



TERMS OF REFERENCE

Project No. R.014204.300
Giant Mine
Yellowknife, Northwest Territories
Interim Underground Stabilization

Solicitation No. EW702-131876/F



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C01	Giant Mine Site Overview
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Additional Drawings are included in Appendices

LIST OF SUPPORTING DOCUMENTS

1. Giant Mine Remediation Plan prepared by SRK Consulting and SENES Consultants Ltd. for Indian and Northern Affairs Canada, July 2007, and associated Supporting Documents.
2. Mine Manager's Site Specific Health and Safety Plan.
3. Water License Application and Correspondence.
4. Three Dimensional Mine Model – Geo-Con, Golder 2014.

END OF SECTION

PART 1 GENERAL

1.1 Precedence

- .1 Division 1 Sections take precedence over technical specification sections in other Divisions.

1.2 Background Information

- .1 Giant Mine was a large-scale gold mine that operated from 1945 to 2004 under a series of different owners. The most recent owners of the mine were assigned to bankruptcy in 2005 and responsibility for this site has since been assigned to Aboriginal Affairs and Northern Development Canada (AANDC). Also since 2005, the required Care and Maintenance at the Giant Mine Site, including environmental management activities, have been contracted out by AANDC and Public Works and Government Services Canada (PWGSC).
- .2 The Giant Mine site is located within the city limits of Yellowknife, Northwest Territories (NWT), Canada, approximately 5 km north of the city centre. The Giant Mine is accessible year-round via Highway 4 (Ingraham Trail). The Giant Mine site lies within the area traditionally used by the Yellowknives Dene First Nation.
- .3 The underground mine has been maintained by the Giant Mine Care and Maintenance Contractor, who is the designated Mine Manager at the site. A risk assessment of the underground mine workings indicated a higher risk of crown pillar failure in some of the underground chambers and stopes. The purpose of this contract is to mitigate these risks by backfilling portions of the underground mine.
- .4 In 2013 Stope Complex B1-18 and surrounding underground areas were significantly backfilled with Paste. The remaining Paste backfilling work for Stope B1-18 is included within this Contract. A description of the 2013 Work performed in Stope Complex B1-18 is included in the Supporting Documents, listed in Section 00 00 01 – List of Drawings and Supporting Documents.
- .5 Additional work to characterize and better understand underground conditions at the Giant Mine site are continuing. Additional information will be made available to the Contractor as this work continues.
- .6 Hazards at the Giant Mine Site that the Contractor should be aware of include, but are not limited to, the following:
 - .1 Tailings (both in-place and windblown) containing silica, arsenic and other mine ore processing by-products in concentrations sufficiently high to require P.P.E. or other controls to limit worker exposure.
 - .2 Reagents including acids and lime.
 - .3 Fuels and lubrication fluids.
 - .4 Process chemicals and mill dust.
 - .5 Electrical hazards - high AC voltages.
 - .6 Physical hazards of dilapidated and/or unstable structures.
 - .7 Physical hazards of unstable crown pillars.
 - .8 Mine openings.
 - .9 Assay chemicals.
 - .10 Wildlife (including bears).

- .11 Asbestos.
- .12 Arsenic Trioxide Dust.
- .13 Contaminated Water.
- .14 Mine workings such as waste rock, open pits, open stopes, and underground chambers.
- .15 Physical hazards of water bodies such as tailings ponds and Baker Creek.
- .16 Traffic along site roads.
- .17 Working in congested sites.
- .18 Extreme cold and Exposure.
- .19 Isolated locations.

1.3 Definitions

- .1 Departmental Representative (DR): Within the context of these Specifications, the term Departmental Representative refers to the person exercising the roles and attributes of Canada under the contract.
- .2 Departmental Representative's Authorized Personnel: Within the context of these Specifications, the term Departmental Representative's Authorized Personnel refers to personnel appointed or authorized by the Departmental Representative. Departmental Representative's Authorized Personnel provide recommendations/ technical guidance to Departmental Representative as required, for the enforcement of these Specifications.
- .3 Contractor: The contractor procured to undertake Work under the Contract to which these Specifications apply.
- .4 Mine Manager: A contract, separate from the Contract to which these Specifications apply, will be in place to fulfill the role of Mine Manager under the NWT Mine Health and Safety Act for the overall Giant Mine Site. The Mine Manager will be responsible for all site Health and Safety on the Giant Mine Site. The existing Care and Maintenance (C&M) Contractor is currently acting as Mine Manager.
- .5 Contractor's Site Superintendent: Contractor's resident site representative who is authorized to make decisions on behalf of the Contractor and who assumes the role and responsibility of a Level 2 Supervisor under the Mine Health and Safety Act for the Project Work Area.
- .6 Authority Having Jurisdiction (AHJ): Governmental agency or sub-agency that regulates the codes and standards that are to be met during the execution of the Work.
- .7 Work: The remediation activities conducted to complete the requirements of these Specifications.

1.4 Description of Work

- .1 The Work under this Contract is being completed as part of a site stabilization plan at the Giant Mine Site. The intent of the site stabilization work is to address remediation issues that are deemed a high risk to the environment or public safety in a manner that complies with the overall Site remediation plan.

- .2 Work under this Contract comprises the supply of all labour, equipment and materials required to generate Paste backfill material and place that Paste in designated underground areas including, but not limited to, the following:
 - .1 Supply, mobilize and demobilize all personnel, equipment, support facilities and materials required to complete the Work.
 - .2 Maintenance and management of Contractor equipment and materials, as required to complete the Work.
 - .3 Production and execution of Environmental Protection Plan including dust management activities.
 - .4 Establishing of temporary construction facilities including, but not limited to Contractors office space, DR office space, sanitary facilities, wastewater collection, temporary enclosures and decontamination facilities required to carry out the Work.
 - .5 Design and construct required surface pads and liners required for Paste delivery area.
 - .6 Drilling of additional Boreholes, as required to meet Contractors accepted Stope Complex Work Plans.
 - .7 Design, install, and operate any new underground paste delivery slick lines (pipelines) required to meet Contractors accepted Stope Complex Work Plans
 - .8 Design and construct required Conventional or Remote Barricades to facilitate containment of Paste within the Paste backfill volume boundary of designed Stope Complexes.
 - .9 Execution of Contractors accepted Backfill Method Plan and Stope Complex Work Plans.
 - .10 Liaise and Coordinate work activities with Mine Manager.
 - .11 Supply, installation and operation of system to monitor, observe and record Paste backfill progress and construction of conventional or remote barricades.
 - .12 Excavation and processing of Tailings from on-site sources in 2014, in preparation for paste production activities in 2015 and subsequent years.
 - .13 Continued excavation and processing of Tailings from on-site sources, including separation of non-hazardous debris, as required in 2015 and subsequent years.
 - .14 Interim and final restoration of Tailings excavation areas.
 - .15 Production of Paste from a combination of Processed Tailings, water and binding agent to meet required specifications.
 - .16 Placement of Paste to backfill designated Stope Complexes to Specification criteria.
 - .17 Conduct a quality control sampling and testing program for Paste production.
 - .18 Prompt identification and plugging of situations where Paste is leaking from the void(s) designated for backfilling, including any required modifications to backfill procedures, equipment, sequencing and Paste mixture.
 - .19 Removal of all personnel, equipment and materials used during the Work, at the completion of Work.
- .3 Provide supplementary information to the Departmental Representative, as required, to support the Water License and its conditions.
- .4 Carry out Work in a manner that satisfies the AHJ, so as to protect the environment, the health and safety of workers and the general public.

1.5 Priority of Backfilling Work

- .1 Stope Complexes included under these Specifications are prioritised for remediation and Work is to be conducted in the sequence described in Table 1 below.
- .2 Work in one stage of the three stage Work sequence is to be completed or substantially completed before commencing work on a subsequent stage of the Work sequence.
- .3 The Departmental Representative will determine when Work on a Stope Complex is substantially completed.

Table 1: Backfilling Work Sequence

<u>Stope Complexes to Be Backfilled</u>	<u>Work Sequence</u>
1-18 Stope Complex	1
B3-06 Stope Complex	
3-70 Stope	2
B3-10 Mid Complex	

1.6 Stope Complex Descriptions

- .1 Underground Area Description – B1-18 Stope Complex – Partially Completed in 2013.
 - .1 The remaining work necessary to complete the backfilling of this stope is outlined in Conceptual Mitigation Plan 1 – B1-18 Stope Complex. The remaining work to be carried out at the B1-18 complex includes blocking off one drift and pumping paste into several remaining boreholes.
- .2 B3-06 Stope Complex
 - .1 Drawing Package 4 in Appendix A includes a 2D drawing package for the B3-06 stope complex. Details discussed herein are also outlined in the presentation of Conceptual Mitigation Plan 2 - B3-06 Stope Complex.
 - .2 The mitigation is aimed at providing support to the sill pillar (also termed a crown pillar) between the B3-06 South / Upper stope void and the overlying B2-08 arsenic stope. The geometry of the sill pillar is complex owing to the presence of lateral arsenic filled development openings sub-vertical raises, and the complex nature of the B3-06 South Upper stope void which forms two separate limbs in the south of the stope which are connected in the northern portion. The B3-06 South stope void is partly backfilled with waste rock, and possibly other unknown materials, to a level between 0m and 4m from the back of the stope. Entry of personnel to the eastern limb of the B3-06 South / Upper stope, although possible through the B3-06 Access decline off 2nd level, is not advised at this time due to the sill pillar stability concerns, the lack of ground support in the back and walls of the stope and the possibility of the movement of rock fill present in stope. Additional geotechnical stability assessments of the stability of the overall stope span and the backfill and possible ground support installation work would be required for man-entry to the area. At this time the conceptual mitigation plan (Section 11) includes only remote

placement of backfill into the stope through boreholes drilled from the underground. Lower arsenic barricades #10, #11, and #12 are present in sub-vertical raises connecting the B3-06 South / Upper stope void to arsenic stope B2-08 above. The backfill placed in this stope void must include relatively tight filling (as tight as possible) of the void to where it intersects the bottom of the arsenic bulkhead raise(s). Ideally some paste is placed in the arsenic raises themselves under the arsenic bulkheads. Paste could be delivered via boreholes drilled from nearby underground openings that are designed to intersect the high point of the voids. Observation boreholes will also be drilled at the bottom of the arsenic raises which could serve as a method to add some paste just below the arsenic bulkheads after the voids are deemed full. A surface paste delivery borehole could supply paste to the general area and an underground slick line with manifolds to the various underground paste delivery boreholes might be required. The B3-06 South / Upper stope void is likely connected to underlying openings via timbered man ways, mill-holes, and raises to development openings on the 3rd level below it that are currently inaccessible for inspection or work. This area is termed the B3-06 South / Lower Development. It is unknown if these potential connections are open or not. Additional boreholes will be drilled to observe if paste placed in the B3-06 South / Upper stope void flows to lower elevations via these probable exit points or through the backfill itself. If paste exits the B3-06 South / Upper stope void, either the paste max design would likely need to be changed and/or remotely placed barricades could be installed in the B3-06 South / Lower Development area. Possible connections also exist to a much larger void below and to the north of the B3-06 South / Upper stope voids. This void is named the B3-06 North / Lower (B3-02 stope) void. If paste leaks to this void extensive and difficult barricade construction would likely be required. At this time it is assumed backfilling of this large void in this area is not required but additional borehole investigations to assess this potential are ongoing. Connections between the B3-06 North / Lower (B3-02) stope and 4th level may exist as some raises are shown in the historical mine plans but these are not obvious in the information available.

.3 A3-70 Stope

- .1 Drawing Package 5 in Appendix A includes 2D drawings for the A3-70 Stope area. Details discussed herein are also outlined in the presentation of Conceptual Mitigation Plan 3 – A3-70 Stope.
- .2 A3-70 stope lies directly beneath Baker Creek in an area between Highway 4 and a mine access road on the rim of A1 open pit. The underground in the A3-70 stope is currently inaccessible for underground inspection. Borehole cavity scans carried out in surface boreholes drilled into void show that it is partly backfilled from between and 4m and 25m from the back of the stope with unknown material. The available information suggests that there are only two possible exits from the void, the upper access in the southern portion of the stope and a service raise in the middle of the stope. It is anticipated that the service raise is full of backfill given the bottom-up cut-and-fill mining approach evidenced in the historical engineered level plans. The surface area above the A3-70 stope is environmentally sensitive given its location relative to Baker Creek and boreholes will be drilled at relatively shallow angles. Once the known exit points are blocked paste can be placed into the void via the boreholes drilled from surface.

- .4 B3-10 Mid (B2-02, B2-04, B2-18, B3-10) Stope Complex
 - .1 Drawing Package 6 in Appendix A includes 2D drawings for the B3-10 Mid (comprised of B2-02, B2-04, B2-18, and B3-10 stopes) stope complex. Details discussed herein are also outlined in the presentation of Conceptual Mitigation Plan 4 – B3-10 Mid Complex.
 - .2 The B3-10 Mid Stope Complex is located adjacent to and under arsenic stope B2-12/13/14 and is comprised of several interconnected stope voids which have multiple name descriptors. The void shape in this area is complicated as the voids are partly backfilled with rock fill and other unknown materials, multiple remnant pillars are present and sub-vertical raises, manways, and mill holes that connect various level and sub-levels exist. Sloughage from hanging walls, pillar loading, working-ground noises, and degradation of hanging wall support (timber studs) has been noted in this area over the last several years. This deteriorating stability situation in a stope immediately adjacent to arsenic stope B2-12/13/14 has led to the decision to backfill it. Also, arsenic stope B2-12/13/14 will also be backfilled and all lower arsenic bulkheads need to be reinforced prior to this occurring. Backfilling the B3-10 Mid complex has the added benefit of providing support to lower arsenic bulkheads #34 and #35. Access to the B3-10 Mid stope is difficult and a full assessment of the void shape is ongoing through a drilling and borehole cavity monitoring survey program. Multiple raises that connect the B3-10 Mid stopes on 2nd level and intermediate levels between 2nd and 3rd level exist to 3rd and possibly 4th level. Monitoring of accessible entrances to the B3-10 stope where paste could leak out of the targeted voids above is possible but no access to 4th level is available to the best of Golder's knowledge.

1.7 Work Not Included

- .1 There are numerous underground workings at the Giant Mine Site, including areas where active care and maintenance activities continue. Except for those specifically designated in the Drawings and Specifications, underground workings are not to be backfilled as part of this Contract.

1.8 Contractual Arrangements

- .1 The Work required by these Specifications form a portion of the overall Gant Mite Site remediation project. Numerous other parties will be using the Site concurrently with Work covered by these Specifications being performed.

1.9 Communication

- .1 Lines of communication will be discussed and detailed during the Pre-Construction meeting.

1.10 Submittals

- .1 All submittals in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Submit requests for payment for review, and for transmittal to Departmental Representative.
- .3 Submit requests for interpretation of Contract Documents, and obtain instructions through Departmental Representative.

- .4 Submit and process substitutions through Departmental Representative.

1.11 On-Site Documents

- .1 Maintain at job site, one copy each of the following:
 - .1 Contract drawings.
 - .2 Specifications.
 - .3 Requests for Clarification and responses.
 - .4 Addenda.
 - .5 Change Orders.
 - .6 Reviewed shop drawings.
 - .7 Other modifications to Contract.
 - .8 Compiled sampling, analytical data, and quality control data.
 - .9 Copy of approved Work Schedule.
 - .10 Material and Safety Data Sheets Specifications.
 - .11 Site Specific Health and Safety Plan including:
 - .1 Fire Safety Plan.
 - .2 Emergency Response Plan.
 - .12 Stope Complex Work Plans
 - .13 Spill Contingency Plan.
 - .14 Environmental Protection Plan.
 - .15 All applicable Territorial permits and licenses, including the Land Use Permit, Water License and extended hours work permit.
 - .16 All applicable Federal permits and licenses.
 - .17 Workers' Safety and Compensation Commission (WSCC) Notification of Project
 - .18 Worker training records
 - .19 Copies of manifests and bills of lading.
 - .20 Other documents as specified.

1.12 Work Schedule

- .1 Provide and maintain a Work Schedule in accordance with instructions of Section 01 32 18, Construction Progress Schedules - Bar (GANTT) Chart.
- .2 Keep the Departmental Representative advised of planned Work activities in accordance with the instructions of Section 01 33 00 – Submittal Procedures.
- .3 All Work under this Contract shall be completed by March 1, 2016.

1.13 Work by Others

- .1 Care and Maintenance for the entire Giant Mine Site is being carried out under a separate contract.

1.14 Physical Work Sequence

- .1 Physical Work is to be carried out in the following general sequence:
 - .1 Construction of Aggregate Material Construction Facilities (as required).
 - .2 Drilling (as required)

- .3 Tailings Excavation, processing and supply to Paste production location(s)
 - .4 Paste Production, including supply of water and binder
 - .5 Conventional or Paste Barricade construction.
 - .6 Paste backfill delivery into designated Stope Complexes to meet priority sequence listed in Table 1. Paste delivery activities to each Stope Complex will follow this general sequence:
 - .1 Plan
 - .2 Implement
 - .3 Monitor
 - .4 Adjust Plan
 - .5 Repeat
 - .7 Tailings excavation restoration.
- .2 Carry out Work in stages to accommodate access to the Work area.
- .1 Schedule and sequence material transportation in coordination with the Departmental Representative and Mine Manager.
 - .2 Sequence Work to minimize site disturbance and dust generation, traffic restrictions, and adverse impact to the environment.
- .3 Coordinate Progress Schedule and co-operate with continued use of site by others.

1.15 Contractor Use of Premises

- .1 Contractor has use of site within the Project Work Area for the performance of the Work, subject to restrictions established by the Departmental Representative, Mine Manager and AHJ.
- .2 Coordinate use of/access to Site areas with the Departmental Representative and Mine Manager, for the following work activities, or as directed by the Departmental Representative:
 - .1 Work completed in the underground, including but not limited to the construction of barricades and the installation of the Paste monitoring system.
 - .2 Water withdrawals from the Polishing Pond, including but not limited to timing and volume.
 - .3 Waste transport throughout the Site.
 - .4 Traffic or worker access restrictions during Work activities.
- .3 Do not unreasonably encumber Site with materials or equipment.
- .4 Move stored products or equipment which interfere with operations of Departmental Representative or Mine Manager.
- .5 Use of Site shall comply with the environmental protection requirements of Section 01 35 43 - Environmental Procedures and Environmental Management Plan.
- .6 Consideration will be given to activities of others around the Site, including vehicle access and travel through the Contractor Work area.

1.16 Departmental Representative Furnished Items

- .1 Departmental Representative will provide the following for Contractor's use during the Work:
 - .1 Provision of a Site Specific Health and Safety Orientation for the overall Giant Mine Site, prepared by the Mine Manager. All Contractor employees working at the site will be required to participate in a health and safety orientation provided by the Mine Manager.

1.17 Permits and Licenses

- .1 Work activities of this Contract, will operate under provisions of a Land Use Permit and Water License. The Water License has been issued and is included in the Supplemental Information, listed in Section 00 00 01 – List of Drawings and Supporting Documents. The Contractor shall provide any supplementary information requested by the Departmental Representative in an expedient manner to support issuance of any amendments to the Water License and to satisfy the conditions of operation. Supplementary information may include, but not be limited to submittals included in Table 01 33 00-1 – Contractor Submittal Schedule in Section 01 33 00 – Submittal Procedures.
- .2 All restrictions and requirements of the Land Use Permit and Water License apply to Contractor.
- .3 Register, obtain and pay for all required licenses and permits for individual tradesmen employed for Work.
- .4 Provide supplemental information to the regulators for any necessary license amendments or reporting requirements.
- .5 Pay all costs associated with complying with the requirements for the permits and licenses noted in the above clauses.

1.18 Site Supervision

- .1 Designate Contractor's Site Superintendent or back-up to be on site at all times during site operations, to have full authority to make decisions for Contractor, to be knowledgeable of the requirements of the Contract, and to act upon Departmental Representative's instructions. The Site Superintendent must fulfill the requirements of the NWT Mine Health and Safety Act and associated Regulations Level 2 Supervisor.
- .2 Departmental Representative may engage an independent engineering consultant to provide inspection and testing services for on-going verification of Contractor's compliance with project specifications and required work procedures.

1.19 Worker Orientation Seminar

- .1 Develop, prior to the start of the Work, course material for a Worker Orientation Seminar for Contractor's employees. The intent is to describe the remediation activities at the site, and provide instruction for the applicable health, safety, and environmental policies and regulations as related to Site Work activities. Course material will be prepared in English and presented in the English language and the local dialect, if required.

- .2 Submit three (3) copies of the Worker Orientation Seminar course material to Departmental Representative for review at least fifteen (15) days prior to the seminar. Include information describing the facility to be used for conducting the seminars.
- .3 The Orientation Course will address, but not necessarily be limited to, the following topics:
 - .1 Project Communication
 - .1 Roles of Departmental Representative and Departmental Representative's Authorized Personnel
 - .2 Roles of Contractor and Contractor's authorized representatives
 - .3 Roles of Mine Manager
 - .4 Lines of Project Communication
 - .5 Coordination and provision of access for work by others
 - .2 Scope of Work
 - .1 Preparation of storage areas
 - .2 Tailings Excavation
 - .3 Paste Production
 - .4 Paste Placement
 - .5 Underground Activities
 - .6 Access restrictions and abatement worker decontamination procedures
 - .7 Occupational and dust monitoring
 - .3 Regional Overview of the Giant Mine Area
 - .1 Land use of area
 - .2 Location of site relative to communities
 - .3 Wildlife
 - .4 Climate
 - .5 Geology and hydrology
 - .6 Flora and fauna
 - .4 Environmental Issues and Protection Procedures
 - .1 Climate
 - .2 Land use
 - .3 Water resources/fisheries
 - .4 Terrestrial resources
 - .5 Heritage resources
 - .6 Spill contingency plans/procedures
 - .7 Training activities
 - .5 Project Organization/Schedule/Administration
 - .1 Personnel policies
 - .2 Supervisory reporting relationships
 - .3 Communication
 - .4 Payroll and banking procedures
 - .5 Work Schedules and hours
 - .6 General Site Specific Health and Safety

- .1 Team Work
 - .2 Work attitudes/productivity
 - .3 Anti-Harassment Policy
 - .4 First aid procedures
 - .5 Protective equipment and clothing
 - .6 Safe operation of equipment and tools
 - .7 WHMIS requirements
 - .8 Wildlife awareness
 - .9 No smoking regulations
 - .10 Firearms
 - .11 Fit for duty requirements
 - .12 Drug and Alcohol Policy
- .7 Work Specific Task Requirements
- .1 Preparation of storage areas
 - .2 Occupational and air quality monitoring
 - .3 Working from heights
 - .4 Confined Space Entry
 - .5 Hot Work Permit System
 - .6 Transportation of Dangerous Goods (TDG)
 - .7 Environmental mitigation procedures
 - .8 Emergency response training
 - .9 Other work items detailed in the Contractor's Backfill Method Plan or Slope Complex Work Plans.
- .4 Prior to the start of Work, conduct Worker Orientation Seminars for all supervisors, foremen, Contractor's general workforce, Departmental Representative and Departmental Representative's Authorized Personnel staff based on the course material reviewed by Departmental Representative.
- .5 Require each attendee to sign a record of attendance upon completion of the seminar. Retain, for Departmental Representative's review at any time, this record of attendance.

1.20 Measurement of Payment

- .1 Work under this Contract will be paid for as follows:
 - .1 Lump sum payment items will be paid at the lump sum price tendered for each lump sum item listed in the Basis of Payment Schedule.
 - .2 Unit price items will be paid at the unit price tendered for each unit price item listed in the Basis of Payment Schedule.
 - .3 Miscellaneous Project costs will be paid at the lump sum prices tendered for Payment Items BOPC-1 through BOPC-5, Balance of Project Costs in the Basis of Payment Schedule.
- .2 Unit price items and lump sum items will be paid under the Basis of Pricing, which will form the Basis of Payment Schedule of the proposed contract. All other items, whether specifically defined in the specific sections of the Specifications or not, will be paid under Payment Items BOPC-1 through BOPC-5, Balance of Project Costs, in the Basis of Payment Schedule.
- .3 Direct costs include all costs directly attributable to a particular pay item including equipment, operators, materials, etc. All direct costs for lump sum and unit price

items are to be included in the appropriate price item in the Basis of Payment Schedule.

