

June 23, 2016



Manitoba Sustainable Development  
Environmental Approvals  
123 Main Street, Suite 160  
Winnipeg, Manitoba  
R3C 1A5

Attention: Siobhan Burland Ross, M.Eng., P.Eng.  
Manager: Municipal, Industrial, and Hazardous Waste Section

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Canada  
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***Request for Minor Licence Alteration – Transformer Installation  
Environment Act Licence No. 2619 RRRR  
Canexus – Brandon Sodium Chlorate Plant***

Dear Ms. Siobhan Burland Ross:

On behalf of Canexus Corporation (Canexus) and by way of this letter, Dillon Consulting Limited (Dillon) is requesting a Minor Alteration to the Canexus Brandon facility's Environmental Act Licence No. 2619 RRRR (the Licence). Specifically, the request relates to the installation of a transformer at the Canexus Sodium Chlorate Facility in Brandon, Manitoba, subject to the Environment Act (the Act), Classes of Development Regulation 164/88, Section 3.6 Transportation and Transmission. This section of the Act states that any installation and operation of a transformer greater than 115 kV is subject to the Classes of Development Regulation.

In total there are currently seven transformers in use on-site greater than 115 kV. These are listed below in **Table 1** and are illustrated on the attached site plan (Sodium Chlorate Plant Equipment General Arrangement Site Plan).

**TABLE 1 - BRANDON PLANT 115KV TRANSFORMER LIST**

Name	Size	Manufacturer	Service
T1	60 MVA	Westinghouse	Phase 1/4 Rectifiers
T2	7.5 MVA	Tranelectric	Phase 1 to 5 Utilities, Admin, MTCE, and Well Pumphouse
T3	56 MVA	Fuji	Phase 2/3 Rectifier (Main)
T10	20 MVA	Federal Power	Phase 2/3 Rectifier (Sidewinder)



Name	Size	Manufacturer	Service
T12	83 MVA	ABB	Phase 5 Rectifier
T16	82 MVA	Pauwels	Phase 6 Rectifier and Phase 6/7 Utilities
T21	53 MVA	ABB	Phase 7 Rectifier

T21, a 115 kilovolt (kV) transformer, was installed by Canexus in 2014 to increase reliability and reduce stress on another transformer (T16) that was operating at maximum capacity. All other transformers listed above were installed previously and were subject to previous revisions of the Licence.

The implication of operating transformer T16 at maximum capacity was a reduced life span. This could present maintenance issues, such as excess stress on the high voltage cabling exiting the unit, and could result in potential leaks due to the transformer being overworked.

The primary advantage of the addition of T21 is the ability to operate the Phase 6 and 7 plants independently, whereas in the past the Phase 6 and 7 plants shared one transformer operating at maximum capacity. The design was permitted and the installation supervised by Manitoba Hydro. The transformer includes current safeguards and drip containment.

Given the subject transformer operates within an existing switchyard complete with drip containment, no effects to terrestrial or aquatic environments are anticipated. This is further explained in the Transformer Oil Containment Plan, attached to this letter as requested by Manitoba Sustainable Development. Furthermore, since the purpose of the installation of the transformer was for reliability and safety, and not an increase in production capacity, no change to air emissions is expected. Overall, the environmental effects of this alteration are considered not significant.

Canexus is committed to Responsible Care. The Canexus Brandon facility will continue to closely monitor site performance and continue with their annual environmental monitoring programs to ensure compliance is met.

*June 23, 2016*

Further to the Minor Alteration notification for the installation of T21, this letter also serves as a notification regarding the licensee's name change from Canexus Chemicals Canada Limited Partnership to Canexus Corporation. The Certificate of Amalgamation issued by the Government of Alberta is attached to this letter.

Please feel free to contact the undersigned with any questions or requests for additional information or documentation. A \$500.00 cheque, payable to the Minister of Finance has been enclosed, as per your request.

Thank you for your consideration of this alteration, and we look forward to hearing from you soon.

Yours sincerely,

**DILLON CONSULTING LIMITED**



Dennis Heinrichs, M.Sc., P.Eng.  
Senior Environmental Engineer

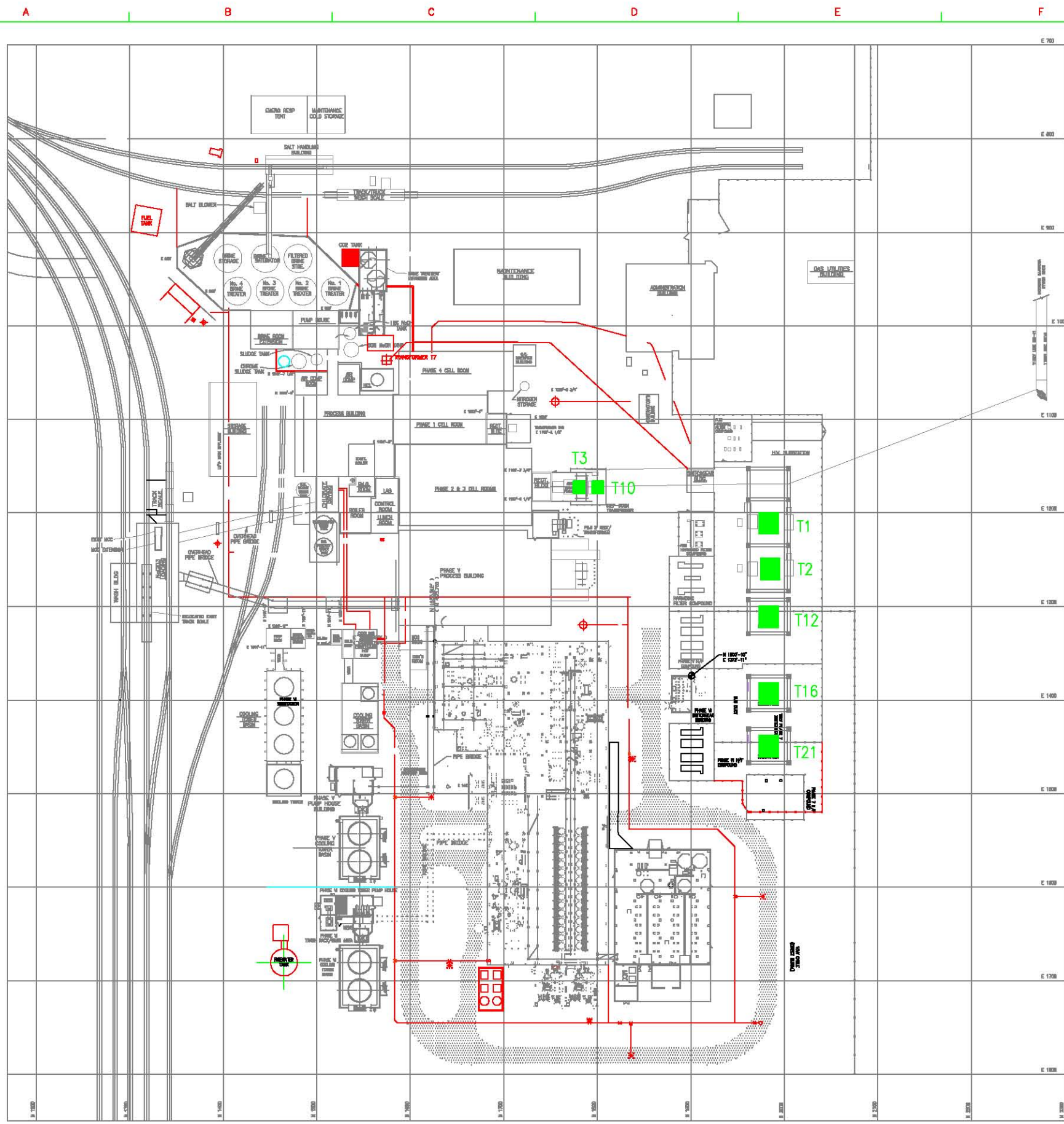
KAO/knp

Attachments: Sodium Chlorate Plant Equipment General Arrangement Site Plan  
Transformer Oil Containment Plan  
Certificate of Amalgamation

