CORDOVA FISH PASSAGES
Copper River Watershed Habitat Enhancement Project
Cordova, Alaska

GENERAL REQUIREMENTS

Scope of work
The scope of work requires removal of three (3) existing culverts along Copper River Highway (locations identified in a table below), and supply and installation of three (3) larger aluminum structural plate box culverts for stream-simulation application as described in these contract documents. The contractor is to supply all labor, materials, and equipment as required to complete the work.

Locations

Stream Name	ADFG Number	CRWP ID	Latitude	Longitude
Lower Copper River Tributary	20100508	COP 43	N60.44235	W145.13415
Lower Copper River Tributary	20100510	COP 44	N60.44300	W145.12830
Lower Copper River Tributary	20100511	COP 45	N60.44318	W145.12714

All construction shall be completed in accordance with the Alaska Department of Transportation and Public Facilities (ADOT&PF) Standard Specifications for Highway Construction (SSHC) 2017 or later edition. Project specific special provisions are provided in the following sections. The requirements contained in the standard specifications and special provisions are hereby made a part of this solicitation and resultant contract.

Contractor is to provide all necessary resources to complete this contract without any adjustments to the original bid amount or contract time.

The contractor shall complete the work in no more than 60 Working Days after commencing operations. The road cannot be shut down for more than 30 consecutive days for construction. The contractor shall remain on site and shall remain engaged in this project from the time excavation begins until water is flowing down the new culvert and simulation channel, and Copper River Highway is drivable. All work below the ordinary high-water mark must be completed between March 1 and April 15, 2020 or as stipulated by the Alaska Department of Fish and Game (ADFG) Fish Habitat Permit. All construction activities must be completed by May 1st, 2020.

Permits
The contractor is to coordinate permitting with Copper River Watershed Project (CRWP) Program Director to obtain or transfer existing permits to the contractor, including but not limited to:

- NEPA
- ADF&G fish habitat permit
- ADF&G resource permit
- US Army Corps of Engineers Alaska District (ACOE) wetland permit 404
- Alaska Department of Natural Resources (ADNR) water use permit

The contractor is also required to obtain permits and approvals from:

- Affected utility companies
- Land Owner (ADOT&PF, USFS) Use permit
- ADOT&PF for traffic control and road closure
- ADFG fish collection permit
- Alaska Department of Environmental Conservation (ADEC) SWPPP Permit

If more than one (1) acre of land is being worked on at one time, the contractor shall obtain (the latest version) Construction General Permit, develop a SWPPP based on that permit and submit a Notice of Intent to ADEC.

Utility Locates

Contractor shall verify locations of all underground utilities present at the site. Before any excavation begins on the Highway, the Contractor shall obtain and fully execute an ADOT&PF digging permit. A minimum of (2 weeks) lead time for coordination with regulatory agencies must be allowed. The Contractor will also be required to furnish all locations, as well as sketches, redlines, and detailed information regarding the utilities and proposed work.

The contractor shall coordinate dig permits with ADOT&PF (Mr. Daniel Adamczak*; daniel.adamczak@alaska.gov, tel. 907-451-2294).*

Road closures

If fully closing the road for construction, provide alternative road routes and all required signage. Coordinate road closure(s) with ADOT&PF, including the schedule of work, signage and traffic control requirements.

Other Requirements

Contractor must wash equipment each time before mobilization to the site to ensure that the spread of invasive species is prevented.

Contractor shall notify the ADFG, CRWP (Copper River Watershed Project) and the Engineer a minimum of 72 hours prior to:

- The initial excavation at the start of the project.
- Diverting stream flows into a temporary diversion channel or culvert.
- Placement of new culverts to allow for inspection of bedding materials and finish grade.
- Backfill of culvert above the spring line (to verify the invert elevations).
- Placement of materials within the newly constructed channel to allow for inspection of the subgrade and fill material.
- Re-watering of the new stream bed and diverting stream flows into the newly constructed channel.

A representative from the Alaska Department of Fish and Game shall be given the opportunity to be onsite during stream diversion and dewatering of the constructed channel to relocate trapped fish. If the ADFG declines the opportunity to be onsite, the Contractor is responsible for relocating trapped fish in accordance with the Permits.

COPPER RIVER WATERSHED HABITAT ENHANCEMENT PROJECT

STANDARD MODIFICATIONS

TO THE

ALASKA DEPARTMENT OF TRANSPORTATION AND PUBLIC FACILITIES STANDARD SPECIFICATIONS FOR HIGHWAY CONSTRUCTION
2017 EDITION

SECTION 105
CONTROL OF WORK

Special Provision

105-1.18 WARRANTIES. *Add the following:*
If within two years after the date of the Project Completion or such longer period of time as may be prescribed elsewhere by the Contract, any work found to be defective, the Contractor shall promptly and without cost to the CRWP, and in accordance with the Engineer's written instructions, either *correct defective work, or, if it has been rejected by the Engineer, remove it from the site and* replace it with conforming work. If the Contractor does not promptly comply with the terms of such instructions, or in an emergency where delay would cause serious risk of loss or damage, the CRWP may have the defective work corrected or the rejected work removed and replaced, and all direct, indirect and consequential costs of such removal and replacement (including but not limited to fees and charges of engineers, architects, attorneys and other professionals) will be borne by the Contractor.

SECTION 201
CLEARING AND GRUBBING

Special Provision

201-1.01 DESCRIPTION. *Add the following:*
Selectively cut and remove trees as needed to complete the work. The contractor is to give the Engineer 72-hour notice and cut only the trees approved for removal.