- .4 Indirect costs include all costs not directly attributable to the pay items including profit, supervision, overhead, administration, CGL Insurance, WCB, allowances for equipment maintenance and depreciation, repairs and any other relevant costs. All indirect costs associated with specific unit price or lump sum items will be included in Payment Items BOPC-1 through BOPC-5, in the Basis of Payment Schedule.
- .5 Include costs of any statement of or requirement for work, goods or services required in this section that are not covered by appropriate payment clauses in other sections in Payment Items BOPC-1 through BOPC-5, Balance of Project Costs, in the Basis of Payment Schedule.
- .6 Notify Departmental Representative of planned Work activities in accordance with requirements of Section 01 33 00 - Submittal Procedures, and at least three (3) days in advance of operations to permit required measurements for payment.
- .7 All direct costs for the preparation of the Worker Orientation Seminar Material, including conducting the seminars and preparation of meeting room facilities, as required, are to be included in the lump sum price for Worker Orientation Seminar, Item 01 11 00-1, as indicated in the Basis of Payment Schedule
- .8 Except as indicated above, Work under this section will not be measured. Include all costs in Item BOPC-1, Balance of Project Costs in the Basis of Payment Schedule. Indicate the cost of this Work as a separate line item in the Contract Work Breakdown Structure (CWBS) specified in Section 01 32 18 Construction Progress Schedules – Bar (GANTT) Chart.

PART 2 PRODUCTS

- .1 Not used.

PART 3 EXECUTION

- .1 Not used.

END OF SECTION

PART 1 GENERAL

1.1 General

- .1 Particular requirements for sampling and testing to be carried out by Contractor and Contractors designated testing laboratory are specified under various Specification sections.
- .2 Provide and pay for collection, transportation and analyses at an accredited laboratory for all Contractors' samples required to meet the specifications.

1.2 Independent Testing Plan

- .1 Submit Independent Testing Plan (ITP) in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Submit ITP to the Departmental Representative thirty (30) days prior to start of the Work. The ITP is to include details of the Contractors proposed methodology to complete sampling and testing requirements including, but not limited to:
 - .1 The Contractors proposed analytical laboratory and laboratory accreditation.
 - .2 Details of proposed sampling personnel, methodology and protocols.
 - .3 Details of the proposed sampling, packaging and transportation methods.
 - .4 A copy of the proposed laboratory's current CALA and ISO 17025 certification valid for all analytical tests to be performed.
 - .5 The type and frequency of sampling and testing to be performed on mixed Paste prior to pumping.
 - .6 The type and frequency of sampling and testing to be performed on cored underground solidified Paste
- .3 Proposed methodologies are to meet or exceed requirement of specifications, certified laboratory requirements and industry best practice. Departmental Representative will review Contractors submittal.
- .4 The analytical testing laboratory designated by the Contractor to carry out testing is to be acceptable to the Departmental Representative. The analytical laboratory must maintain ISO 17025 certification for all tests to be performed. The proposed analytical laboratory must be independent from the Contractor and acceptable to the Departmental Representative.

1.3 Departmental Representative Testing Responsibilities

- .1 Departmental Representative will appoint and pay for services of a testing laboratory required for the following:
 - .1 Quality control material compaction and gradation testing of Aggregate Material, as required.
 - .2 Testing associated with the identification and characterization of Hazardous Materials, as required.
 - .3 Testing required for quality assurance.
 - .4 Testing required for monitoring of ambient air quality .

1.4 Contractors Paste Sampling and Testing Requirements

- .1 Provide labour, equipment and facilities to:

- .1 Provide assistance and access to Work to be inspected and tested by Departmental Representative.
 - .2 Complete Contractor's testing requirements.
 - .3 Make good Work disturbed by inspection and test.
 - .4 Meet inspection and testing requirements of permits issued for the Work.
- .2 Perform Quality control testing of Paste constituents and mixed Paste as required to:
- .1 Evaluate, modify and confirm Paste performance to the Contractors Paste production personnel and operation. Paste performance criteria is included in Section 31 23 23.33 – Paste Production and Delivery.
 - .2 Provide continuous monitoring and confirmation of Paste performance for review by Departmental Representative
 - .3 Conform with Contractors accepted Backfill Method Plan and Contractors accepted Stope Complex Work Plans.
 - .4 Provide sufficient data to allow completion of the Stope Complex Backfilling completion documentation
 - .5 Conform with Requirements of Authorities having Jurisdiction (AHJ).
 - .6 Conform with Federal, Territorial and Municipal regulations and guidelines.
 - .7 Meet inspection and testing required by laws, ordinances, rules, regulations or orders of public authorities.
- .3 Strength testing of Paste samples is to:
- .1 Mimic underground conditions. Cast UCS test cylinders are to be stored for a minimum of 28 days at temperature and humidity conditions equal to that recorded in the underground voids into which the corresponding Paste has been delivered.
 - .2 Be conducted by a third party materials testing laboratory accredited with CCIL – Category "I" Intermediate Certification which follow CSA standard A283-06; CCIL – Aggregate Quality Control Laboratory (Type C) - ASTM C702 , ASTM C117 , ASTM C136; and CCIL – Aggregate Physical Property Laboratory (Type D) - ASTM D422 , ASTM C127 , ASTM C128 , ASTM D854, or within a dedicated on-site laboratory that has been inspected by Departmental Representative and accredited to perform the Paste strength tests required by the Contractors accepted Backfill Method Plan.
 - .3 Be performed in accordance with ASTM standard CCIL – Category "I" Intermediate Certification which follow CSA standard A283-06; CCIL – Aggregate Quality Control Laboratory (Type C) - ASTM C702 , ASTM C117 , ASTM C136; and CCIL – Aggregate Physical Property Laboratory (Type D) - ASTM D422 , ASTM C127 , ASTM C128 , ASTM D854.
 - .4 To be conducted at a minimum of one surface cast sample per 5,000m³ of Paste delivered, with a minimum of two samples tested for each void filled.
 - .5 Be verified by collection and 28 day UCS testing of solidified delivered Paste cored in locations accessible to underground crews.
- .4 Where tests or inspections by designated testing laboratory reveal Work not in accordance with contract requirements, pay costs for additional tests or inspections as required by Departmental Representative to verify acceptability of corrected Work.
- .5 Assume all responsibility for samples compromised during transport including all costs for re-sampling, shipping, analysis and any resulting delays.

1.5 Measurement of Payment

- .1 Include all costs for the development of the Contractors Independent Testing Plan that meets the requirements of this Specification, Water License and AHJ in the Lump Sum price for Payment Item 01 29 83-1 Independent testing Plan in the Basis of Payment Schedule.
- .2 Contractor's QC Testing Requirements will be measured for payment by the cubic metre of delivered Paste and will be paid under Payment Item 01 29 83-2 - Contractor's QC Testing Requirements in the Basis of Payment Schedule. The volume paid under Payment Item 01 29 83-2 will equal the volume paid under Payment Item 31 23 22.33-1 Paste Production and Delivery
- .3 Except as indicated above, work under this section will not be measured. Include all costs in Item BOPC-1, Balance of Project Costs in the Basis of Payment Schedule. Indicate cost of the Work of this section as a separate line item in the Contract Work Breakdown Structure (CWBS) specified in Section 01 32 18 Construction Progress Schedules – Bar (GANTT) Chart.

PART 2 PRODUCTS

- .1 Not Used

PART 3 EXECUTION

- .1 Not Used

END OF SECTION

PART 1 GENERAL

1.1 Definitions

1. Project Start-Up Teleconference Meeting: conference call to be held within ten (10) days after Contract Award and to include the Contractor, Departmental Representative and representatives from AANDC and PWGSC.
2. Pre-Construction Meeting: a two day meeting to be held in Yellowknife prior to Contractor mobilization to Giant Mine Site and to include the Contractor, Departmental Representative and representatives from AANDC and PWGSC.
3. Seasonal Progress Meeting: meeting to be held between summer construction seasons and to include the Contractor, Departmental Representative and representatives from AANDC and PWGSC.
4. Monthly Progress Meeting: meeting to be held on-Site at monthly intervals during construction activities and to include the Contractor, the Mine Manager, Departmental Representative and representatives from AANDC and PWGSC.
5. Weekly Construction Meeting: meeting to be held on-Site at weekly intervals during construction activities and to include the Contractor's Site Superintendent, foremen as necessary, the Mine Manager, and Departmental Representative.
6. Community Information Meeting: meetings to be held in Yellowknife with stakeholders and the public and to include the Contractor's Site Superintendent, AANDC, PWGSC and Departmental Representative.
7. Tailgate Meeting: meeting to be held on-Site daily during construction activities and to include Contractor, all construction staff, and Departmental Representative.

1.2 Administrative

1. Responsibilities of Departmental Representative:
 - .1 Schedule and administer Monthly and Weekly Meetings throughout the progress of the Work.
 - .2 Prepare agenda for meetings unless otherwise specified.
 - .3 Preside at meetings unless otherwise specified.
 - .4 Record the meeting minutes unless otherwise specified.
 - .5 Reproduce and distribute copies of minutes as soon as possible after meetings and transmit to meeting participants and affected parties not in attendance.
2. Responsibilities of Contractor
 - .1 Provide physical space and make arrangements for Weekly, Monthly and Tailgate Meetings.
 - .2 Representatives of Contractor, Sub-Contractor and suppliers attending meetings will be qualified and authorized to act on behalf of party each represents.

1.3 Project Start-up Teleconference Meeting

1. Within ten (10) days after award of Contract, request a meeting of parties in Contract to discuss and resolve administrative procedures and responsibilities. The meeting will be in the form of a teleconference for all parties involved.
2. Representatives from AANDC and PWGSC, Departmental Representative, Contractor, major Sub-Contractors, field inspectors and supervisors will be in attendance.
3. Establish time and teleconference number and notify parties concerned a minimum of five (5) days before meeting.
4. Departmental Representative or designate will chair the meeting and take minutes. Meeting will be informal and agenda to include the following:
 - .1 Appointment of official representative of participants in the Work.
 - .2 Preliminary Schedule of Work.
 - .3 Preliminary Schedule of Cost Breakdown and other submissions.
 - .4 Requirements for temporary facilities, site security and office facilities (as required), equipment and proposed methods of mobilization and demobilization.
 - .5 Set-up of Pre-Construction Meeting.

1.4 Pre-construction Meeting

1. Request a face-to-face meeting of parties in contract to discuss and resolve administrative procedures and responsibilities. The meeting is to take place over a two day period in Yellowknife, NT and will include a site visit.
2. Representatives from AANDC and PWGSC, Departmental Representative, Care and Maintenance Contractor, Underground Contractor, Mine Manager, Contractor, major Sub-Contractors, field inspectors and supervisors will be in attendance.
3. Provide PWGSC and AANDC with a preferred time and available timeframe for conducting a Pre-construction meeting. Coordinate to have all Contractor's attendees complete site orientation prior to the Pre-construction meeting to allow for a site visit.
4. Incorporate mutually agreed variations to Contract Documents into Agreement, prior to signing.
5. Agenda may include:
 - .1 Confirmation of official representative of participants in the Work.
 - .2 Schedule of Work: in accordance with Section 01 32 18 - Construction Progress Schedules - Bar (GANTT) Chart.
 - .3 Schedule of submission in accordance with Section 01 33 00 - Submittal Procedures including, but not limited to:
 - .1 Site Specific Health and Safety Plan.
 - .2 Insurances and transcripts.
 - .3 Equipment to be used by Contractor.
 - .4 Environmental Protection Plan

- .5 Location of equipment and proposed methods for mobilization and demobilization.
- .6 Requirements and location for temporary construction facilities, in accordance with Section 01 52 00 - Construction Facilities.
- .7 Delivery schedule of specified equipment.
- .8 Site security in accordance with Section 01 35 32 - Site Specific Health and Safety Plan.
- .9 Proposed changes, change orders, procedures, approvals required, mark-up percentages permitted, time extensions, overtime, administrative requirements.
- .10 Departmental Representative provided products.
- .11 Record drawings in accordance with Section 01 33 00 - Submittal Procedures.
- .12 Take-over procedures, acceptance, warranties in accordance with Section 01 78 00 - Closeout Submittals.
- .13 Monthly progress claims, administrative procedures, photographs, hold backs.
- .14 Appointment of inspection and testing agencies or firms.
- .15 Signing and execution of construction Contract.
- .16 Weekly and monthly reporting templates.
- .17 Regulatory Issues.
- .18 Aboriginal involvement and reporting.

1.5 Seasonal Progress Meetings

- 1. Departmental Representative will schedule a meeting of parties in contract and arrange a meeting location to discuss the previous and upcoming construction season and resolve issues arising from same, to be held in Yellowknife.
- 2. Representatives from AANDC and PWGSC, Departmental Representative, Care and Maintenance Contractor, Underground Contractor, Mine Manager, Contractor, major Sub-Contractors, field inspectors and supervisors will be in attendance.
- 3. Departmental Representative will notify parties concerned ten (10) days before meeting.
- 4. Departmental Representative will preside.
- 5. Agenda may include:
 - .1 Summary of the previous site activities.
 - .2 Comparison of progress achieved with the Project Schedule.
 - .3 Schedules and action Contractor plans to take to get back on Schedule, if required.
 - .4 Confirmation of quantities.
 - .5 Health, safety and security issues.
 - .6 Summary of interactions with Authorities Having Jurisdiction (AHJ).
 - .7 Work activities for the following season.
- 6. Departmental Representative will record minutes of meetings and circulate to attending parties and affected parties not in attendance shortly after meeting.

1.6 Monthly Progress Meetings

1. Departmental Representative will schedule Monthly Progress Meetings and arrange a meeting location once per month to be held in Yellowknife.
2. Representatives from AANDC and PWGSC, Departmental Representative, Care and Maintenance Contractor, Underground Contractor, Mine Manager, Contractor, major Sub-Contractors, field inspectors and supervisors will be in attendance.
3. Departmental Representative will notify parties five (5) days prior to meetings.
4. Agenda may include:
 - .1 Summary of the previous period's site activities.
 - .2 Comparison of progress achieved with the Project Schedule.
 - .3 Schedules and actions Contractor plans to take to get back on Schedule, if required.
 - .4 Confirmation of quantities.
 - .5 Health, safety and security issues.
 - .6 Occupational and air quality monitoring results.
 - .7 Summary of interactions with AHJ.
 - .8 Work plan for the following quarter, if any.
 - .9 Site facilities and co-ordination requirements.
 - .10 Other business, including resolution of outstanding issues and efficiency strategies.
5. Departmental Representative will record minutes of meetings and circulate to attending parties and affected parties not in attendance shortly after meeting.

1.7 Weekly Construction Meetings

1. During the course of the Work, Departmental Representative will schedule construction meetings weekly.
2. Contractor, major Sub-Contractors involved in Work, Mine Manager, and Departmental Representative are to be in attendance.
3. Departmental Representative to notify parties minimum five (5) days prior to meetings.
4. Departmental Representative to record minutes of meetings and circulate to attending parties and affected parties not in attendance as soon as possible after meeting.
5. Agenda to include the following:
 - .1 Review and approval of minutes of previous meeting.
 - .2 Review of Work progress since previous meeting, using Contractor's Weekly Report.
 - .3 Field observations, problems, conflicts.
 - .4 Problems which impede construction Schedule.
 - .5 Review of Project Schedule, identifying activities that are behind Schedule and corrective measures to regain slippage.
 - .6 Review of Submittals, with expediting as required.
 - .7 Review of proposed changes for effect on construction Schedule.

- .8 Health, Safety and Security issues
- .9 Occupational and air quality monitoring results.
- .10 Correspondence from, or expected visits, from AHJ.
- .11 Site facilities requirements.
- .12 Co-ordination requirements with Mine Manager
- .13 Regulatory compliances issues and other business.

6. Provide written explanations on activities which are overrunning the estimated time. If any such activities are on the critical path, indicate what corrective action will be taken to bring them back on Schedule.

1.8 Tailgate Meeting

1. Hold daily tailgate meetings with all construction staff and on-site Departmental Representative and Departmental Representative's Authorized Personnel, and document minutes with daily reporting requirements to Departmental Representative.

1.9 Community Information Meetings

1. Participate in Community Information meetings scheduled to take place in Yellowknife at the beginning and end of each summer construction season.
2. Organization of Community Information Meeting venue and timing will be performed by AANDC and/ or PWGSC.
3. Provide Design Lead and Construction Lead persons to participate in Community Information meetings.
4. Provide the following at each Community Information Meeting:
 - .1 Progress of Work
 - .2 Contractor's Schedule
 - .3 PowerPoint or equivalent digital presentation material that includes downhole videos, underground videos, plans and maps.
 - .4 Provide a physical setup that shows set Paste.
 - .5 Provide maps with photos to display. 2D level plans with photos of underground cameras with written explanation.
 - .6 Obtain and present wooden models of arsenic stopes currently stored in C-Dry.
 - .7 Attend meeting, setup display area and work with PWGSC/AANDC staff at the table to explain display and/or answer questions from the public.
5. Taylor the presented display and information such that the technical nature of the information is able to be understood by the general public.
6. Submit Community Information Meeting presentation material (documentation/videos) Fourteen (14) days prior to scheduled Community Information Meeting to allow time for review/comments. Modify deliverables to address review comments.

1.10 Measurement of Payment

1. Include all direct costs for the Pre-Construction Meeting in the lump sum price for Pre-Construction Meeting, Item 01 31 19-1, as indicated in Basis of Payment Schedule.

2. Seasonal Progress Meetings will be measured for payment by each meeting event and will include all required preparations. Seasonal Progress Meetings will be paid under Payment Item 01 31 19-2 – Seasonal Progress Meetings in the Basis of Payment Schedule.
3. Monthly Progress Meetings will be measured for payment by each meeting event and will include all required preparations. Monthly Progress Meetings will be paid under Payment Item 01 31 19-3 – Monthly Progress Meetings in the Basis of Payment Schedule.
4. Community Information Meetings will be measured for payment by each meeting event and will include costs for all required preparations. Community Information Meetings will be paid under Payment Item 01 31 19-4 – Community Information Meeting in the Basis of Payment Schedule.
5. Include all direct costs for communication and liaison with the Site Care and Maintenance Contractor and Site Underground Contractor throughout the duration of the Work in lump sum Payment Item 01 31 19-5 – Communication and Liaison with Site Care and Maintenance Contractor in the Basis of Payment Schedule.
6. Except as otherwise indicated herein, Work under this section will not be measured. Include all costs in Item BOPC-1, Balance of Project Costs in the Basis of Payment Schedule. Indicate the cost of this Work as a separate line item in the Contract Work Breakdown Structure (CWBS) specified in Section 01 32 18 Construction Progress Schedules – Bar (GANTT) Chart.

PART 2 PRODUCTS

1. Not used.

PART 3 EXECUTION

1. Not used.

END OF SECTION

PART 1 GENERAL

1.1 Definitions

- .1 Activity: element of Work performed during course of Project. Activity normally has expected duration, and expected cost and expected resource requirements. Activities can be subdivided into tasks.
- .2 Bar Chart (Gantt chart): graphic display of Schedule-related information. In typical bar chart, activities or other Project elements are listed down left side of chart, dates are shown across top, and activity durations are shown as date-placed horizontal bars. Generally Bar Chart should be derived from commercially available computerized project management system.
- .3 Baseline: original approved plan (for Project, Work package, or activity), plus or minus approved scope changes.
- .4 Construction Work Week: Sunday to Saturday, inclusive, seven (7) day Work week. Present scheduled working days as part of Bar (GANTT) Chart submission.
- .5 Duration: number of Work periods (not including holidays or other nonworking periods) required to complete activity or other Project element, usually expressed as workdays or workweeks.
- .6 Milestone: significant event in Project, usually completion of major deliverable.
- .7 Project Schedule: planned dates for performing activities and the planned dates for meeting milestones. Dynamic, detailed record of tasks or activities that must be accomplished to satisfy Project objectives. Monitoring and control process involves using Project Schedule in executing and controlling activities and is used as basis for decision making throughout Project life cycle.

1.2 Requirements

1. Schedule is to be practical and to remain within specified Contract duration with completion of all Work and Final Inspection by March 1, 2016.
2. Plan to complete Work in accordance with prescribed milestones and time frame.
3. Prepare schedule prioritizing completion of work for higher risk items first.
4. Provide and maintain a work schedule showing anticipated progress stages and final completion of Work by March 1, 2016.
5. Limit activity durations to maximum of approximately ten (10) working days, to allow for progress reporting.
6. Prepare the schedule using critical path analysis techniques, showing resource loading. Identify tasks that lie on the critical path. Show total float for all activities.

1.3 Submittals

1. Provide submittals in accordance with Section 01 33 00 - Submittal Procedures.
2. Submit Preliminary Project Schedule to Departmental Representative within seven (7) working days of contract award.
3. Submit Project Schedule to Departmental Representative within five (5) working days of receipt of acceptance of Preliminary Project Schedule.

1.4 Project Schedule

- .1 Develop detailed Project Schedule.
- .2 Ensure detailed Project Schedule includes as minimum, milestone and activity types as follows:
 - .1 Award.
 - .2 Start-up Meeting.
 - .3 Submittals
 - .4 Permits
 - .5 Mobilization.
 - .6 Site Activities (expand as required to suit Contractor's task breakdown).
 - .7 Interim Certificate of Completion.
 - .8 Demobilization.
 - .9 Closeout Submittals.
 - .10 Final Certificate of Completion.
- .3 Following review and comments on Preliminary Project Schedule by Departmental Representative, revise and resubmit Project Schedule.
- .4 During progress of Work revise, update and resubmit the Project Schedule on a monthly basis, or as directed by Departmental Representative. Provide the revised Project Schedule a minimum of three (3) days prior to scheduled monthly progress meetings, or as directed by Departmental Representative.

1.5 Project Schedule Reporting

1. Submit formal revised project schedule every month reflecting activity changes and completions, as well as activities in progress. Update schedule to show completed tasks or percent complete.
2. Submit health and safety related performances measures, socio-economic performance measures and Aboriginal socio-economic performance measures required by AANDC with Monthly Invoice. Templates are provided in Appendix B.

1.6 Project Meetings

1. Discuss Project Schedule at regular meetings, identify activities that are behind Schedule and provide measures to regain slippage. Activities considered behind Schedule are those with projected start or completion dates later than current approved dates shown on baseline schedule.
- .5 Weather related delays will be discussed at regular meetings and the Contractor will provide a plan to mitigate weather related risks.

1.7 Cost and Quantity Control

1. Provide a Contract Work Breakdown Structure (CWBS) based on Contractor's Cost Breakdown and any modifications requested by Departmental Representative as follows:
 - .1 CWBS to be an organization of the Work to be performed, services to be provided and data to be submitted by Contractor, as well as payments to be made to Contractor under the terms of the Contract.
 - .2 The CWBS to clearly define the Work elements of each item of the CWBS.
 - .3 All unit price and lump sum pay items included in the Basis of Payment Schedule to also be included in the CWBS.
 - .4 The CWBS to include a breakdown of pay items included under Item BOPC -1, Balance of Project Costs in the Basis of Payment Schedule.
 - .5 Prepare the CWBS in computerized spreadsheet format compatible with the most recent release of Microsoft Excel software. Provide CWBS in hard copy and electronic format.
 - .6 Submit the CWBS within fifteen (15) days following contract award date.
 - .7 Submit, as part of monthly schedule update, an Excel format spreadsheet showing the value of work completed, as per CWBS, and forecasted value of work for each remaining month of the contract duration.
- .6 Equipment and Material Control:
 - .1 Record data on status of construction material and equipment and report upon Departmental Representative's request.
- .7 Personnel Performance Measures:
 - .1 Record and report personnel listing for each company employed under this Contract, including Sub-Contractors, detailing daily person-hours during the current month and cumulative total to date and report upon Departmental Representative's request.
 - .2 Provide statistics related to lost time due to accidents.
 - .3 Monthly Performance Measures Templates are provided in Appendix B.

1.8 Measurement of Payment

- .1 Work under this section will not be measured. Include all costs in Item BOPC-1, Balance of Project Costs in the Basis of Payment Schedule. Indicate the cost of this Work as a separate line item in the Contract Work Breakdown Structure (CWBS) specified in this section.

PART 2 PRODUCTS

- .1 Not used.

PART 3 EXECUTION

- .1 Not used.

