

WINDSOR-ESSEX PARKWAY PROJECT

PHASE 1 – STRUCTURE TB-4 90% MTO SUBMISSION



KEY PLAN
NOT TO SCALE

LIST OF DRAWINGS

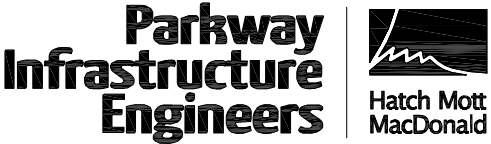
SHEET_NO	TITLE
S6401	GENERAL ARRANGEMENT
S6402	GENERAL NOTES (IN PROGRESS)
S6403	BOREHOLE LOCATIONS & SOIL STRATA
S6404	SOIL STRATIGRAPHY
S6405	GROUND IMPROVEMENTS – PLAN (NOT IN USE)
S6406	GROUND IMPROVEMENTS – SECTIONS (NOT IN USE)
S6407	CONSTRUCTION NOTES – BACKFILL AT STRUCTURES
S6408	CONSTRUCTION NOTES – LWF
S6409	FOUNDATION LAYOUT AND DETAILS (IN PROGRESS)
S6410	ABUTMENT LAYOUT AND DETAILS I (IN PROGRESS)
S6411	ABUTMENT LAYOUT AND DETAILS II (IN PROGRESS)
S6412	RSS WINGWALL LAYOUT AND DETAILS I (IN PROGRESS)
S6413	RSS WINGWALL LAYOUT AND DETAILS II (IN PROGRESS)
S6414	MISCELLANEOUS DETAILS (IN PROGRESS)
S6415	PEDESTRIAN BARRICADES LAYOUT AND DETAILS (IN PROGRESS)
S6416	6000mm APPROACH SLAB (IN PROGRESS)
S6417	STANDARD DETAILS
S6418	EMBEDDED ELECTRICAL WORK (IN PROGRESS)

CONTEMPLATED LIST OF DRAWINGS TO BE SUPPLIED BY BRIDGE SUPPLIER:

- TRUSS LAYOUT AND DETAILS
- DECK LAYOUT AND DETAILS
- BEARING DETAILS
- EXPANSION JOINT DETAILS
- TRUSS RAILING DETAILS

ENVIRONMENTAL NOTES:

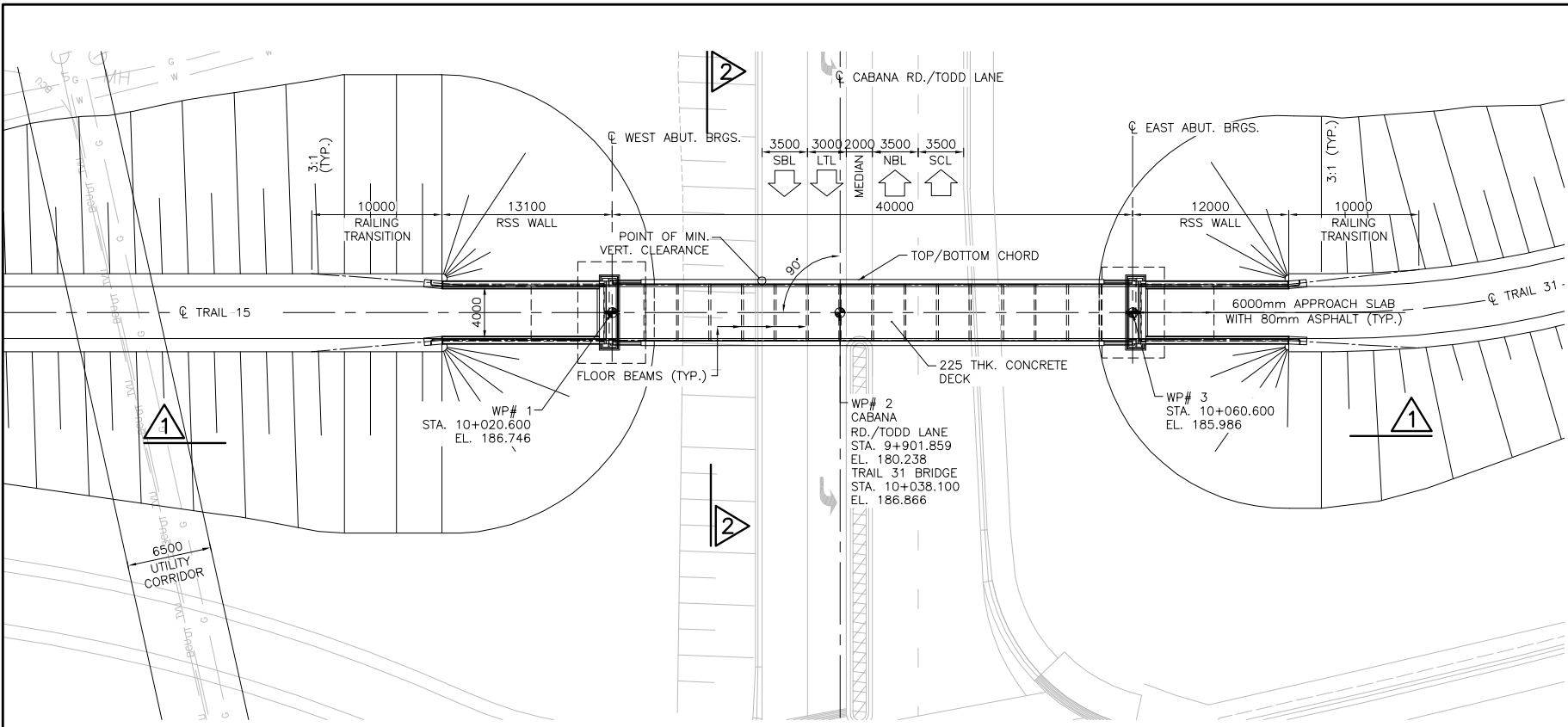
- TB-4 IS LOCATED IN PROXIMITY TO KNOWN SPECIES AT RISK (SAR) HABITAT. CONSTRUCTION MITIGATION TO BE IN PLACE AND MAINTAINED THROUGHOUT THE WORKS. THE CONTRACTOR IS RESPONSIBLE FOR ENSURING DUE SAR CLEARANCE AND POTENTIAL SITE INTERACTIONS WITH SAR. ALL INDIVIDUALS ON THE PROJECT ARE REQUIRED TO UNDERGO SAR AWARENESS TRAINING.
- THE CONTRACTOR IS RESPONSIBLE TO CONTROL EROSION AND SEDIMENT CAUSED BY CONSTRUCTION RELATED ACTIVITIES SO AS TO MEET ALL LEGISLATIVE REQUIREMENTS AND PROJECT AGREEMENT. REFER TO MTO ENVIRONMENTAL GUIDE FOR EROSION AND SEDIMENT CONTROL DURING CONSTRUCTION OF HIGHWAY PROJECTS AND THE RELEVANT PROJECT SPECIFIC EROSION AND SEDIMENT CONTROL PLANS.
- THERE ARE NO FISH BEARING WATERCOURSES IN CLOSE PROXIMITY TO TB-4. ALL WORKS SHALL BE COMPLETED IN A MANNER TO PREVENT THE RELEASE OF A DELETERIOUS SUBSTANCE TO THE ENVIRONMENT.
- WORKS ARE REQUIRED TO BE UNDERTAKEN WITHIN THE TIMING WINDOWS PERMITTED BY LOCAL NOISE BY-LAWS.
- TREE PROTECTION MAY BE REQUIRED AS PER THE TREE PROTECTION PLAN TO BE PUT FORWARD IN THE FINAL LANDSCAPE PLANS. ALL TREE PROTECTION IS TO BE COMPLIANT WITH OPSS 801.
- IF PUMPING IS REQUIRED FOR CONSTRUCTION, PERMIT TO TAKE WATER GUIDELINES SHALL BE FOLLOWED. A DEWATERING PLAN MAY BE REQUIRED IN CONJUNCTION WITH CONSTRUCTION ACTIVITIES.
- STOCKPILE LOCATIONS TO COMPLY WITH THOSE NOTED IN THE DCR AND OTHER APPROVED ENVIRONMENTAL DOCUMENTATION.
- EXCESS EARTH TO BE MANAGED AS OUTLINED WITHIN THE EXCESS EARTH MANAGEMENT PLAN AND DCR.
- REFER TO GENERAL ENVIRONMENTAL NOTES SPECIFIED IN ENVIRONMENTAL PROTECTION PACKAGE SHEETS E9001 AND E9002 FOR ADDITIONAL ENVIRONMENTAL CONSTRAINTS AND MITIGATION MEASURES.



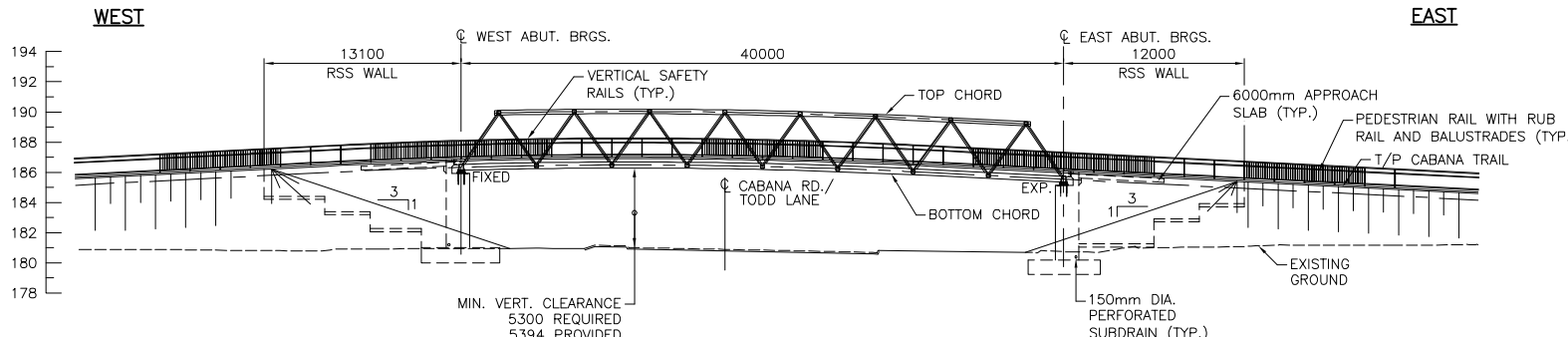
PR-D-707 88-05

MINISTRY OF TRANSPORTATION, ONTARIO

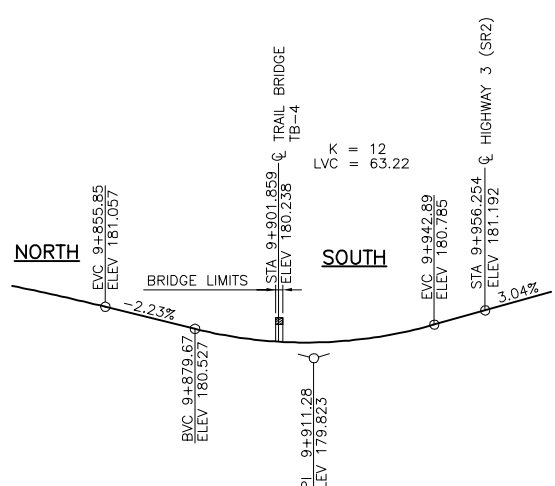
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PLAN
SCALE 1:250



SCALE 1:250



PROFILE OF CABANA RD. / TODD LANE
N.T.S.

PARKWAY
INFRASTRUCTURE CONSTRUCTORS
MAR 18 2014
PROCESSED
PROJECT DOCUMENT AND DATA MANAGEMENT

DRAWING NOT TO BE SCALED
100mm ON ORIGINAL DRAWING

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



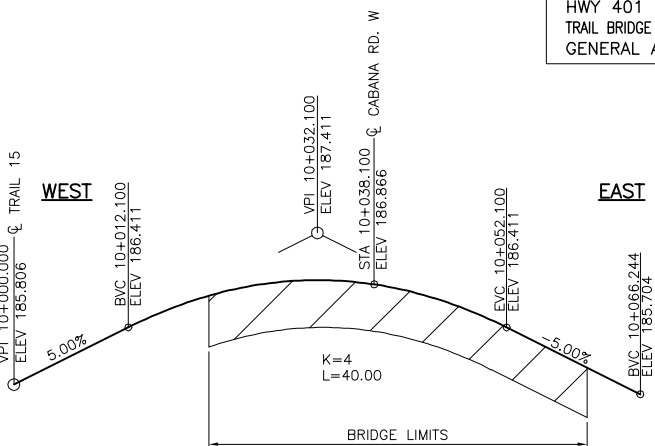
Windsor-Essex
Parkway Project
RFP No. 09-54-1007

NEW CONSTRUCTION
HWY 401
TRAIL BRIDGE OVER CABANA RD.-TODD LN. TB-4
GENERAL ARRANGEMENT

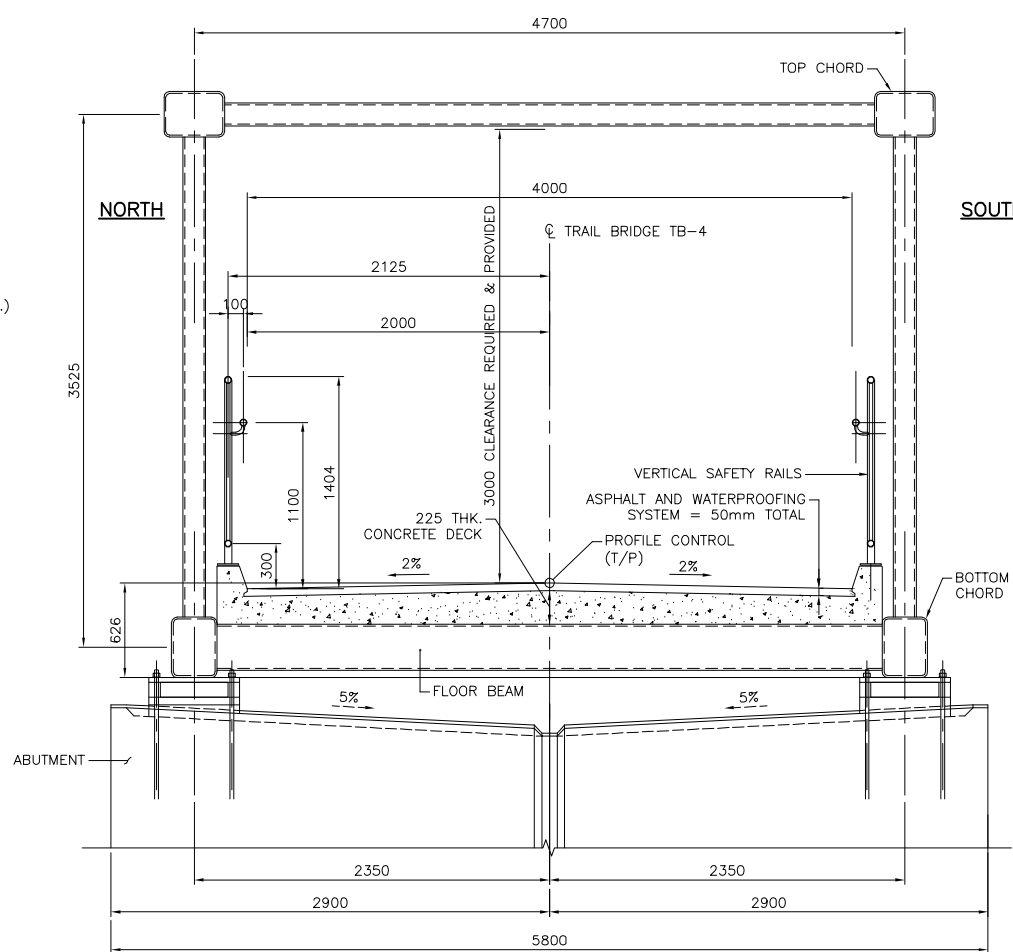


SHEET
S6401

Phase 1
90% Sub



PROFILE OF CABANA TRAIL BRIDGE
N.T.S.



SCALE 1:25

NOT FOR
CONSTRUCTION

REVISIONS	DATE	REV.	BY	DESCRIPTION
13-DEC-13	B	JL		90% MTO SUBMISSION
01-OCT-13	A	MAS		60% MTO SUBMISSION
DESIGN	BM	CHK	JL	CODE CAN/CSA S6-06 LOAD SEE T.A.F. DOC.
DRAWN	RD	CHK	MAS	SITE 6-619 DATE JULY 2010

DOC: 285380-03-060-SEG1-6401

BB-05
PR-D-707

MINISTRY OF TRANSPORTATION, ONTARIO

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NOTES:

1. CLASS OF CONCRETE:
•CAST-IN-PLACE DECK:
•REMAINDER:

40 MPa
30 MPa

2. CLEAR COVER TO REINFORCING STEEL:
•FOOTINGS:
•DECK:
TOP
BOTTOM
•REMAINDER U.N.O.:

100 ± 25
70 ± 20
40 ± 10
70 ± 20

3. REINFORCING STEEL:
•REINFORCING STEEL SHALL BE GRADE 400W UNLESS OTHERWISE SPECIFIED.
•BAR MARKS WITH PREFIX 'C' DENOTE COATED BARS.
•BAR MARKS WITH PREFIX 'S' DENOTE STAINLESS STEEL BARS.
•STAINLESS REINFORCING STEEL SHALL BE TYPE 316LN OR DUPLEX 2205 OR TYPE XM-28 AND HAVE A MINIMUM YIELD STRENGTH OF 500 MPa, UNLESS OTHERWISE SPECIFIED.
•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 AND SS12-2 UNLESS SHOWN OTHERWISE.

4. STRUCTURAL STEEL: (NOT PART OF THIS PACKAGE)
•ALL STRUCTURAL STEEL SHALL CONFORM TO CSA STANDARD CAN/CSA-G40.20-04/G40.21-04. STEEL MARKED 'AT' SHALL BE AT LEAST GRADE 350AT CATEGORY 2. ALL OTHER STEEL SHALL BE GRADE 350A. ROLLED SECTIONS SHALL CONFORM TO CAN/CSA-G40.20-04/G40.21-04 OR ASTM SPECIFICATION A588.
•MEMBERS OR COMPONENTS OF MEMBERS FOR WHICH "AT" STEEL IS SPECIFIED ARE PRIMARY TENSION MEMBERS AND FRACTURE-CRITICAL MEMBERS, STIFFENERS AND GUSSETS ATTACHED TO "AT" MEMBERS SHALL BE "AT" STEEL CATEGORY 2 OR GREATER. PLATE SECTIONS SHALL BE GRADE 350AT CATEGORY 3, CAN/CSA-G40.20-04/G40.21-04.
•BOLTS ON ATMOSPHERIC CORROSION RESISTANT STEEL SHALL BE ASTM A325 TYPE 3, M22. BOLTS ON COATED STEEL SHALL BE GALVANIZED ASTM A325M TYPE 1, M22. BOLT THREADS SHALL BE EXCLUDED FROM THE SHEAR PLANES.
•STUD SHEAR CONNECTORS SHALL BE 22mm DIA. AND SHALL CONFORM TO ASTM A108 AND CSA W59.
•ALL LENGTHS SHOWN ARE IN THE HORIZONTAL PLANE AND MEASURED AT 20°C.
•THE TRUSS AND BEARING STIFFENERS SHALL BE TRULY VERTICAL UNDER FULL DEAD LOAD.
•ALL BUTT WELDS IN FLANGE, WEB AND BOX SECTION SHOP SPLICES SHALL BE FINISHED FLUSH OR SMOOTH. BY GRINDING WHERE NECESSARY IN THE DIRECTION OF THE APPLIED STRESSES.
•UNLESS OTHERWISE NOTED. THE MINIMUM FILLET WELD SHALL BE AS FOLLOWS:

MATERIAL THICKNESS OF THICKER PART JOINED (mm)	MINIMUM SIZE OF SINGLE PASS FILLET WELD (mm)
TO 12 INCLUSIVE	5
OVER 12 TO 20	6
OVER 20 TO 40	8
OVER 40 TO 60	10
OVER 60 TO 120	12

•ALL STEEL SURFACES SHALL BE COATED EXCEPT FOR THE SURFACE OF MEMBERS THAT WILL BE IN CONTACT WITH CONCRETE OR CONTACT SURFACES OF BOLTED CONNECTIONS. THE COLOUR OF THE TOPCOAT SHALL BE 504-217 BROWN (1-GP-12C).
•THE CONTRACTOR SHALL ENSURE THE STABILITY OF ALL COMPONENTS DURING HANDLING TRANSPORTATION AND ERECTION AND UNTIL THE STRUCTURAL STEEL IS IN THE FINAL LOCATION WITH ALL THE PERMANENT BRACING CONNECTIONS AND SUPPORTS IN PLACE AND THE CONCRETE IN THE DECK HAS REACHED A STRENGTH OF 25MPa.

