



# AMHERST ISLAND WIND PROJECT

## AMHERST ISLAND, LOYALIST TOWNSHIP, ONTARIO

### 75 MW WIND FARM

### COLLECTOR SYSTEM PACKAGE

ITEM NO.	DRAWING NO.	DESCRIPTION
1	G001	35kV Collector - Cover Sheet
2	E400A	35kV Collector - Single Line Diagram
3	E401A	35kV Collector - Collector System Overall Layout
4	E402A	35kV Collector - Plan and Profile
5	E404A	35kV Collector - Fiber Optic Junction Box Installation Details
6	E406A	35kV Collector - Trench Sections
7	E407A	35kV Collector - Standard Road Cross-Sections
8	E408A	35kV Collector - Road Crossing Details



Issued For Municipal Consent  
May 10 , 2017  
Project Number: 133560104

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Notes

- 1/12 CN ACCEPTABLE FOR 1250 kcmil CABLE.
- CABLE LENGTHS SHOWN ARE POINT TO POINT MEASUREMENTS +5% FOR RUNS <1000m & +3% FOR RUNS >1000m.
- REFER TO SHEET 4 FOR CABLE SCHEDULE. SIZES ARE NOT FINAL AND SUBJECT TO CHANGE.

Legend

- WTG (WIND TURBINE GENERATOR)
- WTG UNIT SUBSTATION
- 35kV 200kV BIL SECTIONALIZING JUNCTION BOX C/W DEADBREAK JUNCTION BAR (No. OF CONNECTIONS AS SHOWN IN DRAWING)
- CABLE TERMINATION
- DEADBREAK ELBOW
- SA SURGE ARRESTER
- 35kV UNDERGROUND COLLECTOR CABLE
- FAULT INDICATOR LOCATED BELOW THE BASE OF ELBOW

Revision	By	Appd.	YY.MM.DD	
C	ISSUED FOR MUNICIPAL CONSENT	BM	AR	17.05.10
B	ISSUED FOR MUNICIPAL CONSENT	BM	AR	17.02.03
A	ISSUED FOR MUNICIPAL CONSENT	JM	JR	17.01.19

File Name	BM	JR	SF/JM	15.12.07
dwg_60104_AJWF_E400.dwg	Dwn.	Chkd.	Dgn.	YY.MM.DD

Permit-Seal

FOR MUNICIPAL CONSENT

Client/Project

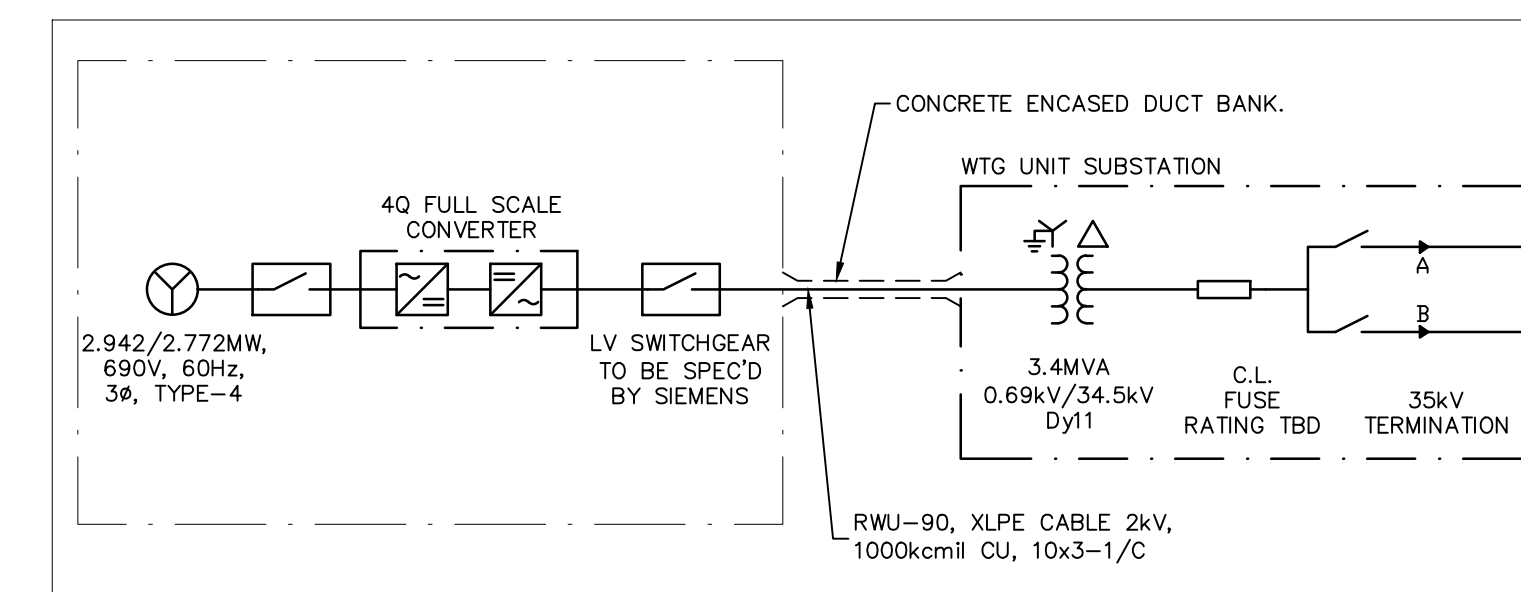


AMHERST ISLAND WIND PROJECT  
75MW WIND FARM  
Amherst Island, Loyalist Township, Ontario

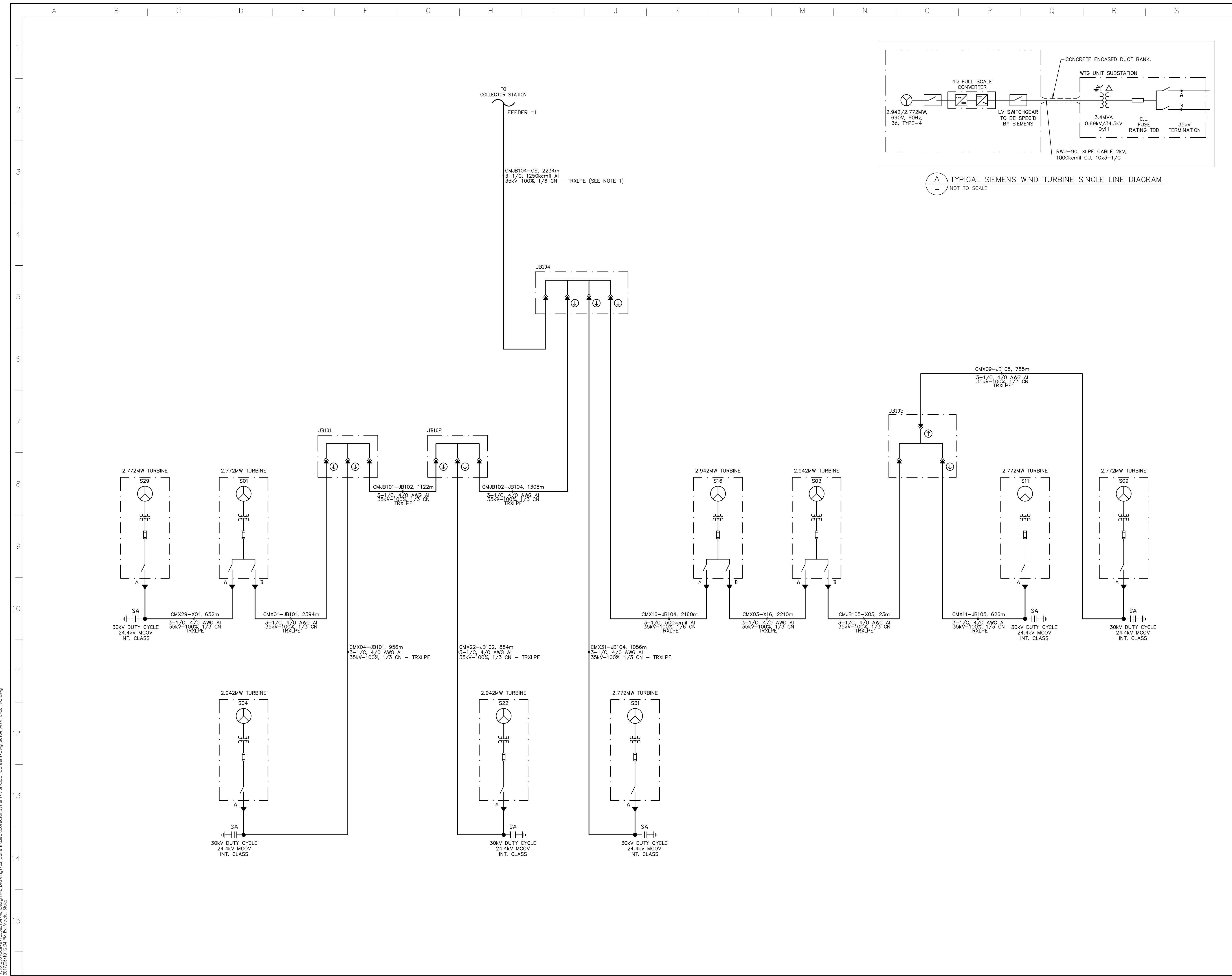
Title

34.5kV COLLECTOR SYSTEM  
FEEDER SINGLE LINE DIAGRAM  
FEEDER #1

Project No.	Scale	
133560104	NOT TO SCALE	
Drawing No.	Sheet	Revision
E400A	1 of 4	C



TYPICAL SIEMENS WIND TURBINE SINGLE LINE DIAGRAM  
NOT TO SCALE



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2017/05/10 12:24 PM By: Noelle Libbe



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Notes

- 1/12 ON ACCEPTABLE FOR 1250 kcmil CABLE.
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- REFER TO SHEET 4 FOR CABLE SCHEDULE. SIZES ARE NOT FINAL AND SUBJECT TO CHANGE.

Legend

- WTG (WIND TURBINE GENERATOR)
- WTG UNIT SUBSTATION
- 35kV 200kV BIL SECTIONALIZING JUNCTION BOX C/W DEADBREAK JUNCTION BAR (No. OF CONNECTIONS AS SHOWN IN DRAWING)
- CABLE TERMINATION
- DEADBREAK ELBOW
- SA SURGE ARRESTER
- 35kV UNDERGROUND COLLECTOR CABLE
- FAULT INDICATOR LOCATED BELOW THE BASE OF ELBOW

Revision	By	Appd.	YY.MM.DD	
C	ISSUED FOR MUNICIPAL CONSENT	BM	AR	17.05.10
B	ISSUED FOR MUNICIPAL CONSENT	BM	AR	17.02.03
A	ISSUED FOR MUNICIPAL CONSENT	JM	JR	17.01.19

File Name	Dwn.	Chkd.	Dsgn.	YY.MM.DD
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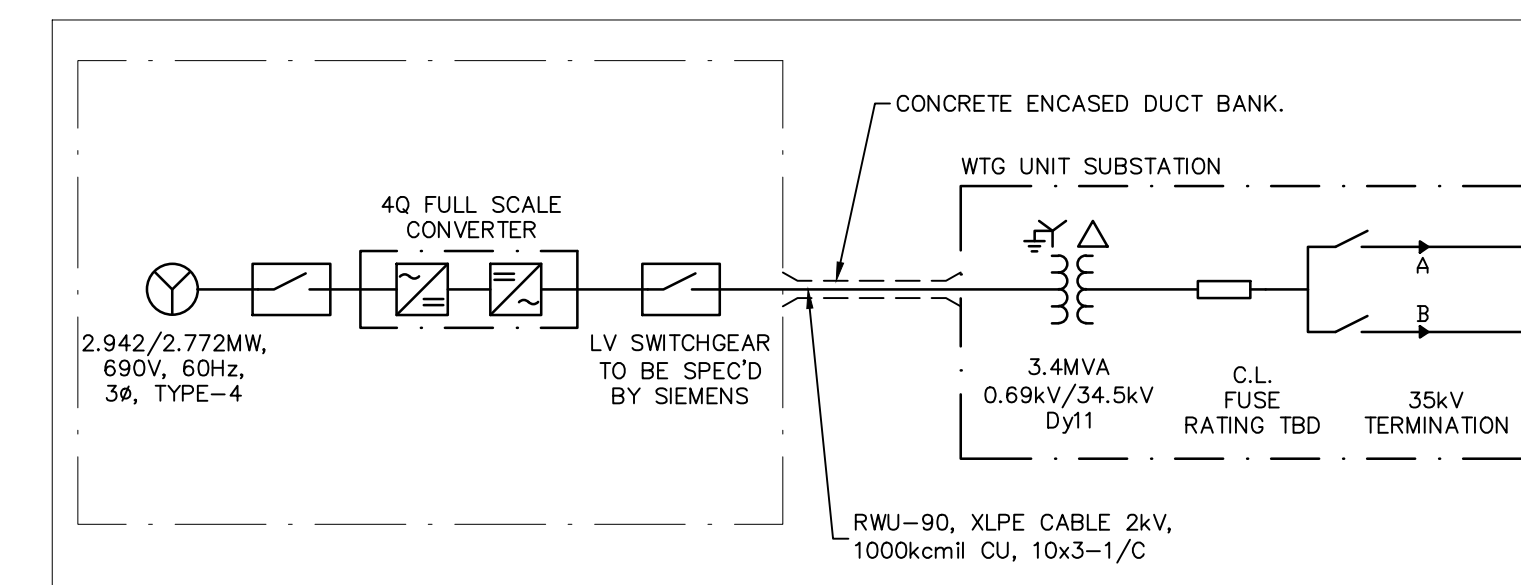
AMHERST ISLAND WIND PROJECT  
75MW WIND FARM  
Amherst Island, Loyalist Township, Ontario

Title

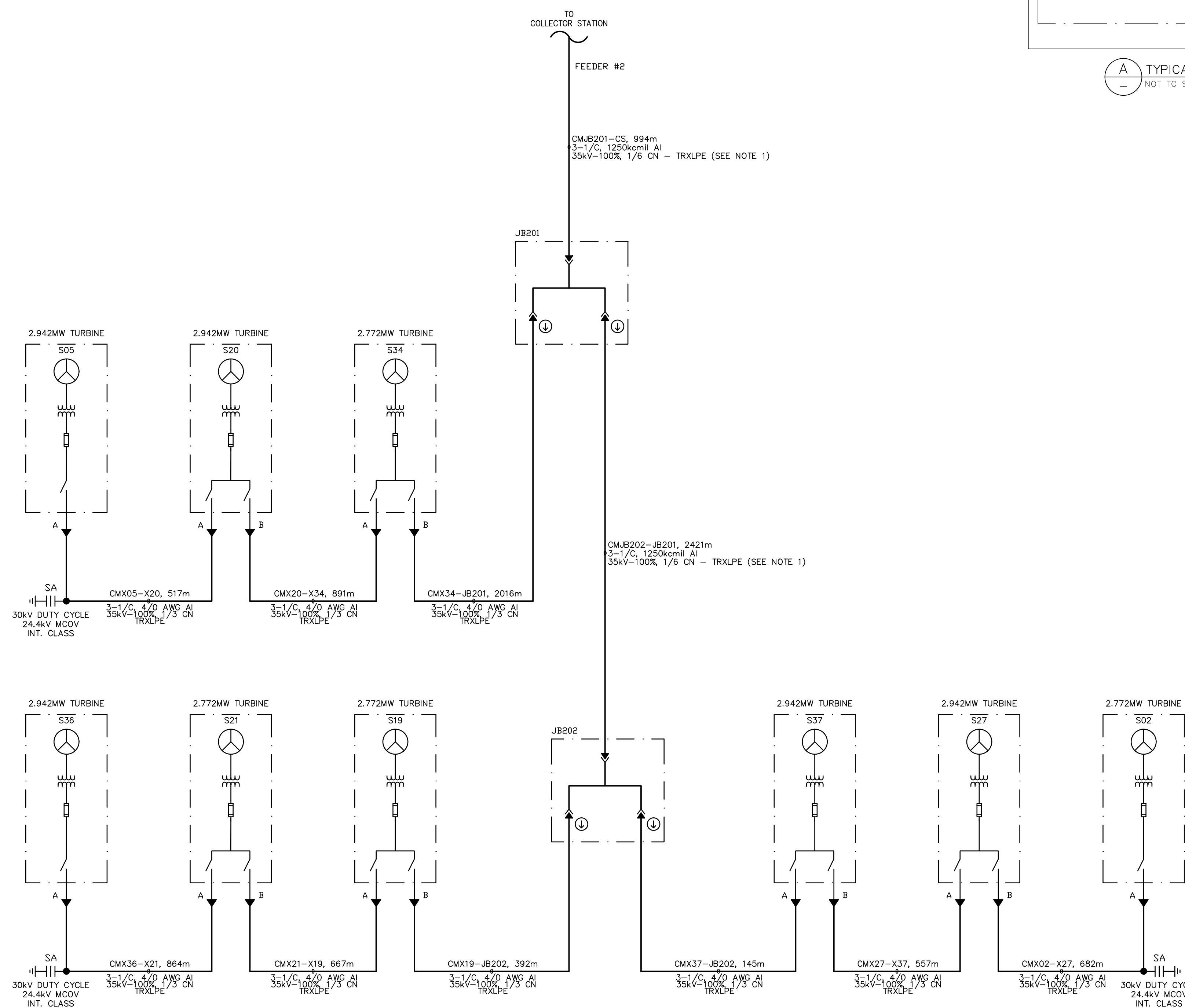
34.5kV COLLECTOR SYSTEM  
FEEDER SINGLE LINE DIAGRAM  
FEEDER #2

Project No.	Scale	
133560104	NOT TO SCALE	
Drawing No.	Sheet	Revision

E400A 2 of 4 C



(A) TYPICAL SIEMENS WIND TURBINE SINGLE LINE DIAGRAM  
NOT TO SCALE



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Notes

- 1/12 ON ACCEPTABLE FOR 1250 kcmil CABLE.
- CABLE LENGTHS SHOWN ARE POINT TO POINT MEASUREMENTS +5% FOR RUNS <1000m & +3% FOR RUNS >1000m.
- REFER TO SHEET 4 FOR CABLE SCHEDULE. SIZES ARE NOT FINAL AND SUBJECT TO CHANGE.

