



NAIN WIND MICRO GRID

2025 Civil Works - WTG Road, Pads, and Foundations **Schedule 2 – Owner's Statement of Requirements**

22-Apr-2025

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Revision Tracking Table

TABLE 1: REVISION TRACKING TABLE

Version	Author	Date	Changes

1 Project Description

1.1 Project Partners

The Nunatsiavut Government, a regional Inuit Government, in collaboration with independent power producer Natural Forces, seeks to take forward the Nunatsiavut Energy Security Plan through the planning and construction of the Nain Wind Micro Grid Project. The Project will generate renewable power to reduce the community's reliance on diesel generated electricity and be a driving force for sustainable economic development in the region. Further, the Project will serve as a demonstration of the potential for renewable energy in other Nunatsiavut communities.

1.2 Project Location

The Project is located in the Inuit community of Nain, Nunatsiavut. Nain is located on the north-east coast of Labrador and is the northern most permanent settlement in the province of Newfoundland and Labrador. Nain is not accessible by road, only by air or sea. Nain is approximately 1 hour and 10 minutes by air from Goose Bay International Airport. Nain is also serviced by a weekly passenger ferry service during the ice-free season. The passenger ferry (MV Kamutik W) details can be found at:

<https://labradormarine.com/routes-and-fares/lcs-routes-and-fares/lcs-freight-services/>.

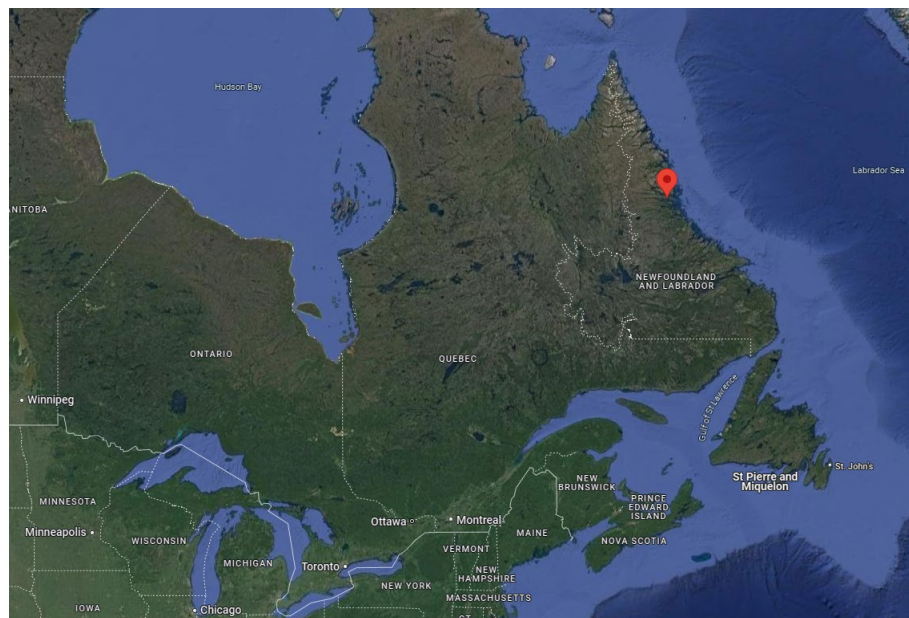


Figure 1: Nain location within Canada

The system includes two wind energy converters (WEC) just outside the main township perimeter to the northwest of the townsite. A Battery Energy Storage System (BESS) is to be located near the premises of the existing diesel plant (southwest of the townsite), along with a microgrid controller to interface with the WEC, BESS, and the diesel plant. A 4.7 km interconnection line connects the WEC site and the BESS sites. Figure 2 below shows the project layout within the community of Nain.

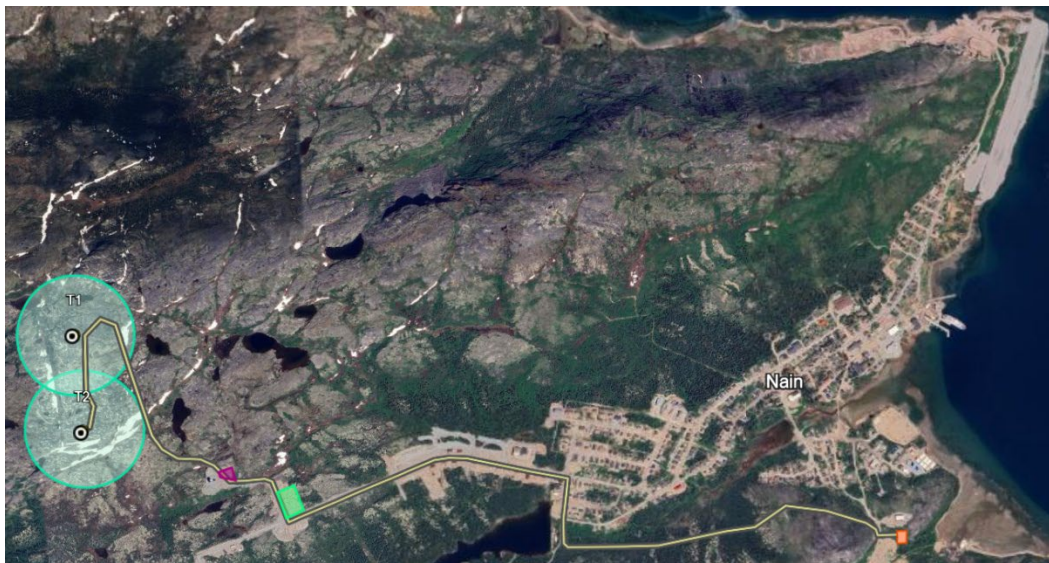


Figure 2: Nain Wind Microgrid Project Layout

1.3 Project Overview

The Nain Wind Micro Grid Project is a greenfield windfarm and energy storage system project that will connect to Nain's existing electrical grid. The clean energy plant consists of two (2) Enercon E82 EP2 E4 2.35 MW wind turbine generators coupled with a 2.5 MW, 5.0 MWh Battery Energy Storage System (BESS), to produce up to 3.0 MW of instantaneous clean electricity.

The project requires construction of a site access road, two (2) crane/assembly pads, and two (2) wind turbine foundations in advance of the wind turbines installation. Wind turbine components and the required lifting equipment will arrive via marine transport (barge) ahead of the next construction season in 2026 for offloading and installation.

Other major project components include a new substation adjacent to NL Hydro's existing diesel generator plant, which houses the BESS and P&C equipment. The wind turbine generators connect to the BESS substation and utility interconnection point via a newly constructed 4.16 kV collector line. These installations and the associated civil works for collector line and the BESS substation are planned for 2026.

