

**enviroline** services Inc.  
PO box 7539 Saskatoon SK. S7K 4L4 Tel 306 242 8836 Fax 306 249 6721 email:enviroline@sasktel.net

## Extrusion Welding Log

[illegible]

# enviroline services Inc.

PO Box 7539 Saskatoon SK. S7K 4L4

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## Extrusion Welding Qualification Data

Date	July 1, 09	Extruder#	X2-2
Project	Baker Lase	Operator	DAP
QC Tech:	MD	Preheat Temp.	280°C
Material	60 mil	Barrel Temp.	245°C
Test Identification	P.M.	Shoe Height	1/4"
Temp.	20	Weld Type	Flat

## Destructive Testing Results

### Vice Grip Peel

Type of failure	Comments

### Tensometer Peel

Lb/Inch	% Separation	Comments
106	0	P
115	0	P
115	0	P
107	0	P
114	0	P

### Seam Tensile

Lb/inch	% Elongation	Comments
181	200	P
172	200	P



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## Extrusion Welding Qualification Data

Date	July 2, 2009	Extruder#	X2-2
Project	Baker Lake	Operator	DAP
QC Tech:	MP	Preheat Temp.	280°C
Material	60 mil	Barrel Temp.	245°C
Test Identification	A.M.	Shoe Height	1/4"
Temp.	8°C	Weld Type	Flat

## Destructive Testing Results

### Vice Grip Peel

Type of failure	Comments

### Tensometer Peel

Lb/Inch	% Separation	Comments
113	0	P
117	0	P
116	0	P
115	0	P
116	0	P

### Seam Tensile

Lb/inch	% Elongation	Comments
179	200	P
178	200	P

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## Extrusion Welding Qualification Data

Date	July 03, 2009	Extruder#	XZ-2
Project	Baker Lake	Operator	DAP
QC Tech:	MD	Preheat Temp.	280°C
Material	60 mil	Barrel Temp.	230°C
Test Identification	A.M.	Shoe Height	1/4"
Temp.	10°	Weld Type	Flat

## Destructive Testing Results

### Vice Grip Peel

Type of failure	Comments

### Tensometer Peel

Lb/Inch	% Separation	Comments
	0	P
117	0	P
114	0	P
112	0	P
112	0	P
118	0	P

### Seam Tensile

Lb/inch	% Elongation	Comments
	200	P
183	200	P
177		



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## Extrusion Welding Qualification Data

Date	July 4 2009	Extruder#	X2-Z
Project	Baker Lake	Operator	DAP
QC Tech:	MD	Preheat Temp.	280°C
Material	60 mil	Barrel Temp.	245°C
Test Identification	AM	Shoe Height	1/4"
Temp.	14°C	Weld Type	flat

## Destructive Testing Results

### Vice Grip Peel

Type of failure	Comments

### Tensometer Peel

Lb/Inch	% Separation	Comments
117	0	P
114	0	P
116	0	P
112	0	P
113	0	P

### Seam Tensile

Lb/inch	% Elongation	Comments
183	200	P
177	200	P

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## Extrusion Welding Qualification Data

Date	July 5 2009	Extruder#	X2-2
Project	Baker Lake	Operator	DAP
QC Tech:	MP	Preheat Temp.	270°C
Material	60 mil	Barrel Temp.	235°C
Test Identification	A.M.	Shoe Height	1/4"
Temp.	7°	Weld Type	Flat

## Destructive Testing Results

### Vice Grip Peel

Type of failure	Comments

### Tensometer Peel

Lb/Inch	% Separation	Comments
	0	P
110	0	P
117	0	P
109	0	P
111	0	P
118	0	P

### Seam Tensile

Lb/inch	% Elongation	Comments
178	200	P
173	200	P



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## Extrusion Welding Qualification Data

Date	July 6, 2009	Extruder#	X2-2
Project	Baker Lake	Operator	DAP
QC Tech:	MD	Preheat Temp.	272°C
Material	60 mil	Barrel Temp.	238°C
Test Identification	A.M.	Shoe Height	1/4"
Temp.	11°C	Weld Type	Flat

## Destructive Testing Results

### Vice Grip Peel

Type of failure	Comments

### Tensometer Peel

Lb/Inch	% Separation	Comments
114	0	P
115	0	P
116	0	P
117	0	P
118	0	P
119	0	P

### Seam Tensile

Lb/inch	% Elongation	Comments
181	200	P
176	200	P

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## Extrusion Welding Qualification Data

Date	July 2, 09	Extruder#	X2-2
Project	Baker Lake	Operator	DAP
QC Tech:	MP	Preheat Temp.	270°C
Material	60 mil	Barrel Temp.	239°C
Test Identification	A.M.	Shoe Height	1/4"
Temp.	7°C	Weld Type	Flat

## Destructive Testing Results

### Vice Grip Peel

Type of failure	Comments

### Tensometer Peel

Lb/Inch	% Separation	Comments
114	0	P
115	0	P
115	0	P
119	0	P
114	0	P

### Seam Tensile

Lb/inch	% Elongation	Comments
183	200	P
188	200	P



## Appendix A3

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### **Baker Lake Diesel Fuel Storage Installations: Final Report Following Construction of Phase 3 (2010)**

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**AGNICO-EAGLE MINES LTD  
MEADOWBANK DIVISION**

**BAKER LAKE FUEL STORAGE INSTALLATIONS  
TANK # 5 AND # 6**

**2010**

**FINAL REPORT  
FOLLOWING THE CONSTRUCTION  
OF  
PHASE 3 (2010)**





**AEM**

**AGNICO-EAGLE MINES LTD  
MEADOWBANK DIVISION**

**BAKER LAKE FUEL STORAGE INSTALLATIONS**

**FINAL REPORT  
FOLLOWING THE CONSTRUCTION  
OF  
PHASE 3 (2010)**

**PREPARED BY :**



**France Bérubé, Eng..Jr  
Civil  
STAVIBEL**



**Serge Beaulé, Eng. associate  
Head Department Civil  
STAVIBEL**



*2011-02-23*

**AGNICO-EAGLE MINES LTD  
MEADOWBANK DIVISION**

**BAKER LAKE FUEL STORAGE INSTALLATIONS TANK # 5 AND # 6**

**FINAL REPORT**

**FOLLOWING THE CONSTRUCTION  
PHASE 3 (2010)**

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## **A. DESCRIPTION OF MANDATE**

Agnico-Eagle Mines has given a mandate to Stavibel, engineering services in order to verify the compliance with applicable regulations of its fuel storage installations in Baker Lake, Nunavut.

Accord to the terms of reference, the mandate consists summarily in the following activities.

- A. Review and compilation of the available documentation;
- B. Collection of any information that may be missing;
- C. REVISION OF CONSTRUCTION DRAWINGS
  - Preparation of « *AS BUILT* » drawing of the construction tank #5 and #6, of phase 3.
- D. Verifications to the storage capacity within the existing containment berms of phase 3.

## B. DOCUMENTATION READILY AVAILABLE

### GOLDER ASSOCIATES – Vancouver office (phase 1, 2, 3)

For the Baker Lake bulk fuel storage facilities, this firm has produced some construction specifications on 2006-04-25, which were given reference SP-GAL-03 under their project number 06-1413-009.

### NISHI-KHON/SNC LAVALIN LTD – Vancouver office (phase 1, 2)

For the Baker Lake bulk fuel facilities, this firm has produced a set of drawings issued **for construction** on 2007-08-03, under their project number 017202. Some specifications for fuel piping and valves were also issued.

<b>EARTHWORK DRAWINGS</b>	017202-1000-41D1-0006	17202-1000-46ES-1001A	017202-8000-46DC-9150
017202-1000-41D1-0001	<b>FUEL PIPING DRAWINGS</b>	17202-1000-46ES-1001B	017202-8000-46DC-9152
017202-1000-41D1-0002	017202-1000-41D1-0007	<b>ELECTRICAL DRAWINGS</b>	017202-8000-46DC-9153
017202-1000-41D1-0003	017202-1000-46D4-1004	017202-1000-46D6-1001	017202-8000-46DC-9156
017202-1000-41D1-0004	017202-1000-46D4-1005	017202-1000-47D2-2001	017202-8000-46DC-9157
017202-1000-41D1-0005	017202-1000-46D4-1006	017202-8000-47DA-9004	017202-8000-46DC-9166

### GEM STEEL EDMONTON LTD (phase 1, 2, 3)

This vendor has submitted a set of « AS BUILT » drawings issued for the completion and permitting, which consist in four (4) structural drawings showing the details of a fuel tank of 10 million liters nominal capacity. These fuel tanks are shown on revision 1 of drawings BL-2010-1, BL210-2, BL-2010-3 and BL-2010-4.

### CHAMCO INDUSTRIES LTD (phase 1, 2)

This vendor has submitted a set of drawings issued **for construction** under their project number 1014938ABS, consisting of the following drawings. These documents have all been received by HATCH and approved.

<b>DRAWING NUMBER</b>	H325174-M268-VD-0040	H325174-M268-VD-0041	H325174-M268-VD-0010
H325174-M268-VD-0011	H325174-M268-VD-0012	H325174-M268-VD-0013	H325174-M268-VD-0014
H325174-M268-VD-0015	H325174-M268-VD-0016	H325174-M268-VD-0017	H325174-M268-VD-0019
H325174-M268-VD-0020	H325174-M268-VD-0021	H325174-M268-VD-0029	H325174-M268-VD-0030
H325174-M268-VD-0031	H325174-M268-VD-0032	H325174-M268-VD-0033	H325174-M268-VD-0034
H325174-M268-VD-0035	H325174-M268-VD-0036	H325174-M268-VD-0037	H325174-M268-VD-0039

### **C. STAVIBEL, ROUYN-NORANDA OFFICE (phase 3)**

This firm has produced a set of construction and has built drawings consisting of the following drawings.

Fuel tanks of phase 3 are shown on these drawing as well as the earthwork, the piping and electrical grounding details.

#### **Earthwork drawings**

<b>DRAWING NUMBER</b>
740-C-0123
740-C-0124
740-C-0125

#### **Fuel piping drawings**

<b>DRAWING NUMBER</b>
740-M-0100

#### **Electrical drawings**

<b>DRAWING NUMBER</b>
740-E-0120



## **D. ADDITIONAL COLLECTION OF INFORMATION**

### **TECHNIC EXPERT INC.**

Role during construction phase #3 : Field supervision during construction of phase 3 (2010)

Mr. Luc Croisetière, which is a civil consultant at the time and Julie Bacon (AEM employee), have supervised the construction of the fuel containment area around tank #5 and #6, in phase 3 of this project. A specialized crew coming from Saskatoon (Enviroline Service inc.) was hired in May 2010 to install an HDPE membrane over the berms. This HDPE membrane has been covered with a minimum layer of about 150 mm thickness of crushed stone.

The installation of the liners has been done and completed on October 5<sup>th</sup> 2010 before the blizzard and snow arrival. Also, before any fuel fill in these new set of tank.

