XCG, A DIVISION OF TRACE ASSOCIATES INC.
T 519.741.5774 F 519.741.5627 E kitchener@xcg.com
820 Trillium Drive, Kitchener, Ontario, Canada N2R 1K4

XCG File No. 4-2111-01-97
August 7, 2024

Contact Water Pond Relocation
Sechelt Landfill
Cconstruction Drawings and Specifications
Sunshine Coast Regional District

Prepared by:

XCG, A DIVISION OF TRACE ASSOCIATES INC.
820 TRILLIUM DRIVE
KITCHENER, ONTARIO
N2R 1K4

Aug. 7 2024
Permit # 1003057

TABLE OF CONTENTS`

ATTACHMENTS

DIVISION 1

SECTION 01 11 00 SUMMARY OF WORK

1.1 SECTION INCLUDES

A. Description of Project.

B. Definitions.

C. Location.

D. Scope of work.

E. Contract Times and Milestones.

F. DRAWINGS.

G. CONTRACTOR use of SITE.

H. OWNER occupancy.

I. Supporting Documents.

J. Measurement and Payment.

1.2 DESCRIPTION OF PROJECT

A. The scope of work shall be the relocation of the CONTACT WATER pond to be constructed within the old drop-off area as detailed in the Design DRAWINGS.

1.3 DEFINITIONS

A. CONTRACTOR – The person or company that is contracted to provide the materials, equipment, and labour to perform the services outlined in these Specifications.

B. OWNER – The organization, defined as the Sunshine Coast Regional District, that owns the asset or SITE where the construction is taking place.

C. ENGINEER – The person or organization that manages the project on behalf of the OWNER, ensuring that the project is scheduled, constructed, and completed in accordance with plans and SPECIFICATIONS. XCG, a division of Trace Associates will act as the ENGINEER on the project.

D. ENGINEERS REPRESENTATIVE – The person that is to supervise the Works and to test and examine any material to be used or workmanship employed in connection with the works. Any designated employee of XCG, a division of Trace Associates that is sent to the SITE to oversee the construction activities.

E. SITE – The area or piece of land where the construction work is taking place. This area is defined as the Sechelt Landfill as outlined in LOCATION.

F. CONSTRUCTION LIMITS – The area of the Site allocated for construction as shown on C-02 of the DRAWINGS. The CONSTRUCTION LIMITS are the responsibility of the contractor for the duration of the project.

G. DRAWINGS – Technical drawings that are used to convey information about a SITE or objects within a SITE, materials, details, and other SPECIFICATIONS.

H. SPECIFICATIONS – A written document describing the scope of work, materials to be used, methods of installation, and quality of workmanship for a project to be placed under contract.

I. SUBSTANTIAL COMPLETION – The stage in the progress of the work when the work or designated portion thereof is sufficiently complete in accordance with the contract documents so that the OWNER can occupy or utilize the work for its intended use.

J. CONTACT WATER – Any water, including seepage or surface runoff, that has come into contact with any component of the Project at the SITE, including mine rock, process solids, infrastructure, and terrain.

1.4 LOCATION

A. The Sechelt Landfill is located at 4905 Dusty Road, approximately 5 kilometres northeast of the junction of Sunshine Coast Highway and Wharf Avenue, approximately 5 kilometres north of Sechelt, British Columbia.

1.5 SCOPE OF WORK

A. The Works to be performed under the Contract consist of the following elements:

- Establish a new limit of waste through the relocation of the CONTACT WATER pond to the north of the old drop-off area;
- Excavate the new proposed CONTACT WATER infiltration pond and retention pond;
- Place and grade fill material to partially infill the previous CONTACT WATER pond;
- Supply, place and compact gravel to construct the new proposed perimeter road;
- Establish new stormwater ditches, berms, and culverts to redirect surface stormwater into the new CONTACT WATER pond;
- Partially infill the existing CONTACT WATER pond to allow additional space for landfilling municipal solid waste;
- Supply and install new landfill gas probes, groundwater monitoring wells and fence between the drop off area and new CONTACT WATER pond.
- Hydroseed according to Section 32 92 19.16 – Hydraulic Seeding.

1.6 ORDER OF WORK

A. The works performed under the Contract are required to take place in the following stages:

1. Excavate and construct the new CONTACT WATER retention and infiltration ponds.

2. Construct the stormwater ditches, berms and ancillary works.

    a. All CONTACT WATER must be directed to the newly constructed contact water retention pond prior to beginning work on the existing CONTACT WATER pond.

3. Drain the existing CONTACT WATER pond and allow the sediment accumulated in the pond to dry out.

4. Construct an access road into the existing CONTACT WATER pond and grade the existing side slopes to 3H:1V.

5. Construct the temporary stormwater berm on the 3H:1V side slope to prevent contact water from entering the existing contact water pond.

6. Backfill the western side of the existing CONTACT WATER pond to grades shown on the DRAWINGS.

7. Construct the new section of the perimeter road.

8. Install new landfill gas probes, groundwater monitoring wells and fence between the drop off area and new CONTACT WATER pond.

9. Hydroseed areas described in Section 32 92 19.16 – Hydraulic Seeding.

1.7 CONTRACT TIMES AND MILESTONES

A. Perform the Works in accordance with the following Contract Times and Milestones:

1. The Works at the SITE shall be commenced within 14 days after the date of the Notice to Proceed.

2. The Works shall be SUBSTANTIALLY COMPLETED on or before December 15, 2024, with the exception of the hydroseeding that is to be completed in spring of 2025. SUBSTANTIAL COMPLETION shall mean completion of the Works as defined in the Builders Lien Act of the Province of British Columbia. The term "SUBSTANTIALLY COMPLETED" as applied to all or part of the Works refers to SUBSTANTIAL COMPLETION thereof.

1.8 DRAWINGS

A. DRAWINGS issued with and forming part of the Contract Documents are listed below:

Drawing	*Revision No.*	*Date of Drawing No. or Latest Revision*	*Title*
G-01	5	JUN 2024	COVER PAGE
C-01	5	JUN 2024	EXISTING SITE CONDITIONS
C-02	5	JUN 2024	PROPOSED SITE MODIFICATIONS
C-03	5	JUN 2024	PROPOSED CONTACT WATER POND
C-04	5	JUN 2024	PROPOSED MODIFICATIONS TO THE EXISTING CONTACT WATER POND
C-05	5	JUN 2024	PROPOSED CONTACT WATER POND PROFILES
C-06	5	JUN 2024	EXISTING AREAS OF POTENTIAL BURIED ASBESTOS
C-07	5	JUN 2024	PROPOSED INFILL STAGES OF THE EXISTING CONTACT WATER POND
C-08	5	JUN 2024	ENVIRONMENTAL MONITORING INFRASTRUCTURE
D-01	5	JUN 2024	DETAILS I
D-02	5	JUN 2024	DETAILS II
D-03	5	JUN 2024	DETAILS III
D-04	5	JUN 2024	DETAILS IV

B. Perform the Works in accordance with the DRAWINGS marked “Issued for Construction.”

1.9 CONTRACTOR USE OF SITE

A. Limit use of the SITE to allow OWNER and SITE Operator's occupancy.

B. CONSTRUCTION LIMITS: Limited to areas noted on the DRAWINGS.

C. Hours of Operation: Limit on-site hours of operation to the hours of 7:00 a.m. to 7:00 p.m. (CONTRACTOR personnel must leave the SITE by 7:00 p.m.), Monday to Saturday.

D. Contractor is responsible for securing the SITE if working outside landfill hours of operation.

E. When unfavorable weather, soil, drainage, or other unsuitable construction conditions exist, continue operations which will not be adversely affected by such conditions. Do not construct or cause to be constructed any portion of the Works under conditions which would adversely affect the quality of the Works, unless special means or precautions are taken to perform the Works in a proper and satisfactory manner.

1.10 OWNER OCCUPANCY

A. OWNER and SITE Operator will occupy the SITE during the entire period of construction for the conduct of normal operations.

B. Cooperate with OWNER to minimize interference and to facilitate OWNER's operations.

C. The work areas covered under this contract is to be fenced off with temporary fencing and signage sufficient to satisfy WorkSafeBC (https://www.worksafebc.com/en) requirements for independent work sites.

D. Schedule the Works to accommodate this requirement.

1.11 SUPPORTING DOCUMENTS

A. The following documents are available upon request:

1. Ground Penetrating Radar Survey, SCRD Landfill, Public Area, March 13, 2020, by Terraprobe Geoscience Corp.

2. Preliminary Geotechnical Report, Sechelt Landfill Sinkhole, February 20, 2020, by Braun Geotechnical Ltd.

3. Updated Hydrogeological Characterization and Impact Assessment, Sechelt Landfill, August 28, 2020, by XCG Consulting Limited.

1.12 MEASUREMENT AND PAYMENT

A. No separate payment will be made for work under this Section.

END OF SECTION

SECTION 01 29 00 PAYMENT PROCEDURES

1.1 SECTION INCLUDES

A. Project Measurement and Payment.

B. Contract Modification Procedures.

C. Measurement and Payment.

1.2 PROJECT MEASUREMENT AND PAYMENT

A. Payment for the Works will be made based upon unit prices.

B. Measurement for Unit Price Work: As specified in individual Sections. Quantities indicated in the Schedule of Prices are for bidding and contract purposes only and are approximate. Quantities of material furnished and/or work performed as verified by survey and ENGINEER determine payment.

C. Payment for Each Item Includes: Full compensation for furnishing labor, supervision, material, tools, equipment, plant, transportation, services, submittals, and incidentals for performance and completion of the Works in complete accordance with the Contract Documents; erection, application, installation, completion, or construction of an item of the Works; overhead and profit; and all other miscellaneous items for which separate payment is not provided under other Items of the Schedule of Prices. All work not specifically set forth as a separate pay Item in the Schedule of Prices shall be considered as a subsidiary obligation of CONTRACTOR and all costs in connection therewith shall be included in the amounts and prices stipulated in the Schedule of Prices. CONTRACTOR shall properly and fairly distribute indirect costs to each pay Item. Final payment for work governed by unit prices will be made on the basis of the actual measurements and quantities approved by ENGINEER multiplied by the unit price stipulated in the Schedule of Prices. Final payment for work governed by lump sum prices will be made on the basis of the applicable lump sum prices stipulated in the Schedule of Prices.

D. Non-payment for Rejected Products: Payment will not be made for any tasks or activities completed for convenience and of the following:

1. Products wasted or disposed of in a manner that is not acceptable.
2. Products determined as unacceptable before or after placement.
3. Products not completely unloaded from the transporting vehicle.
4. Products placed beyond the lines and levels of the required Works.
5. Products remaining on hand after completion of the Works.
6. Loading, hauling, and disposing of rejected products.

1.3 CONTRACT MODIFICATION PROCEDURES

A. Changes in the Works or the requirement for extra work will be made by ENGINEER, with the change procedures as specified herein.

B. Field Order: ENGINEER will advise of minor changes in the Works not involving an adjustment to the Contract Price or the Contract Times by issuing supplemental instructions in the form of a Field Order. Promptly execute such minor changes and supplemental instructions.

C. Proposal Request: ENGINEER may issue a proposal request, which includes a detailed description of a proposed change with supplementary or revised DRAWINGS and SPECIFICATIONS, and schedule for executing the change in the Works. Prepare and submit a written itemized quotation of changes in the Contract Price or the Contract Times that would result from the proposed change in the Project by the due date stipulated in the proposal request.

1.4 MEASUREMENT AND PAYMENT

A. No separate payment will be made for work under this Section.

END OF SECTION

SECTION 01 31 19 PROJECT MEETINGS

1.1 SECTION INCLUDES

A. SITE Meetings.

B. Measurement and Payment.

1.2 SITE MEETINGS

A. SITE meetings will be held weekly with OWNER and ENGINEER or ENGINEER'S REPRESENTATIVE.

B. CONTRACTOR staff will provide OWNER and ENGINEER or ENGINEER'S REPRESENTATIVE a walk through of the SITE and provide an update on construction progress.

1.3 MEASUREMENT AND PAYMENT

A. No separate payment will be made for work under this Section.

END OF SECTION

SECTION 01 32 00 ADMINISTRATIVE REQUIREMENTS AND SUBMITTAL PROCEDURES

1.1 SECTION INCLUDES

A. Mobilization and startup.

B. Coordination.

C. Pre-construction meeting.

D. Submittal procedures.

E. Product data.

F. Measurement and payment.

1.2 MOBILIZATION AND STARTUP

A. CONTRACTOR shall not mobilize to the SITE without ENGINEER'S prior written authorization.

B. Perform planning and scheduling activities as necessary for the performance of the Works.

C. Purchase materials and mobilize equipment, supplies, and incidentals to the SITE.

D. Use the existing SITE access roads to the designated work areas during mobilization. Complete improvements to roads as necessary for the performance of the Works.

E. SITE temporary utilities and facilities in areas designated by ENGINEER. Obtain ENGINEER'S approval prior to changing locations of temporary construction facilities. Do not use other areas without ENGINEER'S prior approval. Provide additional land and access thereto not shown or described that may be required by CONTRACTOR for temporary construction facilities or storage of materials with no liability to OWNER or ENGINEER. Relocate construction equipment or other materials or equipment as required for the performance of the Works.

1.3 COORDINATION

A. Coordinate scheduling, submittals, and work of the various Sections of the Project SPECIFICATIONS and other requirements of the Contract Documents to ensure efficient and orderly sequence of installation of interdependent construction elements, with provisions for accommodating items installed later.

B. Coordinate work of various Sections having interdependent responsibilities for installing, connecting to, and placing in service, such elements.

C. Coordinate space requirements and installation of mechanical and electrical work which are indicated diagrammatically on the DRAWINGS. Follow routing shown for pipes, ducts, and conduit as closely as practicable; place runs parallel with line of building. Utilize spaces efficiently to maximize accessibility for other installations, for maintenance, and for repairs.

D. Coordinate completion and cleanup of work of separate Sections in preparation for SUBSTANTIAL COMPLETION.

E. Complete all works in accordance with Section 01 11 00 - Summary of Work: Order of Work.

1.4 PRE-CONSTRUCTION MEETING

A. ENGINEER will schedule and administer a pre-construction meeting at the SITE after the date of the Notice to Proceed and prior to start of construction at the SITE.

B. ENGINEER will make arrangements for meeting, prepare agenda with copies for participants, and preside at meeting. Provide data required to ENGINEER and be prepared to discuss all items on the agenda.

C. Minimum Attendance Required: CONTRACTOR, CONTRACTOR'S health and safety officer, and major Subcontractors.

D. Agenda will include, but will not necessarily be limited to, the following:

1. Designation of responsible personnel.
2. Completion of OWNER's SITE safety orientation.
3. Lines of authority and communication.
4. Health and safety.
5. Use of the SITE for storage, vehicle parking, access routes, and other SITE requirements.
6. Coordination with OWNER.
7. Procedures for processing field decisions, submittals, substitutions, applications for payments, proposal requests, Field Orders, Work Change Directives, Change Orders, and closeout procedures.

1.5 SUBMITTAL PROCEDURES

A. Unless directed otherwise, transmit submittals to ENGINEER.

B. Identify the Project, CONTRACTOR, Subcontractor, or Supplier; pertinent DRAWING and detail number and Section number, as appropriate.

C. It is the responsibility of CONTRACTOR to review submittals made by Suppliers and Subcontractors before transmitting them to ENGINEER to assure proper coordination of the Works and to determine that each submittal is in accordance with CONTRACTOR'S desires and that there is sufficient information about materials and equipment for ENGINEER to determine compliance with the DRAWINGS and SPECIFICATIONS. Incomplete or inadequate submittals will be returned for revision without review.

D. Unless specified otherwise submit 2 copies of submittals.

1.6 PRODUCT DATA

A. Submit the number of copies which CONTRACTOR requires, plus two copies that will be retained by ENGINEER.

B. Mark each copy to identify applicable products, models, options, and other data. Supplement manufacturers' standard data to provide information unique to the Project.

1.7 MEASUREMENT AND PAYMENT

A. Section 01 29 00 - Payment Procedures: Requirements for measurement and payment.

B. Mobilization and Startup:

1. Schedule of Prices Item No. 01 32 00 / 1.

2. Payment Basis: Lump sum price. Includes furnishing and maintaining insurance required by the Contract Documents; mobilization; work zone delineations; temporary controls; resource and material procurement activities; procure necessary permits; meetings and communications between OWNER, ENGINEER, and CONTRACTOR; and CONTRACTOR'S site-specific Health and Safety Plan development and implementation.

END OF SECTION

SECTION 01 32 16.19 CONSTRUCTION PROGRESS SCHEDULE

1.1 SECTION INCLUDES

A. Construction Progress Schedule.

B. Measurement and Payment.

1.2 CONSTRUCTION PROGRESS SCHEDULE

A. CONTRACTOR shall prepare and submit a Gantt chart (construction progress schedule) in Microsoft Project format.

B. The construction progress schedule will highlight all major construction activities and milestones.

C. CONTRACTOR will update construction progress schedule weekly and distribute at the SITE meeting as required.

1.4 MEASUREMENT AND PAYMENT

A. No separate payment will be made for work under this Section.

END OF SECTION

SECTION 01 35 30 HEALTH AND SAFETY

1.1 SECTION INCLUDES

A. General requirements.

B. Basis of program.

C. SITE characterization.

D. Potential asbestos exposure.

E. Submittals.

F. Air monitoring.

G. Measurement and payment.

1.2 GENERAL REQUIREMENTS

A. Develop a written, site-specific Health and Safety Plan prior to commencing any on-site work and continue to implement, update/maintain, and enforce the plan until final demobilization from the SITE.

B. The health and safety guidelines contained herein are intended to provide for a safe and minimal risk working environment for on-site personnel and to minimize the impact of activities involving contact with any hazardous materials or hazardous wastes on the general public and the surrounding environment.

C. Responsibility: Be responsible for the safety of persons and property on the SITE and for the protection of persons off the SITE and the environment to the extent that they may be affected by the conduct of the Works. Comply with and enforce compliance by CONTRACTOR employees and the employees of CONTRACTOR'S Representatives with safety requirements of the Contract Documents, applicable federal, provincial, and local statutes, regulations, and ordinances, and with CONTRACTOR'S site-specific Health and Safety Plan. CONTRACTOR acknowledges that safety and environment protection obligations are of paramount importance regarding all of the work to be performed under the Contract Documents.

D. Hazard Communication Requirements: Comply with Occupational Health and Safety Regulation, B.C. Reg. 296, Part 5 - Chemical and Biological Substances, Workplace Hazardous Materials Information System (WHMIS).

E. Work Stoppage: CONTRACTOR shall give precedence to the safety and health of the public and on-site personnel and the protection of the environment over cost and schedule considerations for all project work. The Health and Safety Officer shall be responsible for decisions regarding when work will be stopped or started for health or safety considerations and shall have the authority to stop or start the work for health or safety considerations. CONTRACTOR shall assign the responsibility and obligation

to the Health and Safety Officer to stop or start the work when, in the Health and Safety Officer's discretion, it is necessary or advisable for reasons of health or safety. ENGINEER, OWNER, or the ENGINEER'S REPRESENTATIVE shall have the right to stop work for health and safety considerations.

1.3 BASIS OF PROGRAM

A. Workers Compensation Act, Occupational Health and Safety Regulation, B.C. Reg. 296.

1.4 SITE CHARACTERIZATION

A. Work at the SITE may involve contact with municipal solid waste, potential asbestos containing materials (ACMs), and associated contaminants including but not limited to landfill leachate, and landfill gas.

B. Landfill Gas:

1. Landfill gases may be present in the soil adjacent to the landfill during excavation for the CONTACT WATER pond.

2. Landfill gas results from the decomposition of refuse and is primarily composed of 40 to 60% methane, and 30 to 50% carbon dioxide, less than 2% nitrogen, less than 1% oxygen, and trace gases including mercaptans, hydrocarbons, solvents, water vapor, and hydrogen sulfide.

3. Methane is explosive in concentrations between 5 and 15% by volume in air. Methane, carbon dioxide, and nitrogen are simple asphyxiants.

4. Trace gases in landfill gas may be toxic and odorous. Odorous gases cause nausea in some persons. Toxic gases may also be present at concentrations above or below the levels deemed safe for human exposure; there is always a potential for levels to be sufficient to cause permanent and irreversible damage and even death.

C. Refuse Stability: Refuse must be considered prone to instability that may cause slope or sidewall failure due to the high void ratio, irregularity of material composing the refuse, and a typically lesser degree of compaction than soil.

1.5 SUBMITTALS

A. CONTRACTOR'S site-specific Health and Safety Plan:

1. Within 7 days after the date of the Notice to Proceed and prior to mobilization to the SITE, submit a site-specific Health and Safety Plan. As a minimum, the Health and Safety Plan must be compliant with the requirements of the British Columbia Occupational Health and Safety (OHS) Regulation, and shall include the following:

1. Personnel training requirements: The training must cover the following:

1. Names of personnel and alternates responsible for SITE safety and health.
2. Safety, health, and other hazards present and anticipated on the SITE.
3. Use of personal protective equipment.
4. Work practices by which personnel can minimize risks from hazards.
5. Safe use of engineering controls and equipment on the SITE.
6. Medical surveillance requirements, including recognition of symptoms and signs which might indicate overexposure to hazards.
7. Elements of the site-specific Health and Safety Plan.

2. A personal protective equipment (PPE) program which must address the following elements:
   1. Donning and doffing procedures.
   2. PPE selection based upon SITE hazards.
   3. PPE use and limitations of the equipment.
   4. Work mission duration.
   5. PPE maintenance and storage.
   6. PPE decontamination and disposal.
   7. PPE training and proper fitting.
   8. PPE inspection procedures prior to, during, and after use.
   9. Evaluation of the effectiveness of the PPE program.
   10. Limitations during temperature extremes, heat stress, and other appropriate medical considerations.
3. 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 to be used.
4. SITE control measures to be employed at the SITE. Site control measures must include the following:
   1. SITE map.
   2. SITE work zones.
   3. Use of the "buddy system".

4. SITE communications including alerting means for emergencies.

5. Standard operating procedures or safe work practices.

6. Identification of the nearest medical assistance.

5. Emergency response requirements which must address the following:

1. Pre-emergency planning.

2. Personnel roles, lines of authority, and communication.

3. Emergency recognition and prevention. The Sechelt Hospital is part of Vancouver Coastal Health and is located at 5544 Sunshine Coast Highway, Sechelt, BC V0N 3A0. The main phone number for the Sechelt Hospital is (604) 885-2224.

4. Evacuation routes and procedures.

5. Emergency medical treatment and first aid.

6. Emergency alerting and response procedures.

7. Critique of response and follow-up.

8. PPE and emergency equipment.

9. Procedures for reporting incidents to local, provincial, or federal agencies.

6. ENGINEER will review CONTRACTOR'S site-specific Health and Safety Plan for compliance with the OWNER's requirements and provide comments to CONTRACTOR. CONTRACTOR is solely responsible for their site-specific Health and Safety Plan to meet all WorkSafeBC and OWNER's requirements. Revise the plan as appropriate and resubmit the plan to ENGINEER.

1.6 AIR MONITORING

A. Air Monitoring Program (specific monitoring associated with potential ACMs is outlined in Section 01 74 19 - Waste Management and Disposal):

1. Provide the required instruments for air monitoring including, as a minimum, an oxygen level meter, a Hydrogen Sulfide (H_2S) meter, and a combustible gas meter [lower explosive limit (LEL) meter]. Provide sufficient numbers of each instrument to monitor the active work location(s) and to provide backup equipment in cases of equipment malfunction.

2. Operate air monitoring equipment with personnel trained in the use of the specific equipment provided and under the control of Health and Safety Officer. Monitoring equipment used shall be intrinsically safe.

3. Action Levels:

1. Combustible Gases: Action levels are based on the readings from a combustible gas meter. The readings are generally given as a percentage of the lower explosion limit (% LEL) and are collected in the general work area. An atmospheric oxygen level of less than 19.5% may affect the readings from a combustible gas meter and give lower than actual levels. Test oxygen content first.

    1. Non-confined Space Readings, General Area:

Instrument Reading	*Action to be Taken*
0 to 10% LEL	*Continue working and monitoring atmosphere for combustible gases. Inform personnel working in the area whenever readings greater than 5% LEL.*
10 to 20% LEL	*Continue working with caution. Inform personnel working in area of readings. Be prepared to cease operations.*
greater than 20% LEL	*Cease operations and move to a safe place. Re-evaluate work plan. Engineering controls such as forced ventilation and use of non-sparking tools are to be implemented if operations are to continue. DO NOT RESUME WORKING UNTIL CONDITIONS ARE CONSISTENTLY BELOW 20% LEL.*

    2. HOT WORK is only to be conducted at less than 0.1% LEL.

4. Hydrogen Sulfide (H_2S): Whenever readings approach 10 ppm on a direct reading H_2S meter, cease work immediately, move to a safe area and contact the Health and Safety Officer. H_2S has a Threshold Limit Value (TLV) of 10 ppm.

1.7 MEASUREMENT AND PAYMENT

A. No separate payment will be made for work under this Section.

END OF SECTION

SECTION 01 45 00 QUALITY CONTROL REQUIREMENTS

1.1 SECTION INCLUDES

A. Protection of existing infrastructure.

B. Quality control.

C. Tolerances.

D. References.

E. Inspecting and testing services.

F. Manufacturers' field services and reports.

G. Measurement and payment.

1.2 PROTECTION OF EXISTING INFRASTRUCTURE

A. Work by the CONTRACTOR shall not interfere with access to the landfill, daily landfilling operations, or any other activities by the OWNER or representatives. Work by the CONTRACTOR shall not damage or interfere with the existing electrified bear fence or landfill access roads. Any damage caused by the CONTRACTOR to the to the existing electrified bear fence or landfill access roads shall be rectified by the CONTRACTOR, as their sole expense, to the satisfaction of the OWNER.

B. The CONTRACTOR shall provide and maintain adequate access to the area of work.

C. Should CONTRACTORS need to use existing landfill access roads for access to the area of work, authorization is required, and CONTRACTOR is to maintain such roads for duration of the contract and rectify any damage resulting from the CONTRACTOR'S use of roads.

D. CONTRACTOR is to take special responsibility and care to avoid damage to existing structures and/or property, existing drop-off area, existing electrified bear fence, and landfill access roads over the duration of the work. CONTRACTOR is to also take special responsibility and care to avoid damage to existing monitoring wells, as shown in the DRAWINGS. Any damage caused by the CONTRACTOR to the existing structures, property, or SITE must be rectified by the CONTRACTOR, at his sole expense, to the satisfaction of the OWNER.

1.3 QUALITY CONTROL

A. Monitor quality control over Suppliers, products, services, the SITE conditions, and workmanship, to produce Works of specified quality.

B. Comply with manufacturers' instructions, including each step in sequence.

C. Should manufacturers' instructions conflict with the Contract Documents, request clarification from ENGINEER before proceeding.

D. Comply with specified standards as minimum quality for the Works except where more stringent tolerances, codes, or specified requirements indicate higher standards or more precise workmanship.

E. Perform work by persons qualified to produce workmanship of specified quality. Use persons licensed to perform the Works where required by these SPECIFICATIONS or Laws and Regulations.

1.4 TOLERANCES

A. Monitor tolerance control of installed products to produce acceptable Works.

B. Comply with manufacturers' tolerances. Should manufacturers' tolerances conflict with the Contract Documents, request clarification from ENGINEER before proceeding.

1.5 REFERENCES

A. For products or workmanship specified by association, trade, or other consensus standards, comply with requirements of the standard, except when more rigid requirements are specified or are required by applicable Laws and Regulations.

B. Conform to reference standard by date of issue current as of bid closing date, except where a specific date is established by Laws or Regulations or by an individual Section.

C. Specific provisions of Laws or Regulations may be referenced in the Project SPECIFICATIONS to assist CONTRACTOR and identify options selected by ENGINEER. Such references do not relieve CONTRACTOR from compliance with other applicable provisions of Laws or Regulations not specifically referenced.

D. No inference or provision of any reference document including but not limited to any standard SPECIFICATION, manual, or code shall be effective to change the relationships, duties, and responsibilities of OWNER, CONTRACTOR, or ENGINEER from those set forth in the Contract Documents, nor shall it be effective to assign to OWNER or ENGINEER any duty or authority to supervise or direct the furnishing or performance of the Works or any duty or authority to undertake responsibility inconsistent with the provisions of the Contract.

E. Publications referred to in these SPECIFICATIONS form part of the SPECIFICATIONS to the extent specified in individual Sections.

F. In case of conflict or discrepancy between a reference standard and the Project SPECIFICATIONS or with another reference standard, the more stringent requirements shall apply.

G. Should specified reference standards conflict with the Contract Documents, request clarification from ENGINEER before proceeding.

1.6 INSPECTING AND TESTING SERVICES

A. CONTRACTOR shall employ and pay for services of an independent inspecting company and testing laboratory to perform inspecting and testing services as specified in individual Sections.

B. Employment of inspecting company and testing laboratory and services performed by such inspecting company and testing laboratory in no way relieves CONTRACTOR of obligation to perform the Works in accordance with requirements of the Contract Documents.

C. Quality Assurance and Compaction Testing:

1. Comply with requirements of the following reference standards:

    1. American Society for Testing and Materials (ASTM):

        1. C802 - Standard Practice for Conducting an Interlaboratory Test Program to Determine the Precision of Test Methods for Construction Materials.

        2. C1077 - Standard Practice for Laboratories Testing Concrete and Concrete Aggregates for Use in Construction and Criteria for Laboratory Evaluation.

        3. D3740 - Standard Practice for Minimum Requirements for Agencies Engaged in the Testing and/or Inspection of Soil and Rock as Used in Engineering Design and Construction.

        4. E329 - Standard Specification for Agencies Engaged in the Testing and/or Inspection of Materials Used in Construction.

        5. E543 - Standard Practice for Agencies Performing Non-destructive Testing.

2. Inspecting Company and Testing Laboratory: Authorized to operate in the province in which the SITE is located.

3. Inspecting Company and Testing Laboratory Staff: Maintain a full-time registered engineer on staff to review services.

4. Testing Equipment: Calibrated at reasonable intervals with devices of an accuracy traceable to either the National Institute of Standards and Technology or accepted values of natural physical constants.

D. Inspecting Company and Testing Laboratory Responsibilities:

1. Test samples of mixes and materials submitted by CONTRACTOR.

2. Provide qualified personnel at the SITE. Cooperate with ENGINEER and CONTRACTOR in performance of services.

3. Perform specified inspecting, sampling, and testing of products and methods of construction in accordance with specified standards.

4. Ascertain compliance of materials and mixes with requirements of the Contract Documents.

5. Promptly notify ENGINEER and CONTRACTOR of observed irregularities, deficiencies, or non conformance of the Works or products.

6. Perform additional inspection and tests required by ENGINEER.

7. Attend preconstruction meetings and progress meetings, as required.

E. Inspecting Company and Testing Laboratory Reports:

1. After each inspection and test promptly submit three copies of reports to ENGINEER and to CONTRACTOR. Submit draft on SITE inspection report prior to leaving the SITE.

2. As a minimum, reports shall include:

1. Date issued.

2. Project title and number.

3. Name and address of inspecting company and testing laboratory.

4. Name of inspector.

5. Date and time of sampling or inspection.

6. Identification of product and related SPECIFICATION Section.

7. Location in the Project.

8. Record of temperature and weather.

9. Type of inspection or test.

10. Date of test.

11. Results of tests and observations.

12. Conformance with the Contract Documents.

3. When requested by ENGINEER, provide interpretation of test results.

F. Limits on Inspecting Company and Testing Laboratory Authority:

1. Inspecting company and testing laboratory may not release, revoke, alter, or enlarge on requirements of the Contract Documents.

