TOWN OF LUNENBURG

Request for Tender (RFT)

FOR

Dares Lake Dam and Spillway Upgrades

Lunenburg, Nova Scotia

Tender No. TOL2024021

Closing:

August 13, 2024 at 2:00 pm AST

Addressed to:
Curtis Bell
Procurement Coordinator
Town of Lunenburg
119 Cumberland St
PO Box 129
Lunenburg NS B0J 2C0

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Section 00 01 03

Preface

Statement

These Project Documents have been prepared for use with and require being read in conjunction with the Standard Specifications for Municipal Services as published by the Joint Committee on Contract Documents in association with Nova Scotia Road Builders Association, Consulting Engineers of Nova Scotia, and Landscape Nova Scotia. Copies of the Standard Specifications are available from Spectech Limited, 18 Laurier Street, Dartmouth, NS B3A 2G7; telephone: (902) 233-9362; e-mail: nsmunicipalservices@gmail.com; or visit: www.standardspec.ca

Updating and Feedback

The Standard Specifications for Municipal Services will be updated periodically according to feedback from users, industry needs, and changes in codes and regulations.

End of Section 00 01 03

Section 00 21 00

Instructions to Tenderers

Project: Dares Lake Dam and Spillway Upgrades – TOL2024021

Owner
Town of Lunenburg
119 Cumberland St, PO Box 129
Lunenburg, NS B0J 2C0
902-634-4410
purchasing@townoflunenburg.ca

Engineer
GEMTEC Consulting Engineers and Scientists Limited
11 Akerley Boulevard, Suite 450
Dartmouth, NS B3B 1V7
902-832-5999
rob.haineault@gemtec.ca

1. INVITATION
   - .1 Tender Call:
     - .1 Ensure offers are signed under seal, executed, and dated and are received by the Owner located at 119 Cumberland St, PO Box 129 Lunenburg, NS B0J 2C0 before Closing Time local time on Closing Day.
     - .2 Offers will be open UNTIL 2:00pm local time on Closing Day, at office of the Owner.
     - .3 Offers submitted after above time may be returned to Tenderer unopened.
     - .4 Offers will be opened privately. Bid abstracts will be issued by request.
     - .5 Amendments to submitted offer will be permitted if received in writing prior to Tender closing and if endorsed by same party or parties who signed and sealed offer.
2. INTENT
   - .1 The intent of this Tender call is to obtain an offer to perform Work to complete the Dares Lake Dam and Spillway Upgrades Project as indicated in Contract Documents under Stipulated Price Contract, in accordance with Contract Documents.
3. CONTRACT/PROJECT DOCUMENTS
   - .1 Agreement Form.
   - .2 Definitions:
     - .1 Contract Documents: As defined in CCDC 18-2001.
     - .2 Bid, Offer, Tender, Tendering or Bidding: act of submitting an offer under seal.
     - .3 Bid Price, Tender Price: monetary sum identified in Bid Form as an offer to perform Work.
     - .4 Bidders, Tenderers: used interchangeably and meaning the same.

.5 Other definitions as provided in DEFINITIONS Section of CCDC 18-2001 and Supplementary Specifications (if applicable).

.3 Queries/Addenda:

.1 Direct questions to Curtis Bell, Procurement Coordinator by e-mail at purchasing@townoflunenburg.ca.

.2 Addenda may be issued during Tendering period. Addenda will become part of Contract Documents. Include costs in Tender Price. Confirm in the Tender form that all addenda have been received. Tenderers are solely responsible to obtain and acknowledge the receipt of Addenda at time of Tender closing.

.3 Verbal answers are only binding when confirmed by written addenda.

.4 Clarifications requested by Tenderers must be in writing not less than three (3) Working Days before date set for receipt of Tenders. Reply will be in form of an addendum. Copy of addendum will be forwarded to known Tenderers no later than two (2) Working Days before receipt of Tenders.

4. SITE ASSESSMENT

.1 Site Examination:

.1 There will be a non-mandatory site visit on Tuesday, August 6, 2024, at 10:00 am AST at the project site location.

.2 Tenderers will be deemed to have familiarized themselves with existing Site and working conditions and all other conditions which may affect performance of the Contract.

.3 No plea of ignorance of such conditions as a result of failure to make all necessary examinations will be accepted as a basis for any claims for extra compensation or an extension of time.

5. QUALIFICATIONS

.1 Subcontractors:

.1 Owner reserves right to reject proposed Subcontractor for reasonable cause.

6. TENDER SUBMISSION

.1 Submit tenders to the Owner in a sealed envelope marked as follows:

TENDER
Dares Lake Dam and Spillway Upgrades
Contract #TOL2024021
2:00pm (local time),
Tuesday, August 13, 2024
Town of Lunenburg
Curtis Bell, Procurement Coordinator
119 Cumberland St, PO Box 129
Lunenburg NS B0J 2C0

.2 Tender Ineligibility:

.1 Tenders that are unsigned, improperly signed or sealed, conditional, illegible, obscure, contain arithmetical errors, erasures, alterations, or irregularities of any kind, may be declared informal at Owner's discretion.

.2 Tenders with Tender Forms and enclosures which are improperly prepared may be declared informal at Owner's discretion.

.3 Tenders that fail to include security deposit or insurance requirements will be declared informal at Owner's discretion.

.3 Submissions:

.1 Tenderers are solely responsible for delivery of their Tenders in manner and time prescribed.

.2 Submit one completed Tender Form (Section 00 41 43) signed and with corporate seal together in one sealed envelope, clearly identified with Tenderer's name, Project name, and Owner's name on outside.

.3 Improperly completed information, irregularities in Tender security, may be cause not to open Tender envelope and declare Tender informal.

.4 An abstract of submitted Tenders will be made available to Tenderers following Tender opening.

7. TENDER ENCLOSURES/REQUIREMENTS

.1 Tender Security:

.1 Provide tender security in the minimum amount of ten percent (10%) of total price including HST. Provide security with tender in the form of a certified cheque or money order payable to the Owner.

.2 Insurance:

.1 Refer to Section 00 72 45, General Conditions, subsection GC11.1 - INSURANCE, and CCDC 41 for insurance requirements.

.3 Safety Certification

.1 Submit with Tender a copy of Tenderer's current and valid safety accreditation issued by Nova Scotia Workers' Compensation Board or Certificate of Recognition (COR) issued by Construction Safety Nova Scotia.

.2 Out-of-province tenderers with a current and valid COR from a Canadian Federation of Construction Safety Associations member shall obtain and submit a current and valid Letter of Good Standing from Construction Safety Nova Scotia.

.4 Worker's Compensation

.1 Submit with Tender a copy of Tenderer's current and valid clearance letter issued by the Workers' Compensation Board of Nova Scotia.

.2 Out-of-province tenderers shall submit a current and valid clearance letter from a government workers' compensation board but must register with the Nova Scotia Workers' Compensation Board prior to being awarded the Contract.

.5 Tender Form Requirements:

.1 State in Tender Form, time required to complete Work. Completion date in Agreement must be completion time added to commencement date.

.2 Tenderer, in submitting an offer, accepts time period stated in Contract Documents for performing Work. Completion date in Agreement is completion time added to commencement date.

.3 Tenderer, in submitting an offer, agrees to complete Work by date indicated in Contract Documents, but may propose a revision to Contract Time with or without adjustment to Tender price.

.4 Consideration may be given to time of completion when reviewing Tenders submitted.

.5 Include all taxes in prices except HST.

.6 Tender Signing:

.1 Tender Form to be signed under seal by Tenderer.

.2 Sole Proprietorship: signature of sole proprietor in presence of witness who shall also sign. Insert words "Sole Proprietor" under signature. Affix seal.

.3 Partnership: signature of all partners in presence of witness who shall also sign. Insert word 'Partner' under each signature. Affix seal to each signature.

.4 Limited Company: signature of duly authorized signing officer(s) in normal signatures. Insert officer's capacity in which signing officer acts, under each signature. Affix corporate seal. If Tender is signed by officials other than President and Secretary of company, or President-Secretary-Treasurer of company, copy of by-law resolution of Board of Directors authorizing them to do so must also be submitted with Tender in Tender envelope.

.5 Incorporated Company: signature of duly authorized signing officer(s) in normal signatures. Insert officer's capacity in which signing officer acts, under each signature. Affix corporate seal. If Tender is signed by officials other than President and Secretary of company, or President-Secretary-Treasurer of company, copy of by-law resolution of Board of Directors authorizing them to do so must also be submitted with Tender in Tender envelope.

.6 Joint Venture: each party of joint venture must execute Tender under respective seals in manner appropriate to such party as described above, similar to requirements of Partnership.

8. OFFER ACCEPTANCE/REJECTION

.1 Duration of Offer:

.1 Tenders to remain open to acceptance, and irrevocable for ninety (90) days after Tender closing date.

.2 Acceptance of Offer:

.1 Owner reserves the right to accept or reject any or all offers and to cancel the Tendering process and reject all Tenders at any time prior to the award of Contract without incurring any liability to affected Tenderers. Owner may re-tender all or parts of the Work at a later date without incurring any liability to affected Tenderers.

.2 The Town reserves the right to reject any and all tenders. Neither the lowest nor any tender will necessarily be accepted. The Town reserves the right to accept a tender other than the lowest tender based on any criteria and/or accept a tender which may in any way be non-compliant which in its sole and absolute discretion the Town deems to be in

its best interest. The Town reserves the right in its sole and absolute discretion to reject a tender on any basis whatsoever including if a tender is incomplete, conditional, or obscure, or which contains additions not called for, or for irregularities of any kind. Not to limit the generality of the foregoing, if the Town has (in its sole and absolute discretion) any concerns about any internal budget or other issues that may arise in light of the amounts and/or other criteria set out in the tenders it receives, then the Town may cancel the tender process and may (in its sole and absolute discretion) negotiate directly with any tenderer or other person as the Town deems fit. By participating in this tender process, each tenderer is deemed to have waived any and all rights to make any type of claim whatsoever against the Town arising out of this tender process.

.3 Form of Agreement

.1 Section 00 53 43 – Form of Agreement has been included for informational purposes only until execution of Contract.

9. TERMS AND CONDITIONS

.1 Accuracy of Referencing:

.1 Indexing and cross-referencing are for convenience only.

.2 Conditions of Tendering:

.1 Take full cognizance of content of all Contract Documents in preparation of tender. Refer to Section 00 41 43 Part 3.8 for a complete list of Contract Documents.

.3 Amendment or withdrawal of Tender:

.1 Tenders may be amended or withdrawn prior to tender closing.

.2 Amendment of individual Unit Prices is the only acceptable price amendment. Amendments shall not disclose either original or revised total price.

.3 Head amendment or withdrawal as follows: "[Amendment/Withdrawal] of tender for Dares Lake Dam and Spillway Upgrades TOL2024021". Sign as required for tender and submit by email to the address given for receipt of tenders. In order to be considered, submissions shall be received prior to time of tender closing.

.4 Contract Not Transferable/Cancellation of Contract

.1 The Contractor shall not be entitled to assign or transfer this contract or any rights or obligations thereunder. The Contractor cannot subcontract out any portion of the work under this contract except with the express written consent of the Town. This contract may be cancelled by the Town in its sole and absolute discretion, with or without prior notice to the Contractor.

.5 Interpretation

.1 Should there be any questions regarding the interpretation of the Tender or Contract documents, the Lunenburg Town Council shall decide on the correct interpretation.

.6 Legal Age

.1 Contractor must be of legal age to sign contracts in the Province of Nova Scotia.

.7 Return of Tender Security

.1 Tender security will be returned to:

.1 All except the three lowest acceptable tenderers within five (5) Working Days of tender opening.

.2 Two (2) remaining unsuccessful tenderers within ten (10) Working Days of date of award.

.3 Successful tenderer following receipt by Owner of executed agreement, specified contract security, and insurance documents.

.8 Statutory Compliance

.1 The Contractor shall comply with the requirements of all relevant Federal and Provincial legislation and regulations. In particular, the contractor, prior to the execution of the contract, shall file with the Town a certification that they carry Workers Compensation benefits for their employees and shall also comply with all other relevant Federal and Provincial legislation and regulations with respect to their employees, including the Nova Scotia Occupational Health and Safety Act and its regulations. The Contractor must provide proof of current Construction Safety Nova Scotia Association Certificate of Recognition (COR) Certification, if applicable.

.2 The successful Bidder shall be solely responsible for safety and for compliance with the rules, regulations, and practices required by the applicable health and safety legislation and shall be solely responsible for initiating, maintaining, and supervising all safety precautions and programs in connection with the performance of the Work, including any and all orientation and regular meetings throughout.

.9 Indemnity

.1 The Contractor shall indemnify and hold the Town and all its officers, agents and employees harmless against all risks, liabilities and damages which in any way arise from the Contractor's performance of this contract.

End of Section 00 21 00

Section 01 22 00

Measurement and Payment

.1 Unit Prices and lump sum prices are full compensation for the Work necessary to complete each item in the Contract and in combination for all work necessary to complete the Work as a whole.

.2 For every item, include all of the following as required where individual quantities are not provided in the Tender Form: Project signage, mobilization, demobilization, traffic control, assistance to the Engineer, location of in-ground services by external utilities and coordination of work by external utilities (Town of Lunenburg, NSPI, Aliant, etc.), environmental protection, protection of existing trees, clearing, grubbing, excavation, shoring, dewatering, backfilling, bedding, compaction, disposal of surplus materials, protective coatings, marker tape, reinstatement of all disturbed surfaces to existing or with materials and thicknesses as indicated on the Project Drawings, pipe cleaning, disinfection, pressure testing, marker stakes, topographic survey to record as-constructed features, video inspection, and all incidentals.

.3 Additionally, for water main, sanitary sewer and storm sewer, include all of the following as required where individual quantities are not provided in the Tender Form: clearing, grubbing, common excavation, shoring, dewatering, geotextile, bedding, backfilling, compaction, disposal of surplus materials, joint restraints, thrust blocks, thrust anchors, zinc anodes, insulation, polyethylene encasement, flushing, pressure, vacuum and mandrel testing, disinfection, dichlorination, cleaning, closed circuit television inspections, marker stakes, marker tape, tracer wire and test stations.

.4 All measurement shall be along a horizontal plane unless otherwise indicated.

1. Dewatering
   Unit of Measurement: lump sum (LS)
   This item includes: supply, installation, and maintenance of cofferdam and dewatering measures for the duration of the project and post-construction cofferdam removal.

2. Erosion and Sediment Control – Sediment Control Fence
   Unit of Measurement: metre (m)
   Method of Measurement: along centerline of sediment control fence acceptably installed.
   This item includes: the supply, installation, maintenance, and removal of the sediment control fence.

3. Trench Excavation and Backfilling
   Unit of Measurement: cubic metre (m^3)
   Method of Measurement: surface to surface volume method between topographical survey taken post grubbing/topsoil removal and once excavation is complete, as directed by the engineer.
   This item includes: excavation within the limits of work of soil and all other materials not classified as solid rock for the purpose of box culvert installation, including disposal, and supply, placement, and compaction of approved backfill material as required.

4. Common Excavation, Backfill, and Compaction
   Unit of Measurement: cubic metre (m^3)
   Method of Measurement: surface to surface volume between topographical survey taken post grubbing/topsoil removal/excavation and lines and elevations indicated.
   This item includes: excavation within the limits of work, and supply, placement, and compaction of approved in-situ or imported fill material for the purpose of raising dam crest elevation.

