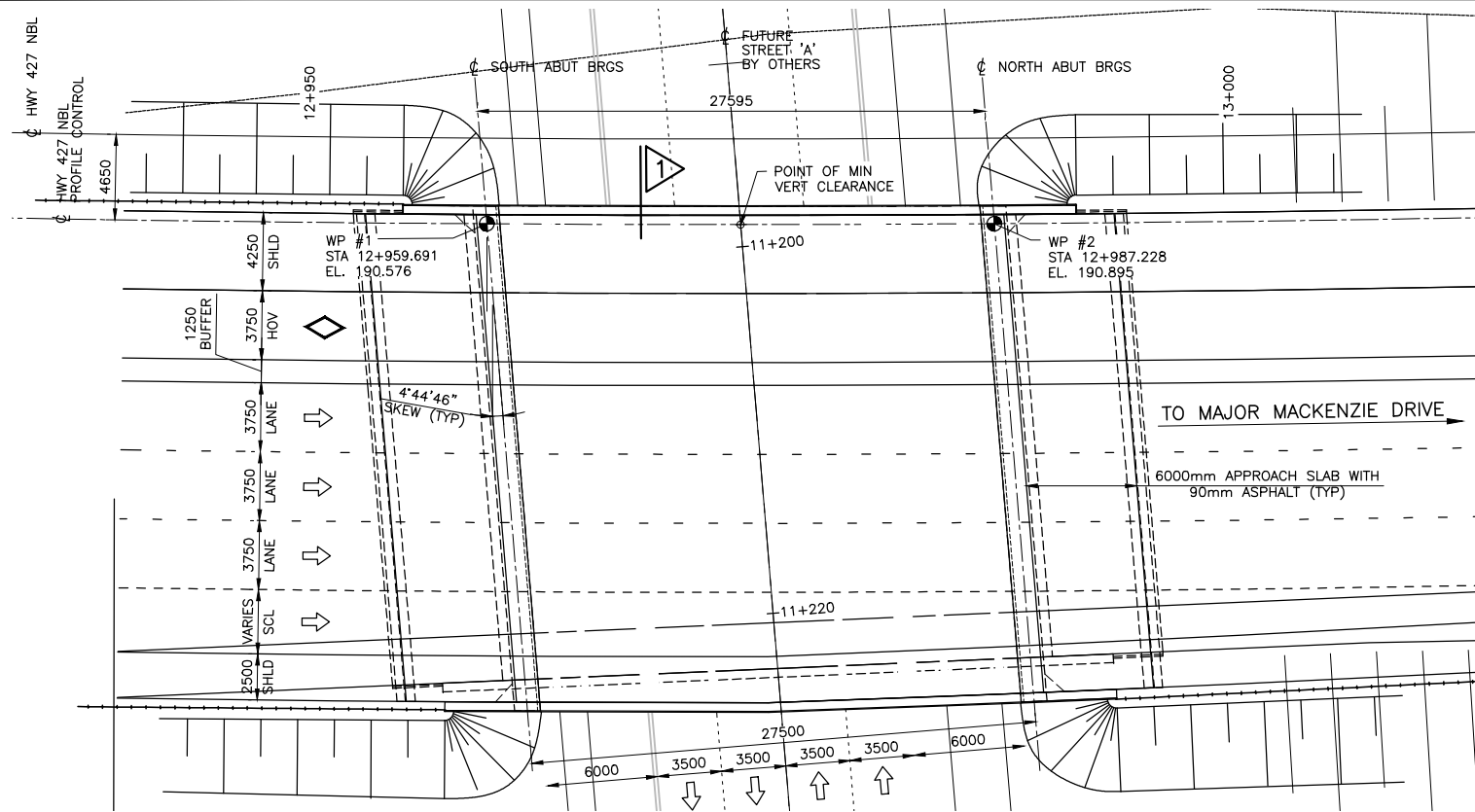


HIGHWAY 427 EXPANSION

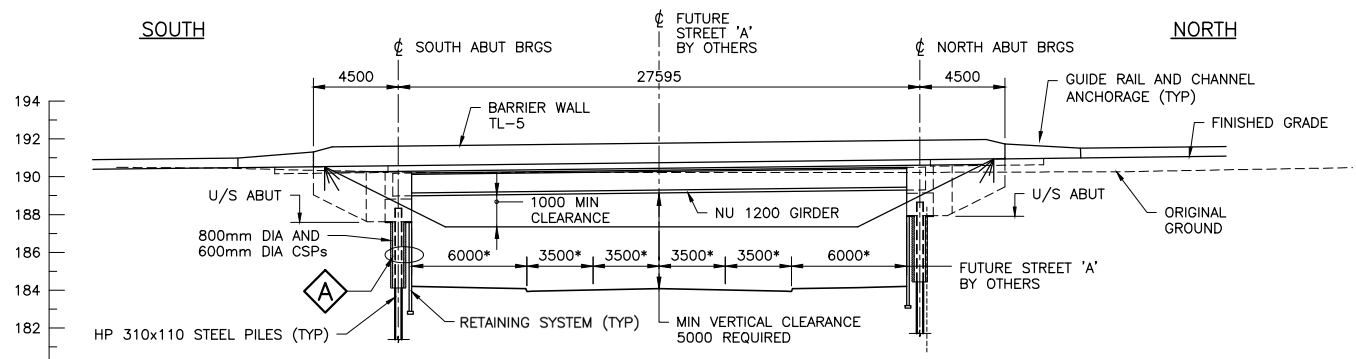
DCR # 4

E.1 Structures

CAD FILE LOCATION AND NAME: C:\PROJECTS\WSP-CA\WSP-FEI\PROJECTS\WSP-CA\WSP-FEI\DWG\500CA-0P2.DWG
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 DATE PLOTTED: 1/18/2019 2:23:47 PM BY: PANG, FEI

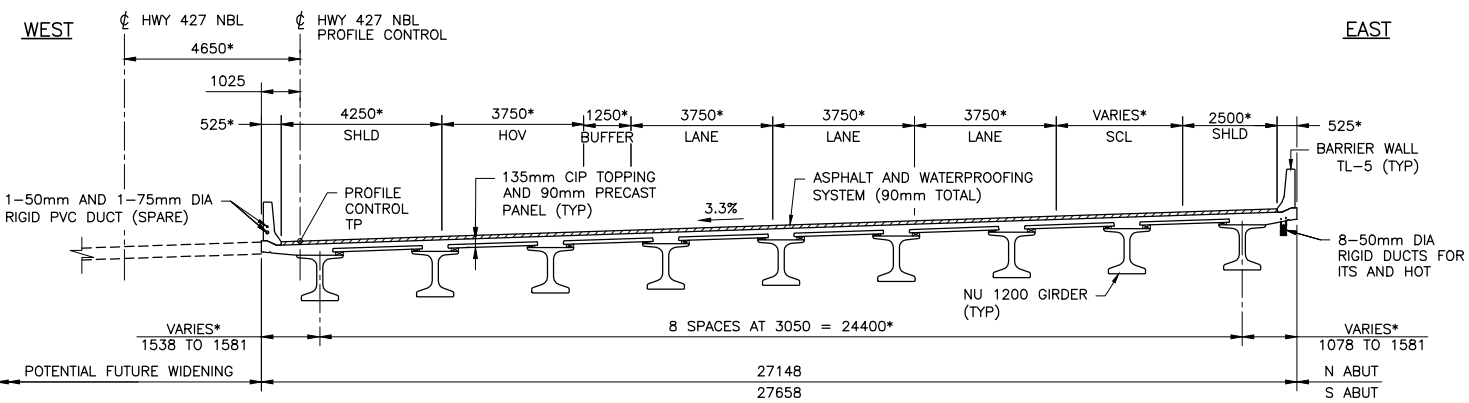


PLAN
1:200



ELEVATION
1:200

* LANING DIMENSIONS ARE PERPENDICULAR TO THE CL OF TRAFFIC LANE
 SPAN LENGTHS ARE ALONG THE CL



1
1:100

* DIMENSIONS ARE PERPENDICULAR TO CL OF TRAFFIC LANE



APPLICABLE STANDARD DRAWINGS:

- OPSD 3000.100 FOUNDATION PILES - STEEL H-PILE DRIVING SHOE
- OPSD 3101.150 WALLS - ABUTMENT, BACKFILL MINIMUM GRANULAR REQUIREMENTS
- 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
- OPSD 3419.100 BARRIERS AND RAILINGS - STEEL GUIDE RAIL AND CHANNEL ANCHORAGE
- OPSD 3941.200 FIGURES IN CONCRETE - SITE NUMBER AND DATE LAYOUT

