Wind Farm Study

Figure 2.2: Wind Farm Layout

Legend

- Turbines
- Transformer/Substation Location
- Access Roads
- Existing 230kV Transmission Line
- Proposed Project 230kV Transmission Line
- MV Circuit 1
- MV Circuit 2
- MV Circuit 3
- MV Circuit 4
- Railway
- Roads
- Highways
- Project Boundary
- Lots/Parcels
- Waterbody

1 : 64,500

0 1,000 2,000 3,000

Map Created By: SFG
Date Created: December 17, 2007
Date Modified: April 24, 2009, 2009
File Path: I:\GIS\077382 Palmyra\2009\Mapping\ERR Figures\Figure 2.2 Wind Farm Layout.mxd

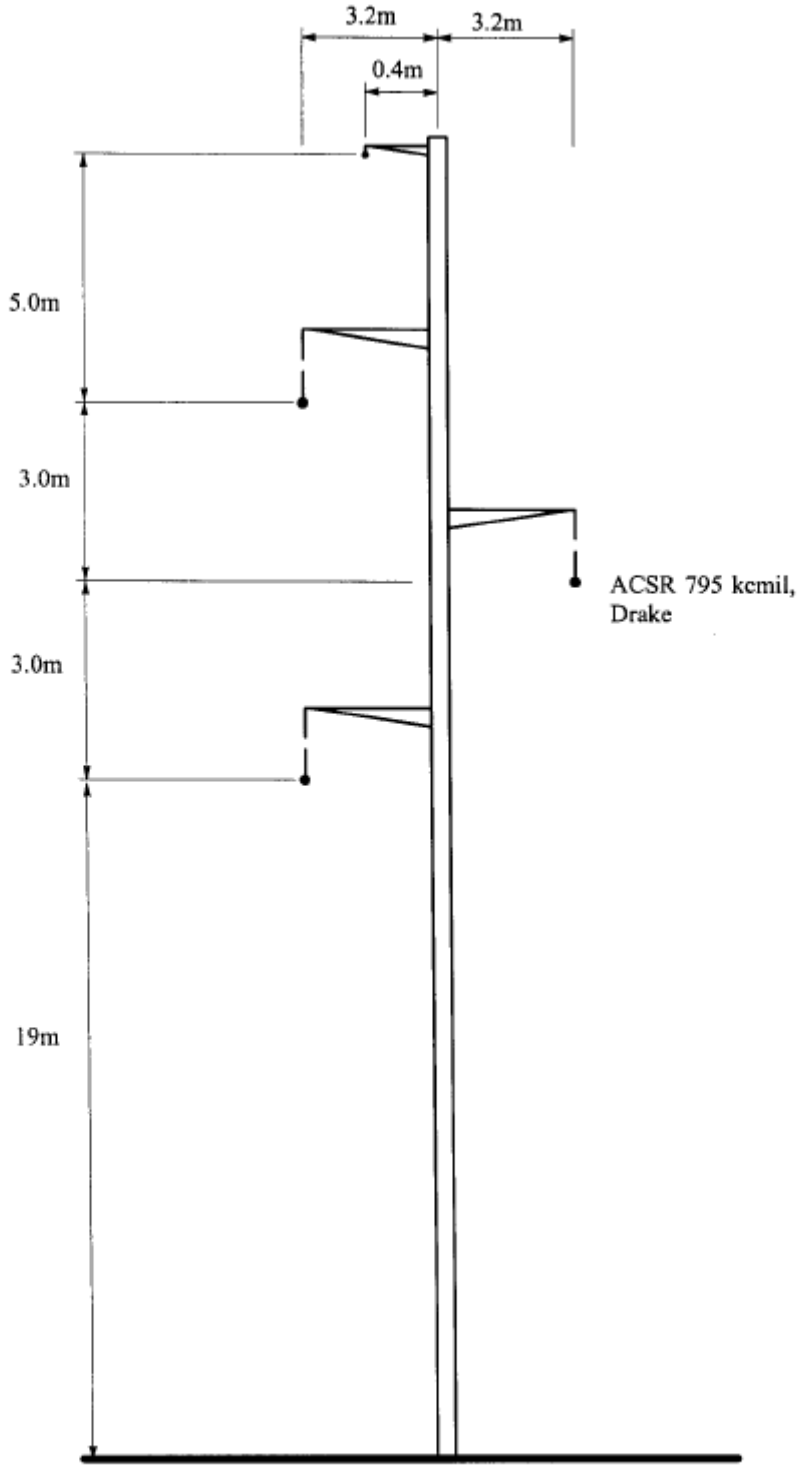
FACILITIES - TRANSMISSION LINE

The Talbot Windfarm Transmission Line will connect the Talbot Windfarm to one of Hydro One's existing 230kV circuits W44LC or W45LC and comprise approximately 10.3 kilometres of single circuit dedicated 230kV line. The line will connect at the southeast end to the Talbot Windfarm Substation and on the northeast end to the Talbot Windfarm Switching Station.

