

Canada Parks Agency
REHABILITATION LACHINE CANAL WALLS
CROWNING WALL REPAIRS AND REPLACEMENT
(SECTORS I8 & I9 – Basin N°4)
Project N° CLAC-1455-05
Addendum n° 01

THIS ADDENDUM COMPLETES, MODIFIES OR ELIMINATES CERTAIN ELEMENTS OF THE TENDER DOCUMENTS, WHICH THE ADDENDUM REFERS TO. IT IS AN INTEGRAL PART OF THE TENDER DOCUMENTS.

MODIFICATIONS ON PLANS AND SPECIFICATIONS

The current precisions are provided, following questions received from contractors during the site visit, and other written questions received.

1. SA06 WORK DURATION

1.1 Replace the article Sa06 work duration by the following:

1.2 SA06 Work duration

Contractor must perform and complete work at the latest 22 weeks after reception of award letter. Construction holidays, from July 23, 2017 to August 5, 2017, are excluded from the work duration.

2. PLANS

2.1 Modifications on plans, sheet 01 is cancelled and replaced by sheet 01 revision 01:

Added to the list of drawings and modification of the total page number of the drawings. See plans in annex. of this addenda

2.2 Modifications on plans, Adding sheets 27 à 32 - Annex :

- Sheets 27 à 29 Addition of 3D survey of various sectors. See plans in annex of this addenda
- Sheets 30 à 32 Addition of the bathymetry of the Canal-de-Lachine. See plan in annex of this addenda.

2.3 General modifications of the project number (894-05 replace by 1455-05):

For all plans, project number 894-05 will be replaced by 1455-05 on construction documents.

2.4 Modifications of title «repair» on plans:

For all plans, « Type 2 repair » will be replaced by « Type 2 Replacement » on construction plans.

3. SPECIFICATIONS

3.1 Adding article 1.2.2 of section 0 10 10 Archaeological monitoring:

Add this article, « *Consider that an archaeologist will be present at the site.* »

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3.2 Adding article 1.3.1.1.11 of section 01 11 00 Summary of work :

Add this article, « *1.3.1.1.11 A navigation corridor will have to be put in place on the encroachment line in the canal (ref plan 8#24) Contractor must install navigation buoy at the end of each work zone and an additional on in the middle.*

The navigation buoys must be all green on the port (left) side when moving upstream direction and red on the starboard (right) side when moving upstream direction. In addition to the navigation buoys, security buoys (yellow) must be put in place to maintain a cable up flow. Installation of buoys must be in accordance with Transport Canada regulation. »

3.3 Modifications of article 1.7.1.1 of section 01 11 00 Summary of work:

Replace article 1.7.1.1 « *The works under this contract including planning of banks, lands and paths used by the contractor must be completed 22 weeks after the receipt of the award letter.*

The final demobilization must be completed ten (10) opening day after the acceptance by the owner of the declaration of substantial completion of works. »

By the following, « *The works under this contract including planning of banks, lands and paths used by the contractor must be completed 22 weeks after the receipt of the award letter. Construction holidays, from July 23, 2017 to August 5, 2017, are excluded from the work duration.*

The final demobilization must be completed ten (10) opening day after the acceptance by the owner of the declaration of substantial completion of works. »

3.4 Adding article 1.9.8 of section 01 11 00 Summary of work:

Add this article, « *Navigation for construction purpose must be restrained to the encroachment specify on plan 8. If the contractors need to use the canal for occasional transport purposes, a specific request and procedure of implementation will need to be address for approval. All transport request within the canal need to respect Transport Canada norms. »*

3.5 Modifications of article 2.1.1.2.3 of section 01 29 00 payment procedures:

Replace article 2.1.1.2.3 « *Access roads including the necessary deforestation, clearing-up, removal of scrub, vines, dead wood, trees and shrub whose trunk diameter is less than 50 mm (measured from the diameter at chest height), sanitary facilities, site fencing, warehouse, scaffolding, site signs and maintenance, in accordance with the requirements of the specifications and drawings, and as directed by the Government Representative. »*

By the following, « *Access roads including the necessary deforestation, clearing-up, removal of scrub, vines, dead wood, trees and shrub whose trunk diameter is less than 50 mm (measured from the diameter at chest height), removal of all scrub at the junction of the crowning walls and seat, sanitary facilities, site fencing, warehouse,*

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scaffolding, site signs and maintenance, in accordance with the requirements of the specifications and drawings, and as directed by the Government Representative. »

3.6 Precision of article 2.1.6 of section 01 29 00 payment procedures:

The guardrail must be removed, completely repainted, and put back in place. The rails are made of galvanised steel and the post are made of cast-iron. The paint does not contain lead.

3.7 Retirement of article 2.1.7 of section 01 29 00 payment procedures:

Retirement of article « *Item 1.7 - Removal and Replacement of 1.8 m mesh fence with support bar (posts at 2.0 m c / c)* »

3.8 Modifications of article 2.1.8 of section 01 29 00 payment procedures:

Replace article « *1.8 Posts 1.8 - Platforms and Access System*
.1 Payment item 1.8 of the Schedule of Prices is priced per linear meter (m. Lin.) of wall intervention for the supply, installation and removal of the access platforms and system in accordance with the requirements of plans and specifications. The unit price for the gateway item (in linear meter) includes the equivalent of the intervention length, regardless of the number of vertical displacements required. Only the equivalent of the intervention length will be paid. If the Contractor puts two platforms at two different heights on the same repair section of 1 m, only one platform of 1 m will be paid and not 2 m. »

By the following, « *.7 Posts 1.7 - Platforms and Access System*
.1 Payment item 1.7 of the Schedule of Prices is priced per linear meter (m. Lin.) of wall intervention for the supply, installation and removal of the access platforms and system in accordance with the requirements of plans and specifications. The unit price for the gateway item (in linear meter) includes the equivalent of the intervention length, regardless of the number of vertical displacements required. Only the equivalent of the intervention length will be paid. If the Contractor puts two platforms at two different heights on the same repair section of 1 m, only one platform of 1 m will be paid and not 2 m. »

3.9 Modifications of article 2.2.10 of section 01 29 00 payment procedures:

Replace article « *.10 Item 2.10 - Concrete for support pad (Concrete 1 MPa)*
.1 The price at item 2.10 of the Schedule of Prices is priced per cubic meter (m³) for the backfill concrete in accordance with the requirements of the plans and specifications and the instructions of the Government Representative.
.2 Price includes, but is not limited to, the following: (...) »,

By the following, « *.10 Item 2.10 - Concrete for support pad (Concrete 1 MPa)*

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- .1 The price at item 2.10 of the Schedule of Prices is priced per cubic meter (m³) for the backfill concrete in accordance with the requirements of the plans and specifications and the instructions of the Government Representative.*
- .2 The concrete for the slab need to have a minimum resistance of 1 Mpa. There is no specific type for this type of mix. For implementation purpose the mix should be able***
- .3 to be put in place by a concrete pump truck Price includes, but is not limited to, the following: (...) »*

3.10 Modifications of article 2.2.11 of section 01 29 00 payment procedures:

- Replace article 2.2.11 « *.11 Item 2.11 - Perforated drain 150 mm and geotextile, PVC (type 1) or PVC COEX (type 1) or PE (type 2), 180 kPa min.*
- .1 The price at item 2.11 of the Schedule of Prices is priced per linear meter (m. Lin.) for the perforated drain in accordance with the requirements of the plans and specifications.*
 - .2 Price includes, but is not limited to, the following: (...) »,*

- By the following « *.11 Item 2.11 - Perforated drain 200 mm and geotextile, PVC (type 1) or PVC COEX (type 1) or PE (type 2), 180 kPa min.*
- .1 The price at item 2.11 of the Schedule of Prices is priced per linear meter (m. Lin.) for the perforated drain in accordance with the requirements of the plans and specifications.*
 - .2 The drainage system to be place behind the wall must be 200mm.***
 - .3 Price includes, but is not limited to, the following: (...) ».*

3.11 Modifications of article 2.3.1 of section 01 29 00 payment procedures:

- Replace article 2.3.1 « *.1 Item 3.1 - Cast -in-Place Concrete; Type XIV-R or XIV-S (self-consolidating)*
- .1 The price at item 3.1 of the Schedule of Prices is priced per cubic meter (m³) of wall concrete, the quantities are calculated according to the actual quantities put in place, in accordance with the requirements of the plans and specifications.*
 - .2 Price includes, but is not limited to, the following: (...) ».*

- By the following « *.1 Item 3.1 - Cast -in-Place Concrete; Type XIV-R or XIV-S (self-consolidating)*
- .1 The price at item 3.1 of the Schedule of Prices is priced per cubic meter (m³) of wall concrete, the quantities are calculated according to the actual quantities put in place, in accordance with the requirements of the plans and specifications.*
 - .2 Repairs of type 2A are repairs carried out continuously over the entire length of the sections covered by this type of repairs.***
 - .3 Price includes, but is not limited to, the following:*
 - .1 The preparation, presentation and correction, if required, of the Work Plan for the demolition of the wall;*

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- .2 Mobilization of labor, tools and equipment required for the execution of the work;*
- .3 The demolition of defective and sound concrete, as directed by the Government Representative;*
- .4 The 300 mm excavation at the back of the wall, if applicable;*
- .5 Loading, transport and storage of excavated material;*
- .6 Loading, transport and installation of the embankment with the excavated material;*
- .7 Saw lines required;*
- .8 The demolition of the crowning wall type 2A***
- .9 Cleaning of reinforcing steel to be retained;*
- .10 Cleaning and surface preparation,*
- .11 Supply, installation and dismantling of formwork;*
- .12 Supply and installation of chamfers;*
- .13 The supply and application of mold release agent;*
- .14 Supply and installation of formwork ties;*
- .15 The supply, transport, handling and placing of the steel components incorporated in the concrete, as shown in the drawings;*
- .16 Supply, installation, vibration, finishing, wet curing of concrete;*
- .17 The collection of demolition materials, their disposal outside the building site and their treatment in accordance with the requirements of Section 01 74 21, Construction/Demolition Waste Management and Disposal;*
- .18 Any incidental expenses.»*

3.12 Modifications of article 2.3.6 of section 01 29 00 payment procedures:

Replace article 2.3.6 « Posts 3.6 - Hydraulic Seeding

- .1 The price at item 3.6 of the Schedule of Prices is priced per square meter (m²) for hydraulic seeding for one meter of width, measure the maintenance of areas seeded during the guarantee period in square meters, in accordance with the requirements of plans and specifications.*
- .2 Measure hydraulic seeding in square meters of seeded area for each mix.*
- .3 Price includes, but is not limited to, the following:*
 - .1 The supply, implementation of materials in accordance with the plans and directives of the Government Representative;*
 - .2 Recovery of sodding of portions of covered surfaces by less than 75% shoot height 150 mm*
 - .3 Areas where the mixture will be incorporated into the existing lawn will not be considered for payment purposes.*
 - .4 Cleaning of premises;*
 - .5 Any incidental expense*
- .4 It is noted that only the area above the excavated trench is included in this payment item. Costs related to all other areas damaged by the*

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work are considered miscellaneous and are included in the reclamation price. »

By the following « .6 Posts 3.6 – **Laying Sod**

*.1 The price at item 3.6 of the Schedule of Prices is priced per square meter (m²) for **laying sod** for one meter of width, measure the maintenance of areas seeded during the guarantee period in square meters, in accordance with the requirements of plans and specifications.*

.2 Price includes, but is not limited to, the following:

.1 The supply, implementation of materials in accordance with the plans and directives of the Government Representative;

.2 Recovery of sodding of portions of covered surfaces by less than 75% shoot height 150 mm

.3 Areas where the mixture will be incorporated into the existing lawn will not be considered for payment purposes.

.4 Cleaning of premises;

.5 Any incidental expense

.3 It is noted that only the area above the excavated trench is included in this payment item. Costs related to all other areas damaged by the work are considered miscellaneous and are included in the reclamation price. »

3.13 Adding article 2.1.3.5 of the section 03 10 00 Concrete forming and accessories

Add this article, « *For repair of the crowning walls workform ties are allowed.* »

3.14 Modifications of the article 3.6.8 of section 31 23 33 Excavating, trenching and backfilling :

Replace the article 3.6.8: « Materials deemed unsuitable by the Department's laboratory will be replaced with Type 2 borrowing materials. »

By the following: « Materials deemed unsuitable by the Department's laboratory will be replaced with Type 1 Mg-20 borrowing materials. »

3.15 Adding specifications section 32 92 23 Sodding:

See section in annex of this addenda

3.16 Adding specifications annex II – PAC property plan :

See section in annex of this addenda

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4. TENDER FORM

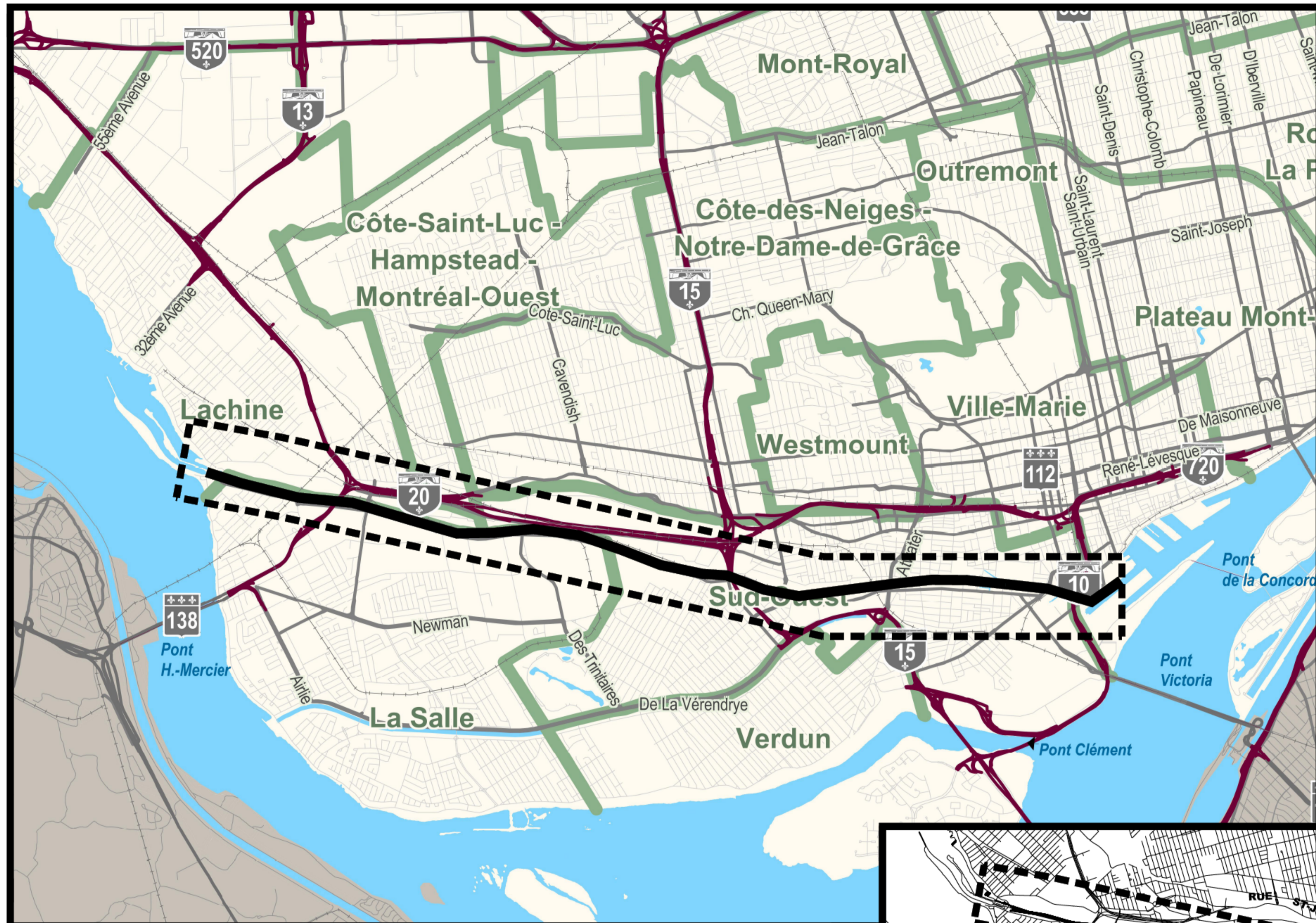
4.1 Replacement of tender form:

The tender form is cancelled and replaced by the tender form revision 01. See tender on Annex.

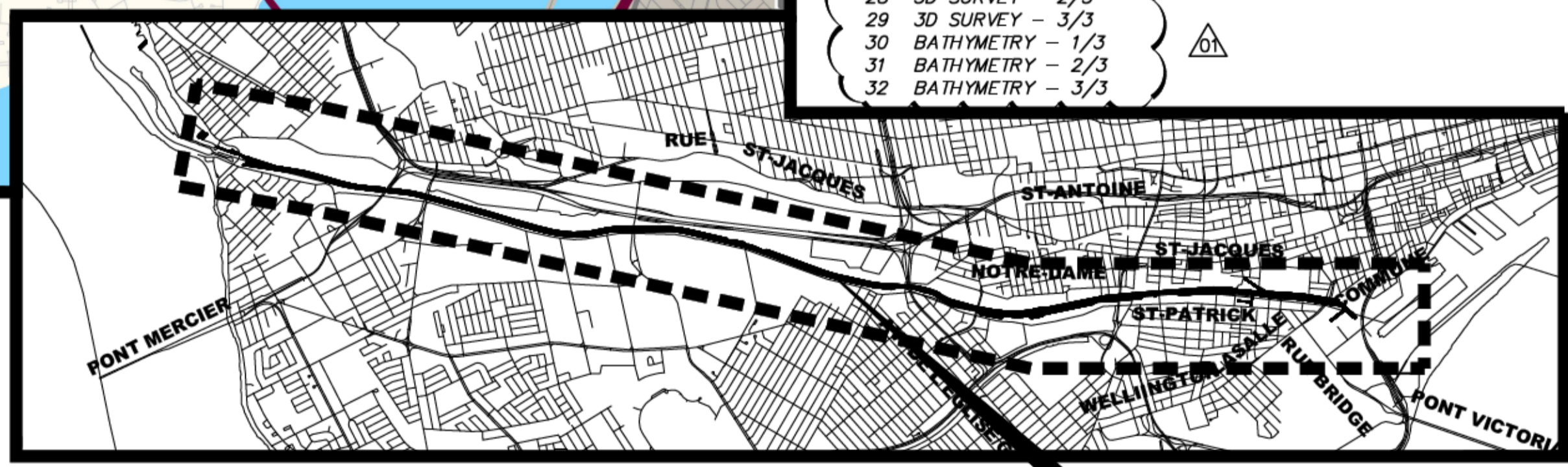
- Modification item 2.11 « *Drain perforé 150 mm et géotextile, PCV (type 1) ou PCV COEX (type 1) ou PE (type 2), 180 kPa min. / Perforated Drain (200 mm) and Geotextile, PCV (type 1) or PCV COEX (type 1) or PE (type 2), 180 kPa min.* », by the following « *Drain perforé **200 mm** et géotextile, PCV (type 1) ou PCV COEX (type 1) ou PE (type 2), 180 kPa min. / Perforated Drain (200 mm) and Geotextile, PCV (type 1) or PCV COEX (type 1) or PE (type 2), 180 kPa min.*»
- Modification item 3.6 « *Ensemencement hydraulique / Hydroseeding* » by the following « ***Engazonnement par plaques / Laying Sod*** »

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Plans



PLAN DE LOCALISATION / LOCATION PLAN



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- 16 DÉTAILS TYPIQUES - RÉPARATION ESCALIER
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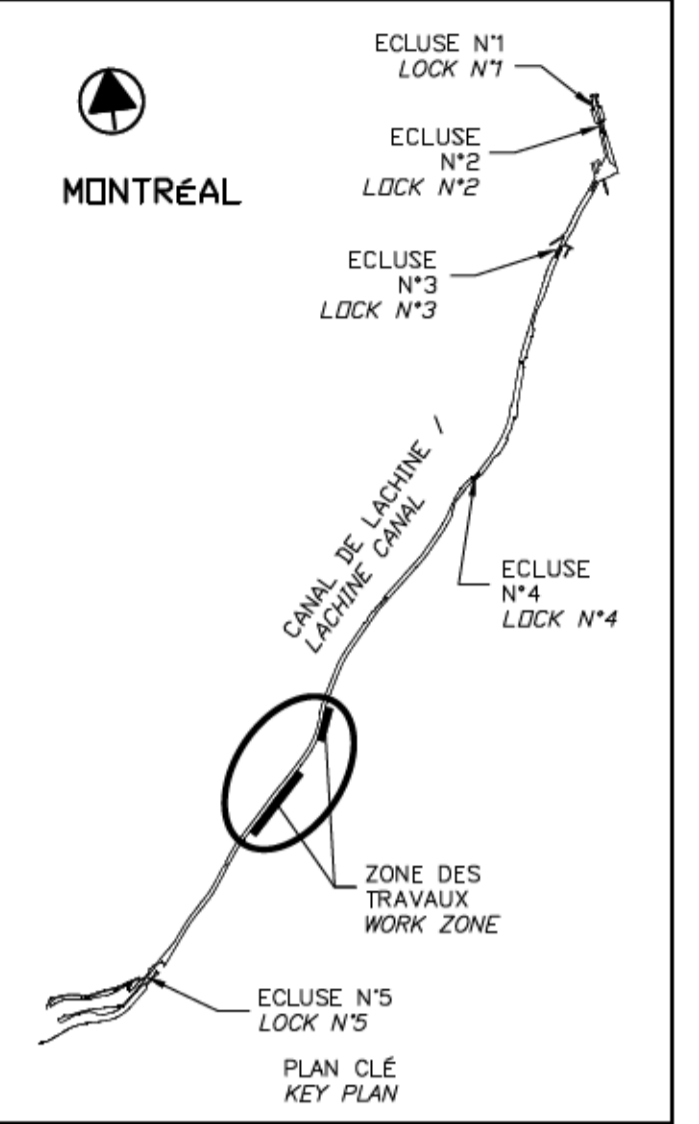
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- 32 BATHYMETRY - 3/3



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SCEAUX SEALS

01	EMIS POUR ADDENDA #1 ISSUED FOR ADDENDUM #1	2017-06-29
00	EMIS POUR SOUMISSION ISSUED FOR SUBMISSION	2017-06-09
révisions revisions		date

Projet
**PARCS CANADA
 PARKS CANADA**
 RÉPARATION ET REMPLACEMENT
 DE MURS DE COURONNEMENT
 (SECTEURS I.8 ET I.9 - BASSIN No 4)
 REPAIR AND REPLACEMENT
 OF THE CROWNING WALLS
 (AREAS I.8 AND I.9 - REACH No 4)

Dessin
**STRUCTURE
 STRUCTURE**
 PAGE FRONTISPICE
 FRONT PAGE

Conçu par Martin Champagne, ing.	2017-06-09	Designed by Date
Dessiné par Caroline Plouffe, Gabriel Blanchette	2017-06-09	Drawn by Date
Approuvé par Jérôme Aubin, ing.	2017-06-09	Approved by Date
Soumission Dominic Pierre, ing. Administrateur de projets APC	2017	Tender 2017 PCA Project Manager
No de projet 1455-05	Project number 1455-05	No de contrat Contract number
Nom du fichier CLAC-(1455-05)	File name CLAC-(1455-05)	No de classement File no
No de plan ou dessin CL-32-121.01	File name CL-32-121.01	No feuillet Drawing no 01/32