5. Precast Concrete Box Culvert
   Unit of Measurement: lump sum (LS)
   This item includes: supply and placement of the precast concrete spillway and components, including but not limited to waterproofing, stoplogs, cutoff liner, and safety railing.

6. Geotextiles
   Unit of Measurement: square metre (m^2)
   Method of Measurement: slope measure of indicated area.
   This item includes: supply and placement of non-woven geotextile in compliance with project specifications.

7. Riprap – Type I
   Unit of Measurement: cubic metre (m^3)
   Method of Measurement: surface to surface volume between topographical survey taken post grubbing/topsoil removal/excavation and lines and elevations indicated.
   This item includes: supply and installation of riprap in compliance with project specifications.

8. Riprap – Type II Mixed
   Unit of Measurement: cubic metre (m^3)
   Method of Measurement: surface to surface volume between topographical survey taken post grubbing/topsoil removal/excavation and lines and elevations indicated.
   This item includes: supply and installation of mixed riprap in compliance with project specifications.

9. Hydroseeding
   Unit of Measurement: square metre (m^2)
   Method of Measurement: slope measure of indicated area.
   This item includes: supply and placement of hydroseed consistent with Nova Scotia Highway Seed Mix; includes soil preparation and hay mulching.

10. Eel Ramp
    Unit of Measurement: lump sum (LS)
    This item includes: assembly, supply, and installation of the eel ramp.

11. Gear Lift
    Unit of Measurement: lump sum (LS)
    This item includes: supply and installation of gear lift system and accompanying lift rods; includes placement of cast in place concrete for gear lift wedges.

End of Section 01 22 00

Section 00 41 43

Tender Form

Part 1 SALUTATION:

.1 To: Town of Lunenburg
119 Cumberland Street, PO Box 129
Lunenburg, NS B0J 2C0

.2 For: Dares Lake Dam and Spillway Upgrades
TOL2024021
Lunenburg, NS B0J 2C0

.3 From: _____

_____

_____

Part 2 TENDERER DECLARES:

.1 That this tender was made without collusion or fraud.

.2 That the proposed Work was carefully examined.

.3 That the tenderer is familiar with local conditions.

.4 That Contract Documents and Addenda No. __ to __ inclusive were carefully examined.

.5 That all the above have been taken into consideration in the preparation of this tender.

Part 3 TENDERER AGREES:

.1 To enter into a Contract to supply all labour, material and equipment and to do all work necessary to construct the Work as described and specified herein for the Unit Prices stated in subsection 4 hereunder, Schedule of Quantities and Unit Prices.

.2 That the estimated Contract Price shall be the sum of the Products of the tendered Unit Prices multiplied by the estimated quantities in subsection 4 hereunder excluding HST.

.3 That this tender is valid for acceptance for ninety (90) days from tender closing.

.4 That measurement and payment for items listed in subsection 4 hereunder shall be in accordance with corresponding items in Section 01 22 00 – Measurement and Payment.

.5 To execute the Form of Agreement and forward same together with the specified Contract security and insurance documents to the Owner within ten (10) Working Days of written notice of award.

.6 That failure to enter into a formal Contract and Provide specified insurance documents and Contract security within time required will constitute grounds for forfeiture of Tender security.

.7 That if Tender security is forfeited, Owner will retain difference in money between amount of tender and amount for which Owner legally Contracts with another party to perform the Work and will refund balance, if any, without interest, to Tenderer.

.8 That Contract Documents include:

.1 Standard Specification for Municipal Services – Revision 2023
.2 Instructions to Tenderers (00 21 00)
.3 Tender Form (00 41 43)
.4 Form of Agreement (00 53 43)
.5 Supplementary Specifications (00 74 00)
.6 Measurement and Payment (01 22 00)
.7 Drawings
.1 101263.002 C1 Project Overview
.2 101263.002 C2 Dissipation Pool Plan and Sections
.3 101263.002 C3 Spillway Plan and Section View
.4 101263.002 C4 Spillway Sections and Details
.5 101263.002 C5 Eel Passage Structure Plan and Details
.6 101263.002 C6 Eel Passage Sections and Details
.7 101263.002 C7 Miscellaneous Details

.8 Addenda as issued and confirmed in subsection 2.4.

.9 In addition to the information required to be submitted, the Town of Lunenburg may require further information to be provided within 7 days of request, which information may include: experience in similar work, work currently under contract, senior supervisory staff available for the project, equipment available for use on project, and financial resources.

Part 4 SCHEDULE OF QUANTITIES AND UNIT PRICES:

Unit prices and lump sum prices are full compensation for the work necessary to complete each item in the Contract and in combination for all work necessary to complete the work as a whole.

For every item, include all the following as required, where individual quantities are not provided in the Tender: mobilization, demobilization, assistance to Engineer, coordination with all utilities, environmental protection, reinstatement, and all incidentals.

Item No.	Description	Unit	Estimated Quantity	Unit Price ($)	Item Total ($)
1	Dewatering	LS	1		
2	Erosion and Sediment Control – Sediment Control Fence	m	110		
3	Trench Excavation and Backfilling	m^3	250		
4	Common Excavation, Backfill, and Compaction	m^3	1750		
5	Precast Concrete Box Culvert	LS	1		
6	Geotextiles	m^2	370		
7	Riprap – Type I	m^3	330		
8	Riprap – Type II Mixed	m^3	500		
9	Hydroseeding	m^2	640		
10	Eel Ramp	LS	1		
11	Lift Gear	LS	1		

CONTRACT PRICE (EXCLUDING HST) $_____(A)

ADD HARMONIZED SALES TAX $_____(B)

TOTAL (PRICE A + B) $_____

Tenderer's HST Registration No. _____

Part 5 COMPLETION TIME:

.1 Tender agrees to complete the Work within ___ weeks of written notification of award.

Part 6 SIGNATURES:

DATED THIS _____ DAY OF _____, 20___.

_____
Name of Tenderer

_____ _____
Witness Signature of Signing Officer

_____
Name and Title (Printed)

_____ _____
Witness Signature of Signing Officer

_____
Name and Title (Printed)

*NOTE: Tenders submitted by or on behalf of any Corporation must be signed in the name of such Corporation by a duly authorized officer(s) or agent(s).

End of Section 00 41 43

Section 00 53 43

Form of Agreement

This Agreement made on the ___ day of _____ in the year _____.

BY AND BETWEEN

Town of Lunenburg

hereinafter called the "Owner"

and

[Contractor]

hereinafter called the "Contractor"

The Owner and the Contractor agree as follows:

ARTICLE A1 – THE WORK

.1 The Contractor shall:

.1 Perform the Work required by the Contract Documents for

Dares Lake Dam and Spillway Upgrades TOL2024021

located at 767 Northwest Rd (Hwy 324), Lunenburg NS

for which the Agreement has been signed by the parties, and for which

GEMTEC Consulting Engineers and Scientists Limited
(Insert above the name of the Engineer)

is acting as and is hereinafter called the "Engineer"

and

.2 do and fulfill everything indicated by this Agreement, and

.3 commence the Work by the ___ day of _____ in the year _____ and attain Substantial Performance of the work as certified by the Engineer by the ___ day of _____ in the year ___.

ARTICLE A2 – AGREEMENTS AND AMENDMENTS

.1 This Contract supersedes all prior negotiations, representations, or agreements, either written or oral, relating in any manner to the Work, including the bidding documents that are not expressly listed in Article A3 of the Agreement.

ARTICLE A3 – CONTRACT DOCUMENTS

.1 The following is an exact list of the Contract Documents referred to in Article A1.1 of this Agreement and as defined in subsection 6 of Section 00 71 00 – DEFINITIONS. This list is subject to subsequent amendments in accordance with the provisions of the Contract Documents.

.1 Standard Specification for Municipal Services – Revision 2023

.2 Instructions to Tenderers (00 21 00)

.3 Tender Form (00 41 43)

.4 Form of Agreement (00 53 43)

.5 Supplementary Specifications (00 74 00)

.6 Measurement and Payment (01 22 00)

.7 Drawings

.1 101263.002 C1 Project Overview

.2 101263.002 C2 Dissipation Pool Plan and Sections

.3 101263.002 C3 Spillway Plan and Section View

.4 101263.002 C4 Spillway Sections and Details

.5 101263.002 C5 Eel Passage Structure Plan and Details

.6 101263.002 C6 Eel Passage Sections and Details

.7 101263.002 C7 Miscellaneous Details

.8 Addenda if required.

ARTICLE A4 – CONTRACT PRICE

.1 The estimated Contract Price is the sum of the Products of the estimated quantities multiplied by the appropriate Unit Prices in the tender form excluding the amount of HST.

.2 The estimated Contract Price is $_____

.3 All amounts shall be in Canadian funds.

.4 The amounts shall be subject to adjustment as provided in the Contract Documents.

ARTICLE A5 – PAYMENT

.1 The Owner shall pay the Contractor in Canadian funds for the performance of the Contract.

.2 The Owner shall make monthly payments on account to the Contractor for the Work performed, as certified by the Engineer, subject to a ten percent (10%) holdback.

.3 The amount of the monthly payments shall be calculated as follows:

.1 The quantity for each pay item on which actual work has been performed shall be measured.

.2 For each Unit Price item this quantity shall be multiplied by the applicable Unit Price as provided in the Tender Form.

.3 For each lump sum item, multiply the percent complete by the value of the lump sum item.

.4 The total value of work completed for the payment period shall be calculated by adding the total of the Products for all pay items from 3.2 and 3.3 of this Article.

.5 The amount of the monthly payment shall be determined by deducting the ten percent (10%) holdback and the total of all previous payments from the total value of such completed work as determined under 3.4 of this Article.

.6 To the amount calculated above, the HST shall be added.

.4 The last day of the payment period shall be the last Working Day of the month.

.5 Upon Substantial Performance of the Work as certified by the Engineer the Owner shall pay to the Contractor the holdback monies then due in accordance with the provisions of Section 00 72 45 – General Conditions, subsection GC 5.8 – PAYMENT OF HOLDBACK UPON SUBSTANTIAL PERFORMANCE OF THE WORK.

.6 Upon the issuance of the final certificate for payment as certified by the Engineer, the Owner shall pay to the Contractor the balance of monies then due in accordance with the provision of Section 00 72 45 – General Conditions, subsection GC 5.10 – FINAL PAYMENT.

ARTICLE A6 – RECEIPT OF AND ADDRESSES FOR NOTICES IN WRITING

.1 Notices in writing shall be addressed to the recipient at the address set out below.

.2 The delivery of a notice in writing shall be by hand, courier, prepaid first -class mail, facsimile or e-mail.

.3 A notice in writing delivered by one party in accordance with this Contract shall be deemed to have been received by the other party on the date of delivery if delivered by hand or courier, or if sent by mail it shall be deemed to have been received five (5) Working Days after the date on which it was mailed.

.4 A notice in writing sent by facsimile or e-mail shall be deemed to have been received on the date of its transmission provided that if such day is not a Working Day or if it is received after the end of normal business hours at the place of receipt, then it shall be deemed to have been received at the opening of business at the place of receipt on the first Working Day following the transmission thereof.

.5 An address for a party may be changed by notice in writing setting out the new address delivered to the other party in accordance with this Article.

.1 The Owner at PO Box 129, Lunenburg, NS, B0J 2C0

.2 The Contract at [Address of Contractor]

.3 The Engineer at 11 Akerley Blvd, Suite 450, Dartmouth, NS B3B 1V7

ARTICLE A7 – QUANTITIES AND MEASUREMENT

.1 The quantities shown in Section 00 41 43 – Schedule of Quantities and Unit Prices are estimated.

.2 Measurement for the actual quantities used to determine payments and Contract Price shall be in accordance with Section 01 22 00 – Measurement and Payment.

ARTICLE A8 – SUCCESSION

.1 The aforesaid Contract Documents are to be read into and form part of the Agreement and the whole shall constitute the Contract between the parties and subject to law and the provisions of the Contract Documents shall inure to the benefit of and be binding upon the parties hereto, their respective heirs, legal representatives, successors and assigns.

ARTICLE A9 – RIGHTS AND REMEDIES

.1 No action or failure to act by the Owner, Engineer, or Contractor shall constitute a waiver of any right or duty afforded any of them under the Contract, nor shall any such action or failure to act constitute an Approval of or acquiescence in any breach thereunder, except as may be specifically agreed in writing.

ARTICLE A10 – TIME

.1 Time shall be construed as being of the essence of the Contract.

In witness whereof the parties hereto have executed this Agreement and by the hands of their duly authorized representatives.

SIGNED AND DELIVERED

In the presence of:

OWNER

_____
Name of Owner

_____ _____
Witness Signature

_____
Name and Title of Person Signing

_____ _____
Witness Signature

_____
Name and Title of Person Signing

CONTRACTOR

_____
Name of Contractor

_____ _____
Witness Signature

_____
Name and Title of Person Signing

_____ _____
Witness Signature

_____
Name and Title of Person Signing

N.B. Where legal jurisdiction, local practice or Owner or Contractor requirements calls for proof of authority to execute this document, attach such proof of authority in the form of a certified copy of a resolution naming the representative(s) authorized to sign the Agreement for and on behalf of the corporation or partnership.

End of Section 00 53 43

Section 00 74 00

Supplementary Specifications

1. INTENT
   .1 The Work of this Contract is to be constructed in accordance with the Standard Specification for Municipal Services – Revision 2021 as developed and published by the Nova Scotia Road Builders Association and the Consulting Engineers of Nova Scotia Joint Committee on Contract Documents, except as modified herein.

   .2 These Supplementary Specifications modify the specification sections to which they refer.

   .3 The Supplementary Specifications take precedence over the Standard Specification to which they refer.

PART 1 - GENERAL

1.1 Description

.1 This Section specifies requirements for dewatering procedures to stabilize ground and/or keep excavations dry during construction of works.

1.2 Related Work Specified Elsewhere

.1	Trench Excavation and Backfilling	Section 003
.2	Excavation, Fill & Compaction	Section 004
.3	Precast Concrete Box Culvert	Section 006

1.3 Submittals

.1 Submit details of proposed dewatering systems for Engineer's review.

1.4 Protection

.1 Take all necessary precautions to prevent uplift of any structure.

.2 Protect all excavations against flooding and damage due to surface run-off.

.3 Protect surrounding environment as dictated by the provincial watercourse alteration permit.

1.5 Payment

.1 Payment for this work item shall be a lump sum price.

.2 Items under this section are included in the Form of Tender under Dewatering.

PART 2 - PRODUCTS

Not applicable.

PART 3 - EXECUTION

3.1 Dewatering

.1 Complete all activities (cofferdam, pumping, temporary diversion channel, etc.) in accordance with the conditions imposed by the provincial watercourse alteration permit and applicable environmental regulations.

.2 All work operations are to be conducted in a manner to cause a minimum of siltation and disturbance to the adjacent and downstream areas.

.3 The Contractor's dewatering plan should include measures to avoid excessive erosion of surrounding slopes during periods of heavy rainfall.

.4 Provide all labour and materials necessary to keep excavations stable and free of water while work is in progress.

.5 Provide stand-by equipment as necessary to ensure continued operation of dewatering system in case of breakdown of primary system.

.6 The contractor is advised to provide a water management plan that accounts for the possibility of rising water levels in the adjacent lake due to heavy precipitation events.

.7 Protection is to be provided to assure no deleterious substance is allowed to enter a watercourse.

.8 The aquatic protection flow requirements specified in the Water Approval are to be maintained downstream of the work area during construction.

3.2 Disposal

.1 Provisions for disposal of water to be subject to Engineer's review.