Project construction is planned as:

2025: Critical path civil work – roads, pads, and turbine foundations.

2026: Turbine erection, BESS substation, collector line, and start of commissioning.

Refer to **Schedule 5d** for the planned project schedule for 2025.

1.4 Definitions

BoP	Balance of plant
CDN	Canadian Dollars
Subcontractor	Civil and Foundation BOP Subcontractor as defined in the Contract Agreement
BESS Subcontractor	Under a separate BESS Contract, role involves installation of the battery energy storage system
Collection System Subcontractor	Under a separate Collection System Contract, role involves construction of the 34.5kV collection system work
Turbine Erection Subcontractor	Under a separate Tower Erection Contract, role involves offloading, pre-assembly, and erection of the wind turbine
Utility Company/NLH	Newfoundland and Labrador Hydro
Principal Contractor	Natural Forces Construction or Project Co, as defined in the Contract Agreement.
Engineer of Record	Prime Contractor or Owner's contracted design engineering firm responsible for project design elements.
Employer/Owner's Representative	Joe Purser of Natural Forces Construction Inc., as defined in the Contract Agreement.
Owner	Nunatsiavut Government in partnership with Natural Forces
Substantial Completion	Date of issue of certificate of substantial completion pursuant to the Contract
TSA	Turbine Supply Agreement
Turbine electrical subcontractor	Electrical subcontractor under Turbine Erection contract. Roles include turbine wiring and foundation ground grid installation.
Turbine Supplier	Enercon GmbH / Enercon Canada Inc.

The Project	Nain Wind Micro Grid
Work	Roads, Turbine Pads, and Turbine Foundations defined in this Contract
WTG	Wind Turbine Generator (the wind turbine)
WEC	Wind Energy Converter (the wind turbine)

All capitalised terms and abbreviations, unless explicitly defined in this document, shall be referred to as defined in the conditions of contract to which this document forms **Schedule 2**.

1.5 Description of Work

WTG Roads, Pads, and Foundations subcontract works (hereafter referred to as the Work) is the critical path civil work essential for WTG installation scheduled for the following year.

The Work consists of construction of two (2) distinct scopes:

Construction of WTG Roads and Pads

The WTG road is built for WTG's site access. This road is designed to allow for transportation of oversize and heavy WTG components up to the WTG erection sites from Nain. It also serves as the permanent site access road to remain during the 25 (+) year operational and maintenance period of the project.

Construction of the WTG road starts from project limits at/near the intersection of Trouser Lake Road and Water Tower Access Road. Existing roadway upgrades are required at this intersection, with existing roadway re-grading required per the IFT drawings in Section 4. New roadway construction starts after the water tower pad at approximate station 0 + 320, right up to both WTG pads.

The new road construction consists primarily of bedrock cut and fill excavations where blasting operations will be required, after the light vegetation, trees, and organic soils have been cleared, grubbed, and stripped. The road profile built by excavated materials is topped by a 150 mm minus rockfill subgrade layer and granular road topping layer, which requires final road grading to allow for proper driving surface and water drainage. Road construction will require installation of CSP culverts, guide rails, and vehicle pull out lanes as per the design drawings.

The two (2) WTG pads adjacent to the WTG road are constructed for multi-purpose use including WTG component pre-assembly, crane assembly, lifting operations, and work area laydowns. They also serve as engineered crane pads for lifting operations. It is essential that pad construction meet the design specifications to ensure the correct pad dimensions, grading, and bearing capacity for heavy lift operations.

The WTG pads, like WTG roads, consists of bedrock cut and fill excavations utilizing blasting following removal of and light vegetation and organic soils. The pads subgrade and final grade materials are the same as WTG road materials and associated placement lifts. Since the WTG foundations located on these pads are also a part of this RFP, the Subcontractor

shall plan accordingly for level bedrock excavation at the foundation perimeters while constructing the WTG pads. WTG pad perimeters will require guide rail installation as per the design drawings.

In addition, the Subcontractor will excavate a buried electrical cable trench from the WTG foundations outer perimeter to the collector line point of surface entry for each turbine location. While the exact design details are still being finalized, the Subcontractor shall assume a cable trench of 1.2 m depth by 0.8 m width x 35 m length for each WTG pad, with an estimated 47 m³ of rock excavation. The buried cable installation and possible earth grounding system installation will be coordinated with the subcontractor during the WTG pads construction phase through the Principal Contractor's interface planning with the Subcontractor and other subcontractors responsible for these scopes.

The general requirements for construction of WTG roads and pads will require the Subcontractor to complete the following as per the design drawings and technical specifications:

- Survey and clearly mark the clearing and construction limits.
- Manage construction zone signage and roadway traffic management.
- Clear and mulch all vegetation within the clearing limits, harvesting any merchantable timber.
- Upgrade the existing site roads within the project limits (road widening, utility pole relocation, re-grading to meet Enercon transport specifications, etc.).
- Install silt fence in any drainage run-off areas to ensure run-off prevents silt from entering any streams, brooks, or other water bodies.
- Strip and grub all organic material within the roadway and pad construction boundaries. Organic materials, if any, to be stockpiled at an agreed location within the project boundaries, and shall not be stockpiled at a height greater than 3 m.
- Excavate new road and pad cut sections with efficient and modern rock excavation techniques (drill and blast, excavator, etc)
- Utilize excavated rock to build-up roadway and pad fill sections sub-grades. Oversize rock (> 500 mm) shall be utilized as fill in accordance with the technical specifications.
- Install CSP culvert in locations indicated on the design drawings.
- Excavate and shape roadway ditching as per the design drawings.
- Place and compact material lifts per technical specifications and agreed construction methods.
- Import, place, and compact 150 mm minus subgrade material.
- Excavate the WTG foundation perimeters and necessary work zone buffers to allow for foundation construction (formwork, formwork anchors, personnel access, etc.). Foundation areas shall be excavated to sound, unfragmented bedrock, and as level as practical to minimize levelling slab requirements.
- Excavate cable trench at each WTG pad.
- Install guide rails.

- Import, place, compact, and grade granular road and pad topping material. Ensure areas are graded to prevent water pooling.
- Reinstatement all disturbed areas not required for the construction and operation of the project to their original state, including topsoil and reseeding, if required.
- Maintain roadway surface grading and dust control throughout construction period.

Construction of WTG Foundations

Each WTG pad requires a WTG foundation to be constructed to support the WTG itself. These WTG foundations are the same in design, with conduit orientational indexing to be confirmed by the Principal Contractor prior to the start of construction.