Legend

- WTG (WIND TURBINE GENERATOR)
- WTG UNIT SUBSTATION
- 35kV 200kV BIL SECTIONALIZING JUNCTION BOX C/W DEADBREAK JUNCTION BAR (No. OF CONNECTIONS AS SHOWN IN DRAWING)
- CABLE TERMINATION
- DEADBREAK ELBOW
- SA SURGE ARRESTER
- 35kV UNDERGROUND COLLECTOR CABLE
- FAULT INDICATOR LOCATED BELOW THE BASE OF ELBOW

C	ISSUED FOR MUNICIPAL CONSENT	BM	AR	17.05.10
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A	ISSUED FOR MUNICIPAL CONSENT	JM	JR	17.01.19

Revision	By	Appd.	YY.MM.DD
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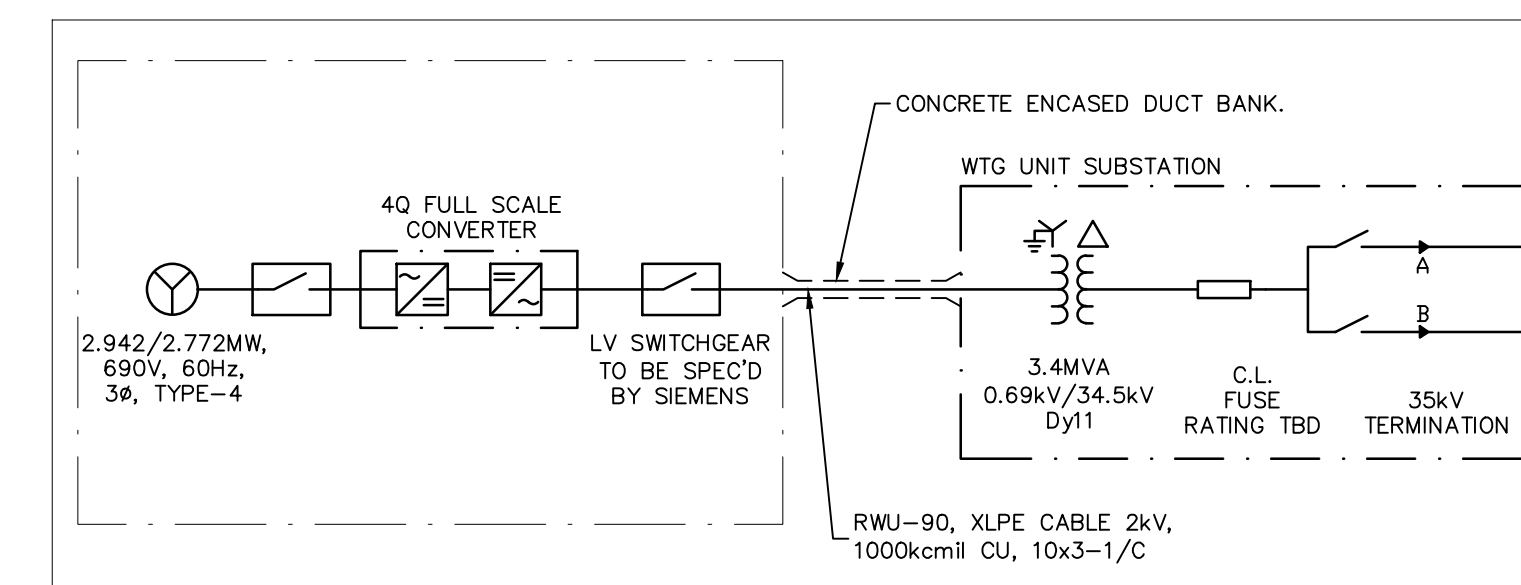
AMHERST ISLAND WIND PROJECT  
75MW WIND FARM  
Amherst Island, Loyalist Township, Ontario

Title

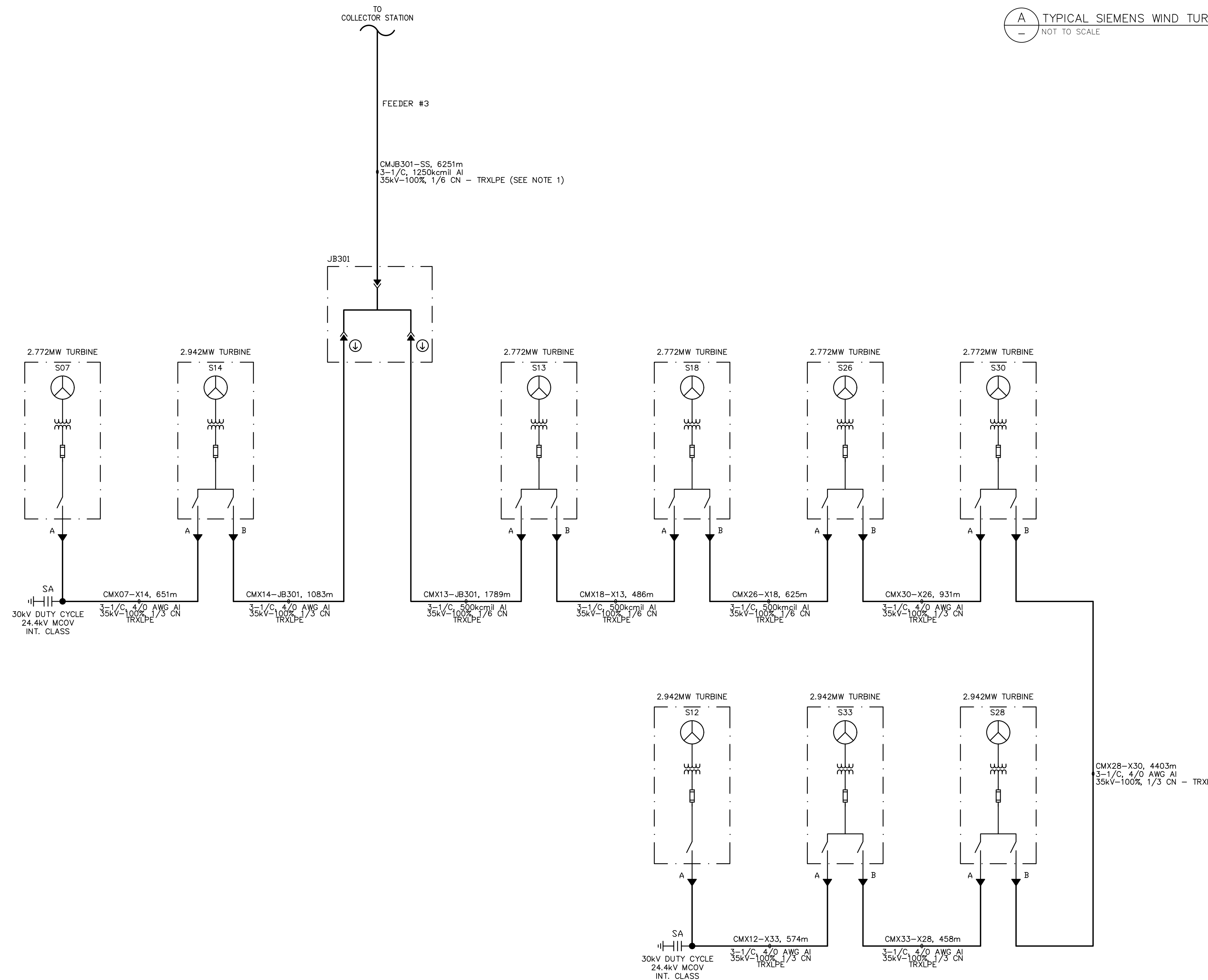
34.5kV COLLECTOR SYSTEM  
FEEDER SINGLE LINE DIAGRAM  
FEEDER #3

Project No.	Scale	
133560104	NOT TO SCALE	
Drawing No.	Sheet	Revision

E400A 3 of 4 C



TYPICAL SIEMENS WIND TURBINE SINGLE LINE DIAGRAM  
NOT TO SCALE



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Notes

- 1/12 ON ACCEPTABLE FOR 750, 1000, 1250 kcmil CABLE.
- CABLE LENGTHS SHOWN ARE POINT TO POINT MEASUREMENTS +5% FOR RUNS <1000m & +3% FOR RUNS >1000m.
- CABLE SIZES ARE NOT FINAL AND SUBJECT TO CHANGE.

COLLECTOR CIRCUIT POWER CABLE SCHEDULE									
CABLE TAG	SOURCE	DESTINATION	MAXIMUM OPERATING CURRENT @ 0.95PF (A)	CABLE TYPE	CABLE SIZE	C.N. SIZE	SEGMENT LENGTH (NOTE 2) (m)	TOTAL LENGTH (3x Segment Length) (m)	INSTALLATION
GSU	WTG	GSU		10x 3-1/C, XLPE, RWU-90, Cu, 2kV	1000 kcmil	N/A	-	-	CONCRETE ENCASED DUCT
CMX29-X01	S29	S01	49.0	3-1/C TRXLPE, AL, LLDPE, 35KV-100%	4/0 AWG	Size-1/3+ (13x#14)	651.20	1954	Direct Buried, Trefoil
CMX01-JB101	S01	JB101	98.0	3-1/C TRXLPE, AL, LLDPE, 35KV-100%	4/0 AWG	Size-1/3+ (13x#14)	2393.50	7181	Direct Buried, Trefoil
CMX04-JB101	S04	JB101	52.0	3-1/C TRXLPE, AL, LLDPE, 35KV-100%	4/0 AWG	Size-1/3+ (13x#14)	955.90	2868	Direct Buried, Trefoil
CMJB101-JB102	JB101	JB102	149.0	3-1/C TRXLPE, AL, LLDPE, 35KV-100%	4/0 AWG	Size-1/3+ (13x#14)	1121.70	3365	Direct Buried, Trefoil
CMX22-JB102	S22	JB102	52.0	3-1/C TRXLPE, AL, LLDPE, 35KV-100%	4/0 AWG	Size-1/3+ (13x#14)	883.70	2651	Direct Buried, Trefoil
CMJB102-JB104	JB102	JB104	201.0	3-1/C TRXLPE, AL, LLDPE, 35KV-100%	4/0 AWG	Size-1/3+ (13x#14)	1308.00	3924	Direct Buried, Trefoil
CMX31-JB104	S31	JB104	49.0	3-1/C TRXLPE, AL, LLDPE, 35KV-100%	4/0 AWG	Size-1/3+ (13x#14)	1056.00	3168	Direct Buried, Trefoil
CMX09-JB105	S09	JB105	49.0	3-1/C TRXLPE, AL, LLDPE, 35KV-100%	4/0 AWG	Size-1/3+ (13x#14)	784.16	2352	Direct Buried, Trefoil
CMX11-JB105	S11	JB105	49.0	3-1/C TRXLPE, AL, LLDPE, 35KV-100%	4/0 AWG	Size-1/3+ (13x#14)	625.60	1877	Direct Buried, Trefoil
CMJB105-X03	JB105	S03	98.0	3-1/C TRXLPE, AL, LLDPE, 35KV-100%	4/0 AWG	Size-1/3+ (13x#14)	22.15	66	Direct Buried, Trefoil
CMX03-X16	S03	S16	149.0	3-1/C TRXLPE, AL, LLDPE, 35KV-100%	4/0 AWG	Size-1/3+ (13x#14)	2209.73	6629	Direct Buried, Trefoil
CMX16-JB104	S16	JB104	201.0	3-1/C TRXLPE, AL, LLDPE, 35KV-100%	500 kcmil	Size-1/6+ (16x#14)	2159.21	6478	Direct Buried, Trefoil
CMJB104-CS	JB104	CS	451.0	3-1/C TRXLPE, AL, LLDPE, 35KV-100%	1250 kcmil	Size-1/6 (20x#12)	2233.27	6700	Direct Buried, Trefoil
CMX05-X20	S05	S20	52.0	3-1/C TRXLPE, AL, LLDPE, 35KV-100%	4/0 AWG	Size-1/3+ (13x#14)	516.18	1549	Direct Buried, Trefoil
CMX20-X34	S20	S34	104.0	3-1/C TRXLPE, AL, LLDPE, 35KV-100%	4/0 AWG	Size-1/3+ (13x#14)	890.82	2672	Direct Buried, Trefoil
CMX34-JB201	S34	JB201	152.0	3-1/C TRXLPE, AL, LLDPE, 35KV-100%	4/0 AWG	Size-1/3+ (13x#14)	2015.93	6048	Direct Buried, Trefoil
CMX36-X21	S36	S21	52.0	3-1/C TRXLPE, AL, LLDPE, 35KV-100%	4/0 AWG	Size-1/3+ (13x#14)	863.52	2591	Direct Buried, Trefoil
CMX21-X19	S21	S19	101.0	3-1/C TRXLPE, AL, LLDPE, 35KV-100%	4/0 AWG	Size-1/3+ (13x#14)	666.54	2000	Direct Buried, Trefoil
CMX19-JB202	S19	202	149.0	3-1/C TRXLPE, AL, LLDPE, 35KV-100%	4/0 AWG	Size-1/3+ (13x#14)	391.75	1175	Direct Buried, Trefoil
CMX02-X27	S02	S27	49.0	3-1/C TRXLPE, AL, LLDPE, 35KV-100%	4/0 AWG	Size-1/3+ (13x#14)	681.24	2044	Direct Buried, Trefoil
CMX27-X37	S27	S37	101.0	3-1/C TRXLPE, AL, LLDPE, 35KV-100%	4/0 AWG	Size-1/3+ (13x#14)	556.39	1669	Direct Buried, Trefoil
CMX37-JB202	S37	JB202	152.0	3-1/C TRXLPE, AL, LLDPE, 35KV-100%	4/0 AWG	Size-1/3+ (13x#14)	144.27	433	Direct Buried, Trefoil
CMJB202-JB201	JB202	JB201	302.0	3-1/C TRXLPE, AL, LLDPE, 35KV-100%	1250 kcmil	Size-1/6 (20x#12)	2420.52	7262	Direct Buried, Trefoil
CMJB201-CS	JB201	CS	454.0	3-1/C TRXLPE, AL, LLDPE, 35KV-100%	1250 kcmil	Size-1/6 (20x#12)	993.40	2980	Direct Buried, Trefoil
CMX12-X33	S12	S33	52.0	3-1/C TRXLPE, AL, LLDPE, 35KV-100%	4/0 AWG	Size-1/3+ (13x#14)	547.00	1641	Direct Buried, Trefoil
CMX33-X28	S33	S28	104.0	3-1/C TRXLPE, AL, LLDPE, 35KV-100%	4/0 AWG	Size-1/3+ (13x#14)	457.90	1374	Direct Buried, Trefoil
CMX28-X30	S28	S30	156.0	3-1/C TRXLPE, AL, LLDPE, 35KV-100%	4/0 AWG	Size-1/3+ (13x#14)	4402.14	13206	Direct Buried, Trefoil
CMX30-X26	S30	S26	205.0	3-1/C TRXLPE, AL, LLDPE, 35KV-100%	4/0 AWG	Size-1/3+ (13x#14)	930.20	2791	Direct Buried, Trefoil
CMX26-X18	S26	S18	254.0	3-1/C TRXLPE, AL, LLDPE, 35KV-100%	500 kcmil	Size-1/6+ (16x#14)	624.12	1872	Direct Buried, Trefoil
CMX18-X13	S18	S13	302.0	3-1/C TRXLPE, AL, LLDPE, 35KV-100%	500 kcmil	Size-1/6+ (16x#14)	486.04	1458	Direct Buried, Trefoil
CMX13-JB301	S13	JB301	351.0	3-1/C TRXLPE, AL, LLDPE, 35KV-100%	500 kcmil	Size-1/6+ (16x#14)	1788.92	5367	Direct Buried, Trefoil
CMX07-X14	S07	S14	49.0	3-1/C TRXLPE, AL, LLDPE, 35KV-100%	4/0 AWG	Size-1/3+ (13x#14)	651.00	1953	Direct Buried, Trefoil
CMX14-JB301	S14	JB301	101.0	3-1/C TRXLPE, AL, LLDPE, 35KV-100%	4/0 AWG	Size-1/3+ (13x#14)	1082.55	3248	Direct Buried, Trefoil
CMJB301-CS	JB301	CS	452.0	3-1/C TRXLPE, AL, LLDPE, 35KV-100%	1250 kcmil	Size-1/6 (20x#12)	6250.78	18752	Direct Buried, Trefoil

BILL OF MATERIALS SUMMARY				
ITEM No.	MATERIAL	RATING	QTY	UNIT
1	CABLE	10x 3-1/C, 1000kcmil Cu, RWU-90, XLPE, Cu, 2kV	TBD	METER
2	CABLE	3-1/C, 4/0AWG AL, 35kv-100% INS. 1/3 C.N.	80,427	METER
3	CABLE	3-1/C, 500kcmil AL, 35kv-100% INS. 1/6 C.N.	15,175	METER
4	CABLE	3-1/C, 1250kcmil AL, 35kv-100% INS. 1/6 C.N.	35,694	METER
5	IN-LINE SPLICE KIT	35kv, 4/0 AWG, AL x 1/C	AS REQUIRED	NUMBER
6	IN-LINE SPLICE KIT	35kv, 500 kcmil, AL x 1/C	AS REQUIRED	NUMBER
7	IN-LINE SPLICE KIT	35kv, 1250 kcmil, AL x 1/C	AS REQUIRED	NUMBER
8	CABLE TERMINATION	DEADBREAK ELBOW CONNECTOR 35KV CLASS 200KV BIL 600A, AL	66 (1 PER PHASE)	NUMBER
9	CABLE TERMINATION	OUTDOOR TYPE TERMINATION KIT 35KV, AL	129 (1 PER PHASE)	NUMBER
10	SURGE ARRESTORS	METAL OXIDE SURGE ARRESTER 30KV DUTY CYCLE, 24.4kV MCOV INT. CLASS	33 (1 PER PHASE)	NUMBER
11	GROUND CABLE	STRANDED BARE COPPER CONDUCTOR, SIZE TO BE DETERMINED BY GROUNDING STUDY REPORT	TBD	METER
12	CABLE FAULT INDICATOR	RATING TBD	48 (1 PER PHASE)	NUMBER

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File Name	Dwg	BM <th>JR <th>SF/JM <th>15.12.07 </th></th></th>	JR <th>SF/JM <th>15.12.07 </th></th>	SF/JM <th>15.12.07 </th>	15.12.07
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Permit Seal

FOR MUNICIPAL CONSENT

Client/Project



AMHERST ISLAND WIND PROJECT  
75MW WIND FARM  
Amherst Island, Loyalist Township, Ontario

Title

34.5KV COLLECTOR SYSTEM  
FEEDER SINGLE LINE DIAGRAM  
CABLE SCHEDULE & BOM

Project No.	Scale	
13356104	NOT TO SCALE	
Drawing No.	Sheet	Revision



Notes

Legend

- WIND TURBINE GENERATOR (WTG)
- 34.5kV COLLECTOR CIRCUIT JUNCTION UNIT (PROPOSED LOCATION IN PRIVATE PROPERTY)
- 34.5kV/115kV SUBSTATION
- 34.5kV COLLECTOR CIRCUIT 1
- 34.5kV COLLECTOR CIRCUIT 2
- 34.5kV COLLECTOR CIRCUIT 3
- OVERHEAD 115kV TRANSMISSION LINE
- WOODED AREA
- WATER BODY
- WATERCOURSE
- METEOROLOGICAL TOWER (MET)

C	ISSUED FOR MUNICIPAL CONSENT	BM	AR	17.05.10
B	ISSUED FOR MUNICIPAL CONSENT	BM	AR	17.02.03
A	ISSUED FOR MUNICIPAL CONSENT	JM	AR	17.01.19
Revision		By	Appd.	YY.MM.DD
File Name: dwg_60104_AWF_E401.dwg		BM	AR	JR
		Dwn.	Chkd.	Dsgn.
				15.12.04
				YY.MM.DD

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FOR MUNICIPAL CONSENT

Client/Project



AMHERST ISLAND WIND PROJECT  
75MW WIND FARM  
Amherst Island, Loyalist Township, Ontario

Title

34.5kV COLLECTOR SYSTEM  
OVERALL LAYOUT

Project No.  
133560104

Scale  
1:25,000

Drawing No.