*****END OF SECTION 001*****

PART 1 - GENERAL

1.1 Description

.1 This Section specifies requirements for the supply, installation, maintenance and removal of a sediment control fence.

1.2 Related Work Specified Elsewhere

.1	Trench Excavation and Backfilling	Section 003
.2	Excavation, Fill & Compaction	Section 004
.3	Hydroseeding	Section 009

1.3 Submittals

.1 Submit to Engineer the specification sheet of the woven geotextile to be used for the sediment control fence.

1.4 Payment

.1 Payment for work under this section shall be for the number of linear metres of sediment control fence acceptably supplied, installed, maintained and removed in accordance with this item.

.2 Items under this section are included in the Form of Tender under Erosion and Sediment Control.

.3 No extra payment will be made for measures ordered by the Engineer to replace damaged or improperly installed sections of sediment control fence.

PART 2 - PRODUCTS

2.1 Sediment Control Fence

.1 All materials shall be supplied by the Contractor.

.2 The sediment control fence may be prefabricated or constructed on site from the specified individual components.

.3 The fabric shall be a woven geotextile as specified below, or an equivalent material approved by the Engineer.

Property	Unit	ASTM	Minimum Requirement
Tearing Strength (Trapezoid Method)	N	D4533	200
Grab Tensile Strength (Both Directions)	N	D4632	400
Elongation at Break	%	D4632	25 max.
Apparent Opening Size	µm	D4751	840 max.
UV Degradation	% Ret.	D4355	70 min.
Permittivity	Sec^{-1}	D4491	0.01 min.

.4 Support posts are to be supplied as indicated in the Contract Documents.

PART 3 - EXECUTION

3.1 Construction

.1 The Contractor shall carry out the Work as indicated in the Contract Documents and/or as specifically directed by the Engineer.

.2 The Contractor shall install sediment control fence to comply with applicable permits and regulations.

.3 The sediment control fence shall be installed as indicated in Contract Documents and prefabricated sediment control fence shall be installed as per the manufacturer's instructions.

.1 In areas of potential sheet flow runoff where construction activity may cause the drainage runoff to transport sediment, and the Contract Documents do not provide for sediment control fences in these areas, the Contractor shall ensure sediment control fences are properly located for effective runoff control.

.4 The Contractor shall maintain the sediment control fence in a functional condition continuously from the time of installation until the completion of the Contract or removal.

.5 The Contractor shall inspect all sediment control fences after each rainfall and at least daily during periods of prolonged rainfall.

.6 The Contractor shall immediately repair any damage to sediment control fences or parts thereof.

.7 The Contractor shall remove retained sediment prior to it having accumulated to a level approximately but not exceeding one-half the height of the fence, and this sediment shall be disposed of at a location at least 30 metres away from any watercourse, and in such a manner the sediment will not be returned to the Work Area or the watercourse; or

.1 Subject to the approval of the Engineer, the Contractor may install a second, back-up sediment control fence, at their own expense.

.8 The Contractor shall remove all sediment control fence and the time of such removal shall be subject to the Engineer's approval but in all cases shall occur prior to the completion of the Contract.

.1 Sediment control fence removed shall become the property of the Contractor and shall be disposed of outside the Work Site.

.2 If the Engineer notifies the Contractor in writing, prior to the completion of the Contract, all or any part of the sediment fence is to remain in place, the Contractor shall be deemed to have completed their obligations for that portion of the sediment control fence under this item and the sediment control fence shall become the property of the Owner.

.9 At the time of removal, the Contractor shall excavate any remaining sediment and dispose of it at a location at least 30 metres from any watercourse, and in such a manner the sediment will not be returned to the Work Area or the watercourse and shall dress and seed the area of the removed fence and sedimentation, to the satisfaction of the Engineer.

*****END OF SECTION 002*****

PART 1 - GENERAL

1.1 Description

.1 This Section specifies requirements for excavating and backfilling trenches for installation of the precast concrete box culvert.

1.2 Related Work Specified Elsewhere

.1	Dewatering	Section 001
.2	Compaction Control and Testing	Section 005

1.3 Definitions

.1 Trench

.1 As defined in Nova Scotia Occupational Health and Safety Act.

.2 Earth Excavation:

.1 All excavation other than rock excavation including removal of frozen earth.

.3 Additional Excavation:

.1 All excavation ordered in writing by the Engineer beyond that specified.

.4 Excess Excavation:

.1 All excavation beyond that specified preformed without written order of the Engineer.

.5 Native Site Material:

.1 Any material obtained from excavating or grading under Contract.

.6 Standard Proctor Density:

.1 As defined in ASTM D698.

1.4 Submittals

.1 Submit to Engineer a copy of agreement for disposal site.

.2 Submit to Engineer the grain size analysis and Standard Proctor laboratory results for all proposed backfill materials.

1.5 Cold Weather Work

.1 Obtain written permission from the Engineer before starting excavation in frozen ground.

1.6 Disposal Sites

.1 Disposal areas shall be at various locations on site as designated by the Engineer under the guidance of any environmental or access permitting.

.2 Keep disposal site stable for dump materials in a manner not to cause nuisance, injury or inconvenience until property owner assumes responsibility under Terms of Agreement.

1.7 Stability of Trench

.1 Employ such construction methods, plant, procedures and precautions as shall ensure that trenches are stable, free from disturbance and unless designated as sub-aqueous work, dry.

.2 Such construction methods may include but are not limited to:

.1 Interlocking timber or steel sheeting and shoring.

.2 Groundwater control systems employing well points, deep wells or eductors.

.3 Surface water or free water control systems employing ditches, stone drains, pipes and/or pumps.

.4 Soil stabilization methods employing cement grouting, chemical grouting or chemical freezing.

.3 Employ such construction methods, plant and materials as shall ensure that migration of fine soil material into pipe bedding or sub-bedding from adjacent ground shall not take place.

.4 Do not use clear stone or other material with a high proportion of voids for bedding or sub-bedding unless specified or ordered in writing by the Engineer for specific locations.

.5 Follow procedures for extracting sheeting, placing backfill and discontinuing groundwater control as shall ensure that backfill load is applied gradually and disturbance of pipeline or its foundation is avoided.

1.8 Payment

.1 Payment for work under this section shall be for the number of cubic metres of acceptable excavation, backfill, and compaction required to install the precast concrete box culvert.

.2 Items under this section are included in the Form of Tender under Trench Excavation and Backfilling.

.3 No extra payment will be made for extra excavation needed on account of soil heaving at bottom of trench or collapse of trench walls.

.4 No extra payment will be made for measures ordered by the Engineer to correct problems caused by excess excavation.

.5 No extra payment will be made for haul on any part of site or for haul required in disposing of excavated material.

.6 No payment will be made for hauling back to site excavated material suitable for backfill that has been removed from site.

.7 No extra payment will be made for stockpiling or double handling of excavated materials.

.8 No extra payment will be made for construction methods required to keep trench stable, free from disturbance or dry.

.9 No extra payment will be made for crushed stone or other granular material used to facilitate drainage or dewatering during construction of pipeline or for extra excavation related thereto.

.10 No extra payment will be made for removal and replacement of soil weakened or disturbed by unsuitable construction methods or procedures or by action of workers.

PART 2 - PRODUCTS

2.1 Backfill Materials

.1 Native Site Material:

.1 Excavated material approved by the Engineer.

.2 Imported Material:

.1 Material free from frozen lumps, cinders, ashes, refuse, vegetable or organic matter, rocks and boulders over 150 mm in any dimension, or other deleterious materials.

.2 Do not use any material until approval has been received from the Engineer.

PART 3 - EXECUTION

3.1 Dewatering

.1 Dewater excavation to Section 001.

3.2 Removal of Frozen Ground

.1 Do not use backhoe bucket or drop weight to break frozen ground.

.2 Adopt method of removal of frozen ground that will not cause excessive noise, ground vibration or damage to adjacent structures and utilities.

3.3 Trenching

.1 Excavate trenches to lines, grades, elevations and dimensions specified or as shown on the Drawings or as directed by the Engineer.

.2 Excavate trenches so that width at bottom does not exceed width at top.

.3 Notify Engineer if bottom of trench appears to be unsuitable for foundation. Excavate unsuitable material as directed or agreed to by the Engineer until satisfactory foundation is attained and backfill with approved granular material.

.4 Stockpile excavated material suitable for trench backfill.

.5 Separate materials that are unsuitable for backfill.

.6 Perform corrective measures ordered by the Engineer to rectify deficiencies caused by excess excavation.

.7 Do not use trenching box if soil conditions or method of use are such that disturbance of soil or bedding occur.

.8 Remove and replace weakened or disturbed soil with approved granular material compacted to 98% maximum dry density in accordance with Standard Proctor Density (ASTM D698) where soil is disturbed or weakened by unsuitable construction methods or procedures which may include inadequate control of groundwater or free water or action of workers.

.9 Any obstruction of watercourse or surface drainage to be completed under permit guidelines.

3.4 Working Mat

.1 Place layer of granular material where necessary to protect trench bottom.

.2 Place working mat layer immediately after excavation has been completed.

.3 Do not encroach on bedding thickness under pipe.

3.5 Backfilling

.1 Place backfill material in uniform layers not exceeding 200 mm in loose depth for full width of trench.

.2 Compact each layer to 98% of maximum dry density in accordance with Standard Proctor Density (ASTM D698) before placing succeeding layer.

.3 Place layers simultaneously on both sides of installed work to equalize loading if applicable.

.4 Do not place backfill in freezing weather without written permission of the Engineer.

.5 Compact using approved mechanical tamping devices, or by hand tamping to achieve specified compaction.

3.6 Disposal of Materials

.1 Dispose of unsuitable and surplus excavated materials at approved disposal locations.

.2 Transport materials in a manner that spillage is minimized.

3.7 Field Quality Control

.1 Do testing to Section 005.

.2 All excavations shall be inspected and approved by the Engineer prior to commencement of installation operations.

*****END OF SECTION 003*****

PART 1 - GENERAL

1.1 Description

.1 This Section specifies requirements for excavation, filling, placement and compaction defined by the typical cross sections shown on the Drawings.

1.2 Related Work Specified Elsewhere

.1	Dewatering	Section 001
.2	Compaction Control and Testing	Section 005
.3	Geotextiles	Section 007
.4	Riprap	Section 008
.5	Hydroseeding	Section 009

1.3 Definitions

.1 Earth Excavation:

.1 All excavation other than rock excavation including removal of frozen earth.

.2 Additional Excavation:

.1 All excavation ordered in writing by the Engineer beyond that specified.

.3 Excess Excavation:

.1 All excavation beyond that specified preformed without written order of the Engineer.

.4 Embankment:

.1 Material derived from usable excavation or imported and placed above original ground or stripped surface.

.5 Native Site Material:

.1 Any material obtained from excavating or grading under Contract.

.6 Standard Proctor Density:

.1 As defined in ASTM D698.

1.4 Submittals

.1 Submit to Engineer a copy of agreement for disposal site required in 1.6.3.

.2 Submit to Engineer a copy of agreement for borrow site subject to Engineer's approval.

.3 Submit to Engineer the grain size analysis and Standard Proctor laboratory results for all proposed backfill materials.

1.5 Cold Weather Work

.1 Obtain written permission from the Engineer before starting excavation in frozen ground.

1.6 Disposal Sites

.1 Arrange with Engineer for disposal of surplus excavated materials on site, in accordance with environmental and access permitting.

.2 Make arrangements for other disposal site if Owner cannot make use of surplus excavated materials and obtain all necessary permits.

.3 Keep disposal area stable and dump materials in a manner not to cause nuisance, injury or inconvenience until property owner assumes responsibility under terms of agreement.

1.7 Site Conditions

.1 Any damages to existing services and utilities by the Contractor during excavation operations shall be repaired and/or replaced to the entire satisfaction of the parties concerned at the Contractor's expense.

.2 The Contractor is not to excavate outside of the slopes or below established grade unless directed by the Engineer.

.3 Embankments are not to be constructed with frozen material and no fill is to be placed when the existing ground or fill surface is frozen.

1.8 Requirements of Regulatory Agencies

.1 Adhere to Provincial and Federal environmental requirements.

1.9 Payment

.1 Payment for work under this section shall be for the number of cubic metres of acceptable excavation, fill, and compaction required to carry out general site grading activities.

.2 Items under this section are included in the Form of Tender under Common Excavation, Backfill, and Compaction.

.3 No extra payment will be made for crushed stone or other granular material used to facilitate drainage during construction.

.4 No extra payment will be made for removal and replacement of soil weakened or disturbed by unsuitable construction methods or procedures or by action of workers.

PART 2 - PRODUCTS

2.1 Backfill Materials

.1 Dam Improvements Material

.1 Raise dam using native or imported material with a minimum of 55% passing the 0.075 mm sieve by weight.

.2 Riprap

.1 Refer to Section 008 for riprap specifications.

PART 3 - EXECUTION

3.1 Removal of Frozen Ground

.1 Do not use backhoe bucket or drop weight to break frozen ground.

.2 Adopt method of removal of frozen ground that will not cause excessive noise, ground vibration or damage to adjacent structures and utilities.

3.2 Excavation

.1 Excavate to lines, elevations and dimensions specified or as shown on Drawings or as directed by the Engineer.

.2 All deposits of materials containing frost heave and unsuitable materials shall be removed below subgrade to the lengths, widths and depths are directed by the Engineer and such unsuitable materials shall be replaced with material approved by the Engineer, placed in 200 mm layers or less, and compacted as specified in 3.6.

.3 Whenever the proposed subgrade elevation is in cut, the earth grade surface shall be compacted, as specified in 3.6, to a depth of 200 mm.

.4 Earth cuts and embankment fill materials may require moisture content adjustment during excavation, placing and compaction, as required, either to aid compaction or reduce dust nuisance, or both.

.5 Construct side ditches to depths and widths indicated or directed by the Engineer to permit ready flow of surface water.

.6 Maintain and keep ditches open and free from debris until final acceptance of work. Install siltation prevention measures as required and directed.

3.3 Fill

.1 Prior to placing any fill material on a slope, the slope shall be graded to make smooth and uniform.

.2 Where indicated or directed by the Engineer, scarify or bench existing slopes in side hill or sloping sections to ensure proper bond between new materials and existing surfaces. Obtain prior approval of method to be used.

.3 Place fill materials from the bottom of slope and work to the top of the slope.

.4 Do not place material which is frozen or place material on frozen surfaces.

.5 Backfill material must be approved by the Engineer before it is incorporated into the work.

.6 Do not place backfill material on a wet, muddy or rutted subgrade.

.7 With material containing less than 25 per cent by volume of stone or rock fragments larger than 100 mm.

.1 Place and compact to full width in uniform layers not exceeding 200 mm loose thickness.

.2 Compact to a density of not less than 98% Standard Proctor Density in accordance with ASTM D698.

.8 Embankments constructed primarily of rock shall be placed in successive uniform loose layers not exceeding in depth the approximate average size of the larger rock. The rock shall not be dumped in place, but shall be distributed by suitable means within the embankment such that the interstices around the rock are filled with fine material.

.9 Prior to placing material, properly shape subgrade to the satisfaction of the Engineer so as to be firm and able to support the construction equipment without unacceptable displacement.

.10 Place backfill material to the lines and grades indicated on the Drawings, as specified herein.

3.4 Finishing

.1 Remove soft or other unstable material that will not compact properly and fill resulting depressions with approved material.

.2 Shape and compact the surface to within 300 mm of design elevations but not uniformly high or low.

.3 Finish back and side slopes of common material to a neat condition, true to line and grade.

.1 Hand finish slopes that cannot be finished satisfactorily by machine.