Salvage and stockpile native organic soils and vegetative mat as required by this contract.

Stockpile and test excavated embankment material for reuse in accordance with section 104-1.04 Use of Materials Found on the Work.

201-3.01 GENERAL. *Delete the first sentence and add the following.*
The contractor will restrict all work to the project / excavation / clearing limits as shown on the drawings.

201-3.02 Clearing: *Add the following:*
Clearing and grubbing is not permitted within the migratory bird window of April 15 to July 15; except as permitted by Federal, State and local laws, and when approved by the agencies having jurisdiction (AHJ) or Engineer. Active nests shall not be disturbed (unless approved by AHJ). The contractor is responsible for completing clearing and grubbing as necessary to finish the project within the permitted time frame. It will be the contractor's responsibility to remove and dispose of all stumps in the way of construction activity (unless the debris are approved to be re-used on the project).

201-3.03 Grubbing *Add the following:*
Salvage and stockpile for reuse, all the native organic soils and vegetative mats from areas that will be disturbed. Take care not to damage and break apart the vegetative mats. The vegetative mats shall be salvaged during the clearing and grubbing operations. Remove the mat in at least 12-inch wide sections and preserve as intact as possible. Additional vegetative mat will be made available offsite if required, if additional vegetative mat is needed the contractor will be allowed to harvest and transport vegetation from an *approved offsite location* within three miles of the jobsite. The contractor is to notify the Engineer 72 hours in advance of vegetative mat placement, so arrangements can be made for offsite harvest.

201-5.01 BASIS OF PAYMENT. *Add the following*:
Salvaging/harvesting, stockpiling, transporting and placing native organic soils is subsidiary to Pay Item 620(1) Topsoil. Refer to section 620-3.01. Pay item for vegetative mats is included in section 690.

Pay Item		Pay Unit
201 (3A)	Clearing and Grubbing	Square Yard

SECTION 202
REMOVAL OF STRUCTURES AND OBSTRUCTIONS

Special Provision

202-3.01 GENERAL.

Existing Culvert Pipe: The existing culvert pipes shall be legally disposed of offsite.

202-5.01 BASIS OF PAYMENT. *Add the following:*
Removal and reinstallation of riprap boulders are subsidiary to Item 611(2) Riprap Class II.

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Pay Item		Pay Unit
202 (4)	Removal of Culvert Pipe	Linear Foot

SECTION 203
EXCAVATION AND EMBANKMENT

Special Provision

203-3.01 GENERAL. *Add the following:*
Inspect excavation for hazardous conditions before worker entry daily and as conditions change. Inspections are to be completed by a competent person as defined by OSHA.

Delete paragraph 11 and add the following.
The contractor is to test and reuse the existing material in construction if approved by the owner/government representative. If additional material is required, supplement with borrow to maintain the side slopes and elevations as shown on the drawings. Fill all ditches and low areas to prevent ponding (unless required for drainage). Grade the disturbed adjacent areas to drain into the new channels; grade all other disturbed areas to the approximate original ground contour and assure proper drainage.

The contractor is to perform a gradation test on the existing embankment material in accordance with ASTM D-422. Density testing shall be completed according to ASTM D698 / AASHTO T99 (Proctor Test) or ASTM D1557 / AASHTO T180 Modified Proctor Test.

203-3.03 EMBANKMENT CONSTRUCTION. *Delete the first paragraph and add the following:*
Prior to any excavation of the existing embankment at or below the existing water level, a cofferdam made out of super sacks shall be installed as shown on the drawings. Use only approved materials in construction of road embankment and culvert backfill.

Delete the second paragraph and add the following:
Supplemental material for the new embankment shall be select material meeting the requirements of Subsection 703-2.07. Select material may be obtained from onsite or borrow sources that have been laboratory tested and meet the project gradation requirements.

203-3.06 COMPACTION BY PROOF ROLLING. *Add the following:* Proof-roll the base of excavation and where the embankment crosses previously undisturbed ground, prior to placing new embankment material, to the extent that ensures the first lift of material placed upon it can be compacted to the specified density. Omit proof rolling only if approved by the Engineer and if necessary to prevent liquefaction of surface soils.

203-5.01 BASIS OF PAYMENT

Payment will be made under:

Pay Item		Pay Unit
203 (3)	Unclassified Excavation	Cubic Yard
203 (3)	Usable Excavation	Cubic Yard
203 (5)	Re-use Select Fill Material Type A	Cubic Yard
203 (5)	Borrow Select Fill Material, Type A	Cubic Yard

SECTION 204
STRUCTURE EXCAVATION FOR CONDUITS AND MINOR STRUCTURES

Special Provision

204-2.01 MATERIALS. *Delete the first 3 sentences and add the following:*
Bedding and backfill material around the culvert will be ADOT&PF Select Material Type F as described in 703-2.09.

General Backfill will be ADOT&PF Select Material Type A

Armored Channel Substrate is to be used inside the culvert to the level, thickness, and methodology shown on the drawings (see information on the drawings).

204-5.01 BASIS OF PAYMENT. *Delete the fourth paragraph and substitute the following:*
Any backfill or bedding material required whose source is other than project excavation will be paid for at the contract price for pay item.