*cc: Mr. Darrel Ouimet, Environment Officer, Manitoba Sustainable Development  
Ms. Jennifer Winsor, Environmental Engineer, Manitoba Sustainable Development  
Mr. Colin Welch, Responsible Care Manager, Canexus Corporation*

**Our file: 15-1850**

# **Sodium Chlorate Plant Equipment General Arrangement Site Plan**



**BRANDON PLANT 115KV TRANSFORMER LIST**

NAME	SIZE	MANUFACTURER	SERVICE
T1	60 MVA	WESTINGHOUSE	PH 1/4 RECTIFIERS
T2	7.5 MVA	TRANSELECTRIC	PH 1 TO 5 UTILITIES, ADMIN, MTCE, AND WELL PUMPHOUSE
T3	56 MVA	FUJI	PH 2/3 RECTIFIER (MAIN)
T10	20 MVA	FEDERAL POWER	PH 2/3 RECTIFIER (SIDEWINDER)
T12	83 MVA	ABB	PH 5 RECTIFIER
T16	82 MVA	PAUWELS	PH 6 RECTIFIER AND PH 6 & 7 UTILITIES
T21	53 MVA	ABB	PH 7 RECTIFIER

REV.	DATE	STATUS	BY	CHK.	APP.
1B	10.25.2014	UPDATED FOR TRANSFORMER LOCATIONS	MW	MW	MW
1A	02.14.2011	UPDATED WITH PH 7	MW	MW	MW
1	23 FEB 07	APPROVED FOR CONSTRUCTION	BK	FM	CA
C	21 NOV 06	ISSUED FOR REFERENCE	B.J.C.		
B	05 JUN 06	ISSUED FOR OWNER REVIEW (PRELIMINARY - PROPOSAL)	YM		GA
A	18 MAY 06	ISSUED FOR OWNER REVIEW (PRELIMINARY)	YM		GA

**NOTES**  
1. THE UNDER GROUND POWER CABLES TO PH6 T/R ARE LOCATED APPROXIMATELY.

**Aker Kvaerner Chemicals**  
A Division of Aker Kvaerner Canada Inc.  
Vancouver, Canada

SIZE: D	SCALE: 1/80=12
DRWN. BY: FBB76	DATE: 15 MAY 06
CH'D. BY: -	DATE: -
ENGINEER: -	DATE: -

CANEXUS  
PHASE 7 EXPANSION  
BRANDON MANITOBA  
SODIUM CHLORATE PLANT  
EQUIPMENT GENERAL ARRANGEMENT  
SITE PLAN

DOCUMENT NUMBER	SHEET	REV
06C09400-4-GAD-0001	-	1B

# Transformer Oil Containment Plan



**DILLON**  
CONSULTING

CANEXUS CORPORATION

# Transformer T21 Oil Containment Plan

Brandon Sodium Chlorate Plant

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## 1.0 Introduction

The purpose of this Transformer Oil Containment Plan is to identify potential impacts associated with the containment and storage of transformer oil, describe the mitigation measures associated with these potential impacts, and describe the equipment, operational procedures, and monitoring plans that are in place to react to potential oil leaks or spills in a coordinated and efficient manner.

## 2.0 T21 Leak Containment System

### 2.1 Oil Type

The T21 transformer uses a high-performance biodegradable paraffin base oil called LUMINOL (see **Appendix A** for product information). Naphthenic mineral oil is not used within this new transformer. LUMINOL is not classified as a hazardous substance under WHMIS or regulated as a dangerous good under the federal Transportation of Dangerous Goods Regulation, also adopted in Manitoba.

### 2.2 Drip Catchment

As part of Canexus's commitment to Responsible Care, Canexus has gone beyond the typical transformer installation on a granular geotextiled switchyard surface to locate the new transformer (T21) on an impermeable concrete pad with drip containment. The provided containment is an engineered cast-in-place concrete catchment pit sufficient to retain small leaks or drips from the transformer. The containment curb is 250 mm high at its outer edge and sloped to a valved outlet drain. This valve can be opened to allow accumulated precipitation to drain from the containment area. Canexus also has the equipment on hand to manually pump out accumulated precipitation on an as-needed basis. The containment pad dimensions are approximately 8 x 5.5 m, representing a storage volume of approximately 5,000 L. This represents 125% of the transformer conservator volume (4,000 L) or 20% of the total transformer oil volume (24,000 L). Construction pictures and plans for the drip containment system are attached to this plan.

### 2.3 Leak Detection

The Canexus Brandon plant operates 24 hours a day, year round. Regular inspections and maintenance are conducted at the plant. Canexus inspects all site transformers weekly, including physical examination of the drip catchment system, at which time a leak into the containment pit would be identified and addressed. As part of their regular monitoring, Canexus staff also examines the substation components for signs of deterioration and conducts maintenance and repairs on an as-needed basis.

Additionally, there is a low level oil trip on the conservator that would shut down the transformer if the oil level dropped significantly, prompting inspection and response. In the case of a catastrophic transformer failure such as a major rupture, the high temperature in the transformer would also trigger an automatic shutdown of the system, prompting inspection and response.

## 3.0 Potential Impacts and Mitigation Measures

### 3.1 During Transformer Installation

An oil spill and/or leak during construction may lead to both soil and water (groundwater or surface water) contamination. During installation, there may be the possibility of fuel spills during the operation and refuelling of construction vehicles. Construction waste such as soil, rags, containers, drums, and plastic from construction equipment and material may lead to adverse impacts on soil if not disposed of properly.

#### 3.1.1 Mitigation Measures

During the installation of transformer (T21) at the Canexus Brandon Sodium Chlorate Plant, Canexus complied with applicable requirements as stated in Section 23 of Environment Act Licence No. 2619 RRRR, as follows:

- a) *Manitoba Regulation 188/2001* or any future amendments thereto, respecting the storage and handling of petroleum products and allied products; and
- b) *The Manitoba Dangerous Goods Handling and Transportation Act*, and regulations issues thereunder, respecting the handling, transport, storage and disposal of any dangerous goods brought onto or generated at the Development.

