made of retroreflective microprisms; or

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

f. Labeling. Garments are labeled in conformance with Section 11.2 of ANSI/ISEA 107-2004; except you may use garments labeled in conformance with ANSI/ISEA 107-1999 until 1/1/08.

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

h. Subsidiary. Payment for high visibility garments for workers is subsidiary to other items.

710-3.12 OVERSIZE AND OVERWEIGHT VEHICLES. Comply with the legal size and weight regulations of 17 AAC 25 and all restrictions of the *Administrative Permit Manual*, except when the Department waives the requirements.

The engineer may waive the permit requirements of regulation 17 AAC 25 regarding oversize and overweight vehicle~~s within the project limits when~~ provided that the contractor submits and follows an ~~acceptable~~ approved Highway Traffic Control Plan.

Permits shall be obtained from the Department's Division of Measurement Standards & Commercial Vehicle Enforcement, for movements of oversize and overweight equipment outside of the project limits, except when the Department waives the permit requirements outside of the project limits. Retain this permit for your records and submit a copy to the Engineer.

Submit a highway traffic control plan for hauling operations from the material site(s) to the project. Include all the highway traffic control devices required for these operations in the highway traffic control plan. Indicate the type, number and frequency of oversize and overweight hauling equipment.

The following items are required of oversize or overweight vehicles or equipment:

a. Truck and equipment headlights must be on at all times during vehicle use;

b. A roof mounted flashing or rotating amber beacon, visible from 360 degrees, must be on during vehicle use;

c. For overweight street legal vehicles, mount clearly visible oversize signs on front and rear of vehicle; and

d. For oversize equipment and/or overweight non-street legal equipment, mount 16" X 16" clean red/orange flags on the outboard points, in addition to clearly visible oversize signs on front and rear of equipment.

When oversize or overweight vehicles are used, add the following to the Highway Traffic Control Plan:

a. Install and maintain orange plastic safety fence that separates the haul route from any adjacent school, business, residence, community center or public gathering place;

b. Furnish highway flaggers as specified by the Highway Traffic Control Plan, and at additional locations where necessary, to control the haul route during all hauling operations. Coordinate their

placement with the Engineer. Haul route highway flaggers will be in addition to airport flaggers required by FAA Advisory Circular150/5370-2E, and the Construction Safety Plan;

c. Limit haul unit speed to 10 mph when passing through any developed area or significant hazard. The Engineer is sole judge of what constitutes a developed area or significant hazard;

d. Obey bridge load restrictions and all height restrictions on haul route;

e. Maintain the haul route in a smooth and dust free condition. Remove all haul debris from the roadway and the surroundings;

f. When overweight loads are hauled over existing pavement, remove the existing pavement and replace with new pavement of similar material and equal thickness to old pavement, as a subsidiary cost, after the haul is finished;

g. Hauler is responsible for the costs of repair for damage to the highway structures, including but not limited to the bridge railings, guardrail, light poles, signs, signal, highway traffic control devices, utilities, and mailboxes on the roadways;

h. Immediately reinstall all signs, signals, guardrail and other safety features that were removed for the haul; and

i. If mailboxes were removed for the haul, reinstall mailboxes by the next day after the haul.

j. Maintain a minimum 12 foot lateral separation between the nonstreet legal vehicles and the motoring public. Specify the highway traffic control devices required for these operations in the highway traffic control plan.

METHOD OF MEASUREMENT

710-4.1 Section GCP-90 and as follows. Quantities will not be measured during winter suspension of work.

a. Highway Traffic Control Device Items. By the number of units in the Highway Traffic Control Rate Schedule, under item G-710d Highway Traffic Control that are installed, accepted, and operational. Incomplete or unsatisfactory devices will not be measured. Special Construction Signs are measured by the total area of legend-bearing sign panel, as determined under subsection P-661-4.1. Items measured by the day are for each item per 24-hour period.

b. Highway Flagger. By the number of approved hours, supported by certified payroll.

c. Watering. By the 1,000 gallons (M-Gallon) of water applied. The Engineer may specify measurement by weight or volume. If by weight, convert to gallons at 8.34 pounds per gallon. If by volume, convert to gallons at 7.48 gallons per cubic foot.

d. Highway Traffic Price Adjustment. By each minute of unauthorized lane closure or lane reduction, per lane, measured to the nearest minute. The Engineer will determine whether the roadway is opened to full unimpeded use by the traveling public.

e. Highway Traffic Control. By the units specified.

f. Plastic Safety Fence. By the linear foot, as placed, to protect or channelize pedestrian traffic as shown on an approved TCP. Any adjustments in configuration of the fence at the same location that does not result in an increased amount of fence is not measured. Opening and closing the fence to gain access to and from the worksite is not measured.

g. Temporary Guardrail. By the linear foot, including end treatments, as shown on an approved TCP.

BASIS OF PAYMENT

710-5.1 Use the following table for unit rates of pay for Contingent Sum:

HIGHWAY TRAFFIC CONTROL RATE SCHEDULE

~~Highway Traffic Control Device~~	~~Pay Unit~~	~~Unit Rate~~
~~Construction Signs~~	~~Each/Day~~	~~$5.00~~
~~Special Construction Sign~~	~~Square Foot~~	~~$20.00~~
~~Type II Barricade~~	~~Each/Day~~	~~$3.00~~
~~Type III Barricade~~	~~Each/Day~~	~~$10.00~~
~~Traffic Cone or Tubular Marker~~	~~Each/Day~~	~~$1.00~~
~~Drums~~	~~Each/Day~~	~~$3.00~~
~~Watering~~	~~M-Gallon~~	~~$20.00~~
~~Plastic Safety Fence~~	~~Foot~~	~~$2.50~~
~~Temporary Sidewalk Surfacing~~	~~Square Foot~~	~~$1.15~~
~~Flexible Markers~~	~~Each~~	~~$50.00~~
~~Temporary Guardrail~~	~~Foot~~	~~$21.00~~

Traffic Control Rate Schedule 03/2011	Pay Unit	Unit Rate
Construction Signs	Each/Day	$ 6.50
Special Construction Signs	Sq Ft	$28.00
Type II Barricade	Each/Day	$ 3.30
Type III Barricade	Each/Day	$11.00
Traffic Cone or Tubular Marker	Each/Day	$ 1.10
Drums	Each/Day	$ 3.30
Sequential Arrow Panel	Each/Day	$55.00
Portable Concrete or Steel F Shape Barrier (12.5 foot long or $8/foot for other lengths)	Each	$100.00
Temporary Crash Cushion / Sand or Water filled Barrels or barrier (all required per end)	Each	$1,250.00
Temporary Crash Cushion / Redirective	Each	$2,500.00
Pilot Car	Hour	$70.00
Pilot Car w/sequential arrows	Hour	$73.00
Watering	M-Gallon	$26.40
Street Sweeping (Regenerative Sweeper, Vacuum Sweeper, Mechanical or Power Broom with vacuum)	Hour	$183.00
40,000 GVW Truck with Crash Attenuator	Hour	$130.00
Plastic Safety Fence	Foot	$ 1.00
Portable Changeable Message Board Sign	Calendar Day	$130.00
Temporary Sidewalk Surfacing	Sq Ft	$ 2.00
Flexible Markers (Flat Whip, Reflective)	Each	$ 60.00
Removal of Pavement Markings	Lineal Foot	$ 1.25
Temporary Guardrail	Lineal Foot	$25.00
Interim Pavement Markings		
Painted Markings	Lineal Foot	$ 0.30
Preformed Pavement Marking Tape (removable or nonremovable)	Lineal Foot	$ 1.75
Temporary Raised Pavement Markers	Each	$ 1.00
Word or Symbol Markings	Each	$40.00
Temporary Cover Markings	Lineal Foot	$ 4.00

a. **Highway Traffic Maintenance.** The contract price includes all resources required to provide the Worksite Traffic Supervisor, all required TCPs and public notices, monthly open house meetings, the Construction Phasing Plan, and the maintenance of all roadways, approaches, crossings, intersections and pedestrian and bicycle facilities, as required. This item also includes any Highway Traffic Control Devices required but not shown on the bid schedule.

Items required by the Contract that are not listed on the bid schedule or not included in other items are subsidiary to Item G-710a Highway Traffic Maintenance, except Highway Traffic Price Adjustment.

b. **Highway Traffic Control Device Items.** The contract price in the Highway Traffic Control Rate Schedule includes all resources required to provide, install, maintain, move, and remove the specified devices. Warning lights, vertical panels, and sign supports required for highway traffic control devices are subsidiary.

c. **Highway Flagger.** The contract price includes all required labor, radios, flagger paddles, and transportation to and from the worksite. The Engineer will pay for item G-710b Highway Flagger at the contract unit price for each Highway Flagger per hour. The hourly rate for Highway Flagger is set at $52.00 per hour for this contract. The Engineer does not require a change order/directive for this pay item. Additional flagging added by change order will be paid according to subsection 40-02 Changes.

d. **Watering.** The contract price in the Highway Traffic Control Rate Schedule includes all resources required to provide watering, as directed.

e. **Highway Traffic Price Adjustment.** If Item G-710c, Highway Traffic Price Adjustment, is shown on the bid schedule, the total value of this contract will be adjusted, for unauthorized lane closures or lane reductions at the rate stated as a pay deduction.

f. **Highway Traffic Control.** Payment for Item G-710d Highway Traffic Control will be made at the unit rate value contained in the Highway Traffic Control Rate Schedule for the accepted units of highway traffic control devices. The Engineer does not require a change order/directive for this pay item.

g. **Plastic Safety Fence.** The contract price in the Highway Traffic Control Rate Schedule includes all resources required to install, maintain, and remove the fence.

h. **Temporary Sidewalk Surfacing.** The contract price in the Highway Traffic Control Rate Schedule includes all resources required to construct, maintain, and remove the surfacing.

i. **Temporary Guardrail.** The contract price in the Highway Traffic Control Rate Schedule includes all resources required to construct, maintain, and remove the guardrail.

Payment will be made under:

Item G-710a	Highway Traffic Maintenance – per lump sum
Item G-710b	Highway Flagger – per contingent sum
Item G-710c	Highway Traffic Price Adjustment – per contingent sum
Item G-710d	Highway Traffic Control – per contingent sum

ITEM G-715 WILDLIFE MONITORING

DESCRIPTION

715-1.1 Comply with the U.S. Fish and Wildlife Service (USF&WS) requirements listed in Appendix P, Wildlife Observer Protocol. Engage a professional services contractor to act as an observer or monitor for endangered species within the requirements shown in the appendix. At the preconstruction conference, provide the names and qualifications of the professional services contract manager and the on-site monitors or observers.

REQUIREMENTS

715-2.1 Meet all monitoring requirements and methods in appendix P. Provide sufficient numbers of qualified and trained observers as required. Prepare all reports and forms, and supply all required equipment as outlined in the appendix.

METHOD OF MEASUREMENT

715-3.1 Subsection 90-05 and in the manner specified in the directive authorizing the work.

BASIS OF PAYMENT

715-4.1 Subsection 90-05 and paid for as specified in the directive authorizing the work.

Payment will be made under:

Item G-715c Wildlife Monitoring – per contingent sum

ITEM L-100 RUNWAY AND TAXIWAY LIGHTING

DESCRIPTION

100-1.1 This item consists of furnishing and installing runway and taxiway lighting systems as indicated on the Plans and as specified herein.

EQUIPMENT AND MATERIALS

100-2.1 GENERAL. Obtain approval of all materials and equipment to be used or incorporated in the work, prior to their shipment to the project site. Submit to the Engineer 5 complete listings of materials and equipment specified herein and on the Plans. Clearly identify the material or equipment by item, name, or designation used on the Plans or specifications and indicate where specified. Include applicable catalog numbers, cuts, wiring diagrams, performance data, and operation and maintenance manuals. Neatly bind and clearly index the submittals. In addition, when specified, include in the submittals certificates of compliance, manufacturer's instructions and/or shop drawings, or proposed construction or installation procedures.

a. **Certified Airport Lighting Equipment.** The following items shall conform to the applicable FAA specifications, except as shown on the Plans and/or modified herein. The equipment shall be certified and listed under AC 150/5345-53, Airport Lighting Equipment Certification Program. This AC, the latest certified equipment list, and the address list of certified airport lighting equipment manufacturers are available on the Internet page for the FAA Office of the Associate Administrator for Airports (ARP). The internet address is http://www.faa.gov/airports_airtraffic/airports/construction/.

ITEM	FAA AC 150/
(1) **Constant Current Regulator, L-828,** class, style, and size as indicated on Plans, 60 Hz input, with brightness control for remote operation.	5345-10
(2) **Runway Edge Light, Bi-directional High-Intensity, L-862,** and Threshold Light, L-862E, with lamp, support column, metal frangible coupling, stainless steel bolts, and upper plug and cord assembly. The lens shall be clamp band style. Complete with lens coloration, lamp wattage, and specified support column height.	5345-46
(3) **Runway Edge Light, Medium Intensity, L-861,** and Threshold Light, L-861E, with incandescent 6.6 A lamp and ~~Lexan~~ lens with support column, metal frangible coupling with stainless steel hex head set screws, and upper plug and cord assembly with separable connector and stainless steel lens encircling clamp band. Complete with lens coloration, lamp wattage, and specified support column height.	5345-46
(4) **Taxiway Edge Light, Medium Intensity, L861T**, with ~~incandescent~~ L.E.D. 6.6 A lamp and ~~Lexan~~ blue glass lens, with support column, metal frangible coupling with stainless steel hex head set screws, and upper plug and cord assembly with separable connector and stainless steel lens encircling clamp band.	5345-46
(5) **Airport Signs, L-858,** internally lighted. Class 2, LED style as shown on the plan. All products and components, including signs and light packages: new and unused, most current manufactured model. Product submittal to include date of manufacture.	5345-44
(6) **Airport Signs, L-858,** unlighted.	5345-44

(7) **Airport Light Base, L-867,** transformer housing, Class I, Size B or D, 24 inches deep, one piece with internal grounding lug, gasket, steel cover, base extension, drain opening, and conduit. 5345-42

(8) **Airport Light Base, L-867,** Watertight, transformer housing, shall be 12 inch x 24 inch, non-steel light bases, meeting the requirements for non-vehicle loading light bases, type L-867. The bases shall be made from Type III, ultra-high molecular weight, heavy-wall, high-density polyethylene pipe having a cell classification of 345434C or better according to ASTM D 3350. A conduit stub made of the same material as the light bases shall be sidewall fused to the bases using saddle fittings, or other approved method for a watertight connection. 5345-42

(9) **Airport Light Base, L-868,** transformer housing, Class I, Steel, Size B, 12 inches deep , two section light base assembly with grooved and "O" ringed flange ring with concrete ring. Complete with any necessary spacer rings, internal grounding lug, mud plate, anti-rotational fins and conduit hubs. 5345-42

(10) **Isolating Transformer, L-830,** individual lamp type, series-to-series, 5000 V, 6.6 A to 6.6 A, 30/45 W or 200 W 5345-47

(11) **Isolating Transformer, L-830,** individual lamp type, series-to-series, 5000 V, 20 A to 6.6 A, 100 W, 200 W or 300 W. Transformers shall have leads of the length shown on the plans. 5345-47

(12) **Isolating Transformer, L-830-1,** individual lamp type, series-to-series, 5000 V, 6.6 A to 6.6 A, 30/45 W. 5345-47

(13) **Isolating Transformer, L-830-6,** individual lamp type, series-to-series, 500 V, 6.6 A to 6.6 A, 200 W. 5345-47

(14) **Radio Control Equipment, L-854,** Type I, with enclosure for surface mounting, antenna and feedline and set to the Common Traffic Advisory Frequency (CTAF) for the project airport as found in the Alaska Supplement of the U.S. Government Flight Publication. 5345-49

(15) **Flush Taxiway Centerline Light Fixture,** Uni or Bi-Directional, Type L-852A, or L-852B, Class 2, Mode 1, Style 3, a flat fixture with 1/4 inch or less clearance above finish surface, with 30 W lamps and color filters, plug and cord assembly, 1/2 inch watertight connector, stainless steel bolts, vibration proof fasteners, "Dry" system with the optical assembly sealed above and below with "O" rings . 5345-46

(16) **Flush Runway Light Fixture,** Uni or Bi-Directional, Type L-850A, ~~or~~ L-850B or L-850C, Class 2, Mode 1, Style 3, as indicated, with 1/4 inch or less clearance above finish surface, with 80 W lamps, color filters, a single 100 or 200 W transformer, plug and cord assembly, 1/2-inch watertight connector, stainless steel bolts, vibration proof fasteners, "Dry" system with the optical assembly sealed above and below with "O" rings. 5345-46

(17) **Primary Handhole, L-868,** class 1, size B, steel, 24 inches deep x 12 inches diameter, 1-3/8 inch N.P.T. conduit hubs (with number and location of hubs as indicated, 4 inch bottom drain hole, steel cover and gasket, internal ground lug with connector and other misc. items. Handhole and cover shall be suitable for vehicle and aircraft wheel loading. 5345-42

(18) **Wind Cone Primary Handhole, L-867,** class 1, size D, steel, 24 inches deep x 16 inch diameter, one piece with internal ground lug with connector, steel cover with

gasket, 4 inch drain hole, 2-1/8 inch N.P.T. and 1-3/8 inch N.P.T. conduit hubs with number and location of hubs indicated, and other misc. items. 5345-42

(19) **Handhole, L-867, Size B, Watertight,** transformer housing shall be 12 inch x 24 inch, non-steel light bases, meeting the requirements for non-vehicle loading light bases, type L-867, with ½ inch galvanized steel cover and gasket. The bases shall be made from Type III, ultra-high molecular weight, heavy wall, high density polyethylene pipe having a cell classification of 345434C or better according to ASTM D 3350. A conduit stub made of the same material as the light bases shall be sidewall fused to the bases using saddle fittings, or other approved method for a watertight connection. 5345-42

b. Sealer. Adhesive sealant shall be a self-leveling silicone sealer.

c. Transformer Support Platform. When called for on the Plans, light bases equipped with L-830 type isolating transformers shall, in addition to the other specified items, be provided with 13-3/4 inch high prefabricated steel, fixed height or folding type, transformer support platforms as shown on the Plans.

d. Power Adapter. Power adapter, when called for in the plans shall be a series primary to 120 V regulated-voltage power supply suitable for use with a 3-step constant current regulator source. The power adapter shall be oil filled and include two replaceable internal fuses. Power adapter ratings shall be 670 VA at 120 V ac with ± 3% regulation @ 2.8 to 6.6 A primary current.

e. Regularly Used Commercial Items. All other regularly used commercial items of electrical equipment not covered by FAA equipment specifications shall conform to the applicable NEMA rulings and standards for equipment of its type.

f. Lock Washers. Lock washers shall be two piece cam-type lock washer.

g. Free Flowing Insulating Material. Insulating material for filling of light bases shall be an inorganic, non-flammable, free-flowing granular material. The material shall be chemically treated to be hydrophobic. It shall be free of asbestos. The material shall have a density of 40 to 42 lb/ft3, and a load bearing strength of 83 psi.

h. Lubricant and Sealant. Lubricant and sealant shall be a general purpose "O"-ring and valve lubricant. Temperature range shall be -40 °F to +400 °F.

i. Soft Gasket. Gaskets to be installed between the base plate and base in watertight lighting systems shall be soft neoprene.

j. Pedestals. The power and communications pedestals shall be fiberglass enclosures constructed to meet the requirements of ANCI C 57.12.28 Standard for Pad-mounted Equipment Enclosure Integrity, an attachment to ANSI C 37.72. Construction details and overall dimensions shall be according to the Plans.

k. Junction Box, Type II. Junction boxes shall be pre-cast reinforced concrete boxes of the size and details shown on the Plans. Junction boxes shall have metal covers. The covers shall be effectively grounded with a 3-foot copper braid.

l. Concrete. Conform to Item P-610 Structural Portland Cement Concrete, 1-inch maximum size coarse aggregate.

CONSTRUCTION METHODS

100-3.1 GENERAL. All work in connection with the airport lighting system shall be according to the applicable provisions of the current NEC of the National Fire Protection Association and all State and local codes. Location of all new fixtures, conduit, cables, etc., shall be as shown on the Plans.

Level and align light fixtures according to manufacturer's instructions. Level to within 1 degree. Align to within 1/2 inch at right angles to centerline and to within 1 inch parallel to centerline.

Where electrical cable or duct is required, such work will be covered under Item L-108 or L-110, as applicable.

Where remote relay assembly and/or remote control panel is required, such work will be covered under item L-109.

Provide all labor, materials, systems, equipment, facilities, and other incidental items as may be required to provide temporary electrical power for construction and testing of all contract work.

100-3.2 INSTALLATION OF NON-WATERTIGHT EDGE LIGHTS. The light base shall be placed on a layer of bedding material of minus 1/4 inch material that is not less than 6 inches in depth. Bedding material shall be, sand, gravel, crushed aggregate, or other suitable material containing no organic, frozen, or other deleterious material. If the light base 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. The material shall be compacted to the requirements of the material into which it is placed. The light base shall be placed to between 3/8 inch and 3/4 inch of finished grade. The base shall be level to within ±1/4 inch.

Connect the insolating transformer with L-823 connector kits and heat shrink tubing. Ensure that all field installed primary cable connectors have the plug pin connectors and receptacle socket connectors properly positioned within their respective connector bodies, as detailed by the connector manufacturer, prior to the shrinking of heat shrink tubing at the cable-connector interface.

Install isolating transformers in the light bases as shown on the Plans. Where called for on the Plans, install isolating transformers in all light bases by placing on top of a 14 inch (extended height) approved transformer supporting platform as specified. Train all connections to the isolating transformer to lay in the upper section of the light base, above the transformer platform and below the cover flange, as shown on the Plans. Provide adequate primary and secondary cable slack in each light base to assure that all connectors can be grouped and trained in the upper section of the light base without subjecting the connector to tension.

Label each edge light assembly with the letter and number designation as indicated on the Plans. Label by permanently die-stamping the letter and number designation onto the light base and base cover plate with 1/4 inch figures.

Install the light fixtures with stainless steel hardware and coat the bolts and frangible couplings with a suitable corrosion inhibitor prior to being installed. Install the light fixtures with lamp, clean the lenses, align and adjust each optical system according to the manufacturer's instructions.

100-3.3 INSTALLATION OF FLUSH LIGHTS. Install flush light fixtures according to the Plans and specifications.

Install flush runway edge and centerline light fixtures and taxiway centerline light fixtures after the old pavement has been cold planed, and before the asphalt is placed. Install flush taxiway and runway centerline and touchdown zone light fixtures on new runways or taxiways after the first asphalt lift and before the final lift.

Core remaining asphalt at the runway centerline light base locations a minimum diameter of 24 inches and remove the base course material to the depth shown. Compact the bottom of the cored hole before pouring concrete.

Use a setting jig to install the bottom section of the light base assembly, as shown in the Plans. The bottom of the light base shall be at least 6 inches above the bottom of the excavation. Provide no more than 4 threaded hubs for the bottom section of the light base, as shown on the Plans. Connect the bottom section of the light bases to the rigid steel conduit system, using rubber grommets or waterproof nipples and couplings. Usually one waterproof sealtite flexible coupling will suffice for each two-hubbed light base.

Call for inspection of the light base assembly prior to the backfilling of the excavations. Backfill with poured PCC meeting the requirements of Item P-610. Fill the excavation only to the level shown. Allow a 3 inch thickness of asphalt pavement over the PCC and over the light base mudplate.

After the PCC has cured at least 72 hours, apply tack coat and overlay with Asphalt Concrete Pavement.

Plug the conduit ends during the course of construction to prevent accumulation of water or debris in the conduit.

When ready to install the inset lights, determine the location of the light base and drill a small diameter core hole to locate the center of the mud plate. Next, drill a 16 inch diameter core hole over the center of the mud plate (± 1/4 inch). Use a coring machine of adequate stability to prevent "wobble". After removing the core, mud plate, plywood cover, and any water or debris that has accumulated, apply a thin layer of self-leveling silicone sealer between the bottom flange of the top section and the top flange of the bottom section and bolt the top section using 18-8, 410, or 416 stainless steel all-thread bolts. Coat the bolts with a suitable corrosion inhibitor prior to installing. Use two-piece cam-type lock washers and torque the bolts to 180 inch-pounds or as recommended by the manufacturer.

Make a "dry system" light fixture installation, using a grooved flange ring, "O" ring, and concrete ring. If the actual elevation of the pavement overlay does not equal the estimated elevation, provide spacer rings or flange rings of different thickness. Bolt the fixture to the top section using 18-8, 410, or 416 stainless steel bolts. Coat the bolts with a suitable corrosion inhibitor prior to installing. Use two piece cam-type lock washers, and torque the bolts to 180 inch-pounds, or as recommended by the manufacturer. Set the outboard edge of the fixture 1/4 to 3/8 inch below the adjacent finished pavement.

Install the light fixtures per the Plans and the specifications and the manufacturers recommended procedure. Do not deviate from these procedures, or the materials shown or specified, without the prior approval of the Engineer.

100-3.4 INSTALLATION OF WATERTIGHT EDGE LIGHTS. Place the light base on a layer of bedding material that is not less than 6 inches in depth and backfill around the lighting base with bedding material. Use bedding material that meets requirements for the applicable lift of material (P-161, P-152, P-154, P-208, P-209) except that 100% of the bedding material will pass a 1 inch sieve.

Test the base assemblies, saddle fittings, and plastic duct as a complete system or in sections to insure that it is watertight. If a pneumatic test is performed to meet this requirement, the minimum pressure shall be ~~10~~ 5 psi for a minimum of 10 minutes.

Base assemblies shall be sealed watertight and conduit openings and any holes shall be caulked with duct seal to prevent any water from entering the base assemblies. After the connection of the isolating transformer with L-823 connector kits the light bases shall be completely filled with free flowing insulating material.

The light base assemblies shall be sealed watertight using the following method and materials or approved equal:

a. Spot weld the weep hole in the bottom of the base plate hub, if present.

b. To insure that no water leaks into the can, use a soft neoprene gasket under the base plate. The gasket shall be covered on both sides with a generous coating of lubricant and sealant to prevent water seepage during freeze-thaw cycles.

c. Install seal washers with stainless steel cups under the bolt heads. The torque on the six bolts should be approximately 25 plus or minus 5 inch-pounds. A torque wrench must be used.

d. After installation of the base plate, plug in the edge light. Using clear adhesive sealant, coat the threads of the frangible coupling and screw into place. Plug the weep hole with adhesive sealant. Put adhesive sealant around the bottom of the frangible coupling at the junction with the base plate.

e. Install the edge light stem securely. Then, using more adhesive sealant, fill the space between the edge light stem and the inside diameter of the frangible coupling. Install the light fixtures with lamp, clean the lenses, align and adjust each optical system according to the manufacturer's instructions.

100-3.5 INSPECTION. Notify the Engineer in writing and request inspection at least 48 hours prior to installing lighting fixtures, making any splices, or covering any buried or concealed work. Immediately correct any deficiencies found during the inspection.

100-3.6 RECORD DOCUMENTS. Maintain at the project site a complete set of contract Plans, specifications and approved changes thereto. In addition to the above, 2 complete sets of electrical plans shall be maintained for as-built purposes upon which all changes, connections, part numbers and conductor routings shall be legibly shown and noted. Where changes to Plans are involved, make notations to show the dates and authorities approving the changes. Permanently store one set of annotated electrical plans in a dry, secure location at the project site. Deliver the second set to the Engineer.

As-built plans shall show locations of all buried items such as conduit, including any existing active lines encountered. All dimensions shall be from runway and taxiway centerlines or other permanent objects. As-built plans shall include complete wiring diagrams, (both power and control), identifying terminals, cables, and connections. As-built plans shall be kept current as the work progresses.

100-3.7 GUARANTEE. Furnish a written guarantee that any materials or workmanship found defective within one year of final acceptance shall be replaced at no additional cost to the Department, promptly upon notification and to the satisfaction of the Engineer.

100-3.8 SPARE PARTS. Provide a quantity of spare light fixtures and transformers equal to 10 percent (rounded down) of the installed quantity of each type of fixture and size of transformer, but not less than one of each size or type. Deliver spare parts to airport maintenance as directed by the Engineer.

100-4.1 METHOD OF MEASUREMENT.

a. Lump Sum. No measurement of quantities will be made.

b. Unit Prices. The quantity to be paid for will be the number of units installed, complete, in place, accepted, and ready for operation, or the number of units acceptably removed.

BASIS OF PAYMENT

100-5.1 ITEMS OF WORK PAID IN OTHER SECTIONS. All work and materials required to install cable, conduit, and ground rods is paid for under Items L-108, and L-110.

~~All work and materials required to install remote relay assembly and remote control panel are paid for under item L-109.~~

100-5.2 ITEMS OF WORK PAID IN THIS SECTION. At the contract lump sum or unit prices for the completed and accepted job.

Refer to Item P-610 for requirements regarding all work and materials to place portland cement concrete. Portland cement concrete is subsidiary to L-100 items requiring its use.

Item L-100a, Airport Lighting: Includes all work required under this item to provide the complete airport lighting system, except work listed above which is paid for under other items.

Item L-100b, Regulator, L-828: Includes mounting, electrical connection (with all input control and output circuits), painting and stenciling. Size as indicated on Plans.

Item L-100c(1), High Intensity Runway Edge and Threshold Light, L-862 and L-862E: Includes L-868 base assembly, gasket, frangible coupling, L-830-6, 200 W isolating transformer, and L-823 cable connectors.

Item L-100c(2), High Intensity Runway Edge and Threshold Light Lens, L-862 and L-862E: Includes lens, gasket, and new lamp.

Item L-100d, Medium Intensity Runway Edge and Threshold Light, L-861 and L-861E: Includes L-867 base assembly, grounding lug and connector, cover, gasket, support column, frangible coupling, 30/45 W L-830-1 isolating transformer, transformer mounting platform (when shown on Plans), and L-823 cable connectors.

Item L-100e, Taxiway Edge Light, L-861T: Includes L-867 base assembly, grounding lug and connector, cover, gasket, support column, frangible coupling, ~~30/45~~ 10/15 W L-830-~~1~~ 6 isolating transformer, transformer mounting platform (when shown on Plans), and L-823 cable connectors.

Item L-100f, Wind Cone Handhole, L-867, Size D: Includes steel cover and gasket, grounding lug and connector, L-823 primary and secondary cable connectors, and PA-4 power adapter (when specified on the Plans).

Item L-100g, Primary Handhole, L-868, Size B: Includes traffic rated steel cover and gasket, grounding lug and connector.

Item L-100h, Remove ~~existing~~ Runway and Taxiway Light: Includes removal of fixtures, transformers, and bases.

Item L-100i, Flush Runway Centerline Light, L-850A or L-850B: Includes L-868 base assembly, spacer rings, flange ring, steel cover, concrete work, asphalt patching and sealing.

Item L-100j, Flush Taxiway Centerline Light, L-852A, L-852B, L-852E or L-852G: Includes L-868 base assembly, spacer rings, flange ring, L-830 isolating transformer, L-823 Cable connectors, concrete work, asphalt patching and sealing.

Item L-100k, Flush Runway Edge Light, L-850C: Includes L-868 base assembly, spacer rings, flange ring, L-830 isolating transformer, L-823 Cable connectors, concrete work, asphalt patching and sealing.

Item L-100l, Relocate ~~Existing~~ Airport Sign, Type L-858: Includes L-867 base, frangible couplings, transformer, concrete base, and sign faces as shown.

Item L-100m, Runway Guard Light, L-804: Includes L-867 base assembly.

Item L-100n, Airport Sign, Type L-858: Includes sign, L-867 base, frangible couplings, transformer, concrete base, sign faces as shown.

Item L-100o, Power or Communications Pedestal: Includes anchor stake and conduits as shown.

Item L-100p, Handhole, L-867, Size B: Includes grounding lug, steel cover, and gasket.

Item L-100q, Junction Box, Type II.

Item L-100r, Temporary Runway Lighting System: Includes high intensity threshold lights, L-862E, transformers, jumpers, and raceways. Constructed, installed and maintained as shown on the plans and/or at the direction of the engineer.

Item L-100ap, Spare Parts: Includes spare light fixtures and transformers.

Payment will be made under:

Item L-100a	Airport Lighting - per lump sum
Item L-100b	Regulator, L-828 - per each
Item L-100c(1)	High Intensity Runway Edge and Threshold Light, L-862 and L-862E - per each
Item L-100c(2)	High Intensity Runway Edge and Threshold Light Lens, L-862 and L-862E - per each
Item L-100d	Medium Intensity Runway Edge and Threshold Light, L-861 and L-861E - per each
Item L-100e	Taxiway Edge Light, L-861T - per each
Item L-100f	Wind Cone Handhole, L-867, Size D - per each
Item L-100g	Primary Handhole, L-868, Size B – per each
Item L-100h	Remove ~~existing~~ Runway and Taxiway Light - per each
Item L-100i	Flush Runway Centerline Light, L-850A or L-850B - per each
Item L-100j	Flush Taxiway Centerline Light, L-852A, L-852B, L-852E or L-852G - per each
Item L-100k	Flush Runway Edge Light, L-850C - per each
Item L-100l	Relocate ~~Existing~~ Airport Sign, Type L-858 - per each
Item L-100m	Runway Guard Light, L-804 - per each
Item L-100n	Airport Sign, Type L-858 - per each
Item L-100o	Power or Communications Pedestal – per each
Item L-100p	Handhole, L-867, Size B – per each
Item L-100q	Junction Box, Type II – per each
Item L-100r	Temporary Runway Lighting System – per lump sum
Item L-100ap	Spare Parts – per lump sum

MATERIAL REQUIREMENTS

AC 150/5345-10	*Constant Current Regulators and Regulator Monitors*
AC 150/5345-42	*Airport Light Bases, Transformer Houses, Junction Boxes and Accessories*
AC 150/5345-44	*Taxiway and Runway Signs*
AC 150/5345-46	*Runway and Taxiway Light Fixtures*
AC 150/5345-47	*Isolation Transformers for Airport Lighting Systems*
AC 150/5345-49	*L-854, Radio Control Equipment*
AC 150/5345-53	*Airport Lighting Equipment Certification Program*
ASTM D 1557	Moisture-Density Relations of Soils and Soil-Aggregate Mixtures Using 10-lb. Rammer and 18-in Drop

ITEM L-107 WIND CONE

DESCRIPTION

107-1.1 This item shall consist of furnishing and installing lighted ~~and unlighted~~ airport wind cones according to these specifications and according to the dimensions, design, and details shown in the Plans.

This work shall include the removal of existing circuitry and foundation.

For lighted wind cones, the work shall include the furnishing and installation of a support for mounting the wind cone, the furnishing and installing of the specified wire from the wind cone to the electrical control panel, and a concrete foundation. The item shall also include all cable connections, the furnishing and installing of the conduit and conduit fittings from the wind cone base to the first hand hole, the furnishing and installation of all lamps, ground rod and ground connection, the testing of the installation, and all incidentals necessary to place the wind cone in operation as a completed unit to the satisfaction of the Engineer.

For unlighted wind cones, the work shall include the furnishing and installation of a support for mounting the wind cone and a concrete foundation.

EQUIPMENT AND MATERIALS

107-2.1 GENERAL.

a. Airport lighting equipment and materials covered by FAA specifications shall be certified and listed under AC 150/5345-53, Airport Lighting Equipment Certification Program. This AC, the latest certified equipment list, and the address list of certified airport lighting equipment manufacturers are available on the Internet home page for the FAA Office of the Associate Administrator for Airports (ARP). The internet address is http://www.faa.gov/airports_airtraffic/airports/construction/.

b. All other equipment and materials covered by other referenced specifications shall be subject to acceptance through manufacturer's certification of compliance with the applicable specification when requested by the Engineer.

107-2.2 WIND CONES. The 8-foot and 12-foot wind cones and assemblies shall conform to the requirements of AC 150/5345-27, Specification for Wind Cone Assemblies. The pole shall be a steel pole hinged in the middle.

a. Type L-807, Style I-A, Size 1, externally lighted wind cone.
b. Type L-807, Style 1-B, Size 1, internally lighted wind cone.
~~**b.**~~**c.** Type L-807, Style I-A, Size 2, externally lighted wind cone.
d. Type L-807, Style 1-B, Size 2, internally lighted wind cone.
~~**c.**~~**e.** Type L-807, Style II, Size 1, unlighted wind cone.
~~**d.**~~**f.** Type L-807, Style II, Size 2, unlighted wind cone.

107-2.3 WIRE. Wire in conduit rated up to 5,000 V shall conform to AC 150/5345-7, Specification for L-824 Underground Cable for Airport Lighting Circuits, Type C cross-linked polyethylene insulated wire. For ratings up to 600 V, cross-linked polyethylene insulated wire type XHHW-2, shall be used. The wires shall be of the type, size, number of conductors, and voltage shown in the Plans.

107-2.4 CONDUIT. Rigid steel conduit and fittings shall conform to the requirements of UL Standard 6, 514, and 1242.

107-2.5 CONCRETE. Design the foundation based on the soil bearing capacity of the soils located at the pole site, pole mechanics, and wind loads. Provide a foundation that will allow adjustment of the pole with a

wrench by tightening or loosening bolts and a pole adjustment range of 5 degrees minimum without compromising the pole wind rating.

Design the foundation as necessary to resist pole lateral, uplift, and overturning forces. Submit calculations stamped by a Professional Engineer to the Engineer for approval. The concrete for foundations shall be proportioned, placed, and cured according to Item P-610, Structural Portland Cement Concrete.

107-2.6 PAINT.

a. Primer for ungalvanized metal surfaces shall be a high solids alkyd primer conforming to Federal Specification TT-P-664D.

b. Primer for galvanized metal surfaces shall be zinc dust-zinc oxide primer paint conforming to MIL-P-24441/19B. If necessary, thin with not more than 1/2 pint of turpentine per gallon of primer.

c. Orange paint for the body and the finish coats on metal surfaces shall consist of a ready-mixed nonfading paint meeting the requirements of Fed. Spec. TT-E-489. The color shall be according to Federal Standard 595, Aviation Gloss Orange, Number 12197.

107-2.7 WIND CONE. The wind cone fabric shall be standard international orange.

CONSTRUCTION METHODS

107-3.1 INSTALLATION. The hinged pole shall be installed on the concrete foundation ~~as shown in the Plans~~ in accordance with these specifications and the manufacturer's drawings. Do not grout between the base plate and the foundation to allow for air circulation and inhibit corrosion inside the pole.

a. Notify the Engineer at least 24 hours prior to placement of concrete. Allow concrete bases to cure for 7 days after pouring before installing the hinged pole.

b. Backfill. Material used as backfill around the footing of the lighted wind cone shall be gravel or sand consisting of crushed or naturally occurring granular material. All materials shall be free of frozen lumps and clay particles.

107-3.2 COUNTERWEIGHT. The Contractor shall furnish and install a counterweight on the hinged support for the 12-foot wind cone. The counterweight may consist of lead weights which may be furnished with the "A" frame assembly or it may consist of concrete poured around the bottom of the hinged support. Where concrete is used, the counterweight shall be approximately 12 inches wide by 2 feet deep and should weigh approximately 500 pounds. The counterweight shall be 25 to 50 pounds less than the weight needed to balance the assembly. The counterbalancing must operate to the satisfaction of the Engineer.

107-3.3 ELECTRICAL CONNECTION. The Contractor shall furnish all labor and materials and shall make complete electrical connections according to the wiring diagram furnished with the Plans.

If underground cable from the transformer vault to the wind cone site and duct for this cable installation ~~under paved areas~~ is required, the cable and duct will be paid for as part of the wind cone pay item.

107-3.4 BOOSTER TRANSFORMER. If shown in the Plans or specified in the Special Provisions, a booster transformer to compensate for voltage drop to the lamps shall be installed in a suitable weatherproof housing. The booster transformer shall be installed as indicated in the Plans and described in the Special Provisions. If the booster transformer is required for installation in the transformer vault, it will be paid for as part of the wind cone pay item.

107-3.5 GROUND CONNECTION AND GROUND ROD. The Contractor shall furnish and install a ground rod, grounding cable, and ground clamps for grounding the "A" frame of the 12-foot assembly or pipe support of the 8-foot support near the base. The ground rod shall be of the diameter and length specified in the Plans

and shall be copper or copper clad. The ground rod shall be driven into the ground adjacent to the concrete foundation so that the top is at least 0.5 foot below grade. The grounding cable shall consist of No. 8 AWG bare stranded copper wire or larger and shall be firmly attached to the ground rod by means of a ground connector or clamp. The other end of the grounding cable shall be securely attached to a leg of the "A" frame or to the base of the pipe support with noncorrosive metal and shall be of substantial construction. The resistance to ground shall not exceed 25 ohms.

107-3.6 PAINTING. Three coats of paint shall be applied (1 prime, 1 body, and 1 finish) to all exposed material installed under this item except the fabric cone, obstruction light globe, and lamp reflectors. The wind cone assembly, if painted on receipt, shall be given 1 finish coat of paint in lieu of the 3 coats specified above.

107-3.7 LAMPS. The Contractor shall furnish and install lamps, as required, conforming to the following requirements and as indicated on the drawings:

a. Incandescent. Provide four 200-W, 115-V general lighting service lamps in the reflectors for the 12-foot cone or four 150-W, 115-V lamps for the 8-foot cone. A clear 100-W, 107-W, or 116-W, 115-V traffic signal lamp with a medium screw base, or a 100-W. A 69 W, L-810, 115 V, medium prefocus base lamp shall be furnished and installed in the obstruction light as required.

b. LED. Provide LED fixtures with independent lamp circuits for general illumination of the wind cone. Furnish and install an L-810, LED, 120-V obstruction light as required.

107-3.8 WINCH AND PADLOCK. The Contractor shall furnish and install a suitable locking ratchet winch for lowering and raising the hinged top section.

A padlock shall also be furnished by the Contractor on the 8-foot wind cone for securing the hinged top section to the fixed lower section. Three keys for the padlock shall be delivered to the Engineer.

107-3.9 TESTING. Furnish all necessary labor, equipment and appliances for testing all material and equipment as specified herein. No work will be accepted until all applicable tests have been performed. Tests shall not begin until the work has been approved by the Engineer. All tests shall be neatly tabulated on a reproducible "Test Sheet" which shall be signed and dated by the Contractor upon completion of the test. Test and demonstrate to the Engineer the following:

a. That all lighting, power, and control circuits are continuous, and free from short circuits.

b. That all circuits are free from unspecified grounds.

c. That the resistance to ground of all non-ground 5000 V circuits is not less than ~~50~~2000 megohms at 1000 V. Where additions are made to existing circuits, only the new section shall be tested. The resistance to ground of 600 V capacity shall be ~~10~~1000 megohms at 500 V for the insulation test.

d. That all circuits are properly connected according to applicable wiring diagrams.

e. That all circuits are operable.

107-3.10 GUARANTEE. Furnish a written guarantee that any materials or workmanship found defective within 1 year of final acceptance shall be replaced at the Contractor's expense, promptly upon notification and to the satisfaction of the Engineer.

METHOD OF MEASUREMENT

107-4.1 The quantity to be paid for will be the number of wind cones ~~installed~~ relocated as completed units in place, accepted, and ready for operation.

BASIS OF PAYMENT

107-5.1 Payment will be made at the contract unit price for each completed and accepted job.

Payment will be made under:

Item L-107a	8-foot Lighted Wind Cone, in place - per each
Item L-107b	12-foot Lighted Wind Cone, in place - per each
Item L-107c	8-foot Unlighted Wind Cone, in place - per each
Item L-107d	12-foot Unlighted Wind Cone, in place - per each

MATERIAL REQUIREMENTS

AC 150/5345-7	L-824 Underground Cable for Airport Lighting Circuits
AC 150/5345-27	Wind Cone Assemblies
ASTM A 615	Deformed and Plain Billet-Steel Bars for Concrete Reinforcement
Commercial Item Description A-A-3067	Paint: Alkyd, Exterior, Low VOC
Fed. Spec. J-C-30	Cable and Wire, Electrical (Power, Fixed Installation)
Fed. Spec. TT-E-489	Enamel, Alkyd, Gloss, Low VOC Content
Fed. Spec. W-P-115	Panel, Power Distribution
Fed. Std. 595	Colors
MIL-P-24441/19B	Paint, Epoxy-Polyamide, Zinc Primer, Formula 159, Type III
UL Standard 6	Rigid Metal Conduit
UL Standard 514	Fittings For Conduit and Outlet Boxes
UL Standard 1242	Intermediate Metal Conduit

ITEM L-108 UNDERGROUND CABLE

DESCRIPTION

108-1.1 This item shall consist of furnishing and installing underground cable according to these specifications at the locations shown in the Plans. This item shall include the excavation and backfill of the trench, where direct buried cable is specified, and the installation of cable, grounding and counterpoise wire in trench, duct or conduit. It shall include splicing, cable marking, and testing of the installation and all incidentals necessary to place the cable in operating condition as a completed unit to the satisfaction of the Engineer. This item shall not include the installation of the duct or conduit.

EQUIPMENT AND MATERIALS

108-2.1 GENERAL.

a. Airport lighting equipment and materials covered by FAA specifications shall be certified and listed under AC 150/5345-53, Airport Lighting Equipment Certification Program. This AC, the latest certified equipment list, and the address list of certified airport lighting equipment manufacturers are available on the Internet home page for the FAA Office of the Associate Administrator for Airports (ARP). The internet address is http://www.faa.gov/airports_airtraffic/airports/construction/.

b. All other equipment and materials covered by other referenced specifications shall be subject to acceptance through manufacturer's certification of compliance with the applicable specification, when requested by the Engineer.

108-2.2 CABLE. Underground cable shall conform to the requirements of AC 150/5345-7, Specification for L-824 Underground Electrical Cable for Airport Lighting Circuits, and meet the following requirements.

5000 V cable shall be non-shielded, single conductor, FAA type C, with cross-linked polyethylene insulation or FAA type B, ICEA S-19-81 ozone-resistant butyl rubber insulated with overall jacket of heavy duty neoprene. Conductor shall be lead alloy coated, soft annealed stranded copper.

600 V cable shall be non–shielded, single conductor, with stranded annealed copper conductor, rated 190 °F, with cross-linked polyethylene insulation classified as UL type-2 and FAA type C.

Underground Electrical Cable shall be No. 14 AWG, 2 Conductor, copper, 600 V, Type SOOW-A/SOOW. Cable shall remain flexible down to -40 °F. The cable connectors shall be secondary connector kits for the plug and the receptacle meeting specification L-823.

If telephone control cable is specified, copper shielded, polyethylene insulated and jacketed, No. 19 AWG telephone cable conforming to ICEA-S-85-625, Standard, Aircore, Polyolefin, Copper Conductor Telecommunications Cable for direct burial, shall be used.

Where counterpoise conductors are to be installed and where soil conditions would adversely affect bare copper wire, cross-linked polyethylene wire conforming to Fed. Spec. J-C-30, Type XHHW-2, 600 volt, may be used.

Cable type, size, number of conductors, strand and service voltage will be specified in the Plans and/or specifications.

108-2.3 BARE COPPER WIRE (COUNTERPOISE OR GROUNDING). Bare copper wire for counterpoise or grounding installations shall be solid or stranded wire conforming to ASTM B 3 and B 8.

108-2.4 CABLE CONNECTIONS. In-line connections of underground primary cables shall be of the type called for in the Plans or in the specifications, and shall be one of the types listed below. When the Plans or the specifications permit a choice of connection, the Contractor shall indicate in the bid the type of connection they propose to furnish.

a. **Cast Splice.** A cast splice, employing a plastic or metal mold and using epoxy resin manufactured by Minnesota Mining and Manufacturing Company, "Scotchcast" Kit No. 82B, or approved equal, is to be used for potting the splice. This means of splicing is the only type approved for telephone control cable.

a. A non re-enterable "scotchcast" 82A series kit shall be used, as required, for splices where 2 or more series circuits are present.

b. **Vulcanized Splice.** A vulcanized splice with proper molds for various cable sizes shall be used.

c. **Field-attached Plug-in Splice.** Figure 3 of AC 150/5345-26, Specification for L-823 Plug and Receptacle, Cable Connectors, employing connector kits, is approved for field attachment to single conductor cable. 600 V cord sets shall include a Type II, Class A, Style I plug on a 16/2 SJO cord. 600 V secondary receptacles shall be Type II, Class B, Style II. 600 V plugs shall be Type II, Class B, Style 4. 5000 V plugs shall be Type I, Class B, Style 3. 5000 V receptacles shall be Type I, Class B, Style 10.

d. **Factory-Molded Plug-in Splice.** Specification for L-823 Connectors, Factory-Molded to Individual Conductors, are approved.

e. **Taped Splice.** Taped splices employing field-applied rubber, or synthetic rubber tape covered with plastic tape are approved. The rubber tape should meet the requirements of ASTM D 4388 and the plastic tape should comply with Mil. Spec. MIL-I-24391 or Commercial Item Description A-A-55809. In all the above cases, connections of cable conductors shall be made using crimp connectors utilizing a crimping tool designed. T to make a complete crimp before the tool can be removed. No. 19 AWG telephone control wires may be connected by means of wrapped and soldered splice, 3M Company Moisture Proof UR Type Connector, or approved equal, or by a method approved by the Engineer. Electrical insulating tape shall be "Scotch" No. 88 or approved equal.

108-2.5 CONCRETE. Concrete for cable markers shall conform to Specification Item P-610, "Structural Portland Cement Concrete."

108-2.6 MARKER TAPE. Marker tape shall be APWA-ULCC compliant, red polyethylene plastic, printed "Caution - Buried Electric Line Below".

108-2.7 INTERSTICE FILLER. When called for on the Plans underground conduit runs shall contain, in addition to the specified conductor(s), one or more runs of compressible interstice filler (as shown on the Plans). Compressible interstice filler shall be 5/8-inch closed cell backer rod (caulk backer).

CONSTRUCTION METHODS

108-3.1 GENERAL. The Contractor shall install the specified cable at the approximate locations indicated in the airport lighting layout plans. The Engineer will indicate specific locations.

Notify the Engineer in writing and request inspection at least 48 hours prior to installing cables, making any splices, or covering any buried or concealed work. Immediately correct any deficiencies found during the inspection. Install cable in a manner to prevent harmful stretching of the conductors, injury to the insulation, damage to tapes and fillers or damage to the outer protective jacket or covering.

Label the circuit conductors in each manhole or handhole by attaching a heat stamped nylon identification tag bearing the circuit designation "R" or "T", as required.

Cable connections between lights will be permitted only at the light locations for connecting the underground cable to the primary leads of the individual insulating transformers. The Contractor shall be responsible for providing cable in continuous lengths for home runs or other long cable runs without connections, unless otherwise authorized in writing by the Engineer or shown in the Plans.

108-3.2 INSTALLATION IN DUCT OR CONDUIT. This item includes the installation of the cable in duct or conduit as described below. The maximum number and voltage ratings of cables installed in each single duct or conduit, and the current-carrying capacity of each cable shall be according to the latest NEC, or the code of the local agency having jurisdiction.

The Contractor shall make no connections or joints of any kind in cables installed in conduits or ducts. Provide and install cables in continuous lengths free of splices between the points of connection indicated on the Plans.

The duct or conduit shall be installed as a separate item according to Item L-110, "Underground Electrical Duct." The Contractor shall make sure that the duct is open, continuous, and clear of debris before installing cable. The cable shall be installed in a manner to prevent harmful stretching of the conductor, injury to the insulation, or damage to the outer protective covering. The ends of all cables shall be sealed with moisture-seal tape before pulling into the conduit and it shall be left sealed until connections are made. Where more than one cable is to be installed in a duct under the same contract, all cable shall be pulled in the duct at the same time. The pulling of a cable through ducts or conduits may be accomplished by hand winch or power winch with the use of cable grips or pulling eyes. Pulling tensions should be governed by recommended standard practices for straight pulls or bends. A lubricant recommended for the type of cable being installed shall be used where pulling lubricant is required. Duct or conduit markers temporarily removed for excavations shall be replaced as required.

Compressible interstice filler (when shown on the Plans and as specified) shall be installed in place with the cable(s). It shall be taped as required to attach and secure it to the conductor(s) during installation.

Where runway and taxiway series lighting circuit conductors are to be installed together through the same conduit, identify the individual conductors at both ends of the duct by applying identification ties which have been heat stamped with the circuit identification "R", "T1" or "T2" as needed.

When installed in the same structure, ductbank or conduit, conductors of separate circuits shall be indentified by colorable insulation. The colors green and white shall not be used to identify series circuits.

Assemble connections in the runway and taxiway series lighting cable at the light assemblies using approved L-823 connector kits. The male end shall be coated with silicone compound. Properly seat both plug and receptacle ends onto cable and check for proper connector pin positioning prior to taping. When completed, wrap the L-823 connection with 2 layers of electrical insulating tape, 1/2 lapped extending at least 1-1/2 inch on each side of the joint. Install heat shrinkable tubing with internal adhesive as shown on Plans. Leave sufficient slack in the cables at points of connection consistent with standard trade practices; and, in the case of the runway and taxiway series lighting cable, leave sufficient slack at each light assembly to permit the connection to be made ~~1 foot~~ 3 feet above grade.

108-3.3 TRENCHING. Where turf is well established and the sod can be removed, it shall be carefully stripped and properly stored. Trenches for cables 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. Road patrols or graders shall not be used to excavate the trench with their blades. The bottom surface of trenches shall be essentially smooth and free from coarse aggregate. Unless otherwise specified, cable trenches shall be excavated to a minimum depth of 1.5 feet below finished grade, except as follows:

a. When off the airport or crossing under a roadway or driveway, the minimum depth shall be 3 feet unless otherwise specified.

b. Minimum cable depth when crossing under a railroad track, shall be 3.5 feet unless otherwise specified.

The Contractor shall excavate all cable trenches to a width not less than 6 inches. The trench shall be widened where more than two cables are to be installed parallel in the same trench. Unless otherwise specified in the Plans, all cables in the same location and running in the same general direction shall be installed in the same trench.

When rock excavation is encountered, the rock shall be removed to a depth of at least 3 inches below the required cable depth and it shall be replaced with bedding material of earth or sand containing no mineral aggregate particles that would be retained on a 1/4 inch sieve. The Contractor shall ascertain the type of soil or rock to be excavated before bidding. All excavation shall be unclassified.

108-3.4 INSTALLATION IN TRENCHES. The Contractor shall not use a cable plow for installing the cable. Mechanical cable-laying equipment may be used in conjunction with a trenching machine if specified on project Plans and specifications; and it should provide for physical inspection of cable prior to backfilling. Sharp bends or kinks in the cable will not be permitted.

Cables shall be unreeled in place alongside or in the trench and shall be carefully placed along the bottom of the trench. Inspect cable as it is removed from the reel to determine that the cable is free of visible defects. Support reel so that it turns easily and without undue strain on the cable. The cable shall not be unreeled and pulled into the trench from one end.

Where two or more cables are laid parallel in the same trench, they shall be placed laterally a minimum distance of 3 inches apart, and the trench shall be widened sufficiently to accomplish this.

Cables crossing over each other shall have a minimum of 3 inch vertical displacement with the topmost cable depth at or below the minimum required depth below finished grade.

Not less than 12 inches of cable slack shall be left on each side of all connections, insulating transformers, light units, and at all other points where cable is connected to field equipment. The slack cable shall be placed in the trench in a series of S-curves. Additional slack cable shall be left in runway light bases, handholes, manholes, etc., where it is required to bring the cable above ground level to make connections. The amount of slack cable will be stipulated by the Engineer, or as shown in the Plans and specifications.

108-3.5 BACKFILLING. After the cable has been installed, the trench shall be backfilled. The initial layer of backfill material shall be 3 inches deep, loose measurement, and shall be either earth or sand containing no mineral aggregate particles that would be retained on a 1/4-inch sieve. This layer shall not be compacted. The second layer shall be 5 inches deep, loose measurement, and shall contain no particles that would be retained on a 1-inch sieve. The remainder of the backfill shall be excavated or imported mineral and shall not contain stone or aggregate larger than 4 inches maximum diameter. The third and subsequent layers of the backfill shall not exceed 8 inches in maximum depth, loose measurement.

The second, and subsequent layers shall be thoroughly tamped and compacted to at least the density of the adjacent undisturbed soil, and to the satisfaction of the Engineer. If necessary to obtain the desired compaction, the backfill material shall be moistened or aerated as required.

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.

108-3.6 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

topsoiling, fertilizing, liming, seeding, sodding, sprigging or mulching. All such work shall be performed according to the FAA standard turfing specifications. The Contractor will be held responsible for maintaining all disturbed surfaces and replacements until final acceptance.

108-3.7 CABLE MARKERS. The location of runway light circuits shall be marked by a concrete slab marker, 2 feet square and 4 inches thick, extending approximately 1 inch above the surface. Each cable run from the line of runway lights to the equipment vault shall also be marked at approximately every 200 feet along the cable run, with an additional marker at each change of direction of cable run. All other cable buried directly in the earth shall be marked in the same manner. The Contractor shall not install slab markers where cable lies in straight lines between obstruction light poles which are spaced 300 feet apart, or less. Cable markers shall be installed immediately above the cable. The Contractor shall impress the word "CABLE" and directional arrows on each cable marking slab. The letters shall be approximately 4 inches high and 3 inches wide, with width of stroke 1/2 inch and 1/4 inch deep.

The location of each underground cable connection, except at lighting units or insulating transformers, shall be marked by a concrete marker slab placed above the connection. The Contractor shall impress the word "SPLICE" on each slab. The Contractor also shall impress additional circuit identification symbols on each slab if so desired by the Engineer.

108-3.8 SPLICING. Connections of the type shown in the Plans shall be made by experienced personnel regularly engaged in this type of work and shall be made as follows:

a. **Cast Splices.** These shall be made by using crimp connectors for jointing conductors. Molds shall be assembled, and the compound shall be mixed and poured according to manufacturer's instructions and to the satisfaction of the Engineer.

b. **Vulcanized Splices.** These shall be made by using crimp connectors for joining conductors. The splice shall be made, using compounds furnished by the manufacturer, according to their instructions and to the satisfaction of the Engineer.

c. **Field-attached Plug-in Splices.** These shall be assembled according to manufacturer's instructions. These splices shall be made by plugging directly into mating connectors. In all cases the joint where the connectors come together shall be wrapped with at least one layer of rubber or synthetic rubber tape and one layer of plastic tape, one-half lapped, extending at least 1-1/2 inches on each side of the joint.

d. **Factory-Molded Plug-in Splices.** These shall be made by plugging directly into mating connectors. In all cases, the joint where the connectors come together shall be wrapped with at least one layer of rubber or synthetic rubber tape and one layer of plastic tape, one-half lapped, extending at least 1-1/2 inches on each side of the joint.

e. **Taped Splices.** A taped splice shall be made in the following manner:

Bring the cables to their final position and cut so that the conductors will butt. Remove insulation and jacket allowing for bare conductor of proper length to fit compression sleeve connector with 1/4 inch of bare conductor on each side of the connector. Use a sharp knife to pencil insulation and jacket at approximately the same angle as a pencil point. Care must be taken to avoid nicking or injuring the conductor during removal of insulation or penciling. Do not use emery paper on splicing operation since it contains metallic particles. The copper conductors shall be thoroughly cleaned. Join the conductors by inserting them equidistant into the compression connection sleeve. Crimp conductors firmly in place with crimping tool that requires a complete crimp before tool can be removed. Test the crimped connection by pulling on the cable. Scrape the insulation to assure that the entire surface over which the tape will be applied (plus 3 inches on each end) is clean. After scraping wipe the entire area with a clean lint-free cloth. Do not use solvents.

Apply high-voltage rubber tape one-half lapped over bare conductor. This tape should be tensioned as recommended by the manufacturer. Voids in the connector area may be eliminated by highly elongating the

tape stretching it just short of its breaking point. Throughout the rest of the splice less tension should be used. Always attempt to exactly half-lap to produce a uniform buildup. Continue buildup to 1-1/2 times cable diameter over the body of the splice with ends tapered a distance of approximately 1 inch over the original jacket. Cover rubber tape with two layers of vinyl pressure-sensitive tape one-half lapped. Do not use glyptol or lacquer over vinyl tape as they react as solvents to the tape. No further cable covering or splice boxes are required.

If shielded cable is to be spliced, prepare cable as for a regular taped splice, except that the neoprene jacket shall be removed a distance not less than 5 inches from the beginning of the penciled portion. Carefully unwrap the shielding tape from that portion where jacket has been removed and cut off so that it extends about 1 inch from end of the jacket. Proceed with the taped splice as described above and tape up to 1/4 inch from the shield on both ends. Build up rubber tape to a thickness equal to the insulation thickness or 5/16 inch over connector.

Next wrap one-half lapped layer of semi-conducting tape, conforming to ASTM D 4388, Type IV, over splicing tape and 1/4 inch onto the shielding tape. Wrap a fine, flat shielding braid one-half lapped over the splice extending 1/2 inch onto the metallic shielding. Solder ends of braid to metallic shielding tape. A bonding wire, (Minimum No. 14 Stranded Copper) equal to the current carrying capacity of the metallic shield, should have the individual strands wrapped around the metallic shield at both ends of the splice. These strands should be tack soldered to the shield in several places. The cable sheath should be replaced by wrapping with two one-half lapped layers of vinyl tape extending 2 inches onto the cable jacket.

The above described splice is for a straight-through splice with continuity of shielding.

108-3.9 BARE COUNTERPOISE WIRE INSTALLATION AND GROUNDING FOR LIGHTNING PROTECTION. If shown in the Plans or specified in job specifications, a stranded bare copper wire, No. 8 AWG minimum size, shall be installed for lightning protection of the underground cables. The bare counterpoise wire shall be installed in the same trench for the entire length of the insulated cables it is designed to protect, and shall be placed at a distance of approximately 4 inches from the insulated cable. The counterpoise wire shall be securely attached to each light fixture base, or mounting stake. The counterpoise wire shall also be securely attached to copper or copper-clad ground rods installed not more than 1,000 feet apart around the entire circuit. The ground rods shall be of the length and diameter specified in the Plans, but in no case shall they be less than 8 feet long nor less than 5/8 inch in diameter.

The counterpoise system shall terminate at the transformer vault or at the power source. It shall be securely attached to the vault or equipment grounding system. The connections shall be made as shown in the project Plans and specifications.

108-3.10 GROUNDING SYSTEM. If shown in the Plans or specified in specifications, a stranded bare copper wire, No. 8 AWG minimum size, shall be installed as grounding for the lighting system. The bare ground wire shall be installed in the same trench for the entire length of the insulated cables or conduit it is designed to protect, and shall be placed at a distance of approximately 4 inches from the insulated cable or conduit. The ground wire shall be securely attached to each light fixture base. The ground wire shall also be securely attached to copper or copper-clad ground rods using exothermic connections and installed not more than 1,000 feet apart around the entire circuit. The ground rods shall be of the length and diameter specified in the Plans, but in no case shall they be less than 8 feet long nor less than 5/8 inch in diameter.

The ground system shall terminate at the transformer vault or at the power source. It shall be securely attached to the vault or equipment grounding system. The connections shall be made as shown in the project Plans and specifications.

108-3.11 TESTING. The Contractor shall furnish all necessary equipment and appliances for testing the underground cable circuits after installation. The Contractor shall test and demonstrate to the satisfaction of the Engineer the following:

a. That all lighting power and control circuits are continuous and free from short circuits.

b. That all circuits are free from unspecified grounds.

c. That the insulation resistance to ground of all nongrounded series circuits is not less than ~~50~~ 2,000 megohms at 1000V. Where additions to existing circuits, only the new section shall be tested. The resistance to ground of 600 V capacity shall be ~~10~~ 1,000 megohms at 500V for the insulation test.

d. That the insulation resistance to ground of all nongrounded conductors of multiple circuits is not less than ~~50~~ 2,000 megohms.

e. That all circuits are properly connected according to applicable wiring diagrams.

f. That all circuits are operable. Operate each control not less than 10 times and operate each lighting and power circuit continuously for not less than 1/2 hour.

METHOD OF MEASUREMENT

108-4.1 Trenching will not be measured for payment. Excavation, backfill, bedding, and reconditioning will be subsidiary.

108-4.2 Cable, ground or counterpoise wire by unit price installed in trench shall be measured by the number of linear feet of cable, ground or counterpoise wire installed in trenches, ready for operation, and accepted as satisfactory. Separate measurement will be made for each cable or counterpoise wire installed in trench.

108-4.3 Cable, ground or counterpoise wire, and interstice filler by unit price installed in duct or conduit shall be measured by the number of linear feet measured in place, completed, ready for operation, and accepted as satisfactory. Separate measurement will be made for each cable, ground or counterpoise wire installed in duct or conduit.

108-4.4 The quantity of ground rods to be paid for under this item shall be the number of ground rods in place, completed, ready for operation, and accepted as satisfactory.

108-4.5 Lump sum items will not be measured for payment.

BASIS OF PAYMENT

108-5.1 Payment will be made at the contract unit price or lump sum price for the items listed below and shown in the Bid Schedule.

Payment will be made under:

Item L-108a	Underground Cable #8 AWG, copper, 5 kV FAA type “B” or type "C" (as specified on Plans), L-824 - per linear foot*
Item L-108b	Underground Cable [Gauge] AWG, copper, 5 kV FAA type “B” or type "C" (as specified on Plans), L-824 - per lump sum
Item L-108c	#6 Bare Copper Ground Conductor - per linear foot*
Item L-108d	[Gauge] Bare Copper Ground Conductor - per lump sum
Item L-108e	Underground Cable, [Gauge] AWG Copper, 600 V, Type "C", L-824 - per linear foot*
Item L-108f	Underground Cable, [Gauge] AWG Copper, 600 V, Type "C", L-824 - per lump sum
Item L-108g	Ground Rod - per each

Item L-108h	Underground cable #14 AWG, 2 Conductor, copper, 600V, Type "SOOW-A/SOOW", - per linear foot*
Item L-108i	Underground cable #14 AWG, 2 Conductor, copper, 600V, Type "SOOW-A/SOOW", - per lump sum
Item L-108j	Interstice Filler - per linear foot*
Item L-108k	Interstice Filler - per lump sum

* For payment purposes, 4% will be added to the straight line measurements for cable and ground conductor wire.

MATERIAL REQUIREMENTS

AC 150/5345-7	*L-824 Underground Electrical Cable for Airport Lighting Circuits*
AC 150/5345-26	*L-823 Plug and Receptacle Cable Connectors*
ASTM B 3	Soft or Annealed Copper Wire
ASTM B 8	Concentric-Lay-Stranded Cooper Conductor, Hard, Medium-Hard, or Soft
ASTM D 4388	Rubber Tapes, Nonmetallic Semi-Conducting and Electrically Insulating
Commercial Item Description A-A-55809	Insulation Tape, Electrical, Pressure-Sensitive Adhesive, Plastic
Fed.Spec. J-C-30	Cable and Wire, Electrical Power, Fixed Installation
MIL-I 24391	Insulation Tape, Electrical, Plastic, Pressure Sensitive

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 80. 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-161, 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 compacted ~~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-135 FAA EQUIPMENT

DESCRIPTION

135-1.1 Furnish and install new foundations, new conduit, new conductors, and new junction boxes for Visual Approach Slope Indicator (VASI) and Runway End Indicator Light (REIL) system as shown on the plans, reference drawings and pertinent specification appendices.

Excavation and backfill required is included in this work and is incidental and will not be measured separately for payment.

Wherever the words "this Contract" are found in the specifications attached, it is understood to denote "this work".

MATERIALS

135-2.1 ELECTRICAL Comply with Item L-108 Underground Cable and Item L-110 Underground Electrical Duct for conduit, wiring, and grounding.

135-2.2 PORTLAND CEMENT CONCRETE Comply with Item P-610 for all work and materials required to place portland cement concrete.

CONSTRUCTION REQUIREMENTS

135-3.1 Install new concrete foundations and extend conduit and wiring as indicated on the plans.

135-3.2 Install grounding equipment as shown on the plans in accordance with FAA 19c guidelines.

METHOD OF MEASUREMENT

135-4.1 This item will not be measured for payment.

BASIS OF PAYMENT

135-5.1 Payment will be made at the contract lump sum price for all labor, materials, supervision, and support required to accomplish the work described herein.

Payment will be made under:

Item L-135k Foundations & Utilities for FAA Equipment– per lump sum

ITEM P-151 CLEARING AND GRUBBING

DESCRIPTION

151-1.1 This item shall consist of clearing or clearing and grubbing, including the disposal of materials, for all areas within the limits designated on the Plans or as required by the Engineer.

Clearing shall consist of the cutting and removal of all trees, stumps, brush, logs, hedges, the removal of fences and other loose or projecting material from the designated areas. The grubbing of stumps and roots will not be required.

Clearing and grubbing shall consist of clearing the surface of the ground of the designated areas of all trees, stumps, down timber, logs, snags, brush, undergrowth, hedges, heavy growth of grass or weeds, fences, structures, debris, and rubbish of any nature, natural obstructions or such material which in the opinion of the Engineer is unsuitable for the foundation of strips, pavements, or other required structures, including the grubbing of stumps, roots, matted roots, foundations, and the disposal from the project of all spoil materials resulting from clearing and grubbing by burning or otherwise.

Selective tree removal requires the hand cutting (topping) of all types of trees either by chain saw or by other approved conventional hand clearing methods. Lay the fallen tree next to the stump.

CONSTRUCTION METHODS

151-2.1 GENERAL. The areas ~~denoted on the Plans~~ to be cleared or cleared and grubbed shall be staked or otherwise marked on the ground at the direction of the Engineer. The Engineer will flag or mark each tree designated for selective tree removal. The clearing and grubbing shall be done far enough ahead of the earthwork operation to permit cross-sectioning prior to excavation or embankment. Mechanical brush cutting equipment may be used for clearing. Dozers or other mechanical equipment not specifically designed for brush cutting may not be used.

Comply with seasonal construction limitations in subsection 80-04 to prevent impacts to migratory bird nesting areas.

Debris from mechanical brush cutting equipment less than 4 feet long by 4 inches in diameter may remain in place outside of Runway and Taxiway Safety Area surfaces except as specified in areas to be embanked. All other spoil materials generated by clearing or by clearing and grubbing shall be disposed of by burning, when permitted by local laws, or by removal to approved disposal areas. When burning of material is permitted, it shall be burned under the constant care of competent watchmen so that the surrounding vegetation and other adjacent property will not be jeopardized. Burning shall be done according to all applicable laws, ordinances, and regulations. Before starting any burning operations, the Contractor shall notify the agency having jurisdiction.

As far as practicable, waste concrete and masonry shall be placed on slopes of embankments or channels. When embankments are constructed of such material, this material shall be placed according to requirements for formation of embankments. Any broken concrete or masonry which cannot be used in construction, and all other materials not considered suitable for use elsewhere, shall be disposed of by the Contractor. In no case shall any discarded materials be left in windrows or piles adjacent to or within the airport limits. The manner and location of disposal of materials shall be subject to the approval of the Engineer and shall not create an unsightly or objectionable view. When the Contractor is required to locate a disposal area outside the airport property limits at their own expense, the Contractor shall obtain and file with the Engineer, permission in writing from the property owner for the use of private property for this purpose.

If the Plans or the Specifications require the saving of merchantable timber, the Contractor shall trim the limbs and tops from designated trees, saw them into suitable lengths, and make the material available for removal by others.

Any blasting necessary shall be done at the Contractor's responsibility, and the utmost care shall be taken not to endanger life or property.

The Contractor shall remove existing structure and utilities that are identified to be removed or demolished, except when another entity is identified in the Contract to accomplish the work.

151-2.2 CLEARING. The Contractor shall clear the staked or indicated area of all objectionable materials. Trees unavoidably falling outside the specified limits must be cut up, removed, and disposed of in a satisfactory manner. In order to minimize damage to trees that are to be left standing, trees shall be felled toward the center of area being cleared. The Contractor shall preserve and protect from injury all trees not to be removed. The trees, stumps, and brush shall be cut to a height of not more than 12 inches above the ground. The grubbing of stumps and roots will not be required.

Fences shall be removed and disposed of when directed by the Engineer. Fence wire shall be neatly rolled and the wire and posts stored on the airport if they are to be used again, or stored at a designated location if the fence is to remain the property of a local owner.

151-2.3 CLEARING AND GRUBBING. In areas designated to be cleared and grubbed, all stumps, roots, buried logs, brush, grass, and other unsatisfactory materials shall be removed, except where embankments exceeding 4.0 feet in depth are to be made outside of paved areas. In cases where such depth of embankments is to be made, all unsatisfactory materials shall be removed, but sound trees, stumps, and brush can be cut off within 6 inches above the ground and allowed to remain. Tap roots and other projections over 1.5 inches in diameter shall be grubbed out to a depth of at least 18 inches below the finished subgrade or slope elevation.

Any buildings and miscellaneous structures that are shown on the Plans to be removed shall be demolished or removed, and all materials therefrom shall be disposed of either by burning or otherwise removed from the site. The remaining or existing foundations, wells, cesspools, and all like structures shall be destroyed by breaking down the materials of which the foundations, wells, cesspools, etc., are built to a depth at least 2 feet below the existing surrounding ground. Any broken concrete, blocks, or other objectionable material which cannot be used in backfill shall be removed and disposed of. The holes or openings shall be backfilled with acceptable material and properly compacted.

All holes remaining after the grubbing operation in embankment areas shall have the sides broken down to flatten out the slopes, and shall be filled with suitable material, moistened and properly compacted in layers to the density required in Item P-152. The same construction procedure shall be applied to all holes remaining after grubbing in excavation areas where the depth of holes exceeds the depth of the proposed excavation.

METHOD OF MEASUREMENT

151-3.1 Measure according to Section GCP-90 and the following:

a. Acre. The area acceptably cleared, or cleared and grubbed, measured on the ground surface. Only areas shown on the Plans, or areas cleared at the Engineer's direction will be measured. Islands of existing cleared areas, such as lakes, ponds, existing stream beds, and roads and trails within the clearing limits of more than 60 square yards will not be included as pay areas.

b. Each. The number of designated trees acceptably removed, regardless of size.

BASIS OF PAYMENT

151-4.1 ~~The accepted quantities of clearing or clearing and grubbing will be paid for at the contract unit price, per unit of measurement~~At the contract lump sum or unit price, for each of the pay items listed below that are shown in the bid schedule.

Payment will be made under:

Item P-151a	Clearing - per acre
Item P-151b	Clearing - lump sum
Item P-151c	Clearing & Grubbing - per acre
Item P-151d	Clearing & Grubbing - lump sum
Item P-151e	Selective Tree Removal – 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.

h. **Ditch Lining**. Use crushed or naturally occurring stones that are sound and durable, are not larger than 8 inches in greatest dimension, and containing not more than 50% by weight passing a 3-inch sieve and not more than 5% by weight passing the No. 200 sieve as determined by WAQTC FOP for AASHTO T27/T11, or as accepted by the Engineer.

~~h.~~i. **Slope Lining.** Use crushed or naturally occurring stones that are sound and durable, to cover slopes for erosion protection. See gradation table below.

Sieve	Percent Passing (%)
1"	100
No. 4	20-45
P200	0-3

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 for material placed below Mean High Water (MHW). ~~, except delete "6%" and replace with "10%" (passing No. 200 screen).~~ Material placed above MHW may have up to 10% passing the 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 be permitted 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 debris, 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 7400.2G~~E~~ *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.

Place and spread ditch lining materials so that the finished face is reasonably uniform and conforms with the lines and slope shown on the Plans or as directed.

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.

Embankment constructed with shot rock shall be formed of material placed in successive horizontal layers of not more than 1.5 times the largest rock size in loose depth, for the full width of the cross section. The material shall be deposited on the fill and distributed by blading and dozing in a manner such that voids, pockets and bridging are reduced to a minimum.

A written plan for in-water placement shall be prepared by the Contractor and submitted to the Engineer for approval. Placement shall not begin until the plan is approved by the Engineer. The placement plan shall include the placement of underlayer and armor stone (or CORE-LOC™ units) slope protection (reference Item P-185 and P-181). The plan must include descriptions of method of placement in water, equipment to be employed, including horizontal and vertical reach capabilities, and lift capacity for handling armor stone or Core-

Loc units. The plan may include drawings or sketches as required to provide details of placement, working platform elevations, and other information as required.

Unsuitable material shall be wasted in the designated waste area as indicated on the plans or 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.

If embankment areas are constructed of material containing rocks that prevent laboratory standard density determination by WAQTC FOP for AASHTO T99/T180 or field density determination by the methods listed in this subsection, then the compaction shall be by compactive effort as follows:

Each layer shall be compacted with at least one full coverage with a 50 ton compression type roller or five full coverages with a 10 ton compressive type roller for each 6 inch depth of layer or fraction thereof. The number of coverages for compression type rollers, including grid roller, weighing more than 10 ton and less than 50 ton shall be as directed by the Engineer. Rollers shall be constructed such that they exert a reasonably uniform pressure over the area covered. In lieu of the aforementioned, each layer shall be compacted with at least one full coverage with a vibratory roller having a minimum dynamic force of 40,000 pounds impact per vibration and a minimum frequency of 1,000 vibrations per minute for each 6 inch depth of layer or fraction thereof. Rolling may be omitted on any layer or portion thereof only when, in the judgment of the Engineer, it is physically impractical to accomplish. In addition to the rolling described above, each layer shall be further compacted by routing construction equipment over the entire width of the embankment.

The material shall be placed carefully such that larger pieces of rock or boulders are well distributed. The intervening spaces and interstices shall be filled with smaller stone and earth as available to form a dense, well compacted 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.

152-3.10 SLOPE LINING. When included as a bid item, slope lining will be applied to finished slopes and areas to the nominal depths and in the locations indicated in the Plans or the approved SWPPP. Just prior to placing the slope lining to slopes with steepness exceeding 5:1, roughen the surface of all areas by track-walking transversely up and down the slopes. 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. Slope lining shall reside on the slope in a stable manner without rolling downhill and collecting at the bottom of the slope. Slope lining does not require compaction.

152-3.11 SUBGRADE PREPARATION. Subgrade preparation shall consist of preparing an existing surface for the placement of subbase, RAP, crushed aggregate surface course and pavement. This item will not include preparation of a newly constructed embankment area. Work will include:

a. Removal of organic material
b. Regrading and recompacting of the subgrade in preparation for placement of an overlaying material
c. Removal and disposal of excess material.
d. Removal of material over Devils Creek culvert in areas shown on the plans
e. Respreading and compacting of material over Devils Creek culvert in unpaved areas.

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.

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.

Ditch Lining will be paid by the ton in accordance with subsection gcp 90-02. Excavation required below normal ditch grade is subsidiary.

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.

152-5.7 For "Slope Lining" 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(1)	Borrow (<6% No. 200) - per ton
Item P-152i(2)	Borrow (<10% No. 200) – per ton
Item P-152r	Subgrade Preparation – per square yard
Item P-152ae	Ditch Lining – per ton
Item P-152ak	Slope Lining – 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
WAQTC FOP for AASHTO T 27/T 11	Sieve Analysis of Fine and Coarse Aggregates

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 when placed under Hot Mixed Asphalt paved areas of the runways, taxiways, aprons, blast pads, EMAS pads and access roads, and not less than 95% in other areas, 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.

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 Item P-157.

Active Treatment System Operator. The Contractor's qualified representative who is responsible for maintaining and operating an active treatment system (as defined in the CGP) for storm water runoff.

Alaska Certified Erosion and Sediment Control Lead (AK-CESCL). A person who has completed training, testing, and other requirements of, and is currently certified as, an AK-CESCL from an AK-CESCL Training Program (a program developed under a Memorandum of Understanding between the Department and others). 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). A system administered by ADEC that issues and tracks permits for storm water discharges.

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.

Clean Water Act (CWA). Federal Water Pollution Control Amendments of 1972, as amended (33 U.S.C. 1251 et seq.).

Consent Decree. The decree entered by the United States District Court for the District of Alaska on September 21, 2010, regarding compliance with the CWA and implementation of the CGP, to which the United States and the Department are parties.

Construction Activity. Physical activity by the Contractor, Subcontractor or utility company that may result in erosion, sedimentation, or a discharge of pollutants into storm water. Construction Activity includes soil disturbing activities (e.g. clearing, grubbing, grading, excavating); and establishment of construction materials or equipment storage or maintenance areas (e.g. material piles, borrow area, concrete truck chute washdown, fueling); and industrial activities that may discharge storm water and are directly related to the construction process (e.g. concrete or asphalt batch plants).

Construction General Permit (CGP). The permit authorizing storm water discharges from Construction Activities, issued and enforced by ADEC. It authorizes stormwater discharges provided permit conditions and water quality standards are met. The CGP, fact sheet, and FAQ documents can be found online at:
http://dec.alaska.gov/water/wnpspc/stormwater/docs/2011_ACGP_20110519_wapp.pdf
http://dec.alaska.gov/water/wnpspc/stormwater/docs/2011_ACGP_Fact_Sheet_20110519.pdf
http://dec.alaska.gov/water/wnpspc/stormwater/docs/Transition_FAQs_60711.pdf

Corp of Engineers Permit (COE Permit). A U.S. Army Corp of Engineers Permit for construction in waters of the US. Such permit may be issued under Section 10 of the Rivers and Harbors Act of 1899, or Section 404 of the Clean Water Act.

Electronic Notice of Intent (eNOI). The electronic Notice of Intent submitted to ADEC, to obtain coverage under the CGP.

Electronic Notice of Termination (eNOT). The electronic Notice of Termination submitted to ADEC, to end coverage under the CGP.

Environmental Protection Agency (EPA). A federal agency charged to protect human health and the environment.

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. Is defined in this section as it is 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.

Inspection. An inspection required by the CGP or the SWPPP, usually performed together by the Contractor's SWPPP Manager and Department's stormwater inspector.

Municipal Separate Storm Sewer System (MS4) Permit. An ADEC storm water discharge permit issued to certain local governments and other public bodies for operation of storm water conveyances and drainage systems. See CGP for further definition.

Multi-Sector General Permit (MSGP). The Alaska Pollutant Discharge Elimination System General Permit for storm water discharges associated with industrial activity.

Operator(s). The party or co-parties associated with a regulated activity that has responsibility to obtain permit coverage under the CGP. "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:

a. The party has operational control over construction plans and specifications, including the ability to make modifications to those plans and specifications; or

b. 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. A partial listing from this definition includes: dredged spoil, solid waste, sewage, garbage, sewage sludge, chemical wastes, biological materials, wrecked or discarded equipment, rock, sand, cellar dirt and industrial or municipal waste.

Project Zone. The physical area provided by the Department for Construction. The Project Zone includes the area of highway or facility under construction, project staging and equipment areas, and material and disposal sites; when those areas, routes and sites, are provided by the Department by the Contract and are directly related to the Contract.

Material sites, material processing sites, disposal sites, haul routes, staging and equipment storage areas; that are furnished by the Contractor or a commercial operator are not included in the Project Zone.

Records. Any record, report, information, document or photograph required to be created or maintained pursuant to the requirements of the Consent Decree, the CGP, the CGP storm water requirements of the Clean Water Act; and 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, that 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.

Storm Event. A rainfall event that produces more than 0.5 inch of precipitation in 24 hours and that is separated from the previous storm event by at least 3 days of dry weather.

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.

Storm Water Pollution Prevention Plan Two (SWPPP2). The Contractor's detailed project specific plan to comply with CGP or MSGP requirements, for Contractor construction-related activities outside the Project Zone.

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 Plan.

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, updates SWPPP records, 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 the 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.f (SWPPP and HMCP) use the Contractor submission and Department review deadlines identified in Subsection 157-1.3.

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. No additional Contract time or additional compensation will be allowed due to delays caused by partial or incomplete submittals, or required re-submittals.

a. **Storm Water Pollution Prevention Plan.** Submit an electronic copy and three hard copies of the SWPPP to the Engineer for approval. Deliver these documents to the Engineer at least 21 days before beginning Construction Activity. Organize and bind the SWPPP and related documents for submittal according to the requirements of Subsection 157-2.1.b.

The Department will review the SWPPP submittals within 14 days after they are received. Submittals will be returned to the Contractor, and marked as either "rejected" with reasons listed or as "approved" by the Department. When the submittal is rejected, the Contractor must revise and resubmit the SWPPP. The 14 day review period will restart when the contractor submits an electronic copy and three hard copies of the revised SWPPP to the Engineer for approval.

After the SWPPP is approved by the Department, the Contractor must sign and certify the approved SWPPP. See Item 4 for further SWPPP submittal requirements.

b. **Hazardous Material Control Plan.** 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.

c. **Spill Prevention, Control and Countermeasure Plan.** When a SPCC Plan is required under Subsection 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 days before beginning Construction Activity. The Department reserves the right to review the SPCC Plan and require modifications.

d. **CGP Coverage.** The Contractor is responsible for permitting of Contractor and subcontractor Construction Activities related to the Project. Do not use the SWPPP for Construction Activities outside the Project Zone where the Department is not an operator. Use a SWPPP2 for Construction Activities outside the Project Zone.

After 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 signed eNOI and ADEC's written acknowledgement (by letter or other document) to the Engineer as soon as practicable and no later than three days after filing eNOI or receiving a written response.

Do not begin Construction Activity until the conditions listed in Subsection 157-3.1.a are completed.

The Department will submit an eNOI to ADEC for Construction Activities inside the Project Zone. The Engineer will provide the Contractor with a copy of the Department's eNOI and ADEC's written acknowledgment (by letter or other document), for inclusion in the SWPPP.

Before Construction Activities occur transmit to the Engineer an electronic copy of the approved and certified SWPPP, with signed Delegations of Signature Authorities, SWPPP Certifications, both permittee's signed eNOIs and ADEC's written acknowledgement.

e. **Ending CGP Coverage.** Submit an eNOT to ADEC within 30 days after the Engineer has determined the conditions listed in Subsection 157-3.1.f have been met. Submit a copy of the signed eNOT and

ADEC's acknowledgement letter to the Department within three days of filing the eNOT or receiving a written response.

f. **ADEC SWPPP Review.** When CGP, Part 2.1.3 requires ADEC SWPPP review:
   (1) Transmit a copy of the Department-approved SWPPP to ADEC using delivery receipt confirmation;
   (2) Transmit a copy of the delivery receipt confirmation to the Engineer within seven days of receiving the confirmation; and
   (3) Retain a copy of delivery receipt confirmation in the SWPPP.

g. **Local Government SWPPP Review.** When local government or the CGP, Part 2.1.4 requires local government review:
   (1) Transmit a copy of the Department-approved SWPPP and other information as required to local government, with the required fee. Use delivery receipt confirmation;
   (2) Transmit a copy of the delivery receipt confirmation to the Engineer within seven days of receiving the confirmation;
   (3) Transmit a copy of any comments by the local government to the Engineer within seven days of receipt;
   (4) Amend the SWPPP as necessary to address local government comments and transmit SWPPP Amendments to the Engineer within seven days of receipt of the comments;
   (5) Include a copy of local government SWPPP review letter in the SWPPP; and
   (6) File a notification with local government that the project is ending.

h. **Modifying Contractor's eNOI.** When required by the CGP Part 2.7, modify your eNOI to update or correct information. Reasons for modification include a change in start or end dates, small changes in number of acres to be disturbed, change in decision to use or not use treatment chemicals, or change in location of SWPPP Records.

   The Contractor must submit an eNOT and then submit a new eNOI instead of an eNOI modification when: the operator has changed, the original eNOI indicates disturbed area less than five acres and the project will disturb more than five acres, or a project over five disturbed acres grows by more than 50%.

157-1.4 PERSONNEL QUALIFICATIONS.

Provide documentation in the SWPPP that the individuals serving in these positions meet the 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 two years experience in erosion and sediment control, as a SWPPP Manager or SWPPP writer, or equivalent. Provide documentation including project names, project timelines, and work responsibilities demonstrating the experience requirement; or
- Professional Engineer registered in the State of Alaska with current certification as AK-CESCL.

For Projects disturbing more than 20 acres, the SWPPP Preparer must also have completed a SWPPP Preparation course.

The Superintendent must meet all the following qualifications:
- Current certification as AK-CESCL; and
- Duly authorized representative, as defined in the CGP, Appendix A, Part 1.12.3,

The SWPPP Manager must have current certification as AK-CESCL and must meet the CGP experience, training, and authority requirements identified for the Storm Water Lead and Storm Water Inspector positions as defined in the CGP, Appendix C, Qualified Person.

The Active Treatment System (ATS) operator must have current certification as AK-CESCL, and be knowledgeable in the principals and practices of treatment systems in general, and the operation of the project-specific ATS. The ATS operator must have at least three months field experience with ATS, or completion of an ATS manufacturer's training course, or completion of system operator's certification course.

The Department accepts people having any of the following certificates as equivalent to AK-CESCL, if the certificates are current according to the sponsoring organization's policies:

- CPESC, Certified Professional in Erosion and Sediment Control; or
- CISEC, Certified Inspector in Sediment and Erosion Control

157-1.5 SIGNATURE/CERTIFICATION REQUIREMENTS AND DELEGATIONS.

a. eNOI and eNOT. The eNOI and eNOT must be signed and certified by a responsible corporate officer according to CGP Appendix A, Part 1.12.2. Signature and certification authority for the eNOI and eNOT cannot be delegated.

b. 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 Superintendent position is responsible for signing and certifying the SWPPP, Inspection Reports, and other reports required by the CGP, except the eNOI and eNOT.

c. Subcontractor Certification. Subcontractors must certify that they have read and will abide by the CGP and the conditions of the project SWPPP.

d. Signatures and Initials. Handwrite signatures or initials on CGP documents and SWPPP forms, wherever a signature or initial is required.

157-1.6 RESPONSIBILITY FOR STORM WATER PERMIT COVERAGE.

a. The Department and the Contractor are jointly responsible for permitting and permit compliance within the Project Zone.

b. 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. Subsection GCP-70-02 describes the requirement to obtain permits, and to provide permit documents to the Engineer.

c. An entity that owns or operates, a commercial plant (as defined in Subsection GCP-80-01.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 appropriate permit coverage. Subsection GCP-70-02 describes the requirement to obtain permits, and to provide permit documents to the Engineer.

d. The Department is not responsible for permitting or permit compliance, and is not liable for fines resulting from noncompliance with permit conditions:

(1) For areas outside the Project Zone;
(2) For Construction Activity and Support Activities outside the Project Zone; and
(3) For commercial plants, commercial material sources, and commercial disposal sites.

157-1.7 UTILITY. (Reserved for Regions)

157-2.1 STORM WATER POLLUTION PREVENTION PLAN (SWPPP) REQUIREMENTS.

a. SWPPP Preparer and Pre-Construction Site Visit.

Use a SWPPP Preparer to develop the SWPPP and associated documents, according to the requirements of the CGP and COE permit. The SWPPP Preparer must put their name, qualifications (including the expiration date of any certifications), title and company name in the SWPPP.

The SWPPP Preparer must conduct a pre-construction inspection at the Project site before construction activity begins. If the SWPPP Preparer is not a Contractor employee, the SWPPP Preparer must visit the site accompanied by the Contractor. Give the Department at least seven days notice of the site visit, so that the Department may participate.

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:

(1) Opportunities to phase construction activities;
(2) Appropriate BMPs and their sequencing; and
(3) 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.

b. Developing the SWPPP.

Use the Department's ESCP, Environmental commitments, and other Contract documents as a starting point for developing the SWPPP. The approved SWPPP replaces the ESCP.

Develop the SWPPP with sections and appendices, according to the current DOT&PF SWPPP template. Include information required by the Contract and the CGP.

Obtain the following forms after they have been completed by the Department and include them in the SWPPP:

- SWPPP Delegation of Signature Authority – DOT&PF (25D-107)
- SWPPP Certification for DOT&PF (25D-109)
- SWPPP Delayed Action Item Report (25D-113)

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)
- 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 Project Staff Tracking (25D-127)
- SWPPP Subcontractor Certification (25D-105)
- SWPPP Training Log (25D-125)

SWPPP Template and Forms are available online at:
http://www.dot.state.ak.us/stwddes/dcsconst/pop_constforms.shtml

Compile the SWPPP in three ring binders with tabbed and labeled dividers for each section and appendix.

c. SWPPP Considerations and Contents.

The SWPPP must provide erosion and sediment control measures for all Construction Activity within the Project Zone. Construction activity outside the Project Zone must have permit coverage, using a separate SWPPP2, and separate Contractor Inspections.

