

CONTRACT DRAWINGS
CONTRACT NO. XXXX-XXXX
BOOK 3 OF 3

CENTRAL REGION
(90% COMPLETION RE-SUBMISSION)
OCTOBER 1, 2010

Ministry of Transportation



INDEX

W.P. No. _____
Contract No. _____

2005-07-00

[illegible][illegible]

DRAWING NAME:	DWGNAME	MODIFIED:	MODDATE	MODTIME
CREATED:	CREATED			

METRIC

CONT
WP 2005-07-00



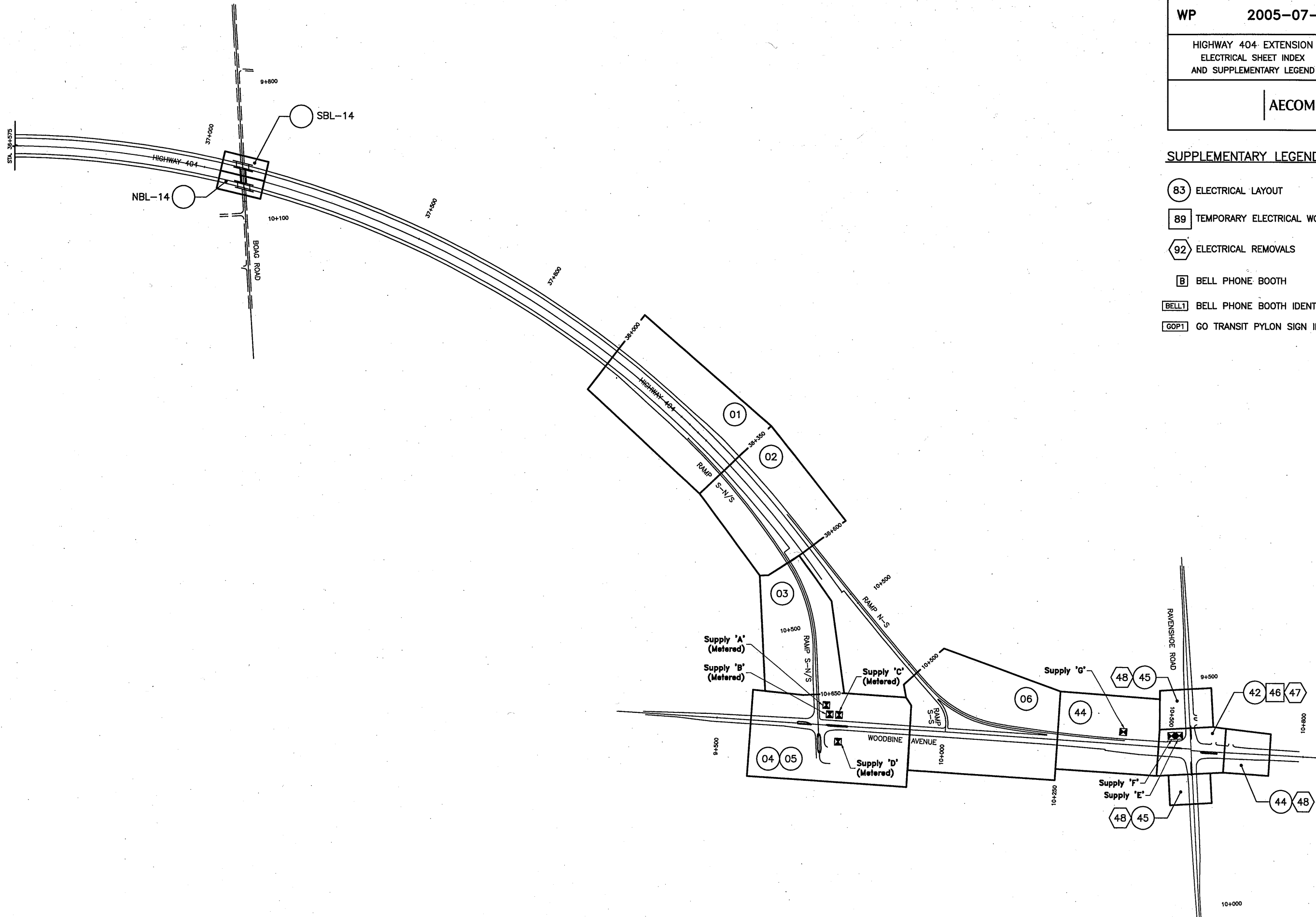
HIGHWAY 404 EXTENSION
ELECTRICAL SHEET INDEX
AND SUPPLEMENTARY LEGEND

SHEET
EL-00

AECOM

SUPPLEMENTARY LEGEND

- 83 ELECTRICAL LAYOUT
- 89 TEMPORARY ELECTRICAL WORK
- 92 ELECTRICAL REMOVALS
- B BELL PHONE BOOTH
- BELL1 BELL PHONE BOOTH IDENTIFIER
- GOP1 GO TRANSIT PYLON SIGN IDENTIFIER



METRIC

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WP

2005-07-00



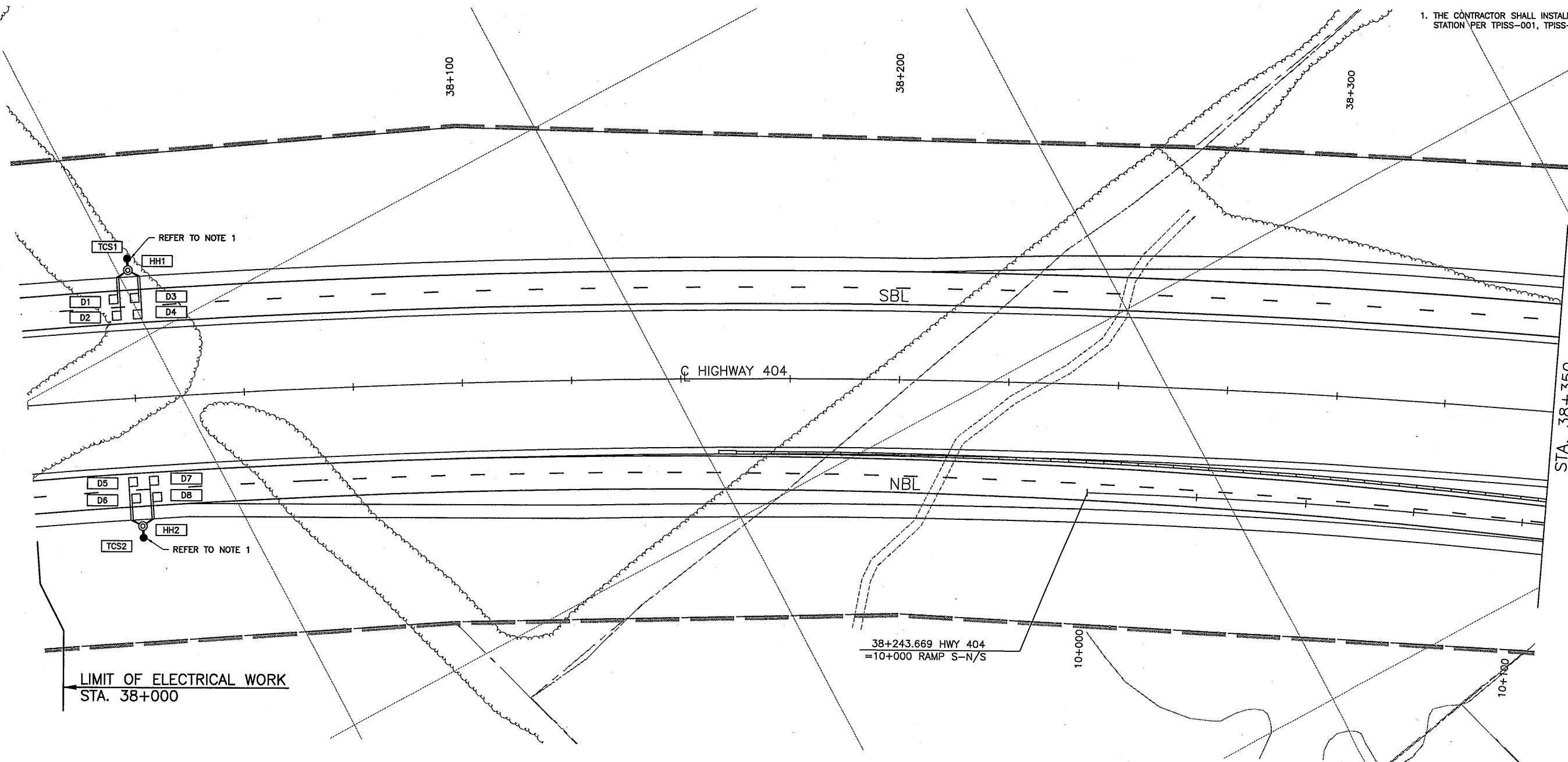
HIGHWAY 404 EXTENSION
ELECTRICAL LAYOUT 1
STA. 38+000 TO STA. 38+350

SHEET
EL-01

AECOM

NOTE:

1. THE CONTRACTOR SHALL INSTALL A TRAFFIC COUNTING STATION PER TPISS-001, TPISS-002, AND TPISS-004.



STA. 38+350



SCALE
5m 0 10m

METRIC

CONT
WP 2005-07-00

HIGHWAY 404 EXTENSION
ELECTRICAL LAYOUT 2
STA. 38+350 TO STA. 10+350

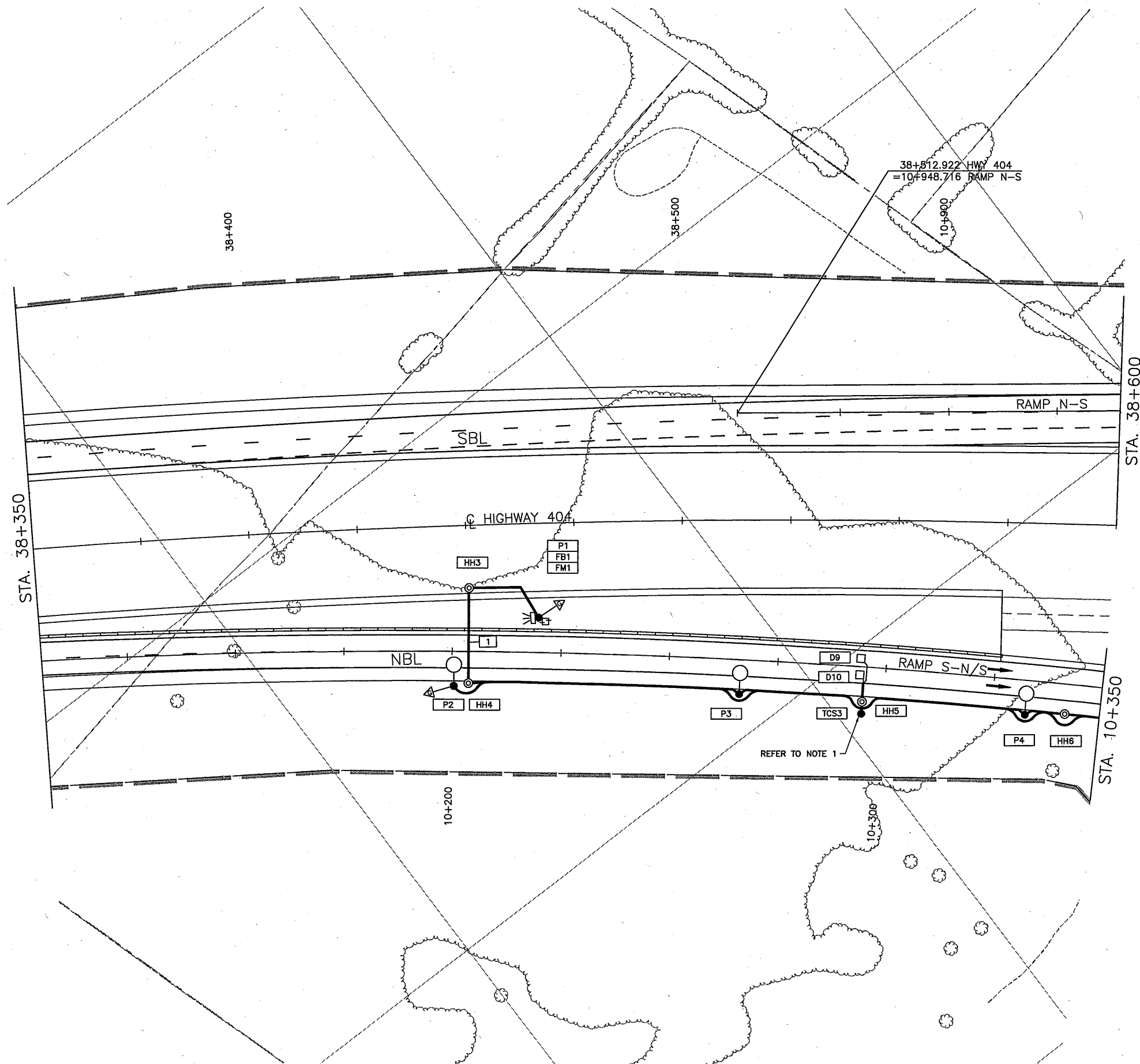


SHEET
EL-02

AECOM

NOTE:

1. THE CONTRACTOR SHALL INSTALL A TRAFFIC COUNTING STATION PER TPISS-001, TPISS-002, AND TPISS-004.



SCALE
5m 0 10m

MINISTRY OF TRANSPORTATION, ONTARIO

SAVE DATE:

SAVE DATE:

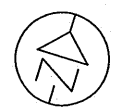
SAVE DATE:

SAVE DATE:

METRIC

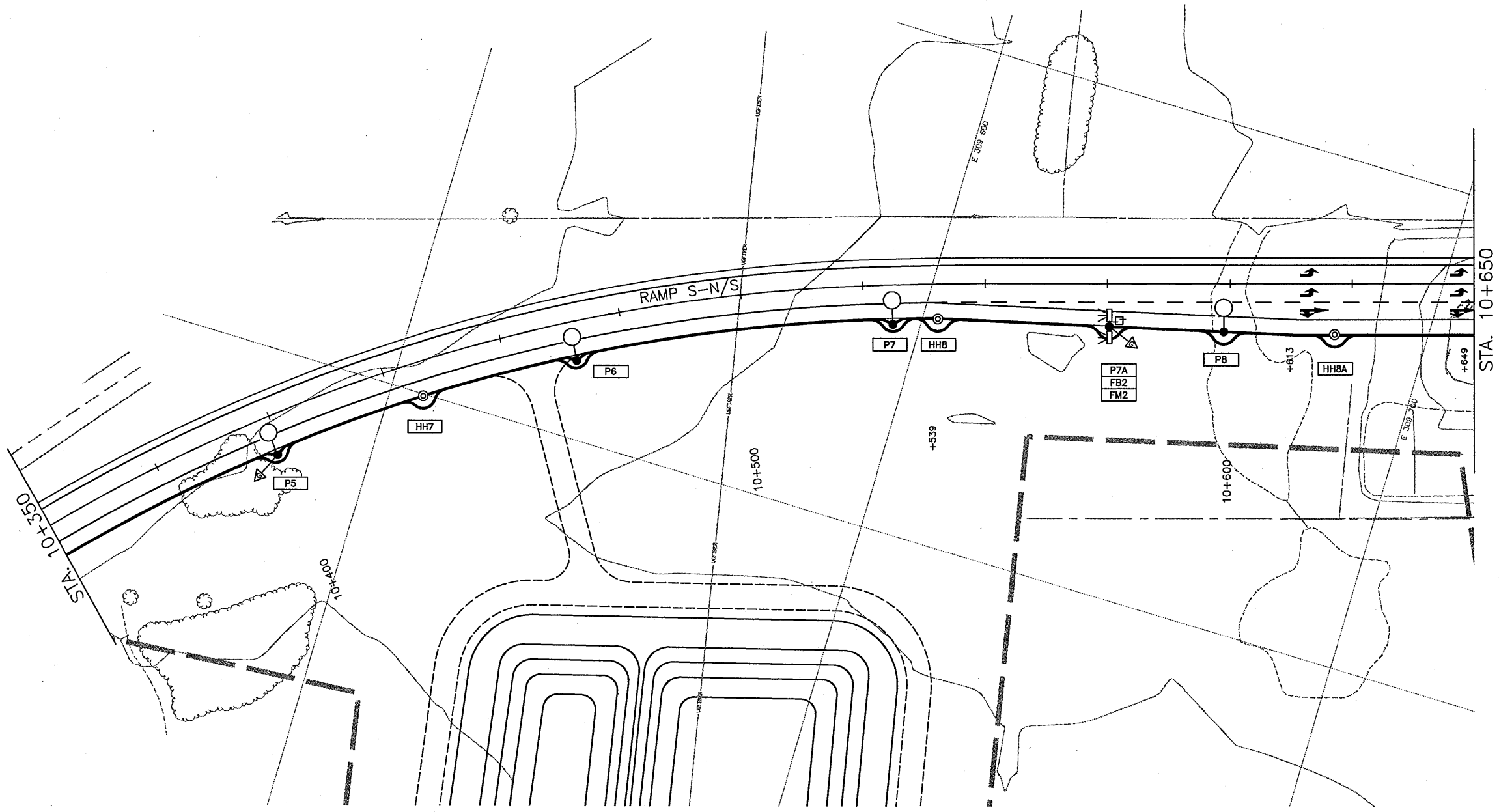
CONT
WP 2005-07-00

HIGHWAY 404 EXTENSION
ELECTRICAL LAYOUT 3
STA. 10+350 TO STA. 10+650



SHEET
EL-03

AECOM



SCALE
5m 0 10m

METRIC

CONT
WP 2005-07-00



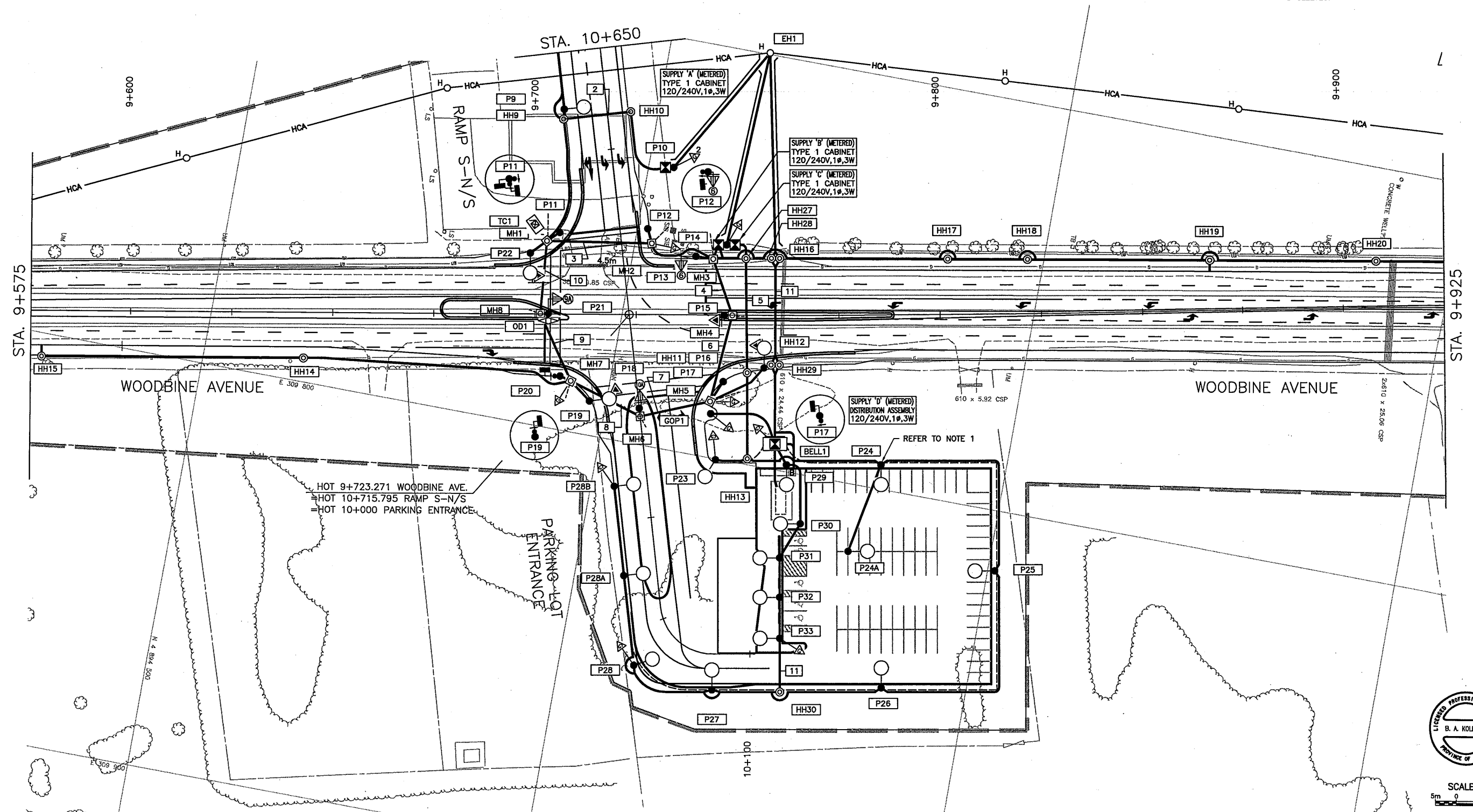
HIGHWAY 404 EXTENSION
ELECTRICAL LAYOUT 4
STA. 9+575 TO STA. 9+925

SHEET
EL-04

AECOM

NOTE:

1. THE FOUNDATION FOR POLE P24 SHALL INCLUDE 3 SLEEVES.



SCALE
5m 0 10m

METRIC

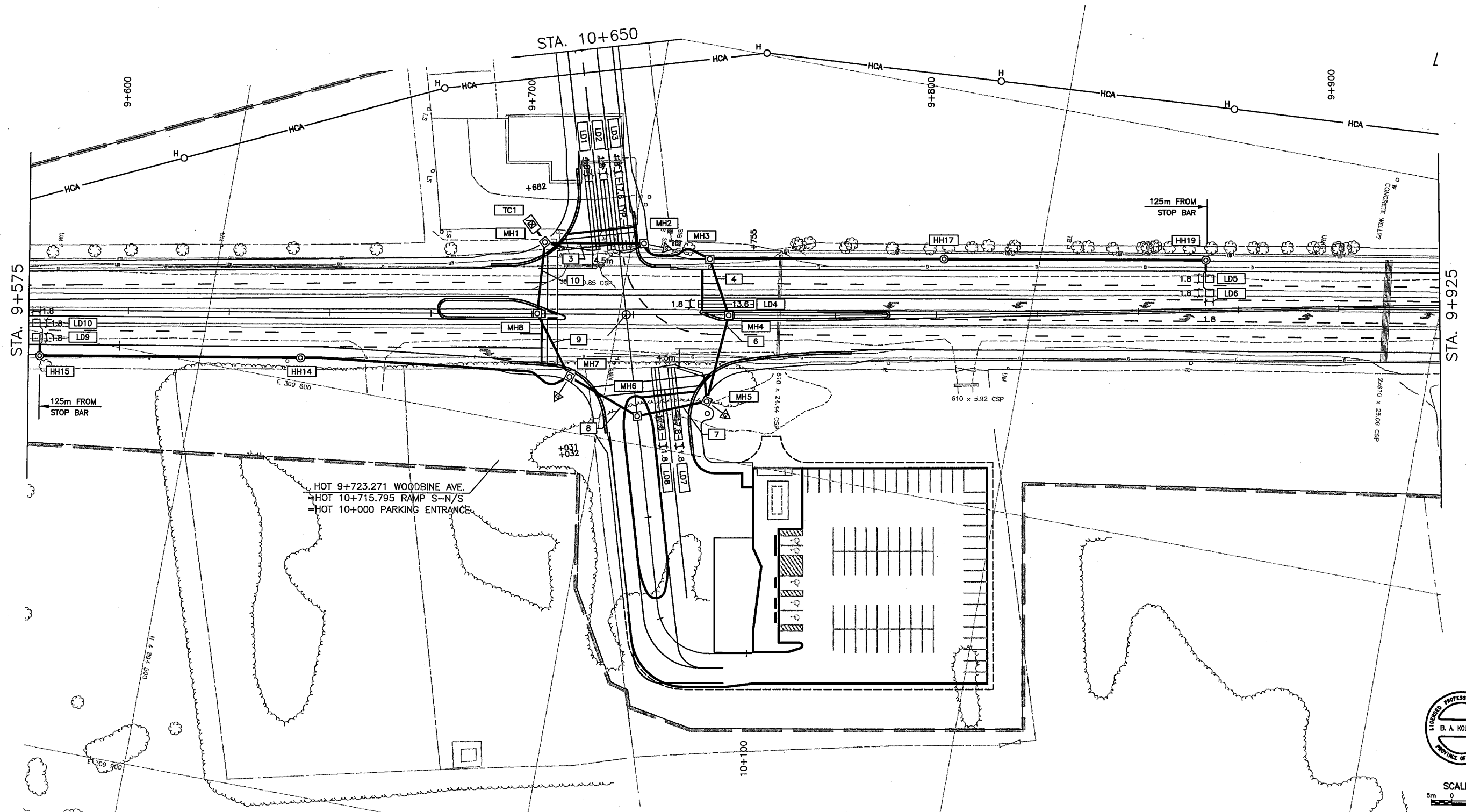
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WP 2005-07-00

HIGHWAY 404 EXTENSION
ELECTRICAL LAYOUT 5 - LOOPS
STA. 9+575 TO STA. 9+925



SHEET
EL-05

AECOM



SCALE
5m 0 10m

METRIC

CONT
WP

2005-07-00



HIGHWAY 404 EXTENSION
ELECTRICAL LAYOUT 6
STA. 9+925 TO STA. 10+250

SHEET
EL-06

AECOM

NOTE:

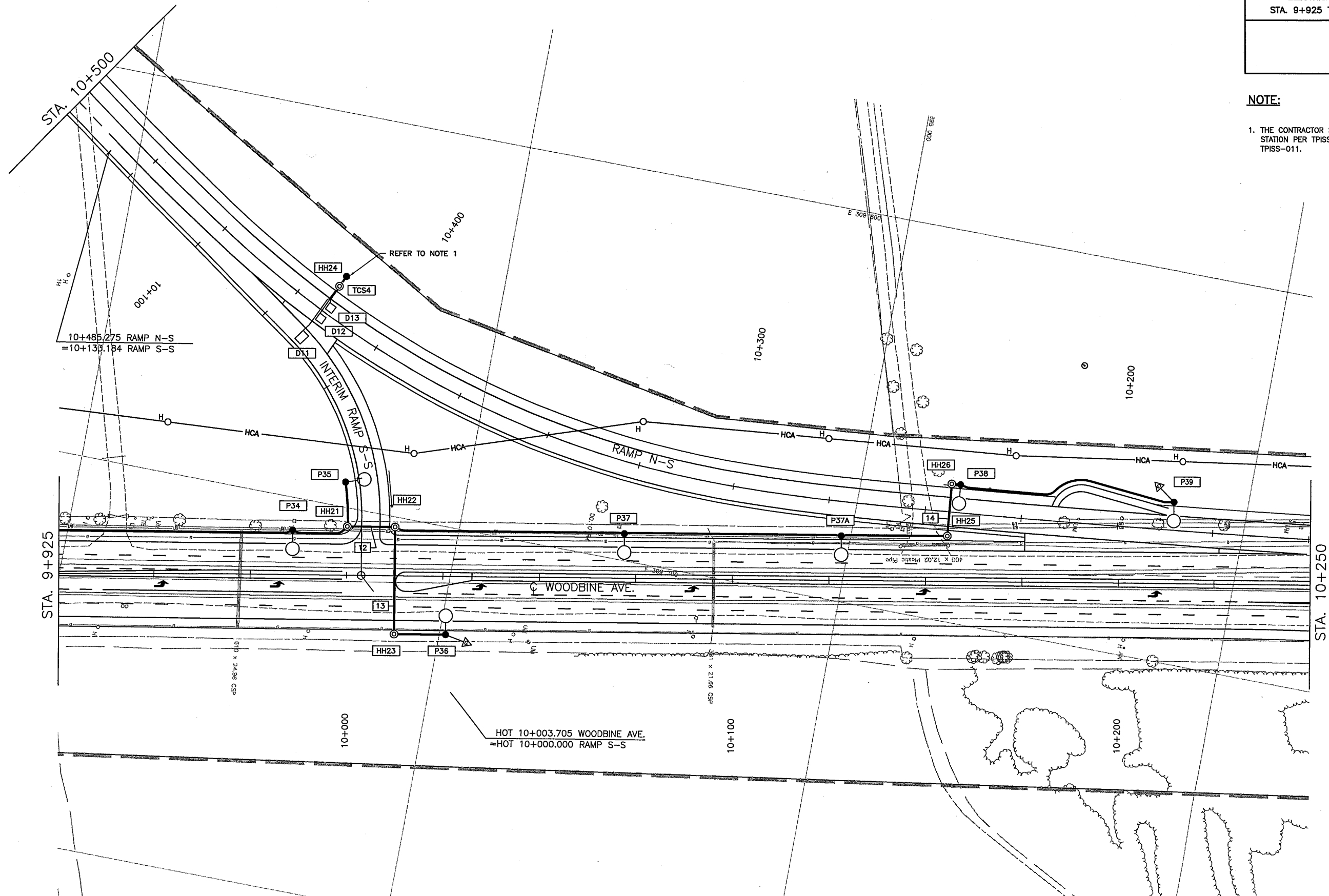
1. THE CONTRACTOR SHALL INSTALL A TRAFFIC COUNTING STATION PER TPISS-001, TPISS-002, TPISS-009, AND TPISS-011.

MINISTRY OF TRANSPORTATION, ONTARIO

PLOT DATE:

SAVE DATE:

DRAWING NAME:
SAVED BY:



SCALE
5m 0 10m

METRIC

CONT
GWP 2005-07-01HIGHWAY 404 EXTENSION
WIRING DIAGRAM 2
COMMUTER PARKING LOTSHEET
EL-08

AECOM

NOTES

1. CONTRACTOR SHALL PROVIDE SUFFICIENT COIL OF CONDUCTOR FOR HYDRO ONE TO COMPLETE FINAL CONNECTION. CONTRACTOR SHALL COORDINATE INSTALLATION AND CONNECTION ON HYDRO POLE WITH HYDRO ONE.
2. COMMUTER LOT WIRING DIAGRAM TO BE READ IN CONJUNCTION WITH TRAFFIC SIGNAL WIRING DIAGRAM AND LIGHTING WIRING DIAGRAM.
3. LOCATION OF BELL SOURCE TO BE DETERMINED.

SUPPLY CONTROL CABINET ASSEMBLY 'C', 120/240V							
DESCRIPTION	CCT NO.	BKR AMPS	CCT LOAD	CCT LOAD	BKR AMPS	CCT NO.	DESCRIPTION
LIGHTING * (1x310W/1x485)	1	30	795W	485W	30	2	LIGHTING * (1 x 485W)
LIGHTING * (1x310W/1x485)	3	30	795w	485W	30	4	LIGHTING * (1 x 485W)
SPARE	5	30	---	--	30	6	SPARE
TOTAL WATTS PER PHASE			1590W	970W			
TOTAL WATTS			2560W				

* IN LOADING TABLE, BALLAST LOSSES HAVE BEEN INCLUDED AS FOLLOWS:

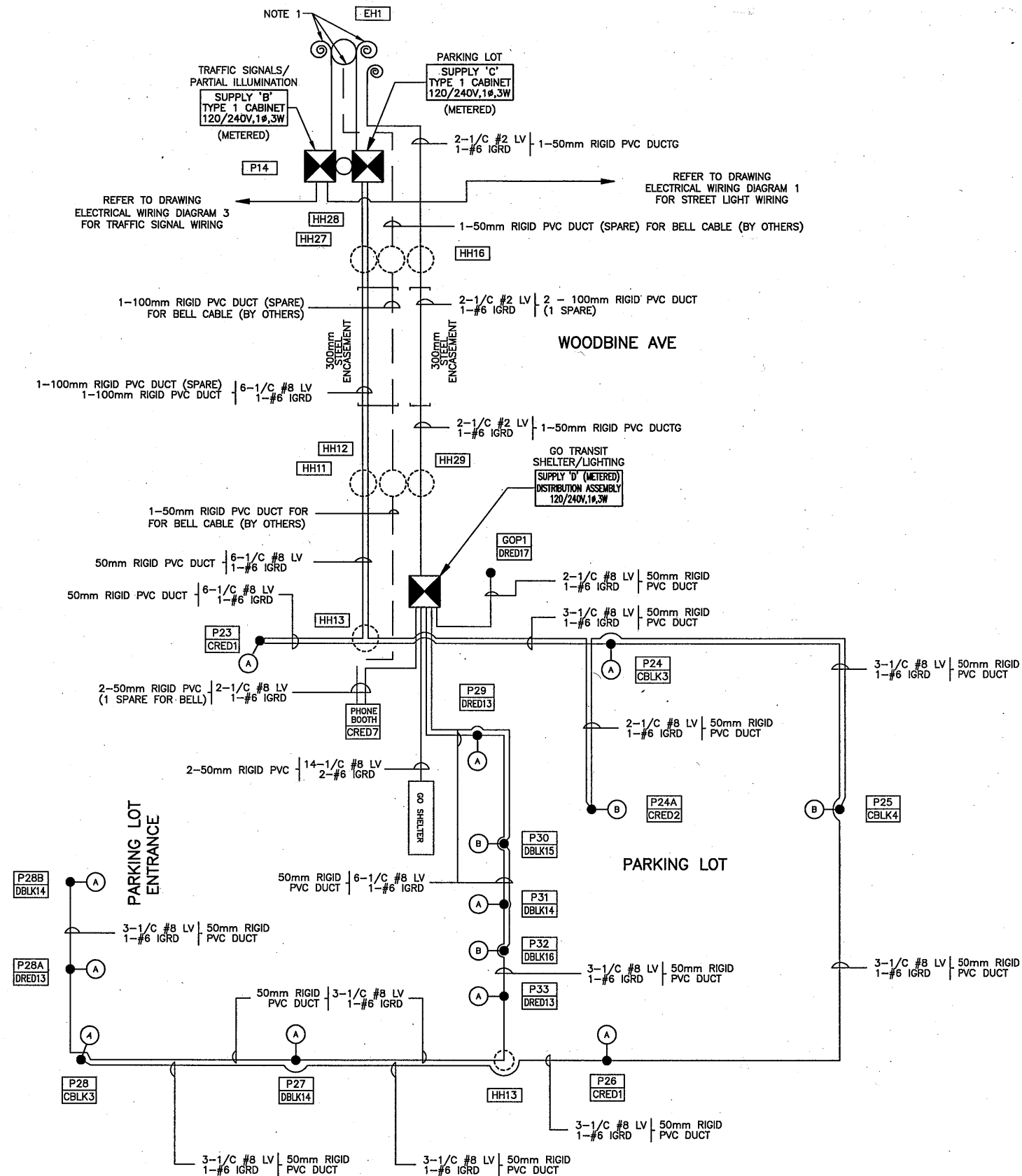
LAMP IN LUMINAIRE: 250W BALLAST LOSS: 60W
 LAMP IN LUMINAIRE: 400W BALLAST LOSS: 85W

** PB1 PHONE BOOTH TO BE ON TRAFFIC SIGNAL BREAKER

DISTRIBUTION ASSEMBLY 'D', 120/240V							
DESCRIPTION	CCT NO.	BKR AMPS	CCT LOAD	CCT LOAD	BKR AMPS	CCT NO.	DESCRIPTION
SHELTER RECEPTACLES	1	15	400W	150W	15	2	CONTROL CIRCUIT
HEATING CONTROL	3	15	50W	400W	15	4	POWER DOOR OPERATOR
RADIANT HEATING	5	30 2-POLE	3000W	1500W	30 2-POLE	6	SCUPPER HEAT TRACING
	7					8	
SPARE	9	15	---	100W	15	10	SNOW CONTROLLER
PLC	11	15	150W	150W	15	12	PHONE BOOTH
SPARE	19	15	--	--	15	18	SPARE
SPARE	21	30	--	--	30	22	SPARE
SPACE	23	--	--	--	--	24	SPACE
LIGHTING CONTACTOR 'A'							
LIGHTING* (2x150W/1x250W)	13	15	700W	815W	30	14	LIGHTING* (1x150W/2x250W)
LIGHTING CONTACTOR 'B'							
PLATFORM LIGHTING (1 x 150W)	15	15	195W	195W	30	16	PLATFORM LIGHTING (1 x 150W)
LIGHTING CONTACTOR 'C'							
PYLON ID SIGN LIGHTING (HO FL)	17	15	550W	580W	15	20	SHELTER LIGHTING & SIGN BOARD
TOTAL WATTS PER PHASE			RED	BLACK			
			5045W	3890W			
TOTAL WATTS			8935W				

* IN LOADING TABLE, BALLAST LOSSES HAVE BEEN INCLUDED AS FOLLOWS:

LAMP IN LUMINAIRE: 150W BALLAST LOSS: 45W
 LAMP IN LUMINAIRE: 250W BALLAST LOSS: 60W



NOTES

1. CONTROLLER SHALL BE NEMA TYPE -- REGIONAL MUNICIPALITY OF YORK STANDARD.
2. CONTRACTOR SHALL PROVIDE SUFFICIENT COIL OF CONDUCTOR FOR HYDRO ONE TO COMPLETE FINAL CONNECTION. CONTRACTOR SHALL COORDINATE INSTALLATION AND CONNECTION ON HYDRO POLE WITH HYDRO ONE.
3. TRAFFIC SIGNAL WIRING DIAGRAM TO BE READ IN CONJUNCTION WITH LIGHTING WIRING DIAGRAMS.

METRIC

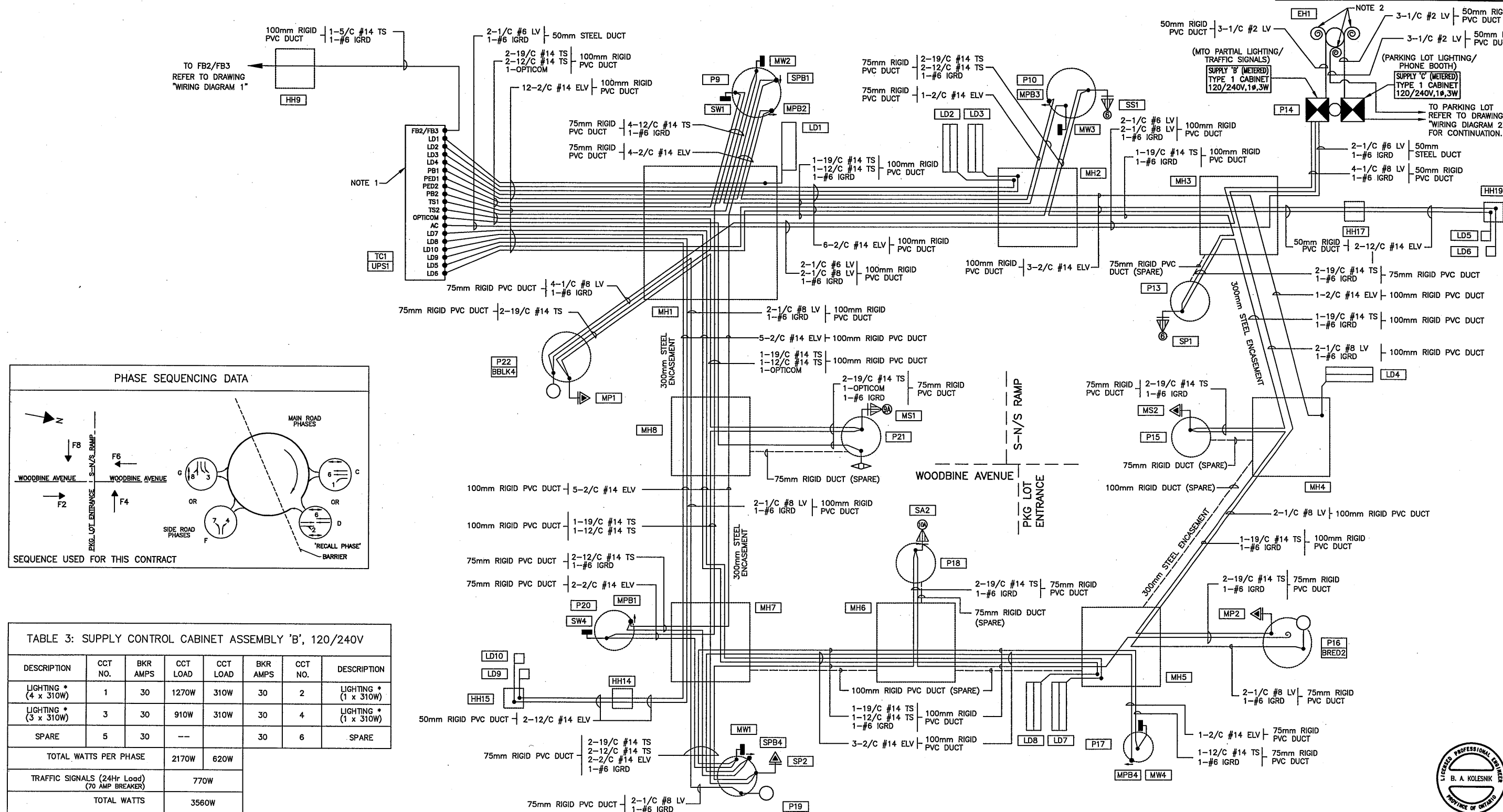
CONT
GWP 2005-07-00

HIGHWAY 404 EXTENSION
WIRING DIAGRAM 3
RAMP S-N/S AT WOODBINE AVENUE



SHEET
EL-09

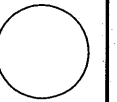
AECOM



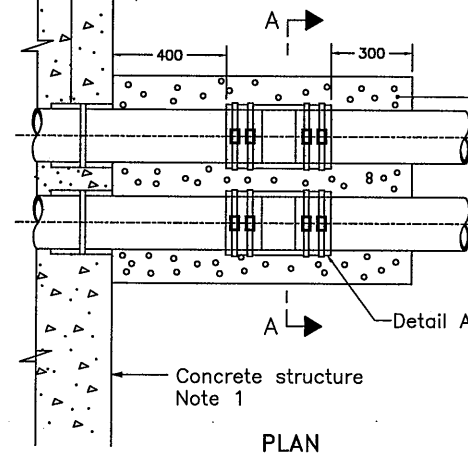
METRIC

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GWP 2005-07-01HIGHWAY 404 EXTENSION
NON-STANDARD ELECTRICAL DETAILS 1SHEET
EL-10

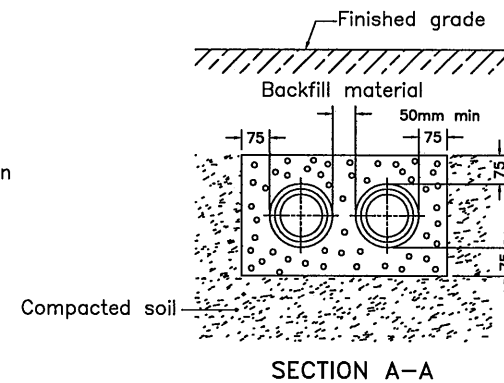
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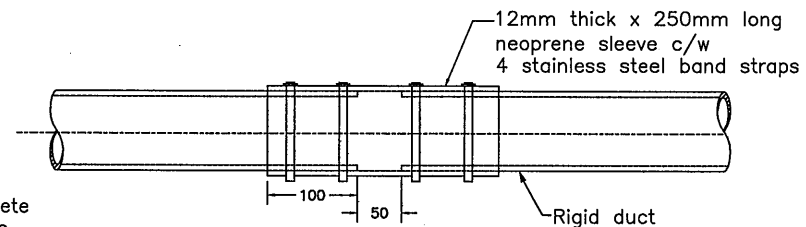
Rigid duct coupling where applicable



PLAN



SECTION A-A

DETAIL A
WOBBLE JOINT

NOTES:

- 1 Concrete structures include bridge structure, concrete footing, maintenance hole, concrete duct bank, etc.
- 2 For number, sizes and orientation of ducts refer to contract drawings.
- A All dimensions are in millimetres unless otherwise shown.

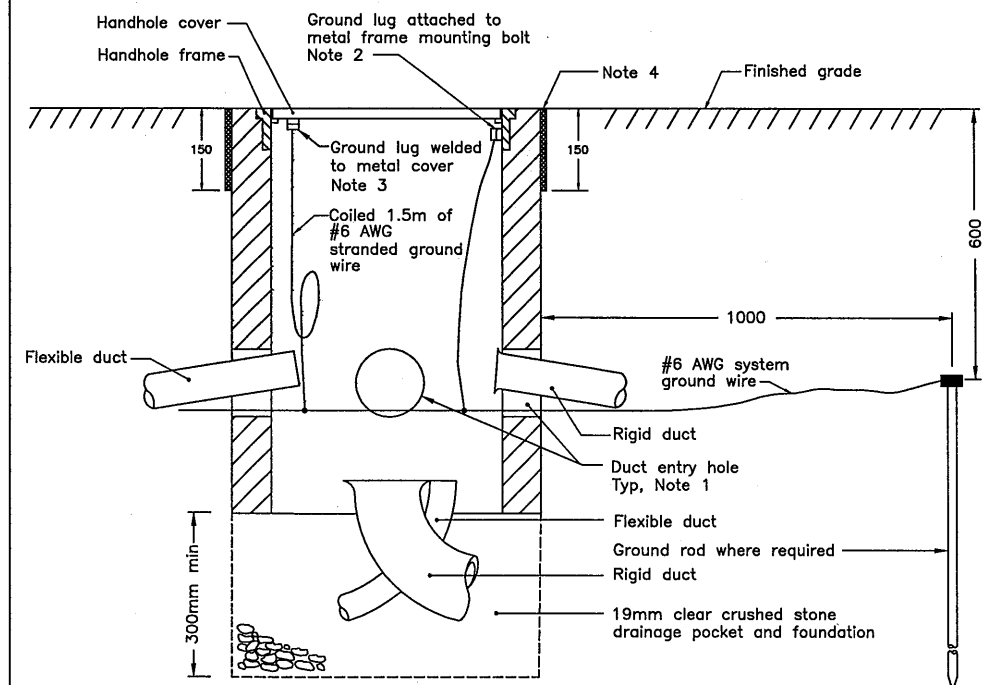
MINISTRY OF TRANSPORTATION ONTARIO DRAWING

October 2008

Rev 0

UNDERGROUND RIGID DUCT
CONNECTION AT
CONCRETE STRUCTURE

MTOD - 2102.01



NOTES:

- 1 For duct entry details see OPSD-2123.03.
- 2 For handholes with metal frames, ground wire shall be attached to frame using a ground lug suitable for #6 AWG stranded copper wire.
- 3 For handholes with metal covers and non metallic frames, the ground wire shall be attached to the handhole cover using a ground lug suitable for #6 AWG copper wire.
- 4 In raised traffic islands, install 12mm expansion board at back of curb.
- A For specific handhole details see OPSD-2112.01, 2112.02, 2112.030, 2112.040, 2112.05, 2113.010 and 2115.01.
- B All dimensions are in millimetres unless otherwise shown.

MINISTRY OF TRANSPORTATION ONTARIO DRAWING

February 2006

Rev

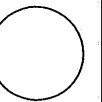
ELECTRICAL HANDHOLES
GENERAL INSTALLATION REQUIREMENTS

MTOD - 2117.02

METRIC

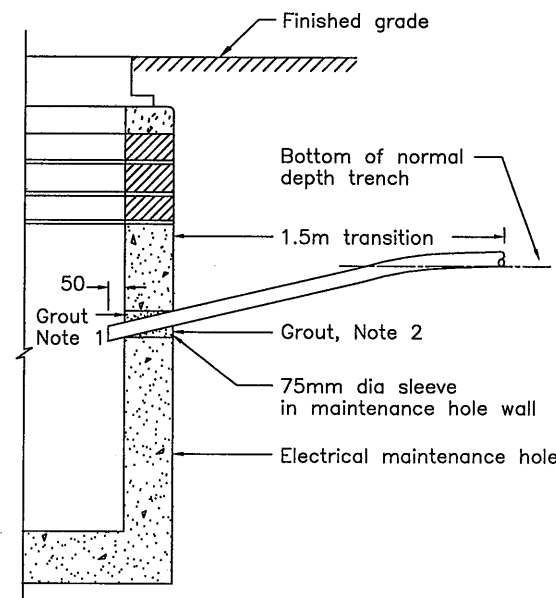
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GWP 2005-07-00

HIGHWAY 404 EXTENSION
NON-STANDARD ELECTRICAL DETAILS 2

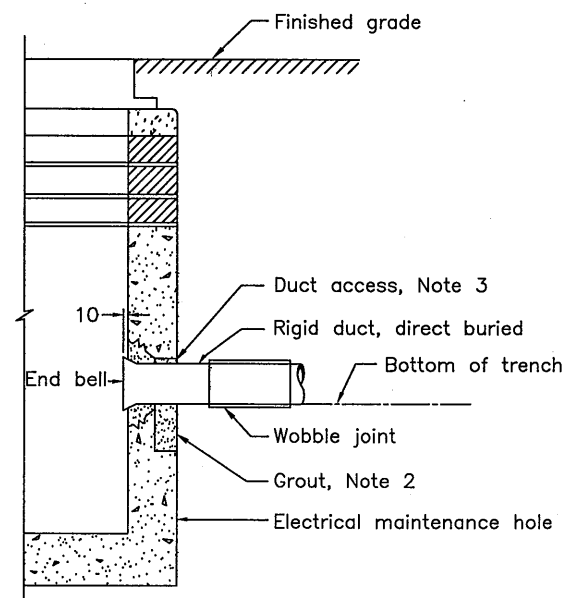


SHEET
EL-11

AECOM



FLEXIBLE DUCTS, DIRECT BURIED

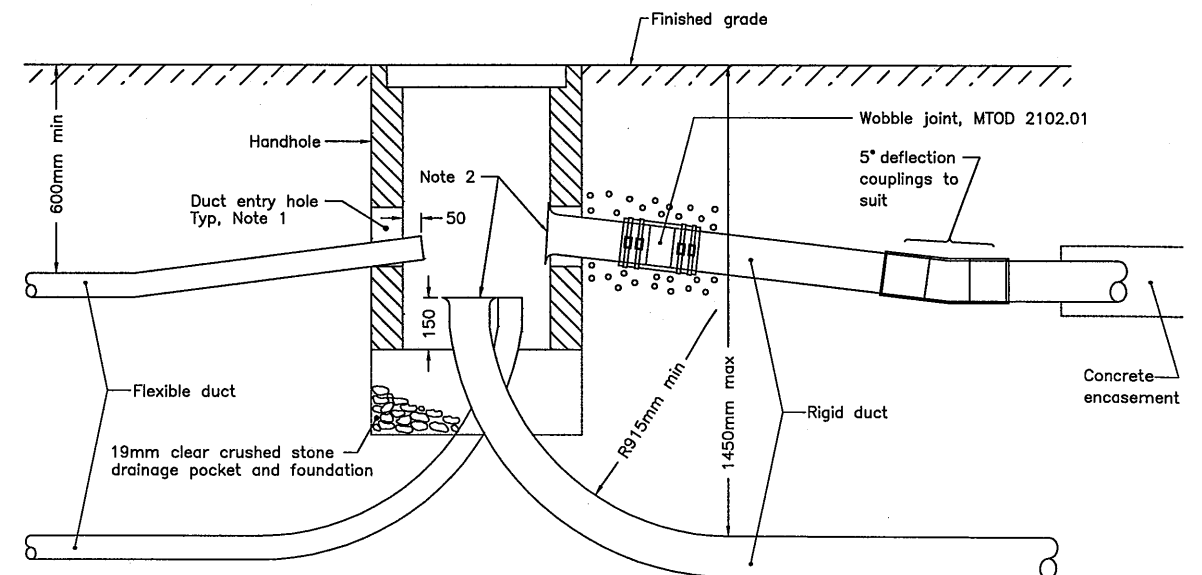


RIGID DUCTS, DIRECT BURIED
OR BY SUB-SURFACE INSTALLATION

NOTES:

- 1 Grout to be placed flush with inside wall to a minimum thickness of 75mm.
 - 2 Grout to be placed flush with outside wall where maintenance hole requires waterproofing; full depth, including knock-out cavity in precast maintenance holes.
 - 3 For precast maintenance holes, knock-out hole to be the minimum size required.
- A All dimensions are in millimetres unless otherwise shown.

MINISTRY OF TRANSPORTATION ONTARIO DRAWING	March 2001	Rev	2
ELECTRICAL MAINTENANCE HOLES	-----		
ENTRY OF DIRECT BURIED DUCTS	-----		
MTOD - 2123.01			



NOTES:

- 1 Duct entry holes to be filled with expandable foam.
 - 2 Rigid ducts terminating in maintenance holes, handholes, or other permanent openings of underground systems shall be provided with an end bell.
- A For installation details see MTD 2102.01, and OPSD 2117.02.
B All dimensions are in millimetres unless otherwise shown.

MINISTRY OF TRANSPORTATION ONTARIO DRAWING	October 2008	Rev	0
ELECTRICAL HANDHOLES	-----		
ENTRY OF DIRECT BURIED AND ENCASED DUCTS	-----		
MTOD - 2123.03			

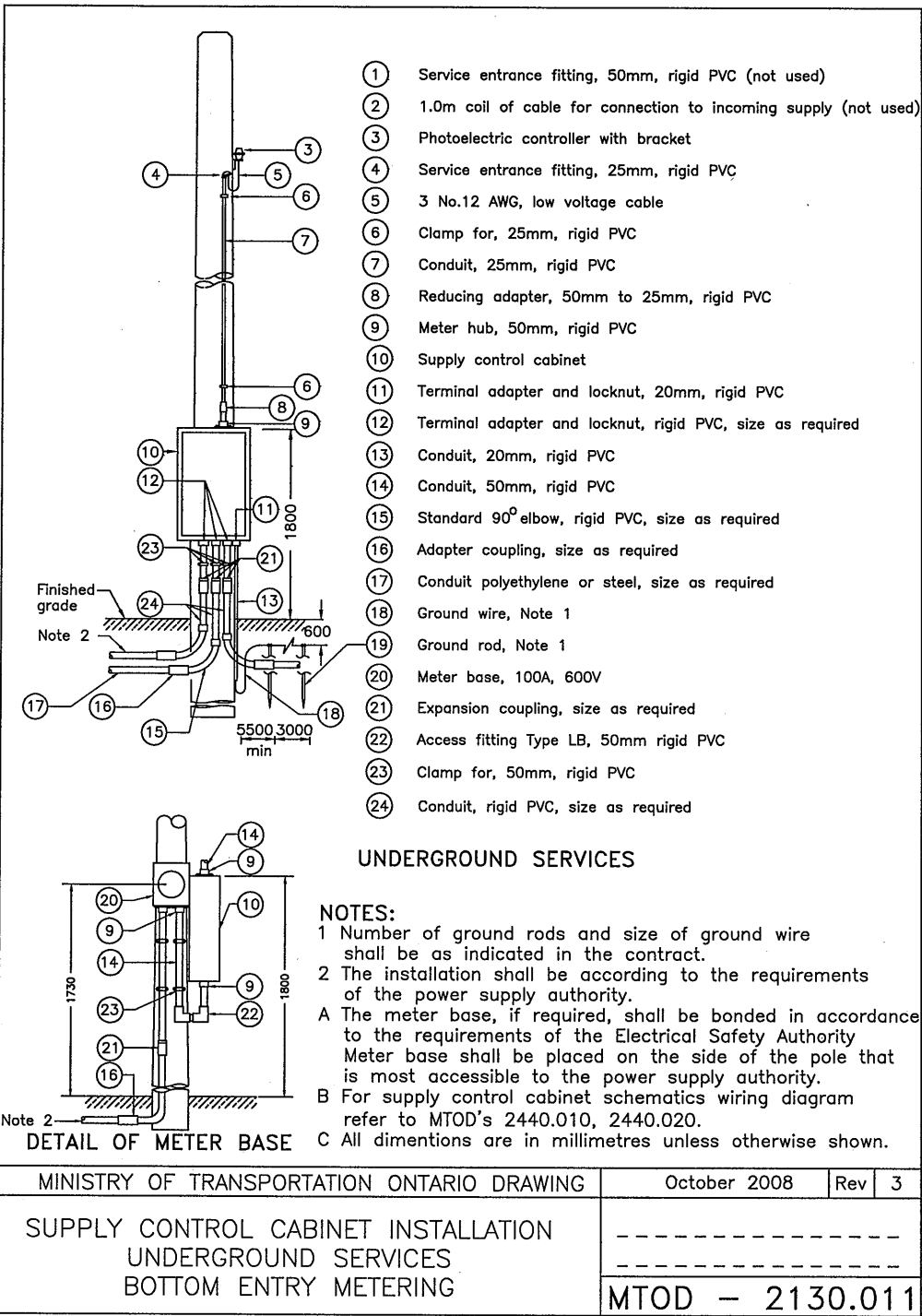
METRIC

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GWP 2005-07-00

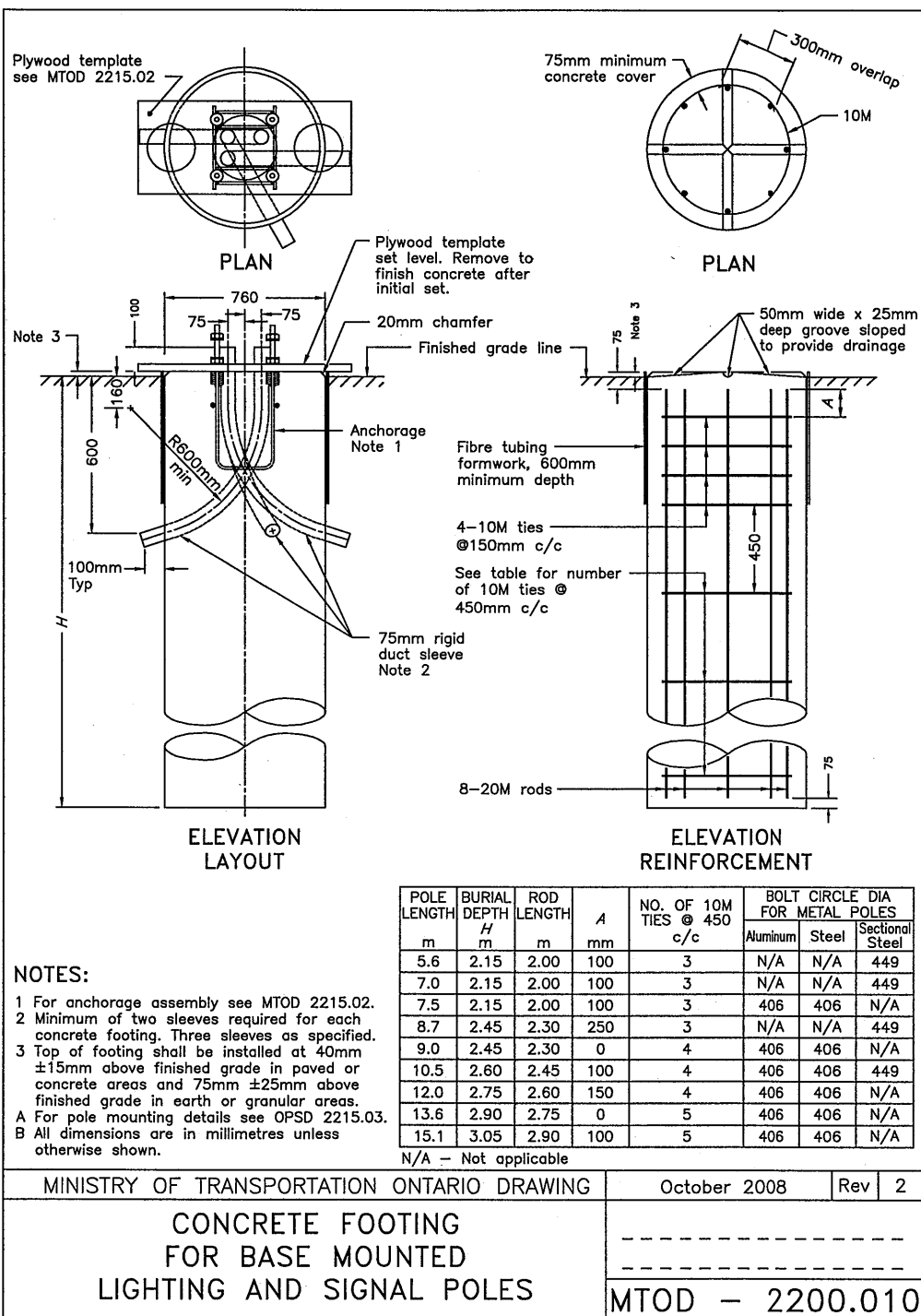
HIGHWAY 404 EXTENSION
NON-STANDARD ELECTRICAL DETAILS 3

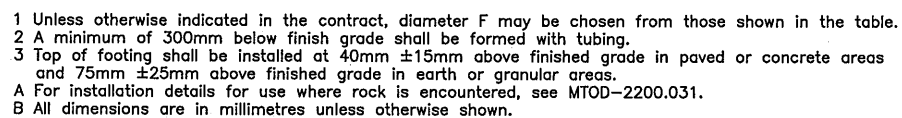
SHEET
EL-12

AECOM



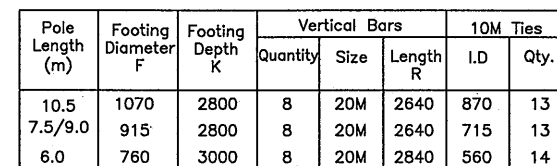
SUPPLY CONTROL CABINETS A AND C





POLE	FOOTING DIMENSIONS		
Length (m)	Dia. F	Depth K	Sleeve Dia.
10.5	1070	2800	75
7.5/9.0	915	2800	
6.0	760	3000	

MINISTRY OF TRANSPORTATION ONTARIO DRAWING	November 2007	Rev	2
CONCRETE FOOTING IN EARTH FOR HEAVY CLASS STEEL POLE AND SECTIONAL STEEL POLE	-----		
	MTOD 2200.050		



A All dimensions are in millimetres unless otherwise shown.

MINISTRY OF TRANSPORTATION ONTARIO DRAWING	February 2006	Rev	1
REINFORCING STEEL FOR CONCRETE FOOTING FOR HEAVY CLASS STEEL POLE AND SECTIONAL STEEL POLE IN EARTH	<div>-----</div> <div>-----</div> <div>MTOD 2200.090</div>		

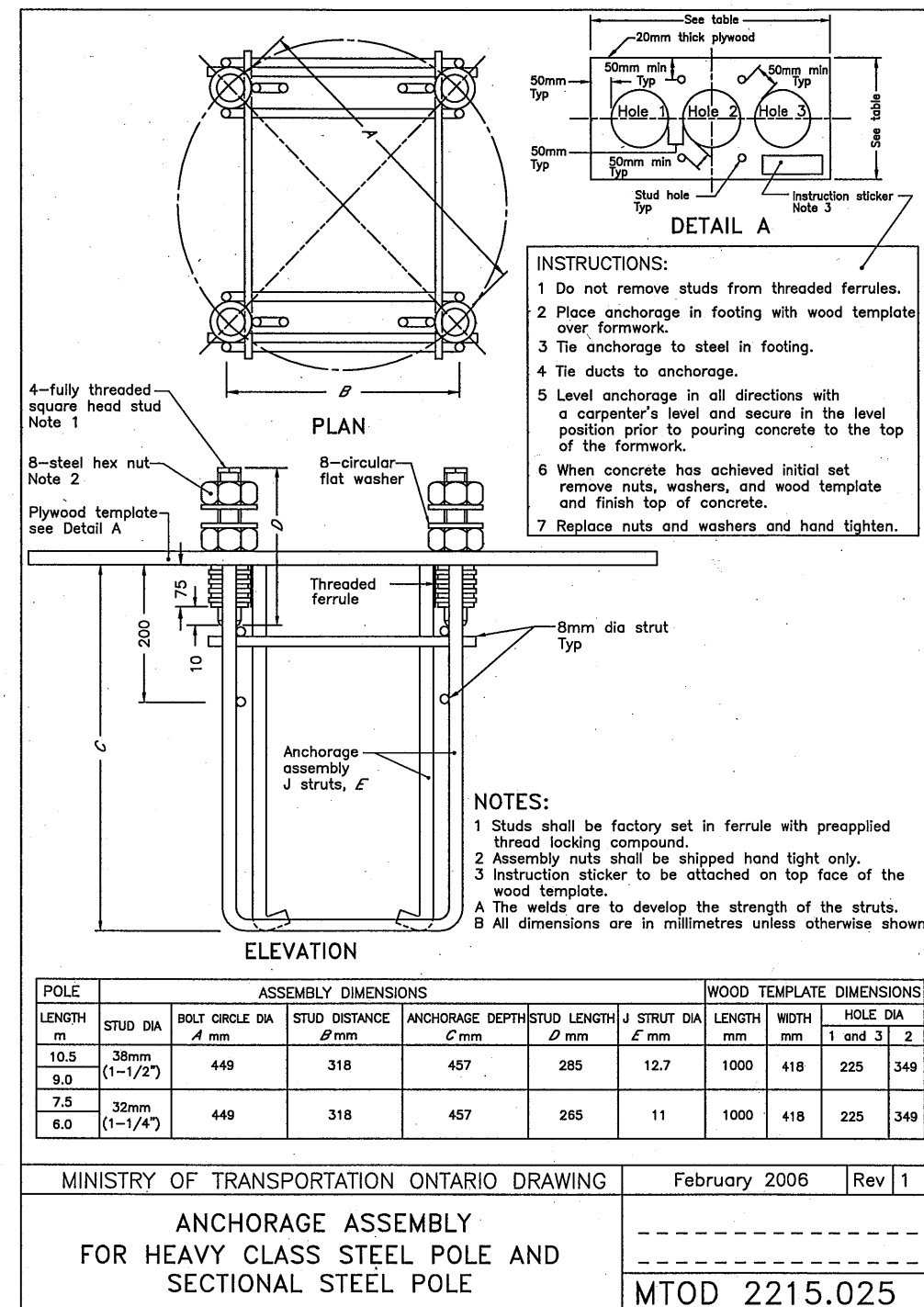
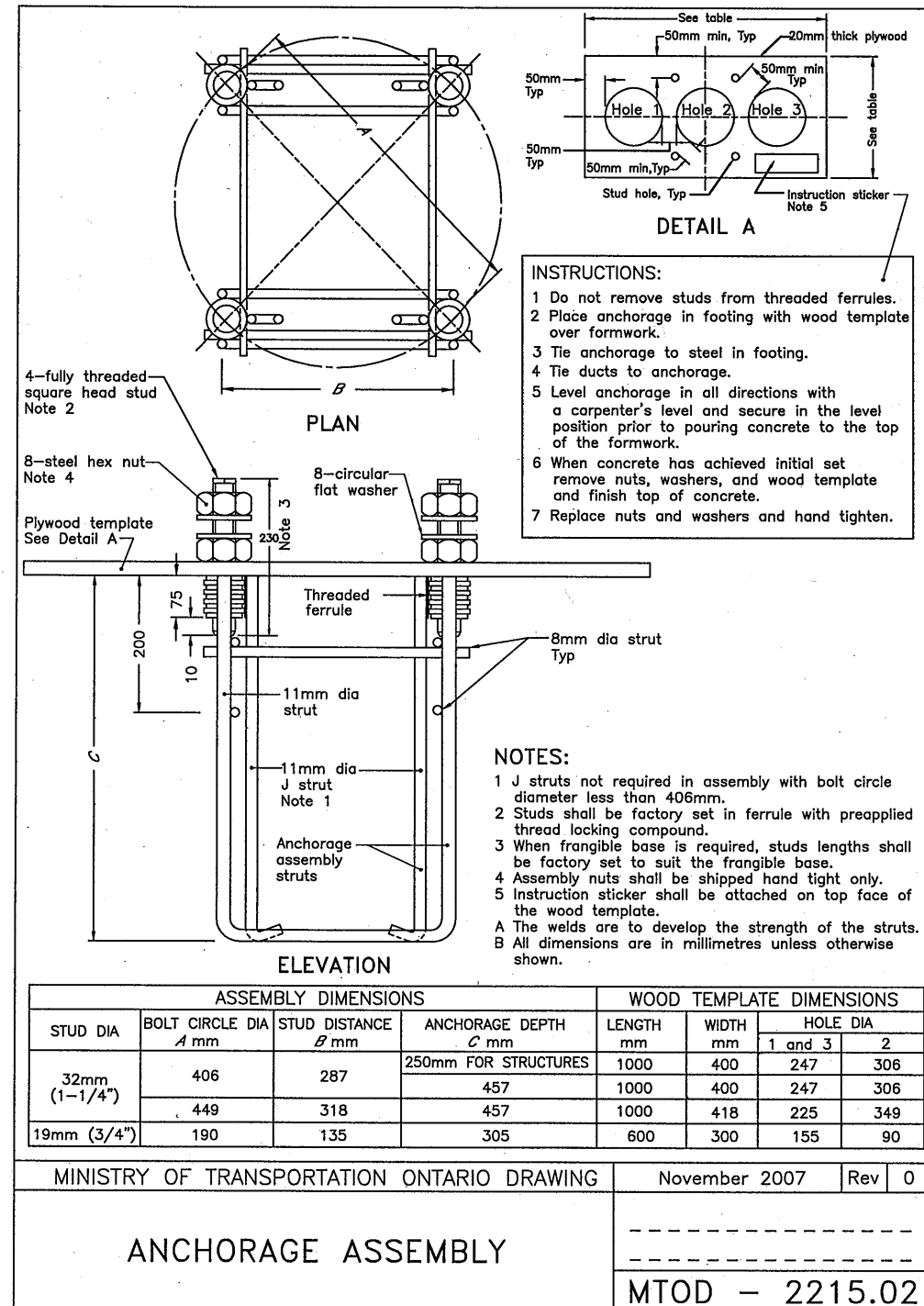
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GWP 2005-07-00

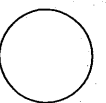
HIGHWAY 404 EXTENSION
NON-STANDARD ELECTRICAL DETAILS 5

SHEET
EL-14

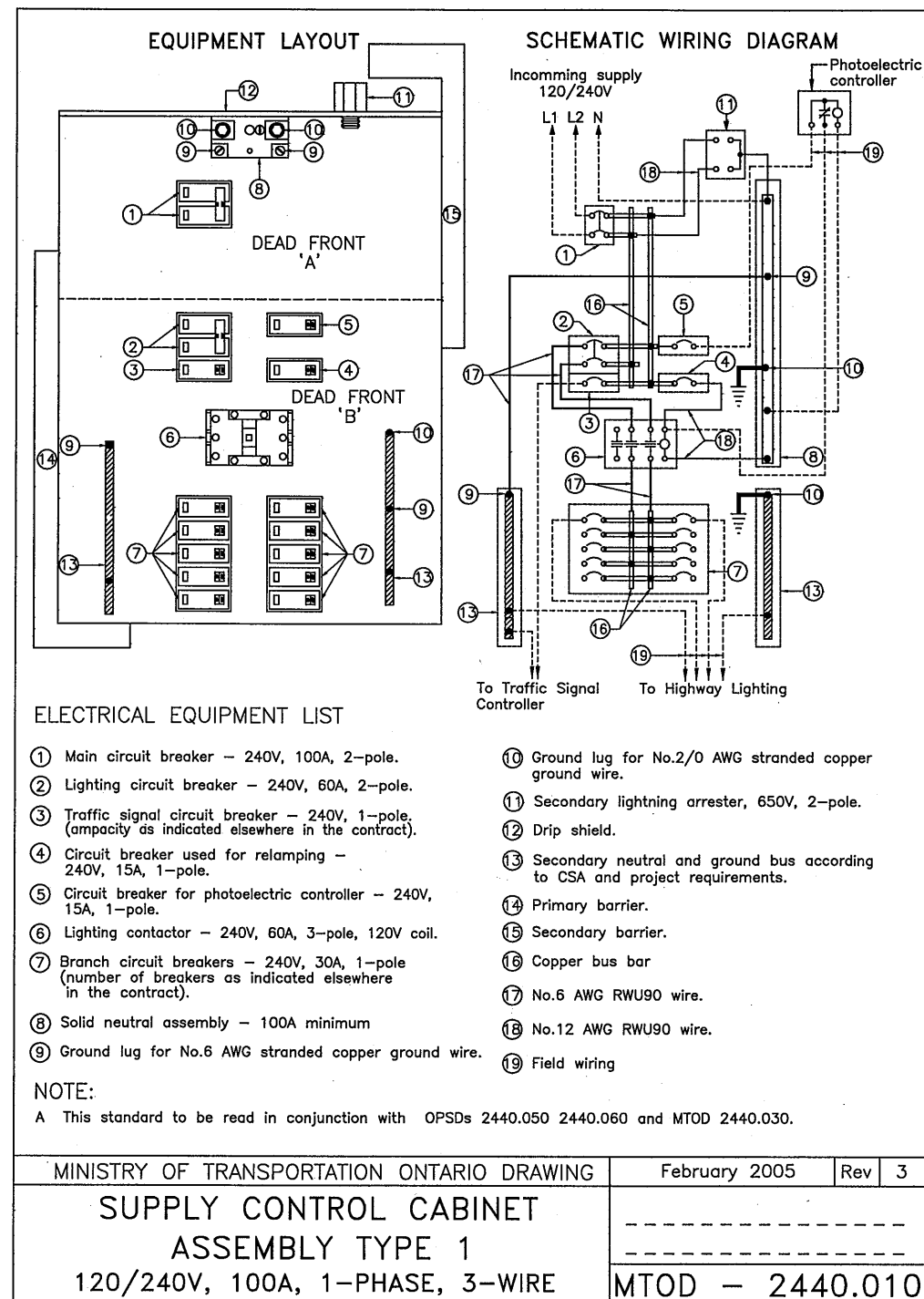
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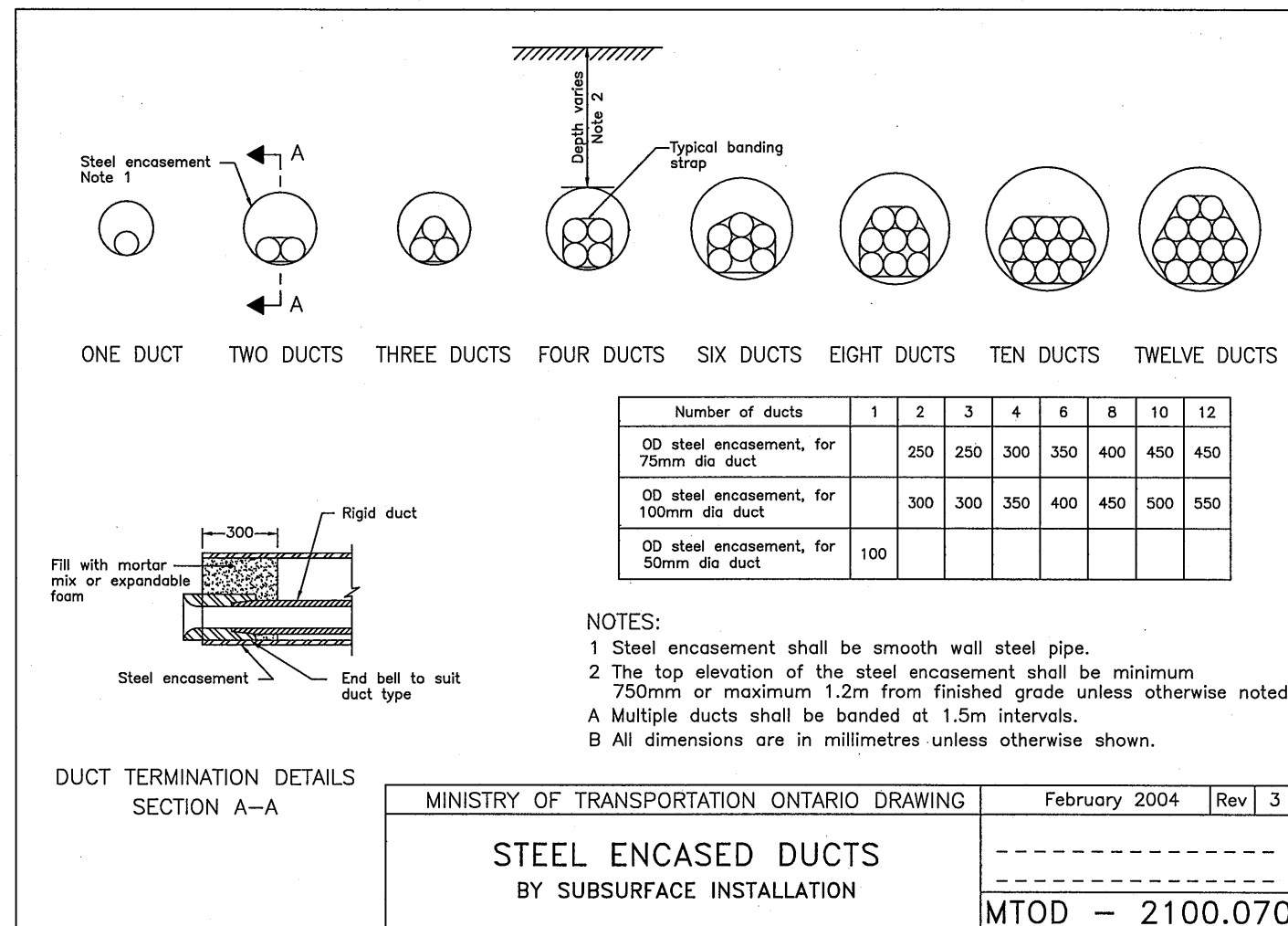
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GWP 2005-07-00HIGHWAY 404 EXTENSION
NON-STANDARD ELECTRICAL DETAILS 6SHEET
EL-15