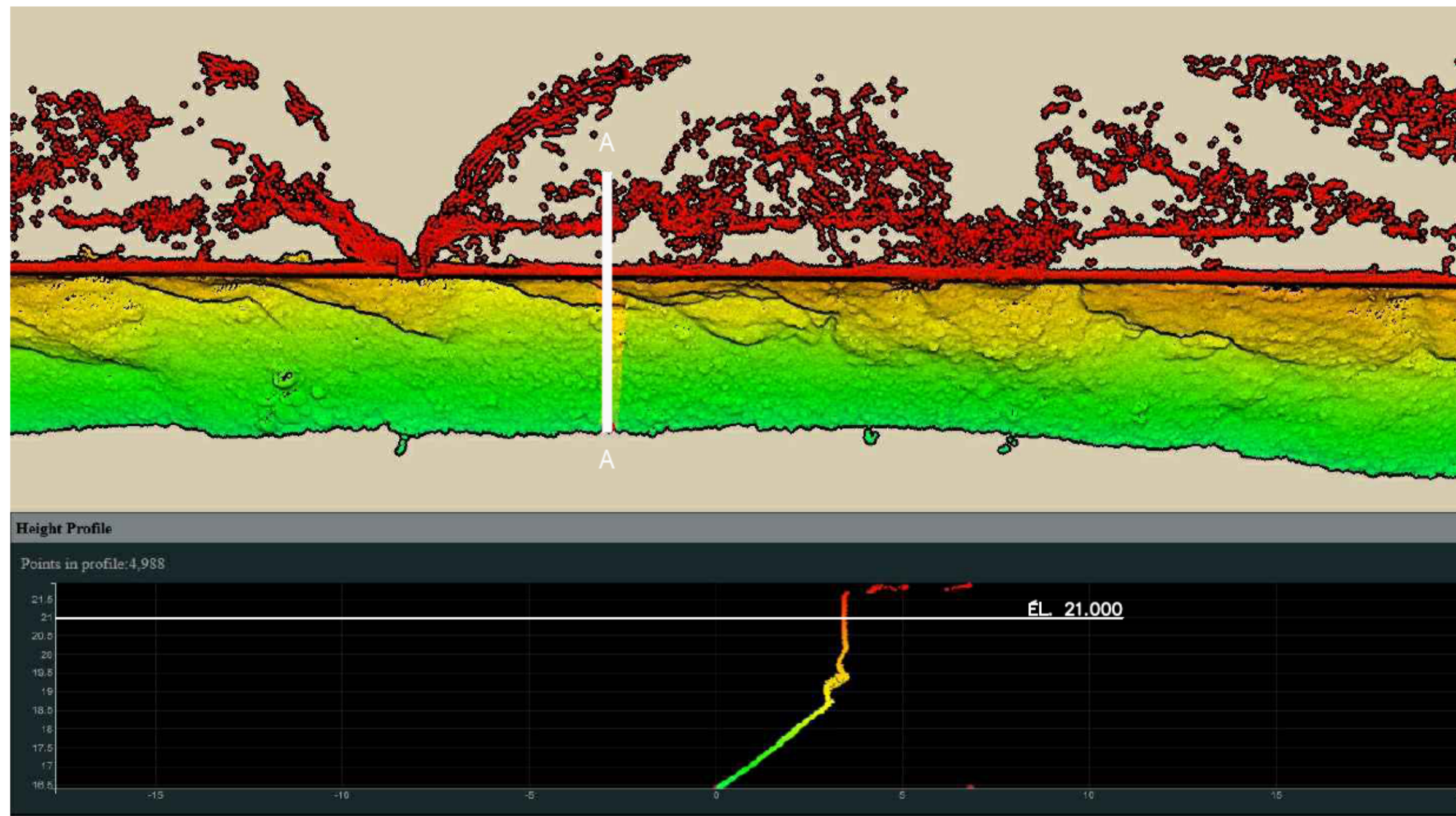
RÉPARATION ET REMPLACEMENT DE MURS DE COURONNEMENT (SECTEURS I.8 ET I.9 - BASSIN No 4)

REPAIR AND REPLACEMENT OF THE CROWNING WALLS (AREAS I.8 AND I.9 - REACH No 4)

CANAL DE LACHINE
 LACHINE CANAL

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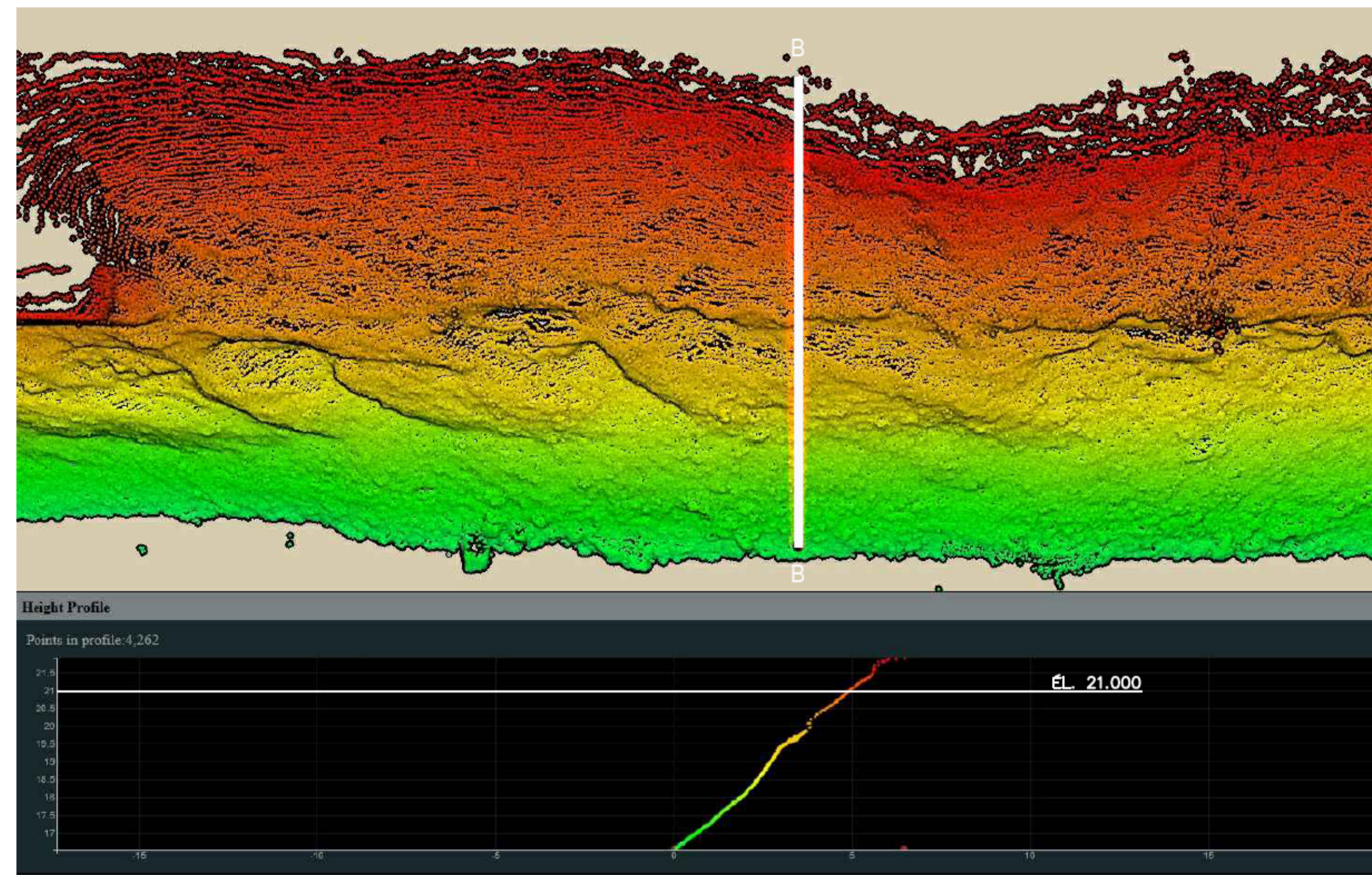
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B4-S-32-B

VUE EN PLAN ET COUPE / PLAN VIEW AND SECTION **(A)**

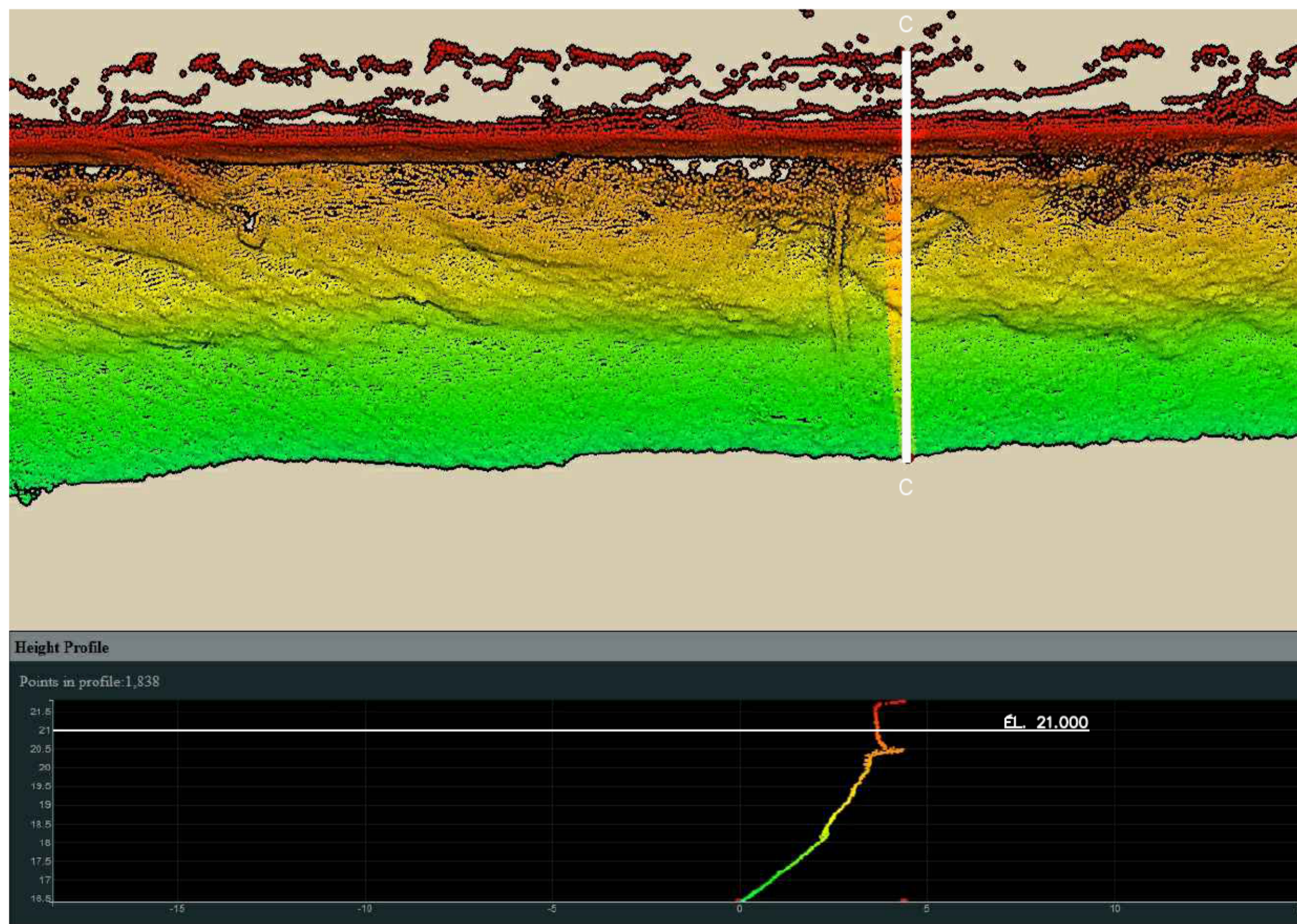
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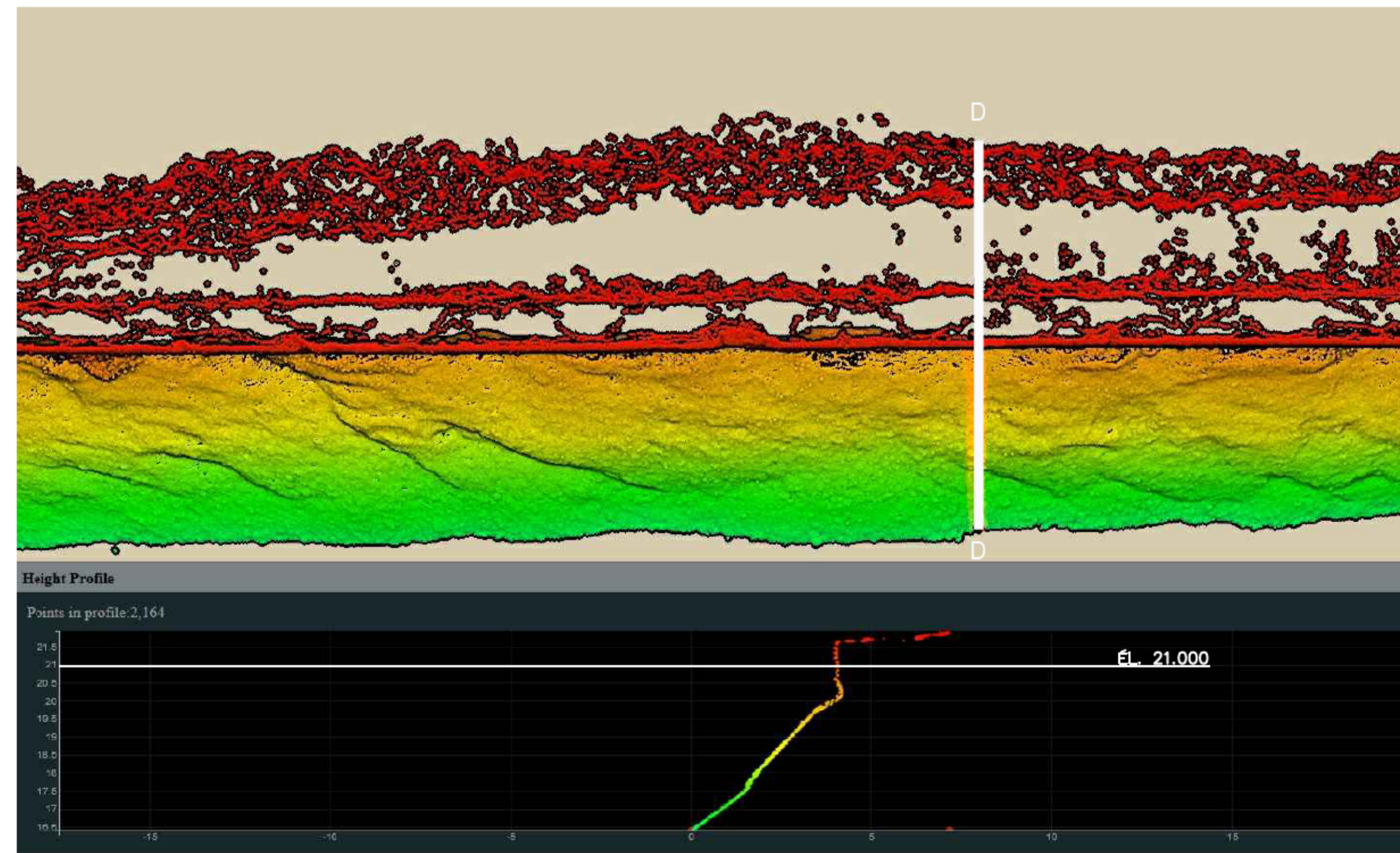
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B4-S-31-A

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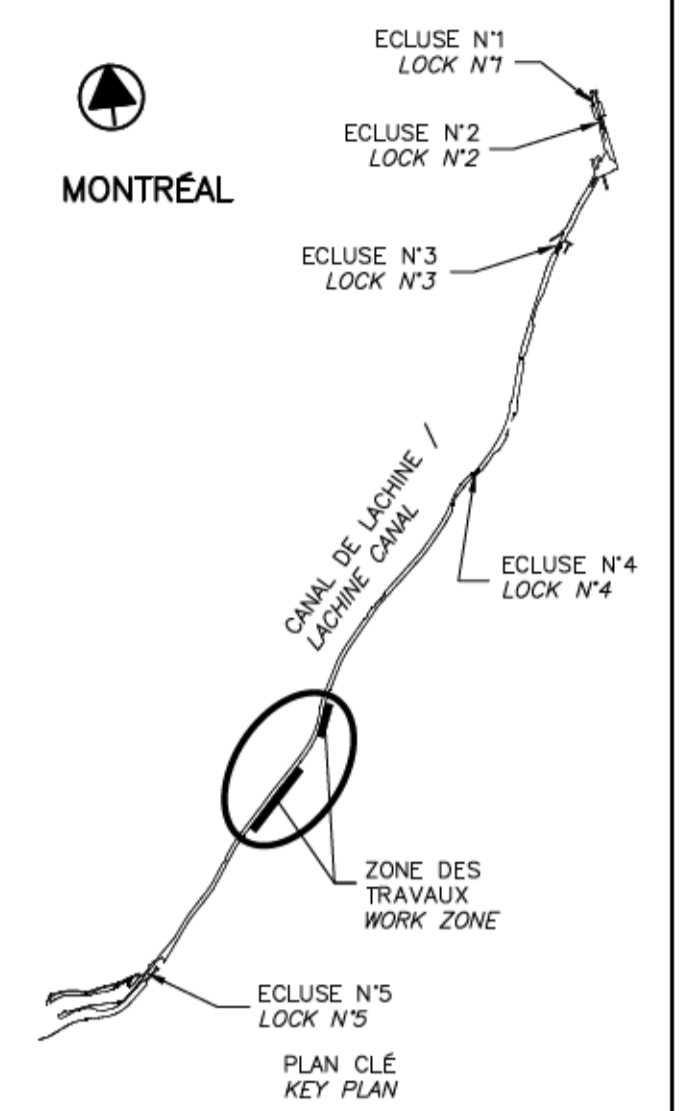
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VUE EN PLAN ET COUPE / PLAN VIEW AND SECTION **(D)**

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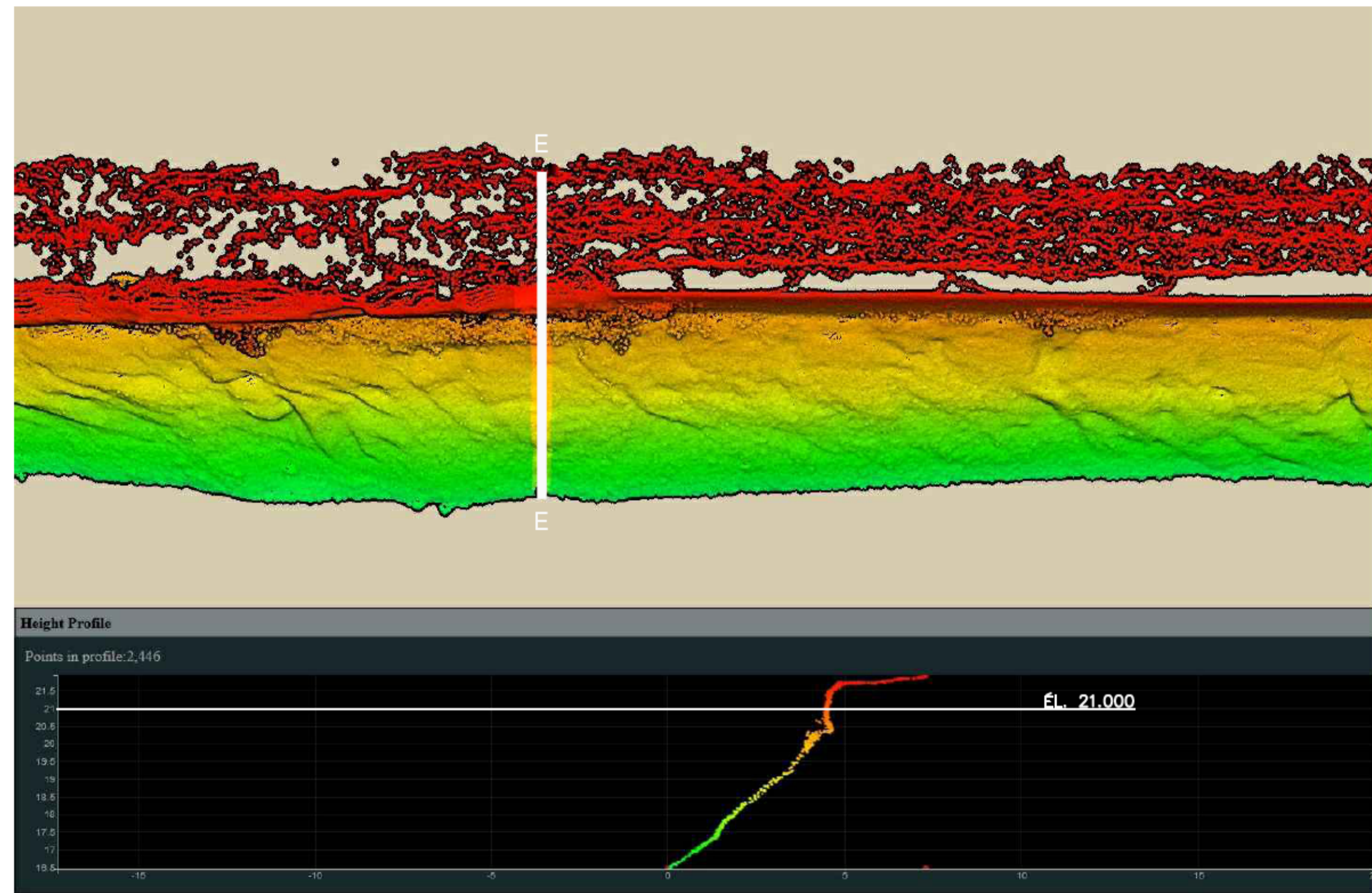
Projet **PARCS CANADA
PARKS CANADA**
 RÉPARATION ET REMPLACEMENT
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 (SECTEURS 1.8 ET 1.9 - BASSIN No 4)
 REPAIR AND REPLACEMENT
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 (AREAS 1.8 AND 1.9 - REACH No 4)

Dessin **ANNEXE
ANNEX**
 RELEVÉ 3D - 1/3
 3D SURVEY - 1/3

Conçu par	Designed by
Dessiné par	Drawn by
Approuvé par	Approved by
Soumission	Tender
Administrateur de projets APC	PCA Project Manager
No de projet 1455-05	No de contrat Contract number
APC	PCA
Nom du fichier CLAC-(1455-05)	No de classement File no
No de plan ou dessin CL-32-121.27	No feuillet Drawing no 27 / 32