The SWPPP must consider the activities of the Contractor and all subcontractors and utility companies performing work in the Project Zone. 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, including utility companies performing Construction Activity, and identify the areas:

(1) Over which each operator has operational control; and
(2) Where the Department and Contractor are co-operators.

For work outside the Project Zone the SWPPP must identify the entity that has stormwater permit coverage, the operator, and the areas that are:

(1) Dedicated to the Project and where the Department is not an operator; and
(2) Not dedicated to the project, but used for the project.

Develop the SWPPP according to the requirements of the CGP and this specification. Account for the Contractor's construction methods and phasing. Identify the amount of mean annual precipitation
Comply with the CGP Part 1.4.2 Allowable Non-Storm Water Discharges. List locations where authorized non-storm water will be used, including the types of water that will be used on-site.

Include the Department's Anti-degradation Analysis in the SWPPP, if storm water from the Project Zone discharges into receiving water that is considered a high quality water and that constitutes an outstanding national resource, according to CGP Part 2.1.5.

There are special requirements in the CGP Part 3.2, for storm water discharges into an impaired water body, and they may include monitoring of storm water discharges. For Projects meeting the permit criteria, the Department will initiate a monitoring program for the storm water within the Project Zone, and will provide the required information and reports for inclusion in the SWPPP. The Contractor is responsible for monitoring and reporting outside the Project Zone.

Preserve natural topsoil unless infeasible. Delineate the site according to CGP Part 4.1. Use stakes, flags, or silt fence, etc. to identifying areas where land disturbing activities will occur and areas that will be left undisturbed. Minimize the amount of soil exposed during Construction activity according to CGP Part 4.1.2.

Comply with CGP Part 4.3, requirements for dewatering for trenches and excavations.

The SWPPP must identify specific areas where potential erosion, sedimentation, or pollution may occur. The potential for wind erosion must be addressed. The potential for erosion at drainage structures must be addressed.

Describe methods and time limits, to initiate temporary or permanent soil stabilization. For areas with mean annual precipitation of:

a. 40 inches or less, initiate stabilization as soon as practicable and within 14 days; or
b. Greater than 40 inches, initiate stabilization as soon as practicable and within seven days.

Within seven days of initiating final stabilization, either complete final stabilization or continue maintenance of work until final stabilization is complete.

Include in the "Stabilize Soils" section of the SWPPP, a description of how you will minimize the amount of disturbed and unstabilized ground in the fall season. Identify anticipated dates of fall freeze-up and spring thaw. Describe how you will stabilize areas when it is close to or past the seasonal time of snow cover or frozen conditions, and before the first seasonal thaw. Include a plan for final stabilization.

Plans for Active Treatment Systems must be submitted to DEC for review at least 14 days prior to their use and the Operator of the ATS identified in the SWPPP. Any use of treatment chemicals must be identified on the NOI.

The SWPPP must provide designated areas for equipment and wheel washing, equipment fueling and maintenance, chemical storage, staging or material storage, waste or disposal sites, concrete washouts, paint and stucco washouts, and sanitary toilets. These activities must be done in designated areas that are located, to the extent practicable, away from drain inlets, conveyance channels, and waters of the US. No discharges are allowed from concrete washout, paint and stucco washout; or from release oils, curing compounds, fuels, oils, soaps, and solvents. Equipment and wheel washing water that doesn't contain detergent may be discharged on-site if it is treated before discharge.

Design temporary BMPs for a 2 year 24 hour precipitation amount. Describe BMPs in the SWPPP and in SWPPP Amendments, including source controls, sediment controls, discharge points, and temporary and permanent stabilization measures. Describe the design, placement, installation, and maintenance of each BMP, using words and drawings as appropriate. Describe the design capacity of sediment basins (including sediment ponds and traps). 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 BMP manual or publication was used for this design."

Describe the sequence and timing of activities that disturb soils and of BMP implementation and removal. Phase earth disturbing activities to minimize unstabilized areas, and to achieve temporary or final stabilization quickly. Whenever practicable incorporate final stabilization work into excavation, embankment and grading activities.

Identify the inspection frequency in the SWPPP:

- For areas where the mean annual precipitation is 15 inches or less, inspect at least once every 14 days during construction and within 24 hours of the end of a storm event that resulted in a discharge ~~from the site~~.
- For areas where the mean annual precipitation is between 15 to 40 inches, inspect ~~either~~ once every seven days~~, or according to item a:~~
- For areas where the mean annual precipitation is 40 inches or greater, inspect ~~once every seven days, and at least~~ twice every seven days~~during periods of relatively continuous precipitation or sequential storm events~~.

Linear Project Inspections, described in CGP Part 6.5. are applicable to this project.

The SWPPP must cite and incorporate applicable requirements of the Project permits, environmental commitments, COE permit, 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.

The SWPPP is a dynamic document. 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 land disturbance and stabilization, and any other records necessary to document storm water pollution prevention activities and to satisfy the requirements of the Consent Decree, CGP and this specification. See Subsection 157-3.3 for more information.

d. Recording Personnel and Contact Information in the SWPPP.

Identify the SWPPP Manager as the Storm Water Lead and Storm Water Inspector positions in the SWPPP. Document the SWPPP Manager's responsibilities in Section 2.0 Storm Water Contacts, of the SWPPP template and:

(1) Identify that the SWPPP Manager does not have authority to sign inspection reports (unless the SWPPP Manager is also the designated project Superintendent).
(2) Identify that the SWPPP Manager cannot prepare the SWPPP unless the SWPPP Manager meets the Contract requirements for the SWPPP Preparer.

Include in the SWPPP, Records of the AK-CESCL cards or certificates 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 (use Form 25D-127) the names of the replacement personnel, the date of the replacement. For temporary personnel record 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 SWPPP Coordinators and Utility SWPPP Coordinators.

Include in the SWPPP, Records of the AK-CESCL cards or certificates of ATS operators. Record names of ATS operators and their beginning and ending dates, on Form 25D-127.

The Department will provide Records of AK-CESCL cards or certificates for the Project Engineer, Stormwater Inspectors, and Monitoring Person (if applicable), and names and dates they are acting in that position. Include the Department's Records in the SWPPP Appendix. Include the department's Storm Water Inspector and Storm Water Monitoring Person (if applicable) in section 2.0 of the SWPPP.

157-2.2 HAZARDOUS MATERIAL CONTROL PLAN (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 Subcontractor Spill Response Coordinator for each subcontractor. The Superintendent and Contractor's Spill Response Field Representative must have 24 hour contact information for each Subcontractor Spill Response Coordinator and the Utility Spill Response Coordinator.

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, under equipment during maintenance or repairs, and under leaky equipment.

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. Clean up spills or contaminated surfaces immediately.

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 AS 46.04.010-900, Oil and Hazardous Substances Pollution Control, and 18 AAC 75. Include contact information for reporting hazardous materials and petroleum product spills to the Project Engineer and reporting to federal, state and local agencies.

157-2.3 SPILL PREVENTION, CONTROL AND COUNTERMEASURE PLAN (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:

a. Oil or petroleum products from a spill may reach navigable waters (as defined in 40 CFR 112); and

b. 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 157-1.3.a, Inspection Reports, and other reports required by the CGP.

The Superintendent may assign certain duties to the SWPPP Manager, those duties may include:
a. Ensuring Contractor's and subcontractor's compliance with the SWPPP and CGP;
b. Ensuring the control of erosion, sedimentation, or discharge of pollutants;
c. Directing and overseeing installation, maintenance, and removal of BMPs;
d. Performing Inspections; and
e. Updating the SWPPP including adding amendments and forms.

When Bid Item P-157(g) is part of the Contract, the SWPPP Manager must be available at all times to administer SWPPP requirements, and be physically present within the Project Zone or the project office, for at least eight hours per day when construction activities are occurring

The Superintendent and SWPPP Manager shall be knowledgeable in the requirements of this Item P-157, 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 and be responsible for suspending 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 the temporary seed mixture specified by special provision, or use annual rye grass if no temporary seed mix is specified.

Use soil stabilization material as specified in Item P-682 and T-908.

Use silt fences as specified in Item P-680.

Use straw that is certified as free of noxious weed by the United States Department of Agriculture, Natural Resources Conservation Service, Local Soil and Water Conservative District. Alaska Weed Free Forage Certification Program must be used when available. Hay may not be substituted for straw.

Use Oregon Scientific RGR126 wireless rain gauge with temperature, or Taylor 2751 Digital Wireless Rain Gauge with Thermometer, or approved equivalent.

157-2.6 CONTRACTOR REQUIREMENTS.

The Contractor must be familiar with the requirements of the CGP and Consent Decree because Contractor's employees will be conducting duties that relate to compliance with the CGP and the Consent Decree. A copy of the Consent Decree is available on the Department's Statewide Environmental Office web page.

157-3.1 CONSTRUCTION REQUIREMENTS.

Comply with the SWPPP and the requirements of the CGP.

a. Before Construction Activity may Begin.

The following actions must be completed before Construction Activity begins:

- (1) The SWPPP Preparer 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
- (2) The SWPPP must be approved by the Engineer
- (3) The Contractor must be authorized to begin by the Engineer
- (4) 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
- (5) The Department approved SWPPP must be submitted to ADEC and Local Government (when required); and
- (6) The Contractor has transmitted to the Engineer an electronic copy of the approved SWPPP.

You may begin Winter Construction activity according to CGP Part 4.10.3, provided actions 1 through 3 above are completed before winter construction activity begins.

Post notices containing the following information:

- (7) Copy of all eNOIs related to this project
- (8) Name and 24 hour phone number of SWPPP Manager
- (9) Location of the SWPPP

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. Locate postings so the public can read them without obstructing construction activities or the traveling public (for example, at an existing pullout). Do not use retroreflective signs for the SWPPP posting. Do not locate SWPPP signs in locations where the

signs may be confused with traffic control signs or devices. Update the notices if the listed information changes.

Install an outdoor rain gauge in per manufacturer's guidance in a readily accessible location on the Project.

Delineate the site for both land disturbing activities and areas that will be left undisturbed. Install sediment controls and other BMPs that must be placed prior to the initiation of Construction Activity.

b. During Construction.

Before subcontractors or utility companies begin soil disturbing activities, provide to them copies of applicable portions of the SWPPP, and require them to sign a SWPPP Subcontractor Certification, Form 25D-105. Include SWPPP Subcontractor Certifications as an appendix to the SWPPP. Ensure subcontractors and utility companies understand and comply with the SWPPP and the CGP. Inform subcontractors and utility companies of SWPPP amendments that affect them in a timely manner. 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 and subcontractors, on control measures at the site and applicable storm water pollution prevention procedures. Training must be specific to the installation, maintenance, protection, and removal of control measures. Training must be given at a frequency that will be adequate to ensure proper implementation and protection of control measures, and no less frequently than once a month during construction activity. 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.

Notify the Engineer immediately if the actions of any utility company or subcontractor do not comply with the SWPPP and the CGP.

Comply with Subsection GCP-70-11 Protection and Restoration of Property and Landscape. Concrete washout must be fully contained.

Fuel in designated areas. Place absorbent pads or other suitable containment under fill ports while fueling, under equipment during maintenance or repairs, and under leaky equipment.

Comply with requirements of the HMCP and SPCC Plan, and all local, state and federal regulations that pertain to the handling, storage, containment, cleanup, and disposal of petroleum products or other hazardous materials.

Keep the SWPPP and HMCP current (refer to Subsection 157-2.1.c, SWPPP Considerations and Contents)

c. 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 A, Part 3.0. Notify the Engineer immediately and to the extent possible coordinate reports to ADEC with the Engineer. The report must include:

- (1) A description of the noncompliance and its causes
- (2) The exact dates and times of noncompliance
- (3) If not yet corrected the anticipated time the project will be brought back into compliance
- (4) The corrective action taken or planned to reduce, eliminate and prevent reoccurrence

If there has been an incident of non-compliance with COE Permits, then notify the Engineer immediately of the non-compliance.

Report spills of petroleum products or other hazardous materials to the Engineer and other agencies as required by law. Use the HMCP and SPCC Plan (if available) for contact information to report spills to regulatory agencies.

d. Corrective Action and Maintenance of BMPs.

Implement maintenance as required by the CGP, SWPPP, and manufacturer's specifications, whichever is more restrictive.

Implement corrective action:

- (1) If an incident of non-compliance with the SWPPP, or CGP is identified;
- (2) If an Inspection or the Engineer identifies the SWPPP or any part of the SWPPP is ineffective in preventing erosion, sedimentation or the discharge of pollutants;
- (3) If a required BMP was not installed according to the SWPPP schedule or phasing or was installed incorrectly, or was not installed according to the CGP Part 4.0.
- (4) If a BMP is not operating as intended, has not been maintained in an effective operation condition, or is unable to effectively perform the intended function.
- (5) If a prohibited discharge of pollutants, as specified in CGP Part 4.6 is occurring or will occur, or
- (6) If there is accumulation of sediment or other pollutants, that is in or near any storm water conveyance channels, or that may enter a discharge point or storm sewer system. If there is accumulation of sediment or other pollutants that is being tracked outside the project zone.

Implement corrective actions so that they comply with the following time requirements:

- (7) For conditions that are easily remedied (i.e. removal of tracked sediment, maintenance of control measure, or spill clean-up), initiate corrective action within 24 hours and complete as soon as possible.
- (8) For all other conditions meet both requirements:
  - (a) Corrective action is completed in time to protect water quality; and
  - (b) Corrective action is completed no later than the Complete-by-Date that was entered in an Inspection Report (see Subsection 157-3.3.b for more information).

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 corrective action as soon as possible.

If a corrective action could affect a subcontractor, notify the subcontractor within three days of taking the corrective action. Require in your written subcontract, that subcontractors must notify the Contractor within 24 hours of becoming aware of a condition that requires a corrective action.

e. Stabilization.

Stabilization may be accomplished using temporary or permanent measures. Initiate stabilization of disturbed soils, erodible stockpiles, disposal sites, and of erodible aggregate layers so that all of the following conditions are satisfied:

- (1) As soon as practicable
- (2) As soon as necessary to avoid erosion, sedimentation, or the discharge of pollutants
- (3) As identified in the SWPPP

Land may be disturbed and stabilized multiple times during a project. Coordinate work to minimize the amount of disturbed soil at any one time. Do not disturb more soil than you can stabilize with the resources available.

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.

When temporary or permanent seeding is required, provide a working hydro seeding equipment located within 100 miles of the project by road; with 1,000 gallon or more tank capacity, paddle agitation of tank, and the capability to reach the seed areas with an uniform mixture of water, seed, mulch and tackifier. If the project is located in an isolated community the hydro-seeder must be located at the project.

Before applying temporary or permanent seeding, prepare the surface to be seeded to reduce erosion potential and to facilitate germination and growth of vegetative cover. Apply seed and maintain seeded areas. Reseed areas where growth of temporary vegetative cover is inadequate to stabilize disturbed ground.

Apply permanent seed according to Items T-901 and T-908, within the time periods allowed by the CGP and the contract, at locations where seeding is indicated on the plans and after land-disturbing activity is permanently ceased.

When installing a culvert or other drainage structure where stream bypass is not used, install temporary or permanent stabilization concurrently or immediately after placing the culvert or drainage structure in a manner that complies with the SWPPP, applicable project permits and prevents discharge of pollutants. Install temporary and permanent stabilization:

- ~~(4)~~ At the culvert or drainage structure inlet and outlet; and
- ~~(5)~~ In the areas upstream and downstream that may be disturbed by the process of installing the culvert, culvert end walls, culvert end sections, or drainage structure.

Before deactivating a stream bypass or stream diversion used for construction of a bridge, culvert, or drainage structure, install permanent stabilization:

~~(1)~~(6) At the inlet and outlet of the culvert, drainage structure, or bridge;
~~(2)~~(7) In the area upstream and downstream of the culvert, drainage structure, or bridge, that is disturbed during installation or construction of the culvert, drainage structure, or bridge; and
~~(3)~~(8) Under the bridge.

Within seven days of initiating final stabilization, either complete final stabilization or continue maintenance of work until final stabilization is complete.

f. Ending CGP Coverage and BMP Maintenance.

The Engineer will determine the date that all the following conditions for ending CGP coverage have been met within the Project Zone:

- (1) Land disturbing activities have ceased
- (2) Final Stabilization has been achieved (including at Department furnished material sources, disposal sites, staging areas, equipment areas, etc.); and
- (3) Temporary BMPs have been removed.

After the Engineer has determined the conditions for ending CGP coverage have been met, the Department will:

- (4) Send written notice to the Contractor with the date that the conditions were met;
- (5) Submit an eNOT to ADEC; and
- (6) Provide a copy of the eNOT and ADEC's acknowledgement letter to the Contractor.

The Contractor is responsible for ending permit coverage within the Project Zone, by submitting an eNOT to ADEC within 30 days of meeting the conditions for ending CGP coverage. The Contractor is responsible for BMP maintenance and SWPPP updates until permit coverage is ended.

If the Contractor's CGP eNOI acreage includes Support Activities and any other areas where the Department is not an Operator, the Contractor may not be able to file an eNOT at the same time as the Department. In this case, the Contractor must amend the SWPPP and separate SWPPP2(s), to indicate the Department's CGP coverage has ended, and the Department is no longer an Operator within the Project Zone.

The Contractor must indicate in the SWPPP the areas that have reached Final Stabilization, and the dates land disturbing activities ended and Final Stabilization was achieved. The Contractor must submit an eNOT to ADEC, and insert copies of the Department's and the Contractor's eNOTs with ADEC's acknowledgement letters in the appendix of the SWPPP.

The Contractor must submit a copy of each signed eNOT and ADEC's acknowledgement letter to the Department within three days of filing the eNOT or receiving a written response.

The Contractor is responsible for coordinating local government inspections of work and ending permit coverage with local government. See Subsection 157-1.3.e for more information.

g. Transmit final SWPPP.

Transmit one copy of the final SWPPP, including all amendments and appendices, to the Engineer when the project eNOTs are filed, or within 30 days of the Department's eNOT being filed, whichever is sooner. Transmittal must be by both electronic and hard copy.

157-3.2 SWPPP DOCUMENTS, LOCATION ON-SITE, AVAILABILITY, AND RECORD RETENTION.

The SWPPP and related documents maintained by the Contractor are the Record for demonstrating compliance with the CGP and the Consent Decree. Copies of SWPPP documents transmitted to the Engineer under the requirements of this specification are informational and do not relieve the Contractor's responsibility to maintain complete records as required by the CGP and this specification.

Keep the 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 that meets CGP requirements and is approved by the Engineer. Records may be moved to another office for record retention after the eNOTs are filed. Records may be moved to another office during winter shutdown. Update on-site postings if records are relocated during winter shutdown. 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.

The SWPPP and related documents must be made available for review and copy, to the Department and other regulatory agencies that request them. See CGP Parts 5.10, 6.6 and 9.4.

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 Activities Log, and SWPPP Daily Record of Rainfall forms. For active projects update the Records daily.

a. Inspection during Construction.

Conduct Inspections according to the schedule and requirements of the SWPPP and CGP.

Inspections required by the CGP and SWPPP must be performed by the Contractor's SWPPP Manager and the Department's storm water 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.

b. 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; except for adding or deleting data fields that list: Location of Discharge Points, and Site Specific BMPs. Complete all fields included on the Inspection Report form; do not leave any field blank.

Unless otherwise directed by the Engineer, insert a Complete-by-Date for each corrective action listed that complies with:

. (1) In time to protect water quality;
(2) less than seven calendar days after the date the inspection was performed; and
(3) before the next scheduled inspection.

Provide a copy of the completed, unsigned Inspection Report to the Engineer by noon on the day following the inspection.

The Superintendent must review, correct errors, and sign and certify the Inspection Report, within three days of the date of Inspection. The Engineer may coordinate with the Superintendent to review and correct any errors or omissions before the Superintendent signs the report. Corrections are limited to adding missing information or correcting entries to match field notes and conditions present at the time the Inspection was performed. Deliver the signed and certified Inspection Report to the Engineer on the same day the Superintendent signs it.

The Engineer will sign and certify the Inspection Report and will return the original to the Contractor within three working days.

The Engineer may make corrections after the Superintendent has signed and certified the Inspection Report. The Engineer will initial and date each correction. If the Engineer makes corrections, the

Superintendent must recertify the Inspection Report by entering a new signature and date in the white space below the original signature and date lines. Send a copy of the recertified Inspection Report to the Engineer on the day it is recertified.

If subsequent corrections to the certified Inspection Report are needed, document the corrections in an addendum that addresses only the omitted or erroneous portions of the original Inspection Report. The Superintendent and the Engineer must both sign and certify the addendum.

c. Inspection before Seasonal Suspension of Work.

Conduct an Inspection before seasonal suspension of work to confirm BMPs are installed and functioning according to the requirements of the SWPPP and CGP.

d. 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 may be reduced to at least one Inspection every 30 days, if approved by the Engineer and the entire site is temporarily stabilized;

When work is suspended due to freezing conditions, the Engineer may suspend inspection requirements after fourteen days of freezing conditions if:

(1) Soil disturbing activities are suspended; and
(2) Soil stabilizing activities are suspended.

Inspections must resume according to the normal inspection schedule identified in the SWPPP, at least 21 days before anticipated spring thaw.

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.

e. 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.

f. 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.

g. Items and Areas to Inspect.

Conduct Inspections of the areas required by the CGP and SWPPP.

h. 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 and date amendments to the SWPPP and updates to the SWPPP Amendment Log.

SWPPP Amendments must be approved by the Engineer.

Amendments must occur:

- (1) 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;
- (2) If an Inspection identifies that any portion of the SWPPP is ineffective in preventing erosion, sedimentation, or the discharge of pollutants;
- (3) Whenever an Inspection identifies a problem that requires additional or modified BMPs
- (4) Whenever a BMP is modified during construction, or a BMP not shown in the original SWPPP is added;
- (5) If the Inspection frequency is modified (note beginning and ending dates); or
- (6) When there is a change in personnel who are named in the SWPPP, according to Subsection 157-2.1.d.

Do not record removal of BMPs as amendments to the SWPPP. See Subsection 157-3.3.i for documenting removal of BMPs.

Amend the SWPPP narrative as soon as practicable after any change or modification, but in no case, later than seven days following identification of the need for an amendment. Every SWPPP Amendment must be signed and 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 157-2.1.c.

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.

i. Site Maps.

Document installation, routine maintenance, and removal of BMPs by making notes on the SWPPP Site Maps. Include the date and the recording person's initials by these notes. Identify areas where Construction Activities begin, areas where Construction Activities temporarily or permanently cease, and areas that are temporarily or permanently stabilized.

j. 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. Document the need for corrective action within 24 hours of either:

(1) Identification during an inspection; or
(2) Discovery by the Department's or Contractor's staff, a subcontractor, or a regulatory agency inspector.

Modification or replacement of a BMP, installation of a new BMP not shown in the original SWPPP, or overdue maintenance (after sediment accumulated in sediment basins (including sediment traps and ponds) exceeds 50% of design capacity; or after sediment accumulates to more than half the above

ground height on silt fences, check dams, or berms) is a corrective action and must be documented on the Corrective Action Log. Do not record removal of BMPs on the Corrective Action Log.

Within 24 hours of discovery, update the Corrective Action Log with the date of discovery and proposed corrective action. If discovered during an inspection, update log with inspection date and proposed corrective actions noted on the Inspection Report.

After the corrective action has been accomplished, note in the Corrective Action Log the action taken and if a SWPPP amendment was needed. 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.

k. Grading and Stabilization Activities 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 organized and completed to demonstrate compliance with the CGP Part 4.4.

Keep the Grading and Stabilization Activities Log as an appendix to the SWPPP.

l. 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 FAILURE TO PERFORM WORK.

The Engineer has authority to suspend work and withhold monies, for an incident of non-compliance with the CGP, Consent Decree or SWPPP, that may endanger health or the environment or for failure to perform work related to this Section. 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:

a. Suspend the work until corrective action is completed;
b. Withhold monies due the Contractor until corrective action is completed;
c. Assess damages or equitable adjustments against the Contract Amount; and
d. 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, the Contractor's failure to:

- (1) Obtain appropriate permits before Construction Activities occur;
- (2) Perform SWPPP Administration;
- (3) Perform timely Inspections;

- (4) Update the SWPPP;
- (5) Transmit updated SWPPP, Inspection Reports, and other updated SWPPP forms to the Engineer;
- (6) Maintain effective BMPs to control erosion, sedimentation, and pollution in accordance with the SWPPP, the CGP, and applicable local, state, and federal requirements;
- (7) Perform duties according to the requirements of this Section P-157; or
- (8) Meet requirements of the CGP, SWPPP, or other permits, laws, and regulations related to erosion, sediment, or pollution control.

No additional Contract time or additional compensation will be allowed due to delays caused by the Engineer's suspension of work under this subsection.

157-3.5 ACCESS TO WORK.

The Project, including any related off-site areas or support activities, must be made available for inspection, or sampling and monitoring, by the Department and other regulatory agencies. See CGP Part 6.6.

METHOD OF MEASUREMENT

157-4.1 Section 90, Item T-901, Item T-908, Item P-680, Item P-682, and as follows:

Items P-157a, P-157c and P-157g, are lump sum.

Items P-157b, P-157d and P-157e, will be measured on a contingent sum basis as specified in the Directive authorizing the work.

Item P-157f will be measured on a contingent sum basis with withholding determined by the Department.

TABLE 157-1 BMP VALUES - RESERVED

Liquidated Damages assessed according to Table 157-2 are not an adjustment to the Contract amount. These damages charges are related to Contract performance but are billed by the Department independent of the Contract amount. An amount equal to the Liquidated Damages may be withheld for unsatisfactory performance, from payment due under the Contract, until the Contractor remits payment for billed Liquidated Damages.

TABLE 157-2 Version B
EROSION, SEDIMENT AND POLLUTION CONTROL – LIQUIDATED DAMAGES

Code	Specification Subsection Number and Description	Deductable Amount in Dollars	Cumulative Deductable Amounts in Dollars
a	157-1.4 Failure to have a qualified (AK-CESCL or equivalent) Superintendent or SWPPP Manager	Calculated in Code B or F	
b	Failure to meet SWPPP requirements of: (1) 157-2.1.a Name of SWPPP Preparer and Date of Pre-Construction Inspection (2) Not Applicable (3) 157-3.3.h Sign and Date SWPPP amendments with qualified person.	$750 per omission	

	157-2.1.d SWPPP Include approving person's name and AK-CESCL expiration date. (4) 157-3.2 Records maintained at project and made available for review		
c	157-2.1.c and 157-3.3.h Failure to either reference a BMP manual or publication, or state that no BMP manual or publication was used	$250 per omission	
d	157-3.3.e Failure to stabilize a Project prior to Seasonal Thaw	$5,000 per Project per year	
e	157-2.1.a Failure to conduct pre-construction inspections before Construction Activities	$2,000 per Project	
f	157-3.3 Failure to conduct and record CGP Inspections 157-3.3.a Personnel conducting Inspections and Frequency 157-3.3.b Inspection Reports, use Form 25D-100, completed with all required information according to the Consent Decree paragraph 7.c, parts (1) through (11)	$750 per Inspection	
g	157-3.1.d Failure to timely accomplish BMP maintenance and/or repairs, In effect until BMP maintenance and/or repairs is completed.	$500 per Project per day	Not to exceed $250,000 per year for all projects
h	157-3.1.c Failure to provide to the Engineer and ADEC a timely oral endangerment report of violations or for a deficient oral endangerment report	$750 for the first day the report is late or deficient	Additional $750 for every 14 day period without the required information
i	157-3.1.c Failure to provide to the Engineer and ADEC a timely written endangerment report of violations or for a deficient written endangerment report	$750 for the first day the report is late or deficient	Additional $750 for every 14 day period without the required information
j	157-3.4 Failure to comply with the most restrictive requirements of the CGP, approved SWPPP, or Section 157, except as listed above	$750 per occurrence for the first day of noncompliance	Additional $750 for every day the deficiency remains uncorrected

BASIS OF PAYMENT

157-5.1. See Subsection 157-3.4 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 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.

Item P-157b Temporary Erosion, Sediment and Pollution Control. At the contingent sum prices specified 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.

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 Additives. At the contingent sum prices specified in the Directive to authorize the work, for all labor, supervision, materials, equipment, and incidentals for extra, additional, or unanticipated work, to install, maintain, remove and dispose of temporary erosion, sedimentation, and pollution control BMPs. 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 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 by 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-157f Withholding. The Engineer may withhold an amount equal to Liquidated Damages, assessed according to Item P-157, from payment due the Contractor. Liquidated Damages for violations of the Contract, CWA, CGP, or Consent Decree are determined by the Engineer according to Table 157-2. The Engineer may withhold payment due the Contractors until the Contractor pays the Liquidated Damages to the Department.

The Department will not release performance bonds until Liquidated Damages assessed according to Item P-157 are paid to the Department, and all requirements according to Subsection GCP-30-05 are satisfied.

Item P-157g SWPPP Manager. At the Contract lump sum price for a SWPPP Manager that conforms to this specification. When Item P-157g appears in the Bid Schedule, the SWPPP Manager must be a different person than the superintendent, and must be physically present during construction activity with duties and authority described in Subsection 157-2.4. When Item P-157g does not appear in the Bid Schedule, the SWPPP Manager is subsidiary to Item P-157a.

Subsidiary Items. Temporary erosion, sediment and pollution control measures that are required outside the Project Zone are subsidiary. Work required by the HMCP and SPCC Plan including hazardous material storage, containment, removal, cleanup and disposal, are subsidiary to Item P-157a Erosion, Sediment and Pollution Control Administration.

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 Section 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 ordered 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 Additives – per contingent sum
Item P-157e Temporary Erosion Sediment and Pollution Control by Directive – per contingent sum
Item P-157f Withholding – per contingent sum
Item P-157g SWPPP Manager – per lump 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.

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

SECTION P-161 RECYCLED ASPHALT PAVEMENT

DESCRIPTION

161-1.1 ~~Excavate and process existing asphalt cement concrete (AC) pavement for use as Recycled Asphalt Pavement (RAP).~~ Process asphalt cement concrete (AC) pavement obtained from existing airport stockpile or supplied from off airport sources by the Contractor. Airport stockpiles may contain both processed and unprocessed (chunk) asphalt and will require further processing to meet these specifications. Haul and place RAP on a prepared foundation, to the lines, grades, and depths shown on the plans or as directed by the Engineer.

MATERIAL AND CONSTRUCTION REQUIREMENTS

161-2.1 PROCESSING. Crush or pulverize ~~existing pavement~~ AC material to meet the requirements of Table 161-1 for use as Recycled Asphalt Pavement (RAP). Process RAP to provide an asphalt content of 2.5 – 5.5 percent by weight.

~~Saw cut and process the full depth of existing pavement in areas shown on the plans or as directed by the Engineer. Excavate to the minimum depth necessary for removal of all existing pavement. Up to one inch of underlying base course material may be excavated along with the AC pavement.~~

TABLE 161-1

RAP GRADATION REQUIREMENTS

Sieve Size	Percent Passing
2 in.	100
1 in.	90-100

161-2.2 PLACEMENT AND SPREADING. Place RAP in 4-inch thick maximum lifts on the approved surface as required to achieve the depth shown on the plans after compaction.

Excess RAP is the property of the State. Place excess RAP in stockpiles located and shaped as shown on the plans, or as directed by the Engineer.

161-2.3 COMPACTION. Thoroughly compact the RAP layer by rolling. Density acceptance will be based on the use of a control strip in accordance with ATM 412 to determine a density standard. Compact to a density not less than 98% of the density standard. After rolling and with the RAP thoroughly set, reduce interstitial spaces to a minimum. Blade and roll alternately as required or directed to obtain a smooth, even and uniformly compacted surface. Do not roll the RAP course when the underlying course is soft or yielding or when the rolling causes undulation of the surface. In areas inaccessible to rollers, tamp RAP material thoroughly with hand held mechanical tampers.

161-2.4 RAP PROTECTION. Do not perform work on the RAP course during freezing temperatures, when the subgrade is wet, or when rain is expected. Hauling equipment may be routed over the finished RAP course, provided no damage results and provided that equipment is routed over the full width of the RAP surface to avoid rutting or uneven compaction. The Engineer has authority to stop all hauling over completed or partially completed RAP when, in his opinion, such hauling is causing damage. Repair at your expense, any damage to the RAP course resulting from the routing of equipment over RAP surfaces.

161-2.5 PROTECTION OF EXISTING STRUCTURES. Take all precautions necessary to ensure that existing structures within ~~pavement removal~~ areas to receive RAP are not damaged. If damage to any structure occurs, repair the damage at no cost to the Department.

161-2.6 DRAINAGE. Maintain drainage at all times. Install temporary drains and drainage ditches, when directed, to intercept or divert surface water that may affect the prosecution or condition of the work.

METHOD OF MEASUREMENT

161-3.1 Section 90. If RAP by unit area appears in the bid schedule, the item will be measured in original position before excavation. If RAP by unit volume appears in the bid schedule, the item will be measured in final position after processing and placement. Underlying base course material excavated along with the AC pavement will not be included in the measurement for payment of RAP measured by unit volume.

BASIS OF PAYMENT

161-4.1 At the contract unit price for recycled asphalt pavement accepted in place.

Payment will be made under:

Item P-161a	Recycled Asphalt Pavement – per square yard
Item P-161b	Recycled Asphalt Pavement – per cubic yard

TESTING REQUIREMENTS

ATM 412	Relative Standard Density by the Control Strip Method

ITEM P-162 PAVEMENT COLD PLANING

DESCRIPTION

162-1.1 Cold plane existing asphalt cement concrete (AC) pavement. Clean pavement surfaces after planing. Place and shape the material produced by cold planing (millings) on a prepared foundation, to the lines, grades, and depths shown on the plans.

Excess millings are the property of the State. Place excess millings in stockpiles located and shaped as shown on the plans or as directed by the Engineer.

EQUIPMENT

162-2.1 COLD PLANING MACHINE. Use a self-propelled specialized cold planing machine with the following capabilities:

- **a.** Removes the millings or cuttings from the pavement surface and loads them into a truck for disposal.
- **b.** Mills the pavement to the required depth and smoothness.
- **c.** Prevents damage to any part of the remaining pavement structure.
- **d.** Establishes grade control, by string line or laser.
- **e.** Controls transverse slope.
- **f.** Mills a minimum 3-foot width of pavement per pass.
- **g.** Effectively controls dust produced during planing operations.

162-2.2 POWER BROOM. Use a self-propelled or towed power broom capable of removing all loose material resulting from the cold planing operation.

CONSTRUCTION REQUIREMENTS

162-3.1 PLANING. Furnish all materials and survey control to accomplish this work. Mill the designated areas of pavement to the depths shown on the plans. Establish any controls required to maintain the specified depth of cut or grade. Establish a finished cold-planed surface that when checked with a four-foot straight edge, does not deviate more than 3/8-inch in either the transverse or longitudinal direction.

Ensure that the cold planing operation does not adversely affect the paving schedule due to breakdowns.

162-3.2 PROTECTION OF EXISTING PAVEMENT AND STRUCTURES. Repair or replace at your expense, any pavement that is torn, cracked, gouged, broken, or undercut as directed by the Engineer. Take all precautions necessary to ensure that existing structures within pavement planing areas are not damaged. If damage to any structure occurs, repair the damage at no cost to the Department.

162-3.3 FINAL CLEANING OF COLD-PLANED SURFACES. After cold planning is complete, use a power broom to remove all loose material from the planed surface.

METHOD OF MEASUREMENT

162-4.1 Section 90. By the area of pavement in original position regardless of depth of cut, milled to the required tolerances. Placement and shaping of millings and the clean up and disposal of surplus material is subsidiary to the item.

BASIS OF PAYMENT

162-5.1 Payment will be made at the contract unit price for acceptably completed quantities.

Payment will be made under:

Item P-162a Pavement Cold Planing - per square yard

ITEM P-164 HYDRODEMOLITION

DESCRIPTION

164-2.1 This item includes all labor, materials, equipment and supervision necessary to remove existing concrete as indicated on the drawings and in the specifications, including, but not limited to:

~~1.~~a. Removal of concrete by means of hydrodemolition.
~~2.~~b. Removal of concrete inaccessible to the hydrodemolition machine with conventional chipping hammers including shadows under the reinforcing steel.
~~3.~~c. Cleaning of the exposed reinforcing steel by use of hydrodemolition machine, sandblasting or wire brush as needed.
~~4.~~d. Containment, collection, treatment and disposal of hydrodemolition wastewater and water used for clean up.
~~5.~~e. Collection of debris from the demolition operation using a vacuum system, or other approved method, and disposal of all debris.
~~6.~~f. Final preparation of surface prior to placement of concrete.
~~7.~~g. Surface cleaning of the exterior roof of the culvert in areas to be overlaid by now PCC.

Hydrodemolition shall consist of removal of concrete to the depth shown in the plans. Scarification shall include removal of surface of a concrete structure to the depths required as shown on the plans. Surface preparation shall include removal of debris, scale, loose aggregate of an existing concrete structure to expose sound concrete in the areas shown on the plans.

This item shall also include all work required to divert Devils Creek and construct access ramps, if needed. Restoration of the access ramps will be accomplished under P-157, Erosion, Sediment and Pollution Control.

EQUIPMENT & MATERIALS

164-2.2 Provide the following equipment:

a. Hydrodemolition Equipment - Concrete removals shall be performed with engineer approved high-pressure hydrodemolition equipment. Equipment shall be capable of removing concrete to the depth specified on the drawings and shall be capable of removing rust and laitance from exposed reinforcement designated to remain in place. The equipment shall be capable of operating at a minimum of 35,000-psi water pressure with flow rates not exceeding 32 gallons per minute. The equipment shall be capable of removing concrete to within one inch of vertical surfaces.

   Hydrodemolition contractor shall supply all necessary equipment, parts and manpower to maintain pre-established production rates and assure adherence to construction schedule. Contractor shall maintain, on the job site, an inventory of common wear parts and replacement accessories for equipment adequate to ensure that routine maintenance tasks can be performed without delay to the hydrodemolition schedule.

b. Vacuum Equipment - Vacuum equipment shall be of sufficient capacity to collect all debris from the hydrodemolition operation no later then two hours following the hydrodemolition operation. The vacuum equipment shall be capable of removing wet debris and water. Water collected during the vacuuming operation shall be discharged to the contractor's wastewater collection system.

Obtain approval for substitute equipment proposed for this work from the Engineer. Use equipment capable of leaving a sound surface without particulate residue.

Provide all water and other expendables necessary to complete the described work.

QUALITY CONTROL

164-3.1. Provide the minimum quality control items:

a. Work shall be performed by organizations that have successfully performed at least five verifiable projects similar to this project within the last five years.

b. Work shall be under the immediate control of a person experienced in hydrodemolition who has supervised three verifiable projects of similar type and size. Supervising person shall be present during all operations.

c. An individual trained and certified in the proper use and safety of the equipment and having a minimum of two years experience with the equipment on jobs of similar type and size shall operate the hydrodemolition system.

d. Chipping hammers used for detail chipping shall not exceed 15 lbs.

e. Final wash-down shall be done using a minimum of 8,000 psi and 8-gpm water blaster.

f. Wastewater shall be tested, as required, to insure compliance with the wastewater discharge requirements established by the governing authority.

g. All water used for hydrodemolition and final clean up shall be potable.

SUBMITTALS

164-4.1.The following submittals shall be required before work can begin:

a. Hydrodemolition equipment specifications. Include robot size and weight, supply water requirements, water consumption, and high-pressure hose specifications.

b. Location and layout of the hydrodemolition equipment.

c. Location and layout of the temporary water supply including materials to be used and any permits required to secure the use of the water.

d. Vacuum system including type, manufacture, capacities, filtration systems.

e. Location and layout of the system to be used to contain the wastewater.

f. Certification of the hydrodemolition operator's qualifications.

g. Chipping hammer and air compressor specifications to be used for detail chipping.

h. Equipment and method of removal for the debris from the concrete demolition. Include proposed drive lanes to move debris outside the structure such that the removal does not impact the ongoing operations.

i. Equipment to be used for final wash down of the hydrodemolished surface.

j. Methods to insure the safety of all personnel.

TESTING AND ACCEPTANCE OF THE HYDRODEMOLITION EQUIPMENT

164-5.1 Hydrodemolition. A trial area will be designated by the engineer to demonstrate that equipment, personnel and methods of operation are capable of producing results satisfactory to the engineer. The trial area shall consist of two sections of approximately 50 square feet each. One section shall contain deteriorated concrete and the other shall contain sound concrete.

In the area of sound concrete, the equipment shall be adjusted to remove:

- A minimum of 3/4 inches of concrete.
- An average of one inch of concrete.

In the area of deteriorated concrete where rebar is exposed, the equipment shall be adjusted to remove:

- A minimum of ¾" inches below the bottom bar of the top mat of reinforcing steel (excluding any carrier bar).

After completion, the equipment shall be moved to the area of deteriorated concrete and using the same parameters for sound concrete removal, a test cut shall be performed to ensure that all deteriorated concrete is removed. If a satisfactory result is obtained, the minimum depth and quality of removal demonstrated in the test areas shall be used

If in the sole opinion of the engineer the hydrodemolition equipment does not produce satisfactory removal of the concrete or the unit does not meet the minimum production requirements of the project, then the engineer may require that the equipment be removed from the project and replaced with equipment that will meet the requirements of the specifications.

The hydrodemolition equipment shall be adjusted, as required, to maintain the quality and depth of cut demonstrated in the test area and to compensate for variations in the compressive strength of the concrete and other factors that may affect the actual depth of removal during the hydrodemolition operation.

164-5.2 Scarification. A trial area will be designated by the engineer to demonstrate that equipment, personnel and methods of operation are capable of producing results satisfactory to the engineer. The trial area shall consist of approximately 50 square feet.

The equipment shall be adjusted to remove an average of one inch of concrete from the existing surface with an amplitude of ± .5 inch. During the scarification, 100% of the original surface must be removed.

If in the sole opinion of the engineer the hydrodemolition equipment does not produce satisfactory removal of the concrete or the unit does not meet the minimum production requirements of the project, then the engineer may require that the equipment be removed from the project and replaced with equipment that will meet the requirements of the specifications.

The hydrodemolition equipment shall be adjusted, as required, to maintain the quality and depth of cut demonstrated in the test area and to compensate for variations in the compressive strength of the concrete and other factors that may effect the actual depth of removal during the hydrodemolition operation.

CONSTRUCTION REQUIREMENTS

164-6.1 Utilities. Protect and/or relocate existing utilities within the work area that may be damaged during the demolition work. Provide temporary service until affected utilities are restored.

164-6.2 Safety. Install temporary protection and other safety requirements prior to starting demolition. Contractor shall adequately shield the work area to prevent debris resulting from hydrodemolition operation from traveling beyond the boundaries of the work area.

Provide adequate lighting as required to perform the work of this item.

164-6.3 Hydrodemolition. Remove the concrete in the areas designated on the drawings using hydrodemolition to the minimum depth specified in the drawings and in these specifications and as demonstrated and approved by the engineer in the hydrodemolition test cut area. Maintain the quality and depth of cut demonstrated in the test area throughout the project. If delaminations exist beyond the minimum removal depth, removals shall continue until all unsound and delaminated concrete has been removed.

163-6.4 Cleaning Reinforcing Steel. Clean all reinforcing steel that is to remain in place and has been exposed by removal operations. Remove all rust and corrosive products immediately prior to concrete placement. Remove oil, dirt, concrete fragments, laitance, loose scale, and other coating that would destroy or inhibit the bond with the new concrete.

Protect cleaned reinforcing steel from the elements and from contamination.

164-6.54 Clean Up. Following hydrodemolition, the bulk debris shall be removed from the area using the vacuum system. Areas inaccessible to the hydrodemolition equipment shall be removed using hand-held pneumatic tools. Shadows under reinforcing steel scheduled to remain in place shall be removed to ¾ inches below the steel using hand-held pneumatic tools.

Clean the area to remove all loose debris and other materials scheduled to be removed during the demolition. Thoroughly clean the demolished area using an 8,000-psi water blaster using a minimum of 8 gpm held at a maximum of 12″ from the deck surface. The surface shall be vacuumed immediately following the high-pressure water cleaning to remove any debris or wastewater. Following the cleaning, the surface shall be free of all debris, loose material, slurry, cement paste and any other material that might interfere with the bond of the new concrete overlay.

Areas where pneumatic tools were used must be thoroughly cleaned using 8,000-psi water blast to remove rust and laitance from existing reinforcing.

Any areas contaminated by materials detrimental to a good bond as a result of the contractors operations shall require additional removals and/or cleaning until a clean surface is obtained, at no additional cost to the Department.

At all locations where exposed reinforcement is designated to remain in place, exercise caution to avoid damaging the reinforcement during removal of concrete. Any reinforcement damaged by contractors operations shall be repaired or replaced at no cost to the Department.

164-6.65 Wastewater Containment and Disposal. Wastewater containment shall be the sole responsibility of the contractor. All equipment needed, including piping, pumps, hoses, settling areas and pH adjustment equipment (if needed) required for the proper collection, clean up and disposal of wastewater from the work area shall be provided and maintained by the contractor. The system shall be designed by the contractor and approved by the engineer to meet the discharge requirements of the local governing authority.

The contractor shall obtain any permits required for the discharge of the wastewater.

All wastewater generated by the contractor's operations including hydrodemolition and clean up water must be contained by the contractor and must pass through the contractor's approved collection system. No water will be allowed to flow directly into Devils Creek.

The contractor shall establish and maintain any testing program required by the local governing authority for the wastewater discharge.

The contractor shall remove daily from the site all concrete debris, sludge and other materials generated by his work and legally dispose of all such materials.

164-6.~~6~~7 General Requirements. During concrete removal do not damage existing reinforcement steel intended to remain in place.

Do not drive or place equipment in the work area that may damage the reinforcing steel to remain in place. Bars that are bent or damaged by the contractor shall be replaced by the contractor at no charge to the owner.

Following removal of debris, and prior to placement of new reinforcement steel, the entire surface shall be cleaned to remove any contamination or loose material remaining in the area.

All water from the hydrodemolition and cleaning process must be contained within the construction barrier limits of the work area. The remaining facility will be operating under normal conditions. Any water that escapes the work area will immediately and without any delay, be removed from occupied areas. The construction barriers shall then be resealed to eliminate the leak.

Following final preparation of the area, including all other work items that must be completed prior to placement of concrete, but before final inspection and placement of concrete,

164-6.~~7~~8 Inspection of Exposed Surfaces. After removals are complete, but prior to final cleaning, all exposed concrete surfaces and all reinforcement designated to remain in place will be inspected by the engineer for compliance with the plans and specifications. Where the engineer finds unsatisfactory surface preparation, the engineer will direct contractor to perform additional removals and/or cleaning. Engineer will re-inspect after additional removals. Overlay material shall not be placed until the engineer has approved the surface preparation.

164-6.~~8~~9 Surface Cleaning. After exposure of the top of the culvert in the areas designated, the area shall be thoroughly cleaned using an 8,000 psi minimum water blaster at 8 gpm using a rotating, multi-jet nozzle held at not more then 12 inches from the surface. Following the final cleaning, the surface shall be clean and free from all dirt, debris, slurry or any other material that might interfere with the bond of the new overlay.

METHOD OF MEASUREMENT

164-7.1. Hydrodemolition shall be paid for per square yard.

164-7.2. Scarification shall be paid for per square yard.

BASIS OF PAYMENT

~~163-5.1~~ 164-8.1At the contract unit price for performing the work as described. All work required to divert Devils Creek and construct access ramps will not be paid directly, but will be considered subsidiary to Item P-164a, Hydrodemolition.

Payment will be made under:

Item P-164a	Hydrodemolition - per square yard
Item P-164b	Scarification – per square yard

ITEM P-165 REMOVAL OF STRUCTURES

DESCRIPTION

165-1.1 Remove and dispose of or salvage existing structures as specified. Backfill the resulting holes and pits. This item will include items from Project No. 53587, Kodiak RSA Extension, and Project No. 54747, Kodiak Devils Creek Culvert Repair.

CONSTRUCTION REQUIREMENTS

165-3.1 GENERAL. Obtain utility locates in the vicinity of the designated items. Work around and preserve any facilities within the work limits. Backfill all excavations with approved embankment or excavated materials and compact in accordance with item P-152.

1. **Removed Structures Designated for Disposal.** Removed structures designated for disposal become your property. Excavate, load, and haul structures to an approved disposal site off of airport property in accordance with applicable Federal and State regulations. The following structures shall be removed and disposed of:

   Kodiak RSA Extension:

   a. Remove catch basin and outfall line at approximately Sta. 13+00 to the right of the Runway 18-36 centerline.

   b. Remove concrete base of existing wind cone at approximately Sta. 173+25, 270' left of Runway 7-25 centerline.

   c. Remove two bases of existing Runway 36 REIL system.

   d. Remove concrete bases for Airport Signs that have been relocated.

   Kodiak Devils Creek Culvert Repair: Remove gravel and other accumulation debris from the entrance and interior of the Devils Creek culvert.

2. **Removed Structures Designated for Salvage.** Removed structures designated for salvage remain the property of the State or the FAA. Items to be salvaged shall be stored on the airport at a location designated by the Engineer.

   Kodiak RSA Extension:

   a. Lighted wind cone at approximately Sta. 173+25, 270' left of Runway 7-25 centerline.

   b. Segmented circle at approximately Sta. 173+25, 270' left of Runway 7-25 centerline.

   Kodiak Devils Creek Culvert Repair: None

3. **Remove and Reinstall Structures.** Remove structures indicated, store on-site and reinstall following construction.

   Kodiak RSA Extension: None.

   Kodiak devils Creek Culvert Repair: Debris rack at south end of the Devils Creek culvert.

METHOD OF MEASUREMENT

165-4.1 This item will not be measured for payment. The Engineer's acceptance constitutes measurement.

BASIS OF PAYMENT

165-5.1 Payment will be made at the contract price for work acceptably completed. No separate payment will be made for hauling or transportation. All work associated with removal, disposal and reinstallation of specified items, including but not limited to labor, equipment, tools, hauling, transportation, and incidentals will be included in the contract price for removal of structures.

Payment will be made under:

Item P-165a(1) Removal of Structures (RSA Extension) - per lump sum

Item P-165a(2) Removal of Structures (Devils Creek) – per lump sum

ITEM P-181 CONCRETE ARMOR UNITS

DESCRIPTION

181-1.1 This work shall consist of furnishing all plant, labor, equipment, and materials and performing all operations in connection with the casting, transporting, handling, and placing of concrete armor units. The Contractor shall notify the Engineer 30 days prior to start of concrete casting, and provide the company name, location, and concrete testing laboratory. Contractor shall execute the sublicense agreement in Appendix N with the licensor or obtain the units from a vendor authorized by the patent holder. The Contractor shall be responsible for all licensing fees. New concrete armor shall consist of Core-Loc units , or approved equal, of the sizes specified in the plans.

The Contractor may propose a different type of concrete unit for the shore protection. Should the Contractor propose a different unit, he shall follow the requirements of Section 181-4.1 below.

MATERIALS

181-2.1. All materials for concrete armor units (Core-Loc units) shall meet the requirements specified in appendix N.

CONSTRUCTION METHODS

181-3.1 GENERAL. Construction methods shall meet the requirements specified in appendix N.

CONTRACTOR PROPOSAL FOR ALTERNATE CONCRETE ARMOR UNITS

181-4.1 GENERAL. Should the Contractor choose to submit an alternative concrete armor unit he shall use the following procedure:

a. Department Furnished Information. The department will furnish, to the Contractor, the following information:

(1) Coastal Engineering Report
(2) AutoCAD base and design drawings for the Contractor's use

b. Submitting Proposals. All proposals must be in writing. The Contractor shall submit the following with each proposal:

(1) 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;

(2) Provide design calculations sealed by a Professional Engineer showing equivalent or better design performance than the owner-supplied method;

(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 date by which the Department must make a decision on the alternate design proposal. The date identified must allow a reasonable time for the Department to conduct an adequate

review and evaluation of the Proposal and process a Change Order without affecting the Contractor's schedule;

(5) The Department's approval of the Proposal shall not change the Contract completion date unless a change to the completion date is specifically provided for in the Change Order authorizing the Proposal; and

(6) 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. Proposals will be considered only when all of the following conditions are met:

(1) The Proposal shall not affect the bid prices or completion date.

(2) The Proposal, regardless of their approval status, becomes the property of the Department. The Contractor shall submit Proposals without use or disclosure restrictions. The Department shall have the right to use, duplicate or disclose the Proposal and any data necessary to use the Proposal 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 Proposal.

(3) The Department is the sole judge as to whether a Proposal qualifies for consideration and evaluation. It may reject any Proposal 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 Proposal 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 Proposal, the Contractor shall provide it in a timely manner. Failure to do so may result in rejection of the Proposal.

(5) 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.

(6) The Contractor shall not implement proposed changes before the Department accepts the Proposal.

(7) The Engineer shall reject all unsatisfactory work resulting from an accepted Proposal. The Contractor shall remove all rejected work or materials, and shall reconstruct the work in accordance with the Proposal or the original design.

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

(9) The Department shall not be held liable for costs or delays due to the rejection of a Proposal, 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 Proposal, in writing, by the date the Contractor specifies, unless extended by mutual consent. If rejected, the Engineer will explain the reasons for rejection. A Proposal 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 Proposal at any time before it is accepted.

(3) If the Proposal 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 Proposal and will not obligate the Department to accept or pay for the final design.

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

METHOD OF MEASUREMENT

181-5.1 Concrete Armor Units will be measured per each concrete armor unit of the size specified, accepted in-place.

BASIS OF PAYMENT

181-6.1 Payment will be made at the contract unit price for each completed and accepted concrete armor unit furnished and installed. This price shall be full compensation for furnishing all material, equipment, labor, and tools to manufacture, transport, handle, remove, store, and place. Royalty payments to patent holder are a subsidiary obligation.

Payment will be made under:

Item P-181a Concrete Armor Unit (2.65 ton) – per each

ITEM P-185 ARMOR STONE

DESCRIPTION

185-1.1 Furnish all plant, labor, equipment and materials and perform the work necessary to manufacture and place stone protection as shown on the plans or as directed by the Engineer.

MATERIAL

185-2.1 GENERAL. Conform to the following quality and gradation requirements. Submit a quarrying, blasting and processing plan to the Engineer for required materials. Do not place materials prior to acceptance.

Provide primary armor and filter or underlayer stone; stone shall not be elongated or tabular. The minimum dimension of each individual stone shall be at least one-third of the stone's maximum dimension. Provide stone that conforms to the specified size requirements after processing. Conduct loading, placement or stockpiling operations in a manner that eliminates breakage. Comply with the following requirements for armor stone

a. **Primary Armor and Filter Stone.** Provide stone having a relatively uniform that falls within the limits shown in the following gradations, based on class:

Primary Armor Stone - Class PA-12000

Stone Weight	Approximate Diameter	Allowable % Smaller **by Stone Count**
15,000 lb.	65 inch	100%
12,000 lb.	60 inch	0-50%
9,000 lb.	55 inch	0%

b. **Underlayer Stone.** Provide uniformly graded underlayer stone that falls within the limits shown in the following gradations, based on class:

Underlayer Stone - Class U-700 lb.

Stone Weight	Approximate Diameter	Allowable % Smaller **by Stone Count**
875 lb.	26 inch	100%
700 lb.	24 inch	0-50%
525 lb.	22 inch	0%

CONSTRUCTION METHODS

185-3.1 General Provide a level, compact area large enough to dump and sort at approved locations(s). Dump the loads specified in this area and assist the Engineer as needed to sort and measure the stones in the load to determine it the armor stone or underlayer stone is within specifications. Provide the equipment needed to assist in this sorting.

Place primary armor and filter or underlayer stones on prepared slopes within the limits shown on the plans. Construct a uniform and regular surface with slopes no steeper than those shown on the plans. Maintain the armor stone until final acceptance, and replace any displaced material to the design slopes, lines, and grades at the Contractor's expense.

Place materials in a manner that produces a well-keyed mass of stone, with each individual stone having three points of contact. Ensure that finished surfaces of all layers are free from pockets of single sized stone. Placement of small stone in primary armor and filter or underlayer stone layers to choke the spaces between large stones or for leveling the surface is not permitted. Breaking of individual pieces in place by blasting or mechanical methods is not permitted. Place filter or underlayer stone to the full course thickness in one operation and in a manner that avoids displacing underlying materials. Placement by methods likely to cause segregation, such as end dumping, side dumping or pushing into position with earth-moving equipment, are not permitted. Obtain the desired distribution of various sizes of armor stones throughout the mass by selective loading and by controlled placement of successive loads during placement. Materials that do not meet the specified requirements for size, quality or distribution of sizes will not be allowed for use.

Orient each stone individually so that the long axis of the stone is perpendicular to the structure's sloped surface. Rearrange individual stones as required to the extent necessary to correct deficiencies and to provide a uniform, well-keyed slope.

Place each class of stone to the full thickness and depth shown on the drawings. No minus tolerance is permitted. A greater thickness is permitted provided the outside slopes present a uniform appearance with a minimum of pieces projecting outside the plane of the finished slope surface. A greater depth is permitted in the toe apron provided uniform appearance and finished depths are maintained.

Stone of a certain weight classification that is rejected because of cracks or seam defects, as described in the Quality Control subsection of this specification, may be used for a lower weight classification if other quality and shape requirements are met.

185-3.2 CONSTRUCTION SEQUENCING Schedule construction activities in general conformance with the following sequencing plan.

a. Clearly delineate the limits of use of each type of stone, both in the field and on as-built drawings.

b. Construct the embankment and slope protection in conformance with the plans and specifications.

185-3.3 QUALITY CONTROL Establish and maintain quality control for stone to assure compliance with contract requirements and to maintain records of its quality control for all operations, including but not limited to the following

a. Produce stone of the size specified, verifying sizes by selected samples when requested by the Engineer.

Acceptability of stone quality is determined by visual inspection. The Engineer may reject materials not found to meet the specified requirements at any time during the performance of the contract, at the source or project site.

a. Test stone material for weight, gradation, and shape to assure compliance with the specifications. Conduct tests at the production site before transporting materials to the project site. Place materials that do not meet the specified requirements in a separate area to assure they do not get mixed in with acceptable materials. Perform tests at uniform intervals throughout the project to meet testing frequency requirements.

b. Before delivery of materials to the project site, meet with the Engineer at the production site and select stones that meet the required weight and shape. Set aside stones at the production site as

reference samples. Select reference samples representing each size in the stone gradation and clearly mark and retain until completion of the project.

c. Testing frequency for this project is shown below

STONE	TYPE OF TEST	NO. OF TESTS
Primary Armor	Visual Inspection/Measurement	10% of Stones
	Weight	10% of Stones
Filter or Underlayer	Measurement	1% of Material Produced
	Weight	1% of Stones

Tests, other than weight, are on individual stones. Failing tests do not count toward the number of tests required. Increase testing frequency as necessary to maintain quality control during production.

(1) **Visual Inspections** Make a visual check of the stones at the production site for elongation, cracks, deterioration, and other defects visible to the naked eye, on at least $^{2}/_{3}$ of the surface area of the stone. Wet five percent of the stones checked for cracks and re-inspected for minute cracks to determine if they are detrimental to the stone quality and if additional inspections are necessary on all stone. Do not transport stones with cracks that are detrimental to stone longevity to the placement site.

(2) **Measurement** Measure stones on three mutually perpendicular axes and compute weight using the appropriate specific gravity. Record computed weights and measurements daily and provide signed copies to the Engineer before the start of the next work shift. Select stones for measurement that represent all sizes specified in order to verify conformance with specified shape and grading limits.

(3) **Weight** In addition to weighing for payment purposes, weigh primary armor in order to verify conformance with the gradation limits specified. Accomplish by placing stones of similar size into a truck or loader, weighing the stones, and calculating an average individual stone weight (e.g., 20 stones placed in a truck weigh 20,000 pounds; this is equivalent to 20 stones with an average weight of 20,000/20 = 1,000 pounds). Use other methods of weighing stones for grading purposes only if approved by the Engineer.

Provide quality test results meeting the following requirements as performed by a certified lab:

PROPERTY	TEST METHOD	LIMITS
Specific gravity (Apparent)	AASHTO T-85	2.65 min.
Absorption	ASTM C 97	2% max.
Soundness (Sodium Sulfate)	ASTM C-88	5% max. loss
Solubility & Durability (Ethylene Glycol)	COE CRD-C-148	2% max. loss after 15 days
LA Abrasion	ASTM C-535	10% max. loss after 200 revs. and 50% max. loss after 1000 revs.
Degradation	ATM T-13	40 min.

185-3.4 Placement Before placing armor materials, establish clear and understandable construction control for the workers. Establish minimum control to delineate the horizontal limits of all stone classes, both toe and shoulder lines. Unless specified in writing, follow the slope lines and grades indicated on the drawings for the limits of the in-place stone.

Survey each layer to document material placement. Make periodic checks as the work progresses to verify line and grade of the armor placement. Provide a copy of the check surveys to the Engineer and obtain approval before placing the next layer of material. Approval of cross-sections does not constitute final acceptance. Take cross-sections at 25-foot intervals and at the ends of each typical section range. Take horizontal cross-section at 5-foot intervals and at grade breaks along the survey grades.

Submit a plan detailing how the check surveys will be completed, including the methodology and equipment proposed. The Contractor shall not place stones until the Engineer approves the method for performing check surveys.

185-3.5 RECOVERED UNDERLAYER STONE. Existing armor stone shall be recovered, and reused as either primary armor stone or underlayer stone as shown in the plans, or as otherwise approved by the Engineer. Recovered underlayer stone shall meet the size requirements above, but won't be subjected to quality testing for acceptance. The Engineer may reject recovered underlayer stone and direct that imported material of the specified class be supplied instead.

METHOD OF MEASUREMENT

185-4.1 Primary armor stone and filter or underlayer stone shall be measured by the tons of material placed, based on project weight records, and in accordance with the dimensions shown on the plans, or as directed by the Engineer. No payment will be made for material placed in excess of these dimensions.

BASIS OF PAYMENT

185-5.1 Payment for primary armor and filter or underlayer stone will be made at the contract unit price and includes all labor, materials, tools, equipment, testing, and incidentals required to construct shore protection.

Payment will be made under

Item P-185a	Primary Armor Stone (PA-12000) - per ton
Item P-185b	Underlayer Stone (U-700) - per ton

ITEM P-189 GABIONS

DESCRIPTION

189-1.1 Construct wire gabion bank protection at locations shown on the plans.

MATERIALS

189-2.1 WIRE MESH. Use 11 gage minimum wire, except that the selvedge may be heavier. Meet or exceed ASTM A 641 medium hardness and tensile strength; Class 3 coating. Furnish at least one sample of each component of the mesh for testing.

Where Stainless Steel mesh is specified, the welded wire mesh shall have a uniform square or rectangular pattern and a resistance weld at each intersection as prescribed in ASTM A974. The welded wire connections shall conform to the requirements of ASTM A 185, including wire smaller that W1.2 (0.124 in.) except that the welded connections shall have a minimum average shear strength of 70% and minimum shear strength or 60% of the minimum ultimate tensile strength of the wire. The wire shall be 316 stainless steel wire manufactured to ASTM A580. The wire shall have a minimum tensile strength of 90,000 psi.

Use mesh with 4-inch openings in the longest dimension.

Use wire mesh that is designed to be nonraveling. It must resist pulling apart at any of the connections forming the mesh when a single wire strand in a section of mesh is cut.

Tie and Connecting Wire: Conform to the same specifications as wire used in the mesh except that it may be not more than 2 gauges smaller. Supply sufficient quantity for securing and fastening all edges of the gabion baskets and diaphragms, for fastening adjacent gabion baskets together, and to provide cross connecting wires in each gabion cell as specified below.

189-2.2 GABION BASKETS. Supply baskets, as specified, in various lengths and heights. Make the lengths multiples (2, 3, or more) of the horizontal width. Furnish all gabion baskets in uniform width of not less than 24 inches or more than 48 inches.

Fabricate the sides, ends, lid, and diaphragms for field assembly into a rectangular basket of the required size. Construct gabions as a unit. The base, ends and sides are either to be woven into a single unit or one edge of these members connected to the base so that strength and flexibility at the point of connection is at least equal to that of the mesh.

189-2.3 DIAPHRAGMS. Where the length of the gabion exceeds its horizontal width, divide the gabion equally with diaphragms of the same mesh and gage as the gabion basket and make compartments of a length approximately equal to horizontal width. Furnish the gabion with the necessary diaphragms secured in proper position on the base section so that no additional tying at this juncture is necessary.

Securely selvedge or bind all perimeter edges so that the joints formed by tying the selvedges have approximately the same strength as the body of the mesh.

189-2.4 GABION BACKFILL. Stone and gravel, uniformly graded from 4 to 12 inches in least dimension and having no more than 60% wear (AASHTO T 96).

189-2.5 GEOTEXTILE FOR SEPARATION. Geotextile for separation shall meet the requirements of Item P-681, Geotextile for Separation and Stabilization.

CONSTRUCTION REQUIREMENTS

189-3.1. Construct gabions to the lines and grades as staked. Meet the details shown on the plans.

Assemble gabion baskets per the manufacturer's recommended procedures. Align each row or tier of gabion baskets before filling the baskets. Install tie wires in both directions horizontally so that layers between ties are not more than 14 inches thick. Space tie wires not more than 14 inches apart horizontally within any gabion basket cell. Loop tie wires around at least 3 meshes of the gabion basket and tie or twist securely. Fill each gabion basket so the lid, when secure, will bear on the gabion filler. Securely fasten gabion baskets to all adjacent baskets, using sufficient wire to provide the same strength as the body of the mesh.

Meet the requirements of section P-152 for all excavation and backfill for gabions.

METHOD OF MEASUREMENT

189-4.1 By the calculated neat line volume of gabion baskets in place using the manufacturer's specified dimensions.

BASIS OF PAYMENT

189-5.1 Payment will be made at the contract unit price per cubic yard. Excavation for gabions will be paid for under section P-152. Geotextile for separation shall be subsidiary to this item unless Item P-681 is included in the project.

Payment will be made under:

Item P-189a Gabion - per cubic yard
Item P-189b Gabion (Stainless Steel) – per cubic yard

TESTING REQUIREMENTS

AASHTO T 96	Resistance to Degradation of Small-Size Coarse Aggregate by Abrasion and Impact in the Los Angeles Machine
ASTM A 185	Standard Specification for Welded Steel Wire Fabric For Concrete Reinforcement
ASTM A 580	Standard Specification for Stainless Steel Wire
ASTM A 641	Zinc-Coated (Galvanized) Carbon Steel Wire
ASTM A 974	Standard Specification for Welded Wire Fabric Gabions and Gabion Mattresses (Metallic Coated or Polyvinyl Chloride (PVC) Coated)

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.

Base course used as a non-erodible surface of unpaved safety areas and with a nominal depth of 2" shall be compacted with a minimum of two passes with steel vibratory roller.

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.

Base course used as a non-erodible surface of unpaved areas will not be tested for density.

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.

Base course used as a non-erodible surface of unpaved areas will not be tested for surface tolerance.

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.

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.

(a). ~~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. . Nordic Abrasion Test requirement (ATM 312) shall not exceed 9 for the coarse HMA aggregate.

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 fine aggregate for hot mix asphalt, Type V, shall not contain any natural sand.

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})	7
Design Number of Gyrations (N_{des})	75
Maximum Number of Gyrations (N_{max})	115
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 ~~6~~7 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-~~8~~7	3-~~8~~7	3-~~8~~7	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 will not be allowed on this project. ~~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.

~~1.~~**(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 [redacted] 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.~~**(1)** Aggregate gradation
~~2.~~**(2)** Asphalt cement content
~~3.~~**(3)** Mat density
~~4.~~**(4)** Longitudinal Joint density
~~5.~~**(5)** Thickness
~~6.~~**(6)** Smoothness
~~7.~~**(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%~~100%
Joint Density	~~90~~ 91%	~~98%~~100%

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 = $[(\text{CPF or DPF})^{*}\text{-}1] \times (\text{tons in lot}) \times (\text{PAB})$

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 =$155 per ton Hot Mix Asphalt Type II, Class A

* 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 __, Class __ - per ton
Item P-401b	Hot Mix Asphalt Price Adjustment - contingent sum
Item P-401c	Asphalt Cement [Performance Grade] - 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-511 MICROSILICA MODIFIED CONCRETE

DESCRIPTION

511-1.01 DESCRIPTION. Furnish and install microsilica modified concrete (MMC) overlay, as specified, at the location(s) shown in the Plans. This item shall also include repair of deteriorated concrete surfaces using epoxy-bonded epoxy grout. Where mention of deck is shown, it shall be understood to mean any surface to receive MMC or grout.

This item shall also include all work required to divert Devils Creek and construct access ramps, if needed. Restoration of the access ramps will be accomplished under P-157, Erosion, Sediment and Pollution Control.

511-2.01 MATERIALS. Use materials that conform to the following:

Portland Cement	Item P-610 (Type I or Type IA)
Fine Aggregate	Item P-610, Subsection 610-2.3
Coarse Aggregate	Quality: Item P-610, Subsection 610-2.2 Gradation: AASHTO M 43 (Gradation No. 7)
Sand For Abrasive Finish	Crushed sand, oven dried, and stored in moisture-proof bags. Meet the following gradation requirements when tested according to WAQTC FOP for AASHTO T 27/T 11:

Sieve	Percent Passing
No. 8	100
No. 30	97-100
No. 200	0-5

High Molecular Weight Methacrylate (HMWM) Resin	Viscosity, min.:	25 cps (Brookfield RVT w/UL adapter, 50 rpm at 75 °F (CA Test 434)
	Density:	8.5 to 8.75 lb/gal at 75 °F (ASTM D 1475)
	Flash Point, min.:	200 °F PMCC (Pinsky-Martens CC)
	Vapor Pressure, max.:	0.04 in. Hg at 75 °F (ASTM D 323)
	Tg (DSC), min.:	135 °F (ASTM D 3418)
	Gel Time, min.:	60 minutes
		Use a promoter/initiator system for the NMWM resin consisting of a metal dryer and peroxide.

Microsilica Admixture — Meet AASHTO M 307, as modified below:

Table 1 Chemical Requirements

Loss on Ignition, max., %	4.0

Add the following:

	Other compounds, total*, max., % 7.0 * Includes aluminum, ferric, magnesium, and calcium oxides
	Table 3 Physical Requirements Add the following: Specific Surface Area, min. (ASTM C 1069) 15 m_2/g
Epoxy Resin	Two-component, 100-percent solids type meeting the requirements of specification ASTM C-881 for type III, grade 2, class B
Epoxy Resin Mortar	AASHTO M 235, Type I, Grade 3

CONSTRUCTION REQUIREMENTS

511-3.01 QUALITY CONTROL AND TESTING.

1. Technical Representative. The Engineer may modify any of the following requirements to meet field conditions. Use a test slab to evaluate finishing and placement properties of the mix. Have a technical representative from the microsilica admixture manufacturer present during initial proportioning, mixing, placing and finishing operations. The technical representative must:

   a. Remain on site for at least the first 2 days of placement.

   b. Be able to perform, demonstrate, inspect and test all of the functions required for placing the MMC as specified and approved by the Engineer.

   c. Aid in properly installing the MMC.

   Adhere to recommendations made by the technical representative as approved by the Engineer.

2. Test Slab. Make a trial batch of the MMC which meets the Specifications at least 4 days before placing the first section of the overlay. Make the trial batch the same size to be batched per truck. Place a test slab at a location approved by the Engineer. Cast the slab 12 feet wide, the same thickness of the overlay, and long enough to place the trial batch. Furnish individual batch weights to the Engineer. Finish and cure the test slab according to all the requirements of these Specifications. One or more trial batch(es) and test slab(s) may be required to meet the requirements of this Specification.

   Notify the Engineer 7 days before preparing the test batch. The Engineer will sample for slump, air entrainment and unit weight and conduct all the required tests to determine if the MMC meets specifications before field placement.

   The test slab remains the Contractor's property. Remove and dispose of the test slab after testing is complete.

3. Production Testing. The Engineer will perform the following tests:
   a. Provide a WAQTC technician to test every load before it is discharged. Loads not meeting specifications shall be rejected.

   b. The Engineer will perform acceptance tests randomly at a frequency of 1 set per 20 cubic yards.

c. The Engineer shall direct the installation of instrumentation to measure the internal temperature and cure time of the concrete to monitor strength development. When the concrete maturity indicates adequate strength, he shall direct that cylinders be tested for compressive strength.

Remove and dispose of test samples when testing is complete.

511-3.02 SUBMITTALS. No submittals are required for materials used in the approved microsilica concrete mix design. Do not begin placing concrete without written approval. Use a mix design according to Subsection 511-3.03.

511-3.03 PROPORTIONING MATERIALS. Submit a mix design approved and stamped by a professional engineer developed according to ACI publication 3012, Section 4, and ACI publication 214, design of normal weight concrete using the absolute volume method per ACI publication 211.1. Submit this mix design to the Engineer for approval 40 days prior to scheduled production. Include the following documents in the submittal:

- Mill certification on cement, MSDS
- Admixtures – Certificate of compliance, manufacturer's specifications, MSDS
- Aggregate – process control records, submit samples to the Engineer for quality testing
- Compressive strengths, air content, slump of test batches supporting mix design
- Demonstrate that the design allows for haul to jobsite and 90 minutes of placement
- Develop and submit maturity curve (5 points minimum)
- Provide permeability test results AASHTO T 277 for concrete aged 28 days. The charge passed through the sample must not exceed 1,000 coulombs.

The mix design must beet the following criteria:

Cement Content, sacks/cy min. (94 lb Sack)	7
Microsilica Fume, lb/cy min	52
Coarse Aggregate Grading, AASHTO M 43	No. 7
Entrained Air Range, %	5-8
Water / (Cement + Microsilica) ratio, lb/lb max.	0.33
Slump, inches max.	7
Design Compressive Strength (F'_c) psi	5,000

511-3.04 STORAGE OF MATERIALS. Store materials per Section 60, Subsection 60-06 and the following:

1. Aggregate. Prevent variations of more than 1.0% in the stockpile moisture content.

2. High Molecular Weight Methacrylate (HMWM) Resin. Store the HMWM resin in a cool, dry place. Protect resin from freezing and exposure to temperatures greater than 100 °F. If the promoter and initiator are supplied separately from the resin, store them so that they do not contact each other directly. Do not store containers of promoters and initiators together in a way that allows leakage or spillage from one to contact containers or materials of the other.

511-3.05 EQUIPMENT. Use equipment that complies with the following:

1. Air Compressor. Equipped with oil traps to eliminate oil from being blown onto the roadway deck during sandblasting and air-cleaning.

2. Vacuum Machine. Capable of collecting all dust, concrete chips, free-standing water and other debris encountered during deck cleaning and preparation. Equipped with collection systems that can operate in air pollution sensitive areas and will not contaminate the deck during final preparation for concrete placement.

3. Water Blast Equipment. High-pressure water blasting equipment capable of removing dust, debris, and loose, disintegrated concrete. Must produce a minimum pressure of 5000 psi.

4. Water Spraying System. A portable high-pressure sprayer with a separate water supply. Make the sprayer readily available to all parts of the deck being overlaid. The sprayer must discharge water in a fine mist to prevent accumulation of free water on the deck. Make sure enough water is available to thoroughly soak the deck being overlaid and keep the deck wet until concrete is placed.

   Certify that the water spraying system meets the following minimum requirements:

Pressure	2200 psi
Flow Rate	5 gallons per minute
Fan Tip	15 to 25 degree range

5. Fogging Equipment. Water fogging equipment capable of increasing humidity in the area of placement. Use nozzles that produce a fine fog mist to maintain a sheen of moisture on the overlay surface without ponding. Limit flow rate to approximately 1 gallon per minute. Use "Fog-it" triple head nozzle by the Fogg-it Nozzle Co., San Francisco, CA, or approved equal.

6. Finishing Machine. A self-propelled finishing machine that:

   a. Can move forward and in reverse under positive control.

   b. Provide for raising and lowering all screeds under positive control. Ensure the upper vertical limit of screed travel permits the screed to clear the finished concrete surface.

   c. Is adjustable to produce the required cross-section, line, and grade. When placing concrete abutting a previously placed lane or strip, ensure the side of the finishing machine is equipped to travel on the completed lane or strip.

   d. Is equipped with a rotating cylindrical double-drum screed not more than 5 feet long, preceded by a vibrating pan. Use a finishing machine with a metal vibrating pan long and wide enough to consolidate the mixture properly. The vibrating frequency of the vibrating pan must be variable with positive control between 3,000 and 6,000 rpm. The Engineer will consider approving a machine with a vibrating pan as an integral part, if it is proposed.

511-3.06 DECK PREPARATION.

1. Clean. Thoroughly clean the lane or strip being overlaid of all loose particles, dust, oil, grease, rust, or other foreign materials that may reduce the bond of new concrete to old concrete.

   Use detergent cleaning, water blast, sandblast or another approved method.

2. Protect. Prevent equipment from contaminating the surface with oil or grease before placing the overlay. When using an air supply system for blast cleaning and blowing, ensure there is an oil trap in the air line.

   Confine hydrodemolition to areas at least 100 feet from the defined limits of any final cleaning or overlay placement in progress. If the Engineer determines that hydrodemolition is impeding or interfering in any way with final cleaning or overlay placement, stop the hydrodemolition work

immediately and move hydrodemolition equipment far enough from the area being prepared or overlaid.

If the water and contaminates from hydrodemolition could flow into the area being prepared or overlaid because of the grade, suspend the hydrodemolition for the first 24 hours of curing time after the concrete is placed.

When final preparation begins, stop removing concrete by mechanical methods and stop cleaning in areas adjacent to a lane or strip being cleaned. Do not resume removing concrete by mechanical methods until placing the concrete and satisfying the curing-time requirement. Suspend sandblasting and cleaning for the first 24 hours of curing time after the concrete is placed.

If the lane or strip being overlaid becomes contaminated after final cleaning, flush the surface with high-pressure water or sandblast (shotblast) the surface before placing the overlay. Begin concrete placement within 24 hours of completing deck preparation for the portion of the deck to be overlaid.

Do not permit traffic (other than required construction equipment) on any portion of the lane or strip prepared for concrete placement, without approval. To prevent contamination from equipment after final cleaning, place polyethylene sheeting over prepared lanes or strips.

3. Keep Wet. After cleaning the lane or strip to be overlaid, and at least 6 hours before placing concrete, thoroughly soak the lane or strip with water. Remove all free-standing water. Keep the lane or strip moist until concrete is placed.

511-3.07 BATCHING AND MIXING CONCRETE.

Batch concrete to conform to Item P-610, Subsection 610-3.4.

Mix concrete to conform to Item 610, Subsection 610-3.6, but do not use a truckload that contains more than 4 cubic yards of concrete without approval.

511-3.08 FORMS. Conform to Item 610, Subsection 610-3.8.

511-3.09 PLACING CONCRETE. Before placing concrete, review equipment, procedures, personnel, previous results, and inspection procedures with the Engineer. Hold a pre-pour meeting 5 working days before the first pour with concrete supplier, WAQTC technician, placing and finishing foremen and Engineer's staff to review the process, authority, and pour details.

- Concrete supplier quality control, number of trucks to be used, identify the person in charge, and WAQTC testing
- Pour sequence, production rate, procedure to halt pour due to delay (weather, breakdown, etc.), crew assignments, person in charge
- Setting of screed rail, testing and finishing equipment
- Plan if breakdown occurs – batch plant, haul, pour, finishing and curing

Place concrete according to Item 610, Subsection 610-3.11 and the following:

1. Do not place concrete under the following conditions:

   a. When the concrete surface temperature is less than 45 °F or greater than 80 °F.

   b. When the combination of air temperature, relative humidity, fresh concrete temperature, and wind velocity at the construction site produces an evaporation rate of 0.15 lb/ft^2 per hour.

c. When rain is expected. Protect freshly placed concrete in case rain begins during placement. Remove and replace rain-damaged concrete to the satisfaction of the Engineer.

2. Use enough concrete delivery trucks to deliver and place concrete consistently and continuously throughout the pour.

3. Use bulkheads for all joints. Before placing concrete against previously placed concrete, check the joint for bond. Remove and replace unbonded concrete as specified in Item 610, Subsection 610-3.12

4. If concrete placement is stopped and the last concrete placed takes a false set or has a slump of less than 1 inch, immediately install a bulkhead transverse to the direction of placement at a position where the overlay can be finished full width up to the bulkhead. Finish and cure concrete according to these Specifications.

   Wait at least 12 hours before placing more concrete, unless there is a gap in the lane or strip. The gap must be wide enough for the finishing machine to clear the transverse bulkhead installed where concrete placement was stopped. Saw back the previously placed concrete from the bulkhead to straight and vertical edges as designated by the Engineer. Sandblast or water-blast the previously placed concrete before placing new concrete.

5. Do not place concrete against the edge of an adjacent lane or strip less than 36 hours old.

6. Use epoxy resin mortar to patch overhead blow-throughs after placing the overlay.

7. Employ qualified personnel, certified by the finishing equipment manufacturer, to operate the equipment. Submit operator certification(s) to the Engineer for approval 7 days prior to placing the test slab(s)

511-3.10 FINISHING CONCRETE. Finish the concrete according to Item 610, Subsection 610-3.15 and the following requirements:

Place rails on which the finishing machine travels outside the area to be overlaid. Use interlocking rail sections or other approved methods of providing rail continuity. Submit plans for anchoring rails for approval according to GCP Section 50, Subsection 50-02. Do not shoot hold-down devices into the concrete unless the concrete is to be subsequently overlaid. Do not penetrate the existing deck with hold-down devices by more than 3/4 inch. Remove rails any time after the concrete has taken an initial set. Protect the new surface edges when removing the finishing machine and rails.

Set screed control to obtain the nominal overlay thickness or specified profile grade and meet finished surface smoothness requirements. The Engineer will verify or adjust the overlay profile before concrete placement. After verifying the profile, the Engineer will not permit changes in the finishing machine elevation controls.

Place and strike off concrete approximately 1/2 inch above the final grade. Consolidate and finish the concrete to final grade with a single pass of the finishing machine to provide a dense, uniform surface. Hand finish concrete to close up or seal off the surface, when required.

Do not allow the concrete surface to dry out. Throughout the finishing process, fog the air over the concrete as needed to maintain a visible moisture sheen on the surface. Use an evaporation reducer, such as "Confilm" by Master Builders, Inc., Seattle, WA until the wet burlap is applied.

Separate construction bulkheads from the newly placed concrete, as follows: Pass a pointing trowel along the inside surfaces of the bulkheads. After the concrete has stiffened enough so it does not flow back, carefully make the trowel cut for the entire depth and length of bulkheads.

511-3.11 CURING CONCRETE. After the surface is finished, immediately begin fogging with equipment specified in Subsection 511-3.05 and continue until wet burlap is applied. As the finishing operation progresses, immediately cover the concrete with a single layer of clean, wet burlap. Use burlap cloth that meets the requirements of AASHTO M 182, Class 4 and is no wider than 6 feet. The Engineer will determine if the burlap can be reused, based on its cleanliness and absorption ability.

Make sure the burlap is well drained and laid flat with no wrinkles on the deck surface. Place adjacent strips of burlap with a minimum overlap of 6 inches. Once the burlap is in place, apply a light fog mist of water. Immediately place a separate layer of white, reflective-type polyethylene sheeting over the wet burlap.

Wet cure the concrete by leaving the polyethylene sheeting and burlap in place for at least 72 hours, keeping the burlap wet.

After the polyethylene sheeting and burlap are removed and the concrete surface has dried, fill and seal all joints and visible cracks with a high-molecular-weight methacrylate (HMWM) resin. Use two applications of HMWM in cracks 1/16 inch and wider. Immediately after applying HMWM, coat the wetted surface with sand for an abrasive finish.

After meeting the curing requirements, use compressed air to accelerate deck-surface drying, crack identification, and sealing.

Do not permit traffic on the finished concrete until the specified curing time is satisfied and the concrete reaches a minimum compressive strength of 3000 psi. Determine compressive strength from informational test cylinders cured on site under temperature and moisture conditions similar to those of the concrete in the structure.

511-3.12 PROTECTING CONCRETE. Protect microsilica concrete when placing it in cold weather. Cold weather is defined as when the average daily air temperature for 3 consecutive days is less than 45 °F. The average daily air temperature is the average of the highest and lowest temperatures from midnight to midnight.

After placing MMC, maintain it at a temperature above 50 °F for at least 3 days.

If the air temperature drops below 35 °F while curing, place insulating blankets over the curing materials. Use insulating blankets 2 inches thick with tough, impermeable cover material.

When the deck temperature is lower than 45 °F, pour microsilica concrete only under the following conditions:

1. Use a concrete mixture between 55 °F and 75 °F at the time of placement.

2. If using heated water to obtain proper placement temperatures, add air-entraining agents after the last heated water.

3. Clear the deck of snow, ice, or frost.

4. Maintain the temperature of the deck receiving concrete at 35 °F, minimum.

5. Maintain the temperature of the rebar at 35 °F, minimum.

6. Cover placed concrete with burlap, plastic sheeting and insulated mats immediately after finishing of the surface. Keep the covering in place for 3 days. Monitor concrete temperature hourly for 3 days. Add 1 day to the covered time for any day in which the recorded surface temperature of the concrete is less than 50 °F.

7. If heated enclosures are used, vent combustion heaters to the outside of the enclosure. Locate heaters and ducts to avoid overheating or drying areas of the concrete surface.

8. As an alternative to the requirements of step 6, monitor the slab's compressive strength. Use in-place, non-destructive testing. After 3 days, uncover the concrete, regardless of temperature, when the concrete reaches a compressive strength of 3000 psi.

9. If any freezing temperature is recorded during the first 24 hours that it is covered, promptly remove concrete.

To pour concrete when rain is predicted, observe the following conditions:

- Have materials on hand to cover the work in case of rain.
- Halt the pour and immediately cover all work when rain drops affect the slab finish.

511-3.13 CHECKING FOR BOND. After the floor curing is complete, the Engineer will test the entire overlaid surface for the total bonding of the concrete to the floor according to ASTM D 4580, Measuring Delaminations in Concrete Bridge Decks by Sounding. Remove concrete from unbonded areas and replace it with MMC without extra compensation.

511-3.14 SURFACE REPAIR. Where scarification under Item 164b is performed, the surface shall be repaired using epoxy-bonded epoxy mortar to restore the surface to its previous thickness. Apply mortar as specified by the manufacturer. Technique for application is optional but must provide a smooth and uniform surface matching the adjacent non-deteriorated areas.

METHOD OF MEASUREMENT

511-4.1 Microsilica modified concrete will be measured by the square yard.

511-4.2 Epoxy-bonded epoxy mortar will be measured by the square yard.

BASIS OF PAYMENT

511-5.1 Payment will be made at the contract cubic yard or square yard price. This price provides full compensation for all labor equipment and materials to complete the item. All work required to divert Devils Creek and construct access ramps will not be paid directly, but will be considered subsidiary to Item P-511.

Payment will be made under:

Item P-511a	Microsilica Modified Concrete – per square yard
Item P-511b	Epoxy-Bonded Epoxy Mortar – per square yard

ITEM P-555 ENGINEERED MATERIAL ARRESTING SYSTEM

DESCRIPTION

555-1.1 This item shall consist of the installation of an Engineered Material Arresting System (EMAS in accordance with these specifications, manufacturer's requirements and the contract drawings, at the locations and of the form and dimensions shown on the plans. This item shall include all labor, equipment, shipping, EMAS blocks, debris deflector and anchors, joint sealing filler, all caulk, butyl tape, extruded silicone coating with adhesive, side vents, surveying services, local storage, conventional forklifts, trash dumpsters, hand tools, modified bituminous material and other items to complete the work.

This specification is a "means and methods" specification, which allows an inexperienced contractor to accurately bid on the performance of a new construction operation by pricing out crew and equipment requirements over the expected duration of the EMAS bed installation. The EMAS manufacturer will provide training for new operations and continuous surveillance inspection services for the duration of the EMAS bed installation.

MATERIALS

555-2.1 SPECIFICATIONS: This EMAS material will be manufactured and must be installed in compliance with FAA Advisory Circular 150/5220-22. The sole source for EMAS blocks to be furnished by the Contractor is the ESCO Company, located at 2289 High Hill Road in Logan Township, New Jersey 08085. Their block sales contact is Mr. Kevin Quan at (856) 241-8620, ext. 452 or Kguan@esco:zodiac.com.

The EMAS materials shall be manufactured in compliance with FAA Advisory Circular 150/5220-22B. Additionally, the following materials will conform to the requirements of the following specifications:

Materials	FAA Specification
Concrete Anchor Beam	P-610
Chevron Paint	P-620

555-2.2 SUBMITTALS. The Contractor is not required to submit any shop drawings:

555-2.3 MATERIAL ACCEPTANCE. Prior to the use of materials, the Contractor shall submit certified test reports to the Engineer for the materials used in the EMAS. The EMAS bed shall not be accepted until the following installation tolerances are met:

Dimension	Lower Tolerance	Upper Tolerance
Width of Bed	-0.1 %	+1 %
Length of Bed	-0.1 %	+1 %
Height of Bed	-0.25 inch	+ 0.75 inch

CONSTRUCTION METHODS

555-3.1 WEATHER LIMITATIONS. The surface temperature of the pavement must be dry and above 40 degrees F, and rising, before EMAS block installation may begin.

555-3.2 STATEMENT OF WORK FOR LABOR, EQUIPMENT AND MATERIALS.

INSTALLATION OF AN ENGINEERED MATERIAL ARRESTING SYSTEM (EMAS) USING JET BLAST RESISTANT (JBR) BLOCKS FOR RUNWAY 7 AND JBR EMASMAX BLOCKS FOR RUNWAY 36 AT KODIAK AIRPORT

555-3.3 WORK SUMMARY FOR EACH RUNWAY DEPARTURE END

a. Work Summary for Kodiak Runway 7 Departure End

The EMAS bed installation for Kodiak Airport Runway 07 departure end involves the receiving and placing of 2,478 pre-cast cellular concrete blocks into a bed with dimensions of approximately 171 feet wide by 239 feet long (42 blocks wide x 59 blocks long). The blocks are nominally 4-ft. wide x 4-ft. long x 6 7/8-inches up to 20 7/8 inches in height. Approximately 3% more blocks than necessary will be shipped to adjust for blocks damaged during shipping and installation. Pallets, extra material, and extra blocks will be repackaged for transport back to ESCO. EMAS blocks are stacked and shipped on pallets. The largest pallet of stacked blocks is nominally 4-ft. x 4-ft. x 77-inches and weighs approximately 2,000 lbs. Receiving the shipping containers containing the pallets of blocks will be complete before the start of block installation. It is estimated that delivery of the blocks and other related installation material requires about 43 containers. Please note that as the block sizes increase, more containers are needed to complete the planned number of rows per shift. For example, a full-sized container with 8" blocks could contain up to 72 individual blocks whereas a container full of 20" blocks has only 35 individual blocks.

Dates for access to the work site and EMAS block installation will be set by the airport's contract bidding documents. A relocated threshold on the runway is the expected operating condition for construction. It is expected the CONTRACTOR will make appropriate adjustments to the labor and material requirement in order to meet this schedule. In the following labor breakdown estimate, one (1) eight-hour shift is assumed, with some arrangements needed for an early start for the asphalt cement melting kettle warm-up operation. Utilizing one block installation crew (16 people), normally 336 EMAS blocks can be installed per shift except for a planned first day quota of 84 and all subsequent days having a daily-expected installation of 126 blocks.

Because training and familiarization with the EMAS block placement is crucial to correct installation, the CONTRACTOR will be required to revert to 84 blocks per shift quotas without additional compensation after any significant crew changes. Specifically, if a new crew, in whole or in part, is put in place after initial start-up, the ESCO field representative has the unilateral authority to reduce the daily installation quota to insure proper training is accomplished. That decision will be based upon the magnitude of the crew change and the contractor has demonstrated performance. Additionally, the ESCO field representative shall have the authority to reject and have removed from the crew any contractor representative who is unable to provide and maintain quality workmanship in the assigned tasks.