Payment will be made under:

Pay Item		Pay Unit
204 (1)	Select Fill Material Type A	Cubic Yard
204 (1)	Select Fill Material Type F	Cubic Yard

SECTION 301
AGGREGATE BASE AND SURFACE COURSE

301-1.01 DESCRIPTION. Construct an aggregate surface course on an approved foundation, as shown on the Plans. Use E-1 surface course as described in 703-2.03.

301-5.01 BASIS OF PAYMENT. Water for compaction, added to the aggregate on the grade, is subsidiary.

Pay Item		Pay Unit
301 (4)	Aggregate Surface Course, Grading E-1	Cubic Yard

SECTION 602
STRUCTURAL PLATE, ALUMINUM PLATE, AND BOX CULVERTS

Special Provision

602-1.01 DESCRIPTION. *Add the following:*
Contractor to provide manufacturer-designed culvert bridges to meet the contract requirements and provide an independent check. Inspect and perform quality acceptance on culvert bridges. Provide design calculations with load ratings for the culvert bridges for review and approval.

Add the following Subsection:

602-1.02 DEFINITIONS.

Culvert Bridge stands for culverts and buried structures meeting the requirements of National Bridge Inspection Standards (NBIS) CFR§650.305; individual culverts and buried structures greater than 10 feet in width, as measured along the centerline of roadway crossing over the structure. When specified in the contract or required by the DOR (Designer of Record), this includes the headwalls, toe walls, wingwalls, and foundation.

Culvert Bridge Design Package (CBDP). DOR design calculations, DOR load ratings, IE design check calculations, IE load ratings, working drawings, and specifications.

Designer of Record (DOR). A civil engineer registered as a Professional Engineer in the State of Alaska, and in responsible charge of the work described. The DOR must have adequate and relevant prior structural design and inspection experience. The DOR may delegate portions of design, quality acceptance, and inspection work, to qualified technicians. The DOR and qualified technicians must not be supervised by, or under the direction of the Contractor's superintendent and work crew.

Independent Design Check (IDC). An independent design check of the design and load rating calculations including but not limited to: design, load ratings, location and dimensions of the foundation, structural members, connections, erection plan and temporary bracing (when required), safety barrier, and independent calculations of design loads, member stress, material properties, hydraulic capacity and scour protection.

Independent Engineer (IE). An engineer registered as Professional Engineer in the State of Alaska, and in responsible charge of the independent design check. The engineer responsible for the check must have adequate and relevant prior structural design experience.

602-2.01 MATERIALS. *Add the following:*

Concrete	Section 501
Reinforcing Steel	Section 503
Structural Steel	Section 504
Riprap	Section 611

Add the following Subsection:

602-2.02 GEOTECHNICAL DATA AND HYDROLOGY INFORMATION. The Department may provide records of geotechnical investigations. The Contactor is responsible for obtaining additional geotechnical data as necessary for the design and construction of the culvert bridge.

The Department may provide hydrology and hydraulics information. The Contractor is responsible for obtaining hydrology and hydraulics data as necessary for the design and construction of the culvert bridge.

Add the following Subsection:

602-2.03 DESIGN REQUIREMENTS. Retain the services of a DOR to design and provide a CBDP for each culvert bridge. Retain the services of an IE to perform an IDC of each CBDP.

1. Design culvert bridges according to the following documents:
   a. Alaska DOT&PF Standard Specifications for Highway Construction for recommended construction methods, material properties, and sampling and testing.
   b. AASHTO LRFD Bridge Design Specifications, as modified by Subsection 602-2.03;
   c. Alaska Highway Preconstruction Manual; and the
   d. Alaska Bridges and Structures Manual (BSM).

2. Design culvert bridges that:
   a. Support 100% of HL93 live loads or the Contractor's maximum construction load whichever is greater, without overstress. Follow the most recent version, including interim version, of the AASHTO LRFD Bridge Design Specifications. Indicate governing live load on working drawings;
   b. Meet the design life specified in AASHTO LRFD Bridge Design Specifications after allowing for metal section loss associated with abrasion and pH levels of the substrate and water;
   c. Meet the seismic acceleration values recommended in the AASHTO LRFD Bridge Design Specifications;
   d. Include the capacities and demands of load-supporting members in the design calculations;
   e. Meet the dimensions, stations, offsets and elevations of inverts and riprap requirements shown on the plans;
   f. Provide the minimum hydraulic capacity shown on the Plans when openings are required to allow for the passage of water; and
   g. Provide the minimum horizontal and vertical clearances shown on the Plans when openings are required to allow the passage of traffic. If no vertical clearance is provided, follow the requirements in the Alaska Highway Preconstruction Manual.

3. Provide working drawings for culvert bridges including:
   a. Dimensions controlling the culvert bridge design and erection, including proposed fill depth, corrugation spacing, corrugation depth, gauge thickness, concrete thickness, reinforcing steel size and locations, clear opening sizes, utility size and locations, and similar controlling dimensions;
   b. Design loads and material properties; and
   c. The soil bearing values.

4. Provide load ratings for the culvert bridges according to the most recent version, interim version, of the AASHTO Manual for Bridge Evaluation (MBE) and the BSM. Load rate metal and concrete culvert bridges using the Load Factor Rating (LFR) and Load and Resistance Factor Rating (LRFR) methods.

   Provide load ratings that reflect the bridge culvert final as-constructed condition. Include values for moment, shear and, where applicable, thrust for concrete culvert bridges. Include values for wall area, buckling, and seam strength for metal culvert bridges. Specify live load type, placement for maximum stress, distribution, and impact.