Figure 3 provides the coordinates for each WTG Foundation:

WEC-No.	PSP/WBS-Element	Coordinates	Elevation [m above sea level]
T1	01	East: -61.739119 North: 56.54406	236.4
T2	02	East: -61.738728 North: 56.541022	245.9

(Co-ordinate system used in table: UTM20 NAD83)

The Parties agree on a tolerance +/-3 m of the co-ordinates stated in the table above. Any bigger deviations shall be agreed by the Parties in due time prior to commencement of construction activities for the civil or Electrical Infrastructure related to the relevant WEC(s).

Figure 3: Nain WTG tower centreline coordinates

Both WTG foundations are designed as reinforced concrete rock anchor foundations. It is important to note the WTG foundation design included in Section 4 of the RFP is a superseded design, which is currently being redesigned due to a differing tower height and wind class rating than the original design. The revised foundation design being completed will be a similar reinforced concrete rock anchor design, where only quantity growth is expected due to some higher foundation loads resulting from the revised equipment selection.

Specifics of Subcontractor responsibilities are detailed in the General Notes section of the foundation drawings in Section 4 of the RFP.

The subcontractor is required to procure all the materials and equipment required to perform the construction of both foundations. The Principal Contractor has planned for the preliminary detail surrounding longer lead items such as the anchor bolt cage, rock anchors, and reinforcement steel to be ready for Subcontractor use for procurement within 10 working days of contract award.

Once the foundations have been excavated to the sub-grade elevation as specified on the design drawings, the Subcontractor shall complete the following requirements before and throughout the construction of each foundation:

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- Perform a trial concrete batch, taking all necessary measurements and casting concrete cylinders. Cylinders to be tested in advance of foundation concreting to ensure the concrete specifications are met.
 - Foundation footprints shall be scaled to remove and loose rock fragments, then cleaned by high pressure water or other approved means to remove all loose materials.
 - Upon inspection and approval of the prepared rock foundation by the Principal Contractor's Consultant, a levelling pad shall be constructed from lean concrete to make a level work surface.
 - Remove the top laitance layer of the levelling slab by green-cutting or other means of scarification.
 - After the levelling slab had cured sufficient to support drilling equipment, the rock anchor drill holes shall be laid out and drilled to the design requirements.
 - The foundation centreline shall be marked and the tower anchor bolt foundation cage supporting legs can also be positioned and installed.
 - The rock anchor holes shall be water pressure tested to ensure acceptable leakage, or otherwise cleaned, grouted and redrilled until acceptable leakage is measured. Rock anchors shall then be installed with hole centralizers, followed by grouting of the rock anchors from the bottom-up to the top of the levelling slab via grout tube and gravity flow. Ensure to cast a minimum number of grout cubes are per the General Notes for laboratory testing.
 - Install reinforcement steel as the approved reinforcement erection drawings. Ensure reinforcement steel is chaired above the levelling slab at the required design height with chairs at equal or greater compressive strength than the foundation concrete design strength. Ensure reinforcement steel is tied at the required intervals with the correct wire grade and size.
 - Install all embedment items (anchor bolt cage, embedded plates, rock anchor sleeves, electrical conduits, drainage pipe, grout template rings, etc.) at the correct dimensions, orientations, and elevations. Once in the correct position, install securement means to ensure the embedded items don't shift or float during concreting.
 - Install formwork as per approved formwork drawings, ensuring the appropriate spacing is kept between formwork and the reinforcement steel. Ensure uprights, walers, tiebacks, and other temporary supports components are of the correct dimensions, material specifications, spacing, and installation method. Apply form release agent to the inner formwork skin to ensure form does not stick to concrete foundation prior to removal.
 - Complete final dimensional checks on formwork while tightening all bracing.
 - Install thermocouples per design specifications, with wiring connections secured and protected from damage.
 - Clean all elements to be concreted thoroughly and remove all washdown debris and excess water.
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- Ensure all surfaces to be covered with concrete are wetted down and within the specified temperature range prior to concreting.
 - Place concrete per the approved placement methods, ensuring that lift heights are respected, and any excess water is not vibrated into the mix. Work the next layer in the same direction as the previous layer to ensure consolidation time between layers is being minimized. Note that a cold joint is not permitted unless approved in advance by the Principal Contractor and Owner's Representative (Owner's Engineer).
 - Measure and record concrete parameter as per the General Notes requirements. Cast a sufficient number of cylinders for testing as per the design General Notes and store them as per CSA requirements.
 - Slope top of foundation and finish as per the design requirements.
 - Ensure placed and finished concrete is cured via curing compound or wet curing for the curing period, and within the specified temperature range.
 - Strip formwork once the concrete has met at least 10 MPa compressive strength, ensure to cure the exposed surface and to maintain the acceptable temperature range at the surface.
 - Complete any necessary concrete repairs as per approved methods.
 - Grout rock anchors forming tube and embedded plate bearing areas.
 - Tension rock anchors once the Owner's Representative (Owner's Engineer) has reviewed and accepted the rock anchors report and the grout and concrete below the rock anchor embedment plate has reached a minimum 70% compressive strength, and the rock anchor grout in the bonding zone has reached full compressive strength.
 - Perform the required proof and performance testing of rock anchors and record the results and have them witnessed by the Principal Contractor or designate.
 - Install the surface hardware for rock anchors and protective hardware for the foundation cage anchor bolts. Note that the WTG erection contractor with complete tower bolt tensioning and tower underside grouting in their scope.
 - Backfill foundation as per the design requirements with the proper backfill material, lift height, and compaction. This will be coordinated with installation of the buried cable by others

The Principal Contractor may require a sacrificial rock anchor installation and pull test in advance of foundation construction to verify geotechnical assumptions. If this is determined as required, the Principal Contractor will inform the Subcontractor of the requirement during the Subcontractor's scheduled procurement period to ensure sufficient additional material is requested.

2 Preliminaries

2.1 Document Delivery Schedule

All Documentation listed below shall be provided by the Subcontractor to the Owner's Representative in the timeframe set out below.

2.1.1 Included with RFP Submission

- Completed Schedule 3 – Proposal Form
- COR Accreditation Certificate from NLCSA or equivalent
- Valid WCB clearance letter (Proof of Good standing) with WorkplaceNL
- Company Health and Safety Policy
- Completed Schedule 5a – HSE Contractor Evaluation (also to be completed and submitted by any subcontractors employed by Subcontractor)
- Details of relevant experience, project team, and a detailed equipment list for execution of the Works
- Completed Schedule 7 – Inuit Content Form
- Schedule of rates for unit labour, plant, and equipment costs - This will be included in Schedule 3 of the Contract documents
- Overall Project plan – Details in section 2.1.1.1
- Foundation Construction Methodology – Details in section 2.1.1.2
- Proposed Subcontractor project schedule (included in Overall Project Plan)

2.1.1.1 Overall Project Plan

The Respondents shall provide a Project description complete with a procurement, construction, HSE and a QA/QC plan. The Project Plan is to provide an overview of the scope of work with all critical scope requirements, as per the technical requirements specified in Schedule 4 of the RFP.