All EMAS joint taping must be installed to a High Quality Standard with minimum overlapping overfilling of joints. The specialty joint seal is adhered to the adjoining blocks. This seam seal cannot be stretched, and requires a careful installer. Prior to any blocks being readied for placement, the Contractor shall be required to demonstrate their ability to apply and finish the seam seal in a manner acceptable to ESCO. In addition to sealing the joints to prevent moisture intrusion, the finished seam seal joints must be aesthetically pleasing, i.e. look good. In order to help achieve the desired result ESCO will provide 2 hours of training in EMAS block seam sealing. This project includes approximately 20,000 linear feet of seam-sealed joints with a requirement for just over 1,200 linear feet per 7 hour or 8-hour shift once the job is underway. Full and careful consideration of which Contractor personnel to assign to this seam sealing work is encouraged, as experience has shown workmen not fully experienced in careful seam sealing/caulking usually do not meet ESCO's quality or workmanship standards thus leading to

job delays and rework. Additionally, ESCO's experience has shown that this seam sealing effort will be the task which paces the job, since it is required that all blocks installed during a work shift have a backer rod installed (if necessary)and the joints sealed by the end of the shift. The entire thrust of these requirements is to attain and maintain a very high level of placement competence and quality of installation.

If night work is required, the CONTRACTOR shall provide adequate portable lighting for use at the work site before dawn and after dusk. For EMAS installation and finishing work, six large self-contained four-bulb light plants, such as the Allmand MLT 3060 or similar, is the minimum. Depending upon the time of year/midnight sun illumination at the time of installation, this requirement may be reduced or waived by the EMAS block manufacturer's representative on site.

Before any shut down of contract operations, all equipment and materials used at the work site shall be moved by the CONTRACTOR to the designated airport mobilization site, to assure safe aircraft operations between the contractor's work shifts.

Initial receiving operations at the staging area can be at any time allowed by the airport until installation commences. Upon commencement of block installation receiving operations will be complete.

The CONTRACTOR is responsible for setting up the staging area and providing access control, a dumpster, all trash collection and rubbish removal, portable lavatory, and all other personnel requirements for the duration of this project. Control of Foreign Object Damage (FOD) construction materials (block packaging materials, paper wrappers, hand tools, small parts, etc.) that are used during the installation of the EMAS is always of concern to an airport and must be controlled. It will be necessary for the CONTRACTOR to provide covered containers to hold all construction debris and refuse at the worksite and/or airport property.

The sequence for installation of the EMAS will be as follows:

- Excavation and placement of the concrete anchor beam
- Survey of the anchor beam to confirm exact stationing of the center and back of the debris deflector
- Installation of jet blast debris deflector
- Mark-out of installation grid (centerline, sidelines, rear edge line, and every block corner with a grid system)
- Installation of the EMAS blocks including
    - Placement of backer rod material into block joints as needed
    - Installation of polycarbonate angle material along perimeter
    - Installation of high and low perimeter block vents (sides and back of bed)
    - Install seam seal tape over joints and backer rod and around vents
    - Install side coating
- Complete any "punch-list" work
- Painting of safety area markings
- Site clean-up and demobilization

Specific works are as detailed on the following pages. Note: where this Statement of Work conflicts with the contract drawings, the contract drawings shall govern.

b. Work Summary for Kodiak Runway 36 Departure End

The EMAS bed installation for Kodiak Airport Runway 36 departure end involves the receiving and placing of 2,310 pre-cast cellular concrete blocks into a bed with dimensions of

approximately 171 feet wide by 223 feet long (42 blocks wide x 55 blocks long). The blocks are nominally 4-ft. wide x 4-ft. long x 3 7/8-inches up to 20 7/8inches in height. Approximately 3% more blocks than necessary will be shipped to adjust for blocks damaged during shipping and installation. Pallets, extra material, and extra blocks will be repackaged for transport back to ESCO. EMAS blocks are stacked and shipped on pallets. The largest pallet of stacked blocks is nominally 4-ft. x 4-ft. x 77-inches and weighs approximately 2,000 lbs. Receiving the shipping containers containing the pallets of blocks will start two to three weeks prior to beginning the installation and may continue during block installation. Installation of the blocks can commence when all of the EMAS blocks have been received. It is estimated that delivery of the blocks and other related installation material requires about 40 ISO extra wide, 20 foot shipping containers. Please note that as the block sizes increase, more containers are needed to complete the planned number of rows per shift. For example, a 20' container with 8" blocks could contain up to 72 individual blocks where as a container full of 20" blocks has only 35 individual blocks.

Dates for access to the work site and EMAS block installation will be set by the airport's contract bidding documents. A closed runway is the expected operating condition for construction. It is expected the CONTRACTOR will make appropriate adjustments to the labor and material requirement in order to meet this schedule. In the following labor breakdown estimate, one (1) seven-hour shift is assumed, with some arrangements needed for an early start for the asphalt cement melting kettle warm-up operation. Utilizing one block installation crew (16 people), normally 126 EMAS blocks can be installed per shift except for a planned first day quota of 84 and all subsequent days having a daily-expected installation of 126 blocks.

Because training and familiarization with the EMAS block placement is crucial to correct installation, the CONTRACTOR will be required to revert to 84 blocks per shift quotas without additional compensation after any significant crew changes. Specifically, if a new crew, in whole or in part, is put in place after initial start-up, the ESCO field representative has the unilateral authority to reduce the daily installation quota to insure proper training is accomplished. That decision will be based upon the magnitude of the crew change and the contractor has demonstrated performance. Additionally, the ESCO field representative shall have the authority to reject and have removed from the crew any contractor representative who is unable to provide and maintain quality workmanship in the assigned tasks.

All EMAS joint taping must be installed to a High Quality Standard with minimum overlapping overfilling of joints. The specialty joint seal is adhered to the adjoining blocks. This seam seal cannot be stretched, and requires a careful installer. Prior to any blocks being readied for placement, the Contractor shall be required to demonstrate their ability to apply and finish the seam seal in a manner acceptable to ESCO. In addition to sealing the joints to prevent moisture intrusion, the finished seam seal joints must be aesthetically pleasing, i.e. look good. In order to help achieve the desired result ESCO will provide 2 hours of training in EMAS block seam sealing. This project includes approximately 20,000 linear feet of seam sealed joints with a requirement for just over 1,200 linear feet per 7-hour shift once the job is underway. Full and careful consideration of which Contractor personnel to assign to this seam sealing work is encouraged, as experience has shown workmen not fully experienced in careful seam sealing/caulking usually do not meet ESCO's quality or workmanship standards thus leading to job delays and rework. Additionally, ESCO's experience has shown that this seam sealing effort will be the task which paces the job, since it is required that all blocks installed during a work shift have a backer rod installed (if necessary) and the joints sealed by the end of the shift. The entire thrust of these requirements is to attain and maintain a very high level of placement competence and quality of installation.

If night work is required, the CONTRACTOR shall provide adequate portable lighting for use at the work site before dawn and after dusk. For EMAS installation and finishing work, six large self-contained four-bulb light plants, such as the Allmand MLT 3060 or similar, is the minimum.

Depending upon the time of year/midnight sun illumination at the time of installation, this requirement may be reduced or waived by the EMAS block manufacturer's representative on site.

Before any shut-down of contract operations, all equipment and materials used at the work site shall be moved by the CONTRACTOR to the designated airport mobilization site, to assure safe aircraft operations between the contractor's work shifts.

Initial receiving operations at the staging area can be at any time allowed by the airport until installation commences. Upon commencement of block installation receiving operations would be expanded to include contractor-supplied access control, which must be coordinated with the work periods at the work site.

The CONTRACTOR is responsible for setting up the staging area and providing access control, a dumpster, all trash collection and rubbish removal, portable lavatory, and all other personnel requirements for the duration of this project. Control of Foreign Object Damage (FOD) construction materials (block packaging materials, paper wrappers, hand tools, small parts, etc.) that are used during the installation of the EMAS is always of concern to an airport and must be controlled. It will be necessary for the CONTRACTOR to provide covered containers to hold all construction debris and refuse at the worksite and/or airport property.

The sequence for installation of the EMAS will be as follows:

- Excavation and placement of the concrete anchor beam
- Survey of the anchor beam to confirm exact stationing of the center and back of the debris deflector
- Installation of jet blast debris deflector
- Mark-out of installation grid (centerline, sidelines, rear edge line, and every block corner with a grid system)
- Installation of the EMAS blocks including
    - Placement of backer rod material into block joints as needed
    - Installation of polycarbonate angle material along perimeter
    - Installation of high and low perimeter block vents (sides and back of bed)
    - Install seam seal tape over joints and backer rod and around vents
    - Install side coating
- Complete any "punch-list" work
- Painting of safety area markings
- Site clean-up and demobilization

Specific works are as detailed on the following pages. Note: where this Statement of Work conflicts with the contract drawings, the contract drawings shall govern.

555-3.4 RECEIVING AND LAYOUT FOR RUNWAY

RECEIVING

The contractor, at a staging area designated by the Airport, will receive from its supplier ESCO the containers containing pre-cast EMAS blocks. The staging area will normally be in close proximity to the work site at a location selected by the airport. "Receiving duties" are generally limited to acknowledging the container delivery by signing the trucker's delivery ticket and escorting the trucker to and from the drop-off point. Prior to the start of block installation, all of the EMAS blocks will arrive at the airport.

Blocks will be shipped in shipping containers. Blocks shipped in advance of installation will be stored at the staging area and will be left secured in the containers. The EMAS blocks are generally shipped

stretch-wrapped on 4-ft. (1.219m) x 4-ft. (1.219m) pallets, but some blocks will be placed on 40" x 48" pallets to maximize the shipping container loading.

LAYOUT

NOTE: The paved surface upon which the EMAS blocks are to be placed must be in compliance to the grade and smoothness requirements of Paving Specification P-401 of this contract and to the slope requirements set forth in the project drawings prior to the block grid layout and/or placement of any EMAS blocks. ESCO personnel will double-check the surface using a straightedge as outlined in the P-401 specification.

Careful layout of extended runway centerline, sides and back edges of the bed rows and steps shall be augmented by field marking one corner alignment point for each of the 2,478 blocks (Runway 7 DE) and 2,310 blocks (Runway 36 DE). Because the blocks are not designed to be altered in the field, the field marking for block corners will be crucial for correct block placement, while edge layout lines will provide side and back block placement guidance. A surveyor, licensed in the state in which the EMAS is being installed, shall establish the control points for field layout marking lines. These control points shall establish the extended runway centerline through the EMAS, EMAS bed perimeter, and interim points both perpendicular and parallel to runway centerline within the confines of the EMAS bed on a 20.25 ft. x20.25 ft. grid pattern within a tolerance of +/- 1/8 inch.PKs shall be used to mark these points. The entire grid layout must be completely installed and accepted by ESCO before any blocks are installed. NOTE: Prior to establishing the points perpendicular to runway centerline, check with ESCO to ensure the debris deflector has been satisfactorily installed and accepted. The grid points will use the back of the deflector channel as the reference base. For marking the grid lines, the CONTRACTOR should use a durable marking system. Chalk lines and other such marking systems will not remain visible after the large amount foot and vehicular traffic associated with this installation. Experience has shown that a white, painted 1/8" string line grid on the pavement with block heights painted in each box appears to be the simplest and most effective method. A walk behind spray paint unit is recommended and works best in windy conditions. It is very important to note that Jet Blast Resistant coated EMAS blocks cannot be altered for field adjustments of block height, width or length.

LAYOUT LABOR FOR RUNWAY EACH DEPARTURE END

Total Men		Days	Area
2	Survey Crew	2	EMAS site

LAYOUT EQUIPMENT FOR EACH DEPARTURE END

- Horizontal Survey Equipment with 1/8- inch (plus or minus) accuracy over the area occupied by the EMAS Bed.
- Surveyor's choice of waterproof and durable grid marking devices**, however, all major points (20.25' grid intersections, rear corner and centerline point) shall be marked with PK nails .**

555-3.5 INSTALLATION PHASE FOR EACH RUNWAY DEPARTURE END

The CONTRACTOR will be responsible for moving shipping containers or just pallets to the EMAS installation site, as they are needed. The CONTRACTOR will unload the EMAS blocks and installation materials using a pallet jack and forklift. Great care must be taken when off-loading the EMAS blocks to prevent damage. The sides of the EMAS block are particularly vulnerable. Forklift load guards shall be covered with a cushioning material (foam or carpet) to help protect the EMAS blocks. Any foot traffic atop

the installed blocks must be minimized. Anyone walking on the bed must have soft-soled shoes with no sharp heels (Sneakers or flat-soled boots preferred). At no time shall any vehicle be allowed to drive on the EMAS.

The jet blast debris deflector supplied by ESCO must be installed before the block layout grid is started and before any blocks are installed. This will protect the runway side of the blocks, and provide a starting point for the grid layout. The primary task involved in the installation of the two-piece Debris Deflector sections will be drilling about 220 each 11/16" diameter x 5" deep holes in the concrete Anchor Beam and the installation of grout-in-place threaded anchors into those holes. The holes must be clear of dust, debris and water. After the anchors are installed, the aluminum Debris Deflector sections are set into position by hand and secured with 3/8" size hex head bolts threaded into the concrete anchors. Due to its frangible nature, people must avoid stepping on the deflector. The deflector comes pre-marked with "NO STEP". Prior to placement of the debris deflector sections, a bead of 100% silicone caulk shall be applied to the surface of the grade beam such that the channel and panel sections of the deflector receive a continuous seal from one edge to the other.

BLOCK PLACEMENT

Stretch wrap and plastic padding used to protect the blocks during transit will be removed and collected at the work site and properly disposed of off-site. Blocks less than 6 inches in height maybe placed into position by hand. These lower height blocks have a maximum weight of 200 pounds but because of their size require four people to lift (one person per block corner). Blocks greater than 6 inches in height will then be placed into position using one of the four (4) Contractor Supplied forklifts. The forklifts used shall be solid tire, warehouse type trucks with side shift capability and low profile forks 42" in length. In no case shall the fork length exceed 48". Each block will be pushed into its final position as marked on the pavement grid either by hand or using a forklift with a push plate to minimize joint spaces. The push plate adapts to standard forks and one push plate will be supplied by ESCO.

NOTE: The push plate should rarely be used. The blocks will slide easily into place within the first 20 seconds after coming into contact with the hot Asphalt Cement adhesive. Improper usage of the Push Plate may damage otherwise good blocks.

Immediately prior to actually placing blocks into position, a hot asphalt cement augmented with a crack sealing additive (25% by volume) shall be applied to the area where the block will be placed at a rate of approximately 1.75 to 2.0 gallons per block and a temperature ranging from 200^0F to 375^0F. The hot asphalt cement/crack sealer coating is the bond or anchor device between the overrun surface and the EMAS blocks. The asphalt cement, while still hot, acts as a lubricant between the block and the existing pavement so that blocks will slide easily into their final position when pushed. ESCO's experience has shown that the total elapsed time from when the hot asphalt cement is placed to when the block must be in its final position is approximately 20 to 25 seconds, depending upon ambient temperatures. After that time, the asphalt cement will have cooled sufficiently to bond the block to the pavement and it will not slide easily. If this occurs before the block is in the correct position, the block will have to be removed and replaced with a new block. **An adhered block cannot be removed without being destroyed.**

NOTE: All blocks have a particular orientation when installed. The backside of the block (the side away from the debris deflector) has the nominal height of the block, in inches, marked on that side. The forklift operator should always be facing the side of the block when picking up the block for placement. The block side with the serial (or batch) number faces the runway. The forklift slot in the tray shall be oriented when the block is placed so that it is perpendicular to the runway centerline.

Block spacers, loaned by ESCO, are inserted between the blocks during the block placement process in order to provide a positive control on the gaps between the blocks while the hot asphalt cement is cooling

and to simplify the process of block alignment. Once the hot asphalt cement is set, individual spacers are removed and reused.

As the first row of blocks next to the anchor beam is completed, the appropriately sized backer rod is inserted into the joint between the blocks at a minimum depth of approximately 5/8-inch from the top of the block, and then caulked. (Note: only the front of the first row is caulked with the Debris Deflector. All remaining block rows are seam sealed. It is a requirement that all installed blocks have backer rod installed (where necessary) and be seam sealed by the end of the work shift. For every vertical side and back row joint between blocks, high and low vents will be installed and caulked in the step riser before the block installation.

Next, a side seal will be adhered to all vertical sides of the completed bed along with 2 inches of overlap onto adjoining horizontal block surfaces.

Finally, the appropriate pavement marking paint will be applied in accordance with a separate specification. This last painting phase consists of applying marking paint to indicate the EMAS arrestor bed as unusable pavement. The CONTRACTOR will supply the marking paint, and any reflectorized beads to be used with it, and all labor under a separate pay item.

Lastly, the empty pallets are neatly stacked, banded and loaded back onto containers by the CONTRACTOR for shipment back to the EMAS production facility. Note that some blocks will be damaged during transport, off-loading and installation. The CONTRACTOR must exercise care to minimize these losses for blocks under his care. The CONTRACTOR is responsible for removal, of and disposal and payment foray damaged blocks or installation material. Extra pallets of good blocks left over at completion of installation will be stacked, corner-protected, plastic-wrapped, and re-loaded into shipping containers by the CONTRACTOR for transport back to ESCO. Backhaul of these materials is not the contractor's responsibility.

DEBRIS DISPOSAL

It is the CONTRACTOR'S responsibility to ensure all stretch wrap, plastic padding, and cardboard corner protectors (packing material) used to protect the blocks during transit, and all other debris generated by this project be collected at the work site, including the staging area, and properly disposed of off-site. All debris transport and disposal shall be in accordance with all applicable federal, state and local regulations. Recycling of materials, especially cardboard products, is strongly encouraged.

While within the aircraft operations area, care must be taken to ensure that all debris is collected and stored in covered containers to mitigate Foreign Object Damage (FOD) to aircraft. The cardboard spacers shipped between the blocks need to be collected, stacked and banded for return shipment to ESCO. Empty pallets will also be packaged in this manner for return shipment.

555-3.6 INSTALLATION LABOR FOR EACH RUNWAY DEPARTURE END)

Total Men	Person	Installation Days	Area	Responsibility
1	Foreman	17	Work Site	Coordination and Supervision
2	Surveyors	2	Work Site	Beam check and Grid Layout
1	Truck Driver	14	Work Site & Staging Area	Transport Blocks and Materials to/ from Staging Area and Installation Site, clean-up
4	Forklift Operators	14	Work Site	2-Unload truck/push blocks and 2-Installblocks with forks, clean-up
4	Laborers	16	Work Site	Operate Pallet jack during shipping container loading and unloading, Remove and dispose of shrink wrap, collect and dispose of padding between blocks, Install debris deflector, apply hot asphalt, Install block, vents, etc.
6	Caulkers/Tapers	14	Work Site	Install backer rod, seam seal, vents and caulk and side coating

555-3.7 INSTALLATION EQUIPMENT FOR EACH RUNWAY DEPARTURE END

Total Equipment	Equipment	Installation Days	Area
4	*5000# Pneumatic Tire Forklift	13	Work Site
1	Push Plate **(ESCO supplied)**	13	Work Site
1	Tractor to move shipping containers to work site (Potentially optional)	13	Work Site & Staging Area
2	**Pallet jacks	13	Work site
1	Asphalt Cement melting unit of sufficient capacity with buckets or pump and hose	13	Work Site
6	Light plants with fuel (If needed)	17	Work Site
1	40 cu yd dumpster (covered) for damaged blocks and trash	17	Work Site
As required	Caulk application equipment	14	Work Site
As required	Debris Deflector installation tools	1-2	Work Site

* All forklifts must have lateral load shift capability.
** Pallet jacks shall meet ESCO specifications.

Note: To the maximum extent practical, all equipment should be on site at the start of the installation phase to insure that it will be available when needed.

555-3.8 ADDITIONAL CONTRACTOR SUPPLIED TOOLS AND MATERIALS NECESSARY FOR INSTALLATION WORK

In addition to the larger equipment shown in the above table, Contractor will be responsible for personal protective equipment for workers along with survey equipment, temporary pavement marking paint, PK nails, 1/8 inch string lines, utility knives, socket sets, masonry drills and bits along with their power supply (generator or air compressor), caulk guns (battery powered electric recommended),and other basic hand tools and cleaning supplies commonly found in the toolboxes of construction crews doing airport work.

555-3.9 COMPLETE LIST OF ESCO SUPPLIED MATERIALS

Material	Quantity
Side Vents	Approx. 300
Jet Blast Debris Deflectors	20 Each end
Jet Blast Debris Deflector Anchors	220 anchors each end
Seam Seal& Adhesive	20,000 Lin Ft (RW 7) 18,000 Lin Ft (RW 36)
Side Coating& Adhesive	1,700 Lin Ft (RW 7) 1,900 Lin Ft (RW 36)
Backer Rod (¾", and 1") Closed-Cell polyethylene foam	1,100 ft. ¾" 600 ft. 1"
Sealant, Urethane Non-Self-Leveling Caulk	72 cartridges each end (10.1 oz size)
Polycarbonate 2" x 2" x 4" Plastic right angle pieces	150 each end
Asphalt Cement and a special modifier , used to adhere the blocks to the pavement	4,620 gallons (RW7) 5,000 gallons (RW 36

If there are any questions regarding this information please contact ESCO Project Manager, Jim Bayley, at 856-241-8620 ext. 456, james.bayley@zodiacaerospace.com

For quotes regarding the EMAS system, please contact ESCO Regional Director, MahamaneTouré at 856-241-8620 ext. 482, Mahamane.Toure@zodiacaerospace.com

555-3.10 SUGGESTED CONSTRUCTION SCHEDULE FOR EACH RUNWAY

DAY	ACTIVITIES
1	Surveyors check grade beam. Laborers start debris deflector.
2	Surveyors establish grid layout points. Laborers mark grid.
3	Train seam sealers/side coaters, Caulkers & Forklift Operators, install row 1
4-16	Install blocks, backer rod, tape, seam seal, side coating, side vents, and caulk.
17	Inspection/Punch list and clean up.

555-3.11 QUALITY CONTROL. Contractor must place and finish the EMAS bed under the continuous surveillance inspection and guidance of the EMAS manufacturer's technical support, following the EMAS installation specification manufacturer's Statement of Work and Quality Control Plan as approved by the Engineer.

555-3.12 OPERATION AND MAINTENANCE MANUALS AND WARRANTY. Provide in accordance with subsection GCP-60-10, and AC 150/5370-10, Section 90, subsection 90-10, Construction Warranty.

METHOD OF MEASUREMENT

555-4.1 This item shall not be measured for payment. The Engineer's acceptance constitutes measurement.

BASIS OF PAYMENT

555-5.1 Payment shall be made at the contract unit price per lump sum**.** No separate payment will be made for oversight and guidance by ESCO technical support including training and inspection by the ESCO field representative, operation and maintenance manuals, and warranty. These items are subsidiary to the complete and acceptable EMAS Bed installation.

Payment will be made under:

Item P-555a (1) Install EMAS Bed (Runway 7) – per lump sum
Item P-555a (2) Install EMAS Bed (Runway 36) – per lump sum

MATERIAL REQUIREMENTS

ASTM D 946 Asphalt Cement for Use in Pavement Construction

ITEM P-556 EMAS SNOW REMOVAL EQUIPMENT

DESCRIPTION

556-1.1 This item shall consist of furnishing one (1) unit of snow removal equipment (SRE) compatible with an Engineered Material Arresting System (EMAS) in accordance with these specifications, equipment manufacturer's requirements, and EMAS manufacturer's requirements. This item shall include all equipment and necessary attachments, delivery to the airport, manufacturer's minimum one (1)-year warranty, maintenance training, and operational training for airport personnel to be held at the airport.

This item will also provide a trailer for the hauling of the equipment (Type I only).

Anticipated uses and/or features of this machine: This Snow Removal Equipment is to be used on Engineered Material Arresting Systems (EMAS) to remove snow that affects NAVAIDS. The equipment provided shall be a machine with a blower that is suitable for operating on the EMAS bed itself

The vehicle shall be ready for operation upon delivery.

556-1.2 TRAINING.

1. Maintenance Training. Included is the transportation, lodging and meals for one (1) airport representative for a minimum of two (2) days of training, at the factory location for operation, maintenance, and repair of the equipment to be provided, scheduled at the Owner's convenience.

2. Operational Training. Included in the cost is one 8-hour hands-on training session, held at Kodiak Airport, to be scheduled at the Department's convenience and acceptable to the factory technician.

556-1.3 WARRANTY. The vehicle shall carry a minimum one (1) year warranty on the entire machine, including both the snow blower, loader and trailer. Bidders shall supply any information and pricing for extended warranties.

MATERIALS

556-2.1 EQUIPMENT.

To evenly distribute the weight of the machine below the maximum operating ground pressure, a track system is recommended. The machine will be able to access the EMAS through use of an **eight foot wide** equipment ramp installed on the front of each EMAS.

1. **Recommended Casting Distance: 75 (22.9) or greater** ft (m) @ Snow weight. of **25 (400)** lb/ft^3 (kg/m^3)

2. **Maximum Machine Operating Ground Pressure 3.0 (2109)** psi (kg/m^2)

3. **Unique Equipment Requirements.** To limit accidental damage to the system while removing snow, the snow blower height should be set no less than 4" above the ground surface. As stated in AC150/5220-20, the equipment manufacturer shall perform tests to ensure the machine meets this specification. Along with those tests, the manufacturer shall supply a calculations sheet showing that the total ground pressure for the equipment, operator, equipment fluids, track system and snow blower does not exceed 3.0 psi.

4. A multipurpose bucket attachment compatible with the Type I machine shall also be supplied.

5. A highway-legal double-axle trailer shall also be supplied with the Type I machine. The trailer shall have a low-height, gravity-tilt deck of sufficient length to accommodate the Type I machine and have a GVWR of 14,000 lb. The trailer shall have full lighting and electric brakes, and be equipped with a pintle hitch to be towed by ¾ to 1 ton vehicle. Contractor shall confirm trailer color with the Department prior to ordering.

Example Type I Equipment:

Terex PT-30 Posi-Track All-purpose Crawler with optional dual stage Erskin 1600 snowblower	Tractor manufactured by: Terex 840 Lily Lane, Grand Rapids, Michigan Phone: 800-346-5954 Snow Blower Manufactured by: Erskine Manufacturing Company 121 Bradley Blvd., Erskine, Minnesota Phone: 800-437-6912
Kubota L40 with L2195 & Soucy Track	Kubota Tractor Corporation Customer Satisfaction 3401 Del Amo Blvd Torrance, CA 90503 Phone: 888-458-2682 Soucy Track 5450 Saint-Roch Street PO Box 400 Drummondville, Quebec J2B 6W3 CANADA
John Deere 4520 Tractor with Frontier SB2176 & Mattracks TAOA5000	Deere & Company World Headquarters One John Deere Place Moline, Illinois 61265 Mattracks 202 Cleveland Ave E Karlstad, MN 56732 877-436-7800

6. **MATERIALS**. Materials used on a carrier vehicle (vehicle) shall conform to the specifications listed in this specification and appropriate sections of Title 49, Chapter III, Subchapter B - Federal Motor Carrier Safety Regulations (Title 49). When not specifically listed, materials shall be of the best quality available for their intended commercial use. Component parts shall be new and free of all defects and imperfections that could affect the serviceability of the finished product.

7. **DESIGN**. Equipment shall be developed in accordance with the best engineering practices available. This includes the incorporation of ergonomic designs specifically directed at the vehicles cab environment. Vehicle design shall include current state-of-the-art procedures that consider improved

cab visibility, communications systems, interior lighting and the mitigation of noise and vibration. Design and installation of equipment shall permit easy accessibility for maintenance and service. All vehicle stress points shall be designed to distribute and dissipate shock forces.

8. **CONSTRUCTION**. Vehicle construction shall provide maximum protection against structural member failures. Equipment shall withstand the cold, moisture, strains, jars, vibration, and other conditions that are likely to be encountered during operation. All components and assemblies shall be free of hazardous protrusions, sharp edges, cracks, or other elements which might cause injury to personnel or damage to equipment. Location of all oil, hydraulic, and air lines and electrical wiring shall be in protected positions properly attached to the frame or body structure. Wherever these lines pass through structural members, they shall be protected with looms or grommets except where a through-frame connector is necessary.

9. **CHASSIS**.

   a. **General**. The design of the vehicle chassis shall be based on an all-wheel drive concept for optimized performance and safety. It shall have power assisted steering and a transmission with suitable load ranges to accommodate normal operating conditions. A pintle hook shall be permanently attached to the rear frame structure capable of towing a vehicle. All installed parts and accessories necessary for the safe operation of the vehicle shall conform to applicable provisions of Title 49.

   b. **Structural Members**. The frame shall be made of either pressed or structural steel channel and reinforced as required to prevent distortion under maximum load conditions. All frames and stiffeners shall be treated with a corrosion inhibitor and shall be primed and painted before assembly.

   c. **Weight Distribution**. The gross vehicle weight of the vehicle shall essentially be distributed equally over its axles. Under normal operating conditions, there shall not be more than a 20 percent variation in weight on any axle. The center of gravity shall be kept as low as possible under maximum load conditions.

10. **ENGINE**. The vehicle engine shall be of internal combustion, gasoline or diesel design having a minimum of four cylinders. It shall be able to meet the performance characteristics specified herein on commercial grade fuel. Dual engined vehicles shall use a common fuel. The engine shall develop sufficient torque and horsepower to meet its normal operational requirements without exceeding the no-load speed at the peak of its certified gross brake horsepower curve. Engine noise and vibration can be reduced in the vehicle cab by minimizing the number of engines for the various power requirements and by placing them behind or below the cab.

11. **COOLING SYSTEM**.

   a. **General**. The engine cooling system shall be based on either a liquid or forced air design. Internal temperatures shall be controlled by a by-pass thermostat that regulates the flow of engine coolant. Even upon failure of the thermostat, the design of the system shall allow the engine to continue temporary operation without overheating. Drain cocks shall be installed at the lowest point of the cooling system and at other points necessary to completely drain the system.

   b. **Coolant Temperatures**. Coolant temperatures shall not exceed 212°F (100°C) nor be less than 140°F (60°C) when operated in ambient temperatures during snow removal operations. In areas which frequently experience temperatures below -40°F (-40°C), cooling system heaters, oil pan heaters, lubricating oil heaters, battery block heaters, and vapor start systems are recommended (see Appendix 2 of AC 150/5200-30).

12. **FUEL SYSTEM**.

a. **General**. The fuel system shall comply with Title 49 and be designed to eliminate the possibility of vapor lock. It shall include a carburetor or fuel injector, choke system (manual or automatic), fuel pump, fuel strainers, dry filter type air cleaners, fuel lines, valves, drains, and other accessories required to provide a complete operational system.

b. **Fuel Tank(s) and Lines**. Fuel tank(s) shall have the capacity to supply fuel continuously to the engine for a period of not less than 8 hours while it is operating at its rated horsepower under normal conditions. If dual tanks are used, the supply system shall be designed to ensure an uninterrupted flow of fuel to the engine. Fuel lines shall be securely fastened in place, installed to prevent chafing or strain, and protected by grommets where lines project through metal apertures. Each fuel tank is to be equipped with an accessible bronze or brass drain plug or a quick drain.

c. **Fuel Filler Pipe**. The fuel filler pipe shall be located in an accessible location outside of the vehicle cab. A light chain shall be attached near its opening and to the filler cap to prevent loss of the cap.

d. **Air Cleaner**. The air cleaner shall be of a two stage design. The first stage incorporates a centrifuging pre-cleaner while the second consists of a dry type replaceable paper filter. It shall display an indicator that shows when the dry type paper filter needs servicing. The connection between the air cleaner outlet(s) and the engine intake(s) shall be waterproof and dust tight. The air cleaner intake shall be positioned in a manner to discourage the ingestion of snow and other contaminants, e.g. within the hood cavity.

13. **EXHAUST SYSTEM AND MUFFLER**. The engine shall be equipped with an efficient and safe exhaust system including mufflers. Its location shall minimize noise and exhaust gases entering the vehicle cab under all operating conditions. Further noise reductions by noise suppression materials, such as muffler insulation, is encouraged. Horizontal portions of exhaust systems shall be protected, whenever possible, from corrosive agents and fuel spills. Exhaust systems shall be positioned under the vehicle in a manner to minimize contact with slush and snow. Muffler(s) are to be made of aluminum, stainless steel, or materials coated with ceramics. Devices shall be installed to prevent snow and slush from entering vertical exhaust stacks.

14. **GOVERNOR**. Engine speed shall be regulated by a governor set to provide the maximum operating speed recommended by the engine, driveline, and power train manufacturers.

15. **LUBRICATION**. An engine's lubricating system shall be equipped with standard production fittings and accessories. Engine oil filter(s) shall be of either full-flow or by-pass design with either able to accept commercial replacement elements. All engine(s) shall receive lubrication prior to delivery with lubricants designated for use under ambient temperature conditions at the point of delivery. The unit(s) shall be tagged to identify the proper lubricants and their temperature ranges.

16. **ACCESSIBILITY**.

a. **Component Location**. Engine and chassis components shall be positioned to allow easy access for inspection and maintenance purposes. Components that historically present maintenance problems or those that have the potential to cause operational problems should particularly be located in unobstructed areas. Locks, controls, and fasteners shall be designed to prevent over-torquing.

b. **Cover Plates**. Cover plates shall be equipped with either quick-disconnect fastenings or hinges.

17. **TRANSMISSION**. Transmission and vehicle manufacturers shall provide an application approval, at the time of vehicle delivery, which states the transmission is suitable for use in the vehicle as configured. The transmission shall operate smoothly and efficiently and be capable of transmitting the maximum gross torque generated by the engine to the drive wheels through all gear reductions. Drive

trains shall be in conformance with SAE requirements and shall be designed to minimize the number of joints. Transmissions may be either manual or automatic as follows:

a. **Manual**. This type of transmission shall have a clutch assembly rated to match the expected load ranges encountered under normal operating conditions. The gear selector shall clearly identify gear positions.

b. **Automatic**. Automatic or non-manual transmissions are either hydrostatic (with or without transfer case), automatic powershift, standard powershift, or fully automatic. Designs utilizing torque converters shall have a suitable torque ratio for the expected load ranges. The torque converter shall not operate at less than 70 percent efficiency. The gear or range selector shall have forward, neutral, and reverse positions clearly identified.

18. **TRANSFER CASE**. The vehicle and transfer case manufacturers shall provide an application approval at the time of vehicle delivery that states the transfer case is suitable for use in the vehicle, as configured. Transfer case assemblies shall provide positive drive to the front and rear axles and be of optional single or multi-speed design. Three proven alternatives are the manual front axle disconnect type, the center differential with manual or automatic lockout type, or an overriding clutch type, any of which may be selected by a purchaser as an option. The transfer case may be a separate unit mounted independently or integrated with the transmission.

19. **AXLES**. The axle and vehicle manufacturers shall provide an application approval at the time of vehicle delivery that states the front and rear axles are suitable for use in the vehicle, as configured. The axle manufacturer's published rating shall at the least be equal to the load imposed at ground level when the vehicle is at its rated gross vehicle weight (GVW). Each non-steering axle shall be equipped with a retarding type device to ensure a torque transfer to each wheel having traction. When appropriate, manual lockout controls shall be located in the vehicle cab. The torque capacity of each axle and differential shall be at least 10 percent in excess of the maximum torque that the axle may experience under any GVW operating condition. The power transmitting shaft on the front steering axles shall incorporate steering joints that do not produce objectionable steering characteristics while the vehicle is operating on uneven surfaces.

20. **BRAKE SYSTEM**. A vehicle service and emergency braking systems shall meet Title 49 requirements for vehicles of similar design. These systems, whether air, hydraulic, or of another design, shall be complete with all necessary equipment to safely control, stop, and hold a fully equipped vehicle under all normal operating conditions. Both systems shall be readily accessible for external adjustment.

21. **STEERING MECHANISM**. The vehicle shall have a hydraulic or power assist steering mechanism which is operated from the driver's seat. During normal operations, the mechanism shall be capable of controlling the vehicle with all equipment operating. The design of the steering mechanism should, in the event of a power assist failure, be capable of safely bringing the vehicle to a park position from the maximum design speed allowed on the airport.

22. **SUSPENSION SYSTEM**. Vehicles shall be equipped with a current production model suspension system having a minimum rated capacity equal to the GVW of the carrier vehicle. System capacity may be determined by taking measurements from ground level with the vehicle loaded to its rated GVW and the attached equipment in its storage position. When required, front and rear axles shall have auxiliary suspension springs. Manufacture's capacity ratings may not be raised to conform to the requirements of this specification. The suspension system shall exhibit no permanent set after the load is removed.

23. **WHEELS, RIMS, TIRES, AND TUBES or TRACKS**

a. **Wheels**. Rim and tire ratings shall conform to The Tire and Rim Association's published recommendations.

b. **Tires**. Each tire shall have a rated carrying capacity at least equal to the loads imposed on them by a fully loaded vehicle measured at each wheel. Tires on each axle shall be of the same size, except where dual tires require different sizes, and they shall have an aggressive tire tread. Tires (and tubes when applicable) shall meet the first line commercial grade requirements for the speed and type of service required. The front and rear tread widths shall not vary by more than four percent.

c. **Spare Rim/Tire**. Each rubber tired vehicle shall be equipped with a spare rim and tire set. If the vehicle possesses two or more separate and distinct tire and wheel sizes, the vehicle manufacturer shall provide one rim and tire set for each size.

d. **Tracks.** To meet the ground pressure requirements, a track system is recommended. The vehicle shall be equipped with a rubber track undercarriage that transfers machine weight to the ground in an effort to reduce ground pressure and provide high floatation. It shall have an elevated internal positive drive. The track shall be designed to prevent surface damage while at the same time providing gripping traction and having the ability to hug the ground. Any special tools required to adjust the tensioning of the undercarriage shall be included as part of this bid package. The undercarriage shall not require daily maintenance.

24. HYDRAULIC SYSTEM.

a. **General**. The hydraulic system shall consist of appropriate rams, pumps, piping, fittings, valves, controls, fluid reservoirs and filters, coolers, and other parts essential to its full operation. The system shall be capable of hydraulically positioning equipment through the entire range of its design limits. It shall be capable of operating all controls simultaneously without a noticeable reduction in power response. All hydraulic controls shall be located in the vehicle cab. The system shall be ruggedly constructed and able to withstand all loads imposed on it without relying on the use of mechanical locks. Filters within the hydraulic system shall conform to the Society of Automotive Engineers (SAE) Information Report, SAE J 931- Hydraulic Power Circuit Filtration.

b. **Pump and Power Takeoff**. The pump shall be ruggedly constructed and powered by the engine through a crankshaft power takeoff. It shall have sufficient capacity to operate the hydraulic equipment specified herein under all operating conditions and speeds.

c. **Lines and Fittings**. Only commercial quality hydraulic lines, hoses, and fittings that are capable of withstanding system working pressures under load are acceptable. Hydraulic hoses shall have a bursting pressure of three times their rated working pressure. The use of fittings, joints, and connections shall be kept to a minimum.

d. **Fluid Tank**. The hydraulic fluid tank shall have a filler neck consisting of a strainer, drain plug, shutoff valve, air vent, and baffles. Its capacity shall exceed the volume of oil required for the operation of any combination of attachments by 50 percent, and it shall have a hydraulic fluid quantity level measurement.

e. **System Winterization**. The hydraulic system shall meet the same low temperature requirements as the engine coolant system.

25. ELECTRICAL SYSTEM.

a. **General**. The electrical system shall be negatively grounded and installed in accordance with current state-of-the-art practices and appropriate Federal requirements. All parts of the electrical system shall be waterproof, easily accessible, securely mounted, and protected against extreme temperatures, physical damage, snow, oil, and corrosion. All electrical circuit wiring shall be made of stranded conductors with a capacity exceeding the anticipated maximum circuit loading.

Insulation of electrical wiring shall be equal to the recommended standards established for insulation materials by the Society of Automotive Engineers (SAE).

b. **Power Supply**. The carrier vehicle shall be equipped with a self regulating electric alternator having an output capacity that exceeds the anticipated electrical load.

c. **Batteries**. Batteries shall be securely mounted and adequately protected against physical injury, water, chemicals, and exhaust heat. They shall be properly sized based on vehicle manufacturer recommendations and be readily accessible for change out and for other purposes. Enclosed battery compartments shall have adequate ventilation. Battery capacity (cranking amps, voltage, reserve power, continuous/deep cycle demand) shall be compatible with the size of the engine and the anticipated electrical load expected under normal operating conditions. Minimum battery size to start the engine shall be rated at 120 ampere-hours over a 20-hour discharge rate.

d. **Starting Device**. The vehicle shall have an electrical starter that shall not introduce a voltage drop sufficient to affect adversely the ignition system. It shall be equipped with an overload protection device. One of the following electrical/starting systems shall be provided:
(1) 12 volt electrical and starting.
(2) 12 volt electrical/24 volt starting.
(3) 24 volt electrical and starting.

e. **Ignition System**. Ignition systems for gasoline engines shall be of either electronic or distributor and coil design. Diesel engines may be equipped with or without glowplugs, depending on make, model, and manufacturer. Under extreme weather conditions, a block heater should be considered for improved ignition.

f. **Sounding Device**. The vehicle shall be equipped with an audible sounding device that is activated when the vehicle is shifted into reverse gear.

26. LIGHTING SYSTEM. The lighting system, including reflectors and clearance lights, shall be standard equipment currently used by the manufacturer. Task-oriented lights should be capable of lighting those areas to be cleared. The system shall include:

a. **Headlights**. The carrier vehicle shall be equipped with two or more sealed-beam quartz-halogen or equivalent headlights with upper and lower driving beams and a foot or hand controlled switch for beam selection. Snow removal attachments and other accessories should not be positioned so as to obstruct the illumination of these lights.

b. **Dual Tail lights and Dual Stop lights**. Each vehicle operating on airport property shall be equipped with dual tail lights and dual stop lights. The stop lights shall be activated whenever service brakes are applied.

c. **Reflectors, Markers, and Clearance Lights**. This equipment shall conform to the requirements of Title 49. The clearance lights shall have commercial truck lenses.

d. **Engine Compartment Lights**. These lights shall adequately illuminate both sides of the engine(s). Location of the switches shall be in the engine compartment(s) with proper clearances so that they can be activated by operators wearing heavy winter gloves and outer garments.

e. **Backup Lights**. There shall be at least two backup lights installed at the rear of and at either side of the vehicle that will automatically be activated when the vehicle is shifted into reverse gear.

f. **Vehicle Safety Identification Lights**. The vehicle shall have a minimum of one revolving yellow beacon mounted on its uppermost part (see AC 150/5210-5B, Painting, Marking, and Lighting of Vehicles on an Airport). The light emitted from the beacon should not reflect off rearview mirrors

and into the operator's eyes. The beacon shall be steady burning with the following characteristics:

(1) low-intensity lighting with an upper limit of 400 candelas (effective) to avoid damage to night vision. The minimum effective intensity range in the horizontal plane should be at least 40 candelas but not more than 400 candelas.
(2) 360° azimuth (horizontal) coverage.
(3) peak intensity from 0°to 10°above the horizontal and reduced intensity to 1/10 of peak intensity from 10° to 15°above the horizontal.

27. OPERATOR'S CAB.

a. **General**. Carrier vehicle cabs shall be made of either metal or fiberglass construction and be of conventional, cab forward or cab-over design. They shall be fully enclosed accommodating a single operator only (half cab) or single operator plus assistant/trainee (full cab). A definite separation shall exist between the engine and operator's compartment. All non-glass surfaces, such as the floor, sides, and roof of the cab, shall have insulation to reduce exterior noise. The maximum interior cab noise measured at the operator's seat shall not exceed 85 dB under the following conditions: windows closed, heater and defrost systems at maximum operation, and carrier vehicle and equipment engines operating at maximum rated capacity. To the extent possible, the interior of the cab shall be ergonomically designed providing the operator with a pleasant working atmosphere that is devoid of the stark conditions normally associated with older equipment.

b. **Communications Equipment**. Transceivers shall be installed in carrier vehicles to establish voice communication with other vehicles, the air traffic control tower, snow control center and maintenance facilities. The vehicle cab shall be designed to provide convenient space near the operator for the installation of a pair of transceivers. Mobile radio equipment shall be supplied, wired-in, mounted in the cab, and ready to operate.

All frequencies are narrow band.

(1) One (1) Icom model A110 05 mount type XCVR (VFO) 791.10, to be set at FAA frequencies: 121.9 (Ground) & 119.8 (CTAF/Air).
(2) Two (2) Larsen NMOKHFUDPL COAX antenna cables each with one (1) PL-259 connector.
(3) Two (2) Larsen NMQB ¼ wave antennas.
(4) 2 Kenwood KES-3 speakers

c. **Fire Extinguisher**. The vehicle cab shall have at least one 2A-10BC interior mounted fire extinguisher that is readily accessible to the operator.

d. **Operator Seat**. The vehicle cab shall provide an operator seat that can easily be adjusted up and down, fore and aft, a minimum of three inches (7.6 cm) in each direction. The seat should also be capable of reducing the effect of vehicle vibration by featuring air-cushion shock absorbing seat systems or systems of comparable design. All vehicle seats shall have approved seat belts. Seats shall be fully upholstered with a good quality fabric or plastic material.

e. **Windows**. The vehicle cab shall maximize the use of glass, including the placement of panels if possible in the lower sections of door panels, to increase the operator's view of operational areas and ground surfaces. All installed glass shall be laminated and safety rated. The location and size of the windshield shall minimize visual obstructions to the operator. The windshield shall be designed to avoid snow buildup and be equipped with at least one two speed automatically operating wiper (standard or wet) that is capable of sweeping a clear view for all occupants. The windshield washer reservoir shall have a capacity of at least one-half gallon (2 liter). Fluid applicators shall be located to provide at least 75 percent coverage to the windshield.

f. **Heater-Defroster**.

(1) **Heating System**. The carrier vehicle cab shall have a heating system that is capable of maintaining a minimum interior temperature of 65°F (18°C) at an ambient outside temperature of -20°F (-29°C). Heat output shall be controllable from within the cab by a selector switch that is conveniently located to the operator. Under all conditions of heating and ventilation, the temperatures measured in the operator's immediate environment should be uniform within 9°F (5°C) (see SAE J 1503, Performance Test for Air-conditioned, Heated and Ventilated off-Road Self Propelled Work Machines).

(2) **Windshield**. Windshields and other glass surfaces in the vehicle cab used in the operation of the vehicle and or to view pavement surfaces, including rear windows if installed, shall be defrosted through a heat energy transfer system.

g. **Ventilation**. Each vehicle cab occupant should receive a minimum of 25 ft3/m (.71 m3/m) of filtered fresh air under all heating and ventilating conditions (see SAE J 1503). Cab ventilator intakes should be screened and positioned in such a manner to minimize the entry of snow.

h. **Hourmeters**. Every engine permanently attached to a carrier vehicle shall be equipped with an hourmeter that registers engine operation time from zero to 9999 hours. Hourmeters shall be prominently displayed so that they can be easily read by an operator or service personnel. The hourmeters shall be of direct read design and shall only register when the engine is running.

i. **Instrumentation**. The cab shall display an instrument panel equipped with rocker and/or toggle switches and controls (instruments) that are user friendly to operators wearing bulky winter clothing. Toggle switches, where used, shall have a minimum length of 1 1/2 inches (4 cm). Frequently used instruments shall be located in direct line-of-sight and within forearm reach of a medium-sized person sitting in the operator's position. All instruments shall be clearly identified with labels that indicate their function. Instruments should display urgency of-action lights, i.e., green for normal operation, amber for warning, and red for emergency. Instruments shall be illuminated by background lighting regulated by dimmer switches capable of providing infinitely variable lighting intensities. Circuit breakers shall be grouped for easy access and convenience. Typical instruments that report and track major functions of a carrier vehicle are as follows:

(1) **Engine**.
a) Voltmeter.
b) Lubricating Oil Pressure Gauges.
c) Coolant Temperature Gauge(s).
d) Tachometer(s) including hourmeter(s).
e) Starting Controls (including auxiliary cold start controls).
f) Hydraulic Oil Pressure and Temperature Gauge, if applicable.

(2) **Vehicle Chassis**.
a) Brake-air Pressure Gauges if required.
b) Low-air Pressure Warning, visual and audible type, if required.
c) Light Switches and Headlight Beam Indicator.
d) Speedometer with Recording Odometer.
e) Fuel Quantity Gauge(s).
f) Equipment Controls.

28. SHEET METAL COMPONENTS.

a. **General**. The carrier vehicle engine, as well as its mechanical components, shall be protected wherever possible from snow, rain and other winter elements. Body and engine enclosures shall be fabricated from aluminum, fiberglass, and steel. Self tapping bolts are unacceptable in the construction of these enclosures.

b. **Body Accessories**. The following parts and accessories are necessary for operational safety:

(1) **Steps**. Four-way safety tread design steps are required to ascend and descend certain high profile carrier vehicles. These steps, together with assist handles, shall be of ample size to ensure safe and easy access for persons wearing bulky winter clothing.
(2) **Walkway**. A four-way safety tread design walkway shall be provided, as necessary, for access.
(3) **Handrails**. Handrails shall be provided as required at all steps, walkways, and work stations. They shall be made of corrosion-resistant materials or otherwise treated to prevent corrosion.
(4) **Fenders**. All carrier vehicles shall be equipped with fenders and when determined by the operator, non-sail mudflaps to prevent wheels from throwing snow and other debris.
(5) **Drains**. Plugged or free flowing drains shall be provided at all body and compartment locations where standing water can collect. Free flowing drains shall not drain onto sensitive mechanical or electrical components or on areas anticipated to be occupied by personnel during normal operations.
(6) **Doors**. Doors shall be equipped with a positive closing mechanism and, where appropriate, a locking mechanism. Top hinged compartment doors shall be held in the open position by support arms.
(7) **Gutters**. The vehicle cab shall be equipped with gutters, located above the entrance doors, of sufficient length to span the door width and provide runoff protection to occupants either entering or exiting the cab.

29. PAINTING, MARKING, AND LIGHTING OF VEHICLES.

a. **Painting and Marking**. The vehicle shall be painted Chrome-Yellow in accordance with color tolerance charts that have been made available for FAA regional airport inspectors and key potential users in the aviation safety equipment industry (see AC 150/5210-5B).

(1) **Preparation and Finish**. The carrier vehicle and all mounted and towed equipment shall be cleaned first, then treated with a corrosion inhibitor, primed, puttied, sanded, and finally painted. The paint shall consist of not less than two coats of Chrome-Yellow polyurethane enamel having a combined minimum thickness of 7 mils.
(2) **Quality**. The finished paint shall be free of "fisheye", "orange peel", chips, runs, or other imperfections that detract from the equipment's corrosion resistance and appearance.

30. MISCELLANEOUS.

a. **Name, Service, and Instruction Plates**. All information plates shall be made of either noncorrosive metal or plastic with the information engraved, stamped, or etched thereon. Plates shall be mounted in a conspicuous place with screws, bolts, rivets, or exterior type pressure sensitive tape.

(1) **Plastic plates**. Plastic plates are acceptable only in locations that are not exposed to the elements and subject to weathering or excessive heat.
(2) **Information**. Plates shall identify make, model, serial number, and any other relevant data.

b. **Technical Publications**. The manufacturer shall furnish two sets of the following publications:

(1) **Operator's Manual**. The operator's manual includes lubrication charts and instructions.
(2) **Parts Manual**. The parts manual identifies and lists all parts, components, and sub-assemblies used in the fabrication of the carrier vehicle.

(3) **Maintenance and Service Manual**. A maintenance and service manual provides guidance to no specialists performing routine services. The manual should also describe in detail with appropriate schematics the overhaul and major maintenance procedures required to maintain the vehicle.

c. **Accessories and Tools**. The carrier vehicle shall be equipped with the following tools and accessories. They shall be kept in a secure and readily accessible enclosure that is permanently affixed to the vehicle.

(1) **Tire Tools or Track tools**.
(2) **Jack**. A jack specifically adapted to the carrier vehicle that is capable of raising it to a position where a flat tire can be changed.
(3) **Shear Pins**. A minimum of six pins shall be provided in support of each shear pin located on the carrier vehicle and its auxiliary equipment.
(4) **Specialized Tools**. Specialized tools required for routine servicing of the carrier vehicle and its auxiliary equipment.

DELIVERY

556-3.2 DELIVERY.

1. Preparation for Delivery.

a. **Shipment**. The vendor "seller" is responsible for the safe and timely delivery of the vehicle and its accessories, spare parts, and tools to the agreed place of delivery.

b. Marking. Carrier vehicles shall be marked for shipment in accordance with instructions agreed to by the purchaser.

2. Instruction and Training. The manufacturer shall, at no additional cost, furnish the services of trained personnel to the purchaser at a time and place agreed to by all parties. These individuals shall provide instructions to airport personnel sufficient for the personnel to familiarize themselves with the operational and maintenance characteristics of the vehicle and its auxiliary equipment. The period of instruction shall not be less than 24 hours.

3. Delivery Location. The equipment shall be delivered to the Kodiak Airport via flatbed truck to:

Kodiak Airport
1427 Airport Way, Kodiak, AK 99615
Owner: Alaska Department of Transportation & Public Facilities
Contact: Mr. Robert Greene, Airport Manager
Phone: (907) 487-4952

METHOD OF MEASUREMENT

556-4.1 METHOD OF MEASUREMENT

"EMAS Snow Removal Equipment, Type I" shall be measured for payment by the number of units furnished and accepted as complete units to include delivery via flatbed truck, and commissioning of the Tractor, Track system, snow blower, and bucket

BASIS OF PAYMENT

556-5.1 BASIS OF PAYMENT.

Payment for "EMAS Snow Removal Equipment, Type I" shall be made at the contract unit price for each EMAS Snow Removal Equipment furnished and accepted. No separate payment will be made for including the trailer, delivery (via flat bed truck), training or warranty as described in these Specifications.

Payment shall be made under:

Item P-556a – EMAS Snow Removal Equipment (Type I) - per Each

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.

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

610-2.11 SURFACE SEALER. Where called for in the plans, provide a liquid applied, water soluble hydrophobic pore lining impregnate that is specifically formulated to protect concrete from the detrimental effects of moisture intrusion, freeze-thaw cycles, chloride ion penetration, and deicing chemicals. Provide Pavix CCC100 manufactured by Chem-Crete, Hydrozo Enviroseal 40 by Cehmrex, or an Engineer approved product containing 40 percent silane meeting AASHTO T 259 ASTM C 642, and ASTM C 672.

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.

610-3.20 REINFORCING STEEL REPAIR. Repair reinforcing steel where rust, corrosion or abrasion has reduced the reinforcing steel cross-section area to less than 80% of its original cross-section area. The repair shall consist of placing a second bar of reinforcing steel next to the substandard bar and securing it to the original bar as outlined in Subsection 610-3.9 above. The size and length of the additional bar shall be as shown on the plans.

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 either by the linear foot or 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-610g	Steel Reinforcement – 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, 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.

620-2.4 STENCILS. Use 1/10-inch orthopedic grade plastic stencils.

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.

Use stencils for application of runway hold short markings, taxiway hold short markings, surface painted holding position signs, taxiway enhanced centerline markings, access road, and ILS markings. Stencils become property of the State. After application and approval of painted traffic markings, deliver the clean and re-useable stencils to the Airport Manager as directed by the Engineer.

Application of markings to the Engineered Material Arresting System (EMAS) shall be by hand wands. No vehicles will be allowed on the EMAS.

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, u~~Use high pressure water 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.

The pressure of the water shall be at least 10,000 psi. Pressure shall be adjusted to accomplish removal with minimal surface etching. Ultra high pressure water (40,000 psi) will not be permitted. Hydroblast equipment shall be single-vehicle, self-contained, and must have the ability to adjust cutting width as required for varying line or marking width. The equipment shall be capable of removing a minimum of 1,000 square feet per hour. Use of chemicals, grinding, sandblasting or shot blasting for removing pavement markings will not be permitted.

The contractor shall remove from the airfield all debris, waste, and by-products generated by the paint marking removal. Accumulation of residue resulting from the removal operation shall be removed as the work progresses. Disposal of all waste will be in strict compliance with all applicable federal, stste and local regulations.

Repair any damaged pavement or surfacing caused by the marking removal operation, as directed by the Engineer. Collect and dispose of all loose and water material as needed to prevent interference with drainage or to prevent dusty conditions under traffic, wind, or jet/prop blast

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.

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.~~

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
Item P-620f	Painted Marking Removal – per lump sum

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 P-621 SAW-CUT GROOVES

DESCRIPTION

621-1.1 This item consists of providing a skid resistant surface that prevents hydroplaning during wet weather in accordance with these specifications and at the locations shown on the plans, or as directed by the Engineer.

CONSTRUCTION METHODS

621-2.1 Transverse grooves saw-cut in the pavement must form a 1/4 inch wide by 1/4 inch deep by 1 1/2 inches center-to-center configuration. The grooves must be continuous for the entire runway length. They must be saw-cut transversely in the runway or blast pad/EMAS pad pavement to ~~not less than 10 feet from the runway pavement edge to allow adequate space for equipment operation~~the edge of pavement or 25', whichever is less. The Contractor must provide a grooving machine of a type equipped with diamond-saw cutting blade groove cutting head capable of making at least 18 inches in width of multiple parallel grooves in one pass of the machine. Thickness of the cutting blades shall be capable of making the required width and depth of grooves in one pass of the machine. The cutting head shall not contain a mixture of new and worn blades or blades of unequal wear or diameter. The wheels on the grooving machine shall be of a design that will not scar or spall the pavement. The machine must be equipped with devices to control depth of groove and alignment within the specified tolerances.

The saw-cut grooves must meet the following tolerances. The tolerances apply to each day's production and to each piece of grooving equipment used for production. The Contractor is responsible for all controls and process adjustments necessary to meet these tolerances.

a. **Alignment tolerance.** Plus or minus 1-1/2 inches in alignment for 75 feet.

b. **Groove tolerance.**

   (1) **Depth.** The standard depth is 1/4 inch. At least 90 percent of the grooves must be at least 3/16 inch, at least 60 percent of the grooves must be at least 1/4 inch, and not more than 10 percent of the grooves may exceed 5/16 inch.

   (2) **Width.** The standard width is 1/4 inch. At least 90 percent of the grooves must be at least 3/16 inch, at least 60 percent of the grooves must be at least 1/4 inch, and not more than 10 percent of the grooves may exceed 5/16 inch.

c. **Center-to-center spacing.** The standard spacing is 1-1/2 inches.

   (1) **Minimum spacing** 1-3/8 inches.

   (2) **Maximum spacing** 1-1/2 inches.

Saw-cut grooves must not be closer than 3 inches or more than 9 inches from transverse paving joints. Grooves must not be closer than 6 inches and no more than 18 inches from in-pavement light fixtures. Grooves may be continued through longitudinal joints. Where neoprene compression seals have been installed and the compression seals are recessed sufficiently to prevent damage from the grooving operation. Grooves may be continued through the longitudinal joints. Where neoprene compression seals have been installed and the compression seals are not recessed sufficiently to prevent damage from the

grooving operation, grooves must not be closer than 3 inches or more than 5 inches from the longitudinal joints.

621-2.23 ENVIRONMENTAL REQUIREMENTS. Grooving operations will not be permitted when freezing conditions prevent the immediate removal of debris and/or drainage of water from the grooved area.

621-2.34 EXISTING PAVEMENTS. Bumps, depressed areas, bad or faulted joints, and badly cracked and/or spalled areas in the pavement shall not be grooved until such areas are adequately repaired or replaced.

621-2.45 NEW PAVEMENTS. New asphalt concrete pavements shall be allowed to cure for a minimum of 30 days before grooving, to allow the material to become stable enough to prevent closing of the grooves under normal use. Permit new Portland cement concrete pavements to cure for a minimum of 28 days before grooving. Spalling along or tearing or raveling of the groove edges shall not be allowed.

The Engineer may allow grooving after a curing period of less than 30 days if it can be demonstrated that grooves are stable with no spalling along or tearing or raveling of the groove edges.

621-2.56 CLEAN-UP. During and after installation of saw-cut grooves, the Contractor must remove from the pavement all debris, waste, and by-products generated by the operations to the satisfaction of the Engineer. Cleanup of waste material must be continuous during the grooving operation. Flush debris produced by the machine to the edge of the grooved area or pick it up as it forms. The dust coating remaining shall be picked up or flushed to the edge of the area if the resultant accumulation is not detrimental to the vegetation or storm drainage system. Accomplish all flushing operations in a manner to prevent erosion on the shoulders Waste material must be disposed of in an approved manner. Waste material must not be allowed to enter the airport storm or sanitary sewer system. The Contractor must dispose of these wastes in strict compliance with all applicable state, local, and Federal environmental statutes and regulations

621-2.67 REPAIR OF DAMAGED PAVEMENT. Grooving must be stopped and damaged pavement repaired at the Contractor's expense when in the opinion of the Engineer the result of the grooving operation will be detrimental to aircraft tires.

ACCEPTANCE

621-3.1 ACCEPTANCE TESTING. Grooves will be accepted based on results of zone testing. All acceptance testing necessary to determine conformance with the groove tolerances specified will be performed by the Engineer.

Instruments for measuring groove width and depth must have a range of at least 0.5 inches and a resolution of at least 0.005 inches. Gage blocks or gages machined to standard grooves width, depth, and spacing may be used.

Instruments for measuring center-to-center spacing must have a range of at least 3 inches and a resolution of at least 0.02 inches.

The Engineer will measure grooves in five zones across the pavement width. Measurements will be made at least three times during each day's production. Measurements in all zones will be made for each cutting head on each piece of grooving equipment used for each day's production.

The five zones are as follows:

Zone 1	Centerline to 5 feet left or right of the centerline.
Zone 2	5 feet 25 feet left of the centerline.
Zone 3	5 feet to 25 feet right of the centerline.
Zone 4	25 feet to edge of grooving left of the centerline.
Zone 5	25 feet to edge of grooving right of the centerline.

At a random location within each zone, five consecutive grooves sawed by each cutting head on each piece of grooving equipment will be measured for width, depth, and spacing. The five consecutive measurements must be located about the middle blade of each cutting head plus or minus 4 inches. Measurements will be made along a line perpendicular to the grooves.

Width or depth measurements less than 0.170 inches shall be considered less than 3/16 inches.

Width or depth measurements more than 0.330 inches shall be considered more than 5/16 inches.

Width or depth measurements more than 0.235 inches shall be considered more than 1/4 inches.

Production must be adjusted when more than one groove on a cutting head fails to meet the standard depth, width, or spacing in more than one zone.

The Engineer may require a written report indicating the percentage of grooves that meet tolerances and may require a report indicating how many times production was adjusted. Blade wear and surface variability may require more testing than the minimum of three per day per equipment. It is expected that the Contractor will routinely spot check for compliance each time the equipment aligns for a grooving pass.

~~MEASUREMENT AND PAYMENT~~

~~621-4.1 PAYMENT FOR SAW-CUT GROOVING. Payment for saw-cut grooving will be made at the contract unit price per square yard for saw-cut grooving.~~

METHOD OF MEASUREMENT

621-4.1 Pavement saw-cut grooves will be measured either by neat line dimensions as shown in the Plans or as a single item of work. No deductions will be made for areas skipped to avoid joints or in-pavement fixtures.

BASIS OF PAYMENT

621-5.1 Payment will be made at the contract unit price or the lump sum price for pavement saw-cut grooves accepted by the Engineer.

Payment will be made under:

Item P-621a Saw-Cut Grooves - per square yard
Item P-621b Saw-Cut Grooves - per lump sum

ITEM P-640 SEGMENTED CIRCLE

DESCRIPTION

640-1.1 This item consists of furnishing and installing an airport segmented circle, according to the dimensions, design, details, and location shown on the Plans. Construct barrel-type or panel-type, as shown in the bid schedule.

If shown on the Plans, the segmented circle includes landing direction indicator, landing strip indicators, or traffic pattern indicators.

MATERIALS

640-2.1 Barrel-Type.

a. **Barrels.** Cylindrical, steel, 55-gallon, undamaged, contaminant-free, and rust-free.
b. **Primer Paint.** Zinc Oxide, raw linseed oil, and alkyd primer, meeting SSPC-Paint 25.
c. **Finish Paint.** Aviation Gloss Orange, No. 12197, meeting Federal Standard 595.

640-2.2 Panel-Type.

a. **Panels.** Sheet aluminum with a reflective covering and meeting the following requirements:

(1) Use 0.080 inch thick, alloy 6061-T6, 5052-H36, 5052-H38, or recycled aluminum meeting alloy 3105, as specified in ASTM B 209.

(2) Make each panel a continuous sheet for the length and width shown on the Plans. Furnish panels that are cut to size and shape and free of buckles, warp, dents, cockles, burrs and any other defects resulting from fabrication. Complete all possible fabrication including shearing, cutting and punching of holes prior to the base metal preparation.

(3) Treat the aluminum base metal sheets with chromate conversion coating for aluminum conforming to the requirements of ASTM B 449, Class 2. After cleaning and coating operations, protect the panels at all times from contact or exposure to greases, oils, dust or other contaminants.

(4) Cover one side of each panel with orange reflective sheeting, meeting the requirements of AASHTO M 268, Type III.

b. **Stanchions.** Perforated, galvanized, square steel tubing with the dimensions shown on the Plans and meeting the following requirements:

(1) Fabricate tube with cold-rolled carbon steel sheets, 12 gage, commercial quality, meeting ASTM A 653, coating designation G 90. Form tubes, roll to size, and weld in the corner.

(2) Perforate all members for their entire length with 7/16 inch diameter holes on 1 inch centers.

(3) Furnish members that are straight and with a smooth, uniform finish with no splices.

(4) Ensure that all perforations and cut off ends are free from burrs.

c. **Hardware and Fasteners.** Hardware and fasteners shall meet the following requirements:

(1) Gusset and splice plates shall be 1/4-inch thick steel, ASTM A 36, galvanized.

(2) Fasteners shall be hot dip galvanized, Grade 2, 3/8-inch diameter bolts; with two 1-inch diameter washers and one nut, each bolt. Provide bolt lengths as required to fasten members.

CONSTRUCTION METHODS

640-3.1 GENERAL. The site may be either on a prepared pad constructed for that purpose under separate item or on natural ground, whichever is shown on the Plans.

If the segmented circle is to be placed on original ground, clear the site of all brush and vegetation to the limits shown on the Plans and level the site.

Use material excavated for installation of barrels or stanchions as backfill. Spread excess material evenly over ground adjacent to the barrels, stanchions, or pad so as to leave the site in a neat condition.

640-3.2 BARREL-TYPE. Clean the outside of each barrel with an approved solvent and paint with 1 coat of primer paint and 2 coats of finish paint.

Cut hole maximum of 6 inches in bottom of barrel. Fill barrel one third with clean sand or gravel. Bury the bottom one third of barrel at the location and in the configuration shown on the Plans.

640-3.3 PANEL-TYPE. Prepare and assemble panels, perforated steel tubes, and hardware as shown in the Plans. Bury stanchions to the depth, at the location, and in the configuration shown on the Plans.

640-4.1 METHOD OF MEASUREMENT. Segmented circle will not be measured for payment.

640-5.1 BASIS OF PAYMENT. Payment will be made at the contract lump sum price shown on the bid schedule. Clearing of the site is paid for under Item P-151. If Item P-151 is not included in the bid schedule, clearing is subsidiary.

Payment will be made under:

Item P-640a	Segmented Circle (Barrel-Type) - per lump sum
Item P-640b	Segmented Circle (Panel-Type) - per lump sum

MATERIAL REQUIREMENTS

AASHTO M 268	Standard Specification for Retroreflective Sheeting
ASTM A 36	Structural Steel
ASTM A 653	Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process
ASTM A 924	Standard Specification for General Requirements for Steel Sheet, Metallic-Coated by the Hot-Dip Process
ASTM B 209	Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate
ASTM B 449	Standard Specification for Chromates on Aluminum
Federal Standard 595	Colors Used in Government Procurement
SSPC – Paint 25	Specification for Zinc Oxide, Raw Linseed Oil, and Alkyd Primer (Without Lead and Chromate Pigments)

ITEM P-670 HAZARDOUS AREA BARRIERS

DESCRIPTION

670-1.1 Provide barriers for use on the project under subsection 70-09, Barricades, Warning Signs and Hazard Markings. Provide each barrier complete with flasher unit and flag in accordance with the dimensions, design, and details shown on the Plans. Haul and place barriers as shown on the Plans or as directed by the Engineer. Relocate barriers as conditions warrant.

Provide additional flasher units and flags, when specified, for use on Department-supplied barriers.

MATERIALS

670-2.1 Use materials that conform to the following:

a. **Hazard Marker Barrier, Timber.** Provide construction-grade Douglas Fir-Larch with nominal dimensions of 12 inches x 12 inches and a length of 8 feet. Use pressure treated wood with a preservative salt retention of not less than 0.6 lbs/ft^3, kiln dried after impregnation, and conforming to the American Wood Preservers Bureau (AWPB) FDN Standard. Provide timbers that bear the AWPB Quality Mark of an approved inspection agency as described in the AWPB Standard. Use either oil base or latex exterior paint in colors international orange and white.

b. **Hazard Marker Barrier, Plastic.** Provide 10 inch x 10 inch by 8 foot nominal dimension portable water-ballast barriers made from high impact, safety orange and white, UV-resistant, high density polyethylene (HDPE) plastic. Provide barriers with pre-molded flag staff and flasher bracket attachment holes. Provide barriers that are designed as a modular system to allow assembly/disassembly and nesting for compact storage, and to permit the option of physically bolting multiple barriers together to provide a continuous barrier wall. Provide 6-inch x 72-inch reflective striping panel for attachment to one side of each barrier.

670-2.2 Flag. Provide heavy vinyl coated nylon, 18 inch x 18 inch flag with an integral diagonal metal or plastic stay to make the flag self supporting. Provide flag in color fluorescent orange and mounted on a ¾ inch x 30-inch staff.

670-2.3 Flasher Unit. Provide battery-operated omnidirectional flashing red light. Provide flasher unit with mounting bracket designed for the appropriate barrier type.

a. **Flasher Unit for Timber Barrier.** Meet Manual on Uniform Traffic Control Devices (MUTCD) requirements for Type A Warning Lights. Supply one set of non-standard tools, such as the on/off switch or battery access tool, for each 5 flasher units furnished.

b. **Flasher Unit for Plastic Barrier.**

Composition	High impact, polycarbonate plastic lens and base
Flashing Rate	60 flashes per minute
Brightness	6000 mcd
LED	Total of 3 red
Photo Cell	Allows for solar light to automatically shut off in higher level light conditions and turn on in lower light conditions

CONSTRUCTION REQUIREMENTS

670-3.1 GENERAL. On the top side and at opposite ends of each barrier, mount one flag and one flasher unit per manufacturer's instructions. Tether flag to the barrier.

a. **Hazard Marker Barrier, Timber.**

(1) **Preparation.** Prior to painting, notch the underside of each timber to allow for the use of a forklift. Cut two 4 inch high by 12 inch wide notches spaced 36 inches center to center, centered on the long axis of the timber.

(2) **Painting.** Apply one coat of primer and one coat of finish white color paint on all sides and the ends followed by two coats of orange finish paint to form the stripes on the sides. Paint orange stripes 24 inches wide and offset by 6 inches from one side to the next giving a "barber pole" effect.

(3) **Flag and Flasher Unit.** Mount the flag 24 inches from one end of the timber by drilling a hole 1/8 inch larger than the diameter of the staff by 8 inches deep. Mount the flasher unit 24 inches from the opposite end of the timber.

b. **Hazard Marker Barrier, Plastic.** Fill barriers with water for ballast in accordance with manufacturer's recommendations. When shown on the plans or directed by the Engineer, interlock barrier units using manufacturer recommended connectors to form a continuous wall separating the hazardous work area from aircraft movement areas. Adhere reflective striping panels to one side of each barrier.

670-3.2 DELIVERY. Deliver hazard marker barriers, flasher units, and flags to the project site prior to commencing work within the Air Operations Area.

670-3.3 STORAGE. Following completion of the project, remove flasher units and flags from the barriers. Barriers, flasher units, and flags are the property of the State. Drain plastic barriers. Deliver to a location on the Airport designated by the Engineer.

METHOD OF MEASUREMENT

670-4.1 Hazard marker barriers, complete with flag and flasher unit will be measured by the number of units furnished and accepted.

Flasher units and flags to be used on Department-supplied barriers will be measured by the number of units furnished and accepted.

BASIS OF PAYMENT

670-5.1 Payment covers all costs associated with furnishing and storing hazard marker barriers, flasher units, and flags, including tools, batteries, and incidentals.

Work required for placing, erecting, moving, and maintaining barriers is subsidiary.

Payment will be made under:

Item P-670a	Hazard Marker Barrier, [Type] - per each
Item P-670b	Flasher Unit for [Type] Barrier - per each
Item P-670c	Flag - per each

ITEM P-671 RUNWAY AND TAXIWAY CLOSURE MARKERS

DESCRIPTION

671-1.1 Furnish, install, and maintain runway and/or taxiway closure markers at the locations shown on the Plans or as directed by the Engineer. Where a new runway is built to replace an existing runway, install runway closure markers on the old runway immediately after the new runway has been opened for operations. Place markers as shown on the Plans or as directed by the Engineer. Relocate markers as required. Materials supplied under this item may be used as temporary closure markers as required in ~~section 80-04~~the Construction Safety and Phasing Plan. Illuminated panels shall become the property of the Department and shall be delivered to a location on airport property designated by the Engineer.

MATERIALS

671-2.1 Use materials that conform to the following.

a. Vinyl Mesh Panel.

(1) Panel Material. High tenacity vinyl coated polyester mesh fabric, 9 oz/yd^2, 70% closed mesh allowing water to flow through. Use 3.0 oz/yd^2 woven polyester fabric, coated after weaving with 6.0 oz/yd^2 coating of poly vinyl chloride, color traffic yellow. Minimum tensile strength 230x200 lbs grab method and 200x140 lbs strip method. Meet ASTM D 471 for water absorption, 7 days @160 degrees F, 5.0% maximum weight gain and ASTM D 750 for weathering, 2500 hours, no appreciable change in color, no cracking, minimum crazing.

(2) Seams, Perimeter Hem, and Thread. Double flat felled seams, double stitched, and 3-ply perimeter hem sewn with UV resistant #92 bonded polyester thread.

(3) Grommets. No. 2 brass rolled-rim spur grommets installed through hem at 30-inch intervals along marker perimeter.

(4) Anchors. 3/8-inch diameter deformed reinforcing steel at least 18 inches long, including a hook formed as a 4-inch segment bent perpendicular to the anchor stem.

b. Snow Fence Panel.

(1) Panel Material. Wire-supported wood lathe snow fence, pre-treated with a suitable wood stain.

(2) Paint Type: (select one)

(a) AASHTO M248, Type F (Alkyd resin)

(a) FSS TT-P-19D(1) Paint Latex (Acrylic emulsion, Exterior).

(3) Paint Color: Traffic Yellow, #33538

(4) Anchors: 3/8-inch diameter deformed reinforcing steel at least 18 inches long, including a hook formed as a 4-inch segment bent perpendicular to the anchor stem.

c. Illuminated Panel.

Illuminated panels shall conform to FAA Advisory Circular 150/5345-55A, Specification for L-893, Lighted Visual Aid To Indicate Temporary Runway Closure. The following models and manufacturers or approved equals are acceptable for this project.

* Model LXD06 as manufactured by Neubert Aero Corp, 2071 Otter Way, Palm Harbor, Florida, (727)-789-8922, fax (727)-789-2015, or approved equal.

* RCM-D, Runway Closure Marker, FAA L-893, as manufactured by Flight Light, Inc., 2708 47th Ave., Sacramento, CA 95822-3548, (916)394-2800, FAX (916)394-2809.

* Portable Runway Closure Marker (RCM) as manufactured by Sherwin Industries, 2129 West Morgan Avenue Airport Runway Support Milwaukee, WI 53221-1534, (414)281-6400, Fax: (414)281-6404

CONSTRUCTION REQUIREMENTS

671-3.1 Meet the following requirements.

a. **Vinyl Mesh Panel.** Secure by driving anchors into the embankment through all grommets.

b. **Snow Fence Panel.** Apply to the upper side of the panels, two coats of paint that result in a dense and consistent color. Construct panels double layered, with upper layer wood lathe oriented to lower lathe at right angles to provide a solid yellow appearance.

   Combine standard manufactured widths to provide plan dimensions, if necessary.

   Secure panels by driving anchors into the embankment at 30-inch intervals around the perimeter of each panel. If more than one standard manufactured width is combined to obtain plan dimensions, provide anchors on each strip.

c. **Illuminated Panel**. The illuminated panels (portable lighted markers) shall be placed ~~in~~at locations shown on the plans. The Contractor shall maintain and operate the illuminated panels continuously as directed by the Engineer. Work includes, but is not limited to, fueling, replacing bulbs and relocating the illuminated panels as required for stages of the work. Following the project, the markers shall be returned to serviceable condition. Any damage shall be repaired, generator serviced, light bulbs replaced before delivery to the Airport.

METHOD OF MEASUREMENT

671-4.1 By the number of markers of the specified type, installed and accepted as completed units in place. No additional measurement will be made for removing and relocating markers for various stages of work.

BASIS OF PAYMENT

671-5.1 Payment will be made at the contract unit price for each furnished and accepted item of the marker type specified.

Payment will be made under:

Item P-671a	Runway Closure Marker, [Type] - per each
Item P-671b	Taxiway Closure Marker, [Type] - per each
Item P-671c	Illuminated Runway Closure Marker – per each

TESTING REQUIREMENTS

ASTM D 471 Rubber Property – Effect of Liquids

ASTM D 750 Rubber Deterioration in Carbon-Arc Weathering Apparatus

ITEM P-680 GEOTEXTILE FOR SILT FENCE

DESCRIPTION

680-1.1 Furnish, place, maintain, and remove temporary silt fence as shown on the Plans or as directed.

MATERIALS

680-2.1 GEOTEXTILE. Use geotextile that meets AASHTO M 288 for Temporary Silt Fence, or as approved by the Engineer

680-2.2 POSTS. Use posts made of wood, steel, or approved synthetic material that will adequately support the fence under forces induced by water and sediment loading.

CONSTRUCTION REQUIREMENTS

680-3.1 Erect geotextile fence before excavation or embankment construction begins.

680-3.2 POST INSTALLATION. Place posts a maximum of 8 feet apart and drive a minimum of 18 inches into the ground.

680-3.3 GEOTEXTILE PLACEMENT. Install geotextile on posts in a vertical position and support by a wire mesh fence or self-support system. Set at the height specified in the Contract. Secure the bottom 18 inches of the geotextile on the upslope side of the fence as shown on the Plans. Backfill trench with tamped soil. Join adjacent sections of geotextile only at posts with a minimum of 6 inches overlap.

680-3.4 MAINTENANCE AND REMOVAL. Maintain the integrity of the fence as long as it is necessary to contain sediment runoff. Inspect the fence daily and correct deficiencies immediately. Remove and dispose of the fence when adequate vegetative growth insures no further erosion of the slopes. Cut off the fabric at ground level and remove the fabric, wire and posts. When thickness of trapped sediment is in excess of 4 inches above the ground, either remove sediment from the site or spread sediment uphill of the fence and seed all exposed soil immediately, following the requirements of Item T-901.

METHOD OF MEASUREMENT

680-4.1 Fence will be measured in place, on the ground along the post line.

BASIS OF PAYMENT

680-5.1 Payment will be made as follows: 60% for installation. 25% for maintenance and repairs, prorated at the Engineer's discretion, 15% for removing it from the site.

Payment will be made under:

Item P-680a Silt Fence – per linear foot

ITEM P-681

GEOTEXTILE FOR SEPARATION AND STABILIZATION

DESCRIPTION

681-1.1 Prepare surfaces and furnish and place geotextiles for embankment separation and/or stabilization as shown on the Plans.

MATERIALS

681-2.1 Use geotextiles and sewing thread that conform to the following:

a. Separation. Meet AASHTO M 288 for Separation, except provide a minimum permittivity of 0.05 sec^{-1}.

b. Stabilization. Meet AASHTO M288 for Stabilization, except provide a minimum permittivity of 0.08 sec^{-1}.

CONSTRUCTION REQUIREMENTS

681-3.1 Surface Preparation. Prepare surface by removal of stumps, brush, boulders, and sharp objects. Fill holes and large ruts with material shown on the Plans or as approved.

681-3.2 Geotextile Placement. Unroll geotextile directly onto the prepared surface. Stretch geotextile to remove any creases or wrinkles. Do not expose geotextiles to the elements for longer than 5 days after removal of protective covering.

a. Separation. Lay geotextile for embankment separation parallel to the embankment centerline. On horizontal curves, place in segment lengths not exceeding those listed in Table 1, with butt ends cut to match and sewn or overlapped. On tangents, straighten the geotextile and sew or overlap butt ends.

b. Stabilization. Lay geotextile for embankment stabilization perpendicular to the embankment centerline. Join segments by sewing or an approved bonding or attachment process.

681-3.3 Joining. Join geotextile for embankment separation by sewing or overlapping. Join geotextile for stabilization by sewing. Use other attachment methods, if approved.

a. Sew seams with a butterfly or j-seam. Use a double-thread chain stitch (lock stitch). Bring adjacent sections of geotextile together and fold so that the stitching penetrates four layers of geotextile for the full seam length. Make the stitching line 1-¼ inches (± ¼-inch) from the folded edge of the seam and at least ½-inch from the free edge of the geotextile.

b. Overlapped sections must overlap a minimum of 3 feet.

TABLE 1

GEOTEXTILE PLACEMENT ON CURVES

Degree of Curve	Maximum Segment Length (ft.)
1	125
2	90
3	75
4	65
5	55
6	50

681-3.4 Material Placing and Spreading. During placing and spreading, maintain a minimum depth of 12 inches of cover material at all times between the fabric and the wheels or tracks of the construction equipment.

Spread the material in the direction of the fabric overlap. Maintain proper overlap and fabric continuity. If sewn or bonded seams are used, place the cover material and spread in only one direction for the entire length of the geotextile. On weak subgrades spread the cover material simultaneously with dumping to minimize the potential of a localized subgrade failure.

Compact using a smooth drum roller. Do not allow construction equipment to make sudden stops, starts, or turns on the cover material.

681-3.5 Geotextile Repair.

a. **Separation.** Overlay torn area with geotextile with a minimum 3-foot overlap around the edges of the torn area. Ensure that the patch remains in place when material is placed over the affected area.

b. **Stabilization.** Sew according to Subsection 681-3.3.

METHOD OF MEASUREMENT

681-4.1 By multiplying plan neat line width by the measured length in final position parallel to installation centerline along the ground surface. No allowance will be made for overlap, whether at joints or patches.

BASIS OF PAYMENT

681-5.1 Payment will be made at the contract unit price per square yard.

Material used to fill ruts and holes will be paid for at the unit price for the type of material used.

Payment will be made under:

Item P-681a Geotextile, Separation - per square yard
Item P-681b Geotextile, Stabilization - per square yard

ITEM P-682

GEOTEXTILE FOR DRAINAGE AND EROSION CONTROL

DESCRIPTION

682-1.1 Prepare surfaces and furnish and place geotextiles for embankment drainage as shown on the Plans.

MATERIALS

682-2.1 Use geotextiles that conform to the following:

a. **Drainage.** Geocomposite comprised of a tri-planar geonet structure with thermally bonded non-woven geotextile on both sides, capable of removing subsurface water from the embankment. Meet ASTM D-4716 for Transmissivity.

The Drainage Geocomposite shall be:

ROADRAIN 7100-2
TENAX Corporation, Geosynthetics Division
4800 East Monument Street
Baltimore, MD 21205
1-800-356-8495
www.tenax.net

or approved equal by the Engineer.

CONSTRUCTION REQUIREMENTS

682-3.1 Surface Preparation. Prepare Borrow surface by removal of stumps, brush, boulders, and sharp objects. Borrow surface should be smooth and to the design grade. Fill holes and large ruts with Borrow, or as approved.

682-3.2 Geotextile Placement. Unroll geotextile directly onto the prepared surface. Rolls shall be placed along roadway direction, with the main flow direction orientated down slope towards roadway edge. Stretch geotextile to remove any creases or wrinkles. Do not expose geotextiles to the elements for longer than 5 days.

682-3.3 Joining. Side-to-Side joints shall overlap a minimum of 3 inches. End-to-End joints shall be overlapped a minimum of 3 inches or butted together. The top geotextile layer shall be sewn together at the seams using butterfly or j-seams. All seams shall be double-lock stitched.

682-3.4 Material Placing and Spreading. During placing and spreading, maintain a minimum depth of 12 inches of cover material at all times between the fabric and the wheels or tracks of the construction equipment.

Spread the material in the direction of the fabric overlap. Maintain proper overlap and fabric continuity. If sewn or bonded seams are used, place the cover material and spread in only one direction for the entire length of the geotextile. On weak subgrades spread the cover material simultaneously with dumping to minimize the potential of a localized subgrade failure.

Compact using a smooth drum roller. Do not allow construction equipment to make sudden stops, starts, or turns on the cover material.

682-3.5 Geotextile Repair. Prior to covering the deployed geocomposite, each roll shall be inspected for damage. Potential repair techniques will be separated for just geotextile damage and for damage resulting on the entire geocomposite (geonet damaged).

a. **Geotextile damage:** Small holes shall be patched with an 8" x 8" geotextile piece. Apply spray adhesive to one side of the 8x8" textile patch. Firmly press 8x8" textile patch over repair area. If the damaged area of the geotextile is greater than this patch size, a bigger patch is recommended. If the geotextile is damaged beyond 50 percent of the width of the roll, a continuous piece of fabric the same width as the repaired geocomposite may be cap-stripped directly to the adjacent seams by sewing a portion of new geotextile in place.

b. **Geocomposite damage:** If rip, tear or damaged area on the deployed geocomposite is more than 50 percent of the width of the roll, the damaged area shall be cut out and the two portions of the geonet shall be joined as explained above. Other rips, tears or damaged areas on the deployed geocomposite shall be removed and patched by placing a patch extending 12 inches beyond the edges of the damaged area. The patch shall be secured to the original geonet with cable ties.

METHOD OF MEASUREMENT

682-4.1 By multiplying plan neat line width by the measured length in final position parallel to installation centerline along the ground surface. No allowance will be made for overlap, whether at joints or patches.

BASIS OF PAYMENT

682-5.1 Payment will be made at the contract unit price per square yard.

Material used to fill ruts and holes will be paid for at the unit price for the type of material used.

Payment will be made under:

Item P-682a Geotextile, Drainage - per square yard

SECTION P-684 FLOATING SILT CURTAIN

DESCRIPTION

684-1.1 Furnish, place, maintain, and remove temporary floating silt curtain as shown on the Plans for control of sediment and debris.

MATERIALS

684-2.1 GENERAL. Provide a silt curtain of commercial manufacture, with demonstrated ability to trap and hold sediment and debris.

684-2.2 SUBMITTALS AND APPROVAL. Submit for approval of the silt curtain that is proposed for use in the work. Obtain approval prior to shipment to the project site. Provide submittals that include certificates of compliance, manufacturer's printed instructions and/or shop drawings and proposed installation/removal procedures.

684-2.3 CURTAIN FABRIC. For curtains used in standing water, provide pervious geotextile meeting AASHTO M 288 for Temporary Silt Fence or impervious coated fabric such as nylon reinforced polyvinyl chloride, treated polypropylene/polyester fabric or approved equal adhering to the following:

Grab tensile strength (ASTM D4632 or equivalent)	200 lb
Maximum apparent opening size (ASTM D4751 or equivalent)	0.008 in
UV[3] Resistance	Required
Panel Lengths	100 ft or less (for depths less than 13 ft)

684-2.4 FLOTATION. Provide Flotation consisting of rigid, closed cell expanded polystyrene, ethafoam or polyethylene floats attached to the top of the silt curtain along its entire length. Provide flotation material with protection from mechanical damage and deterioration that would cause pollution. Employ flotation that provides the curtain with a minimum of free board without gaps. Ensure that the buoyancy ratio (weight of displaced fluid to barrier weight) is greater than 3 to 1.

Provide high visibility color fabric cover for the flotation devices with a 1-inch minimum width reflective band attached on the side of the flotation covering along the entire length of the boom. Ensure that the flotation is secured to the boom to prevent shifting or slipping. Provide manufacturer installed grommets or equivalents to reinforce stress points and provide attachment points.

684-2.5 LINES AND ATTACHMENT POINTS. Provide a curtain that incorporates anchor lines, top load lines and bottom load lines, as required, that are minimum ½-inch diameter nylon rope. Provide a curtain with anchor lines, additional ballast, and floats that are attached to the silt curtain at reinforced attachment points provided by the manufacturer.

684-2.6 ANCHOR/BALLAST. Provide anchor and ballast chain of minimum ½-inch diameter galvanized steel with ballast chain sewn into a hem at the bottom of the curtain and secured to the material of the hem to prevent shifting or accidental removal.

CONSTRUCTION REQUIREMENTS

684-3.1 GENERAL. Provide a curtain high enough to extend to the bottom of the water channel plus 10 % when measured from MHHW. Weight the base of the curtain with ballast so that it will remain in continuous contact with the bottom to prevent sediment and silt migration.

Maintain the silt curtain in a basically vertical position. Allow a minimum of 6 inches free board at the top of the curtain for curtain depths less than 6.5 feet and 12 inches free board for curtain depths more than 6.5 feet at all times along its continuous length.

684-3.2 JOINING PANELS/SECTIONS. For ease of handling and transportation, individual panels/sections may be connected or sewn together in the field. Do not use heat welding methods to join panels. Join the panels in a manner that will prevent silt, sediment, debris or turbidity to migrate from the work area. If joints are sewn together, use heavy duty #350 polyester twine thread to make double row ¼-inch maximum stitches that will not unravel if broken.

684-3.3 CONDITIONS AND TIMING FOR INSTALLATION. Install silt curtain instead of silt fence when fence free board is anticipated to be less than 1-foot or as directed by the Engineer. Install as soon as open water appears in the spring and before the embankment begins to thaw.

684-3.4 ANCHORS. Provide anchors in the size and number required to maintain the curtain in position for proper and continuous operation once deployed. Mark the vertical position of the anchors with crown buoys to warn of their hazard and facilitate easy recovery.

Attach anchor chains between the anchor line and anchor to prevent line fouling, to lower the angle of load pulling on the anchor, and to act as a shock absorber.

Employ anchor line buoys to help prevent line entanglement and stress on the boom.

Equip each anchor with a minimum of 10 feet of anchor chain.

MAINTENANCE

684-4.1 After installation, maintain the floating silt curtain in proper working order until the embankment has ~~70% vegetative cover~~ receive required shore protection. Maintain curtain used to control other areas of the work until sediment in suspension has settled and floating debris has been removed. Removal must be approved by the Engineer. Conduct the removal during periods of calm weather. Remove the curtain carefully to minimize the release of trapped sediment and debris. Do not drag the curtain while in contact with the water channel bottom.

Maintain the integrity of the curtain as long as it is necessary to contain sediment. Inspect daily and correct deficiencies immediately. Remove and dispose of the curtain when adequate vegetative growth insures no further erosion of the slopes.

METHOD OF MEASUREMENT

684-5.1 Section 90. At the water line along the face of the flotation at the contract price per foot.

BASIS OF PAYMENT

684-6.1 Payment will be made as follows: 60% for installation. 25% for maintenance and repairs, prorated over the anticipated active construction period with a portion included as part of each interim payment. If the anticipated construction period changes, the remainder for maintenance will be prorated over the new period. 15% for removing it from the site.

Payment will be made under:

Item P-684a Floating Silt Curtain – per linear foot

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.~~ and application rate as follows:

Bering Hairgrass, Norcoast, 60%
Red Fescue, Boreal, 35%
Bluejoint Reedgrass, 5%

Application rate is 40 pounds per acre.

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.

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.

Fertilizer shall be applies at a rate of 450 pounds per acre.

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 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. 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 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) 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.

901-3.5 FINAL ACCEPTANCE. 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. 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 under Item T-908.

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, and for controlling erosion, sediment, and pollution or as directed by the Engineer.

908-1.2 RELATED SECTIONS, REFERENCE ORGANIZATIONS, AND STANDARD DOCUMENTS.