   Include the following cases for LFR load ratings:
   a. Inventory with multiple lanes and impact included
   b. Operating with multiple lanes and impact not included
   c. Operating with one lane centered on the roadway and impact not included.

   Include the following cases for LRFR load ratings:
   d. Inventory with multiple lanes and impact included
   e. Operating with multiple lanes and impact included
   f. Operating with one centered on the roadway and impact not included.

Add the following Subsection:

602-2.04 DESIGN SUBMITTALS AND REVIEW. Submit the following for review and approval at least 30 days prior to the beginning or construction related to the culvert bridges:

1. The CBDP. The design drawings and load ratings in the CBDP must be stamped with the seal of, dated by, and signed by the DOR;
2. An IDC letter stamped with the seal of, dated by, and signed by the IE certifying: “The Culvert Design Bridge Package meets the AASHTO LRFD Bridge Design Specifications, the AASHTO Manual for Bridge Evaluation, and the Contract requirements”.

Revise and resubmit the CBDP to incorporate any comments received during review. Resubmit the IDC letter after comments have been incorporated.

The approval of the CBDP shall not be construed as complete review, but will only indicate that the general method of construction and working drawings are acceptable to the Department, that the CBDP appears complete, and that an IDC letter was provided. The Contractor shall remain responsible for all aspects of the culvert bridge.

602-3.01 CONSTRUCTION REQUIRMENTS. *Add the following:* When shown on the Plans, place riprap in accordance with Section 611.

Do not begin fabrication or construction of culvert bridges without the written approval of the Engineer. Do not open culvert bridges to traffic without approval of the Engineer.

602-5.01 BASIS OF PAYMENT. *Replace the first sentence with the following:* Structure excavation, bedding, and backfill for culvert is paid for under Section 204. The CBDP, engineering, inspection, labor, equipment, and materials necessary to design, load rate, and install culvert bridges are subsidiary.

Payment will be made under:

Pay Item		Pay Unit
602 (2)	Supply and Install Structural Plate Aluminum Box Culvert 16'-6" Span, 6'-8" Rise with Solid Invert; Haunch Gage 3, Crown Gage 2	Linear Foot

SECTION 611
RIPRAP

Special Provision

611-3.01 CONSTRUCTION REQUIREMENTS. *Add the following:*
Use riprap to construct revetment to the lines and grades shown on the Plans. Refer to Section 690 Waterway. Use borrow or salvaged organic soil to fill surface and sub-surface voids in the riprap to the satisfaction of the Engineer. Borrow or salvaged organic soil shall not prevent rock to rock contact. Cover riprap with 4" of topsoil and seed.

611-5.01 BASIS OF PAYMENT. *Add the following:*
Filling voids in riprap with borrow or salvaged organic soils is subsidiary to Pay Item 611(1) Riprap, Class II.

Payment will be made under:

Pay Item		Pay Unit
611 (1)	Riprap, Class II	Cubic Yard

SECTION 618
SEEDING

Special Provision

618-1.01 DESCRIPTION. *Delete subsection in entirety and substitute the following*:
Topsoil and seed new or disturbed slopes, riprap slope protection, and other areas shown on the drawings. Place the soil, then seed and water. Provide a living ground cover on slopes as soon as possible.

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

618-3.03 APPLICATION. *Add the following*:
Evenly mix the seeds in a sack immediately before dispersing or adding to a hydro seeding solution, and then evenly mix the seeds into solution. Water lightly, keep top 1/8" soil moist until final acceptance of the Project is received.

Apply at one pound per 1000 square feet (43 lbs./Acre) or as recommended by the seed supplier

Contractor must provide the Engineer with seed tags provided by seed supplier showing seed purity and germination in compliance with Section 724 Seed for approval prior to applying seed to project site.

618-4.01 METHOD OF MEASUREMENT. *Add the following:*
The quantity of seeding shall include all cultivation, seeding, and limestone if required.

618-5.01 BASIS OF PAYMENT. *Add the following:*
Furnishing, mobilizing, modifying, operating, and maintaining all materials and equipment necessary to install seed is subsidiary to pay item 618(1) Seeding. For warranty and more on maintenance requirements see Section 690-3.05.

Pay Item		Pay Unit
618 (1)	Seeding (Schedule A)	Square Yard
618 (3)	Water for Seeding	Lump Sum

SECTION 620
TOPSOIL

Special Provision

620-1.01 DESCRIPTION. *First paragraph Add the following:*
The contractor shall revegetate as much of the disturbed ground as possible with vegetative (veg) mat to match the existing landscape. Veg mat needs to have a 4-inch layer of topsoil below.

Where vegetative mat is not available, or is not feasible due to ground contours, or does not match the surrounding area, the contractor is to apply topsoil and seed. Contractor must stabilize the fill material from erosion.

620-3.01 PLACING. *Add the following:*
Place native organic soils (salvaged from clearing, grubbing, and excavation work) or topsoil to meet the requirements of Section 726 to a thickness of 4 inches (or as shown on the drawings) on all disturbed ground away from the road prism; seed according to Section 618, Seeding, of these specifications.

Pay Item		Pay Unit
620 (1)	Top Soil (4”)	Square Yard

SECTION 630
GEOTEXTILE FOR EMBANKMENT AND ROADWAY SEPARATION, STABILIZATION AND REINFORCEMENT

630-1.01 DESCRIPTION. Prepare ground surface, and furnish and place geotextiles for separation, stabilization, and/or reinforcement as shown on the Plans.