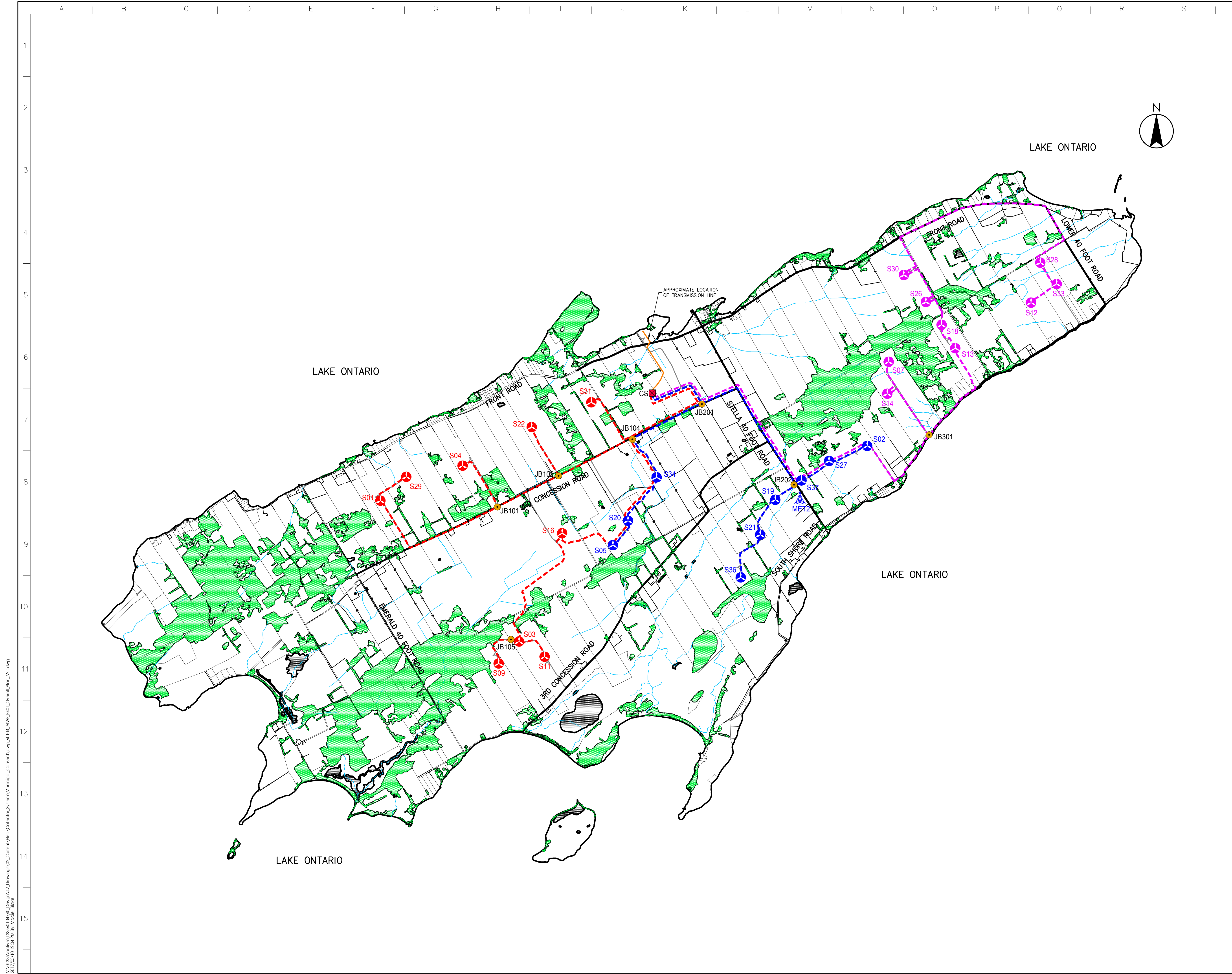
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Revision

E401A

1 of 2

C



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 2017/05/10 12:04 PM By: Moezel, Blake  
 ORIGINAL SHEET - ARCHD



Notes

Legend

## REFERENCE TO DRAWING E-XXX SHEET NUMBER

Revision	By	Appd.	YY.MM.DD
C	ISSUED FOR MUNICIPAL CONSENT	BM	AR 17.05.10
B	ISSUED FOR MUNICIPAL CONSENT	BM	AR 17.02.03
A	ISSUED FOR MUNICIPAL CONSENT	JM	AR 17.01.19
File Name:	dwg_60104_AWVF_E401.dwg	BM	AR JR 15.12.04
		Dwn.	Chkd. Dsgn. YY.MM.DD

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Client/Project



AMHERST ISLAND WIND PROJECT  
75MW WIND FARM  
Amherst Island, Loyalist Township, Ontario

Title

34.5KV COLLECTOR SYSTEM  
LAYOUT KEY PLAN

Project No.  
133560104

Scale  
1:25,000

Drawing No.

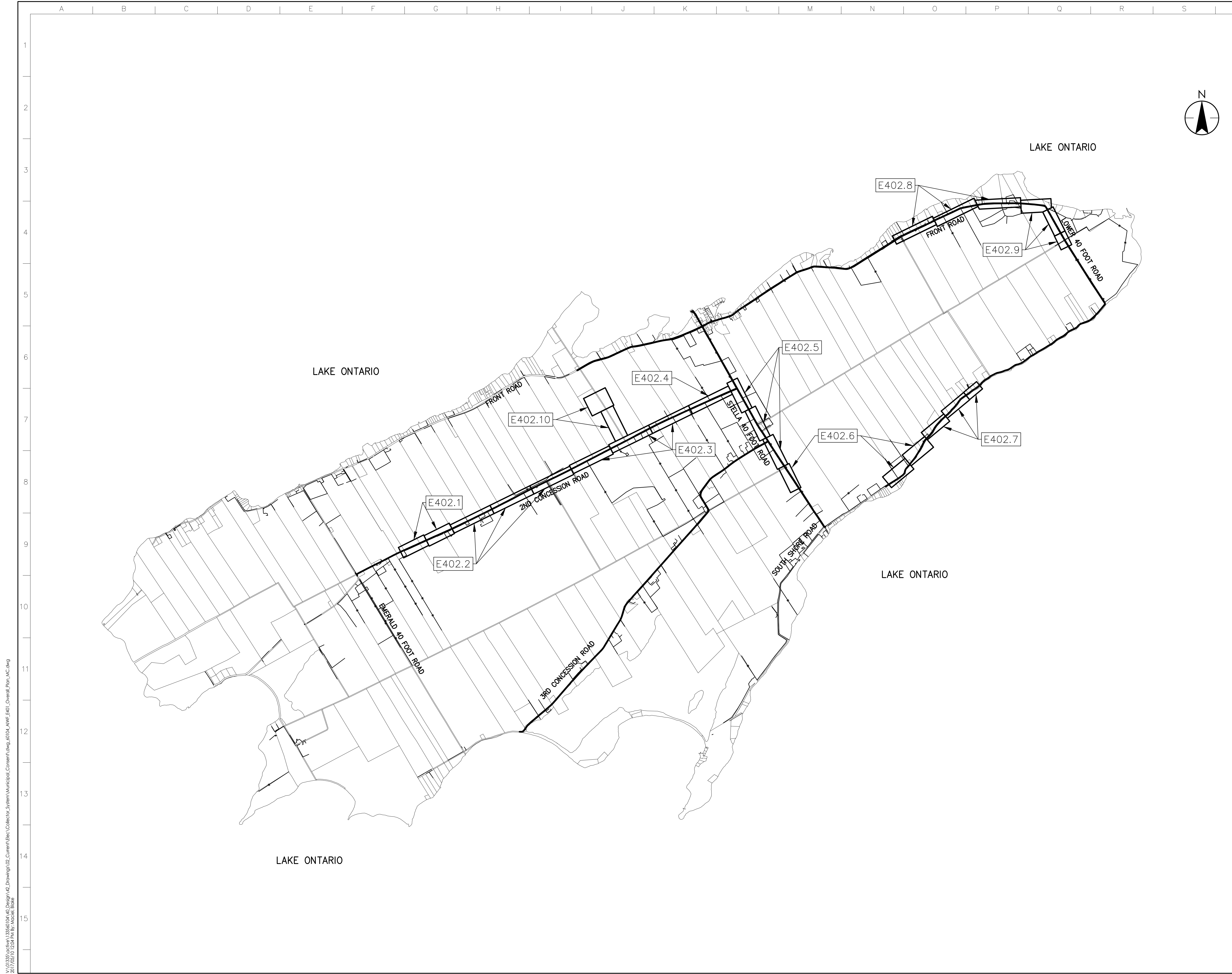
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Revision

E401A

2 of 2

C



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Notes

- CULVERT CROSSINGS ON PRIVATE ACCESS ROADS HAVE NOT BEEN IDENTIFIED. CONTRACTOR SHALL COORDINATE CONSTRUCTION ACTIVITIES TO ENSURE CABLES ARE INSTALLED PRIOR TO CULVERTS.
- LINEWORK SHOWN FOR ACCESS ROADS ON PRIVATE PROPERTY IS BASED ON IN-PROGRESS DESIGN FROM STANTEC CIVIL ENGINEERING.
- FOR FIBER PULL BOX DETAILS REFER TO DRAWING E404-1.
- ALL ELECTRICAL WORK ASSOCIATED WITH THE COLLECTOR SYSTEM AND SHOWN ON THIS LAYOUT IS DIAGRAMMATIC AND SHALL COMPLY WITH THE CONSTRUCTIBLE LIMITS FOR THIS PROJECT.

Legend

- S## WIND TURBINE GENERATOR (WTO)
- JB### 34.5KV COLLECTOR CIRCUIT JUNCTION UNIT (PROPOSED LOCATION)
- 34.5KV COLLECTOR CIRCUIT
- WATERCOURSES
- ROAD ALLOWANCE
- FENCE
- E407 DET.A TRENCHING AND BORING INSTALLATION REFERENCES. REFERS TO E400 SERIES
- E408 DET.A DRAWING DETAILS
- DIRECTIONAL BORE

C	ISSUED FOR MUNICIPAL CONSENT	BM	AR	17.05.10
B	ISSUED FOR MUNICIPAL CONSENT	BM	AR	17.02.03
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Issued		By	Appd.	YY.MM.DD
File Name:	dwg_60104_AWF_E402.dwg	Blk	JR	BM/JM
		Dwn.	Chkd.	Dgn.
				YY.MM.DD

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FOR MUNICIPAL CONSENT

Client/Project

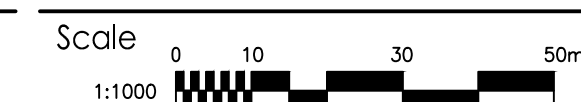


AMHERST ISLAND WIND PROJECT  
75MW WIND FARM  
Amherst Island, Loyalist Township, Ontario

Title

34.5KV COLLECTOR SYSTEM  
OVERALL LAYOUT

Project No.  
133560104



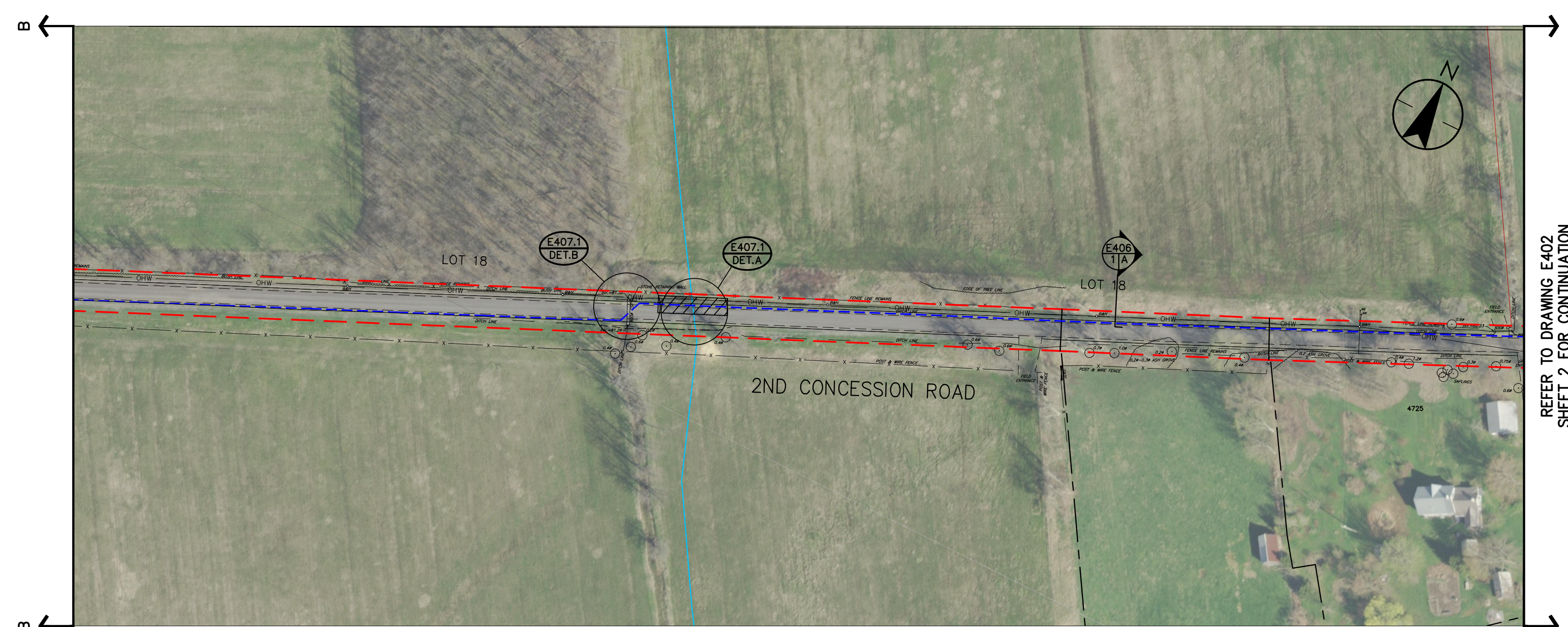
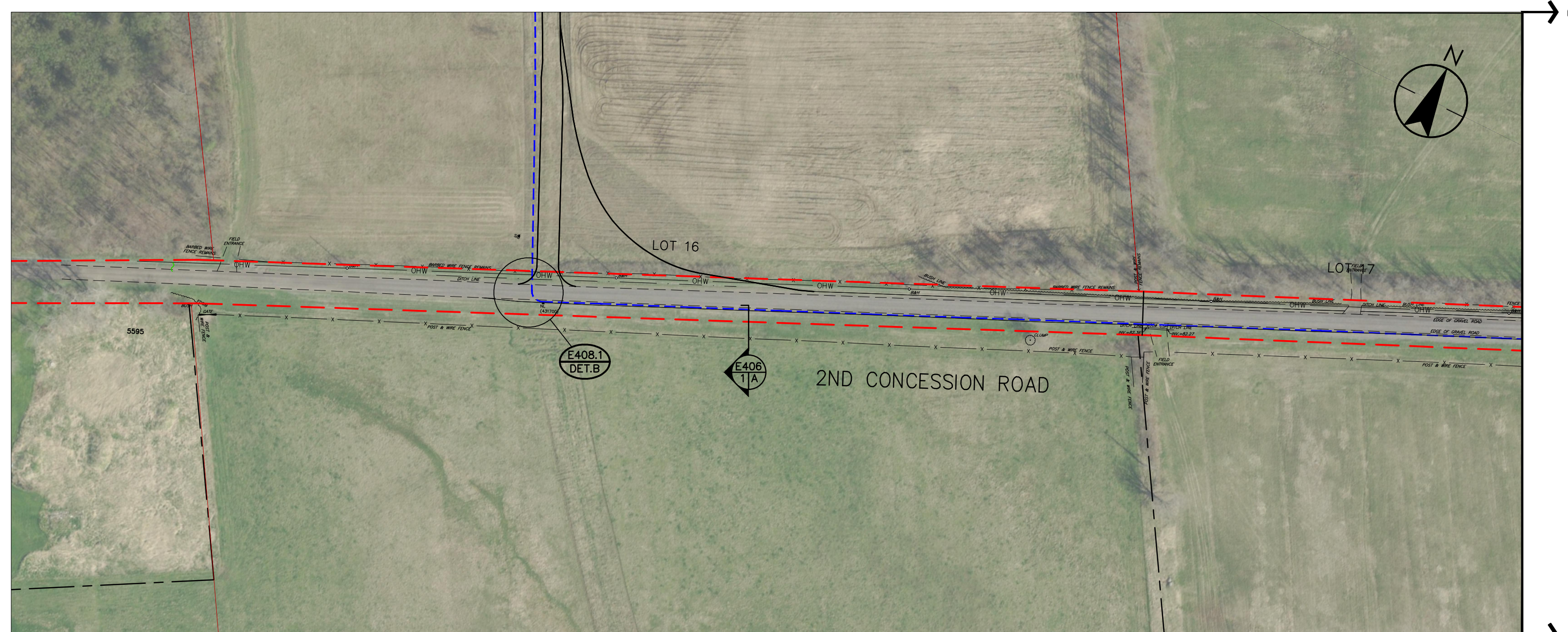
Drawing No.

Sheet 1 of 10 Revision

E402A

1 of 10

C



REFER TO DRAWING E402 SHEET 2 FOR CONTINUATION



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- LINEWORK SHOWN FOR ACCESS ROADS ON PRIVATE PROPERTY IS BASED ON IN-PROGRESS DESIGN FROM STANTEC CIVIL ENGINEERING.
- FOR FIBER PULL BOX DETAILS REFER TO DRAWING E404-1.
- ALL ELECTRICAL WORK ASSOCIATED WITH THE COLLECTOR SYSTEM AND SHOWN ON THIS LAYOUT IS DIAGRAMMATIC AND SHALL COMPLY WITH THE CONSTRUCTIBLE LIMITS FOR THIS PROJECT.

Legend

- S## WIND TURBINE GENERATOR (WTO)
- JB### 34.5KV COLLECTOR CIRCUIT JUNCTION UNIT (PROPOSED LOCATION)
- 34.5KV COLLECTOR CIRCUIT
- WATERCOURSES
- ROAD ALLOWANCE
- FENCE
- E407 DET.A TRENCHING AND BORING INSTALLATION REFERENCES. REFERS TO E400 SERIES DRAWING DETAILS
- E408 DET.A DIRECTIONAL BORE

C	ISSUED FOR MUNICIPAL CONSENT	BM	AR	17.05.10
B	ISSUED FOR MUNICIPAL CONSENT	BM	AR	17.02.03
A	ISSUED FOR MUNICIPAL CONSENT	JM	AR	17.01.19
Issued		By	Appd.	YY.MM.DD
File Name:	dwg_60104_AWF_E402.dwg	BM	JR	BM/JM
		Dwn.	Chkd.	Dgn.
				YY.MM.DD

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Client/Project

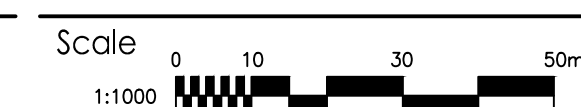


AMHERST ISLAND WIND PROJECT  
75MW WIND FARM  
Amherst Island, Loyalist Township, Ontario

Title

34.5KV COLLECTOR SYSTEM  
OVERALL LAYOUT

Project No.  
133560104



Drawing No.