1. Alaska Department of Transportation and Public Facilities (ADOT&PF):

Seeding	Section T-901
Topsoil	Section T-905
Silt Fence	Section P-680
Erosion, Sediment, and Pollution Control	Section P-157

2. American Association of State Highway and Transportation Officials (AASHTO):

Standard Practice for:
- Compost for Erosion/Sediment Control (Filter Berms and Filter Socks) R51-10
- Compost for Erosion/Sediment Control (Compost Blankets) R52-10

3. United States Composting Council (USCC):
- Testing Methods for the Examination of Compost and Composting (TMECC)
- Seal of Testing Assurance Program (STA) documents

4. Erosion Control Technology Council (ECTC)
- Hydraulic Erosion Control Products (HECPs) Specification Chart
  Table 1, Performance Chart for Standard HECPs
- Rolled Erosion Control Products (RECPs) Specification Chart
  Table 1, Rolled Erosion Control - Temporary
  Table 2, Rolled Erosion Control - Permanent

5. National Transportation Product Evaluation Program (NTPEP)
- Testing and Evaluation of Products Materials and/or Devices

6. Texas DOT/Texas Transportation Institute (TTI) Hydraulics and Erosion Control Laboratory

908-1.3 SUBMITTALS. Submit stabilization and erosion, sediment and pollution control performance testing results with certifications for each material, Section 908-2.1 through 2.12 Materials. Submit a sample of each material to the Engineer 7 days before the scheduled installation.

1) Test compost, all applications, no more than 90 days before installation.
2) At a minimum, certificate will include the name of the manufacturer, product name, style number or similar, chemical composition of the material, the fibers, netting, yarn and similar and the weed free status of the material.
3) Organic materials shall be accompanied with all applicable health certificates and permits.
4) Furnish a Material Safety Data Sheet (MSDS) that demonstrates the product is not harmful to plants, animals, and aquatic life.

MATERIALS

908-2.1 Select stabilization materials, individually or a combination of, matched to the project applications/conditions (sheet flow, concentrated flow, slope, length of slope, access, etc.) providing

performance and functional longevity meeting the most restrictive requirements of the Construction General Permit (CGP), the approved Stormwater Pollution Prevention Plan (SWPPP) and Section P-157 Erosion, Sediment and Pollution Control.

Stabilization materials shall be free of noxious weeds, seeds, chemical printing ink, germination and growth inhibitors, herbicide residue, chlorine bleach, (except where specified: rock, metal, plastics) and other deleterious materials and not harmful to plants, animals and aquatic life. Wood cellulose "paper" fiber, wood chips, sawdust, and hay are not permitted as stabilization materials.

908-2.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 MULCH. Flexible blanket/covering, temporary degradable (bio/photo) form of erosion control. Use one of the following:

Dry Erosion Control, Stabilization Products. Hand applied or spread with mulch blower equipment.

1. Straw. Use straw, in an air-dried condition, from oats, wheat, rye, or other approved grain crops that are free from noxious weeds, seeds, mold, or other materials detrimental to plant life. Straw material shall be certified weed-free straw using North American Weed Management Association (NAWMA) Standards. In-lieu of certified weed-free straw provide documentation that the material is steam or heat treated to kill seeds or provide U.S. or state's department of agriculture laboratory test reports, dated within 90 days prior to the date of application showing that there are no viable seeds in the straw.

2. Shredded Bark Mulch. Shredded bark and wood with the following characteristics:
   a. Not containing resin, tannin, or other compounds in quantities harmful to plant life.
   b. Maximum length of individual pieces is 2 inches with 75% passing through a 1 inch sieve.
   c. Will form a uniform ground cover/mat, have moisture absorption, retention, and percolation properties, not be susceptible to spreading by wind or rain providing a good growth medium.
   d. May contain up to 50% shredded wood material.
   e. Shredded wood material aged 1 year minimum prior to use.

Hydraulic Erosion Control Products (HECPs) Applied hydraulically.

A fiber mulch matrix: biodegradable and composed of wood, straw, coconut and other fibers natural and man-made. When applied, create a continuous, porous, absorbent high water holding, flexible blanket/mat/mulch/covering making intimate contact with, and adhering to sloped soil surface; permitting water infiltration; resists erosion and promotes rapid germination and accelerated plant growth. The fibers may be thermally processed, and cross-linked with a hydro-colloidal or linear anionic tackifier (curing period

24-48 hours) or mechanically-bonded (no curing period). When agitated in slurry tanks with water the fibers will become uniformly suspended, without clumping to form homogeneous slurry.

The HECPs shall be delivered premixed by the manufacturer. The HECP will contain only the materials provided in the sealed containers from the manufacturer. No added components are permitted after the manufacturer seals the product container, before application, during application or otherwise. Submit documentation dated within 3 years of application, from an independent accredited laboratory as approved by the Engineer, showing that the product's testing performance meets the requirements for the slope(s) to be protected on the project, according to the National Transportation Product Evaluation Program (NTPEP), Erosion Control Technology Council (ECTC) and or the Texas DOT/Texas Transportation Institute (TTI) Laboratory.

If the HECP contains cotton or straw provide documentation that the material is certified weed free using NAWMA Standards. In-lieu of certified weed-free straw, provide documentation that the material is steam or heat treated to kill seeds or provide U.S. or state's department of agriculture laboratory test reports, dated within 90 days prior to the date of application showing that there are no viable seeds in the straw.

The HECP shall contain a dye to facilitate placement and inspection of the material.

1. Wood Strand, Fiber.
   A blend of angular, loose, long thin wood pieces with a high length to width ratio and that are frayed. Minimum 95% of strands between 2 inches and 10 inches, at least 50% of the length shall have a width thickness between 1/16 and 1/8 inch. No single strand shall have a width or thickness greater than 1/2 inch. Processed wood fiber with the following characteristics:
   a. Will remain in uniform suspension in water under agitation and will blend with grass seed, fertilizer and other additives to form homogeneous slurry.
   b. Will form a blotter-like uniform ground cover on application, have moisture absorption, retention and percolation properties, the ability to cover, and hold grass seed in contact with soil, and not create a hard crust upon drying providing a good growth medium.

2. Dried Peat Moss. Partially decomposed fibrous or cellular stems and leaves of any of several species of Sphagnum mosses with the following characteristics:
   a. Chopped or shredded to allow distribution through normal hydraulic type seeding equipment and capable of being suspended in water to form part of a homogeneous slurry.
   b. Free from woody substances and mineral matter such as sulfur or iron and with a pH value of between 4.0 and 6.5.
   c. Furnished in an air dry condition and containing less than 35% moisture by weight. Have a water holding capacity of not less than 800% by weight on an oven dry basis.

3. Fiber Matrix (FM) Mulch - Types.
   a. Stabilized Mulch Matrices (SMMs)
   b. Bonded Fiber Matrices (BFMs)
   c. Mechanical Bonded Fiber Matrix (MBFM)
   d. Polymer Stabilized Fiber Matrix (PSFM)
   e. Fiber Reinforced Matrices (FRMs)
      1) Flexible Growth Medium (FGM)
      2) Extended-Term Flexible Growth Medium (ET-FGM)

~~**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 MATTING. Fiber mulches, mulch matrices, nets and turf reinforcement mats manufactured from wood fibers, straw, jute, coir, polyolefins, PVC, nylon and others creating dimensionally stable nets, meshes, geotextiles and blankets; creating a continuous, porous, absorbent, flexible blanket/mat/mulch/covering making intimate contact with and adhering to sloped soil surface, resisting erosion and promoting rapid germination and accelerated plant growth.

Rolled Erosion Control Products (RECPs) (Temporary Degradable and Permanent Erosion Control)
Use RECPs that bear the Quality and Date Oversight and Review (QDOR) Seal from the ECTC. Independent test results from the NTPEP, that the mulch, when tested according to ASTM 6459 Standard Test Method for Determination of Rolled Erosion Control Products (RECP), Performance in Protecting Hillslopes from Rainfall-Induced Erosion, meets the performance requirement using the Revised Universal Soil Loss Equation (RUSL).

Functional Longevity.

1. Temporary Degradable.

   a. Duration.
      1) Short-Term RECPs. (RECPs 3 - 12 months)
         C_{Factor} = .15 maximum
         Test Soil Type = Sandy Loam
         (National Resources Conservation Service (NCRS) Soil Texture Triangle)
      2) Moderate (Extended) -Term RECPs. (RECPs 24 months)
         C_{Factor} = .05 maximum
         Test Soil Type = Sandy Loam (NCRS Soil Texture Triangle)
      3) Long-Term RECPs. (RECPs 36 months)
         C_{Factor} = .01 maximum
         Test Soil Type = Sandy Loam (NCRS Soil Texture Triangle)

   b. Product types.
      1) Mulch-Control Nets (MCNs). Planar woven natural fiber or extruded geosynthetic mesh used to anchor loose fiber matting/mulches.
      2) Erosion Control Blankets (ECBs). Processed natural and/or polymer fibers, yarns or twines mechanically, structurally, or chemically bound together to form a continuous matrix with a minimum weight of 8 oz/yd^2 and a limiting shear stress of 0.45 lb/ft^2.
      3) Netless. Fibers mechanically interlocked and/or chemically adhered together.
      4) Single-net and Double-net. Fibers mechanically bound together by single or double netting.
      5) Open Weave Textiles (OWTs). Fibers woven into a continuous matrix.

   c. Materials.
      1) Burlap. Standard weave with a weight of 3.5 to 10 oz/yd^2.
      2) Jute Mesh Fabric. Cloth of a uniform, open, plain weave of undyed and 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 meeting the following requirements:
         a) Width: 45 to 48 inches, ± 1 inch
         b) 78 warp-ends per width of cloth (minimum)
         c) 41 weft-ends per yard (minimum)
         d) Weight: 20 ounces per linear yard, ± 5%

3) Woven Paper or Sisal Mesh Netting. Woven from twisted yarns available in rolls 45 to 48 inches wide. Mesh may vary from closed to open weave, ranging from 1/8 to 1/4 inch openings. Shrinkage after wetting may not exceed 20% of the surface area.
4) Knitted Straw Mat. Commercially manufactured ECB. Use photodegradable netting and biodegradable thread. Use straw, in an air-dried condition, from oats, wheat, rye, or other approved grain crops that are free from noxious weeds, seeds, mold, or other materials detrimental to plant life. ECB may contain coconut or fiber to reinforce the straw. Straw material shall be certified weed-free straw using NAWMA Standards. In-lieu of certified weed-free straw, provide documentation that the material is steam or heat treated to kill seeds or provide U.S. or state's department of agriculture laboratory test reports, dated within 90 days prior to the date of application showing that there are no viable seeds in the straw.
5) Woven/Curled Wood blanket. Machine produced mat of curled wood shavings with a minimum of 80% 6-inch or longer fibers, with consistent thickness and the fibers evenly distributed over the entire area of the blanket. Smolder resistant without the use of chemical additives. Cover the top side of the blanket with biodegradable extruded plastic mesh.
6) Coconut (Coir Fiber). Machine produced mat, ECB of consistent thickness and coir fiber evenly distributed over the area of the mat. Use bio/photo degradable netting and thread.

2. Permanent.

a. Hydro matting shall be a hydraulically applied system of long strand fibers joined together by a high-strength adhesive to create a continuous three dimensional blanket that adheres to the soil surface to form a bonded fiber matrix. The system shall be applied to the soil as a viscous mixture which, upon drying, creates a high strength, porous and erosion resistant mat. Upon drying, the matrix shall not inhibit the germination and growth of plants beneath the layer. The matrix shall retain its form despite rewetting and shall contain the seed and fertilizer specified in Section T-901.

Hydraulically applied soil stabilization matting shall be applied at the rate of 3,000 pounds per acre in accordance with the manufacturer's written recommendations and application parameters and as approved by the Engineer.

b. Turf Reinforcement Mats (TRMs). A machine produced matting composed of:
1) high-strength, UV stabilized (polypropylene or equivalent), biaxially oriented nets (top and bottom), UV stabilized polypropylene or polyolefin fiber matrix (center), mechanically bound together with UV stabilized polypropylene or polyolefin thread, or
2) woven, high strength, UV stabilized, polypropylene fiber matrix.

TRMs (may be supplemented with degradable components) shall impart immediate erosion protection, enhance vegetation establishment during and after maturation and permanent vegetation reinforcement providing long-term functionality.

The turf reinforcement matting shall be rated for soil slopes of 1 horizontal: 1 vertical (1H:1V) or steeper.

Turf reinforcement matting shall be green in color, and have the following properties:

Property	Test Method	Requirement
Thickness	ASTM D6525 or ASTM D1777	0.5", min.
Mass/Unit Area	ASTM 6566 or ASTM D5261	11.25 oz/sq yd, min.
Resiliency	ASTM 6524 or ASTM D1777	80%, min.

Tensile Strength – Machine Direction	ASTM D6818 or ASTM D5035	220 lbs/ft, min.
UV Stability	ASTM D4355 per 1000 hrs.	80 %, min.

908-2.4 SEDIMENT RETENTION FIBER ROLLS (SRFRs). Fiber rolls also referred to as wattles. Manufacture of photodegradable or biodegradable fabric netting without preservative treatment, evenly woven, free of crusted material, cuts, and tears. Manufacture stakes of photodegradable or biodegradable material (wood stakes, except as approved by the Engineer).

1. Filter Sock (Wattle)
   a. Fabric netting.
   b. Filled with wood fiber, straw, flax, rice, coconut fiber material.
   c. Minimum diameter 5 inches.

2. Compost Sock.
   a. Extra Heavy weight fabric netting with a minimum strand width of 5 mils.
   b. Filled with coarse compost.
   c. Minimum diameter 8 inches.

3. Coir Log.
   a. Woven wrap bristle coir twine netting.
   b. Filled with 100% coconut (coir) fiber uniformly compacted.
   c. Segments maximum length 20 foot, diameter as suited to the application and a density of 7 lbs/pcf or greater.
   d. Coir twine strength equal to 80 lb minimum weaved to a 2 inch x 2 inch opening pattern.
   e. Ties made of hemp rope by 1/4 inch diameter.

908-2.5 COMPOST. . Suitable for serving as a soil amendment or an erosion control material. Sanitized, mature compost meeting local, state, and Federal quality requirements tested and certified by the U.S. Composting Council (USCC) under the Seal of Testing Assurance (STA) Program. Biosolids compost must meet the Standards for Class A biosolids outlined in 40 Code of Federal Regulations (CFR) Part 503. Additionally, meet the requirements of the AASHTO specifications:

1. Compost Blankets. Standard Practice for Compost for Erosion/Sediment Control (Compost Blankets) R 52-10.

2. Compost Filter Berms and Filter Socks. Standard Practice for Compost for Erosion/Sediment Control (Filter Berms and Filter socks) R 51-10.

908-2.6 TACKIFIER. Tackifier, viscous overspray, generally composed of dry powered vegetable gums derived from guar gum, psyllium and sodium alginase; asphaltic emulsions; petroleum distillates; co-polymer emulsions; and lignosulfonates and used to anchor soil, compost, seed, the mulch fibers to one another, and the ground. Contain no growth or germination inhibiting materials nor significantly reduce infiltration rates. Tackifier shall hydrate in water and readily blend with other slurry material. Tackifier options include:

1. Type A. Organic tackifier with certification of plant sources; or

2. Type B. Synthetic tackifier with certification confirming product is not harmful to plants, animals, or aquatic life.

908-2.7 POLYACRYLAMIDE (PAM). Use as a tie-down for soil, compost, seed and as a flocculent. Polyacrylamide (PAM) products shall meet the requirements of American National Standards Institute (ANSI)/National Sanitation Foundation International (NSF) Standard 60 for drinking water treatment, be anionic (not cationic), linear and not cross-linked with an average molecular weight greater than 5 Mg/mole,

minimum 30 percent charge density; contain at least 80% active ingredients and a moisture content not exceeding 10% by weight.

Deliver PAM in a dry granular powder or liquid form.

908-2.8 SOIL BINDERS (POLYACRYLAMIDE(PAM)). Urethane foam core encased in geotextile material (silt fence material Section 633), minimum 8 inches height by minimum base width of 16 inches by minimum 7 foot length. Overhang the geotextile 6 inch minimum each end with apron type ties by 24 inches each side of the foam core.

908-2.9 GEOTEXTILE ENCASED CHECK DAMS AND SEDIMENT BARRIERS. (Reserved)

908-2.10 SANDBAG.

1. Sandbag Sack Fabric. Fabric shall be a nonwoven, needle punched design meeting the Minimum Average Roll Values (MARV) verified in accordance with ASTM D4759.

2. Seam Thread. Similar durability to the sandbag sack fabric.

3. Sandbag Fill Material. Aggregate material, containing less than 10% passing No. 200 sieve.

4. Cinch Ties. Plastic ties or equivalent tie recommended by the sandbag manufacturer.

908-2.11 MANUFACTURED INLET PROTECTION SYSTEM.

1. Manufacturers:
   a. Ultra Tech International – Ultra-DrainGuard
   b. Bowhead Environmental and Safety - StreamGuard Exert II Sediment Insert
   c. Enpac - Catch Basin Insert, Oil and Sediment or
   d. Approved equal.

908-2.12 CLEAR PLASTIC COVERING. A clear plastic covering meeting the requirements of the National Institute of Standards and Technology (NIST) voluntary Product Standard PS 17 - 69 for polyethylene sheeting having a minimum thickness of 6 mils.

908-2.13 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.

908-2.14 Other stabilization materials submitted to and approved by the Engineer.

Include on the packaging the manufacturer's name, the content, the air dry-weight and the guaranteed chemical analysis of the contents. Ship and deliver to the site in the original, unopened containers.

CONSTRUCTION REQUIREMENTS

908-3.1 GENERAL. Stabilization may include individual or a combination of materials, including but not limited to temporary seeding, mulch, tackifier, staples, matting, stabilizing emulsions, soil binders, dustless sweeping, dust palliatives, and others.

1. Material Storage and Protection. Store materials elevated off the ground and covered protecting them from construction and or damage from the environment including but not limited to:
   a. Precipitation
   b. Extended ultraviolet radiant including sunlight
   c. Chemicals that are strong acids or other
   d. Flames and welding sparks

e. Excess temperatures
f. Other environmental conditions that may damage the materials

2. Fabrication.
   a. Sandbags. Sand bags shall measure 15 inches by 30 inches. Place approximately 1.0 cubic foot of sand (having no more than 10% fines passing No. 200 sieve) in each sandbag sack. Close the open end of the sandbag as recommended by the fabric manufacturer.

908-3.2 SURFACE PREPARATION. Clear all areas to be stabilized of stones 4 inches in diameter and larger and of all weeds, plant growth, sticks, stumps, and other debris or irregularities that might interfere with the stabilization operation, growth of cover (where vegetative cover is part of the stabilization operation) or subsequent maintenance of the vegetative-covered area(s).

Smooth the surface and backfill all gullies and potholes before application. Make the areas reasonably free of ruts, holes, and humps; trackwalk if required by the manufacturer; apply the stabilization material to each area.. ~~Remove all sticks and other foreign matter that prevents contact of the mulch or matting and the soil.~~

If specified, apply topsoil to the area to be stabilized before application of the stabilizing material. Ensure that the surface is moist at the time of placement. Soil preparation shall conform to Section 905-3.1. If area is to be seeded, soil preparation shall conform to Section 901-3.1.

908-3.3 APPLICATION. ~~Apply soil stabilization material at the rate specified in the Special Provisions. 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.~~
Apply stabilization material, including rate of application, according to the specifications. If not specified, apply according to the manufacturer's requirements. Where manufacturer requirements conflict with the specification, except where the Engineer directs otherwise, apply the material according to the requirements of the manufacturer.

If seeding is specified, except where seed is included in the stabilization material, complete the application of stabilization materials within 24 hours after seed is placed.

Do not use vehicles or equipment which cause rutting or displacement of the subgrade or topsoil.

1. Temporary Seeding. Annual Ryegrass per Subsection T-901. Apply at a rate of 1/2 lb/1000 sq. ft., minimum, on level ground to a maximum of 1 1/2 lb/1000 sq. ft., maximum, on sloping ground and highly erodible soils. Prepare surface and place seed as noted under Subsection 901-3.1 Soil Preparation and Subsection 901-3.3 Application. Confirm application of temporary seeding with the Engineer.

2. Tacking Agents - Tackifiers. Apply tacking agents according to the manufacturer's installation instructions matched to the application providing functional longevity, erosion control effectiveness, and vegetative establishment.

3. Soil Binders. Apply soil binders according to the manufacturer's installation instructions.

   a. Using Polyacrylamide (PAM) and PAM with Short-Term Mulch:
      Apply PAM on bare soils.

      Apply PAM and PAM with short-term mulch only where sediment control is in place and complete.

      Do not apply PAM and PAM with short-term mulch on saturated ground during rainfall.

   b. Using Moderate-Term Mulch:

Apply moderate-term mulch according to manufacturer's installation instructions. If the curing period to achieve maximum performance is greater than the time period before precipitation is predicted, or the soil is saturated, do not apply the moderate-term mulch except as approved by the Engineer.

c. Using Long-Term Mulch:
Apply long-term mulch according to the manufactures installation instructions. Apply at a rate of 2000 pounds per acre.

4. Erosion Control Blankets (ECBs). Select blankets, as specified by the manufacturer, to match the slope; and installed according to the manufacturer's instructions rolled out on well prepared soils to assure intimate contact and anchored with staples, stakes and or anchor trenches. Temporary erosion control blankets with 60 percent or greater open area may be installed prior to seeding. Place blankets with less than 60 percent open area immediately after the seeding operation.

Staple matting/ECBs as recommended by the manufacturer for the application.

5. Compost Blankets. Construct compost blankets according to AASHTO R 52-10 and as specified. Use coarse compost and place over bare soil a blanket of 2 inch minimum thickness, except as otherwise specified. Apply material either by hand spreading and or pneumatically. Compost will have no free water visible or produce dust when handled. Place compost before seeding or mix seed with compost.

6. Check Dams. Place check dams as soon as possible and practicable or when and where if directed by the Engineer. Place the check dams perpendicular to channels and construct of a height sufficient to maximize detention while keeping the water in the channel. Place and install check dams according to the Plans and anchor to maintain in effective position.

a. Sandbag. Place the initial row in tight contact with the ditchline for the length of the dam. Place each following row centered across the joint between the bags of the lift/row below.

7. Stabilized Construction Entrance.
Temporary stabilized construction entrance shall be constructed according to the Plans, prior to beginning any clearing, grubbing, earthwork, or excavation.

When the stabilized entrance no longer prevents track out of sediment or debris, the Contractor shall either rehabilitate the existing entrance to original condition, or construct a new entrance.

When the Plans require a tire wash in conjunction with the stabilized entrance, the Contractor shall include details for the tire wash and the method for containing and treating the sediment-laden runoff as part of the SWPPP. All vehicles leaving the site shall stop and wash sediment from their tires.

8. Sediment Control Barriers. Sediment control barriers shall be installed according to the Plans or manufacturer's recommendations in the areas of clearing, grubbing, earthwork, or drainage prior to starting those activities.

a. Sandbag. Place the initial row in tight contact with the surface perpendicular to the slope. Place each following row centered across the joint between the bags of the lift/row below.

b. Sediment Retention Fiber Rolls.

c. Silt Fence.

d. Compost Berm. Construct compost berms according to AASHTO R 51-10. Use coarse compost.

9. Turf Reinforcement Mats. According to manufacturers installation instructions.

908-3.4 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.~~
Maintain stabilized areas in a satisfactory condition for the term of the Contract, including warranty obligations. Inspect as required by the CGP, approved SWPPP, and Section P-157 Erosion, Sediment and Pollution Control and correct any deficiencies immediately. Remove and dispose of temporary measures, including trapped sediment and contaminants, off project at approved locations. Materials manufactured as degradable may be left in place when approved by the Engineer.

Maintenance includes but is not limited to:

a. Protecting stabilized areas against traffic by approved warning signs or barricades.

b. Repairing surfaces gullied or otherwise damaged following application of stabilization material(s).

Where seeding is included in the soil stabilization.

c. Reseeding, as required by Section T-901 Seeding. Reapply the stabilization materials correcting the problems of the initial application.

d. Watering, where vegetative growth is part of the soil stabilization, according to Section T-901 Seeding.

The Engineer will perform inspection of the stabilization as required in the CGP, Section P-157, and the SWPPP. Make repairs as required by same and as directed.

METHOD OF MEASUREMENT

908-4.1 ~~By the square yard, a~~According to Subsection GCP-90-02, acceptably placed, measured on the slope of the ground surface. ~~Water, maintenance, and repair are subsidiary~~

BASIS OF PAYMENT

908-5.1 Water, maintenance, repair, removal, and disposal of temporary stabilization materials are subsidiary.

Except as specified, seeding is paid under Section T-901 Pay Items, topsoil under Section T-905 Pay Items, silt fence under Section P-680 Pay Items and temporary erosion, sediment, and pollution control under Section P-157 Pay Items. The unit price for Item T-908w, Hydro Matting shall include seed and fertilizer at application rates specified in Section T-901.

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~~
Item T-908b	Mulch – Straw – per square yard
Item T-908c	Mulch - Shredded Bark Mulch – per square yard
Item T-908d	Mulch – (type) – per square yard
Item T-908e	Mulch - Hydraulic Erosion Control Products – per square yard
Item T-908f	Mulch - HECP Wood Strand, Fiber - per square yard
Item T-908g	Mulch - HECP Dried Peat Moss – per square yard
Item T-908h	Mulch - HECP SMM – per square yard
Item T-908i	Mulch - HECP BFM – per square yard

Item T-908j Mulch - HECP MBFM – per square yard
Item T-908k Mulch - HECP PSFM – per square yard
Item T-908l Mulch - HECP FRM-FGM - per square yard
Item T-908m Mulch - HECP FRM-ET-FGM- per square yard
Item T-908n Mulch – HECP (type) - per square yard
Item T-908o Matting – per square yard
Item T-908p Matting - RECP Control Nets – per square yard
Item T-908q Matting - RECP Netless Rolled ECB – per square yard
Item T-908r Matting - RECP Single-Net ECB – per square yard
Item T-908s Matting - RECP Single-Net OWT- per square yard
Item T-908t Matting - RECP Double-Net ECB – per square yard
Item T-908u Matting – RECP (type) - per square yard
Item T-908v Compost – per square yard
Item T-908w Hydro Matting – per square yard
Item T-908x Turf Reinforcement Mat – per square yard
Item T-908y Turf Reinforcement Mat (type) – per square yard
Item T-908z Sediment Retention Fiber Rolls (SRFRs) – per linear foot
Item T-908aa Fiber Rolls - SRFR Filter Sock – per linear foot
Item T-908ab Fiber Rolls - SRFR Compost Sock – per linear foot
Item T-908ac Fiber Rolls - SRFR Coir Log - per linear foot
Item T-908ad Fiber Rolls – SRFR (type) - per linear foot
Item T-908ae Check Dam and Sediment Barrier – Geotextile – per linear foot
Item T-908af Check Dam (type) – per linear foot
Item T-908ag Sediment Barrier (type) – per linear foot
Item T-908ah Compost Berm – per linear foot
Item T-908ai Sandbags - per each
Item T-908aj Manufactured Inlet Protection System - per each
Item T-908ak Sandbag Inlet Protection System – per each

Appendix A

(Not Used)

Appendix B

Construction Surveying 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

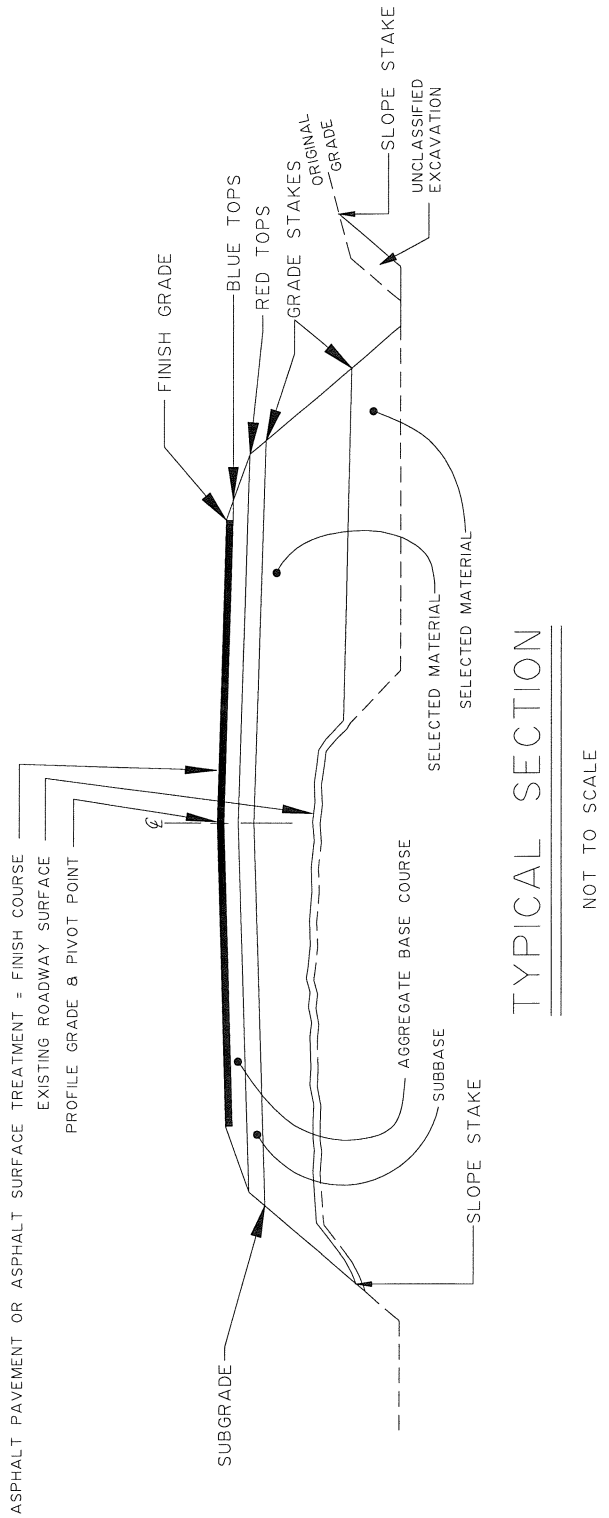
Table 2—Survey frequency requirements (in feet)

	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



3. Survey point materials requirements

- ✓ These are minimum requirements; larger sizes may be necessary.
- ✓ Use only stakes with planed sides.

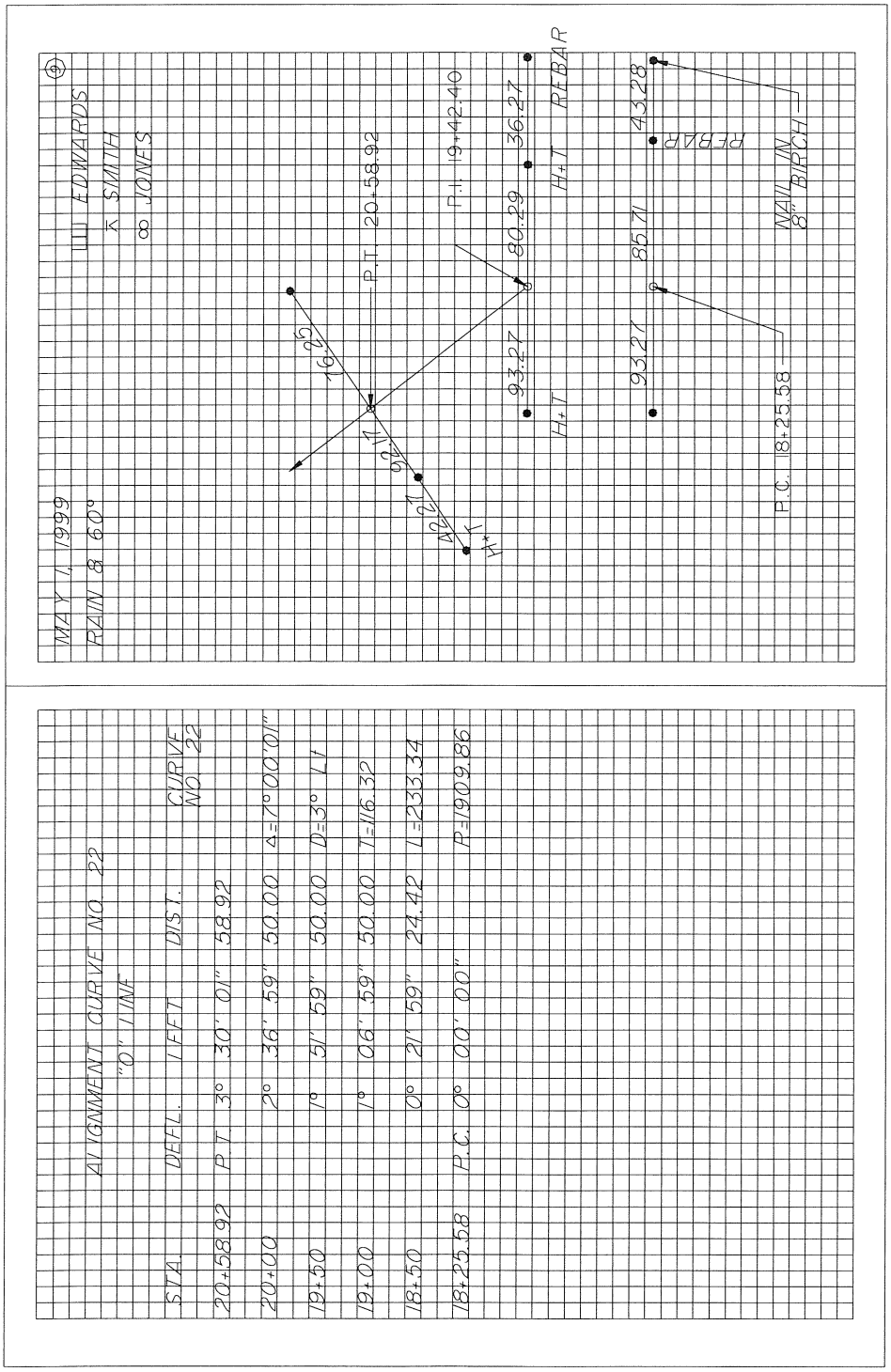
Table 3—Survey point materials requirements

	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.

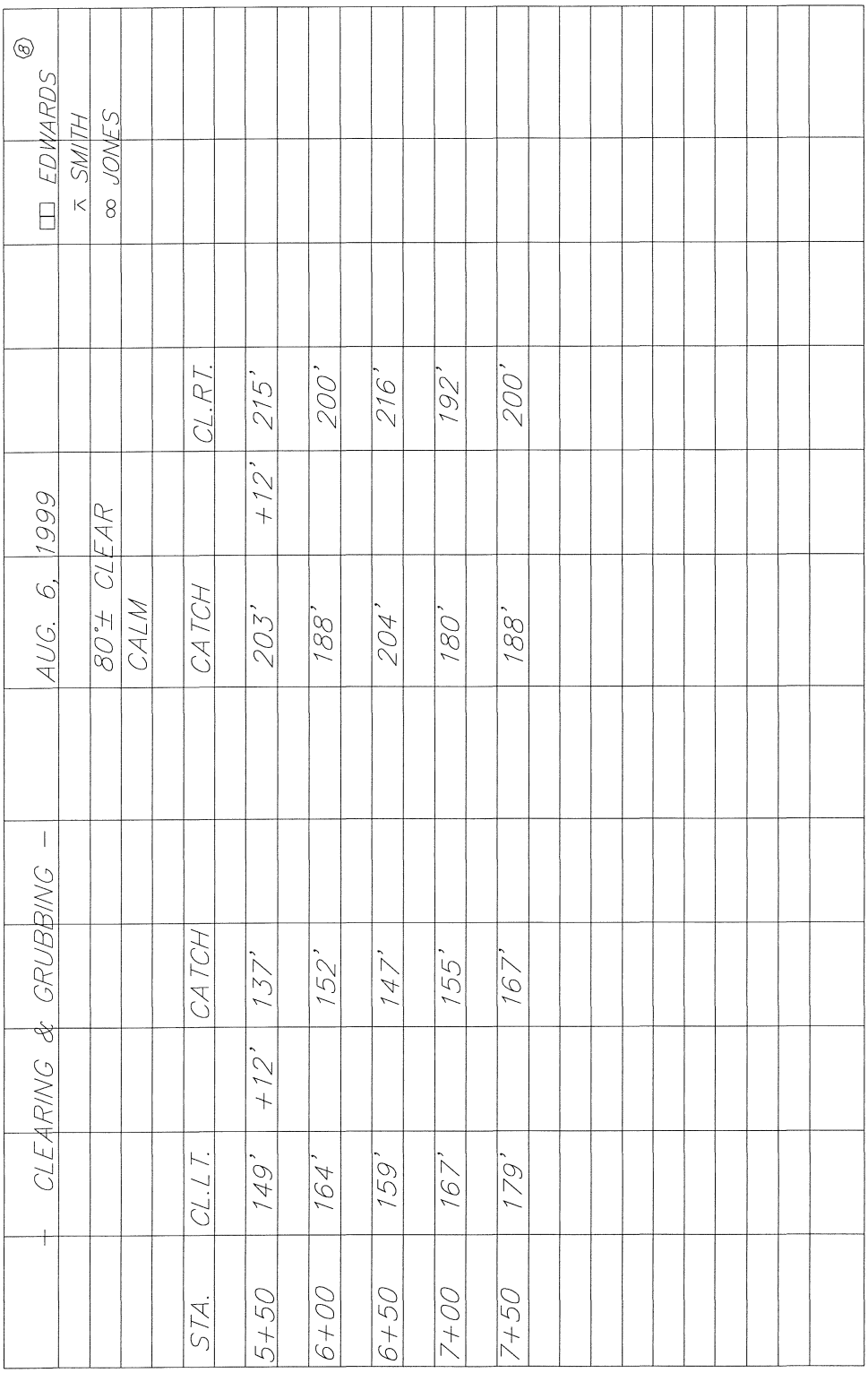
4. Typical alignment notes

- ✓ 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.



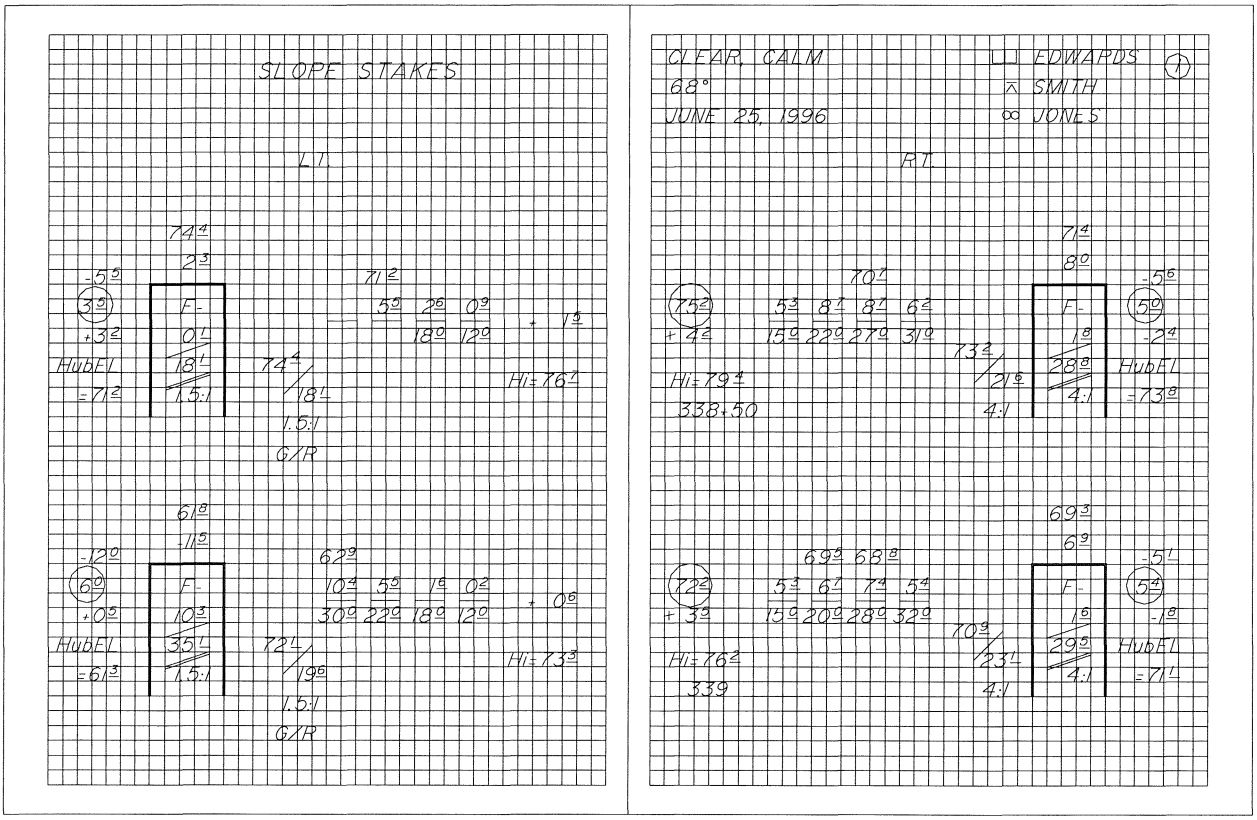
6. Typical level notes

- ✓ 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

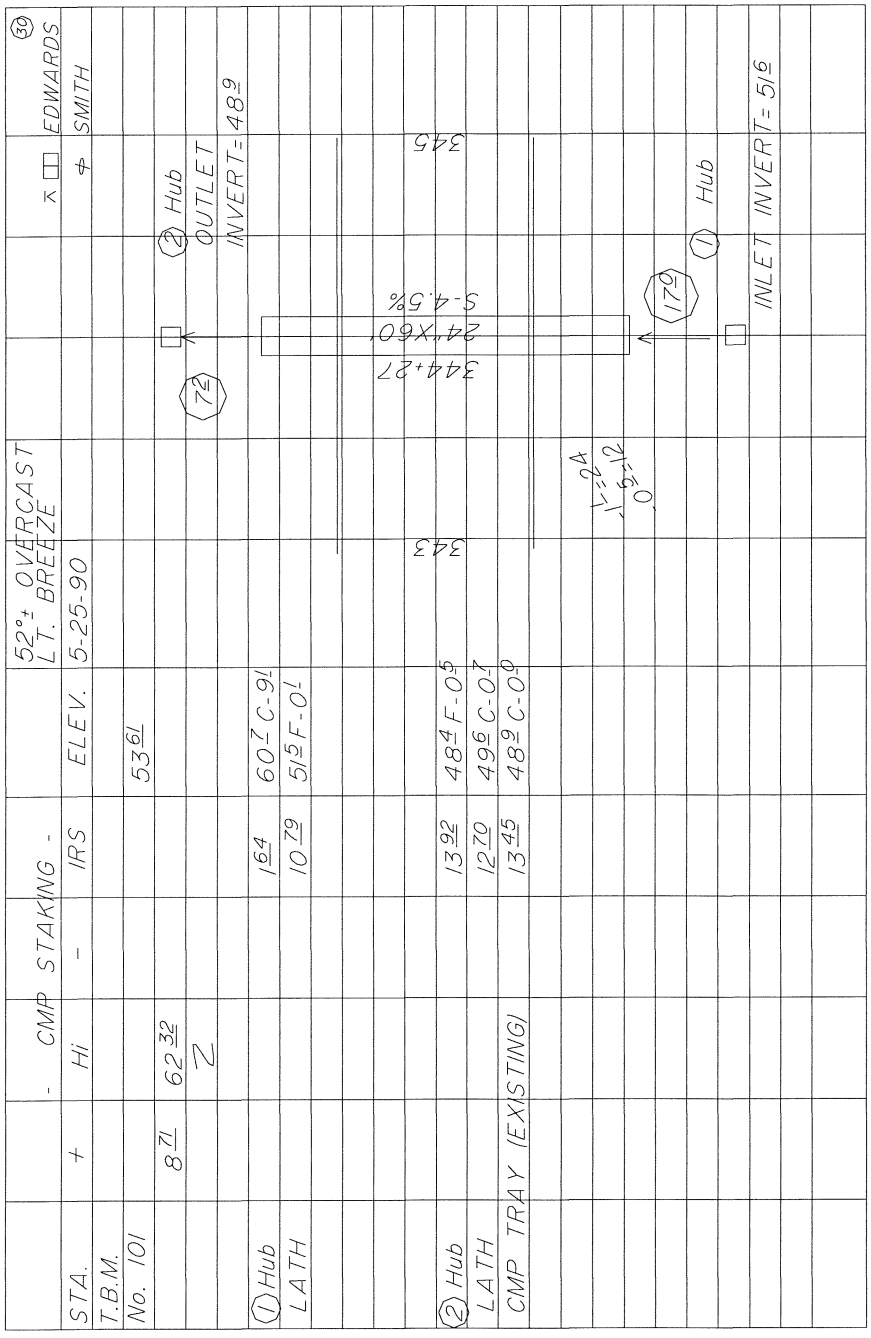
7. Typical slope stake notes

- ✓ 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.

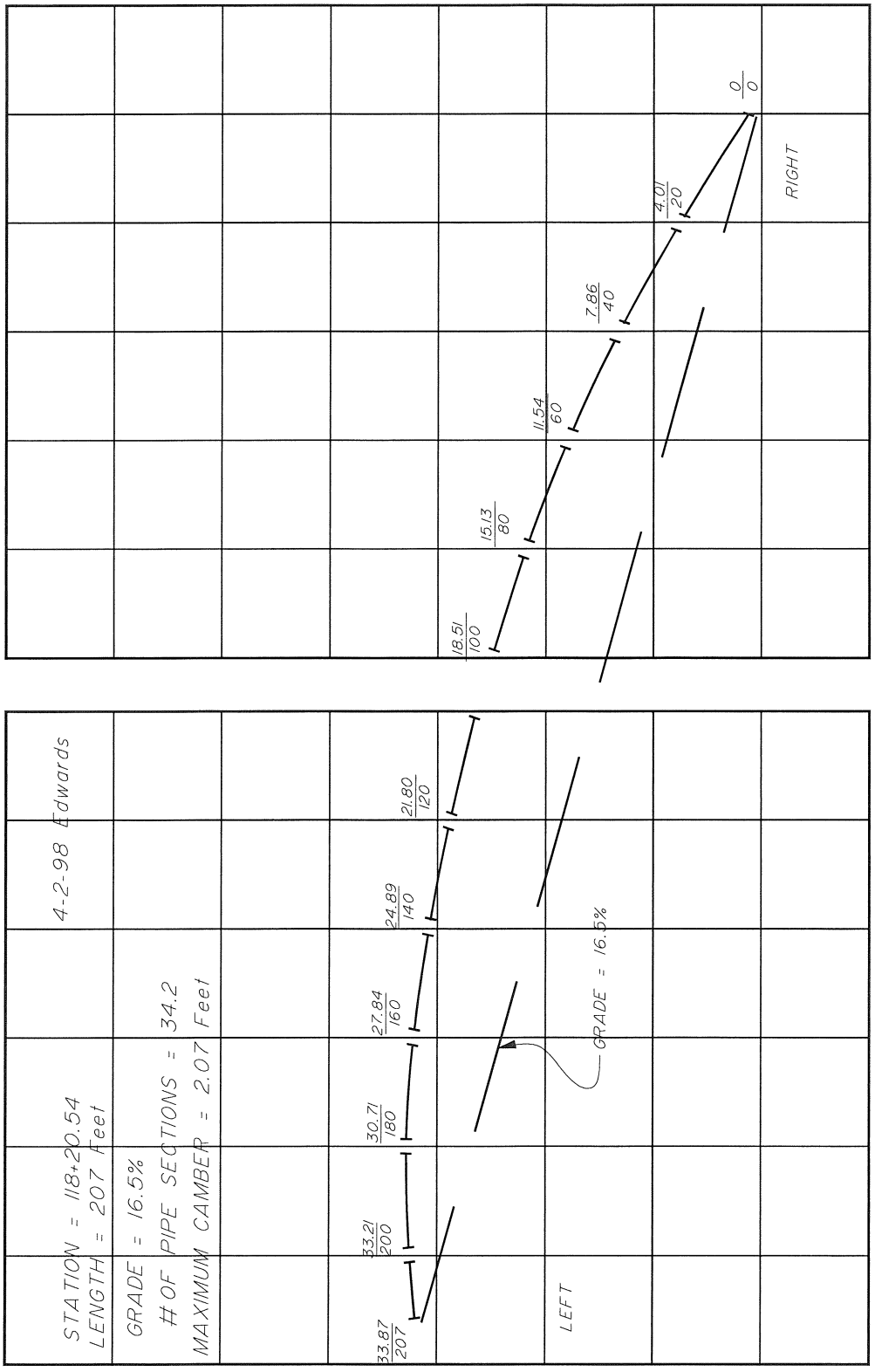


8. Typical culvert notes

- ✓ 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.

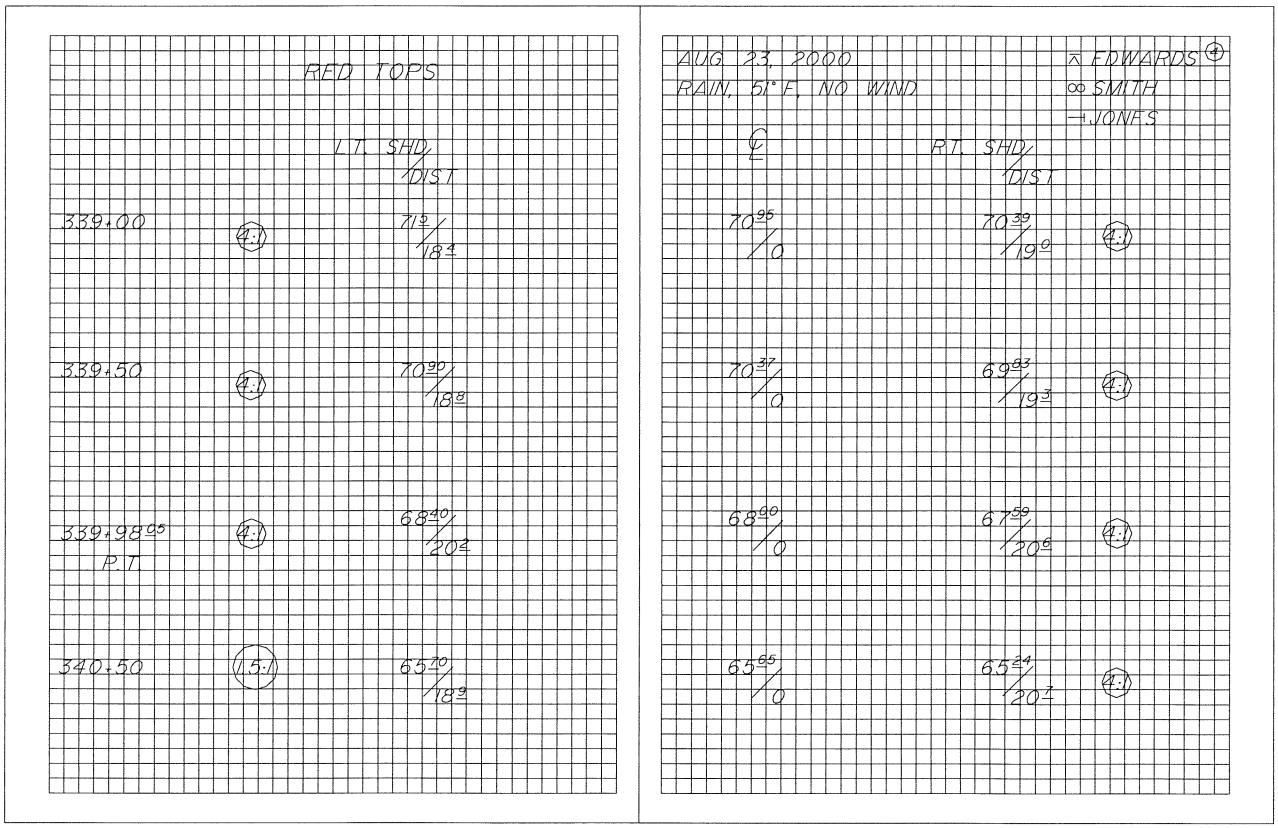


9. Typical culvert camber diagram



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

Materials Sampling and Testing Frequency

AIRPORT CONSTRUCTION Materials Sampling & Testing Frequency

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	For unsuitable excavation number consecutively EX-W-1. No need to test if waste is designated on plans
Embankment	Acceptance	(5)	Standard Density	As required by changes in material	Number consecutively BM-SD-1 or EX-SD-1
			Field Density	1 per 1,500 C.Y. or 1 per 3,000 Tons (6)	Number consecutively BM-D-1 or EX-D-1.
			Gradation, P.I. (4) and Deleterious (visual)	1 per 5,000 C.Y. or 1 per 10,000 Tons (6)	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 and Deleterious (visual)	1 per 50,000 C.Y. or 1 per 100,000 Tons	
Bedding & Backfill for Structures (Drainage Items, Ducts, Conduits, etc.)	Acceptance	(5)	Standard Density	As required by changes 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 Too Coarse to Test **(TCTT)** 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. Any material can be rejected based on failure to meet any one of the criteria.
2) Required when Standard Density test is run in the project laboratory.
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 structure installed same day and same manner. Perform densities within 18 inches of the structure or outside diameter of the pipe. Frequency may be reduced to 1 per 200 lineal feet for electrical conduits when approved by Regional Quality Assurance Engineer **(RQE)** or Regional Materials Engineer **(RME).**
4) Perform Plasticity Index **(P.I.)** tests on the first five samples at the start of production from any source. If these tests indicate the material to be non-plastic, additional acceptance tests need only be performed when IA samples are taken. 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.
5) See the specified test method for minimum sample size.
6) For large unclassified embankments, a field density and gradation testing frequency of 1/10,000 C.Y. or 1/20,000 Tons is acceptable subject to the approval of the RQE, RME or Statewide Materials Engineer **(SME)**.

AIRPORT CONSTRUCTION Materials Sampling & Testing Frequency

Material	Type of Sample	Sample Size	Type of Tests	Frequency	Remarks
Subbase Course	Source Quality	150 lbs.	L.A. Wear, Degradation	1 per source prior to use or as required based on change in material	Allow minimum of 14 days for testing and transport. Number consecutively Q-SB-1 or Q-SC-1
	Acceptance	(6)	Standard Density	1 per source and as required based on change in material	Number consecutively SB-SD-1
			Field Density (1)	1 per 1,000 CY or 1 per 2,000 Tons	Number consecutively SB-D-1
			Gradation, L.L. P.I., Deleterious	1 per 2,500 CY or 1 per 5,000 Ton (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 CY or 1 per 20,000 Tons	
			Gradation, Deleterious, L.L., P.I.	1 per 25,000 CY or 1 per 50,000 Tons	
Aggregate Surface Course and Crushed Aggregate Base Course	Source Quality	150 lbs.	L.A. Wear, Degradation, Soundness	1 per source prior to use or as required based on change in material	Allow minimum 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 change 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 BC-D-1 or SC-D-1
			Gradation, Fracture, Deleterious, L.L., P.I., SE	1 per 1,000 C.Y. or 1 per 2,000 Tons (3) (4) (5)	Number consecutively BC-G-1 or SC-G-1
	Independent Assurance	(6)	Standard Density	1 per source	Use numbers that correspond to acceptance samples. Include field test results with sample
			Field Density (2)	1 per 5,000 C.Y. or 1 per 10,000 Tons	
			Gradation, Fracture, L.L., P.I., SE, Deleterious	1 per 10,000 CY 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 density testing is not required when material (as shown by gradation testing) is TCTT.
(2) Required when Standard Density is run in project laboratory.
(3) Perform Liquid Limit **(L.L.)** and P.I. tests on the first five samples at the start of production from any source. If these tests indicate the material to be non-plastic, additional acceptance tests need only be performed when IA samples are taken. 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 acceptance tests need only be performed when IA samples are taken.
(5) If the first five tests indicate the material meets specification for Sand Equivalent **(SE)**, additional acceptance tests need only be performed when IA samples are taken. The SE test is not required for Aggregate Surface Course.
(6) See the specified test method for minimum sample size.

AIRPORT CONSTRUCTION Materials Sampling & Testing Frequency

Material	Type of Sample	Sample Size	Type of Tests	Frequency	Remarks
Plant Hot Mix Asphalt and Asphalt Treated Base Course	Source Quality	150 lbs. Aggregate	L.A. Wear, Degradation, Sodium Sulfate Loss	1 per source prior to use or as required based on changes in material	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, L.L., P.I.	1 per source and as required based on changes in material	Allow 15 days or contract specified time for mix design and testing after receiving contractor's proposed gradation.
	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, L.L., P.I., Fracture, F&E, SE, Deleterious, Thickness	1 per sublot (3) (4) (5) (6) (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 (1)	Required when MSG is run in the field.
			Mat Density, Gradation, Oil Content, L.L., P.I., Fracture, F&E, SE	1 per 10 sublots	Use numbers that correspond to acceptance samples. Include field test results with sample
	Information	30 lb	3-Marshall Biscuits or 2-gyratory samples	1 per Mix Design Minimum	Compare results to Mix Design.

(1) Refer to project specifications.
(2) Recommendations regarding anti-strip requirements must be determined for each mix design.
(3) Perform L.L. and P.I. tests on the first five samples at the start of production from any source. If these tests indicate the material to be non-plastic, additional acceptance tests need only be performed when IA samples are taken. 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 acceptance tests need only be performed when IA samples are taken.
(5) SE: If the first five tests indicate the material meets specification for SE, additional acceptance tests need only be performed when IA samples are taken.
(6) Perform Flat and Elongated **(F&E)** tests 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.

AIRPORT CONSTRUCTION Materials Sampling & Testing Frequency

Material	Type of Sample	Sample Size	Type of Tests	Frequency	Remarks
Asphalt Cement	Source Quality	See Remarks	(1)	1 per each grade and source prior to use	Manufacturer's certification required
	Acceptance (1)	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.
Liquid Asphalt for: a. Prime Coat b. Tack Coat c. Seal Coats d. Asphalt Surface Treatment	Source 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 (for emulsified asphalt)	(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 Asphalt Surface Treatments	Source Quality	150 lbs. Aggregate	Fracture, F&E, L.A. Wear, Soundness, Degradation	1 per source prior to use or as required by changes in material prior to use	Allow 25 days for testing and transport
	Acceptance	(4)	Gradation, Fracture, 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	May be taken from stockpile or production

(1) Refer to project specifications.
(2) Fracture: If the first ten tests indicate the fracture to be 5% or more above specification, additional acceptance tests need only be performed when IA samples taken/tested.
(3) Perform F&E tests 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.

AIRPORT CONSTRUCTION Materials Sampling & Testing Frequency

Material	Type of Sample	Sample Size	Type of Tests	Frequency	Remarks
Portland Cement Concrete	Source Quality				
a. Cement and Cementitious	Quality	a. Two 1-gal cans, each	See Remarks	1 per shipment (2) (4)	Allow 40 days for testing and transport. Manufacturer's certification required
b. Water		b. ½ gal in glass jar	See Remarks	1 per source	Allow 20 days for testing or potable water accepted by Project Engineer.
c. Coarse Aggregate		c. 100 lbs	Deleterious Substances, L.A. wear, Soundness	1 per source	Allow 25 days for testing and transport.
d. Fine Aggregate		d. 25 lbs	Deleterious Substances, Soundness	1 per source	Allow 25 days for testing and transport.
Portland Cement Concrete	Mix Design Submittal (1) (3)				
a. Cement and Cementitious	Mix Design	a. 94 lbs., each	Mix Design Verification as required by RQE or RME	1 per source prior to use	For verification of Contractor-furnished mix design, allow 40 days for testing and transport
b. Water		b. None			
c. Coarse Aggregate		c. 330 lbs			
d. Fine Aggregate		d. 220 lbs			
e. Admixtures		e. 1 qt each			

(1) Refer to project specifications.
(2) Cement stored in silos or bins over six months, or in bags over three months, may require re-testing. See project specifications.
(3) Manufacturer's certifications and aggregate test reports required.
(4) Manufacturer's Certification for cement used on project may be accepted in lieu of sampling as approved by the RQE or RME

AIRPORT CONSTRUCTION Materials Sampling & Testing Frequency

Material	Type of Sample	Sample Size	Type of Tests	Frequency	Remarks
Concrete Continued:					
Coarse Aggregate	Acceptance	(5)	Gradation and; Deleterious (visual)	1 per 200 C.Y.	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	Temperature, Slump, % Air, Water/Cement Ratio, Unit Weight, Yield, Proportions per C.Y.	1 per ½ days pour (2) or 1 per 200 C.Y.	(3)
		Cylinders or beams	Compressive strength or Flexural strength (1)	1 per ½ days pour (2) or 1 per 200 C.Y.	Mold two (6x12) or three (4x8) cylinders or 2 (6x6x20) beams. Test at 28 days. (1) (4)
	Information	Cylinders or beams	Compressive strength or Flexural strength	As required (e.g. for 7 day break)	Mold two (6x12) or three (4x8) cylinders or 2 (6x6x20) beams "As Required" for Strength Data.
Coarse Aggregate	Independent Assurance	(5)	Gradation and; Deleterious (visual)	1 per 2,000 C.Y. with minimum of 1 per project if over 100 C.Y. is placed	Use numbers that correspond to acceptance samples. Include field test results with sample.
Fine Aggregate			Gradation, Deleterious (visual), Fineness Modulus		
Mix		As required by test method	Temperature, Slump, % Air, Water/Cement Ratio, Unit Weight, Yield, Proportions per C.Y.	1 per 2,000 C.Y.	
		Cylinders or beams	Compressive strength or Flexural strength	1 per 2,000 C.Y.	Mold two (6x12) or three (4x8) cylinders or 2 (6x6x20) beams

(1) Refer to project specifications.
(2) Half day's pour considered to be 6 hours or less.
(3) 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.
(4) For non-structural or minor concrete construction, as determined by the RQE or RME, 1 set minimum per project is recommended.
(5) See the specified test method for minimum sample size.

AIRPORT CONSTRUCTION Materials Sampling & Testing Frequency

Material	Type of Sample	Sample Size	Type of Tests	Frequency	Remarks
Misc. Hardware	Source Quality	(1)		1 per pay item or assembly, min.	Approved by designated authority; reference MCL
Concrete Reinforcing Steel	Source 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	Source 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, Deleterious (visual)	1 per source or as required by change in material	Number consecutively PB-G-1
Topsoil	Source Quality	15 lbs.	Organic content, Gradation, pH	1 per source prior to use or as required by changes in material	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
Signals and Lighting	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.

Acceptance of Minor Quantities and Installations

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

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 per project.
3. Asphalt Cement—not to exceed 85 Tons or 15 Tons for other liquid asphalt 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 exceed 100 lineal feet.
7. Topsoil—not to exceed 600 square yards.

APPENDIX D

CONSTRUCTION SAFETY AND PHASING PLAN

(CSPP)

CONSTRUCTION SAFETY AND PHASING PLAN

KODIAK AIRPORT

SAFETY AREA EXTENSION
Project No. AKSAS 53587
AIP No. 3-02-0158-017-2014

And

DEVILS CREEK CULVERT REPAIR
Project No. 57474
AIP No. 3-02-0158-01_-201_

Kodiak, Alaska

March, 2014

Prepared By:
Alaska Department of Transportation & Public Facilities

4111 Aviation Avenue
P. O. Box 196900
Anchorage, Alaska 99519

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APPENDICES

This Construction Safety and Phasing Plan (CSPP) was developed concurrently with the project design, in accordance with FAA Advisory Circular 150/5370-2F.

This CSPP provides the basic requirements for the Contractor in the development of a Contractor Safety Plan Compliance Document (SPCD) that will be subject to Department approval prior to any construction activities for this project. Changes to this CSPP are not anticipated.

INTRODUCTION

The following is the Construction Safety and Phasing Plan (CSPP) to be used to prepare the Safety Plan Compliance Document (SPCD) for construction activity at Kodiak 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 a safe manner.

Work to be accomplished on this project includes the following:

- Extend the runway safety area for Runway 7 to the east by 600' and install an Engineered Material Arrestor System (EMAS) at the end of the safety area.
- Relocate the threshold of Runway 18 by 240' to the south to provide 240' of safety area prior to the threshold.
- Extend the Runway 18-36 embankment by 600' to the south.
- Relocate the threshold of Runway 36 by 240' to the south.
- Reconfigure the Runway 36, Taxiway A and Taxiway B intersections.
- Construct a 360' safety area prior to the relocated threshold of Runway 36.
- Install an EMAS at the north end of the safety area of Runway 36.
- Relocate the access road at the south end of the new Runway 18-36 safety area.
- Relocate the access road across the safety area of Runway 25.
- Repair the Devil's Creek culvert.
- Remove the existing lighted wind cone and segmented circle.
- Install a new lighted wind cone and segmented circle.
- Change runway designation of Runway 7-25 to 8-26.
- Change runway designation of Runway 18-36 to 1-19.
- Change taxiway and location signs to agree with the new runway designation.

(1) COORDINATION

The Kodiak Airport Runway Safety Area Extension project will require significant coordination efforts by the Contractor with the Department Of Transportation & Public Facilities Airport Manager, the Engineer, the U. S. Coast Guard and the various commercial airlines, air taxi's and Tenants operating at the Kodiak Airport (ADQ), including the Federal Aviation Administration (FAA) which operates a contract Air Traffic Control Tower (ATCT) at Kodiak and the Kenai Flight Service Station (FSS) and various visual and electronic NAVAIDs at the Kodiak Airport. Timely, ongoing and dedicated coordination efforts by the Contractor are essential to a safe and secure work environment that minimizes disruption to airport operation, safety, and security during the project.

The DOT&PF Airport Manager has primary responsibility for the Kodiak Airport's operation, safety and security. The Contractor's point of contact with the Airport Manager is through the Engineer. Any Contractor activity affecting an Aircraft Operations Area (AOA) of the airport is subject to advance authorization from the Airport Manager, through the Engineer, and all persons without exception are

subject to the Airport Manager's authority while on DOT&PF Airport Property. The Contractor shall develop a Safety Plan Compliance Document (SPCD) to compliment this Construction Safety and Phasing Plan (CSPP). The Contractor shall consult the Airport Manager, through the Engineer, while developing its SPCD.

Prior to any person (without exception) being granted access to operational areas of the Kodiak Airport, training stipulated by the Airport Manager is required. This training will cover topics such as safe and proper airport access, airport security, radio communication and vehicle operation as well as safety procedures or precautions specific to the Kodiak Airport. Part of this training may be provided by the Airport Manager but the Contractor will need to make inquiries and arrangements with the Airport Manager well in advance.

Coordination Through The Engineer: Whenever the project documents call for coordination, notification, contact or other interaction, any such activity shall be done by the Contractor; and it shall be done through, in the presence of, or with the written approval of the Engineer. Such activity could be with the DOT&PF Airport Manager, DOT&PF airport management, DOT&PF Maintenance and Operations, USCG Aircraft Rescue and Fire Fighting (ARFF) personnel, FAA Systems Operations Control Center (SOCC), Air Carriers, Airport Tenants, airport users, any local, state or federal agency, any private group or association, or members of the general public.

Lead time is required to coordinate any alteration to critical airport functions such as runway dimensional changes, partial and complete runway closures, taxiway and apron closures, Navaid deactivations and temporary outages, and de-energizing runway Visual Aids. The following lead times are required for the Contractor to initiate coordination efforts through the Engineer and provide schedule information:

Entity / Group / Agency / Organization	Lead Time	Critical Airport Function
DOT&PF Airport Manager*	14 days	AOA changes & Visual Aid outages
Airport Rescue and Fire Fighting (ARFF)*	14 days	AOA changes
FAA Systems Operations Control Center**	45 days	Navaid shutdowns
Airport Tenants / Users	45 days	AOA changes, Navaid & Visual Aid changes and outages
Air Carriers	45 days	AOA changes, Navaid & Visual Aid changes and outages

*Any Airport safety or security issue, and all emergencies or accidents require immediate notification
**Reference CSPP Section 1c. Note that other coordination with FAA may require different lead times, such as e-filing of FAA form 7460-1 for certain equipment intended for use by the Contractor. See below section 9.e.

(a) Pre-Construction Conferences

The Contractor shall attend the Pre-Construction Conference as required in the Contract Documents.

The Safety Plan Compliance Document shall be submitted at or prior to the Pre-Construction Conference.

(b) Contractor Progress Meetings

Hold weekly progress meetings with the Engineer at times and places acceptable to the Engineer. Provide facilities with a toll free number so that the Engineer's invitees may attend telephonically. Airport safety, security and short term construction schedules shall be a standing agenda item for each progress meeting. Additionally, the Contractor shall provide updated construction information for project stakeholders via email and advertisements, and administrate and hold entirely separate informational public meetings each week during active construction. The preliminary project stakeholder list is outlined below in CSPP section 1e.

(c) Scope or Schedule Changes

The Contractor will schedule and sequence the work in accordance with the phasing requirements. The Contractor will not change the schedule, perform unscheduled work or perform work out of sequence within any of the specified project phases unless prior written approval is received from the Engineer. As a standing condition of approval of any schedule or sequence change, the Contractor will perform additional coordination in accordance with this section.

(d) FAA ATO Coordination

Closing or restricting use of RW 7-25 and RW 18-36 will require deactivations and temporary outages of various navigation aids (NAVAIDs) operated and maintained by the FAA. NAVAIDs at the Kodiak Airport include a localizer and glide slope (ILS), Distance Measuring Equipment (DME), Vertical Approach Slope Indicator (VASI) and Runway End Identifier Lights (REILS).

Taking any navaid out of service requires 45 days advance coordination with the FAA SOCC, as well as with other project stakeholders. For an ILS outage, coordinate with the Airport Manager through the Engineer who will contact FAA SOCC. The Contractor will provide all support including, but not limited to, meeting attendance, scheduling and project documentation that may be required to conduct coordination with SOCC.

Putting navaid back in service will require advance coordination with various divisions of the FAA. Any navaid impacted by the project may require an FAA Flight Check certification prior to SOCC putting it back in service. The Contractor shall conduct all required coordination efforts with FAA, through the Engineer, to prepare for and schedule all required FAA flight checks.

(e) Project Stakeholder List

The following is a preliminary list of project stakeholders. The Contractor shall ensure that the following entities receive appropriate project coordination as identified above, working through the Engineer. This list is preliminary, and additional stakeholders may be identified during development of the Contractors SPCD, as well as during the project's Construction.

FAA Contacts:

Department	Interest	Contact Name	Contact Address/Phone/email
FAA Airports Division	Airport Certification Grant Compliance	Gabriel Mahns	(907)271-3665

FAA Systems Operations Control Center (SOCC)	Open or Close Runway NAVAIDs Relocate Runway Threshold		(800)478-2139 (907)271-5800
	FAA Local M&O and NAVAIDS	Greg Roberts	(907)398-7975
Kenai Flight Service Station	Notices to Airmen	Local Phone	(907)-283-7211

DOT&PF Contacts:

Department	Interest	Contact Name	Contact Address/Phone/email
Airport Manager	Safety, Security, Operations	Rob Greene	1500 Anton Larson Road Kodiak, AK 99615 (907) 487-4952 (907) 539-7072 (Cell) Robert.Greene@alaska.gov
Construction Manager	Construction Administration	Steven Jochens	Steven.Jochens@alaska.gov (907)-269-0659
Project Engineer	Construction Administration	Merle Sena	Merle.Sena@alaska.gov (907) 632-9130 (Cell)
M&O Safety and Security	Safety and Security	Jeff Doerning	jeffrey.doerning@alaska.gov (907)269-0754
Design Team Lead		Morgan Merritt, P.E. Jeanne Lematta, P.E.	morgan.merritt@alaska.gov jeanne.lematta@alaska.gov

Air Carriers:

Company	Interest	Contact Name	Contact Address/Phone/email
Alaska Airlines	Air Passenger\Cargo	Lynae Craig	Lynae.craig@alaskaair.com
Andrew Airways	Air Taxi		(907)487-2566 (907)487-2578 (Fax) info@andrewairways.com
Empire Airlines	FedEx	Randy Lanfall Director of Operations	(208)292-3850 (208)292-3851 (Fax) randyl@empireairlines.com
Era Alaska	Air Passenger\Cargo	Dave Lowell Dir. Of Flight Safety	(907)266-8387 dlowell@flyera.com
Harvey Flying Service	Air Taxi		(907)487-2621 (907)487-1947 (Fax) harveyfs@eagle.ptialaska.net
Island Air Service	Air Taxi		(907) 487-4596 (800) 478-6196 islandair@alaska.com

Servant Air	Air Taxi		(907)487-4444 (877)487-4400 info@ServantAir.net
Trans Northern	Air Freight, Charter		(907)245-1879 charters@transnorthern.com

USCG Base Kodiak:

Company/Organization	Interest	Contact Name	Contact Address/Phone/email
United States Coast Guard	Safety, Air Operations		(907)487-5003

Private, State Government, and Local Government Entities:

Organization	Interest	Contact Name	Contact Address/Phone/email
State Representative	State Government	Alan Austerman	305 Center Ave. Suite 1 Kodiak AK, 99615 Phone: 907-486-8872 Fax: 907-486-5264 Representative.Alan.Austerman@akleg.gov
State Senator	State Government	Gary Stevens	305 Center Ave. Suite 1 Kodiak AK, 99615 Phone: 907-486-4925 Fax: 907-486-5264 Senator.Gary.Stevens@akleg.gov
City of Kodiak	Local Government	Aimée Kniaziowski City Manager	710 Mill Bay Road Kodiak, Alaska 99615 907.486.8640 • Fax 907.486.8600 AKniaziowski@city.kodiak.ak.us
Kodiak Island Borough	Local Government	Bud Cassidy Borough Manager	710 Mill Bay Rd. Room 125 Kodiak, AK 99615 Ph: (907) 486-9301 Fax: (907) 486-9374
Koniag, Inc.	Native Corporation	Tom Panamaroff	(907)561-2668 (800) 658-3818 toll free (907) 486-3325 fax www.koniag.com

Natives of Kodiak	Native Corporation	Dave Anderson	(907) 486-3606 Fax: (907) 486-2745 (800) 648-8462 nokinfo@alaska.com
Ouzinkie Native Corporation	Native Corporation	John Sturgeon	1-800-680-2208 (907)561-2452 Fax: (907) 680-2268
Leisnoi, Inc.	Native Corporation	Carl Potts	907-512-2055 Info@leisnoi.com www.leisnoi.com

Utilities

Organization	Interest	Contact Name	Contact Address/Phone/email
USCG Integrated Service Command (ICS) Kodiak Facilities Engineering Division	Water and Sewer Locates	Cmdr. Andy Brown	(907)487-5320, x217
Locate Call Center	Utility Locates		1-800-478-3121
FAA	NAVAIDs Locates	Gregg Roberts	(907)269-1149 (907)398-7975

Media Organizations:

Organization	Interest	Contact Name	Contact Address/Phone/email

Other Interested Groups or Organizations:

Organization	Interest	Contact Name	Contact Address/Phone/email

(2) PHASING

The objective of this project is to provide adequate safety area for Runways 7-25 and 18-36 and repair the Devils Creek culvert. The project will be constructed in phases to minimize disruption for operations at the Kodiak Airport. The intent is to complete all runway safety area work by October 31, 2015. Devils Creek culvert work may be completed in 2016.

The phasing for the project is organized into three groupings.

- Phase 1A and 1B – These phases cover work associated with Runway 7-25 and include construction of a 500' wide by 600' long extension of the safety area and constructing an EMAS for Runway 7-25.

- Phase 2A, 2B and 2C – These phases cover work associated with Runway 18-36 and include construction of an embankment extension of Runway 18-36 to the south, relocating the runway to the south by 240', constructing a 360' safety area to the south, reconfiguring the Runway 36 Taxiway A and Taxiway B intersections, restriping the runway and taxiways, construction of an EMAS, repaving Taxiway C between Taxiway B and Runway 18-36, and relocating the service road from USCG Base Kodiak to the sewage treatment plant.
- Phase 3 – This phase will cover repair of the Devil's Creek culvert.

It is expected that Phase 1 and Phase 2 will begin simultaneously and be completed by October 31, 2015. In accordance with the FEIS and ROD for this project, no in-water work (below MHW) will be allowed between April 1 and July 15. The Contractor shall schedule and sequence work based on the phasing requirements.

Construction summaries shown include major items of work and are not meant to be all-inclusive of work to be performed. The order for accomplishing the individual items of work may vary in accordance with the Contractors schedule.

(a) Phase Elements

Any Contractor activity affecting the operations of the Kodiak Airport is subject to advance authorization from the Airport Manager, through the Engineer. Any Contractor activity affecting NAVAIDs requires advance coordination with FAA SOCC. The Contractor shall follow Section 1 of this CSPP in coordinating activities for the duration of the project.

Prior to any change to an Airport Operations Area (AOA), all temporary markings, runway designator covers, hazardous area barricades, lighted closure marking (X)'s, etc. required by the CSPP, construction safety drawings or approved SPCD shall be acceptably installed or removed. All such work shall be coordinated in advance.

Haul route(s) for each phase are designated in the plans and the Contractor is responsible for maintaining them in satisfactory condition as the work progresses. This includes controlling haul route dust at all times. The Contractor shall coordinate and secure approved gate access(s) prior to beginning any work on the airport.

(i) Phase 1A - Runway 7-25 Safety Area Embankment Construction

Description: This phase will consist of placement of fill material and shore protection at the east end of Runway 7-25 for the 600' safety area extension of this runway.

Duration: Work is expected to begin by June 15, 2014 and be complete by December 31, 2014. The intent is to complete all embankments and shore protection placement during the 2014 construction season in preparation for Phase 1B which will begin in the 2015 construction season. No in-water work (below MHW) will be allowed between April 1 and July 31.

Construction Summary: Work associated with this phase is within the Phase 1 construction area depicted on the construction phasing and safety drawings. This work includes, but is not limited to, the following:

- Install temporary threshold lights as shown of the plans.
- Install temporary REIL (Contractor will install conduit, wiring and FAA will install the REIL).
- Install temporary threshold bar and chevrons as shown in the Safety Plan Details.
- Deactivate the runway threshold and edge lights at the closed end of the runway.
- Cover Runway 25 designation number and threshold markers as shown in the Safety Plan Details.
- Paint new temporary runway designation number as shown in the plans.
- Construct the new embankment for the safety area extension east of the east end of Runway 7-25 to include placing of embankment material and shore protection.
- Remove temporary lighting and marking following completion of embankments.
- Restore runway threshold and edge lighting.
- Restore the REIL system to its original location (to be performed by the FAA).
- Reactivate Glide Slope (to be performed by the FAA).

(ii) Phase 1B - Runway 7-25 Safety Area Surfacing, Paving, EMAS and Striping

Description: This phase will consist of grading of the safety area extension and placing additional embankment material, as necessary, to bring the surface up to grade. The shore protection will also be inspected and any repairs made. The blast pad and the EMAS pad will be constructed and paved. The service road that crosses the threshold of Runway 25 will be constructed and surfaced. The balance of the safety area will be surfaced. The EMAS will be installed at the east end of the safety area embankment and the safety area marked. The runway designation markers, taxiway and location signs will be changed to reflect the change in runway designation from Runway 7-25 to Runway 8-26.

Duration: This work is expected to begin no later than May 1, 2015 and be complete by October 31, 2015. No in-water work (below MHW) will be allowed between April 1 and July 31.

Construction Summary: Work associated with this phase is within the Phase 1 construction area depicted on the construction safety plans. This work includes, but is not limited to, the following:

- Deactivate the FAA Glide Slope and REIL (to be performed by FAA).
- Install temporary REIL (Contractor will install conduit, wiring and FAA will install the REIL).
- Install temporary threshold lights as shown on the plans.
- Deactivate the lighting in the closed part of the runway.
- Install temporary threshold bar and chevrons as shown in the Safety Plan Details.
- Cover Runway 25 designation number and threshold stripes as shown in the Safety Plan Details.
- Paint new temporary runway designation numbers as shown on the plans.
- Regrade the safety area, as needed.
- Surface and pave the safety area as shown on the plans.
- Install Runway 7 EMAS.

- Mark safety area.
- Change runway designation numbers for Runway 7-25 to 8-26.
- Change existing taxiway and location signs to reflect the new runway designation.
- Remove temporary lighting and marking following completion.
- Restore runway lighting.
- Reactivate the FAA Glide Slope and REIL (to be performed by the FAA).

(iii) Phase 2A - Runway 18-36 Safety Area Embankment Construction

Description: This phase will consist of placement of fill material and shore protection at the south end of Runway 18-36 for construction of the runway relocation and safety area extension of this runway.

Duration: Work is expected to begin by June 15, 2014 and be complete by December 31, 2014. No in-water work (below MHW) will be allowed between April 1 and July 31. The intent is to complete all embankment work during the 2014 construction season in preparation for Phase 2B which will be completed in 2015.

Construction Summary: Work associated with this phase is within the Phase 2A and 2B construction area depicted on the construction safety plans. This work includes, but is not limited to, the following:

- Construct the new embankment for the runway relocation and safety area extension south of the south end of Runway 18-36 to include placing of shore protection.

(iv) Phase 2B - Runway 18-36 South Extension and Safety Area Surfacing and Paving

Description: This phase will consist of regrading of the embankment constructed during Phase 2A and place additional embankment material, as needed, to bring the surface up to grade. The shore protection will also be inspected and any repairs made. The 240' extension of the runway to the south will be constructed and paved. Taxiway A from Taxiway B to the new runway threshold will be constructed and paved. The blast pad will be constructed and paved. The service road that crosses the threshold of Runway 36 will be constructed and surfaced. The balance of the safety area will be surfaced. The new runway and taxiway lights will be installed but not energized. The foundation work and wiring for the REIL system will be installed.

Duration: This work is expected to begin no later than May 1, 2015 and be complete by July 31, 2015. No in-water work (below MHW) will be allowed between April 1 and July 31.

Construction Summary: Work associated with this phase is within the Phase 2A and 2B construction area depicted on the construction safety plans. This work includes, but is not limited to, the following:

- Regrade the runway extension and safety area, as needed.
- Install new runway and taxiway lighting for the Runway 36 threshold and for Taxiways A and B but do not activate.
- Surface and pave the runway, taxiways and blast pad as shown on the plans.
- Construct new service road as shown on the plans.

(v) Phase 2C - Runway 18-36, Taxiway A and Taxiway B Remarking and EMAS

Description: This phase will relocate the thresholds of Runways 18 and 36 by 240' to the south. Existing runway striping will be removed as shown on the plans. The striping for Taxiway A and B will be removed. New striping will be applied for the relocated runway. The runway designation numbers for Runway 18-36 will be changed to Runway 1-19. The taxiway striping for Taxiways A and B will be applied to indicate the new configuration of these taxiways. The runway and taxiway lighting system will be modified to reflect the new runway and taxiway configuration. Existing taxiway and location signs will be changed to reflect change in runway designation. The VASI for Runway 36 will be refurbished and REIL system will be installed at its new location. The EMAS will be installed at the north end of the safety area. Taxiway C between Taxiway B and Runway 18-36 will be repaved. The existing lighted wind cone and segmented circle will be removed. A new lighted wind cone and segmented Circle will be installed.

Duration: This phase will commence immediately following completion of Phase 2B. This phase is expected to begin August 1, 2015 and be complete by November 30, 2015. This phase shall not begin until Phase 2B is complete. If approved by the engineer, this phase or some of its parts may be started earlier.

Construction Summary: Work associated with this phase is within the Phase 2B construction area depicted on the construction safety plans. This work includes, but is not limited to, the following:

- Deactivate runway and taxiway lights for the project area.
- Place illuminated runway closure markers over runway designation numbers during hours of temporary runway closure.
- Place Hazard Barriers as shown in the Safety Plan during hours of runway closure.
- Remove runway threshold and edge lights, and taxiway edge lights, as required.
- Install new threshold lights for the relocated threshold of Runway 18.
- Remove existing runway and taxiway striping as shown on the Marking Demolition Plan.
- Install EMAS at north end of the Runway 18-36 safety area.
- Mark Runway 1-19, Taxiway A and Taxiway B as shown on the plans.
- Change taxiway and location signs to agree with new runway designation.
- Install REIL system at its new locations (to be activated by FAA).
- Refurbish VASI (to be accomplished by FAA).
- Repave and mark Taxiway C between Taxiway B and Runway 18-36.
- Remove existing lighted wind cone and segmented circle.
- Install new lighted wind cone and segmented circle.
- Activate runway and taxiway lights.
- Remove closure markers, temporary REIL system and barriers.

(vi) Phase 3 – Devils Creek Culvert Rehabilitation

Description: This phase will consist of rehabilitation of the existing twin-box Portland cement concrete (PCC) culvert located at approximately Station 15+00 of Runway 7-25. Work will consist of repair and repaving of the invert and walls of the interior of the culvert with new PCC. This phase will also include construction of a dike at the inlet end of the culvert.

Duration: This phase of work is currently not funded. It is expected to begin by May, 2015 and be complete in 2016.

Construction Summary: Work associated with this phase is within the Phase 3 construction area depicted on the construction safety plans. This work includes, but is not limited to, the following:

- Repair interior of PCC Box Culvert.
- Construct a dike around the entrance to the box culvert.

(b) Safety Plan Drawings

Safety plan drawings are included in this CSPP and the plan set. The drawings are available in Autodesk format (*.dwg) files, and as Adobe (*.pdf) format, through the Engineer. Modify these drawings to fit your proposed means and methods to complete the project if needed, but no modification is allowed to change the phasing requirements. Submit your construction safety drawings with revisions, if any, along with a work schedule and SPCD for approval within 30 days of receiving NTP #1.

SPCD information can be found in advisory circular (AC) 150/5370-2 *Operational Safety on Airports During Construction*. The latest edition of this AC and most others can be obtained free of charge from the FAA on the internet.
http://www.faa.gov/airports/resources/advisory_circulars/

(3) AREAS AND OPERATIONS AFFECTED BY THE CONSTRUCTION ACTIVITY

(a) Identification of Affected Areas

Areas that are anticipated to be affected by the performance of work for each required phase of this project are shown on the construction safety drawings included in this CSPP and the plan set. If, at any time during this project, the Contractor becomes aware of any other areas that are or could be affected by the performance of work, the Contractor shall promptly revise the construction safety plan drawings to show them, update the SPCD and submit to the Engineer for approval. Work in any such other affected area is prohibited until written approval of the updated SPCD and revised construction safety drawings is received from the Engineer.

See Section 13, Special Conditions, for situations affecting the closures of runways and taxiways under emergency conditions.

(i) Closing, or Partial Closing of Runways, Taxiways and Aprons

- Phase 1A and 1B: The threshold of Runway 25 will be temporarily relocated by approximately 500' to the west. The first 500' of the runway will be closed to aircraft operations. For Runway 25, the landing distance available (LDA) will be 7,000'. The accelerate-stop distance (ASD), takeoff runway available (TORA) and takeoff distance available (TODA) will be 6,000'. For Runway 7, the LDA ASD, TORA and TODA will be 6,000'.

  Runway 7-25 will be closed for aircraft operations, except taxi, for remarking of the Runway 8 designation marker. Closures are expected to be of short duration. Closures will be coordinated with Airport Management and ATCT through the Engineer.

- Phase 2A and 2B: During these phases, Runway 18-36, Taxiway A and Taxiway B will be closed to all aircraft operations from 6:30 p.m. to 6:30 a.m. to allow for construction.

- Phase 2C: Runway 18-36 will be closed for aircraft operations during this phase. The segments of Taxiway A/B and C between Taxiway B and Runway 18-36 will also be closed to aircraft operations. The contractor should plan on allowing the USCG to tow aircraft through the construction area with prior notice.

- Phase 3: No closures are anticipated.

(ii) Closing of ARFF Access Routes

No closing of ARFF routes is anticipated. The scope of construction for this project will not prevent ARFF access to any area of the airport, or surrounding properties. Movement of ARFF vehicles will be allowed through closed areas whenever physical conditions will accommodate them. Marking of access routes, open excavations and trenches must be maintained as detailed in sections 15, 16, and 18 below. Coordinate with ARFF personnel as discussed in section 9d.

(iii) Closing of Access Routes Used by Airport and Airline Support Vehicles

No closing of these access routes is anticipated.

(iv) Interruption of Utilities, Including Water Supplies for Firefighting

There is no anticipated interruption of utilities during this project.

The water supply line from USCG Base Kodiak to the sewerage treatment plant runs through the safety area in the area of Runway 36 covered by Phases 2A and 2B. Verify there are no water supply lines, communication lines, electrical lines, or other utility lines within the work limits. If located these lines must be protected from damage unless relocation of the utility line is required.

A 16 inch water line crosses the Devils Creek culvert in the area of taxiway F intended to receive culvert reinforcement. We are not anticipating any interruption in service for this water line.

(v) Approach/Departure Surfaces Affected By Heights of Objects

The proposed work may include the use of tall equipment such as a crane or vertical drill rig on the closed runway. The use and movement of this equipment, if employed, will be subject to coordination with FAA (using form 7460-1) under section 9.e below, authorization by the Airport Manager and the issuance of a NOTAM. Anticipate e-filing of the form 7460-1 and 45 days review. For work areas marked on the attached Safety Plan Sheets, assumption of vehicles no higher than 15 feet at the east end of Runway 7-25 and increasing by 20:1 to the east was made. (See profile on Sheet AD1 of 9 of the Safety Plans.

See section 18.b.i below for additional restrictions regarding tall equipment.

(vi)Staging Areas, and Haul Routes Near AOA

All staging areas and haul routes will be kept away from the AOA to the extent practicable. Haul routes that approach AOAs must be marked or flagged to prevent incursion into object free areas (OFAs) or other restricted areas during aircraft operations.

(b) Mitigation of Effects

(i) Temporary Changes to Runway and/or Taxi Operations

During Phases 2A and 2B, Runway 18-36 will be closed to aircraft operations from 6:30 p.m. to 6:30 a.m.

During Phases 2A and 2B work will occur within the safety Areas of Taxiway A and Taxiway B. Both taxiways will be closed to taxiing aircraft. This will restrict taxiing from USCG Base Kodiak to the airport and aircraft using Runway 36. The aircraft will be required to notify the Contractor through the ATCT or Engineer at least 30 minutes prior to a scheduled or unscheduled flight. The Contractor will be required to move personnel and equipment from the taxiway safety areas to allow passage of the aircraft.

(4) PROTECTION OF NAVIGATION AIDS (NAVAIDS) AND VISUAL AIDS

(a) NAVAIDS Required To Be Taken Out Of Service

The runway partial or full closures will require that the following NAVAIDs be taken out of service, and returned to service by the FAA:

Runway 25 Glide Slope – This instrument will be deactivated during Phases 1A and 1B. The Glide Slope will be returned to service after each phase.

(b) Visual Aids

Runway lighting and visual aids will be affected by the project. FAA visual aids will be deactivated, relocated and returned to service by the FAA.

Runway 7-25 Lighting - During Phases 1A and 1B, the Runway 25 threshold will be relocated 500' to the west and the existing threshold and edge lights in this area will be deactivated. Temporary threshold lights will be installed.

Runway 18-36 Lighting - During Phases 2A and 2B, the runway lights will be deactivated from 6:30 p.m. to 6:30 p.m. During Phase 2C, the runway lights will be deactivated for the duration of the phase.

Runway 25 VASI - The VASI will remain in service.

Runway 25 REIL - The REIL will be deactivated during Phases 1A and 1B. The REIL will be returned to service after each phase.

Runway 25 REIL (temporary) – Temporary REIL lights will be installed at the relocated threshold.

Runway 36 REIL – The REIL will be deactivated during hours of temporary runway closure and will be deactivated for the duration of Phase 2C and relocated into its final position for the new Runway 36 threshold.

Runway 36 VASI – During hours of runway closure, the VASI will be deactivated.

(i) Coordination with FAA and the Airport Manager

Conduct coordination with FAA for NAVAIDs and with the Airport Manager through the Engineer for visual aids as detailed under Section 1d above.

(ii) Issuance of NOTAMs

NOTAMS will be issued as detailed in section 9.b below.

(iii) Protection of Underground Utilities Serving NAVAIDS and Visual Aids

Protect underground power supply as detailed in Section 11 below.

(iv) Drawings of Affected NAVAIDs

See the construction safety drawings included in this CSPP and the plan set for location of affected NAVAIDS.

