



Public Works
Government Services
Canada

Ontario Region

Travaux publics
Services gouvernementaux
Canada

Région de l'Ontario

LIST OF DRAWINGS

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Public Works and
Government Services Canada
Travaux publics et
Services gouvernementaux Canada



MH
MORRISON HERSHFIELD

HAMILTON

ONTARIO

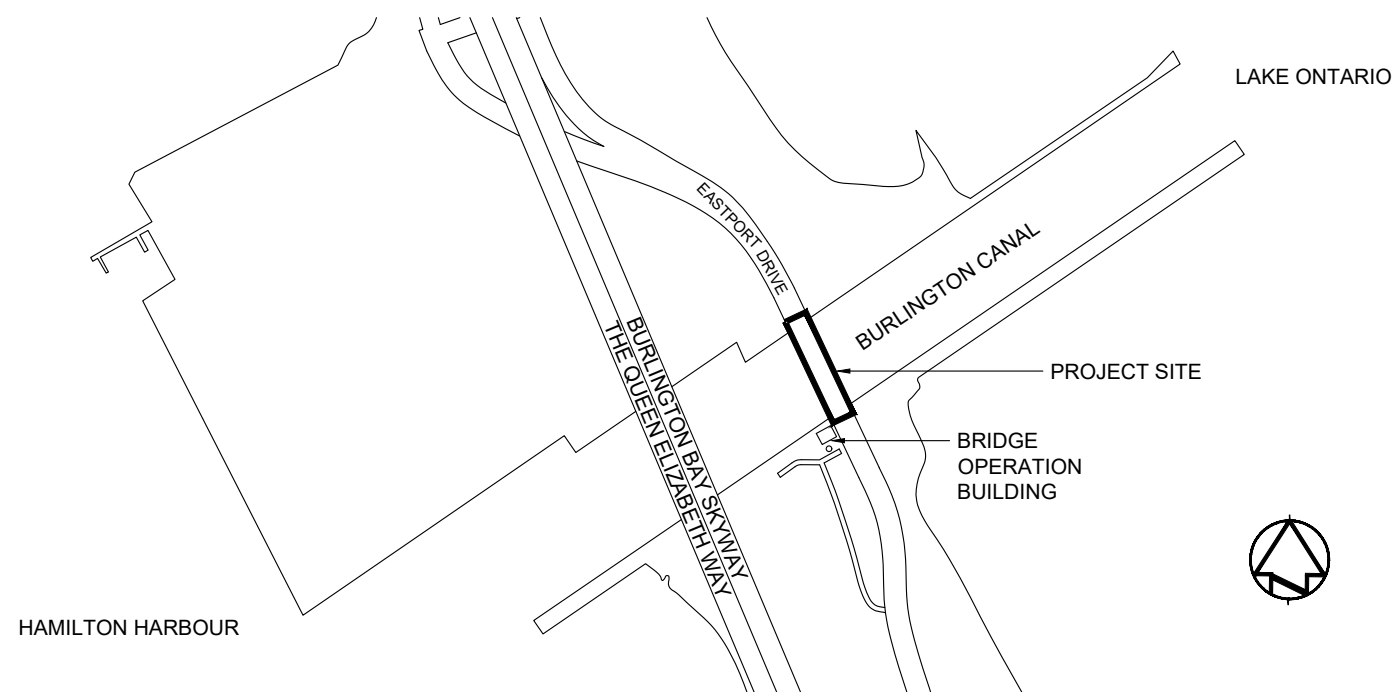
BURLINGTON CANAL LIFT BRIDGE

1157 BEACH BOULEVARD

BURLINGTON LIFT BRIDGE DECK REPAIRS AND WELDING

PWGSC Proj. No.: R.090211.001

DATE: 2019-06-13



04		
03		
02		
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revision		date

Do not scale drawings.
Verify all dimensions and conditions on site and immediately
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A	Detail No. No. du détail
B	drawing no. – where detail required dessin no. – où détail exigé
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project title
titre du projet
HAMILTON Ontario
BURLINGTON CANAL LIFT BRIDGE
1157 BEACH BOULEVARD
BURLINGTON LIFT BRIDGE
DECK REPAIRS AND WELDING

drawing title
titre du dessin
COVER SHEET

drawn by
dessiné par
CB

designed by
conçu par
DW

approved by
approuvé par
JO

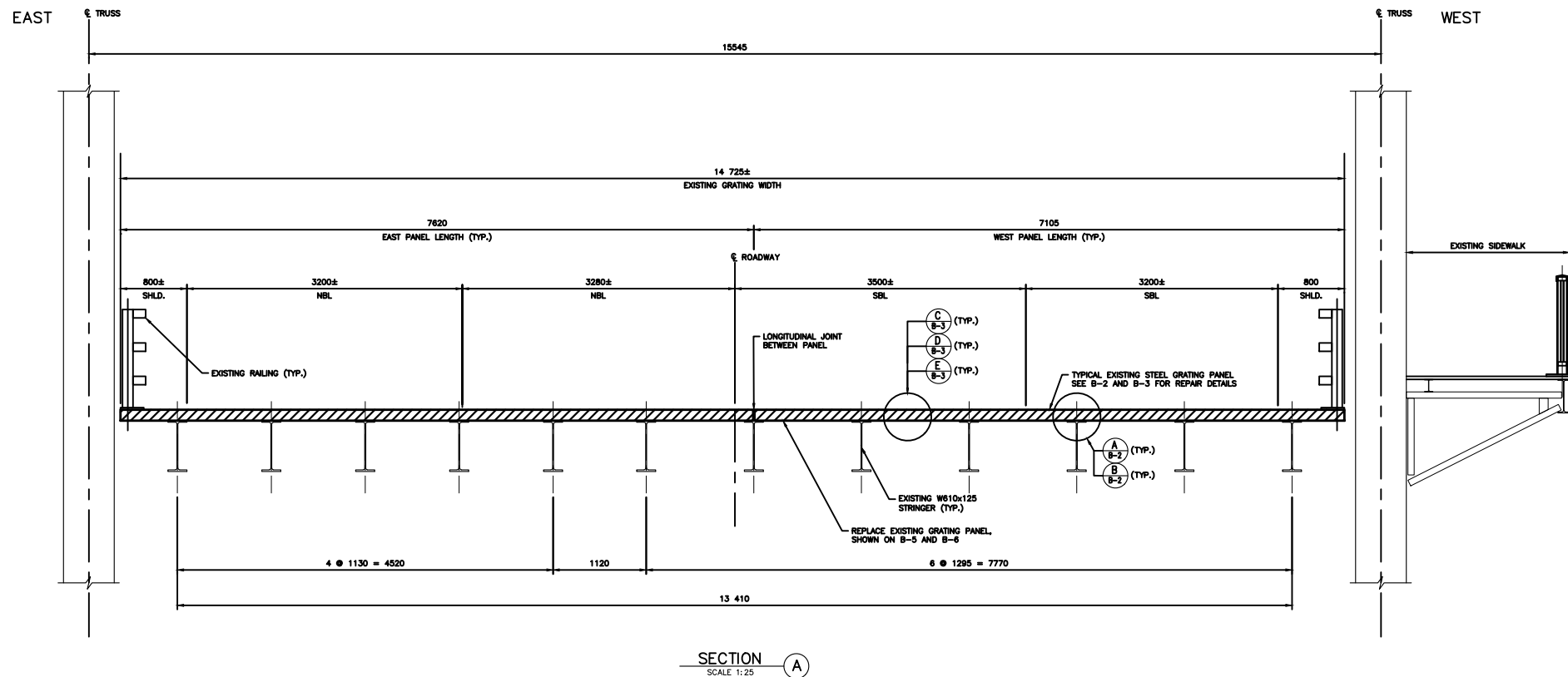
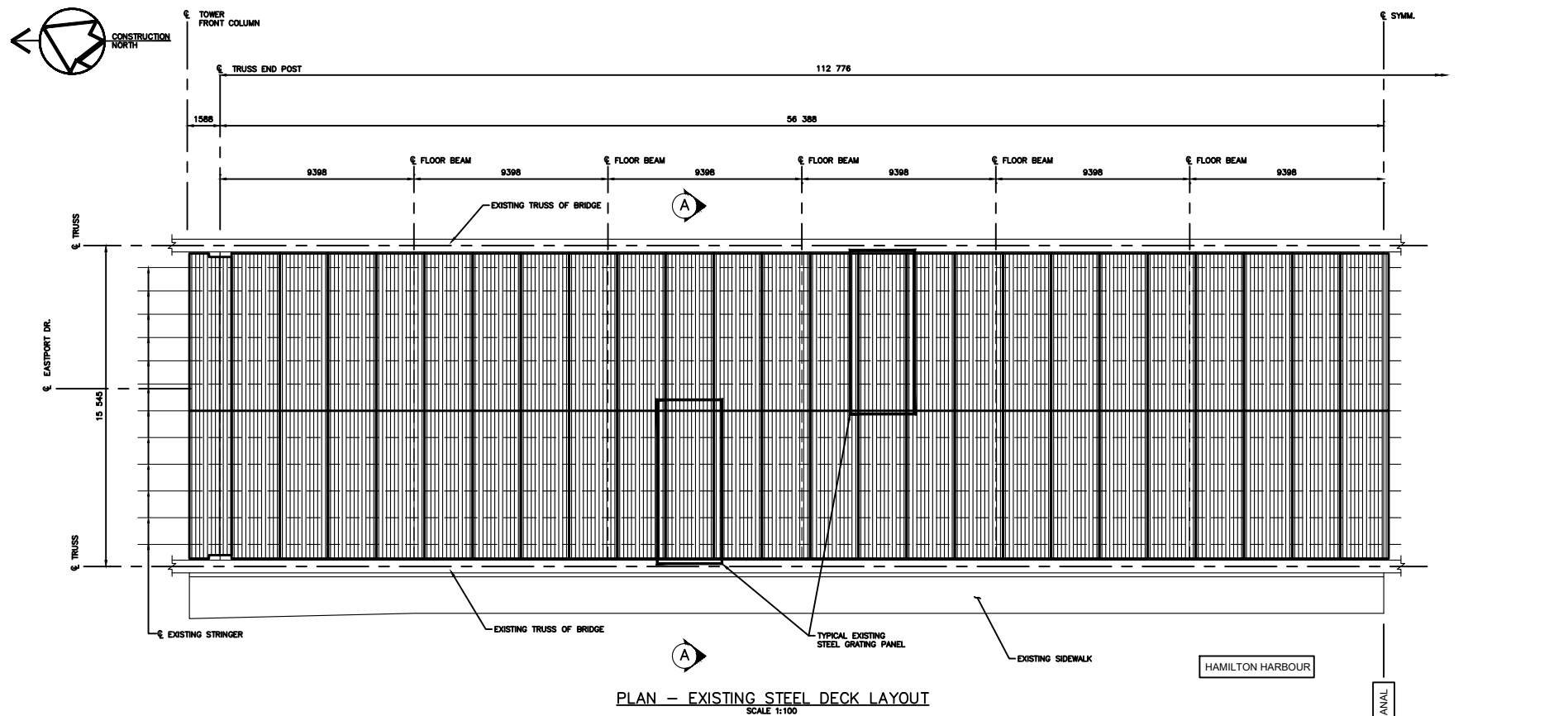
td
offre
PA
project manager
administrateur
de projets

project date
date du projet
2019-06-13

project no.
no. du projet
R.090211.001

drawing no.
dessiné no.
B-0

Canada



GENERAL NOTES:

1. STRUCTURAL LAYOUT BASED ON REFERENCE DRAWINGS PROVIDED BY PWSC.
2. TRAFFIC CONTROL DETAILED ELSEWHERE IN THE CONTRACT DOCUMENTS.
3. ALL DIMENSIONS IN [mm] UNLESS NOTED OTHERWISE.

DESIGN SPECIFICATIONS AND DESIGN LOADS:

1. WELDING ACCORDING TO CSA W59-18 - WELDED STEEL CONSTRUCTION

SCOPE OF WORK - GRATING REPAIRS:

- WORK IS NOT LIMITED TO ITEMS LISTED BELOW. OTHERS AS SHOWN AND/OR SPECIFIED IN CONTRACT.
- NO INTENTIONAL ORDER OF SEQUENCE OF ITEMS LISTED BELOW.

1. PERFORM PRE-CONSTRUCTION INSPECTION TO VERIFY LOCATION OF DECK DAMAGES.
2. IMPLEMENT TRAFFIC CONTROL.
3. PERFORM REPAIR WORK AS DIRECTED BY THE DEPARTMENTAL REPRESENTATIVE.
- 3.1. TYPE A REPAIRS - FABRICATE, DELIVER AND INSTALL NEW STEEL HOLD-DOWN PLATES IN LOCATIONS OF EXISTING FAILED M-BEAM TO STRINGER CONNECTIONS.
- 3.2. TYPE B REPAIRS IF TYPE A NOT FEASIBLE.
- 3.3. TYPE C REPAIRS - RESTORE BROKEN CONNECTIONS BETWEEN STEEL GRATING MEMBERS.
- 3.4. TYPE D REPAIRS - INSTALL FULL MEMBER DEPTH WELDS.
- 3.5. TYPE E REPAIRS - REPLACE MISSING GRATING MEMBERS.
- 3.6. M-BEAM WEB CRACK REPAIRS - RESTORE PANEL M-BEAM CONTINUITY.
4. CLEAN-UP AND REINSTATE SITE.

SCOPE OF WORK - GRATING PANEL REPLACEMENT:

- WORK IS NOT LIMITED TO ITEMS LISTED BELOW. OTHERS AS SHOWN AND/OR SPECIFIED IN CONTRACT.
- NO INTENTIONAL ORDER OF SEQUENCE OF ITEMS LISTED BELOW.

1. PERFORM PRE-CONSTRUCTION INSPECTION OF GRATING PANEL TO VERIFY LOCATION, DIMENSIONS AND CONFIRM REPLACEMENT METHODOLOGY.
2. IMPLEMENT TRAFFIC CONTROL.
3. PERFORM REPAIR WORK AS DIRECTED BY THE DEPARTMENTAL REPRESENTATIVE.
- 3.1. IMPLEMENT ENVIRONMENTAL ENCLOSURE AND REMOVE BIRD GUANO FROM WORK AREA.
- 3.2. REMOVE AND STORE EXISTING RAILING POST BASE ANCHORAGE AND RAILING ELEMENTS.
- 3.3. REMOVE EXISTING GRATING PANEL AS DESIGNATED BY DEPARTMENTAL REPRESENTATIVE.
- 3.4. PREPARE EXISTING STRINGERS TO RECEIVE NEW GRATING PANEL ALONG WITH INSTALLATION HARDWARE AND ALL APPURTENANCES.
- 3.5. INSTALL NEW GRATING PANEL INCLUDING THE INSTALLATION HARDWARE AND ALL APPURTENANCES.
- 3.6. COAT TOP FLANGE OF STRINGERS AS SPECIFIED ELSEWHERE IN THE CONTRACT DOCUMENTS.
- 3.7. REINSTATE RAILING.
4. CLEAN-UP AND REINSTATE SITE.

CONSTRUCTION NOTES:

1. EXISTING DIMENSIONS ARE BASED ON AVAILABLE REFERENCE DRAWINGS AND ARE NOT NECESSARILY THE SAME AS AS-BUILT DIMENSIONS. THE CONTRACTOR SHALL VERIFY ALL DIMENSIONS, DETAILS AND ELEVATIONS OF THE EXISTING STRUCTURE THAT ARE RELEVANT TO THE WORK AND SHALL REPORT ANY DISCREPANCIES TO THE DEPARTMENTAL REPRESENTATIVE PRIOR TO COMMENCEMENT OF THE WORK AND BEFORE ORDERING MATERIALS.
2. CHECK AND IDENTIFY ALL UTILITIES WITHIN THE WORK AREA AND CARRY OUT NECESSARY PROTECTION AND PRECAUTIONARY MEASURES AS MAY BE REQUIRED BY RELEVANT AUTHORITIES PRIOR TO PERFORMING WORK.
3. TAKE CARE TO AVOID DAMAGE TO ELEMENTS TO REMAIN AND COMPONENTS TO BE REUSED. DAMAGE CAUSED BY REMOVAL SHALL BE REPAIRED OR REPLACED AS DIRECTED BY DEPARTMENTAL REPRESENTATIVE, AT THE CONTRACTOR'S EXPENSE.
4. DISPOSE OF EXCESS MATERIALS AS SPECIFIED ELSEWHERE IN THE CONTRACT DOCUMENTS.

STRUCTURAL STEEL NOTES:

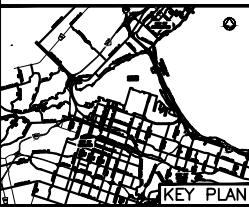
1. ALL STRUCTURAL STEEL SHALL CONFORM TO CSA STANDARD CSA-C440.20-13/G40.21-13, GRADE 350AT.
2. BOLTS SHALL BE GALVANIZED ASTM A325M TYPE 1.
3. UNLESS OTHERWISE NOTED THE FILLET WELD SHALL BE AS FOLLOWS:

MATERIAL THICKNESS OR THICKER PART JOINTED (mm)	MINIMUM SIZE OF FILLET WELD (mm)
TO 12 INCLUSIVE	5
OVER 12 TO 20	6
OVER 20 TO 40	8
OVER 40 TO 60	10

4. PERMANENT STEEL SOLID ROUND BARS SHALL BE TOUCHED-UP USING COLD GALVANIZING, 2 COATS ZINC RICH PAINT.
5. FIELD WELDS ON GALVANIZED STEEL JOINTS SHALL BE TOUCHED-UP USING COLD GALVANIZING, 2 COATS ZINC RICH PAINT.
6. TOPS OF EXISTING STRINGERS SHALL BE COATED AS SPECIFIED ELSEWHERE IN THE CONTRACT DOCUMENTS.
7. PROPERTIES OF STEEL GRATING TO BE AS PER EXISTING GRATING DETAIL ON DRAWING B-6.
8. GRATING PANELS TRIM BARS SHALL BE FULLY SHOP WELDED TO ENDS OF BEARING BARS AND ARE REQUIRED ON ALL EDGES WHERE EXPOSED ENDS OF BEARING BARS WOULD OTHERWISE BE PRESENT. TRIM BARS SHALL BE FLUSH WITH THE TOP OF M-BEAMS.

NOTE:

THE HOLDING REPAIRS IN THIS CONTRACT ARE DESIGNED TO RETAIN THE INTEGRITY OF THE BRIDGE UNTIL THE COMPLETE REPLACEMENT OF THE DECK IN 2021.



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HAMILTON Ontario
BURLINGTON CANAL LIFT BRIDGE
1157 BEACH BOULEVARD
BURLINGTON LIFT BRIDGE
DECK REPAIRS AND WELDING

drawing title
titre du dessin
GENERAL ARRANGEMENT

drawn by
dessiné par
CB

designed by
conçu par
DW

approved by
approuvé par
JO

bid
offre
PA

project manager
administrateur
de projet

project date
date du projet
2019-06-13

project no.
no. du projet
R.090211.001

drawing no.
dessiné no.
B-1

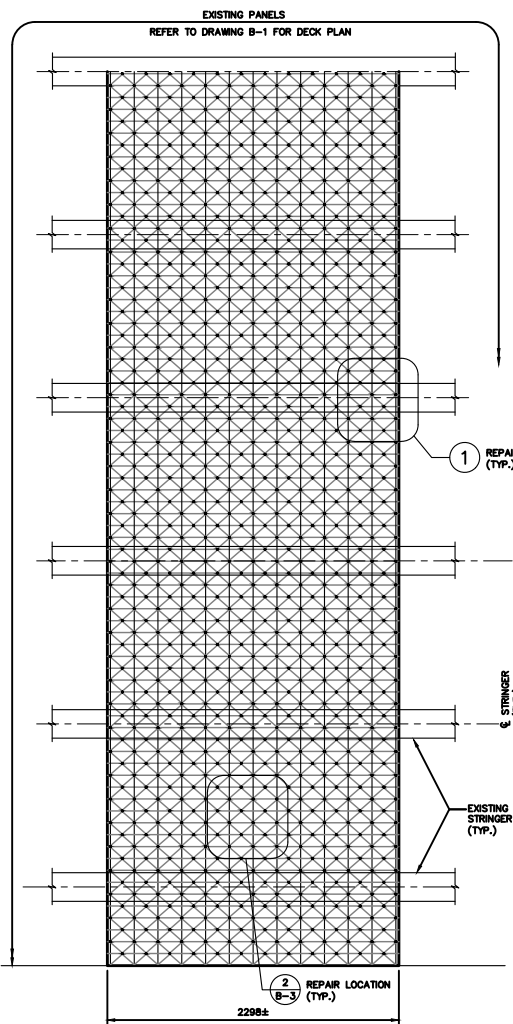
LEGEND:



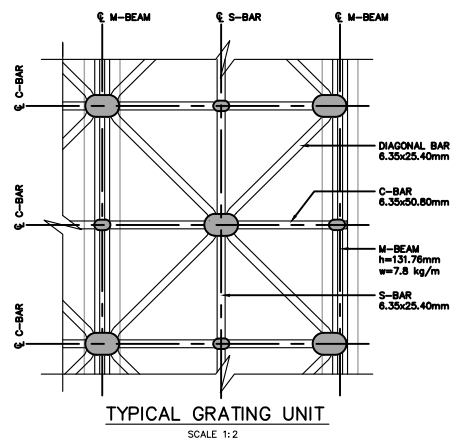
DENOTES REMOVAL

DRAWING NOT TO BE SCALED

100 mm ON ORIGINAL DRAWING



EXISTING STEEL GRATING PANEL - TYPICAL PLAN
SCALE 1:20



TYPICAL GRATING UNIT
SCALE 1:2

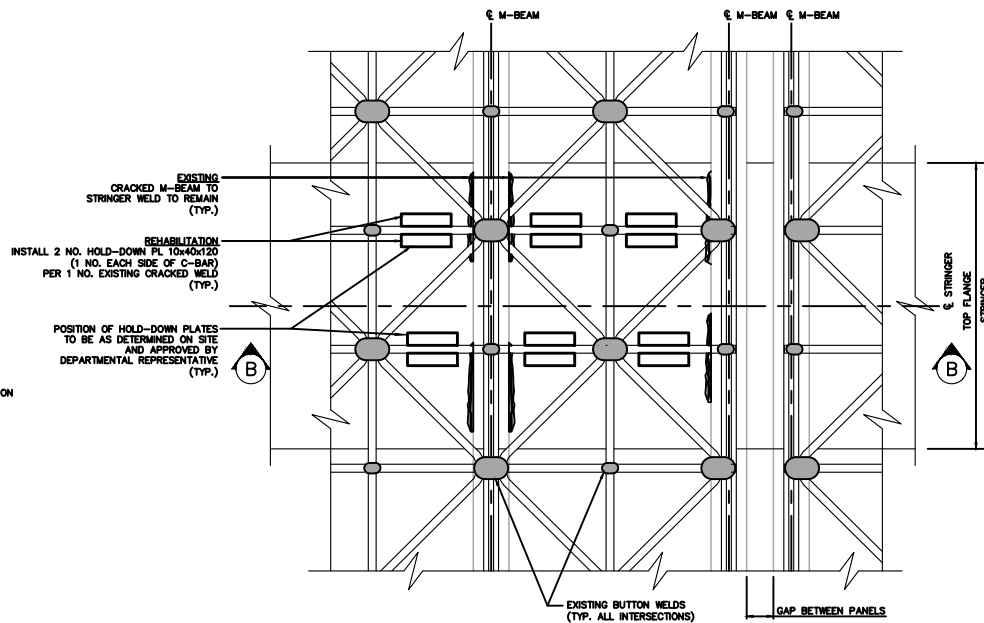
SUGGESTED WORK SEQUENCE

TYPE A REPAIRS:

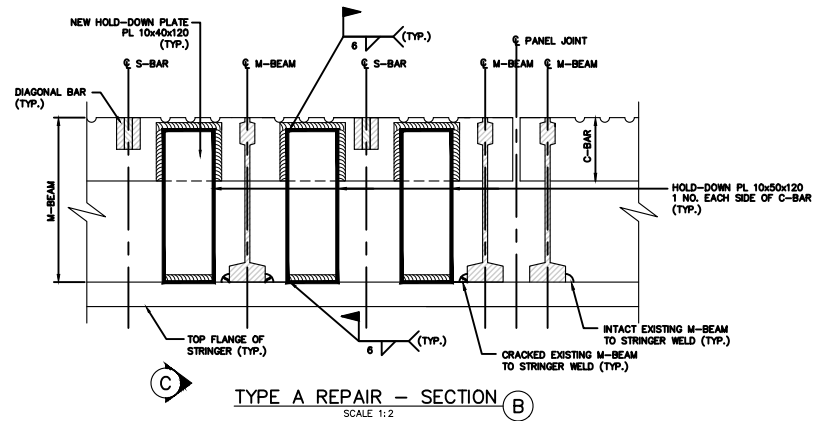
1. PREPARE STRINGER SURFACE FOR WELDING.
2. TEST FIT HOLD-DOWN PLATES.
3. INSTALL 2 NO. PLATES FOR EACH BROKEN WELD.

TYPE B REPAIRS:

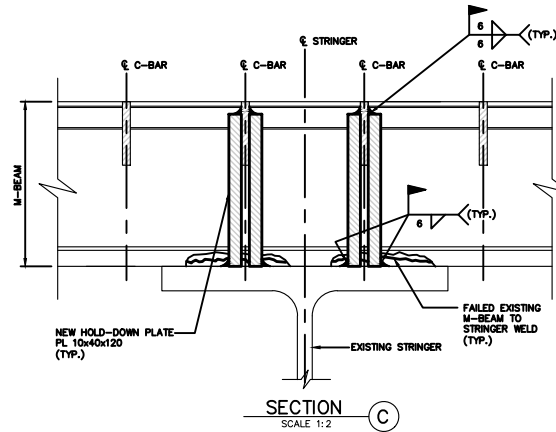
1. REMOVE EXISTING CRACKED FILLET WELD AS DIRECTED BY DEPARTMENTAL REPRESENTATIVE.
2. PREPARE STRINGER SURFACE FOR WELDING.
3. INSTALL NEW WELDED CONNECTION BETWEEN M-BEAM AND STRINGER.



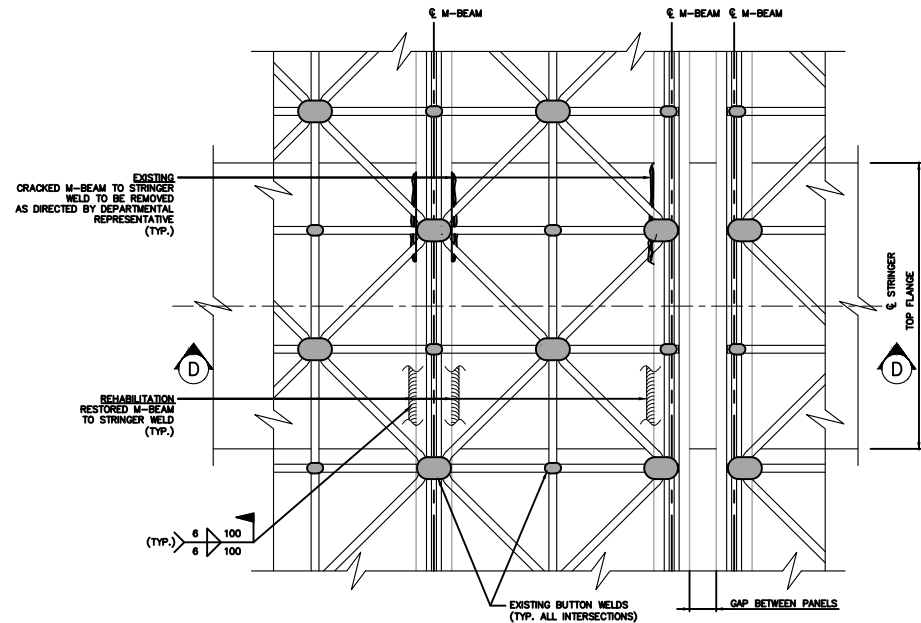
TEMPORARY GRATING HOLD-DOWN REPAIR - TYPE A
PART PLAN GRATING PANEL 1
SCALE 1:2



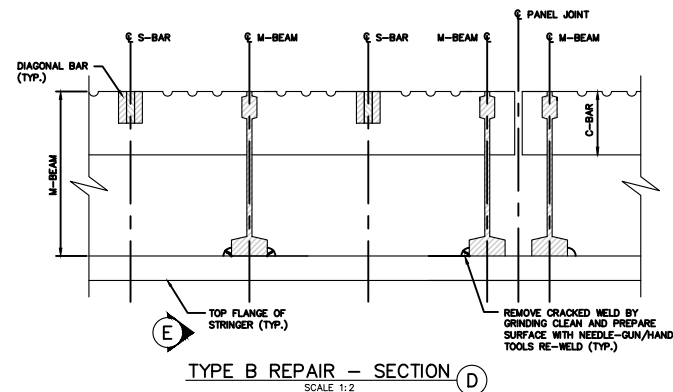
TYPE A REPAIR - SECTION B
SCALE 1:2



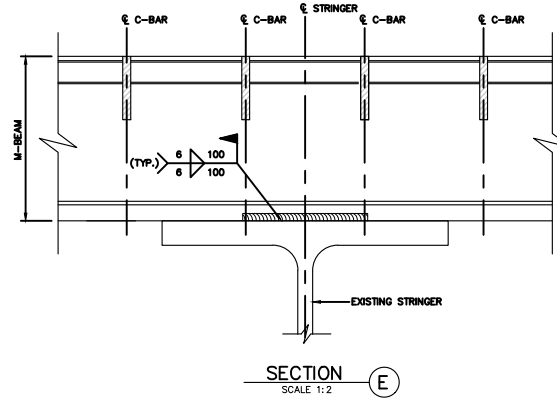
SECTION C
SCALE 1:2



TEMPORARY GRATING HOLD-DOWN REPAIR - TYPE B
PART PLAN GRATING PANEL 1
SCALE 1:2



TYPE B REPAIR - SECTION D
SCALE 1:2



SECTION E
SCALE 1:2



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HAMILTON Ontario
BURLINGTON CANAL LIFT BRIDGE
1157 BEACH BOULEVARD
BURLINGTON LIFT BRIDGE
DECK REPAIRS AND WELDING

drawing title
titre du dessin
**BRIDGE DECK GRATING
TEMPORARY HOLD-DOWN
REPAIRS TYPE A AND B**

drawn by
dessiné par CB

designed by
conçu par DW

approved by
approuvé par JO

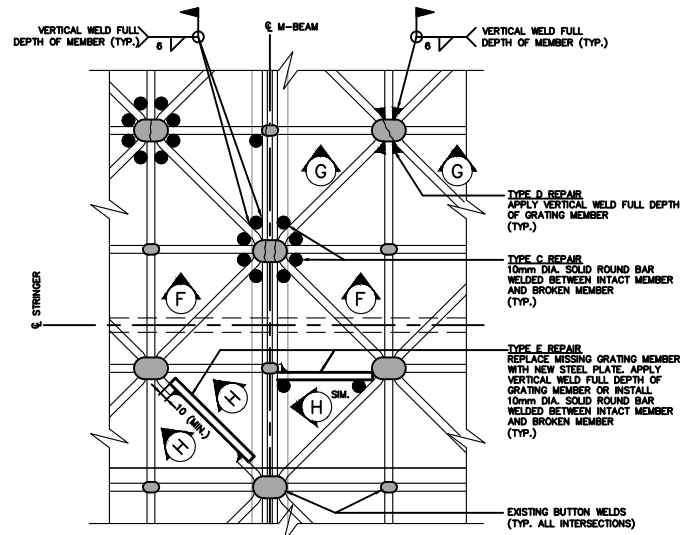
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travail PA project manager
administrateur de projet

project date
date du projet 2019-06-13

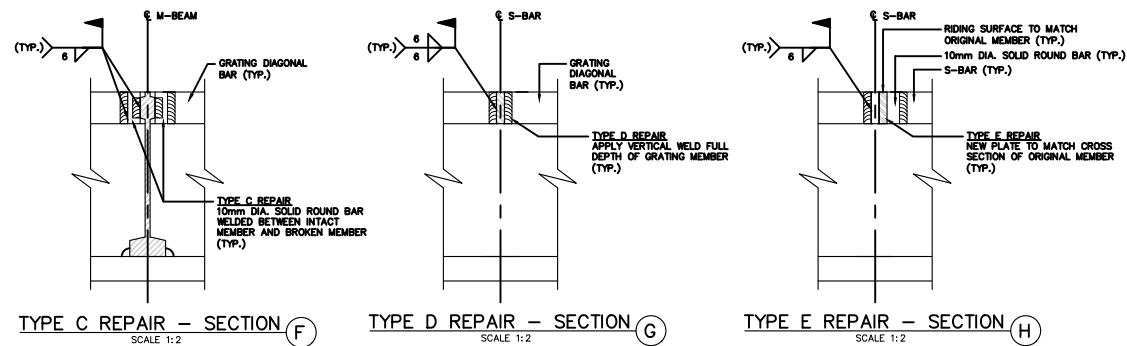
project no.
no. du projet R.090211.001

drawing no.
dessiné par B-2

DRAWING NOT TO BE SCALED
100 mm ON ORIGINAL DRAWING



BUTTON WELD AND MEMBER REPLACEMENT REPAIRS
PART PLAN GRATING PANEL **2**
SCALE 1:2



TYPE C REPAIR - SECTION **F**
SCALE 1:2

TYPE D REPAIR - SECTION **G**
SCALE 1:2

TYPE E REPAIR - SECTION **H**
SCALE 1:2

SUGGESTED WORK SEQUENCE

TYPE C REPAIRS:
FOR FULLY-CRACKED BUTTON WELDS, INSTALL SOLID ROUND BARS AS SHOWN FOR LOCATIONS AS DIRECTED BY DEPARTMENTAL REPRESENTATIVE.

TYPE D REPAIRS:
FOR PARTIALLY-CRACKED BUTTON WELDS, PERFORM FULL DEPTH WELD AS SHOWN FOR LOCATIONS AS DIRECTED BY DEPARTMENTAL REPRESENTATIVE.

TYPE E REPAIRS:
INSTALL SOLID ROUND BARS AS SHOWN FOR LOCATIONS WHERE LAP DISTANCE < 10mm OR AS DIRECTED BY DEPARTMENTAL REPRESENTATIVE.



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BURLINGTON CANAL LIFT BRIDGE
1157 BEACH BOULEVARD
BURLINGTON LIFT BRIDGE
DECK REPAIRS AND WELDING

drawing title
titre du dessin
BUTTON WELD AND MEMBER
REPLACEMENT REPAIRS
TYPE C, D AND E

drawn by
dessiné par
CB

designed by
conçu par
DW

approved by
approuvé par
JO

bid
offre
PA

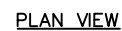
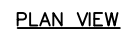
project manager
administrateur
de projets

project date
date du projet
2019-06-13

project no.
no. du projet
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drawing no.
dessiné no.
B-3

DRAWING NOT TO BE SCALED
100 mm ON ORIGINAL DRAWING



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revision	description	date

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No. du détail

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

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

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HAMILTON Ontario
BURLINGTON CANAL LIFT BRIDGE
1157 BEACH BOULEVARD
**BURLINGTON LIFT BRIDGE
DECK REPAIRS AND WELDING**

drawing title
titre du dessin
BRIDGE DECK

drawn by
dessine par DS

designed by
conc par DW

approved by
approuvé par JO

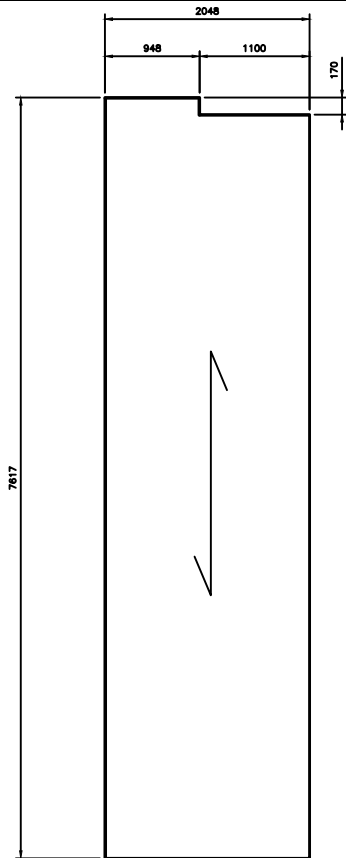
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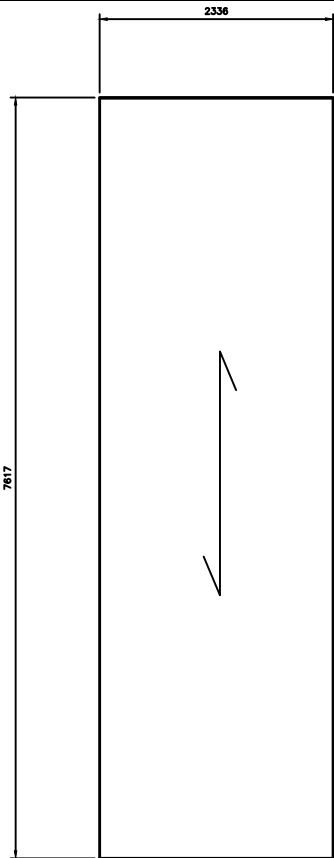
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no. du projet

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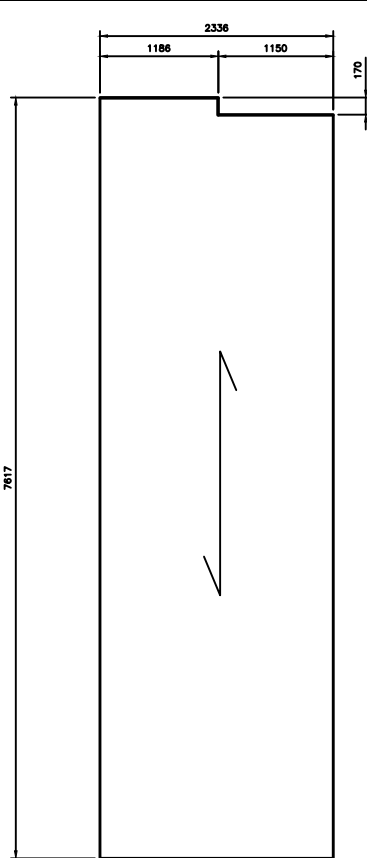
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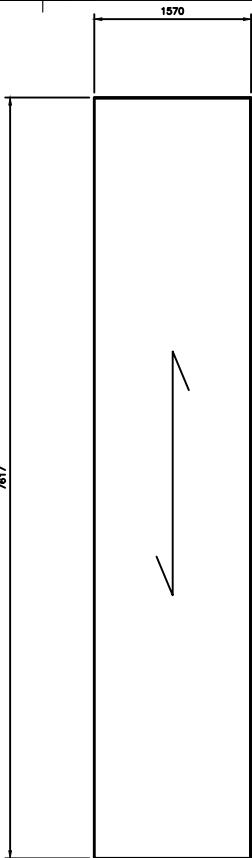
PANEL A



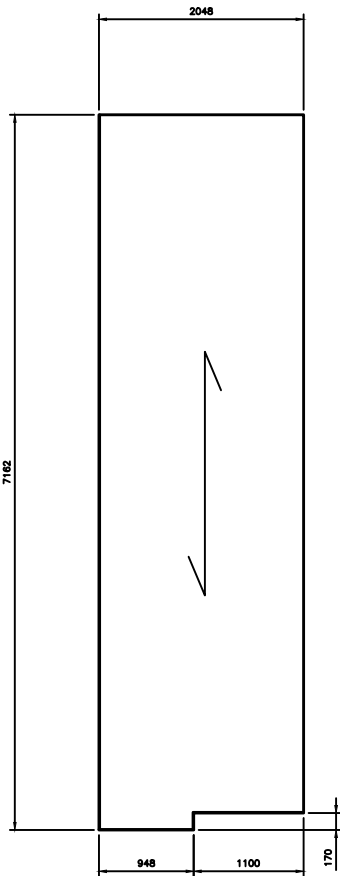
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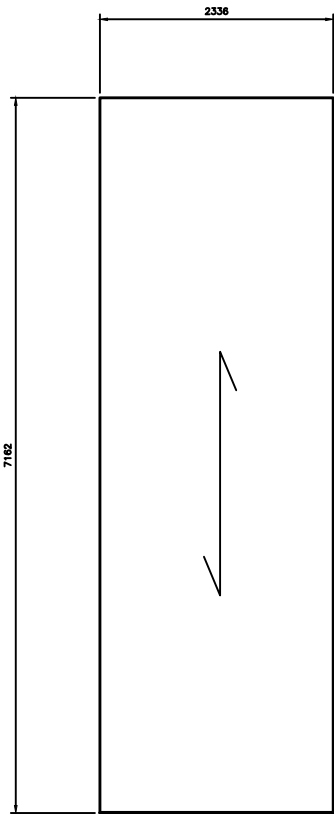
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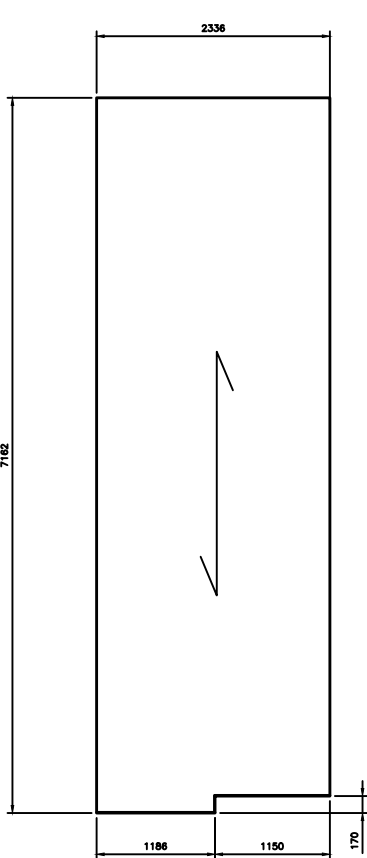
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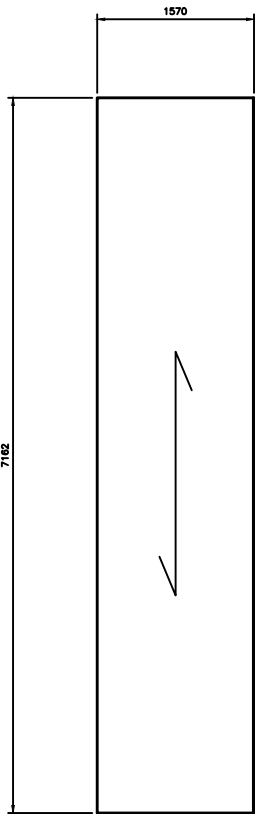
PANEL D



PANEL E2 THRU E46



PANEL E47



PANEL F




NOTE:
PANEL(S) TO BE REMOVED AFTER IDENTIFICATION BY
DEPARTMENTAL REPRESENTATIVE.

 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



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1157 BEACH BOULEVARD
BURLINGTON LIFT BRIDGE
DECK REPAIRS AND WELDING

drawing title
titre du dessin
GRATING PANEL PLAN

drawn by
dessiné par
DS

designed by
conçu par
DW

approved by
approuvé par
JO

tender
soumission
PM

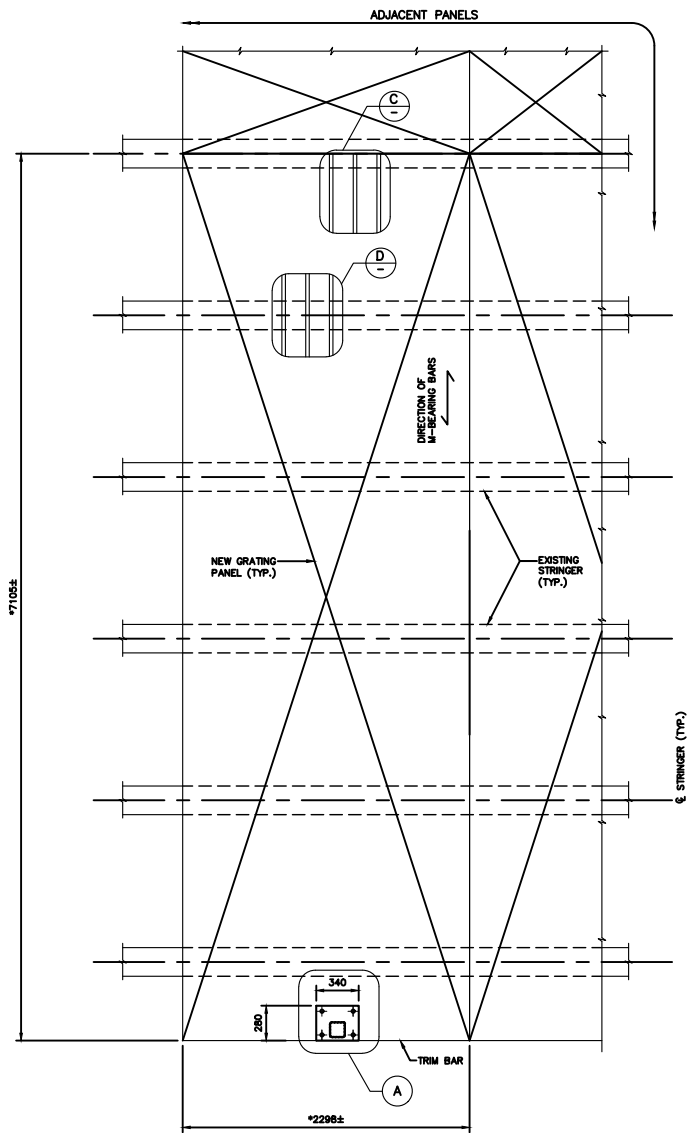
project manager
administrateur de projet

project date
date du projet
2019-06-13

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no. du projet
R.090211.001

drawing no.
dessiné no.
B-5

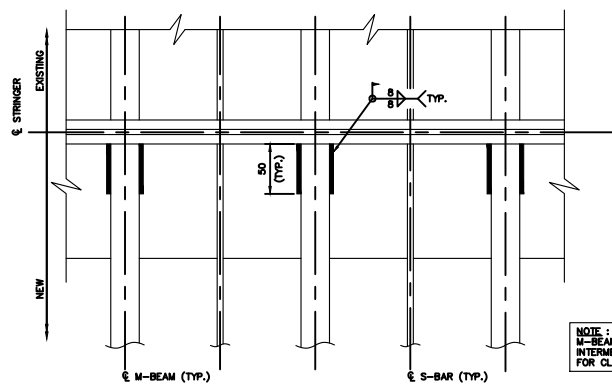
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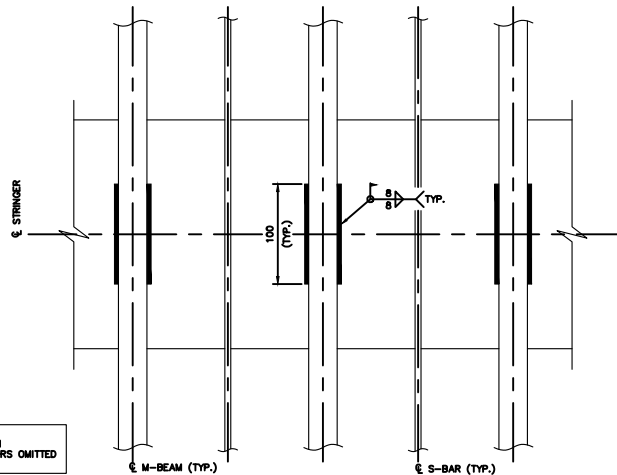
NEW STEEL GRATING PANEL - PART PLAN
SCALE 1:20

* NOTES:

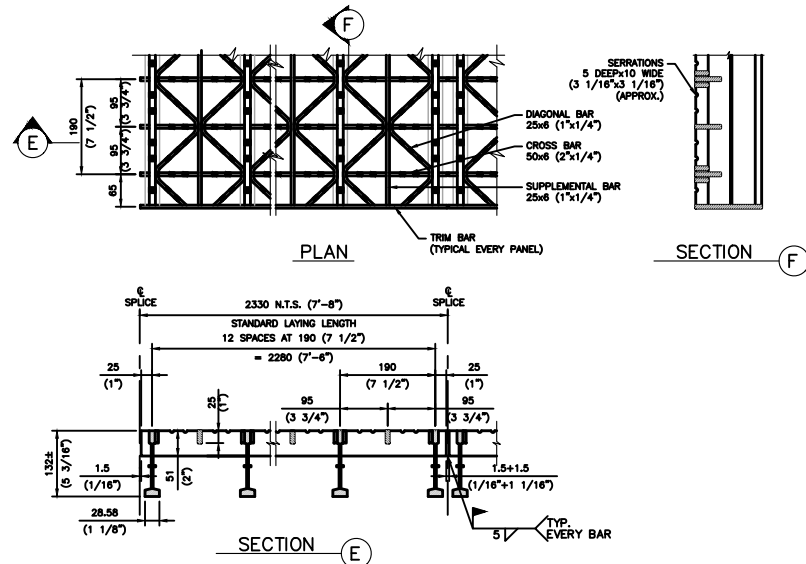
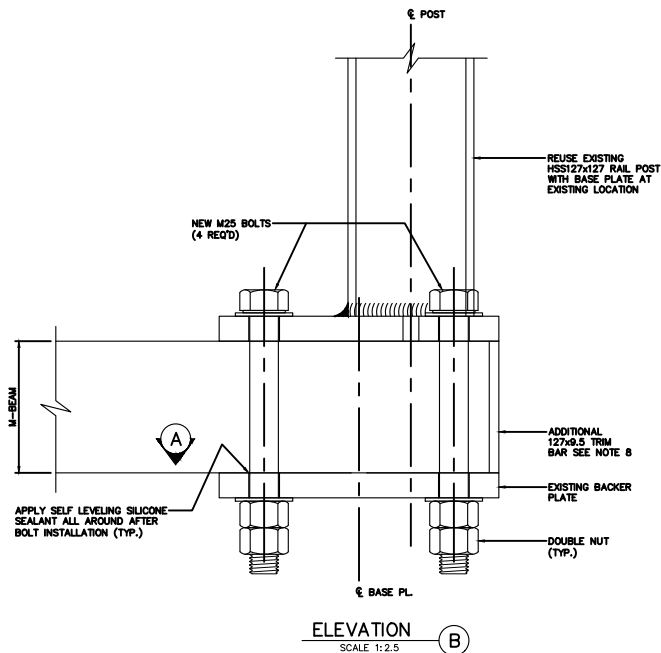
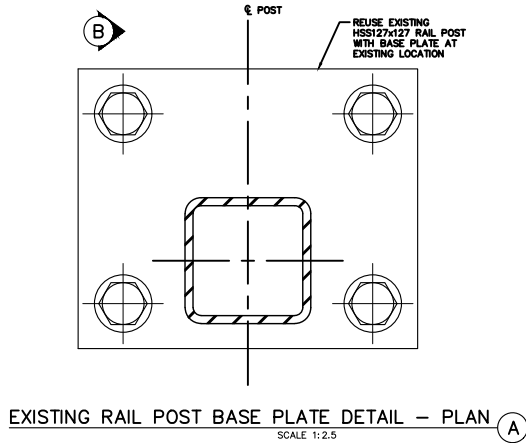
1. ALLOW 6mm GAP BETWEEN NEW AND EXISTING PANELS.
2. FIELD VERIFY PANEL DIMENSIONS BEFORE AND AFTER FABRICATING PANEL TO ENSURE FIT PRIOR TO COMMENCING REMOVALS.
3. NEW REPLACEMENT GRATING PANEL TO MATCH EXISTING PANEL SIZE.



TYPICAL WELD DETAIL AT END JOINT
SCALE 1:2.5



TYPICAL WELD DETAIL
SCALE 1:2.5



EXISTING STEEL DECK GRATING
SCALE 1:5



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BURLINGTON CANAL LIFT BRIDGE
1157 BEACH BOULEVARD
BURLINGTON LIFT BRIDGE
DECK REPAIRS AND WELDING

drawing title
titre du dessin
**GRATING PANEL
REPLACEMENT DETAILS**

drawn by
dessiné par
DS

designed by
conçu par
DW

approved by
approuvé par
JO

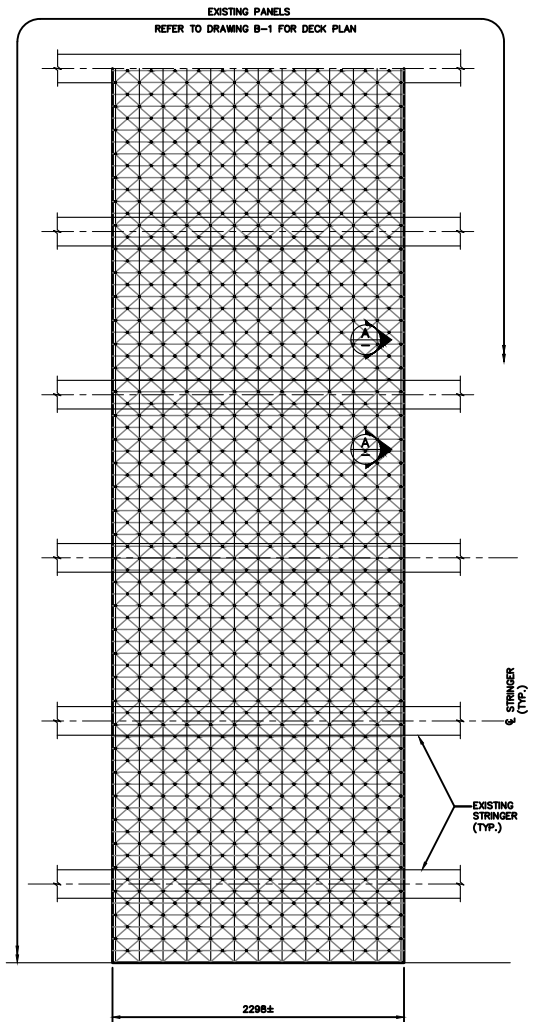
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project manager
administrateur
de projet

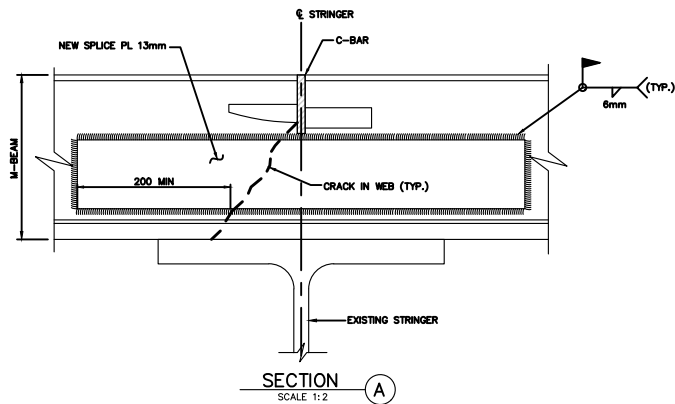
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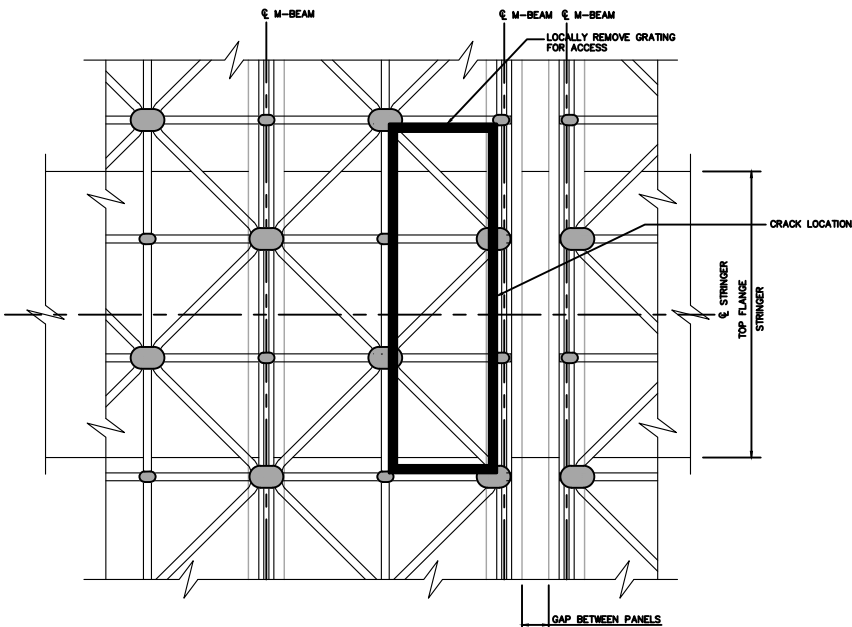
drawing no.
dessiné par
B-6



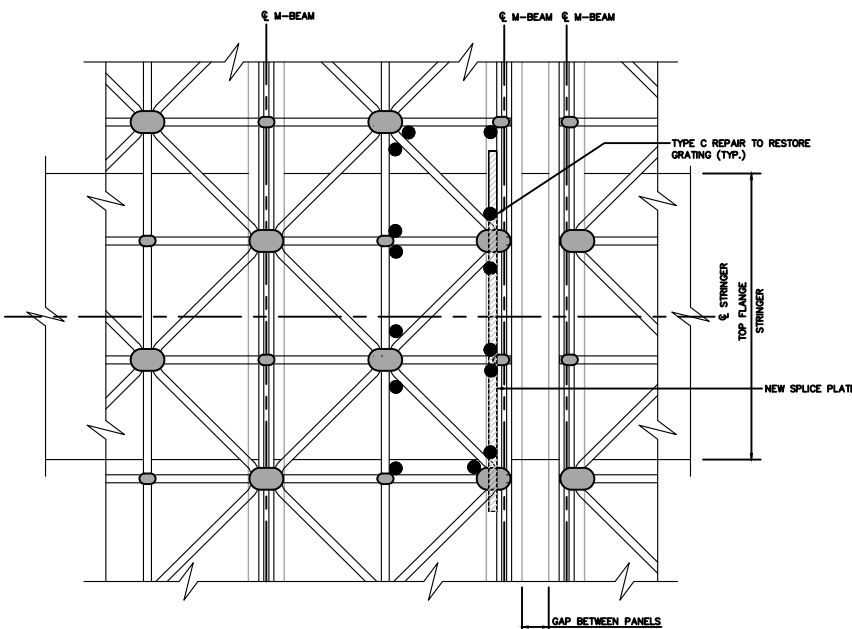
EXISTING STEEL GRATING PANEL – TYPICAL PLAN
SCALE 1:20



SECTION A
SCALE 1:2



GRATING PLAN – REMOVAL
SCALE 1:2



GRATING PLAN – REPAIR
SCALE 1:2

- GENERAL NOTES:
1. SAWCUT/SALVAGE PORTION OF GRATING AS REQUIRED FOR ACCESS TO REPAIR CRACKS IN M-BEAMS. DO NOT HARM EXISTING BUTTON WELDS.
 2. PREPARE SURFACE FOR WELDING..
 3. FIELD MEASURE AND FIT SPUCE PLATE OVER CRACK PRIOR TO WELDING
 4. REINSTALL SALVAGED GRATING USING TYPE 'C' REPAIR DETAIL.



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01		
revision		date

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

A	Detail No. No. du détail
B	drawing no. - where detail required dessin no. - où détail exigé
C	drawing no. - where detailed dessin no. - où détaillé

project title
titre du projet
HAMILTON Ontario
BURLINGTON CANAL LIFT BRIDGE
1157 BEACH BOULEVARD
BURLINGTON LIFT BRIDGE
DECK REPAIRS AND WELDING

drawing title
titre du dessin
**M-BEAM WEB CRACK
HOLDING REPAIR**

drawn by
dessiné par
CB

designed by
conçu par
DW

approved by
approuvé par
JO

bid
offre
PA

project manager
administrateur
de projets

project date
date du projet
2019-06-13

project no.
no. du projet
R.090211.001

drawing no.
dessiné no.
B-7

DRAWING NOT TO BE SCALED
100 mm ON ORIGINAL DRAWING