END OF SECTION

PART 1 GENERAL

1.1 Definition

- .1 Shop Drawings: Drawings, diagrams, illustrations, Schedules, performance charts, brochures and other data which are to be provided by Contractor to illustrate details of a portion of the Work.

1.2 Administrative

- .1 Submit to Departmental Representative submittals, as listed in Table 01 33 00-1 at the end of this section, 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 and acceptance is completed by Departmental Representative
- .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 Departmental Representative. This review represents that necessary requirements have been determined and verified, or will be, and that each submittal has been checked and co-coordinated 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 Departmental Representative, in writing at time of submission, of any deviations from requirements of Contract Documents, stating reasons for deviations.
- .7 Contractor's responsibility for errors and omissions in submission is not relieved by Departmental Representative's review and acceptance of submittals.
- .8 Contractor's responsibility for deviations in submission from requirements of Contract Documents is not relieved by Departmental Representative review or acceptance.
- .9 Keep one reviewed copy of each submission on Site.
- .10 All submittals must be up to date at the time of monthly invoice submission. No invoice will be approved for payment if submittals are not up to date.

1.3 Shop Drawings, Product Data and Submissions

- .1 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.
- .2 Submit Shop Drawings and Submissions according to requirements and schedule identified throughout these Specifications. Shop Drawings and Submittals to bear stamp and signature of qualified Professional Engineer registered or licensed in the Northwest Territories where specified. Submit Preliminary Shop Drawings and Submittals according to individual submittal schedule.
- .3 Make changes in Shop Drawings as Departmental Representative may require, consistent with Contract Documents. When resubmitting, notify Departmental Representative in writing of any revisions other than those requested.
- .4 Verify in Shop Drawings:
 - .1 Field measurements.
 - .2 Field construction criteria.
 - .3 Catalogue numbers and similar data.
- .5 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.
- .6 Submissions shall include:
 - .1 Date and revision dates.
 - .2 Project title and number.
 - .3 Name and address of Subcontractor.
 - .4 Where specified, the stamp of a qualified Professional Engineer registered in the Northwest Territories and the Permit to Practice in the Northwest Territories of his/her firm certifying approval of submissions, verification of field measurements and compliance with Contract Documents.
- .7 Provide details of appropriate portions of Work as applicable:
 - .1 Standards.
 - .2 Relationship to adjacent work.
- .8 After Departmental Representative's review and acceptance, distribute copies.
- .9 Unless otherwise specified, submit one (1) electronic copy of Shop Drawings (pdf) for each requirement requested in Specification Sections and as Departmental Representative may reasonably request.

- .10 Delete information not applicable to project.
- .11 Supplement standard information to provide details applicable to project.
- .12 If upon review and acceptance by Departmental Representative, no errors or omissions are discovered Work may proceed. If Shop Drawings or Submittals are rejected, noted copy will be returned and re-submission of corrected Shop Drawings and Submittals, through same procedure indicated above, must be performed before fabrication and installation of Work may proceed.
- .13 The review and acceptance of Shop Drawings and Submittals by Departmental Representative is for sole purpose of checking conformance with general concept and Specifications.
 - .1 This review does not constitute Departmental Representative approval of detailed design or direction to the Contractor and such review does not relieve Contractor of responsibility for errors or omissions or of responsibility for meeting all requirements of Contract Documents.
 - .2 Contractor is responsible for thoroughness of required work and for co-ordination of all activities.

1.4 Photographs

- .1 Provide date-marked digital photos in “Joint Photographic Experts Group” (.jpg) format for Photographs.
- .2 Digital photographs to have a minimum of 2,592 x 1,944 pixel (5 Megapixel) resolution.
- .3 Captioned Photographs to be submitted on a compact disc (CD) or DVD.
- .4 Quantity: Provide sufficient number of photographs to adequately describe the Work activities.
- .5 Submit progress photographs with weekly QC test results and Progress tracking report or as directed by the Departmental Representative.

1.5 Weekly Quality Control Test Results and Progress Tracking

- .1 Submit weekly reports within 48 hours of the end of the reporting week period which include the following:
 - .1 Details of work completed since the last weekly report including Paste volumes placed in different Stope Complex voids and the Borehole/ underground piping used to deliver the Paste.
 - .2 Compiled Contractor daily field reports.
 - .3 Any delay, including but not limited to, the supply of materials, equipment, or labour that will impact the schedule.
 - .4 Any health or safety incidents or concerns.
 - .5 The dates and volumes of water withdrawn from the Polishing Pond.
 - .6 The installation, maintenance and monitoring of any sediment and erosion control measures.
 - .7 Volumes of water, Processed Tailings, binder and additives used in Paste Production.
 - .8 The sequence, mix designs and delivery locations and volumes of Paste delivered to the Stope Complex.

- .9 A visual map progressively updated with areas that have met the backfilling criteria.
- .10 Still photos of critical Stope Complex voids showing progress of filling.
- .11 A summary of any wildlife sightings at the Contractor's work area, and any mitigative measures taken to limit wildlife disturbances.

1.6 Contractors Backfill Method Plan

- .1 Submit with Bid, a Backfill Method Plan that includes, but is not limited to:
 - .1 Paste production process design and flowchart, including details on the material holding volumes and production rates for process equipment.
 - .2 Paste production equipment list including details on make and model of mixing and pumping equipment.
 - .3 Tailings excavation, processing and hauling equipment list.
 - .4 Water supply and hauling equipment list.
 - .5 Typical Paste production facilities arrangement drawing.
 - .6 Proposed Paste mix designs for different applications, including void backfill and remote barricade construction applications.
 - .7 General designs of Paste backfill monitoring systems including type of monitoring equipment and typical number of monitoring stations per Stope Complex.
 - .8 Paste delivery process design and flowchart
 - .9 Paste delivery volume determination method, equipment, calibration and frequency of calibration.
 - .10 Details and examples of trigger levels or events at which production and/or pumping of Paste will be suspended and the backfilling mix/sequence/ approach will be modified. The Backfill Method Plan is to include:
 - .1 The proposed typical and/or potential responses to Contractor defined trigger levels or events.
 - .2 The criteria or observations which would define a Leakage situation, including:
 - .1 The timeframe of Paste delivery elapsing prior to defining a Leakage situation, with maximum of 48 hours.
 - .2 The volume of Paste to be delivered prior to defining a Leakage situation.
 - .3 The sequence, or range, of proposed responses to a Leakage situation, including but not limited to:
 - .1 Potential Paste mix designs;
 - .2 Potential equipment changes;
 - .3 Potential delivery sequence or volume changes;
 - .4 The timeframe of Paste delivery elapsing prior to adjusting Leakage response approach; and
 - .5 The volume of Paste to be delivered prior to adjusting Leakage response approach.
 - .11 Minimum temperatures of air, water and tailings required for proposed production method.
 - .12 Trigger temperatures in air, water and tailings that will require implementation of different work methodology.

- .13 Actions to be taken if QC tests do not meet specification or Backfill Method Plan criteria.
- .2 The successful bidder will have their Backfill Method Plan reviewed by the Departmental Representative. Backfill Method Plan is to be finalized to address Departmental Representative comments fourteen (14) days prior to commencing Site Work activities.

1.7

Contractors Stope Complex Work Plan

- .1 Prior to commencing Paste production activities, Borehole drilling or Aggregate Material placement activities at any of the designated Stope Complexes, submit to the Departmental Representative a Stope Complex Work Plan for that particular Stope Complex. This document will detail how the processes and procedures outlined in the Contractors Backfill Method Plan will be applied to the particular Stope Complex. Each Stope Complex Work Plan is to include, but not be limited to:
 - .1 Drawings, designs and plans of any required underground rehabilitation or new access development required to be constructed by Care and Maintenance Contractor to allow Contractor to execute Stope Complex Work Plan.
 - .2 Material and Equipment lists and description of excavation or other tailings recovery method.
 - .3 Site plans and drawings including pad extents, liner extents and road improvements.
 - .4 General sequence of Paste delivery to Boreholes or Underground pipes, noting the voids that need to be confirmed as filled prior to filling of subsequent voids.
 - .5 A drawing showing proposed tailings excavation locations, screener operation location(s), water management works, tailings water discharge locations, tailings test pitting locations and surface access routes.
 - .6 Testing data, calculations and engineering relationships for each paste mix design proposed for use in the Stope Complex.
 - .7 Paste production and placement schedule.
 - .8 Methods proposed to address any Stope Complex specific completion criteria noted in Specifications.
 - .9 Number, type and location of proposed Boreholes, in addition to existing Boreholes, to be drilled to implement Contractors Stope Complex Work Plan.
 - .10 Borehole general arrangement drawings showing surface access, drill pads, borehole locations, orientations and target stope coordinates
 - .11 Identification of venting boreholes locations.
 - .12 Number, construction methodology and location of proposed Barricades.
 - .13 Engineered drawings for any proposed Conventional Barricades to be constructed, stamped by a registered professional in the Northwest Territories, as required
 - .14 Designs of tailings fill placement monitoring systems including the number, location and orientation of backfill monitoring equipment.
 - .15 Infrastructure development, relocation, upgrading or repair requirements for both surface and underground mine infrastructure.
 - .16 Paste delivery system general arrangement drawings including surface and underground pipe alignments and borehole locations.
 - .17 Traffic control requirements.

- .18 An assessment of the risks associated with failure of:
 - .1 Existing plugs and bulkheads in drifts adjacent to arsenic dust storage stopes and chambers.
 - .2 Existing or newly constructed Conventional or Paste confinement barricades.

1.8 Stope Complex Backfill Completion Document

- .1 At completion of each Stope Complex backfilling, as defined in Section 31 23 23.33 – Paste Production and Delivery, submit a Stope Complex Backfill Completion Document that documents the backfilling process and provides monitoring and inspection verification that Stope Complexes are filled to Specification criteria. Document to include, but not be limited to:
 - .1 Monitoring camera photographs/ video screen shots,
 - .2 As-built drawings of barricades (as required by NWT Mines Act)

1.9 Work Plan Change Document

- .1 Subsequent to the Contractors proposed Stope Complex Work Plan being reviewed and accepted by the Departmental Representative, significant changes to the Contractors Work Plan for the particular Stope Complex are to be detailed and provided to the Departmental via a Work Plan Change Document, rather than a revision of the whole Work Plan.
- .2 Examples of changes to the Stope Complex Work Plan requiring submission of a Work Plan Change Document include:
 - .1 A change in the type or location of a Conventional or Paste Barricade
 - .2 A change to the location, but not necessarily extent, of Tailings excavation work.
 - .3 Details of new Boreholes proposed to be drilled into the Stope Complex.
 - .4 A change in location, orientation or length of Boreholes already proposed to be drilled into the Stope Complex.
 - .5 A change to Processed Tailings stockpiling locations.
 - .6 A change to tailings haul routes or other Equipment haul routes.
- .3 Change forms are to be numbered according to the Stope Complex they apply to, with a sequential number that results in a unique document number.

1.10 Measurement of Payment

- .1 The preparation and weekly submission of the quality control test results and progress tracking report will be measured for payment by each report submitted to the Departmental Representative within 48 hours of week end. Weekly QC Test Results and Progress Reporting will be paid under Payment Item 01 33 00-1 in the Basis of Payment Schedule.
- .2 Include all direct costs for the submission, revision and re-submission of the Contractors Backfill Method Plan in the Lump Sum price for Payment Item 01 33 00-2 Backfill Method Plan as indicated in the Basis of Payment Schedule. Payment of the Lump Sum price will be made upon acceptance by Departmental Representative of an updated Backfill Method Plan, incorporating Departmental Representative comments on initial plan as required.

- .3 Include all direct costs for the submission, revision and resubmission as required of the Stope Complex specific work plan in Unit Price Payment Items 01 33 00-3 through 01 33 00-6, Stope Complex Work Plan in the Basis of Payment Schedule
- .4 Include all direct costs for the submission, revision and resubmission as required of the Stope Complex Completion Document in Unit Price Payment Items 01 33 00-7 through 01 33 00-10 – Stope Complex Completion Document in the Basis of Payment Schedule.
- .5 Except as detailed above, work under this section will not be measured. Include all costs in Item BOPC-1, Balance of Project Costs in the Basis of Payment Schedule. Indicate the cost of this Work as a separate line item in the Contract Work Breakdown Structure (CWBS) specified in Section 01 32 18 Construction Progress Schedules – Bar (GANTT) Chart.

PART 2 PRODUCTS

- .1 Not used.

PART 3 EXECUTION

- .1 Not used.

**TABLE 01 33 00-1
 CONTRACTOR SUBMITTAL SCHEDULE**

Specification Section	Description	Date
01 11 00	Worker Orientation Course Seminar Course Material	Fifteen (15) days prior to seminar
01 11 00	Record of Attendance at Worker Orientation Seminar	Upon Departmental Representative's request
01 11 00	Notification of Planned Work Activities	Three (3) days in advance of operations
01 29 83	Draft Independent Testing Plan	As per Contractors schedule
01 29 83	Revised Independent Testing Plan	Within 10 days of receipt of Departmental Representative comments on Draft ITP. Prior to Paste production and delivery.
01 31 19	Community Information Meetings Presentation Material	Fourteen (14) days prior to Community Information Meeting
01 32 18	Preliminary Project Schedule	Seven (7) days after Contract Award
01 32 18	Project Schedule	Five (5) days of receipt of acceptance, updated monthly
01 32 18	Contract Work Breakdown Structure (CWBS)	Fifteen (15) days after Contract Award
01 32 18	AANDC Reporting Requirements	Monthly with invoice
01 33 00	Weekly QC Test Results and Progress Tracking Reports	Weekly, within 48 hours of the end of the construction week
01 33 00	Draft Backfill Method Plan	With bid
01 33 00	Final Backfill Method Plan	Within 10 days of receipt of Departmental Representative comments on Draft Backfill Method Plan
01 33 00	Draft Stope Complex Work Plan (for each Stope Complex)	As per Contractors schedule
01 33 00	Final Stope Complex Work Plan (for each Stope Complex)	Within 10 days of receipt of Departmental Representative comments on Draft Stope Complex Work Plan
01 33 00	Draft Stope Complex Backfill Completion Document	When Contractor believes backfilling is complete at applicable Stope Complex.
01 33 00	Revised Stope Complex Backfill Completion Document	Within 10 days of receipt of Departmental Representative comments on Draft Stope Complex Backfill Completion Document, and after completion of any Work identified as required by Departmental Representative.
01 33 00	Work Plan Change Document	As required to communicate changes to the accepted Stope Complex Work Plan
01 35 32	Draft Site Specific Health and Safety Plan	Fifteen (15) days after Contract Award
01 35 32	Site Specific Health and Safety Plan	Thirty (30) days prior to mobilization
01 35 32	Proof of PPE Certification and Fit Testing	Prior to commencement of work
01 35 32	Inventory of health and safety and medical supplies and equipment	Within ten (10) days of mobilization, on yearly basis
01 35 32	Personnel Training Matrix	Monthly, in advance of progress claims
01 35 32	On-Site Contingency and Emergency Response Plan	With SSHASP
01 35 32	Spill Contingency Plan	With SSHASP
01 35 32	Fire Safety Program	With SSHASP
01 35 32	First Aid Credentials	With SSHASP
01 35 32	Incident Reports	Within twenty-four (24) hours of occurrence
01 35 43	Copies of Environmental Agency Submittals/Approvals	As required by the Departmental Representative
01 35 43	Environmental Protection Plan	Thirty (30) days prior to commencing Work

**TABLE 01 33 00-1
 CONTRACTOR SUBMITTAL SCHEDULE**

Specification Section	Description	Date
01 41 00	Material Safety Data Sheets (MSDS)	With SSHASP and upon delivery of material
01 41 00	Permit for Extended Hours	Upon request
01 45 00	Inspection and Testing Reports	As required
01 52 00	Construction Facilities Site Plan(s)	Prior to mobilization
01 53 00	Mobilization and Demobilization Plan	Seven (7) days after Contract Award
01 71 01	Name, address and qualifications of Surveyor	Fourteen (14) days prior to commencing Survey activities
01 71 01	Proof of Survey equipment calibration	Prior to start of construction each year
01 71 01	Documentation of Accuracy of Field Engineering	Upon Departmental Representative's request
01 71 01	Raw survey data in electronic form	As required by the Departmental Representative
01 71 01	Record survey data in electronic form	As required by the Departmental Representative
01 71 01	Certificate with Elevations and Locations	As required by the Departmental Representative
01 71 01	Electronic and Hard Copy Drawings	As required for progress claims
01 78 00	Project Completion Document	After completion of the Work

PART 1 **GENERAL**

1.1 **Definitions**

.1 Wastewater: wash water, rinse water, water from decontamination activities, water from dewatering work areas, and/or any other liquid effluent stream created or encountered during Work activities. Does not include sewage water from sanitary facilities.

1.2 **Regulatory Requirements**

.1 Refer to Section 01 41 00 - Regulatory Requirements.

1.3 **Submittals**

.1 Make submittals in accordance with Section 01 33 00 - Submittal Procedures.

1.4 **Water Sources**

.1 Obtain all water for use in structure and equipment decontamination from the Polishing Pond at a maximum volume of 250 cubic metres a day. The following table indicates typical water quality over a year for the Polishing Pond.

Polishing Pond Water Quality Data			
Parameter	Units	Average Concentration	Maximum Concentration
Total Alkalinity, as CaCO ₃	mg/L	69.3	92.1
Aluminum	mg/L	0.0155	0.201
Antimony	mg/L	0.362	1.09
Arsenic	mg/L	0.288	0.433
Barium	mg/L	0.015	0.020
Beryllium	mg/L	ND	
Bismuth	mg/L	ND	
Boron	mg/L	0.33	0.40
Bromide	mg/L	3.09	6.30
Cadmium	mg/L	0.00008	0.0005
Calcium	mg/L	418	464
Cesium	mg/L	0.0001	0.0003
Chloride	mg/L	313	410
Chromium	mg/L	0.0007	0.0011
Cobalt	mg/L	0.0114	0.0802
Copper	mg/L	0.0111	0.0111
Cyanide, Total	mg/L	0.0063	0.0145
Dissolved Organic Carbon	mg/L	4.56	5.14
Hardness	mg/L	1416	1520
Iron	mg/L	0.032	0.161
Lead	mg/L	0.0004	0.0070
Lithium	mg/L	0.027	0.056
Magnesium	mg/L	89.5	100
Manganese	mg/L	0.0241	0.499
Mercury	mg/L	ND	
Molybdenum	mg/L	0.0231	0.0305
Nickel	mg/L	0.0401	0.0687
Nitrate/Nitrite, as N	mg/L	6.74	9.45
Oil & Grease	mg/L	ND	
pH	unitless	7.76	8.01

Polishing Pond Water Quality Data			
Parameter	Units	Average Concentration	Maximum Concentration
Phosphorus	mg/L	ND	
Potassium	mg/L	11.9	13.3
Rubidium	mg/L	0.0074	0.0111
Selenium	mg/L	0.0011	0.0019
Silicon	mg/L	1.5776	1.8500
Silver	mg/L	0.0001	0.0002
Sodium	mg/L	160.6	191
Specific Conductivity	uS/cm	2961	3180
Strontium	mg/L	2.83	3.88
Sulphate	mg/L	1098	1170
Thallium	mg/L	0.0001	0.0001
Titanium	mg/L	0.0051	0.016
Total Ammonia, as N	mg/L	0.0176	0.04
Total Dissolved Solids	mg/L	2426	2760
Total Kjeldahl Nitrogen	mg/L	0.432	0.732
Total Organic Carbon	mg/L	4.54	5.32
Total Phosphate, as P	mg/L	0.0054	0.0076
Total Suspended Solids	mg/L	<1	1.9
Turbidity	NTU	0.41	1
Uranium	mg/L	0.00226	0.0061
Vanadium	mg/L	0.0016	0.0031
Zinc	mg/L	0.0055	0.0713

- .2 There are no potable water sources on-site. Obtain water for use in personnel decontamination showers, office facilities, and sanitary facilities from the City of Yellowknife.
- .3 No water is to be taken from on-site surface water bodies, except for Polishing Pond water used in paste production.
- .4 There is no sanitary sewage disposal on-site. Disposal shall be done in accordance with AHJ.

1.5 Wastewater

- .1 Collect all wastewater generated from Work. Transport and treat or dispose of wastewater off site in accordance with AHJ.
- .2 Provide, operate, and maintain tanks for the collection of wastewater. Wastewater storage ponds meeting all requirements of AHJ are permitted.
- .3 Support tank(s) on (temporary) above ground foundation(s).

1.6 Vehicular Access and Parking

- .1 Prevent contamination of access and site roads by Contractor's Work activities. Immediately scrape up debris or material deposited by Contractor on access roads which is suspected to be contaminated as determined by Departmental Representative; containerize, transport and place at Material Storage Area.
- .2 Departmental Representative may collect soil samples for chemical analyses from the travelling surfaces of existing access routes prior to, during, and upon completion of Work. Excavate and dispose of clean soil contaminated by Contractor's activities at no additional cost.

1.7 Dust and Particulate Control

- .1 Execute Work by methods that minimize raising dust from operations, in accordance with the Environment Management Plan and the Contractors accepted Environmental Protection Plan, detailed in Section 01 35 43 – Environmental Procedures.
- .2 Collect wastewater used for dust and particulate control.

1.8 Equipment Decontamination

- .1 Decontaminate equipment used for tailings excavation and paste processing Work prior to leaving Work area.
- .2 Perform final decontamination of all equipment, tools, and materials which may have come in contact with potentially contaminated materials prior to removal from site.
- .3 Notify Departmental Representative for inspection after decontamination and prior to removal from site. Departmental Representative will have right to require additional decontamination to be completed, if deemed necessary.

1.9 Progress Cleaning

- .1 Maintain cleanliness of Project Work Area to comply with federal, provincial/territorial, and local fire and safety laws, ordinances, codes, and regulations.
- .2 Coordinate cleaning operations with storage operations to prevent accumulation of dust, dirt, debris, rubbish, and waste materials.

1.10 Removal

- .1 Do not bury rubbish and waste materials on site unless approved by Departmental Representative.
- .2 Do not discharge wastes into streams or waterways.

1.11 Measurement of Payment

- .1 Work under this section will not be measured. Include all costs in Item BOPC-1, Balance of Project Costs in the Basis of Payment Schedule. Indicate the cost of this Work as a separate line item in the Contract Work Breakdown Structure (CWBS) specified in Section 01 32 18 Construction Progress Schedules – Bar (GANTT) Chart.

PART 2 PRODUCTS

Not used.

PART 3 EXECUTION

Not used.

END OF SECTION

PART 1 GENERAL

1.1 Definitions

- .1 Project Work Area: Area directly affected by the Work under these Specifications and within which the Contractor supervises and directs Work.
- .2 Contractor's Site Superintendent: Contractor's resident site representative who is authorized to make decisions on behalf of the Contractor and who assumes the role and responsibility of a Level 2 Supervisor under the NWT Mine Health and Safety Act for the Project Work Area.
- .3 Contractor's Site Specific Health and Safety Plan (SSHASP): the Site Specific Health and Safety Plan, prepared by the Contractor and reviewed and accepted by the Departmental Representative and the Mine Manager; that applies only to the Work of this Contract and within the Project Work Area. Unless otherwise specified, all references to a SSHASP in this section apply to the Contractor's SSHASP.
- .4 Mine Manager's Site Specific Health and Safety Plan: the Site Specific Health and Safety Plan, prepared by the Mine Manager, that the Contractor's SSHASP must comply with, and that applies to the overall Giant Mine Site.

1.2 Site Specific Health and Safety Plan Requirements

- .1 Comply with the Mine Manager's health and safety requirements.
- .2 Develop a SSHASP for the specified Work that satisfies all Authorities Having Jurisdiction (AHJ) and complies with Mine Manager's SSHASP.
- .3 Develop a SSHASP for the Work that complies with the most stringent requirements of regulations from AHJ, Canada Labour Code, and NWT Mine Health and Safety Act.
- .4 Maintain and complete all health and safety, fire safety, and environmental compliance activities in accordance with applicable sections and AHJ.

1.3 Compliance Meetings

- .1 Schedule a compliance meeting on an as required basis, as directed by Departmental Representative. Compliance meetings may be held in conjunction with regular meetings.
- .2 The intent of the compliance meeting is to review reporting and inspection requirements with respect to the NWT Mine Health and Safety Act, existing permits, other regulations, and other requirements as necessary.
- .3 Compliance meetings to be held at the Work site.
 - .1 Departmental Representative will record minutes, chair the meeting and distribute minutes to parties of record prior to the next Scheduled meeting.