LIST OF DRAWINGS:

- 500 GENERAL ARRANGEMENT
- 501 BOREHOLE LOCATIONS AND SOIL STRATA
- 502 FOUNDATION LAYOUT
- 503 NORTH ABUTMENT DETAILS AND REINFORCEMENT
- 504 SOUTH ABUTMENT DETAILS AND REINFORCEMENT
- 505 WINGWALLS
- 506 PRESTRESSED NU GIRDERS AND BEARINGS (NU 1200)
- 507 PRESTRESSED NU GIRDER - DETAILS
- 508 DECK LAYOUT & SCREED ELEVATIONS
- 509 PRECAST DECK PANEL LAYOUT
- 510 PRECAST DECK PANELS FOR CONCRETE GIRDERS - DETAIL I
- 511 PRECAST DECK PANELS FOR CONCRETE GIRDERS - DETAIL II
- 512 DECK REINFORCEMENT
- 513 BARRIER WALL W/O RAILING, TL-5 (GFRP REBAR WITH ANCHOR HEAD)
- 514 6000 mm APPROACH SLABS
- 515 EXPANSION JOINT AND SLEEPER SLAB (10mm <MOVEMENT <= 40mm)
- 516 STRIP SEAL EXPANSION JOINT FOR SLEEPER SLAB (10mm <MOVEMENT <= 40mm)
- 517 STANDARD AND MISCELLANEOUS DETAILS
- 518 PILE DRIVING CONTROL
- 519 ELECTRICAL EMBEDDED WORK

GENERAL NOTES:

1. DESIGN STANDARDS AND CODES:
 - SCHEDULE 15-1 AND SCHEDULE 15-2: PROJECT AGREEMENT
 - DESIGN CODE: CAN/CSA-S6-14
 - MINISTRY OF TRANSPORTATION OF ONTARIO STRUCTURAL MANUAL
 - ONTARIO PROVINCIAL STANDARD SPECIFICATIONS (OPSS)
2. LIVE LOAD: CL-625-ONT.
3. CLASS OF CONCRETE

PRECAST GIRDERS	60 MPa (HPC)
PRECAST DECK PANELS	40 MPa
REMAINDER	30 MPa
4. CLEAR COVER TO REINFORCING STEEL

FOOTINGS	100 ± 25
DECK	
TOP	70 ± 20
BOTTOM	40 ± 10
REMAINDER UNLESS OTHERWISE NOTED	70 ± 20
5. REINFORCING STEEL

REINFORCING STEEL SHALL BE GRADE 400W UNLESS OTHERWISE SPECIFIED.

BAR MARKS WITH PREFIX 'S' DENOTE STAINLESS STEEL BARS.

STAINLESS REINFORCING STEEL SHALL BE TYPE 316 LN OR DUPLEX 2205 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 UNLESS INDICATED OTHERWISE.
6. GLASS FIBRE REINFORCED POLYMER (GFRP)

GLASS FIBRE REINFORCED POLYMER (GFRP) REINFORCING BARS SHALL BE GRADE I, GRADE II OR GRADE III AS SPECIFIED IN THE CONTRACT DOCUMENTS.

THE NOMINAL DIAMETER, TENSILE MODULUS OF ELASTICITY AND GUARANTEED MINIMUM TENSILE STRENGTH SHALL BE AS SPECIFIED IN THE CONTRACT DOCUMENTS.

BAR MARKS WITH THE PREFIX GI DENOTE GRADE I GFRP BARS, BAR MARKS WITH THE PREFIX GII DENOTE GRADE II GFRP BARS AND BAR MARKS WITH THE PREFIX GIII DENOTE GRADE III GFRP BARS.
7. ROADWAY CLASSIFICATION: TO BE DETERMINED BY OTHERS.
8. ALL DIMENSIONS ARE IN MILLIMETERS ALL ELEVATIONS ARE IN METERS UNLESS OTHERWISE SHOWN.