Sheet

Revision

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Legend

- S## WIND TURBINE GENERATOR (WTG)
- JB### 34.5KV COLLECTOR CIRCUIT JUNCTION UNIT (PROPOSED LOCATION)
- 34.5KV COLLECTOR CIRCUIT
- WATERCOURSES
- ROAD ALLOWANCE
- FENCE
- E407 DET.A TRENCHING AND BORING INSTALLATION REFERENCES. REFERS TO E400 SERIES DRAWING DETAILS
- E408 DET.A DRAWING DETAILS
- DIRECTIONAL BORE

C	ISSUED FOR MUNICIPAL CONSENT	Bm	AR	17.05.10	
B	ISSUED FOR MUNICIPAL CONSENT	Bm	AR	17.02.03	
A	ISSUED FOR MUNICIPAL CONSENT	JM	AR	17.01.19	
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		Dwn.	Chkd.	Dgn.	YY.MM.DD

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AMHERST ISLAND WIND PROJECT  
75MW WIND FARM  
Amherst Island, Loyalist Township, Ontario

Title

34.5KV COLLECTOR SYSTEM  
OVERALL LAYOUT

Project No.	133560104	Scale	1:1000
Drawing No.	Sheet	3 of 10	Revision

E402A C



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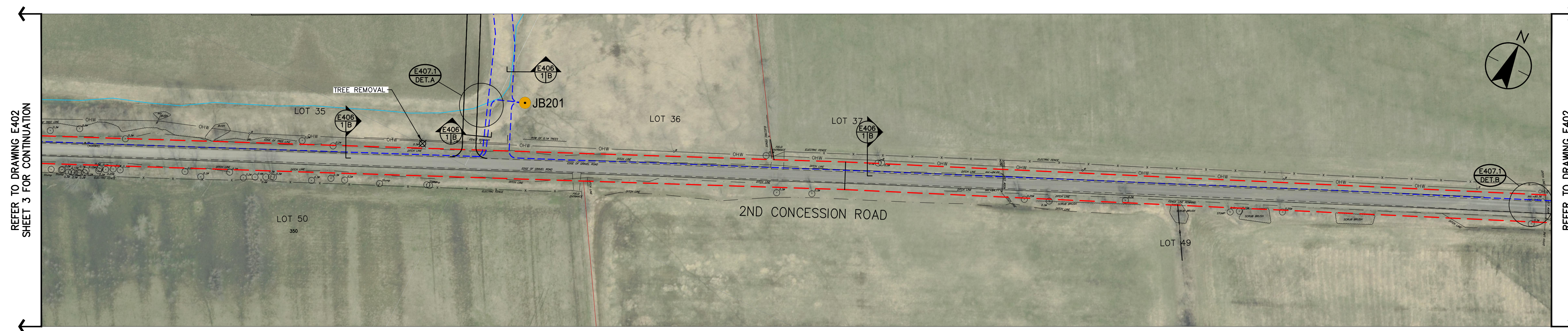
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Legend

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- 34.5KV COLLECTOR CIRCUIT
- WATERCOURSES
- ROAD ALLOWANCE
- FENCE
- E407 DET A TRENCHING AND BORING INSTALLATION REFERENCES. REFERS TO E400 SERIES DRAWING DETAILS
- E408 DET A TRENCHING AND BORING INSTALLATION REFERENCES. REFERS TO E400 SERIES DRAWING DETAILS
- DIRECTIONAL BORE



REFER TO DRAWING E402 SHEET 3 FOR CONTINUATION

REFER TO DRAWING E402 SHEET 5 FOR CONTINUATION

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A	ISSUED FOR MUNICIPAL CONSENT	JM	AR	17.01.19
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				15.12.02
				YY.MM.DD

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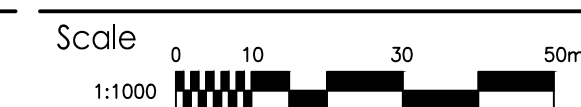


AMHERST ISLAND WIND PROJECT  
75MW WIND FARM  
Amherst Island, Loyalist Township, Ontario

Title

34.5KV COLLECTOR SYSTEM  
OVERALL LAYOUT

Project No.  
133560104



Drawing No.

Sheet

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E402A

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Legend

- S## WIND TURBINE GENERATOR (WTG)
- JB### 34.5KV COLLECTOR CIRCUIT JUNCTION UNIT (PROPOSED LOCATION)
- 34.5KV COLLECTOR CIRCUIT
- WATERCOURSES
- ROAD ALLOWANCE
- FENCE
- E407 DETA TRENCHING AND BORING INSTALLATION REFERENCES. REFERS TO E400 SERIES DRAWING DETAILS
- E408 DETA DIRECTIONAL BORE

C	ISSUED FOR MUNICIPAL CONSENT	BM	AR	17.05.10
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Client/Project



AMHERST ISLAND WIND PROJECT  
75MW WIND FARM  
Amherst Island, Loyalist Township, Ontario

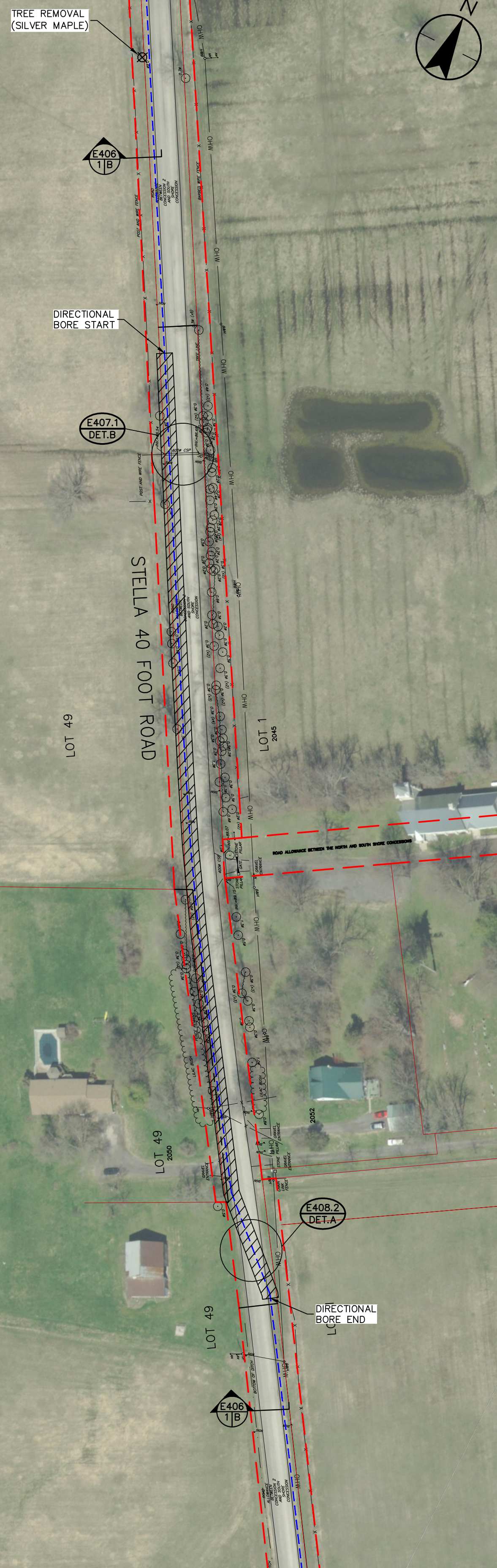
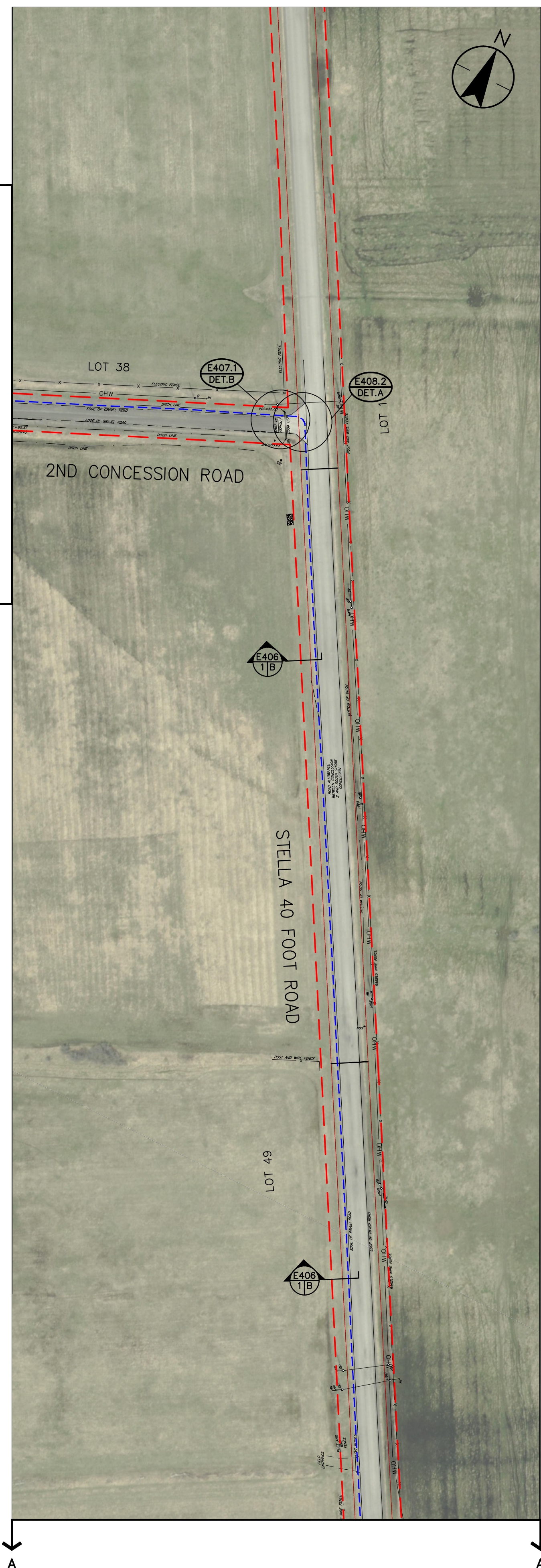
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34.5KV COLLECTOR SYSTEM  
OVERALL LAYOUT

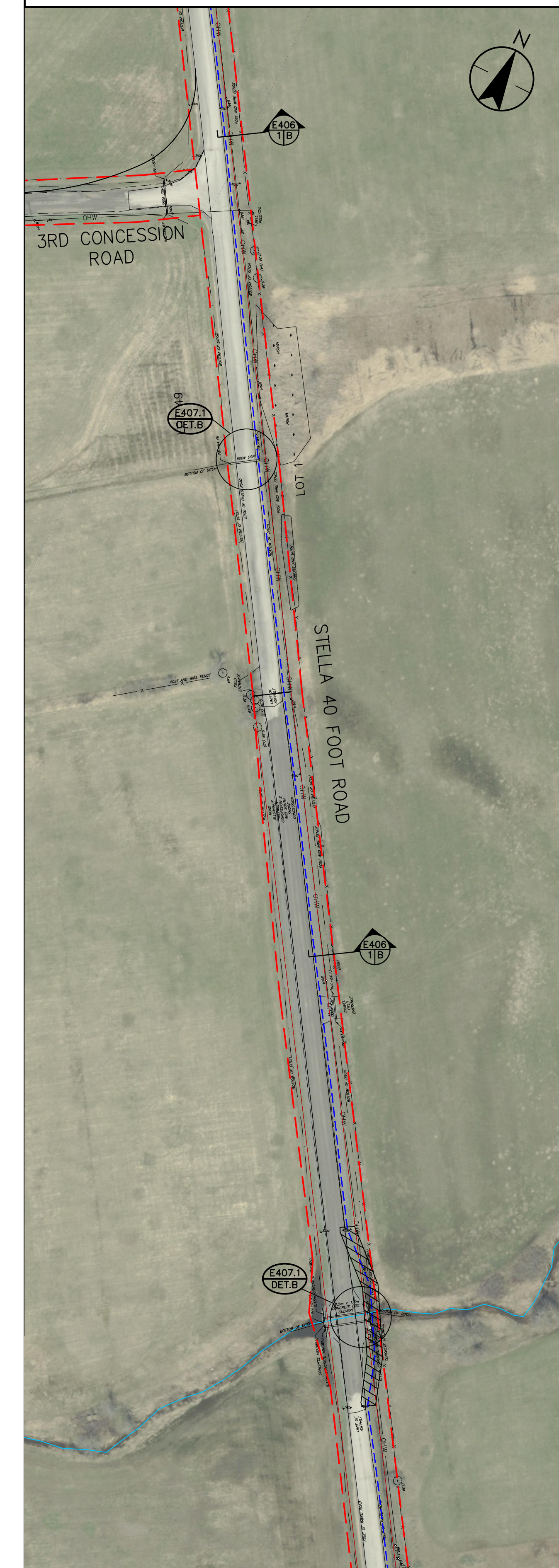
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133560104	1:1000	
Drawing No.	Sheet	Revision

E402A 5 of 10 C

REFER TO DRAWING E402 SHEET 4 FOR CONTINUATION



REFER TO DRAWING E402 SHEET 6 FOR CONTINUATION





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Legend

- S## WIND TURBINE GENERATOR (WTG)
- JB### 34.5KV COLLECTOR CIRCUIT JUNCTION UNIT (PROPOSED LOCATION)
- 34.5KV COLLECTOR CIRCUIT
- WATERCOURSES
- ROAD ALLOWANCE
- FENCE
- E407 DET.A TRENCHING AND BORING INSTALLATION REFERENCES. REFERS TO E400 SERIES
- E408 DET.A DRAWING DETAILS
- DIRECTIONAL BORE

C	ISSUED FOR MUNICIPAL CONSENT	BM	AR	17.05.10	
B	ISSUED FOR MUNICIPAL CONSENT	BM	AR	17.02.03	
A	ISSUED FOR MUNICIPAL CONSENT	JM	AR	17.01.19	
Issued		By	Appd.	YY.MM.DD	
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AMHERST ISLAND WIND PROJECT  
75MW WIND FARM  
Amherst Island, Loyalist Township, Ontario

Title

34.5KV COLLECTOR SYSTEM  
OVERALL LAYOUT

Project No.  
133560104

Scale  
1:1000

Drawing No.

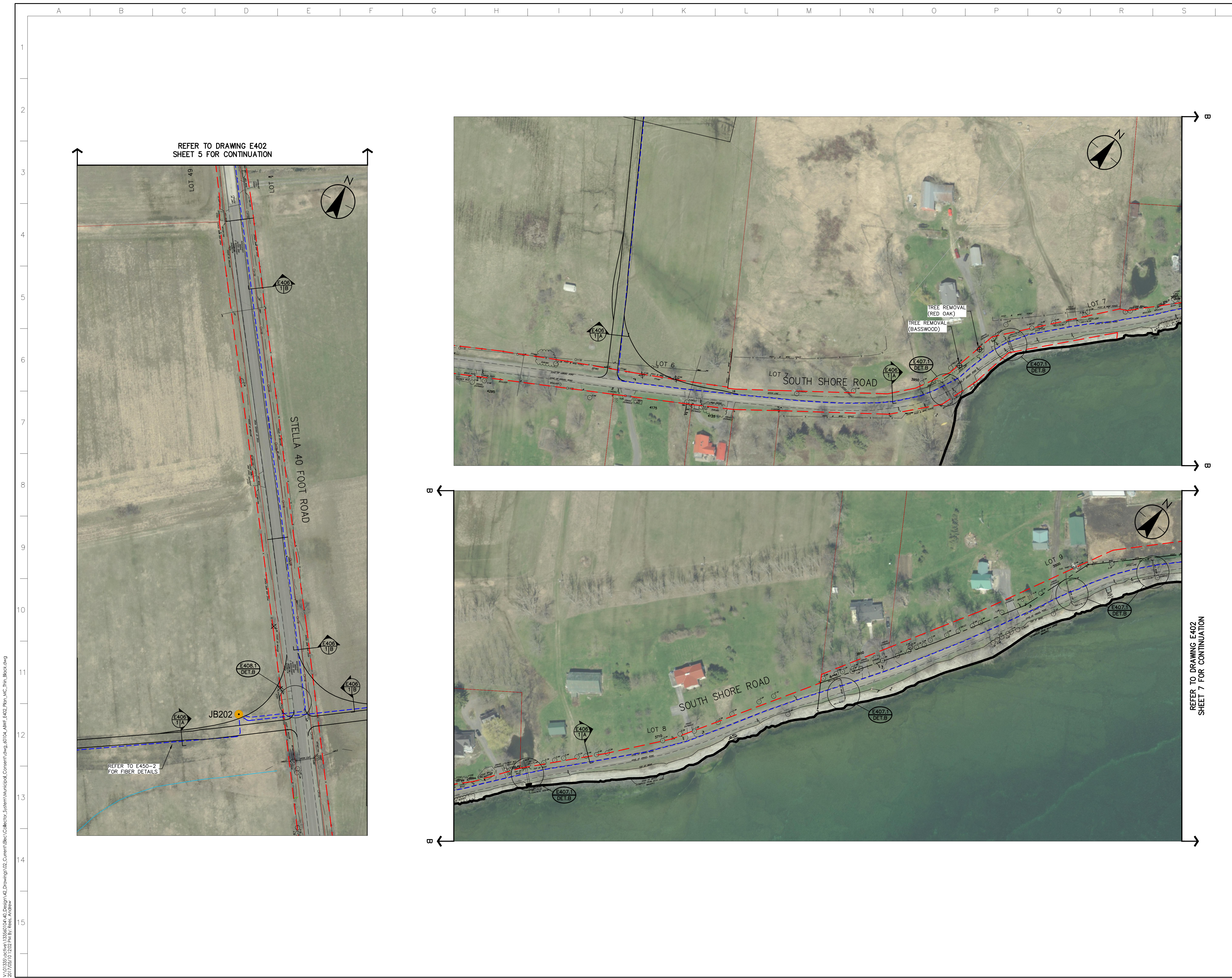
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Revision

E402A

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C



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Legend

- S## WIND TURBINE GENERATOR (WTG)
- JB### 34.5kV COLLECTOR CIRCUIT JUNCTION UNIT (PROPOSED LOCATION)
- 34.5kV COLLECTOR CIRCUIT
- WATERCOURSES
- ROAD ALLOWANCE
- FENCE
- E407 DET.A TRENCHING AND BORING INSTALLATION REFERENCES. REFERS TO E400 SERIES.
- E406 DET.A DRAWING DETAILS
- DIRECTIONAL BORE