- .2 Attendees:
 - .1 Contractor: Superintendent and/or Supervisor(s), representatives of major Sub-Contractors, and others as necessary.
 - .2 Mine Manager.
 - .3 Departmental Representative and representatives of Independent Inspection Agencies.
 - .4 AANDC representative(s).
- .3 Agenda:
 - .1 Review site safety and security compliance issues.
 - .2 Review and approval of minutes of previous meeting.
 - .3 Review of compliance items of significance that could affect Work.
 - .4 Identify requirements for maintenance of quality standards needed for compliance with applicable Codes and Legislation.
 - .5 Review environmental and regulatory compliance.
 - .6 Review of Contractor's on-going inspection reports.
 - .7 Other topics as appropriate to current status of the Work.
- .4 Compliance meetings to include site inspections on a monthly basis, or different frequency, as determined by the Departmental Representative or as dictated by the AHJ.
 - .1 Identify and record field observations, compliance problems, and conflicts that must be noted in reports required by the AHJ.
 - .2 Identify corrective measures and procedures to regain approval from AHJ.

1.4

Submittals

- .1 All submittals in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Submit Draft SSHASP no later than fifteen (15) days after contract award to the Department Representative, Mine Manager and AHJ to ensure all the elements required by the Mine Manager's SSHASP, NWT Mine Health and Safety Act, OSHA Regulations, other AHJ, and Contract Specifications have been addressed. Any items which are identified as missing or requiring modification will be added and the plan revised, so as to incorporate the additional items. Submit the Final SSHASP thirty (30) days prior to mobilization. The Final SSHASP to be submitted to Departmental Representative, Mine Manager, and AHJ to ensure all the elements required by the Mine Manager's SSHASP, NWT Mine Health and Safety Act, OSHA Regulations, other AHJ, and Contract Specifications have been addressed.
- .3 The SSHASP will include, but not be limited to the following sections:
 - .1 A Statement of Contractor's Safety Policy.
 - .2 Environmental, Health and Safety Management Plan.
 - .3 Name and telephone number of Contractor's corporate Safety Officer and on-site Safety Representative.
 - .4 Safety Responsibilities of all on-site personnel.
 - .5 Anti-Harassment Policy.
 - .6 Safe Work Practices and/or Job Procedures.
 - .7 Requirements for safety meetings and documentation.

- .8 Safety Inspection Plan.
 - .9 First Aid Locations.
 - .10 Results of safety and health risk or hazard analysis for Work area and activities.
 - .11 Procedures for, but not limited to:
 - .1 General worker health and safety.
 - .2 Cold weather survival.
 - .3 Heat stress.
 - .4 Working at heights.
 - .5 Confined spaces.
 - .6 Working with the hazard and health risk items identified during the health risk and hazard analysis.
 - .7 Identification of previously unidentified suspected hazardous materials.
 - .8 Lockout/Tagout procedures for equipment that could become energized.
 - .9 Working around mine openings.
 - .10 Emergency site communications.
 - .12 Workplace Hazardous Materials Information System (WHMIS) and Material Safety Data Sheet (MSDS) records.
 - .13 Personnel hygiene.
 - .14 Personal Protection Equipment (PPE) Program.
 - .15 Access restrictions and control zone, entering and existing procedures for the Project Work Area.
 - .16 Protective equipment and clothing to be worn by workers and visitors at the Hazardous Materials Abatement Work Area(s).
 - .17 Traffic control.
 - .18 Site Contingency and Emergency Response Plan.
 - .19 Fuel Management Plan.
 - .20 Fire Safety Plan.
 - .21 Working around mine openings.
- .4 The Site Contingency and Emergency Response Plan is to address standard operating procedures to be implemented during emergency situations. Plans including procedures are to meet Safety Requirements below.
- .1 Prepare and coordinate a Contingency and Emergency Response Plan with contributions from the Mine Manager, appropriate authorities including the Northwest Territories Mine Health and Safety Act, Stanton Hospital, RCMP, Ministry of Transportation, and the Yellowknife Fire Department.
 - .2 Plan will identify off-site Emergency Response Coordinator through whom all information and coordination will flow in the event of an incident and coordination with Mine Manager.
 - .3 This plan is to include, but is not limited to, an evacuation plan in the event of accident, power failure, arsenic trioxide dust release, or any other event that may require modification of Work area isolation procedures.
 - .4 The plan is to address limitations to emergency response capabilities of the City of Yellowknife.

- .5 Review the On-site Contingency and Emergency Response Plan with AHJ, Mine Manager, and local emergency response authorities during the Emergency Response Orientation Seminar and make modifications or additions as necessary based on review comments during the Seminar.
- .6 Other details to include in the Site Contingency and Emergency Response Plan are:
 - .1 A description of pre-emergency planning.
 - .2 Personnel roles, lines of authority and communication, emergency phone numbers.
 - .3 Emergency alerting and response procedures.
 - .4 Evacuation routes and procedures, safe distances and places of refuge.
 - .5 Directions/methods of getting to nearest medical facility.
 - .6 Emergency decontamination procedures.
 - .7 Emergency medical treatment and First-Aid.
 - .8 Emergency protective equipment: Including, at minimum, clothing, protective suits, respirators, etc. in accordance with NIOSH guidelines.
 - .9 Procedures for reporting incidents.
- .5 The PPE Program will include, but is not limited to, the following.
 - .1 Donning and doffing procedures.
 - .2 PPE Selection based upon site hazards.
 - .3 PPE use and limitations of equipment.
 - .4 Work mission duration, PPE maintenance and storage.
 - .5 PPE decontamination and disposal.
 - .6 PPE inspection procedures prior to, during, and after use.
 - .7 Evaluation of effectiveness of PPE program and limitations during temperature extremes, and other appropriate medical considerations.
 - .8 Medical surveillance requirements for personnel assigned to work at site.
 - .9 Frequency and types of air monitoring, personnel monitoring, and environmental sampling techniques and instrumentation to be used, including methods of maintenance and calibration of monitoring and sampling equipment.
 - .10 Contaminated site working and decontamination procedures for both personnel and equipment.
 - .11 Written respiratory protection program for project activities.
 - .12 Proof of respirator fit testing.
- .6 Complete an inventory of Contractor's health, safety, medical and first aid equipment and supplies on-site to assess compliance with AHJ requirements. Submit the inventory to Departmental Representative within ten (10) days of mobilization each season. Include a schedule for upgrading deficiencies to meet requirements of AHJ.
- .7 Prepare and maintain a training matrix documenting all applicable training, including the worker orientation seminar, of all Work personnel. In addition to Contractor's workers, include all sub-contractors, visitors and Departmental Representative's Authorized Personnel in matrix. Submit updated training matrix to Departmental Representative on a monthly basis.

1.5 Construction Safety Measures

- .1 Designate a resident Health and Safety Officer to oversee Contractor's SSHASP with the authority to enforce policies and procedures set out in the SSHASP. Health and Safety Officer to have a minimum of five (5) years' acceptable experience in administering construction health and safety programs.
- .2 Observe and enforce construction safety measures required by the latest revisions of: Canada Labour Code, National Building Code of Canada, National Fire Code of Canada, Northwest Territories Workers' Safety and Compensation Commission, the applicable Occupational Health and Safety Regulations, and Territorial and local statutes and AHJ.
- .3 In the event of discrepancies between any requirements of the above listed authorities, the more stringent requirements will govern.
- .4 Arrange regular safety meetings, as specified in Section 01 31 19 – Project Meetings.
- .5 Provide all workers, Departmental Representative, and authorized visitors with suitable safety clothing, equipment and protection appropriate to the potential types and levels of exposure encountered in accordance with the Site Specific Health and Safety Plan and Section 01 35 32 - Site Specific Health and Safety Plan.
- .6 Workers are to also be educated as to risks, and be trained in safe work practices.
- .7 Departmental Representative and Mine Manager have the authority to stop Work on the contract if, in his/her opinion, the Work is being performed in an unsafe manner as required by the applicable safety legislation.
- .8 Coordinate and verify with Mine Manager that emergency procedures including appropriate First Aid facilities and First Aid personnel are in place at the Work Site. First Aid facilities and First Aid personnel must be in compliance with the *NWT Mine Health and Safety Act*.
- .9 Verify that procedures meet the AHJ requirements.
- .10 Immediately stop Work and notify Departmental Representative for further instructions with respect to abatement procedures required when Hazardous or suspected Hazardous Materials are encountered during course of Work.

1.6 Filing of Notice

- .1 File Notice of Project with AHJ prior to commencement of Work.
- .2 Provide copy of Notice of Project to Departmental Representative.

1.7 Regulatory Requirements

- .1 Comply with specified standards, regulations and orders of AHJ to ensure safe operations in the vicinity of hazardous or toxic materials and other hazards (such as wildlife encounters, falls, etc.).

- .2 All equipment brought to the site must meet the *Mine Health and Safety Act*; equipment must have rotating beacons and vehicles should have beacons and buggy whips.

1.8 Responsibility

- .1 Be responsible for safety of persons and property on the site and for protection of the environment to extent that they may be affected by the conduct of Work.
- .2 The health and safety of personnel and the public takes precedence.
- .3 Control access to the Project Work area. Persons with business at the Project Work Area and who are not Contractor's employees must be briefed on health and safety issues, and provided with a copy of the SSHASP.
- .4 Contractor may refuse access to the Project Work Area to any person not complying with site specific health and safety standards.
- .5 Where required, control traffic around Project Work Area. Coordinate traffic control with Departmental Representative and Mine Manager, and local AHJ as required.
- .6 Comply with and enforce compliance by employees with safety requirements of Contract Documents, applicable federal, territorial, and local statutes, regulations, and ordinances, Mine Manager's SSHASP, and with Contractor's SSHASP:
 - .1 Conduct appropriate safety training for all personnel working on the site.
 - .2 Conduct Work place safety inspections for all Work activities.
 - .3 Maintain a log of first aid and safety supplies and notify appropriate personnel for restocking after each incident, and periodical restocking to replace outdated or consumable (headache medicines, band-aids) products.
 - .4 Conduct Job Safety/Hazard Assessment prior to commencing new Work activity not already documented in a Safe Work Plan or a Standard Operating Procedure.

1.9 Hazard Communication Requirements

- .1 Comply with Work Site Hazardous Materials Information System Regulations of the AHJ.
- .2 Provide Departmental Representative and Mine Manager with up to date Material Safety Data Sheets (MSDS) and documentation on any "hazardous" chemical that Contractor or Contractor Representatives plan to bring onto site; bound in one place and stored in accordance with the Site Specific Health and Safety.

1.10 Unforeseen Hazards

- .1 Should any unforeseen or peculiar safety related factor, hazard, or condition become evident, stop Work, assess, take steps to mitigate if necessary at that time and immediately advise Departmental Representative verbally and in writing.

- .2 Monitor potential low oxygen and Lower Explosive Limits areas with oxygen/LEL monitor when working in confined spaces. These areas include, but are not limited to, tanks, sewage vaults, excavations and areas near machinery exhaust.

1.11 Safety and Hygiene

- .1 Provide appropriate training for all persons entering the site in accordance with specified personnel training requirements, maintain log of who was trained, what training was provided and by whom the training was conducted.
- .2 Personal Protective Equipment (PPE):
 - .1 Furnish site personnel with appropriate PPE as required by AHJ.
 - .2 Verify that safety equipment and protective clothing is kept clean, is used and well maintained, and treated as per manufacturer's recommendations.
 - .3 All clothing and personal protective equipment used for Work must remain on site, to be either decontaminated or disposed of. No Work clothing is to leave the contaminated Work site without having been properly decontaminated. This includes, but is not limited to working coveralls.
 - .4 Outline and designate PPE for each site and Work activity in accordance with AHJ.
- .3 Develop written PPE care and use procedures to be included in the SSHASP and verify that procedures are strictly followed by site personnel including, but not limited to, the following:
 - .1 Provisions for prescription eyeglasses with side shields worn as safety glasses, and any restrictions to the wearing of contact lenses.
 - .2 The use of eyeglass inserts for workers wearing full-face respirators.
 - .3 Provisions for steel toed safety shoes or boots covered by overshoes when entering or working in potentially contaminated Work areas.
 - .4 Discard disposable PPE worn on site at end of each Workday.
 - .5 Decontaminate reusable PPE at end of each shift.
 - .6 Provision for decontamination arising from access to contaminated or hazardous Work areas.
- .4 Develop a written Respiratory Protection program if required as part of the PPE Program to be strictly followed by site personnel, which includes the following procedures at minimum:
 - .1 Provide site personnel with training in accordance with regulations.
 - .2 Monitor, evaluate, and provide appropriate respiratory protection for site personnel.
 - .3 Verify that levels of protection as listed have been chosen to be consistent with site specific potential airborne hazards associated with major contaminants identified on site, and detailed in the Environmental Management Plan and Specifications
 - .4 Immediately notify Departmental Representative when level of required respiratory protection increases.
 - .5 Verify that appropriate respiratory protection during Work activities is available and readily accessible; all personnel entering potentially contaminated or hazardous Work areas will be supplied with and use appropriate respiratory protection.
 - .6 Assess ability for site personnel to wear respiratory protection.

- .7 Verify that site personnel have passed respirator fit test prior to entering potentially contaminated or hazardous areas.
- .8 Verify that facial hair does not interfere with proper respirator fit.
- .9 Submit proof of fit testing for site personnel to Departmental Representative prior to commencing Work. Update submission when new personnel are added to Work or when new Work activities occur.
- .5 Heat Stress/Cold Stress: Implement heat stress and cold stress monitoring program as applicable and include in the SSHASP.
- .6 Personnel Hygiene and Personnel Decontamination Procedures to include the following as a minimum:
 - .1 Provision of containers for storage and disposal of contaminated PPE.
 - .2 Potable water and suitable sanitation facility.

1.12 Site Communication

- .1 Post emergency numbers near site telephones. Update emergency numbers as required.
- .2 Train personnel in the use of "buddy" system.
- .3 Provide alarm system to notify employees of site emergency situations or to stop Work activities if necessary. Identify emergency stations and Muster Points. Test alarm system regularly and train personnel to use alarm system as required.
- .4 All equipment must have operational two-way radio communication while in operation.

1.13 Safety Meeting

- .1 Conduct task specific safety meetings as per Work requirements, requirements of Mine Manager, and as directed by Departmental Representative.
- .2 Conduct safety meetings with all Workers. Workers must be instructed on the dangers inherent with winter conditions, and hazard avoidance procedures.
- .3 Conduct mandatory daily safety meetings, which can be completed in conjunction with daily Tailgate Meetings as specified in Section 01 31 19 – Project Meetings, and additionally as required by special or Work related conditions or AHJ. Special or work related conditions that may require additional safety meetings include, but is not limited to, the following:
 - .1 Refresher training for existing equipment and protocols,
 - .2 Ongoing safety issues and protocols, and
 - .3 New site conditions as encountered.

1.14 Storage and Handling of Fuel

- .1 There will be no fuel storage area available for this Work.
- .2 Provide a Fuel Management Plan that includes but is not limited to:
 - .1 Information related to on-site transport and handling.

- .2 The refueling of all vehicles and equipment by appropriately trained personnel, using the proper PPE and drip pans, in a manner which meets or exceeds regulatory requirements.
- .3 The recording of fuel usage by activity.
- .3 Inspect fuel dispensing equipment daily. Make available firefighting and spill response equipment for immediate access at each fuel dispensing equipment.
- .4 Position all barrels containing fuel and /or hazardous materials in an elevated position, either on their side with bungs facing 9 and 3 o'clock position, or on pallets, upright, and banded.
- .5 All barrels to be individually identified. Label will be to industry standards and will provide all information necessary for health and safety and environmental purposes. Make available, to all personnel, Material Safety Data Sheets for all materials maintained at site or along right-of-ways.
- .6 All barrels/fuel containers to be stored in accordance with the Land Use Permit and pending Water License, and labelled with AANDC's name and Contractor's name, as required by the permits.
- .7 Treat all waste petroleum products, including used oil filters, as hazardous materials.
- .8 Conduct regular inspections of all machinery hydraulic, fuel and cooling systems. Repair leaks immediately.
- .9 Pre-assemble and maintain emergency spill equipment with all mobile fuelling containers.
- .10 Remove all full and empty barrels and associated materials and equipment from site at conclusion of Work.
- .11 All fuel drums delivered to site, regardless of ownership, will be returned to supplier by Contractor for reuse. Fuel drums, if transported, will comply with applicable regulations.

1.15

Vehicle and Equipment Usage

- .1 Traffic control will be provided by the Mine Manager based on the submitted and reviewed Work Plan.
- .2 Seatbelts must be worn at all times vehicle is in operation.
- .3 Speed limits set by the Mine Manager must be obeyed at all times.
- .4 If road conditions are unsafe or marginally unsafe, inform Departmental Representative and Mine Manager so that roads may be maintained to acceptable standards. Do not risk property damage or injury.
- .5 Vehicles are to not be idled for longer than 10 minutes (warm up) unless explicitly used as a place of refuge during animal encounters or for personnel working outdoors during winter operations. Exceptions are to be made in consultation with Departmental Representative.

- .6 Perform vehicle maintenance and lubrication of equipment in a manner that avoids spillage of fuels, oils, grease and coolants. Refuel equipment as per the Fuel Management Plan.
- .7 Place drip pans under stationary equipment with potential leaks.
- .8 All mobile light equipment brought to the site must have rotating beacons, audible backup alarms, wheel chocks and buggy whips.
- .9 Dispose of used oil, grease and coolants from Contractor's Equipment maintenance activities at the Contractors cost.
- .10 Helmets must be worn at all times when operating ATV's.

1.16 Flammable Liquids

- .1 The handling, storage and use of flammable liquids will be governed by the current National Fire Code of Canada.
- .2 Flammable liquids such as gasoline, kerosene and naphtha may be kept for ready use in quantities not exceeding forty five (45) litres provided they are stored in approved safety cans bearing the Underwriter's Laboratory of Canada or Factory Mutual seal of approval. Storage of quantities of flammable liquids exceeding 45 litres for Work purposes, requires permission of the permitting authority.
- .3 Do not transfer flammable liquids in the vicinity of open flames or any type of heat-producing devices.
- .4 Do not use flammable liquids having a flash point below 38°C such as naphtha or gasoline as solvents or cleaning agents.
- .5 Store flammable waste liquids, for disposal, in approved containers located in a safe ventilated area. Quantities are to be kept to a minimum and Departmental Representative is to be notified when disposal is required.
- .6 Dispose of all flammable liquids in accordance with all applicable environmental regulations.

1.17 Medical

- .1 Ensure availability and maintain first aid facilities for all Workers as required by AHJ, Human Resources and Social Development Canada and the statutes of the *NWT Safety Act*. Provide first aid personnel, as required by the statutes of the *NWT Mine Health and Safety Act*. Include personnel first aid training in Training Matrix.
- .2 Provide the appropriate NWT First Aid kit, based on the number of Workers, in accordance with AHJ and the *NWT Safety Act*.
- .3 Establish a medical emergency evacuation (med-e-vac) plan acceptable to the AHJ for the removal of any injured person to medical facilities or a doctor's care in accordance with applicable legislative and regulatory requirements.
- .4 Emergency and First Aid Equipment:

- .1 Locate and maintain emergency and first aid equipment in appropriate location at Project Work Area including first aid kit to accommodate number of site personnel; portable emergency eye wash and fire protection equipment as required by NWT Mine Health and Safety Act .
- .2 Locate sufficient self-contained breathing apparatus units; blankets and towels; stretcher; and one (1) hand held emergency siren in all confined and hazardous access locations.
- .3 Provide a health and safety coordinator on site at all times when Work activities are in progress; duties of first aid attendant may be shared with other light duty Work related activities around First Aid station.

1.18 Health and Safety Incidents and Accident Reports

- .1 Immediately report, verbally, followed by a written incident report submitted within twenty four (24) hours, to AHJ and Departmental Representative and Mine Manager, all significant accidents arising out of or in connection with the performance of the Work, giving full details and statements of witnesses. If death or serious injuries or damages are caused, report the accident promptly to Departmental Representative by telephone, e-mail or facsimile in addition to any report required under federal and territorial laws and regulations.
- .2 If a claim is made by anyone against Contractor or Sub-Contractor on account of any incident or accident, promptly report the facts in writing to Departmental Representative, giving full details of the claim.

1.19 Fire Safety

- .1 Provide for all fire prevention, fire protection and fire fighting needs for the Project Work Area.
- .2 Implement a fire safety program that is co-ordinated with the Mine Manager's fire safety program, and includes fire prevention, fire protection and fire fighting requirements. Submit details of the fire safety program with the SSHASP. Such review does not relieve Contractor from any obligations or responsibilities required by the Contract.
- .3 Ensure that any Sub-Contractors and other Contractor personnel on Project Work Area are briefed on fire safety requirements and are familiar with the fire prevention, fire protection and fire fighting program.
- .4 The fire safety program to meet or exceed the most recent editions of the following codes and standards:
 - .1 NWT Mine Health and Safety Act.
 - .2 National Fire Code of Canada.
 - .3 Canada Labour Code.
- .5 Personnel designated for fire-fighting services must be provided with training for any special hazards that may be present. These personnel must also be provided with Personal Protective Equipment (PPE) as required by AHJ and the Canada Labour Code.

- .6 Departmental Representative is to be advised, and a "Hot Work" permit issued by Contractor's designated representative in all cases involving welding, burning or the use of blow torches and salamanders, in buildings or facilities. Special precautions are necessary to safeguard life and property from damage by fire or explosives.
- .7 Wherever Work is being carried out in dangerous or hazardous areas involving the use of heat, fire watchers equipped with sufficient fire extinguishers, are to be provided. The determination of dangerous or hazardous areas along with the level of precaution necessary for Fire Watch is to be at the discretion of Contractor. Notify Departmental Representative prior to that determination.
- .8 Provide proper ventilation and eliminate all sources of ignition where flammable liquids, such as lacquers or urethanes are used.

1.20 Reporting Fires

- .1 A person discovering a fire and all fire related incidents will report immediately, by fastest available means, to Departmental Representative, Site Superintendent, and C&M Site Superintendent.
- .2 A person discovering a fire will if possible, remain in the vicinity to direct fire fighting personnel to the location of the fire.

1.21 Fire Extinguishers

- .1 Provide and maintain fire extinguishers in sufficient quantity and size to protect, in an emergency, the Work in progress and the physical plant on site.

1.22 Smoking Precautions

- .1 Abide by applicable AHJ smoking regulations or the requirements of this Section, whichever are more stringent.
- .2 Do not permit smoking in asbestos and arsenic areas. Exercise care in the use of smoking materials in non-restricted areas.
- .3 Provide and place signs prohibiting smoking in areas where smoking is not permitted.
- .4 Signs prohibiting smoking will be in English and will have black lettering not less than 50 mm high, with a 12 mm wide stroke on a yellow background. In lieu of lettering, relevant universal symbols of not less than 150 mm by 150 mm may be used.
- .5 Smoking is prohibited within 7.5 metres of fuel dispensing facilities, flammable liquids or chemical storage areas.
- .6 Provide and place signs indicating that smoking within 7.5 metres of fuel dispensing facilities is not permitted, and that the vehicle ignition must be turned off while the vehicle is being refuelled. Provide at least one weather-resistant sign at each fuel dispensing location. The signs will have a minimum dimension of 200 mm and letters not less than 25 mm high. In lieu of lettering, signs may have international "No Smoking - Ignition Off" symbols not less than 100 mm in diameter. Install signs in a location visible to all drivers approaching the dispensing location, and at the dispensing unit.

1.23 Rubbish and Waste Materials

- .1 Rubbish and waste materials are to be kept to a minimum.
- .2 Storage:
 - .1 Extreme care is required where it is necessary to store oily waste in Work areas to ensure maximum possible cleanliness and safety.

1.24 Hazardous Substances

- .1 All Work entailing the use of, or exposure to, toxic or hazardous materials or chemicals, or creating a hazard to life, safety or health, is to be in accordance with the National Fire Code of Canada, Occupational Health and Safety Legislation, and WHMIS.

1.25 Hazards

- .1 A list of hazards at the Giant Mine site are included in Section 01 11 00 – Summary of Work.