CONSTRUCTION NOTES:

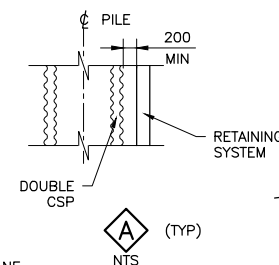
1. THE CONTRACTOR SHALL ESTABLISH THE BEARING SEAT ELEVATIONS BY DEDUCTING THE ACTUAL BEARING THICKNESSES FROM THE TOP OF BEARING ELEVATIONS. IF THE ACTUAL BEARING THICKNESSES ARE DIFFERENT FROM THOSE GIVEN WITH THE BEARING DESIGN DATA, THE CONTRACTOR SHALL ADJUST THE REINFORCING STEEL TO SUIT.
2. BACKFILL SHALL NOT BE PLACED BEHIND THE ABUTMENTS UNTIL THE DECK SLAB IS IN PLACE AND HAS REACHED 70% OF ITS DESIGN STRENGTH.
3. BACKFILL SHALL BE PLACED SIMULTANEOUSLY BEHIND BOTH ABUTMENTS KEEPING THE HEIGHT OF BACKFILL APPROXIMATELY THE SAME. AT NO TIME SHALL THE DIFFERENCE IN ELEVATION BE GREATER THAN 500mm.
4. CONSTRUCT ABUTMENTS TO THE BEARING SEAT ELEVATIONS. THE CONTRACTOR SHALL SUPPLY TEMPORARY LATERAL BRACINGS FOR ABUTMENTS. FORMWORK AND LATERAL BRACINGS SHALL NOT BE REMOVED UNTIL THE CONCRETE IN DECK HAS REACHED 70% OF ITS SPECIFIED 28-DAY STRENGTH.
5. ALL EXPOSED EDGES TO RECEIVE A 20x20 CHAMFER.
6. ALL GIRDERS SHALL BE BRACED INDIVIDUALLY BY ATTACHING EACH END TO THE RESPECTIVE SUB-STRUCTURE ELEMENT IMMEDIATELY UPON ERECTION.

LEGEND:

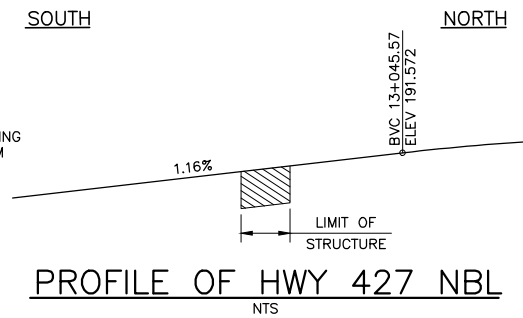
- ⊕ BOREHOLE
- ⊠ ROCK PROTECTION AND MEANDER LIMIT HATCH
- ▨ PRECAST CONCRETE PANEL
- ▨ NEW ASPHALT AND WATERPROOFING

LIST OF ABBREVIATIONS:

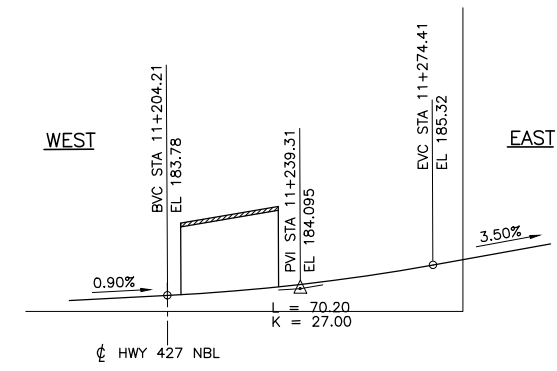
- WP WORKING POINT
- CIP CAST IN PLACE
- U/S UNDER SIDE
- P/C PROFILE CONTROL
- T/P TOP OF PAVEMENT