AECOM



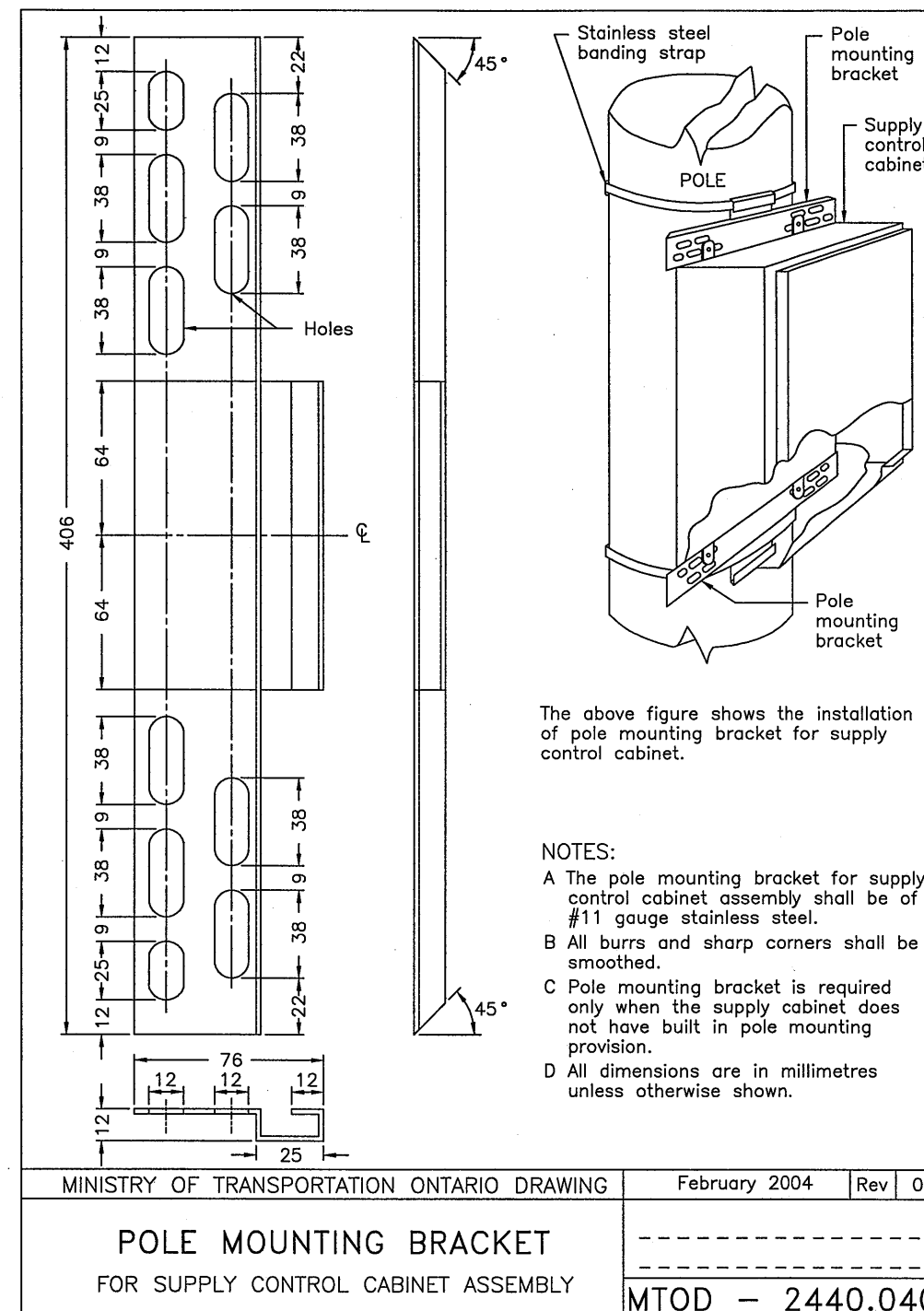
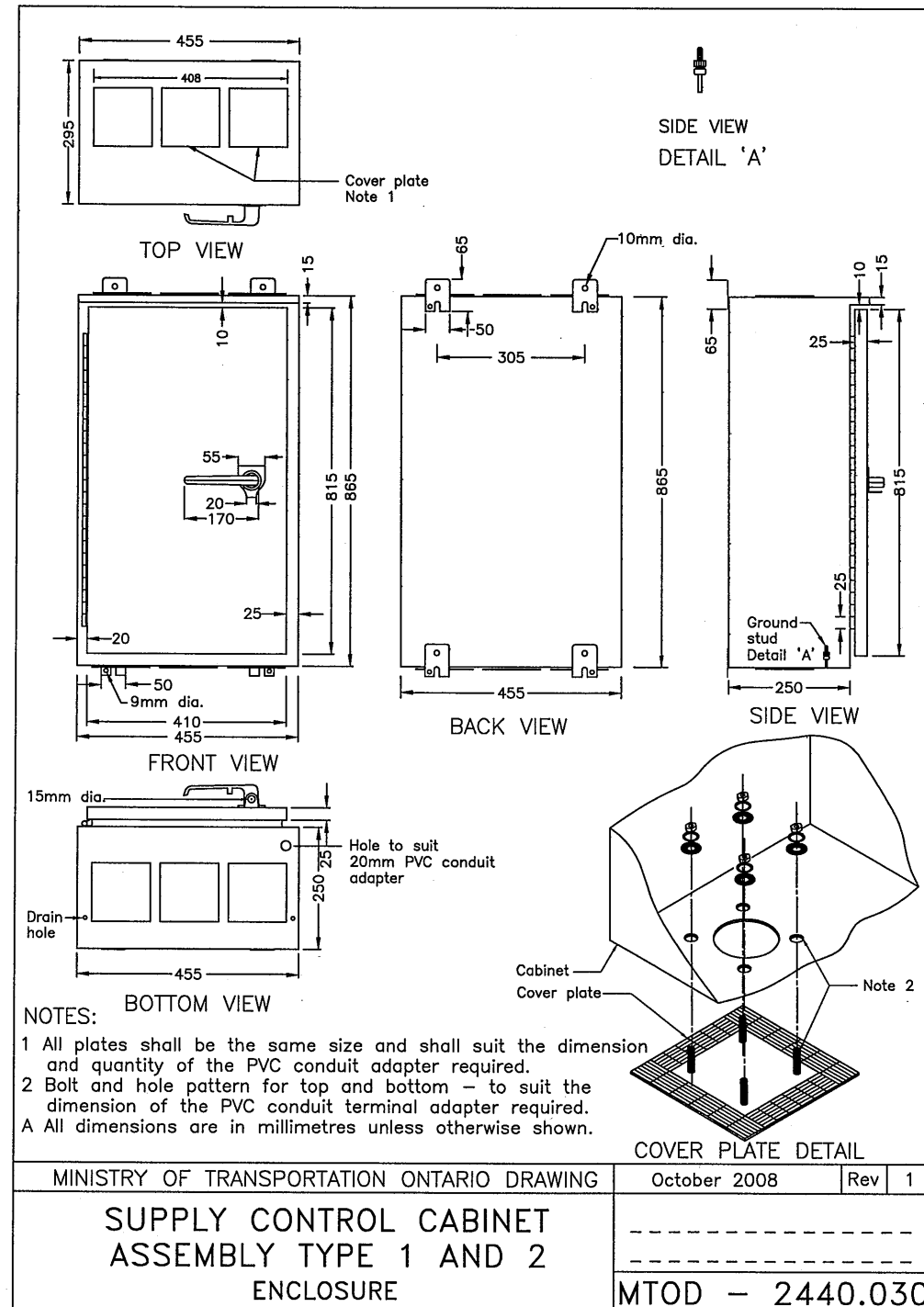
SUPPLIES 'A' AND 'B'



METRIC

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GWP 2005-07-00HIGHWAY 404 EXTENSION
NON-STANDARD ELECTRICAL DETAILS 7SHEET
EL-16

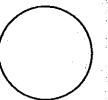
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METRIC

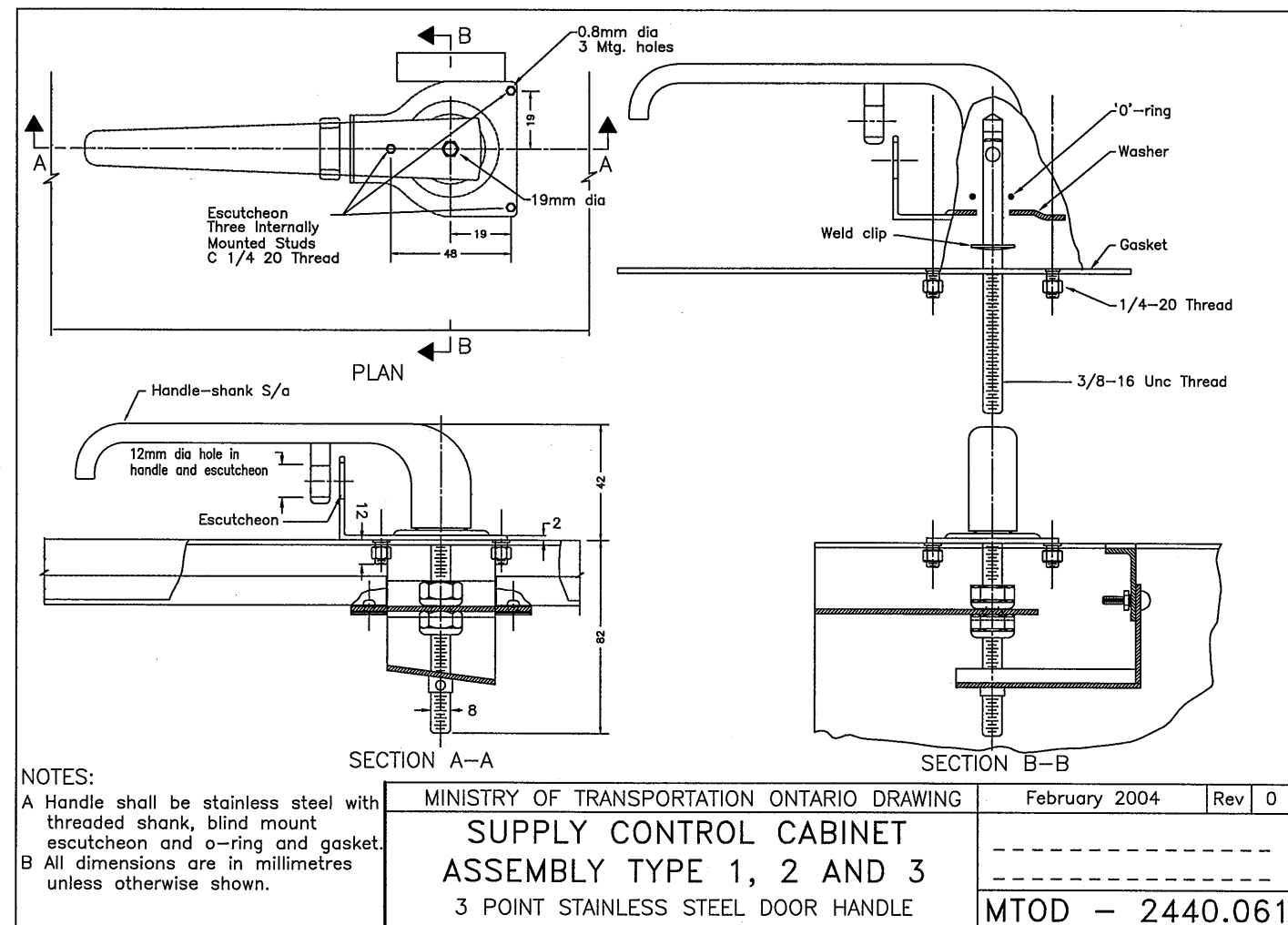
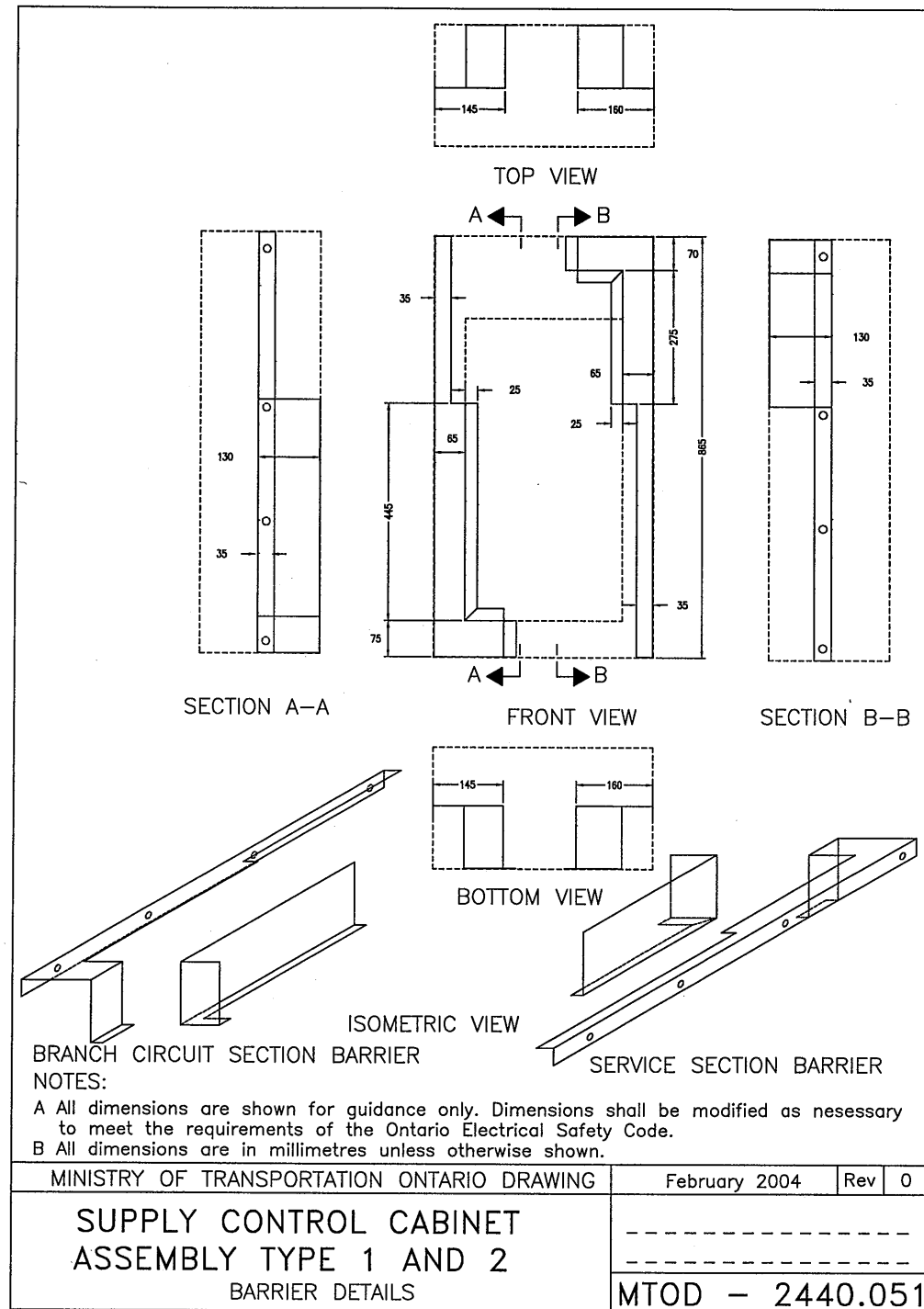
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GWP 2005-07-00

HIGHWAY 404 EXTENSION
NON-STANDARD ELECTRICAL DETAILS 8



SHEET
EL-17

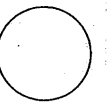
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METRIC

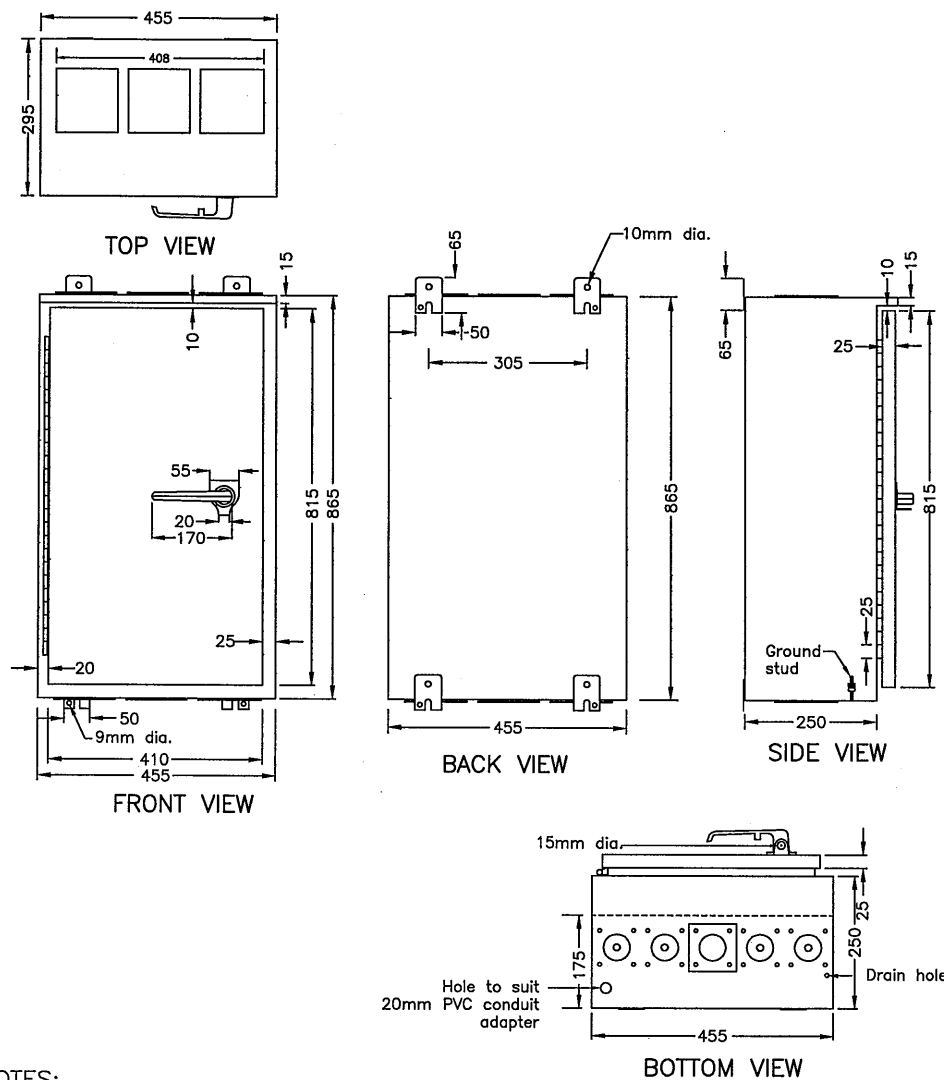
CONT
GWP 2005-07-00

HIGHWAY 404 EXTENSION
NON-STANDARD ELECTRICAL DETAILS 9



SHEET
EL-18

AECOM



NOTES:

- 1 Plates shall suit the dimension and quantity of the PVC conduit adapter required.
 - 2 Bolt and hole pattern for top and bottom - to suit the dimension of the PVC conduit terminal adapter required.
- A All dimensions are in millimetres unless otherwise shown.

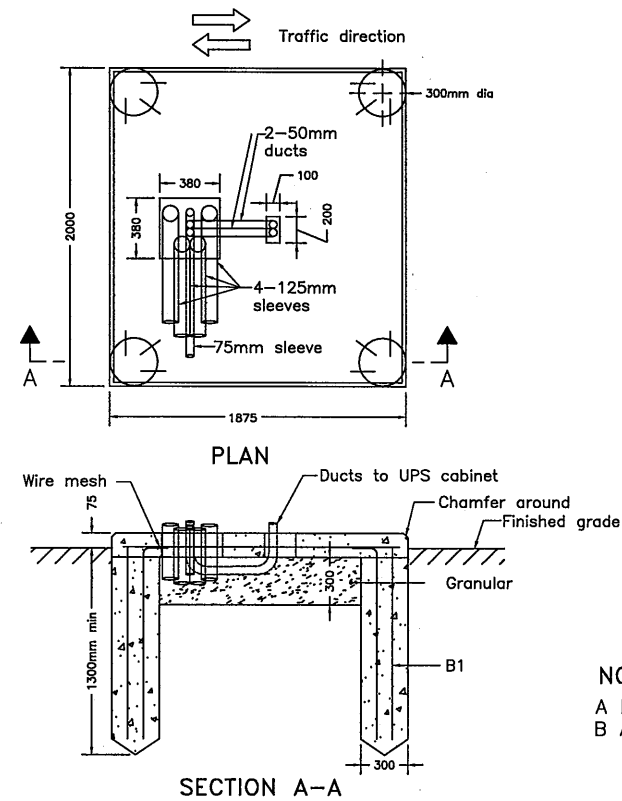
MINISTRY OF TRANSPORTATION ONTARIO DRAWING October 2008 Rev 1

**SUPPLY CONTROL CABINET
ASSEMBLY TYPE 1 MODIFIED
ENCLOSURE**

Modified to accommodate up
to 5 x 50mm ducts

MTOD-2440.030M

ENCLOSURE FOR SUPPLY 'B'



STEEL TABLE *			
Mark	Shape	Size	No. req'd
B1		20	12

* Reinforcing steel to be Grade 400

NOTES:

- A Maintain 75mm cover over reinforcing steel.
B All dimensions are in millimetres unless otherwise shown.

MINISTRY OF TRANSPORTATION ONTARIO DRAWING	November 2007	Rev	0
CONCRETE PAD FOR TRAFFIC SIGNAL CONTROL CABINET AND UNINTERRUPTIBLE POWER SUPPLY (UPS) CABINET			
MTOD 2514.021			



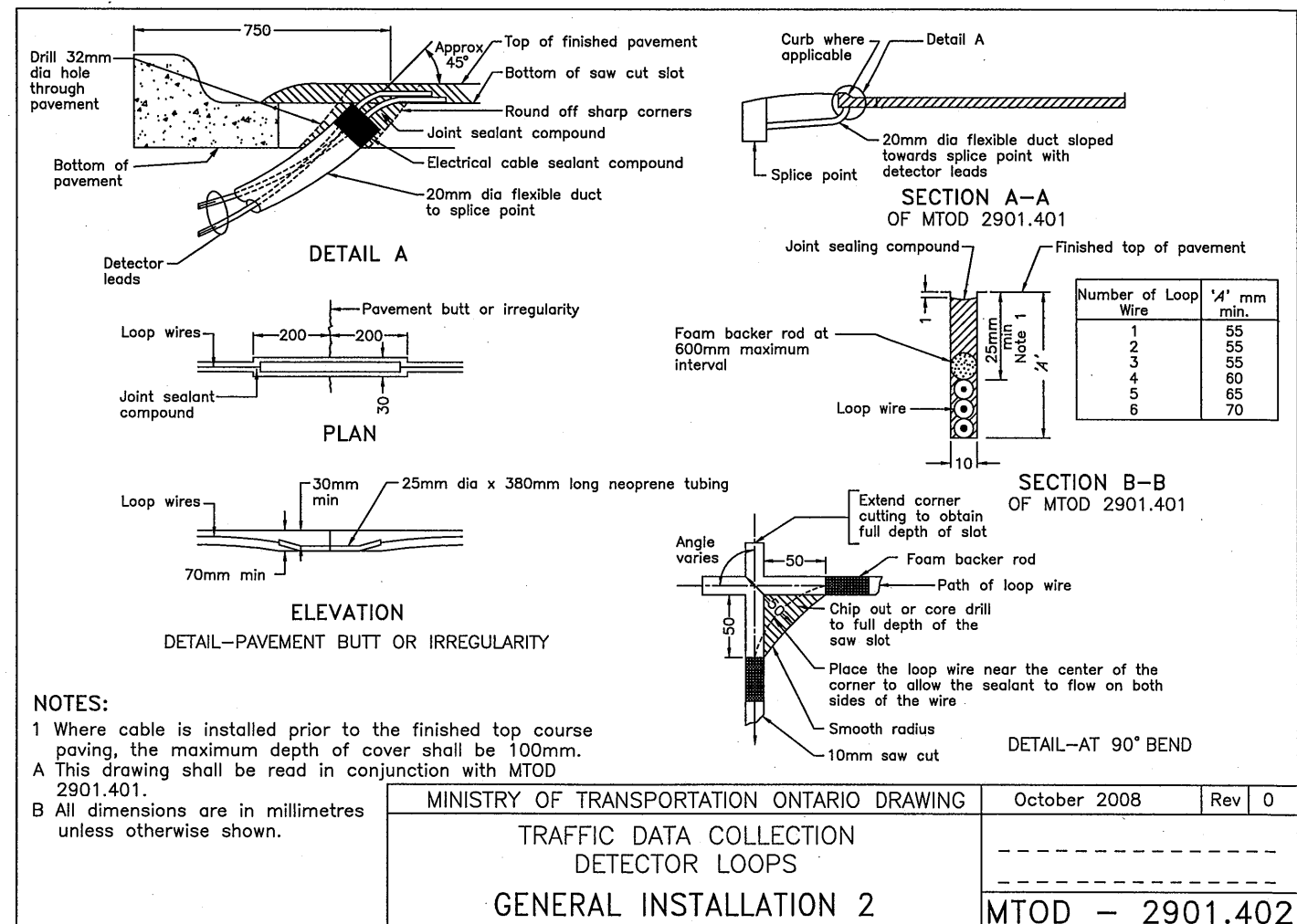
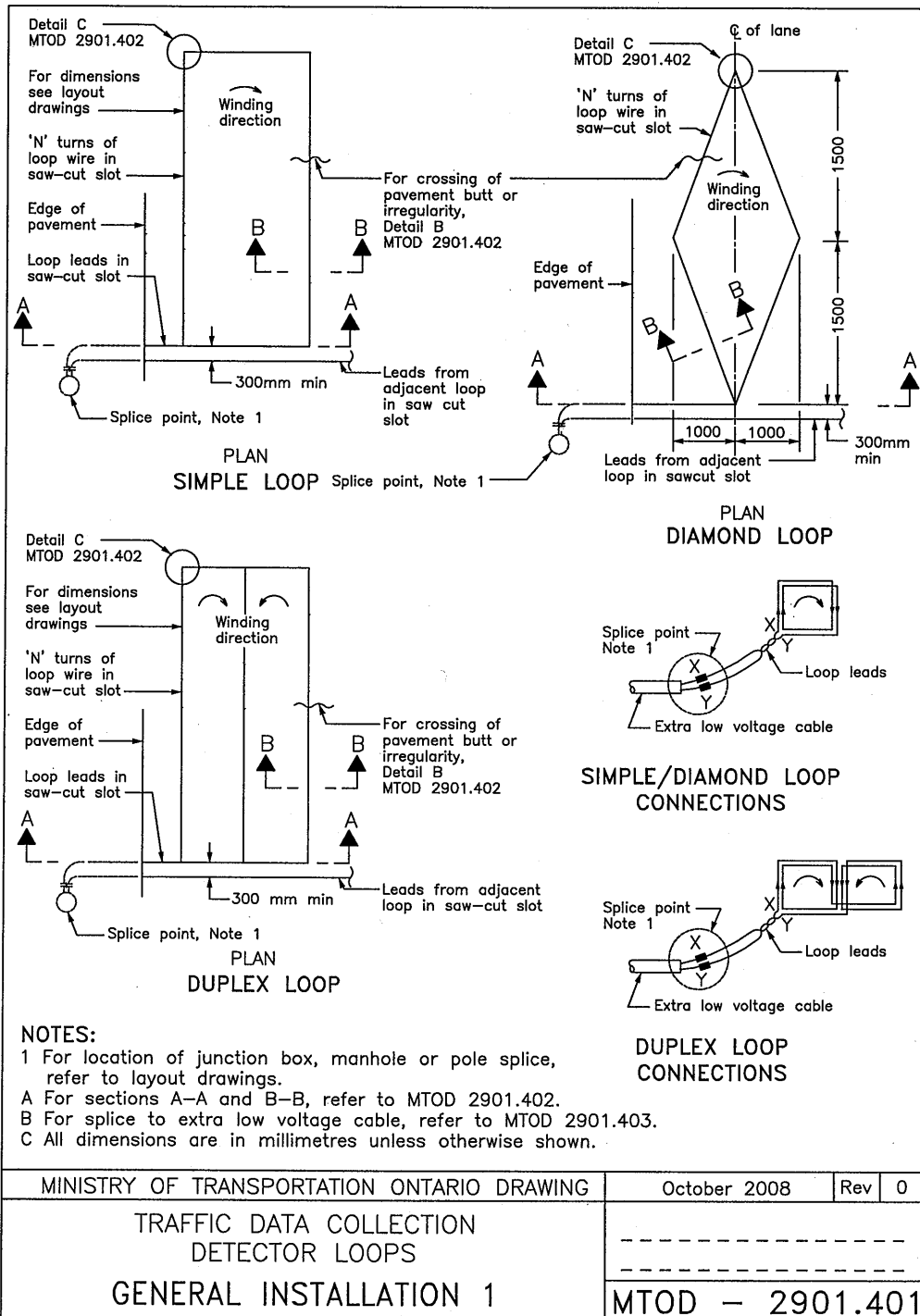
METRIC

CONT
GWP 2005-07-00

HIGHWAY 404 EXTENSION
NON-STANDARD ELECTRICAL DETAILS 10

SHEET
EL-19

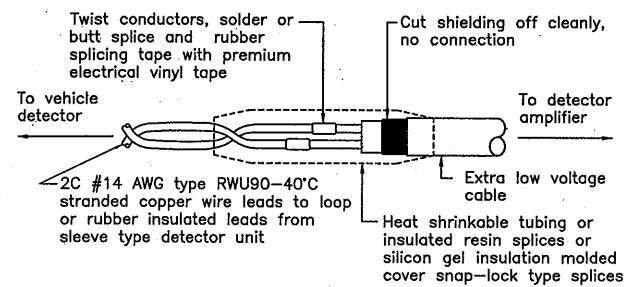
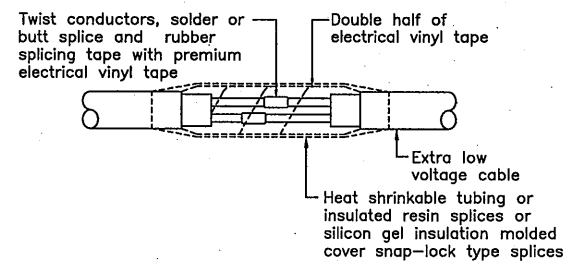
AECOM



METRIC

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GWP 2005-07-00HIGHWAY 404 EXTENSION
NON-STANDARD ELECTRICAL DETAILS 10SHEET
EL-20

AECOM

EXTRA LOW VOLTAGE CABLE TO
DETECTOR CABLE-SPLICING DETAIL

LOW VOLTAGE CABLE-SPLICING DETAIL

NOTES:

1 Heat shrinkable tubing to be 2.4mm wall thickness 19mm dia, 600V.

A Splices shall not be used unless shown on the wiring diagrams, quantity sheets, layout drawings or approved by the Contract Administrator.

B All dimensions are in millimetres unless otherwise shown.

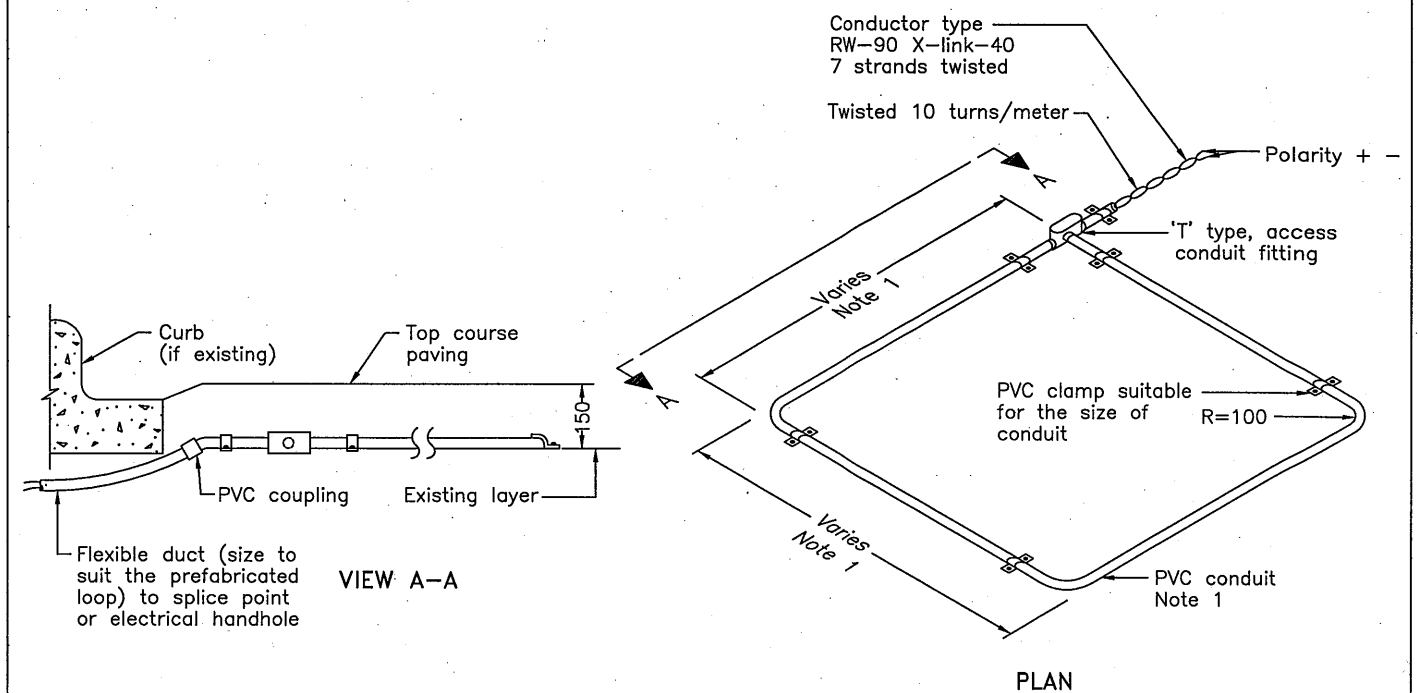
MINISTRY OF TRANSPORTATION ONTARIO DRAWING

October 2008

Rev 0

TRAFFIC DATA COLLECTION
DETECTOR LOOPS GENERAL
SPLICES FOR CABLES

MTOD 2901.403



NOTES:

1 Dimensions as indicated elsewhere in the contract.

A All dimensions are in millimetres unless otherwise shown.

MINISTRY OF TRANSPORTATION ONTARIO DRAWING

October 2008

Rev 0

PREFABRICATED
DETECTOR LOOP

MTOD - 2901.404

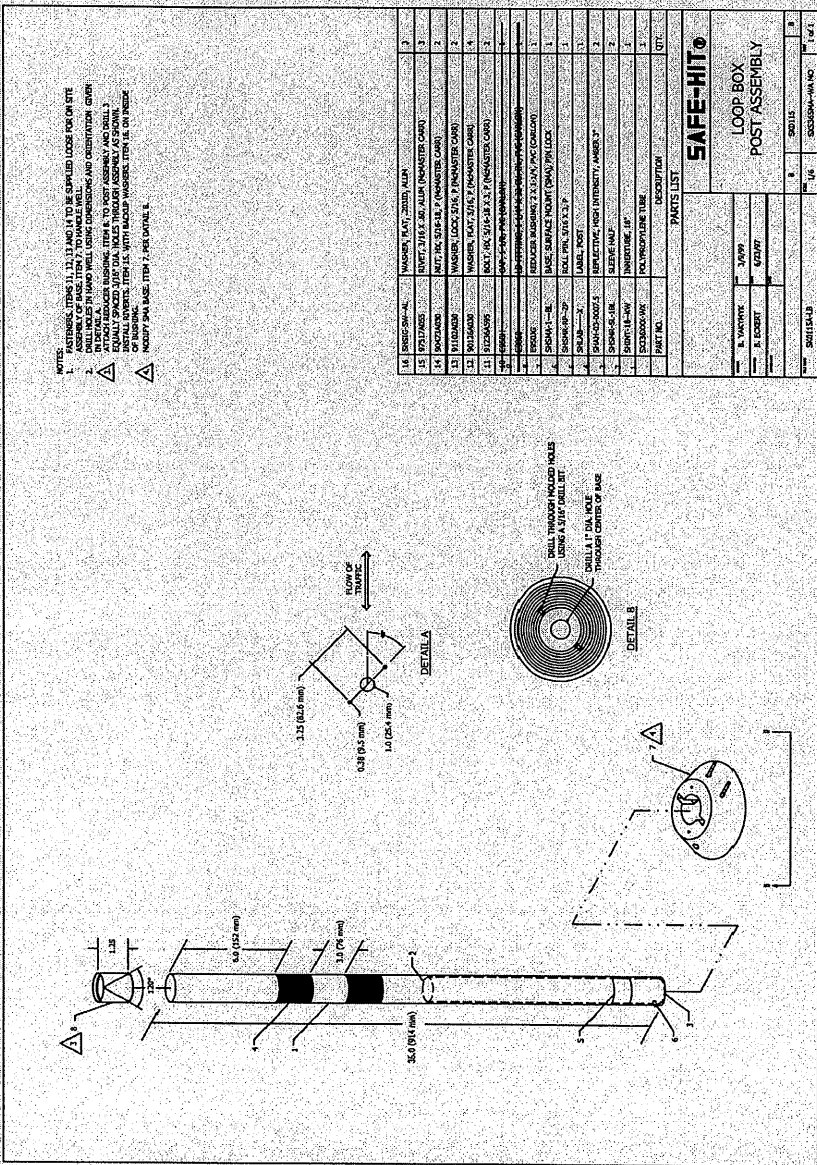
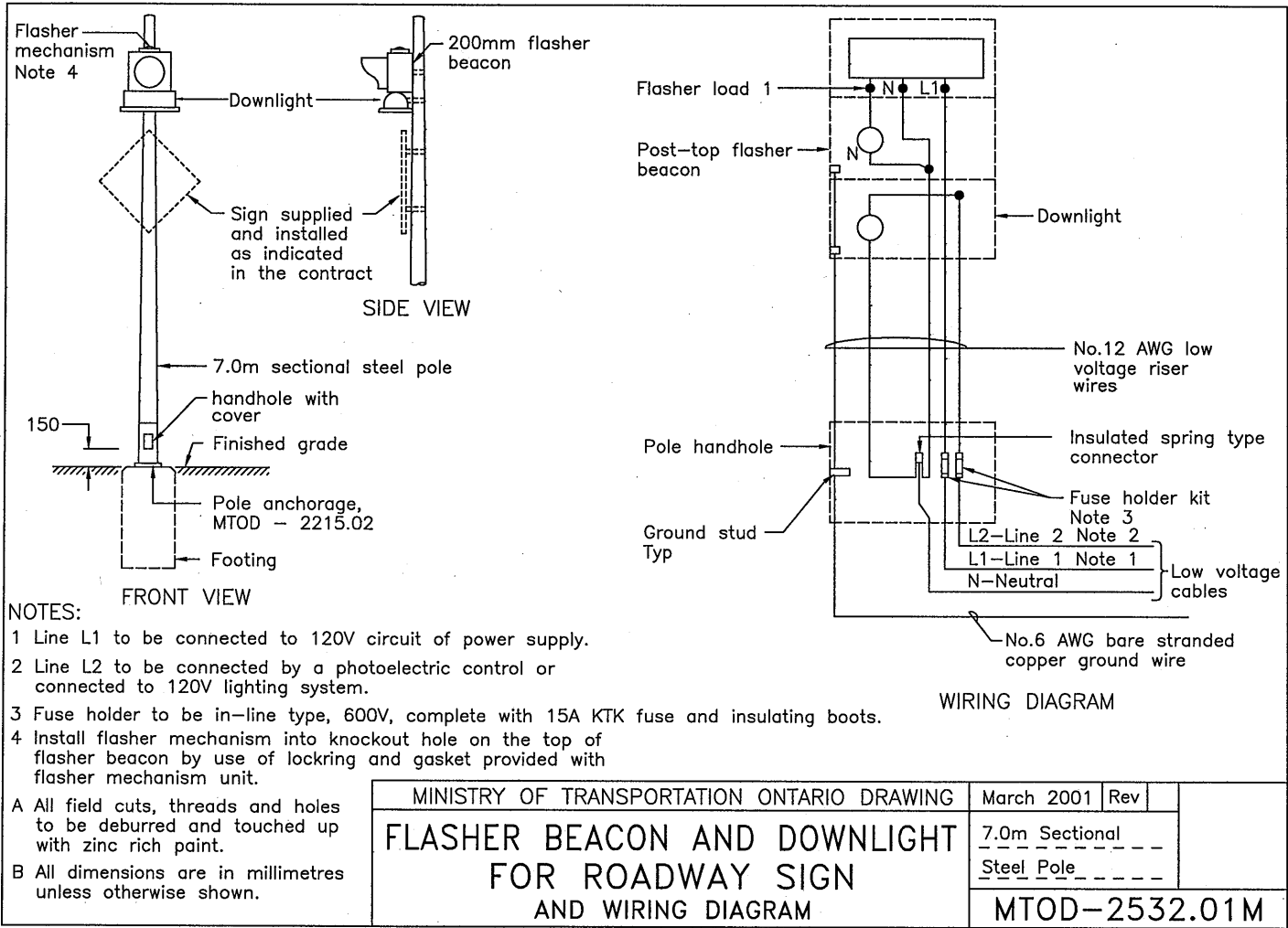
METRIC

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GWP 2005-07-00

HIGHWAY 404 EXTENSION
NON-STANDARD ELECTRICAL DETAILS 12

SHEET
EL-21

AECOM



MINISTRY OF TRANSPORTATION

April 2003 Rev 0

FLEX POST

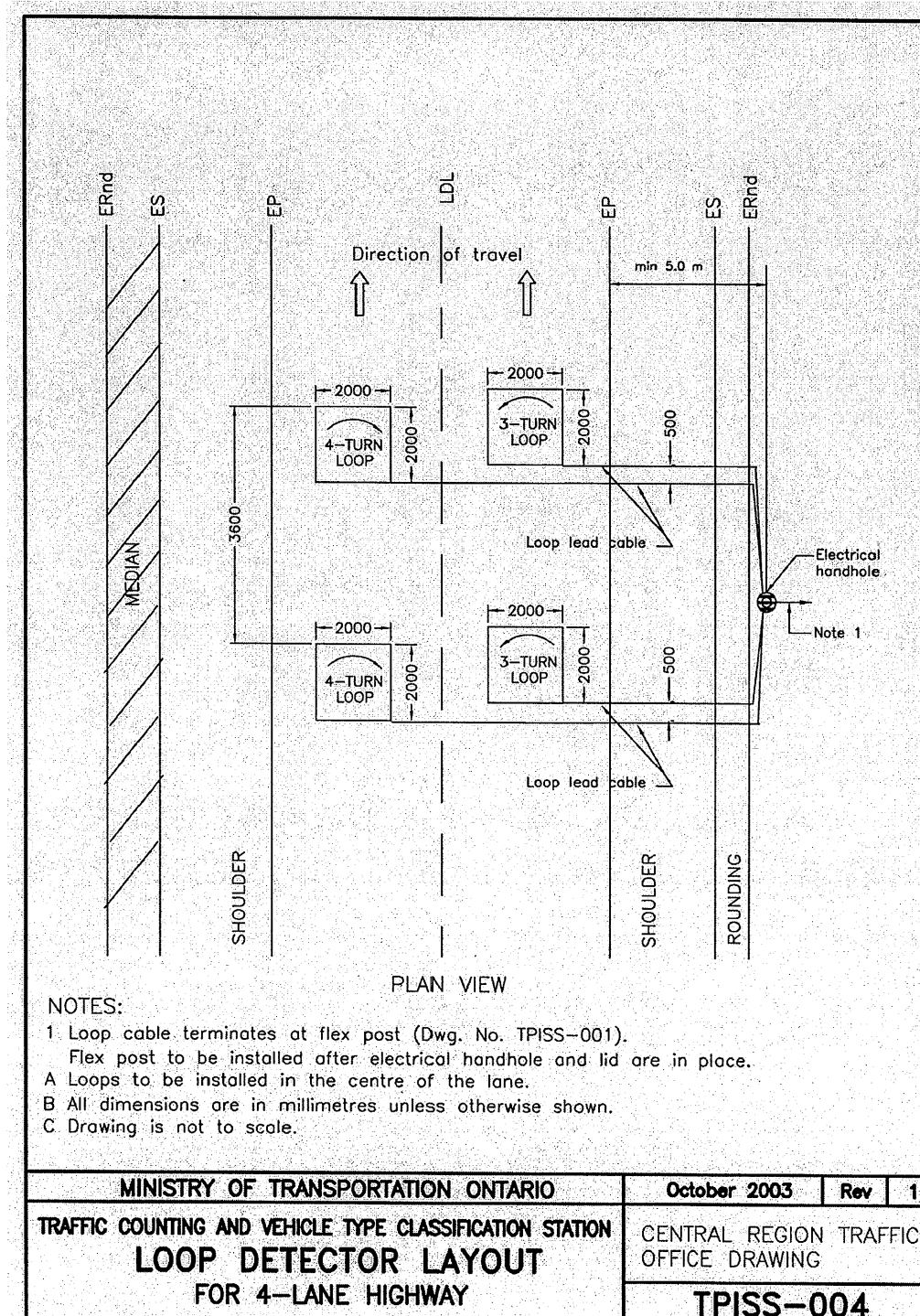
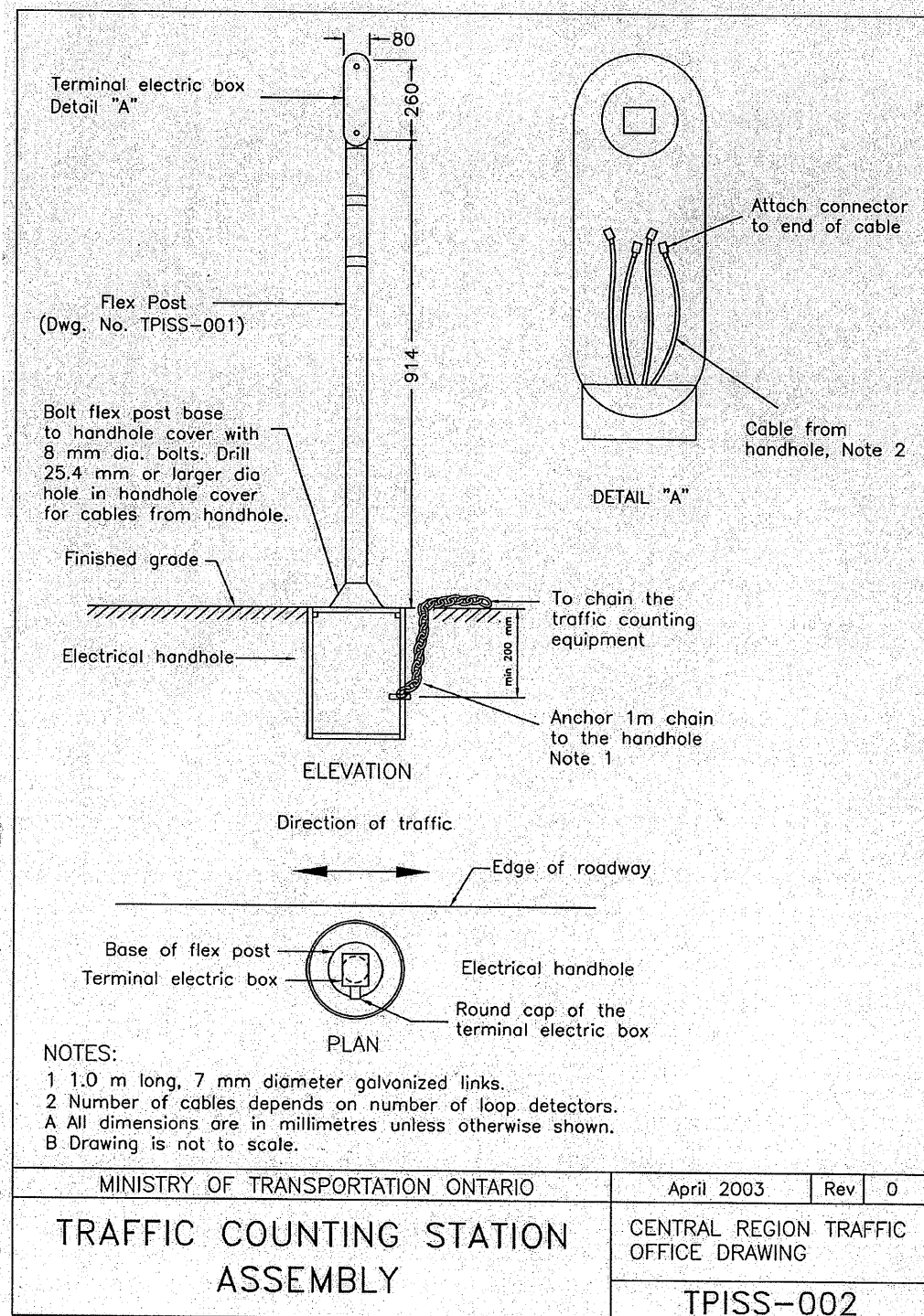
CENTRAL REGION TRAFFIC
OFFICE DRAWING

TPISS-001

METRIC

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GWP 2005-07-00HIGHWAY 404 EXTENSION
NON-STANDARD ELECTRICAL DETAILS 13SHEET
EL-22

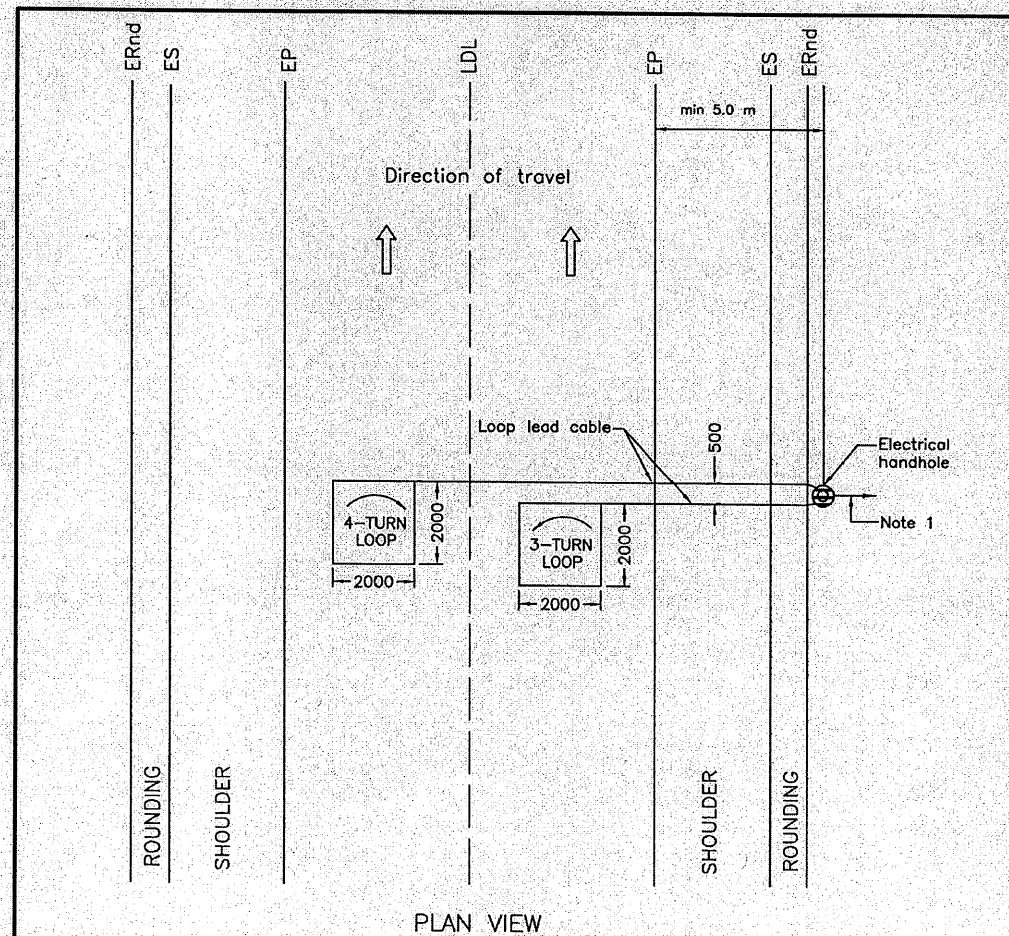
AECOM



METRIC

CONT
GWP 2005-07-00HIGHWAY 404 EXTENSION
NON-STANDARD ELECTRICAL DETAILS 14SHEET
EL-23

AECOM



NOTES:

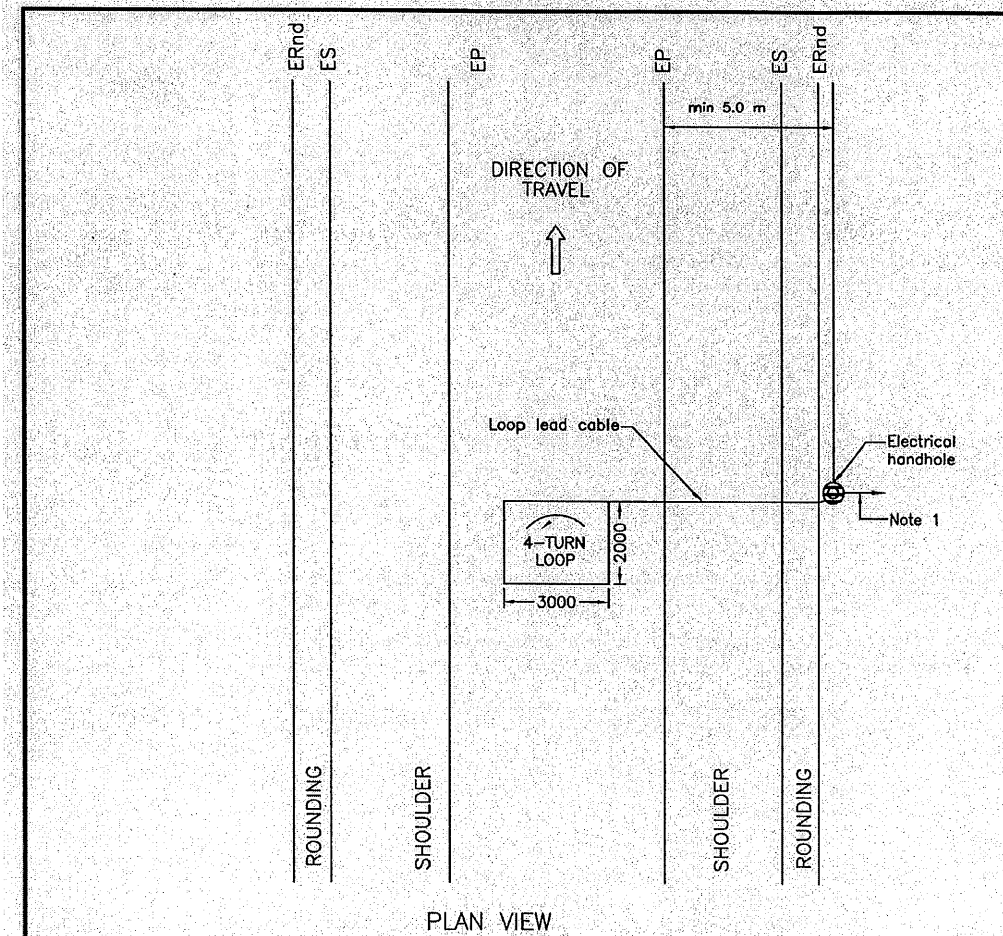
- 1 Loop cable terminates at flex post (Dwg. No. TPISS-001).
Flex post to be installed after electrical handhole and lid are in place.
- 2 (a) Loop is typically square shaped (2000x2000) unless otherwise specified (instructed);
(b) Loop has typically 4 turns unless otherwise specified (instructed).
- A Flex post shall be installed on the right side of direction of travel if local conditions permit this to be done safely, otherwise flex post shall be installed on the left side of direction of travel.
- B Loops to be installed in the centre of the lane.
- C All dimensions are in millimetres unless otherwise shown.
- D Drawing is not to scale.

MINISTRY OF TRANSPORTATION ONTARIO

July 2006 Rev 2

TRAFFIC COUNTING STATION
LOOP DETECTOR LAYOUT
FOR 2 LANE RAMPCENTRAL REGION TRAFFIC
OFFICE DRAWING

TPISS-009



NOTES:

- 1 Loop cable terminates at flex post (Dwg. No. TPISS-001).
Flex post to be installed after electrical handhole and lid are in place.
- 2 For 1-lane ramp:
(a) Loop is (2000x3000) unless otherwise specified (instructed);
(b) Loop has typically 4 turns unless otherwise specified (instructed).
- A Flex post shall be installed on the right side of direction of travel if local conditions permit this to be done safely, otherwise flex post shall be installed on the left side of direction of travel.
- B Loop to be installed in the centre of the lane.
- C All dimensions are in millimetres unless otherwise shown.
- D Drawing is not to scale.

MINISTRY OF TRANSPORTATION ONTARIO

July 2006 Rev 0

TRAFFIC COUNTING STATION
LOOP DETECTOR LAYOUT
FOR 1 LANE RAMPCENTRAL REGION TRAFFIC
OFFICE DRAWING

TPISS-011

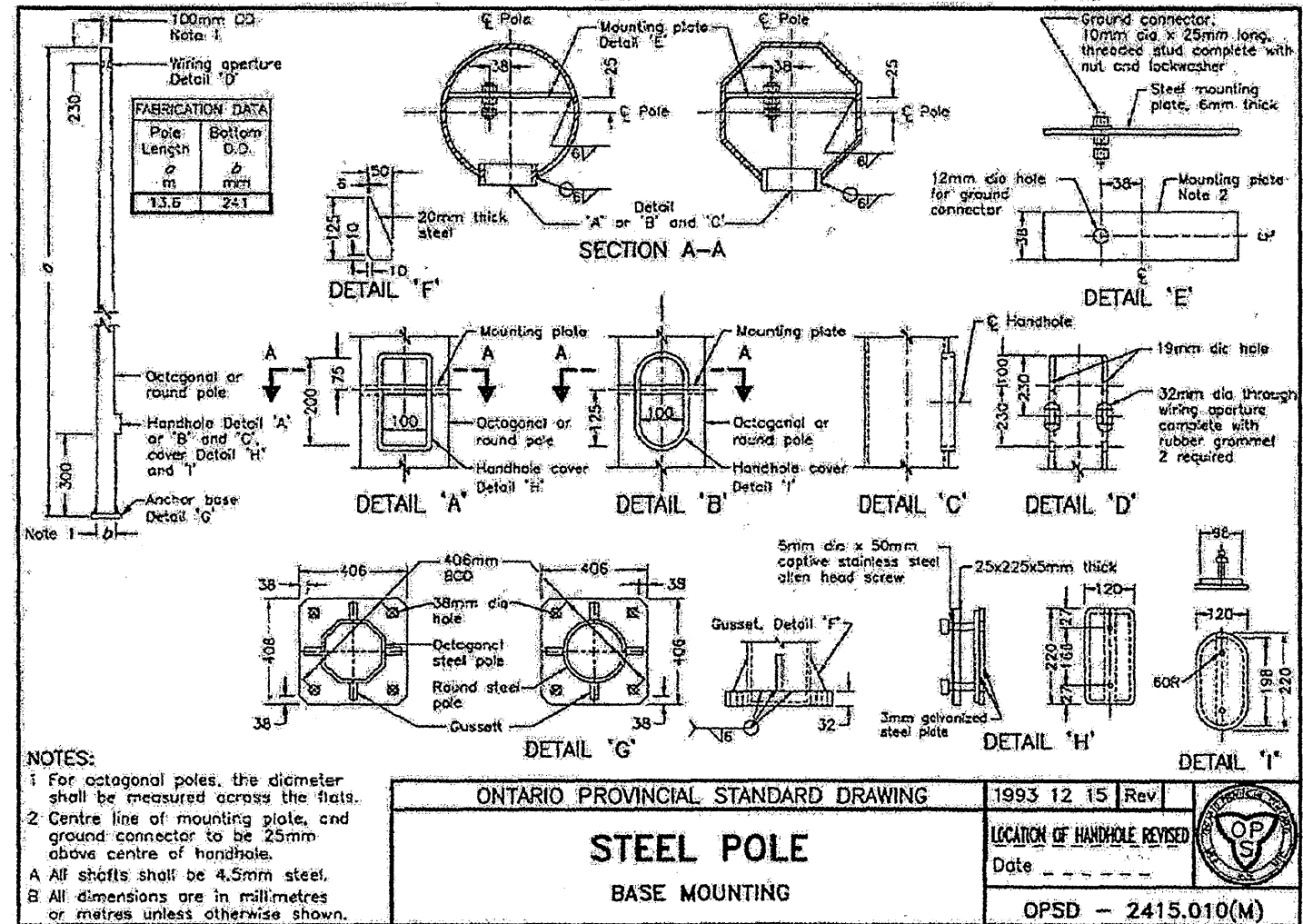
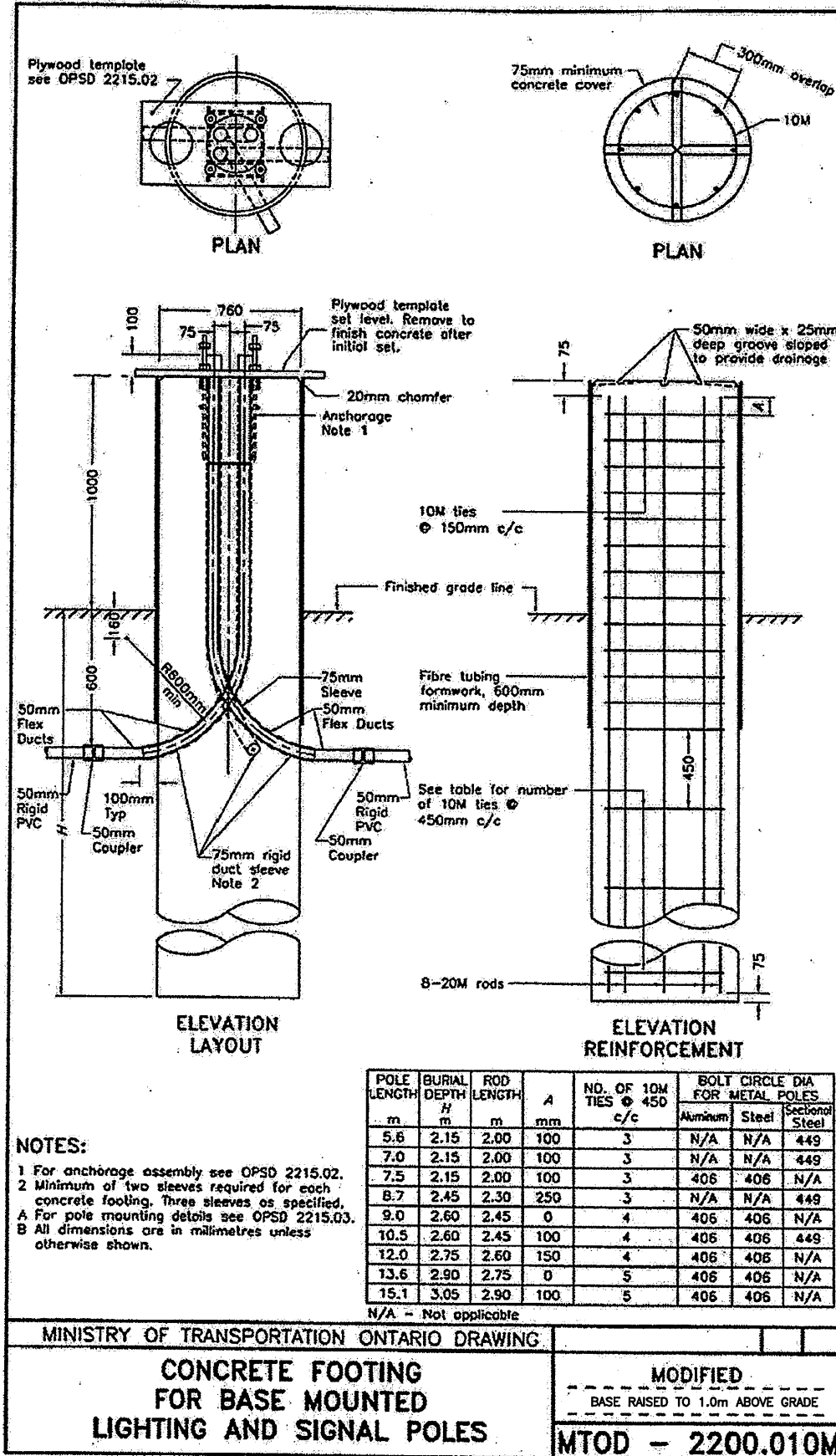
METRIC

CONT
GWP 2005-07-00

HIGHWAY 404 EXTENSION
NON-STANDARD ELECTRICAL DETAILS 15

SHEET
EL-24

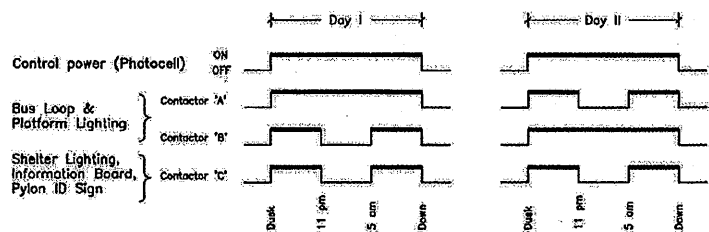
AECOM



MTO/GO CARPOOL PARKING LOT
POLES P24, P24A, P25, P26



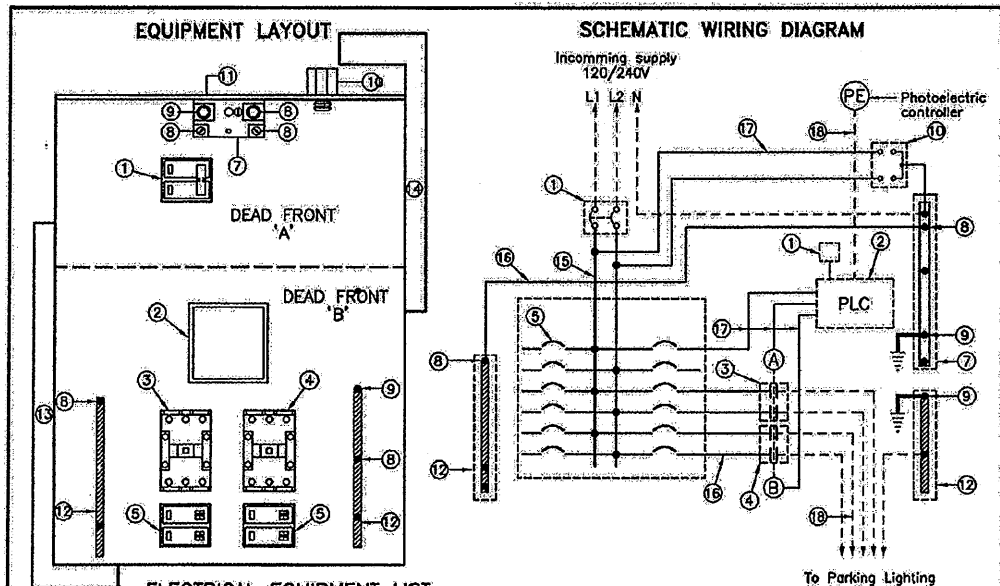
MTO/GO CARPOOL PARKING LOT
POLES P24, P24A, P25, P26



NOTES:

Program the logic controller to perform the same functions and hours of operation as the controller at GO Transit Park and Ride.

SUPPLY "C" - PLC OPERATION DIAGRAM AT OPENING DAY



ELECTRICAL EQUIPMENT LIST

- 1 Main circuit breaker - 240V, 100A, 2-pole
- 2 Programmable Logic Controller, LOGO series, Siemens (model and characteristics as indicated elsewhere in the contract)
- 3 Contactor, 240V, 120V coil (ampacity and number of poles as indicated elsewhere in the contract), with nameplate: LIGHTING CONTACTOR 'A' - PARKING LOT
- 4 Contactor, 240V, 120V coil (ampacity and number of poles as indicated elsewhere in the contract), with nameplate: LIGHTING CONTACTOR 'B' - PARKING LOT
- 5 Branch circuit breakers - 240 V, 1-pole (number and ampereage of breakers as indicated elsewhere in the contract)
- 6 Relamp switch
- 7 Solid neutral assembly - 100A minimum
- 8 Ground lug for No. 6 AWG stranded copper ground wire
- 9 Ground lug for No. 2/0 AWG stranded copper ground wire
- 10 Secondary lightning arrester, 650V, 2-pole
- 11 Drip shield
- 12 Secondary neutral and ground bus according to CSA and project requirements
- 13 Primary barrier
- 14 Secondary barrier
- 15 Copper bus bar
- 16 No. 6 AWG RWU90 wire
- 17 Control circuit wiring min. No. 12 AWG RWU90
- 18 Field wiring

NOTES:

A. This standard has been modified to accommodate the equipment for dual-level lighting control, by lengthening the Type 1 cabinet assembly enclosure to 1,067mm. All other dimensions and components of the cabinet assembly shall be per MTOD-2440.03.

B. This standard to be read in conjunction with OPSDs 2440.050, 2440.060 and MTOD 2440.030.

MINISTRY OF TRANSPORTATION ONTARIO DRAWING

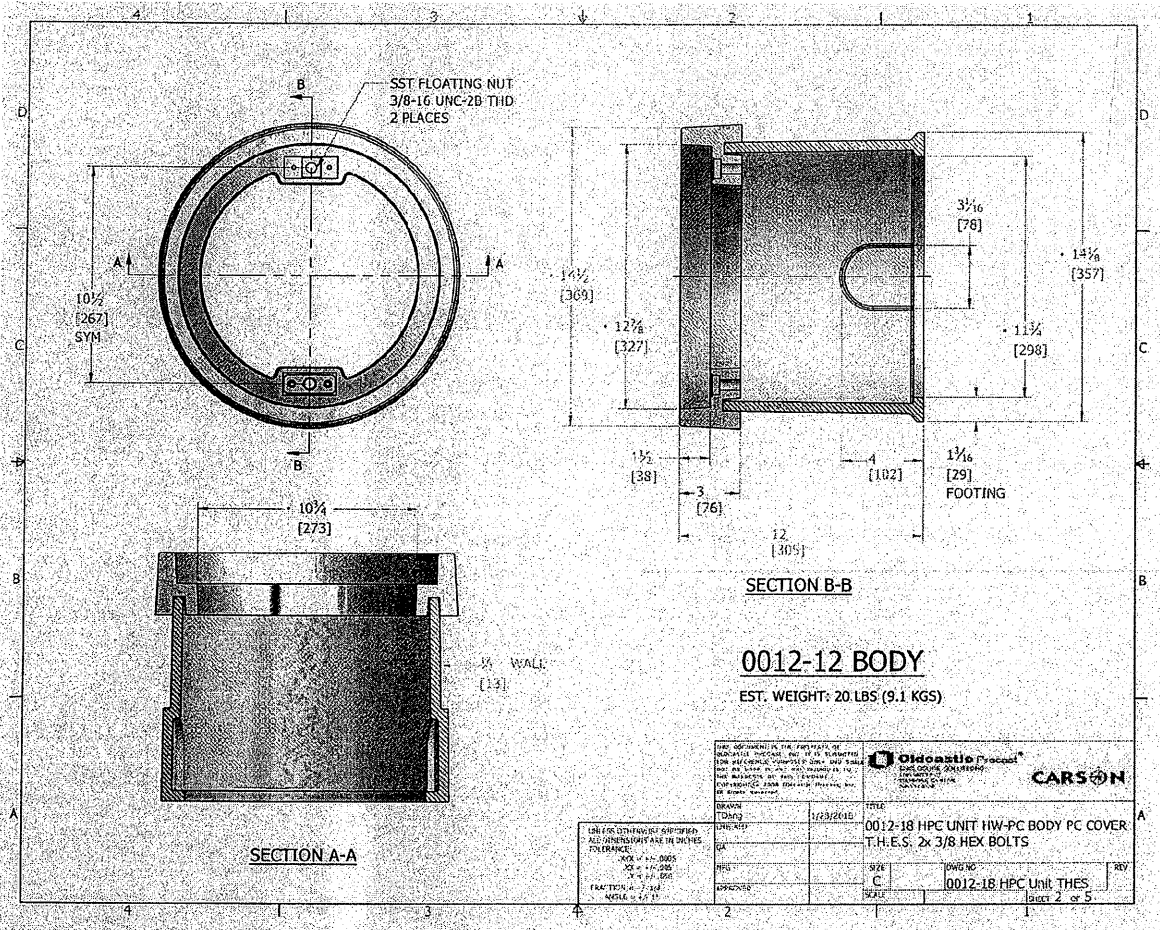
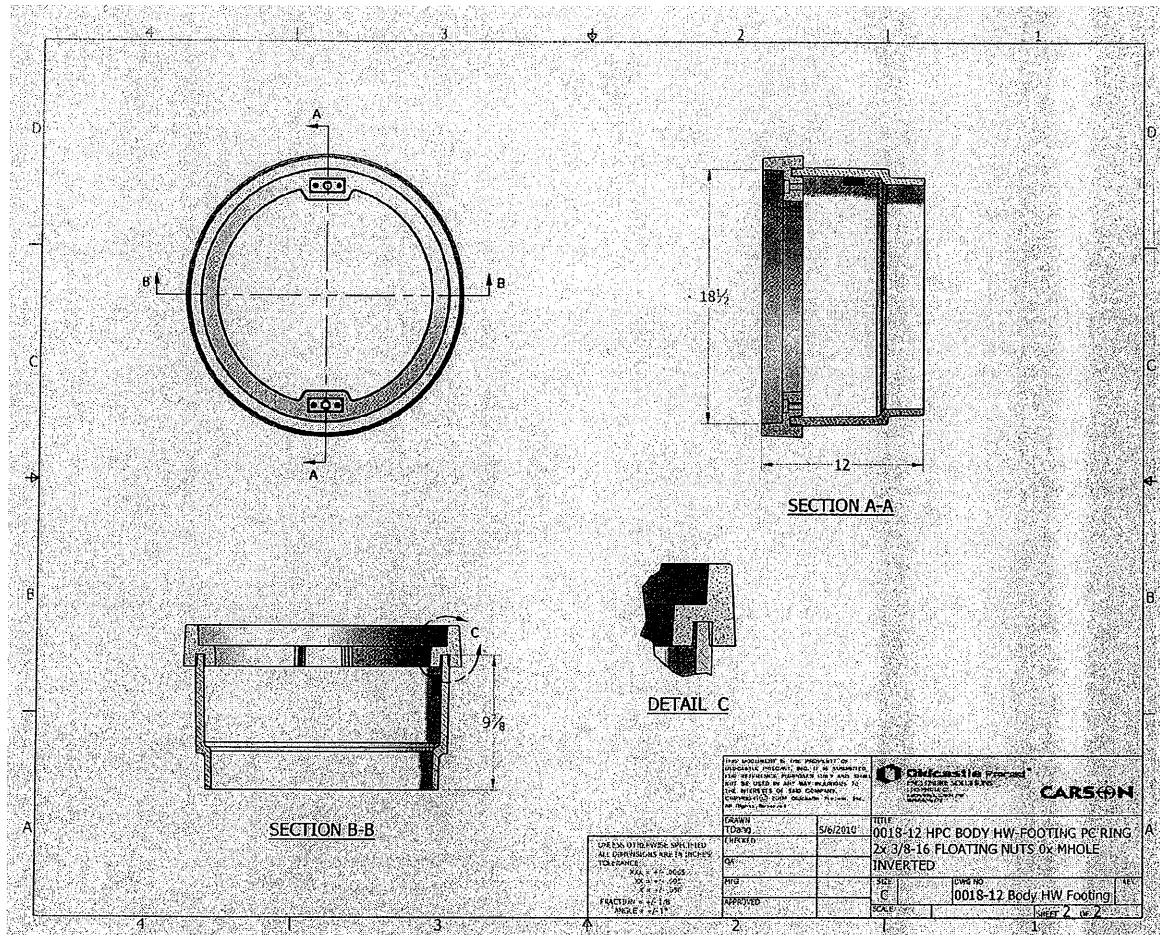
February 2005

Rev 3

SUPPLY "C" - CONTROL CABINET
ASSEMBLY TYPE 1 FOR
DUAL-LEVEL LIGHTING CONTROL
120/240V, 100A, 1-PHASE, 3-WIRE

MTOD-2440.010(M)





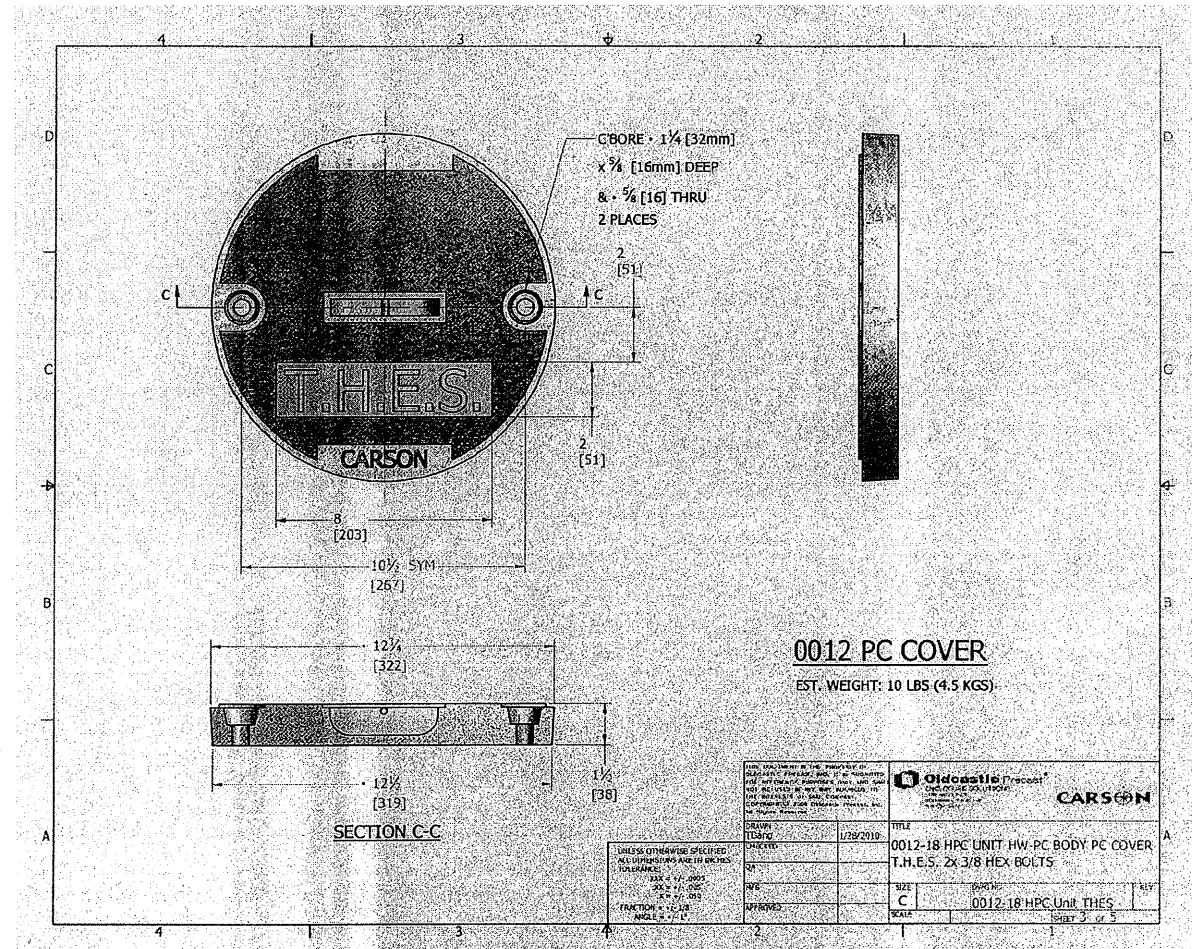
METRIC

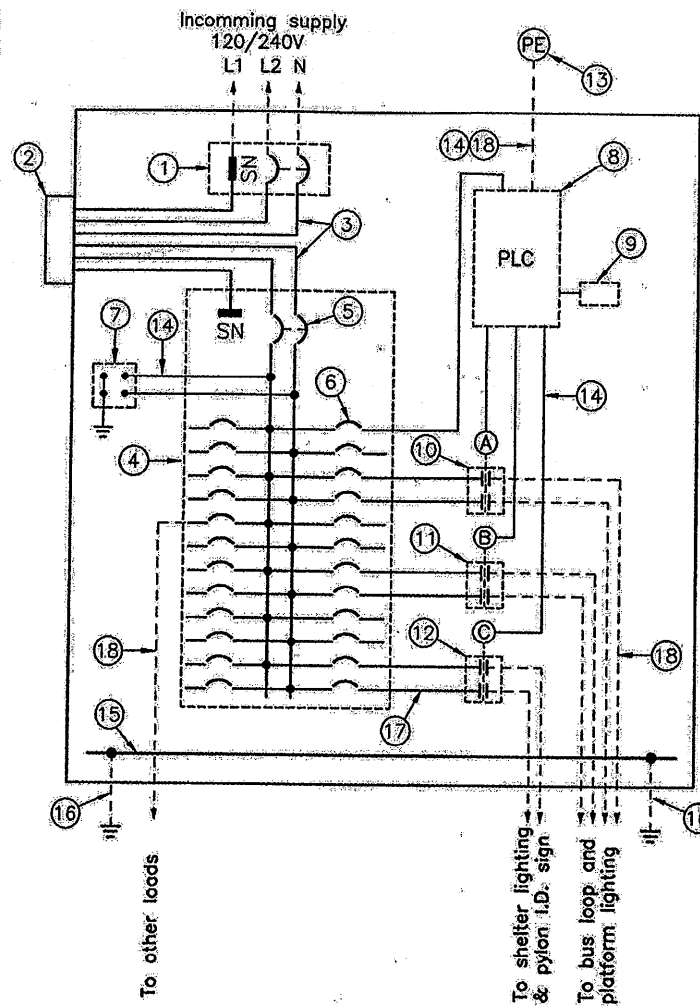
CONT
GWP 2005-07-00

HIGHWAY 404 EXTENSION
NON-STANDARD ELECTRICAL DETAILS 16A
460mm POLYMER HANDWELL

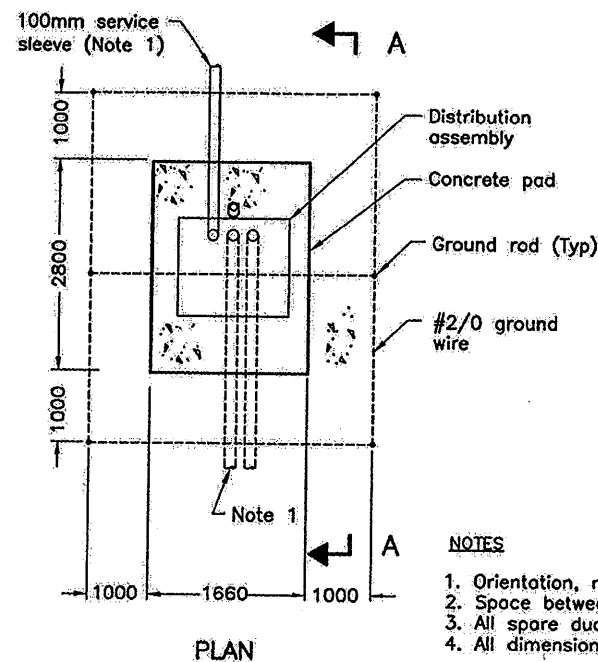
SHEET
EL-25A

AECOM



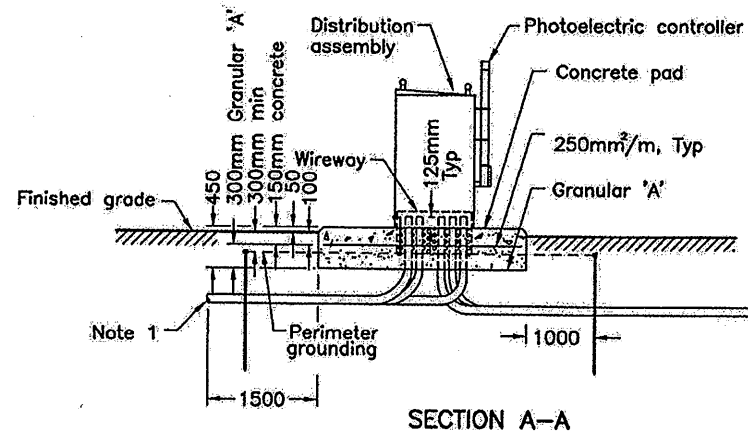


WIRING DIAGRAM
Dual-Level Lighting Control



PLAN

CONCRETE PAD, CONDUIT LAYOUT AND GROUNDING



SECTION A-A

NOTES

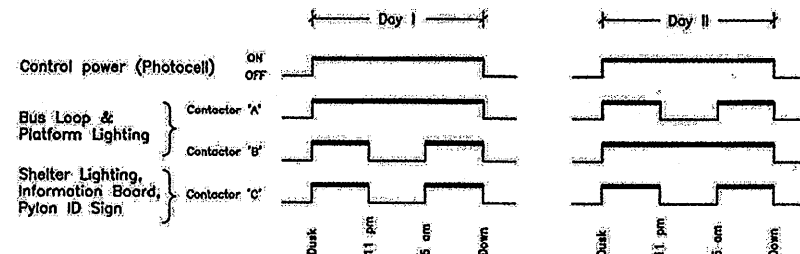
1. Orientation, number and size of ducts as specified.
2. Space between ducts shall be 50mm minimum.
3. All spare ducts shall be extended 1500mm and capped.
4. All dimensions are in millimeters unless otherwise shown.