.4 Finish back and side slopes of rock material to a neat and safe condition, true to line and grade.

3.5 Maintenance

.1 Maintain finished surfaces in a condition conforming to this Section until acceptance.

3.6 Compaction

.1 Materials shall be placed in horizontal layers by approved equipment, for full width of excavation and embankment fills, and compacted to a minimum of 98 percent of the Maximum Standard Proctor Dry Density as determined by ASTM D698.

.2 Materials shall be moistened or dried as required for maximum density and thoroughly compacted by mechanical vibrators capable of producing required compaction. HAULING AND PLACING EQUIPMENT WILL NOT BE ACCEPTED IN LIEU OF COMPACTING EQUIPMENT.

3.7 Unauthorized Over-Excavation

.1 Should the Contractor (unless ordered by the Engineer) excavate below the required subbase elevation, they shall be required to backfill such excavations with subbase material approved by the Engineer, placed in 200 mm layers or less, and, hauling, handling, placing or compaction of such backfill material compacted as specified in 3.6, for which no payment will be made.

3.8 Disposal of Material

.1 Excavated material shall be disposed of on site at a location designated by the Engineer.

3.9 Field Quality Control

.1 Inspection and testing to Section 005.

.2 Inform Engineer so as to provide sufficient notice to permit inspection of the subgrade level prior to placing backfill.

*****END OF SECTION 004*****

PART 1 - GENERAL

1.1 Description

.1 This Section specifies requirements for compaction control and testing throughout progress of work.

1.2 Related Work Specified Elsewhere

.1	Trench Excavation and Backfilling	Section 003
.2	Excavation, Fill & Compaction	Section 004

1.3 Definitions

.1 Standard Proctor Density as defined in ASTM D698

1.4 Payment

.1 There will be no separate payment for items in this section.

PART 2 - PRODUCTS

Not applicable.

PART 3 - EXECUTION

3.1 Material

.1 Testing of material to be performed by an independent testing agency paid by the Owner.

.2 Supply representative samples of materials for gradation and proctor tests.

.3 Provide labour to obtain and handle samples at work site or at source of materials.

3.2 Compaction Testing

.1 Compaction tests of placed material, to be performed by independent testing agency provided by the Owner.

.2 Testing to be performed throughout progress of work to determine adequacy of compaction.

.3 Contractor to provide timely notice and cooperate with inspection staff during testing.

.4 Compaction of all backfill materials is to be completed to 98% of the maximum dry density and within 2% of the optimum moisture content, as determined by the Standard Proctor Density test.

END OF SECTION 005

PART 1 - GENERAL

1.1 Description

.1 This Section specifies requirements for the supply and installation of precast concrete box culvert sections.

1.2 Related Work Specified Elsewhere

.1	Dewatering	Section 001
.2	Trench Excavation and Backfilling	Section 003

1.3 Submittals

.1 The Contractor shall submit shop drawings for the precast concrete box culvert, containing but not limited to the following information:

- .1 General layout showing all box culvert sections and appurtenances;
- .2 Length and weight (mass) of individual sections;
- .3 Joint details (including gap, gasket, connection plates and waterproofing);
- .4 Proposed construction joints (if sections not cast monolithically);
- .5 Location and type of inserts and lift devices (including location where rebar and/or mesh will be cut for lifting anchors);
- .6 Location of reinforcing steel;
- .7 Bar schedules for all reinforcing steel;
- .8 Itemized supply list;
- .9 Detail showing year of fabrication embedded on the culvert;
- .10 Concrete design strength, age of test, form removal strength and shipping strength;
- .11 Two sets of design calculations; and
- .12 Location of manufacturing plant.

.2 The Contractor shall submit shop drawings for the stoplogs and hand railing containing but not limited to the following information:

- .1 Materials supplied and location of manufacturing facility(s); and
- .2 Connection details.

.3 The Contractor shall submit shop drawings for the cutoff liner containing the following information:

- .1 Materials supplied and location of manufacturing facility;
- .1 Installation details; and
- .2 Material specifications.

.4 The Contractor shall submit, in advance of the commencement of the Work, the manufacturer's certification that the materials to be supplied for the fabrication meet the specified requirements.

.5 The Contractor shall submit, upon request, the proposed source of the supply of the backfill material from within the Work Site.

.6 If the source of the supply of the backfill material is located outside the Work Site, the Contractor shall submit the proposed source, in writing, for the approval of the Engineer, at least 14 Days in advance of obtaining backfill material from the proposed source.

1.4 Payment

.1 Payment for this work item shall be a lump sum price.

.2 Items under this section are included in the Form of Tender under Precast Concrete Box Culvert.

.3 The supply and installation of hand railings, stoplogs, and cutoff liner, as specified in the Contract Documents, shall be included in the payment for work under this section.

PART 2 - PRODUCTS

2.1 Precast Concrete Box Culvert

.1 All materials shall be supplied by the Contractor.

.2 Concrete shall meet the requirements of CSA A23.1 and CSA A23.2.

.1 Exposure Class shall be C-XL.

.2 Air content shall be 5 to 8%.

.3 Interior water-tight joint seal shall be Rub'r-Nek, size per joint seal manufacturer's written recommendations, or approved equivalent.

.4 Exterior joint wrap shall be 300 mm wide Conwrap, ConSeal CS-212 or approved equivalent, with primers recommended by the manufacturer.

.5 The calcium nitrite corrosion inhibitor shall conform to the following:

.1 The dosage rate shall be 15 L/m3.

.2 The corrosion inhibiting calcium nitrite admixture shall contain between 30% to 36% calcium nitrite by weight of solution.

.3 The calcium nitrite shall be added at the concrete ready mix plant and verification shall be provided to the Engineer for the quantity of the calcium nitrite added to each batch of concrete.

.1 Acceptable verification shall include, but is not necessarily limited to, printouts from computerized batch plants or printouts from computerized admixture dispensing units.

.2 Verification shall be provided on the delivery slip.

.6 Dowels for attachment of cut-off walls to box Culverts shall be 25 M deformed reinforcing steel bars.

.7 Reinforcing steel shall be rebar conforming to 304.2 and/or welded deformed steel wire fabric conforming to ASTM A1064.

.1 Welding of reinforcing steel, including tack welding, is prohibited unless otherwise indicated on the Contract Documents.

.8 Baffles and pads shall be supplied as part of the precast concrete box culvert sections.

.1 Reinforcement shall be placed in both faces of baffles, pads, and cut-off walls.

.1 The maximum spacing of reinforcing steel for baffles, pads, and cut-off walls shall be 300 mm.

.2 The concrete for precast baffles, pads, and cut-off walls shall have an air content of 5 to 8%.

.9 Non-shrink grout shall conform to ASTM C1107.

.10 Reinforcing supports shall be made of plastic, stainless steel, or galvanized steel with a minimum of 25 mm of cover.

2.2 Stoplogs

.1 Stoplogs shall consist of water-proofed dimensional lumber.

.2 Stoplogs shall be safe for use in aquatic environments.

2.3 Cutoff Liner

.1 Cutoff liner shall be 60 mil PVC liner or equivalent approved by the Engineer.

PART 3 - EXECUTION

3.1 Precast Concrete Box Culvert

.1 All aspects of precast concrete work shall comply with CSA A23.1 and CSA A23.4 and shall be to the satisfaction of the Engineer.

.2 Manufacture of the box Culvert sections shall not commence until the Shop Drawings have been reviewed by the Engineer.

.1 The Engineer's written notice of review of the Shop Drawings shall in no way relieve the manufacturer of the responsibility for correctness of dimensions, size of components and details of fabrication.

.3 Precast concrete box Culvert sections shall be erected in the sequence indicated on the manufacturer's shop drawings.

.1 Deviation from the manufacturer's shop drawings shall not be permitted without the written authorization of the Engineer.

.4 Culvert sections shall be joined in a straight line using industry methods, with the bell end up grade. Each Culvert section shall be set into place and positioned together as recommended by the manufacturer of the lifting device.

.1 After final alignment of each box Culvert section by overhead means, homing shall be performed by jacking or winching with "come-alongs" attached to the inner anchors while the box Culvert section is still suspended.

.2 Boxes that are subsequently moved after the gasket joint seal has been compressed, will require re-installation with a replacement gasket.

.9 The maximum joint gap between any two box Culvert sections shall be 20 mm uniformly across the joint with the sections in straight alignment.

.1 Sections set to a joint gap greater than 20 mm shall be removed and reset to the specified gap.

.2 Sections which cannot be reset shall be rejected.

.5 After satisfactory placement of the Culvert sections, all anchor pockets shall be filled with non-shrink grout.

.6 Joint seal and exterior wrap material and appurtenances shall be installed in accordance with the manufacturer's specifications.

.1 Joint seal shall be placed around the entire joint.

.7 Backfill shall be carried out in accordance with Section 003 and as specified in the Contract Documents.

.8 No backfill shall be placed in the excavation until the excavation has been approved by the Engineer, including but not limited to the dimensions of excavation and the character of foundation materials.

3.2 Hand Railing

.1 Hand railing shall be constructed to conform with all applicable safety regulations.

***** END OF SECTION 006*****

PART 1 - GENERAL

1.1 Description

.1 This Section specifies requirements for supplying and installing geotextiles to be used in the work.

1.2 Related Work Specified Elsewhere

.1	Excavation, Fill & Compaction	Section 004
.2	Riprap	Section 008

1.3 Samples

.1 Submit to the Engineer samples at least three (3) weeks prior to commencing work a minimum of 1 m^2 of each type of geotextile material to be used along with the technical data.

1.4 Mill Certificates

.1 Submit to the Engineer copies of mill test data and certificate at least 3 weeks prior to start of work.

1.5 Delivery & Storage

.1 During delivery and storage, protect geotextiles from direct sunlight, ultraviolet rays, excessive heat, mud, dirt, dust, debris and rodents.

1.6 Payment

.1 Payment for work under this section shall be in square metres for the type of geotextile acceptably placed. There will be no additional payment for required overlaps or repairs.

.2 Items under this section are included in the Form of Tender under Geotextiles.

PART 2 - PRODUCTS

2.1 Materials

.1 The geotextiles shall be of non-woven needle punched construction comprising synthetic, non-biodegradable fibres. Fibres used in the manufacture of geotextiles and the threads used in joining geotextiles by sewing shall consist of long chain synthetic polymers composed of at least 85% by weight polyolefins, polyesters or polyamides. They shall be formed into a network such that the filaments or yarns retain dimensional stability relative to each other, including selvages.

Property	Unit	ASTM	Minimum Requirement
Tearing Strength (Trapezoid Method)	N	D4533	500
Grab Tensile Strength (Both Directions)	N	D4632	1200
Elongation at Break	%	D4632	50
Apparent Opening Size	µm	D4751	50 – 250
Permittivity	Sec^{-1}	D4491	1.00 – 2.50

.3 Acceptance of geotextile material shall be based on ASTM D4759.

PART 3 - EXECUTION

3.1 Delivery & Storage

.1 Each individual roll of geotextile shall be wrapped and covered to protect the fabric from direct sunlight, ultraviolet rays, excessive heat, mud, dirt, debris and rodents.

.2 Use equipment that does not contact the material itself during loading, unloading and handling. Slings or other lifting devices should provide adequate support without damaging the material. Off-load in a minimum of steps directly to the storage or installation area.

.3 Store all rolls of geotextile on smooth, flat surfaces raised above the ground that provide continuous support to the rolls. Maintain additional protective cover if rolls are to be stored in excess of 30 days.

3.2 Installation

.1 Where fabric seams are not sewn, overlaps shall be 600 mm in roll length, and 900 mm at roll end. Care shall be taken to ensure there are no wrinkles at overlaps.

.2 When placing fabric which incorporates a sewn seam, the seam shall be placed "thread up" to facilitate inspection and repair.

.3 Sewn seams shall be constructed using a "J" or a "Prayer" configuration with 5 to 8 stitches per 25 millimeters. Stitches shall be such that they will have an elongation at break equal to or greater than the geotextile when tested in the plane of the seam. Ultimate grab strength perpendicular to the seam shall be equal to or exceed 90% of the grab tensile strength of the geotextile.

.4 Welding will not be permitted unless it can be clearly demonstrated that a continuous weld can be achieved having an elongation at break equal to or greater than the original geotextile.

.5 Thread for sewn seams shall have an equal or better resistance to chemical and biological degradation as that of the geotextile. For inspection purposes, the thread used shall be of a colour that will contrast with the original geotextile. Threads comprising of any organic fibres or nylon will not be accepted.

.6 Connect non-woven geotextile to back face of weir wall using Flex Seal liquid rubber sealant coating, or equivalent approved by the Engineer.

3.3 Protection

.1 Do not permit passage of any vehicle directly on the geotextile at any time.

.2 Maximum drop height for fill directly onto the geotextile shall not exceed 1 metre.

.3 Great care should be taken so as not to damage geotextiles during filling operations. Any damaged geotextile shall be repaired according to the manufacturer's recommendations.

3.4 Repairs

.1 Repair seams which open or fabric tears during fill placement by removing fill and resetting the fabric. Additional geotextile shall be placed over the area, extending beyond the perimeter of the fault a distance corresponding to the lapping requirements. Where practical, the repair fabric should be pinned or stapled into place at intervals equal to or less than one eighth the perimeter of the damage or 2 metres, whichever is the lesser.

*****END OF SECTION 007*****

PART 1 - GENERAL

1.1 Description

.1 This section specifies requirements for supplying and constructing stone riprap slopes.

1.2 Related Work Specified Elsewhere

.1	Excavation, Fill & Compaction	Section 004
.2	Geotextile	Section 007

1.3 Submittals

.1 Submit details of proposed riprap material for Engineer's review prior to placement.

.2 Submit details of proposed pitrun gravel material for use in Type II Mixed for Engineer's review prior to placement.

1.4 Payment

.1 Payment for this work shall be in cubic metres of riprap acceptably placed to the lines and grades shown or as directed by the Engineer.

.2 Items under this section are included in the Form of Tender under Riprap.

.2 Cost of the provision of materials, labour, and equipment to test the riprap to resolve disagreement between the Owner and the Contractor shall be borne by the Contractor if the test results show that the material does not meet the specified gradation, otherwise the Owner shall bear the cost of the test.

PART 2 - PRODUCTS

2.1 Riprap Materials

.1 Maximum L.A. Abrasion (ASTM C131 or C535) Loss of 35%.

.2 Maximum soundness sodium sulphate (ASTM C88) not less than 15%.

.3 Riprap Type I shall meet the following grading limits:

Mass kg	Diameter mm	Finer by Mass %
300	600	100
200	530	70 - 90
100	420	40 - 55
10	190	0 - 15

.4 Riprap Type II Mixed shall meet the following grading limits:

Mass kg	Diameter mm	Finer by Mass %
750	820	100
500	710	70 - 90
250	570	40 - 55
25	260	0 - 15

.1 Riprap Type II Mixed shall be thoroughly mixed with a pitrun gravel subbase which shall conform to the following gradation limitations:

ASTM Sieve Size	Finer by Mass %
125 mm	100
100 mm	95 - 100
75 mm	82 - 100
50 mm	62 - 100
37.5 mm	52 - 100
19 mm	30 - 90
9.5 mm	22 - 79
4.75 mm	16 - 66
2.36 mm	12 - 55
1.18 mm	9 - 44
300 µm	4 - 25
75 µm	0 - 7

.2 The Contractor shall produce a consistent mixed homogeneous blended supply of the specified mixture at the proportion of approximately 20% by weight to the riprap material indicated.