630-2.01 MATERIALS. Use materials that conform to the following:

Geotextiles and Sewn Seam Strength	Subsection 729-2.01

630-3.01 CONSTRUCTION.

1. Surface Preparation. Prepare ground surface by removing stumps, brush, boulders, and sharp objects. Fill holes and ruts over 3 inches deep, with material shown on the Plans or as approved by the Engineer.

2. Geotextile Placement. Unroll geotextile directly onto the prepared surface. Stretch geotextile to remove any creases, folds or wrinkles. Do not drag the geotextile through mud or over sharp objects that could damage the geotextile. Do not expose geotextiles to sunlight for longer than 14 days after removal of protective covering. Do not allow geotextiles to get wet prior to installation.

a. Geotextile, Reinforcement placed under culverts shall be placed perpendicular to the road centerline (i.e. parallel to the culvert centerline), with one 15-foot wide piece of geotextile centered under the culvert centerline. Seams parallel to the road centerline (i.e. perpendicular to the culvert centerline) shall not be allowed.

4. Material Placing and Spreading. During placing and spreading of material, maintain a minimum depth of 6 inches of cover material at all times between the geotextile and the wheels or tracks of the construction equipment. Limit the size and weight of construction equipment to reduce rutting in the initial lift above the geotextile to not greater than 3 inches deep to prevent overstressing the geotextile.

   Place the cover material and spread in only one direction for the entire length of the geotextile. On weak subgrades limit height of dumped cover material to prevent localized subgrade and/or geotextile failure.

   Compact using a smooth drum roller. Do not allow construction equipment to make sudden stops, starts, or turns on the cover material. Do not allow turning of vehicles on the initial lift of cover material above the geotextile. Fill any ruts over 3 inches deep occurring during construction with material shown on the Plans; do not grade adjacent material into rut; and compact to the specified density.

5. Geotextile Repair. Repair and replace damaged geotextile (torn, punctured, or disturbed at the overlaps or sewn joints). For damage evidenced by visible geotextile damage, subgrade pumping, intrusion, or embankment distortion, remove the backfill around and under the damaged or displaced area, and repair with material matching the damaged material. Make patches overlap or sew patches to the existing geotextile.

a. Reinforcement. Overlay torn area with geotextile with a minimum 3-foot overlap around the edges of the torn or damaged area. Ensure the patch remains in place when cover material is placed over the affected area.

630-4.01 METHOD OF MEASUREMENT. 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.

Pay Item		Pay Unit
630 (1)	Geotextile, Separation	Square Yard

SECTION 640
MOBILIZATION AND DEMOBILIZATION

Standard Modifications

640-3.01 CONSTRUCTION REQUIREMENTS
Pressure wash all tracked equipment, excavation equipment, and excavation hauling equipment prior to every mobilization to ensure that the spread of invasive species is minimized. Clean equipment so that no invasive species would have the chance of being spread or imported into the site. At a minimum, there should be no visible dirt on equipment.

All equipment must be re-washed every time if it was removed from the site before it is returned to the site.

Pay Item		Pay Unit
640 (1)	Mobilization and Demobilization	Lump Sum

SECTION 641
EROSION SEDIMENT AND POLLUTION CONTROL

Standard Modifications

641-5.01 Basis of Payment

Payment will be made under:

Pay Item		Pay Unit
641 (1)	Erosion, Sediment and Pollution Control (Administration)	Lump Sum
641 (3)	Temporary Erosion, Sediment and Pollution Control	Lump Sum

SECTION 642
CONSTRUCTION SURVEYING AND MONUMENTS

Standard Modifications

642-3.01 GENERAL. *First paragraph Add the following:*
The contractor shall submit for approval the qualifications of all persons engaged in grade control. The lead person establishing and checking grades in the field must have a minimum of 2 years of relative experience and be assigned to the project with the primary responsibility of grade control. Equipment operators or other personnel with other project responsibilities cannot be responsible for grade control duties. At least one person competent in setting, adjusting and recording grades *shall always be on site* during streambed excavation, culvert placement and backfill operations.

642-4.01 METHOD OF MEASUREMENT. *Delete all 6 paragraphs and add the following:*
No measurement of quantities will be made.

Delete the Pay Item table and add the following:

642-5.01 BASIS OF PAYMENT. Construction Surveying includes field and office work required to accomplish the work, including furnishing necessary personnel, equipment, transportation and supplies.

Traffic control devices necessary for the survey parties are considered subsidiary to Pay Item 642 (1).

Payment will be made under:

Pay Item		Pay Unit
642 (1)	Construction Surveying	Lump Sum

SECTION 643
TRAFFIC MAINTENANCE

Standard Modifications

643-1.03 TRAFFIC CONTROL PLAN. *Add the following:*
The contractor shall submit for approval to ADOT&PF and the Engineer a traffic control plan prepared under the supervision of a Traffic Control Supervisor assigned to this project. No work shall begin on the project site until the traffic control plan is approved.

643-4.01 METHOD OF MEASUREMENT. *Delete items 1 thru 16 and add the following:*
Traffic Maintenance will be lump sum and shall include preparation of TCPs, and all labor, materials, traffic control devices and equipment required to implement the Traffic Control Plans as specified and as directed. Temporary construction signs, flagging and pilot car, if required by TCP, will be subsidiary.

643-5.01 BASIS OF PAYMENT. *Delete paragraphs1 - 17 and add the following:*
Traffic Maintenance. The contract price includes all resources required to provide all required Traffic Control Plans and public notices, and the maintenance of all roadways, approaches, crossings, intersections and pedestrian and bicycle facilities, as required. This item also includes any temporary construction signs and traffic control devices required but not shown on the bid schedule.

