



ENBRIDGE PIPELINES (SASKATCHEWAN) INC.

**Amendment to
Proposed Manitoba Interconnect Project**

**14-17-09-28 W1M to 12-16-09-28 W1M
Near Cromer, Manitoba**

**Manitoba Innovation, Energy and Mines
Project Application**

**File #: CC 13 06
Date: August 21, 2014**

A handwritten signature in black ink, appearing to read 'Fran W. H.'.

Project Manager

1. Overview

Enbridge Pipeline (Saskatchewan) Inc. (“EPSI”) is submitting this amendment to the original application that was submitted on July 7, 2014 for the purposes of classifying piping that connects the Bakken Metering Line 26 Receiving Trap site (CBK) to the Manitoba Interconnect Custody Transfer (MIC) facility as a pipeline. The purpose of this pipeline is to provide the capabilities to transferring product off of Line 26 to the MIC facility, where the product will be metered and then delivered to Tundra Energy Marketing Limited (Tundra) via pipeline ZML-VT-01 that was included in the initial application. This amendment does not include any additional piping or changes to the design; it is solely for the purpose of classifying and licensing some of the piping that was included in the original application as a pipeline.

This new pipeline will be designated as ZML-KV-01. It will start and end within 9-17-09-28 W1M. See attached drawing SM-0112-13-5-IOP for routing details. The total length of the proposed ZML-KV-01 pipeline will be approximately 150 meters from valve to valve, of which 115 meters will be buried and 35 meters will be above grade. There will be approximately 35 meters of piping within the CBK surface lease, 73m of new right-of-way (ROW) and 42 meters of piping will be within the MIC surface lease. There will be one (1) pipeline crossing, which will be a crossing of the 16” EPSI line ZML-WV-01. See drawing SM-0112-13-5-XEB for a detail of the crossing.

There will be no storage capacity within the MIC facility for crude oil. All crude oil will be metered and shipped directly to Tundra. Note that the size of the surface lease for MIC has been reduced since the initial application; the southwest section of the surface lease at MIC is no longer required since ROW is being taken for the ZML-KV-01 pipeline. See attaches drawings SM-0112-13-2-IOP-1-R3 and SM-0112-13-2-IOP-2-R3 for the updated surface lease drawings for MIC.

1.1 Pipeline Specifications

The pipeline is proposed to be constructed of NPS 16 steel pipe. Specifically, the pipe will be 406.4 mm (OD) x 9.5 mm (WT) and will be constructed of Grade 359, Category II, FBE coated steel line pipe as per CSA regulation Z245.1 – Steel Line Pipe. The pipeline is designed for a 9,930 kPa MOP. The pipeline will be hydrostatically tested following installation with a maximum test pressure of 15,485 kPa and a minimum test pressure of 14,892 kPa. The hydrostatic test will consist of a 4 hour strength test and a 4 hour leak test, as per CSA Z662-11 – Oil & Gas Pipeline Systems. See the pipeline construction alignment sheet SM-0112-13-5-CON.

The pipeline will be constructed using generally accepted installation practices, as per CSA Z662-11, with the pipeline having a minimum depth of cover of 1.5 m. The pipeline construction method will consist of trenching. EPSI will acquire the necessary crossing agreements and ensure that there is a minimum of 0.3 m cover between pipelines. Pipeline construction will also adhere to conditions as outline in the environmental assessment approval by Manitoba Conservation.

1.2 Flow Rates

The proposed pipeline is expected to have an operating range of flow rates from 325 m³/hr to 1,100 m³/hr, with the anticipated average flow to be approximately 750 m³/hr. The flow rate

will be dependent on the operating conditions of the entire upstream system and the nominations from Tundra.

1.3 Substance Description

The crude that will be transported through the pipeline will be classified as UHC as outlined in the table below.

Product Identifier	Crude Type (Long Name)	Total Sulphur (% by weight)	Pour Point (°C)	Reid Vapour Pressure (kPa)	Density (kg/m ³)	Viscosity (cSt) at Specified Temperature (°C)				
						10.0	20.0	30.0	40.0	45.0
UHC	US High Sweet - Clearbrook	0.18	-20	74.3	815.0	3.90	3.12	2.53	2.11	1.93

Reference: 2013 Crude Characteristics Booklet (Enbridge)

2. Facility/Pipeline Safety Systems

The design of this project will incorporate corrosion control, leak detection and pressure relief.

2.1 Corrosion Control

The proposed pipeline will be constructed with line pipe that is externally coated with FBE. All girth welds below grade will also be coated with FBE. The piping and fittings above grade at both facilities will be primed and painted as per Enbridge Construction Specification FCS019 – External Paint to Enbridge paint standard P-210. The proposed pipeline will also be pigged at regular intervals to remove paraffins and waxes that may cause corrosion on the interior of the pipeline. In addition, cathodic protection will be utilized to protect the integrity of the piping. The proposed corrosion control system will comply with CSA Z662-11 – Oil & Gas Pipelines Systems.

2.2 Leak Detection and Emergency Shutdowns

EPSI intends to have a robust leak prevention and detection system in place along with an Emergency Shutdown plan for each facility and pipeline. The proposed plan will include the following:

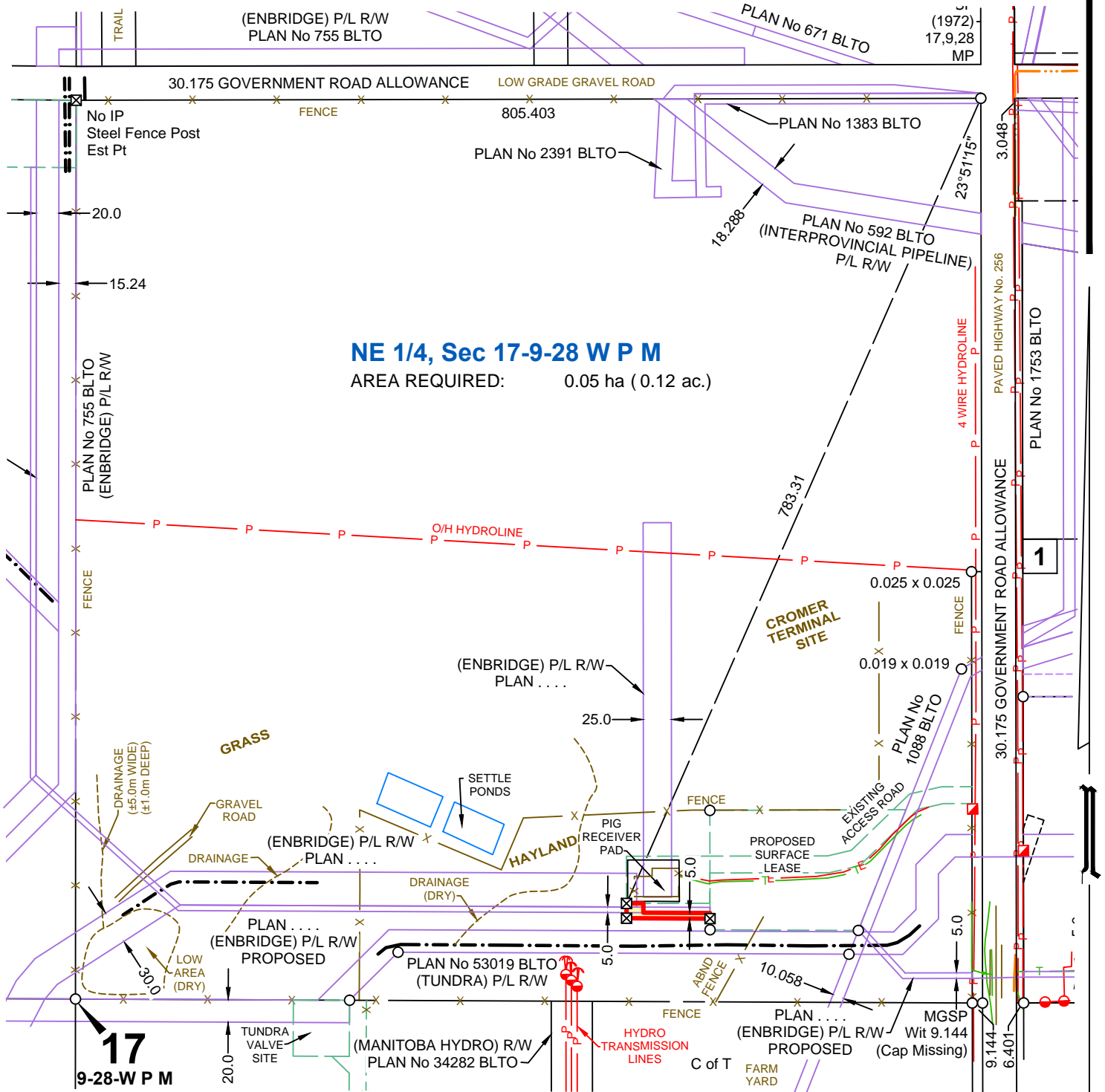
- Installation and monitoring of a Coriolis meter at the Tundra Delivery Facility. The meter will measure any deviations to the output volume and can be compared to other meters on the Enbridge system as required. This will be completed via the ATMOS leak detection program.
- Pigging of the pipelines at regular intervals to remove any buildup of potentially corrosive material in the pipeline. Pigging schedules will be developed by EPSI operations.
- Pressure Indicating Transmitters (PITs) installed at each facility to monitor the pressures and pressure drops.
- Control Centre in Edmonton will have the capability of shutting down all facilities via control valves, in case of an emergency.
- Operation personnel on site can also shut down the facilities, in case of an emergency.

Appendix A
ZML-KV-01 Pipeline Right of Way &
Revised Facility Survey Plans for MIC

Drawing Name	Drawing Number
16" (ZML-KV-01) Pipeline IOP	SM-0112-13-5-IOP
16" (ZML-KV-01) Pipeline Construction Alignment	SM-0112-13-5-CON
Enbridge Pipeline Crossing	SM-0112-13-5-XEB
Manitoba Interconnect Facility Lease IOP	SM-0112-13-2-IOP-1-R3
Manitoba Interconnect Facility Lease IOP	SM-0112-13-2-IOP-2-R3



PIPELINE RIGHT OF WAY INDIVIDUAL OWNERSHIP PLAN



NE 1/4, Sec 17-9-28 W P M
AREA REQUIRED: 0.05 ha (0.12 ac.)

OWNER(S): INTERPROVINCIAL PIPELINE INC.

TITLE No.: 1534951/2

This plan certified correct this
20th day of August, 2014.

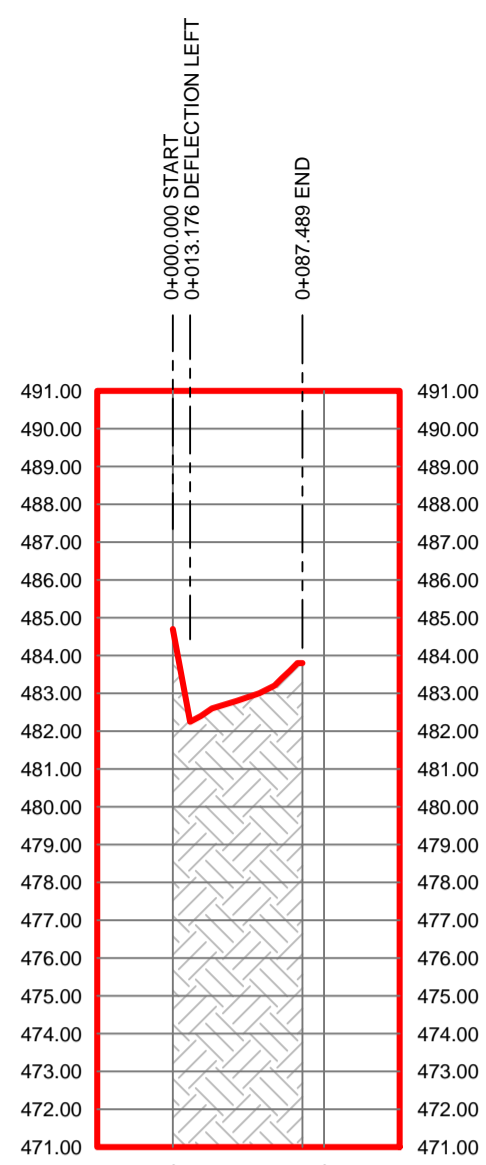
David Quirk
David J. Quirk
Manitoba Land Surveyor