1.26 Measurement of Payment

- .1 All costs for the preparation and completion of the Site Specific Health and Safety Plan are to be included in the Lump Sum price for Payment Item 01 35 32-1- Site Specific Health and Safety Plan, as indicated in the Basis of Payment Schedule.
- .2 Payment Item 01 35 32-1 - Site Specific Health and Safety Plan will be made in progress installments as follows:
 - .1 Seventy Five percent (75%) of the Lump Sum price for Payment Item 01 35 32-1 - Site Specific Health and Safety Plan will be paid upon submission by Contractor and acceptance by Departmental Representative of the initial Site Specific Health and Safety Plan.
 - .2 Five percent (5%) of the Lump Sum price for Payment Item 01 35 32-1 - Site Specific Health and Safety Plan will be paid upon submission to Departmental Representative of each additional revised version of the Site Specific Health and Safety Plan, incorporating additional or modified health and safety requirements to account for changing conditions, as requested by the Departmental Representative.
 - .3 The balance of the of the Lump Sum price for Payment Item 01 35 32-1 - Site Specific Health and Safety Plan will be paid after the completion of the Work, if applicable.
- .3 Except as otherwise indicated herein, Work under this section will not be measured. Include all costs in Item BOPC-1, Balance of Project Costs in the Basis of Payment Schedule. Indicate the cost of this Work as a separate line item in the Contract Work Breakdown Structure (CWBS) specified in Section 01 32 18 Construction Progress Schedules – Bar (GANTT) Chart.

PART 2 PRODUCTS

Not used.

PART 3 EXECUTION

3.1 Ambient Air Quality Criteria

- .1 The goal of the ambient air quality monitoring program, conducted by the Departmental Representative, is to safeguard both the community and workers from potentially hazardous or injurious air quality.

The table below outlines Air Quality worker health criteria for the main contaminants of concern.

Criteria	Limit	Averaging Period	Regulatory Body
Allowable Arsenic Concentration for Worker Zone without PPE	0.01 mg/m ³ 0.03 mg/m ³	8-hour 15-minute	Draft Occupational Health and Safety Regulation (Safety Advisory Committee, Northwest Territories, 2012)
Inhalable PM fraction in Worker Zone without PPE	10 mg/m ³ 20 mg/m ³	8-hour 15-minute	Draft Occupational Health and Safety Regulation (Safety Advisory Committee, Northwest Territories, 2012)
Respirable PM fraction in Worker Zone without PPE	3 mg/m ³ 6 mg/m ³	8-hour 15-minute	Draft Occupational Health and Safety Regulation (Safety Advisory Committee, Northwest Territories, 2012)

The table below outlines the site-wide and community ambient air quality criteria for the main contaminants of concern.

Criteria	Limit	Averaging Period	Regulatory Body
Arsenic Concentration	0.1 µg/m ³ 0.3 µg/m ³	1-hour 24-hour	Alberta Ambient Air Quality Objectives (adopted from Texas) Ontario Ambient Air Quality Criteria
PM ₁₀ Concentration	30 µg/m ³	24-hour	Northwest Territories' Ambient Air Quality Standards

3.2 Ambient Air Quality Monitoring Program

- .1 Contractor work activities are bound by the results of the Site air quality monitoring program to be conducted by others.
- .2 An air quality monitoring program consisting of both real-time monitoring and 24-hr sampling will be undertaken by the Departmental Representative.
- .3 The ambient air quality monitoring program will begin a minimum of seven (7) days before commencing Work. Air quality monitoring shall continue until Departmental Representative has confirmed completion of Work.
- .4 Real-time monitoring of air quality at the perimeter of the remedial Work Areas will be undertaken by the Departmental Representative and may include, but is not limited to, the following:
- .1 Three (3) portable, continual recording instruments; positioned on stable tripods along exposed upwind and downwind work area perimeters prior to the start of each work day. Each monitoring site will measure and

- record fifteen (15) minute average concentrations (PM10) on a continuous basis throughout the work day.
- .2 All real-time measurements will be performed at locations selected prior to the start of each work day based on a review of the prevailing wind direction(s), wind speeds, type of work activity and location of activity (source) in relation to downwind receptors. The monitors will be strategically positioned to provide adequate coverage and protection between adjacent property boundary and remedial activity(s), even in the case the wind direction changes.
 - .3 The monitoring results for dust will be recorded as averages, with an appropriate warning system in place to indicate any exceedances of action levels.
 - .4 Exceedences will be communicated to the Contractor throughout the work day so that appropriate actions can be taken by the Contractor.
 - .5 Real-time air quality action levels are described below in the table below. The Departmental Representative will enforce the listed actions if these air quality levels are exceeded.

Parameter	Action Level	Monitoring Location	Averaging Period Duration	Action Required if Level Exceeded
Dust Plumes at Project Work Area	Visible dust emissions	At Project Work Area	Not Applicable	Work continues. If visible dust emissions are observed at the Project Work Area, the Contractor must implement mitigative measures detailed in the Dust Management Plan to prevent exceedance of the next Action Level.
PM ₁₀	180 µg/m ³	at downwind location(s) of Project Work Area	15 Minutes	Work continues. Contractor to investigate potential source of dust emissions and report results to Departmental Representative. Contractor to initiate appropriate measures as specified in the Dust Management Plan to correct operations and protect air quality.
PM ₁₀	125 µg/m ³	at downwind location(s) of Project Work Area	1 Hour	Dust generating Work stops. Work may be shifted to another activity which does not produce dust. Work resumes at previously halted Work activity when reason(s) for the dust emissions are identified and corrective procedures are implemented as specified in the Dust Management Plan.
PM ₁₀	85 µg/m ³	at downwind location(s) of Project Work Area	4 Hours	All Work stops. The Contractor and Departmental Representative will review corrective action(s) taken to date and the Contractor will identify additional measures to reduce air emissions. Construction practices and procedures will be examined to assess potential modifications. Work does not resume until a strategy satisfactory to the Departmental Representative is formulated and implemented.

- .6 24-hr air sampling at the perimeter of the remedial work areas will be undertaken by the Departmental Representative and may include, but is not limited to, the following:

- .1 Two (2) portable air samplers; positioned on stable tripods along exposed downwind work area perimeters. One sampler will collect Total Suspended Particulate (TSP) and the other sampler will collect PM₁₀. The TSP samples will be analyzed for both TSP and arsenic. The PM₁₀ samples will be analyzed for both PM₁₀ and arsenic.
- .2 The samplers will run for 24-hrs from the start of the work day until the start of the following work day. Sampling will occur twice a week, at a minimum
- .3 All sampling will be performed at locations selected prior to the start of each work day based on a review of the prevailing wind direction(s), wind speeds, type of work activity and location of activity (source) in relation to downwind receptors.
- .4 The 24-hr sampling results will be compared to the relevant criteria and Exceedances will be communicated to the Contractor.
- .5 For the 24-periods with exceedances, the Contractor shall provide a description of the construction activities and the potential cause of the exceedances. Corrective procedures must be agreed upon with the Departmental Representative. Consecutive or regular exceedances will trigger increased sampling and a review of the Real-time Action Levels by the Departmental Representative.

- .7 A separate site-wide ambient air monitoring program is undertaken by an independent air quality consultant to monitor air quality at the Giant Mine site boundary. The Contractor may be requested to provide information regarding construction activities. Work activities may also be stopped if site-wide action levels are triggered.

END OF SECTION

PART 1 GENERAL

1.1 Definitions

- .1 Environmental Management Plan (EMP): Plan provided by the Owner that details the objectives and requirement for activities related to the maintenance, protection, monitoring, reporting and assessment of physical and biological values on the Giant Mine site. The Environment Management Plan is included as a supporting document to these specifications.
- .2 Environmental Pollution and Damage: Presence of chemical, physical, biological elements or agents which adversely affect human health and welfare; unfavourably alter ecological balances of importance to human life; affect other species of importance to humankind; or degrade environment aesthetically, culturally and/or historically.
- .3 Environmental Protection: Prevention/control of pollution and habitat or environment disruption during site remediation activities. Control of environmental pollution and damage requires consideration of land, water, and air; biological and cultural resources; and includes management of visual aesthetics; noise; solid, chemical, gaseous, and liquid waste; radiant energy and radioactive material as well as other pollutants.

1.2 Regulatory Overview

- .1 Comply with all applicable environmental laws, regulations and requirements of Federal, Territorial and other regional authorities including, but not limited to those listed in Section 01 41 00 – Regulatory Requirements.
- .2 Acquire and comply with such permits, approvals and authorizations as may be required.
- .3 Comply with, and be subject to, those permits and approvals obtained from Departmental Representative to conduct the Work.

1.3 Submittals

- .1 All submittals to be in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Submit all required Contractor submittals to satisfy environmental requirements directly to the responsible agency and AHJ.
- .3 Submit an Environmental Protection Plan to Departmental Representative for review thirty (30) days prior to commencing Work activities. Environmental Protection Plan is to encompass the requirements and guidelines presented in the Specifications and the Project Environmental Management Plan (EMP) is available as a supporting document to these Specifications
- .4 Submit one (1) complete copy of all submittals and agency approvals to Departmental Representative.
- .5 Include the following information in the weekly QC Test Results and Progress Tracking reports, as detailed in Section 01 33 00 – Submittal Procedures:
 - .1 Tabulated data identifying the date and volume of water withdrawn from the Polishing Pond.

- .2 A summary of any wildlife sightings at the Contractor's work area, and any mitigative measures taken to limit wildlife disturbances.

1.4 Fires

- .1 Unless otherwise specified and authorized in writing by the Departmental Representative, fires and burning of rubbish on site are not permitted.

1.5 Water Control

- .1 Water supply for Paste Production Work activities to be obtained from the Polishing Pond. No water to be obtained from other on-site surface water bodies.
- .2 Contain, collect, transfer, treat, and discharge wastewater as per Section 01 35 15 – Special Project Procedures for Contaminated Sites.

1.6 Pollution Control

- .1 Provide pollution control as specified in the EMP, listed as a supporting document to these specifications.
- .2 Control emissions from equipment and Work activities so as to comply with the local authorities emission requirements and requirements of this Specification.

1.7 Notification

- .1 Departmental Representative will notify Contractor verbally and in writing of observed non-compliance with Federal, Territorial or Municipal environmental laws or regulations, permits and other elements of Contractor's Environmental Protection plan.
- .2 Contractor will, after receipt of such notice, inform Departmental Representative of proposed corrective action and take such action to the satisfaction of Departmental Representative.
- .3 Departmental Representative may issue stop Work order until satisfactory corrective action has been taken.
- .4 No time extensions granted or financial adjustments allowed to Contractor for such suspensions.

1.8 Measurement of Payment

- .1 All costs for the preparation and completion of the Environmental Protection Plan are to be included in the Lump Sum for Payment Item 01 35 43-1 Environmental Protection Plan, as indicated in the Basis of Payment Schedule.
- .2 The Lump Sum payment for Payment Item 01 35 43-1, will be made in progress installments as follows:
 - .1 Eighty percent (80%) of the Lump Sum payment will be paid upon submission by Contractor and acceptance by Departmental Representative of the completed Environmental Protection Plan that includes modifications to address Draft Environmental Protection Plan review comments made by Departmental Representative.

- .2 Ten percent (10%) of the Lump Sum payment will be paid upon submission of Environmental Protection Plan that has been updated to reflect changing site conditions, as requested by, and incorporating comments from, Departmental Representative.
- .3 The balance of the Lump Sum payment, if applicable, will be paid after the completion of the Work.

- .3 Except as otherwise indicated herein, Work under this section will not be measured. Include all costs in Item BOPC-1, Balance of Project Costs in the Basis of Payment Schedule. Indicate the cost of this Work as a separate line item in the Contract Work Breakdown Structure (CWBS) specified in Section 01 32 18 Construction Progress Schedules – Bar (GANTT) Chart.

PART 2 PRODUCTS

- .1 Not used.

PART 3 EXECUTION

- .1 Not used.

END OF SECTION

PART 1 GENERAL

1.1 References and Codes

- .1 Perform Work in accordance with all permits and licenses acquired for this Project including those from the Mackenzie Valley Land and Water Board, the City of Yellowknife, AANDC, Canada Labour Code and Department of Fisheries and Oceans (DFO) including all amendments and other National codes. If there is a conflict or discrepancy, the more stringent requirements apply.
- .2 Meet or exceed the requirements of:
 - .1 Contract documents.
 - .2 Specified standards, codes and referenced documents.
 - .3 Authorities Having Jurisdiction (AHJ).
- .3 Perform work in accordance with the Specifications and meet or exceed all codes, standards and regulations applicable to the Work and issued under the authority of the Government of Canada, the Government of the NWT, and the City of Yellowknife. Use latest version of all specified standards, codes and referenced documents. Most stringent requirements will apply to any case of conflict between requirements listed in acts, codes, standards or regulations to Work described herein.

1.2 References and Codes - Federal

- .1 Meet or exceed the most recent amendments or revisions to the governing codes, standards and guidelines, and regulations applicable to Work and issued under the authority of the Government of Canada including, but not limited to:
 - .1 Canada Labour Code Part II - Occupational Health and Safety (R.S. 1985, c.L-2).
 - .2 Northwest Territories and Nunavut Mining Regulations (C.R.C., c. 1516).
 - .3 Canada Occupational Health and Safety Regulations (SOR/86-304).
 - .4 Canadian Environmental Protection Act, S.C. 1999 (S.C. 1999, c.33).
 - .5 Controlled Products Regulations (SOR/88-66).
 - .6 Export and Import of Hazardous Waste and Hazardous Recyclable Material Regulations (EIHWHRMR) (SOR/2005-149).
 - .7 Inter-provincial Movement of Hazardous Waste Regulations (SOR/2002-301).
 - .8 National Fire Code of Canada, 2010.
 - .9 Ozone Depleting Substances Regulations, 1998 (SOR/99-7).
 - .10 Transportation of Dangerous Goods Act, 1992 (S.C. 1992, c.34).
 - .11 Transportation of Dangerous Goods Regulations (SOR/2001-286).
 - .12 Mackenzie Valley Land Use Regulations (SOR/98-429).
 - .13 Migratory Birds Convention Act, 1994 (S.C. 1994, c.22).
 - .14 Northwest Territories Waters Act (S.C. 1992, c.39).
 - .15 Storage Tank Systems for Petroleum Products and Allied Petroleum Products Regulations (SOR/2008-197).

1.3 References and Codes - Northwest Territories

- .1 Meet or exceed the most recent amendments or revisions to the governing codes, standards and guidelines, and regulations applicable to Work and issued under the authority of the Government of the Northwest Territories including, but not limited to:
- .1 Environmental Protection Act (R.S.N.W.T. 1988, c. E-7).
 - .2 Labour Standards Act (R.S.N.W.T. 1988, c.L-1)
 - .3 Public Health Act (R.S.N.W.T. 1988, c.P-12).
 - .4 Spill Contingency Planning and Reporting Regulations (R-068-93).
 - .5 Fire Prevention Act (R.S.N.W.T. 1988, c.F-6).
 - .6 Transportation of Dangerous Goods Act (S.N.W.T. 1990, c.36).
 - .7 Used Oil and Waste Fuel Management Regulations (R-064-2003).
 - .8 Work Site Hazardous Materials Information System Regulations (R.R.N.W.T. 1990, c.S-2).
 - .9 Mine Health and Safety Act (S.N.W.T. 1994, c.25).
 - .10 Asbestos Safety Regulations (R-016-92).

1.4 References and Codes – City of Yellowknife

- .1 Meet or exceed the most recent amendments or revisions to the governing codes, standards and guidelines, and regulations applicable to Work and issued under the authority of the City of Yellowknife including, but not limited to:
- .1 Water and Sewer Services By-law No. 4663.
 - .2 Building By-law No. 4469.
 - .3 Emergency Response and Fire Protection Services By-law No. 4502.

1.5 Standard and Guidelines

- .1 Meet or exceed the most recent amendments or revisions to the governing standards, guidelines, and policies applicable to the Work, including, but not limited to:
- .1 Environmental Code of Practice for Aboveground and Underground Storage Tank Systems Containing Petroleum and Allied Petroleum Products, CCME, 2003.
 - .2 Guidelines for Canadian Drinking Water Quality, Health Canada, August 2012.
 - .3 Guidelines for Effluent Quality and Wastewater Treatment at Federal Establishments, Environment Canada, April 1976.
 - .4 Guidelines for the Management of Waste Batteries, GNWT ENR, September 1998.
 - .5 Guidelines for the Management of Waste Lead and Lead Paint, GNWT ENR, April 2004.
 - .6 Guideline for the Management of Waste Solvents, GNWT ENR, September 1998.
 - .7 Guideline for Contaminated Site Remediation, GNWT ENR, November 2003.
 - .8 Guideline for Ambient Air Quality Standards in the Northwest Territories, GNWT ENR, January 2011.
 - .9 Guideline for Dust Suppression, GNWT ENR, February 1998.
 - .10 Guideline for the General Management of Hazardous Waste in the NWT, GNWT ENR, February 1998.

- .11 Environmental Guideline for Ozone Depleting Substances (ODS) and Halocarbon Alternatives, GNWT ENR, August 2007.
- .12 Environmental Health and Safety Management Systems Manual, AANDC March 2008.
- .13 AANDC Standard Operating Procedures.
- .14 Canadian Soil Quality Guidelines for the Protection of Environmental and Human Health, CCME, 1999.
- .15 Canadian Water Quality Guidelines for the Protection of Aquatic Life, CCME, 1999.
- .16 Contaminated Sites Management Policy, AANDC, 2002.
- .17 A Federal Approach to Contaminated Sites, CSMWG, 2002.
- .18 Risk Management Guidance Document, AANDC, 2006.
- .19 Contaminated Sites Cost Estimating Guide, AANDC, 2006.
- .20 Treasury Board Policy on Management of Real Property, TB, 2007.
- .21 Risk Management Tool & Reporting Tool User Guide, AANDC, 2007.
- .22 Environment, Health & Safety Standard Operating Procedures Manual, AANDC, 2008.
- .23 Environment, Health & Safety Control Framework, Northern Contaminated Sites Program, AANDC, 2008.
- .24 Environment, Health & Safety Audit Program Guide, AANDC, 2008.
- .25 Construction Project Safety Management Guide, 5th Edition, PWGSC, 2008.
- .26 Abandoned Military Site Remediation Protocol, AANDC, 2008.
- .27 General Guidelines Asbestos Removal and Disposal, GNWT 2010.
- .28 Northwest Territories and Nunavut Code of Practice Asbestos Abatement, Workers' Safety & Compensation Commission, 2012.

1.6 Operational Statements

- .1 Aboriginal Affairs and Northern Development Canada (AANDC), Northern Affairs Program, Contaminated Sites Program, Environment, Health and Safety Standard Operating Procedures Manual applicable to the Work includes, but is not limited to, the following:
 - .1 SOP-017(A), Wildlife Safety, September 27, 2006.
 - .2 SOP-017(B), Bear Safety, August 28, 2008.

1.7 Hazardous Material Discovery

- .1 Stop Work immediately and notify Departmental Representative upon discovery of the following materials during course of work:
 - .1 Hazardous Materials such as PCB's, asbestos, arsenic, and mercury not described in Contract Specifications, Drawings or Appendices.

1.8 WHMIS

- .1 Comply with requirements of Workplace Hazardous Materials Information System (WHMIS) regarding use, handling and storage of hazardous materials; and regarding labeling and provision of material safety data sheets acceptable to AHJ including Labour Canada and Health and Welfare Canada.
- .2 Deliver copies of Material Safety Data Sheets data sheets to Departmental Representative upon delivery of materials.

1.9 Submittals

- .1 All submittals in accordance with Section 01 33 00 - Submittal Procedures.

1.10 Extended Work Hours

- .1 If applicable, apply and obtain a permit for Extended Hours from Labour Services, Justice Department of the Northwest Territories. Submit a copy to the Departmental Representative upon request.

1.11 Measurement of Payment

- .1 Work under this section will not be measured. Include all costs in Item BOPC-1, Balance of Project Costs in the Basis of Payment Schedule. Indicate the cost of this Work as a separate line item in the Contract Work Breakdown Structure (CWBS) specified in Section 01 32 18 Construction Progress Schedules – Bar (GANTT) Chart.

PART 2 PRODUCTS

- .1 Not used.

PART 3 EXECUTION

- .1 Not used.

END OF SECTION

PART 1 GENERAL

1.1 Inspection

- .1 Allow Departmental Representative 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 Departmental Representative 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 Departmental Representative 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, Departmental Representative shall pay cost of examination and replacement.

1.2 Submittals

- .1 All submittals in accordance with Section 01 33 00 – Submittal Procedures.

1.3 Independent Inspection Agencies

- .1 Independent Inspection/Testing Agencies may be engaged by Departmental Representative for purpose of inspecting and/or testing portions of Work. Cost of such services will be borne by Departmental Representative.
- .2 Provide equipment required for executing inspection and testing by appointed agencies.
- .3 Employment of inspection/testing agencies does not relax Contractor's 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 Departmental Representative at no cost to Departmental Representative. Pay costs for re-testing and re-inspection.

1.4 Access to Work

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

1.5 Procedures

- .1 Notify appropriate agency and Departmental Representative 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.

1.6 Rejected Work

- .1 Correct 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 Departmental Representative 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.
- .3 If, in opinion of Departmental Representative, it is not expedient to correct defective Work or Work not performed in accordance with Contract Documents, Departmental Representative may deduct from Contract Price difference in value between Work performed and that called for by Contract Documents, amount of which to be determined by Departmental Representative.

1.7 Measurement of Payment

- .1 Work under this section will not be measured. Include all costs in Item BOPC-1, Balance of Project Costs in the Basis of Payment Schedule. Indicate the cost of this Work as a separate line item in the Contract Work Breakdown Structure (CWBS) specified in Section 01 32 18 Construction Progress Schedules – Bar (GANTT) Chart.

PART 2 PRODUCTS

- .1 Not used.

PART 3 EXECUTION

- .1 Not used.

END OF SECTION

PART 1 GENERAL

1.1 Installation and Removal

- .1 During Work, coordinate use of site and facilities with Departmental Representative and Mine Manager.
- .2 Parking is permitted at the Giant Mine Site for vehicles forming a part of the Work and for vehicles required to transport personnel to the place of Work; no other vehicle parking is permitted.
- .3 Do not unreasonably encumber premises with products.

1.2 Existing Services

- .1 The location of equipment and utility services specified or indicated on the Drawings is to be considered as approximate.
- .2 Before commencing Work, establish location and extent of services in area of Work and notify Departmental Representative of findings.
- .3 Where unknown services are encountered, immediately advise Departmental Representative and confirm findings in writing.
- .4 Repair and replace services or facilities damaged as a result of Contractor's operations at own cost.

1.3 Water Supply

- .1 There is no active water supply to buildings included in this Contract. Obtain potable water from the City of Yellowknife. Obtain supply of water for Paste production from Polishing Pond, as per Section 01 35 15 – Special Procedures for Contaminated Sites. Operate and maintain supply system and carry out testing and reporting in accordance with Authorities Having Jurisdiction (AHJ).
- .2 Transfer water via pumping and/or treatment system to water transport/storage equipment used for Work.
- .3 Provide, maintain and operate equipment required to transport and store water for use at Work Area.
- .4 Coordinate water supply with Departmental Representative.

1.4 Temporary Power and Light

- .1 Install temporary facilities as necessary for power distribution or supply using ground cable(s) following the routing identified on the Drawings. Erect safety barriers as necessary along routing. Temporary power system to be installed according to the requirements of the Canadian Electrical Code and the NWT Mine Health and Safety Act.
- .2 Provide and maintain temporary lighting throughout project.
- .3 Power outages are a common occurrence in the City of Yellowknife. Provide emergency backup generator(s) to provide continued operation, in the event of a

local power outage, of Work activities and facilities necessary for the protection of human health and the environment.

1.5 Temporary Heating and Ventilation

- .1 Provide, operate and maintain equipment necessary to provide temporary heating required during Work period.
- .2 Provide temporary heat and ventilation as required to facilitate progress of Work. Ventilation is to meet health regulations for safe working environment.
- .3 Maintain temperatures as required by Labour Code and AHJ in areas where Work is in progress.
- .4 Maintain strict supervision of operation of temporary heating and exhaust equipment to conform with requirements of AHJ.
- .5 Be responsible for damage to Work due to failure in providing adequate heat and protection during Work activities.