2. Inspecting company and testing laboratory may not approve or accept any portion of the Works.

3. Inspecting company and testing laboratory may not assume or perform any duties of CONTRACTOR.

4. Inspecting company and testing laboratory has no authority to stop the Works.

G. CONTRACTOR Responsibilities:

1. Deliver to inspecting company and testing laboratory at designated location, adequate samples of materials proposed to be used which require testing, along with proposed mix designs for concrete, and other material mixes that require testing by inspecting company and testing laboratory.

2. Cooperate with personnel of independent inspecting company and testing laboratory and provide safe access to the Works and to manufacturer's operations.

3. Provide incidental labor and facilities:

1. To provide access to the Works to be tested.

2. To obtain and handle samples at the SITE or at source of products to be tested.

3. To facilitate tests and inspections.

4. For inspecting company and testing laboratory's exclusive use for storage and curing of test samples.

5. Forms for preparing concrete test beams and cylinders.

4. Notify ENGINEER and inspecting company and testing laboratory 24 hours prior to expected time for operations requiring inspecting and testing services to allow for assignment of personnel and scheduling of tests.

5. Furnish copies of product test reports.

6. Promptly notify ENGINEER of all observed irregularities or non-conformance of the Works.

7. Retesting required because of CONTRACTOR negligence or non-conformance to specified requirements shall be performed by the same inspecting company and testing laboratory on instructions by ENGINEER at CONTRACTOR'S expense and at no additional cost to OWNER.

8. If defects or deficiencies are revealed during testing or inspecting, correct such defects and deficiencies and retest affected portions of the Works.

1.7 MANUFACTURERS' FIELD SERVICES AND REPORTS

A. When specified in individual Sections, require Suppliers to provide qualified staff to observe SITE conditions, conditions of surfaces and installation, quality of workmanship, startup of equipment, test, adjust, and balance of equipment, as applicable, and to initiate instructions when necessary.

B. Submit qualifications of observer to ENGINEER 30 days in advance of required observations. Observer subject to approval of ENGINEER.

C. Report observations and SITE decisions or instructions given to applicators or installers that are supplemental or contrary to manufacturers' written instructions.

D. Submit report in duplicate on same day as the SITE visit to ENGINEER for information.

1.8 MEASUREMENT AND PAYMENT

A. No separate payment will be made for work under this Section.

END OF SECTION

SECTION 01 52 00 FACILITIES AND CONTROLS

1.1 SECTION INCLUDES

A. Vehicular Access and Parking.

B. Temporary Controls.

C. Removal of Temporary Facilities and Controls.

D. Measurement and Payment.

1.2 VEHICULAR ACCESS AND PARKING

A. Access Roads:

1. Existing Roads: Reasonable use of existing on-site roads for construction traffic is permitted subject to the following conditions:

    1. Do not interrupt or interfere with traffic on roads at any time except where open-trench crossings are specified on the DRAWINGS and proper notice regarding open-trench crossings has been given to ENGINEER.

    2. Comply with weight and load size restrictions where applicable.

    3. Tracked vehicles are not allowed on paved areas.

2. Maintenance and Use:

    1. Maintain existing paved areas used for construction; promptly remove standing water and repair breaks, potholes, low areas, and other deficiencies, to maintain paving and drainage in original or specified condition.

    2. Remove mud from vehicle wheels before entering public roads.

3. Removal and Repair:

    1. Remove temporary materials and construction at SUBSTANTIAL COMPLETION.

    2. Repair existing facilities damaged by use to original condition.

B. Parking:

1. Arrange for surface parking areas to accommodate use of construction personnel.

2. Locate parking areas as directed by OWNER.

3. Do not allow tracked vehicles on pavement or concrete.

4. Existing Parking Areas:

1. Do not allow heavy vehicles or construction equipment in parking areas.

C. Traffic Regulation:

1. Control construction vehicular parking to prevent interference with access by emergency vehicles, and OWNER's operations.

2. Monitor parking of construction personnel's vehicles. Maintain vehicular access to and through parking areas.

3. Prevent construction parking on or adjacent to access roads or in non-designated areas.

4. Provide trained and equipped flag person(s) to regulate traffic when construction operations or traffic encroach on public traffic lanes.

5. Provide signs, barricades, gate persons, and other measures required to control traffic on the SITE.

6. Confine construction traffic to designated haul routes.

7. Remove equipment and devices at SUBSTANTIAL COMPLETION.

8. Repair damage caused by installation and removal.

1.3 TEMPORARY CONTROLS

A. Water Control:

1. Maintain excavations free of water.

2. Protect the SITE from puddling or running water. Grade the SITE to drain. Provide water barriers as necessary to protect the SITE from soil erosion.

3. Prevent surface water runoff from leaving work areas.

3. Prevent precipitation from infiltrating or from directly running off stockpiled materials. Cover stockpiled materials with an impermeable liner during periods of work stoppage including at the end of each working day and as directed by ENGINEER.

4. Direct surface waters that have not contacted potentially contaminated materials to existing surface drainage systems.

5. Dispose of water in a manner not injurious to public health or safety, to property, or to any part of the Works completed or under construction.

B. Dewatering:

1. Dewater the various parts of the Works including, without limitation, excavations, structures, foundations, and work areas. All water collected from the works within

the disposal area of the SITE is to be treated as leachate. Any leachate collected shall be pumped into the newly constructed CONTACT WATER retention pond.

2. Employ construction methods, plant, procedures, and precautions that will ensure the Works, including excavations, are stable, free from disturbance, and dry.

3. Provide sufficient and appropriate labor, plant, and equipment necessary to keep the Works free of water including standby equipment necessary to ensure continuous operation of dewatering system.

1.4 REMOVAL OF TEMPORARY FACILITIES AND CONTROLS

A. Remove equipment, facilities, and materials prior to the SUBSTANTIAL COMPLETION.

B. Grade the SITE as shown on the DRAWINGS.

C. Clean and repair damage caused by installation or use of temporary work.

D. Restore existing facilities used during construction to original and functional condition.

1.5 MEASUREMENT AND PAYMENT

A. No separate payment will be made for work under this Section.

END OF SECTION

SECTION 01 61 00 COMMON PRODUCT REQUIREMENTS

1.1 SECTION INCLUDES

A. Basic product requirements.

B. Product options.

C. Product substitutions.

D. Product delivery and handling requirements.

E. Product storage and handling requirements.

F. Measurement and payment.

1.2 BASIC PRODUCT REQUIREMENTS

A. Do not use materials and equipment removed from existing premises, except as specifically permitted by the Contract Documents.

B. Provide interchangeable components of the same manufacturer for components being replaced.

1.3 PRODUCT OPTIONS

A. Products Specified by Reference Standards or by Description Only: Any approved product meeting those standards or descriptions.

B. Products Specified by naming one or more manufacturers with a provision not prohibiting substitutions: Products of manufacturers named and meeting SPECIFICATIONS; options or substitutions allowed. Submit a request for substitution for any manufacturer not named in accordance with the following Article.

C. Products Specified by naming one or more manufacturers with a provision prohibiting substitutions: Products of manufacturers named and meeting SPECIFICATIONS, no options or substitutions allowed.

1.4 PRODUCT SUBSTITUTIONS

A. Document each request with complete data substantiating compliance of proposed substitution with the Contract Documents.

B. A request for substitution constitutes a representation that CONTRACTOR:

1. Has investigated proposed product and determined that it meets or exceeds the quality level of the specified product.

2. Will provide the same warranty for the substitution as for the specified product.

3. Will coordinate installation and make changes to other Works which may be required for the Works to be complete at CONTRACTOR'S expense and at no additional cost to OWNER.

4. Waives claims for additional costs or time extension which may subsequently become apparent.

C. Substitutions will not be considered when they are indicated or implied on Shop Drawings or product data submittals without separate written request.

1.5 PRODUCT DELIVERY AND HANDLING REQUIREMENTS

A. Make all arrangements for transportation, delivery, and handling of products required for prosecution and completion of the Works.

B. Shipments of products to CONTRACTOR or Subcontractors shall be delivered to the SITE only during regular working hours. Shipments shall be addressed and consigned to the proper party giving name of Project, street number, and city. Do not deliver shipments to OWNER except where otherwise directed in writing.

C. Provide advance notice of delivery of products to the SITE as required in other Sections. Do not deliver products of any kind to the SITE until approval in writing has been applied for and obtained by CONTRACTOR from ENGINEER.

D. Arrange delivery of products to the SITE in accordance with work sequence and in ample time to facilitate inspection prior to installation. Schedule deliveries to limit requirement for storage at the SITE to the practical minimum.

E. Coordinate deliveries to avoid conflict with the Works and conditions at the SITE and to accommodate the following:

1. Work of Other CONTRACTORs, or OWNER.

2. Limitations of storage space.

3. Availability of equipment and personnel for handling products.

4. OWNER's use of the SITE.

F. Do not have products delivered to the SITE until related Shop Drawings or Samples have been approved by ENGINEER.

G. Do not have products delivered to the SITE until required storage facilities have been provided.

H. Transport and handle products in accordance with manufacturers' instructions.

I. Immediately on delivery, inspect shipments to ensure that products comply with requirements of the Contract Documents and reviewed submittals, quantities are correct, and products are undamaged.

J. Provide equipment and personnel to handle products by methods to prevent soiling, disfigurement, or damage.

1.6 PRODUCT STORAGE AND HANDLING REQUIREMENTS

A. Limit on-site storage of products to areas shown on the C-02 of DRAWINGS or otherwise approved by ENGINEER.

B. Make all arrangements and provisions necessary for storage of materials and equipment.

C. Place all excavated materials, construction equipment, and materials and equipment to be incorporated into the Works so as not to injure any part of the Works or existing facilities and so that free access can be had at all times to all parts of the Works and to all utility service company installations in the vicinity of the Works.

D. Store and protect products in accordance with manufacturers' recommendations and instructions and requirements of SPECIFICATIONS, with seals and labels intact and legible.

E. Store sensitive products in weathertight, climate-controlled enclosures. Protect products subject to ultraviolet degradation from direct exposure to sunlight.

F. For exterior storage of fabricated products, place on sloped supports, above ground.

G. Provide off-site storage and protection when the SITE does not permit on-site storage or protection.

H. Cover products subject to deterioration with impervious sheet covering. Provide ventilation to avoid condensation or potential degradation of product.

I. Store loose granular materials on solid flat surfaces in a well-drained area. Prevent mixing with foreign matter.

J. Furnish equipment and personnel to store products by methods to prevent soiling, disfigurement, or damage.

K. Arrange storage of products to permit easy access for inspection. Periodically inspect to verify products are undamaged and are maintained in acceptable condition.

L. Store materials and equipment neatly and compactly, and in locations that will cause a minimum of inconvenience to other contractors, public travel, adjoining owners, tenants, and occupants.

M. Protect delivered products from contamination or damage.

N. Do not use lawns, grass plots, or other private property for storage purposes without written permission of OWNER or other person in possession or control of such premises.

O. CONTRACTOR shall be fully responsible for loss or damage to stored products, materials, and equipment.

1.7 MEASUREMENT AND PAYMENT

A. No separate payment will be made for work under this Section.

END OF SECTION

SECTION 01 74 19 WASTE MANAGEMENT AND DISPOSAL

1.1 SECTION INCLUDES

A. References.

B. Definitions.

C. Submittals.

D. Quality Assurance.

E. Municipal Solid Waste management and disposal.

F. Potential ACM management and disposal.

G. Measurement and Payment.

1.2 REFERENCES

A. WorkSafeBC Occupational Health and Safety Regulation Part 6: Substance Specific Requirements.

B. A Guide to the Regulations respecting Asbestos on Construction Projects and in Buildings and Repair Operations released in November 2007 (Ontario guidance document).

C. Canada Labour Code

1. Canada Occupational Health and Safety Regulations SOR/86-304.

D. Department of Justice Canada (Jus)

1. Canadian Environmental Protection Act, 1999 (CEPA).

E. Health Canada/Workplace Hazardous Materials Information System (WHMIS).

1. Safety Data Sheets (SDS).

F. Transport Canada (TC).

1. Transportation of Dangerous Goods Act, 1992 (TDGA).

G. Underwriters' Laboratories of Canada (ULC)

H. Government of Canada, Technical guideline to asbestos exposure management programs.

I. BC Regulation 63/88, Environmental Management Act, Hazardous Waste Regulation.

J. WorkSafeBC, Asbestos Training, Certification & Licensing.

1.3 DEFINITIONS

A. Asbestos Containing Materials (ACMs): materials that contain 0.5% or more asbestos by dry weight and are identified under Existing Conditions including fallen materials and settled dust. Non-friable ACMs may become friable (fibres become loose from the matrix) during handling or transportation; in these cases, if the ACM contains more than 1%, by weight, of asbestos fibres the ACMs will become hazardous waste.

B. Waste Asbestos: waste materials containing more than 1%, by weight, of asbestos fibres. If the waste contains more than 1%, by weight, of asbestos fibres and the waste is either a powder/dust or friable, or asbestos fibres are no longer bound in a binder material/matrix, Asbestos Waste is hazardous waste.

C. Asbestos Work Areas: area where work takes place which will or may disturb ACMs and/or Waste Asbestos.

D. Authorized Visitors: OWNER, ENGINEER, or ENGINEERS REPRESENTATIVE, and representatives of regulatory agencies.

E. Competent Worker in relation to specific work, means a worker who:

1. Is qualified because of knowledge, training and experience to perform the work.

2. Is familiar with the British of Columbia and federal laws and with the provisions of the regulations that apply to the work.

3. Has knowledge of all potential or actual danger to health or safety in the work.

F. Friable Materials: material that when dry can be crumbled, pulverized, or powdered by hand pressure and includes such material that is crumbled, pulverized, or powdered.

G. HEPA vacuum: High Efficiency Particulate Air filtered vacuum equipment with a filter system capable of collecting and retaining fibres greater than 0.3 microns in any direction at 99.97% efficiency.

H. Non-Friable Materials: material that when dry cannot be crumbled, pulverized, or powdered by hand pressure.

I. Occupied Areas: any area the is outside of the outside Asbestos Work Area.

J. Polyethylene sheeting sealed with tape: polyethylene sheeting of type and thickness specified sealed with tape along edges, around penetrating objects, over cuts and tears, and elsewhere as required to provide continuous polyethylene membrane to protect underlying surfaces from water damage or damage by sealants, and to prevent escape of asbestos fibres through sheeting into clean area.

1.4 SUBMITTALS

A. Submittals in accordance with Section 01 32 00 – Administrative Requirements and Submittal Procedures.

B. Before beginning work:

1. Obtain from appropriate agency and submit to ENGINEER necessary permits for excavation, transportation and disposal of ACMs and/or Waste Asbestos. Ensure that landfill operator is fully aware of hazardous nature of material being landfilled, and proper methods of disposal. Submit proof satisfactory to ENGINEER that suitable arrangements have been made to receive and properly dispose of ACMs and/or Waste Asbestos. Shared responsibility between the CONTRACTOR and ENGINEER to ensure that the CONTRACTOR does not drive with ACMs and/or Waste Asbestos outside the limits of the landfill. If requested by the CONTRACTOR, OWNER will implement/create a temporary site access to speed up flow of trucks from the excavation to the disposal location.

2. Submit proof satisfactory to ENGINEER that all asbestos workers have received appropriate training and education by a competent person on hazards of asbestos exposure, good personal hygiene, entry and exit from Asbestos Work Area, aspects of work procedures and protective measures while working in Asbestos Work Areas, and the use, cleaning and disposal of respirators and protective clothing. Submit proof of attendance in form of certificate. This required training and education is outlined in WorkSafeBC.

3. Ensure supervisory personnel have WorkSafeBC certification for asbestos abatement.

4. Submit layout of proposed work areas, suitable fencing and decontamination facilities to ENGINEER for review.

5. Submit Provincial/Territorial and/or local requirements for Notice of Project form.

6. Submit proof of CONTRACTOR'S Asbestos Liability Insurance.

7. Submit proof satisfactory to ENGINEER that employees have respirator fitting and testing. Workers must be fit tested (irritant smoke test) with respirator that is personally issued.

8. Submit Worker's Compensation Board status and transcription of insurance.

9. Submit documentation including test results, fire and flammability data, and Safety Data Sheets (SDS) for chemicals or materials that may be used during this project.

1.5 QUALITY ASSURANCE

A. Regulatory Requirements: comply with Federal, Provincial/Territorial and local requirements pertaining to asbestos, provided that in case of conflict among those requirements or with these SPECIFICATIONS more stringent requirement applies. Comply with regulations in effect at time work is performed.

B. Health and Safety:

1. Complete construction occupational health and safety in accordance with Section 01 35 30 - Health and Safety.

2. Safety Requirements: worker and visitor protection.

   a. Protective equipment and clothing to be worn by workers while in Asbestos Work Area includes:

      a. Air purifying full face-mask respirator personally issued to worker and marked as to efficiency and purpose, suitable for protection against asbestos and acceptable to Provincial Authority having jurisdiction. The respirator to be fitted so that there is an effective seal between the respirator and the worker's face, unless the respirator is equipped with a hood or helmet. The respirator to be cleaned, disinfected and inspected as per the WorkSafeBC, for Workers: Asbestos Training and Certification requirements. The CONTRACTOR to establish written procedures regarding the selection, use and care of respirators, and a copy of the procedures to be provided to and reviewed with each worker who is required to wear a respirator. In addition, a copy of the procedures must be posted in an area used by all workers. All personal protective equipment used by all workers needs to comply with the training completed in WorkSafeBC, For Workers: Asbestos Training and Certification.

      b. Disposable type protective clothing that meets the requirements of the WorkSafeBC, For Workers: Asbestos Training and Certification. Protective clothing to be provided by the CONTRACTOR and worn by every worker who enters the Asbestos Work Areas, and the protective clothing to comply with the WorkSafeBC Asbestos standards.

   b. Eating, drinking, chewing, and smoking, including e-cigarettes are not permitted in Asbestos Work Area.

   c. Ensure workers are fully protected with respirators and protective clothing during preparation of system of enclosures prior to commencing actual asbestos abatement.

C. Before leaving Asbestos Work Area, the worker must decontaminate their protective clothing by following the regulations and requirements based on WorkSafeBC.

D. Ensure workers wash hands and face when leaving Asbestos Work Area. Facilities for washing are to be provided by the CONTRACTOR.

E. Ensure that no person required to enter an Asbestos Work Area has facial hair that affects seal between respirator and face.

F. Visitor Protection:

   1. Provide protective clothing and approved respirators to Authorized Visitors to work areas.

   2. Instruct Authorized Visitors in the use of protective clothing, respirators, and procedures.

3. Instruct Authorized Visitors in proper procedures to be followed in entering into and exiting from Asbestos Work Area.

1.6 MUNICIPAL SOLID WASTE MANAGEMENT AND DISPOSAL

A. CONTRACTOR must dispose of all municipal solid waste and asbestos encountered on SITE during works in the on-site landfill after proper precautions and safeguards have been implemented.

B. CONTRACTOR will be charged the standard landfill tipping fees for waste generated on SITE as a part of the construction works.

C. CONTRACTOR will notify landfill staff prior to hauling waste up to the active disposal area. Loads of waste must be weighed at the scale prior to being hauled to the active disposal area.

D. CONTRACTOR will provide an estimated quality and description of waste prior to disposal.

1.7 POTENTIAL ASBESTOS CONTAINING MATERIAL MANAGEMENT AND DISPOSAL

A. EXISTING CONDITIONS

1. Testing of suspected asbestos containing materials to be handled, removed, or otherwise disturbed and disposed of during this Project are the responsibility of the CONTRACTOR. The CONTRACTOR is to retain a qualified, recognized Consultant who is experienced in earth-moving operations and in the handling of ACMs and/or Waste Asbestos. All investigations of suspect ACMs and/or Waste Asbestos, and disturbance of confirmed ACMs and/or Waste Asbestos are covered within the scope of this SPECIFICATION and Project.

2. Notify ENGINEER of suspect ACMs and/or Waste Asbestos discovered during Work and not apparent from excavation investigations, DRAWINGS, SPECIFICATIONS, or report pertaining to Work. Do not disturb such material until instructed by ENGINEER.

B. SCHEDULING

1. Not later than ten (10) days before beginning Work on this Project notify following in writing:

2. Provincial/Territorial, Department of Labour.

3. Disposal Authority.

4. Inform sub-trades of presence of asbestos containing materials identified in Existing Conditions.

5. Submit to ENGINEER a copy of notifications prior to start of Work.

6. Hours of Work: perform work involving asbestos within stipulated working hours of Contact Documents for this project.

C. OWNER'S INSTRUCTIONS

1. Before beginning Work, provide to ENGINEER satisfactory proof that every worker has their WorkSafeBC certification and training in hazards of asbestos exposure, in personal hygiene including dress and showers (to be supplied, maintained, and operated at the SITE by the CONTRACTOR), in entry and exit from Asbestos Work Area, and in use, cleaning, and disposal of respirators and protective clothing.

2. Instruction and training related to respirators includes, at minimum:

   a. Proper fitting of equipment.

   b. Inspection and maintenance of equipment.

   c. Disinfecting of equipment.

   d. Limitations of equipment.

   e. Instruction and training must be provided by competent, qualified person.

   f. Supervisory personnel to complete required training.

D. MATERIALS

1. Polyethylene: minimum 0.15mm thick unless otherwise specified; in sheet size to minimize joints as outlined in the Government of Canada – Technical Guideline to Asbestos Exposure Management Programs.

2. FR polyethylene: minimum 0.15mm thick, woven fibre reinforced fabric bonded both sides with polyethylene as outlined in the Government of Canada – Technical Guideline to Asbestos Exposure Management Programs.

3. Tape: fibreglass - reinforced duct tape suitable for sealing polyethylene under both dry conditions and wet conditions using amended water.

4. Wetting agent: 50% polyoxyethylene ester and 50% polyoxyethylene ether, or other material approved by CONTRACTOR'S Competent Worker, ENGINEER, and/or Consultant, mixed with water in concentration to provide adequate penetration and wetting of asbestos containing material.

5. Waste Containers: contain waste in two separate containers.

   a. Inner container: 0.15mm thick sealable polyethylene bag.

   b. Outer container: sealable metal or fibre type where there are sharp objects included in waste material; otherwise, outer container may be sealable metal or fibre type or second 0.15mm thick sealable polyethylene bag.

c. Labelling requirements: affix preprinted cautionary asbestos warning, in both official languages, that is visible when ready for removal to disposal SITE.

6. Tape: tape suitable for sealing polyethylene to surfaces under both dry and wet conditions using amended water.

E. PREPARATION

1. Before beginning Work, at each access to Asbestos Work Area, install warning signs and caution tape in both official languages that align with the requirements outlined in WorkSafeBC – OHS Guidelines Part 6: Substance Specific Requirements.

2. Work Areas:

   a. All work areas during initial investigations and excavation of confirmed asbestos containing materials must be completely encircled by snow fence or equivalent fencing when unattended.

   b. If the investigation and/or excavation sites are to be left unattended for longer periods, the asbestos excavation location must be covered with uncontaminated soil, or such other material deemed appropriate to prevent migration of asbestos fibres from the location.

3. Worker Decontamination and Cleanup:

   a. Worker Decontamination includes the following:

      i. Before leaving Asbestos Work Area, the worker must decontaminate their protective clothing by following the regulations and requirements based on WorkSafeBC.

      ii. Ensure workers wash hands and face when leaving Asbestos Work Area. Facilities for washing are to be provided by the CONTRACTOR as the OWNER does not have running water on SITE.

      iii. Ensure that no person required to enter an Asbestos Work Area has facial hair that affects seal between respirator and face.

      iv. Visitor Protection:

         1. Provide protective clothing and approved respirators to Authorized Visitors to work areas.

         2. Instruct Authorized Visitors in the use of protective clothing, respirators and procedures.

         3. Instruct Authorized Visitors in proper procedures that must be followed in entering into and exiting from Asbestos Work Area.

      v. Seal and remove double bagged waste from SITE. Dispose of in accordance with requirements of Provincial/Territorial and Federal authority having

jurisdiction. Supervise dumping and ensure that dump operator is fully aware of hazardous nature of material to be dumped and that guidelines and regulations for asbestos disposal are followed.

vi. Once sealed and double bagged, the confirmed asbestos will be safely transported and dumped at the Sechelt landfill, in guidance with Provincial/Territorial and Federal guidelines and regulations.

4. Do not begin Asbestos Abatement work until:

a. Arrangements have been made for disposal of waste.

b. Work areas and decontamination areas required to remain in use are effectively segregated.

c. Tools, equipment, and materials waste containers are on hand.

d. Arrangements have been made for property security.

e. Warning signs are displayed where access to contaminated areas is possible.

f. Notifications have been completed and other preparatory steps have been taken.

F. SUPERVISION

1. Minimum of one Supervisor for every ten workers is required.

2. Approved Supervisor must remain within Asbestos Work Area during disturbance, removal, or other handling of asbestos containing materials.

G. SITE SECURITY

1. Provide with both passive and active security if left unattended overnight.

2. Install signs denoting the danger of the SITE(s).

3. Have security personnel frequently monitor the SITE(s) to eliminate intentional or unintentional trespassing.

4. Asbestos excavation locations must be completely encircled by snow fence or equivalent fencing when unattended.

H. DETERMINATION OF ASBESTOS, LOCATION AND QUANTITY

1. Consultant with applicable training in Asbestos management to test suspected containing materials to confirm presence or absence of asbestos containing materials in the work SITE. All investigations of suspect asbestos containing materials, and disturbance of confirmed asbestos containing material are covered within scope of this SPECIFICATION and Project.

2. The presence and location of asbestos deposits in a SITE should be determined, as far as possible, by:

   a. The SITE OWNER/operator; or

   b. Any other sources deemed appropriate.

I. ASBESTOS REMOVAL

1. Before removing asbestos:

   a. Prepare SITE with appropriate security and fencing as required.

   b. Excavate asbestos containing materials and load into appropriately containment (possibly lined and sealed truck) for transport. The excavated asbestos within the Asbestos Work Area and Proposed CONTACT WATER Pond that is appropriately lined and sealed is to be transported to the Sechelt Landfill where it will be landfilled.

   c. Notify Sechelt Landfill of approximate size and quantity of excavated asbestos material found within the Asbestos Work Area.

   d. A pre-determined and GPS located area within the Sechelt Landfill will be pre-excavated and made ready for the receival of ACMs and/or Waste Asbestos. Placed asbestos will be covered immediately by landfill staff and another pre-determined and GPS located area within the Sechelt Landfill will be prepared.

   e. Excavation of the asbestos area must include the removal of approximately 30 centimetres of soil proved to be asbestos-free in all directions surrounding the asbestos deposit, as detailed in WorkSafeBC Regulations. Over excavation must be practiced ensuring the complete removal of ACMs and/or Waste Asbestos. The total excavation quantity will then include both the asbestos deposit and surrounding earth as defined above.

2. Dust Suppression:

   a. The following must be considered when planning dust suppression activities:

   b. Prevent spread of dust from Asbestos Work Area using measures appropriate to work to be done.

   c. Wetting and maintaining appropriate wetness of earth, ACMs, and/or Waste Asbestos at the point of excavation during all phases of the operations to eliminate visible dust emissions.

   d. Prevention of surface water run-offs.

   e. Provision to maintain wetting when work is not in progress (e.g., overnight).

   f. Wetting and maintaining appropriate wetness of all roadways and tracks on the reclamation SITE during the excavation operations.

g. The use of acceptable commercially available dust suppressants on roadways.

h. The type of alternative dust suppressants and their application rate, etc., to be in keeping with the aim of eliminating visible dust emissions.

i. Where application of water is required for wetting asbestos containing materials, shut off electrical power, provide 24-volt safety lighting and ground fault interrupter circuits on power source for electrical tools, in accordance with applicable CSA Standard. Ensure safe installation of electrical lines and equipment.

3. Cleanup:

a. Frequently during Work and immediately after completion of work, clean up dust and asbestos-containing waste if required include use of HEPA vacuum or by damp wipe/mopping.

b. The cleaning of vehicles that were near the reclamation before prior leaving the SITE. At minimum must consist of a thorough hosing.

c. Seal and remove double bagged waste from SITE. Dispose of in accordance with requirements of Provincial/Territorial and Federal authority having jurisdiction. Supervise dumping and ensure that dump operator is fully aware of hazardous nature of material to be dumped and that guidelines and regulations for asbestos disposal are followed.

d. Perform final thorough clean-up of Asbestos Work Areas and adjacent areas as deemed suitable by CONTRACTOR'S Competent Worker, ENGINEER, and/or Consultant.

J. AMBIENT AIR MONITORING

1. From beginning of Work until completion of excavation operations, CONTRACTOR's Competent Worker or CONTRACTOR are to take air samples on daily basis around the perimeter fencing of SITE by means of air samples analyzed by Phase Contrast Microscopy (PCM).

a. Stop Work when PCM measurements exceed 0.02 f/cc and correct procedures.

b. The number and location of samples to be determined by the Consultant and reviewed by Ministry personnel as applicable.

c. Results must be evaluated in accordance with the above Occupational Health and Safety Regulation for asbestos in ambient air.

2. Visible Emissions on SITE:

a. Remedial measures must be taken.

b. The Consultant shall maintain a log of such events that records the time, duration, location, probable cause, and remedial measures applied.

c. Copies of the log must be made available to the OWNER and included in the construction report to be submitted once construction reaches SUBSTANTIAL COMPLETION.

d. The log data shall be reviewed and compared with pertinent asbestos analytical data to ascertain if a relationship between the visible emission and asbestos fibre counts exists.

3. Analytical Results:

a. All analytical results must be forwarded to the OWNER and used in the construction report as soon as possible if required.

4. Post Removal Monitoring:

a. Post-removal air monitoring of the excavation site must be conducted in a manner and frequency as determined by the ENGINEER.

K. INSPECTION

1. Perform inspection of Asbestos Work Area to confirm compliance with SPECIFICATION and governing authority requirements. Deviations from these requirements that have not been approved in writing by CONTRACTOR'S Competent Worker, ENGINEER, and/or Consultant may result in Work stoppage, at no cost to OWNER.

2. CONTRACTOR'S Competent Worker, ENGINEER, and/or Consultant will inspect Work for:

a. Adherence to specific procedures and materials.

b. Final cleanliness and completion.

c. No additional costs will be allowed by CONTRACTOR for additional labour or materials required to provide specified performance level.

3. When asbestos leakage from Asbestos Work Area has occurred or is likely to occur CONTRACTOR'S Competent Worker, ENGINEER, and/or Consultant may order Work shutdown.

a. No additional costs will be allowed by CONTRACTOR for additional labour or materials required to provide specified performance level.

1.8 MEASUREMENT AND PAYMENT

A. No separate payment will be made for work under this Section.

END OF SECTION

SECTION 01 73 03 EXECUTION AND CLOSEOUT PROCEDURES

1.1 SECTION INCLUDES

A. Examination.

B. Field surveying.

C. Restoration.

D. Final cleaning.

E. Removal and disposal.

F. Protection of installed work.

G. Closeout procedures.

H Project record documents.

I. Measurement and payment.

1.2 EXAMINATION

A. Prior to commencement of work at the SITE, inspect the SITE with ENGINEER and OWNER to review and establish the condition of surface features including existing roads, parking areas, buildings, wells, trees and other plants, grassed areas, fencing, service poles, wires, paving, and survey benchmarks or monuments on or adjacent to the SITE which may be affected by the Works. This inventory shall be mutually agreed between ENGINEER, OWNER, and CONTRACTOR and shall not thereafter be subject to dispute. Such inventory as may be amended, from time to time, will be used by ENGINEER to check compliance by CONTRACTOR with the requirements of the Contract Documents.