DETAIL A (TYP)
NTS



PROFILE OF HWY 427 NBL
NTS



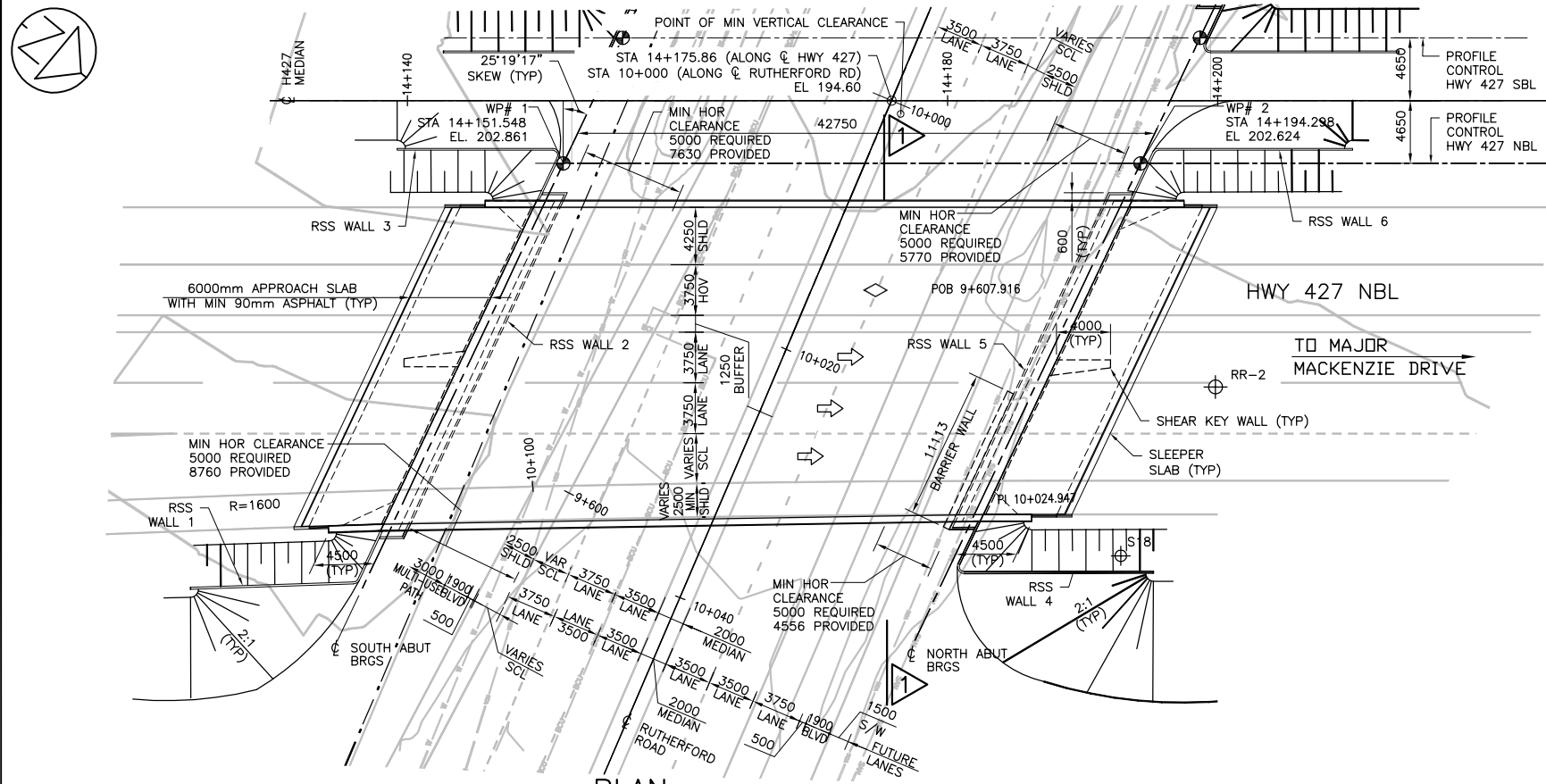
PROFILE OF STREET 'A'
NTS

NO.	DATE	REVISIONS	BY	CHK	LEAD	PROJ. MGR.
B	19/01/18	DRAFT - 90% SUBMISSION TO CA				
A	18/11/15	DRAFT - 90% SUBMISSION TO CA				