1.6 Temporary Communication Facilities

- .1 There are currently three (3) communication systems available to the Contractor for Mine site coverage:
 - .1 FM surface radio and repeaters for two-way communications.
 - .2 Shaft communication radio and signaling system.
 - .3 Cellular telephone coverage is available.

1.7 Fire Protection

- .1 Provide and maintain temporary fire protection equipment during performance of Work required by governing codes and regulations.

1.8 Signs and Notices

- .1 Safety and Instruction Signs and Notices:
 - .1 Signs and Notices for safety and instruction to be in English and French.
- .2 Maintenance of Site Signs:
 - .1 Maintain approved Signs and Notices for duration of Project and dispose of on completion of the Project or earlier if directed by the Departmental Representative.

1.9 Measurement of Payment

- .1 Work under this section will not be measured. Include all costs in Item BOPC-1, Balance of Project Costs in the Basis of Payment Schedule. Indicate the cost of this Work as a separate line item in the Contract Work Breakdown Structure (CWBS) specified in Section 01 32 18 Construction Progress Schedules – Bar (GANTT) Chart.

PART 2 PRODUCTS

.1 Not used.

PART 3 EXECUTION

.1 Not used.

END OF SECTION

PART 1 GENERAL

1.1 Description of Work

- .1 Source, supply, construct, erect, operate, maintain and decommission Site Construction Facilities required to perform the Work.

1.2 Definitions

- .1 Construction Facilities: Temporary structures, services, or equipment erected and used on-site to support Contractor's operations for completion of Work.

1.3 Installation and Removal

- .1 Provide Construction Facilities in order to execute Work expeditiously.
- .2 Design, supply, construct, maintain, operate, and decommission all Construction Facilities required to support the Work. Provide Construction Facilities as specified at the Work site, and any other location where Construction Facilities are essential to the Work. Construction Facilities to meet requirements of permits for the Work, satisfy requirements of Federal, Territorial and local Authorities Having Jurisdiction (AHJ), and comply with the requirements of Section 01 35 43 - Environmental Procedures and Section 01 35 15 – Special Procedures for Contaminated Sites.
- .3 Within the Stope Complex Work Plans, include Construction Facility specifics including:
 - .1 Proposed locations, dimensions, and types of Work area enclosures, including avenues of ingress/egress.
 - .2 Proposed location and dimensions of office facility, maintenance facilities, any storage facilities and equipment laydown area.
 - .3 Proposed location and dimensions of any other required Construction Facilities.

1.4 Location of Equipment and Fixtures

- .1 Locations of equipment indicated or specified are to be considered as approximate.
- .2 Inform Departmental Representative of impending installation and obtain approval for actual location if deviation from specified location is contemplated.
- .3 Submit field drawings to indicate relative position of various services and equipment when required by Departmental Representative.
- .4 Subject to existing occupancy by Site Care and Maintenance staff, the large, white dome structure (Superdome) building located adjacent to the dam between South and Central Tailings Ponds is available to Contractor.

1.5 Access and Dust Control

- .1 Provide and maintain adequate access, including snow removal, at Work locations. Mine Manager is responsible for road maintenance and snow removal throughout overall site. Inform Departmental Representative of any access restrictions due to Mine Manager operations. Contractor is responsible for

maintenance and snow removal activities on haul roads, ramps and pad areas created by the Contractor,

- .2 Control Work operations to eliminate all excessive dust-creating activities, or as directed by Departmental Representative. The use of oil for dust control is prohibited.

1.6 Hoisting

- .1 Provide, operate and maintain hoists required for moving of workers, materials and equipment.
- .2 Hoists to be operated by qualified and certified operator.

1.7 Site Storage/Loading

- .1 Confine Work and operations of employees to portions of the Site directly impacted by Stope Complex backfilling activities. Do not unreasonably encumber premises with products.
- .2 Do not load or permit to load any part of Work with a weight or force that will endanger the Work.

1.8 Mine Openings

- .1 Comply with requirements of *NWT Mine Health and Safety Act* when working in proximity to mine openings.
- .2 Immediately inform Departmental Representative upon identification of previously unidentified mine openings and restrict access to area until health and safety requirements are met.

1.9 Vehicles

- .1 There is no requirement to provide vehicles for Departmental Representative or the Departmental Representative's Authorized Personnel use.

1.10 Camp Facilities

- .1 Contractor accommodation camp facilities are not permitted within the Site.

1.11 Office Facilities

- .1 Contractor to provide own on-Site office facilities.
- .2 Provide office space for six (6) Departmental Representative or Departmental Representatives Authorized Personnel. Office space will include the following items:
 - .1 Windows
 - .2 Desk and chair for six (6) people
 - .3 Operational wireless printer and scanner
 - .4 Wireless internet access
 - .5 Heating with temperature control ability
- .3 Place Departmental Representative office facilities so as not to interfere with other site activities but close to Contractors office facilities.

1.12 Sanitary Facilities

- .1 Subject to existing occupancy by Site Care and Maintenance staff, the shower, locker and person equipment storage baskets of the existing 'C-Dry' building on Site is available to Contractor.
- .2 Provide and operate sanitary facilities for Work force and dispose of waste in accordance with AHJ.
- .3 Post notices and take such precautions as required by local health authorities. Keep area and premises in sanitary condition.

1.13 Construction Signage

- .1 Maintain approved signs and notices in good condition for duration of Project, and dispose of off site on completion of Project or earlier if directed by Departmental Representative.

1.14 Fire Routes

- .1 Maintain access to property, including overhead clearance, for use by emergency response vehicles.

1.15 Protection for Off-Site and Public Property

- .1 Protect surrounding private and public property from damage during performance of Work.
- .2 Be responsible for damage incurred.

1.16 Accommodation

- .1 Accommodation for Contractors personnel and Work crews is not available on Site.
- .2 Source and provide off-Site accommodation for Contractors personnel and Work crews.

1.17 Equipment Maintenance Facilities

- .1 Two garage bays are available in the site MEG (garage). 5 and 20 tonne cranes are associated with these bays and access doors are approximately 6 meters wide.
- .2 Provide own equipment repair and maintenance facilities if MEG (garage) facilities are not sufficient.

1.18 Traffic Control

- .1 Site traffic control will be performed by the Site Care and Maintenance Contractor based on the Traffic Control requirements identified in the Contractors Stope Complex Work Plans.

1.19 Measurement of Payment

- .1 Include all direct costs for Design, supply, operation and maintenance of Contractor Site Facilities under Lump Sum Payment Item 01 52 00-1 in the Basis of Payment schedule.
- .2 Include all direct costs for supply and maintenance of Departmental Representative Office Facilities under Lump Sum Payment Item 01 52 00-2 in the Basis of Payment schedule.
- .3 Include all direct costs for accommodation of all Contractors personnel during Stope Complex backfilling activities under Lump Sum Payment Items 01 52 00-3 through 01 52 00-6 – Crew Accommodation During Stope Complex Activities in the basis of Payment schedule for each Stope Complex.
- .4 Include all direct costs for the upgrading, construction, maintenance and decommissioning (if required) of Site civil infrastructure, including site roads, drilling pads or paste production equipment and facility pads to support Contractor's work in lump sum Payment Items 01 52 00-7 through 01 52 00-10 in the Basis of Payment Schedule. Payment Items 01 52 00-7 through 01 52 00-10 are to include all costs for the supply of Aggregate Material and the supply and installation of impermeable liners, as required
- .5 The following work items will be incidental to the work described in this Section, and will not be measured separately:
 - .1 Provision of water for moisture conditioning, compaction and dust control.
 - .2 All construction surveying for the convenience of the Contractor
 - .3 Draining of wet areas prior to placement of Aggregate Materials.
 - .4 Excavation, stripping and replacement of organic material.
- .6 Except as indicated above, Work under this section will not be measured. Include all costs in Item BOPC-1, Balance of Project Costs in the Basis of Payment Schedule. Indicate the cost of this Work as a separate line item in the Contract Work Breakdown Structure (CWBS) specified in Section 01 32 18 Construction Progress Schedules – Bar (GANTT) Chart.

PART 2 PRODUCTS

- .1 Not used.

PART 3 EXECUTION

3.1 Site Hauling Infrastructure

- .1 Construct access haul roads, ramps, laydown areas and turning areas as required to complete the Work to applicable regulations including, but not limited to, the NWT Mine Health and Safety Act.
- .2 Haul Roads
 - .1 Construct two-way haul roads to a minimum of two times the width of the largest hauling equipment.
 - .2 Construct one-way haul roads with distance/location markers between segments where the road is wide enough to allow vehicle meeting.
 - .3 Construct turn-outs as required.

- .4 Construct shoulder berms where shoulder drops exceed three (3) metres.
- .5 Post speed limits where required as specified in Section 01 35 32 – Site Specific Health and Safety Plan.

3.2 Paste Production and Borehole Drilling Site Preparation

.1 Site Preparation

- .1 Identify on Contractors accepted Stope Complex Work Plans the proposed installation location, perimeter extents and arrangement of Paste production equipment and facilities.
- .2 Identify on Contractors accepted Stope Complex Work Plans the proposed locations and perimeter extents of any drill pads and arrangement of drilling equipment.
- .3 Supply and place imported Aggregate Materials to construct Paste production and drill pads as required by Contractors accepted Stope Complex Work Plan.
- .4 Construct Paste production facility and Borehole drill pads to meet requirements of Water License, Land Use Permit, AHJ and Inspectors.
- .5 As required by Water License and Land Use Permit, install durable, impermeable geomembrane material beneath Paste mixing areas, Paste pumping areas and other locations subject to impact by spilled Paste and beneath stockpile of mine Tailings outside the extents of the Tailings Ponds.

END OF SECTION

PART 1 GENERAL

1.1 Mobilization and Demobilization

- .1 Commencement of mobilization constitutes acceptance of existing conditions.
- .2 Provide all labour, equipment and materials to perform all Work necessary for mobilization to, and demobilization from Site.
- .3 Mobilization to include transportation to site of Contractor's labour, equipment, materials, and assembling, erecting, and preparing site in readiness to start Work, all in accordance with Contractor's Schedule.
- .4 Demobilization is to include dismantling and removal from Site, of all Contractor's equipment, materials, waste resulting from cleanup of Site and transportation of labour from Site.
- .5 Decontaminate and clean all equipment used on the Project prior to demobilization according to Section 01 35 15 – Special Procedures for Contaminated Sites.
- .6 Give five (5) days advance notice in writing to Departmental Representative prior to mobilizing to Site.
- .7 Summarize the proposed mode, route, equipment, labour and all other requirements for the mobilization and demobilization of all required permits, equipment, materials, waste and personnel to complete the Work, as indicated in these specifications, in a Mobilization and Demobilization Plan. Submit the Mobilization and Demobilization Plan to the Departmental Representative a maximum of seven (7) days after contract award.
- .8 All mobilization and demobilization methods to comply with the requirements of all applicable codes, standards, guidelines and permits.
- .9 All personnel supervising or operating equipment via overland or marine routes to be properly certified.
- .10 A post-Demobilization site visit will be required as part of the Post-Demobilization Inspection as per Section 01 77 00 – Closeout Procedures.

1.2 Submittals

- .1 Submit Mobilization and Demobilization Plan in accordance with Section 01 33 00 - Submittal Procedure for review by Departmental Representative.

1.3 Measurement of Payment

- .1 All costs for mobilization of equipment and materials, including the submission of the Mobilization and Demobilization Plan, are to be included in the lump sum price for payment Item 01 53 00-1 - Mobilization to Giant Mine Site, as indicated in the Basis of Payment Schedule. The lump sum price for mobilization is to include labour, equipment, materials, supplies, meals, accommodation, flights and any other costs necessary to undertake Work required.
- .2 .2 All costs for final site restoration and demobilization of Contractor equipment and materials are to be included in the lump sum price for payment

item 01 53 00–2, Demobilization from Giant Mine Site, as indicated in the Basis of Payment Schedule. The lump sum price for demobilization is to include all labour, equipment, materials, meals, accommodation, flights and any other cost necessary to undertake the Work required. Payment for demobilization will be made after satisfactory cleanup of the site, removal from the site of all equipment and submission to the Departmental Representative of all Contractor submittals as per Section 01 78 00 – Closeout Submittals.

- .3 Except as otherwise indicated herein, Work under this section will not be measured. Include all costs in Item BOPC-1, Balance of Project Costs in the Basis of Payment Schedule. Indicate the cost of this Work as a separate line item in the cost breakdown specified in Section 01 32 18 -Construction Progress Schedules – Bar GANTT) Chart.

PART 2 PRODUCTS

- .1 Not used.

PART 3 EXECUTION

- .1 Not used.

END OF SECTION

PART 1 GENERAL

1.1 General

- .1 Use material and equipment acceptable to Departmental Representative unless otherwise specified.
- .2 Provide material and equipment of specified design and quality, performing to published ratings and for which replacement parts are readily available.
- .3 Use products of one manufacturer for material and equipment of same type or classification unless otherwise specified.

1.2 Submittals

- .1 All submittals in accordance with Section 01 33 00 - Submittal Procedures.

1.3 Reference Standards

- .1 If there is question as to whether any product or system is in conformance with applicable standards, Departmental Representative reserves right to have such products or systems tested to prove or disprove conformance.
- .2 Cost for such testing will be born by Departmental Representative in event of conformance with Contract Documents or by Contractor in event of non-conformance.
- .3 Conform to latest date of issue of referenced standards in effect except where specific date or issue is specifically noted.

1.4 Quality

- .1 Products, materials, and articles (referred to as products throughout Specifications) incorporated in Work to 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 Departmental Representative based upon requirements of Contract Documents.
- .4 Unless otherwise indicated in specifications, maintain uniformity of manufacture for any particular or like item.

1.5 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 Departmental Representative 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 Departmental Representative at commencement of Work and should it subsequently appear that Work may be delayed for such reason, Departmental Representative reserves right to substitute more readily available products of similar character, at no increase in Contract Price or Contract Time.

1.6 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 Store cementitious products clear of earth or concrete floors, and away from walls.
- .5 Keep sand, when used for grout or mortar materials, clean and dry.
- .6 Store sheet materials, lumber on flat, solid supports and keep clear of ground. Slope to shed moisture. Secure from wind.
- .7 Remove oily rags and other combustible debris from site daily. Take every precaution necessary to prevent spontaneous combustion.
- .8 Remove and replace damaged products at own expense and to satisfaction of Departmental Representative.

1.7 Transportation

- .1 Pay costs of transportation of products required in performance of Work.

1.8 Manufacturer's Instructions

- .1 Unless otherwise indicated in specifications, install or erect products in accordance with manufacturer's instructions.
- .2 Notify Departmental Representative in writing, of conflicts between specifications and manufacturer's instructions, so that Departmental Representative may establish course of action.
- .3 Improper installation or erection of products, due to failure in complying with these requirements, authorizes Departmental Representative to require removal and re-installation at no increase in Contract Price or Contract Time.

1.9 Measurement of Payment

- .1 Work under this section will not be measured. Include all costs in Item BOPC-1, Balance of Project Costs in the Basis of Payment Schedule. Indicate cost of the Work of this section as a separate line item in the Contract Work Breakdown

Structure (CWBS) specified in Section 01 32 18 Construction Progress Schedules
– Bar (GANTT) Chart.

PART 2 PRODUCTS

.1 Not Used

PART 3 EXECUTION

.1 Not Used

END OF SECTION

PART 1 GENERAL

1.1 Qualifications of Surveyor

- .1 Qualified surveyor with a minimum of five (5) years of surveying experience, acceptable to Departmental Representative.
- .2 Surveyor cannot be an Employee of Contractor.

1.2 References

- .1 Departmental Representative's identification of existing survey control points and property limits.

1.3 Survey Reference Points

- .1 Existing base horizontal and vertical control points are designated on drawings.
- .2 Locate, confirm and protect control points prior to starting site Work. Preserve permanent reference points during construction. Condition and accuracy of control points is unknown, Contractor to re-establish local control points where required.
- .3 Make no changes or relocations without prior written notice and approval from the Departmental Representative.
- .4 Report to Departmental Representative when reference point is lost or destroyed, or requires relocation because of necessary changes in grades or locations.
- .5 Replace control points in accordance with original survey control.

1.4 Survey Requirements

- .1 Establish stable temporary survey control points for use in laying out work. Re-establish local control points at the start of each construction season.
- .2 Establish lines and levels, locate and lay out, by instrumentation.
- .3 Conduct survey required to prepare As-built drawings showing Work areas at the completion of work activities.
- .4 Generate 3D survey and volume calculations of Stope Complex voids immediately prior to final backfilling of the voids such that it can clearly be demonstrated that the Stope Complex specific completion criteria have been met.

1.5 Survey Equipment

- .1 Calibrate all equipment prior to the construction season. Submit to the Departmental Representative documentation certifying the calibration of the equipment.
- .2 Supply and operate CMS (Cavity Monitoring System) or similar 3D survey equipment to generate 3D survey and volume calculations of Stope Complex voids.

1.6 Survey Markers

- .1 Provide all survey markers and other items required to complete Work as specified, including, but not limited to:

- .1 Pointed stakes (minimum 1.2 m in length, 12 mm thick, 38 mm wide)
- .2 Pointed hubs (minimum 0.5 m in length, 20 mm thick, 38 mm wide)
- .3 Nails (100 mm long), spikes (250 mm long), pins (1 m long), etc.
- .4 Fluorescent paint, flagging, etc.
- .5 Felt markers, chalk, wax pens, etc.

- .2 Maintain supply of survey markers for Departmental Representative's use.

1.7 Records

- .1 Maintain a complete, accurate log of control and survey Work as it progresses.

1.8 Submittals

- .1 Submit name and address of Surveyor to Departmental Representative after contract award.
- .2 Upon request of Departmental Representative, submit documentation to verify accuracy of field Work. Maintain accuracy to a minimum of 0.01 m vertically and 0.1 m horizontally. Submit data in UTM Nad83 Datum.
- .3 Submit raw survey data in electronic form containing (at minimum):
 - .1 Date of survey.
 - .2 Name of survey
 - .3 Point numbers, Northing, Easting, elevation, description.
- .4 Submit the record survey data file as the latest as-constructed information.
- .5 At completion of all Work, submit certificate signed by surveyor certifying and noting those elevations and locations of completed Work that conform and do not conform with Contract Documents.
- .6 Submit all drawings electronically in accordance with PWGSC protocols for AutoCAD drawings, and by hard copy.
- .7 Submit to the Departmental Representative documentation certifying the calibration of the equipment ten (10) days prior to construction commencement each season.

1.9 Measurement for Payment

- .1 Include all direct costs for survey of all Tailings excavations areas following Final Restoration in the lump sum price for Item 01 71 01-1 – Survey of Tailings Excavation Areas Following Final Restoration, in the Basis of Payment Schedule.
- .2 Include all direct costs for survey of Stope Complex Paste Production and Borehole Drilling Locations following completion of backfill and removal of equipment in the Unit Price price for Items 01 71 01-2 through 01 71 01-5 – Survey of Stope Complex Paste Production and Borehole Drilling Locations.
- .3 The scope of work for Payment Items 01 71 01-2 through 01 71 01-5 includes, but is not limited to, surveyor and assistant labour, equipment, materials, meals, accommodation, and flights.
- .4 Except as indicated above, work under this section will not be measured. Include all costs in Item BOPC-1, Balance of Project Costs in the Basis of Payment Schedule. Indicate cost of the work of this section as a separate line item in the Contract Work

Breakdown Structure (CWBS) specified in Section 01 32 18 - Construction Progress Schedules - Bar (GANTT) Chart.

PART 2 PRODUCTS

.1 Not used.

PART 3 EXECUTION

3.1 Survey Milestones

.1 Following completion of Tailings excavation and processing area restoration, and acceptance of restoration completion by Departmental Representative, survey the extents, surface topography and elevations of all areas within TCFs disturbed by Tailings excavation, hauling, stockpiling and processing.

.2 Following completion of backfilling activities at each Stope Complex, and removal of Contractors equipment, survey the locations, surface topography, extents and elevations of Paste production facility pads, drilling pads, access roads and other earth facilities constructed by the Contractor or others to enable backfill of the Stope Complex.

END OF SECTION

PART 1 GENERAL

1.1 Closeout Procedures

- .1 Provide Departmental Representative with draft Stope Complex Completion Document when Contractor considers Work at each Stope Complex is complete.
- .2 Address Departmental Representative's comments and recommendations on Draft Stope Complex Completion Document to demonstrate that Work at each Stope Complex is complete. Addressing Departmental Representative's comments and recommendations may require:
 - .1 Submission of additional data and results from backfill monitoring program, or
 - .2 Additional Work activities, including Paste production and delivery and/or drilling of additional Boreholes.
- .3 Departmental Representative will provide written acceptance to Contractor when it has been demonstrated, to the Departmental Representative's satisfaction, that Stope Complex backfilling has achieved Specifications requirements.

1.2 Measurement of Payment

- .1 Work under this section will not be measured. Include all costs in Item BOPC-1, Balance of Project Costs in the Basis of Payment Schedule. Indicate the cost of this Work as a separate line item in the Contract Work Breakdown Structure (CWBS) specified in Section 01 32 18 Construction Progress Schedules – Bar (GANTT) Chart.

PART 2 PRODUCTS

- .1 Not used.

PART 3 EXECUTION

- .1 Not used.

END OF SECTION

PART 1 GENERAL

1.1 Submittal

- .1 Submit Project Record Documents in accordance with Section 01 33 00 – Submittal Procedures.

1.2 Stope Complex Completion Document

- .1 Submit to Departmental Representative a Stope Complex Completion Document as specified in Section 01 33 00 – Submittal Procedures.

1.3 Project Completion Documentation

- .1 Following completion of all Work, submit to Departmental Representative a Project Completion Document that includes:
 - .1 Summary of Health and Safety issues, environmental issues and performance indicators.
 - .2 Copies of all permits and documents obtained by the Contractor.
 - .3 Information on the state of temporary facilities used in this Contract.
 - .4 Copies of all documents and permits obtained by the Contractor.
 - .5 Results of all testing carried out by the Contractor.
 - .6 Any other pertinent information.
 - .7 Copies of all shipping documents identifying the shipper, the receiver and all carriers involved in the transport of materials.
 - .8 Information as required by the Land Use Permit.
 - .9 Information as required by the Water License.
 - .10 Information as required by all other applicable regulatory bodies and AHJ.
 - .11 Copies of all Transportation of Dangerous Goods documentation.
 - .12 Record Drawings showing areas where Work was undertaken.

1.4 Site Documentation

- .1 In addition to requirements in General Conditions, maintain at the site for Departmental Representative one record copy of:
 - .1 Contract Drawings.
 - .2 Specifications.
 - .3 Addenda.
 - .4 Change Orders and other modifications to the Contract.
 - .5 Reviewed shop drawings and product data.
 - .6 Field test records.
 - .7 Inspection certificates.
 - .8 Manufacturer's certificates.
- .2 Store record documents and samples in field office apart from documents used for construction.
- .3 Maintain record documents in clean, dry and legible condition. Do not use record documents for construction purposes.
- .4 Keep record documents and samples available for inspection by Departmental Representative.

- .5 Include Record Documents within the Project Completion Documents to be submitted as specified in this section.
- .6 Other Documents: maintain manufacturer's certifications, inspection certifications, field test records, required by individual specifications sections.
 - .1 Manufacturer, trade name, and catalogue number of each product actually installed, particularly optional items and substitute items.
 - .2 Changes made by Addenda and change orders.

1.5 Measurement of Payment

- .1 Work under this section will not be measured. Include all costs in Item BOPC-1, Balance of Project Costs in the Basis of Payment Schedule. Indicate the cost of this Work as a separate line item in the Contract Work Breakdown Structure (CWBS) specified in Section 01 32 18 Construction Progress Schedules – Bar (GANTT) Chart.

PART 2 PRODUCTS

- .1 Not used.

PART 3 EXECUTION

- .1 Not used.