### **QAMANITTUAP, SANA, GILBERT GOUP.**

Role during construction phase #3

In early May 2010, and considering a short window of time for the 2010 tanks construction, (2) diamond drills and (1) crew of blasters were required 24 hr/day considering an estimated  $\pm 125\,000$  tons of rock to blast, excavate and haul to a dump area. The bottom final floor was cutted at the elevation  $\pm 35.5$  and completely on slip rock.

### **GEM STEEL EDMONTON LTD**

Role during construction phase #3 : Fabrication and field assembly of 10 M liters fuel tanks

Construction of phase 3 (tanks #5 and #6) took place from July to September 2010, with a crew of about 16 workers.

Following phase 3 of this field work, a crew from ACUREN has proceeded to X-RAY testing of horizontal and vertical welds according to specifications described in the latest edition of API Standard 650. According to the report made by ACUREN, minor repairs of defective welds were required, either on the tank shell or nozzles.

### **SM CONSTRUCTION INC.**

Role during construction phase #3

As the connection and pipe were already built in 2009 for the phase 3 future development a crew of 4 welders have installed pipeline from existing tank #4 to reach tank #5 and #6. This work have been completed on September 30<sup>th</sup> 2010. The tank fuel filling planned in mid-october 2010.

## **E. REVISION OF CONSTRUCTION DRAWINGS**

AEM has hired Stavibel Engineering Services, a firm based in Rouyn-Noranda, in order to complete the drawings that were used in producing this report. Those drawings are enclosed in Appendix 1 of this report.

**Drawing 740-C-0123** shows the general layout of fuel storage area. It has been compiled using surveying data by a crew from NUNA and Agnico Eagle.

**Drawing 740-C-0124** shows the cross sections of the containment area of phase 3. They are generated using AutoCad CIVIL 3D software and based on the informations collected by Agnico Eagle.

**Drawing 740-C-0125** shows the details of the HDPE membrane, its limits and the components of the phase3.

**Drawing 740-M-0100 G** shows the general of the piping layout and also the specification of the main equipment (valves, check valves, etc.)

**Drawing 740-E-0120** shows the layout and the details of the electrical grounding of fuel storage area. It's based on the informations collected by Agnico Eagle.

**Drawing BL2010-01** shows the general tank elevation of the fuel storage tanks.

**Drawing BL2010-02** shows the roof and the nozzle plan of the fuel storage tanks.

**Drawing BL2010-03** shows the details of the assembly of the fuel storage tanks.

**Drawing BL2010-04** shows also the details of the assembly of the fuel storage tanks.

## **F. VERIFICATION TO STORAGE CAPACITY WITHIN BERMS**

Stavibel Engineering Services has completed verifications on the liquid storage capacity inside the containment berms, which create an impermeable enclosure around tank #5 and #6.

The method used was volume calculation using AutoCad CIVIL 3D software.

The maximum storage capacity of fuel tanks #5 and #6 is 15 500 m<sup>3</sup> of diesel fuel at a standard temperature of fifteen degrees Celcius (15 °C).

It has been verified using the above software that the impermeable enclosure built in phase 3 will effectively hold 100% of the maximum storage capacity of the biggest tank, plus 10% of the maximum storage of the other tank. This calculation has been summarized in a worksheet that is shown on page 7, here under.

The containment volume for tanks #3 and #4 is 15 500 m<sup>3</sup>.

Thus, the lowest point of the HDPE membrane that sits atop the containment area is sufficiently high (at elevation 39.3 m) to meet the above criteria.

A worst case scenario has been simulated, and consists in either a rupture of the first course of side plates in the tank shell, or a failure in the outlet piping, when either one of fuel tank is 100% full.

This simulation shows that, in such a worst case scenario, the hydraulic balancing level inside the containment area would not exceed the point with the lowest elevation (39.3 m) on the surrounding berms, which is located on the south-west side. On north-east side, the berm gives more elevation at an elevation of approximative ±45 m.

The containment volume for tanks #5 and #6 is 15 500 m<sup>3</sup> as a result, this new containment requirement of 110% of the biggest tank volume (or 11 843 m<sup>3</sup>), expressed while considering all two (2) tanks as a whole, will then be exceeded by 45%.

## DESIGN REVIEW – FOR FUEL SPILL CONTAINMENT BERMS AT BAKER LAKE

ÉQUIPEMENTS	DIAM (ft)	RIM EL. (m)	Radius (m)	Surface (m <sup>2</sup> )	TOP EL. (m)	Height (m)	Volume (m <sup>3</sup> )
740-TK-044-TANK #5	110	*37.846	16.764	882.89	50.04	12.195	10.767
740-TK-044-TANK #5	110	*37.831	16.764	882.89	50.03	12.195	10.767

Let's say berms are 5' 3" higher than the average tank floor (so 1.60 m total height) with variable slopes and that the tanks are sitting on cones made of crushed stone of 20 m diameter x 1.0 m height.

\*Average tank #5 =  $(37.839 + 37.846 + 37.848 + 37.852)/4 = 37.846$

\*Average tank #6 =  $(37.835 + 37.825 + 37.830 + 37.833)/4 = 37.831$

### Volume

**Secondary Containment Requirement** → 11 843 m<sup>3</sup>

according to ref. PN-1326, Section 3.9.1 (1) 2-b-ii → 110%

Containment volume to be subtracted for the two (2) cones made of crushed stone: already reduced from AutoCad 3D

<p style="text-align: right;"><u>Volume</u></p> <p>NET CONTAINMENT 15 500 m<sup>3</sup> or 144% &gt; 110%</p>
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# APPENDIX 1

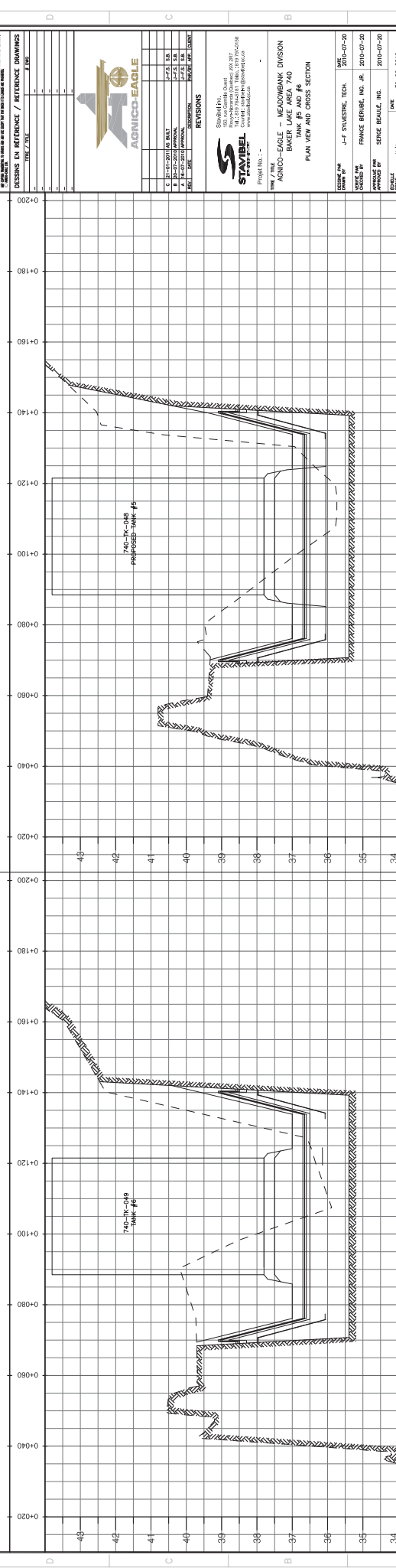
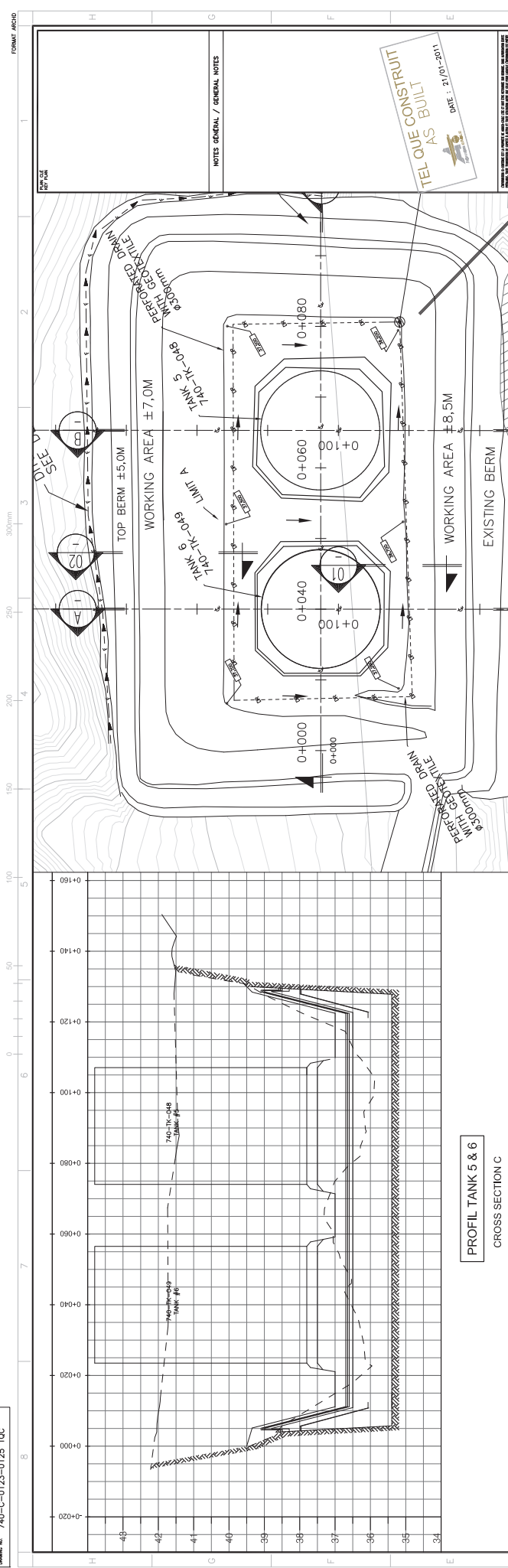
## AS BUILT DRAWINGS FOR PHASE 3

DRAWINGS NUMBER			
<b>Earthwork drawings</b>	<b>Fuel piping drawing</b>	<b>GEM Steel drawings</b>	BL2010-4
740-C-0123	740-M-0100	BL2010-1	
740-C-0124	<b>Electrical drawings</b>	BL2010-2	
740-C-0125	740-E-0120	BL2010-3	

## IFC DRAWING FOR PHASE 3

DRAWINGS NUMBER			
<b>Earthwork drawings</b>	<b>Fuel piping drawing</b>	<b>GEM Steel drawings</b>	BL2010-4
740-C-0123	740-M-0100	BL2010-1	
740-C-0124	<b>Electrical drawings</b>	BL2010-2	
740-C-0125	740-E-0120	BL2010-3	





PROFIL TANK 5

PROFIL TANK 6  
CROSS SECTION A

[illegible]

