

**Structural Assessment  
Report and Design**



**William Parkway Improvements  
Municipal Class EA**

**Bridge Over Spring Creek Structural  
Assessment Report**

**Submitted to:  
City of Brampton, Ontario**

**PROJECT 478286**

**Prepared by:**

**Parsons Inc.  
625 Cochrane Drive, Suite 300  
Markham, Ontario L3R 9R9**

**January 2024**

# **William Parkway Improvements Municipal Class EA Bridge Over Spring Creek Structural Assessment and Design Report**

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**Prepared by:**

**Reviewed by:**

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**Weiting Gan, Associate Engineer  
Parsons Inc.**

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**Ramy Gabr, P.Eng., Principal Engineer  
Parsons Inc.**

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## Statement of Qualifications and Limitations

The attached Report (the “Report”) has been prepared by PARSONS INC. (“PARSONS”) for the benefit of the Client (“Client”) in accordance with the agreement between PARSONS and Client, including the scope of work detailed therein (the “Agreement”).

The information, data, recommendations, and conclusions contained in the Report (collectively, the “Information”):

- is subject to the scope, schedule, and other constraints and limitations in the Agreement and the qualifications contained in the Report (the “Limitations”);
- represent PARSONS’s professional judgement in light of the Limitations and industry standards for the preparation of similar reports;
- may be based on information provided to PARSONS which has not been independently verified;
- has not been updated since the date of issuance of the Report and its accuracy is limited to the time period and circumstances in which it was collected, processed, made or issued;
- must be read as a whole and sections thereof should not be read out of context;
- was prepared for the specific purposes described in the Report and the Agreement; and
- in the case of subsurface, environmental, or geotechnical conditions, may be based on limited testing and on the assumption that such conditions are uniform and not variable either geographically or over time.

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- Appendix A – Existing Drawings
- Appendix B – General Arrangement Drawing
- Appendix C – Existing Structure Photographs

## 1. Introduction

As part of the assignment, the City of Brampton is undertaking a Municipal Class Environmental Assessment study for improvements to Williams Parkway. This report provides a summary of the site inspection conducted at the structure as well as the rehabilitation/modifications required for the structure located at William Parkway over Spring Creek (Structure ID J3RBWTE133).

## 2. Location

The structure is located at William Parkway over Spring Creek, approximately 200m west of MacKay Street in the City of Brampton. A key plan showing location of the structure is attached below.



## 3. Existing Structure

The structure at Williams Parkway over Spring Creek was constructed in 1983. It is a concrete rigid frame cast-in-place bridge with span length as 6.17m. The bridge deck is 600mm deep with 25.0m width, accommodating two lanes in each direction at Williams Parkway. The wearing surface is asphalt with waterproofing. Barrier walls at south and north sidewalks have a total length of 27.7m with 900mm depth. More information can be found in existing general arrangement (GA) attached in Appendix A.

## 4. Available Information

The following reference documents were made available:

- City of Brampton, Williams Parkway Culvert and Watercourse drawings, dated August 1976
- Williams Pkwy Bridge Over Etobicoke Creek Tributary rehabilitation drawings, dated September 2003
- OSIM Inspection Report (Structure ID: J3RBWTE133), dated May 2020
- Torbram Road EA from Bovaird Drive to Queen Street East, prepared by Parsons and dated August 2020

## 5. Maintenance and Repair History

In 2002, City of Brampton had proposed rehabilitation for this bridge. The rehabilitation included patch repair and repave on deck, parapet wall and rails replacement, and repair on channel and sidewalk under the bridge. Spalling of bridge soffit at outlet and underside of deck was repaired. The gabion baskets had been removed and filled with topsoil and sod. MCI and sealer were applied to concrete surfaces of sidewalks, parapet walls and inside of culvert. The “Low Overhead” sign was also installed over pathway during this rehabilitation.

## 6. Existing Structure Condition

The bridge is in overall good condition with a Bridge Condition Index (BCI) of 74 in the OSIM inspection carried out in May 2020 by the City. Parsons conducted a visual site inspection in October 12<sup>th</sup>, 2023. The following section is a summary of the survey findings.

- The bridge soffit at north part of deck is generally in fair condition with spalls and stained small cracks. Patch repair is noted at north outlet soffit.
- The south soffit is generally in fair condition with medium to wide cracks at outlet with rebars exposed, medium transverse cracks with efflorescence and wet stain at middle of soffit. Delamination as spalls and small cracks are also noted.
- The abutments are generally in good condition. Medium longitudinal cracks are found at west abutment close to stream elevation.
- The bridge deck is generally in good condition. Alligator cracks and pothole are noted on top of road close to the edge of north and south sidewalks. Wide transverse asphalt cracks are found on the top of road at both lanes.
- North and south sidewalks are in good condition.
- Barrier walls at both sides of bridge are generally in fair condition. Wide vertical cracks are noted near joint locations at SE and NW barrier walls. Small vertical cracks are found at some of the railing supports at NW barrier wall. Delamination of rebars is noted at SW barrier wall. Some of the plugs for form ties are lost in north and south barrier walls.
- NE wingwall is generally in good to fair condition. Small to medium cracks are noted near the east abutment.
- NW wingwall cannot be approached due to vegetation.
- SE wingwall is generally in good condition with spalls and small cracks.
- SW wingwall is generally in good condition with small to medium cracks and spalls.

## 7. Structural Recommendation Based on Proposed Road Design

The Williams Parkway MCEA identified improvements including the narrowing of some through lanes and the addition of a multi-use path on both the north and south sides of Williams Parkway. As the new road cross section can fit within the existing bridge deck, the bridge does not need to be extended. Improvements to the barrier walls are required to satisfy safety requirements for the MUP.

Considering serviceability and functionality, the existing barrier on deck is suggested to be replaced by combination traffic/bicycle barrier and railing, which can refer to Brampton Standard STD 417 and a modified Ministry of Transportation Ontario (MTO) Standard SSD 110-84. The proposed barrier wall has thickness of 250mm and height of 908 mm from the top of asphalt. The proposed railing is 462mm high from the top of barrier wall, and the total height of barrier will be 1370 mm. The sidewalk will be modified to accommodate MUP.

Minor rehabilitation such as patch repairs and crack injection and the bridge inside barrel is also proposed. Detailed condition survey is recommended to evaluate the amount of cracks, patches and delamination on the bridge structure, especially on soffit and underside of deck.

## 8. Summary

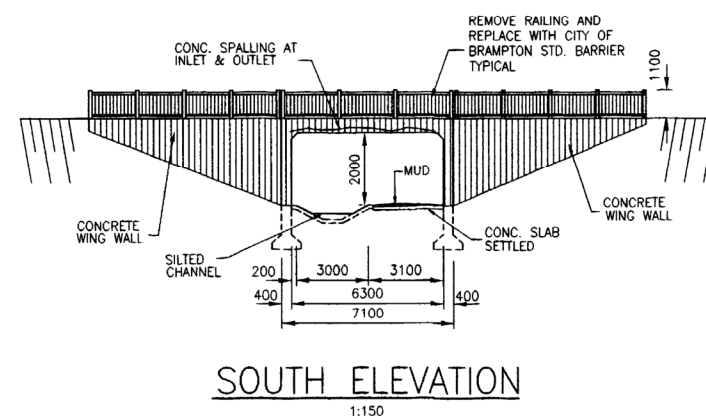
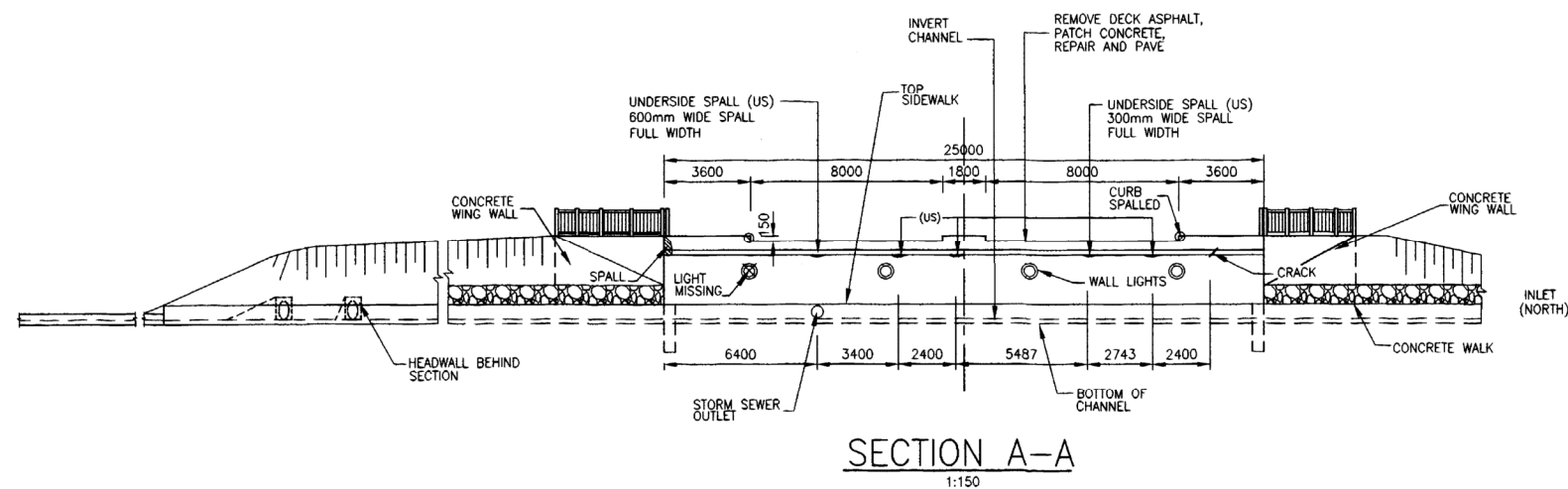
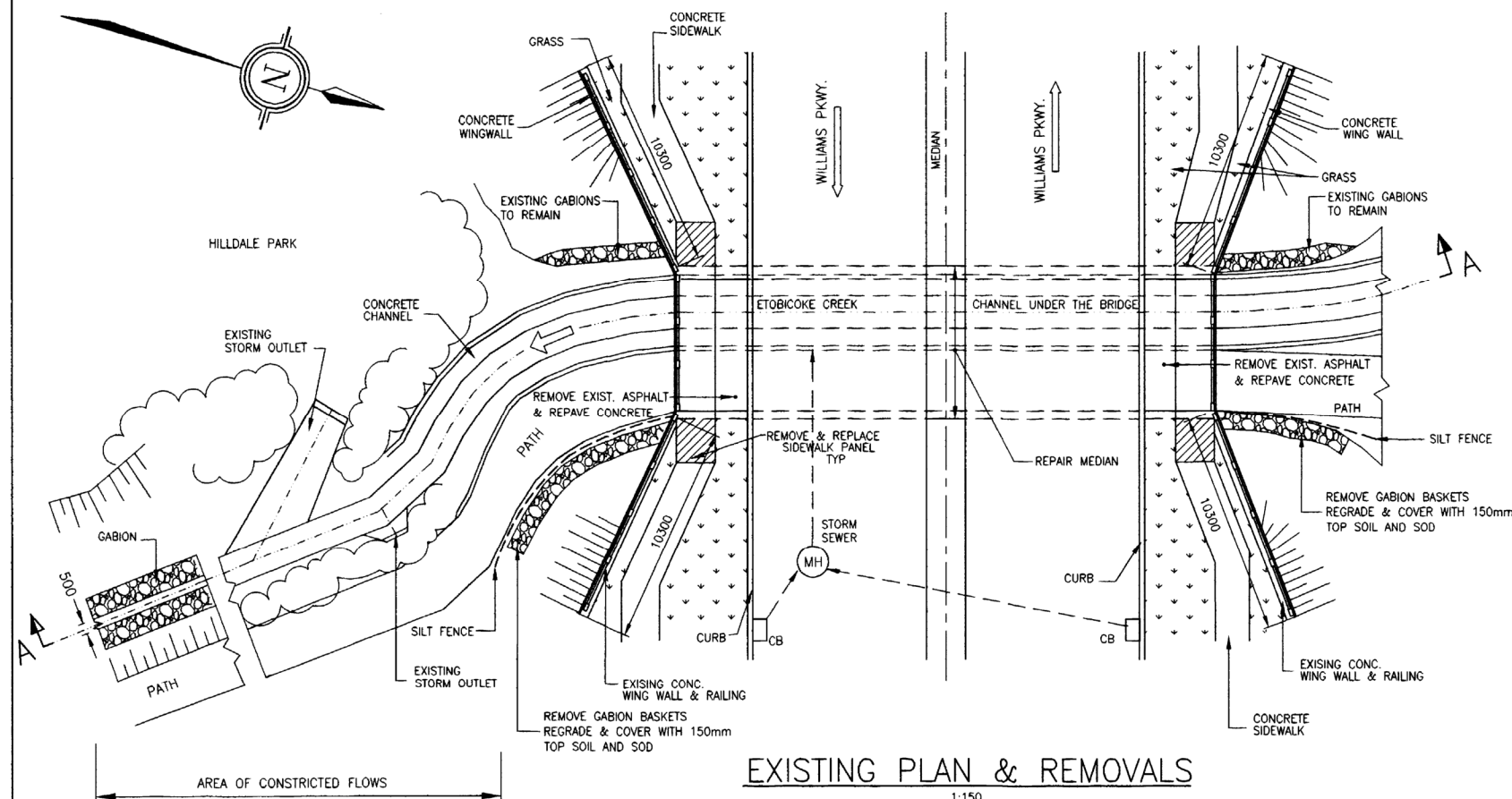
The site inspection for the bridge over Spring Creek indicate that the existing structure is generally in good condition. The soffits and barrier walls are in fair condition where wide cracks and spalls are noted. Replacement of barrier wall and railing and patch repairs has been proposed in order to meet the safety requirement for MUP.

The existing drawings for the bridge are provided in Appendix A. The General Arrangement is provided in Appendix B. The photos for existing structure are attached in Appendix C.

## APPENDIX A – EXISTING DRAWINGS

REVISIONS	NO	DATE	BY
<b>KEY PLAN</b> 1" = 400'			
<div style="display: flex; justify-content: space-around; align-items: center;"> <div> <i>[Signature]</i>              CITY OF BRAMPTON           </div> <div> <i>[Signature]</i>              CITY OF BRAMPTON           </div> </div>			
<b>CITY OF BRAMPTON</b>			
DEVELOPMENTAL INVESTMENTS LTD. <b>WILLIAMS PARKWAY</b> CULVERT & WATERCOURSE RESIDENTIAL 10,			
<b>paul theil associates limited</b> consulting engineers 700 Balmoral Drive, Bramalea, Ontario.			
DATE AUG 1976	CONTRACT DWG NO <b>J3-6-8</b>		
DRAWN M.S.S.	SCALE 1" = 40' HORIZ 1" = 4' VERT		
CHECKED <i>Michael L. ...</i>	FILE 7306-A-250		
APPROVED <i>[Signature]</i>			





## GENERAL NOTES:

1. CLASS OF CONCRETE - 30MPa
2. REINFORCING STEEL SHALL BE GRADE 400. SUFFIX "C" DENOTES COATED BARS.
3. ALL DESIGN REQUIREMENTS SHALL BE IN ACCORDANCE WITH CANADIAN HIGHWAY BRIDGE DESIGN CODE, 3RD EDITION, 1991
4. UNLESS SHOWN OTHERWISE, TENSION LAP LENGTHS NOT INDICATED ON THE CONTRACT DRAWINGS SHALL BE CLASS B.
5. BAR HOOKS SHALL BE MINIMUM LENGTH UNLESS INDICATED OTHERWISE.
6. CLEAR COVER TO REINFORCING STEEL 70±20 UNLESS OTHERWISE NOTED.
7. SAWCUTS IN CONCRETE SHALL BE 25mm DEEP OR TO FIRST LAYER OF REINFORCING STEEL, WHICHEVER IS LESS.
8. THE CONTRACTOR SHALL VERIFY ALL DIMENSIONS OF THE EXISTING WORK AND ALL DETAILS ON SITE AND REPORT DISCREPANCIES TO THE ENGINEER BEFORE PROCEEDING WITH THE WORK.
9. FOR STAGING DETAILS AND MAINTENANCE OF TRAFFIC SEE TEMPORARY TRAFFIC CONTROL DRAWING, SHEET NO. 6.

## APPLICABLE STANDARD DRAWINGS

- OPSD-3901.01 MODIFICATION OF ROUND VERTICAL DECK DRAIN  
 OPSD-3906.02 BRIDGE DECK WATERPROOFING  
 OPSD-3906.03 BRIDGE DECK WATERPROOFING DETAILS  
 OPSD-3951.00 DRAINAGE OF ASPHALT WEARING SURFACE ON EXISTING DECKS  
 OPSD-4010.00 GUIDE RAIL & CHANNEL ANCHORAGE

## LIST OF DRAWINGS

- SHEET 1 GENERAL ARRANGEMENT  
 SHEET 2 CHANNEL REPAIRS  
 SHEET 3 REPAIR PLAN AND DETAILS  
 SHEET 4 PARAPET WALL  
 SHEET 5 RAILING FOR PARAPET WALL  
 SHEET 6 TEMPORARY TRAFFIC CONTROL

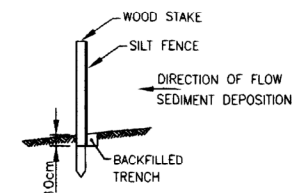
## SCOPE &amp; SUGGESTED SEQUENCE OF WORK ON DECK

## STAGE 1

1. PLACE TRAFFIC CONTROLS FOR STAGE 1 CONSTRUCTION.
2. REMOVE DECK ASPHALT, PATCH CONCRETE, REPAIR AND REPAVE.
3. REMOVE EXISTING PARAPET WALLS & RAILINGS.
4. INSTALL NEW CONCRETE PARAPET WALLS & RAILINGS.
5. REMOVE AND REPLACE SETTLED SIDEWALK PANELS.
6. REPAIR CHANNEL, SIDEWALK UNDER BRIDGE, SPALLING OF BRIDGE SOFFIT AT OUTLET AND SPALLING AREAS UNDERSIDE OF DECK.
7. REMOVE GABION BASKETS, COVER WITH TOPSOIL AND SOD.
8. APPLY MCI AND SEALER TO CONCRETE SURFACES OF SIDEWALKS, PARAPET WALLS, INSIDE OF CULVERT.
9. INSTALL "LOW OVERHEAD" SIGN OVER PATHWAY.

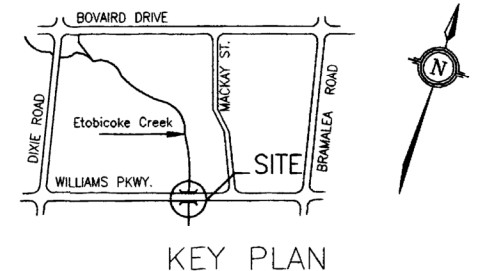
## STAGE 2

1. MOVE TRAFFIC CONTROLS FOR STAGE 2 CONSTRUCTION.
2. REPEAT STEPS 2 TO 5 FROM STAGE 1 CONSTRUCTION.
3. REMOVE TEMPORARY BARRIER
4. RESTORE TRAFFIC TO ENTIRE STRUCTURE.



## SILT FENCE INSTALLATION

N.T.S.



## NOTE:

THIS DRAWING WAS PRODUCED BY PLANMAC INC.  
 IN DIGITAL FORMAT FROM SURVEY NOTES MADE  
 JUNE 23, 2002 AND JULY 8, 2002

## CREEK BED PROTECTION

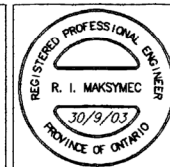
1. NO WORK WILL BE ALLOWED ADJACENT TO OR IN THE CREEK BED BETWEEN 1 APRIL & 1 JULY
2. PROVIDE TEMPORARY SCAFFOLDING WITH IMPERMEABLE SURFACE TO PREVENT CONCRETE REMOVALS FROM ENTERING CREEK
3. TEMPORARY SCAFFOLDING TO BE REMOVED PRIOR TO FORECAST RAIN STORMS

NO.	BY	DATE	REVISIONS	CHECKED
2	H.C.	30/9/03	AS CONSTRUCTED	M.R.K.
1	P.Z.	19/11/02	REVISED AS PER TRCA COMMENTS	M.R.K.

CITY OF BRAMPTON  
WORKS & TRANSPORTATION

COMMISSIONER OF WORKS &amp; TRANSPORTATION A. D. MacMILLAN, P. ENG.

**PLANMAC INC.**  
 CONSULTING ENGINEERS & PLANNERS  
 15 North Queen St., Suite 105  
 Toronto, Ontario, M5Z 6C1  
 CANADA  
 Tel: (416) 628-6300 FAX: (416) 622-6710

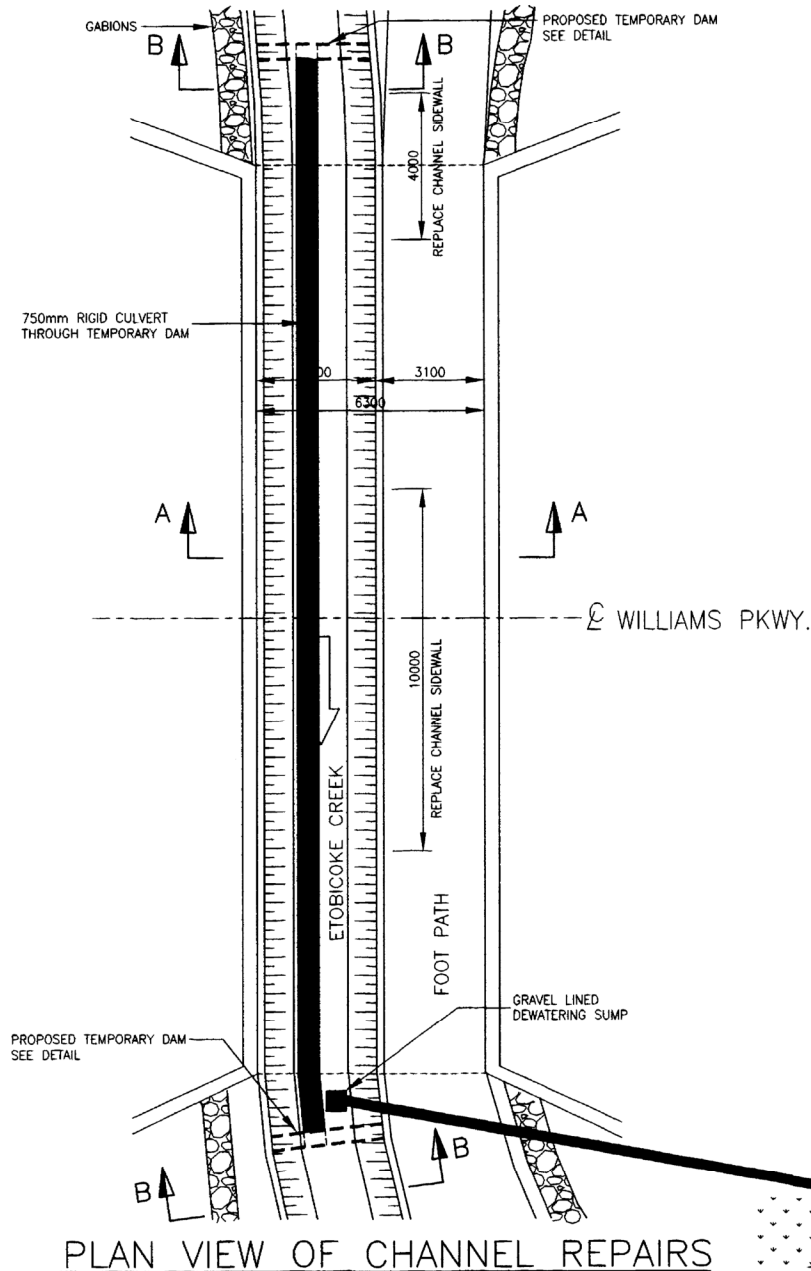
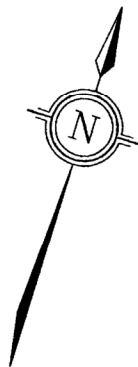


**WILLIAMS PKWY BRIDGE**  
 OVER ETOBICOKE CREEK TRIBUTARY  
 STRUCTURE NO. 391043/ 0.2km WEST OF MACKAY ST.

PROPOSED REHABILITATION  
GENERAL ARRANGEMENT

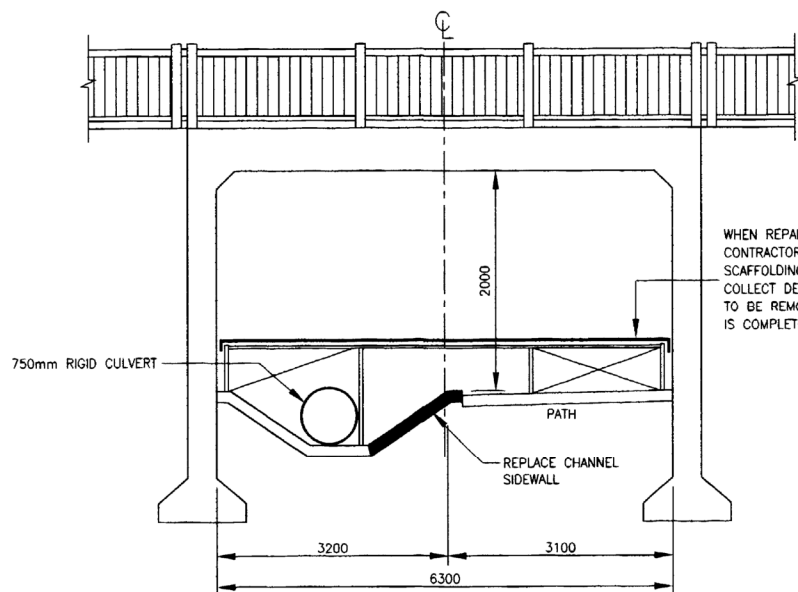
SURVEYED BY: A.S.&P.Z.	DATE:	CONTRACT NO. 2002-051
DRAWN BY: A.S.	CHECKED BY: M.R.K.	DRAWING NO.
DESIGNED BY: R.D.F.	CHECKED BY: R.I.M.	SHEET NO.
SCALE: AS NOTED	DATE: 30 SEPT. 03	BR-15 1 of 6





PLAN VIEW OF CHANNEL REPAIRS

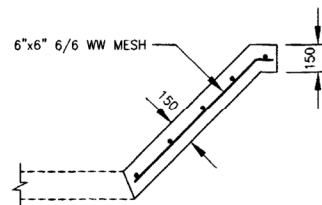
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SECTION A-A

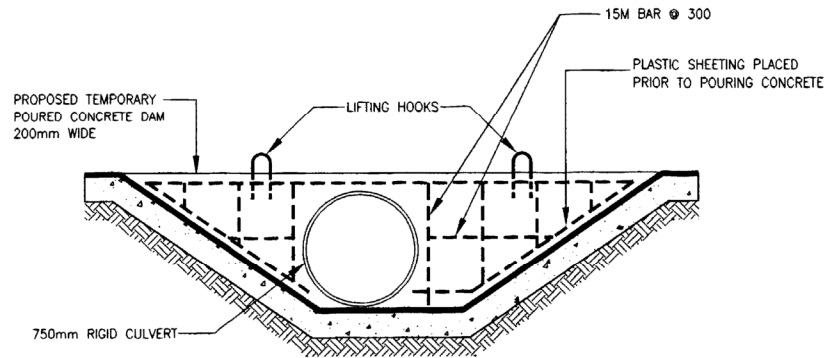
1:50

WHEN REPAIRING CRACKS IN SOFFIT, CONTRACTOR TO PROVIDE TEMPORARY SCAFFOLDING WITH PLASTIC SHEET TO COLLECT DEBRIS, TEMPORARY SCAFFOLDING TO BE REMOVED EVERY DAY AFTER WORK IS COMPLETED



CHANNEL SIDEWALL REPAIR DETAILS

1:20



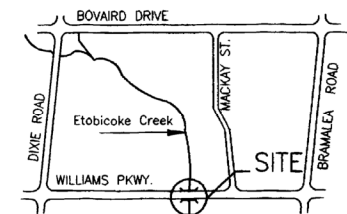
SECTION B-B  
TEMPORARY DAM DETAIL

1:20

NOTES:

1. STREAM BED MUST BE RESTORED TO ORIGINAL OR IMPROVED CONDITION.
2. DISCHARGE FROM DEWATERING MUST BE DISPERSED FROM TRAP THROUGH VEGETATED AREA MIN. 10m FROM WATERCOURSE.
3. EXCAVATED MATERIAL MUST BE STORED 10m AWAY FROM WATERCOURSE.

DIMENSIONS ARE IN METRES  
AND/OR MILLIMETRES  
UNLESS OTHERWISE SHOWN



KEY PLAN



2	H.C.	30/9/03	AS CONSTRUCTED	M.R.K.
1	P.Z.	4/7/03	ENVIRONMENTAL PROTECTION REVISED	M.R.K.
NO.	BY	DATE	REVISIONS	CHECKED

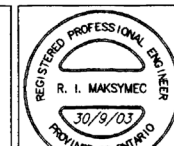


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**WORKS & TRANSPORTATION**

COMMISSIONER OF WORKS & TRANSPORTATION A. D. MacMILLAN, P. ENG.



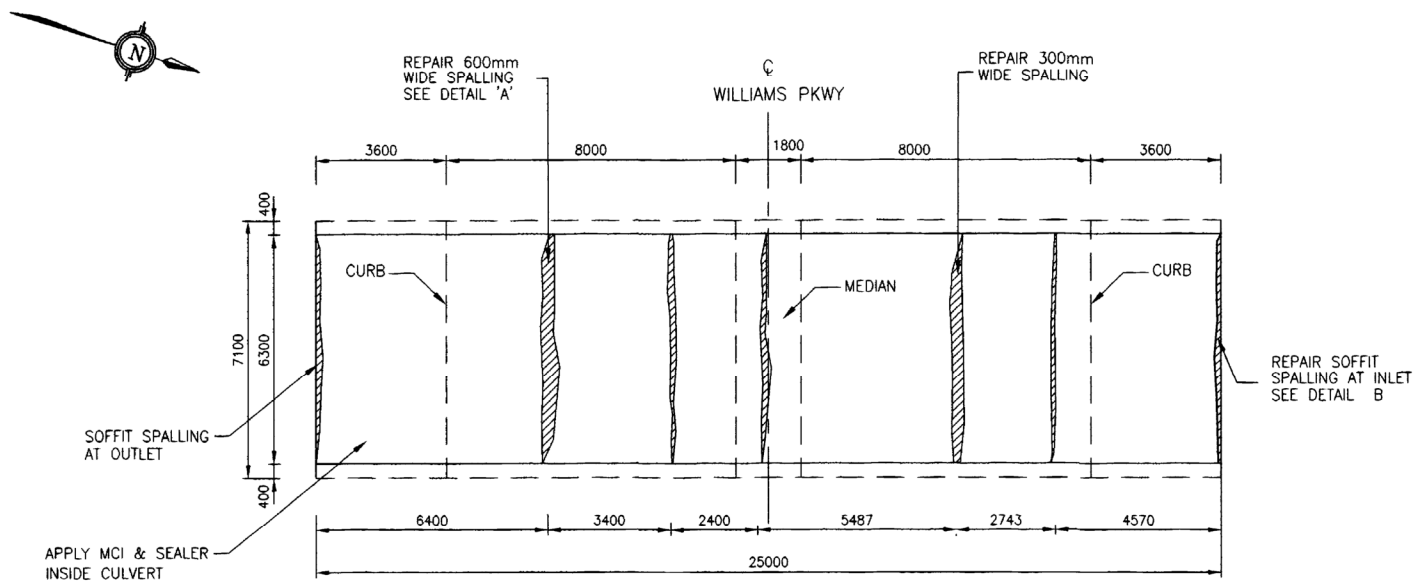
**PLANMAC INC.**  
CONSULTING ENGINEERS & PLANNERS  
15 North Queen St., Suite 105  
Toronto, Ontario, M5Z 8C1  
CANADA  
Tel: (416) 626-5800 FAX: (416) 622-6710



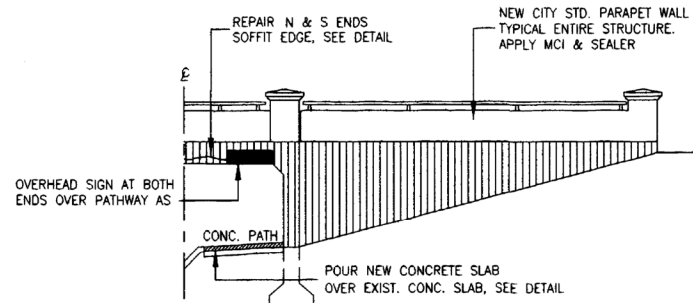
**WILLIAMS PKWY BRIDGE**  
OVER ETOBICOKE CREEK TRIBUTARY  
STRUCTURE NO. 391043/ 0.2km WEST OF MACKAY ST.

**PROPOSED REHABILITATION**  
**CHANNEL REPAIRS**

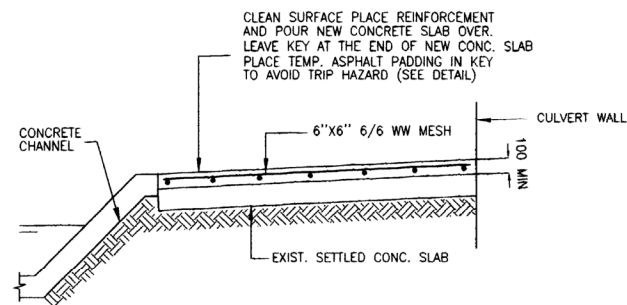
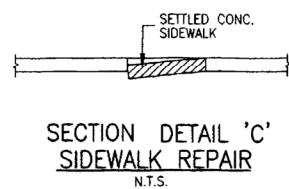
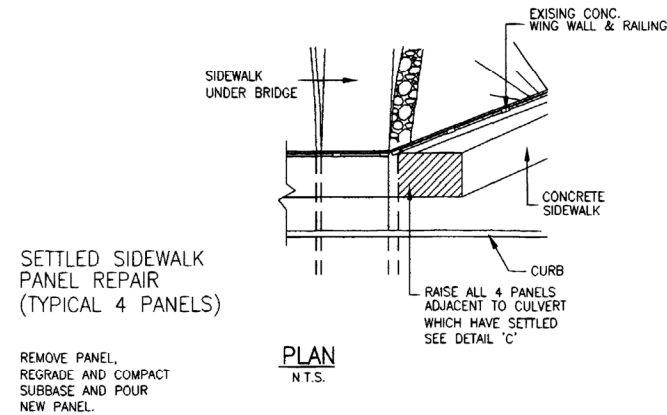
SURVEYED BY: A.S.&P.Z.	DATE:	CONTRACT NO. 2002-22
DRAWN BY: P.Z.	CHECKED BY: M.R.K.	DRAWING NO. BR-15
DESIGNED BY: R.D.F.	CHECKED BY: R.I.M.	SHEET NO. 2 of 6
SCALE: AS NOTED	DATE: 30 SEPT. 03	



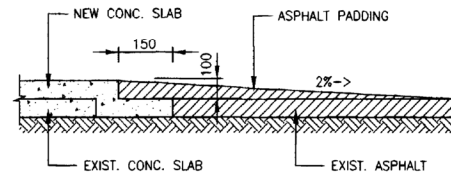
UNDERSIDE DECK REPAIR  
1:100



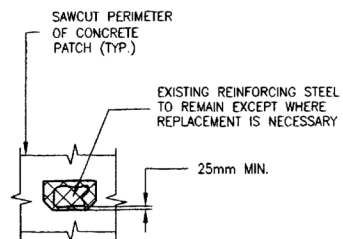
SOUTH ELEVATION (REHABILITATED)  
1:100



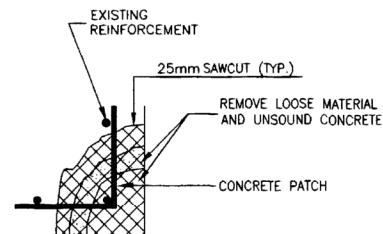
SIDEWALK REPAIR SECTION  
1:25



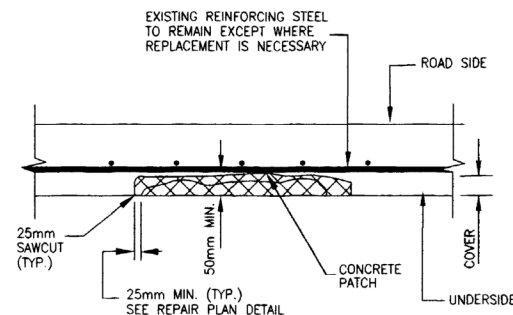
KEY DETAIL AT END OF  
CONCRETE SIDEWALK  
1:20



REPAIR PLAN DETAIL  
N.T.S.



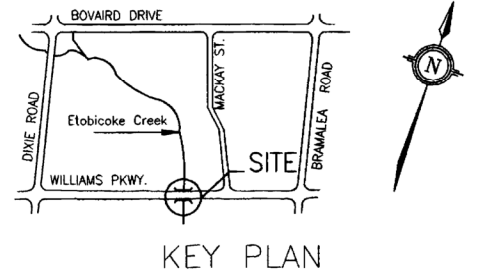
DETAIL 'B' SOFFIT EDGE REPAIR  
N.T.S.



SECTION DETAIL 'A'  
N.T.S.

NOTES:

1. SAWCUT PERIMETER.
2. CHIP AND REMOVE ALL LOOSE AND UNSOUND CONCRETE.
3. CLEAN CONCRETE AND EXPOSED REINFORCING STEEL BY ABRASIVE BLAST.
4. PLACE CONCRETE PATCH.



1	H.C.	30/9/03	AS CONSTRUCTED	M.R.K.
NO.	BY	DATE	REVISIONS	CHECKED

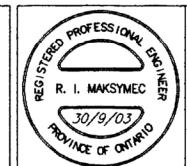


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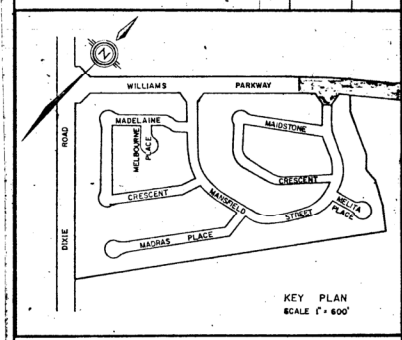
PROJECT DWG. NO.

**WILLIAMS PKWY BRIDGE**  
OVER ETOBICOKE CREEK TRIBUTARY  
STRUCTURE NO. 391043/ 0.2km WEST OF MACKAY ST.

**PROPOSED REHABILITATION**  
**REPAIR AND DETAILS**

SURVEYED BY: A.S.&P.Z.	DATE:	CONTRACT NO. 2002-051
DRAWN BY: A.S.	CHECKED BY: M.R.K.	DRAWING NO.
DESIGNED BY: R.D.F.	CHECKED BY: R.I.M.	SHEET NO.
SCALE: AS NOTED	DATE: 30 SEPT. 03	BR-15 3 of 6

REVISIONS	Nº	DATE	BY
1. REVISIONS: SEE DWG. 7306-A-164 (14)	1	3-5-76	JLS
2. REVISIONS: SEE DWG. 7306-A-164 (14)	2	3-4-76	DOV
3. REVISIONS: SEE DWG. 7306-A-164 (14)	3	4-8-76	H.S.S.
4. REVISIONS: SEE DWG. 7306-A-164 (14)	4	4-12-76	H.S.S.
5. REVISIONS: SEE DWG. 7306-A-164 (14)	5	4-12-76	H.S.S.
6. REVISIONS: SEE DWG. 7306-A-164 (14)	6	4-12-76	H.S.S.
7. REVISIONS: SEE DWG. 7306-A-164 (14)	7	4-12-76	H.S.S.
8. REVISIONS: SEE DWG. 7306-A-164 (14)	8	4-12-76	H.S.S.



- GENERAL NOTES:
- UNLESS OTHERWISE NOTED ON THE DRAWINGS THE FOLLOWING REQUIREMENTS SHALL APPLY TO THE WORKS. ALTERNATIVE MATERIAL SPECIFICATIONS ARE LISTED IN THE CONTRACT DOCUMENTS.
1. SEWER PIPE SHALL BE TYPE AND CLASS INDICATED, OR APPROVED ALTERNATIVE MATERIAL AND PIPE CLASS.
  2. CONCRETE PIPE LARGER THAN 18" DIA SHALL BE REINFORCED, CLASS 575.
  3. ALL CONCRETE SEWER PIPE SHALL HAVE RUBBER GASKET JOINTS.
  4. ALL SEWERS SHALL BE CONSTRUCTED WITH TYPE 'B' BEDDING UNLESS OTHERWISE SPECIFIED.
  5. ALL WATERMAINS SHALL HAVE 5'6" MIN. COVER.
  6. MANHOLE COVERS AND FRAMES SHALL BE CANTON TYPE 55579, OR APPROVED EQUAL.
  7. CATCHBASIN GRATINGS AND FRAMES SHALL BE LTD CR24 WITH BICYCLE PROOF TOPS.
  8. MANHOLE STEPS SHALL BE STEELCO LR 10 OR APPROVED EQUAL.
  9. CATCHBASIN LEADS SHALL BE 8" DIA FOR SINGLE CATCHBASINS, 10" DIA FOR DOUBLE CATCHBASINS, UNLESS OTHERWISE NOTED IN THE DRAWINGS. ALL CATCHBASIN LEADS SHALL BE CONCRETE PIPE, CLASS CH, EXTRA STRENGTH.
  10. WATERMAIN SHALL BE DUCTILE IRON ANSI CLASS 2 CEMENT LINED WITH TYTON JOINTS FOR SIZES 4"-12".
  11. 2" WATERMAIN SHALL BE TYPE 'K' SOFT COPPER.
  12. WATERMAIN AND APPURTENANCES AS PER REGION OF PEEL MATERIAL SPECIFICATIONS FOR WATERMAIN AND APPURTENANCES.
  13. WATERMAIN CONNECTIONS SHALL BE 1" DIA DOUBLE SERVICE AND 3/4" SINGLE SERVICE OF TYPE 'K' SOFT SEAMLESS COPPER TUBING.
  14. THE PROPOSED ELEVATIONS AT BUILDINGS AND THE BASIC DIRECTION OF SURFACE DRAINAGE WILL BE SUBJECT TO DETAILED DESIGN WHEN HOUSE TYPES AND PLOT PLANS ARE AVAILABLE.
  15. SUPPORT STORM SEWERS AT ALL CROSSINGS REFER TO CITY OF BRAMPTON STD DWS 7355.
  16. 1.33% DESIGNED GRADE  
1.33% AS CONSTRUCTED GRADE

MIN 26 1978

CITY OF BRAMPTON  
ENGINEERING DEPT.

**CITY OF BRAMPTON**

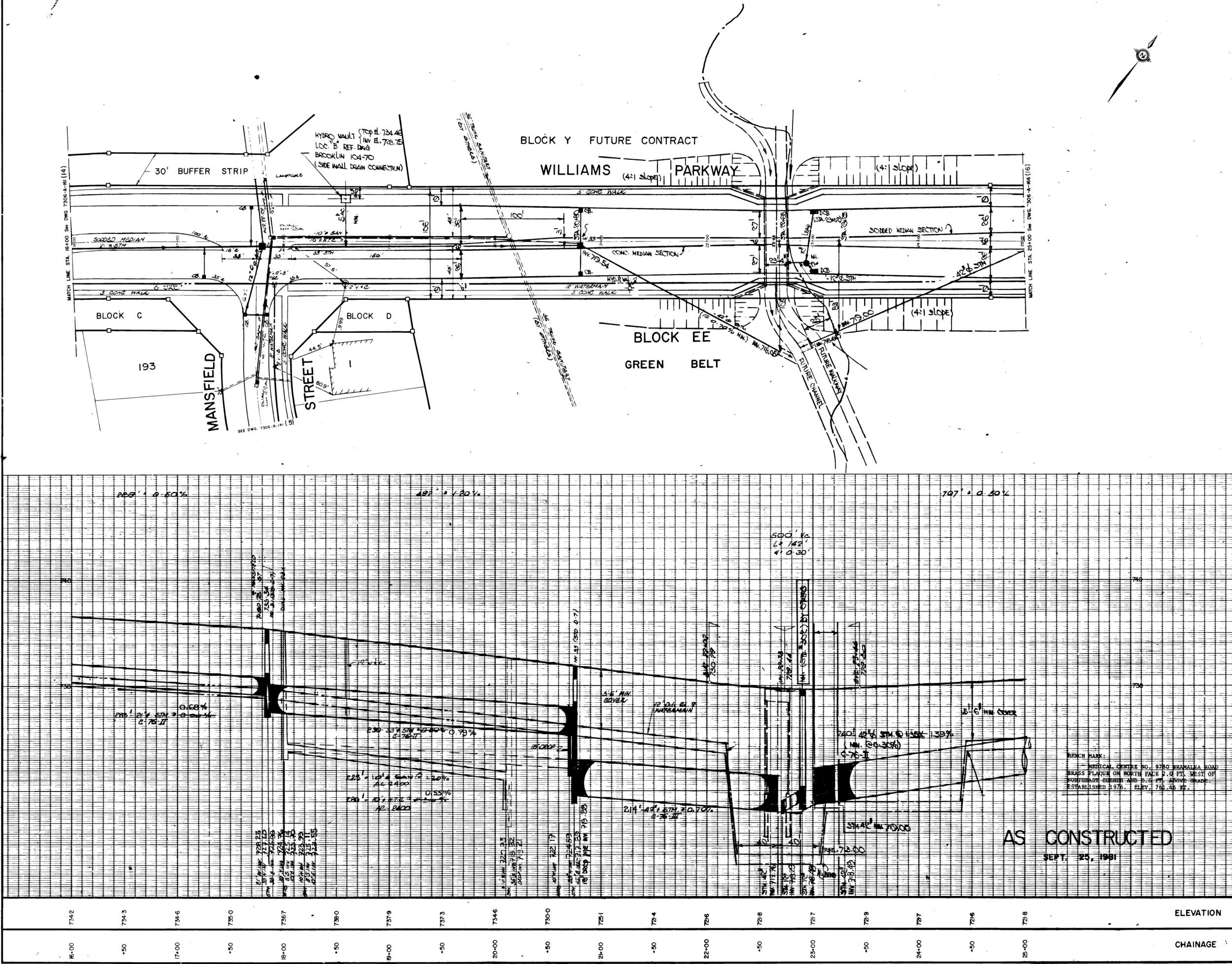
DEVELOPMENTAL INVESTMENTS LTD.

WILLIAMS PARKWAY  
STA. 16+00 TO 25+00

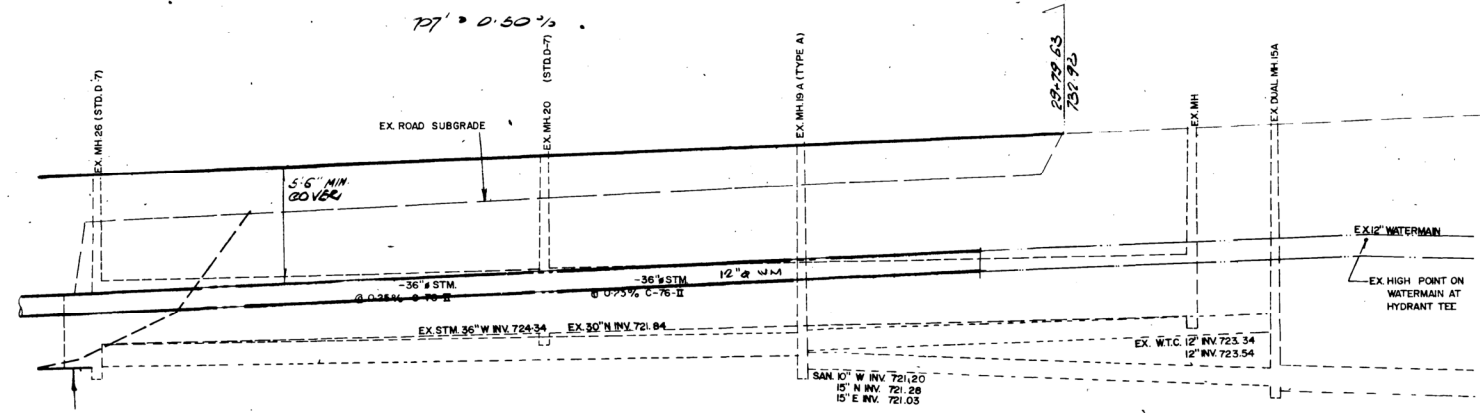
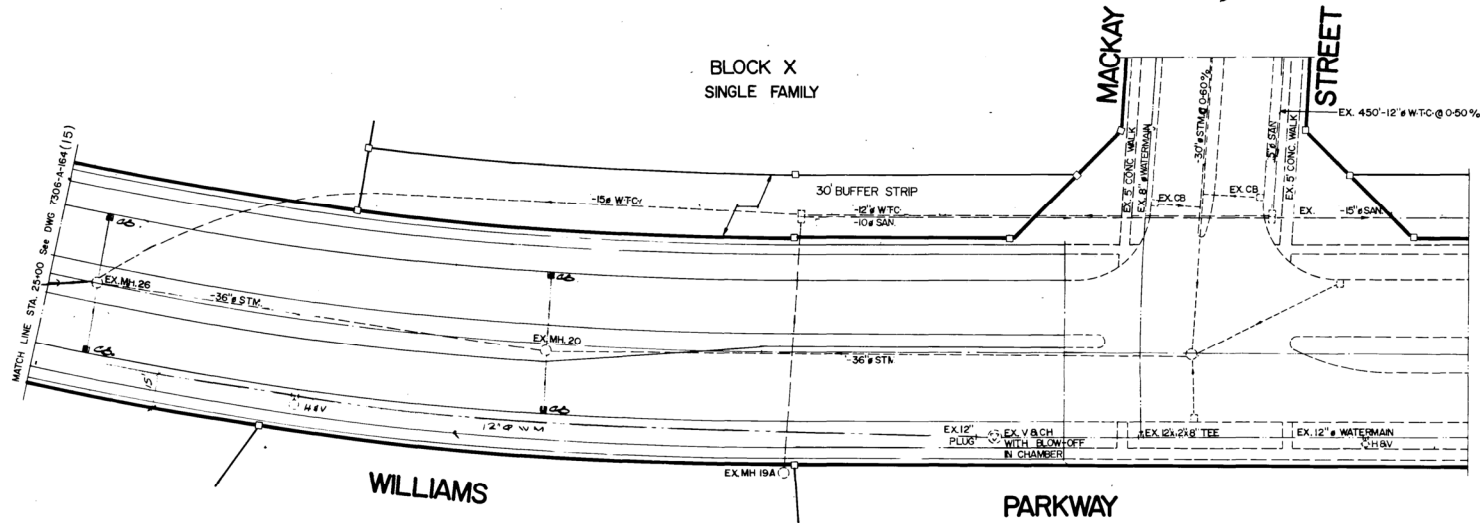
RESIDENTIAL 10, STAGE 4

**paul theil associates limited**  
consulting engineers  
700 Balmoral Drive, Bramalea, Ontario.

DATE	JANUARY 1976	CONTRACT DWS Nº	J3-129-6
DRAWN	DOV	SCALE	HORIZ 1"=40' VERT. 1"=4'
CHECKED	AD	FILE	7306-A-164
APPROVED	PK		



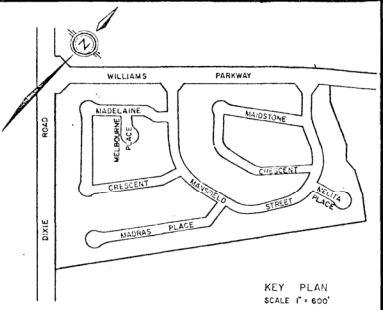
AS CONSTRUCTED  
SEPT. 25, 1981



BENCH MARK:  
MEDICAL CENTRE NO. 9780 BRAMALEA ROAD  
BRASS PLAQUE ON NORTH FACE 2.0 FT. WEST OF  
NORTHEAST CORNER AND 0.6 FT. ABOVE GRADE.  
ESTABLISHED 1976. ELEV. 761.46 FT.

AS CONSTRUCTED  
SEPT. 25, 1981

REVISIONS	Nº	DATE	BY
REVISED 42" Ø STM SEWER	1	AUG 25/96	H.S.S
A5 CONSTRUCTED SAN STM, INV. 2	2	SEPT 10/96	D.W.D
A5 CONSTRUCTED	3	SEPT 25/96	D.W.D



- GENERAL NOTES:
- UNLESS OTHERWISE NOTED ON THE DRAWINGS THE FOLLOWING REQUIREMENTS SHALL APPLY TO THE WORKS. ALTERNATIVE MATERIAL SPECIFICATIONS ARE LISTED IN THE CONTRACT DOCUMENTS.
- SEWER PIPE SHALL BE TYPE AND CLASS INDICATED, OR APPROVED ALTERNATIVE MATERIAL AND PIPE CLASS.
  - CONCRETE PIPE LARGER THAN 18\"/>
  - ALL CONCRETE SEWER PIPE SHALL HAVE RUBBER GASKET JOINTS.
  - ALL SEWERS SHALL BE CONSTRUCTED WITH TYPE B BEDS UNLESS OTHERWISE SPECIFIED.
  - ALL WATERMANS SHALL HAVE 5'-6\"/>
  - MANHOLE COVERS AND FRAMES SHALL BE CASTON TYPE D5179, OR APPROVED EQUAL.
  - CATCHBASIN GRATES AND FRAMES SHALL BE LTD. ORDN. WITH BOYLE PROOF TOPS.
  - MANHOLE STEPS SHALL BE STEELCO LR101 OR APPROVED EQUAL.
  - CATCHBASIN LEADS SHALL BE 8\"/>
  - WATERMAN SHALL BE DUCTILE IRON ANSI CLASS 2 DEVENT LINED WITH TYTON JOINTS FOR SIZES 4\"/>
  - 2\" WATERMAIN SHALL BE TYPE K\"/>
  - WATERMAN AND APPURTENANCES AS PER REGION OF PIPEL. MATERIAL SPECIFICATIONS FOR WATERMAIN AND APPURTENANCES.
  - WATERMAIN CONNECTIONS SHALL BE 1\"/>
  - THE PROPOSED ELEVATIONS AT BUILDINGS AND THE BASIC DIRECTION OF SURFACE DRAINAGE WILL BE SUBJECT TO DETAILED DESIGN WHEN HOUSE TYPES AND PLOT PLANS ARE AVAILABLE.
  - SUPPORT STORM SEWERS AT ALL CROSSINGS. REFER TO CITY OF BRAMPTON STD. DWG. #355.

CITY OF BRAMPTON

DEVELOPMENTAL INVESTMENTS LTD.

WILLIAMS PARKWAY  
STA. 25+00 to 29+77.63

RESIDENTIAL IO, STAGE 4

paul theil associates limited  
consulting engineers  
700 Balmoral Drive, Bramalea, Ontario.

DATE	JANUARY 1976	CONTRACT DWG Nº	
DRAWN	<i>[Signature]</i>	J3-129-7	
CHECKED	<i>[Signature]</i>	SCALE HORIZ. 1\"/>	
APPROVED	<i>[Signature]</i>	FILE	

ELEVATION	CHAINAGE
722.0	25+00
723.8	+50
729.4	26+00
733.8	+50
735.2	27+00
735.2	+50
735.4	28+00
735.1	+50
734.4	29+00
734.0	+50
733.3	29+63

## APPENDIX B – GENERAL ARRANGEMENT DRAWING



NOTES

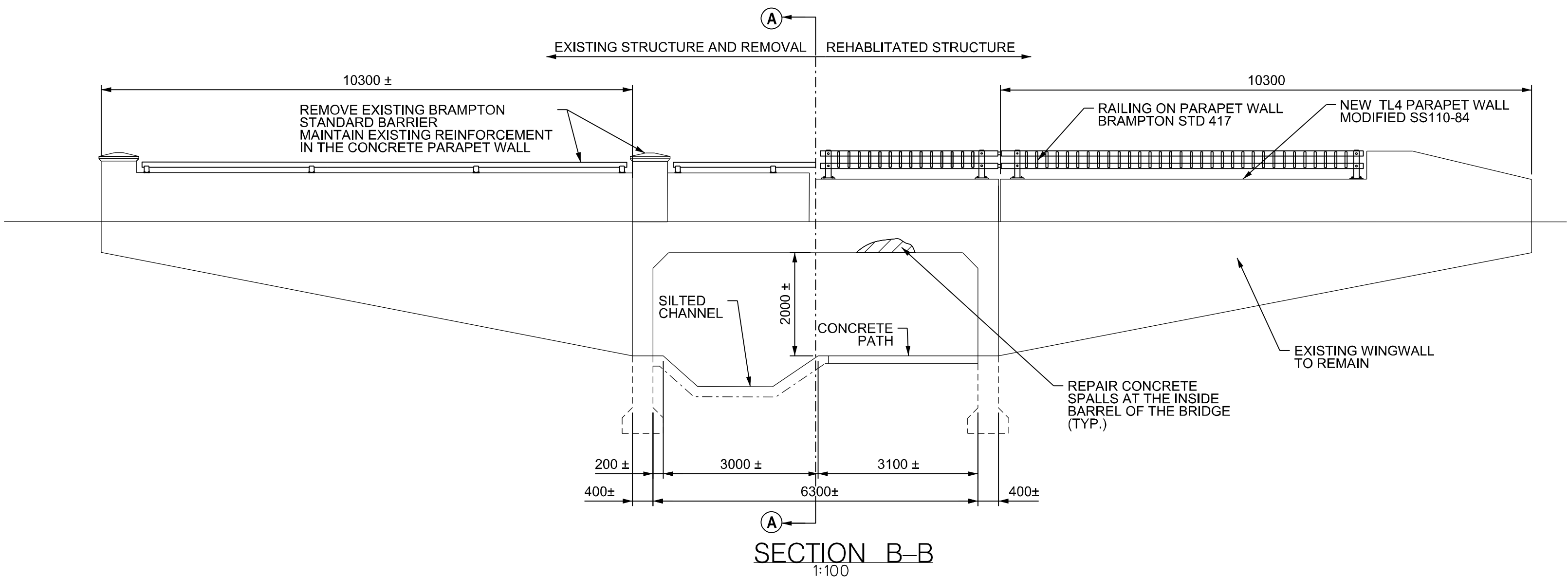
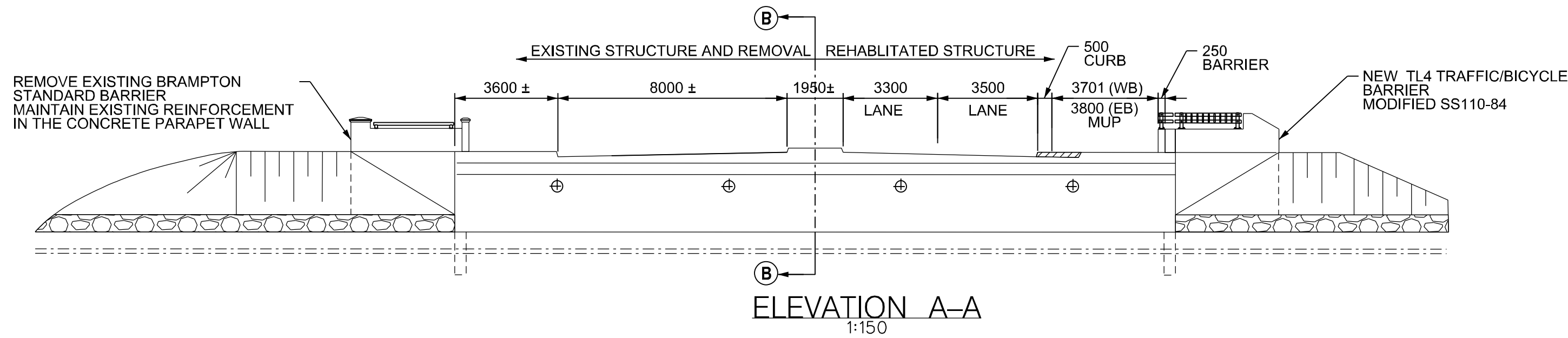
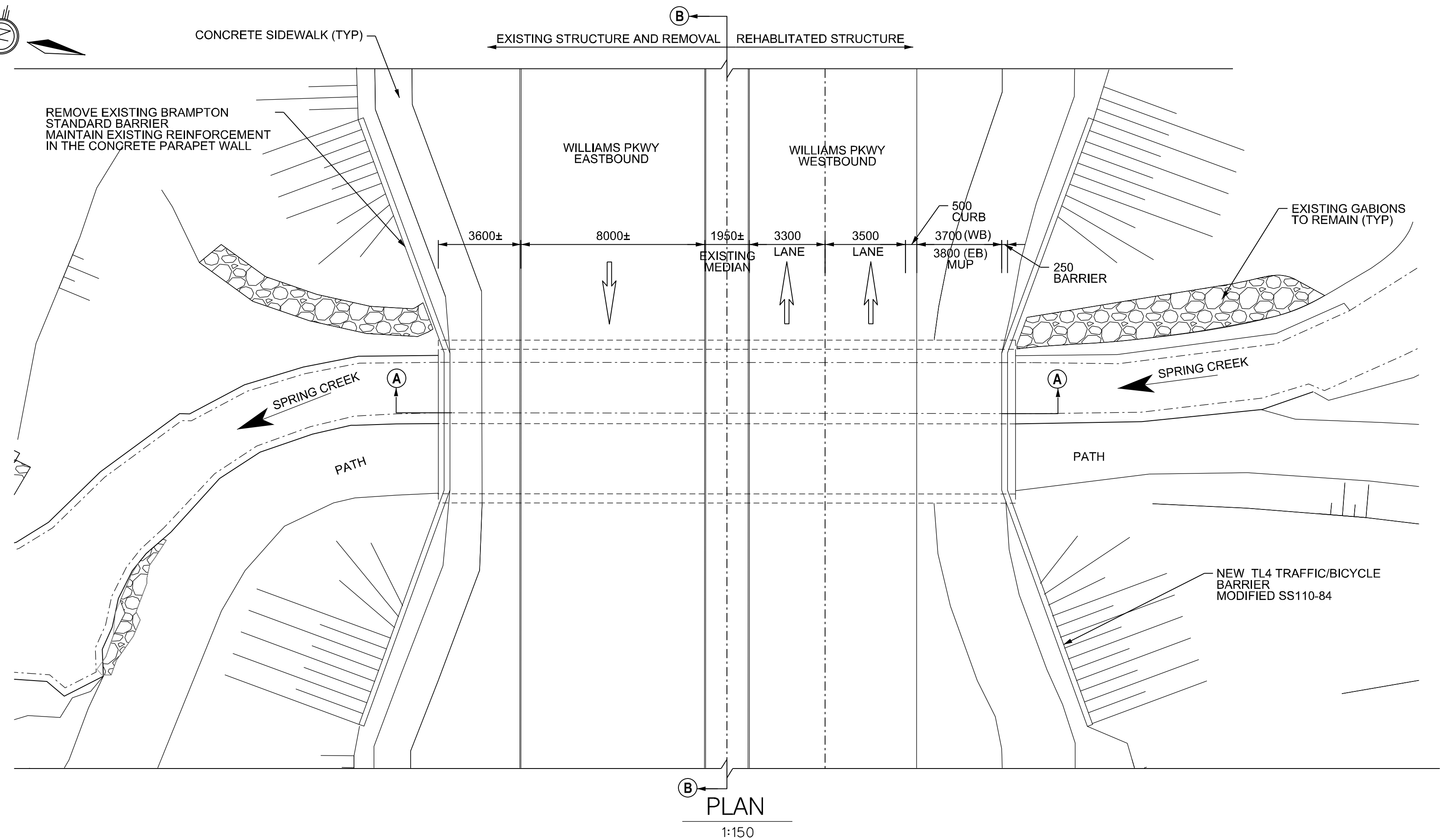
- CLASS OF CONCRETE:  
ALL 30MPa
- CLEAR COVER TO REINFORCING STEEL:  
OUTSIDE FACE 50 ± 10  
REMAINDER UNLESS NOTED OTHERWISE 70 ± 20
- REINFORCING STEEL:
- REINFORCING STEEL SHALL BE GRADE 500W.
  - BARS MARKED WITH PREFIX 'S' DENOTE STAINLESS STEEL BARS.
  - STAINLESS REINFORCING STEEL SHALL BE TYPE 316LN OR DUPLEX 2205 AND HAVE MINIMUM YIELD STRENGTH OF 500MPa, UNLESS OTHERWISE SPECIFIED.
  - UNLESS SHOWN OTHERWISE, TENSION LAP SPLICES FOR REINFORCING STEEL 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.

APPLICABLE STANDARD DRAWINGS

- SS110-84 PARAPET WALL FOR COMBINATION TRAFFIC/  
BICYCLE RAIL, TL-4 (GFRP REBAR WITH ANCHOR HEAD)
- BRAMPTON  
STD 417 DOUBLE RAILING FOR BARRIER WALL

LEGEND

- WB DENOTES WESTBOUND  
EB DENOTES EASTBOUND



1	E. LYAPIN	02/09/24	PROPOSED REHABILITATION		C. KHO
NO.	BY	DATE	REVISIONS		CHECKED

**BRAMPTON**  
Flower City  
brampton.ca

**Public Works & Engineering**  
**Capital Works**

**PARSONS**

PROJECT

DWG. NO.

**WILLIAMS PKWY BRIDGE**  
**OVER SPRING CREEK**  
STRUCTURAL NO. 390143/ 0.2km WEST OF MACKAY STREET

PROPOSED REHABILITATION GENERAL ARRANGEMENT					
SURVEYED BY:		DATE: FEBRUARY 2024		FILE NO. XX-XXX-XXX	
DRAWN BY: E. LYAPIN		CHECKED BY: R. GABR		DRAWING NO.	
DESIGNED BY: W. GAN		CHECKED BY: C. KHO		SHEET NO.	
SCALE: AS NOTED		DATE: FEBRUARY 2024			

## APPENDIX C – EXISTING STRUCTURE PHOTOGRAPHS





PHOTOGRAPH 1 NORTH ELEVATION



PHOTOGRAPH 2 DECK TOP LOOKING NORTH, TRANSVERSE CRACK





**PHOTOGRAPH 3 DECK TOP LOOKING SOUTH, ALLIGATOR CRACKS**



**PHOTOGRAPH 4 DECK TOP LOOKING WEST**





PHOTOGRAPH 5 DECK TOP LOOKING WEST



PHOTOGRAPH 6 WEST ABUTMENT





PHOTOGRAPH 6 EAST ABUTMENT



PHOTOGRAPH 7 NORTH FASCIA





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PHOTOGRAPH 9 UNDERSIDE OF NORTH SOFFIT



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PHOTOGRAPH 10 NORTH SOFFIT





PHOTOGRAPH 11 SOUTH FASCIA



PHOTOGRAPH 12 WIDE CRACKS AT SOUTH SOFFIT





PHOTOGRAPH 13 NORTH EAST WINGWALL



PHOTOGRAPH 14 NORTH WEST WINGWALL





PHOTOGRAPH 15 SOUTH EAST WINGWALL



PHOTOGRAPH 16 SOUTH WEST WINGWALL





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PHOTOGRAPH 17 SOUTH SIDEWALK LOOKING WEST



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PHOTOGRAPH 18 SOUTH BARRIER WALL WITH VERTICAL WIDE CRACKS





PHOTOGRAPH 19 NORTH SIDEWALK LOOKING WEST



PHOTOGRAPH 20 NORTH BARRIER WALL WITH VERTICAL MEDIUM CRACKS





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PHOTOGRAPH 21 TRANSVERSE NARROW TO MEDIUM CRACK WITH EFFLORESCENCE ON SOFFIT



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PHOTOGRAPH 22 DELAMINATION AND SPALL ON SOFFIT





PHOTOGRAPH 23 SMALL CRACKS ON SOFFIT



PHOTOGRAPH 24 SIDEWALK UNDER THE BRIDGE





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**PHOTOGRAPH 25 NORTH UPSTREAM**



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**PHOTOGRAPH 26 SOUTH DOWNSTREAM**