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**Part 1            General**

**1.1                BACKGROUND INFORMATION**

.1            Introduction

- .1            Mining of the Mt. Nansen deposit was conducted between 1996 and early 1999 by open pit methods. The open pit mined through an exploration adit which had been developed in the 1960's.
- .2            Water accumulation in the pit has produced a small body of contaminated water since the end of mining. As the water level rises, this contaminated water would discharge to Pony Creek via the adit, thus potentially impacting the creek.
- .3            Recent investigations suggest that the water quality in the pit has gradually improved but still contains contaminants.
- .4            The Yukon Government Department of Energy, Mines and Resources has determined that the release of the water within the Mt. Nansen pit directly to Pony Creek will result in impacts to surface water quality.
- .5            Consequently, means to prevent overflow from the pit via the Pony Adit to the creek are required.

.2            Site Location

- .1            The Mount Nansen Mine site is located 60 kilometres west of the village of Carmacks, Yukon, and covers an area of 53 square kilometres.

.3            Site Hazards

- .1            Hazards that the Contractor should be aware of include, but are not limited to, the following:
  - .1            Mine openings in variably unstable condition;
  - .2            Open pit subject to rockfall and slope raveling;
  - .3            Contaminated water;

**1.2                DESCRIPTION OF WORK**

.1            Work under this contract comprises the following tasks:

- .1            Stabilization of mine workings
- .2            Construction of a steel reinforced concrete bulkhead
- .3            Construction of a hydraulic weir

**1.3                DEFINITIONS**

- .1            Project Manager's Authorized Personnel: personnel appointed by the Project Manager or authorized on site by the Project Manager. Project Manager's Authorized Personnel provide recommendations/ technical guidance to the Project Manager, as required, for the enforcement of these specifications.
- .2            Contractor: Contractor procured for the work described herein.
- .3            Care and Maintenance Contractor: Contractor who provides services at the site.

#### **1.4 REFERENCES**

- .1 Yukon Regulations O.I.C. 1986/164 Occupational Health and Safety Act – Mine Safety Regulations

#### **1.5 WORK BY OTHERS**

- .1 Care and Maintenance services at the site are currently provided by the Care and Maintenance Contractor, under contract to the Government of Yukon, Department of Energy, Mines and Resources, and that contract will be in place for the duration of the Work. Care and Maintenance activities may affect the Work of this contract. The Care and Maintenance activities are summarized as follows:
  - .1 Provision of equipment and labour for operation and maintenance of environmental care systems;
  - .2 Maintenance of infrastructure;
  - .3 Security and caretaking services.
- .2 The Work must include provisions for coordinating related work by others for following item:
  - .1 Unless otherwise directed by Project Manager, all existing access roads must be maintained during the Work in a condition suitable for passage of light mobile equipment (e.g. pick-up truck), as well as heavy equipment, to facilitate work by others across the site. Unless otherwise directed by the Project Manager, upon completion of the Work, all existing roads must be left in a similar condition.
  - .2 Contractors and Contractor's personnel are to adhere to the Care and Maintenance Contractor's Site Specific Health and Safety Plan and all other applicable Site and Camp rules.

#### **1.6 WORK SEQUENCE**

- .1 Main mobilisation
  - .1 Confirm mobilisation date with Project Manager with at least 14 days notice.
  - .2 Mobilise to site all equipment required to perform the work.
- .2 Mine working inspection and stabilization
  - .1 Retain the services of a person with Yukon Shift Boss Certification as required under the Yukon Government Mine Safety Act, during all periods when the openings are being inspected, and when underground work is carried out.
  - .2 Inspect mine workings prior to commencing stabilization work.
    - .1 Perform inspection by a certified person in conjunction with the Yukon Chief Mine Safety Officer .
    - .2 Submit Stabilization Program Report to Project Manager
  - .3 Stabilize mine workings in accordance with the Stabilisation Program Report.
- .3 Construction of reinforced concrete bulkhead and V-notch weir
  - .1 Construct a reinforced concrete bulkhead.
  - .2 Construct a reinforced concrete wall with stainless steel weir.
- .4 Demobilization

- .1 Demobilize no later than September 30, 2006.

#### **1.7 CONTRACTOR USE OF PREMISES**

- .1 Contractor has unrestricted use of site for the performance of the Work only, subject to restrictions established by the Project Manager and as per legislation.
- .2 Maintain space provided for the purpose of carrying out the Work, such as repair shops, storage and office space, to Project Manager's satisfaction. Such maintenance shall be limited to good housekeeping and cleaning, and the repair of damage caused by negligence on the part of Contractor
- .3 Coordinate use of premises under direction of the Project Manager.
- .4 Do not unreasonably encumber sites with materials or equipment.
- .5 Move stored products or equipment which interferes with operations of Project Manager and/or Care and Maintenance Contractor.
- .6 Use of site shall comply with the environmental protection requirements of 013543 - Environmental Procedures.

#### **1.8 OWNER FURNISHED ITEMS**

- .1 Project Manager will provide through the Care and Maintenance Contractor the following:
  - .1 Unheated covered storage
  - .2 Basic office space as specified in 011400 - Work Restrictions
  - .3 Use of fully equipped kitchen/dining facilities and bunkhouse for accommodation.
- .2 Contractor is to use own equipment. No equipment will be furnished and usage of existing site equipments is not permitted.

#### **1.9 PERMITS AND LICENSES**

- .1 Contractors shall register, obtain and pay for all required licenses and permits for individuals employed for work as referenced in the these Specifications and pay all costs associated with complying with the requirements for those permits and licenses. Costs of these shall be incidental to the work.
- .2 Contractors shall meet or exceed requirements of:
  - .1 Contract documents.
  - .2 Specified standards, codes and referenced documents.
  - .3 All applicable codes, standards and regulations shall be considered by the Contractor as a requirement of the Law of the Land and shall form a part of the Work; non-referenced relevant codes does not relieve the Contractor from responsibility to comply with such codes, standards, regulations or acts.
- .3 All plans and procedures must comply with the Care and Maintenance Contractor's Site Specific Health and Safety Plan.