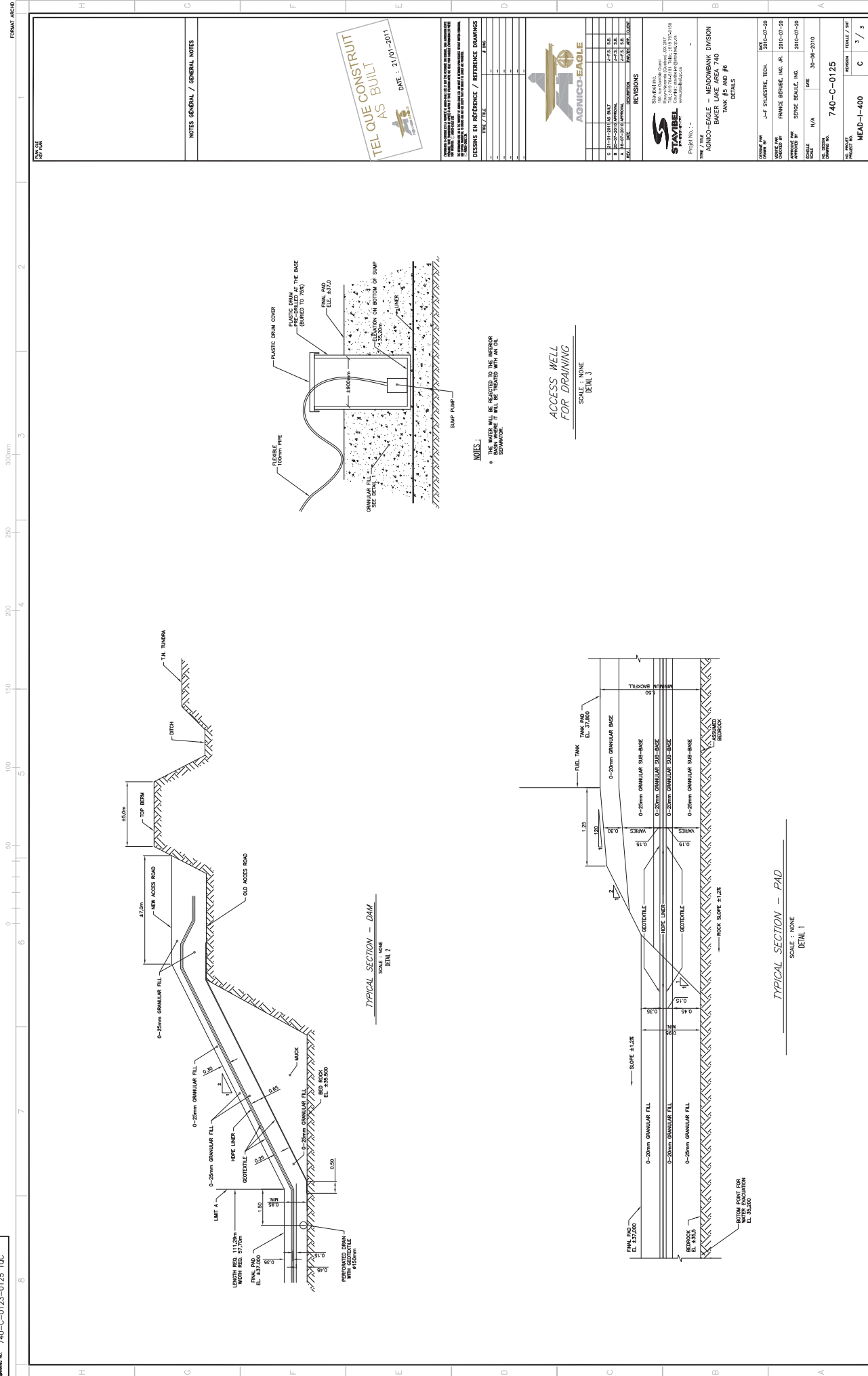
**STAVIBEL**  
PROFESSIONAL

Stavibel Inc.  
100, rue Gamble Ouest  
Rouyn-Noranda (Québec) J9X 2R7  
Tél.: 819 764-5181 Téléc.: 819 793-2058  
Compt.: 819 764-5181  
[www.stavibel.qc.ca](http://www.stavibel.qc.ca)

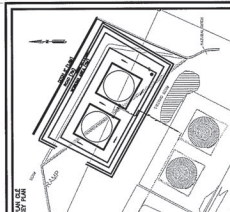
AGNICO-EAGLE - MEADOWBANK DIVISION  
BAKER LAKE AREA 740  
TANK #5 AND #6  
PLAN VIEW AND CROSS SECTION

DESIGNER NAME	DATE
J-F SYLVESTRE, TECH.	2010-07-20
DESIGNER NAME	DATE
FRANCE BÉRUÉ, INC. JR.	2010-07-20
APPROVED NAME	DATE
SERGE BEAULÉ, INC.	2010-07-20

740-C-0124	NO. PROJECT PROJECT NO.	REVISION	FEUILLE / SHEET
		C	2 / 3








NOTES GENERAL / GENERAL NOTES

1-ALL THE SPRING CONNECTION MUST BE AT THE BOTTOM OF THE TANK

POUR CONSTRUCTION FOR CONSTRUCTION

DATE : 12/08/2010

 MINISTÈRE DE L'ENVIRONNEMENT ET DU DÉVELOPPEMENT DURABLE

POUR CONSTRUCTION  
FOR CONSTRUCTION  
DATE : 12/08/2010

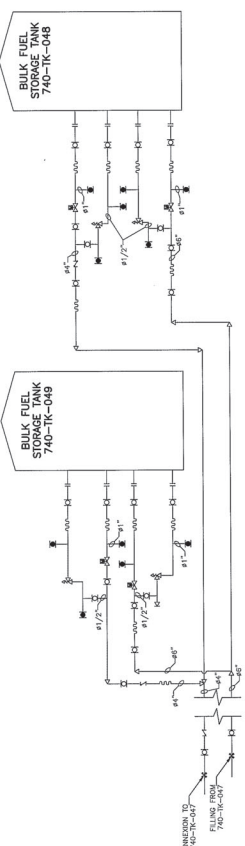


REV	DATE	DESCRIPTION	MAILED	FILED
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1	2010-07-20	FOR APPROVAL	V.Cm.	J.M.C
A	2010-07-16	FOR APPROVAL	V.Cm.	J.M.C
1			MAILED	A. GUNF