C	ISSUED FOR MUNICIPAL CONSENT	BM	AR	17.05.10
B	ISSUED FOR MUNICIPAL CONSENT	BM	AR	17.02.03
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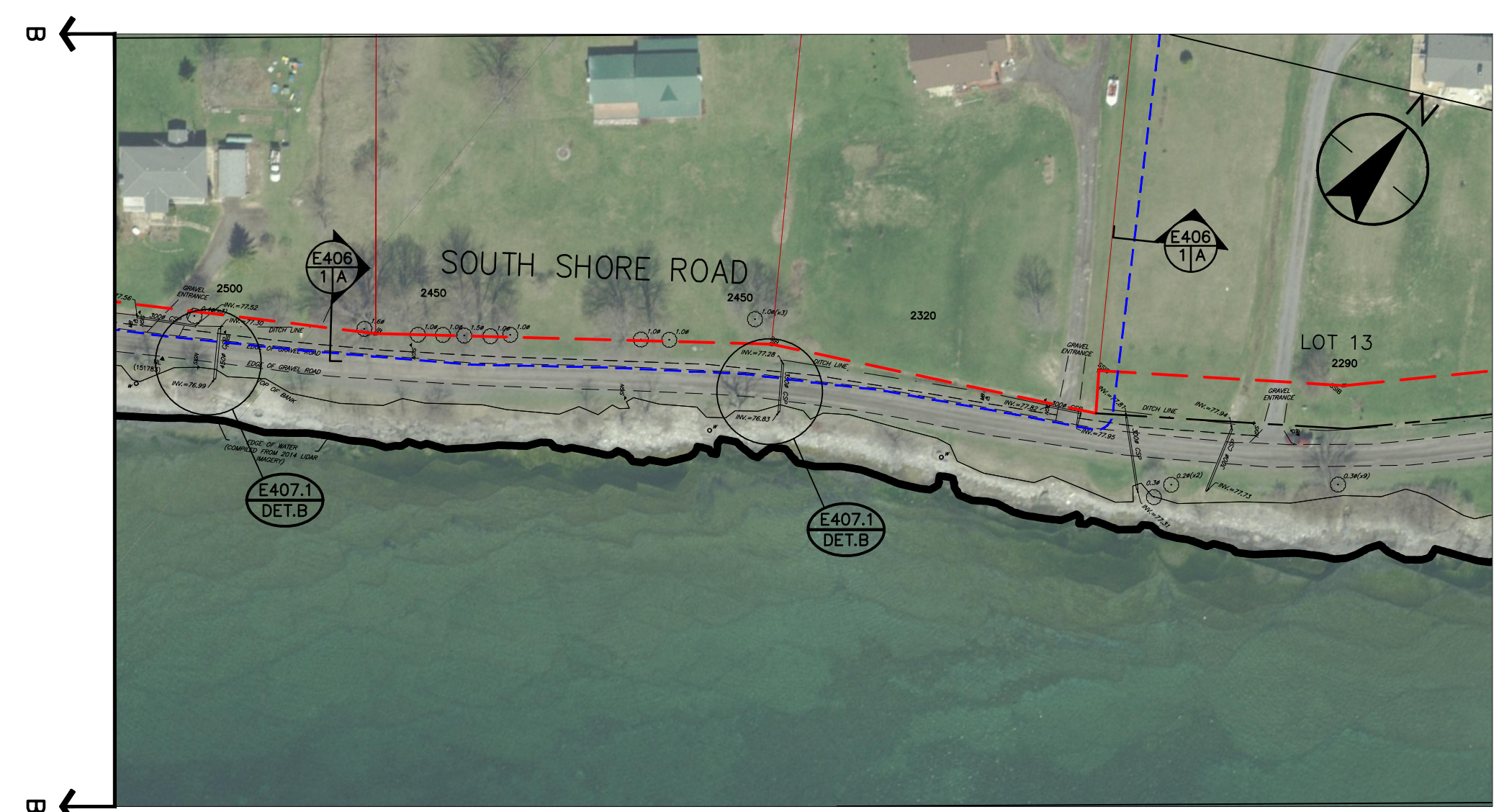
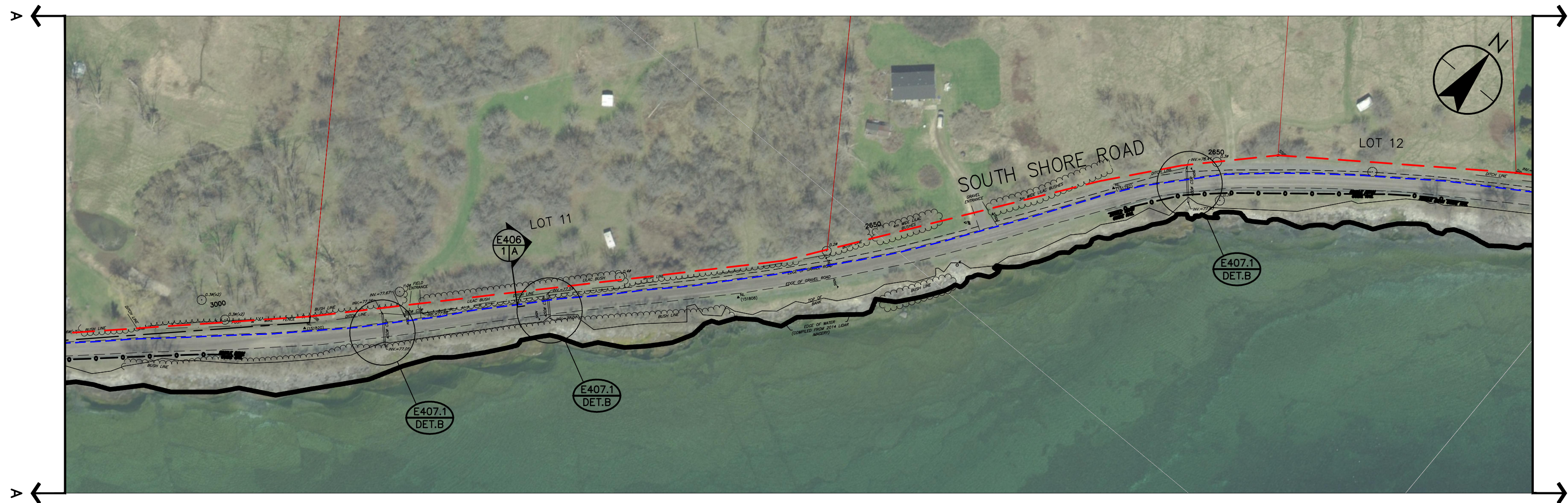
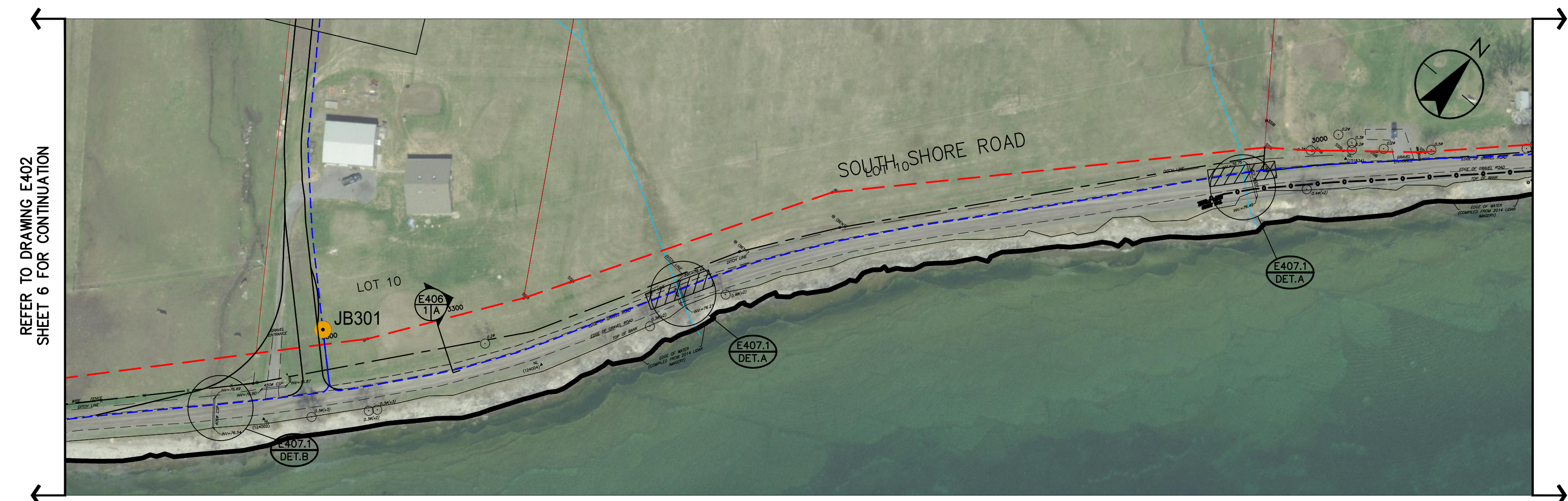
AMHERST ISLAND WIND PROJECT  
75MW WIND FARM  
Amherst Island, Loyalist Township, Ontario

Title

34.5kV COLLECTOR SYSTEM  
OVERALL LAYOUT

Project No.	133560104	Scale	1:1000
Drawing No.	Sheet	Revision	

E402A 7 of 10 C



REFER TO DRAWING E402  
SHEET 6 FOR CONTINUATION

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Legend

- S## WIND TURBINE GENERATOR (WTG)
- JB### 34.5kV COLLECTOR CIRCUIT JUNCTION UNIT (PROPOSED LOCATION)
- 34.5kV COLLECTOR CIRCUIT
- WATERCOURSES
- ROAD ALLOWANCE
- FENCE
- E407 DET.A TRENCHING AND BORING INSTALLATION REFERENCES. REFERS TO E400 SERIES DRAWING DETAILS
- E408 DET.A DRAWING DETAILS
- DIRECTIONAL BORE

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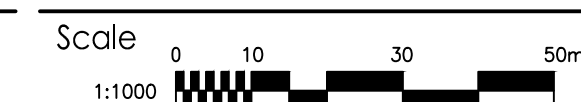


AMHERST ISLAND WIND PROJECT  
75MW WIND FARM  
Amherst Island, Loyalist Township, Ontario

Title

34.5kV COLLECTOR SYSTEM  
OVERALL LAYOUT

Project No.  
133560104



Drawing No.

Sheet 8 of 10

Revision

E402A

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C



REFER TO DRAWING E402  
SHEET 9 FOR CONTINUATION

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C	ISSUED FOR MUNICIPAL CONSENT	BM	AR	17.05.10
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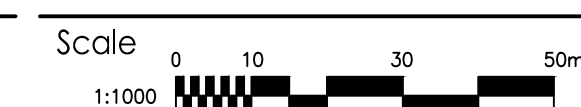


AMHERST ISLAND WIND PROJECT  
75MW WIND FARM  
Amherst Island, Loyalist Township, Ontario

Title

34.5KV COLLECTOR SYSTEM  
OVERALL LAYOUT

Project No.  
133560104



Drawing No.

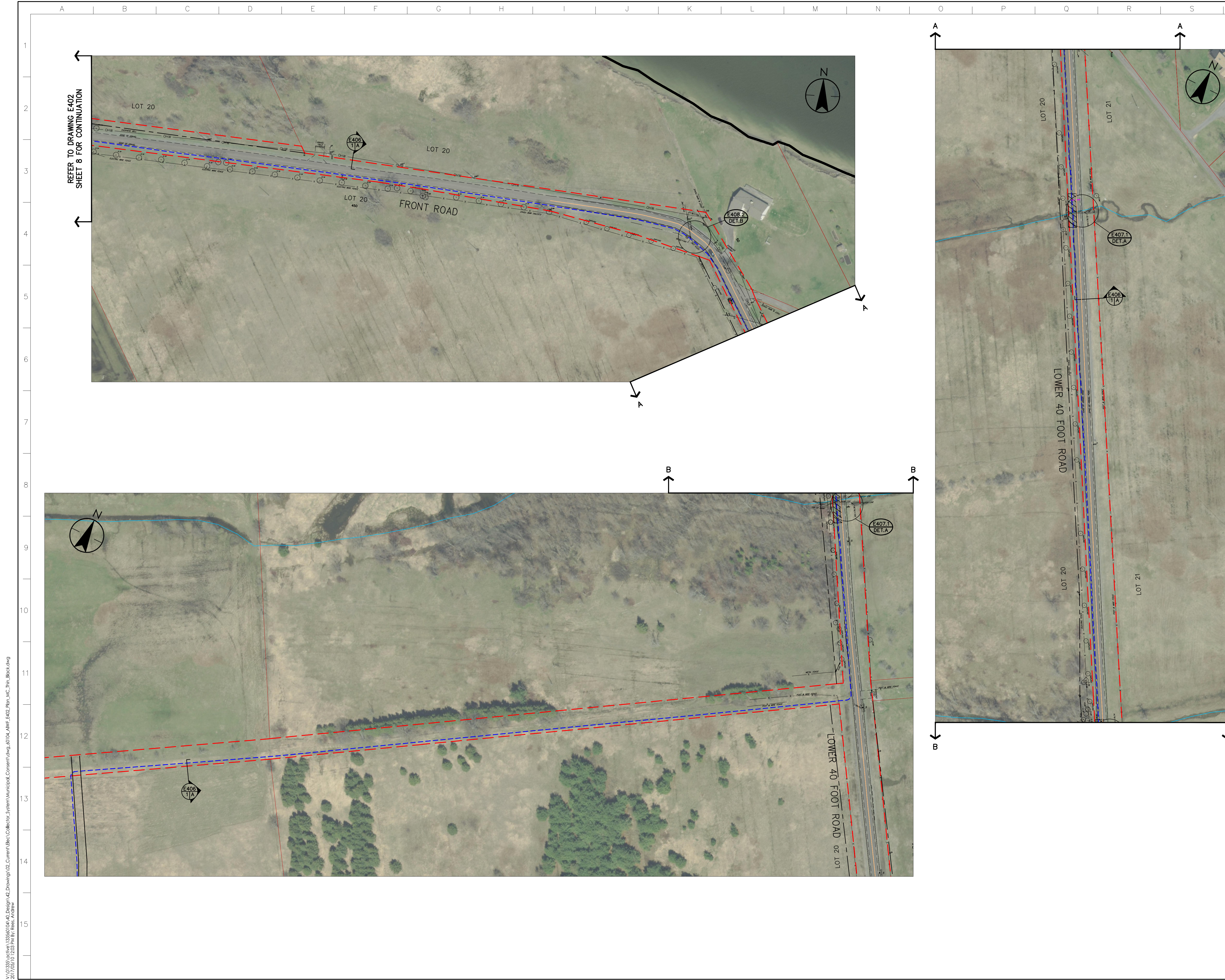
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Revision

E402A

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- DIRECTIONAL BORE

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				YY.MM.DD

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Client/Project

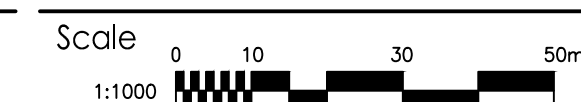


AMHERST ISLAND WIND PROJECT  
75MW WIND FARM  
Amherst Island, Loyalist Township, Ontario

Title

34.5KV COLLECTOR SYSTEM  
OVERALL LAYOUT

Project No.  
133560104



Drawing No.

Sheet

Revision

E402A

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C



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Notes

- ALL DIMENSIONS SHOWN IN MILLIMETER UNLESS OTHERWISE NOTED.
- AREA UNDER THE BASE SHALL BE EXCAVATED TO BELOW THE FROST LINE (1100mm) OR TO A DEPTH NECESSARY TO REACH FIRM, UNDISTURBED MATERIAL, WHICHEVER IS DEEPER.
- EXCAVATE 300mm BEYOND THE PERIMETER OF THE BASE AND BACKFILL THE ENTIRE EXCAVATED AREA WITH CLEAN, NON-EXPANSIVE SOIL, COMPACTED TO 95% SPD IN 300mm LAYERS.
- SEAL CABLE PASSAGE THROUGH CONDUIT END WITH FIRE RETARDANT EXPANSION FOAM.
- RESERVED.
- ALL PART NUMBERS SUBJECT TO APPROVED EQUIVALENT.
- FIBER SPLICE BOX TO BE SIZED TO CONTAIN 10m OF EACH FIBER CABLE FOR ACCESS TO SPLICE. SPLICE BOX TO BE SIZED FOR CABLE MINIMUM BENDING RADIUS x2.

Legend

C	ISSUED FOR MUNICIPAL CONSENT	BM	AR	17.05.10
B	ISSUED FOR TENDER	BM	AR	17.01.10
A	ISSUED FOR CLIENT REVIEW	DK	JR	16.10.21
Revision	By	Appd.	YY.MM.DD	

File Name:	dwg_60104_AWF_E404.dwg	BM	JR	BM/JM	16.10.12
		Dwn.	Chkd.	Dsgn.	YY.MM.DD

Permit-Seal

FOR MUNICIPAL CONSENT

Client/Project



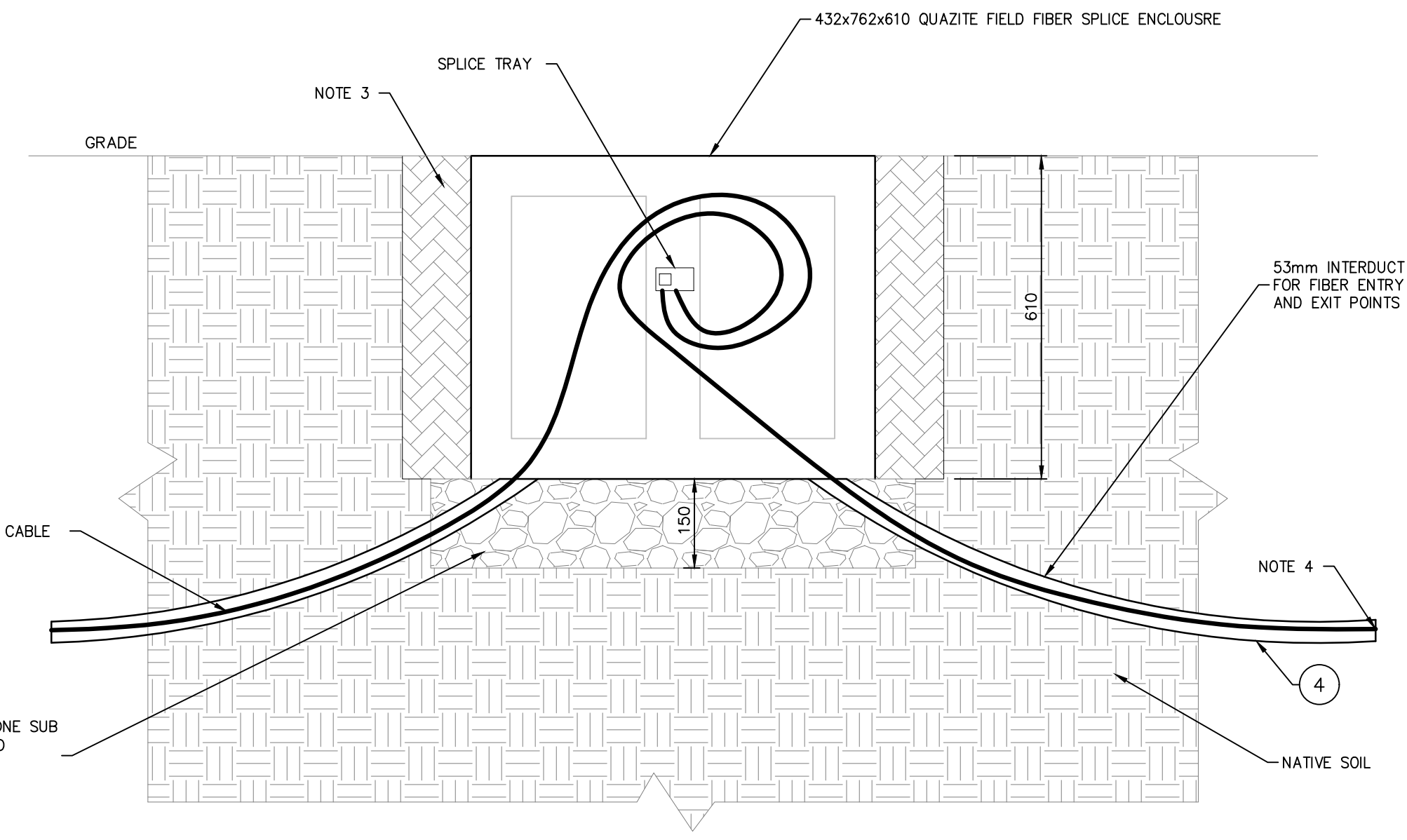
AMHERST ISLAND WIND PROJECT  
75MW WIND FARM  
Amherst Island, Loyalist Township, Ontario