A single-line diagram of the proposed electrical connection is attached at Exhibit F, Tab 2, Schedule 2.

The proposed Talbot Windfarm Transmission Line will proceed in a single pole configuration, with a triangular alignment of wires. A pole schematic is included at Exhibit E, Tab 2, Schedule 3. The span length between each pole is expected to be approximately 100m and will depend on detailed geotechnical analysis, final engineering design as well as clearance considerations along the Talbot Transmission Line's routing.

Facilities – Schematic of Transmission Tower



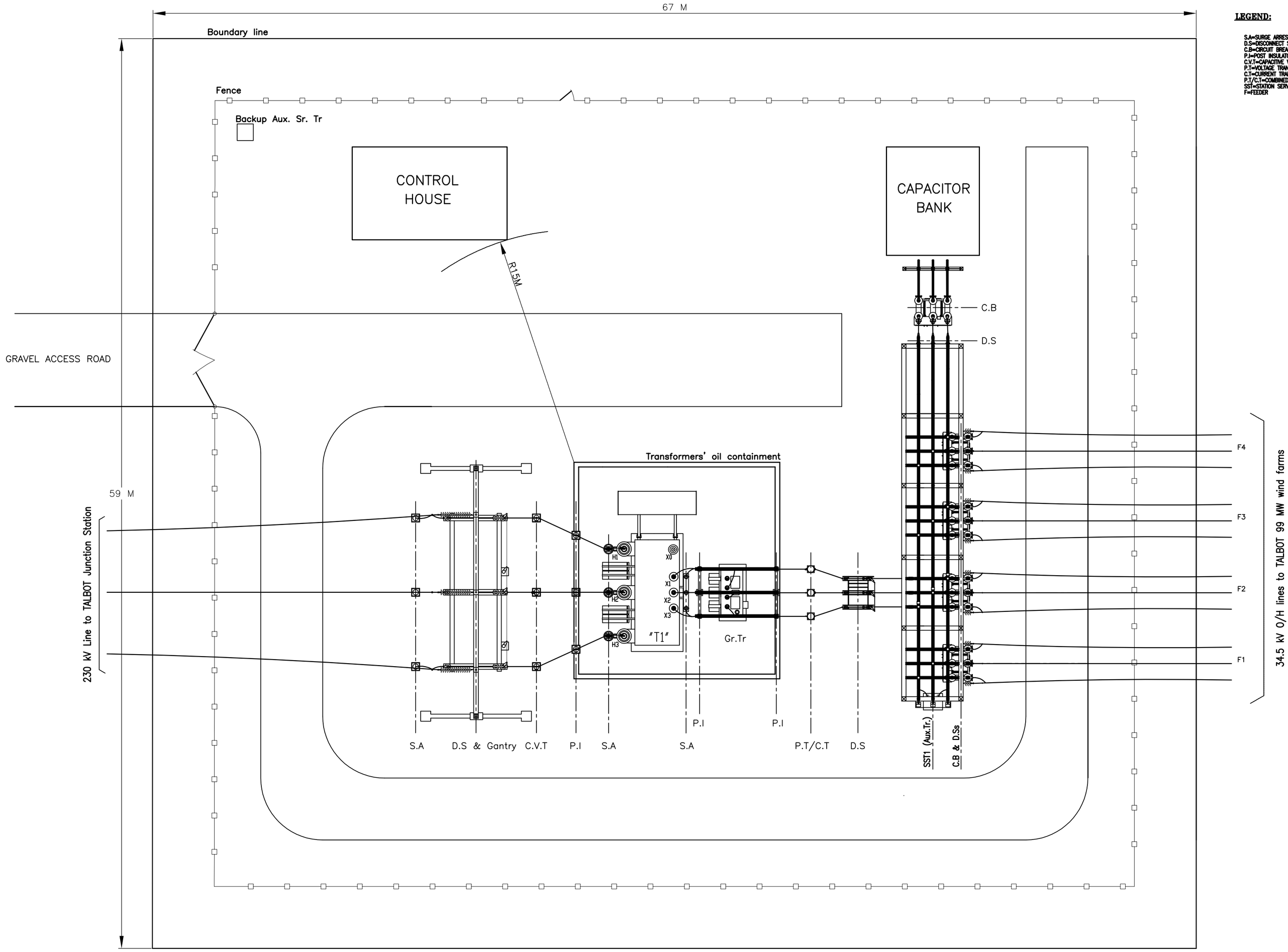
R1	X1	R0	X0	B1	C1	C0
Ω/km	Ω/km	Ω/km	Ω/km	µS/km	µF/km	µF/km
0.0877	0.4846	0.3596	1.2645	3.4220	0.009077	0.005194