- .4 Most stringent requirements will apply to any case of conflict between requirements listed in acts, codes, standards or regulations to Work described herein.
- .5 Contractors shall retain the services of a person with Yukon Shift Boss Certification as required under the Yukon Government Mine Safety Regulations, during all periods when the mine workings are being inspected and when underground work is carried out.

**1.10 ADDITIONAL DRAWINGS**

- .1 Project Manager may furnish additional drawings to assist proper execution of work. These drawings will be issued for clarification only. Such drawings shall have the same meaning and intent as if they were included with plans referred to in Contract documents.

**1.11 MEASUREMENT FOR PAYMENT**

- .1 Notify Project Manager of planned work activities in accordance with requirements of 013300 - Submittal Procedures, and at least 48 hours in advance of operations to permit required measurements for payment.
- .2 All approved lump sum pay items will be paid under the Basis of Payment Schedule. All other items, whether specifically defined in the Specifications or not, will be paid under Basis of Payment Schedule, Balance of Project Complete.
- .3 Direct costs include all costs directly attributable to a particular pay item including equipment, operators, materials, equipment maintenance and depreciation, etc. All direct costs for unit price items are to be included in the appropriate unit price in Basis of Payment Schedule.
- .4 All direct costs for lump sum items are to be included in the appropriate lump sum price in Basis of Payment Schedule.
- .5 Indirect costs include all costs not directly attributable to the pay items including overhead, administration, etc. All indirect costs associated with pay items in Basis of Payment Schedule are to be included in Balance of Project Complete.
- .6 Except as otherwise indicated herein, work under this Section will not be measured. Include all costs in Balance of Project Complete. Payment will be made at the lump sum tendered under Item 4 on the Basis of Payment form.

**Part 2 Products**

**2.1 NOT USED**

- .1 Not used.

**Part 3 Execution**

**3.1 NOT USED**

- .1 Not used.

Mount Nansen  
Pony Creek Adit Bulkhead  
Project No. 1CY001.003

SUMMARY OF WORK

Section 01 11 00  
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**END OF SECTION**

**Part 1            General**

**1.1                EXISTING SERVICES**

.1            Electrical Power

.1            Electrical power is not available for the work described herein.

**1.2                EXISTING SITE ROADS**

.1            The current conditions of existing site roads may affect the Work.

**1.3                EXISTING CAMP**

.1            Certain portions of the The existing camp facilities as outlined in Section 011100 will not be available to the Contractor.

**1.4                WILDLIFE CONTROL MEASURES**

.1            Wildlife Monitors will be provided by the Engineer through the Care and Maintenance Contractor

**1.5                SPECIAL REQUIREMENTS**

.1            Project Manager must approve access to areas off project limits. Restricted areas on site include, but are not limited to, the following:

.1            Mill building and ancillary facilities (outside tanks, conveyor galleries);

.2            Original powerhouse;

.3            Gyratory crusher building and ancillary facilities (stockpile feed conveyor);

.4            Areas outlined in the Care and Maintenance Contractor Site Specific Health and Safety Plan.

.2            Project Manager and Contractor have the right to restrict access to any on-site or outside personnel as site conditions dictate.

.3            Contractor and Contractor's personnel are to adhere to the Care and Maintenance Contractor's Site Specific Health and Safety Plan and all other applicable Site and Camp rules.

**1.6                MEASUREMENT FOR PAYMENT**

.1            Work identified in this section will not be measured. Include all costs in Balance of Project Complete. Payment will be made at the lump sum tendered under Item 4 on the Basis of Payment form.

**Part 2            Products**

**2.1                NOT USED**

.1                Not Used.

**Part 3            Execution**

**3.1                NOT USED**

.1                Not Used.

**END OF SECTION**

**Part 1            General**

**1.1                ADMINISTRATIVE**

- .1        Submit to Project Manager submittals listed for review. Submit with reasonable promptness and in orderly sequence so as to not cause delay in Work. Failure to submit in ample time is not considered sufficient reason for an extension of Contract Time and no claim for extension by reason of such default will be allowed.
- .2        Work affected by submittal shall not proceed until review by Project Manager is complete.
- .3        Present shop drawings and product data in SI Metric units.
- .4        Where items or information is not produced in SI Metric units converted values are acceptable.
- .5        Review submittals prior to submission to Project Manager. This review represents that necessary requirements have been determined and verified, or will be, and that each submittal has been checked and co-ordinated with requirements of Work and Contract Documents. Submittals not stamped, signed, dated and identified as to specific project will be returned without being examined and shall be considered rejected.
- .6        Notify Project Manager, in writing at time of submission, identifying deviations from requirements of Contract Documents and stating reasons for deviations.
- .7        Verify field measurements and affected adjacent Work are coordinated.
- .8        Contractor's responsibility for errors and omissions in submission is not relieved by Project Manager's review of submittals.
- .9        Contractor's responsibility for deviations in submission from requirements of Contract Documents is not relieved by Project Manager review.
- .10      Keep one reviewed copy of each submission on site.

**1.2                SUBMITTALS**

- .1        Submit requests for payment for review, and for transmittal to Project Manager.
- .2        Process substitutions through Project Manager.
- .3        Process change orders through Project Manager.
- .4        Deliver closeout submittals for review and preliminary inspections, for transmittal to Project Manager.
- .5        Submit to Project Manager, four (4) copies of the all the requested plans as per schedule.

**1.3                SHOP DRAWINGS AND PRODUCT DATA**

- .1        The term "shop drawings" means drawings, diagrams, illustrations, schedules, performance charts, brochures and other data, which are to be provided by Contractor to illustrate details of a portion of Work.