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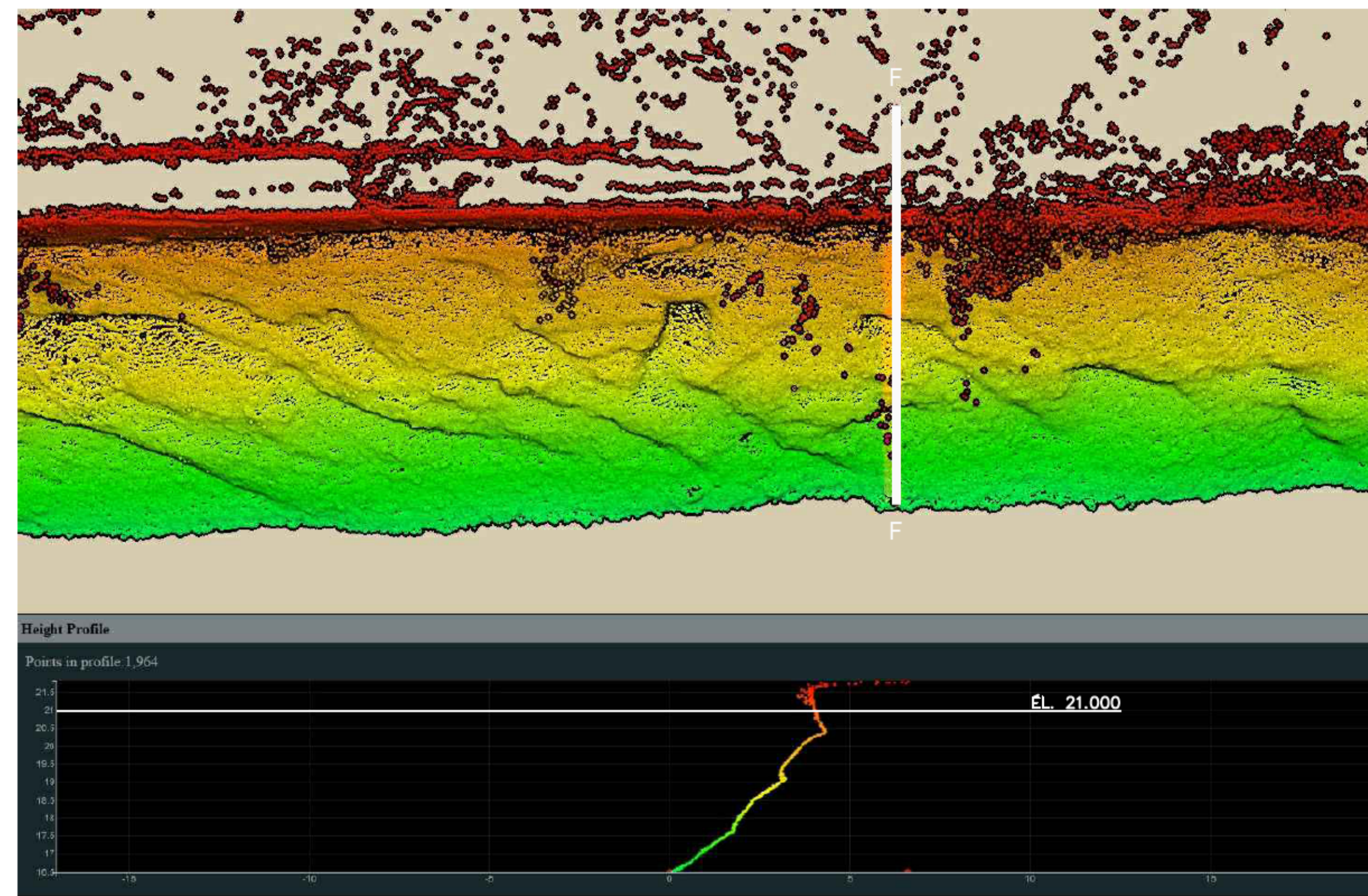
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VUE EN PLAN ET COUPE / PLAN VIEW AND SECTION **E**

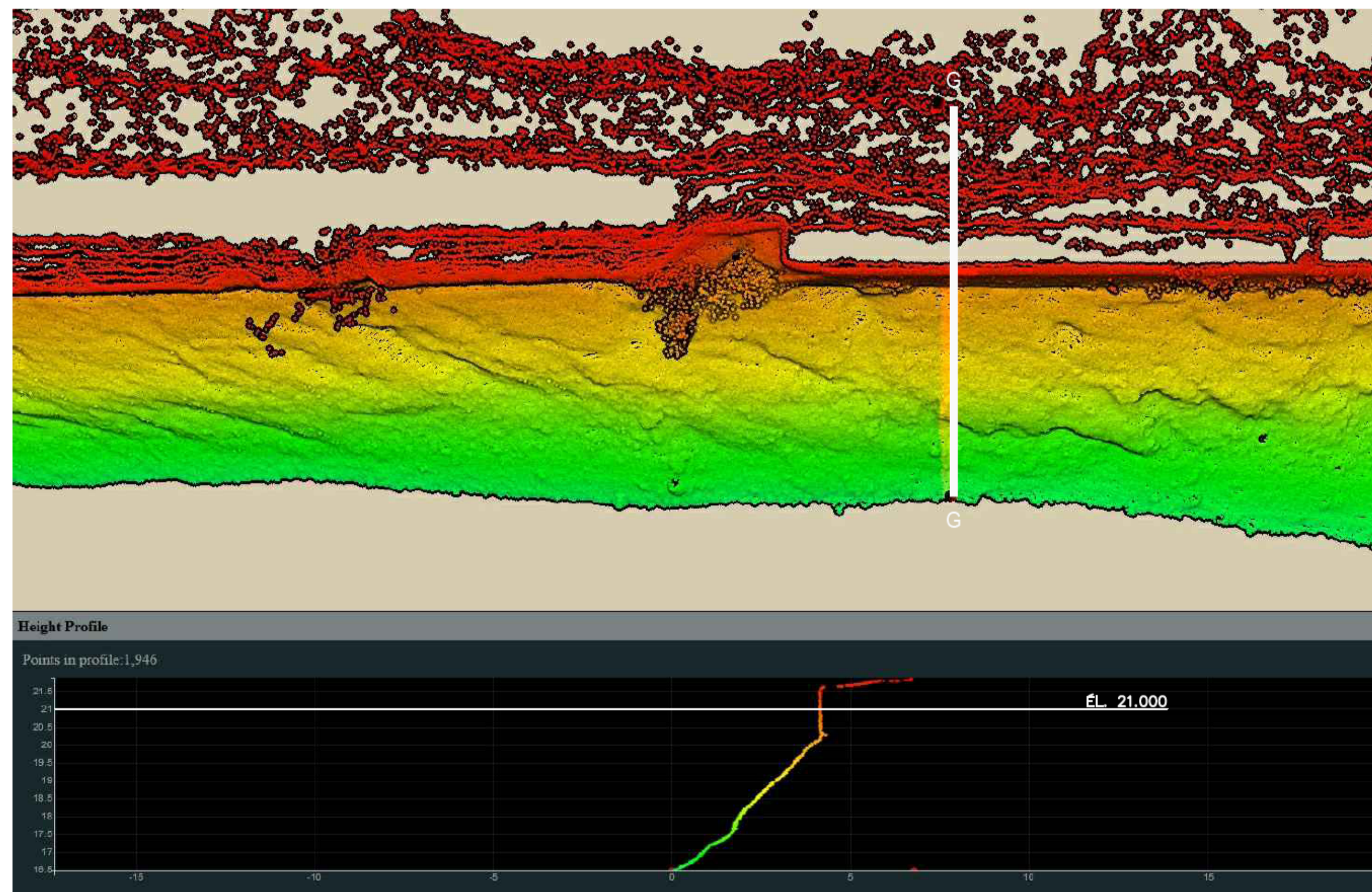
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B4-S-22-A

VUE EN PLAN ET COUPE / PLAN VIEW AND SECTION **F**

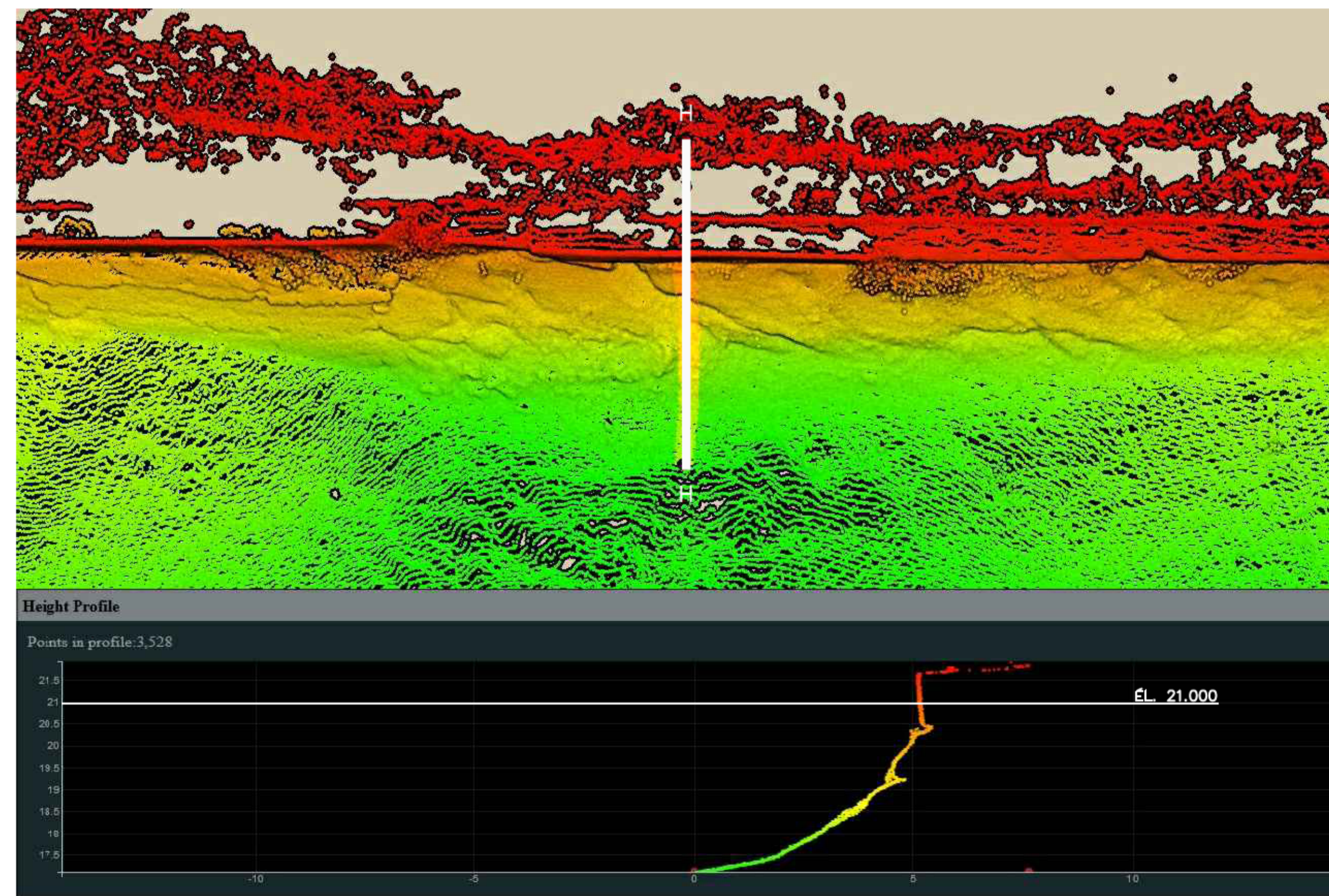
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B4-S-21-C

VUE EN PLAN ET COUPE / PLAN VIEW AND SECTION **G**

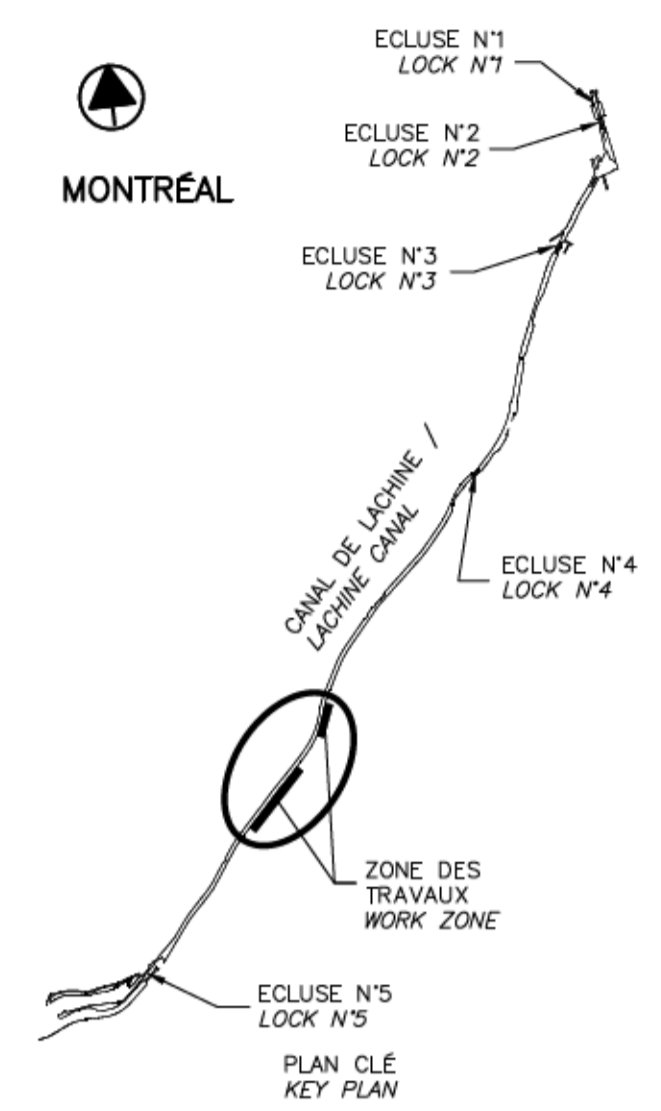
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B4-S-20-D

VUE EN PLAN ET COUPE / PLAN VIEW AND SECTION **H**

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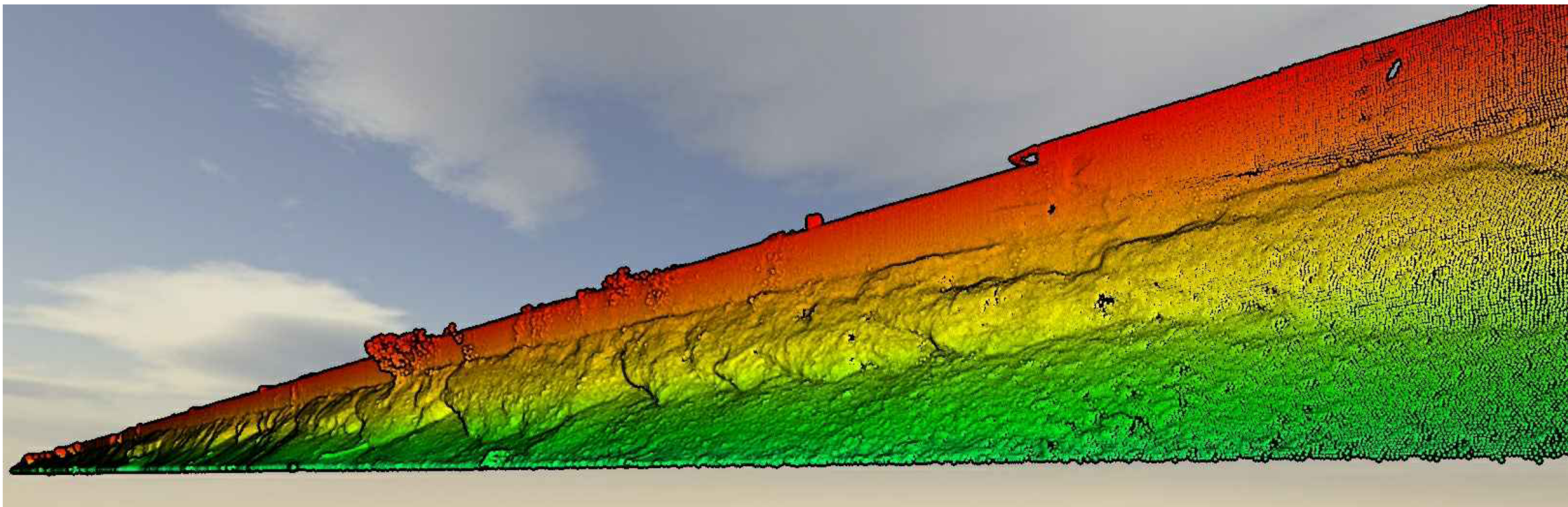
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 REPAIR AND REPLACEMENT
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 (AREAS 1.8 AND 1.9 - REACH No 4)


Dessin **ANNEXE
ANNEX**
 Relevé 3D - 2/3
 3D SURVEY - 2/3

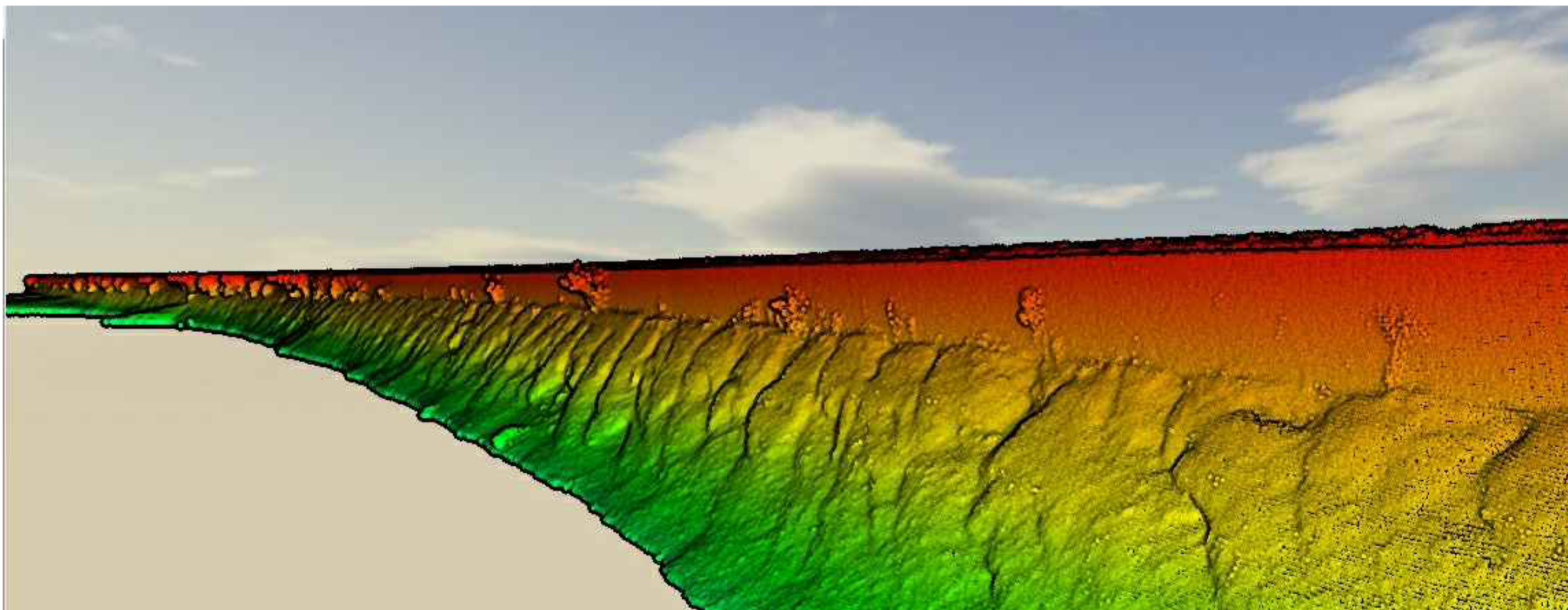
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Approuvé par	Approved by	
Soumission	Tender	
Administrateur de projets APC	PCA Project Manager	
No de projet 1455-05	Project number 1455-05	No de contrat Contract number
Nom du fichier CLAC-(1455-05)	File name CLAC-(1455-05)	No de classement File no
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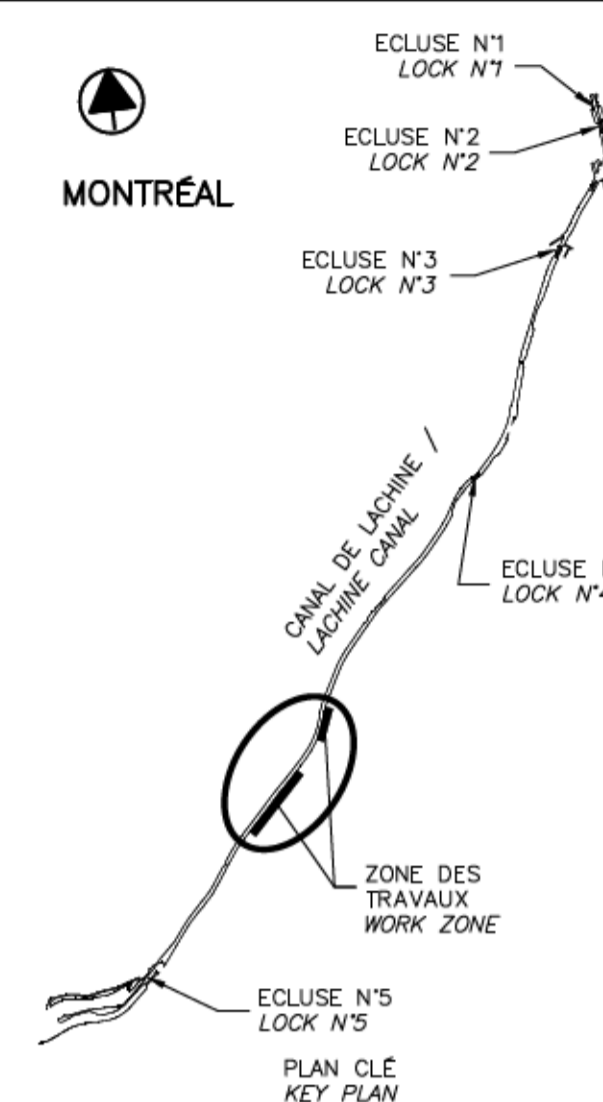
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RIVE SUD / SOUTH BANK (B4-S-32 À B4-S-29)
 VUE EN ÉLÉVATION / ELEVATION VIEW 
 ÉCH./N.A.É. SCALE/N.T.S.



