ALASKA RAILROAD CORPORATION
327 W. Ship Creek Ave.
Anchorage, AK 99501

October 9, 2020

Addendum 3
Invitation to Bid # 20-33-208503
MP 52.14 Rockfall Mitigation

Addendum number 3 is issued for Questions and Clarifications

The Closing Date for this ITB has not changed.
Bids will be received until October 13, 2020 @ 3:00 PM Alaska time.

Clarifications:

Please replace the following pages in the entirety with the pages attached herein.

Page 58-70 Appendix F Special Conditions

All other terms and conditions remain unchanged.
If there are any questions regarding this addendum please let me know.

Thank you,

Greg C Goemer
Sr. Contract Administrator Alaska
Railroad Corporation

QUESTIONS:

1. Can an additional site visit be performed to allow perspective Contractor's to access the top of the project limits?

    a. No, additional pictures from the path that the surveyor's utilized to access the top of the project limits are provided in DropBox. Note that surveyor's access the top from the south end of the southernmost tunnel. After an Intent to Award has been issued, a site visits may be scheduled.

2. ARRC's response to question #26 indicates excess rock cannot be stockpiled at MP 51 as discussed during the site visit. Materials shall instead be stockpiled at MP 80. This mean the ARRC air dumps will need to cross beneath the blasting zone to get loaded ie rail will need to be kept open through the work zone. Is this ARRC's intent? If so, how many air dumps will be committed to this project and what is the estimated round trip time to transport the air dumps from site to MP 80 and back? How many air dumps can be used per each train? The inability to stockpile rock at MP 51 is going to add a lot of cost to this project and should be reconsidered if at all possible.

    a. Aggregate materials generated within the Project limits can be stockpiled at both Tunnel Section (ARRC ≈MP 51) and the stockpile area at ARRC ≈MP 80 (Seward Highway ≈MP 95.6). ARRC ≈MP80 is to be utilized should material stockpiled at Tunnel Section become unmanageable to stockpile within the ARRC's RoW. Access to the Tunnel Section crossing and its facilities cannot be compromised by the Contractor's stockpiling activities.
    b. During a scheduled outage the Contractor determines whether or not the rail needs to be kept open through the blasting zone. ARRC assets will originate from either Anchorage or Portage and will need to be able to return to Portage at a minimum by the end of their shift. When the train consist is intended to be utilized for more than one (1) day, the consist will tie up at the Portage Passenger facility for the approved duration required.
    c. Travel time between the project site and MP80 is roughly an hour each way, depending on track conditions and freight traffic. If the site is utilized, it would be advantageous to place the final load of the day into the air dump cars so that it can be dumped at MP80 at the beginning of the train crews shift.
    d. Item No. 1.2 – ARRC Mobilization Support indicates that a minimum of ten (10) air dumps can be committed to this project. The amount of air dumps committed will be the same number that can be utilized in a single train consist.

3. //Specification page 4 of 22 V.e indicates written plans must be provided at least 120 days before the first outage. Shall contractors assume no work will be permitted within 120 days of award? This will require pioneering/drilling operations be performed after significant snow/ice accumulation.

    a. Contractor's shall not assume that no work is permitted within 120 days of award. The ARRC will expeditiously review all the required submittals required to allow the Contractor to commence work and schedule track outages. In the past, expedited reviews occurred within 3 to 10 business days.

4. Specification page 4 of 22 V.f indicates a review/progress meeting is required at least 90 days prior to the first outage. Shall contractors assume no work will be permitted within 120 days of award?

    a. Contractor's shall not assume that no work is permitted within 120 days of award. A review/progress meeting shall be required prior to the first scheduled outage. The ARRC will expeditiously review all the written plans/submittals mentioned in question 2 and schedule the abovementioned meeting to occur as soon as practicable. In the past, expedited reviews and subsequent meetings occurred within 3 to 10 business days. Longer durations may be required as train activity through the corridor increases in Spring.

5. Please confirm the ARRC will supply the galvanized PS31 sheet piles?

    a. Hot-dip galvanized sheet pile will be provided by the ARRC for the Contractor's use.

6. 36" x 0.5" Culverts: Assume no coatings or galvanized?

    a. Galvanized . The specifications have been updated to reflect.

7. Retaining Walls, Chanel Iron walers: Please provide a splice detail. Walers are typically connected with splice plates or a lapped joint rather than welding.

    a. The walers were designed to be simply supported between the soldier piles. They can be constructed continuously and have breaks every third soldier pile where there is approximately a 1" gap between the waler sections. They are active in bearing at the soldier piles, so there isn't much to design in terms of a splice if they are breaking them at the soldier piles.

8. Rock Anchor Experience: Not many contractors in Alaska have 5 years rock anchor experience. Can this requirement be relaxed? We have drilled & installed rock anchors on a project with similar, or greater, complexity within the past 2 years.

    a. ARRC will relax this requirement as long as the Contractor and its personnel have performed work of similar complexity. Contractor to provide project and personnel resumes with references.