5. CONCRETE FINISH OF ALL EXPOSED SURFACES SHALL HAVE A RUBBED FINISH.

6. TRUSS BRIDGE SUPPLIER RESPONSIBLE FOR MEETING ALL REQUIREMENTS OF APPLICABLE CODE & STANDARDS.

7. REQUIREMENTS FOR TRAIL BRIDGE PAINTING, ANIMAL ICONS AND OTHER AESTHETIC TREATMENTS ARE PROVIDED IN THE TECHNICAL MEMO FOR AESTHETICS PACKAGE (DOC, NO. 285380-72-126-0014). ALL STRUCTURAL STEEL PAINT COATING SYSTEMS SHALL MEET THE REQUIREMENTS OF THE MTO STRUCTURAL MANUAL, OPSS 911 AND OPSS 1704.
- CONSTRUCTION NOTES
1. THE CONTRACTOR SHALL ESTABLISH THE BEARING SEAT ELEVATIONS BY DEDUCTING THE ACTUAL BEARING THICKNESSES FROM THE TOP OF BEARING ELEVATIONS. IF THE ACTUAL BEARING THICKNESSES ARE DIFFERENT FROM THOSE GIVEN WITH THE BEARING DESIGN DATA, THE CONTRACTOR SHALL ADJUST THE REINFORCING STEEL TO SUIT.

2. THE CONTRACTOR IS FULLY RESPONSIBLE FOR GROUNDWATER CONTROL ON TIMING OF CONSTRUCTION AND PREVAILING WEATHER CONDITIONS.

3. BACKFILL SHALL NOT BE PLACED AGAINST ANY PORTION OF THE ABUTMENTS OR WINGWALLS UNTIL THE CONCRETE FOR THE DECK HAS BEEN PLACED AND ITS COMPRESSIVE STRENGTH HAS REACHED 30 MPa.

4. ALL EXISTING UTILITIES SHALL BE ACCURATELY LOCATED PRIOR TO ANY CONSTRUCTION BEING CARRIED OUT. UNLESS NOTED OTHERWISE ON STRUCTURAL AND UTILITIES DRAWINGS, ALL EXISTING UTILITIES ARE TO REMAIN IN PLACE AND SHALL BE PROTECTED FROM DAMAGE DURING CONSTRUCTION OF THE TUNNEL EMBANKMENTS.

5. TEMPORARY EXCAVATION, SUBGRADE EXPOSURE AND PROTECTION, AND BACKFILLING SHALL CONFORM TO OPSS 902.

6. SETTLEMENTS AND GROUND DEFORMATIONS SHALL BE MONITORED DURING AND AFTER CONSTRUCTION.

7. VIBRATIONS SHALL BE MONITORED AT STRATEGIC LOCATIONS DURING PILING AND CONSTRUCTION ON TEMPORARY SLOPES AND ADJACENT TO UTILITIES.

8. FOR ALL HIGHWAY WORKS REFER TO HIGHWAY NEW CONSTRUCTION DRAWINGS.

9. FOR ALL ELECTRICAL AND ATMS WORKS REFER TO ELECTRICAL AND ATMS NEW CONSTRUCTION DRAWINGS.

10. FOR ALL UTILITY WORKS REFER TO UTILITY NEW CONSTRUCTION DRAWINGS.

11. APPROVED RSS WALL SUPPLIER TO REFER TO UTILITIES NEW CONSTRUCTION DRAWINGS AND CONFIRM LOCATION OF ALL UTILITIES. RSS WALL DESIGN SHALL ACCOUNT FOR ALL INTERFERENCE WITH UTILITIES.

12. FOR LIGHT AND TRAFFIC POLE LOCATIONS REFER TO ELECTRICAL AND ATMS DRAWING PACKAGE.

13. RSS WALL SHALL BE DESIGNED AND CONSTRUCTED IN ACCORDANCE WITH THE 'MTO RSS DESIGN GUIDELINES' AND SPECIAL PROVISIONS SP599S22 AND SP599S23.

14. THE FACTOR-OF-SAFETY AGAINST EXTERNAL MODES OF FAILURE FOR RSS WALLS SHALL BE AS PER CANADIAN FOUNDATION ENGINEERING MANUAL (CFEM).

15. FOR INFORMATION ON EXISTING PAVEMENT AND INFRASTRUCTURE REFER TO HIGHWAYS REMOVAL DRAWINGS AND GENERAL NOTES PROVIDED WITHIN HIGHWAY REMOVALS DRAWING PACKAGE.

16. ALL WORKS OCCURRING AFTER CONSTRUCTION OF RSS WALLS AND ABUTMENTS THAT INVOLVE EXCAVATION BELOW ROAD SUBGRADE SHALL BE COORDINATED WITH GEOTECHNICAL DESIGN.
- ABBREVIATIONS:
- | | |
|--------------|---|
| ABUT. | ABUTMENT |
| BF | BACK FACE |
| BOT. | BOTTOM |
| BRGS. | BEARINGS |
| BVC | BEGINNING OF VERTICAL CURVE |
| C/C | CENTER-TO-CENTER |
| CL | CENTER LINE |
| CIP | CAST-IN-PLACE |
| CLR | CLEAR |
| CONT. | CONTINUOUS |
| CSP | CORRUGATED STEEL PIPE |
| C/W | COMPLETE WITH |
| DIA | DIAMETER |
| DR | DRIVE |
| DWG | DRAWING |
| EA. | EACH |
| E.B. (EB) | EASTBOUND |
| EF | EACH FACE |
| E.G. | EXISTING GROUND |
| E.J. | EXPANSION JOINT |
| EL./ELEV. | ELEVATION |
| E.P.D.M | ETHYLENE PROPYLENE DIENE MONOMER (M-CLASS) RUBBER |
| EPS | EXPANDED POLYSTYRENE |
| EQ | EQUAL |
| EVA | ETHYLENE VINYL ACETATE |
| EVC | END OF VERTICAL CURVE |
| EW | EACH WAY |
| EXP. | EXPANSION |
| FF | FRONT FACE |
| F.G. | FUTURE GROUND |
| FIX | FIXED |
| HORIZ. | HORIZONTAL |
| HP | H-PILE |
| HWY | HIGHWAY |
| ID | INSIDE DIAMETER |
| LTL | LEFT TURN LANE |
| LWF | LIGHT WEIGHT FILL |
| MAT. | MATERIAL |
| MAX. | MAXIMUM |
| MIN. | MINIMUM |
| NB | NORTHBOUND |
| NOM. | NOMINAL |
| N.T.S. | NOT TO SCALE |
| OD | OUTSIDE DIAMETER |
| R/C | REINFORCED CONCRETE |
| RD | ROAD |
| REINF. | REINFORCEMENT |
| R/F | REINFORCED FOOTING |
| RCM | REINFORCED GRANULAR MAT |
| RSS | RETAINED SOIL SYSTEM |
| RTL | RIGHT TURN LANE |
| R.W. (RW) | RETAINING WALL |
| SB | SOUTHBOUND |
| SCL | SPEED CHANGE LANE |
| SHLD. | SHOULDER |
| STA. | STATION |
| STD | STANDARD |
| STIR. | STIRRUP |
| TB | TRAIL BRIDGE |
| T/D | TOP OF DECK |
| THK. | THICKNESS |
| T.O. | TOP OF |
| T/P | TOP OF PAVEMENT |
| TYP. | TYPICAL |
| UNO (U.N.O.) | UNLESS NOTED OTHERWISE |
| U/S | UNDERSIDE |
| VERT. | VERTICAL |
| VPI | VERTICAL POINT OF INTERSECTION |
| W.B.(WB) | WESTBOUND |
| WP | WORKING POINT |
| W.W. | WINGWALL |
| WWR | WELDED WIRE REINFORCEMENT |
- METRIC
- DIMENSIONS ARE IN METRES
AND/OR MILLIMETRES
UNLESS OTHERWISE SHOWN
- Parkway
Infrastructure
Engineers
-
- Windsor-Essex
Parkway Project
RFP No. 09-54-1007
-
- NEW CONSTRUCTION
HWY 401
TRAIL BRIDGE OVER CABANA RD.-TODD LN. TB-4
GENERAL NOTES
- SHEET
S6402
- Phase 1
- 90% Sub
- APPLICABLE STANDARD DRAWINGS
- | | |
|---------------|--|
| OPSD 3101.150 | WALLS, ABUTMENT, BACKFILL, MINIMUM GRANULAR REQUIREMENT |
| OPSD 3121.150 | WALLS, RETAINING, BACKFILL, MINIMUM GRANULAR REQUIREMENT |
| OPSD 3190.100 | WALLS, RETAINING AND ABUTMENT, WALL DRAIN |
| OPSD 3370.100 | DECK, WATERPROOFING HOT APPLIED ASPHALT MEMBRANE WITH PROTECTION BOARD |
| OPSD 3370.101 | DECK, WATERPROOFING HOT APPLIED ASPHALT MEMBRANE AT ACTIVE CRACKS GREATER THAN 2 mm WIDE AND CONSTRUCTION JOINTS |
| OPSD 3390.100 | DECK, DRIP CHANNEL |
| OPSD 3941.200 | FIGURES IN CONCRETE, SITE NUMBER AND DATE, LAYOUT |
| OPSD 3950.100 | JOINTS, CONCRETE EXPANSION AND CONSTRUCTION, ON STRUCTURE |
- IN PROGRESS
- NOT FOR
CONSTRUCTION
- DRAWING NOT TO BE SCALED
100mm ON ORIGINAL DRAWING
-
- | | | | | | |
|-----------|-----------|------|-----|--------------------|----------------------|
| REVISIONS | | | | | |
| | 13-DEC-13 | B | JL | 90% MTO SUBMISSION | |
| | 01-OCT-13 | A | MAS | 60% MTO SUBMISSION | |
| | DATE | REV. | BY | DESCRIPTION | |
| DESIGN | BM | CHK | JL | CODE CAN/CSA S6-06 | LOAD SEE T.A.F. DOC. |
| DRAWN | RD | CHK | MAS | SITE 6-619 | DATE JUN 2013 |
- DOC: 285380-03-060-SEG1-6402

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

Parkway
Infrastructure
Engineers
amec
Hatch Mott
Macdonald

Windsor-Essex
Parkway Project
RFP No. 09-54-1007

NEW CONSTRUCTION
HWY 401
TRAIL BRIDGE OVER CABANA RD.-TODD LN. TB-4
BOREHOLE LOCATIONS & SOIL STRATA

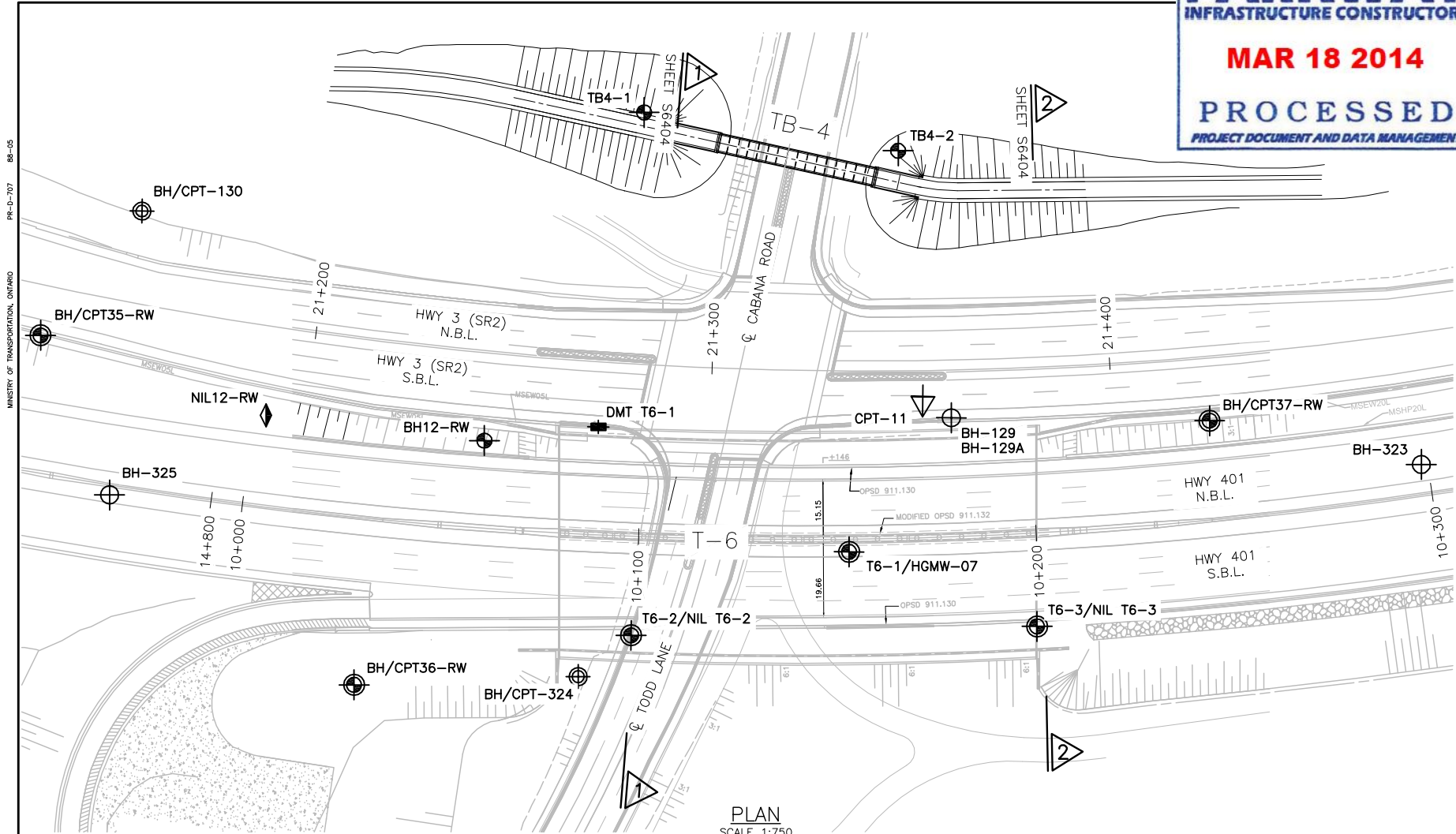
SHEET
S6403

Phase 1
90% Sub

PR-D-707 BB-05

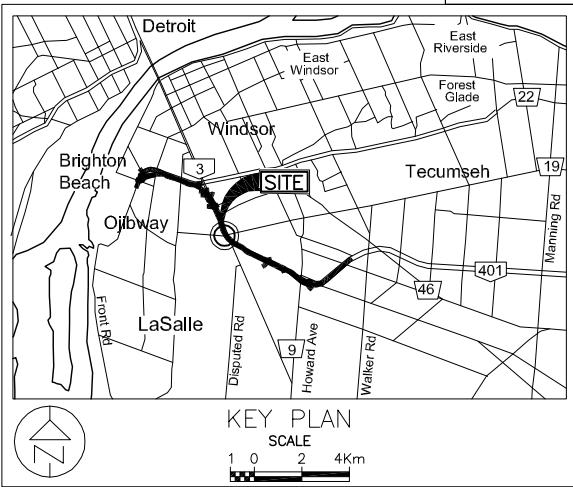
MINISTRY OF TRANSPORTATION, ONTARIO

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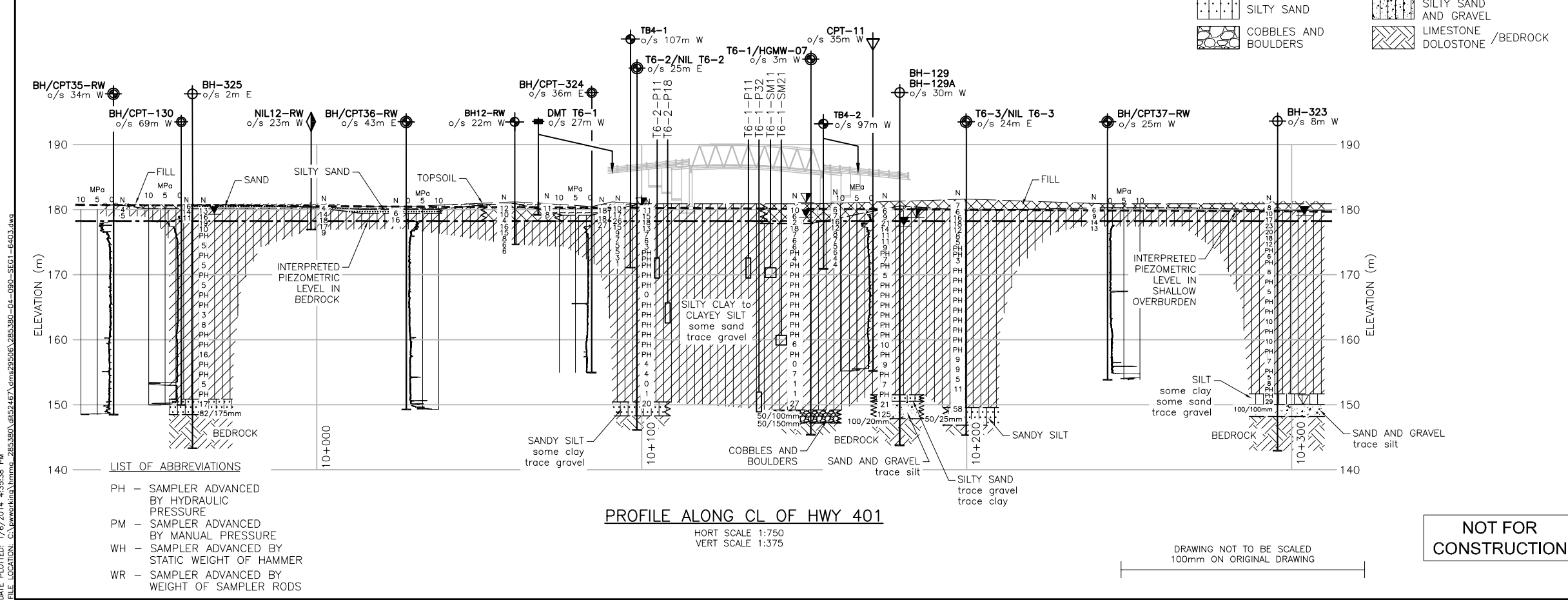
No.	ELEVATION	CO-ORDINATES (UTM, NAD 83 ZONE 17)	
		NORTHING	EASTING
AMEC BOREHOLES			
BH12-RW	181.2	4679718.1	332037.9
BH/CPT35-RW	181.0	4679825.8	331995.8
BH/CPT36-RW	180.5	4679710.0	331968.8
BH/CPT37-RW	180.9	4679571.4	332146.2
DMT T6-1	181.2	4679696.6	332057.3
NIL12-RW	181.2	4679767.0	332011.4
NIL T6-2	180.8	4679661.8	332020.5
NIL T6-3	181.7	4679574.1	332073.1
T6-1/HGMW-07	180.9	4679627.0	332067.4
T6-2	180.8	4679659.9	332018.8
T6-3	181.6	4679577.5	332079.1
TB4-1	180.7	4679732.3	332128.6
TB4-2	181.0	4679674.4	332157.2
PREVIOUS BOREHOLES			
BH-129	180.8	4679625.1	332109.7
BH-129A	180.8	4679625.1	332109.7
BH-323	181.3	4679521.4	332167.6
BH-325	180.8	4679787.7	331972.9
BH/CPT-130	180.8	4679821.8	332036.1
BH/CPT-324	180.9	4679664.9	332002.7
CPT-11	180.9	4679634.0	332110.0

MATERIAL LEGEND	
	TOPSOIL/ ORGANICS
	FILL
	SAND
	SILTY CLAY
	SILTY SAND
	COBBLES AND BOULDERS
	SILT
	SANDY SILT
	CLAYEY SILT
	SAND AND GRAVEL
	SILTY SAND AND GRAVEL
	LIMESTONE /BEDROCK DOLOSTONE



- LEGEND**
- BOREHOLE CURRENT INVESTIGATION
 - BOREHOLE AND NILCON VANE CURRENT INVESTIGATION
 - SW/SP HOLE (HYDROGEOLOGY) CURRENT INVESTIGATION
 - NILCON VANE CURRENT INVESTIGATION
 - CPT - CURRENT INVESTIGATION
 - DMT - CURRENT INVESTIGATION
 - BOREHOLE PREVIOUS INVESTIGATION
 - BOREHOLE, CPT AND NILCON VANE PREVIOUS INVESTIGATIONS
 - CPT -PREVIOUS INVESTIGATION
 - N SPT N-VALUE
 - BLOWS/0.3m UNLESS OTHERWISE STATED (STD. PEN. TEST, 475 J/BLOW)
 - MHSG - MAGNETIC HEAVE/SETTLEMENT GAUGE (SM)
 - P - VIBRATING WIRE PIEZOMETER (VWP)
 - SPZ - STANDPIPE PIEZOMETER
 - DRY BOREHOLE DRY DURING DRILLING
 - WATER LEVEL DURING DRILLING
 - WATER LEVEL (SHALLOW PIEZO)
 - WATER LEVEL (DEEP PIEZO)

- NOTES**
- THIS DRAWING IS TO BE READ IN CONJUNCTION WITH THE ACCOMPANYING GEOTECHNICAL DESIGN REPORT.
 - THE INTERPRETED STRATIGRAPHY REPRESENTS SIMPLIFIED SUBSURFACE CONDITIONS. THE BOUNDARIES BETWEEN SOIL STRATA HAVE BEEN DEFINED AT BOREHOLE LOCATIONS ONLY. CONDITIONS BETWEEN BOREHOLE LOCATIONS COULD DIFFER FROM ILLUSTRATED CONDITIONS.
 - ELEVATIONS ARE REFERENCED TO GEODETIC DATUM.