RIVE SUD / SOUTH BANK (B4-S-22 À B4-S-20)
 VUE EN ÉLÉVATION / ELEVATION VIEW 
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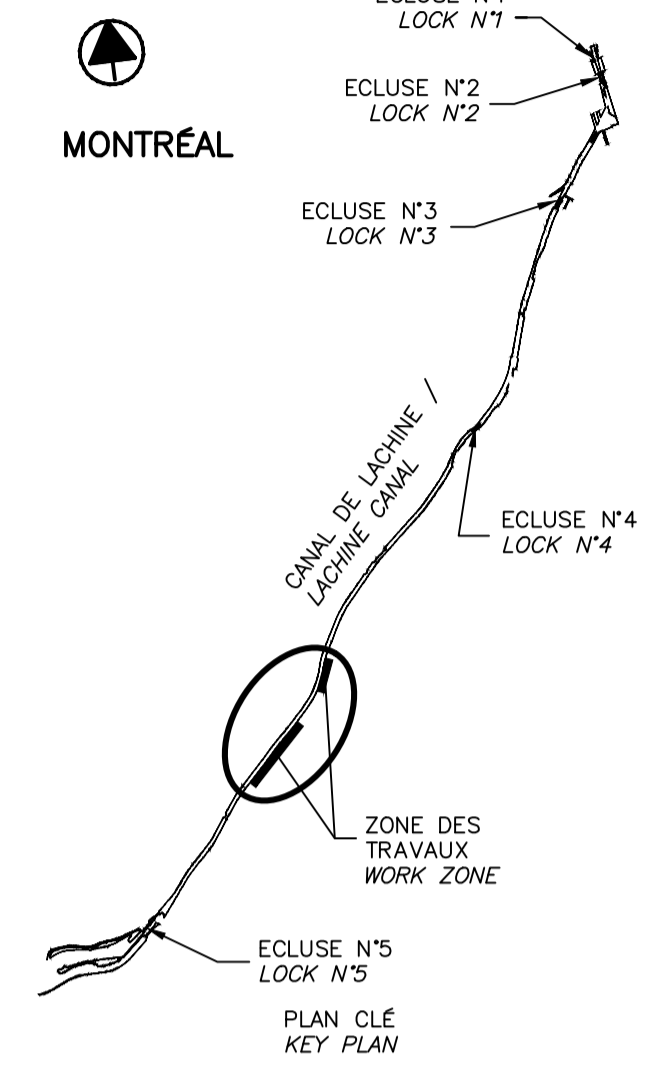
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 RÉPARATION ET REMPLACEMENT DE MURS DE COURONNEMENT (SECTEURS 1.8 ET 1.9 - BASSIN No 4)
 REPAIR AND REPLACEMENT OF THE CROWNING WALLS (AREAS 1.8 AND 1.9 - REACH No 4)

Dessin **ANNEXE ANNEX**
 RELEVÉ 3D - 3/3
 3D SURVEY - 3/3

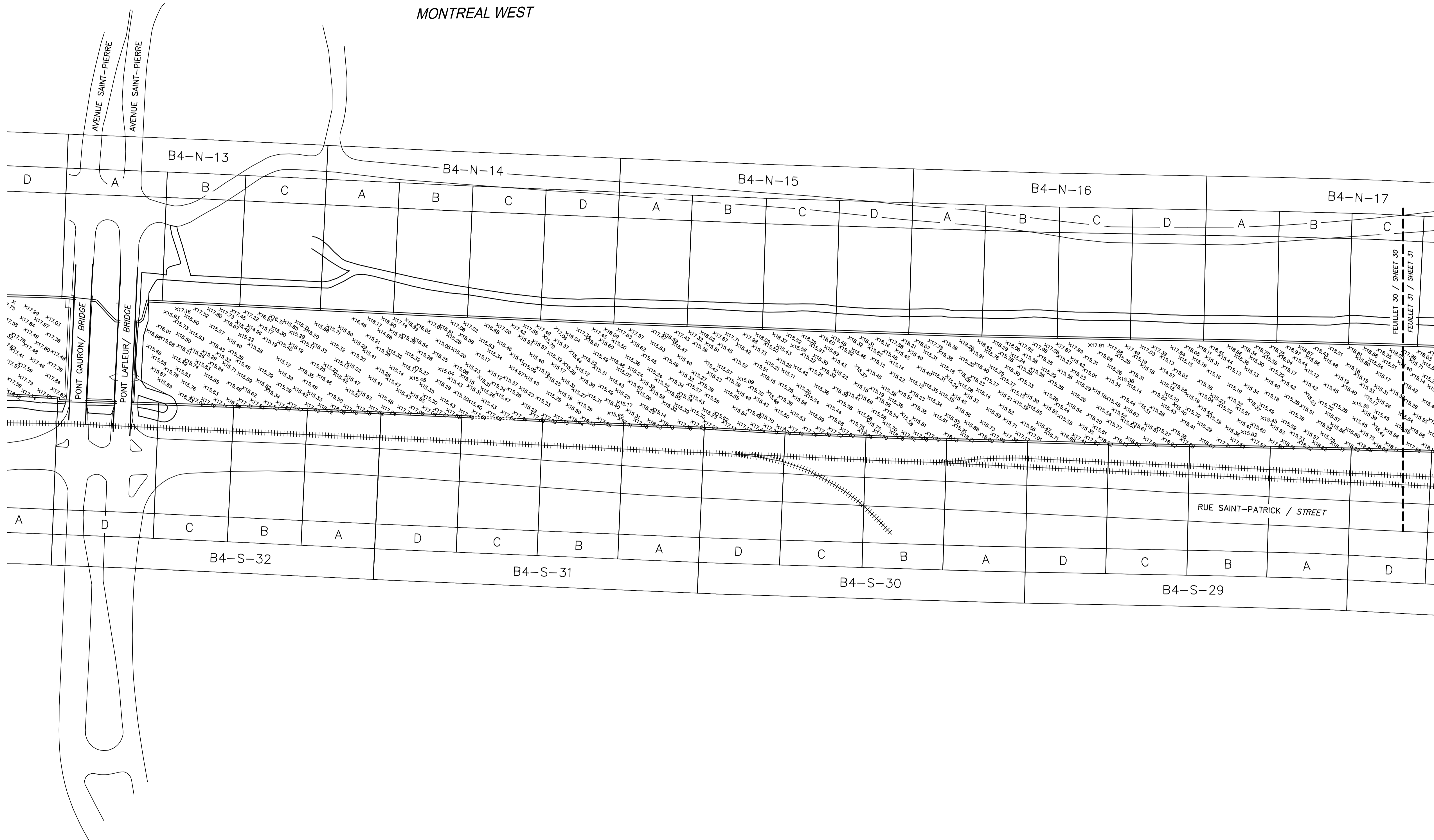
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Date	Date
Approuvé par	Approved by
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Soumission	Tender
Administrateur de projets APC	PCA Project Manager
No de projet / Project number	No de contrat / Contract number
1455-05	
Nom du fichier / File name	No de classement
CLAC-(1455-05)	
No de plan ou dessin / File name	No feuillet / Drawing no
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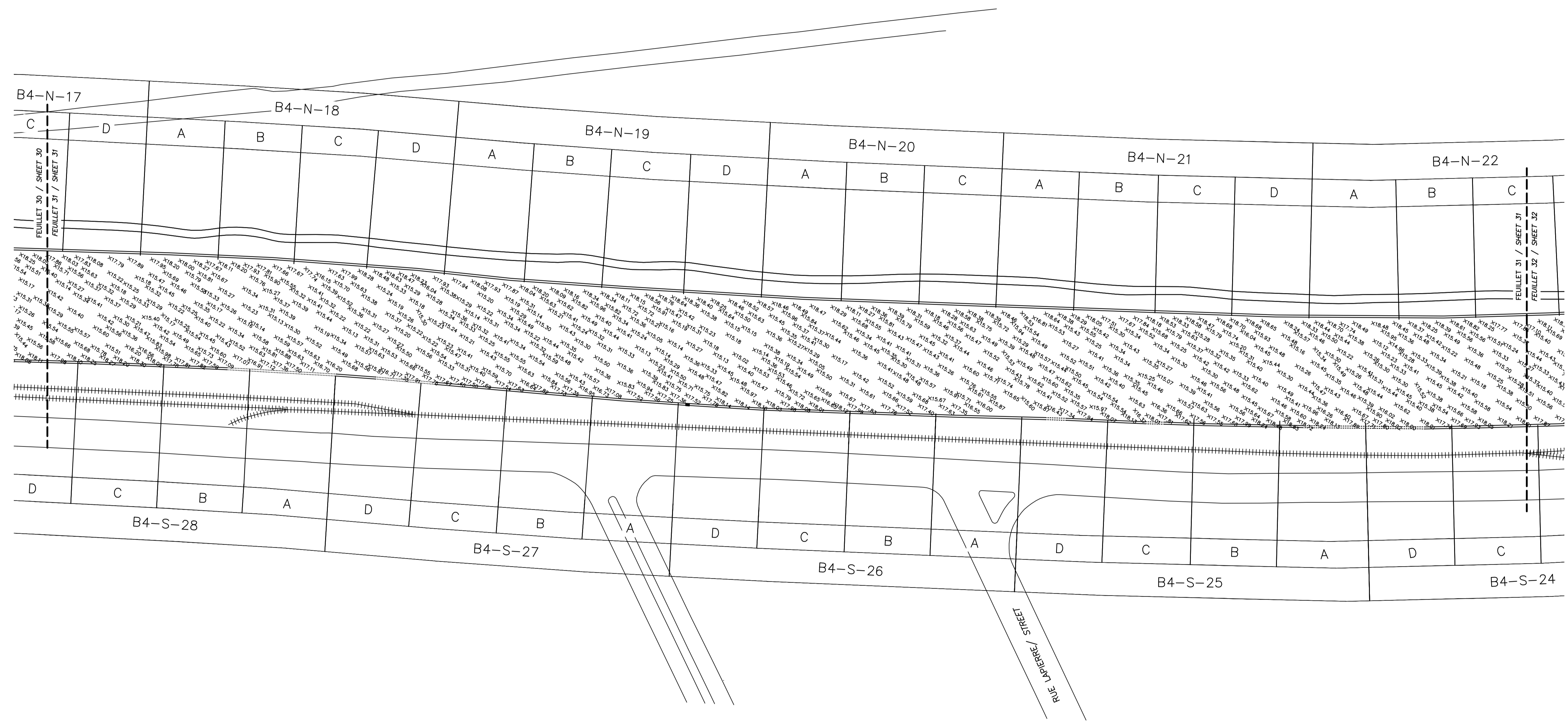
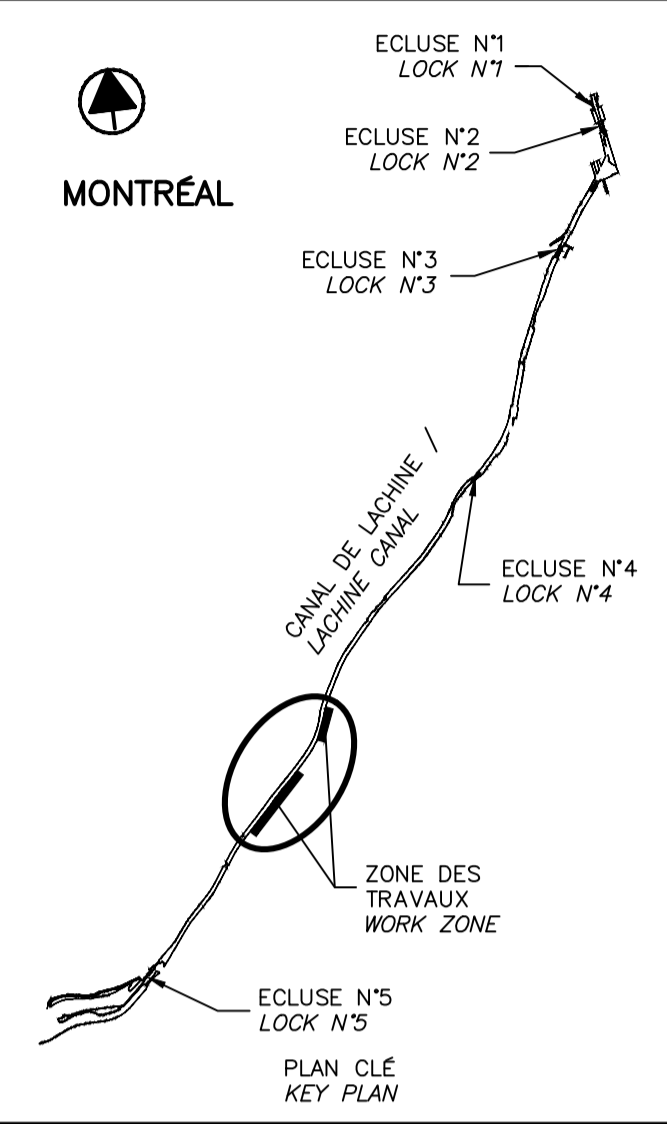
Projet **PARCS CANADA
PARKS CANADA**
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 (SECTEURS I.8 ET I.9 - BASSIN No 4)
 REPAIR AND REPLACEMENT
 OF THE CROWNING WALLS
 (AREAS I.8 AND I.9 - REACH No 4)

Dessin **ANNEXE
ANNEX**
 BATHYMÉTRIE - 1/3
 BATHYMETRY - 1/3

Conçu par	Designed by
Date	Date
Dessiné par	Drawn by
Date	Date
Approuvé par	Approved by
Date	Date
Soumission	Tender
Administrateur de projets APC	PCA Project Manager
No de projet 1455-05	Project number 1455-05
No de contrat	Contract number
Nom du fichier CLAC-(1455-05)	File name CLAC-(1455-05)
No de classement	File no
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No feuillet 30	Feuillet / Drawing no 30 / 32

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Projet / Project
PARCS CANADA / PARKS CANADA
RÉPARATION ET REMPLACEMENT DE MURS DE COURONNEMENT (SECTEURS I.8 ET I.9 - BASSIN No 4)
REPAIR AND REPLACEMENT OF THE CROWNING WALLS (AREAS I.8 AND I.9 - REACH No 4)

Dessin / Drawing
ANNEXE / ANNEX

BATHYMÉTRIE - 2/3
 BATHYMETRY - 2/3

Conçu par / Designed by

Date / Date
 Dessiné par / Drawn by

Date / Date
 Approuvé par / Approved by

Date / Date
 Soumission / Tender

Administrateur de projets APC / PCA Project Manager

No de projet / Project number No de contrat / Contract number
 1455-05

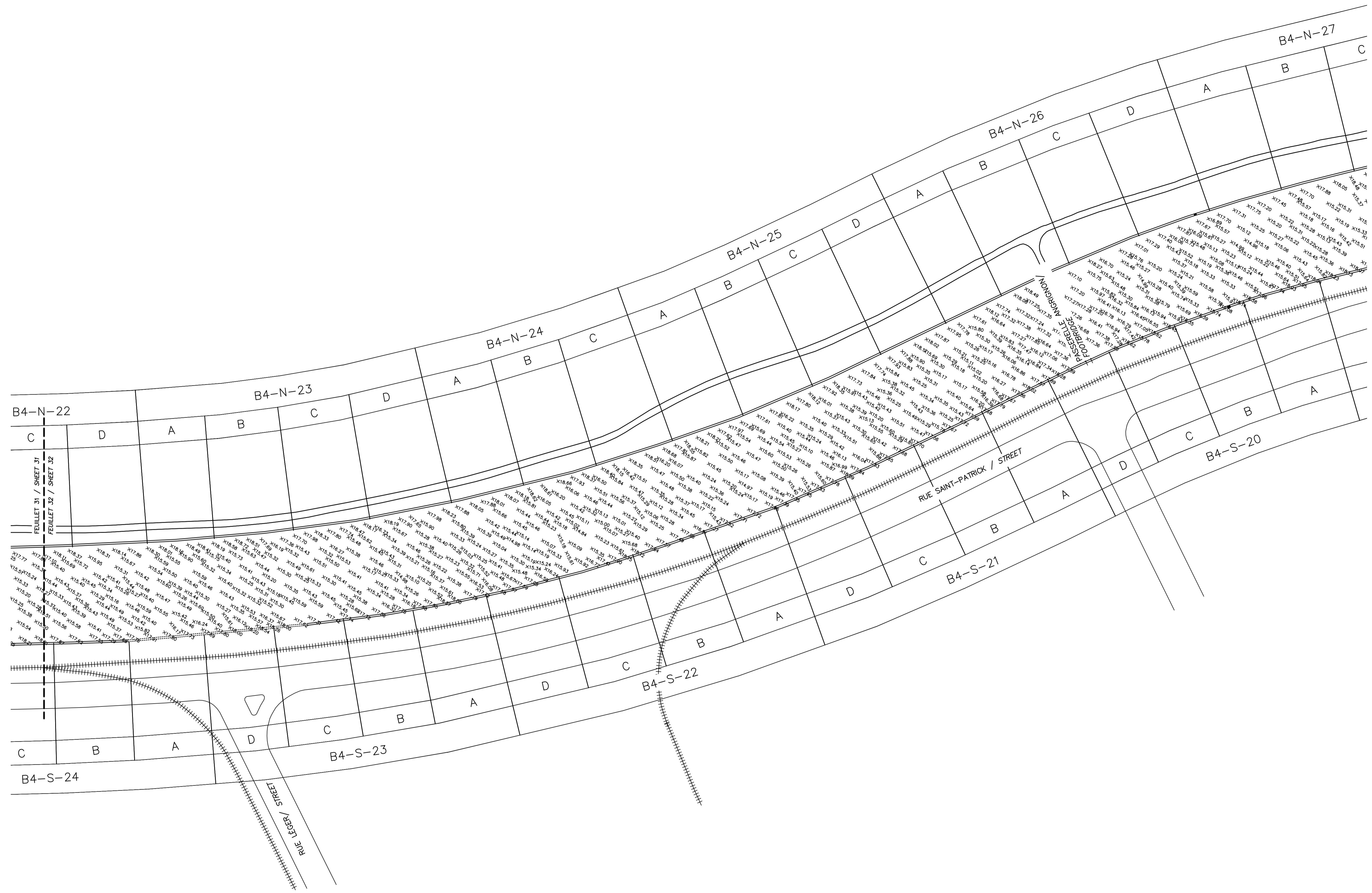
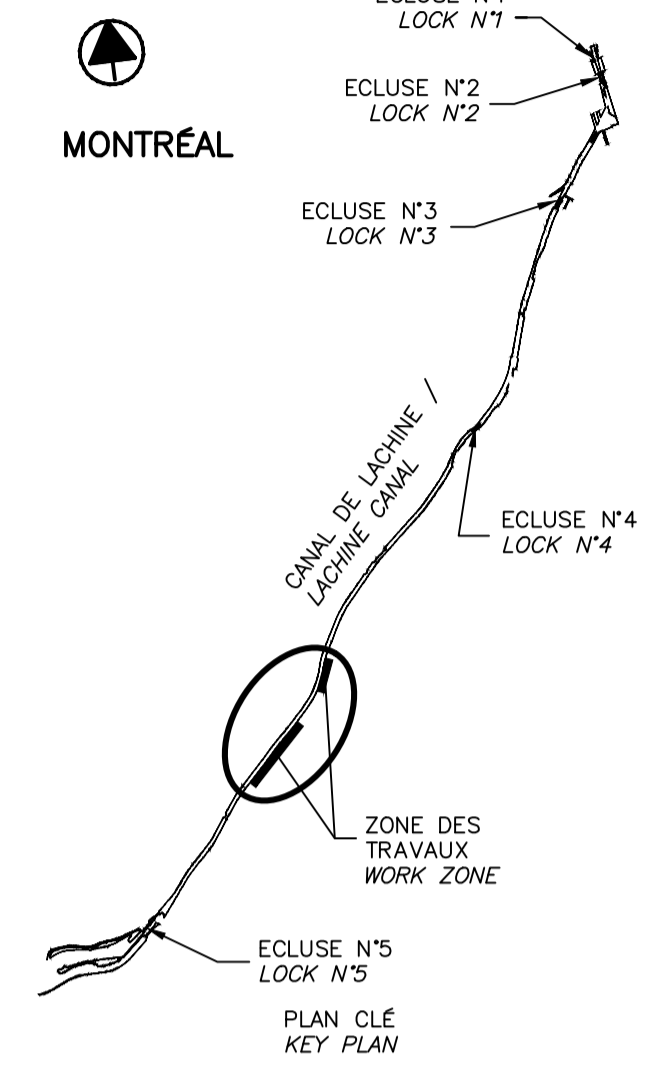
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No de plan ou dessin / File name No feuillet / Drawing no
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Projet **PARCS CANADA
PARKS CANADA**
 RÉPARATION ET REMPLACEMENT
 DE MURS DE COURONNEMENT
 (SECTEURS I.8 ET I.9 - BASSIN No 4)
 REPAIR AND REPLACEMENT
 OF THE CROWNING WALLS
 (AREAS I.8 AND I.9 - REACH No 4)

Dessin **ANNEXE
ANNEX**
 BATHYMÉTRIE - 3/3
 BATHYMETRY - 3/3

Conçu par	Designed by
Dessiné par	Drawn by
Approuvé par	Approved by
Soumission	Tender
Administrateur de projets APC	PCA Project Manager
No de projet 1455-05	No de contrat Contract number
APC	PCA
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No de plan ou dessin CL-32-121.32	No feuillet Drawing no 32 / 32

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Canada Parks Agency
REHABILITATION LACHINE CANAL WALLS
CROWNING WALL REPAIRS AND REPLACEMENT
(SECTORS I8 & I9 – Basin N°4)
Project N° CLAC-1455-05
Addendum n° 01

Specifications

Partie 1 General

1.1 RELATED REQUIREMENTS

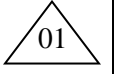
- .1 All drawings issued for tender

1.2 SUMMARY OF WORKS

- .1 The Contractor must respect all archaeological monitoring clauses indicated in point 1.3.
- .2 Consider that an archaeologist will be present at the site.**

1.3 ARCHAEOLOGICAL CLAUSES

- .1 Special Conditions:
 - .1 The Canadian national historic site of the LACHINE CANAL is deemed a highly-recognized heritage site by the Canadian government. Thus, all excavation work identified with the potential of containing historical remains or ruins, must be monitored by an Archaeologist appointed by Parks Canada Agency. The excavation work required for the rehabilitation of the wall is therefore subject to the following sections' specifications.
 - .2 Access and Collaboration:
 - .1 The Contractor must cooperate and comply with all instructions issued by the Departmental Representative during excavation works to avoid any loss of archaeological information on the site.
 - .2 The Contractor must facilitate access to the work site and collaborate with the Archaeologist. The Archaeologist or his representative will be present on site as required, in relation to the protection and recording of the historical remains. Their role will be to guide the Contractor to avoid loss of archaeological information and to gather information on the remains.
 - .3 The Contractor must allow the team of archaeologists to conduct examinations and archaeological surveys.
 - .3 Archaeological Discoveries
 - .1 The Contractor must notify the Departmental Representative and the Archaeologist (or his representative) of any archaeological discovery (remains of buildings or facilities, objects, and fragments of objects) made on the premises and wait for his written instructions before continuing work around the discovery. Relics, antiques, and other items with some interest from a historical, archaeological, or scientific perspective (remains, object, or fragment of an object) found on the site or in the areas of excavation or demolition remain the property of the Crown. The Contractor must protect and obtain instructions from the Departmental Representative in this regard.
 - .4 Suspension of Work:
 - .1 The Contractor must provide in his contract, at his expense, five (5) minute work suspensions per hour of excavation in all areas requiring the presence of the



Archaeologist (as described in section 1.2). These work stoppages, if unused, will be accumulated and can be reused later as needed. A register of the unused time will be documented by the Departmental Representative or his representative in agreement with the Contractor and the Archaeologist.

.2 For work stoppages lasting more than 30 minutes, the Departmental Representative will assess the implications of the stoppage and notify the Contractor to that effect. The Contractor may be required to move the machinery to another area to allow the continuation of the archaeologists' work. If reassignment is not possible, the Contractor will be compensated from the bank of hours. In the case where the bank of hours is exhausted, the Contractor will be compensated in accordance with the agreements made during the first site meeting.

.5 Manual Excavations for Archaeological Purposes:

.1 Given the possibility of archaeological discoveries, the Contractor is advised that during work, manual excavations may be required in addition to any other work necessary in ensuring the protection of discoveries. The Contractor shall be compensated in accordance with the agreements made at the first site meeting.

.6 Protection of Relics and Structures:

.1 The Contractor must take all reasonable precautions during excavation and other works to protect the excavated remains and to allow their examination by the Archaeologists. Parks Canada Agency will not tolerate any exception in this regard. If by neglect the Contractor deteriorates any relic whatsoever, he will be held responsible and the Department will determine the implications.