DISTRIBUTION ASSEMBLY LEGEND

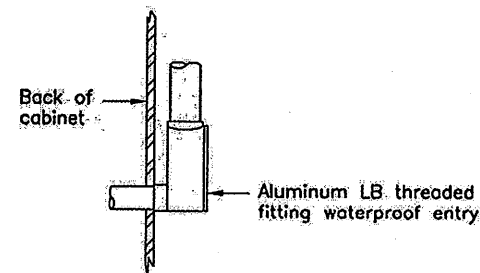
- ① Service entrance switch with nameplate: SERVICE ENTRANCE SWITCH
- ② Metering socket as specified by power supply authority
- ③ Power feed cable, #2 AWG RWU 90 wire
- ④ Panelboard, 120/240 V, 100 A, 1 phase, with nameplate: POWER PANEL
- ⑤ Main circuit breaker, 240 V, 2-pole (ampacity as indicated elsewhere in the contract)
- ⑥ Branch circuit breakers, 240 V (ampacity and number of poles as indicated elsewhere in the contract)
- ⑦ Secondary lightning arrester, thyrite type, 650- V, 2-pole
- ⑧ Programmable Logic Controller, LOGO series, Siemens (model and characteristics as indicated elsewhere in the contract)
- ⑨ Relamp switch
- ⑩ Contactor, 240 V, 120V coil (ampacity and number of poles as indicated elsewhere in the contract), with nameplate: LIGHTING CONTACTOR 'A' - BUS LOOP & PLATFORM LIGHTING
- ⑪ Contactor, 240 V, 120V coil (ampacity and number of poles as indicated elsewhere in the contract), with nameplate: LIGHTING CONTACTOR 'B' - BUS LOOP & PLATFORM LIGHTING
- ⑫ Contactor, 240 V, 120V coil (ampacity and number of poles as indicated elsewhere in the contract), with nameplate: LIGHTING CONTACTOR 'C' - SHELTER LIGHTING & SIGNAGE
- ⑬ Photoelectric controller
- ⑭ Control circuit wiring, min. #12 AWG
- ⑮ Copper-ground bus
- ⑯ Ground wire #2/0 AWG
- ⑰ #6 AWG wire
- ⑱ Field wiring

NOTES

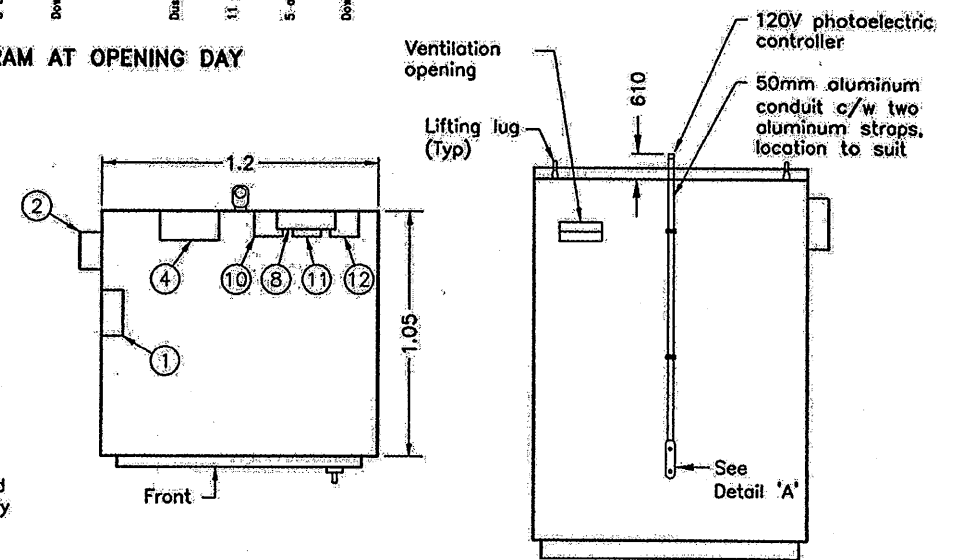
- A. PROGRAMMABLE LOGIC CONTROLLER FUNCTIONS:
- EVENINGS, FULL LIGHTING SWITCHED ON (CONTACTORS 'A' AND 'B')
 - DAILY BETWEEN 11pm AND 5am, HALF LIGHTING SWITCHED ON (CONTACTORS 'A' OR 'B'). ALTERNATE CONTACTORS EVERY OTHER DAY.
 - MORNINGS AFTER 5am, ALL LIGHTING SWITCHED OFF
 - NIGHTS WITHOUT 'GO' SERVICE, HALF LIGHTING SWITCHED ON (CONTACTORS 'A' OR 'B')
- B. FOR OTHER LOADS CONNECTED TO PANELBOARD REFER TO WIRING DIAGRAM FOR SUPPLY 'J'.



PLC - OPERATION DIAGRAM AT OPENING DAY

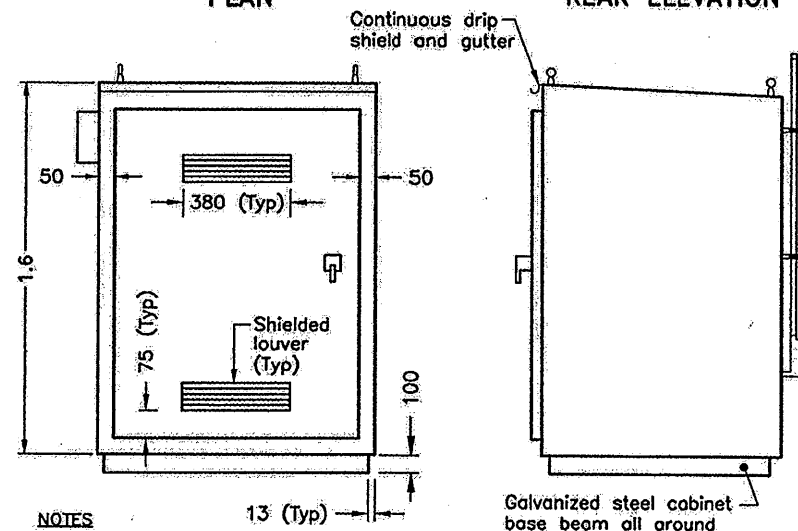


DETAIL A



PLAN

REAR ELEVATION



NOTES

- A All dimensions shown are minimum.
B All dimensions are in millimeters or meters unless otherwise shown.

FRONT ELEVATION

SIDE ELEVATION

SUPPLY "D" - DISTRIBUTION ASSEMBLY
OUTSIDE METER SOCKET
120/240, 100A, 1-PHASE, 3-WIRE

CONT
GWP 2005-07-00

HIGHWAY 404 EXTENSION
NON-STANDARD ELECTRICAL DETAILS 17

SHEET
EL-26

AECOM

METRIC

ELECTRICAL LEGEND	
SYMBOL	DESCRIPTION
A	SURFACE MOUNTED LED FIXTURE. 'A' DENOTES TYPE, REFER TO SCHEDULE.
Ⓢ	15A, 120V, GFI SINGLE PHASE DUPLEX RECEPTACLE (CSA 5-15R)
□	PUSHBUTTON
Ⓢ	DIRECT CONNECTION TO EQUIPMENT
○+	CONDUIT OR CABLES ROUTED UP
⇐+	CONDUIT OR CABLES ROUTED DOWN
AC-1	EQUIPMENT TAG NUMBER
3 E2	INSTALLATION DETAIL REFERENCE eg. DETAIL 3 ON DRAWING E2

CONT
GWP 2005-07-00

SHEET
EL-27

HIGHWAY 404 EXTENSION
NON-STANDARD ELECTRICAL DETAILS 18
GO TRANSIT - TYPICAL SHELTER 'A'

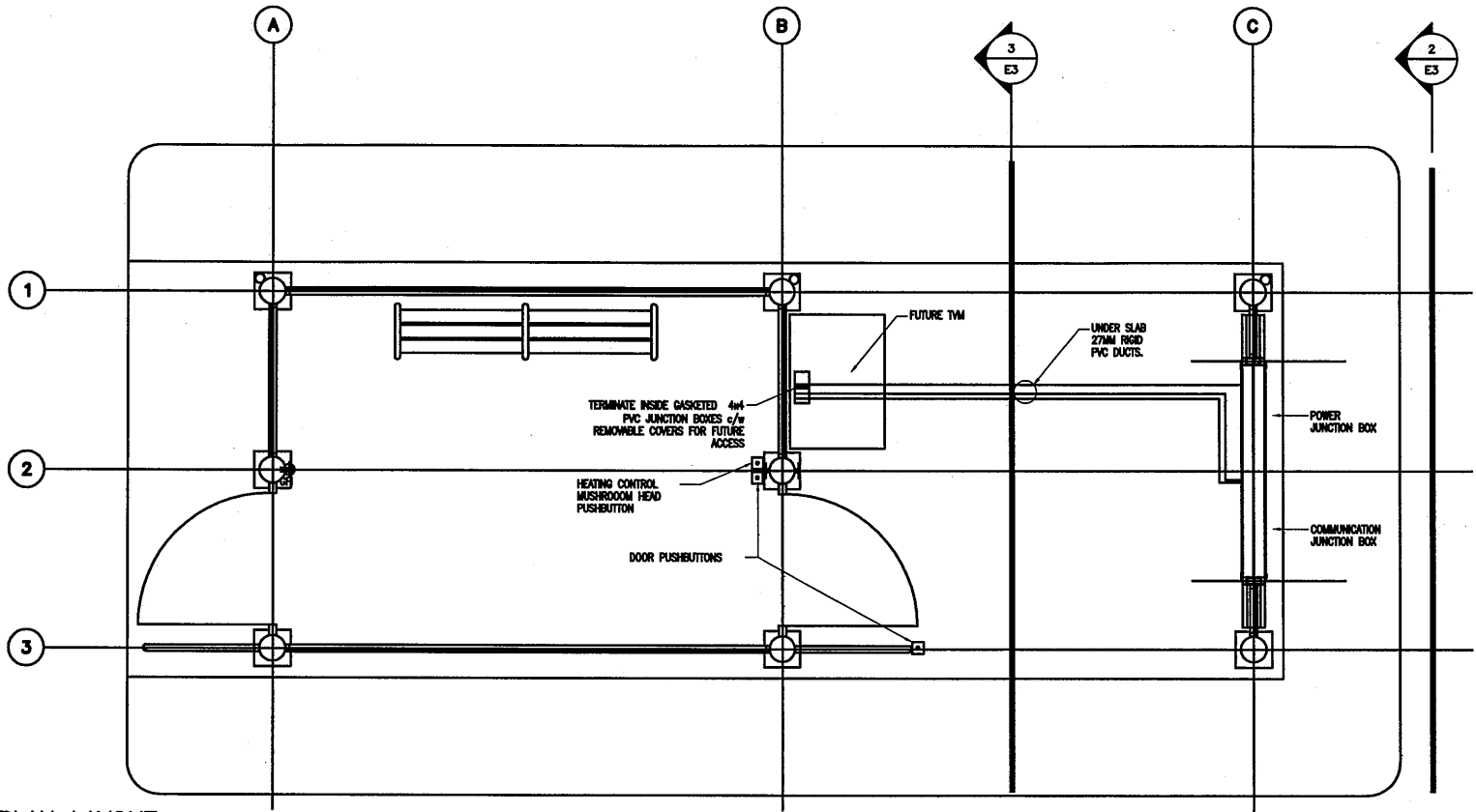
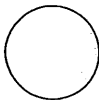
AECOM

SERVICE LOAD CALCULATION			
EQUIPMENT	CONNECTED	FACTOR	SERVICE
BASE LOAD			
ELECTRIC HEATING	3.0 KVA	1	3.0 KVA
SCUPPER HEAT TRACING	1.5 KVA	1	1.5 KVA
POWER DOOR OPERATOR	0.4 KVA	1	0.4 KVA
LIGHTING + SIGNAGE	1.0 KVA	1	1.0 KVA
TOTAL			5.9 KVA
AMPS = $\frac{5.9 \text{ KVA} \times 1000}{208 \times 1.73} = 16.40$ THEREFORE A 100A SERVICE IS SUFFICIENT.			
MAX. AVAILABLE FAULT CURRENT AT THE SECONDARY IS LESS THAN 18kA			

ELECTRIC HEATER SCHEDULE					
TAG No.	TYPE	WATTS	VOLT	Ø	COMMENTS
RH-1	RADIANT HEATER	3000	208/240	1	OUELLET OR EQUIVALENT

SCHEDULE OF LIGHTING FIXTURES AND LAMPS										CONTRACTOR SHALL ORDER OPTIONS, FEATURES OR ACCESSORIES TO SUIT THE INSTALLATION. QUANTITIES ARE INDICATED FOR GUIDE ONLY. CONTRACTOR SHALL CONFIRM QUANTITIES PRIOR TO BID SUBMISSION.	
FIXTURES					BALLAST	LENS	LAMPS				
TYPE	MANUFACTURER	CATALOGUE NUMBER	DESCRIPTION	VOLTAGE	TYPE	TYPE	WATTS	NUM	TYPE	MOUNTING	REMARKS
A	RIJUD	X-CL-0-5-034-B-120-STD	LED FIXTURE	120	-NA	-NA	80	4	LED	SURFACE MOUNTED	LOW PROFILE FIXTURE. VANDAL RESISTANT WITH TAMPER PROOF SCREWS.
B	ALLANSON LIGHTING ELECTRICS	ACLW-WHO	GO LED SIGNAGE FIXTURE	120	-NA	-NA	16	16	LED	MOUNTED BEHIND SIGNAGE	PER SIGN. LEDs PLACEMENT TO AVOID HOT SPOTS.

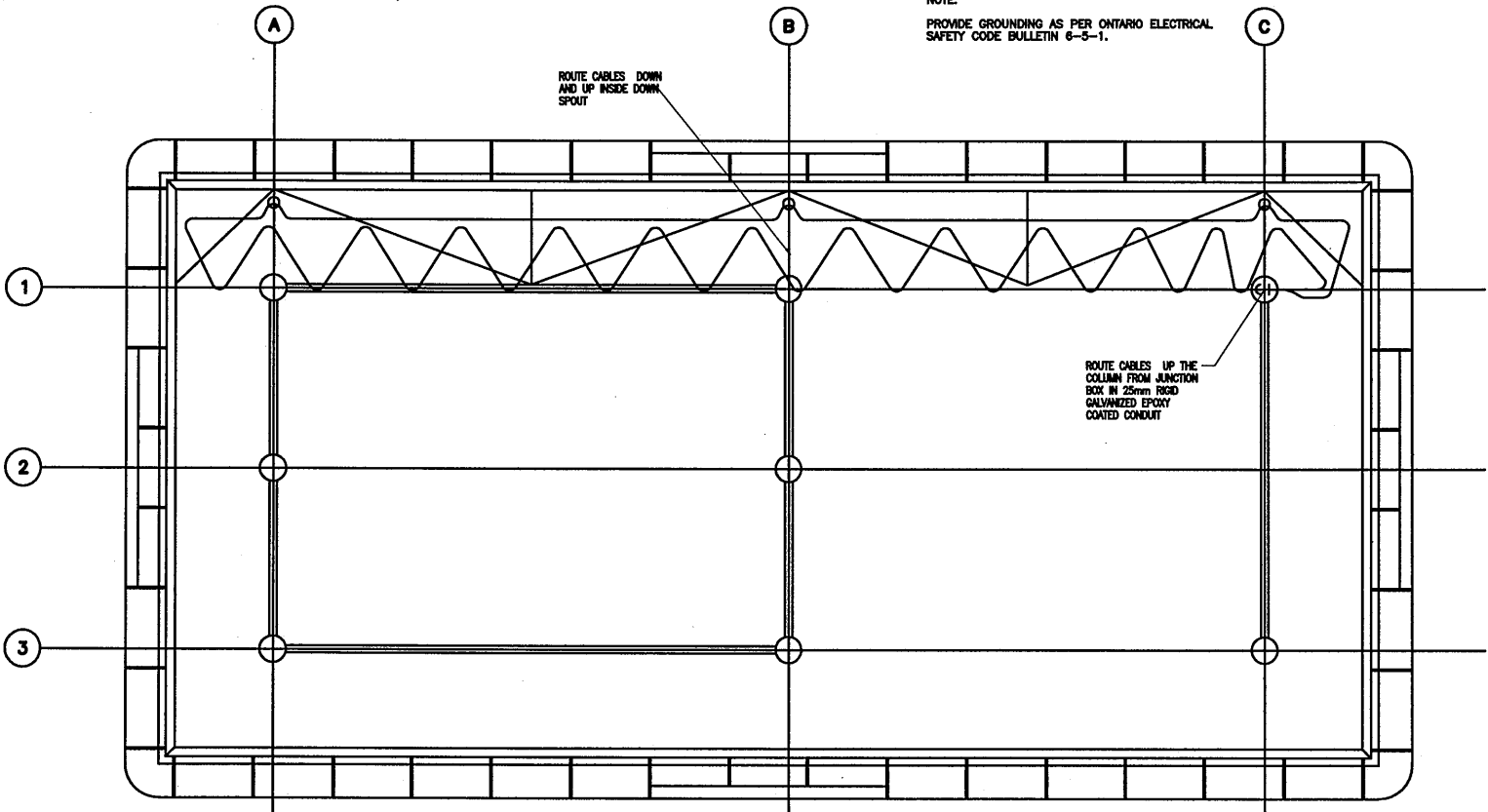
NOTE:
SEE SPECIFICATIONS FOR ADDITIONAL ELECTRICAL REQUIREMENTS AND INFORMATION
PROVIDE GROUNDING AS PER ONTARIO ELECTRICAL SAFETY CODE BULLETIN 6-5-1.



PLAN LAYOUT
(TYPICAL 2440mm x 3710mm SHELTER)

1
E2
1:25

NOTE:
PROVIDE GROUNDING AS PER ONTARIO ELECTRICAL
SAFETY CODE BULLETIN 6-5-1.



ROOF PLAN - HEAT TRACING LAYOUT
(TYPICAL 2440mm x 3710mm SHELTER)

2
E2
1:25

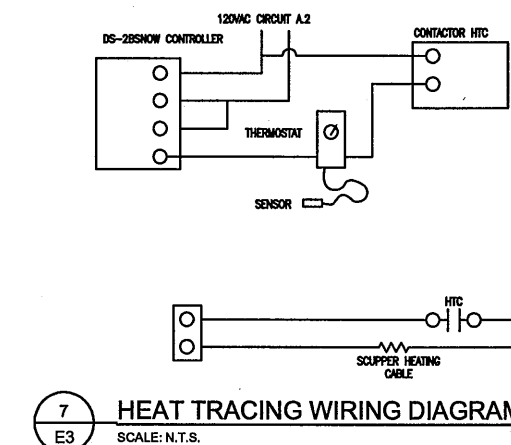
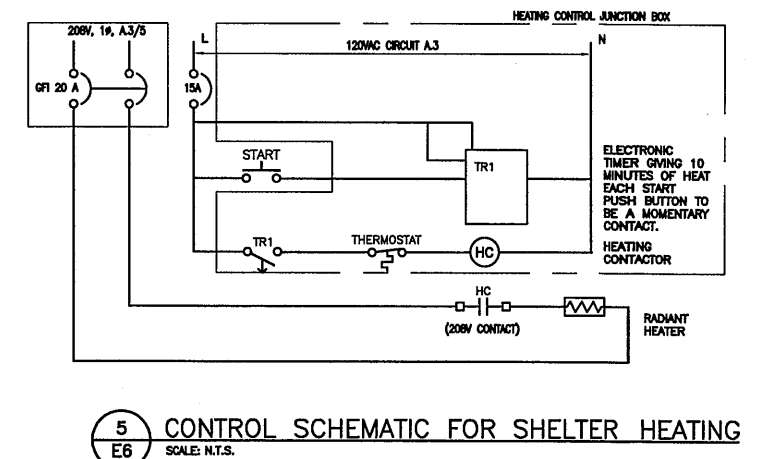
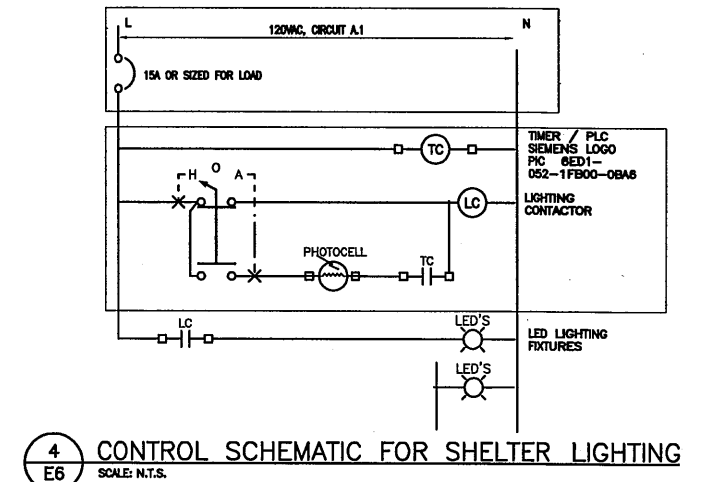
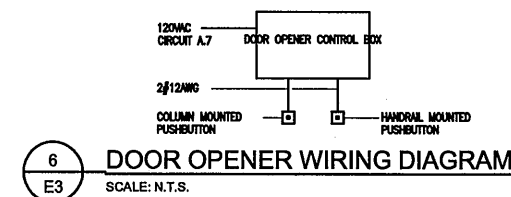
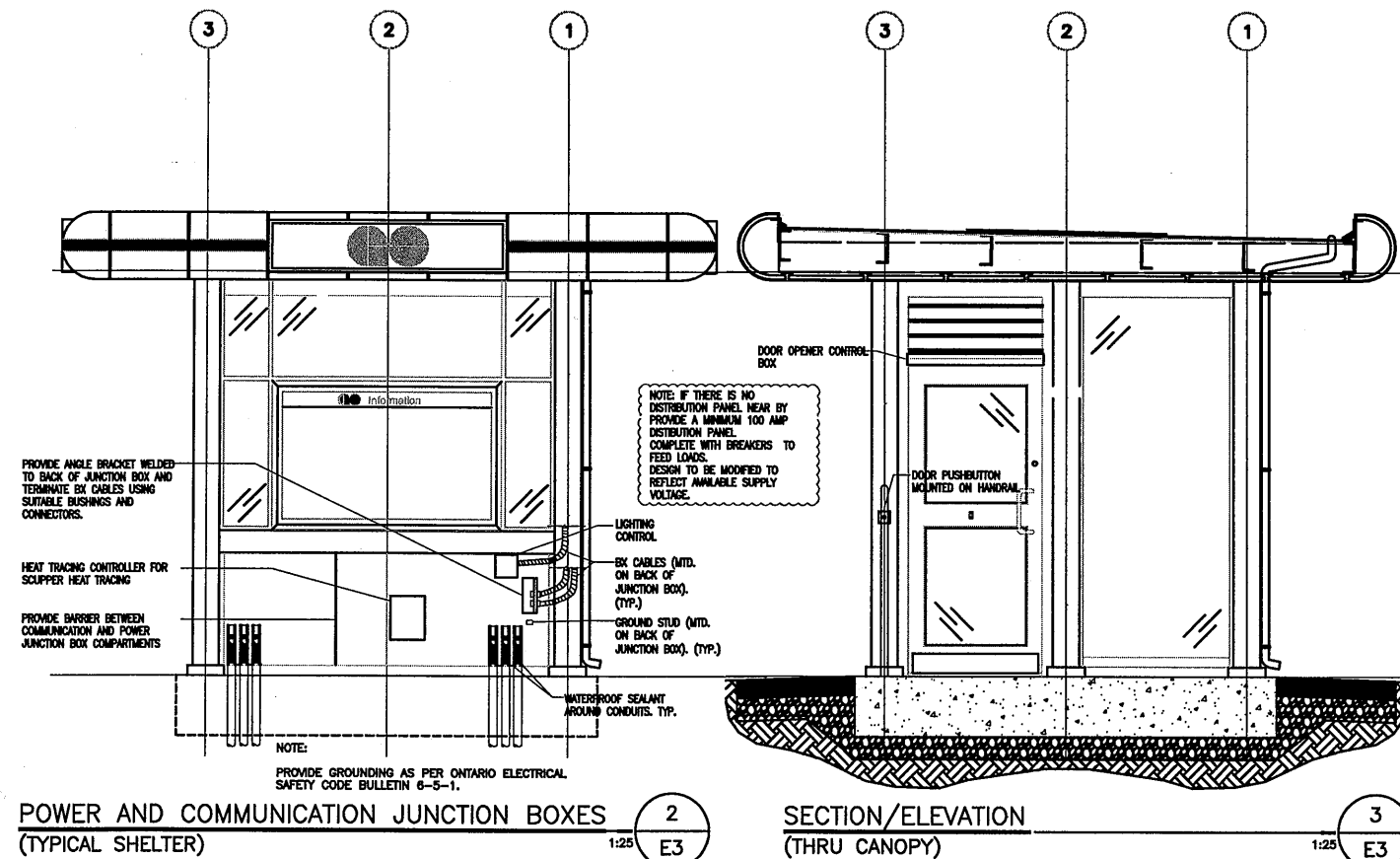
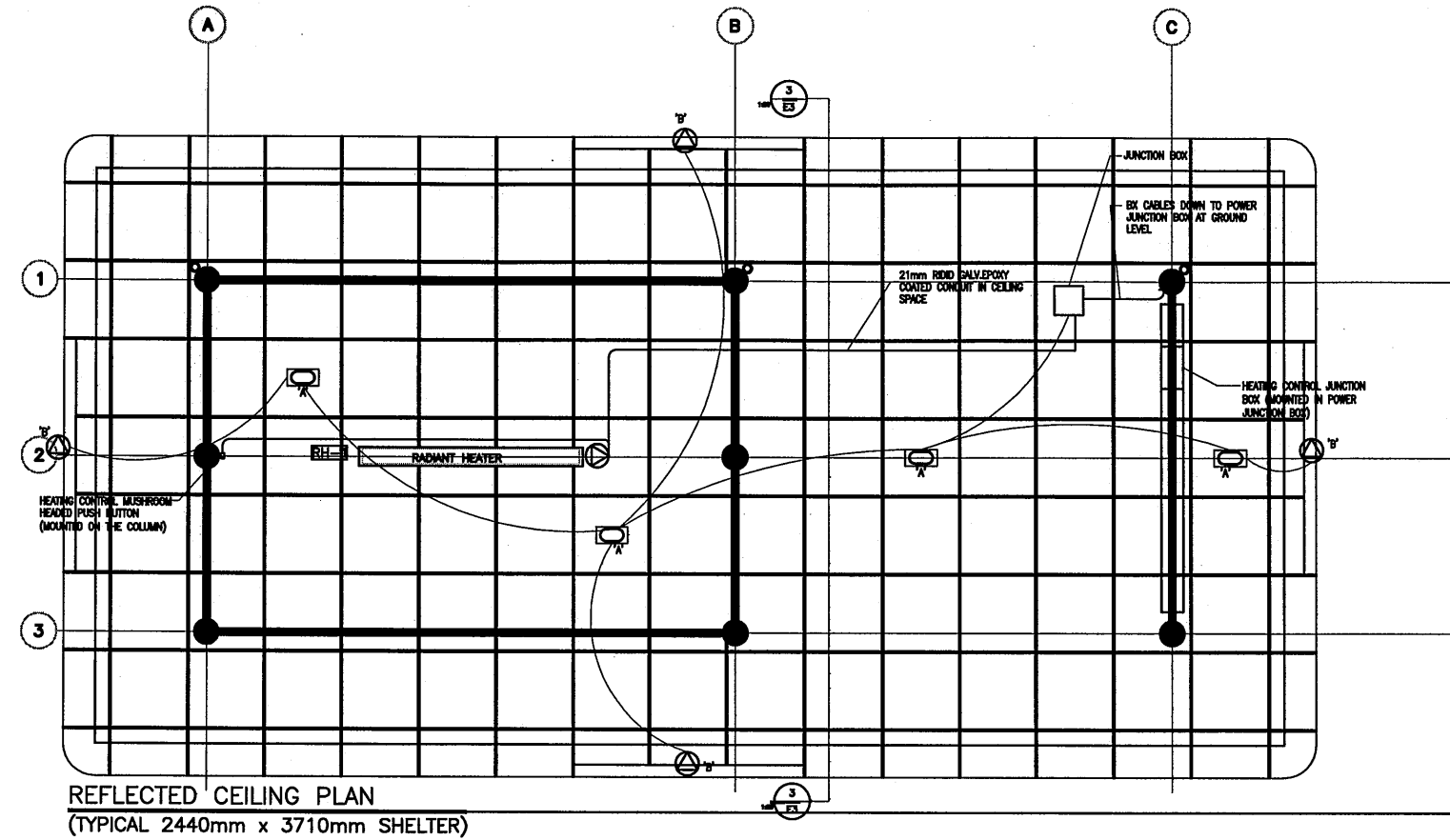
METRIC

CONT
GWP 2005-07-00

HIGHWAY 404 EXTENSION
NON-STANDARD ELECTRICAL DETAILS 20
GO TRANSIT - TYPICAL SHELTER 'A'

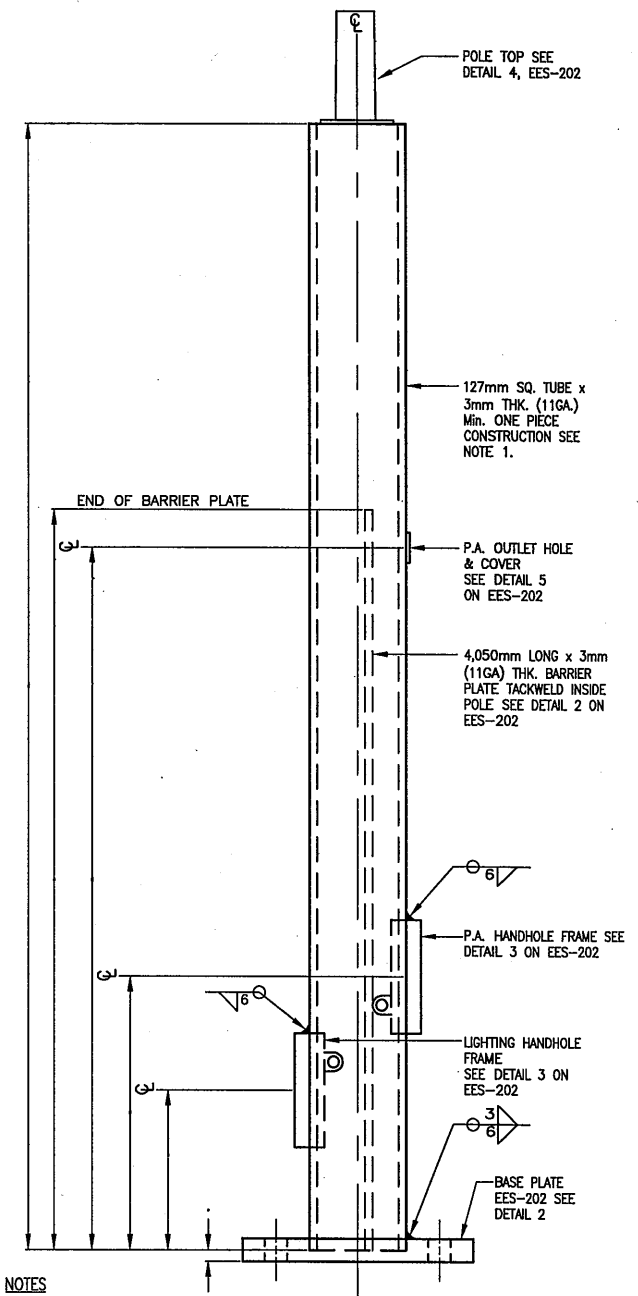
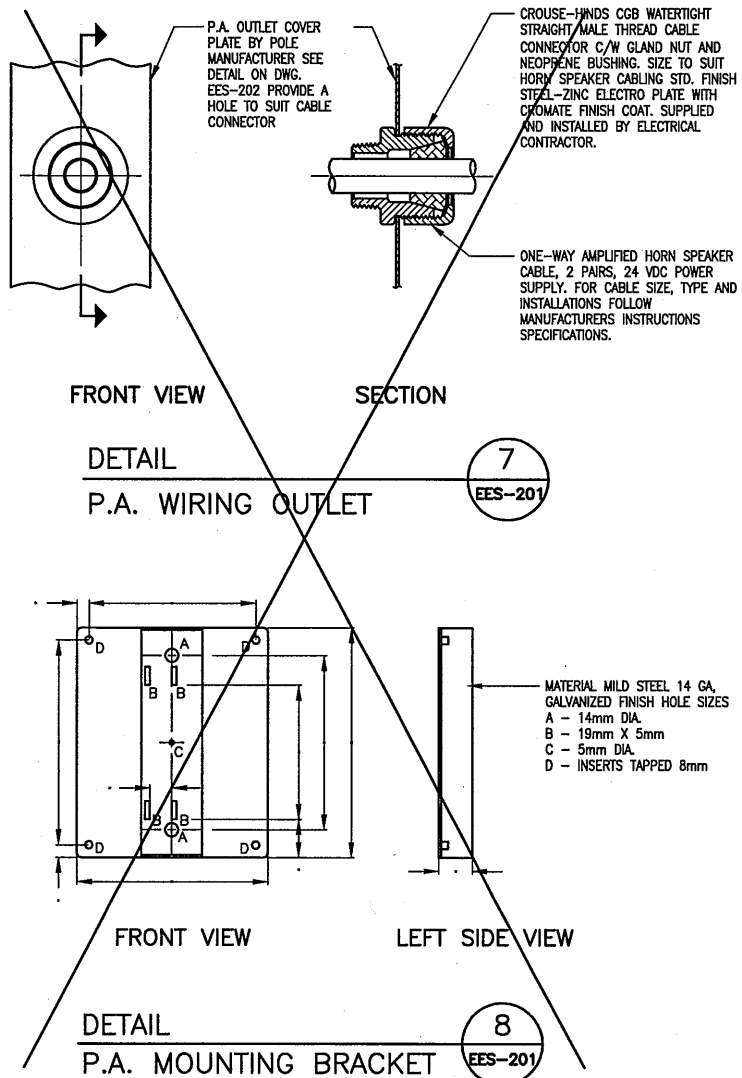
SHEET
EL-29

AECOM



NOTES:

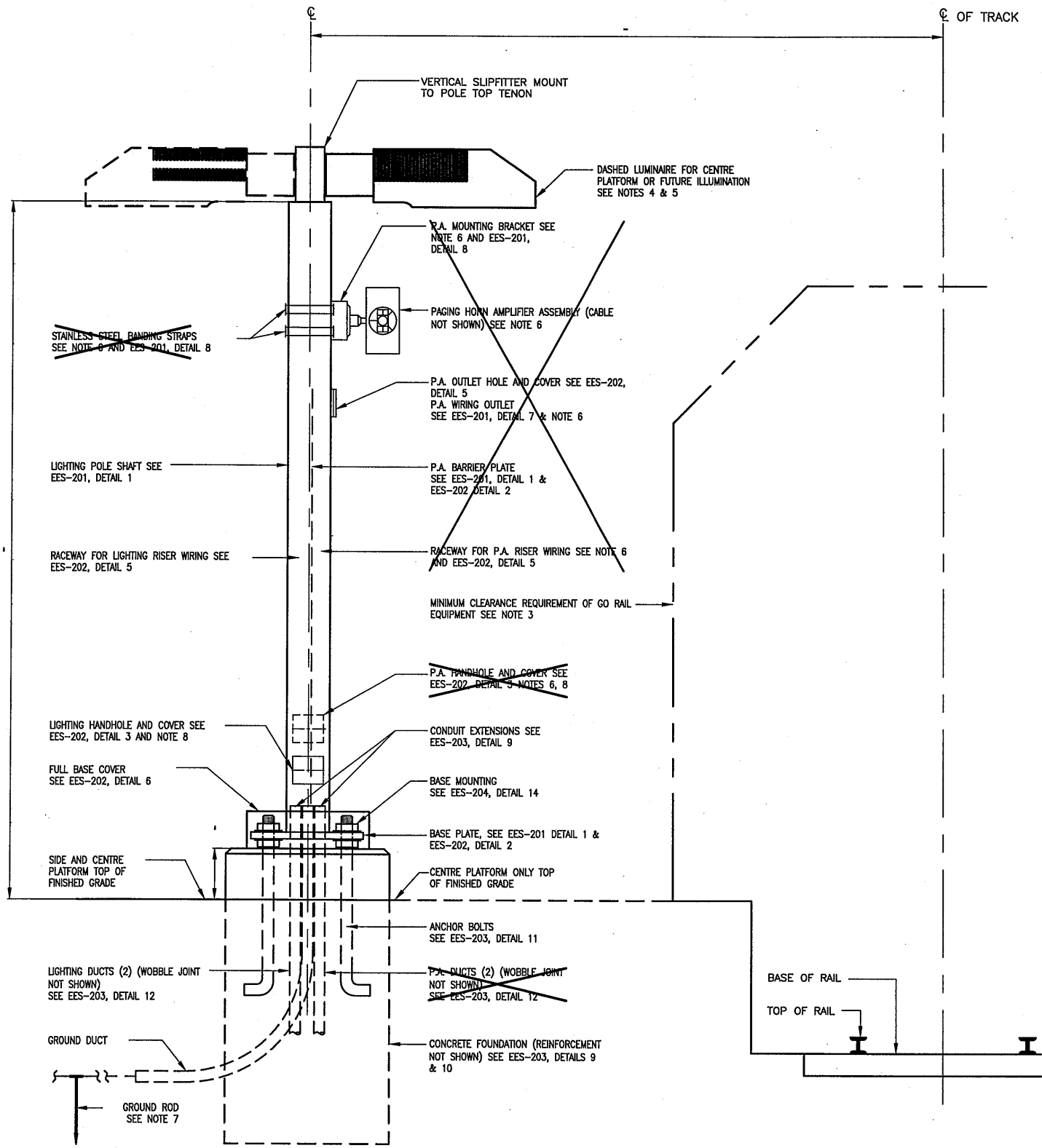
1. HIS TYPICAL 6m STRAIGHT SQUARE GALVANIZED STEEL POLE ASSEMBLY IS GENERAL GUIDANCE FOR ELECTRICAL INSTALLATION APPLICABLE TO PLATFORM, BUS LOADING, KISS & RIDE AND WALKWAY AREA LIGHTING. FOR CONCRETE FOUNDATION REQUIREMENT, REFER TO LAYOUT DRAWINGS AND CONCRETE FOUNDATION REINFORCEMENT TABLE ON STANDARD DRAWING EES-203.
2. FOR APPLICABLE LUMINAIRE MOUNTING HEIGHTS SEE NOTE 1 ABOVE.
3. THE HORIZONTAL AND VERTICAL TRACK CLEARANCES FOR ALL PLATFORM LIGHTING POLE INSTALLATIONS SHALL COMPLY WITH THE LATEST CANADIAN NATIONAL AND/OR CANADIAN PACIFIC RAILWAYS STANDARD CLEARANCE DIAGRAM. THE DESIGNER TO DETERMINE EXACT DISTANCE AND MUST OBTAIN WRITTEN APPROVALS BEFORE ANY WORK IS STARTED.
4. SECOND LUMINAIRE IS USUALLY NECESSARY FOR CENTRE PLATFORM LIGHTING OR AS DETERMINED BY SITE CONDITIONS; REFER TO LAYOUT DRAWINGS.
5. 150 WATT HPS LUMINAIRE WITH INTERNAL 150 WATT, 120 VOLT BALLAST AND 150 WATT CLEAR HPS LAMP. MATERIAL AND FINISH AS PER SPECIFICATION. COLOR TO BE PLATINUM SILVER. LUMINAIRE MANUFACTURER TO SUPPLY VERTICAL SLIP FITTER MOUNTS. LUMINAIRE SHALL BE KIM LIGHTING "THE ARCHETYPE" MODEL SAR MEDIUM BASE.
6. P.A. HARDWARE AND WIRING SUPPLIED AND INSTALLED AS SPECIFIED. FOR EXACT LOCATION OF SPEAKERS, REFER TO LAYOUT DRAWINGS.
7. GROUNDING RODS TO BE LOCATED AT BASE OF EVERY OTHER POLE OR EVERY 50M (PLATFORM ONLY.)
8. ORIENTATE POLE SUCH THAT HANDHOLES ARE PARALLEL TO THE TRACK.



NOTES:

1. LIGHTING POLE CONSTRUCTION AND COMPONENTS SHALL BE HOT DIP GALVANIZED STEEL C.S.A. G40.21-44 W MINIMUM WITH 50ksi YIELD
2. ALL WELDING TO CONFORM TO THE SPECIFICATIONS OF THE C.W.B. W47.1 AND W59 FULLY APPROVED C.S.A. QUALITY PROGRAM STANDARD CAN3-2299.3-1979. DESIGNED TO AASHTO WITH 80MPH WIND SPEED & 1.3 GUST FACTOR, DESIGNED FOR MAXIMUM EPA OF 10.
3. ALL FASTENERS TO BE STAINLESS STEEL EXCEPT WHERE NOTED OTHERWISE.
4. POLE MANUFACTURER SHALL SUPPLY BOLTS, NUTS AND WASHERS TO TO SUIT DESIGN SPECIFIED IN NOTE 2 ABOVE.

DETAIL
POLE SHAFT
EES-201, EES-203, EES-204

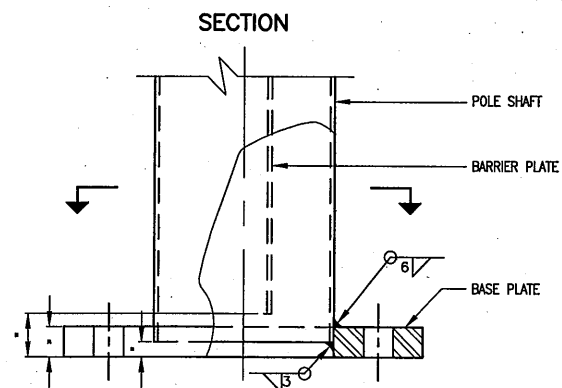
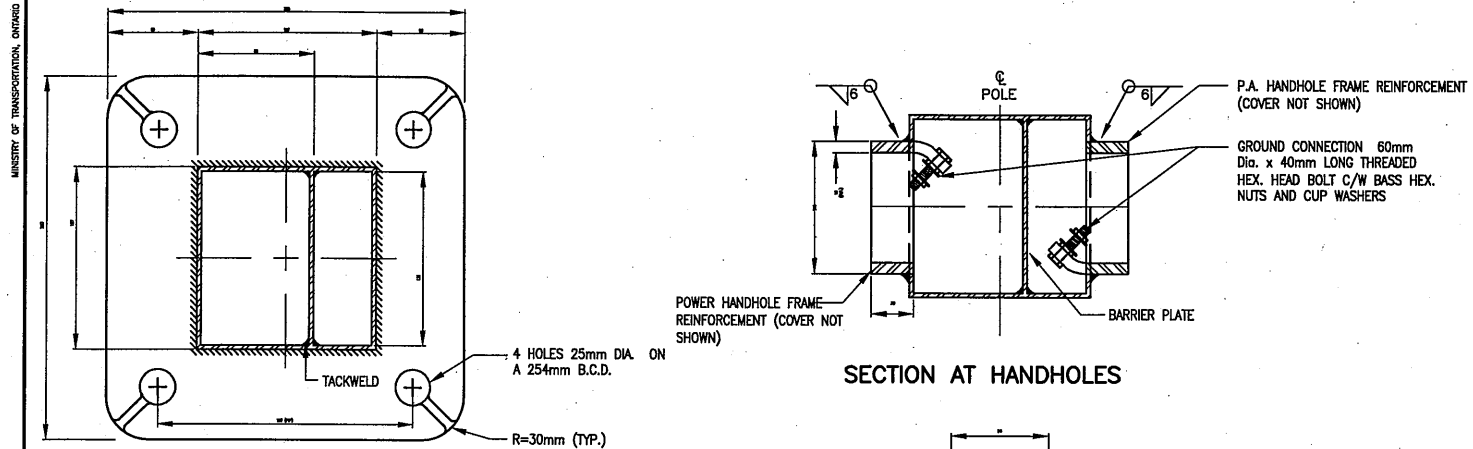


ELEVATION
TYPICAL PLATFORM LIGHTING
POLE ASSEMBLY
A
EES-201

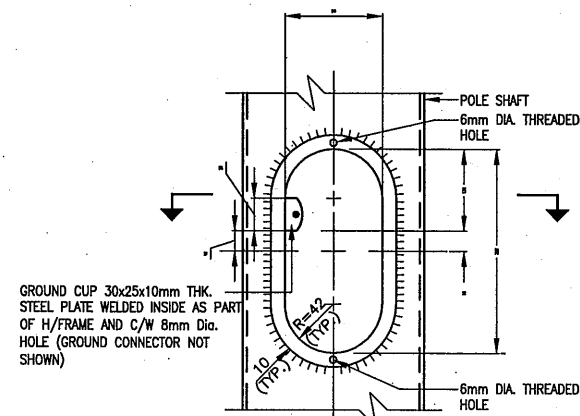
METRIC

CONT
GWP 2005-07-00HIGHWAY 404 EXTENSION
NON-STANDARD ELECTRICAL DETAILS 22
GO TRANSIT - 6m LIGHTING POLESHEET
EL-31

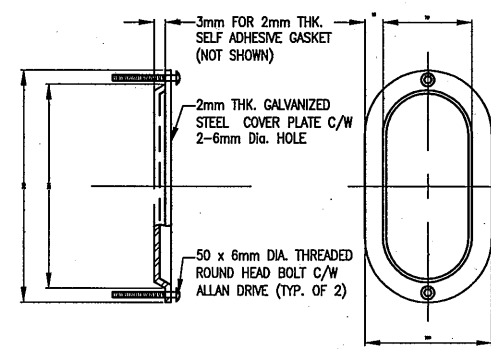
AECOM



PART ELEVATION

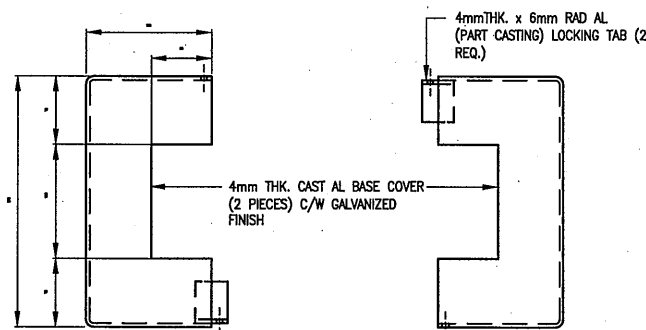
DETAIL 2
BASE PLATE EES-201, EES-202, EES-204

FRONT VIEW AT HANDHOLES



SIDE VIEW

FRONT VIEW

DETAIL 3
HANDHOLE AND COVER EES-201

TOP VIEW

6mm DIA. HOLE (2 REQ.) FOR 6mm (#14) x 20mm LONG ROBERTSON SELF-TAPPING SCREW (2 REQ.)

8mm DIA. HOLE (2 REQ.)

SIDE VIEW

SIDE VIEW

DETAIL 6
FULL BASE COVER EES-201

DETAIL 4
POLE TOP EES-201

OUTLET (COVER AND HARDWARE NOT SHOWN)

OUTLINE OF COVER

2 HOLES DRILLED AND TAPPED FOR 6mm NC SCREWS

P.A. BARRIER PLATE

200 x 130 x 3mm THK. ALL COVER PLATE C/W GALVANIZED FINISH 6mm DIA. MOUNTING HOLES, 2mm THK. SELF ADHESIVE GASKET (NOT SHOWN) AND 6mm x LONG NC SCREWS

FRONT VIEW

SECTION

FRONT VIEW

SECTION

DETAIL 5
P.A. OUTLET EES-201

#12 AWG STRANDED, INSULATED, COPPER, THW (GREEN) GROUND WIRE TO LUMINAIRES SEE NOTE 1

#12 AWG STRANDED INSULATED COPPER THW RISERS SEE NOTE 1

FUSE HOLDER KIT SEE NOTE 2

COMPRESSION CONNECTORS, COPPER TO COPPER WITH INSULATING COVERS

GROUND STUD

HANDHOLE

41mm DIA. RIGID PVC CONDUIT

20mm DIA. RIGID PVC CONDUIT

CONDUCTOR SIZES AS SHOWN ON WIRING DIAGRAM

STRANDED INSULATED RWU90 (XLPE) SECONDARY CONDUCTORS

LINE

LINE

NEUTRAL

GROUND (GREEN) MIN. #8 AWG

#6 AWG BARE STRANDED COPPER GROUND WIRE CABLE TO GROUND ROD CONNECTION CADWELD PROCESS OR APPROVED EQUAL

COPPER CLAD (FULL LENGTH) SOLID STEEL GROUND RODS 20mm DIA. x 3m LONG, AS INDICATED ON LAYOUT DRAWINGS TO OBTAIN SPECIFIED RESISTANCE TO GROUND

120/208 VOLT, 1 PHASE SYSTEM

#12 AWG STRANDED, INSULATED, COPPER, THW (GREEN) GROUND WIRE TO LUMINAIRES SEE NOTE 1

#12 AWG STRANDED INSULATED COPPER THW RISERS SEE NOTE 1

FUSE HOLDER KIT SEE NOTE 2

COMPRESSION CONNECTORS, COPPER TO COPPER WITH INSULATING COVERS

GROUND STUD

HANDHOLE

41mm DIA. RIGID PVC CONDUIT

20mm DIA. RIGID PVC CONDUIT

CONDUCTOR SIZES AS SHOWN ON WIRING DIAGRAM

STRANDED INSULATED RWU90 (XLPE) SECONDARY CONDUCTORS

LINE

LINE

NEUTRAL

GROUND (GREEN) MIN. #8 AWG

#6 AWG BARE STRANDED COPPER GROUND WIRE CABLE TO GROUND ROD CONNECTION CADWELD PROCESS OR APPROVED EQUAL

COPPER CLAD (FULL LENGTH) SOLID STEEL GROUND RODS 20mm DIA. x 3m LONG, AS INDICATED ON LAYOUT DRAWINGS TO OBTAIN SPECIFIED RESISTANCE TO GROUND

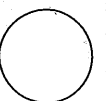
120/208 VOLT, 3 PHASE SYSTEM

NOTES:

- BROKEN LINES INDICATE ADDITIONAL CONDUCTORS FOR DOUBLE LUMINAIRE INSTALLATION AND / OR ALTERNATE CIRCUIT IN ACCORDANCE WITH PLATFORM LIGHTING AND WIRING DIAGRAM DRAWINGS.
- IN-LINE WATERPROOF FUSEHOLDER 600V, 30A WITH BREAKAWAY FEATURE, GOULD GEB-11-11 C/W WATERPROOF INSULATING BOOTS AND ONE 10 AMP FUSE TYPE KTK 600 VOLTS OR APPROVED EQUAL.
- ALL GROUNDING WIRES TO BE FITTED WITH COMPRESSION LUGS BEFORE SECURING TO GROUND STUD IN POLE.

REF. No. EES-202

METRIC

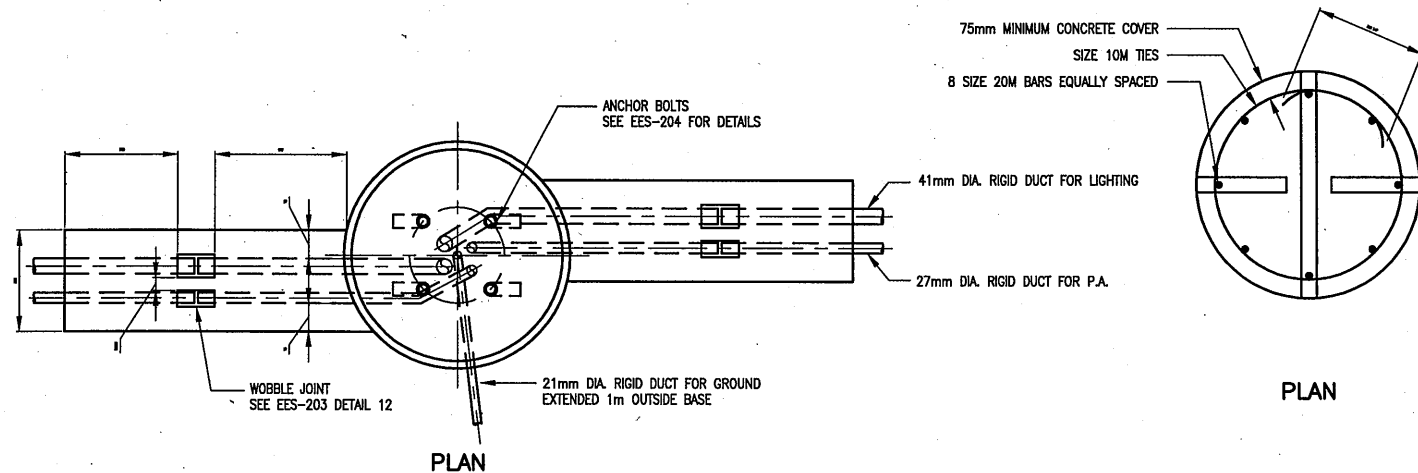
CONT
GWP 2005-07-00HIGHWAY 404 EXTENSION
NON-STANDARD ELECTRICAL DETAILS 23
GO TRANSIT - 6m LIGHTING POLESHEET
EL-32

AECOM

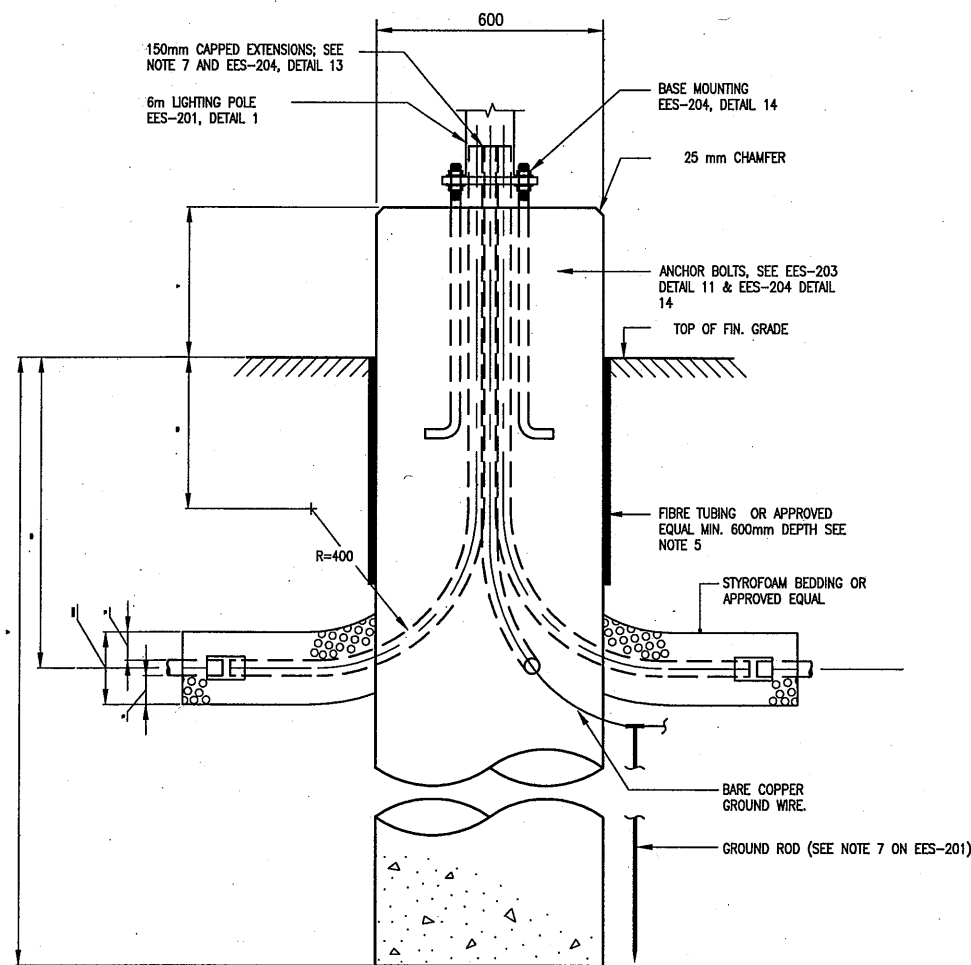
CONCRETE FOUNDATION REINFORCEMENT TABLE							
AREA	POLE LENGTH	BOLT CIRCLE DIAMETER	FOUND. HEIGHT ABOVE GRADE 'A'	NORMAL BURIAL DEPTH 'B'	LENGTH OF VERT. REINF.	NO. OF TIES	
						150mm C/C	450mm C/C
RAIL PLATFORM & WALKWAYS	6m	254mm	300mm	2.95m	2.95m	4	3
BUS, PLATFORM, LOADING, KISS & RIDE AND POLES	6m	254mm	900mm	2.50m	3.25m	4	5

NOTES:

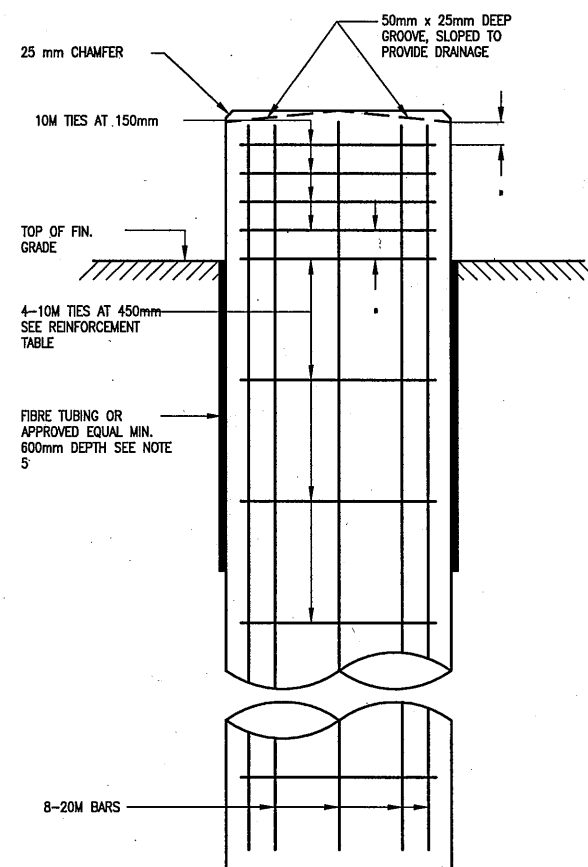
1. CONCRETE COMPRESSIVE STRENGTH SHALL BE 30 MPa AT 28 DAYS. PROVIDE 6 % AIR ENTRAINMENT.
2. REINFORCING SHALL CONFIRM TO C.S.A. SPECIFICATION G 30.12 M (MIN. YIELD STRENGTH OF 400 MPa)
3. CONCRETE IN FOUNDATION SHALL BE PLACED AGAINST UNDISTURBED GROUND.
4. TOP OF FOUNDATION SHALL BE TRUE LEVEL.
5. AFTER CONCRETE HARDENS THE FIBRE TUBING TO BE PEELED OFF FROM THE TOP TO THE FINISH GRADE AS INDICATED IN REINFORCEMENT TABLE COLUMN 'A'.
6. ALL RIGID DUCTS AND FITTINGS SHALL BE 'PVC' OR 'FIBRE REINFORCED' AS INDICATED ON LAYOUT DRAWINGS AND SHALL MEET THE REQUIREMENTS OF C.S.A. STANDARDS.
7. NO CONDUITS SHALL BE SET IN CONCRETE BASE WITHOUT ANCHOR SETTING TEMPLATE.



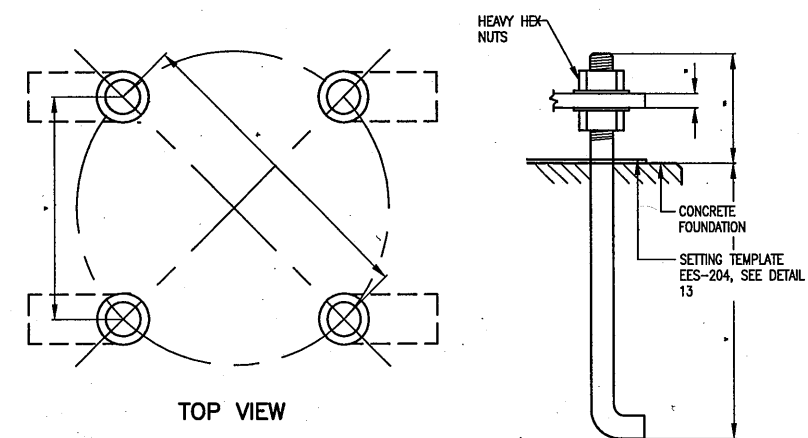
PLAN



ELEVATION

DETAIL
CONCRETE FOUNDATION
DIMENSIONS9
EES-201

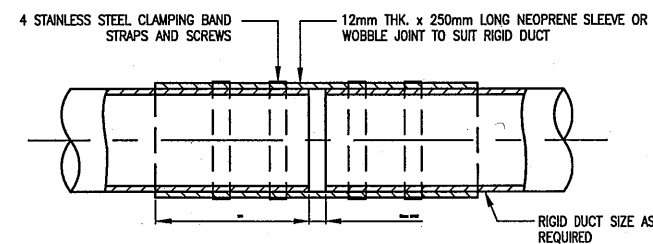
ELEVATION

DETAIL
CONCRETE FOUNDATION
REINFORCEMENT10
EES-201

TOP VIEW

ANCHOR BOLT

BOLT CIRCLE DIAMETER TABLE			
STUD DIAMETER (mm)	BOLT CIRCLE DIA. 'A' (mm)	STUD DISTANCE 'B' (mm)	ANCHORAGE DEPTH 'C' (mm)
22 (7/8")	254 (10")	180 (7")	609

DETAIL
ANCHORAGE ASSEMBLY11
EES-201, EES-204

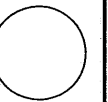
SIDE VIEW

DETAIL
WOBBLE JOINT12
EES-201, EES-203

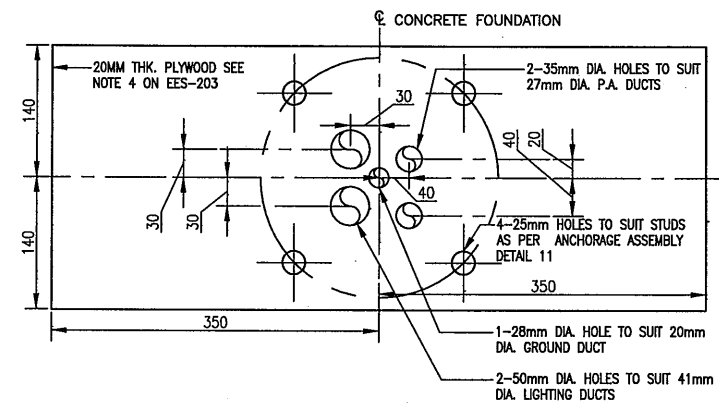
NOTES:

1. RIGID DUCTS AND FITTINGS SHALL BE RIGID PVC AND SHALL MEET THE REQUIREMENTS OF CSA STANDARD.
2. ANCHOR BOLTS, HEX NUTS AND WASHERS SHALL BE MADE OF SAE 10-30 STEEL AND WILL BE HOT DIP GALVANIZED IN ACCORDANCE WITH CSA STANDARD G-164 SPECIFICATIONS.
3. STUDS WILL BE GIVEN A LIBERAL COATING OF WHITE NON-STAINING GREASE.
4. EACH ANCHORAGE ASSEMBLY SHALL BE FINISHED WITH ONE SETTING TEMPLATE FOR ACCURATE POSITION OF THE ANCHORAGE ASSEMBLY AND CONDUITS WITHIN THE FORM. TEMPLATE TO BE REMOVED AFTER CONCRETE HARDENS.

METRIC

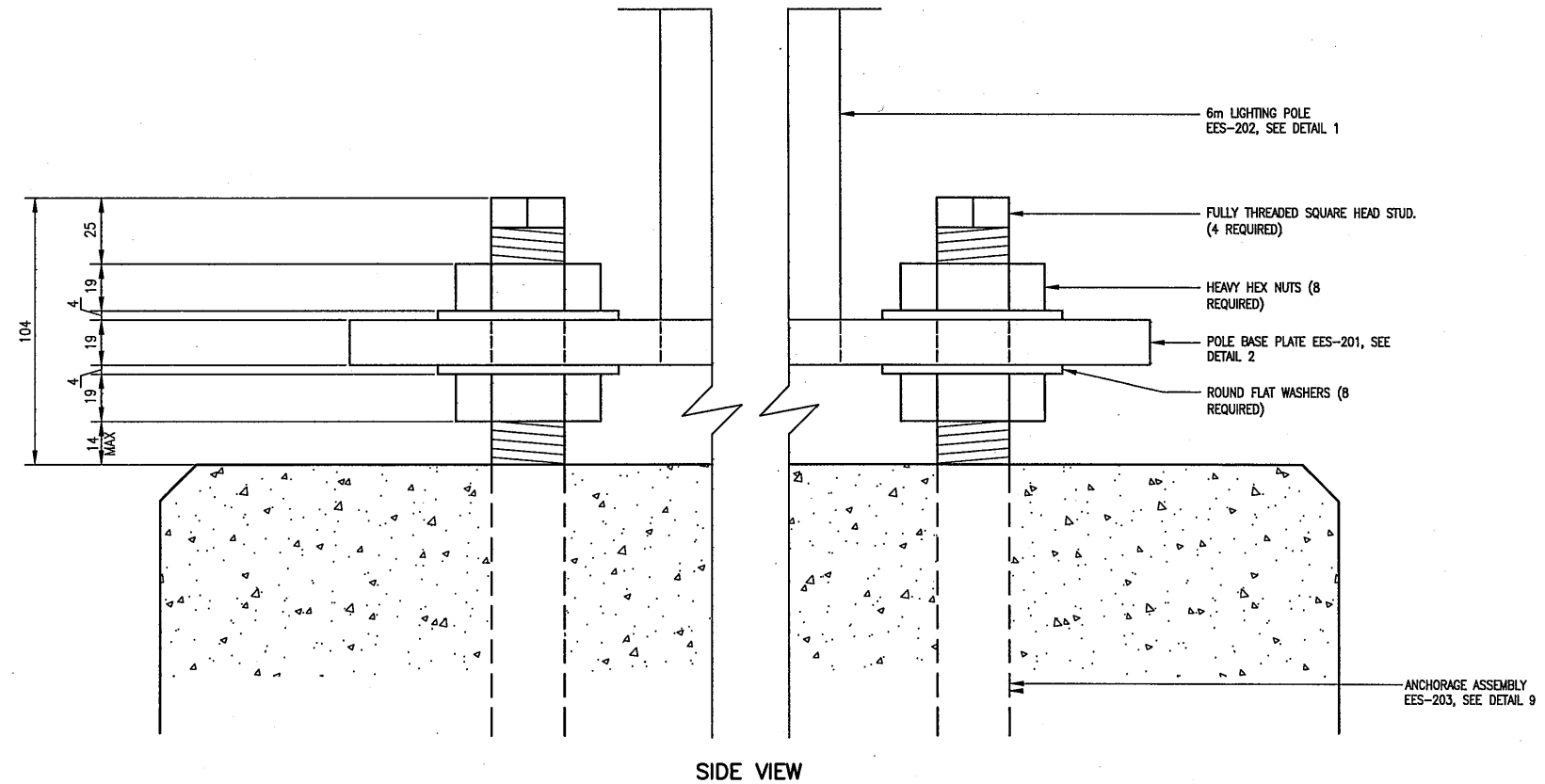
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GWP 2005-07-00HIGHWAY 404 EXTENSION
NON-STANDARD ELECTRICAL DETAILS 24
GO TRANSIT - 6m LIGHTING POLESHEET
EL-33

AECOM

DETAIL
SETTING TEMPLATE

13

EES-203



SIDE VIEW

DETAIL
BASE MOUNTING

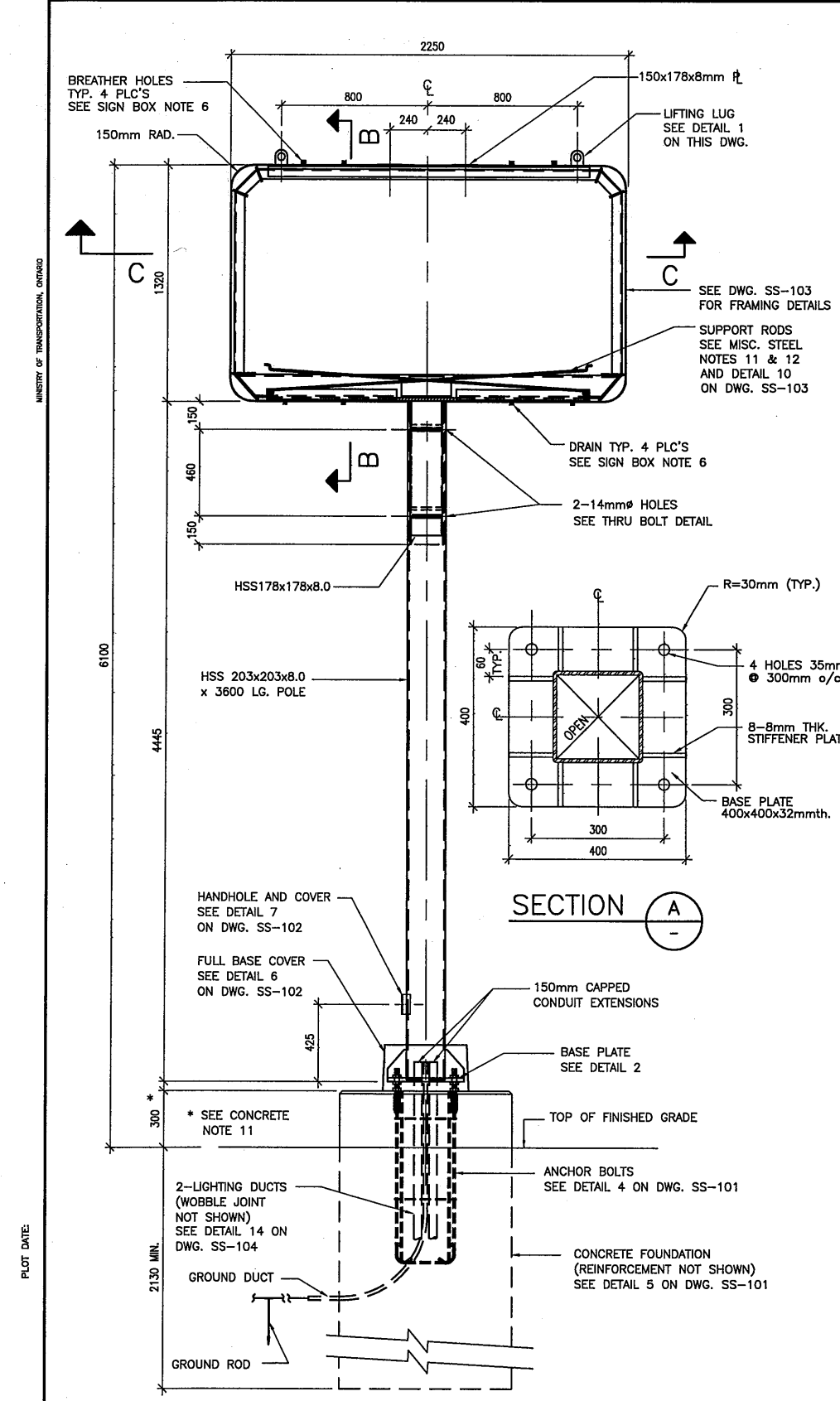
14

EES-201, EES-202, EES-204

PLOT DATE:

SAVE DATE:

DRAWING NAME:
SAVED BY:



ELEVATION
TYPICAL STATION SIGN
ASSEMBLY

NOTES:

GENERAL:

- DESIGN AND CONSTRUCT IN ACCORDANCE WITH THE LATEST EDITION OF THE ONTARIO BUILDING CODE AND ALL APPLICABLE LOCAL BY-LAWS AND REGULATIONS.
- BEFORE COMMENCING WORK, CONDUCT A CONDITION SURVEY OF EXISTING BUILDINGS, TREES AND OTHER PLANTS, LAWNS, FENCING, SERVICE POLES, WIRES, RAILTRACKS AND PAVING, SURVEY BENCH MARKS AND MONUMENTS WHICH MAY BE AFFECTED BY THE WORK. CONTRACTOR WILL BE HELD RESPONSIBLE FOR DAMAGE TO ADJACENT STRUCTURES UNLESS IT CAN BE DEMONSTRATED THAT THE PROBLEM WAS PRE-EXISTING.
- PROTECT BURIED SERVICES AND ALL NATURAL AND MAN-MADE FEATURES REQUIRED TO REMAIN UNDISTURBED.
- ALL DIMENSIONS SHOWN ARE IN METRES AND/OR MILLIMETRES UNLESS OTHERWISE NOTED.
- SUBMIT SHOP DRAWINGS FOR APPROVAL TO OWNER'S ENGINEER PRIOR TO FABRICATION.
- ALL CODES AND STANDARDS REFERENCED HERE IN SHALL BE THE LATEST EDITION.
- CONTRACTOR TO PRE-ASSEMBLE SIGN BOX AND INTERIOR FRAMING IN SHOP PRIOR TO SHIPMENT.

EXCAVATION:

- KEEP EXCAVATION CLEAN, FREE OF STANDING WATER AND LOOSE SOIL. PROTECT EXCAVATION FROM FREEZING.
- IT IS ASSUMED THAT THE MINIMUM ALLOWABLE SOIL PRESSURE IS 100 kPa (2000 psf) WITH NO ORGANICS PRESENT. OWNER TO OBTAIN GEOTECHNICAL INSPECTION TO VERIFY EXISTING SOIL CONDITIONS PRIOR TO CONSTRUCTION AND REPORT TO OWNER'S ENGINEER ANY DEVIATION FROM THE MINIMUM REQUIREMENTS.

CONCRETE:

- CONCRETE MATERIALS & METHODS OF CONSTRUCTION TO CONFORM TO CSA A23.1 UNLESS OTHERWISE SPECIFIED.
- CONCRETE STRENGTH SHALL BE 30MPa @ 28 DAYS.
- MATERIALS
 - CEMENT: TO CSA-A5-M88, TYPE 10
- MIX PROPORTIONS
 - EXPOSURE CLASSIFICATION, F-2
 - AGGREGATE SIZE TO CLAUSE 14.2.2 OF CSA A23.1-M94 : GROUP 1, 20-5mm
 - SLUMP TO TABLE 6 OF CSA A23.1-M94 : 80mm 20mm
 - AIR CONTENT: ALL CONCRETE TO CONTAIN PURPOSELY ENTRAINED AIR IN ACCORDANCE WITH TABLE 9 OF CSA A23.1-M94 : $\pm 4-7\%$
 - ADMIXTURES TO CLAUSE 6 OF CSA A23.1-M94
 - MAX. WATER/CEMENT RATIO BY MASS : 0.50
- CURE & PROTECT CONCRETE IN ACCORDANCE WITH CSA A23.1.
- MINIMUM CONCRETE COVER TO REINFORCING AND ANCHOR BOLTS TO BE 75mm.
- ALL EXPOSED CORNERS OF CONCRETE TO HAVE 20mm CHAMFER.
- REMOVE EXPOSED ABOVE GRADE PORTION OF FIBRE TUBING FORM AROUND FOUNDATION AFTER CONCRETE HAS HARDENED.
- CONCRETE IN FOUNDATION SHALL BE PLACED AGAINST UNDISTURBED GROUND.
- TOP OF FOUNDATION SHALL BE TRUE LEVEL.
- FOR CASE WHERE SIGN WILL BE LOCATED ON LEVEL PARKING AREA SURFACES, HEIGHT ABOVE TOP OF ASPHALT SHALL BE 1000 mm. VERIFY WITH OWNER PRIOR TO PLACING REINFORCING STEEL AND CONCRETE. DEPTH OF CONCRETE FOUNDATION BELOW GRADE SHALL REMAIN AS NOTED.