B. Provide ongoing review, inspection, and attendance during performance of the Works to properly document conditions. Promptly inform ENGINEER of any existing condition at the SITE affected by the Works which may require restoration, repair, or replacement. Do not cover up any of the Works without prior approval from ENGINEER.

C. CONTRACTOR will maintain a photographic log of the existing conditions of the site, construction progress and post construction conditions. A copy of the photographic log will be provided to ENGINEER to be included in final construction report.

C. Maintain and protect existing SITE structures and facilities from damage which may be affected by the Works while work is in progress. Repair or replace damage resulting from the Works to ENGINEER'S approval.

D. Verify that existing SITE conditions and substrate surfaces are acceptable for subsequent work. Beginning new work means acceptance by CONTRACTOR of existing conditions.

E. Verify that existing substrate is capable of structural attachment of new work being applied or attached or that existing, or previously constructed surfaces are ready to receive subsequent work.

F. Examine and verify specific conditions described in individual Sections.

G. Verify that utility services are available, of the correct characteristics, and in the correct location.

H. Verify that utility requirements and characteristics of operating equipment are compatible with building utilities.

1.3 FIELD SURVEYING

A. Quality Assurance:

1. Employ a licensed land surveyor or Engineering Firm or Engineering Technology Firm registered in the Province of British Columbia and acceptable to ENGINEER to perform survey work of this article.

2. ENGINEER may, at any time, check CONTRACTOR'S survey and layout work but this shall not relieve CONTRACTOR of any of its responsibilities to carry out the Works to the lines and grades set out in accordance with the DRAWINGS and the Project SPECIFICATIONS or as otherwise necessary for performance of the Works in accordance with the Contract Documents.

3. CONTRACTOR shall be responsible for laying out the Works from established reference points. The CONTRACTOR shall alert OWNER and ENGINEER if there are significant discrepancies between the DRAWINGS and SITE conditions.

B. Record Documents:

1. Maintain a complete and accurate log of control and survey work as it progresses.

2. Prepare a certified survey illustrating dimensions, locations, angles, and elevations of construction, and the SITE work.

3. Submit record documents prior to demobilization.

C. Survey Reference Points:

1. Locate, preserve, and protect survey control and reference points.

2. Promptly report to ENGINEER the loss or destruction of any reference point or relocation required because of changes in grades or other reasons.

3. Make good any errors entering into the Works through CONTRACTOR failure to notify ENGINEER concerning lack of preservation of such survey reference points.

4. Accurately replace or relocate disturbed reference or survey control points based on original survey control. Make no changes without prior written notice to and approval of ENGINEER.

D. Survey Requirements:

1. Utilize recognized engineering survey practices. Locate and lay out the Works using properly calibrated instrumentation.

2. Establish elevations, lines, and levels.

3. Periodically verify layouts by same means and methods.

4. Develop and make such additional detailed surveys as are needed for construction, such as benchmarks, slope stakes, batter boards, stakes for establishing the design elevations of excavations and final grades, and other working points, lines, and elevations. Maintain benchmarks and base lines established by ENGINEER, existing property boundaries, lines and grade hubs, and other references and construction or survey points.

E. Examination:

1. Verify locations of survey control points prior to starting work.

2. Verify set-backs, easements, and clearances, confirm DRAWING dimensions and elevations.

3. Promptly notify ENGINEER of any discrepancies discovered.

1.4 RESTORATION

A. As a minimum, restoration shall mean replacement, repairs, or reconstruction to a condition at least as good as or better than the condition prior to commencement of the Works.

B. Except where specifically required otherwise by other Sections, restore areas of the Works and areas affected by the performance of the Works to conditions that existed prior to commencement of the Works and to match condition of similar adjacent, undisturbed areas.

C. Ensure that restored areas match existing grade and surface drainage characteristics, except as otherwise specified, and ensure a smooth transition from restored surfaces to existing surfaces.

D. Do not alter original conditions without prior written approval from ENGINEER.

E. Without limiting the generality of the foregoing or other requirements of the Contract Documents, preserve and protect existing features encountered at the SITE during the

performance of the Works including, but not limited to wells, structures, curbs and gutters, fences, pavement, manholes and catch basins, utilities, railroad sidings, roads, streets, walks, grassed areas, and other graded or improved areas.

F. Utilize construction methods and procedures during the performance of the Works which keeps disturbance and damage of whatever nature to existing conditions to the practical minimum. Where work necessitates root or branch cutting, do not proceed without ENGINEER'S prior approval.

G. Ensure that quality, grades, elevations, and extent of bedding, cover, and other backfill materials including subgrades, finish grades, and thickness of pavements for roadways and parking areas are properly documented during their removal to ensure reconstruction to at least their original and functional condition.

H. Restoration Material: New, except as otherwise specified, not damaged or defective, and of the best quality for the purpose intended. Furnish evidence as to type, source, and quality of materials or products furnished when requested by ENGINEER or specified in other Sections.

I. Should any dispute arise as to the quality or fitness of materials, whether obtained on the SITE or off the SITE, whether previously inspected by ENGINEER prior to use or not, the decision to use any material or product in the finished Works will rest solely with ENGINEER.

J. Remove from the SITE clean material not approved for reuse.

K. Handle and store products and materials in a manner to prevent damage, adulteration, deterioration, and soiling and in accordance with manufacturer's instructions when applicable.

L. Prior to commencement of restoration work, inform ENGINEER of proposed material, methods, and procedures to repair, replace, or reconstruct disturbed, damaged, or suspected damage to the Works.

M. Perform cutting, fitting, remedial, and coordination work to make the several parts of the Works fit together.

N. Except as specified otherwise, dismantle and salvage materials for reuse where practicable. Exercise due care when removing material for salvage. Repair or replace materials damaged through improper handling or through loss after removal.

O. Store and protect removed material approved for reuse in approved locations. Beginning of restoration work means acceptance of existing conditions.

1.5 FINAL CLEANING

A. Execute final cleaning prior to SUBSTANTIAL COMPLETION of the Works.

B. Clean equipment and fixtures to a sanitary condition with cleaning materials appropriate to the surface and material being cleaned.

C. Clean debris from drainage systems.

D. Clean the SITE; sweep paved areas and rake clean landscaped surfaces.

E. Repair pavement, roads, sod, and all other areas affected by construction operations and restore them to original condition or to minimum condition specified.

F. Maintain cleaning until acceptance by OWNER.

1.6 REMOVAL AND DISPOSAL

A. Remove surplus materials and temporary facilities and controls from the SITE.

B. Dispose of all non-contaminated waste materials, litter, debris, and rubbish in the landfill. Recycling is to be utilized as much as possible prior to disposal of materials in the landfill.

C. Do not burn or bury rubbish and waste materials on the SITE.

D. Do not dispose of volatile or hazardous wastes such as mineral spirits, oil, or paint thinner in storm or sanitary drains.

E. Do not discharge wastes into on-SITE and on-landfill ditches or streams and waterways.

1.7 PROTECTION OF INSTALLED WORK

A. Protect installed work and provide special protection where specified in individual Sections.

B. Provide temporary and removable protection for installed products. Control activity in immediate work area to prevent damage.

C. Prohibit traffic upon landscaped areas.

D. Maintenance of Flow: Maintain the flow of water in the water distribution system and in existing watercourses. In the event that any emergency or situation should arise which requires interruption of normal operation of any existing systems, restore normal operation as soon as possible even though permission for such planned shutdown was obtained.

E. Flotation: Take necessary precautions against the flotation of any structures during construction. Make good any damage caused by flotation.

1.8 CLOSEOUT PROCEDURES

A. Submit written certification that the Contract Documents have been reviewed, the Works has been inspected, and that the Works is complete in accordance with the Contract Documents and in compliance with Laws and Regulations including, but not limited to, the provision of all applicable federal, provincial, and local health, safety, and environmental laws and regulations, and ready for ENGINEER'S review.

B. Complete and furnish submittals to ENGINEER that are required by governing or other authorities and by the Contract Documents. Payment shall not become due and payable until all submittals have been made acceptable to ENGINEER.

1.9 PROJECT RECORD DOCUMENTS

A. Maintain 1 set of the following record documents on the SITE; record actual revisions to the Works:

1. DRAWINGS.
2. SPECIFICATIONS.
3. Change Orders and other modifications to the Contract.
4. Reviewed Shop Drawings, product data, and Samples.
5. Manufacturer's instruction for assembly, installation, and adjusting.

B. Ensure entries are complete and accurate, enabling future reference by OWNER.

C. Store record documents separate from documents used for construction.

D. Record information concurrent with construction progress.

E. SPECIFICATIONS: Legibly mark and record, at each Section of the SPECIFICATIONS, a description of actual products installed, including the following:

1. Manufacturer's name and product model and number.
2. Product substitutions or alternates utilized.
3. Changes made by modifications.

F. Record Documents and Shop Drawings: Legibly mark each item to record actual construction including:

1. Measured horizontal and vertical locations of underground utilities and appurtenances, referenced to permanent surface improvements.
2. Measured locations of internal utilities and appurtenances concealed in construction, referenced to visible and accessible features of the Works.
3. Field changes of dimension and detail.
4. Details not on original DRAWINGS.

G. Remove ENGINEER title block and seal from all documents generated by CONTRACTOR.

H. Submit documents to ENGINEER with claim for final payment.

1.10 MEASUREMENT AND PAYMENT

A. Section 01 29 00 - Payment Procedures: Requirements for measurement and payment.

B. Demobilization and Closeout:

1. Schedule of Prices Item No. 01 73 03 / 1.

2. Payment Basis: Lump sum price. Includes final cleaning of equipment, construction facilities, and materials to be removed from the SITE; final removal of temporary construction and support facilities provided by CONTRACTOR; final SITE cleanup; final non-contaminated waste removal and disposal; final grading; adjusting; field surveying; restoration; protection of installed work; and record documents.

END OF SECTION

DIVISION 2

SECTION 02 42 00 REMOVAL AND SALVAGE OF CONSTRUCTION MATERIALS

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Salvaging and Transportation of Concrete Blocks.

B. Transportation of Wheel Stops and Drainage Pipe Joints.

C. Transportation of Large Heavy Equipment Tires.

D. Removal and Salvaging of Road Aggregate Material.

E. Measurement and Payment.

1.2 REFERENCES

A. Section 01 45 00 - Quality Control Requirements.

1.3 QUALITY ASSURANCE

A. Regulatory Requirements: ensure work is performed in compliance with applicable Provincial regulations.

1.4 DELIVERY, STORAGE, AND HANDLING

A. Section 01 61 00 – Common Product Requirements.

B. Protect existing items designated to remain, items designated to move, and items designated for salvage. In event of damage to such items, immediately replace or make repairs to approval of ENGINEER and at no extra cost.

C. Remove and store materials to be salvaged or moved in a manner to prevent damage. Store and protect in accordance with requirements for maximum preservation of material.

PART 2 PRODUCTS

2.1 SALVAGING AND TRANSPORTATION OF CONCRETE BLOCKS

A. Concrete blocks.

2.2 TRANSPORTATION OF WHEEL STOPS AND DRAINAGE PIPE JOINTS

A. Rubber wheel stops and drainage pipe joints.

B. Accessories:

1. Anchors.

2.3 TRANSPORTATION OF LARGE HEAVY EQUIMPMENT TIRES

A. Large heavy equipment tires.

2.4 REMOVAL AND SALVAGING OF ROAD AGGREGATE MATERIAL

A. Road aggregate material from the former drop-off area.

PART 3 EXECUTION

3.1 EXAMINATION

A. Section 01 73 03 - Execution and Closeout Procedures.

B. Verify that existing plant life or other surface features designated to remain are tagged or identified.

3.2 PREPARATION

A. Inspect SITE with ENGINEER and verify extent and location of items designated for removal, disposal, salvage, and items to remain.

B. Locate and protect utilities. Preserve active utilities traversing SITE in operating condition.

C. Locate and protect groundwater monitoring wells.

D. Locate and protect soil gas monitoring probes.

3.3 SALVAGING OF CONCRETE BLOCKS

A. Existing concrete blocks, located at the former public drop off area (as shown on Drawing C-01), are to be salvaged.

B. Salvaged concrete blocks are to be loaded, shipped, and unloaded at Pender Harbour Transfer Station.

C. Most of the existing concrete blocks do not have the metal lifting hook and should be moved using an excavator equipped with a bucket and hydraulic thumb.

D. Storage location at Pender Harbour Transfer Station to be determined by ENGINEER.

3.4 TRANSPORTATION OF WHEEL STOPS AND DRAINAGE PIPE JOINTS

A. Existing wheel stops, drainage pipe joints and accessories, located at the former public drop off area (as shown on Drawing C-01), are to be salvaged.

B. Wheel stops, drainage pipe joints and accessories are to be loaded, shipped, and unloaded at Pender Harbour Transfer Station.

C. Storage location at Pender Harbour Transfer Station to be determined by ENGINEER.

3.5 TRANSPORTATION OF LARGE HEAVY EQUIPMENT TIRES

A. Existing large heavy equipment tires, located at the former public drop off area (as shown on Drawing C-01), are to be salvaged.

B. Large heavy equipment tires are to be loaded, shipped, and unloaded at Pender Harbour Transfer Station.

C. Storage location at Pender Harbour Transfer Station to be determined by ENGINEER.

3.6 REMOVAL AND SALVAGING OF ROAD AGGREGATE MATERIAL

A. Excavate and stockpile aggregate road material from the former drop off area as well as the existing perimeter road adjacent to the existing CONTACT WATER pond.

B. Every effort shall be made to re-use the road aggregate material in the construction of the CONTACT WATER Pond Relocation project.

C. Road aggregate material that must not be re-used as part of the CONTACT WATER Pond Relocation project is to be used by landfill staff in road maintenance activities.

PART 4 MEASUREMENT AND PAYMENT

4.1 GENERAL

A. Section 01 29 00 - Payment Procedures.

4.2 SALVAGING OF CONCRETE BLOCKS

A. Schedule of Prices Item No. 02 42 00 / 1.

B. Measurement Basis: Lump Sum.

C. Payment Basis: Unit price. Includes loading, shipping, and unloading of existing Concrete Blocks.

4.3 TRANSPORTATION OF WHEEL STOPS AND DRAINAGE PIPE JOINTS

A. Schedule of Prices Item No. 02 42 00 / 2.

B. Measurement Basis: Lump Sum.

C. Payment Basis: Unit price. Includes loading, shipping, and unloading of existing Wheel Stops and accessories.

4.4 TRANSPORTATION OF LARGE HEAVY EQUIPMENT TIRES

A. Schedule of Prices Item No. 02 42 00 / 3.

B. Measurement Basis: Lump Sum.

C. Payment Basis: Unit price. Includes loading, shipping, and unloading of existing large heavy equipment tires.

4.5 REMOVAL AND SALVAGING OF ROAD AGGREGATE MATERIAL

A. Schedule of Prices Item No. 02 42 00 / 4.

B. Measurement Basis: Cubic Metre.

C. Payment Basis: Unit price. Includes excavation and stockpiling of existing Road Aggregate Material.

END OF SECTION

SECTION 03 41 00 - PRECAST STRUCTURAL CONCRETE

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Triple 300mm Inlet Headwall.

B. Measurement and Payment.

1.2 RELATED SECTIONS

A. Section 01 32 00 – Administrative Requirements and Submittal Procedures.

B. Section 01 45 00 – Quality Control Requirements.

C. Section 31 23 11 – Fill.

1.3 REFERENCES

A. Canadian Standards Association (CSA):

1. A23.1/A23.2 – Concrete Materials and Methods for Concrete Construction/Methods of Test for Concrete.
2. A23.4 – Pre-cast Concrete-Materials and Construction.
3. G30.5 – Welded Steel Wire Fabric for Concrete Reinforcement.
4. G30.15 – Welded Deformed Steel Wire Fabric for Concrete Reinforcement.
5. G40.21 – Structural Quality Steel.
6. W186-M1997 – Welding of Reinforcing Bars in Reinforced Concrete Construction.

B. American Society for Testing and Materials (ASTM):

1. A775/A 775M [94d] – Specification for Epoxy-Coated Reinforcing Steel Bars.

1.4 SUBMITTAL PROCEDURES

A. Section 01 32 00 – Administrative Requirements and Submittal Procedures: Requirements for submittals.

B. Product Data: Pre-cast concrete dimensions including test reports and material property sheets. OWNER supplied.

C. Manufacturer's Certificate: Quality control certificates pertaining to each pre-cast concrete item produced. OWNER supplied.

D. Manufacturer's Instructions: Indicate special instructions required to install products specified. OWNER supplied.

1.5 QUALITY CONTROL

A. Section 01 45 00 - Quality Control Requirements: Requirements for Quality Control.

B. Concrete Quality

1. Unless otherwise noted or specified, use concrete mix designed to produce a minimum of 25 MPa compressive cylinder strength at 28 days, with a maximum water/cement ratio to CSA A23.4.

2. Concrete quality shall conform to CSA Standard A23.1.

3. Air Entrainment of Concrete Mix: Refer to CSA A23.1.

4. Use of calcium chloride not permitted.

5. Concrete shall meet the following additional requirements:

    1. Minimum cement content of 320 kg per cubic metre.

    2. Maximum water/cement ratio of 0.45.

    3. Coarse aggregate of a nominal maximum size not exceeding 28mm.

    4. Slump of 50mm ± 20mm.

    5. Entrained air of 5 to 8 %.

C. Reinforcing Steel, Attachment Hardware and Miscellaneous Items

1. Anchors shall be securely attached in accordance with CSA W186.70.

2. Reinforcing steel for bent and hooked connections shall conform to: CSA G40.21.

3. Galvanize anchors after fabrication and touch up anchors with zinc rich primer after welding.

4. Pick-up points for handling units shall be formed with accurately placed rigid P.V.C. pipe recessed 15mm from both finished surfaces.

D. Fabrication

1. Pre-cast concrete units shall be fabricated in accordance with CSA A23.4.

2. Anchors, lifting hooks, shear bars, spacers and other inserts or fittings shall be as recommended and/or designed by manufacturer for a complete and rigid installation. Each shall conform to requirements of local building by-laws. Lift hooks shall be

adequately sized to safely handle panels according to member dimension and weight. Anchors/inserts shall be concealed where practical.

3. Burn off lift cables paint and fill in recesses with grout if required.

E. Finishes

1. Finish units in accordance with CSA A23.4.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Store pre-cast concrete with labeling in place.

B. Store and handle pre-cast concrete with applicable requirements of the specified references, the manufacturer's instructions, and as specified herein.

C. Use every precaution not to damage the pre-cast concrete. Repairs or replacement of damaged items will be at the CONTRACTORS expense.

PART 2 PRODUCTS

2.1 TRIPLE 300mm INLET HEADWALL

A. Manufacturer: Lombard Concrete or approved equivalent.

B. Pipe Size: Triple 300mm diameter pipe, with sloped winged walls.

C. Concrete Strength: 45 MPa.

D. Minimum Concrete Thickness: 100mm.

E. Trash Rack.

PART 3 EXECUTION

3.1 EXAMINATION

A. Verify that filled and compacted area is ready to receive work, and dimensions and elevations are as shown on DRAWINGS.

3.2 GENERAL

A. Erect pre-cast work in accordance with CSA A23.4.

B. Supply anchors for pre-cast units required to be cast into cast-in-place concrete frame to CONTRACTOR for installation. Provide such items in ample time to meet construction program. Supply layout drawings locating accurately the position of all cast-in items to be installed by other Sections.

3.3 PREPARATION

A. Arrange for utility company to identify utilities. CONTRACTOR responsible for all private and public utility locates required to complete the Works.

3.4 TRIPLE 300mm INLET HEADWALL

A. Place Structural Fill and compact headwall foundation as per Section 31 23 11 - Fill.

B. Install Triple 300mm Inlet Headwall as indicated on DRAWINGS.

C. Set pre-cast concrete unit straight, level, and square.

D. Connect 300mm Pipes.

E. Backfill around pre-cast unit.

3.5 CLEANING

A. If required, clean exposed work face by washing and brushing only, as pre-cast is erected. Use approved masonry cleaner if washing and brushing fails to achieve required finish. Remove immediately materials that may set up or harden.

3.5 FIELD QUALITY CONTROL

A. Section 01 45 00 - Quality Control Requirements: Requirements for inspection and testing.

PART 4 MEASUREMENT AND PAYMENT

4.1 TRIPLE 300mm INLET HEADWALL

A. Schedule of Prices A Item No. 03 41 00 / 1.

B. Payment Basis: Lump sum price. Includes excavation, transporting suitable materials to temporary stockpiles, temporary stockpiling, and disposal of unsuitable and excess excavated material, grading, backfill and installation of the Triple 300mm Inlet Headwall, trash rack, gaskets, fittings, and grout.

END OF SECTION

SECTION 31 23 10 EXCAVATION AND TRENCHING

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Municipal Solid Waste Management and Disposal.

B. Potential Asbestos Containing Material Management and Disposal.

C. ON-SITE Structural Fill.

1.2 REFERENCES

A. Section 01 45 00 – Quality Control Requirements: Requirements for references.

B. Section 01 74 19 - Waste Management and Disposal.

1.3 DEFINITIONS

A. Excavation: Removal of materials of whatever nature encountered, whether wet, frozen, or otherwise, including dense tills, hardpan, frozen materials, cemented materials, concrete fragments, asphalt pavement, boulders, or rock fragments less than 1 cubic metre in volume, and weathered rock which can be removed by ripping or excavating with heavy-duty mechanical construction equipment without drilling and blasting.

B. Excavation Limits: Areal excavation limits shown on the DRAWINGS to specified depth or as directed by ENGINEER and does not include areas shown as being on hold pending further sampling and analysis by ENGINEER.

C. Additional Excavation: Excavation beyond initial excavation limits, either area or in depth, as directed by ENGINEER following sampling and analysis.

1.4 SEQUENCING AND SCHEDULING

A. Prior to commencement of excavations, all landfill infrastructure (e.g., manholes, monitoring wells, etc.) shall be located.

B. Coordinate interruptions of utility services to existing and adjacent buildings or facilities which become necessary either directly or indirectly due to work required under this Contract through ENGINEER. Down time for service disruptions may be limited as to duration and time (weekend, nights, or holidays). Perform work during the period designated.

C. Coordinate and sequence excavation operations to minimize the need for temporary stockpiling of excavated materials. Keep the time during which excavations remain open to the minimum.

D. Excavations shall not be left open over night unless approved by ENGINEER or required by the scope of work.

E. Do not allow or cause any of work performed to be covered up or enclosed prior to required inspections, tests, or approvals.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION

3.1 EXAMINATION

A. Verify that survey benchmarks and existing and intended elevations for the Works are as shown on the DRAWINGS.

3.2 PREPARATION

A. Identify required lines, levels, contours, and datum locations.

B. Locate, identify, and protect utilities from damage.

C. Arrange for utility company to identify utilities.

1. It should be noted that disconnected (not active) electrical lines run under the former drop off area, as well as a former gas probe buried by previous construction activities.

D. Maintain and protect from damage wells, utilities, buildings, building foundations, surface features, and structures encountered, and not designated for demolition or removal. In the event of disturbance of or damage to any such well, utility, buildings, building foundations, surface features, or structures, immediately notify ENGINEER. Repair or replace, as directed by ENGINEER, any well, utility, building, building foundation, surface feature, or structure damaged by CONTRACTOR operations unless specified for demolition or removal.

E. Protect existing buildings, wells, facilities, surface features, tanks, and structures where temporary unbalanced earth pressures or uplift are liable to develop utilizing bracing, shoring, or other approved methods to counteract unbalance.

F. Employ procedures for excavation such that disturbance of wells, utilities, buildings, building foundations, surface features, and structures is avoided.

G. Protect excavations from contamination.

H. Obtain direction from ENGINEER before moving or otherwise disturbing wells, utilities, building, building foundations, surface features, and structures.

I. Remove surface features or obstructions including, but not necessarily limited to, trees, shrubs, bush, and other vegetation from surfaces to be excavated, within the

limits shown on the DRAWINGS or as required to construct the finished work. Dispose of such obstructions to an on-site spoil area as directed by ENGINEER.

3.4 EXCAVATING

A. Excavations shall not be left open over night unless approved by ENGINEER.

B. Underpin or shore adjacent structures which may be damaged by excavating work.

C. Excavate to lines, grades, elevations, and dimensions shown on the DRAWINGS or as directed by ENGINEER.

D. Slope banks with machine to angle of repose or shallower, as required by Laws and Regulations.

E. Grade top perimeter of excavation to prevent surface water from draining into excavation.

F. Remove debris and other obstructions encountered.

G. Remove boulders and cobbles with a diameter greater 150mm.

H. Loose rock, rock fragments, earth and debris shall be removed, and the surface shall be cleaned by mechanical and/or manual means such that structures bear on sound bedrock.

I. Remove boulders and fragments that may slide or roll into excavated areas.

J. Trim, shape, and level the trench rock bottom so to be free of irregularities. Provide recesses for pipe joints to ensure bearing will occur along barrel of pipe.

K. Notify ENGINEER of unexpected subsurface conditions and discontinue affected work in area until notified to resume work.

L. Hand trim, make firm, and remove loose material and debris from excavations. Where natural or fill material at bottom of excavation is disturbed, compact disturbed soil to density at least equal to undisturbed soil or to the density specified for the succeeding layer of backfill, whichever is greater, or remove disturbed soil and refill the space as directed by ENGINEER.

M. Do not disturb soil within the branch spread of trees or shrubs that are to remain. If excavating through roots, excavate by hand and cut roots with sharp axe or saw. Seal cuts with approved tree wound dressing.

N. Open excavations shall be CONTRACTOR'S sole responsibility.

O. Where rock has been excavated below specified tolerances, the CONTRACTOR shall remove all shatter, loose rocks, rock fragments, earth and debris and shall be cleaned as specified in item D. above. Over excavated areas shall be replaced with fill concrete. No payment shall be made for rock excavation or fill concrete beyond specified tolerances.

P. Stockpile excavated material in area designated on the SITE by the ENGINEER.

3.5 DISPOSAL OF UNSUITABLE OR EXCESS EXCAVATED MATERIAL

A. Unsuitable Excavated Materials: Soil containing rocks larger than 150mm measured through any axis, roots, organic matter, very soft clays, fine uniform sands, soils which are not compactable to the specified density.

B. Dispose of excavated material determined by ENGINEER as unsuitable for backfill or excess excavated material, in a designated on-site spoil area as directed by ENGINEER.

3.6 OVER-EXCAVATING

A. Notify ENGINEER when soil at the bottom of the excavation appears unsuitable and proceed as directed by ENGINEER. Where, in ENGINEER'S opinion, the undisturbed condition of the soils is inadequate for the support of installations, over-excavate to adequate supporting soils as directed by ENGINEER and refill the excavated space with approved material to the proper elevation in accordance with the procedure specified for backfill. Where so directed by ENGINEER and except as otherwise specified, the excavation and removal of inadequate material as specified, supply and installation of such material in excess of quantities shown on the DRAWINGS will be paid for under the appropriate item of the Schedule of Additional Unit Prices. Use such over-excavated material in the Works or stockpile on the SITE as approved by ENGINEER.

B. Backfill with ON-SITE structural fill or imported structural fill in accordance with Section 31 23 11 - Fill.

C. Should unauthorized excavation be carried below the lines and grades shown on the DRAWINGS and in excess of specified limits and tolerance because of CONTRACTOR'S operations including errors, methods of construction, or to suit his convenience, correct unauthorized excavation as follows:

1. Fill under unauthorized over-excavation areas by extending the indicated bottom elevation of the base of the material specified to be placed to the unauthorized excavation bottom without altering the required top elevation and compact in accordance with Section 31 23 11 – Fill unless otherwise directed by ENGINEER.

3.7 TEMPORARY STOCKPILING

A. Stockpile excavated materials on the SITE as designated by ENGINEER.

B. Construct stockpile sites so that they are well drained, free of foreign materials, and of adequate bearing capacity to support the weight of materials to be placed thereon.

C. Provide and maintain access to stockpiles.

D. Separate differing materials with substantial dividers or stockpile apart to prevent mixing.

E. Prevent contamination or segregation of soil types.

F. Direct surface water away from stockpile sites to prevent erosion or deterioration of materials.

G. Stockpiling of excavated materials must be located a minimum of 5 metres from buried landfill infrastructure.

H. Maintain area surrounding stockpiles in neat and tidy condition.

3.8 TOLERANCES

A. Excavation Depth: Within 25mm or less than specified depth but not uniformly greater or less.

3.9 CLEANING

A. Clean and reinstate work areas and areas affected by equipment outside areas specified to be excavated.

3.10 PROTECTION OF FINISHED WORK

A. Protect bottom of excavations and soil adjacent to and beneath foundation from freezing and disturbance.

3.11 MUNICIPAL SOLID WASTE MANAGEMENT AND DISPOSAL

A. Completed in accordance with Section 01 74 19 - Waste Management and Disposal, subsection 1.6 Municipal Solid Waste Management and Disposal.

3.12 POTENTIAL ASBESTOS CONTAINING MATERIAL MANAGEMENT AND DISPOSAL

A. Completed in accordance with Section 01 74 19 - Waste Management and Disposal, subsection 1.7 Potential Asbestos Containing Material Management and Disposal.

PART 4 MEASUREMENT AND PAYMENT

4.1 MUNICIPAL SOLID WASTE MANAGEMENT AND DISPOSAL

1. Schedule of Prices Item No. 31 23 10 / 1.

2. Payment Basis: Cubic metre price. Includes excavation, loading, hauling and disposal in the on-site landfill.

4.2 POTENTIAL ASBESTOS CONTAINING MATERIAL MANAGEMENT AND DISPOSAL

1. Schedule of Prices Item No. 31 23 10 / 2.

2. Payment Basis: Cubic metre price. Includes inspection, testing, health and safety, excavation, proper handling and disposal in the on-site Landfill.

4.3 ON-SITE STRUCTURAL FILL

1. Schedule of Prices Item No. 31 23 10 / 3.

2. Payment Basis: Cubic metre price. Includes excavation and stockpiling.

END OF SECTION

SECTION 31 23 11 FILL

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Well Graded Base.

B. Rip Rap.

C. ON-SITE Structural Fill.

D. Imported Structural Fill.

E. Compacted Clay Liner.

E. Topsoil.

F. Measurement and Payment.

1.2 REFERENCES

A. Section 01 45 00 – Quality Control Requirements.

B. Section 01 74 19 – Waste Management and Disposal.

C. American Society of Testing and Materials (ASTM):

1. C117 – Standard Test Method for Materials Finer than 75-μm (No. 200) Sieve in Mineral Aggregates by Washing.

2. C136 – Standard Test Method for Sieve Analysis of Fine and Coarse Aggregates.

3. D422 – Standard Test Method for Particle-Size Analysis of Soils.

4. D698 – Test Method for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbf/ft^3 (600 kN-m/m^3)).

5. D1140 - Standard Test Method for Amount of Material in Soils Finer Than the No. 200 (75-μm) Sieve.

6. D1556 - Standard Test Method for Density and Unit Weight of Soil in Place by the Sand-Cone Method.

7. D1557 - Test Method for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/ft^3 (2,700 kN-m/m^3)).

8. D2167 - Standard Test Method for Density and Unit Weight of Soil in Place by the Rubber Balloon Method.

9. D2216 - Standard Test Method for Laboratory Determination of Water (Moisture) Content of Soil and Rock.

10. D2434 - Standard Test Method for Hydraulic Conductivity of Granular Soils (Constant Head).

11. D2487 - Standard Classification of Soils for Engineering Purposes (Unified Soil Classification System).

12. D2922 - Standard Test Methods for Density of Soil and Soil-Aggregate in Place by Nuclear Methods (Shallow Depth).

13. D3017 - Standard Test Method for Water Content of Soil and Rock in Place by Nuclear Methods (Shallow Depth).

14. D3740 - Standard Practice for Minimum Requirements for Agencies Engaged in the Testing and/or Inspection of Soil and Rock as Used in Engineering Design and Construction.