.2 In the event where the Departmental Representative authorizes the demolition of materials on site, the Contractor must take all necessary precautions to ensure the protection of adjacent structures which are not to be demolished. The demolition of materials must be carried out gradually and in a controlled manner once the archaeological surveys have been completed. If items are damaged during construction works, the Contractor must immediately notify the Departmental Representative.

END OF SECTION

Part 1 General

1.1 RELATED REQUIREMENTS

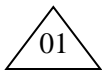
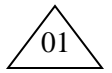
- .1 Section 02 41 99- *Demolition for minor works*
- .2 Section 03 10 00 - *Concrete Forming and Accessories*
- .3 Section 03 20 00 – *Concrete Reinforcing*
- .4 Section 03 30 00 – *Cast-in-Place Concrete*
- .5 Section 03 30 03 – *Concrete Repair*
- .6 Section 05 50 00 – *Metal Fabrications*
- .7 Section 09 97 17 – *Painting Exterior Metal Surfaces*
- .8 Section 31 04 31 – *Historic Subgrade, Shoring and Bracing*
- .9 Section 31 05 16 – *Aggregate Materials*
- .10 Section 31 11 00 – *Clearing and Grubbing*
- .11 Section 31 23 33.01 – *Excavating, Trenching and Backfilling*
- .12 Section 31 32 19 – *Geotextiles*
- .13 Section 32 91 19.13 – *Topsoil Placement and Grading*
- .14 Section 32 92 19.16 – *Hydraulic Seeding*
- .15 Section 35 59 29 – *Mooring Devices*

1.2 DEFINITIONS

- .1 Navigation period: from the Friday preceding Victoria day until thanksgiving.

1.3 WORK COVERED BY CONTRACT DOCUMENTS

- .1 The Work covered by this contract includes the restoration of the Lachine Canal walls on the section(s) indicated in the Tender Form and on drawings.
 - .1 The restoration works can include one or more of the following activities, without limitation:
 - .1 Replacement or rehabilitation of crowning walls (Retaining wall) and seats;
 - .2 Any other repair details shown on drawings and proposed in the current contract,
 - .3 Perform a detailed list of walls to be repaired or replaced. Validate precise dimensions, and profiles of walls subject to the current contract. Perform all required survey.
 - .4 Provide detailed shop drawings, showing existing profiles of wall that must be repaired or replaced in addition to final profiles, for the



- Departmental Representative's approval. Submitted profiles must be consistent with existing profiles.
- .5 Note all existing drains, pipes, scales, bollards and railings in the work zone and locate them in the shop drawings. These items must be reinstalled or conserved as existing.
 - .6 The Contractor is responsible for providing appropriate platforms and temporary supports, required to undertake work shown on the plans, specifications, and tender form. No additional fees will be allotted to the contractor if he must modify his access system during work.
 - .7 Provide and install confinement chambers to allow concrete pouring in winter conditions,
 - .8 The Contractor is responsible to provide, at his own expenses, all required shelters, and heating systems, to be able to perform work in winter conditions.
 - .9 The Departmental Representative will film certain stages of work. By bidding on this contract, the Contractor is aware of this circumstance and can in no case oppose the films being recorded during the execution of work.
 - .10 Perform landscaping work.
 - .11 A navigation corridor will have to be put in place on the encroachment line in the canal (ref plan 8#24) Contractor must install navigation buoy at the end of each work zone and an additional one in the middle. The navigation buoys must be all green on the port (left) side when moving upstream direction and red on the starboard (right) side when moving upstream direction. In addition to the navigation buoys, security buoys (yellow) must be put in place to maintain a cable up flow. Installation of buoys must be in accordance with Transport Canada regulation.**
- .2 All construction, demolition, and related temporary work, must be performed in accordance with standards, including the security code for construction S-2.1, r.6, CSA S350 and other applicable safety regulations put in place by the owner.
 - .3 The Contractor must provide all required labour, materials, and equipment to perform work shown in the drawings.
 - .4 Perform demolition work as shown on the drawings. The section shown in the drawings specify either additional demolition, removal of loose concrete or cleaning cavities.
 - .5 In zones affected by the demolition works, the contractor assumes all responsibilities in regards to the protection against dust, the danger of demolition, and others.
 - .6 Provide, for verification purposes, the drawings, graphics, and details indicating the dismantling order of the work, shoring parts, and temporary work.
 - .7 All temporary work drawings must be certified by a competent engineer, recognized in the province of Quebec.

- .8 Take all necessary precautions to prevent any movement or collapse of structures that must be conserved to avoid any damage. Provide and install all parts required for shoring and reinforcement. Perform all necessary remedial work as required. Put in place all necessary precautions to ensure the safety of workers throughout the work.
- .9 Anchors must be installed in accordance with the recommendation of the Departmental Representative in the presence of his authorised representative.
- .10 The Contractor must coordinate his work in accordance with the existing dimensions and profiles, and must provide profiles adapted to the existing ones for the Departmental Representative's approval. The Contractor must provide shop drawings showing final profiles and variants for comment.

1.4 Marking required for any encroachment in the canal during the navigation period.CONTRACT METHOD

- .1 Construction work is under lump-sum contract and unit price contract, in accordance with the articles presented in the Tender Form.

1.5 WORK BY OTHERS

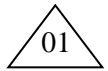
- .1 Not used.

1.6 FUTURE WORK

- .1 Not used.

1.7 WORK SEQUENCE

.1 Deadlines



- .1 The works under this contract including planning of banks, lands and paths used by the contractor must be completed 22 weeks after the receipt of the award letter. **Construction holidays, from July 23, 2017 to August 5, 2017, are excluded from the work duration.**
- .2 The final demobilization must be completed ten (10) opening day after the acceptance by the owner of the declaration of substantial completion of works.
- .3 All other activities must be completed within the deadlines.
- .4 The normal water level in the Canal will be lowered between October 18th, 2017 to December 17th, 2017 inclusively. The water level in the Canal will be raised on December 17th, 2017 and this date cannot be changed in any circumstances.

.2 Scheduling

- .1 Construction Facilities
 - .1 At the kick-off meeting, the Contractor must submit the Construction Facilities Layout Plan to the Departmental Representative for approval.
 - .1 In the five (5) days following of submittal of the layout plan, the Departmental Representative shall return a reviewed copy of the plan, along with any comments to the Contractor.

- .2 Within five (5) days following the acceptance of the Construction Facilities Layout Plan, the Contractor shall have completed the installation of the construction trailers.
- .2 Restoration of the Lachine Canal Walls
 - .1 At the kick-off meeting, the Contractor must submit to the Departmental Representative the Work Sequence for the wall restoration with a justification for each phase of the works.
 - .1 The Work Sequence for the wall restoration shall be prepared by prioritizing certain work to allow the execution of other work, in favour of the execution time.
 - .2 In the five (5) days following the submittal of the Work Sequence for the restoration work, the Departmental Representative shall return to the Contractor, a reviewed copy of the document, along with any comments.
 - .2 At the kick-off meeting, the Contractor must submit to the Departmental Representative the Construction Schedule, considering the information contained in the Work Sequence.
 - .1 Prepare the Construction Schedule in accordance with the timeframes specified in the present specifications section and in the Tender Form.
 - .2 In the five (5) days following the submittal of the Construction Schedule, the Departmental Representative shall return to the Contractor a reviewed copy of the schedule, along with any comments.
 - .3 Perform all repair works in accordance with the Work Sequence and the Construction Schedule approved by the Departmental Representative.
 - .4 At the kick-off meeting, submit to the Departmental Representative the Temporary Signage drawings for traffic management during the execution of the wall restoration work.
 - .1 In the five (5) days following the submittal of the Temporary Signage drawings for traffic management, the Departmental Representative shall return to the Contractor a reviewed copy of the drawings, along with any comments.
 - .2 Within five (5) days following the acceptance of Temporary Signage drawings, the Contractor shall have completed the installation of these drawings on the site.
 - .5 At the kick-off meeting, submit to the Departmental Representative the shop drawings of the Temporary Access System for the execution of the wall restoration works.
 - .1 In the five (5) days following the submittal of the Temporary Access System shop drawings, the Departmental Representative shall return to the Contractor a reviewed copy of the drawings, along with any comments.
 - .2 Immediately after having received the acceptance of the Temporary Access System shop drawings, and once the

temporary signage has been installed and approved by the Departmental Representative, the Contractor shall implement the Temporary Access System on the site.

- .6 In the seven (7) days following the kick-off meeting, submit to the Departmental Representative the shop drawings required for the execution of the wall restoration works.
 - .1 In the five (5) days following the submittal of the shop drawings, the Departmental Representative shall return to the Contractor a reviewed copy of the drawings, along with any comments.
 - .2 Within five (5) days following the acceptance of the shop drawings, the Contractor shall deliver the necessary materials to the site.

1.8 INSTRUCTIONS TO THE CONTRACTOR

- .1 By accepting this Contract, the Contractor accepts all the responsibilities normally assigned to the Prime Contractor under the workplace health and safety regulations. Before starting the works, the Contractor must perform the following activities:
 - .1 Submit to the Departmental Representative a Health and Safety Plan and a mechanical inspection certificate for each piece of machinery used on site.
 - .2 Ensure that workers on the site have received the training and information required to perform the work safely and that all required tools and protective equipment are available, in compliance with all standards, laws, and regulations.
 - .3 Comply at all times with the provisions of the occupational health and safety regulations and safety codes.
 - .4 Inform your employees of their right to refuse any work that is dangerous to their health or safety.
 - .5 Identify and barricade the work area and control access to the site.
 - .6 In the case of an unforeseen incident, take all necessary measures, including stopping work, to protect the health and safety of the workers and the public, and immediately contact the Departmental Representative.
- .2 Execute the work to provide for continuous public usage. Maintain access to the public places as long as an alternative has not been developed when the progress of the works is an impediment to the free movement of the public.

1.9 CONTRACTOR USE OF PREMISES

- .1 The work area can be used continuously until substantial completion. The construction sites are restricted to the areas mentioned on the plans.
- .2 The use of the premises is restricted to the areas necessary for the execution of the work and those areas made available to the Contractor for the installation of the Construction Facilities and for the storage of the equipment and materials required for the works. The Contractor shall allow access to these areas outside the work zones to the PCA to allow:
 - .1 Maintenance of equipment;
 - .2 Partial Owner occupancy, if required;

- .3 Work by other contractors.
- .3 Coordinate use of premises under direction of the Departmental Representative.
- .4 Obtain and pay for use of additional storage or work areas needed for operations under this Contract.
- .5 Remove or alter existing work to prevent injury or damage to portions of existing work which remain.
- .6 Repair or replace portions of existing work which have been altered during construction operations to match existing or adjoining work, as directed by the Departmental Representative.
- .7 The Contractor cannot use existing structures for the execution of his work. He shall take the necessary precautions to protect existing structures and shall assume complete responsibility of any claims resulting in the damages that are attributed to him. An authorization from the Departmental Representative is necessary before any installation (fixations etc.) on an existing structure. Upon completion of the work, the existing structure must be in an equivalent or superior state than it was at the beginning of the work.
- .8 Navigation for construction purpose must be restrained to the encroachment specify on plan 8. If the contractors need to use the canal for occasional transport purposes, a specific request and procedure of implementation will need to be address for approval. All transport request within the canal need to respect Transport Canada norms.**

1.10 OWNER OCCUPANCY

- .1 The Owner will occupy the premises (outside the work zones) during the entire construction period for execution of normal operations.
- .2 Co-operate with Owner in scheduling operations to minimize conflict and to facilitate Owner usage.

1.11 PARTIAL OWNER OCCUPANCY

- .1 Schedule and substantially complete designated portions of Work for Owner's occupancy prior to Substantial Performance of entire Work.
- .2 Execute Certificate of Substantial Performance for each designated portion of Work prior to Owner occupancy. The Contractor must allow access to the premises to the Owner at all times.
- .3 On occupancy, Owner will provide for occupied areas:
 - .1 Maintenance.
 - .2 Security.
- .4 Execute Partial Interim Certificate of Completion for each designated portion of Work prior to partial Owner occupancy. Following, allow access to the premises to the Owner.

1.12 PRE-PURCHASED EQUIPMENT

- .1 Not used.

1.13 OWNER FURNISHED ITEMS

- .1 Not used.

1.14 ALTERATIONS, ADDITIONS, OR REPAIRS TO EXISTING BUILDING

- .1 Not used.

1.15 EXISTING SERVICES

- .1 Submit schedule to and obtain approval from the Departmental Representative at least seven (7) days in advance for any shut-down or closure of active services or facilities including power and communications services. Adhere to approved schedule and provide notice to affected parties.
- .2 Establish location and extent of service lines in area of work before starting Work. Notify Departmental Representative of findings.

1.16 DOCUMENTS REQUIRED

- .1 Maintain at job site, one copy each document as follows:
 - .1 Contract Drawings.
 - .2 Specifications.
 - .3 Addenda.
 - .4 Reviewed Shop Drawings.
 - .5 List of Outstanding Shop Drawings.
 - .6 Change Orders.
 - .7 Other Modifications to Contract.
 - .8 Field Test Reports.
 - .9 Copy of Approved Work Schedule.
 - .10 Health and Safety Plan and Other Safety Related Documents.
 - .11 Other documents as specified.

Part 2 Products

2.1 Specialized supply

- .1 Probe for measuring water level
 - Submit required data sheets and manufacturer's specifications and documentation for the product. Provide a model with the following spectra:
 - .1 Telemetry system;
 - .2 Modem GMS;
 - .3 Batch of electric al material (Connectors, clip, etc.);
 - .4 Software STS 9100;
 - .5 Levellogger edge of reading 20M;
 - .6 Nul-modem cable;

- .7 Sensor STS connection casing ;
- .8 12 volt battery, direct charger to plug in 120V outlet;
- .9 Barologger edge of reading 10M.
- .2 Installation: Provide and install a probe to measure the water level of the Lachine Canal at the location indicated by the Supervisor. The probe will be at the Gauron Lafleur bridge.
- .3 Payment: The probe is payable in accordance with section 01 29 00 - Payment to item 4.1

Part 3 Execution

3.1 NOT USED

- .1 Not used.

END OF SECTION

Part 1 General

1.1 REFERENCES

- .1 Not used.

Part 2 Explanation of the Bid Form prices

2.1 Item 1. – Government Representative Site Office, Environment, and General Items

.1 Item 1.1 – Construction Facilities

- .1 Payment item 1.1 of the *Schedule of Prices* is a fixed lump sum amount to compensate all necessary expenses incurred in the execution of the works as well as any other expenses not included in the other *Schedule of Prices* items, in accordance with the requirements of the specifications.

- .2 The amount includes, but is not limited to, the following:

- .1 All that is described in Section 01 52 00, *Construction Facilities*, such as:

.1 Electricity, water, and lighting on site.

.2 Construction site offices; Furnishings, telephone and related services (internet, pagers, fax, etc.), microwave and small refrigerator (9 cubic feet minimum), cold and hot water dispenser, including drinking water, heating and air conditioning of the site offices.

.3 Access roads including the necessary deforestation, clearing-up, removal of scrub, vines, dead wood, trees and shrub whose trunk diameter is less than 50 mm (measured from the diameter at chest height), **removal of all scrub at the junction of the crowning walls and seat**, the removal of fences and vines on the edge of the crowning wall, sanitary facilities, site fencing, warehouse, scaffolding, site signs and maintenance, in accordance with the requirements of the specifications and drawings, and as directed by the Government Representative.

.4 The required coordination with the City of Montreal and other stakeholders, including obtaining all necessary permits to carry out the work.

.5 The maintenance of the worksite and of its access routes.

.6 All that is required in the following sections and is not directly attributed or related to one of the other items of the Bid Form:

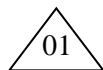
Section 01 11 00 Summary of Work

Section 01 31 19 Project Meetings

Section 01 32 16.07 Construction Progress Schedule

Section 01 33 00 Submittal Procedures

Section 01 35 29.06 Health and Safety Requirements



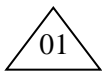
- Section 01 52 00 Construction Facilities
- Section 01 52 00 Construction Facilities
- Section 01 56 00 Temporary Barriers and Enclosures
- Section 01 73 00 Execution
- Section 01 74 11 Cleaning
- Section 01 74 21 Construction/Demolition Waste Management and Disposal
- Section 01 77 00 Closeout Procedures
- Section 07 78 00 Closeout Submittals
- .7 All costs associated with surveying and staking the works and all other site take-offs and measurements that are not allocated to any of the other items of the *Schedule of Prices* .
- .8 The costs of providing a security guard or other means of supervision for the site (if required).
- .9 Rental costs of land and/or space for the storage of materials.
- .10 The protection of existing public utilities within the work site during construction. If the Contractor damages these installations during his work, he must replace them at his expense.
- .11 All fees pertaining to the supply of water and electricity for the duration of the work.
- .12 Expenses for all means taken to minimize damage to earthworks, trees, shrubs, paving, bed of the river and its banks, etc.
- .13 The rehabilitation of the premises:
 - .1 All work to restore the temporary sites used (access road, storage area, etc.) to their natural state;
 - .2 All work to restore street furniture (benches, tables, garbage cans, etc.) to their original condition;
 - .3 All work to restore vegetation by grassing of sites damaged by work;
 - .4 All work permitting the repair of all other damages and damages that the Contractor caused to the site of the works, to the public or private property affected by its works.
- .14 The Contractor shall repair all damage caused in the performance of its work to the satisfaction of the Owners concerned and that of the Government Representative. The work site must be returned in a similar or better condition to that existing before the work begins.
- .3 A portion equal to 20 % of the total amount bid for this item will be paid with the first progress claim, provided that the work has begun.
- .4 Other progress payments under this item will be paid to a percentage consistent with the general progress of work for each progress claim period except for the

- last payment which shall be paid to an amount up to 85% of the general progress of the work.
- .5 The last progress claim equivalent to 15% shall be paid with the payment emitted during the "*Substantial Performance of the Work*".
- .2 Item 1.2 – Environmental Protection Measures
- .1 Payment item 1.2 of *Schedule of Prices* is a fixed lump sum amount to compensate all necessary expenses incurred for measures to protect the environment in accordance with the requirements of the specifications.
- .2 The amount includes, but is not limited to, the following:
- .1 All that is described in Section 01 35 43, *Environmental Procedures* such as the preparation, presentation, and implementation of the environmental protection plan;
- .2 The preparation, presentation, and implementation of :
- .1 The emergency spill plan;
- .2 The construction facilities location plan location;
- .3 The work zone plans;
- .4 The air pollution prevention plan;
- .5 The contamination prevention plan;
- .6 The wastewater management plan;
- .7 The plan for the designation and protection of wetlands and historical, archaeological, cultural, and biological resources;
- .8 The preparation, presentation, and implementation of a plan to protect the historical and heritage character of the site.
- .3 Plant protection measures;
- .4 Temporary facilities for pollution prevention;
- .3 A portion equal to 20 % of the total amount bid for this item will be paid with the first progress claim, provided that the work has begun.
- .4 Other progress payments under this item will be paid to a percentage consistent with the general progress of work for each progress claim period.
- .3 Item 1.3 - Sediment Barrier
- .1 Payment item 1.3. of the *Schedule of Prices* is per linear meter (m. Lin.) for all costs incurred for the installation of sediment barrier in accordance with the requirements of the plans and specifications
- .2 Price includes, but is not limited to, the following:
- .1 The preparation, presentation, and correction, if required, of the Work Plan;
- .2 Mobilization of labor, tools and equipment required for the execution of the work;
- .3 Supply including geotextile, transportation, handling, warehousing and placing;
- .4 Servicing and maintenance of barriers for the duration of the work;

- .5 Dismantling of the sediment barrier;
 - .6 Cleaning of the premises at the end of work;
 - .7 Any incidental expense.
- .4 Item 1.4 - Turbidity curtain (confinement)
- .1 Payment item 1.4 of the *Schedule of Prices* is per linear meter (m. Lin.) for all costs incurred for the installation of a turbidity curtain in accordance with the requirements of the plans and specifications
 - .2 Price includes, but is not limited to, the following:
 - .1 The preparation, presentation, and correction, if required, of the Work Plan and shop drawings;
 - .2 Mobilization of labor, tools and equipment required for the execution of the work;
 - .3 The supply, transportation, handling, storage, and operation;
 - .4 Maintenance and retention of the curtain for the duration of the work;
 - .5 Dismantling of the curtain;
 - .6 Cleaning of premises at the end of work;
 - .7 Any incidental expense.
- .5 Item 1.5 – Deforestation of the excavation zone
- .1 Payment items 1.5.1 to 1.5.2 – Deforestation of trees with diameters superior to 200 mm (measured from the diameter at chest height)
 - .1 Payment items 1.5.1 to 1.5.2 of the *Schedule of Prices* are priced per unit for all the costs incurred for the deforestation of trees according to their dimensions, in accordance with the requirements of the plans and specifications.
 - .2 This item applies only to trees in the excavation area.
 - .3 The price includes, but is not limited to, the following:
 - .1 Preparation, presentation, and correction, if required, of the Work Plan;
 - .2 The mobilization of labour, tools, and equipment required to carry out the work;
 - .3 Supply, transport, handling, maintenance, and removal of access required for clearing works;
 - .4 The clearing of areas identified by the Government Representative;
 - .5 Loading, transporting and disposing of debris to a site in accordance with current policies;
 - .6 Cleaning at the end of the works;
 - .7 Any incidental expenses.

.6 Item 1.6 - Removal, Painting and Repositioning of Guardrails

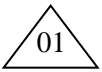
- .1 Payment item 1.6 of the *Schedule of Prices* is priced per linear meter (m. Lin.) for the removal, painting and repositioning of guardrails in accordance with the requirements of the plans and specifications.
- .2 Price includes, but is not limited to, the following:
 - .1 The preparation, presentation, and correction, if required, of shop drawings, the painting procedure, samples, and technical data sheets required;
 - .2 Mobilization of labor, tools and equipment required for the execution of the work;
 - .3 Removal, transportation, handling, storage of guardrails;
 - .4 The supply, handling, transport and use of materials;
 - .5 All costs incurred in the surface preparations;
 - .6 Painting of guardrails;
 - .7 The restoration of the guardrails, including the new anchors of the same size as the existing one;
 - .8 Leveling the guardrails, if necessary, with cementitious grout;
 - .9 In the event of damage, immediately repair the affected items and at the Contractor's expense;
 - .10 Any incidental expenses.



- .3 **The guardrail must be removed, completely repainted, and put back in place. The rails are made of galvanised steel and the post are made of cast-iron. The paint does not contain lead.**

.7 Posts 1.7 - Platforms and Access System

- .1 Payment item 1.7 of the *Schedule of Prices* is priced per linear meter (m. Lin.) of wall intervention for the supply, installation and removal of the access platforms and system in accordance with the requirements of plans and specifications. The unit price for the gateway item (in linear meter) includes the equivalent of the intervention length, regardless of the number of vertical displacements required. Only the equivalent of the intervention length will be paid. If the Contractor puts two platforms at two different heights on the same repair section of 1 m, only one platform of 1 m will be paid and not 2 m.
- .2 Price includes, but is not limited to, the following:
 - .1 The preparation, presentation, and correction, if required, of shop drawings and design calculations;
 - .2 Mobilization of labor, tools and equipment required for the execution of the work;
 - .3 The supply, transport, handling, installation, maintenance and removal of platforms and access systems;
 - .4 Any incidental expenses.