As required by Section 24 of the licence, Canexus stored all petroleum products within a curbed storage holding area designed to contain a volume of liquid equal to 110% of the volume of the largest storage tank plus the effective displacement volume of all other tanks located within the curbed area. It was Canexus' responsibility to maintain the integrity of the containment system by repairing any defective equipment immediately and regularly removing precipitation accumulation.

As earlier mentioned in **Section 2.1**, the new transformer oil is not considered a dangerous good or classified as a hazardous material under WHMIS. However, as per Canexus' Emergency Response Plan for Spills/Release Response, if a significant oil spill or leak had occurred during the installation of the transformer, Canexus would have assessed the hazards associated with the spill. If there was an immediate human health or safety hazard, evacuation would have been initiated. If not, proper personal protective equipment would have been worn, the spill would have been controlled, the spilled substance would have been contained and clean-up would have occurred. The appropriate personnel and authorities would have been notified in the event of a reportable spill.

As required in Section 26 in Environment Act Licence No. 2619 RRRR, spill recovery equipment was available on-site at all times to address a spill of any liquid dangerous good or hazardous waste which may not have been contained completely by existing provisions. A trailer dedicated for plant spill control equipment was located in the Emergency Responses building on the west side of the salt offloading tracks. The equipment in the trailer would have been used for spill control and cleanup had a spill occurred. Portable minor spill response equipment was also available throughout the plant site.

### 3.1.2 Impacts

No significant spills occurred during construction. The environmental impact of the installation of the transformer is considered to be not significant.

## 3.2 During Transformer Operation

An oil spill and/or leak from the transformer during operation may lead to both soil and water (groundwater or surface water) contamination.

### 3.2.1 Mitigation Measures

Beyond locating the transformer in its existing switchyard, Canexus also placed the transformer inside a concrete drip catchment system as described above in **Section 2.2**. As outlined in **Section 2.3**, Canexus regularly monitors the transformers and would detect a transformer shutdown caused by a low oil level or increased transformer temperature, investigate, and respond appropriately. Should a minor spill or leak occur from the transformer oil conservator, the concrete presents an impermeable barrier to migration of oil to the soil and underlying groundwater. A leak or spill of less than 5,000 L in volume, equivalent to 125% of the conservator volume, is likely to be captured and Canexus would be able to collect and dispose of the oil without impacting the environment. Should the concrete curbs be overtopped or breached, the concrete platform is located in a gravelled area approximately 240 m from the closest surface water body, the Assiniboine River, so impacts to a surface water body are considered low and therefore not significant.

### 3.2.2 Potential Impacts

Considering the risk of a transformer oil leak, the implementation of drip containment, and Canexus' procedures to monitor, detect, and address leaks or spills promptly, the potential for residual impacts to the environment from the T21 transformer operation is considered low and not significant.

## 3.3 At Decommissioning

Should the transformer be decommissioned, oil will be removed from the transformer prior to decommissioning. Appropriate mitigation measures will be followed to prevent spills or leaks of insulating oil during the removal of the transformer. Impacts due to the decommissioning of the system on soil, surface water, or groundwater are not anticipated.

# Appendix A

## *LUMINOL Data Sheet and MSDS*



## LUMINOL™ TR/TRI HIGH-EFFICIENCY ELECTRICAL INSULATION FLUIDS

### Introduction

#### LUMINOL™ Outperforms Naphthenic Electrical Insulating Oils

Petro-Canada's LUMINOL family of electrical insulating fluids represents a breakthrough in electrical insulating fluids technology. Unlike naphthenic mineral oils, LUMINOL uses Petro-Canada's ultra-pure severely hydrotreated iso-paraffin base fluids to help minimize power loss and maximize productivity. These fluids contain no corrosive sulphur that may lead to transformer breakdown.

LUMINOL fluids withstand energy spikes and hot and cold weather extremes, better than naphthenic electrical insulating oils. Thanks to a naturally high oxidation stability, LUMINOL fluids resist breakdown longer and help provide extended service life. So less money is spent on routine transformer maintenance and fluid top-up, and less time worrying about transformer efficiency.

LUMINOL delivers worry-free, corrosive sulphur-free performance.

#### Environmental, Health & Safety Benefits

LUMINOL fluids can help reduce disposal costs and the potential impact of spills, as well as answer possible community concerns about transformer oil toxicity. Petro-Canada produces LUMINOL fluids using the HT Purity Process combined with Hydroisomerization. These ultra-pure fluids are inherently biodegradable in natural environments, free of carcinogenic polynuclear aromatics (PNAs) and virtually non-toxic. As well, LUMINOL's negative gassing tendency and higher flash point help reduce the risk of fire and explosion.

#### Facts about LUMINOL TR/TRI

LUMINOL TR and LUMINOL TRI are ideal for use in large power and distribution transformers operating at peak capacity as well as free-breathing units, pad mount, and pole mount transformers; for commercial, industrial and institutional applications:

- LUMINOL TR is designed for Type I applications.
- LUMINOL TRI is designed for Type II applications.

- LUMINOL TR and TRI meet or exceed the performance requirements of CSA C50 (Class A and B), ASTM D3487 standards, and DOBLE TOPS specifications.
- LUMINOL TR and TRI meet the CSA C50-08 upgraded oxidation stability Special Requirements for Type III and Type IV fluids respectively.
- LUMINOL is approved for applications requiring Hydro One M-104
- LUMINOL TR meets International Electrotechnical Commission, IEC 60296 General specifications for trace inhibited transformer oil.
- LUMINOL TRI meets IEC 60296 General specifications for inhibited transformer oil.

#### Demonstrated Characteristics Include:

- Outstanding oxidation stability to help extend the service life of circuit breakers and LTCs.
- Excellent heat transfer capability to help enhance transformer performance.
- High dielectric impulse strength to improve performance in the presence of overvoltage conditions.
- Low power-factor (dielectric loss) to reduce thermal runaway under conditions of high electric stress.
- Negative gassing to reduce the risk of failure from hydrogen gas bubbles.
- Full compatibility with existing naphthenic insulating oils, which enhances the performance of the combined fluids.
- LUMINOL TR and TRI contain no corrosive sulphur compounds and do not require passivators.
- LUMINOL TR and TRI are colourless.
- Outstanding cold weather performance.

#### Dependable Supply Today And Tomorrow:

- Available in bulk, 1,040L (275 USG) totes (TRI only - minimum order required) and 205L (55 USG) drums.
- Initial delivery can be arranged within two weeks, and ongoing supply is then tailored to meet individual requirements.
- Available only from Petro-Canada, one of the world's most dependable producers of advanced fluids.

#### What is the HT difference?

Petro-Canada starts with the HT purity process to produce water-white, 99.9% pure base oils. The result is a range of lubricants, specialty fluids and greases that deliver maximum performance for our customers.