END OF SECTION

PART 1 GENERAL

1.1 Description of Work

- .1 Provide all labour, equipment and materials required to drill Boreholes to meet conditions of Specifications, Contractors accepted Backfill Method Plan and Contractors accepted Stope Complex Work Plans, both from surface and from underground locations, as necessary, for each designated Stope Complex.
- .2 Construct access roads to surface Borehole locations where current access is non-existing or inadequate for Contractor's equipment.
- .3 Construct drill pads to enable drilling of Boreholes required to meet conditions of Specifications, Contractors accepted Backfill Method Plan and Contractors accepted Stope Complex Work Plans. Drill pads are to be constructed of Aggregate Material and of a size sufficient for safe operation of the Contractor's drilling and ancillary equipment.
- .4 Install sealable casing and lockable casing caps on all surface Boreholes to prevent inflow of surface water and egress of underground dust.
- .5 Install sealed casing through Overburden encountered in Boreholes to prevent inflow of sub surface water or loose soil materials into the Borehole annulus.
- .6 Backfill or grout Boreholes constructed by the Contractor unless written authorization is provided by the Departmental Representative to leave open and not backfilled.

1.2 Definitions:

- .1 Borehole: Drilled hole to provide access, whether directly or indirectly, to an underground void designated for backfilling for the purposes of investigation, monitoring, Paste delivery or ventilation of the void.
- .2 Overburden; Natural or fill soils or Aggregate Materials located between the ground surface and underlying bedrock.

1.3 Qualifications

- .1 Be thoroughly familiar with, and knowledgeable about, existing site conditions, scope of work and requirements of this Specification.
- .2 Contractor's Foreman responsible for the work of this Section is to have a minimum of five (5) years of experience in hard rock, diamond drilling operations.

1.4 Environmental and Personnel Protection

- .1 Implement environmental protection measures in accordance with Section 01 35 43 - Environmental Procedures and as detailed in Contractors accepted Environmental Protection Plan
- .2 Install temporary erosion, sediment and drainage controls prior to drilling activities in accordance with Environmental Protection Plan. Contain and dispose of drill cuttings in accordance with Contractors accepted Environmental Protection Plan

- .3 Suspend operations whenever climatic conditions are unsatisfactory for drilling to conform to this Specification or Contractors accepted Backfill Method Plan or Contractors accepted Stope Complex Work Plan.

1.5 Measurement of Payment

- .1 Work under this section will not be measured. Include all costs for drilling to meet requirements of Contractors accepted Stope Complex Work Plans in the Unit rate price for Payment Item 31 23 23.33-1 – Paste Production and Delivery in the Basis of Payment schedule. Indicate the cost of this Work as a separate line item in the Contract Work Breakdown Structure (CWBS) specified in Section 01 32 18 Construction Progress Schedules – Bar (GANTT) Chart.
- .2 Costs to conduct investigation and confirmation drilling activities as requested by the Departmental Representative will be paid under Potential Additional Work (PAW) rates supplied in the Basis of Payment schedule.

PART 2 PRODUCTS

- .1 Not used.

PART 3 EXECUTION

- .1 Inform Departmental Representative of drilling progress, including the start and completion of each Borehole.
- .2 Organize and arrange drilling equipment and materials so as to not impede or prevent movement of others around Site.
- .3 Tailor the diameter of each Borehole to the Borehole purpose.
- .4 Boreholes are to be drilled using methods and experienced drilling personnel capable of drilling with an accuracy equal to, or greater than, one meter of drift from the target over one hundred meters of drill length, as measured in three dimensions. The breakthrough of the borehole intersection with the underground void is to be located using survey or other positioning method accepted by the Departmental Representative.
- .5 All surface Boreholes are to have casings installed in their uppermost portion such that surface water flows do not enter the Borehole. The casing is to project a minimum 0.4m above the ground surface. Casings are to be connected to surrounding bedrock or natural ground with a cement grout that extends from the bedrock surface a minimum of 1.0m below the bedrock surface.
- .6 Surface boreholes are to be secured at the collar to prevent unauthorized access. All collars are to be lockable.
- .7 Underground drilling operations are to be conducted by crews experienced in underground drilling and conducted with provision made for exhausting of drilling gases and other safe working practices, as required.
- .8 Borehole casings and collars are to be made to allow easy attachment to, or insertion of, a Paste delivery pump hose.

- .9 At completion of Stope Complex backfilling activities, Boreholes are to be left accessible, locked and secured.
- .10 At completion of Stope Complex backfilling activities Boreholes not constructed by the Contractor are to be left open and not backfilled. Backfilling or grouting of Boreholes not constructed by the Contractor is not required under this contract.
- .11 Backfilling or grouting of Boreholes constructed by the Contractor is required unless written authorization is provided by the Departmental Representative to leave open and not backfilled.

END OF SECTION

PART 1 GENERAL

1.1 Description

- .1 This Section specifies the requirements for the removal, sorting, handling and stockpiling of scattered debris located within Contractors proposed Paste production and Borehole drilling location extents prior to construction of Aggregate Material pads or commencement of Stope Complex backfilling operations.

1.2 Definitions

- .1 Non-Hazardous Debris: Scattered, stockpiled, visible, surficial and/or partially buried waste Non-Hazardous Materials.
- .2 Hazardous Materials: Materials that are designated as hazardous under Territorial or Federal Legislation or as dangerous goods under the Transportation of Dangerous Goods (TDG) Act or CEPA.
- .3 Non-Hazardous Materials: Materials that are not designated as hazardous under Territorial or Federal Legislation.

1.3 Measurement of Payment

- .1 Include all direct costs for the collection, sorting, handling and stockpiling of all Non-Hazardous Debris from the extent of the Contractors proposed Paste production and delivery facilities and Borehole drill pads for each designated Stope Complex in the corresponding lump sum prices for Payment Items 02 41 23-1 through 02 41 23-4 – Surface Non-Hazardous Debris Removal in the Basis of Payment Schedule.
- .2 The scope of work for payment Items 02 41 23-1 through 02 41 23-4 is to include, removal, collection, segregation, consolidation, sorting, loading, transportation and stockpiling of Non-Hazardous debris as described in this Section and as required by Water Licence, Land Use Permit and AHJs.
- .3 Removal of debris identified to contain Hazardous Materials will be negotiated with Departmental Representative using the Labour and Materials rates provided in the Potential Additional Work section of the Basis of Payment Schedule.
- .4 Except as indicated above, work under this section will not be measured. Include all costs in Item BOPC-1, Balance of Project Costs in the Basis of Payment Schedule. Indicate cost of the Work of this section as a separate line item in the Contract Work Breakdown Structure (CWBS) specified in Section 01 32 18 Construction Progress Schedules – Bar (GANTT) Chart.

PART 2 PRODUCTS

- .1 Not used

PART 3 EXECUTION

3.1 Protection Procedures

- .1 When excavating in the vicinity of a drainage course or a body of water, erect silt fences and/or floating silt curtains to prevent the release of sediment or deleterious materials

into the water in accordance with Section 01 35 43 – Environmental Procedures and the Environmental Protection Plan

- .2 Environmental protection measures are to be in accordance with Section 01 35 43 – Environmental Procedures and the Environmental Protection Plan
- .3 Maintain supply of overpack drums during debris removal activities to contain leaking Hazardous and Non-Hazardous Materials.
- .4 Erect sorbent booms along edge of Water bodies within 10 metres debris removal work to isolate the water body from debris removal work activities.

3.2 Debris Removal

- .1 Examine the area(s) to assess the material type and nature of the debris.
- .2 Proceed with the collection and removal of debris if, based on the visual assessment, the debris is determined to be Non-Hazardous Material.
- .3 Contractor personnel with Hazardous Materials training to continuously monitor the operation to identify potentially Hazardous Material.
- .4 Immediately suspend the debris removal operation if suspected Hazardous Material is identified and allow confirmation of the nature of the material to be investigated and established by the Departmental Representative.
- .5 Store suspicious debris in a secured area in secured containers, if the nature of the material or debris can't be confirmed, notify Departmental Representative about the findings. Testing for classification of Hazardous Materials will be carried out and paid for by Departmental Representative.
- .6 Completely remove partially buried Non-Hazardous Debris unless otherwise directed by Departmental Representative.
- .7 Advise Departmental Representative of any stained soils encountered during debris removal operations.

3.3 Debris Stockpiling

- .1 Collect, load, transport and stockpile Non-Hazardous Debris in either of:
 - .1 An existing location within the Giant Mine Site that contains stockpiled and organised or accumulated Non-Hazardous Debris; or
 - .2 A location proximal to the Stope Complex backfilling operations where the stockpiled Non-Hazardous debris will have the following attributes:
 - .1 Will not interfere with existing Giant Mine operations or equipment movements.
 - .2 Is adjacent to an existing Site road or equipment turn-out.
 - .3 The stockpiled Non-Hazardous Debris is accessible by wheeled excavation, loading and trucking equipment.

END OF SECTION

PART 1 GENERAL

1.1 Description

- .1 This Section specifies general requirements for the supply of Aggregate Material to be incorporated into the work as granular fill for construction of:
 - .1 Stope Complex drill pads,
 - .2 Paste production equipment foundation pads,
 - .3 Upgrades or repairs to site roads and access ways,
 - .4 Stabilised haul equipment access ways across Tailings excavation areas,
 - .5 Tailings processing equipment foundation pads,
 - .6 Underground Paste barricades,
 - .7 Any other infrastructure improvements required to implement the Contractors accepted Stope Complex Work Plans.
- .2 Aggregate Materials used on Site are to be sourced and processed sufficiently that placed Aggregate Materials do not leach or cause deleterious runoff that enter watercourses or extends greater than 1m from the placed materials.

1.2 Definitions

- .1 Aggregate Materials; Course grained, non-metal leaching, Non-acid generating or Potentially Acid Generating (PAG), non-Tailings earth materials blended as required to meet requirements of Specifications and Contractors accepted Stope Complex Work Plans.
- .2 Site: The extents of the Giant Mine Remediation Project, as shown on Drawing C-01.

1.3 Aggregate Material Source

- .1 Abide by conditions of the Quarry Permit, Land Use Permit and Water Licence and/or other requirements of Authorities Having Jurisdiction (AHJ).
- .2 Aggregate Materials are to be sourced from locations outside the Giant Mine Site extents. There are no locations on site available for extraction or generation of Aggregate Materials.
- .3 The source, or sources, of Aggregate Materials to be incorporated into work is to be detailed in the Contractors accepted Stope Complex Work Plans.
- .4 Information on acid-base accounting (ABA) sampling and testing conducted on the Aggregate Material source and products is to be included in the Contractors accepted Stope Complex Work Plans. Sampling and testing are to be obtained according to BC Ministry of Transport (BC MOT) Technical Circular T-10/04 'ARD Testing at Quarry and Rock Cut Sites, November 2004' and industry standard for that material.
- .5 If, in the opinion of Departmental Representative, materials from the proposed source do not meet, or cannot reasonably be processed to meet specified requirements, locate an alternative source or demonstrate that material from source in question can be processed to meet specified requirements.
- .6 Should a change of material source be proposed during work, provide Departmental Representative with completed Work Plan Change Document detailing change a minimum of one (1) week prior to change. Details of the new source, including acid-

base accounting (ABA) sampling and testing is required to accompany the Work Plan Change Document.

- .7 Acceptance of Aggregate Material at source does not preclude future rejection if it is subsequently found to vary spatially, or if it fails to conform to requirements specified, or if its field performance is found to be unsatisfactory.

1.4 Measurement of Payment

- .1 Access to, and development of Aggregate Material sources including construction of haul roads, stripping, handling, stockpiling, replacement of organics, and any necessary restoration will be incidental to the work of this Section, and will not be measured separately.
- .2 Processing of Aggregate Material to meet project specifications, including selective excavation, blending, screening, crushing or any other method necessary to produce acceptable Aggregate Materials that meet the requirements of the Contractors accepted Stope Complex Work Plans will be incidental to the work of this section and will not be measured separately.
- .3 Include all direct costs for the supply of Aggregate Materials in the lump sum prices for Payment Items 01 52 00-7 through 01 52 00-10 - Civil Development of Paste Production, Drill Pads and Stope Complex Site Access in the Basis of Payment Schedule.

PART 2 PRODUCTS

2.1 Aggregate Materials

- .1 Aggregate Material quality: sound, hard, durable material free from soft particles, organic material or other deleterious substances.
- .2 Aggregate Materials classified as unsuitable will include:
 - .1 Earth Materials containing organic material, snow, ice or other deleterious material.
 - .2 Metal leaching, Acid Generating or Potentially Acid Generating earth materials.

PART 3 EXECUTION

3.1 Obtaining Aggregate Material

- .1 Obtain from own sources, all required Aggregate Material.
- .2 The existing operational pads and roadways at the site are not to be used as Aggregate Material borrow sources unless specifically authorized by Departmental Representative.
- .3 Transport Aggregate Material to the work areas via existing access routes where available. Maintain access constructed routes and provide for dust control on the constructed access route to the work areas.

3.2 Handling

- .1 Handle and transport Aggregate Material to avoid segregation, contamination and degradation.

3.3 Stockpiling

- .1 If required, stockpile aggregates on site in locations approved by Departmental Representative. Stockpiles are to not be located on undisturbed natural ground surfaces.
- .2 Stockpiling sites are to be level, well drained, and of adequate bearing capacity and stability to support stockpiled materials and handling equipment. Avoid areas with soft, fine-grained soils that may contaminate stockpiled materials.
- .3 Except where stockpiled on stabilized areas acceptable to Departmental Representative, provide compacted sand base not less than 300 mm in depth to prevent contamination of the aggregate, or stockpile aggregates on ground but do not incorporate bottom 300 mm of pile into work.
- .4 Stockpile materials in uniform layers of one (1) metre maximum thickness.
- .5 Complete each layer over the entire stockpile area before beginning next layer.
- .6 Uniformly spot-dump Aggregate Material delivered to stockpile in trucks and build up stockpile as specified.
- .7 During snowy conditions, prevent ice and snow from becoming mixed into stockpile.
- .8 When work is complete, remove excess stockpiled material from Site or dispose of as indicated by Departmental Representative.

END OF SECTION

PART 1 GENERAL

1.1 Description

- .1 This Section specifies requirements for:
 - .1 The grading of Tailings excavation areas and Site existing or constructed Aggregate Material infrastructure.
 - .2 The supply and placement of Aggregate Materials as required.
- .2 Contractor is responsible for maintenance of Contractor constructed site roads.

1.2 Definitions

- .1 Scarifying: The disturbance or loosening of a soil to a depth of 300 mm to allow for compaction or aeration.
- .2 Haul Roads: Roads constructed or upgraded from existing access routes for the purpose of hauling material or equipment to complete the Work.

1.3 Site Conditions

- .1 Suspend operations whenever climatic conditions are unsatisfactory for grading to conform with this Specification.
- .2 Do not operate equipment in work areas until the material has dried sufficiently to prevent excessive rutting.
- .3 Areas to be graded are to be free from debris and excessive snow, ice or standing water prior to grading work beginning.
- .4 Contractor is advised that soft ground conditions may be prevalent at the site during periods of maximum thaw of the permafrost or freshet. Schedule and carry out work to minimize disturbance to permafrost soils.

1.4 Protection

- .1 Prevent damage to benchmarks, existing buildings, surface or underground service or utility lines which are to be used to support ongoing construction activities. Immediately repair any damage to the above or replace the above in the event of damage, at no cost to Departmental Representative.
- .2 Protect archaeological sites from construction and construction traffic.
- .3 Protect unanticipated archaeological resources encountered during construction, suspend all activities in that area and notify Departmental Representative immediately.
- .4 Protect and do not disturb spawning beds and breeding grounds as identified or required by the Authorities Having Jurisdiction (AHJ) during construction.
- .5 Environmental protection measures are to be in accordance with the Contractor accepted Environmental Protection Plan and Section 01 35 43 - Environmental Procedures.

1.5 Measurement of Payment

- .1 Work under this section will not be measured. Include all costs in Item BOPC-1, Balance of Project Costs in the Basis of Payment Schedule. Indicate cost of the Work of this section as a separate line item in the Contract Work Breakdown Structure (CWBS) specified in Section 01 32 18 Construction Progress Schedules – Bar (GANTT).

PART 2 PRODUCTS

2.1 Materials

- .1 Aggregate Materials in accordance with Section 31 05 16 – Aggregate Materials.

PART 3 EXECUTION

3.1 Placement, Moisture Conditioning, and Compaction of Aggregate Material

- .1 Place Aggregate Material to the lines, grades, elevations and dimensions required by Contractors accepted Stope Complex Work Plan, or as agreed to with Departmental Representative.
- .2 Set grades and lay out work from control points in areas of Aggregate Material placement. Verify the original ground topography by survey as required.
- .3 Haul Aggregate Material from source locations to Stope Complex, Borehole drill locations or access roads/ slopes as required by Contractors accepted Stope Complex Work Plan.
- .4 Do not place Aggregate Material on snow or surface ice.
- .5 Maintain natural drainage patterns, unless otherwise directed, and fill depressions to avoid any ponding of water adjacent to embankments.
- .6 All Aggregate Materials are to be placed in an unfrozen state. Aggregate Material to be free from debris, snow and ice. Do not place Aggregate Material if the outside air temperature is below 0°C, unless otherwise directed by Departmental Representative.
- .7 A crowned surface must be maintained during construction to provide ready runoff of surface water. Do not place material in free standing water.
- .8 Cease construction at any sign of movement or bulging in embankments to allow assessment by Departmental Representative.
- .9 Placed Aggregate Materials in horizontal lifts and compact to provide a safe working and equipment traversing surface. For Aggregate Material fill depths greater than 500 mm, place Aggregate Material in lifts not exceeding 250 mm in loose thickness. For fill depths greater than 200 mm and less than 500 mm, place material in two lifts of equal depth. For fill depths less than 200 mm, place material in one lift.
- .10 Moisture condition and compact Aggregate Material as required to meet requirements of Contractors accepted Stope Complex Work Plans. Provide a water truck capable of efficiently placing water on Aggregate Material, if required. If material is excessively moist, aerate by scarifying with suitable equipment until moisture content is corrected.

- .11 If Aggregate Material has dried out prematurely due to weather conditions, scarify surface, adjust moisture condition and recompact at Departmental Representative's discretion. No extra payment will be made for extra costs incurred as a result of any extra work.
- .12 Compaction equipment must be capable of obtaining required densities uniformly in materials on project. Hand equipment must be available for compaction in areas where large equipment can not access and around instrumentation. Tracked or tired equipment may be substituted for dedicated compaction equipment, provided it can demonstrate satisfactory compactive effort as specified in this section.
- .13 Shape finished surface to required cross-section and grade, or as directed by Departmental Representative.
- .14 Place and trim Aggregate Material such that side slopes on Paste Production and Borehole Drilling pads are no steeper in grade than 1V:3H.

3.2 Excavating

- .1 Lay out work in detail from control points in areas of excavation.
- .2 Keep excavations free of water while work is in progress. Protect open excavations against flooding and damage due to surface run-off. Dispose of water in a manner not detrimental to work completed or under construction. Provide treatment and discharge all water resulting from the dewatering of open excavations as described in Section 01 35 15 – Special Project Procedures for Contaminated Sites.
- .3 Dispose of excavated material at approved locations. Do not obstruct flow of surface drainage or natural watercourses.
- .4 Where required due to unauthorized over-excavation, fill areas with Aggregate Material, as directed by Departmental Representative, compacted to a minimum 90 percent of Maximum Dry Density in accordance with ASTM D698.

3.3 Trenching

- .1 Excavations in excess of the maximum allowable unprotected height of slopes identified in applicable regulations, Section 01 41 00 – Regulatory Requirements, are to be shored, cut back or protected by temporary protective structure.
- .2 Trenching activities to be in compliance with applicable safety regulations and requirements specified in Section 01 35 32 – Site Specific Health and Safety Plan.

3.4 Maintenance

- .1 Maintain finished surfaces in a condition in accordance with this Section until succeeding material is applied or until demobilization.

END OF SECTION

PART 1 GENERAL

1.1 Description

- .1 The Work specified in this section consists of providing all necessary labour, materials, and equipment, to excavate tailings from existing available Site Tailings Ponds and process for use as raw material in the production of Paste.
- .2 Available Tailings Pond investigations are provided in Appendix A. Additional investigations and sampling by the Contractor may be required to supplement this information in order to design and execute Contractors accepted Stope Complex Work Plans.
- .3 Tailings excavation and processing activities will commence in 2014, with the remainder of the Work completed in the 2015 and subsequent construction seasons.

1.2 Definitions

- .1 Tailings: Fine grained, mine ore processing, waste product deposited in Site Tailings ponds.
- .2 Processed Tailings: Tailings that have been excavated and processed as required to make suitable for use as feed material in Paste production operations.
- .3 Dewatering: The removal of water from open excavations, stockpiles, ponds and depressions.

1.3 Qualifications

- .1 Be thoroughly familiar with and knowledgeable about existing site conditions, scope of work and requirements of the specification.

1.4 Environmental and Personnel Protection

- .1 Environmental protection measures and supplies, including dust control and temporary erosion, sediment and drainage controls, are to be provided and operated in accordance with Section 01 35 43 - Environmental Procedures and the Contractors accepted Environmental Protection Plan
- .2 Protect existing dams, culverts and infrastructure, or any other components identified for protection by the Departmental Representative.
- .3 Suspend operations whenever climatic conditions are unsatisfactory for excavation or grading to conform with this specification.

1.5 Measurement for Payment

- .1 Include all direct costs for the processing of tailings for the purpose of paste production during the 2014 season under Unit Rate Payment Item 31 23 10-1 in the Basis of Payment Schedule.

The scope of work for Payment Item 31 23 10-1 - 2014 Tailings Production, is to include, but not necessarily be limited to:

- .1 Excavation of tailings from within available on-Site Tailings Pond extents.
- .2 Transport of excavated tailings to the Contractors Tailings processing, stockpiling or moisture conditioning locations.

- .3 Separation of debris from tailings as required to conform with Specifications and Contractors accepted Backfill Method Plan.
- .4 Screening, blending, moisture conditioning or otherwise processing of Tailings to provide Processed Tailings.
- .5 Dewatering of Tailings excavations as required for completion of work.
- .6 Hauling of Processed Tailings to stockpiles.
- .7 Survey of tailings storage area prior to stockpiling material.
- .8 Survey of stockpiled processed tailings material.

The scope of work for 2014 Tailing Production, Payment Item 31 23 10-1, does not include the following:

- .1 Tailings excavation and processing activities for paste production that occurs in 2015 and subsequent years.
- .2 Work that is included for payment elsewhere.

Payment Item 31 23 10-1 - 2014 Tailings Production will be measured and paid by cubic meter of stockpiled material measured by survey method.

- .2 Tailings excavation and processing activities that occur in 2015 and subsequent years for Paste production and delivery work will be not measured separately for payment and will be paid under Unit Rate Payment Item 31 23 23.33-1 -Paste Production and Delivery in the Basis of Payment Schedule.

The scope of work for Item 31 23 23.33-1 Paste Production and Delivery includes, but is not limited to:

- .1 Excavation of tailings from within available on-Site Tailings Pond extents.
 - .2 Transport of excavated tailings to the Contractors Tailings processing, stockpiling or moisture conditioning locations.
 - .3 Separation of debris from tailings as required to conform with Specifications and Contractors accepted Backfill Method Plan.
 - .4 Screening, blending, moisture conditioning or otherwise processing of Tailings to provide Processed Tailings.
 - .5 Dewatering of Tailings excavations as required for completion of work.
 - .6 Hauling of Processed Tailings to stockpiles or Paste production locations.
- .3 Interim restoration of all Tailings excavation areas prior to freshet each year of construction will be paid by Unit Rate under Payment Item 31 23 10-2 – Interim Restoration of Tailings Excavation Areas in the Basis of Payment Schedule. Payment Item 31 23 10-2 will be paid following inspection of all tailings excavation areas and confirmation by Departmental Representative that all tailings excavation areas have been restored to the requirements of the Specification, Water License, Land Use Permit, Regulations and AHJ.
 - .4 Final restoration of all Tailings excavation areas following completion of Stope Complex backfilling activities will be paid by Lump Sum under Payment Item 31 23 10-3 – Final Restoration of Tailings Excavation Areas in the Basis of Payment Schedule. Payment Item 31 23 10-3 will be paid following completion of all Stope Complex backfilling activities, inspection of all tailings excavation areas and confirmation by Departmental Representative that all tailings excavation areas have been restored to the requirements of the Specification, Water License, Land Use Permit, Regulations and AHJ.
 - .5 Except as indicated above, work under this section will not be measured. Include all costs in Item BOPC-1, Balance of Project Costs in the Basis of Payment Schedule.

Indicate cost of the Work of this section as a separate line item in the Contract Work Breakdown Structure (CWBS) specified in Section 01 32 18 Construction Progress Schedules – Bar (GANTT).