Payment will be made under:

Pay Item		Pay Unit
643 (2)	Traffic Maintenance	Lump Sum

SECTION 672
STREAM DIVERSION & DEWATERING

Special Provision

672-1.01 DESCRIPTION.
The Work under this Section consists of performing all operations pertaining to the dewatering of Work areas and diversion of surface and subsurface water flows for excavation and backfill during construction operations as shown on the drawings.

672-1.02 GENERAL.
A recommended Stream Diversion Plan has been provided on the drawings. The provided stream diversion plan is intended to convey the engineered design concept. The location shown, and the design can be adjusted by the contractor as needed to better fit field conditions, including the locations of bulk bags (Super Sacks), coffer dams, the diversion culvert, and related items. The contractor *can propose an alternative diversion plan* to the Engineer and Owner for approval. The Contractor shall review the contract documents and submit any changes to the Engineer for approval in writing in advance before implementing a modified plan. Divert water and dewater work area only as approved by the permits. The streambed, downstream of the work shall not be allowed to dry out. The contractor shall use work methods that will allow the portion of the streambed, outside the limits of construction, to remain wet for the duration of this project.

Required Notifications:
The Contractor shall provide notification a minimum of 72 hours prior, or as required by the permit, to the USFWS, Alaska Department of Fish and Game (ADFG) and the Engineer of record before:

1. Diverting stream flows into the temporary diversion culvert.
2. Diverting stream flows into the reconstructed channel with in the new culvert.

672-2.01 MATERIALS.
Contractor shall be responsible for obtaining, mobilizing, operating, and maintaining all materials and equipment necessary to complete dewatering operations, including machinery, bulk bags, sandbags, hoses, pumping facilities, piping, temporary culverts, and the like. All material costs are incidental to pay item 672(1) Stream Diversion & Dewatering.

672-3.01 CONSTRUCTION.
Comply with construction design, installation, and operation of dewatering systems with current safety and environmental regulations. Work must be performed in dry conditions. Minimize disturbance of undisturbed ground. Engineer will approve placement of pads for dewatering equipment.

Maintain 24-hour pump operation for trench dewatering until backfill is at least 1’ above the groundwater elevation.

672-3.02 DEWATERING.
Acceptance of Contractor’s written Stream Diversion Plan by the Engineer does not relieve Contractor of responsibility for the exercise of reasonable precaution, prudent construction practices, overloading or misuse of existing or new structures, the adequacy and safety of such works, and the potential damage due to undermining existing or completed works.

Relocate all the fish contained within any coffer/diversion dams, the scour pool, or the old channel before the site is completely dewatered. Place relocated fish in the closest pool upstream of the construction area. If trash pumps are used for stream diversion, the intake must be operated and maintained to prevent fish entrapment, entrainment, or injury. Around the intake use perforated or slotted plate and woven wire with a mesh size not greater than 3/32 inch or a profile bar and wedge wire with openings not greater than 1/16 inch. Intake velocities shall not exceed a passive velocity of 0.2 feet per second (fps) or an active velocity 0.4 fps.

Water resulting from Contractor's dewatering effort may not be pumped or otherwise diverted into creeks unless required permits, including, but not limited to, ADNR, ADEC and the U.S. Environmental Protection Agency, are obtained. Under no circumstances will the Contractor be allowed to divert water from the excavation onto roadways. Contractor is to provide a disposal site for excess water, within the limits of construction, in accordance with all necessary permits.

Maintain the dewatering pumping operations to ensure return flow does not exceed State of Alaska water quality standards. Water pumped from the construction site may require additional filtration by filter fabrics, settling, or other methods to prevent turbid water from directly entering the stream. Turbid water pumped from the work site for the purpose of lowering the water table in the trench during stream channel reconstruction shall be discharged at least 100 feet from stream flows, except when performing dewatering procedures described in the next subsection.

672-3.03 REWATERING.
Conduct re-watering activities to minimize sediment movement downstream of the site upon completion of in-stream work. Prior to re-diverting full stream flows to reconstructed channel (including culvert), wet the channel to wash fines into stream bed. Slowly wet the channel through use of pumps or by diverting a small portion of stream flows into the reconstructed channel. Provide means for collecting sediment and turbid water at downstream end of reconstructed channel. Capture and pump turbid water from downstream end of channel back to upstream end of channel until fines are washed into stream bed and water runs clear as determined by the Engineer. After the initial sediment is removed, slowly breach the coffer/diversion dams to avoid a large pulse of water being sent through the newly constructed channel.

672-4.01 METHOD OF MEASUREMENT. Section 109.
Temporary culverts, pumps, hoses, stilling basins, sandbags, bulk bags (e.g., Super Sacks), plastic liners, temporary rock and riprap, and other materials will not be measured for payment.

672-5.01 BASIS OF PAYMENT.
All administrative costs, materials, equipment and labor necessary to complete the scope of work as specified under this section and not paid for under other items on the bid schedule, including temporary culverts, pumps, hoses, stilling basins, sandbags, bulk bags (e.g., Super Sacks), plastic liners, temporary rock and riprap, are subsidiary to Item 672(1), Stream Diversion & Dewatering.

Payment will be made under:

Pay Item		Pay Unit
672 (1)	Stream Diversion & Dewatering	Lump Sum

SECTION 690
WATERWAY

690-1.01 DESCRIPTION.
Construct a waterway bed (stream bed, river bed, creek bed, and or similar), and waterway bank (protection and revegetation), at the location shown on the Plans.