NOT FOR CONSTRUCTION

REVISIONS	DATE	REV.	BY	DESCRIPTION
20-DEC-13	B	EA		90% MTO SUBMISSION
01-OCT-13	A	EA		60% MTO SUBMISSION
DESIGN	EA	CHK	DD	CODE CAN/CSA
DRAWN	SJL	CHK	MO	SITE 6-619
				LOAD SEE T.A.F. DOC.
				DATE 19-APR-13

METRIC

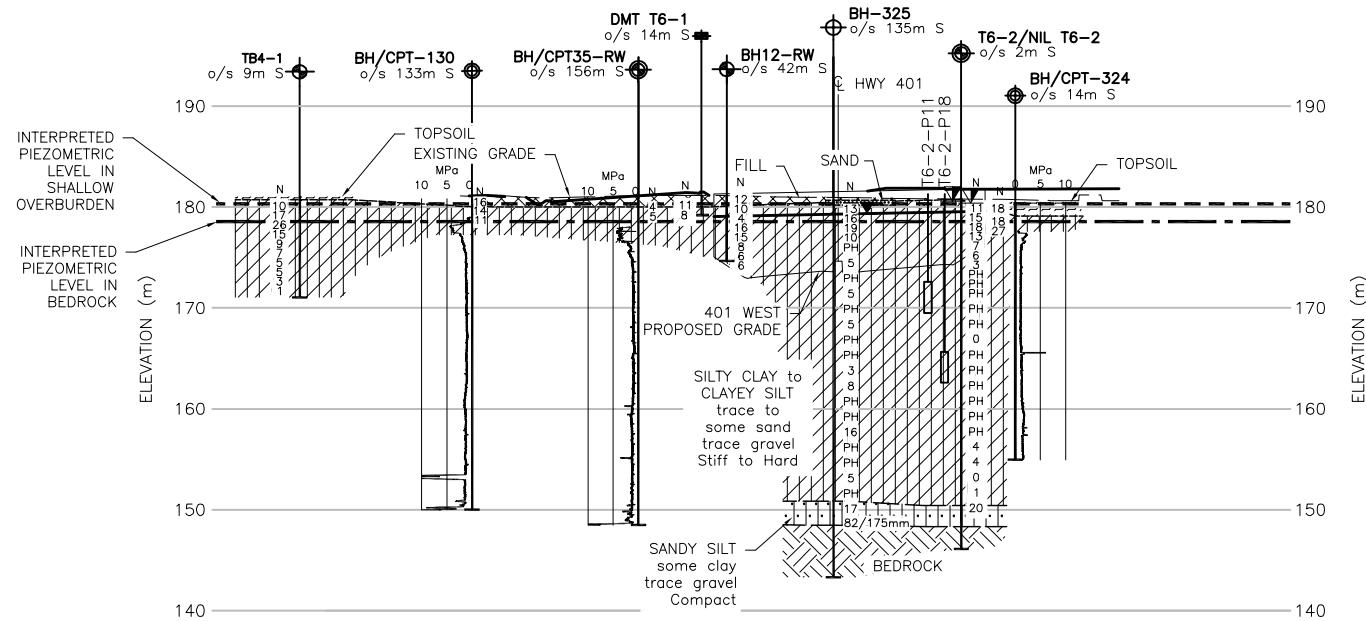
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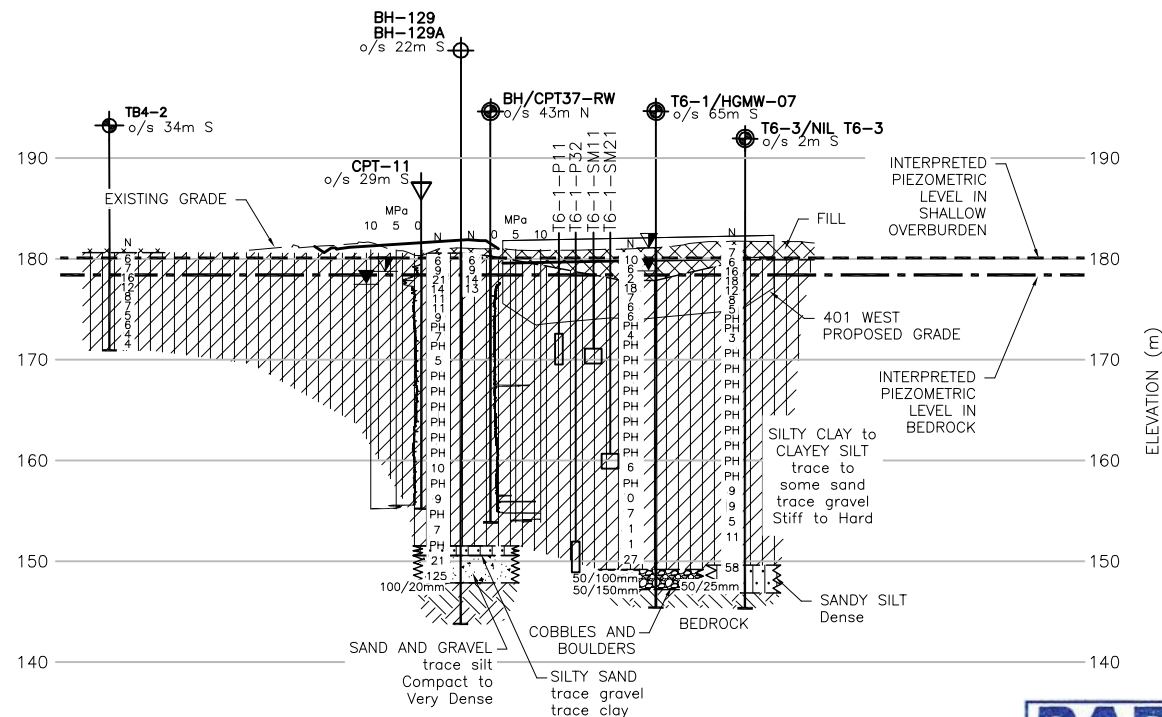
Windsor-Essex
Parkway Project
RFP No. 09-54-1007

NEW CONSTRUCTION
HWY 401
TRAIL BRIDGE OVER CABANA RD.-TODD LN. TB-4
SOIL STRATIGRAPHY

SHEET
S6404
Phase 1
90% Sub



1
HORT SCALE 1:750
VERT SCALE 1:375



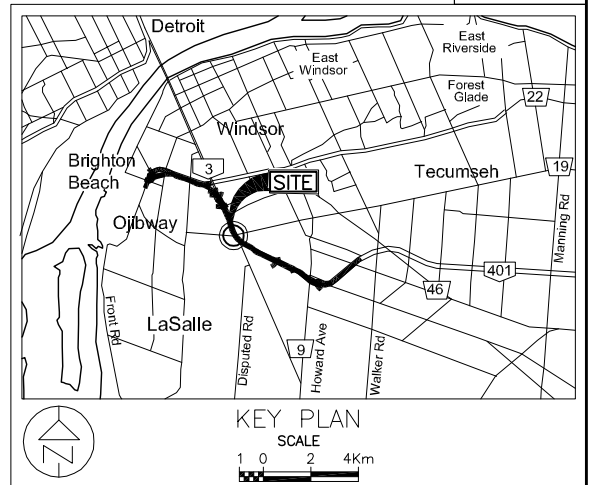
2
HORT SCALE 1:750
VERT SCALE 1:375

LIST OF ABBREVIATIONS

PH - SAMPLER ADVANCED BY HYDRAULIC PRESSURE
PM - SAMPLER ADVANCED BY MANUAL PRESSURE
WH - SAMPLER ADVANCED BY STATIC WEIGHT OF HAMMER
WR - SAMPLER ADVANCED BY WEIGHT OF SAMPLER RODS

MATERIAL LEGEND

TOPSOIL/ORGANICS
FILL
SAND
SILTY CLAY
SILTY SAND
COBBLES AND BOULDERS
SILT
SANDY SILT
CLAYEY SILT
SAND AND GRAVEL
SILTY SAND AND GRAVEL
LIMESTONE/DOLOSTONE /BEDROCK



LEGEND

BOREHOLE CURRENT INVESTIGATION
BOREHOLE AND NILCON VANE CURRENT INVESTIGATION
SW/SP HOLE (HYDROGEOLOGY) CURRENT INVESTIGATION
NILCON VANE CURRENT INVESTIGATION
CPT - CURRENT INVESTIGATION
DMT - CURRENT INVESTIGATION
BOREHOLE PREVIOUS INVESTIGATION
BOREHOLE, CPT AND NILCON VANE PREVIOUS INVESTIGATIONS
CPT -PREVIOUS INVESTIGATION
N SPT N-VALUE
BLOWS/0.3m UNLESS OTHERWISE STATED (STD. PEN. TEST, 475 J/BLOW)
P - VIBRATING WIRE PIEZOMETER (VWP)
SPz - STANDPIPE PIEZOMETER
MHS - MAGNETIC HEAVE/SETTLEMENT GAUGE (SM)
MPa 0 5 10
CPT-qc
DRY BOREHOLE DRY DURING DRILLING
WATER LEVEL DURING DRILLING
WATER LEVEL (SHALLOW PIEZO)
WATER LEVEL (DEEP PIEZO)

NOTES

- THIS DRAWING IS TO BE READ IN CONJUNCTION WITH THE ACCOMPANYING GEOTECHNICAL DESIGN REPORT.
- THE INTERPRETED STRATIGRAPHY REPRESENTS SIMPLIFIED SUBSURFACE CONDITIONS. THE BOUNDARIES BETWEEN SOIL STRATA HAVE BEEN DEFINED AT BOREHOLE LOCATIONS ONLY. CONDITIONS BETWEEN BOREHOLE LOCATIONS COULD DIFFER FROM ILLUSTRATED CONDITIONS.
- ELEVATIONS ARE REFERENCED TO GEODETIC DATUM.



DRAWING NOT TO BE SCALED
100mm ON ORIGINAL DRAWING

NOT FOR
CONSTRUCTION

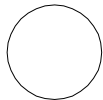
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01-OCT-13	A	EA		60% MTO SUBMISSION
DESIGN	EA	CHK	DD	CODE CAN/CSA
DRAWN	SJL	CHK	MO	SITE 6-619
				LOAD SEE T.A.F. DOC.
				DATE 19-APR-13

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

Parkway
Infrastructure
Engineers



Windsor–Essex
Parkway Project
RFP No. 09–54–1007



NEW CONSTRUCTION
HWY 401
TRAIL BRIDGE OVER CABANA RD.–TODD LN. TB-4
GROUND IMPROVEMENTS – PLAN

SHEET
S6405

Phase 1
90% Sub

NOT IN USE

DRAWING NOT TO BE SCALED
100mm ON ORIGINAL DRAWING

NOT FOR
CONSTRUCTION

REVISIONS					
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		01-OCT-13	A	JC	60% MTO SUBMISSION
		DATE	REV.	BY	DESCRIPTION
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				DATE	JUN 2013

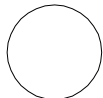


METRIC
DIMENSIONS ARE IN METRES
AND/OR MILLIMETRES
UNLESS OTHERWISE SHOWN

Parkway
Infrastructure
Engineers



Windsor–Essex
Parkway Project
RFP No. 09–54–1007



NEW CONSTRUCTION
HWY 401
TRAIL BRIDGE OVER CABANA RD.–TODD LN. TB-4
GROUND IMPROVEMENTS – SECTIONS

SHEET
S6406

Phase 1
90% Sub

NOT IN USE

DRAWING NOT TO BE SCALED
100mm ON ORIGINAL DRAWING

NOT FOR
CONSTRUCTION



REVISIONS						
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	01-OCT-13	A	JC	60% MTO SUBMISSION		
	DATE	REV.	BY	DESCRIPTION		
DESIGN	BR	CHK	PM	CODE	CAN/CSA	S6-06
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MINISTRY OF TRANSPORTATION, ONTARIO
PR-D-707
88-05

CONSTRUCTION NOTES – BACKFILL AT STRUCTURES

1.0 GENERAL REQUIREMENTS

- 1.1.

THESE CONSTRUCTION NOTES RELATE TO THE SUPPLY AND PLACEMENT OF BACKFILL MATERIALS AT THE STRUCTURES AT THE WINDSOR–ESSEX PARKWAY (WEP) PROJECT AS ILLUSTRATED ON THE ACCOMPANYING DRAWINGS. THE REQUIREMENTS GIVEN HEREFTER ARE THE GENERAL REQUIREMENTS. FOR DETAILED REQUIREMENTS, THE CONTRACTOR SHOULD REFER TO APPROPRIATE ONTARIO PROVINCIAL STANDARD SPECIFICATIONS (OPSS) LISTED IN SECTION 1.6.
- 1.2.

THESE CONSTRUCTION NOTES ARE TO BE READ IN CONJUNCTION WITH THE ACCOMPANYING GEOTECHNICAL DESIGN DRAWINGS AND REPORT.
- 1.3.

FOR LIGHTWEIGHT FILL (LWF), REFER TO CONSTRUCTION NOTES FOR LIGHTWEIGHT FILL MATERIAL.
- 1.4.

FOR EXPANDED POLYSTYRENE (GEOFOAM, EPS) FILL, REFER TO CONSTRUCTION NOTES FOR EXPANDED POLYSTYRENE FILL.
- 1.5.

THESE REQUIREMENTS DO NOT APPLY TO THE HIGHWAY PAVEMENT CONSTRUCTION.
- 1.6.

THE CONSTRUCTION WORKS SHALL BE EXECUTED IN ACCORDANCE WITH THE GEOTECHNICAL DESIGN ILLUSTRATED ON THE ACCOMPANYING DRAWINGS, THE SUPPLIER SPECIFICATIONS AND THE REQUIREMENTS SPECIFIED IN THE FOLLOWING STANDARDS, SPECIFICATIONS AND PUBLICATIONS:
- ASTM D422

•

ASTM D2216

•

ASTM D2850

PARTICLE–SIZE ANALYSIS OF SOILS
MOISTURE CONTENT OF SOILS
UNCONSOLIDATED–UNDRAINED TRIAXIAL COMPRESSION TEST ON COHESIVE SOILS

•

ASTM D2922

•

ASTM D3017

•

ASTM D5856

DENSITY OF SOIL AND SOIL–AGGREGATE IN PLACE BY NUCLEAR METHODS
WATER CONTENT OF SOIL AND ROCK IN PLACE BY NUCLEAR METHODS
HYDRAULIC CONDUCTIVITY OF POROUS MATERIALS USING A RIGID WALL PERMEAMETER

•

OPSS 201

•

OPSS 206

•

OPSS 212

•

OPSS 401

•

OPSS 501

•

OPSS 517

CLEARING, CLOSE CUT CLEARING, GRUBBING, REMOVAL OF SURFACE AND PILED BOULDERS
GRADING
BORROW
TRENCHING, BACKFILLING AND COMPACTING
COMPACTING
DEWATERING OF PIPELINE, UTILITY AND ASSOCIATED STRUCTURE EXCAVATION

•

OPSS 518

•

OPSS 805

•

OPSS 902

CONTROL OF WATER FROM DEWATERING OPERATIONS
TEMPORARY EROSION AND SEDIMENT CONTROL MEASURES
CONSTRUCTION SPECIFICATIONS FOR EXCAVATING AND BACKFILLING – STRUCTURES

•

OPSS 1001

•

OPSS 1004

•

OPSS 1010

AGGREGATES – GENERAL
AGGREGATES – MISCELLANEOUS
AGGREGATES – BASE, SUBBASE, SELECT SUBGRADE AND BACKFILL MATERIAL

•

OPSS 1860

•

OPSD 208.010

GEOTEXTILE
BENCHING OF EARTH SLOPES

1.7.

IF THERE IS ANY CONFLICT BETWEEN THE REQUIREMENTS GIVEN ON THIS DRAWING AND THE STANDARDS AND SPECIFICATIONS DOCUMENTS LISTED IN SECTION 1.6, THE DESIGNER SHOULD BE CONSULTED FOR CLARIFICATION AND RECOMMENDATIONS.

1.8.

IN THE FOLLOWING CONSTRUCTION NOTES, THE CONTRACTOR MEANS PIC AND ITS SUB–CONTRACTORS, THE SUPPLIER MEANS THE MANUFACTURER AND PROPRIETARY SUPPLIER, THE ENGINEER MEANS THE GEOTECHNICAL SITE ENGINEER, AND THE DESIGNER MEANS THE GEOTECHNICAL DESIGNER OF THE PROJECT.
- 2.0 SITE PREPARATION AND EXCAVATION
- 2.1

CLEARING AND GRUBBING AREA SHALL EXTEND MINIMUM 3 m BEYOND THE FOOTPRINT AREA OF THE STRUCTURE, OR AS REQUIRED BY THE ENGINEER. THE TREES AND SHRUBS REMOVED FROM THE GROUND SHALL BE TRANSPORTED TO DESIGNATED AREAS.