**NOTE: NOT TO BE USED FOR
CONSTRUCTION PURPOSES**

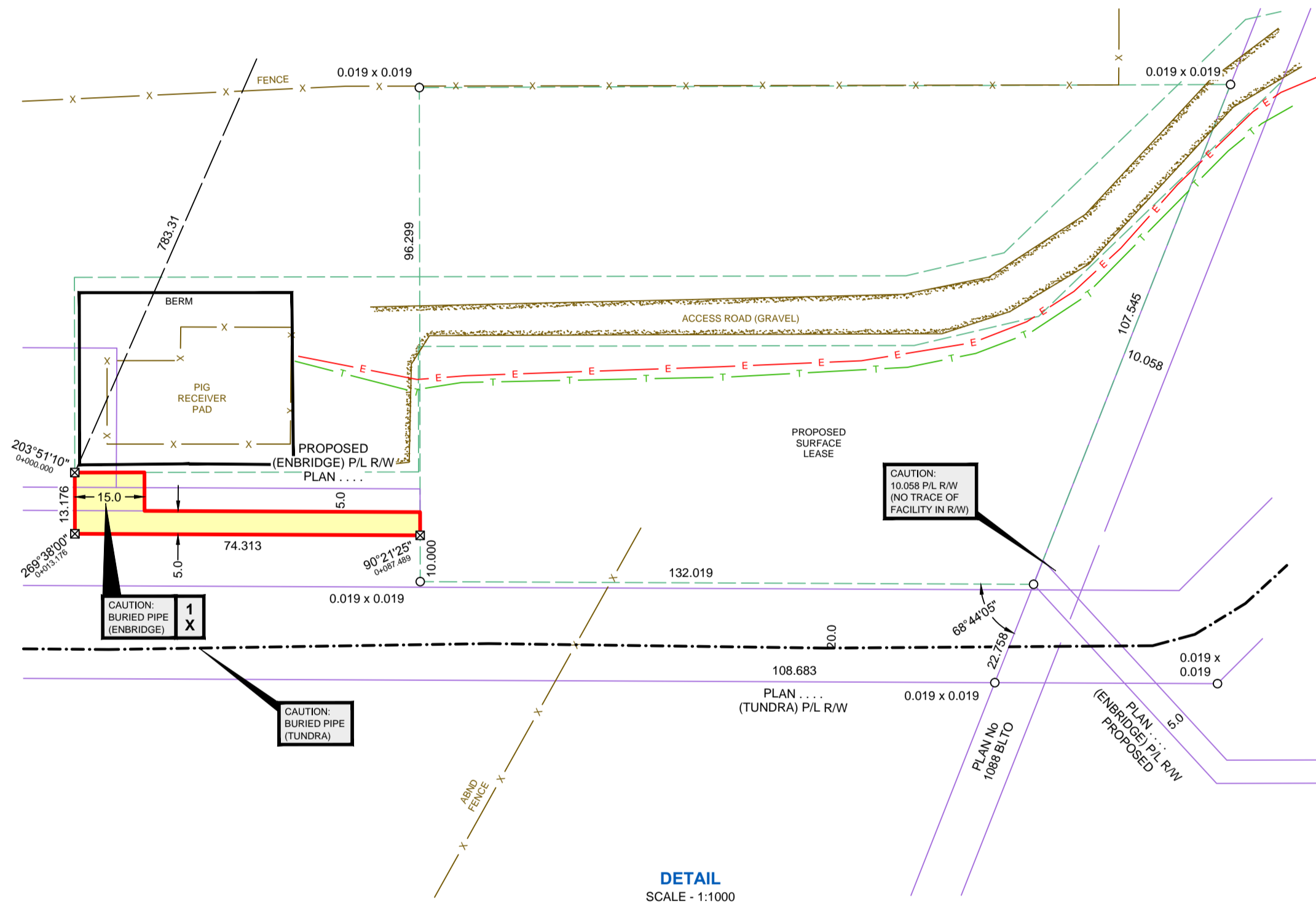
LEGEND:

- Survey Monuments found shown thus: ○
- 0.019 x 0.019 Iron Posts planted shown thus: ●
- 0.025 x 0.025 Iron Posts planted shown thus: ■
- Temporary Point shown thus: ⊠
- Portions referred to shown thus:
- Temporary Work Space shown thus:
- Distances are in metres and decimals thereof.