15. D4253 - Standard Test Methods for Maximum Index Density and Unit Weight of Soils Using a Vibratory Table.

16. E548 - Standard Guide for General Criteria Used for Evaluating Laboratory Competence.

1.3 DEFINITIONS

A. Excavation: Removal of materials of whatever nature encountered, whether wet, frozen, or otherwise, including dense tills, hardpan, frozen materials, cemented materials, concrete fragments, asphalt pavement, boulders or rock fragments less than 1 cubic metre in volume, and weathered rock which can be removed by ripping or excavating with heavy-duty mechanical construction equipment without drilling and blasting.

B. Excavation Limits: Areal excavation limits shown on the DRAWINGS to specified depth or as directed by ENGINEER and does not include areas shown as being on hold pending further sampling and analysis by ENGINEER.

C. Additional Excavation: Excavation beyond initial excavation limits either, area or in depth, as directed by ENGINEER following sampling and analysis.

D. SMDD: Standard Maximum Dry Density and in the context of this project means the maximum dry unit weight determined in accordance with ASTM D698.

E. SPD: Standard Proctor Maximum Dry Density and in the context of this project means the maximum dry unit weight determined in accordance with ASTM D698.

1.4 PROGRESS SUBMITTALS

A. Source: Submit to ENGINEER the location of the proposed source of materials to be incorporated into the Works at least 14 days prior to commencing production, including change in material source during performance of work.

B. Geotechnical Data: Submit to ENGINEER grain size distribution curves for each classification of material prior to commencing production. Submit to ENGINEER at least 14 days prior to delivery to the SITE.

1.5 SEQUENCING AND SCHEDULING

A. Prior to commencement of excavations, all landfill infrastructure (e.g., manholes, monitoring wells, etc.) shall be located.

B. Coordinate interruptions of utility services to existing and adjacent buildings or facilities which become necessary either directly or indirectly due to work required under this Contract through ENGINEER. Down time for service disruptions may be limited as to duration and time (weekend, nights, or holidays). Perform work during the period designated.

C. Coordinate and sequence excavation operations to minimize the need for temporary stockpiling of excavated materials. Keep the time during which excavations remain open to the minimum.

D. Excavations shall not be left open over night unless approved by ENGINEER.

E. Do not allow or cause any of work performed to be covered up or enclosed prior to required inspections, tests, or approvals.

PART 2 PRODUCTS

2.1 GENERAL

A. All quantities are to be paid based on measured in place (and compacted) volumes.

B Imported from an approved source.

C. Free of unsuitable materials including:

1. Frozen material or material containing snow or ice.

2. Trees, stumps, branches, roots, or other wood or lumber.

3. Wire, steel, cast iron, cans, drums, or other foreign material.

D. Compactable to specified density.

2.2 WELL GRADED BASE

A. Well Graded Base Aggregate as per the 2020 Standard Specifications for Highway Construction.

2.3 RIP RAP

A. Rip rap shall be hard durable rock of a quality that will not disintegrate on exposure to water or the atmosphere. Rip Rap that is to be used must not be rounded and/or smooth.

B. Rocks shall be generally uniformly graded.

C. The gradation shall meet the following specifications:

ASTM Sieve Size	Percent Passing by Weight
200mm	100
150mm	90
125mm	50
1mm	0

2.4 ON-SITE STRUCTURAL FILL

A. On-site Native Sand and Gravel (Pit Run), free of unsuitable materials.

B. Unsuitable Materials: Materials not approved for use as determined by ENGINEER and include the following:

1. Material containing loam, roots, or organic matter.
2. Clays which are classified as inorganic clays of high plasticity in accordance with ASTM D2487.
3. Soft and/or organic clays and silts of low strength.
4. Rock and lumps of material with dimensions greater than specified layer thickness before compaction.

2.5 IMPORTED STRUCTURAL FILL

A. Material excavated from an approved source, free of unsuitable materials.

B. To be well-graded granular material, substantially free from clay lumps, organic matter, and other extraneous material, screened to remove all stones in excess of maximum diameter specified in material description. Conform to following gradations:

Size	Percent by Volume
75mm	100
25mm	90
0.300mm	0 – 15
0.075mm	0 – 6

2.6 COMPACTED CLAY LINER

A. Low Permeability Clay shall be free of unsuitable materials and consist of suitable mixtures of clay, silt, sand, and gravel provided such materials are of sufficiently low permeability and stable when compacted as specified, as approved by the ENGINEER.

B. Unsuitable Materials: Materials not approved for use as determined by ENGINEER and include the following:

1. Materials containing loam, roots, or other organic matter.
2. Clays which are classified as inorganic clays of high plasticity in accordance with ASTM D2487-17e1.
3. Soft and/or organic clays and silts of low strength, and sand.
4. Rock and lumps of material with dimensions greater than specified layer thickness before compaction.

C. Grain Size Distribution:

1. A clay fraction (less than 0.074 millimetres standard sieve size) of at least 25% and a minimum 60% silt and clay content;
2. A gravel fraction (greater than 4.76 millimetres standard sieve size) less than 10%; and
3. A plasticity index greater than 15%.

D. Atterberg Limits:

E. Liquid limit range of 30 to 50% permeability:

1. Hydraulic conductivity of 1 x 10^{-9} m/sec (1 x 10^{-7} cm/sec).

2.7 TOPSOIL

A. Friable.

B. Neither heavy clay nor of very light sandy nature consisting of the following:

1. Within 5% +/-: 45% sand.
2. 35% silt.
3. 20% clay.
4. pH of 6.2 to 7.2.

C. Free from subsoil, roots, vegetation, debris, toxic materials, stones over 50mm diameter.

D. Containing 4% minimum organic matter for clay loams and 2% minimum organic matter for sandy loams.

E. Capable of sustaining vigorous plant growth.

PART 3 EXECUTION

3.1 EXAMINATION

A. Verify that survey benchmarks and existing and intended elevations for the Works are as shown on the DRAWINGS.

B. Ensure that all grades and elevations are as per DRAWINGS.

C. Notify ENGINEER immediately of any grade or elevation issues.

D. Suspend operations whenever climatic conditions, as determined by ENGINEER, are unsatisfactory for placing fill to the requirements of this Section.

E. After occurrence of heavy rains, do not operate equipment on approved subgrade until the material has dried sufficiently to prevent occurrence of excessive rutting.

F. Do not allow or cause any of the work performed or installed to be covered up or enclosed by work of this Section prior to required inspections, measurements, tests, or approvals. ENGINEER to review and approve exposed subgrade prior to placement of concrete lock blocks or fill.

G. Obtain approval from ENGINEER for completed excavations and previously placed material prior to placement of successive lifts.

H. Obtain approval from ENGINEER prior to placing fill against structures or around exposed buried utilities.

I. Ensure areas to be backfilled are free from debris or standing water.

J. Do not permit traffic in restored/repaired area without approval from ENGINEER.

3.2 PREPARATION

A. Identify required lines, levels, contours, and datum locations.

B. Locate, identify, and protect utilities that remain from damage. Confirm locations of buried utilities and structures by careful test excavations or other suitable means.

C. Arrange for utility company to identify utilities.

D. Maintain and protect from damage wells, utilities, buildings, building foundations, surface features, and structures encountered, and not designated for demolition or removal. In the event of disturbance of or damage to any such well, utility, buildings, building foundations, surface features, or structures, immediately notify ENGINEER. Repair or replace, as directed by ENGINEER, any well, utility, building, building foundation, surface feature, or structure damaged by CONTRACTOR operations unless specified for demolition or removal.

E. Protect existing buildings, wells, facilities, surface features, tanks, and structures where temporary unbalanced earth pressures or uplift are liable to develop utilizing bracing, shoring, or other approved methods to counteract unbalance.

F. Employ procedures for excavation such that disturbance of wells, utilities, buildings, building foundations, surface features, and structures is avoided.

G. Protect excavations and trenches from contamination.

H. Obtain direction from ENGINEER before moving or otherwise disturbing wells, utilities, building, building foundations, surface features, and structures.

I. Remove surface features or obstructions including, but not necessarily limited to, trees, shrubs, bush, and other vegetation from surfaces to be excavated, within the limits shown on the DRAWINGS or as required to construct the finished work. Dispose of such obstructions to an on-site spoil area as directed by ENGINEER.

J. Remove debris or water from areas to be backfilled.

3.3 EXCAVATING

A. Excavations shall not be left open over night unless approved by ENGINEER.

B. Underpin or shore adjacent structures which may be damaged by excavating work.

C. Excavate to lines, grades, elevations, and dimensions shown on the DRAWINGS or as directed by ENGINEER.

D. Slope banks with machine to angle of repose or shallower, as required by Laws and Regulations.

E. Grade top perimeter of excavation to prevent surface water from draining into excavation.

F. Remove debris and other obstructions encountered.

G. Remove boulders and cobbles with a diameter greater 150mm.

H. Loose rock, rock fragments, earth and debris shall be removed, and the surface shall be cleaned by mechanical and/or manual means such that structures bear on sound bedrock.

I. Remove boulders and fragments that may slide or roll into excavated areas.

J. Trim, shape and level the trench rock bottom so to be free of irregularities. Provide recesses for pipe joints to ensure bearing will occur along barrel of pipe.

K. Notify ENGINEER of unexpected subsurface conditions and discontinue affected work in area until notified to resume work.

L. Hand trim, make firm, and remove loose material and debris from excavations. Where natural or fill material at bottom of excavation is disturbed, compact disturbed soil to density at least equal to undisturbed soil or to the density specified for the succeeding layer of backfill, whichever is greater, or remove disturbed soil and refill the space as directed by ENGINEER.

M. Do not disturb soil within the dripline of trees or shrubs that are to remain. If excavating through roots, excavate by hand and cut roots with sharp axe or saw. Seal cuts with approved tree wound dressing.

N. Open excavations shall be CONTRACTOR'S sole responsibility.

O. Where rock has been excavated below specified tolerances, the CONTRACTOR shall remove all shatter, loose rocks, rock fragments, earth and debris and shall be cleaned as specified in item D. above. Over excavated areas shall be replaced with fill concrete. No payment shall be made for rock excavation or fill concrete beyond specified tolerances.

P. Stockpile excavated material in area designated on the SITE by the ENGINEER.

3.4 OVER-EXCAVATING

A. Notify ENGINEER when soil at the bottom of the excavation appears unsuitable and proceed as directed by ENGINEER. Where, in ENGINEER'S opinion, the undisturbed condition of the soils is inadequate for the support of installations, over-excavate to adequate supporting soils as directed by ENGINEER and refill the excavated space with approved material to the proper elevation in accordance with the procedure specified for backfill. Where so directed by ENGINEER and except as otherwise specified, the excavation and removal of inadequate material as specified, supply and installation of such material in excess of quantities shown on the DRAWINGS will be paid for under the appropriate item of the Schedule of Additional Unit Prices. Use such over-excavated material in the Works or stockpile on the SITE as approved by ENGINEER.

B. Backfill with ON-SITE Structural Fill/Imported Structural Fill in accordance with Section 31 23 11 - Fill.

C. Should unauthorized excavation be carried below the lines and grades shown on the DRAWINGS and in excess of specified limits and tolerance because of

CONTRACTOR'S operations including errors, methods of construction, or to suit his convenience, correct unauthorized excavation as follows:

1. Fill under unauthorized over-excavation areas by extending the indicated bottom elevation of the base of the material specified to be placed to the unauthorized excavation bottom without altering the required top elevation and compact in accordance with Section 31 23 11 - Fill unless otherwise directed by ENGINEER.

3.5 TEMPORARY STOCKPILING

A. Stockpile excavated materials on the SITE as designated by ENGINEER.

B. Construct stockpile sites so that they are well drained, free of foreign materials, and of adequate bearing capacity to support the weight of materials to be placed thereon.

C. Provide and maintain access to stockpiles.

D. Separate differing materials with substantial dividers or stockpile apart to prevent mixing.

E. Prevent contamination or segregation of soil types.

F. Direct surface water away from stockpile sites to prevent erosion or deterioration of materials.

G. Stockpiling of excavated materials must be located a minimum of 5 metres away from buried landfill infrastructure.

H. Maintain area surrounding stockpiles in neat and tidy condition.

3.6 COMPACTION

A. Apply potable water as necessary during compaction to obtain the specified density. If the material to be compacted is excessively moist, aerate with suitable equipment and methods until the moisture content is corrected. In areas not accessible to rolling equipment, compact material to specified density with mechanical tampers.

1. CONTRACTOR is responsible for the supply of potable water. Historically, the Sunshine Coast Regional District goes under a water restriction during the summer months and CONTRACTOR must have a plan for a reliable potable water supply.

B. When fill material is wetted by sprinkling, do not direct jets of water at fill with such force that finer materials will be washed out.

C. Compaction Equipment: The type, size, and efficiency of compaction equipment shall be capable of achieving specified degree of compaction. When operating equipment adjacent to and immediately above structures, exercise care so as not to cause damage or displacement of the structure.

D. For the purposes of compaction testing, suitable substrate for compacting above will be assumed.

3.7 TOLERANCES

A. Excavation Depth: Within 25mm or less than specified depth but not uniformly greater or less.

3.8 FIELD QUALITY CONTROL

A. Section 01 45 00 - Quality Control Requirements.

B. Test installed materials to confirm compliance with SPECIFICATIONS.

C. Submit copies of test reports to ENGINEER.

D. Verification Testing by ENGINEER:

1. ENGINEER may select samples of uncompacted fill intended for the Works and samples of compacted fill in the Works.

2. ENGINEER will perform tests in the field or in the laboratory on samples of backfill and imported fill to determine if materials meet SPECIFICATION. Testing of imported fill will include analysis for the presence of contaminants, grain size analysis, moisture content determination, bulk wet density, maximum dry density, and permeability. Testing for backfill will include moisture content determination, maximum dry density, and bulk wet density. Copies of test reports will be supplied to CONTRACTOR on request.

3. Testing by ENGINEER will in no way relieve CONTRACTOR of his responsibility to test all material prior to notifying ENGINEER of the materials' suitability for the work involved.

E. Methods of Testing:

1. Particle size analysis shall be performed in accordance with ASTM D422 or ASTM D1140, whichever is appropriate to material tested.

F. Failure to Meet Specified Requirements: If tests indicate that material SPECIFICATIONS have not been achieved or cannot be obtained with equipment in use, the procedure being followed, or the material being incorporated, remove and replace work and modify operations so that the equipment, procedures, and materials will produce the required results. Additional testing required by ENGINEER will be to CONTRACTOR'S account.

3.9 ADJUSTING

A. Finish compacted soil surfaces to within 25mm of grades shown on the DRAWINGS. Correct surface irregularities by loosening and adding or removing material until the surface is within specified grade.

B. Leave work areas in a properly graded condition sloped as required to permit proper drainage and free of depressions that will pond or collect water or debris that will restrict flow.

3.10 CLEANING

A. Clean and reinstate work areas and areas affected by equipment outside areas specified to be excavated.

3.11 PROTECTION OF FINISHED WORK

A. Protect bottom of excavations and soil adjacent to and beneath foundation from freezing and disturbance.

B. Reshape and recompact fills subjected to vehicular traffic.

3.12 SCHEDULES - COMPACTION

A. Crushed Surfacing Aggregates: Compact to 100% SPD.

B. Crushed Base Aggregates: Compact to 100% SPD.

C. ON-SITE Structural Fill: Compact to 95% SPD.

E. Imported Structural Fill: Compact to 100% SPD.

F. Compacted Clay Liner: 95% SPD.

PART 4 MEASUREMENT AND PAYMENT

4.1 GENERAL

A. Section 01 29 00 - Payment Procedures.

4.2 WELL GRADED BASE

A. Schedule of Prices Item No. 31 23 11 / 1.

B. Measurement Basis: Cubic Metre.

C. Payment Basis: Unit price. Includes supply, placement, grading, compaction, and compaction testing.

4.3 RIP RAP

A. Schedule of Prices Item No. 31 23 11 / 2.

B. Measurement Basis: Cubic Metre.

C. Payment Basis: Unit price. Includes supply, placement, and compaction.

4.4 ON-SITE STRUCTURAL FILL

A. Schedule of Prices Item No. 31 23 11 / 3.

B. Measurement Basis: Cubic Metre.

C. Payment Basis: Unit price. Includes trucking from stockpile location, placement, grading, compaction, and compaction testing.

4.5 IMPORTED STRUCTURAL FILL

A. Schedule of Prices Item No. 31 23 11 / 4.

B. Measurement Basis: Cubic Metre.

C. Payment Basis: Unit price. Includes supply, placement, grading, compaction, and compaction testing.

4.6 COMPACTED CLAY LINER

A. Schedule of Prices Item No. 31 23 11 / 5.

B. Measurement Basis: Cubic Metre.

C. Payment Basis: Unit price. Includes supply, placement, grading, compaction, and testing.

4.7 TOPSOIL

A. Schedule of Prices Item No. 31 23 11 / 6.

B. Measurement Basis: Cubic Metre.

C. Payment Basis: Unit price. Includes supply, placement, and grading.

END OF SECTION

SECTION 31 32 19.01 GEOTEXTILES

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Supply and installation of Non-Woven Geotextile.

1.2 RELATED SECTIONS

A. Section 31 23 11 – Fill

1.3 REFERENCES

A. Section 01 45 00 - Quality Control Requirements: Requirements for references.

B. American Society for Testing and Materials (ASTM):

1. D3786 – Standard Test Method for Hydraulic Bursting Strength of Knitted Goods and Non-woven Fabrics – Diaphragm Bursting Strength Tester Method.
2. D4355 – Standard Test Method for Deterioration of Geotextiles from Exposure to Ultraviolet Light and Water (Xenon-Arc Type Apparatus).
3. D4491 – Standard Test Methods for Water Permeability of Geotextiles by Permittivity.
4. D4533 – Standard Test Method for Trapezoid Tearing Strength of Geotextiles.
5. D4632 – Standard Test Method for Grab Breaking Load and Elongation of Geotextiles.
6. D4751 – Standard Test Method for Determining Apparent Opening Size of a Geotextile.
7. D4833 – Standard Test Method for Index Puncture Resistance of Geotextiles, Geomembranes, and Related Products.
8. D4873 – Standard Guide for Identification, Storage and Handling of Geosynthetic Rolls and Samples.
9. D5199 – Standard Test Method for Measuring Nominal Thickness of Geotextiles and Geomembranes.
10. D5261 – Standard Test Method for Measuring Mass Per Unit Area of Geotextiles.

1.4 DEFINITIONS

A. AOS: Apparent Opening Size.

B. Geotextile: Synthetic fabric for use in geotechnical filter, separation, stabilization, or erosion control applications.

C. Minimum Average Roll Value: Average value for a specified parameter less 2 standard deviations.

1.5 PROGRESS SUBMITTALS

A. Section 01 32 00 - Administrative Requirements and Submittal Procedures: Requirements for progress submittals.

B. Product Data: Submit no later than 10 days prior to ordering.

C. The CONTRACTOR shall submit to ENGINEER, within a maximum of 5 days after award of Contract, a 1.0 x 1.0 square metre panel of each geotextile material for inspection and testing. The geotextile shall be submitted, uniformly rolled, and shall be wrapped in plastic to protect the material from moisture and damage during shipment. Samples shall be externally tagged for identification. The tag shall include the following information:

1. Manufacturer name
2. Product type and name
3. Product grade
4. Lot number
5. Dimensions (length and width)

D. Manufacturer's Installation Instructions: Submit at least 14 days prior to installation. Include installation, handling, storage, and repair instructions.

E. Manufacturer's Certificates: Certificates pertaining to the rolls of material delivered to the SITE shall accompany the rolls. Each roll shall be identified by a unique manufacturing number. The quality control certificate shall include results of at least the following tests: unit weight, tensile strength, elongation at break, Mullen Burst strength, puncture strength, permittivity, apparent opening size, ultraviolet stability, and manufacturer's records for storage, handling, and shipping of geotextile. The quality control certificates shall be signed by a responsible party employed by the manufacturer and shall be notarized. Materials and rolls which are in non-compliance with the minimum required properties will be rejected.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Deliver geotextile bearing manufacturer's seals and labels intact. Clearly label each roll to show geotextile identification, date of manufacture, lot number, analysis of contents, and special instructions.

B. Store and handle geotextile in accordance with manufacturer's recommendations and ASTM D4873, in manufacturer's original covers, and protect from moisture, dust, light, and heat.

C. Notify ENGINEER 3 days in advance of delivery to the SITE. Perform joint inspection with ENGINEER upon delivery. Defects or damage from shipping and handling will be grounds for rejection of a portion of geotextile or of the entire geotextile roll at the discretion of ENGINEER. Remove roll from the SITE and replace with new material.

1.7 SEQUENCING AND SCHEDULING

A. Section 01 32 00 - Administrative Requirements and Submittal Procedures: Requirements for coordination.

B. Coordinate installation of geotextile with surface preparation.

C. Sequence work with work of other Sections.

PART 2 PRODUCTS

2.1 NON-WOVEN GEOTEXTILE

A. Nilex Environmental Geotextile 4512E, or approved equivalent.

B. Properties:

1. Minimum Mass per unit area – 400 g/m^2.
2. Minimum Thickness – 2.9mm.
3. Minimum Grab Tensile Strength – 1,400 N.
4. Minimum Grab Elongation – 50%.
5. Minimum CBR Puncture Strength – 4,000 N.
6. Minimum Trapezoidal Tear Strength – 500 N.

PART 3 EXECUTION

3.1 EXAMINATION

A. Verify that surfaces and the SITE conditions are ready to receive work.

3.2 PREPARATION

A. Prior to geotextile placement, where possible roll the surface with a smooth drum steel or pneumatic roller so as to be free of irregularities, loose earth, and abrupt changes in grade. Provide the necessary equipment and personnel to maintain an acceptable supporting surface during fabric installation.

B. Examine geotextile for defects including rips, holes, flaws, deterioration, or damage incurred during manufacture, transportation, or handling.

C. Remove defective or damaged geotextile from the SITE.

3.3 INSTALLATION

A. Notify ENGINEER at least 24 hours in advance of intention to commence placement of geotextile.

B. Obtain approval of ENGINEER prior to installation of geotextile.

C. Place the geotextile on a prepared base as shown on the DRAWINGS.

D. Unfold or unroll geotextile in accordance with manufacturer's instructions, directly on the prepared base, in conditions which will prevent damage to both the geotextile and the base grade. Unsuitable conditions include, but are not limited to, moderate to high wind conditions.

E. The geotextile shall be rolled down the slope in such a manner as to continuously keep the geotextile in tension by self weight. The geotextile shall be securely anchored in an anchor trench where applicable, or by other approved or specified methods.

F. Overlap dimensions and the method of joining adjacent sheets shall, as a minimum, be in conformance with manufacturer's instructions but shall not be less than 0.3 m. Secure geotextile to the base grade in accordance with manufacturer's instructions and as shown on the DRAWINGS.

G. During placement of the geotextile, care shall be taken to not entrap soil, stones, or excessive moisture that could hamper subsequent seaming of the geotextile as judged by the ENGINEER.

H. Do not expose geotextile to sunlight for more than 14 days, or less if recommended by manufacturer.

I. Position and deploy geotextile to minimize handling. Lay smooth and free of tension, stress, folds, or creases. Protect properly placed geotextile from displacement, contamination by surface runoff, or damage, until and during placement of overlaid materials.

J. Place geotextile on sloping surfaces in one continuous length.

K. Seams shall be oriented down slopes perpendicular to grading contours unless otherwise specified.

L. Do not permit passage of vehicular traffic directly on geotextile at any time.

M. Place geotextile by unrolling onto graded surface and retain in position as specified.

N. Do not permit placement of overlay materials until ENGINEER has inspected and approved installation of geotextile.

O. Remove and replace damaged or deteriorated geotextile as directed by ENGINEER.

3.4 FIELD QUALITY CONTROL

A. Section 01 45 00 - Quality Control Requirements: Field inspection and testing.

B. ENGINEER will inspect geotextile in place for tears, overlaps, and consistency before placing materials thereon. Damaged sections, as judged by ENGINEER, will be marked and their removal from the work area recorded. Repair minor damage and minor defects as specified in manufacturer's procedures when approved by ENGINEER to ENGINEER'S satisfaction.

C. ENGINEER will verify that weather conditions are acceptable for panel placement.

PART 4 MEASUREMENT AND PAYMENT

4.1 GENERAL

A. Section 01 29 00 - Payment Procedures: Requirements for measurement and payment.

4.2 NON-WOVEN GEOTEXTILE

A. Schedule of Prices Item No. 31 32 19.01 / 1.

B. Measurement Basis: By the square metre, measured in place.

C. Payment Basis: Unit price. Includes supply and placement of non-woven geotextile as shown on DRAWINGS.

4.3 ANCHOR TRENCH

A. Schedule of Prices Item No. 31 32 19.01 / 2.

B. Measurement Basis: By the linear metre, measured in place.

C. Payment Basis: Unit price. Includes excavation and backfilling.

END OF SECTION

SECTION 32 92 19.16 HYDRAULIC SEEDING

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Preparation of Subgrade.

B. Hydraulic Seeding.

C. Measurement and Payment.

1.2 REFERENCES

A. Section 01 45 00 - Quality Control Requirements.

B. American Society for Testing and Materials (ASTM):

1. D2974 – Standard Test Method for Moisture, Ash and Organic Matter of Peat and Other Organic Soils.

2. D4972 – Standard Test Method for pH of Soils.

C. Official Seed Analysis of North America.

1.3 DEFINITIONS

A. Weeds: Include, but are not limited to, Dandelion, Jimsonweed, Quackgrass, Horsetail, Morning Glory, Rush Grass, Mustard, Lambsquarter, Chickweed, Cress, Crabgrass, Canadian Thistle, Nutgrass, Poison Oak, Blackberry, Tansy Ragwort, Bermuda Grass, Johnson Grass, Poison Ivy, Nut Sedge, Nimble Will, Bent Grass, Wild Garlic, Perennial Sorrel, and Brome Grass.

B. Noxious Weeds:

1. Harmful, undesirable, hard to control.

2. Include, but are not limited to: Johnson Grass or Johnson Grass Crosses, Canadian Thistle, Quackgrass, Wild Garlic and Wild Onion, Annual Blue Grass, Corn Cockle, Dodder, and Blindweed.

1.4 PROGESS SUBMITTALS

A. Section 01 32 00 – Administrative Requirements and Submittal Procedures.

B. Seed Certificates: At least 14 days prior to seeding submit certificates from seed vendors for each seed mixture required, stating botanical and common name, percentage by weight and percentages of purity, germination, and weed seed for each species.

C. Fertilizer Certificate: At least 14 days prior to placing fertilizer, submit certificate confirming conformance with SPECIFICATION.

1.5 CLOSEOUT SUBMITTALS

A. Maintenance Data: Include maintenance instructions, cutting method, and maximum grass height.

1.6 QUALITY ASSURANCE

A. Regulatory Requirements: Ensure work is performed in compliance with applicable Provincial regulations.

B. Provide seed mixture in weatherproof containers showing percentage of seed mix, year of production, net weight, date of packaging, and location of packaging.

1.7 QUALIFICATIONS

A. Seed Producer: Established vendor capable of providing adequate seed quality and quantities.

B. Fertilizer: Established vendor capable of providing adequate fertilizer quality and quantities.

C. Installer: Company specializing in planting and establishment of multiple acre grading and planting projects with 5 years' documented experience.

1.8 REGULATORY REQUIREMENTS

A. Comply with regulatory agencies for fertilizer and herbicide composition.

1.9 DELIVERY, STORAGE, AND HANDLING

A. Deliver grass seed mixture in original sealed bags bearing the seed Supplier's label and certificate indicating the content of species, grade, and mass. Seed in damaged packaging will be rejected. Label containers showing:

1. Analysis of seed mixture.
2. Percentage of pure seed.
3. Percentage of weeds.
4. Year of production.
5. Net weight.
6. Date when tagged and locations.
7. Percentage germination.

8. Name and address of distributor.

B. Deliver fertilizer in waterproof bags showing weight, chemical analysis, and name of manufacturer.

C. Deliver mulch in moisture-proof containers showing manufacturer, content, and net weight (air dry).

D. Store materials in accordance with manufacturer's instructions and in a manner to prevent damage or deterioration.

E. Remove from the SITE seed which has become wet, moldy, or otherwise damaged in transit or storage.

F. Store seed in weatherproof enclosures.

1.10 ENVIRONMENTAL REQUIREMENTS

A. Do not apply materials over snow, ice, frozen ground, or standing water.

B. Do not apply seed slurry when wind conditions are such that material would be carried beyond designated area or that materials would not be uniformly applied or when wind velocity exceeds 20 km/h.

1.11 SEQUENCING AND SCHEDULING

A. Section 01 32 00 – Administrative Requirements and Submittal Procedures.

B. Seed areas within 10 days of notification by ENGINEER.

PART 2 PRODUCTS

2.1 SEED MIXTURE

A. Manufacturer: Quality Seeds West, Kodiak Coastal Revegetation Mix or approved equivalent for placement in spring 2025.

Species	*% by Weight*	*% by Seed*
Creeping Red Fescue	15%	14.88%
Hard Fescue	10%	12.90%
Slender Wheatgrass	13%	4.13%
Perennial Ryegrass	20%	9.52%
Dahurian Wild Ryegras	15%	2.83%
Orchardgrass	6%	6.78%
Timothy	4%	9.92%
Canada Bluegrass	5%	15.77%
Red Top	1%	10.91%
White Clover	1.5%	2.23%
Single Cut Red Clover	8%	4.92%
Alsike Clover	3.5%	5.21%

2.2 MULCHING MATERIAL

A. Free of weeds and other foreign materials, free of growth or germination inhibiting ingredients; manufactured in such a manner that after addition and agitation in slurry tanks with water, the fibers in the material will become uniformly suspended to form a homogeneous slurry; dyed a suitable color to facilitate inspection of the placement of the material. When applied, capable of forming an absorptive mat, which will allow moisture to percolate into the underlying soil.

B. Wood fibre mulch.

2.3 FERTILIZER

A. Phosphorous base 18-18-18, granular form, dry, free flowing, and free from lumps.

2.4 WATER

A. Clean, fresh, and free of any contaminants and substances or matter which could inhibit germination and vigorous growth of grass.

PART 3 EXECUTION

3.1 EXAMINATION

A. Verify that prepared soil base is ready to receive work of the Section.

3.2 HYDROSEEDING

A. Seeding and mulching shall be a 1-step process in which seed, fertilizer, hydraulic mulch, and mulch adhesive are applied simultaneously in a water slurry via hydraulic seeder/mulcher.

B. Apply seed at a rate of 40 - 50 kg/ha. If necessary, use a lawn spreader to ensure consistency among seed coverage.

C. Hydraulic Seeder/Mulcher: Apply seed, fertilizer, hydraulic mulch, and temporary cover adhesive using an acceptable hydraulic seeder/mulcher. The hydraulic seeder/mulcher shall be equipped with mechanical agitation equipment capable of mixing the materials into a homogeneous slurry and maintaining the slurry in a homogeneous state until it is applied. The discharge pumps and gun nozzles shall be capable of applying the materials uniformly.