2.2

THE STRIPPING AREA SHALL EXTEND MINIMUM 1 m BEYOND THE FOOTPRINT AREA OF THE STRUCTURE, OR AS REQUIRED BY THE ENGINEER. ALL PEAT/MUSKEG, WETLAND VEGETATION AND OTHER UNSUITABLE MATERIAL SHOULD BE STRIPPED AND TRANSPORTED TO DESIGNATED AREAS.

2.3

CONTRACTOR IS FULLY RESPONSIBLE FOR THE DESIGN, CONSTRUCTION METHODS AND PERFORMANCE OF THE TEMPORARY SLOPES AND WORKS.

2.4

ALL EXCAVATION WORKS SHOULD BE CARRIED OUT IN ACCORDANCE WITH THE GUIDELINES OUTLINED IN OCCUPATIONAL HEALTH AND SAFETY ACT (OHSa) AND ONTARIO PROVINCIAL STANDARD SPECIFICATION (OPSS) 902. NATIVE DEWATERED SOILS AT THE SITE AND COMPACTED FILLS MAY BE CLASSIFIED IN GENERAL AS TYPE 3 SOILS. UNDEWATERED FILLS, NATIVE SAND AND SILTS, AND WATER BEARING BACKFILL WITHIN TRENCHES OF ACTIVE AND/OR ABANDONED UTILITIES MAY DEVELOP TYPE 4 SOIL CONDITIONS AND SHALL BE ADDRESSED ACCORDINGLY.

2.5

THE SOILS AT THE PROJECT SITE ARE HIGHLY SUSCEPTIBLE TO RAPID DETERIORATION WHEN EXPOSED TO ELEMENTS, WEATHERING, WATER INFLOW AND PONDING, DISTURBANCE FROM CONSTRUCTION TRAFFIC, AND THE LIKE. SUBGRADE SOILS AND BACKFILL IN PROGRESS SHALL BE APPROPRIATELY PROTECTED AT ALL TIMES AGAINST SURFACE EROSION, DESICCATION, AND FREEZE–THAW EFFECTS, REGULARLY INSPECTED AND MONITORED, AND TREATED AS REQUIRED.

2.6

TO PROTECT THE SUBGRADE INTEGRITY, THE FINAL EXCAVATION LAYER ABOVE THE DESIGN ELEVATION IN GENERAL SHOULD NOT BE LESS THAN 0.5 m AND SHOULD BE CARRIED OUT ONLY WHEN THE CONTRACTOR IS READY TO PREPARE AND COVER/PROTECT THE SUBGRADE SAME DAY THE FINAL EXCAVATION IS EXPOSED AND APPROVED.

2.7

NO CONSTRUCTION TRAFFIC SHOULD BE PERMITTED OVER THE SUBGRADE WITHOUT APPROVED PROTECTIVE COVERS.

2.8

THE SUBGRADE EXCAVATION SHALL BE CUT TO NEAT LINES AND GRADES USING BUCKETS EQUIPPED WITH SMOOTH LIPS. ONCE EXPOSED, THE SUBGRADE MUST BE IMMEDIATELY INSPECTED. UPON APPROVAL, THE SUBGRADE SURFACE SHOULD BE COVERED WITH SKIM COAT OF LEAN CONCRETE MUD MAT, GRANULAR OVER GEO–FABRIC, GRANULAR OVER SUBGRADE, ETC., AS APPROVED BY THE ENGINEER, FOR PROTECTION AGAINST DISTURBANCE AND TO PROVIDE A WORKING SURFACE.

2.9

THE TEMPORARY EXCAVATION SURFACES SHALL BE BENCHED ACCORDING TO OPSD 208.010. UNLESS THE GRANULAR BACKFILL IS FILTER GRADED WITH RESPECT TO THE NATIVE SUBGRADE MATERIAL, A GEOTEXTILE LAYER (TERRAFIX 360R OR EQUIVALENT) SHALL BE PLACED AT THE BENCHED INTERFACE BETWEEN THE EXCAVATED SURFACE AND THE GRANULAR BACKFILL TO FUNCTION AS A SEPARATOR AND PREVENT MIGRATION OF FINES.

2.10

IF PRESENCE OF GASSY SOILS IS EVIDENCED (FOR EXAMPLE, DISSOLVED GAS BUBBLES COMING OUT OF SOLUTION AND/OR SOFTENING OF THE EXCAVATION FACE), THE EXCAVATION PROGRESS SHALL BE REVIEWED WITH THE ENGINEER IN TERMS OF TIMING, STAGING AND OTHER MITIGATION MEASURES.

2.11

THE CONTRACTOR SHOULD EMPLOY APPROPRIATE GROUND IMPROVEMENT APPROACH (E.G., SUITABLE FILL LAYER, GEOGRID SHEET, ETC.) TO FACILITATE CONSTRUCTABILITY, WHERE REQUIRED, AS APPROVED BY THE ENGINEER.

2.12

THE SUBGRADE SHOULD BE SLOPED APPROPRIATELY TO ACHIEVE POSITIVE DRAINAGE OF SEEPAGE AND SURFACE WATER TO SUBDRAINS, DITCHES OR SUMPS TO AVOID PONDING BENEATH ANY FILL PLACED. NO PONDING OR FLOODING SHALL BE ALLOWED TO OCCUR IN AREAS OF FINAL EARTHWORKS (SEE SECTION 6 ON DRAINAGE – REQUIREMENTS).

3.0 REINFORCED GRANULAR MAT (RGM)

3.1

THE RGM ARE REINFORCED SOIL MATS COMPRISING SELECT COMPACTED GRANULAR FILL AND REINFORCEMENT (GEOSYNTHETICS OR METALLIC)

3.2

GRANULAR FILL FOR RGM: THE FILL MATERIAL SHALL BE GRANULAR ‘A’ OR GRANULAR ‘B’ TYPE II (OPSS 1010) PLACED AS PER NOTE 5.4 AND COMPACTED TO NOT LESS THAN 98%.

3.3

REINFORCEMENT FOR RGM: AS PER CONTRACT DOCUMENTS.

4.0 FILL MATERIALS

4.1

ALL FILL MATERIALS TO BE USED AS BACKFILL FOR STRUCTURES SHALL BE INERT MATERIAL, FREE OF ORGANIC MATERIAL AND DELETERIOUS SUBSTANCES. ALL FILL MATERIALS SHALL BE APPROVED BY THE ENGINEER AT THE BORROW SOURCE AND AT PLACEMENT LOCATION.

4.2

SILTY CLAY FILL: THE UPPER CLAY CRUST ZONE MATERIAL OBTAINED FROM REQUIRED EXCAVATIONS IN THE DEPRESSED SEGMENTS OF THE WEP OR OTHER SOURCES APPROVED BY THE ENGINEER SHALL BE USED AS PER DRAWINGS PROVIDED IT MEETS THE OPSS 902 REQUIREMENTS AND CAN BE COMPACTED TO AT LEAST 95% SPMDD. THE SUITABILITY OF THE CLAY FILL MATERIALS SHALL BE VERIFIED IN TERMS OF ITS GRADATION (E.G., SILTY CLAY TO CLAYEY SILT), PLASTICITY CHARACTERISTICS (LOW TO MEDIUM PLASTICITY INDEX) AND THE IN–SITU MOISTURE CONTENT. ALL SUITABLE METHODS TO ACHIEVE THE SPECIFIED PLACEMENT MOISTURE CONTENT SHALL BE EMPLOYED.

4.3

GRANULAR FILL FOR GENERAL BACKFILL: THE GRANULAR FILL MATERIAL SHALL BE GRANULAR ‘B’ TYPE I OR II, OR ALTERNATIVE GRANULAR MATERIALS APPROVED BY THE ENGINEER. THE SUITABILITY OF GRANULAR FILL MATERIALS SHALL BE DETERMINED AS PER THE OPSS 1010 STANDARD AND THE REQUIREMENTS OF THE RSS/RGM SUPPLIER.

4.4

RIPRAP: THE RIPRAP MATERIAL FOR EROSION PROTECTION OF PERMANENT SLOPES AND CHANNEL SURFACES SHALL BE R–10 (MINUS 180 mm) FOR LIGHT TO MEDIUM EROSION RISK CONDITIONS AND R–50 (MINUS 305 mm) FOR HIGH RISK CONDITIONS, AS SHOWN ON THE DESIGN DRAWINGS OR AS REQUIRED BY THE ENGINEER (OPSS 1004). GEOTEXTILE SHALL BE USED AT INTERFACE BETWEEN THE SOIL SLOPES AND RIPRAP LAYER TO PREVENT LOSS OF MATERIAL FROM THE SOIL SLOPE.

4.5

LWF AND EPS: SEE RESPECTIVE CONSTRUCTION NOTES.

4.6

ROCK FILL INSIDE CULVERT SHALL BE RIVER STONE AND SHALL MEET THE FOLLOWING REQUIREMENTS: 20% 100–200mm DIA. STONE, 50% 100mm DIA. STONE, 20% 50–100mm DIA. STONE, 10% CLEAN SAND.

4.7

ROCK FILL INSIDE CULVERT SHALL BE MIXED WITH PARENT MATERIAL AND TOPSOIL. MIXTURE RATIO TO BE 60% ROCK TO 40% SOIL.

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

Windsor–Essex
Parkway Project
RFP No. 09–54–1007

NEW CONSTRUCTION
HWY 401
TRAIL BRIDGE OVER CABANA RD.–TODD LN. TB–4
CONSTRUCTION NOTES – BACKFILL AT STRUCTURES

SHEET
S6407

Phase 1

90% Sub

5.0 FILL PLACEMENT AND COMPACTION

5.1

GENERAL:
 - THE CONTRACTOR SHALL SUBMIT TO THE ENGINEER THEIR QC/QA INSPECTION AND TEST PLAN FOR REVIEW/COMMENT PRIOR TO THE PLACEMENT/COMPACTION OF FILL.
 - FILL SHALL NOT BE PLACED ON SURFACES HAVING STANDING WATER, OR SURFACES WHICH HAVE BEEN RUTTED AND HEAVED BY TRAFFICKING. FILL SHALL NOT BE PLACED ON FROZEN SURFACES. FROZEN FILL IS DEFINED AS MATERIALS WITH SOIL WATER IN FROZEN STATE.
 - ALL EARTHWORKS TO BE ADEQUATELY PROTECTED AGAINST EROSION, FROST AND WATER INGRESS UNTIL THE LANDSCAPING REQUIREMENTS HAVE BEEN INSTALLED (SEE SECTIONS 2.6 TO 2.8).

5.2

IF NOT SPECIFIED IN THE CONTRACT DOCUMENTS, TARGET DENSITIES WILL BE ESTABLISHED UTILIZING CONTROL STRIPS AS PRESENTED IN OPSS 501. THE MINIMUM TARGET DENSITIES SHALL BE AS PER NOTES 5.3 AND 5.4.

5.3

THE SILTY CLAY FILL SHALL BE PLACED IN MAXIMUM 200 mm THICK LOOSE LIFTS AND COMPACTED AT WOPT±2% MOISTURE CONTENT TO A MINIMUM OF 95% SPMDD UNLESS OTHERWISE SPECIFIED IN THE CONTRACT DOCUMENTS. THE TERMS WOPT AND SPMDD REFER TO OPTIMUM WATER CONTENT AND MAXIMUM DRY DENSITY, RESPECTIVELY, DETERMINED BY STANDARD PROCTOR TESTS.

5.4

THE GRANULAR FILL MATERIALS SHALL BE PLACED IN MAXIMUM 300 mm THICK LOOSE LIFTS AND COMPACTED AT WOPT±2% MOISTURE CONTENT TO A MINIMUM OF 95% SPMDD UNLESS OTHERWISE SPECIFIED IN THE CONTRACT DOCUMENTS.

5.5

THE COMPACTION EQUIPMENT SHALL BE APPROPRIATE FOR THE MATERIAL TO BE COMPACTED AND THE SITE CONDITIONS, AND SHOULD BE PROPOSED TO THE ENGINEER FOR APPROVAL. ADEQUATE NUMBER OF PASSES SHALL BE EMPLOYED TO ACHIEVE THE SPECIFIED PLACEMENT DENSITIES. HEAVY COMPACTION EQUIPMENT SHOULD NOT BE EMPLOYED NEAR STRUCTURAL WALLS.

5.6

COMPACTION AND PLACEMENT OF GRANULAR MATERIALS FOR RSS WALLS SHALL CONFORM TO THE MANUFACTURER’S RECOMMENDATIONS.

5.7

FILL PLACEMENT SHALL CONFORM TO THE REQUIREMENTS PRESENTED IN OPSS 501. THE CONTRACTOR SHOULD USE APPROPRIATELY SIZED EQUIPMENT TO AVOID DAMAGING ANY STRUCTURES, DEGRADING THE AGGREGATE, OR EPS BLOCKS.

6.0 DRAINAGE – DEWATERING

6.1

REFER TO OPSS 518 FOR DEWATERING REQUIREMENTS.

6.2

THE CONSTRUCTION SITE WILL BE KEPT CLEAN AND DRY, FREE OF WATER PUDDLES, MUD AND DEBRIS.

6.3

MINOR TO SIGNIFICANT SEEPAGE FROM RUNOFF INFILTRATIONS OR PERCHED WATER WITHIN UPPER GRANULAR DEPOSITS AND/OR FILL IS ANTICIPATED. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE TEMPORARY DEWATERING SYSTEM.

7.0 USE

7.1

THIS DRAWING PROVIDES CONSTRUCTION REQUIREMENTS FOR GEOTECHNICAL ASPECTS OF BACKFILLING AT TRAIL EMBANKMENTS AND STRUCTURES.

NOT FOR
CONSTRUCTION

DRAWING NOT TO BE SCALED
100mm ON ORIGINAL DRAWING

REVISIONS					
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	01–OCT–13	A	EA	60% MTO	SUBMISSION
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MINISTRY OF TRANSPORTATION, ONTARIO

PR-D-707

BB-05

CONSTRUCTION NOTES – LIGHTWEIGHT FILL MATERIAL

1.0 GENERAL REQUIREMENTS

- 1.1.

THE CONSTRUCTION NOTES ON THIS DRAWING COVER THE REQUIREMENTS FOR THE SUPPLY AND PLACEMENT OF WATER COOLED ULTRA LIGHTWEIGHT BLAST FURNACE SLAG TO BE USED FOR CONSTRUCTION OF THE STRUCTURES FOR THE WINDSOR–ESSEX PARKWAY (WEP) PROJECT. AT THE WEP PROJECT, THE ULTRA LIGHTWEIGHT BLAST FURNACE SLAG MATERIAL IS GENERALLY REFERRED TO AS THE LIGHT WEIGHT FILL (LWF).
- 1.2.

THESE CONSTRUCTION NOTES ARE TO BE READ IN CONJUNCTION WITH THE ACCOMPANYING DESIGN DRAWING(S), OTHER RELEVANT CONSTRUCTION NOTES AND GEOTECHNICAL REPORT.
- 1.3.

THE CONSTRUCTION WORKS SHALL BE EXECUTED IN ACCORDANCE WITH THE DESIGN ILLUSTRATED ON THE ACCOMPANYING DRAWINGS, AND THE REQUIREMENTS SPECIFIED IN THE FOLLOWING STANDARDS, SPECIFICATIONS AND PUBLICATIONS:

•

MTO

•

ASTM D422

•

ASTM D2216

•

ASTM D2922

•

ASTM D3017

•

OPSS 212

•

OPSS 501

•

OPSS 517

•

OPSS 1010

•

OPSS 1860

NSSP ULTRA LIGHTWEIGHT BLAST FURNACE SLAG (WATER COOLED)

PARTICLE–SIZE ANALYSIS OF SOILS

MOISTURE CONTENT OF SOILS

DENSITY OF SOIL AND SOIL–AGGREGATE IN PLACE BY NUCLEAR METHODS

WATER CONTENT OF SOIL AND ROCK IN PLACE BY NUCLEAR METHODS

BORROW

COMPACTION

DEWATERING

AGGREGATES–BASE, SUBBASE, SELECT SUBGRADE, AND BACKFILL MATERIAL

GEOTEXTILES
- 1.4.

IF THERE IS ANY CONFLICT BETWEEN THE REQUIREMENTS GIVEN ON THIS DRAWING AND THE STANDARDS AND SPECIFICATIONS DOCUMENTS LISTED IN SECTION 1.3, THE DESIGNER SHOULD BE CONSULTED FOR CLARIFICATION AND RECOMMENDATIONS.
- 1.5.

IN THE FOLLOWING SPECIFICATIONS, THE CONTRACTOR MEANS PIC AND ITS SUB–CONTRACTORS, AND THE ENGINEER MEANS THE GEOTECHNICAL SITE ENGINEER, AND THE DESIGNER MEANS THE GEOTECHNICAL DESIGNER OF THE PROJECT.

2.0 SITE PREPARATION AND EXCAVATION

- 2.1

THE SITE PREPARATION AND EXCAVATION REQUIREMENTS ON THE CONSTRUCTION NOTES FOR THE BACKFILL AT STRUCTURES ARE APPLICABLE.

3.0 SUBMISSION AND DESIGN REQUIREMENTS

- 3.1

THE CONTRACTOR SHALL SUBMIT TO PIC AND THE ENGINEER CERTIFICATES OF CONFORMANCE SEALED AND SIGNED BY THE QUALITY VERIFICATION ENGINEER AS FOLLOWS:

a.

PRIOR TO THE PLACEMENT OF THE LIGHTWEIGHT FILL MATERIAL ON THE PROJECT, THE CONTRACTOR SHALL SUBMIT TO THE CONTRACT ADMINISTRATOR A CERTIFICATE OF CONFORMANCE STATING THAT THE MATERIAL SATISFIES THE MATERIAL PROPERTIES SPECIFIED IN SECTION 4.1.

b.

FOLLOWING FILL PLACEMENT, THE CONTRACTOR SHALL SUBMIT TO THE CONTRACT ADMINISTRATOR A CERTIFICATE OF CONFORMANCE STATING THAT THE MATERIAL SATISFIES THE REQUIREMENTS OF THIS SPECIFICATION AND THAT THE WORK HAS BEEN CARRIED OUT IN GENERAL CONFORMANCE WITH THE CONTRACT DOCUMENTS AND SPECIFICATIONS. THE CONTRACTOR SHALL ALSO SUBMIT ALL QUALITY CONTROL TEST RESULTS FOR INFORMATION ONLY.

4.0 MATERIAL

- 4.1

THE LWF SHALL SATISFY THE FOLLOWING PHYSICAL, MECHANICAL AND CHEMICAL PROPERTY REQUIREMENTS:

•

ANGLE OF INTERNAL FRICTION

>35° (ASTM 2850–85)

•

HYDRAULIC CONDUCTIVITY

>8 E–03 CM/S (ASTM 5856–95, METHOD A)

•

CHEMICAL COMPOSITION

THE MATERIAL SHALL MEET THE LEACHATE CRITERIA ESTABLISHED UNDER ONTARIO REGULATION 347

•

IN SITU WET UNIT WEIGHT

<12.5 kN/m³ (ASTM D2922) (MAXIMUM WHEN PLACED AND COMPACTED IN ACCORDANCE WITH THE SPECIFICATIONS)
- 5.0 CONSTRUCTION
- 5.1

THE LWF (BLAST FURNACE SLAG) IS SUSCEPTIBLE TO CRUSHING IF OVERCOMPACTED AND CAREFUL CONSTRUCTION PROCEDURES AND SUPERVISION ARE REQUIRED. THE CONTRACTOR SHALL PLACE THE LWF MATERIAL AND SHALL ACHIEVE COMPACTION WITHOUT CRUSHING THE MATERIAL SINCE CRUSHING INCREASES ITS UNIT WEIGHT. THE CONTRACTOR SHALL PLACE THE LWF MATERIAL WITHOUT EXCEEDING THE SPECIFIED IN SITU UNIT WEIGHT AND MAINTAINING CRUSHING OF THE MATERIAL BELOW 5%.

5.2

TO PREVENT OVER–CRUSHING AND OVER–COMPACTION, THE LWF SHALL BE PLACED AS FOLLOWS:

a.