.5 Riprap shall consist of clean, hard, sound, durable rock having density of not less than 2.6 t/m^3 and angular surfaces such that the rocks interlock when placed.

PART 3 - EXECUTION

3.1 Placing

.1 Place riprap to required length, thickness and depth specified or as directed by Engineer.

.2 Provide adequate foundation upon which bottom of riprap will rest. The area shall be clear of all driftwood, debris, snow, ice and other objectionable materials.

.3 Excavate a trench at toe of slope to dimensions required where riprap is to be placed on slopes.

.4 Fine grade area to be rip rapped to a uniform and even surface. Fill depressions with suitable material and compacted to provide firm bed.

.5 Place stones in approved manner to secure regular surface and stable mass. Place larger stones at bottom of slopes.

.6 Placement:

.1 Use larger stones for lower courses as headers for subsequent courses.

.2 Stagger vertical joints and fill voids with rock spalls.

.3 Finish surface even, free of large openings, and neat in appearance.

***** END OF SECTION 008*****

PART 1 - GENERAL

1.1 Description

.1 This Section specifies requirements for the supply and application of hydroseeding.

1.2 Related Work Specified Elsewhere

.1 Excavation, Fill & Compaction Section 004

1.3 Submittals

.1 Submit information and details of hydroseeding mixture and application methods to Engineer prior to placement.

1.4 Payment

.1 Payment for this work shall be in square metres of hydroseed acceptably placed to the lines shown or as directed by the Engineer.

.2 Items under this section are included in the Form of Tender under Hydroseeding.

PART 2 - PRODUCTS

2.1 Hydroseeding Mixture

.1 Seed mix shall consist of the Nova Scotia Highway Seed Mix which includes the following species:

- .1 40% Creeping Red Fescue
- .2 15% Timothy
- .3 15% Tall Fescue
- .4 10% Kentucky Blue Grass
- .5 10% Alsike Clover
- .6 5% Red Top
- .7 5% Perennial Rye

.2 An equivalent mix of perennial grasses and legumes may be used as approved by the Engineer.

.3 Seed shall be kept dry and protected from sunlight, heat, or other detrimental conditions.

PART 3 - EXECUTION

3.1 Placing

.1 The application rate for the seed mix shall be a minimum of 100 kg/ha.

.2 Water shall be free of any impurities which would inhibit seed germination or seedling growth.

.3 Hydroseeding shall be carried out as soon as possible after the completion of the surface preparation.

.4 Hydroseeding will not be permitted on hardened or crusted soil. Final dressing of slopes shall include removal of deleterious materials and loosening of the top 50 mm of soil.

.5 Scarifications shall be parallel to the contour of the slope with a minimum indentation (high to low) of 25 mm and at a maximum spacing of 150 mm.

.6 Hydroseeding shall not be performed under windy conditions, or during periods of rainfall or severe drought, on areas covered by standing water, or under other adverse conditions as determined by the Engineer.

.7 The seed mixture shall be thoroughly mixed with water in a hydroseeding tank capable of continually agitating the mixture during the operation to ensure that a homogeneous slurry is produced. The hydroseed mix shall be prepared on site and applied immediately. It shall not be left in the tank for longer than 6 hours before being used.

.8 Binder shall be used for all hydroseeding work.

.9 The mixture shall be applied uniformly onto prepared surfaces from a hydroseeder which shall be capable of spraying the extremities of slopes or other areas of exposed ground, whether through the towergun nozzle or extension hose.

END OF SECTION 009

PART 1 - GENERAL

1.1 Description

.1 This Section specifies requirements for the supply, fabrication, and installation of the custom eel ramp system.

.1 Eel ramp system includes all components to be installed within the existing precast box culvert spillway.

1.2 Related Work Specified Elsewhere

.1 Gear Lift Section 011

1.3 Submittals

.1 Submit shop drawings to Engineer, including but not limited to the following, prior to carrying out eel ramp fabrication:

.1 Fabrication sequencing;
.2 Itemized materials list and supplier location(s); and
.3 Connection details.

1.5 Payment

.1 Payment for this work item shall be a lump sum price.

.2 Items under this section are included in the Form of Tender under Eel Ramp.

PART 2 - PRODUCTS

2.1 General

.1 All components of the eel ramp shall be safe for use in an aquatic environment.

2.1 Structural Steel

.1 Use stainless steel conforming to Contract Documents or equivalent approved by the Engineer.

2.2 Peg Board Substrate

.1 Use AECOM MIL01 juvenile substrate or equivalent approved by the Engineer.

2.3 Artificial Turf Substrate

.1 Use 13 mm eco-grass turf surface or equivalent approved by the Engineer.

2.4 Ramp Liner

.1 Use 60 mil TPO reinforced membrane or equivalent approved by the Engineer.

2.5 Neoprene Seal

.1 Use 50 mm by 75 mm solid neoprene block or equivalent approved by the Engineer.

PART 3 - EXECUTION

3.1 Construction

.1 Contractor shall assemble eel ramp according to the plan submitted to the Engineer.

*****END OF SECTION 010*****

PART 1 - GENERAL

1.1 Description

.1 This Section specifies requirements for the installation of a bevel gear lift and accompanying lift rods.

1.2 Related Work Specified Elsewhere

.1 Eel Ramp Section 010

1.3 Payment

.1 Payment for work under this section shall be lump sum for the installation of the bevel gear lift and accompanying lift rods.

.1 Owner will supply the bevel gear lift and accompanying lift rods to the contractor no less than seven (7) days prior to installation.

.2 Any damage to the bevel gear lift and/or accompanying lift rods because of mishandling or mistreatment by the Contractor shall be repaired or replaced at the expense of the Contractor.

PART 2 - PRODUCTS

2.1 Bevel Gear Lift

.1 Mueller bevel gear lift and accompanying lift rods to be supplied by the Owner.

PART 3 - EXECUTION

3.1 Construction

.1 The Contractor shall carry out the Work as indicated in the Contract Documents and/or as specifically directed by the Engineer.

END OF SECTION 011

PART 1 - GENERAL

1.1 Description

.1 This Section specifies requirements for cast-in-place concrete to be used during construction of the concrete spillway structure.

1.2 Related Work Specified Elsewhere

.1 Concrete Reinforcement — Section 013

1.3 Submittals

.1 Submit information and details of construction of spillway for the Engineer's review, prior to proceeding

.2 Provide certification indicating the concrete supplier is certified in accordance with the Atlantic Provinces Ready Mix Concrete Association Program or equivalent.

.3 Provide certification that plant, equipment, and materials to be used in concrete comply with requirements of CSA A23.1.

.4 Provide mix designs in compliance with CSA A23.1 to provide concrete of quality, yield and strength as specified. Mix designs to be prepared and stamped by an engineer licensed to practice in Nova Scotia.

1.4 Payment

.1 There will be no separate payment for items in this section.

PART 2 - PRODUCTS

2.1 Materials

.1 Concrete:

.1 The Contractor shall be responsible for the concrete mix design.

.2 Proportion normal density concrete in accordance with CSA A23.1, Alternate 1, to produce concrete with minimum 28-day compressive strength of 35 MPa.

.3 Concrete Exposure Class: C-1

.4 Maximum Water-Cement Ratio: 0.40

.5 Nominal Maximum Size of Coarse Aggregate: 19 mm

.6 Air Content: 5% to 8%

.7 Slump as required for proper placement and consolidation.

.8 Mix design to incorporate a mid-range plasticizer to achieve slump at plant. Super plasticizer to be used to achieve workability and slump on site if required. Water will not be added on site without the written approval of the Engineer.

.2 Concrete Reinforcement: as per Section 004.

.3 Formwork:

.1 Form Ties: Use removable or snap-off metal ties, fixed or adjustable length, free of devices leaving holes larger than 25 mm diameter in concrete surface.

.2 Formwork Materials: Use plywood and wood formwork materials to CSA-O121, CSA-O86, and CSA-O153. For exposed to view flat surfaces use medium density overlay plywood, minimum 19 mm thick.

.3 Form Release Agent: Chemically active release agents containing compounds that react with free lime in concrete resulting in water insoluble soaps, preventing concrete from sticking to forms.

PART 3 - EXECUTION

3.1 Formwork

.1 Formwork to be fabricated and erected in accordance with CAN/CSA-S269.1, producing finished concrete conforming to shape, dimensions, locations and levels indicated within tolerances required by CSA-A23.1.

.2 Formwork and supporting bracing members shall be designed such that they will not deflect noticeably under the weight or pressure of the concrete and other loadings incidental to construction. The maximum deflection of facing materials in concrete surfaces exposed to view shall be L/360 of the span between supporting members.

.3 A non-staining form release agent shall be applied to all forms where the finished concrete surface will be exposed.

.4 Align form joints and make watertight. Keep form joints to a minimum.

.5 External corners of all exposed concrete members to be rounded to 6 mm radius unless specified otherwise in Drawings. Clean formwork in accordance with CSA A23.1 prior to placement of concrete.

.6 Formwork to be left in place a minimum of three (3) days after placing concrete. All exposed surfaces are to be kept continuously wet for the remainder of the curing period.

.7 Remove formwork when concrete has reached 75% of design strength or minimum period noted in Section 3.1.6. All exposed surfaces are to be kept continuously wet for the remainder of the curing period.

3.2 Cast-in-place Concrete

.1 All concrete work (cold weather concreting, placement, formwork, finishes, curing, etc.) shall comply in all respects to CSA Standard A23.1, A23.2, and A23.3, unless otherwise indicated.

.2 All clearances shall be 75 mm perpendicular to face of concrete, unless otherwise noted.

.3 Construction traffic shall not be permitted on any part of newly poured concrete until curing period has ended and concrete has attained a minimum compressive strength of 28 MPa. This is also valid for the launch of the superstructure.

.4 All exposed concrete surfaces shall be continuously moist cured for a minimum 7 consecutive days after placement in accordance with CSA A23.1.

.5 Finish concrete in accordance with CSA A23.1. Formed surfaces to be smooth form finish. Exposed surfaces to be trowel finish.

3.3 Field Quality Control

.1 Inspection and testing of concrete and concrete materials shall be carried out in accordance with CSA A23.1.

.2 Concrete testing to be performed by independent testing agency provided by the Owner.

.3 Contractor to provide timely notice and cooperate with inspection staff during testing.

.4 Inspection or testing by Engineer will not augment or replace Contractor's quality, nor relieve the Contractor of its contractual responsibilities.

*****END OF SECTION 012*****

PART 1 - GENERAL

1.1 Description

.1 This Section specifies requirements for concrete reinforcement to be used during construction of the concrete spillway.

1.2 Related Work Specified Elsewhere

.1 Concrete and Formwork — Section 012

1.3 Submittals

.1 Submit reinforcement shop drawings compliant and in accordance with Reinforcing Steel Manual of Standard Practice (Reinforcing Steel Institute of Canada) prior to start of work for review by Engineer. Shop drawings to indicate the following:

.1 Bar bending details.

.2 Lists and quantities of reinforcement.

.3 Sizes, spacing and locations of reinforcement with identifying code marks to permit correct placement without reference to structural drawings.

.4 Detail lap lengths and bar development lengths to CSA-A23.3. Provide Class B tension lap splices unless otherwise indicated.

.2 Supply certified copy of mill test report of reinforcing steel, including physical and chemical analysis. This must be available a minimum of two (2) weeks prior to commencing reinforcing work.

1.4 Substitutes

.1 Substituting different size reinforcement only permitted if approved by the Engineer.

1.5 Payment

.1 There will be no separate payment for items in this section.

PART 2 - PRODUCTS

2.1 Materials

.1 Reinforcing Steel: Carbon steel, deformed bars to CAN/CSA-G30.18, Grade 400W.

.2 Cold-drawn annealed steel wire ties to CSA-G30.3.

.3 Chairs, bolsters, bar supports, spacers to CSA-A23.1. Non-metallic where within 40 mm of exposed concrete surfaces.

.4 Bar coupler to be able to develop at least 125% of the specified yield strength of the reinforcing. Bar couplers with protective plug, such as BPI Barsplicer flanged coupler system or an approved equivalent, shall be used.

2.2 Fabrication

.1 Fabricate reinforcing steel in accordance with CSA-A23.1, ANSI/ACI 315, and Reinforcing Steel Manual of Standard Practice by the Reinforcing Steel Institute of Canada, unless indicated otherwise.

.2 Welding of reinforcement shall not be permitted.

2.3 Storage and Handling

.1 Reinforcing steel shall be handled and stored in such a manner that it is kept free of dirt, mud and water.

.2 Clean reinforcing steel of excess rust and previously deposited concrete prior to placing concrete.

PART 3 - EXECUTION

3.1 Field Bending

.1 Do not field bend reinforcement except where indicated or authorized by the Engineer. When field bending is authorized, bend without heat, applying a slow and steady pressure.

.2 Replace bars which develop cracks or splits.

3.2 Placing Reinforcement

.1 Place reinforcing steel as indicated on reviewed placing drawings and in accordance with CSA-A23.1.

.2 Prior to placing concrete, obtain Engineer's approval of reinforcing material and placement.

.3 Install, support and space reinforcement in alignment to position and clearances indicated and secure to supports.

.4 Remove and replace reinforcement that is visibly damaged or cracked.

.5 Do not cut reinforcement, before or after concrete is placed, to permit incorporation of other work.

.6 Do not relocate reinforcement without approval.

.7 Clean reinforcement before placing concrete.