## Typical Performance Data

PROPERTY	TEST	CSA-C50 CLASS A		ASTM D3487		LUMINOL	
		Type I/III	Type II/IV	Type I	Type II	TR	TRi
<b>PHYSICAL PROPERTIES</b>							
Appearance	Visual	N/A		Clear & Bright		Clear & Bright	
Colour	ASTM D1500	0.5 max		0.5 max		<0.5	
Specific Gravity @ 15°C	ASTM D4052	0.906 max		0.91 max		0.835	
Kinematic Viscosity, cSt @ 100°C	ASTM D445	N/A		3.0 max		2.8	
Kinematic Viscosity, cSt @ 40°C	ASTM D445	10 max		12.0 max		9.2	
Kinematic Viscosity, cSt @ 0°C	ASTM D445	75 max		76.0 max		53	
Kinematic Viscosity, cSt @ -40°C	ASTM D445	2500 max		N/A		1230	
Pour Point, °C	ASTM D5950	-46 max		-40 max		-60	
Interfacial Tension @ 25°C, dynes/cm	ASTM D971	40 min		40 min		48	
Flash Point, °C	ASTM D92	145 min		145 min		170	
<b>CHEMICAL PROPERTIES</b>							
Neutralization Number, mg KOH/g	ASTM D974	0.03 max		0.03 max		<0.01	
Water Content, ppm	ASTM D6304	35 max		35 max		<25	
Corrosive Sulphur	ASTM D1275B	Not corrosive		Not corrosive		Not corrosive	
Corrosive Sulphur	IEC 62535					Not corrosive	
PCB Content, ppm	ASTM D4059	2 max		Not detectable		Nil	
Oxid. Stability, wt.% Sludge @ 72h	ASTM D2440	0.1 max	N/A	0.15 max	0.1 max	<0.01	<0.01
Oxid. Stability, Neut # mg KOH/g @ 72h	ASTM D2440	0.4 max	N/A	0.5 max	0.3 max	<0.01	<0.01
Oxid. Stability, wt.% Sludge @ 164h	ASTM D2440	0.2 max	0.05 max	0.3 max	0.2 max	<0.01	<0.01
Oxid. Stability, Neut # mg KOH/g @ 164h	ASTM D2440	0.5 max	0.2 max	0.6 max	0.4 max	<0.01	<0.01
Oxid. Stability, wt% Sludge	IEC 61125 C	Types III & IV: 0.08 max		N/A		<0.02 <sup>†</sup>	
Oxid. Stability, Neut # mg KOH/g	IEC 61125 C	Types III & IV: 1.2 max		N/A		<0.02 <sup>†</sup>	
Oxid. Stability, Power Factor @ 90°C	IEC 61125 C	Types III & IV: 0.5 max		N/A		<0.001 <sup>†</sup>	
Inhibitor Content, wt. %	ASTM D2668	≤ 0.08	> 0.08 -0.40	≤ 0.08	≤ 0.08 -0.30	0.08	0.20
Rotary Pressure Vessel Oxidation Test, minutes	ASTM D2112	N/A	195 min	N/A	195 min	400	600
<b>ELECTRICAL PROPERTIES</b>							
Dielectric Breakdown Voltage, @ 60 Hz Disk Electrode, min, kV	ASTM D877	30 min		30 min		55	
Dielectric Breakdown Voltage @ 60 Hz VDE Electrode, 2.03 mm gap, min, kV	ASTM D1816	24 min <sup>††</sup>		35 min <sup>††</sup>		44 <sup>††</sup>	
		56 min <sup>†††</sup>		56 min <sup>†††</sup>		65 <sup>†††</sup>	
Dielectric Breakdown Impulse, kV	ASTM D3300	145 min		145 min		>300	
Gassing Tendency, µL/min	ASTM D2300	N/A		+30 max		-10	
Power Factor @ 60 Hz, 100°C	ASTM D924	0.005 max		0.003 max		0.001	
Power Factor @ 60 Hz, 25°C	ASTM D924	0.0005 max		0.0005 max		<0.0001	

The values quoted above are typical of normal production. They do not constitute a specification.

<sup>†</sup> Test duration: Type III (332 h); Type IV (500 h).

<sup>††</sup> Following transport (unprocessed oil).

<sup>†††</sup> After filtering, drying and degassification (new processed oil).

## Health and Safety

To obtain Material Health and Safety Data Sheets, contact one of Petro-Canada's TechData Info Lines.

## TechData Info Lines

If you are an **existing customer** looking to place an order, please call a Customer Order Management Representative at:

**Canada (English)** . . . . . Phone 1-800-268-5850  
**(French)** . . . . . Phone 1-800-576-1686  
**United States** . . . . . Phone 1-877-730-2369  
**Latin America/Europe/Asia** . . . . . Phone +1-866-957-4444

You can also e-mail us at [lubecsr@suncor.com](mailto:lubecsr@suncor.com)



If you would like to **become a Petro-Canada lubricants customer** and require more information about specialty fluids, oils and greases that can help maximize your equipment performance, savings and productivity, please contact us at:

**North America** . . . . . Phone 1-866-335-3369  
**Europe** . . . . . Phone +44 (0) 121-781-7264  
**Germany** . . . . . Phone 0800-589-4751  
**China** . . . . . Phone +86 (21) 6362-0066

Visit us on the web at [lubricants.petro-canada.com](http://lubricants.petro-canada.com)



# Material Safety Data Sheet

## LUMINOL™ TR (Type I Trace-Inhibited)



000003000234

Version 2.0

Revision Date 2015/03/25

Print Date 2015/03/25

### SECTION 1. PRODUCT AND COMPANY IDENTIFICATION

Product name : LUMINOL™ TR (Type I Trace-Inhibited)

Product code : LUMTRDRX, LUMTR, LUMTRBLK

Manufacturer or supplier's details

Petro-Canada Lubricants Inc.  
2310 Lakeshore Road West  
Mississauga ON L5J 1K2  
Canada

Emergency telephone number : Suncor Energy: +1 403-296-3000;  
Poison Control Centre: Consult local telephone directory for emergency number(s).

#### Recommended use of the chemical and restrictions on use

Recommended use : Premium trace-inhibited (Type I) insulating oil for use in electrical transformers, circuit breakers and switches.

Prepared by : Product Safety: +1 905-804-4752

### SECTION 2. HAZARDS IDENTIFICATION

#### Emergency Overview

Appearance	viscous liquid
Colour	Clear and bright
Odour	Slight naphthalene like odour.

#### Potential Health Effects

Primary Routes of Entry : Eye contact  
Ingestion  
Inhalation  
Skin contact

Aggravated Medical Condition : None known.

#### Carcinogenicity:

##### IARC

No component of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.

##### ACGIH

No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by ACGIH.

# Material Safety Data Sheet

## LUMINOL™ TR (Type I Trace-Inhibited)

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### SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

Substance / Mixture : Mixture

#### Hazardous components

No hazardous ingredients

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### SECTION 4. FIRST AID MEASURES

- If inhaled : Move to fresh air.  
Artificial respiration and/or oxygen may be necessary.  
Seek medical advice.
- In case of skin contact : In case of contact, immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes.  
Wash skin thoroughly with soap and water or use recognized skin cleanser.  
Wash clothing before reuse.  
Seek medical advice.
- In case of eye contact : Remove contact lenses.  
Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes.  
Obtain medical attention.
- If swallowed : Rinse mouth with water.  
DO NOT induce vomiting unless directed to do so by a physician or poison control center.  
Never give anything by mouth to an unconscious person.  
Seek medical advice.
- Most important symptoms and effects, both acute and delayed : First aider needs to protect himself.