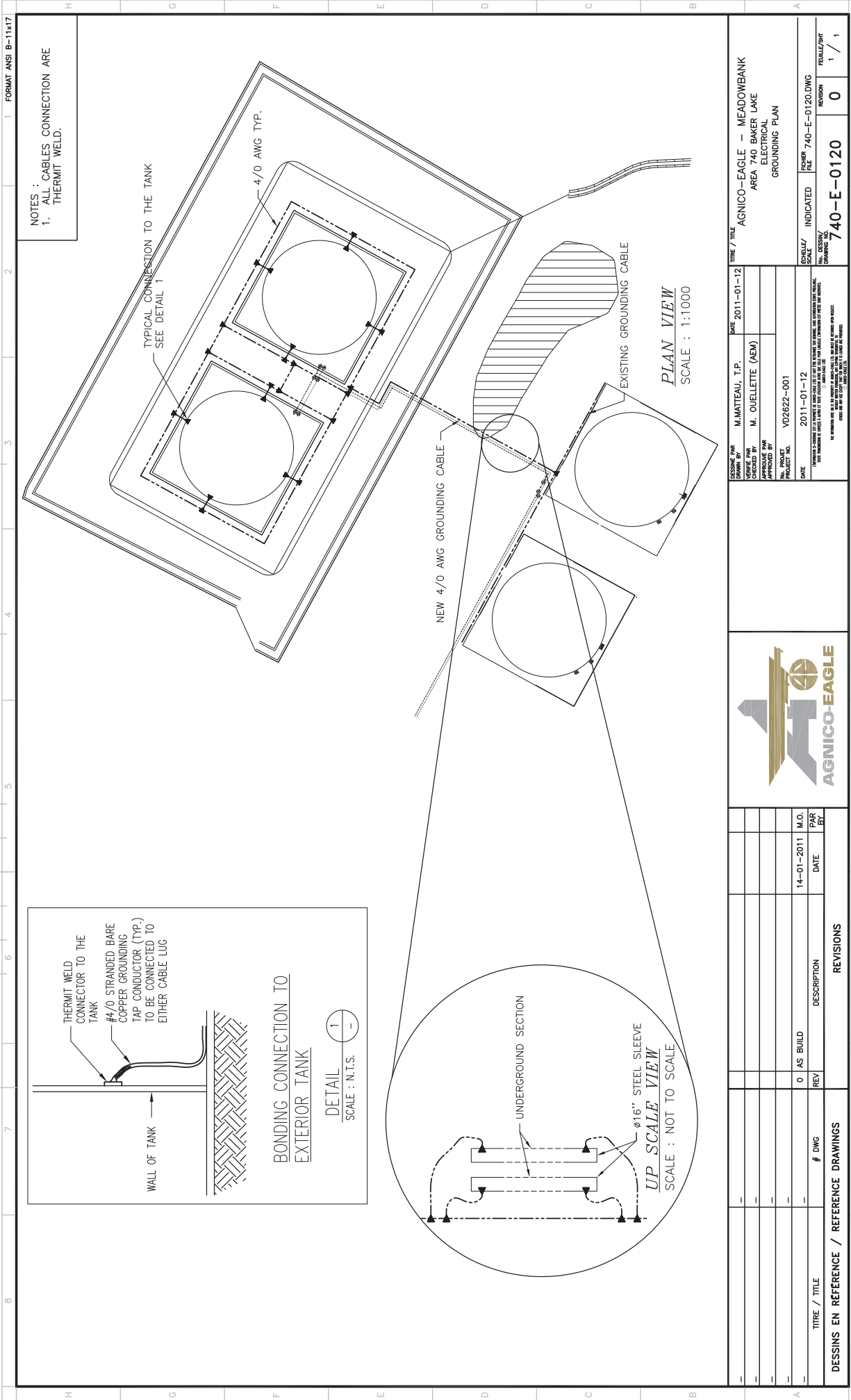
REVISIONS

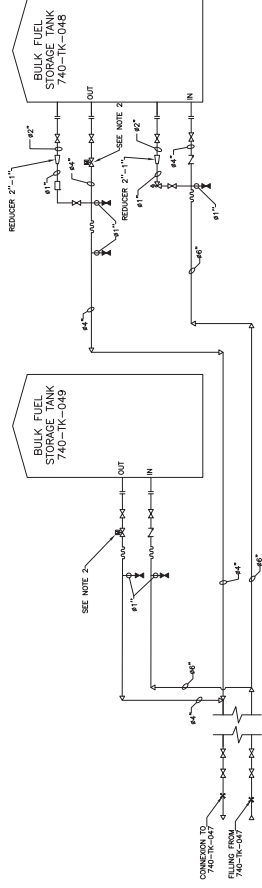
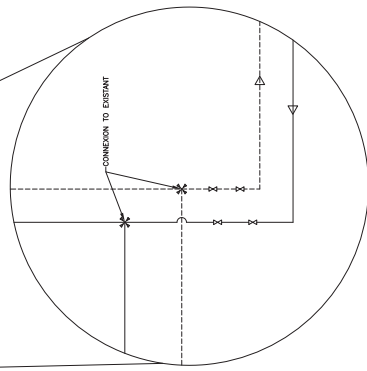
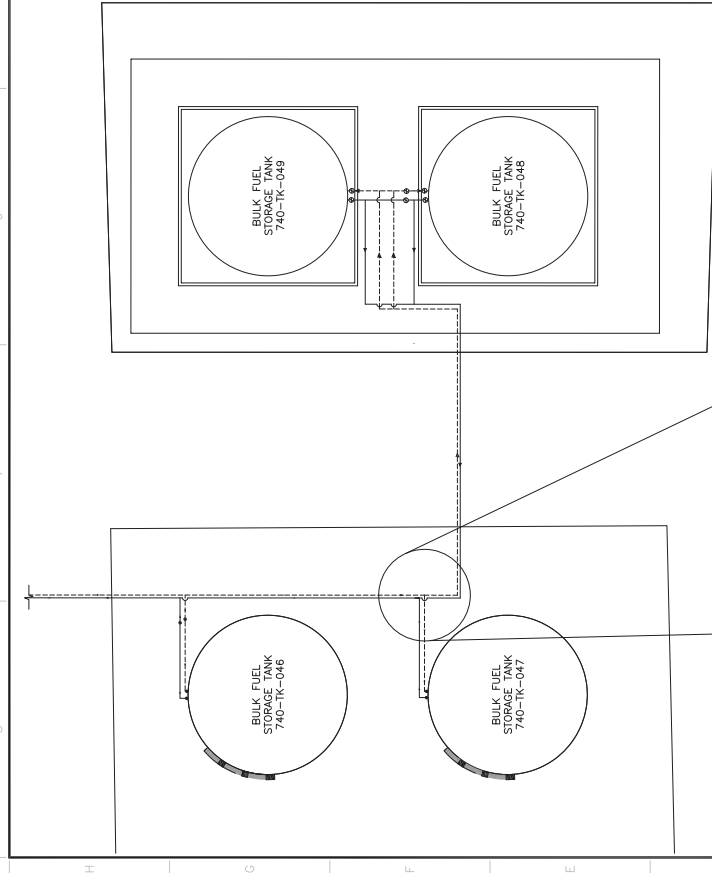
TIME / WEEK  
 AGNICO-EAGLE - MEADOWBANK DIVISION  
 BAKER LAKE AREA 740  
 TANK #5 AND #6  
 FUEL DISTRIBUTION PIPING  
 LAYOUT AND DETAILS

DESIGNER PAK DATE	VICKY CISTE, TECH.	DATE 2010-07-16
VENDOR PAK DESIGN BY	J-M CHARRON, Ing.	
APPROVAL PAK APPROVED BY	J-M CHARRON, Ing.	
EXHIBIT SCALE	N/A	DATE
NO. ARCH. DRAWING NO.		
740-M-0100		
NO. PROJECT PROJECT NAME	MEAD-i-400	REVISION FEUILLE / DNF 0 / 1

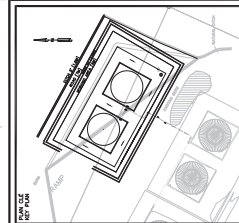


### PIPING DETAILS





PIPING DETAILS



Piping	Symbol	Measurement	Details	Type	Materials	Quantity
Filling of Tank 740-TK-048 from 740-TK-049		Gate Valve	Class 150 Flanged, Face to face dimension ANS B8.10, End to End dimension ANS B8.5, 1, API 510 Ball carbon steel body, ANFM A134 LCC	NA	Beitic Gate 150	2
		Gate Valve	Class 150 Flanged, Face to face dimension ANS B8.10, End to End dimension ANS B8.5, 1, API 510 Ball carbon steel body, ANFM A134 LCC	NA	Beitic Gate 150	4
		Gate Valve	Class 150 Flanged, Face to face dimension ANS B8.10, End to End dimension ANS B8.5, 1, API 510 Ball carbon steel body, ANFM A134 LCC	NA	Beitic Gate 150	2
		Gate Valve	Class 150 Flanged, Face to face dimension ANS B8.10, End to End dimension ANS B8.5, 1, API 510 Ball carbon steel body, ANFM A134 LCC	NA	Beitic Gate 150	2
Distribution from Tank 740-TK-049		Gate Valve	Class 150 Flanged, Face to face dimension ANS B8.10, End to End dimension ANS B8.5, 1, API 510 Ball carbon steel body, ANFM A134 LCC	NA	Beitic Gate 150	4
		Gate Valve	Class 150 Flanged, Face to face dimension ANS B8.10, End to End dimension ANS B8.5, 1, API 510 Ball carbon steel body, ANFM A134 LCC	NA	Beitic Gate 150	4
		Gate Valve	Class 150 Flanged, Face to face dimension ANS B8.10, End to End dimension ANS B8.5, 1, API 510 Ball carbon steel body, ANFM A134 LCC	NA	Beitic Gate 150	2
		Gate Valve	Class 150 Flanged, Face to face dimension ANS B8.10, End to End dimension ANS B8.5, 1, API 510 Ball carbon steel body, ANFM A134 LCC	NA	Beitic Gate 150	2
Overpressure line from Tank 740-TK-048		Gate Valve	Class 150 Flanged, Face to face dimension ANS B8.10, End to End dimension ANS B8.5, 1, API 510 Ball carbon steel body, ANFM A134 LCC	NA	Beitic Gate 150	4
		Gate Valve	Class 150 Flanged, Face to face dimension ANS B8.10, End to End dimension ANS B8.5, 1, API 510 Ball carbon steel body, ANFM A134 LCC	NA	Beitic Gate 150	4
		Gate Valve	Class 150 Flanged, Face to face dimension ANS B8.10, End to End dimension ANS B8.5, 1, API 510 Ball carbon steel body, ANFM A134 LCC	NA	Beitic Gate 150	2
		Gate Valve	Class 150 Flanged, Face to face dimension ANS B8.10, End to End dimension ANS B8.5, 1, API 510 Ball carbon steel body, ANFM A134 LCC	NA	Beitic Gate 150	2

AGNICO-EAGLE

DESIGNER

REVISIONS

NO.	DATE	DESCRIPTION
1	2010-07-16	ISSUED FOR PERMIT
2	2010-08-20	FOR CONSTRUCTION
3	2010-08-20	FOR APPROVAL
4	2010-08-20	FOR APPROVAL
5	2010-08-20	FOR APPROVAL
6	2010-08-20	FOR APPROVAL
7	2010-08-20	FOR APPROVAL
8	2010-08-20	FOR APPROVAL
9	2010-08-20	FOR APPROVAL
10	2010-08-20	FOR APPROVAL

TIME / DATE

AGNICO-EAGLE - MEADOWS DIVISION

BAKER LAKE AREA 240

TANK #5 AND #6

FUEL DISTRIBUTION PIPING

LAYOUT AND DETAILS

DESIGNED BY

WICKY CRETE TECH

2010-07-16

2010-08-20

2010-08-20

2010-08-20

2010-08-20

2010-08-20

2010-08-20

2010-08-20

2010-08-20

2010-08-20

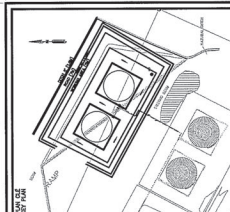
PROJECT NO.

740-M-0100

MEAD-I-400

1

1




NOTES GENERAL / GENERAL NOTES

1-ALL THE SPRING CONNECTION MUST BE AT THE BOTTOM OF THE TANK

POUR CONSTRUCTION FOR CONSTRUCTION

DATE : 12/08/2010



POUR CONSTRUCTION  
FOR CONSTRUCTION  
DATE : 12/08/2010

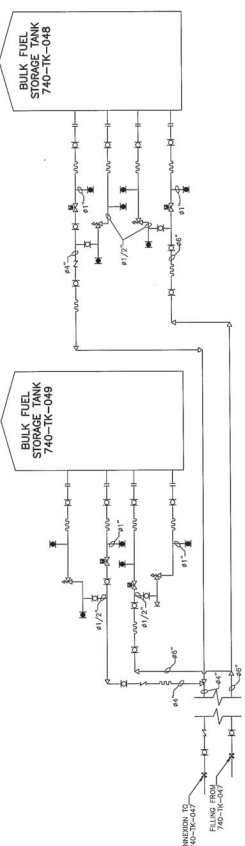


REV	DATE	DESCRIPTION	MAILED	FILED
0	2010-08-12	FOR CONSTRUCTION	MAILED	J.M.C
1	2010-07-20	FOR APPROVAL	V.Cm.	J.M.C
A	2010-07-16	FOR APPROVAL	V.Cm.	J.M.C
1			MAILED	A. GUNF

REVISIONS

TIME / WEEK  
 AGNICO-EAGLE - MEADOWBANK DIVISION  
 BAKER LAKE AREA 740  
 TANK #5 AND #6  
 FUEL DISTRIBUTION PIPING  
 LAYOUT AND DETAILS

DESIGNER PAK DATE	VICKY CISTE, TECH.	DATE 2010-07-16
VARIANTE PAK DESIGNER PAK	J-M CHARRON, Ing.	
APPROUVE PAK APPROVED PAK	J-M CHARRON, Ing.	
EXCELLE SCALE	N/A	DATE
NO. DESIGNS COMMENTS		
740-M-0100		
NO. PRODUCE PRODUCT NAME	PRODUCTION	FEUILLE / DNF 0 / 1
MEAD-i-400		



### PIPING DETAILS



## APPENDIX 2

### SAFE FILL LEVELS FOR ALL FUEL TANKS

TEMPERATUE OF FUEL in the barge at discharge	MAXIMUM FUEL LEVEL To be read on the VAREC float level	
	TANK # 5	TANK #6
0 °C	9,63	9,63
+ 5 °C	9,67	9,67
+ 10 °C	9,72	9,72
+ 15 °C	9,76	9,76

**NOTE: EACH TANK HAS A SLIGHTLY DIFFERENT ELEVATION, SO CARE MUST BE TAKEN DURING HYDRAULIC BALANCING OF TANKS, ESPECIALLY WHEN THOSE ARE FULL**

## Appendix A4

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### **Baker Lake Jet-A Fuel Storage Installations: As-built Report (2013)**

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**AGNICO EAGLE**  
**MEADOWBANK**

**AGNICO EAGLE MINES LTD**  
**MEADOWBANK DIVISION**

**BAKER LAKE JET A FUEL STORAGE INSTALLATIONS**

**2013**

**AS BUILT CONSTRUCTION REPORT**

**PREPARED BY:**

Yanick Simard

Project General Foreman

AEM.