- .2 Indicate materials, methods of construction and attachment or anchorage, erection diagrams, connections, explanatory notes and other information necessary for completion of Work. Where articles or equipment attach or connect to other articles or equipment, indicate that such items have been coordinated, regardless of Section under which adjacent items will be supplied and installed. Indicate cross references to design drawings and specifications.
- .3 Unless otherwise specified, allow seven (7) days for Project Manager's review of each submission.
- .4 Adjustments made on shop drawings by Project Manager are not intended to change Contract Price. If adjustments affect value of Work, state such in writing to Project Manager prior to proceeding with Work.
- .5 Make changes in shop drawings as Project Manager may require, consistent with Contract Documents. When resubmitting, notify Project Manager in writing of any revisions other than those requested.
- .6 Accompany submissions with transmittal letter, in duplicate, containing:
  - .1 Date.
  - .2 Project title and number.
  - .3 Contractor's name and address.
  - .4 Identification and quantity of each shop drawing, product data and sample.
  - .5 Other pertinent data.
- .7 Submissions shall include:
  - .1 Date and revision dates.
  - .2 Project title and number.
  - .3 Name and address of:
    - .1 Subcontractor.
    - .2 Supplier.
    - .3 Manufacturer.
  - .4 Contractor's stamp, signed by Contractor's authorized representative certifying approval of submissions, verification of field measurements and compliance with Contract Documents.
  - .5 Details of appropriate portions of Work as applicable:
    - .1 Fabrication.
    - .2 Layout, showing dimensions, including identified field dimensions, and clearances.
    - .3 Setting or erection details.
    - .4 Capacities.
    - .5 Performance characteristics.
    - .6 Standards.
    - .7 Relationship to adjacent work.
- .8 After Project Manager's review, distribute copies.

- .9 Submit, four (4) prints and one (1) electronic copy of shop drawings for each requirement requested in specification Sections and as Project Manager may reasonably request.
- .10 Submit, four (4) prints and one (1) electronic copy of product data sheets or brochures for requirements requested in specification Sections and as requested by Project Manager where shop drawings will not be prepared due to standardized manufacture of product.
- .11 Delete information not applicable to project.
- .12 Supplement standard information to provide details applicable to project.
- .13 If upon review by Project Manager, no errors or omissions are discovered or if only minor corrections are made, two (2) copies will be returned and fabrication and installation of Work may proceed. If shop drawings are rejected, noted copy will be returned and resubmission of corrected shop drawings, through same procedure indicated above, and must be performed before fabrication and installation of Work may proceed.
- .14 The review of shop drawings by the Government of Yukon, Department of Highways and Public Works (GY-DHPW) Energy, Mines and Resources (GY-EMR) is for sole purpose of ascertaining conformance with general concept. This review shall not mean that GY-DHPWEMR approves detail design inherent in shop drawings, responsibility for which shall remain with Contractor submitting same, and such review shall not relieve Contractor of responsibility for errors or omissions in shop drawings or of responsibility for meeting all requirements of construction and Contract Documents. Without restricting generality of foregoing, Contractor is responsible for dimensions to be confirmed and correlated at job site, for information that pertains solely to fabrication processes or to techniques of construction and installation and for co-ordination of Work of all sub-trades.

**1.4 MEASUREMENT FOR PAYMENT**

- .1 Work identified in this section will not be measured. Include all costs in Balance of Project Complete. Payment will be made at the lump sum tendered under Item 4 on the Basis of Payment form.

**Part 2 Products**

**2.1 NOT USED**

- .1 Not Used.

**Part 3 Execution**

**3.1 NOT USED**

- .1 Not Used.

**END OF SECTION**

**Part 1            General**

**1.1                FIRES**

- .1        Provide supervision, attendance and fire protection measures as directed.

**1.2                DISPOSAL OF WASTES**

- .1        Dispose of materials in accordance with Section - 01 74 19 Construction Waste Management And Disposal or as directed by Project Manager.

**1.3                DRAINAGE**

- .1        Provide temporary drainage and pumping as necessary to keep working area free from water.
- .2        Do not pump water containing suspended materials into waterways.
- .3        Control disposal or runoff of water containing suspended materials or other harmful substances in accordance with regulatory requirements.

**1.4                WORK ADJACENT TO WATERWAYS**

- .1        Do not operate construction equipment in waterways outside of work areas.
- .2        Do not use waterway beds for borrow material.
- .3        Do not dump excavated fill, waste material or debris in waterways.

**1.5                POLLUTION CONTROL**

- .1        Maintain temporary erosion and pollution control features installed under this contract.
- .2        Cover or wet down dry materials and rubbish to prevent blowing dust and debris. Provide dust control for temporary roads.
- .3        Adhere to all permits applicable for the work areas.

**1.6                MEASUREMENT FOR PAYMENT**

- .1        Work identified in this section will not be measured. Include all costs in Balance of Project Complete. Payment will be made at the lump sum tendered under Item 4 on the Basis of Payment form.

**Part 2            Products**

**2.1                NOT USED**

- .1        Not Used.

**Part 3            Execution**

**3.1                NOT USED**

.1            Not Used.

**END OF SECTION**

**Part 1           General**

**1.1           FIRES**

- .1   Provide supervision, attendance and fire protection measures as directed.

**1.2           DISPOSAL OF WASTES**

- .1   Dispose of materials in accordance with Section - 01 74 19 Construction Waste Management And Disposal or as directed by Project Manager.

**1.3           DRAINAGE**

- .1   Provide temporary drainage and pumping as necessary to keep working area free from water.
- .2   Do not pump water containing suspended materials into waterways.
- .3   Control disposal or runoff of water containing suspended materials or other harmful substances in accordance with regulatory requirements.

**1.4           WORK ADJACENT TO WATERWAYS**

- .1   Do not operate construction equipment in waterways outside of work areas.
- .2   Do not use waterway beds for borrow material.
- .3   Do not dump excavated fill, waste material or debris in waterways.

**1.5           POLLUTION CONTROL**

- .1   Maintain temporary erosion and pollution control features installed under this contract.
- .2   Cover or wet down dry materials and rubbish to prevent blowing dust and debris. Provide dust control for temporary roads.
- .3   Adhere to all permits applicable for the work areas.

**1.6           MEASUREMENT FOR PAYMENT**

- .1   Work identified in this section will not be measured. Include all costs in Balance of Project Complete. Payment will be made at the lump sum tendered under Item 4 on the Basis of Payment form.

**Part 2           Products**

**2.1           NOT USED**

- .1   Not Used.