Title

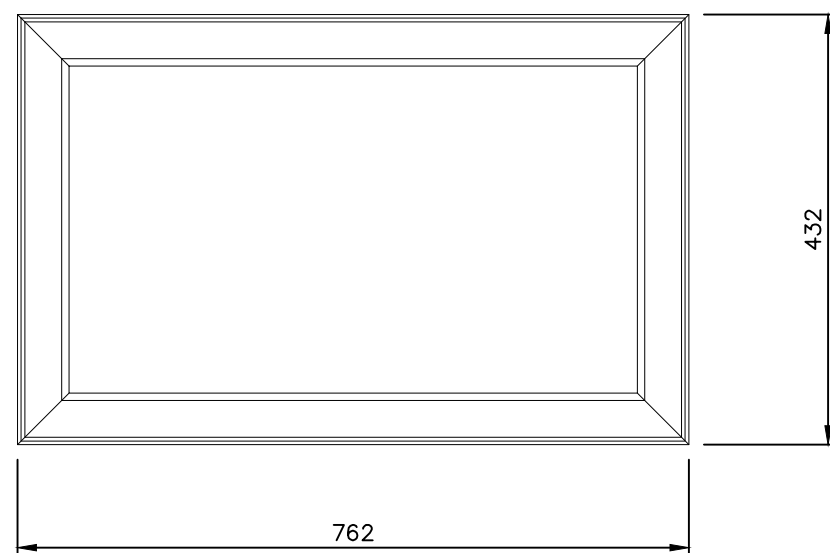
34.5kV COLLECTOR SYSTEM  
FIBER OPTIC JUNCTION BOX  
INSTALLATION DETAILS

Project No.	Scale	
133560104	N.T.S.	
Drawing No.	Sheet	Revision

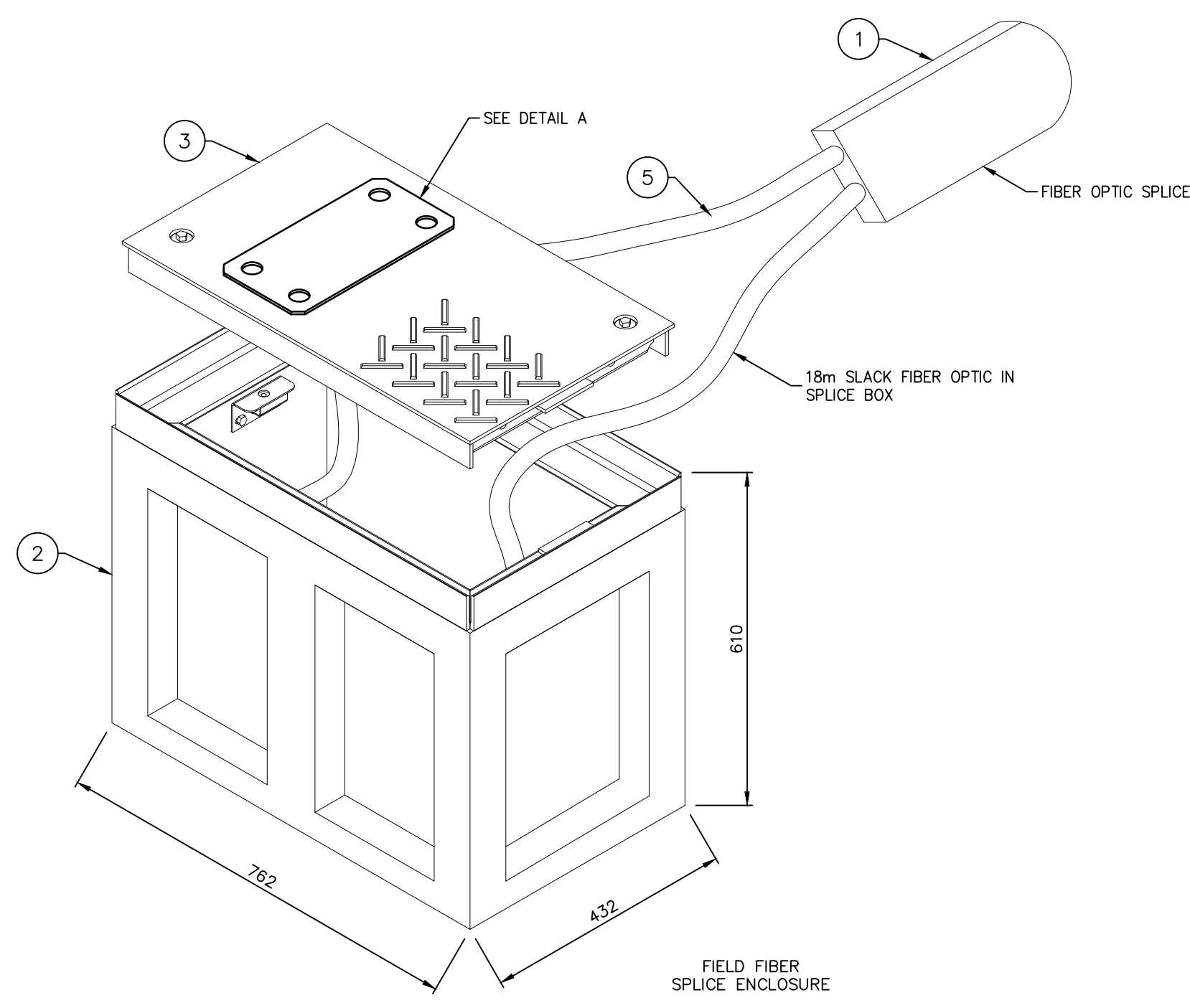
E404A 1 of 1 C



A IN GROUND FIBER SPLICE ENCLOSURE DETAILS  
N.T.S.



B TOP VIEW  
N.T.S.



C QUAZITE DETAILS: PG BOX  
N.T.S.

ITEM	MANUFACTURER	PART#	DESCRIPTION
1	CORNING	UCAO-05-24	PREFORMED FIBER OPTIC FUSION SPLICE TRAY - USED TO ROUTE AND STORE FUSION SPLICES IN CASES
2	QUAZITE	PG1730BA24	COLLECTOR SYSTEM FIBER SPLICING SURFACE SPLICE BOX.
3	QUAZITE	PG1730CA00	COLLECTOR SYSTEM FIBER SPLICING SURFACE SPLICE BOX COVER.
4	BY CONTRACTOR	-	53mm (2") SMOOTH WALL TYPE HDPE SDR 13.5 INNER-DUCT
5	-	-	FIBER OPTIC CABLE



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Notes

- ALL DIMENSIONS SHOWN ARE IN MILLIMETERS UNLESS OTHERWISE NOTED.
- ALL UNDERGROUND PARALLEL CABLES SHALL BE SEPARATED FROM ALL OTHER EXISTING UTILITIES RUNNING IN PARALLEL BY A MINIMUM OF 1.0m CENTERLINE TO CENTERLINE, UNLESS OTHERWISE INDICATED BY SPECIFIC UTILITY CLEARANCE REQUIREMENTS.
- SUPPLY, PLACE AND COMPACT NATIVE BACKFILL. NATIVE BACKFILL TO BE FREE OF DEBRIS, SHARP OBJECTS, ORGANIC OR FROZEN MATERIAL AND SCREENED WHERE LARGE PARTICLE SIZE MAY CAUSE DAMAGE TO CABLE. NATIVE BACKFILL TO BE INSTALLED IN LIFTS OF 300mm AND COMPACTED TO 95% SPD.
- THE PADDING BACKFILL MATERIAL SHALL BE SCREENED NATIVE MATERIAL WITH MAXIMUM PARTICLE SIZE NO LARGER THAN 4.75mm IN DIAMETER. PADDING BACKFILL TO BE INSTALLED IN LIFTS OF 300mm AND COMPACTED TO 95% SPD.
- THERMAL BACKFILL TO BE IMPORTED SCREENED CRUSHED LIMESTONE WHERE CABLE AMPACITY CONTROL IS REQUIRED WITH NO PARTICLES LARGER THAN 4.75mm. THERMAL RESISTIVITY SHALL NOT EXCEED 1.0°C.m/W IN ITS DRY STATE.
- INSTALLATION METHODS TO BE IN ACCORDANCE WITH OESC AND MANUFACTURER'S RECOMMENDATIONS TO MAINTAIN TREFOL CONFIGURATION.
- FINAL LOCATION AND SIZE OF BARE Cu GROUND CONDUCTOR TO BE CONFIRMED WITH FINAL GROUNDING STUDY.
- TOPSOIL TO BE SEGREGATED DURING TRENCH EXCAVATION AND RETURNED TO GRADE LEVEL FOLLOWING TRENCH BACKFILL TO ENSURE VEGETATION RE-GROWTH AT CABLE INSTALLATIONS.

Legend

- 35kV POWER CABLE
- FIBER OPTIC CABLE
- Cu GROUND CONDUCTOR
- EXISTING NATIVE SOIL
- COMPACTED NATIVE FILL
- PADDING BACK FILL
- THERMAL BACK FILL

Revision	By	Appd.	YY.MM.DD	
C	ISSUED FOR MUNICIPAL CONSENT	BM	AR	17.05.10
B	ISSUED FOR TENDER	BM	AR	17.01.10
A	INTERNAL REVIEW	JM	JR	16.10.18

File Name	Dwn.	Chkd.	Dgn.	YY.MM.DD
File Name: dwg_60104_AWF_E406.dwg	BM	JR	JM	15.12.07

Permit Seal

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Client/Project



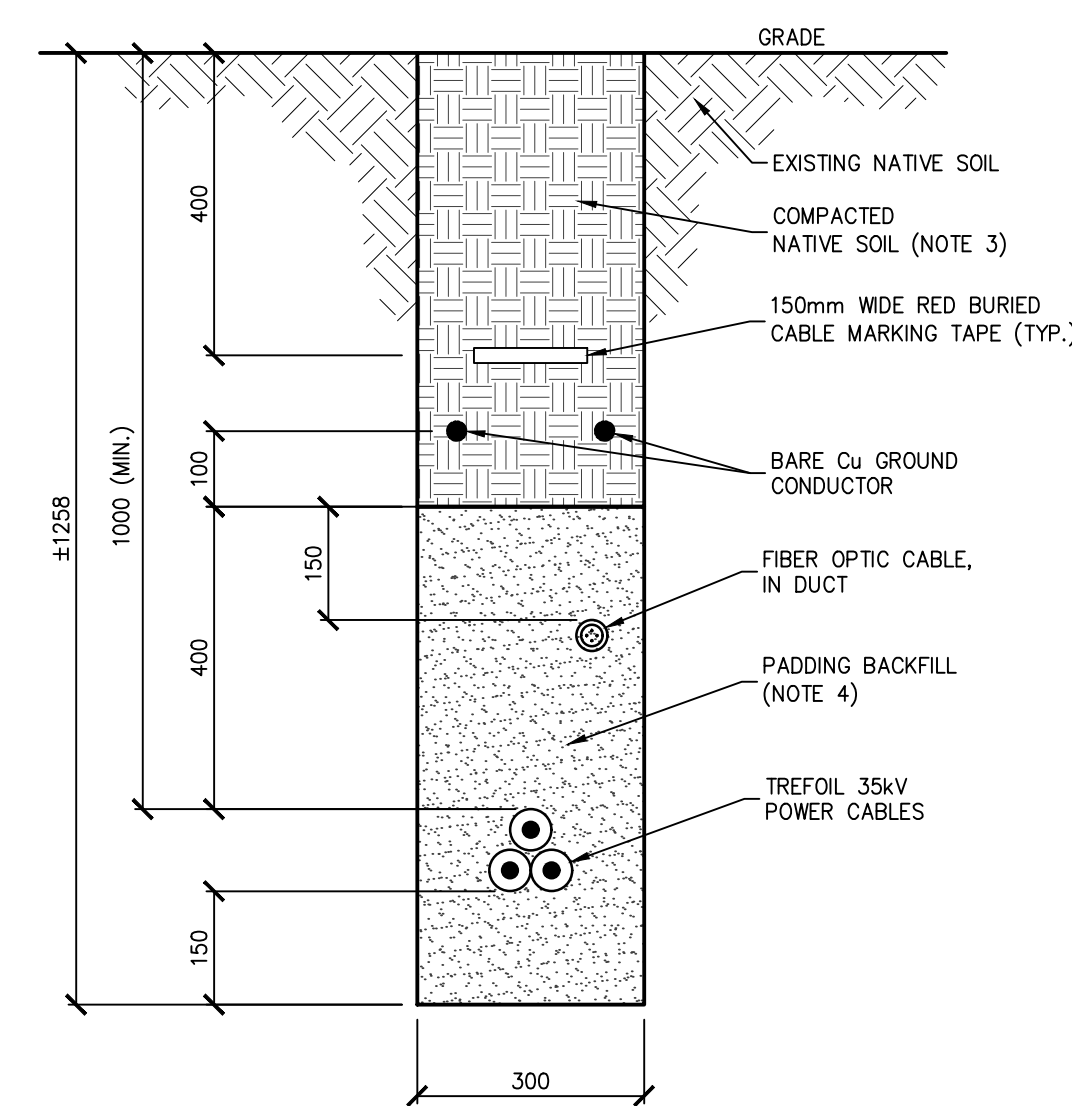
AMHERST ISLAND WIND PROJECT  
75MW WIND FARM  
Amherst Island, Loyalist Township, Ontario

Title

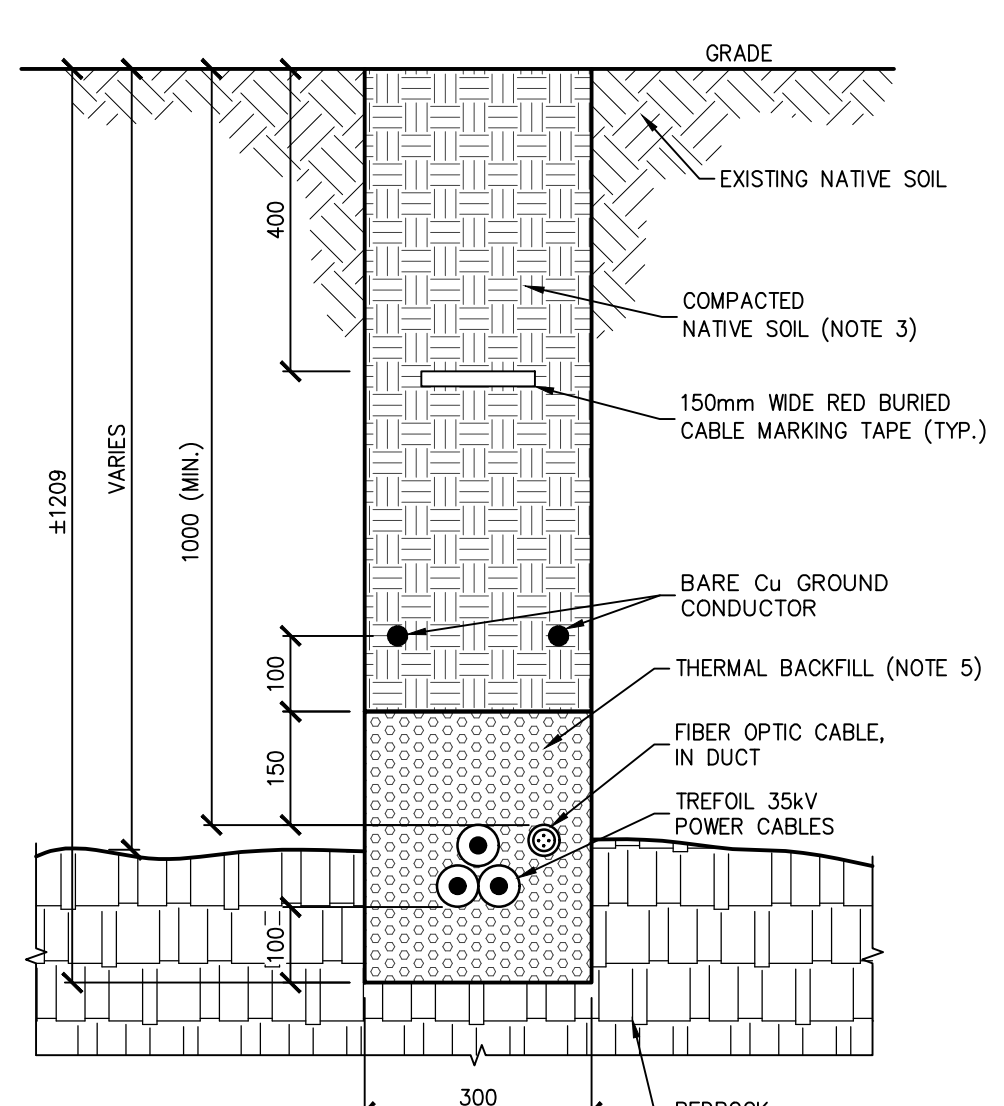
34.5kV COLLECTOR SYSTEM  
CABLE TRENCH DETAILS