D. Volume Certification: Hydraulic seeding/mulching equipment shall have the tank volume certified by a plate affixed by manufacturer and confirmed to ENGINEER by means of measurements or tests prior to the commencement of work. This plate shall be affixed in plain view on the hydraulic seeder/mulcher and shall not be removed or altered. The plate shall certify tank volume only and shall imply equipment conformance to other requirements of this SPECIFICATION.

E. Application of Materials: Measure the quantity of each material to be charged into the hydraulic seeded/mulcher tank either by mass or by a system of mass-calibrated volume measurements acceptable to ENGINEER. Add the materials to the tank while it is being loaded with water. Thoroughly mix the materials into a homogeneous water slurry and distribute uniformly over the designated surface area via the hydraulic seeder/mulcher. Apply seed, fertilizer, and where applicable, hydraulic mulch adhesive within 2 hours of being charged into the hydraulic seeded/mulcher tank. During loading of the hydraulic seeder/mulcher tank, add materials in the following sequence: seed, then fertilize, then, where applicable, hydraulic mulch and adhesive.

F. Blend into existing adjacent grass areas to bond new growth to existing adjacent areas or to previous applications to form uniform surfaces.

3.3 FERTILIZER

A. Apply fertilizer at least 4 weeks after seeding to allow germination of grass.

B. Apply after smooth raking of Topsoil or placement of Biodegradable Erosion Control Blanket.

C. Do not apply fertilizer at same time or with same machine used to apply seed.

D. Mix thoroughly into upper 50mm of Topsoil.

E. Lightly water to aid the dissipation of fertilizer.

3.4 MAINTENANCE FOR SEED ESTABLISHMENT

A. Start maintenance immediately after area hydroseeded.

B. Maintain seeded area for not less than the period stated below and longer, as required to establish an acceptable stand, as determined by ENGINEER:

1. Not less than 60 days after last area hydroseeded.

2. If planted in fall and not given full 60 days of maintenance, or if not considered acceptable by ENGINEER, at completion of 60 days continue maintenance the following spring until acceptable vegetation cover is established.

C. Maintain vegetation cover by watering, fertilizing, weeding, mowing, trimming, overseeding, and other operations such as rolling, regrading, and replanting as required to establish a smooth, acceptable grassed surface, free of eroded or bare areas.

D. Vegetative cover will be accepted by ENGINEER provided all requirements have been complied with, including completion of 60-day maintenance period and the following:

1. Vegetative cover is properly established.

2. Turf is free of eroded, bare, or dead spots and 98% free of weeds.

3. No surface is visible when vegetative cover has been cut to a height of 100 to 125mm.

E. Immediately re-seed areas which show signs of bare spots.

3.5 CLEANING

A. Clean up immediately: soil, mulch, broken sod, or other debris spilled onto pavement and dispose of deleterious materials.

B. Take precautions and prevent contamination by seeding and mulching slurry of structures, signs, guardrails, fences, utilities, or other surfaces not specified to be landscaped.

C. Where contamination occurs, remove seeding slurry to satisfaction of, and by means approved by ENGINEER.

3.6 PROTECTION OF FINISHED WORK

A. Protect landscaped areas from damage.

Part 4 MEASUREMENT AND PAYMENT

4.1 GENERAL

A. Section 01 29 00 - Payment Procedures.

4.2 HYDRAULIC SEEDING

A. Schedule of Prices Item No. 32 92 19.16 / 1.

B. Measurement Basis: By the square metre, measured in place.

C. Payment Basis: Unit price. Includes preparation of sub-grade, supply and placement of hydroseeding as shown on DRAWINGS, and maintenance.

END OF SECTION

SECTION 32 35 44 EROSION AND SEDIMENT CONTROL

1.1 SECTION INCLUDES

A. Silt Fence.

B. Rock Check Dams.

1.2 REFERENCES

A. Section 01 45 00 - Quality Control Requirements: Requirements for references.

B. American Society for Testing and Materials (ASTM):

1. C127 – Standard Test Method for Specific Gravity and Absorption of Coarse Aggregate.
2. D698 – Standard Test Method for Laboratory Compaction Characteristics of Soil Using Standard Effort (600 kN-m/m^3).
3. D2487 – Standard Classification of Soils for Engineering Purposes (Unified Soil Classification System).
4. D6461 – Standard Specifications for Silt Fence Materials.
5. D6462 – Standard Practice for Silt Fence Installation.

1.3 PROGRESS SUBMITTALS

A. Section 01 32 00 - Administrative Requirements and Submittal Procedures: Requirements for progress submittals.

B. Product Data: No later than 14 days following the date of the Notice to Proceed, submit product data for all manufactured products and materials.

C. Soil Erosion and Sediment Control Plan: No later than 14 days following the date of the Notice to Proceed, submit Soil Erosion and Sediment Control Plan indicating locations, design, and product names and features.

1.4 QUALITY ASSURANCE

A. Regulatory Requirements: ensure work is performed in compliance with applicable Provincial regulations.

1.5 QUALIFICATIONS

A. Manufacturer: Company specializing in manufacturing the products specified in this Section with minimum 5 years documented experience.

B. Installer: Company specializing in performing the work of this Section, with minimum 3 years documented experience and approved by manufacturer.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Protect silt fence materials from chemicals, physical damage, direct sunlight, or other conditions or substances which may degrade the product.

B. Deliver, store, and handle in accordance with manufacturer's instructions.

1.7 ENVIRONMENTAL REQUIREMENTS

A. Maintain soil erosion and sediment control features during and after installation.

1.8 SEQUENCING AND SCHEDULING

A. Section 01 32 00 - Administrative Requirements and Submittal Procedures: Requirements for coordination.

B. Temporary erosion control measures shall be in place and functional prior to initiation of earth work activities.

1.9 PRODUCTS

A. Silt Fence:

1. An assembled, ready to install unit consisting of geotextile attached to driveable posts.

2. Geotextile: Uniform in texture and appearance with no defects, flaws, or tears that would affect its physical properties. Contain sufficient ultraviolet ray inhibitor and stabilizers to provide a minimum 2-year service life from outdoor exposure.

3. Net Backing: An industrial polypropylene mesh which is joined to the geotextile at both top and bottom with double stitching of heavy-duty cord. Width of netting: minimum of 760 millimetres (2 1/2 feet).

4. Posts: Sharpened wood stakes, approximately 50mm (2 inches) square and protrude below the bottom of geotextile to allow a minimum of 600mm embedment. Post spacing: not to exceed 2,310mm. Securely fasten each post to the geotextile and net backing by staples suitable for such purpose.

B. Rock Dams.

1. 150mm RIP RAP as shown on the DRAWINGS.

1.10 EXAMINATION

A. Section 01 73 03 - Execution and Closeout Requirements: Requirements for examination of existing conditions before starting work.

B. Verify surface water drainage pattern to ensure proper locating of soil erosion and sediment control features.

1.11 PREPARATION

A. Preserve salient natural features, keep cut-fill operations to a minimum, and ensure conformity with topography so as to create the least erosion and to adequately handle the volume and velocity of surface water runoff.

B. Whenever feasible, retain, protect, and supplement natural vegetation.

C. Do not damage, degrade, or in any way cause harm to existing above-ground structure or appurtenance, below-ground utility, pipe, conduit, cable, conductor, or structure.

D. Performance of temporary erosion control work does not relieve CONTRACTOR of his responsibility for preventing or minimizing the potential for erosion or siltation.

1.12 INSTALLATION

A. Silt Fence

1. Install silt fence in accordance with ASTM D6462.

2. Do not construct silt fence in flowing streams or in swales where there is the possibility of a washout.

3. Check weekly and after each rainfall erosion and sediment control measures.

4. Silt fence may be removed at the beginning of the workday but replace at the end of the workday.

5. Whenever sedimentation is caused by stripping vegetation, regrading, or other development, remove it from all adjoining surfaces, drainage systems, and watercourses, and repair damage as quickly as possible.

6. Prior to or during construction, ENGINEER may require the installation or construction of improvements to prevent or correct temporary conditions on SITE. Improvements may include berms, mulching, sediment traps, detention and retention basins, grading, planting, retaining walls, culverts, pipes guardrails, temporary roads, and other measures appropriate to the specific condition. All temporary improvements shall remain in place and in operation until otherwise directed by ENGINEER.

7. Unless otherwise shown on the DRAWINGS, or directed by ENGINEER, remove all items upon completion of Works. Spread accumulated sediments to form a suitable surface for seeding or dispose of and shape the area to permit natural drainage; all to the satisfaction of ENGINEER. All materials once removed become the property of CONTRACTOR.

B. Rock Check Dams

1. Installed as shown on the DRAWINGS.

2. 250mm high, 500mm long, and the width of the CONTACT WATER Ditch.

3. Constructed of 150mm RIP RAP.

1.13 FIELD QUALITY CONTROL

A. Section 01 45 00 - Quality Control Requirements: Requirements for inspection and testing.

B. ENGINEER will inspect all temporary erosion control items for proper placement and maintenance.

C. Repairs ordered by ENGINEER caused by circumstances not under CONTRACTOR'S control after acceptance will be compensated for at Contract rates or as extra work in the absence of comparable items of work. Material used in restoring any original temporary erosion control installation, after the original installations were accepted, will be measured and added to the quantities originally installed.

1.14 CLEANING

A. Section 01 73 03 - Execution and Closeout Procedures: Requirements for cleaning installed work.

B. Clean silt fences of excessive sediment accumulation if and when necessary.

C. Remove sediment deposits when the level of deposition reaches approximately one-half the height of the barrier.

1.15 MEASUREMENT AND PAYMENT

A. Temporary Soil Erosion and Sediment Control

1. Schedule of Prices Item No. 32 35 44 / 1.

2. Payment Basis: Lump sum price. Includes supply and installation of Silt Fence and Rock Check Dams as per DRAWINGS.

END OF SECTION

SECTION 33 41 00 STORM UTILITY DRAINAGE PIPING

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Supply and installation of 300mm Stormwater Pipe.

B. Supply and installation of Road Culverts.

C. Measurement and Payment.

1.2 RELATED SECTIONS

A. Section 31 23 11 – Fill.

B. Section 31 23 10 – Excavation and Trenching.

1.3 REFERENCES

A. American Society for Testing and Materials (ASTM):

1. ASTM A536 – Standard Specification for Ductile Iron Castings.

1.4 DEFINITIONS

A. CSP: Corrugated Steel Pipe.

B. SPMDD: Standard Proctor Maximum Dry Density and in the context of this Contract means maximum dry unit weight determined in accordance with ASTM D698.

1.5 SUBMITTAL PROCEDURES

A. Section 01 32 00 – Administrative Requirements and Submittal Procedures: Requirements for progress submittals.

B. Product Data: Piping and fitting dimensions including test reports and material property sheets.

C. Manufacturer's Certificate: Quality control certificates pertaining to each lot of pipe produced.

D. Manufacturer's Instructions: Indicate special procedures required to install products specified.

1.6 QUALITY CONTROL

A. Section 01 45 00 - Quality Control Requirements: Requirements for Quality Control.

B. CSP Pipe:

1. CSP Pipe: CSA G401. Pipe size is specified in metric units; however, equivalent IPS pipe sizes shall be used.

1.7 DELIVERY, STORAGE, AND HANDLING

A. Deliver and store piping with labeling in place.

B. Deliver, store, and handle pipe in accordance with applicable requirements of the specified references, the manufacturer's instructions, and as specified herein.

C. CONTRACTOR is responsible for conducting an inspection at the time of delivery to verify that the correct products and the expected quantities are received. Pipes and accessories must be visually inspected for damage such as cuts, gouges, delamination, bulges, flat areas, and ovality that may have occurred during shipment.

D. Use every precaution to prevent damage to the pipe. Do not permit metal tools or heavy objects to unnecessarily come in contact with the pipe.

E. All pipe shall be lifted off trailer to avoid any damage while unloading.

F. CONTRACTOR is responsible for each pipe shipment to ensure that there has been no loss or damage.

G. Pipe shall be stored on level surfaces to avoid deformation. Supports shall be spaced to prevent bending and deformation to the ends of the pipe. When stacked, the weight of upper units shall not cause deformation to pipe in the lower units.

PART 2 PRODUCTS

2.1 300mm CSP CULVERTS

A. Aluminized Type 2, 2.0mm wall thickness, 68mm x 13mm corrugations.

B. Size: 300mm diameter.

C. Quantity: 4.

2.2 ROAD CULVERTS

A. Aluminized Type 2, 2.0mm wall thickness, 68mm x 13mm corrugations.

B. Size: 300mm diameter.

C. Quantity: 32.

PART 3 EXECUTION

3.1 EXAMINATION

A. Section 01 73 03 – Execution and Closeout Procedures: Verification of existing conditions before starting work.

B. Verify that excavation foundation is ready to receive work and excavations, dimensions, and elevations are as shown on the DRAWINGS.

C. Verify items provided by other Sections are properly sized and located.

3.2 PREPARATION

A. Excavate to grades as shown on DRAWINGS, as per Section 31 23 10 – Excavation and Trenching.

B. Hand trim excavations to required elevations.

C. Ensure that the excavation remains dry and groundwater elevation remains below the base excavation elevation until adequate backfill is placed to ensure that the installed pipe will not be dislodged.

D. Ensure that excavation foundation is suitable for pipe bedding placement. Excavation foundation should be free of large stones, clumps of soil, frozen soil, and debris.

E. Trench width shall be sufficiently wide to allow compaction of pipe bedding in the haunches and adjacent to the sides of the pipe.

F. Remove large stones or other hard matter which could damage piping or impede consistent backfilling or compaction.

3.3 STORM UTILITY DRAINAGE PIPING INSTALLATION

A. Prevent debris and water from entering inside of pipe.

B. Lay pipe to slope gradients shown on the DRAWINGS with maximum variation from true slope of 1cm in 3m. Maintain positive drainage for all pipe sections.

C. Use laser equipment for controlling grade of pipe installation.

D. Pipe bedding shall be placed and compacted in such a way to provide uniform and adequate longitudinal support under the pipe. Blocking shall not be used to bring the pipe to grade.

E. Backfill to lines and grades indicated on DRAWINGS. Backfill shall not contain deleterious material as specified in Section 31 23 11 - Fill.

3.4 FIELD QUALITY CONTROL

A. Section 01 45 00 – Quality Control Requirements: Field inspection and testing.

B. Request inspection prior to placing aggregate cover over pipe.

3.5 PROTECTION OF FINISHED WORK

A. Section 01 73 03 – Execution and Closeout Procedures: Requirements for protecting installed work.

B. Protect pipe and cover from damage or displacement prior to and during backfilling operations.

C. Prevent debris from entering system.

PART 4 MEASUREMENT AND PAYMENT

4.1 GENERAL

A. Section 01 29 00 - Payment Procedures: Requirements for measurement and payment.

4.2 300mm CSP CULVERTS

A. Schedule of Prices Item No. 33 41 00 / 1.

B. Measurement Basis: By the linear metre, measured in place along the centerline of the pipe.

C. Payment Basis: Unit price. Includes excavation, transporting suitable materials to temporary stockpiles, temporary stockpiling, and disposal of unsuitable or excess excavated material, supply and installation of 300mm CSP culvert pipes, accessories, and backfill with Granular A as part of the walking path, and compaction and regrading to grades shown on DRAWINGS.

4.2 ROAD CULVERTS

A. Schedule of Prices Item No. 33 41 00 / 2.

B. Measurement Basis: By the linear metre, measured in place along the centerline of the pipe.

C. Payment Basis: Unit price. Includes excavation, transporting suitable materials to temporary stockpiles, temporary stockpiling, and disposal of unsuitable or excess excavated material, supply and installation of 300mm CSP culvert pipes, accessories, and backfill with Granular A as part of the walking path, and compaction and regrading to grades shown on DRAWINGS.

END OF SECTION

SECTION 32 31 13 CHAIN LINK FENCES AND GATES

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Supply and installation of fence posts, framework, fabric, and accessories.

B. Supply and installation of double swing gates.

C. Measurement and Payment.

1.2 REFERENCES

A. American Society for Testing and Materials (ASTM):

1. A116 - Standard Specification for Zinc-Coated (Galvanized) Steel Woven Wire Fence Fabric.
2. A121 - Standard Specification for Zinc-Coated (Galvanized) Steel Barbed Wire.
3. A153 - Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware.
4. A392 - Standard Specification for Zinc-Coated Steel Chain-Link Fence Fabric.
5. A491 - Standard Specification for Aluminum-Coated Steel Chain-Link Fence Fabric.
6. A585 - Standard Specification for Aluminum-Coated Steel Barbed Wire.
7. A780 - Standard Practice for Repair of Damaged and Uncoated Areas of Hot-Dip Galvanized Coatings.
8. C94 - Standard Specification for Ready-Mixed Concrete.
9. F567 - Standard Practice for Installation of Chain-Link Fence.
10. F668 - Standard Specification for Poly Vinyl Chloride (PVC)-Coated Steel Chain-Link Fence Fabric.
11. F669 - Standard Specification for Strength Requirements of Metal Posts and Rails for Industrial Chain Link Fence.
12. F1043 - Standard Specification for Strength and Protective Coatings on Metal Industrial Chain Link Fence Framework.
13. F1083 - Standard Specification for Pipe, Steel, Hot-Dipped Zinc-Coated (Galvanized) Welded, for Fence Structures.

B. Canadian General Standards Board (CGSB):

1. CAN/CGSB-138.1 – Fabric for Chain Link Fence.
2. CAN/CGSB-138.2 – Steel Framework for Chain Link Fence.
3. CAN/CGSB-138.3 – Installation of Chain Link Fence.
4. CAN/CGSB-138.4 – Gates for Chain Link Fence.

C. Canadian Standards Association (CSA): G162.1 – Methods of Determining Mass of Coating on Zinc-Coated (Galvanized) Steel Wire.

D. Chain Link Fence Manufacturers Institute (CLFMI): Product Manual.

1.3 DEFINITIONS

A. Fence Post: An upright tubular or fabricated steel member for supporting fencing material.

B. Line Posts: Fence posts spaced at regular intervals between terminal posts throughout each stretch of fence.

C. Terminal Posts: Fence posts which include end, gate, corner, and straining posts.

D. End Posts: Fence posts positioned at the ends of a stretch of fence.

E. Gate Posts: 2 fence posts forming a gateway.

F. Corner Posts: Fence posts positioned at corners and changes of direction greater than 10 degrees.

G. Straining Posts: Fence posts positioned at changes in grade greater than 30 degrees.

H. Top Rail: Tubular or fabricated steel section continuously joined by means of sleeves or couplings throughout each stretch of fence extending between terminal posts.

I. Brace Rail: Tubular or fabricated steel section used for bracing terminal posts.

J. Diagonal Brace Wire: Wire used for bracing terminal posts.

K. Top Wire: Wire installed at top of fence and extending throughout each stretch of fence between terminal posts.

L. Bottom Wire: Wire installed at bottom of fence and extending throughout each stretch of fence between terminal posts.

M. Fittings: Mechanical connections of various designs, shapes, and metals to join fence components into an integral structure.

N. Wire Ties: Wire used to tie chain link fence fabric to line posts, bottom wires, and top rails or top wires.

O. Knuckled: Type of selvage obtained by interlocking adjacent wire ends, in pairs, and then bending the wire ends back into a closed loop.

P. Barbed: Tye type of selvage obtained by interlocking adjacent wire ends, in pairs, and then twisting the wire at least two turns with the wire ends above the twist.

Q. Barbed Wire: Twisted longitudinal wires, termed line wires, to which barbs are attached.

R. Non-shrink Cement Grout: A bedding compound that is inert and free from shrinkage.

1.4 SYSTEM DESCRIPTION

A. Fence Height: 2.4 metres.

B. Line Post Spacing: At intervals not exceeding 3.1 metres.

C. Gates: Double Swing 6.0 metres.

D. Fence Post and Rail Strength: Conform to ASTM F669, Heavy industrial fence quality.

E. Barbed Wire: None.

F. Gate Latches: Lockable.

1.5 SUBMITTAL PROCEDURES

A. Section 01 32 00 – Administrative Requirements and Submittal Procedures: Requirements for submittals.

B. Shop Drawings: Indicate plan layout, spacing of components, post foundation dimensions, hardware anchorage, and schedule of components.

C. Product Data: Include for fabric, posts, accessories, fittings, and hardware.

1.6 CLOSEOUT SUBMITTALS

A. Section 01 73 03 – Execution and Closeout Procedures: Requirements for closeout procedures.

B. Record Documents: Accurately record actual locations of property perimeter posts relative to property lines.

1.7 QUALITY CONTROL

A. Section 01 45 00 - Quality Control Requirements: Requirements for Quality Control.

B. Perform work of this Section in accordance with the manufacturer's instructions.

1.8 QUALIFICATIONS

A. Manufacturer: Company specializing in manufacturing the products specified in this Section with minimum 3 years experience.

1.9 DELIVERY, STORAGE, AND HANDLING

A. Section 01 61 00 – Common Product Requirements: Requirements for delivery, storage, and handling.

B. Deliver chain link fence fabric in firmly tied tight rolls.

C. Tag each roll clearly indicating class of coating, specified wire size, mesh size, height of fabric, ASTM A392 and ASTM F668 designation, and manufacturer's name.

D. Store and handle materials in accordance with manufacturer's instructions. In the event of damage, make repairs or replacements approved by ENGINEER.

E. Protect zinc coated surfaces from damage and protect fencing materials from distortion or bending.

F. Repair damaged zinc-coated surfaces as specified.

1.10 SEQUENCING AND SCHEDULING

A. Section 01 32 00 - Administrative Requirements and Submittal Procedures: Requirements for coordination.

B. Do not commence fence installation until backfilling is complete.

PART 2 PRODUCTS

2.1 MATERIALS

A. Framing (Steel CAN/CGSB 138.2), Type 1, Style A, heavy duty, Schedule 40, galvanized steel pipe, welded construction minimum yield strength of 344 MPa; coating conforming to ASTM F1043 on pipe exterior and interior.

B. Fabric Wire Classification: CAN/CGSB 138.1, Type 1, steel fabric, Class A, zinc-coated galvanized before weaving, Style 2, medium duty, Grade 2, average mass per unit area of zinc coating shall not be less than 490 g/m2 of uncoated wire surface.

C. Barbed Wire: ASTM A121, Galvanized steel; 12 gage thick wire, 3 strands, 4 points at 125mm on centres.

2.2 COMPONENTS

A. Line Posts: 60mm diameter.

B. Corner and Terminal Posts: 89mm diameter.

C. Gate Posts: 100mm diameter.

D. Top and Brace Rail: 41mm diameter, plain end, sleeve coupled.

E. Fabric: 50mm diamond mesh interwoven wire, 3.5mm diameter wire, top salvage knuckle end closed, bottom selvage twisted tight.

F. Tension Wire: 5mm diameter steel, single strand.

G. Tension Band 5mm thick steel.

H. Tension Strap: 5mm thick steel.

I. Tie Wire: Aluminum alloy steel wire.

2.3 ACCESSORIES

A. Caps: Cast steel galvanized, sized to post diameter, set screw retainer.

B. Fittings: Galvanized steel: sleeves, bands, clips, rail ends, tension bars, fasteners, stretcher, turnbuckle, and fittings.

2.4 FINISHING

A. Components and Fabric: ASTM F1043, Galvanized.

B. Hardware: ASTM A153/A153M, Galvanized.

PART 3 EXECUTION

3.1 EXAMINATION

A. Section 01 73 03 – Execution and Closeout Procedures: Requirements for examination of existing conditions before starting work.

B. Verify that surfaces and the Site conditions are ready to receive work.

3.2 PREPARATION

A. Remove debris and correct ground undulations along fence lines to obtain a smooth uniform gradient between posts.

3.3 INSTALLATION OF NEW FENCE

A. Install framework, fabric, accessories, and gates in accordance with CAN/CGSB 138.3 and manufacturer's instructions.

B. Place fabric on the outside of posts and rails.

C. Set terminal, gate, and concrete set line posts plumb, in concrete footings with top of footing 50mm above finish grade. Slope top of concrete for water runoff.

D. Line post depth below finish grade: 900mm. Should an obstruction be encountered that prevents the line post from being driven to full depth, advise ENGINEER. ENGINEER will determine if either a concrete foundation is to be installed, or the line post will be driven at a different location.

E. Corner, gate, and concrete set line post footing depth below finish grade: 900mm.

F. Brace each gate and corner post to adjacent line post with horizontal center brace rail and diagonal truss rods. Install brace rail one bay from end and gate posts.

G. Provide top rail through line post tops and splice with 150mm long rail sleeves.

H. Install center and bottom brace rail on corner gate leaves.

I. Do not stretch fabric until concrete foundation has achieved adequate strength, minimum 5 days.

J. Stretch fabric between terminal posts or at intervals of 30m maximum, whichever is less.

K. Position bottom of fabric 50mm above finish grade.

L. Fasten fabric to top rail, line posts, braces, and bottom tension wire with tie wire at maximum 400mm on centres.

M. Attach fabric to end, corner, and gate posts with tension bars and tension bar clips.

N. Install bottom tension wire stretched taut between terminal posts.

O. Install support arms sloped outward and attach barbed wire; tension and secure.

P. Do not attach hinged side of gate from building wall; provide gate posts on both sides of gate openings.

Q. Install gate with fabric and barbed wire overhang to match fence. Install three hinges per leaf, latch, catches, drop bolt, foot bolts, and sockets.

R. Provide concrete center drop to footing depth and drop rod retainers at center of double gate openings.

S. Posts in solid rock or where overburden is less than 900mm. Drill holes for posts to a minimum depth of 500mm with diameter 25mm greater than the outside diameter of post. Fill the annular space around post with non-shrink cement grout.

T. Install corner posts where change in alignment exceeds 10 degrees horizontally.

U. Field weld wire fabric fence to line, corner and gate posts at maximum spacing of 700mm. Apply two heavy coats of zinc-rich touch-up paint to welds.

3.5 TOLERANCES

A. Maximum variation from plumb: 5mm.

B. Maximum offset from true position: 25mm.

C. Components shall not infringe adjacent property lines.

3.6 FIELD QUALITY CONTROL

A. Section 01 45 00 - Quality Control Requirements: Requirements for inspection and testing.

B. Repair damaged galvanized surfaces in accordance with ASTM A780.

C. Apply field repair coating to damaged galvanized surfaces at dry film thickness at least equal to specified galvanized coating thicknesses.

3.7 CLEANING

A. Section 01 73 03 – Execution and Closeout Procedures: Requirements for cleaning installed work.

B. Spread soil excavated from post holes uniformly on ground surface, on the inside of proposed fence alignment, or utilize to backfill post holes along existing fence alignments.

PART 4 MEASUREMENT AND PAYMENT

4.1 GENERAL

A. Section 01 29 00 - Payment Procedures: Requirements for project measurement and payment.

4.2 INSTALLATION OF NEW FENCING

A. Schedule of Unit Prices Item No. 32 31 13 / 1.

B. Measurement Basis: By the linear metre measured in place along centerline of fence.

C. Payment Basis: Unit price. Includes supply and installation of fence posts, concrete footings, fabric, braces, rails, tension wire, attachments, and accessories.

4.3 INSTALLATION OF FENCE DOUBLE SWING GATE

A. Schedule of Unit Prices Item No. 32 31 13 / 2.

B. Payment Basis: Lump sum price. Includes supply and installation of gate, fabric, hinges, foot bolt, center rest, lockable latch, attachments, and accessories.

END OF SECTION

SECTION 33 51 39 GENERAL UTILITIES

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Gas Probe Installation.

B. Monitoring Well Installation.

C. Monitoring Well MW-2A Repair.

D. Measurement and payment.

1.2 REFERENCES

A. Section 01 45 00 - Quality Control Requirements.

1.3 SUBMITTALS

A. Section 01 32 00 – Administrative Requirements and Submittal Procedures.

PART 2 PRODUCTS

2.1 GAS PROBE INSTALLATION

A. Once installation of new gas probes is completed the new gas probes are to be flagged to prevent damage as well.

B. Each gas probe is a nested probe setup with one shallow gas probe and one deep gas probe. The following is the completion details for proposed gas probes:

1. Completion Depth (mbgs) – 1.9 for the shallow and 3.65 for the deep.

2. Screened interval, including clear stone filter pack (mbgs) – 0.9 through 1.9 for the shallow and 2.65 through 3.65 for the deep.

3. Bentonite plug (mbgs) – 0.15 through 0.9 metres for the shallow and 1.9 through 2.65 for the deep.

4. Concrete seal (mbgs) – 0.0 through 0.15 metres for both the shallow and deep.

C. Accessories: 19mm slotted PVC screen, 19mm SCH40 PVC pipe, clear stone filter pack, bentonite plug, salvage existing well casing.

2.2 MONITORING WELL INSTALLATION

A. Once installation of new monitoring well is completed the new monitoring wells are to be flagged to prevent damage as well.

B. The following are the completion details for PR-MW1:

1. Completion Depth (mbgs) – 4.75.
2. Screened interval (mbgs), including silica sand filter pack – 3.0 through 4.5. Note: silica sand filter pack to extend 0.5m above top of well screen.
3. Bentonite plug (mbgs) – 0.25 through 2.5.
4. Concrete seal (mbgs) – 0.0 through 0.25.

C. The following are the completion details for PR-MW2:

1. Completion Depth (mbgs) – 11.25.
2. Screened interval (mbgs), including 10-slot well screen and 10/20 silica sand filter pack – 9.5 through 11.0. Note: silica sand filter pack to extend 0.5m above top of well screen.
3. Bentonite plug (mbgs) – 0.25 through 9.0.
4. Concrete seal (mbgs) – 0.0 through 0.25.

D. The following are the completion details for PR-MW3:

1. Completion Depth (mbgs) – 4.75.
2. Screened interval (mbgs), including silica sand filter pack – 3.0 through 4.5. Note: sand silica filter pack to extend 0.5m above top of well screen.
3. Bentonite plug (mbgs) – 0.25 through 2.5.
4. Concrete seal (mbgs) – 0.0 through 0.25.

E. The following are the completion details for PR-MW4:

1. Completion Depth (mbgs) – 7.75.
2. Screened interval (mbgs), including silica sand filter pack – 6.0 through 7.5. Note: silica sand filter pack to extend 0.5m above top of well screen.
3. Bentonite plug (mbgs) – 0.25 through 5.5.
4. Concrete seal (mbgs) – 0.0 through 0.25.

F. Accessories: 19mm diameter 10-slot PVC well screen, 19mm diameter SCH40 PVC pipe, 10/20 silica sand filter pack, bentonite pellets, salvage existing well casing.