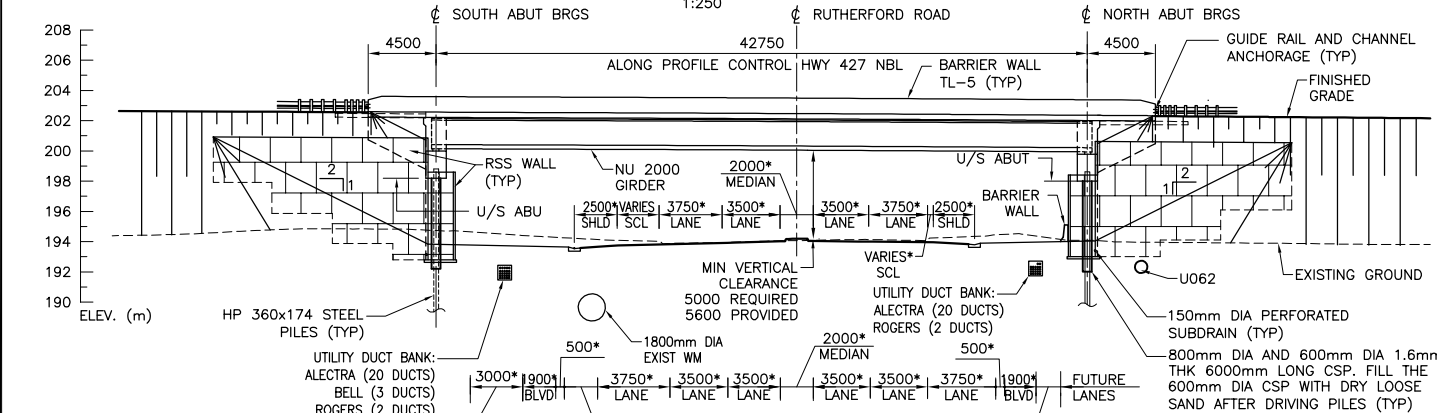
SCALE :	AS NOTED	
DESIGNED	ZHONG LIU	
DRAWN	SCOTT CLAYTON	
CHECKED	MICHAEL HATCH	
APPROVED LEAD ENGR.	TATIANA QJALA	
APPROVED PROJ. MANAGER		
NAME (PRINT)	INIT.	DATE



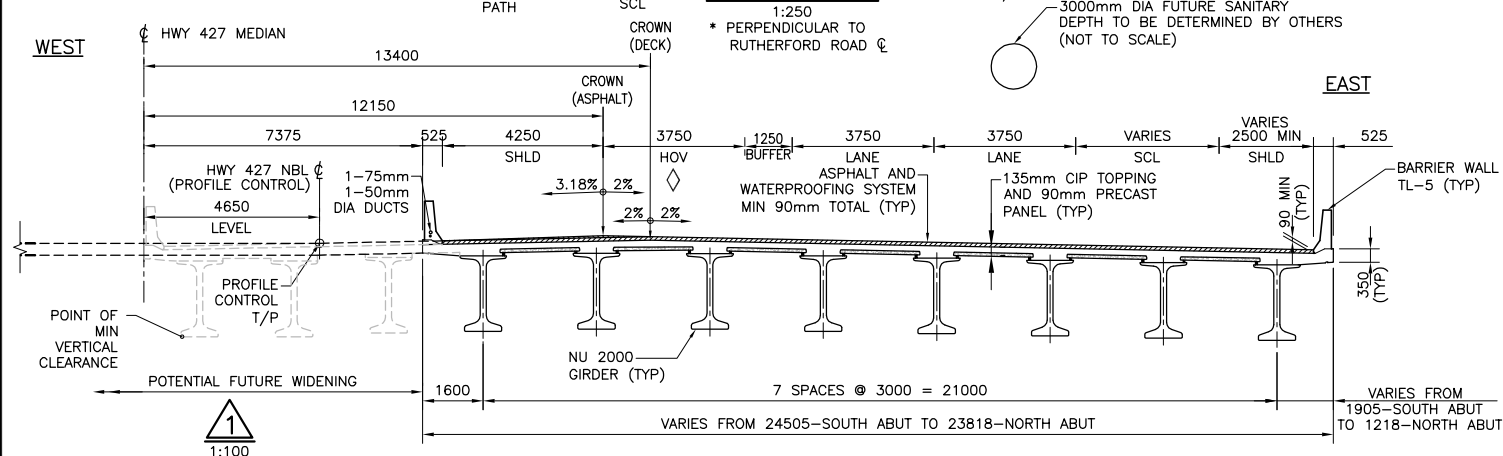
TITLE							
HWY 427 EXPANSION HWY 427 NBL OVER STREET 'A'							
GENERAL ARRANGEMENT							
PROJECT ID.	STAGE IDENTIFIER	DESIGN PACKAGE NUMBER	DISCIPLINE	STRUCTURE NUMBER	DOCUMENT TYPE	DRAWING NUMBER	REVISION NUMBER
H427-D	N	7	STR	B14A	DWG	500	B