690-1.02 REFERENCES.
Stream Bank Revegetation and Protection: A Guide for Alaska; published by Alaska Department of Fish and Game; printed copy available from the Department, and electronic copy available on the internet.

690-2.01 MATERIALS.

Clearing and Grubbing	Section 201
Spruce Trees	Section 621
Seeding	Section 618 & 724
Top Soil	Section 620 & 726
Channel Armor Substrate	Section 204

Waterway Bank Fill: Native material and Select Material, Type A.

Salvaged Organic Soil: Salvaged topsoil, overburden material, or useable excavation high in organics and fines.

690-3.01 CONSTRUCTION REQUIREMENTS.
Provide equipment of a size and type to efficiently complete the work with the least impact on the waterway. Submit to the Engineer a list of equipment to be used during construction for review and approval. Do not damage the culvert structure or surface finish. Do not operate equipment directly on the surface of the culvert; work off of protective pad/dunnage or waterway bed fill material.

690-3.02 EXCAVATION.
Excavate to the dimensions shown on the Plans. Control excavated material to minimize disturbance to the new channel and banks.

690-3.03 WATERWAY BED.
Place channel armor substrate material in the channel by methods that do not cause segregation or damage. The Channel Armor Substrate will be placed in lifts of various depths depending on the size of the material. The large riprap boulders are to be placed so that they are in solid contact with each other. The fines in between the larger riprap are an integral part of the waterway bed and are to be compacted tightly into the voids. Acceptable methods involve using water pressure, metal rods and hand tamping methods to force material into the voids until full. Make waterway bed surface roughness similar to the natural waterway bed. Layers of riprap separated by layers of fines are not acceptable.

690-3.04 WATERWAY BANK.
Tie the ends of constructed banks to the existing grade. Modify bank height and width as necessary to create a smooth transition from constructed bank to existing grade. Replace vegetative mat along the channel banks.

Construct Banks:
Place the bank reconstruction materials as shown on the Plans and noted in the Specifications. Place the bank fill material with vegetative mat such that the top of the bank, the vegetated mat, is flat and at the same elevation as the existing bank.

1. Install Erosion Control measures before beginning work.

2. Salvage/harvest and stockpile vegetative mat.

3. Excavate the waterway bank.

4. Place waterway bank fill.

5. Place vegetative mat on the topsoil. Plant vegetative mats between April 1 and May 1.
   a.) Wet the bank. Soak vegetative mats to saturation prior to placing.
   b.) If the vegetative mat has lost topsoil, such that the in-place thickness of the mat will not be 12-inches thick, place additional topsoil over the Willows, filling voids, and increasing the mat thickness to 12-inches plus the initial 4-inches of topsoil.
   c.) Stake all areas to be planted with vegetative mats as shown on the Plans prior to installation. Notify the Engineer of the delineated areas three working days prior to installation. Install only after receiving the Engineers approval.
   d.) Place vegetative mats tightly together, without gaps, with full contact of the root mass to the soil surface below, tamp into place and anchor with wooden stakes 18-inches long and spaced 1 per square yard.

690-3.05 ESTABLISHMENT PERIOD
Establishment period shall extend for two complete growing seasons after the required planting is completed. A growing season is from May1, to September 30.

Employ all possible means to preserve the vegetative mat in a healthy and vigorous condition to ensure successful establishment. During this period, perform the necessary weeding to keep the area of disturbance free from invasive species. Water as frequently as necessary to keep the immediate root area moist at all times.

The engineer may, but is not required to, determine the Project is complete except for the period of establishment, and issue a letter of final acceptance. After final acceptance, work or materials due under this subsection during any remaining period of establishment are considered warranty obligations that continue to be due following final acceptance in accordance with Subsection 105-1.18

690-3.06 PLANT REPLACEMENT
Engineer and Contractor's representative, in the spring of the year following the planting year and before June 30, inventory Willow cuttings, transplants, and vegetative mat planted on the project to determine the number/area of dead plants/organic materials.

1. Willow Cuttings. At least 4 cuttings per foot, on average over a 4-foot section, for each individual layer, shall be healthy and in a flourishing condition. For areas not meeting this requirement, replant the areas using live staking techniques; space the replacement live stakes at 6-inches along the layer or as directed by the Engineer. Do not remove the dead cuttings.

2. Planted new saplings that replaced every tree removed as approved by the Engineer; shall be healthy and in flourishing condition. For those not meeting the requirements – re-plant with new healthy plants.

3. Vegetative Mat. If the planted vegetative mat survival (mat being vigorous and healthy) area is greater than 75% of the original planting area, no replacement mat is required. If the mat survival area is less than 75%, replace the vegetative mat to increase the area to 75% of the originally planted area.

Coordinate the replacement of the vegetative mat with the planting of transplants to minimize damage to healthy organic materials. The Engineer will select which of the dead or unhealthy Willow cuttings, transplants, and vegetative mat area to replace.

Perform replacement planting between July 1 and July 15 according to the original planting procedures and as described in this subsection.

If after the maintenance period a survival rate, as described in 1 and 2 above, of planted organic material has not been attained, replant the materials to attain the levels of survival as described in 1 and 2 above, for each live organic material planted.

Contractor is responsible for replacing plants vandalized, stolen, or damaged during the maintenance period. Replace plants as soon as weather conditions permit. Provide replacement plant quality equal to, or better than, initially specified.