2.3 MONITORING WELL MW-2A REPAIR

A. Inspect and recommend repairs to MW-2A.

PART 3 EXECUTION

3.1 EXAMINATION

A. Section 01 73 03 – Execution and Closeout Procedures.

B. Verify that area is ready to receive work, and dimensions and elevations are as shown on Drawings.

3.2 FIELD QUALITY CONTROL

A. Section 01 45 00 – Quality Control Requirements.

3.3 PROTECTION OF FINISHED WORK

A. Section 01 73 03 - Execution and Closeout Procedures.

PART 4 MEASUREMENT AND PAYMENT

4.1 GENERAL

A. Section 01 29 00 - Payment Procedures.

4.2 GAS PROBE INSTALLATION

A. Schedule of Prices Item No. 33 51 39 / 1.

B. Payment Basis: Unit price. Includes drilling, supply and installation of new gas probes and accessories.

4.3 MONITORING WELL INSTALLATION

A. Schedule of Prices Item No. 33 51 39 / 2.

B. Payment Basis: Unit price. Includes drilling, supply, and installation of new monitoring wells and accessories.

4.3 MONITORING WELL MW-2A REPAIR

A. Schedule of Prices Item No. 33 51 39 / 3.

B. Payment Basis: Unit price. Includes inspection, recommendation, and repair of MW-2A.

END OF SECTION

ATTACHMENT 1

SCHEDULE OF PRICES – CONTACT WATER POND RELOCATION, SECHELT LANDFILL

Table 1 - Schedule of Prices

Item	Spec	Description	Quantity	Unit	Unit Price	Total Price
1	01 32 00 / 1	Administrative - Admin Requirements and Submittal Procedures	1	LS		
2	01 32 00 / 1	Administrative - Execution and Closeout Procedures	1	LS		
3	01 73 03 / 1	Execution and Closeout Procedures - Demobilization and Closeout	1	LS		
4	02 42 00 / 1	Removal and Salvage of Construction Materials - Salvaging of Concrete Blocks	1	LS		
5	02 42 00 / 2	Removal and Salvage of Construction Materials - Transportation of Wheel Stops and Drainage Pipe Joints	1	LS		
6	02 42 00 / 3	Removal and Salvage of Construction Materials - Transportation of Large Heavy Equipment Tires	1	LS		
7	02 42 00 / 4	Removal and Salvage of Construction Materials - Removal and Salvaging of Road Aggregate Material	400	m^3		
8	03 41 00 / 1	Precast Structural Concrete - Triple 300mm Inlet Headwall	1	LS		
9	31 23 10 / 1	Excavation and Trenching - Municipal Solid Waste Management and Disposal	2500	m^3		
10	31 23 10 / 2	Excavation and Trenching - Potential Asbestos Containing Material Management and Disposal	2500	m^3		
11	31 23 10 / 3	Excavation and Trenching - On-Site Structural Fill	7500	m^3		
12	31 23 11 / 1	Fill - Well Graded Base	75	m^3		
13	31 23 11 / 2	Fill - Rip Rap	40	m^3		
14	31 23 11 / 3	Fill - On-Site Structural Fill	2500	m^3		
15	31 23 11 / 4	Fill - Imported Structural Fill	250	m^3		
16	31 23 11 / 5	Fill - Compacted Clay Liner	1425	m^3		
17	31 23 11 / 6	Fill - Topsoil	10	m^3		
18	31 32 19.01 / 1	Geotextiles - Non-Woven Geotextile	850	m^2		
19	31 32 19.01 / 2	Geotextiles - Anchor Trench	120	LM		
20	32 92 19.16 / 1	Hydraulic Seeding - Hydraulic Seeding	6000	m^2		
21	32 35 44 / 1	Erosion and Sediment Control - Temporary Soil Erosion and Sediment Control	1	LS		
22	33 41 00 / 1	Storm Utility Drainage Piping - 300mm CSP Culverts	10	LM		
23	33 41 00 / 2	Storm Utility Drainage Piping - Road Culverts	95	LM		
24	32 31 13 / 1	Chain Link Fences and Gates - Installation of New Fencing	120	LM		
25	32 31 13 / 2	Chain Link Fences and Gates - Installation of Fence Double Swing Gate	1	LS		
26	33 51 39 / 1	General Utilities - Gas Probe Installation	3	each		
27	33 51 39 / 2	General Utilities - Monitoring Well Installation	4	each		
28	33 51 39 / 3	General Utilities - Monitoring Well MW-2A Repair	1	each		
					Schedule of Prices Total	**$ -**
					Project Total	**$ -**

ATTACHMENT 2
DRAWINGS JUNE 10, 2024

KEY MAP
SCALE 1:40000

DRAWING INDEX

SHEET	REV.#	DATE	TITLE
G-01	5	JUNE 10, 2024	COVER PAGE
C-01	5	JUNE 10, 2024	EXISTING SITE CONDITIONS
C-02	5	JUNE 10, 2024	PROPOSED SITE MODIFICATIONS
C-03	5	JUNE 10, 2024	PROPOSED CONTACT WATER POND
C-04	5	JUNE 10, 2024	PROPOSED MODIFICATIONS TO THE EXISTING WATER CONTACT POND
C-05	5	JUNE 10, 2024	PROPOSED CONTACT WATER POND PROFILES
C-06	5	JUNE 10, 2024	EXISTING AREAS OF POTENTIAL BURIED ASBESTOS
C-07	5	JUNE 10, 2024	PROPOSED INFILL STAGES OF THE EXISTING CONTACT WATER POND
C-08	5	JUNE 10, 2024	ENVIRONMENTAL MONITORING INFRASTRUCTURE
D-01	5	JUNE 10, 2024	DETAILS I
D-02	5	JUNE 10, 2024	DETAILS II
D-03	5	JUNE 10, 2024	DETAILS III
D-04	5	JUNE 10, 2024	DETAILS IV

CONTACT WATER POND RELOCATION
SECHELT LANDFILL

SUNSHINE COAST REGIONAL DISTRICT

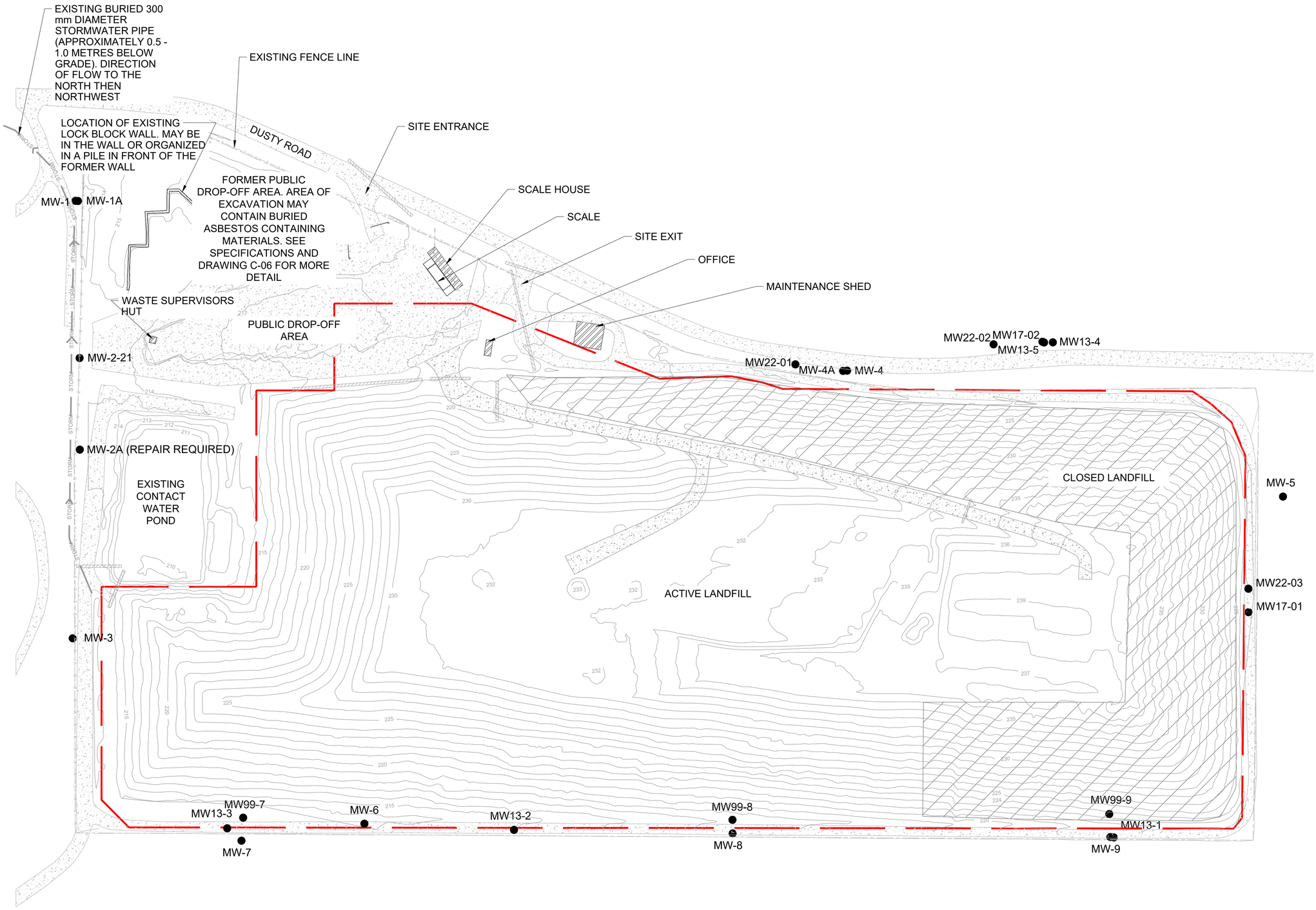
SECHELT, BRITISH COLUMBIA

820 Trillium Drive
Kitchener, ON N2R 1K4
Ph. (519) 741-5774

ISSUED FOR TENDER

Issue Date: JUNE 10, 2024

FILE: TND421110197001G01+.dwg



LEGEND:

- PROPERTY BOUNDARY
- APPROXIMATE LIMIT OF WASTE
- APPROXIMATE FENCE LINE
- EXISTING CONTOURS
- EXISTING GRAVEL ROAD
- EXISTING BUILDING
- EXISTING CULVERT
- STORM — SURFACE WATER DRAINAGE PIPES
- MW — EXISTING MONITORING WELLS

No.	Description	Auth. By	Date
5	ISSUED FOR TENDER	ZJW	JUNE 10, 2024
4	ISSUED FOR INTERNAL REVIEW	ZJW	MAY 27, 2024
3	ISSUED FOR 100% REVIEW	ZJW	MAY 17, 2024
2	ISSUED FOR 90% REVIEW	ZJW	APRIL 30, 2024
1	ISSUED FOR 60% REVIEW	ZJW	APRIL 1, 2024
0	ISSUED FOR 30% REVIEW	ZJW	MARCH 15, 2024

REVISIONS

NOTES

PROFESSIONAL ENGINEER T. KOLODZIEJ # 47495 BRITISH COLUMBIA ENGINEER

Aug. 7 2024
Permit # 1003057

VERIFY SCALE
BAR IS 20 mm ON ORIGINAL DRAWING.

0 — 20 mm

IF NOT 20 mm ON THIS SHEET, ADJUST SCALES ACCORDINGLY.

XCG | A DIVISION OF TRACE ASSOCIATES

Designed By:	Z. WEIMA
Date:	JUNE 2024
Drawn By:	Z. WEIMA
Date:	JUNE 2024
Checked By:	T. KOLODZIEJ
Date:	JUNE 2024

SUNSHINE COAST REGIONAL DISTRICT

EXISTING SITE CONDITIONS

CONTACT WATER POND RELOCATION SECHELT LANDFILL

SUNSHINE COAST REGIONAL DISTRICT

Scale:	Drawing No:	Rev.
1:700	C-01	5

FILE: TND\211103\700\G01+.dwg

EXISTING BURIED 300 mm DIAMETER STORMWATER PIPE (APPROXIMATELY 0.5 - 1.0 METRES BELOW GRADE)

PROPOSED CONTACT WATER INFILTRATION POND

PROPOSED CONTACT WATER RETENTION POND

PROPOSED GAS PROBES

DUSTY ROAD

PR - MW2
PR - MW1
CONSTRUCTION LIMITS

EXISTING PUBLIC DROP-OFF AREA

PROPOSED NEW GRAVEL ROAD

CONTRACTOR TEMPORARY STORAGE AREA

PROPOSED LIMIT OF WASTE

PR - MW3
PR - MW4

FILL IN EXISTING CONTACT WATER POND (SEE DRAWING C-07)

CONTRACTOR PARKING AREA OR AS DESIGNATED

LEGEND:

- PROPERTY BOUNDARY
- APPROXIMATE FENCE LINE
- EXISTING CONTOURS
- PROPOSED GRAVEL ROADS
- APPROXIMATE LIMIT OF WASTE
- PROPOSED CONTOURS
- CONSTRUCTION LIMITS
- PR - MW — PROPOSED MONITORING WELLS
- PROPOSED GAS PROBES

0 30 60 m

1:700

FILE: TND\211109\7001G01+.dwg

No.	Description	Auth. By	Date
5	ISSUED FOR TENDER	ZJW	JUNE 10, 2024
4	ISSUED FOR INTERNAL REVIEW	ZJW	MAY 27, 2024
3	ISSUED FOR 100% REVIEW	ZJW	MAY 17, 2024
2	ISSUED FOR 90% REVIEW	ZJW	APRIL 30, 2024
1	ISSUED FOR 60% REVIEW	ZJW	APRIL 1, 2024
0	ISSUED FOR 30% REVIEW	ZJW	MARCH 15, 2024

REVISIONS

NOTES

PROFESSIONAL ENGINEER — T. KOLODZIEJ — # 47498 — CANADA — ENGINEER
Aug. 7 2024
Permit # 1003057

VERIFY SCALE BAR IS 20 mm ON ORIGINAL DRAWING.

0 — 20 mm

IF NOT 20 mm ON THIS SHEET, ADJUST SCALES ACCORDINGLY.

XCG — A DIVISION OF TRACE ASSOCIATES

Designed By:	Z. WEIMA
Date:	JUNE 2024
Drawn By:	Z. WEIMA
Date:	JUNE 2024
Checked By:	T. KOLODZIEJ
Date:	JUNE 2024

SUNSHINE COAST REGIONAL DISTRICT

PROPOSED SITE MODIFICATIONS

CONTACT WATER POND RELOCATION
SECHELT LANDFILL

SUNSHINE COAST REGIONAL DISTRICT

Scale:	Drawing No:	Rev.
1:700	C-02	5

PROPOSED 3 METRE WIDE
PERIMETER ACCESS
TRIPLE 300 mm CSP RETENTION POND OUTLET
INTERIOR POND SPILLWAY
FILL IN EXISTING SURFACE
WATER DITCH
PROPOSED STORMWATER
DIVERSION BERM ALONG POND
EXISTING SECURITY
FENCE
INFILTRATION POND
SPILLWAY
PROPOSED CONTACT WATER
INFILTRATION POND
PROPOSED 2 METRE WIDE
INTERIOR ACCESS
PROPOSED CONTACT
WATER RETENTION
POND
PROPOSED FENCE GATE
PR - MW2
PR - MW1
NATURAL
FLOW
PATTERN
SILT
FENCING
RETENTION POND
SPILLWAY
PROPOSED CULVERT
PROPOSED ROCK
CHECK DAMS
FILL IN EXISTING SURFACE
WATER DITCH
PROPOSED NEW
GRAVEL ROAD
PROPOSED FENCE
PROPOSED CONTACT
WATER DITCH
EXISTING PUBLIC
DROP-OFF AREA
EXISTING SECURITY
FENCE
PROPOSED CONTACT WATER
DITCH AND BERM
FOR CONTINUATION
SEE DRAWING C-04
LEGEND:
PROPERTY BOUNDARY
APPROXIMATE FENCE LINE
EXISTING CONTOURS
PROPOSED CONTOURS
PROPOSED GRAVEL ROADS
EXISTING BUILDING
SILT FENCING
PROPOSED CULVERT
PR - MW PROPOSED MONITORING WELLS
0 5 10 m
1 : 200

No.	Description	Auth. By	Date
5	ISSUED FOR TENDER	ZJW	JUNE 10, 2024
4	ISSUED FOR INTERNAL REVIEW	ZJW	MAY 27, 2024
3	ISSUED FOR 100% REVIEW	ZJW	MAY 17, 2024
2	ISSUED FOR 90% REVIEW	ZJW	APRIL 30, 2024
1	ISSUED FOR 60% REVIEW	ZJW	APRIL 1, 2024
0	ISSUED FOR 30% REVIEW	ZJW	MARCH 15, 2024

REVISIONS

NOTES

PROFESSIONAL ENGINEER, PROVINCE OF BRITISH COLUMBIA, T. KOLODZIEJ # 47498
Aug. 7 2024
Permit # 1003057

VERIFY SCALE
BAR IS 20 mm ON
ORIGINAL DRAWING.
0 20 mm
IF NOT 20 mm ON THIS
SHEET, ADJUST SCALES
ACCORDINGLY.

XCG | A DIVISION OF TRACE ASSOCIATES

Designed By: Z. WEIMA
Date: JUNE 2024
Drawn By: Z. WEIMA
Date: JUNE 2024
Checked By: T. KOLODZIEJ
Date: JUNE 2024

SUNSHINE COAST REGIONAL DISTRICT

PROPOSED CONTACT WATER POND

CONTACT WATER POND RELOCATION
SECHELT LANDFILL

SUNSHINE COAST REGIONAL DISTRICT

Scale: 1:200 | Drawing No: C-03 | Rev. 5

FOR CONTINUATION
SEE DRAWING C-03

STORM

STORM

STORM

STORM

STORM

214

PROPOSED ROCK
CHECK DAMS
15 D-04

TOP OF PROPOSED BERM
9 D-02

INSIDE EDGE
OF PROPOSED BERM
9 D-02

OUTSIDE EDGE
OF PROPOSED BERM
9 D-02

PROPOSED CONTACT WATER
DITCH AND BERM
9 D-02

PROPOSED CULVERT
20 D-04

PROPOSED NEW GRAVEL
ROAD (5 METRES WIDE)
8 D-02

EXISTING CULVERT

PROPOSED CULVERT
20 D-04

EXISTING CULVERT

210

211

212

213

214

215

220

225

230

LEGEND:

- PROPERTY BOUNDARY
- APPROXIMATE FENCE LINE
- EXISTING CONTOURS
- PROPOSED NON WOVEN GEOTEXTILES
- PROPOSED CONTOURS
- APPROXIMATE LIMIT OF WASTE
- PROPOSED GRAVEL ROADS
- EXISTING CULVERT
- PROPOSED CULVERT

0 5 10 m

1 : 200

FILE: TND\23110197001G01+.dwg

No.	Description	Auth. By	Date
5	ISSUED FOR TENDER	ZJW	JUNE 10, 2024
4	ISSUED FOR INTERNAL REVIEW	ZJW	MAY 27, 2024
3	ISSUED FOR 100% REVIEW	ZJW	MAY 17, 2024
2	ISSUED FOR 90% REVIEW	ZJW	APRIL 30, 2024
1	ISSUED FOR 60% REVIEW	ZJW	APRIL 1, 2024
0	ISSUED FOR 30% REVIEW	ZJW	MARCH 15, 2024

REVISIONS

NOTES

PROFESSIONAL ENGINEER
T. KOLODZIEJ
47409
CERTIFIED
CANADA
ENGINEER

Aug. 7 2024
Permit # 1003057

VERIFY SCALE
BAR IS 20 mm ON
ORIGINAL DRAWING.

0 20 mm

IF NOT 20 mm ON THIS
SHEET, ADJUST SCALES
ACCORDINGLY.

XCG | A DIVISION OF TRACE ASSOCIATES

Designed By:	Z. WEIMA
Date:	JUNE 2024
Drawn By:	Z. WEIMA
Date:	JUNE 2024
Checked By:	T. KOLODZIEJ
Date:	JUNE 2024

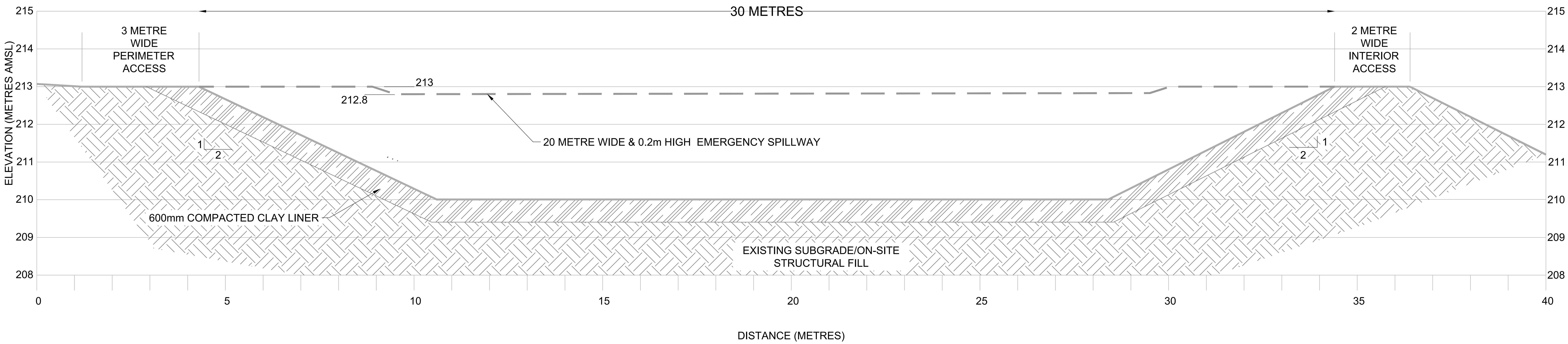
SUNSHINE COAST REGIONAL DISTRICT

PROPOSED MODIFICATIONS TO THE EXISTING WATER CONTACT POND

CONTACT WATER POND RELOCATION SECHELT LANDFILL

SUNSHINE COAST REGIONAL DISTRICT

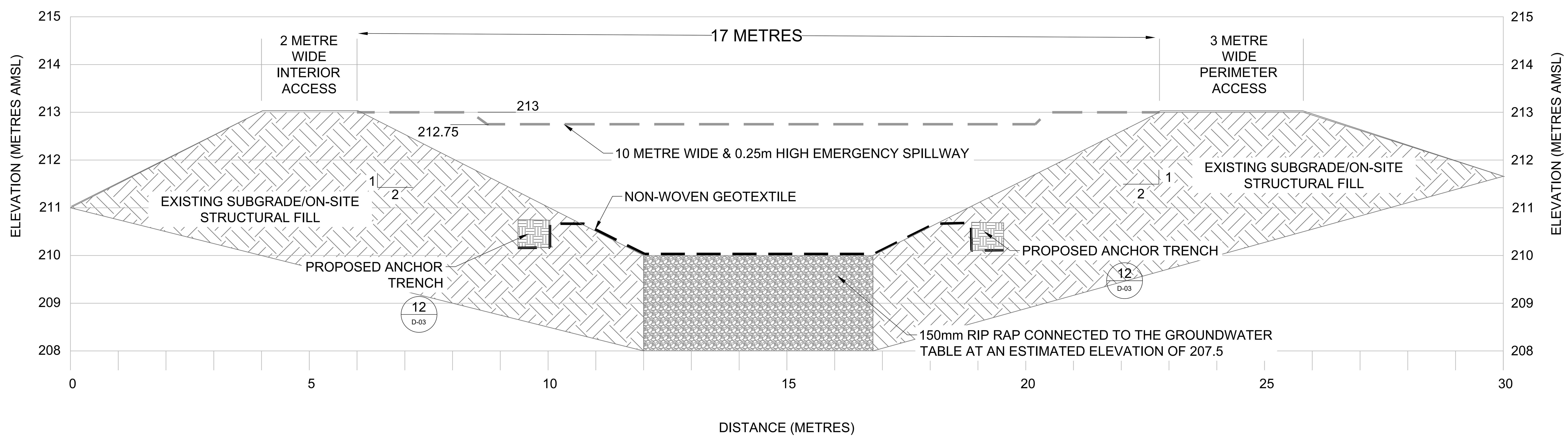
Scale:	Drawing No:	Rev.
1:200	C-04	5



SECTION A-A' RETENTION POND PROFILE

N.T.S.

C-03



SECTION B-B' INFILTRATION POND PROFILE

N.T.S.

C-03

FILE: TND4211101970001G01+.dwg

No.	Description	Auth. By	Date
5	ISSUED FOR TENDER	ZJW	JUNE 10, 2024
4	ISSUED FOR INTERNAL REVIEW	ZJW	MAY 27, 2024
3	ISSUED FOR 100% REVIEW	ZJW	MAY 17, 2024
2	ISSUED FOR 90% REVIEW	ZJW	APRIL 30, 2024
1	ISSUED FOR 60% REVIEW	ZJW	APRIL 1, 2024
0	ISSUED FOR 30% REVIEW	ZJW	MARCH 15, 2024

REVISIONS

NOTES

PROFESSIONAL ENGINEER
PROVINCE OF BRITISH COLUMBIA
T. KOLODZIEJ
47498
Aug. 7 2024
Permit # 1003057

VERIFY SCALE
BAR IS 20 mm ON
ORIGINAL DRAWING.

0 — 20 mm

IF NOT 20 mm ON THIS
SHEET, ADJUST SCALES
ACCORDINGLY.

XCG
A DIVISION OF TRACE ASSOCIATES

Designed By: Z. WEIMA
Date: JUNE 2024
Drawn By: Z. WEIMA
Date: JUNE 2024
Checked By: T. KOLODZIEJ
Date: JUNE 2024

SUNSHINE COAST REGIONAL DISTRICT

PROPOSED CONTACT WATER POND PROFILES

CONTACT WATER POND RELOCATION
SECHELT LANDFILL

SUNSHINE COAST REGIONAL DISTRICT

Scale: AS SHOWN
Drawing No: C-05
Rev. 5

FILE: TND42111019570001G01+.dwg

No.	Description	Auth. By	Date
5	ISSUED FOR TENDER	ZJW	JUNE 10, 2024
4	ISSUED FOR INTERNAL REVIEW	ZJW	MAY 27, 2024
3	ISSUED FOR 100% REVIEW	ZJW	MAY 17, 2024
2	ISSUED FOR 90% REVIEW	ZJW	APRIL 30, 2024
1	ISSUED FOR 60% REVIEW	ZJW	APRIL 1, 2024
0	ISSUED FOR 30% REVIEW	ZJW	MARCH 15, 2024

REVISIONS

NOTES

PROFESSIONAL ENGINEER
PROVINCE OF BRITISH COLUMBIA
T. KOLODZIEJ
47498
Aug. 7 2024
Permit # 1003057

VERIFY SCALE
BAR IS 20 mm ON ORIGINAL DRAWING.
0 20 mm
IF NOT 20 mm ON THIS SHEET, ADJUST SCALES ACCORDINGLY.

XCG A DIVISION OF TRACE ASSOCIATES

Designed By:	Z. WEIMA
Date:	JUNE 2024
Drawn By:	Z. WEIMA
Date:	JUNE 2024
Checked By:	T. KOLODZIEJ
Date:	JUNE 2024