The Overall Project Plan shall include the Respondent's proposed project schedule that includes procurement, engineering design and review, mobilization, construction operations, contract milestones, demobilizations, and any other activities pertinent to fulfilling the RFP requirements.

It shall also include the Respondents proposed labour, equipment, and plant assignments (resource loading) to support the proposed project schedule.

If the Respondent has reason to believe the information provided is insufficient or incomplete they shall notify the Principal Contractor to gather more data as appropriate. The Respondent shall be deemed to have obtained all necessary information as to the risks, contingencies and other circumstances which may influence or affect the RFP. To the same extent, the Respondent shall be deemed to have inspected the place of work, the surroundings, the above data and other

available information and been satisfied before agreeing to the final pricing schedule as to all relevant matters, including:

- The form and nature of the Place of Work,
- The hydrological and climatic conditions,
- The extent and nature of the work and goods necessary for the execution and completion of the Work and the remedying of defects; and
- The requirements for access, accommodation, facilities, personnel, power, transport, water, and other services.

2.1.1.2 Foundation Construction Methodology

It is also important to note that both WTG foundations are required to have an independent engineering review and final sign-off by the WTG manufacturer before the Subcontractor's final completion can be approved. To assist with this requirement, the Prime Contractor will provide Engineer of Record site and office support throughout both WTG foundations construction. The Subcontractor will need to provide a Foundation Construction Methodology to ensure the quality of the work conforms to the approved engineering design required for independent 3rd party approval. This document shall contain the Subcontractor's methodology to meet the design and technical specifications of these requirements:

- Materials and equipment procurement and logistics
- Foundation bedrock surface preparation and levelling slab construction
- Water control and excavation drainage method
- Rebar and formwork design and installation
- Concrete and grout mix designs
- Concrete aggregate and concrete batch testing methods
- Concrete batching, delivery, and placement methods including planned plant and equipment specifics
- Methods to address Batch plant, pump, or placement equipment breakdown
- Embedment installation
- Dimensional and quality control methods and resources
- Concreting thermal control plan
- Concreting formwork stripping and curing
- Rock anchor hole water pressure testing
- Rock anchor tensioning, pull testing, and grouting
- Concrete inspection and repairs

2.1.2 Prior to Contract Award

- Surety Bond or Performance Security in accordance with Schedule 1, section 11.2 CONTRACT SECURITY.
- Site-Specific Health and Safety Plan in accordance with Section 3.2.3 below
- Proof of Insurance Coverage in accordance with Section 2.3 below

- Subcontractor's project schedule including materials procurement and engineering deliverables.

2.1.3 Prior to Material Procurement

- Product data and shop drawings for all anchor bolts and hardware.
- Embedded plate and template ring shop drawings.
- Mill certifications for all anchor bolts and embedded plates.
- Laboratory tensile strength report of threaded anchor bolts for each heat number

2.1.4 Two (2) Weeks Prior to Mobilization

- Updated project schedule including progress of mobilization, procurement, and engineering deliverables.
- Task Based Risk Assessment and Mitigation for Major Operations (1 – Roads/Pads, 2 – Foundations, Etc.)
- Project Quality Plan and Inspection and Test Plan (ITP)
- Proposed labour resource schedule (by day) for project duration.

2.1.5 Four (4) Weeks Prior to Foundation Construction Start

- Erection reinforcement drawings
- Formwork shop drawings
- Concrete Mix with historical or trial batch test results (slump, compressive strength, air temperature, concrete temperature, thermocouple datalogger results)
- Cement and aggregate test reports, including material gradation charts
- Concrete admixture or additive product data, if any.
- Grout Mix for rock anchors with manufacturers instructions and test compressive strength test results.
- Test results of Alkali-Silica reaction and mitigation measures if aggregates are reactive.
- Semi-Adiabatic test results of the proposed mix design.
- Concrete Production, Delivery, and Placement Plan – see General Notes on design drawings.
- Concreting Execution Procedure – see General Notes on design drawings
- Concrete Curing Plan
- Concreting repair procedures
- Rock Anchor Tensioning Calibration Procedure
- Rock Anchor Post Tensioning and Testing Procedure

2.1.6 Upon Project Completion / Handover

- Complete set of safety documents and records arising from Obligations During Construction in accordance with Section 3.2.5 below

- As-Built Drawings
- Quality assurance/quality control documentation in accordance with mutually agreed ITP
- All documents required as defined in **Schedule 4 –Technical Specifications**

2.2 Insurance Provided by Owner

Without restricting any other responsibility of the Subcontractor under this Contract, the Owner shall provide, maintain, and pay for the following insurances:

Wrap-Up Liability

Wrap-up liability insurance for the benefit of the Owner, the Contractor, Subcontractor, subcontractors and such other persons, firms, and corporations the Owner may determine, with a limit of liability in an amount that the Owner may reasonably provide per occurrence for bodily injury, death and damage to property and will include a cross liability clause and a 30 days' notice of cancellation clause. This policy will be maintained continuously from commencement of the work until total performance of the work.

“All Risks” Course of Construction Insurance

“All risks” course of construction insurance for the benefit of the Owner, the Contractor, Subcontractor, subcontractors and such other persons, firms, or corporations as the Owner may determine, insuring not less than the estimated completed value of all insured property or such amounts the Owner may determine, including coverage for “all risks” of physical loss or damage to all materials, structures, property and equipment entering into or intended for the work or alterations thereto, while anywhere in Canada or the continental United States of America, including while in temporary storage, and while being transported anywhere in Canada or the continental United States of America and at the site during or pending construction, erection and installation, subject to such exclusions, sub-limits and conditions as the Owner and the insurer may determine. This policy shall be maintained continuously from commencement of the work until total completion.

2.3 Certificate of Insurance

Before any of the Work is performed, the Respondent shall provide, maintain and pay for the following insurances:

Commercial General Liability Insurance:

Commercial general liability insurance covering the operations of the insured. Limits of \$5,000,000 per occurrence for bodily injury, death and damage to property including loss of use, in a form and with Insurers reasonably acceptable to the Project Owners and prohibiting subrogation against the Project Owners and providing for not less than 30 days' prior notice by registered mail in advance of cancellation, material change or

amendment restricting coverage. Option to allow for the Project Owners to be added as additional insured.

Contractors' Property Insurance:

"All risks" contractors' property insurance covering owned and non-owned mobile equipment, property and construction tools, machinery and equipment used by the contractor throughout the course of the construction period, including boiler insurance on temporary boilers and pressure vessels, in a form and with insurers reasonably acceptable to the Project Owners to this section and endorsed to provide the Project Owners with not less than 30 days' prior notice by registered mail in advance of cancellation, material change or amendment restricting coverage.