*****END OF SECTION 013*****

DARES LAKE DAM AND SPILLWAY

UPGRADES AND EEL PASSAGE

LUNENBURG, NS

GEMTEC

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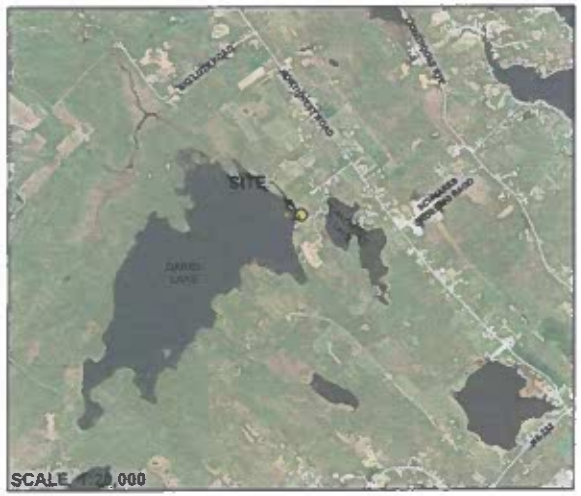
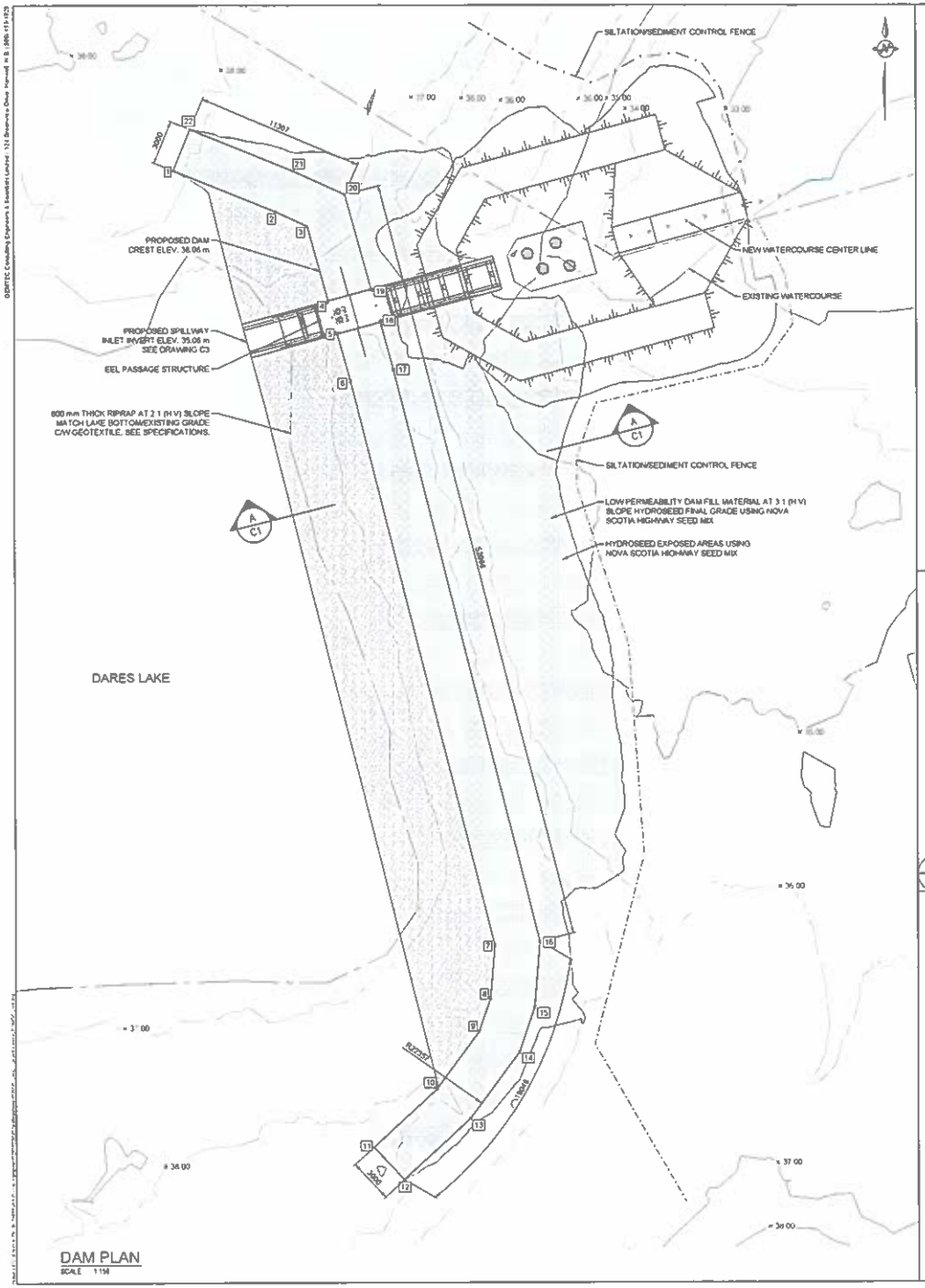


DRAWINGS INDEX	
C1	PROJECT OVERVIEW
C2	DISSIPATION POOL PLAN AND SECTIONS
C3	SPILLWAY PLAN AND SECTION VIEW
C4	SPILLWAY SECTIONS AND DETAILS
C5	EEL PASSAGE STRUCTURE PLAN AND DETAILS
C6	EEL PASSAGE SECTIONS AND DETAILS
C7	MISCELLANEOUS DETAILS



DAM PLAN
SCALE 1:150

DAM WAYPOINTS		
WAYPOINT	NORTHING, m	EASTING, m
1	4917268.6736	391535.7879
2	4917263.6727	391542.6678
3	4917262.6691	391544.8034
4	4917257.6145	391546.1919
5	4917255.5803	391546.8081
6	4917252.3708	391547.6801
7	4917214.3660	391557.2907
8	4917210.6302	391557.0001
9	4917208.6009	391556.2358
10	4917204.7267	391553.3746
11	4917200.7667	391549.1709
12	4917198.5709	391551.1851
13	4917202.7205	391555.6223
14	4917207.1895	391558.8237
15	4917210.2115	391558.9504
16	4917214.6177	391560.3215
17	4917253.1341	391550.5815
18	4917256.3514	391549.7020
19	4917258.8057	391549.0856
20	4917265.0358	391547.3276
21	4917268.8267	391543.8594
22	4917269.4521	391538.9191

DAM RAISE NOTES:

1. RAISE DAM USING IN-SITU OR IMPORTED MATERIAL WITH A MINIMUM OF 95% PASSING 75 MICRON SIEVE BY WEIGHT, AND COMPACTED TO 98% MAXIMUM DRY DENSITY AS PER ASTM D698, COMPACTION OF FILL MATERIAL MUST FOLLOW DIV. 2 SEC. 8 OF NOVA SCOTIA STANDARD SPECIFICATION (HENCEFORTH REFERRED TO AS "THE SPECIFICATION"). MATERIAL MUST BE APPROVED BY ENGINEER PRIOR TO PLACEMENT.
2. TYPE 1 RIP-RAP SHALL BE PLACED IN ACCORDANCE WITH DIV. 3 SEC. 6 OF THE SPECIFICATION AND SHALL BE AT LEAST 600 mm THICK MEASURED PERPENDICULAR TO THE PREPARED SURFACE. THE RIP-RAP MUST BE APPROVED BY THE ENGINEER PRIOR TO PLACEMENT AND SHALL FOLLOW THE FOLLOWING GRADING LIMITS

MASS (kg)	SIZE* (mm)	FINER BY MASS (%)
300	600	100
200	530	70 - 90
100	420	40 - 55
10	190	0 - 15

HYDROSEED MIX SHALL CONSIST OF THE *Nova Scotia Highway Seed Mix* AND SHALL BE SUPPLIED AND APPLIED ACCORDING TO DIV. 7 SEC. 5 OF THE SPECIFICATION.

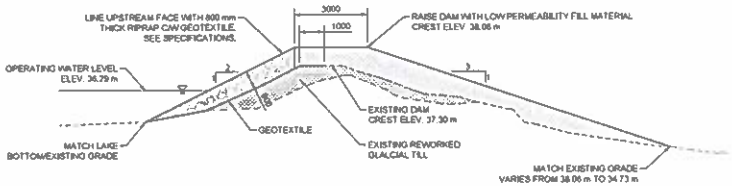
DISSIPATION POOL NOTES:

1. DISSIPATION POOL SHALL BE CONSTRUCTED OF A ROCK MIXTURE CONSISTING OF RIP-RAP AT LEAST 1100 mm THICK MEASURED PERPENDICULAR TO THE PREPARED SURFACE AND THE APPROPRIATE AMOUNT OF FINES TO ENSURE WATER WILL NOT BE LOST THROUGH INTERSTITIAL SPACING.
2. DISSIPATION POOL TYPE 2 MIXED RIP-RAP MUST BE APPROVED BY THE ENGINEER PRIOR TO PLACEMENT AND SHALL CONFORM TO THE FOLLOWING GRADING LIMITS

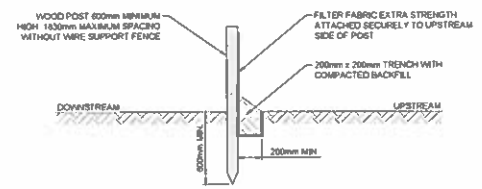
MASS (kg)	SIZE* (mm)	FINER BY MASS (%)
750	820	100
500	710	70 - 90
250	570	40 - 55
25	280	0 - 15

3. DISSIPATION POOL FINES SHALL BE FINE GRANULAR MATERIAL, GRAVEL BORROW OR PIT-RUN MATERIAL (20% FINES DOES NOT INCLUDE CLAYS).
4. WASH THE DISSIPATION POOL PRIOR TO OPENING PERMANENTLY TO THE ENVIRONMENT.

*APPROXIMATE DIAMETER



TYPICAL DAM SECTION
A C1 SCALE 1:100



NOTES:

1. INSPECT AND REPAIR FENCE AFTER EACH STORM EVENT AND REMOVE SEDIMENT WHEN NECESSARY.
2. REMOVED SEDIMENT SHALL BE DEPOSITED IN AN AREA THAT WILL NOT CONTRIBUTE SEDIMENT OFF-SITE AND CAN BE PERMANENTLY STABILIZED.
3. MAINTAIN SILTATION FENCE UNTIL VEGETATION IS FIRMLY ESTABLISHED.

TYPICAL SILTATION/SEDIMENT CONTROL FENCE DETAIL
SCALE 1:20

GENERAL NOTES

1) DATUM: CGVD 2013.
2) PROJECTION: NAD83 (CSRS) UTM ZONE 20N.
3) ALL UNITS ARE IN MILLIMETRES UNLESS OTHERWISE SPECIFIED.

NUMBER	REVISION	DATE (YY-MM-DD)
0	ISSUED FOR TENDER	2021-07-22

ENGINEER'S SEAL

NOT FOR CONSTRUCTION

DRAWN BY	TLR	CHECKED BY	HA
CALCULATIONS BY	JP	CHECKED BY	HA

PROJECT

DARES LAKE DAM AND SPILLWAY UPGRADES AND EEL PASSAGE
LUNENBURG, NS

DRAWING

PROJECT OVERVIEW

SCALE

AS NOTED

FILE NO.	SHEET NO.
101263.002	C1

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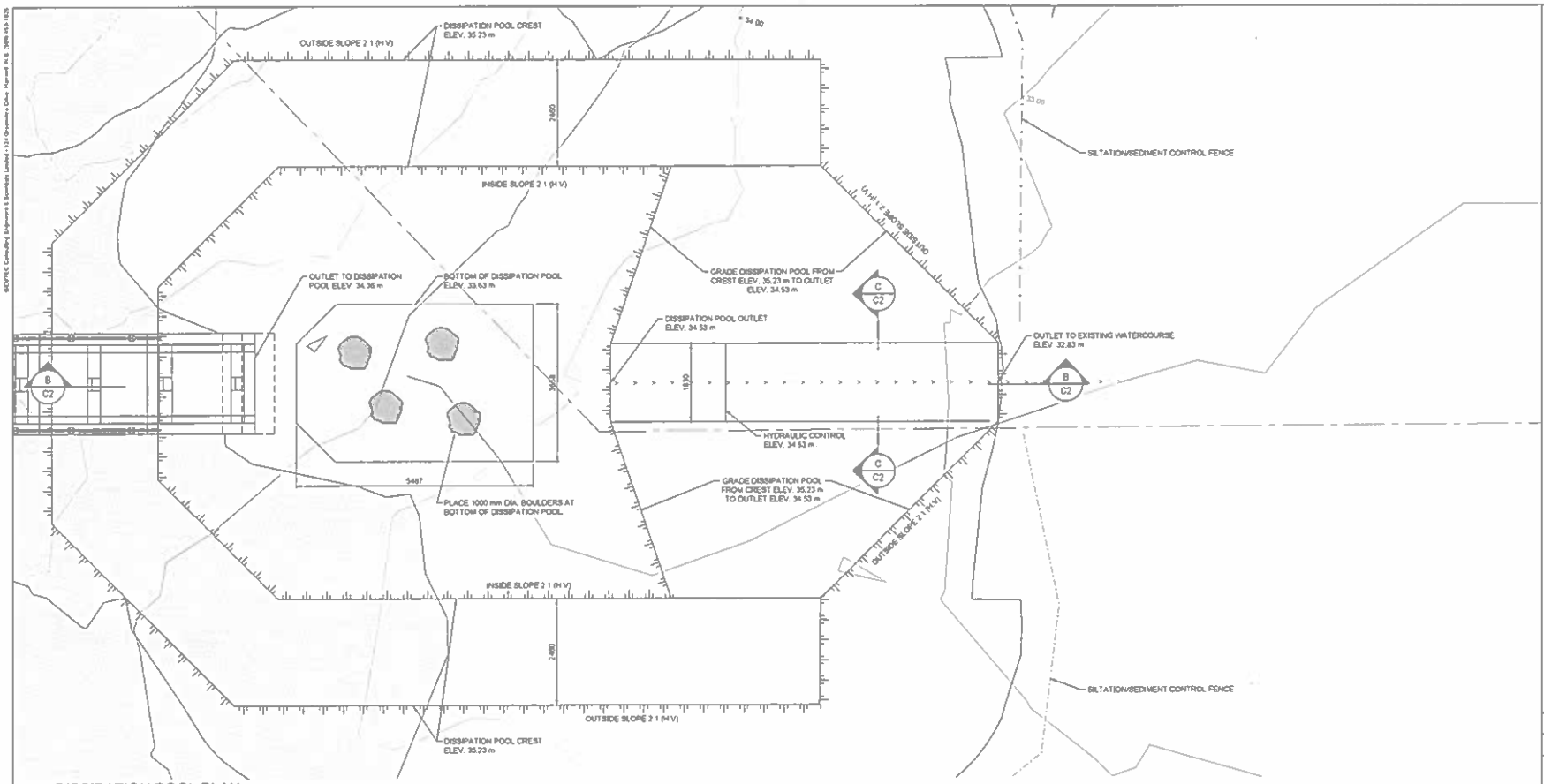
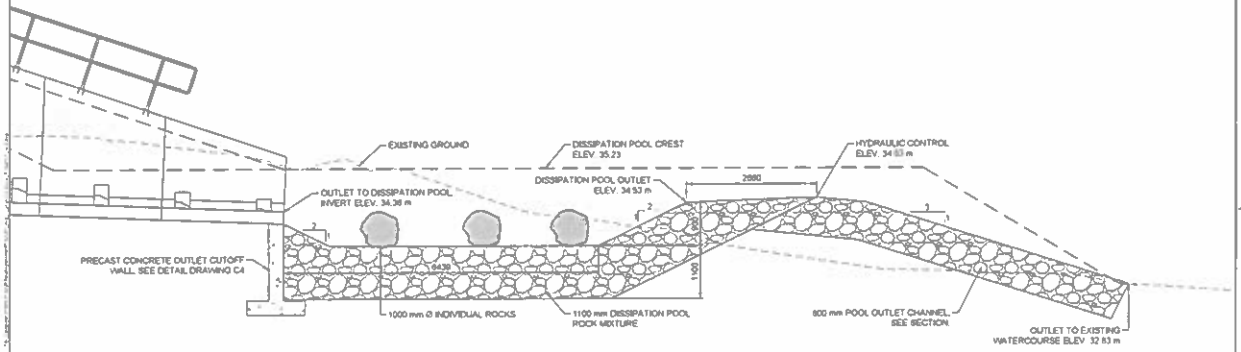


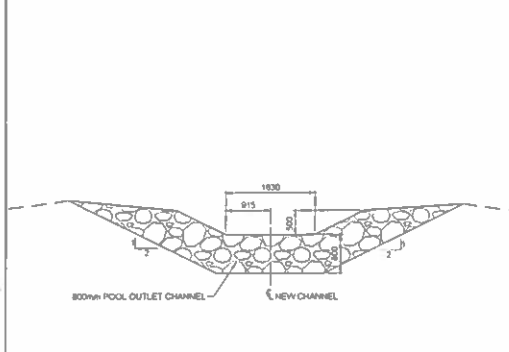
DISSIPATION POOL PLAN

SCALE 1:50



B C2 DISSIPATION POOL SECTION

SCALE 1:50



C C2 POOL OUTLET CHANNEL SECTION

SCALE 1:50

GENERAL NOTES

1) DATUM: CGVD 2013.
2) PROJECTION: NAD83 (CSRS) UTM ZONE 20N
3) ALL UNITS ARE IN MILLIMETRES UNLESS OTHERWISE SPECIFIED.