2.2 Item 2. – Replacement of the Crowning Walls

- .1 Item 2.1 – Excavations (2nd Class Excavated Material)
 - .1 Payment item 2.1 of the *Schedule of Prices* is priced per cubic meter (m³) for excavated, stored and backfilled material. The volume shall be calculated based on a joint statement of the excavations in accordance with the requirements of the plans and specifications.
 - .2 Price includes, but is not limited to, the following:
 - .1 Mobilization of labor, tools and equipment required for the execution of the work;
 - .2 Removal of stumps and roots at least 200 mm below ground level, their scrapping and re-leveling of the land;
 - .3 Complete removal of roots in excavation areas;
 - .4 Drying and drainage of the excavation bottom;
 - .5 Excavation, loading, transport and storage of cuttings;
 - .6 Loading, transport, and installation of embankments with excavated material;
 - .7 Compaction of materials;
 - .8 Cleaning of premises;
 - .9 Any incidental expenses.
- .2 Item 2.2 – Disposal of Contaminated Soil
 - .1 Payment items 2.2.1 to 2.2.3 of the *Schedule of Prices* are priced per tonnes (t) of evacuated soil for the disposal of different types of contaminated soils, in accordance with the requirements of the specifications and drawings, and as directed by the Government Representative.
 - .2 The amount includes, but is not limited to, the following:
 - .1 Disposal of contaminated soil contaminated soils A-B, B-C,C+, as directed by the Government Representative.
 - .2 Transport off site and treatment as prescribed by Section 01 74 21 *Construction / Demolition Waste Management and Disposal*;
 - .3 Stockpiling and off-site disposal
 - .4 Clean-up;
 - .5 Any incidental expenses.
- .3 Items 2.3, –Demolition and/or removal of collapsed walls
 - .1 The line item 2.3 of the *Schedule of Prices* are priced per cubic meter (m³) of concrete demolished, in accordance with the requirements of the specifications and drawings, and as directed by the Government Representative.
 - .2 The amount includes, but is not limited to, the following:
 - .1 Preparation, presentation, and correction, if required, of the Work Plan regarding the demolition of the wall;
 - .2 The mobilization of labour, tools, and equipment required to carry out the work;

- .3 All required saw cuts;
 - .4 The demolition of defective and sound concrete as directed by the Government Representative;
 - .5 Cleaning and surface preparation,
 - .6 Cleaning the reinforcing steel to be retained;
 - .7 Cleaning of the concrete substrate;
 - .8 The collection and treatment of demolition materials as prescribed by Section 01 74 21 *Construction / Demolition Waste Management and Disposal*;
 - .9 Any incidental expenses.
- .4 Item 2.4 - Galvanized reinforcement
- .1 The price to the payment item 2.4, of the *Schedule of Prices* is priced per kilogram (kg) of steel according to the quantities placed in the formwork, in accordance with the requirements of the drawings and specifications.
 - .2 Price includes, but is not limited to, the following:
 - .1 The preparation, presentation and correction, if required, of the Work Plan for the Installation of Steel Bars;
 - .2 Mobilization of labor, tools and equipment required for the execution of the work;
 - .3 The preparation, presentation, and correction, if required, of the shop drawings and the slip of the frames;
 - .4 The supply of reinforcing bars and the shaping thereof,
 - .5 Galvanization where stipulated in the plans and specifications;
 - .6 Installation of reinforcing steel required;
 - .7 Any incidental expenses.
- .5 Items 2.5 - Chemical anchorage
- .1 The price to the payment item 2.5 of the Schedule of Prices is priced per unit of chemical anchor, in accordance with the requirements of the plans and specifications.
 - .2 Price includes, but is not limited to, the following:
 - .1 The preparation, presentation, and correction, if required, of shop drawings and anchor chemical technical sheet;
 - .2 Mobilization of labor, tools and equipment required for the execution of the work;
 - .3 Drilling and cleaning of holes for the installation of chemical anchors;
 - .4 The supply, handling, transport and installation of steel anchor rods and anchor chemicals;
 - .5 The execution of tests on control anchorages, in accordance with Section 03 30 03;
 - .6 Any incidental expenses.

- .3 The following items are excluded from this item:
 - .1 Anchors, used to replace the formwork tie-rods, used to hold the formwork in place, and which are required for placing concrete on existing concrete, are not covered by any item in the slip. All costs incurred by the Contractor for the construction of these works are included in the price of the formwork;
- .6 Positions 2.6 – Cast-in-Place Concrete
 - .1 The price in item 2.6 of the Schedule of Prices is priced per cubic meter (m³) of wall concrete, the quantities shall be calculated according to the theoretical dimensions in accordance with the requirements of the plans and specifications.
 - .2 Price includes, but is not limited to, the following:
 - .1 The preparation, presentation, and correction, if required, of shop drawings, the concreting procedure, the descriptions of the mixtures and the technical data sheets required;
 - .2 Mobilization of labor, tools and equipment required for the execution of the work;
 - .3 Supply, installation and dismantling of formwork;
 - .4 Supply and installation of chamfers;
 - .5 The supply and application of mold release agent;
 - .6 Supply and installation of formwork ties;
 - .7 The supply and application of repair mortar to the location of the formwork ties;
 - .8 The anchors, used to replace the formwork tie-rods, used to hold the formwork in place and required for the placement of concrete on existing concrete.
 - .9 Supply and installation of steel wire;
 - .10 The supply, transport, handling and placing of the drain 150 mm x 150 mm;
 - .11 The supply, transport, handling and placing of the steel components incorporated in the concrete, as shown in the drawings;
 - .12 Treatment of substrate before concreting;
 - .13 Supply, installation, vibration, finishing, wet curing of concrete;
 - .14 The execution of the saw-strokes shown in the drawings;
 - .15 Cleaning of concrete surfaces adjacent to the concreting area;
 - .16 At the end of the work, off-site evacuation of the formwork materials and correction of defective repairs;
 - .17 Concrete Finishing
 - .18 Treatment of surplus materials in accordance with Section 01 74 21, *Construction / Demolition Waste Management and Disposal*;
 - .19 Any incidental expenses.

.7 Position 2.7 - Bollards

- .1 The price at item 2.7 of the Schedule of Prices is unit priced for the removal, painting and replacing of the bollards in accordance with the requirements of the drawings and specifications.
- .2 Price includes, but is not limited to, the following:
 - .1 The preparation, presentation, and correction, if required, of shop drawings, the painting procedure, samples and technical data sheets required;
 - .2 Mobilization of labor, tools and equipment required for the execution of the work;
 - .3 Removal, transportation, handling, storage of bollards;
 - .4 The supply, handling, transport and use of materials;
 - .5 All costs incurred in the preparation of surfaces;
 - .6 Painting of the bollards
 - .7 Repositioning bollards, including new anchors of the same size as the existing one;
 - .8 In the event of damage, immediately repair the affected items and at the Contractor's expense;
 - .9 All costs related to the work in section 35 59 29 - Mooring equipment;
 - .10 Any incidental expenses.

.8 Posts 2.8 - Rungs

- .1 The price at item 2.8 of the Schedule of Prices is unit priced for the establishment of a series of steps in accordance with the requirements of the plans and specifications.
- .2 The unit rungs include steps similar to the existing conditions. The sets of steps are composed with holes for the feet and galvanized reinforced steel in front and on top of the walls as described on the plans. The price also includes the support to hold the bars.
- .3 The existing conditions is composed of four ranks on the front face and one on the top. In case of variation, the rungs will be paid proportionally.
- .4 Price includes, but is not limited to, the following:
 - .1 The preparation, presentation, and correction, if required, of shop drawings, samples, and technical data sheets;
 - .2 Mobilization of labor, tools and equipment required for the execution of the work;
 - .3 The supply, transport, handling and setting of the echelons, such as the existing ones;
 - .4 Any incidental expenses.

.9 Item 2.9- Type 1 borrowing materials, MG-20

- .1 The price at item 2.9 of the Schedule of Prices is priced per tonne (t) for the borrowed materials in accordance with the requirements of the plans and specifications.

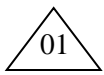
- .2 Price includes, but is not limited to, the following:
- .1 This item covers materials that replace materials deemed unsuitable by the Government Representative.
 - .2 Transportation of loan materials to the site.
 - .3 Purchase and installation of borrowed materials in accordance with the plans, specifications, and instructions of the Government Representative.
 - .4 Compaction;
 - .5 Cleaning of premises;
 - .6 Any incidental expenses.
- .10 Item 2.10 - Concrete for support pad (Concrete 1 MPa)
- .1 The price at item 2.10 of the Schedule of Prices is priced per cubic meter (m³) for the backfill concrete in accordance with the requirements of the plans and specifications and the instructions of the Government Representative.
- .2 **The concrete for the slab need to have a minimum resistance of 1 Mpa. There is no specific type for this type of mix. For implementation purpose the mix should be able**
- .3 to be put in place by a concrete pump truck Price includes, but is not limited to, the following:
- .1 The preparation, presentation, and correction, if required, of shop drawings, the concreting procedure, the descriptions of the mixtures and the technical data sheets required;
 - .2 Supply, installation and dismantling of formwork;
 - .3 Carrying concrete for the support pad to the site.
 - .4 Purchase and installation of support pad per plans and specifications.
 - .5 Treatment of surplus materials in accordance with Section 01 74 21, *Construction / Demolition Waste Management and Disposal*
 - .6 Cleaning of premises;
 - .7 Any incidental expenses.
- .11 Item 2.11 - Perforated drain 200 mm and geotextile, PVC (type 1) or PVC COEX (type 1) or PE (type 2), 180 kPa min.
- .1 The price at item 2.11 of the Schedule of Prices is priced per linear meter (m. Lin.) for the perforated drain in accordance with the requirements of the plans and specifications.
- .2 **The drainage system to be place behind the wall must be 200mm.**
- .3 Price includes, but is not limited to, the following:
- .1 The supply of materials, the installation of drains including the installation of the geotextile, the preparation of the foundation, the clear stone support cushion, the connection of the elements and all accessories required for the installation Such as joints between the various sections;
 - .2 Cleaning of premises;
 - .3 Any incidental expenses.
- .12 Item 2.12- Topsoil

- .1 The price at item 2.12 of the Schedule of Prices is priced per square meter (m²), based on the area covered in accordance with the requirements of the plans and specifications.
- .2 Price includes, but is not limited to, the following:
 - .1 Stripping, loading, transport and storage of topsoil;
 - .2 The supply of the material, loading, transport, spreading, leveling, stripping, removal of woody debris and waste, and any amendments necessary to make the material conform to plans and specifications;
 - .3 The preparation of the ground for the placement of the topsoil;
 - .4 Loading, transport and use of topsoil;
 - .5 Any incidental expenses.
- .13 Item 2.13 - Hydraulic Seeding
 - .1 The price at item 2.13 of the Schedule of Prices is priced per square meter (m²) for hydraulic seeding and shall be used to measure the maintenance of the seeded area during the guarantee period in square meters in accordance with the requirements of the plans and specifications.
 - .2 Measure hydraulic seeding in square meters of seeded area for each mix.
 - .3 Price includes, but is not limited to, the following:
 - .1 The supply, implementation of materials in accordance with the plans and directives of the Government Representative;
 - .2 Recovery of sodding of portions of covered surfaces by less than 75% shoot height 150 mm
 - .3 Areas where the mixture will be incorporated into the existing lawn will not be considered for payment purposes.
 - .4 Cleaning of premises;
 - .5 Any incidental expense
 - .4 It is noted that only the area above the excavated trench is included in this payment item. Costs related to all other areas damaged by the work are considered miscellaneous and are included in the reclamation price.
- .14 Posts 2.14 - Geotextile
 - .1 The price at item 2.14 of the Schedule of Prices is priced per square meter (m²) based on the actual surface area covered, without addition for overlap, for the geotextile required for the excavations, in accordance with the requirements of the plans and specifications.
 - .2 Price includes, but is not limited to, the following:
 - .1 The provision of warehousing, handling, transport, laying, assembling of slicks, fixing anchorages, and the use of materials in accordance with drawings and specifications;
 - .2 Cleaning and shimming;
 - .3 Any incidental expenses.

2.3 Post 3. - Repair of the crowning wall without overlay

.1 Item 3.1 - Cast -in-Place Concrete; Type XIV-R or XIV-S (self-consolidating)

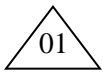
.1 The price at item 3.1 of the Schedule of Prices is priced per cubic meter (m³) of wall concrete, the quantities are calculated according to the actual quantities put in place, in accordance with the requirements of the plans and specifications.



.2 **Repairs of type 2A are repairs carried out continuously over the entire length of the sections covered by this type of repairs.**

.3 Price includes, but is not limited to, the following:

- .1 The preparation, presentation and correction, if required, of the Work Plan for the demolition of the wall;
- .2 Mobilization of labor, tools and equipment required for the execution of the work;
- .3 The demolition of defective and sound concrete, as directed by the Government Representative;
- .4 The 300 mm excavation at the back of the wall, if applicable;
- .5 Loading, transport and storage of excavated material;
- .6 Loading, transport and installation of the embankment with the excavated material;



- .7 Saw lines required;
- .8 **The demolition of the crowning wall type 2A**
- .9 Cleaning of reinforcing steel to be retained;
- .10 Cleaning and surface preparation,
- .11 Supply, installation and dismantling of formwork;
- .12 Supply and installation of chamfers;
- .13 The supply and application of mold release agent;
- .14 Supply and installation of formwork ties;
- .15 The supply, transport, handling and placing of the steel components incorporated in the concrete, as shown in the drawings;
- .16 Supply, installation, vibration, finishing, wet curing of concrete;
- .17 The collection of demolition materials, their disposal outside the building site and their treatment in accordance with the requirements of Section 01 74 21, *Construction/Demolition Waste Management and Disposal*;
- .18 Any incidental expenses.

.2 Item 3.2 - Galvanized reinforcement

.1 The price to the payment item 3.2 of the *Schedule of Prices* is priced per kilogram (kg) of steel according to the quantities placed in the formwork, in accordance with the requirements of the drawings and specifications.

.2 Price includes, but is not limited to, the following:

- .1 The preparation, presentation and correction, if required, of the Work Plan for the Installation of Steel Bars;

- .2 Mobilization of labor, tools and equipment required for the execution of the work;
 - .3 The preparation, presentation, and correction, if required, of the shop drawings and the slip of the frames;
 - .4 The supply of reinforcing bars and the shaping thereof,
 - .5 Galvanization where stipulated in the plans and specifications;
 - .6 Installation of reinforcing steel required;
 - .7 Any incidental expenses.
- .3 Items 3.3 - Chemical anchorage
- .1 The price to the payment item 3.3 of the Schedule of Prices is priced per unit of chemical anchor, in accordance with the requirements of the plans and specifications.
 - .2 Price includes, but is not limited to, the following:
 - .1 The preparation, presentation, and correction, if required, of shop drawings and anchor chemical technical sheet;
 - .2 Mobilization of labor, tools and equipment required for the execution of the work;
 - .3 Drilling and cleaning of holes for the installation of chemical anchors;
 - .4 The supply, handling, transport and installation of steel anchor rods and anchor chemicals;
 - .5 The execution of tests on control anchorages, in accordance with Section 03 30 03;
 - .6 Any incidental expenses.
 - .3 This item excludes the following items:
 - .1 Anchors, used to replace formwork tie-rods, which are used to hold the formwork in place and are required for the placement of concrete on existing concrete, are not covered by any item in the slip and All costs incurred by the Contractor for the construction of these works are included in the price of the formwork;
- .4 Position 3.4 - Bollards
- .1 The price at item 3.4 of the Schedule of Prices is unit priced for the removal, painting and replacing of the bollards in accordance with the requirements of the drawings and specifications.
 - .2 Price includes, but is not limited to, the following:
 - .1 The preparation, presentation, and correction, if required, of shop drawings, the painting procedure, samples and technical data sheets required;
 - .2 Mobilization of labor, tools and equipment required for the execution of the work;
 - .3 Removal, transportation, handling, storage of bollards;

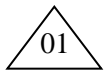
- .4 The supply, handling, transport and use of materials;
- .5 All costs incurred in the preparation of surfaces;
- .6 Painting of the bollards
- .7 Repositioning bollards, including new anchors of the same size as the existing one;
- .8 In the event of damage, immediately repair the affected items and at the Contractor's expense;
- .9 All costs related to the work in section 35 59 29 - Mooring equipment;
- .10 Any incidental expenses.

.5 Posts 3.5 - Rungs

- .1 The price at item 3.5 of the Schedule of Prices is priced per unit for the establishment of a series of steps in accordance with the requirements of the plans and specifications.
- .2 The unit rungs include steps similar to the existing conditions. The sets of steps are composed with whole for the feet and galvanized reinforced steel in front and on top of the walls as described on the plans. The price also includes the support to whole the bars.
- .3 The existing conditions is composed of four ranks on the front face and one on the top. In case of variation, the rungs will be paid proportionally.
- .4 Price includes, but is not limited to, the following:
 - .1 The preparation, presentation and correction, if required, of shop drawings, samples and technical data sheets;
 - .2 Mobilization of labor, tools and equipment required for the execution of the work;
 - .3 The supply, transport, handling and installation of steps including new anchorages of the same size as the existing one;
 - .4 Any incidental expenses.

.6 Posts 3.6 – Laying Sod

- .1 The price at item 3.6 of the Schedule of Prices is priced per square meter (m²) for **laying sod** for one meter of width, measure the maintenance of areas seeded during the guarantee period in square meters, in accordance with the requirements of plans and specifications.
- .2 Price includes, but is not limited to, the following:
 - .1 The supply, implementation of materials in accordance with the plans and directives of the Government Representative;
 - .2 Recovery of sodding of portions of covered surfaces by less than 75% shoot height 150 mm
 - .3 Areas where the mixture will be incorporated into the existing lawn will not be considered for payment purposes.
 - .4 Cleaning of premises;
 - .5 Any incidental expense



- .3 It is noted that only the area above the excavated trench is included in this payment item. Costs related to all other areas damaged by the work are considered miscellaneous and are included in the reclamation price.

2.4 **Item 4. - Specialty Supplies**

- .1 Poste 4.1 – Probe for measuring water level
- .1 The price at item 4.1 of the Schedule of Prices is priced per unit for the total costs incurred for the supply and installation of a probe for measuring the water level of the Lachine Canal, in accordance with the requirements of plans and specifications.
- .2 Price includes, but is not limited to, the following:
- .1 The preparation, presentation and correction, if required, of shop drawings and technical data sheets of the probe model;
- .2 Mobilization of labor, tools and equipment required for the execution of the work;
- .3 The supply, transport, handling and installation of the probe
- .4 Any incidental expense.

2.5 **Item 5. – traffic maintenance and temporary signage**

- .1 Item 5.1- Traffic Maintenance and Temporary Signage
- .1 The price at item 5.1 is a daily price for traffic and temporary signaling in accordance with the requirements of the plans and specifications.
- .2 Price includes, but is not limited to, the following:
- .1 Maintenance of traffic and temporary signaling;
- .2 The preparation of all signaling plans. The plans must be signed by an engineer member of the “ordre des ingénieurs du Québec”;
- .3 Mobilisation maintenance and disassembling of the temporary signaling;
- .4 Maintenance of access to properties;
- .5 The provision of signalers as required;
- .6 The provision, mobilization, maintenance, replacement in the event of breakage or vandalism, the commissioning or disengagement, the displacement and demobilization of the temporary signaling required to carry out work on the entire site in accordance with the requirements of this document;
- .7 Maintenance of signs and traffic lanes including inspections requested;
- .8 Temporary signaling, equipment and manpower required for the complete execution of all works;
- .9 Temporary signaling for cyclists and pedestrians;
- .10 Temporary marking of the cycling path and rehabilitation of existing signage
- .11 The provision of all signaling personnel, including the signaling officer and the site manager, as well as the machinery and vehicles required for temporary signaling;

- .12 Any incidental expenses.
- .2 Item 5.2 - Special Panels
 - .1 The price at item 5.2 of the Schedule of Prices is priced per square meter (m²) for the conformity and installation of special panels and signs in accordance with the requirements of the drawings and specifications.
 - .2 Price includes, but is not limited to, the following:
 - .1 The preparation, presentation and correction, if necessary, of shop drawings signed and sealed by a member engineer in good standing of the Ordre des ingénieurs du Québec;
 - .2 Obtaining all required certificates;
 - .3 The supply, shaping, transportation and handling of the materials required for the application of the special panels and signs;
 - .4 Mobilization of labor, tools and equipment required for the execution of the work;
 - .5 The provision of accessories required for the installation of panels and signs such as poles, braces, hardware;
 - .6 Implementation, maintenance, replacement in case of accident, breakage or vandalism of special panel;
 - .7 Demobilization of special panels and signs at the end of the work;
 - .8 Turning the traffic sign on or off, as often as required;
 - .9 Temporary signage required during operations;
 - .10 Any incidental expenses.

2.6 Item 6. - Provision for winter conditions - Concreting in cold weather

- .1 Item 6.1 - Temporary Shelter for Concrete Work
 - .1 The price at item 6.1 of the Schedule of Prices is priced per linear meter (m. Lin.) to offset all costs incurred for the temporary shelter for concrete work in accordance with the requirements of the plans and specifications.
 - .2 Temporary shelter is payable only if it is required in writing by the Government Representative.
 - .3 Price includes, but is not limited to, the following:
 - .1 The preparation, presentation, and correction, if required of the description of the shelter.
 - .2 Mobilization of labor, tools and equipment required for the execution of the work;
 - .3 The supply, handling and transportation of the materials required to construct the shelter;
 - .4 Installation, maintenance during construction and dismantling at the end of the temporary shelter;
 - .5 Heating the temporary shelter during the work;
 - .6 Off-site transportation of materials;
 - .7 Any incidental expenses.

- .4 The bid price is paid as follows:
 - .1 60% of the amount after assembly of the shelter to the satisfaction of the Representative of the Ministry;
 - .2 40% of the amount after the evacuation of the materials that made up the shelter, outside the building site.
- .2 Item 6.2 - Insulation (RSI 0.40 per coat)
 - .1 The price at item 6.2 of the Schedule of Prices is priced per square meter (m²) of new uncut concrete surface covered with insulation in accordance with the requirements of the plans and specifications.
 - .2 Insulation layers shall be payable only if required in writing by the Government Representative.
 - .3 Price includes, but is not limited to, the following:
 - .1 The preparation, presentation, and correction, if required of the description of the composition of the insulating layer;
 - .2 Mobilization of labor, tools and equipment required for the execution of the work;
 - .3 The supply, handling, transportation, installation, maintenance during construction, removal, and disposal of insulation layers at the end of the work;
 - .4 The cost of insulation protection of concrete required because of the correction of defective works shall be borne by the Contractor.
 - .5 Any incidental expenses.
 - .4 The bid price is paid as follows:
 - .1 60% of the amount after installation of the insulation layers requested;
 - .2 40% of the post after the removal of the insulating materials from the building site.
- .3 Item 6.3 - Heating of Concrete Components
 - .1 The price at item 6.3 of the Schedule of Prices is priced per cubic meter (m³) of concrete or cement slurry installed, the components of which are heated in accordance with the requirements of the drawings and specifications.

- .2 Price includes but is not limited to:
- .1 Heating of the mixing water (between 40 ° C and 80 ° C) used for the manufacture of the concrete;
 - .2 Heat aggregates to remove frozen pieces, snow, and ice;
 - .3 The cost of heating the concrete or grout components without the need for shrinkage because of the correction of defective work shall be borne by the Contractor;
 - .4 Any incidental expenses.