SIGN BOX:

- SIGN BOX TO BE DOUBLE SIDED.
- FACE FRAME AND FILLER FRAMES TO BE ALUMINUM EXTRUSIONS, 6063T5 ALLOY, PAINTED BLACK TO MATCH STEEL POST UNLESS DETERMINED OTHERWISE BY OWNER.
- FACE FRAME AND FILLER FRAME TO BE SIGNPRO # BSH-2000, AND BSHD-W-2000, OR APPROVED EQUIVALENT. ASSEMBLE AS PER MANUFACTURER'S RECOMMENDATIONS.
- FASTENERS TO BE STAINLESS STEEL SET SCREWS.
- PROVIDE NEOPRENE GASKET ALL AROUND AS A WEATHER PROOF SEAL BETWEEN THE FACE FRAME AND CABINET.
- INSTALL 4-1/2" TYPE ECD13 "STANDARD" BREATHERS BY "CROUSE-HINDS" IN TOP FILLER EXTRUSION. INSTALL 4-1/2" TYPE ECD15 "UNIVERSAL" DRAINS BY "CROUSE-HINDS" IN BOTTOM FILLER EXTRUSION. DRILL AND TAP HOLES, SEAL THREADS WITH EPOXY PRIOR TO INSTALLATION.
- FACING TO BE 5mm (3/16") "SOLAR GRADE" CLEAR OR WHITE TRANSLUCENT LEXAN, SCOTCH-3M VINYL FILM COPY AND GRAPHICS TO OWNERS SPECIFICATIONS.
- FACING TO BE SELF HINGED AND GASKETED FOR SERVICING OF THE LIGHTING FIXTURES.
- RACEWAY AND RACEWAY COVERS TO BE 24ga. BAKED ENAMEL SHEET STEEL.
- SET SCREWS TO BE STAINLESS STEEL, 6.35mmx19.05mm (1/4"x3/4") #20 CUP POINT ALLEN TYPE, @ 1200mm o.c. REQUIRED TO PROVIDE BLOWOUT PROOF CLOSURE OF FACE FRAME (REQ'D TOP AND BOTTOM OF EACH FACE).
- HINGES SHALL BE STAINLESS STEEL BY SPAENAUER, 3"x4" OPENx0.120" GA., TYPE 1.098-810 BUTT HINGE WITH NON-REMOVEABLE PIN. INSTALL 4 HINGES, ONE FACE (TOP OF SIGN ONLY).
- SCREWS TO FASTEN HINGE SHALL BE STAINLESS STEEL "HEXCO" SCREWS, #8x3/8" LONG FLAT HEAD WITH UNDERCUT. SEAL THREADS WITH EPOXY PRIOR TO INSTALLATION FOR WATERTIGHT FIT.

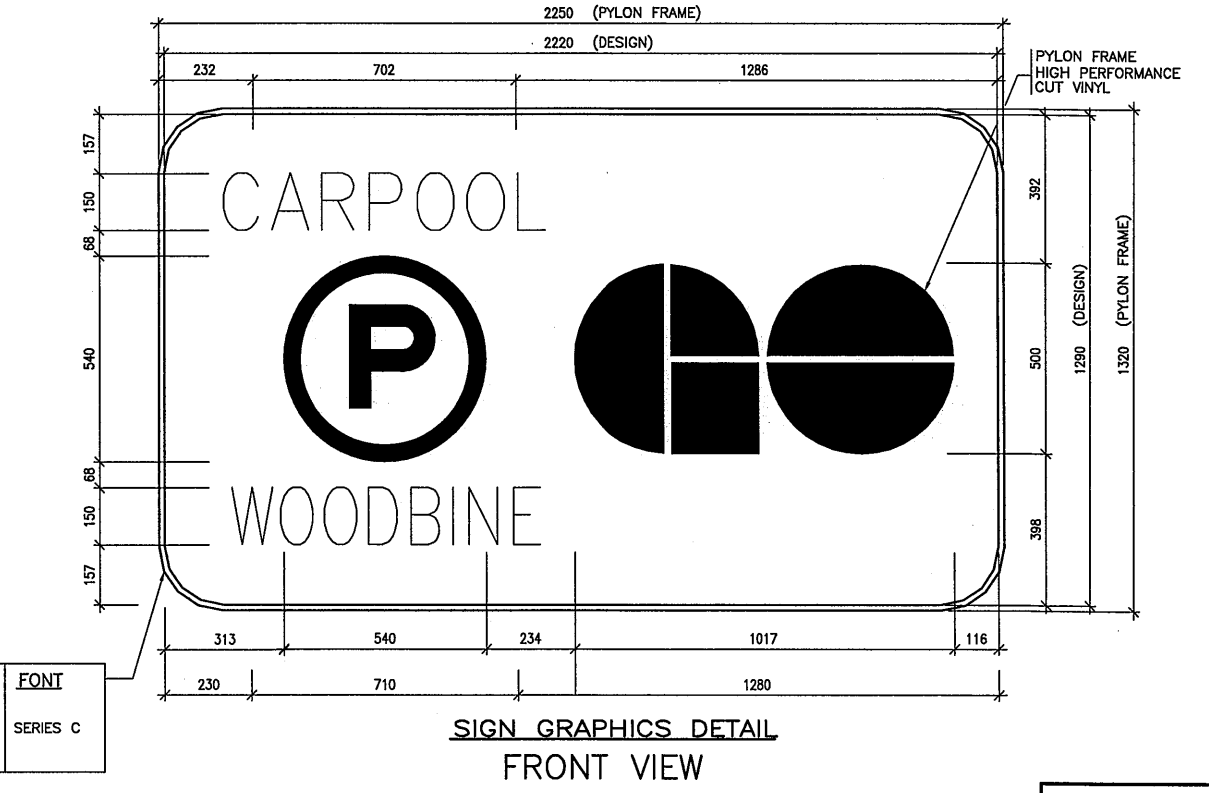
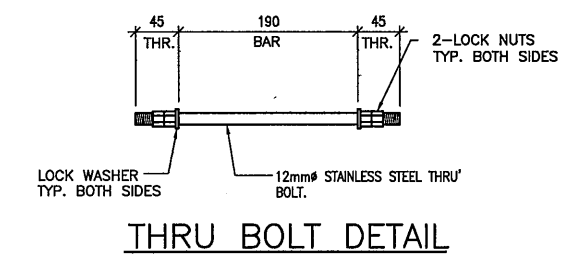
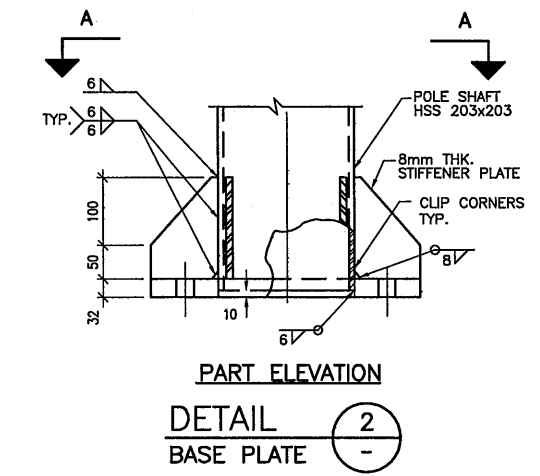
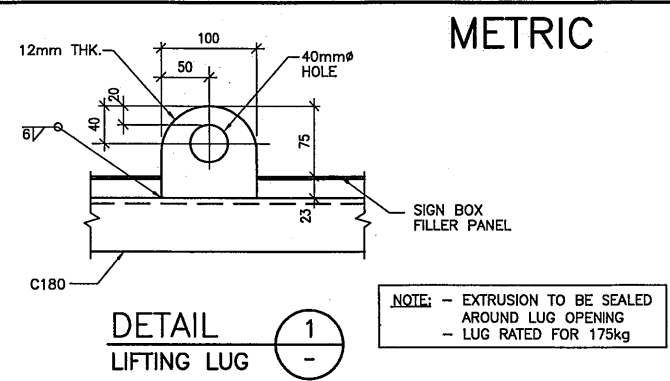
MISCELLANEOUS STEEL:

SEE DWG. SS-102 FOR NOTES.

PYLON I.D. SIGN STANDARD REFERENCE DRAWINGS

- SS-101 CONC. BASE & ANCHORING DETAILS
- SS-102 HANDHOLE BASE DETAILS
- SS-103 SIGN HEAD DETAILS
- SS-104 ELECTRICAL DETAILS

SIGN ELEMENT	COLOUR	MIN. REFL(ASTM)	FONT
BACKGROUND	WHITE/BLACK	TYPE I/TYPE I	SERIES C
BORDER INNER/OUTER	BLACK/WHITE	TYPE I/TYPE I	
TEXT	BLACK	TYPE I	
SYMBOL	GREEN/WHITE/BLACK	TYPE I/TYPE I/NONE	



CONT
GWP 2005-07-00

HIGHWAY 404 EXTENSION
NON-STANDARD ELECTRICAL DETAILS 25
GO TRANSIT - PYLON I.D. SIGN

AECOM

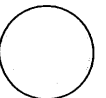
SHEET
EL-34

DRAWING NAME:
SAVED BY:

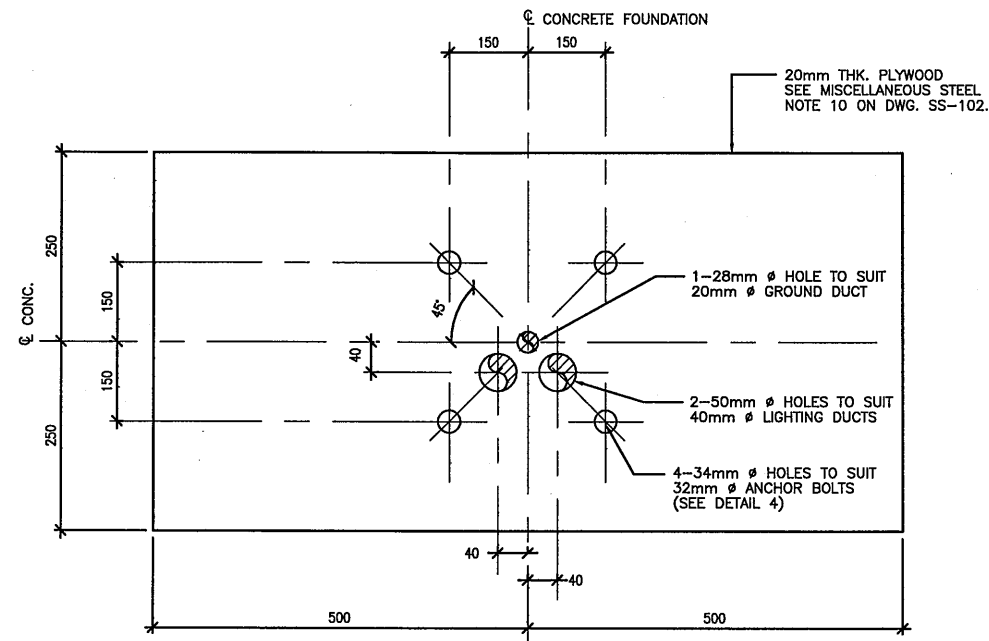
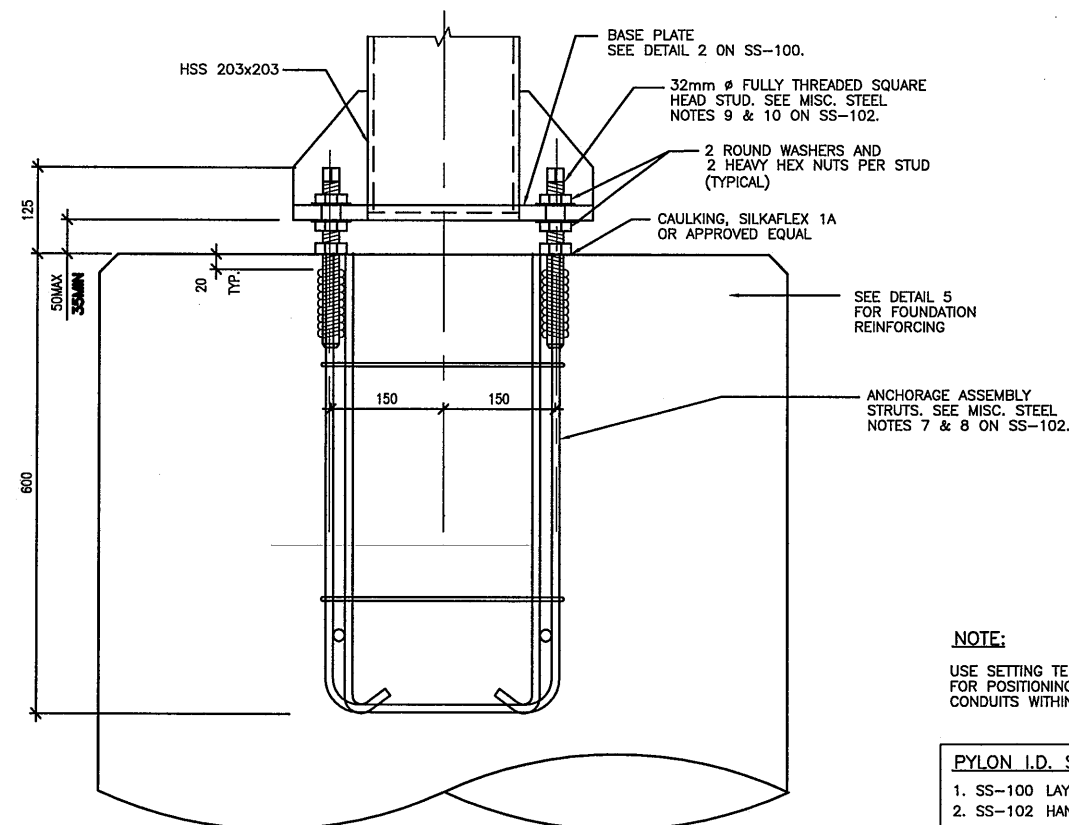
PLOT DATE:

SAVE DATE:

METRIC

CONT
GWP 2005-07-00HIGHWAY 404 EXTENSION
NON-STANDARD ELECTRICAL DETAILS 26
GO TRANSIT - PYLON I.D. SIGNSHEET
EL-35

AECOM

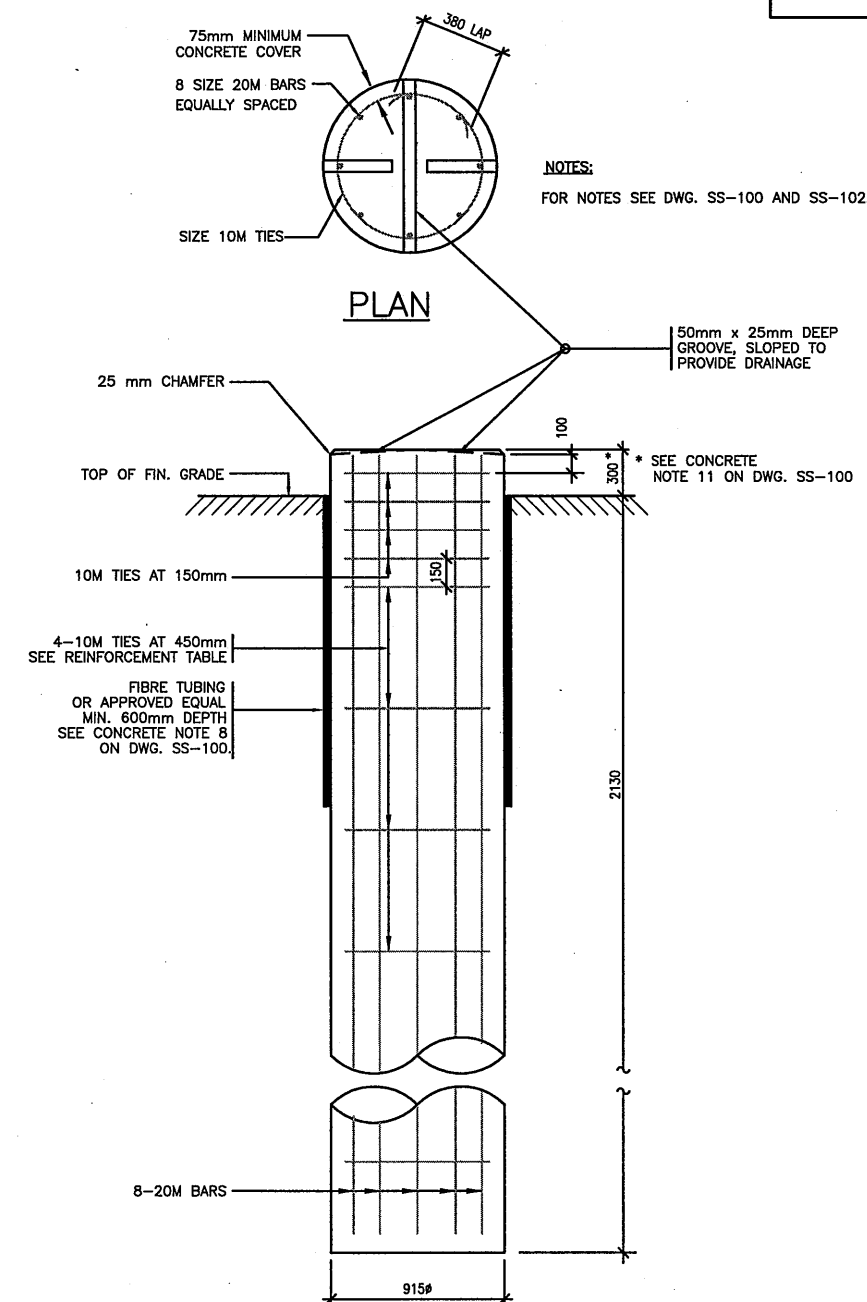
DETAIL 3
SETTING TEMPLATEACROW RICHMOND ASSEM.
TYPICAL POSITIONING
TYPE DGR-2DETAIL 4
ANCHOR BOLTS

NOTE:

USE SETTING TEMPLATE (SEE DETAIL 3)
FOR POSITIONING ANCHOR BOLTS AND
CONDUITS WITHIN THE FORM.

PYLON I.D. SIGN STANDARD REFERENCE DRAWINGS

1. SS-100 LAYOUTS & ELEVATION
2. SS-102 HANDHOLE BASE DETAILS
3. SS-103 SIGN HEAD DETAILS
4. SS-104 ELECTRICAL DETAILS



NOTES:

FOR NOTES SEE DWG. SS-100 AND SS-102.

PLAN

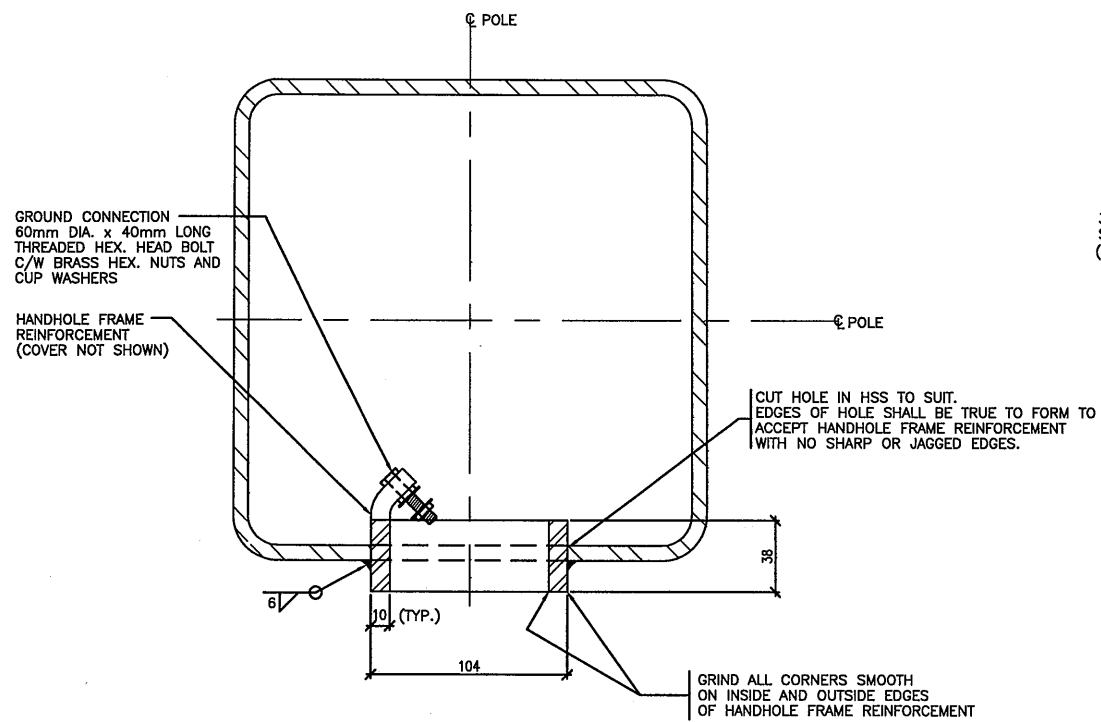
ELEVATION

DETAIL 5
CONCRETE FOUNDATION
REINFORCEMENT

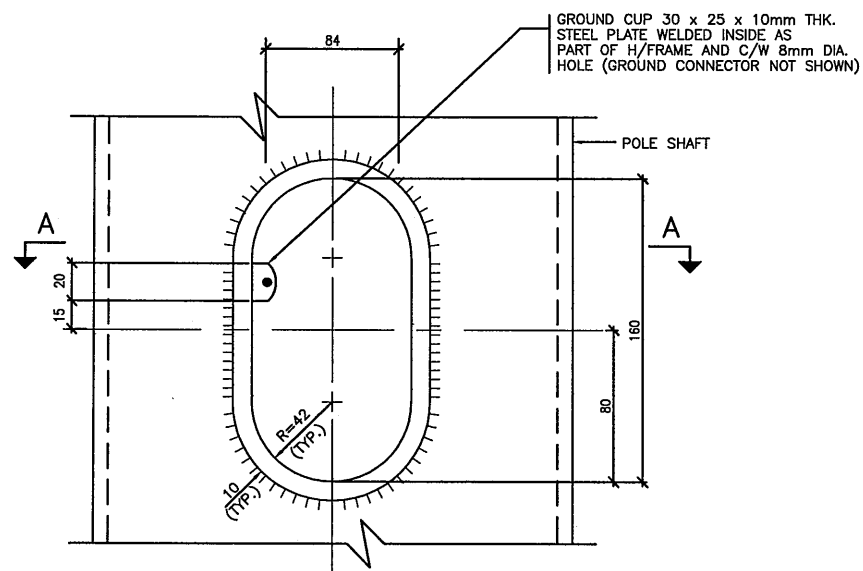
METRIC

CONT
GWP 2005-07-00HIGHWAY 404 EXTENSION
NON-STANDARD ELECTRICAL DETAILS 27
GO TRANSIT - PYLON I.D. SIGNSHEET
EL-36

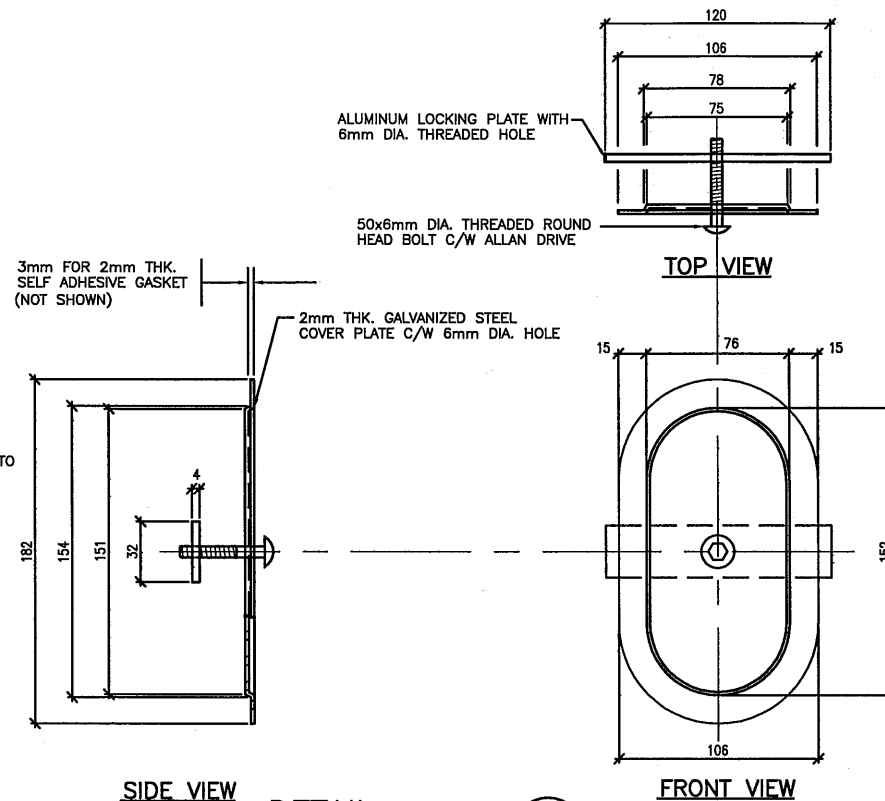
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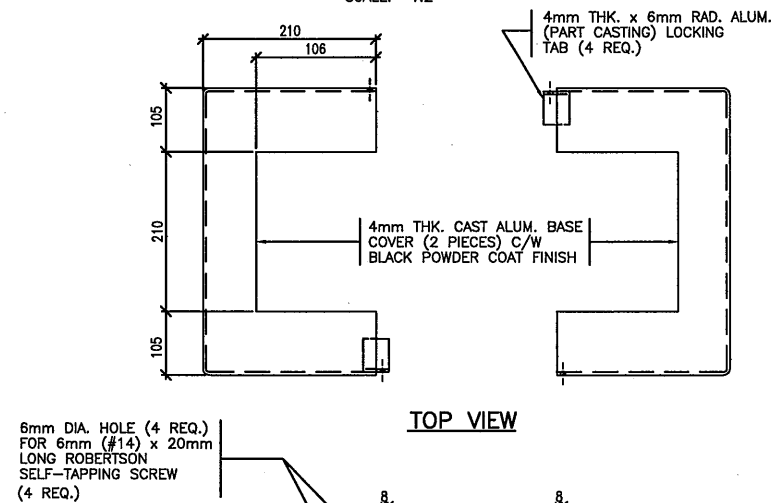
SECTION A

FRONT OUTSIDE VIEW
AT HANDHOLE

NOTE: COVER REMOVED FOR CLARITY



SIDE VIEW

DETAIL
HANDHOLE & COVER
SCALE: 1:2

TOP VIEW

SIDE VIEW

DETAIL
FULL BASE COVER
SCALE: 1:5

NOTES:

1. FOR NOTES SEE DWG. SS-100.

MISCELLANEOUS STEEL:

1. STRUCTURAL STEEL AND PLATES TO CONFORM TO CSA G40.21-M, GRADE 300W. HSS SECTIONS TO CONFORM TO CSA G40.21-M, GRADE 350W, CLASS H.
2. DESIGN, FABRICATE & ERECT TO CAN3-S16.1 & CISC HANDBOOK OF STEEL CONSTRUCTION.
3. AVOID WARPAGE OF WELDED ASSEMBLY DURING WELDING PROCEDURE.
4. ALL WELDS TO CONFORM TO CSA W59. USE ELECTRODES TO CSA W48.1, E480XX.
5. POLE CONSTRUCTION & COMPONENTS TO BE HOT DIP GALVANIZED TO CAN/CSA-G164, MINIMUM ZINC COATING OF 800 g/m², COMPLETE WITH POLYESTER POWDER COATED FINISH. COLOUR OF FINISH COAT TO BE BLACK UNLESS DETERMINED OTHERWISE BY OWNER. INTERIOR STEEL SUPPORTS WITHIN SIGNS SHALL HAVE POLYESTER POWDER COAT FINISH. COLOUR OF FINISH COAT TO BE WHITE. THE EXTRUSION AREA WHERE STEEL IS IN CONTACT WITH THE ALUMINIUM IS TO BE PAINTED TO AVOID CHEMICAL REACTION.
6. ALL FASTENERS TO BE STAINLESS STEEL EXCEPT WHERE NOTED OTHERWISE. FASTENERS FINISH TO BE BLACK PAINTED IN FIELD.
7. ANCHORAGE ASSEMBLY TO BE NCA/ACROW RICHMOND ASSEMBLY, TYPE DGR-2 (4 ANCHOR CONFIGURATION) PRE-SET ANCHOR.
8. ANCHORAGE ASSEMBLY STRUTS AND COILS SHALL BE OF SAE C-1030 GRADE STEEL, MINIMUM YIELD STRENGTH OF Fy=596 MPa. ASSEMBLY SHALL BE HOT DIP GALVANIZED IN ACCORDANCE WITH CSA-G164 SPECIFICATIONS.
9. FULLY THREADED SQUARE HEAD STUDS FOR ANCHORAGE ASSEMBLY SHALL BE 32mm DIA. A325 FASTENERS.
10. EACH ANCHORAGE ASSEMBLY SHALL BE FURNISHED WITH ONE SETTING TEMPLATE FOR ACCURATE POSITIONING OF THE ANCHORAGE ASSEMBLY AND CONDUITS WITHIN THE FORM. TEMPLATE TO BE REMOVED AFTER CONCRETE HARDENS. (SEE DETAIL 3 ON DWG. SS-101).
11. SUPPORT RODS SHALL BE 8mm DIA. HARDENED STEEL ROD C/W 150mm LONG FLEXIBLE STEEL WIRE AND COTTER PIN FASTENED TO ROD. ROD AND SUPPORT CLIP TO BE HOT-DIP GALVANIZED.
12. MOUNT D-CLIP ROD HOLDER TO HORIZONTAL LEG OF INTERIOR FRAMING ANGLES. MOUNT AS CLOSE TO END OF ANGLES AS POSSIBLE. DRILL 2-12mm DIAMETER HOLES, ONE EACH END, IN 'J' PORTION OF FACE FRAME EXTRUSION (BOTTOM ONLY ON ONE FACE) TO ACCEPT END OF RODS WHEN SIGN FACE IS IN OPEN POSITION.
13. SUPPORT ROD TO BE TELESCOPING WITH SPRING LOADED PIN TO SECURE INNER ROD IN EXTENDED POSITION. MATERIAL TO BE GALVANIZED STEEL OUTER TUBING AND INNER INSERT. SECURE BASE TO FACE OF HSS CENTRE POST. PROVIDE C-CLIP SECURED TO FACE OF HSS CENTRE POST @ TOP OF TELESCOPING ROD TO SECURE IT WHEN NOT IN USE.

PYLON I.D. SIGN STANDARD REFERENCE DRAWINGS

1. SS-100 LAYOUTS AND ELEVATIONS
2. SS-101 CONC. BASE & ANCHORING DETAILS
3. SS-103 SIGN HEAD DETAILS
4. SS-104 ELECTRICAL DETAILS

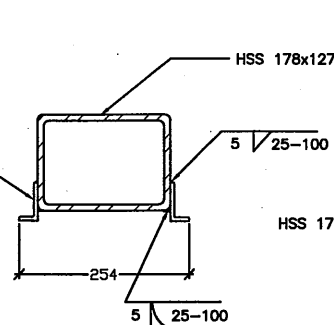
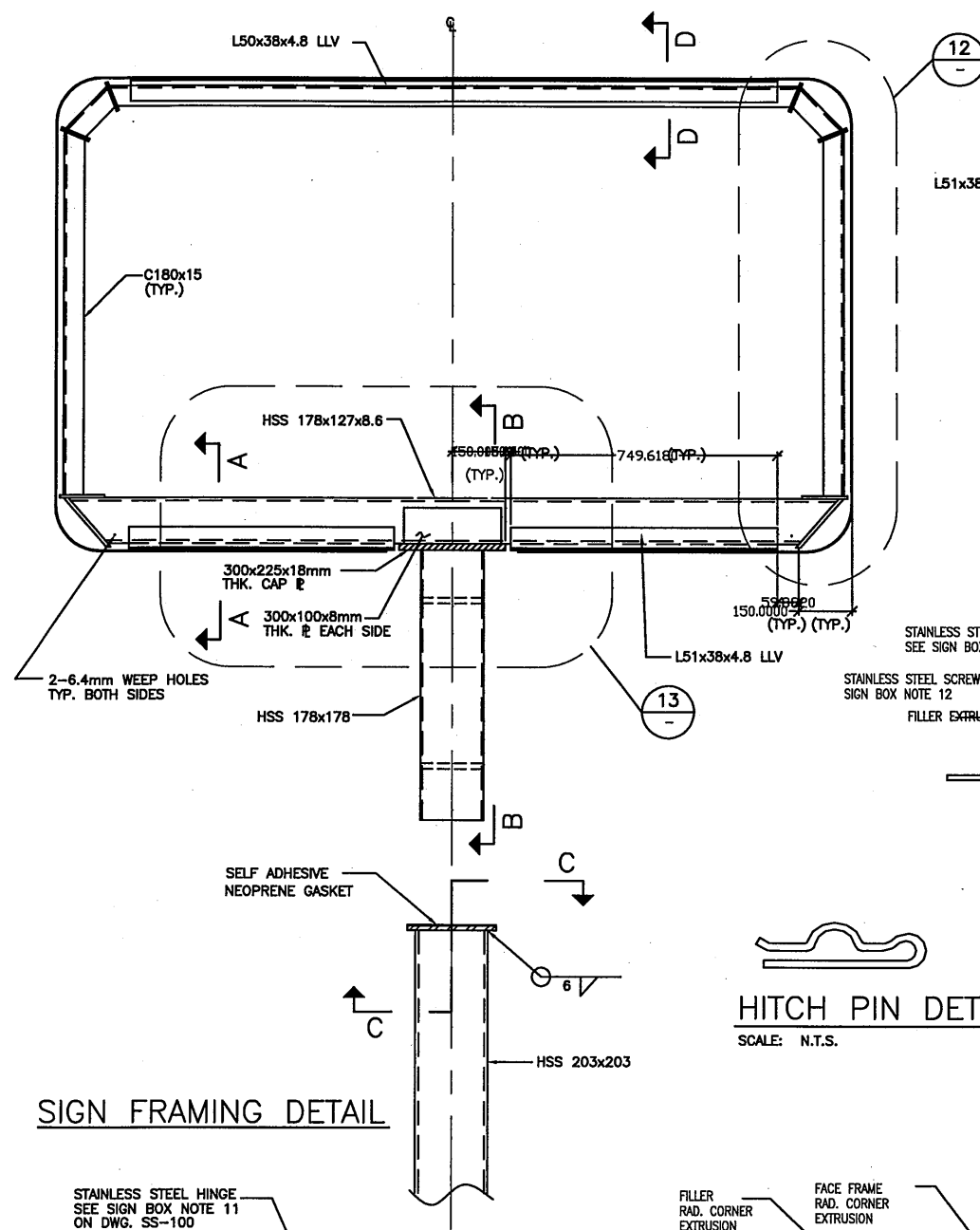
METRIC

CONT
GWP 2005-07-00

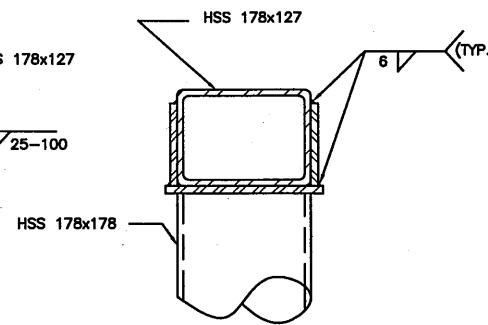
HIGHWAY 404 EXTENSION
NON-STANDARD ELECTRICAL DETAILS 28
GO TRANSIT - PYLON I.D. SIGN

SHEET
EL-37

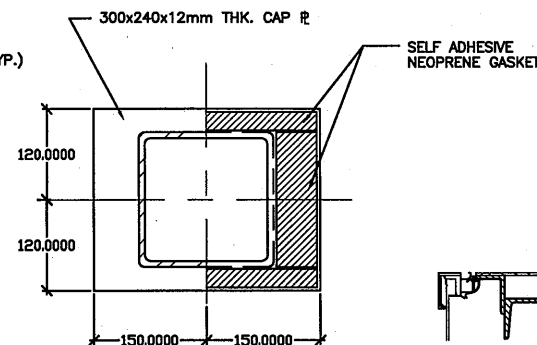
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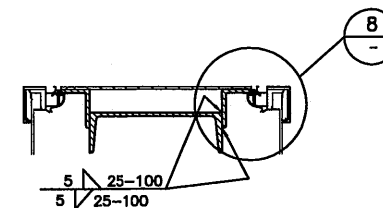
SECTION A
SCALE: 1:5



SECTION B
SCALE: 1:5



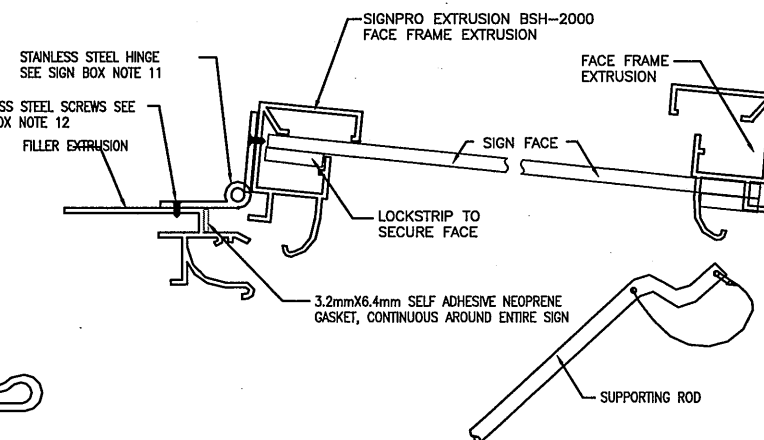
SECTION C
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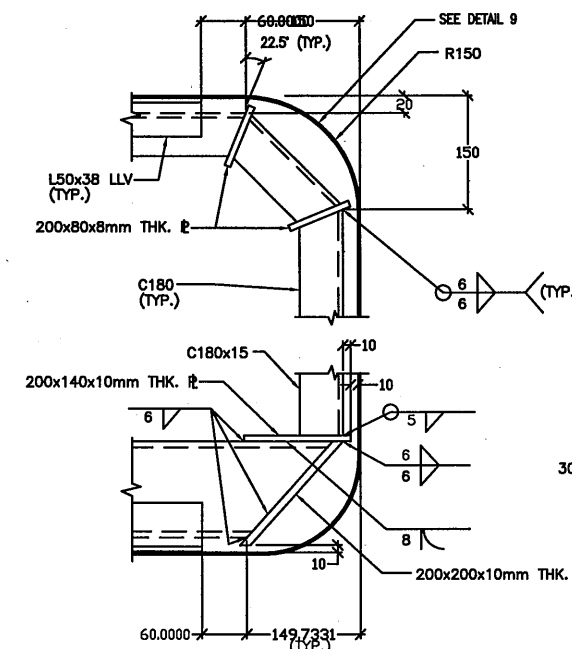
SECTION D
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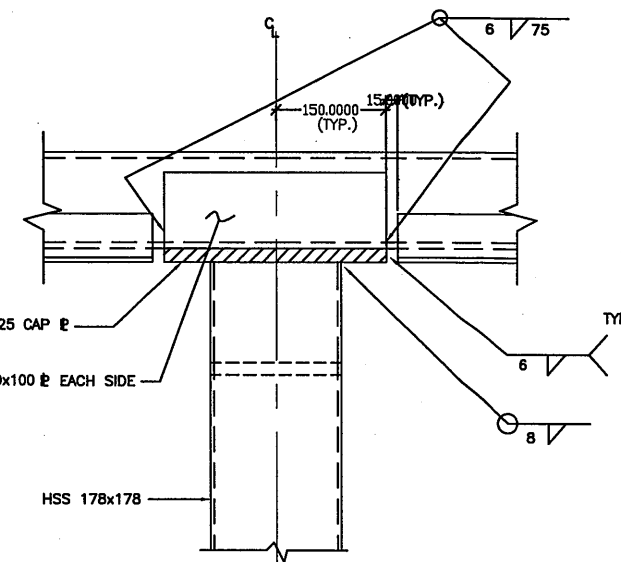
SECTION E
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DETAIL 11
SUPPORTING ROD ATTACHMENT
SCALE: N.T.S.

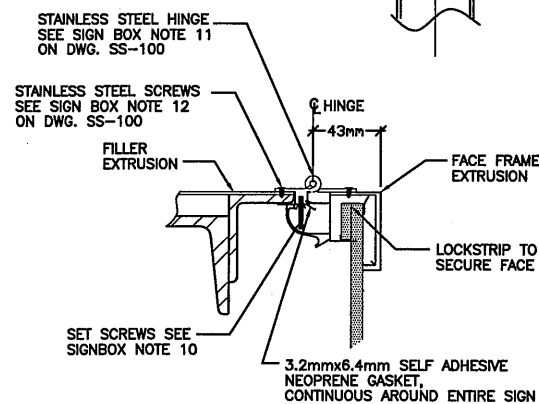


DETAIL 12
SCALE: 1:5

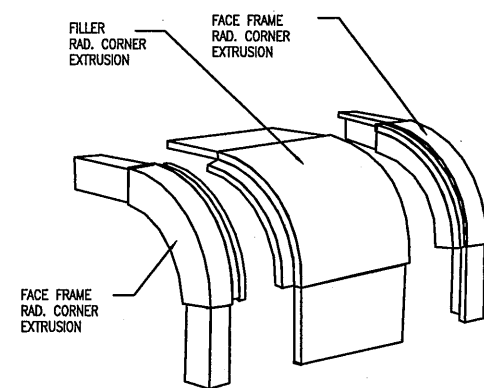


DETAIL 13
SCALE: 1:5

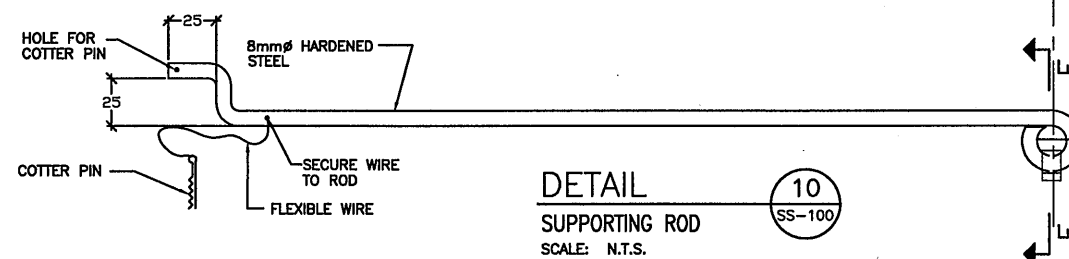
SIGN FRAMING DETAIL



DETAIL 8
SCALE: 1:5



DETAIL 9
SIGNPRO CAST CORNERS
BSHD-W-2000
SCALE: 1:5



DETAIL 10
SUPPORTING ROD
SCALE: N.T.S.

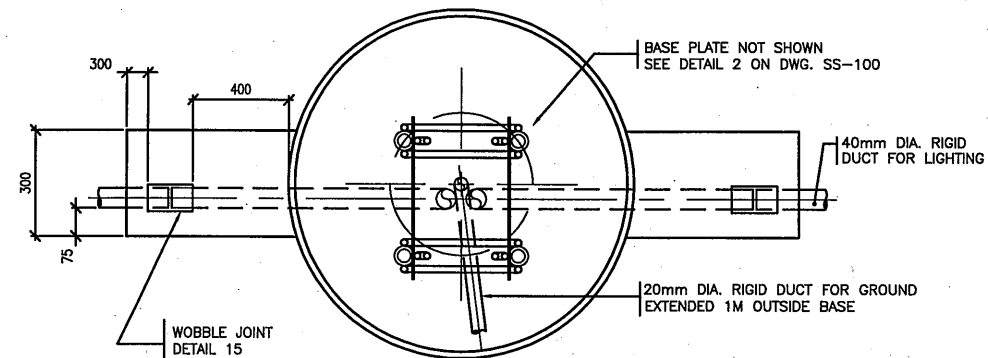
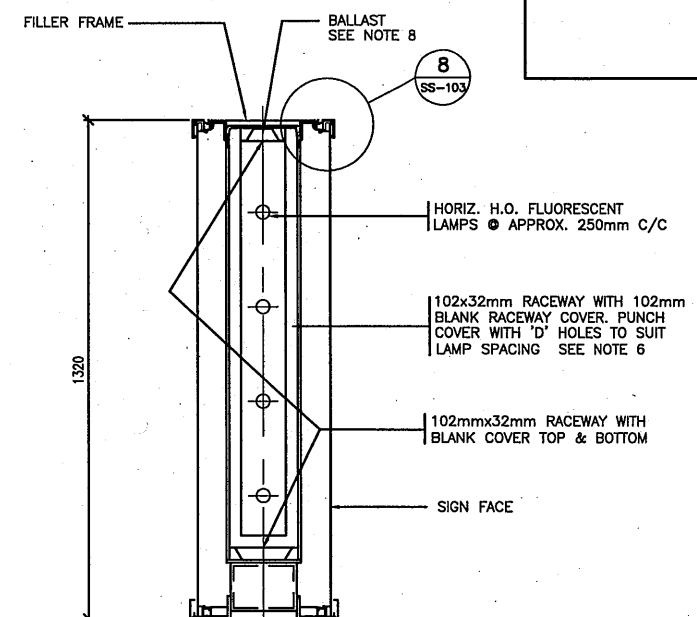
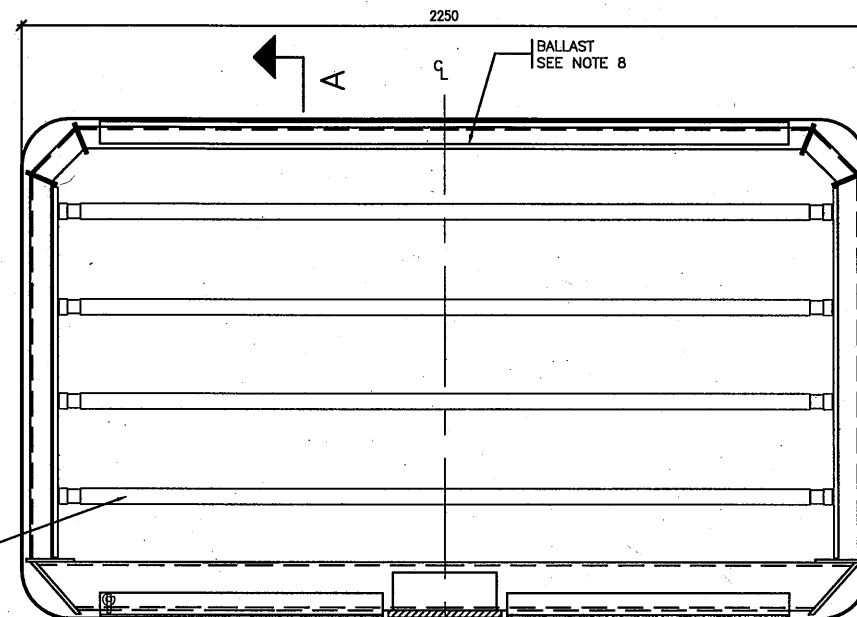
PYLON I.D. SIGN STANDARD REFERENCE DRAWINGS

1. SS-100 LAYOUTS AND ELEVATIONS
2. SS-101 CONC. BASE & ANCHORING DETAILS
3. SS-102 HANDHOLE BASE DETAILS
4. SS-104 ELECTRICAL DETAILS

METRIC

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NON-STANDARD ELECTRICAL DETAILS 29
GO TRANSIT - PYLON I.D. SIGNSHEET
EL-38

AECOM

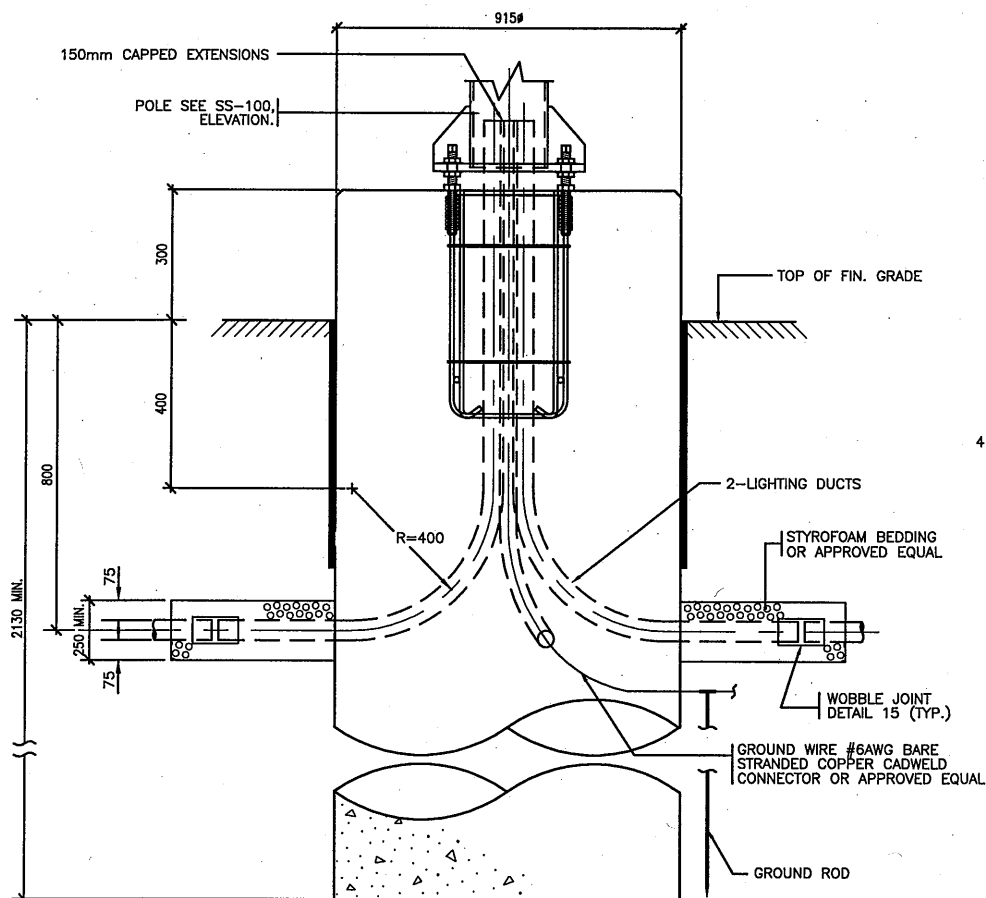
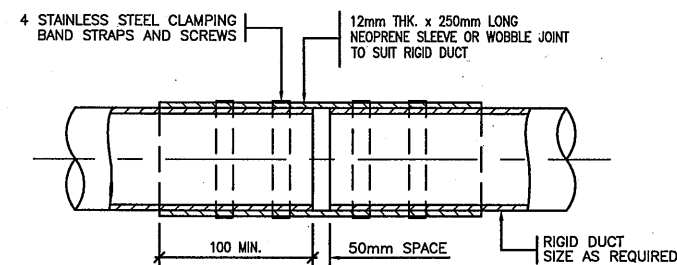
HOR. H.O. FLUORESCENT
LAMPS @ 250mm C/C
SEE NOTE 6

ELECTRICAL NOTES:

1. ALL WIRING SHALL BE IN ACCORDANCE WITH CANADIAN ELECTRICAL CODE, C22.1.98
2. ADHERE TO THE REQUIREMENTS OF SECTION 34 OF THE C.E.C. PART 1, C22.1
3. PROVIDE LOCAL ISOLATION SWITCH FOR CIRCUIT DISCONNECTING AT FIXTURE.
4. ALL RIGID DUCTS AND FITTINGS SHALL BE 'PVC' OR 'FRE' AS INDICATED ON LAYOUT DRAWINGS AND SHALL MEET THE REQUIREMENTS OF C.S.A. STANDARDS.
5. NO CONDUITS SHALL BE SET IN CONCRETE BASE WITHOUT ANCHOR SETTING TEMPLATE.
6. LAMP TO BE HIGH OUTPUT, COOL WHITE 7 FOOT FOR TYPE 'B' BOX.
7. LAMP SOCKET TO BE WEATHERPROOF, SPRING LOADED AT TOP.
8. BALLAST TO BE 800mA, 120V, HIGH OUTPUT, LOW TEMP., -20° STARTING, ADVANCE OR PHILIPS MANUFACTURE.
9. PROVIDE INTERNAL ELECTRICAL RACEWAY WITH SNAP-IN BUSHING FOR CABLE ENTRY.
10. VOLTAGE OF SIGN SUPPLY (SITE SPECIFIC) USUALLY 120 VOLT CONTRACTOR TO VERIFY BEFORE FABRICATION.
11. ALL GROUNDING WIRES TO BE FITTED WITH COMPRESSION LUGS BEFORE SECURING TO GROUND STUD.
12. ALL UNDER GROUND WIRING SHALL BE INDIVIDUAL TWU - STRANDED, AND SIZED BY LENGTH OF RUN, MINIMUM #10 IN ACCORDANCE WITH CANADIAN ELECTRICAL CODE.

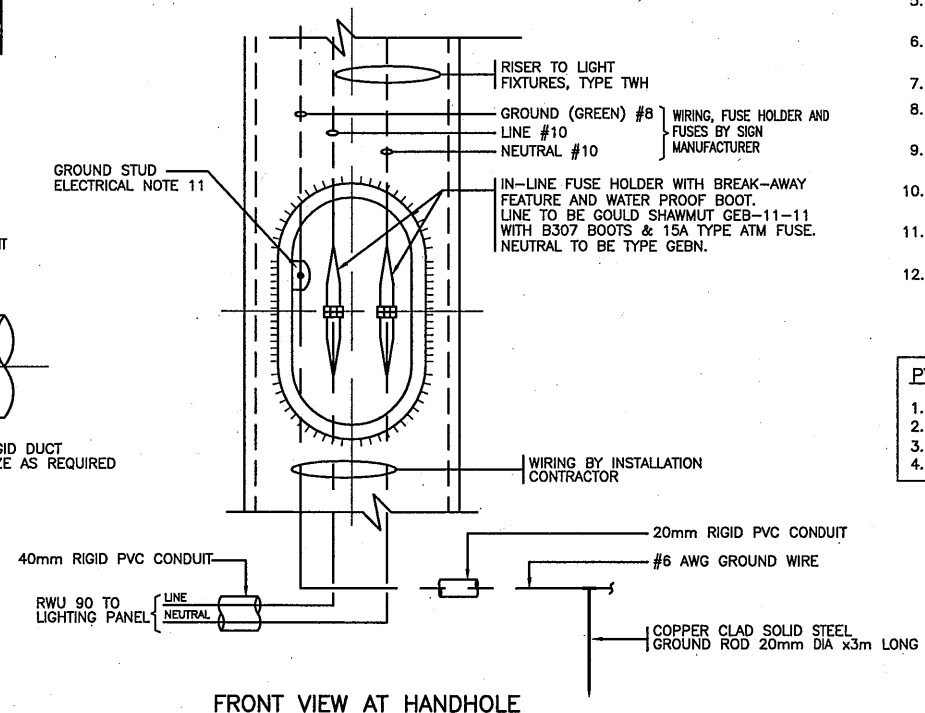
PYLON I.D. SIGN STANDARD REFERENCE DRAWINGS

1. SS-100 LAYOUTS AND ELEVATIONS
2. SS-101 CONC. BASE & ANCHORING DETAILS
3. SS-102 HANDHOLE BASE DETAILS
4. SS-103 SIGN HEAD DETAILS

DETAIL
ELECTRICAL DUCT14
SS-100

DETAIL

WOBBLE JOINT

15
-DETAIL
WIRING16
-

PLOT DATE:

SAVE DATE:

DRAWING NAME:
SAVED BY:

TRAFFIC SIGNALS

	EXISTING HWY. TRAFFIC SIGNAL HEAD & MAST ARM (WITH B.B.)
	PROPOSED HWY. TRAFFIC SIGNAL HEAD & MAST ARM (WITH B.B.)
	EXISTING HWY. TRAFFIC SIGNAL HEAD & MOUNTING BRACKET (WITH B.B.)
	PROPOSED HWY. TRAFFIC SIGNAL HEAD & MOUNTING BRACKET (WITH B.B.)
	EXISTING SPECIAL TRAFFIC SIGNAL HEAD & MOUNTING BRACKET (WITH B.B.)
	PROPOSED SPECIAL TRAFFIC SIGNAL HEAD & MOUNTING BRACKET (WITH B.B.)
	EXISTING SPECIAL TRAFFIC SIGNAL HEAD & MAST ARM (WITH B.B.)
	PROPOSED SPECIAL TRAFFIC SIGNAL HEAD & MAST ARM (WITH B.B.)
	EXISTING TRANSIT TRAFFIC SIGNAL HEAD & MOUNTING BRACKET (WITH B.B.)
	PROPOSED TRANSIT TRAFFIC SIGNAL HEAD & MOUNTING BRACKET (WITH B.B.)
	EXISTING HWY. TRAFFIC SIGNAL HEAD & SPAN WIRE
	PROPOSED HWY. TRAFFIC SIGNAL HEAD & SPAN WIRE
	PROPOSED ALL 30CM LENS HWY. TRAFFIC SIGNAL HEAD & MAST ARM (WITH B.B.)
	EXISTING ALL 30CM LENS HWY. TRAFFIC SIGNAL HEAD & MAST ARM (WITH B.B.)
	PROP. ALL 30CM LENS HWY. TRAFFIC SIGNAL HEAD & MOUNTING BRACKET (WITH B.B.)
	EXIST. ALL 30CM LENS HWY. TRAFFIC SIGNAL HEAD & MOUNTING BRACKET (WITH B.B.)
	EXISTING PEDESTRIAN SIGNAL HEAD
	PROPOSED PEDESTRIAN SIGNAL HEAD & MOUNTING BRACKET (SYMBOL TYPE)
	EXISTING COUNTDOWN PEDESTRIAN SIGNAL HEAD
	PROPOSED COUNTDOWN PEDESTRIAN SIGNAL HEAD
	EXISTING AUDIBLE PEDESTRIAN SIGNAL HEAD
	PROPOSED AUDIBLE PEDESTRIAN SIGNAL HEAD
	EXISTING PEDESTRIAN PUSH BUTTON
	PROPOSED PEDESTRIAN PUSH BUTTON
	EXISTING AUDIBLE PEDESTRIAN SIGNAL STATION
	PROPOSED AUDIBLE PEDESTRIAN SIGNAL STATION
	EXISTING TRAFFIC SIGNAL CONTROLLER (PEDESTAL MOUNTED)
	PROPOSED TRAFFIC SIGNAL CONTROLLER (PEDESTAL MOUNTED)
	EXISTING TRAFFIC SIGNAL CONTROLLER (POLE MOUNTED)
	PROPOSED TRAFFIC SIGNAL CONTROLLER (POLE MOUNTED)
	EXISTING TRAFFIC SIGNAL CONTROLLER (BASE MOUNTED)
	PROPOSED TRAFFIC SIGNAL CONTROLLER (BASE MOUNTED)
	EXISTING BATTERY BACKUP SYSTEM (BASE MOUNTED)
	PROPOSED BATTERY BACKUP SYSTEM (BASE MOUNTED)
	EXISTING FLASHER CONTROL BOX
	PROPOSED FLASHER CONTROL BOX
	EXISTING VIDEO DETECTION CAMERA
	PROPOSED VIDEO DETECTION CAMERA
	EXISTING VEHICLE DETECTOR
	PROPOSED VEHICLE DETECTOR
	EXISTING SERVICE
	PROPOSED SERVICE
	EXISTING METERED SERVICE
	PROPOSED METERED SERVICE
	EXISTING C.T.C.S. ANTENNA
	PROPOSED C.T.C.S. ANTENNA
	EXISTING OPTICAL PRE-EMPTION DETECTOR
	PROPOSED OPTICAL PRE-EMPTION DETECTOR
	EXISTING OPTICAL PRE-EMPTION DETECTOR FOR FIRE & TRANSIT
	PROPOSED OPTICAL PRE-EMPTION DETECTOR FOR FIRE & TRANSIT
	EXISTING EMTRAC PRE-EMPTION DETECTOR ANTENNA
	PROPOSED EMTRAC PRE-EMPTION DETECTOR ANTENNA
	EXISTING DOME CAMERA
	PROPOSED DOME CAMERA
	EXISTING CCTV CAMERA
	PROPOSED CCTV CAMERA

CONDUIT & WIRING

	EXISTING AERIAL FEED
	PROPOSED AERIAL FEED
	EXISTING AERIAL TRAFFIC CABLE
	PROPOSED AERIAL TRAFFIC CABLE
	EXISTING 25mm or 38mm CONDUIT
	PROPOSED 25mm or 38mm RIGID P.V.C. CONDUIT (OPEN CUT)
	EXISTING 50mm CONDUIT
	PROPOSED 50mm RIGID P.V.C. CONDUIT (OPEN CUT)
	EXISTING 75mm CONDUIT
	PROPOSED 75mm RIGID P.V.C. CONDUIT (OPEN CUT)
	PROPOSED 75mm/100mm RIGID P.V.C. CONDUIT (PLACED BY DIRECTIONAL BORING)
	EXISTING 100mm CONDUIT
	PROPOSED 100mm RIGID P.V.C. CONDUIT (OPEN CUT)
	EXISTING ASPHALT TO BE SAW CUT, REMOVED & RESTORED FOR INSTALLATION OF CONDUIT
	EXISTING DUCT BANK
	PROPOSED DUCT BANK
	EXISTING VEHICLE DETECTOR (WIRE INDUCTIVE LOOP)
	PROPOSED VEHICLE DETECTOR (WIRE INDUCTIVE LOOP)
	EXISTING QUADRUPOLE LOOP DETECTOR (WIRE INDUCTIVE LOOP)
	PROPOSED QUADRUPOLE LOOP DETECTOR (WIRE INDUCTIVE LOOP)
	EXISTING PREFORMED DUCTED LOOP DETECTORS
	PROPOSED PREFORMED DUCTED LOOP DETECTORS

ILLUMINATION & ILLUMINATED SIGNS

	EXISTING H.P.S. LUMINAIRE & MAST ARM (WATTAGE AS NOTED)
	PROPOSED H.P.S. LUMINAIRE & MAST ARM (WATTAGE AS NOTED)
	EXISTING POST TOP LUMINAIRE
	EXISTING "KEEP RIGHT" SIGN WITH FLASHER, BEACON & BASELIGHT
	EXISTING "KEEP RIGHT" SIGN & BASELIGHT
	PROPOSED "KEEP RIGHT" SIGN & BASELIGHT
	EXISTING "KEEP RIGHT" BOLLARD
	PROPOSED "KEEP RIGHT" BOLLARD
	EXISTING AERIAL "LEFT TURN ONLY" SIGN & SPAN WIRE
	PROPOSED AERIAL "LEFT TURN ONLY" SIGN & SPAN WIRE
	EXISTING STOP OR ADVANCED WARNING SIGN WITH FLASHING BEACON
	PROPOSED STOP OR ADVANCED WARNING SIGN WITH FLASHING BEACON
	EXISTING SIGNALS AHEAD SIGN WITH FLASHING BEACON
	PROPOSED SIGNALS AHEAD SIGN WITH FLASHING BEACON
	EXISTING SIGN WITH ALTERNATING FLASHING BEACONS
	PROPOSED SIGN WITH ALTERNATING FLASHING BEACONS
	EXISTING "KEEP RIGHT" SIGN
	PROPOSED "KEEP RIGHT" SIGN
	EXISTING STREET NAME SIGN
	PROPOSED STREET NAME SIGN

POLES & HANDWELLS

	EXISTING POLE
	PROPOSED WOOD POLE
	PROPOSED GALVANIZED STEEL POLE INCLUDING CONCRETE BASE
	EXISTING CONCRETE HANDWELL
	PROPOSED CONCRETE HANDWELL
	EXISTING ELECTRICAL MANHOLE
	PROPOSED ELECTRICAL MANHOLE
	PROPOSED CUT-OUT

PAVEMENT MARKING LEGEND

NAME	DIMENSIONS	USE
SOLID (WHITE)		EDGE LINES, LANE LINES, (WHITE) ** CROSSWALKS (0.15 WIDE) ** EDGE LINE ADJACENT TO CONTINUITY LINE (0.20 WIDE)
SOLID (YELLOW)		DIRECTIONAL DIVIDING LINES (YELLOW)
DOUBLE SOLID		DIRECTIONAL DIVIDING LINES (YELLOW)
BROKEN-URBAN (THRU)		URBAN LOW SPEED LANE LINES (WHITE)
BROKEN-RURAL (THRU)		RURAL HIGH SPEED LANE LINES (WHITE)
SIMULTANEOUS SOLID AND BROKEN		DIRECTIONAL DIVIDING LINES (YELLOW)
SIMULTANEOUS SOLID AND BROKEN		TWO-WAY LEFT TURN LANES (BROKEN LINE ON OUTSIDE & SOLID LINE ADJACENT TO CL) (YELLOW)
BROKEN (TURN)		LEFT OR RIGHT TURN LANE LINES (WHITE)
WIDE BROKEN		CONTINUITY LINES (WHITE)
CONDENSED BROKEN		BUS BAY (WHITE) *GUIDE LINES (WHITE)
HATCHING		DENOTES LIMITS OF SYMBOLS YELLOW FOR SEPARATION OF OPPOSING TRAFFIC. WHITE FOR SEPARATION OF DIVERGING TRAFFIC.
STOP BLOCK		INTERSECTION STOP LINES (WHITE)
CROSS		APPROACH TO RAILWAY CROSSING & PEDESTRIAN CROSSOVER (WHITE)
RAILWAY STOP BLOCK		RAILWAY CROSSING STOP LINES (WHITE)

REMOVALS

	REMOVE AND SALVAGE TEMPORARY WOOD POLE C/W ALL EQUIPMENT AND WIRING
	REMOVE AND DISPOSE OF CONCRETE HANDWELL
	REMOVE AND DISPOSE OF CONDUIT
	REMOVE AND SALVAGE LUMINAIRE AND MAST ARM
	REMOVE AND SALVAGE TRAFFIC SIGNAL HEAD AND MAST ARM
	REMOVE AND SALVAGE POLE C/W ALL EQUIPMENT (REMOVE AND DISPOSE OF CONCRETE POLE BASE)

MISCELLANEOUS

	EXISTING GROUND ROD
	PROPOSED 20mm x 3m COPPER CLAD GROUND ROD WITH THERMIT WELD CONNECTION
	EXISTING BACK GUY
	PROPOSED BACK GUY
	EXISTING POLE MOUNTED TRANSFORMER
	PROPOSED POLE MOUNTED TRANSFORMER
	EXISTING FOURWAY AERIAL FLASHING BEACON
	PROPOSED FOURWAY AERIAL FLASHING BEACON
	EXISTING PIPE BUMPER
	PROPOSED PIPE BUMPER
	SURVEY SET-UP POINT

METRIC

SYMBOL & BLOCK NAME

	SW
	SY
	DSY
	BTH
	BTHHS
	SB
	SBS
	BTU
	BW
	CB
	LIM
	TRAFFIC FLOW
	TRAFFIC FLOW
	TRAFFIC FLOW

RIGHT OF WAY, FENCES, ETC.

	REGIONAL ROAD RIGHT OF WAY OR REGIONAL ROAD PROPERTY LIMIT WITHOUT FENCE
	FENCE ON REGIONAL RIGHT OF WAY OR REGIONAL PROPERTY LIMIT
	RIGHT OF WAY - ALL ROW LIMITS EXCLUDING REGIONAL RIGHT OF WAY
	FENCES - EXCLUDING THOSE OUTLINING REGIONAL LIMITS
	GATE
	GUIDE POST
	MAILBOX
	IN-GROUND SPRINKLER
	GAS FILLER PIPE (GTP-GAS TEST PIPE)
	WATER WELL
	HIGHWAY SIGN
	COMMERCIAL SIGN

UTILITIES

	EXIST. SAN/STORM SEWER
	GAS MAIN
	WATER MAIN
	UNDERGROUND BELL CABLE
	UNDERGROUND BELL CONDUIT
	UNDERGROUND FIBRE OPTIC STRUCTURE
	UNDERGROUND TV CABLE
	UNDERGROUND HYDRO CABLE
	GAS VALVE
	WATER VALVE
	FIRE HYDRANT
	MAINTENANCE HOLE
	SANITARY, GAS, WATER, BELL
	UTILITY POLE
	HYDRO, BELL, LAMP, TRAFFIC LIGHT
	EXISTING CULVERT

TRAFFIC SIGNAL HEAD TYPES

20 cm DIA.
LENS (TYP)

SOLID CIRCULAR GREEN
OR AMBER LENSES MAY
BE EITHER 20 cm OR
30 cm DIA.

30 cm DIA.
LENS (TYP)

STD HWY HWY 1 2 3 4 5 6 7

GREEN/AMBER
LED/BIMODAL
ARROW

TRANSIT

WHITE
VERTICAL
BAR

(B) (9) PROTECTED SIMULTANEOUS LEFT TURNS FOLLOWED
BY PERMISSIVE LEFT TURNS WITH AMBER ARROW.

(1C) ADVANCED GREEN WITH GREEN ARROW.

NOTE: FOR SPECIAL ARROW HEADS (B) (9) (1C) (1)
200mm AMBER BALL AND 200mm GREEN BALL
LENS ARE TO BE USED.

NOTES

- ALL CONNECTIONS BETWEEN HANDWELLS AND CONCRETE POLE BASES FOR TRAFFIC SIGNAL POLES OR PEDESTRIAN POLES ARE TO BE MADE WITH 75mm # RIGID PVC CONDUIT UNLESS OTHERWISE INDICATED.
- WHEN IT IS NECESSARY TO BREAK INTO EXISTING CONCRETE HANDWELLS FOR PLACEMENT OF ADDITIONAL DUCTS, THESE DUCTS MUST BE PLACED NEATLY WITHOUT CAUSING STRUCTURAL DAMAGE AND ARE TO BE PROPERLY GROUTED.
- THE MATERIAL REMOVED FROM TUNNELLING UNDER THE EXISTING CURB AND GUTTER OR SIDEWALK MUST BE REPLACED BY TAMPING INTERMITTENTLY TO ENSURE PROPER COMPACTION WITH NO CAVITIES.
- POLES ARE TO BE PLACED SO THAT THE POLE HANDHOLES ARE ON THE HOUSE SIDE OF THE POLES. MEDIAN POLES ARE TO BE PLACED SO THAT THE HANDHOLE IS FACING AWAY FROM THE INTERSECTION.
- MINIMUM CLEARANCE BETWEEN THE TRAFFIC SIGNAL HEADS AND THE PAVEMENT IS 4.9m AND THE MAXIMUM CLEARANCE IS 5.3m.
- THE PEDESTRIAN HEADS ARE TO BE MOUNTED 2.7m ABOVE THE GROUND.
- THE PEDESTRIAN PUSHBUTTONS ARE TO BE MOUNTED 1.1m ABOVE THE GROUND IN THE LOCATIONS INDICATED ON THE DRAWING. A PEDESTRIAN SIGN (SYMBOL TYPE, G-19L/G-19R) SHALL BE MOUNTED IMMEDIATELY ABOVE EACH PUSHBUTTON. THE SIGN WILL BE SUPPLIED BY THE REGION.
- SEE STANDARD DRAWING E-3.24 FOR TREATMENT OF WIRE INDUCTIVE LOOPS CROSSING BUTT OR IRREGULARITY. SEE STANDARD DRAWING E-3.25 FOR LOOP DETECTOR LEAD-IN DETAILS. FOAM BACKER RODS ARE TO BE USED FOR THE INSTALLATION OF THE LOOP DETECTORS. THEY ARE TO BE INSTALLED ON TOP OF THE LOOP WIRE, SPACED EVERY 600mm.
- ALL CONNECTIONS FOR THE BURIED CABLE ARE TO BE MADE IN THE HANDHOLE OF THE STEEL POLES UNLESS OTHERWISE SPECIFIED.
- THE CONTRACTOR IS TO CONTACT THE APPROPRIATE HYDRO AUTHORITY FOR ALL CONNECTIONS TO AND/OR DISCONNECTIONS FROM POWER. INSTALLATION OF THE POWER SUPPLY AND THE POWER CONNECTION MUST BE COMPLETED VERY EARLY IN THE CONTRACT TO ENSURE THERE IS NO DELAY TO THE TRAFFIC SIGNAL AND/OR ILLUMINATION TURN ON.
- WHERE PROPOSED CONDUIT WILL CONFLICT WITH THE EXISTING 150mm # SUBDRAIN, ADJUST THE BURIAL DEPTH OF THE CONDUIT.
- GROUND PROPOSED POLES AND HANDWELL FRAMES USING NO. 6 AWG GREEN GROUND WIRE. POLES ARE TO BE CONNECTED TO SYSTEM GROUND WIRE IN THE NEAREST HANDWELL. CONNECTION IS TO BE MADE USING THERMIT WELD "Y" SPLICE. CHECK THE RESISTANCE TO GROUND.
- THE POLES ARE TO BE INSTALLED DIRECTLY ON TOP OF THE CONCRETE POLE BASES AND LEVELLED WITH GALVANIZED STEEL SHIMS, IF NECESSARY. DOUBLE NUTTING OF POLES WILL NOT BE ALLOWED.
- ALL LUMINAIRES ARE TO BE MOUNTED ON 3.7m MAST ARMS, UNLESS OTHERWISE SPECIFIED.
- THE EXISTING TRAFFIC SIGNALS WILL REMAIN IN OPERATION UNTIL THE TEMPORARY TRAFFIC SIGNALS ARE COMPLETED AND THE CONTROL TRANSFER IS PERFORMED.
- THE TEMPORARY TRAFFIC SIGNALS WILL REMAIN IN OPERATION UNTIL THE PERMANENT TRAFFIC SIGNALS ARE COMPLETED AND THE CONTROL TRANSFER IS COMPLETED.
- IF IT IS NECESSARY FOR THE CONTRACTOR TO WORK WITHIN 3 METRES OF PRIMARY HYDRO LINES, THE CONTRACTOR IS TO HAVE THE APPROPRIATE HYDRO AUTHORITY PRESENT FOR THEIR ASSISTANCE/ADVICE TO DO THE WORK.
- ALL HOLES LEFT FROM THE REMOVAL OF THE CONCRETE POLE BASES AND HANDWELLS ARE TO BE FILLED WITH GRANULAR "A" COMPACTED TO 100% STANDARD PROCTOR DENSITY OR EARTH COMPACTED TO 95% OF M.D.D. DEPENDING ON WHAT THE LOCAL MATERIAL IS, UNLESS OTHERWISE NOTED.
- ALL CONDUIT THAT IS TO BE ABANDONED, UNDER THE EXISTING ROAD, MUST BE PLUGGED USING THE CONDUIT MANUFACTURER'S PLUGS.
- IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO ENSURE THAT HE HAS AN UP TO DATE SET OF YORK REGION ELECTRICAL STANDARD DRAWINGS. A FULL SET OF DRAWINGS MAY BE OBTAINED FROM YORK REGION, TRANSPORTATION AND WORKS DEPARTMENT, ROADS BRANCH.
- FOR TYPICAL WIRING DETAILS SEE STANDARD DWG. E-4.01, E-4.02, E-4.03.
- EXPPOSED TRAFFIC SIGNAL HEADS MOUNTED WITH PLUMBIZERS, WHICH ARE NOT OPERATIONAL, ARE TO BE ROTATED SO THE HEAD IS PARALLEL TO THE PAVEMENT WITH THE FRONT OF THE HEAD FACING DOWN. EXPPOSED TRAFFIC SIGNAL HEADS ON MEDIAN POLES MOUNTED WITH VERTICAL BRACKETS, WHICH ARE NOT OPERATIONAL, ARE TO BE SECURELY COVERED AND TURNED TO THE LEFT OF APPROACHING TRAFFIC. EXPPOSED PEDESTRIAN HEADS MOUNTED WITH VERTICAL BRACKETS, WHICH ARE NOT OPERATIONAL, ARE TO BE SECURELY COVERED AND TURNED TO FACE THE POLE ON WHICH THEY ARE MOUNTED.
- STOP LINES AND CROSSWALK LINES ARE TO BE PLACED WITHIN A 24 HOUR PERIOD PRIOR TO THE TRAFFIC SIGNAL TURN ON.

WOODBINE AVE. (Y.R. 8) AT RAVENSHOE RD. (Y.R. 32)
PERMANENT

TYPE AND LOCATION OF TRAFFIC SIGNAL HEADS					
LOCATION	No.	TYPE	BACKBOARD	MAST ARM OR OFFSET	COMMENTS
W.B. SEC.	01	SPEC.	YES	NONE	NO. 9 LED
W.B. PRIM.	02	HWY.	YES	5.5m	
N.B. AUX.	03	SPEC.	YES	4.6m	NO. 9 LED
N.B. SEC.	04	SPEC.	YES	NONE	NO. 9 LED
N.B. PRIM.	05	HWY.	YES	5.5m	
E.B. SEC.	06	HWY.	YES	NONE	
E.B. PRIM.	07	HWY.	YES	5.5m	
S.B. AUX.	08	SPEC.	YES	3.6m	NO. 9 LED
S.B. SEC.	09	SPEC.	YES	NONE	NO. 9 LED
S.B. PRIM.	10	HWY.	YES	5.5m	

WOODBINE AVE. (Y.R. 8) AT RAVENSHOE RD. (Y.R. 32) - PERMANENT

POLE ASSEMBLIES						
POLE NO.	POLE DESCRIPTION	TRAFFIC SIGNAL MAST ARM	HANGER/PLUMBIZER/BRAKET	LUMINAIRE MAST ARM	LUMINAIRE	COMMENTS
P40	EXISTING HP	---	---	USS TEU-12-MA	250W HPS	PROP. SERVICE POLE (2 SERVICES) 4 EXIST. GROUND RODS (FROM TEMPS) INSTALL 2 PROP. GROUND RODS INSTALL 1 LUMINAIRE
P41	POLEFAB SS23B	---	2 BRACKETS	---	---	INSTALL 2 COUNTDOWN PED HEADS AND 1 PUSHBUTTON
P42	POLEFAB SS36R712B	---	1 BRACKET	---	---	---
P43	POLEFAB TB16R712B	TR-SMA-18	1 PLUMBIZER	USS TER-12-MA	250W HPS	INSTALL 1 LUMINAIRE REINSTALL SALVAGED STREET NAME SIGN
P44	POLEFAB SS23B	---	2 BRACKETS	---	---	INSTALL 2 COUNTDOWN PED HEADS AND 1 PUSHBUTTON
P45	EXISTING HP	---	---	USS TEU-12-MA	250W HPS	INSTALL 1 LUMINAIRE
P46	POLEFAB SS36R712B	TR-SMA-15	1 PLUMBIZER	---	---	---
P47	EXISTING HP	---	---	USS TEU-12-MA	250W HPS	INSTALL 1 LUMINAIRE
P48	POLEFAB SS36R712B	---	1 BRACKET	---	---	---
P49	POLEFAB TB16R712B	TR-SMA-18	1 PLUMBIZER	USS TER-12-MA	250W HPS	INSTALL 1 LUMINAIRE REINSTALL SALVAGED STREET NAME SIGN
P50	POLEFAB SS23B	---	2 BRACKETS	---	---	INSTALL 2 COUNTDOWN PED HEADS AND 1 PUSHBUTTON
P51	POLEFAB SS36R712B	---	1 BRACKET	---	---	---
P52	POLEFAB TB16R712B	TR-SMA-18	1 PLUMBIZER	USS TER-12-MA	250W HPS	INSTALL 1 LUMINAIRE REINSTALL SALVAGED STREET NAME SIGN
P53	POLEFAB SS23B	---	2 BRACKETS	---	---	INSTALL 2 COUNTDOWN PED HEADS AND 1 PUSHBUTTON
P54	POLEFAB TB16R712B	TR-SMA-12	1 PLUMBIZER	USS TER-12-MA	250W HPS	INSTALL 1 LUMINAIRE
P55	POLEFAB SS36R712B	---	1 BRACKET	---	---	---
P56	POLEFAB TB16R712B	TR-SMA-18	1 PLUMBIZER	USS TER-12-MA	250W HPS	INSTALL 1 LUMINAIRE REINSTALL SALVAGED STREET NAME SIGN
P57	POLEFAB TB16R712B	---	---	USS TER-12-MA	250W HPS	INSTALL 1 LUMINAIRE
P58	POLEFAB TB16R712B	---	---	USS TER-12-MA	250W HPS	INSTALL 1 LUMINAIRE INSTALL 1 GROUND ROD
P59	EXISTING HP	---	---	---	---	PROPOSED TRAFFIC COUNTING STATION
P60	EXISTING HP	---	---	---	---	PROPOSED SERVICE POLE FOR TRAFFIC COUNTING STATION INSTALL 4 GROUND RODS
P61	EXISTING HP	---	---	USS TEU-12-MA	250W HPS	INSTALL 1 LUMINAIRE
P62	EXISTING HP	---	---	USS TEU-12-MA	250W HPS	PROPOSED SUPPLY POINT INSTALL 1 LUMINAIRE
P63	POLEFAB TB16R712B	---	---	USS TER-12-MA	250W HPS	INSTALL 1 LUMINAIRE INSTALL 1 GROUND ROD

WOODBINE AVE. (Y.R. 8) AT RAVENSHOE RD. (Y.R. 32) - PERMANENT

POLES & ELECTRICAL STRUCTURES						
NOTE: ALL DIMENSIONS ARE TO THE CENTRE OF POLE BASES, POLES, HANDWELLS ETC.						
LOCATION	POLE OR STRUCT. No.	STATION	O/S FROM E	O/S PARAL TO E/P	STANDARDS	COMMENTS
WOODBINE	P40	EXISTING HP	---	---	E-5.04	PROP. SERVICE POLE (2 SERVICES) 4 EXIST. GROUND RODS (FROM TEMPS) INSTALL 2 PROP. GROUND RODS
WOODBINE	P41	10+525	---	3.25	E-2.08, E-3.08, E-3.14, E-3.31	
RAVENSHOE	P42	9+631	1.5	---	E-2.09, E-3.06, E-3.13, E-3.14, E-7.01	
RAVENSHOE	P43	9+628	---	2.50	E-2.10 E-3.06, E-3.15, E-7.18, E-7.19, E-7.22	REINSTALL SALVAGED STREET NAME SIGN
WOODBINE	P44	10+568	---	3.25	E-2.08, E-3.06, E-3.14, E-3.31	
WOODBINE	P45	EXISTING HP	---	---	E-3.05	
WOODBINE	P46	10+579	---	2.50	E-2.10, E-3.06, E-3.15	
WOODBINE	P47	EXISTING HP	---	---	E-3.05	
WOODBINE	P48	10+576	3.25	---	E-2.09, E-3.06, E-3.13, E-3.14, E-7.01	
WOODBINE	P49	10+586	---	2.50	E-2.10 E-3.06, E-3.15, E-7.18, E-7.19, E-7.22	REINSTALL SALVAGED STREET NAME SIGN
WOODBINE	P50	10+572	---	3.25	E-2.08, E-3.06, E-3.14, E-3.31	
RAVENSHOE	P51	9+686	1.5	---	E-2.09, E-3.06, E-3.13, E-3.14, E-7.01	
RAVENSHOE	P52	9+689	---	2.50	E-2.10 E-3.06, E-3.15, E-7.18, E-7.19, E-7.22	REINSTALL SALVAGED STREET NAME SIGN
RAVENSHOE	P53	9+680	---	3.25	E-2.08, E-3.06, E-3.14, E-3.31	
WOODBINE	P54	10+520	---	2.50	E-2.10, E-3.06, E-3.15	
WOODBINE	P55	10+523	0.0	---	E-2.09, E-3.06, E-3.13, E-3.14, E-7.01	
WOODBINE	P56	10+513	---	2.50	E-2.10 E-3.06, E-3.15, E-7.18, E-7.19, E-7.22	REINSTALL SALVAGED STREET NAME SIGN
WOODBINE	P57	10+473	---	2.50	E-2.10, E-3.06	
WOODBINE	P58	10+423	---	2.50	E-2.10, E-3.06	
WOODBINE	P59	EXISTING HP	---	---	---	PROPOSED TRAFFIC COUNTING STATION
WOODBINE	P60	EXISTING HP	---	---	E-5.04	PROPOSED SERVICE POLE FOR TRAFFIC COUNTING STATION; INSTALL 4 GROUND RODS
WOODBINE	P61	EXISTING HP	---	---	E-3.06	
WOODBINE	P62	EXISTING HP	---	---	E-3.06	PROPOSED SUPPLY POINT
RAVENSHOE	P63	9+733	---	2.50	E-2.10, E-3.06	INSTALL 1 GROUND ROD

METRIC

CONT

GWP 2005-07-00

CHARTS AND NOTES 1 (MUNICIPAL)
YORK REGION
WOODBINE AVE. AT RAVENSHOE RD.