NUMBER	ISSUE	DATE (YYYY/MM/DD)
0	ISSUED FOR TENDER	2024/07/22

ENGINEER'S STAMP

NOT FOR CONSTRUCTION

DRAWN BY	TLR	CHECKED BY	HA
CALCULATIONS BY	JP	CHECKED BY	HA

PROJECT

DARES LAKE DAM AND SPILLWAY UPGRADES AND EEL PASSAGE
LUNENBURG, NS

DRAWING

DISSIPATION POOL PLAN AND SECTIONS

SCALE

AS NOTED

FILE NO.	SHEET NO.
101263.002	C2

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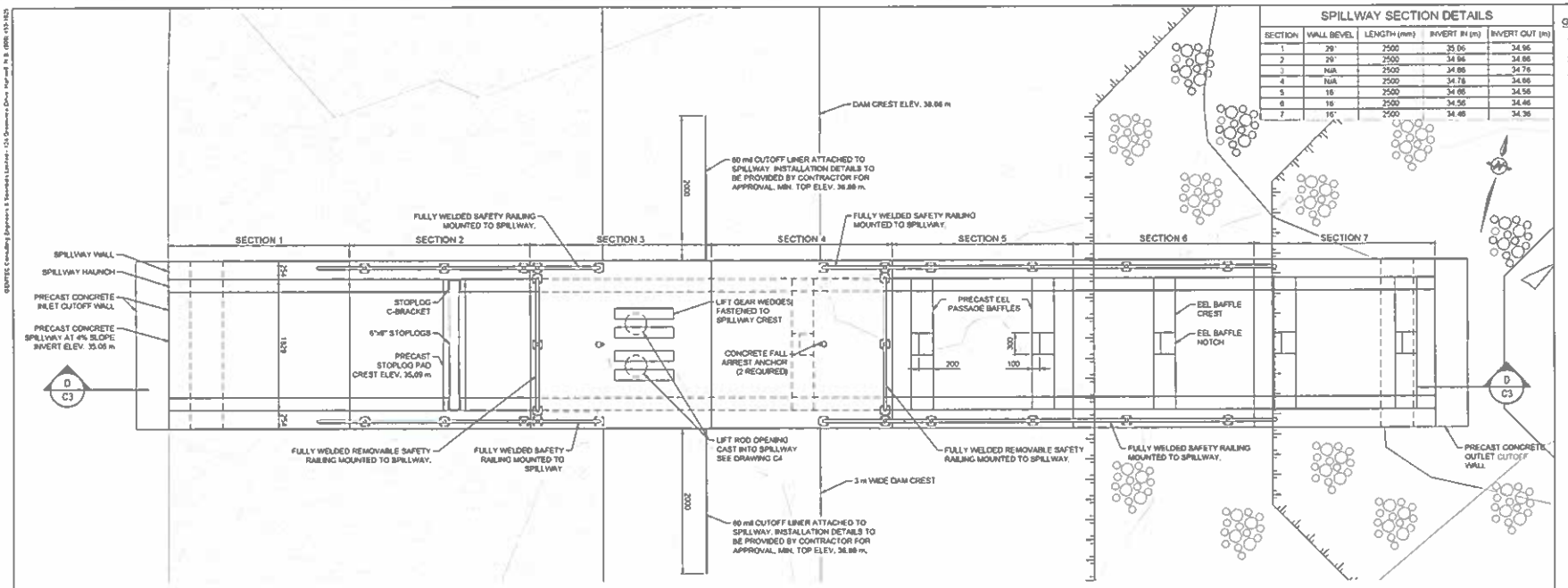


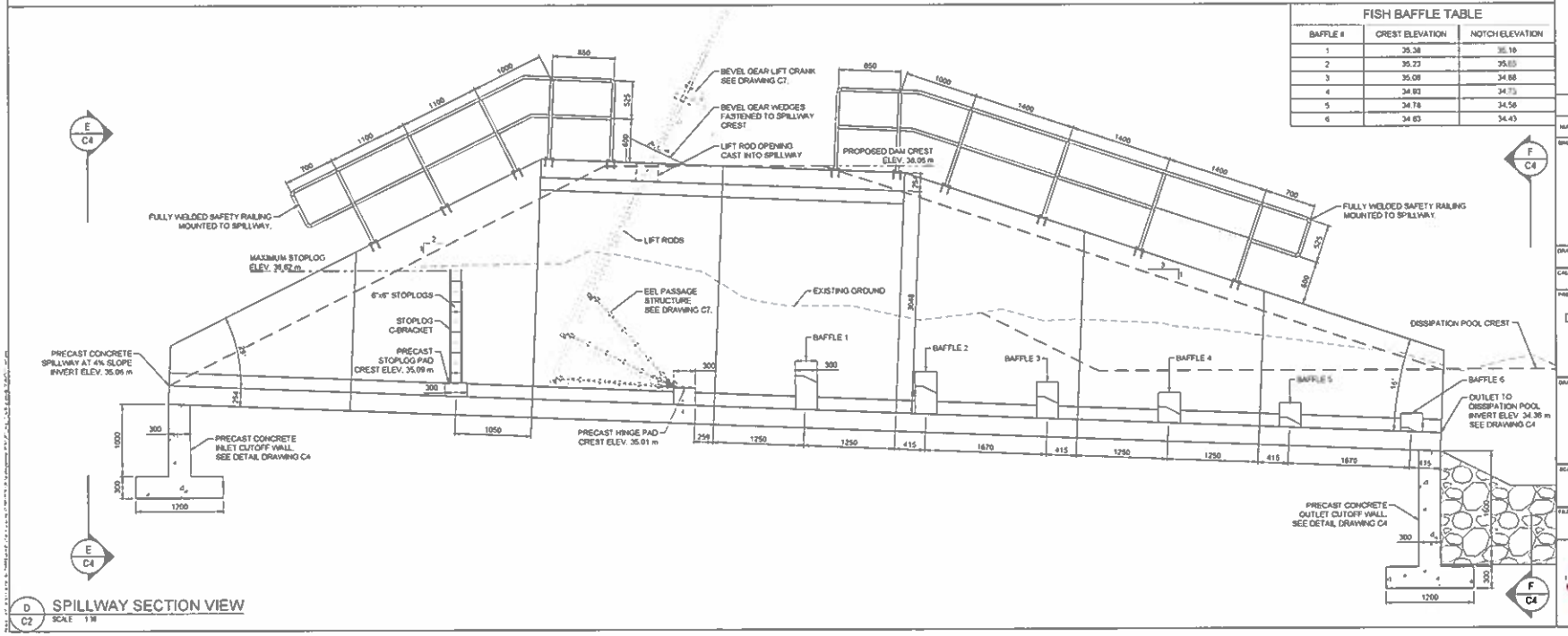
SPILLWAY PLAN VIEW
SCALE 1:30

SPILLWAY SECTION DETAILS

SECTION	WALL BEVEL	LENGTH (mm)	INVERT IN (m)	INVERT OUT (m)
1	29°	2500	35.06	34.96
2	29°	2500	34.96	34.86
3	N/A	2500	34.86	34.76
4	N/A	2500	34.76	34.66
5	16	2500	34.66	34.56
6	16	2500	34.56	34.46
7	16°	2500	34.46	34.36

FISH BAFFLE TABLE

BAFFLE #	CREST ELEVATION	NOTCH ELEVATION
1	35.38	35.18
2	35.23	35.03
3	35.08	34.88
4	34.93	34.73
5	34.78	34.58
6	34.63	34.43



D C2 SPILLWAY SECTION VIEW
SCALE 1:30

GENERAL NOTES

1) DATUM CGVD 2013.
2) PROJECTION NAD83 (CSRS) UTM ZONE 20N.
3) ALL UNITS ARE IN MILLIMETRES UNLESS OTHERWISE SPECIFIED.

NUMBER	ISSUE	DATE (YYYY/MM/DD)
0	ISSUED FOR TENDER	2021/07/23

ENGINEER'S STAMP

NOT FOR CONSTRUCTION

DRAWN BY	CHECKED BY
TLR	HA
CALCULATIONS BY	CHECKED BY
JP	HA

PROJECT

DARES LAKE DAM AND SPILLWAY UPGRADES AND EEL PASSAGE
LUNENBURG, NS

DRAWING

SPILLWAY PLAN AND SECTION VIEW

SCALE 1:30
0 1.0 2.0m

FILE NO.	SHEET NO.
101263.002	C3

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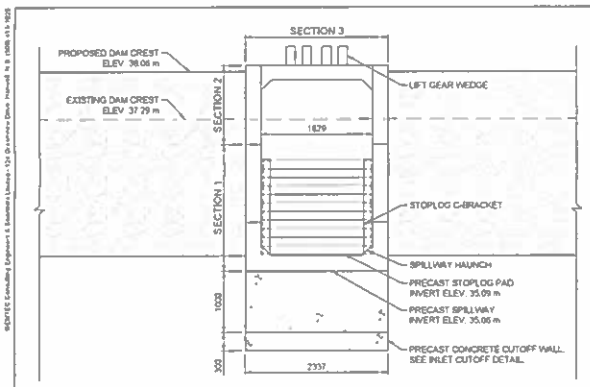
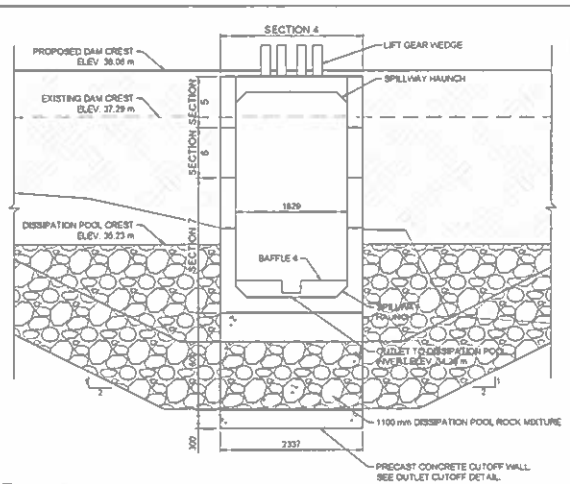
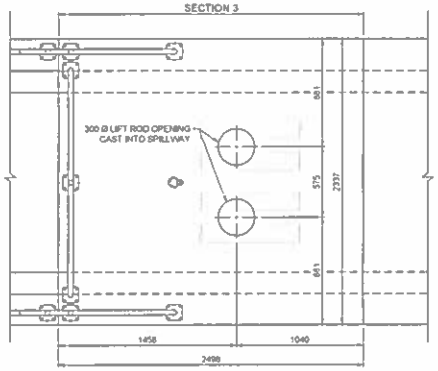


E C3 SPILLWAY UPSTREAM SECTION VIEW
SCALE 1:40



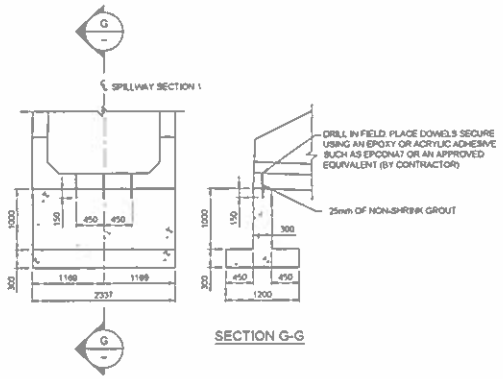
F C3 SPILLWAY DOWNSTREAM SECTION VIEW
SCALE 1:40



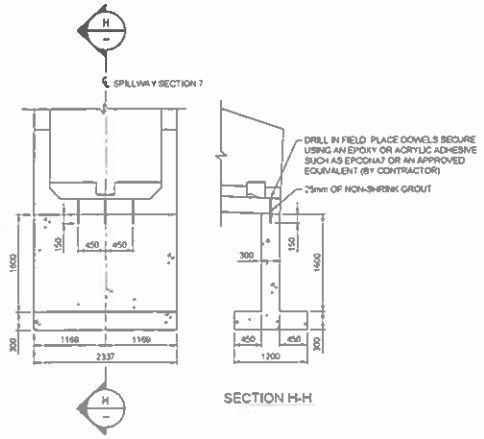
LIFT ROD OPENING DETAIL
SCALE 1:20

GENERAL NOTES

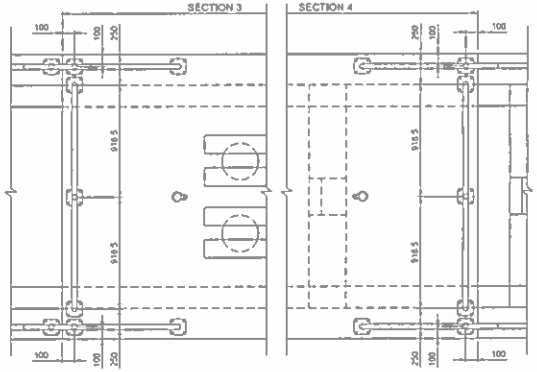
1) DATUM: CGVD 2013
2) PROJECTION: NAD83 (CSRS) UTM ZONE 20N
3) ALL UNITS ARE IN MILLIMETRES UNLESS OTHERWISE SPECIFIED.

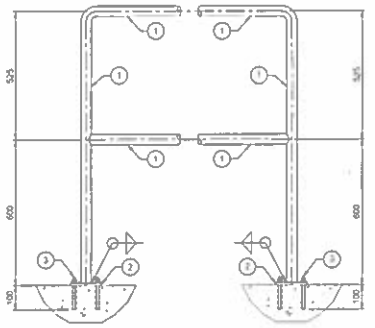


PRECAST CONCRETE INLET CUTOFF WALL DETAIL
SCALE 1:40



PRECAST CONCRETE OUTLET CUTOFF WALL DETAIL
SCALE 1:40





NOTES:
1. 42.2 mm OD x 6.3 mm THICK SS TUBING SCH 10S 304L SS TO ASTM A778 & A774.
2. 6.35 mm THICK SS MOUNTING PLATE 304L SS TO ASTM TO A240.
3. HILTI HIT-HY 200 ADHESIVE ANCHORING SYSTEM C/W 9.5 mm Ø HIT-Z-R SS ANCHOR ROD, DOUBLE SS WASHERS AND NUTS.
4. SAFETY RAILING PIPE AND MOUNTING PLATE 180 GRIT POLISHED AFTER FABRICATION