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### SECTION 5. FIREFIGHTING MEASURES

- Suitable extinguishing media : Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.
- Unsuitable extinguishing media : No information available.
- Specific hazards during firefighting : Cool closed containers exposed to fire with water spray.



# Material Safety Data Sheet

## LUMINOL™ TR (Type I Trace-Inhibited)



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- Hazardous combustion products : Carbon oxides (CO, CO<sub>2</sub>), nitrogen oxides (NO<sub>x</sub>), sulphur oxides (SO<sub>x</sub>), hydrocarbons, smoke and irritating vapours as products of incomplete combustion.
- Further information : Prevent fire extinguishing water from contaminating surface water or the ground water system.

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### SECTION 6. ACCIDENTAL RELEASE MEASURES

- Personal precautions, protective equipment and emergency procedures : Use personal protective equipment.  
Ensure adequate ventilation.  
Evacuate personnel to safe areas.  
Material can create slippery conditions.
- Environmental precautions : If the product contaminates rivers and lakes or drains inform respective authorities.
- Methods and materials for containment and cleaning up : Prevent further leakage or spillage if safe to do so.  
Remove all sources of ignition.  
Soak up with oil absorbent material.  
Non-sparking tools should be used.  
Ensure adequate ventilation.  
Contact the proper local authorities.

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### SECTION 7. HANDLING AND STORAGE

- Advice on safe handling : For personal protection see section 8.  
Smoking, eating and drinking should be prohibited in the application area.  
In case of insufficient ventilation, wear suitable respiratory equipment.  
Avoid contact with skin, eyes and clothing.  
Do not ingest.  
Keep away from heat and sources of ignition.  
Keep container closed when not in use.
- Conditions for safe storage : Store in original container.  
Containers which are opened must be carefully resealed and kept upright to prevent leakage.  
Keep in a dry, cool and well-ventilated place.  
Keep in properly labelled containers.  
To maintain product quality, do not store in heat or direct sunlight.

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### SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

#### Components with workplace control parameters

Contains no substances with occupational exposure limit values.

- Engineering measures** : No special ventilation requirements. Good general ventilation should be sufficient to control worker exposure to airborne contaminants.

# Material Safety Data Sheet

## LUMINOL™ TR (Type I Trace-Inhibited)



000003000234

Version 2.0

Revision Date 2015/03/25

Print Date 2015/03/25

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### Personal protective equipment

- Respiratory protection : Use respiratory protection unless adequate local exhaust ventilation is provided or exposure assessment demonstrates that exposures are within recommended exposure guidelines. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator.
- Filter type : organic vapour filter
- Hand protection  
Material : neoprene, nitrile, polyvinyl alcohol (PVA), Viton(R).
- Remarks : Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary.
- Eye protection : Wear face-shield and protective suit for abnormal processing problems.
- Skin and body protection : Choose body protection in relation to its type, to the concentration and amount of dangerous substances, and to the specific work-place.
- Protective measures : Wash hands and face before breaks and immediately after handling the product.  
Wash contaminated clothing before re-use.  
Ensure that eyewash station and safety shower are proximal to the work-station location.
- Hygiene measures : Remove and wash contaminated clothing and gloves, including the inside, before re-use.  
Wash face, hands and any exposed skin thoroughly after handling.

---

### SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

- Appearance : viscous liquid
- Colour : Clear and bright
- Odour : Slight naphthalene like odour.
- Odour Threshold : No data available
- pH : No data available
- Pour point : -60 °C (-76 °F)
- Boiling point/boiling range : No data available
- Flash point : 170 °C (338 °F)  
Method: Cleveland open cup

# Material Safety Data Sheet

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Fire Point	:	No data available
Auto-Ignition Temperature	:	No data available
Evaporation rate	:	No data available
Flammability	:	Low fire hazard. This material must be heated before ignition will occur.
Upper explosion limit	:	No data available
Lower explosion limit	:	No data available
Vapour pressure	:	No data available
Relative vapour density	:	No data available
Density	:	0.84 kg/l (15 °C / 59 °F)
Solubility(ies)		
Water solubility	:	insoluble
Partition coefficient: n-octanol/water	:	No data available
Viscosity		
Viscosity, kinematic	:	9.4 cSt (40 °C / 104 °F) 2.6 cSt (100 °C / 212 °F)
Explosive properties	:	Do not pressurise, cut, weld, braze, solder, drill, grind or expose containers to heat or sources of ignition.

---

### SECTION 10. STABILITY AND REACTIVITY

Possibility of hazardous reactions	:	Hazardous polymerisation does not occur. Stable under normal conditions.
Conditions to avoid	:	No data available
Incompatible materials	:	Reactive with oxidising agents and acids.
Hazardous decomposition products	:	May release COx, NOx, SOx, hydrocarbons, smoke and irritating vapours when heated to decomposition.

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### SECTION 11. TOXICOLOGICAL INFORMATION

Information on likely routes of exposure	:	Eye contact Ingestion Inhalation Skin contact
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### Acute toxicity

#### Product:

Acute oral toxicity : Remarks: No data available

Acute inhalation toxicity : Remarks: No data available

Acute dermal toxicity : Remarks: No data available

### Skin corrosion/irritation

#### Product:

Remarks: No data available

### Serious eye damage/eye irritation

#### Product:

Remarks: No data available

### Respiratory or skin sensitisation

No data available

### Germ cell mutagenicity

No data available

### Carcinogenicity

No data available

### Reproductive toxicity

No data available

### STOT - single exposure

No data available

### STOT - repeated exposure

No data available

### Aspiration toxicity

No data available

---

## SECTION 12. ECOLOGICAL INFORMATION

### Ecotoxicity

#### Product:

Toxicity to fish : Remarks: No data available

Toxicity to daphnia and other aquatic invertebrates : Remarks: No data available

Toxicity to algae : Remarks: No data available

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Toxicity to bacteria : Remarks: No data available

### Persistence and degradability

#### Product:

Biodegradability : Remarks: No data available

### Bioaccumulative potential

No data available

### Mobility in soil

No data available

### Other adverse effects

No data available

---

## SECTION 13. DISPOSAL CONSIDERATIONS

### Disposal methods

Waste from residues : The product should not be allowed to enter drains, water courses or the soil.  
Offer surplus and non-recyclable solutions to a licensed disposal company.  
Waste must be classified and labelled prior to recycling or disposal.  
Send to a licensed waste management company.  
Dispose of as hazardous waste in compliance with local and national regulations.  
Dispose of product residue in accordance with the instructions of the person responsible for waste disposal.

---

## SECTION 14. TRANSPORT INFORMATION

### International Regulation

#### IATA-DGR

Not regulated as a dangerous good

#### IMDG-Code

Not regulated as a dangerous good

### Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code

Not applicable for product as supplied.

#### 49 CFR

Not regulated as a dangerous good

#### TDG

Not regulated as a dangerous good

### Special precautions for user

Not applicable

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### SECTION 15. REGULATORY INFORMATION

**WHMIS Classification** : Not Rated

This product has been classified according to the hazard criteria of the CPR and the MSDS contains all of the information required by the CPR.