There is additional vegetated mat available for revegetation off site at a designated location. The contractor is to notify the Engineer, coordinate the schedule and provide man power and equipment for harvesting and transporting the replacement mat to the job site.

All plants are to be sourced locally on the island with an exception of grass seed. Plants are to be obtained from the area(s) identified by the Engineer.

690-3.07 MAINTANENCE.
Install and maintain plastic safety fence meeting the requirements in Section 643, in the locations shown in the Revegetation Details on the Plans. Install plastic safety fence per the manufacturer's recommendations upon completion of waterway bank protection and revegetation. Remove plastic safety fence at the end of the maintenance period for the willow cuttings, live willow stakes, and vegetative mat.

Deepwater vegetative mat, willow cuttings, and transplants immediately after planting. Deepwatering shall provide water penetration throughout the entire layer, to the top of the waterway bank fill, with minimum runoff. Rain will not be considered a substitute for deepwatering unless permitted by the Engineer.

Deepwater the vegetative mat, Willow cuttings and transplants as follows:

1. Deepwater at least twice a week during the first 45 days after planting.

2. For 45 days after planting, deepwater during the remainder of the first growing season ending September 30 of the same year as the planting, through the maintenance period ending September 30 of the second growing season, as follows:

a. Once a week in May, June and July.
b. Once between August 10 and August 20.
c. Once during the last week in September.

3. The Engineer may direct the Contractor to deep water past September 30 or provide supplemental watering any time during the life of the project when weather conditions are excessively warm or dry.

Daily water vegetative mat, willow cuttings, and transplants, or as directed by the Engineer. Keep the mats moist until final acceptance of the project or as accepted by the Engineer.

Watering equipment shall be equipped with or followed by a vehicle equipped with a Type B advance warning arrow panel using caution mode according to Part VI of the Alaska Traffic Manual.

The warranty and maintenance period for this work shall extend from the time of planting to September 30 of the second year (second growing season).

690-5.01 BASIS OF PAYMENT.

1. Pay Items 690 (1) include the materials and all work to place and maintain the materials in place, including but not limited to, excavation, placement/backfilling, benching, compacting, filling voids and similar.

2. Pay Item 690 (2) includes the materials and all work to salvage/harvest, store, transport, place and maintain organic materials, salvaged vegetation, topsoil, watering, and similar. Watering is subsidiary.

Water diversion is paid under Section 672.

Offsite disposal of any material attributed to this feature of work shall be subsidiary to and paid under section 690 (1)

3. Vegetative mat shall be a minimum of three (3) feet wide.

Payment will be made under:

Pay Item		Pay Unit
690 (1)	Waterway Bed – Fine Material	Cubic Yard
690 (1)	Waterway Bed – Course Material	Cubic Yard
690 (1)	Waterway Bed – Riprap Class II	Cubic Yard
690 (4)	Vegetative Mat (3 ft. wide)	Square Yard

SECTION 703
AGGREGATES

703-2.09 SUBBASE. *Add the following:*

Subbase, Grading F. Aggregate containing no muck, frozen material, roots, sod or other deleterious matter and with a plasticity index not greater than 6 as tested by ATM 204 and ATM 205. Table 703-8 and the first paragraph of Subsection 703-2.09 do not apply to Grading F. Meet the following gradation as tested by ATM 304:

Subbase, Grading F

SIEVE	PERCENT PASSING BY WEIGHT
2in	100%
No. 4	15 – 65%
No. 200	0 – 6%

SECTION 724
SEED

Standard Modifications

724-2.01 MATERIALS *Add The following*:
The required seed mix for this project is:

Name	**Proportion by Weight**
Nortran Tufted Hair grass, *Deschampsia caespitosa*	45%
Arctared' Red Fescue, *Festuca rubra*	30%
Egan Sloughgrass,	20%
Arctic Mulch Blue Joint Reed Grass	See Below *

*. Apply Arctic Mulch (Blue Joint Reed Grass) generously over newly seeded areas. The mulch will be applied at 46 pounds (lbs) per 1000 square feet (SF).

SECTION 726
TOPSOIL

Standard Modifications

726-2.01 *Delete sentence number 2 and replace with the following:*
Contains a minimum of 10 percent organic matter as determined by loss-on-ignition of oven dried samples according to ATM 203.

Top soil to be weed-free certified. Suppliers are to be approved by the owner or engineer.

SECTION 729
GEOSYNTHETICS

729-2.01 GEOTEXTILE FOR SUBSURFACE DRAINAGE, SEPARATION, STABILIZATION, EROSION CONTROL AND EMBANKMENT REINFORCEMENT.

1. Subsurface Drainage. Meet AASHTO M 288 for Subsurface Drainage, except provide a minimum permittivity of 0.50 sec-1, and meet Class 2 Strength Property Requirements.
2. Separation. Meet AASHTO M 288 for Separation, except provide a minimum permittivity of 0.50 sec-1, and meet Class 3 Strength Property Requirements.
3. Stabilization. Meet AASHTO M 288 for Stabilization, except provides a minimum permittivity of 0.50 sec-1, and meet Class 1 Strength Property Requirements.
4. Erosion Control. Meet AASHTO M 288 for Permanent Erosion Control and meet Class 1 Strength Property Requirements.
5. Reinforcement. Meet the requirements in Table 729-1 for Type 1 or Type 2.

Package, label, handle and store geotextile materials according to ASTM D 4873.