

TABLE OF FITS AND FINISHES		ENGLISH		METRIC	
PART	FIT	FINISH (MICRO-INCH)	FIT	FINISH (Rd)	
MACHINERY BASE ON STEEL	—	250	—	6.3	
MACHINERY BASE ON MASONRY	—	500	—	12.5	
SHAFT JOURNALS	—	8	H8/f7	0.2	
JOURNAL BUSHING	RC6	16	H8/f7	0.4	
SPLIT BUSHING IN BASE	LC1	125	H7/h6	3.2	
SOLID BUSHING IN BASE (TO 3.1MM WALL)	FN1	63	H7/s6	1.6	
SOLID BUSHING IN BASE (OVER 3.1MM WALL)	FN2	63	H7/s6	1.6	
HUBS ON SHAFTS (TO 50.8 MM BORE)< 50.8MM	FN2	32	H7/s6	0.8	
HUBS ON SHAFTS (OVER 50.8 MM BORE)> 50.8MM	FN2	63	H7/s6	1.6	
TURNED BOLTS IN FINISHED HOLES	LC6	63	H7/h6	1.6	
SLIDING BEARINGS	RC6	32	H8/f7	0.8	
ROLLING SURFACES	—	63	—	1.6	
BEARING SURFACES	—	32	—	0.8	
MACHINERY PARTS IN FIXED CONTACT	—	125	—	3.2	
OTHER MACHINED SURFACES		FINISH ALL OVER — 250		FINISH ALL OVER — 6.3	
KEYS AND KEYWAYS	TOP & BOTTOM	—	63	—	1.6
	SIDES	—	63	—	1.6

GENERAL MACHINERY NOTES (METRIC):

1.

DETAILS OF MACHINERY SHALL CONFORM TO THE AASHTO LRFD MOVABLE HIGHWAY BRIDGE DESIGN SPECIFICATIONS, 2ND EDITION, WITH 2007 INTERIM REVISIONS THROUGH 2011, UNLESS OTHERWISE SHOWN ON THE PLANS, OR PROVIDED IN THE SPECIAL PROVISIONS.
2.

PROVIDE STAINLESS STEEL SHIMS FOR LEVELING AND ALIGNING ALL MACHINERY COMPONENTS. SHIMS SHALL BE 13 NOMINAL THICKNESS, UNLESS OTHERWISE SPECIFIED, WITH ADJUSTMENT VARIATIONS AS DESCRIBED IN THE SPECIFICATIONS. ANYWHERE SHIMS ARE REQUIRED, TAPERED SHIMS MAY BE NECESSARY TO ACHIEVE BEARING ACROSS A BEARING SURFACE WHILE MAINTAINING ALIGNMENT. THE THICKNESS AND TAPER SHALL BE BASED ON MEASUREMENTS. TAPERED SHIMS WHERE NECESSARY SHALL BE PROVIDED AT NO ADDITIONAL COST.
3.

MACHINERY DIMENSIONS SHOWN ON DRAWINGS ARE DIMENSIONS AFTER MACHINING.
4.

ALL BOLTS SHALL BE FINISH BODY HIGH STRENGTH MEETING THE REQUIREMENTS OF ASTM A449, UNLESS OTHERWISE INDICATED. THE FINISH BODY HIGH STRENGTH BOLT TO HOLE CLEARANCE SHALL BE MINIMUM 0.0762 AND MAXIMUM 0.254, UNLESS OTHERWISE NOTED. WHERE STRUCTURAL FIT HIGH STRENGTH BOLTS ARE SPECIFIED THE BOLT TO HOLE CLEARANCE SHALL BE BETWEEN 0.0762 AND 1.5875, UNLESS OTHERWISE NOTED. WHERE TURNED BOLTS/FASTENERS ARE SPECIFIED, THE BOLT TO HOLE CLEARANCE SHALL BE LC-6, UNLESS OTHERWISE NOTED. ALL U.S. FASTENERS SHALL HAVE A HARDENED PLAIN WASHER F436 UNDER THE HEAD AND THE NUT. HIGH STRENGTH BOLTS THAT HAVE BEEN TORQUED SHALL NOT BE REUSED.
5.

UNLESS OTHERWISE INDICATED OR REQUIRED FOR THE PROPER ASSEMBLY OF PARTS, DIMENSIONAL TOLERANCES AND FINISHES FOR MACHINERY IN GENERAL SHALL BE AS FOLLOWS:

SURFACE	TOLERANCE
MACHINED (TO 25.4)	+/- 0.381
MACHINED (OVER 25.4)	+/- 0.762
ROLLED	+/- 0.762
NON-MACHINED CAST (TO 25.4")	+/- 0.762
NON-MACHINED CAST (OVER 25.4)	+/- 1.5875
BOLT HOLE LOCATIONS	+/- 0.762
6.

ALL CORNERS AND EDGES OF CASTINGS SHALL HAVE SUITABLE FILLETS AND RADII, IN GENERAL THE FILLET OR RADII SHALL BE A MINIMUM OF 12R. FOR SECTIONS GREATER THAN 50.8 AND 6.35R. ON THINNER SECTIONS. CASTINGS SHALL BE PROVIDED WITH A BOSS FOR VERTICAL MOUNTING BOLTS AND SPOT FACE FOR HORIZONTAL MOUNTING BOLTS. BOSSES SHALL BE 6.35 HIGH AND SHALL HAVE A MINIMUM DIAMETER OF 6.35 PLUS THE NOMINAL WASHER DIAMETER. SPOT FACES SHALL BE 1.5875 DEEP AND HAVE A MINIMUM DIAMETER OF 6.35 PLUS THE NOMINAL WASHER DIAMETER. THE CONTRACTOR SHALL ADHERE TO THE PROPER CASTING AND COOLING PROCESS, SO THAT SURFACE SHRINKAGE CRACKS ARE ELIMINATED.
7.

ALL SURFACES OF FORGINGS SHALL BE MACHINED TO THE DIMENSIONS SHOWN ON THE PLANS.
8.

ALL TRANSITIONS OF SURFACES OF MACHINERY PARTS SHALL BE BLENDED SMOOTH.
9.

THE EDGES AND CORNERS OF ALL MACHINERY PARTS SHALL BE DETAILED AND MACHINED WITH SUITABLE FILLETS AND CHAMFERS. IN GENERAL THE MINIMUM EDGE OR CORNER, RADIUS OR CHAMFER SHALL BE 1.5875 IF PART THICKNESS IS LESS THAN 25.4 AND 3.175 IF EQUAL OR GREATER, UNLESS OTHERWISE NOTED. IN THE CASE OF MATING PARTS, ALLOWANCE SHALL BE MADE FOR THE PROPER FIT AND ASSEMBLY, SUCH DETAILS SHALL BE SHOWN ON SHOP DRAWINGS.
10.

FASTENERS THAT REQUIRE TAPPED HOLES, SHALL BE DETAILED WITH A MINIMUM THREAD ENGAGEMENT OF 1.5 TIMES THE NOMINAL BODY DIAMETER. A 3.175 COUNTERBORE SHALL BE PROVIDED IN THE BASE MATERIAL FOR FASTENERS LESS THAN 25.4 DIAMETER AND 6.35 FOR GREATER THAN 25.4 DIAMETER. SUITABLE THREAD RELIEF SHALL BE PROVIDED TO PROPERLY TENSION THE FASTENERS. COUNTERSUNK FASTENERS SHALL BE DETAILED WITH A MINIMUM OF A 1.5875 RECESS.

GENERAL MACHINERY NOTES (IMPERIAL):

1.

DETAILS OF MACHINERY SHALL CONFORM TO THE AASHTO LRFD MOVABLE HIGHWAY BRIDGE DESIGN SPECIFICATIONS, 2ND EDITION, WITH 2007 INTERIM REVISIONS THROUGH 2011, UNLESS OTHERWISE SHOWN ON THE PLANS, OR PROVIDED IN THE SPECIAL PROVISIONS.
2.

PROVIDE STAINLESS STEEL SHIMS FOR LEVELING AND ALIGNING ALL MACHINERY COMPONENTS. SHIMS SHALL BE 1/2" NOMINAL THICKNESS, UNLESS OTHERWISE SPECIFIED, WITH ADJUSTMENT VARIATIONS AS DESCRIBED IN THE SPECIFICATIONS. ANYWHERE SHIMS ARE REQUIRED, TAPERED SHIMS MAY BE NECESSARY TO ACHIEVE BEARING ACROSS A BEARING SURFACE WHILE MAINTAINING ALIGNMENT. THE THICKNESS AND TAPER SHALL BE BASED ON MEASUREMENTS. TAPERED SHIMS WHERE NECESSARY SHALL BE PROVIDED AT NO ADDITIONAL COST.
3.

MACHINERY DIMENSIONS SHOWN ON DRAWINGS ARE DIMENSIONS AFTER MACHINING.
4.

ALL BOLTS SHALL BE FINISH BODY HIGH STRENGTH MEETING THE REQUIREMENTS OF ASTM A449, UNLESS OTHERWISE INDICATED. THE FINISH BODY HIGH STRENGTH BOLT TO HOLE CLEARANCE SHALL BE MINIMUM 0.003" AND MAXIMUM 0.010", UNLESS OTHERWISE NOTED. WHERE STRUCTURAL FIT HIGH STRENGTH BOLTS ARE SPECIFIED THE BOLT TO HOLE CLEARANCE SHALL BE BETWEEN 0.003" AND .0625", UNLESS OTHERWISE NOTED. WHERE TURNED BOLTS/FASTENERS ARE SPECIFIED, THE BOLT TO HOLE CLEARANCE SHALL BE LC-6, UNLESS OTHERWISE NOTED. ALL U.S. FASTENERS SHALL HAVE A HARDENED PLAIN WASHER F436 UNDER THE HEAD AND THE NUT. HIGH STRENGTH BOLTS THAT HAVE BEEN TORQUED SHALL NOT BE REUSED.
5.

UNLESS OTHERWISE INDICATED OR REQUIRED FOR THE PROPER ASSEMBLY OF PARTS, DIMENSIONAL TOLERANCES AND FINISHES FOR MACHINERY IN GENERAL SHALL BE AS FOLLOWS:

SURFACE	TOLERANCE
MACHINED (TO 1")	+/- .015"
MACHINED (OVER 1")	+/- .03"
ROLLED	+/- .03"
NON-MACHINED CAST (TO 1")	+/- .03"
NON-MACHINED CAST (OVER 1")	+/- .0625"
BOLT HOLE LOCATIONS	+/- .03"
6.

ALL CORNERS AND EDGES OF CASTINGS SHALL HAVE SUITABLE FILLETS AND RADII, IN GENERAL THE FILLET OR RADII SHALL BE A MINIMUM OF 1/2".R. FOR SECTIONS GREATER THAN 2" AND 1/4".R. ON THINNER SECTIONS. CASTINGS SHALL BE PROVIDED WITH A BOSS FOR VERTICAL MOUNTING BOLTS AND SPOT FACE FOR HORIZONTAL MOUNTING BOLTS. BOSSES SHALL BE 1/4" HIGH AND SHALL HAVE A MINIMUM DIAMETER OF 1/4" PLUS THE NOMINAL WASHER DIAMETER. SPOT FACES SHALL BE .0625" DEEP AND HAVE A MINIMUM DIAMETER OF 1/4" PLUS THE NOMINAL WASHER DIAMETER. THE CONTRACTOR SHALL ADHERE TO THE PROPER CASTING AND COOLING PROCESS, SO THAT SURFACE SHRINKAGE CRACKS ARE ELIMINATED.
7.

ALL SURFACES OF FORGINGS SHALL BE MACHINED TO THE DIMENSIONS SHOWN ON THE PLANS.
8.

ALL TRANSITIONS OF SURFACES OF MACHINERY PARTS SHALL BE BLENDED SMOOTH.
9.

THE EDGES AND CORNERS OF ALL MACHINERY PARTS SHALL BE DETAILED AND MACHINED WITH SUITABLE FILLETS AND CHAMFERS. IN GENERAL THE MINIMUM EDGE OR CORNER, RADIUS OR CHAMFER SHALL BE .0625" IF PART THICKNESS IS LESS THAN 1" AND 1/8" IF EQUAL OR GREATER, UNLESS OTHERWISE NOTED. IN THE CASE OF MATING PARTS, ALLOWANCE SHALL BE MADE FOR THE PROPER FIT AND ASSEMBLY, SUCH DETAILS SHALL BE SHOWN ON SHOP DRAWINGS.
10.

FASTENERS THAT REQUIRE TAPPED HOLES, SHALL BE DETAILED WITH A MINIMUM THREAD ENGAGEMENT OF 1.5 TIMES THE NOMINAL BODY DIAMETER. A 1/8" COUNTERBORE SHALL BE PROVIDED IN THE BASE MATERIAL FOR FASTENERS LESS THAN 1" DIAMETER AND 1/4" FOR GREATER THAN 1" DIAMETER. SUITABLE THREAD RELIEF SHALL BE PROVIDED TO PROPERLY TENSION THE FASTENERS. COUNTERSUNK FASTENERS SHALL BE DETAILED WITH A MINIMUM OF A 1/16" RECESS.

PARSONS


MORRISON HERSHFIELD

2	REVISED DATE OF REVISION 1	2015/12/01
1	ISSUED FOR CONSTRUCTION	2015/11/25
revision	description	date

Do not scale drawings. Verify all dimensions and conditions on site and immediately notify the Departmental Representative of all discrepancies.

A

B

C

A

B

C

A

B

C

Detail No.
No. du détail

drawing no. — where detail required
dessin no. — où détail exigé

drawing no. — where detailed
dessin no. — où détaillé

project title
titre du projet
KINGSTON ONTARIO
LASALLE CAUSEWAY
BASCULE BRIDGE

BUFFERS REPLACEMENT

drawing title
titre du dessin
LIST OF MATERIALS
AND NOTES

drawn by
dessiné par
G. TAYLOR

designed by
conc par
J. KEYT

approved by
approuvé par

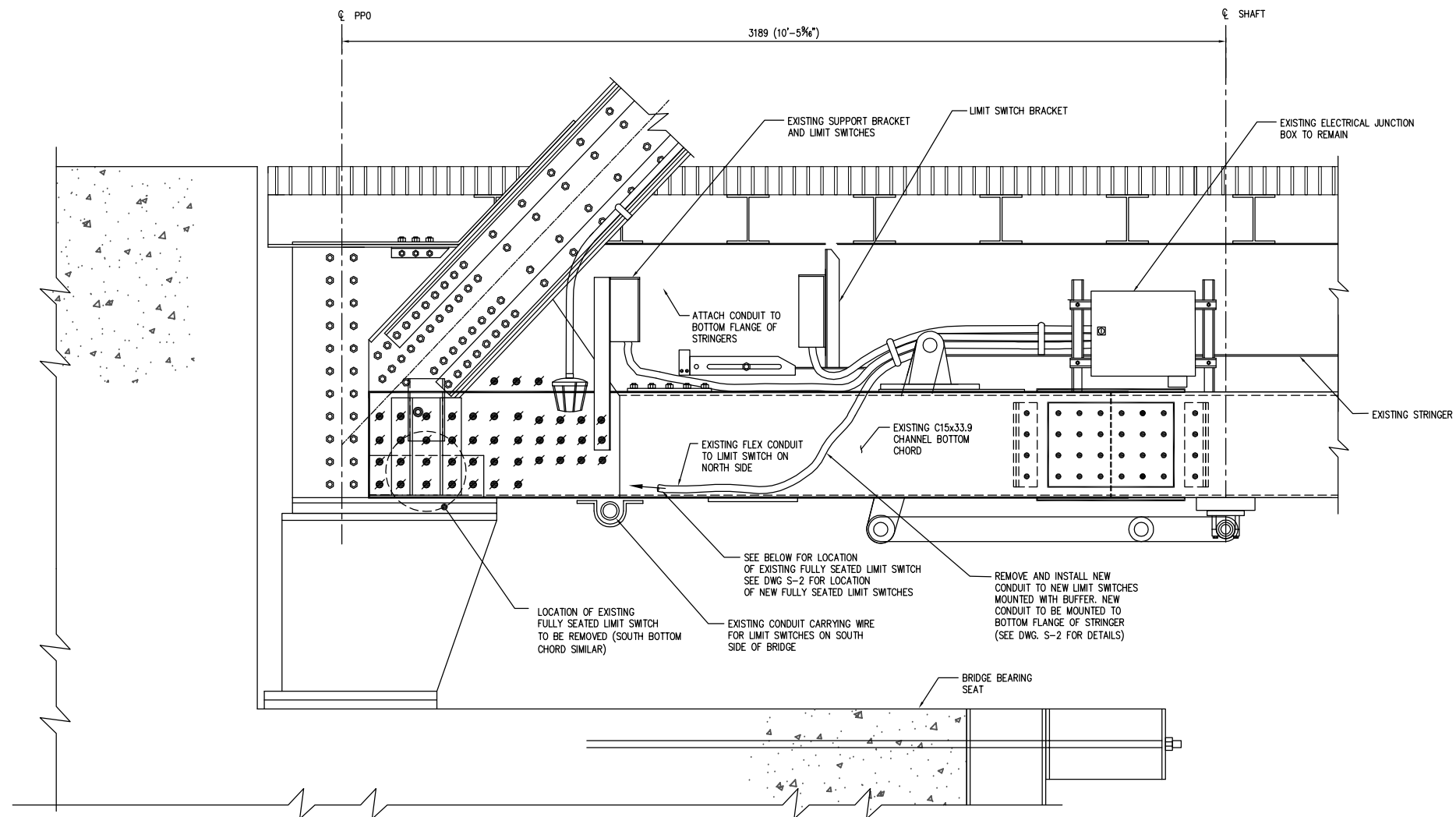
Bid
soumission

project manager
administrateur
de projets

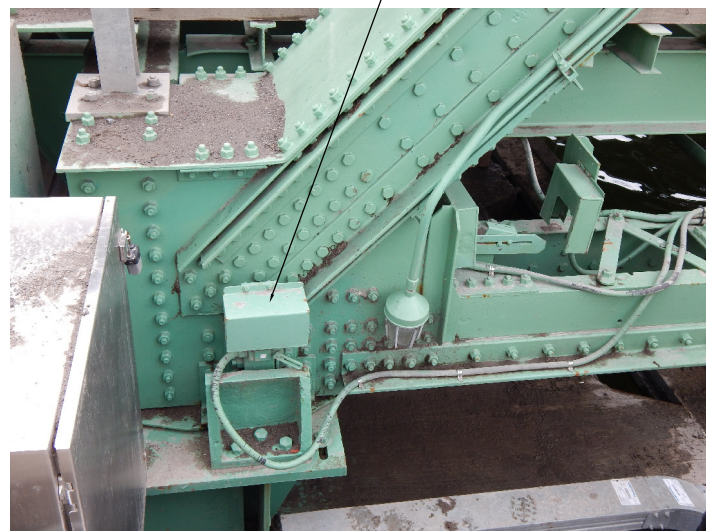
project date
date du projet
2015-11-25

project no.
no. du projet
R.0079892.001

drawing no.
dessiné no.
M-1



PARTIAL ELEVATION VIEW OF EXISTING NORTH BOTTOM CHORD (EXTERIOR)
(AT ABUTMENT)



PHOTOGRAPHS OF NORTH BOTTOM CHORD - NORTH SIDE

NOTES:

1. FOR GENERAL NOTES SEE DWG G-3.



Public Works and
Government Services Canada
Architectural and Engineering Services
Ontario Region

Travaux publics et
Services gouvernementaux Canada
Services d'architecture et de génie
Région de l'Ontario

PARSONS**MORRISON HERSHFIELD**

**Professional Engineers
Ontario**

Temporary Licensee

Name: Jeffrey Douglas Key
Number: 100215529-01
Limitations: Mechanical engineering for La Salle
Bridge in Kingston, Ontario for Public Works General
Services Canada.

Collaborator: Sylvain Monminy, P.Eng.
Expiry Date: July 31, 2016
Association of Professional Engineers of Ontario

**Professional Engineers
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Name: John Schmid
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Expiry Date: March 31, 2016
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	drawing no. - where detailed dessin no. - où détaillé

project title
titre du projet
**KINGSTON ONTARIO
LASALLE CAUSEWAY
BASCULE BRIDGE**

BUFFERS REPLACEMENT

drawing title
titre du dessin
**GENERAL ELEVATION
EXTERIOR BOTTOM CHORD
NORTH SIDE REMOVAL**

drawn by
dessiné par
G. TAYLOR

designed by
conçu par
J. SCHMID

approved by
approuvé par

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soumission
project manager
administrateur
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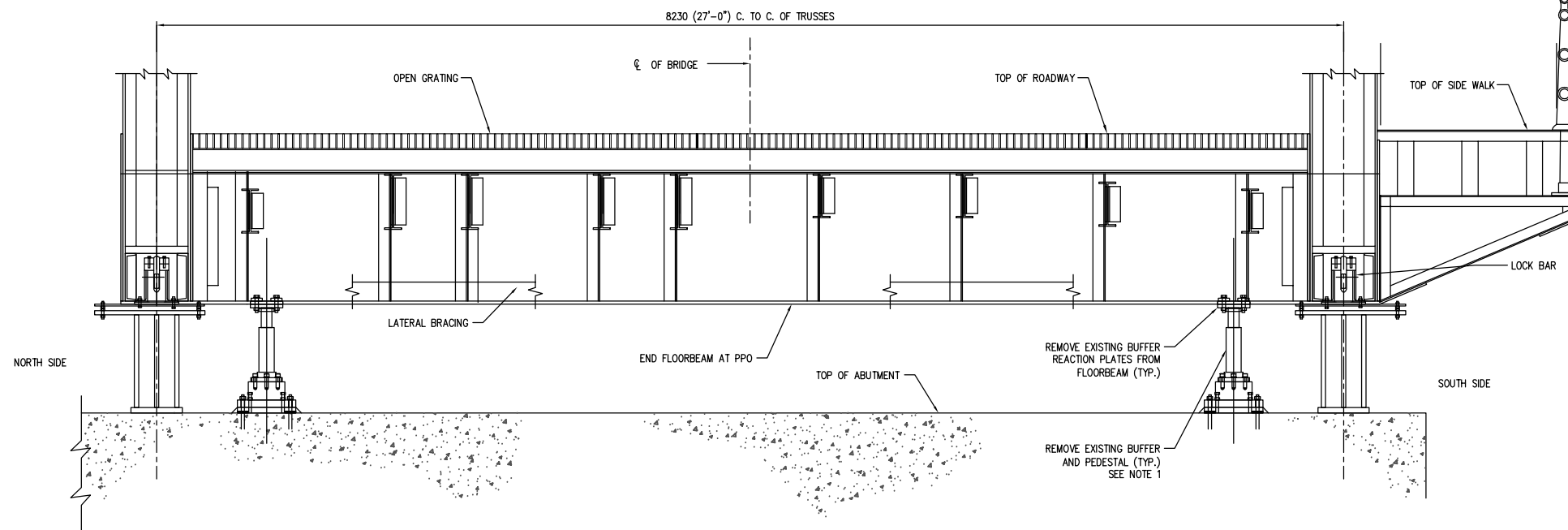
project date
date du projet
2015-11-25

project no.
no. du projet
R.079892.001

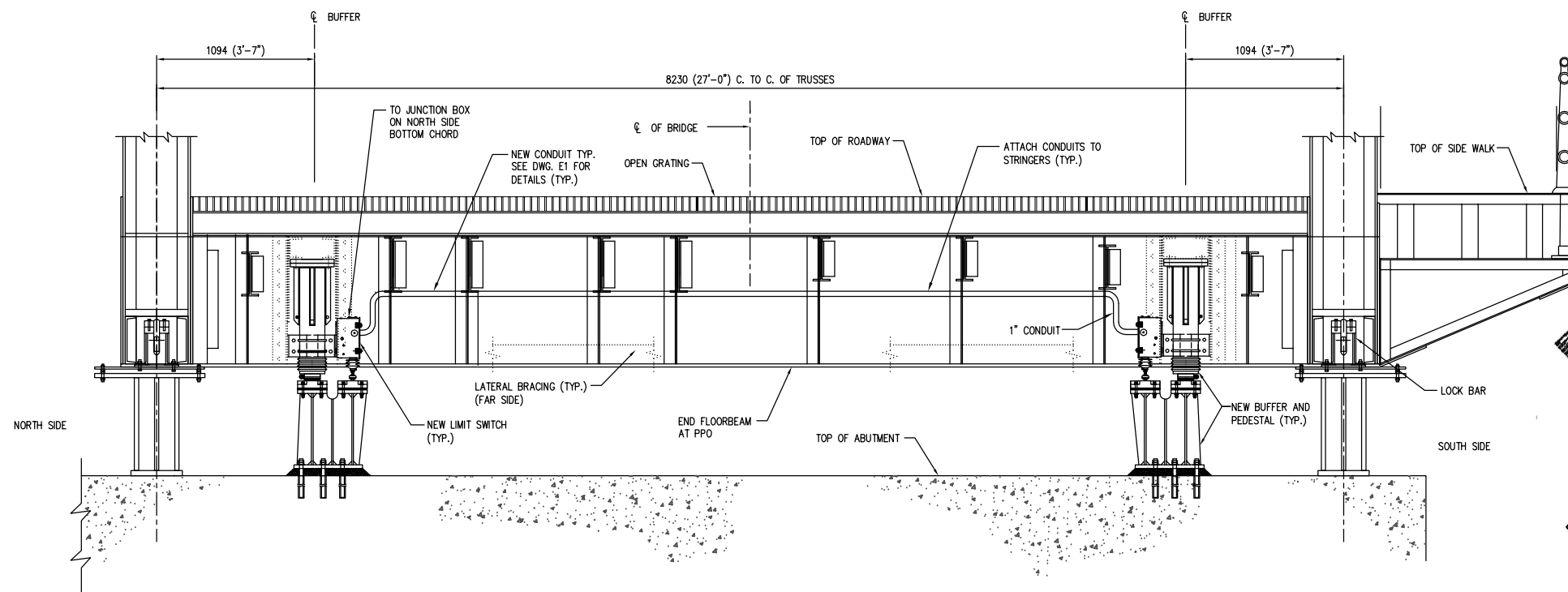
drawing no.
dessiné no.
S-1

NOTES:

1. EXISTING BUFFERS AND BUFFER HARDWARE TO BE REMOVED ONE AT A TIME. SECOND EXISTING BUFFER MAY BE REMOVED ONLY AFTER THE FIRST NEW BUFFERS HAVE BEEN INSTALLED.



CROSS SECTION AT ABUTMENT WITH EXISTING BUFFER (LOOKING WESTBOUND)



CROSS SECTION AT ABUTMENT WITH NEW BUFFER (LOOKING EASTBOUND)



Public Works and
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Ontario Region

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	drawing no. - where detailed dessin no. - où détaillé

project title
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**KINGSTON ONTARIO
LASALLE CAUSEWAY
BASCULE BRIDGE**

BUFFERS REPLACEMENT

drawing title
titre du dessin
**CROSS SECTIONS
AT ABUTMENT
LOOKING WESTBOUND**

drawn by
dessiné par
G. TAYLOR

designed by
conçu par
J. KEYT

approved by
approuvé par

Bid
soumission
project manager
administrateur
de projets

project date
date du projet
2015-11-25

project no.
no. du projet
R.079892.001

drawing no.
dessiné no.
S-2

Professional Engineers
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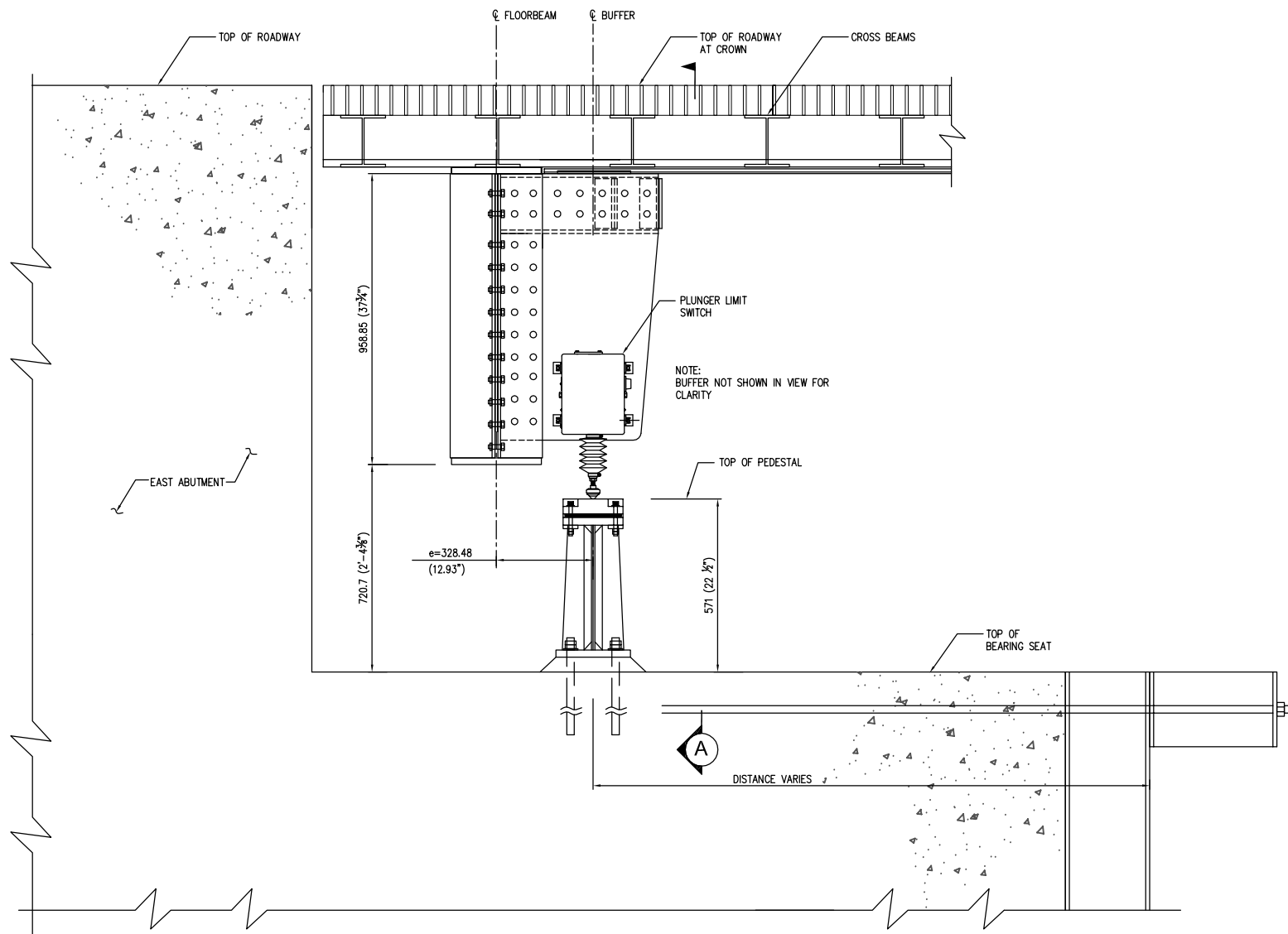
NOTES:

1. FOR SECTION B SEE DWG. S-4.
2. FOR SECTION C SEE DWG. S-5.

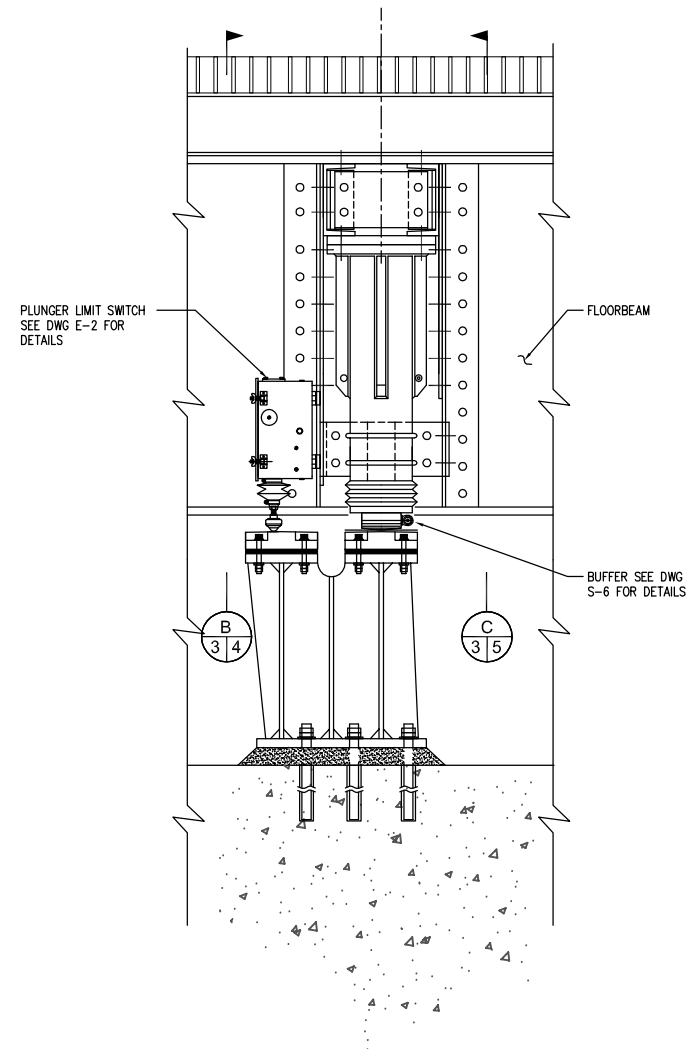


Public Works and
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Architectural and Engineering Services
Ontario Region

Travaux publics et
Services gouvernementaux Canada
Services d'architecture et de génie
Région de l'Ontario



ELEVATION - NEW BUFFER SOUTH SIDE (LOOKING SOUTH)
(NORTH SIDE SIMILAR - OPPOSITE HAND)



FRONT VIEW SECTION

A
3/3



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KINGSTON ONTARIO
LASALLE CAUSEWAY
BASCULE BRIDGE

BUFFERS REPLACEMENT

drawing title
titre du dessin

ELEVATION AND FRONT VIEW
AT ABUTMENT WITH PEDESTAL

drawn by
dessiné par

G. TAYLOR

designed by
conçu par

J. KEYT

approved by
approuvé par

Bid
soumission

project manager
administrateur
de projets

project date
date du projet

2015-11-25

project no.
no. du projet

R.079892.001

drawing no.
dessiné no.

S-3