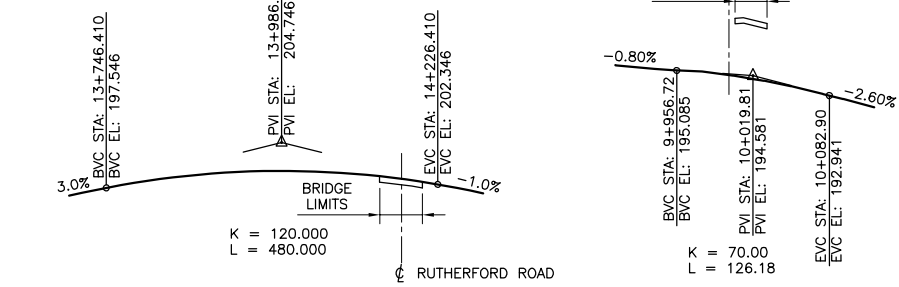
PLAN
1:250



ELEVATION
1:250



PROFILE OF HWY 427
NTS



PROFILE OF RUTHERFORD ROAD
NTS

APPLICABLE STANDARD DRAWINGS:

OPSD 3000.100	FOUNDATION PILES - STEEL H-PILE DRIVING SHOE
OPSD 3101.150	WALLS - ABUTMENT, BACKFILL MINIMUM GRANULAR REQUIREMENTS
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
OPSD 3419.100	BARRIERS AND RAILINGS - STEEL GUIDE RAIL AND CHANNEL ANCHORAGE
OPSD 3941.200	FIGURES IN CONCRETE - SITE NUMBER AND DATE LAYOUT

LIST OF DRAWINGS:

700	GENERAL ARRANGEMENT
701	BOREHOLE LOCATIONS AND SOIL STRATA
702	FOUNDATION LAYOUT
703	NORTH ABUTMENT
704	SOUTH ABUTMENT
705	WINGWALLS
706	RETAINED SOIL SYSTEM
707	PRESTRESSED NU GIRDERS AND BEARINGS (NU 2000)
708	PRESTRESSED NU GIRDER - DETAILS
709	DECK LAYOUT & SCREED ELEVATIONS
710	PRECAST DECK PANEL LAYOUT
711	PRECAST DECK PANELS FOR CONCRETE GIRDERS - DETAIL I
712	PRECAST DECK PANELS FOR CONCRETE GIRDERS - DETAIL II
713	DECK REINFORCEMENT
714	BARRIER WALL W/O RAILING, TL-5 (GFRP REBAR WITH ANCHOR HEAD)
715	6000 mm APPROACH SLABS
716	EXPANSION JOINT AND SLEEPER SLAB (10mm<MOVEMENT<=40mm)
717	STRIP SEAL EXPANSION JOINT FOR SLEEPER SLAB (10mm<MOVEMENT<=40mm)
718	DETAILS OF CONCRETE SLOPE PAVING
719	STANDARD AND MISCELLANEOUS DETAILS
720	ELECTRICAL EMBEDDED WORK

LIST OF ABBREVIATIONS:

CIP	CAST IN PLACE
HOV	HIGH OCCUPANCY VEHICLE
PVI	POINT OF VERTICAL INTERSECTION
SHLD	SHOULDER
SCL	SPEED CHANGE LANE
WP	WORKING POINT

LEGEND:

	BOREHOLE
--	----------

GENERAL NOTES:

- DESIGN STANDARDS AND CODES:
 - SCHEDULE 15-1 AND SCHEDULE 15-2: PROJECT AGREEMENT
 - DESIGN CODE: CAN/CSA-S6-14
 - MINISTRY OF TRANSPORTATION OF ONTARIO STRUCTURAL MANUAL
 - ONTARIO PROVINCIAL STANDARD SPECIFICATIONS (OPSS)
- LIVE LOAD: CL-625-ONT.
- CLASS OF CONCRETE

PRECAST GIRDERS	70 MPa (HPC)
PRECAST DECK PANELS	40 MPa
REMAINDER	30 MPa
- CLEAR COVER TO REINFORCING STEEL

FOOTINGS	100 ± 25
DECK	
TOP	70 ± 20
BOTTOM	40 ± 10
REMAINDER UNLESS OTHERWISE NOTED	70 ± 20
- REINFORCING STEEL

REINFORCING STEEL SHALL BE GRADE 400W UNLESS OTHERWISE SPECIFIED.