**The components of this product are reported in the following inventories:**

<b>DSL</b>	On the inventory, or in compliance with the inventory
<b>TSCA</b>	All chemical substances in this product are either listed on the TSCA Inventory or are in compliance with a TSCA Inventory exemption.
<b>EINECS</b>	On the inventory, or in compliance with the inventory

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### SECTION 16. OTHER INFORMATION

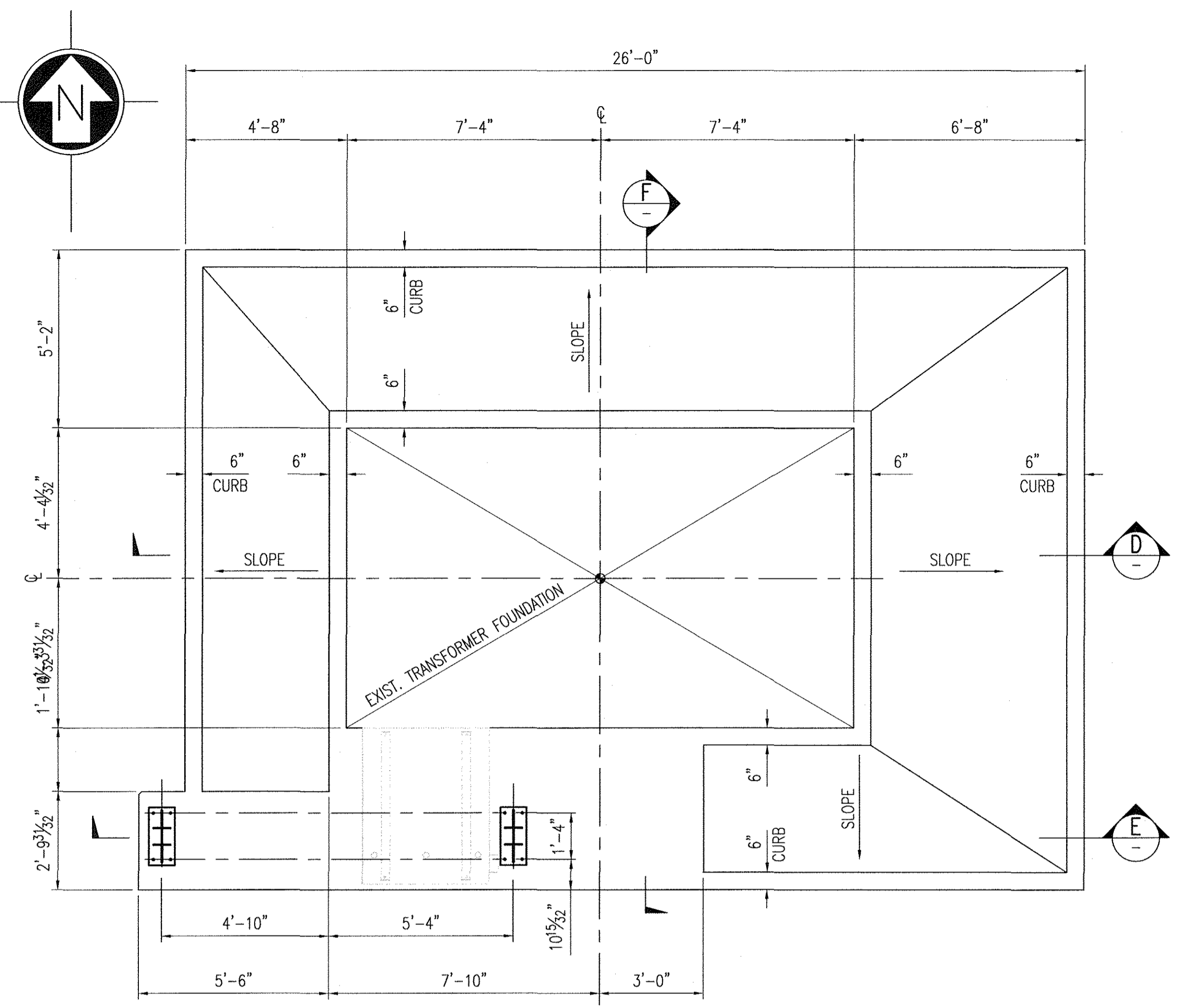
For Copy of (M)SDS : The Canadian Controlled Products Regulations (CPR) (Under the Hazardous Products Act, part of the WHMIS legislation) only apply to WHMIS Controlled (i.e., hazardous) products. Therefore, the CPR and the 3-year update rule specified therein do not apply to WHMIS Non-Controlled products. Although this is true, customarily Petro-Canada reviews and updates Non-Controlled product MSDS if a customer requests such an update. These Non-Controlled product updates are given a lower priority than Controlled products but are handled as soon as practicable. If you would like to verify if the MSDS you have is the most current, or you require any further information, please contact:  
Internet: [lubricants.petro-canada.ca/msds](http://lubricants.petro-canada.ca/msds)  
Western Canada, telephone: 1-800-661-1199; fax: 1-800-378-4518  
Ontario & Central Canada, telephone: 1-800-268-5850; fax: 1-800-201-6285  
Quebec & Eastern Canada, telephone: 1-800-576-1686; fax: 1-800-201-6285  
For Product Safety Information: 1 905-804-4752