(5) CONTRACTOR ACCESS

(a) Location of Stockpiled Construction Materials

See the construction safety drawings included in this CSPP and the plan set for staging and stockpile location. Materials may be temporarily stockpiled elsewhere on the airport property if the following conditions are met:

- Stockpile location has been authorized by the Airport Manager and approved by the Engineer.
- Stockpile location has been submitted on form 7460-1 and approved by regional FAA office.
- Stockpile location has been permitted or does not require agency permits.
- Stockpile is stored and stabilized so as to not be a hazard to aircraft operations and to prevent attraction of wildlife. See section 6 regarding wildlife management, and section 7 regarding foreign object debris (FOD) management.
- Stockpile is removed prior to completion of the construction phase unless specifically authorized by the Airport Manager and approved by the Engineer in writing. Stabilize and grade area to drain after removing stockpiled materials.

(b) Vehicle and Pedestrian Operations

(i) Authorized Vehicles

All Contractor vehicles requiring access to Restricted Areas shall be registered with the Airport Manager. Each vehicle shall also display either a permanent or temporary ramp vehicle permit as issued and instructed by the Airport Manager. Temporary ramp permits shall be returned to the Airport Manager upon completion of work or expiration of the ramp permit(s), whichever is sooner. All construction vehicles and equipment must have flags and lights and must meet conditions as specified in AC 150/5210-5.

(ii) Vehicle Color

Vehicles may be any color or combination of colors other than solid black or white. In accordance with (IAW) AC 150/5210-5, paragraph 3f.

(iii) Vehicle Lighting

Vehicles not escorted by a properly lighted vehicle must be equipped with a yellow flashing light and flag during the day; and with a yellow flashing light during nighttime. Lights must flash at 75 ± 15 flashes per minute. Lights must have peak intensity within the range of 40 to 400 candelas (effective) from 0° (horizontal) up to 10° above the horizontal and for 360° horizontally. The upper limit of 400 candelas (effective) is necessary to avoid damage to night vision. From 10° to 15° above the horizontal plane, the light output must be 1/10th of peak intensity or between 4 and 40 candelas (effective) (IAW AC 150/5210-5, paragraph 5b and c.).

- Yellow flashing light per the following chromaticity requirements: The Society of Automotive Engineers (SAE) Standard J578 Revised December 2006, *Color Specification*, defines the acceptable color boundary limits and measurement of emitted red, white, signal blue, and yellow

light for vehicle lights. This standard applies to the overall emitted color of light from the device in lieu of emitted light from any small area of the lens. The color of emitted light must fall within the color boundaries per SAE J578 Revised December 2006 (color boundary equations are in the standard) using color measurement methods detailed in the standard. See FAA Engineering Brief #67, *Light Sources Other Than Incandescent and Xenon for Airport and Obstruction Lighting Fixtures*, for additional information and Alternative Lighting Devices.

(iv) Vehicle Markings

All vehicles shall be marked with the Contractor or Sub-contractor's name. All vehicles, other than those that are properly equipped and authorized by the Airport Manager to routinely traverse any portion of the AOA, must be marked with a flag on a staff attached to the vehicle so that the flag will be readily visible. The flag must be at least a 3-foot by 3-foot square having a checkered pattern of international orange and white squares at least 1-foot on each side (IAW AC 150/5210-5, paragraph 4d.).

All vehicles operating on AOAs (runways, taxiways, ramps and parking aprons) shall be in good operating condition and free of fluid leaks. The Airport Manager or the Engineer may refuse to permit access or direct the removal of any vehicles not meeting these requirements.

Any vehicle that travels on any portion of an AOA, other than properly closed and marked areas, shall be driven by a vehicle operator who possesses a badge and has received radio communication and airport driver training. The vehicle shall be properly marked, lighted and equipped with a working aviation-band, two-way radio and be authorized by the Airport Manager, through the Engineer. The vehicle operator is required to monitor the ATCT or Common Traffic Advisory Frequency (CTAF) for the ADQ on the frequencies shown in 5c.

(v) Authorization to Operate Contractor Vehicles

Vehicle operators must present a valid Alaska Driver's License to the Airport Manager to receive authorization to operate contractor vehicles in the Restricted Areas and construction areas.

All Contractor and subcontractor employees who operate vehicles must complete training required by the Airport Manager prior to working on any portions of the airport property. The training must be repeated annually for each season of construction. Training records will be supplied to and maintained by the Alaska Department of Transportation and Public Facilities (DOT&PF) for each authorized driver.

Vehicle operators at airports face conditions that are not normally encountered during highway driving. Therefore, those persons who have vehicular access to the AOA's must have an appropriate level of knowledge of airport rules and regulations. Any person expected to operate on the AOA must demonstrate a functional knowledge of the English language.

(vi) Area of Authorization

Contractor and subcontractor personnel, equipment and vehicles will only be authorized in the specified work area for the phase that is under construction at any given time and on the designated access routes to and from that area.

(vii) Keys and Key-way Devices

The Airport Manager may issue card keys or keys and key-way devices that grant the Contractor access to secured areas. The Contractor shall not duplicate any card key, key or key-way device or allow any person other than those authorized by the Airport Manager to receive and use card keys, keys or key-way devices. The Contractor shall immediately notify the Airport Manager of lost or unrecovered card keys, keys or key-way devices. The Contractor will be responsible for lost or unrecovered card keys, keys or key way devices and must pay all costs associated with lock replacement, or re-keying, at the Airport Managers discretion.

(viii) Construction Employee Parking Areas

In addition to information included elsewhere in the CSPP, the following provisions apply:

- Coordinate vehicle parking areas for Contractor and subcontractor employees with the Airport Manager, through the Engineer. Coordinate in advance and ensure that the location(s) designated by the Airport Manager are used at all times in a manner that prevents unsafe conditions and damage to airport or private property.
- Do not park or operate motorized vehicles on vegetated unimproved surfaces.
- Do not park vehicles within 15 feet of any roadway open to traffic.
- Do not park vehicles within 6 feet of a security fence.

(ix) Construction Vehicle and Equipment Parking

Contractor staging areas for work on the Kodiak Airport Safety Area Extension project are available within the work area for each phase, subject to the authorization by the Airport Manager, through the Engineer, and the conditions cited in this section. Before occupying an authorized temporary use/staging area, mark the staging area limits with lath and flagging or other measure and then arrange a joint inspection with the Engineer to record the area's original condition. Do not stage motorized equipment in the staging area without a drip pan. Equipment not actively engaged in the work is to be removed from the Runway and taxiway OFA. When the temporary staging area is no longer needed, arrange a joint inspection with the Engineer to ensure you have returned the area to an acceptable improved condition.

(c) Two-Way Radio Communications

All Contractor and subcontractor personnel engaged in activities involving unescorted operation on AOA's will be trained by the Airport Manager, and shall observe the proper procedures for communications at all times, including use of the appropriate radio frequencies. Training on proper communication procedures is essential for maintaining airport operational safety.

When operating vehicles on or near open runways, taxiways or aprons, all Contractor and subcontractor personnel must understand the critical importance of monitoring and maintaining radio contact with the ATCT or with inbound and outbound air traffic using the CTAF. The following are the radio frequencies utilized:

FAA Air Traffic Control Tower (Part time)

Oct 1 – March 31; 1520Z - 0500Z
April 1 – September 30; 1600Z - 0700Z
(The Contractor shall verify hours of operation before starting work.)
Tower – 119.8 MHz
Ground Control – 121.9 MHz

Remote Communications Outlet/Common Traffic Advisory Frequency - 119.8 MHz
(Remote to Kenai FSS)
(Available when tower is closed)

When the Kodiak ATCT is closed, communicate with the Kenai FSS via the remote communications outlet, using the CTAF.

All other construction related radio communications shall be limited to Federal Communications Commission (FCC) approved frequencies or radio bands.

(d) Airport Security (Kodiak Airport)

SECURITY REQUIREMENTS. The Contractor shall conform to the security requirements of the Kodiak Airport. These requirements include 'Airport Ground Vehicle Operating Training Guide' which is available on request. There is also a requirement for a Contractor and his crew to receive security clearances, be badged, and receive security training, pertinent to the area of the airport the Contractor shall be working on.

The security of AOAs shall be maintained at all times. 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 AOA utilized for the construction project. Failure to maintain security shall also include failure to abide by the identification program or other requirements pertaining to the security of the AOAs as set out herein.

The Contractor shall be responsible for preventing unauthorized access to the AOA by way of the construction site to include maintaining perimeter gates in either a locked condition or attended by persons who insure that only authorized personnel or vehicles are admitted through them into the AOA. Any opening in the fencing that would allow unauthorized access by a person being able to go through must be either secured so as not to allow unauthorized access or attended by persons as outlined above.

Those persons designated to control access points into the AOA shall be instructed in the proper procedures of identification requirements for persons and vehicles.

The Contractor shall 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 thereof.

a. Identification of Persons

TSA Regulations require the airport operator to control access and prevent unauthorized persons from entering Air Operations Areas (AOAs). In compliance with this requirement, the airport operator has established procedures to authorize or deny access to the AOAs and to identify and control persons while in these areas.

The Identification Badge, developed and adopted by the airport operator, is the only identification system recognized as authority to allow Contractor personnel to enter restricted AOAs. Any person found in restricted areas not in compliance with this program shall be removed from the area and action shall be taken against violators as appropriate under Alaska State Statute or Alaska Administrative Codes.

(1) Control Authority

The Airport Manager has been delegated authority for approving issuance, system control, implementation, and accountability of this program.

Proper individual identification and vehicle permits must be obtained through the Airport Manager before attempting to enter the airport grounds.

Individual identification badges must be obtained through the Airport Manager.

Applicants for Airport identification Badges must present either a current US Passport or two types of identification; one state and one federal. For example, a valid Alaska Driver's License, or Alaska State ID and a Social Security Card must be presented to the airport Manager.

An individual badge shall be used by each Contractor employee granted access to the airport 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.

(2) Badge Issuance Controls

No person may be issued an identification badge unless the following actions are completed:

(a) The employer of the person to receive a photo badge submits a written request to the Airport Manager requesting badge issuance. The application form for Airport identification shall be an original letter, shall be on company letterhead stationery, and shall include the following provisions:

Original signature of authorized company representative.

Requests submitted to the Airport Manager for identification badges must be approved and signed by an authorized individual from DOT/PF Aviation Construction.

The request form/letter will be considered valid for 30 days from the date it was originally signed and dated.

(b) Prior to issuance of an identification badge, the employee to be badged shall complete the badge application form at the airport manager's office and affirm that they understand and shall abide by the appropriate rules required for access onto the AOA. Each application shall be submitted to the TSA for a Security Threat Assessment (STA) prior to receiving an identification badge. A STA can take from 72 hours to 3 weeks to complete.

Upon receiving clearance from TSA, through the STA process, the employee shall attend Security training, based on the area of the airport the employee will be working. Security training shall be scheduled, in advance, through the airport manager's office. Upon completion of the required Security training, a badge will be issued.

(c) Employers are responsible for the maintenance of records necessary to ensure the retrieval of badges and final employee clearance by the Airport Manager upon termination of employment. Whenever a badged person's employment is terminated, for any reason whatsoever, the employer is responsible for recovering the ID badge and returning it to the Airport Manager. All badges must be returned to the ID section within five (5) days of the employee's termination date.

(d) Should an employee lose his/her ID badge, he/she shall immediately notify his/her employer, who shall then immediately notify the Airport Manager. Per TSA regulations, a written report of the lost badge shall be filed with the Airport Manager's office.

The Airport Manager will make telephone confirmation of the employee's employment status prior to reissue of a badge.

(e) The airport operator requires each Contractor and badge holder to agree to abide by the provisions of this identification program. The employer shall designate one or more persons to act as the activity badge control officer and as the point of contact for coordination in matters of badge program administration and security matters.

(3) Restricted Area Access Controls

(a) The airport operator is responsible for preventing unauthorized access to AOAs. Therefore, no person is permitted access to air operations areas unless that person is badged by the airport operator and his/her badge signifies that he/she has access to the area. All Airport Identification Badges must be worn on the outermost garment above the waist.

(b) The word "TEMPORARY" is written on the bottom front of the badge inside a gray bar. Construction badges shall only be valid in the immediate construction area and direct routes to and from the construction area. Failure to properly wear the badges or improper use of the construction badge(s) may result in confiscation of the badge(s) by the Airport Manager, removal from the AOA, and civil penalties imposed. The construction badge has an expiration date and is valid for a particular construction project only. The construction badge must be returned to the company immediately upon completion of the job, project, or badge expiration date, whichever is sooner. Lost badges must be reported immediately to the company and the Airport Manager.

(c) Any crossings of the AOA security fence shall require coordination with the Airport Manager prior to opening any gate. The Contractor is responsible for providing a flagman at any unsecured AOA access gate used to haul materials to and from the construction site, waste disposal area, or to any area where the Contractor's equipment must traverse within the AOA. These flagmen shall receive training from the Airport Manager relative to the access requirements into the AOA. The flagmen shall ensure that no access to the AOA is allowed except for properly badged personnel or by vehicles that are properly marked and permitted or properly escorted. The Airport Manager shall be contacted immediately if an unauthorized person enters the gate. In addition, flagmen shall be required at areas where the Contractor's equipment must cross active runways or taxiways to ensure that trucks hauling materials to and from the job safely yield right of way to aircraft. The Contractor shall provide a two way radio so that the flagmen shall continuously monitor the CTAF when the Contractor is hauling across or working in close proximity of an active runway or taxiway.

b. Identification of Vehicles

TSA Regulations require the airport operator to control access and prevent unauthorized vehicles from entering AOAs. In compliance with this requirement, the airport operator has established procedures to authorize or deny access to the AOAs and to identify and control vehicles while in restricted areas.

(1) Vehicle Identification Standards

All Contractor vehicles requiring access to the AOAs shall display a temporary ramp access permit as issued and instructed by the Airport Manager.

Temporary ramp permits must be turned back to the Airport Manager upon completion of work or expiration of the ramp permit(s), whichever is sooner.

(2) Area of Authorization

Contractor vehicles are only authorized in the areas where their contract work is being performed and on the access routes to and from that area.

(3) Authorized Vehicles

Any Contractor vehicle is authorized onto the airport when it is within its area of authorization, the temporary permits are properly displayed, and all occupants have proper airport identification badges properly displayed.

In order to maintain an accountability for all badges issued, it shall be required that the Contractor be responsible for physically collecting and turning back to the Airport Manager any and all outstanding badges/permits no longer used for the construction project; to include photo identification construction badges, and vehicle ramp permits.

c. Fees for Badges and Permits

A fee of $25.00 shall be charged the Contractor for each badge or permit the Contractor is responsible for that is issued; $50.00 for each replacement of a lost badge; $50.00 for not returning upon expiration of said badge(s), permit(s), or completion of the project, whichever is sooner. No badge or permit shall be reissued until fees are paid and a replacement request letter is received. All fees shall be paid by the Contractor as a subsidiary cost.

(e) Security Program (USCG Station – Kodiak)

The following is included in Section 70, Legal Relations and Responsibilities to the Public, in the Special Provisions of the contract. This section is applicable for operations within USCG Base Kodiak.

A. Provide Contracting Officer Technical Representative/Construction Inspector (COTR/CI) with a list of all employees, representatives, and subcontractors, including name, age, and address of each. All employees will be required to obtain security passes from the Base Security. Passes must be carried at all times when on Base and returned to the COTR/CI at the completion of the work. Violation of facility regulations may result in a forfeiture of individual passes.

B. Contact Base Security regarding regulations concerning vehicle passes. Provide a complete list of over the road vehicles and construction equipment to the Base Security. Include the make, model, year build, and identifying marks of each vehicle. All over-the-road vehicles must have current, valid registration and proof of insurance. All drivers must have a valid driver's license.

(6) WILDLIFE MANAGEMENT

The primary wildlife safety concern at Kodiak is birds. Birds are attracted by possible sources of food, open water or areas that may provide shelter. Of secondary concern are mammals such as bears, deer or other animals that would constitute a danger to operating aircraft, or possibly cause damage to

airfield fences or other equipment. Report the presence of birds or animals within the airport property to the Airport Manager in accordance with the airport's wildlife hazard management plan. Do not attempt to disperse birds or animals.

(a) Trash

Control and contain trash within all work areas, and especially within the airport property. It is the responsibility of all personnel who work at Kodiak to pick up trash and debris on the airfield. In some cases, this may simply be a blowing candy wrapper or bag. When the source of the attractant is the result of a failure to properly secure garbage or food in an enclosed facility or container, the Airport Manager will contact the responsible party in an effort to remedy the situation. If removal or securing of the attractant does not cause the birds to leave the area, airport maintenance and operations will be contacted to disperse the birds.

Fish or animal carcasses that attract birds or wildlife can be a safety hazard. Report the presence of fish or animal carcasses to the Airport Manager, or his representative, so they can be removed.

(b) Standing Water

Areas of standing and flowing water on and surrounding the airfield contribute to the presence of numerous species of hazardous wildlife. In some cases, these water sources provide a food attractant in the form of fish and aquatic invertebrates. Areas of standing water caused by, or made worse, by Contractor's activities will be rectified by temporary grading in compliance with the ESCP and SWPPP requirements as soon as detected. Provide adequate drainage, and erosion and sediment control measures to prevent attracting birds and other wildlife.

(c) Tall Grass and Seeds

The seed mix specified for this project has been approved by the Alaska Department of Natural Resources, Plant Materials Center. The seed mix will minimize the attraction to birds and wildlife. The Airport Manager will be responsible for annual clearing of vegetation with respect to wildlife management.

(d) Poorly Maintained Fencing and Gates

Maintain airfield security by manning gates that must be kept open for hauling. Fences or gates that are damaged by construction activities or contractor negligence must be repaired immediately at no cost to DOT&PF. All repairs are subject to inspection and approval of the Airport Manager, through the Engineer. Close and lock all gates that are not actively being used. Report all damage to fences or gates to the Airport Manager through the Engineer, whether caused by contractor activities, or otherwise observed.

(e) Disruption of Existing Wildlife Habitat

The project has been properly permitted with the regulatory agencies having jurisdiction over wildlife. Disruption of existing wildlife beyond the project footprint is prohibited.

(f) Vegetation Clearing

In order to protect migratory birds, the Contractor shall perform vegetation clearing in accordance with the USFWS Recommended Time Periods for Avoiding Vegetation Clearing in Alaska. See: http://www.fws.gov/alaska/fisheries/fieldoffice/anchorage/pdf/vegetation_clearing.pdf. No vegetation shall be cleared during the times recommended in the above document, unless the Contractor performs a bird survey to confirm that birds are not nesting in (or adjacent to) the area to be disturbed. The Contractor shall coordinate with the Engineer before performing the bird survey.

(g) Endangered Species

Wildlife observers will monitor for northern sea otters, Steller sea lions and Steller's Eider during in-water fill placement. Placement of fill would only occur when wildlife viewing conditions make it possible to observe a distance of 300 meters of the project fill footprint. The wildlife observers report directly to the Engineer.

(h) Raptor Nest Surveys

The Department will conduct a pre-construction raptor nest survey and if Bald Eagle nests are found during the survey, the National Bald Eagle Management Guidelines will be followed.

(7) FOREIGN OBJECT DEBRIS (FOD) MANAGEMENT

Control of FOD is a primary concern to safe airport operation. All debris must be removed from operational surfaces upon discovery or notification.

To emphasize the importance of FOD management, the agenda for each weekly contractor progress meeting with the Engineer and his invitees shall include discussion of any occurrences or issues in the previous week and potential improvements to ongoing practices. This can include trash management as discussed under section 6a.

(a) Inspections

Participate in daily safety and final inspections as required in section 10 below. Take immediate action as required to cleanup, and prevent FOD on operational surfaces.

(b) Hauling

Do not haul on or across paved surfaces (even when closed) unless authorized by the Airport Manager and approved by the Engineer in writing and included in the approved SPCD. Ensure all vehicles that must cross the AOA to perform inspections, temporary marking maintenance, or other required activities are swept clean, and checked for loose equipment, tools, or other objects that could become FOD.

Keep all active runway and taxiway areas swept clean of materials spilled by Contractor operations. Remove all material spills from the active runways, taxiways, and aprons immediately to avoid damage

to aircraft. Station adequate cleaning equipment at the job site for immediate cleanup of any material spills on all active runway, taxiway and apron surfaces. Assure that all loose material and debris has been removed from the sides of haul vehicles before leaving or entering the site in order to minimize spills of material on airport or road surfaces. Clean all spilled materials off airport operational surfaces before opening to aircraft. Clean all existing runway and taxiway lights, as well as temporary lighting, before opening to aircraft.

When trucks shall be traversing an AOA, the driver or an assigned laborer shall sweep off excess material that accumulates on the outside of the trucks during loading. Hand-sweep each truck before leaving the work areas.

(8) HAZARDOUS MATERIALS (HAZMAT) MANAGEMENT

Develop a Hazardous Materials Control Plan (HMCP), and Spill Prevention, Control and Countermeasure (SPCC) plan as required by the standard specification P-157 as quoted below:

Prepare the HMCP for prevention of pollution from storage, use, containment, cleanup, and disposal of all HAZMAT, including petroleum products related to construction activities and equipment. Include the HMCP as an appendix to the Storm Water Pollution Prevention Plan (SWPPP.) Compile Material Safety Data Sheets (MSDS) 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 Subcontractor Spill Response Coordinator for each subcontractor. The Superintendent and Contractor's Spill Response Field Representative must have 24-hour contact information for each Subcontractor Spill Response Coordinator and the Utility Spill Response Coordinator.

List and give the location and estimated quantities of HAZMAT (including materials or substances listed in 40 Code of Federal Regulations [CFR] 117 and 302, and petroleum products) to be used or stored on the Project. HAZMAT must be stored in covered storage areas. Include secondary containment for all HAZMAT 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 HAZMAT. Controls include placing absorbent pads or other suitable containment under fill ports while fueling, under equipment during maintenance or repairs, and under leaky equipment.

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 HAZMAT. 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. Clean up spills or contaminated surfaces immediately.

Describe methods of disposing of waste petroleum products and other HAZMAT generated by the Project, including routine maintenance. Identify haul methods and final disposal areas. Assure final disposal areas are permitted for HAZMAT disposal.

Describe methods of complying with the requirements of Alaska Statute (AS) 46.04.010-900, *Oil and Hazardous Substances Pollution Control*, and 18 AAC 75. Include contact information for reporting HAZMAT and petroleum product spills to the Project Engineer and reporting to federal, state and local agencies.

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.

(9) NOTIFICATION OF CONSTRUCTION ACTIVITIES

(a) Maintenance of a List of Responsible Representatives/ Points of Contact

The Contractor shall develop a list of contacts, in consultation with the Airport Manager and Engineer, consisting of both Contractor personnel and DOT&PF employees. Although the primary contacts for all matters involving safety and security remain the Airport Manager, Engineer, and Contractor Superintendent, certain issues may warrant the delegation of response to individuals capable of immediately taking action. These contacts may be required to be available 24 hours a day, as specified to address the following issues:

- ARFF coordination, including accidental utility interruption, or airport emergency response. (See section 9c below for non-airport related emergencies dial 911).
- HAZMAT Spill Response.
- Maintenance of temporary airport markings and lighting.
- Repair of erosion sediment control measures.
- FOD cleanup.
- Repair of damaged fence, gates, or locks.
- Other airport security issues, including loss of keys, identification badges, dismissed contractor employees.

(b) Other points of contact, as specified, or as directed by the Engineer/Notices to Airmen (NOTAMs)

Before beginning any construction activity, coordinate with the Airport Manager through the Engineer to provide information for all required NOTAMs and allow a minimum of 14 days prior to the date that the NOTAM needs to be issued by. Work that requires issuance of a NOTAM cannot begin until the NOTAM is authorized by the Airport Manager, through the Engineer and its issuance by the FAA is confirmed. Include drawings, in a format acceptable to the Engineer, that show areas open or closed to aircraft operations. Shows designated taxi routes and include other information on the drawings as directed. Modify the drawings as directed. Coordinate further, as required, to determine the cancellation of notices issued as NOTAMs.

The following guidance will apply regarding NOTAMs:

- The Airport Manager will provide information on closed or hazardous conditions on airport movement areas to the ATCT and/or FSS so it can issue a NOTAM.
- The Airport Manager will coordinate the issuance, maintenance, and cancellation of NOTAMs about airport conditions resulting from construction activities with tenants and the local air traffic facility.
- Only the Airport Manager may issue or cancel NOTAMs on airport conditions. (The Airport Manager, as the official representative of the state of Alaska DOT&PF Kodiak Airport (ADQ), has sole authority to close or open all AOA's including runways, taxiways and aprons.)

(c) Emergency Notification Procedures

For all non-airport related emergencies dial 911. This includes required medical, fire, or police response on or off airport property. Under emergency conditions involving immediate loss of human life, or threat to wellbeing, contractor personnel may allow access to airport property by uniformed emergency services. Maintain airfield security in all other respects. Notify the Engineer, and the Airport Manager immediately following any 911 emergency call.

In all matters involving airport safety and security, the Airport Manager and the Engineer are the primary contacts that the Contractor is required to immediately and first notify upon discovery of any issue or concern.

(d) Coordination with ARFF Personnel

Coordinate with ARFF personnel as required by this CSPP and the Airport Manager. Keep ARFF personnel informed of all area closures, restrictions to access routes and service roads on, or near the airport related to construction activities. Contact and coordinate with ARFF for any planned utility outages, including water supply, or in the event of accidental utility outages. Provide the same information to ARFF as is provided all other air carriers, including construction safety drawings and weekly updates.

(e) Notification to the FAA

Provide all notifications to FAA, through the Engineer as required for compliance with this CSPP, the approved SPCD and CFR 14, Part 77 and Part 157.

Subpart B—Notice Requirements

§ 77.5 Applicability

(a) If you propose any construction or alteration described in § 77.9, you must provide adequate notice to the FAA of that construction or alteration.

(b) If requested by the FAA, you must also file supplemental notice before the start date and upon completion of certain construction or alterations that are described in § 77.9.

(c) Notice received by the FAA under this subpart is used to:

(1) Evaluate the effect of the proposed construction or alteration on safety in air commerce and the efficient use and preservation of the navigable airspace and of airport traffic capacity at public use airports;

(2) Determine whether the effect of proposed construction or alteration is a hazard to air navigation;

(3) Determine appropriate marking and lighting recommendations, using FAA Advisory Circular 70/7460–1, Obstruction Marking and Lighting;

(4) Determine other appropriate measures to be applied for continued safety of air navigation;

(5) Notify the aviation community of the construction or alteration of objects that affect the navigable airspace, including the revision of charts, when necessary.

§ 77.7 Form and time of notice.

(a) If you are required to file notice under § 77.9, you must submit to the FAA a completed FAA Form 7460–1, Notice of Proposed Construction or Alteration. FAA Form 7460–1 is available at FAA regional offices or on the Internet. FAA encourages electronic filing of 7460-1 applications.

(b) You must submit this form at least 45 days before the start date of the proposed construction or alteration or the date an application for a construction permit is filed, whichever is earliest.

(c) If you propose construction or alteration that is also subject to the licensing requirements of the Federal Communications Commission (FCC), you must submit notice to the FAA on or before the date that the application is filed with the FCC. Contractor should be aware that the FAA does not guarantee processing of the application within 45 days, and some applications take much longer.

(d) If you propose construction or alteration to an existing structure that exceeds 2,000 ft. in height above ground level (AGL), the FAA presumes it to be a hazard to air navigation that results in an inefficient use of airspace. You must include details explaining both why the proposal would not constitute a hazard to air navigation and why it would not cause an inefficient use of airspace.

(e) The 45-day advance notice requirement is waived if immediate construction or alteration is required because of an emergency involving essential public services, public health, or public safety. You may provide notice to the FAA by any available, expeditious means. You must file a completed FAA Form 7460–1 within 5 days of the initial notice to the FAA. Outside normal business hours, the nearest flight service station will accept emergency notices.

§ 77.9 Construction or alteration requiring notice.

If requested by the FAA, or if you propose any of the following types of construction or alteration, you must file notice with the FAA of:

(a) Any construction or alteration that is more than 200 ft. AGL at its site.

(b) Any construction or alteration that exceeds an imaginary surface extending outward and upward at any of the following slopes:

(1) 100 to 1 for a horizontal distance of 20,000 ft. from the nearest point of the nearest Runway of each airport described in paragraph (d) of this section with its longest Runway more than 3,200 ft. in actual length, excluding heliports.
(2) 50 to 1 for a horizontal distance of 10,000 ft. from the nearest point of the nearest Runway of each airport described in paragraph (d) of this section with its longest Runway no more than 3,200 ft. in actual length, excluding heliports.
(3) 25 to 1 for a horizontal distance of 5,000 ft. from the nearest point of the nearest landing and takeoff area of each heliport described in paragraph (d) of this section.

(c) Any highway, railroad, or other traverse way for mobile objects, of a height which, if adjusted upward 17 feet for an Interstate Highway that is part of the National System of Military and Interstate Highways where overcrossings are designed for a minimum of 17 feet vertical distance, 15 feet for any other public roadway, 10 feet or the height of the highest mobile object that would normally traverse the road, whichever is greater, for a private road, 23 feet for a railroad, and for a water runway or any other traverse way not previously mentioned, an amount equal to the height of the highest mobile object that would normally traverse it, would exceed a standard of paragraph (a) or (b) of this section.

(d) Any construction or alteration on any of the following airports and heliports:
(1) A public use airport listed in the Airport/ Facility Directory, Alaska Supplement, or Pacific Chart Supplement of the U.S. Government Flight Information Publications;
(2) A military airport under construction, or an airport under construction that will be available for public use;
(3) An airport operated by a Federal agency or the Department of Defense (DOD).
(4) An airport or heliport with at least one FAA-approved instrument approach procedure.

(e) You do not need to file notice for construction or alteration of:
(1) Any object that will be shielded by existing structures of a permanent and substantial nature or by natural terrain or topographic features of equal or greater height, and will be located in the congested area of a city, town, or settlement where the shielded structure will not adversely affect safety in air navigation;
(2) Any air navigation facility, airport visual approach or landing aid, aircraft arresting device, or meteorological device meeting FAA-approved siting criteria or an appropriate military service siting criteria on military airports, the location and height of which are fixed by its functional purpose;
(3) Any construction or alteration for which notice is required by any other FAA regulation.
(4) Any antenna structure of 20 feet or less in height, except one that would increase the height of another antenna structure.

§ 77.11 Supplemental notice requirements.

(a) You must file supplemental notice with the FAA when:
(1) The construction or alteration is more than 200 feet in height AGL at its site; or
(2) Requested by the FAA.

(b) You must file supplemental notice on a prescribed FAA form to be received within the time limits specified in the FAA determination. If no time limit has been specified, you must submit supplemental notice of construction to the FAA within 5 days after the structure reaches its greatest height.

(c) If you abandon a construction or alteration proposal that requires supplemental notice, you must submit notice to the FAA within 5 days after the project is abandoned.

(d) If the construction or alteration is dismantled or destroyed, you must submit notice to the FAA within 5 days after the construction or alteration is dismantled or destroyed.

PART 157—NOTICE OF CONSTRUCTION, ALTERATION, ACTIVATION, AND DEACTIVATION OF AIRPORTS

§ 157.1 Applicability.

This part applies to persons proposing to construct, alter, activate, or deactivate a civil or joint-use (civil/ military) airport or to alter the status or use of such an airport. Requirements for persons to notify the Administrator concerning certain airport activities are prescribed in this part. This part does not apply to projects involving:

(a) An airport subject to conditions of a Federal agreement that requires an approved current airport layout plan to be on file with the Federal Aviation Administration; or

(b) An airport at which flight operations will be conducted under visual flight rules (VFR) and which is used or intended to be used for a period of less than 30 consecutive days with no more than 10 operations per day.

(c) The intermittent use of a site that is not an established airport, which is used or intended to be used for less than one year and at which flight operations will be conducted only under VFR. For the purposes of this part, intermittent use of a site means:

(1) The site is used or is intended to be used for no more than 3 days in any one week; and

(2) No more than 10 operations will be conducted in any one day at that site.

§ 157.2 Definition of terms.

For the purpose of this part:

Airport means any airport, heliport, helistop, vertiport, gliderport, seaplane base, ultralight flightpark, manned balloon launching facility, or other aircraft landing or takeoff area.

Heliport means any landing or takeoff area intended for use by helicopters or other rotary wing type aircraft capable of vertical takeoff and landing profiles.

Private use means available for use by the owner only or by the owner and other persons authorized by the owner.

Private use of public lands means that the landing and takeoff area of the proposed airport is publicly owned and the proponent is a non-government entity, regardless of whether that landing and takeoff area is on land or on water and whether the controlling entity be local, State, or Federal Government.

Public use means available for use by the general public without a requirement for prior approval of the owner or operator.

Traffic pattern means the traffic flow that is prescribed for aircraft landing or taking off from an airport, including departure and arrival procedures utilized within a 5-mile radius of the airport for ingress, egress, and noise abatement.

§ 157.3 Projects requiring notice.

(a) Each person who intends to do any of the following shall notify the Administrator in the manner prescribed in § 157.5:

(b) Construct or otherwise establish a new airport or activate an airport.

(c) Construct, realign, alter, or activate any Runway or other aircraft landing or takeoff area of an airport.

(d) Deactivate, discontinue using, or abandon an airport or any landing or takeoff area of an airport for a period of one year or more.

(e) Construct, realign, alter, activate, deactivate, abandon, or discontinue using a taxiway associated with a landing or takeoff area on a public-use airport.

(f) Change the status of an airport from private use to public use or from public use to another status.

(g) Change any traffic pattern or traffic pattern altitude or direction.

(h) Change status from instrument flight rules (IFR) to VFR or VFR to IFR.

§ 157.5 Notice of intent.

(a) Notice shall be submitted on FAA Form 7480–1, copies of which may be obtained from an FAA Airport District/ Field Office or Regional Office, to one of those offices and shall be submitted at least—
  (1) In the cases prescribed in paragraphs (a) through (d) of § 157.3, 90 days in advance of the day that work is to begin; or
  (2) In the cases prescribed in paragraphs (e) through (g) of § 157.3, 90 days in advance of the planned implementation date.

(b) Notwithstanding paragraph (a) of this section—
  (1) In an emergency involving essential public service, public health, or public safety or when the delay arising from the 90-day advance notice requirement would result in an unreasonable hardship, a proponent may provide notice to the appropriate FAA Airport District/Field Office or Regional Office by telephone or other expeditious means as soon as practicable in lieu of submitting FAA Form 7480–1. However the proponent shall provide full notice, through the submission of FAA Form 7480–1, when otherwise requested or required by the FAA.
  (2) Notice concerning the deactivation, discontinued use, or abandonment of an airport, an airport landing or takeoff area, or associated taxiway may be submitted by letter. Prior notice is not required; except that a 30- day prior notice is required when an established instrument approach procedure is involved or when the affected property is subject to any agreement with the United States requiring that it be maintained and operated as a public- use airport.

§ 157.7 FAA determinations.

(a) The FAA will conduct an aeronautical study of an airport proposal and, after consultations with interested persons, as appropriate, issue a determination to the proponent and advise those concerned of the FAA determination. The FAA will consider matters such as the effects the proposed action would have on existing or contemplated traffic patterns of neighboring airports; the effects the proposed action would have on the existing airspace structure and projected programs of the FAA; and the effects that existing or proposed manmade objects (on file with the FAA) and natural objects within the affected area would have on the airport proposal. While determinations consider the effects of the proposed action on the safe and efficient use of airspace by aircraft and the safety of persons and property on the ground, the determinations are only advisory. Except for an objectionable determination, each determination will contain a determination-void date to facilitate efficient planning of the use of the navigable airspace. A determination does not relieve the proponent of responsibility for compliance with any local law, ordinance or regulation, or state or other Federal regulation. Aeronautical studies and determinations will not consider environmental or land use compatibility impacts.

(b) An airport determination issued under this part will be one of the following:
  (1) No objection.
  (2) Conditional. A conditional determination will identify the objectionable aspects of a project or action and specify the conditions which must be met and sustained to preclude an objectionable determination.
  (3) Objectionable. An objectionable determination will specify the FAA's reasons for issuing such a determination.

(c) Determination void date. All work or action for which notice is required by this sub-part must be completed by the determination void date. Unless other wise extended, revised, or terminated, an FAA determination becomes invalid on the day specified as the determination void date.

Interested persons may, at least 15 days in advance of the determination void date, petition the FAA official who issued the determination to:

(1) Revise the determination based on new facts that change the basis on which it was made; or

(2) Extend the determination void date. Determinations will be furnished to the proponent, aviation officials of the state concerned, and, when appropriate, local political bodies and other interested persons.

§ 157.9 Notice of completion.

Within 15 days after completion of any airport project covered by this part, the proponent of such project shall notify the FAA Airport District Office or Regional Office by submission of FAA Form 5010–5 or by letter. A copy of FAA Form 5010–5 will be provided with the FAA determination.

(10) INSPECTION REQUIREMENTS

(a) Daily (or more frequent) Inspections

Conduct safety and security inspections at least twice daily (every 12 hours) during the runway closures. Use Appendix 4, Construction Project Daily Safety Inspection Checklist from FAA/AC 150/5370-2F as the basis for the inspection. Schedule inspections to not conflict with the active RSA, ROFA, and OFZ detailed in section 17 below. No other work is allowed inside the active runway areas.

Safety and security inspections will be attended by the Engineer, and / or Airport Manager, or their representatives. Repair or remedy all safety and security issues immediately. Do not wait until an inspection to address issues. Inspections are to be used to verify that all required maintenance is being performed in a timely manner.

Notify the Airport Manager and the Engineer regarding any safety or security issues found during the inspections, regardless of cause. Include at least the following items in the inspections (other items may be added at the direction of the Engineer):

- Inspect the lighted 'X' closure markings at each Runway end. Check fuel supply, and refueling schedule.
- Inspect each temporary marking and all temporary lighting for serviceability, completeness, and durability.
- Inspect each required crossing of any active surface for the presence of FOD.
- Inspect placement and condition of all barricades located on or near airport runways.
- Inspect haul routes for proper markings and barricades. Ensure that vehicles are using only designated haul routes for the phase under construction at the time.
- Inspect fences and gates adjacent to, or used for access on haul routes. Ensure that vehicles are using only the designated access points for the phase under construction at the time. Ensure that each open gate is actively manned to protect airfield security.

(b) Final Inspections

Perform a joint final safety inspection with the Airport Manager and the Engineer prior to the opening of closed runways for aircraft operations. Verify that all runway edge lights and airport markings are

serviceable and correct. Remove all FOD as directed, and any other construction related materials not allowed to remain on airport property. RSA's or TSA's must meet part 139 requirements prior to the runway or taxiway reopening being authorized by the Airport Manager.

The final safety inspection may become part of the project Final Inspection detailed under the standard specifications section 50-15, at the discretion of the Engineer.

(11) UNDERGROUND UTILITIES

This project requires work around and adjacent to FAA-owned NAVAIDs and DOT&PF-owned Runway edge lighting. Coordinate with FAA, through the Engineer, for utility locates. After FAA electronically locates and marks the buried cable, hand dig to physically locate the cables prior to any excavation in the area.

The project will be working in the vicinity of the water line which serves the USCG sewage treatment plant. Coordinate with the USCG, through the Engineer, for utility locates. After USCG electronically locates and marks the buried water line and cables, hand dig to physically locate the cables prior to any excavation in the area.

Since segments of the airport lighting system and NAVAIDs for Runways 7-25 and 18-36 will have been deactivated prior to beginning work on the respective Runway, no emergency notifications will be required if an underground cable is hit during excavation. However, the Contractor must immediately notify the Airport Manager and the Engineer if a cable hit occurs. Notify the FAA, through the Engineer, as soon as is practical, but no later than the beginning of the next work shift. See section 1(c) above for FAA contact information.

The Devils Creek culvert repair will be working in the vicinity of an existing water and sewer line. The water line consists of a 16" CI pipe which crosses the top of the culvert at Taxiway F. The sewer line consists of an 8" concrete incased CI pipe which runs across the outlet of the culvert and runs on the interior of the east bay from its outlet end to the infield between Runway 7-25 and Taxiway D. Coordinate with the USCG, through the Engineer, for utility locates. After USCG electronically locates and marks the buried water line and sewer line, hand dig to physically locate the lines prior to any excavation in the area.

(12) PENALTIES

All Contractor and Subcontractor personnel must abide by Contract requirements, including the CSPP and the approved SPCD, at all times for the duration of the project. The Contractor shall be responsible for payment of any fines levied by any federal, state, or local agency having authority that result from the Contractor's failure to comply with Contract requirements. Any Contractor failure to comply with Contract requirement(s) may result in suspension of work; and individual workers are subject to removal from the project per section 80-05, third paragraph:

> *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.

(13) SPECIAL CONDITIONS

(a) Emergency Landings

Aircraft declaring an emergency will be allowed to land at the airport. The work area may need to be cleared of personnel and equipment on extremely short notice (15 minutes or less). The Contractor shall be prepared at all times to remove lighted X's, temporary closure markings and Runway barricades on short notice. Assign this task to as many personnel as is required to accomplish the removal in a timely and effective manner as part of your SPCD. Clear the Runway and RSA when advised by the ATCT or FSS, or directed by authority of the Airport Manager or Engineer.

(b) Taxiway A and B Closure and Movement of Aircraft

The Contractor shall keep taxiway A and B open and useable for the passage of aircraft at all times with the following restrictions:

- Taxiways A and B will remain opened for the passage of aircraft, under power, from 6:30 a.m. to 6:30 p.m. The Contractor may continue to work on the Taxiway during this time period, provided that the contractor not delay passage of aircraft by more than 30 minutes from notification by the Engineer, Airport Manager, ATCT or Air Station Kodiak Operations Center of the arrival or departure of an aircraft.

- Taxiways A and B may be closed to aircraft from 6:30 p.m. to 6:30 a.m. with the restriction that the Contractor must maintain the taxiway to be available for movement of aircraft, under tow, for critical operations as stated below.

    - In the event of a critical operation such as search and rescue, disaster relief, aircraft mechanical problem for a mission critical aircraft, or other emergency, regardless of the time, the Contractor shall immediately provide for passage of any aircraft, with a maximum 15 minute delay from time of notification by the ATCT or Operations Center.

(c) Special Equipment

Use of tall equipment, such as cranes or drilling rigs, must be authorized by the Airport Manager, through the Engineer. It must also be submitted by the Contractor on form 7460-1 and approved by FAA. See coordination requirements under CSPP sections 1c and 9e above.

(d) Water for Dust Control

Provide water for dust control as required, and as directed in accordance with Item G-710, Highway Traffic Maintenance. Dust, smoke, steam, or other airborne particulates caused by Contractor activities may be considered a safety violation as determined by the Airport Manager or Engineer.

(14) RUNWAY AND TAXIWAY VISUAL AIDS. MARKING, LIGHTING, SIGNS, AND VISUAL NAVAIDS

(a) General

See the attached construction safety drawings included in this CSPP and the plan set for locations and descriptions of markings, lighting, signs, and visual NAVAIDS. Runways will require relocation of NAVAIDS and runway lighting.

(b) Markings

Temporary markings as shown on the construction safety drawings included in this CSPP and the plan set will be used during the temporary shortening of Runway 7-25. Markings on Runway 7-25 for Phase 1A will be reapplied prior to the beginning of Phase 1B. The runway threshold bar, threshold markers and designator numbers will be covered during each phase. Temporary runway designation numbers will be painted on the pavement during each phase.

Illuminated runway closure marking and lighted hazardous area barriers will be used during the daily temporary closure of Runway 18-36 during Phases 2A and 2B and for the full closure during Phase 2C.

(c) Airport Lighting and Visual NAVAIDs

Airport lighting or visual aids (threshold lights, runway and taxiway edge lighting, and taxiway/runway signs) and visual NAVAIDs (REILS, VASI) for the closed Runways will be turned off, or otherwise covered or disabled during Runway closures. All visual aids and visual NAVAIDS on the Runway remaining open will remain operational. Some visual aids and NAVAIDS will be turned off, relocated or modified while runways are shortened during Phases 1A and 1B as shown in the attached drawings and in the plan set. All NAVAIDS are owned and maintained by the FAA. Airport lighting is owned and maintained by DOT&PF.

(i) REILs

The Runway 25 REILs will be deactivated for Phases 1A and 1B. The REILs will be reactivated at their original location following each phase. Temporary REILs will be installed at the relocated threshold during each phase.

The Runway 36 REILs will be deactivated for runway closures during Phases 2A, 2B and 2C. Following Phase 1C, the REILs will be relocated to their new location for the new permanently relocated Runway 36 threshold.

(ii) VASIs

The Runway 36 VASIs will be deactivated during the runway closures during Phases 2A, 2B and 2C.

(iii) ILS, Localizer and Glide Slope

During Phases 1A and 1B, the Runway 25 Glide Slope will be deactivated due to the temporary relocation of the Runway 25 threshold. The Glide Slope may be reactivated after each phase.

(iv) Runway Edge and Threshold Lighting

During Phases 1A and 1B, the threshold for Runway 25 will be temporarily relocated by approximately 500' to the west. The runway threshold lights and edge lights for the closed area of the runway will be deactivated. Temporary threshold lights will be placed at the relocated threshold. The white/yellow lenses will be adjusted to provide 2,000' of yellow indication for the end of Runway 7. Upon opening of the closed area of the runway following each phase, the original threshold and edge lights will be reinstalled.

There will be no changes to the edge and threshold lights during Phases 2A and 2B. The lights will be deactivated during the temporary closures. During Phase 2C, the runway lights will adjusted to conform to the new relocation of Runway 18-36 by 240' to the south.

(v) Taxiway Edge Lighting

There will be no changes to the taxiway edge lights for Taxiways A and B during Phases 2A and 2B.

During Phase 2C, new taxiway lights will be installed to reflect the reconfiguration of the intersection of Taxiways A and B, and Runway 18-36.

(d) Signs

The taxiway guidance and location signs at the intersection of Taxiways A and B and current Runway 36 threshold will remain in place for Phases 2A and 2B. They will be relocated, modified or replaced during Phase 2C to agree with the new configuration for Taxiways A and B and for the permanently relocated threshold for Runway 36.

All taxiway guidance and location signs for Taxiways A, B, C, D, E and F will be updated to reflect the changes in the runway designation of Runway 7-25 to Runway 8-26 and of Runway 18-36 to 1-19 respectively.

(15) MARKING AND SIGNS FOR ACCESS ROUTES

The Contractor shall include markings and signs for access and haul routes in the SPCD submittal. Pavement markings and signs for construction personnel will conform to AC 150/5340-18 and, to the

extent practicable, with the Federal Highway Administration *Manual on Uniform Traffic Control Devices* (MUTCD) and/or state highway specifications. Signs adjacent to areas used by aircraft must comply with the frangibility requirements of AC 150/5220-23, frangible connections, which may require modification to size and height guidance in the MUTCD.

(16) HAZARD MARKING AND LIGHTING

(a) Purpose

The purpose of hazard markings and lighting is to delineate the construction area from the AOAs. It also serves as a visual warning to pilots, and airport ground traffic, that to proceed past the markers could jeopardize safety of persons or equipment, including damage to aircraft or loss of life. Hazard marking and lighting must not itself become a hazard to the safe operation of aircraft. Hazard markings and lighting must be separated from active surfaces by a suitable distance usually defined by the OFA or OFZ, but depends on work location, type of aircraft expected to be operating, and other factors.

Hazard marking and lighting must also identify open manholes, small areas under repair, stockpiled material, waste areas, and areas subject to jet blast. Consider less obvious construction-related hazards and include markings to identify FAA, airport, and national weather service facilities cables and power lines, instrument landing system (ILS) critical areas; airport surfaces, such as RSA, OFA, and OFZ; and other sensitive areas for contractor personnel to avoid these areas.

(b) Equipment

Proposed locations of hazard markings and lighting are shown on the construction safety drawings included in this CSPP and the plan set. Other locations or equipment may be proposed by the Contractor or required by the Department, depending on the Contractor's proposed schedule and sequencing of work within each specified Phase or the Contractors proposed means and methods. The Contractor shall include proposed equipment, including signs, markings, and lighting in the SPCD submittal.

(i) Spacing of Barricades

The spacing of barricades must be such that a breach is physically prevented, barring a deliberate act. For example, if barricades are intended to exclude vehicles, gaps between barricades must be smaller than the width of the excluded vehicles, generally 4 feet. Provision must be made for ARFF access if necessary. If barricades are intended to exclude pedestrians, they must be continuously linked. Continuous linking may be accomplished through the use of ropes, securely attached to prevent FOD.

(ii) Maintenance

Maintain temporary markings and hazardous area barriers throughout each specified Phase. Repair damaged or non-functioning markings, barriers, and flashers immediately upon discovery or notification.

(17) PROTECTION OF RUNWAY AND TAXIWAY SAFETY AREAS, OBJECT FREE AREAS, OBSTACLE FREE ZONES, AND APPROACH/DEPARTURE SURFACES

See the construction safety drawings included in this CSPP and the plan set for locations and limits of the following areas / zones.

Before beginning construction, coordinate with the Engineer to identify the RSA, OFZ, and the OFA for the active runway. The Engineer may require surveyed location of the RSA, OFZ, or OFA by the Contractor, as part of the construction surveying requirement. This will define a boundary for use of construction equipment during aircraft operations.

(a) Runway Safety Area (RSA)

The RSA width for both Runway 7-25 and Runway 18-36 is 500' wide and centered on the respective Runway centerlines. There is no safety area beyond the ends or prior to the threshold of each runway. No equipment, vehicles or personnel will be allowed within an RSA when the Runway is open to aircraft operations. All equipment, vehicles and personnel must vacate the RSA prior to opening the Runway to aircraft operations. No material stockpiles will be allowed at any time.

The RSA prior to the runway thresholds and beyond the ends for both Runways is currently 0'.

(b) Runway Object Free Area (ROFA)

The ROFA width for both Runways is 800 feet, centered on the respective Runway centerline. When a runway is open to aircraft operations, construction, including excavations, may be permitted in the ROFA. However, equipment must be removed from the ROFA when not in use, and material should not be stockpiled in the ROFA if not necessary. Vehicles may not be parked in the ROFA. Stockpiling material in the OFA requires submittal of a 7460-1 form and justification provided to the appropriate FAA Airports Regional or District Office for approval. No equipment or vehicles are to be parked, or left unattended, in the ROFA at any time.

(c) Taxiway Safety Area (TSA)

The Taxiway Safety Areas for all taxiway s is 171'. No work will be allowed within a TSA when the taxiway is open to aircraft operations. Taxiways closed for construction will not be subject to TSA standards, except that no stockpiling of material or parking of equipment or vehicles will be allowed within the TSA of a closed taxiway.

(d) Taxiway Object Free Area (TOFA)

The Taxiway OFAs for Taxiways A, B, C and D are currently 259'. No work will be allowed within a TOFA when the taxiway is open to aircraft operations. During aircraft operations, equipment, vehicles, and personnel may temporarily occupy the TOFA. No equipment or vehicles are to be parked or left unattended in the active TOFA at any time.

(e) Obstacle Free Zone (OFZ)

The OFZ width for both Runways is 400 feet, centered on the respective Runway centerline. In general, personnel, material, and/or equipment may not penetrate the OFZ while the Runway is open for aircraft operations. If a penetration to the OFZ is necessary, it may be possible to continue aircraft operations through operational restrictions. Coordinate with the FAA Airport Regional or District Office through the Engineer.

(f) Runway Approach/Departure Surfaces

All personnel, materials, and/or equipment must remain clear of the applicable threshold siting surfaces (see AC 150/5300-13). Objects that do not penetrate these surfaces may still be obstructions to air navigation and may affect standard instrument approach procedures. Coordinate with the FAA Airport Regional or District Office through the Engineer.

The Runway Approach Surface for Runways 25 and 36 and the Departure Surface for Runways 7 and 18 will begin 200' from the temporarily relocated threshold and then rises at a 20:1 slope.

Obstruction removal work, construction equipment or disposal of material may penetrate the 20:1 surfaces defined in AC 150/5300-13. Any activity that would penetrate these surfaces shall be restricted unless otherwise coordinated with and approved by the FAA through the Engineer.

(18) OTHER LIMITATIONS ON CONSTRUCTION

(a) Prohibitions

(i) No Crossing of Active Runway

Crossing of the active Runway by Contractor or subcontractor personnel, vehicles, or equipment will not be allowed without prior authorization from the Airport Manager, through the Engineer.

(ii) Airport Marking System

Use of light colored sand bags, or other materials that interfere with the airport marking system will not be allowed.

(iii) Flare Pots

The use of flare pots on airport property is prohibited at any time.

(b) Restrictions

(i) Use of Tall Equipment

Use of tall equipment that must routinely operate more than 16 feet above ground level requires prior authorization of the Airport Manager and inclusion on form 7460-1 as specified under 14 CFR part 77

(See section 9e above). Use of tall equipment such as cranes, drill rigs, or similar will require obstruction lighting and use of orange and white flagging (see advisory circular (AC) 70/7460–1 *Obstruction Marking and Lighting*, paragraph 42g and subsequent guidance). Equipment must be lowered to be as close to ground level as practical when not actively employed, even when parked off of airport property.

(ii) Use of Tools with Open Flames

Open-flame welding or torch cutting operations are permitted only with the approval of the Airport Manager and only when adequate fire safety precautions are in place.

(iii) Open Trenches, Excavations, and Stockpiles

Prominently mark open trenches, excavations, and stockpiled materials at the construction site and light these obstacles during hours of restricted visibility and darkness. No open trenches are allowed in the RSA, TSA or TOFA when the Runway or taxiway is open. Trenches must be covered with approved material or backfilled. No material stockpiles are allowed in the RSA, TSA or TOFA when the Runway or taxiway is open or within the ASOS critical areas (see CSPP section 17). Constrain stockpiled material to prevent its movement as a result of forecasted wind conditions.

(iv) Discovery of Contaminated Soils

If contaminated soils are encountered within the excavation area, stop work at the discovery location until the contamination is identified and the Engineer coordinates with the Alaska Department of Environmental Conservation (ADEC).

(v) Barge Travel

Project related barge travel shall avoid areas with high densities of endangered or threatened species to the extent practicable, avoid sea lion rookeries and major haul out areas, and not ground in high-density kelp stands. The Cliff Point-Cliff Island-Zaimka Island area shall be avoided by barges hauling to the site during the winter. See these and other requirements contained in Appendix D.4, Permits.

(vi) Construction Lighting

Limitations for construction lighting are contained in Appendix D.4, Permits.

Construction Safety and Phasing Plan
Appendix D.1 –
Definition of Terms

Appendix 2. Definition of Terms

Term	Definition
7460-1	Notice Of Proposed Construction Or Alteration. For on-airport projects, the form submitted to the FAA regional or airports division office as formal written notification of any kind of construction or alteration of objects that affect navigable airspace, as defined in 14 CFR Part 77, safe, efficient use, and preservation of the navigable airspace. (See guidance available on the FAA web site at oeaaa.faa.gov.) The form may be downloaded at http://www.faa.gov/airports/resources/forms/, or filed electronically at: https://oeaaa.faa.gov.
7480-1	Notice Of Landing Area Proposal. Form submitted to the FAA Airports Regional Division Office or Airports District Office as formal written notification whenever a project without an airport layout plan on file with the FAA involves the construction of a new airport; the construction, realigning, altering, activating, or abandoning of a Runway, landing strip, or associated taxiway; or the deactivation or abandoning of an entire airport The form may be downloaded at http://www.faa.gov/airports/resources/forms/.
AAC	Alaska Administrative Code
AC	Advisory Circular
ACRC	Aircraft Reference Code
ACSI	Airport Certification Safety Inspector
ADEC	Alaska Department of Environmental Conservation
ADQ, PADQ	Kodiak Airport
ADG	Airplane Design Group
AGL	Above Ground Level
AIP	Airport Improvement Program
ALECP	Airport Lighting Equipment Certification Program
ALS	Approach Lighting System
ANG	Air National Guard
AOA	Air Operations Area. Any area of the airport used or intended to be used for the landing, takeoff, or surface maneuvering of aircraft. An air operations area includes such paved or unpaved areas that are used or intended to be used for the unobstructed movement of aircraft in addition to its associated Runways, taxiways, or aprons.
ARC	Airport Reference Code
ARFF	Aircraft Rescue and Fire Fighting
ARP	FAA Office of Airports
AS	Alaska Statute
ASDA	Accelerate-Stop Distance Available

Term	Definition
ATC	Air Traffic Control
ATCT	Airport Traffic Control Tower
ATIS	Automatic Terminal Information Service
ATO	Air Traffic Organization
Certificated Airport	An airport that has been issued an Airport Operating Certificate by the FAA under the authority of 14 CFR Part 139, Certification of Airports.
CFR	Code of Federal Regulations
CHRC	Criminal History Records Check
Construction	The presence and movement of construction-related personnel, equipment, and materials in any location that could infringe upon the movement of aircraft.
CSPP	Construction Safety And Phasing Plan. The overall plan for safety and phasing of a construction project developed by the airport operator, or developed by the airport operator's consultant and approved by the airport operator. It is included in the invitation for bids and becomes part of the project specifications.
CTAF	Common Traffic Advisory Frequency
Displaced Threshold	A threshold that is located at a point on the Runway other than the designated beginning of the Runway. The portion of pavement behind a displaced threshold is available for takeoffs in either direction or landing from the opposite direction.
DOD	Department of Defense
DOT	Department of Transportation
DOT&PF	Alaska Department of Transportation & Public Facilities
EMAS	Engineered Materials Arrestor System
EPA	Environmental Protection Agency
ESA	Endangered Species Act
FAA	Federal Aviation Administration
FCC	Federal Communications Commission
FEIS	Final Environmental Impact Statement
FOD	Foreign Object Debris
FSS	Flight Service Station
HAZMAT	Hazardous Materials
HMCP	Hazardous Materials Control Plan
IAW	In Accordance With
IFR	Instrument Flight Rules
ILS	Instrument Landing System
ISC	Integrated Support Command (USCG)
LDA	Landing Distance Available

Term	Definition
LOC	Localizer antenna array
MMM	Marine Mammals Management
MMPA	Marine Mammal Protection Act
Movement Area	The Runways, taxiways, and other areas of an airport that are used for taxiing or hover taxiing, air taxiing, takeoff, and landing of aircraft, exclusive of loading aprons and aircraft parking areas (reference 14 CFR Part 139).
MSDS	Material Safety Data Sheet
MUTCD	Manual on Uniform Traffic Control Devices
NAVAID	Navigation Aid
NAVAID Critical Area	An area of defined shape and size associated with a NAVAID that must remain clear and graded to avoid interference with the electronic signal.
Non-Movement Area	The area inside the airport security fence exclusive of the Movement Area. It is important to note that the non-movement area includes pavement traversed by aircraft.
NOTAM(s)	Notice(s) to Airmen
Obstruction	Any object/obstacle exceeding the obstruction standards specified by 14 CFR Part 77, subpart C.
OCC	Operations Control Center
OE / AAA	Obstruction Evaluation / Airport Airspace Analysis
OFA	Object Free Area. An area on the ground centered on the Runway, taxiway, or taxi lane centerline provided to enhance safety of aircraft operations by having the area free of objects except for those objects that need to be located in the OFA for air navigation or aircraft ground maneuvering purposes. (See AC 150/5300-13, for additional guidance on OFA standards and wingtip clearance criteria.)
OFZ	Obstacle Free Zone. The airspace below 150 ft (45 m) above the established airport elevation and along the Runway and extended Runway centerline that is required to be clear of all objects, except for frangible visual NAVAIDs that need to be located in the OFZ because of their function, in order to provide clearance protection for aircraft landing or taking off from the Runway and for missed approaches. The OFZ is subdivided as follows: Runway OFZ, Inner Approach OFZ, Inner Transitional OFZ, and Precision OFZ. Refer to AC 150/5300-13 for guidance on OFZ.
OSHA	Occupational Safety and Health Administration
P&R	Planning and Requirements Group
PAPI	Precision Approach Path Indicators
PFC	Passenger Facility Charge
PLASI	Pulse Light Approach Slope Indicators
Project Proposal Summary	A clear and concise description of the proposed project or change that is the object of Safety Risk Management.
RE	Resident Engineer
REIL	Runway End Identifier Lights
RNAV	Area Navigation

Term	Definition
ROD	Record of Determination
ROFA	Runway Object Free Area
RSA	Runway Safety Area. A defined surface surrounding the Runway prepared or suitable for reducing the risk of damage to airplanes in the event of an undershoot, overshoot, or excursion from the Runway, in accordance with AC 150/5300-13.
RUNWAY	Runway
SAE	Society of Automotive Engineers
SIDA	Security Identification Display Area
SMS	Safety Management System
SOCC	Systems Operations Control Center
SPCC	Spill Prevention, Control and Countermeasure
SPCD	Safety Plan Compliance Document. Details developed and submitted by a contractor to the airport operator for approval providing details on how the performance of a construction project will comply with the CSPP.
SRM	Safety Risk Management
STA	Security Threat Assessment
SWPPP	Storm Water Pollution Prevention Plan
Taxiway Safety Area	A defined surface alongside the taxiway prepared or suitable for reducing the risk of damage to an airplane unintentionally departing the taxiway, in accordance with AC 150/5300-13.
TDG	Taxiway Design Group
Temporary	Any condition that is not intended to be permanent.
Temporary Runway End	The beginning of that portion of the Runway available for landing and taking off in one direction, and for landing in the other direction. Note the difference from a displaced threshold.
Threshold	The beginning of that portion of the Runway available for landing. In some instances, the landing threshold may be displaced.
TODA	Takeoff Distance Available
TOFA	Taxiway Object Free Area
TORA	Takeoff Run Available. The length of the Runway less any length of Runway unavailable and/or unsuitable for takeoff run computations. See AC 150/5300-13 for guidance on declared distances.
TSA	Taxiway Safety Area Transportation Security Administration
UNICOM	A radio communications system of a type used at small airports.
TW	Taxiway
VASI	Visual Approach Slope Indicators
VGSI	Visual Glide Slope Indicator. A device that provides a visual glide slope indicator to landing pilots. These systems include precision approach path indicators (PAPI), visual approach slope indicators (VASI), and pulse light approach slope indicators (PLASI).
VFR	Visual Flight Rules

Term	Definition
VOR	VHF Omnidirectional Radio Range
VPD	Vehicle / Pedestrian Deviation

Construction Safety and Phasing Plan

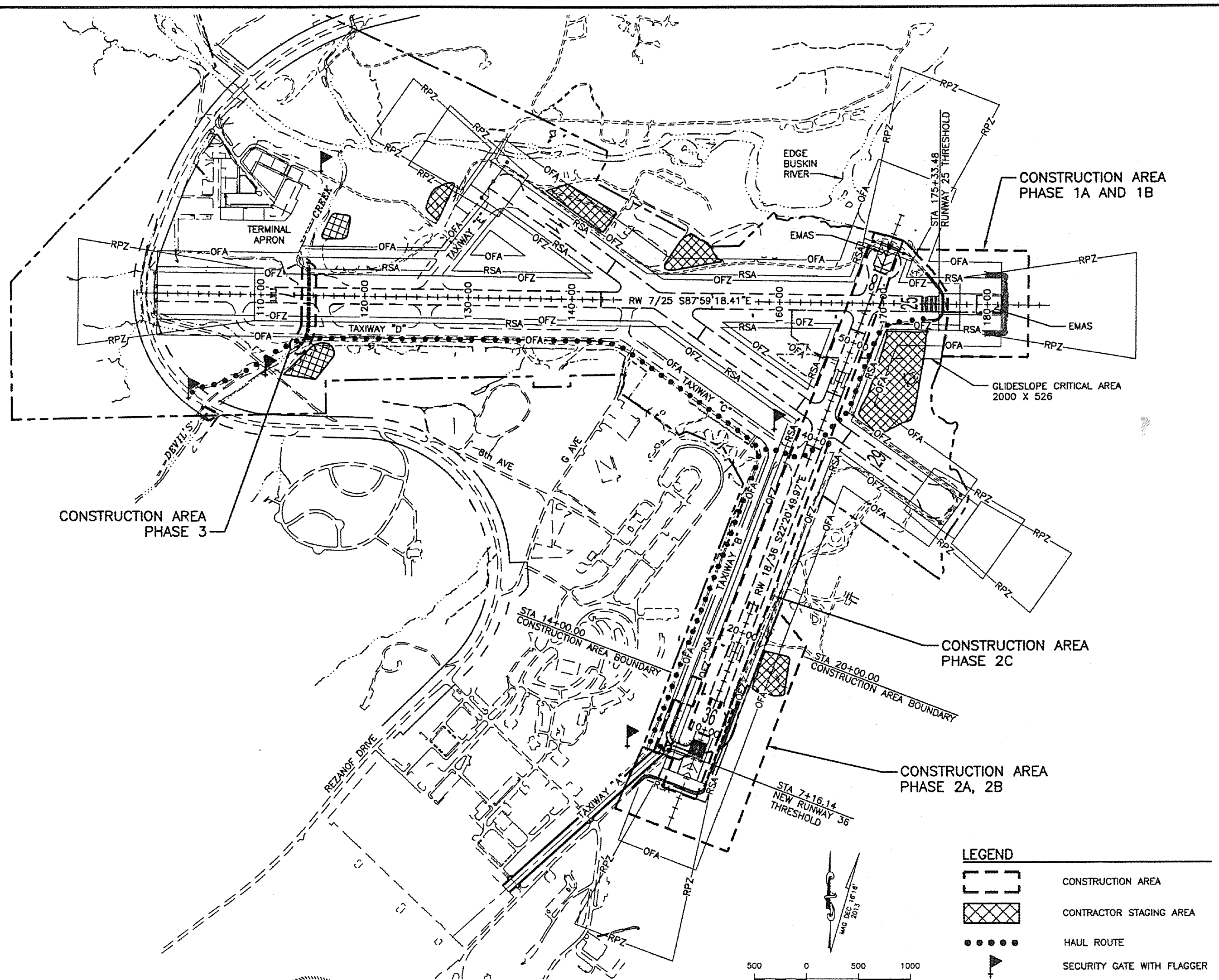
Appendix D.2 –

Phasing Drawings

Kodiak Airport, RSA Extension	AD1 through AD6 of 15
Kodiak Airport, Devils Creek Culvert Repair	BD-1 of 2

GENERAL HAUL ROUTE NOTES:

1. SPEED IS RESTRICTED TO 25 MPH ON AIRPORT PROPERTY AND 10 MPH NEAR NAVIGATION AIDS. FOLLOW LOCAL TRAFFIC LAWS WHEN TRAVELING ON PUBLIC ROADS.
2. ACCESS AND HAUL ROUTES SHALL BE MAINTAINED BY THE CONTRACTOR THROUGHOUT HAULING AND CONSTRUCTION OPERATIONS.
3. PORTIONS OF THE HAUL ROUTES AND STAGING AREAS MAY REQUIRE IMPROVEMENT TO SUPPORT CONTRACTOR'S OPERATIONS.
4. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PLACEMENT, REMOVAL AND REPLACING ANY EXISTING FENCE OR GATES REQUIRED FOR ESTABLISHING ACCESS TO THE HAUL ROUTES.
5. FIELD-VERIFY SUITABILITY OF HAUL ROUTES AND STAGING AREAS SHOWN. DEVELOP AND MAINTAIN HAUL ROUTES AS REQUIRED. THE CONTRACTOR SHALL BE RESPONSIBLE FOR REPAIRING THE HAUL ROUTES AND STAGING AREA DAMAGE TO PRECONSTRUCTION CONDITIONS. SEE SECTIONS GCP-40 AND GCP-70.
6. PROVIDE TRAFFIC CONTROL PLANS FOR EACH PHASE OF THE WORK. SEE SECTION G-710.
7. DUE TO THE LOCATION OF THE ELEMENTARY SCHOOL, HAUL OF EMBANKMENT AND SHORE PROTECTION MATERIAL SHALL NOT BE ALLOWED USING 8TH STREET AND G AVENUE.



PREPARED BY: HDR Alaska, Inc.

BY	DATE	REVISION

STATE OF ALASKA
DEPARTMENT OF TRANSPORTATION AND PUBLIC FACILITIES
CENTRAL REGION

KODIAK AIRPORT
KODIAK, ALASKA
KODIAK AIRPORT RSA EXTENSION, 2014
PROJECT No. 53587
AIP No. 3-02-0158-017-2014
PHASING PLAN OVERVIEW

DATE: 3/28/2014
SHEET: AD1 OF 15
AS-BUILT SHEET:

Designed By: D.C. Drawn By: L.W. Checked By: J.W.
Date Revised: 3/28/2014, 10:13 AM
Layout Name: Sheet AD1

PHASE 1A NOTES:

CONSTRUCTION SUMMARY:

WORK ASSOCIATED FOR THIS PHASE INCLUDES, BUT IS NOT LIMITED TO, THE FOLLOWING:

- IMPLEMENT SAFETY PLAN REQUIREMENTS INCLUDED IN THE SPCD.
- IMPLEMENT BEST MANAGEMENT PRACTICES.
- DEACTIVATE THE FAA GLIDE SLOPE AND REIL.(TO BE PERFORMED BY FAA).
- INSTALL TEMPORARY REIL.
- INSTALL TEMPORARY THRESHOLD LIGHTS AS SHOWN OF THE PLANS.
- INSTALL TEMPORARY THRESHOLD BAR AND CHEVRONS AS SHOWN IN THE SAFETY PLAN DETAILS.
- COVER THRESHOLD AND RUNWAY 25 DESIGNATION NUMBER AS SHOWN IN THE SAFETY PLAN DETAILS.
- CONSTRUCT THE NEW EMBANKMENT FOR THE SAFETY AREA EXTENSION EAST OF THE EAST END OF RUNWAY 7/25 TO INCLUDE PLACING OF EMBANKMENT MATERIAL AND SHORE PROTECTION.
- REMOVE TEMPORARY LIGHTING AND MARKING FOLLOWING COMPLETION OF EMBANKMENTS.
- RESTORE REIL SYSTEMS TO ITS ORIGINAL LOCATION (TO BE PERFORMED BY THE FAA).
- REACTIVATE GLIDESLOPE (TO BE PERFORMED BY THE FAA).

2. AREAS CLOSED TO AIRCRAFT OPERATIONS

THE THRESHOLD OF RUNWAY 25 WILL BE RELOCATED BY 500' TO THE WEST. THE FIRST 500' OF RUNWAY WILL BE CLOSED TO AIRCRAFT OPERATIONS.

3. TAXI ROUTES

TAXI ROUTES WILL NOT BE AFFECTED DURING THIS PHASE AND NO TAXIWAY WILL BE CLOSED.

4. ARFF ACCESS ROUTES

ARFF ACCESS ROUTES WILL NOT BE AFFECTED DURING THIS PHASE.

5. CONSTRUCTION HAUL ROUTES

ROUTES ARE SHOWN ON THE PHASING PLANS AND SHALL BE GENERALLY AS FOLLOWS:

THE PRIMARY HAUL ROUTE SHALL BE FROM REZANOF DRIVE WEST, EXIT ON DRIVEWAY LOCATED NORTH OF DEVIL'S CREEK. ENTER AOA THROUGH SECURITY GATE AND PROCEED EAST ALONG SERVICE ROAD SOUTH OF TAXIWAYS D AND C. CROSS RUNWAY 18/36 AND 11/29 TO THE SERVICE ROAD EAST OF RUNWAY 18/36. ENTER PROJECT AREA.

6. IMPACTS ON NAVAIDS

THE GLIDE SLOPE FOR RUNWAY 25 WILL BE DEACTIVATED DUE TO THE RELOCATION OF THE RUNWAY 25 THRESHOLD.

RUNWAY 25 VASI WILL BE DEACTIVATED AND TEMPORARILY RELOCATED 500' TO THE WEST. NEW TEMPORARY FOUNDATIONS WILL BE CONSTRUCTED AND TEMPORARY WIRING INSTALLED.

THE REIL WILL BE DEACTIVATED AND TEMPORARILY RELOCATED BY 500' TO THE WEST. NEW TEMPORARY WIRING AND LIGHT BASES WILL BE INSTALLED.

EXISTING VASI AND REIL EQUIPMENT WILL BE UTILIZED.

7. LIGHTING AND MARKING CHANGES

THE RUNWAY 25 THRESHOLD WILL BE RELOCATED BY APPROXIMATELY 500' TO THE WEST. THE RUNWAY EDGE LIGHTS AND THRESHOLD LIGHTS FOR THE CLOSED END OF THE RUNWAY WILL BE DEACTIVATED. TEMPORARY THRESHOLD LIGHTS WILL BE INSTALLED AT THE RELOCATED THRESHOLD.

A TEMPORARY THRESHOLD BAR WILL BE PLACED AT THE NEW THRESHOLD WITH TEMPORARY CHEVRONS LEADING UP TO THE BAR.

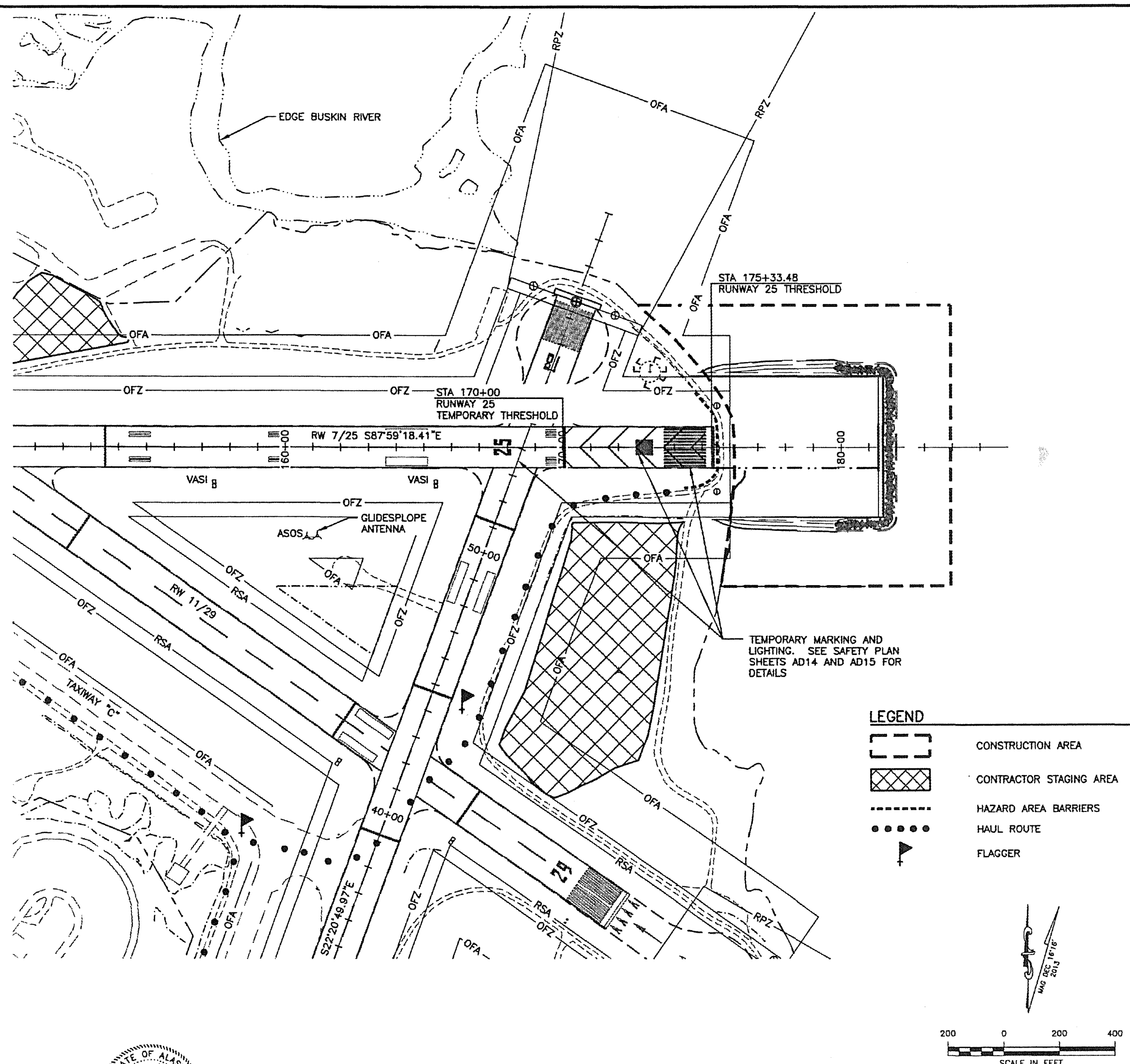
THE RUNWAY THRESHOLD AND DESIGNATION NUMBERS WILL BE COVERED.

8. AVAILABLE RUNWAY LENGTH

RUNWAY LENGTH WILL BE SHORTENED TO 7,000' FEET DURING THIS PHASE. SEE THE DECLARED DISTANCES INCLUDED AS FOLLOWS:

RUNWAY 7
ASDA = 7,000' TORA = 7,000' TODA = 7,000' LDA = 7,000'
RUNWAY 25
ASDA = 6,000' TORA = 6,000' TODA = 6,000' LDA = 7,000'

THERE IS NO SAFETY AREA BEYOND THE ENDS OR PRIOR TO THE BEGINNING PF EACH RUNWAY.



STATE OF ALASKA 49TH John C. Wahl CE 4504 3/26/14 REGISTERED PROFESSIONAL ENGINEER

PREPARED BY: HDR Alaska, Inc.

BY	DATE	REVISION

STATE OF ALASKA
DEPARTMENT OF TRANSPORTATION AND PUBLIC FACILITIES
CENTRAL REGION

KODIAK AIRPORT
KODIAK, ALASKA
KODIAK AIRPORT RSA EXTENSION, 2014
PROJECT No. 53587
AIP No. 3-02-0158-017-2014
PHASING PLAN
PHASE 1A

DATE: 3/26/2014
SHEET: AD2 OF 15
AS-BUILT SHEET:

PHASE 1B NOTES:

1. CONSTRUCTION SUMMARY:

WORK ASSOCIATED FOR THIS PHASE INCLUDES, BUT IS NOT LIMITED TO, THE FOLLOWING:

- IMPLEMENT SAFETY PLAN REQUIREMENTS INCLUDED IN THE SPCD.
- IMPLEMENT BEST MANAGEMENT PRACTICES.
- DEACTIVATE THE FAA GLIDE SLOPE, AND REIL.(TO BE PERFORMED BY FAA).
- TEMPORARILY RELOCATE THE REIL LIGHTS AS SHOWN ON THE PLANS.
- INSTALL TEMPORARY THRESHOLD LIGHTS AS SHOWN OF THE PLANS.
- INSTALL TEMPORARY THRESHOLD BAR AND CHEVRONS AS SHOWN IN THE SAFETY PLAN DETAILS.
- COVER RUNWAY 25 THRESHOLD AND DESIGNATION NUMBER AS SHOWN IN THE SAFETY PLAN DETAILS.
- REGRADE THE SAFETY AREA, AS NEEDED.
- SURFACE AND PAVE THE SAFETY AREA AS SHOWN ON THE PLANS.
- INSTALL RUNWAY 7/25 EMAS.
- MARK SAFETY AREA.
- REMOVE TEMPORARY LIGHTING AND MARKING FOLLOWING COMPLETION OF EMBANKMENTS.
- RESTORE THE REIL SYSTEMS TO THEIR ORIGINAL LOCATION.
- REACTIVATE GLIDE SLOPE (TO BE PERFORMED BY THE FAA).

2. AREAS CLOSED TO AIRCRAFT OPERATIONS

THE THRESHOLD OF RUNWAY 25 WILL BE RELOCATED BY 500' TO THE WEST. THE FIRST 500' OF RUNWAY WILL BE CLOSED TO AIRCRAFT OPERATIONS.

3. TAXI ROUTES

TAXI ROUTES WILL NOT BE AFFECTED DURING THIS PHASE AND NO TAXIWAY WILL BE CLOSED.

4. ARFF ACCESS ROUTES

ARFF ACCESS ROUTES WILL NOT BE AFFECTED DURING THIS PHASE.

5. CONSTRUCTION ACCESS AND HAUL ROUTES

HAUL ROUTES ARE SHOWN ON THE PHASING PLAN AND SHALL BE GENERALLY AS FOLLOWS:

THE PRIMARY HAUL ROUTE FOR THE HAULING OF MATERIALS INCLUDING EMBANKMENT AND SHORE PROTECTION MATERIAL SHALL BE FROM REZANOF DRIVE WEST, EXIT ON DRIVEWAY LOCATED NORTH OF DEVIL'S CREEK. ENTER AOA THROUGH SECURITY GATE AND PROCEED EAST ALONG SERVICE ROAD SOUTH OF TAXIWAYS D AND C. CROSS RUNWAY 18/36 AND 11/29 TO THE SERVICE ROAD EAST OF RUNWAY 18/36. ENTER PROJECT AREA.

6. IMPACTS ON NAVAIDS

THE GLIDE SLOPE FOR RUNWAY 25 WILL BE DEACTIVATED DUE TO THE RELOCATION OF THE RUNWAY 25 THRESHOLD.

RUNWAY 25 VASI WILL BE DEACTIVATED AND TEMPORARILY RELOCATED 500' TO THE WEST. NEW TEMPORARY FOUNDATIONS WILL BE CONSTRUCTED AND TEMPORARY WIRING INSTALLED.

THE REIL WILL BE DEACTIVATED AND TEMPORARILY RELOCATED BY 500' TO THE WEST. NEW TEMPORARY WIRING AND LIGHT BASES WILL BE INSTALLED.

EXISTING VASI AND REIL EQUIPMENT WILL BE UTILIZED.

7. LIGHTING AND MARKING CHANGES

THE RUNWAY 25 THRESHOLD WILL BE RELOCATED BY APPROXIMATELY 500' TO THE WEST. THE RUNWAY EDGE LIGHTS AND THRESHOLD LIGHTS FOR THE CLOSED END OF THE RUNWAY WILL BE DEACTIVATED. TEMPORARY THRESHOLD LIGHTS WILL BE INSTALLED AT THE RELOCATED THRESHOLD.

A TEMPORARY THRESHOLD BAR WILL BE PLACED AT THE NEW THRESHOLD WITH TEMPORARY CHEVRONS LEADING UP TO THE BAR.

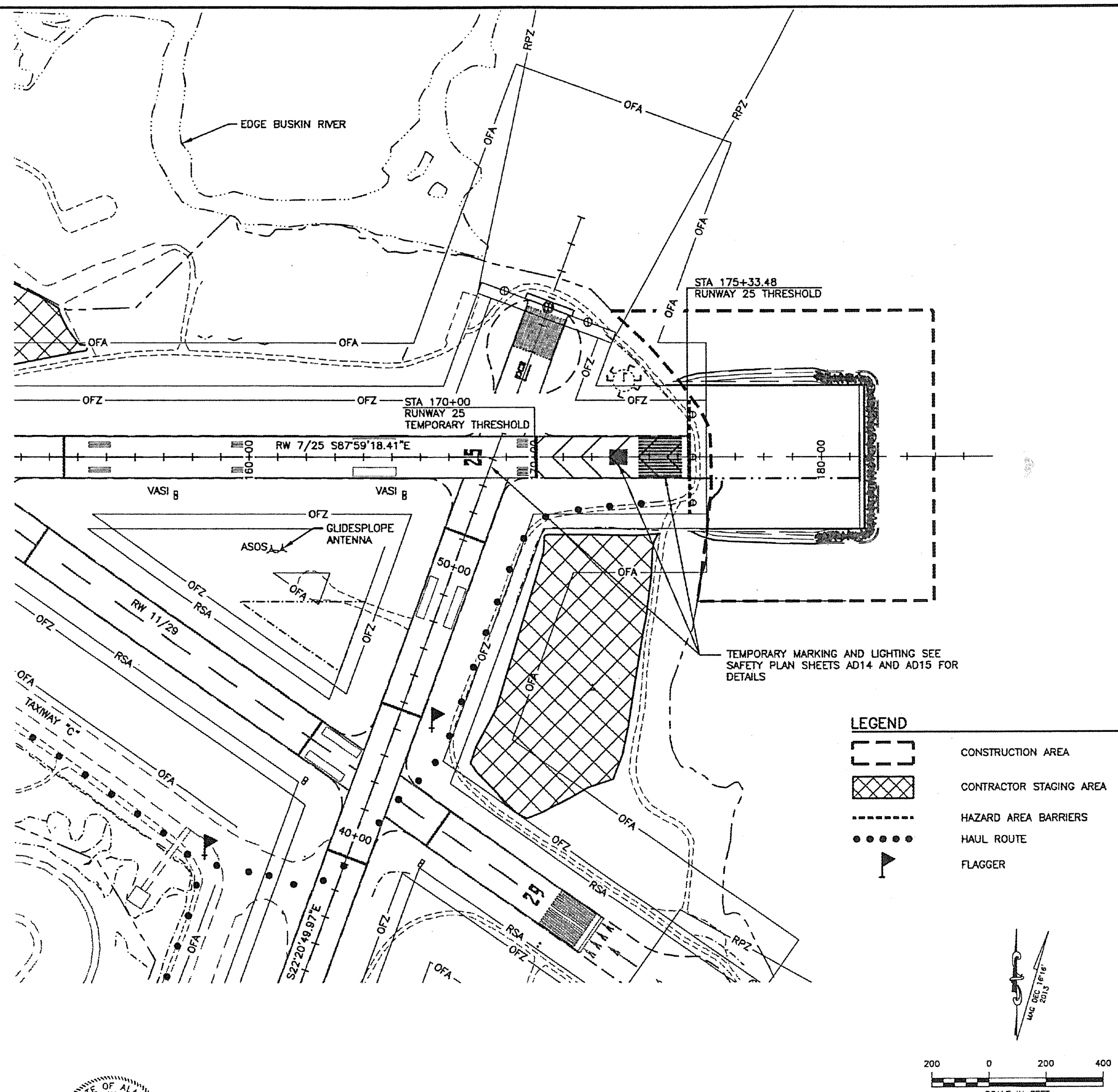
THE RUNWAY DESIGNATION NUMBER WILL BE COVERED.

8. AVAILABLE RUNWAY LENGTH

RUNWAY LENGTH WILL BE SHORTENED TO 7,033' FEET DURING THIS PHASE. SEE THE DECLARED DISTANCES INCLUDED AS FOLLOWS:

RUNWAY 7
ASDA = 7,000' TORA = 7,000' TODA = 7,000' LDA = 7,000'
RUNWAY 25
ASDA = 6,000' TORA = 6,000' TODA = 6,000' LDA = 7,000'

THERE IS NO SAFETY AREA BEYOND THE ENDS OR PRIOR TO THE BEGINNING OF EACH RUNWAY.



PREPARED BY: HDR Alaska, Inc.

BY	DATE	REVISION

STATE OF ALASKA
DEPARTMENT OF TRANSPORTATION AND PUBLIC FACILITIES
CENTRAL REGION

KODIAK AIRPORT
KODIAK, ALASKA
KODIAK AIRPORT RSA EXTENSION, 2014
PROJECT No. 53587
AIP No. 3-02-0158-017-2014
PHASING PLAN
PHASE 1B

DATE: 3/28/2014
SHEET: AD3 OF 15
AS-BUILT SHEET:

Date Revised: 3/26/2014, 10:15 AM
Layout Name: ADD-EMAS_AD3_PhasingPlan-Phase1B 3OF15
Designed By: D.G.
Drawn By: L.W.
Checked By: J.W.

Date Revised:	3/24/2014, 10:22 AM	Designed By: D.C.
Layout Name:	ADO-EMAS_AD4_PhasingPlan-Phase2A 4OF15	Drawn By: L.W.
File Path and Name:	C:\pwworking\sea\d0930371\ADO_EMAS_AD2-AD6_PhasingPlan.dwg	Checked By: J.W.

PHASE 2A NOTES:

1. CONSTRUCTION SUMMARY:

WORK ASSOCIATED WITH THIS PHASE INCLUDES, BUT IS NOT LIMITED TO, THE FOLLOWING:

- IMPLEMENT SAFETY PLAN REQUIREMENTS INCLUDED IN THE SPCD.
- IMPLEMENT BEST MANAGEMENT PRACTICES.
- DURING HOURS OF DAILY RUNWAY AND TAXIWAY CLOSURE:
  - DEACTIVATE RUNWAY LIGHTS.
  - DEACTIVATE VASI AND REIL FOR RUNWAY 36.
  - PLACE ILLUMINATED HAZARD AREA BARRIERS AS SHOWN IN THE SAFETY PLAN DRAWINGS.
- CONSTRUCT THE NEW EMBANKMENT AND SHORE AT THE SOUTH END OF RUNWAY 18-36.
- FOLLOWING THE HOURS OF DAILY RUNWAY AND TAXIWAY CLOSURE:
  - REMOVE FOD FROM RUNWAY AND TAXIWAY SURFACES.
  - FOLLOWING THE CLOSURE, REMOVE THE BARRIERS, "X"S.
  - RESTORE RUNWAY LIGHTING, VASI AND REIL SYSTEMS.

2. AREAS CLOSED TO AIRCRAFT OPERATIONS

RUNWAY 18-36 TAXIWAY A AND TAXIWAY B NAY BE CLOSED FROM 6:30 P.M. TO 6:30 A.M. DURING THIS PHASE.

3. DURATION OF CLOSURES

THIS PHASE IS EXPECTED TO BEGIN IN JUNE, 2014 AND BE COMPLETED BY DECEMBER, 2014.

4. TAXI ROUTES

TAXIWAY A AND B WILL BE CLOSED DURING PERIODS OF RUNWAY CLOSURE.

5. ARFF ACCESS ROUTES

ARFF ACCESS ROUTES WILL NOT BE AFFECTED DURING THIS PHASE.

6. HAUL ROUTES

THE HAUL ROUTES SHALL BE FROM REZANOF DRIVE WEST, EXIT ON DRIVEWAY LOCATED NORTH OF DEVILS CREEK. ENTER AOA THROUGH SECURITY GATE AND PROCEED ALONG THE SERVICE ROAD SOUTH OF TAXIWAYS D AND C, AND SOUTH ALONG THE WEST SIDE OF TAXIWAY B. CROSS TAXIWAY A AND ENTER PROJECT AREA.

7. IMPACTS ON NAVAIDS

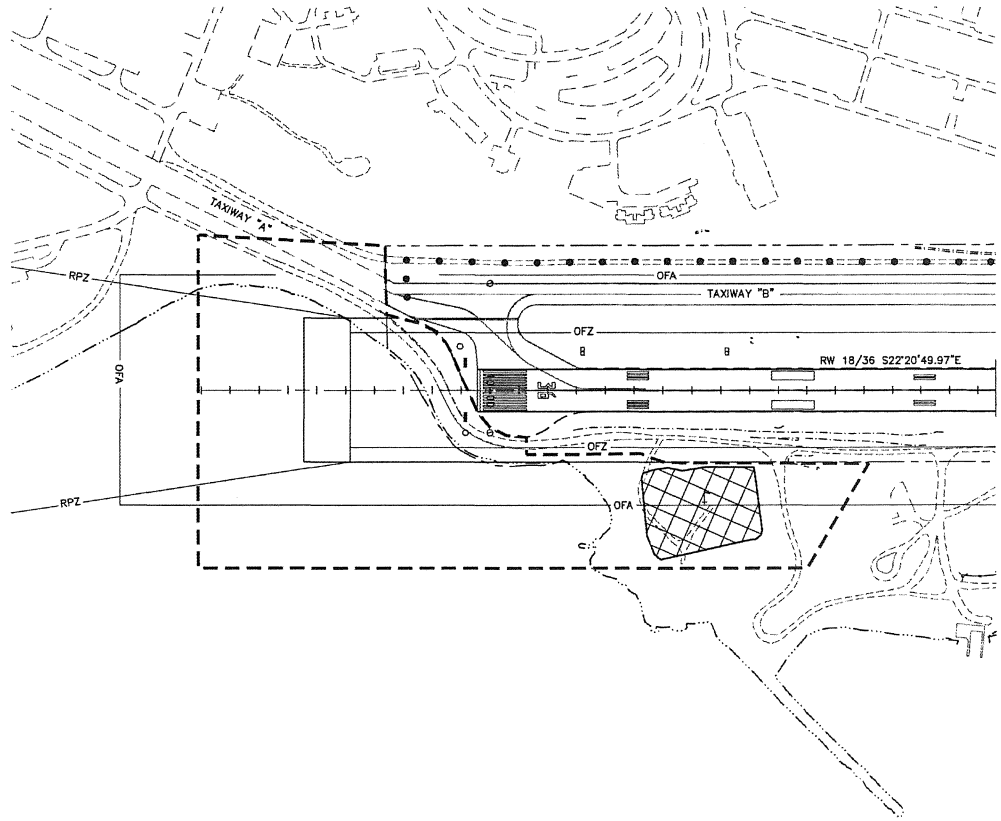
THE RUNWAY 36 VASI AND REIL WILL BE DEACTIVATED DURING HOURS OF RUNWAY CLOSURE BY EITHER OBSCURING THE LIGHTS OR TURNING OFF POWER. (AS DIRECTED BY FAA)

8. LIGHTING AND MARKING CHANGES

THE RUNWAY LIGHTS WILL BE DEACTIVATED DURING HOURS OF RUNWAY CLOSURE.