9. Michael Baker Specs, page 13 of 22, Rock Sockets: M&P paragraph indicates "rebar & dowels" are subsidiary to rock socket item. Please provide details of rebar & dowels.

    a. This is boiler plate language for the specs. There are no rebar or dowels required in the rock sockets for this project. This is boiler plate language for the specs. There are no rebar or dowels required in the rock sockets for this project.

10. Will contractor be required to remove existing retaining walls? Addendum 2, Construction Specifications, page 14 of 22, paragraph "c" requires removal of existing components that are to be replaced as part of this work.

    a. Contractor is to remove existing and dispose of in accordance with all applicable Federal, Local, State and Tribal laws. Vertical members that cannot be removed in their entirety, shall be removed to the satisfaction of the Owner or its representative.

11. Please verify that PS31 flat sheets do not get welded to HP14x89 soldier piles. No weld detail provided.

    a. It was not our intent to weld the PS31 sheets to the HP14x89 soldier piles.

12. Will ARRC deliver PS31 flat sheet piles to Portage or will contractor pick up at POA?

    a. ARRC provided materials will be loaded onto a flat car that will be mobilized to the site via the ARRC Train Consist. It is recommended that the Contractor be involved with the selection and loading of the sheets.

13. No weld detail is provided for MC 18 x 45.8 sheet pile cap beam to HP 14 x 89 soldier piles. Please provide weld detail.

    a. Please provide a 6" long 3/16" continuous fillet weld between the channel flange the HP 14x89 on the track side.

14. Addendum 2 page 67 of 92 Item No. 3 – Finish Face Excavation states "measurement for payment will be calculated as the summation of the total drilling depth, to include a maximum of 6 inches of sub-drill per holes, of the pre-split and buffer holes, from the contractor provided drill logs." Please clarify how cubic yardage of finish face excavation will be measured for payment.

    a. Updated the ITB package to clarify the payment of materials generated from blasting activities.

15. Parameters for seismic monitoring?

    a. Updated the ITB package, parameters are noted under Blasting Specifications → Vibration Control and Monitoring.

16. Is it acceptable for Contractors to bid the current formula of NA Grout as opposed to the formula specified? The data sheet for the NA Grout listed is outdated and the strengths are a bit lower than those.

    a. If the grout meets the general intent of the specifications, it can be used. The documentation provided in the ITB package reflects what the designer's sub-contractor provided for the materials they used in the field. With reduced strength, it could become necessary to increase the primary bond zone to insure that when the anchors are load tested they do not fail. This would be determined by performing a load test on a sacrificial

test anchor on-site. Contractors are to decide, and proceed at their own risk, if they want to utilize one of the permanent anchors to be the test subject. Another option would be to just increase the primary bond zone based on the grout strength, the geometry of the bond zone annulus, add contingency, and then proceed with load testing at their own risk.

17. Cost Schedule lists 6.1.10 and 6.210 Rolled Erosion Control Products and Cellular as Contingent Sum items. Does the contractor fill in a price for these line items?
    a. No, the contractor dos not need to fill in a price for these items. The budgeted amount is $8,000 for each line item and ARRC will only pay for the amount required and approved.

APPENDIX F – Special Conditions

Work shall be completed in accordance with the project drawings, these special conditions, the technical specifications provided herein, and the suggested installation procedures as provided by the manufacturer. In the event of technical specification conflicts, the project drawings shall control.

It is recommended that the Contractor become familiar with the site conditions and review the Owner provided geotechnical data prior to bidding the work, so as to make their own assessment of what means and methods will be necessary to complete the work. It is recommended that prospective Contractors visit the site prior to bidding the work, particularly at a minus tide.

All construction shall meet the current industry standards for the work being performed. The Contractor will help the Owner or its representative perform construction observation and oversight as required to complete the project and provide quality assurance for the project. All work shall meet all the stipulations stated herein and in any governing permits.

Quality Control: The Contractor shall be responsible for controlling the quality of the construction and all of the required materials that are not furnished by the Owner. The work noted herein requires documentation of conformance with material and installation specifications. Material documentation shall be furnished to the Owner prior to placement or use of the Contractor provided materials on-site. Installation quality documentation shall be furnished to the Owner prior to any request for payment. Contractor is to supply quality control procedures for approval fifteen (15) days prior to commencing field work that is in compliance with the ARRC's installation requirements noted herein and on the Plans.

ARRC Coordination: The Contractor must coordinate with ARRC Project Management and Maintenance-of-Way for daily operations, access to the physical project site, for the delineation of the Contractor equipment staging area(s), to coordinate the movement of assets to the project site. Further coordination with the ARRC's designated Track Inspector and its on-site representative will be paramount to the successful execution of the work.

Surety Bonding: If the aggregate sum of any work awarded exceeds $100,000.00 U.S. Dollars, the Contractor must provide bonding as outlined herein.