Automobile / Non-Owned Automobile Liability Insurance:

Automobile liability insurance with respect to automobiles and aircraft used directly or indirectly in the performance of the work and which are owned, leased, chartered or used by the Subcontractor and covering liability for bodily injury, death and damage to property with a limit of not less than \$2,000,000 inclusive for each and every loss, in a form and with Insurers reasonably acceptable to the Project Owners and prohibiting subrogation against the Project Owners and providing for not less than 30 days' prior notice by registered mail in advance of cancellation, material change or amendment restricting coverage.

Professional Liability Insurance

Professional Liability Insurance with limits of five million dollars (\$5,000,000 CAD). When policies are renewed or replaced, Subcontractor shall make commercially reasonable efforts to cause the policy retroactive date to coincide with, or precede, the commencement date of services in connection herewith. If policies will be lapsed at completion of the project, an extended reporting period of 24 months is required.

Proof of coverage must be provided by way of valid Insurance Certificates to the Principal Contractor to the satisfaction of the Owner's appointed insurance consultant.

2.4 Surety Bond or Performance Security

The Subcontractor is required to provide for furnishing a surety bond as outlined in Section SCC 11.2 of Schedule 1. The surety bond shall be due on signing of the Contract and shall be in the amount of **15%** of the Contract Value. The surety bond shall name the Principal Contractor as obligee and shall be in effect until a Certificate of Substantial Completion is issued by the Owner.

In lieu of a surety bond, a performance security, payable by cash or certified cheque to the Principal Contractor in Trust, and in the same amount and for the same duration will be accepted as an alternative.

2.5 Programmes and Co-operation

The Work is part of a larger wind energy project. The overall Project Schedule for 2025 is included as **Schedule 5d**. For sake of clarity, the works required in this RFP are critical path activities essential to work planned for the start of project construction in 2026, taken to be 01-Jun-2026.

The Subcontractor may be required to interface with and cooperate with other contractors on site and is required to be flexible in their work sequencing to allow the overall delivery of the project. The Subcontractor is expected to co-operate with the Owner's Representative, the Principal Contractor, Consultants, and other contractors to complete the overall Project in the most efficient manner possible.

2.6 Project Data

The Subcontractor's attention is specifically drawn to the following key Project data supplied as part of this Contract;

- Schedule 4 – Technical Specifications
- Schedule 5b – Environmental Management and Protection Plan
- Schedule 5c – Geotechnical Report

Note that Schedule 5c is a desktop geotechnical study completed by the engineering firm WSP in November, 2020 and is specific to the WTG foundation locations. The desktop investigation consisted of reviewing available topographical information, geological mapping, record drawings, technical reports and research papers. Although geotechnical conditions appear similar along the WTG access road and pads, there has been no on-site geotechnical investigation completed to validate this assumption.

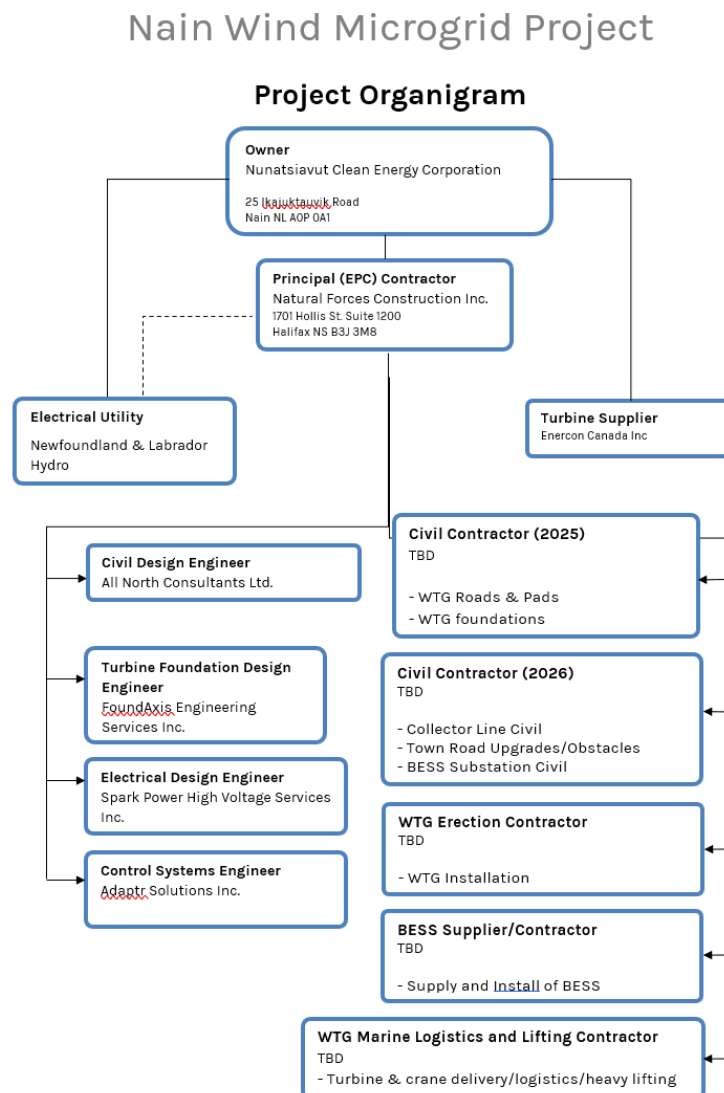
It is drawn to the attention of the Subcontractor that no warranties are made relating to site ground conditions, and that risk relating to subsurface conditions as it relates to constructing the Work or complying with directives with respect to unseen environmental hazards requiring remediation is to be born solely by the Subcontractor. The Subcontractor should assume that excavation works will take place primarily in rock conditions and include for all necessary rock removal in their price.

The Subcontractor shall satisfy themselves as to the correctness of the details supplied. If the Subcontractor has reasonable reason to believe the information provided is insufficient or incomplete they shall notify the Principal Contractor to gather more data as appropriate. The Subcontractor shall be deemed to have obtained all necessary information as to the risks, contingencies and other circumstances which may influence or affect the RFP. To the same extent, the Subcontractor shall be deemed to have inspected the place of work, the surroundings, the above data and other available information and been satisfied before agreeing to the final pricing schedule as to all relevant matters, including:

- The form and nature of the Place of Work,
- The hydrological and climatic conditions,
- The extent and nature of the work and goods necessary for the execution and completion of the Work and the remedying of defects; and
- The requirements for access, accommodation, facilities, personnel, power, transport, water, and other services.

2.7 Project Organigram

The Project Organigram below is intended to show the proposed integration of works within the project.