9. AVAILABLE RUNWAY LENGTH

THE LENGTH OF RUNWAY 18-36 WILL BE TO 5,009'.

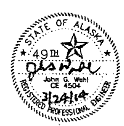


LEGEND

- CONSTRUCTION AREA
- CONTRACTOR STAGING AREA
- HAZARD AREA BARRIERS
- HAUL ROUTE
- SECURITY GATE WITH FLAGGER

MAG DEC 16°16' 2013

200 0 200 400
SCALE IN FEET



PREPARED BY: HDR Alaska, Inc.

BY	DATE	REVISION			
			STATE OF ALASKA DEPARTMENT OF TRANSPORTATION AND PUBLIC FACILITIES CENTRAL REGION	KODIAK AIRPORT KODIAK, ALASKA KODIAK AIRPORT RSA EXTENSION, 2014 PROJECT No. 53587 AIP No. 3-02-0158-017-2014 PHASING PLAN PHASE 2A	DATE: 3/18/2014 SHEET: AD4 OF 15 AS-BUILT SHEET:

PHASE 2B NOTES:

1. CONSTRUCTION SUMMARY:

WORK ASSOCIATED WITH THIS PHASE INCLUDES, BUT IS NOT LIMITED TO, THE FOLLOWING:

- IMPLEMENT SAFETY PLAN REQUIREMENTS INCLUDED IN THE SPCD.
- IMPLEMENT BEST MANAGEMENT PRACTICES.
- DURING HOURS OF DAILY RUNWAY AND TAXIWAY CLOSURE:
  - DEACTIVATE RUNWAY LIGHTS.
  - DEACTIVATE VASI AND REIL FOR RUNWAY 36.
  - PLACE LIGHTED "X"S OVER RUNWAY RESIGNATION MARKERS FOR RUNWAY 18 AND 36.
  - PLACE ILLUMINATED HAZARD AREA BARRIERS AS SHOWN IN THE SAFETY PLAN DRAWINGS.
- CONSTRUCTION DURING THIS PHASE WILL INCLUDE
  - COMPLETE CONSTRUCTION OF THE SOUTHERN EMBANKMENT EXTENSION.
  - CONSTRUCT SOUTHERN EXTENSION OF RUNWAY, TAXIWAY A.
  - CONSTRUCT SAFETY AREA.
  - PAVE BLAST PAD.
  - CONSTRUCT SERVICE ROAD.
  - INSTALL LIGHTING.
- FOLLOWING THE HOURS OF DAILY RUNWAY AND TAXIWAY CLOSURE:
  - REMOVE FOD FROM RUNWAY AND TAXIWAY SURFACES.
  - FOLLOWING THE CLOSURE, REMOVE THE BARRIERS, "X"S.
  - RESTORE RUNWAY LIGHTING, VASI AND REIL SYSTEMS.

2. AREAS CLOSED TO AIRCRAFT OPERATIONS

RUNWAY 18-36, TAXIWAY A AND B MAY BE CLOSED FROM 6:30 P.M. TO 6:30 A.M. DURING THIS PHASE.

3. DURATION OF CLOSURES

THIS PHASE IS EXPECTED TO BEGIN IN JUNE, 2014 AND BE COMPLETED BY DECEMBER, 2014.

4. TAXI ROUTES

TAXIWAY A AND B WILL BE CLOSED DURING PERIODS OF RUNWAY CLOSURE.

5. ARFF ACCESS ROUTES

ARFF ACCESS ROUTES WILL NOT BE AFFECTED DURING THIS PHASE.

6. HAUL ROUTES

THE HAUL ROUTES SHALL BE FROM REZANOF DRIVE WEST, EXIT ON DRIVEWAY LOCATED NORTH OF DEVILS CREEK. ENTER AOA THROUGH SECURITY GATE AND PROCEED EAST ALONG THE SERVICE ROAD SOUTH OF TAXIWAYS D AND C, AND SOUTH ALONG THE WEST SIDE OF TAXIWAY B. CROSS TAXIWAY A AND ENTER PROJECT AREA.

7. IMPACTS ON NAVAIDS

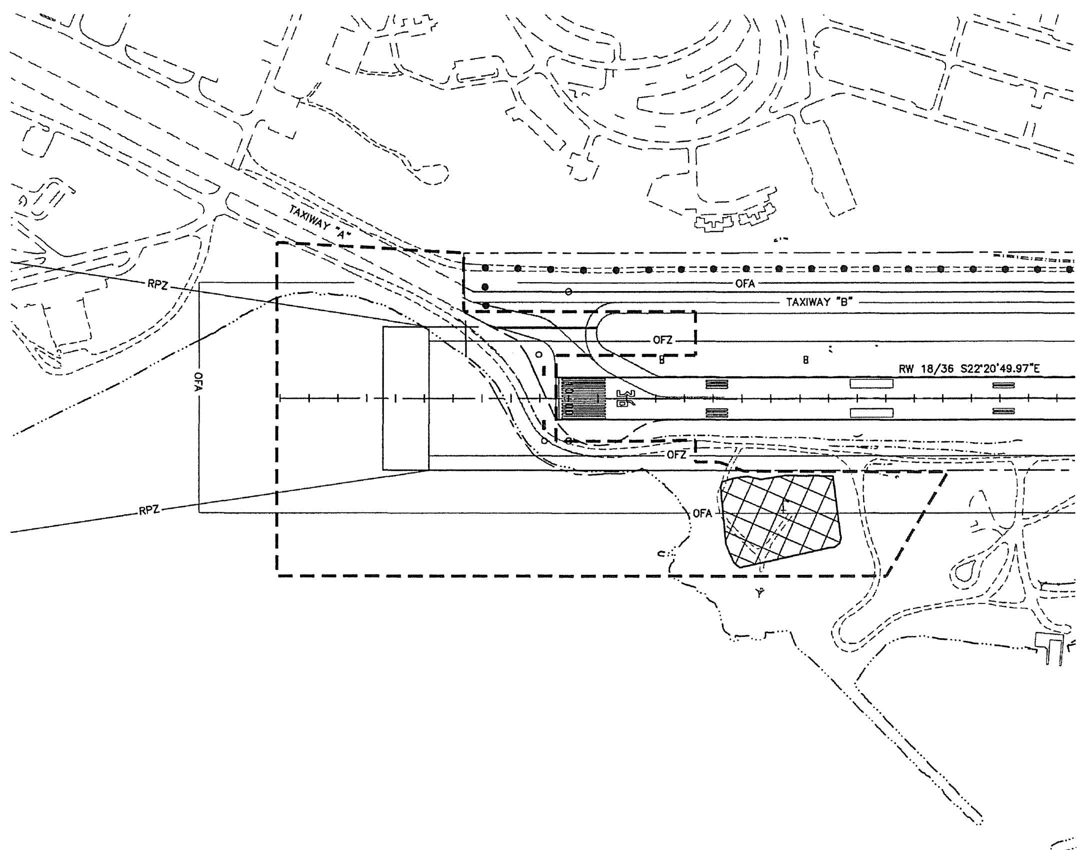
THE RUNWAY 36 VASI AND REIL WILL BE DEACTIVATED DURING HOURS OF RUNWAY CLOSURE BY EITHER OBSCURING THE LIGHTS OR TURNING OFF POWER. (AS DIRECTED BY FAA)

8. LIGHTING AND MARKING CHANGES

THE RUNWAY LIGHTS WILL BE DEACTIVATED DURING HOURS OF RUNWAY CLOSURE.

9. AVAILABLE RUNWAY LENGTH

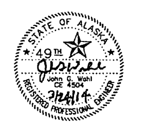
THE LENGTH OF RUNWAY 18-36 WILL BE TO 5,009'.



LEGEND

(dashed box)	CONSTRUCTION AREA
(cross-hatched box)	CONTRACTOR STAGING AREA
--------	HAZARD AREA BARRIERS
● ● ● ● ●	HAUL ROUTE
(flag)	SECURITY GATE WITH FLAGGER

200 0 200 400
SCALE IN FEET



PREPARED BY: HDR Alaska, Inc.

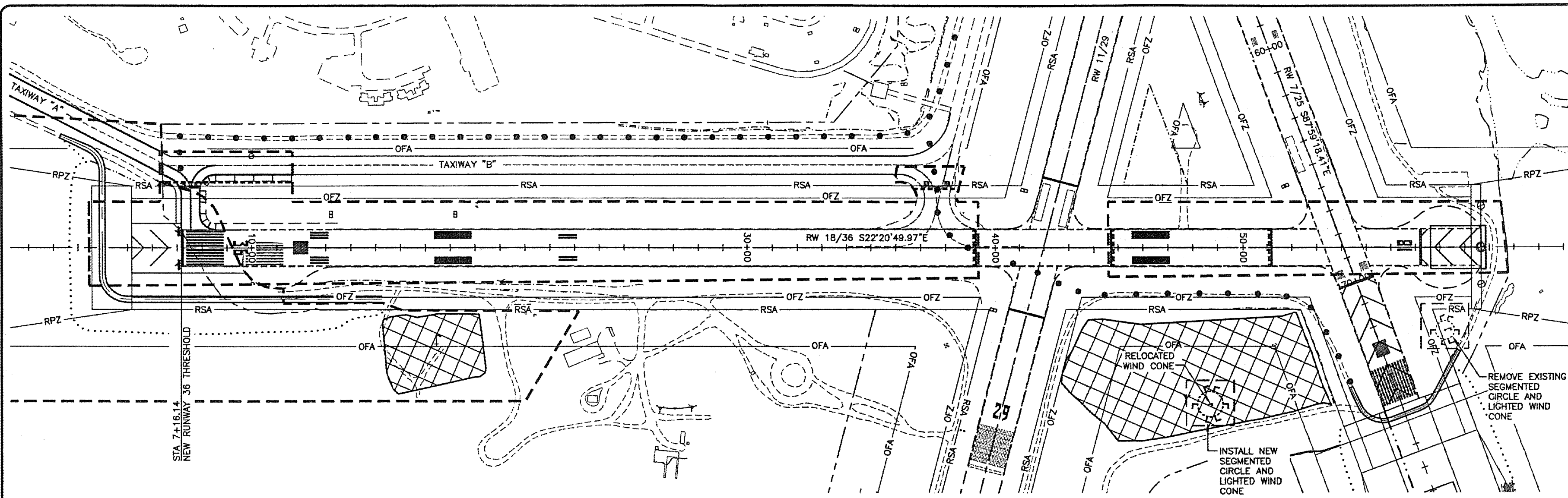
BY	DATE	REVISION

STATE OF ALASKA
DEPARTMENT OF TRANSPORTATION AND PUBLIC FACILITIES
CENTRAL REGION

KODIAK AIRPORT
KODIAK, ALASKA
KODIAK AIRPORT RSA EXTENSION, 2014
PROJECT No. 53587
AIP No. 3-02-0158-017-2014
PHASING PLAN
PHASE 2B

DATE: 3/18/2014
SHEET: AD5 OF 15
AS-BUILT SHEET: OF

Designed By: D.G.
Drawn By: L.W.
Checked By: J.W.
Date Revised: 3/24/2014, 10:23 AM



PHASE 2C NOTES:

1. CONSTRUCTION SUMMARY:

WORK ASSOCIATED WITH THIS PHASE INCLUDES, BUT IS NOT LIMITED TO, THE FOLLOWING:

- IMPLEMENT SAFETY PLAN REQUIREMENTS INCLUDED IN THE SPCD.
- PLACE LIGHTED RUNWAY CLOSURE MARKERS AT ENDS OF RUNWAY AS SHOWN IN THE SAFETY PLAN.
- DEACTIVATE RUNWAY AND TAXIWAY LIGHTS FOR THE PROJECT AREA.
- PLACE HAZARD BARRIERS AS SHOWN IN THE SAFETY PLAN.
- REMOVE THRESHOLD EDGE LIGHTS, AS REQUIRED, FOR RUNWAY 18.
- INSTALL NEW THRESHOLD LIGHTS FOR THE RELOCATED THRESHOLD OF RUNWAY 18.
- REMOVE EXISTING RUNWAY AND TAXIWAY STRIPING AS SHOWN ON THE MARKING DEMOLITION PLAN.
- INSTALL EMAS AT NORTH END OF THE RUNWAY 18/36 SAFETY AREA.
- MARK RUNWAY 18/36, TAXIWAY A AND TAXIWAY B AS SHOWN ON THE PLANS.
- REFURBISH VASI
- REPAVE TAXIWAY C
- INSTALL NEW SEGMENTED CIRCLE AND LIGHTED WIND CONE
- REMOVE EXISTING SEGMENTED CIRCLE AND LIGHTED WIND CONE
- INSTALL REILS AT THEIR NEW LOCATIONS.
- REACTIVATE RUNWAY, TAXIWAY LIGHTS AND NAVAIDS.
- REMOVE CLOSURE MARKERS AND BARRIERS.

2. AREAS CLOSED TO AIRCRAFT OPERATIONS

RUNWAY 18/36 SHALL BE CLOSED TO AIRCRAFT OPERATIONS.

TAXIWAYS A AND C BETWEEN TAXIWAY B AND RUNWAY 18/36 SHALL BE CLOSED.

3. DURATION OF CLOSURES

PHASE 2C WILL BEGIN IMMEDIATELY FOLLOWING COMPLETION OF PHASE 2B (APPROXIMATELY AUGUST, 2015) AND SHALL BE COMPLETED BY NOVEMBER 30, 2015.

4. TAXI ROUTES

AIRCRAFT WILL USE TAXIWAY A AND B TO ACCESS RUNWAYS 7/25 AND 11/29.

5. ARFF ACCESS ROUTES

ARFF ACCESS ROUTES WILL NOT BE AFFECTED DURING THIS PHASE.

6. CONSTRUCTION ACCESS AND HAUL ROUTES

ACCESS TO THE HAUL ROUTES IS SHOWN ON THE PHASING PLAN AND SHALL BE GENERALLY AS FOLLOWS:

THE ACCESS ROUTE WILL BE FROM REZANOF DRIVE WEST, PROCEED VIA 8TH STREET AND G AVENUE TO THE SECURITY GATE ADJACENT TO THE USCG ARFF FACILITY. ENTER THE AOA AND PROCEED EAST ALONG SERVICE ROAD SOUTH OF TAXIWAYS D AND C AND WEST OF TAXIWAY B. CROSS TAXIWAY A AND ENTER PROJECT AREA.

ALTERNATE ACCESS WILL BE FROM REZANOF DRIVE WEST, PROCEED FROM THE TERMINAL ENTRANCE ROAD TO THE DEVIL'S CREEK SERVICE ROAD. ENTER THE AOA THROUGH THE GATE AT DEVIL'S CREEK AND THEN PROCEED VIA THE EXISTING SERVICE ROADS NORTH ALONG TAXIWAY E AND EAST ON THE NORTH SIDE OF RUNWAYS 11/29 AND 7/25 TO THE PROJECT AREA.

7. IMPACTS ON NAVAIDS

THE RUNWAY 36 VASI AND REIL LIGHTS WILL BE DEACTIVATED. VASI WILL BE REFURBISHED AND REIL LIGHTS RELOCATED TO THEIR FINAL POSITION.

8. LIGHTING AND MARKING CHANGES

TEMPORARY LIGHTED RUNWAY CLOSURE MARKERS SHALL BE PLACED ON RUNWAY CENTERLINE ON OR NEAR THE EXISTING OR RELOCATED RUNWAY DESIGNATION NUMBERS DEPENDING ON CONSTRUCTION AND MARKING ACTIVITIES.

9. AVAILABLE RUNWAY LENGTH

RUNWAY 18/36 SHALL BE CLOSED.

LEGEND

- CONSTRUCTION AREA
- CONTRACTOR STAGING AREA
- HAZARD AREA BARRIERS
- HAUL ROUTE
- SECURITY GATE WITH FLAGGER

MAG DEC 15°16' 2013

200 0 200 400
SCALE IN FEET

Designed By:	D.G.
Drawn By:	L.W.
Checked By:	J.W.
Date Revised:	3/26/2014 12:06 PM

PREPARED BY: HDR Alaska, Inc.

BY	DATE	REVISION

STATE OF ALASKA
DEPARTMENT OF TRANSPORTATION AND PUBLIC FACILITIES
CENTRAL REGION

KODIAK AIRPORT
KODIAK, ALASKA
KODIAK AIRPORT RSA EXTENSION, 2014
PROJECT No. 53587
AIP No. 3-02-0158-017-2014
PHASING PLAN
PHASE 2C

DATE: 3/26/2014
SHEET: AD6 OF 15
AS-BUILT SHEET:

PHASE 3 PHASING PLAN NOTES:

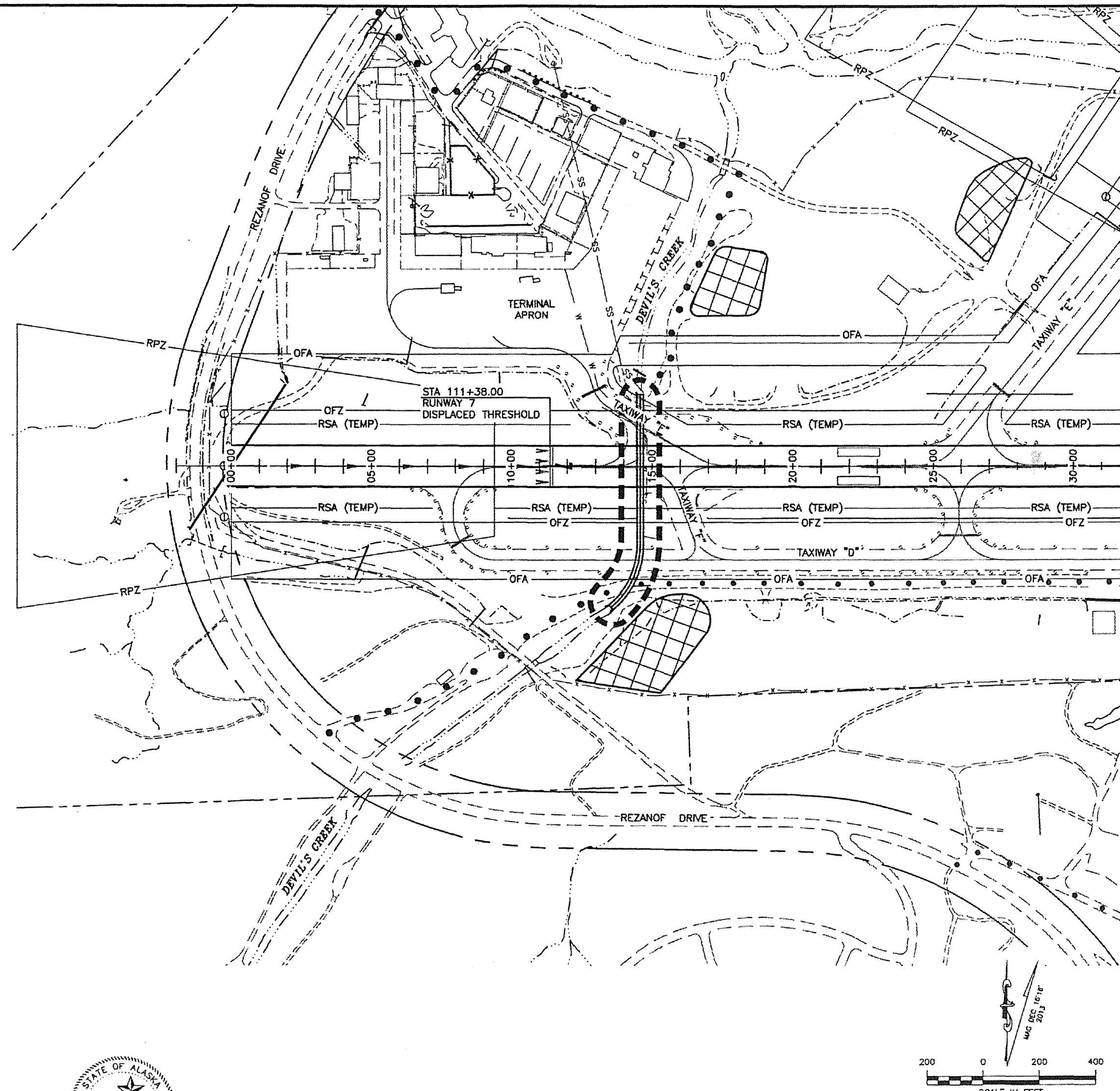
CONSTRUCTION SUMMARY:

1. WORK ASSOCIATED WITH THIS PHASE INCLUDES, BUT IS NOT LIMITED TO, THE FOLLOWING:
   - REPAIR INTERIOR OF PCC BOX CULVERT
   - CONSTRUCT A DIKE AROUND THE ENTRANCE TO THE BOX CULVERT TO RAISE HYDRAULIC HEAD OF THE CREEK TO INCREASE FLOW THROUGH THE CULVERT
2. AREAS CLOSED TO AIRCRAFT OPERATIONS
   RUNWAY 7-25 AND TAXIWAYS D AND F SHALL REMAIN OPEN AT ALL TIMES.
3. DURATION OF CLOSURES
   RUNWAY 7-25 AND TAXIWAYS D AND F SHALL REMAIN OPEN AT ALL TIMES.
4. Taxi Routes
   TAXI ROUTES WILL NOT BE CHANGED.

   WHILE CONSTRUCTION ACTIVITY IS UNDER WAY, LARGE AIRCRAFT (GREATER THAN 12,500 POUNDS) MAY NOT MAKE A RIGHT TURN WHILE TAXIING FROM THE COMMERCIAL APRON VIA TAXIWAY F ONTO RUNWAY 7-25 FOR BACKTAXI TO RUNWAY 7 TO AVOID JET/PROP BLAST TO THE CONSTRUCTION AREA AT DEVILS CREEK. TAXIWAY F AND TAXIWAY D SHALL BE USED.
5. ARFF ACCESS ROUTES
   ARFF ACCESS ROUTES WILL NOT BE AFFECTED DURING THIS PHASE.
6. CONSTRUCTION ACCESS AND HAUL ROUTES
   ACCESS AND HAUL ROUTES SHALL BE GENERALLY AS FOLLOWS:

   THE PRIMARY ACCESS ROUTE TO THE SOUTH END OF THE DEVILS CREEK CULVERT WILL BE FROM REZANOF DRIVE WEST, PROCEED VIA 8TH STREET AND G AVENUE TO THE SECURITY GATE ADJACENT TO THE USCG ARFF FACILITY. ENTER THE AOA AND PROCEED WEST ALONG SERVICE ROAD SOUTH OF TAXIWAY D AND ENTER PROJECT AREA. ALTERNATE ROUTE IS THROUGH THE DEVILS CREEK GATE USING FLAGGERS AT ACCESS CONTROLS SIMILAR TO THE RSA EXTENSION PROJECT.

   THE ACCESS AND HAUL ROUTE TO THE NORTH END OF THE DEVILS CREEK CULVERT WILL BE FROM REZANOF DRIVE WEST. PROCEED FROM THE TERMINAL ENTRANCE ROAD TO THE DEVILS CREEK SERVICE ROAD. ENTER THE AOA THROUGH THE GATE AT DEVILS CREEK AND THEN PROCEED TO THE PROJECT AREA ON THE RIGHT.
7. IMPACTS ON NAVAIDS
   NO NAVAIDS WILL BE AFFECTED BY THIS PHASE.
8. LIGHTING AND MARKING CHANGES
   THERE WILL BE NO LIGHTING OR MARKING CHANGES DURING THIS PHASE.
9. AVAILABLE RUNWAY LENGTH
   RUNWAY LENGTHS INCLUDED IN PHASES 1A AND 1B WILL APPLY.
10. COORDINATION WITH OTHER PROJECTS
    THIS PHASE IS BEING PERFORMED UNDER A CONSTRUCTION CONTRACT INCLUDING THE KODIAK AIRPORT RSA EXTENSION, PROJECT NO. 53587, AND KODIAK AIRPORT DEVILS CREEK CULVERT REPAIR, PROJECT NO. 57474. THE CONSTRUCTION SAFETY AND PHASING PLAN INCLUDES BOTH PROJECTS AND PROVISIONS FOR THE PLAN ARE APPLICABLE TO BOTH PROJECTS.



LEGEND

(dashed box)	CONSTRUCTION AREA
(cross-hatched box)	CONTRACTOR STAGING AREA
(dashed line)	HAZARD AREA BARRIERS
● ● ● ● ●	HAUL ROUTE

PREPARED BY: HDR Alaska, Inc.

BY	DATE	REVISION

STATE OF ALASKA
DEPARTMENT OF TRANSPORTATION AND PUBLIC FACILITIES
CENTRAL REGION

KODIAK AIRPORT
KODIAK, ALASKA
KODIAK AIRPORT RSA EXTENSION, 2014
PROJECT No. 53587
AIP No. 3-02-0158-017-2014
PHASING PLAN
PHASE 3

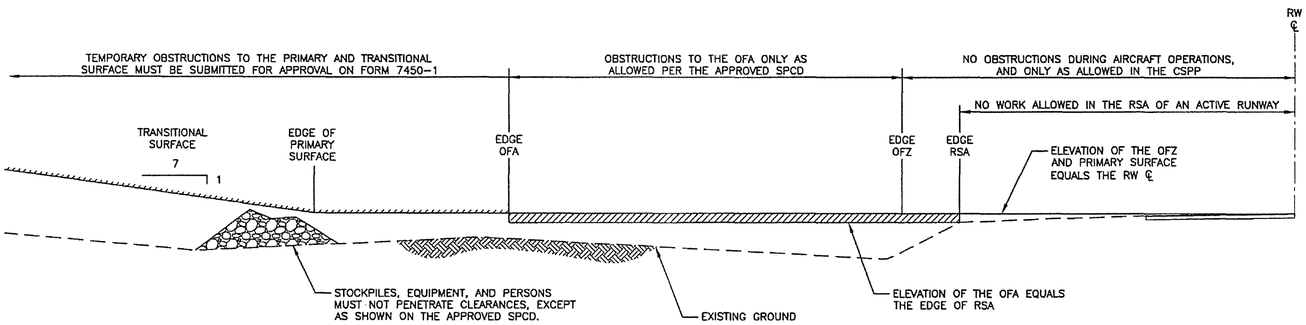
DATE: 3/26/2014
SHEET: BD1 OF 2
AS-BUILT SHEET:

Construction Safety and Phasing Plan
Appendix D.3 –
Construction Safety Drawings

Kodiak Airport, RSA Extension	AD7 through AD15 of 15
Kodiak Airport, Devils Creek Culvert Repair	BD-2 of 2

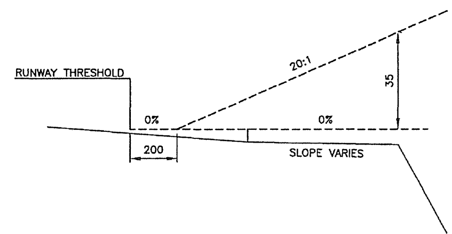
GENERAL SAFETY PLAN NOTES:

1. SUBMIT A SAFETY PLAN COMPLIANCE DOCUMENT (SPCD) PER FAA AC 150/5370-2F, OPERATIONAL SAFETY ON AIRPORTS DURING CONSTRUCTION (SAFETY AC), WITHIN 30 DAYS OF RECEIVING NOTICE TO PROCEED (NTP) TO THE ENGINEER FOR APPROVAL.
2. FOLLOWING APPROVAL OF THE SPCD, IF SUBSEQUENT CHANGES ARE NEEDED, SUBMIT A REVISION TO THE ENGINEER FOR REVIEW AND APPROVAL. ALLOW UP TO 40 DAYS FOR REVIEW OF REVISED SPCD.
3. SEE SHEETS AD9 THROUGH AD15 FOR CONSTRUCTION PHASE SPECIFIC SAFETY PLANS.
4. WHENEVER THE PLANS OR SPECIFICATIONS CALL FOR COORDINATION, NOTIFICATION, CONTACT, OR OTHER INTERACTION WITH FAA, AIRPORT MANAGEMENT, MAINTENANCE AND OPERATIONS, ARFF PERSONNEL, AIRPORT TENANTS, AIRPORT USERS, ANY LOCAL, STATE, OR FEDERAL AGENCY, GROUP, OR ASSOCIATION, OR THE GENERAL PUBLIC, SUCH ACTIVITY SHALL BE DONE THROUGH, IN THE PRESENCE OF, OR WITH THE WRITTEN APPROVAL OF THE ENGINEER. ALLOW SUFFICIENT TIME FOR COORDINATION AND APPROVALS WITHIN PROPOSED WORK SCHEDULES. SEE THE CSPP FOR REQUIRED LEAD TIMES FOR COORDINATION WITH CERTAIN GROUPS.
5. THE CONTRACTOR MUST REPORT ANY SAFETY ISSUES TO THE ENGINEER AND AIRPORT MANAGER UPON DISCOVERY. THE CONTRACTOR MUST TAKE IMMEDIATE ACTION TO RESOLVE SAFETY ISSUES AS DIRECTED.
6. THE TERM "ACTIVE RUNWAY" REFERS TO RUNWAY OR PORTION OF THE RUNWAY OPEN TO LANDING, TAKEOFF AND TAXIING OPERATIONS.
7. NO CONSTRUCTION ACTIVITY IS ALLOWED WITHIN THE RUNWAY SAFETY AREA (RSA) OF THE ACTIVE RUNWAY. NO CONSTRUCTION ACTIVITY IS ALLOWED WITHIN THE TAXIWAY SAFETY AREA (TSA) OR TAXIWAY OBJECT FREE AREA (TOFA) WHILE THE TAXIWAY IS OPEN FOR AIRCRAFT OPERATIONS. COORDINATE ANY RESTRICTIONS TO AIRCRAFT OPERATIONS WITH AIRPORT USERS AND THE AIRPORT MANAGER.
8. DO NOT STORE MATERIALS OR PARK EQUIPMENT WITHIN THE OFA OF THE ACTIVE RUNWAY. USE STOCKPILE AND STAGING AREAS SHOWN TO STORE MATERIALS OR PARK EQUIPMENT. EQUIPMENT MAY BE PARKED IN THE "CONSTRUCTION AREA" PROVIDED IT DOES NOT CONFLICT WITH OTHER LIMITATIONS. ALL TEMPORARY STAGING AND STOCKPILE LOCATIONS OTHER THAN "STOCKPILE AREA" REQUIRE APPROVAL OF THE ENGINEER. ENSURE ADEQUATE DISTANCE FOR JET AND PROP BLAST PROTECTION.
9. EQUIPMENT WILL NOT BE ALLOWED OUTSIDE OF THE FOOTPRINT OF THE PROJECT EXCEPT FOR EXISTING PADS AS APPROVED BY THE ENGINEER.
10. EQUIPMENT WILL ONLY BE PERMITTED INSIDE THE AIRPORT OPERATIONS AREAS (AOA) AS APPROVED BY THE AIRPORT MANAGER THROUGH THE ENGINEER. SEE GCP-80 OF THE SPECIFICATIONS FOR LIMITATIONS AND OPERATIONAL SAFETY CONCERNS.
11. SNOW OR EARTH BERMS, STORAGE OF EQUIPMENT AND MATERIALS, OR ANY GROUND DISTURBING ACTIVITIES WILL NOT BE ALLOWED IN THE GLIDESLOPE CRITICAL AREA EXCEPT FOR WORK DEPICTED ON THE PLANS WHILE THE GLIDESLOPE IS SHUT DOWN AND BEFORE FAA CONDUCTS THE FLIGHT CHECK.
12. ARFF MUST HAVE ACCESS TO THE ENTIRE AIRPORT DURING EMERGENCIES. MAINTAIN SUITABLE CORRIDORS AND COORDINATE ACCESS WITH ARFF PERSONNEL THROUGH THE ENGINEER AS REQUIRED.
13. MAINTAIN AIRCRAFT ACCESS TO TAXIWAYS AND APRONS DURING AIR OPERATIONS AS SHOWN ON THE PLANS. WHEN TAXIWAYS ARE CLOSED, HAZARD BARRIERS NEED TO BE PLACED AS SHOWN ON THE PLANS. CONTACT THE AIRPORT MANAGER AND AFFECTED PARTIES 45 DAYS PRIOR TO FULL CLOSURE OF ANY TAXIWAY (SEE CSPP FOR MORE INFORMATION).
14. RUNWAY AND TAXIWAY WORK AREA LIMITS WILL BE TEMPORARILY CLOSED FOR AIRCRAFT OPERATIONS AS SHOWN ON THE SAFETY AND PHASING PLAN SHEETS AND IN ACCORDANCE WITH CSPP AND THE APPROVED SPCD.
15. MARK OPEN TRENCHES OR EXCAVATIONS WITH HAZARD AREA BARRIERS. LIGHT WITH RED LIGHTS DURING HOURS OF RESTRICTED VISIBILITY OR DARKNESS. SEE CSPP (SECTION 18) REGARDING RESTRICTIONS FOR TRENCH AND EXCAVATION LOCATIONS
16. HAZARDOUS AREA BARRIERS MAY BE REQUIRED AT ADDITIONAL LOCATIONS, OR ADJUSTMENT MAY BE REQUIRED. LOCATE BARRIERS AS DIRECTED BY THE ENGINEER. SEE HAZARDOUS AREA BARRIER DETAIL ON SAFETY PLAN DETAILS SHEET.
17. COORDINATE THROUGH THE ENGINEER FOR CONTRACTOR ACTIVITIES THAT MAY INTERFERE WITH THE OFA AND WEATHER INSTRUMENTS. SEE THIS SHEET FOR VERTICAL CLEARANCES.
18. MONITOR TEMPORARY MARKINGS AND LIGHTING SYSTEMS FREQUENTLY AND TAKE ACTION TO CORRECT DEFICIENCIES IMMEDIATELY UPON DISCOVERY AND NOTIFICATION.
19. CARRY OUT CONTINUING COORDINATION THROUGH THE ENGINEER USING WEEKLY EMAIL UPDATES AND PROGRESS MEETINGS WITH THE AIRPORT MANAGER, AIRPORT MAINTENANCE, ARFF PERSONNEL, AIRPORT USERS AND OTHER PARTIES LISTED IN SECTION 1A OF THE SCPP.
20. PROVIDE WATER FOR DUST CONTROL AS REQUIRED, AND AS DIRECTED. DUST, SMOKE, STEAM, OR OTHER AIRBORNE PARTICULATES CAUSED BY CONTRACTOR ACTIVITIES MAY BE CONSIDERED A SAFETY VIOLATION.
21. KEEP ALL ACTIVE HAUL ROUTES AND AIRPORT SURFACES CLEAN OF MATERIAL. REMOVE SPILLED OR TRACKED MATERIAL IMMEDIATELY TO AVOID VEHICLE ACCIDENTS OR AIRCRAFT DAMAGE.
22. REMOVE ALL FOREIGN OBJECT DEBRIS (FOD) IMMEDIATELY UPON DISCOVERY OR NOTIFICATION. FAILURE TO REMOVE FOD MAY BE CONSIDERED A SAFETY VIOLATION AS DETERMINED BY THE ENGINEER.
23. WHEN A RUNWAY IS OPEN TO AIRCRAFT OPERATIONS, CONSTRUCTION, INCLUDING EXCAVATIONS, MAY BE PERMITTED IN THE ROFA. HOWEVER, EQUIPMENT MUST BE REMOVED FROM THE ROFA WHEN NOT IN USE, AND MATERIAL SHOULD NOT BE STOCKPILED IN THE ROFA IF NOT NECESSARY. STOCKPILING MATERIAL IN THE OFA REQUIRES SUBMITTAL OF A 7460-1 FORM AND JUSTIFICATION PROVIDED TO THE APPROPRIATE FAA AIRPORTS REGIONAL OR DISTRICT OFFICE FOR APPROVAL. NO EQUIPMENT OR VEHICLES ARE TO BE PARKED, OR LEFT UNATTENDED, IN THE ROFA AT ANY TIME.
24. KEEP ALL WORKERS, EQUIPMENT AND MATERIALS OUTSIDE OF THE ACTIVE RUNWAY SAFETY AREA, NAVAID CRITICAL AREAS, AND APPROACH SURFACES DURING AIRCRAFT OPERATIONS, AND ONLY ENTER THESE AREAS AS REQUIRED AND AS APPROVED.
25. KEEP ALL WORKERS, EQUIPMENT, AND MATERIALS OUTSIDE OF THE TAXIWAY SAFETY AREAS AND TAXIWAY OBJECT FREE AREAS WHILE TAXIWAYS ARE OPEN TO AIRCRAFT. ALL TAXIING AIRCRAFT HAVE THE RIGHT OF WAY.
26. PROVIDE AN AIRPORT FLAGGER IF HAULING ACROSS AN ACTIVE TAXIWAY AND/OR ACTIVE RUNWAY AND IS APPROVED AND INCLUDED IN THE APPROVED SPCD.
27. PROVIDE A GATE GUARD IF ANY GATE REMAINS OPEN DURING CONSTRUCTION ACTIVITIES.
28. TEMPORARY CLOSURE OF ANY RUNWAY OR TAXIWAY MUST BE DEPICTED IN THE APPROVED SPCD. COORDINATE WITH THE AIRPORT MANAGER, FAA, AIRPORT TENANTS AND OPERATORS, THROUGH THE ENGINEER AT LEAST 45 DAYS IN ADVANCE OF ACTUAL CLOSURES. REFER TO THE SCPP FOR ALLOWED CLOSURE DURATIONS.
29. HAZARDOUS AREA BARRIERS FOR THE CONTRACTOR'S USE ARE AVAILABLE FROM THE AIRPORT MANAGER. FLAGS AND FLASHERS MAY ALSO BE AVAILABLE. THE CONTRACTOR SHALL CONFIRM AVAILABILITY AND PROVIDE ADDITIONAL FLAGS AND FLASHERS AS REQUIRED. THE CONTRACTOR SHALL ALSO PROVIDE FRESH BATTERIES FOR FLASHERS.
30. PROVIDE PICK UP BROOM TRUCK (STREET SWEEPER), OR OTHER EQUIPMENT AS APPROVED FOR CONTROL OF FOD ON ACTIVE SURFACES. CLEAN ACTIVE SURFACES OF FOD IMMEDIATELY UPON DISCOVERY OR NOTIFICATION.



VERTICAL RELATION OF THE RSA, OFZ, OFA, PRIMARY AND TRANSITIONAL SURFACES

NTS



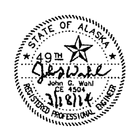
APPROACH / DEPARTURE SURFACES (TYPICAL)

NTS

PHASE 1A AND 1B	RSA OR TSA (ft.)*	OFZ (ft.)*	OFA (ft.)*	PRIMARY SURFACE (ft.)*
RW 7-25	150	200	400	500

PHASE 1A AND 1B	RSA OR TSA (ft.)*	OFZ (ft.)*	OFA (ft.)*	PRIMARY SURFACE (ft.)*
RW 18-36	150	200	400	500
TW A	85.5			N/A
TW B	85.5			N/A

* DISTANCE MEASURED FROM RW OR TW CENTERLINE



PREPARED BY: HDR Alaska, Inc.

BY	DATE	REVISION

STATE OF ALASKA
DEPARTMENT OF TRANSPORTATION AND PUBLIC FACILITIES
CENTRAL REGION

KODIAK AIRPORT
KODIAK, ALASKA
KODIAK AIRPORT RSA EXTENSION, 2014
PROJECT No. 53587
AIP No. 3-02-0158-017-2014

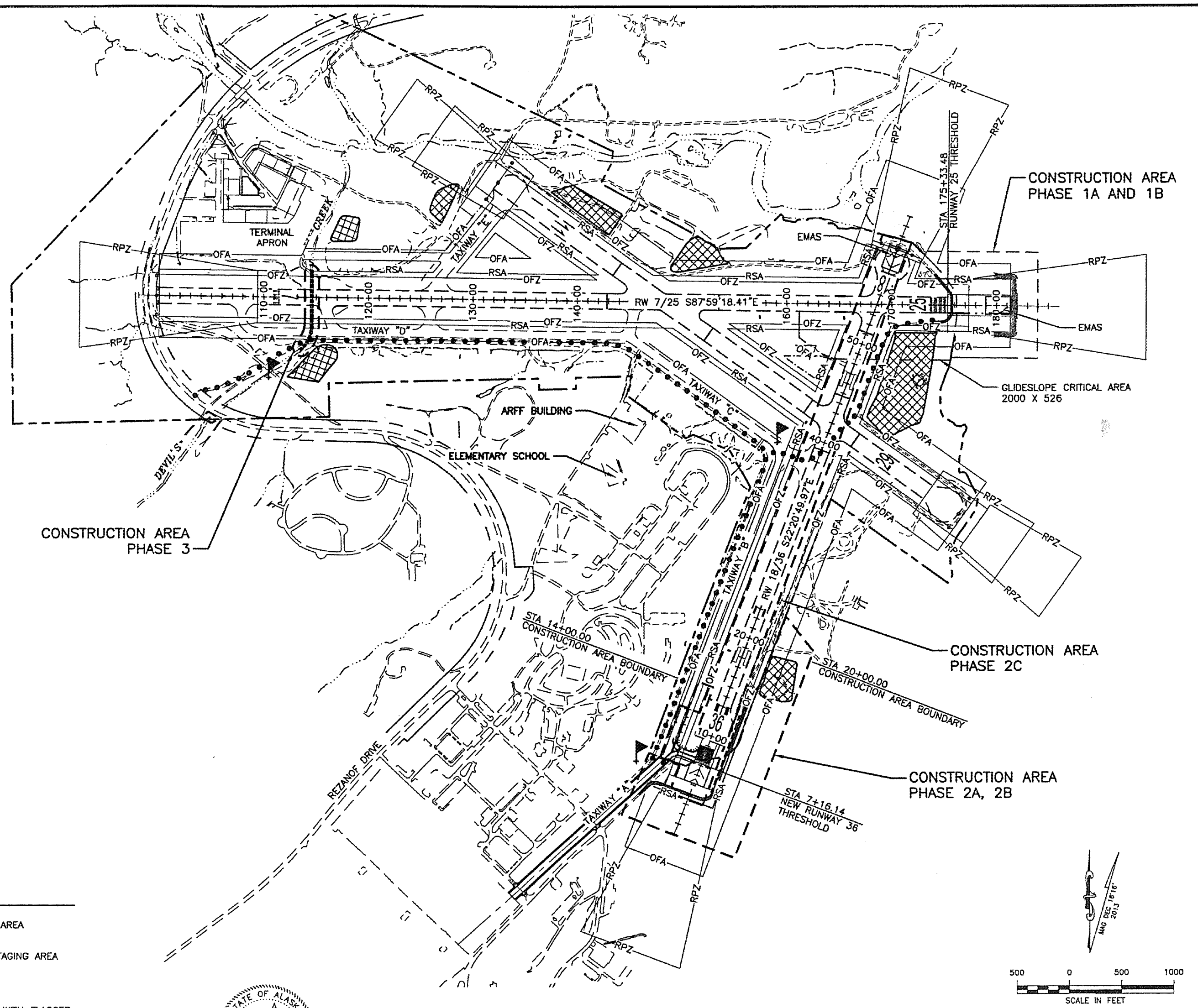
SAFETY PLAN NOTES

DATE: 3/18/2014
SHEET: AD7 OF 15
AS-BUILT SHEET: OF

Designed By: D.G. Drawn By: L.W. Checked By: J.W.
Date Revised: 3/18/2014, 1:10 PM
Layout Name: Sheet AD7

GENERAL HAUL ROUTE NOTES:

1. SPEED IS RESTRICTED TO 25 MPH ON AIRPORT PROPERTY AND 10 MPH NEAR NAVIGATION AIDS. FOLLOW LOCAL TRAFFIC LAWS WHEN TRAVELING ON PUBLIC ROADS.
2. HAUL ROUTES SHALL BE MAINTAINED BY THE CONTRACTOR THROUGHOUT HAULING AND CONSTRUCTION OPERATIONS.
3. PORTIONS OF THE HAUL ROUTES AND STAGING AREAS MAY REQUIRE IMPROVEMENT TO SUPPORT CONTRACTOR'S OPERATIONS.
4. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PLACEMENT, REMOVAL AND REPLACING ANY EXISTING FENCE OR GATES REQUIRED FOR ESTABLISHING ACCESS TO THE HAUL ROUTES.
5. FIELD-VERIFY SUITABILITY OF HAUL ROUTES AND STAGING AREAS SHOWN. DEVELOP AND MAINTAIN HAUL ROUTES AS REQUIRED. THE CONTRACTOR SHALL BE RESPONSIBLE FOR REPAIRING THE HAUL ROUTES AND STAGING AREA DAMAGE TO PRECONSTRUCTION CONDITIONS. SEE SECTIONS GCP-40 AND GCP-70.
6. PROVIDE TRAFFIC CONTROL PLANS FOR EACH PHASE OF THE WORK. SEE SECTION G-710.



LEGEND

(dashed box)	CONSTRUCTION AREA
(cross-hatched box)	CONTRACTOR STAGING AREA
● ● ● ● ●	HAUL ROUTE
(flag)	SECURITY GATE WITH FLAGGER

PREPARED BY: HDR Alaska, Inc.

BY	DATE	REVISION

STATE OF ALASKA
DEPARTMENT OF TRANSPORTATION AND PUBLIC FACILITIES
CENTRAL REGION

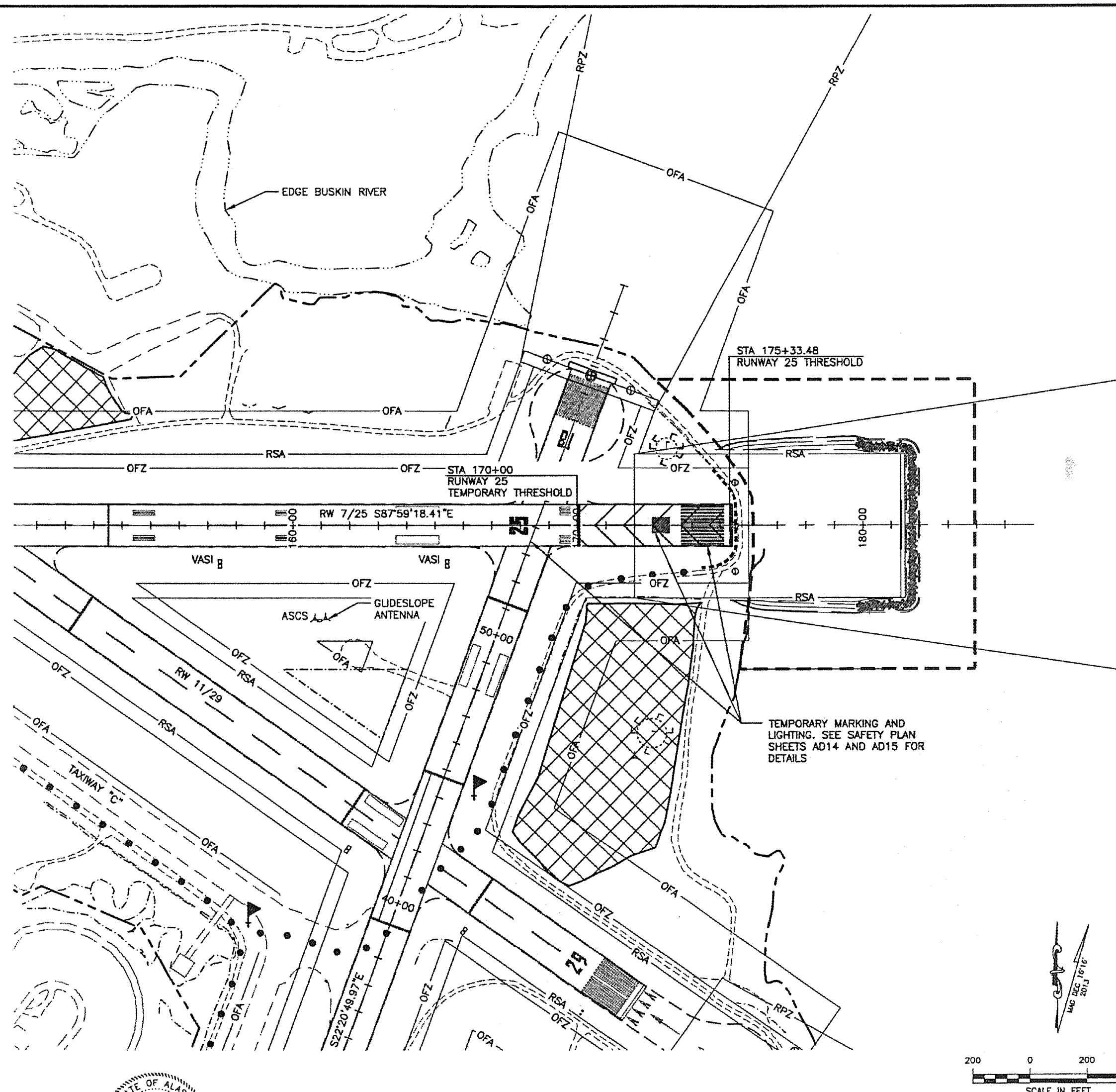
KODIAK AIRPORT
KODIAK, ALASKA
KODIAK AIRPORT RSA EXTENSION, 2014
PROJECT No. 53587
AIP No. 3-02-0158-017-2014
SAFETY PLAN
OVERVIEW

DATE: 3/26/2014
SHEET: AD8 OF 15
AS-BUILT SHEET:

Designed By: D.C.
Drawn By: L.W.
Checked By: J.W.
Date Revised: 3/26/2014 10:26 AM
Layout Name: Sheet AD8

PHASE 1A SAFETY PLAN NOTES:

1. KEEP ALL PERSONS, EQUIPMENT, AND TEMPORARY STOCKPILES CLEAR OF THE 20:1 APPROACH / DEPARTURE SURFACE OF THE RUNWAY 25 RELOCATED THRESHOLD DURING AIRCRAFT OPERATIONS ON RUNWAY 7/25. THIS INCLUDES STAYING CLEAR OF THE APPROACH / DEPARTURE SURFACES 15 MINUTES PRIOR TO LANDING AND 15 MINUTES AFTER DEPARTURE. NOTE THE 20:1 SURFACE BEGINS 200 FEET PRIOR TO (EAST) THE RELOCATED THRESHOLD AND HAS THE ELEVATION OF THE CENTERLINE OF THE RELOCATED THRESHOLD.
2. THE ELEVATION OF THE 20:1 SURFACE REMAINS THE SAME REGARDLESS OF THE OFFSET FROM THE CENTERLINE, BUT THE HEIGHT ABOVE THE GROUND VARIES WITH THE TERRAIN AS THE OFFSET AND GROUND ELEVATION CHANGES. THE SURFACE ITSELF IS IMAGINARY, AND IS REQUIRED TO BE FREE OF OBSTRUCTIONS TO SUPPORT THE APPROVED APPROACH PROCEDURE FOR RUNWAY 7/25.
3. USE THE DESIGNATED HAUL ROUTES FOR THIS PHASE AS SHOWN ON SAFETY PLAN OVERVIEW SHEET. ALTERNATE HAUL ROUTES MUST BE APPROVED AND DEPICTED IN THE APPROVED SPCD.
4. GLIDE SLOPE WILL BE DEACTIVATED DURING PHASE 1A. THERE WILL BE NO RESTRICTIONS WITHIN THE GLIDESLOPE CRITICAL AREA AFTER DEACTIVATION.



LEGEND

ZZZ	CONSTRUCTION AREA
XXX	CONTRACTOR STAGING AREA
- - - - -	HAZARD AREA BARRIERS
● ● ● ● ●	HAUL ROUTE
▶	FLAGGER

STATE OF ALASKA
49TH
John G. Ward
CE 4504
3/26/14
REGISTERED PROFESSIONAL ENGINEER

PREPARED BY: HDR Alaska, Inc.

BY	DATE	REVISION

STATE OF ALASKA
DEPARTMENT OF TRANSPORTATION AND PUBLIC FACILITIES
CENTRAL REGION

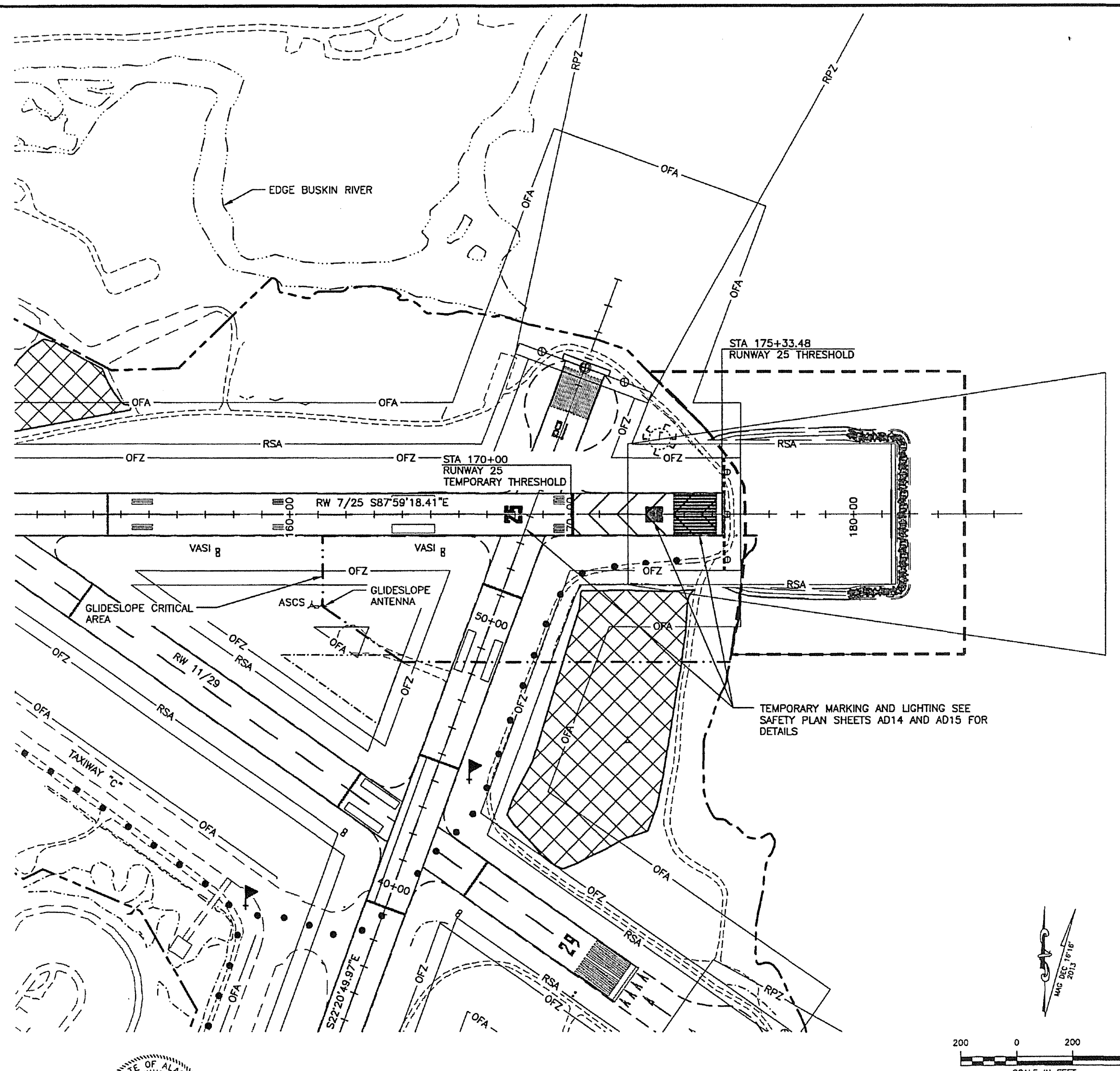
KODIAK AIRPORT
KODIAK, ALASKA
KODIAK AIRPORT RSA EXTENSION, 2014
PROJECT No. 53587
AIP No. 3-02-0158-017-2014
SAFETY PLAN
PHASE 1A

DATE: 3/26/2014
SHEET: AD9 OF 15
AS-BUILT SHEET:

Designed By: D.G.
Drawn By: L.W.
Checked By: J.W.
Date Revised: 3/26/2014, 9:54 AM
Layout Name: ADQ-EMAS_AD9_SafetyPlan

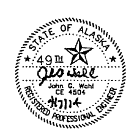
PHASE 1B SAFETY PLAN NOTES:

1. KEEP ALL PERSONS, EQUIPMENT, AND TEMPORARY STOCKPILES CLEAR OF THE 20:1 APPROACH / DEPARTURE SURFACE OF THE RUNWAY 25 RELOCATED THRESHOLD DURING AIRCRAFT OPERATIONS ON RUNWAY 7/25. THIS INCLUDES STAYING CLEAR OF THE APPROACH / DEPARTURE SURFACES 15 MINUTES PRIOR TO LANDING AND 15 MINUTES AFTER DEPARTURE. NOTE THE 20:1 SURFACE BEGINS 200 FEET PRIOR TO (EAST) THE RELOCATED THRESHOLD AND HAS THE ELEVATION OF THE CENTERLINE OF THE RELOCATED THRESHOLD.
2. THE ELEVATION OF THE 20:1 SURFACE REMAINS THE SAME REGARDLESS OF THE OFFSET FROM THE CENTERLINE, BUT THE HEIGHT ABOVE THE GROUND VARIES WITH THE TERRAIN AS THE OFFSET AND GROUND ELEVATION CHANGES. THE SURFACE ITSELF IS IMAGINARY, AND IS REQUIRED TO BE FREE OF OBSTRUCTIONS TO SUPPORT THE APPROVED APPROACH PROCEDURE FOR RUNWAY 7/25.
3. USE THE DESIGNATED HAUL ROUTES FOR THIS PHASE AS SHOWN. ALTERNATE HAUL ROUTES MUST BE APPROVED AND DEPICTED IN THE APPROVED SPCD.
4. GLIDESLOPE WILL BE DEACTIVATED DURING PHASE 1B. THERE WILL BE NO RESTRICTIONS WITHIN THE GLIDESLOPE CRITICAL AREA AFTER DEACTIVATION.



LEGEND

┌ ─ ┐	CONSTRUCTION AREA
⊠	CONTRACTOR STAGING AREA
--------	HAZARD AREA BARRIERS
● ● ● ● ●	HAUL ROUTE
⚑	SECURITY GATE WITH FLAGGER



PREPARED BY: HDR Alaska, Inc.

BY	DATE	REVISION

STATE OF ALASKA
DEPARTMENT OF TRANSPORTATION AND PUBLIC FACILITIES
CENTRAL REGION

KODIAK AIRPORT
KODIAK, ALASKA
KODIAK AIRPORT RSA EXTENSION, 2014
PROJECT No. 53587
AIP No. 3-02-0158-017-2014
SAFETY PLAN
PHASE 1B

DATE: 3/26/2014
SHEET: AD10 OF 15
AS-BUILT SHEET: OF

Date Revised: 4/03/2014 2:21 PM
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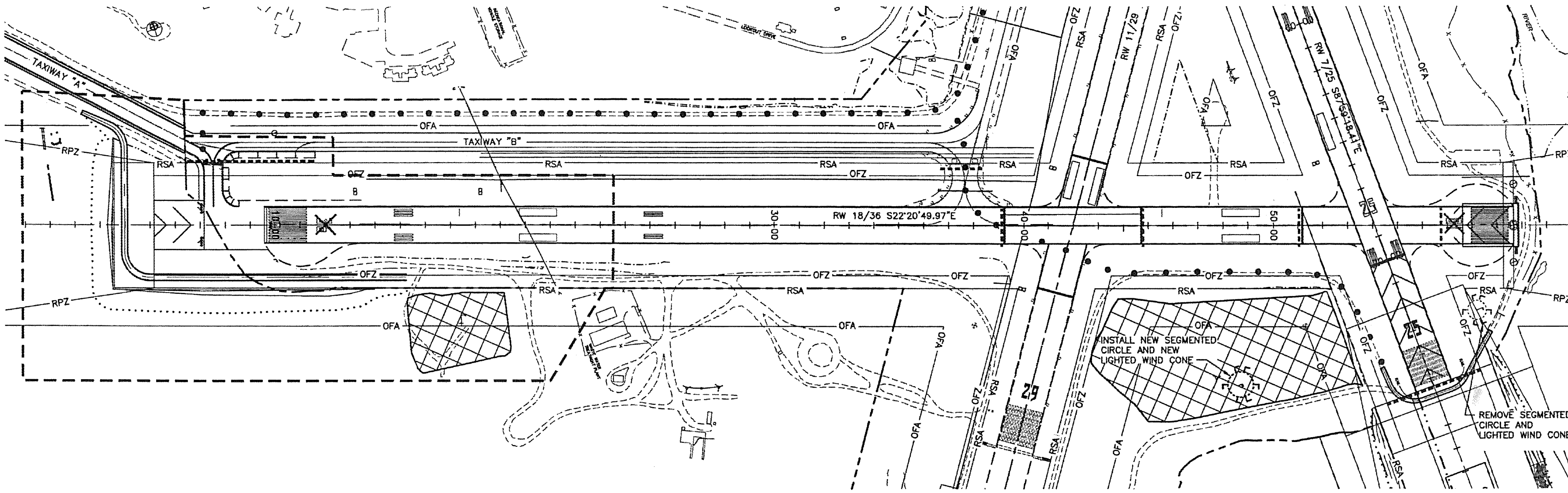
File Path and Name: C:\pwworking\...\AD0_EMAS_AD9-AD15_SafetyPlan.dwg
Designed By: D.G.
Drawn By: L.W.
Checked By: J.W.



Date Revised:	3/26/2014, 10:30 AM
Layout Name:	ADQ-EMAS_AD11_SafetyPlan
File Path and Name:	C:\pwworking\seo\d0930371\ADQ_EMAS_AD9-AD15_SafetyPlan.dwg
Designed By:	D.G.
Drawn By:	L.W.
Checked By:	J.W.

PHASE 2A SAFETY PLAN NOTES:

1. KEEP ALL PERSONS, EQUIPMENT, AND TEMPORARY STOCKPILES CLEAR OF THE 20:1 APPROACH / DEPARTURE SURFACE OF THE RUNWAY 36 THRESHOLD DURING AIRCRAFT OPERATIONS ON RUNWAY 18/36. THIS INCLUDES STAYING CLEAR OF THE APPROACH / DEPARTURE SURFACES 15 MINUTES PRIOR TO LANDING AND 15 MINUTES AFTER DEPARTURE. NOTE THE 20:1 SURFACE BEGINS 200 FEET PRIOR TO (SOUTH OF) THE THRESHOLD AND HAS THE ELEVATION OF THE CENTERLINE OF THE THRESHOLD.

2. THE ELEVATION OF THE 20:1 SURFACE REMAINS THE SAME REGARDLESS OF THE OFFSET FROM THE CENTERLINE, BUT THE HEIGHT ABOVE THE GROUND VARIES WITH THE TERRAIN AS THE OFFSET AND GROUND ELEVATION CHANGES. THE SURFACE ITSELF IS IMAGINARY, AND IS REQUIRED TO BE FREE OF OBSTRUCTIONS TO SUPPORT THE APPROVED APPROACH PROCEDURE FOR RUNWAY 18/36.

3. USE THE DESIGNATED HAUL ROUTES FOR THIS PHASE AS SHOWN. ALTERNATE HAUL ROUTES MUST BE APPROVED AND DEPICTED IN THE APPROVED SPCD.

4. TAXIWAY A AND B CLOSURE AND MOVEMENT OF AIRCRAFT:
   - THE CONTRACTOR SHALL KEEP TAXIWAY A AND B OPEN AND USEABLE FOR THE PASSAGE OF AIRCRAFT AT ALL TIMES WITH THE FOLLOWING RESTRICTIONS:
     - TAXIWAY A WILL REMAIN OPENED FOR THE PASSAGE OF AIRCRAFT, UNDER POWER, FROM 6:30 A.M. TO 6:30 P.M. THE CONTRACTOR MAY CONTINUE TO WORK ON THE TAXIWAY DURING THIS TIME PERIOD, PROVIDED THAT HE NOT DELAY PASSAGE OF AIRCRAFT BY MORE THAN 30 MINUTES FROM NOTIFICATION BY ENGINEER, AIRPORT MANAGER, THE ATCT OR AIR STATION KODIAK OPERATIONS CENTER OF THE ARRIVAL OR DEPARTURE OF THE AIRCRAFT.
     - TAXIWAY A MAY BE CLOSED FROM 6:30 P.M. TO 6:30 A.M. WITH THE RESTRICTION THAT IT MUST BE AVAILABLE FOR MOVEMENT OF AIRCRAFT, UNDER TOW, FOR CRITICAL OPERATIONS AS STATED BELOW.
     - IN THE EVENT OF A CRITICAL OPERATION SUCH AS SEARCH AND RESCUE, DISASTER RELIEF, AIRCRAFT MECHANICAL PROBLEM FOR A MISSION CRITICAL AIRCRAFT, OR OTHER EMERGENCY, REGARDLESS OF THE TIME, THE CONTRACTOR SHALL IMMEDIATELY PROVIDE FOR PASSAGE OF ANY AIRCRAFT, WITH A MAXIMUM 15 MINUTE DELAY FROM TIME OF NOTIFICATION BY THE ENGINEER, AIRPORT MANAGER, ATCT OR OPERATIONS CENTER.

5. RUNWAY 18–36 TEMPORARY CLOSURE:
   - RUNWAY 18–36 MAY BE CLOSED FROM 6:30 P.M. TO 6:30 A.M. DURING THIS PHASE.
   - PLACE ILLUMINATED RUNNING CLOSURE MARKERS OVER RUNWAY DESIGNATION NUMBERS OF EACH RUNWAY.
   - PLACE HAZARDOUS BARRIERS WITH FLAGS AND FLASHERS AS INDICATED ON PLANS.

LEGEND

- CONSTRUCTION AREA
- CONTRACTOR STAGING AREA
- HAZARD AREA BARRIERS
- HAUL ROUTE
- SECURITY GATE WITH FLAGGER
- ILLUMINATED RUNWAY CLOSURE MARKER

MAG DEC 16°16' 2013

200 0 200 400
SCALE IN FEET

STATE OF ALASKA 49th John G. Wahl CE 4504 3/24/14 REGISTERED PROFESSIONAL ENGINEER

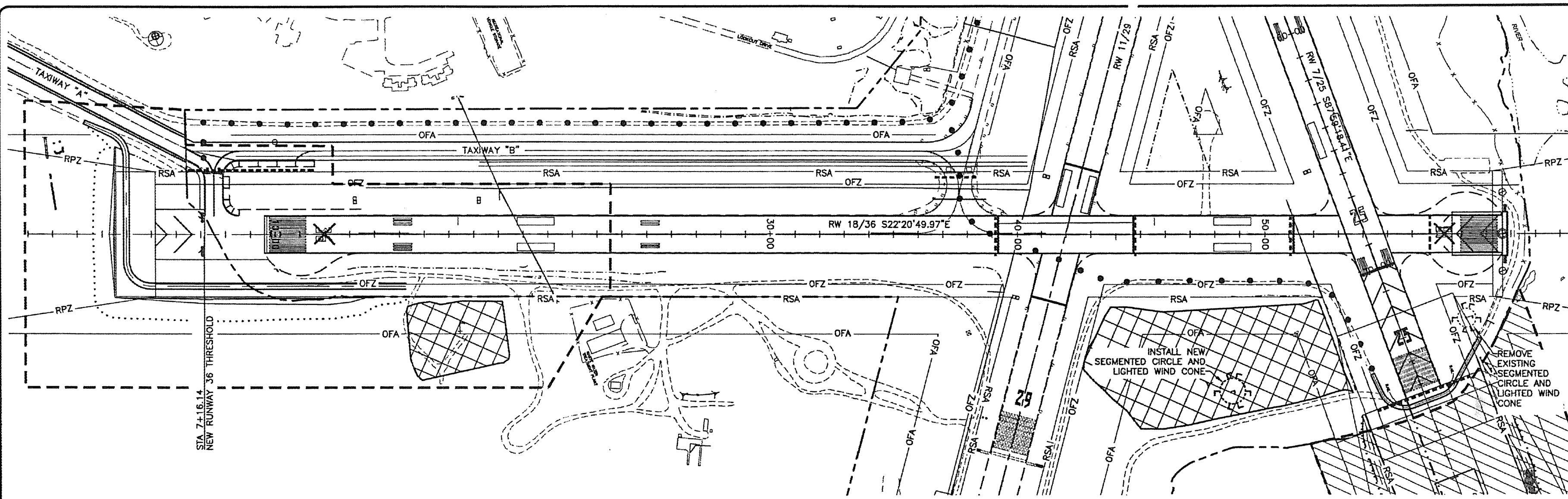
PREPARED BY: HDR Alaska, Inc.

BY	DATE	REVISION

STATE OF ALASKA
DEPARTMENT OF TRANSPORTATION AND PUBLIC FACILITIES
CENTRAL REGION

KODIAK AIRPORT
KODIAK, ALASKA
KODIAK AIRPORT RSA EXTENSION, 2014
PROJECT No. 53587
AIP No. 3-02-0158-017-2014
SAFETY PLAN
PHASE 2A

DATE: 3/26/2014
SHEET: AD11 OF 15
AS-BUILT SHEET: OF



PHASE 2B SAFETY PLAN NOTES:

1. KEEP ALL PERSONS, EQUIPMENT, AND TEMPORARY STOCKPILES CLEAR OF THE 20:1 APPROACH / DEPARTURE SURFACE OF THE RUNWAY 36 THRESHOLD DURING AIRCRAFT OPERATIONS ON RUNWAY 18/36. THIS INCLUDES STAYING CLEAR OF THE APPROACH / DEPARTURE SURFACES 15 MINUTES PRIOR TO LANDING AND 15 MINUTES AFTER DEPARTURE. NOTE THE 20:1 SURFACE BEGINS 200 FEET PRIOR TO (SOUTH OF) THE THRESHOLD AND HAS THE ELEVATION OF THE CENTERLINE OF THE THRESHOLD.

2. THE ELEVATION OF THE 20:1 SURFACE REMAINS THE SAME REGARDLESS OF THE OFFSET FROM THE CENTERLINE, BUT THE HEIGHT ABOVE THE GROUND VARIES WITH THE TERRAIN AS THE OFFSET AND GROUND ELEVATION CHANGES. THE SURFACE ITSELF IS IMAGINARY, AND IS REQUIRED TO BE FREE OF OBSTRUCTIONS TO SUPPORT THE APPROVED APPROACH PROCEDURE FOR RUNWAY 18/36.

3. USE THE DESIGNATED HAUL ROUTES FOR THIS PHASE AS SHOWN. ALTERNATE HAUL ROUTES MUST BE APPROVED AND DEPICTED IN THE APPROVED SPCD.

4. TAXIWAY A AND B CLOSURE AND MOVEMENT OF AIRCRAFT:
   - THE CONTRACTOR SHALL KEEP TAXIWAY A AND B OPEN AND USEABLE FOR THE PASSAGE OF AIRCRAFT AT ALL TIMES WITH THE FOLLOWING RESTRICTIONS:
     - TAXIWAY A WILL REMAIN OPENED FOR THE PASSAGE OF AIRCRAFT, UNDER POWER, FROM 6:30 A.M. TO 6:30 P.M. THE CONTRACTOR MAY CONTINUE TO WORK ON THE TAXIWAY DURING THIS TIME PERIOD, PROVIDED THAT HE NOT DELAY PASSAGE OF AIRCRAFT BY MORE THAN 30 MINUTES FROM NOTIFICATION BY ENGINEER, AIRPORT MANAGER, THE ATCT OR AIR STATION KODIAK OPERATIONS CENTER OF THE ARRIVAL OR DEPARTURE OF THE AIRCRAFT.
     - TAXIWAY A MAY BE CLOSED FROM 6:30 P.M. TO 6:30 A.M. WITH THE RESTRICTION THAT IT MUST BE AVAILABLE FOR MOVEMENT OF AIRCRAFT, UNDER TOW, FOR CRITICAL OPERATIONS AS STATED BELOW.
     - IN THE EVENT OF A CRITICAL OPERATION SUCH AS SEARCH AND RESCUE, DISASTER RELIEF, AIRCRAFT MECHANICAL PROBLEM FOR A MISSION CRITICAL AIRCRAFT, OR OTHER EMERGENCY, REGARDLESS OF THE TIME, THE CONTRACTOR SHALL IMMEDIATELY PROVIDE FOR PASSAGE OF ANY AIRCRAFT, WITH A MAXIMUM 15 MINUTE DELAY FROM TIME OF NOTIFICATION BY THE ENGINEER, AIRPORT MANAGER, ATCT OR OPERATIONS CENTER.

5. RUNWAY 18-36 TEMPORARY CLOSURE:
   - RUNWAY 18-36 MAY BE CLOSED FROM 6:30 P.M. TO 6:30 A.M. DURING THIS PHASE.
   - PLACE ILLUMINATED RUNNING CLOSURE MARKERS OVER RUNWAY DESIGNATION NUMBERS OF EACH RUNWAY.
   - PLACE HAZARDOUS BARRIERS WITH FLAGS AND FLASHERS AS INDICATED ON PLANS.

LEGEND

- CONSTRUCTION AREA
- CONTRACTOR STAGING AREA
- HAZARD AREA BARRIERS
- HAUL ROUTE
- SECURITY GATE WITH FLAGGER
- ILLUMINATED RUNWAY CLOSURE MARKER

MAG DEC 16°16' 2013

200 0 200 400
SCALE IN FEET

STATE OF ALASKA 49th John C. Wahl CE 4504 3/26/14 REGISTERED PROFESSIONAL ENGINEER

PREPARED BY: HDR Alaska, Inc.

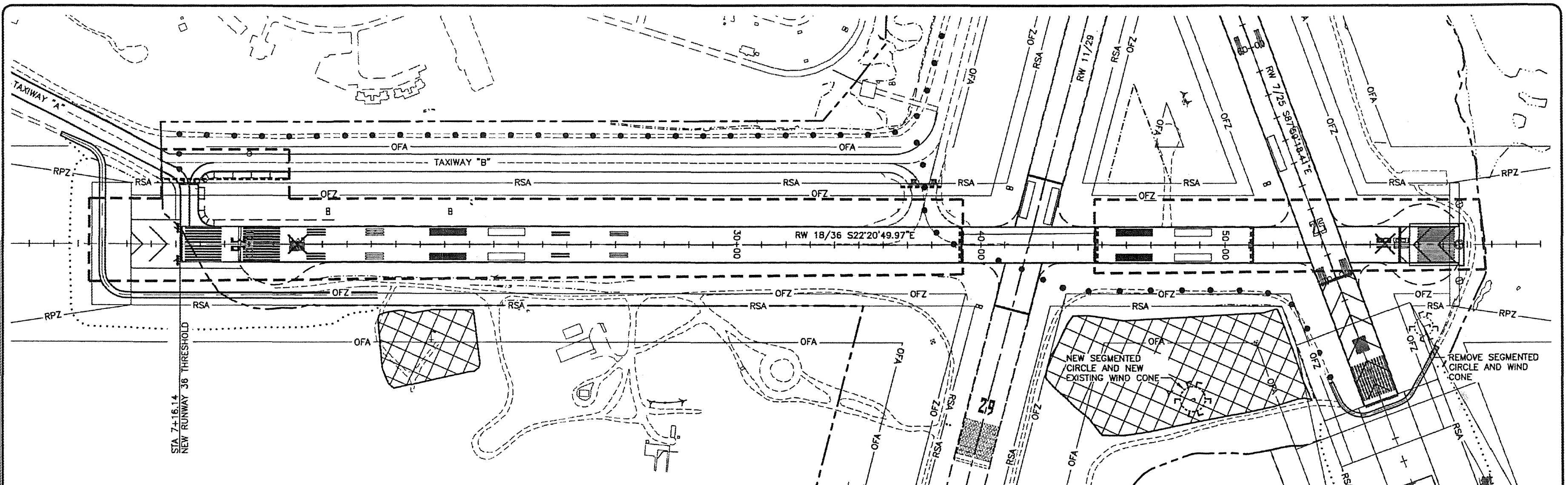
BY	DATE	REVISION

STATE OF ALASKA
DEPARTMENT OF TRANSPORTATION AND PUBLIC FACILITIES
CENTRAL REGION

KODIAK AIRPORT
KODIAK, ALASKA
KODIAK AIRPORT RSA EXTENSION, 2014
PROJECT No. 53587
AIP No. 3-02-0158-017-2014
SAFETY PLAN
PHASE 2B

DATE: 3/28/2014
SHEET: AD12 OF 15
AS-BUILT SHEET:

Designed By: D.G. Drawn By: L.W. Checked By: J.W.



PHASE 2C SAFETY PLAN NOTES:

1. USE THE DESIGNATED HAUL ROUTES FOR THIS PHASE AS SHOWN. ALTERNATE HAUL ROUTES MUST BE APPROVED AND DEPICTED IN THE APPROVED SPCD.

2. PROVIDE PICK UP BROOM TRUCK (STREET SWEEPER), OR OTHER EQUIPMENT AS APPROVED FOR CONTROL OF FOD ON ACTIVE SURFACES. CLEAN ACTIVE SURFACES OF FOD IMMEDIATELY UPON DISCOVERY OR NOTIFICATION.

3. TAXIWAYS A AND B CLOSURE AND MOVEMENT OF AIRCRAFT:

- TAXIWAY A AND C BETWEEN TAXIWAY B AND RUNWAY 18/36
- THE FOLLOWING APPLIES TO OPEN SEGMENT OF TAXIWAYS A AND B:
  - THE CONTRACTOR SHALL KEEP TAXIWAY A AND B OPEN AND USEABLE FOR THE PASSAGE OF AIRCRAFT AT ALL TIMES WITH THE FOLLOWING RESTRICTIONS:
  - TAXIWAY A WILL REMAIN OPENED FOR THE PASSAGE OF AIRCRAFT, UNDER POWER, FROM 6:30 A.M. TO 6:30 P.M. THE CONTRACTOR MAY CONTINUE TO WORK ON THE TAXIWAY DURING THIS TIME PERIOD, PROVIDED THAT THE CONTRACTOR DOES NOT DELAY PASSAGE OF AIRCRAFT BY MORE THAN 30 MINUTES FROM NOTIFICATION BY THE ATCT OR AIR STATION KODIAK OPERATIONS CENTER OF THE ARRIVAL OR DEPARTURE OF THE AIRCRAFT.
  - TAXIWAY A MAY BE CLOSED FROM 6:30 P.M. TO 6:30 A.M. WITH THE RESTRICTION THAT THE CONTRACTOR MUST MAINTAIN THE TAXIWAY TO BE AVAILABLE FOR MOVEMENT OF AIRCRAFT, UNDER TOW, FOR CRITICAL OPERATIONS AS STATED BELOW.
  - IN THE EVENT OF A CRITICAL OPERATION SUCH AS SEARCH AND RESCUE, DISASTER RELIEF, AIRCRAFT MECHANICAL PROBLEM FOR A MISSION CRITICAL AIRCRAFT, OR OTHER EMERGENCY, REGARDLESS OF THE TIME, THE CONTRACTOR SHALL IMMEDIATELY PROVIDE FOR PASSAGE OF ANY AIRCRAFT, WITH A MAXIMUM 15 MINUTE DELAY FROM TIME OF NOTIFICATION BY THE ATCT OR OPERATIONS CENTER.

4. RUNWAY CLOSURE

- RUNWAY 18-36 WILL BE CLOSED DURING THIS PHASE.
- PLACE ILLUMINATED CLOSURE MARKERS
- PLACE HAZARDOUS AREA BARRIERS AS SHOWN.

LEGEND

- CONSTRUCTION AREA
- CONTRACTOR STAGING AREA
- HAZARD AREA BARRIERS
- HAUL ROUTE
- SECURITY GATE WITH FLAGGER
- ILLUMINATED RUNWAY CLOSURE MARKER

MAG DEC 16°16' 2013

200 0 200 400
SCALE IN FEET

STATE OF ALASKA 49TH John C. Wohl CE 4504 3/24/14 REGISTERED PROFESSIONAL ENGINEER

PREPARED BY: HDR Alaska, Inc.

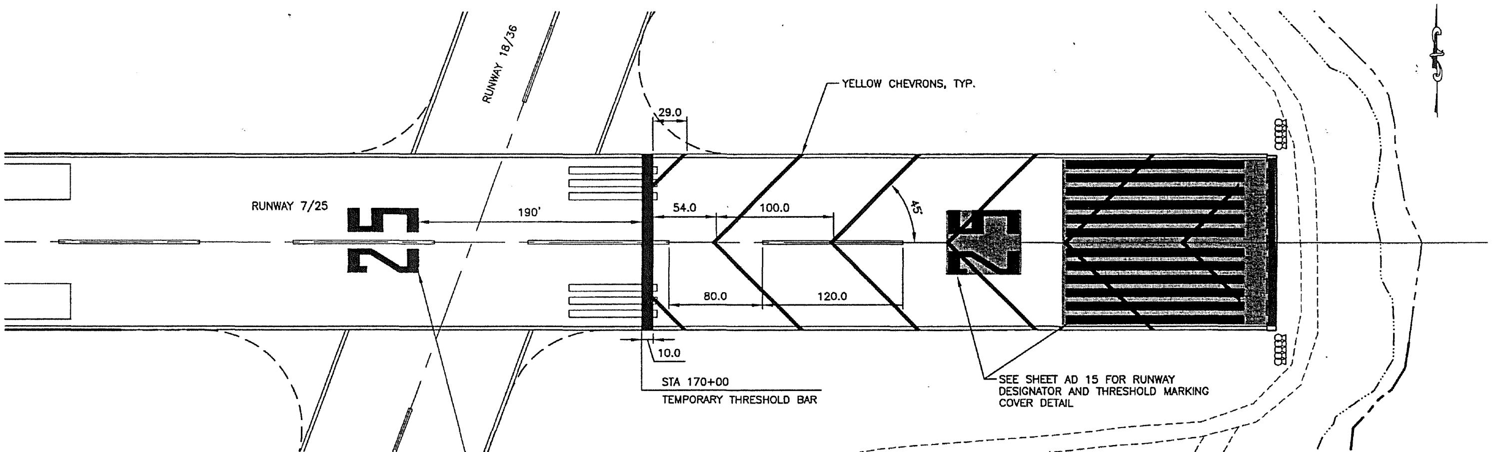
BY	DATE	REVISION

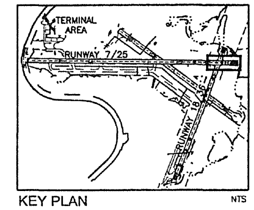
STATE OF ALASKA
DEPARTMENT OF TRANSPORTATION AND PUBLIC FACILITIES
CENTRAL REGION

KODIAK AIRPORT
KODIAK, ALASKA
KODIAK AIRPORT RSA EXTENSION, 2014
PROJECT No. 53587
AIP No. 3-02-0158-017-2014
SAFETY PLAN
PHASE 2C

DATE: 3/26/2014
SHEET: AD13 OF 15
AS-BUILT SHEET:

Date Revised: 3/25/2014, 10:09 AM
Designed By: D.G.
Drawn By: L.W.
Checked By: J.W.

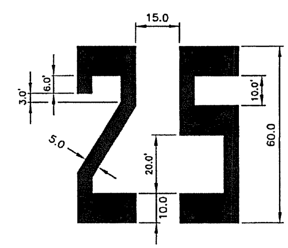




NOTES:

1. 10x150 THRESHOLD BAR SHALL BE WHITE IN COLOR
2. CHEVRONS SHALL BE YELLOW IN COLOR

RUNWAY 25 TEMPORARY THRESHOLD MARKING
PHASES 1A AND 1B



RUNWAY DESIGNATION

NOTES:

1. RUNWAY DESIGNATION MARKER SHALL BE WHITE.
2. USE TEMPORARY WATER BASED PAINT FOR RUNWAY DESIGNATION NUMBERS
3. REMOVE PAINT FOLLOWING PHASE 1A AND 1B.
4. TEMPORARY MARKING SHALL BE FABRIC OR PLYWOOD SECURED TO PAVEMENT.

50 0 50 100
SCALE IN FEET

PREPARED BY: HDR Alaska, Inc.

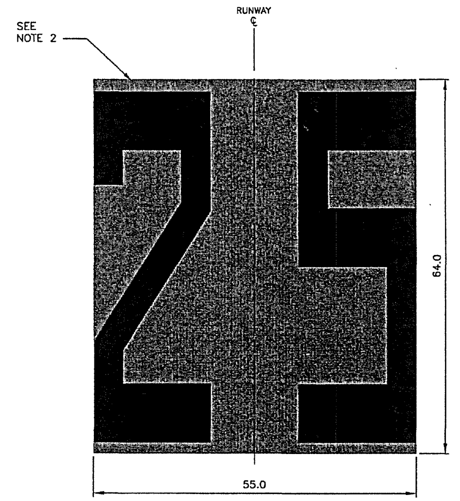
BY	DATE	REVISION

STATE OF ALASKA
DEPARTMENT OF TRANSPORTATION AND PUBLIC FACILITIES
CENTRAL REGION

KODIAK AIRPORT
KODIAK, ALASKA
KODIAK AIRPORT RSA EXTENSION, 2014
PROJECT No. 53587
AIP No. 3-02-0158-017-2014
SAFETY PLAN
TEMPORARY MARKING PLAN

DATE: 3/26/2014
SHEET: AD14 OF 15
AS-BUILT SHEET: OF

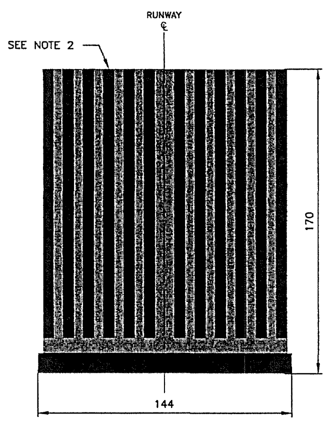
Date Revised: 4/03/2014, 2:39 PM
Designed By: D.O.
Drawn By: L.W.
Checked By: J.W.



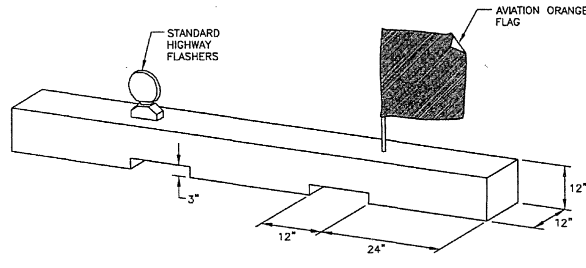
RUNWAY DESIGNATOR COVER
NTS

NOTES:

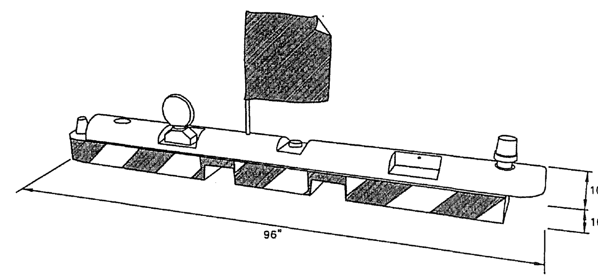
1. THE DIMENSIONS ARE APPROXIMATE. FIELD VERIFY AND ADJUST AS NECESSARY TO COMPLETELY COVER THE RUNWAY DESIGNATOR.
2. RUNWAY DESIGNATOR AND THRESHOLD MARKING COVERS SHALL BE CONSTRUCTED OF MATERIAL SPECIFIED IN SECTION P-671, AND SHALL BE BLACK IN COLOR.
3. PLACE AND MAINTAIN RUNWAY DESIGNATOR COVERS AS CONSTRUCTION ALLOWS. COVERS MUST ALSO BE IN PLACE DURING NON WORKING HOURS.



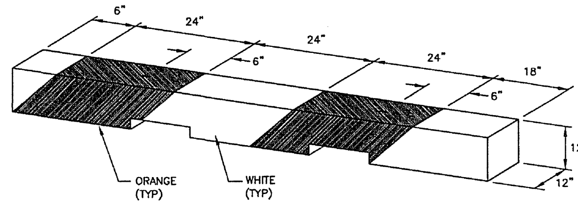
RUNWAY THRESHOLD MARKING COVER
NTS



TIMBER PREPARATION, FLAG AND FLASHER MOUNTING DETAIL
NTS



PRE-MANUFACTURED POLYETHYLENE BARRIER
NTS

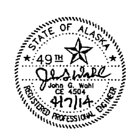


PAINT DETAIL

HAZARDOUS AREA BARRIERS
NTS

NOTES:

1. DRILL AND NOTCH TIMBER BEFORE PAINTING.
2. REFER TO SECTION 704, HAZARDOUS AREA BARRIER.



PREPARED BY: HDR Alaska, Inc.