Welding: All welding performed under performed this Contract is to comply with all applicable provisions of the most current version of the American Welding Society (AWS) D1.5 Bridge Welding Code. Where AWS D1.5 is not applicable, welding is to be performed in accordance with AWS D1.1 Structural Welding Code - Steel. Prior to commencing welding activities, the Contractor is to submit all welding procedures, in accordance with either AWS D1.1 or D1.5 that it intends to use for the work specified within the Contract Documents. Additionally, submit welder certificates that include a statement that specifically certifies that each proposed welder has been qualified as specified in the applicable AWS for the particular process or processes that said welder will perform under this Contract. With each proposed welder's certificate(s), the Contractor shall also specifically certify that said welder's qualifications remain in effect in accordance with AWS and provide evidence that the proposed individual has satisfactorily passed the AWS qualification tests for the welding processes submitted and, if pertinent, has undergone recertification.

When welding materials with galvanic coatings, the galvanizing within one (1) inch of the weld shall be removed, and repaired, in accordance with the Contract Documents. Welding through galvanic coatings is not permitted.

Galvanic Coating Repairs: Galvanic coatings damaged due to fabrication, welding (e.g. field splices, field welds), materials handling, or occurring during the installation of items under this Contract shall be repaired either by flame spray metalizing or hot stick method, in accordance with ASTM A780 or AWS C2.23, as noted on the Plans, the Construction Specifications, and herein.

Unless noted otherwise herein, the 2020 edition of the Alaska Department of Transportation and Public Facilities **S**tandard **S**pecifications for **H**ighway **C**onstruction shall be referenced as the **SSHC**. Furthermore, unless explicitly noted, "Section" or "subsection" shall be in reference to the SSHC. The aforementioned reference manual can be found at http://dot.alaska.gov/stwddes/dcsspecs/assets/pdf/hwyspecs/sshc2020.pdf.

CPM Schedule: Provide and maintain a Critical Path Method (CPM) progress schedule for the project in accordance with Section 646 "*CPM Scheduling*". Initial CPM schedule is to be provided to the Owner a no less than five (5) business days prior to the pre-construction meeting and updated schedules are to be provided as indicated herein and with each application for payment.

The Contractor will be given access to the site and allowed to commence excavation activities after the completion of the ARRC's scheduled passenger service to Seward on, or around, **15 September 2020**.

Contract extensions for the reasons listed in subsection 108-1.06.3 "*Reasons for Suspension of Work and Extension of Contract Time*" will be reviewed on a case-by-case basis.

Substantial Completion: Substantial Completion shall be on or before **01 May 2021,** unless accepted and agreed upon otherwise by the Owner. This completion scope includes all work items contained within the Contract Documents, properly completed, approved by the Owner and fully serviceable for the intended use.

Final Completion: Final Completion of all work shall be on or before **15 May 2021**, or prior to the beginning of ARRC's scheduled passenger service to Seward.

Construction Phasing Plan: Submit a Construction Phasing Plan for approval no less than five (5) working days prior to the pre-construction meeting. The plan shall detail how the Contractor plans to address each phase or segment of the project within the constraints outlined herein and on the Plans. Work shall be completed in phases that include, at a minimum, the following;

- Ditch line / rockfall catchment excavation/blasting,
- Finish face excavation/blasting and scaling (*as required*),
- Installation (**as required*) of rock bolts*, rock dowels*, and drain holes*,
- Retaining and drainage structure at ≈ARRC MP 52.14, and
- Retaining and drainage structure at ≈ARRC MP 52.40.

The phasing of construction activities detailed above, and herein, is provided as a guideline and is not expected to be followed in the order above. The Construction Phasing Plan shall however address, at a minimum, the activities outlined above and herein. Each phase shall also address the protection, removal, repair, and/or reinstallation of track facilities throughout the duration of the phase(s).

Liquidated Damages: If the Owner and the Contractor cannot agree on amenable terms of an extension in accordance with subsection 108-1.06, then liquidated damages will be deducted from the Contractor as outlined in subsection 108-1.07 for the amounts outlined in Table 108-1 therein.

Additionally, any charges or fees associated with the delay of any incoming vessel to the facility, to include any delays compounded by the initial delay, may be withheld at an amount equal to the charges or fees from payment due the Contractor, in accordance with General Condition 13.7. The Owner will not release performance bonds until any and all liquidated damages assessed under this Contract are paid to the Owner and all stipulations associated with said damages are satisfied.

Flyrock Control: Flyrock is defined as rock fragments or debris which is propelled by blasting activities beyond the blast area from either improper blast design for the material encountered on-site or insufficient control mechanisms. The Contractor shall employ techniques that effectively limit and control flyrock. Where necessary or when directed by the Owner, use approved blasting mats, soil or other equally serviceable materials or containment methods to prevent flyrock from damaging existing structures or entering the Placer River.

Structures: Prior to commencing drilling and blasting operations, the ARRC will inspect the northern portal of Tunnel 2 (*ARRC MP 52.14*), the southern portal of Tunnel 3 (*ARRC MP 52.4*), the tunnels themselves up to each's respective portal outside the project limits, and the existing retaining structures within the project limits for any damage. The Contractor will be provided the pre-construction site inspection reports generated by the Owner. It is recommended that the Contractor produce their own inspection report prior to commencing any earth disturbing activities in support of the Project and submit it to the Owner prior to commencing said activities.