PART 2 PRODUCTS

.1 NOT USED

PART 3 EXECUTION

3.1 Background

- .1 The Tailings material sources available to the Contractor are the South, Central and North Tailings Ponds.
- .2 The Tailings Ponds are subject to freezing. Ice lenses can be anticipated.
- .3 Tailings grain size distribution changes from location to location and with depth in Tailings deposits.
- .4 Tailings in Tailings Ponds have moisture contents that likely increase with depth within the Tailings deposits. Staged excavation and/or stockpiling of tailings may be required to produce Tailings and Processed Tailings that are productively workable and transportable.
- .5 The Tailings Ponds receive surface runoff from rainfalls and snowmelt. Tailings Pond water collects at the northeast area of the South tailings Pond where it drains via a culvert through a dam to a drainage path in the Central Tailings Pond.
- .6 Tailings areas designated as available for excavation may contain buried Non-Hazardous and Hazardous Debris. Historical mine records do not allow for reliable identification of debris-free areas.
- .7 The lower portions of Tailings Pond deposits may consist of Tailings deposited on vegetation and organic materials.

3.2 Tailings Excavation

- .1 Perform excavation and processing as required to provide Processed Tailings of sufficient quality and quantity for Paste production.
- .2 Complete Tailings Pond investigation and testing as needed to verify suitability of potentially excavated material for Paste production.
- .3 Upgrade existing access roads or construct new access roads into, and within, the Tailings Ponds as necessary and as approved by Departmental Representative.
- .4 Supply, operate and maintain dewatering facilities as required to carry out the Work. Water is to be discharged into locations as approved by Departmental Representative.
- .5 Remove debris, obstructions, ice and snow from Tailings as necessary to supply suitable Processed Tailings.
- .6 Maintain excavated surfaces at a safe and stable slope during excavations
- .7 Maintain slopes as free draining and free of any ponded water.

- .8 Surface drainage and natural watercourses may be diverted to discharge to alternative location as approved by the Departmental Representative but are not to be obstructed.
- .9 The Departmental Representative is to be immediately informed of any Hazardous or potentially Hazardous Debris encountered during Tailings excavations.

3.3 Tailings Processing

- .1 Establish a Tailings screening and processing area, as required to produce Processed Tailings.
- .2 Produce Processed Tailings from the designated Tailings Pond source areas through processes including excavation, screening, blending and/ or moisture conditioning.
- .3 Place Tailings material that is found to be unsuitable back in designated Tailings Ponds.
- .4 Processed Tailings may be stockpiled at locations around the site proposed by the Contractor in accepted Stope Complex Work Plans and approved by the Departmental Representative.
- .5 Processed Tailings stockpiles are to be located on an engineered foundation that incorporates:
 - .1 Dust control measures
 - .2 Water run-on and runoff containment facilities
 - .3 Other environmental protection measures as required by Water License, Land Use Permit, Regulations and AHJ.

3.4 Handling of Excavated Non-Hazardous Debris

- .1 Separate all Non-Hazardous Debris from potentially Hazardous materials.
- .2 Transport and stockpile Non-Hazardous Debris removed from Tailings deposits during Tailings excavation to either:
 - .1 An existing location within the Giant Mine Site that contains stockpiled and organized or accumulated Non-Hazardous Debris or,
 - .2 A suitable location proximal to the Stope Complex backfilling operations where stockpiled Non-Hazardous debris will have the following attributes:
 - .1 Will not interfere with existing Giant Mine operations or equipment movements.
 - .2 Is adjacent to an existing Site road or equipment turn-out.
 - .3 Is accessible by wheeled excavation, loading and trucking equipment.

3.5 Tailings Excavation Area Restoration

- .1 Dispose of Paste mixed but not delivered to Stope Complexes within designated Tailings Pond extents.
- .2 During and following excavation and removal of required Tailings, regrade, re-slope, backfill or otherwise re-contour the Tailings excavation areas to promote positive drainage and to leave them safe condition and in compliance with permits and licences.

- .3 Tailings excavation areas are to be restored to meet the requirements of the Water License, AHJ, regulations, applicable Federal and Territorial guidelines and these Specifications.
- .4 Prior to freshet each year, and upon completion of Tailings excavation work:
 - .1 Remove Contractors vehicles, equipment, materials, waste materials and debris from the Tailing excavations.
 - .2 Grade Tailings excavation surfaces such that slopes are no steeper than 3H:1V.
 - .3 Grade Tailings excavation surfaces such that areas of ponded water are restricted to less than 10m² in area.
 - .4 Grade Tailings excavation surfaces to provide a gradual overall slope, rather than an undulating, hummocky topographic surface.
 - .5 Re-establish gravity drainage within the Central Tailings Pond
 - .6 Decommission unnecessary Contractor-installed roads and structures such as, but not limited to, culverts, temporary sanitation facilities, shops, work areas, and others as directed by Departmental Representative.
 - .7 Grade Tailings excavation surfaces to facilitate water flow and management by Care and Maintenance contractor.
 - .8 Implement and execute other Tailings Ponds restoration measures required by Water License, Land Use Permit and AHJ.

3.6 Spilled Tailings Removal

- .1 Prior to demobilization from Site, scrape, excavate or otherwise collect all Tailings, Processed Tailings and mixed but undelivered Paste spilled onto haul roads, stockpile locations, paste production areas, Borehole locations and other areas impacted by Work activities that lie outside available Tailings Pond extents..
- .2 Placed all collected Tailings, Processed Tailings and recovered spilt tailings material within designated Tailings Pond extents and grade to meet restoration requirements of this Section.

END OF SECTION

PART 1 GENERAL

1.1 Description

- .1 Supply all design effort, equipment, labor and materials to mix Paste components and deliver resultant Paste as Stope Complex backfill and barricade construction material, as detailed in Specifications, Contractors accepted Backfill Method Plan and applicable Contractors accepted Stope Complex Work Plan.

1.2 Related Information

- .1 Conceptual Mitigation Plans.
- .2 Technical Package including underground workings drawings, plans and sections.
- .3 3D Underground Workings SURPAC model.

1.3 Definitions

- .1 Paste: Stope Complex backfilling and barricade construction material capable of flowing and comprising a mixture of on-site Processed Tailings, water, binding agent and other constituent additives required to meet Specification criteria and the requirements of the Contractors accepted Backfill Method Plan and Contractors accepted Stope Complex Work Plan. Paste is to harden in less than 24 hours without the need for compaction in layers and has a minimum 28 day compressive strength of 0.1 MPa (100 kPa). The exact strength, flow, set, and permeability performance properties of Paste is to be designed and determined by the Contractor and detailed in the Contractors Backfill Method Plan and Stope Complex Work Plans.
- .2 Conventional Barricade: Wood, metal, concrete or masonry blockage of an underground mine workings conduit, accessed via underground workings, constructed to meet NWT Mines Act requirements and erected to prevent migration of Stope Complex backfill Paste.
- .3 Remote Barricade: Blockage of an underground mine workings conduit to prevent migration of Stope Complex backfill Paste and created remotely from conduit using delivery of Paste via Borehole and/ or underground delivery piping.
- .4 Site: The Giant Mine property, with boundaries as shown on Drawing C-01
- .5 Conceptual Mitigation Plan: Stope Complex backfilling plans developed by Golder Associates, and included in Appendix A that detail the potentially most efficient, approach for Paste backfilling of Stope Complexes, given the current knowledge of underground workings.
- .6 Leakage: Paste delivered to designated Stope Complexes but not contained within the required Paste backfill volume boundary of the designated Stope Complex.
- .7 Unaddressed Leakage: Paste meeting the following conditions:
 - .1 Delivered to designated Stope Complexes.
 - .2 Not contained within the required Paste backfill volume boundary of the designated Stope Complex.
 - .3 Flowing beyond the required Paste backfill volume boundary of the designated Stope Complex concurrently with Contractor Backfill monitoring network not showing increasing Paste backfill levels within the Stope Complex.

- .4 Flowing beyond the required Paste backfill volume boundary of the designated Stope Complex concurrently with either:
 - .1 Contractor not performing Barricade construction measures or leakage control measures to address leakage event, as detailed in the Contractors accepted Backfill Method Plan, or
 - .2 Contractor performing Barricade construction measures or leakage control measures, as detailed in the Contractors accepted Backfill Method Plan but which have been determined by the Departmental Representative, and communicated to the Contractor, to be ineffective and requiring modification.

1.4 Description of Work

- .1 Design, supply, commission, operate and maintain a Paste production facility sufficient to produce Paste in the quantity and quality required to backfill the designated Stope Complexes to the requirements of this Specification and the criteria detailed in Table 1.4.1. The facility is to include a system to measure volume of Paste delivered to the designated Stope Complexes as a basis for payment. The facility is to include systems to measure the quantity of cement and/or other additive used.

Table 1.4.1: Stope Complexes to be Backfilled

Stope Complex to be Backfilled Under this Contract	Stope Complex Backfill Volume	Stope Complex Specific Backfill Completion Criteria
1-18 Stope Complex	2000	1/20th crown pillar thickness (water license requirement) with a flat paste profile.
B3-06 Stope Complex	5000	Both east and west limbs of the B3-06 South / Upper stope void must be filled to the base of where the arsenic bulkhead raises intersect the void with a flat paste profile - see conceptual mitigation plan.
A3-70 Stope	13000	Backfill required to within 1m of the high point of the back (top) of the void with a flat paste profile.
B3-10 Mid Complex	19000	Backfill void to within 2m of the high point of the back (top) of voids (up to 3 separate areas) with a flat paste profile.

- .1 Supply all material constituents and additives required for Paste production.
- .2 Supply Processed Tailings as raw feed to the Paste Production Facility as described in Section 31 23 10 Tailings Excavation and Processing.
- .3 Design and implement delivery of Paste to each Stope Complex in the most efficient approach to achieve requirements of the Specifications. Contractor is not necessarily required to follow all details of backfilling approach described in Conceptual Mitigation Plan.
- .4 Drill any additional Boreholes required to execute Contractors Stope Complex Work Plans in accordance with Section 02 02 00 - Drilling.
- .5 Design and conduct a sampling and testing protocol for the Paste production and delivery to demonstrate compliance with Specifications and Contractors accepted Backfill Method Plan.
- .6 Establish and implement monitoring methods to track progress of Paste delivery and Stope Complex backfilling.
- .7 Design and install Barricades to contain Paste backfill where required.
- .8 Communicate and liaise with Site Care and Maintenance Contractor to design suitable, workable and achievable barricades using existing underground

infrastructure to meet requirements of accepted Backfill Method Plan and Stope Complex Work Plans. Site Care and Maintenance Contractor will provide safe access to conventional barricade locations, where safe to do so. Note that repairs to existing mine infrastructure will be undertaken by the Site underground care and Maintenance contractor.

- .9 Install controls in the Paste piping distribution system to avoid Paste recirculation or blockages.
- .10 Provide a means of remote dumping of Paste and clearing of lines should blockages occur. Paste delivery Boreholes and piping into the underground workings are not to be flushed with water.
- .11 Barricade Design and as-built drawings are to be stamped by the Contractor's professional engineer in accordance with NWT Mines Act and NAPEG requirements.
- .12 Provide all labour, equipment and materials required to coordinate, monitor and deliver Paste to the designated areas.
- .13 Perform underground inspections and monitoring continuously to observe and record Paste backfill and barricade conditions and ensure actual conditions match expected conditions.
- .14 Install a means of venting displaced air in voids being filled and monitor for proper venting.
- .15 Identify where there is the possibility of arsenic trioxide dust being ventilated during backfill Paste placement such that venting exhaust air is can be monitoring by others as part of Site-wide air quality monitoring.

1.5 Submittals

- .1 Submit in accordance with Section 01 33 00, Submittal Procedures.
- .2 Manufacturer's Certificates: Submit manufacturer certificates for portland cement or other binder constituents or other additives for each constituent Paste batch.

1.6 Stope Complex Backfilling Completion Criteria Applicable to All Stope Complexes

- .1 Backfill each designated Stope Complex until backfill monitoring network observes, records and demonstrates that:
 - .1 Paste has not, and likely will not, flow into areas of the underground mine workings identified as not to be impacted or contacted by Paste.
 - .2 Stope Complex voids have been filled sufficiently that remaining airspace in the void is no greater in thickness than 1/20th of the minimum thickness of the crown pillar above the void.

1.7 Site Conditions

- .1 Be familiar with ground conditions and supplied information for all potential tailings excavation areas and all Stope Complexes designated for backfilling.
- .2 Suspend operations whenever climatic conditions are unsatisfactory for Work to conform to Specifications.
- .3 Prepare site for Paste production and delivery in accordance with Section 02 41 23 – Debris Removal.

1.8 Protection

- .1 Prevent damage to benchmarks, existing buildings, surface or underground service or utility lines which are to be used to support ongoing mine activities until such time as

they are to be demolished. Immediately repair any damage to the above or replace the above in the event of damage, at no cost to Departmental Representative.

- .2 Protect archaeological sites from construction and construction traffic.
- .3 Protect unanticipated archaeological resources encountered during construction, suspend all activities in that area and notify Departmental Representative immediately.
- .4 Protect and do not disturb spawning beds and breeding grounds as identified or required by the Authorities Having Jurisdiction (AHJ) during construction.
- .5 Environmental protection measures are to be in accordance with the Contractors accepted Environmental Protection Plan and Section 01 35 43 - Environmental Procedures.

1.9 Contractors Paste Sampling and Testing Requirements

- .1 Perform Quality control testing of paste constituents and mixed Paste as detailed in Section 01 29 83 – Contractors Testing Procedures

1.10 Measurement of Payment

- .1 Include all direct costs for the provision of Paste production components, mixing of Paste components and the deliverance of resultant Paste into designated Stope Complexes to meet the requirements of this Specification, the Contractors accepted Backfill Method Plan and the Contractors accepted Stope Complex Work Plans under Unit Rate Payment Item 31 23 23.33-1 in the Basis of Payment Schedule. The scope of work for Payment Item 31 23 23.33-1 is to include, but not necessarily be limited to:
 - .1 Excavation, processing and handling of on-site, in-situ mine tailings and Processed Tailings.
 - .2 Loading and hauling of Processed Tailings from excavation or conditioning sites to Paste production locations,
 - .3 Stockpiling of Non-Hazardous Debris materials screened and rejected from Tailings.
 - .4 Supply of water to the Paste Production operations locations.
 - .5 Supply of binder and other Paste constituents to the Paste Production operations locations.
 - .6 Handling and mixing of Paste constituents to form Paste that meets the requirement of this Specification and the Contractors approved Backfill Method Plan and the Contractors approved Stope Complex Work Plans,
 - .7 Delivery of Paste via pumping or gravity feed to surface and underground Boreholes.
- .2 Payment Item 31 23 23.33-1 will be measured for payment by cubic metre of Paste delivered into a Stope Complex and the volume for payment will be determined by the Departmental Representative through values recorded by Paste production and delivery mixing and pumping equipment, verified by underground backfill monitoring progress measurements and supported by tailings excavation and haulage data. Calibration of Paste production and delivery flow recording equipment is to be conducted as detailed in this Section.
- .3 Payment Item 31 23 23.33-1 will apply to all Paste delivered into designated Stope complexes without differentiation between different Paste mixtures. Paste delivered into designated Stope Complexes to serve as bulk backfill, remote barricade construction material or leakage control material will all be measured and paid under Payment Item 31 23 23.33-1.

- .4 Include all direct costs for initial establishment of Paste production equipment and delivery equipment at each of the designated Stope Complex under the corresponding Lump Sum Payment Items 31 23 23.33-2 through 31 23 23.33-5 – Initial Establishment and Paste Production at Stope Complex. Payment Items 31 23 23.33-2 through 31 23 23.33-5 will only be paid once, upon initial establishment at the designated Stope Complex.
- .5 The erection of barricades remotely placed using Paste delivered via Borehole and/ or underground piping or erection of conventional wood, muck, metal or concrete barricades and any required instrumentation by crews and equipment within underground mine workings to meet the requirements of this Specification, the Contractors accepted Backfill Method Plan and the Contractors accepted Stope Complex Work Plans will be measured by the number of barricades installed and will be paid under Unit Rate Payment Items 31 23 23.33-6 through 31 23 23.33-9 – Installation of Conventional or Remote Barricade. The scope of work for Payment Items 31 23 23.33-6 through 31 23 23.33-9 is to include all direct design, material and labour costs to access barricade locations and erect barricades according to Contractors barricade design.
- .6 Payment for the erection of Conventional or Paste Barricades under Payment Items 31 23 23.33-6 through 31 23 23.33-9 will be made upon submission to, and acceptance by, the Departmental Representative of recorded Paste backfill monitoring verification that Paste is backfilling voids on one side of the barricade but not flowing past the barricade location.
- .7 Include all direct design, labour, equipment and other costs for establishment, operation and maintenance of a backfill and barricade monitoring network under Lump Sum Payment Items 31 23 23.33-10 through 31 23 23.33-13 -Stope Complex Backfill Monitoring in the basis of Payment schedule.

Lump Sum price to include, but not necessarily be limited to:

- .1 Operation, monitoring and recording of multiple underground and down drill hole cameras, CMS or other monitoring technique(s),
 - .2 Underground inspections and recording of backfilling progress by Contractors crew,
 - .3 Coordination with other underground contractors on site to install and monitor monitoring equipment and associated lighting plants
 - .4 Coordination with Departmental Representative to clearly demonstrate and document progress of stope complex backfilling.
- .8 The following work items will be incidental to the work described in this Section, and will not be measured separately:
 - .1 Handling and disposal of paste mixed but not delivered to Boreholes.
 - .2 Testing, inspection, calibration and verification of volume or flow measurement devices on Paste production equipment.
 - .3 Measurement and calculation of Paste constituent volumes and weights for progress reporting or Contractor convenience purposes.
 - .9 No payment will be made for:
 - .1 Unaddressed Leakage
 - .2 Rejected material.
 - .3 Surplus material.

- .4 Paste delivered to Boreholes or underground piping that is not shown to meet the requirements of this Section.
- .5 Placement of Paste beyond the limits and depths required to meet this Specification, unless specifically authorized by Departmental Representative.
- .10 Except as indicated above, work under this section will not be measured. Include all costs in Item BOPC-1, Balance of Project Costs in the Basis of Payment Schedule. Indicate cost of the Work of this section as a separate line item in the Contract Work Breakdown Structure (CWBS) specified in Section 01 32 18 Construction Progress Schedules – Bar (GANTT).

PART 2 PRODUCTS

2.1 Materials

- .1 Paste: Following mixing of constituents, delivered to Boreholes Paste with following attributes:
 - .1 Contains no ice or frozen materials.
 - .2 Contains no organic materials.
 - .3 Contains no Hazardous Materials.
 - .4 A minimum temperature of +2°C when delivered to underground workings.
 - .5 A minimum 28 day Uniaxial Compressive Strength of 100kPa when subject to ASTM C39.
 - .6 Does not segregate or liquefy following delivery into Stope Complexes before achieving required 28 day strength.

PART 3 EXECUTION

3.1 Paste Production and Borehole Drilling Site Preparation

- .1 Site Preparation
 - .1 Prepare Paste Production and Borehole Drilling locations in accordance with Section 01 52 00 Construction Facilities.
 - .2 Remove Non-Hazardous waste and debris from the proposed extent of the Paste production areas and Borehole drilling locations prior to construction of Aggregate Material pads or establishment of equipment, in accordance with Section 02 41 23 Debris Removal.

3.2 Provision of Water to Paste Production

- .1 All water used in Paste production is to be sourced in accordance with Water License.
- .2 On-site Polishing Pond water is to be used as the water source for Paste production, unless alternative sources are proposed by Contractor, acceptable to Water License and approved by Departmental Representative

3.3 Site Access and Haul Roads

- .1 Construct site access roadways, turn-outs and shoulder berms as required by the Contractors Stope Complex Work Plans to complete the Work to applicable regulations including, but not limited to, the NWT Mine Health and Safety Act.

3.4 Survey

- .1 Following completion of activities at each Stope Complex, survey the final ground conditions including constructed pad topography, drilled Borehole locations and orientations and the extent of any remaining debris stockpiles.
- .2 Integrate post-completion survey information into Stope Complex completion documents.
- .3 Conduct 3D survey of Stope Complexes during the last stages of Paste backfilling as detailed in this Section and Section 01 71 01 Survey Requirements.

3.5 Paste Delivery Locations and Delivery Sequencing

- .1 Existing Boreholes into voids within the designated Stope Complexes are available to the Contractor for Paste delivery and/or backfill progress monitoring purposes. Additional Boreholes into Stope Complex voids are to be drilled during early 2014 and will also be available to the Contractor.
- .2 The locations and orientation of the existing and to-be-completed-in-early-2014 Boreholes are shown on accompanying technical package drawings.
- .3 Contractor to plan, direct and execute backfilling of Stope Complex voids to meet Specifications and in priority sequence detailed in Section 01 11 00 – Summary of Work

3.6 Paste Delivery Execution

- .1 Backfill Stope Complex voids with Paste that has been mixed to consistencies, strengths and constituent proportions detailed in the specifications, Contractors accepted Backfill Methodology Plan, Contractors accepted Stope Complex Work Plans or as agreed to, in writing, by the Departmental Representative.
- .2 Paste distribution lines are not to be flushed with water into the underground workings being backfilled. Borehole and underground distribution lines must keep flush water entering underground workings.
- .3 Air venting from Stope Complexes to the surface environment during backfilling operations is to meet air quality standards detailed in the attached Environmental Monitoring Plan.

3.7 Paste Delivery Measurement Device Calibration

- .1 Paste pump flow measurement and recording equipment is to be tested and recalibrated at a frequency equal to, or more frequent than, once per week, with calibration results provided to the Departmental Representative.
- .2 Details of Contractors calibration testing frequency and methods are to be detailed in Backfill Method Plan.

3.8 Paste and Paste Constituent Temperature Monitoring

- .1 Measure and record the temperature of the Processed Tailings entering the Paste mixer at least once per hour during Paste pumping.
- .2 Measure and record the temperature of Paste delivered to Boreholes or underground piping at the commencement of pumping whenever the paste mix design is changed.

- .3 The temperature of the Paste delivered to Boreholes or underground piping is to be measured and recorded every 15 minutes during Paste pumping when:
 - .1 When the ambient air temperature of Yellowknife is less than +5°C, as reported by Environment Canada.
 - .2 When the measured temperature of Processed Tailings entering the Paste mixer is less than +5°C.
 - .3 When the measured temperature of water entering the Paste mixer is less than +5°C.

3.9 Barricades

- .1 Install and erect Conventional or Remote Barricades required to meet Specifications and Contractors accepted Stope Complex Work Plan.
- .2 Conventional Barricades constructed from wood, muck, metal, concrete, masonry, foam or other non-Paste medium are to be designed and constructed to meet requirements of NWT Mines Act and/ or to the satisfaction of NWT mines Inspectors.
- .3 Barricade to include some provision for water bleed release and air release/ breather venting.

3.10 Stope Complex Backfilling and Paste Barricade Monitoring

- .1 Perform underground inspections and monitoring continuously to observe and record Paste backfill and barricade conditions to verify that actual conditions match expected conditions.
- .2 Continuously record monitoring results to track and assess progress backfilling of Stope Complexes against backfilling completion criteria.
- .3 Cavity Monitoring Surveys (CMS), or similar 3D survey technique, is to form part of the Backfill Monitoring program. A CMS scan is to be conducted prior to placing the final lift of backfill Paste in a Void. This CMS scan will provide a measure of the volume of the void still to fill and confirmation that the void is backfill to the required completion criteria.
- .4 If selected as monitoring equipment, and detailed in the Contractors accepted Backfill Method Plan and Stope Complex Work Plans, still or continuous image cameras are required to:
 - .1 Produce a signal and image(s) that can be monitored and recorded on screen using both hard-wired and wireless connections between camera and screen.
 - .2 Produce a signal that is viewable and recordable in a widely used, non-proprietary format.
 - .3 Be erected in conjunction with a scale bar in the camera frame. This scale bar is to be marked clearly in 0.25 metre increments with bold marking and positioned as far into the camera view area as practical and safe, such that the backfilling progress of the void observed by the camera can be easily and clearly monitored and recorded.
 - .4 Be installed as high in the void to be filled as possible so that the monitoring provides a reliable record of void filling throughout the filling process.

END OF SECTION