**Part 3            Execution**

**3.1                NOT USED**

.1            Not Used.

**END OF SECTION**

**Part 1           General**

**1.1               INSPECTION**

- .1       Allow Project Manager access to Work. If part of Work is in preparation at locations other than Place of Work, allow access to such Work whenever it is in progress.
- .2       Give timely notice requesting inspection if Work is designated for special tests, inspections or approvals by Project Manager instructions, or law of Place of Work.
- .3       If Contractor covers or permits to be covered Work that has been designated for special tests, inspections or approvals before such is made, uncover such Work, have inspections or tests satisfactorily completed and make good such Work.
- .4       Project Manager may order any part of Work to be examined if Work is suspected to be not in accordance with Contract Documents. If, upon examination such work is found not in accordance with Contract Documents, correct such Work and pay cost of examination and correction. If such Work is found in accordance with Contract Documents, Project Manager shall pay cost of examination and replacement.

**1.2               INDEPENDENT INSPECTION AGENCIES**

- .1       Project Manager may engage Independent Inspection/Testing Agencies for purpose of inspecting and/or testing portions of Work. Cost of such services will be borne by Project Manager.
- .2       Provide equipment required for executing inspection and testing by appointed agencies.
- .3       Employment of inspection/testing agencies does not relax responsibility to perform Work in accordance with Contract Documents.
- .4       If defects are revealed during inspection and/or testing, appointed agency will request additional inspection and/or testing to ascertain full degree of defect. Correct defect and irregularities as advised by Project Manager at no cost to Project Manager. Pay costs for retesting and reinspection.

**1.3               ACCESS TO WORK**

- .1       Allow inspection/testing agencies access to Work.
- .2       Co-operate to provide reasonable facilities for such access.

**1.4               PROCEDURES**

- .1       Notify appropriate agency and Project Manager in advance of requirement for tests, in order that attendance arrangements can be made.
- .2       Submit samples and/or materials required for testing, as specifically requested in specifications. Submit with reasonable promptness and in an orderly sequence so as not to cause delay in Work.
- .3       Provide labour and facilities to obtain and handle samples and materials on site.

**1.5 REJECTED WORK**

- .1 Remove defective Work, whether result of poor workmanship, use of defective products or damage and whether incorporated in Work or not, which has been rejected by Project Manager as failing to conform to Contract Documents. Replace or re-execute in accordance with Contract Documents.
- .2 Make good other Contractor's work damaged by such removals or replacements promptly.

**1.6 MEASUREMENT FOR PAYMENT**

- .1 Work identified in this section will not be measured. Include all costs in Balance of Project Complete. Payment will be made at the lump sum tendered under Item 4 on the Basis of Payment form.

**Part 2 Products**

**2.1 NOT USED**

- .1 Not Used.

**Part 3 Execution**

**3.1 NOT USED**

- .1 Not Used.

**END OF SECTION**

**Part 1           General**

**1.1               TEMPORARY HEATING AND VENTILATION**

- .1       Provide temporary heating and ventilation as may be required during construction period, including attendance and maintenance.
- .2       Maintain strict supervision of operation of temporary heating and ventilating equipment to:
  - .1       Conform to applicable codes and standards.
  - .2       Enforce safe practices.
  - .3       Vent direct-fired combustion units to outside.
- .3       Be responsible for damage to Work due to failure in providing adequate heat and protection during construction.

**1.2               TEMPORARY POWER AND LIGHT**

- .1       Provide temporary lighting and power supply as required to perform the work.
- .2       Install temporary facilities for power in accordance with governing regulations and ordinances.

**1.3               FIRE PROTECTION**

- .1       Provide and maintain temporary fire protection equipment during performance of Work required by governing codes, regulations and bylaws.
- .2       Adhere to the Care and Maintenance Contractor Site Specific Health and Safety Plan

**1.4               SANITARY FACILITIES**

- .1       Provide sanitary facilities for work force, as required, in accordance with governing regulations and ordinances and authorities having jurisdiction.

**1.5               MEASUREMENT FOR PAYMENT**

- .1       Work identified in this section will not be measured. Include all costs in Balance of Project Complete. Payment will be made at the lump sum tendered under Item 4 on the Basis of Payment form.

**Part 2           Products**

**2.1               NOT USED**

- .1       Not Used.

**Part 3            Execution**

**3.1                NOT USED**

.1            Not Used.

**END OF SECTION**

**Part 1            General**

**1.1                QUALITY**

- .1        Products, materials, equipment, and articles (referred to as products throughout specifications) incorporated in Work shall be new, not damaged, or defective, and of best quality (compatible with specifications) for purpose intended. If requested, furnish evidence as to type, source, and quality of products provided.
- .2        Defective products, whenever identified prior to completion of Work, will be rejected, regardless of previous inspections. Inspection does not relieve responsibility, but is precaution against oversight or error. Remove and replace defective products at own expense and be responsible for delays and expenses caused by rejection.
- .3        Should any dispute arise as to quality or fitness of products, decision rests strictly with Project Manager based upon requirements of Contract Documents.

**1.2                AVAILABILITY**

- .1        Immediately upon signing Contract, review product delivery requirements and anticipate foreseeable supply delays for any items. If delays in supply of products are foreseeable, notify Project Manager of such, in order that substitutions or other remedial action may be authorized in ample time to prevent delay in performance of Work.
- .2        In event of failure to notify Project Manager at commencement of Work and should it subsequently appear that Work may be delayed for such reason, Project Manager reserves right to substitute more readily available products of similar character, at no increase in Contract Price or Contract Time.

**1.3                STORAGE, HANDLING AND PROTECTION**

- .1        Handle and store products in manner to prevent damage, adulteration, deterioration, and soiling and in accordance with manufacturer's instructions when applicable.
- .2        Store packaged or bundled products in original and undamaged condition with manufacturer's seal and labels intact. Do not remove from packaging or bundling until required in Work.
- .3        Store products subject to damage from weather in weatherproof enclosures.
- .4        Remove and replace damaged products at own expense and to satisfaction of Project Manager.