FOR EMBANKMENTS THE LWF SHALL BE PLACED IN LIFTS OF 300 mm AND COMPACTED BY 3 PASSES OF SINGLE DRUM VIBRATORY EQUIPMENT APPROVED BY THE ENGINEER (E.G., BOMAG 142 OR EQUIVALENT, TABLE 1).

b.

FOR BACKFILL TO STRUCTURES, THE LWF SHALL BE PLACED IN LIFTS OF 300 mm AND COMPACTED WITH 8 PASSES OF MANUALLY GUIDED TAMPER SUCH AS A BOMAG BPR 30/38 D OR EQUIVALENT (TABLE 1).

c.

THE CONTRACTOR SHALL PLACE AND SPREAD THE LOOSE LIFTS USING A RUBBER TIRE FRONT–END LOADER SUCH AS A CATERPILLAR 980 F OR EQUIVALENT.

5.3

COMPACTION EQUIPMENT TECHNICAL DETAILS ARE PROVIDED IN TABLE 1.

5.4

THE LWF ZONES SHALL BE APPROPRIATELY WRAPPED IN GEOTEXTILE TO AVOID LOSS OF FINES FROM THE ADJACENT BACKFILL OR NATIVE MATERIALS IN CONTACT WITH THE LWF ZONES.

6.0 QUALITY CONTROL

6.1

QUALITY CONTROL (QC) TESTING SHALL BE CARRIED OUT BY THE CONTRACTOR TO ENSURE THAT THE LWF MATERIAL IS PLACED AND COMPACTED AS SPECIFIED. FIELD DENSITY AND FIELD MOISTURE DETERMINATION SHALL BE MADE IN ACCORDANCE WITH ASTM D2922 AND ASTM D3017, RESPECTIVELY.

6.2

THE CONTRACTOR SHALL BUILD A CONTROL STRIP TO VERIFY THAT THE PLACEMENT AND COMPACTION PROCEDURE WILL ACHIEVE THE REQUIREMENTS OF THESE SPECIFICATIONS WITHOUT EVIDENCE OF CRUSHING AND WITHOUT EXCEEDING THE SPECIFIED MAXIMUM IN SITU WET UNIT WEIGHT OF 12.5 kN/m³.

6.3

MATERIAL PLACED IN THE CONTROL STRIP SHALL HAVE THE MOISTURE CONTENT THAT WILL YIELD THE SPECIFIED IN–SITU UNIT WEIGHT. FOR THE CONTROL STRIP DETERMINATION, THE NUCLEAR GAUGE METHOD WILL NOT BE CONSIDERED AN ACCEPTABLE METHOD OF DETERMINING THE IN–SITU MOISTURE CONTENT OF THE LWF MATERIAL. MOISTURE CONTENT SHALL BE DETERMINED BY THE OVEN DRY METHOD ON SELECTED COMPACTED EMBANKMENT MATERIAL SAMPLES IN ACCORDANCE WITH ASTM D2216.

6.4

AFTER THE TRIAL AREA IS COMPLETE, SAMPLES FOR MOISTURE CONTROL AND IN SITU UNIT WEIGHT DETERMINATION TESTING SHALL BE AS PER ASTM D2922.

6.5

IN ADDITION, GRADATION AS PER ASTM D422–63 BEFORE AND AFTER COMPACTION EFFORT SHALL BE PERFORMED TO DETERMINE THAT CRUSHING IS KEPT WITHIN 5%.

6.6

THE REQUIREMENTS OF THE CONTROL STRIP MUST BE SATISFIED AS PART OF THE ACCEPTANCE CRITERIA OF ANY PROPOSED CHANGE TO THE SPECIFIED COMPACTION METHOD OF THIS SPECIAL PROVISION.

7.0 USE

7.1

THIS DRAWING PROVIDES CONSTRUCTION REQUIREMENTS FOR GEOTECHNICAL ASPECTS OF BACKFILLING AT TRAIL EMBANKMENTS AND STRUCTURES.

METRIC

DIMENSIONS ARE IN METRES
AND/OR MILLIMETRES
UNLESS OTHERWISE SHOWN

Windsor–Essex
Parkway Project
RFP No. 09–54–1007

NEW CONSTRUCTION
HWY 401
TRAIL BRIDGE OVER CABANA RD.–TODD LN. TB–4
CONSTRUCTION NOTES – LIGHTWEIGHT FILL MATERIAL

SHEET

S6408

Phase 1

90% Sub

TABLE 1: COMPACTION EQUIPMENT TECHNICAL DETAILS

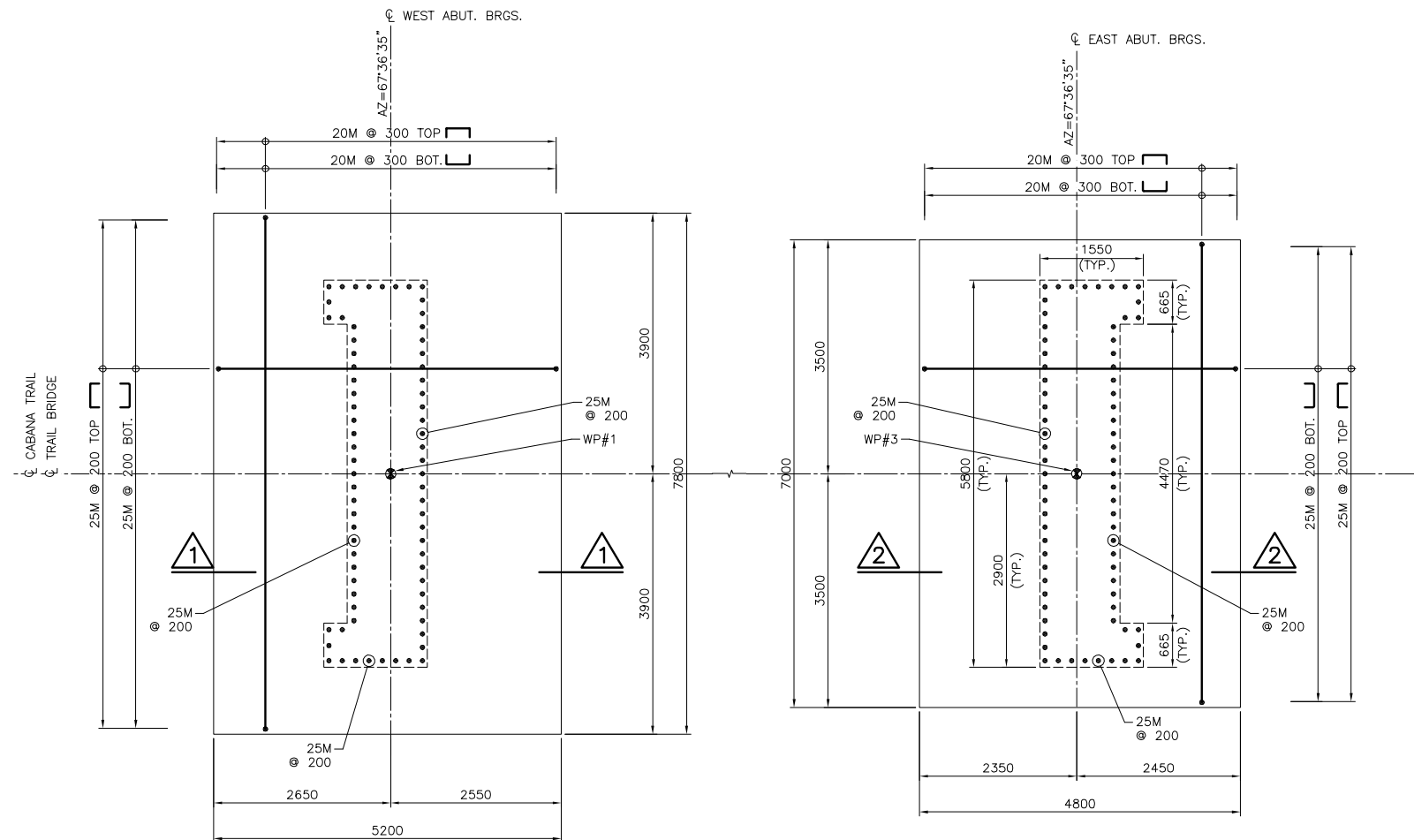
	BOMAG 142 D	BOMAG BPR 30/38 D
WEIGHTS		
• OPERATING WEIGHT (kg)	4690±	175±
• MASS PER SQUARE METRE OF BASE PLATE (kg/m²)	N/A	1439
DIMENSIONS		
• DRUM WIDTH (mm)	1426±	N/A
• DRUM DIAMETER (mm)	1058±	N/A
• WIDTH OF BASE PLATE (mm)	N/A	380
• LENGTH OF BASE PLATE (mm)	N/A	730
DRIVE		
• PERFORMANCE DIN 6271 IFN (kW)	37±	3.7
• PERFORMANCE SAE (kW)	39.5	N/A
• SPEED (RPM)	2300	3600
VIBRATORY SYSTEM		
• FREQUENCY (Hz)	32±	68±
• AMPLITUDE (mm)	1.24±	N/A
• CENTRIFUGAL FORCE (KN)	66±	30±

DRAWING NOT TO BE SCALED
100mm ON ORIGINAL DRAWING

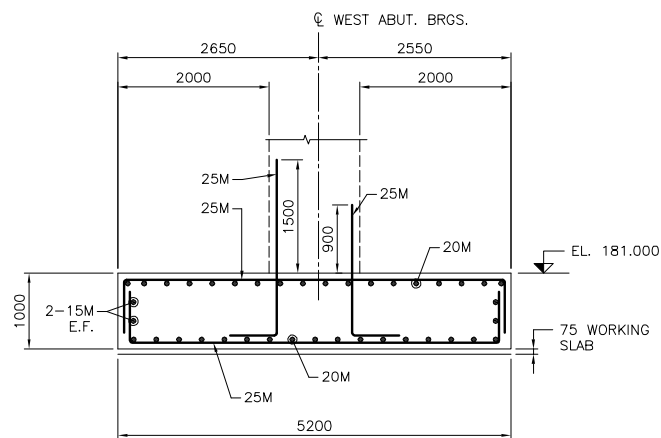
NOT FOR
CONSTRUCTION

REVISIONS					
	20–DEC–13	B	EA	90% MTO SUBMISSION	
	01–OCT–13	A	EA	60% MTO SUBMISSION	
	DATE	REV.	BY	DESCRIPTION	
DESIGN	SF	CHK	NSV	CODE CAN/CSA S6–06	LOAD SEE T.A.F. DOC.
DRAWN	MM	CHK	DD	SITE 6–619	DATE 20–DEC–11

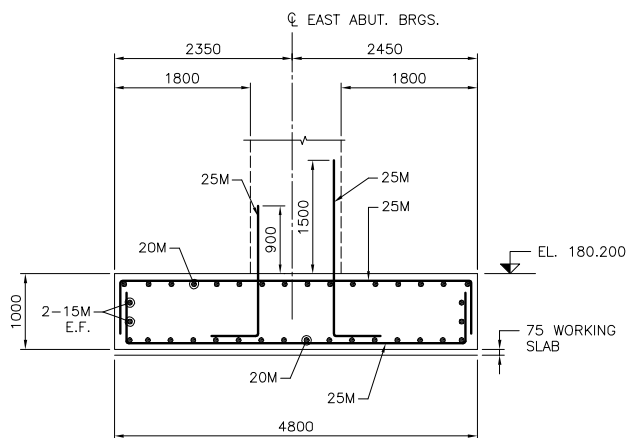
DOC: 285380–04–094–SEG1–6408



PLAN
SCALE 1:50



1
SCALE 1:50



2
SCALE 1:50

METRIC

DIMENSIONS ARE IN METRES
AND/OR MILLIMETRES
UNLESS OTHERWISE SHOWN

Parkway
Infrastructure
Engineers



Windsor-Essex
Parkway Project
RFP No. 09-54-1007



NEW CONSTRUCTION
HWY 401
TRAIL BRIDGE OVER CABANA RD.-TODD LN. TB-4
FOUNDATION LAYOUT AND DETAILS

SHEET
S6409

Phase 1
90% Sub

WORKING POINT DATA			
WORKING POINT	STATION	CO-ORDINATES	
		NORTHING	EASTING
WP #1	10+020.600	4679712.573	332133.077
WP #3	10+060.600	4679675.589	332148.314

NOTES:

- FOR GENERAL NOTES SEE SHEET S6402.
- THIS DRAWING IS TO BE READ IN CONJUNCTION WITH SHEET S6410 AND S6411.

ASSUMED LOADS FROM
SUPERSTRUCTURE-UNFACTORED:

CONCRETE DECK	814kN
ASPHALT	179kN
STEEL TRUSS	392kN
MAINTENANCE VEHICLE	80kN
PEDESTRIANS	4kN/m ²

FOOTING BEARING CAPACITY

SLS SOIL RESISTANCE	135 kPa
NET FACTORED ULS RESISTANCE	205 kPa

IN PROGRESS

NOT FOR
CONSTRUCTION

DRAWING NOT TO BE SCALED
100mm ON ORIGINAL DRAWING

REVISIONS									
13-DEC-13				B	JL	90% MTO SUBMISSION			
01-OCT-13				A	MAS	60% MTO SUBMISSION			
DATE				REV. BY		DESCRIPTION			
DESIGN	BM	CHK	JL	CODE CAN/CSA S6-06		LOAD	SEE T.A.F. DOC.		
DRAWN	RD	CHK	MAS	SITE 6-619		DATE	JUN 2013		

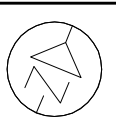
DATE PLOTTED: 1/6/2014 4:24:10 PM
FILE LOCATION: C:\working\hmmg_285380\dl52487\dm285380-03-061-SEG1-6410.dwg
MINISTRY OF TRANSPORTATION, ONTARIO PR-D-707 88-05



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



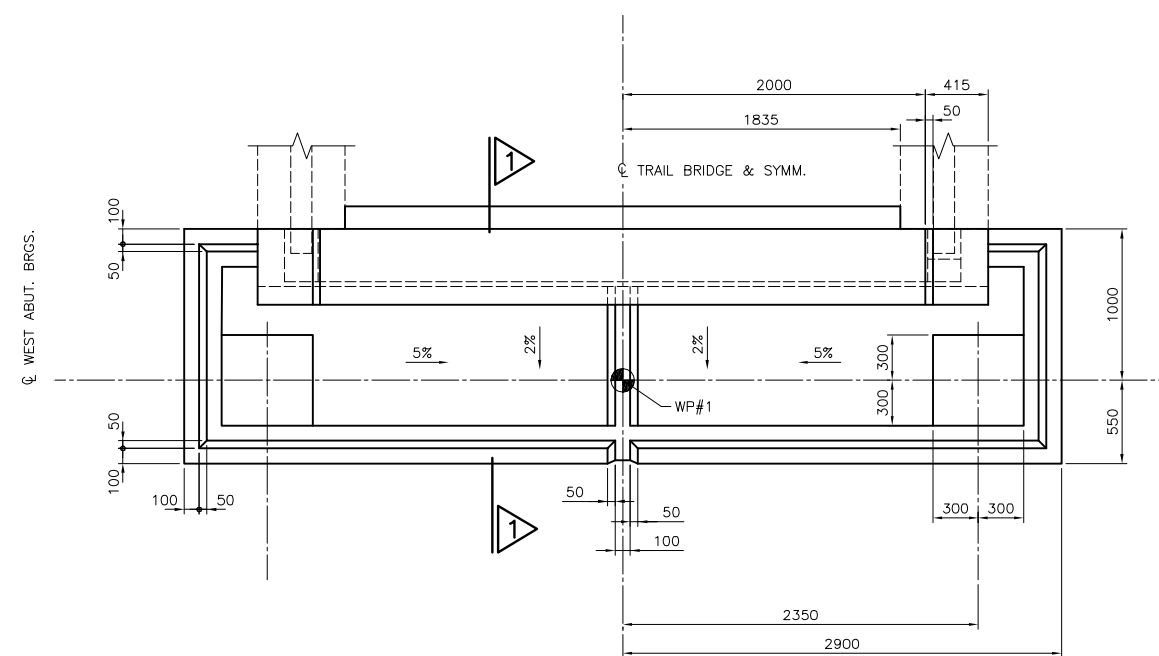
Windsor-Essex
Parkway Project
RFP No. 09-54-1007



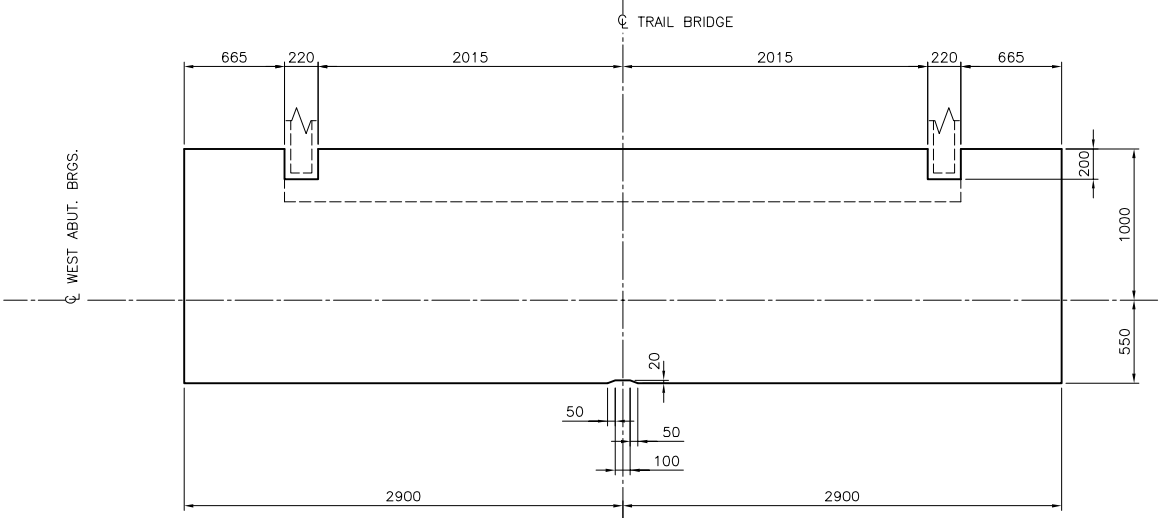
NEW CONSTRUCTION
HWY 401
TRAIL BRIDGE OVER CABANA RD.-TODD LN. TB-4
ABUTMENT LAYOUT AND DETAILS I