**APPROVED BY:**



AGNICO EAGLE MINES LTD

*MEADOWBANK DIVISION*

BAKER LAKE JET A FUEL STORAGE INSTALLATIONS

2013

AS BUILT CONSTRUCTION REPORT

TABLE OF CONTENTS

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2. DESCRIPTION OF THE FUEL CONTAINEMENT PAD CONSTRUCTION STEPS	2
2.1 Excavation of the existing area	2
2.2 Construction of the pad Phase 1	2
2.3 Installation of the bituminous liner	3
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3. DESCRIPTION OF THE FACILITIES AND MECHANICAL PARTS ASSEMBLING	4
3.1 New tanks placement and installation of the pump house	4
3.2 Piping connection and electrical assembling phase 1	4
3.2 Piping connection and electrical assembling Phase 2	5

APPENDIX 1: DRAWINGS

APPENDIX 2: STAVIBEL'S CONSTRUCTION DAILY REPORTS

APPENDIX 3: SM'S TECHNICAL DATA SHEETS & DRAWINGS DOCUMENT



## **1- DESCRIPTION OF CONSTRUCTION ACTIVITIES**

Agnico Eagle mines has contracted Stavibel Engineering Services to design the Jet A fuel storage facilities located in Baker Lake, Nunavut, complying with specifications required by environmental and governmental regulations, namely Environment Canada's Fuel Tank Storage Regulations and the CCME Environmental Code of Practice for Aboveground and Underground Storage Tank Systems Containing Petroleum and Allied Petroleum Products.

Stavibel provided the design, planning and construction oversight related to the installation of infrastructure of AEM's new Jet A Fuel Storage facility which consists of 20 – 100,000L double walled tanks, associated piping and pumping systems and secondary requirement. AEM prepared a site survey to ensure proper measurements and elevation of the existing area.

The main activities related to the construction were scheduled as follow:

- I: AEM sent surveyed data of the existing area to Stavibel
- II: Stavibel sent first design plans for comments
- III: AEM moved the existing tanks and prepared the field for the construction
- IV: Construction of the infrastructure pad
- V: Assembling of all the installation of tanks and mechanical infrastructure.

## 2- DESCRIPTION OF THE FUEL CONTAINEMENT PAD CONSTRUCTION STEPS

### 2.1 EXCAVATION OF THE EXISTING AREA. July 14<sup>th</sup> 2013.

Quality control and quality approval: Stavibel

Construction contractor: Quamanittuap-Sana ( FGL)

General supervision and foreman: AEM

Starting with test pits, the presence of water was observed in the excavation area. It was then decided to increase the elevation of the pad by +300mm. Presence of contaminated soil was found as well; it was removed, analyzed by environmental department and sent to the soil landfarm at Meadowbank. The total amount was 128m<sup>3</sup>. All non-contaminated soil and rock that was removed and was placed aside to be used during the backfilling of the pad. (1) 365 CAT excavator, (1) D6 CAT dozer, (1) operator and (1) surveyor were necessary for the initial phase.

### 2.2 CONSTRUCTION OF THE PAD PHASE 1. July 15<sup>th</sup> – July 25<sup>th</sup> 2013.

Quality control and quality approval: Stavibel

Construction contractor: Quamanittuap-Sana ( FGL)

Material transportation: BLCS

General supervision and foreman: AEM

During this phase of the project, a (1) 365 CAT excavator, (1) 320 CAT excavator, (1) Komatsu 39PX dozer, (1) Hamm 3625 compactor and (1) 740 CAT haul truck were utilized. In addition, staff included were (1) operator plus (1) surveyor. The first step was to backfill the pad up to the determined level with 0-200mm NPAG rock, and then enlarge the road south of the pad. Excess water (clean) was drained in order to construct the containment berms around the pad as showed in appendix 1 B. Once the rock pad was at the determined elevation, crushed 0-20mm NPAG material was placed on top of the berms. Corrective measures around the pad were undertaken due to some instability in the area where the fuel cabinet would be installed. Crushed 0-20mm NPAG material was placed on the top of the pad, compacted to prepare for the installation of the bituminous liner. Excavation in the surrounding ditches was completed in accordance with design specifications. A total amount of 1217m<sup>3</sup> of NPAG 0-200mm and 455m<sup>3</sup> of NPAG 0-20mm was used to complete this phase of the construction.

## **2.3      INSTALATION OF THE BITOUMINOUS LINER.**

July 25<sup>th</sup> – July 27<sup>th</sup> 2013

Quality control and quality approval:      Stavibel

Construction contractor:              Quamanittuap-Sana ( FGL)

Liner crew:              Texcel

General supervision and foreman:              AEM

Equipment and manpower used included (1) 365 CAT excavator to unroll the liner and we had (1) operator, (1) surveyor, (2) liner installers and (3) laborers from Baker Lake. The liner was installed over a two day period. After installation, any holes that resulted were repaired and conformity tests were undertaken (pressure and tension). In addition, soft geotextile was placed under and over the liner to prevent puncturing that could occur while walking on the liner or during placement of the covering granular material. It was calculated that 2400m<sup>2</sup> of bituminous liner and 2625m<sup>2</sup> of soft geotextile was placed.

## **2.4      CONSTRUCTION OF THE TANK PAD PHASE 2.**

July 27<sup>th</sup>- July 31<sup>st</sup> 2013

Quality control and quality approval:      Stavibel

Construction contractor:              Quamanittuap-Sana ( FGL)

Material transportation:              BLCS

General supervision and foreman:              AEM

Phase 2 of construction of the pad was to place crushed 0-20mm NPAG over the bituminous liner (previously covered with geotextile). The following equipment and manpower were used, (1) 365 CAT excavator, (1) 307 Cat excavator, (1) 39 PX Komatsu bulldozer, (1) 740 CAT haul truck, (1) Hamm 3625 compactor, (1) operator and (1) surveyor. During this phase the contractor's (BLCS) was out of service due to mechanical issues so the 0-20mm NPAG layer was screened to maintain quality. Any materials that screened larger than 0-20mm were removed by hand. A total of 728m<sup>3</sup> of 0-20mm NPAG granular material were used to build the 300mm thick layer of liner protection. A slopped trench was excavated (1000mm up to ground level) to place an 8 inches steel conduit for electrical cable necessary to operate the pump house.

- FURTHER INFORMATION, PICTURES AND PLANS FOR THOSE STEPS CAN BE FOUND IN THE APPENDIX 1 AND 2

### **3- DESCRIPTION OF THE FACILITIES AND MECHANICAL PARTS ASSEMBLING.**

#### **3.1 NEW TANKS PLACEMENT AND INSTALATION OF THE PUMP HOUSE. Aug 5<sup>th</sup> –Aug 12<sup>th</sup> 2013**

Installation crew: SM Construction

Field supervisor: Quamanittuap-Sana ( FGL)

Crane and operator: J.M Francoeur

General supervision and foreman: AEM

20, double walled, 100,000L fuel storage tanks meeting CCME ULC requirements were placed on the pad described in Sec 2 above. Equipment and manpower used during this phase included (1) 35tns MCR crane, (6) technicians, (1) welder and (1) electrician. The tanks were placed according to the design specifications, ie level. Once the tanks placement was completed, foot bridges were installed as well as the pump house. \* See figure at page 523 in SM'S manual, appendix 3

#### **3.2 PIPING CONNECTION AND ELECTRICAL ASSEMBLING PHASE 1. Aug 12<sup>th</sup> – Aug 19<sup>th</sup> 2013**

Installation crew: SM Construction

Field supervisor: Quamanittuap-Sana ( FGL)

General supervision and foreman: AEM

During this phase (6) technicians and (1) welder assembled the 4 inch pipe and connections between the tanks and pump house. Also (1) electrician started the installation of electrical cables and control panels for the facility. All piping, pumps, electrical connections, etc. conformed to all applicable codes, specifications and regulations. \* See SM'S manual under the technical data section, Pp. 3 to 512, APPENDIX 3.



### 3.3 PIPING CONNECTION AND ELECTRICAL ASSEMBLING PHASE 2.

Aug 29<sup>th</sup> – Sept 17<sup>th</sup>

Installation crew: SM Construction

Field supervisor: Quamanittuap-Sana ( FGL)

General supervision and foreman: AEM

For the final phase of the project, (6) technicians and (1) welder completed assembling and installation of the pipe connections between the tanks and inside the pump house. An (1) electrician connected all of the main cables, the panels and computers inside the pump house. Hi-level alarms were also placed on all tanks and were tested as per specifications. All alarms were noted to be functional. After installation, all tanks were cleaned and washed inside and pressure tested as per specifications. During the pressure test, one tank indicated a loss of pressure. A small crack was found between the inside two layers of the tank. This might have occurred during the placement of this tank. It was decided not to add fuel to this tank this year. Repairs will be undertaken prior to re-fueling. At this point the tanks were ready to use for fuel storage.

- FURTHER INFORMATIONS, PARTS DESCRIPTIONS, PHOTOGRAPH, INSTALLATION AND ELECTRICAL PLANS CAN BE FOUND IN APPENDIX 3.