Prepared by : Product Safety: +1 905-804-4752

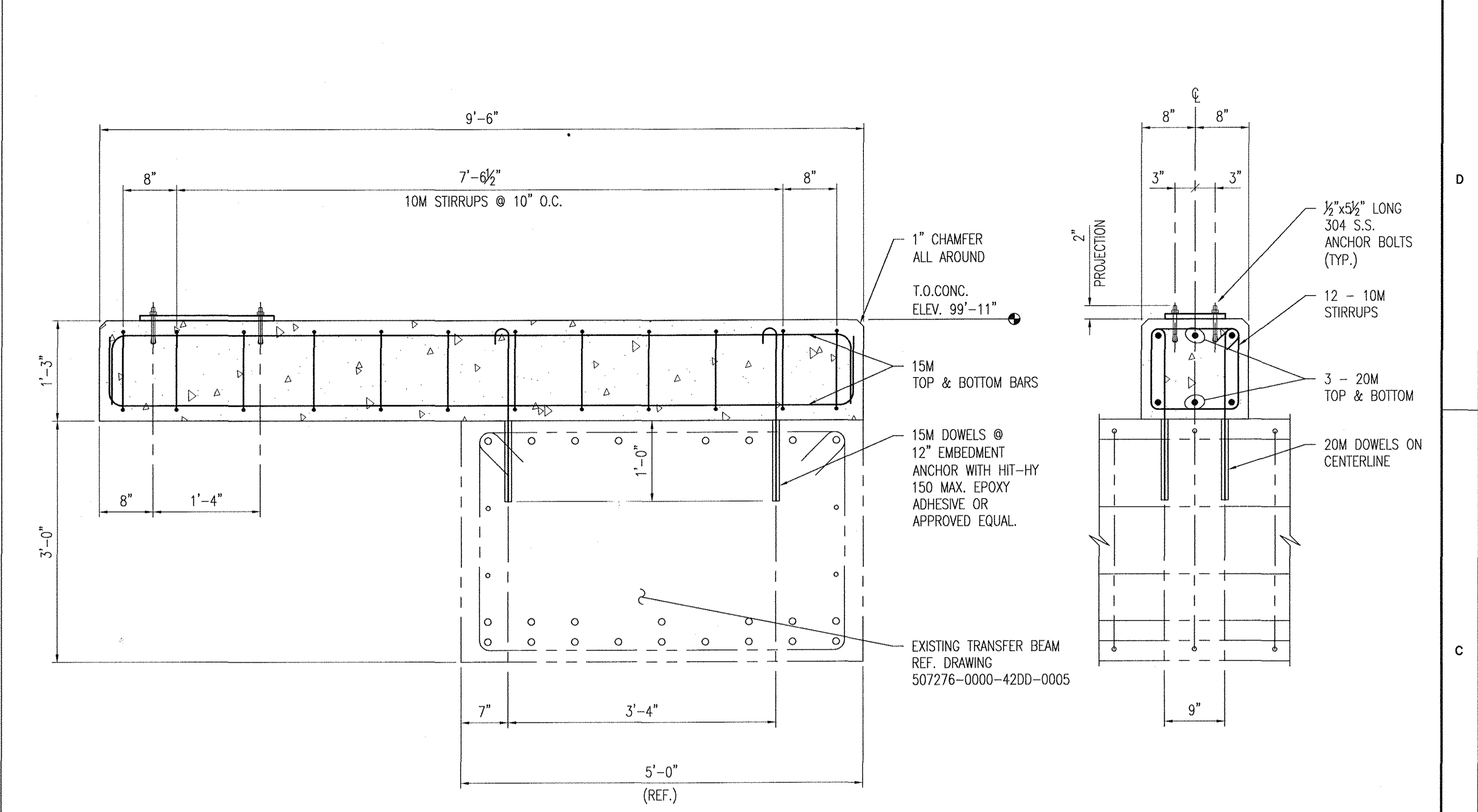
The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.

## **Appendix B**

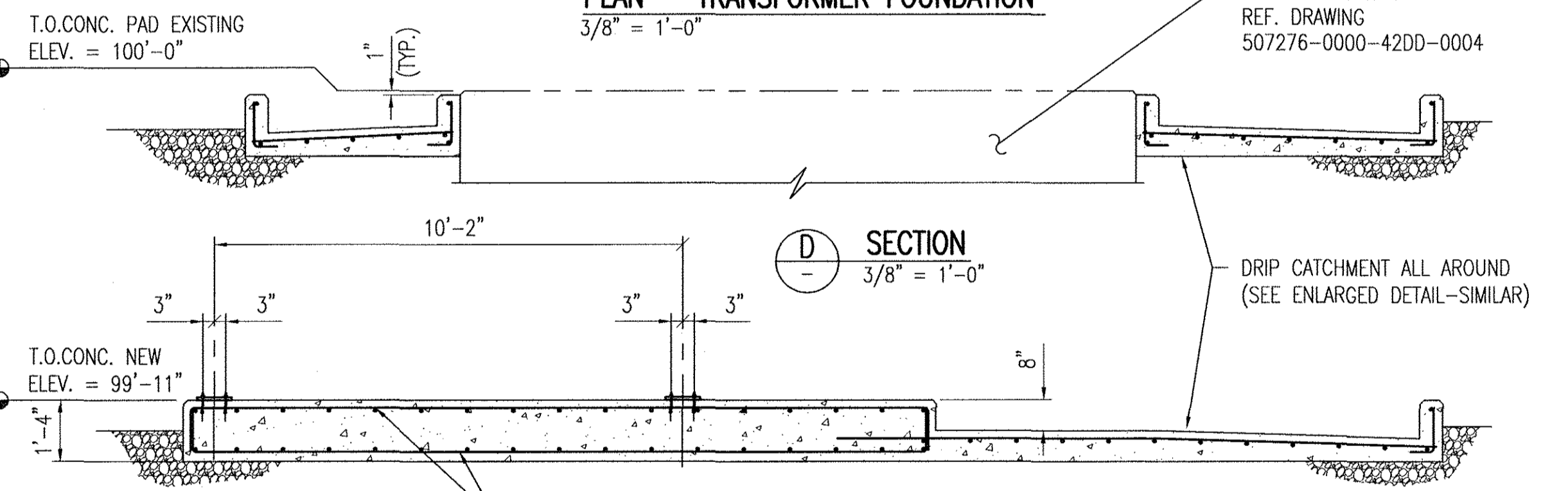
### ***Transformer T21 Drip Catchment Details***



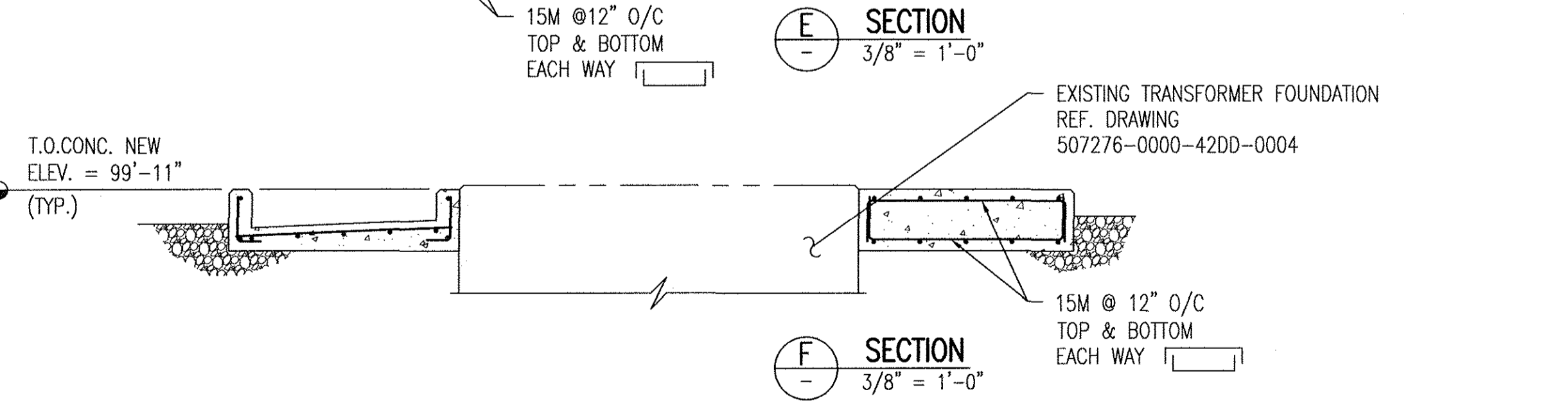
**PLAN - TRANSFORMER FOUNDATION**  
3/8" = 1'-0"