3 Health, Safety and Environment

This section outlines the general duties of the Subcontractor but is in no way intended to capture all the duties.

The health and safety of our employees, contractors, and partners is the first priority for Natural Forces. A commitment to leadership, accountability, and continuous improvement is expected when working for, or with, Natural Forces. We believe that every worker should expect to leave work and return home every day as healthy and safe as when they arrived, and we expect our subcontractors to have the same commitments.

As a Subcontractor of Natural Forces, you agree to demonstrate your Commitment to Safety by ensuring the most care in planning your work, protecting people, and protecting the environment by setting an example for all other workers to follow.

The Subcontractor's top priority will be protecting people. The duties and responsibilities are fully outlined in the appropriate legislation. These requirements are produced by the Employer's Representative for the Project. Persons using these requirements are advised to familiarize themselves with the purposes of the requirements and their obligations under the relevant health and safety legislation.

The Subcontractor, in carrying out the work, must take precautions as necessary to protect the environment by:

- managing waste streams created in the construction phase;
- preventing the contamination of soils and groundwater due to placement of contaminated material;
- protecting watercourses, wetlands, and soils from damage due to erosion and contaminated materials;
- protecting the habitat of threatened species of migratory birds and bats;
- protecting from spills.

Steps have been taken in the design of the project to minimize the impact on the environment. The Subcontractor shall implement all mitigation strategies and follow all recommendations in Schedule 2 – Environmental Management and Protection Plan.

3.1 Safety Objective

The Subcontractor must comply, as a minimum, with all relevant Regulations in the Newfoundland, Labrador Occupational Health and Safety Act, and all permits and regulations required by Nain Inuit Community Council (NICG) and the Nunatsiavut Government.

To achieve, and where possible surpass these requirements, each Subcontractor must:

- Provide a Site-Specific Health and Safety Plan,
- Provide staff trained and qualified for all works,

- Carry out all works in accordance with work methods that are reviewed and approved for use through the Principal Contractor,
- Carry out regular inspections on all plant and equipment,
- Provide records for auditing of all controls,
- Comply with all the obligations set out in this document.

3.2 Subcontractor's Obligations

3.2.1 Legislation

The full requirements of all relevant health and safety legislation are to be observed as far as they apply to the Project. Nothing in this document shall relieve any contractor of their obligations to comply with the requirements of these Acts and Regulations.

3.2.2 Safety Officer

The Subcontractor shall appoint a Safety Officer (suitably qualified by experience and training; fully versed in the Newfoundland and Labrador OHS Act and Regulations to advise the same in matters of safety, to exercise general supervision of the observance of safety requirements and to promote safe methods of works. The Safety Officer shall visit the Site on a basis agree to ahead of work starting during Subcontract activities and be present during any critical lifts or high-risk activities.

3.2.3 Obligations Prior to Mobilizing to Site

Prior to mobilizing equipment and personnel to site, the Subcontractor must prepare and submit to the Employer's Representative for review a Site-Specific Health and Safety Plan. This document will include a Hazard Identification and Risk Assessment Plan for their activities on site during the execution of the Works. The Subcontractor shall be responsible for maintaining and updating this file as part of their role as the work progresses.

This Site-Specific Health and Safety Plan shall include but not be limited to the following:

- Provisions for the management of safety during the construction phase including a management organisation chart clearly showing those who perform a statutory safety role;
- Method statements for each and every component of their works on site, to be communicated through Toolbox Talks and signed off by all workers undertaking the covered works;
- Risk assessments for site hazards identified prior to site mobilization and provisions for subsequent hazard identification and risk assessment procedures for the site;

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- A comprehensive inspection checklist, which the Subcontractor shall use on a weekly basis on site to ensure implementation of the controls detailed in this Site-Specific Health and Safety Plan;
 - Provisions for safety training & environmental compliance training of personnel upon their indoctrination on Site and subsequently as the project proceeds;
 - Provisions for the safe control and use of chemicals on site, including *Workplace Hazardous Materials Information System (WHMIS)* program of which copies must be readily available on site;
 - Provisions for the control of the Subcontractor's and subcontractor's activities on the site including permit to work, entry into confined spaces, hot work permits, equipment lock-out/tag-out procedures etc.;
 - The provision and maintenance of safe electrical equipment supplied on the Site;
 - The provision of fire-fighting facilities on the Site;
 - Site emergency procedures (fire, accident, etc.);
 - Site first aid facilities and trained personnel;
 - Arrangements for the promotion of safety on Site;
 - Disciplinary procedures for breaches in safety by site personnel, including management and staff;
 - Personal protective equipment (PPE) policy;
 - Inspection and control of work equipment;
 - Recording of weekly Subcontractor/subcontractor site labour returns;
 - Accident reporting, recording and investigation;
 - Provisions for ensuring the adequacy of sub-subcontractors safety standards prior to their appointment on site; and
 - Safety consultation procedures for site workforce.

The Subcontractor shall be required to ensure that individual responsibility for safety measures is detailed in the Site-Specific Health and Safety Plan. Work completed by sub-subcontractors will be subject to the same requirements, measures, and controls under the plan as work done by the Subcontractor.

Should the extent, nature or method of working be changed in the course of its execution, the Subcontractor shall take account of the change by amending the Site-Specific Health and Safety Plan for the works and submitting it for approval of the Employer. This amended Safety Statement must be distributed and fully understood by all the relevant persons before works relating to the revised Safety Statement takes place.

3.2.4 Obligations During Construction

During the construction phase of the project, the Subcontractor must carry out the controls and activities laid out within the Site-Specific Health and Safety Plan, including but not limited to:

- Undertake regular toolbox talks to communicate risks and safe work practices;
- Provide for method statement signoff by all workers for all works involved;
- Carry out training as required to personnel on the site and maintain site records.
- Coordinate meetings between different trades and operations, and that of sub-subcontractors as appropriate for the work to ensure all workers have sufficient knowledge of hazards and safe work practices pertaining to each other's works;
- Maintain an incident record;
- Carry out regular inspections on all vehicles, equipment and plant used on site and ensure compliance with all relevant requirements for the same;
- Maintain valid test certificates for all lifting devices to be used;
- Provide for subsequent hazard identification and risk assessment procedures for the site
- Provide for daily inspection of all excavations
- Keep up to date and on site all records pertaining to the above activities
- Provide daily employee/work group FLRAs

3.2.5 Obligations on Project Completion / Handover

Upon completion of the job, the contractor is required to:

- Provide to the Employer's Representative a complete set of all relevant safety documents and records arising from the Obligations during Construction above (The Safety File); and
- Carry out a Residual Risk Assessment on the completed works, along with any identified hazards, risks and suggested mitigation strategies, and provide the same to the Employer's Representative.