SHEET

EL-40

AECOM

WOODBINE AVE. (Y.R. 8) AT RAVENSHOE RD. (Y.R. 32)
PERMANENT

JOINTS BETWEEN LOOP WIRE & HOMERUN CABLE ARE TO BE MADE AS FOLLOWS		
LOOP DETECTOR NO.	SPLICE POINT	REMARKS
LD11	HW01	SCOTCHCAST JOINT
LD12	HW01	SCOTCHCAST JOINT
LD13	HW02	SCOTCHCAST JOINT
LD14	HW02	SCOTCHCAST JOINT
LD15	HW07	SCOTCHCAST JOINT
LD16	HW06	SCOTCHCAST JOINT
LD17	HW06	SCOTCHCAST JOINT
LD18	HW09	SCOTCHCAST JOINT
LD19	HW09	SCOTCHCAST JOINT
LD20	HW11	SCOTCHCAST JOINT
LD21	HW11	SCOTCHCAST JOINT
LD22	HW17	SCOTCHCAST JOINT
LD23	HW17	SCOTCHCAST JOINT
LD24	HW18	SCOTCHCAST JOINT

WOODBINE AVE. (Y.R. 8) AT RAVENSHOE RD. (Y.R. 32)
PERMANENT

CO-ORDINATES		
POLE OR STRUCTURE No.	NORTHING	EASTING
P41	4 895 386.624	309 603.740
P42	4 895 406.814	309 598.987
P43	4 895 418.434	309 589.865
P44	4 895 426.604	309 597.952
P46	4 895 437.594	309 600.146
P48	4 895 438.332	309 622.393
P49	4 895 450.576	309 634.014
P50	4 895 438.216	309 641.642
P51	4 895 419.887	309 650.198
P52	4 895 407.131	309 657.375
P53	4 895 400.967	309 649.618
P54	4 895 388.985	309 646.019
P55	4 895 388.423	309 624.761
P56	4 895 375.867	309 610.282
P57	4 895 342.767	309 653.776
P58	4 895 293.469	309 662.137
P60	4 895 139.829	309 644.178
P63	4 895 446.542	309 691.370
HW01	4 895 389.469	309 601.017
HW02	4 895 406.464	309 595.839
HW03	4 895 420.479	309 591.570
HW04	4 895 435.628	309 600.514
HW05	4 895 487.242	309 592.104
HW06	4 895 538.980	309 584.881
HW07	4 895 439.511	309 622.167
HW08	4 895 450.576	309 634.014
HW09	4 895 435.115	309 646.813
HW10	4 895 434.927	309 650.529
HW11	4 895 420.237	309 651.346
HW12	4 895 407.905	309 658.761
HW13	4 895 406.134	309 655.642
HW14	4 895 390.952	309 645.659
HW15	4 895 389.821	309 645.866
HW16	4 895 341.291	309 645.041
HW17	4 895 287.826	309 662.838
HW18	4 895 387.242	309 624.973
HW19	4 895 382.895	309 607.250
HW20	4 895 383.968	309 606.715
HW21	4 895 141.241	309 652.052
TC2 N	4 895 380.096	309 598.042
TC2 S	4 895 377.881	309 598.201
TC2 E	4 895 379.412	309 599.148
TC2 W	4 895 378.565	309 597.095



MINISTRY OF TRANSPORTATION, ONTARIO

PLOT DATE:

SAVE DATE:

DRAWING NAME:
SAVED BY:

METRIC

WOODBINE AVE. (Y.R. 8) AT RAVENSHOE RD. (Y.R. 32) - PERMANENT

POLES & ELECTRICAL STRUCTURES						
NOTE: ALL DIMENSIONS ARE TO THE CENTRE OF POLE BASES, POLES, HANDWELLS ETC.						
LOCATION	POLE OR STRUCT. No.	STATION	O/S FROM £	O/S PARAL TO E/P	STANDARDS	COMMENTS
RAVENSHOE	HW01	9+630	---	2.50	E-1.03	
RAVENSHOE	HW02	9+630	---	1.50	E-1.03	
RAVENSHOE	HW03	9+630	---	2.50	E-1.03	
WOODBINE	HW04	10+577	---	2.50	E-1.03	INSTALL 1 GROUND ROD
WOODBINE	HW05	10+629	---	2.50	E-1.03	
WOODBINE	HW06	10+682	---	2.50	E-1.03	
WOODBINE	HW07	10+577	3.25	---	E-1.03	
WOODBINE	HW08	10+577	---	2.50	E-1.03	INSTALL 1 GROUND ROD
RAVENSHOE	HW09	9+687	---	2.50	E-1.03	
RAVENSHOE	HW10	9+691	---	2.50	E-1.03	FOR GEORGINA LANDSCAPE FEATURE
RAVENSHOE	HW11	9+687	1.50	---	E-1.03	
RAVENSHOE	HW12	9+691	---	2.50	E-1.03	FOR GEORGINA LANDSCAPE FEATURE
RAVENSHOE	HW13	9+687	---	2.50	E-1.03	
WOODBINE	HW14	10+522	---	2.50	E-1.03	INSTALL 1 GROUND ROD
WOODBINE	HW15	10+521	---	2.50	E-1.03	FOR GEORGINA LANDSCAPE FEATURE
WOODBINE	HW16	10+472	---	2.50	E-1.03	
WOODBINE	HW17	10+417	---	2.50	E-1.03	
WOODBINE	HW18	10+522	9.6	---	E-1.03	
WOODBINE	HW19	10+521	---	2.50	E-1.03	FOR GEORGINA LANDSCAPE FEATURE
WOODBINE	HW20	10+522	---	2.50	E-1.04	INSTALL 1 GROUND ROD
WOODBINE	HW21	10+275	---	2.50	E-1.03, E-8.05	TRAFFIC COUNTING STATION
RAVENSHOE	KR01	9+631	1.5	---	E-7.01	BANDED TO POLE P42
WOODBINE	KR02	10+576	3.25	---	E-7.01	BANDED TO POLE P48
WOODBINE	KR03	10+608	3.25	---	E-7.01	
RAVENSHOE	KR04	9+686	1.5	---	E-7.01	BANDED TO POLE P51
WOODBINE	KR05	10+523	0.0	---	E-7.01	BANDED TO POLE P55
WOODBINE	KR06	10+498	0.0	---	E-7.01	
RAVENSHOE	KR07	9+606	1.5	---	E-7.01	
RAVENSHOE	KR08	9+712	1.5	---	E-7.01	

NOTES FOR TEMPORARY SIGNALS

- ALL TEMPORARY SIGNAL HEADS SHALL BE THE 'HIGHWAY' TYPE WITH BACKBOARDS. LENSES SHALL BE 300mm RED, 200mm AMBER AND GREEN, UNLESS OTHERWISE SPECIFIED.
- ALL TEMPORARY SIGNAL HEADS SHALL BE MOUNTED ON SPAN WIRE.
- THE CONTRACTOR SHALL LEAVE 3m OF EXTRA CABLE COILED AT EACH SIGNAL HEAD TO ALLOW FOR ADJUSTMENTS TO SUIT CONSTRUCTION STAGING. RELOCATION OF HEADS WILL BE DONE BY THE CONTRACTOR UPON REQUEST BY THE REGION.
- IF IT IS NECESSARY FOR THE CONTRACTOR TO WORK WITHIN 3 METRES OF PRIMARY HYDRO LINES, THE CONTRACTOR IS TO HAVE THE APPROPRIATE HYDRO AUTHORITY PRESENT FOR THEIR ASSISTANCE/ADVICE TO DO THE WORK.
- THE WORK MUST BE STAGED SO AS TO MAINTAIN THE EXISTING ILLUMINATION IN CONTINUOUS NIGHT TIME OPERATION.
- MINIMUM CLEARANCE BETWEEN THE TEMPORARY TRAFFIC SIGNAL HEADS AND THE PAVEMENT IS 5.5m AND THE MAXIMUM CLEARANCE IS 6m.
- ALL HOLES LEFT FROM THE REMOVAL OF CONCRETE POLE BASES, HANDWELLS AND TEMPORARY POLES ARE TO BE FILLED WITH EITHER GRANULAR 'A' COMPACTED TO 100% STANDARD PROCTOR DENSITY OR EARTH COMPACTED TO 95% OF M.D.D. DEPENDING ON WHAT THE LOCAL MATERIAL IS, UNLESS OTHERWISE NOTED.
- EXISTING VEHICLE LOOP DETECTORS ARE TO BE ABANDONED AS NOTED ON THE DRAWINGS. THE CONTRACTOR WILL CONTACT THE REGION 1 WEEK PRIOR TO UNDERTAKING ANY WORK THAT WILL RENDER THE EXISTING VEHICLE LOOP DETECTORS INOPERATIVE.
- THE CONTRACTOR IS TO SUPPLY THE TEMPORARY TRAFFIC SIGNAL POLES. ALL POLES ARE TO BE 11.0m LONG AND SET AT 1.80m. THE POLES ARE TO BE WESTERN RED CEDAR, CLASS 3, WITH PRESERVATIVE BUTT END TREATMENT C.S.A. STANDARD 015.2-1989 AND 080-1974 OR EQUIVALENT PRESSURE TREATED PINE. USED POLES, IN GOOD CONDITION, ARE ACCEPTABLE SUBJECT TO APPROVAL OF THE COMMISSIONER.
- TEMPORARY TRAFFIC CONTROL SIGNALS ARE TO BE ADJUSTED TO SUIT ALL CHANGES TO ROAD ALIGNMENTS AND CONSTRUCTION STAGING AS REQUIRED. THE CONTRACTOR IS TO NOTIFY THE PROJECT SUPERVISOR WHEN ADJUSTMENTS ARE REQUIRED.
- ALL LOCATION AND ORIENTATION CHANGES TO THE TRAFFIC SIGNAL HEADS MUST BE APPROVED BY YORK REGION ELECTRICAL CONSTRUCTION COORDINATOR, PRIOR TO IMPLEMENTATION. WHEN SIGNAL HEADS ARE TO BE DE-ENERGIZED TO ACCOMMODATE CONSTRUCTION STAGING, THE TRAFFIC SIGNAL HEADS MUST BE COVERED WITH "TRAFFIC JACKET" SIGNAL COVERS.

WOODBINE AVE. (Y.R. 8) AT RAVENSHOE RD. (Y.R. 32) - PERMANENT

POLE ASSEMBLIES						
POLE NO.	POLE DESCRIPTION	TRAFFIC SIGNAL MAST ARM	HANGER/PLUMBIZER/BRACKET	LUMINAIRE MAST ARM	LUMINAIRE	COMMENTS
P40	EXISTING HP	---	---	---	250W HPS	PROPOSED SERVICE POLE INSTALL 4 GROUND RODS
TP1	WOOD	---	---	USS TEU-12-MA	250W HPS	INSTALL 2 BACK GUYS, 1 LUMINAIRE AND 1 GROUND ROD
TP2	WOOD	---	---	USS TEU-12-MA	250W HPS	INSTALL 2 BACK GUYS, 1 LUMINAIRE AND 1 GROUND ROD
TP3	WOOD	---	---	USS TEU-12-MA	250W HPS	INSTALL 1 BACK GUY, 1 LUMINAIRE AND 1 GROUND ROD
TP4	WOOD	---	---	USS TEU-12-MA	250W HPS	INSTALL 1 BACK GUY, 1 LUMINAIRE AND 1 GROUND ROD
TP5	WOOD	---	---	USS TEU-12-MA	250W HPS	INSTALL 2 BACK GUYS, 1 LUMINAIRE AND 1 GROUND ROD

WOODBINE AVE. (Y.R. 8) AT RAVENSHOE RD. (Y.R. 32) - TEMPORARY

POLES & ELECTRICAL STRUCTURES						
NOTE: ALL DIMENSIONS ARE TO THE CENTRE OF POLE BASES, POLES, HANDWELLS ETC.						
LOCATION	POLE OR STRUCT. No.	STATION	O/S FROM £	O/S PARAL TO E/P	STANDARDS	COMMENTS
WOODBINE	P40	EXISTING HP	---	---	E-5.04	PROP. SERVICE POLE, 4 PROP. GROUND RODS
WOODBINE	TP1		19.1	---	E-3.01, E-3.02, E-3.03 E-3.04, E-3.05, E-3.23	INSTALL 2 BACK GUYS, 1 LUMINAIRE AND 1 GROUND ROD
WOODBINE	TP2	10+575	19.3	---	E-3.01, E-3.02, E-3.03 E-3.04, E-3.05, E-3.23	INSTALL 2 BACK GUYS, 1 LUMINAIRE AND 1 GROUND ROD
WOODBINE	TP3	10+530	28.3	---	E-3.01, E-3.02, E-3.03 E-3.04, E-3.05, E-3.23	INSTALL 1 BACK GUY, 1 LUMINAIRE AND 1 GROUND ROD
WOODBINE	TP4	10+521	24.4	---	E-3.01, E-3.02, E-3.03 E-3.04, E-3.05, E-3.23	INSTALL 1 BACK GUY, 1 LUMINAIRE AND 1 GROUND ROD
WOODBINE	TP5	10+521	20.9	---	E-3.01, E-3.02, E-3.03 E-3.04, E-3.05, E-3.23	INSTALL 2 BACK GUYS, 1 LUMINAIRE AND 1 GROUND ROD

WOODBINE AVE. (Y.R. 8) AT RAVENSHOE RD. (Y.R. 32)
TEMPORARY

TYPE AND LOCATION OF TRAFFIC SIGNAL HEADS					
LOCATION	No.	TYPE	BACKBOARD	MAST ARM OR OFFSET	COMMENTS
W.B. AUX.	11	HWY.	YES	29.4m FROM TP1	
W.B. SEC.	12	HWY.	YES	23.6m FROM TP1	
W.B. PRIM.	13	HWY.	YES	17.7m FROM TP1	
N.B. AUX.	14	SPEC.	YES	31.1m FROM TP2	No. 9 LED
N.B. SEC.	15	SPEC.	YES	22.1m FROM TP2	No. 9 LED
N.B. PRIM.	16	HWY.	YES	14.6m FROM TP2	
E.B. AUX.	17	HWY.	YES	27.5m FROM TP3	
E.B. SEC.	18	HWY.	YES	22.3m FROM TP3	
E.B. PRIM.	19	HWY.	YES	17.1m FROM TP3	
S.B. AUX.	20	SPEC.	YES	31.2m FROM TP5	No. 9 LED
S.B. SEC.	21	SPEC.	YES	20.3m FROM TP5	No. 9 LED
S.B. PRIM.	22	HWY.	YES	14.4m FROM TP5	

CONT
GWP 2005-07-00

CHARTS AND NOTES 2 (MUNICIPAL)
YORK REGION
WOODBINE AVE. AT RAVENSHOE ROAD

SHEET
EL-41

AECOM

WOODBINE AVE. (Y.R. 8) AT RAVENSHOE RD. (Y.R. 32)
TEMPORARY

CO-ORDINATES		
POLE OR STRUCTURE No.	NORTHING	EASTING
TP1	4 895 430.579	309 801.134
TP2	4 895 440.660	309 638.322
TP3	4 895 400.575	309 651.344
TP4	4 895 390.675	309 649.108
TP5	4 895 382.754	309 604.717



MINISTRY OF TRANSPORTATION, ONTARIO

PLOT DATE:

SAVE DATE:

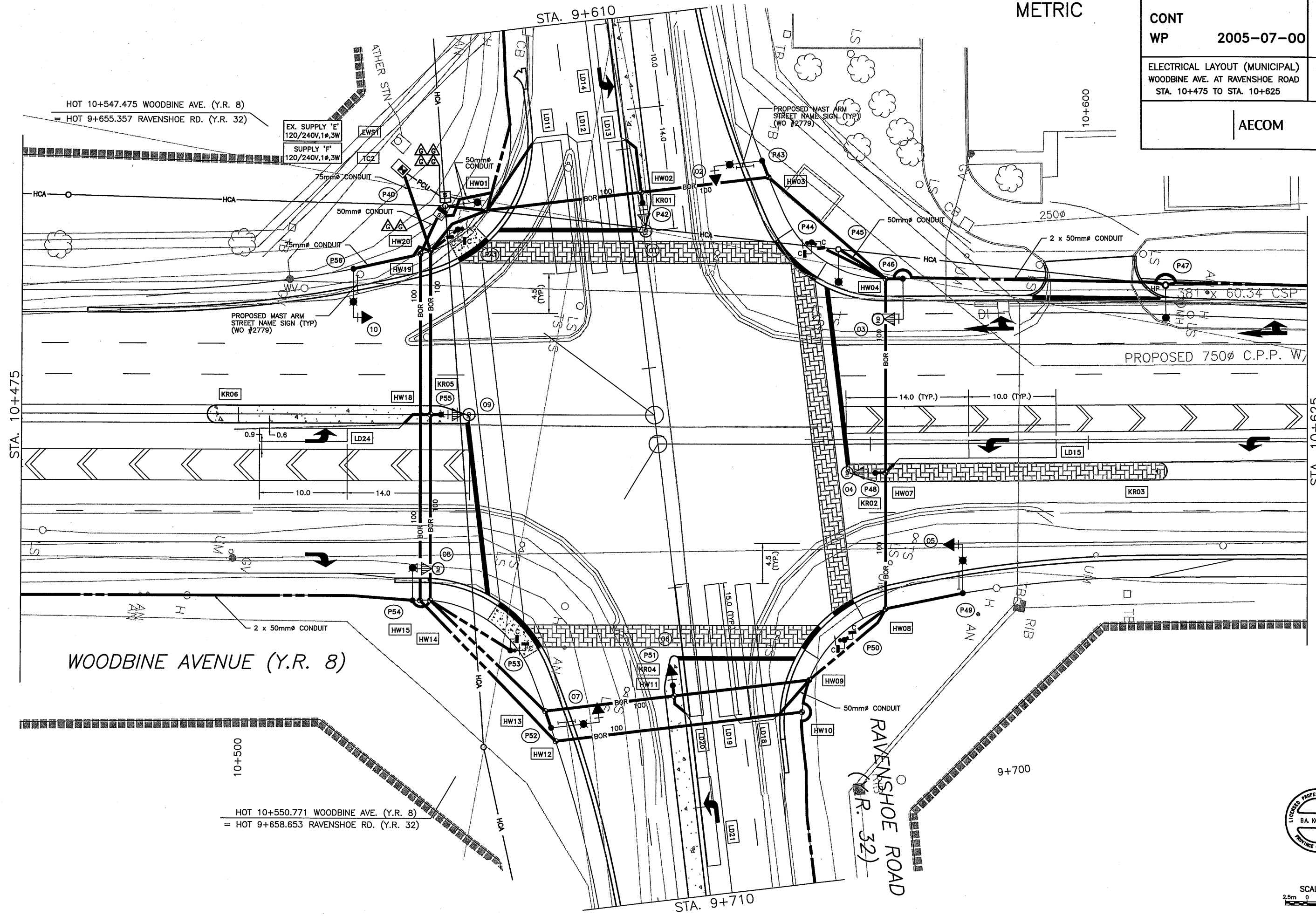
DRAWING NAME:
SAVED BY:

STA. 9+610

METRIC

CONT WP	2005-07-00
ELECTRICAL LAYOUT (MUNICIPAL) WOODBINE AVE. AT RAVENSHOE ROAD STA. 10+475 TO STA. 10+625	
AECOM	

SHEET EL-42

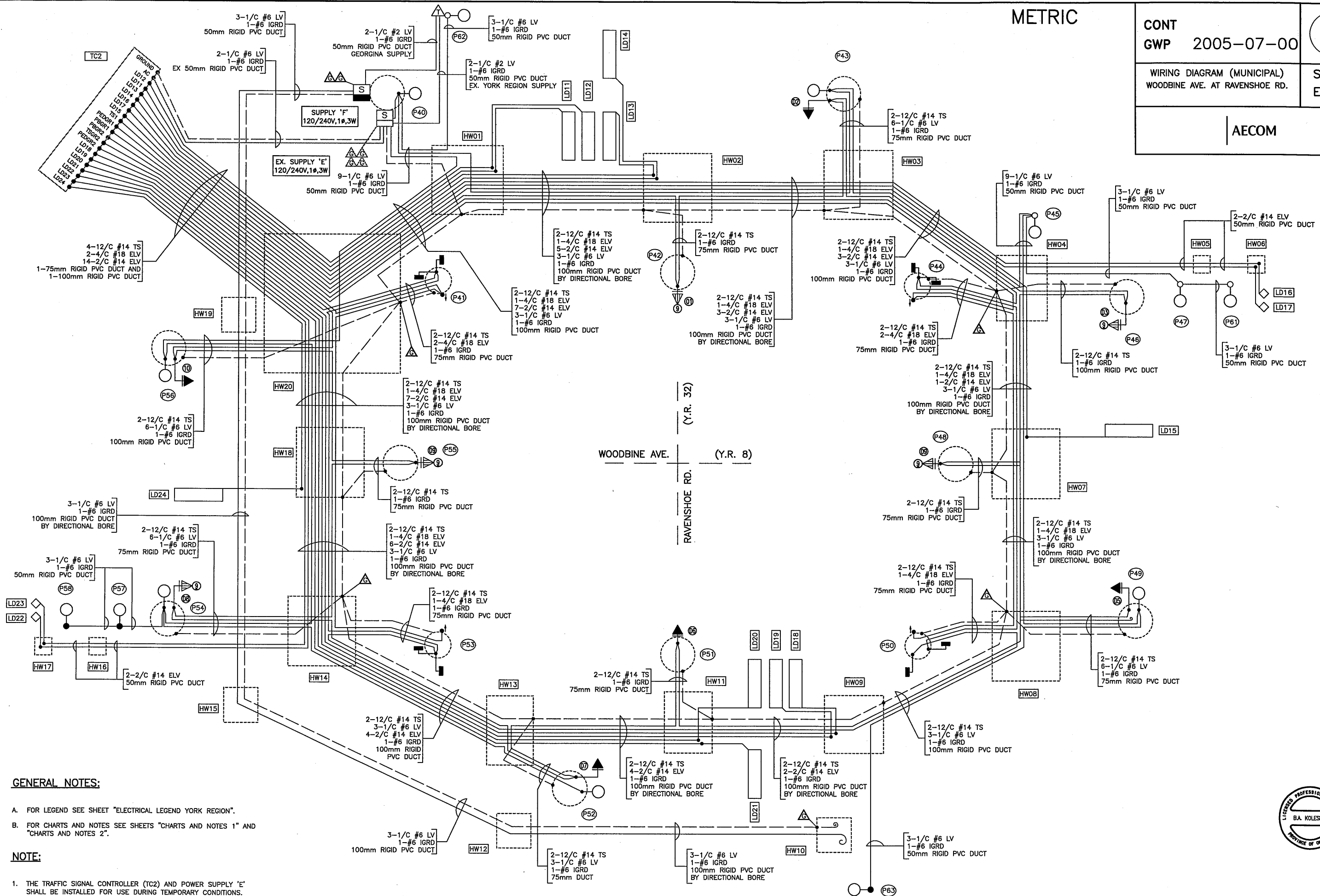


SCALE
2.5m 0 5m

METRIC

CONT
GWP 2005-07-00WIRING DIAGRAM (MUNICIPAL)
WOODBINE AVE. AT RAVENSHOE RD.SHEET
EL-43

AECOM

**GENERAL NOTES:**

- A. FOR LEGEND SEE SHEET "ELECTRICAL LEGEND YORK REGION".
- B. FOR CHARTS AND NOTES SEE SHEETS "CHARTS AND NOTES 1" AND "CHARTS AND NOTES 2".

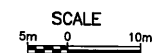
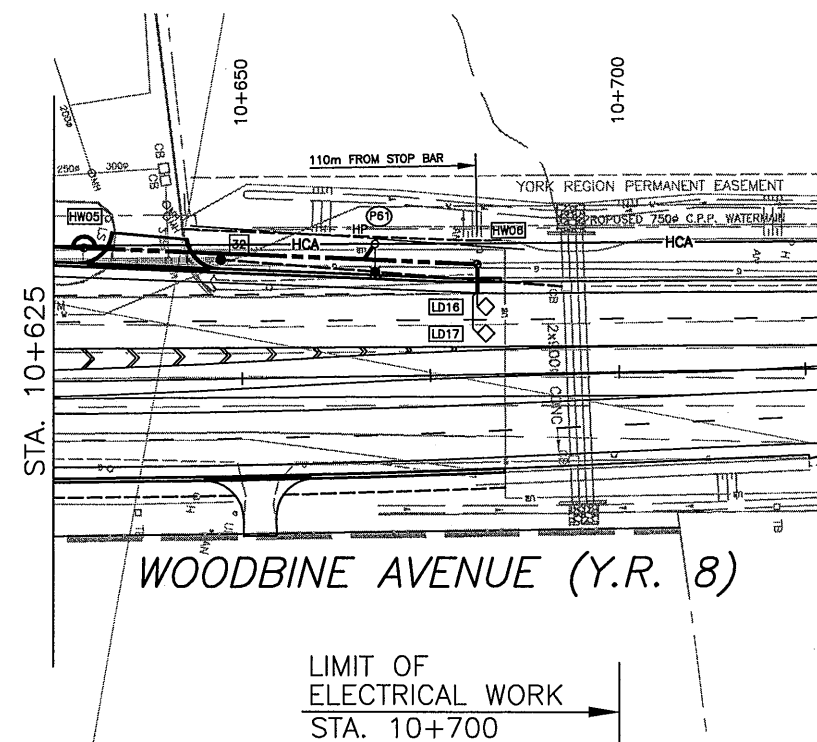
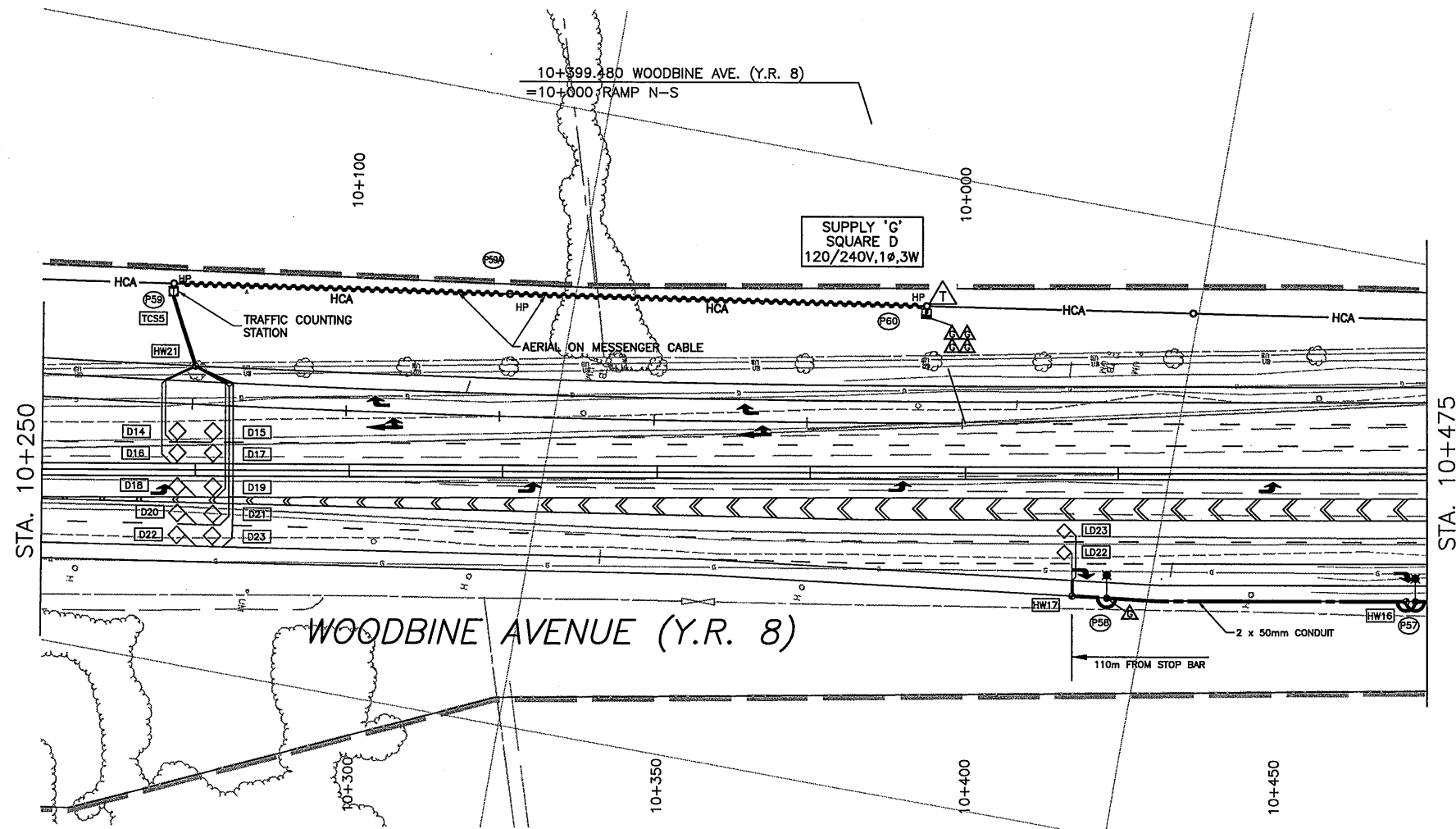
NOTE:

1. THE TRAFFIC SIGNAL CONTROLLER (TC2) AND POWER SUPPLY 'E' SHALL BE INSTALLED FOR USE DURING TEMPORARY CONDITIONS.



METRIC

CONT WP	2005-07-00	
ELECTRICAL LAYOUT (MUNICIPAL) WOODBINE AVENUE STA. 10+250 TO STA. 10+475 STA. 10+625 TO STA. 10+700		SHEET EL-44
AECOM		



METRIC

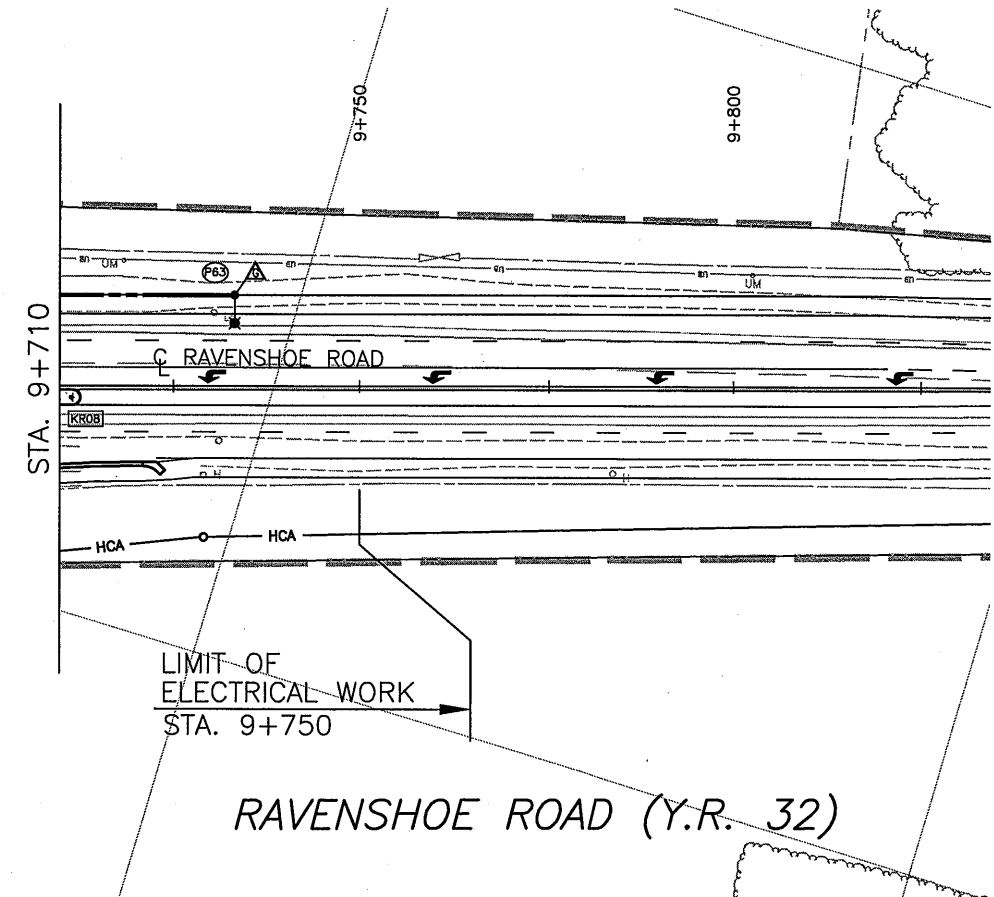
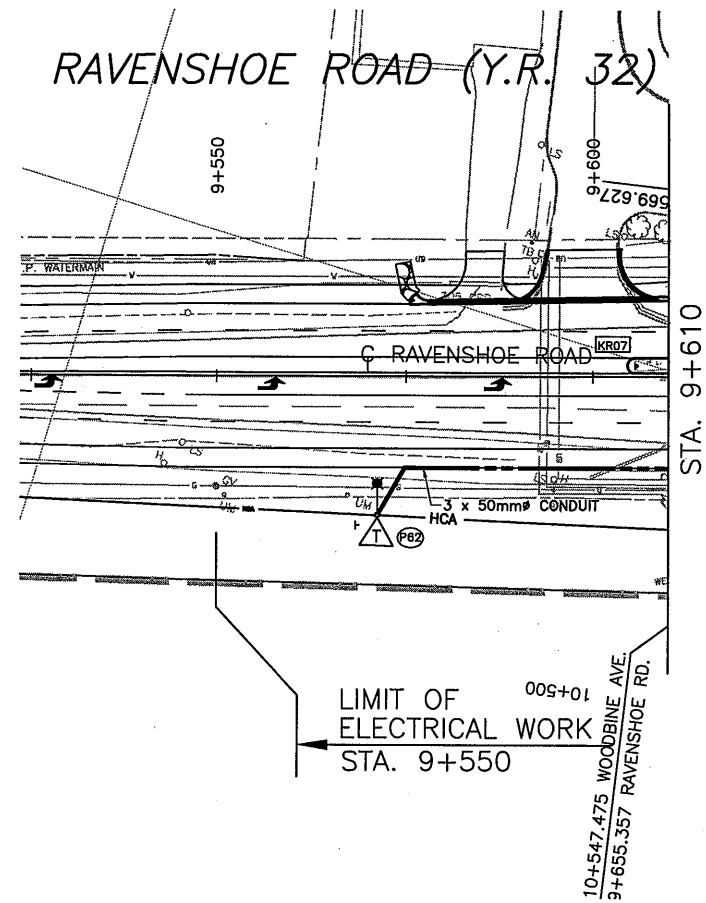
CONT
WP 2005-07-00



ELECTRICAL LAYOUT (MUNICIPAL)
RAVENSHOE ROAD AT WOODBINE AVE.
STA. 9+550 TO STA. 9+615
STA. 9+705 TO STA. 9+750

SHEET
EL-45

AECOM



SCALE
5m 0 10m

MINISTRY OF TRANSPORTATION, ONTARIO

PLOT DATE:

SAVE DATE:

DRAWING NAME:
SAVED BY:

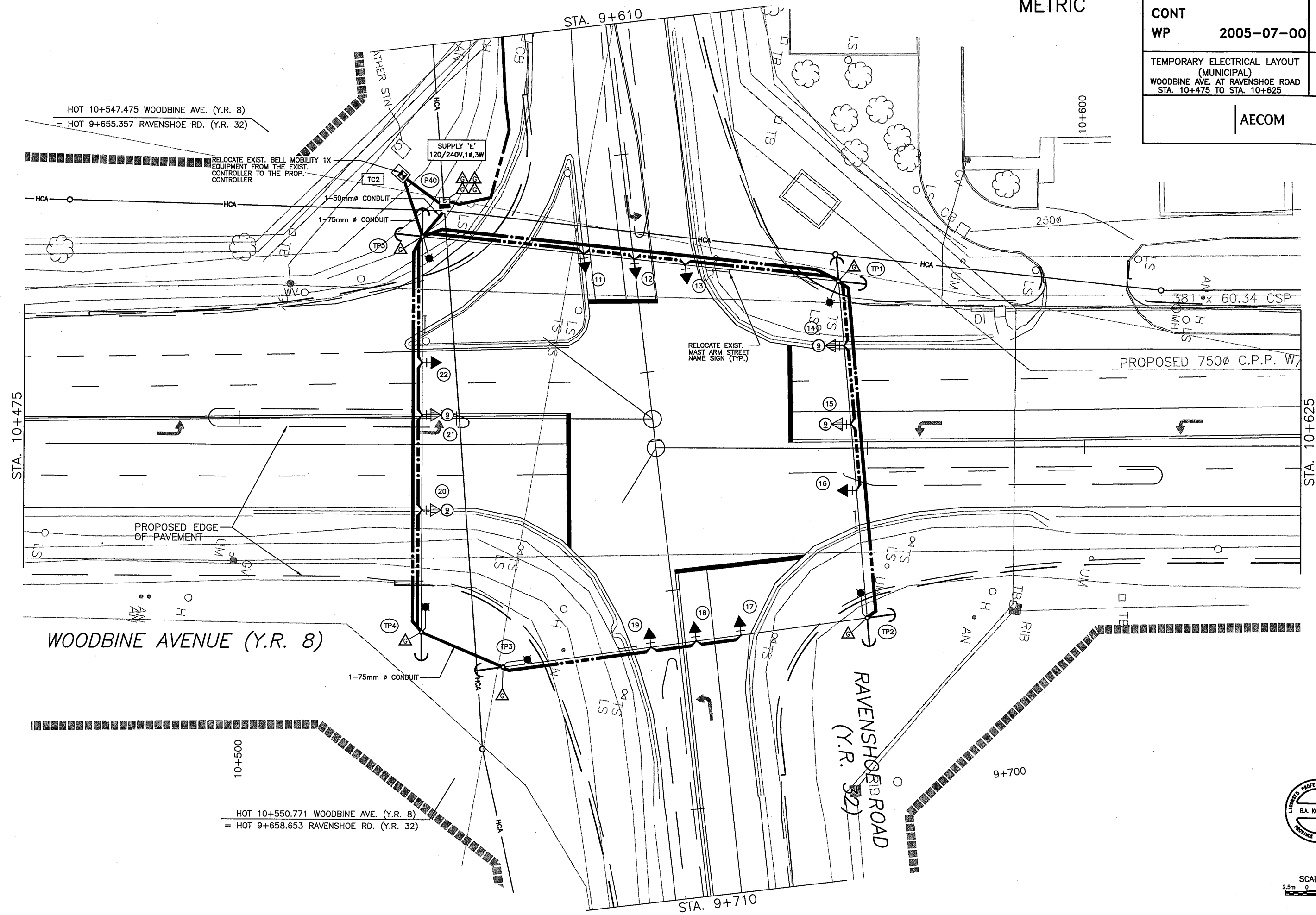
STA. 9+610

METRIC

CONT WP	2005-07-00
TEMPORARY ELECTRICAL LAYOUT (MUNICIPAL) WOODBINE AVE. AT RAVENSHOE ROAD STA. 10+475 TO STA. 10+625	
AECOM	



SHEET
EL-46



SCALE
2.5m 0 5m

MINISTRY OF TRANSPORTATION, ONTARIO

PLOT DATE:

SAVE DATE:

DRAWING NAME:
SAVED BY:

STA. 9+610

METRIC

CONT
WP

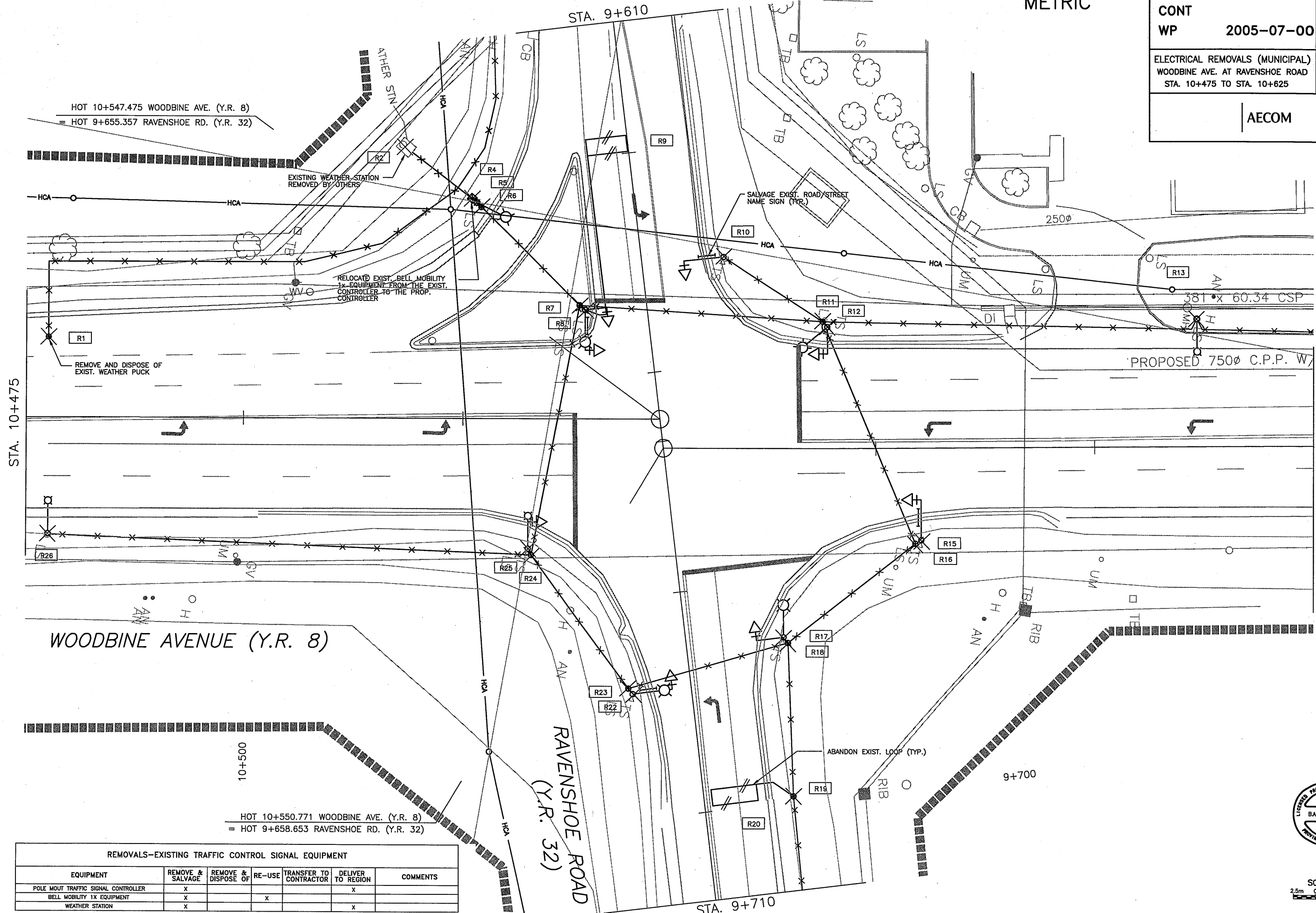
2005-07-00



ELECTRICAL REMOVALS (MUNICIPAL)
WOODBINE AVE. AT RAVENSHOE ROAD
STA. 10+475 TO STA. 10+625

SHEET
EL-47

AECOM



WOODBINE AVENUE (Y.R. 8)

10+500

HOT 10+550.771 WOODBINE AVE. (Y.R. 8)
= HOT 9+658.653 RAVENSHOE RD. (Y.R. 32)

RAVENSHOE ROAD
(Y.R. 32)

STA. 9+710

STA. 10+625

REMOVALS-EXISTING TRAFFIC CONTROL SIGNAL EQUIPMENT

EQUIPMENT	REMOVE & SALVAGE	REMOVE & DISPOSE OF	RE-USE	TRANSFER TO CONTRACTOR	DELIVER TO REGION	COMMENTS
POLE MOUNT TRAFFIC SIGNAL CONTROLLER	X				X	
BELL MOBILITY 1X EQUIPMENT	X		X			
WEATHER STATION	X				X	

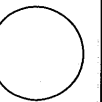


SCALE
2.5m 0 5m

METRIC

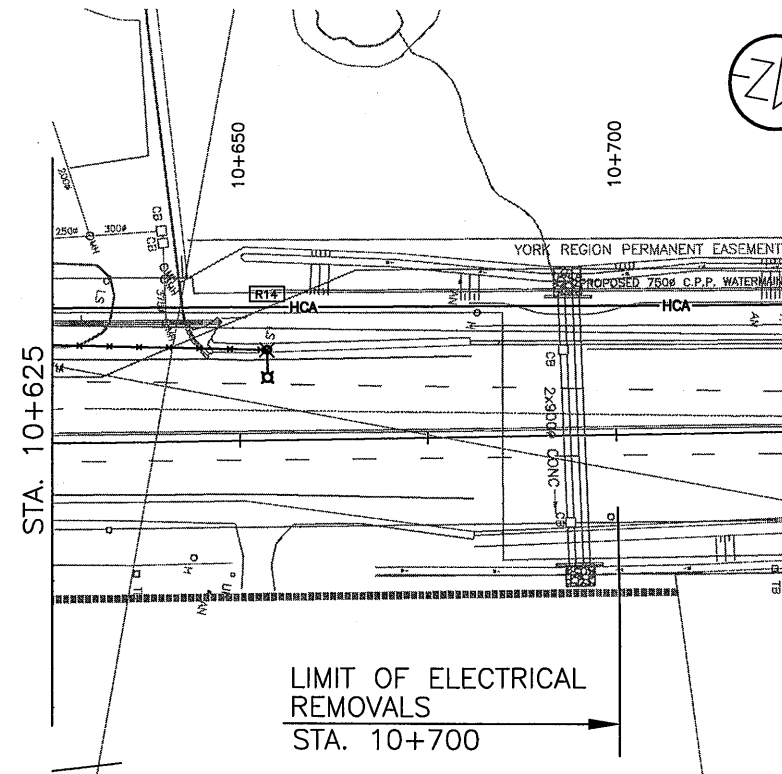
CONT
WP 2005-07-00

ELECTRICAL REMOVALS (MUNICIPAL)
WOODBINE AVE. AT RAVENSHOE RD.
STA. 10+625 TO STA. 10+700
STA. 9+570 TO 9+610 AND 9+710 TO 9+750

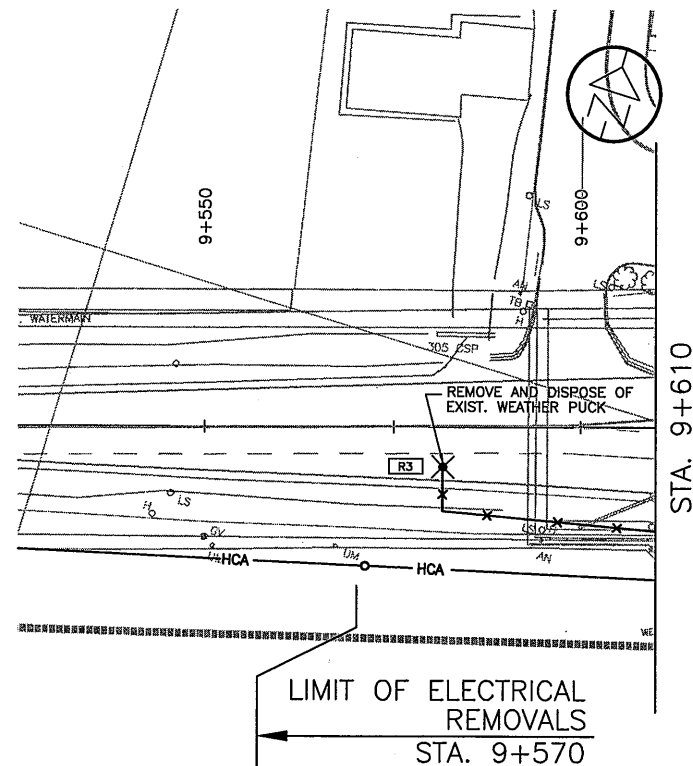


SHEET
EL-48

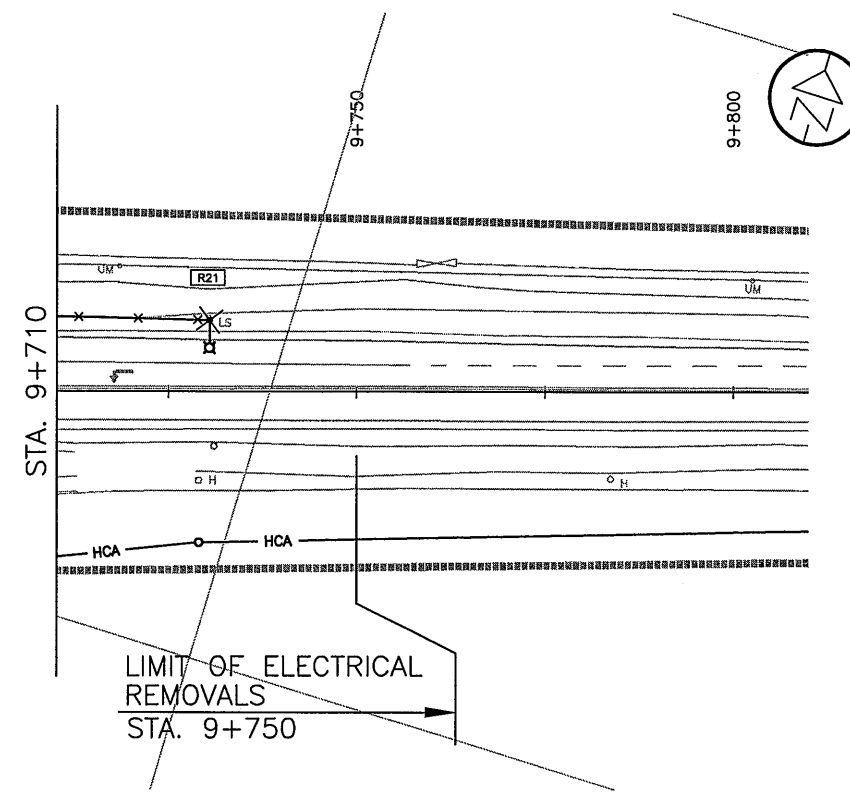
AECOM



WOODBINE AVENUE (Y.R. 8)



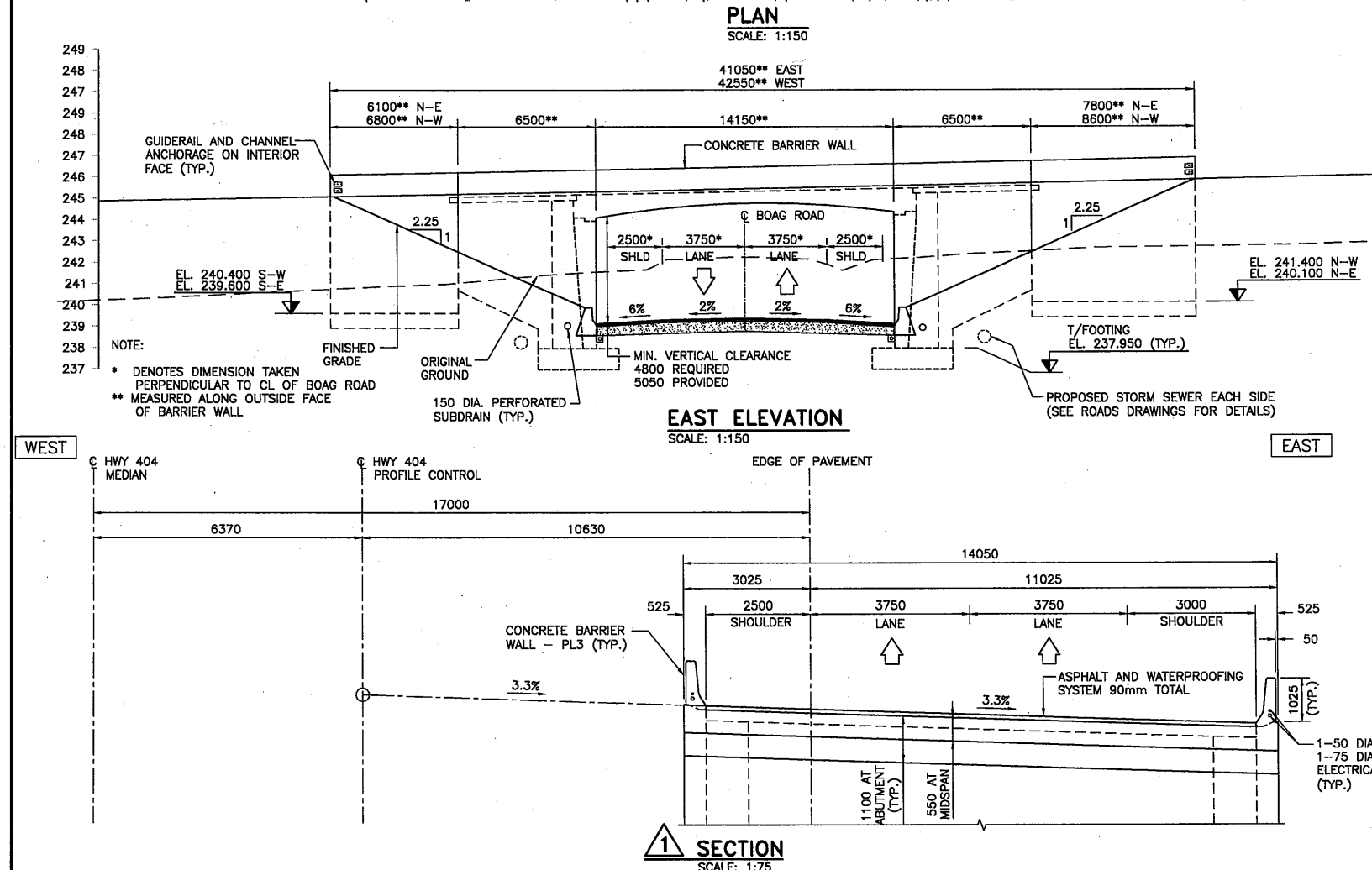
RAVENSHOE ROAD (Y.R. 32)



RAVENSHOE ROAD (Y.R. 32)



SCALE
5m 0 10m



REVISIONS									
	DATE	BY	DESCRIPTION						
DESIGN	S.K. CHK	S.B. CHK	CODE	CHBDC-06	LOAD CL-625 ONT	DATE	MAY 2010		
DRAWN	D.L. CHK	V.K. SITE	37-153B/1			DWG	1		

METRIC
DIMENSIONS ARE IN METRES AND/OR
MILLIMETRES UNLESS OTHERWISE SHOWN.
STATIONS IN KILOMETRES + METRES.

CONT No.
WP No. 2005-07-00

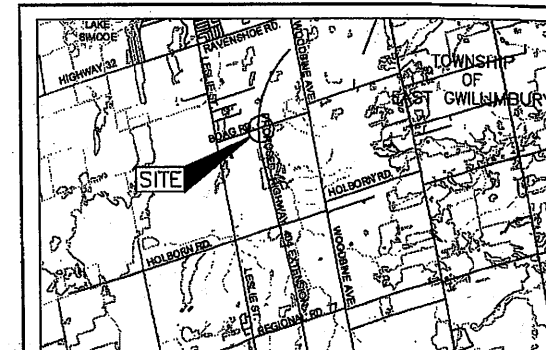


HIGHWAY 404
BOAG ROAD OVERPASS - NBL
BOREHOLE LOCATION AND SOIL STRATA

SHEET
NBL-2



Golder Associates Ltd.
MISSISSAUGA, ONTARIO, CANADA



KEY PLAN
SCALE
1.5 0 1.5 3 km

LEGEND

- Borehole - Current Investigation
- ⊕ Borehole - Previous Investigation (Golder, 2004)
- Seal
- Piezometer
- N Standard Penetration Test Value
- 15 Blows/0.3m unless otherwise stated (Std. Pen. Test, 475 j/blow)
- WL in piezometer, measured on May 20, 2009
- WL upon completion of drilling

No.	ELEVATION	CO-ORDINATES	
		NORTHING	EASTING
BR-7	241.6	4893070.6	308931.3
BR-8	241.1	4893076.7	308942.0
BR-9	242.8	4893098.1	308931.4
BR-10	242.1	4893101.0	308940.4
BR-11	240.8	4893064.2	308936.2
BR-12	242.7	4893108.1	308936.5
503	242.5	4893097.6	308935.4
504	241.4	4893078.5	308941.4

NOTES

This drawing is for subsurface information only. The proposed structure details/works are shown for illustration purposes only and may not be consistent with the final design configuration as shown elsewhere in the Contract Documents.

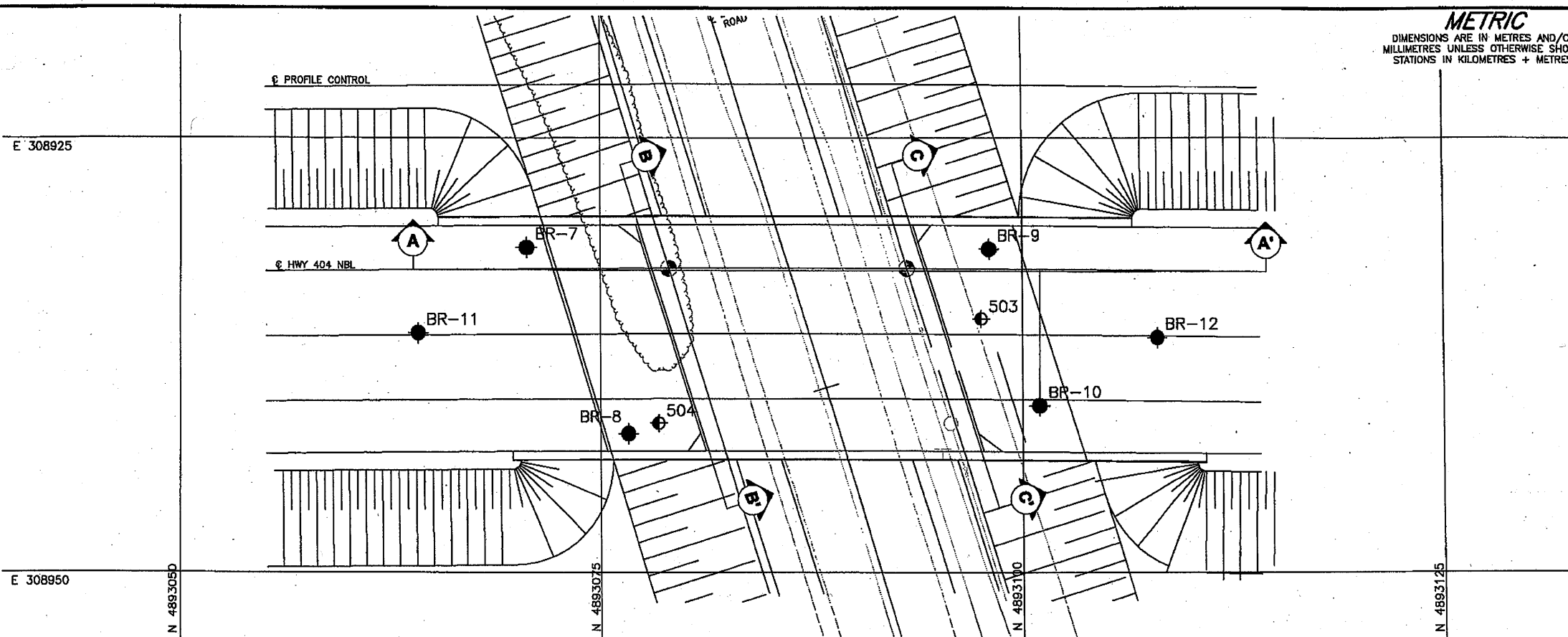
The boundaries between soil strata have been established only at borehole locations. Between boreholes the boundaries are assumed from geological evidence.

The complete Foundation Investigation and Design Report for this project and other related documents may be examined at the Materials Engineering and Research Office, Downsview. Information contained in this report and related documents is specifically excluded in accordance with Section GC 2.01 of OHS General Conditions.

REFERENCE

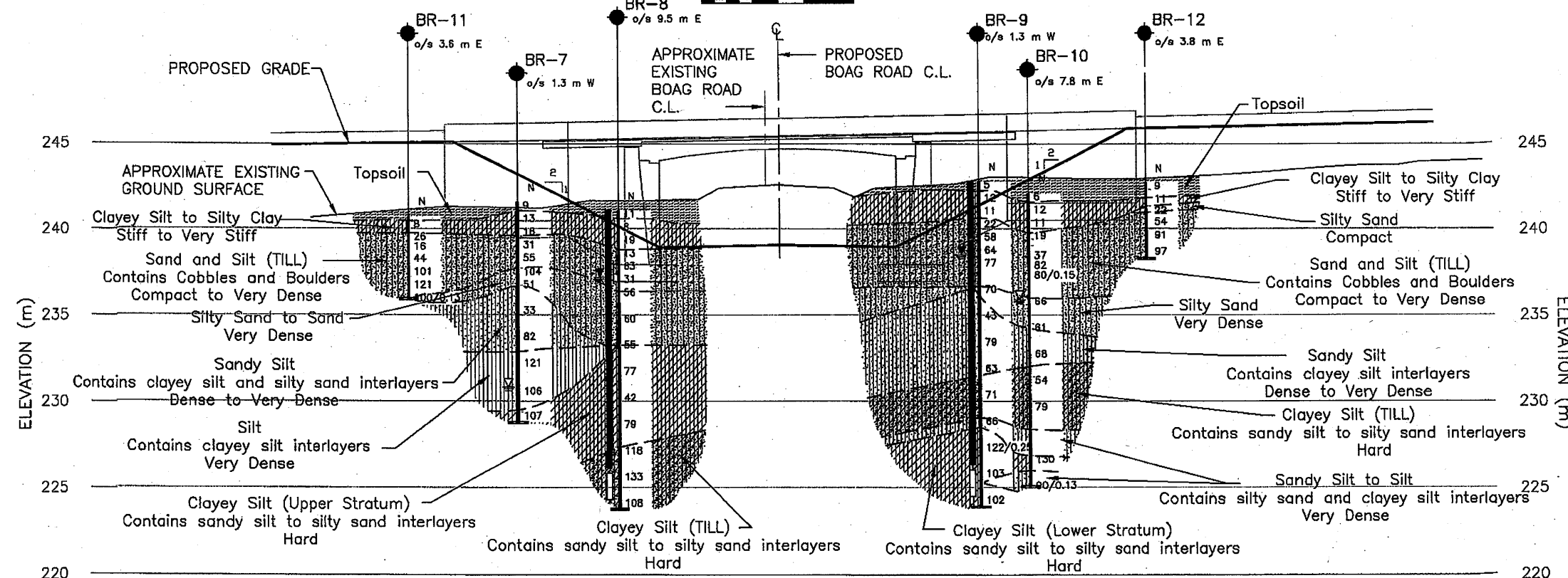
Base plans provided in digital format by AECOM (drawing file 2538-199-ST-0001-NBL-To Golder-090930.dwg, received October 09, 2009).

NO.	DATE	BY	REVISION
1			
Geospec No. 31D-489			
HWY. 404		PROJECT NO. 08-1111-0D22	
SUBM'D.	CHKD. TB	DATE: November 09	SITE:
DRAWN: OD	CHKD. KJB	APPD. JMAC	DWG. 2



PLAN

SCALE
3 0 3 6 m



A-A' PROFILE ALONG NBL CENTERLINE

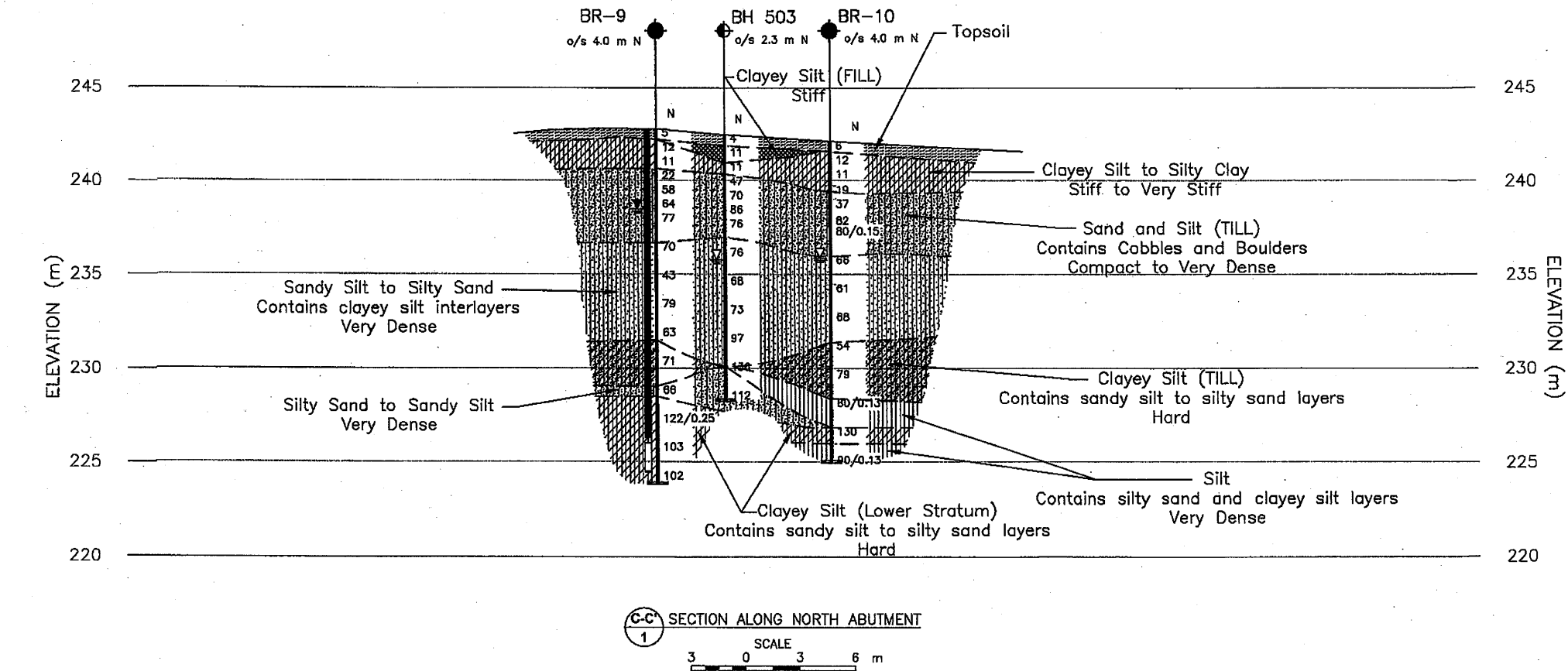
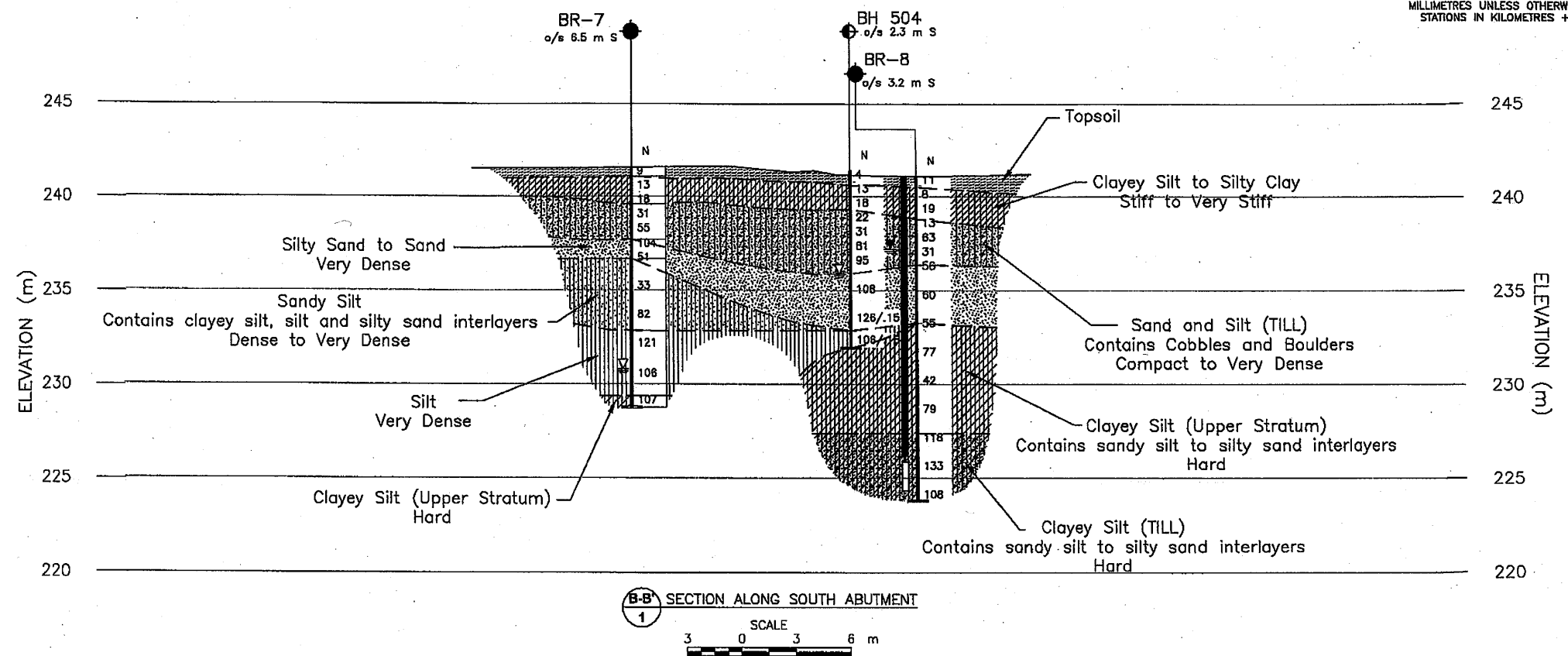
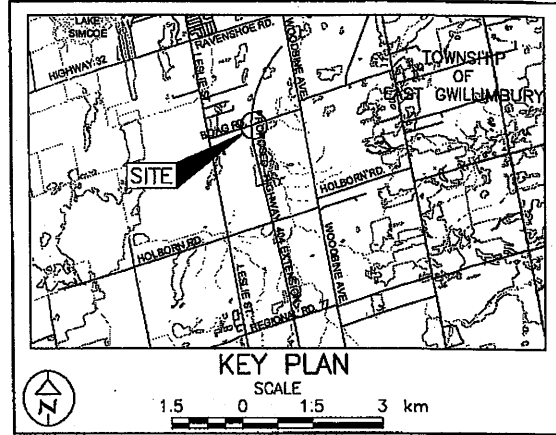
SCALE
3 0 3 6 m







METRIC
DIMENSIONS ARE IN METRES AND/OR
MILLIMETRES UNLESS OTHERWISE SHOWN.
STATIONS IN KILOMETRES + METRES.

CONT No. WP No. 2005-07-00	
HIGHWAY 404 BOAG ROAD OVERPASS - NBL SOIL STRATA	SHEET NBL-3



Golder Associates Ltd.
MISSISSAUGA, ONTARIO, CANADA



LEGEND			
	Borehole - Current Investigation		
	Borehole - Previous Investigation (Golder, 2004)		
	Seal		
	Piezometer		
N	Standard Penetration Test Value		
16	Blows/0.3m unless otherwise stated (Std. Pen. Test, 475 j/blow)		
	WL in piezometer, measured on May 20, 2009		
	WL upon completion of drilling		
CO-ORDINATES			
No.	ELEVATION	NORTHING	EASTING
BR-7	241.6	4893070.6	308931.3
BR-8	241.1	4893076.7	308942.0
BR-9	242.8	4893098.1	308931.4
BR-10	242.1	4893101.0	308940.4
BR-11	240.8	4893064.2	308936.2
BR-12	242.7	4893108.1	308936.5
503	242.5	4893097.6	308935.4
504	241.4	4893078.5	308941.4

NOTES

This drawing is for subsurface information only. The proposed structure details/works are shown for illustration purposes only and may not be consistent with the final design configuration as shown elsewhere in the Contracts Documents.

The boundaries between soil strata have been established only at borehole locations. Between boreholes the boundaries are assumed from geological evidence.

The complete Foundation Investigation and Design Report for this project and other related documents may be examined at the Materials Engineering and Research Office, Downsview. Information contained in this report and related documents is specifically excluded in accordance with Section GC 2.01 of OPS General Conditions.

REFERENCE

Base plans provided in digital format by AECOM (drawing file 2538-199-ST-0001-NBL-To Golder-090930.dwg, received October 09, 2009).