Any damage sustained to permanent structures (to include drainage features and track structures) as a result of the Contractor's construction activities, shall be repaired at the Contractor's expense and to the Owner's Engineer of Record's satisfaction.

Damage sustained to structures that are scheduled to be replaced under this Contract are to be reported to the Owner's Engineer of Record immediately. As the track is the main method of transportation in and out of the project area, the structures need to remain serviceable, at their current rating, until such time that they are replaced. Any damages sustained to the structures that result in the de-rating of the structure in question shall be repaired prior to rail equipment traversing the section of track it supports. All repairs shall be at the Contractor's expense and to the Owner's Engineer of Record's satisfaction. In the event that the permanent structure cannot be constructed prior to either party requiring the movement of rail equipment over the affected section of track, the repairs can be foregone, if approved by the Owner or its representative.

Vibration Control and Monitoring: Base the allowable charge weights per delay on vibration levels that do not cause damage as established from the vibrations measured during the Test Blast. The aforementioned Test Blast can be either be an access/pioneering or a ditch line blast. Do not exceed the maximum peak particle velocity and minimum frequency values of 2.00 inches per second and 30 Hertz, respectively. If damage occurs at aforementioned values, prepare and submit revised threshold limits to the Owner's Engineer for approval. Perform regression analyses with the Test Blast data and directional transmission characteristics after every blast to determine if conditions are changing as a result of either the geology or blast design and adjust accordingly.

Monitor each blast with three (3) approved seismographs located, as approved, near the blast and adjacent to each portal structure. Record particle velocity for three mutually perpendicular components of vibration in the range generally found with construction blasting with each seismograph. Provide digitally recording seismographs. The type of seismograph instrumentation and the method of use must conform to the general guidelines for proper use of seismographs.

Do not exceed a peak particle velocity of each component to exceed the safe limits of the nearest structure subject to vibration damage. The Contractor's appointed vibration specialist shall have experience in seismic monitoring to establish the safe vibration limits. Submit a resume for the vibration specialist for review. The vibration specialist will supervise the placement and operation of the seismographs and will interpret the seismograph records to ensure that the seismograph data is effectively utilized in the control of the blasting operations.

Provide the vibration data recorded for each shot prior to the next blast with the Blasting Records (when Blasting Records are required contractually as identified herein).

Recorded data should include, at a minimum, the following:

a. Identification of instrument used;
b. Name of qualified vibration specialist qualified to observe and interpret seismographs;
c. Distance and direction of recording station from blast area;
d. Type of ground at recording station and material on which the instrument is sitting;
e. Maximum particle velocity in each component and frequency;
f. The time history of each component;
g. A dated and signed copy of records of seismograph readings;
h. A regression analysis determining if conditions are changing as a result of geology or blast Design; and,
i. Blast vibration levels conforming to the alternative blasting level criteria in USBM, RI 8507.

The Owner will review the Contractor's data for concurrence. If data is found to be outside the parameters identified herein or damage to the portal structures occurs, the Owner will employ its own vibration specialist to oversee the Contractor's appointed vibration specialist. This individual, or individuals, ***will only*** be utilized should the Owner deem existing blasting procedures are producing unsatisfactory results or are unsafe. Monies will be withheld from payment, in accordance with the Contract Documents, for the amount of the professional service fees accrued during the pay period in which the services were utilized.

Blasting Personnel: Only utilize personnel experienced in the handling of explosives. Provide a Blaster-in-Charge (BIC) with a minimum of five (5) years' experience who is authorized under all applicable Federal, State, and local laws or regulations to possess, transport, store and use explosives of the type required to execute the work outlined herein and on the Plans.

Submit the BIC's resume, copy of their current Alaska Explosive Handler Certificate of Fitness and any other applicable licenses, to the Owner for review and approval prior to commencing the use of explosives in support of this project. The BIC shall also have experience in developing shot-specific plans for the Owner's review.

The BIC is will be on-site during all loading and blasting operations and shall be responsible for the safety procedures as set forth herein and maintaining detailed records for each day of blasting work performed under this Contract.

Explosives: Refers to any commercial explosive products, materials, blasting agents, primers, delays, initiators, etc. used in blasting operations. Transport, store, handle, and load explosives and blasting agents following all laws and ordinance as well as the applicable requirements of Title 29, Title 30, and Title 49 of the Code of Federal Regulation and the current Office of Surface Mining Reclamation and Enforcement (OSMRE) Blasting Guidance Manual, except as specifically required herein. Use only explosives permitted by the State, local laws, and ordinances, and all respective agencies having jurisdiction over them. Use of bulk or prill explosives, and explosives that are over one (1) year old, are prohibited unless prior approval has been received from the Owner or its representative.

Do not fire explosives until sounding a warning and ensuring that all persons have been removed from the radius of danger by the BIC.