**1.4                MANUFACTURER'S INSTRUCTIONS**

- .1        Unless otherwise indicated in specifications, install or erect products in accordance with manufacturer's instructions. Do not rely on labels or enclosures provided with products. Obtain written instructions directly from manufacturers.
- .2        Notify Project Manager in writing, of conflicts between specifications and manufacturer's instructions, so that Project Manager may establish course of action.

- .3 Improper installation or erection of products, due to failure in complying with these requirements, authorizes Project Manager to require removal and re-installation at no increase in Contract Price or Contract Time.

**1.5 QUALITY OF WORK**

- .1 Ensure Quality of Work is of highest standard, executed by workers experienced and skilled in respective duties for which they are employed. Immediately notify Project Manager if required Work is such as to make it impractical to produce required results.
- .2 Do not employ anyone unskilled in their required duties. Project Manager reserves right to require dismissal from site, workers deemed incompetent or careless.
- .3 Decisions as to standard or fitness of Quality of Work in cases of dispute rest solely with Project Manager, whose decision is final.

**1.6 REMEDIAL WORK**

- .1 Perform remedial work required to repair or replace parts or portions of Work identified as defective or unacceptable. Coordinate adjacent affected Work as required.
- .2 Perform remedial work by specialists familiar with materials affected. Perform in a manner to neither damage nor put at risk any portion of Work.

**1.7 MEASUREMENT FOR PAYMENT**

- .1 Work identified in this section will not be measured. Include all costs in Balance of Project Complete. Payment will be made at the lump sum tendered under Item 4 on the Basis of Payment form.

**Part 2 Products**

**2.1 NOT USED**

- .1 Not used.

**Part 3 Execution**

**3.1 NOT USED**

- .1 Not used.

**END OF SECTION**

**Part 1            General**

**1.1                DISPOSAL OF WASTES**

- .1            Do not bury rubbish or waste materials.
- .2            Fires and burning of rubbish on site not permitted.
- .3            Do not dispose of waste, volatile materials and other rubbish into waterways.
- .4            Transport muck, ice and other inert waste from stabilization of mine workings to site on waste rock pile designated by Project Manager.
- .5            All other waste material to be disposed of as directed by Project Manager.

**1.2                USE OF SITE AND FACILITIES**

- .1            Execute work with least possible interference or disturbance.
- .2            Maintain security measures established by the Project Manager through the Care and Maintenance Contractor Site Specific Health and Safety Plan.
- .3            All stockpile material to be located as directed by Project Manager.

**1.3                CLEANING**

- .1            Remove tools and waste materials on completion of Work, and leave work area in clean and orderly condition.
- .2            Clean-up work area as work progresses.

**1.4                MEASUREMENT FOR PAYMENT**

- .1            Work identified in this section will not be measured. Include all costs in Balance of Project Complete. Payment will be made at the lump sum tendered under Item 4 on the Basis of Payment form.

**Part 2            Products**

**2.1                NOT USED**

- .1            Not Used.

**Part 3            Execution**

**3.1                NOT USED**

- .1            Not Used.

**END OF SECTION**

**Part 1           General**

**1.1               INSPECTION AND DECLARATION**

- .1 Contractor's Inspection: Contractor and all Subcontractors shall conduct an inspection of Work, identify deficiencies and defects, and repair as required to conform to Contract Documents.
  - .1 Notify Project Manager in writing of satisfactory completion of Contractor's Inspection and that corrections have been made.
  - .2 Request Project Manager's Inspection.
- .2 Project Manager's Inspection: Project Manager and Contractor will perform inspection of Work to identify obvious defects or deficiencies. Contractor shall correct Work accordingly.
- .3 Completion: submit written certificate that following have been performed:
  - .1 Work has been completed and inspected for compliance with Contract Documents.
  - .2 Defects have been corrected and deficiencies have been completed.
  - .3 Work is complete and ready for Final Inspection.
- .4 Final Inspection: when items noted above are completed, request final inspection of Work by Project Manager and Contractor. If Work is deemed incomplete by Project Manager complete outstanding items and request reinspection.

**1.2               MEASUREMENT FOR PAYMENT**

- .1 Work identified in this section will not be measured. Include all costs in Balance of Project Complete. Payment will be made at the lump sum tendered under Item 1 on the Basis of Payment form.

**Part 2           Products**

**2.1               NOT USED**

- .1 Not Used.

**Part 3           Execution**

**3.1               NOT USED**

- .1 Not Used.

**END OF SECTION**

**Part 1            General**

**1.1                RECORDING ACTUAL SITE CONDITIONS**

- .1        Record information concurrently with construction progress. Do not conceal Work until required information is recorded.
- .2        Contract Drawings and shop drawings: legibly mark each item to record actual construction, including:
  - .1        Field changes of dimension and detail.
  - .2        Changes made by change orders.
  - .3        Details not on original Contract Drawings.
  - .4        References to related shop drawings and modifications.
  - .5        Field changes of dimension and detail.
  - .6        Changes made by Change Order or Field Order.
- .3        Specifications: legibly mark each item to record actual construction.
- .4        Other Documents: maintain manufacturer's certifications, inspection certifications, field test records, required by individual specifications sections.

**1.2                RECORD DRAWINGS**

- .1        Maintain project record drawings and record accurately deviations from Contract documents on one set of prints.
- .2        At completion of project and prior to final inspection, neatly transfer record notations to second set of drawings and submit both sets to Project Manager. Forward information on completed areas at the end of each construction season.
- .3        Reference survey coordinates and elevation to existing control points as indicated on the Drawings. In the event, that monuments have been removed or destroyed, re-establish control monuments.

**1.3                MEASUREMENT FOR PAYMENT**

- .1        Work identified in this section will not be measured. Include all costs in Balance of Project Complete. Payment will be made at the lump sum tendered under Item 4 on the Basis of Payment form.

**Part 2            Products**

**2.1                NOT USED**

- .1        Not Used.

**Part 3            Execution**

**3.1                NOT USED**

.1            Not Used.