SAFETY RAILING LOCATION AND DETAILS
SCALE NTS

NUMBER	ISSUE	DATE (YYYY-MM-DD)
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CALCULATIONS BY	JP	CHECKED BY	HA

PROJECT

DARES LAKE DAM AND SPILLWAY UPGRADES AND EEL PASSAGE
LUNENBURG, NS

DRAWING

SPILLWAY SECTIONS AND DETAILS

SCALE

AS NOTED

FILE NO.	SHEET NO.
101263.002	C4

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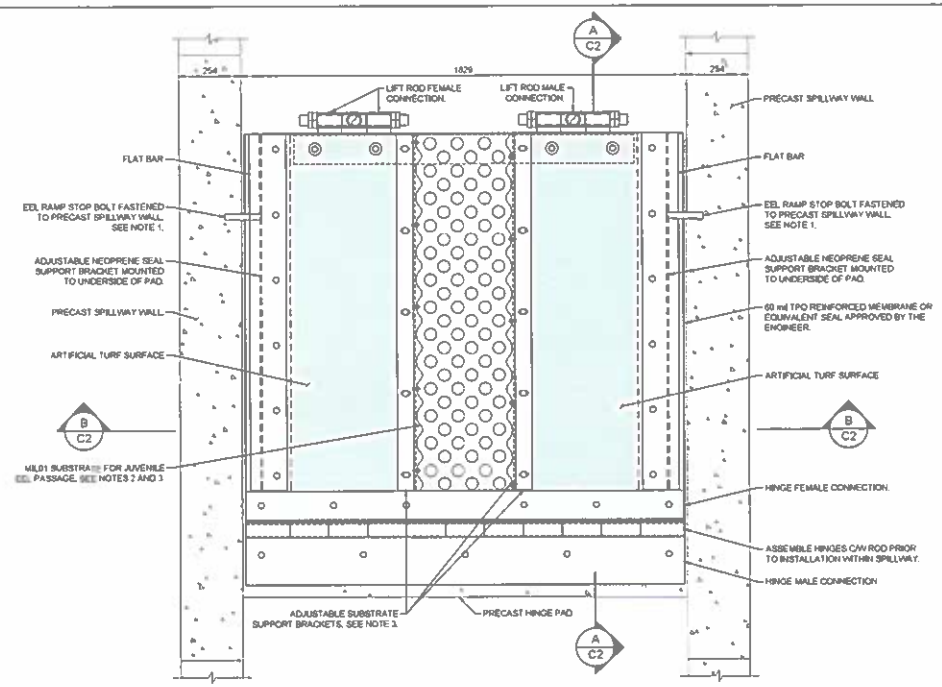
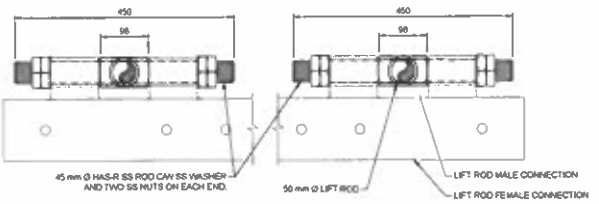
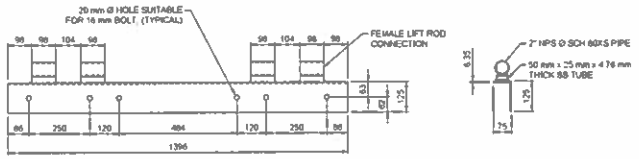


NOTE
1. FIELD FIT EEL RAMP STOP BOLTS TO LIMIT MAXIMUM EEL RAMP ELEV. TO 36.28m
2. FIELD FIT MIL01 SUBSTRATE TO FIT LENGTH OF PAD. CUT AND SMOOTH ALL ROUGH EDGES AS REQUIRED.
3. MIL01 SUBSTRATE TO BE ATTACHED TO THE ADJUSTABLE BRACKETS AT THE CLOSEST POINTS TO THE OUTER EDGES. FIELD FIT HOLE LOCATIONS TO SUIT.

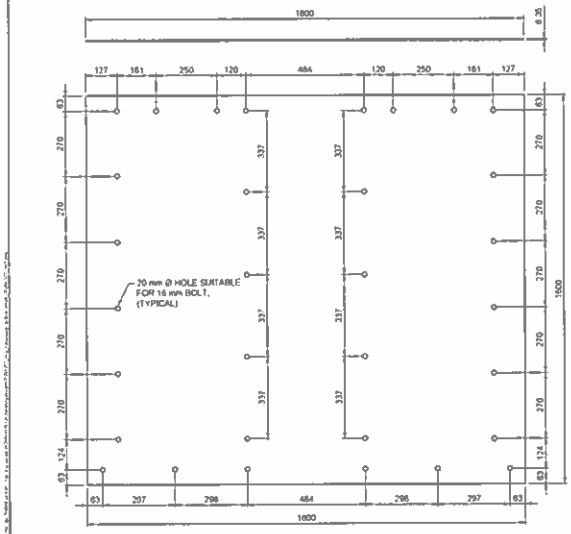
EEL PASSAGE STRUCTURE PLAN
SCALE 1:10



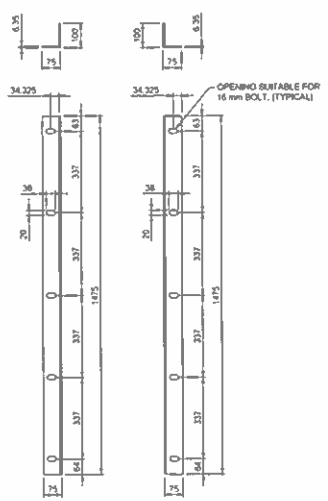
LIFT ROD MALE CONNECTION DETAIL
SCALE 1:5



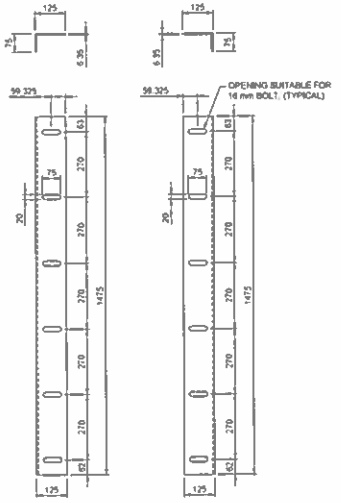
LIFT ROD FEMALE CONNECTION DETAIL
SCALE 1:10



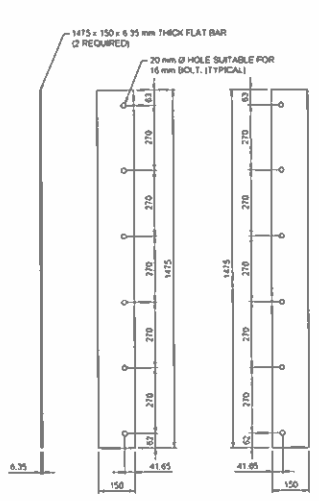
EEL RAMP PAD DETAIL
SCALE 1:10



ADJUSTABLE SUBSTRATE SUPPORT BRACKET
SCALE 1:10



ADJUSTABLE NEOPRENE SEAL SUPPORT BRACKET
SCALE 1:10



FLAT BAR DETAIL
SCALE 1:10

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PROJECT

DARES LAKE DAM AND SPILLWAY UPGRADES AND EEL PASSAGE
LUNENBURG, NS

DRAWING

EEL PASSAGE STRUCTURE PLAN AND DETAILS

SCALE

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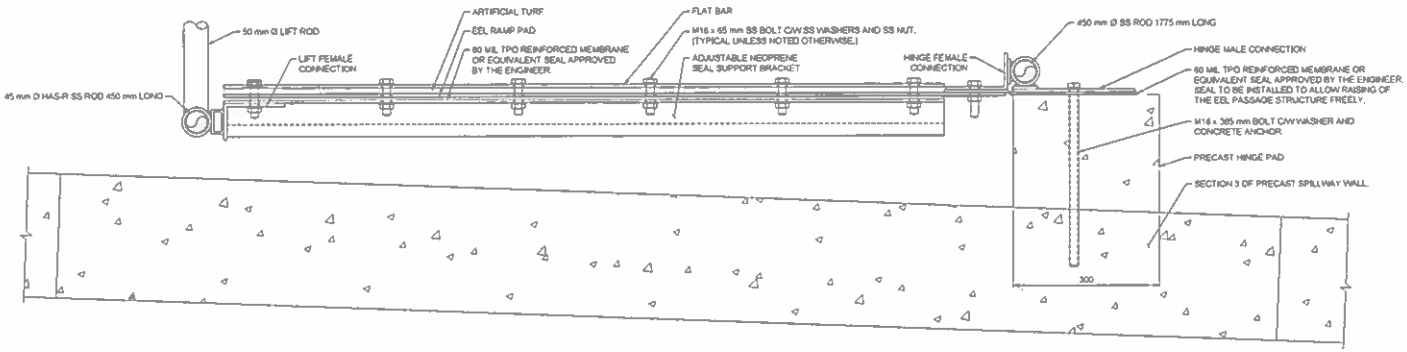
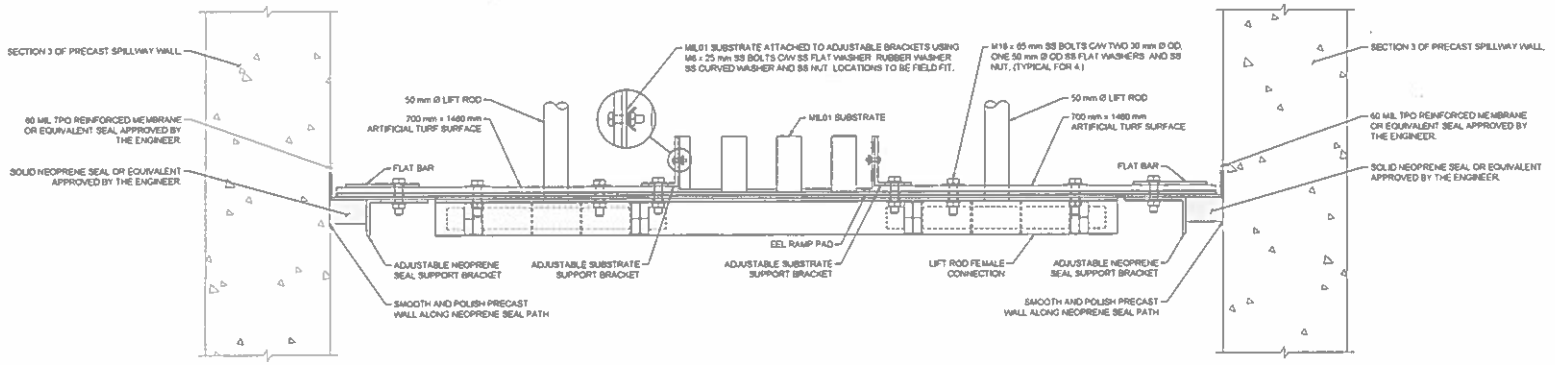
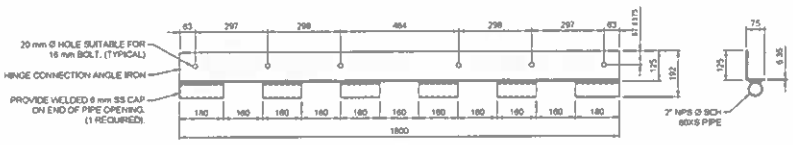


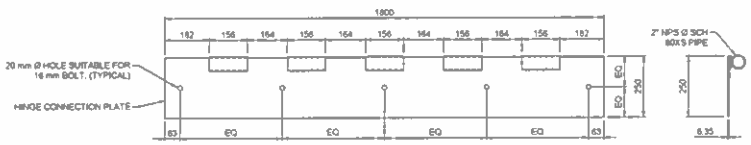
A C1 SECTION A-A
SCALE 1:5



B C1 SECTION B-B
SCALE 1:5



HINGE FEMALE CONNECTION DETAIL
SCALE 1:10



HINGE MALE CONNECTION DETAIL
SCALE 1:10

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CALCULATIONS BY: JP	CHECKED BY: HA

PROJECT

DARES LAKE DAM AND SPILLWAY UPGRADES AND EEL PASSAGE LUNENBURG, NS

DRAWING

EEL PASSAGE SECTIONS AND DETAILS

SCALE

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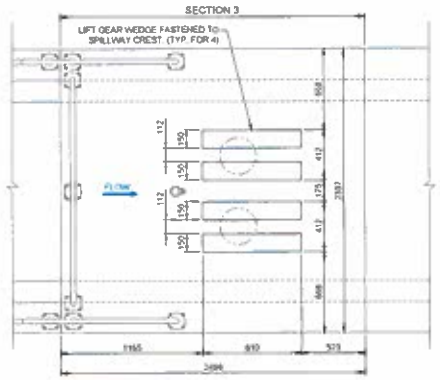
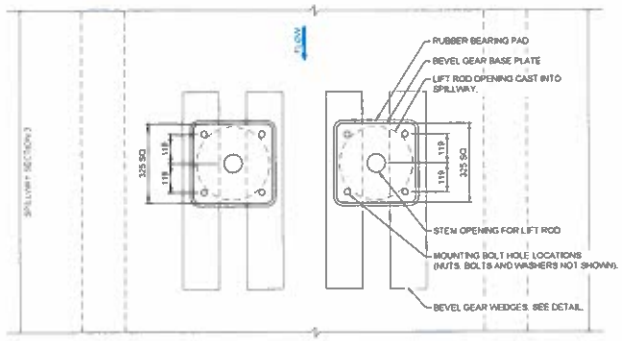
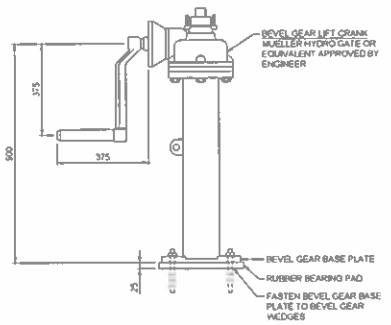


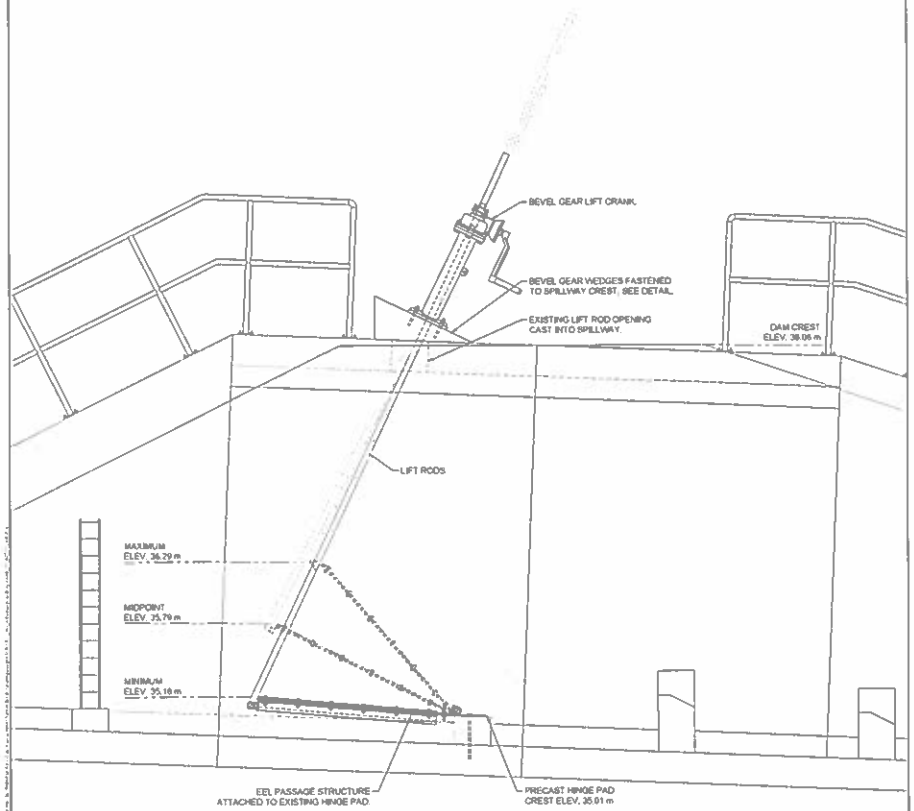
LIFT GEAR WEDGE DETAIL
SCALE 1:20



BEVEL GEAR BASE PLATE DETAIL
SCALE 1:10



BEVEL GEAR LIFT CRANK DETAIL
SCALE 1:10



SPILLWAY SECTION VIEW
SCALE 1:20

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PROJECT

DARES LAKE DAM AND SPILLWAY UPGRADES AND EEL PASSAGE
LUNENBURG, NS

DRAWING

MISCELLANEOUS DETAILS

SCALE

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