General Blast Plan: Submit a General Plan as prepared by the BIC for the Owner's review. The aforementioned plan shall include information regarding the overall approach, equipment, and materials to be used for the completion of all blasting work to be performed under this Contract. Submit the General Plan a minimum of thirty (30) days prior to commencing drilling and blasting operations for the Owner's review and approval. Update and re-submit the plan as necessary to reflect any changes that may result from comments or results of any blast(s). The plan shall include, at a minimum, the following items:

a. Safety Plan as described below.
b. Resumes of the BIC, certified blasters, and drillers.
c. Blasting agents to be used and a plan for transporting, handling, and secured storage (*if stored on-site*).
d. Tentative hours of blasting operations and days of the week that operations are to occur.
e. Drilling equipment and planned drill hole diameters (differentiate between controlled and production holes).
f. General hole layout for controlled, production and buffer holes and depths (to include sub-drilling).
g. Example drill log and loading diagram.
h. Loading details including trade names, types, sizes of explosives and stemming material.
i. Methods employed to prevent fly rock and blowouts.
j. Proposed methods and cameras angles for high-definition video documentation of all shots. A minimum of three (3) vantage points are required per shot.

The Safety Plan accompanying the General Blast plan shall address, at a minimum; warning signals; plans for notifications of affects local, State, and Federal agencies; NOTAM (Notice to Airmen)s, and temporary rockfall protection measures. The Safety Plan shall also address methods for the protection of life and health, public and/or private property, new work or existing work on the project, wildlife, waters, or nearby structures such as the two (2) tunnel portals shown on the Plans.

Drill Logs: Include estimates of the depth and location of encountered subsurface conditions including: groundwater, voids, zones of soft or weathered rock, mud pockets, changes in drill effort, and any other abnormalities from design parameters (i.e. burden thickness, fracturing, hardness, etc.) Provide the logs to the Owner or its representative in a numbered field notebook for review and approval. Provide a drill hole log on each controlled, buffer, and production blast hole. The Owner, or its representative, will field verify a minimum of ten (10) percent of the holes against their collected measurements and the survey data as quality control for payment purposes.

Shot Plans: Individual shot plans *will not* be required unless the Owner, or its representative, deem existing blasting procedures are producing unsatisfactory results or are unsafe.

When required, the Contractor shall submit a Shot Plan in accordance with the approved General Plan that has been prepared by the BIC for each shot for review. Include details of the shot that is to be conducted. Submit the plan a minimum of three (3) das prior to beginning blasting activities for review. An approved Shot Plan will be required prior to drilling any holes for the shot. The Shot Plan shall, at a minimum, include the following:

a. Shot Number.
b. Station limits of proposed shot, scheduled date and time of each blast.
c. Plan and section views, prepared at a standard engineering scale of proposed drill pattern indicating hole type (*controlled, production, and buffer holes*), hole size, hole depths and angles, and hole pattern and spacing. Include the location of the free face, the burden (*design/max/min*), and the planned light height on all drawings.
d. Drill hole diameters (*controlled, production, and buffer holes*) and depths including sub-drilling.
e. Stemming length and type of material used for stemming.
f. Loading detailed including trade names, types, and sizes of explosives.
g. Diagram and description of proposed initiation and delay sequence of blast holes.
h. Weight of explosives per hole and per delay, and powder factors including weight of explosive per cubic yard.
i. Design blast area. Blast area defined as predicted limits of displaced rock (*through rolling, shifting, or flying*) following the shot.
j. Fallout capacity (*compared with both neat line and swelled rock quantity*).
k. Drill logs are to be used for review of the blast pattern and loading design.

l. Methods employed to prevent fly rock and blowouts. Include additions as necessary to document additional actions taken based on the results of the holes drilled and logs provided below. Include measures taken to protect the existing structures if it lies within the design blast area defined herein.
m. The locations for video recording; one (1) camera shall be looking at Tunnel 2's portal and one (1) camera shall be looking at Tunnel 3's portal.
n. A copy of the updated General Plan with all relevant revisions (*if applicable*).
o. Written responses to all comments and questions raised by the Owner (*if applicable*).

Shot Records: Individual shot records *will not* be required unless the Owner, or its representative, deem existing blasting procedures are producing unsatisfactory results or are unsafe.

When required, the Contractor's Shot Records are to be submitted to the Owner in a format that is acceptable to it. A sample shot record is provided with the attachments included herein. The Shot Record is to serve as the as-built of the shot and will include detailed as-constructed loading diagrams for each shot. Submit the Shot Record for each shot within twenty-four (24) hours of the completed shot. The Shot Record shall include, at a minimum, the following information:

a. Shot Number.
b. Date and time of blast.
c. Station limits of blast.
d. Number of blast holes.
e. Plan and section views, prepared at a standard engineering scale of proposed drill pattern indicating hole type (*controlled, production, and buffer holes*), hole size, hole depths and angles, and hole pattern and spacing. Include the location of the free face, the burden (*design/max/min*), and the planned light height on all drawings.
f. Note regarding conditions encountered in the drill holes, including soft or fractured zones, water table, alignment problems for each hole.
g. Loading diagram indicating types and amounts of explosives, primers, initiators, stemming depth, stemming decks, powder factors, trade names, and sizes of explosives, primers and initiators for each hole.
h. Summary of fallout capacity compared to anticipated performance outlined in the Shot Plan.
i. As-built sequence of the shot, including delay times and initiator delay times.
j. Remarks regarding results of the shot including, damage, misfires, flyrock, and other unusual results or effects.
k. Video record of the blast form the two (2) locations positioned towards the tunnel portals.
l. Photographic record of all final slope faces that are exposed in the vicinity of the blast area.