SUNSHINE COAST REGIONAL DISTRICT

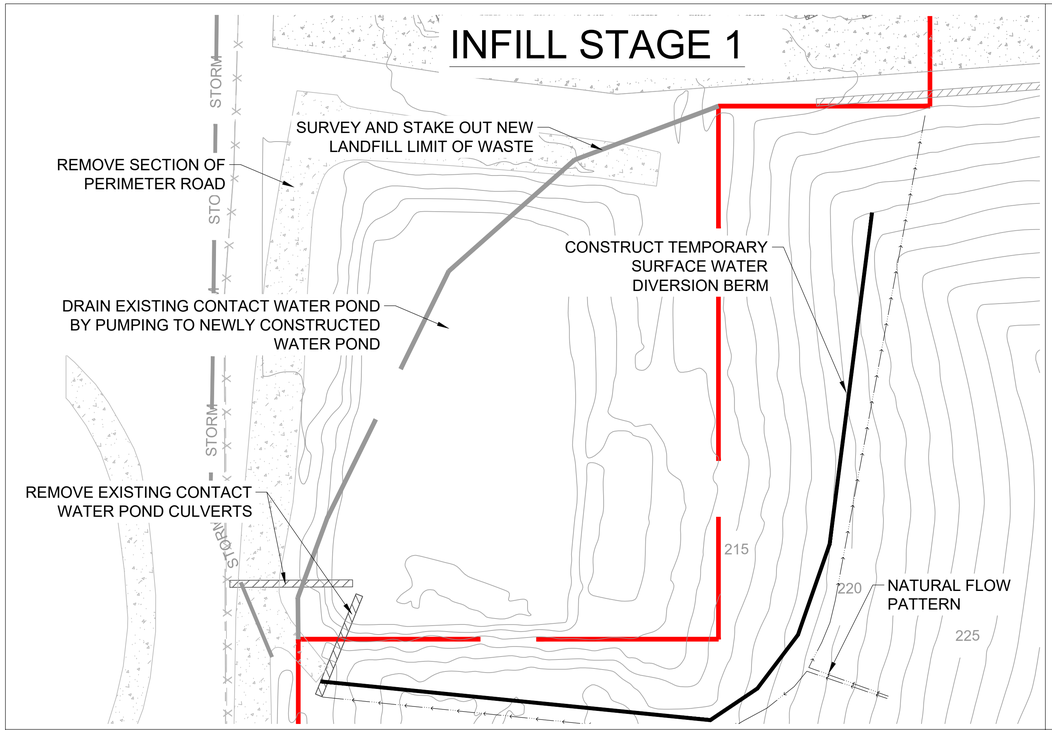
EXISTING AREAS OF POTENTIAL BURIED ASBESTOS

CONTACT WATER POND RELOCATION
SECHELT LANDFILL

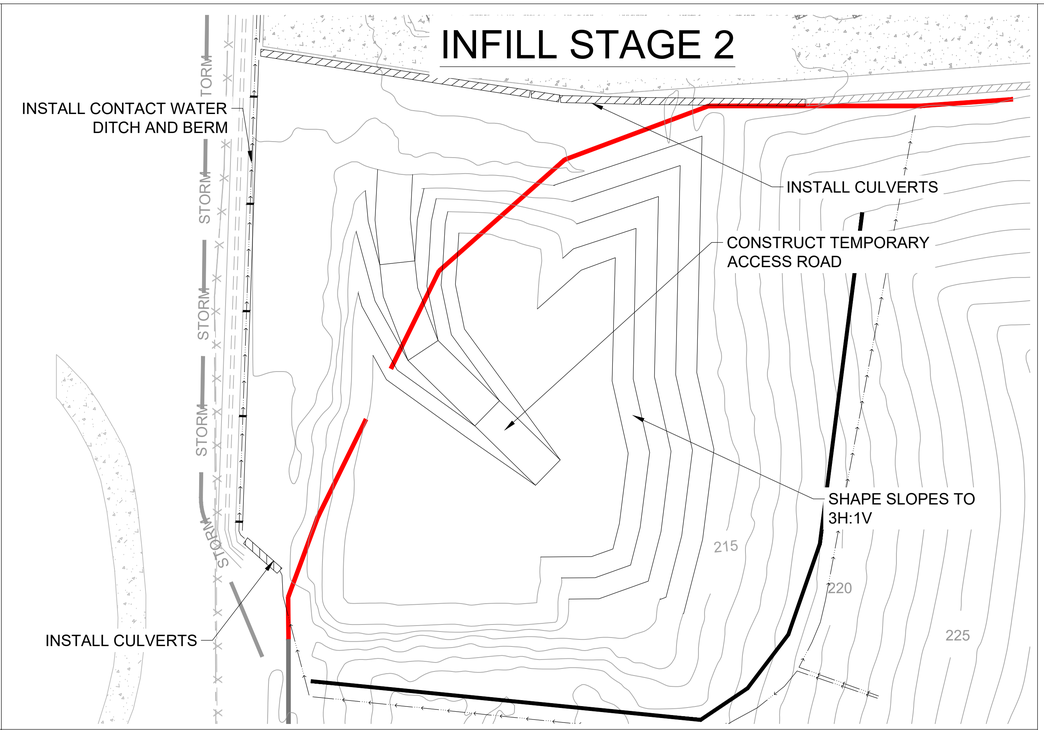
SUNSHINE COAST REGIONAL DISTRICT

Scale:	Drawing No:	Rev.
1:200	C-06	5

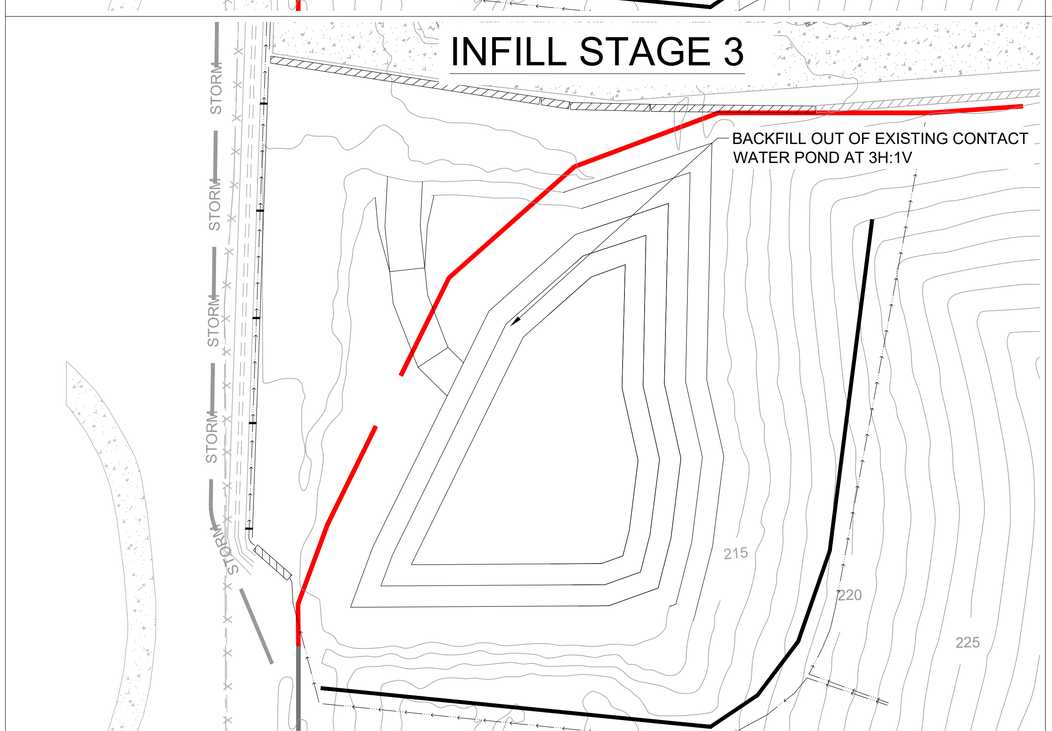
INFILL STAGE 1



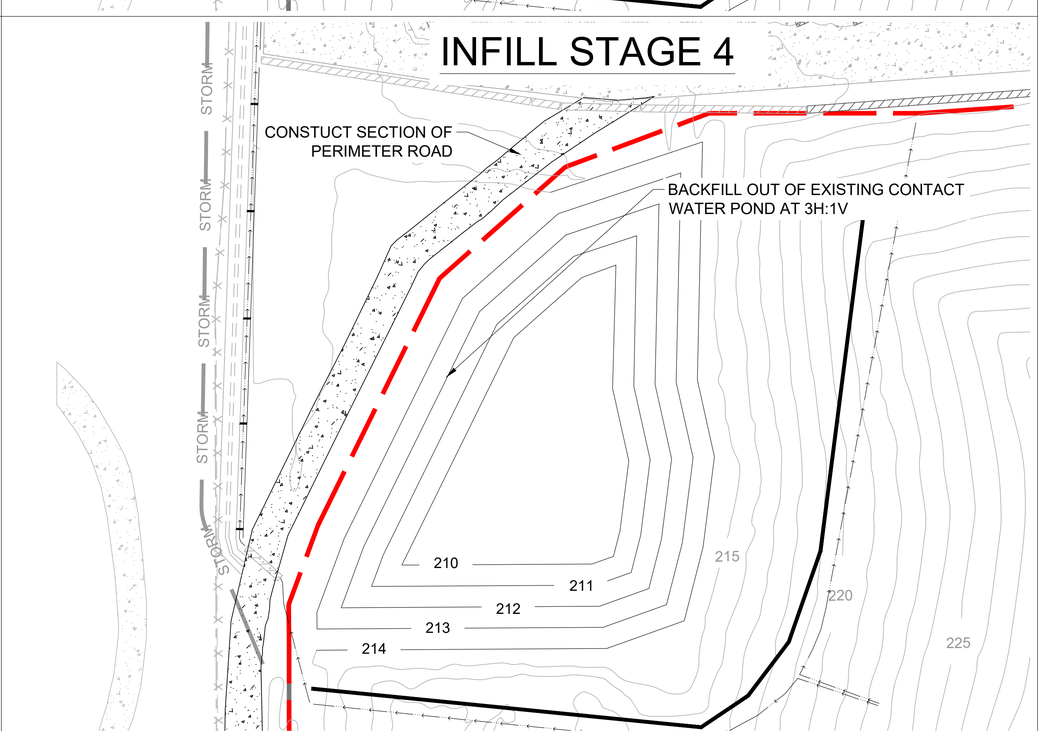
INFILL STAGE 2



INFILL STAGE 3



INFILL STAGE 4



LEGEND:

- PROPERTY BOUNDARY
- APPROXIMATE FENCE LINE
- EXISTING CONTOURS
- PROPOSED NON WOVEN GEOTEXTILES
- PROPOSED CONTOURS
- APPROXIMATE LIMIT OF WASTE
- PROPOSED GRAVEL ROADS
- EXISTING CULVERT
- PROPOSED CULVERT

0 10 20 m

1 : 400

FILE: TND\21110197001G01+.dwg

No.	Description	Auth. By	Date
5	ISSUED FOR TENDER	ZJW	JUNE 10, 2024
4	ISSUED FOR INTERNAL REVIEW	ZJW	MAY 27, 2024
3	ISSUED FOR 100% REVIEW	ZJW	MAY 17, 2024
2	ISSUED FOR 90% REVIEW	ZJW	APRIL 30, 2024
1	ISSUED FOR 60% REVIEW	ZJW	APRIL 1, 2024
0	ISSUED FOR 30% REVIEW	ZJW	MARCH 15, 2024

REVISIONS

NOTES

PROFESSIONAL ENGINEER PROVINCE OF BRITISH COLUMBIA T. KOLODZIEJ # 47408 ENGINEER

Aug. 7 2024
Permit # 1003057

VERIFY SCALE BAR IS 20 mm ON ORIGINAL DRAWING.

0 20 mm

IF NOT 20 mm ON THIS SHEET, ADJUST SCALES ACCORDINGLY.

XCG A DIVISION OF TRACE ASSOCIATES

Designed By:	Z. WEIMA
Date:	JUNE 2024
Drawn By:	Z. WEIMA
Date:	JUNE 2024
Checked By:	T. KOLODZIEJ
Date:	JUNE 2024

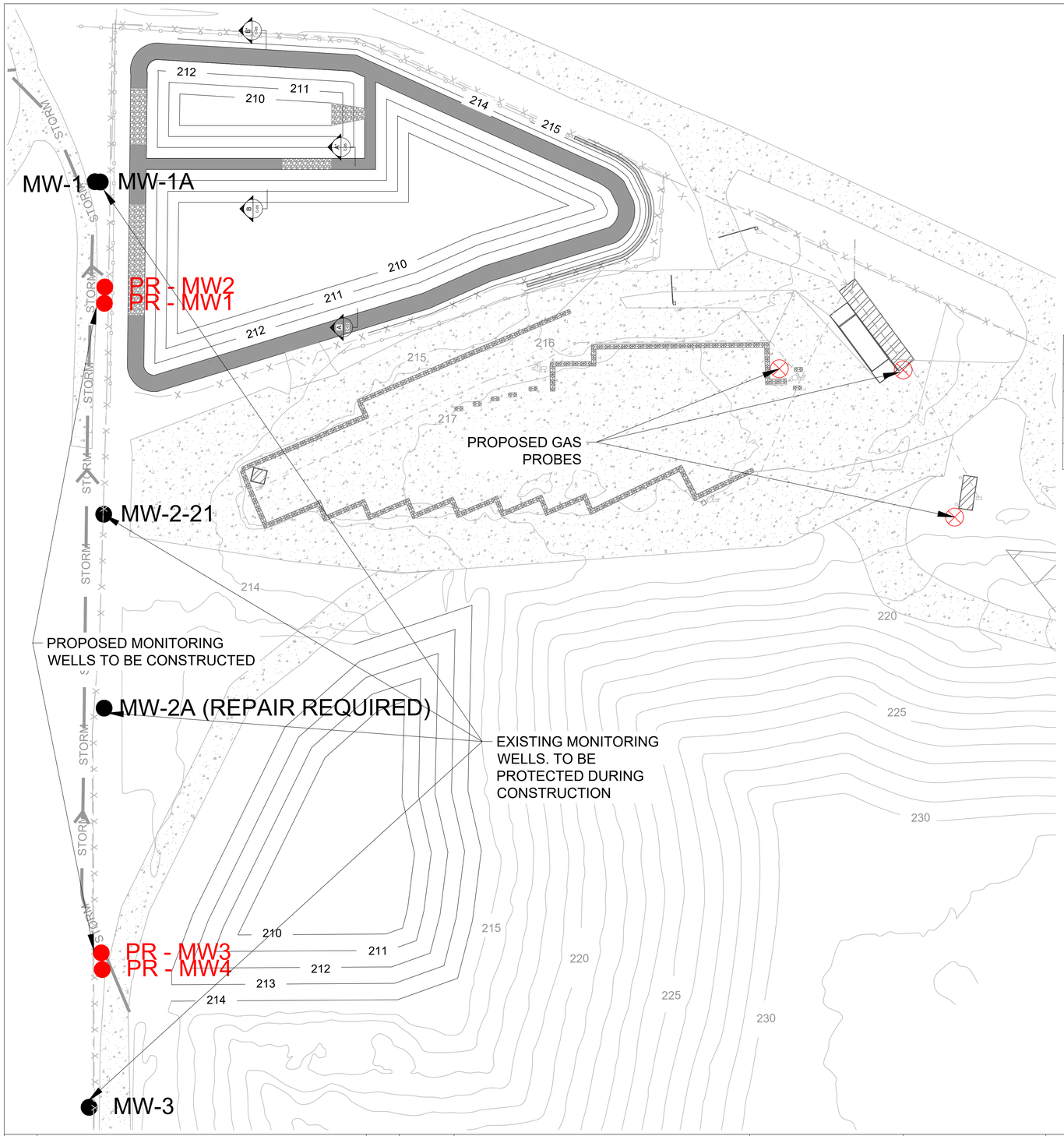
SUNSHINE COAST REGIONAL DISTRICT

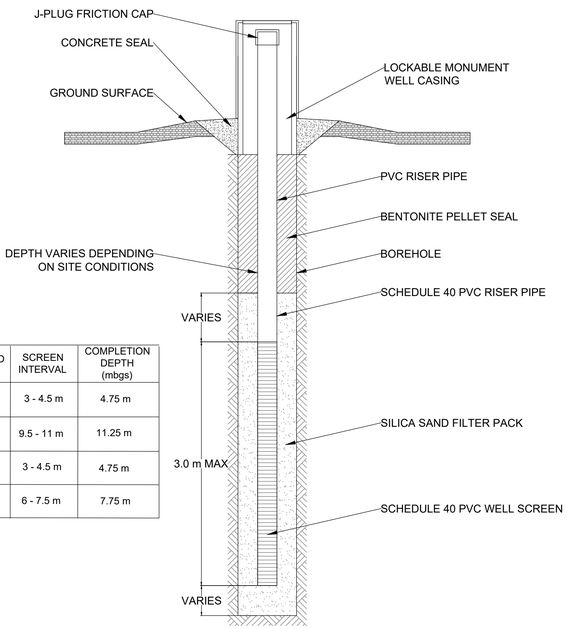
PROPOSED INFILL STAGES OF THE EXISTING CONTACT WATER POND

CONTACT WATER POND RELOCATION SECHELT LANDFILL

SUNSHINE COAST REGIONAL DISTRICT

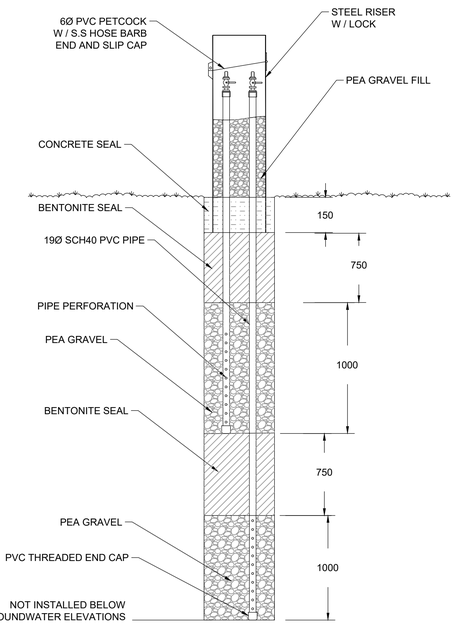
Scale:	Drawing No:	Rev.
1:400	C-07	5





PROPOSED WELLS	SCREEN INTERVAL	COMPLETION DEPTH (mbgs)
PR - MW1	3 - 4.5 m	4.75 m
PR - MW2	9.5 - 11 m	11.25 m
PR - MW3	3 - 4.5 m	4.75 m
PR - MW4	6 - 7.5 m	7.75 m

PROPOSED MONITORING WELL



PROPOSED GAS PROBE

LEGEND:

- PROPERTY BOUNDARY
- APPROXIMATE FENCE LINE
- EXISTING CONTOURS
- PROPOSED GRAVEL ROADS
- APPROXIMATE LIMIT OF WASTE
- PROPOSED CONTOURS
- CONSTRUCTION LIMITS
- PR - MW — PROPOSED MONITORING WELLS
- PROPOSED GAS PROBES

0 10 20 m

1:400

FILE: TND\211109\001G01+.dwg

No.	Description	Auth. By	Date
5	ISSUED FOR TENDER	ZJW	JUNE 10, 2024
4	ISSUED FOR INTERNAL REVIEW	ZJW	MAY 27, 2024
3	ISSUED FOR 100% REVIEW	ZJW	MAY 17, 2024
2	ISSUED FOR 90% REVIEW	ZJW	APRIL 30, 2024
1	ISSUED FOR 60% REVIEW	ZJW	APRIL 1, 2024
0	ISSUED FOR 30% REVIEW	ZJW	MARCH 15, 2024

REVISIONS

NOTES

T. KOLODZIEJ — PROFESSIONAL ENGINEER — PROVINCE OF BRITISH COLUMBIA — # 47498
Aug. 7 2024
Permit # 1003057

VERIFY SCALE BAR IS 20 mm ON ORIGINAL DRAWING.

0 20 mm

IF NOT 20 mm ON THIS SHEET, ADJUST SCALES ACCORDINGLY.

XCG — A DIVISION OF TRACE ASSOCIATES

Designed By:	Z. WEIMA
Date:	JUNE 2024
Drawn By:	Z. WEIMA
Date:	JUNE 2024
Checked By:	T. KOLODZIEJ
Date:	JUNE 2024

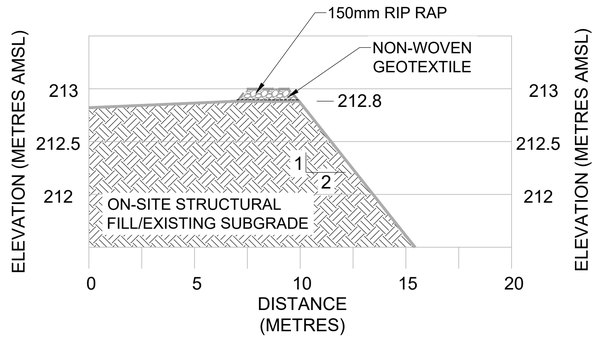
SUNSHINE COAST REGIONAL DISTRICT

ENVIRONMENTAL MONITORING INFRASTRUCTURE

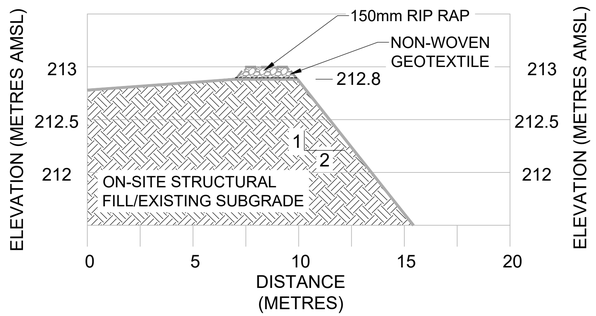
CONTACT WATER POND RELOCATION
SECHELT LANDFILL

SUNSHINE COAST REGIONAL DISTRICT

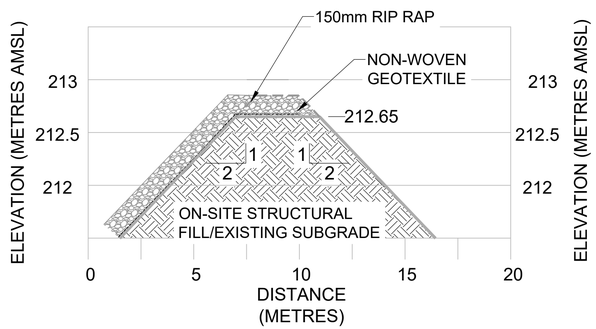
Scale:	Drawing No:	Rev.
1:400	C-08	5



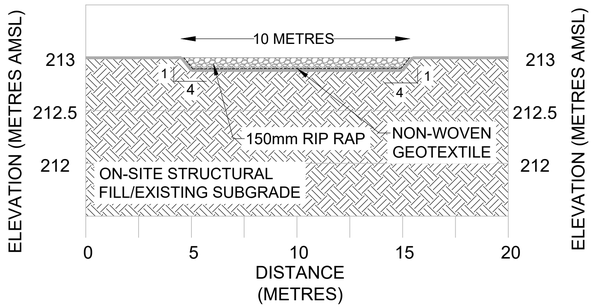
DETAIL 1 — INFILTRATION POND SPILLWAY
N.T.S. — C-03



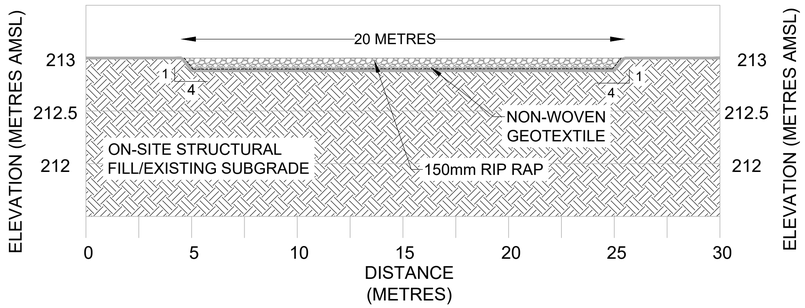
DETAIL 3 — RETENTION POND SPILLWAY
N.T.S. — C-03



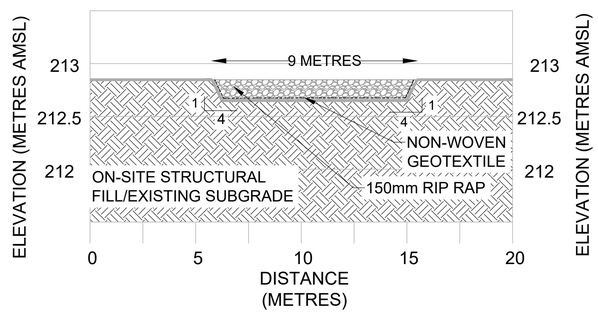
DETAIL 5 — INTERIOR POND SPILLWAY
N.T.S. — C-03



DETAIL 2 — INFILTRATION POND SPILLWAY
N.T.S. — C-03



DETAIL 4 — RETENTION POND SPILLWAY
N.T.S. — C-03



DETAIL 6 — INTERIOR POND SPILLWAY
N.T.S. — C-03

FILE: TND\211103\700\G01+.dwg

No.	Description	Auth. By	Date
5	ISSUED FOR TENDER	ZJW	JUNE 10, 2024
4	ISSUED FOR INTERNAL REVIEW	ZJW	MAY 27, 2024
3	ISSUED FOR 100% REVIEW	ZJW	MAY 17, 2024
2	ISSUED FOR 90% REVIEW	ZJW	APRIL 30, 2024
1	ISSUED FOR 60% REVIEW	ZJW	APRIL 1, 2024
0	ISSUED FOR 30% REVIEW	ZJW	MARCH 15, 2024

REVISIONS

1) ALL MEASUREMENTS IN MILLIMETRES UNLESS OTHERWISE STATED

NOTES

PROFESSIONAL ENGINEER — PROVINCE OF BRITISH COLUMBIA — T. KOLODZIEJ — # 47435 — ENGINEER
Aug. 7 2024
Permit # 1003057

VERIFY SCALE
BAR IS 20 mm ON ORIGINAL DRAWING.
0 — 20 mm
IF NOT 20 mm ON THIS SHEET, ADJUST SCALES ACCORDINGLY.

XCG — A DIVISION OF TRACE ASSOCIATES

Designed By:	Z. WEIMA
Date:	JUNE 2024
Drawn By:	Z. WEIMA
Date:	JUNE 2024
Checked By:	T. KOLODZIEJ
Date:	JUNE 2024

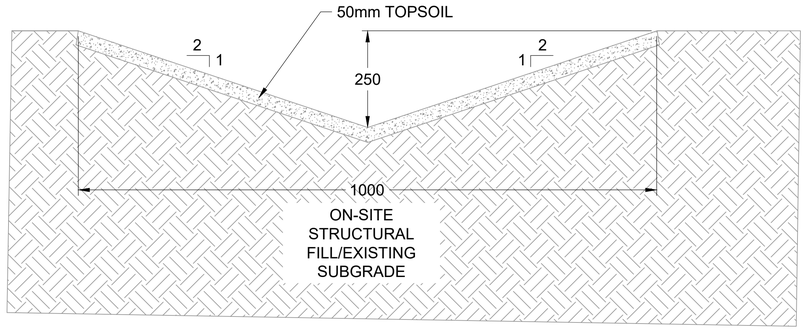
SUNSHINE COAST REGIONAL DISTRICT

DETAILS I

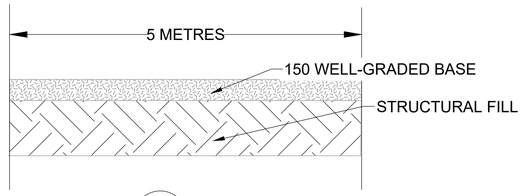
CONTACT WATER POND RELOCATION
SECHELT LANDFILL

SUNSHINE COAST REGIONAL DISTRICT

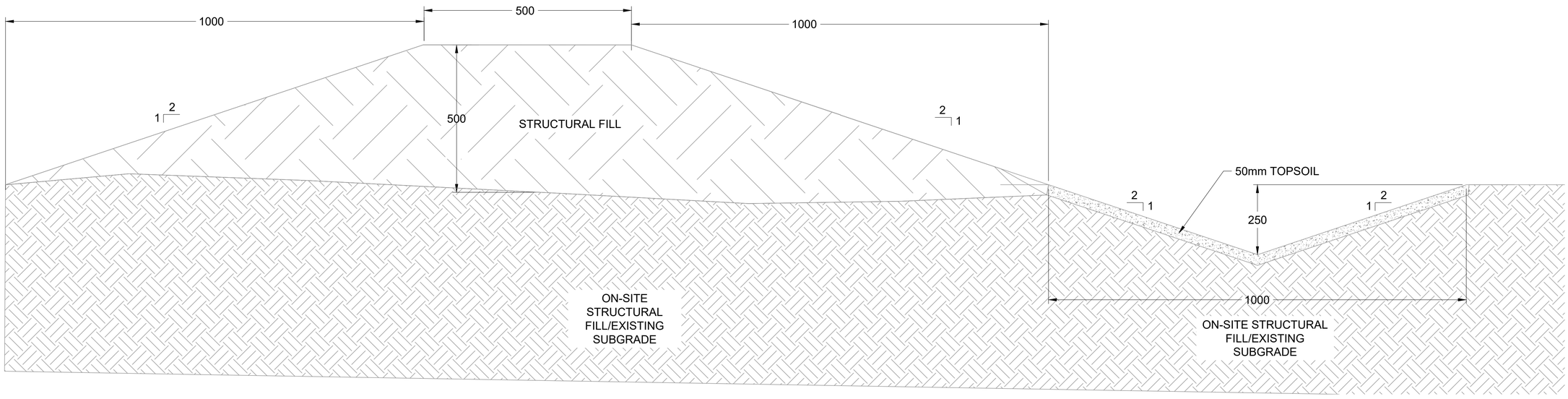
Scale:	Drawing No:	Rev.
AS SHOWN	D-01	5



DETAIL 7 (C-03) PROPOSED CONTACT WATER DITCH
N.T.S.



DETAIL 8 (C-04) PROPOSED NEW GRAVEL ROAD
N.T.S.



DETAIL 9 (C-04) PROPOSED CONTACT WATER DITCH AND BERM
N.T.S.

FILE: TND\21110\7001\G01+.dwg

No.	Description	Auth. By	Date
5	ISSUED FOR TENDER	ZJW	JUNE 10, 2024
4	ISSUED FOR INTERNAL REVIEW	ZJW	MAY 27, 2024
3	ISSUED FOR 100% REVIEW	ZJW	MAY 17, 2024
2	ISSUED FOR 90% REVIEW	ZJW	APRIL 30, 2024
1	ISSUED FOR 60% REVIEW	ZJW	APRIL 1, 2024
0	ISSUED FOR 30% REVIEW	ZJW	MARCH 15, 2024

REVISIONS

NOTES

1) ALL MEASUREMENTS IN MILLIMETRES UNLESS OTHERWISE STATED

PROFESSIONAL ENGINEER PROVINCE OF BRITISH COLUMBIA T. KOLODZIEJ # 47498 ENGINEER
Aug. 7 2024
Permit # 1003057

VERIFY SCALE
BAR IS 20 mm ON
ORIGINAL DRAWING.

0 20 mm

IF NOT 20 mm ON THIS
SHEET, ADJUST SCALES
ACCORDINGLY.

XCG A DIVISION OF TRACE ASSOCIATES

Designed By:	Z. WEIMA
Date:	JUNE 2024
Drawn By:	Z. WEIMA
Date:	JUNE 2024
Checked By:	T. KOLODZIEJ
Date:	JUNE 2024

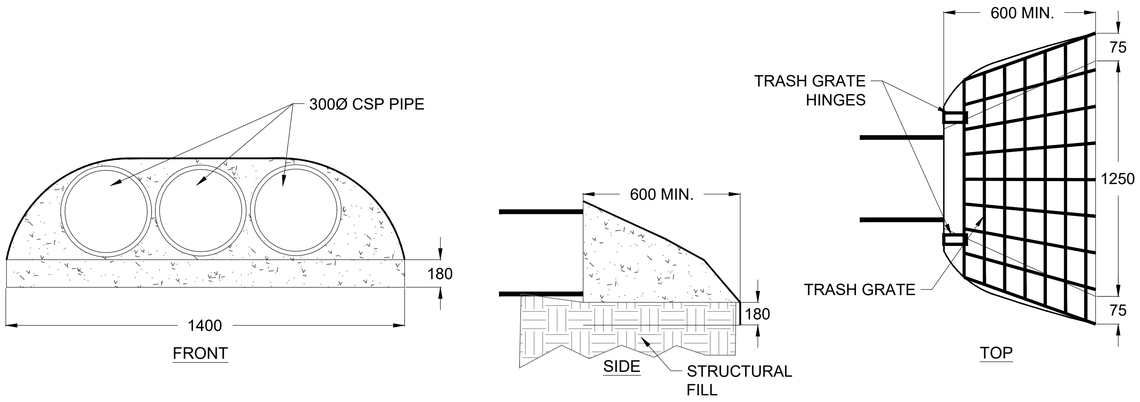
SUNSHINE COAST REGIONAL DISTRICT

DETAILS II

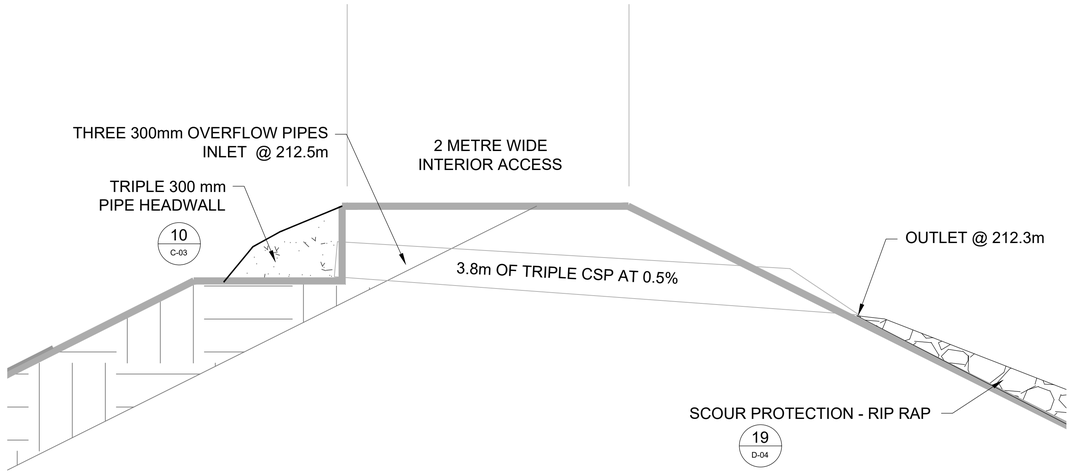
CONTACT WATER POND RELOCATION
SECHELT LANDFILL

SUNSHINE COAST REGIONAL DISTRICT

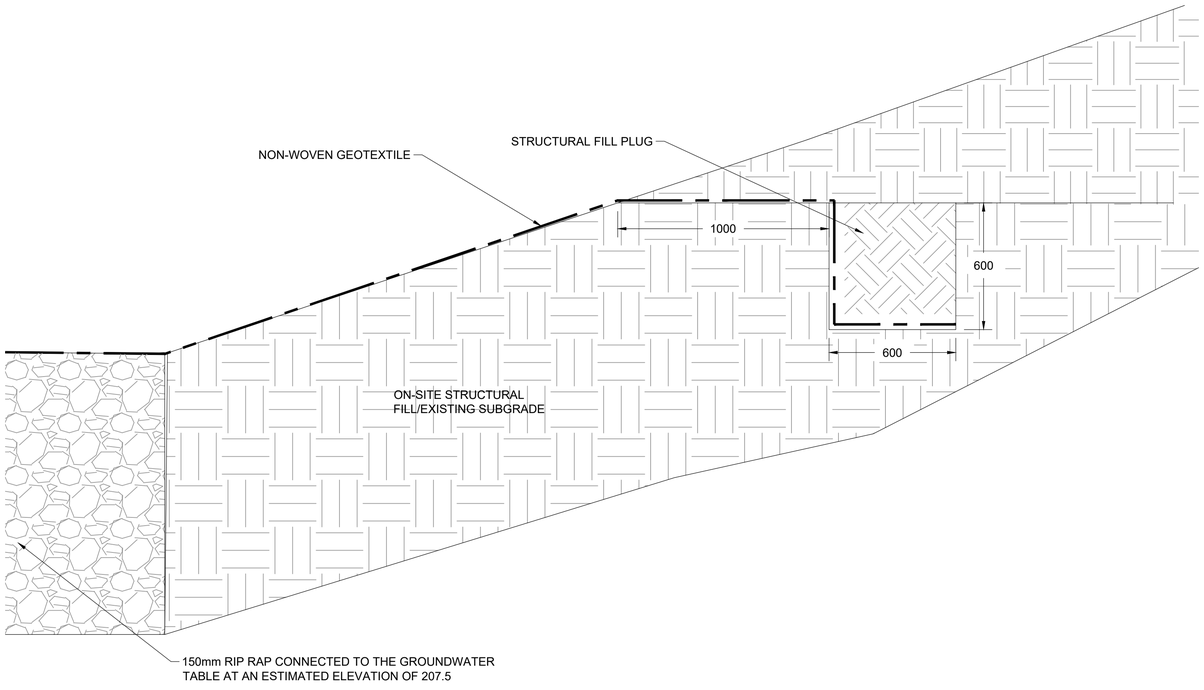
Scale:	Drawing No:	Rev.
AS SHOWN	D-02	5



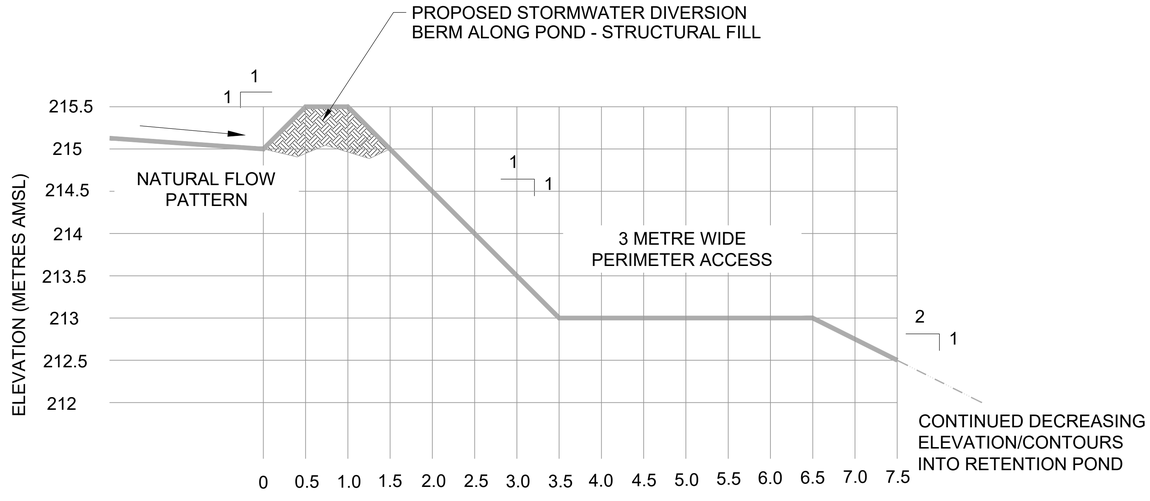
DETAIL 10 (C-03) TRIPLE 300 mm PIPE HEADWALL
N.T.S.