**C SECTION**  
0001 1" = 1'-0"

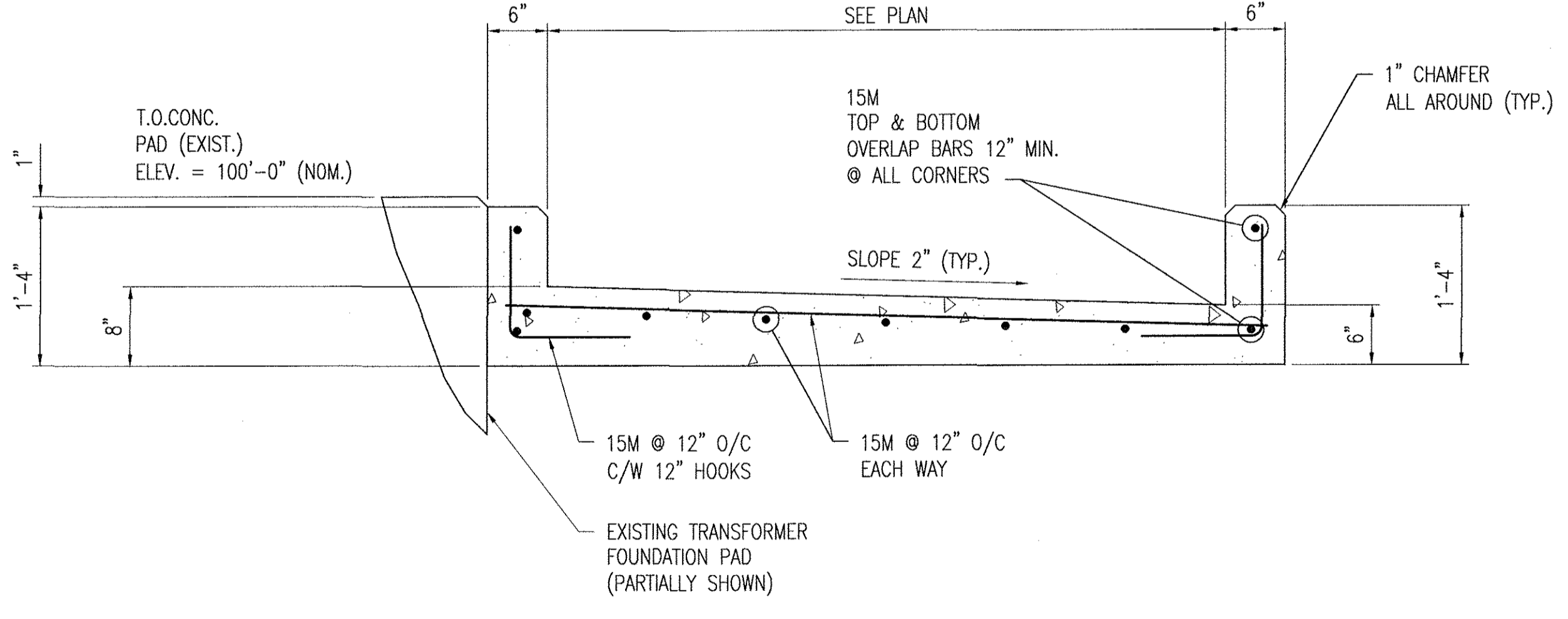


**D SECTION**  
3/8" = 1'-0"



**E SECTION**  
3/8" = 1'-0"

**F SECTION**  
3/8" = 1'-0"



**DRIP CONTAINMENT DETAIL**  
1" = 1'-0"  
(WIDTH VARIES - SEE PLAN)

LAST SAVE: 2014/08/01 - 11:28am  
 PATH: M:\618799\ENGS\425TR\DD - General DWG\618799-0000-42-00-0001.dwg

ISSUE No	REV.	DATE (Y/M/D)	PURPOSE OF ISSUE	TRANSMISSION LETTER No	ISSUE No	REV.	DATE (Y/M/D)	PURPOSE OF ISSUE	TRANSMISSION LETTER No

No	REVISION DESCRIPTION	DATE (Y/M/D)	INITIALS: * DESIGNED ** APPROVED
00	RELEASED FOR CONSTRUCTION	2014/08/01	
PA	RELEASED FOR PRELIMINARY REVIEW	2014/06/11	K.K. R.B.

No	REVISION DESCRIPTION	DATE (Y/M/D)	INITIALS: * DESIGNED ** APPROVED

	<b>PROFESSIONAL SEAL</b> SNC-LAVALIN 148 Nature Park Way Winnipeg, MB, Canada R3P 0X7 204-786-8080	CLIENT <b>CANEXUS CHEMICALS CANADA LP</b>
	PREPARATION DESIGNED: K. KOTYK DRAWN: B. DICKSON CHECKED: R. COATES DATE: 2014-06-03 SCALE: AS SHOWN	APPROVAL PROJECT DISCIPLINE ENGINEER: R. BEAN PROJECT ENGINEERING MANAGER: CLIENT:
TITLE TRANSFORMER SUBSTATION PHASE 6/7 TRANSFORMER BUS DUCT SUPPORT FOUNDATION & DRIP CATCHMENT DETAILS		PROJECT No: 612799 SUBDIVISION: 0000 SUBJECT: 42_DD SERIAL: 0002 REV.: 00



## Appendix C

### *Transformer T21 Installation Photos*



Photo 1: View of transformer foundation pre-installation

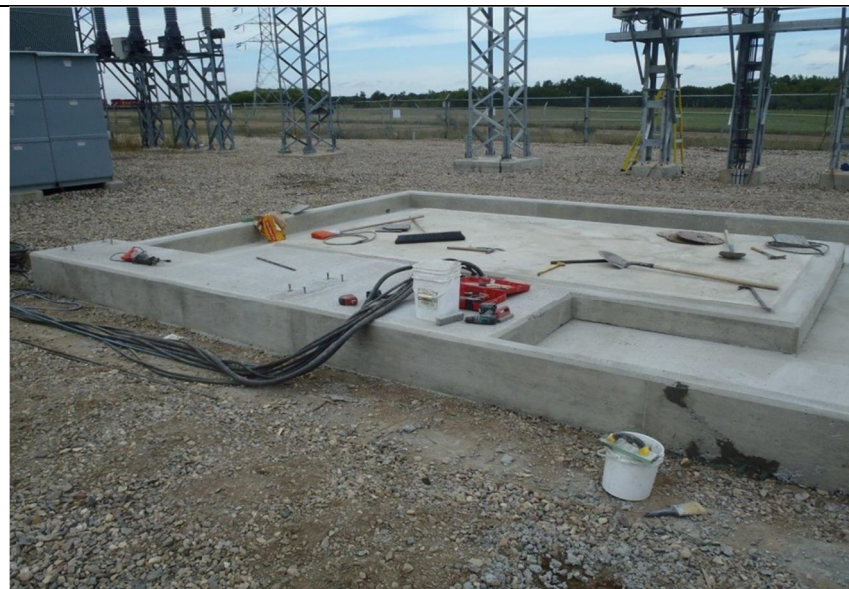


Photo 2: View of transformer foundation pre-installation



Photo 3: View of transformer foundation pre-installation



Photo 4: View of transformer during installation

# Certificate of Amalgamation

CORPORATE ACCESS NUMBER: 2017208121

**Government  
of Alberta ■**

**BUSINESS CORPORATIONS ACT**

**CERTIFICATE  
OF  
AMALGAMATION**

**CANEXUS CORPORATION  
IS THE RESULT OF AN AMALGAMATION FILED ON 2013/01/01.**