**END OF SECTION**

**Part 1           General**

**1.1           DESCRIPTION**

- .1    The Work specified in this section consists of providing all necessary labour, materials, plant, and equipment to control surface and ground water in the areas of Work, as specified herein.
- .2    The work shall include, but not be limited to, the following:
  - .1       Dewater mine workings over a distance extending from the portal to a point at least 10 m past the bulkhead construction location.

**1.2           DEFINITIONS**

- .1    Dewatering: the removal of water from mine workings and mine workings accesses.

**1.3           SUBMITTALS**

- .1    Do not start Work requiring control of water until approval to proceed is obtained from Project Manager in writing.
- .2    Submit a work plan for Water Control, including the information described below, at least 14 days prior to commencing any Work requiring control of water.
  - .1       Description of plans and methodology of dewatering and keeping work areas dry;
  - .2       Descriptions of equipment, operating procedures, water discharge locations and sediment control measures, as necessary;
  - .3       Any drawings or sketches required to illustrate the descriptions.

**1.4           MEASUREMENT OF PAYMENT**

- .1    Work identified in this section will not be measured. Include all costs in Balance of Project Complete. Payment will be made at the lump sum tendered under Item 4 on the Basis of Payment form.

**Part 2           Products**

**2.1           MATERIALS**

- .1    Unspecified materials may be used in water control activities.

**Part 3           Execution**

**3.1           MINE WORKINGS**

- .1    Remove ice from the adit floor over a distance extending from the portal to a point at least 10 m past the bulkhead construction location shown on Drawing 2. Transport excavated ice to waste disposal site on the waste rock pile, as designated by Project Manager.

- .2 Dewater mine workings over a distance extending from the portal to a point at least 10 m past the bulkhead construction location shown on Drawing 2.
- .3 Discharge water collected in accordance with the approved Water Control work plan or as directed by Project Manager.
- .4 Discharge water in such a manner that erosion at the point of discharge and downstream will not be caused, and the quality of receiving water bodies will not be affected.
- .5 Keep all work areas free of water, or maintain water conditions that are acceptable to Project Manager.

**END OF SECTION**

**Part 1            General**

**1.1                DESCRIPTION**

- .1        The Work specified in this section consists of providing all necessary labour, materials, plant, and equipment to stabilize the mine workings.
- .2        Inspect the mine workings and submit program to stabilize mine workings in accordance with the Yukon Government regulations and standards.
- .3        Stabilize the mine workings against rock falls using methods and materials that will provide safe access to the bulkhead for a period of at least five years.
- .4        Retain the services of a person with Yukon Shift Boss Certification as required under the Yukon Government Mine Safety Regulations, during all periods when the mine workings are being inspected and when underground work is carried out.

**1.2                REFERENCES**

- .1        SRK Consulting, "Pony Creek Adit Bulkhead, Mt Nansen, Yukon" Report submitted to Department of Energy, Mines and Resources, Assessment and Abandoned Mines Branch, Yukon Government
- .2        Yukon Regulations O.I.C. 1986/164 Occupational Health and Safety Act – Mine Safety cartridge Regulations

**1.3                SUBMITTALS**

- .1        Submit a work plan describing the proposed methodology and materials to stabilize the mine workings in accordance with the Yukon Government regulations and standards.
  - .1        Include description of equipment, operating procedures and safety measures.
  - .2        Include any drawings or sketches required to illustrate the descriptions.
- .2        Submit, at least 14 days prior to commencing any underground work, the name, qualifications and contact details of the retained person as the person with Yukon Shift Boss Certification as defined in the Yukon Government Mine Safety Regulations.
- .3        Prior to initiating stabilization work, complete site inspection with Project Manager and Yukon WCB Mine Safety Officer.
- .4        Submit an As-Built Report describing the work performed to stabilize the mine workings.
  - .1        Include description of equipment, operating procedures and safety measures.
  - .2        Include any drawings or sketches required to illustrate the descriptions.

**1.4                MEASUREMENT OF PAYMENT**

- .1        Payment for all work under this section shall be made at the lump sum price tendered for "Mine Workings Stabilization", Item 1 on the Basis for Payment form.
- .2        Tendered price shall include all labour, equipment, and materials to perform the mine workings stabilization

## **1.5 EXISTING CONDITIONS**

- .1 Consult report by SRK Consulting as referenced in Section 1.2.2 for a description of the condition of the bedrock inside the mine workings.

## **1.6 WASTE MANAGEMENT AND DISPOSAL**

- .1 Separate and recycle waste materials in accordance with Section 01355 - Waste Management and Disposal.

## **Part 2 Products**

### **2.1 MATERIALS**

- .1 Provide and maintain an adequate supply of properly dressed scaling bars, gads, and other equipment necessary for scaling.
- .2 As described in the work plan to be submitted under item 1.3.1, provide:
  - .1 Timber sets for portal stabilization
  - .2 Rock bolts for adit stabilization

## **Part 3 Execution**

### **3.1 SUPERVISION**

- .1 Retain the services of a person with Yukon Shift Boss Certification as required under the Yukon Government Mine Safety Act, during all periods when the openings are being inspected, and when underground work is carried out.

### **3.2 PORTAL OVERBURDEN REMOVAL**

- .1 Remove overburden material to a distance of 5 m above and around portal brow.
- .2 Transport overburden and debris to disposal site on the waste rock pile, as designated by Project Manager.

### **3.3 PORTAL AND ADIT SCALING**

- .1 Inspect portal and adit with Project Manager to verify extent of scaling to be undertaken.
- .2 Remove all loose rock fragments and debris from the portal face and portal area.
- .3 Remove all loose rock fragments and debris along the adit between the portal and a point at least 5 m beyond the location of the bulkhead.
- .4 Transport loose rock fragments and debris to disposal site on the waste rock pile, as designated by Project Manager.

**3.4 GROUND STABILIZATION**

- .1 Inspect and submit to Project Manager for approval a program to rehabilitate the portal and stabilize the adit against rock falls, to a point at least 5 m beyond the bulkhead construction location, using methods and materials that will provide safe access to the bulkhead for a period of at least five years.
- .2 Carry out approved portal rehabilitation and adit stabilization program, including provision and installation of all necessary materials.
- .3 Perform work in accordance with the Yukon Government Mine Safety Act.