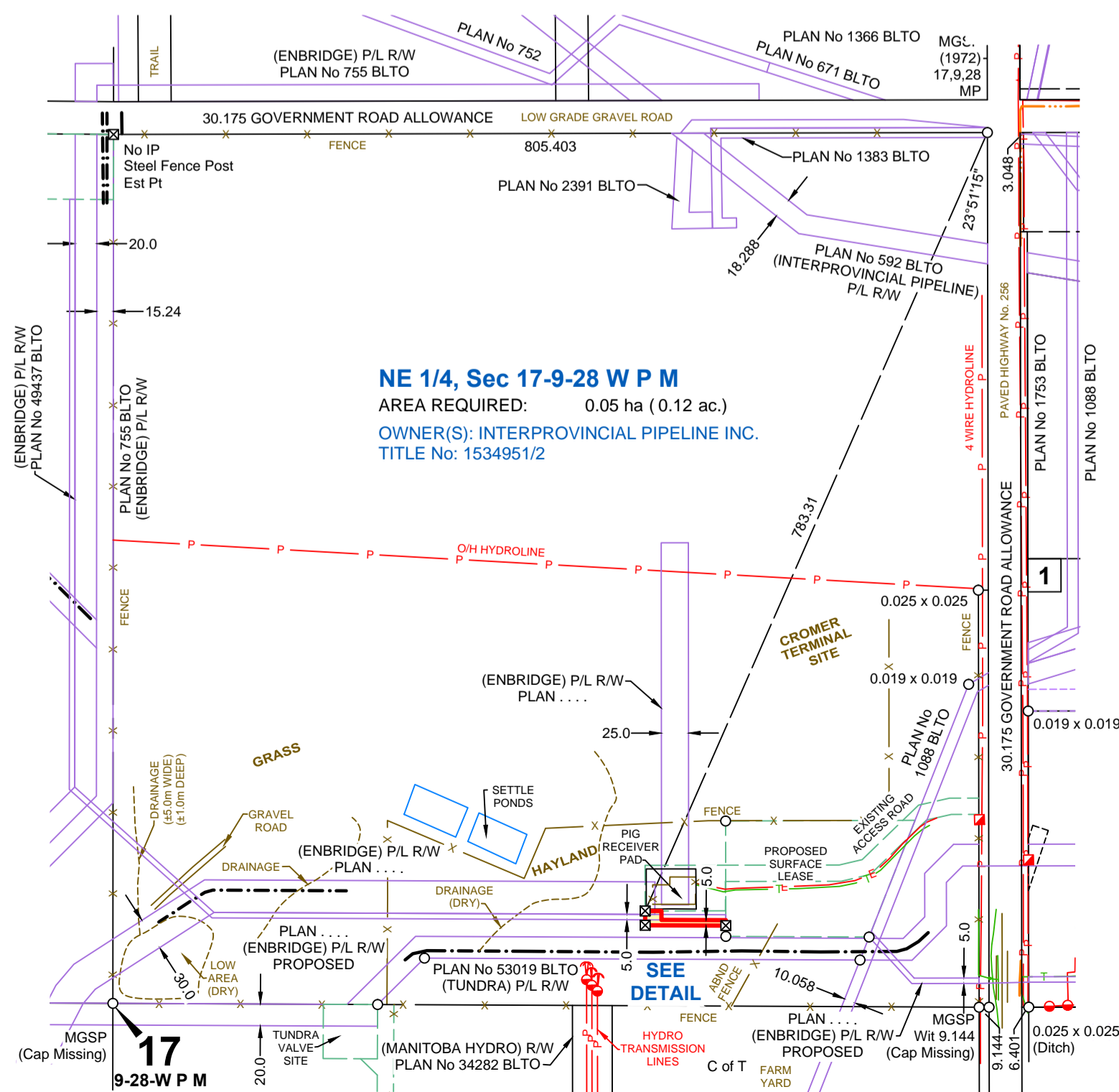
No.	DATE	REVISION / ISSUED	JOB No.	SCALE 1:5000	David J. Quirk M.L.S. 130 King Street Estevan, SK S4A 2T5 Tel: 306-634-2635
0.	AUG. 20, 2014	PLAN ISSUED	SM-0112-13-5		
SURVEYED BY: MH/MC		CALC'D BY: CO		DRAWN BY: JB	
					SM-0112-13-5-IOP



PROFILE 9-17-9-28 W P M TO 9-17-9-28 W P M
VERTICAL SCALE 1:200
HORIZONTAL SCALE 1:5000



DETAIL
SCALE - 1:1000



NE 1/4, Sec 17-9-28 W P M
AREA REQUIRED: 0.05 ha (0.12 ac.)
OWNER(S): INTERPROVINCIAL PIPELINE INC.
TITLE No: 1534951/2

BOOK OF REFERENCE

STATION TO STATION	DISTANCE (Meters)	R.O.W Width	AREA (Hectares)	LEGAL DESCRIPTION	OWNER
0+000.000 - 0+087.489	87.489	15.0 & 5.0	0.05	NE 1/4, Sec 17-9-28 W P M	INTERPROVINCIAL PIPELINE INC.

CROSSING / REFERENCE DRAWINGS

No.	DESCRIPTION	LOCATION	DRAWING No.
1X	(ENBRIDGE) P/L R/W - PLAN No (PROPOSED)	NE 1/4, Sec 17	SM-0112-13-5-XEB-1

REVISION / ISSUED

No.	DATE	DESCRIPTION	JOB NO.
1	AUGUST 20, 2014	- PLAN ISSUED	SM-0112-13-5

LEGEND:

- Survey Monuments found shown thus: ○
 - Survey Monuments planted shown thus: ●
 - 0.025 x 0.025 Iron Posts planted shown thus: ■
 - Temporary Point shown thus: □
 - Distances are in metres and decimals thereof.
 - Distances shown as 'Calc' are NOT to be included in total lengths.
- Buried Pipe shown thus: ————
- Buried Electrical Cable shown thus: ————
- Buried Cable shown thus: ————
- Buried MTS Cable shown thus: ————
- Hydro Pole shown thus: ————
- Overhead Hydro line shown thus: ————
- Utility Gas line shown thus: ————
- Fence line shown thus: ————
- Tree / Bush line shown thus: ————
- Portions referred to shown thus: ————
- Temporary Work Space shown thus: ————

WELL LEGEND:

- LOCATION / STANDING
- ☆ GAS WELL
- OIL WELL
- ⊙ INJECTION WELL
- ⊗ GAS INJECTION WELL
- ⊘ SERVICE WELL
- ⊚ SUSPENDED WELL
- ⊛ ABANDONED WELL
- ⊜ ABANDONED GAS WELL
- ⊝ SUSPENDED GAS WELL
- ⊞ ABANDONED OIL WELL
- ⊟ SUSPENDED OIL WELL
- ⊠ WATER SOURCE WELL
- ⊡ WATER WELL

PIPE SPECIFICATIONS:

CARRIER PIPE #1
Carrier Line Size: 406.4 mm O.D. x 9.52 mm W.T.
Carrier Line Spec.: Steel, CSA Z245.1 G359 CAT. II
Max. Operating Pressure: 9830 kPa
Product Conveyed: Clean Oil

NOTE:

Information Provided by SER and IHS Energy

FACILITIES SOURCE DATA:

Facility Type	Yes	No	N/A
Legal Plans	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Land Titles	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Manitoba Telephone	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Manitoba Hydro	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Wellsite Listing	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Other 3 Way Sweep	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

NOTE: Positions of buried facilities shown are derived from interpretations of signals from electronic devices. Reception of electronic signals is subject to interference and has limitations, therefore it should not be assumed that all buried facilities are shown, and facilities which are shown should not be construed as 'located' until physically exposed. All underground installations should be marked by the respective authorities prior to excavation or construction.