# **APPENDIX 1.**

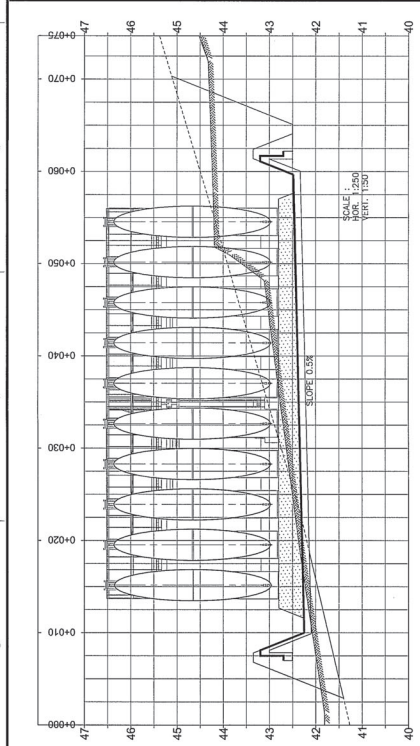
## **DRAWINGS.**

### **A. DESIGN PLAN FOR COMMENTS:**

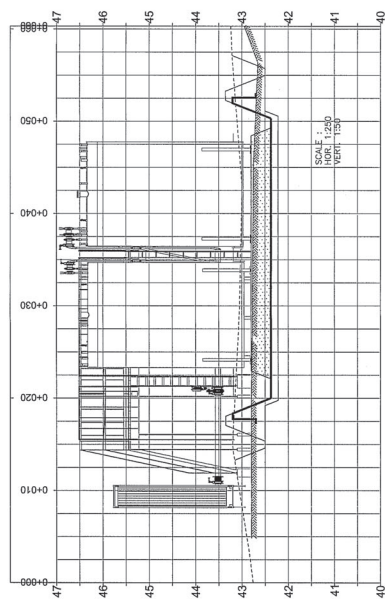
Drawing number: 61-740-230-211\_A

### **B. AS BUILT DRAWINGS:**

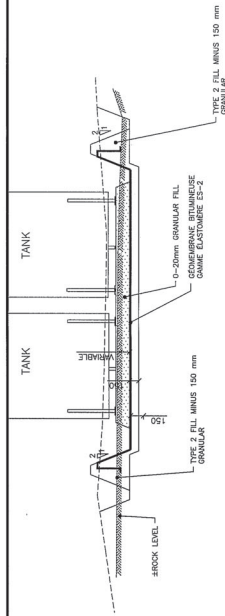
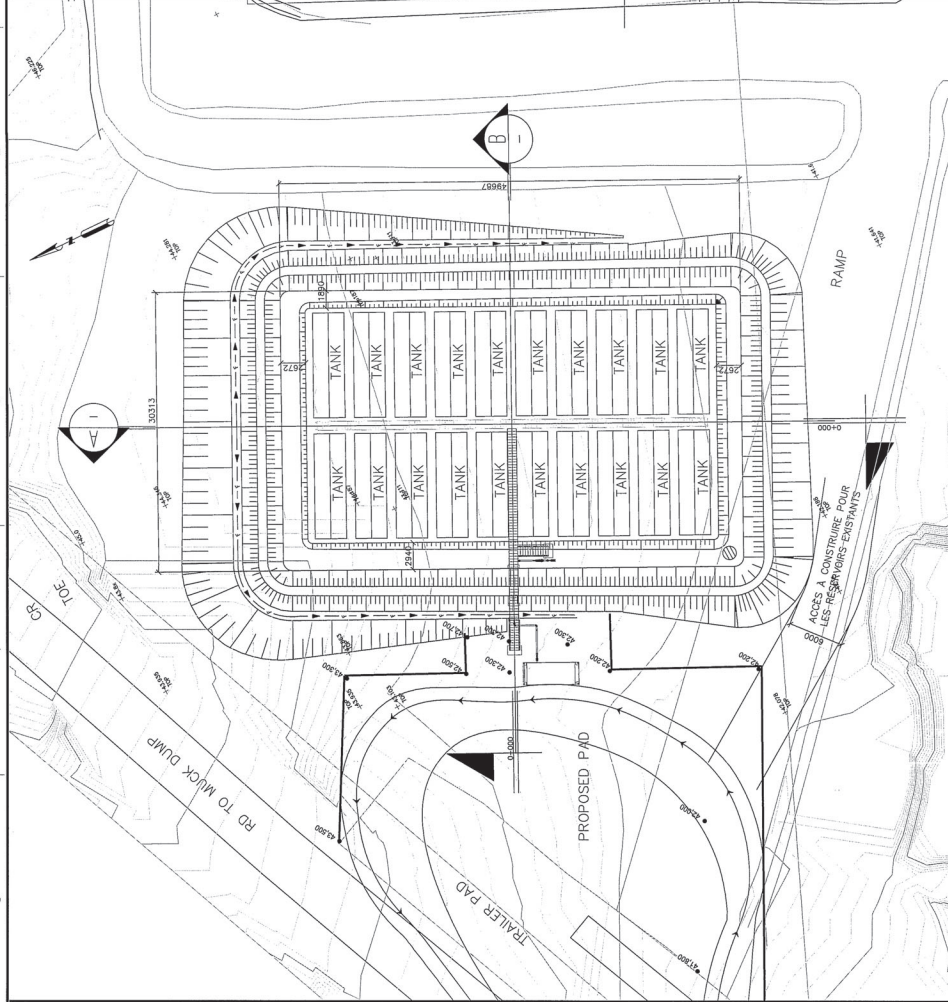
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	BAKER FF 2	SECTION VIEW



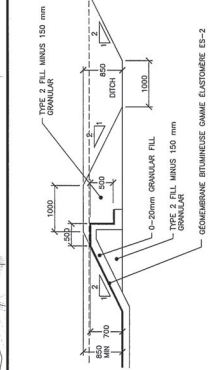
SECTION - A



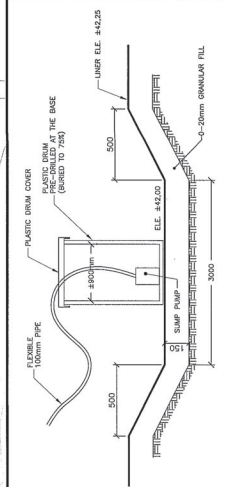
SECTION - B



TYPICAL SECTION WITH OPTION COLETANCHE



TYPICAL SECTION - DAM



NOTES:  
• THE WATER WILL BE REJECTED TO THE INTERIOR BASIN WHERE IT WILL BE TREATED WITH AN OIL SEPARATOR.

SCALE: NONE

PROJECT NO. 61-740-230-211-A

DATE: 2013-08-11

POUR COMMENTAIRES POUR COMMENTS

NOTES GENERAL / GENERAL NOTES

AGNICO EAGLE

REVISIONS

NO.	DATE	DESCRIPTION	BY	CHK.
1	2013-08-11	ISSUED FOR CONSTRUCTION	AS SHOWN	AS SHOWN

DESIGNER: YVES BOURDET, P.Eng.

DATE: 2013-08-11

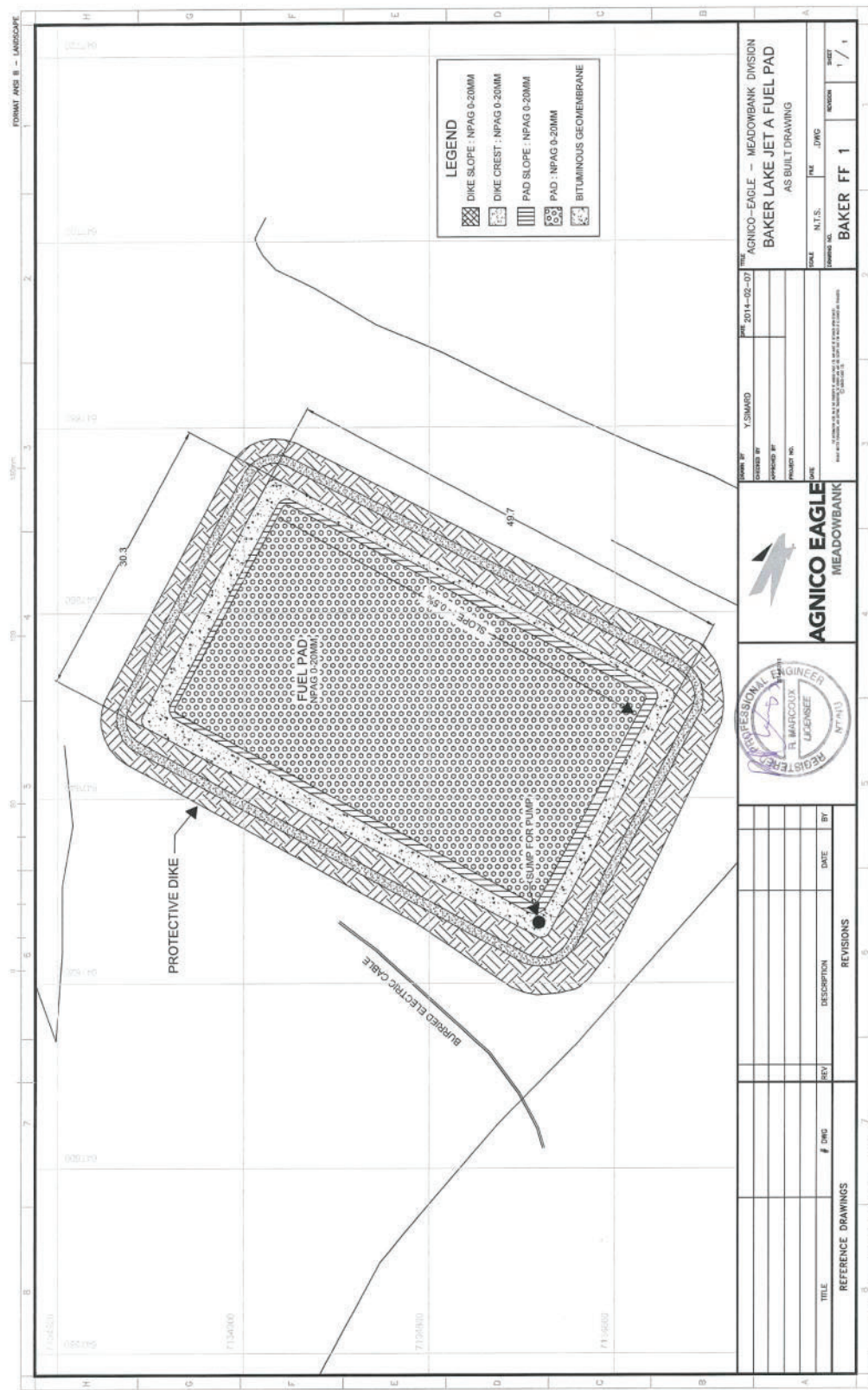
PROJECT NO. 61-740-230-211-A

PROJECT TITLE: ACCESS WELL FOR DRAINING

SCALE: NONE









## **APPENDIX 2.**

### **STAVIBEL'S CONSTRUCTION DAILY REPORT.**

DESCRIPTION OF THE FUEL CONTAINEMENT PAD CONSTRUCTION STEPS.

Title of project :	Baker Lake Jet-A Fuel Farm	Date :	2013-07-14
Project # :	OP-84541-J /VD3356	Doc #:	VD3356-003-RV-01
Prepared by :	Michaël Racine	Contractor :	Fernand Gilbert Ltée
Verified by :	Richard Marcoux, ing.	Temperature :	10 à 16°C Wind : 5 à 15 km/h

Object : Contractor's schedule (approximative hours)

Labour and machinery	Company	Working hours
1 Shovel CAT 365C L	FGL	11
Operator	FGL	12
Surveyor	FGL	9
10 tons roller compactor	BLCS	0
Bulldozer CAT D6 (DOZ09)	AEM	1
Field inspector	Stavibel	12

- **7h à 9h** Shovel 365 moves from Baker Lake to the Fuel Farm.
- **9h à 10h** Shovel 365 makes pit test at the North extremity of the projected pond.
- **10h à 12h** Shovel 365 removes the 0-20mm crushed stone in place.
- **13h à 17h30** Shovel 365 stockpiles the contaminated material outside the projected pond.
- **17h30 à 18h30** Bulldozer D6 profiles the infra.

**Comments :**

- Visit of Jean-François Béland (AEM foreman) and Dany Pageault (FGL superintendent) de 12h à 16h30
- After 3 test pits in the excavation zone, we found the presence of water and frozen material above the proposed elevation of the excavation. We need to increase the elevation of the project of 300mm.
- Presence of contaminated material and organic soil. The materials are stockpile and will be analyse by the environment. Thereafter, they will indicate how to dispose of it.

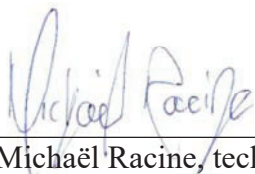
- Photo #1 – 3 test pits. Smell of Jet-A fuel and water arrival.





- Photo #2 – Excavation and stockpile of the contaminated material until the final level of the infra.



Par :   
Michaël Racine, tech.

Richard Marcoux, ing.  
No OIQ : 38724  
Project manager

Title of project :	Baker Lake Jet-A Fuel Farm	Date :	2013-07-15
Project # :	OP-84541-J /VD3356	Doc #:	VD3356-003-RV-02
Prepared by :	Michaël Racine	Contractor :	Fernand Gilbert Ltée
Verified by :	Richard Marcoux, ing.	Temperature :	8 à 17°C Wind : 5 à 30 km/h

Object : Contractor's schedule (approximative hours)

Labour and machinery	Company	Working hours	Volume (m3)
1 Shovel CAT 365C L	FGL	7	
Opérateur	FGL	12	
Surveyor	FGL	12	
Roller compactor	BLCS	1.9	
Bulldozer CAT D6T (DOZ09)	AEM	5	
Shovel 330C	BLCS	8.5	
2 articulated trucks CAT 740	BLCS	8.5	576
Field inspector	Stavibel	12	

- **6h30 à 18h30** Shovel 365 and Bulldozer D6T backfill with blasted rock 0-200 mm from quarry #1.
- **9h30 à 18h30** Loader 966 et 2 trucks haul the blasted rock 0-200 mm from quarry #1.
- **6h30 à 18h30** Compactor compacts the blasted rock when required.