Project No.	Scale	
133560104	1:10	
Drawing No.	Sheet	Revision

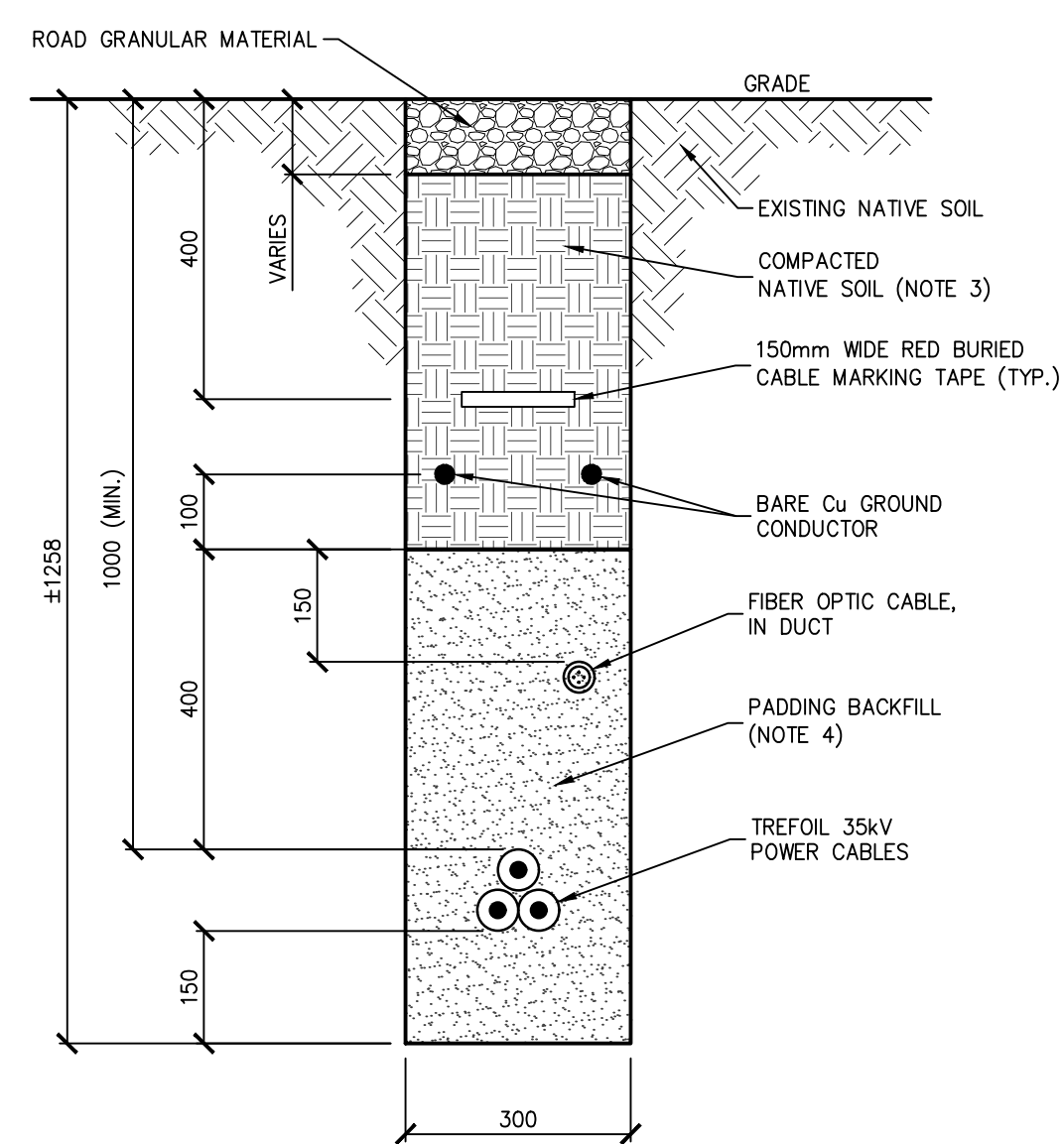
E406A 1 of 1 C



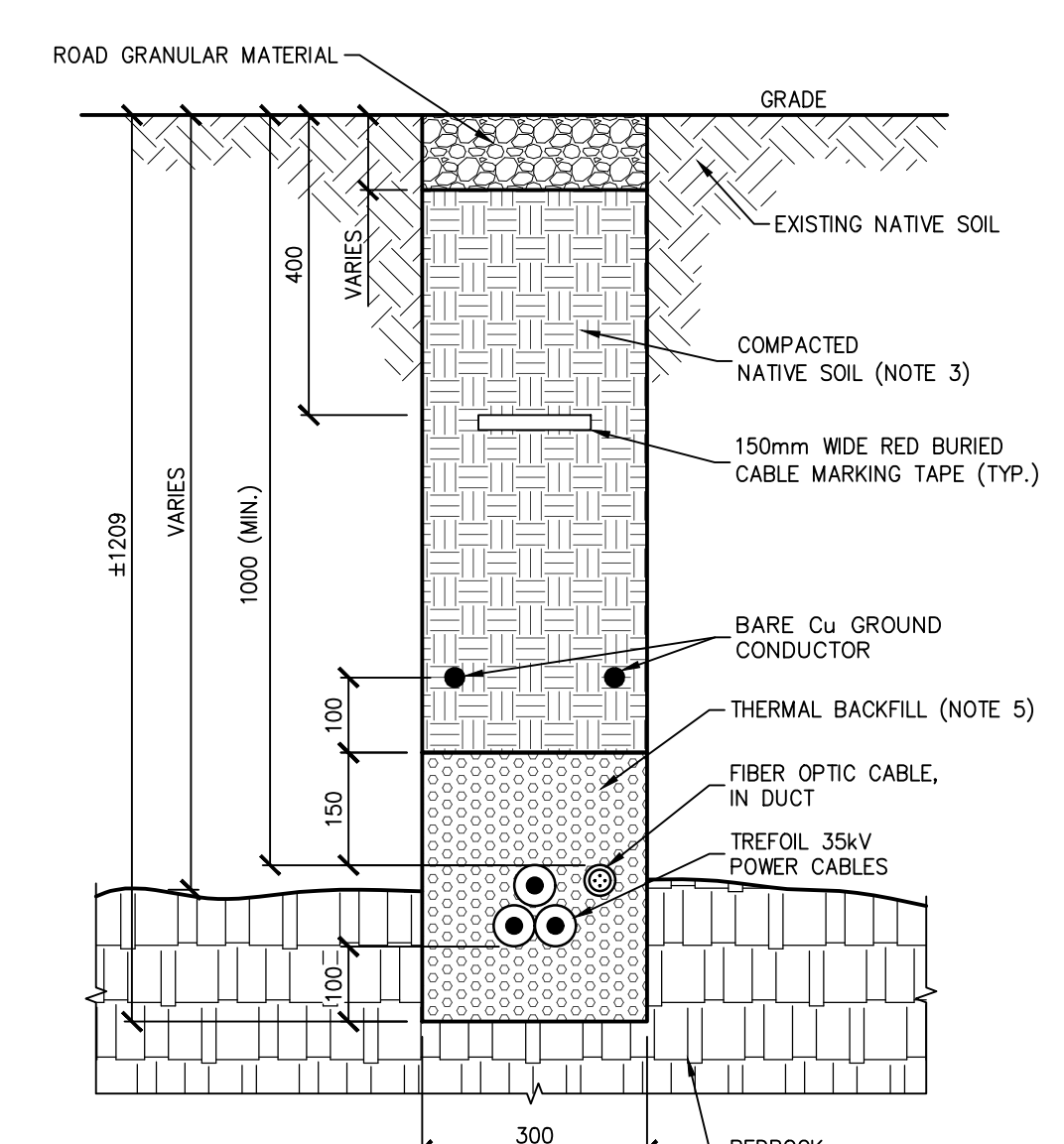
A1 TYPICAL TRENCH DETAIL  
Scale 1:10



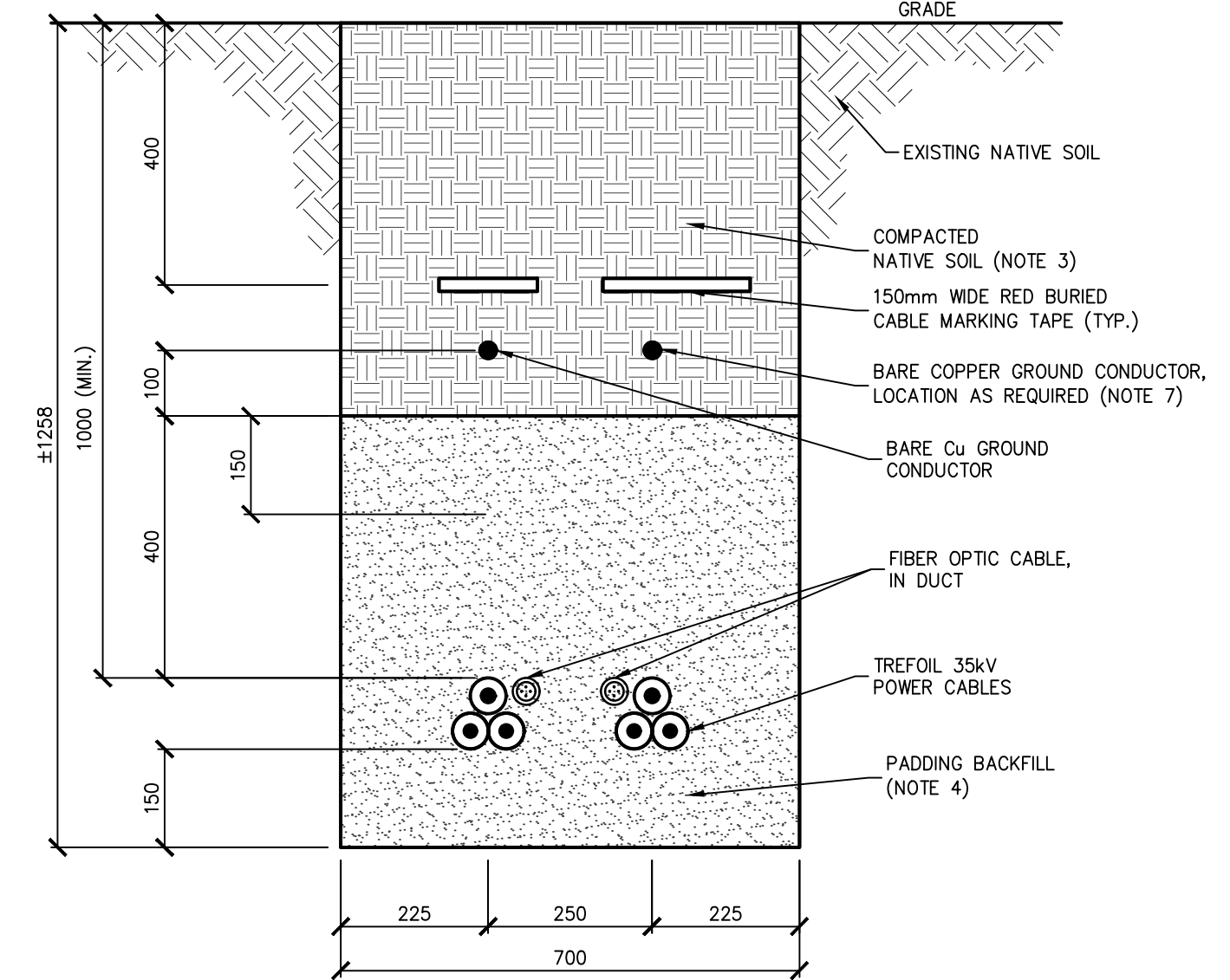
A2 TRENCH THROUGH BEDROCK  
Scale 1:10



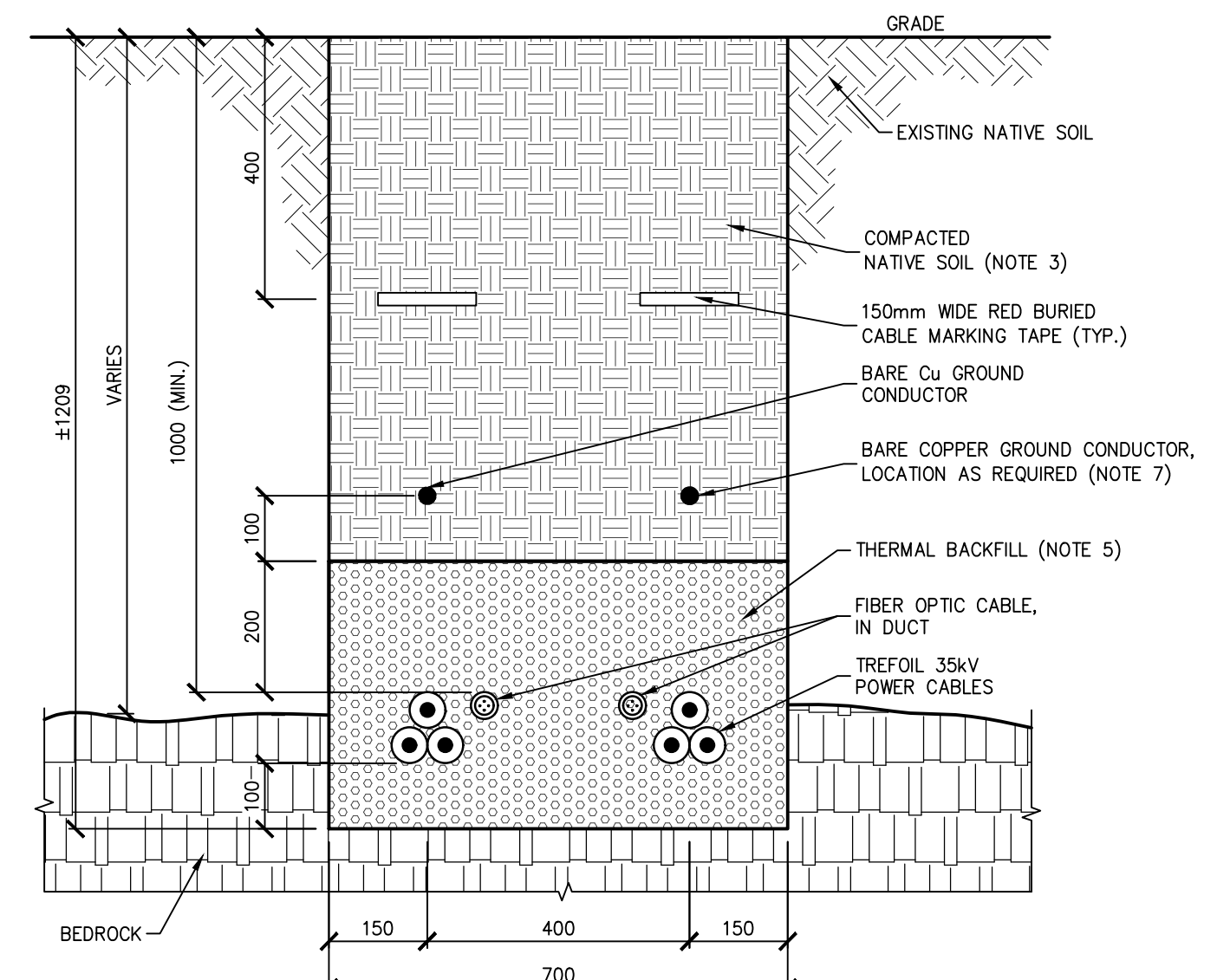
A3 TYPICAL TRENCH DETAIL  
Scale 1:10



A4 TRENCH THROUGH BEDROCK  
Scale 1:10



B1 TYPICAL TRENCH DETAIL  
Scale 1:10



B2 TRENCH THROUGH BEDROCK  
Scale 1:10

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Notes

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- EXISTING UTILITIES SHALL BE LOCATED AND MARKED IN FIELD BEFORE DIGGING.
- ALL UNDERGROUND CABLES SHALL BE SEPARATED FROM ALL OTHER EXISTING UTILITIES RUNNING IN PARALLEL BY A MINIMUM OF 1.0m EDGE TO EDGE UNLESS OTHERWISE INDICATED BY SPECIFIC UTILITY CLEARANCE REQUIREMENTS.
- CABLE MARKERS ARE REQUIRED IN MUNICIPAL RIGHT OF WAY AT EVERY CORNER AND FOR LINE OF SIGHT (MAXIMUM 300m) FOR ALL STRAIGHT RUNS, AND SHALL BE INSTALLED AT ALL ROAD, RAILROAD, BRIDGE, PIPELINE AND CABLE CROSSINGS; CABLE MARKING IN PRIVATE PROPERTY TO BE ADDED AT OWNERS DISCRETION.
- THE ENDS OF THE HDPE CASING SHALL BE SURVEYED AT THE CONCLUSION OF THEIR INSTALLATION AND THE ACTUAL LOCATION SHOWN ON THE AS RECORDED DOCUMENTATION.
- TEMPORARY ENTRY/EXIT PIT EXCAVATION TO BE MINIMUM 10m BACK FROM TOP OF BANK (WATERCOURSE/ DITCH CROSSINGS) OR 10m BACK FROM LOCATED PIPELINE, WHERE APPLICABLE.
- ALL WORK SHALL REMAIN WITHIN PROJECT BOUNDARIES AND MUNICIPAL RIGHT OF WAYS
- HDPE CARRIER PIPE TO BE AT MAXIMUM DEPTH FOR TOTAL LENGTH OF PIPELINE EASEMENT.

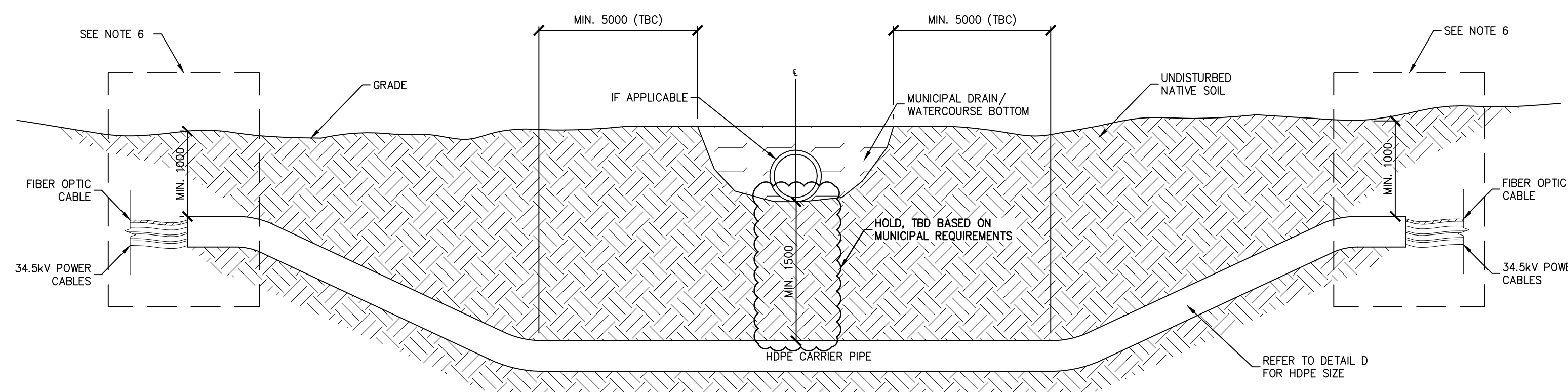
Legend

HDPE CARRIER PIPE SIZES	
CABLE SIZE	HDPE SIZE (Ø)
4/0 AWG	5" (129mm)
500kcmil	6" (155mm)
1250kcmil	8" (203mm)

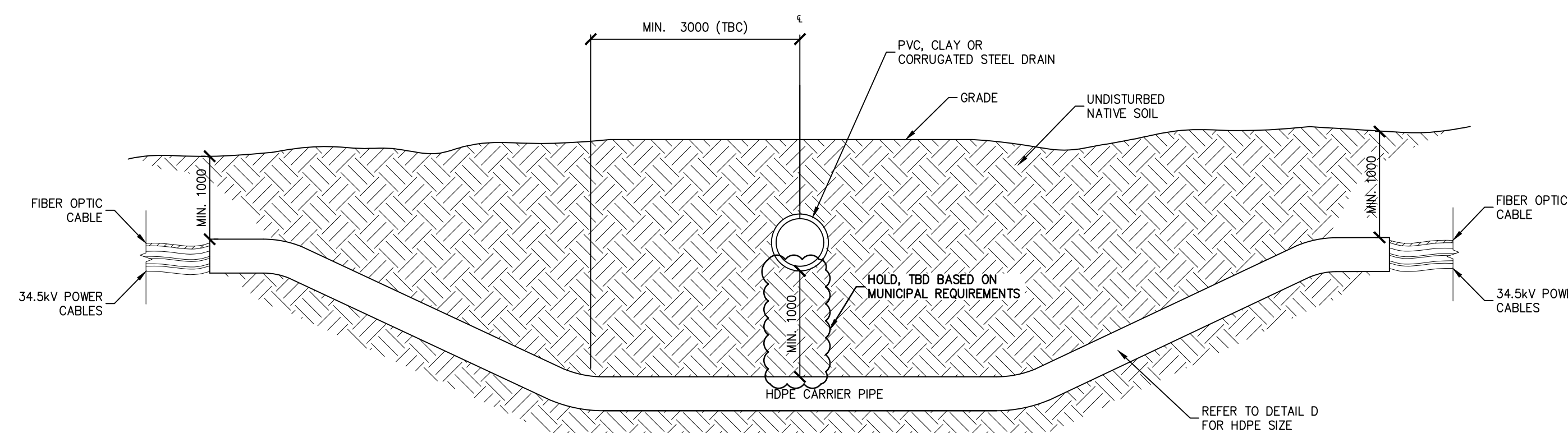
D HDPE CARRIER PIPE SIZING TABLE  
SCALE: N.T.S.