CERTIFICATION:

I certify that the survey represented by this plan is correct to the best of my knowledge and was completed on the 30th day of January, 2014.

David J. Quirk
David J. Quirk
Manitoba Land Surveyor

MIDWEST SURVEYS

RIGHT OF WAY INFORMATION:

Right-of-way Boundaries:	Flagged	Yes	No
	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Buried Facilities:	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

LICENCE INFORMATION:

THE PROPOSED PIPELINE RIGHT OF WAY IS:
- More than 1.5 km from the nearest urban or rural centre

SURVEYED BY: MH/MC CALCULATED BY: CO/SD DRAWN BY: JB

TOTAL LENGTH OF RIGHT-OF-WAY ALONG POSTED BOUNDARY = 87.489

ENBRIDGE PIPELINES (SASKATCHEWAN) INC.

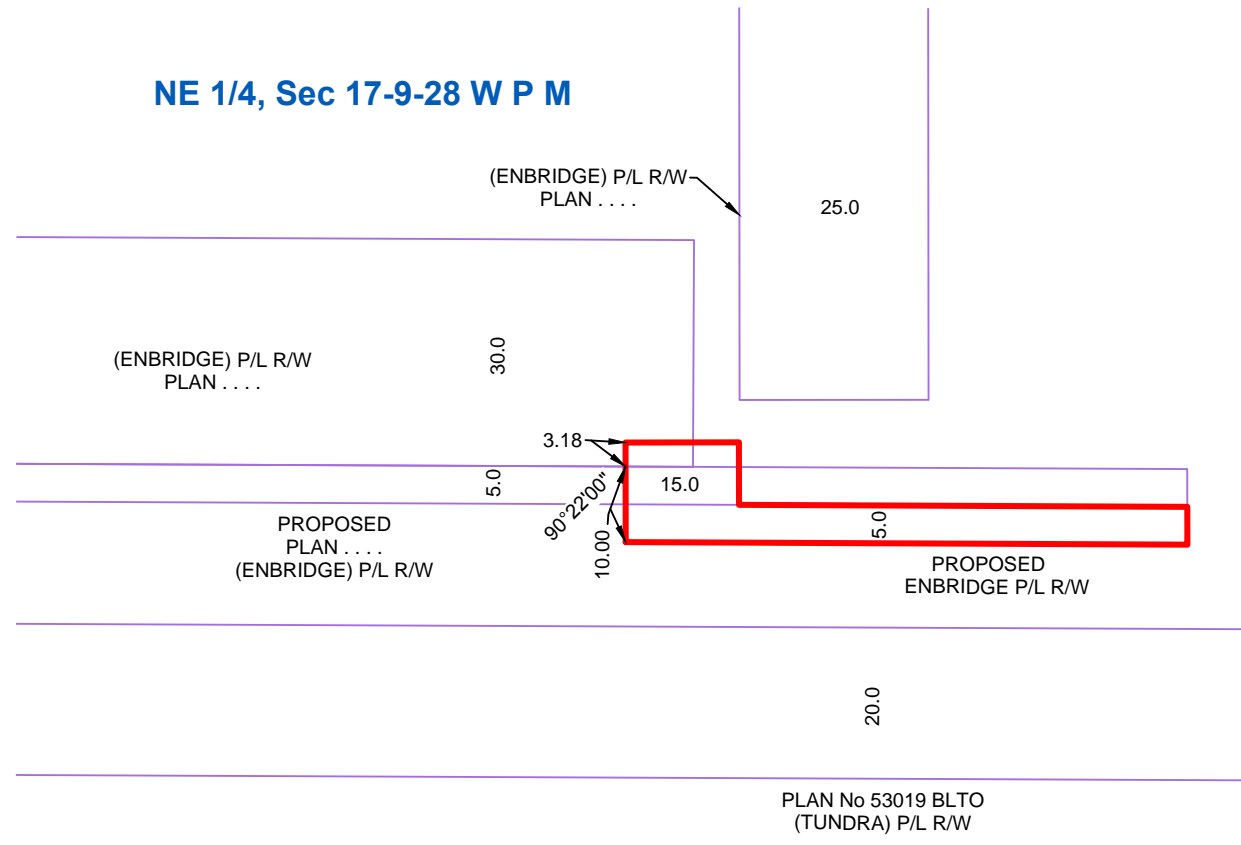
P. ENG.