SHEET
S6410

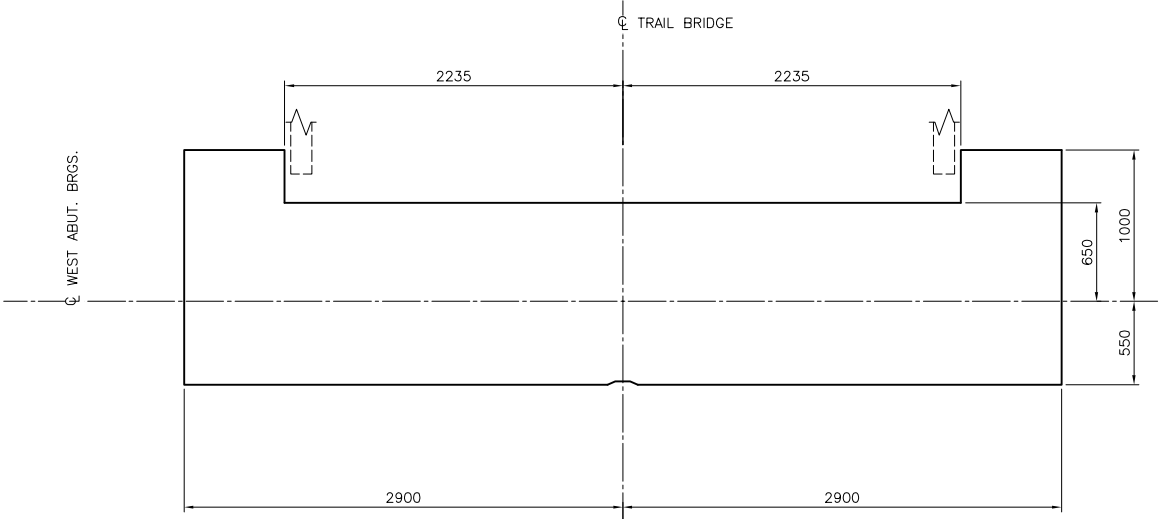
Phase 1
90% Sub



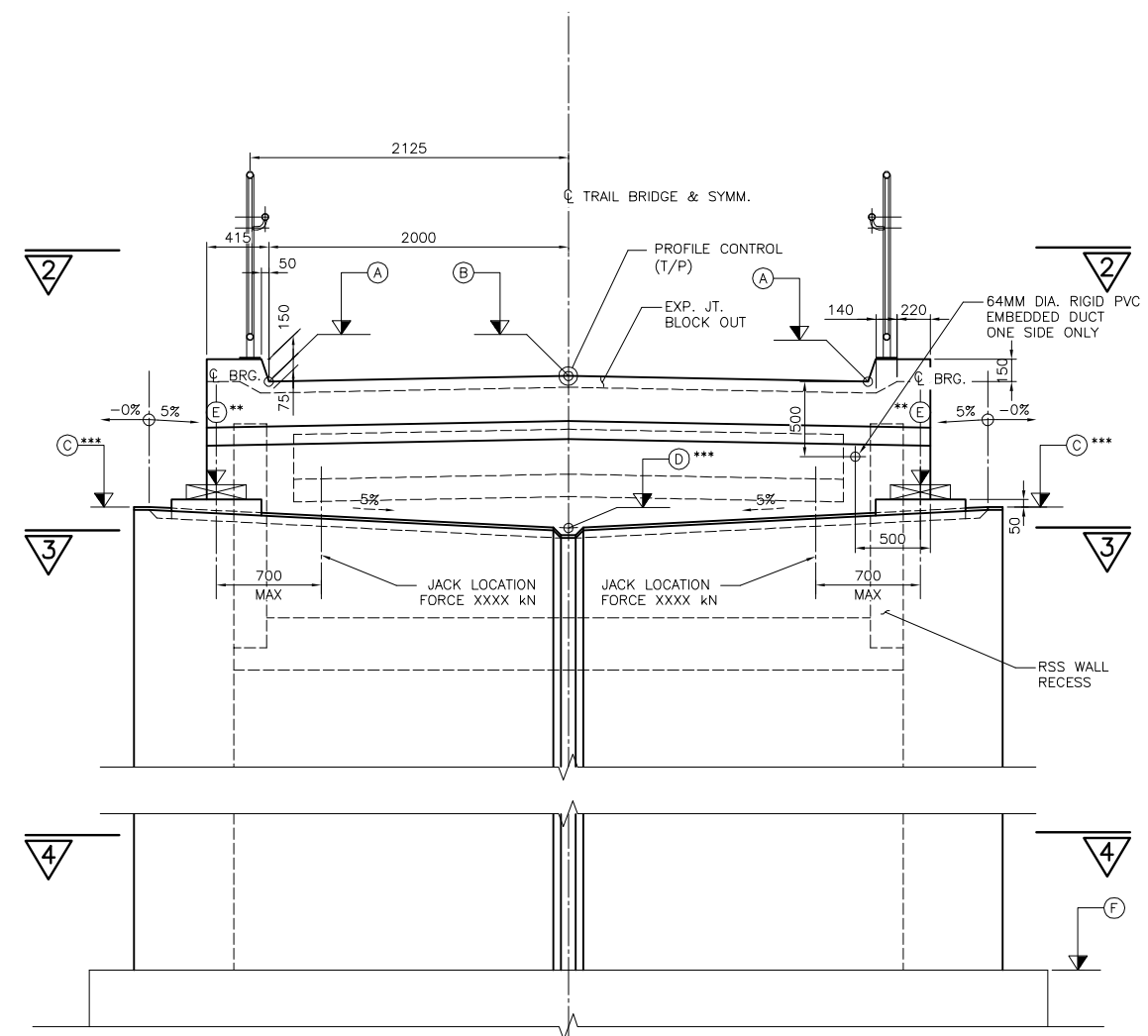
PLAN 2 WEST ABUTMENT SHOWN
SCALE 1:25 EAST ABUTMENT SIMILAR (AS NOTED)



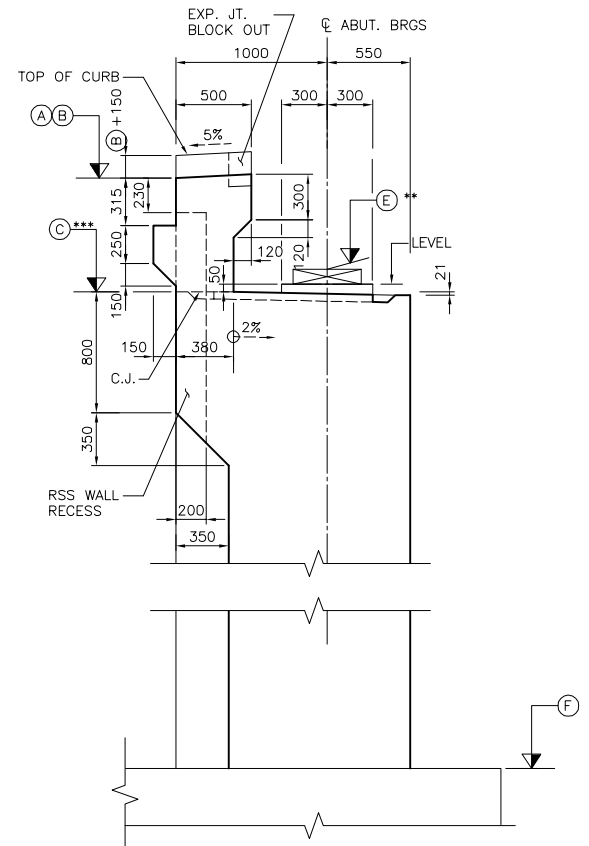
PLAN 3 WEST ABUTMENT SHOWN
SCALE 1:25 EAST ABUTMENT SIMILAR (AS NOTED)



PLAN 4 WEST ABUTMENT SHOWN
SCALE 1:25 EAST ABUTMENT SIMILAR (AS NOTED)



ELEVATION
SCALE 1:25



ELEVATION 1
SCALE 1:25

POINT	W ABUT.	E ABUT.
	ELEVATIONS	ELEVATIONS
A	186.676	185.896
B	186.716	185.936
C***	185.970	185.210
D***	185.830	185.070
E**	186.120	185.360
F	181.000	180.200

** DENOTES TOP OF BEARING ELEVATIONS. SEE CONSTRUCTION NOTES ON SHEET S6402.

*** VARY ACCOMMODATE ACTUAL BEARING HEIGHT

NOTES:

1. BACKFILL SHOULD BE PLACED BEHIND THE ABUTMENTS TO THE CONSTRUCTION JOINT LEVEL BEFORE THE DECK SLAB IS IN PLACE.
2. CAST BEARING PEDESTALS LEVEL.
3. THIS DRAWING TO BE READ IN CONJUNCTION WITH SHEET S6409 & S6411.
4. THE CONTRACTOR SHALL COORDINATE WITH BEARING SUPPLIER FOR THE INSTALLATION OF BEARING ANCHORAGES.

APPLICABLE STANDARD DRAWINGS

- OPSD 3101.150 WALLS, ABUTMENT, BACKFILL, MINIMUM GRANULAR REQUIREMENT
- OPSD 3102.100 WALLS, ABUTMENT, BACKFILL DRAIN
- OPSD 3950.100 JOINTS, CONCRETE EXPANSION AND CONSTRUCTION, ON STRUCTURE



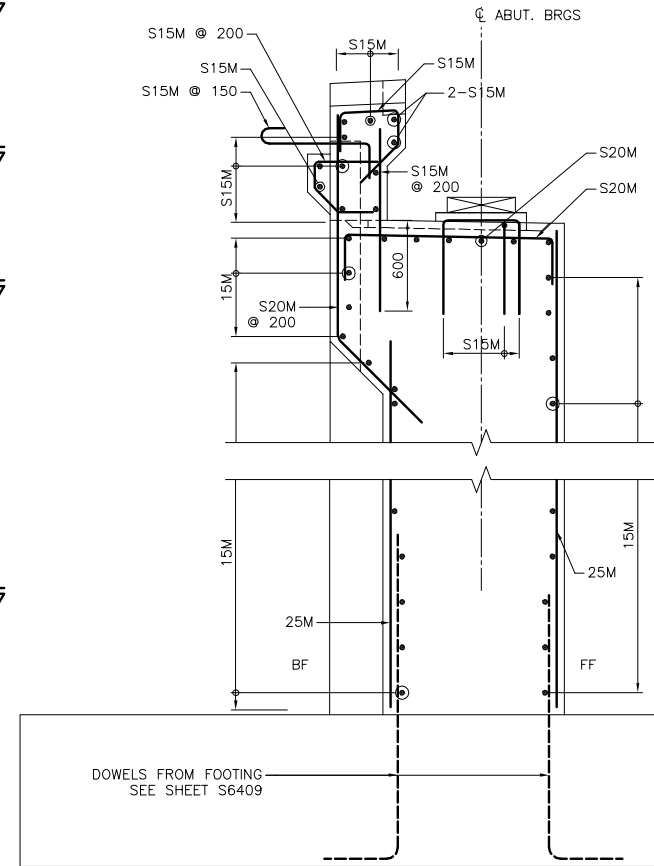
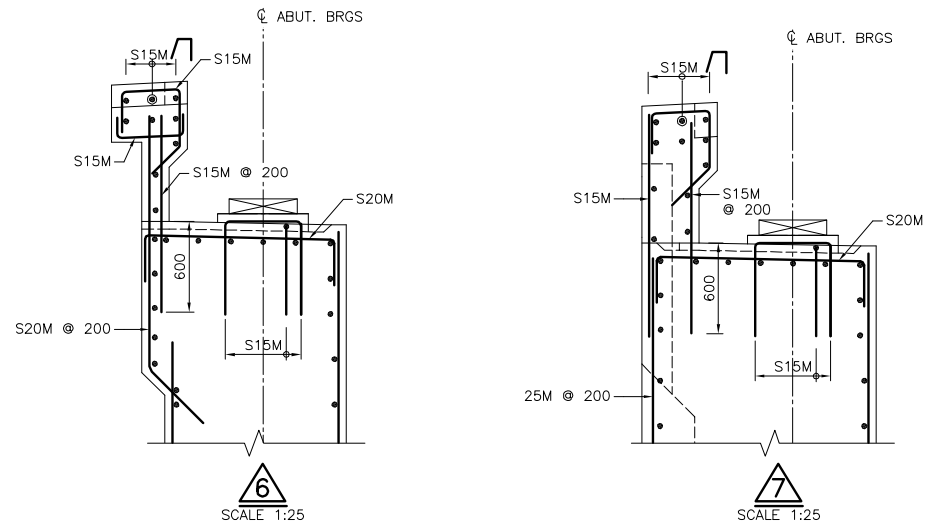
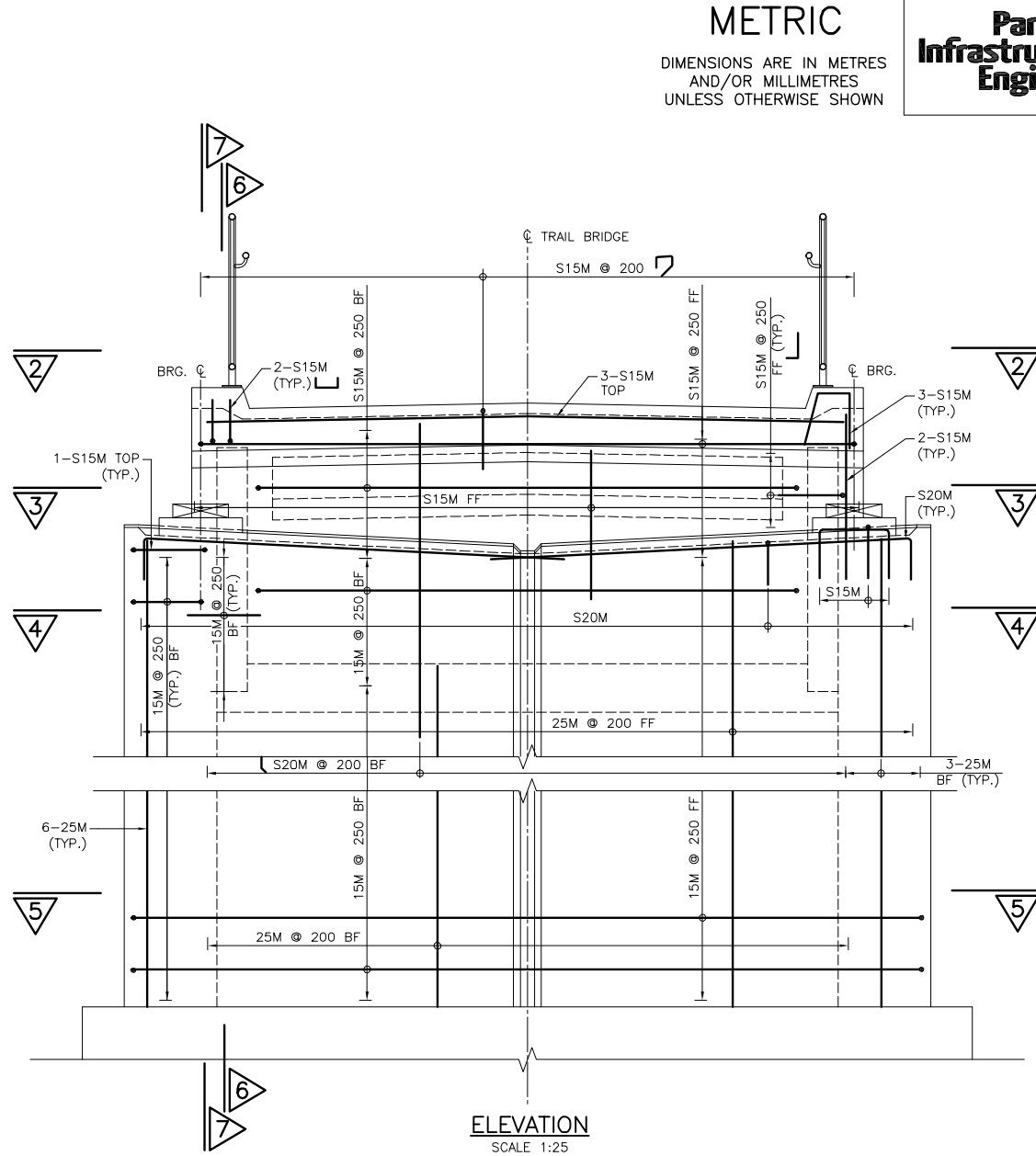
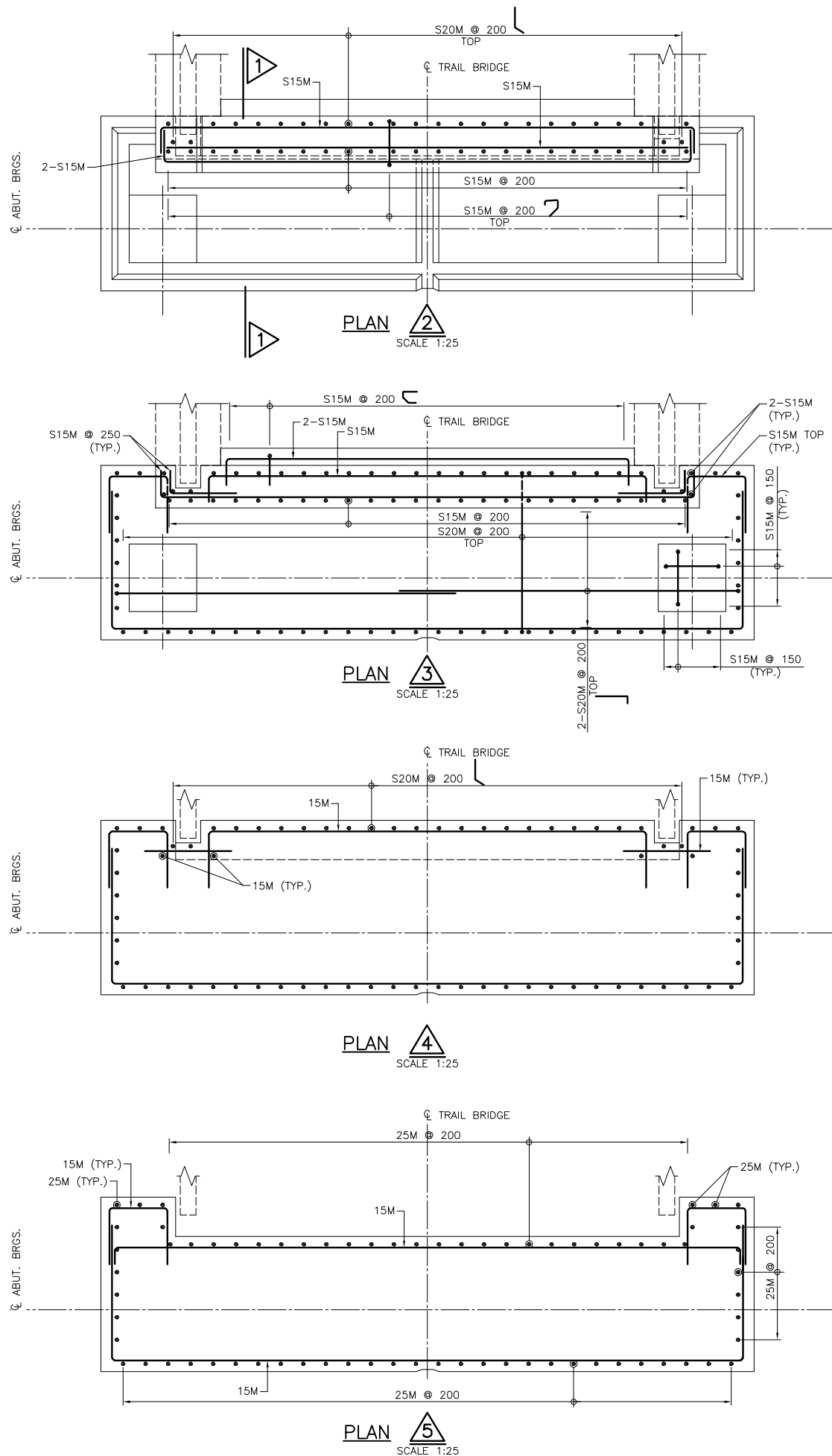
DRAWING NOT TO BE SCALED
100mm ON ORIGINAL DRAWING

NOT FOR
CONSTRUCTION

IN PROGRESS

REVISIONS	DATE	REV.	BY	DESCRIPTION
13-DEC-13	B	JL		90% MTO SUBMISSION
01-OCT-13	A	MAS		60% MTO SUBMISSION
DESIGN	BM	CHK	JL	CODE CAN/CSA S6-06 LOAD SEE T.A.F. DOC.
DRAWN	RD	CHK	MAS	SITE 6-619 DATE JUN 2013

DOC: 285380-03-061-SEG1-6410



NOTES:
1. THIS DRAWING TO BE READ IN CONJUNCTION WITH SHEET S6409 & S6410.