UTILITY CLEARANCE		
UTILITY	HORIZONTAL OFFSET	VERTICAL OFFSET
TELECOMMUNICATIONS	1000mm	1000mm
MUNICIPAL DRAIN	2500mm	1000mm
MUNICIPAL WATER SUPPLY	2500mm	1000mm
HONI DISTRIBUTION POLES	600mm	N/A

E UTILITY CLEARANCE REQUIREMENTS  
SCALE: N.T.S.



A WATER COURSE CROSSING PROFILE VIEW  
SCALE: N.T.S.



B CULVERT DRAIN CROSSING PROFILE VIEW  
SCALE: N.T.S.

Revision	By	Appd.	YY.MM.DD	
C	ISSUED FOR MUNICIPAL CONSENT	BM	AR	17.05.10
B	ISSUED FOR TENDER	BM	AR	17.01.10
A	INTERNAL REVIEW	JL	JR	16.10.18

File Name: dwg\_60104\_AWF\_E407.dwg  
Dwn. Chkd. Dgn. YY.MM.DD

Permit Seal

FOR MUNICIPAL CONSENT

Client/Project



AMHERST ISLAND WIND PROJECT  
75MW WIND FARM  
Amherst Island, Loyalist Township, Ontario

Title

34.5kV COLLECTOR SYSTEM  
UTILITY AND WATERWAY  
CROSSING DETAILS

Project No.	Scale
133560104	N.T.S.

Drawing No.	Sheet	Revision
E407A	1 of 1	C

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2017/05/10 12:04 PM By: Marcel Boase



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4. CABLE MARKERS ARE REQUIRED IN MUNICIPAL RIGHT OF WAY AT EVERY CORNER AND FOR LINE OF SIGHT (MAXIMUM 300m) FOR ALL STRAIGHT RUNS, AND SHALL BE INSTALLED AT ALL ROAD, RAILROAD, BRIDGE, PIPELINE AND CABLE CROSSINGS. CABLE MARKING IN PRIVATE PROPERTY TO BE ADDED AT OWNERS DISCRETION.
5. ALL WORK SHALL REMAIN WITHIN PROJECT BOUNDARIES AND MUNICIPAL RIGHT OF WAYS.
6. INSIDE EDGE OF TRENCH SHALL BE 3.5m TO 3.8m FROM ROAD CENTERLINE, SUBJECT TO FIELD VERIFICATION.

Legend

D	ISSUED FOR MUNICIPAL CONSENT	BM	AR	17.05.10
C	REVISED TRENCH OFFSET	AR	AR	17.04.24
B	ISSUED FOR TENDER	BM	AR	17.01.10
A	INTERNAL REVIEW	JL	JR	16.10.18
Revision		By	Appd.	YY.MM.DD
File Name: dwg_60104_AWF_E408.dwg		BM	JR	BM/JM
		Dwn.	Chkd.	Dgn.
15.12.04				

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FOR MUNICIPAL CONSENT

Client/Project



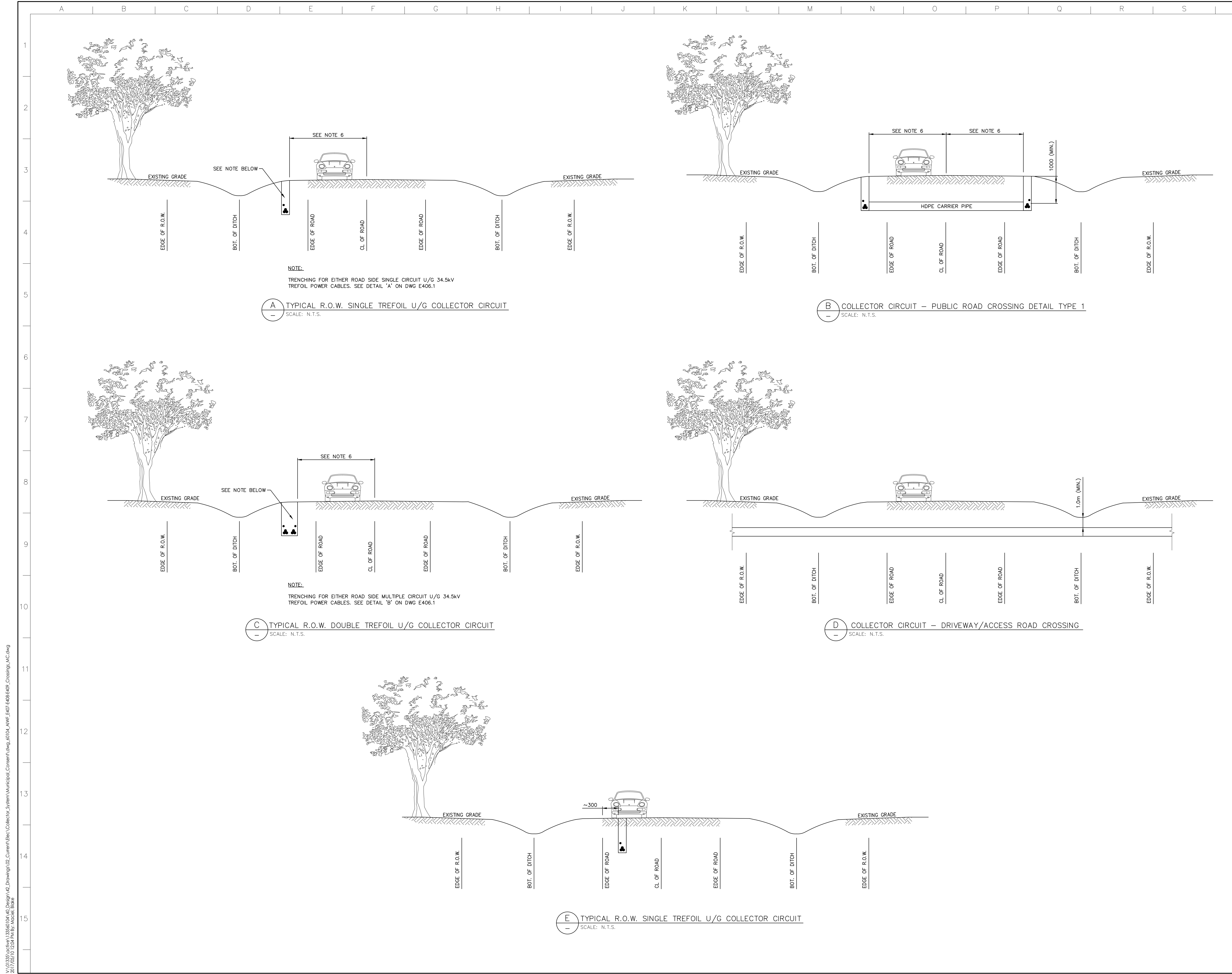
AMHERST ISLAND WIND PROJECT  
75MW WIND FARM  
Amherst Island, Loyalist Township, Ontario

Title

34.5KV COLLECTOR SYSTEM  
ROADWAY CROSSING DETAILS

Project No.	Scale	
133560104	N.T.S.	
Drawing No.	Sheet	Revision

E408A 1 of 3 D



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Legend

Revision	By	Appd.	YY.MM.DD
D	BM	AR	17.05.10
C	AR	AR	17.04.24
B	BM	AR	17.01.10
A	JL	JR	16.10.18

File Name: dwg\_60104\_AWF\_E408.dwg  
Dwn. Chkd. Dgn. Y.Y.MM.DD

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Client/Project



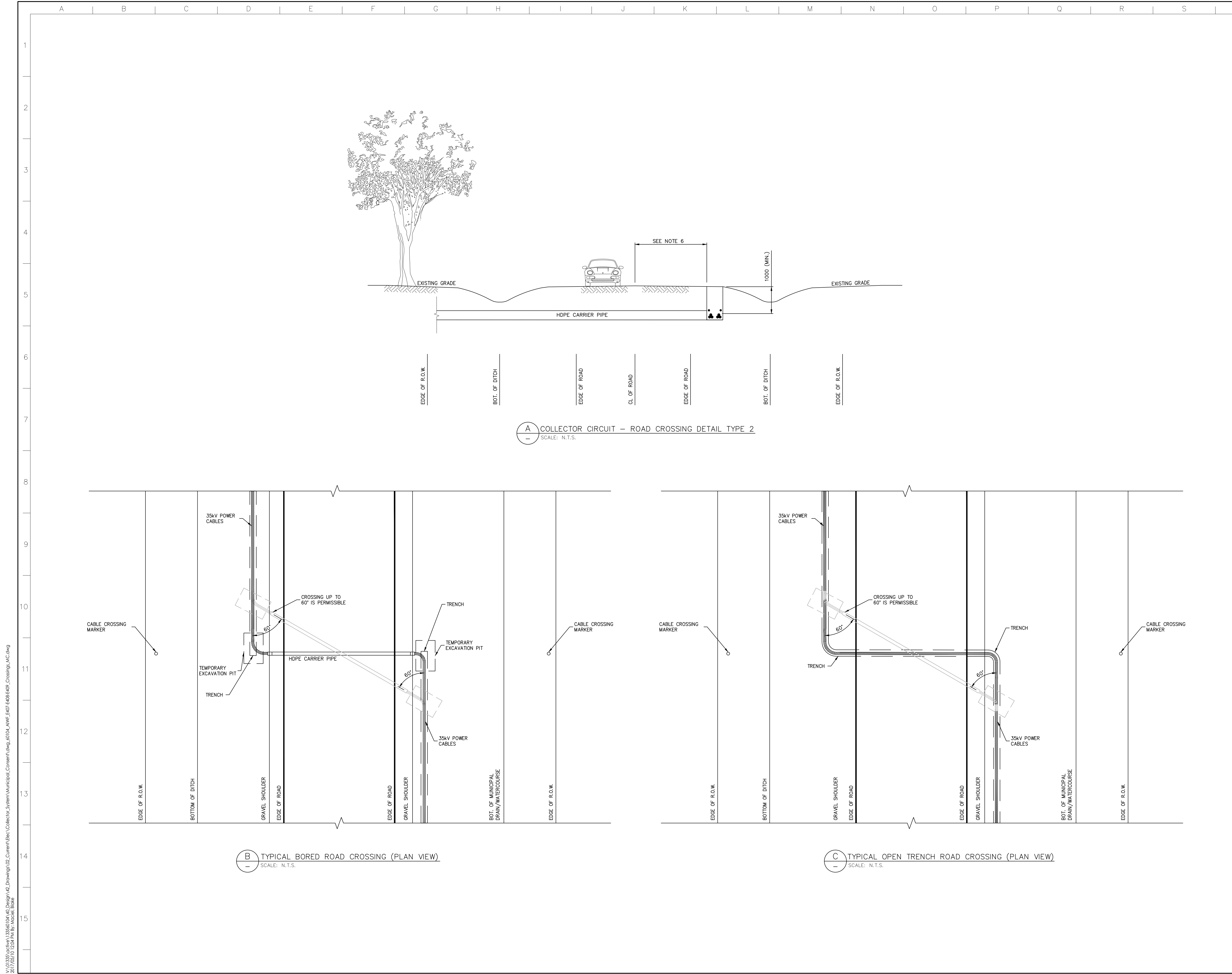
AMHERST ISLAND WIND PROJECT  
75MW WIND FARM  
Amherst Island, Loyalist Township, Ontario

Title

34.5KV COLLECTOR SYSTEM  
ROADWAY CROSSING DETAILS

Project No.	Scale	
133560104	N.T.S.	
Drawing No.	Sheet	Revision

E408A 2 of 3 D



**A** COLLECTOR CIRCUIT – ROAD CROSSING DETAIL TYPE 2  
SCALE: N.T.S.

**B** TYPICAL BORED ROAD CROSSING (PLAN VIEW)  
SCALE: N.T.S.

**C** TYPICAL OPEN TRENCH ROAD CROSSING (PLAN VIEW)  
SCALE: N.T.S.

V:\013356\active\133560104\_40\_Design\42\_Drawing\42\_Collector\_System\Municipal\_Consemt\dwg\_60104\_AWF\_E408\_E408-E408-E408\_Crossing\_MC.dwg  
2017/05/10 12:04 PM By: Moeel Ibraheem



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6. INSIDE EDGE OF TRENCH SHALL BE 3.5m TO 3.8m FROM ROAD CENTERLINE, SUBJECT TO FIELD VERIFICATION.

Legend

Revision	By	Appd.	YY.MM.DD	
D	ISSUED FOR MUNICIPAL CONSENT	BM	AR	17.05.10
C	REVISED TRENCH OFFSET	AR	AR	17.04.24
B	ISSUED FOR TENDER	BM	AR	17.01.10
A	INTERNAL REVIEW	JL	JR	16.10.18

File Name:	Dwg.	Chkd.	Dgn.	YY.MM.DD
dwg_60104_AWF_E408.dwg	BM	JR	BM/JM	15.12.04

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Client/Project



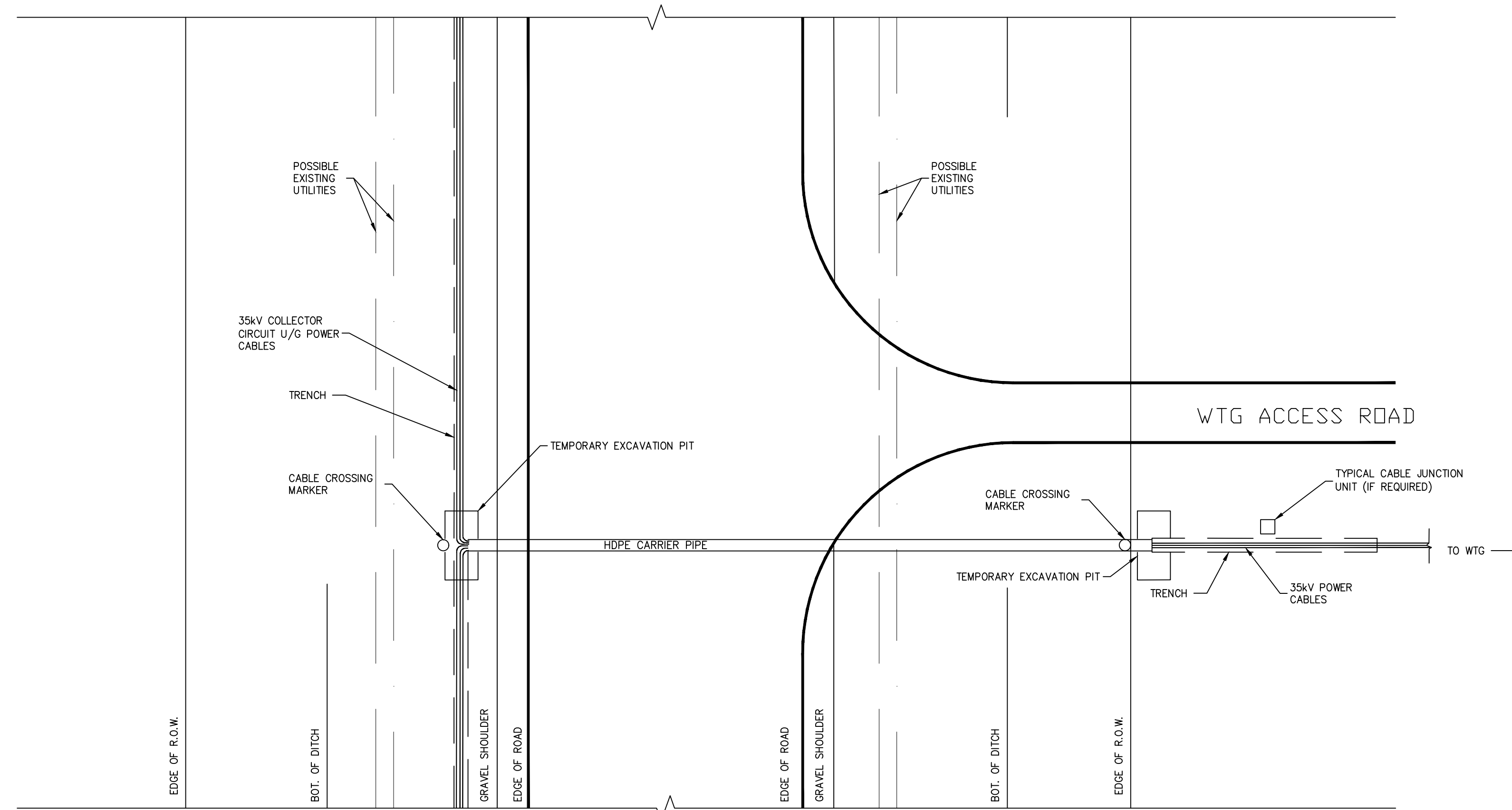
AMHERST ISLAND WIND PROJECT  
75MW WIND FARM  
Amherst Island, Loyalist Township, Ontario

Title

34.5kV COLLECTOR SYSTEM  
ROADWAY CROSSING DETAILS

Project No.	Scale	
133560104	N.T.S.	
Drawing No.	Sheet	Revision

E408A 3 of 3 D



**B** TYPICAL ROW CROSSING U/G COLLECTOR CCT AT ACCESS ROAD (PLAN VIEW)  
SCALE: N.T.S.

V:\013356\active\133560104\_40\_Design\42\_Drawing\42\_Corridor\Elec\System\Municipal\_Corridor\dwg\_60104\_AWF\_E408.dwg  
2017/05/10 12:04 PM By: Hobbie, Brian