**END OF SECTION**

**Part 1            General**

**1.1                DESCRIPTION**

- .1     The Work specified in this section consists of providing all necessary labour, materials, plant, and equipment to construct a cast-in-place concrete bulkhead and a V-notch weir inside the Pony Creek Adit.
- .2     The work shall include, but not be limited to, the following:
  - .1       Construct a cast-in-place concrete bulkhead.
  - .2       Construct a cast-in-place concrete wall with a V-notch weir.
- .3     Retain the services of a person with Yukon Shift Boss Certification as required under the NWT Mine Safety Act, during all periods when the openings are being inspected, and when underground work is carried out.
- .4     Related Sections:
  - .1       Section 01 33 00 - Submittal Procedures.
  - .2       Section 01 35 30 - Health and Safety Requirements.
  - .3       Section 01 74 19 - Construction Waste Management.

**1.2                REFERENCES**

- .1     SRK Consulting, "Pony Creek Adit Bulkhead, Mt Nansen, Yukon" Report submitted to Department of Energy, Mines and Resources, Assessment and Abandoned Mines Branch, Yukon Government
- .2     Yukon Regulations O.I.C. 1986/164 Occupational Health and Safety Act – Mine Safety cartridge Regulations
- .3     Canadian Standards Association (CSA International)
  - .1       CSA A23.1-00 Concrete Materials and Methods of Concrete Construction
  - .2       CAN/CSA –G30.18M
  - .3       CSA S269.1-1975 Falsework for Construction Purposes
  - .4       CAN/CSA-S269.3-M92 Concrete Formwork
- .4     American Society for Testing and Materials International (ASTM)
  - .1       ASTM C1017
- .5     American Concrete Institute (ACI)
  - .1       ACI 305R
  - .2       ACI 306R

**1.3                DESIGN AND PERFORMANCE REQUIREMENTS**

- .1     Bulkhead design is in accordance with the following standards:
  - .1       CSA-A23.1-04 – Concrete Materials and Methods of Concrete Construction
  - .2       CSA-A23.3-04 – Design of Concrete Structures

- .2 Design loading for the bulkhead is a uniform pressure corresponding to 35 metres of water head.
- .3 The design of the bulkhead is based on anchorage in to sound competent rock.
  - .1 Assess the surrounding rock by a licensed and qualified engineer prior to the start of the work.
    - .1 Report findings to Project Manager.
- .4 Materials and testing to conform to the current editions of relevant standards published by the following organizations:
  - .1 Canadian Standards Association (CSA)
  - .2 American Society for Testing and Materials (ASTM)

#### **1.4 SUBMITTALS**

- .1 Do not start Work until approval to proceed is obtained from Project Manager in writing.
- .2 Submit a work plan at least 30 days prior to commence the Work describing the proposed methodology and materials to construct the bulkhead and the V-notch weir in accordance with the Yukon Government regulations and standards.
  - .1 Include description of equipment, operating procedures and safety measures.
  - .2 Include a procedure for casting concrete over the full height of the bulkhead and ensuring a strong bond between the concrete and the rock. Particular attention should be paid to pouring concrete against the ceiling.
  - .3 Include any drawings or sketches required to illustrate the descriptions.
- .3 Submit, at least 14 days prior to commencing the Work, all required drawings and sketches to construct the formwork for the bulkhead and the V-notch weir.
  - .1 Submit all drawings and sketches signed by an engineer licensed to practice in the Yukon Territory.
- .4 Submit, at least 14 days prior to commencing any Work, the name, qualifications and contact details of the retained person as the person with Yukon Shift Boss Certification as defined in the Yukon Government Mine Safety Regulations.
- .5 Submit, at least 14 days prior to commencing of the Work, certification to the Owner from the supplier that the concrete to be supplied conforms to the requirements.
- .6 Submit, at least 14 days prior to commencing of the Work, a statement from the concrete supplier identifying the proposed source of aggregate and certifying that the proposed aggregate/cement combination will not produce deleterious expansion due to alkali-aggregate reaction.
- .7 Submit copies of all test results directly to the Project Manager from the testing agency for review.
- .8 Submit shop drawings in accordance with Section 01330 - Submittal Procedures.
- .9 Submit "as-built" drawings in accordance with Section 01780.

- .10 Submit an As-Built Report describing the work performed to construct the bulkhead and the V-notch weir.
  - .1 Include description of equipment, operating procedures and safety measures.
  - .2 Include any drawings or sketches required to illustrate the descriptions.
  - .3 Have As-Built Report signed by an engineer licensed to practice in the Yukon Territory.

## **1.5 FIELD QUALITY CONTROL**

- .1 Perform all concrete work in accordance with the requirements of CSA-A23.1
- .2 Inspection and testing of concrete and concrete materials shall be in accordance with CSA-A23.1 and carried out by an independent testing laboratory approved by the Owner.
- .3 Minimum concrete testing (not withstanding CSA-A23.1) shall be completed as follows:
  - .1 One "test" per batch
  - .2 One "test" per day of placement regardless of the total quantity placed that day.
  - .3 A "test" shall consist of a slump test, an air-entrainment test, and samples collected for compression testing.

## **1.6 MEASUREMENT OF PAYMENT**

- .1 Construction of the bulkhead as described herein shall be paid as a lump sum under Item 2 on the Basis of Payment form.
  - .1 Price to include all engineering fees, required labour, equipment and materials.
    - .1 Activities to include but limited to: preparing surfaces: supplying, installing and grouting dowels: designing, supplying and constructing form work: supplying, installing and securing rebar; supplying and installing seepage pipe, collar and valve; supplying, handling and placement of concrete: and any other activities necessary to construct the bulkhead.
  - .2 Design and construction of the V-notch weir as described herein shall be paid as a lump sum under Item 3 on the Basis of Payment form.
    - .1 Price to include all engineering fees, required labour, equipment and materials.
      - .1 Activities to include but limited to: preparing surfaces: supplying and installing stainless steel V-Notch plate: designing, supplying and constructing form work; supplying, installing and securing rebar; supplying, handling and placement of concrete: and any other activities necessary to construct the V-Notch weir.