3.3 Site Construction Hazards

This section seeks to outline the main hazards associated with the Site. The hazards listed are merely an indication by the Employer's Representative of the hazards which may be present at present, but should in no way alleviate the Subcontractor from its obligation to identify the hazards during the course of the work.

3.3.1 Overhead Power Lines

There will be overhead collection systems above and alongside some construction areas. The Subcontractor will be responsible for clearly marking each crossing and making known its location to employees and sub-contractors.

3.3.2 Underground Services

There are anticipated buried pipe and electrical cabling in the water tower areas near the beginning of the site access. The Subcontractor will be responsible for identifying and following all mitigation measures required to ensure underground infrastructure is not damaged or disturbed, and that all Subcontractor personnel are aware of these potential underground services. The Subcontractor will be responsible to obtain the necessary ground disturbance permits (if applicable) and identify, mark, and coordinate any de-energization of the underground infrastructure.

3.3.3 Traffic

There may be vehicle traffic (including ATV and snowmobile) at times on the Site. The Subcontractor shall take all appropriate steps through signage and temporary blockades to ensure that access to the site is prohibited to unauthorized vehicles.

3.3.4 Site Topography

The site is predominantly treeless with low-lying vegetation and mosses covering exposed or partially buried bedrock.

3.4 Management of Health and Safety

The Subcontractor shall be responsible for preparing and maintaining the Health and Safety Plan, co-ordinating health and safety practice on site and preparing, issuing and revising as necessary the definitive Health and Safety File, in accordance with the requirements of the relevant Act and Regulations.

The Subcontractor shall rigorously assess the safety policies, method statements and risk assessments of all potential specialist sub-contractors to verify compliance with good practice and health and safety legislation. All such documentation shall be made available to the Principal Contractor on request.

Each Subcontractor shall also have specific and direct responsibility for the health and safety of their own employees and others who may be affected by their work. Whilst the Subcontractor shall fulfil the responsibility for co-ordinating the activities of sub-subcontractors on site, this will not relieve the Subcontractor from their own health and safety responsibilities as defined in the relative Act and Regulations.

For each component of the works the Subcontractor shall submit a method statement to the Employer's Representative identifying specific hazardous operations and the method by which the operation is to be carried out and controlled. This shall be provided in the form of a method statement and risk assessment to a format approved by the Employer's Representative.

The Subcontractors shall be responsible for informing all personnel on site that may be affected by the work of the Subcontractor or sub-subcontractor, bringing their attention to potential or perceived hazards and where and when they are to be carried out.

Health, Safety & Welfare issues will be reviewed at regular site meetings. Any areas of concern or non-compliance with the H & S Plan must be highlighted at these meetings.

The Subcontractor will be responsible for facilitating the appointment of a Health and Safety Representative from the workforce.

The Employer's Representative reserves the right to inspect all safety documentation associated with the Project.

3.5 Communications

In addition to their responsibilities to their own employees and sub-subcontractors, each Subcontractor shall be responsible for the co-ordination of safety management with all other contractors and sub-contractors on the site and the management of Health and Safety on site.

The Subcontractor shall hold regular briefings onsite to discuss coordination between all parties at the site and ensure that all hazards or risks are identified and that the appropriate control measures are being correctly applied.

These meetings shall be held once-a-week or on a more regular basis if necessary.

The Employer's Representative shall attend a number of these meetings throughout the course of the project.

The minutes of each of these meetings shall be maintained in a project safety file. The Subcontractor must ensure the safety file is up to date and available on site. The Employer's Representative reserves the right to audit the file at any time during which the project is proceeding.

3.6 Environmental Protection

The Subcontractor, in carrying out the Work, must take precautions as necessary to protect the environment by:

- managing waste streams created in the construction phase;
- preventing the contamination of soils and groundwater due to placement of contaminated material;
- protecting watercourses, wetlands, and soils from damage due to erosion and contaminated materials;
- protecting the habitat of threatened species of migratory birds and bats;
- protecting from spills;
- implementing spill response measures.

Steps have been taken in the design of the project to minimize the impact on the environment. The Subcontractor shall implement all mitigation strategies and follow all recommendations in Schedule 5b – Environmental Management and Protection Plan.

4 Site Requirements

4.1 Inuit/First Nations Hiring and Employment

Subcontractors shall include as much Inuit hiring and employment content as possible. Bids with significant Inuit hiring & employment content, as defined under the *Procurement Act*, will be given preferred treatment in the bid evaluation process. During execution of the works, the Owner's Representative will audit the successful Proponent's performance in respect to Inuit content to ensure compliance with their bid commitments.

The Nunatsiavut Government have developed a database of Inuit Businesses, including contractors, service providers, and individuals that can be pulled from for employment/contract opportunities. This list will eventually be published publicly but for the time being interested proponents can contact Sandi Michelin with details about an opportunity and she will provide the appropriate contacts.

Name: Sandi Michelin

Role: Business Development Manager

E: sandi.michelin@nunatsiavut.com

P: 709-947-3602

4.2 Use and Place of Work

The Subcontractor is to take all reasonable care and precautions to prevent site personnel including those of sub-contractors and public bodies from trespassing on adjoining property or any part of the premises, which do not form part of the Work. If the Subcontractor wishes to make use of adjoining land, they shall serve notices, obtain permissions and clear away and make good any damage at their own expense and pay any costs and charges in connection therewith.

The Site is not to be used for any other purpose other than the construction of the Work. The use of car parking is restricted to site personnel and limited to the area designated and/or approved by the Principal Contractor. The Subcontractor is to ensure that if their operations block or prevent access to traffic using any of the existing site access roads then provision shall be made to clear the access within a reasonable time, if requested by other road users.

The Subcontractor shall take all necessary measures to ensure safety on public roads from site traffic. Access and egress from the site during the execution of the Work shall be in accordance with the requirements of the local Authority and the Police. The Principal Contractor retains the right, with just cause, to object to and have removed from the Project any subcontractor or employee of the Subcontractor or employee of any

subcontractor for inappropriate behaviour either on site or in the community where it is reasonably deemed that such behaviour has placed the Project or the Owner in a negative way.

All vehicles using site access roads will be limited to a maximum speed of 30 km/h except where otherwise posted. It is the responsibility of the Subcontractor to enforce this.

4.3 Site Access

All construction vehicles will enter the site from Water Tank Access Road, as shown on the map in Figure 2, Page 7. Construction personnel are not permitted to drive their personal vehicles on to the construction site and must park such vehicles in parking area approved by the Owner's Representative.

4.4 Plant, Tools and Vehicles

The Subcontractor shall provide all plant, tools, equipment and vehicles for proper and safe execution of the Work. The plant, tools, and equipment are to be maintained and certified and their operators suitably trained to the satisfaction of all relevant Regulations. The Subcontractor's attention is drawn to the fact that there may be no statutory services available for use in the area.