BY	DATE	REVISION

STATE OF ALASKA
DEPARTMENT OF TRANSPORTATION AND PUBLIC FACILITIES
CENTRAL REGION

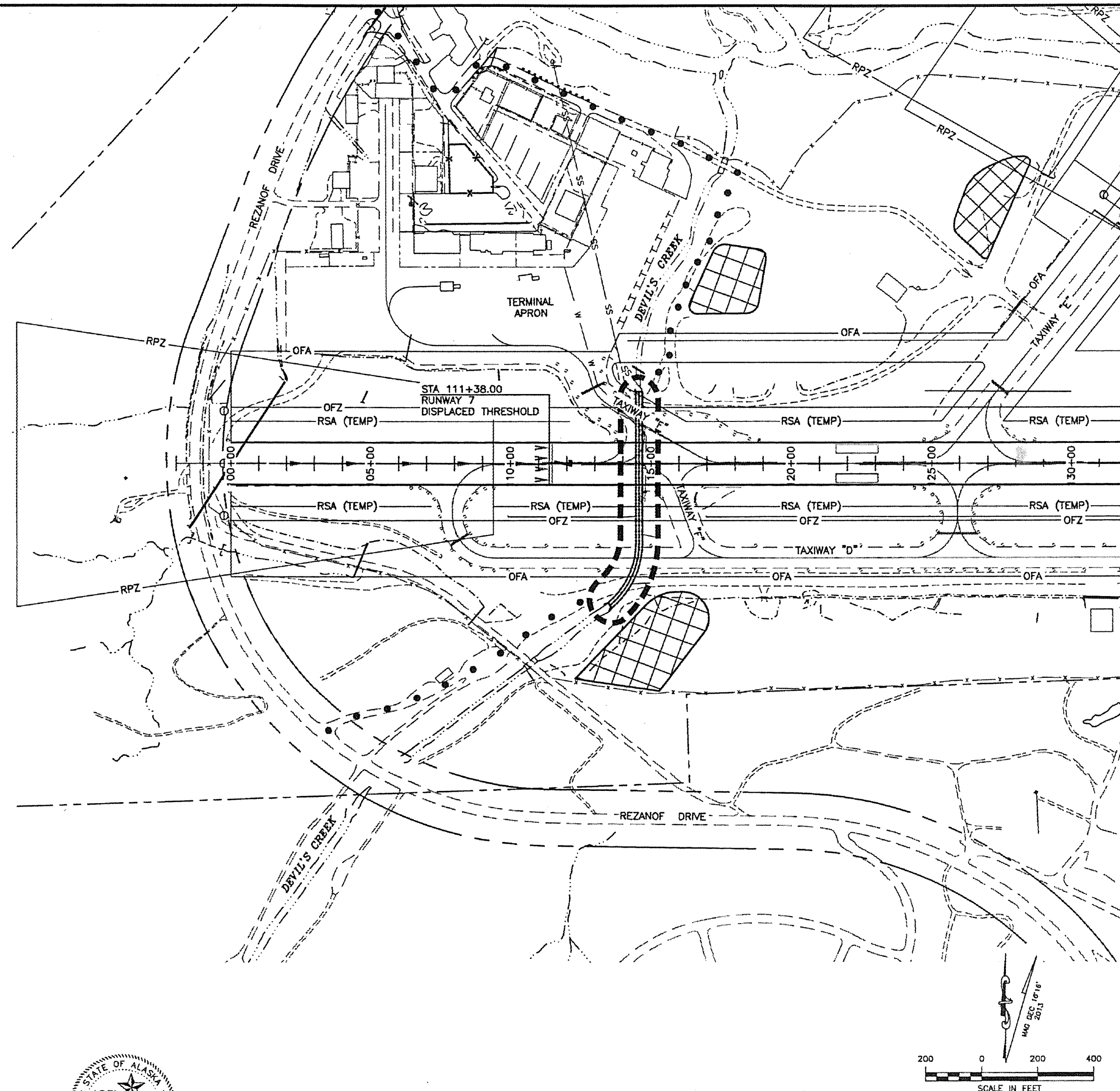
KODIAK AIRPORT
KODIAK, ALASKA
KODIAK AIRPORT RSA EXTENSION, 2014
PROJECT No. 53587
AIP No. 3-02-0158-017-2014
SAFETY PLAN
DETAILS

DATE: 3/26/2014
SHEET: AD15 OF 15
AS-BUILT SHEET: OF

Designed By: D.G.
Drawn By: L.W.
Checked By: J.W.
Date Revised: 4/03/2014, 2:39 PM
Layout Name: Sheet AD 15

PHASE 3 SAFETY PLAN NOTES:

1. KEEP ALL WORKERS, EQUIPMENT AND MATERIALS OUTSIDE OF THE ACTIVE RUNWAY SAFETY AREA, NAVAID CRITICAL AREAS, AND APPROACH SURFACES DURING AIRCRAFT OPERATIONS, AND ONLY ENTER THESE AREAS AS REQUIRED AND AS APPROVED.
2. KEEP ALL WORKERS, EQUIPMENT, AND MATERIALS OUTSIDE OF THE TAXIWAY SAFETY AREAS AND TAXIWAY OBJECT FREE AREAS WHILE TAXIWAYS ARE OPEN TO AIRCRAFT. ALL TAXIING AIRCRAFT HAVE THE RIGHT OF WAY.
3. USE THE DESIGNATED HAUL ROUTES FOR THIS PHASE AS SHOWN. ALTERNATE HAUL ROUTES MUST BE APPROVED AND DEPICTED IN THE APPROVED SPCD.
4. PROVIDE AN AIRPORT FLAGGER IF HAULING ACROSS AN ACTIVE TAXIWAY AND/OR ACTIVE RUNWAY AND IS APPROVED AND INCLUDED IN THE APPROVED SPCD.
5. PROVIDE A GATE GUARD IF ANY GATE REMAINS OPEN DURING CONSTRUCTION ACTIVITIES.
6. TEMPORARY CLOSURE OF ANY RUNWAY OR TAXIWAY MUST BE DEPICTED IN THE APPROVED SPCD. COORDINATE WITH THE AIRPORT MANAGER, FAA, AIRPORT TENANTS AND OPERATORS, THROUGH THE ENGINEER AT LEAST 45 DAYS IN ADVANCE OF ACTUAL CLOSURES. REFER TO THE SCPP FOR ALLOWED CLOSURE DURATIONS.
7. HAZARDOUS AREA BARRIERS ARE SHOWN AT APPROXIMATE LOCATIONS. ADJUSTMENTS OR ADDITIONAL LOCATIONS MAY BE REQUIRED. RELOCATE BARRIERS AS DIRECTED BY THE ENGINEER.
8. PROVIDE PICK UP BROOM TRUCK (STREET SWEEPER), OR OTHER EQUIPMENT AS APPROVED FOR CONTROL OF FOD ON ACTIVE SURFACES. CLEAN ACTIVE SURFACES OF FOD IMMEDIATELY UPON DISCOVERY OR NOTIFICATION. CLEAN AFFECTED RUNWAY AND TAXIWAY SURFACES PRIOR TO REOPENING.
9. ARFF MUST HAVE ACCESS TO ENTIRE AIRPORT DURING EMERGENCIES. MAINTAIN SUITABLE CORRIDORS AND COORDINATE ACCESS WITH ARFF PERSONNEL THROUGH THE ENGINEER AS REQUIRED.
10. RUNWAY 7–25 AND TAXIWAYS D AND F SHALL REMAIN OPEN AT ALL TIMES
11. COORDINATION WITH OTHER PROJECTS
THIS PHASE IS BEING PERFORMED UNDER A CONSTRUCTION CONTRACT INCLUDING THE KODIAK AIRPORT RSA EXTENSION, PROJECT NO. 53587, AND KODIAK AIRPORT DEVILS CREEK CULVERT REPAIR, PROJECT NO. 57474. THE CONSTRUCTION SAFETY AND PHASING PLAN INCLUDES BOTH PROJECTS. PROVISIONS FOR THE PLAN ARE APPLICABLE TO BOTH PROJECTS.



LEGEND

CONSTRUCTION AREA

CONTRACTOR STAGING AREA

HAZARD AREA BARRIERS

HAUL ROUTE

FLAGGER

Date Revised: 4/08/2014 3:31 PM | Designed By: D.G. | Drawn By: L.W. | Checked By: J.W.

PREPARED BY: HDR Alaska, Inc.

BY	DATE	REVISION

STATE OF ALASKA
DEPARTMENT OF TRANSPORTATION AND PUBLIC FACILITIES
CENTRAL REGION

KODIAK AIRPORT
KODIAK, ALASKA
KODIAK AIRPORT RSA EXTENSION, 2014
PROJECT No. 53587
AIP No. 3-02-0158-017-2014
SAFETY PLAN
PHASE 3

DATE: 3/26/2014
SHEET: BD2 OF 2
AS-BUILT SHEET:

Construction Safety and Phasing Plan

Appendix D.4 –

Permits

(See Appendix E)

Appendix E

Permits

DEPARTMENT OF THE ARMY
ALASKA DISTRICT, U.S. ARMY CORPS OF ENGINEERS
REGULATORY DIVISION
P.O. BOX 6898
JBER, ALASKA 99506-0898
MAR 12 2014

Alaska Department of Transportation and Public Facilities
Attention: Taylor Horne
Post Office Box 196900
Anchorage, Alaska 99519

Dear Mr. Horne:

Enclosed are two copies of Department of the Army permit POA-2006-1144, Chiniak Bay, which would authorize Runway Safety Area extensions on Runways 07/25 and 18/36 at the Kodiak Airport. The project site is located within Sections 14, 15, 16, & 22, T. 28 S., R. 20 W., Seward Meridian, USGS Quad Maps: Kodiak C-2/D-2, Latitude 57.7499° N., Longitude 152.4938° W., in Kodiak, Alaska.

The Alaska Department of Environmental Conservation has issued a Certificate of Reasonable Assurance pursuant to Section 401 of the Clean Water Act for your project and found it to be in accordance with the Alaska Water Quality Standards. This certification is attached to the Department of the Army permit and will become a part of this permit when it is finalized.

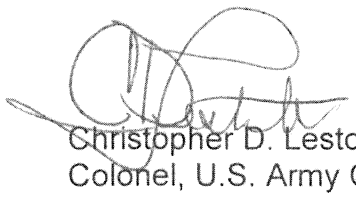
Additionally, we have enclosed a Notification of Administrative Appeal Options and Process and Request for Appeal form regarding this Department of the Army Permit (see section labeled "Initial Proffered Permit").

If you accept the conditions of the enclosed permit, please sign and date both copies and return them to us. The permit will not be valid until we have returned a finalized copy to you. This is not an authorization to commence construction. No work is to be performed in Chiniak Bay, or adjacent wetlands, until you have received a validated copy of the permit.

Nothing in this letter shall be construed as excusing you from compliance with other Federal, State, or local statutes, ordinances, or regulations which may affect this work.

Thank you for your cooperation with the U.S. Army Corps of Engineer's Regulatory Program. If you have any questions, please contact Mr. Jack Hewitt of my Regulatory staff via email at jack.j.hewitt@usace.army.mil, in writing at the letterhead address, or by phone at (907) 753-2708.

Sincerely,



Christopher D. Lestochi
Colonel, U.S. Army Corps of Engineers
District Commander

DEPARTMENT OF THE ARMY PERMIT

Permittee: Alaska Department of Transportation & Public Facilities

Permit No.: POA-2006-1144, Chiniak Bay

Issuing Office: U.S. Army Engineer District, Alaska

NOTE: The term "you" and its derivatives, as used in this permit, means the permittee or any future transferee. The term "this office" refers to the appropriate district or division office of the Corps of Engineers having jurisdiction over the permitted activity or the appropriate official of that office acting under the authority of the commanding officer.

You are authorized to perform work in accordance with the terms and conditions specified below.

Project Description: A total of 339,090 cubic yards of clean fill material and rip rap may be discharged into 17.7 acres of intertidal and subtidal waters of the U.S., and 0.11 acre of wetlands, to expand the Runway Safety Areas (RSA) at the Kodiak Airport as follows:

Runway 07/25: Discharge 156,000 cubic yards of clean fill material and riprap below HTL, into 9.1 acres of marine water, beyond Runway End 25 (east end) to create a landmass 500' wide by 600' long.

Runway 18/36: Discharge 183,090 cubic yards of clean fill material and riprap below HTL, into 8.6 acres of marine water, and 0.11 acre of wetland, on Runway End 18 (south end) to create a landmass 500' wide and 600' long.

All work will be performed in accordance with the attached plan, 5 sheets, dated 12/02/2013.

Project Location: At the Kodiak Airport, within Sections 14, 15, 16, & 22, T. 28 S., R. 20 W., Seward Meridian, USGS Quad Maps: Kodiak C-2/D-2, Latitude 57.7499° N., Longitude 152.4938° W., Kodiak, Alaska.

General Permit Conditions:

1. The time limit for completing the work authorized ends on January 31, 2019. If you find that you need more time to complete the authorized activity, submit your request for a time extension to this office for consideration at least one month before the above date is reached.

2. You must maintain the activity authorized by this permit in conformance with the terms and conditions of this permit. You are not relieved of this requirement if you abandon the permitted activity, although you may make a good faith transfer to a third party in compliance with General Condition 4 below. Should you wish to cease to maintain the authorized activity or should you desire to abandon it without a good faith transfer, you must obtain a modification of this permit from this office, which may require restoration of the area.

3. If you discover any previously unknown historic or archeological remains while accomplishing the activity authorized by this permit, you must immediately notify this office of what you have found. We will initiate the Federal and State coordination required to determine if the remains warrant a recovery effort or if the site is eligible for listing in the National Register of Historic Places.

4. If you sell the property associated with this permit, you must obtain the signature of the new owner in the space provided and forward a copy of the permit to this office to validate the transfer of this authorization.

5. If a conditioned water quality certification has been issued for your project, you must comply with the conditions specified in the certification as special conditions to this permit. For your convenience, a copy of the certification is attached if it contains such conditions.

6. You must allow representatives from this office to inspect the authorized activity at any time deemed necessary to ensure that it is being or has been accomplished in accordance with the terms and conditions of your permit.

Special Permit Conditions:

1 The use of the permitted activity must not interfere with the public's right to free navigation on all navigable waters of the United States.

2 You must install and maintain, at your expense, any safety lights and signals prescribed by the United States Coast Guard (USCG), through regulations or otherwise, on your authorized facilities. The USCG may be reached at the following address and telephone number: U.S. Coast Guard, Commander OAN, 17th District, Post Office Box 25517, Juneau, Alaska 99802-5517; (907) 463-2250.

3 The permittee understands and agrees that, if future operations by the United States require the removal, relocation, or other alteration, of the structure or work herein authorized, or if, in the opinion of the Secretary of the Army or his authorized representative, said structure or work shall cause unreasonable obstruction to the free navigation of the navigable waters, the permittee will be required, upon due notice from the Corps of Engineers, to remove, relocate, or alter the structural work or obstructions caused thereby, without expense to the United States. No claim shall be made against the United States on account of any such removal or alteration.

4. Before commencing work, the permittee shall purchase 97.9 marine credits, and 0.6 wetland credits from the Conservation Fund as per 'Receipt of Payment Form' attached. These in-lieu-fee credits shall be for enhancement or preservation of aquatic resources in the Kodiak area. You must email this form signed by both you and the Conservation Funds to reqpagemaster@usace.army.mil and to Jack Hewitt upon completion of payment (see form attached).

Special Information:

Any condition incorporated by reference into this permit by General Condition 5, remains a condition of this permit unless expressly modified or deleted, in writing, by the District Engineer or his authorized representative.

Further Information:

1. Congressional Authorities: You have been authorized to undertake the activity described above pursuant to:

(X) Section 10 of the Rivers and Harbors Act of 1899 (33 U.S.C. 403).

(X) Section 404 of the Clean Water Act (33 U.S.C. 1344).

( ) Section 103 of the Marine Protection, Research, and Sanctuaries Act of 1972 (33 U.S.C. 1413).

2. Limits of this authorization.

a. This permit does not obviate the need to obtain other Federal, State, or local authorization required by law.

b. This permit does not grant any property rights or exclusive privileges.

c. This permit does not authorize any injury to the property or rights of others.

d. This permit does not authorize interference with any existing or proposed Federal project.

3. Limits of Federal Liability. In issuing this permit, the Federal Government does not assume any liability for the following:

a. Damages to the permitted project or uses thereof as a result of other permitted or unpermitted activities or from natural causes.

b. Damages to the permitted project or uses thereof as a result of current or future activities undertaken by or on behalf of the United States in the public interest.

c. Damages to persons, property, or to other permitted or unpermitted activities or structures caused by the activity authorized by this permit.

d. Design or construction deficiencies associated with the permitted work.

e. Damage claims associated with any future modification, suspension, or revocation of this permit.

4. Reliance on Applicant's Data: The determination of this office that issuance of this permit is not contrary to the public interest was made in reliance on the information you provided.

5. Reevaluation of Permit Decision. This office may reevaluate its decision on this permit at any time the circumstances warrant. Circumstances that could require a revaluation include, but are not limited to, the following:

a. You fail to comply with the terms and conditions of this permit.

b. The information provided by you in support of your permit application proves to have been false, incomplete, or inaccurate (See 4 above).

c. Significant new information surfaces which this office did not consider in reaching the original public interest decision.

Such a reevaluation may result in a determination that it is appropriate to use the suspension, modification, and revocation procedures contained in 33 CFR 325.7 or enforcement procedures such as those contained in 33 CFR 326.4 and 326.5. The referenced enforcement procedures provide for the issuance of an administrative order requiring you to comply with the terms and conditions of your permit and for the initiation of legal action where appropriate. You will be required to pay for any corrective measures ordered by this office, and if you fail to comply with such directive, this office may in certain situations (such as those specified in 33 CFR 209.170) accomplish the corrective measures by contract or otherwise and bill you for the cost.

6. Extensions. General Condition 1 establishes a time limit for the completion of the activity authorized by this permit. Unless there are circumstances requiring either a prompt completion of the authorized activity or a reevaluation of the public interest decision, the Corps will normally give favorable consideration to a request for an extension of this time limit.

Your signature below, as permittee, indicates that you accept and agree to comply with the terms and conditions of this permit.

_____ _____

(PERMITTEE) AND TITLE (DATE)

This permit becomes effective when the Federal official, designated to act for the Secretary of the Army, has signed below.

_____ _____

Colonel Christopher D. Lestochi
Colonel, Corps of Engineers
District Commander

Date

When the structures or work authorized by this permit are still in existence at the time the property is transferred the terms and conditions of this permit will continue to be binding on the new owner(s) of the property. To validate the transfer of this permit and the associated liabilities associated with compliance with its terms and conditions have the transferee sign and date below.

_____ _____

(TRANSFEREE) (DATE)

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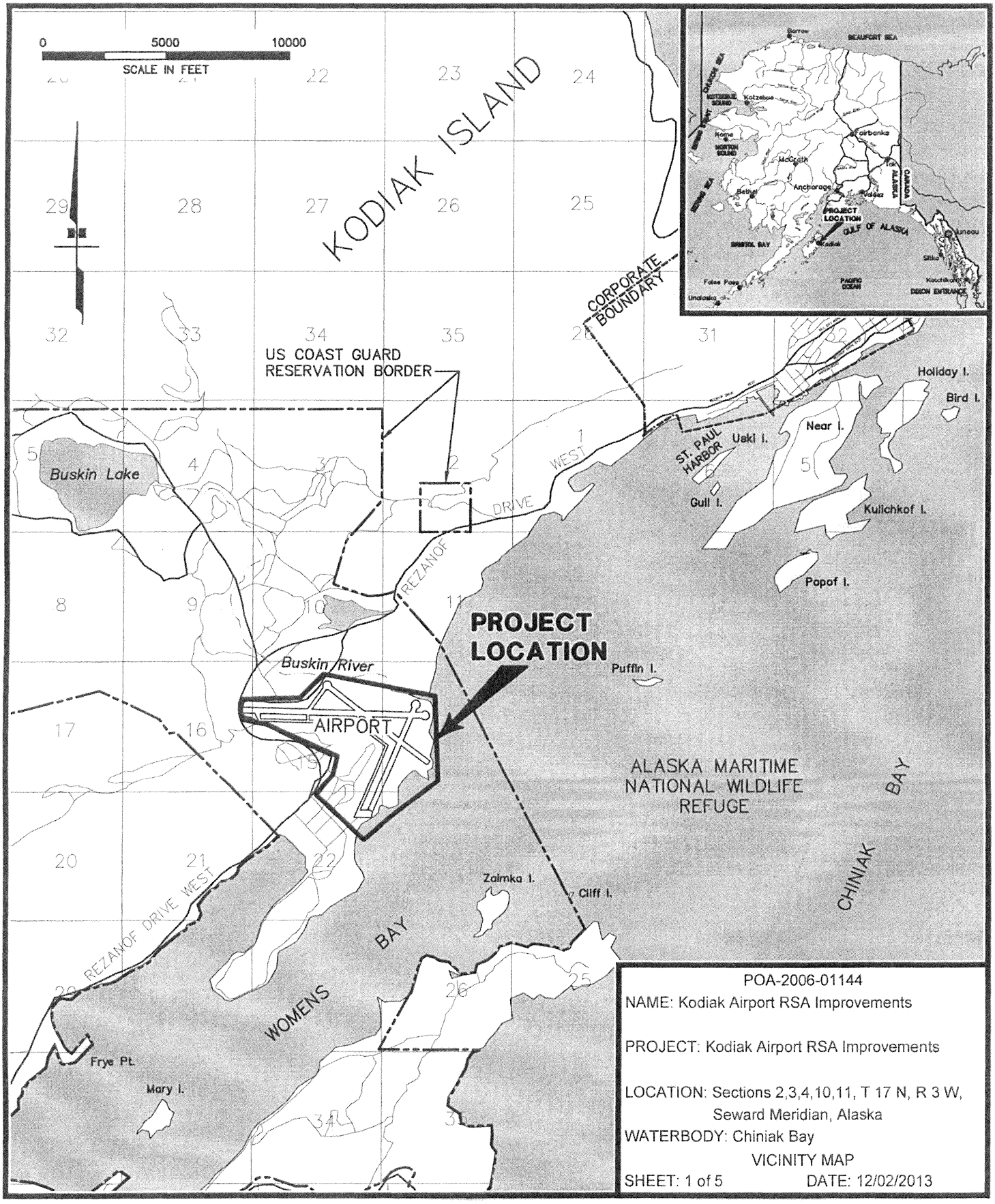

POA-2006-01144

NAME: Kodiak Airport RSA Improvements

PROJECT: Kodiak Airport RSA Improvements

LOCATION: Sections 2,3,4,10,11, T 17 N, R 3 W, Seward Meridian, Alaska

WATERBODY: Chiniak Bay

VICINITY MAP

SHEET: 1 of 5 DATE: 12/02/2013

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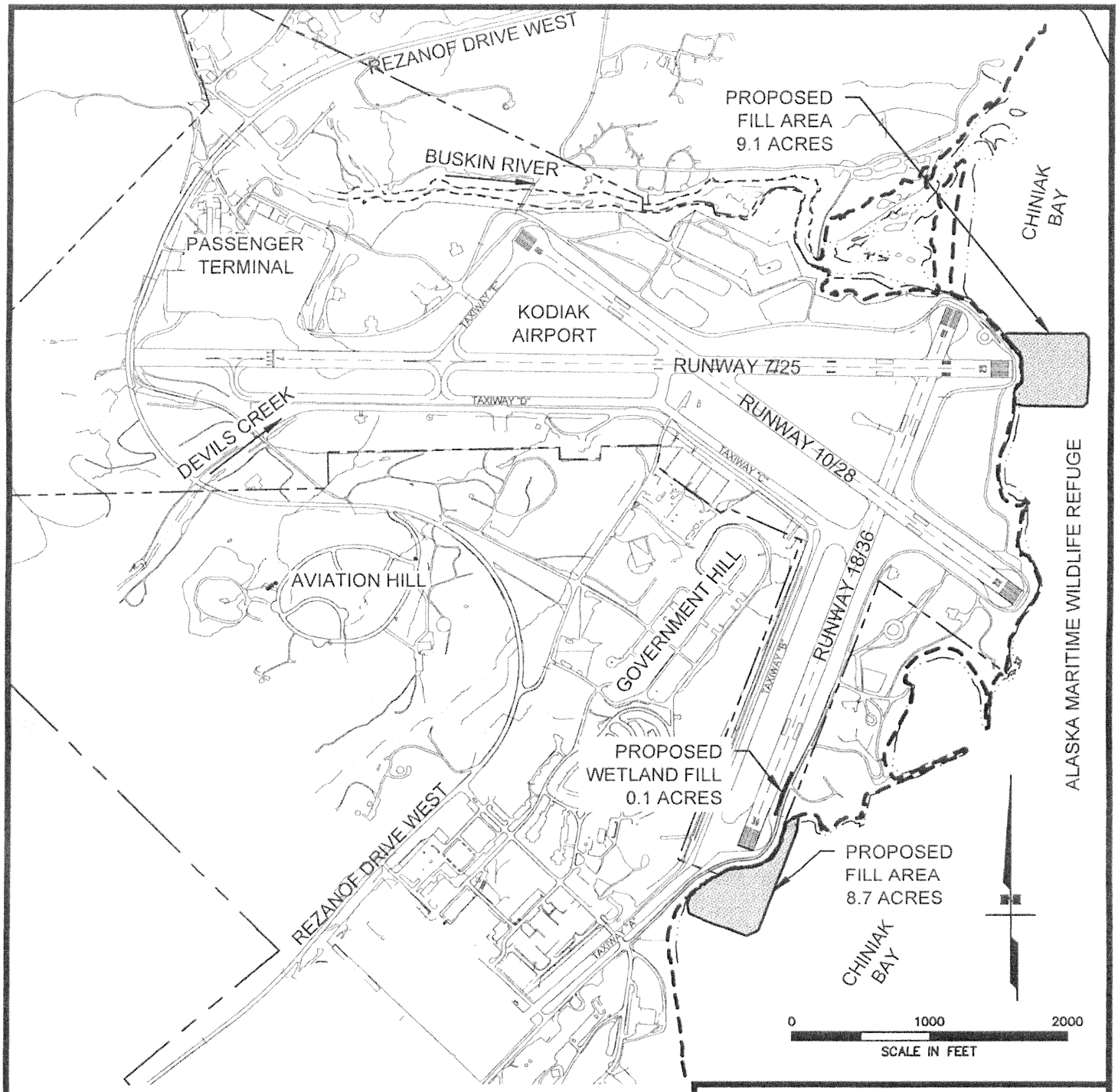

STREAMS OR DITCHES

ORDINARY HIGH WATER

HIGH TIDE LINE

PROPOSED FILL

POA-2006-01144

NAME: Kodiak Airport RSA Improvements

PROJECT: Kodiak Airport RSA Improvements

LOCATION: Sections 2,3,4,10,11, T 17 N, R 3 W, Seward Meridian, Alaska

WATERBODY: Chiniak Bay

PROJECT OVERVIEW

SHEET: 2 of 5 DATE: 12/02/2013

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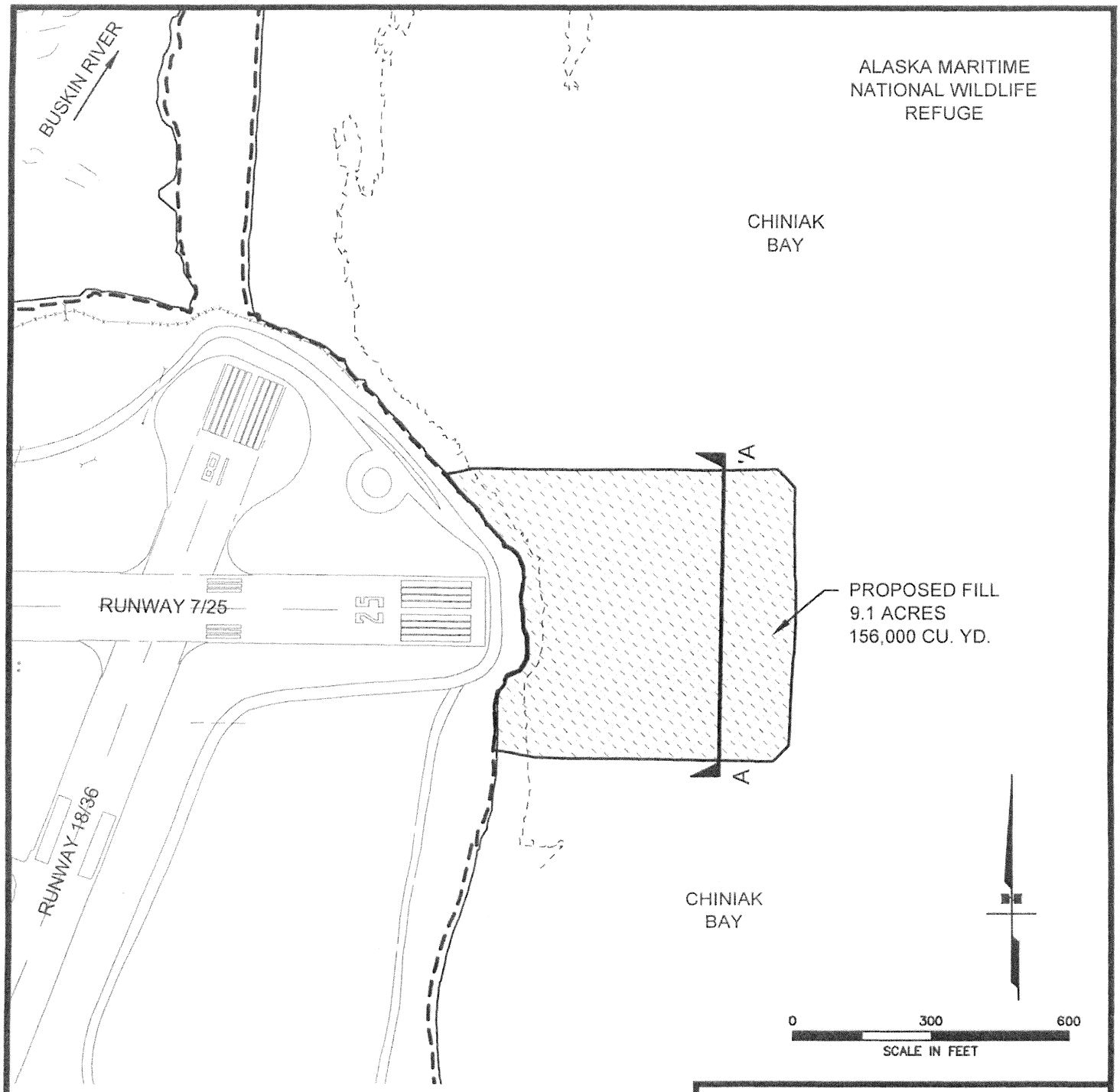


STREAMS OR DITCHES

MARINE WETLAND IMPACTS

HIGH TIDE LINE (11 FEET NAVD88)

MEAN HIGHER HIGH WATER (9.56 FEET NAVD88)

MEAN LOWER LOW WATER (0.76 FEET NAVD88)

POA-2006-01144

NAME: Kodiak Airport RSA Improvements

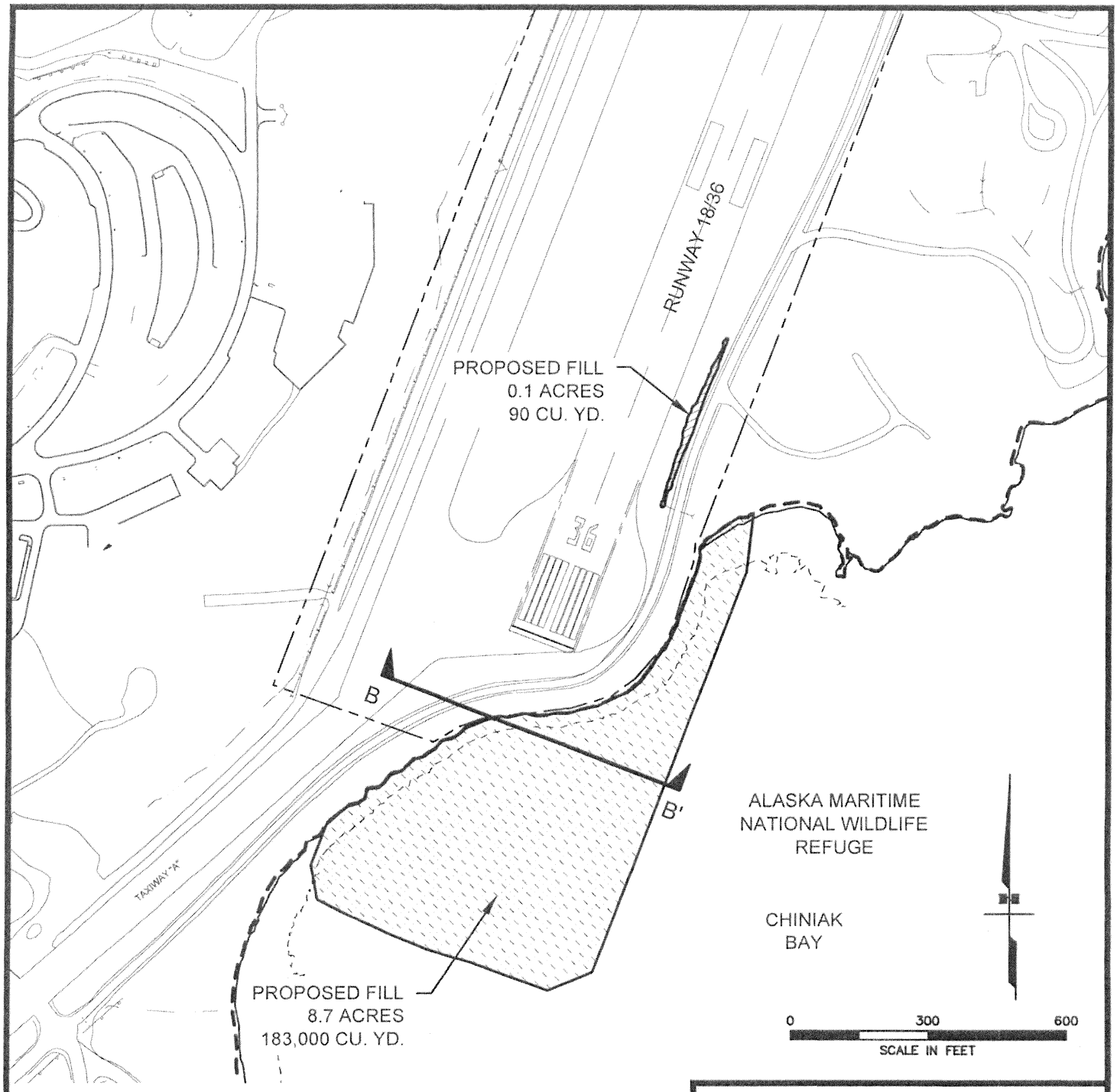
PROJECT: Kodiak Airport RSA Improvements

LOCATION: Sections 2,3,4,10,11, T 17 N, R 3 W, Seward Meridian, Alaska

WATERBODY: Chiniak Bay

RUNWAY 25 RSA EXTENSION

SHEET: 3 of 5 DATE: 12/02/2013



STREAMS OR DITCHES

PEM WETLAND IMPACTS

MARINE WETLAND IMPACTS

HIGH TIDE LINE (11 FEET NAVD88)

MEAN HIGHER HIGH WATER (9.56 FEET NAVD88)

MEAN LOWER LOW WATER (0.76 FEET NAVD88)

POA-2006-01144

NAME: Kodiak Airport RSA Improvements

PROJECT: Kodiak Airport RSA Improvements

LOCATION: Sections 2,3,4,10,11, T 17 N, R 3 W, Seward Meridian, Alaska

WATERBODY: Chiniak Bay

RUNWAY 36 RSA EXTENSION

SHEET: 4 of 5 DATE: 12/02/2013

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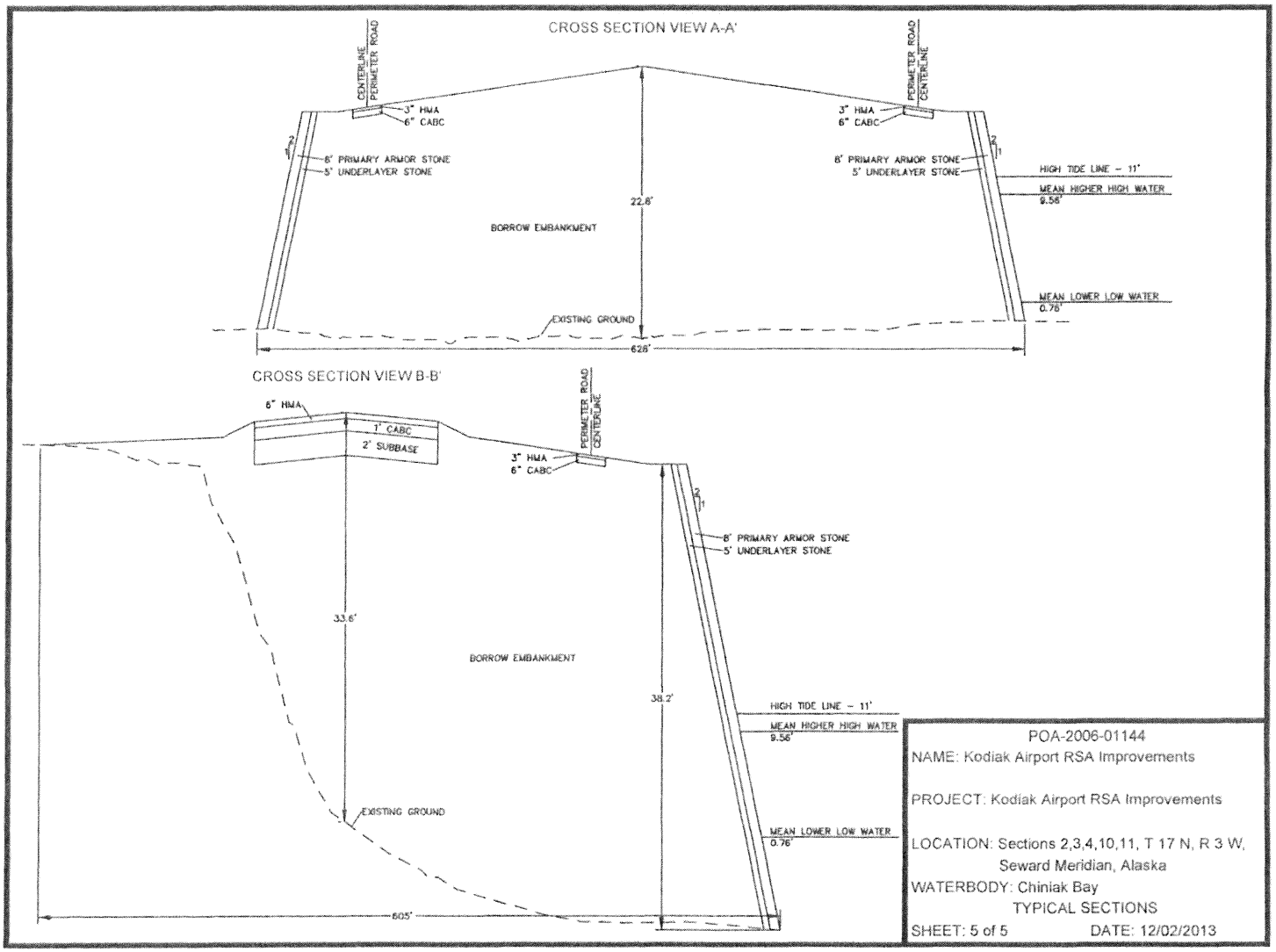


POA-2006-01144
NAME: Kodiak Airport RSA Improvements

PROJECT: Kodiak Airport RSA Improvements

LOCATION: Sections 2,3,4,10,11, T 17 N, R 3 W, Seward Meridian, Alaska
WATERBODY: Chiniak Bay
TYPICAL SECTIONS
SHEET: 5 of 5 DATE: 12/02/2013

THE STATE of ALASKA
GOVERNOR SEAN PARNELL

Department of Environmental Conservation
DIVISION OF WATER
Wastewater Discharge Authorization Program

555 Cordova Street
Anchorage, Alaska 99501-2617
Main: 907.269.6285
Fax: 907.334.2415
www.dec.alaska.gov/water/wwdp

November 13, 2013

Certified Mail: 7012-1010-0003-0389-9354

Taylor Horne
ADOT&PF
PO Box 112500, MS-2500
Juneau, AK 99811-2500

Re: Chiniak Bay ADOT&PF Kodiak Airport RSA
Reference No. POA-2006-1144

Dear Mr. Merritt:

In accordance with Section 401 of the Federal Clean Water Act of 1977 and provisions of the Alaska Water Quality Standards, the Department of Environmental Conservation (DEC) is issuing the enclosed Certificate of Reasonable Assurance for placement of fill material in waters of the U.S. in association with the improvements of the Runway Safety Areas at the Kodiak Island Airport Facility.

DEC regulations provide that any person who disagrees with this decision may request an informal review by the Division Director in accordance with 18 AAC 15.185 or an adjudicatory hearing in accordance with 18 AAC 15.195 – 18 AAC 15.340. An informal review request must be delivered to the Director, Division of Water, 555 Cordova Street, Anchorage, AK 99501, within 15 days of the permit decision. Visit http://www.dec.state.ak.us/commish/ReviewGuidance.htm for information on Administrative Appeals of Department decisions.

An adjudicatory hearing request must be delivered to the Commissioner of the Department of Environmental Conservation, 410 Willoughby Avenue, Suite 303, PO Box 111800, Juneau, AK 99811-1800, within 30 days of the permit decision. If a hearing is not requested within 30 days, the right to appeal is waived.

By copy of this letter we are advising the U.S. Army Corps of Engineers of our actions and enclosing a copy of the certification for their use.

Sincerely,

James Rypkema
Section Manager, Storm Water and Wetlands

Enclosure: 401 Certificate of Reasonable Assurance

cc: (with encl.)
Jack Hewitt, USACE, Anchorage
Susan Cunningham, Vigil-Agrimis
Michael Daigneault, ADF&G
USFWS Field Office, Anchorage
Heather Dean, EPA Operations, Anchorage

STATE OF ALASKA
DEPARTMENT OF ENVIRONMENTAL CONSERVATION
CERTIFICATE OF REASONABLE ASSURANCE

A Certificate of Reasonable Assurance, in accordance with Section 401 of the Federal Clean Water Act and the Alaska Water Quality Standards is issued to Alaska Department of Transportation and Public Facilities (ADOT&PF), PO Box 112500, MS-2500, Juneau, AK 99811-2500, Attn: Taylor Horne Project Manager for placement of fill material in waters of the U.S. in association with the improvements of the Runway Safety Areas (RSA) of Runway 07/25 and Runway 18/36, at the Kodiak Island Airport Facility. The applicant proposes for Runway 07/25 that a total of 339,090 cubic yards of clean fill material would be placed in 17.8 acres of intertidal and subtidal waters of the U.S. and 0.11 acre of wetlands. For Runway 18/36, the applicant proposes to place approximately 462,000 cubic yards of fill would be required to construct the new 600-foot landmass extension to the south beyond Runway end 36, shift the runway 240 feet, and install a 40-knot engineered materials arresting system beyond the north end of the runway.

A State Water Quality Certification is required under Section 401 because the proposed activity will be authorized by a U.S. Army Corps of Engineers permit, reference number POA-2006-1144, and a discharge of pollutants to waters of the U.S. located in the State of Alaska may result from the proposed activity. Public notice of the application for this certification was given as required by 18 AAC 15.180 in the Corps Public Notice POA-2006-1144 posted from October 19, 2012 to December 18, 2012. The Record of Decision on the Final Environmental Impact Statement for the Runway Safety Area project was released in September 2013.

The proposed activity is located within Sections 14, 15, 16, & 22, T. 28 S., R. 20 W., Seward Meridian, USGS Quad Maps Kodiak C-2/D-2, Latitude 57.7499° N., Longitude 152.4938° W., Kodiak Island Borough, near Kodiak, Alaska.

The Department of Environmental Conservation (DEC) reviewed the application and certifies that there is reasonable assurance that the proposed activity, as well as any discharge which may result, will comply with applicable provisions of Section 401 of the Clean Water Act and the Alaska Water Quality Standards, 18 AAC 70, provided that the following alternative measures are adhered to.

1. Reasonable precautions and controls must be used to prevent incidental and accidental discharge of petroleum products or other hazardous substances. Fuel storage and handling activities for equipment must be sited and conducted so there is no petroleum contamination of the ground, surface runoff or water bodies.

2. During construction, spill response equipment and supplies such as sorbent pads shall be available and used immediately to contain and cleanup oil, fuel, hydraulic fluid, antifreeze, or other pollutant spills. Any spill amount must be reported in accordance with Discharge Notification and Reporting Requirements (AS 46.03.755 and 18 AAC 75 Article 3). The applicant must contact by telephone the DEC Area Response Team for Central Alaska at (907) 269-3063 during work hours or 1-800-478-9300 after hours. Also, the applicant must contact by telephone the National Response Center at 1-800-424-8802.

3. Runoff discharged to surface water (including wetlands) from a construction site disturbing one or more acres must be covered under Alaska's General Permit for Storm Water Discharges from Large and Small Construction Activities in Alaska (AKR100000). This permit requires a Storm Water Pollution Prevention Plan (SWPPP). For projects that disturb more than five acres, this SWPPP must also be submitted to DEC (William Ashton, 907-269-6283) prior to construction.

This certification expires five (5) years after the date the certification is signed. If your project is not completed by then and work under U.S Army Corps of Engineers Permit will continue, you must submit an application for renewal of this certification no later than 30 days before the expiration date (18 AAC 15.100).

Date: November 13, 2013

James Rypkema, Section Manager
Storm Water and Wetlands

US Army Corps
of Engineers
Alaska District

RECEIPT OF PAYMENT-CREDITS CALCULATION		
Compensatory Mitigation Type: Mitigation Bank ( ) In-Lieu-Fee Program (X)		
Service Area: The Conservation Fund, Southwest Service Area		
HUC: 19020701		
Permit No.: POA-2006-1144		
Project: Kodiak Airport Runway Safety Area Expansion		
Location: Latitude 57.7499° N., Longitude 152.4938° W.		
Waterway: Chiniak Bay		
Cowardin Wetland Types		
System	Subsystem	Credits
Marine/Estuarine	Intertidal	10.45
	Subtidal	87.45
Palustrine		0.60
Riverine		
Lacustrine	Lake-Littoral	0.00
	Lake-Limnetic	0.00
	TOTAL CREDITS	98.50

VERIFICATION OF CREDITS SOLD BY:

Mr. Taylor Horne — Date
ADOT/PF

The Conservation Fund — Date

NOTIFICATION OF ADMINISTRATIVE APPEAL OPTIONS AND PROCESS AND REQUEST FOR APPEAL

Applicant: Alaska Department of Transportation and Public Facilities	File Number:POA-2006-1144	Date: March 13, 2014

Attached is:		See Section below
X	INITIAL PROFFERED PERMIT (Standard Permit or Letter of Permission)	A
	PROFFERED PERMIT (Standard Permit or Letter of Permission)	B
	PERMIT DENIAL	C
	APPROVED JURISDICTIONAL DETERMINATION	D
	PRELIMINARY JURISDICTIONAL DETERMINATION	E

THIS REQUEST FOR APPEAL FORM MUST BE RECEIVED BY: MAY 13, 2014

SECTION I - The following identifies your rights and options regarding an administrative appeal of the above decision. Additional information may be found at http://www.usace.army.mil/CECW/Pages/reg_materials.aspx or Corps regulations at 33 CFR Part 331.

A: INITIAL PROFFERED PERMIT: You may accept or object to the permit.

- ACCEPT: If you received a Standard Permit, you may sign the permit document and return it to the District Engineer for final authorization. If you received a Letter of Permission (LOP), you may accept the LOP and your work is authorized. Your signature on the Standard Permit or acceptance of the LOP means that you accept the permit in its entirety, and waive all rights to appeal the permit, including its terms and conditions, and approved jurisdictional determinations associated with the permit.
- OBJECT: If you object to the permit (Standard or LOP) because of certain terms and conditions therein, you may request that the permit be modified accordingly. You must complete Section II of this form and return the form to the District Engineer. Your objections must be received by the District Engineer within 60 days of the date of this notice, or you will forfeit your right to appeal the permit in the future. Upon receipt of your letter, the District Engineer will evaluate your objections and may: (a) modify the permit to address all of your concerns, (b) modify the permit to address some of your objections, or, (c) not modify the permit, having determined that the permit should be issued as previously written. After evaluating your objections, the District Engineer will send you a proffered permit for your reconsideration, as indicated in Section B below.

B: PROFFERED PERMIT: You may accept or appeal the permit

- ACCEPT: If you received a Standard Permit, you may sign the permit document and return it to the District Engineer for final authorization. If you received a Letter of Permission (LOP), you may accept the LOP and your work is authorized. Your signature on the Standard Permit or acceptance of the LOP means that you accept the permit in its entirety, and waive all rights to appeal the permit, including its terms and conditions, and approved jurisdictional determinations associated with the permit.
- APPEAL: If you choose to decline the proffered permit (Standard or LOP) because of certain terms and conditions therein, you may appeal the declined permit under the Corps of Engineers Administrative Appeal Process by completing Section II of this form and sending the form to the Division Engineer. This form must be received by the Division Engineer within 60 days of the date of this notice.

C: PERMIT DENIAL: You may appeal the denial of a permit under the Corps of Engineers Administrative Appeal Process by completing Section II of this form and sending the form to the Division Engineer. This form must be received by the Division Engineer within 60 days of the date of this notice.

D: APPROVED JURISDICTIONAL DETERMINATION (JD): You may accept or appeal the approved JD or provide new information.

- ACCEPT: You do not need to notify the Corps to accept an approved JD. Failure to notify the Corps within 60 days of the date of this notice means that you accept the approved JD in its entirety, and waive all rights to appeal the approved JD.
- APPEAL: If you disagree with the approved JD, you may appeal the approved JD under the Corps of Engineers Administrative Appeal Process by completing Section II of this form and sending the form to the Division Engineer. This form must be received by the Division Engineer within 60 days of the date of this notice.

E: PRELIMINARY JURISDICTIONAL DETERMINATION: You do not need to respond to the Corps regarding the Preliminary JD. The Preliminary JD is not appealable. If you wish, you may request an approved JD (which may be appealed), by contacting the Corps district for further instruction. Also, you may provide new information for further consideration by the Corps to reevaluate the JD.

SECTION II - REQUEST FOR APPEAL or OBJECTIONS TO AN INITIAL PROFFERED PERMIT

REASONS FOR APPEAL OR OBJECTIONS: (Describe your reasons for appealing the decision or your objections to an initial proffered permit in clear concise statements. You may attach additional information to this form to clarify where your reasons or objections are addressed in the administrative record.)

ADDITIONAL INFORMATION: The appeal is limited to a review of the administrative record, the Corps memorandum for the record of the appeal conference or meeting, and any supplemental information that the review officer has determined is needed to clarify the administrative record. Neither the appellant nor the Corps may add new information or analyses to the record. However, you may provide additional information to clarify the location of information that is already in the administrative record.

In order for a Request For Appeal to be accepted by the Corps, the Corps must determine that it is complete, that it meets the criteria for appeal under 33 CFR Part 331.5, and that it has been received by the Division Office within 60 days of the date of the Notice of Appeal Process. It is not necessary to submit a Request For Appeal form to the Division office if you do not object to the decision.

POINT OF CONTACT FOR QUESTIONS OR INFORMATION:

If you have questions regarding this decision and/or the appeal process please contact:	If you only have questions regarding the appeal process you may also contact:
Jack Hewitt, PM Alaska District Corps of Engineers CEPOA-RD-S P.O. Box 6898 JBER, AK 99506-0898 (907) 753-2708 (800) 478-2712 (toll free in AK)	Commander USAED, Pacific Ocean Division ATTN: CEPOD-PDC/Cindy Barger Building 525 Fort Shafter, HI 96858-5440 **To submit this form, mail to the address above**

RIGHT OF ENTRY: Your signature below grants the right of entry to Corps of Engineers personnel, and any government consultants, to conduct investigations of the project site during the course of the appeal process. You will be provided a 15-day notice of any site investigation, and will have the opportunity to participate in all site investigations.

	Date:	Telephone number:
_____ Signature of appellant or agent.		

THE STATE of ALASKA
GOVERNOR SEAN PARNELL

Department of Fish and Game
DIVISION OF HABITAT
Central Region Office
333 Raspberry Road
Anchorage, Alaska 99518-1565
Main: 907.267.2342
Fax: 907.267.2499

FISH HABITAT PERMIT FH 14-II-0037

ISSUED: March 6, 2014
EXPIRES: December 31, 2015

Alaska Department of Transportation and Public Facilities
Attn: Mark Boydston
P.O. Box 196900
Anchorage, AK 99519-6900

Dear Mr. Boydston:

Re: Culvert Repair – Devils Creek
Stream No. 259-21-10120-2005
Section 15, T. 28 S., R. 20 W., S.M.

Pursuant to AS 16.05.871(b), the Alaska Department of Fish and Game, Division of Habitat, has reviewed the Alaska Department of Transportation and Public Facilities (ADOT&PF) proposal to increase the hydraulic capacity and repair the twin box culverts located under Runway 7/25 and taxiways at the Benny Benson State Airport in Kodiak (Figures 1 through 3).

Project Description
The ADOT&PF proposes to repair the existing twin 10-foot wide by 6-feet high concrete box culverts. The culverts were constructed during WW II era and the concrete has deteriorated within the culverts, and exposed the reinforcement bar (Figures 4 and 5). The existing steel trash rack located at the culvert inlets will be temporarily removed during construction. After the work is completed, the trash rack will be re-installed in the same location.

To access the culverts with equipment, temporary access ramps located on both streambanks at the culvert inlet and outlet (four ramps) will be installed near the culverts (Figures 6 and 7). The existing streambanks were installed during previous airport construction projects. To provide dry working conditions in the culvert and streambed access route, a coffer dam will be constructed to divert the water into one culvert. When the work is completed in the first culvert, Devils Creek will be diverted into the repaired culvert to complete work on the second culvert. After diverting the active channel, the isolated channel will be inspected to assess whether fish are present. Stranded fish will be captured and moved to the active channel in accordance with a valid Fish Resource Permit.

The floor and walls of the culverts will be cleaned of deteriorated concrete. The demolished concrete will be removed and disposed of in an approved upland location. New concrete will be pumped into the culvert using a pumper truck. The culvert joints will be sealed by installing a vapor barrier on joints not located below the runway and taxiway asphalt by removing the fill above the culvert. The vapor barrier will be placed on the existing culvert joints then the excavated fill will be replaced. Polyurethane foam will be injected into the culvert joints located below the runway and taxiway asphalt from within the culvert. Accumulated streambed material located at the culvert inlets will be removed. The angular concrete culvert inlet corners will be rounded to increase additional hydraulic capacity.

To prevent airport flooding, a 400-foot long dike consisting of class I and class II riprap and capped with 5-inch cobbles will be installed above ordinary high water at the culvert inlet and west side streambank (Figures 2 and 6). The dike will allow water to rise above the culvert inlets to prevent water from flooding the airport runways and taxiways. Erosion at the culvert outlets is not anticipated because the streambed and streambanks are comprised of rock.

After construction, the access ramps will be removed and the streambanks will be restored to pre-project conditions. The restoration will use similar material as the existing streambanks and a biodegradable coconut erosion control blanket will be placed over exposed soils. The disturbed areas will be re-vegetated with native species, grasses, or other suitable vegetation to minimize erosion and sedimentation, so that 75% of the vegetative cover is established within the second growing season.

Anadromous Fish Act
Devils Creek has been specified as being important for the spawning, rearing, or migration of anadromous fishes pursuant to AS 16.05.871(a). Devils Creek is known to support pink salmon and Dolly Varden.

In accordance with AS 16.05.871(d), project approval is hereby given subject to the project description above and the following stipulations:

1. All bank cuts, slopes, fills, and other exposed earthwork arising from the culvert installation rehabilitation shall be stabilized to prevent erosion which may occur during and after construction.

2. All work below the ordinary high water shall be conducted when water levels are low and the introduction of sediments can be minimized.

3. No fuel shall be stored, no vehicles shall be fueled or serviced, and vehicles leaking fuel, hydraulic fluids, or other pollutants shall not be operated below ordinary high water of Devils Creek.

4. The final plans and specifications for the stream diversion shall be submitted to the ADF&G for review and approval a minimum of two weeks prior to installation in Devils Creek.

You are responsible for the actions of contractors, agents, or other persons who perform work to accomplish the approved project. For any activity that significantly deviates from the approved plan, you shall notify the Division of Habitat and obtain written approval in the form of a permit amendment before beginning the activity. Any action that increases the project's overall scope or that negates, alters, or minimizes the intent or effectiveness of any stipulation contained in this permit will be deemed a

significant deviation from the approved plan. The final determination as to the significance of any deviation and the need for a permit amendment is the responsibility of the Division of Habitat. Therefore, it is recommended you consult the Division of Habitat immediately when a deviation from the approved plan is being considered.

For the purpose of inspecting or monitoring compliance with any condition of this permit, you shall give an authorized representative of the state free and unobstructed access, at safe and reasonable times, to the permit site. You shall furnish whatever assistance and information as the authorized representative reasonably requires for monitoring and inspection purposes.

This letter constitutes a permit issued under the authority of AS 16.05.871 and must be retained on site during project activities. Please be advised that this determination applies only to activities regulated by the Division of Habitat; other agencies also may have jurisdiction under their respective authorities. This determination does not relieve you of your responsibility to secure other permits; state, federal, or local. You are still required to comply with all other applicable laws.

In addition to the penalties provided by law, this permit may be terminated or revoked for failure to comply with its provisions or failure to comply with applicable statutes and regulations. The department reserves the right to require mitigation measures to correct disruption to fish and game created by the project and which was a direct result of the failure to comply with this permit or any applicable law.

You shall indemnify, save harmless, and defend the department, its agents, and its employees from any and all claims, actions, or liabilities for injuries or damages sustained by any person or property arising directly or indirectly from permitted activities or your performance under this permit. However, this provision has no effect if, and only if, the sole proximate cause of the injury is the department's negligence.

This permit decision may be appealed in accordance with the provisions of AS 44.62.330-630.

Any questions or concerns about this permit may be directed to Habitat Biologist Will Frost at 267-2813 or emailed to william.frost@alaska.gov.

Sincerely,

Cora Campbell, Commissioner

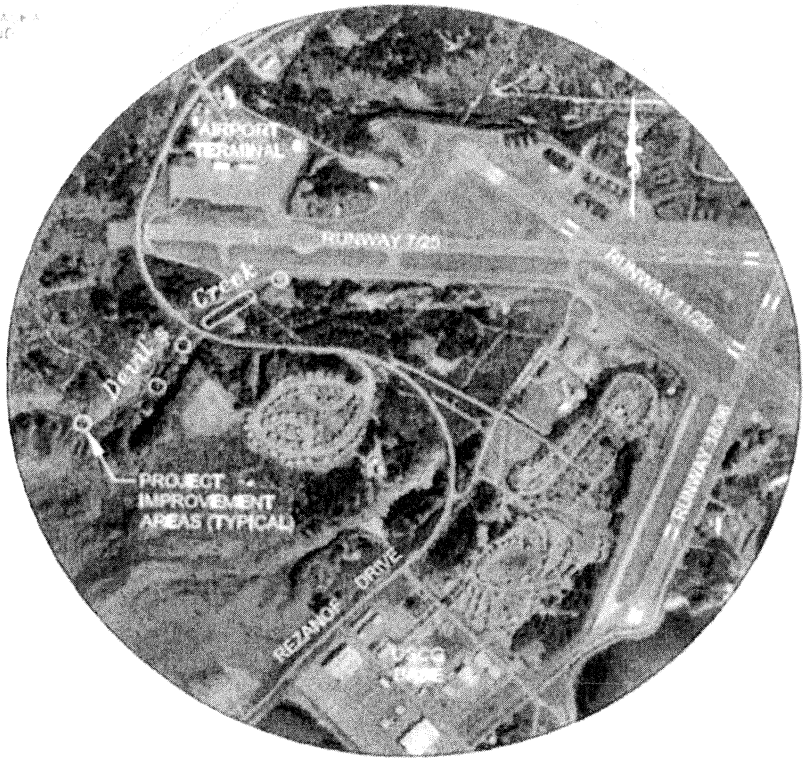
By: Michael J. Daigneault
Regional Supervisor
Central Region Office

enc: Figures 1 through 7

cc: AWT, Kodiak

ecc: N. Svoboda, ADF&G
S. Ayers, ADF&G
G. O'Doherty, ADF&G
D. Tracy, ADF&G
A. Ott, ADF&G
S. Schrof, ADF&G
B. Cassidy, KIB
USACE, Regulatory Branch

LOCATION MAP

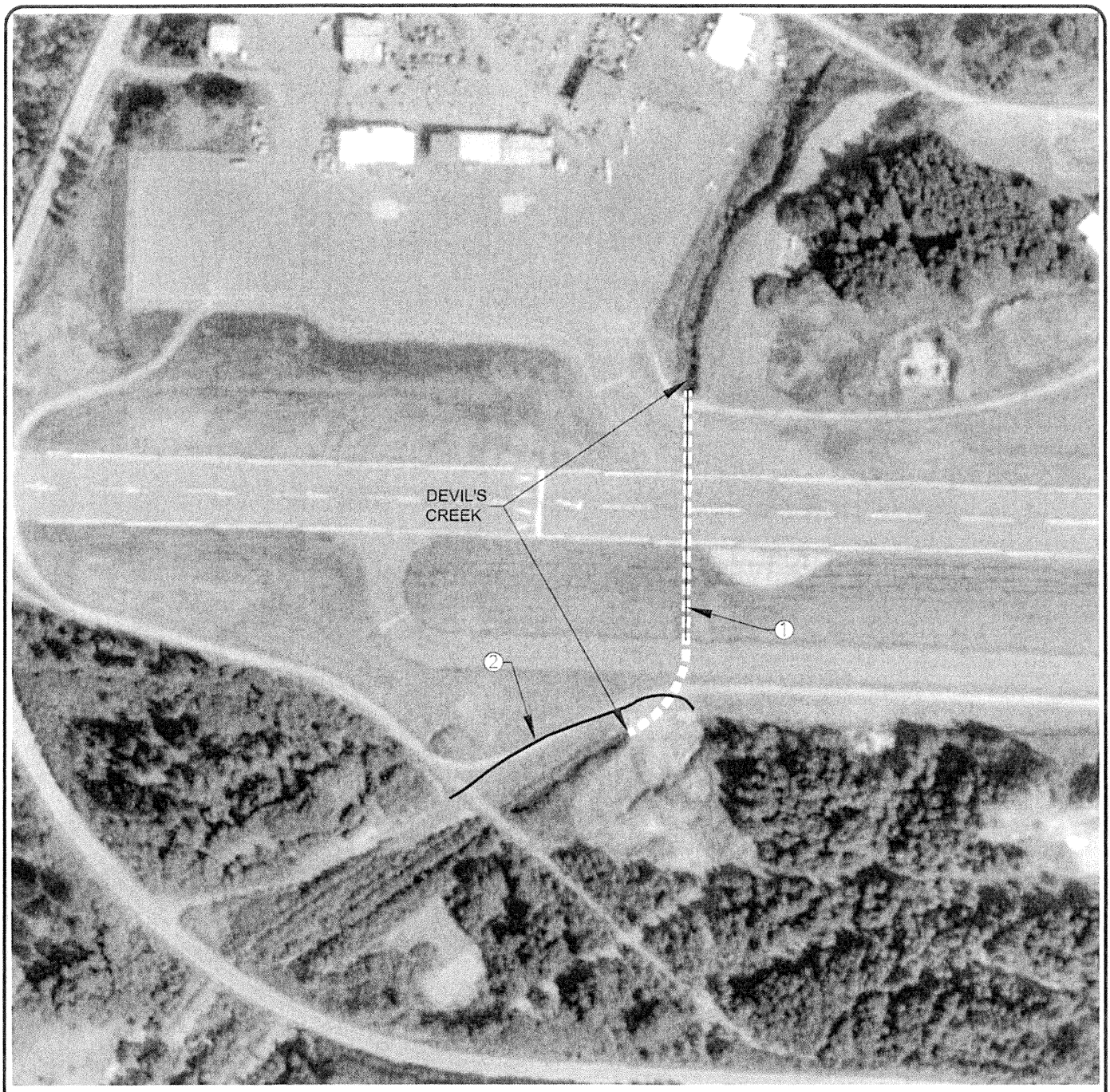


VICINITY MAP

NOT TO SCALE

STATE OF ALASKA
DEPARTMENT OF TRANSPORTATION AND PUBLIC FACILITIES
CENTRAL REGION

DF&G FISH HABITAT PERMIT DOT&PF Project No. 57474 DEVILS CREEK CULVERT LOCATION & VICINITY MAPS	DATE 2/5/2014 FIGURE 1



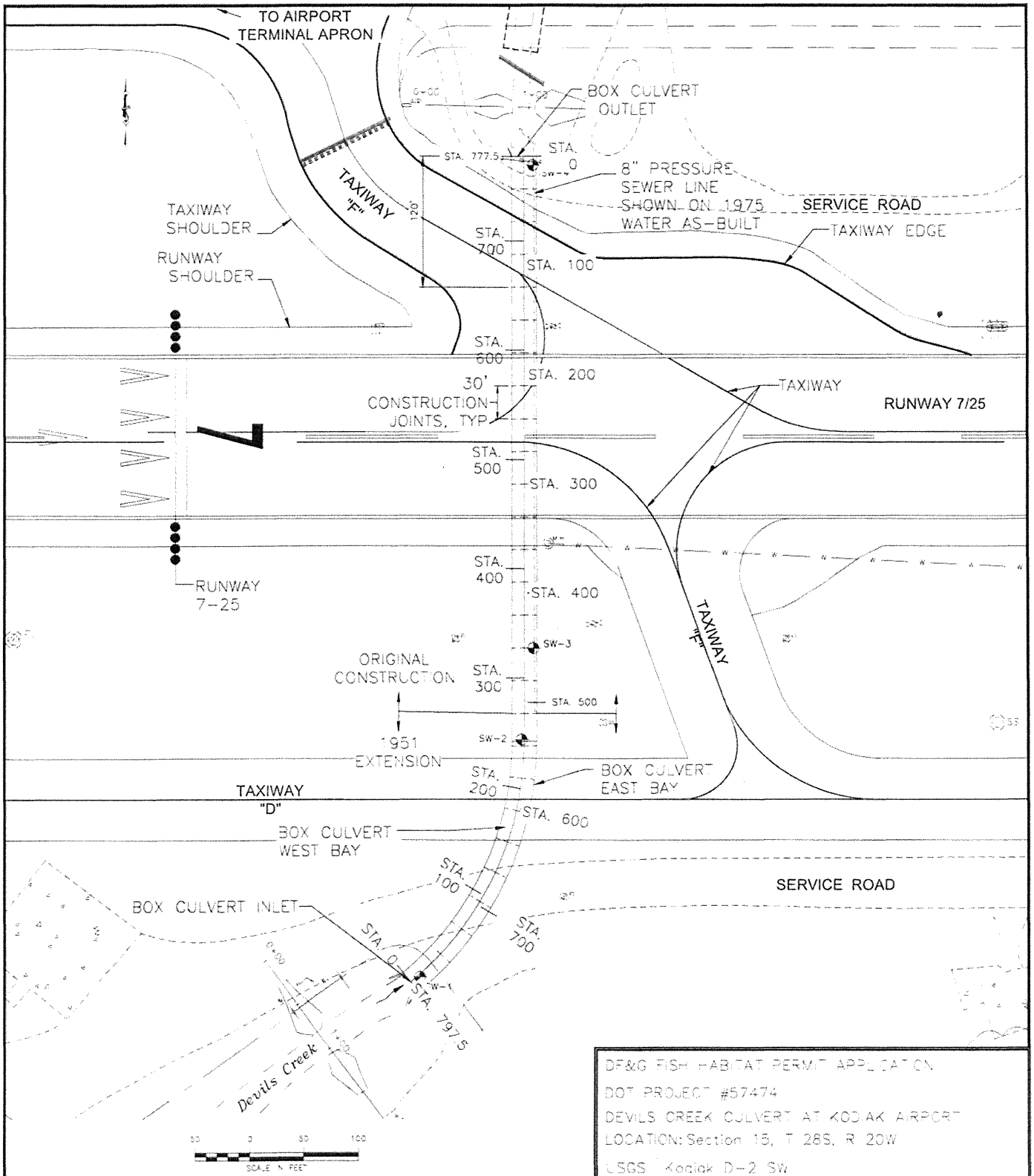
NOT TO SCALE

NOTES:

1. REHABILITATE DEVIL'S CREEK CULVERT
2. CONSTRUCT DIKE

STATE OF ALASKA
DEPARTMENT OF TRANSPORTATION AND PUBLIC FACILITIES
CENTRAL REGION

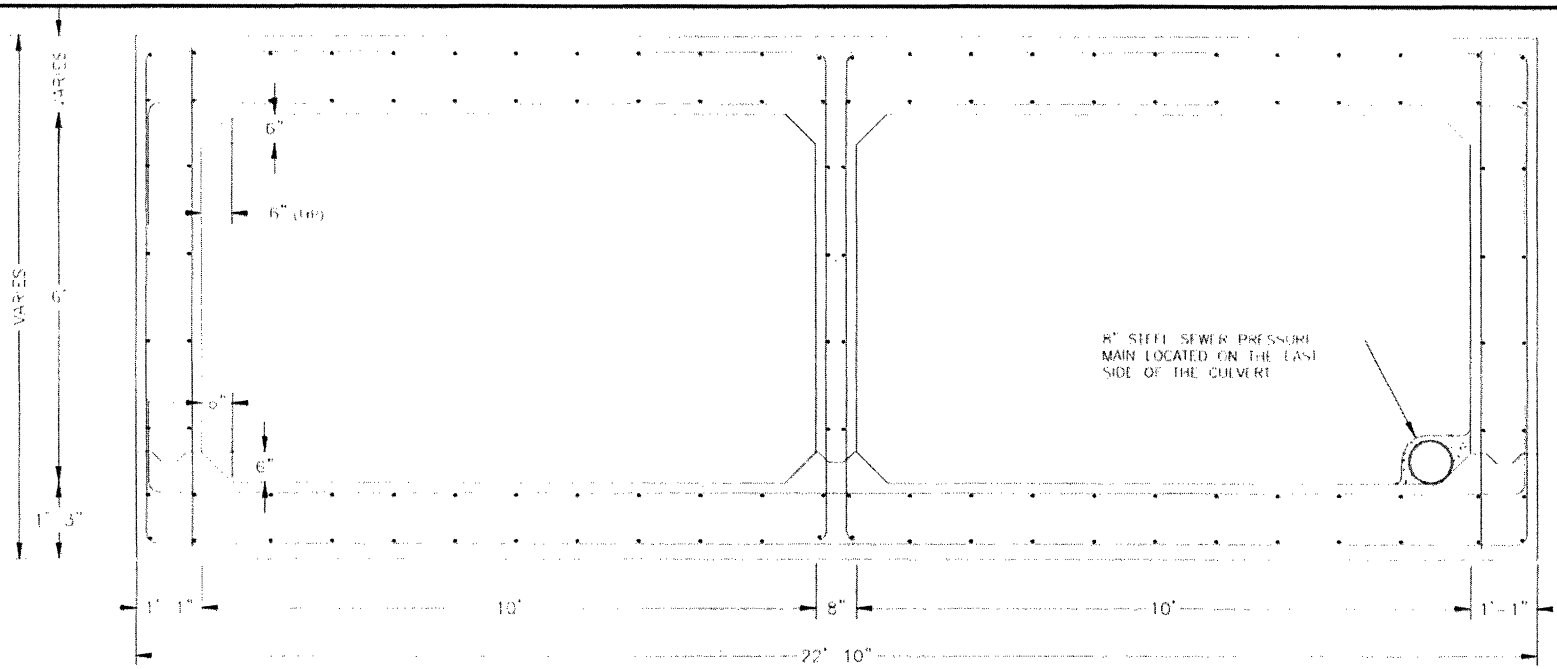
DF&G FISH HABITAT PERMIT APPLICATION DOT&PF Project No. 57474 DEVILS CREEK CULVERT PROJECT OVERVIEW	DATE: 2/5/2014 FIGURE 2



DF&G FISH HABITAT PERMIT APPLICATION
DOT PROJECT #57474
DEVILS CREEK CULVERT AT KODIAK AIRPORT
LOCATION: Section 15, T 28S, R 20W
USGS Kodiak D-2 SW
Lat. 57.7502 °N, Long 152.5121 °W

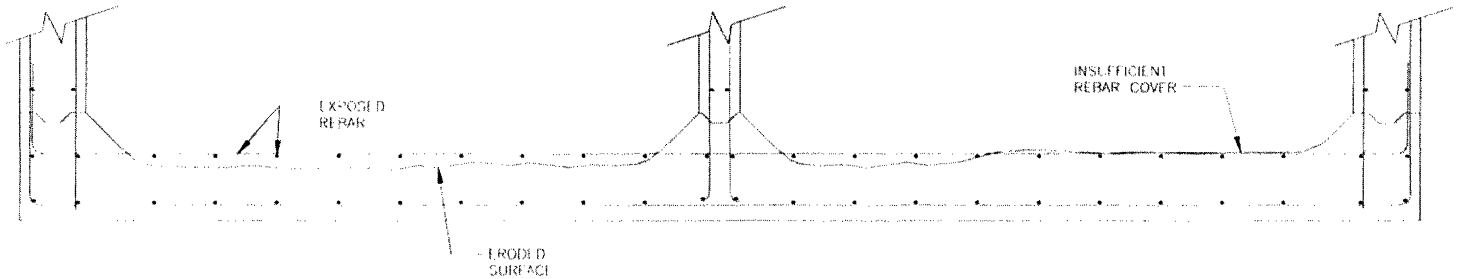
DATE: 2/5/2014

SITE PLAN FIG. 3



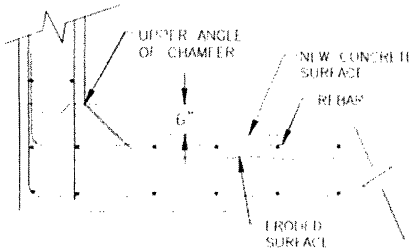
TYPICAL SECTION THRU DEVILS CREEK CULVERT

N.T.S.



ERODED FLOOR OF DEVILS CREEK CULVERT

N.T.S.



NEW CONCRETE PLACEMENT IN DEVILS CREEK CULVERT

N.T.S.

DF&G FISH HABITAT PERMIT APPLICATION

DOT PROJECT #57474

DEVILS CREEK CULVERT AT KODIAK AIRPORT

LOCATION: Section 15, T 28S, R 20W

USGS Kodiak D-2 SW

Lat. 57.75072 °N, Long 152.51211 °W

DATE: 2/5/2014

TYPICAL CULVERT SECTIONS **FIGURE 4**

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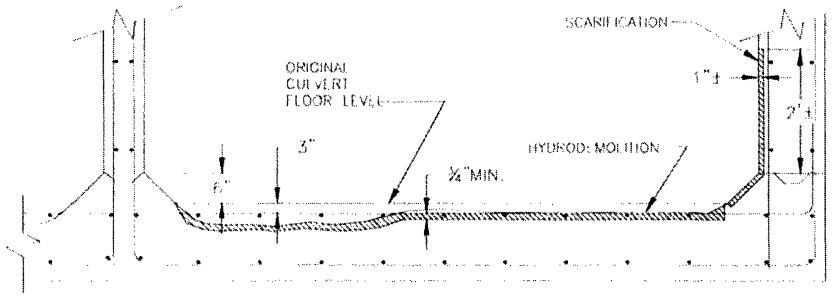
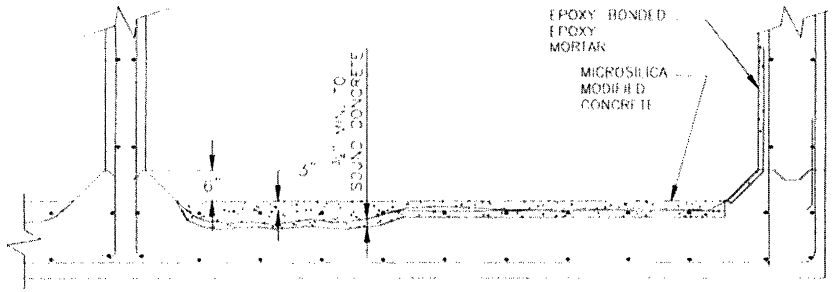


HYDRODEMOLITION DETAIL
N.T.S.

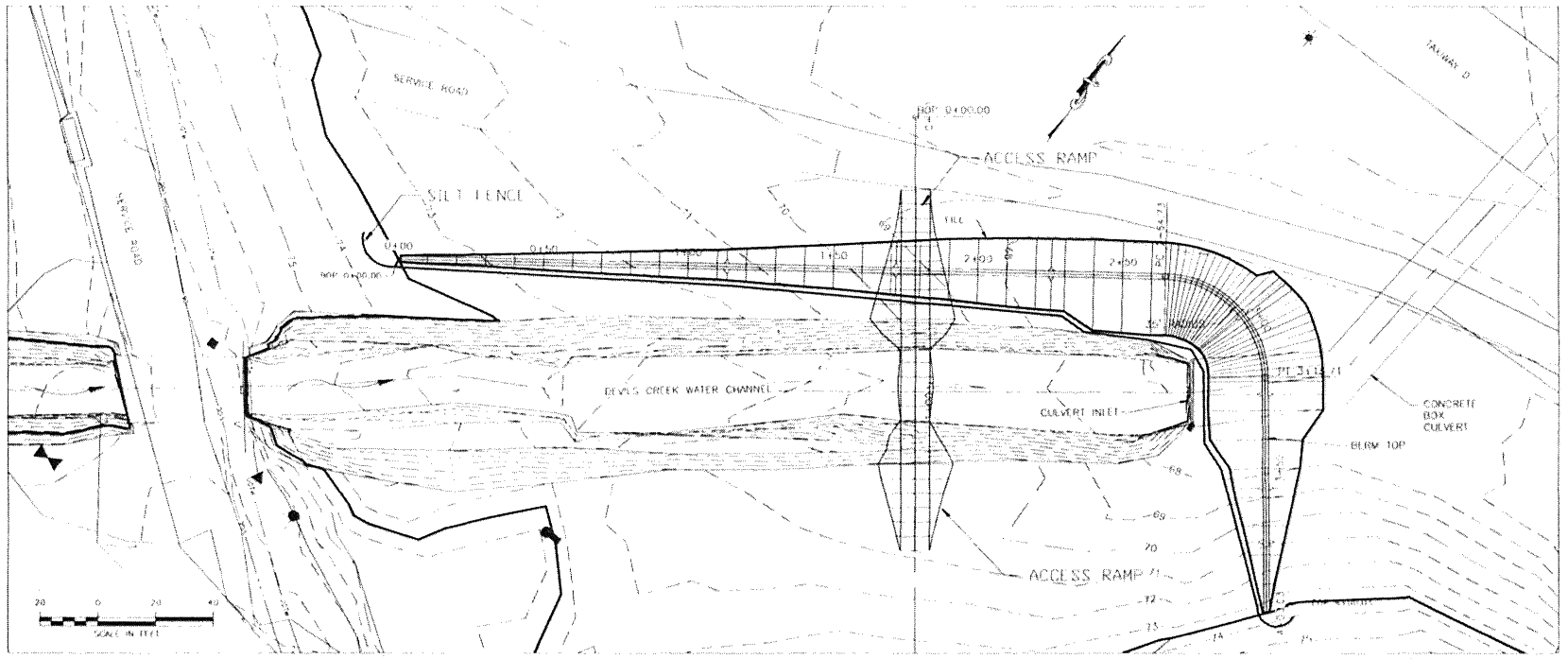


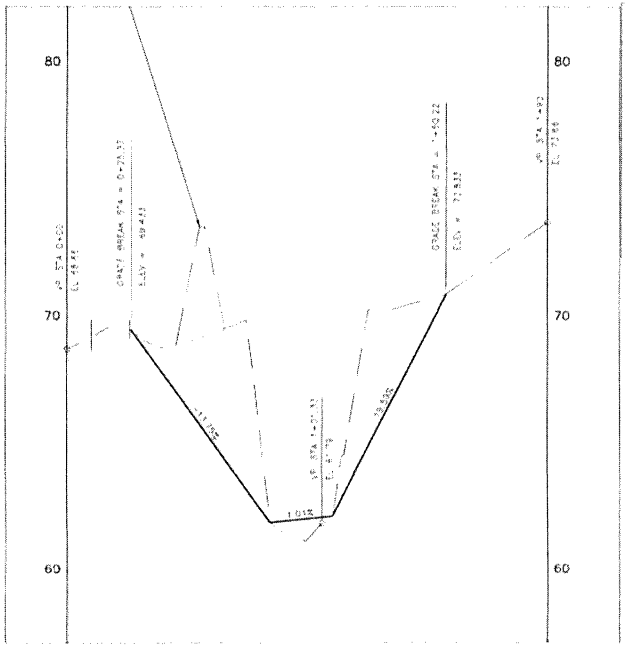
CULVERT REPAIR DETAIL
N.T.S.

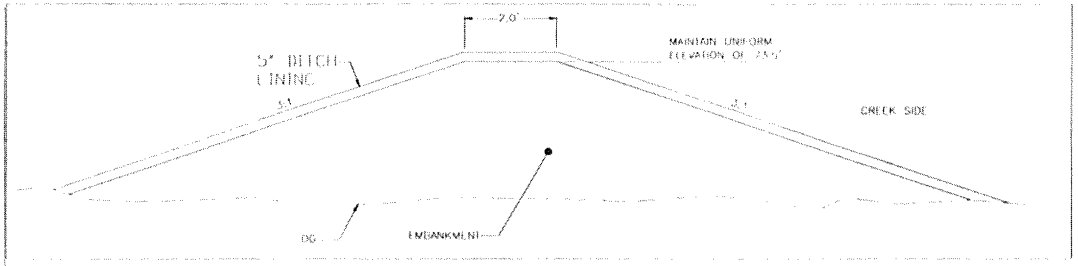
DF&G FISH HABITAT PERMIT APPLICATION
DOT PROJECT #57474
DEVILS CREEK CULVERT AT KODIAK AIRPORT
LOCATION: Section 15, T 28S, R 20W
USGS Kodiak D-2 SW
Lat. 57.75072 °N, Long 152.51211 °W
DATE: 2/5/2014

CULVERT REPAIR DETAILS FIG 5

W:\Environmental\Environmental Project Dwgs\53587 Devils Creek Culvert Repair\53587 fig 4_5 Sec dets.dwg 3/4/2014 12:48:02 PM, DWG To PDF.pc3



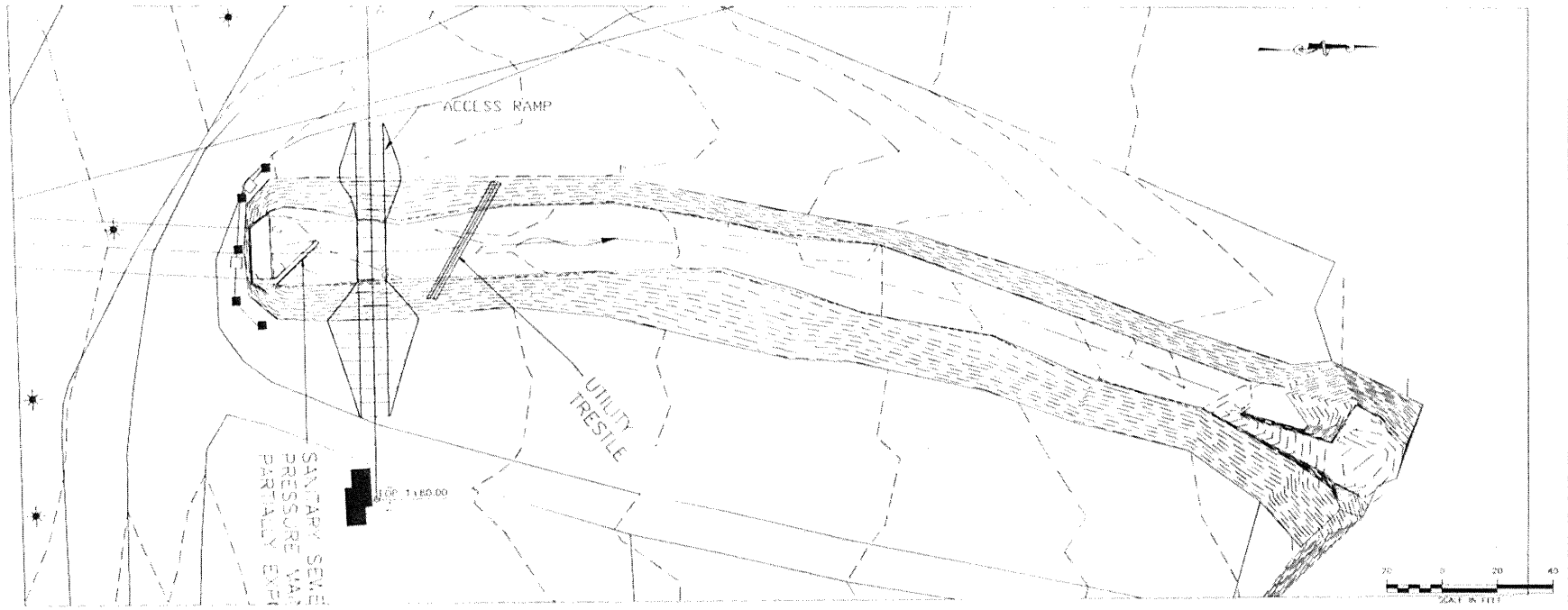


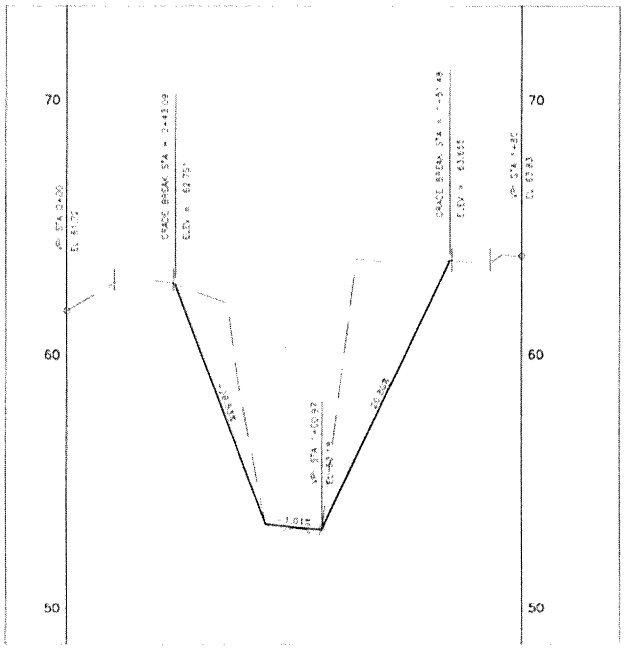


BERM TYPICAL SECTION
N.T.S.

DF&C FISH HABITAT PERMIT APPLICATION
DOT PROJECT #57474
DEVILS CREEK CULVERT AT KODIAK AIRPORT
LOCATION: Section 15, T 28S, R 20W
USGS Kodiak D 2 SW
Lat. 57.75072 °N, Long 152.51211 °W
DATE: 2/5/2014

PROPOSED BERM & ACCESS RAMP FIG. 6





DI &C FISH HABITAT PERMIT APPLICATION

DOT PROJECT #57474

DEVILS CREEK CULVERT AT KODIAK AIRPORT

LOCATION: Section 15, T 28S, R 20W

USGS Kodiak D-2 SW

Lat. 57.75072 °N, Long 152.51211 °W

DATE: 2/5/2014

NORTH ACCESS RAMP & SECTION FIG. 7

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Appendix F

(Not Used)

Appendix G

(Not Used)

Appendix H

(Not Used)

Appendix I

Aviation Materials Certification List

AIRPORT MATERIALS CERTIFICATION LIST (Central Region) (current 5/9/13)

Project Name Kodiak Airport, RSA Extension and Devils Creek Culvert Repair

Project Number AIP No. 3-02-0158-017-2014/53587 and AIP No. 3-02-0158-01x-201x/57474

Project Engineer Signature

Unshaded boxes indicate who approves the manufacturer's certificate of compliance or materials submittals.
If two boxes not shaded, either approving authority may be used.

Materials Item	Specification	Construction			Design		Statewide Materials		Remarks	Materials Certificate Location e.g. Binder #
		Project Engineer	Regional Materials or QA Engineer	Airport Ltg. Equipment Certification Program	Civil Design Engineer of Record	Electrical Design Engineer of Record	*Qualified Products List (QPL)	State Materials or QA Engineer		
D-701 STORM DRAINS AND CULVERTS										
Pipe										
PE Pipe or Arch, __ Diam. or ____ Rise & Span	D-701-2.2									
G-710 TRAFFIC CONTROL FOR ROADS, STREETS AND HIGHWAYS										
Traffic Control Devices	G-710-2.1								G-710 Materials approved on project with TCP conforming to Alaska Traffic Manual (ATM).	
L-100 RUNWAY AND TAXIWAY LIGHTING										
Runway Edge Light, Bi-Directional High-Intensity, L-862	L-100-2.1 a.(2)									
Taxiway Edge Light, Medium Intensity, L-861T	L-100-2.1 a.(4)									
Airport Signs, L-858, internally lighted	L-100-2.1 a.(5)									
Airport Signs, L-858, unlighted	L-100-2.1 a.(6)									
Airport Light Base, L-867	L-100-2.1 a.(7)									
Airport Light Base, L-867	L-100-2.1 a.(8)									
Airport Light Base, L-868	L-100-2.1 a.(9)									
Isolating Transformer, L-830	L-100-2.1 a.(10)									
Isolating Transformer, L-830	L-100-2.1 a.(11)									
Isolating Transformer, L-830-1	L-100-2.1 a.(12)									
Isolating Transformer, L-830-6	L-100-2.1 a.(13)									
Flush Runway Light Fixture	L-100-2.1 a.(16)									
Primary Hand Hole, L-868	L-100-2.1 a.(17)									
Wind Cone Primary Handhole, L-867	L-100-2.1 a.(18)									

*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.
See GCP 60-05 for submittal requirements.

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If two boxes not shaded, either approving authority may be used.

Materials Item	Specification	Construction			Design		Statewide Materials		Remarks	Materials Certificate Location e.g. Binder #
		Project Engineer	Regional Materials or QA Engineer	Airport Ltg. Equipment Certification Program	Civil Design Engineer of Record	Electrical Design Engineer of Record	*Qualified Products List (QPL)	State Materials or QA Engineer		
Handhole, L-867, Size B, Watertight	L-100-2.1 a.(19)									
Self-leveling silicone Sealer	L-100-2.1 b.									
Transformer Support Platform	L-100-2.1 c./Plans									
Power Adapter	L-100-2.1 d.									
Regularly Used Commercial Items	L-100-2.1 e.									
Lock Washers	L-100-2.1 f.									
Free Flowing Insulating Material	L-100-2.1 g.									
Lubricant and Sealant	L-100-2.1 h.									
Soft Gasket	L-100-2.1 i.									
Pedestals	L-100-2.1 j.									
Junction Box, Type II	L-100-2.1 k./Plans									
Concrete Mix Design	L-100-2.1 l. / P-610									
L-107 WIND CONE										
Wind Cones										
Type L-807, Style I-A, Size 1	L-107-2.2 a.									
Type L-807, Style I-B, Size 1	L-107-2.2 b.									
Type L-807, Style I-A, Size 2	L-107-2.2 c.									
Type L-807, Style I-B, Size 2	L-107-2.2 d.									
Type L-807, Style II, Size 1	L-107-2.2 e.									
Type L-807, Style II, Size 2	L-107-2.2 f.									
Wire	L-107-2.3									
Conduit	L-107-2.4									
Concrete Mix Design	P-610									
Paint										

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Materials Item	Specification	Construction			Design		Statewide Materials		Remarks	Materials Certificate Location e.g. Binder #
		Project Engineer	Regional Materials or QA Engineer	Airport Ltg. Equipment Certification Program	Civil Design Engineer of Record	Electrical Design Engineer of Record	*Qualified Products List (QPL)	State Materials or QA Engineer		
Priming for ungalvanized metal	L-107-2.6 a.									
Priming for galvanized metal	L-107-2.6 b.									
Orange	L-107-2.6 c.									
Wind Cone Fabric	L-107-2.7									
Lamps										
Incandescent	L-107-3.7 a.									
LED	L-107-3.7 b.									
Winch and Padlock	L-107-3.8									

L-108 UNDERGROUND CABLE

L-824 Cable										
5000 V	L-108-2.2/Plans									
600V	L-108-2.2/Plans									
Underground Electrical	L-108-2.2/Plans									
Telephone control	L-108-2.2/Plans									
Counterpoise Conductors	L-108-2.2/Plans									
Bare Copper Wire	L-108-2.3									
Cable Connections										
Cast Splice	L-108-2.4 a.									
Vulcanized Splice	L-108-2.4 b.									
Field-attached Plug-in Splice	L-108-2.4 c.									
Factory-molded Plug-in Splice	L-108-2.4 d.									
Taped Splice	L-108-2.4 e.									
Electrical Insulating Tape	L-108-2.4 e.									
Concrete Mix Design	P-610									

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Materials Item	Specification	Construction			Design		Statewide Materials		Remarks	Materials Certificate Location e.g. Binder #
		Project Engineer	Regional Materials or QA Engineer	Airport Ltg. Equipment Certification Program	Civil Design Engineer of Record	Electrical Design Engineer of Record	*Qualified Products List (QPL)	State Materials or QA Engineer		
Marker Tape	L-108-2.6									
Interstice Filler	L-108-2.7/Plans									
L-110 UNDERGROUND ELECTRICAL DUCT										
Bituminous Fiber Duct										
Type I, for concrete encasement	L-110-2.2 a.									
Type II, for direct burial	L-110-2.2 b.									
Asbestos Cement Duct										
Type I, for concrete encasement	L-110-2.3 a.									
Type II, for direct burial	L-110-2.3 b.									
Steel Conduit	L-110-2.4									
Concrete Mix Design	L-110-2.5/P-610									
Underground Plastic Conduit										
Rigid, non-metallic conduit Schedule 40 PVC	L-110-2.6 a.									
Type III, rigid, HDPE pipe	L-110-2.6 b.									
Flexible Metal Conduit	L-110-2.7									
Tapes										
Pipe Sealing tape	L-110-2.8 a.									
Corrosion preventive tape	L-110-2.8 b.									
P-157 EROSION, SEDIMENT AND POLLUTION CONTROL										
BMP Installations	P-157-2.5								P-157 Control and Stabilization Materials identified and documented in SWPPP and approved on project.	
P-181 CONCRETE ARMOR UNIT									Detailed specifications and requirements for this item are included in Appencix N of the specifications	
Cements	A 3.1									
Aggregates	A 3.2									
Water	A 3.3									

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Materials Item	Specification	Construction			Design		Statewide Materials		Remarks	Materials Certificate Location e.g. Binder #
		Project Engineer	Regional Materials or QA Engineer	Airport Ltg. Equipment Certification Program	Civil Design Engineer of Record	Electrical Design Engineer of Record	*Qualified Products List (QPL)	State Materials or QA Engineer		
Ready-Mixed Concrete	A 3.4									
Admixtures	A 3.5									
Curing Compound	A 3.6									
P-189 GABION										
Wire Mesh	P-189-2.1									
Gabion Basket	P-189-2.2									
Diaphragms	P-189-2.3									
Geotextile for Separation	P-189-2.5									
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.(2)									
P-511 MICROSILICA MODIFIED CONCRETE										
Portland Cement	P-511-2.01									
Fine Aggregate	P-511-2.01									
Course Aggregate	P-511-2.01									
Sand for Abrasive Finish	P-511-2.01									
HMWN Resin	P-511-2.01									
Microsilica Admixture	P-511-2.01									
Epoxy Reson	P-511-2.01									
Epoxy Resin Mortar	P-511-2.01									
Concrete Mix Design	P-511-3.03									
P-555 ENGINEERED MATERIAL ARRESTING SYSTEM										

*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.
See GCP 60-05 for submittal requirements.