IN PROGRESS

NOT FOR CONSTRUCTION

Parkway Infrastructure Engineers

Windsor-Essex Parkway Project

RFP No. 09-54-1007

NEW CONSTRUCTION

HWY 401

TRAIL BRIDGE OVER CABANA RD.-TODD LN. TB-4

ABUTMENT LAYOUT AND DETAILS II

SHEET S6411

Phase 1

90% Sub

PARKWAY

INFRASTRUCTURE CONSTRUCTORS

MAR 18 2014

PROCESSED

PROJECT DOCUMENT AND DATA MANAGEMENT

REVISIONS	DATE	REV.	BY	DESCRIPTION
13-DEC-13	B	JL		90% MTO SUBMISSION
01-OCT-13	A	MAS		60% MTO SUBMISSION
DESIGN	BM	CHK	JL	CODE CAN/CSA S6-06 LOAD SEE T.A.F. DOC.
DRAWN	RD	CHK	MAS	SITE 6-619 DATE JUN 2013



1. FOR GENERAL NOTES SEE SHEET S6402.
2. MAXIMUM RSS WALL COPING LENGTHS BETWEEN, EXPANSION, CONSTRUCTION AND CONTROL JOINTS ARE NOT TO EXCEED THE FOLLOWING:
 - 3000 BETWEEN CONSTRUCTION AND CONTROL JOINTS.
 - 9000 BETWEEN EXPANSION JOINTSCONSTRUCTION AND CONTROL JOINTS ARE TO BE CONSTRUCTED AS PER DETAILS SHOWN ON STANDARD DRAWING SS110-64 AND EXPANSION JOINTS ARE TO BE CONSTRUCTED AS BE DETAIL SHOWN ON OPSPD 3950.100.
3. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH SHEET S6414.

NOT FOR
CONSTRUCTION

DRAWING NOT TO BE SCALED
100mm ON ORIGINAL DRAWING

REVISIONS									
	13-DEC-13	B	JL	90% MTO SUBMISSION					
	01-OCT-13	A	MAS	60% MTO SUBMISSION					
	DATE	REV.	BY	DESCRIPTION					
	DESIGN BM	CHK JL	CODE CAN/CSA S6-06	LOAD SEE T.A.F. DOC.					
DRAWN RD	CHK MAS	SITE 6-619	DATE JUN 2013						

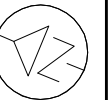
METRIC

DIMENSIONS ARE IN METRES
AND/OR MILLIMETRES
UNLESS OTHERWISE SHOWN

**Parkway
Infrastructure
Engineers**



Windsor-Essex
Parkway Project
RFP No. 09-54-1007



NEW CONSTRUCTION
HWY 401
TRAIL BRIDGE OVER CABANA RD.-TODD LN. TB-4
RSS WINGWALL LAYOUT AND DETAILS II

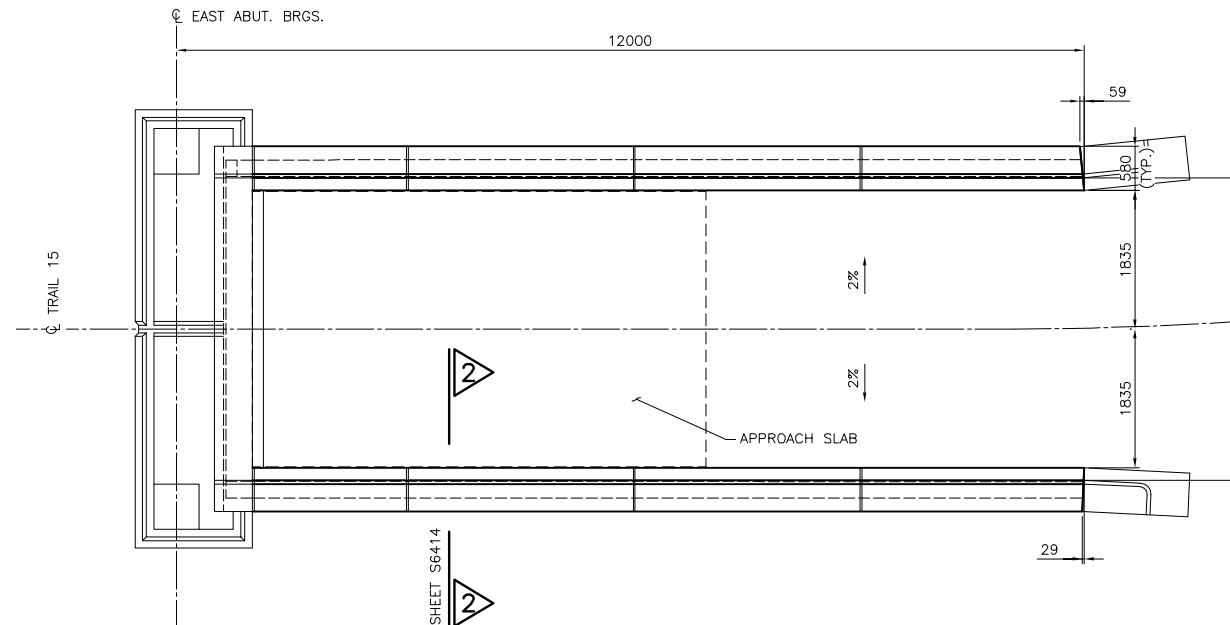
SHEET
S6413

Phase 1
90% Sub

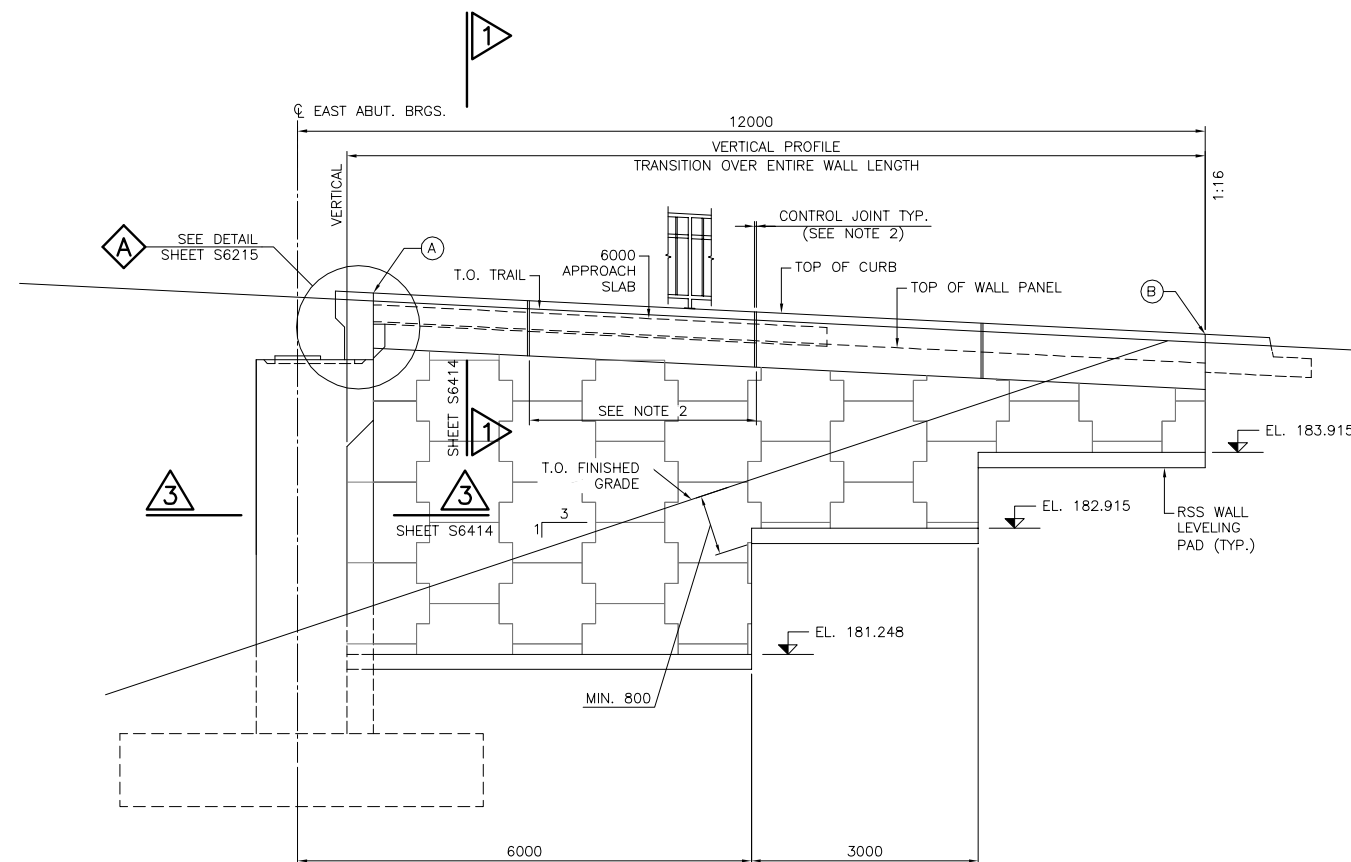
TOP OF CONCRETE ELEVATIONS		
WINGWALL	(A)	(B)
NORTHEAST	186.046	185.496
SOUTHEAST	186.046	185.496

NOTES:

- THIS DRAWING IS TO BE READ IN CONJUNCTION WITH SHEET S6412 AND S6414.



PLAN
SCALE 1:50



ELEVATION
SCALE 1:50

IN PROGRESS

NOT FOR
CONSTRUCTION

DRAWING NOT TO BE SCALED
100mm ON ORIGINAL DRAWING



REVISIONS				DATE		REV. BY		DESCRIPTION	
13-DEC-13	B	JL	90% MTO SUBMISSION	01-OCT-13	A	MAS	60% MTO SUBMISSION	DESIGN	BM
CHK	JL	CODE	CAN/CSA S6-06	LOAD	SEE T.A.F. DOC.	DRAWN	RD	CHK	MAS
SITE	6-619	DATE	JUN 2013						

METRIC

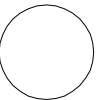
DIMENSIONS ARE IN METRES
AND/OR MILLIMETRES
UNLESS OTHERWISE SHOWN

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Parkway Project
RFP No. 09-54-1007

NEW CONSTRUCTION
HWY 401
TRAIL BRIDGE OVER CABANA RD.-TODD LN. TB-4
MISCELLANEOUS DETAILS

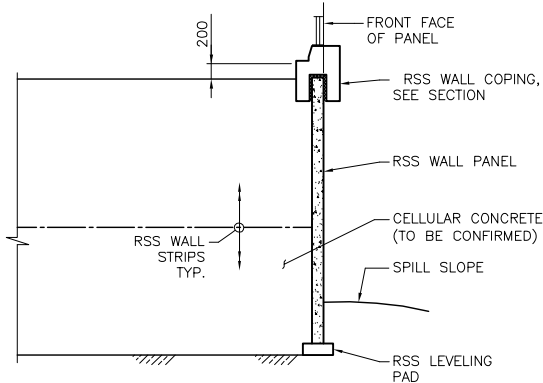


SHEET
S6414

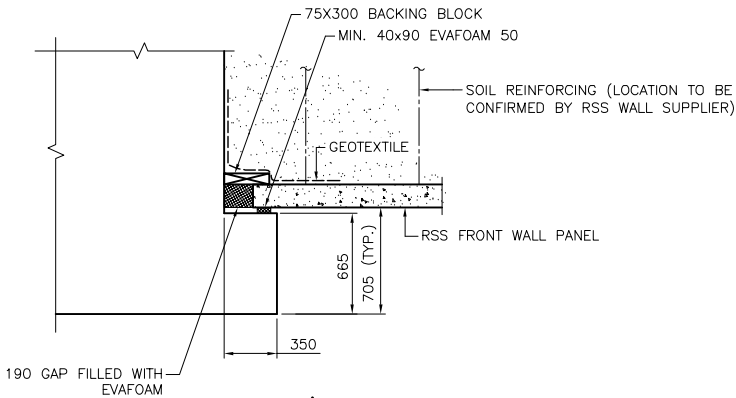
Phase 1
90% Sub

NOTES:

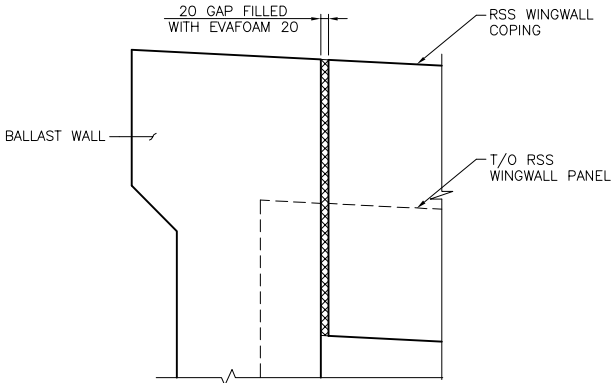
1. THIS DRAWING TO BE READ IN CONJUNCTION WITH SHEET S6412 AND S6413.



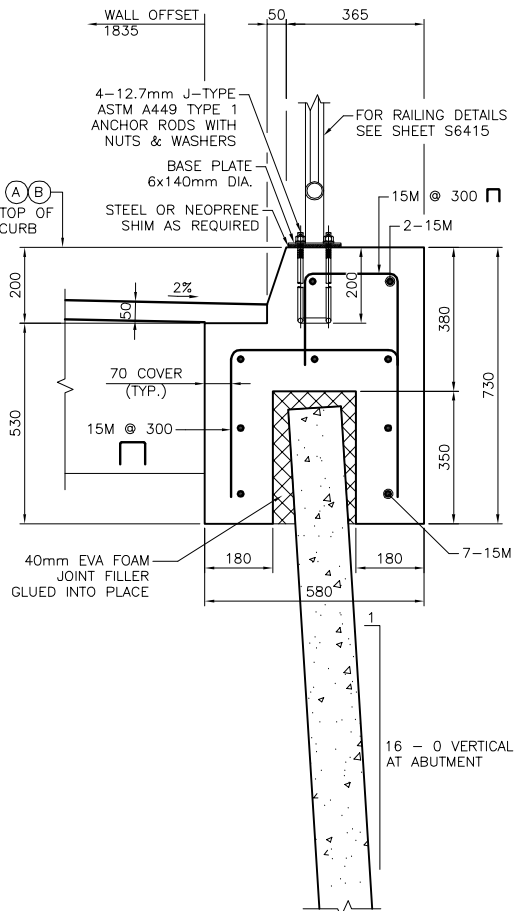
2
SCALE 1:50
SHEET S6412 & S6413



3
SCALE 1:25
SHEET S6412 & S6413



A
SCALE 1:10
SHEET S6412 & S6413



1 RSS WALL CAP DETAIL
SCALE 1:10
SHEET S6412 & S6413

DRAWING NOT TO BE SCALED
100mm ON ORIGINAL DRAWING

NOT FOR
CONSTRUCTION



IN PROGRESS

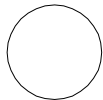
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13-DEC-13		B	JL	90% MTO SUBMISSION	
01-OCT-13		A	MAS	60% MTO SUBMISSION	
DESIGN		BM	CHK	JL	CODE CAN/CSA S6-06
DRAWN		RD	CHK	MAS	SITE 6-619
					LOAD SEE T.A.F. DOC.
					DATE JUN 2013

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

Parkway
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Engineers



Windsor–Essex
Parkway Project
RFP No. 09–54–1007



NEW CONSTRUCTION
HWY 401
TRAIL BRIDGE OVER CABANA RD.–TODD LN. TB-4
PEDESTRIAN BARRICADES LAYOUT AND DETAILS

SHEET
S6415

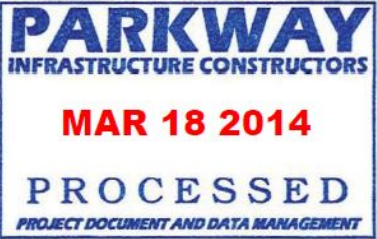
Phase 1
90% Sub

IN PROGRESS

DRAWING NOT TO BE SCALED
100mm ON ORIGINAL DRAWING

NOT FOR
CONSTRUCTION

REVISIONS									
		13-DEC-13	B	JL	90% MTO SUBMISSION				
		01-OCT-13	A	MAS	60% MTO SUBMISSION				
		DATE	REV.	BY	DESCRIPTION				
DESIGN	BR	CHK	PM	CODE	CAN/CSA	S6-06	LOAD	SEE T.A.F. DOC.	
DRAWN	LG	CHK	MAS	SITE	6-619		DATE	JUN 2013	



METRIC

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UNLESS OTHERWISE SHOWN

**Parkway
Infrastructure
Engineers**



Windsor-Essex
Parkway Project
RFP No. 09-54-1007



NEW CONSTRUCTION
HWY 401
TRAIL BRIDGE OVER CABANA RD.-TODD LN. TB-4
6000mm APPROACH SLAB

SHEET
S6416

Phase 1
90% Sub

NOTES

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

APPLICABLE STANDARD DRAWINGS

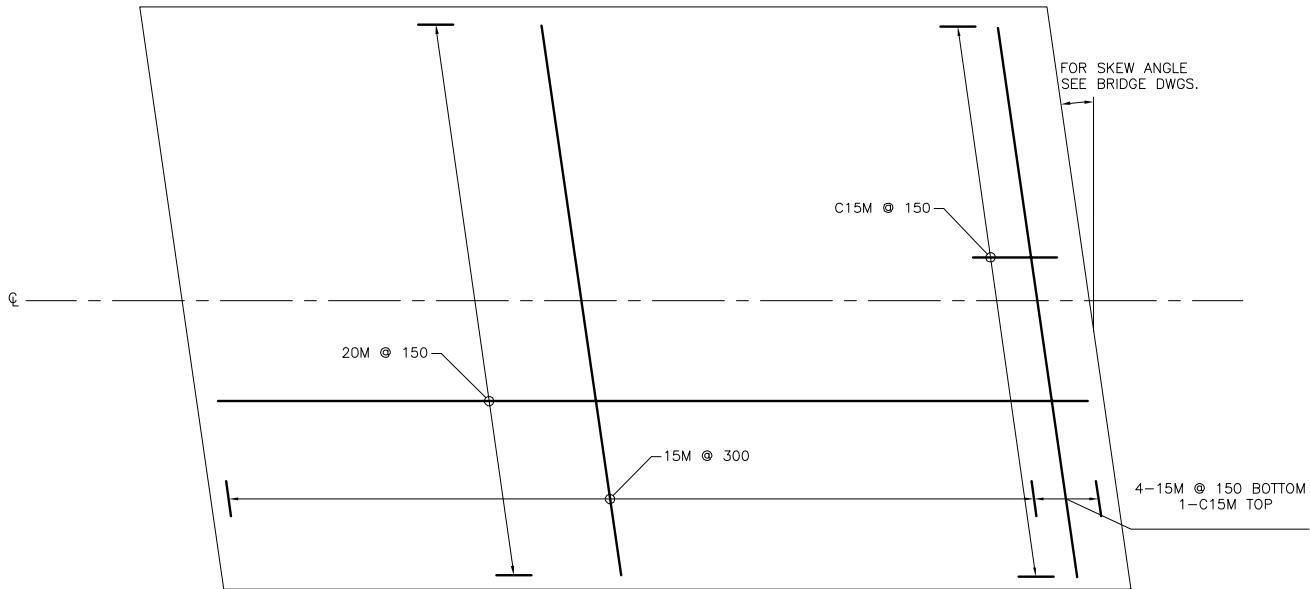
- OPSD-3370.100 DECK, WATERPROOFING HOT APPLIED ASPHALT MEMBRANE WITH PROTECTION BOARD
- OPSD-3370.101 DECK, WATERPROOFING HOT APPLIED ASPHALT MEMBRANE AT ACTIVE CRACKS GREATER THAN 2mm WIDE AND CONSTRUCTION JOINTS

TOP OF CONCRETE ELEVATION		
POINT	WEST APPROACH SLAB	EAST APPROACH SLAB
(A)	186.363	185.516
(B)	186.596	185.816
(C)	186.403	185.556
(D)	186.636	185.856
(E)	186.363	185.516
(F)	186.596	185.816