NO.	DATE	BY	REVISION
Geocres No.31D-489			
HWY. 404	PROJECT NO. 08-1111-0022		DIST.
SUBWD.	CHKD. TB	DATE. November 09	SITE:
DRAWN: DD/RJ	CHKD. KJB	APPD. JMAC	DWG. 3

DRAWING NAME: 2538-199-00_00-ST-0004-NBL.dwg
SAVED BY: lnsld
PLOT DATE: 9/20/2010 8:34 AM
SAVED DATE: 8/26/2010 11:07 AM

MINISTRY OF TRANSPORTATION, ONTARIO
PR-D-707 88-05

METRIC
DIMENSIONS ARE IN METRES
AND/OR MILLIMETRES
UNLESS OTHERWISE SHOWN

DIST
CONT No 0000-0000
WP No 2005-07-00

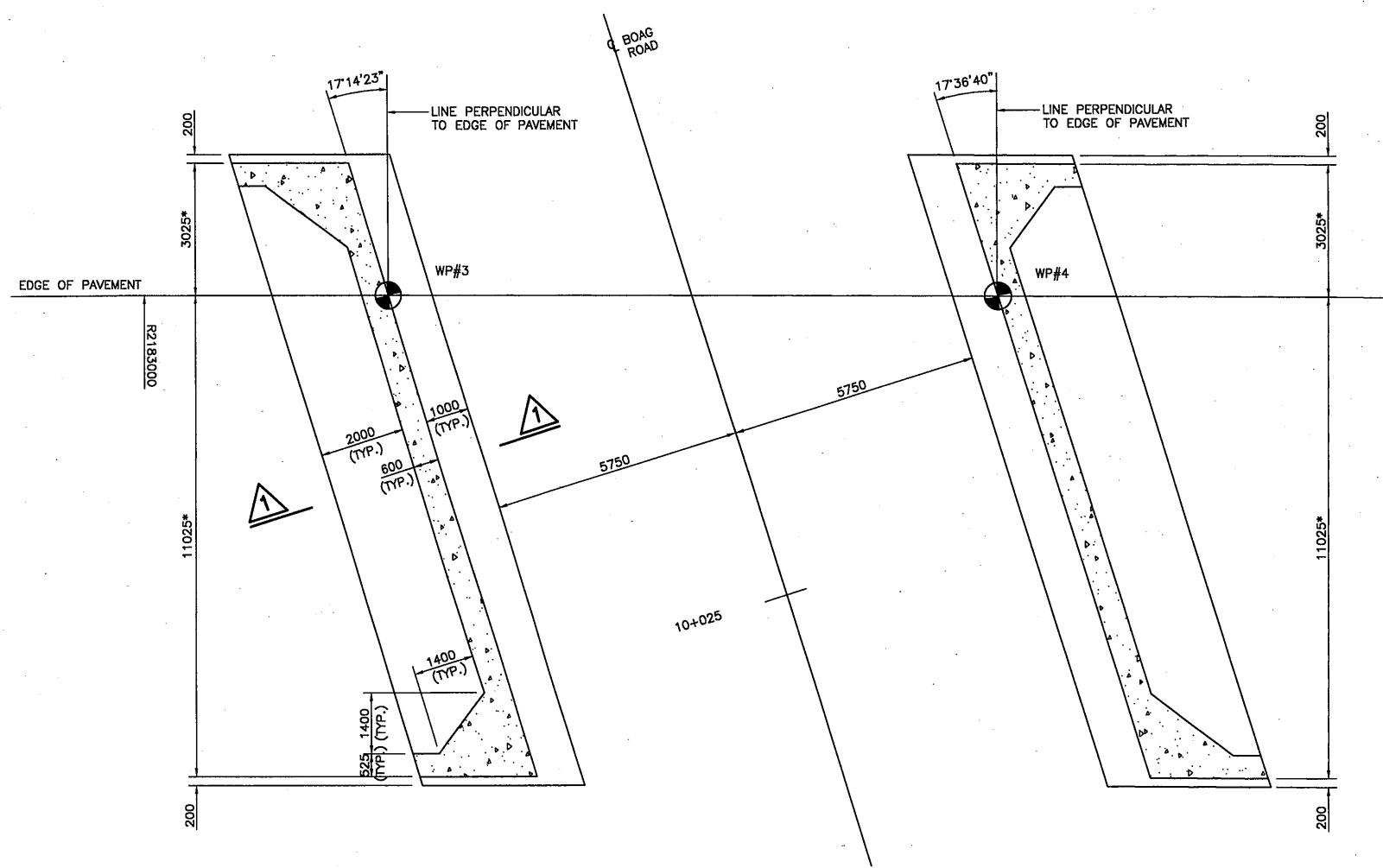
BOAG ROAD OVERPASS
HWY 404 NBL
FOUNDATION LAYOUT AND
FOOTING REINFORCEMENT

AECOM

SHEET
NBL-4

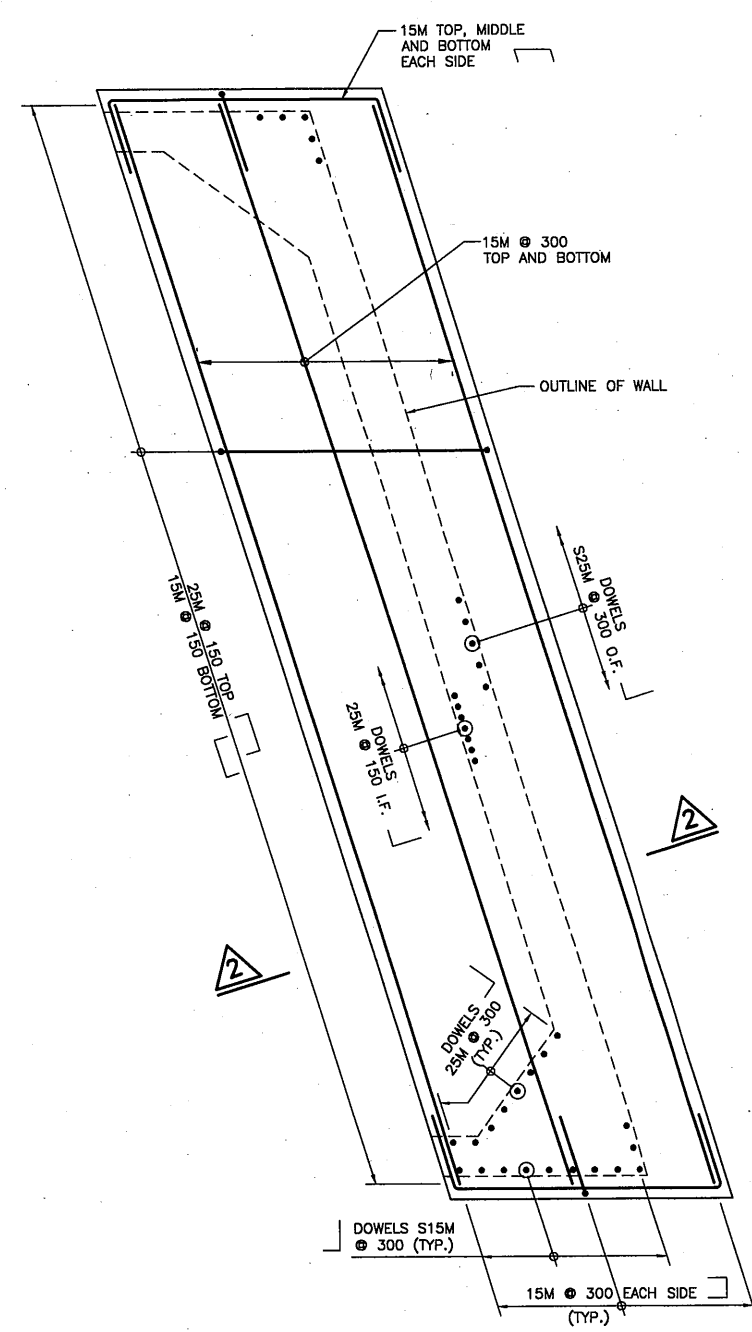
- NOTES:
- FACTORED GEOTECHNICAL RESISTANCE OF SOIL AT BOTTOM OF FOOTING LEVEL:
ULS: 450 KPa
SLS: 300 KPa

LOCATION	EASTING	NORTHING
WP#3	308932.491	4893079.148
WP#4	308932.510	4893093.297

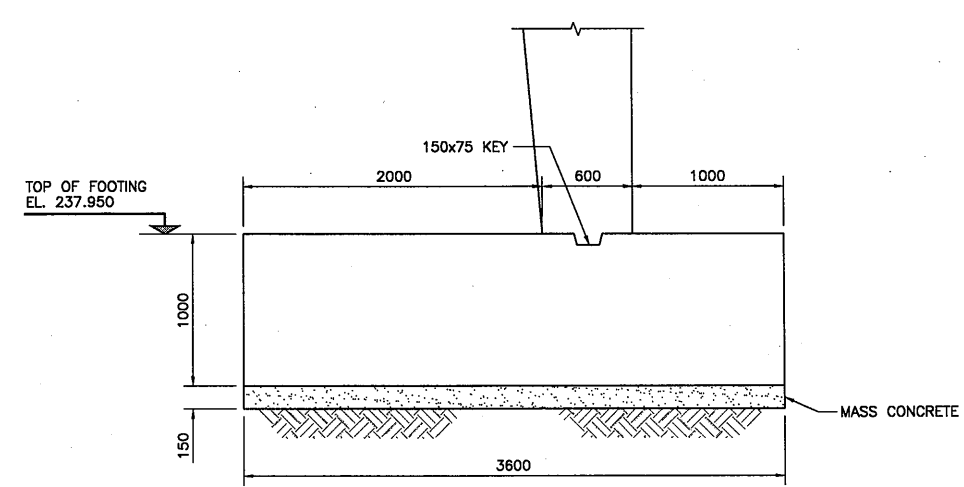


FOOTING LAYOUT PLAN
SCALE: 1:75

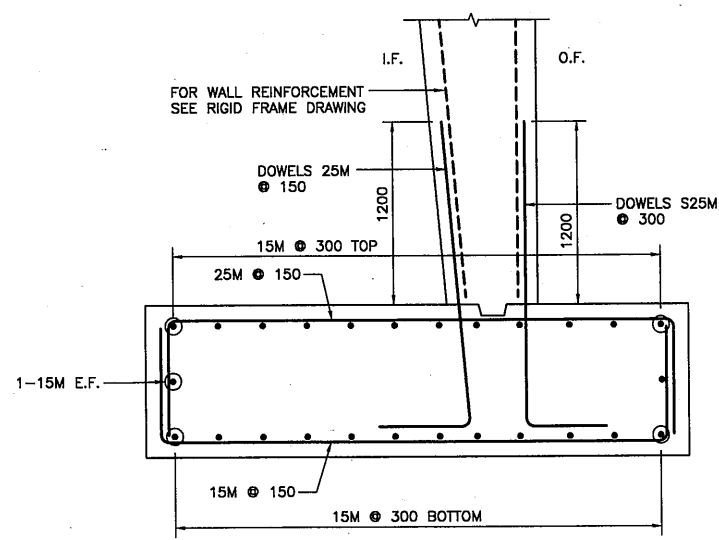
NOTES:
* DIMENSIONS ARE PERPENDICULAR TO
EDGE OF PAVEMENT



TYPICAL FOOTING PLAN - REINFORCEMENT
SCALE: 1:50



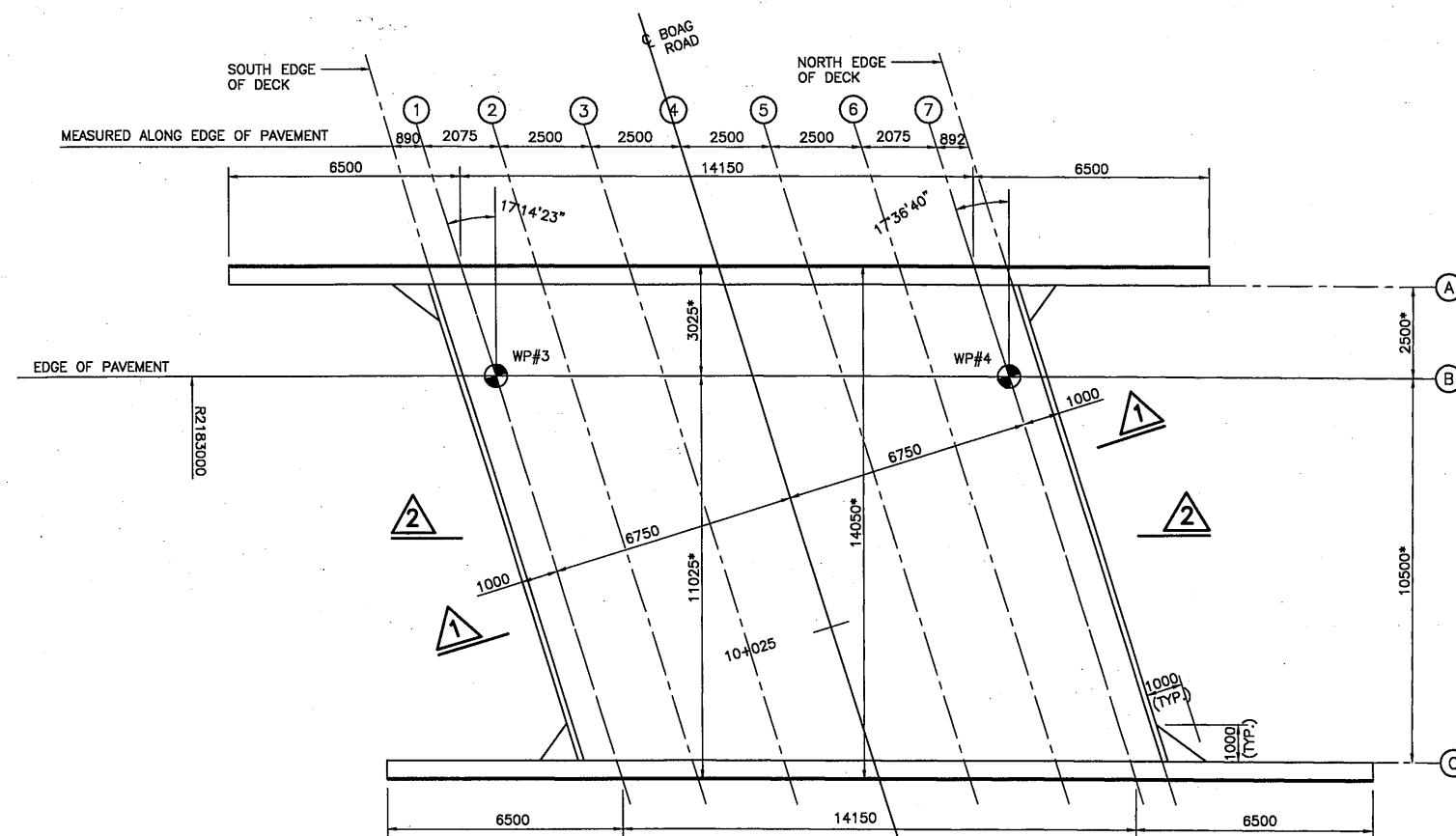
SECTION 1
SCALE: 1:25



SECTION 2
SCALE: 1:25

DRAWING NOT TO BE SCALED
100mm ON ORIGINAL DRAWING

REVISIONS	DATE	BY	DESCRIPTION
DESIGN	S.K. CHK	S.B. CODE	CHBDC-06 LOAD CL-625 ONT DATE MAY 2010
DRAWN	D.L. CHK	V.K. SITE	37-1538/1 DWG 4



NOTES:

1. * DIMENSIONS ARE PERPENDICULAR TO EDGE OF PAVEMENT.
2. RETAINING WALLS AND APPROACH SLABS ARE NOT SHOWN FOR CLARITY.

SCREED ELEVATIONS			
GRID	A	B	C
S. EDGE OF DECK	245.521	245.452	245.16
1	245.538	245.469	245.18
2	245.577	245.508	245.22
3	245.625	245.556	245.27
4	245.673	245.605	245.32
5	245.722	245.654	245.37
6	245.771	245.704	245.42
7	245.813	245.746	245.46
N. EDGE OF DECK	245.831	245.764	245.48

METRIC
DIMENSIONS ARE IN METRES
AND/OR MILLIMETRES
UNLESS OTHERWISE SHOWN

DIST
CONT No 0000-0000
WP No 2005-07-00

BOAG ROAD OVERPASS
HWY 404 NBL
RIGID FRAME - PLAN AND SECTIONS

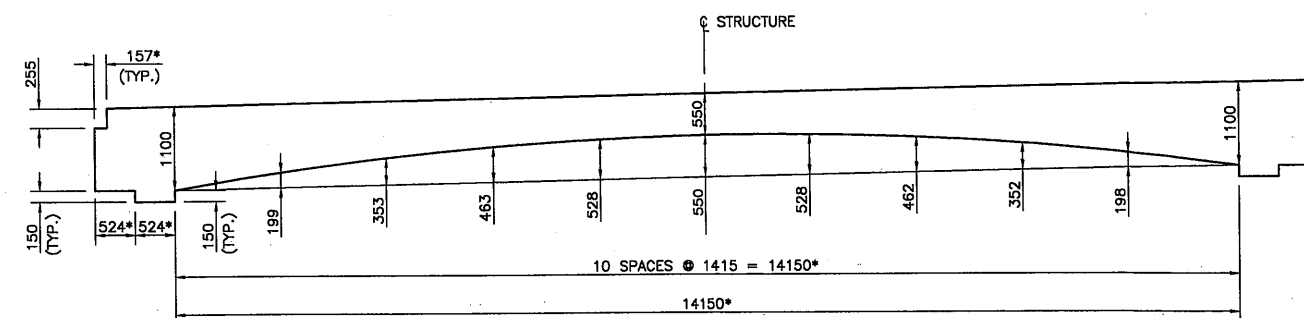


SHEET
NBL-5

AECOM

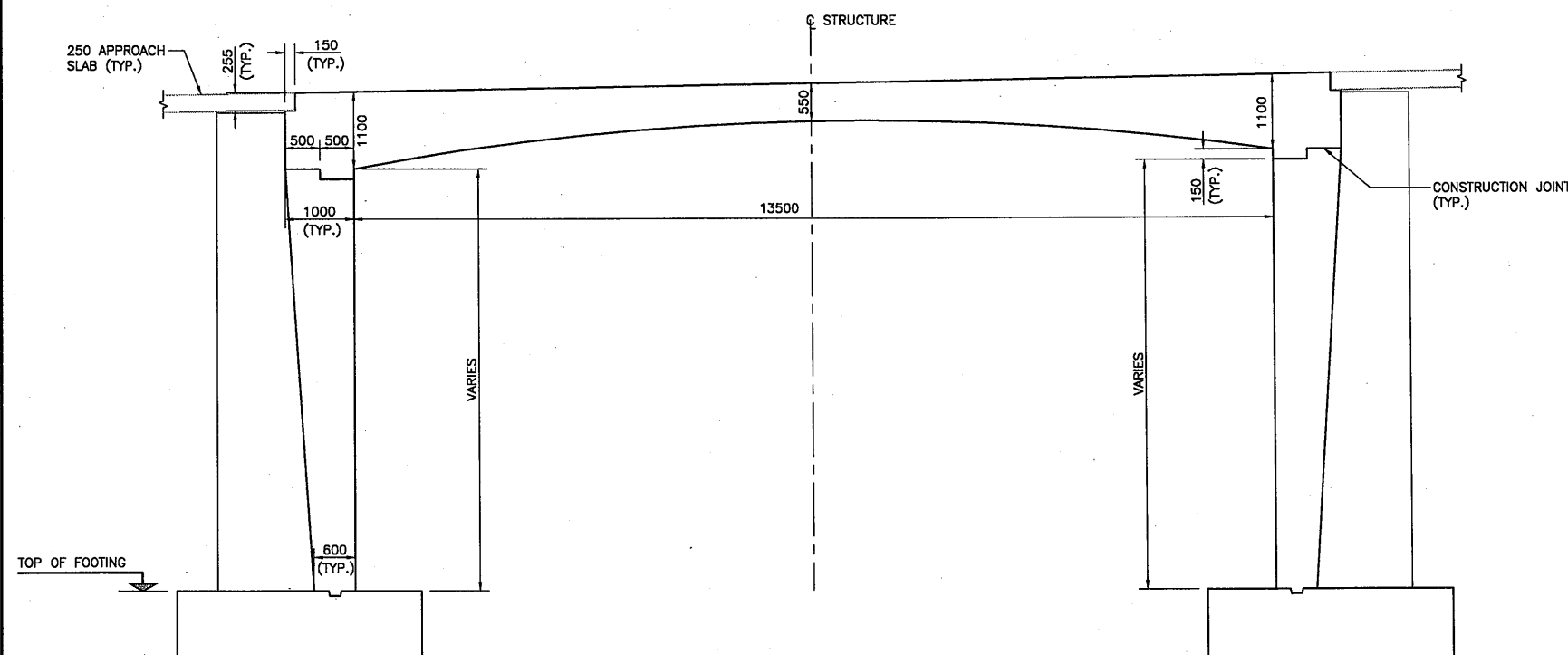
NOTES:

1. SCREED ELEVATIONS ARE AT TOP OF CONCRETE.
2. TOP OF CLEAT TO BE CAST 35mm BELOW APPROACH SLAB SEAT.



NOTES:

* DIMENSIONS ARE MEASURED ALONG
EDGE OF PAVEMENT.



DRAWING NOT TO BE SCALED
100mm ON ORIGINAL DRAWING

[illegible]

DRAWING NAME: 2538-199-00-00-ST-0006-NBL.dwg
SAVED BY: lueid
SAVED DATE: 8/26/2010 11:06 AM
PLOT DATE: 9/30/2010 8:35 AM

MINISTRY OF TRANSPORTATION, ONTARIO
PR-D-707 BR-05

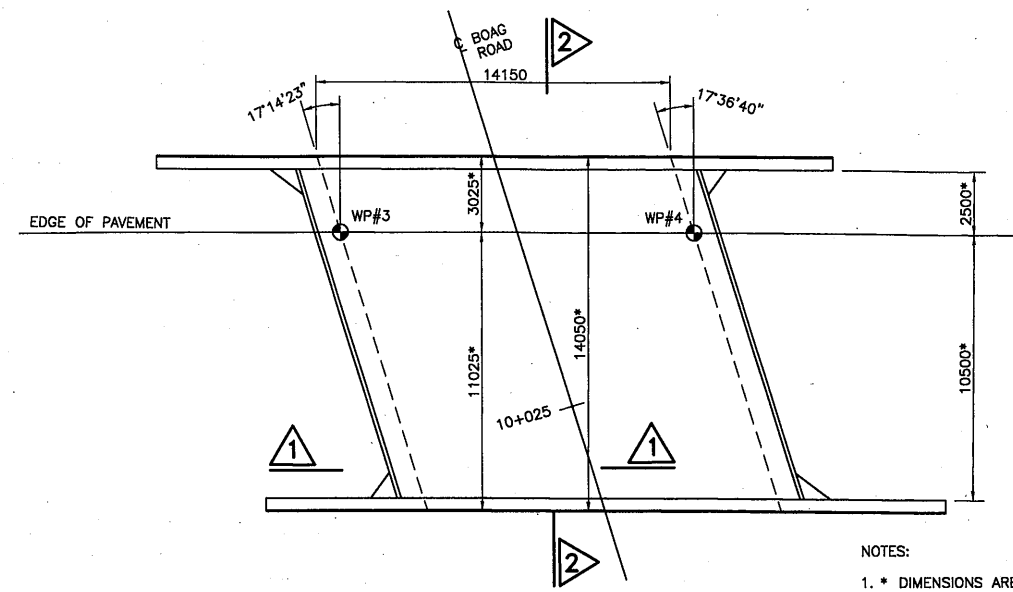
METRIC
DIMENSIONS ARE IN METRES
AND/OR MILLIMETRES
UNLESS OTHERWISE SHOWN

DIST
CONT No 0000-0000
WP No 2005-07-00
BOAG ROAD OVERPASS
HWY 404 NBL
RIGID FRAME - REINFORCEMENT



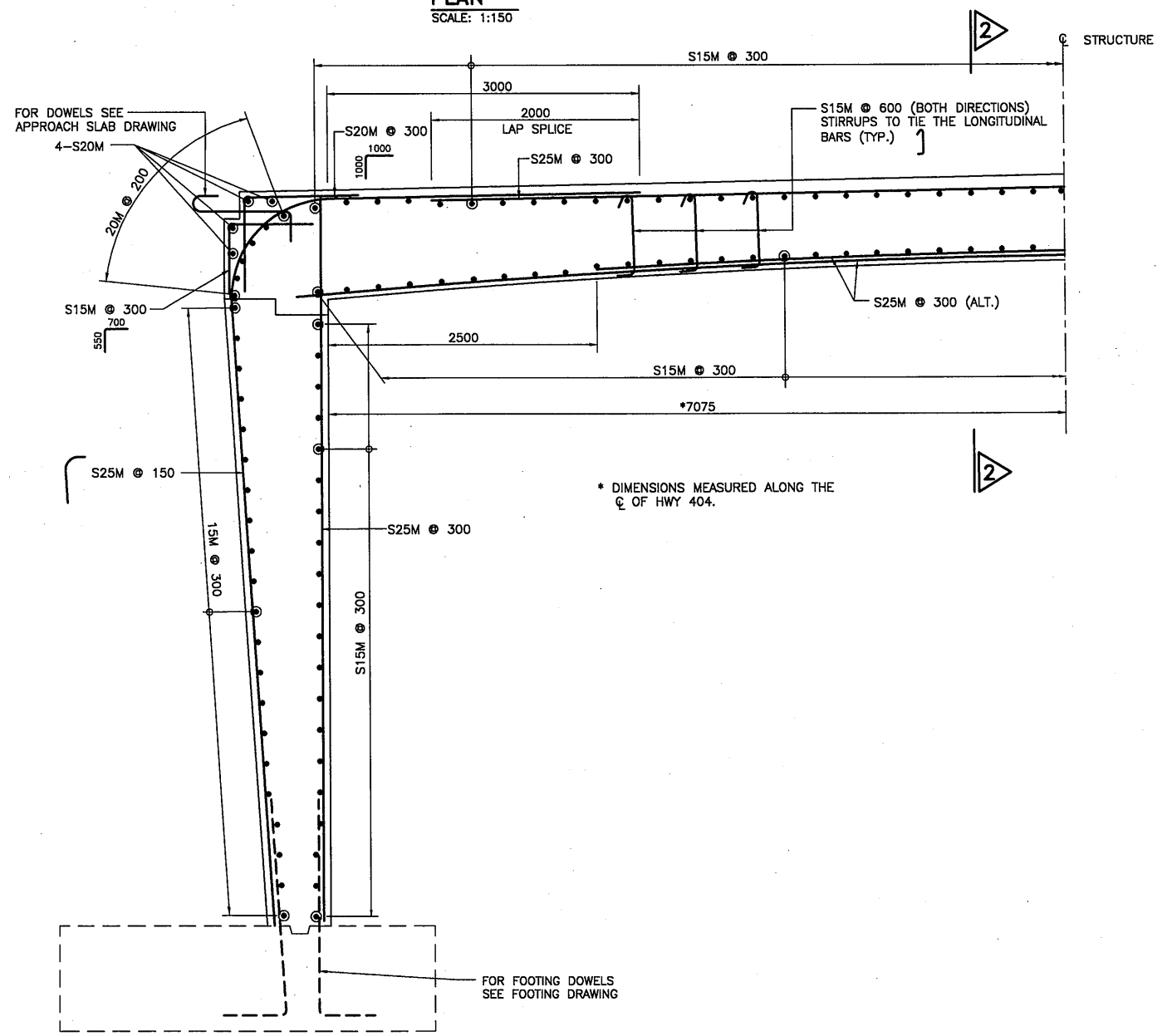
SHEET
NBL-6

AECOM

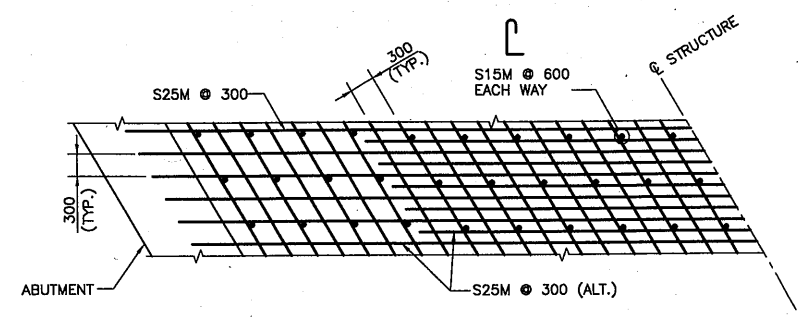


PLAN
SCALE: 1:150

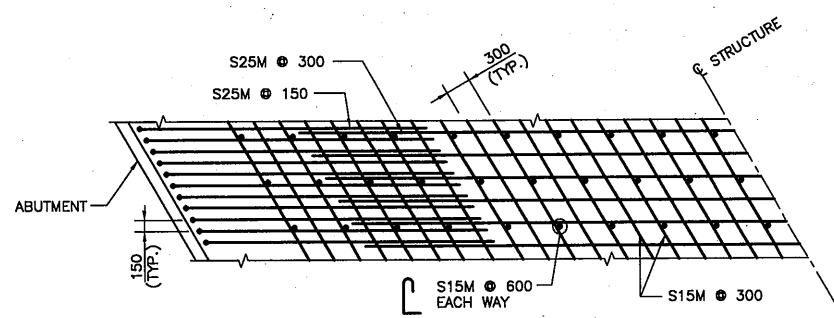
- NOTES:
- * DIMENSIONS ARE PERPENDICULAR TO EDGE OF PAVEMENT.
 - RETAINING WALLS AND APPROACH SLABS ARE NOT SHOWN FOR CLARITY.



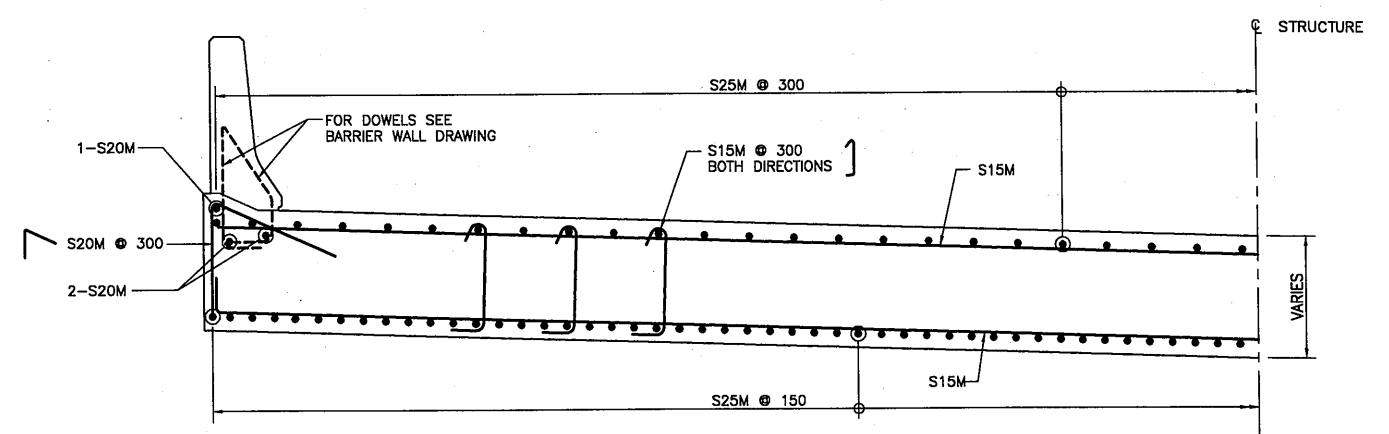
1 SECTION
SCALE: N.T.S.



PARTIAL DECK BOTTOM REINFORCEMENT PLAN
SCALE: N.T.S.



PARTIAL DECK TOP REINFORCEMENT PLAN
SCALE: N.T.S.



2 SECTION
SCALE: N.T.S.

DRAWING NOT TO BE SCALED
100mm ON ORIGINAL DRAWING

LEGEND:

ALT. DENOTES ALTERNATE

APPLICABLE STANDARD DRAWINGS:

OPSD 3329.101 DECK, REINFORCEMENT - SUPPORTS FOR REINFORCING STEEL FOR SLAB DEPTHS 300 mm OR LESS

REVISIONS	DATE	BY	DESCRIPTION
DESIGN	S.K. CHK	S.B. CODE	CHBDC-06 LOAD CL-625 ONT DATE MAY 2010
DRAWN	D.L. CHK	V.K. SITE	37-1538/1 DWG 6

METRIC
 DIMENSIONS ARE IN METRES
 AND/OR MILLIMETRES
 UNLESS OTHERWISE SHOWN

DIST
 CONT No 0000-0000
 WP No 2005-07-00



BOAG ROAD OVERPASS
 HWY 404 NBL
 WINGWALLS

SHEET
 NBL-7

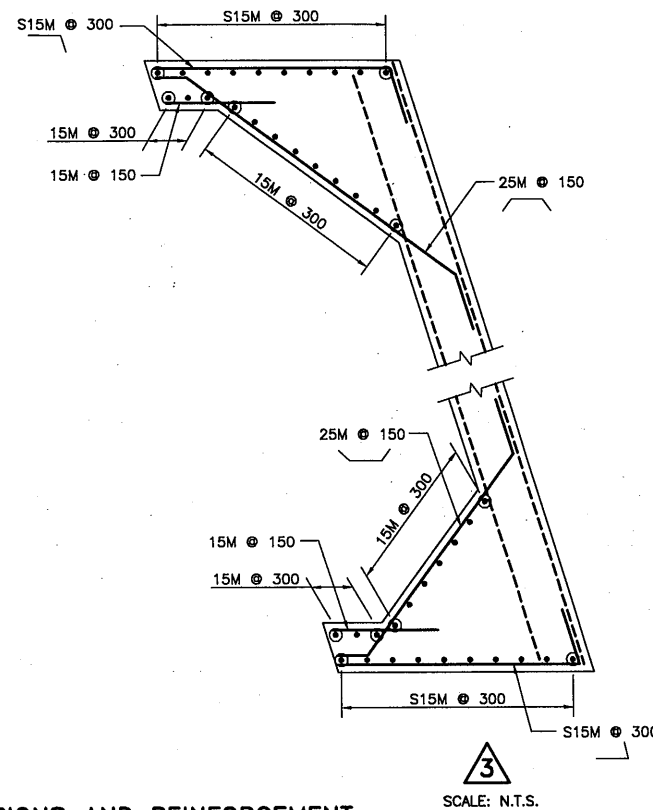
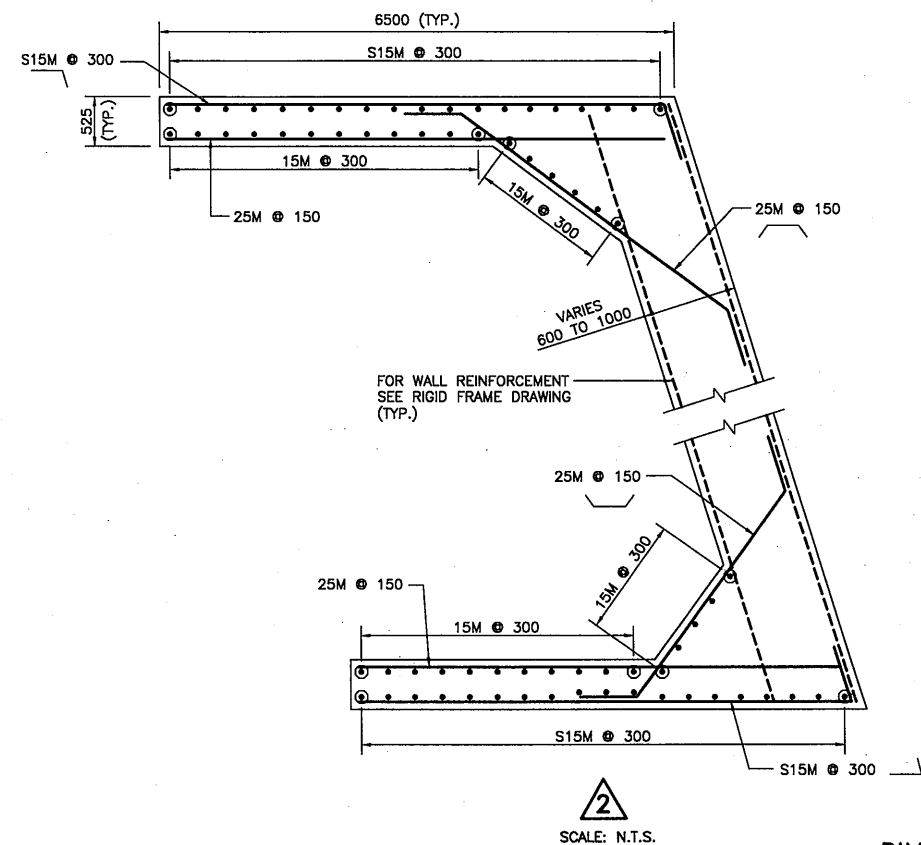
AECOM

LEGEND:

O.F. DENOTES OUTSIDE FACE
 I.F. DENOTES INSIDE FACE

APPLICABLE STANDARD DRAWINGS:

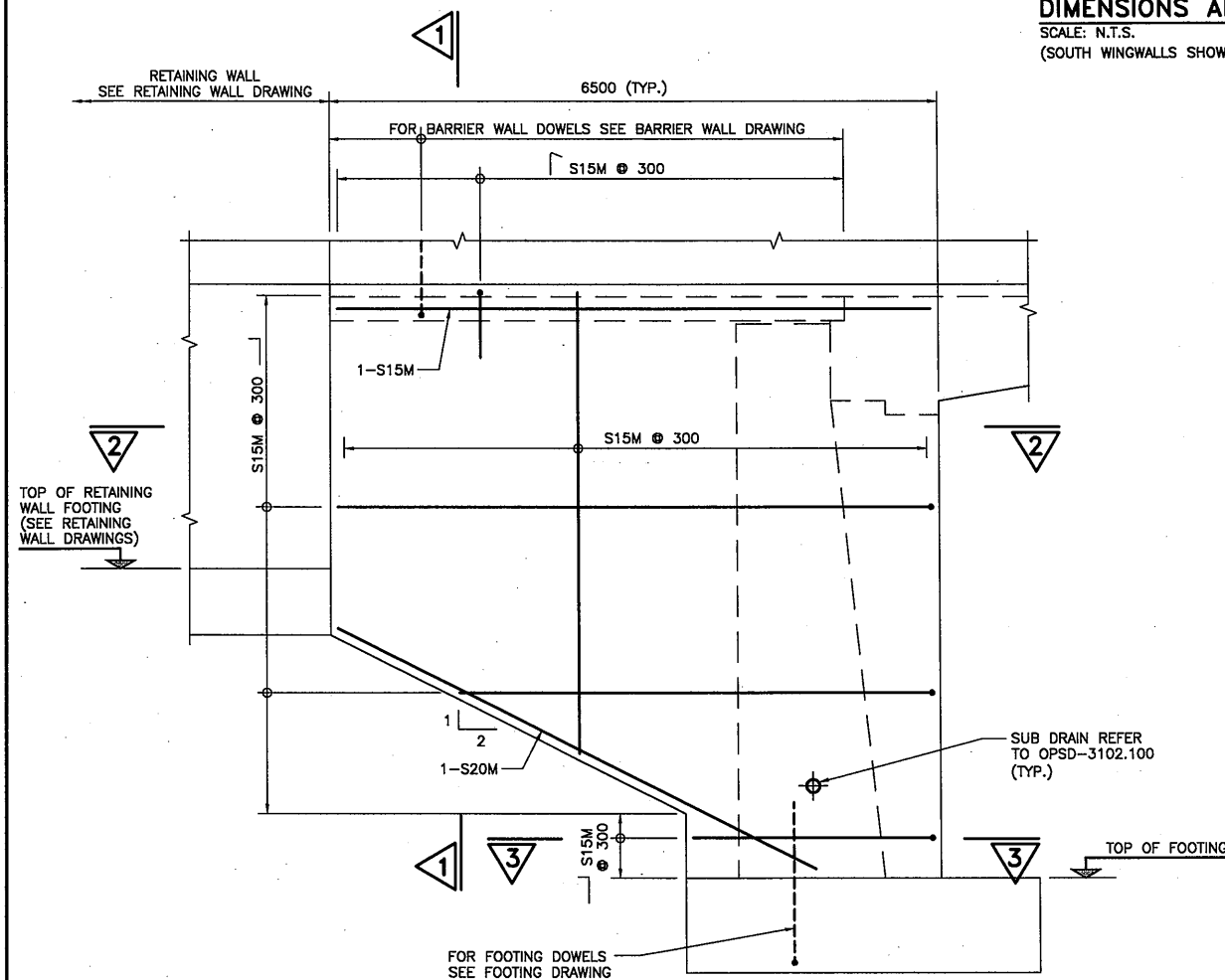
OPSD 3941.200 FIGURES IN CONCRETE - SITE NUMBER
 AND DATE LAYOUT



DIMENSIONS AND REINFORCEMENT

SCALE: N.T.S.
 (SOUTH WINGWALLS SHOWN, NORTH WINGWALLS SIMILAR)

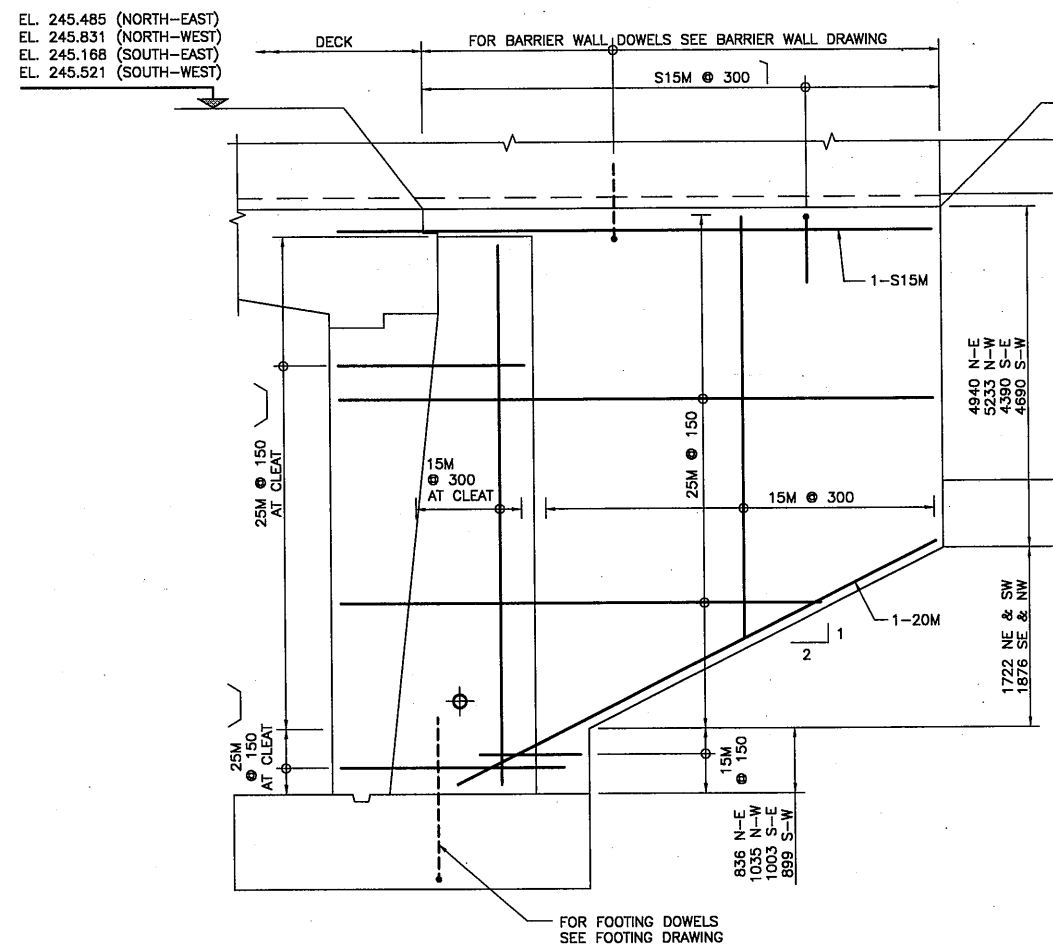
EL. 245.485 (NORTH-EAST)
 EL. 245.831 (NORTH-WEST)
 EL. 245.168 (SOUTH-EAST)
 EL. 245.521 (SOUTH-WEST)



OUTSIDE FACE

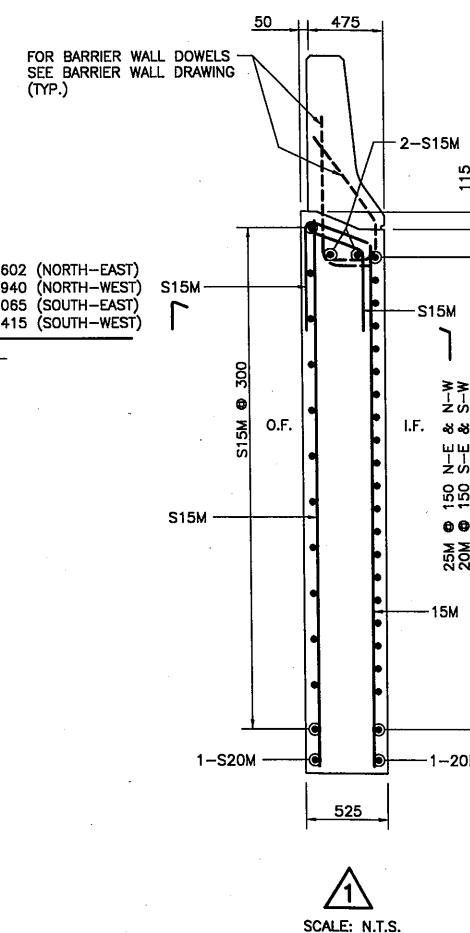
TYPICAL WINGWALL ELEVATION - DIMENSIONS AND REINFORCEMENT

SCALE: N.T.S.



INSIDE FACE

DRAWING NOT TO BE SCALED
 100mm ON ORIGINAL DRAWING



REVISIONS	DATE	BY	DESCRIPTION
DESIGN	S.K. CHK	S.B. CODE	CHBDC-06 LOAD CL-625 ONT DATE MAY 2010
DRAWN	D.L. CHK	V.K. SITE	37-1538/1 DWG 7

[illegible]

[illegible]

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PLOT DATE: 9/30/2010 8:36 AM
DRAWING NAME:
SAVED BY: luzzid
MINISTRY OF TRANSPORTATION, ONTARIO
PR-3-707 BR-05

METRIC
DIMENSIONS ARE IN METRES
AND/OR MILLIMETRES
UNLESS OTHERWISE SHOWN

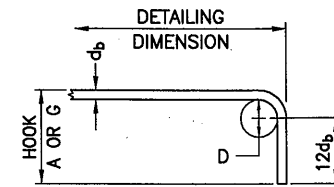
DIST
CONT No 0000-0000
WP No 2005-07-00



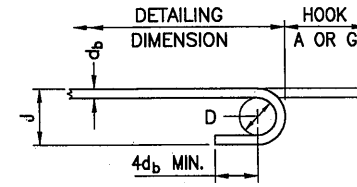
BOAG ROAD OVERPASS
HWY 404 NBL
HOOK DIMENSIONS

SHEET
NBL-11

AECOM



STANDARD 90° HOOK



STANDARD 180° HOOK

MINIMUM BENDING PIN DIAMETER, D, mm

BAR SIZE	STEEL GRADE	
	400R (2)	400W
10M	70	60
15M	100	90
20M	120	100
25M	150	150
30M	250	200
35M	300	250
45M	450 (1)	400
55M	600 (1)	550

(1) Special fabrication is required for bends exceeding 90° for bars of these sizes and grade.

(2) For stainless steel, with $F_y = 420$, use the same D as for 400R.

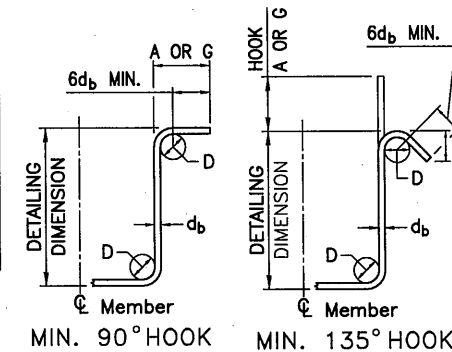
STANDARD HOOK DIMENSIONS

BAR SIZE	90° HOOKS		180° HOOKS			
	A OR G (mm)		A OR G (mm)		J (mm)	
	400R	400W	400R	400W	400R	400W
10M	180	180	140	130	90	80
15M	260	250	180	170	130	120
20M	310	300	220	200	160	140
25M	400	400	280	280	200	200
30M	510	490	400	350	310	260
35M	610	590	480	430	370	320
45M	790	770	680	630	540	490
55M	1030	1010	900	850	710	660

NOTE: All Hook Dimensions are according to the CHBDC-2000.

MINIMUM STIRRUP AND TIE HOOK DIMENSIONS

BAR SIZE	BAR DIAM. d_b (mm)	PIN DIAM. D (mm)	90°	135°	
			A OR G (mm)	A OR G (mm)	H (approx.) (mm)
10M	11.3	45	100	100	70
15M	16.0	65	140	140	100
20M	19.5	80	180	175	115
25M	25.2	100	230		



HOOK DIMENSIONS
FOR UNCOATED BARS

Date JUNE 2002 Rev



SS12-1

DRAWING NOT TO BE SCALED
100mm ON ORIGINAL DRAWING

REVISIONS		DATE		BY		DESCRIPTION	
DESIGN	S.K. CHK	S.B. CODE	CHBDC-06	LOAD CL-625 ONT	DATE	MAY 2010	
DRAWN	D.L. CHK	V.K. SITE	37-1538/1		DWG	11	

2538-198-00-00-ST-0012-NBL.dwg
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SAVED BY: lusakid
SAVED DATE: 8/26/2010 11:04 AM
PLOT DATE: 9/30/2010 8:36 AM
PR-D-707 88-05
MINISTRY OF TRANSPORTATION, ONTARIO

LEGEND:

-  EARTH EXCAVATION
 GRANULAR 'A' BACKFILL

APPLICABLE STANDARD DRAWINGS:

OPSD 3101.150 WALLS-ABUTMENT, BACKFILL MINIMUM GRANULAR REQUIREMENT

METRIC
DIMENSIONS ARE IN METRES
AND/OR MILLIMETRES
UNLESS OTHERWISE SHOWN

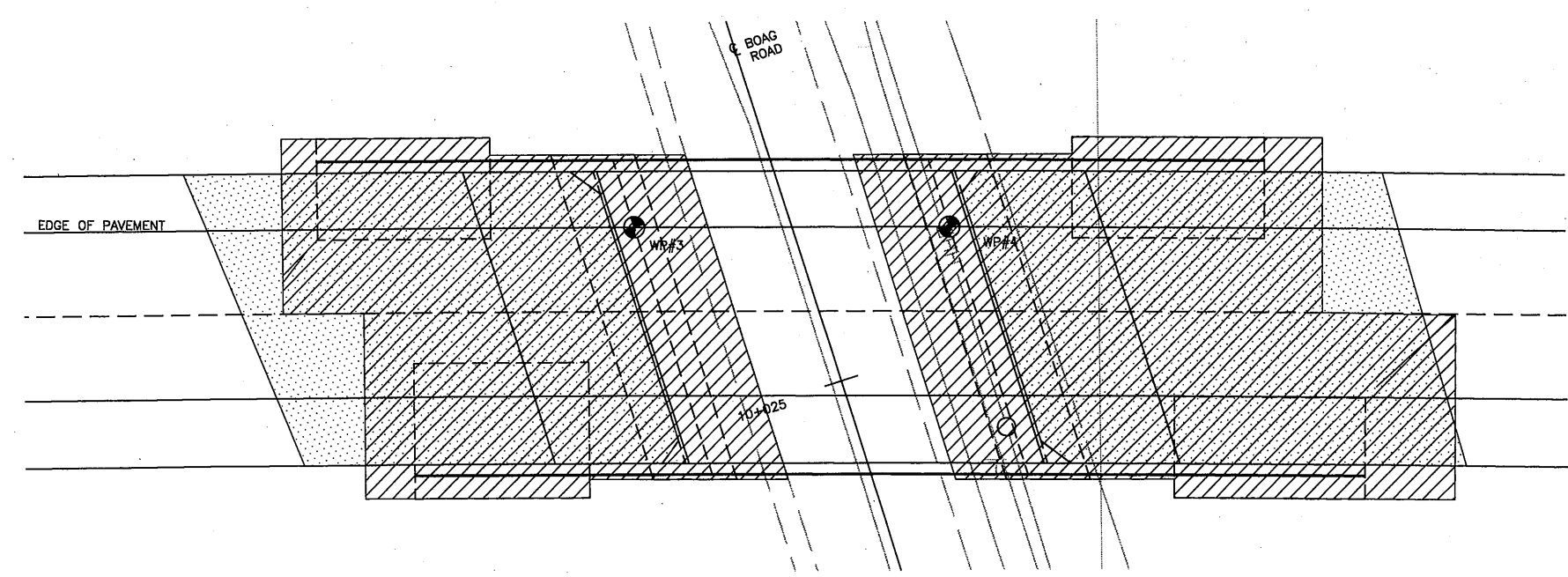
DIST
CONT No 0000-0000
WP No 2005-07-00



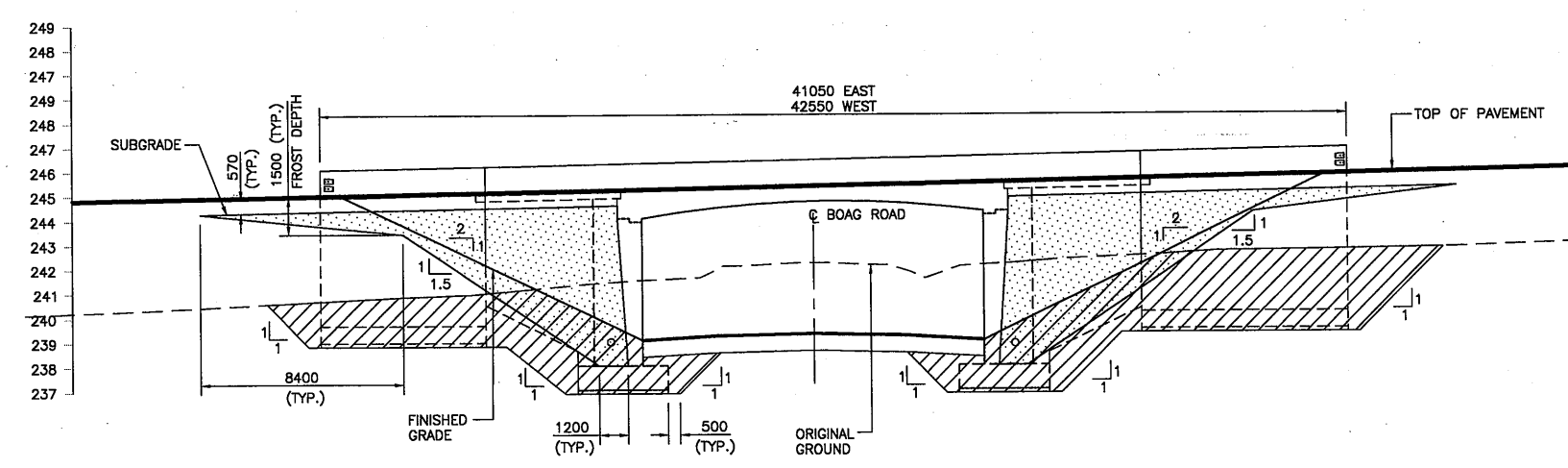
BOAG ROAD OVERPASS
HWY 404 NBL
EXCAVATION AND BACKFILL

SHEET
NBL-12

AECOM



PLAN
SCALE: 1:150



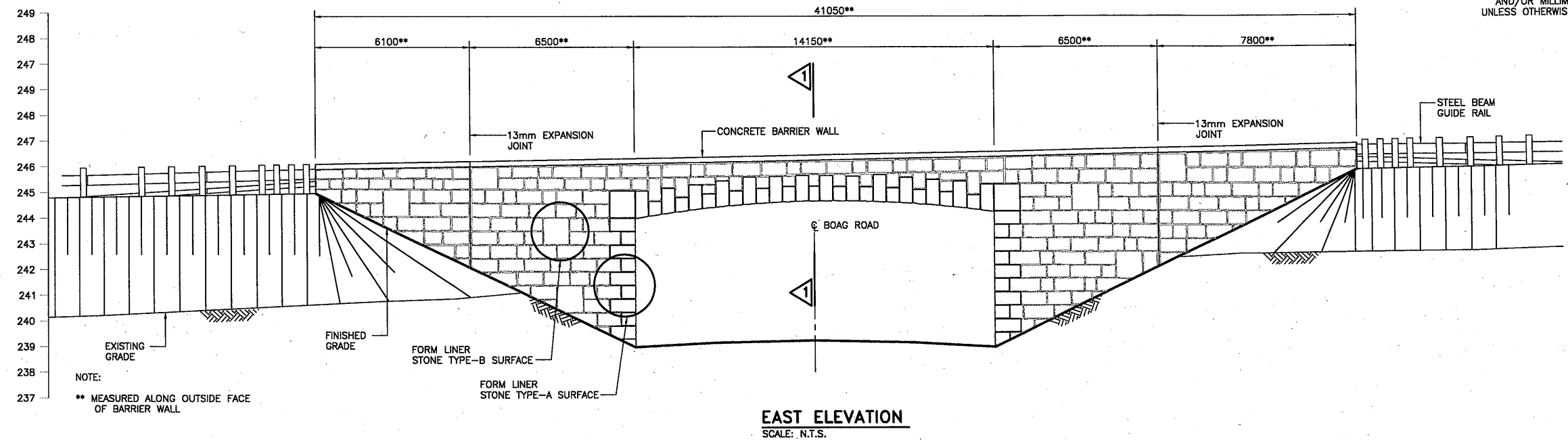
ELEVATION
SCALE: 1:150

DRAWING NOT TO BE SCALED
100mm ON ORIGINAL DRAWING

REVISIONS		DATE		BY	DESCRIPTION	
DESIGN	S.K.	CHK	S.B.	CODE	CHBDC-06	LOAD CL-625 ONT
DRAWN	D.L.	CHK	V.K.	SITE	37-1538/1	DWG 12

2538-199-00_00-ST-0013-NBL.dwg
SAVED BY: lunsfeld
DESIGN NAME:
SAVED DATE: 8/26/2010 11:08 AM
PLOT DATE: 9/20/2010 8:36 AM

MINISTRY OF TRANSPORTATION, ONTARIO
PR-D-707 88-05



EAST ELEVATION
SCALE: N.T.S.

METRIC
DIMENSIONS ARE IN METRES
AND/OR MILLIMETRES
UNLESS OTHERWISE SHOWN

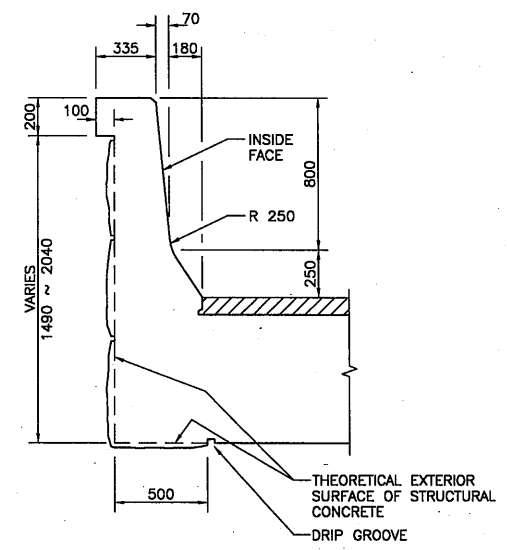
DIST	CONT No 0000-0000	
WP No 2005-07-00		
BOAG ROAD OVERPASS HWY 404 NBL FORM LINER		SHEET NBL-13
AECOM		

NOTES:

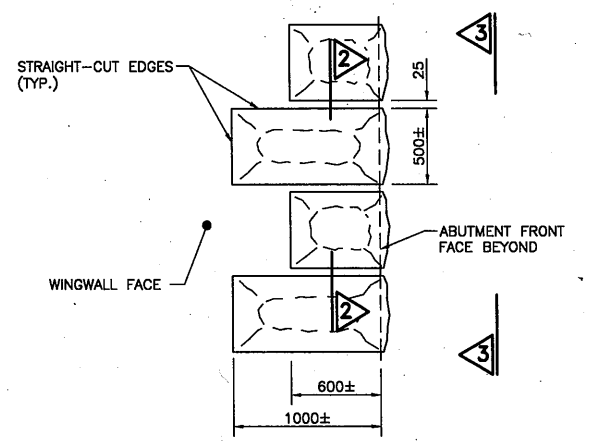
1. FORM LINER SURFACE SHALL BE EXTENDED TO 500mm BELOW FINISHED GRADE.
2. CONCRETE COVER TO BE MEASURED FROM THEORETICAL EXTERIOR SURFACE.

APPLICABLE STANDARD DRAWINGS:

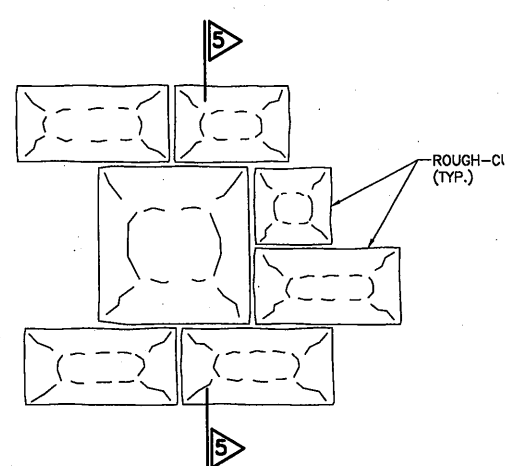
OPSD 3390.100 DECK DRIP CHANNEL



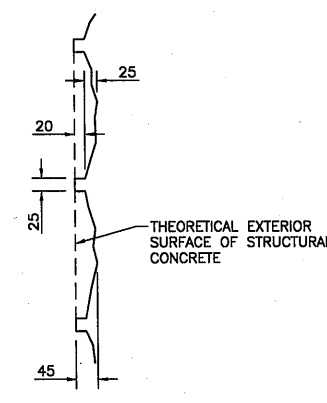
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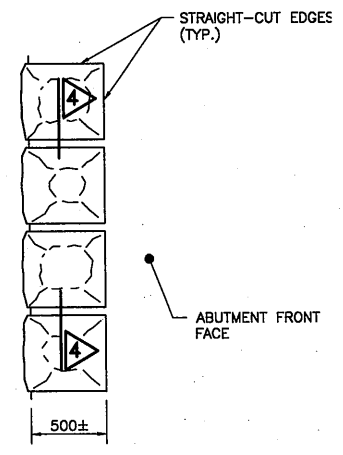
STONE TYPE-A DETAIL
SCALE: N.T.S.



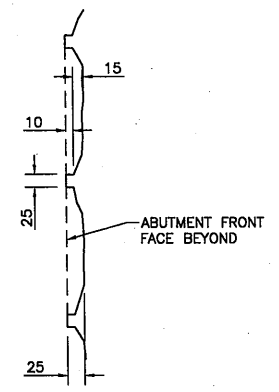
STONE TYPE-B DETAIL
SCALE: N.T.S.



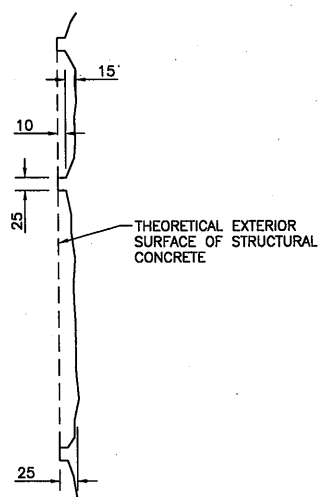
2 SECTION
SCALE: N.T.S.
RELIEF ON WINGWALL FACE



3 SECTION
SCALE: N.T.S.



4 SECTION
SCALE: N.T.S.
RELIEF ON ABUTMENT FRONT FACE AND SOFFIT

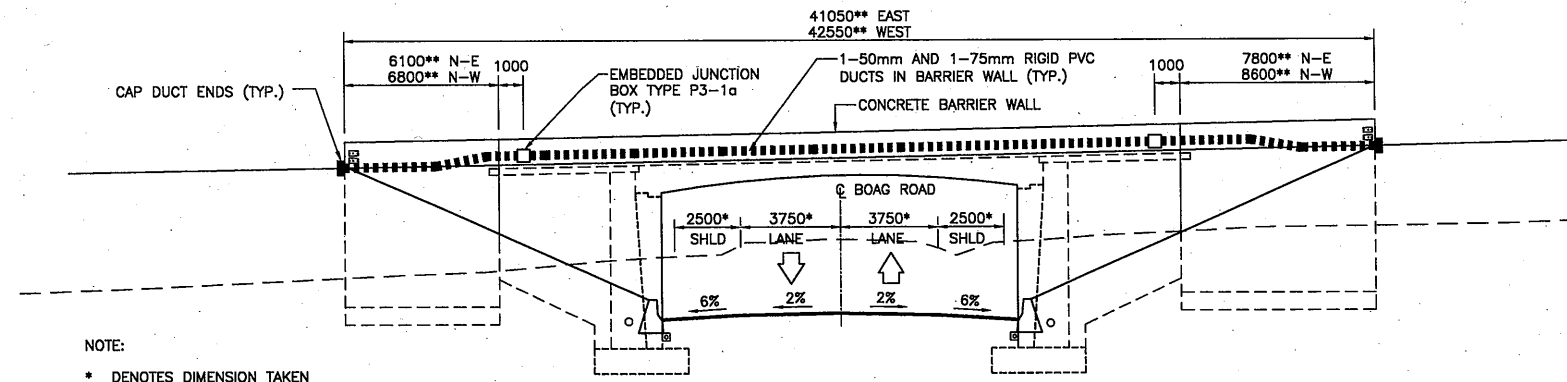
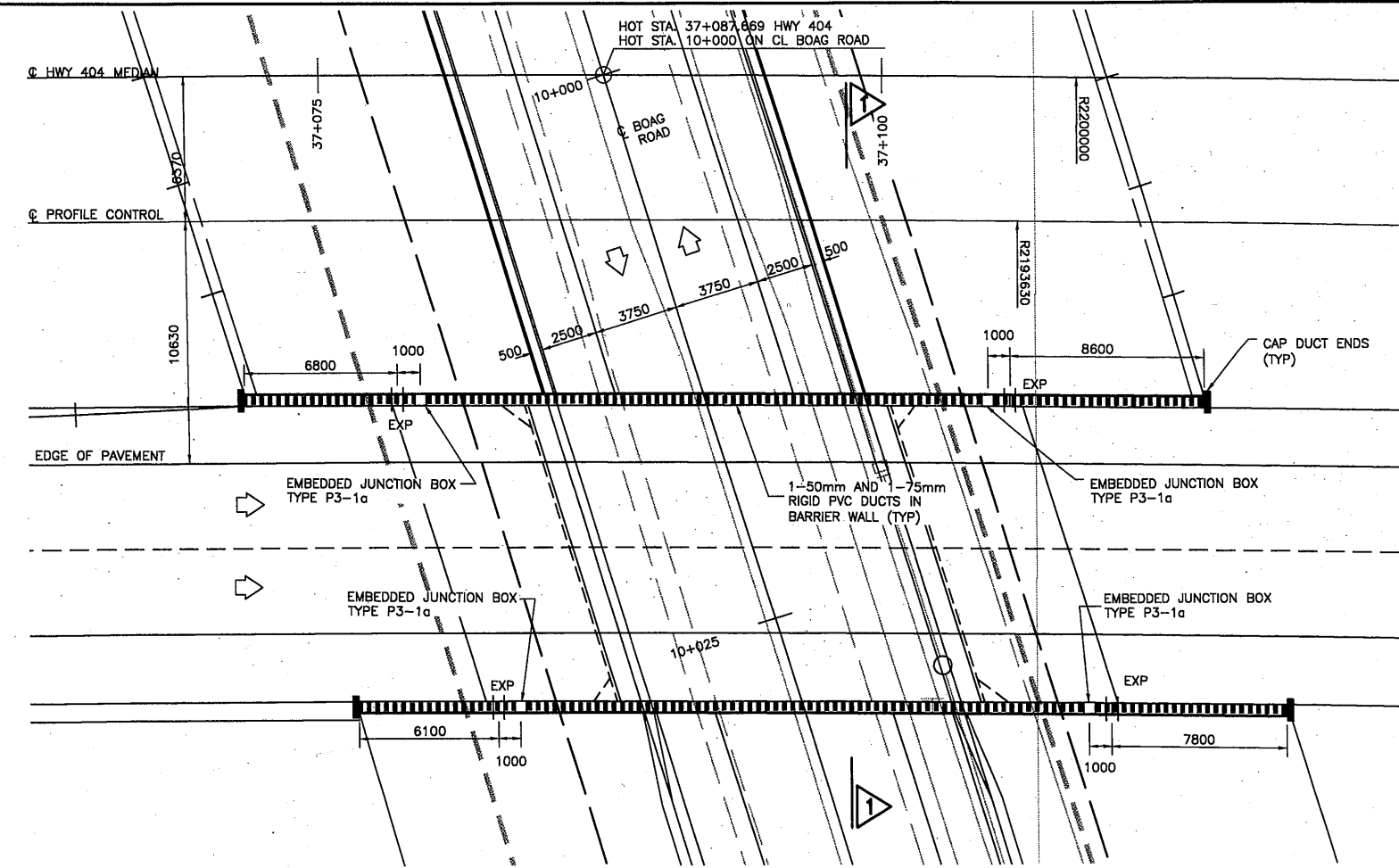


5 SECTION
SCALE: N.T.S.
RELIEF ON WINGWALL FACE

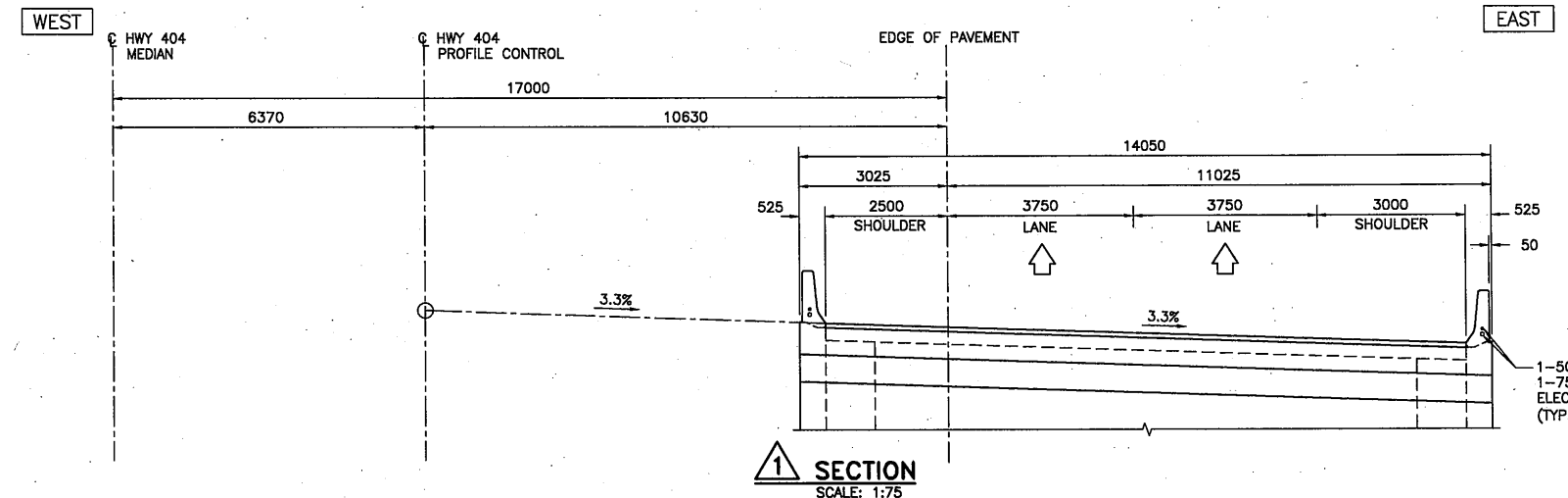
DRAWING NOT TO BE SCALED
100mm ON ORIGINAL DRAWING

REVISIONS	DATE	BY	DESCRIPTION
DESIGN	S.K.	CHK	S.B. CODE CHBDC-06 LOW CL-625 ONT DATE MAY 2010
DRAWN	D.L.	CHK	V.K. SITE 37-1538/1 DWG 13

2538-199-00-00-ST-0014-NBL.dwg
DRAWING NAME:
SAVED BY: larakd
SAVED DATE: 8/26/2010 11:03 AM
PLOT DATE: 9/30/2010 8:37 AM
MINISTRY OF TRANSPORTATION, ONTARIO
PR-5-707 88-35



NOTE:
* DENOTES DIMENSION TAKEN PERPENDICULAR TO CL OF BOAG ROAD
** MEASURED ALONG OUTSIDE FACE OF BARRIER WALL



METRIC
DIMENSIONS ARE IN METRES
AND/OR MILLIMETRES
UNLESS OTHERWISE SHOWN

DIST CONT No 0000-0000 WP No 2005-07-00		
BOAG ROAD OVERPASS HWY 404 NBL EMBEDDED WORK IN STRUCTURE		
AECOM		SHEET NBL-14

GENERAL NOTE:
A. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS OTHERWISE NOTED.

SUPPLEMENTARY LEGEND
■■■■ EMBEDDED DUCT IN STRUCTURE, SIZE AS INDICATED

DRAWING NOT TO BE SCALED
100mm ON ORIGINAL DRAWING

REVISIONS	DATE	BY	DESCRIPTION
DESIGN	B.M. CHK	B.K. CODE	CHBDC-06 LOAD CL-625 ONT DATE MAY 2010
DRAWN	B.M. CHK	V.K. SITE	37-1538/1 DWG 14

METRIC
DIMENSIONS ARE IN METRES AND/OR
MILLIMETRES UNLESS OTHERWISE SHOWN.
STATIONS IN KILOMETRES + METRES.

CONT No.
WP No.2005-07-00

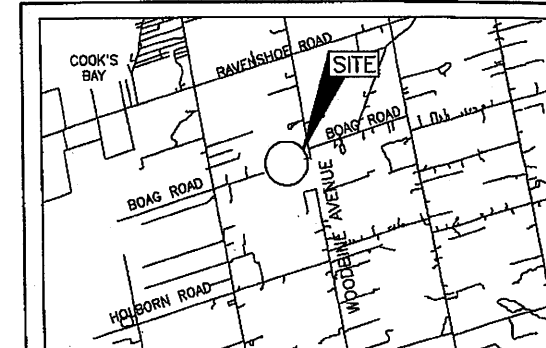


HIGHWAY 404
BOAG ROAD OVERPASS - SBL
BOREHOLE LOCATION AND SOIL STRATA

SHEET
SBL-2



Golder Associates Ltd.
MISSISSAUGA, ONTARIO, CANADA



KEY PLAN
SCALE
1.5 0 1.5 km

LEGEND

- Borehole - Current Investigation
- ⬆ Seal
- ⬆ Piezometer
- N Standard Penetration Test Value
- 16 Blows/0.3m unless otherwise stated
(Std. Pen. Test, 475 j/blow)
- 100% Rock Quality Designation (RQD)
- ≡ WL in piezometer, measured on May 20, 2009
- ≡ WL upon completion of drilling

No.	ELEVATION	CO-ORDINATES	
		NORTHING	EASTING
BR-1	242.7	4893066.8	308889.1
BR-2	242.3	4893061.0	308899.6
BR-3	243.5	4893085.8	308888.5
BR-4	242.8	4893090.3	308900.0
BR-5	241.7	4893052.7	308894.9
BR-6	243.4	4893099.8	308894.7

NOTES

This drawing is for subsurface information only. The proposed structure details/works are shown for illustration purposes only and may not be consistent with the final design configuration as shown elsewhere in the Contract Documents.

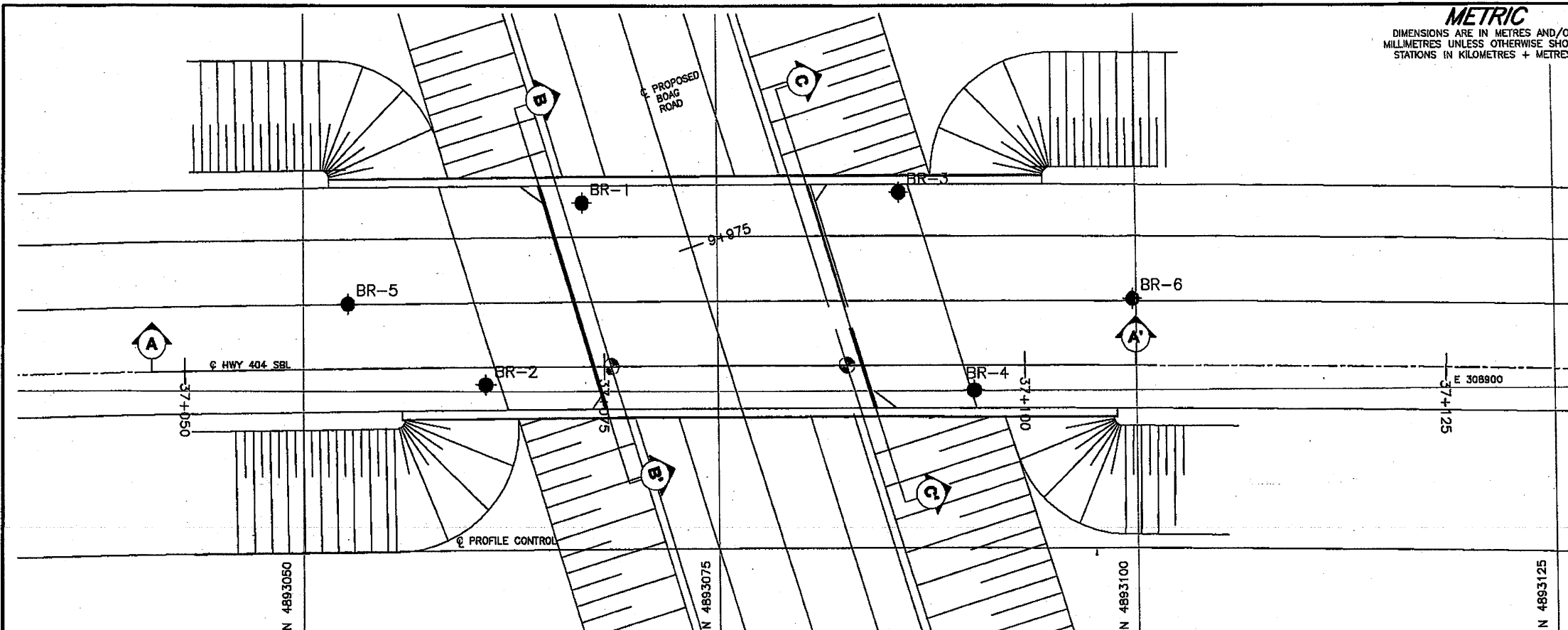
The boundaries between soil strata have been established only at borehole locations. Between Boreholes the boundaries are assumed from geological evidence.

The complete foundation investigation and design report for this project and other related documents may be examined at the Materials Engineering and Research Office, Downsview. Information contained in this report and related documents is specifically excluded in accordance with Section GC 2.01 of OPS General Conditions.

REFERENCE

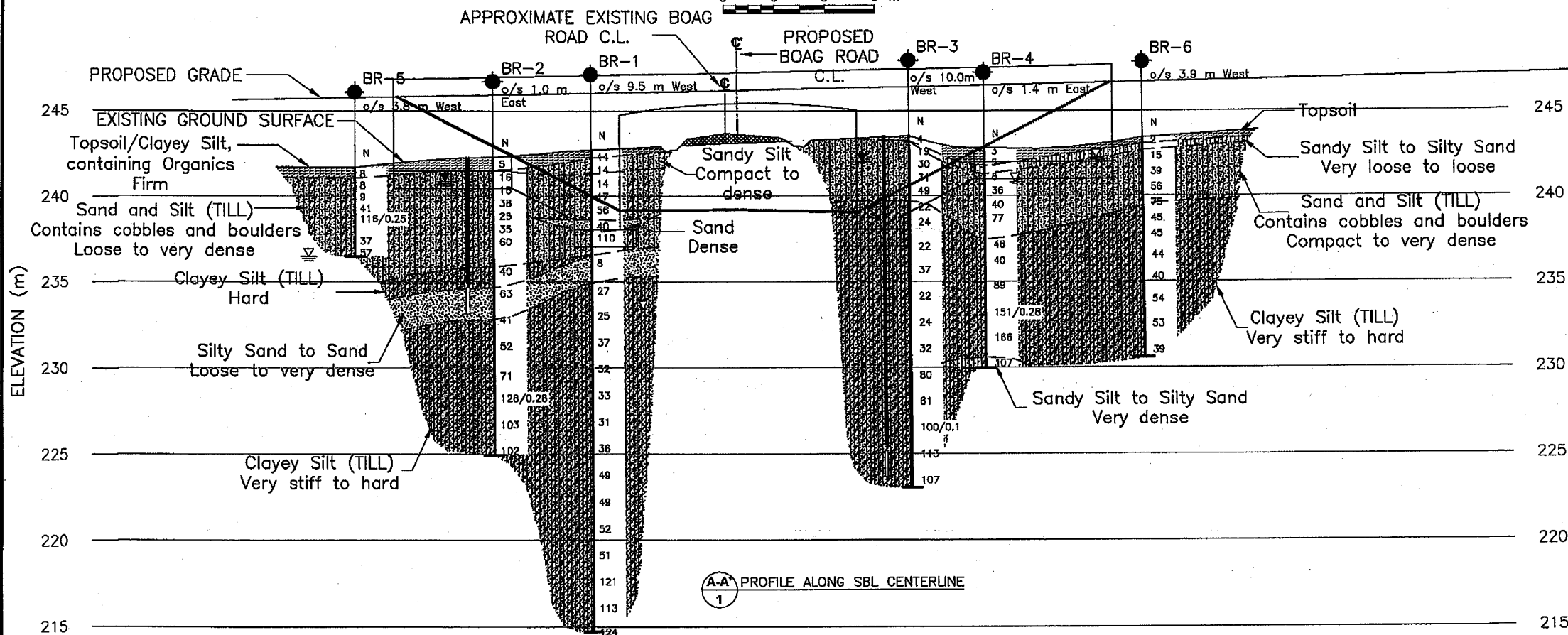
Base plans provided in digital format by AECOM, drawing file no. 2538-198-ST-0001-SBL-To Golder-090930.dwg, received Oct. 09, 2009.

1	Nov. 18, 2009	KJB	UPDATED BASE DRAWING
NO.	DATE	BY	REVISION
Geocres No. 31D-464			
HWY. 404		PROJECT NO. 08-1111-0022 DIST.	
SUBM'D.	CHKD. TB	DATE: Nov. 2009	SITE:
DRAWN: DD	CHKD. KJB	APPD. JMAC	DWG. 2



PLAN

SCALE
3 0 3 6 m



A-A' PROFILE ALONG SBL CENTERLINE

SCALE
3 0 3 6 m

METRIC
 DIMENSIONS ARE IN METRES AND/OR MILLIMETRES UNLESS OTHERWISE SHOWN. STATIONS IN KILOMETRES + METRES.