PROJECT NAME: 9-17-9-28 PIG RECEIVER PAD TO 9-17-9-28 W P M PROPOSED LEASE

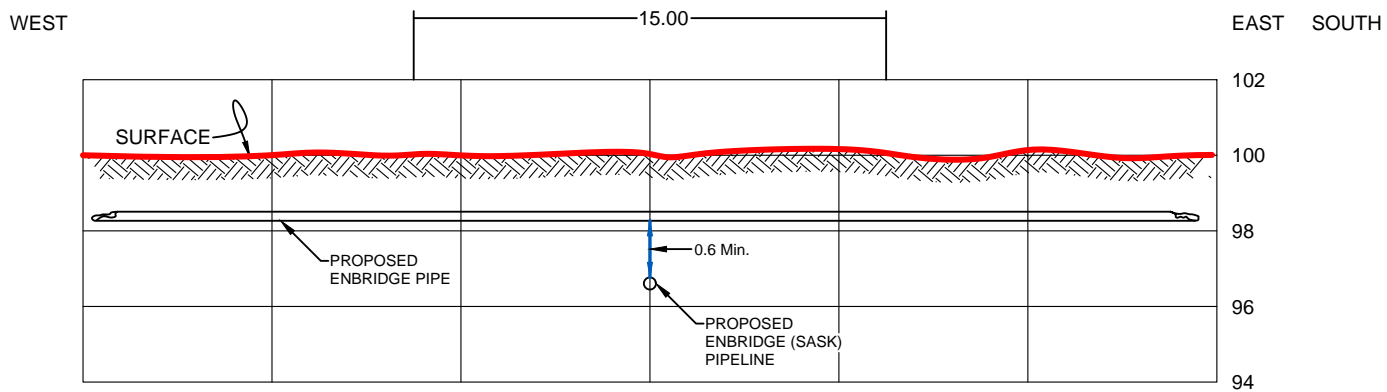
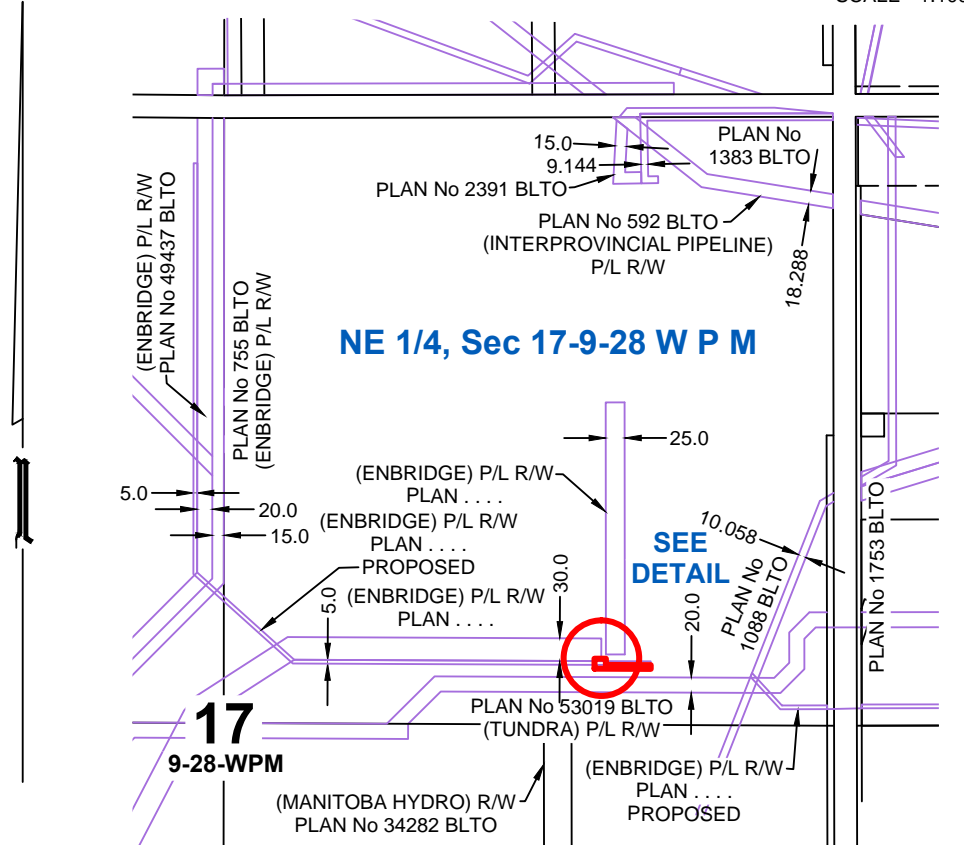
PLAN SHOWING
PIPELINE CONSTRUCTION ALIGNMENT
PROPOSED 16" LINE ZML-KV-01
IN
NE 1/4, Sec 17,
Twp 9, Rge 28, W P M

R.M. OF PIPESTONE

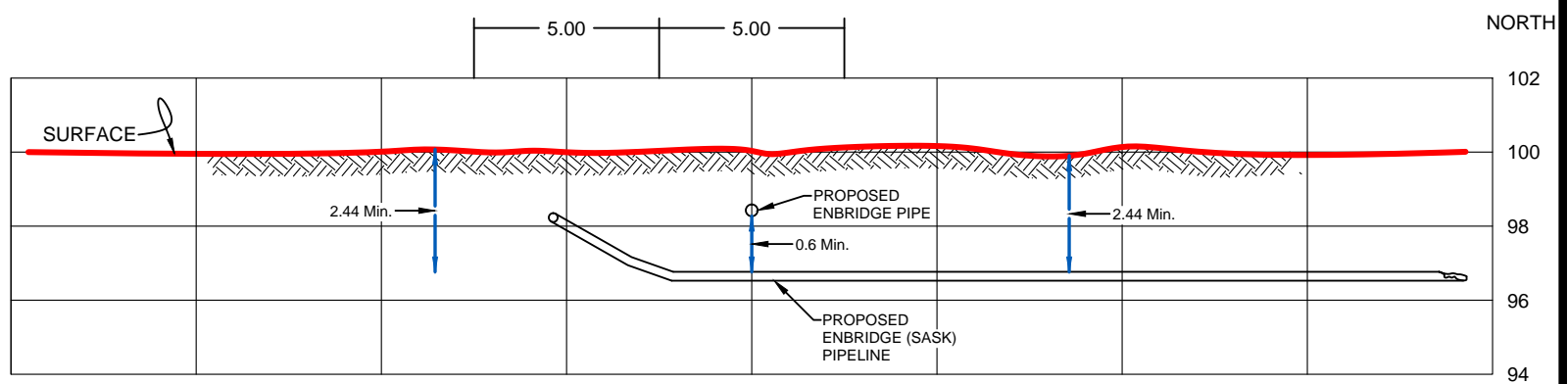
DETAIL
SCALE - 1:1000



LOCATION PLAN
SCALE - 1:10000



CROSS-SECTION
HORIZONTAL SCALE - 1:200
VERTICAL SCALE - 1:200



PROFILE
HORIZONTAL SCALE - 1:200
VERTICAL SCALE - 1:200

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PIPE SPECIFICATIONS: ENBRIDGE(SASK)		PIPE SPECIFICATIONS: ENBRIDGE(SASK)	
CARRIER PIPE		CARRIER PIPE	
Outside Diameter:	406.4 mm	Outside Diameter:	406.4 mm
Wall Thickness:	9.52 mm	Wall Thickness:	9.5 mm
Specification / Grade:	CSA Z245.1 G359 CAT. II	Specification / Grade:	CSA Z245.1 G359 CAT. II
Pipe Material:	Steel (ZML-KV-01)	Pipe Material:	Steel (ZML-WV-01)
Year of Installation:	2014	Year of Installation:	2014
Type of Joint:	Welded	Type of Joint:	Welded
Protection:	FBE	Protection:	FBE
Max. Operating Pressure:	9930 kPa	Max. Operating Pressure:	7378 kPa
Min. Test Pressure:	14895 kPa	Min. Test Pressure:	11067 kPa
Product Conveyed:	Clean Oil	Product Conveyed:	Clean Oil