Blasting Consultant: An independent professional appointed by the Owner, to review and provide comments to it on the blasting activities of the BIC. This individual, or individuals, *will only* be utilized should the Owner deem existing blasting procedures are producing unsatisfactory results or are unsafe. In the event that the Blasting Consultant is deemed necessary, the Contractor shall bear all expenses associated with said individual or individuals.

The Blasting Consultant will make recommendations for all drilling and blasting operations, control of flyrock and other associated work, and review all shot plans and records.

Monies will be withheld from payment, in accordance with the Contract Documents, for the amount of the professional service fees accrued by the Owner during the pay period in which the services were utilized.

Pre-Blast Conference: Prior to the commencement of any drilling and blasting activities, hold a pre-blasting meeting at the job-site. Coordinate with the Owner so that they and their representatives may attend. During this conference the Contractor shall discuss the Safety Plan, the General Plan, and visit specific sites as necessary to familiarize all participates with the details of the blasting operations.

Pioneering, Access and Survey: Pioneering of trails is anticipated to access the top of the cut and/or to prepare working platform(s), should it be deemed feasible by the Contractor. Limit all access routes to within the right-of-way shown on the Plans. Depending on the equipment selected and the existing topography, this may require aerial mobilization, crane drilling, or other unique access methods. Do not make cuts or fill that have the potential to generate rockfall or slope stability issues during or after construction. Use methods to construct stable slopes or add additional temporary rockfall protection measures to prevent rockfall from temporary access slopes.

Clear the access area of all boulders, debris, any overburden (common excavation) prior to beginning drill and blasting work (when practicable). Set survey control reference at convenient locations to ensure that both the Owner and the Contractor can ensure that drilling occurs within the right-of-way and within the tolerances set forth herein and on the Plans. Control should consist of a minimum of; start of cut, end of cut, location of maximum cut height, and as many intermediate alignment marks as are necessary to provide a clear line-of-sight from one mark to another. Re-establish control if the reference points are removed or obscured, or as necessary, so that the alignment of the cut can be easily determined at any time during the drilling operations. Establish control on intermediate benches of cuts consisting of more than one (1) foot. All control shall be set as in accordance with Item No. 8 – Construction Surveying.

Production Blasting: Utilize production blasting to fragment rock with a more widely spaced set of holes with the design excavation limits adjacent to the controlled blasting line to facilitate removal efforts. The BIC shall use materials and methods as necessary to fragment and loosen the material within the design excavation limits, while leaving a smooth, stable black slope using the controlled blasting methods set forth herein.

Shots shall be designed by the BIC and in such a manner that the delay sequences and the charge weights per delay shall be sized to prevent damage to buildings, structures, utilities, sensitive fish or wildlife habitat and any other facilities.

Prior to blasting, all loose objects shall be removed, and all dangerous conditions shall be rendered safe, in or near the cut slope area.

Controlled Blasting: Utilized controlled blasting techniques for all rock slopes higher than ten (10) feet to produce a stable back slop cut face along the designed neat excavation lines. The purpose of controlled blasting is to ensure long-term rock slop performance and stability by minimizing damage to the rock back slop. Pre-split blast holes are closely spaced, lightly loaded with specialized explosives drilled along the place of the final design slopes. Buffer holes are lightly loaded holes between the pre-split holes of the permanent back face and the production blast area. Pre-split blast holes and buffer holes are required in all controlled blasting areas, unless otherwise approved by the Owner.

1. *Drilling Tolerance*. Drill the holes parallel to each other and within six (6) inches of the staked plane at the top of the cut, where practicable. A thirty (30) inch and a sixty (60) inch interval shall be assumed for spacing between pre-split and buffer holes, respectively. The aforementioned dimensions may be increased to expedite drilling operations upon approval from the Owner.

   Control hole drilling to ensure that no hole deviates from the ideal slope plane by more than nine (9) inches. This tolerance applies to deviations between adjacent pre-split holes into or out of the planned slope plane.

2. *Drilling Locations*. When Shot Plans are required contractually, do not drill in any area that does not have an approved Shot Plan. Drilling controlled blast holes should not exceed one blast length ahead of where excavation of production blasts have been completed to their full depth so that the results of the previous controlled blast can be review by the Owner or its representative.

3. *Hole Length/Lift Height*. The length of controlled blast holes shall be based on the full depth of the lift's height. Due to right-of-way limitations and material quantities, benching is not required. Benching may

be performed if the actual slope, after accounting for offset benches where applicable, does not deviate from the planned top of slope by more than one (1) foot. Furthermore, the Owner's Engineer of Record must approve the Contractor's proposed top of slope prior to it being drilled.