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If two boxes not shaded, either approving authority may be used.

Materials Item	Specification	Construction			Design		Statewide Materials		Remarks	Materials Certificate Location e.g. Binder #
		Project Engineer	Regional Materials or QA Engineer	Airport Ltg. Equipment Certification Program	Civil Design Engineer of Record	Electrical Design Engineer of Record	*Qualified Products List (QPL)	State Materials or QA Engineer		
Materials	P-555-2.1								EMAS Sample QA Plan is included in Appendix O of the Specifications	
P-556 EMAS SNOW REMOVAL EQUIPMENT										
Equipment	P-556-2.1									
P-605 JOINT SEALING FILLER										
Joint Sealers	P-605-2.1/Plans									
P-610 STRUCTURAL PORTLAND CEMENT CONCRETE										
Concrete Mix Design	P-610-3.2									
Premolded Joint Material	P-610-2.7									
Joint Filler	P-610-2.8/P-605									
Steel Reinforcement	P-610-2.9									
Cover Materials for Curing	P-610-2.10									
Sheet Materials	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									
Paint, Solvent Base										
White	P-620-2.2									
Yellow	P-620-2.2									
Reflective Media, Combined Cert. with Paint	P-620-2.3									
P-640 SEGMENTED CIRCLE										
Panel-Type										

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Materials Item	Specification	Construction			Design		Statewide Materials		Remarks	Materials Certificate Location e.g. Binder #
		Project Engineer	Regional Materials or QA Engineer	Airport Ltg. Equipment Certification Program	Civil Design Engineer of Record	Electrical Design Engineer of Record	*Qualified Products List (QPL)	State Materials or QA Engineer		
Panels	P-640-2.2 a.(1), (2) & (3)									
Reflective Sheeting	P-640-2.2 a. (4)									
Stanchions	P-640-2.2 b./Plans									
Hardware and Fasteners										
Gusset and splice plates	P-640-2.2 c.(1)									
Fasteners	P-640-2.2 c.(2)									
P-681 GEOTEXTILE FOR SEPARATION AND STABILIZATION										
Geotextile for Separation	P-681-2.1a									
Geotextile for Stabilization	P-681-2.1b									
P-682 GEOTEXTILE FOR DRAINAGE AND EROSION CONTROL										
	P-682-2.1									
P-684 FLOATING SILT CURTAIN										
Curtain Fabric	P-684-2.3									
Flotation	P-684-2.4									
Lines and Attachment Points	P-684-2.5									
Anchor/Ballast	P-684-2.6									
ADDITIONAL MATERIALS										

*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.
See GCP 60-05 for submittal requirements.

Appendix J

(Not Used)

Appendix K

(Not Used)

Appendix L

(Not Used)

Appendix M

(Not Used)

Appendix N

Core-Loc Specification

CORE-LOC NORTH AMERICA

GENERAL CONTRACT SPECIFICATIONS

FOR

CORE-LOC® ARMOR UNITS

AUGUST 2013

CORE-LOC ARMOR UNITS					
Revision	**Date**	**Author**	**Checked**	**Status**	**Approved**
01	19 November 2003	JHED		Draft	
02	24 November 2003	JHED	GKP/GdeFR	First Issue	
03	11 January 2005	JHED	GKP	Second Issue	
04	19 July 2005	JHED	GKP	Third Issue	
05	15 May 2012	GKP	AHH	For Construction	
06	15 August 2013	LAC	AHH	For Construction	

REVISION	DATE	CHANGES	MADE BY
03	11.01.05	Revised A1.1, 2, 4.4, 5.1, 5.3,5.4.2.3,6.2,6.3,7.1,7.3,7.4, Added A5.4.3	GKP
04	19.07.05	Note added to table in A5.3	JHED
05	15.05.12	US Customary units added GKP	GKP
06	15.08.13	Revised A7.4, Added A7.5	LAC

GENERAL CONTRACT SPECIFICATIONS

FOR

CORE-LOC® ARMOR UNITS

TABLE OF CONTENTS

PAGE NO.

A 1. SCOPE

A 1.1 General

The Core-loc® is a proprietary breakwater armor unit developed and patented by the US Army Corps of Engineers.

The licensee for the United States of America, Mexico and Canada is Prestedge Retief Dresner Wijnberg USA LLC (PRDW) who are consulting coastal and ocean engineers with offices in Cape Town South Africa, Tacoma USA and Santiago Chile. PRDW's role as licensee is primarily to provide technical input and support to the project design engineers and the contractor with respect to the use of Core-loc concrete armor units. PRDW trade under the name of Core-loc North America (CLNA).

For the use of Core-loc, CLNA will charge a fee per tonne of Core-loc manufactured by the Contractor. This fee includes specific technical assistance, provided during the design and construction stages of the project. The Contractor will have to enter into a sub-license agreement which will give him the rights to manufacture the Core-loc units under license and carry out the construction work to quality levels defined in terms of this specification that would be monitored, as set out by the Licensor, the US Army Corps of Engineers.

This specification covers the manufacture of pre-cast concrete Core-loc armor units, storage of the units, transporting and placing the Core-loc units in the primary armor layer of a breakwater.

The Contractor shall prepare a Quality Assurance plan for the manufacture and placement of Core-loc for approval by the Engineer prior to commencement of the work.

A 2. DEFINITIONS

For the purposes of this specification the following definitions shall apply.

Breakwater: a structure consisting of rock rubble and Core-loc armor units, constructed in the sea primarily to provide a protected harbor basin.

Core: graded rockfill forming the central bulk of the breakwater cross-section.

Underlayer: graded rockfill enclosing the core.

Primary armor: precast concrete Core-loc armor units forming the outer layer to the breakwater.

Tonne: (abbreviated t): metric ton, 1000 kg.

Core-loc packing density: the number of Core-loc units per unit area in the armor layer. The area of the Core-loc armor layer is calculated as the area of the plane passing through the centre of the armor layer as shown on the drawings.

Units: Units used thoughout are Metric SI units. Equivalent US Customary units are indicated in brackets.

A 3. MATERIALS

A 3.1 Cements

All cements used for manufacture of Core-loc units shall be Portland Cement Type I, II or III complying with ASTM C150. Cement shall have a C_3A content of less than 8%.

A 3.2 Aggregates

Coarse and fine aggregates shall conform to the requirements of ASTM C33.

All aggregates shall comply to the restrictions on reactive materials as defined in ASTM C33. The Contractor shall present results of tests carried out using test method ASTM C1293 on the proposed concrete mix to the Engineer for approval. Alternatively the Contractor may present a report on petrographic analysis of the aggregate carried out in accordance with ASTM C295. The source of the aggregates should have a record of satisfactory performance in the region. Coarse aggregates shall also comply with the relevant Class designation for the Weathering Region in which the works are located as defined in Figure 1 of ASTM C33. In Severe Weathering Regions the coarse aggregates shall comply with Class Designation 3S, and in Moderate or Negligible Weathering Regions with Class 3M, as defined in Table 3 of ASTM C33.

Coarse aggregates shall comply with grading sizes 56 or 57 in accordance with Table 2 of ASTM C33, unless the Contractor can demonstrate acceptable performance from a mix comprising different aggregate gradings.

A 3.3 Water

Water used for concrete shall be potable fresh water, free from injurious amounts of acids, alkalis, organic matter, and other substances that may impair the strength or durability of concrete.

A 3.4 Ready-Mixed Concrete

Ready-mixed concrete shall comply with the requirements of this Specification, and with ASTM C94. The concrete mix shall be proportioned in accordance with Option C as defined in ASTM C94.

A 3.5 Admixtures

Admixtures conforming to the requirements of ASTM C494 may be proposed by the Contractor to improve the concrete mix properties. In all cases the Contractor is to submit, full details of the admixtures proposed and the manner in which it will be mixed with the concrete, to the Engineer for approval. The use of additives containing calcium chloride is forbidden.

A 3.6 Curing Compound

In all cases where a concrete curing compound is specified, the curing compound shall be grey or white pigmented membrane forming material complying with ASTM specification C 309, except that the maximum permissible water loss in the test shall be 0.0084 pound per square foot.

A 4. PLANT

A 4.1 Batching Plant

The Contractor shall ensure, by regular examination, calibration, and tests, that the batching system functions efficiently and accurately and that hoppers and cement containers are kept dry and clean. The batching plant shall be such that

a) cement may be batched to any accuracy of within 2 % of the mass required
b) water may be measured, by mass or by volume, to an accuracy of within 2 % of the quantity required and
c) aggregate may be batched to an accuracy of within 3 % of the mass required.

In the case of an automatic plant, the weighing scales shall be so interlocked that a new batch of materials cannot be delivered until the weighing hoppers have been completely emptied or the previous batch and the scales are in balance.

Where discharge of materials from the hoppers is manually controlled, a method of signaling shall be employed to ensure that ingredients are not omitted, or are not added more than once, when a batch of concrete is being made up.

A 4.2 Mixing Plant

The type and capacity of mixing machines shall be such that the rate of output of concrete is suitable for the rate of concreting. Each machine shall be capable of producing a uniform distribution of the ingredients throughout the batch and shall comply with the specification to which the manufacturer claims it has been manufactured. Worn or bent blades and paddles shall be replaced. The inner surfaces of the mixer shall be clean and free from hardened concrete.

A 4.3 Vibrators

Vibrators shall be capable of fully compacting each layer of concrete where compaction by vibration is specified. As least one standby vibrator shall be available for every three (or smaller number of) vibrators necessary to maintain the rate of placing. Formwork surface vibrators may be used in conjunction with poker vibrators if required.

A 4.4 Formwork

Formwork for manufacturing of the Core-loc armor units shall be made of steel, with plate thickness not less than 0.197 inches. The use of timber or other materials for formwork is subject to approval of the Engineer.

CLNA will supply formwork drawings to the Contractor in terms of the sub-license agreement. The Contractor shall be responsible for producing shop drawings which shall be submitted to the Engineer and to CLNA for approval.

Appropriate stiffeners shall be used to avoid excessive distortion of the forms.

The Core-loc form does not normally have any bottom, and it is placed directly onto the casting bed surface. A sheet of polyurethane or pvc, or other suitable bond breaker, shall be used on the surface of the bed.

The Contractor shall pay special attention to the sealing of the forms so as to prevent leakage of mortar at the joints and shall continuously attend to the forms to ensure a satisfactory end product. The Contractor shall take all necessary precautions to prevent damage to the units while the concrete is still green and to prevent units from being damaged during stripping or lifting.

Bolt and rivet holes in the formwork shall be countersunk so that a smooth surface of the desired contour is obtained. Forms shall be free of bulge and warp at all times. As far as practical, form marks shall conform to the general lines of the precast units.

The formwork shall be designed and constructed so that it can be removed without injuring the concrete. No ties or struts will be permitted to pass through the space to be filled with concrete. All methods of formwork support shall be external. All joints shall be sufficiently watertight to prevent leakage of mortar.

Sharp junctions must be avoided and formwork shall be suitably rounded internally along junction lines.

Forms shall be inspected prior to the placing of concrete. Dimensions shall be checked carefully and any bulging or warping shall be remedied and any dirt or debris within the forms shall be removed. Special attention shall be paid to bracing, and where forms appear to be braced insufficiently or built unsatisfactorily, either before or during placing of the concrete, the Engineer may order the work to be stopped until the defects have been corrected to his satisfaction.

Forms shall be treated with non-staining mineral oil immediately before placing concrete.

Before re-use forms shall be reconditioned and surfaces that will be in contact with concrete, shall be thoroughly cleaned without damage to the surfaces.

A 4.5 Lifting Machinery

All cranes and gantries together with all slings, ropes and hooks, to be used on the site of the works shall be tested and certified as required by legislation.

Breakwater cranes shall be equipped with load measuring devices, and shall be provided with means to monitor the location of the crane hook in three degrees of freedom whether in air or underwater.

Cranes or gantries to be used for handling precast concrete armor units shall be capable of lifting and lowering the maximum rated load without shock or impact that may cause damage to the units.

Lifting slings or clamps used to handle concrete armor units shall be capable of supporting the unit without causing local stresses that may cause damage to the units.

A 5. CONSTRUCTION

A 5.1 General

Before commencement of manufacture of Core-loc units, the Contractor shall:

a) enter into a sub-license agreement with CLNA pertaining to the rights to the use of the Core-loc® unit on the project and payment of the royalties associated therewith.
b) submit a quality assurance plan which will ensure compliance with this Specification and provide acceptable documentary proof that all specified operations have been carried out satisfactorily.
c) submit a method statement for Core-loc manufacture (including concrete mix designs, formwork, curing, method of handling and transport to storage).
d) Submit a method statements for Core-loc transport and placing, and for survey of placed Core-loc armor layers.

A 5.2 Safety

Construction plant and equipment shall only be operated by personnel who are suitably trained, licensed and qualified for the particular item of plant.

Stacking areas for concrete armor units shall be monitored and controlled by an experienced supervisor to ensure that they present no danger to personnel working in the vicinity.

A 5.3 Concrete Quality

Concrete for Core-loc units shall have the following characteristics:

TABLE 5-1: CORE-LOC CONCRETE CHARACTERISTICS

Criterion	Value	Test Method	Notes
Nominal 28 day compressive strength	35 Mpa (5 076 psi)	ASTM C39	Acceptance criteria shall be in accordance with ACI 318 or ASTM C94
Nominal 28 day tensile strength	3.5 Mpa* (5.076 psi)	ASTM C78	
Minimum tensile strength before units can be moved	2 Mpa (290 psi)	ASTM C78	
Minimum cement content	340 kg/m^3 (21.2 lb/ft^3)		
Maximum water cement ratio	0.50		
Minimum density	2300 kg/m^3 (143.6 lb/ft^3) 2400 kg/m^3 (149.8 lb/ft^3)	ASTM C138	For 5% air entrainment For <2% air entrainment
Air entrainment	5% ± 1.5%	ASTM C231	Applicable only in regions where air or water temperature may fall below freezing point
Maximum temperature of concrete during placing	30 deg. Celsius (86 deg. Fahrenheit)		
Maximum temperature of concrete during hydration	75 deg. Celsius (167 deg. Fahrenheit)		
Minimum temperature of concrete during placing	7 deg. Celsius (45 deg. Farenheit)		
Slump, at placing	30 – 80 mm (1 1/4 in – 2 3/4 in)	ASTM C143	

* 4.5 Mpa (653 psi) for units larger than 8.3 m^3 (11.1 yd^3)

A 5.4 Methods and Procedures

A 5.4.1 Preparation of Casting Yard

The Contractor shall design and construct a facility for the casting, handling and storage of the Core-loc armor units. The location, extent and details shall be subject to the approval of the Engineer.

The yard shall be so designed as to facilitate all operations associated with the setting up and handling of formwork, casting, stripping, curing, handling and storage of the units. The stacking area shall be designed to accommodate the high loading intensities imposed by the stacked units without excessive settlement.

Casting beds shall be properly aligned and leveled. The casting and storage area shall be provided with even and compacted access roads to enable safe handling and transport of units.

A 5.4.2 Manufacture and Storage of Core-loc Units

A 5.4.2.1 General

Since Core-loc units are manufactured without steel reinforcement the concrete strength and in particular the consistency of tensile strength is of critical importance. The development of cracks in the concrete which severely weakens the tensile strength of concrete shall therefore be prevented. Aspects that need special attention include:

a) Prevention of cracks in concrete that can develop due to restraint by the formwork on concrete during dry shrinkage after casting.
b) Prevention of cracks in concrete that can develop as a result of excessive temperature difference between concrete core and surface during curing.
c) Prevention of cracks in concrete that can develop as a result of inappropriate handling during formwork removal, transport and placing in storage and finally in the breakwater armor layer.

A 5.4.2.2 Casting

Concrete shall be transported and placed within 60 minutes of mixing. Concrete shall be poured in layers not more than 450 mm (18 in) thick. In addition, the layer thickness shall be less than the length of the vibrators used.

Vibration shall continue until practically all air bubbles have risen to the surface and shall be stopped before laitance or excess water appears.

Special arrangements, approved by the Engineer, shall be made when air temperatures exceed 35 °C (95°F). In all cases the concrete temperature on placing shall be less than 30 °C (86° F).

The formwork support of the self weight of the unit shall not be removed before the concrete has attained sufficient strength to support its own weight and any load that may be imposed on it.

The formwork of each unit shall be filled in one pour of several batches to form a complete unit. The exposed surfaces shall be wood-floated.

If the filling of a mould is stopped for more than half an hour due to a breakdown of plant or any other cause whatsoever, the unit shall be submitted to the Engineer for acceptance or rejection. If rejected, the unit shall be removed from the works by the Contractor at his own expense.

A 5.4.2.3 Curing

Curing shall commence as soon as possible after placing of the concrete for un-shuttered parts, and immediately after removal of formwork elsewhere.

The following curing methods are permissible:

i) Retaining forms in place on vertical surfaces for seven days after casting provided they are made with non-absorbent facing materials and that the forms do not restrain the unit and cause shrinkage cracks.

ii) Covering with burlap or similar moisture retaining materials. The materials shall be kept continually moist for seven days after casting and shall not be allowed to dry out as alternate wetting and drying is detrimental to the curing process.

iii) Sprinkle or spraying with water. This may be done at frequent intervals provided that the concrete surface remains continuously moist for seven days after casting and is not allowed to dry out between wetting. Erosion of the fresh concrete surface must be avoided.

iv) Covering with plastic sheeting, or other waterproof covering for seven days after casting. The covering material shall be firmly and continuously held in place along its edges such that the concrete surface is not allowed to dry out. Care must be taken not to tear, puncture or otherwise disrupt the continuity of the curing film.

v) Liquid membrane-forming curing compounds which comply with the requirements of ASTM C309 may be used. The formulation must be such as to form a moisture retentive film shortly after being applied and must not be injurious to Portland cement paste. White or grey pigments or dyes must be incorporated to enable the compound to be visible on the surface for inspection purposes.

For unformed surfaces the compound shall be applied after finishing and as soon as the free water on the surface has disappeared and no water sheen is visible. When forms are removed, the exposed concrete surface shall be wet with water immediately and kept moist until the curing compound is applied. Immediately prior to application, the concrete shall be allowed to reach a uniformly damp appearance with no free water on the surface. Application of the compound should then begin at once. The compound should be applied at a uniform rate with two applications at right angles to each other to ensure complete coverage, and may be applied by hand or power sprayer. Pigmented compounds must be adequately stirred to assure even distribution of the pigment during application, unless the formulation contains a thixotropic agent which prevents settlement.

The surface shall be prepared, and the curing compound must be applied, strictly in accordance with the manufacturer's printed instructions. The compound manufacturer must supply a certificate confirming compliance with ASTM C309.

In the case of concrete surfaces with run-off problems, it may be necessary to apply more than one coat of membrane forming curing compound to obtain the specified total or cumulative application rate.

When the wind velocity exceeds 5 m/s (11 mph) and/or the ambient temperature is above 25 deg C (77° F) and/or the relative humidity is below 60%, the initial 24 hour curing of concrete surfaces not covered by formwork shall be carried out by continuous spraying with fresh water, unless otherwise permitted by the Engineer.

All water for curing shall be clean, fresh water and under no circumstances will seawater be permissible.

The Engineer's prior written approval of the curing method to be used must be obtained before any concrete is cast. Units which in the Engineer's opinion have not been cured adequately shall be rejected.

A 5.4.2.4 Defects

Concrete surfaces shall not be patched or cement washed. The presence of areas of honey-combing or segregation of the aggregate shall be considered sufficient cause for rejection of

a unit. Rejected units shall not be used in the works but shall be removed from site at the Contractor's expense.

A 5.4.2.5 Records

The units shall be clearly and legibly marked showing a serial number and the date on which the unit was cast. Such markings must be permanent (impressed 10 mm (1/2 inch) into the fresh concrete before setting) so that they can be easily read for a period of at least one year after casting. In addition the number of each Core-loc shall be painted in red with the aid of number stencils 250 mm (10 in) number height) on opposing facets of the Core-loc with an approved white paint not longer than 7 days before placing of Core-loc units in the breakwater armor layer.

A record shall be kept by the Contractor of all serial numbers, the dates of casting, mix proportions, date of placing, cube and beam strengths, slump values and other remarks for all units. A weekly return showing the details shall be submitted to the Engineer.

A 5.4.2.6 Handling and storing

The Core-loc unit shall not be moved until the concrete has reached a tensile strength of at least 2 Mpa (290 psi), as determined by flexural tests or by correlation with compressive test results.

Lifting arrangements required to move the concrete units to storage shall be such that excessive stresses in the unit do not occur, and shall be subject to the approval of the Engineer.

The units shall be stored in a neat and orderly manner. The serial number and date of casting of each unit shall be clearly visible at all times.

A 5.4.3 Handling and Placing of Units

The Core-loc units shall be kept in storage until the specified 28 day compressive and tensile strengths have been achieved before they are placed in the primary armor layer on the breakwater.

The units shall be placed on an approved under layer as indicated on the drawings or as directed by the Engineer. All units shall be in contact with the rock underlayer. The units

shall be placed in a single layer and with judgment and care and as economically as possible. All units shall be placed in deliberately varied attitudes, with neighboring units having different attitudes, each unit at its corresponding pre-determined location and allowed to take up a natural and stable position. Armor units shall be placed at slope packing densities as specified. The profiles shown on the drawings or prescribed by the Engineer shall be adhered to as closely as practically possible.

The area applicable for calculation of the number of Core-loc units in the armor layers shall be the slope area of the plane passing through the centre of the theoretical cross-section area of the armor layer specified on the drawings.

Equipment used in this operation shall be of adequate capacity to ensure that the units are handled with care to avoid damage to the unit being placed as well as to the units already in position. Lifting and placing shall be with an approved clamp type appliance or similar approved. Divers may be required to assist with placing of units under water.

Core-loc units shall be placed by land based equipment. Floating equipment shall not be allowed for placing of Core-loc units because of the risk of the Core-loc unit impacting on the breakwater while being suspended from floating equipment likely to be in motion due to wave action.

The co-ordinates of each armor unit shall be predetermined and each predetermined location shall be numbered. In placing the Core-loc units, care shall be taken not to impact on the rock underlayer or previously placed units and the placement clamp or sling around the unit shall only be released after the unit has come to rest on the bed. After a Core-loc unit has been placed the number on the Core-loc and the location number shall be recorded as well as its actual X, Y and Z co-ordinates.

Units that are damaged in any way during placing shall be removed from the site as directed by the Engineer at no additional cost to the Owner. Damaged or rejected units will not be paid for nor will those which are washed out of position during the contract.

A 5.4.4 Test Section Placement

The Engineer may instruct the Contractor to build a test section layer of Core-loc units on dry land before working on the breakwater. The Core-loc placing team will have to place Core-loc units on a slope similar to that of the breakwater underlayer. The units are to be placed at predetermined positions at the specified packing density and with varied attitudes. The Contractor is to use the survey equipment that will be used on the contract to place the units

and to surv3ey the placed unit positions. To simulate the placement of units underwater, the crane operator must place the units without being able to see the units.

Only once the Engineer is satisfied with the Contractor's placing and surveying capabilities will the Contractor be allowed to start placing units on the breakwater.

A 6. TOLERANCES

A 6.1 Core-loc Dimensions

The Core-loc formwork shall be fabricated so that the leading dimensions are within a tolerance of -0mm/+10mm. (-0 in / +1/2 in).

The weight of all Core-loc units, when weighed in accordance with clause A7.2 of this Specification, shall equal or exceed 98% of the nominal weight.

A 6.2 Surface Profiles and Underlying Rockfill

Underlying rock material shall be placed to levels, dimensions and slopes shown on the drawings. When the surface profile is measured, using the techniques specified, it shall comply with the vertical tolerances as shown in the following table:

TABLE 6-1: VERTICAL PLACING TOLERANCES FOR ROCK MATERIALS

Depth of placing below low water	Placed rock underlayer with gradings where W_{em} is greater than 300 kg (660 lbs)	
	On individual measurements (m)	Design profile to actual mean profile (m)
Dry, i.e above low water	±0.3 D_{n50}	+ 0.35 D_{n50} - 0.25 D_{n50}
Less than 5m (16 ft)	± 0.5 D_{n50}	+ 0.6 D_{n50} - 0.4 D_{n50}
5-15m (16 ft – 50 ft)	± 0.5 D_{n50}	+ 0.6 D_{n50} - 0.4 D_{n50}
Greater than 15m (50 ft)	± 0.5 D_{n50}	+ 0.6 D_{n50} - 0.4 D_{n50}

Note: * All tolerances refer to the design profile compared with the mean actual profile unless stated otherwise.

* D_{n50} is the median nominal stone diameter in the underlayer, which is calculated as the cube root of the volume of the stone. The volume shall be calculated by dividing the mass of the stone by the saturated surface dry density.

Notwithstanding the tolerances in the above table, the following shall apply to armor layers:

- The tolerances on two consecutive mean actual profiles shall not be negative.
- The slope shall be sufficiently regular to avoid any Core-loc unit being out of profile, and at the same time sufficiently rough to avoid any abnormal slipping due to settlement.

Notwithstanding any accumulation of positive tolerances on underlying layers, the thickness of the underlayer shall not be less than 80% of the nominal thickness when calculated using mean actual profiles. Where an accumulation of positive tolerances arises and is acceptable to the Engineer, the position of the design profiles will need to be adjusted to suit.

Where ordered by the Engineer, the Contractor shall, at his own expense, remove rubble outside the specified profiles irrespective of whether the excess is due to faulty placing or due to displacement of the rubble by sea action.

A 6.3 Core-loc Placement

The placing accuracy of the Core-loc units in the horizontal plane (x – y plane) shall be the lesser of 500 mm (20 in) or C/6 relative to its predetermined location and using the armor unit centre of gravity to define its location. In addition, armor units shall be placed to obtain optimum interlocking, ensuring that each block is in contact with the underlayer and that the maximum cylinder that can be pushed through the Core-loc layer has a diameter of less than 0.264C, where C is the height of the Core-loc unit.

The placing density shall be 95% to 105% of the theoretical packing density given in the drawings.

A 7. TESTING

A 7.1 Concrete

Testing of concrete shall comply with the requirements of this Specification, and of ACI 301.

Samples shall be taken at the rate of one sample for the first 50 cubic metres (65 cubic yards) of concrete cast on any day, and thereafter at one additional sample per 100 cubic metres (130 cubic yards). Samples shall be taken at the point of placement.

Each sample shall be tested for slump in accordance with ASTM C143. Strength tests shall be carried out on three test specimens taken from each sample. Compressive strength shall be tested just prior to form removal, and at 28 days or at other ages as specified by the Engineer (ie 6 test cylinders required). Tensile strength shall be tested for each sample in accordance with ASTM C78 just prior to form removal, and at 28 days or at another age as specified by the Engineer (ie 6 test beams). The tensile (splitting) strength test (ASTM C496) may be used in place of the simple beam test only when sufficient tests have been carried out to provide a reliable correlation between the results for the two tests. When a sufficient number of consistent tensile strength tests have been carried out so as to give a reasonable correlation between compressive and tensile strengths, the need for tensile testing may be reduced by the Engineer.

A 7.2 Unit Weights of Core-loc

The Contractor shall check the weight of at least 2% of the Core-loc units no earlier than 28 days after casting, using an approved and certified weighing device.

A 7.3 Survey of Underlayer and Toe

Measurements shall be carried out using a probe with a special spherical end of diameter $0.5D_{n50}$, suspended vertically from a crane. D_{n50} is the median nominal stone diameter in the underlayer, which is calculated as the cube root of the volume of the stone. The volume shall be calculated by dividing the mass of the stone by the saturated surface dry density. The probe shall be connected to a rigid stem with a rigid connection between stem and spherical end. The length of the stem shall be as required, and the probe shall have sufficient mass to limit excessive movement during observations. Alternatively, the Contractor may propose alternative survey methods using sonar below water level and conventional survey methods above. A real time kinematic GPS system, mounted on the top of the crane and with an electronic sensor to obtain the correct distance between the receiver and the bottom of the probe, is to be used to measure and store the X, Y and Z position of the probe. This system must be able to give an accuracy of within 20mm (3/4 in) in all direction.

Measurements shall be taken on the slope profile at least every C metres, measured along the slope, including the top and the bottom of the slope, where C is the height of the Core-loc unit.

Measurement profiles shall be at intervals along the length of the structure approved by the Engineer. The survey intervals shall be at not more than 10 m (30 ft) apart, and shall be at more frequent intervals if instructed by the Engineer (e.g. where the profile is changing rapidly or on tight-radius curves). No layer shall be covered by a subsequent layer until the profile of the former layer has been approved by the Engineer.

A 7.4 Survey of Core-loc Units

The armor layer shall be inspected visually above and below water jointly by the Contractor and the Engineer to ensure a consistent armor layer has been accomplished. The Engineer may order the Contractor to replace existing units or place additional units at locations where he considers non-conformance with the armor placing requirement.

The crane placing Core-loc units is to have a real kinematic GPS system mounted on it with an electronic sensor to obtain the correct distance between the receiver and the center of the Core-loc. This system must be able to give an accuracy of within 20mm (3/4 in) in all directions. The X, Y and Z co-ordinates of the centroid of each placed Core-loc unit are to be recorded once the unit has been lowered into its final position, but prior to it being released by the lifting cable. These placed coordinates are to be stored in a data collecting system. At the end of each day of placing the positions of the placed units are to be recorded and submitted to the Engineer in an electronic and a hard copy format.

The Contractor may use a placing assistance system such as POSIBLOC™ as an alternative to the kinematic GPS system to place the armour units. Details of the POSIBLOC™ system are presented under Annexure A of this specification. Proper use of the system allows for much better accuracy in recording as-built information. The Contractor must ensure that all provisions are made for the correct operation of this placing system including training on the use of the system.

At the end of each week the Contractor is to submit a report on the placed Core-loc units to the Engineer for approval. This report shall include a record of each Core-loc unit placed, its number, its theoretical coordinates, its actual placed coordinates, the deviation, the date of casting and the date of placement.

If it is established that the tolerances as specified under clauses A6.1 or A6.2 are not complied with, a joint visual inspection by the Contractor and the Engineer shall be done (either above and/or below water depending on the zone concerned).

A 7.4.1 Underwater Video and Sonar Surveys

The underwater inspection shall be done using underwater video recording (with on-line remote video display above water on board the survey boat) and a sonar survey of the underwater side slope of the breakwater with equipment as specified. The video recording shall clearly indicate the inscribed or painted numbers of the Core-loc units at the location concerned. The date and time shall also be recorded on the video image.

The video and sonar survey recordings shall be submitted to the Engineer for evaluation.

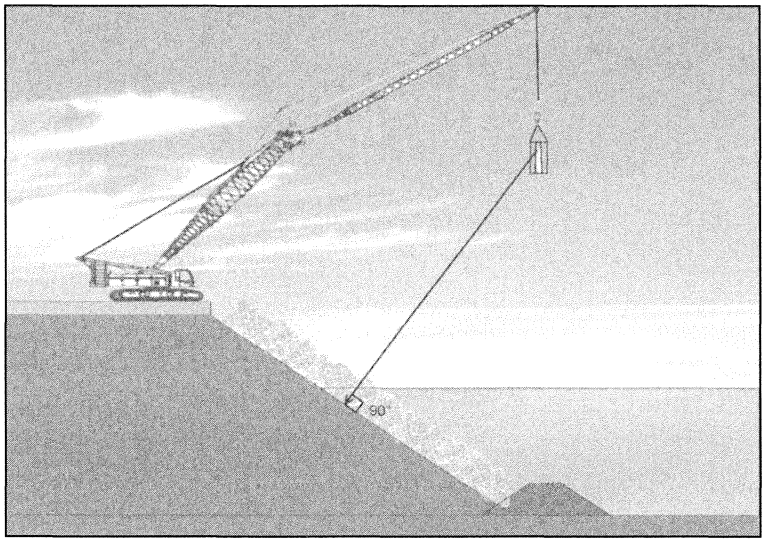
A 7.5 As-Built Photographic Records

Daily photographs of the placed Core-loc units shall be submitted to the Engineer for evaluation. Where practical this should include underwater photographs.

Photographs must include physical chainage markers to enable identification of Core-loc placement rows and columns.

Land based photographs shall be taken with the photographer suspended from a crane. The photographs shall be taken at an angle normal to the underlayer slope as indicated in the figure below.

FIGURE 7-1: ANGLE OF AS-BUILT PHOTOGRAPHIC RECORDS RELATIVE TO UNDERLAYER SLOPE



Each photograph should present an area with average width of approximately 7 to 10 Core-locs. Photographs should have a sufficiently high resolution to enable zooming in to an area showing only four Core-locs without visible loss in resolution.

An example photograph showing an average number of 10 rows of Core-locs above the water surface is presented in Figure 7-2 below.

FIGURE 7-2: EXAMPLE OF AS-BUILT PHOTOGRAPHIC RECORD OF CORE-LOC UNITS

ANNEXURE A – POSIBLOC™ PLACING ASSISTANCE SYSTEM

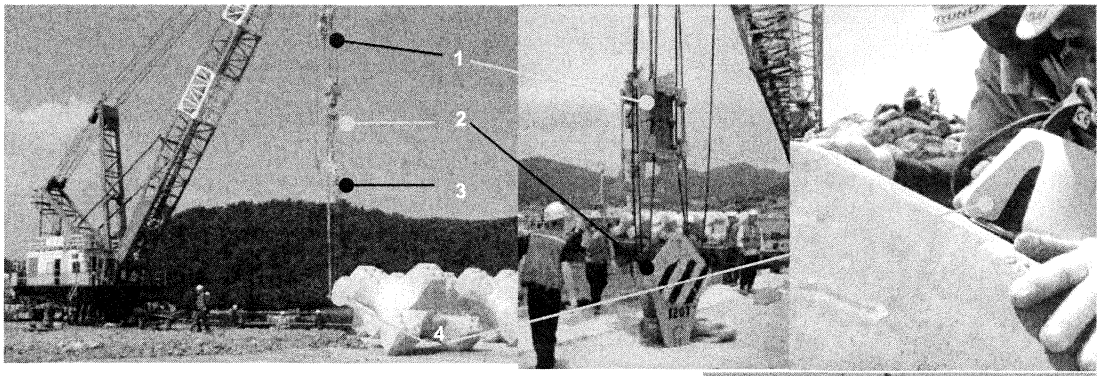
A. Placing assistance systems

Placing assistance systems indicate the X, Y, Z coordinates of block centres of gravity in real time but also their orientation. The block's attitude is displayed on screen so that it can be oriented and interlocked correctly.

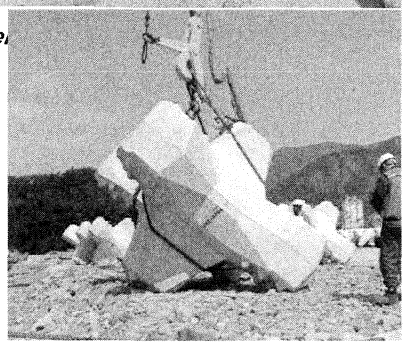
1. The POSIBLOC™ system

The POSIBLOC® is a block-positioning system that was developed specifically for underwater contexts. The system is installed on the crane used to place the armour blocks. The screen displays a reconstituted 3D view of the armour placed so far and of the block currently being placed. The system also records the last known position of the blocks and their orientation. This type of system has many advantages:

- less need for divers,
- blocks can be placed when there is little or no visibility,
- provides a comprehensive view from any angle (front, top, profiles, etc.) and perfectly clear zooms of the block geometry,
- the quality of placing is distinctly better than when a GPS is used without divers,
- work can proceed round the clock,
- can be used to produce 3D imagery, a base for the as-built drawings and placing reports.



1: POSIBLOC® positioning reference suspended on the crane cables (compe inclination)
2: Main crane hook
3: Sling release hook
4: Recoverable block orientation module (BIB)

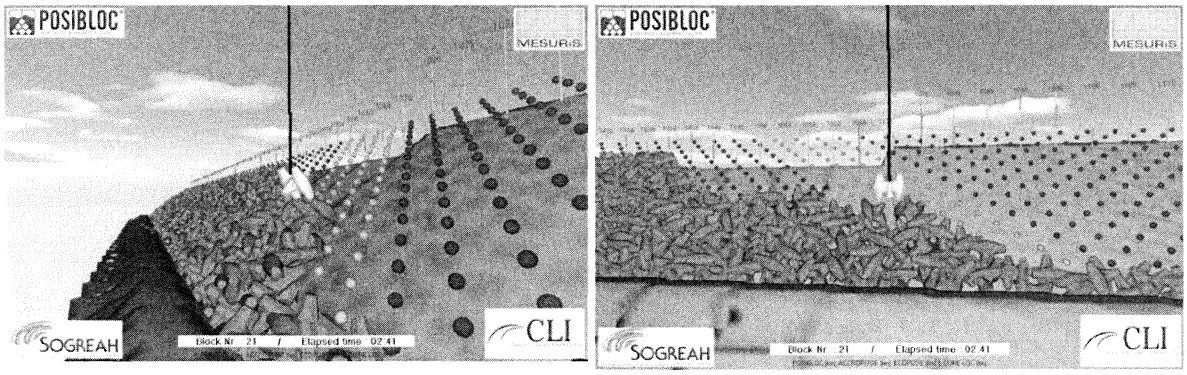


For further information contact Mesuris:

- Website www.mesuris.com/
- *E-mail:* marinesystems@mesuris.com

The system nevertheless has its own tolerances, which are H/12 or 15 cm (whichever is greater).

This placing assistance system cannot be used for checking. An armour cannot be validated purely on the basis of the data it produces. Divers must carry out inspections to confirm that the placing is correct or a survey performed using a very high resolution multi-beam (0.5° beams) sounding device.



Two examples of underwater views reconstituted by the POSIBLOC™ system

It is essential for users of this system to be trained. The supplier must provide the appropriate training in the use of the system, but not training in actual block placing, which is given by CLI. The system does not replace the staff responsible for placing the blocks, but provides additional assistance to make sure that it is done in the best possible conditions.

Appendix O

(Not Used)

Appendix P

Wildlife Observer Protocol

Appendix P

Wildlife Observer and Construction Activity Protocol for ESA Listed and Candidate Species

I. MONITORING REQUIREMENTS AND METHODS

The 2013 EIS ROD states Wildlife observers would ensure Endangered Species Act (ESA) listed and candidate species are protected by adhering to the USFWS's *Observer Protocols for Fill Placement and Dredging* in the marine environment.

The 2013 EIS ROD requires wildlife observers for the following ESA-listed found species:

- Northern sea otter (*Enhydra lutris kenyoni*) - Southwest distinct population segment (DPS),threatened
- Steller's eider (*Polysticta stelleri*) - Alaska breeding population, threatened
- Steller Sea Lion (*Eumetopias jubatus*) – Western DPS, endangered
- Humpback whale (*Megaptera novaeangliae)* - endangered

The Kittlitz's murrelet (*Brachyramphus brevirostris*) and yellow-billed loon (*Gavia adamsii*) are candidates under the ESA and may also be found.

Northern sea otters, Steller's eiders, Steller sea lions and humback whales may be harmed by noise from placing fill and dredging in marine waters. Impacts from noise are likely to be avoided if observers confirm listed marine mammals are not present very near the source of loud noises when the noise impacts occur. Construction activities will likely produce temporary visual or audible disturbance that may cause marine mammals and birds to cease feeding, adopt vigilant behaviors, or disperse to other areas. Using one or more observers to look for listed and candidate species within the "hazard area" is an effective means to assure that no listed marine mammals or birds will be harmed.

The "hazard area" is defined here as the area in which noise levels from construction activities may exceed threshold noise levels that cause harm. The observer is responsible for communicating the presence of one or more listed or candidate species the hazard area to construction operators and halting work until the animal voluntarily leaves the area. To "clear" the area means to verifyno listed and candidate species are present. No action may be taken to disturb listed and candidate and move them away or discourage them from using a particular area.

The 2013 EIS ROD defines the "hazard area" as including the area 300 meters (m) from the project fill footprints prior to filling activities. The hazard area includes all marine areas below mean high tide (MHT) within the specified 300 m radius around the noise source. Areas blocked by points of land or shoreline contours are not included in the hazard area, but a 10° buffer outside of these areas should be included.

II. PROTOCOLS FOR FILL PLACEMENT AND DREDGING IN THE MARINE ENVIRONMENT (USFWS 2012a) [adapted to include Steller sea lion and candidate species per the 2013 EIS ROD]

A. Ramp-up Procedures

Placing fill and other in-water noise production would occur only after other noise generating activities have ramped up and listed and candidate species have had the opportunity to leave the 300-m "hazard area" of their own accord.

B. Monitoring the 300-m "hazard area" – Fill Placement and Dredging

1. Prior to commencing in-water fill placement, in-water dredging, and any other heavy equipment in-water use for manipulating the substrate (including using hydraulic rock breakers, drills, etc.) observers will monitor a 300-m hazard area centered on the work site for 30 minutes. Additionally, observers will monitor the hazard area before recommencing work after any break greater than 30 minutes.
2. If observers see a listed or candidate species within the hazard area during the 30-minute observation period prior to start-up, the observation period need not start over once the animal moves outside the hazard area but work may not commence until the observation period is complete.
3. If observers see a listed or candidate species in the 300-m buffer during the observation period prior to starting work and it (they) does not leave the area prior to the 30-minute observation period ending, work may continue after ramp up procedures are applied.
4. If a listed or candidate species enters the 300-m hazard area during fill placement or dredging after the observation period has ended, work may continue after ramp up procedures are applied.
5. All observers must be capable in spotting and identifying Northern sea otters, Steller sea lions, Steller's eiders, humpback whales, Kittlitz's murrelets yellow-billed loons. Also, observers must be able to record applicable data during all weather conditions in which in-water fill placement or in-water dredging will be conducted.
6. All observer protocols will be applied to any unidentified duck whenever the observer cannot identify whether a duck is a male or a female Steller's eiders in breeding or nonbreeding plumage.
7. Observers will be given the authority to halt project activities and to provide clearance for work to resume.
8. Observers will have no other duties during the observation period in order to ensure that watching for protected species remains the observer's main focus.
9. The observer will be on watch for no more than four (4) consecutive hours without a one-hour break to avoid fatigue.
10. A lead observer will be responsible for implementing the protocols. The lead observer may select and train additional observers and will remain accountable for their performance throughout the work season. The lead observer will conduct and/or supervise all monitoring for all specific sites throughout the project construction duration.
11. Monitoring may be needed during construction activities that may have little lead time based upon logistics and weather constraints. For practical and logistical reasons, observers should reside in Kodiak during construction to avoid delaying construction activities.
12. All observers must be trained in the monitoring methods to include the following topics:

a. Types of construction activities that require monitoring
b. Observation methods and equipment
c. Observation locations
d. Distance estimation
e. Data to record (parameters) and field forms (see attached data sheet examples)
f. Species identification
g. Procedures to Stop Work

13. Tools, such as a laser range finder or buoys placed at 300 m intervals away from the shoreline, will be used to aid the observer in estimating distances.

14. The following are standard equipment examples recommended for observers use:
    a. High power, reticle binoculars 10 x 50 Bushnell
    b. Range finder equivalent to Leica LRF 1200
    c. GPS and compass
    d. High power spotting scope

15. Observation stations will be established to maximize hazard area visibility. Elevated observation stations provide better visibility than those at sea level.

16. Observation stations may be established aboard moored vessels and stationary skiffs.

17. Using a particular station may depend upon weather conditions. If the observable range from any one vantage point is limited due to weather or construction activity, the observer should use an established station that has a better vantage point for monitoring.

18. If visibility is poor due to weather or low light, the observation period will not commence until viewing conditions make it possible to monitor the entire hazard area. Alternately, inwater fill placement and in-water dredging may commence after ramp up procedures are conducted.

19. During periods with low visibility, additional observers should be added in multiple stations as needed to provide complete visual coverage of the hazard area.

20. Observers will record basic metrics such as start and end times, date, the observation station GPS location, observer's name, type of work occurring, numbers and locations for observed listed and candidate species, environmental conditions (air temperature, wind speed and direction, sea state, swell height, tide stage, visibility, percent cloud cover, and precipitation), documentation of work shut downs or postponements due to presence of sea otters, sea lions or eiders, and duration work was shut down or postponed. See attached data sheet and observation code examples.

21. Other data that may be useful include: recording listed or candidate species movements (direction and travel distance), times during which the movements occur, and a categorical assessment of behaviors during the observation period. For example, indicate whether a sea otter is resting, feeding, grooming, engaging in social interactions, or travelling from one place to another. Record behavioral changes during the observation period, and comment on whether these behaviors appear to be associated with the work being conducted, and if so, what indications lead to that conclusion.

22. All observation records will be made available to the Engineer at the end of each calendar month.

23. A summary report will be provided to the Engineer by December 1 each year.

C. Protocol Revisions

No changes to the observer protocol will be made without prior review and approval by USFWS or NMFS as applicable. The Project Engineer will forward monthly summary reports to USFWS and NMFS. The observer protocol will also be re-evaluated following each construction season

in coordination with USFWS and NMFS. Observers shall revise field observation methods and data reporting elements according to the Engineer's direction. The Engineer's concurrence with changes recommended by USFWS or NMFS will not be unreasonably withheld.

III. MINIMUM QUALIFICATIONS FOR MARINE MAMMAL AND MARINE BIRD OBSERVERS

1. The observer must be capable of identifying the ESA-listed and candidate species discussed in this document during all types of weather in which the aforementioned construction activities will be conducted.
2. Visual acuity in both eyes (correction is permissible) sufficient to discern moving targets at the water's surface with ability to estimate target size and distance. Using binoculars or a spotting scope may be necessary to correctly identify the target.
3. Advanced education in biological science, wildlife management, mammalogy or related fields (Bachelor's degree or higher is preferred).
4. Experience and ability to conduct field observations and collect data according to assigned protocols (this may include academic experience).
5. Experience or training in identifying marine mammals (cetaceans and pinnipeds) and marine birds in the field.
6. Sufficient training, orientation or experience with vessel operations, if needed, to provide for personal safety during observations.
7. Writing skills sufficient to prepare observation reports. Reports should include such information as the number, type, and location of marine mammals or birds observed; marine mammal or bird behavior in the potential sound effects area (the 300 m hazard area) during construction; dates and times when observations and in-water construction activities occurred; dates and times when observers suspended in-water construction activities because marine mammals or birds were present, etc.
8. Ability to communicate orally by radio or in person with project personnel to provide real time information on marine mammals or birds observed in the area.

IV. DATA RECORDING, QUALITY CONTROL, AND REPORTING

1. Observers shall record data on monitoring/survey forms. At the end of each day during which filling or dredging activity occurs, observers shall review the entries for the day, and initial that they have completed the review and addressed any deficiencies. See attached example observation forms. These are included as examples only and the actual observation form used shall be created by the Wildlife Observer and approved by the Engineer prior to use.
2. Observations shall be entered into a spreadsheet (Excel, e.g.) file to submit to USFWS or NMFS at their request. DOT&PF will submit monthly summary reports and electronic data to USFWS and NMFS.
3. Data to be recorded include: observed listed and candidate species numbers and locations, behaviors, observation frequency, behavioral changes during observation period, whether these behaviors appear to be associated with the work being conducted, and if so, what indications lead to that conclusion. Records will also include environmental conditions (air temperature, wind speed and direction, sea state, swell height, tide stage, visibility, percent cloud cover, and precipitation). Data will also include the nature of work being conducted,

whether work was shut down or postponed due to presence of protected species, and if so, for how long. Listed and candidate species observations will include the number and locations of observed individuals.

V. CONSTRUCTION ACTIVITY PROTOCOL [per 2013 EIS ROD]

A. Construction Timing

In-water work construction will be excluded from April 1 to July 15 to avoid impacts to aquatic species. In-water work is defined as any work below the high tide line (Elevation 11.7 ft).

B. Construction Lighting

1. Steady lights would not be used to make cranes or other overhead structures more visible. Lights would be flashing red. Only strobe, strobe-like or blinking incandescent lights would be used for this purpose.

2. Crane booms would be left unlit or be lit only with acceptable lighting, and would be lowered as close to ground level as feasible when not in use. The wildlife observer would confirm that any cranes used in construction were lowered when not in use and were not lighted, or if remaining up at night, were lit only with strobe lights.

Attachments

Example Observation Forms

Example Marine Mammal Observation Sheet:

Marine Mammal Observations

Project Name:_____

Date: _____ Sheet _____ of _____ for this day

Monitor: _____ Monitoring Location: _____

Sighting #	Time of Day	Weather	Species	# of Individuals	Location*	Behavior/Construction Activity

*E.g., Direction, Distance Estimate or Mark on Figure with Sighting Number

MARINE MAMMAL OBSERVATION RECORD FORM

Project Name: ______________________________

Monitoring Location______________________________
(Pier Location, Vessel based, Land Location, other)

Page ___________ of _____________

Date: ________________________________

Vessel Name: ______________________________

Time Effort Initiated:_______________

Time Effort Completed:_____________

Sighting Data

Event Code	Sighting Number (1 or 1.1 if resight)	Time/Duration watching sighting (Start/End time if continuous)	WP # (every time a sighting is made)	Observer	Sighting cue	Species	Dist/ Dir to Animal (from Observer)	Dist to Pile (btwn animal & pile)	# of Animals Group Size (min/max/best)# of Calves	Relative Motion/and Behavior Code (see code sheet)	Const Type During Sighting	Miti gation used during sighting?	Miti gation Type?	Visibility	% Glare	Weath Cond	Sea State and Wave Ht	Swell Dir	Behavior Change/ Response to Activity/Comments
		: : : :					m or km °	m or km	/ / ___ calves	opening closing parallel none	PRE POST SSV SSI V I PC DP ST NONE	Y N	DE SD	B P M G E			Light Mod Heavy	N or S W or E	
		: : : :					m or km °	m or km	/ / ___ calves	opening closing parallel none	PRE POST SSV SSI V I PC DP ST NONE	Y N	DE SD	B P M G E			Light Mod Heavy	N or S W or E	
		: : : :					m or km °	m or km	/ / ___ calves	opening closing parallel none	PRE POST SSV SSI V I PC DP ST NONE	Y N	DE SD	B P M G E			Light Mod Heavy	N or S W or E	
		: : : :					m or km °	m or km	/ / ___ calves	opening closing parallel none	PRE POST SSV SSI V I PC DP ST NONE	Y N	DE SD	B P M G E			Light Mod Heavy	N or S W or E	
		: : : :					m or km °	m or km	/ / ___ calves	opening closing parallel none	PRE POST SSV SSI V I PC DP ST NONE	Y N	DE SD	B P M G E			Light Mod Heavy	N or S W or E	
		: : : :					m or km °	m or km	/ / ___ calves	opening closing parallel none	PRE POST SSV SSI V I PC DP ST NONE	Y N	DE SD	B P M G E			Light Mod Heavy	N or S W or E	
		: : : :					m or km °	m or km	/ / ___ calves	opening closing parallel none	PRE POST SSV SSI V I PC DP ST NONE	Y N	DE SD	B P M G E				N or S W or E	

Sighting #=chronological number of sightings, if resight of same animal, then 1.1, 1.2, etc. WP (Waypoint)=GPS recording of lat/long, time/date stamp. Critical for vessel observers.

Sighting Codes
(Sighting Cue & Behavior Codes)

Behavior codes

Code	Behavior	Definition
BR	Breaching	Leaps clear of water
CD	Change Direction	Suddenly changes direction of travel
CH	Chuff	Makes loud, forceful exhalation of air at surface
DI	Dive	Forward dives below surface
DE	Dead	Shows decomposition or is confirmed as dead by investigation
DS	Disorientation	An individual displaying multiple behaviors that have no clear direction or purpose
FI	Fight	Agonistic interactions between two or more individuals
FO	Foraging	Confirmed by food seen in mouth
MI	Milling	Moving slowly at surface, changing direction often, not moving in any particular direction
PL	Play	Behavior that does not seem to be directed towards a particular goal; may involve one, two or more individuals
PO	Porpoising	Moving rapidly with body breaking surface of water
SL	Slap	Vigorously slaps surface of water with body, flippers, tail etc.
SP	Spyhopping	Rises vertically in the water to "look" above the water
SW	Swimming	General progress in a direction. Note general direction of travel when last seen [Example: "SW (N)" for swimming north]
TR	Traveling	Traveling in an obvious direction. Note direction of travel when last seen [Example: "TR (N)" for traveling north]
UN	Unknown	Behavior of animal undetermined, does not fit into another behavior
Pinniped only		
EW	Enter Water (from haul out)	Enters water from a haul-out for no obvious reason
FL	Flush (from haul out)	Enters water in response to disturbance
HO	Haul out (from water)	Hauls out on land
RE	Resting	Resting onshore or on surface of water
LO	Look	Is upright in water "looking" in several directions or at a single focus
SI	Sink	Sinks out of sight below surface without obvious effort (usually from an upright position)
VO	Vocalizing	Animal emits barks, squeals, etc.
Cetacean only		
LG	Logging	Resting on surface of water with no obvious signs of movement

Marine Mammal Species

Code	Marine Mammal Species
CASL	California Sea Lion
HSEA	Harbor Seal
STSL	Steller Sea Lion
HPOR	Harbor Porpoise
DPOR	Dall's Porpoise
ORCA	Killer Whale
HUMP	Humpback Whale
UNLW	Unknown Large Whale
RIVO	River Otter (not a marmam)
OTHR	Other
UNKW	Unknown

Event

Code	Activity Type
E ON	Effort On
E OFF	Effort Off
PRE	Pre Watch
POST	Post Watch
SSV	Soft start-vibratory
SSI	Soft start-impact
WC	Weather Condition/Change
S	Sighting
M-DE	Mitigation Delay
M-SD	Mitigation Shutdown

Construction Type

Code	Activity Type
SSV	Soft Start (Vibratory)
SSI	Soft Start (Impact)
V	Vibratory Pile Driving (installation and extraction)
I	Impact Pile Driving
PC	Pneumatic Chipping
DP	Dead pull
ST	Stabbing
NONE	No Pile Driving

Mitigation Codes

Code	Activity Type
DE	Delay onset of Pile Driving
SD	Shut down Pile Driving

Visibility

Code	Distance Visible
B	Bad (<0.5km)
P	Poor (0.5 – 1.5km)
M	Moderate (1.5 – 10km)
G	Good (10 - 15km)
E	Excellent (<15km)

Glare

Percent glare should be total glare of observers' area of responsibility. Are they covering 90 degrees or 180 degrees? Total glare for that area and write that area down on the datasheet so we know later what percentage of the field of view was poor due to glare.

Weather Conditions

Code	Weather Condition
S	Sunny
PC	Partly Cloudy
L	Light Rain
R	Steady Rain
F	Fog
OC	Overcast

Sea State and Wave Height

Use Beaufort Sea State Scale for Sea State Code. This refers to the surface layer and whether it is glassy in appearance or full of white caps. In the open ocean, it also takes into account the wave height, but in inland waters the wave heights (swells) may never reach the levels that correspond to the correct surface white cap number. Therefore, include wave height for clarity.

Code	Wave Height
Light	0 – 3 ft
Moderate	4 – 6 ft
Heavy	>6 ft

Swell Direction

Swell direction should be where the swell is coming from (S for coming from the south). If possible, record direction relative to fixed location (pier). Choose this location at beginning of monitoring project.

STATE OF ALASKA
DEPARTMENT OF TRANSPORTATION AND PUBLIC FACILITIES

REQUIRED CONTRACT PROVISIONS
for
FEDERAL-AID (FAA) CONSTRUCTION CONTRACTS

I. GENERAL

Procurements made under the Airport Improvement Program, AIP, must adhere to the provisions outlined in Title 49 CFR Part 18.36. This regulation provides for policies and procedures to be applied to typical procurement actions under the AIP, such as construction development, equipment purchases, and selection for professional services (engineering consultants etc.)

The Federal Aviation Administration, FAA, is not a party to the contracts, the Alaska Department of Transportation and Public Facilities, DOT&PF, executes in support of the AIP. The DOT&PF is the contractual authority for establishing and administering the contract agreements and is responsible for all contractual matters, including evaluation and award of contract, resolution of claims and disputes, and settlement of litigation issues.

A breach of any of the stipulations contained in these Required Contract Provisions may be sufficient grounds for withholding of progress payments, withholding of final payment, termination of the contract, suspension / debarment or any other action determined to be appropriate by the DOT&PF and FAA.

II. CIVIL RIGHTS ACT OF 1964, TITLE VI

(Required in all contracts and subcontracts)

During the performance of this contract, the contractor, for itself, its assignees and successors in interest (hereinafter referred to as the "contractor") agrees as follows:

1.1 Compliance with Regulations. The contractor shall comply with the Regulations relative to nondiscrimination in federally assisted programs of the Department of Transportation (hereinafter, "DOT") Title 49, Code of Federal Regulations, Part 21, as they may be amended from time to time (hereinafter referred to as the Regulations), which are herein incorporated by reference and made a part of this contract.

1.2 Nondiscrimination. The contractor, with regard to the work performed by it during the contract, shall not discriminate on the grounds of race, color, or national origin in the selection and retention of subcontractors, including procurements of materials and leases of equipment. The contractor shall not participate either directly or indirectly in the discrimination prohibited by section 21.5 of the Regulations, including employment practices when the contract covers a program set forth in Appendix B of the Regulations.

1.3 Solicitations for Subcontracts, Including Procurements of Materials and Equipment. In all solicitations either by competitive bidding or negotiation made by the contractor for work to be performed under a subcontract, including procurements of materials or leases of equipment, each potential subcontractor or supplier shall be notified by the contractor of the contractor's obligations under this contract and the Regulations relative to nondiscrimination on the grounds of race, color, or national origin.

1.4 Information and Reports. The contractor shall provide all information and reports required by the Regulations or directives issued pursuant thereto and shall permit access to its books, records, accounts, other sources of information, and its facilities as may be determined by the DOT&PF or the FAA to be pertinent to ascertain compliance with such Regulations, orders, and instructions. Where any information required of a contractor is in the exclusive possession of another who fails or refuses to furnish this information, the contractor shall so certify to the DOT&PF or the FAA, as appropriate,

and shall set forth what efforts it has made to obtain the information.

1.5 Sanctions for Noncompliance. In the event of the contractor's noncompliance with the nondiscrimination provisions of this contract, the sponsor shall impose such contract sanctions as it or the FAA may determine to be appropriate, including, but not limited to:

a. Withholding of payments to the contractor under the contract until the contractor complies, and/or

b. Cancellation, termination, or suspension of the contract, in whole or in part.

1.6 Incorporation of Provisions. The contractor shall include the provisions of paragraphs 1 through 5 in every subcontract, including procurements of materials and leases of equipment, unless exempt by the Regulations or directives issued pursuant thereto. The contractor shall take such action with respect to any subcontract or procurement as the DOT&PF or the FAA may direct as a means of enforcing such provisions including sanctions for noncompliance. Provided, however, that in the event a contractor becomes involved in, or is threatened with, litigation with a subcontractor or supplier as a result of such direction, the contractor may request the DOT&PF to enter into such litigation to protect the interests of the DOT&PF and, in addition, the contractor may request the United States to enter into such litigation to protect the interests of the United States.

1.7 Airport and Airway Improvement Act of 1982. The contractor assures that it will comply with pertinent statutes, Executive orders and such rules as are promulgated to assure that no person shall, on the grounds of race, creed, color, national origin, sex, age, or handicap be excluded from participating in any activity conducted with or benefiting from Federal assistance. This provision obligates the tenant/concessionaire/lessee or its transferee for the period during which Federal assistance is extended to the airport a program, except where Federal assistance is to provide, or is in the form of personal property or real property or interest therein or structures or improvements thereon. In these cases the provision obligates the party or any transferee for the longer of the following periods: (a) the period during which the property is used by the DOT&PF or any transferee for a purpose for which Federal assistance is extended, or for another purpose involving the provision of similar services or benefits or (b) the period during which the DOT&PF or any transferee retains ownership or possession of the property. In the case of contractors, this provision binds the contractors from the bid solicitation period through the completion of the contract. This provision is in addition to that required of Title VI of the Civil Rights Act of 1964.

III. BUY AMERICAN PREFERENCES

(Required in all contracts and subcontracts)

In accepting AIP funding, the DOT&PF is certifying that they will not acquire (or permit any contractor or subcontractor) to use any steel or manufactured products produced outside the United States on any portion of the project for which funds are provided, unless otherwise approved by the FAA. Therefore, for the AIP funded portion of a project, contractor must either:

1. Certify, in writing, all products are wholly produced in the US of US materials, or
2. Request a waiver to use non-US produced products, or
3. Certify that all equipment that is being used on the project is on the Nationwide Buy American conformance list.

The AIP funded portion of a project includes the grant recipient's local share.

Under 49 U.S.C. § 50101(b), the FAA has the authority to waive these Buy American Preferences if certain market or product conditions exist. These are:

1. Applying the Buy American Preferences would be inconsistent with the public interest;
2. The steel or goods produced in the U.S. are not produced in a sufficient and reasonably available amount or are not of a satisfactory quality;
3. When the cost of components and subcomponents produced in the U.S. is more than 60 percent of the cost of all components of the facility or equipment procured and final assembly occurs in the United States; or
4. Including domestic material will increase the cost of the overall project by more than 25 percent.

IV. DAVIS-BACON LABOR PROVISIONS

(Incorporate into all construction contracts and subcontracts that exceed $2,000 and are financed under the AIP program.)

1. Minimum Wages

(i) All laborers and mechanics employed or working upon the site of the work will be paid unconditionally and not less often than once a week, and without subsequent deduction or rebate on any account (except such payroll deductions as are permitted by the Secretary of Labor under the Copeland Act (29 CFR Part 3)), the full amount of wages and bona fide fringe benefits (or cash equivalent thereof) due at time of payment computed at rates not less than those contained in the wage determination of the Secretary of Labor which is attached hereto and made a part hereof, regardless of any

contractual relationship which may be alleged to exist between the contractor and such laborers and mechanics.

Contributions made or costs reasonably anticipated for bona fide fringe benefits under section 1(b)(2) of the Davis-Bacon Act on behalf of laborers or mechanics are considered wages paid to such laborers or mechanics, subject to the provisions of paragraph (1)(iv) of this section; also, regular contributions made or costs incurred for more than a weekly period (but not less often than quarterly) under plans, funds, or programs which cover the particular weekly period, are deemed to be constructively made or incurred during such weekly period. Such laborers and mechanics shall be paid the appropriate wage rate and fringe benefits on the wage determination for the classification of work actually performed, without regard to skill, except as provided in 29 CFR Part 5.5(a)(4). Laborers or mechanics performing work in more than one classification may be compensated at the rate specified for each classification for the time actually worked therein: *Provided*, That the employer's payroll records accurately set forth the time spent in each classification in which work is performed. The wage determination (including any additional classification and wage rates conformed under (1)(ii) of this section) and the Davis-Bacon poster (WH-1321) shall be posted at all times by the contractor and its subcontractors at the site of the work in a prominent and accessible place where it can easily be seen by the workers.

(ii)(A) The contracting officer shall require that any class of laborers or mechanics, including helpers, which is not listed in the wage determination and which is to be employed under the contract shall be classified in conformance with the wage determination. The contracting officer shall approve an additional classification and wage rate and fringe benefits therefore only when the following criteria have been met:

(1) The work to be performed by the classification requested is not performed by a classification in the wage determination; and

(2) The classification is utilized in the area by the construction industry; and

(3) The proposed wage rate, including any bona fide fringe benefits, bears a reasonable relationship to the wage rates contained in the wage determination.

(B) If the contractor and the laborers and mechanics to be employed in the classification (if known), or their representatives, and the contracting officer agree on the classification and wage rate (including the amount designated for fringe benefits where appropriate), a report of the action taken shall be sent by the contracting officer to the Administrator of the Wage and Hour Division, Employment Standards Administration, U.S. Department of Labor, Washington, D.C. 20210. The Administrator, or an authorized representative, will approve, modify, or disapprove every additional classification action within 30 days of receipt and so advise the contracting officer or will notify the contracting officer within the 30-day period that additional time is necessary.

(C) In the event the contractor, the laborers or mechanics to be employed in the classification or their representatives, and the contracting officer do not agree on the proposed classification and wage rate (including the amount designated for fringe benefits where appropriate), the contracting officer shall refer the questions, including the views of all interested parties and the recommendation of the contracting officer, to the Administrator for determination. The Administrator, or an authorized representative, will issue a determination within 30 days of receipt and so advise the contracting officer or will notify the contracting officer within the 30-day period that additional time is necessary.

(D) The wage rate (including fringe benefits where appropriate) determined pursuant to subparagraphs (1)(ii) (B) or (C) of this paragraph, shall be paid to all workers performing work in the classification under this contract from the first day on which work is performed in the classification.

(iii) Whenever the minimum wage rate prescribed in the contract for a class of laborers or mechanics includes a fringe benefit which is not expressed as an hourly rate, the contractor shall either pay the benefit as stated in the wage determination or shall pay another bona fide fringe benefit or an hourly cash equivalent thereof.

(iv) If the contractor does not make payments to a trustee or other third person, the contractor may consider as part of the wages of any laborer or mechanic the amount of any costs reasonably anticipated in providing bona fide fringe benefits under a plan or program, *Provided*, That the Secretary of Labor has found, upon the written request of the contractor, that the applicable standards of the Davis-Bacon Act have been met. The Secretary of Labor may require the contractor to set aside in a separate account assets for the meeting of obligations under the plan or program.

2 Withholding.

The FAA or the DOT&PF shall upon its own action or upon written request of an authorized representative of the Department of Labor withhold or cause to be withheld from the contractor under this contract or any other Federal contract with the same prime contractor, or any other Federally-assisted contract subject to Davis-Bacon prevailing wage requirements, which is held by the same prime contractor, so much of the accrued payments or advances as may be considered necessary to pay laborers and mechanics, including apprentices, trainees, and helpers, employed by the contractor or any subcontractor the full amount of wages required by the contract. In the event of failure to pay any laborer or mechanic, including any apprentice, trainee, or helper, employed or working on the site of work, all or part of the wages required by the contract, the FAA may, after

written notice to the contractor, DOT&PF, applicant, or owner, take such action as may be necessary to cause the suspension of any further payment, advance, or guarantee of funds until such violations have ceased.

3. Payrolls and basic records.

(i) Payrolls and basic records relating thereto shall be maintained by the contractor during the course of the work and preserved for a period of three years thereafter for all laborers and mechanics working at the site of the work. Such records shall contain the name, address, and social security number of each such worker, his or her correct classification, hourly rates of wages paid (including rates of contributions or costs anticipated for bona fide fringe benefits or cash equivalents thereof of the types described in 1(b)(2)(B) of the Davis-Bacon Act), daily and weekly number of hours worked, deductions made and actual wages paid. Whenever the Secretary of Labor has found under 29 CFR 5.5(a)(1)(iv) that the wages of any laborer or mechanic include the amount of any costs reasonably anticipated in providing benefits under a plan or program described in section 1(b)(2)(B) of the Davis-Bacon Act, the contractor shall maintain records which show that the commitment to provide such benefits is enforceable, that the plan or program is financially responsible, and that the plan or program has been communicated in writing to the laborers or mechanics affected, and records which show the costs anticipated or the actual costs incurred in providing such benefits. Contractors employing apprentices or trainees under approved programs shall maintain written evidence of the registration of apprenticeship programs and certification of trainee programs, the registration of the apprentices and trainees, and the ratios and wage rates prescribed in the applicable programs.

(ii)(A) The contractor shall submit weekly for each week in which any contract work is performed a copy of all payrolls to the FAA, if the agency is a party to the contract, but if the agency is not such a party, the contractor will submit the payrolls to the applicant, DOT&PF, or owner, as the case may be, for transmission to the FAA. The payrolls submitted shall set out accurately and completely all of the information required to be maintained under 29 CFR 5.5(a)(3)(i), except that full social security numbers and home addresses shall not be included on weekly transmittals. Instead the payrolls shall only need to include an individually identifying number for each employee (*e.g.* , the last four digits of the employee's social security number). The required weekly payroll information may be submitted in any form desired. Optional Form WH–347 is available for this purpose from the Wage and Hour Division Web site at *http://www.dol.gov/esa/whd/forms/wh347instr.htm* or its successor site. The prime contractor is responsible for the submission of copies of payrolls by all subcontractors. Contractors and subcontractors shall maintain the full social security number and current address of each covered worker, and shall provide them upon request to the FAA, if the agency is a party to the contract, but if the agency is not such a party, the contractor will submit them to the applicant, DOT&PF, or owner, as the case may be, for transmission to the FAA, the contractor, or the Wage and Hour Division of the Department of Labor for purposes of an investigation or audit of compliance with prevailing wage requirements. It is not a violation of this section for a prime contractor to require a subcontractor to provide addresses and social security numbers to the prime contractor for its own records, without weekly submission to the DOT&PF (or the applicant, sponsor, or owner).

(B) Each payroll submitted shall be accompanied by a "Statement of Compliance," signed by the contractor or subcontractor or his or her agent who pays or supervises the payment of the persons employed under the contract and shall certify the following:

(1) That the payroll for the payroll period contains the information required to be provided under § 5.5(a)(3)(ii) of Regulations, 29 CFR part 5, the appropriate information is being maintained under § 5.5 (a)(3)(i) of Regulations, 29 CFR part 5, and that such information is correct and complete;

(2) That each laborer and mechanic (including each helper, apprentice and trainee) employed on the contract during the payroll period has been paid the full weekly wages earned, without rebate, either directly or indirectly, and that no deductions have been made either directly or indirectly from the full wages earned, other than permissible deductions as set forth in Regulations 29 CFR Part 3;

(3) That each laborer or mechanic has been paid not less than the applicable wage rates and fringe benefits or cash equivalents for the classification of work performed, as specified in the applicable wage determination incorporated into the contract.

(C) The weekly submission of a properly executed certification set forth on the reverse side of Optional Form WH-347 shall satisfy the requirement for submission of the "Statement of Compliance" required by paragraph (3)(ii)(B) of this section.

(D) The falsification of any of the above certifications may subject the contractor or subcontractor to civil or criminal prosecution under Section 1001 of Title 18 and Section 231 of Title 31 of the United States Code.

(iii) The contractor or subcontractor shall make the records required under paragraph (3)(i) of this section available for inspection, copying or transcription by authorized representatives of the Sponsor, the FAA or the Department of Labor, and shall permit such representatives to interview employees during working

hours on the job. If the contractor or subcontractor fails to submit the required records or to make them available, the Federal agency may, after written notice to the contractor, DOT&PF, applicant or owner, take such action as may be necessary to cause the suspension of any further payment, advance, or guarantee of funds. Furthermore, failure to submit the required records upon request or to make such records available may be grounds for debarment action pursuant to 29 CFR 5.12.

4. Apprentices and Trainees.

(i) **Apprentices**. Apprentices will be permitted to work at less than the predetermined rate for the work they performed when they are employed pursuant to and individually registered in a bona fide apprenticeship program registered with the U.S. Department of Labor, Employment and Training Administration, Bureau of Apprenticeship and Training, or with a State Apprenticeship Agency recognized by the Bureau, or if a person is employed in his or her first 90 days of probationary employment as an apprentice in such an apprenticeship program, who is not individually registered in the program, but who has been certified by the Bureau of Apprenticeship and Training or a State Apprenticeship Agency (where appropriate) to be eligible for probationary employment as an apprentice. The allowable ratio of apprentices to journeymen on the job site in any craft classification shall not be greater than the ratio permitted to the contractor as to the entire work force under the registered program. Any worker listed on a payroll at an apprentice wage rate, who is not registered or otherwise employed as stated above, shall be paid not less than the applicable wage rate on the wage determination for the classification of work actually performed. In addition, any apprentice performing work on the job site in excess of the ratio permitted under the registered program shall be paid not less than the applicable wage rate on the wage determination for the work actually performed. Where a contractor is performing construction on a project in a locality other than that in which its program is registered, the ratios and wage rates (expressed in percentages of the journeyman's hourly rate) specified in the contractor's or subcontractor's registered program shall be observed. Every apprentice must be paid at not less than the rate specified in the registered program for the apprentice's level of progress, expressed as a percentage of the journeymen hourly rate specified in the applicable wage determination. Apprentices shall be paid fringe benefits in accordance with the provisions of the apprenticeship program. If the apprenticeship program does not specify fringe benefits, apprentices must be paid the full amount of fringe benefits listed on the wage determination for the applicable classification. If the Administrator determines that a different practice prevails for the applicable apprentice classification, fringes shall be paid in accordance with that determination. In the event the Bureau of Apprenticeship and Training, or a State Apprenticeship Agency recognized by the Bureau, withdraws approval of an apprenticeship program, the contractor will no longer be permitted to utilize apprentices at less than the applicable predetermined rate for the work performed until an acceptable program is approved.

(ii) **Trainees**. Except as provided in 29 CFR 5.16, trainees will not be permitted to work at less than the predetermined rate for the work performed unless they are employed pursuant to and individually registered in a program which has received prior approval, evidenced by formal certification by the U.S. Department of Labor, Employment and Training Administration. The ratio of trainees to journeymen on the job site shall not be greater than permitted under the plan approved by the Employment and Training Administration. Every trainee must be paid at not less than the rate specified in the approved program for the trainee's level of progress, expressed as a percentage of the journeyman hourly rate specified in the applicable wage determination. Trainees shall be paid fringe benefits in accordance with the provisions of the trainee program. If the trainee program does not mention fringe benefits, trainees shall be paid the full amount of fringe benefits listed on the wage determination unless the Administrator of the Wage and Hour Division determines that there is an apprenticeship program associated with the corresponding journeyman wage rate on the wage determination which provides for less than full fringe benefits for apprentices. Any employee listed on the payroll at a trainee rate who is not registered and participating in a training plan approved by the Employment and Training Administration shall be paid not less than the applicable wage rate on the wage determination for the classification of work actually performed. In addition, any trainee performing work on the job site in excess of the ratio permitted under the registered program shall be paid not less than the applicable wage rate on the wage determination for the work actually performed. In the event the Employment and Training Administration withdraws approval of a training program, the contractor will no longer be permitted to utilize trainees at less than the applicable predetermined rate for the work performed until an acceptable program is approved.

(iii) **Equal Employment Opportunity**. The utilization of apprentices, trainees and journeymen under this part shall be in conformity with the equal employment opportunity requirements of Executive Order 11246, as amended, and 29 CFR Part 30.

5. Compliance With Copeland Act Requirements.

The contractor shall comply with the requirements of 29 CFR Part 3, which are incorporated by reference in this contract.

6. Subcontracts.

The contractor or subcontractor shall insert in any subcontracts the clauses contained in 29 CFR Part 5.5(a)(1) through (10) and such other clauses as the FAA may by appropriate instructions require, and also a clause requiring the subcontractors to include these clauses in any lower tier subcontracts. The prime contractor shall be responsible for the compliance by any subcontractor or lower tier subcontractor with all the contract clauses in 29 CFR Part 5.5.

7. Contract Termination: Debarment.

A breach of the contract clauses in paragraph 1 through 10 of this section may be grounds for termination of the contract, and for debarment as a contractor and a subcontractor as provided in 29 CFR 5.12.

8. Compliance With Davis-Bacon and Related Act Requirements.

All rulings and interpretations of the Davis-Bacon and Related Acts contained in 29 CFR Parts 1, 3, and 5 are herein incorporated by reference in this contract.

9. Disputes Concerning Labor Standards.

Disputes arising out of the labor standards provisions of this contract shall not be subject to the general disputes clause of this contract. Such disputes shall be resolved in accordance with the procedures of the Department of Labor set forth in 29 CFR Parts 5, 6 and 7. Disputes within the meaning of this clause include disputes between the contractor (or any of its subcontractors) and the DOT&PF, the U.S. Department of Labor, or the employees or their representatives.

10. Certification of Eligibility.

(i) By entering into this contract, the contractor certifies that neither it (nor he or she) nor any person or firm who has an interest in the contractor's firm is a person or firm ineligible to be awarded Government contracts by virtue of section 3(a) of the Davis-Bacon Act or 29 CFR 5.12(a)(1).

(ii) No part of this contract shall be subcontracted to any person or firm ineligible for award of a Government contract by virtue of section 3(a) of the Davis-Bacon Act or 29 CFR 5.12(a)(1).

(iii) The penalty for making false statements is prescribed in the U.S. Criminal Code, 18 U.S.C. 1001.

V. CONTRACT WORKHOURS AND SAFETY STANDARDS ACT REQUIREMENTS, 29 CFR PART 5

(Incorporate into all construction contracts and subcontracts that exceed $100,000 and are financed under the AIP program.)

1. Overtime Requirements.

No contractor or subcontractor contracting for any part of the contract work which may require or involve the employment of laborers or mechanics shall require or permit any such laborer or mechanic, including watchmen and guards, in any workweek in which he or she is employed on such work to work in excess of forty hours in such workweek unless such laborer or mechanic receives compensation at a rate not less than one and one-half times the basic rate of pay for all hours worked in excess of forty hours in such workweek.

2. Violation; Liability for Unpaid Wages; Liquidated Damages.

In the event of any violation of the clause set forth in paragraph (1) above, the contractor and any subcontractor responsible therefor shall be liable for the unpaid wages. In addition, such contractor and subcontractor shall be liable to the United States (in the case of work done under contract for the District of Columbia or a territory, to such District or to such territory), for liquidated damages. Such liquidated damages shall be computed with respect to each individual laborer or mechanic, including watchmen and guards, employed in violation of the clause set forth in paragraph 1 above, in the sum of $10 for each calendar day on which such individual was required or permitted to work in excess of the standard workweek of forty hours without payment of the overtime wages required by the clause set forth in paragraph 1 above.

3. Withholding for Unpaid Wages and Liquidated Damages.

The FAA or the DOT&PF shall upon its own action or upon written request of an authorized representative of the Department of Labor withhold or cause to be withheld, from any monies payable on account of work performed by the contractor or subcontractor under any such contract or any other Federal contract with the same prime contractor, or any other Federally-assisted contract subject to the Contract Work Hours and Safety Standards Act, which is held by the same prime contractor, such sums as may be determined to be necessary to satisfy any liabilities of such contractor or subcontractor for unpaid wages and liquidated damages as provided in the clause set forth in paragraph 2 above.

4. Subcontractors.

The contractor or subcontractor shall insert in any subcontracts the clauses set forth in paragraphs 1 through 4 and also a clause requiring the subcontractor to include these clauses in any lower tier subcontracts. The prime contractor shall be responsible for compliance by any subcontractor or lower tier subcontractor with the clauses set forth in paragraphs 1 through 4 of this section.

VI. SUBLETTING OR ASSIGNING THE CONTRACT

(Incorporate into all procurement contracts that are funded by AIP funds)

1. The contractor shall perform with its own organization contract work amounting to not less than 30 percent (or a greater percentage if specified elsewhere in the contract) of the total original contract price, excluding any specialty items designated by the DOT&PF. Specialty items may be performed by subcontract and the amount of any such specialty items performed may be deducted from the total original contract price before computing the amount of work required to be performed by the contractor's own organization (23 CFR 635.116).

a. The term "perform work with its own organization" refers to workers employed or leased by the prime contractor, and equipment owned or rented by the prime contractor, with or without operators. Such term does not include employees or equipment of a subcontractor or lower tier subcontractor, agents of the prime contractor, or any other assignees. The term may include payments for the costs of hiring leased employees from an employee leasing firm meeting all relevant Federal and State regulatory requirements. Leased employees may only be included in this term if the prime contractor meets all of the following conditions:

(1) the prime contractor maintains control over the supervision of the day-to-day activities of the leased employees;

(2) the prime contractor remains responsible for the quality of the work of the leased employees;

(3) the prime contractor remains all power to accept or exclude individual employees from work on the project; and

(4) the prime contractor remains ultimately responsible for the payment of predetermined minimum wages, the submission of payrolls, statements of compliance and all other Federal regulatory requirements.

b. "Specialty Items" shall be construed to be limited to work that requires highly specialized knowledge, abilities, or equipment not ordinarily available in the type of contracting organizations qualified and expected to bid or propose on the contract as a whole and in general are to be limited to minor components of the overall contract.

2. The contract amount upon which the requirements set forth in paragraph (1) of Section VI is computed includes the cost of material and manufactured products which are to be purchased or produced by the contractor under the contract provisions.

3. The contractor shall furnish (a) a competent superintendent or supervisor who is employed by the firm, has full authority to direct performance of the work in accordance with the contract requirements, and is in charge of all construction operations (regardless of who performs the work) and (b) such other of its own organizational resources (supervision, management, and engineering services) as the contracting officer determines is necessary to assure the performance of the contract.

4. No portion of the contract shall be sublet, assigned or otherwise disposed of except with the written consent of the contracting officer, or authorized representative, and such consent when given shall not be construed to relieve the contractor of any responsibility for the fulfillment of the contract. Written consent will be given only after the DOT&PF has assured that each subcontract is evidenced in writing and that it contains all pertinent provisions and requirements of the prime contract.

5. The 30% self-performance requirement of paragraph (1) is not applicable to design-build contracts; however, DOT&PF may establish their own self-performance requirements.

VII. ACCESS TO RECORDS AND REPORTS

(Incorporate into all procurement contracts that are funded by AIP funds)

The Contractor shall maintain an acceptable cost accounting system. The Contractor agrees to provide the DOT&PF, the FAA and the Comptroller General of the United States or any of their duly authorized representatives access to any books, documents, papers, and records of the contractor which are directly pertinent to the specific contract for the purpose of making audit, examination, excerpts and transcriptions. The Contractor agrees to maintain all books, records and reports required under this contract for a period of not less than three years after final payment is made and all pending matters are closed.

VIII. CERTIFICATION OF NONSEGREGATED FACILITIES

(Incorporate in all construction contracts and subcontracts that exceed $10,000. The notices should be placed within the solicitation for proposals. The actual certification should be incorporated in the contract agreement.)

The federally-assisted construction contractor certifies that she or he does not maintain or provide, for his employees, any segregated facilities at any of his establishments and that she or he does not permit his employees to perform their services at any location, under his control, where segregated facilities are maintained. The federally-assisted construction contractor certifies that she or he will not maintain or provide, for his employees, segregated facilities at any of his establishments and that she or he will not permit his

employees to perform their services at any location under his control where segregated facilities are maintained. The federally-assisted construction contractor agrees that a breach of this certification is a violation of the Equal Opportunity Clause in this contract.

As used in this certification, the term "segregated facilities" means any waiting rooms, work areas, restrooms, and washrooms, restaurants and other eating areas, timeclocks, locker rooms and other storage or dressing areas, parking lots, drinking fountains, recreation or entertainment areas, transportation, and housing facilities provided for employees which are segregated by explicit directives or are, in fact, segregated on the basis of race, color, religion, or national origin because of habit, local custom, or any other reason. The federally-assisted construction contractor agrees that (except where she or he has obtained identical certifications from proposed subcontractors for specific time periods) she or he will obtain identical certifications from proposed subcontractors prior to the award of subcontracts exceeding $10,000 which are not exempt from the provisions of the Equal Opportunity Clause and that she or he will retain such certifications in his files.

IX. CLEAN AIR AND WATER POLLUTION CONTROL

(Incorporate in all contracts and subcontracts that exceed $100,000.)

Contractors and subcontractors agree:

a. That any facility to be used in the performance of the contract or subcontract or to benefit from the contract is not listed on the Environmental Protection Agency (EPA) List of Violating Facilities;

b. To comply with all the requirements of Section 114 of the Clean Air Act, as amended, 42 U.S.C. 1857 et seq. and Section 308 of the Federal Water Pollution Control Act, as amended, 33 U.S.C. 1251 et seq. relating to inspection, monitoring, entry, reports, and information, as well as all other requirements specified in Section 114 and Section 308 of the Acts, respectively, and all other regulations and guidelines issued thereunder;

c. That, as a condition for the award of this contract, the contractor or subcontractor will notify the awarding official of the receipt of any communication from the EPA indicating that a facility to be used for the performance of or benefit from the contract is under consideration to be listed on the EPA List of Violating Facilities;

d. To include or cause to be included in any construction contract or subcontract which exceeds $ 100,000 the aforementioned criteria and requirements.

X. CERTIFICATION REGARDING DEBAREMENT, SUSPENSION, INELIGIBILITY AND VOLUNTARY EXCLUSION

(Incorporate into all contracts that exceed $25,000, which funded under the AIP. Incorporate in all contracts for auditing services regardless of the contract amount.)

The bidder/offeror certifies, by submission of this proposal or acceptance of this contract, that neither it nor its principals is presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from participation in this transaction by any Federal department or agency. It further agrees by submitting this proposal that it will include this clause without modification in all lower tier transactions, solicitations, proposals, contracts, and subcontracts. Where the bidder/offeror/contractor or any lower tier participant is unable to certify to this statement, it shall attach an explanation to this solicitation/proposal.

XI. LOBBYING AND INFLUENCING FEDERAL EMPLOYEES

(Required in all contracts and subcontracts.)

(1) No Federal appropriated funds shall be paid, by or on behalf of the contractor, to any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with the making of any Federal grant and the amendment or modification of any Federal grant.

(2) If any funds other than Federal appropriated funds have been paid or will be paid to any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with any Federal grant, the contractor shall complete and submit Standard Form-LLL, "Disclosure of Lobby Activities," in accordance with its instructions.

XII. EQUL EMPLOYMENT OPPORTUNITY

(Incorporate in all construction contracts and subcontracts that exceed $10,000.)

During the performance of this contract, the contractor agrees as follows:

1. The contractor will not discriminate against any employee or applicant for employment because of race, color, religion, sex, or national origin. The contractor will take affirmative action to ensure that applicants are employed, and that employees are treated during employment without regard to their race, color, religion, sex, or national origin. Such action shall include, but not be limited to the following: Employment, upgrading, demotion, or transfer; recruitment or recruitment advertising; layoff or termination; rates of pay or other forms of compensation; and selection for training, including apprenticeship. The contractor agrees to post in

conspicuous places, available to employees and applicants for employment, notices to be provided setting forth the provisions of this nondiscrimination clause.

2. The contractor will, in all solicitations or advertisements for employees placed by or on behalf of the contractor, state that all qualified applicants will receive considerations for employment without regard to race, color, religion, sex, or national origin.

3. The contractor will send to each labor union or representative of workers with which she/he has a collective bargaining agreement or other contract or understanding, a notice to be provided advising the said labor union or workers' representatives of the contractor's commitments under this section, and shall post copies of the notice in conspicuous places available to employees and applicants for employment.

4. The contractor will comply with all provisions of Executive Order 11246 of September 24, 1965, as amended, and of the rules, regulations, and relevant orders of the Secretary of Labor.

5. The contractor will furnish all information and reports required by Executive Order 11246 of September 24, 1965, and by rules, regulations, and orders of the Secretary of Labor, or pursuant thereto, and will permit access to his books, records, and accounts by the administering agency and the Secretary of Labor for purposes of investigation to ascertain compliance with such rules, regulations, and orders.

6. In the event of the contractor's noncompliance with the nondiscrimination clauses of this contract or with any of the said rules, regulations, or orders, this contract may be canceled, terminated or suspended in whole or in part and the contractor may be declared ineligible for further Government contracts or federally assisted construction contracts in accordance with procedure authorized in Executive Order 11246 of September 24, 1965, and such other sanctions may be imposed and remedies invoked as provided in Executive Order 11246 of September 24, 1965, or by rule, regulation, or order of the Secretary of Labor, or as otherwise provided by law.

7. The contractor will include the portion of the sentence immediately preceding paragraph (1) and the provisions of paragraphs (1) through (7) in every subcontract or purchase order unless exempted by rules, regulations, or orders of the Secretary of Labor issued pursuant to section 204 of Executive Order 11246 of September 24, 1965, so that such provisions will be binding upon each subcontractor or vendor. The contractor will take such action with respect to any subcontract or purchase order as the administering agency may direct as a means of enforcing such provision, including sanctions for noncompliance: *Provided, however,* that in the event a contractor becomes involved in, or is threatened with, litigation with a subcontractor or vendor as a result of such direction by the administering agency the contractor may request the United States to enter into such litigation to protect the interests of the United States.

XIII. DISADVANTAGED BUSINESS ENTERPRISES

(The contract assurance clause shall be incorporated verbatim. The prompt payment clause represents sample language that meets the requirements of 49 CFR Part 26.29)

Contract Assurance - 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 DOT assisted contracts. Failure by the contractor to carry out these requirements is a material breach of this contract, which may result in the termination of this contract or such other remedy, as the recipient deems appropriate.

Prompt Payment - The prime contractor agrees to pay each subcontractor under this prime contract for satisfactory performance of its contract no later than eight working days from the receipt of each payment the prime contractor receives from DOT&PF. The prime contractor agrees further to return retainage payments to each subcontractor within eight working days after the subcontractor's work is satisfactorily completed. Any delay or postponement of payment from the above referenced time frame may occur only for good cause following written approval of the DOT&PF. This clause applies to both DBE and non-DBE subcontractors.

XIV. RIGHTS TO INVENTIONS

(Incorporate into all procurement contracts that funded by AIP funds.)

All rights to inventions and materials generated under this contract are subject to regulations issued by the FAA and the DOT&PF under which this contract is executed.

XV. TRADE RESTRICTION CLAUSE

(Incorporate into all contracts funded by AIP.)

The contractor or subcontractor, 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 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 person 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;

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 in accordance with 49 CFR 30.17, no contract shall be awarded to a contractor or subcontractor 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 said list for use on the project, the Federal Aviation Administration may direct through the Sponsor cancellation of the contract at no cost to the Government.

Further, the contractor agrees that, if awarded a contract resulting from this solicitation, it will incorporate this provision for certification without modification in each contract and in all lower tier subcontracts. The contractor may rely on the certification of a prospective subcontractor unless it has knowledge that the certification is erroneous.

The contractor shall provide immediate written notice to the sponsor 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. The subcontractor agrees to provide written notice to the contractor if at any time it learns that its certification was 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 DOT&PF cancellation of the contract or subcontract for default at no cost to the 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 States 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.

XVI. VETERAN'S PREFERENCE

(Incorporate into all construction contracts financed under the AIP program.)

In the employment of labor (except in executive, administrative, and supervisory positions), preference shall be given to Veterans of the Vietnam era and disabled veterans as defined in Section 515(c)(1) and (2) of the Airport and Airway Improvement Act of 1982. However, this preference shall apply only where the individuals are available and qualified to perform the work to which the employment relates.

XVII. TERMINATION OF CONTRACT

(Incorporate into all procurement contracts that funded by AIP funds that exceed $10,000.)

a. The DOT&PF may, by written notice, terminate this contract in whole or in part at any time, either for the DOT&PF's convenience or because of failure to fulfill the contract obligations. Upon receipt of such notice services shall be immediately discontinued (unless the notice directs otherwise) and all materials as may have been accumulated in performing this contract, whether completed or in progress, delivered to the DOT&PF.

b. If the termination is for the convenience of the DOT&PF, an equitable adjustment in the contract price shall be made, but no amount shall be allowed for anticipated profit on unperformed services.

c. If the termination is due to failure to fulfill the contractor's obligations, the DOT&PF may take over the work and prosecute the same to completion by contract or otherwise. In such case, the contractor shall be liable to the DOT&PF for any additional cost occasioned to the DOT&PF thereby.

d. If, after notice of termination for failure to fulfill contract obligations, it is determined that the contractor had not so failed, the termination shall be deemed to have been effected for the convenience of the DOT&PF. In such event, adjustment in the contract price shall be made as provided in paragraph 2 of this clause.

e. The rights and remedies of the DOT&PF provided in this clause are in addition to any other rights and remedies provided by law or under this contract.

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