ENBRIDGE PIPELINES (SASKATCHEWAN) INC.

CROSSING PLAN OF
ENBRIDGE PIPELINES (SASKATCHEWAN) INC.
PLAN No
IN THE NE 1/4, Sec 17, Twp 9, Rge 28, W P M
MANITOBA

CERTIFIED CORRECT:
David Quirk
DATE:
August 20th, 2014

MIDWEST SURVEYS
DAVID J. QUIRK M.L.S.
ESTEVAN - PHONE: 306-634-2635
FAX: 306-634-3164



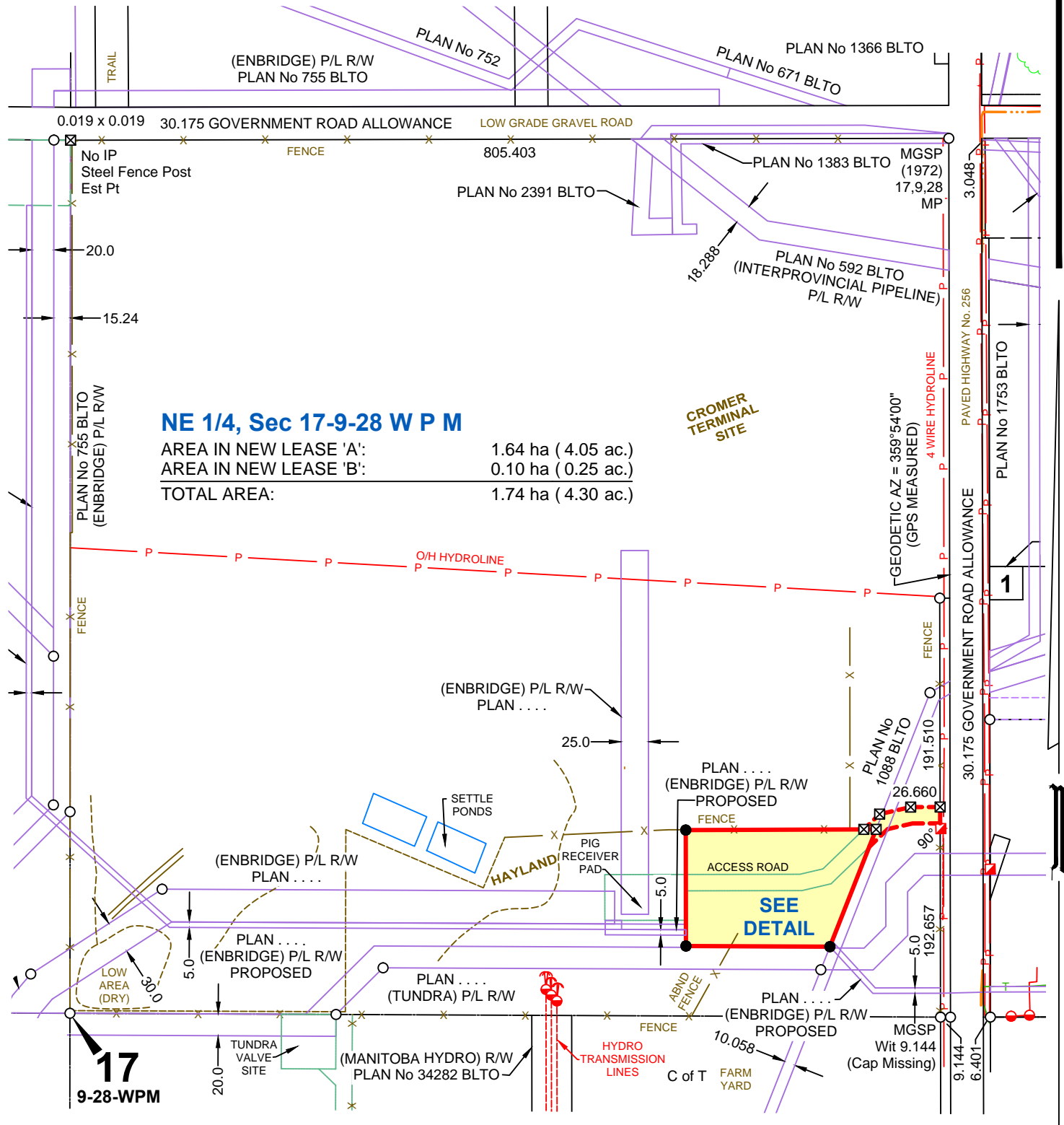
REVISION Δ
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SM-0112-13-5-XEB-1

No.	DATE	REVISION / ISSUED	JOB No.
0.	AUG. 20, 2014	PLAN ISSUED	SM-0112-13-5

SURVEYED BY: MH/MC CALC'D BY: CO DRAWN BY: JB



INDIVIDUAL OWNERSHIP PLAN



OWNER(S): INTERPROVINCIAL PIPELINE INC.

TITLE No.: 1534951/2

This plan certified correct this 20th day of August, 2014.