4. *Final Face Inspection*. The Owner, or its representative, will perform a final face inspection upon relieving the shot from the face. If at any time during the progress of the work, the approved methods of blasting and drilling fail to produce the desired result of a smooth, stable back slope, the Owner will provide the Contractor notice of any deficiencies. The Contractor shall modify its blasting approach to attempt to achieve the desired result.

Scaling: Remove all loose hanging, or potentially dangerous rock from slopes as the excavation progresses to ensure the rock slopes are stable. Accomplish scaling with hand tools, hydraulic splitters, machine scaling with an excavator or other approved mechanical equipment, high pressure water spray, light explosive charges, air bags, scaling bars, and/or rope access technicians.

BASE BID ITEMS:

The Construction Specifications, as referenced below, are attached herein for the construction of the two retaining structures outlined below. As such, additional pay items are outlined in the above referenced attached document that are not referenced below.

Item No. 1.1 – Mobilization

Perform work and operations necessary to move personnel, equipment, supplies and incidentals to the project site; establish offices, buildings, and other facilities, expect those provided by the Owner, perform other work and operations and pay costs incurred, before beginning construction; complete similar demobilization activities; and furnish required submittals such as as-builts, certificates, payrolls, civil rights reports, and equipment warranties as necessary. The Owner does not anticipate at this time providing the Contractor with utilities or support facilities. Therefore, the Contractor shall, anticipate providing their own utility and support facilities necessary to complete the work and/or provide for their employees. Contractor must comply with the Alaska Department of Labor and Workforce Development requirements as noted herein. Inclusive to this line item is the work outlined in the Construction Specifications attached herein for the two (2) retaining structures.

Method of measurement for payment will be in accordance with subsection 640-4.01 and Supplemental Condition SC-01.

Item No. 1.2 – ARRC Mobilization Support

Item includes all equipment, labor, materials, and supervision required by the Contractor to schedule and utilize ARRC Maintenance-of-Way forces in support of its construction activities at the project site. The Contractor shall forecast its needs for ARRC support activities that consist of, but not limited to, the following activities; equipment mobilization, and material mobilization (*both to and from the site*) utilizing the following as a basis:

Equipment Description	Unit
Train Consist with up-to 10[1] flats and 10[3] air dumps	Train Day[2]
Equipment Mover	Day[4]

Notes:
[1] Specifications for cars available for use are provided herein under Attachments and availability of requested cars is not guaranteed.
[2] Hours of service are limited to a maximum of twelve (12) hours per crew shift. By Federal Law the Consist may not operate past the maximum of 12 hours.
[3] Quantity of Difco 50yd[3] air dump cars is dependent upon availability at the time of request.
[4] Days are limited to a maximum of twelve (12) hours to include the operator's travel time from the Portage Section without prior approval.

This line item will not be measured for payment. Additional Units for each of the abovementioned equipment items may require a minimum 14-day request prior to its anticipated need in support of the Project. The Contractor may be responsible for the additional costs associated with the equipment's unscheduled use.

Item No. 2 – Ditch Line Excavation

Work includes all equipment, labor, materials, and supervision required to construct the ditch line to the lines and grades shown on the Plans. Work is to be completed in accordance with subsection 203-3.02(h) - *Ditch Line/Subgrade Blasting*.

Inclusive to this work are all costs associated with the excavation of any of materials encountered (*as defined in subsection 203-2.01*), all work associated with pioneering access trails (*as identified herein above*), all necessary clearing and grubbing required in any area, and maintaining the excavation and embankment areas to keep them free draining at all times as the work progresses.

When drilling and blasting activities are required, work shall be performed as indicated herein and in accordance with Section 203. Inclusive to this work would be the drilling of all production holes; provision of all explosive materials, loading of said holes, and all costs associated with monitoring and inspecting of critical structures.

Measurement for payment shall be calculated in accordance with subsection 109-1.02(3)(b) and Item *No. 8 – Construction Surveying*. Payment will not be made for material generated from outside the design surfaces as a result of intentional over excavation, sub-drilling beyond six inches, or the use of higher than necessary powder factors.

The accepted quantity will be paid for at the agreed upon unit price and in accordance with Section 109 and Supplemental Condition SC-01.

Item No. 3 – Finish Face Excavation

Work includes all equipment, labor, materials, and supervision required to excavate the finish rock face to the lines and grades shown on the Plans by excavating.

Inclusive to this work are all costs associated with the excavation of any of materials encountered (*as defined in subsection 203-2.01*), all work associated with pioneering access trails (*as identified herein above*), all necessary clearing and grubbing required in any area, and maintaining the excavation and embankment areas to keep them free draining at all times as the work progresses.

When drilling and blasting activities are required, work shall be performed as indicated herein and in accordance with Section 203. Inclusive to this work would be the drilling of presplit, buffer, and production holes; provision of all explosive materials (to include presplit specific products), loading of said holes, and all costs associated with monitoring and inspecting of critical structures.