END OF SECTION

Part 1 General

1.1 RELATED REQUIREMENTS

- .1 Section 03 20 00 - *Concrete reinforcing*
- .2 Section 03 30 00 - *Cast-in-place concrete*
- .3 Section 03 30 03 – *Concrete repair*

1.2 REFERENCES

- .1 Canadian Standards Association (CSA International)
 - .1 CSA-A23.1-04/A23.2-04, Concrete Materials and Methods of Concrete Construction/Methods of Test and Standard Practices for Concrete.
 - .2 CSA-O86S1-05, Supplement No. 1 to CAN/CSA-O86-01, Engineering Design in Wood.
 - .3 CSA O121-M1978 (R2003), Douglas Fir Plywood.
 - .4 CSA O151-04, Canadian Softwood Plywood.
 - .5 CSA O153-M1980 (R2003), Poplar Plywood.
 - .6 CAN/CSA-O325.0-92 (R2003), Construction Sheathing.
 - .7 CSA O437 Series-93 (R2006), Standards for OSB and Waferboard.
 - .8 CSA S269.1-1975 (R2003), Falsework for Construction Purposes.
 - .9 CAN/CSA-S269.3-M92 (R2003), Concrete Formwork, National Standard of Canada
- .2 Underwriters' Laboratories of Canada (ULC)
 - .1 CAN/ULC-S701-05, Standard for Thermal Insulation, Polystyrene, Boards and Pipe Covering.
- .3 Ministère des Transports du Québec (MTQ)
 - .1 *Cahier des charges et devis généraux – Infrastructures routières – Construction et réparation (CCDG)*
 - .2 *Ouvrages routiers, Normes, Tome VII – Matériaux, norme 3101, Béton de masses volumiques normales.*
 - .3 *Ouvrages routiers, Normes, Tome VII – Matériaux, norme 3501, Matériaux de cure.*
 - .4 *Ouvrages routiers, Normes, Tome VII – Matériaux, norme 3801, Mortiers cimentaires en sac.*
 - .5 *Ouvrages routiers, Normes, Tome VII – Matériaux, norme 3901, Coulis cimentaires.*

1.3 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Submittals in accordance with Section 01 33 00 - *Submittal Procedures.*
- .2 Submit shop drawings for formwork and falsework.

- .1 Submit drawings stamped and signed by professional engineer member of the *Ordre des ingénieurs du Québec*.
- .2 Shop drawings must indicate method and schedule of construction, shoring, stripping and re-shoring procedures, materials, arrangement of joints, special architectural exposed finishes, ties, liners, and locations of temporary embedded parts. Comply with CSA S269.1, for falsework drawings Comply with CAN/CSA-S269.3 for formwork drawings.
- .3 Provide shop drawings including formwork design data: permissible rate of concrete placement, and temperature of concrete, in forms.
- .4 Provide sequence of erection and removal of formwork/falsework as directed by the Departmental Representative.
- .3 After construction, inspection and prior to the concrete pour, provide the Departmental Representative an advisory stating that the formwork and falsework conform to the plans submitted. The advisory must indicate the time and date of the inspection and be signed and sealed by an engineer, member of the *Ordre des ingénieurs du Québec*.
- .4 Submit the technical specifications with regards to the formwork and falsework.
 - .1 Provide the Departmental Representative all the technical specifications as well as the manufacturers documents concerning the formwork ties, form release agents and any other products required for the work of formwork and temporary support structures or falsework. The specifications must indicate the product characteristics, performance criteria, dimensions, limits and finish.
- .5 Specify the assembly and disassembly of the formwork and falsework in accordance to the Departmental Representatives requirements.
- .6 Submit required Material Safety Data Sheets (MSDS), in accordance with the Workplace Hazardous Materials Information System (WHMIS) and according to Section 01 35 29.06 – *Health and Safety Requirements* and Section 01 35 43 – *Environmental Procedures*.

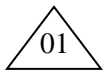
1.4 DELIVERY, STORAGE AND HANDLING

- .1 Separate waste materials for reuse recycling in accordance with Section 01 74 21 - *Construction/Demolition Waste Management and Disposal*.
- .2 Place materials defined as hazardous or toxic in designated containers.
- .3 Divert wood materials from landfill to a recycling reuse composting facility as approved by the Departmental Representative.
- .4 Divert plastic materials from landfill to a recycling reuse composting facility as approved by the Departmental Representative.
- .5 Divert unused form release material from landfill to an official hazardous material collections site as approved by the Departmental Representative.

Part 2 Products

2.1 MATERIALS

- .1 All the crowning walls of the Lachine Canal are elements with particular architectural features.
- .2 Formwork materials:
 - .1 The formwork use must be new. The surfaces and surrounding of the wood should be smooth and unbroken
 - .2 For concrete without special architectural features, use wood and wood product formwork materials to CSA-O121.
 - .3 For concrete with special architectural features, use formwork materials to CSA-A23.1/A23.2.
- .3 Form ties:
 - .1 For concrete not designated 'Architectural', 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 For Architectural concrete, use snap ties complete with plastic cones and light grey concrete plugs.
 - .3 For the special requirements of complete crowning walls replacement, formwork ties are not permitted in the concrete of the walls to retain the vertical walls of the formwork. The tie rods must be located above the formwork or on the soles and removed after installation. Reinforcement parts must be installed on the exterior of the formwork to ensure structural integrity.
 - .4 The ties and tie-rods ends that remain in the concrete shall be galvanized.
- .5 For repair of the crowning walls workform ties are allowed**
- .4 Form stripping agent
 - .1 colourless mineral oil, non-toxic, biodegradable, low VOC, free of kerosene, with viscosity between 70 and 110s Saybolt Universal 15 to 24 mm²/s at 40 degrees C, flashpoint minimum 150 degrees C, open cup.
- .5 Falsework materials: to CSA-S269.1.



Part 3 Execution

3.1 FABRICATION AND ERECTION

- .1 Verify lines, levels and centres before proceeding with formwork/falsework and ensure dimensions agree with drawings.
- .2 Fabricate and erect falsework in accordance with CSA S269.1.
- .3 Do not place shores and mud sills on frozen ground.
- .4 Provide site drainage to prevent washout of soil supporting mud sills and shores.

- .5 Fabricate and erect formwork in accordance with CAN/CSA-S269.3 to produce finished concrete conforming to shape, dimensions, locations and levels indicated within tolerances required by CSA-A23.1/A23.2.
- .6 Align form joints and make watertight.
 - .1 Keep form joints to minimum.
- .7 Unless otherwise specified and with approval for the Departmental Representative, use the same chamfer strips as the existing structure on the top of the crowning wall.
- .8 Visible and non-visible sharp edges shall be chamfered. Unless otherwise indicated in the specifications and drawing, the chamfer dimensions are use 15 mm x 15 mm.
- .9 Obtain Departmental Representative's approval for use of earth forms framing openings not indicated on drawings.
- .10 Grooves, slots, openings, drip edges, re-entrants, and expansion and contraction joints must comply with specifications.
- .11 Embed anchors, sleeves, and other embedded items required for the works specified in other sections.
 - .1 Ensure that anchors and embeds do not protrude from surfaces to be coated with a finishing product, a coat of paint for example.
- .12 Coat the inside of the formwork with a commercially available form removal agent designed to prevent the adhesion of concrete.
- .13 Brush forms before their installation according to the application rate specified in the data sheet of the product to be used. The form removal agent should not come in contact with the reinforcement.
- .14 Obtain authorization by the Departmental Representative prior to pouring concrete directly in the ground or when reserving openings in the formwork that aren't indicated in the drawings.
- .15 Determine the elevation of the concrete pour by the top of formwork or by molding.
- .16 Before pouring the concrete, clean formwork in accordance with CSA standard A23.1/A23.2, latest edition.
 - .1 For cleaning formwork, use a compressed air jet, a jet of pressurized water, or a vacuum to remove any ice, snow, debris, or other foreign matter.
 - .2 The air jet must be equipped with a filter that removes oil. Demonstrate the effectiveness of the filter before use.
 - .3 Use mixing water for concrete in accordance with CSA standard A23.1/A23.2, latest edition, for cleaning formwork.

3.2 REMOVAL AND RESHORING

- .1 After pouring the concrete, leave the formwork in place for at least three (3) days.
- .2 Remove formwork when concrete has reached 70 % of its design strength or minimum period noted above, whichever comes later, and replace immediately with adequate reshoring.

- .3 The formwork shall be considered removed once it has been loosened and a part of it is no longer in contact with the concrete.
- .4 The requirements related to concrete cure must be applied in sequence with the formwork removal if the formwork is removed before the curing period, in accordance to Section 03 30 00 – *Cast in place concrete*.
- .5 Re-use formwork and falsework subject to requirements of CSA-A23.1/A23.2.

3.3 CLEANING

- .1 Progress Cleaning: clean in accordance with Section 01 74 11 - *Cleaning*.
 - .1 Leave Work area clean at end of each day.
- .2 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment in accordance with Section 01 74 11 - *Cleaning*.

END OF SECTION

Part 1 General

1.1 RELATED REQUIREMENTS

- .1 Section 31 11 00 – *Clearing and Grubbing*
- .2 Section 31 32 19.01 - *Geotextiles*
- .3 Section 32 91 19.13- *Mechanical seeding*
- .4 Section 32 92 19.16 – *Hydraulic seeding*

1.2 REFERENCES

- .1 American Society for Testing and Materials International (ASTM)
 - .1 ASTM C117-04, Standard Test Method for Material Finer than 0.075 mm (No.200) Sieve in Mineral Aggregates by Washing.
 - .2 ASTM C136-05, Standard Test Method for Sieve Analysis of Fine and Coarse Aggregates.
 - .3 ASTM D422-632002, Standard Test Method for Particle-Size Analysis of Soils.
 - .4 ASTM D698-00ae1, Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbf/ft³) (600 kN-m/m³).
 - .5 ASTM D1557-02e1, Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/ft³) (2,700 kN-m/m³).
 - .6 ASTM D4318-05, Standard Test Methods for Liquid Limit, Plastic Limit, and Plasticity Index of Soils.
- .2 Canadian General Standards Board (CGSB)
 - .1 CAN/CGSB-8.1-88, Sieves, Testing, Woven Wire, Inch Series.
 - .2 CAN/CGSB-8.2-M88, Sieves, Testing, Woven Wire, Metric.
- .3 Canadian Standards Association (CSA International)
 - .1 CAN/CSA-A3000-03, Cementitious Materials Compendium (Consists of A3001, A3002, A3003, A3004 and A3005).
 - .1 CSA-A3001-03, Cementitious Materials for Use in Concrete.
 - .2 CSA-A23.1/A23.2-04, Concrete Materials and Methods of Concrete Construction/Methods of Test and Standard Practices for Concrete.
- .4 U.S. Environmental Protection Agency (EPA)/Office of Water
 - .1 EPA 832R92005, Storm Water Management for Construction Activities: Developing Pollution Prevention Plans and Best Management Practices.

1.3 DEFINITIONS

- .1 Excavation classes: two classes of excavation will be recognized; common excavation and rock excavation.

- .1 Rock: solid material in excess of 1.00 m³ and which cannot be removed by means of heavy duty mechanical excavating equipment with 0.95 to 1.15 m³ bucket. Frozen material not classified as rock.
- .2 Common excavation: excavation of materials of whatever nature, which are not included under definitions of rock excavation.
- .2 Unclassified excavation: excavation of deposits of whatever character encountered in Work.
- .3 Topsoil:
 - .1 Material capable of supporting good vegetative growth and suitable for use in top dressing, landscaping and seeding.
 - .2 Material reasonably free from subsoil, clay lumps, brush, objectionable weeds, and other litter, and free from cobbles, stumps, roots, and other objectionable material larger than 25 millimeters 1 inch in any dimension.
- .4 Waste material: excavated material unsuitable for use in Work or surplus to requirements.
- .5 Borrow material: material obtained from locations outside area to be graded, and required for construction of fill areas or for other portions of Work.
- .6 Recycled fill material: material, considered inert, obtained from alternate sources and engineered to meet requirements of fill areas.
- .7 Unsuitable materials:
 - .1 Weak, chemically unstable, and compressible materials.
 - .2 Frost susceptible materials:
 - .1 Fine grained soils with plasticity index less than 10 when tested to ASTM D4318, and gradation within limits specified when tested to ASTM D422 ASTM C136 : Sieve sizes to CAN/CGSB-8.1 CAN/CGSB-8.2.
 - .2 Table:

Sieve Designation	% Passing
2.00 mm	100
0.10 mm	45 - 100
0.02 mm	10 - 80
0.005 mm	0 - 45
 - .3 Coarse grained soils containing more than 20 % by mass passing 0.075 mm sieve.
 - .8 Unshrinkable fill: very weak mixture of cement, concrete aggregates and water that resists settlement when placed in utility trenches, and capable of being readily excavated.

1.4 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Make submittals in accordance with Section 01 33 00 - *Submittal Procedures*.
- .2 Quality Control: in accordance with Section 01 45 00 - *Quality Control*.
 - .1 Submit condition survey of existing conditions as described in EXISTING CONDITIONS article of this Section.

- .2 Submit for review by the Departmental Representative proposed dewatering heave prevention methods as described in PART 3 of this Section.
 - .3 Submit to the Departmental Representative written notice at least 7 days prior to excavation work, to ensure cross sections are taken.
 - .4 Submit to the Departmental Representative written notice when bottom of excavation is reached.
 - .5 Submit to the Departmental Representative testing inspection results report as described in PART 3 of this Section.
- .3 Documents and Workshop Drawings
- .1 Submit work shop drawings for cofferdam and excavation, trenching and backfilling work to the Departmental Representative for approval, signed by a qualified engineer, a member of the Ordre des ingénieurs du Canada Quebec.
 - .2 Prior to commencement of work, submit documentbation with regards to the location of underground utilities.
- .4 Procedure
- .1 Submit to the Departmental Representative, for review, the procedure for storing excavation materials to be used for the backfill.
- .5 Technical Specificaitons
- .1 Before commencing the work referred to in this section, submit a list of the main equipment and materials
- .6 Samples:
- .1 Inform the Departmental Representative at least 2 weeks prior to beginning Work, of proposed source of fill unshrinkable fill materials and provide access for sampling.
 - .2 Ship samples prepaid to the Departmental Representative, in tightly closed containers to prevent contamination and exposure to elements.
 - .3 At least 4 weeks prior to beginning Work, inform the Departmental Representative source of fly ash and submit samples to the Departmental Representative.
 - .1 Do not change source of Fly Ash without written approval of the Departmental Representative.

1.5 QUALITY ASSURANCE

- .1 Quality control: in accordance with Section 01 45 00 – *Quality Control*.
- .2 Qualification Statement: submit proof of insurance coverage for professional liability prior to commencing work
- .3 Materials testing and compaction testing shall be carried out by a Laboratory designated by the Departmental Representative.
- .4 No more than one (1) week prior to the commencement of backfilling or filling provide the designated testing organization with the descriptive records and grading of the proposed fill material for the work.

- .5 Notify the Departmental Representative in writing not later than forty-eight (48) hours prior to commencing backfilling or filling with the approved materials so that the designated testing laboratory can perform the necessary compaction tests.
- .6 Submit design and supporting data at least 2 weeks prior to beginning Work.
- .7 Design and supporting data submitted to bear stamp and signature of qualified Professional Engineer, member of the *Ordre des ingénieurs du Québec*.
- .8 Retain the services of a recognized, competent engineer, member in good standing of the *Ordre des ingénieurs du Québec* (where the work will be performed) for the design and inspection of cofferdams, shoring works, bracing works, and underpinning works used during the performance of Work.
- .9 Do not use soil material until written report of soil test results are reviewed approved by the Departmental Representative.
- .10 Health and Safety Requirements:
 - .1 Do construction occupational health and safety in accordance with Section 01 35 29.06 - Health and Safety Requirements.

1.6 WASTE MANAGEMENT AND DISPOSAL

- .1 Separate waste materials for reuse recycling in accordance with Section 01 74 21 - *Construction/Demolition Waste Management and Disposal*.

1.7 EXISTING CONDITIONS

- .1 Buried services:
 - .1 Before commencing work verify establish location of buried services on and adjacent to site.
 - .2 Arrange with appropriate authority for relocation of buried services that interfere with execution of work: pay costs of relocating services.
 - .3 Remove obsolete buried services within 2 m of foundations: cap cut-offs.
 - .4 Size, depth and location of existing utilities and structures as indicated are for guidance only. Completeness and accuracy are not guaranteed.
 - .5 Prior to beginning excavation Work, establish location and state of use of buried utilities and structures, notify the Departmental Representative, and clearly mark such locations to prevent disturbance to services during Work.
 - .6 Confirm locations of buried utilities by careful test excavations soil hydrovac methods.
 - .7 Maintain and protect from damage, water, sewer, gas, electric, telephone and other utilities and structures encountered as indicated.
 - .8 Record location of maintained, re-routed and abandoned underground lines.
 - .9 Confirm locations of recent excavations adjacent to area of excavation.
- .2 Existing buildings and surface features:
 - .1 Conduct, with the Departmental Representative, condition survey of existing buildings, trees and other plants, lawns, fencing, service poles, wires, rail tracks, pavement, survey bench marks and monuments which may be affected by Work.

- .2 Protect existing buildings and surface features from damage while Work is in progress. In event of damage, immediately undertake repairs as directed by the Departmental Representative at the Contractor’s expense.
- .3 Where required for excavation, cut roots or branches as directed by the Departmental Representative.

Part 2 Products

2.1 MATERIALS

- .1 Type 1 and Type 2 fill: properties to Section 31 05 16 - Aggregate Materials and the following requirements:

- .1 Crushed, pit run or screened stone, gravel or sand.
- .2 Gradations to be within limits specified when tested to ASTM C136 ASTM C117. Sieve sizes to CAN/CGSB-8.1 CAN/CGSB-8.2.
- .3 Table:

Sieve Designation	% Passing	
Type 1	Type 2	
75 mm	-	100
50 mm	-	-
37.5 mm	-	-
25 mm	100	-
19 mm	75-100	-
12.5 mm	-	-
9.5 mm	50-100	-
4.75 mm	30-70	22-85
2.00 mm	20-45	-
0.425 mm	10-25	5-30
0.180 mm	-	-
0.075 mm	3-8	0-10

- .2 Geotextiles: to Section 31 32 19.01 - Geotextiles.

Part 3 Execution

3.1 SITE PREPARATION

- .1 Remove obstructions, ice and snow, from surfaces to be excavated within limits indicated.
- .2 Cut pavement or sidewalk neatly along limits of proposed excavation in order that surface may break evenly and cleanly.
- .3 Temporary erosion and sedimentation protection
 - .1 Establish sediment barriers consisting of geotextile in accordance with Section 01 35 43 - *Environmental Procedures*.

3.2 PREPARATION/PROTECTION

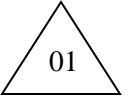
- .1 Protect existing features in accordance with Section 01 56 00 - *Temporary Barriers and Enclosures* and applicable local regulations.
- .2 Keep excavations clean, free of standing water, and loose soil.
- .3 Where soil is subject to significant volume change due to change in moisture content, cover and protect to the Departmental Representative.
- .4 Protect natural and man-made features required to remain undisturbed. Unless otherwise indicated or located in an area to be occupied by new construction, protect existing trees from damage.
- .5 Protect buried services that are required to remain undisturbed.

3.3 STRIPPING OF TOPSOIL

- .1 Begin topsoil stripping of areas as indicated by the plans and specifications after area has been cleared of brush, weeds, grasses, and removed from site.
- .2 Stripping must be done in such a way as to avoid contaminating the topsoil usable for landscaping with underlying materials of different composition. Thus, the depth of clearing varies per the nature of the terrain.
 - .1 Do not mix topsoil with subsoil.
- .3 The Contractor shall, at its own expense, recover and store all the topsoil required for its work and provide the necessary space for storage.
 - .1 Stockpile height not to exceed 2 m and should be protected from erosion.
- .4 If organic soils cannot be used for landscaping, the Contractor shall dispose them.

3.4 COFFERDAMS, SHORING, BRACING AND UNDERPINNING

- .1 Maintain sides and slopes of excavations in safe condition by appropriate methods and in accordance with Section 01 35 29.06 - *Health and Safety Requirements* and the *Health and Safety Act* for the Province of Quebec.
 - .1 Where conditions are unstable, the Contractor's engineer shall verify and advise methods.
- .2 During backfill operation:
 - .1 Unless otherwise indicated or directed by the Departmental Representative, remove sheeting and shoring from excavations.
 - .2 Do not remove bracing until backfilling has reached respective levels of such bracing.
 - .3 Pull sheeting in increments that will ensure compacted backfill is maintained at elevation at least 500 mm above toe of sheeting.
- .3 Upon completion of substructure construction:
 - .1 Remove cofferdams, shoring and bracing.

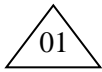


3.5 DEWATERING AND HEAVE PREVENTION

- .1 Keep excavations free of water while Work is in progress.
- .2 Provide for the Departmental Representative's review, approval details of proposed dewatering or heave prevention methods, including dikes, well points, and sheet pile cut-offs.
- .3 Avoid excavation below groundwater table if quick condition or heave is likely to occur.
 - .1 Prevent piping or bottom heave of excavations by groundwater lowering, sheet pile cut-offs, or other means.
- .4 Protect open excavations against flooding and damage due to surface run-off.
- .5 Dispose of water in accordance with Section 01 35 43 - *Environmental Procedures* collection runoff areas and in manner not detrimental to public and private property, or portion of Work completed or under construction.
 - .1 Provide and maintain temporary drainage ditches and other diversions outside of excavation limits.

3.6 EXCAVATION

- .1 Advise, by writing, the Departmental Representative at least seven (7) days in advance of excavation operations for initial cross sections to be taken.
- .2 Excavate to lines, grades, elevations and dimensions as indicated.
- .3 Keep excavated and stockpiled materials safe distance away from edge of trench as directed by the Departmental Representative.
- .4 Restrict vehicle operations directly adjacent to open trenches.
- .5 All usable materials from second-class excavated material must be used for the construction of embankments.
- .6 If usable materials are lost due to the fault of the Contractor, he shall replace them at his own expense with an equivalent volume of materials conforming to the requirements of the plans and specifications.
- .7 If cuttings can not be used or are deemed unsuitable by the Department's laboratory, the contractor must discard them.
- .8 **Materials deemed unsuitable by the Department's laboratory will be replaced with Type 1 Mg-20 borrowing materials.**
- .9 Do not obstruct flow of surface drainage or natural watercourses.
- .10 Earth bottoms of excavations to be undisturbed soil, level, free from loose, soft or organic matter.
- .11 Notify the Departmental Representative when bottom of excavation is reached.
- .12 Obtain the Departmental Representative's approval of completed excavation.
- .13 Remove unsuitable material from trench bottom including those that extend below required elevations to extent and depth as directed by the Departmental Representative.
- .14 Correct unauthorized over-excavation as follows:



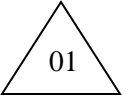
- .1 Fill under other areas with Type 2 fill compacted to not less than 90 % of corrected Standard Proctor maximum dry density.
- .15 Install geotextiles, immediately after excavation, in accordance with the Departmental Representative and Section 31 32 19.01 - *Geotextiles*.

3.7 FILL TYPES AND COMPACTION

- .1 Use types of fill as indicated or specified below. Compaction densities are percentages of maximum densities obtained from ASTM D1557.
 - .1 Use Type 2 as indicated on the plans, fill and compact to 90 %.
 - .2 Use recoverable material from cuttings as indicated in Plans and compact up to 90%.