DETAIL 11 (C-03) TRIPLE 300 mm CSP RETENTION POND OUTLET
N.T.S.



DETAIL 12 (C-05) PROPOSED ANCHOR TRENCH
N.T.S.



DETAIL 13 (C-03) PROPOSED STORMWATER DIVERSION BERM ALONG POND
N.T.S.

FILE: TND\211109\7001\G01+.dwg

No.	Description	Auth. By	Date
5	ISSUED FOR TENDER	ZJW	JUNE 10, 2024
4	ISSUED FOR INTERNAL REVIEW	ZJW	MAY 27, 2024
3	ISSUED FOR 100% REVIEW	ZJW	MAY 17, 2024
2	ISSUED FOR 90% REVIEW	ZJW	APRIL 30, 2024
1	ISSUED FOR 60% REVIEW	ZJW	APRIL 1, 2024
0	ISSUED FOR 30% REVIEW	ZJW	MARCH 15, 2024

REVISIONS

1) ALL MEASUREMENTS IN MILLIMETRES UNLESS OTHERWISE STATED

NOTES

PROFESSIONAL ENGINEER PROVINCE OF BRITISH COLUMBIA T. KOLODZIEJ # 47498 CENTRAL COLUMBIA ENGINEERING
Aug. 7 2024
Permit # 1003057

VERIFY SCALE BAR IS 20 mm ON ORIGINAL DRAWING.
0 20 mm
IF NOT 20 mm ON THIS SHEET, ADJUST SCALES ACCORDINGLY.

XCG A DIVISION OF TRACE ASSOCIATES

Designed By:	Z. WEIMA
Date:	JUNE 2024
Drawn By:	Z. WEIMA
Date:	JUNE 2024
Checked By:	T. KOLODZIEJ
Date:	JUNE 2024

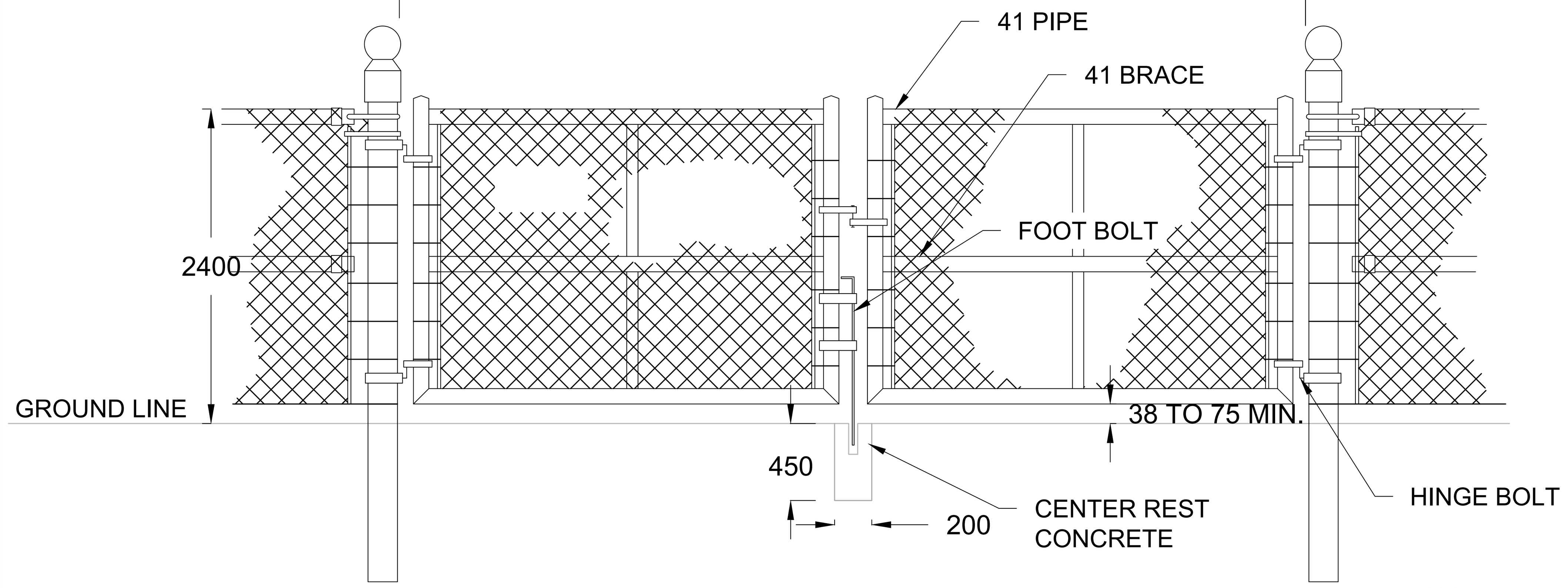
SUNSHINE COAST REGIONAL DISTRICT

DETAILS III

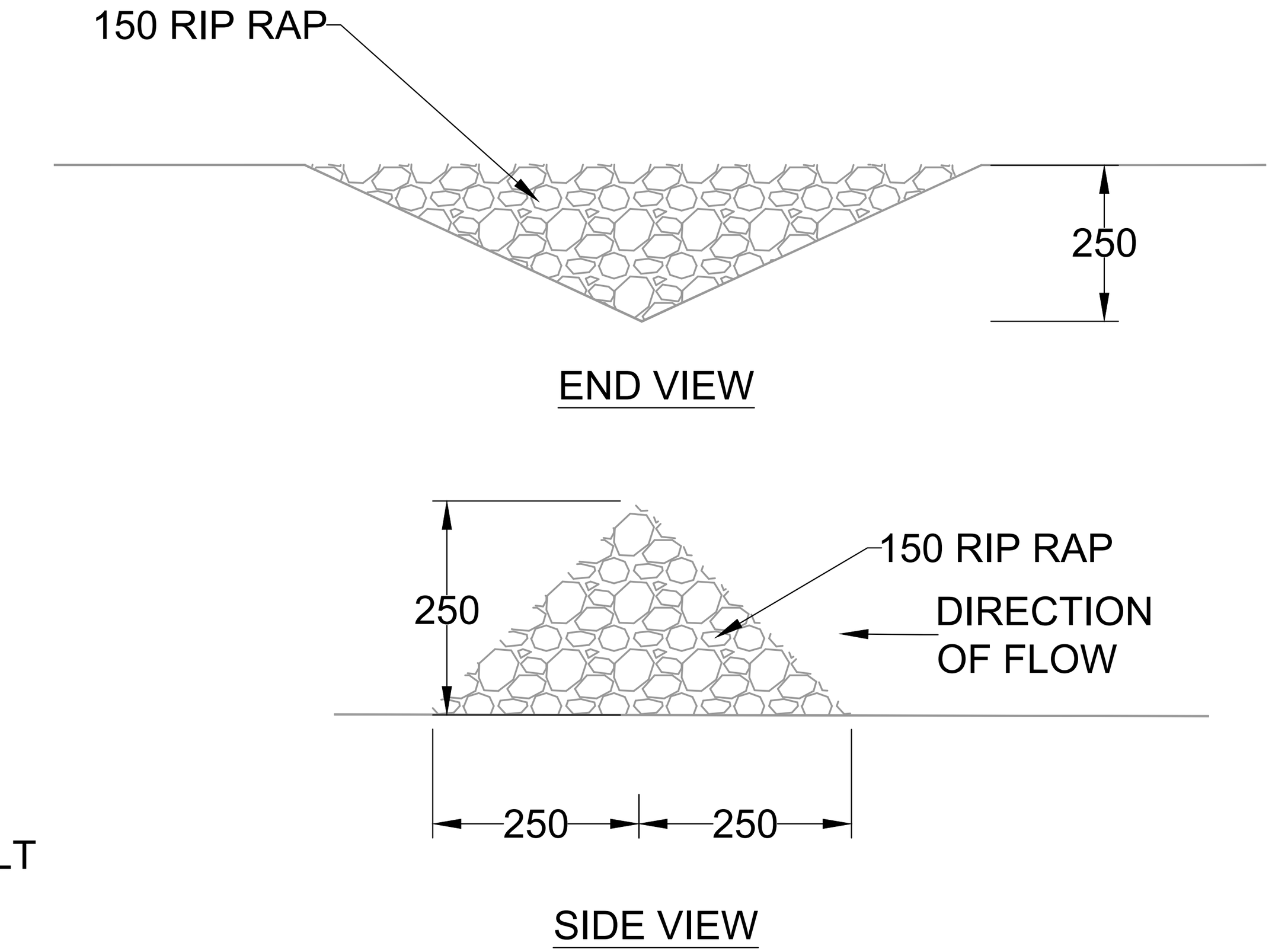
CONTACT WATER POND RELOCATION
SECHELT LANDFILL

SUNSHINE COAST REGIONAL DISTRICT

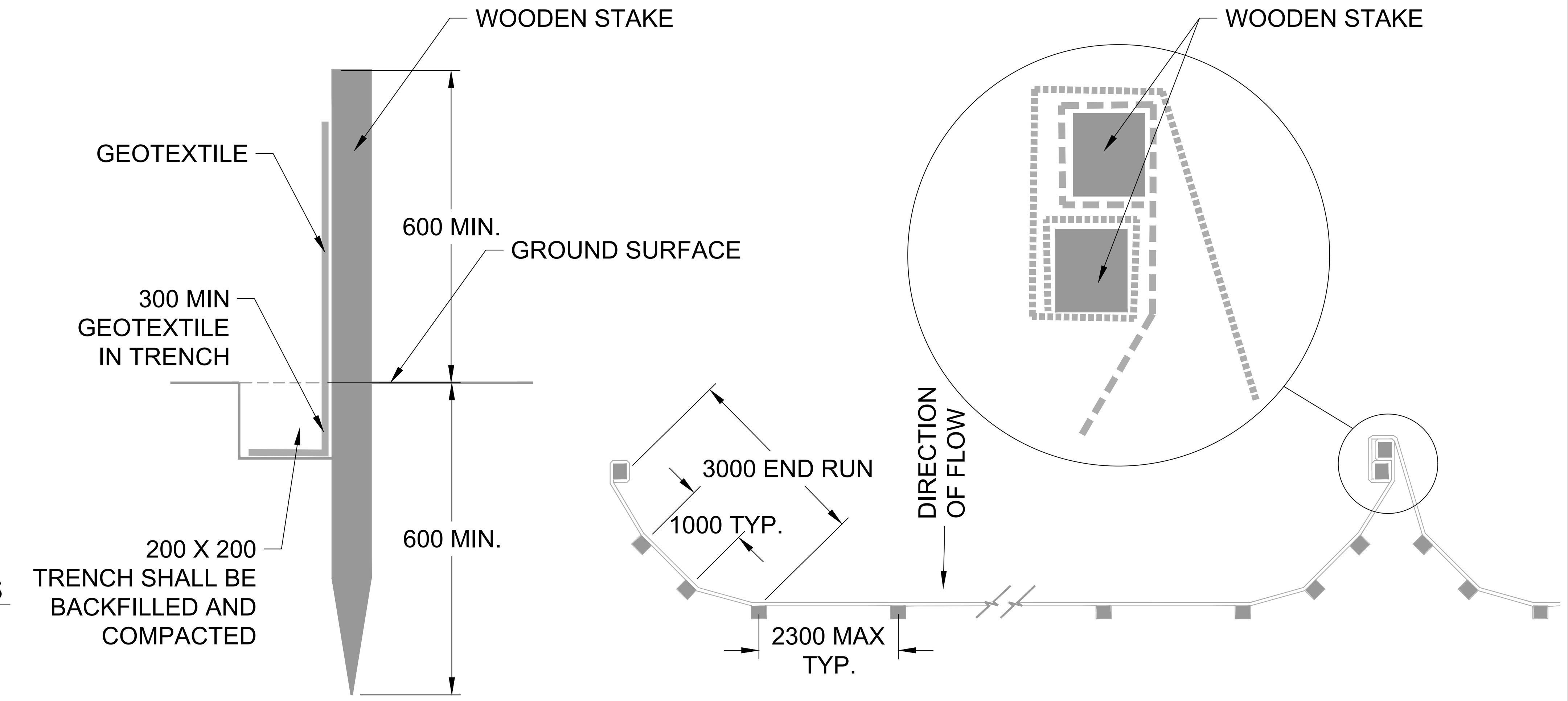
Scale:	Drawing No:	Rev.
AS SHOWN	D-03	5



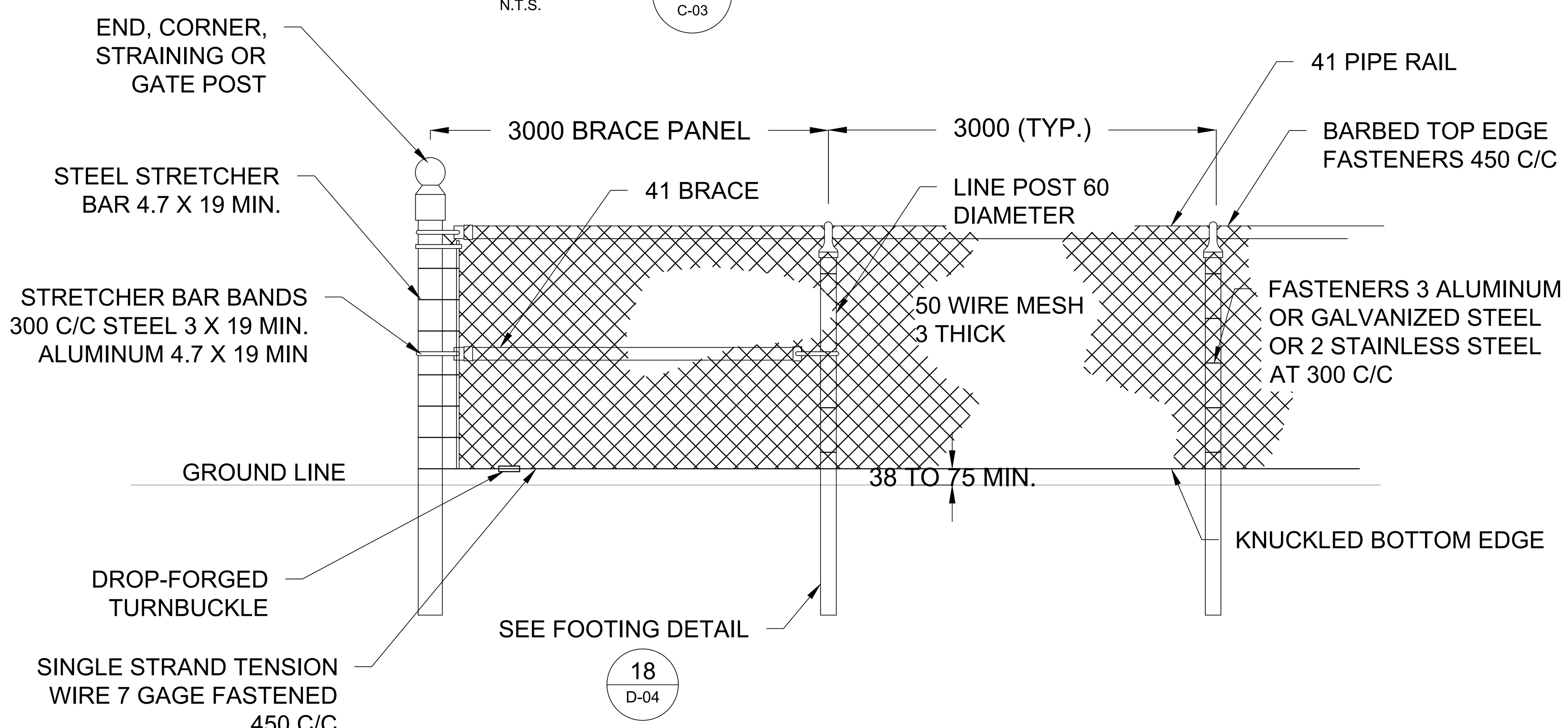
DETAIL 14 PROPOSED FENCE GATE
N.T.S. C-03



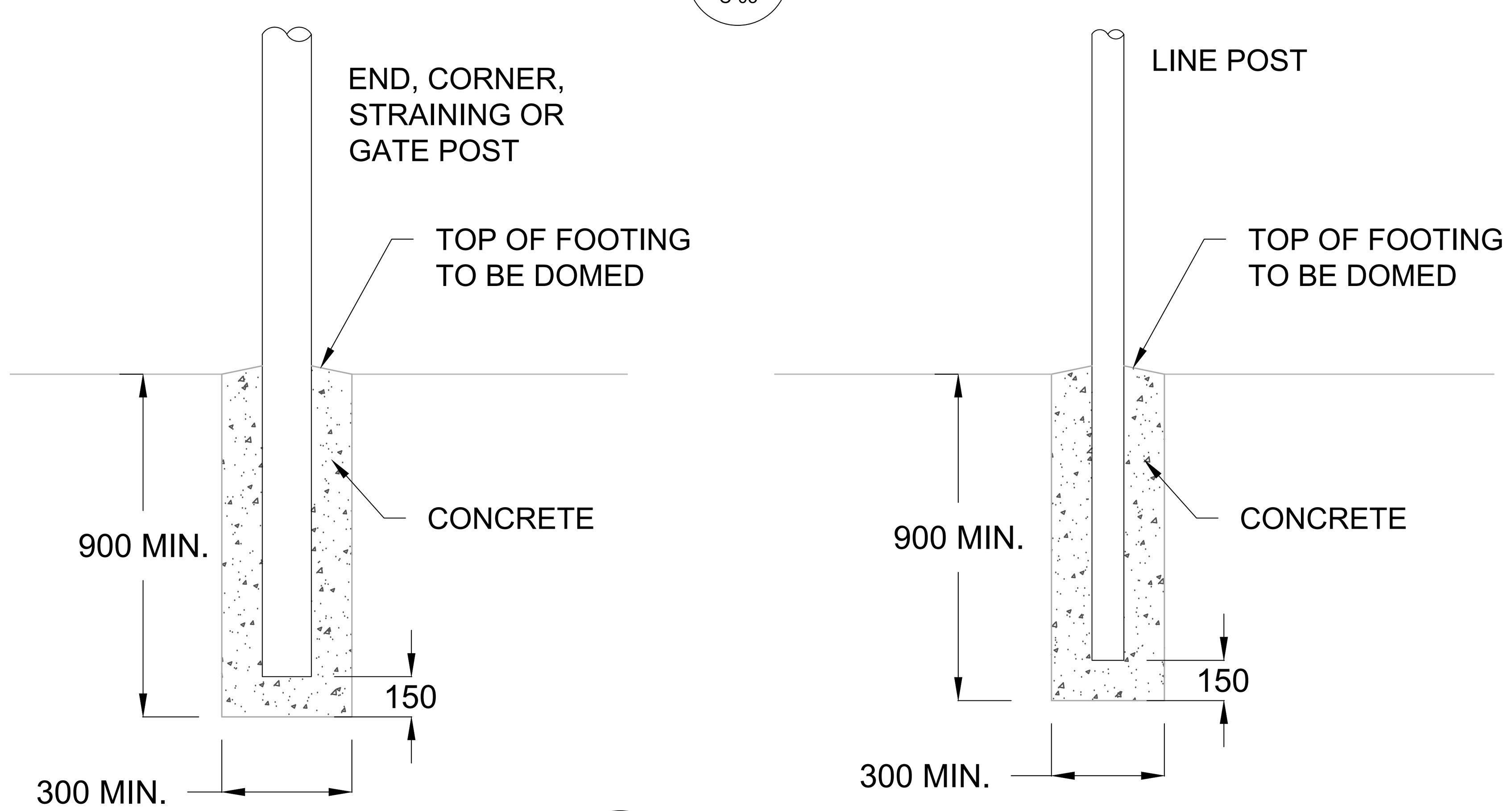
DETAIL 15 PROPOSED ROCK CHECK DAMS
N.T.S. C-03



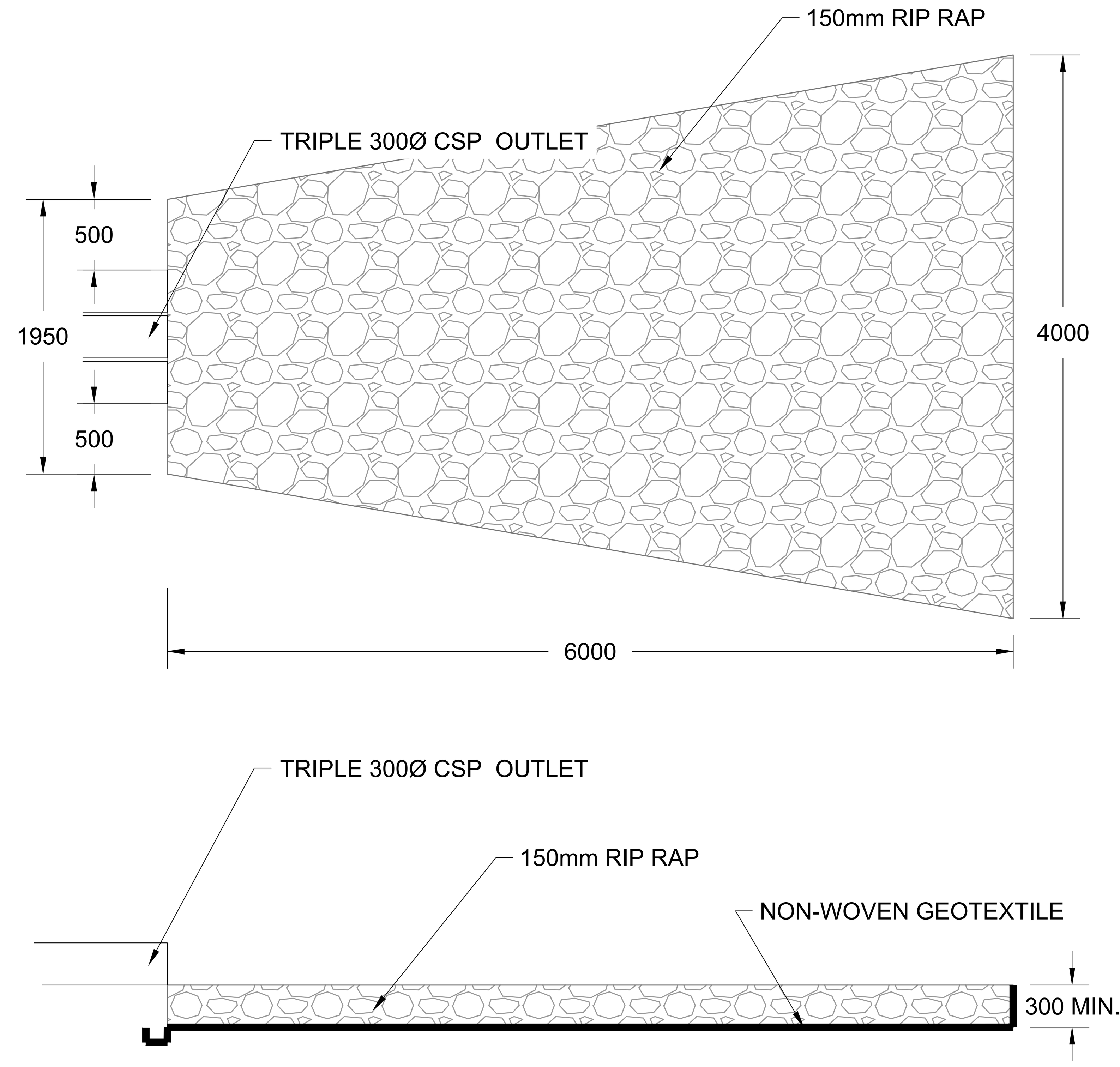
DETAIL 16 SILT FENCING
N.T.S. C-03



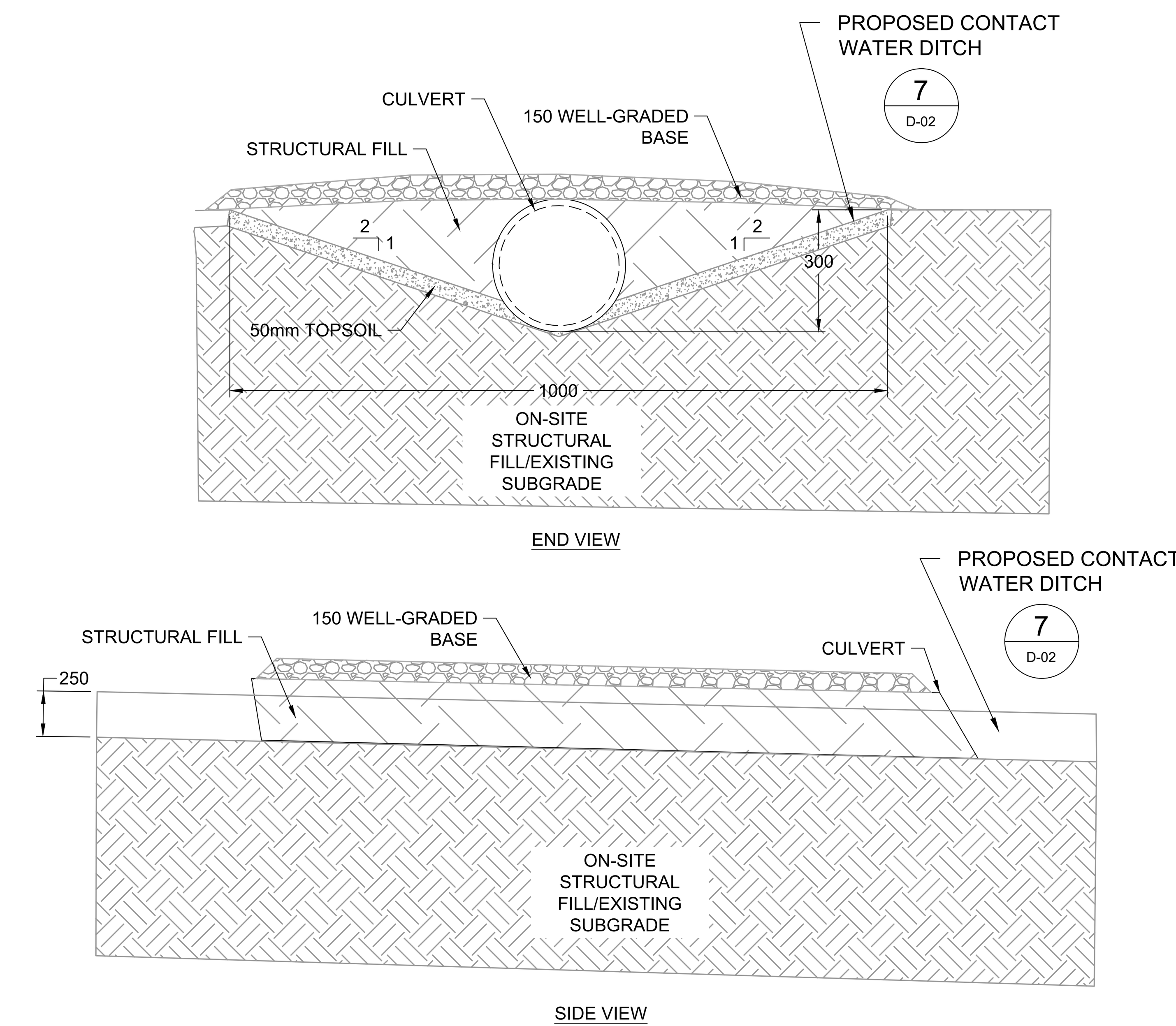
DETAIL 17 PROPOSED FENCE
N.T.S. C-03



DETAIL 18 PROPOSED FOOTING
N.T.S. D-04



DETAIL 19 TRIPLE 300 mm CSP RETENTION POND OUTLET
N.T.S. C-03



DETAIL 20 PROPOSED CULVERT
N.T.S. C-03

FILE: TND42111095700IG01+.dwg

No.	Description	Auth. By	Date
5	ISSUED FOR TENDER	ZJW	JUNE 10, 2024
4	ISSUED FOR INTERNAL REVIEW	ZJW	MAY 27, 2024
3	ISSUED FOR 100% REVIEW	ZJW	MAY 17, 2024
2	ISSUED FOR 90% REVIEW	ZJW	APRIL 30, 2024
1	ISSUED FOR 60% REVIEW	ZJW	APRIL 1, 2024
0	ISSUED FOR 30% REVIEW	ZJW	MARCH 15, 2024

REVISIONS

1) ALL MEASUREMENTS IN MILLIMETRES UNLESS OTHERWISE STATED

NOTES

T. KOLODZIEJ # 47499 ENGINEER
Aug. 7 2024
Permit # 1003057

VERIFY SCALE
BAR IS 20 mm ON
ORIGINAL DRAWING.

0 20 mm

IF NOT 20 mm ON THIS
SHEET, ADJUST SCALES
ACCORDINGLY.

XCG | A DIVISION OF TRACE ASSOCIATES

Designed By: Z. WEIMA
Date: JUNE 2024
Drawn By: Z. WEIMA
Date: JUNE 2024
Checked By: T. KOLODZIEJ
Date: JUNE 2024

SUNSHINE COAST REGIONAL DISTRICT

DETAILS IV

CONTACT WATER POND RELOCATION
SECHELT LANDFILL

SUNSHINE COAST REGIONAL DISTRICT

Scale: AS SHOWN | Drawing No: D-04 | Rev. 5