Once all material has been relieved from the final face (*as defined by the lines and grades on the Plans*), material identified during the final face inspection is to be scaled, along with material identified on the existing slopes within fifteen (15) feet of the cut limits. The limits of scaling may be extended beyond fifteen (15) feet by the Owner, or its representative, if disturbed or displaced blocks are observed as a result of the Contractor's blasting activities. Scaling within design excavation limits of the newly exposed slopes and in the adjacent fifteen (15) foot zone, or the extended limits as defined above, is subsidiary to this work.

Measurement for payment shall be calculated in accordance with subsection 109-1.02(3)(b) and Item *No. 8 – Construction Surveying*. Payment will not be made for material generated from outside the design surfaces as a result of intentional over excavation, excessive scaling (*to include material generated using unapproved scaling methods*) sub-drilling beyond six inches, or the use of higher than necessary powder factors (*e.g. using non-presplit powder a presplit hole that results in excessive back break*).

The accepted quantity will be paid for at the agreed upon unit price and in accordance with Section 109 and Supplemental Condition SC-01.

Item No. 4 – Unclassified Excavation

Work includes all equipment, labor, materials, and supervision required to excavate materials to the lines and grades shown on the Plans. All material removed, or generated as a result of construction activities in support of this project, shall be considered unclassified excavation; as defined by subsection 203-2.01(1).

Inclusive to this work are all costs associated with loading unclassified excavation into ARRC provided air dumps and stockpiling of the material, if necessary, at the stockpile location located at approximately ARRC MP 51.12.

Measurement for payment shall be calculated in accordance with subsection 109-1.02(3)(b) and *Item No. 8 – Construction Surveying*.

The accepted quantity will be paid for at the agreed upon unit price and in accordance with Section 109 and Supplemental Condition SC-01.

Item No. 5 – Drain Holes

Work includes all equipment, labor, materials, and supervision required to drill drain holes in rock slopes to relieve excess water pressure as specified or directed. The Engineer will determine the location and construction details of the drain holes, depending on the conditions encountered in each slope.

The accepted quantity will be paid for at the agreed upon lump unit price and in accordance with Section 109 and Supplemental Condition SC-01.

The Construction Specifications, as referenced below, are attached herein for the construction of the two retaining structures outlined below. As such, additional pay items for the lump sum bid items (Items No 6.1 and 6.2) **are outlined in the above referenced attached document that are not, or may not be, referenced below.**

Item No. 6.1 – MP 52.14 Retaining Structure

Work includes all equipment, labor, materials, and supervision required to complete all work associated with the construction of the retaining structure, and its components in accordance with the Plans and the Construction Specifications included herein.

The accepted quantity will be paid for at the agreed upon lump sum price and in accordance with Section 109 and Supplemental Condition SC-01.

Item No. 6.2 – MP 52.40 Retaining Structure

Work includes all equipment, labor, materials, and supervision required to complete all work associated with the construction of the retaining structure, and its components in accordance with the Plans and the Constriction Specifications included herein.

The accepted quantity will be paid for at the agreed upon lump sum price and in accordance with Section 109 and Supplemental Condition SC-01.

Item No. 7 – 36”x0.500t Smoothwall Steel Culvert

Work includes all equipment, labor, materials, and supervision required to construct culverts, to the lines and grades shown on the Plans, and in accordance with Section 603 “*CULVERTS AND STORM DRAINS*”. Culvert material shall be 36”ø x 0.500”t pipe meeting the requirements set forth in subsection 716-2.06 “*STEEL PIPE*”. Pipe shall be galvanized in accordance ASTM A123 and as noted in the Plans. Damage to galvanic repairs shall be performed as noted on the Plans, herein, and in accordance with subsection 716-2.07.

Excavation, bedding, and backfill are subsidiary to this work and must conform to the requirements set forth in subsections 204-2.01 and 204-3.01, the Construction Specifications attached herein, and the details on the plans.

The accepted quantity will be paid for at the agreed upon unit price and in accordance with Section 109 and Supplemental Condition SC-01.

Item No. 8 – Construction Surveying

Provide a surveyor or third-party surveying firm to 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 in accordance standard engineering and survey practices.

The surveyor may also be directed and/or required to perform any task outlined in Section 642 "*Construction Surveying and Monuments*".

All calculations used to determine final pay item quantities (*e.g. volumes*) must be signed and sealed by a Professional Land Surveyor registered in the State of Alaska.

The accepted quantity will be paid for at the agreed upon lump sum price, incrementally on an agreed upon breakdown, and in accordance with Section 109. Prior to the Contractor's first application for payment that includes this progress under this item, the Contractor is to submit a lump sum breakdown for approval based upon with the phases and/or segments of work outlined herein.

ADDITIVE ALTERNATE BID ITEMS:

Item No. A1 – MP 51.8 Rock Stabilization

Work includes all equipment, labor, materials, and supervision required to remove the loose rock mass located at approximately ARRC Milepost 51.8 on the Track LT, as outlined in the photos attached herein. Material is to be removed in such a manner that the neither the adjacent bridge superstructure and/or substructure are adversely affected by the Contractor's means and methods of removing the mass.

The accepted quantity will be paid for at the agreed upon lump sum price and in accordance with Section 109 and Supplemental Condition SC-01.

END OF SPECIAL CONDITIONS