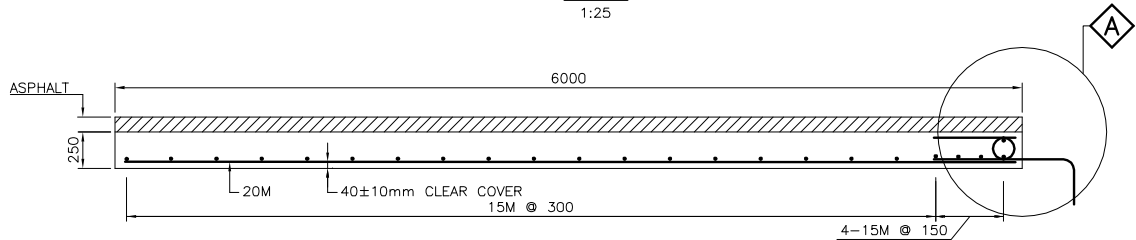
IN PROGRESS

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

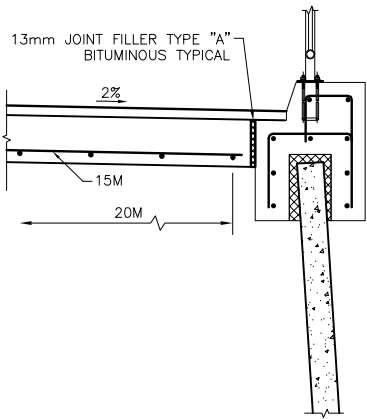
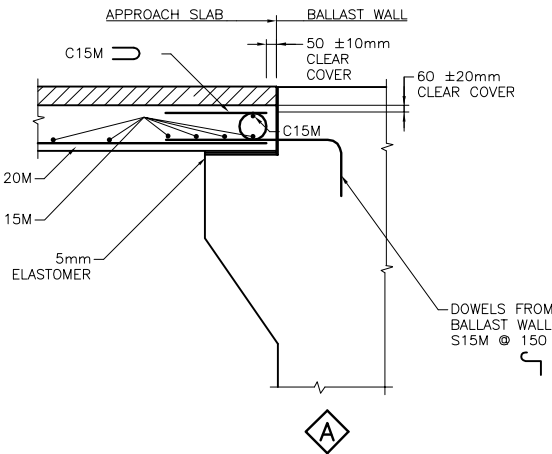
REVISIONS		DATE	REV.	BY	DESCRIPTION
13-DEC-13		B	JL	90% MTO SUBMISSION	
01-OCT-13		A	MAS	60% MTO SUBMISSION	
DESIGN		BM	CHK	JL	CODE CAN/CSA S6-06 LOAD SEE T.A.F. DOC.
DRAWN		RD	CHK	MAS	SITE 6-619 DATE JUN 2013



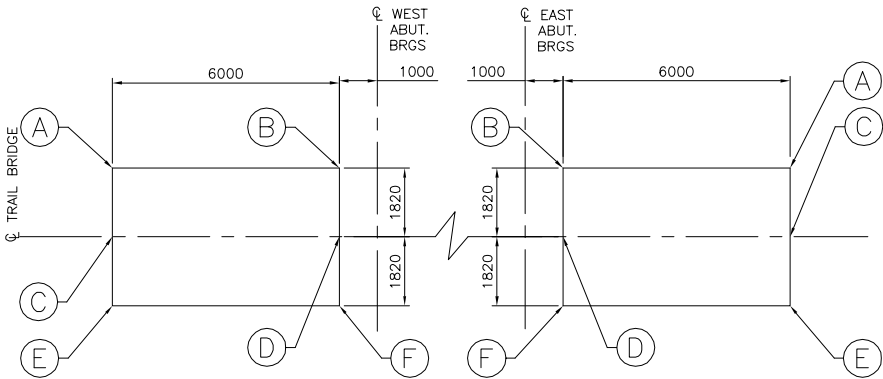
PLAN
1:25



LONGITUDINAL SECTION
1:25



SECTION AT RSS WINGWALL



KEY PLAN
1:100



DRAWING NOT TO BE SCALED
100mm ON ORIGINAL DRAWING

NOT FOR
CONSTRUCTION

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

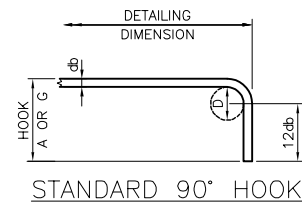
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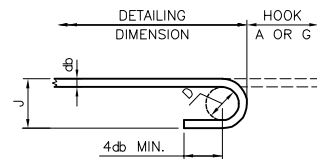
Windsor-Essex
Parkway Project
RFP No. 09-54-1007

NEW CONSTRUCTION
HWY 401
TRAIL BRIDGE OVER CABANA RD.-TODD LN. TB-4
STANDARD DETAILS

SHEET
S6417
Phase 1
90% Sub



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 FY = 420, USE THE SAME D AS FOR 400R.

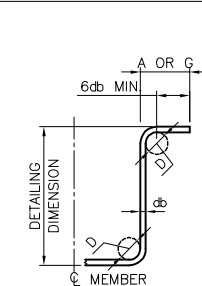
STANDARD HOOK DIMENSIONS

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

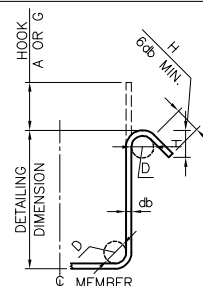
NOTE: ALL HOOK DIMENSIONS ARE ACCORDING TO THE CHBDC-2000.

MINIMUM STIRRUP AND TIE HOOK DIMENSIONS

BAR SIZE	BAR DIAM. ϕ_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			



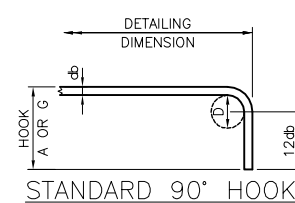
MIN. 90° HOOK



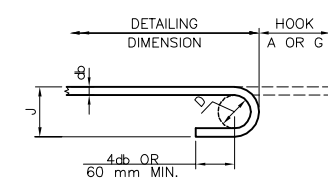
MIN. 135° HOOK

HOOK DIMENSIONS
FOR UNCOATED BARS

Date	JUNE 2002	Rev	
SS12-1			



STANDARD 90° HOOK



STANDARD 180° HOOK

MINIMUM BENDING PIN DIAMETER, D, mm

BAR SIZE	STEEL GRADE 400
10M	80
15M	120
20M	160
25M	200
30M	240
35M	350
45M	450
55M	550

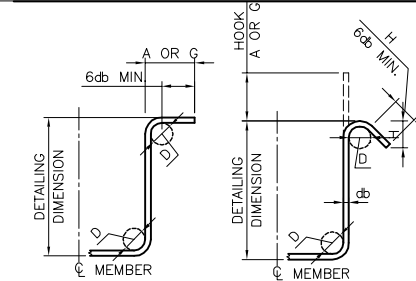
STANDARD HOOK DIMENSIONS

BAR SIZE	90° HOOKS		180° HOOKS	
	A OR G (mm)	A OR G (mm)	J (mm)	
10M	190	210*	110*	
15M	270	260*	160*	
20M	330	300*	200	
25M	430	330	250	
30M	610	460*	300	
35M	640	700*	430*	
45M	790	850*	540	
55M	1010	1050*	680*	

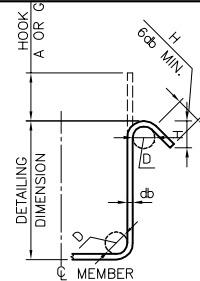
NOTE: TABULATED VALUES FOR STANDARD HOOK DIMENSIONS ARE THE LARGER OF CALCULATED (ACCORDING TO CHBDC-2000) AND REINFORCING STEEL INSTITUTE OF CANADA (RSIC) REQUIREMENTS. VALUE MARKED BY '*' INDICATE RSIC RECOMMENDED MINIMUM.

MINIMUM STIRRUP AND TIE HOOK DIMENSIONS

BAR SIZE	BAR DIAM. ϕ_b (mm)	PIN DIAM. D (mm)	90°		135°	
			A OR G (mm)	A OR G (mm)	H (APPROX.) (mm)	
10M	11.3	90	180	190	120	
15M	16.0	130	190	220	130	
20M	19.5	160	230	260	150	
25M	25.2	200	280			



MIN. 90° HOOK



MIN. 135° HOOK

NOTE: VALUE MARKED BY '**' INDICATES RSIC RECOMMENDED MINIMUM, BASED ON THE AVERAGE OF 90° AND 180° HOOKS.

HOOK DIMENSIONS
FOR COATED BARS

Date	JUNE 2002	Rev	
SS12-2			

DRAWING NOT TO BE SCALED
100mm ON ORIGINAL DRAWING

NOT FOR
CONSTRUCTION



REVISIONS		DATE	REV.	BY	DESCRIPTION
13-DEC-13		B	JL		90% MTO SUBMISSION
01-OCT-13		A	MAS		60% MTO SUBMISSION
DESIGN		BM	CHK	JL	CODE CAN/CSA S6-06
DRAWN		RD	CHK	MAS	SITE 6-619
					DATE JUN 2013

LEGEND:

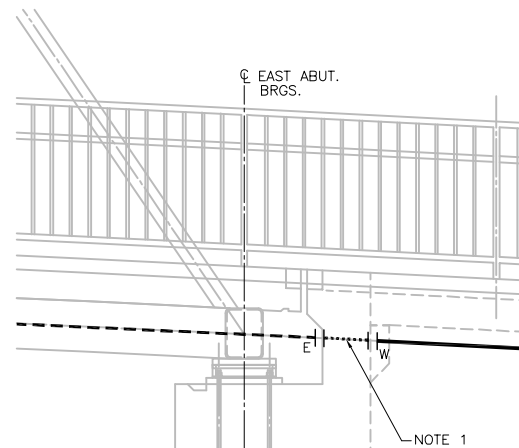
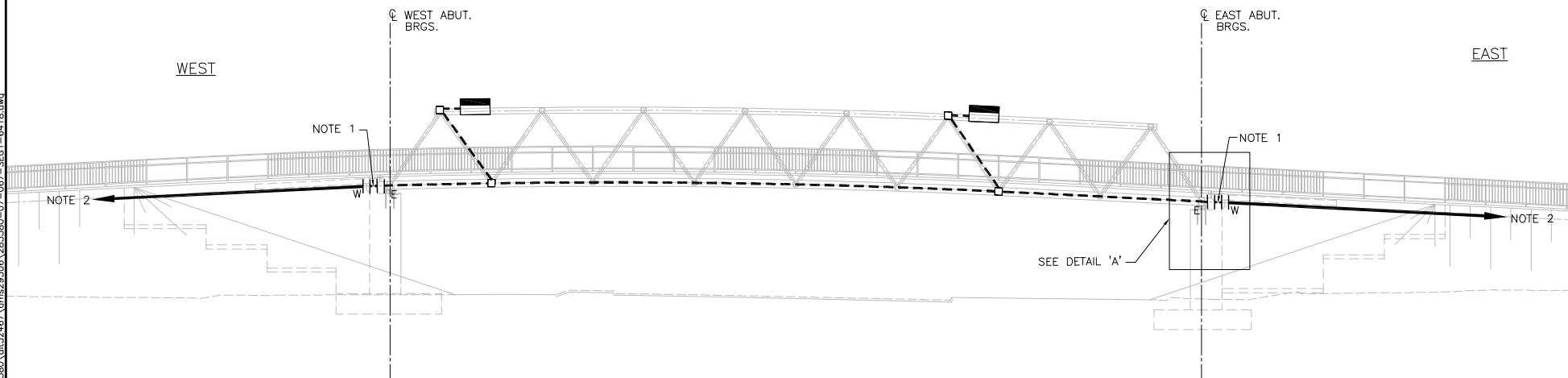
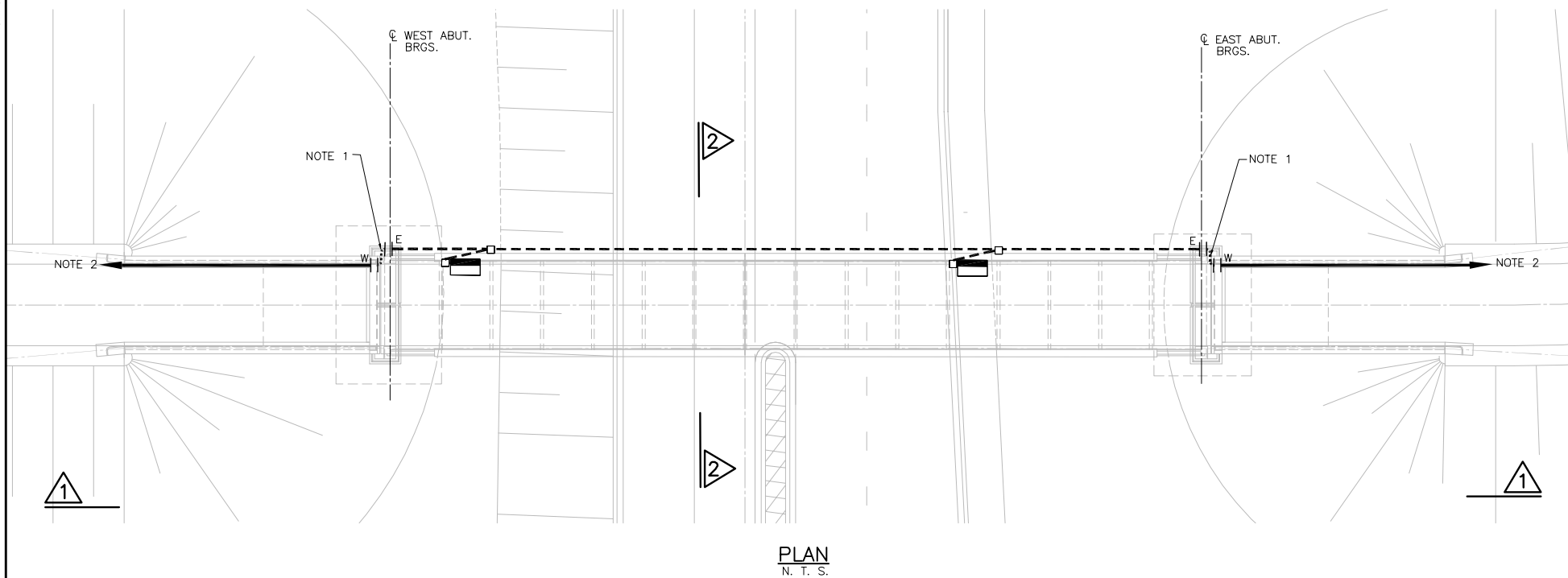
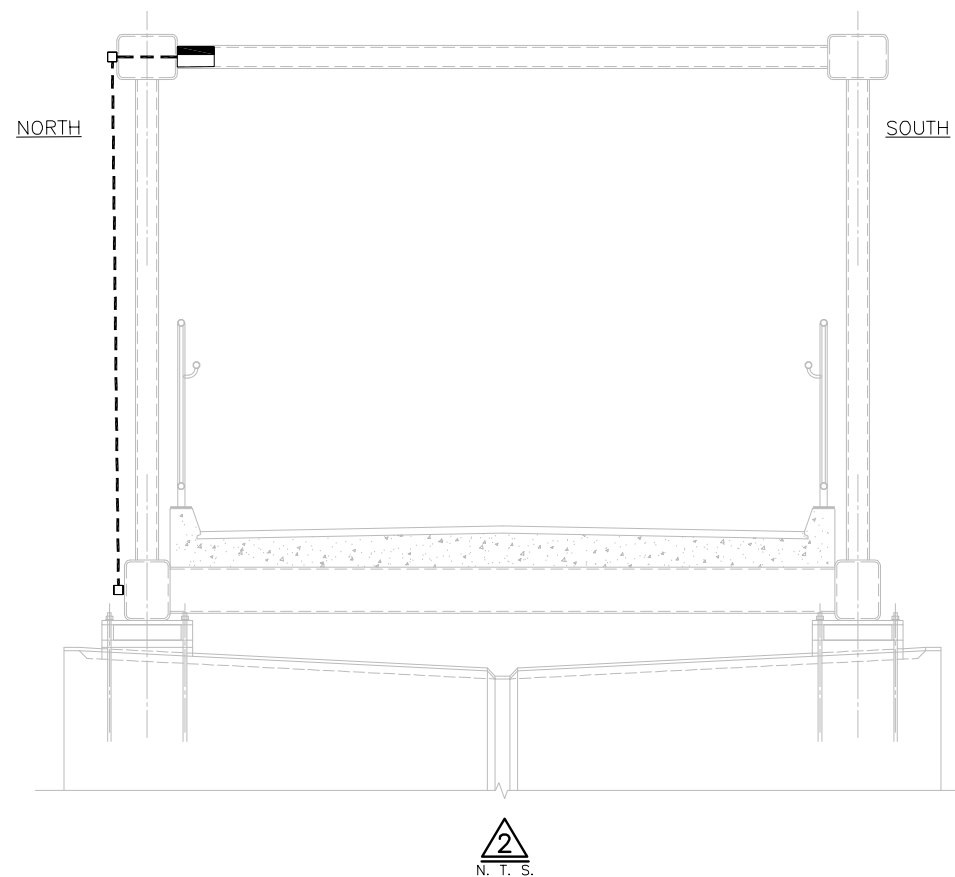
- SURFACE MOUNTED TRAIL BRIDGE DUCT. REFER TO ELECTRICAL AND ATMS WIRING DIAGRAMS FOR QUANTITY AND SIZE OF DUCT(S).
- 50mm DIA.PVC DIRECT BURIED TRAIL BRIDGE LIGHTING DUCT
- RIGID PVC SURFACE MOUNTED JUNCTION BOX, TYPE P4-7 (MTOD-2300.030)
- ▬ TRAIL BRIDGE LUMINAIRE. REFER TO SPECIAL PROVISION 611 F01M
- W WOBBLE JOINT AS PER MTO-2102.01
- E EXPANSION COUPLING

NOTES:

- A. ALL ELECTRICAL WORK INCLUDING DUCTS, JUNCTION BOXES, EXPANSION AND DEFLECTION ASSEMBLIES AND FOOTINGS ON STRUCTURE TO BE INSTALLED UNDER STRUCTURAL CONTRACT.
- B. SURFACE MOUNTED ELECTRICAL WORKS ARE TO BE INSPECTED BY ESA PRIOR TO INSTALLATION.
- C. EXACT DUCT ROUTING AND MOUNTING DETAILS, AND LUMINAIRE MOUNTING DETAILS TO BE WORKED OUT WITH THE BRIDGE SUPPLIER.
- D. TRAIL BRIDGE LUMINAIRE TO BE SECURED TO BRIDGE TOP CHORD USING STAINLESS STEEL STRAPPINGS OR BOLTS.
1. EMBEDDED DUCT(S) IN ABUTMENT SEE SHEET S6410.
2. CONNECT TO PATHWAY HANDHOLE. SEE LAYOUT DRAWINGS (TYP.)

IN PROGRESS

METRIC

DIMENSIONS ARE IN METRES
AND/OR MILLIMETRES
UNLESS OTHERWISE SHOWNParkway
Infrastructure
EngineersWindsor-Essex
Parkway Project
RFP No. 09-54-1007NEW CONSTRUCTION
HWY 401
TRAIL BRIDGE OVER CABANA RD.-TODD LN. TB-4
EMBEDDED ELECTRICAL WORKSHEET
S6418Phase 1
90% SubTYPICAL DETAIL 'A' AT ABUTMENT
N. T. S.DRAWING NOT TO BE SCALED
100mm ON ORIGINAL DRAWINGNOT FOR
CONSTRUCTION

REVISIONS		DATE	REV.	BY	DESCRIPTION
1	13-DEC-13	B	JS	90% MTO SUBMISSION	
	01-OCT-13	A	MAS	60% MTO SUBMISSION	
DESIGN	JS	CHK	JL	CODE CAN/CSA S6-06	LOAD SEE T.A.F. DOC.
DRAWN	YZ	CHK	MAS	SITE 6-619	DATE JUN 2013

DOC: 285380-07-067-SEG1-6418