## **1.7 EXISTING CONDITIONS**

- .1 Conduct a field inspection with Project Manager to assess the condition of the mine workings at the location of bulkhead and V-notch weir.

## **1.8 WASTE MANAGEMENT AND DISPOSAL**

- .1 Separate and recycle waste materials in accordance with Section 01355 - Waste Management and Disposal.

- .2 Collect and separate plastic, paper packaging and corrugated cardboard.
- .3 Designate cleaning area for tools to limit water use and runoff.
- .4 Dispose of any waste material or debris as directed by the Owner.

## **Part 2 Products**

### **2.1 CONCRETE REINFORCEMENT**

- .1 Reinforcing steel shall be hot rolled deformed billet bars to CAN/CSA-G30.18M, Grade 400R
- .2 Welding of reinforcement is not permitted.
- .3 Reinforcing bars shall be supplied in full lengths between bulkhead sides.
  - .1 Splicing of reinforcement is not permitted without approval from the Project Manager.

### **2.2 DOWELS**

- .1 Dowels in to rock shall be 20M 1200.

### **2.3 PIPING**

- .1 Piping to be Schedule 40 steel.

### **2.4 V-NOTCH PLATE**

- .1 V-Notch plate to be 316 Stainless Steel.

### **2.5 CAST IN PLACE CONCRETE**

- .1 Cast in place concrete materials and methods of construction shall conform to CSA A23.1.
- .2 Select cast in place concrete mix proportions in accordance with CSA-A23.1 Alternative 1 to give the following properties:
  - .1 Cement: Portland Cement Type HS (50)
  - .2 Minimum Compressive Strength at 28 days: 35MPa
  - .3 Maximum Water/Cementing Materials Ratio: 0.40
  - .4 Exposure Class: S-1
  - .5 Nominal Maximum Size of Coarse Aggregate: 20 mm
  - .6 Slump at Time and Point of Discharge: 80 +/- 20 mm
  - .7 Air Content: 4 to 7%. Spacing factor shall comply with CAN/CSA-A23.1 Clauses 4.3.3.2 and 4.3.3.3.
- .3 Engineer to provide additional concrete admixtures at Project Manager's discretion

**Part 3 Execution**

**3.1 PREPARATION WORK**

- .1 Dewater mine workings according to Section 31 23 09
- .2 Stabilise mine workings according to Section 31 23 21

**3.2 BULKHEAD**

- .1 Construct bulkhead in accordance with design provided by Project Manager.
- .2 Remove all loose and fractured rock along all sides of the bulkhead to expose only rock that is sound.
- .3 Bulkhead dimensions shown in Drawing 3 are based on field measurements.
  - .1 Verify the dimensions of the bulkhead following preparation work and removal of any fractured rock.
  - .2 Advise Project Manager of actual dimensions prior to the installation of reinforcement and dowels.
- .4 Dowels in to rock shall be anchored using Hilti HIT HY150 adhesive.
  - .1 Obtain approval from Project Manager before using equivalent products.
  - .2 Follow the manufacture's recommendations for drillhole sizes and working time.
- .5 Provide design and drawings prepared by professional engineer licensed in the Yukon Territory for concrete formwork, shoring and temporary support.
- .6 Roughen rock to a minimum 5 mm amplitude over entire surface that shall receive concrete.
- .7 Place and secure reinforcing steel, formwork, and seepage pipe.
- .8 Clear concrete cover to the reinforcing steel shall be 75 mm.
- .9 Ensure rock surface is clean and dry prior to pouring concrete.
- .10 Apply a bonding agent to the rock surface prior to pouring of concrete.
  - .1 Submit the specifications of the proposed bonding agent to Project Manager for review and approval.
  - .2 Cement paste can be used instead of bonding agent.
    - .1 Cement paste to be in accordance with CSA A23.1.
- .11 Any gaps around the perimeter that remain after concreting of the bulkhead shall be filled with an epoxy grout mixed with sand to ensure that bulkhead is water-tight.
- .12 Curing and protection
  - .1 Cure and protect concrete in accordance with CSA-A23.1 Clause 7.4.
  - .2 Conform to hot and cold weather requirements of ACI 305R and ACI 306R.
  - .3 Formwork shall be left in place for a period of not less than five days.

### 3.3 V-NOTCH WEIR

- .1 Construct V-Notch weir in accordance with design provided by Project Manager.
- .2 Remove all loose and fractured rock along all sides and base of the weir to expose only rock that is sound.
- .3 Weir dimensions shown in Drawing 4 are based on field measurements.
  - .1 Verify the dimensions of the weir following preparation work and removal of any fractured rock.
  - .2 Advise Project Manager of actual dimensions prior to the installation of reinforcement.
- .4 Provide design and drawings prepared by professional engineer licensed in the Yukon Territory for concrete formwork, shoring and temporary support.
- .5 Roughen rock to a minimum 5 mm amplitude over entire surface that shall receive concrete.
- .6 Place and secure reinforcing steel, formwork, and V-Notch plate.
- .7 Clear concrete cover to the reinforcing steel shall be 75 mm.
- .8 Ensure rock surface is clean and dry prior to pouring concrete.
- .9 Apply a bonding agent to the rock surface prior to pouring of concrete.
  - .1 Submit the specifications of the proposed bonding agent to Project Manager for review and approval.
  - .2 Cement paste can be used instead of bonding agent.
    - .1 Cement paste to be in accordance with CSA A23.1.
- .10 Any gaps around the perimeter that remain after concreting of the weir shall be filled with an epoxy grout mixed with sand to ensure that contact is water-tight.
- .11 Curing and protection
  - .1 Cure and protect concrete in accordance with CSA-A23.1 Clause 7.4.
  - .2 Conform to hot and cold weather requirements of ACI 305R and ACI 306R.
  - .3 Formwork shall be left in place for a period of not less than five days.

**END OF SECTION**