CONT No.
 WP No.2005-07-00

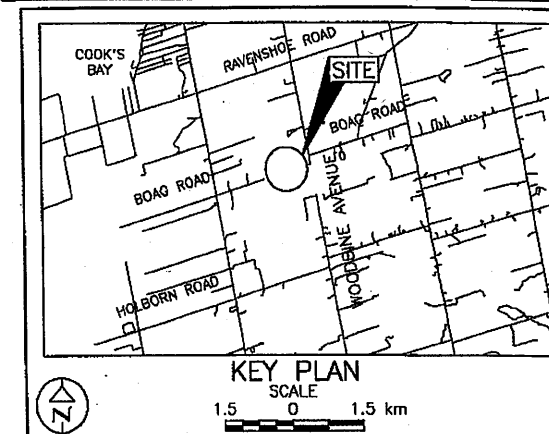


HIGHWAY 404
 BOAG ROAD OVERPASS - SBL
 SOIL STRATA

SHEET
 SBL-3



Golder Associates Ltd.
 MISSISSAUGA, ONTARIO, CANADA



LEGEND

- Borehole - Current Investigation
- ⊥ Seal
- ⊥ Piezometer
- N Standard Penetration Test Value
- 16 Blows/0.3m unless otherwise stated (Std. Pen. Test, 475 j/blow)
- 100% Rock Quality Designation (RQD)
- ≡ WL in piezometer, measured on May 20, 2009
- ≡ WL upon completion of drilling

No.	ELEVATION	CO-ORDINATES	
		NORTHING	EASTING
BR-1	242.7	4893066.8	308889.1
BR-2	242.3	4893061.0	308899.6
BR-3	243.5	4893085.8	308888.5
BR-4	242.8	4893090.3	308900.0

NOTES

This drawing is for sub-surface information only. The proposed structure details/works are shown for illustration purposes only and may not be consistent with the final design configuration as shown elsewhere in the Contract Documents.

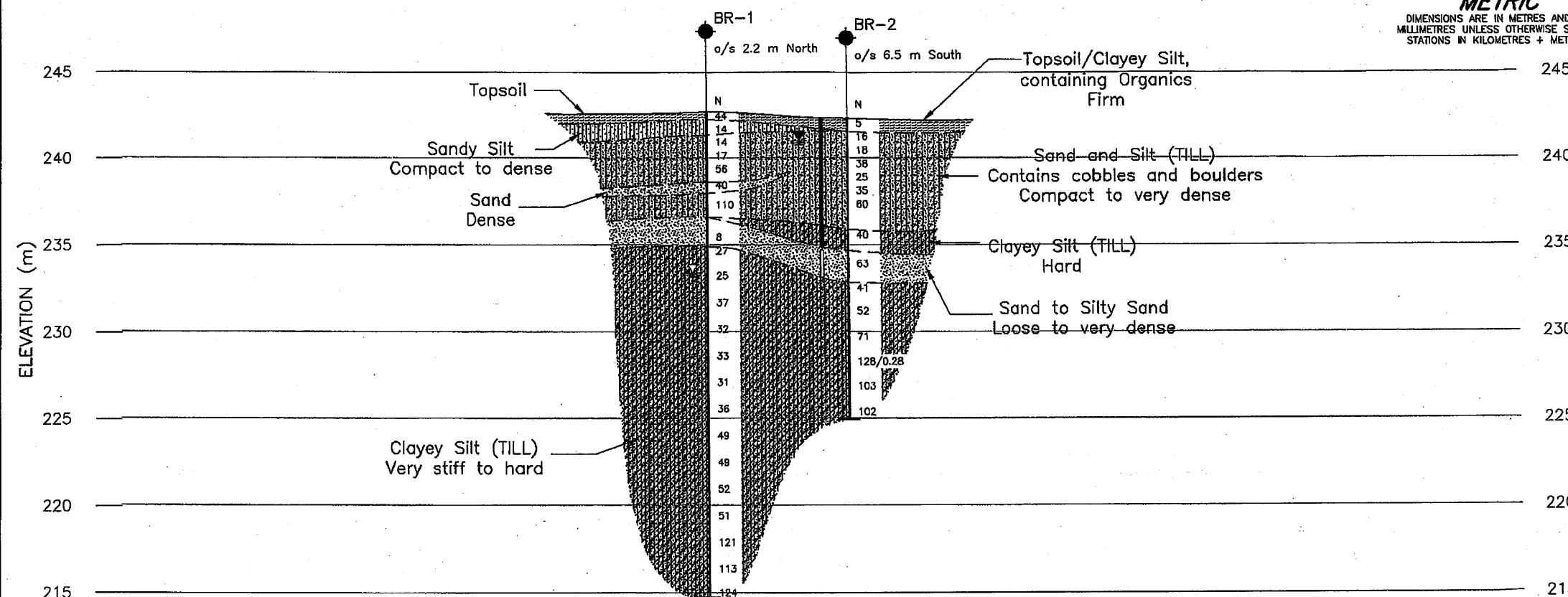
The boundaries between soil strata have been established only at borehole locations. Between Boreholes the boundaries are assumed from geological evidence.

The complete foundation investigation and design report for this project and other related documents may be examined at the Materials Engineering and Research Office, Downsview. Information contained in this report and related documents is specifically excluded in accordance with Section GC 2.01 of OPS General Conditions.

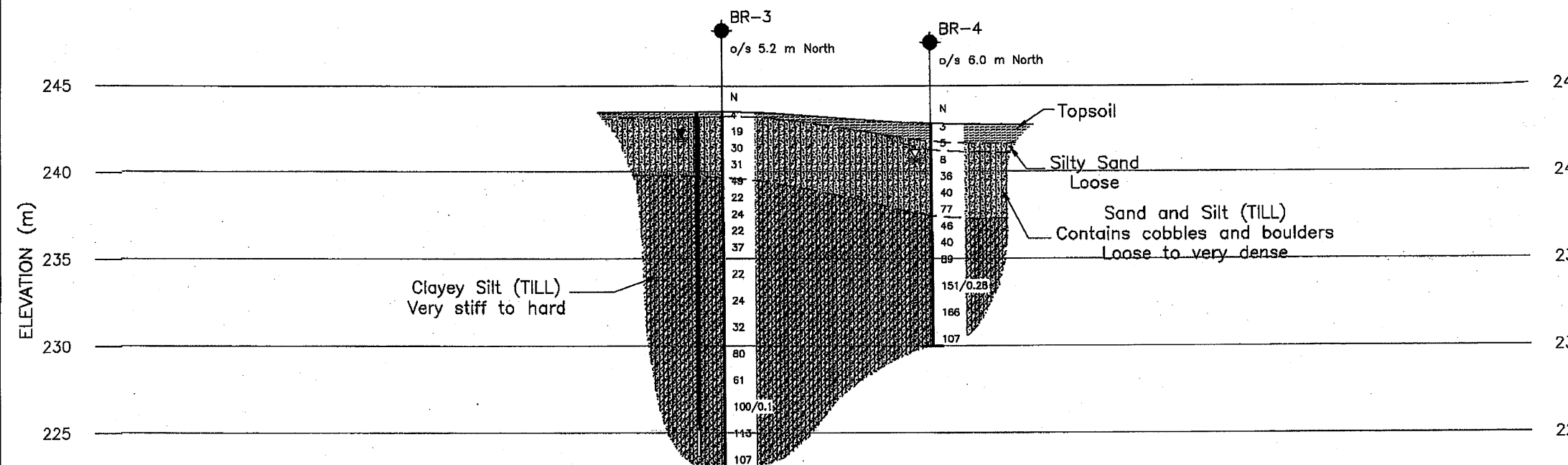
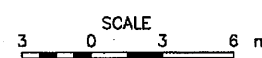
REFERENCE

Base plans provided in digital format by AECOM, drawing file no. 2538-199-ST-0001-SBL-To Golder-090930.dwg, received Oct. 09, 2009.

NO.	DATE	BY	REVISION
1	Nov. 18, 2009	KJB	UPDATED BASE DRAWING
Geopress No. 31D-464			
HWY. 404	PROJECT NO. 08-1111-0022		DIST.
SUBM'D.	CHKD. TB	DATE: Nov. 2009	SITE:
DRAWN: DD	CHKD. KJB	APPD. JMAC	DWG. 3



B-B' SECTION ALONG SOUTH ABUTMENT
 1



C-C' SECTION ALONG NORTH ABUTMENT
 1




DRAWING NAME: 2538-199-00-00-ST-0004-SBL.dwg
SAVED BY: lward
PLOT DATE: 9/30/2010 8:42 AM
DATE: 8/26/2010 11:13 AM

MINISTRY OF TRANSPORTATION, ONTARIO
PR-6-707 88-05

METRIC
DIMENSIONS ARE IN METRES
AND/OR MILLIMETRES
UNLESS OTHERWISE SHOWN

DIST
CONT No 0000-0000
WP No 2005-07-00


SHEET
SBL-4

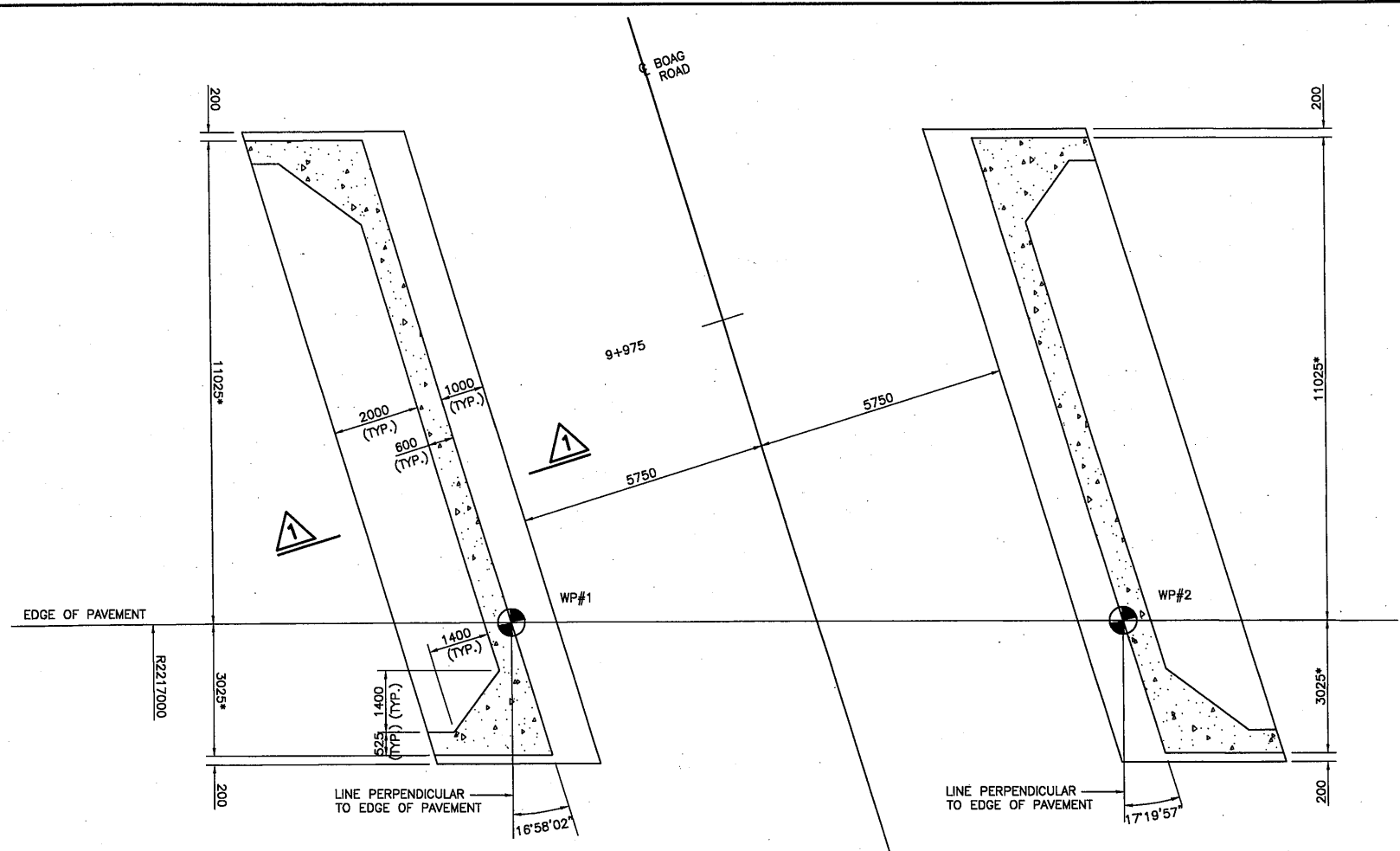
BOAG ROAD OVERPASS
HWY 404 SBL
FOUNDATION LAYOUT AND
FOOTING REINFORCEMENT

AECOM

NOTES:

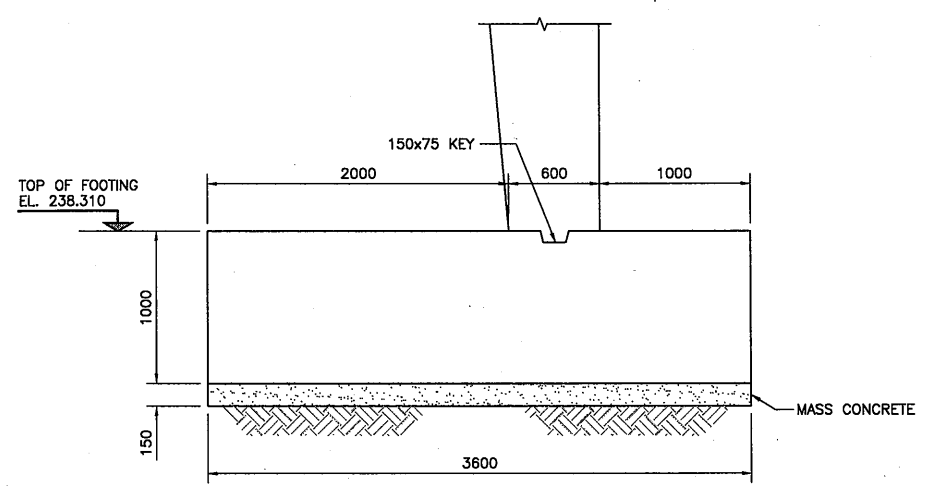
- FACTORED GEOTECHNICAL RESISTANCE OF SOIL AT BOTTOM OF FOOTING LEVEL:
ULS: 450 KPa
SLS: 300 KPa

LOCATION	EASTING	NORTHING
WP#1	308898.536	4893068.541
WP#2	308898.487	4893082.668

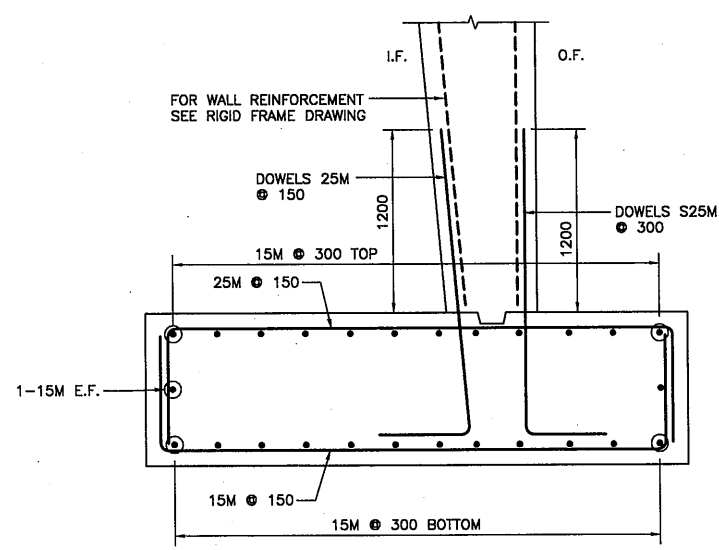


FOOTING LAYOUT PLAN
SCALE: 1:75

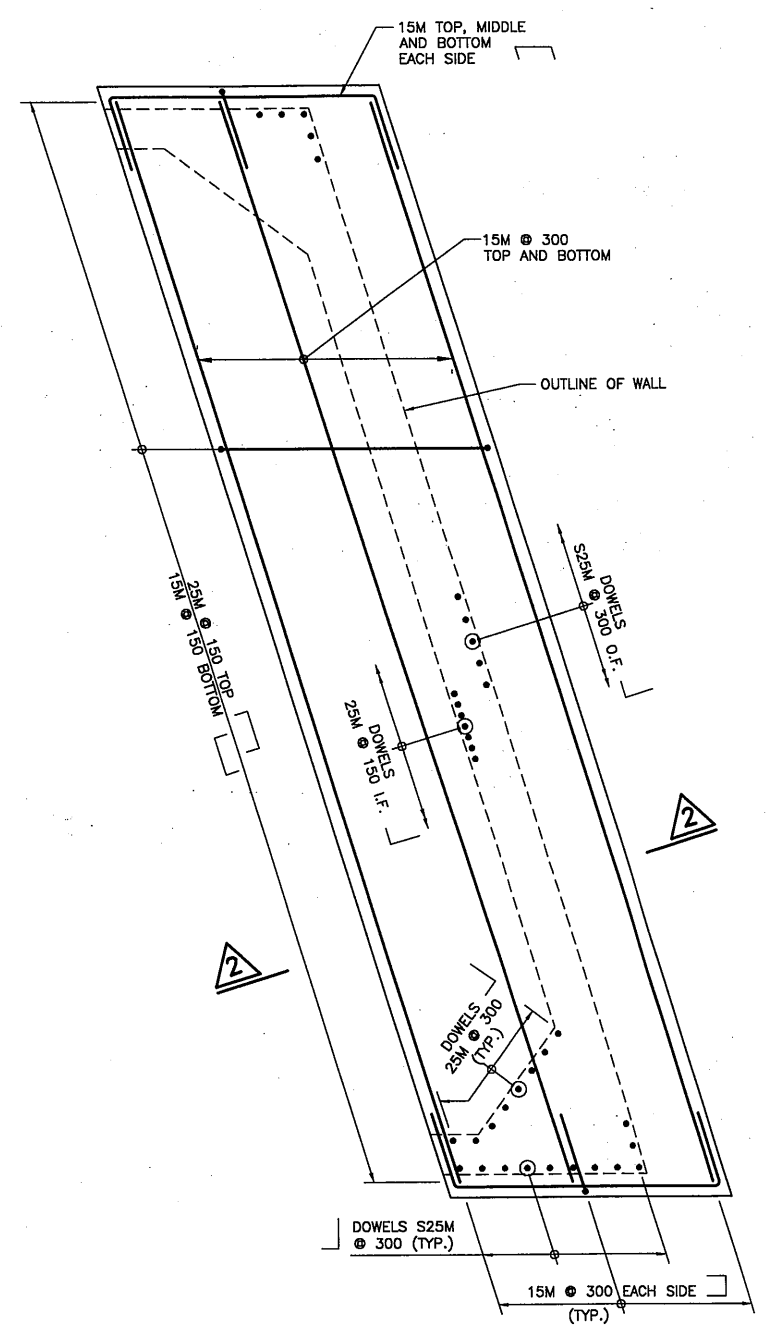
NOTES:
* DIMENSIONS ARE PERPENDICULAR TO
EDGE OF PAVEMENT



SECTION 1
SCALE: 1:25



SECTION 2
SCALE: 1:25



TYPICAL FOOTING PLAN - REINFORCEMENT
SCALE: 1:50

DRAWING NOT TO BE SCALED
100mm ON ORIGINAL DRAWING

REVISIONS	DATE	BY	DESCRIPTION
DESIGN	S.K.	CHK	S.B. CODE CHBDC-06 LOW CL-625 ONT DATE MAY 2010
DRAWN	D.L.	CHK	V.K. SITE 37-1538/2 DWG 4

DRAWING NAME: 2538-199-00_00-ST-0005-SBL.dwg
SAVED DATE: 8/26/2010 11:12 AM
PLOT DATE: 9/30/2010 8:42 AM

MINISTRY OF TRANSPORTATION
ROADS

PR-S-707
88-205

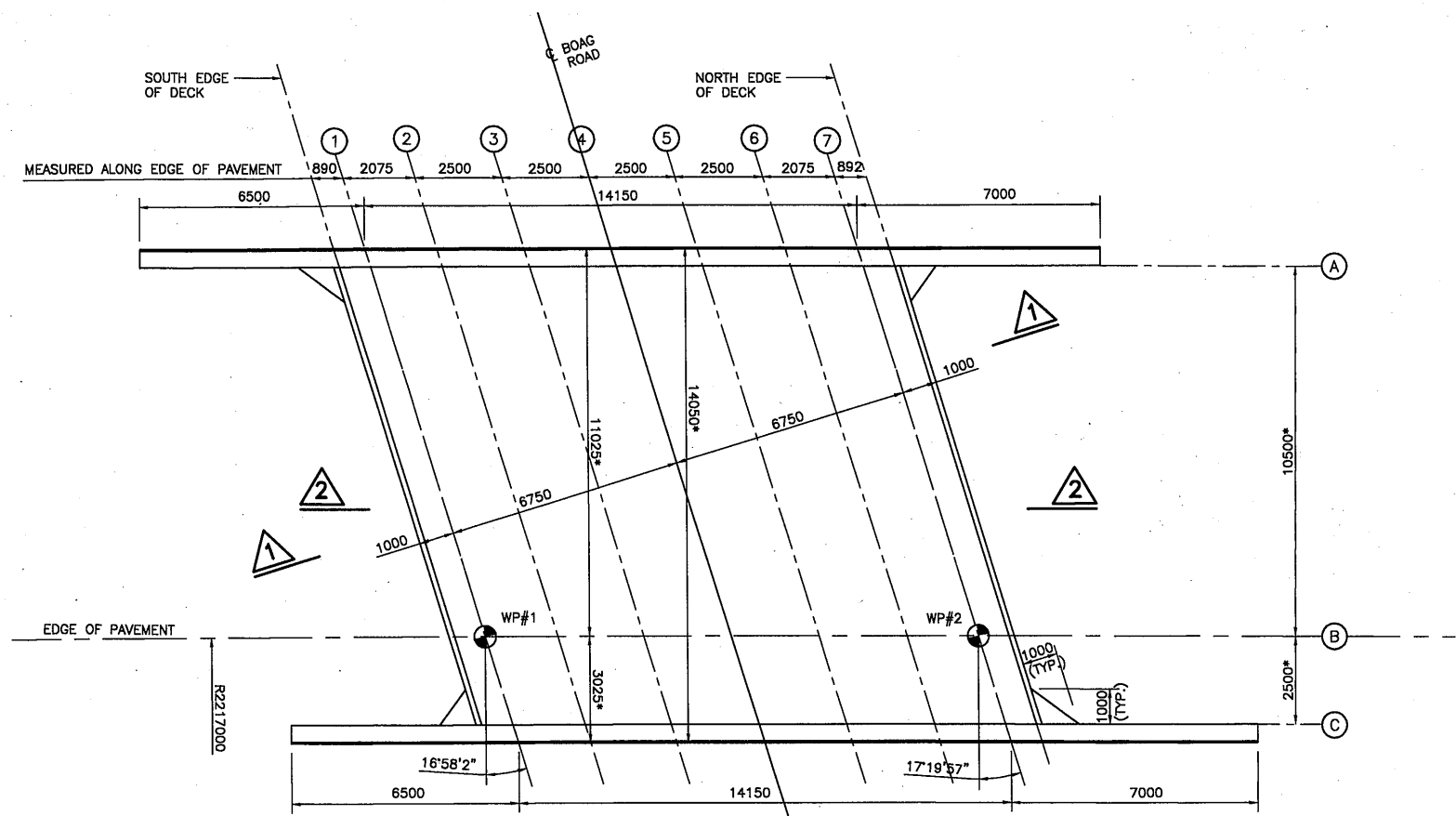
METRIC
DIMENSIONS ARE IN METRES
AND/OR MILLIMETRES
UNLESS OTHERWISE SHOWN

DIST
CONT No 0000-0000
WP No 2005-07-00

BOAG ROAD OVERPASS
HWY 404 SBL
RIGID FRAME - PLAN AND SECTIONS

SHEET
SBL-5

AECOM

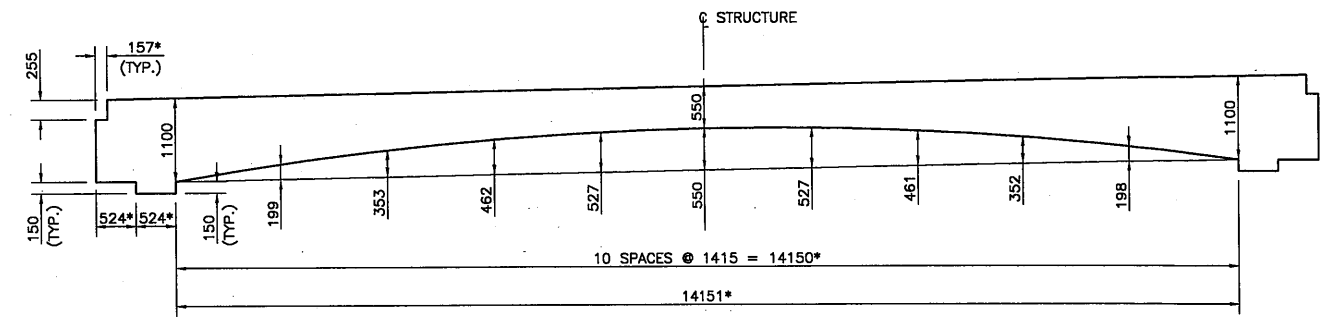


- NOTES:
- * DIMENSIONS ARE PERPENDICULAR TO EDGE OF PAVEMENT.
 - RETAINING WALLS AND APPROACH SLABS ARE NOT SHOWN FOR CLARITY.

PLAN
SCALE: 1:100

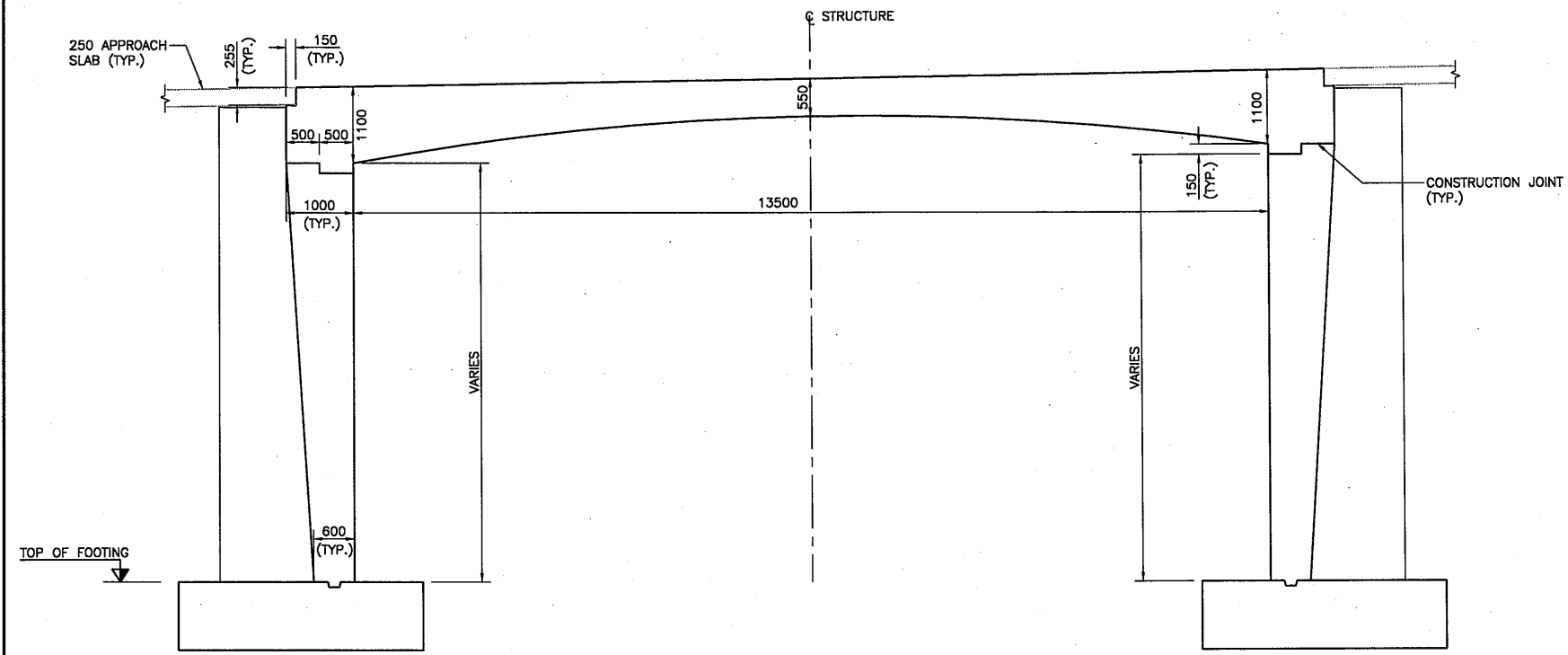
SCREED ELEVATIONS			
GRID	A	B	C
S. EDGE OF DECK	246.256	245.965	245.896
1	246.272	245.981	245.911
2	246.307	246.017	245.948
3	246.351	246.062	245.993
4	246.395	246.107	246.038
5	246.440	246.153	246.084
6	246.485	246.199	246.131
7	246.523	246.238	246.170
N. EDGE OF DECK	246.540	246.255	246.187

- NOTES:
- SCREED ELEVATIONS ARE AT TOP OF CONCRETE.
 - TOP OF CLEAT TO BE CAST 35mm BELOW APPROACH SLAB SEAT.



SECTION 2 - SOFFIT GEOMETRY
SCALE: N.T.S.

- NOTES:
- * DIMENSIONS ARE MEASURED ALONG EDGE OF PAVEMENT.



SECTION 1
SCALE: 1:50

DRAWING NOT TO BE SCALED
100mm ON ORIGINAL DRAWING

REVISIONS		DATE		BY		DESCRIPTION	
DESIGN	S.K. CHK	S.B. CODE	CHBDC-06	LOAD CL-625 ONT	DATE	MAY 2010	
DRAWN	D.L. CHK	V.K. SITE	37-1538/2		DWG	5	

DRAWING NAME: 2538-199-00_00-ST-0006-SBL.dwg
SAVED BY: lward
SAVED DATE: 8/26/2010 11:12 AM
PLOT DATE: 9/30/2010 8:42 AM

MINISTRY OF TRANSPORTATION, ONTARIO
PR-D-707 88-35

METRIC
DIMENSIONS ARE IN METRES
AND/OR MILLIMETRES
UNLESS OTHERWISE SHOWN

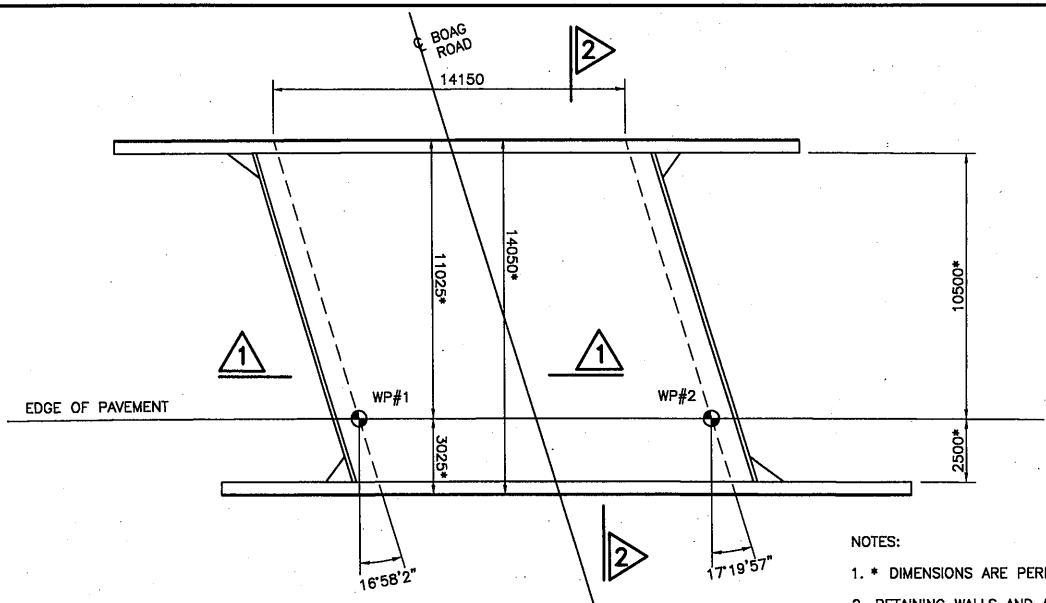
DIST
CONT No 0000-0000
WP No 2005-07-00

BOAG ROAD OVERPASS
HWY 404 SBL
RIGID FRAME - REINFORCEMENT



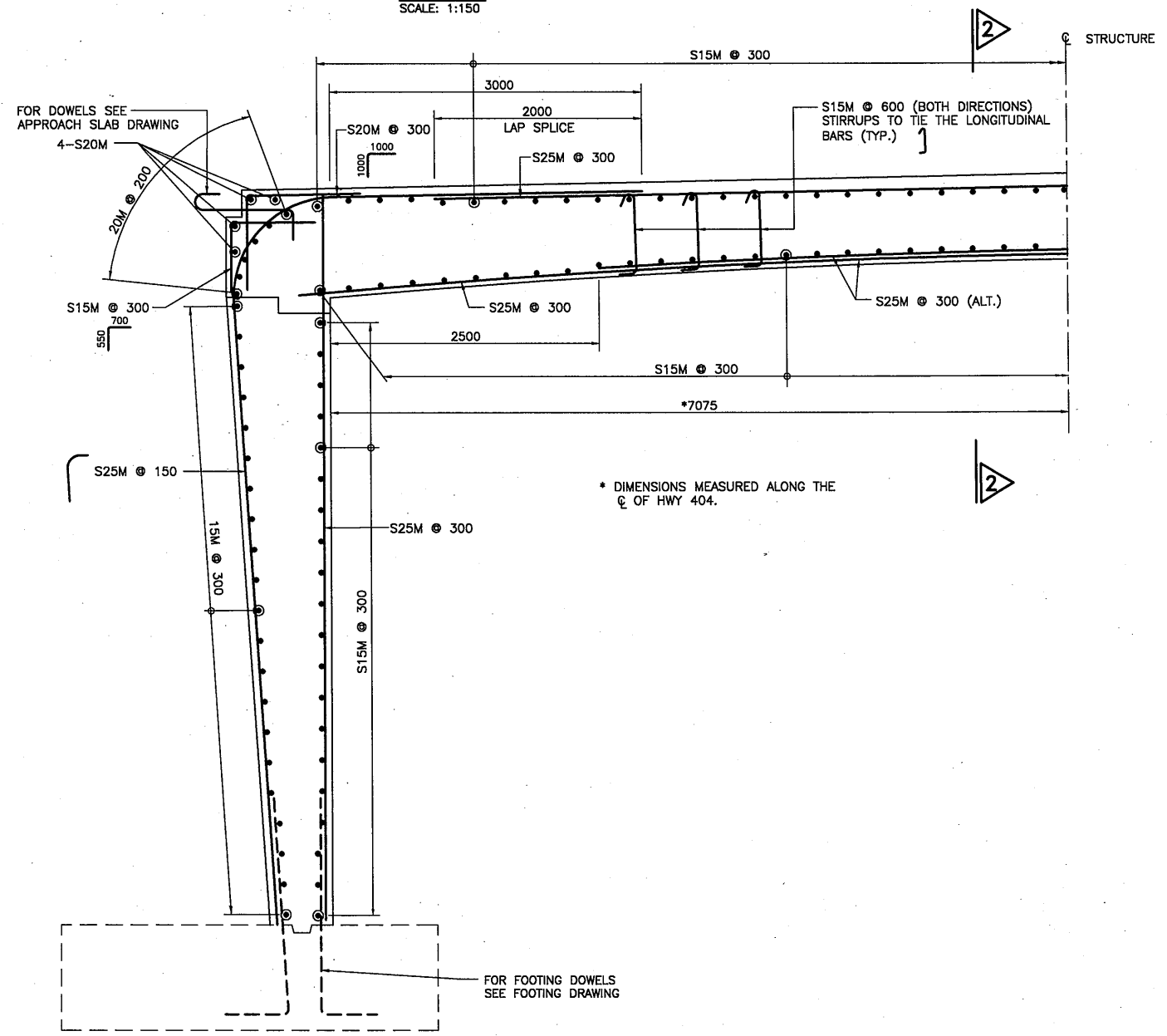
SHEET
SBL-6

AECOM

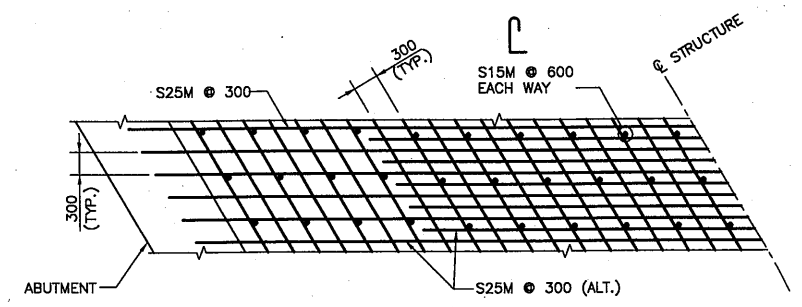


PLAN
SCALE: 1:150

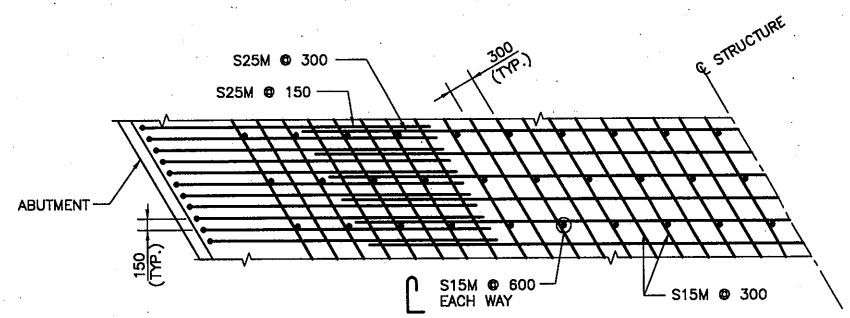
- NOTES:
- * DIMENSIONS ARE PERPENDICULAR TO EDGE OF PAVEMENT.
 - RETAINING WALLS AND APPROACH SLABS ARE NOT SHOWN FOR CLARITY.



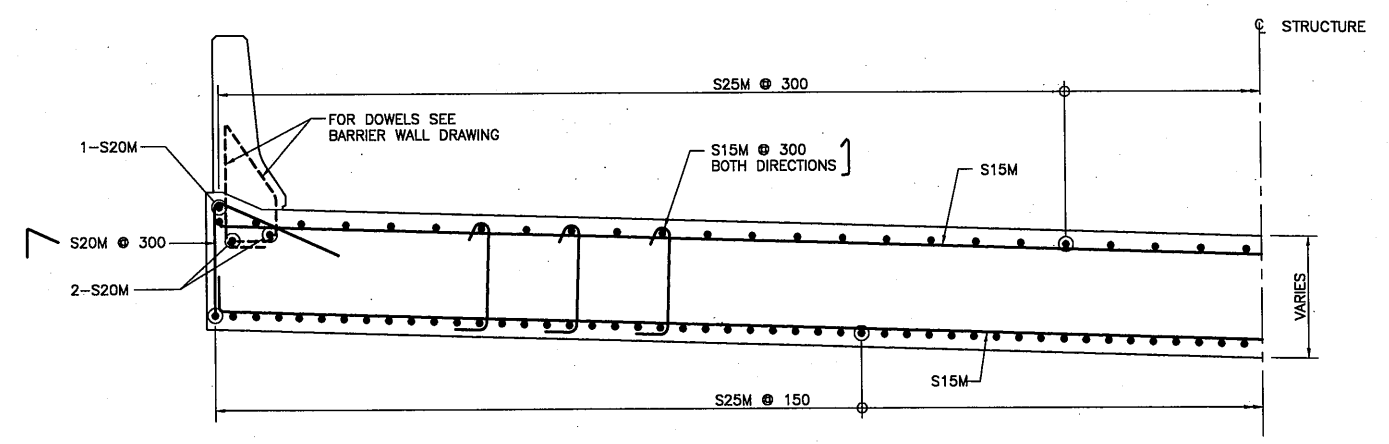
1 SECTION
SCALE: N.T.S.



PARTIAL DECK BOTTOM REINFORCEMENT PLAN
SCALE: N.T.S.



PARTIAL DECK TOP REINFORCEMENT PLAN
SCALE: N.T.S.



2 SECTION
SCALE: N.T.S.

DRAWING NOT TO BE SCALED
100mm ON ORIGINAL DRAWING

REVISIONS		DATE	BY	DESCRIPTION
DESIGN	S.K./CHK	S.B./CODE	CHBDC-06	LOAD CL-625 ONT DATE MAY 2010
DRAWN	D.L./CHK	V.K./SITE	37-1538/2	DWG 6

DRAWING NAME: 2538-199-00-00-ST-0007-SBL.dwg
SAVED BY: lusakd
SAVED DATE: 8/26/2010 11:12 AM
PLOT DATE: 9/30/2010 8:42 AM

MINISTRY OF TRANSPORTATION, ONTARIO
PR-D-707 88-05

METRIC
DIMENSIONS ARE IN METRES
AND/OR MILLIMETRES
UNLESS OTHERWISE SHOWN

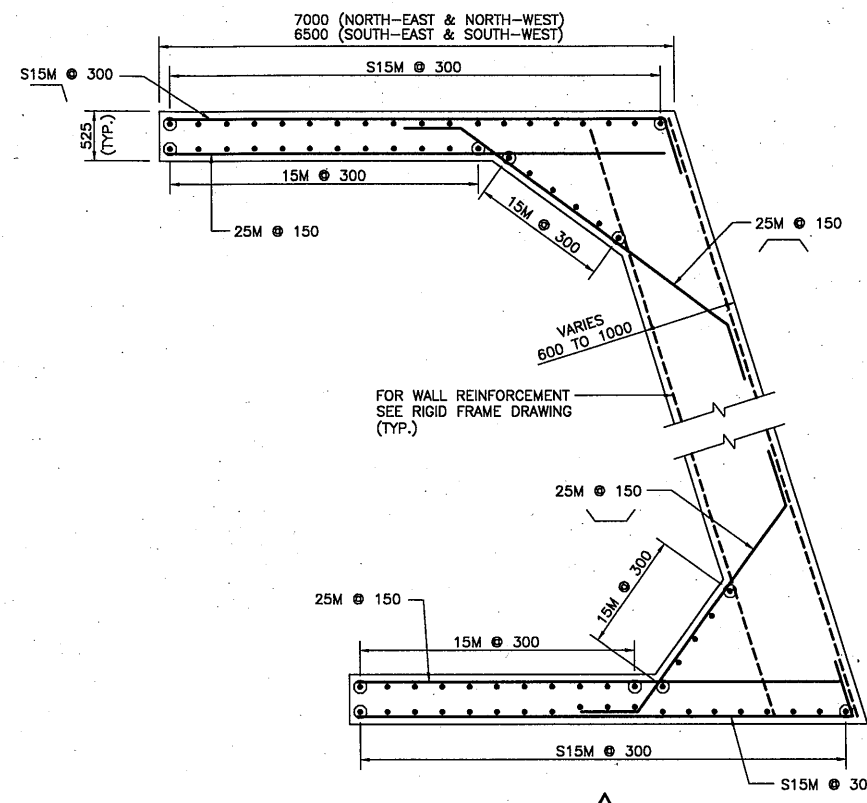
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BOAG ROAD OVERPASS HWY 404 SBL WINGWALLS		
AECOM		SHEET SBL-7

LEGEND:

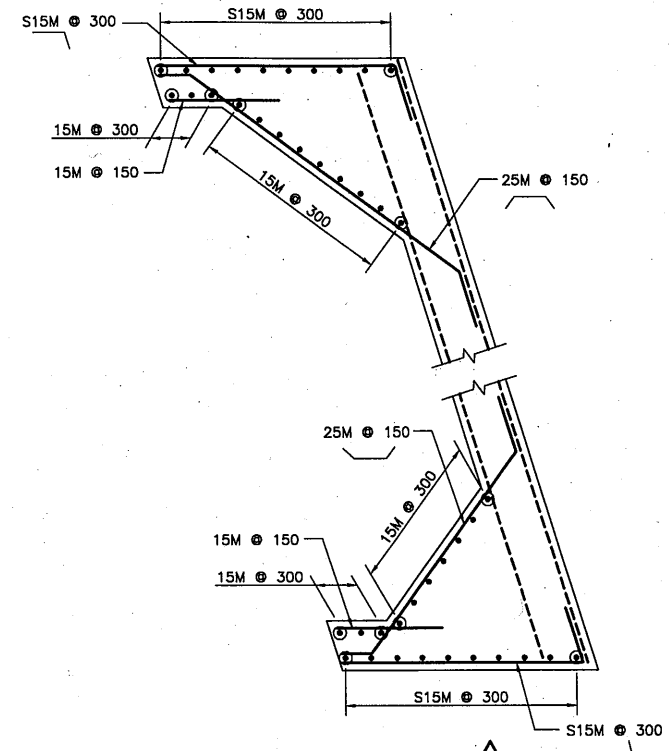
O.F. DENOTES OUTSIDE FACE
I.F. DENOTES INSIDE FACE

APPLICABLE STANDARD DRAWINGS:

OPSD 3941.200 FIGURES IN CONCRETE - SITE NUMBER
AND DATE LAYOUT



1
SCALE: N.T.S.



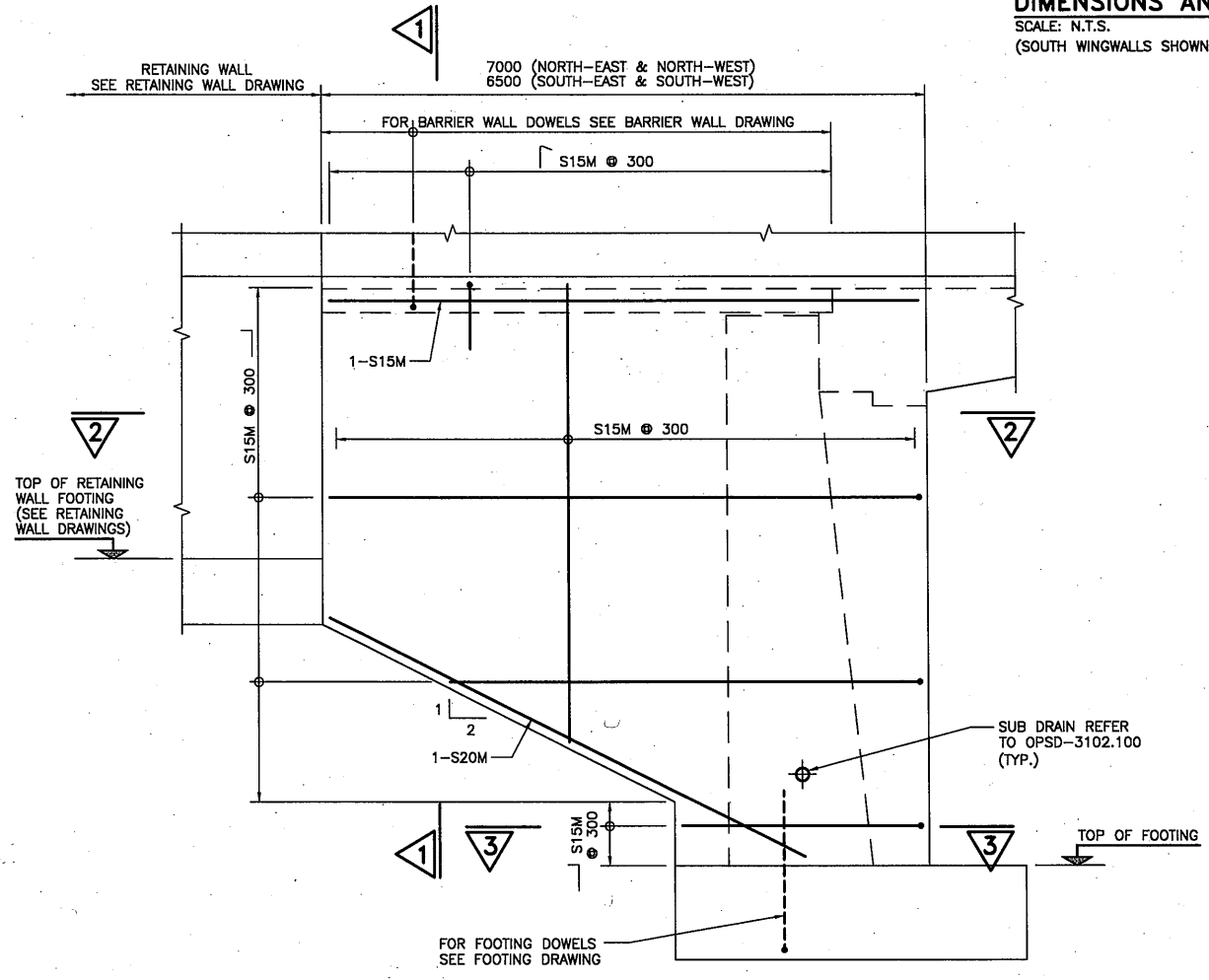
3
SCALE: N.T.S.

DIMENSIONS AND REINFORCEMENT
SCALE: N.T.S.
(SOUTH WINGWALLS SHOWN, NORTH WINGWALLS SIMILAR)

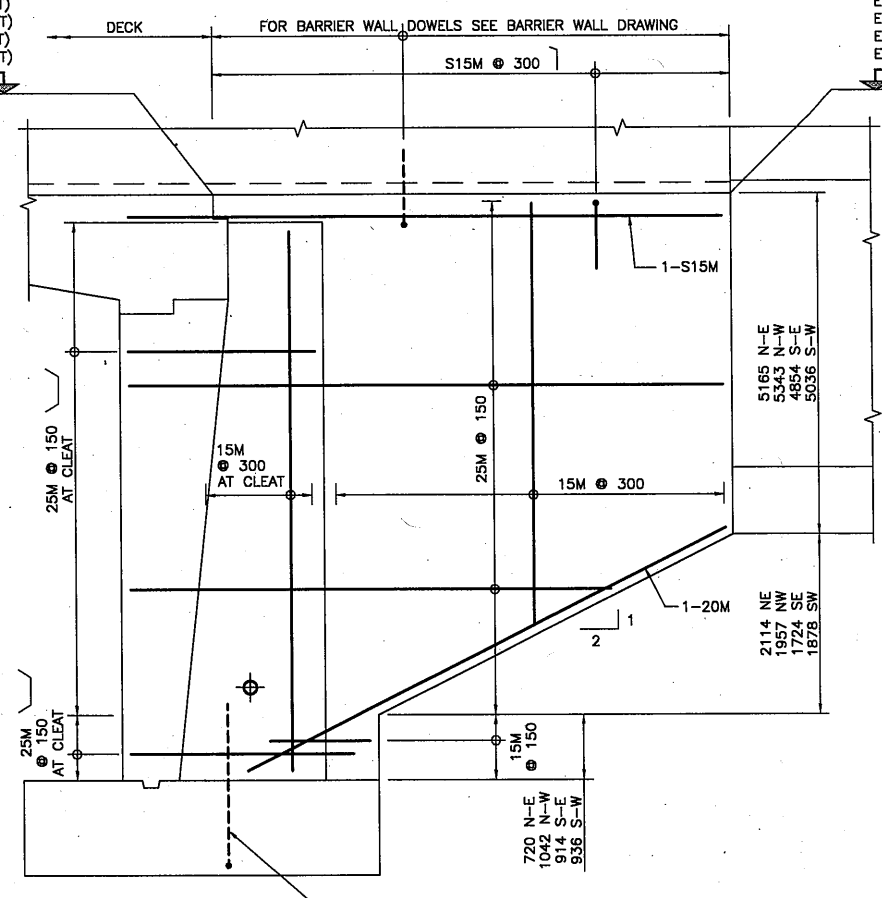
EL. 246.187 (NORTH-EAST)
EL. 246.540 (NORTH-WEST)
EL. 245.896 (SOUTH-EAST)
EL. 246.256 (SOUTH-WEST)

FOR BARRIER WALL DOWELS SEE BARRIER WALL DRAWING
S15M @ 300

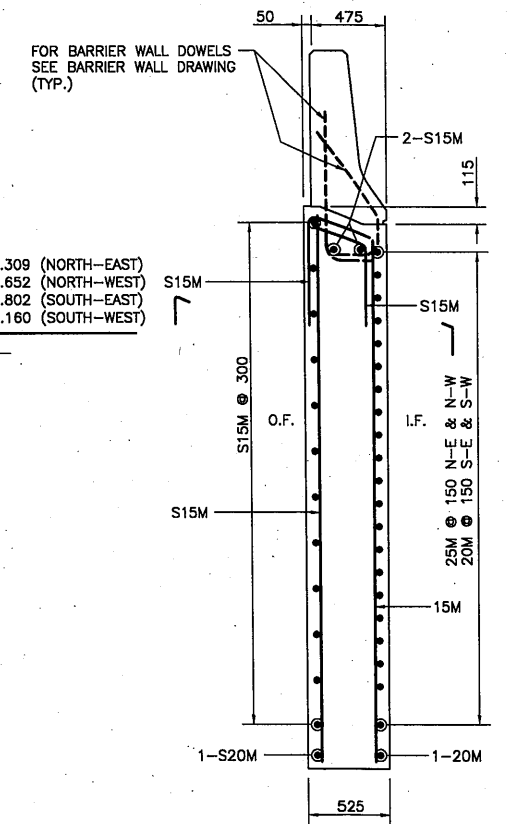
EL. 246.309 (NORTH-EAST)
EL. 246.652 (NORTH-WEST)
EL. 245.802 (SOUTH-EAST)
EL. 246.160 (SOUTH-WEST)



2
SCALE: N.T.S.



4
SCALE: N.T.S.



5
SCALE: N.T.S.

TYPICAL WINGWALL ELEVATION - DIMENSIONS AND REINFORCEMENT
SCALE: N.T.S.

DRAWING NOT TO BE SCALED
100mm ON ORIGINAL DRAWING

REVISIONS	DATE	BY	DESCRIPTION
DESIGN	S.K. CHK	S.B. CODE	CHBDC-06
DRAWN	D.L. CHK	V.K. SITE	37-1538/2
DATE	DATE	DATE	DATE
MAY 2010			
DWG	7		

[illegible]

[illegible]

2538-199-00_00-ST-0010-SBL.dwg
DRAWING NAME: 2538-199-00_00-ST-0010-SBL.dwg
SAVED DATE: 8/26/2010 11:11 AM
PLOT DATE: 9/30/2010 8:43 AM
MINISTRY OF TRANSPORTATION, ONTARIO
PR-0-707 88-05

METRIC
DIMENSIONS ARE IN METRES
AND/OR MILLIMETRES
UNLESS OTHERWISE SHOWN

DIST
CONT No 0000-0000
WP No 2005-07-00



BOAG ROAD OVERPASS
HWY 404 SBL
6000mm APPROACH SLAB

SHEET
SBL-10

AECOM

NOTES:

1. CLEAR COVER TO REINFORCING STEEL 70 ± 20 mm EXCEPT AS NOTED.
2. LAYOUT OF REINFORCING STEEL WILL BE SIMILAR FOR LEFT HAND AND ZERO DEGREE SKEW.
3. BARS MARKED WITH PREFIX 'S' DENOTE STAINLESS STEEL BARS.
4. WATERPROOFING AT JOINT BETWEEN BRIDGE AND APPROACH SLAB TO BE IN ACCORDANCE WITH OPSD-3370.1000.
5. WATERPROOFING FOR BRIDGES WITHOUT EXPANSION JOINTS (RIGID FRAMES AND INTEGRAL ABUTMENTS) TO BE IN ACCORDANCE WITH OPSD-3370.1010.

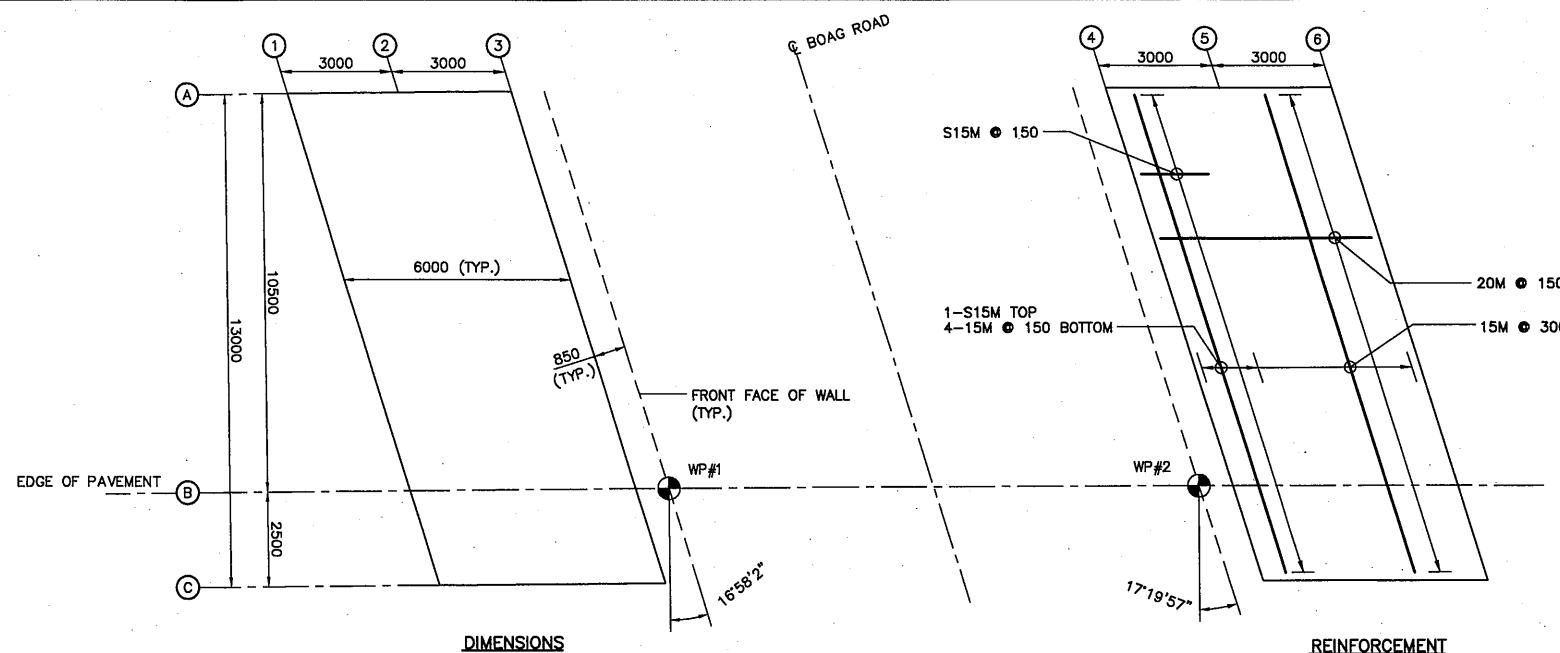
APPLICABLE STANDARD DRAWINGS

OPSD-3370.1000 DECK WATERPROOFING, HOT APPLIED ASPHALT MEMBRANE WITH PROTECTION BOARD DETAILS
OPSD-3370.1010 DECK WATERPROOFING, HOT APPLIED ASPHALT MEMBRANE AT ACTIVE CRACKS GREATER THAN 2mm WIDE AND CONSTRUCTION JOINTS

TOP OF CONCRETE ELEVATIONS

	1	2	3	4	5	6
A	246.156	246.206	246.256	246.540	246.596	246.653
B	245.863	245.914	245.965	246.255	246.313	246.371
C	245.792	245.844	245.896	246.187	246.245	246.304

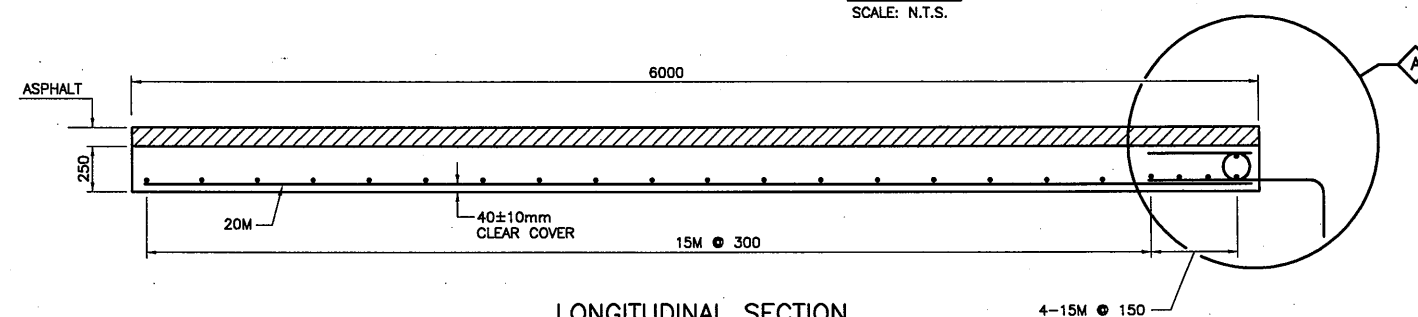
STANDARD DRAWING
APRIL 2008
MODIFIED
SS116-1
6000 mm APPROACH SLAB



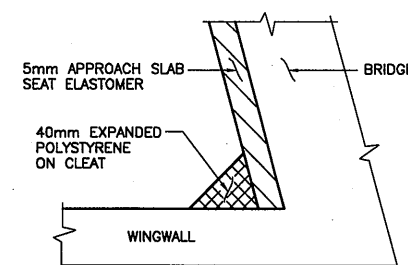
DIMENSIONS

REINFORCEMENT

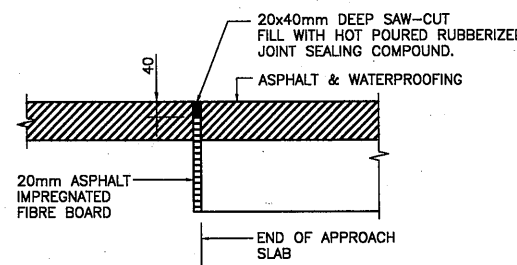
PLAN
SCALE: N.T.S.



LONGITUDINAL SECTION
SCALE: N.T.S.

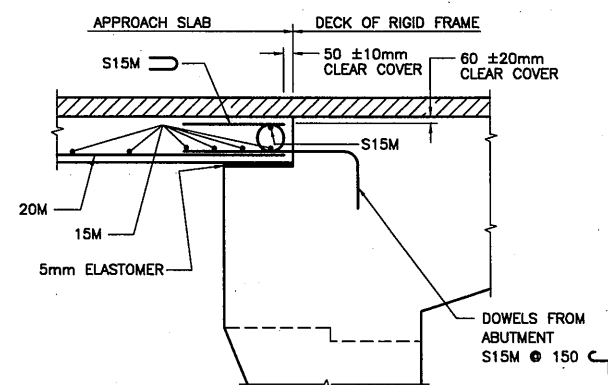


DETAIL AT CLEAT
SCALE: N.T.S.

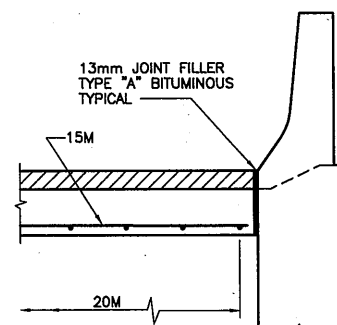


NOTE: FOR DETAILS OF CONCRETE PAVEMENT OPTION, SEE ROAD DRAWINGS

EXPANSION JOINT AT END OF APPROACH SLAB
SCALE: N.T.S.



FOR BRIDGES WITHOUT EXPANSION JOINTS
SCALE: N.T.S.



WITHOUT SIDEWALK

SECTION AT WINGWALL/RETAINING WALL
SCALE: N.T.S.

DRAWING NOT TO BE SCALED
100mm ON ORIGINAL DRAWING

REVISIONS	DATE	BY	DESCRIPTION
DESIGN	S.K. CHK	S.B. CODE	CHBDC-06 LOAD CL-625 ONT DATE MAY 2010
DRAWN	D.L. CHK	V.K. SITE	37-1538/2 DWG 10

DRAWING NAME: 2538-199-00_00-ST-0011-SBL.dwg
SAVED BY: lbaekd
PLOT DATE: 9/30/2010 8:43 AM
PLOT DATE: 9/30/2010 11:11 AM

MINISTRY OF TRANSPORTATION DRAWING


PR-6-707 BR-05

METRIC
DIMENSIONS ARE IN METRES
AND/OR MILLIMETRES
UNLESS OTHERWISE SHOWN

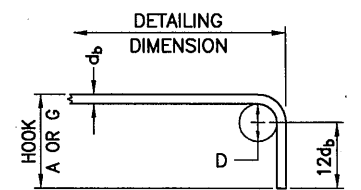
DIST
CONT No 0000-0000
WP No 2005-07-00

BOAG ROAD OVERPASS
HWY 404 SBL
HOOK DIMENSIONS

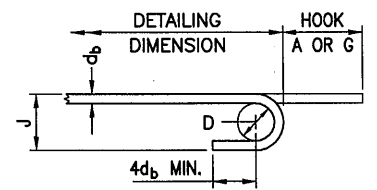
AECOM



SHEET
SBL-11



STANDARD 90° HOOK



STANDARD 180° HOOK

MINIMUM BENDING PIN DIAMETER, D, mm

BAR SIZE	STEEL GRADE	
	400R ⁽²⁾	400W
10M	70	60
15M	100	90
20M	120	100
25M	150	150
30M	250	200
35M	300	250
45M	450 ⁽¹⁾	400
55M	600 ⁽¹⁾	550

- (1) Special fabrication is required for bends exceeding 90° for bars of these sizes and grade.
- (2) For stainless steel, with $F_y = 420$, use the same D as for 400R.

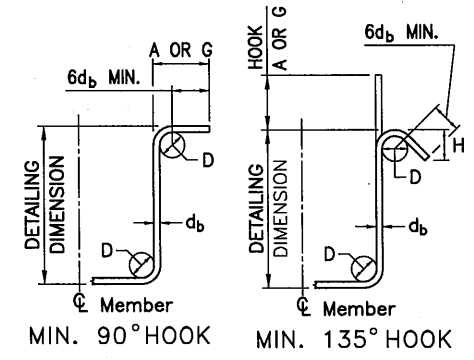
STANDARD HOOK DIMENSIONS

BAR SIZE	90° HOOKS		180° HOOKS			
	A OR G (mm)		A OR G (mm)		J (mm)	
	400R	400W	400R	400W	400R	400W
10M	180	180	140	130	90	80
15M	260	250	180	170	130	120
20M	310	300	220	200	160	140
25M	400	400	280	280	200	200
30M	510	490	400	350	310	260
35M	610	590	480	430	370	320
45M	790	770	680	630	540	490
55M	1030	1010	900	850	710	660

NOTE: All Hook Dimensions are according to the CHBDC-2000.

MINIMUM STIRRUP AND TIE HOOK DIMENSIONS

BAR SIZE	BAR DIAM. d_b (mm)	PIN DIAM. D (mm)	90°	135°	
			A OR G (mm)	A OR G (mm)	H (approx.) (mm)
10M	11.3	45	100	100	70
15M	16.0	65	140	140	100
20M	19.5	80	180	175	115
25M	25.2	100	230		



MIN. 90° HOOK MIN. 135° HOOK

HOOK DIMENSIONS FOR UNCOATED BARS

Date	JUNE 2002	Rev	
SS12-1			


DRAWING NOT TO BE SCALED
100mm ON ORIGINAL DRAWING


REVISIONS		DATE		BY		DESCRIPTION	
DESIGN	S.K. CHK	S.B. CODE	CHBDC-06	LOAD CL-625 ONT	DATE	MAY 2010	
DRAWN	D.L. CHK	V.K. SITE	37-1538/2		DWG	11	

DRAWING NAME: 2538-199-00-00-ST-0012-SBL.dwg
SAVED BY: luraakd
SAVED DATE: 8/26/2010 11:10 AM
PLOT DATE: 9/30/2010 9:03 AM

MINISTRY OF TRANSPORTATION, ONTARIO
PR-5-707 88-35

LEGEND:

 EARTH EXCAVATION

 GRANULAR 'A' BACKFILL

APPLICABLE STANDARD DRAWINGS:

OPSD 3101.150 WALLS-ABUTMENT, BACKFILL MINIMUM GRANULAR REQUIREMENT

METRIC
DIMENSIONS ARE IN METRES
AND/OR MILLIMETRES
UNLESS OTHERWISE SHOWN

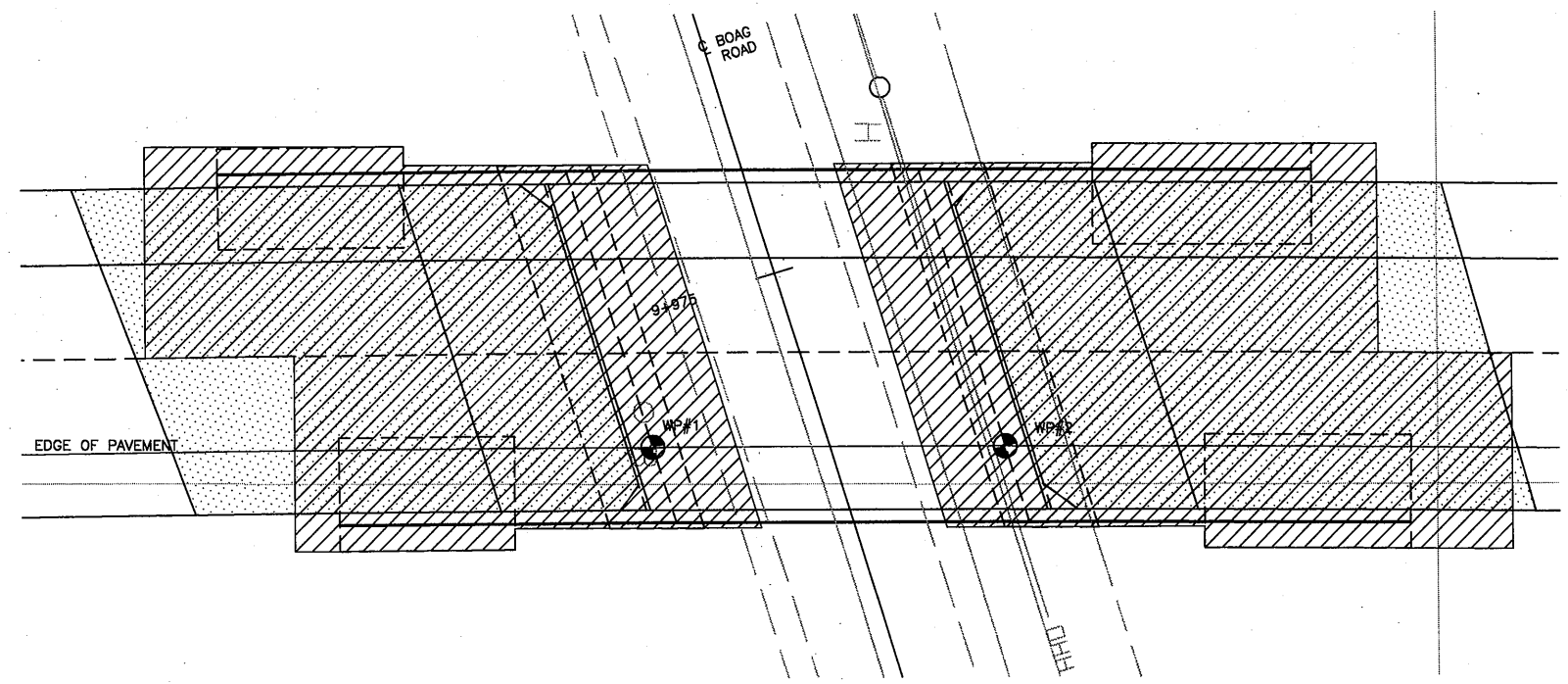
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WP No 2005-07-00



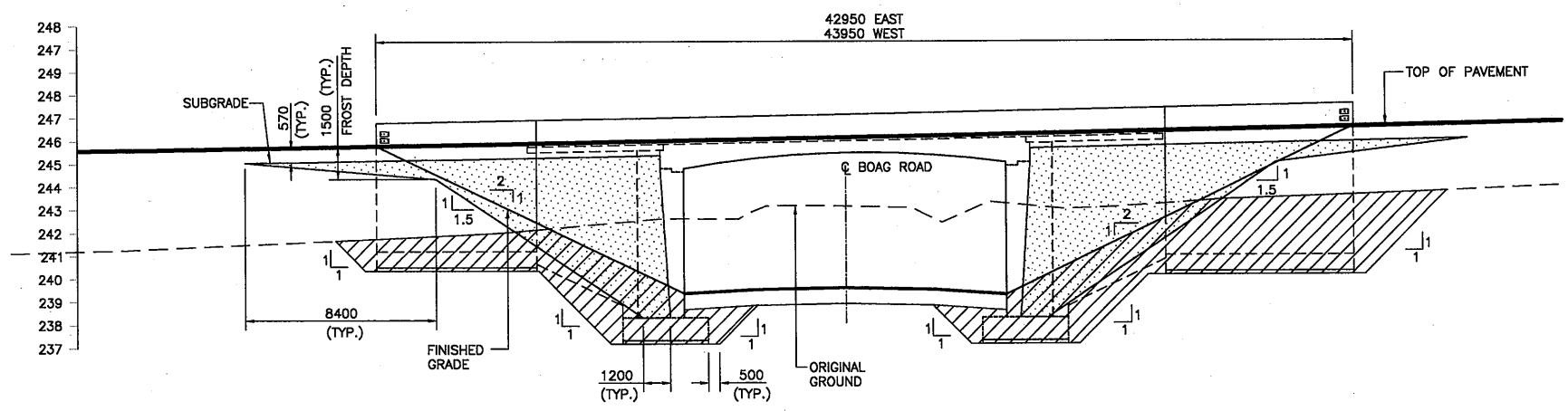
BOAG ROAD OVERPASS
HWY 404 SBL
EXCAVATION AND BACKFILL

SHEET
SBL-12

AECOM



PLAN
SCALE: 1:150



ELEVATION
SCALE: 1:150

DRAWING NOT TO BE SCALED
100mm ON ORIGINAL DRAWING

REVISIONS		DATE		BY	DESCRIPTION	
DESIGN	S.K. CHK	S.B. CODE	CHBDC-06	LOAD CL-625 ONT	DATE	MAY 2010
DRAWN	V.K. CHK	D.L. SITE	37-1538/2		DWG	12

2538-199-00-00-ST-0013-SBL.dwg
DRAWING NAME: 2538-199-00-00-ST-0013-SBL.dwg
SAVED BY: luoold
SAVED DATE: 9/26/2010 11:10 AM
PLOT DATE: 9/30/2010 8:43 AM
MINISTRY OF TRANSPORTATION, ONTARIO
PR-3-707
88-05

METRIC
DIMENSIONS ARE IN METRES
AND/OR MILLIMETRES
UNLESS OTHERWISE SHOWN

DIST
CONT No 0000-0000
WP No 2005-07-00

BOAG ROAD OVERPASS
HWY 404 SBL
FORM LINER

SHEET
SBL-13

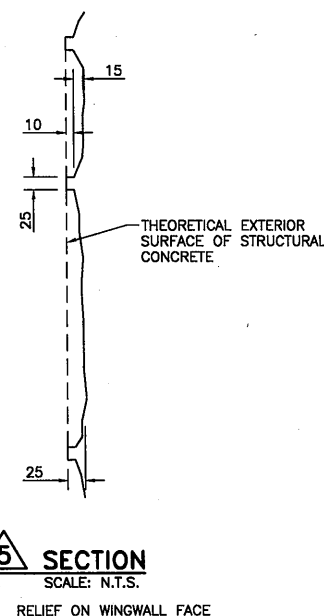
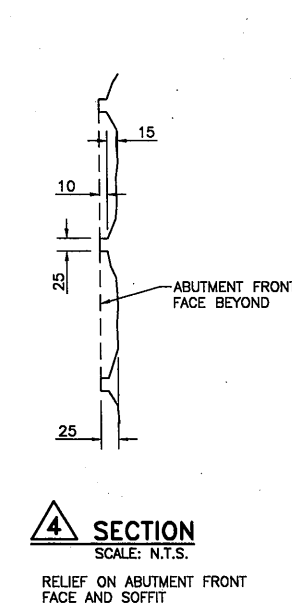
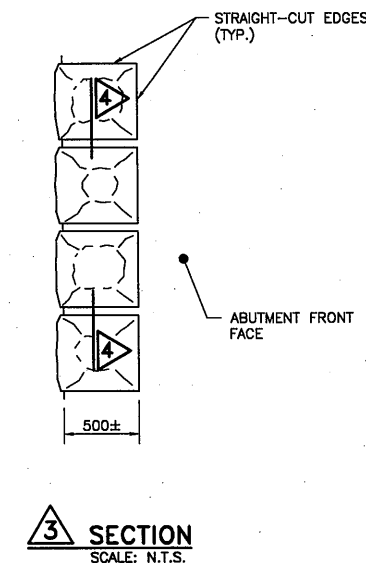
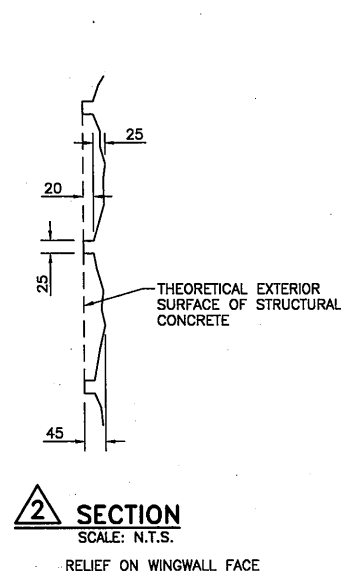
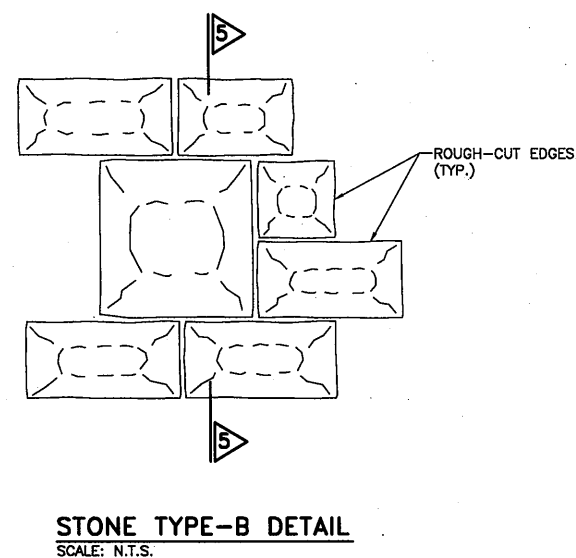
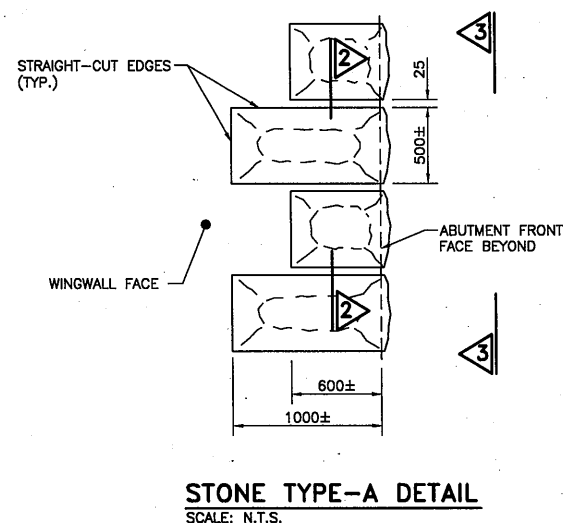
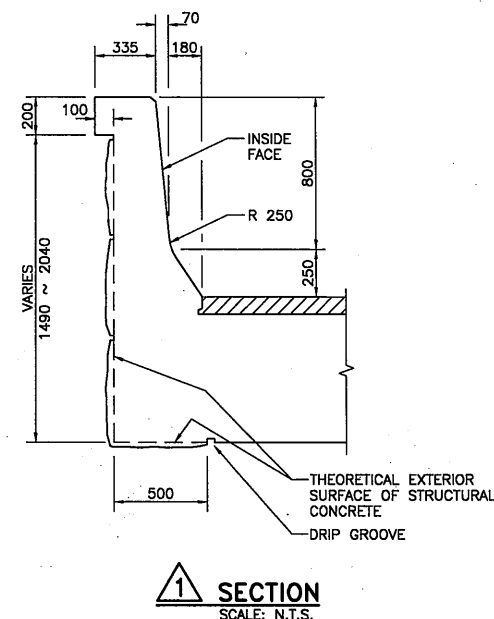
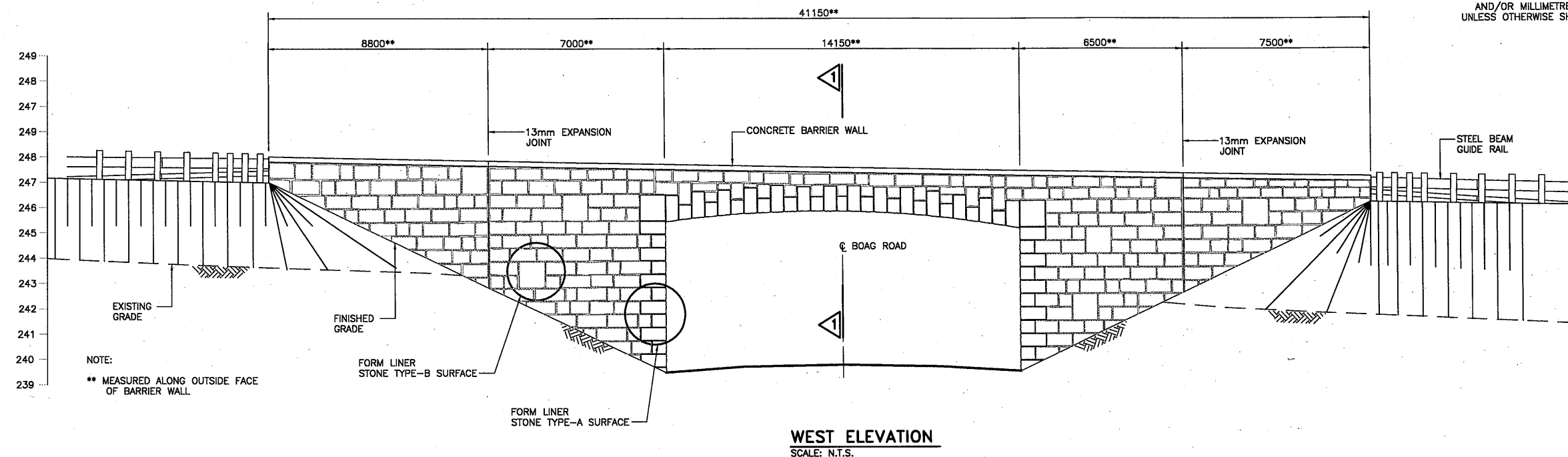
AECOM

NOTES:

1. FORM LINER SURFACE SHALL BE EXTENDED TO 500mm BELOW FINISHED GRADE.
2. CONCRETE COVER TO BE MEASURED FROM THEORETICAL EXTERIOR SURFACE.