4.5 Facilities for Subcontractor's Workers

The Subcontractor shall provide any temporary sheds, office, mess-room, lodgings, or sanitary accommodation required for its own use. Such accommodation should be securely locked outside non-working hours. The above facilities shall comply with the requirements of all relevant Regulations of the Newfoundland and Labrador Occupational Health and Safety Act, and all permits and regulations required by Nain Inuit Community Council (NICG). The Subcontractor shall remove and make good all such facilities on completion of the works.

4.6 Lighting and Power

The Subcontractor is required to provide all lighting and temporary power as required for their site facilities and works at their own cost. The Principal Contractor is not required to provide lighting or power to any other contractors on site. Provision of light and power must be compliant with relevant safety regulations and electrical service permits and inspections complying with ServiceNL.

4.7 Potable and Industrial Water Supply

The subcontractor is required to provide all potable water, drinking water, and water used for construction of the works at their own costs. The Principal Contractor is not required to provide any water supply to any other contractors on site. Provision of water supply is subject Nain Inuit Community Council By-Laws and ServiceNL regulations were required.

4.8 Noise Restrictions

The amount of noise generated on the site is to be kept to a minimum; generators, compressors and other noisy plant are to operate within original manufacturer approved noise levels. Noisy items of plant should be sited to minimise disruption to adjoining properties. All activities on site shall comply with the applicable statutory noise regulations.

4.9 Maintenance of Existing Services

The Subcontractor shall protect, uphold, divert and maintain all pipes, ducts, drains, sewers, service mains, overhead lines, and any other relevant services as appropriate during the construction of the Work. The Subcontractor is to make good any damage so caused at their own expense. Approval for the interruption of any services shall be applied for to the relevant utility and/or local council at least two (2) weeks in advance of any requirement. The Subcontractor shall follow appropriate Utility Company and other regulations where electrical lines or cables cross the site, it is the responsibility of the Subcontractor to identify and locate these.

4.10 Preservation of Trees

Tree removal outside of approved construction limits should not take place without the express permission of the Principal Contractor. The Subcontractor is to reinstate all unauthorized damaged trees at their own expense.

4.11 Temporary Fencing

The Subcontractor shall provide and maintain all necessary fencing, gates and other temporary works to adequately enclose all boundaries of the Work for the protection of the public and for the proper execution of the Work as required in accordance with the requirements of the Newfoundland and Labrador OHS Act and Regulations and local authorities.

4.12 Security

The Subcontractor shall be solely liable for any and all damages to all of his/her own personnel, equipment, materials, plant, tooling brought to the site by the Subcontractor, or for damages to the Subcontractor's portion of the works completed caused by theft or vandalism. The Subcontractor may arrange, at his/her expense, for the placement of security guards, provided that the arrangement is first communicated with the Principal Contractor and that such arrangement doesn't negatively affect other contractors working at the site.

4.13 Site Management

The Subcontractor shall provide for all necessary on and off-site management and supervisory costs and charges including a "person-in-charge" who will be full time on site, fluent in English, and contactable by mobile phone and email.

The Subcontractor will submit for the consideration of the Principal Contractor details of the qualifications and experience of the designated “person-in-charge” and any proposed temporary alternative person, these personnel shall not be changed without the prior written approval of the Principal Contractor.

At the end of each week the Subcontractor shall provide details on the project to allow the Principal Contractor to compile an overall Project Status Report. Information required will include, but not be limited to:

- Programme/Progress including tracking of progress versus Project Schedule (Schedule 5d), i.e. update of Subcontractor's schedule, including three (3) week look ahead Subcontractor schedules.
- Work completed in the previous week and works proposed for the following week
- Commercial Issues including variations and changes raised or expected
- Engineering/Design issues
- Interface and construction issues
- Health, safety, and Environmental statistics and observations (including near misses)
- Person-Hour statistics including Indigenous employee and subcontractor statistics
- Safety and Environmental reports conducted to date
- Improvement Notices identified in the site audits
- Security arrangements
- Equipment Log
- Number, type and capacity of all plant (excluding hand tools) and vehicles operating on the Project site
- Subcontractor's project schedule update versus Subcontractor's baseline project schedule (required for submittal every 3 weeks during construction)

4.14 Work on Public or Private Roads

The Subcontractor is responsible for obtaining all necessary consents from the relevant authorities and shall allow for adequate notification to the Local Authority in order to allow the opportunity for inspection of any works carried out on public roads or lands.

The Subcontractor shall keep approaches to the site free from excavated materials, mud, and debris. Any deterioration of the public roadway that requires remedial works in order to maintain continued vehicle access must be immediately reported to the Principal Contractor. The Subcontractor shall allow for all requirements of the Temporary Workplace Traffic Control Manual during interruption of existing signs along the roadway.

Any damage to the public road as a result of the Work shall be made good by the Subcontractor, at their sole expense, following approval from the Nain Inuit Community Council of any permanent or temporary works required.

4.15 Compaction Testing

Compaction testing shall be completed by the Subcontractor in accordance with the compaction requirements shown in Schedule 4 – Technical Specifications. Locations for compaction tests shall be agreed to in advance with the Principal Contractor and shall likely include locations along the crane track path of roadways and hardstands/crane pad locations at each turbine.

4.16 Traffic signage

The Subcontractor shall install traffic signage to reasonably furnish the site safe and navigable for other road users. Such signage will include road speed limits, stop signs, and turbine location signage.

4.17 Road Maintenance

The Subcontractor shall provide a reasonable level of road maintenance throughout the construction season to maintain sufficient access to turbine locations, and any laydown or material stockpile areas.

4.18 Drying the Work

The Subcontractor shall dry out the works as may be necessary to facilitate progress and satisfactory completion.

4.19 Quality Control Documentation and Compliance Certification

The Subcontractor shall prepare and submit an Inspection Test Plan (ITP) for approval by the Principal Contractor. The Subcontractor shall be required to submit a comprehensive and complete QA/QC package for each turbine foundation for review by the Owner's Engineer. The QA/QC documentation shall be submitted in a complete, organized package on a per turbine basis (not in multiple deliveries). The QA/QC package will include but not be limited to:

- Concreting procedures,
- Subgrade inspection reports,
- Concrete test reports (including air content, slump, and compressive strength at 7, 14, 28 and 56 days),
- Rebar inspection reports,
- Grout quality reports including grout cube strength tests,
- Rock anchor reports including installation records, post-tension data, and water test results.

The Subcontractor shall provide a written Compliance Certification confirming that the turbine foundations have been constructed in accordance with the design documentation. For the detailed submittal requirements, please refer to Schedule 4 – Technical Specifications.