BAR MARKS WITH PREFIX 'S' DENOTE STAINLESS STEEL BARS.

STAINLESS REINFORCING STEEL SHALL BE TYPE 316 LN OR DUPLEX 2205 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 UNLESS INDICATED OTHERWISE.
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GLASS FIBRE REINFORCED POLYMER (GFRP) REINFORCING BARS SHALL BE GRADE I, GRADE II OR GRADE III AS SPECIFIED IN THE CONTRACT DOCUMENTS.

THE NOMINAL DIAMETER, TENSILE MODULUS OF ELASTICITY AND GUARANTEED MINIMUM TENSILE STRENGTH SHALL BE AS SPECIFIED IN THE CONTRACT DOCUMENTS.

BAR MARKS WITH THE PREFIX GI DENOTE GRADE I GFRP BARS, BAR MARKS WITH THE PREFIX GII DENOTE GRADE II GFRP BARS AND BAR MARKS WITH THE PREFIX GIII DENOTE GRADE III GFRP BARS.
- RETAINED SOIL SYSTEM (RSS) SHALL HAVE THE FOLLOWING ATTRIBUTES:

APPLICATION:	FALSE ABUTMENT
PERFORMANCE:	HIGH
APPEARANCE:	HIGH
- ROADWAY CLASSIFICATION: RFD 120.
- ALL DIMENSIONS ARE IN MILLIMETRES ALL ELEVATIONS ARE IN METERS UNLESS OTHERWISE SHOWN.

CONSTRUCTION NOTES:

- 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.
- BACKFILL SHALL NOT BE PLACED BEHIND THE ABUTMENTS UNTIL THE DECK SLAB IS IN PLACE AND HAS REACHED 70% OF ITS DESIGN STRENGTH.
- BACKFILL SHALL BE PLACED SIMULTANEOUSLY BEHIND BOTH ABUTMENTS KEEPING THE HEIGHT OF BACKFILL APPROXIMATELY THE SAME. AT NO TIME SHALL THE DIFFERENCE IN ELEVATION BE GREATER THAN 500mm.
- CONSTRUCT ABUTMENTS TO THE BEARING SEAT ELEVATIONS. THE CONTRACTOR SHALL SUPPLY TEMPORARY LATERAL BRACINGS FOR ABUTMENTS. FORMWORK FOR THE ABUTMENTS SHALL NOT BE REMOVED UNTIL THE CONCRETE IN THE ABUTMENTS HAS REACHED 21MPa. LATERAL BRACINGS FOR THE ABUTMENTS SHALL NOT BE REMOVED UNTIL THE CONCRETE IN THE DECK HAS REACHED 21MPa.
- ABUTMENT PILES SHALL NOT BE DRIVEN UNTIL PRELOADING OF APPROACH EMBANKMENT IS COMPLETE.

DATE	REVISIONS	BY	CHK	LEAD	PROJ.
19/01/18	50% SUBMISSION TO CA				
18/10/03	50% SUBMISSION TO CA				
18/04/25	50% SUBMISSION TO CA				

SCALE : AS NOTED

DESIGNED	NASIM REZAEI
DRAWN	FEI PANG
CHECKED	SUBOOHI OBAID
APPROVED LEAD ENG.	TATIANA QJALA
APPROVED PROJ. MANAGER	



<p>HWY 427 EXPANSION HWY 427 NBL RUTHERFORD ROAD OVERPASS SITE 37x-2432/B1 GENERAL ARRANGEMENT</p>							
PROJECT ID.	STAGE IDENTIFIER	DESIGN PACKAGE NUMBER	DISCIPLINE	STRUCTURE NUMBER	DOCUMENT TYPE	DRAWING NUMBER	REVISION NUMBER
H427-D	N	7	STR	B15A	DWG	700	C