APPLICABLE STANDARD DRAWINGS:

OPSD 3390.100 DECK DRIP CHANNEL

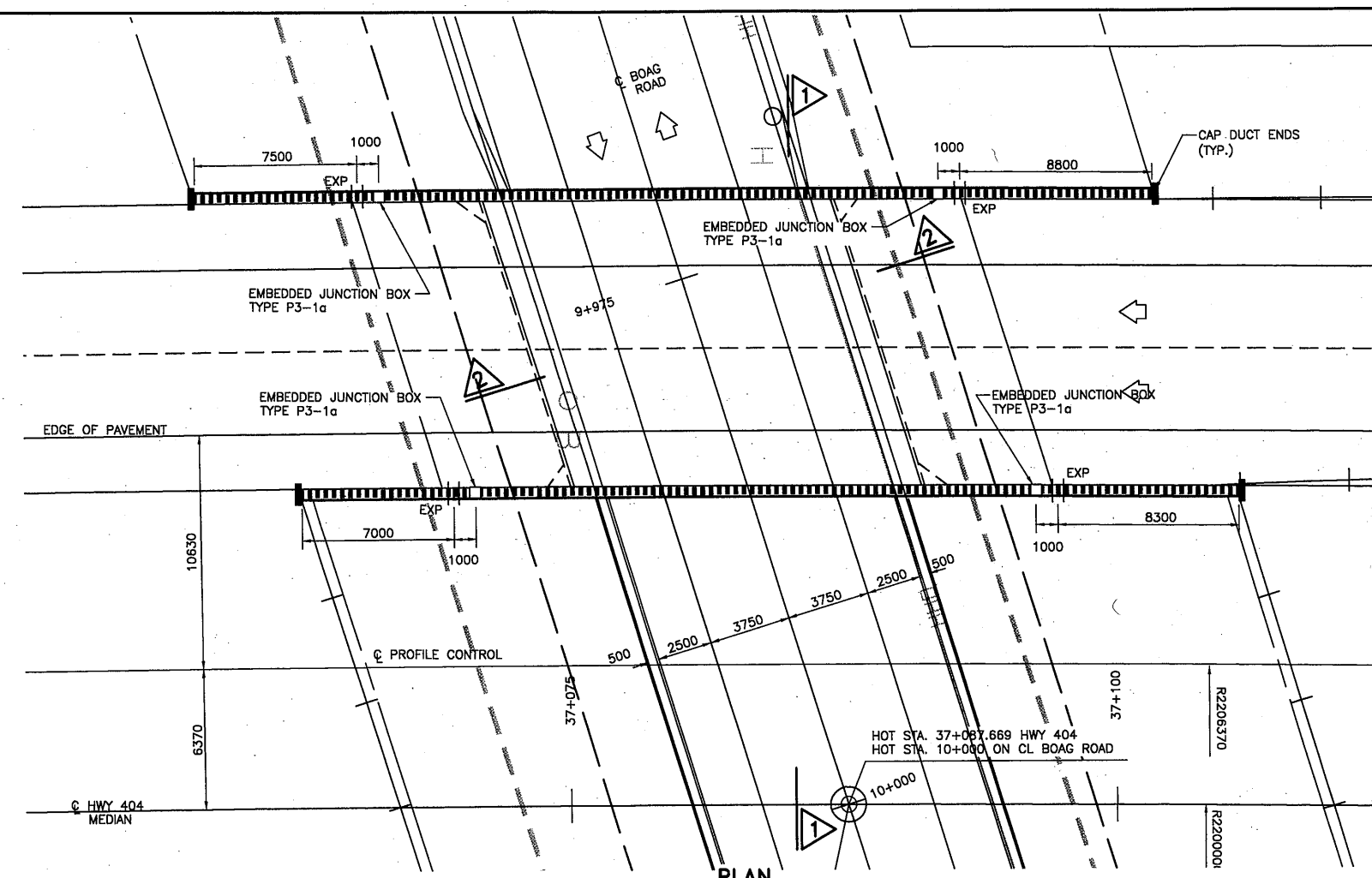


DRAWING NOT TO BE SCALED
100mm ON ORIGINAL DRAWING

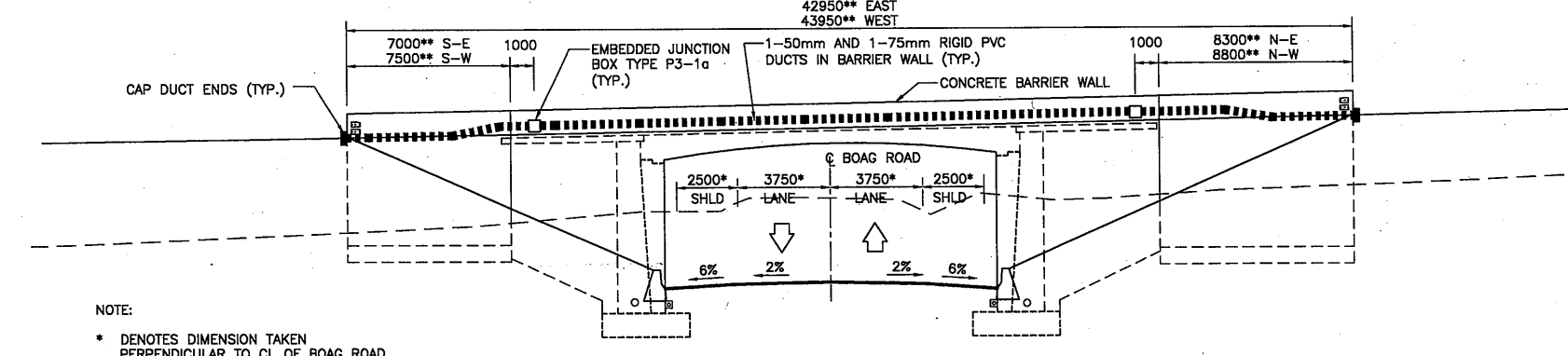
REVISIONS		DATE		BY	DESCRIPTION	
DESIGN	S.K.	CHK	S.B.	CODE	CHBDC-06	LOW CL-625 ONT
DRAWN	D.L.	CHK	V.K.	SITE	37-1538/2	DWG 13

DRAWING NAME: 2538-199-00-00-ST-0014-SBL.dwg
SAVED BY: lashed
PLOT DATE: 9/20/2010 9:01 AM
SAVED DATE: 8/26/2010 11:13 AM

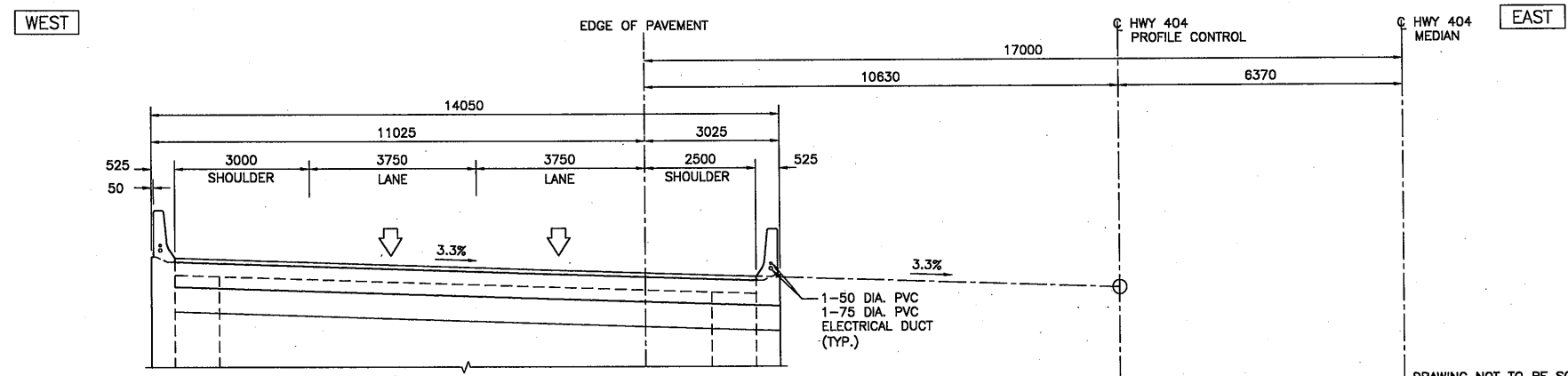
MINISTRY OF TRANSPORTATION, ONTARIO
PR-0-207 BR-05



PLAN
SCALE: 1:150



EAST ELEVATION
SCALE: 1:150



SECTION
SCALE: 1:75

METRIC
DIMENSIONS ARE IN METRES
AND/OR MILLIMETRES
UNLESS OTHERWISE SHOWN

DIST	CONT No 0000-0000	
	WP No 2005-07-00	
BOAG ROAD OVERPASS HWY 404 SBL EMBEDDED WORK IN STRUCTURE		SHEET SBL-14
AECOM		

GENERAL NOTE:

A. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS OTHERWISE NOTED.

SUPPLEMENTARY LEGEND

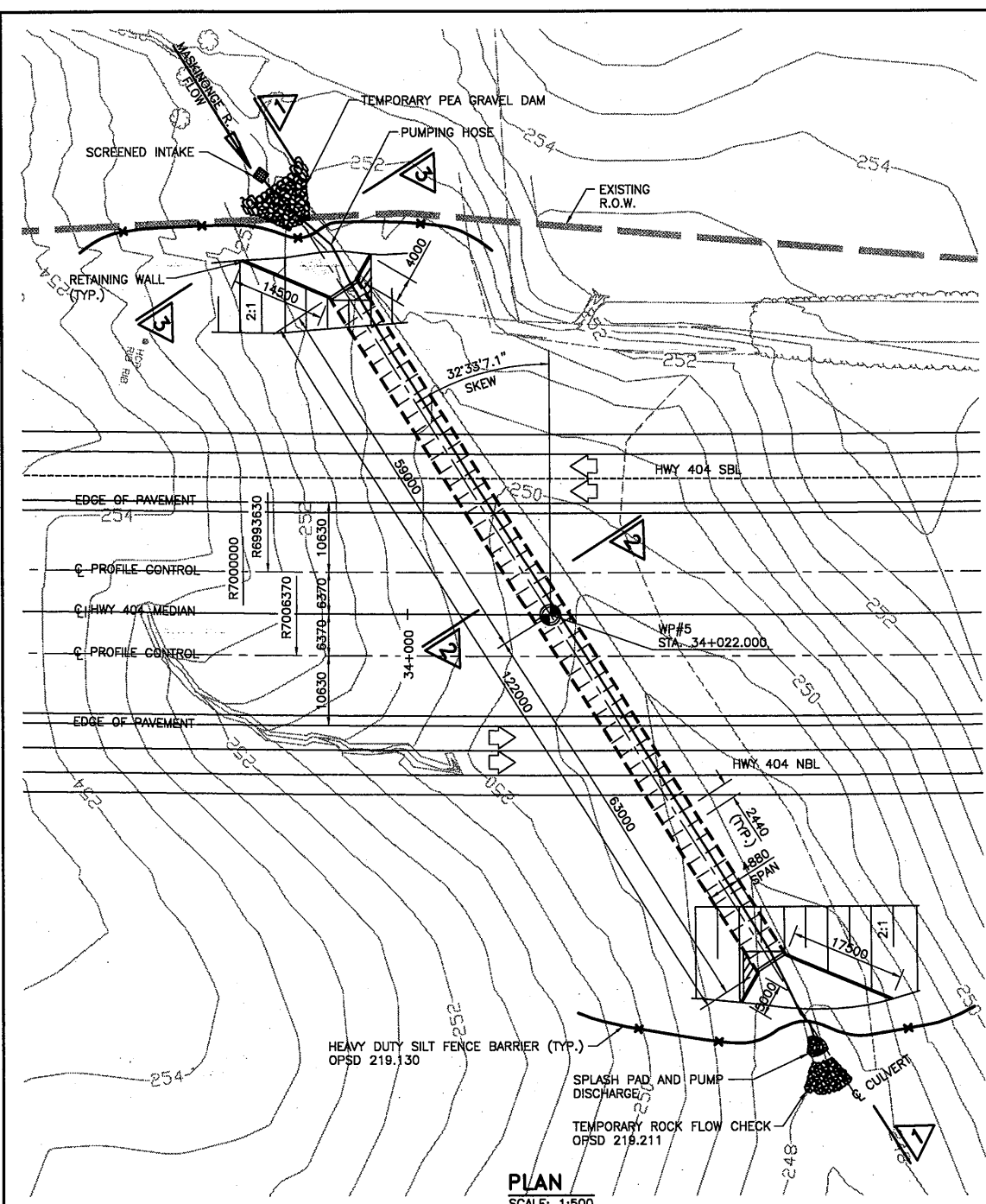
■■■■■ EMBEDDED DUCT IN STRUCTURE, SIZE AS INDICATED

DRAWING NOT TO BE SCALED
100mm ON ORIGINAL DRAWING

REVISIONS	DATE	BY	DESCRIPTION
DESIGN	B.M.	CHK	B.K. CODE
DRAWN	B.M.	CHK	B.K. SITE
CHBDC-06	LOAD CL-625 ONT	DATE	MAY 2010
37-1538/2	DWG	14	

2538-199-00-00-ST-1001.dwg
DRAWING NAME:
9/30/2010 11:16 AM
PLOT DATE:
8/26/2010 11:16 AM
SAVED DATE:
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9/30/2010 11:16 AM
PLOT DATE:
8/26/2010 11:16 AM
SAVED DATE:

PR-5-797 08-05
MINISTRY OF TRANSPORTATION DRAWING



PLAN
SCALE: 1:500

GENERAL NOTES:

- CLASS OF CONCRETE:
PRECAST CULVERT 40 MPa
PRECAST HEADWALL 35 MPa
REMAINDER 30 MPa
- CLEAR COVER TO REINFORCING STEEL:
PRECAST 40mm±10mm
BOTTOM OF FOOTING 100mm±25mm
REMAINDER 70mm±20mm (U.N.O.)
- REINFORCING STEEL:
REINFORCING STEEL SHALL BE GRADE 400 UNLESS NOTED OTHERWISE.

UNLESS SHOWN OTHERWISE, TENSION LAP SPLICES SHALL BE CLASS B.

BAR HOOKS SHALL HAVE STANDARD HOOK DIMENSIONS USING MINIMUM BEND DIAMETERS, WHILE STIRRUPS AND TIES SHALL HAVE MINIMUM HOOK DIMENSIONS. ALL HOOKS SHALL BE IN ACCORDANCE WITH THE STRUCTURAL STANDARD DRAWINGS SS12-1, UNLESS NOTED OTHERWISE.
- CONSTRUCTION NOTES:

NO PRECAST CULVERT UNITS SHALL BE INSTALLED UNTIL CONCRETE IN FOOTINGS HAS REACHED 70% OF ITS DESIGN STRENGTH AND BACKFILL FOR FOOTING HAS BEEN FINISHED. NO BACKFILL BEHIND PRECAST CULVERT UNITS SHALL BE DONE UNTIL CONCRETE IN FOOTINGS HAS REACHED 100% OF ITS DESIGN STRENGTH.

BACKFILL SHALL BE PLACED SIMULTANEOUSLY BEHIND BOTH SIDES OF THE CULVERTS KEEPING THE HEIGHT OF THE BACKFILL APPROXIMATELY THE SAME. AT NO TIMES SHALL THE DIFFERENCE IN ELEVATION BE GREATER THAN 500mm.

THE CONTRACTOR IS FULLY RESPONSIBLE FOR ADEQUATE PROTECTION OF UTILITIES, SERVICES, STRUCTURES, ROADWAYS, ETC. DURING CONSTRUCTION OPERATIONS.
CONTRACTOR'S METHOD OF PROTECTION TO BE SUBMITTED TO THE CONTRACT ADMINISTRATOR FOR INFORMATION PURPOSES ONLY.

THE INFORMATION SHOWN ON THESE DRAWINGS CONCERNING TYPE AND LOCATION OF UNDERGROUND UTILITIES IS NOT GUARANTEED TO BE ACCURATE.

THE CONTRACTOR SHALL ADVISE ALL UTILITY COMPANIES IN WRITING OF HIS OR HER PROPOSED WORK.
THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE REPAIR AT HIS OWN EXPENSE OF ANY DAMAGE TO UTILITIES CAUSED BY THE CONTRACTOR.

APPLICABLE STANDARD DRAWINGS:

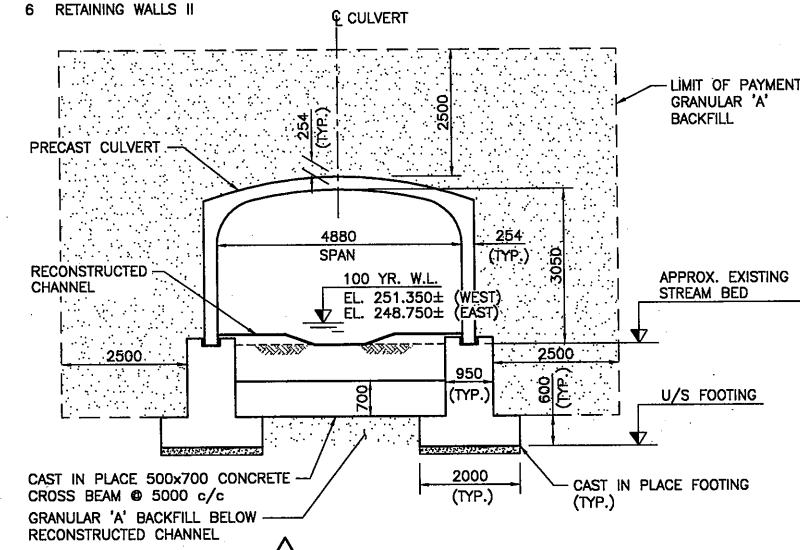
- OPSD 3121.150 WALLS - RETAINING, BACKFILL MINIMUM GRANULAR REQUIREMENTS
OPSD 3941.200 FIGURES IN CONCRETE - SITE NUMBER AND DATE LAYOUT

LEGEND:

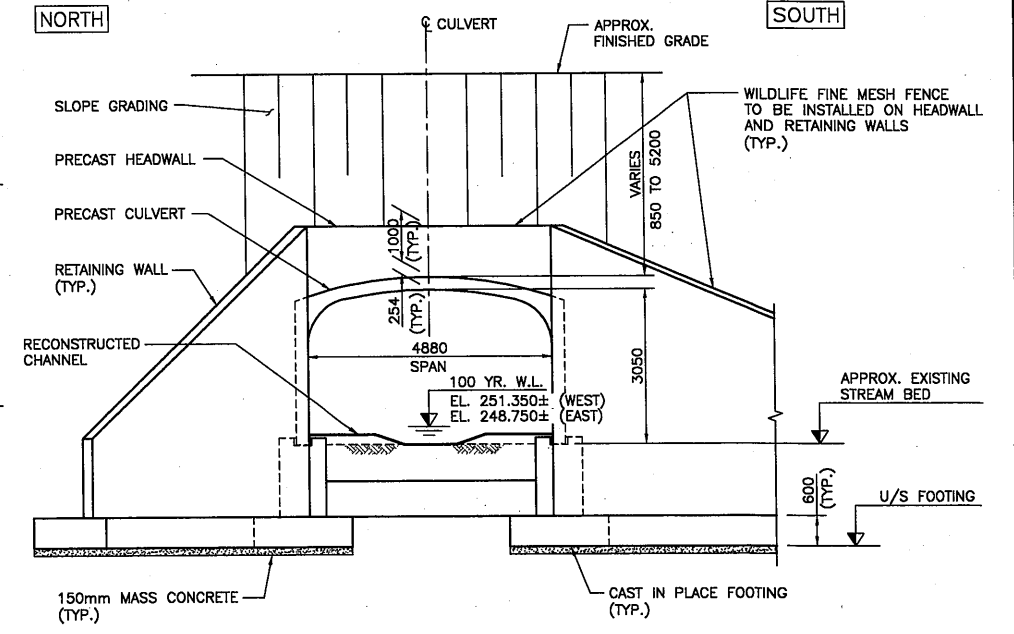
WP DENOTES WORKING POINTS
N.T.S. DENOTES NOT TO SCALE
U.N.O. DENOTES UNLESS NOTED OTHERWISE

LIST OF DRAWINGS:

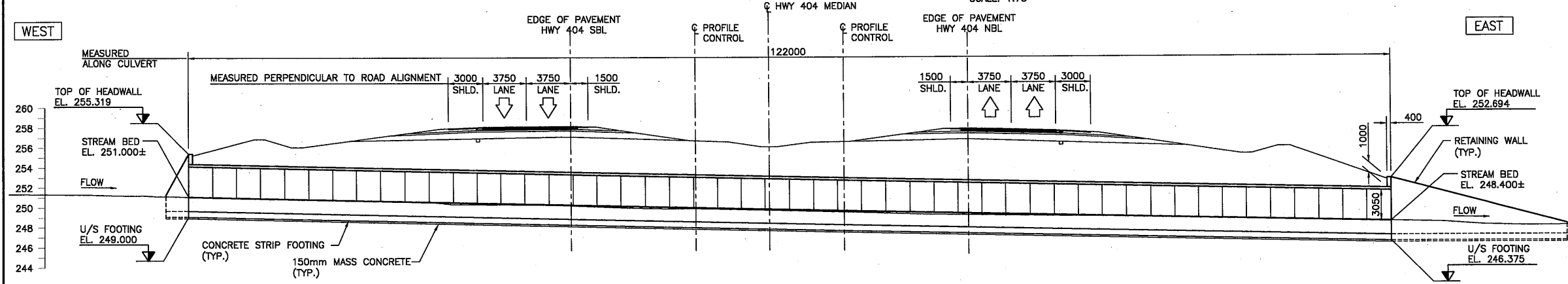
- GENERAL ARRANGEMENT
- BOREHOLE LOCATION AND SOIL STRATA
- FOUNDATION LAYOUT
- FOOTING DETAILS
- RETAINING WALLS I
- RETAINING WALLS II



SECTION 2
SCALE: 1:75

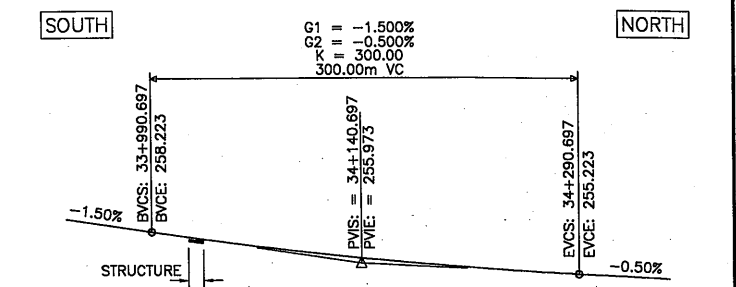


SECTION 3 - INLET
SCALE: 1:75



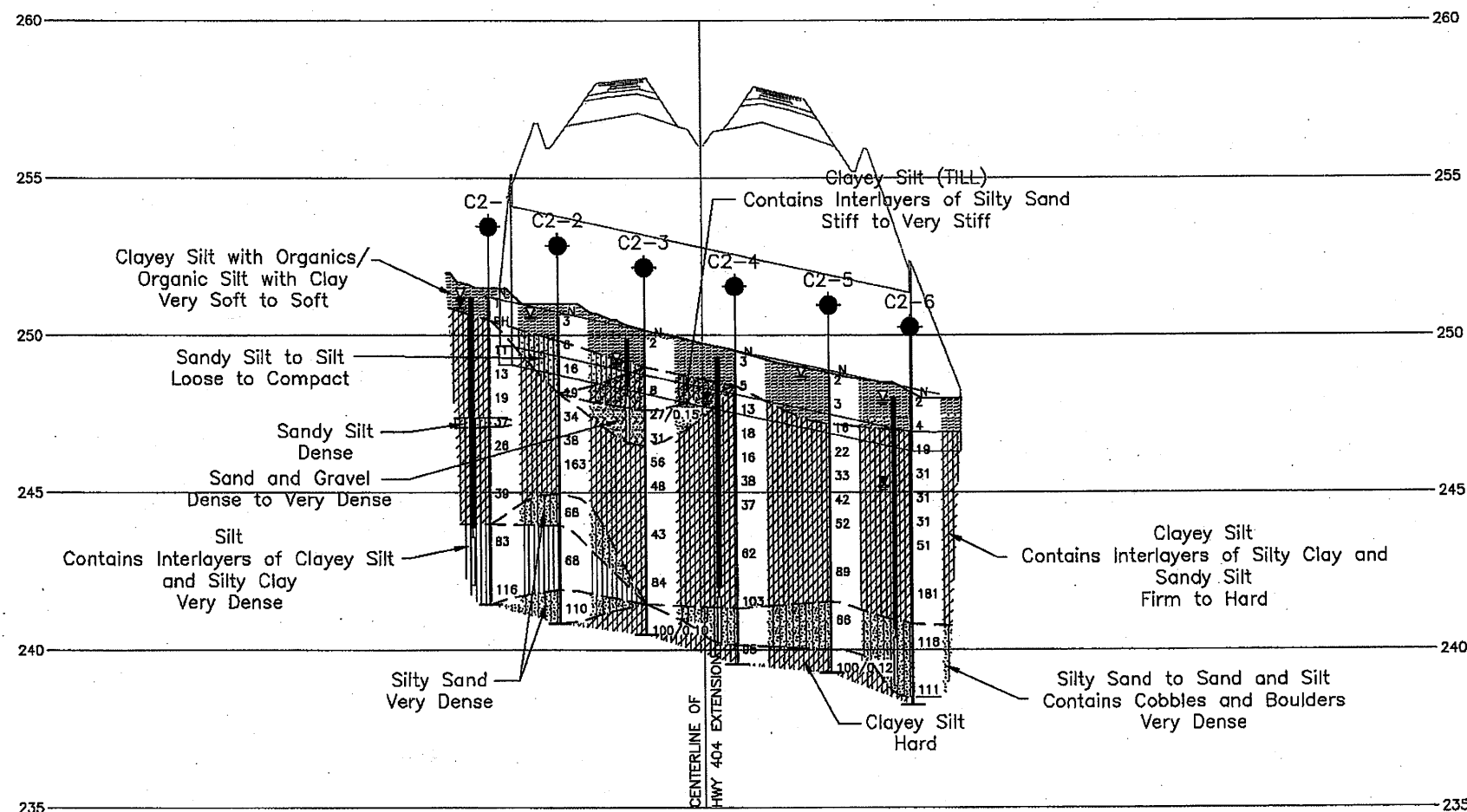
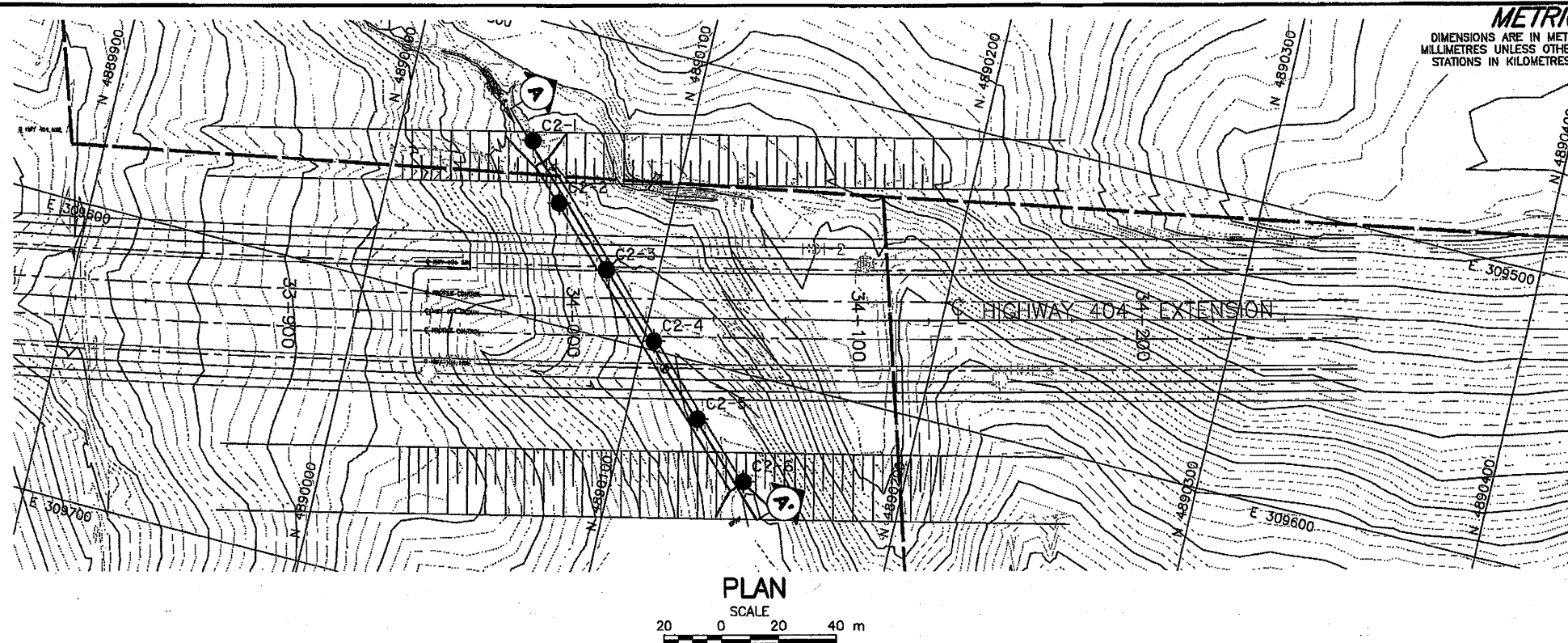
SECTION 1
SCALE: 1:250

DRAWING NOT TO BE SCALED
100mm ON ORIGINAL DRAWING



PROFILE OF HWY 404
(T/P ALONG PROFILE CONTROL)
SCALE: N.T.S.

REVISIONS		DATE	BY	DESCRIPTION
DESIGN	S.K. CHK	S.B. CODE	CHBDC-06	LOAD CL-625 ONT DATE MAY 2010
DRAWN	D.L. CHK	V.K. SITE	37-1538/3	DWG 1



METRIC
 DIMENSIONS ARE IN METRES AND/OR MILLIMETRES UNLESS OTHERWISE SHOWN. STATIONS IN KILOMETRES + METRES.

CONT No. 2005-07-00
 WP No. 2005-07-00

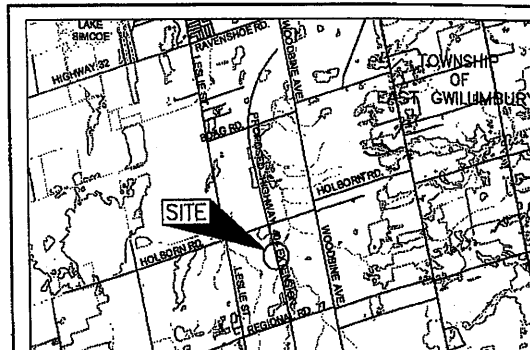
HIGHWAY 404 EXTENSION
 MASKINONGE RIVER TRIBUTARY CULVERT
 BOREHOLE LOCATION AND SOIL STRATA



SHEET
 C2



Golder Associates Ltd.
 MISSISSAUGA, ONTARIO, CANADA



LEGEND

- Borehole - Current Investigation
- ⊥ Seal
- ⊥ Piezometer
- N Standard Penetration Test Value
- 16 Blows/0.3m unless otherwise stated (Std. Pen. Test, 475 j/blow)
- ≡ WL in piezometer, measured on June 12, 2009
- ≡ WL upon completion of drilling

No.	ELEVATION	CO-ORDINATES	
		NORTHING	EASTING
C2-1	251.2	4890050.4	309545.5
C2-2	250.6	4890064.2	309564.0
C2-3	249.8	4890085.8	309582.1
C2-4	249.3	4890107.6	309601.6
C2-5	248.7	4890128.7	309623.7
C2-6	248.0	4890149.3	309640.6

NOTES

This drawing is for subsurface information only. The proposed structure details/works are shown for illustration purposes only and may not be consistent with the final design configuration as shown elsewhere in the Contract Documents.

The boundaries between soil strata have been established only at borehole locations. Between Boreholes the boundaries are assumed from geological evidence.

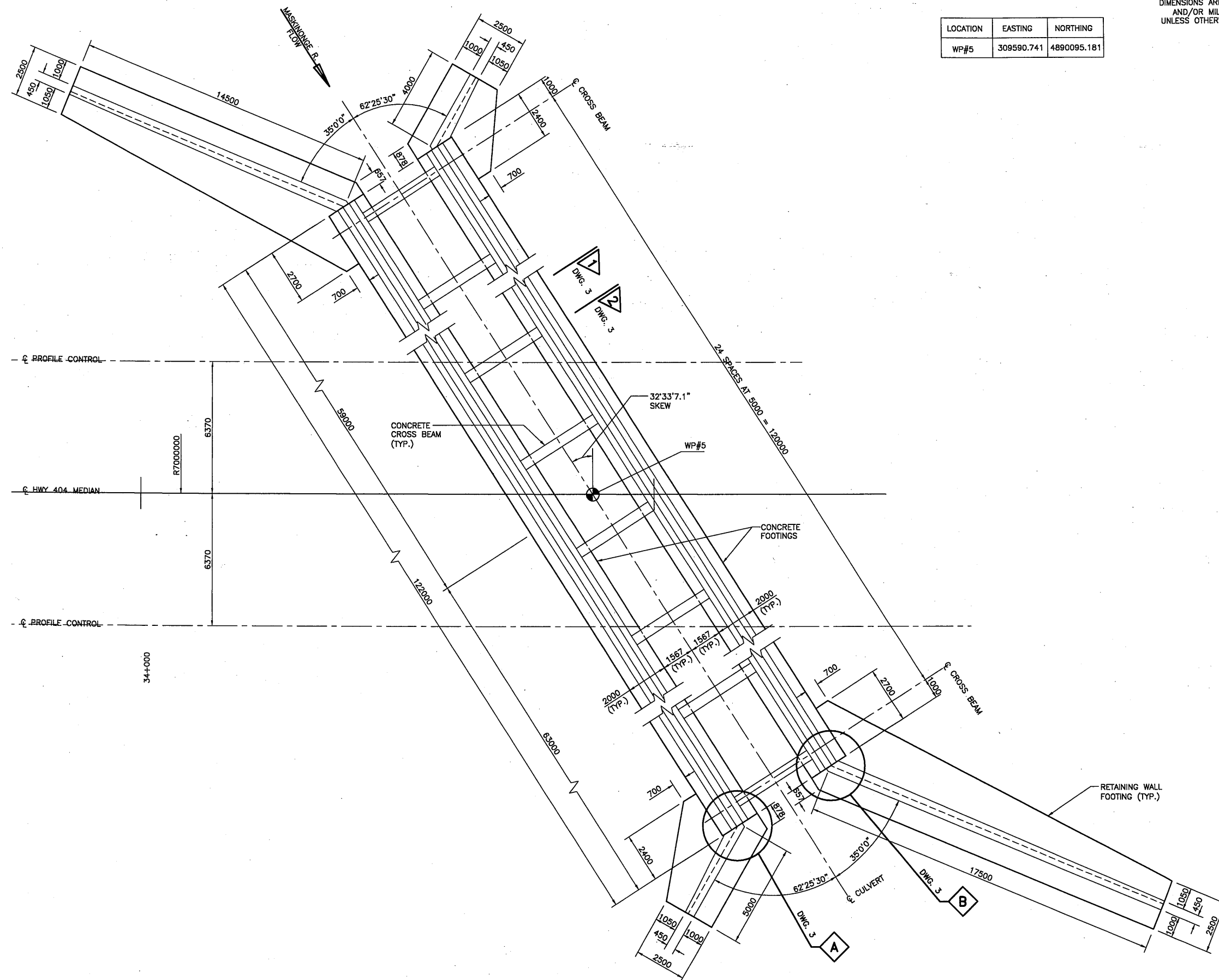
The complete foundation investigation and design report for this project and other related documents may be examined at the Materials Engineering and Research Office, Downsview. Information contained in this report and related documents is specifically excluded in accordance with Section GC 2.01 of OPS General Conditions.

REFERENCE

Base plans provided in digital format by AECOM, drawing files "78808.dwg" and "78809.dwg", received, November, 16, 2008 and drawing file "2538-199-00-00-ST-1001-To Golder-091126.dwg", received November 28, 2009.

DRAFT

NO.	DATE	BY	REVISION
Geacres No.			
HWY. 404		PROJECT NO. 08-1111-0022	
SUBM'D.		CHKD. TB	DATE: Dec 2009
DRAWN: JFC/RJ		CHKD. KJB	APPD.
		SITE: DWG. 2	



FOOTING LAYOUT PLAN
SCALE: 1:100

DRAWING NOT TO BE SCALED
100mm ON ORIGINAL DRAWING

LOCATION	EASTING	NORTHING
WP#5	309590.741	4890095.1

METRIC
DIMENSIONS ARE IN METRES
AND/OR MILLIMETRES
UNLESS OTHERWISE SHOWN

DIST
CONT No 0000-0000
WP No 2005-07-00
HIGHWAY 404 AT Sta. 34+022
MASKINONGE RIVER TRIBUTARY CULVERT
FOUNDATION LAYOUT



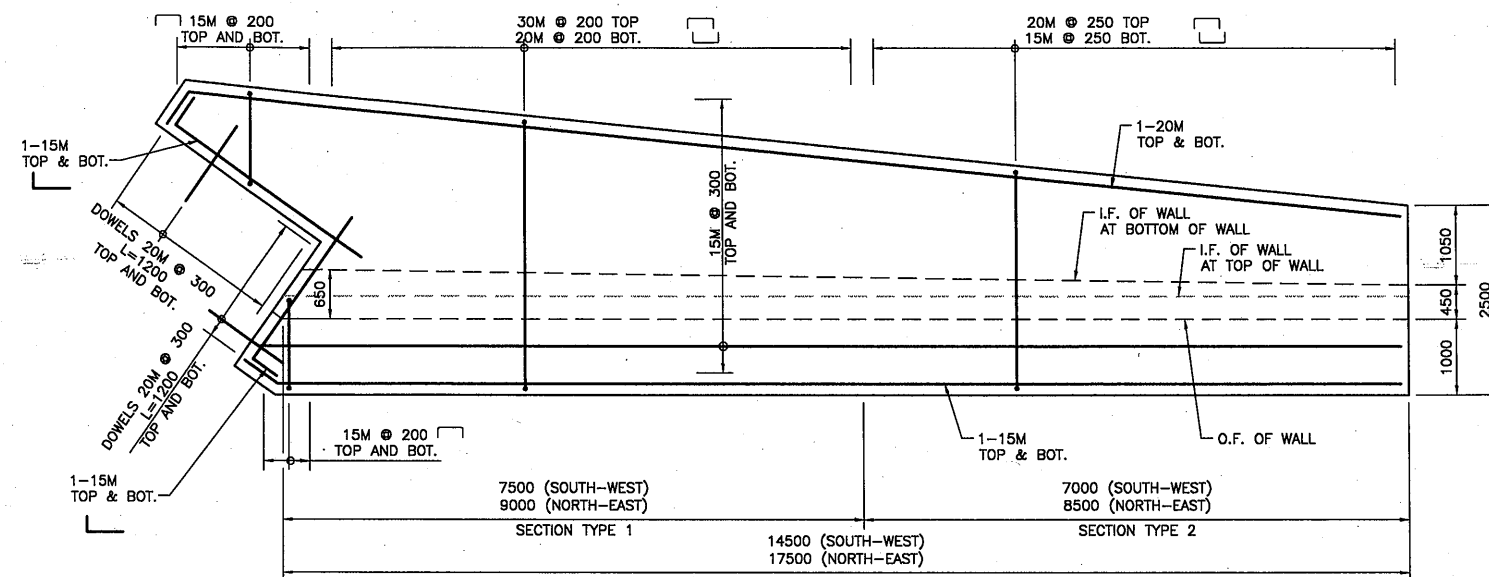
SHEET
C3

AECOM

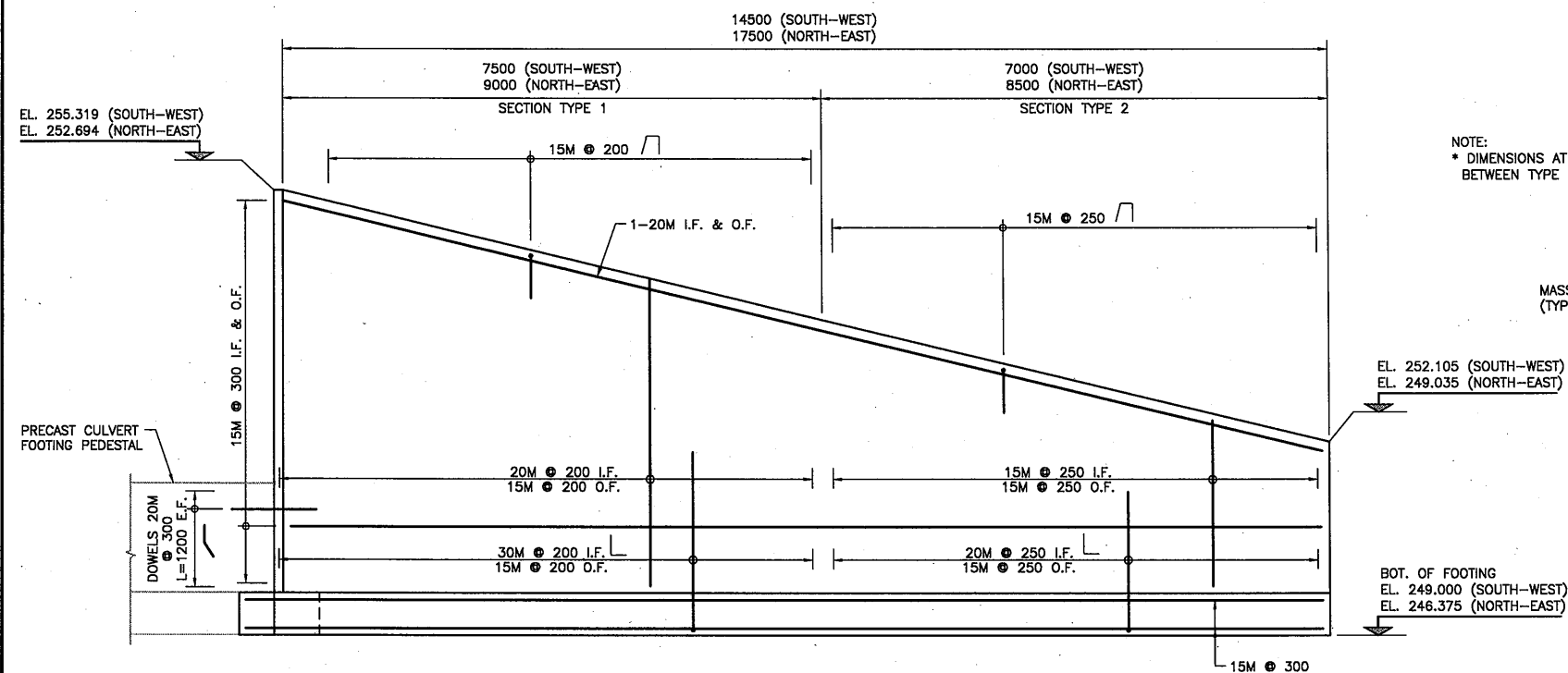
NOTES:

1. FACTORED GEOTECHNICAL RESISTANCE OF SOIL AT BOTTOM OF FOOTING LEVEL:
 ULS: 350 KPa
 SLS: 250 KPa

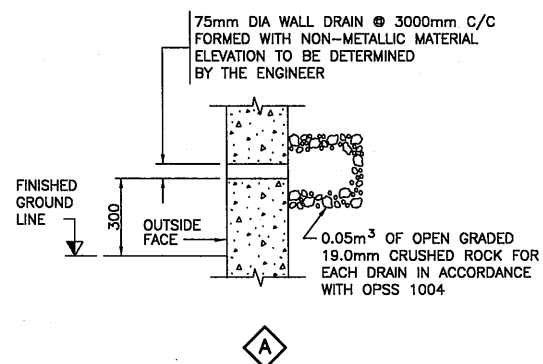
REVISIONS										
	DATE	BY	DESCRIPTION							
DESIGN	S.K.	CHK	S.B.	CODE	CHBDC-06				LOAD CL-625 ONT	DATE MAY 2010
DRAWN	D.L.	CHK	V.K.	SITE	37-1538/3				DWG. 3	



NORTH-EAST RETAINING WALL PLAN - DIMENSIONS AND REINFORCEMENT
SCALE: N.T.S.
(SOUTH-WEST RETAINING WALL SIMILAR)



NORTH-EAST RETAINING WALL ELEVATION - DIMENSIONS AND REINFORCEMENT
 SCALE: N.T.S.
 (SOUTH-WEST RETAINING WALL SIMILAR)



LEGEND:

O.F.	DENOTES OUTSIDE FACE
I.F.	DENOTES INSIDE FACE
E.F.	DENOTES EACH FACE
BOT.	DENOTES BOTTOM

APPLICABLE STANDARD DRAWINGS:

OPSD 3941.200 FIGURES IN CONCRETE - SITE NUMBER
AND DATE LAYOUT

METRIC
DIMENSIONS ARE IN METRES
AND/OR MILLIMETRES
UNLESS OTHERWISE SHOWN

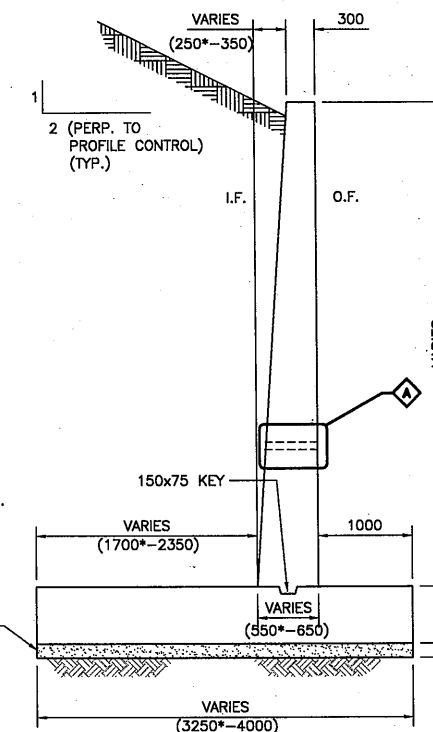
DIST
CONT No 0000-0000
WP No 2005-07-00


SHEET
C5

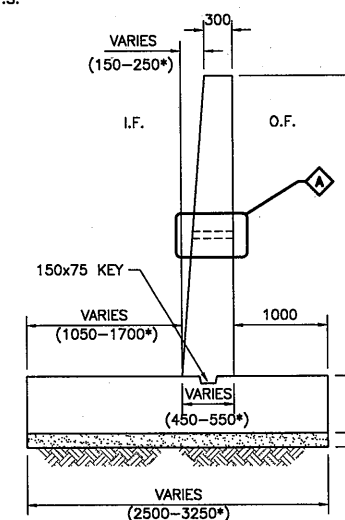
AECOM

NOTES:

1. FACTORED GEOTECHNICAL RESISTANCE OF SOIL AT BOTTOM OF FOOTING LEVEL:
- | | |
|------|---------|
| ULS: | 350 KPa |
| SLS: | 250 KPa |

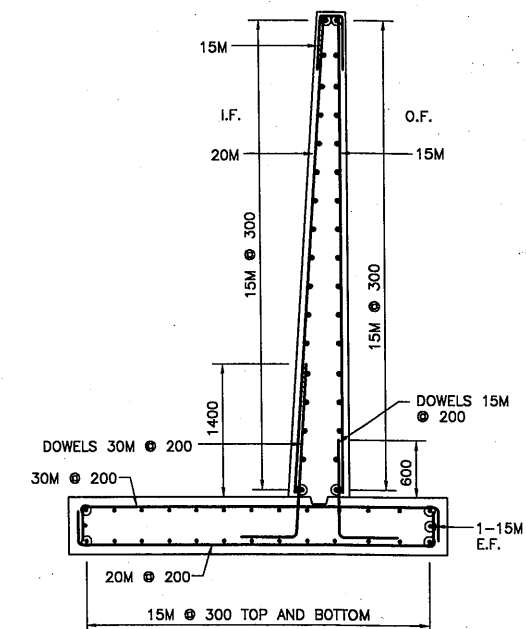


SECTION TYPE 1 - DIMENSIONS
SCALE: N.T.S.

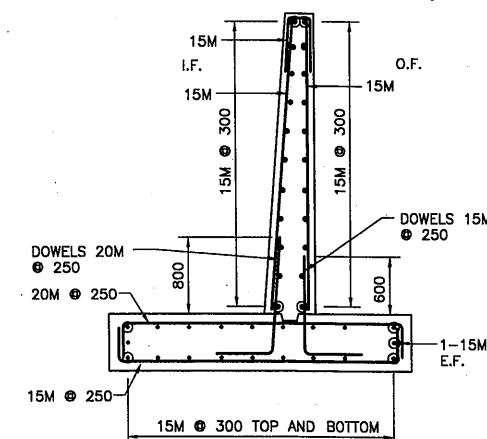


SECTION TYPE 2 - DIMENSIONS
SCALE: N.T.S.

DRAWING NOT TO BE SCALED
100mm ON ORIGINAL DRAWING

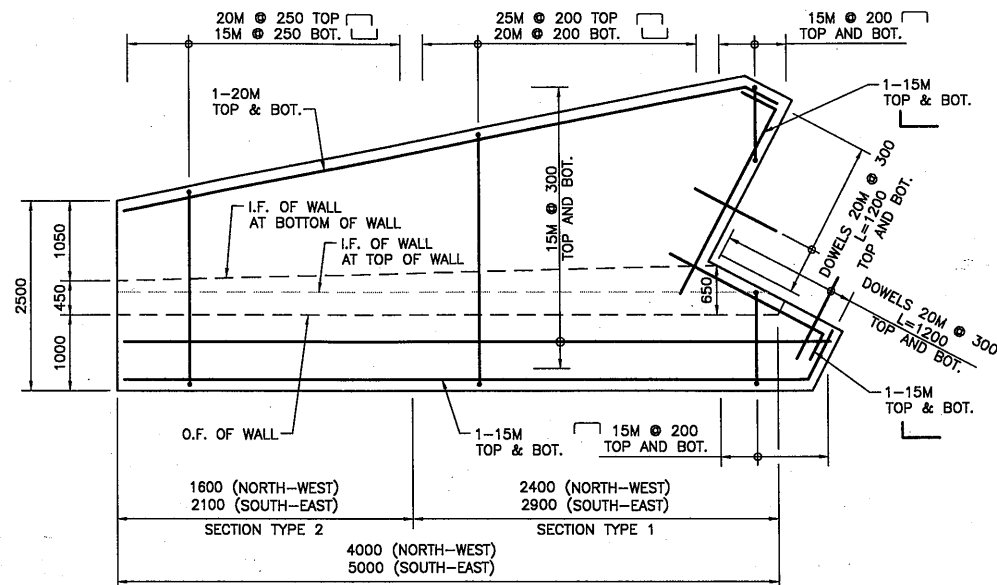


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SCALE: N.T.S.



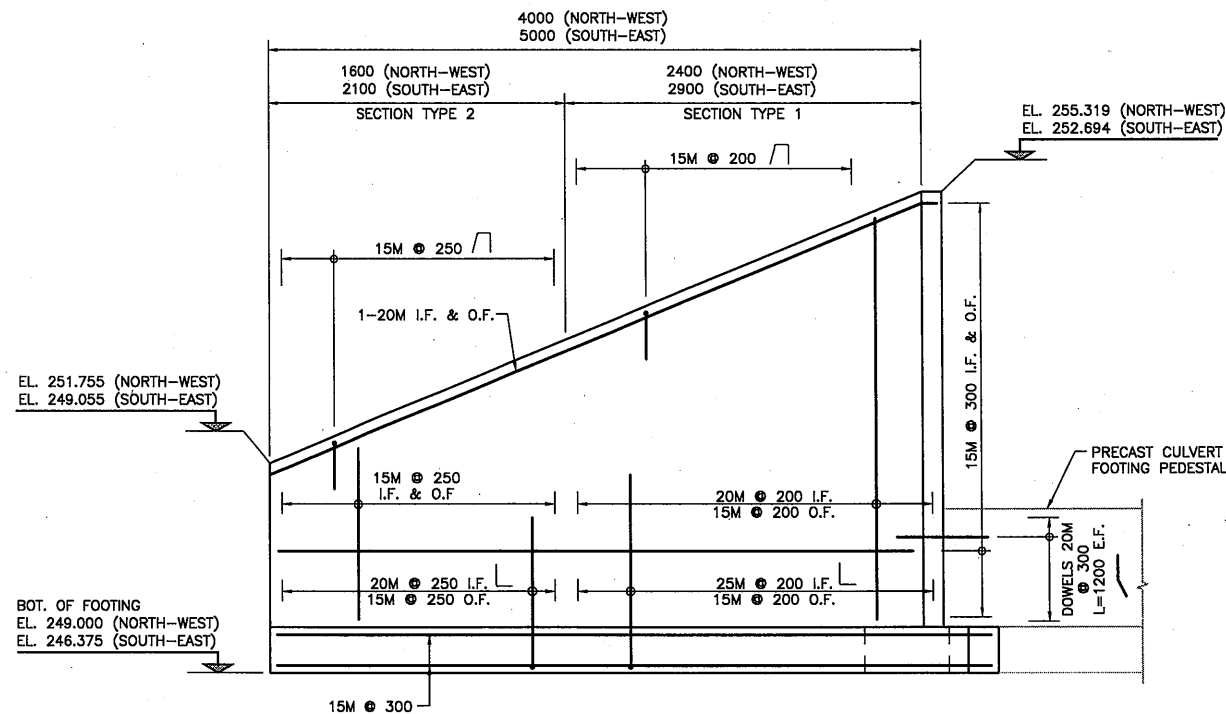
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SCALE: N.T.S.

REVISIONS									
	DATE	BY	DESCRIPTION						
DESIGN	S.K.	CHK	S.B.	CODE	CHBDC-06	LOAD CL-625	ONT	DATE	MAY 2010
DRAWN	D.L.	CHK	V.K.	SITE	37-1538/3			DWG.	5



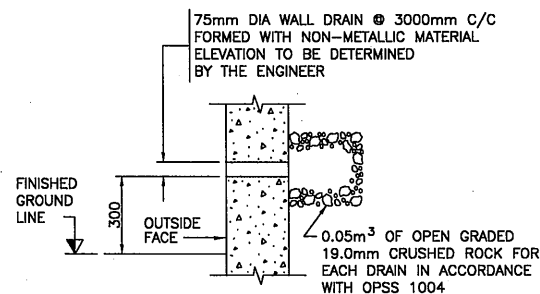
SOUTH-EAST RETAINING WALL PLAN - DIMENSIONS AND REINFORCEMENT

SCALE: N.T.S.
 (NORTH-WEST RETAINING WALL SIMILAR)



SOUTH-EAST RETAINING WALL ELEVATION - DIMENSIONS AND REINFORCEMENT

SCALE: N.T.S.
 (NORTH-WEST RETAINING WALL SIMILAR)



LEGEND:

O.F. DENOTES OUTSIDE FACE
 I.F. DENOTES INSIDE FACE
 E.F. DENOTES EACH FACE
 BOT. DENOTES BOTTOM

APPLICABLE STANDARD DRAWINGS:

OPSD 3941.200 FIGURES IN CONCRETE - SITE NUMBER AND DATE LAYOUT

METRIC
 DIMENSIONS ARE IN METRES
 AND/OR MILLIMETRES
 UNLESS OTHERWISE SHOWN

DIST
 CONT No 0000-0000
 WP No 2005-07-00

HIGHWAY 404 AT Sta. 34+022
 MASKINONGE RIVER TRIBUTARY CULVERT
 RETAINING WALLS II



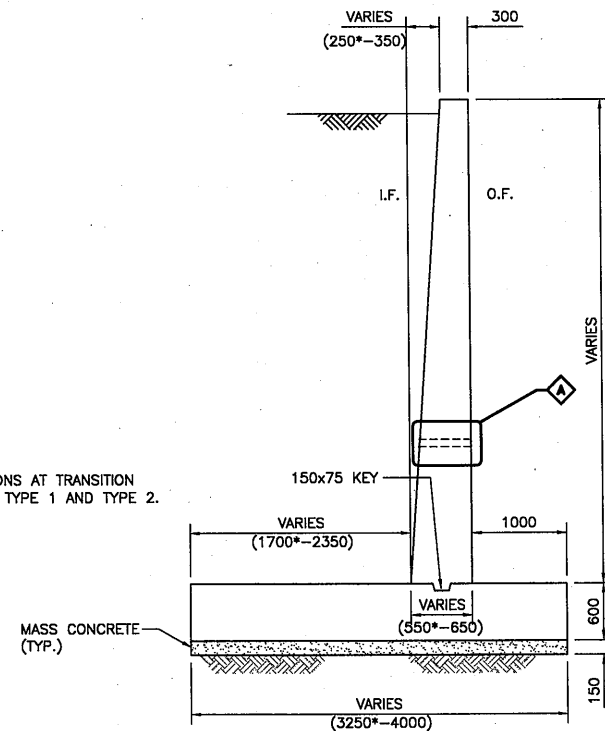
SHEET
 C6

AECOM

NOTES:

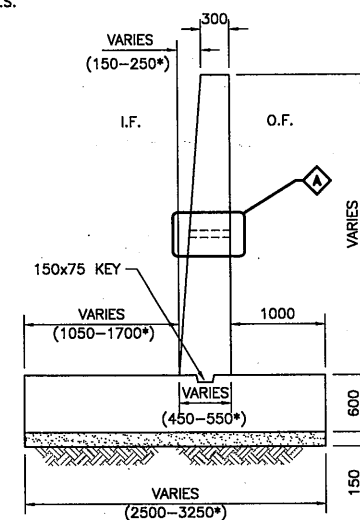
- FACTORED GEOTECHNICAL RESISTANCE OF SOIL AT BOTTOM OF FOOTING LEVEL:
 ULS: 350 KPa
 SLS: 250 KPa

NOTE:
 * DIMENSIONS AT TRANSITION
 BETWEEN TYPE 1 AND TYPE 2.



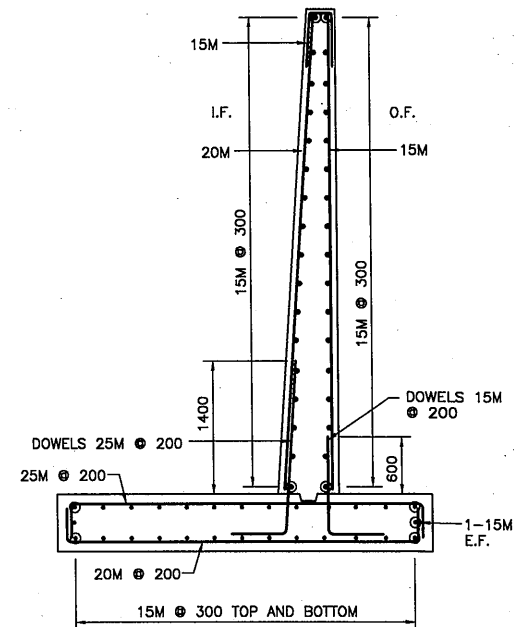
SECTION TYPE 1 - DIMENSIONS

SCALE: N.T.S.



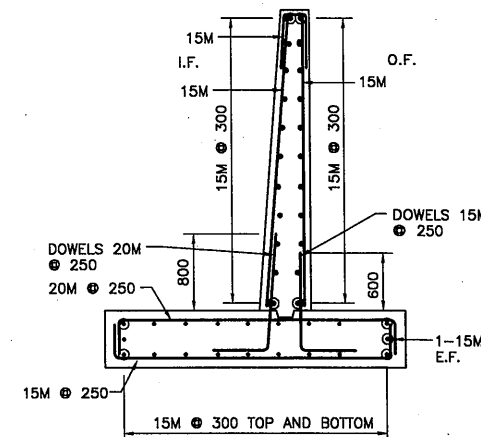
SECTION TYPE 2 - DIMENSIONS

SCALE: N.T.S.



SECTION TYPE 1 - REINFORCEMENT

SCALE: N.T.S.



SECTION TYPE 2 - REINFORCEMENT

SCALE: N.T.S.

DRAWING NOT TO BE SCALED
 100mm ON ORIGINAL DRAWING

REVISIONS	DATE	BY	DESCRIPTION
DESIGN	S.K. CHK	S.B. CODE	CHBDC-06 LOW CL-625 ONT DATE MAY 2010
DRAWN	D.L. CHK	V.K. SITE	37-1538/3 DWG 6

2538-199-00-00-ST-0001-SSS.dwg
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SAVED DATE: 8/3/2010 12:01 PM
PLOT DATE: 9/30/2010 8:51 AM
MINISTRY OF TRANSPORTATION, ONTARIO
PR-2-707 BR-05

METRIC
DIMENSIONS ARE IN METRES
AND/OR MILLIMETRES
UNLESS OTHERWISE SHOWN

DIST
CONT No 0000-0000
WP No 2005-07-00
HWY 404
STEEL COLUMN
SIGN SUPPORTS
SHEET
SS-1

AECOM

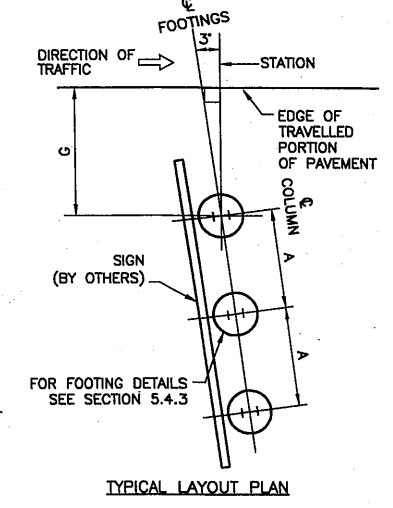
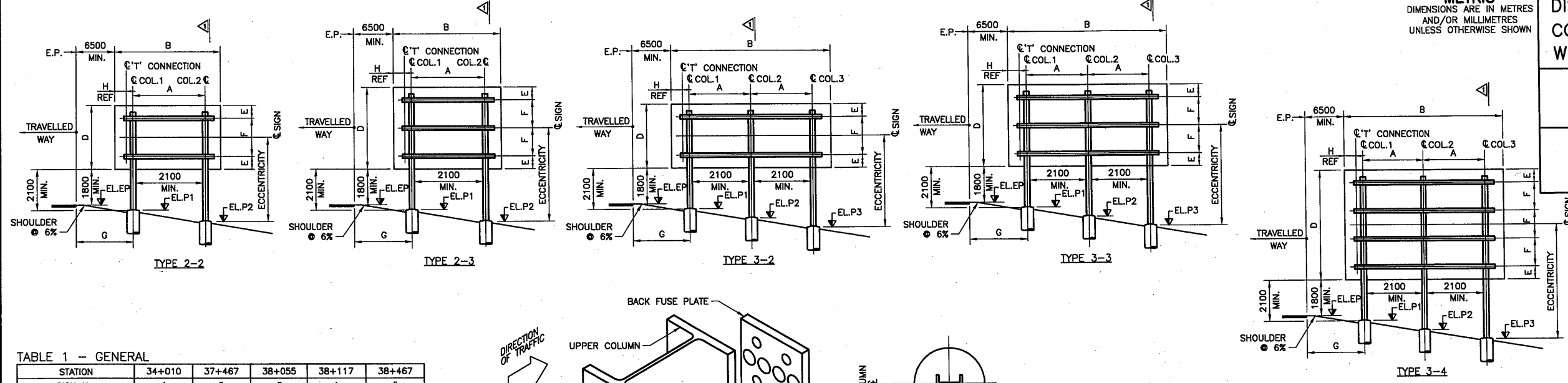
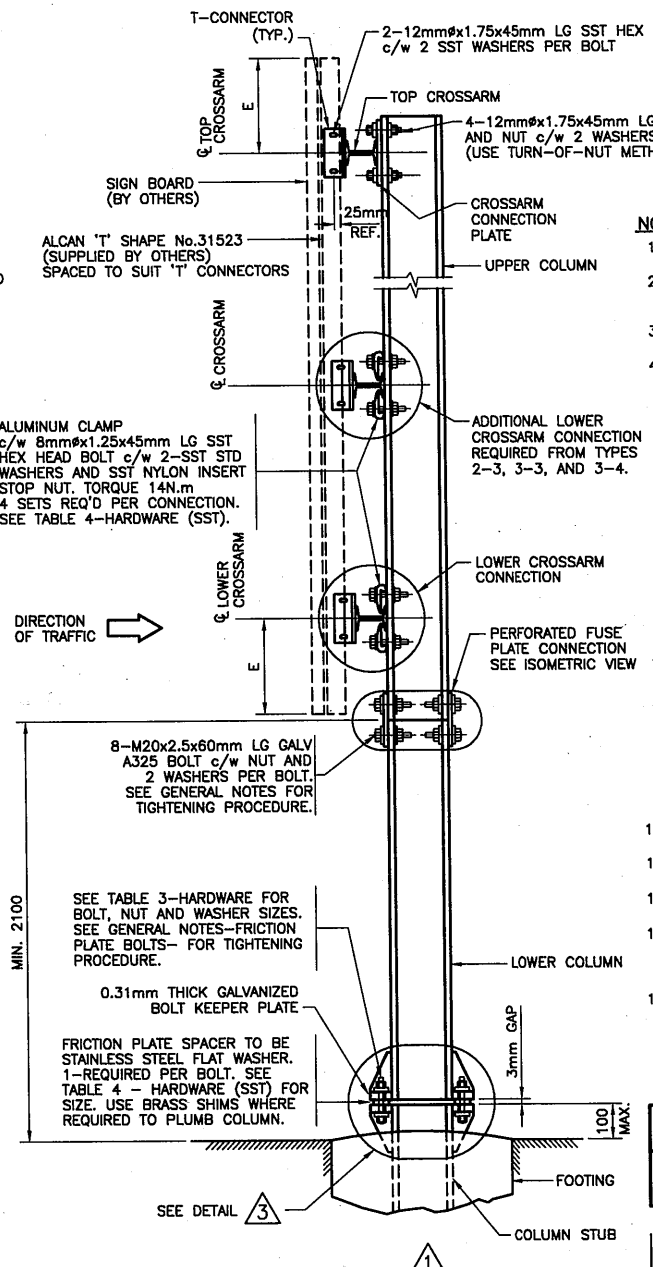
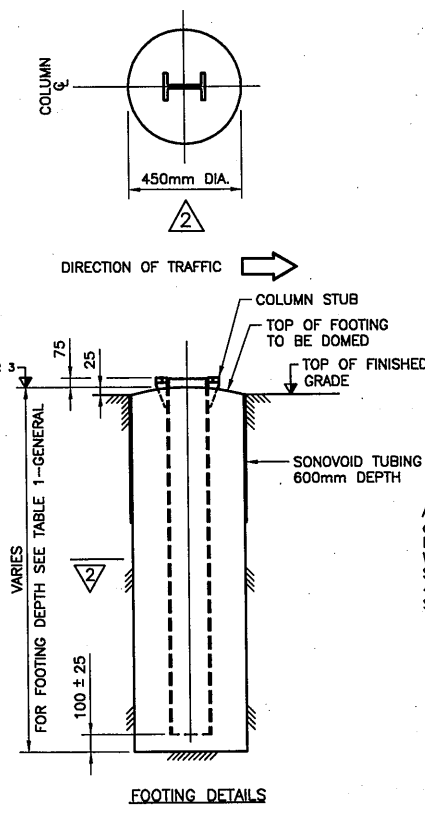
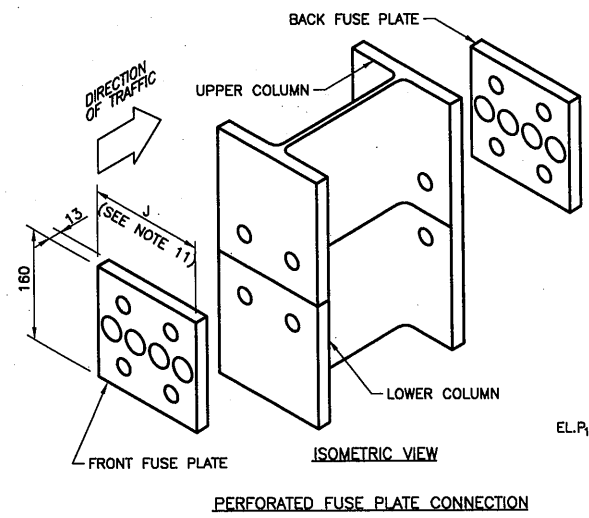


TABLE 1 - GENERAL

STATION	34+010	37+467	38+055	38+117	38+467
SIGN No.	1	2	3	4	5
SIGN SIZE (DxB)	2134x4877	2134x4267	1524x4877	2134x3658	1524x5468
TYPE	2-3	2-3	2-2	2-3	2-2
EL.P.	257.82	249.18	237.40	234.92	232.43
EL.P1	256.69	248.05	236.28	233.83	231.24
EL.P2	256.19	247.65	235.78	233.44	230.74
EL.P3	-	-	-	-	-
A	3000	2400	3000	2300	3000
E	462	462	342	462	342
F	605	605	840	605	840
G	7440	7440	7440	7180	7735
H	150	200	150	300	450
COLUMN SIZE	W200x42	W200x42	W200x42	W200x42	W200x42
FRICION PLATE CONNECTION PRETIGHTENING TORQUE (N.m)	67 (FOR M16 BOLT)	67 (FOR M16 BOLT)	67 (FOR M16 BOLT)	67 (FOR M16 BOLT)	67 (FOR M16 BOLT)
FOOTING DEPTH	2000	2000	2000	2000	2000
CONCRETE IN FOOTINGS (m³)	0.636	0.636	0.636	0.636	0.636



- NOTES
- ALL STRUCTURAL STEEL SHALL CONFORM TO CSA STANDARD CAN3-G40.21-M92 GRADE 300W.
 - ALL BOLTS, NUTS AND WASHERS EXCEPT LOWER CROSSARM CONNECTIONS SHALL CONFORM TO ASTM A325 GALVANIZED IN ACCORDANCE WITH CSA SPECIFICATION G164-M92.
 - ALL STEEL SHALL BE GALVANIZED AFTER FABRICATION IN ACCORDANCE WITH CSA SPECIFICATION G164-M92.
 - THE PROCEDURE FOR TIGHTENING BOLTS SHALL BE AS FOLLOWS:
(A) FRICTION PLATE BOLTS
- ASSEMBLE COLUMN TO STUB WITH GALVANIZED BOLTS AND WITH TWO GALVANIZED WASHERS PLUS ONE FLAT SST WASHER ON EACH BOLT BETWEEN PLATES, AND GALVANIZED BOLT KEEPER PLATE ON BOTTOM FRICTION PLATE, USING BRASS SHIMS AS REQUIRED TO PLUMB COLUMN.
- TIGHTEN BOLTS IN A SYSTEMATIC ORDER TO PRESCRIBED PRETIGHTENING TORQUE AS SPECIFIED IN TABLE 1-GENERAL.
- LOOSEN EACH BOLT AND RETIGHTEN TO SPECIFIED TORQUE IN THE SAME ORDER AS INITIAL TIGHTENING. (DO NOT OVER TIGHTEN)
(B) FUSE PLATE BOLTS
- TIGHTEN BOLTS IN A SYSTEMATIC ORDER TO A SNUG-TIGHT CONDITION.
- CONTINUE TO FURTHER TIGHTEN EACH BOLT, IN THE SAME ORDER AS THE INITIAL TIGHTENING, BY 1/3 TURN OF NUT.
 - CLASS OF CONCRETE TO BE 30 MPa.
 - CONCRETE TO BE PLACED AGAINST UNDISTURBED GROUND IN AUGURED HOLE.
 - THE FRICTION PLATE ATOP THE VERTICALLY POSITIONED COLUMN STUB SHALL BE INSTALLED DEAD LEVEL AND HELD IN THE CORRECT POSITION AND ELEVATION WITH A TEMPLATE, UNTIL THE CONCRETE HAS PROPERLY SET.
 - TOP SURFACE OF FOOTING SHALL BE DOMED.
 - FRICTION PLATE AND FUSE PLATE BOLT THREADS TO BE BURIED AT JUNCTION WITH NUT USING CENTRE PUNCH.
 - EL.P1, EL.P2 OR EL.P3 DENOTES ELEVATION OF TOP OF FOOTING CONCRETE.
 - FOR DETAILS OF PARTS SEE FABRICATION INFORMATION IN SIGN SUPPORT MANUAL, SECTION 5.5-FABRICATION.
 - UPPER AND LOWER COLUMNS SHALL NOT BE ERECTED UNTIL 7 DAYS AFTER CONCRETE HAS BEEN PLACED.
 - THE USE OF BRASS SHIMS SHALL BE LIMITED TO A TOTAL THICKNESS OF 5mm, FOR PERFECTLY PLUMBING THE LOWER COLUMN. IF THIS CANNOT BE ACCOMPLISHED, THE FOOTING WITH THAT COLUMN STUB SHALL BE REJECTED.
 - THE ALIGNMENT OF THE CENTRELINES OF FOOTINGS, AND THE LOCATION OF THE STUB WITH RESPECT TO THE CENTRE OF THE FOOTINGS AND THE C/C OF COLUMNS ('A'-DIMENSION) SHALL BE AS REQUIRED BY OPSS 915.

TABLE 2 – COMPONENTS/PARTS											
STATION		34+010		37+467		38+055		38+117		38+467	
DESCRIPTION		SIZE	QUANT./LENGTH	SIZE	QUANT./LENGTH	SIZE	QUANT./LENGTH	SIZE	QUANT./LENGTH	SIZE	QUANT./LENGTH
COLUMN STUB		W200x42	2x2000	W200x42	2x2000	W200x42	2x2000	W200x42	2x2000	W200x42	2x2000
LOWER COLUMN No.1		W200x42	1x3095	W200x42	1x3095	W200x42	1x2970	W200x42	1x3055	W200x42	1x3040
LOWER COLUMN No.2		W200x42	1x3595	W200x42	1x3495	W200x42	1x3470	W200x42	1x3445	W200x42	1x3540
LOWER COLUMN No.3		—	—	—	—	—	—	—	—	—	—
UPPER COLUMNS		W200x42	2x1520	W200x42	2x1520	W200x42	2x1150	W200x42	2x1520	W200x42	2x1150
LOWER CROSSARM(S)		S75x8	2x4695	S75x8	2x3995	S75x8	1x4695	S75x8	2x3175	S75x8	1x4685
TOP CROSSARM		S75x8	1x4695	S75x8	1x3995	S75x8	1x4695	S75x8	1x3175	S75x8	1x4685
BRASS SHIMS		t = 0.305 t = 0.813	AS REQUIRED FOR PLUMBING LOWER COLUMN	AS REQUIRED FOR PLUMBING LOWER COLUMN	AS REQUIRED FOR PLUMBING LOWER COLUMN	AS REQUIRED FOR PLUMBING LOWER COLUMN	AS REQUIRED FOR PLUMBING LOWER COLUMN	AS REQUIRED FOR PLUMBING LOWER COLUMN	AS REQUIRED FOR PLUMBING LOWER COLUMN	AS REQUIRED FOR PLUMBING LOWER COLUMN	AS REQUIRED FOR PLUMBING LOWER COLUMN
FRONT FUSE PLATE		t = 13mm	2	t = 13mm	2	t = 13mm	2	t = 13mm	2	t = 13mm	2
BACK FUSE PLATE		t = 13mm	2	t = 13mm	2	t = 13mm	2	t = 13mm	2	t = 13mm	2
ALUMINUM CLAMP		SEE DETAILS	16	SEE DETAILS	16	SEE DETAILS	8	SEE DETAILS	16	SEE DETAILS	8

STATION											
DESCRIPTION	SIZE	QUANT.	SIZE	QUANT.	SIZE	QUANT.	SIZE	QUANT.	SIZE	QUANT.	
TOP CROSSARM BOLTS	12mmx1.75x45mmLG	8	12mmx1.75x45mmLG	8	12mmx1.75x45mmLG	8	12mmx1.75x45mmLG	8	12mmx1.75x45mmLG	8	
FUSE PLATE BOLTS	M20x60mmLG	16	M20x60mmLG	16	M20x60mmLG	16	M20x60mmLG	16	M20x60mmLG	16	
FRICTION PLATE BOLTS	M16x70mmLG	8	M16x70mmLG	8	M16x70mmLG	8	M16x70mmLG	8	M16x70mmLG	8	
FRICTION PLATE WASHERS	M16 FLAT	16	M16 FLAT	16	M16 FLAT	16	M16 FLAT	16	M16 FLAT	16	

TABLE 4 - HARDWARE (SST)

STATION	34+010	37+467	38+055	38+117	38+467	DESCRIPTION
LOWER CROSSARM CONNECTION	16	16	8	16	8	8mmx1.25x45mm LG THREADED LENGTH 25mm SST HEX. HD. BOLT
	32	32	16	32	16	8mm SST STD FLAT WASHER
	16	16	8	16	8	8mmx1.25 SST NYLON INSERT STOP NUT
FRICTION PLATE SPACER	8	8	8	8	8	SST 37 O.D.x21 I.D.x3mm THK
T-CONNECTOR TO T SHAPE CONNECTION	30	24	20	24	20	12mmx1.75x45mm LG SST HEX. HD. BOLT
	60	48	40	48	40	12mm SST FLAT WASHER



MODIFIED
SS118-30

STANDARD DRAWING
JUNE 2004

STEEL COLUMN
BREAKAWAY SIGN SUPPORTS

REVISIONS	DATE	BY	DESCRIPTION
DESIGN	A.M. CHK	S.K. CODE	CHBDC-061 LOW CL-625 ONT DATE MAY 2010
DRAWN	D.L. CHK	V.K. SITE	DWG 1