FACILITIES - SUBSTATION

The Talbot Windfarm Substation will comprise one 34.5/230 kV transformer with a dedicated 230 kV circuit breaker and switchgear, a capacitor bank on the 230 kV side, as well as 34.5 kV circuit breakers and associated switchgear . The transformer will be protected by a multi-function relay. Protection includes transformer differential in addition to overcurrent and other functions that are available on this type of relay.

The impedance of the transformer will be selected to suit the short circuit requirements of the Hydro One transmission system and will be determined when Hydro One's Customer Impact Assessment ("CIA") is issued.

A schematic diagram showing the layout of the proposed Talbot Windfarm Substation is included in Exhibit E, Tab 3, Schedule 2. The detailed specifications of the transformer are set out in Exhibit E, Tab 3, Schedule 3.



LEGEND:

S.A=SURGE ARRESTER
D.S=DISCONNECT SWITCH
C.B=CIRCUIT BREAKER
P.I=POST INSULATOR
C.V.T=CAPACITIVE VOLTAGE TRANSFORMER
P.T=VOLTAGE TRANSFORMER
C.T=CURRENT TRANSFORMER
P.T/C.T=COMBINED P.T & C.T FOR METERING PURPOSE
SST=STATION SERVICE TRANSFORMER
F=FEEDER

NOTES

1. SITE GRAVEL SHALL BE EXTENDED TO 3 METERS BEYOND THE FENCE.

REFERENCE DRAWINGS

DRAWING No.	DRAWING TITLE
AG-8066-01 R1	TALBOT 99MW WIND FARM SINGLE LINE DIAGRAM SCHEMATIC

0 1 2 3 4 5 6 7 8 9 10
METERS

PRELIMINARY

No.	Revisions/Issues	Date:
0	ISSUED FOR PRELIMINARY REVIEW	SEP. 17 2008

Orientation

Seal

ALGAL & ASSOCIATES LTD.
250 Merton St., Suite 306,
Toronto, Ontario, M4S 1B1
Tel: (416)484-4200, Fax: (416)484-8260
E-mail: algal@algal.ca

Project:

RENEWABLE ENERGY SYSTEMS (RES)

TALBOT (PALMYRA) WIND FARM

ONTARIO, CANADA

Drawing Title:

150MW TALBOT WIND FARM
34.5 kV/230 kV SUBSTATION
GENERAL ARRANGEMENT

Drawn By: A.B	Date: SEP 18 2008
Designed By: A.B	Proj. No:
Checked By: P.K	File No:
Approved By: .	Scale: NTS

Drawing No:

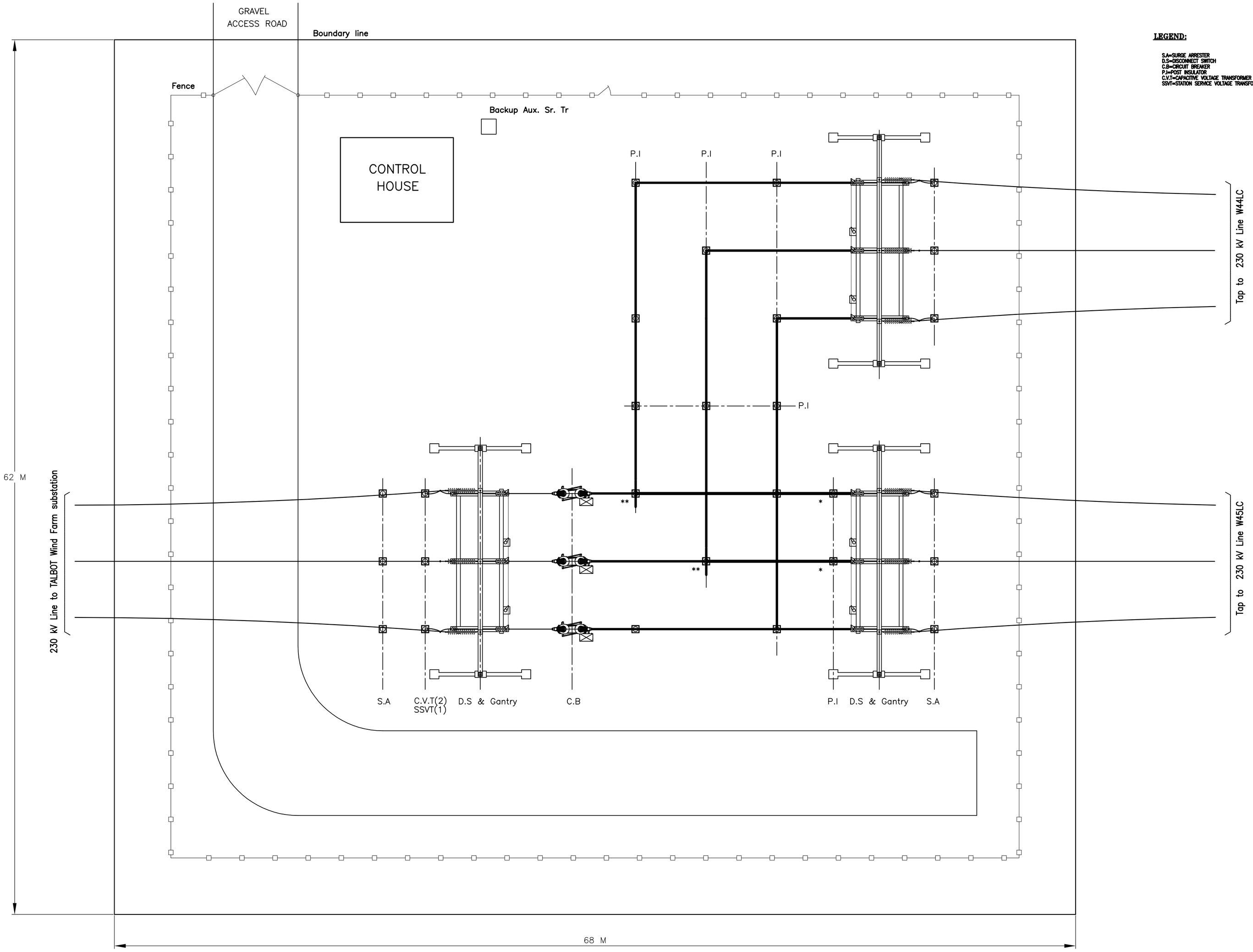
AG-8066-L1 R0

FACILITIES - SWITCHING STATION

The Talbot Windfarm Switching Station will be located adjacent to Hydro One's 230 kV double-circuit transmission line W44LC/W45LC, at a point that is approximately 23 kilometres east from Hydro One's Chatham Substation terminal.

The Talbot Windfarm Switching Station will include one 230 kV breaker and motorized disconnect switch ("MOD") connected to Hydro One's circuit W44LC. A second MOD may be installed, at some time in the future, in order to facilitate an alternate connection to Hydro One's circuit W45LC to provide the IESO with more flexibility for managing system reliability. The determination of whether and when the Talbot Windfarm Transmission Line will be connected to circuit W45LC, instead of to circuit W44LC, will be made by the IESO.

The MOD(s) and associated protection will be operated with interlocks so that only one such switch may be closed at any given time thus only one of the Hydro-One's circuits will be tapped at any given time.



LEGEND:

S.A=SURGE ARRESTER
D.S=DISCONNECT SWITCH
C.B=CIRCUIT BREAKER
P.I=POST INSULATOR
C.V.T=CAPACITIVE VOLTAGE TRANSFORMER
SSVT=STATION SERVICE VOLTAGE TRANSFORMERS

NOTES

1. SITE GRAVEL SHALL BE EXTENDED TO 3 METERS BEYOND THE FENCE.
1. (*) High level Post Insulators.
1. (**) Aluminum A-Frames.

REFERENCE DRAWINGS	
DRAWING No.	DRAWING TITLE
AG-8066-01 R1	TALBOT 99MW WIND FARM SINGLE LINE DIAGRAM SCHEMATIC

0 1 2 3 4 5 6 7 8 9 10
METERS

PRELIMINARY

No.	Revisions/Issues	Date:
0	ISSUED FOR PRELIMINARY REVIEW	SEP. 17 2008

Orientation

Seal

ALGAL & ASSOCIATES LTD.
250 Merton St., Suite 306,
Toronto, Ontario, M4S 1B1
Tel: (416)484-4200, Fax: (416)484-8260
E-mail: algal@algal.ca

Project:

RENEWABLE ENERGY SYSTEMS (RES)

TALBOT (PALMYRA) WIND FARM

ONTARIO, CANADA

Drawing Title:

150MW TALBOT WIND FARM
230 kV JUNCTION STATION
GENERAL ARRANGEMENT

Drawn By: A.B	**Date:** SEP 18 2008
Designed By: A.B	**Proj. No:**
Checked By: P.K	**File No:**
Approved By: .	**Scale:** NTS

Drawing No:

AG-8066-L2 R0