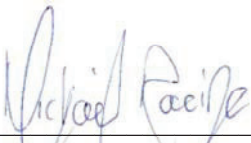
#### Comments :

- Attempt to cover the stockpile of contaminated material with tarps after the request of the environment. Unfortunately the wind make this operation impossible.
- The water accumulations are pumped before backfilling above.



- Photo #1 – Overview of the infra. Some water accumulations caused by the thaw of the material in place. A small ditch will be made to try to drain this water during night.



Par :   
Michaël Racine, tech.

Richard Marcoux, ing.  
No OIQ : 38724  
Project manager

Title of project :	Baker Lake Jet-A Fuel Farm	Date :	2013-07-16
Project # :	OP-84541-J /VD3356	Doc #:	VD3356-003-RV-03
Prepared by :	Michaël Racine	Contractor :	Fernand Gilbert Ltée
Verified by :	Richard Marcoux, ing.	Temperature :	8 à 17°C Wind : 5 à 30 km/h

Object : Contractor's schedule (approximative hours)

Labour and machinery	Company	Working hours	Volume (m3)
1 Shovel CAT 365C L	FGL	11	
Operator	FGL	12	
Surveyor	FGL	12	
Roller compactor Protec Boxer 114	BLCS	0	
Bulldozer CAT D6T (DOZ09)	AEM	0	
Shovel CAT 330C	BLCS	11	
2 Articulated trucks CAT 740	BLCS	11	816
Field inspector	Stavibel	12	

- **6h30 à 18h30** Loader 966 and 2 trucks haul the blasted rock 0-200 mm from quarry #1.
- **6h30 à 12h00** Shovel 365 widens the road on the south side of the pond Sud with blasted rock 0-200 mm from quarry #1.
- **6h30 à 18h30** Shovel 365 backfills with blasted rock 0-200 mm from quarry #1.

**Comments :**

- Beginning of haulage of the contaminated material to the mine (4 loads per day).



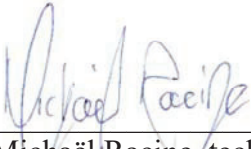
- Photo #1 – Windening of the road on the south side of the pond





- Photo #2 – Drainage of the water on north side of the pad. The ground is more stable at the end of the day.



Par :   
Michaël Racine, tech.

Richard Marcoux, ing.  
No OIQ : 38724  
Project manager

Title of project :	Baker Lake Jet-A Fuel Farm	Date :	2013-07-17
Project # :	OP-84541-J /VD3356	Doc #:	VD3356-003-RV-04
Prepared by :	Michaël Racine	Contractor :	Fernand Gilbert Ltée
Verified by :	Richard Marcoux, ing.	Temperature :	8 à 17°C Wind : 30 à 70 km/h

Object : Contractor's schedule (approximative hours)

Labour and machinery	Company	Working hours	Volume (m3)
1 Shovel CAT 365C L	FGL	11	
Operator	FGL	12	
Surveyor	FGL	12	
Loader CAT 966H + operator	AEM	10	
Roller compactor Protec Boxer 114	BLCS	2.54	
Bulldozer CAT D6T (DOZ09)	AEM	0	
Shovel CAT 330C	BLCS	5	
2 articulated trucks CAT 740	BLCS	11	muck : 254.4 0-20mm : 272.5
Fiel inspector	Stavibel	12	

- **6h30 à 18h30** Shovel 365 builds the mini dikes with blasted rock 0-200 mm.
- **6h30 à 11h30** Shovel 330 and 2 trucks (BLCS) haul the blasted rock 0-200 mm from quarry #1.
- **7h30 à 10h15** Loader 966 separates the contaminated and the non-contaminated material.
- **10h15 à 18h30** Loader 966 builds the mini dikes.
- **13h à 18h** 2 trucks 740 (BLCS) haul the 0-20mm.

**Comments :**

- Haulage of the contaminated material to the mine (4 loads of 10 wheeler per day).
- The non-contaminated material that contain a bit of organic soil is stockpile in order to do the access road for the pump house.



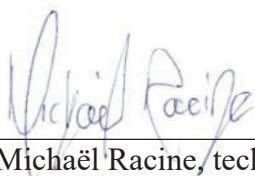
- Photo #1 – Construction of the mini dikes around the pad. Stockpile of the 0-20mm on the pad.





- Photo #2 – Loading of the contaminated material.



Par :   
Michaël Racine, tech.

Richard Marcoux, ing.  
No OIQ : 38724  
Project manager

Title of project :	Baker Lake Jet-A Fuel Farm	Date :	2013-07-18
Project # :	OP-84541-J /VD3356	Doc #:	VD3356-003-RV-05
Prepared by :	Michaël Racine	Contractor :	Fernand Gilbert Ltée
Verified by :	Richard Marcoux, ing.	Temperature :	5 à 10°C Wind : 30 à 50 km/h

Object : Contractor's schedule (approximative hours)

Labour and machinery	Company	Working hours
1 Shovel CAT 365C L	FGL	9
Operator	FGL	12
Surveyor	FGL	12
Loader CAT 966H + operator	AEM	8
Roller compactor Protec Boxer 114	BLCS	0
Bulldozer CAT D6T (DOZ09)	AEM	0
Field inspector	Stavibel	12

- **6h30 à 12h00** Shovel 365 builds the mini dikes with blasted rock 0-200 mm.
- **6h30 à 15h30** Loader 966 loads the contaminated material, moves the contaminated stockpile that disturbed the construction of the ditch and moves the sea-cans.
- **13h à 15h** Shovel 365 stands by for mechanical problems.
- **15h à 18h30** Shovel 365 puts the 0-20mm on the mini dike.

#### Comments :

- Haulage of the contaminated material to the mine (6 loads of 10 wheeler per day).
- The crushed stone 0-20mm is stockpile and survey. The results give 18,17 m<sup>3</sup>/trucks instead of 24m<sup>3</sup> as specified in the spec of the truck. Here are the adjusted volumes for the last days :

	2013-07-15		2013-07-16		2013-07-17		Cumulatif	
	load	volume (m3)	load	volume (m3)	load	volume (m3)	load	volume (m3)
<b>Muck quarry 1</b>	24	436,048	34	617,7347	14	254,3613	72	<b>1308,144</b>
<b>0-3/4" BLCS</b>		0		0	15	272,53	15	<b>272,53</b>



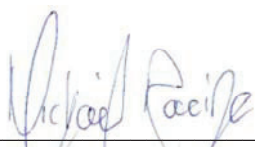
- Photo #1 – Placing the crushed stone 0-20mm on the mini dike.





- Photo #2 – Moving the contaminated stockpile to make the drainage ditch behind the north dike.



Par :   
Michael Racine, tech.

Richard Marcoux, ing.  
No OIQ : 38724  
Project manager



Title of project :	Baker Lake Jet-A Fuel Farm	Date :	2013-07-19
Project # :	OP-84541-J /VD3356	Doc #:	VD3356-003-RV-06
Prepared by :	Michaël Racine	Contractor :	Fernand Gilbert Ltée
Verified by :	Richard Marcoux, ing.	Temperature :	8 à 18°C Wind : 20 à 30 km/h

Object : Contractor's schedule (approximative hours)

Labour and machinery	Company	Working hours
1 Shovel CAT 365C L	FGL	11
Opérateur	FGL	12
Arpenteur	FGL	12
Rouleau compacteur Protec Boxer 114	BLCS	1.21
Chargeur CAT 966H + opérateur	AEM	3.5
Camion 10 roues + opérateur	AEM	5.5
Bulldozer CAT D6T (DOZ09)	AEM	0
Surveillant de chantier	Stavibel	12

- **6h30 à 12h00** Shovel 365 loads the truck with the non-contaminated material that contain organic soil.
- **6h30 à 12h00** 10 wheels truck hauls the material containing organic soil for the construction of the access road for the pump house.
- **6h30 à 10h00** Loader 966 moves the concrete blocks and other small jobs.
- **13h à 18h30** Shovel 365 builds the mini dike and the infra on the north side of the pad.

**Comments :**

- Haulage of the contaminated material to the mine (6 loads of 10 wheeler per day).

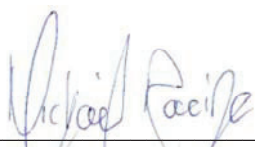
- Photo #1 – Loading the truck with the non-contaminated material that contain organic soil for the construction of the access road for the pump house.





- Photo #2 – Reparation of an instability on the North-East side of the pad.



Par :   
Michaël Racine, tech.

Richard Marcoux, ing.  
No OIQ : 38724  
Project manager

Title of project :	Baker Lake Jet-A Fuel Farm	Date :	2013-07-20
Project # :	OP-84541-J /VD3356	Doc #:	VD3356-003-RV-07
Prepared by :	Michaël Racine	Contractor :	Fernand Gilbert Ltée
Verified by :	Richard Marcoux, ing.	Temperature :	8 à 18°C Wind : 5 à 10 km/h

Object : Contractor's schedule (approximative hours)

Labour and machinery	Company	Working hours
Shovel CAT 365C L	FGL	2
Shovel CAT 320	FGL	5
Bulldozer Komat'su 39px	FGL	4
Operator	FGL	12
Surveyor	FGL	12
Roller compactor Protec Boxer 114	BLCS	0.4
Truck CAT 740	BLCS	114.1 m3
Bulldozer CAT D6T (DOZ09)	AEM	0
Field inspector	Stavibel	12

- **6h30 à 8h30** Shovel 365 builds the mini dike.
- **8h30 à 10h30** Shovel 320 is moving from Baker Lake to the field.
- **10h30 à 14h30** Shovel 320 builds the mini dike and profile the ditch.
- **14h30 à 18h30** Bulldozer 39px places the 0-20mm crushed stone.
- **14h30 à 18h30** Truck CAT 740 places the 0-20mm crushed stone.

#### Comments :

- Survey of a load of 0-20mm crushed stone to confirm the volume. Recalculation of the volumes with 16.3m<sup>3</sup>/load.

	2013-07-15		2013-07-16		2013-07-17		2013-07-20		Cumulative	
	load	volume	load	volume	load	volume	load	volume	load	volume
<b>Muck quarry 1</b>	24	391,2	34	554,2	14	228,2			72	<b>1173,6</b>
<b>0-3/4" BLCS</b>		0		0	15	244,5	7	114,1	15	<b>407,5</b>



- Photo #1 – There is frost in the north ditch that prevent the excavation to the desired elevation.





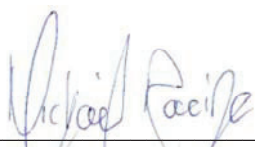
- Photo #2 – A bit of water on the pad because of the ditch that is to high. No instability.





- Photo #3 – Placing the 0-20mm crushed stone.



Par :   
Michaël Racine, tech.

Richard Marcoux, ing.  
No OIQ : 38724  
Project manager

Title of project :	Baker Lake Jet-A Fuel Farm	Date :	2013-07-21
Project # :	OP-84541-J /VD3356	Doc #:	VD3356-003-RV-08
Prepared by :	Michaël Racine	Contractor :	Fernand Gilbert Ltée
Verified by :	Richard Marcoux, ing.	Temperature :	8 à 18°C Wind : 5 à 10 km/h

Object : Contractor's schedule (approximative hours)

Labour and machinery	Company	Working hours
Shovel CAT 365C L	FGL	0
Shovel CAT 320	FGL	9
Bulldozer Komat'su 39px	FGL	2
Operator	FGL	12
Surveyor	FGL	12
Roller compacter Hamm 3625	FGL	2
Truck CAT 740	BLCS	48.9 m3
Bulldozer CAT D6T (DOZ09)	AEM	0
Field inspector	Stavibel	12

- **6h30 à 15h30** Shovel 320 builds the dike, builds the access road and places the concrete blocks for the pump house.
- **15h30 à 17h30** Bulldozer 39px places the 0-20mm crushed stone.
- **17h30 à 18h30** Shovel 320 digs the ditch.
- **15h30 à 17h00** Truck CAT 740 hauls the 0-20mm crushed stone.

#### Comments :

- Volumes of material hauled by BLCS :

	2013-07-15		2013-07-16		2013-07-17		2013-07-20		2013-07-21		Cumulative	
	load	volume	load	volume	load	volume	load	volume	load	volume	load	volume
<b>Muck quarry 1</b>	24	391,2	34	554,2	14	228,2					72	<b>1173,6</b>
<b>0-3/4" BLCS</b>		0		0	15	244,5	7	114,1	3	48,9	15	<b>407,5</b>

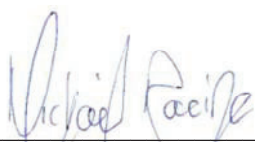


- Photo #1 – Placing the 0-20mm crushed stone. All the 0-20mm is on the field at the end of the day.



- Photo #2 – Excavation of the north ditch at the good elevation to drain the pad infra.



Par :   
Michaël Racine, tech.

Richard Marcoux, ing.  
No OIQ : 38724  
Project manager



Title of project :	Baker Lake Jet-A Fuel Farm	Date :	2013-07-22
Project # :	OP-84541-J /VD3356	Doc #:	VD3356-003-RV-09
Prepared by :	Michaël Racine	Contractor :	Fernand Gilbert Ltée
Verified by :	Richard Marcoux, ing.	Temperature :	8 à 15°C Wind : 5 à 10 km/h

Object : Contractor's schedule (approximative hours)

Labour and machinery	Company	Working hours
Shovel CAT 365C L	FGL	0
Shovel CAT 320	FGL	2.5
Bulldozer Komat'su 39px	FGL	0
Operator	FGL	5.5
Surveyor	FGL	5.5
Roller compactor Hamm 3625	FGL	0
Field inspector	Stavibel	12

- **16h à 18h30**      Shovel 320 digs the ditch around the pad.

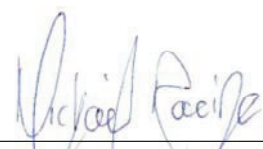
#### Comments :

- Cross shift. No activity on the field before 16h. I make a roundtrip to Meadowbank to go get the new operator and surveyor.
- Volumes of material hauled by BLCS :

	2013-07-15		2013-07-16		2013-07-17		2013-07-20		2013-07-21		Cumulative	
	load	volume	load	volume	load	volume	load	volume	load	volume	load	volume
<b>Muck quarry 1</b>	24	391,2	34	554,2	14	228,2					72	1173,6
<b>0-3/4" BLCS</b>		0		0	15	244,5	7	114,1	3	48,9	15	407,5

- Photo #1 – Excavation of the north ditch to the frost. There is a groundwater artery.



Par :   
Michaël Racine, tech.

Richard Marcoux, ing.  
No OIQ : 38724  
Project manager

Title of project :	Baker Lake Jet-A Fuel Farm	Date :	2013-07-23
Project # :	OP-84541-J /VD3356	Doc #:	VD3356-003-RV-10
Prepared by :	Michaël Racine	Contractor :	Fernand Gilbert Ltée
Verified by :	Richard Marcoux, ing.	Temperature :	8 à 15°C Wind : 5 à 10 km/h

Object : Contractor's schedule (approximative hours)

Labour and machinery	Company	Working hours
Shovel CAT 365C L	FGL	0
Shovel CAT 320	FGL	9
Bulldozer Komat'su 39px	FGL	1
Operator	FGL	12
Surveyor	FGL	12
Roller compactor Hamm 3625	FGL	5
Truck CAT 740	BLCS	32.6 m3
Field inspector	Stavibel	12

- **6h30 à 11h**      Shovel 320 places the 0-20mm crushed stone.
- **8h à 9h**      Truck CAT 740 hauls the 0-20mm crushed stone.
- **11h à 12h**      Bulldozer 39px places the 0-20mm crushed stone.
- **12h à 15h**      Shovel 320 finishes the mini dike and builds the key for the membrane.
- **15h à 18h30**      Shovel 320 builds the access road for the pump house.

#### Comments :

- Volumes of material hauled by BLCS :

	2013-07-15		2013-07-16		2013-07-17		2013-07-20		2013-07-21		2013-07-23		Cumulative	
	load	volume	load	volume	load	volume	load	volume	load	volume	load	volume	load	volume
<b>Muck</b>	24	391,2	34	554,2	14	228,2							72	1173,6
<b>0-3/4"</b>					15	244,5	7	114,1	3	48,9	2	32,6	15	440,1



- Photo #1 – Overview of the pond ready for the geotextile and the bituminous geomembrane.





- Photo #2 – Small key trench for the membrane.



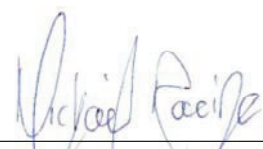


- Photo #3 – Construction of the access road for the pump house.



- Photo #4 – Arrival of 11 tanks of 100 000L and 2 tanks of 50 000L on the barge.



Par :   
Michaël Racine, tech.

Richard Marcoux, ing.  
No OIQ : 38724  
Project manager

Title of project :	Baker Lake Jet-A Fuel Farm	Date :	2013-07-24
Project # :	OP-84541-J /VD3356	Doc #:	VD3356-003-RV-11
Prepared by :	Michaël Racine	Contractor :	Fernand Gilbert Ltée
Verified by :	Richard Marcoux, ing.	Temperature :	15 à 23°C Wind : 5 à 20 km/h

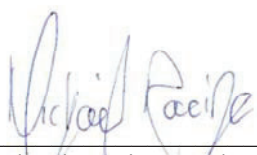
Object : Contractor's schedule (approximative hours)

Labour and machinery	Company	Working hours
Shovel CAT 365C L	FGL	0
Shovel CAT 320	FGL	0
Bulldozer Komat'su D39px	FGL	1
Operator	FGL	12
Surveyor	FGL	12
Roller compactor Hamm 3625	FGL	0
3 labours	FGL	4
2 membrane installers	Texcel	3.5
Shovel CAT 307	AEM	4.5
Field inspector	Stavibel	12

- **6h30 à 7h30** Stand by
- **7h30 à 12h** Shovel 307 cleans the membrane in prevision of the reparations between the existing diesel tanks #1 and 2.
- **8h à 12h** 3 labours place the crushed stone 0-20 mm crushed stone to make sure the foundation for the bituminous geomembrane is flat.
- **17h à 18h** Bulldozer 39px places the 0-20mm crushed stone on the access road for the pump house.

**Comments:**

- The membrane installers arrive at 15h.

Par :   
Michaël Racine, tech.

Richard Marcoux, ing.  
No OIQ : 38724  
Project manager



Title of project :	Baker Lake Jet-A Fuel Farm	Date :	2013-07-25
Project # :	OP-84541-J /VD3356	Doc #:	VD3356-003-RV-12
Prepared by :	Michaël Racine	Contractor :	Fernand Gilbert Ltée
Verified by :	Richard Marcoux, ing.	Temperature :	15 à 24°C Wind : 5 à 20 km/h

Object : Contractor's schedule (approximative hours)

Labour and machinery	Company	Working hours
Shovel CAT 365C L	FGL	9
Shovel CAT 320	FGL	0
Bulldozer Komat'su 39px	FGL	0
Roller compactor Hamm 3625	FGL	0
Operator	FGL	12
Surveyor	FGL	12
3 Labours	FGL	12
Vibratory plate (small)	BLCS	1 jour
2 membrane installers	Texcel	12
Field inspector	Stavibel	12

- **6h30 à 11h30** Shovel 365 places the geotextile and failed attempt for the installation of the bituminous geomembrane.
- **11h30 à 16h30** Stand by
- **16h30 à 20h** Shovel 365 places the bituminous geomembrane.

**Comments :**

- Impossible to place the membrane with the membrane rack available. Waiting for the rack with bearings to roll out the membrane from 11h30 to 16h30. The wasted time is caught up after souper.

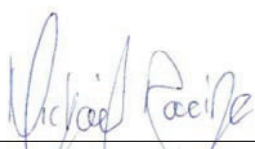
- Photo #1 – Compaction of the slopes with the vibratory plate to avoid rock punching in the membrane.





- Photo #2 – Placing the geotextile and the bituminous geomembrane.



Par :   
Michaël Racine, tech.

Richard Marcoux, ing.  
No OIQ : 38724  
Project manager



Title of project : Baker Lake Jet-A Fuel Farm	Date : 2013-07-26
Project # : OP-84541-J /VD3356	Doc #: VD3356-003-RV-13
Prepared by : Michaël Racine	Contractor : Fernand Gilbert Ltée
Verified by : Richard Marcoux, ing.	Temperature : 15 à 26°C Wind: 5 à 20 km/h

Object : Contractor's schedule (approximative hours)

Labour and machinery	Company	Working hours
Shovel CAT 365C L	FGL	4.5
Shovel CAT 320	FGL	0
Bulldozer Komat'su 39px	FGL	0
Roller compactor Hamm 3625	FGL	0
Operator	FGL	12
Surveyor	FGL	12
3 labours	FGL	12
2 membrane installers	Texel	12
Field inspector	Stavibel	12

- **6h30 à 18h30** 4 labours (FGL) et 2 labours (Texcel) place the bituminous geomembrane.
- **6h30 à 9h** Shovel 365 places the bituminous geomembrane.
- **9h à 12h** Shovel 320 works on another project for the diesel fuel tanks.
- **13h à 15h** Shovel 365 places the bituminous geomembrane.
- **15h à 16h** Shovel 320 works on another project for the diesel fuel tanks.
- **16h à 18h30** Shovel 365 places the bituminous geomembrane.

Comments :

- Photo #1 – Placing the bituminous geomembrane with a geotextile under.