David J. Quirk
 David J. Quirk
 Manitoba Land Surveyor

NOTE: NOT TO BE USED FOR CONSTRUCTION PURPOSES

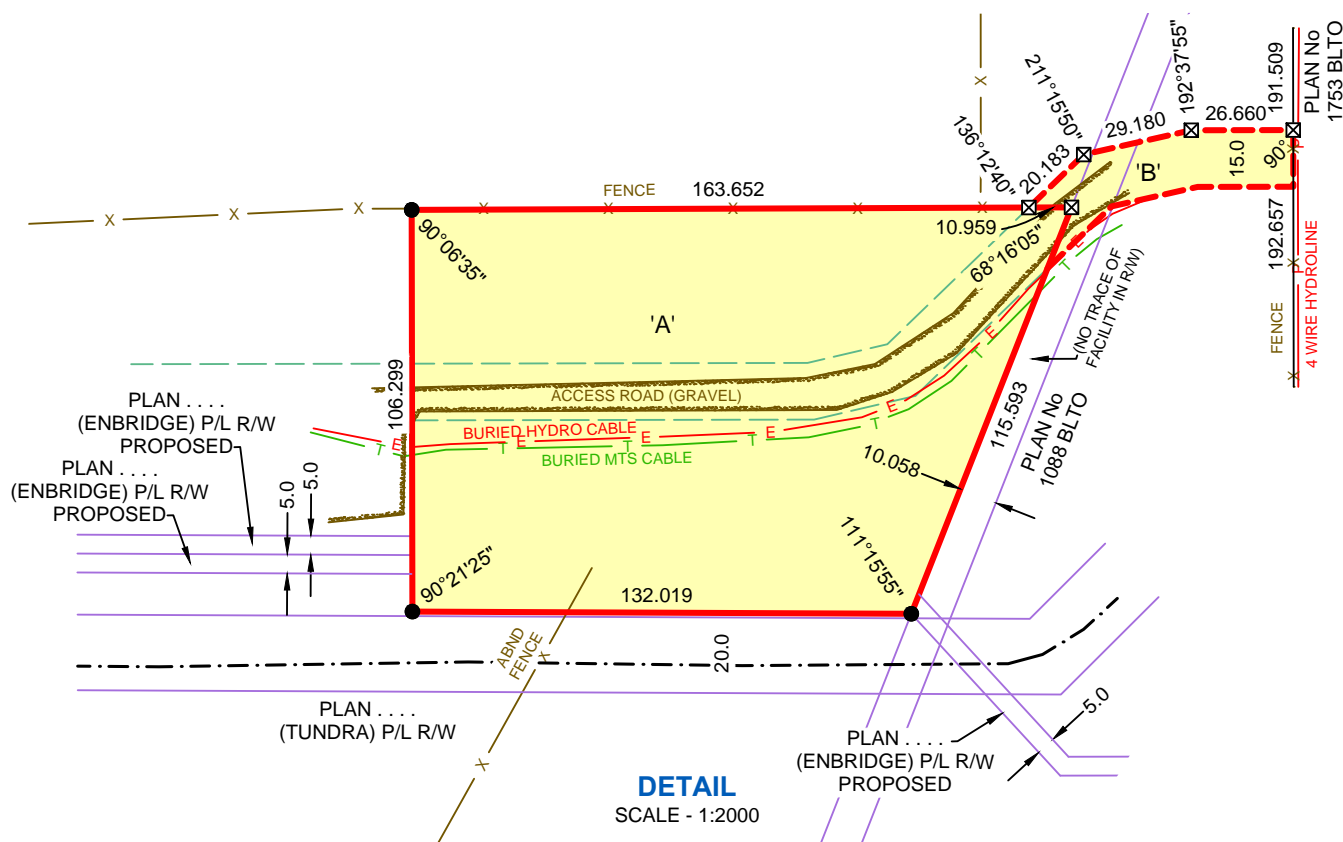
LEGEND:

- Survey Monuments found shown thus: ○
- 0.019 x 0.019 Iron Posts planted shown thus: ●
- 0.025 x 0.025 Iron Posts planted shown thus: ■
- Temporary Point shown thus: ⊠
- Portions referred to shown thus: [Red outline]
- Temporary Work Space shown thus: [Pink fill]
- Distances are in metres and decimals thereof.

No.	DATE	REVISION / ISSUED	JOB No.	SCALE 1:5000	David J. Quirk M.L.S. 130 King Street Estevan, SK S4A 2T5 Tel: 306-634-2635
0.	FEB. 18, 2014	PLAN ISSUED	SM-0112-13-2		
1.	APR. 28, 2014	ADDED EXISTING ACCESS ROAD & ADDED LEASE AREA IN THE SW CORNER	SM-0112-13-2		
2.	JUN. 5, 2014	REVISED DETAIL ON PAGE 2 & REVISED DRAWING NAME	SM-0112-13-2		
3.	AUG. 20, 2014	REMOVED LEASE AREA IN SW CORNER	SM-0112-13-2		
SURVEYED BY: MC		CALC'D BY: CO	DRAWN BY: JB	SM-0112-13-2-IOP-1-R3	

ENBRIDGE LEASE SITE

INDIVIDUAL OWNERSHIP PLAN



NOTE: NOT TO BE USED FOR CONSTRUCTION PURPOSES

LEGEND:

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- 0.025 x 0.025 Iron Posts planted shown thus: ■
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- Portions referred to shown thus:
- Temporary Work Space shown thus:
- Distances are in metres and decimals thereof.

No.	DATE	REVISION / ISSUED	JOB No.	SCALE 1:2000	David J. Quirk M.L.S. 130 King Street Estevan, SK S4A 2T5 Tel: 306-634-2635
0.	FEB. 18, 2014	PLAN ISSUED	SM-0112-13-2		 SM-0112-13-2-IOP-2-R3
1.	APR. 28, 2014	ADDED EXISTING ACCESS ROAD & ADDED LEASE AREA IN THE SW CORNER	SM-0112-13-2		
2.	JUN. 5, 2014	REVISED DETAIL ON PAGE 2 & REVISED DRAWING NAME	SM-0112-13-2		
3.	AUG. 20, 2014	REMOVED LEASE AREA IN SW CORNER	SM-0112-13-2		
SURVEYED BY: MC		CALC'D BY: CO	DRAWN BY: JB		