3.8 BACKFILLING

- .1 Do not proceed with backfilling operations until completion of following:
 - .1 The Departmental Representative has inspected and approved installations.
 - .2 Inspection, testing, approval, and recording location of underground utilities.
 - .3 Removal of concrete formwork.
 - .4 Removal of shoring and bracing; backfilling of voids with satisfactory soil material.
- .2 Areas to be backfilled to be free from debris, snow, ice, water and frozen ground.
- .3 Do not use backfill material which is frozen or contains ice, snow or debris.
- .4 Place backfill material in uniform layers not exceeding 150 mm compacted thickness up to grades indicated. Compact each layer before placing succeeding layer.
- .5 Backfilling around installations:
 - .1 Place bedding and surround material as specified elsewhere.
 - .2 Do not backfill around or over cast-in-place concrete within 24 hours after placing of concrete.
 - .3 Where temporary unbalanced earth pressures are liable to develop on walls or other structures:
 - .1 Permit concrete to cure for minimum 14 days or until it has sufficient strength to withstand earth and compaction pressure and approval obtained from the Departmental Representative;
 - .2 If approved by the Departmental Representative, erect bracing or shoring to counteract unbalance, and leave in place until removal is approved by Departmental Representative DCC Representative Departmental Representative.
- .6 Install drainage filter system in backfill as indicated as directed by the Departmental Representative.



3.9 RESTORATION

- .1 Upon completion of Work, remove waste materials and debris in accordance to Section 01 74 21 - *Construction/Demolition Waste Management and Disposal*, trim slopes, and correct defects as directed by the Departmental Representative.
- .2 The final leveling shall cover the alterations to be made to render the profiles in accordance with the theoretical longitudinal and transverse lines and all the work required for the cleaning and restoration of the premises.
 - .1 In accordance with sections 32 91 19.13 – *Topsoil placing and grading*, 32 92 19.16 - *Hydraulic seeding* and 32 92 23 – *Sodding*.
 - .2 Return pavements affected by work to condition and level prior to start of work, taking care to respect the original thickness of these structures.
- .3 Clean and rehabilitate areas affected by work as instructed by Departmental Representative and in accordance with 01 74 11 – *Cleaning*.

END OF SECTION

Part 1 General

1.1 RELATED REQUIREMENTS

- .1 Section 32 91 19.13 - *Topsoil Placement and Grading*

1.2 REFERENCES

Not used.

1.3 ADMINISTRATIVE REQUIREMENTS

- .1 Scheduling: in accordance with Section 01 32 16.07 – *Construction Progress Schedule*.
 - .1 Schedule sod laying to coincide with preparation of soil surface.
 - .2 Schedule sod installation when frost is not present in ground.
- .2 Pre-Installation Meetings: in accordance with Section 01 31 19 - *Project Meetings*.
 - .1 Conduct pre-installation meeting to verify project requirements, installation instructions and warranty requirements.

1.4 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Submit in accordance with Section 01 33 00 - *Submittal Procedures*.
- .2 Technical Specifications:
 - .1 Submit manufacturer's instructions, printed product literature and data sheets for sod, geotextile and fertilizer and include product characteristics, performance criteria, physical size, finish and limitations.
 - .2 Submit 2 copies of WHMIS MSDS in accordance with Section 01 35 29.06 - *Health and Safety Requirements*.
- .3 Samples:
 - .1 Submit:
 - .1 Sod for each type specified.
 - .1 Install approved samples in 1 square metre mock-ups and maintain in accordance with maintenance requirements during establishment period.
 - .2 Bio-degradable geotextile fabric.
 - .3 0.5 kg container of each type of fertilizer used.
 - .2 Obtain approval of samples by the Government Representative.
- .4 Certificates
 - .1 Submit product certificates signed by manufacturer certifying materials comply with specified performance characteristics and criteria and physical requirements of seed mix, seed purity, and sod quality.
- .5 Test Reports

- .1 Submit certified test reports showing compliance with specified performance characteristics and physical properties of seed mix, seed purity, and sod quality.

1.5 QUALITY ASSURANCE

- .1 Quality control: in accordance with Section 01 45 00 – *Quality Control*.
- .2 Qualifications:
 - .1 Landscape Contractor: to be a Member in good standing of the *Association des paysagistes professionnels du Québec (APPQ)* or any other horticultural association approved by the Government Representative.
 - .2 Landscape Planting Supervisor: Landscape Industry Certified Technician with Softscape Installation designation.
 - .3 Landscape Maintenance Supervisor: Landscape Industry Certified Technician with Turf Maintenance designation.

1.6 DELIVERY, STORAGE AND HANDLING

- .1 Deliver, store and handle materials in accordance with Section 01 61 00 - *Common Product Requirements* and with manufacturer's written instructions.
- .2 Delivery and Acceptance Requirements: deliver materials to site in original factory packaging, labelled with manufacturer's name and address.
- .3 Storage and Handling Requirements:
 - .1 Store materials in accordance with supplier's recommendations.
 - .2 Replace defective or damaged materials with new.
- .4 Develop a construction waste management plan for the works covered by this section in accordance with Section 01 74 21 – *Construction/Demolition Waste Management and Disposal*.
- .5 Packaging Waste Management: remove for reuse and return by manufacturer of pallets, crates, padding, packaging materials as specified in Construction Waste Management Plan Waste Reduction Workplan in accordance with Section 01 74 21 - *Construction/Demolition Waste Management and Disposal*.

Part 2 Products

2.1 MATERIALS

- .1 Number One Turf Grass Nursery Sod: sod that has been especially sown and cultivated in nursery fields as turf grass crop.
 - .1 Turf Grass Nursery Sod types:
 - .1 Number One Kentucky Bluegrass Sod: Nursery Sod grown solely from seed of cultivars of Kentucky Bluegrass, containing not less than 50 % Kentucky Bluegrass cultivars.
 - .2 Number One Kentucky Bluegrass Sod - Fescue Sod: Nursery Sod grown solely from seed mixture of cultivars of Kentucky Bluegrass and Chewing Fescue or Creeping Red Fescue, containing not less than 40 %

- Kentucky Bluegrass cultivars and 30% Chewing Fescue or Creeping Red Fescue cultivars.
- .3 Number One Named Cultivars: Nursery Sod grown from certified seed.
 - .2 Turf Grass Nursery Sod quality:
 - .1 Not more than 1 broadleaf weed and up to 1 % native grasses per 40 square metres.
 - .2 Density of sod sufficient so that no soil is visible from height of 1,500 mm when mown to height of 50 mm.
 - .3 Mowing height limit: 35 to 65 mm.
 - .4 Soil portion of sod: 6 to 15 mm in thickness.
 - .2 Commercial Grade Turf Grass Nursery:
 - .1 Mow sod at height directed by Government Representative DCC Representative Government Representative within 36 hours prior to lifting, and remove clippings.
 - .2 Not more than 5 broadleaf weeds and up to 20 % native grasses per 40 square metres.
 - .3 Sod establishment support:
 - .1 Biodegradable geotextile, square mesh.
 - .2 Wooden pegs: 17 x 8 x 200 mm.
 - .3 Biodegradable starch pegs: 17 x 8 x 200 mm.
 - .4 Water:
 - .1 Supplied by the Contractor.
 - .5 Fertilizer:
 - .1 To Canada "Fertilizers Act" and Fertilizers Regulations.
 - .2 Complete, synthetic, slow release with 65 % of nitrogen content in water-insoluble form.

2.2 SOURCE QUALITY CONTROL

- .1 Submit to the Government Representative, at least 2 weeks prior to delivery, the proposed source of sod and obtain written approval. No other source shall be accepted without written approval from the Government Representative.
- .2 When proposed source of sod is approved, use no other source without written authorization from the Government Representative.

Part 3 Execution

3.1 INSTALLERS

- .1 Installers must be members in good standing of the *Association des paysagistes professionnels du Québec* (APPQ) or any other horticultural association approved by the Government Representative.

3.2 EXAMINATION

- .1 Verification of Conditions: verify that conditions of substrate previously installed under other Sections or Contracts are acceptable for sod installation in accordance with manufacturer's written instructions.
 - .1 Visually inspect substrate in presence of the Government Representative.
 - .2 Inform the Government Representative of unacceptable conditions immediately upon discovery.
 - .3 Proceed with installation only after unacceptable conditions have been remedied and after receipt of written approval to proceed from the Government Representative.

3.3 PREPARATION

- .1 Verify that grades are correct and prepared in accordance with Section 32 91 19.13 - *Topsoil Placement and Grading*. If discrepancies occur, notify the Government Representative, and commence work when instructed by the Government Representative.
- .2 Do not perform work under adverse field conditions such as frozen soil, excessively wet soil or soil covered with snow, ice, or standing water.
- .3 Remove and dispose of weeds; debris; stones 50 mm in diameter and larger; soil contaminated by oil, gasoline and other deleterious materials; off site in location as directed by the Government Representative in accordance with Section 01 74 21 - *Construction/Demolition Waste Management and Disposal*.

3.4 IMPLEMENTATION

- .1 Ensure sod placement is done under supervision of certified Landscape Planting Supervisor.
- .2 Lawn sodding periods are between late thaw and June 15th (spring), and between August 15th and the beginning of the frost (fall season).
- .3 Do not perform work when conditions are unfavorable, such as when the ground is frozen or damp, or when covered with snow, ice or stagnant water.
- .4 Sod must be delivered within 24 hours of collection. They must be laid within 48 hours of collection.
- .5 In dry weather, before laying sod sections, the Contractor must protect them to maintain their vitality by maintaining sufficient moisture to prevent the soil from becoming detached during handling.

3.5 SOD PLACEMENT

- .1 Lay sod sections in rows, joints staggered. Butt sections closely without overlapping or leaving gaps between sections. Cut out irregular or thin sections with sharp implements.
- .2 Roll sod as directed by the Government Representative. Provide close contact between sod and soil by light rolling. Use of heavy roller to correct irregularities in grade is not permitted.
- .3 Water sufficiently so that water penetrates and soaks grass sections to the ground immediately after laying sod sheets.

3.6 SOD PLACEMENT ON SLOPES AND PEGGING

- .1 Install and secure geotextile fabric in areas indicated, in accordance with manufacturer's instructions.
- .2 Start laying sod at bottom of slopes.
- .3 Unroll sod sections perpendicular to slope, using offset joints. Tighten them one against the other to leave no voids, but do not overlap. Cut narrow or irregularly shaped sections using sharp tools.
- .4 Plant stakes in sod laid on steep slopes, whose gradient exceeds 1/3, and the on the sod placed within 1 m of manholes and less than 1 m from canals and drainage ditches. Arrange stakes as follows:
 - .1 100 mm below top edge at 200 mm on centre for first sod sections along contours of slopes.
 - .2 No less than 3 pegs per square metre.
 - .3 No less than 6 pegs per square metre in drainage structures. Adjust pattern as directed by the Government Representative.
 - .4 Drive pegs vertically so that they are 20 mm above soil surface of sod sections.
- .5 Water sufficiently so that water penetrates and soaks sod sections to the ground immediately after laying sod sheets.

3.7 FERTILIZING PROGRAM

- .1 Fertilize during formation and warranty periods.
- .2 Apply fertilizer uniformly, the basic formula of which meets 1-3-1 providing a minimum of 25 kg / ha of nitrogen (N), 75 kg / ha of phosphorus (P₂O₅) and 25 kg / Ha of potassium (K₂O). The recommendations of the laboratory performing the soil analysis take precedence over the above requirements

3.8 CLEANING

- .1 Progress Cleaning: clean in accordance with Section 01 74 11 - *Cleaning*.
 - .1 Leave Work area clean at end of each day.
 - .2 Keep pavement and area adjacent to site clean and free from mud, dirt, and debris at all times.
- .2 Final Cleaning: upon completion remove surplus materials, rubbish, tools, and equipment in accordance with Section 01 74 11 - *Cleaning*.
 - .1 Clean and reinstate areas affected by Work.
- .3 Waste Management: separate waste materials for reuse, compost, and recycling 01 74 21 - *Construction/Demolition Waste Management and Disposal*.
 - .1 Remove recycling and compost containers and bins from site and dispose of materials at appropriate facility.
 - .2 Divert unused fertilizer from landfill to official hazardous material collections site approved by the Government Representative.

3.9 PROTECTION BARRIERS

- .1 Protect newly sodded areas from deterioration with snow fence on rigid frame as directed by the Government Representative.
- .2 Remove protection after inspection as directed by the Government Representative.

3.10 MAINTENANCE DURING ESTABLISHMENT PERIOD

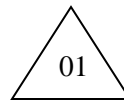
- .1 Perform following operations from time of installation until acceptance.
 - .1 Water sodded areas in sufficient quantities and at frequency required to maintain optimum soil moisture condition to a depth of 75 mm.
 - .2 Cut grass to 50 mm when or prior to it reaching height of 75 mm.
 - .3 Maintain sodded areas weed free 95%.
 - .4 Fertilize areas in accordance with fertilizing program. Spread half of required amount of fertilizer in one direction and remainder at right angles and water in well.
 - .5 Temporary barriers or signage to be maintained where required to protect newly established sod.

3.11 ACCEPTANCE

- .1 Turf Grass Nursery Sod areas will be accepted by the Government Representative provided that:
 - .1 Sodded areas are properly established.
 - .2 Sod is free of bare and dead spots.
 - .3 No surface soil is visible from height of 1500 mm when grass has been cut to height of 50 mm.
 - .4 Sodded areas have been cut minimum 2 times prior to acceptance.
- .2 Sodded Commercial Grade Turf Grass Nursery Sod areas will be accepted by the Government Representative provided that:
 - .1 Sodded areas are properly established.
 - .2 Extent of surface soil visible when grass has been cut to height of 60 mm is acceptable.
 - .3 Sod is free of bare or dead spots and extent of weeds apparent in grass is acceptable.
 - .4 Sodded areas have been cut minimum 2 times prior to acceptance.
 - .5 Fertilizing in accordance with fertilizer program has been carried out at least once.
- .3 Areas sodded in fall will be accepted in following spring one month after start of growing season provided acceptance conditions are fulfilled.
- .4 When environmental conditions allow, all sodded areas showing shrinkage cracks shall be top-dressed and seeded with a seed mix matching the original.

3.12 MAINTENANCE DURING WARRANTY PERIOD

- .1 Perform following operations from time of acceptance until end of warranty period:

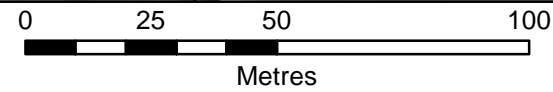


- .1 Water sodded Turf Grass Nursery Sod Commercial Grade Turf Grass Nursery Sod areas at weekly intervals to obtain optimum soil moisture conditions to depth of 100 mm.
- .2 Repair and re-sod dead or bare spots to satisfaction of the Government Representative.
- .3 Cut grass and remove clippings that will smother grass as directed by the Government Representative to height as follows:
 - .1 Turf Grass Nursery Sod:
 - .1 50 mm during normal growing conditions.
 - .2 Commercial Grade Turf Grass Nursery Sod:
 - .1 60 mm during normal growing conditions.
- .3 Cut grass at 2 week intervals; at intervals where approximately one third of growth is removed in single cut.
- .4 Fertilize areas in accordance with fertilizing program. Spread half of required amount of fertilizer in one direction and remainder at right angles and water in well.
- .5 Remove weeds by mechanical means.

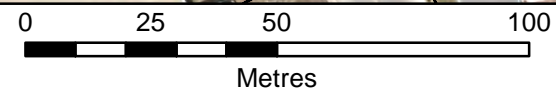
END OF SECTION

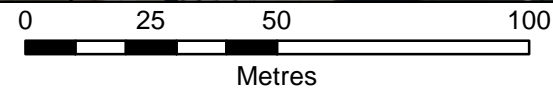
**REHABILITATION LACHINE CANAL WALLS
CROWNING WALL REPAIRS AND REPLACEMENT
(SECTORS I.8 et I.9– BASIN N°4)
Project N° CLAC-1455-05
Addendum no.1**

ANNEXE II - PAC Property plan









Canada Parks Agency
REHABILITATION LACHINE CANAL WALLS
CROWNING WALL REPAIRS AND REPLACEMENT
(SECTORS I8 & I9 – Basin N°4)
Project N° CLAC-1455-05
Addendum n° 01

Tender form



AGENCE PARCS CANADA / CANADA PARKS AGENCY

RÉHABILITATION DE MURS DU CANAL-DE-LACHINE - REMPLACEMENT ET RÉPARATION DES MURS DE COURONNEMENT / REHABILITATION OF LACHINE CANAL WALLS-REPAIR AND REPLACEMENT OF THE CROWNING WALLS

No DE PROJET / PROJECT No : CLAC-1455-05

BORDEREAU DE SOUMISSION - révision no1/ BID FORM- 1455-05 - revision no1

**TABLEAU DES PRIX UNITAIRES : il est convenu que le tableau suivant est le tableau des prix unitaires à utiliser aux fins de contrat
TABLE OF UNIT COSTS: it is agreed that the following table is the Table of Unit Costs to be used for the purposes of this Contract**

POSTES DE PAIEMENT / PAYMENT ITEMS

N°	Description du travail / Description of work	Unité / Unit	Prix unitaire / Unit cost	Quantité / Quantity	MONTANT TOTAL / TOTAL AMOUNT
1.	<u>ORGANISATION DE CHANTIER, BUREAU DU SURVEILLANT, ET ARTICLES GÉNÉRAUX / SITE OFFICE, ENVIRONNEMENT AND GENERAL ITEMS</u>				
1.1	Installations de chantier / Construction Facilities	Global / Lump sum		1	
1.2	Mesures de protection de l'Environnement / Environmental Protection Measures	Global / Lump sum		1	
1.3	Barrière à sédiments / Sediment barrier	M. Lin. / Lin. M.		1125	
1.4	Rideau de turbidité (confinement) / Turbidity curtain (containment)	M. Lin. / Lin. M.		1125	
1.5	Déboisement de la zone d'excavation / Clearing				
1.5.1	- Déboisement d'arbres entre 200 mm et 250 mm inclusivement au DHP / Clearing of trees between 200 mm and 250 mm inclusive at DHP	Unité / Unit		1	
1.5.2	- Déboisement d'arbres de plus de 250 mm au DHP / Clearing of trees of more than 250 mm at DHP	Unité / Unit		20	
1.6	Enlèvement, peinture et remise en place de garde-corps / Removal, Painting and Repositioning of Guardrails	M. Lin. / Lin. M.		30	
1.7	Plateformes et système d'accès / Platforms and Access System	M. Lin. / Lin. M.		1105	



AGENCE PARCS CANADA / CANADA PARKS AGENCY

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2.	REEMPLACEMENT DU MUR DE COURONNEMENT / REPLACEMENT OF THE CROWNING WALLS				
2.1	Excavation (déblai 2e classe) et remblayage / Excavations et backfilling	M. Cu. / Cu M.		2874	
2.2	Disposition des sols contaminés / Disposal of Contaminated Soil				
2.2.1	- Plage A-B / Range A-B	Tonne / Ton		400	
2.2.2	- Plage B-C/ Range B-C	Tonne / Ton		200	
2.2.3	- Plage C+ / Range C+	Tonne / Ton		200	
2.3	Démolition et/ou récupération couronnement effondré / Concrete Demolition and/or Removal of collapsed walls	M. Cu. / Cu M.		1658	
2.4	Armature galvanisé / Reinforcing Galvanized Steel	Kg / Kg		116907	
2.5	Ancrage chimique (acier galvanisé) / Chemical Anchors (galvanized steel)	Unité / Unit		2927	
2.6	Béton coulé en place / Cast in place Concrete	M. Cu. / Cu M.		1490	
2.7	Bollards / Bollards	Unité / Unit		16	
2.8	Échelons / Rungs	Unité / Unit		67	



Parcs
Canada

Parks
Canada

AGENCE PARCS CANADA / CANADA PARKS AGENCY

RÉHABILITATION DE MURS DU CANAL-DE-LACHINE - REMPLACEMENT ET RÉPARATION DES MURS DE COURONNEMENT / REHABILITATION OF LACHINE CANAL WALLS-REPAIR AND REPLACEMENT OF THE CROWNING WALLS

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2.9	Matériaux emprunt type 1, MG-20 / Type 1 borrowing materials, MG-20	Tonne / Ton		1265	
2.10	Béton pour coussin de support (Béton 1 Mpa) / Concrete for support pad (Concrete 1 MPa)	M. Cu. / Cu M.		227	
2.11	Drain perforé 200 mm et géotextile, PCV (type 1) ou PCV COEX (type 1) ou PE (type 2), 180 kPa min. / Perforated Drain (200 mm) and Geotextile, PCV (type 1) or PCV COEX (type 1) or PE (type 2), 180 kPa min.	M. Lin. / Lin. M.		1105	
2.12	Terre végétale / Topsoil	M. carré / Sqrt. M		3893	
2.13	Ensemencement hydraulique / Hydroseeding	M. carré / Sqrt. M		3893	
2.14	Géotextile / Geotextile	M. carré / Sqrt. M		4527	
3	RÉPARATION SANS SURÉPAISSEUR DU MUR DE COURONNEMENT / REPAIR OF THE CROWING WALL				
3.1	Béton coulé en place ; Type XIV-R ou XIV-S (autoplaçant) / Cast -in-Place Concrete; Type XIV-R or XIV-S (self-consolidating)	M. Cu. / Cu M.		75	
3.2	Armature galvanisé / Reinforcing Galvanized Steel	Kg / Kg		5424	
3.3	Ancrage chimique (acier galvanisé) / Chemical Anchors (galvanized steel)	Unité / Unit		5273	
3.5	Échelons / Rungs	Unité / Unit		14	
3.6	Engazonnement par plaques / Laying Sod	M. carré / Sqrt. M		226	



AGENCE PARCS CANADA / CANADA PARKS AGENCY

RÉHABILITATION DE MURS DU CANAL-DE-LACHINE - REMPLACEMENT ET RÉPARATION DES MURS DE COURONNEMENT / REHABILITATION OF LACHINE CANAL WALLS-REPAIR AND REPLACEMENT OF THE CROWNING WALLS

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4	FOURNITURE SPÉCIALISÉE / SPECIALIZED EQUIPMENT				
4.1	Sonde pour mesurer le niveau d'eau / Probe for measuring water level	Unité / Unit		1	
5	MAINTIEN DE LA CIRCULATION ET SIGNALISATION TEMPORAIRE / TRAFFIC MAINTENANCE AND TEMPORARY SIGNAGE				
5.1	Maintien de la circulation et signalisation temporaire / Traffic Maintenance and temporary signage	Jour / Day		154	
5.2	Panneaux spéciaux / Special signs	M. carré / Sqrt. M		20	
6	PROVISIONS POUR CONDITIONS D'HIVER / PROVISION FOR WINTER CONDITIONS - COLD WEATHER CONCRETING				
6.1	Abri temporaire et Chauffage inclus / Temporary Shelter for Concrete Pouring and heating included	M. Lin. / Lin. M.		553	
6.2	Isolant RSI 0,40 par couche / Insulation (RSI 0,40 per layer)	M. carré / Sqrt. M		1384	
6.3	Chauffage des constituants de béton / Heating of Concrete Components	M. Cu. / Cu M.		896	

Total des postes de paiement / Total Items :

Préparé par / Prepared by :

Date :

Nom de la compagnie / Company: