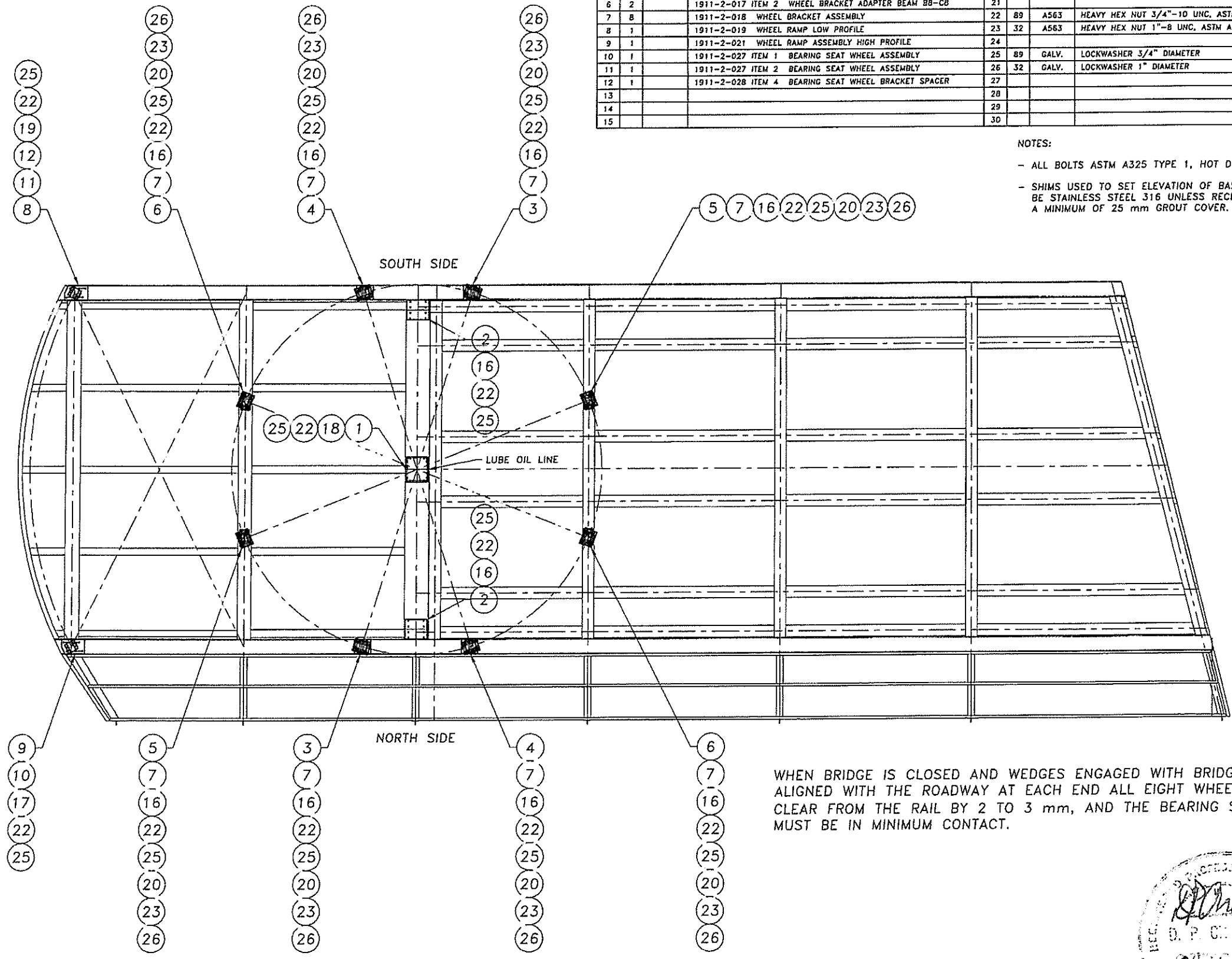
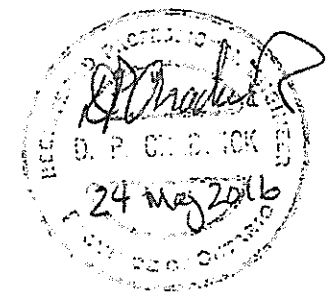


BILL OF MATERIAL				BILL OF MATERIAL			
ITEM	QTY	MATERIAL	DESCRIPTION	ITEM	QTY	MATERIAL	DESCRIPTION
1	1		1911-2-002 CENTER PIVOT ASSEMBLY	16	68	A325	HEAVY HEX STRUCTURAL BOLT 3/4"-10 UNC x 3" LONG
2	2		1911-2-010 BEARING SEAT ASSEMBLY	17	6	A325	HEAVY HEX STRUCTURAL BOLT 3/4"-10 UNC x 5" LONG
3	2		1911-2-016 ITEM 1 WHEEL BRACKET ADAPTER MAIN GRIDER	18	9	A325	HEAVY HEX STRUCTURAL BOLT 3/4"-10 UNC x 6" LONG
4	2		1911-2-016 ITEM 2 WHEEL BRACKET ADAPTER MAIN GRIDER	19	6	A325	HEAVY HEX STRUCTURAL BOLT 3/4"-10 UNC x 6 1/2" LONG
5	2		1911-2-017 ITEM 1 WHEEL BRACKET ADAPTER BEAM BB-CB	20	32	A325	HEAVY HEX STRUCTURAL BOLT 1"-8 UNC x 5" LONG
6	2		1911-2-017 ITEM 2 WHEEL BRACKET ADAPTER BEAM BB-CB	21			
7	8		1911-2-018 WHEEL BRACKET ASSEMBLY	22	89	A563	HEAVY HEX NUT 3/4"-10 UNC, ASTM A563 GRADE DH HOT DIP GALV
8	1		1911-2-019 WHEEL RAMP LOW PROFILE	23	32	A563	HEAVY HEX NUT 1"-8 UNC, ASTM A563 GRADE DH HOT DIP GALV.
9	1		1911-2-021 WHEEL RAMP ASSEMBLY HIGH PROFILE	24			
10	1		1911-2-027 ITEM 1 BEARING SEAT WHEEL ASSEMBLY	25	89	GALV.	LOCKWASHER 3/4" DIAMETER
11	1		1911-2-027 ITEM 2 BEARING SEAT WHEEL ASSEMBLY	26	32	GALV.	LOCKWASHER 1" DIAMETER
12	1		1911-2-028 ITEM 4 BEARING SEAT WHEEL BRACKET SPACER	27			
13				28			
14				29			
15				30			

NOTES:
 - ALL BOLTS ASTM A325 TYPE 1, HOT DIPPED GALVANIZED.
 - SHIMS USED TO SET ELEVATION OF BASE PLATES SHALL BE STAINLESS STEEL 316 UNLESS RECESSED TO PROVIDE A MINIMUM OF 25 mm GROUT COVER.



WHEN BRIDGE IS CLOSED AND WEDGES ENGAGED WITH BRIDGE DECK ALIGNED WITH THE ROADWAY AT EACH END ALL EIGHT WHEELS MUST BE CLEAR FROM THE RAIL BY 2 TO 3 mm, AND THE BEARING SEATS (ITEM 2) MUST BE IN MINIMUM CONTACT.



BOTTOM VIEW BRIDGE FRAME

No	Date	Description	Drawn by / Dessiné par	Approved / Approuvé
2	20/05/16	ISSUED FOR TENDER	FJ	DC
1	25/04/16	RELEASED FOR REVIEW	FJ	-

Revision / Révision	
A	Detail number / No. du détail
B	Location dwg. no. / No. sur dessin
C	Drawing sheet no. / No. du dessin

Client Acceptance / Acceptation du client
 Signature _____ Date _____
 File No / No. de dossier _____

Public Works and Government Services Canada / Travaux publics et Services gouvernementaux Canada
 Client Service Team / Équipe des services à la clientèle pour Parcs Canada Ontario Region / Région de l'Ontario

Canada

MMM GROUP

Chadwick Engineering Ltd.

Project title / Titre du projet
KINGSTON MILLS SWING BRIDGE REHABILITATION

RIDEAU CANAL
 KINGSTON ONTARIO

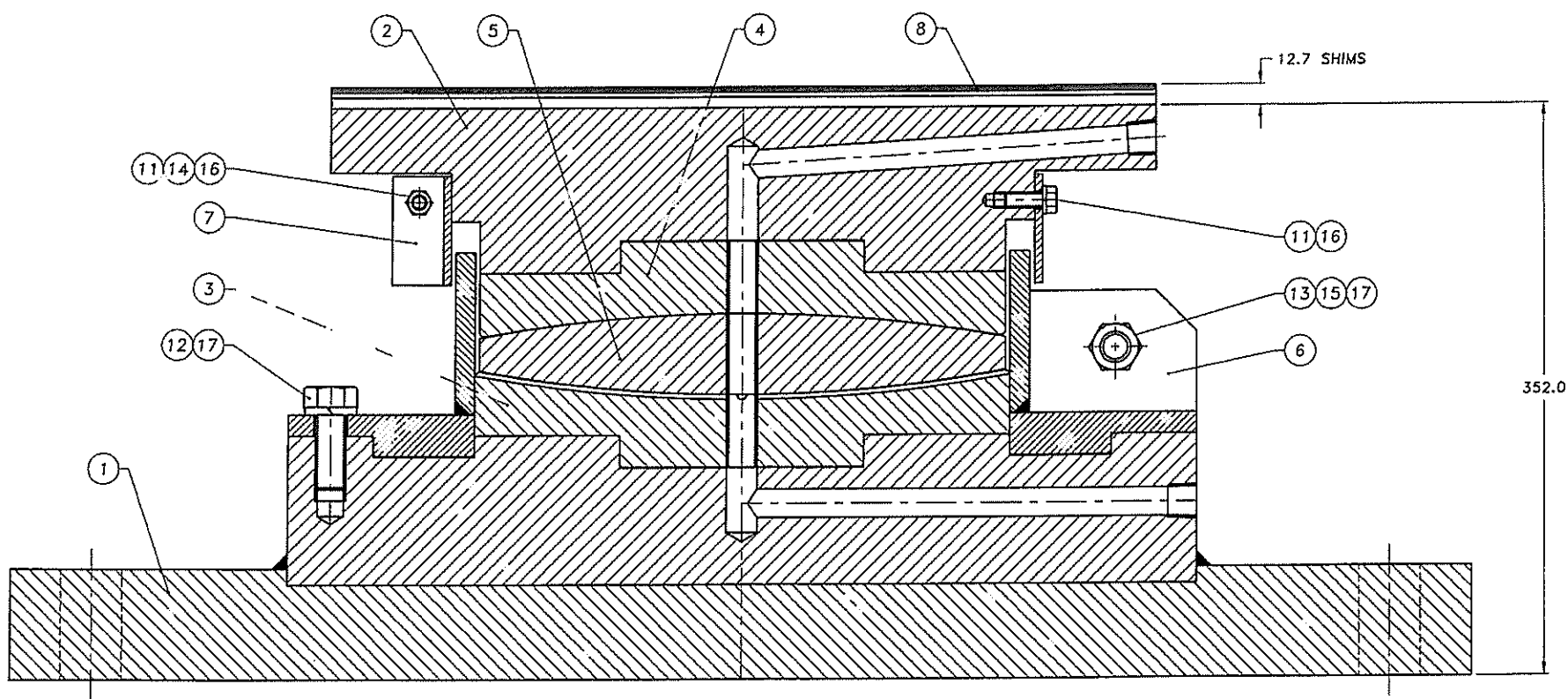
Drawing title / Titre du dessin
UNDERSIDE BRIDGE ARRANGEMENT BEARING AND WHEEL LAYOUT

Scale / Echelle NOT TO SCALE	
Drawn by / Dessiné par FJ	Date MARCH 2016
Designed by / Conçu par FJ	Date
Checked by / Vérifié par DPC	Date
Approved by / Approuvé par DPC	Date MAY 2016

Project No./No. du projet 3515015	Client No./No. du Client CE 1911-2-001	Sheet No./Feuille No. M001
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BILL OF MATERIAL			
ITEM	QTY	MATERIAL	DESCRIPTION
1	1		1911-2-003 PIVOT BASE
2	1		1911-2-004 PIVOT TOP PLATE
3	1		1911-2-005 LOWER SPHERICAL PLATE
4	1		1911-2-006 UPPER SPHERICAL PLATE
5	1		1911-2-007 SPHERICAL DISC
6	2		1911-2-008 RETAINER
7	2		1911-2-009 GUARDING BAND
8	1		1911-2-028 SHIM PACK
9			
10			
11	6	S.S. 316	HEX HEAD CAP SCREW 3/8"-16 UNC x 1" LONG
12	6	S.S. 316	HEX HEAD CAP SCREW 3/4"-10 UNC x 2" LONG
13	2	S.S. 316	HEX HEAD CAP SCREW 3/4"-10 UNC x 2 1/2" LONG
14	2	S.S. 316	HEX NUT 3/8"-16 UNC
15	2	S.S. 316	HEX NUT 3/4"-10 UNC
16	6	S.S. 316	LOCKWASHER 3/8" DIAMETER
17	8	S.S. 316	LOCKWASHER 3/4" DIAMETER
18			

ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE NOTED.



SECTION THRU PIVOT ASSEMBLY



ALL DIMENSIONS IN MILLIMETERS

UNSPECIFIED TOLERANCES:
 DECIMAL: X.XXX ± .05 [.002]
 X.XX ± .25 [.01]
 X.X ± .50 [.02]

REMOVE ALL BURRS AND SHARP EDGES

2	20/03/16	ISSUED FOR TENDER	FJ	DC
1	25/04/16	RELEASED FOR REVIEW	FJ	-
No.	Date	Description	Drawn by / Dessiné par	Approved / Approuvé

Revision / Révision	
A	Detail number / No. du détail
B	Location on drawing / No. sur dessin
C	Drawing sheet no. / No. du dessin

Client Acceptance / Acceptation du client
 Signature _____ Date _____
 File No./No. de dossier _____

Public Works and Government Services Canada / Travaux publics et Services gouvernementaux Canada
 Client Service Team for Parks Canada Ontario Region / Équipe des services à la clientèle pour Parcs Canada Région de l'Ontario



Project title / Titre du projet
KINGSTON MILLS SWING BRIDGE REHABILITATION
RIDEAU CANAL
KINGSTON ONTARIO

Drawing title / Titre du dessin
CENTER PIVOT ASSEMBLY

Scale / Echelle
 1:2

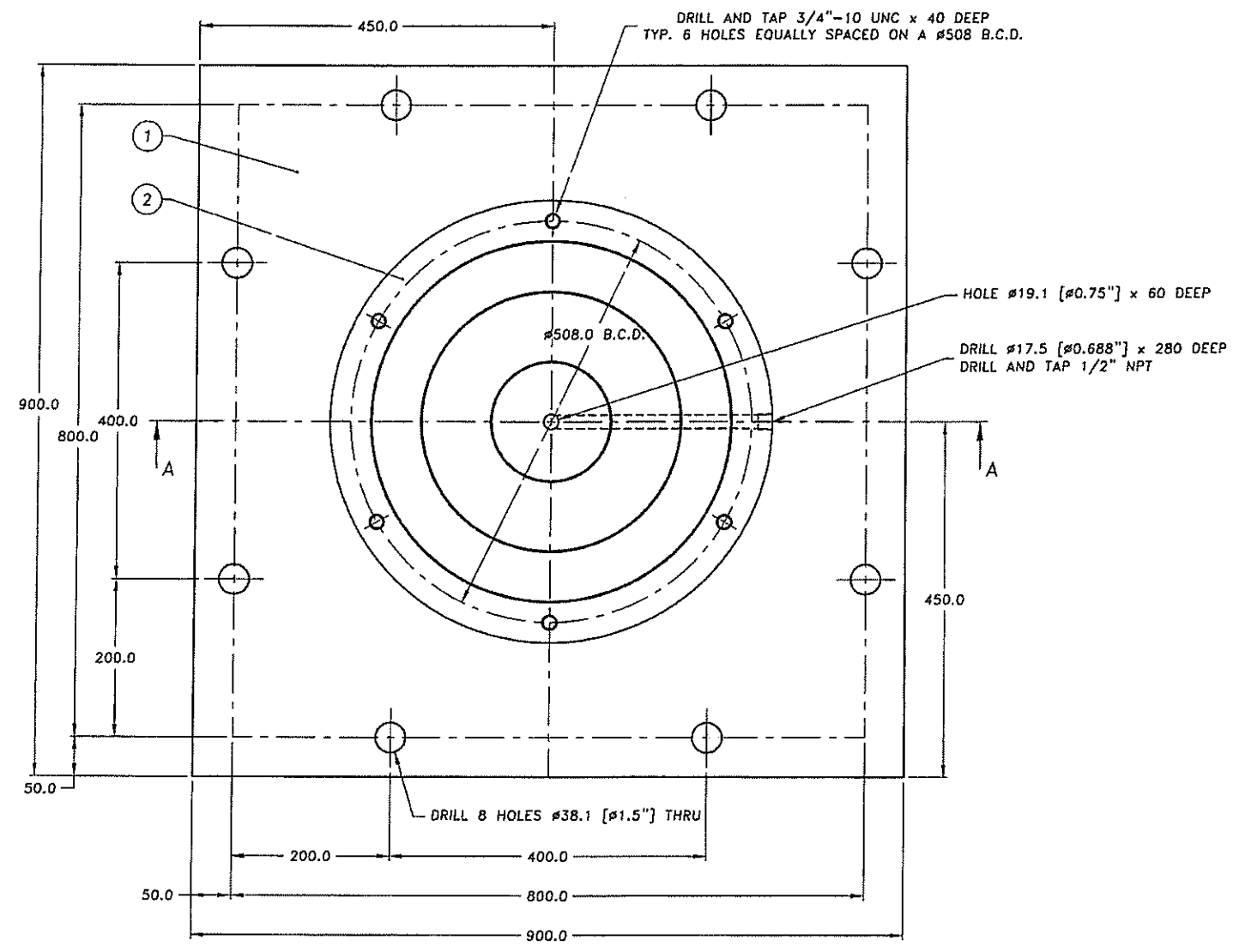
Drawn by / Dessiné par: FJ, Date: MARCH 2016

Designed by / Conçu par: FJ, Date:

Checked by / Vérifié par: DPC, Date:

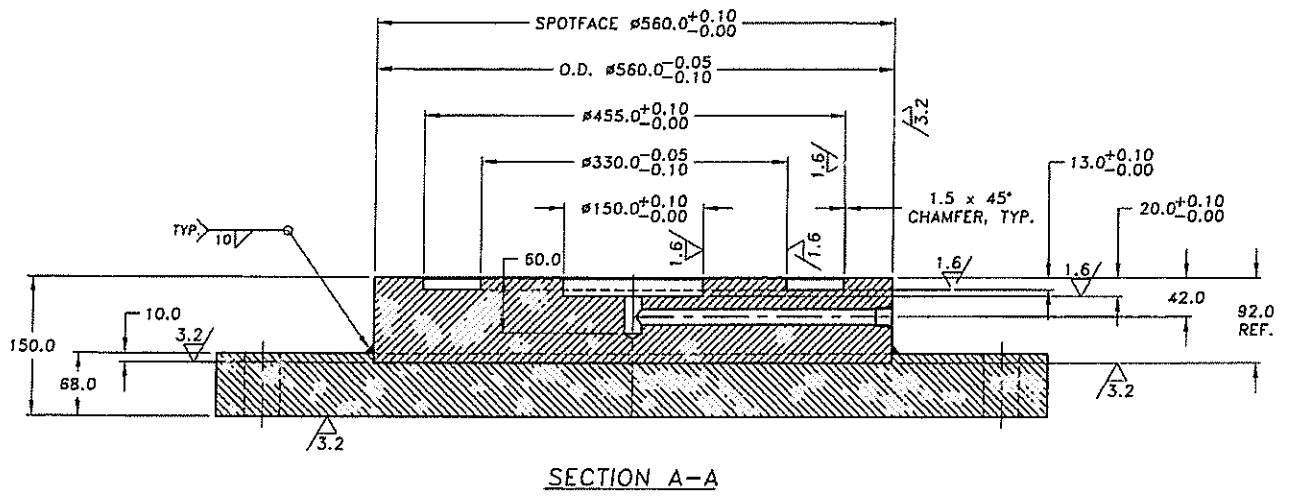
Approved by / Approuvé par: DPC, Date: APR 2016

Project No./No. du projet: 3515015	Client No./No. du Client: CE 1911-2-002	Sheet No./Feuille No.: M002
Drawing Reference No./Numéro de Référence du Dessin:		

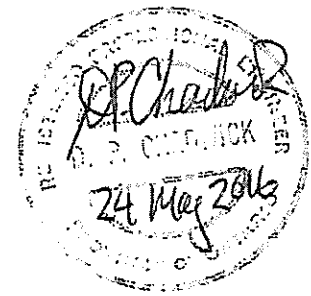


BILL OF MATERIAL			
ITEM	QTY	MATERIAL	DESCRIPTION
1	1	A36	PLATE 76.2 (3") THICK x 900 x 900
2	1	A36	PLATE 101.6 (4") THICK x 560 DIAMETER

ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE NOTED.



ALL DIMENSIONS IN MILLIMETERS		
UNSPECIFIED TOLERANCES:		
DECIMAL:	X.XXX	± .05 [.002]
	X.XX	± .25 [.01]
	X.X	± .50 [.02]
REMOVE ALL BURRS AND SHARP EDGES		
Ra micrometer	Ra micro-inch	Roughness Grade Number
50	2000	N12
25	1000	N11
12.5	500	N10
6.3	250	N9
3.2	125	N8
1.6	63	N7
0.8	32	N6
0.4	16	N5
0.2	8	N4
0.1	4	N3
0.05	2	N2
0.025	1	N1



No.	Date	Description	Drawn by	Approved
2	29/05/16	ISSUED FOR TENDER	FJ	DC
1	25/01/16	RELEASED FOR REVIEW	FJ	-

Revision / Révision	
A	Detail number No. du détail
B	Location on drawing No. sur dessin
C	Drawing sheet no. No. du dessin

Client Acceptance / Acceptation du client
Signature _____ Date _____
File No / No. de dossier _____

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

Client Service Team for Parks Canada Ontario Region
Équipe des services à la clientèle pour Parcs Canada Région de l'Ontario

Canada

MMM GROUP

Chadwick
Engineering Ltd.

Project title / Titre du projet
KINGSTON MILLS SWING BRIDGE REHABILITATION

RIDEAU CANAL
KINGSTON ONTARIO

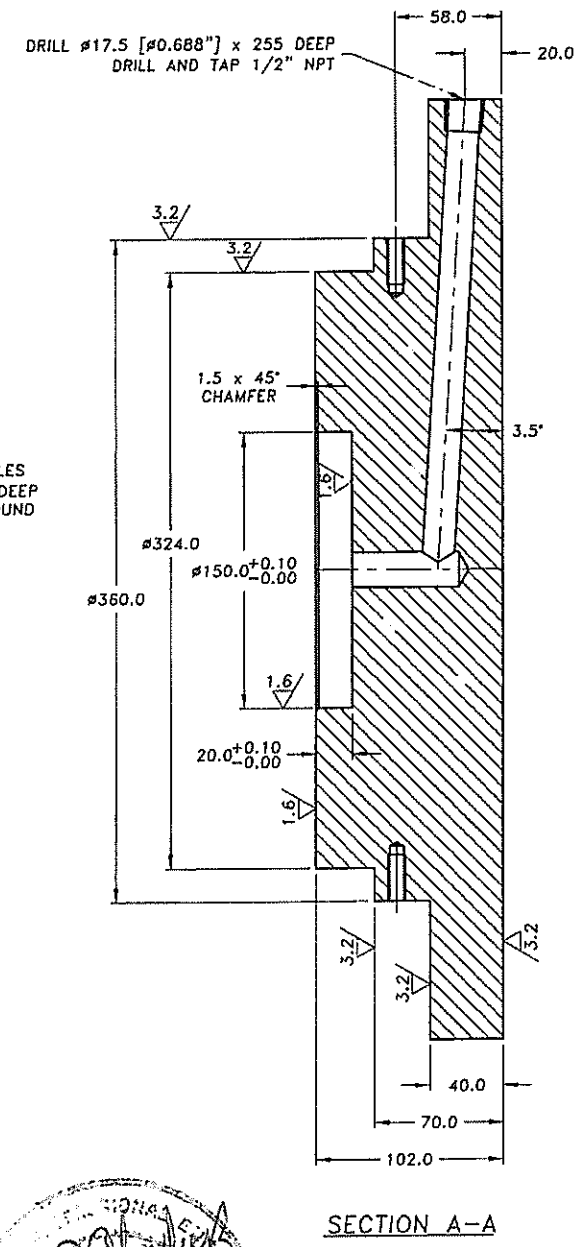
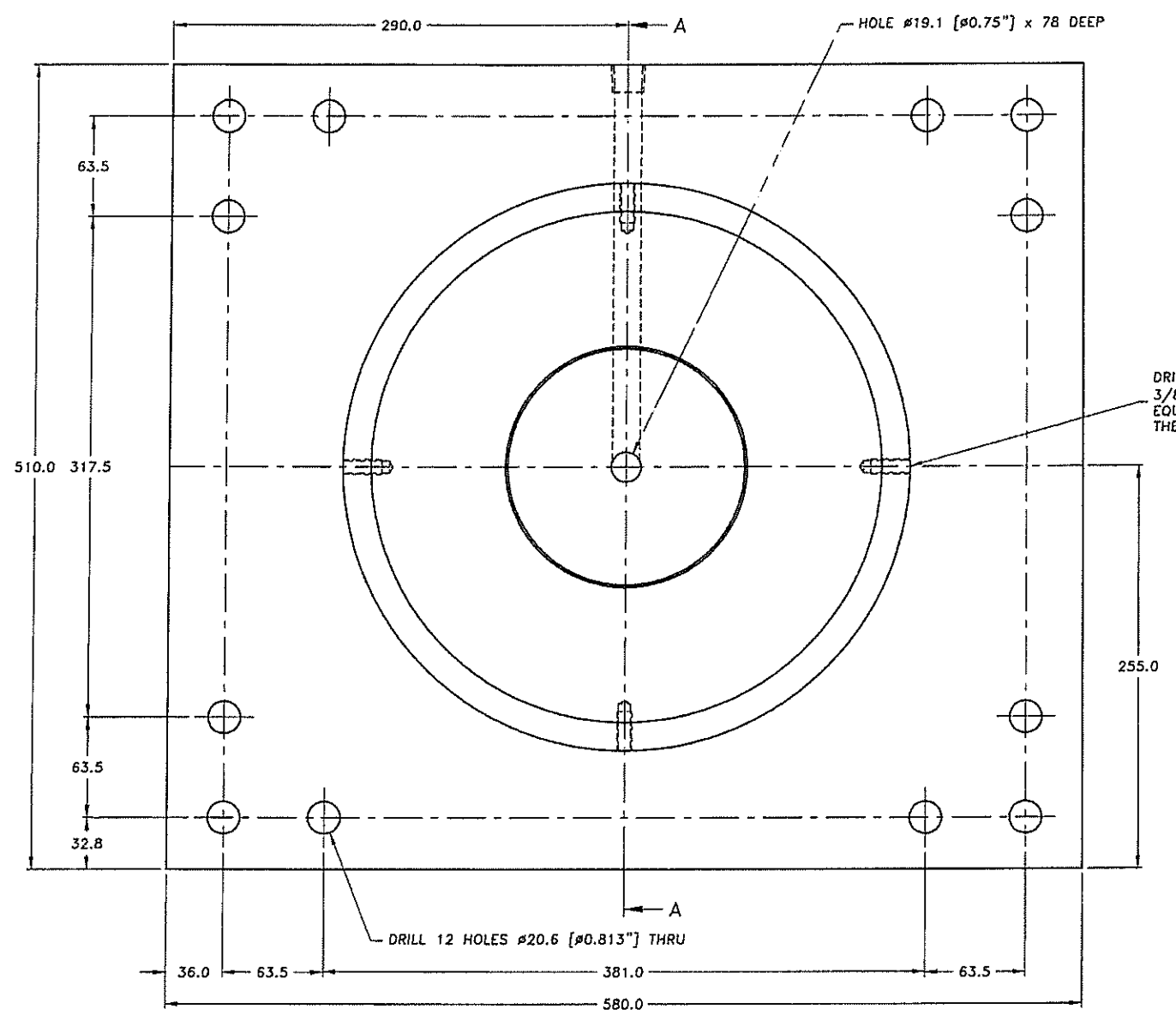
Drawing title / Titre du dessin
CENTER PIVOT PIVOT BASE

Scale / Echelle	
1:4	Date
Drawn by / Dessiné par	DATE
FJ	MARCH 2016
Designed by / Conçu par	Date
FJ	
Checked by / Vérifié par	Date
DPC	
Approved by / Approuvé par	Date
DPC	APR 2016

Project No / No. du projet	Client No / No du Client	Sheet No. / Feuille No.
3515015	CE 1911-2-003	M003

BILL OF MATERIAL			
ITEM	QTY	MATERIAL	DESCRIPTION
1	1	A36	PLATE 111 (4 3/8") THICK x 510 x 580

ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE NOTED.



APC Chadwick
24 May 2016

No.	Date	Description	Drawn by	Approved
2	20/05/16	ISSUED FOR TENDER	FJ	DC
1	25/04/16	RELEASED FOR REVIEW	FJ	-

Revision / Révision	
A	A Detail number No. du détail
B	B Location dwg no. No. sur dessin
C	C Drawing sheet no. No. du dessin

Client Acceptance / Acceptation du client
 Signature _____ Date _____
 File No./No. de dossier _____

Public Works and Government Services Canada
 Travaux publics et Services gouvernementaux Canada
 Client Service Team for Parks Canada Ontario Region
 Équipe des services à la clientèle pour Parcs Canada Région de l'Ontario



Project title / Titre du projet
KINGSTON MILLS SWING BRIDGE REHABILITATION

RIDEAU CANAL
KINGSTON ONTARIO

Drawing title / Titre du dessin
CENTER PIVOT PIVOT TOP PLATE

Scale / Echelle
 1:2

Drawn by / Dessiné par
 FJ Date
 MARCH 2016

Designed by / Conçu par
 FJ Date

Checked by / Vérifié par
 DPC Date

Approved by / Approuvé par
 DPC /PR 2016

Project No./No. du projet
 3515015 Client No./No. du Client
 CE 1911-2-004 Sheet No./
 Feuille No.

Drawing Reference No./Numéro de Référence du Dessin
M004

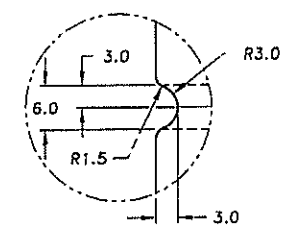
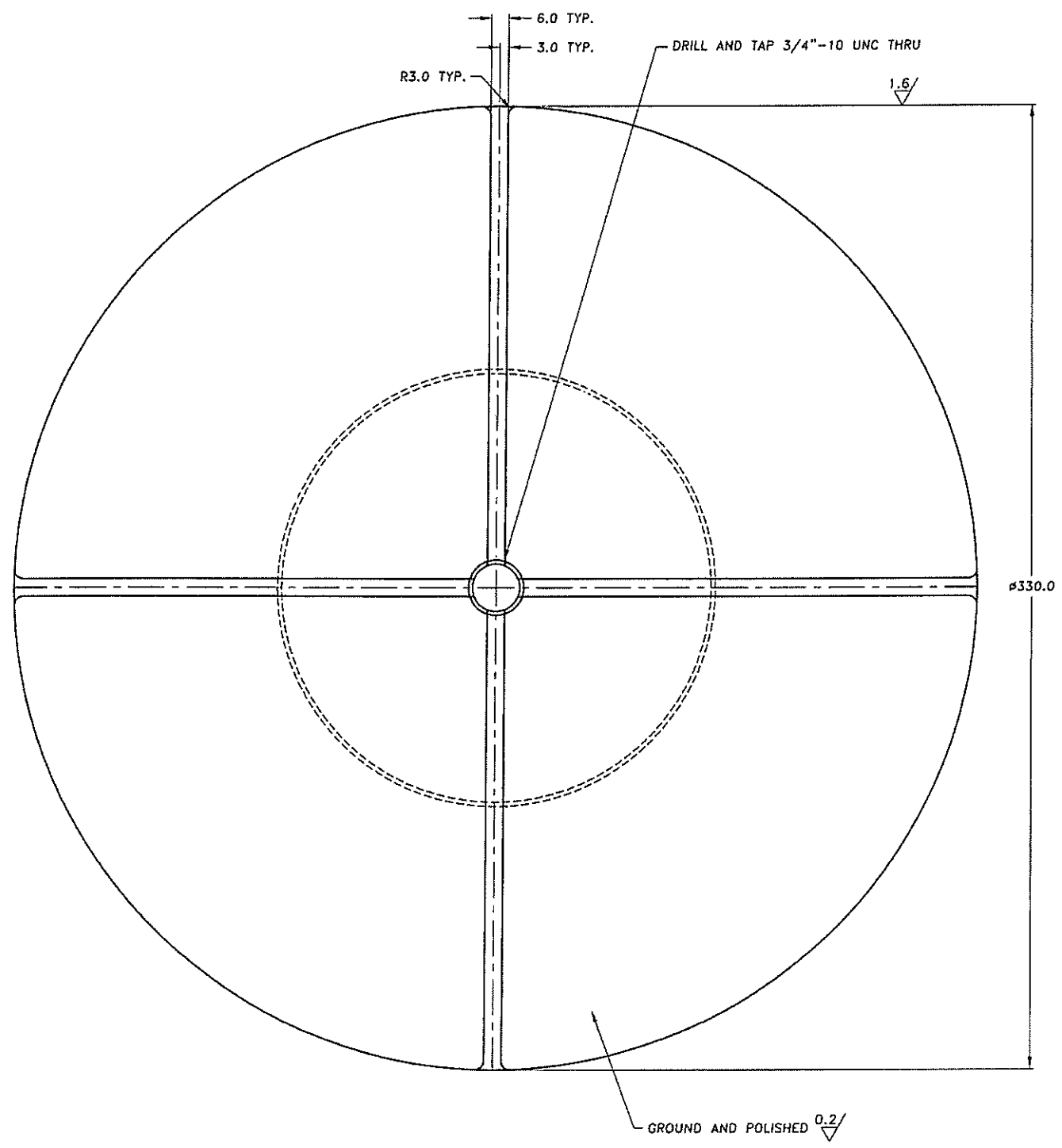
Ra micrometer	Ra micro-inch	Roughness Grade Number
50	2000	N12
25	1000	N11
12.5	500	N10
6.3	250	N9
3.2	125	N8
1.6	63	N7
0.8	32	N6
0.4	16	N5
0.2	8	N4
0.1	4	N3
0.05	2	N2
0.025	1	N1

ALL DIMENSIONS IN MILLIMETERS

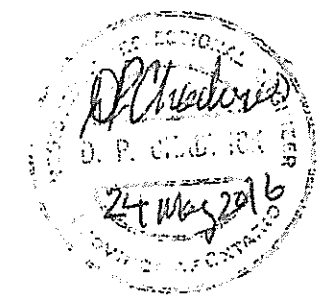
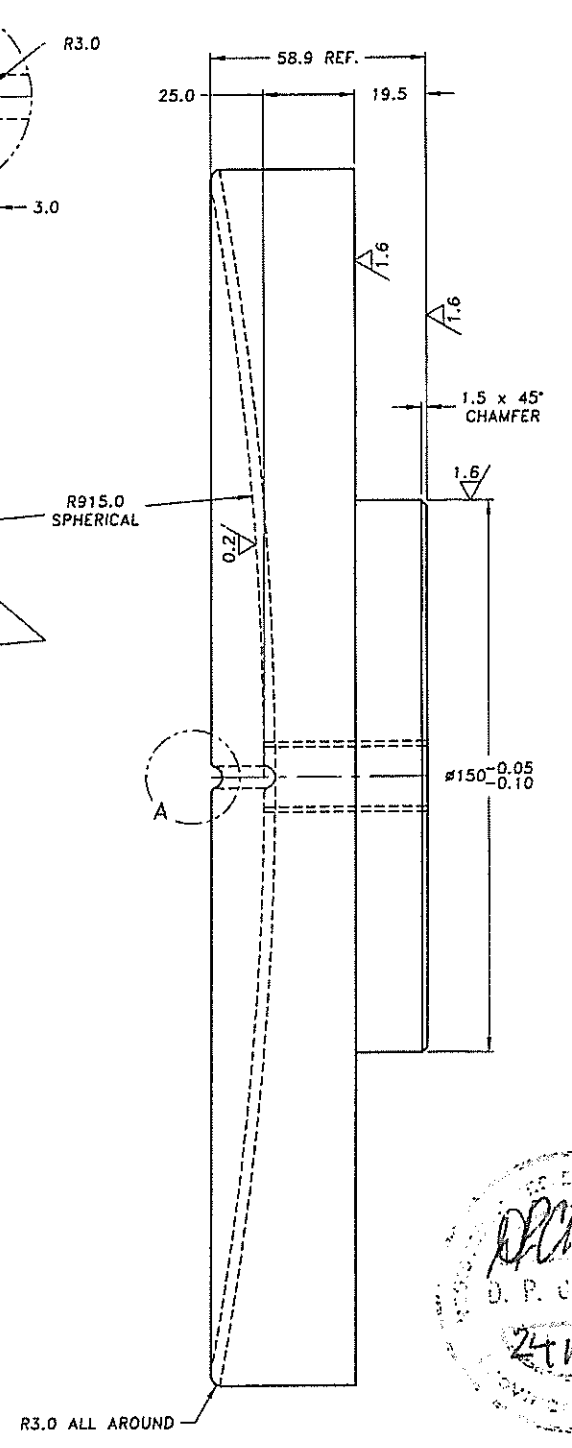
UNSPECIFIED TOLERANCES:
 DECIMAL: X.XXX ± .05 [.002]
 X.XX ± .25 [.01]
 X.X ± .50 [.02]

REMOVE ALL BURRS AND SHARP EDGES

BILL OF MATERIAL			
ITEM	QTY	MATERIAL	DESCRIPTION
1	1	AISI 4340	PREHEAT TREATED PLATE 63.5 (2 1/2") THICK x 330 DIAMETER



DETAIL A
SCALE 2:1



ALL DIMENSIONS IN MILLIMETERS

UNSPECIFIED TOLERANCES:
 DECIMAL: X.XXX ± .05 [.002]
 X.XX ± .25 [.01]
 X.X ± .50 [.02]

REMOVE ALL BURRS AND SHARP EDGES

Ra micrometer	Ra micro-inch	Roughness Grade Number
50	2000	N12
25	1000	N11
12.5	500	N10
6.3	250	N9
3.2	125	N8
1.6	63	N7
0.8	32	N6
0.4	16	N5
0.2	8	N4
0.1	4	N3
0.05	2	N2
0.025	1	N1

No.	Date	Description	Drawn by	Approved
2	20/05/16	ISSUED FOR TENDER	FJ	DC
1	25/04/16	RELEASED FOR REVIEW	FJ	-

Revision / Révision	
A	A Detail number No. du détail
B	B Location dwg. no. No. sur dessin
C	C Drawing sheet no. No. du dessin

Client Acceptance / Acceptation du client
 Signature _____ Date _____
 File No./No. de dossier _____

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

Client Service Team for Parks Canada Ontario Region
 Équipe des services à la clientèle pour Parcs Canada Région de l'Ontario

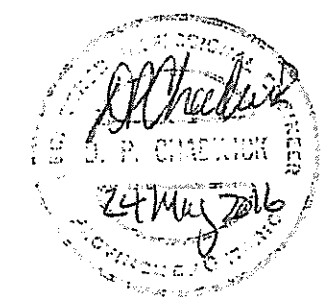
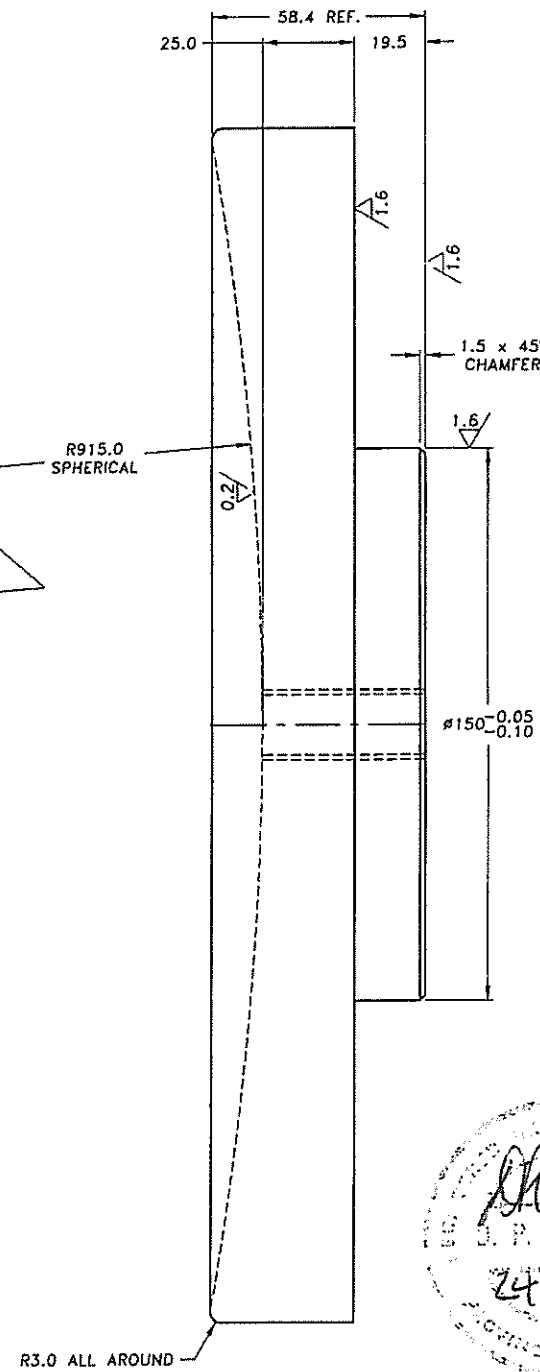
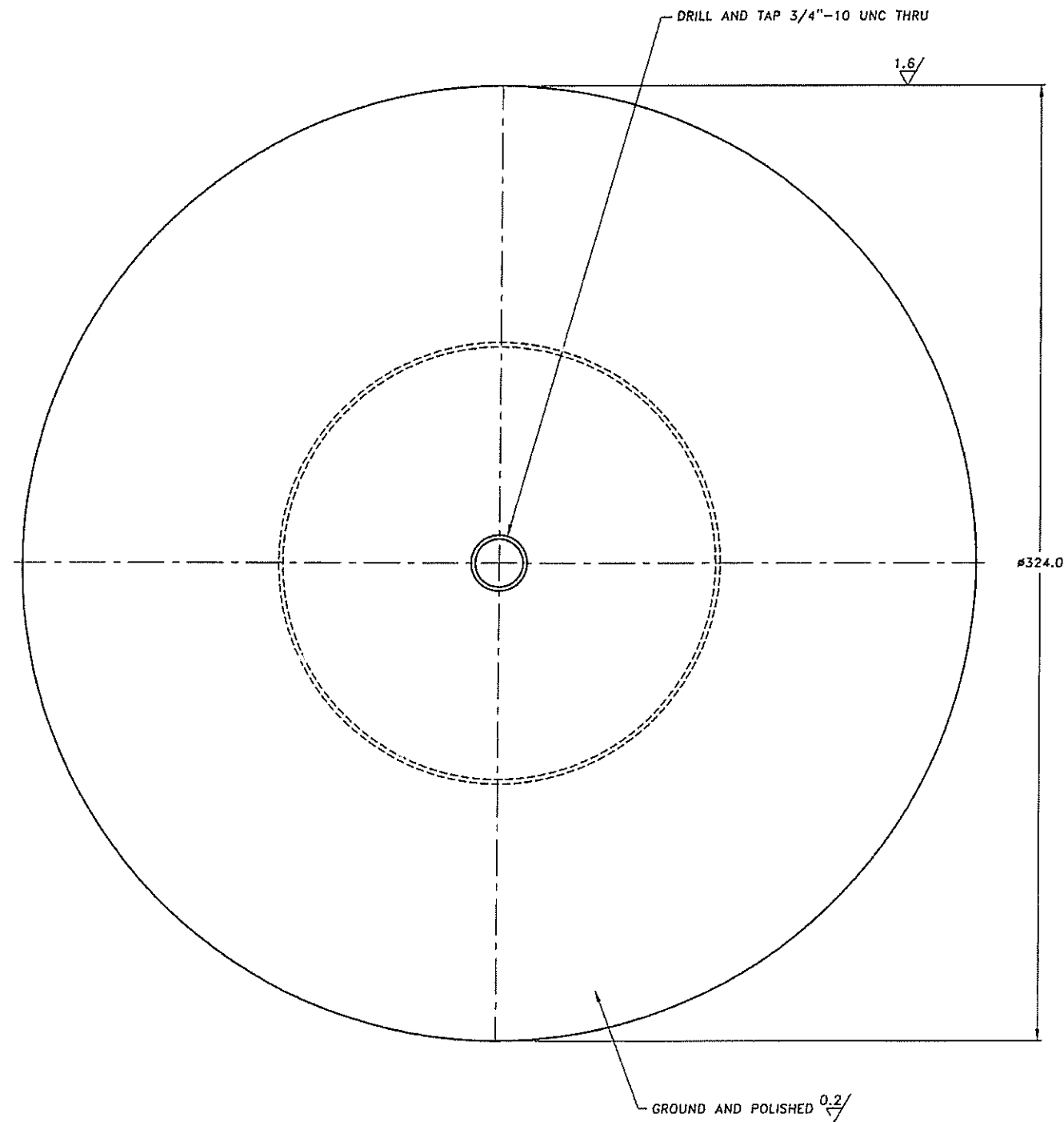


Project Title / Titre du projet
KINGSTON MILLS SWING BRIDGE REHABILITATION
RIDEAU CANAL
KINGSTON ONTARIO

Drawing Title / Titre du dessin
CENTER PIVOT LOWER SPHERICAL PLATE

Scale / Echelle		
1:1		
Drawn by / Dessiné par	Date	
FJ	MARCH 2016	
Designed by / Conçu par	Date	
FJ		
Checked by / Vérifié par	Date	
DPC		
Approved by / Approuvé par	Date	
DPC	27 APR 2016	
Project No./No. du projet	Client No./No. du Client	Sheet No./Feuille No.
3515015	CE 1911-2-005	M005
Drawing Reference No./Numéro de Référence du Dessin		

BILL OF MATERIAL			
ITEM	QTY	MATERIAL	DESCRIPTION
1	1	AISI 4340	PREHEAT TREATED PLATE 63.5 (2 1/2") THICK x 324 DIAMETER



No.	Date	Description	Drawn by	Approved
2	29/05/16	ISSUED FOR TENDER	FJ	DC
1	23/04/16	RELEASED FOR REVIEW	FJ	-

Revision / Révision	
A	Detail number No. du détail
B	Location dwg. no. No. sur dessin
C	Drawing sheet no. No. du dessin

Client Acceptance / Acceptation du client
 Signature _____ Date _____
 File No. / No. de dossier _____

Public Works and Government Services Canada / Travaux publics et Services gouvernementaux Canada
 Client Service Team for Parks Canada Ontario Region / Équipe des services à la clientèle pour Parcs Canada Région de l'Ontario

Canada

MMM GROUP

Chadwick Engineering Ltd.

Project title / Titre du projet
KINGSTON MILLS SWING BRIDGE REHABILITATION
RIDEAU CANAL
KINGSTON ONTARIO

Drawing title / Titre du dessin
CENTER PIVOT UPPER SPHERICAL PLATE

Scale / Echelle	
1:1	
Drawn by / Dessiné par	Date
FJ	MARCH 2016
Designed by / Conçu par	Date
FJ	
Checked by / Vérifié par	Date
DPC	
Approved by / Approuvé par	Date
DPC	APR 2016
Project No. / No. du projet	Client No. / No. du Client
3515015	CE 1911-2-006
Drawing Reference No. / Numéro de Référence du Dessin	Sheet No. / Feuille No.

Ra micrometer	Ra micro-inch	Roughness Grade Number
50	2000	N12
25	1000	N11
12.5	500	N10
6.3	250	N9
3.2	125	N8
1.6	63	N7
0.8	32	N6
0.4	16	N5
0.2	8	N4
0.1	4	N3
0.05	2	N2
0.025	1	N1

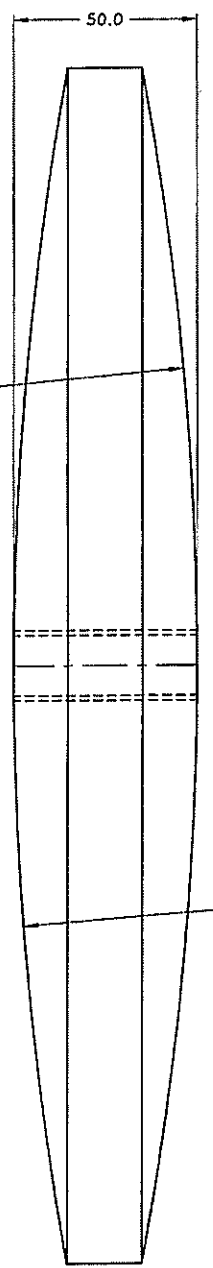
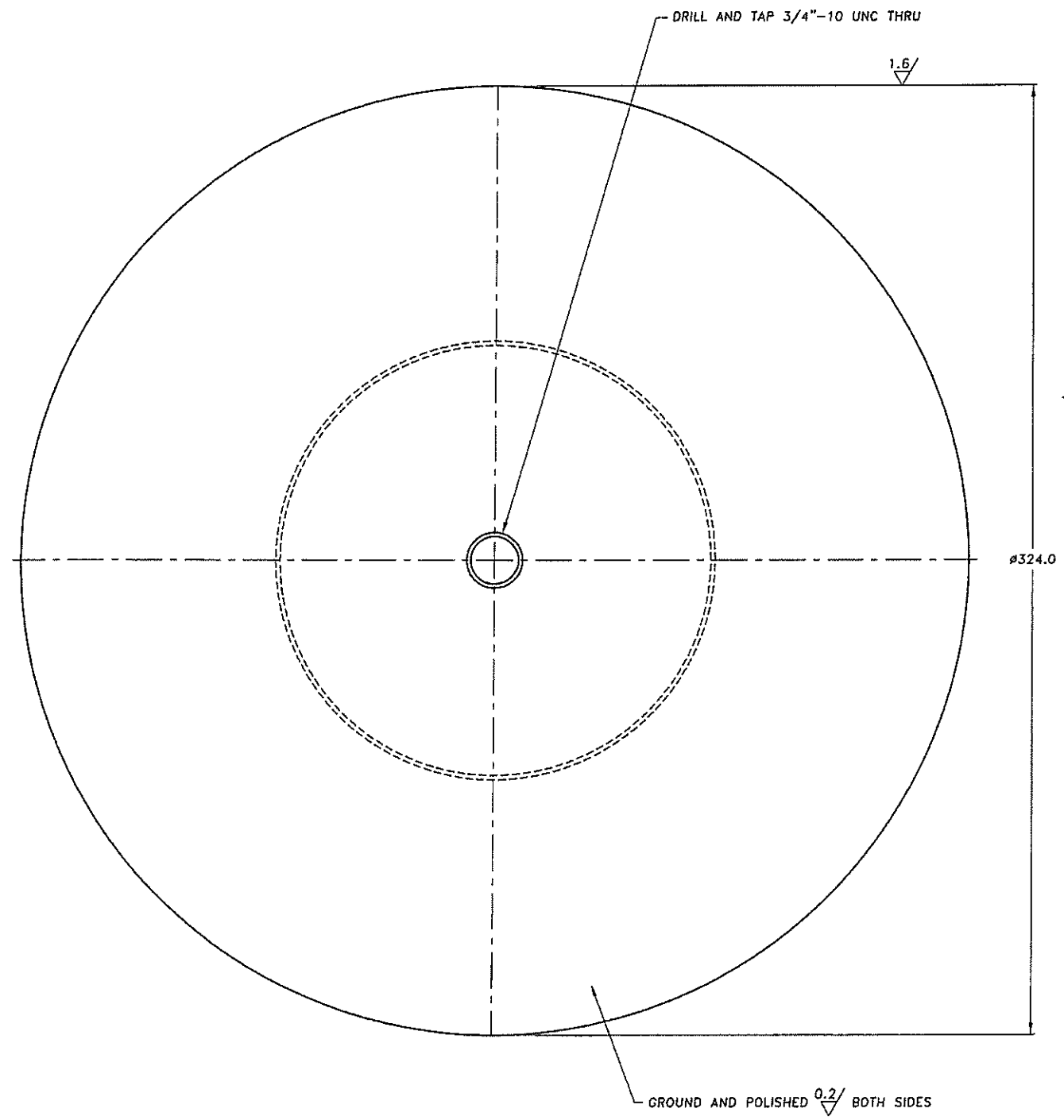
ALL DIMENSIONS IN MILLIMETERS

UNSPECIFIED TOLERANCES:
 DECIMAL: X.XXX ± .05 [.002]
 X.XX ± .25 [.01]
 X.X ± .50 [.02]

REMOVE ALL BURRS AND SHARP EDGES

M006

BILL OF MATERIAL			
ITEM	QTY	MATERIAL	DESCRIPTION
1	1	AMPCO 18	PLATE 50 (2") THICK x 324 DIAMETER



Ra micrometer	Ra micro-inch	Roughness Grade Number
50	2000	N12
25	1000	N11
12.5	500	N10
6.3	250	N9
3.2	125	N8
1.6	63	N7
0.8	32	N6
0.4	16	N5
0.2	8	N4
0.1	4	N3
0.05	2	N2
0.025	1	N1

ALL DIMENSIONS IN MILLIMETERS

UNSPECIFIED TOLERANCES:
 DECIMAL: X.XXX ± .05 [.002]
 X.XX ± .25 [.01]
 X.X ± .50 [.02]

REMOVE ALL BURRS AND SHARP EDGES

No.	Date	Description	Drawn by / Dessiné par	Approved / Approuvé
2	20/05/16	ISSUED FOR TENDER	FJ	DC
1	25/04/16	RELEASED FOR REVIEW	FJ	-

Revision / Révision	
A	Détail number / No. du détail
B	Location dwg. no. / No. sur dessin
C	Drawing sheet no. / No. du dessin

Client Acceptance / Acceptation du client
 Signature _____ Date _____
 File No./No. de dossier _____

Public Works and Government Services Canada / Travaux publics et Services gouvernementaux Canada
 Client Service Team for Parks Canada Ontario Region / Équipe des services à la clientèle pour Parcs Canada Région de l'Ontario

Canada

MMM GROUP

Chadwick Engineering Ltd.



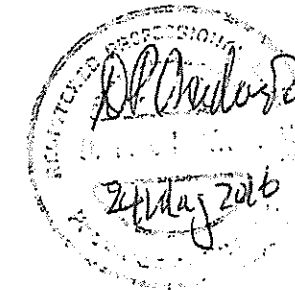
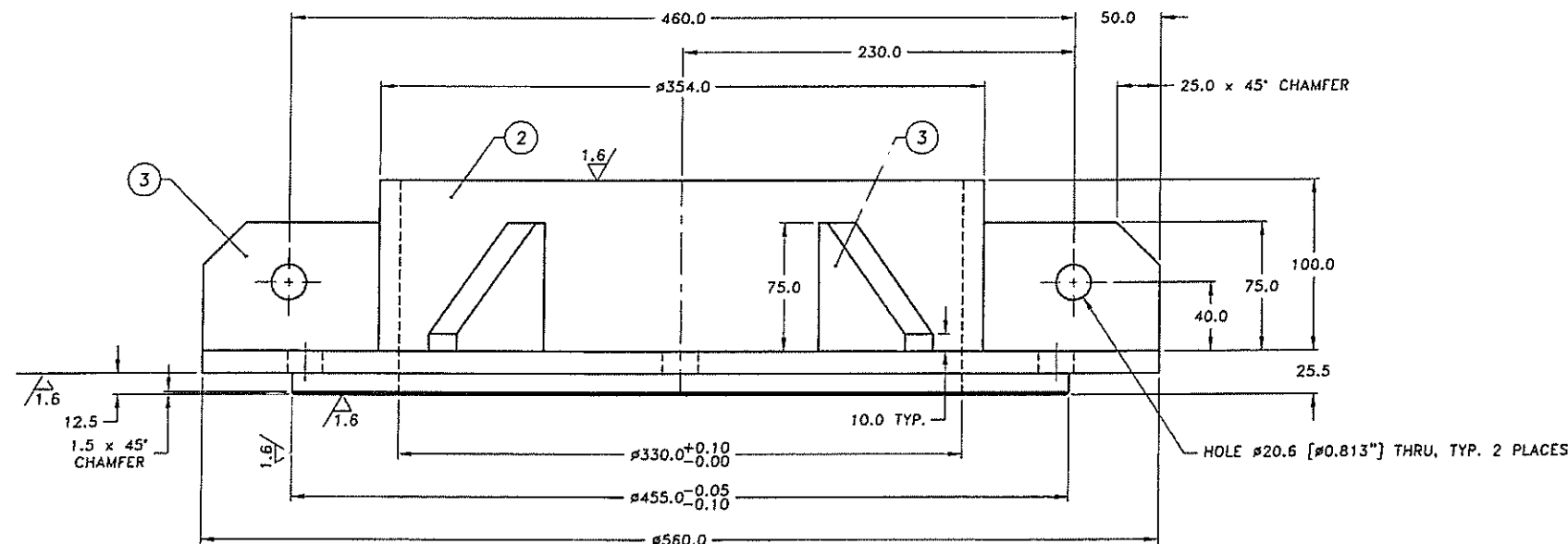
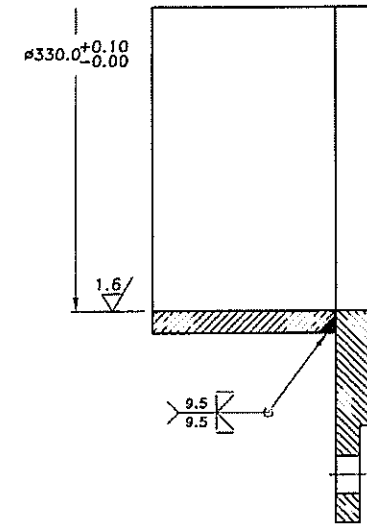
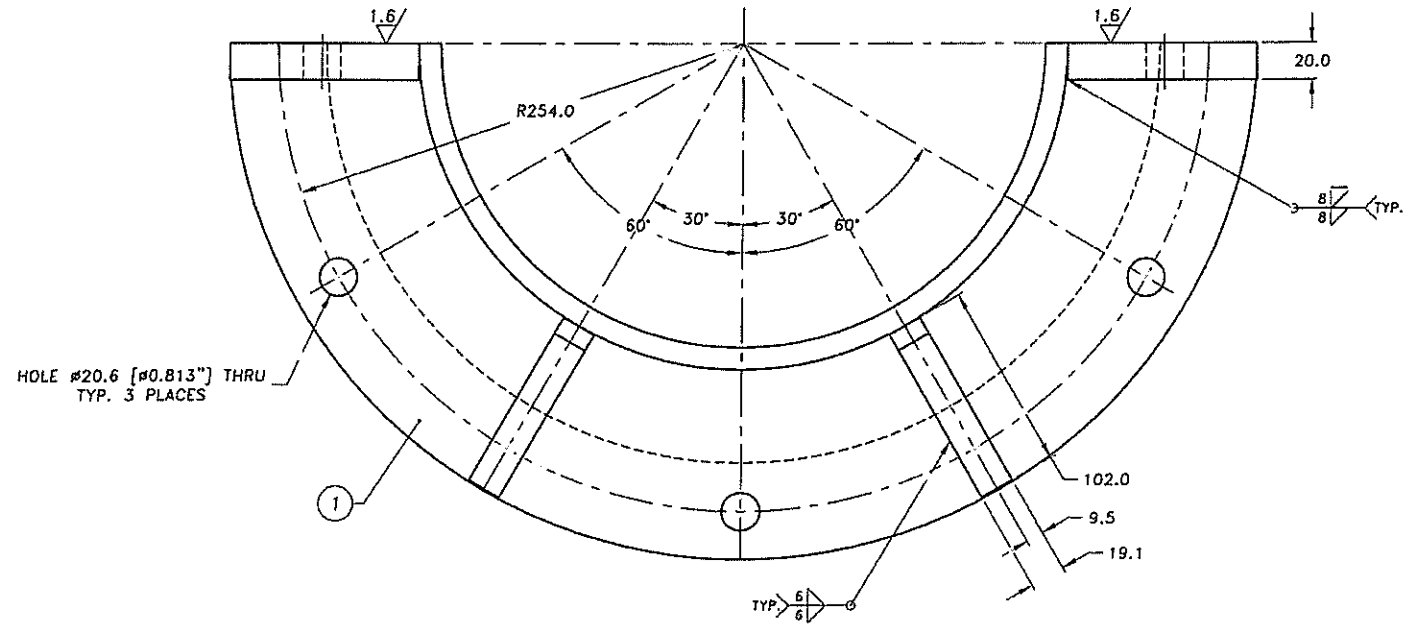
Project title / Titre du projet
KINGSTON MILLS SWING BRIDGE REHABILITATION
RIDEAU CANAL
KINGSTON ONTARIO

Drawing title / Titre du dessin
CENTER PIVOT SPHERICAL DISC

Scale / Echelle		
1:1		
Drawn by / Dessiné par	Date	
FJ	MARCH 2016	
Designed by / Conçu par	Date	
FJ		
Checked by / Vérifié par	Date	
DPC		
Approved by / Approuvé par	Date	
DPC	APR 2016	
Project No./No. du projet	Client No./No du Client	Sheet No./Feuille No
3515015	CE 1911-2-007	M007
Drawing Reference No / Numéro de Référence du Dessin		

BILL OF MATERIAL			
ITEM	QTY	MATERIAL	DESCRIPTION
1	1	A36	PLATE 31.8 (1 1/4") THICK x 280 x 560
2	1	A36	PLATE 15.9 (5/8") THICK x 100 x 550
3	2	A36	PLATE 25.4 (1") THICK x 75 x 103
4	2	A36	PLATE 19.1 (3/4") THICK x 75 x 102

ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE NOTED.



No.	Date	Description	Drawn by	Approved
2	20/05/16	ISSUED FOR TENDER	FJ	DC
1	15/04/16	RELEASED FOR REVIEW	FJ	-

Revision / Révision	
A	A Detail number No. du détail
B	B Location dwg. no. No. sur dessin
C	C Drawing sheet no. No. du dessin

Client Acceptance / Acceptation du client
 Signature _____ Date _____
 File No./No. de dossier _____

Public Works and Government Services Canada
 Travaux publics et Services gouvernementaux Canada
 Client Service Team for Parks Canada Ontario Region
 Équipe des services à la clientèle pour Parcs Canada Région de l'Ontario

Canada

MMM GROUP

Chadwick Engineering Ltd.

Project title / Titre du projet

KINGSTON MILLS SWING BRIDGE REHABILITATION

RIDEAU CANAL

KINGSTON ONTARIO

Drawing title / Titre du dessin

CENTER PIVOT RETAINER

Scale / Echelle
1:2

Drawn by / Dessiné par FJ Date MARCH 2016

Designed by / Conçu par FJ Date

Checked by / Vérifié par DPC Date

Approved by / Approuvé par DPC Date APR 2016

Project No./No. du projet 3515015 Client No./No. du Client CE 1911-2-008 Sheet No./Feuille No.

Drawing Reference No./Numéro de Référence du Dessin M008

Ra micrometer	Ra micro-inch	Roughness Grade Number
50	2000	N12
25	1000	N11
12.5	500	N10
6.3	250	N9
3.2	125	N8
1.6	63	N7
0.8	32	N6
0.4	16	N5
0.2	8	N4
0.1	4	N3
0.05	2	N2
0.025	1	N1

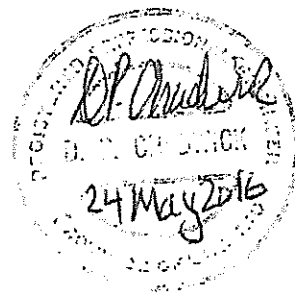
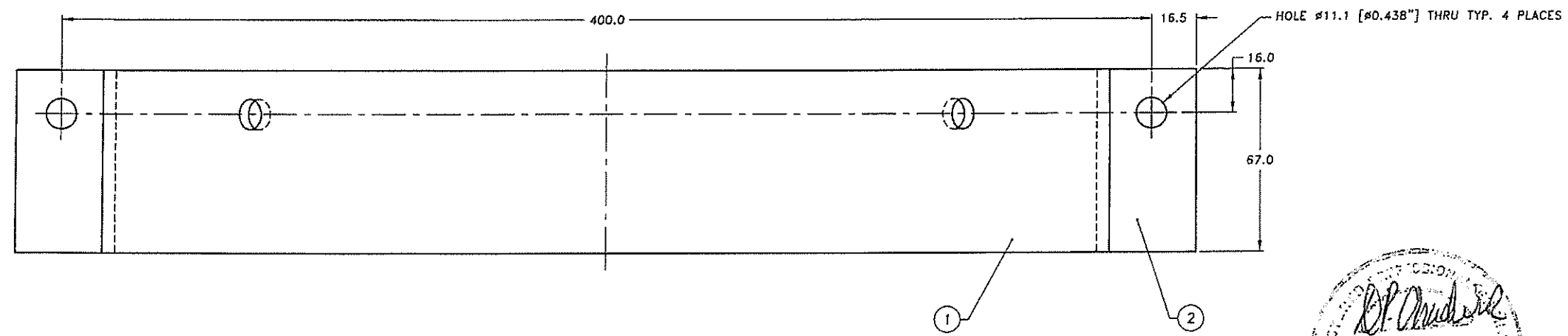
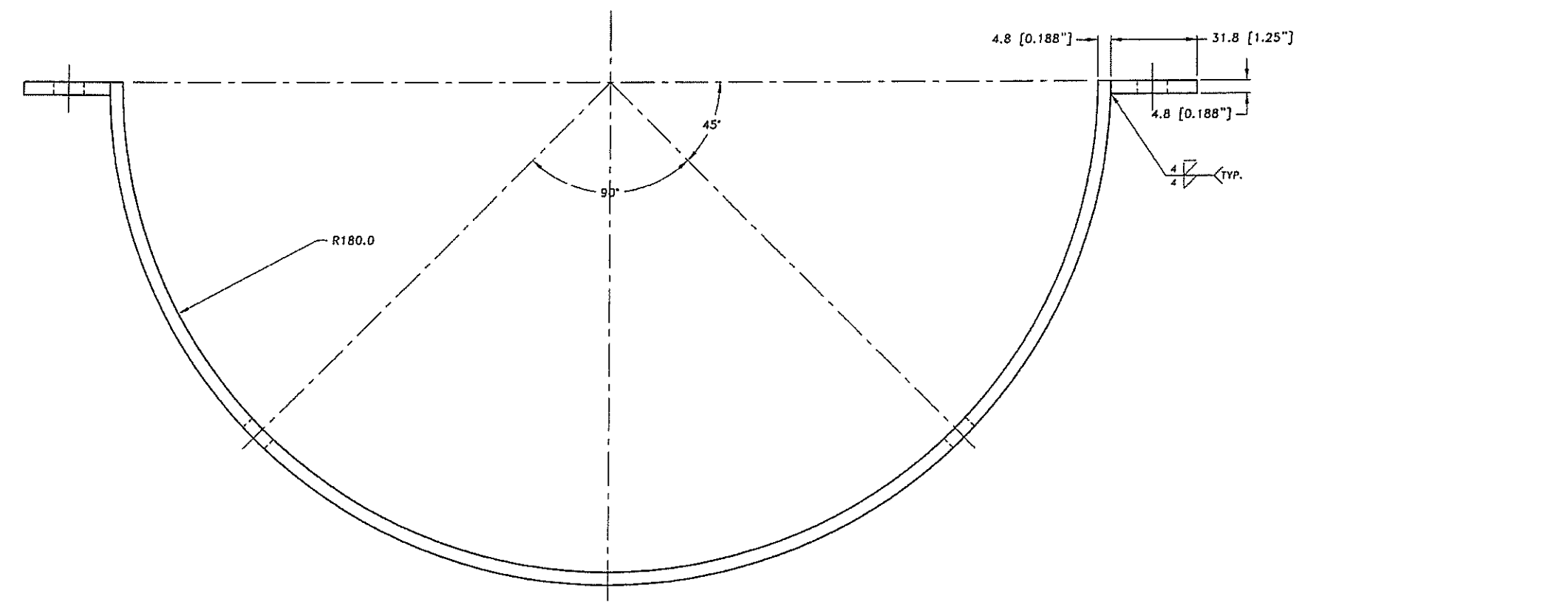
ALL DIMENSIONS IN MILLIMETERS

UNSPECIFIED TOLERANCES:
 DECIMAL: X.XXX ± .05 [.002]
 X.XX ± .25 [.01]
 X.X ± .50 [.02]

REMOVE ALL BURRS AND SHARP EDGES

BILL OF MATERIAL			
ITEM	QTY	MATERIAL	DESCRIPTION
1	1	C1020	PLATE 4.8 (3/16") THICK x 67 x 573
2	2	C1020	PLATE 4.8 (3/16") THICK x 32 x 67

ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE NOTED.



ALL DIMENSIONS IN MILLIMETERS

UNSPECIFIED TOLERANCES:
 DECIMAL: X.XXX ± .05 [.002]
 X.XX ± .25 [.01]
 X.X ± .50 [.02]

REMOVE ALL BURRS AND SHARP EDGES

No.	Date	Description	Drawn by Dessiné par	Approved Approuvé
2	28/05/16	ISSUED FOR TENDER	FJ	DC
1	25/04/16	RELEASED FOR REVIEW	FJ	-

Revision / Révision	
A	Detail number No. du détail
B	Location dwg. no. N° sur dessin
C	Drawing sheet no. No. du dessin

Client Acceptance / Acceptation du client
 Signature _____ Date _____
 File No./No. de dossier _____

Public Works and Government Services Canada / Travaux publics et Services gouvernementaux Canada
 Client Service Team for Parks Canada Ontario Region / Équipe des services à la clientèle pour Parcs Canada Région de l'Ontario

Canada

MMM GROUP

Chadwick Engineering Ltd.

Project title / Titre du projet
KINGSTON MILLS SWING BRIDGE REHABILITATION
RIDEAU CANAL
KINGSTON ONTARIO

Drawing title / Titre du dessin
CENTER PIVOT GUARDING BAND

Scale / Echelle
 1:1

Drawn by / Dessiné par
 FJ Date
 MARCH 2016

Designed by / Conçu par
 FJ Date

Checked by / Vérifié par
 DPC Date

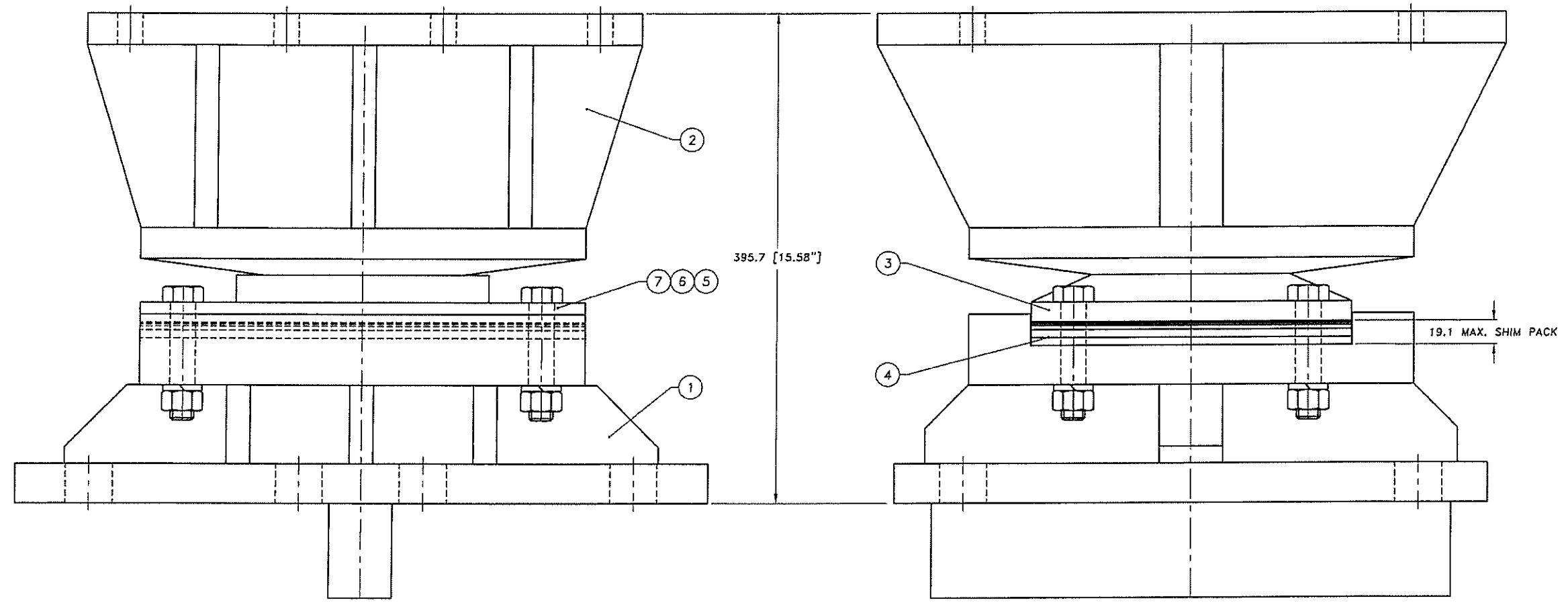
Approved by / Approuvé par
 DPC Date
 APR 2016

Project No./No. du projet 3515015	Client No./No du Client CE 1911-2-009	Sheet No./Feuille No M009
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Drawing Reference No./Numéro de Référence du Dessin

BILL OF MATERIAL			
ITEM	QTY	MATERIAL	DESCRIPTION
1	1		1911-2-011 LOWER BEARING SEAT BLOCK WELDMENT
2	1		1911-2-012 UPPER BEARING SEAT BLOCK WELDMENT
3	1		1911-2-013 SEAT PLATE
4	1		1911-2-014 SHIM PACK
5	4	A325	HEAVY HEX STRUCTURAL BOLT 3/4-10 UNC x 3 1/2 LONG ASTM A325 TYPE 1 HOT DIPPED GALVANIZED
6	4	A563	HEAVY HEX NUT 3/4-10 UNC, ASTM A563 GRADE DH HOT DIP GALV.
7	4	GALV.	LOCKWASHER 3/4" DIAMETER

ALL DIMENSION ARE IN MILLIMETERS UNLESS OTHERWISE NOTED.



2	20/05/16	ISSUED FOR TENDER	FJ	DC
1	23/04/16	RELEASED FOR REVIEW	FJ	-
No.	Date	Description	Drawn by / Dessiné par	Approved / Approuvé

Revision / Révision	
A	Détail number / No. du détail
B	Location dwg. n. / No. sur dessin
C	Drawing sheet no. / No. du dessin

Client Acceptance / Acceptation du client
 Signature _____ Date _____
 File No./N. de dossier _____

Public Works and Government Services Canada / Travaux publics et Services gouvernementaux Canada
 Client Service Team for Parks Canada / Équipe des services à la clientèle pour Parcs Canada Ontario Region / Région de l'Ontario
Canada

MMM GROUP

Chadwick Engineering Ltd.

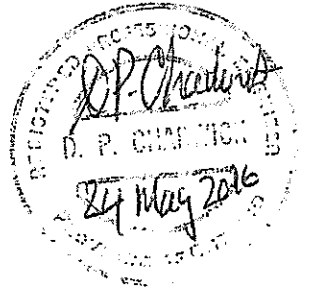
Project title / Titre du projet
KINGSTON MILLS SWING BRIDGE REHABILITATION
RIDEAU CANAL
KINGSTON ONTARIO

Drawing title / Titre du dessin
BEARING SEAT ASSEMBLY

Scale / Echelle
 1:2
 Drawn by / Dessiné par: FJ Date: MARCH 2016
 Designed by / Conçu par: FJ Date:

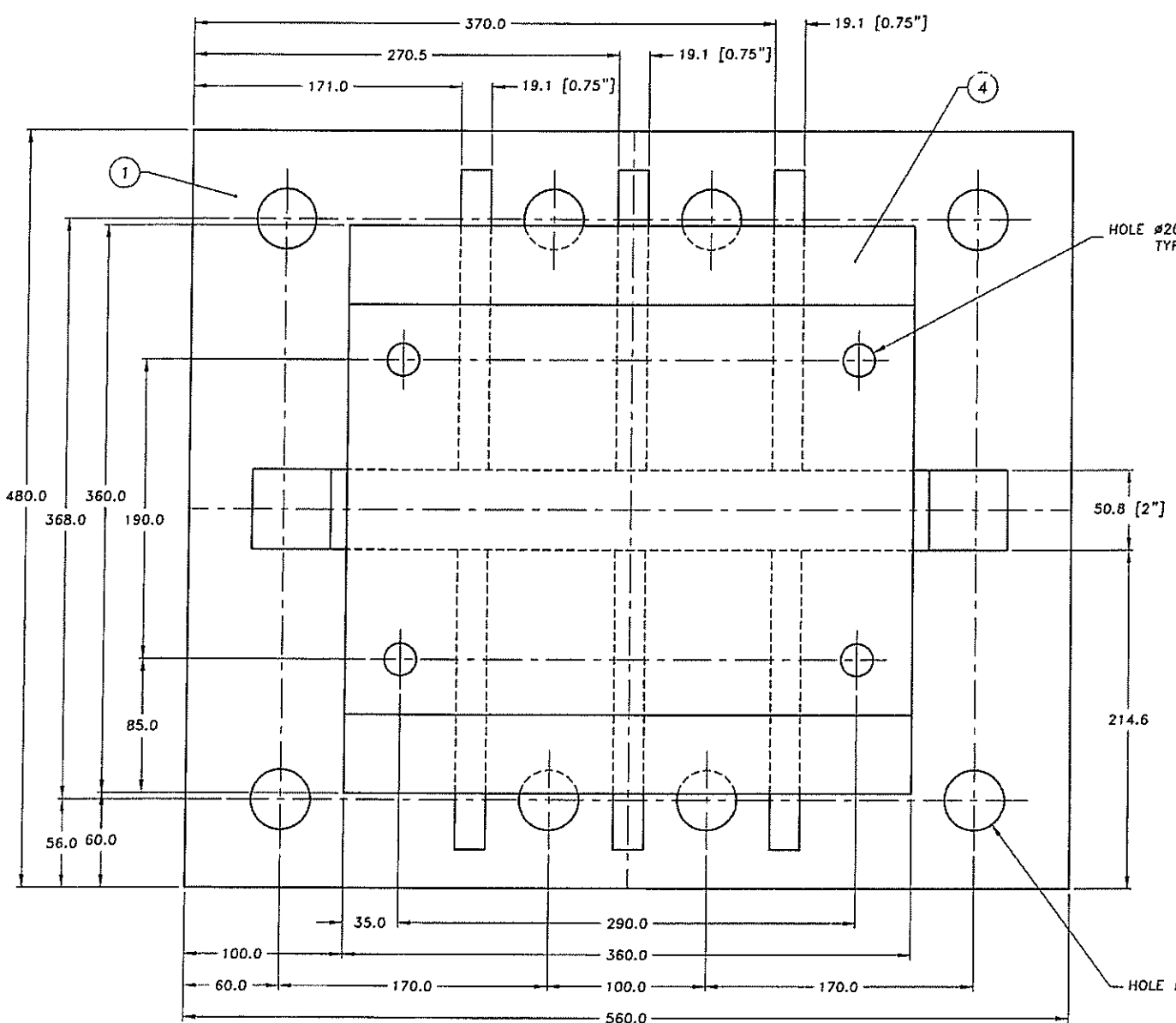
Checked by / Vérifié par: DPC Date:
 Approved by / Approuvé par: DPC Date: APR 2016

Project No./No du projet 3515015	Client No./No du Client CE 1911-2-010	Sheet No./Feuille No M010
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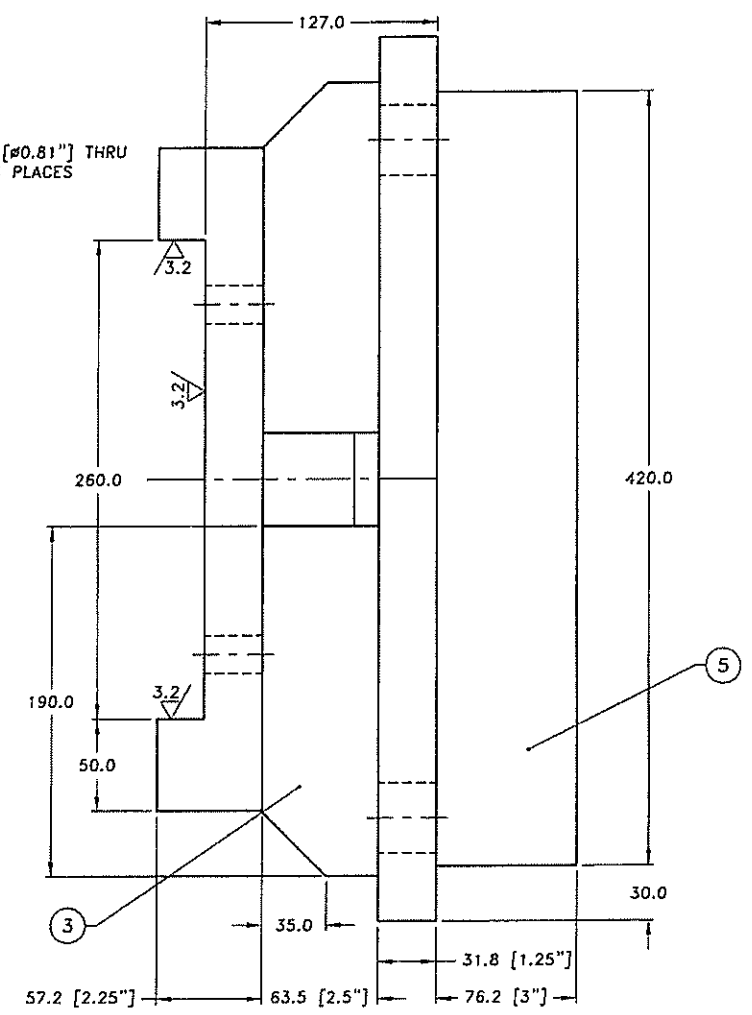
ALL DIMENSIONS IN MILLIMETERS
 UNSPECIFIED TOLERANCES:
 DECIMAL: X.XXX ± .05 [.002]
 X.XX ± .25 [.01]
 X.X ± .50 [.02]
 REMOVE ALL BURRS AND SHARP EDGES

BILL OF MATERIAL			
ITEM	QTY	MATERIAL	DESCRIPTION
1	1	A36	PLATE 31.8 (1.25") THICK x 480 x 560
2	1	A36	PLATE 50.8 (2") THICK x 63.5 x 480
3	6	A36	PLATE 19.1 (0.75") THICK x 63.5 x 190
4	1	A36	PLATE 57.2 (2.25") THICK x 360 x 360
5	1	A36	PLATE 50.8 (2") THICK x 76.2 x 420

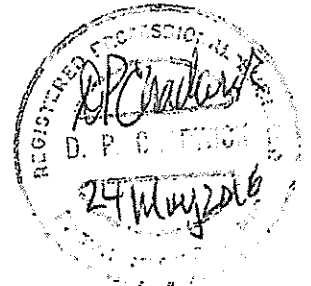


HOLE #20.6 (#0.81") THRU TYP. 4 PLACES

HOLE #38.1 (#1.5") THRU TYP. 8 PLACES

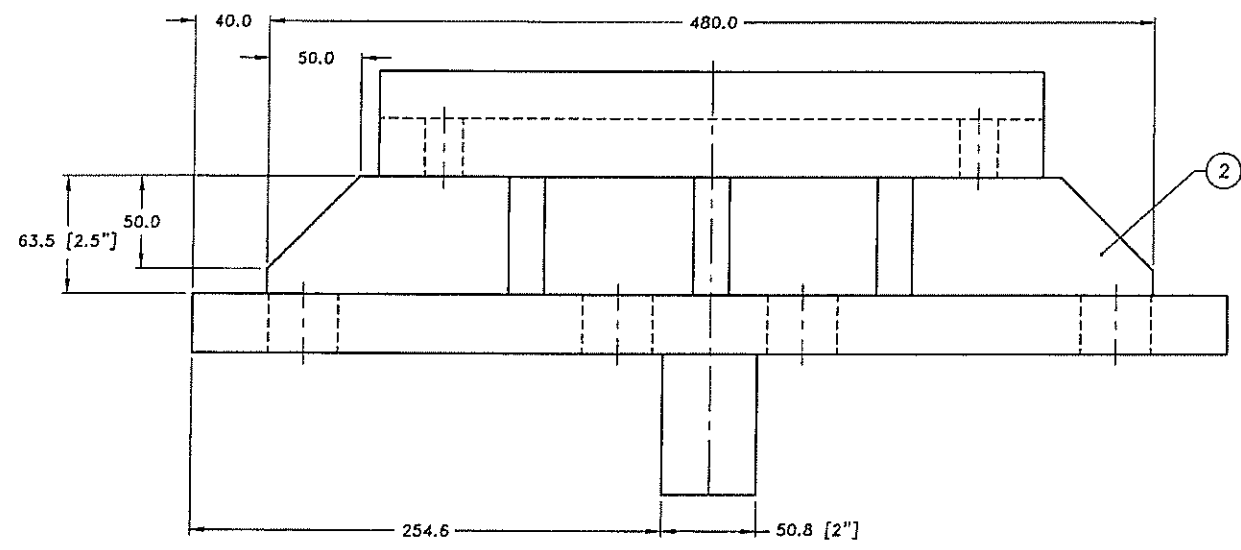


NOTES:
 - ALL DIMENSION ARE IN MILLIMETERS UNLESS OTHERWISE NOTED.
 - WELD ALLOVER WITH A 10 mm FILLET.



ALL DIMENSIONS IN MILLIMETERS
 UNSPECIFIED TOLERANCES:
 DECIMAL: X.XXX ± .05 [.002]
 X.XX ± .25 [.01]
 X.X ± .50 [.02]
 REMOVE ALL BURRS AND SHARP EDGES

Ra micrometer	Ra micro-inch	Roughness Grade Number
50	2000	N12
25	1000	N11
12.5	500	N10
6.3	250	N9
3.2	125	N8
1.6	63	N7
0.8	32	N6
0.4	16	N5
0.2	8	N4
0.1	4	N3
0.05	2	N2
0.025	1	N1



No.	Date	Description	Drawn by / Dessiné par	Approved / Approuvé
2	10/05/16	ISSUED FOR TENDER	FJ	DC
1	25/04/16	RELEASED FOR REVIEW	FJ	-

Revision / Révision

A Detail number / No. du détail
 B Location dwg. no. / No. sur dessin
 C Drawing sheet no. / No. du dessin

Client Acceptance / Acceptation du client
 Signature _____ Date _____
 File No./No. de dossier _____

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

Client Service Team for Parks Canada Ontario Region / Équipe des services à la clientèle pour Parcs Canada Région de l'Ontario

Canada



Chadwick Engineering Ltd.

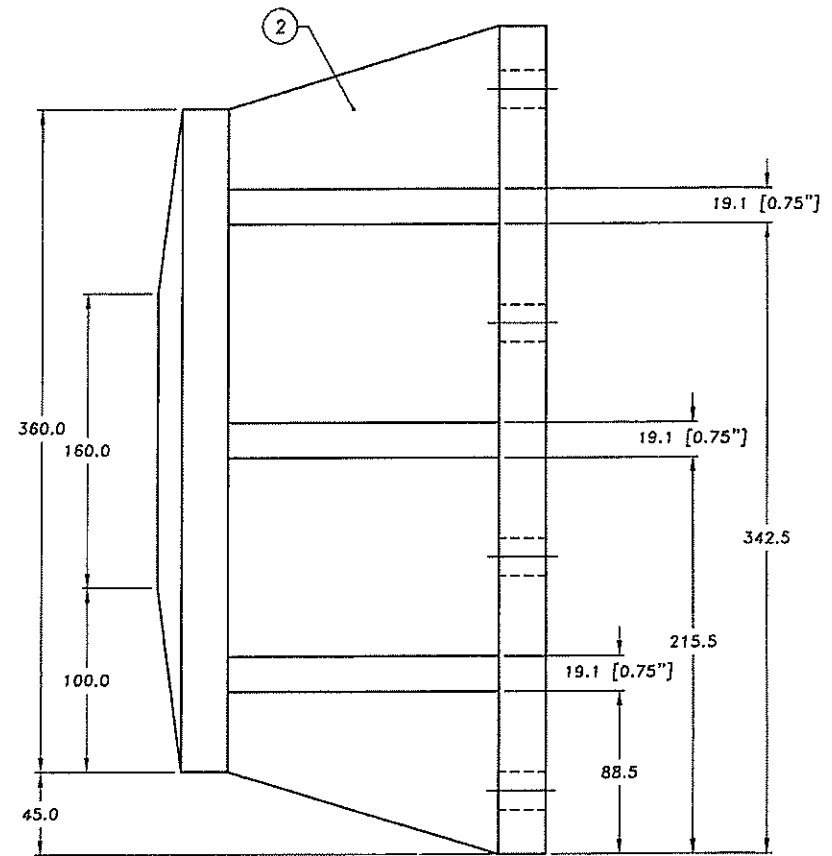
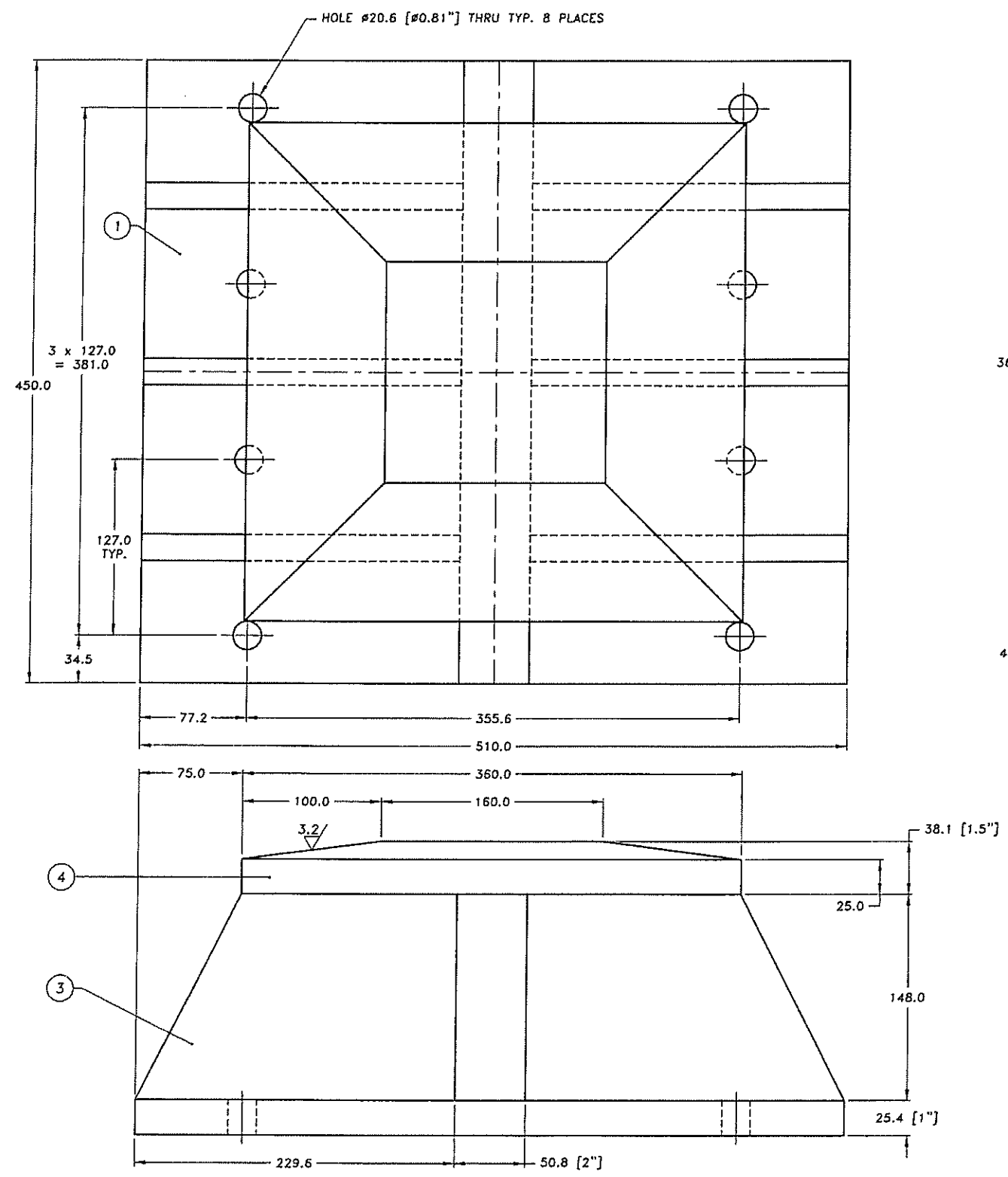
Project title / Titre du projet
KINGSTON MILLS SWING BRIDGE REHABILITATION
RIDEAU CANAL
KINGSTON ONTARIO

Drawing title / Titre du dessin
BEARING SEAT LOWER BLOCK WELDMENT

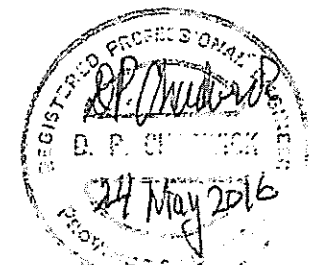
Scale / Echelle: 1:2

Drawn by / Dessiné par	Date	
FJ	MARCH 2016	
Designed by / Conçu par	Date	
FJ		
Checked by / Vérifié par	Date	
DPC		
Approved by / Approuvé par	Date	
DPC	APR 2016	
Project No./No. du projet	Client No./No. du Client	Sheet No./Feuille No.
3515015	CE 1911-2-011	M011
Drawing Reference: No. Numéro de Référence du Dessin		

BILL OF MATERIAL			
ITEM	QTY	MATERIAL	DESCRIPTION
1	1	A36	PLATE 25.4 (1") THICK x 450 x 510
2	1	A36	PLATE 50.8 (2") THICK x 148 x 450
3	6	A36	PLATE 19.1 (0.75") THICK x 148 x 229.6
4	1	A36	PLATE 38.1 (1.5") THICK x 360 x 360



NOTES:
 - ALL DIMENSION ARE IN MILLIMETERS UNLESS OTHERWISE NOTED.
 - WELD ALLOVER WITH A 10 mm FILLET.



ALL DIMENSIONS IN MILLIMETERS
 UNSPECIFIED TOLERANCES:
 DECIMAL: X.XXX ± .05 [.002]
 X.XX ± .25 [.01]
 X.X ± .50 [.02]
 REMOVE ALL BURRS AND SHARP EDGES

Ra micrometer	Ra micro-inch	Roughness Grade Number
50	2000	N12
25	1000	N11
12.5	500	N10
6.3	250	N9
3.2	125	N8
1.6	63	N7
0.8	32	N6
0.4	16	N5
0.2	8	N4
0.1	4	N3
0.05	2	N2
0.025	1	N1

No.	Date	Description	Drawn by Designé par	Approved Approuvé
2	20/05/16	ISSUED FOR TENDER	FJ	DC
1	25/04/16	RELEASED FOR REVIEW	FJ	-

Client Acceptance / Acceptation du client
 Signature _____ Date _____
 File No./N^o. de dossier _____

Public Works and Government Service Canada / Travaux publics et Services gouvernementaux Canada
 Client Service Team for Parks Canada Ontario Region / Équipe des services à la clientèle pour Parcs Canada Région de l'Ontario

Canada

MMM GROUP

Chadwick Engineering Ltd.

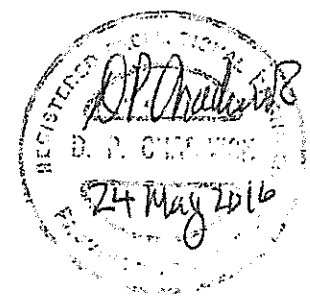
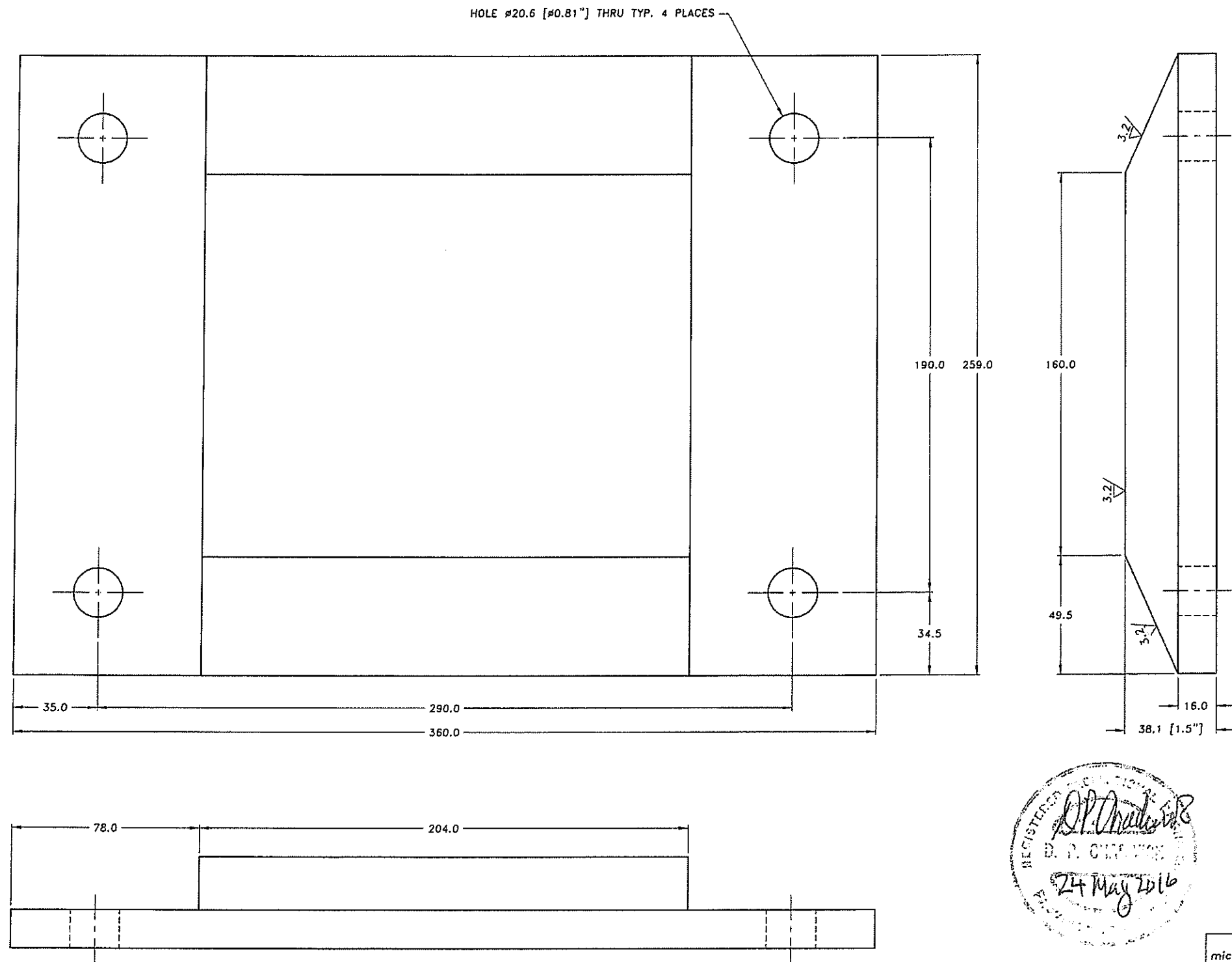
Project title / Titre du projet
KINGSTON MILLS SWING BRIDGE REHABILITATION
RIDEAU CANAL
KINGSTON ONTARIO

Drawing title / Titre du dessin
BEARING SEAT UPPER BLOCK WELDMENT

Scale / Echelle 1:2		
Drawn by/ Dessiné par FJ	Date MARCH 2016	
Designed by/ Conçu par FJ	Date	
Checked by/ Vérifié par DPC	Date	
Approved by/ Approuvé par DPC	Date APR 2016	
Project No./No. du projet 3515015	Client No./No du Client CE 1911-2-012	Sheet No./Feuille No. M012
Drawing Reference No./Numero de référence du dessin		

BILL OF MATERIAL			
ITEM	QTY	MATERIAL	DESCRIPTION
1	1	A36	PLATE 38.1 (1.5") THICK x 259 x 360

ALL DIMENSION ARE IN MILLIMETERS UNLESS OTHERWISE NOTED.



ALL DIMENSIONS IN MILLIMETERS

UNSPECIFIED TOLERANCES:
 DECIMAL: X.XXX ± .05 [.002]
 X.XX ± .25 [.01]
 X.X ± .50 [.02]

REMOVE ALL BURRS AND SHARP EDGES

Ra micrometer	Ra micro-inch	Roughness Grade Number
50	2000	N12
25	1000	N11
12.5	500	N10
6.3	250	N9
3.2	125	N8
1.6	63	N7
0.8	32	N6
0.4	16	N5
0.2	8	N4
0.1	4	N3
0.05	2	N2
0.025	1	N1

No.	Date	Description	Drawn by Dessiné par	Approved Approuvé
2	20/05/16	ISSUED FOR TENDER	FJ	DC
1	25/04/16	RELEASED FOR REVIEW	FJ	-

Revision / Révision	
A	Detail number No. du détail
B	Location dwg. no. No. sur dessin
C	Drawing sheet no. No. du dessin

Client Acceptance / Acceptation du client
 Signature _____ Date _____
 File No./No. de dossier _____

Public Works and Government Services Canada / Travaux publics et Services gouvernementaux Canada
 Client Service Team for Parks Canada / Équipe des services à la clientèle pour Parcs Canada Ontario Region / Région de l'Ontario

Canada

MMM GROUP

Chadwick Engineering Ltd.

Project title / Titre du projet
KINGSTON MILLS SWING BRIDGE REHABILITATION

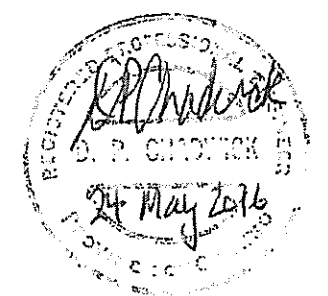
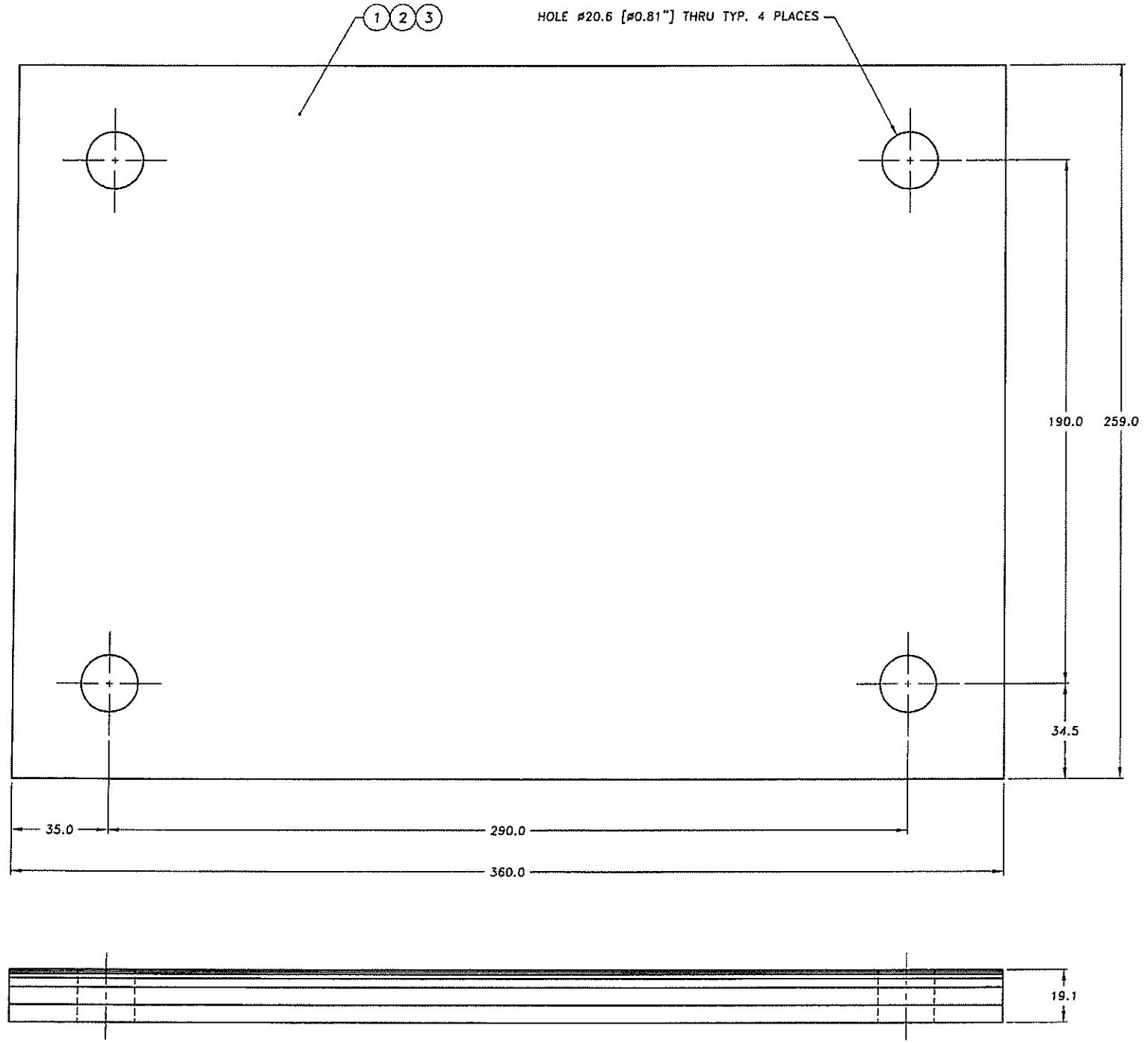
RIDEAU CANAL
 KINGSTON ONTARIO

Drawing title / Titre du dessin
BEARING SEAT SEAT PLATE

Scale / Echelle		
1:1		
Drawn by / Dessiné par	Date	
FJ	MARCH 2016	
Designed by / Conçu par	Date	
FJ		
Checked by / Vérifié par	Date	
DPC		
Approved by / Approuvé par	Date	
DPC	APR 2016	
Project No. / N. du projet	Client No. / No du Client	Sheet No. / Feuille No
3515015	CE 1911-2-013	M013
Drawing Reference No. / Numéro de Référence du Dessin		

BILL OF MATERIAL			
ITEM	QTY	MATERIAL	DESCRIPTION
1	2	AISI 316	SHEET 6.35 (1/4") THICK x 259 x 360
2	1	AISI 316	SHEET 3.2 (1/8") THICK x 259 x 360
3	1	AISI 316	SHEET 1.6 (1/16") THICK x 259 x 360
4	2	AISI 316	SHEET 0.8 (1/32") THICK x 259 x 360

ALL DIMENSION ARE IN MILLIMETERS UNLESS OTHERWISE NOTED.



ALL DIMENSIONS IN MILLIMETERS

UNSPECIFIED TOLERANCES:

DECIMAL: X.XXX ± .05 [.002]
 X.XX ± .25 [.01]
 X.X ± .50 [.02]

REMOVE ALL BURRS AND SHARP EDGES

Ra micrometer	Ra micro-inch	Roughness Grade Number
50	2000	N12
25	1000	N11
12.5	500	N10
6.3	250	N9
3.2	125	N8
1.6	63	N7
0.8	32	N6
0.4	16	N5
0.2	8	N4
0.1	4	N3
0.05	2	N2
0.025	1	N1

No.	Date	Description	Drawn by / Dessiné par	Approved / Approuvé
2	20/05/16	ISSUED FOR TENDER	FJ	DC
1	23/04/16	RELEASED FOR REVIEW	FJ	-

Revision / Révision

A Detail number / No. du détail
 B Location dwg. no. / No sur dessin
 C Drawing sheet no. / No. du dessin

Client Acceptance / Acceptation du client

Signature _____ Date _____

File No / No. de dossier _____

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

Client Service Team for Paris, Canada / Equipe des services à la clientèle pour Paris Canada



Project title / Titre du projet

KINGSTON MILLS SWING BRIDGE REHABILITATION

RIDEAU CANAL

KINGSTON ONTARIO

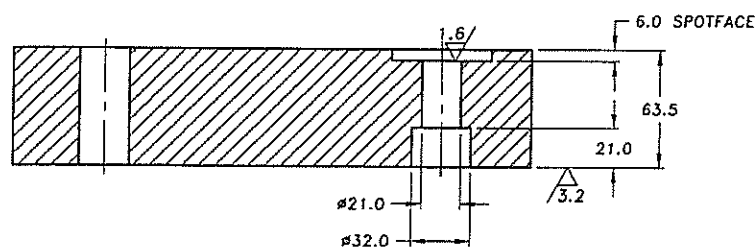
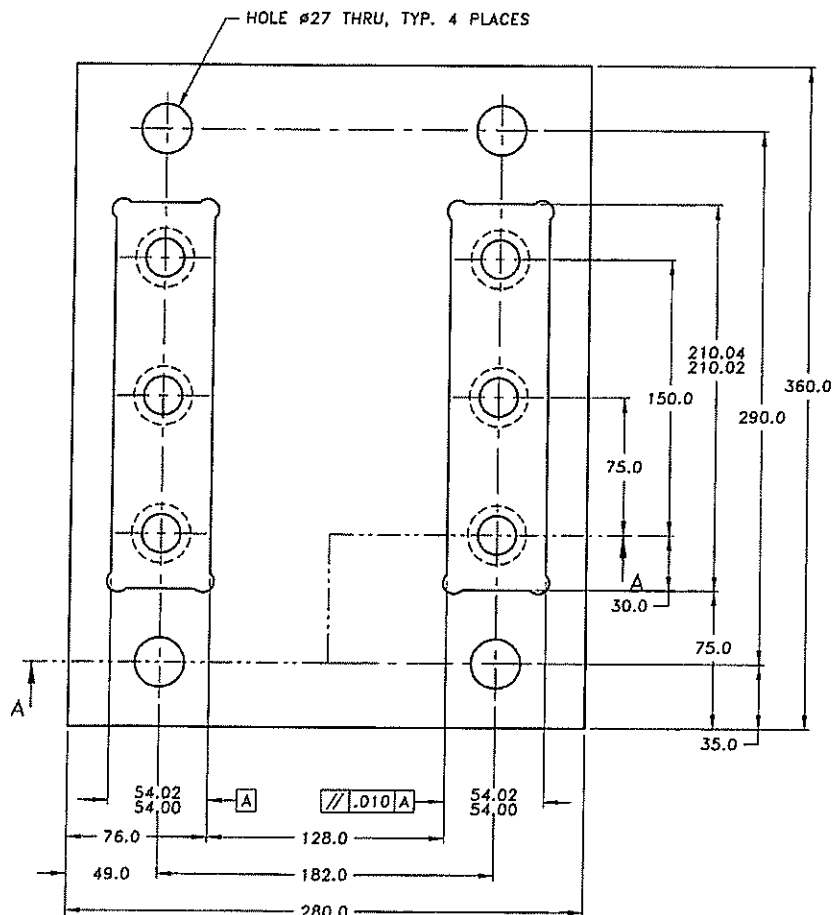
Drawing title / Titre du dessin

BEARING SEAT SHIM PACK

Scale / Echelle		
1:1		
Drawn by / Dessiné par	Date	
FJ	MARCH 2016	
Designed by / Conçu par	Date	
FJ		
Checked by / Vérifié par	Date	
DPC		
Approved by / Approuvé par	Date	
DPC	APR 2016	
Project No. / No. du projet	Client No. / No. du Client	Sheet No. / Feuille No.
3515015	CE 1911-2-014	
Drawing Reference No. / Numéro de Référence du Dessin		M014

BILL OF MATERIAL			
ITEM	QTY	MATERIAL	DESCRIPTION
1			BASE PLATE WHEEL BRACKET
1	1	A36	PLATE 70 (2 1/4") THICK x 280 x 360

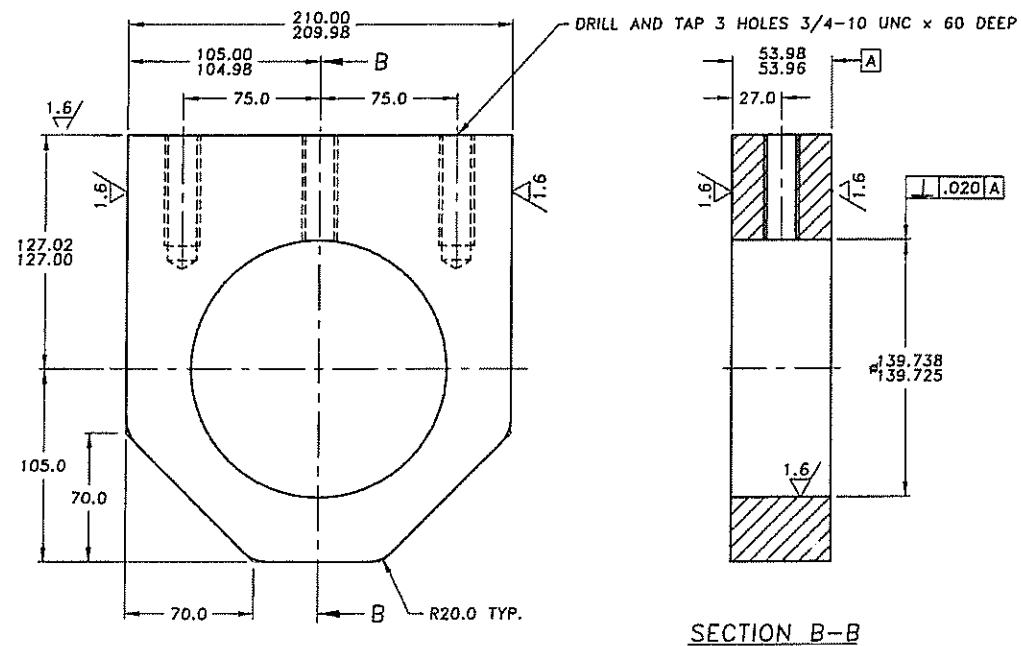
ALL DIMENSION ARE IN MILLIMETERS UNLESS OTHERWISE NOTED.



SECTION A-A

BILL OF MATERIAL			
ITEM	QTY	MATERIAL	DESCRIPTION
2			SHAFT SUPPORT PLATE HEADEND SIDE
1	1	A36	PLATE 63.5 (2.5") THICK x 210 x 232

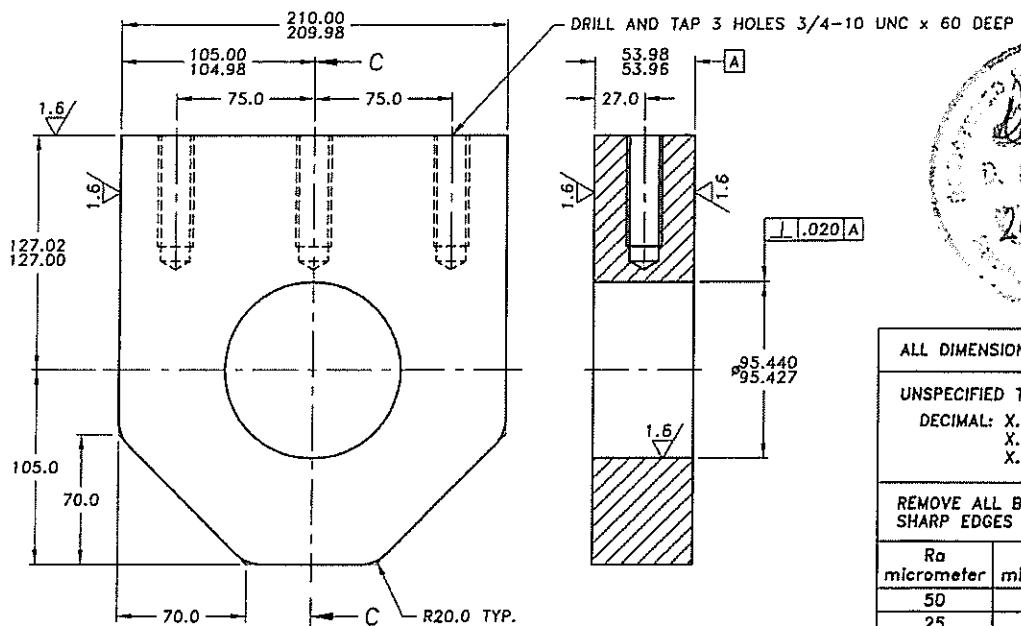
ALL DIMENSION ARE IN MILLIMETERS UNLESS OTHERWISE NOTED.



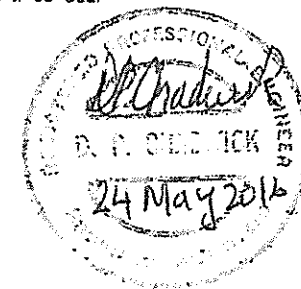
SECTION B-B

BILL OF MATERIAL			
ITEM	QTY	MATERIAL	DESCRIPTION
3			SHAFT SUPPORT PLATE ENDCAP SIDE
1	1	A36	PLATE 63.5 (2.5") THICK x 210 x 232

ALL DIMENSION ARE IN MILLIMETERS UNLESS OTHERWISE NOTED.



SECTION C-C



ALL DIMENSIONS IN MILLIMETERS

UNSPECIFIED TOLERANCES:
 DECIMAL: X.XXX ± .05 [.002]
 X.XX ± .25 [.01]
 X.X ± .50 [.02]

REMOVE ALL BURRS AND SHARP EDGES

Ra micrometer	Ra micro-inch	Roughness Grade Number
50	2000	N12
25	1000	N11
12.5	500	N10
6.3	250	N9
3.2	125	N8
1.6	63	N7
0.8	32	N6
0.4	16	N5
0.2	8	N4
0.1	4	N3
0.05	2	N2
0.025	1	N1

2	20/05/16	ISSUED FOR TENDER	FJ	DC
1	25/04/16	RELEASED FOR REVIEW	FJ	-
No	Date	Description	Drawn by / Dessiné par	Approved / Approuvé

Revision / Révision	
A	Detail number / No. du détail
B	Location dwg no / No sur dessin
C	Drawing sheet no. / No. du dessin

Client Acceptance / Acceptation du client
 Signature _____ Date _____
 File No / No. de dossier _____

Public Works and Government Services Canada / Travaux publics et Services gouvernementaux Canada
 Client Service Team for Parks Canada / Équipe des services à la clientèle pour Parcs Canada Ontario Region / Région de l'Ontario

Canada

MMM GROUP

Chadwick Engineering Ltd.

Project title / Titre du projet
 KINGSTON MILLS SWING BRIDGE REHABILITATION

RIDEAU CANAL
 KINGSTON ONTARIO

Drawing title / Titre du dessin
 BALANCE WHEEL BRACKET
 DETAIL PARTS

Scale / Echelle
 1:2

Drawn by / Dessiné par
 FJ MARCH 2016

Designed by / Conçu par
 FJ Date

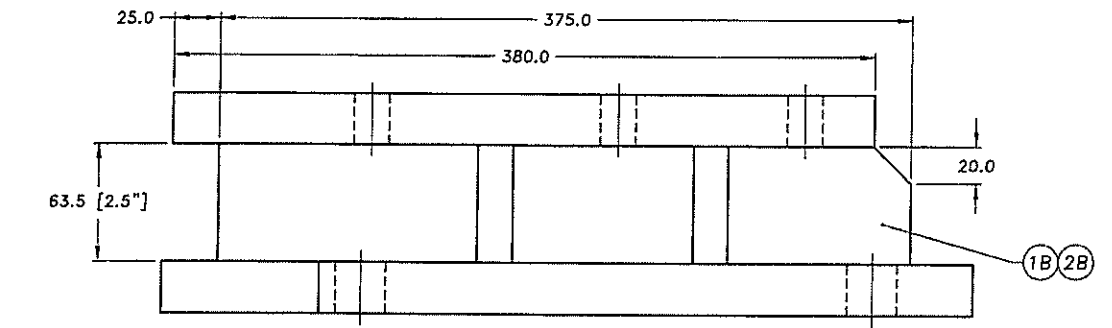
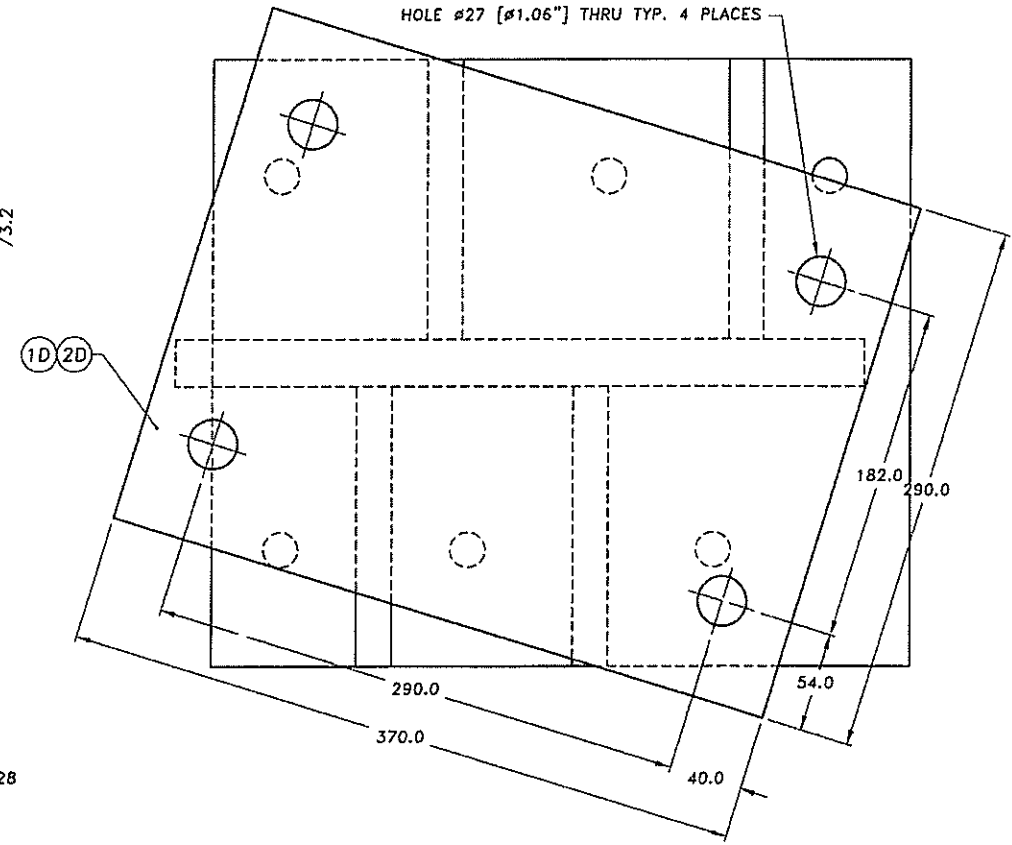
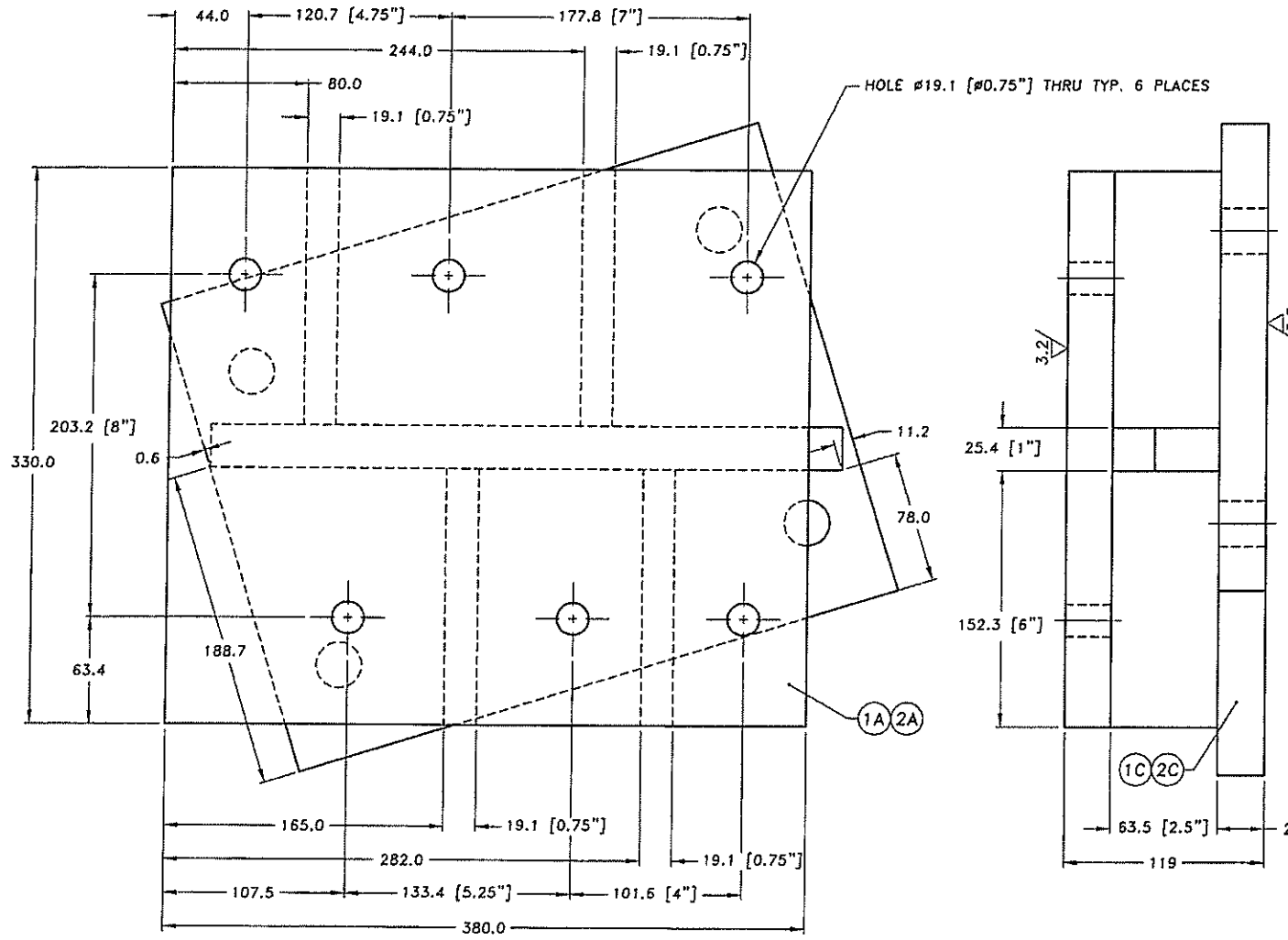
Checked by / Vérifié par
 DPC Date

Approved by / Approuvé par
 DPC Date APR 2016

Project No / No. du projet
 3515015 Client No / No du Client
 CE 1911-2-015 Sheet No. / Feuille No.

Drawing Reference No / Numéro de Référence du Dessin
 M015

BILL OF MATERIAL			
ITEM	QTY	MATERIAL	DESCRIPTION
1			WHEEL BRACKET ADAPTER MAIN GRIDER-RHS (AS SHOWN)
1A	1	A36	PLATE 31.8 (1.25") THICK x 330 x 380
1B	1	A36	PLATE 25.4 (1") THICK x 63.5 x 375
1C	4	A36	PLATE 19.1 (0.75") THICK x 63.5 x 152.3
1D	1	A36	PLATE 31.8 (1.25") THICK x 290 x 370
2			WHEEL BRACKET ADAPTER MAIN GRIDER-LHS (OPPOSITE)
2A	1	A36	PLATE 31.8 (1.25") THICK x 330 x 380
2B	1	A36	PLATE 25.4 (1") THICK x 63.5 x 375
2C	4	A36	PLATE 19.1 (0.75") THICK x 63.5 x 152.3
2D	1	A36	PLATE 31.8 (1.25") THICK x 290 x 370



NOTES:

- ALL DIMENSION ARE IN MILLIMETERS UNLESS OTHERWISE NOTED.
- WELD ALLOVER WITH A 10 mm FILLET.
- FIELD VERIFY HOLE PATTERN IN ITEMS 1A AND 2A AGAINST THE HOLE PATTERN IN THE EXISTING MAIN GRIDERS.



ALL DIMENSIONS IN MILLIMETERS

UNSPECIFIED TOLERANCES:

DECIMAL: X.XXX ± .05 [.002]
 X.XX ± .25 [.01]
 X.X ± .50 [.02]

REMOVE ALL BURRS AND SHARP EDGES

Ra micrometer	Ra micro-inch	Roughness Grade Number
50	2000	N12
25	1000	N11
12.5	500	N10
6.3	250	N9
3.2	125	N8
1.6	63	N7
0.8	32	N6
0.4	16	N5
0.2	8	N4
0.1	4	N3
0.05	2	N2
0.025	1	N1

2	29/05/16	ISSUED FOR TENDER	FJ	DC
1	23/04/16	RELEASED FOR REVIEW	FJ	-
No.	Date	Description	Drawn by	Approved
			Dessine par	Approuvé
Revision / Révision				
A		Detail number		
B		Location dwg. no.		
C		Drawing sheet no.		
Client Acceptance / Acceptation du client				
Signature			Date	
File No./No. de dossier				

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

Client Service Team for Parks Canada Ontario Region / Équipe des services à la clientèle pour Parcs Canada Région de l'Ontario

Project title / Titre du projet

KINGSTON MILLS SWING BRIDGE REHABILITATION

RIDEAU CANAL

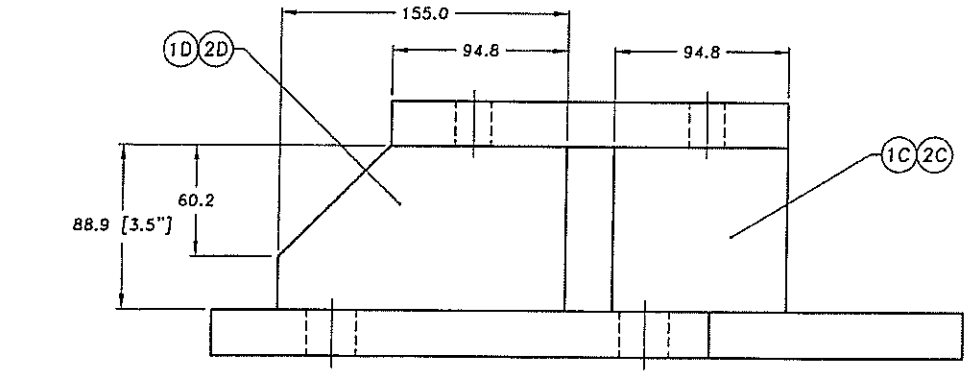
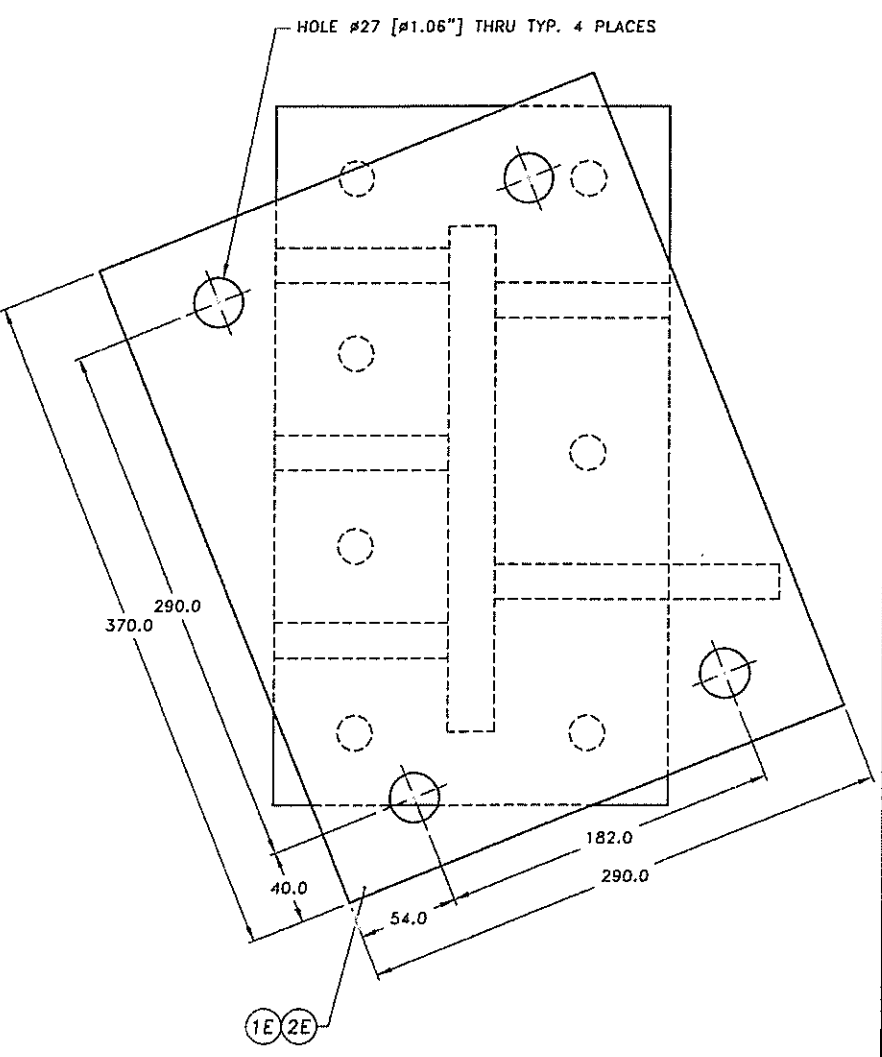
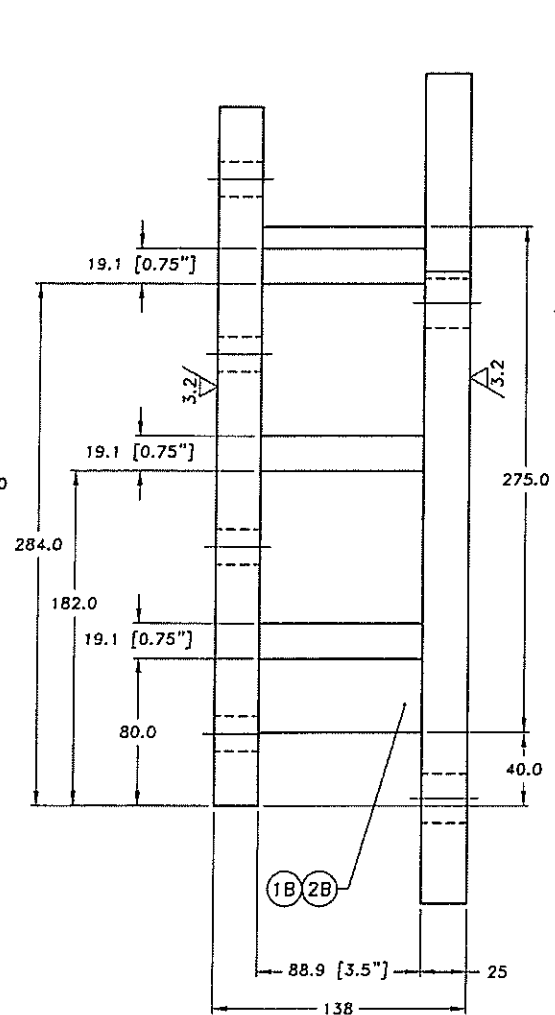
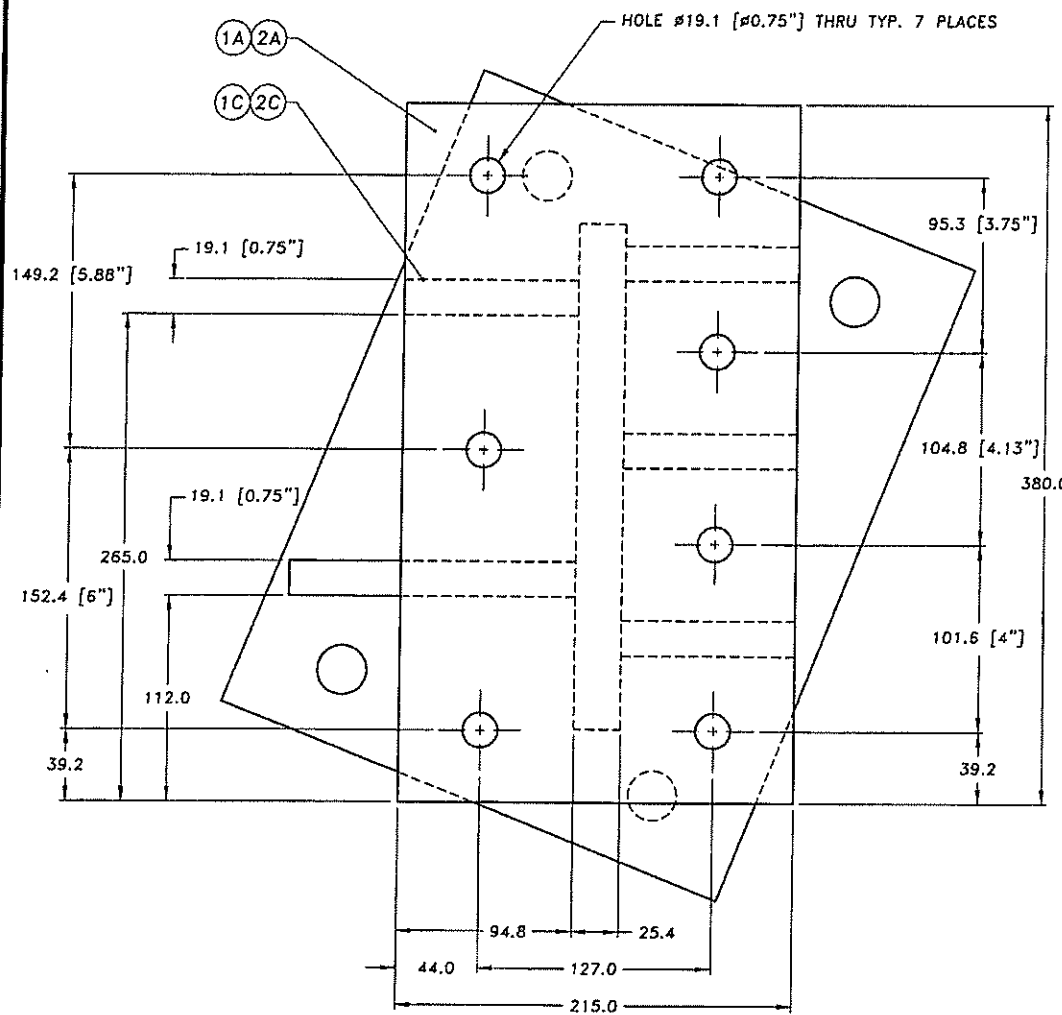
KINGSTON **ONTARIO**

Drawing title / Titre du dessin

BALANCE WHEEL BRACKET ADAPTER MAIN GRIDER WELDMENT

Scale / Echelle		
1:2		
Drawn by / Dessiné par	Date	
FJ	MARCH 2016	
Designed by / Conçu par	Date	
FJ		
Checked by / Vérifié par	Date	
DPC		
Approved by / Approuvé par	Date	
DPC	APR 2016	
Project No / No du projet	Client No / No du Client	Sheet No / Feuille No
3515015	CE 1911-2-016	
Drawing Reference No / Numéro de Référence du Dessin		M016

BILL OF MATERIAL			
ITEM	QTY	MATERIAL	DESCRIPTION
1			WHEEL BRACKET ADAPTER BEAM BB-C8 (AS SHOWN)
1A	1	A36	PLATE 31.8 (1.25") THICK x 215 x 380
1B	1	A36	PLATE 25.4 (1") THICK x 88.9 x 275
1C	4	A36	PLATE 19.1 (0.75") THICK x 94.8 x 88.9
1D	1	A36	PLATE 19.1 (0.75") THICK x 88.9 x 155
1E	1	A36	PLATE 31.8 (1.25") THICK x 290 x 370
2			WHEEL BRACKET ADAPTER BEAM BB-C8 (OPPOSITE)
2A	1	A36	PLATE 31.8 (1.25") THICK x 215 x 380
2B	1	A36	PLATE 25.4 (1") THICK x 88.9 x 275
2C	4	A36	PLATE 19.1 (0.75") THICK x 94.8 x 88.9
2D	1	A36	PLATE 19.1 (0.75") THICK x 88.9 x 155
2E	1	A36	PLATE 31.8 (1.25") THICK x 290 x 370



- NOTES:**
- ALL DIMENSION ARE IN MILLIMETERS UNLESS OTHERWISE NOTED.
 - WELD ALLOVER WITH A 10 mm FILLET.
 - FIELD VERIFY HOLE PATTERN AGAINST THE HOLE PATTERN IN EXISTING FLOOR BEAM.



ALL DIMENSIONS IN MILLIMETERS

UNSPECIFIED TOLERANCES:
 DECIMAL: X.XXX ± .05 [.002]
 X.XX ± .25 [.01]
 X.X ± .50 [.02]

REMOVE ALL BURRS AND SHARP EDGES

Ra micrometer	Ra micro-inch	Roughness Grade Number
50	2000	N12
25	1000	N11
12.5	500	N10
6.3	250	N9
3.2	125	N8
1.6	63	N7
0.8	32	N6
0.4	16	N5
0.2	8	N4
0.1	4	N3
0.05	2	N2
0.025	1	N1

No	Date	Description	Drawn by / Dessiné par	Approved / Approuvé
2	20/05/16	ISSUED FOR TENDER	FJ	DC
1	25/04/16	RELEASED FOR REVIEW	FJ	-

Revision / Révision

A Detail number / No. du détail
 B Location dwg. no. / No. sur Cahier
 C Drawing sheet no. / No. du dessin

Client Acceptance / Acceptation du client
 Signature _____ Date _____
 File No / No. de dossier _____

Public Works and Government Services Canada / Travaux publics et Services gouvernementaux Canada
 Client Service Team for Parks Canada Ontario Region / Équipe des services à la clientèle pour Parcs Canada Région de l'Ontario

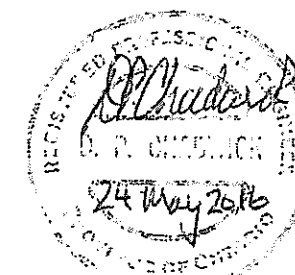
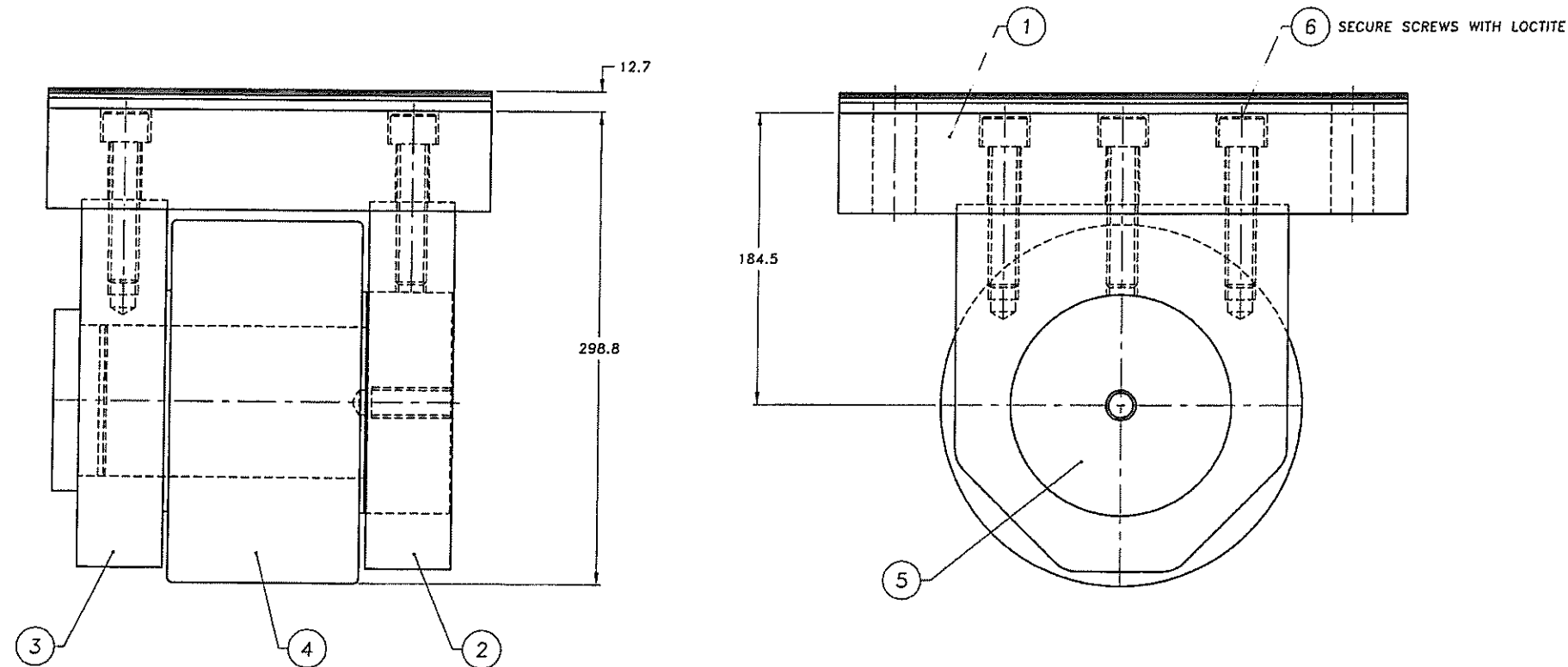


Project title / Titre du projet
KINGSTON MILLS SWING BRIDGE REHABILITATION
RIDEAU CANAL
KINGSTON ONTARIO

Drawing title / Titre du dessin
BALANCE WHEEL BRACKET ADAPTER BEAM BB AND C8 WELDMENT

Scale / Echelle		
1:2		
Drawn by / Dessiné par	Date	
FJ	MARCH 2016	
Designed by / Conçu par	Date	
FJ		
Checked by / Vérifié par	Date	
DPC		
Approved by / Approuvé par	Date	
DPC	PR 2016	
Project No / No. du projet	Client No / No du Client	Sheet No. / Feuille No.
3515015	CE 1011-2-017	
Drawing Reference No. / Numéro de Référence du Dessin		M017

BILL OF MATERIAL			
ITEM	QTY	MATERIAL	DESCRIPTION
1	1		1911-2-015 ITEM 1 BASE PLATE WHEEL BRACKET
2	1		1911-2-015 ITEM 2 SHAFT SUPPORT PLATE HEADEND SIDE
3	1		1911-2-015 ITEM 3 SHAFT SUPPORT PLATE ENDCAP SIDE
4	1	STEEL	PCI TRACK ROLLER 9" DIAMETER YOKE TYPE, PART NO. PTRY-9.00
5	1	STEEL	PCI SHAFT WITH ENDCAP 3.75" DIAMETER, PART NO. YSH-3.750-R
6	6	A574	SOCKET HEAD CAP SCREW 3/4"-10 UNC x 3 1/2" LONG
7	1		1911-2-028 ITEM 2 WHEEL BRACKET SHIM PACK



ALL DIMENSIONS IN MILLIMETERS

UNSPECIFIED TOLERANCES:

DECIMAL: X.XXX ± .05 [.002]
 X.XX ± .25 [.01]
 X.X ± .50 [.02]

REMOVE ALL BURRS AND SHARP EDGES

No.	Date	Description	Drawn by / Dessiné par	Approved / Approuvé
2	20/05/16	ISSUED FOR TENDER	FJ	DC
1	15/01/16	RELEASED FOR REVIEW	FJ	-

Revision / Révision	
A	Détail number / No. du détail
B	Location d'orig. no. / No. sur dessin
C	Drawing sheet no. / No. du dessin

Client Acceptance / Acceptation du client
 Signature _____ Date _____
 File No./No. de dossier _____

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

Client Service Team for Parks Canada Ontario Region / Équipe des services à la clientèle pour Parcs Canada Région de l'Ontario

Canada



Chadwick Engineering Ltd.

Project title / Titre du projet
KINGSTON MILLS SWING BRIDGE REHABILITATION

RIDEAU CANAL
 KINGSTON ONTARIO

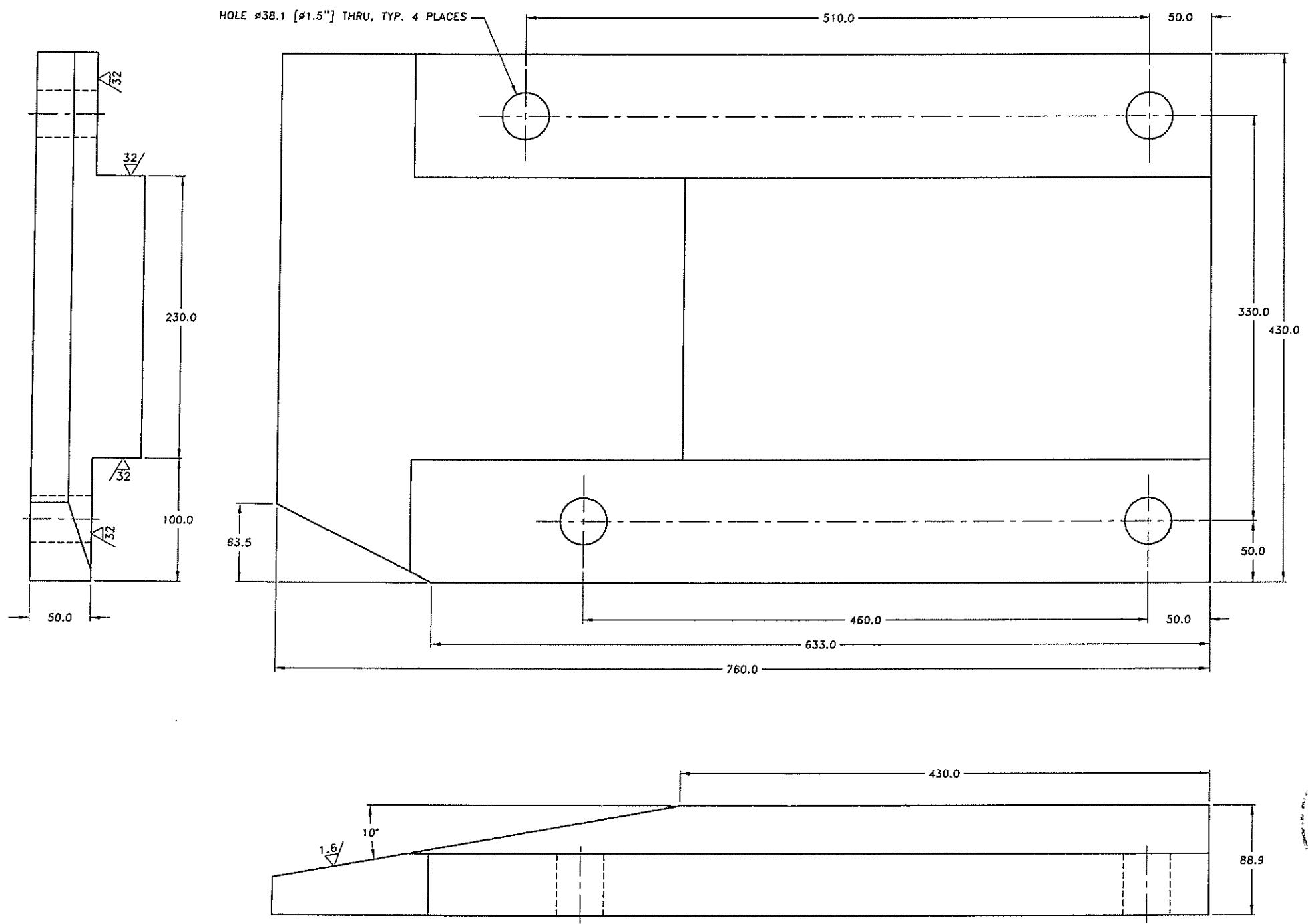
Drawing title / Titre du dessin
BALANCE WHEEL ASSEMBLY

Scale / Echelle	1:2
Drawn by / Dessiné par	FJ
Date	MARCH 2016
Designed by / Conçu par	FJ
Date	
Checked by / Vérifié par	DPC
Date	
Approved by / Approuvé par	DFC
Date	APR 2016

Project No. / No. du projet	Client No./No. du Client	Sheet No. / Feuille No.
3515015	CE 1911-2-01B	M018
Drawing Reference No. / Numéro de Référence du Dessin		

BILL OF MATERIAL			
ITEM	QTY	MATERIAL	DESCRIPTION
1	1	A36	PLATE 88.9 (3.5") THICK x 430 x 760

ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE NOTED.



No.	Date	Description	Drawn by / Dessiné par	Approved / Approuvé
2	20/05/16	ISSUED FOR TENDER	FJ	DC
1	25/04/16	RELEASED FOR REVIEW	FJ	-

Revision / Révision	
A	Detail number / No. du détail
B	Location dwg. no. / No. sur dessin
C	Drawing sheet no. / No. du dessin

Client Acceptance / Acceptation du client
 Signature _____ Date _____
 File No./No. de dossier _____

Public Works and Government Services Canada / Travaux publics et Services gouvernementaux Canada
 Client Service Team for Parks Canada / Équipe des services à la clientèle pour Parcs Canada Ontario Region / Région de l'Ontario



Project title / Titre du projet
KINGSTON MILLS SWING BRIDGE REHABILITATION
RIDEAU CANAL
KINGSTON ONTARIO

Drawing title / Titre du dessin
WHEEL RAMP LOW PROFILE

Scale / Echelle	
1:2	
Drawn by / Dessiné par	Date
FJ	MARCH 2016
Designed by / Conçu par	Date
FJ	
Checked by / Vérifié par	Date
DPC	
Approved by / Approuvé par	Date
DPC	APR 2016
Project No./No. du projet	Client No./No. du Client
3515015	CE 1911-2-019
Sheet No./Feuille No.	

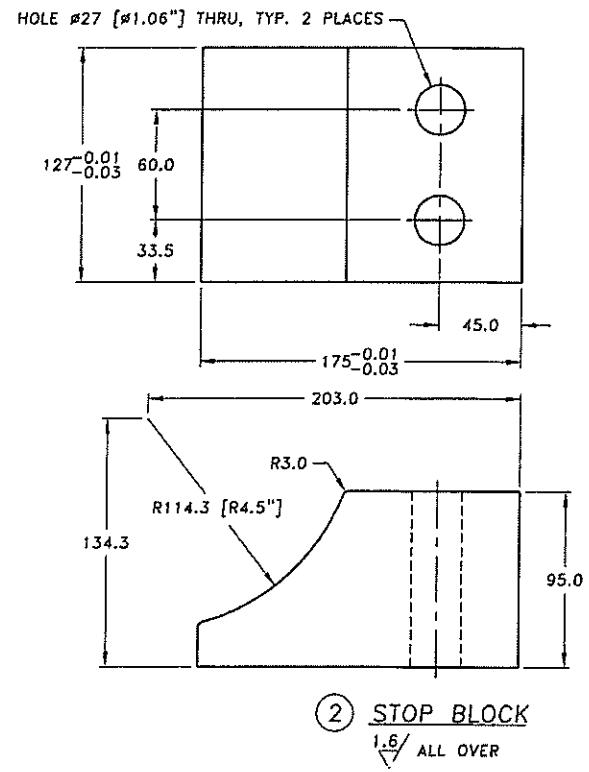
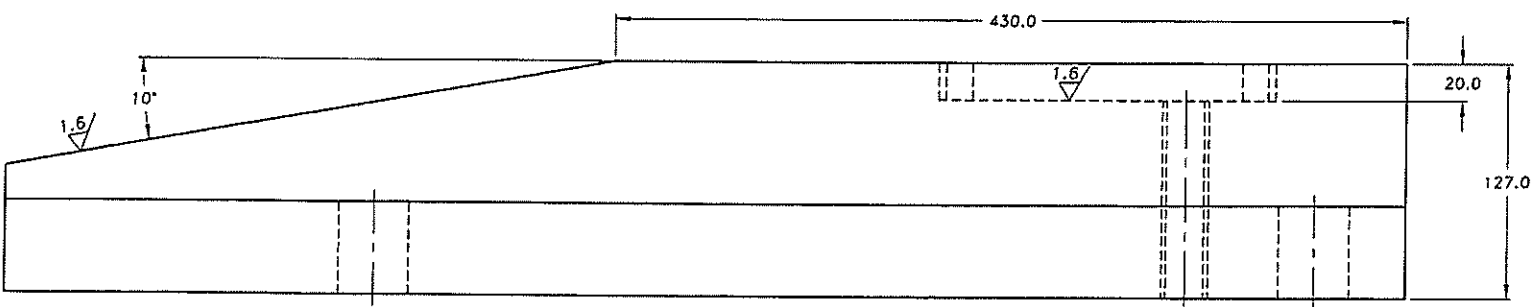
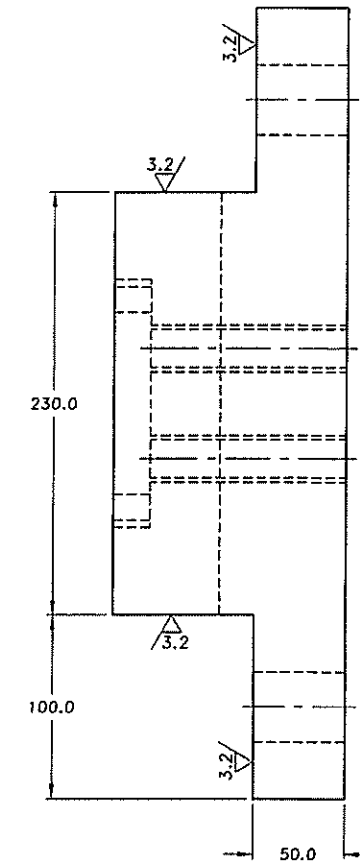
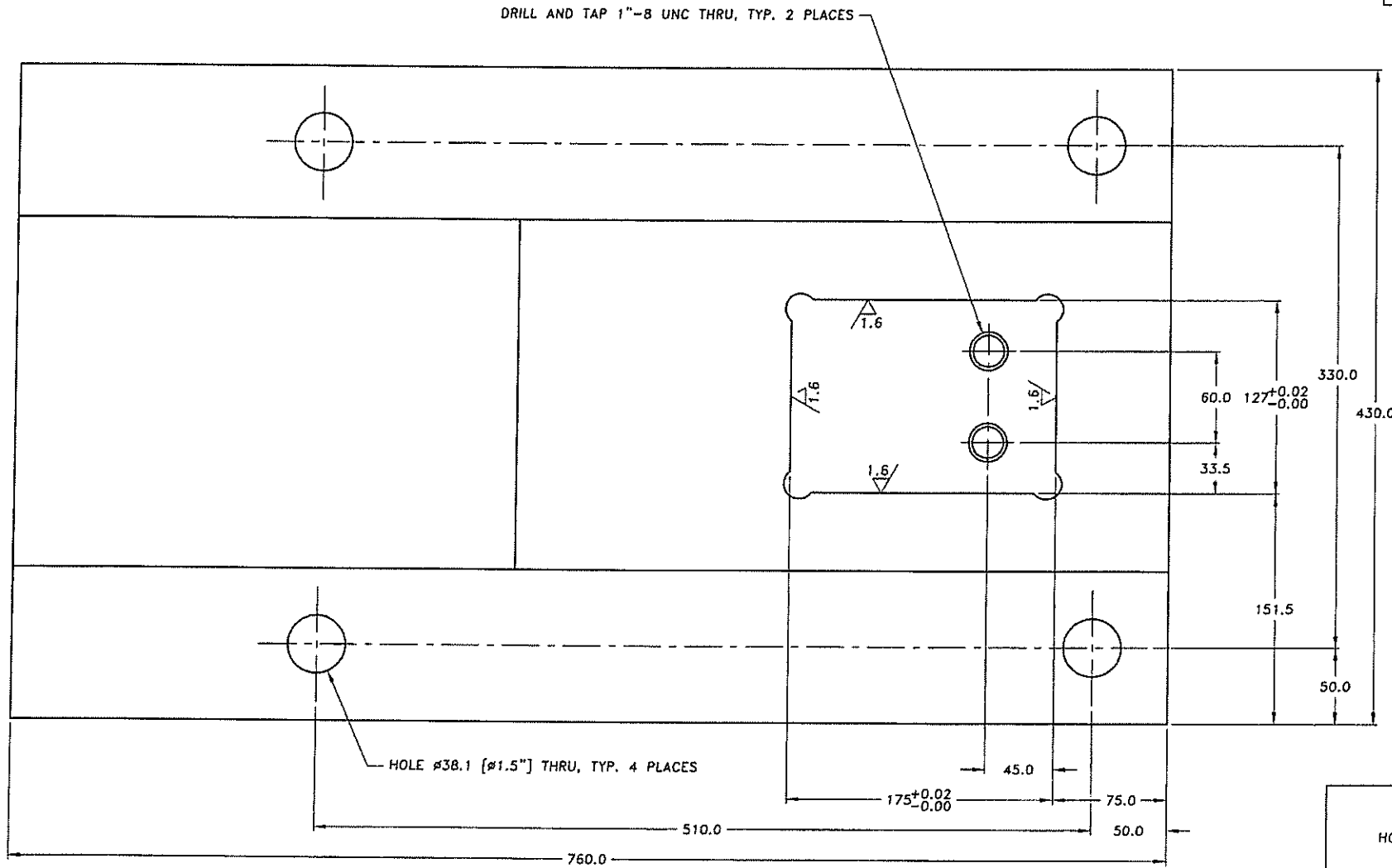
ALL DIMENSIONS IN MILLIMETERS
 UNSPECIFIED TOLERANCES:
 DECIMAL: X.XXX ± .05 [.002]
 X.XX ± .25 [.01]
 X.X ± .50 [.02]
 REMOVE ALL BURRS AND SHARP EDGES

Ra micrometer	Ra micro-inch	Roughness Grade Number
50	2000	N12
25	1000	N11
12.5	500	N10
6.3	250	N9
3.2	125	N8
1.6	63	N7
0.8	32	N6
0.4	16	N5
0.2	8	N4
0.1	4	N3
0.05	2	N2
0.025	1	N1

Drawing Reference No. / Numéro de Référence du Dessin
M019

BILL OF MATERIAL			
ITEM	QTY	MATERIAL	DESCRIPTION
1			WHEEL RAMP HIGH PROFILE
1	1	A36	PLATE 127 (5") THICK x 430 x 760
2			STOP BLOCK
1	1	A36	PLATE 101.2 (4") THICK x 127 x 175

ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE NOTED.



① WHEEL RAMP HIGH PROFILE

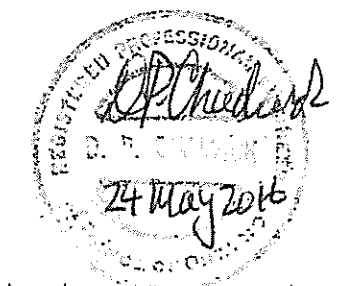
② STOP BLOCK
1.6/ ALL OVER

Ra micrometer	Ra micro-inch	Roughness Grade Number
50	2000	N12
25	1000	N11
12.5	500	N10
6.3	250	N9
3.2	125	N8
1.6	63	N7
0.8	32	N6
0.4	16	N5
0.2	8	N4
0.1	4	N3
0.05	2	N2
0.025	1	N1

ALL DIMENSIONS IN MILLIMETERS

UNSPECIFIED TOLERANCES:
 DECIMAL: X.XXX ± .05 [.002]
 X.XX ± .25 [.01]
 X.X ± .50 [.02]

REMOVE ALL BURRS AND SHARP EDGES



No.	Date	Description	Drawn by	Approved
2	28/05/16	ISSUED FOR TENDER	FJ	DC
1	25/04/16	RELEASED FOR REVIEW	FJ	-

Revision / Révision	
A	Detail number / No. du détail
B	Location dwg. no. / No. sur dessin
C	Drawing sheet no. / No. du dessin

Client Acceptance / Acceptation du client
 Signature _____ Date _____
 File No. / No. de dossier _____

Public Works and Government Services Canada / Travaux publics et Services gouvernementaux Canada
 Client Service Team for Parks Canada Ontario Region / Équipe des services à la clientèle pour Parcs Canada Région de l'Ontario



Project title / Titre du projet
KINGSTON MILLS SWING BRIDGE REHABILITATION
RIDEAU CANAL
KINGSTON ONTARIO

Drawing title / Titre du dessin
WHEEL RAMP HIGH PROFILE
DETAIL PARTS

Scale / Echelle
 1:2

Drawn by / Dessiné par
 FJ Date
 MARCH 2016

Designed by / Conçu par
 FJ Date

Checked by / Vérifié par
 DPC Date

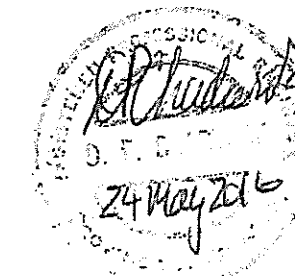
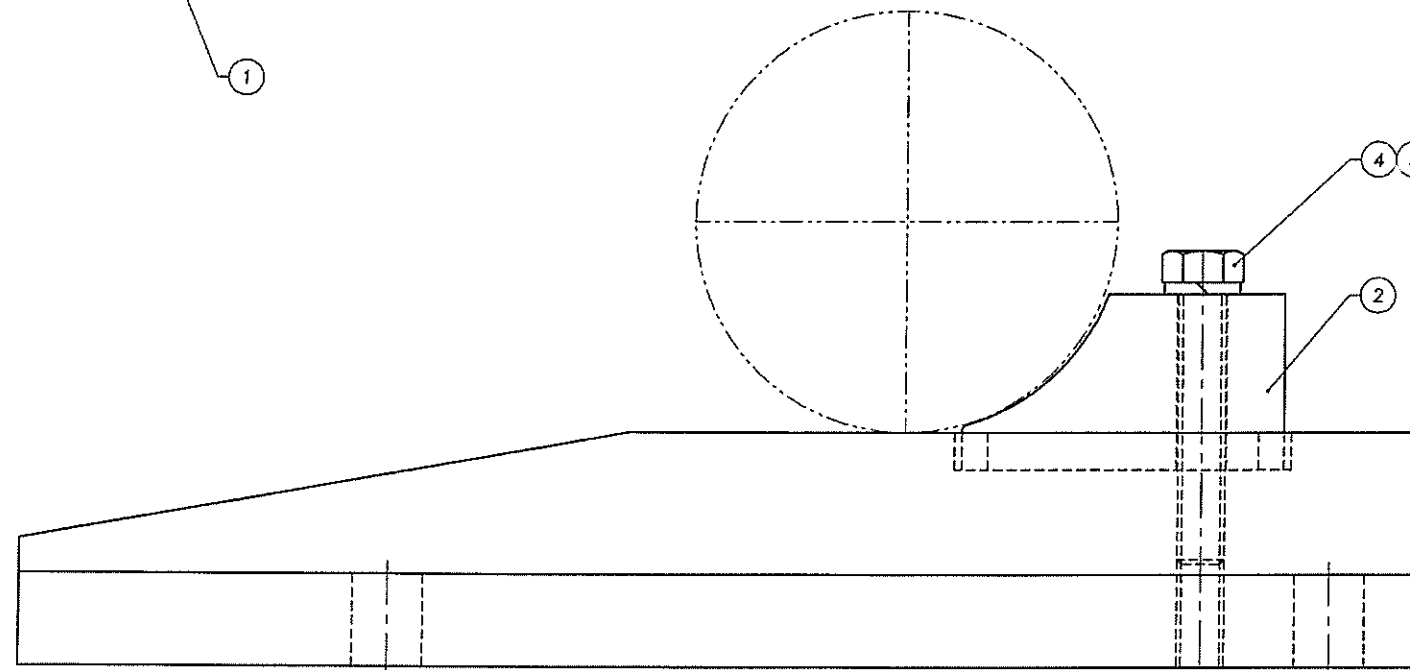
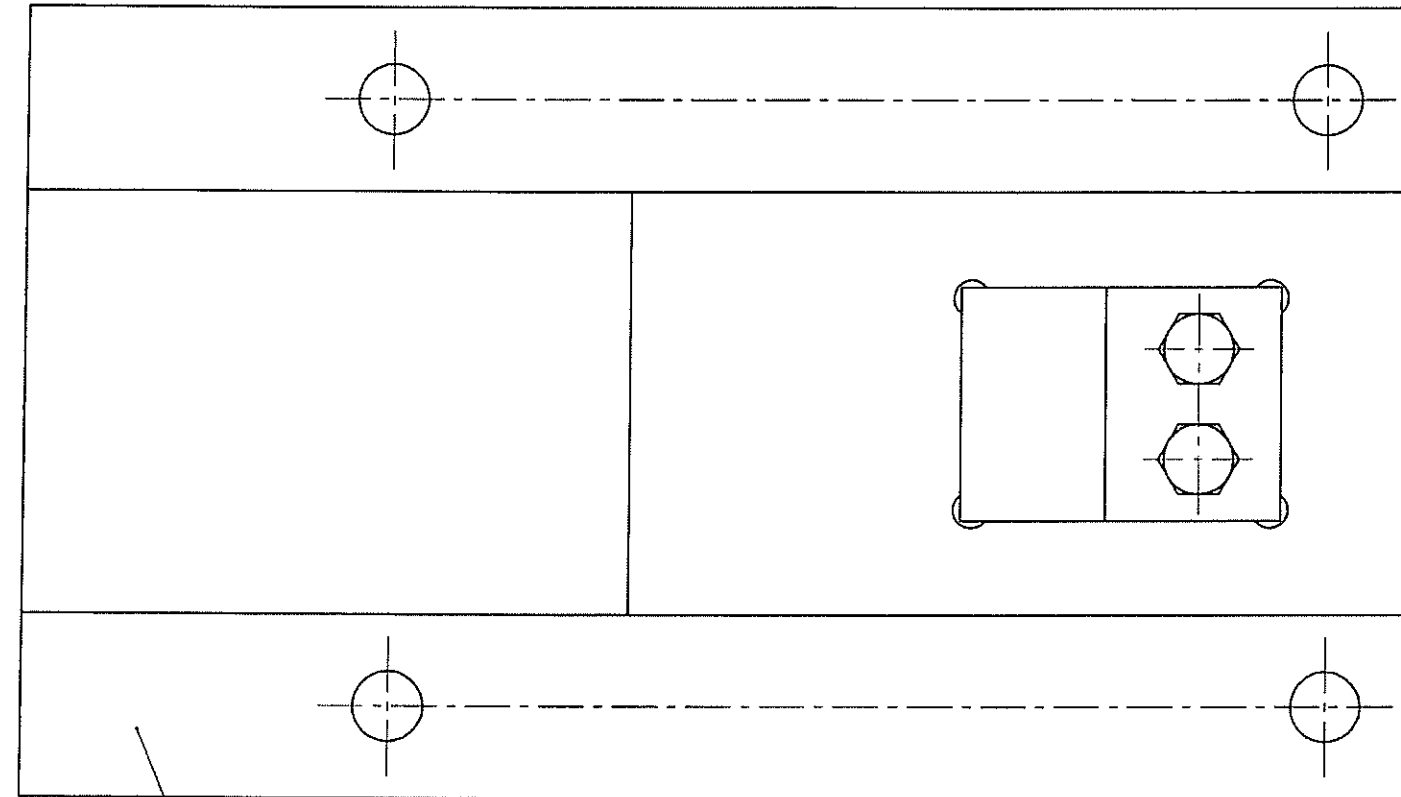
Approved by / Approuvé par
 DPC Date
 APR 2016

Project No. / No. du projet
 3515015

Client No. / No. du Client
 CE 1911-2-020

Sheet No. / Feuille No.
 M020

BILL OF MATERIAL			
ITEM	QTY	MATERIAL	DESCRIPTION
1	1		1911-2-020 ITEM 1 WHEEL RAMP HIGH PROFILE
2	1		1911-2-020 ITEM 2 STOP BLOCK
3	2	S.S. 316	HEX HEAD CAP SCREW 1"-8 UNC x 6" LONG
4	2	S.S. 316	LOCKWASHER 1" DIAMETER



No.	Date	Description	Drawn by / Dessiné par	Approved / Approuvé
2	29/05/16	ISSUED FOR TENDER	FJ	DC
1	25/04/16	RELEASED FOR REVIEW	FJ	-

Revision / Révision	
A	A Detail number / No. du détail
B	B Location dwg. no. / No sur de'sin
C	C Drawing sheet no. / No. du dessin

Client Acceptance / Acceptation du client
 Signature _____ Date _____
 File No./No. de dossier _____

Public Works and Government Services Canada / Travaux publics et Services gouvernementaux Canada
 Client Service Team for Parks Canada Ontario Region / Équipe des services à la clientèle pour Parcs Canada Région de l'Ontario

Canada

MMM GROUP

Chadwick Engineering Ltd.

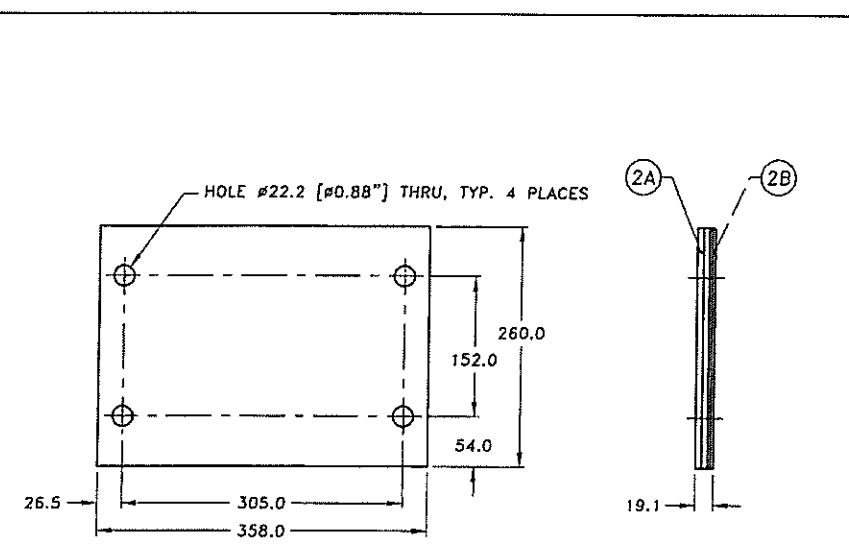
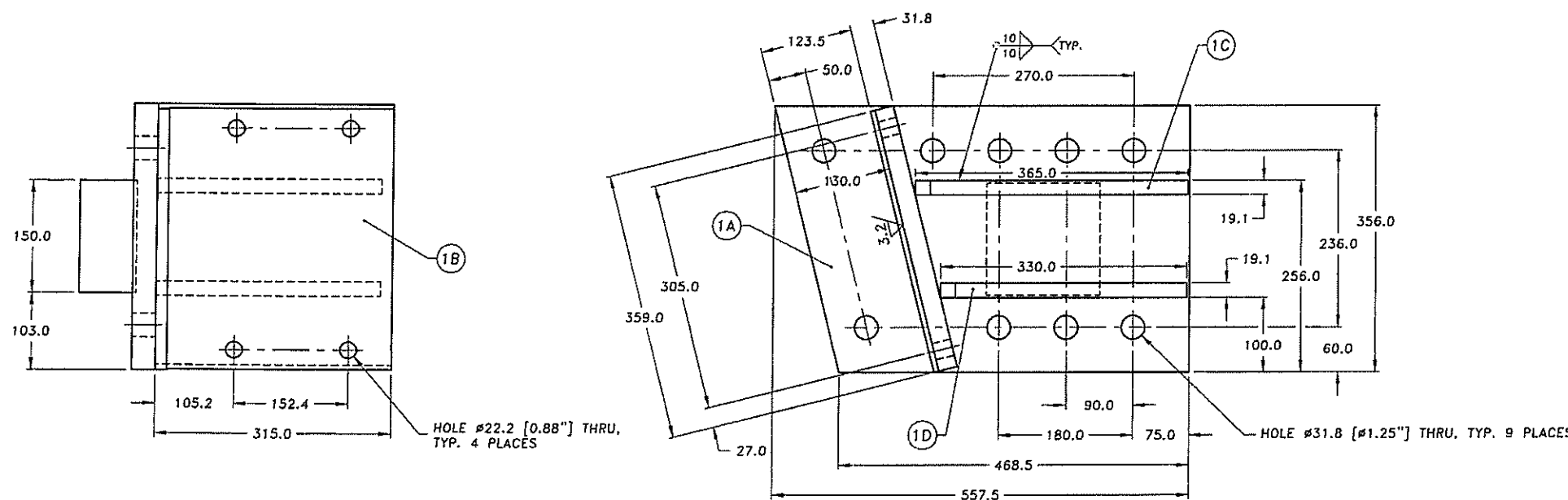
Project title / Titre du projet
KINGSTON MILLS SWING BRIDGE REHABILITATION
RIDEAU CANAL
KINGSTON ONTARIO

Drawing title / Titre du dessin
WHEEL RAMP HIGH PROFILE ASSEMBLY

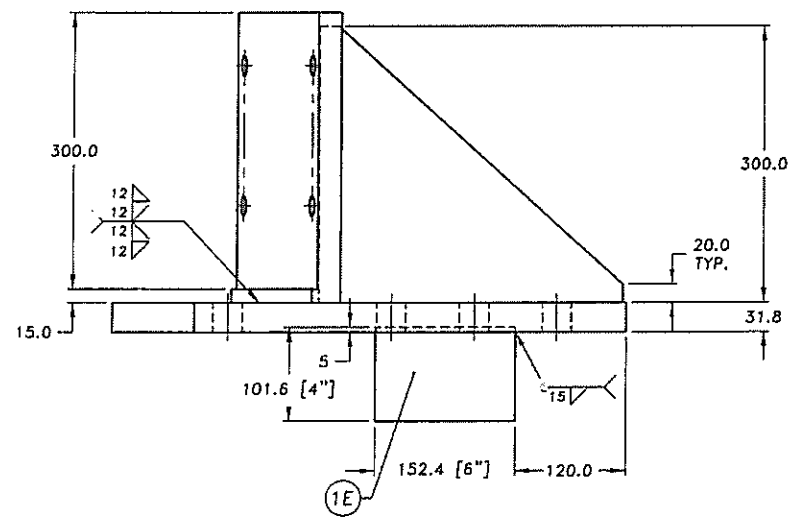
Scale / Échelle
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 Drawn L./ Dessiné par
 FJ MARCH 2016
 Designed by/ Conçu par
 FJ
 Checked by/ Vérifié par
 DPC
 Approved by / Approuvé par
 DPC APR 2016

Project No./No. du projet 3515015	Client No./No du Client CE 1911-2-021	Sheet No./Feuille No. M021
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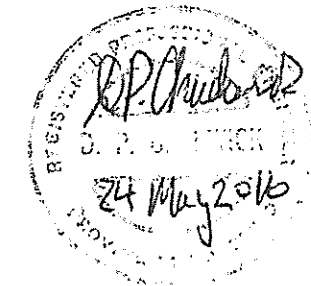
BILL OF MATERIAL			
ITEM	QTY	MATERIAL	DESCRIPTION
1			BUMPER BRACKET
1A	1	A36	PLATE 31.8 (1 1/4") THICK x 356 x 558
1B	1	A36	PLATE 31.8 (1 1/4") THICK x 315 x 359
1C	1	A36	PLATE 19.1 (3/4") THICK x 300 x 365
1D	1	A36	PLATE 19.1 (3/4") THICK x 300 x 330
1E	1	C1012	FLAT BAR 101.6 (4") THICK x 152.4 (6") x 150 LONG
2			BUMPER SHIM PACK
2A	2	AISI 316	PLATE 6.3 (1/4") THICK x 260 x 358
2B	2	AISI 316	PLATE 3.2 (1/8") THICK x 260 x 358



② BUMPER SHIM PACK



① BUMPER BRACKET



ALL DIMENSIONS IN MILLIMETERS		
UNSPECIFIED TOLERANCES:		
DECIMAL:	X.XXX	± .05 [.002]
	X.XX	± .25 [.01]
	X.X	± .50 [.02]
REMOVE ALL BURRS AND SHARP EDGES		
Ra micrometer	Ra micro-inch	Roughness Grade Number
50	2000	N12
25	1000	N11
12.5	500	N10
6.3	250	N9
3.2	125	N8
1.6	63	N7
0.8	32	N6
0.4	16	N5
0.2	8	N4
0.1	4	N3
0.05	2	N2
0.025	1	N1

No.	Date	Description	Drawn by	Approved
2	20/05/16	ISSUED FOR TENDER	FJ	DC
1	25/04/16	RELEASED FOR REVIEW	FJ	-

Client Acceptance / Acceptation du client
 Signature _____ Date _____
 File No./No. de dossier _____

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

Client Service Team for Parks Canada Ontario Region
 Équipe des services à la clientèle pour Parcs Canada Région de l'Ontario

Canada

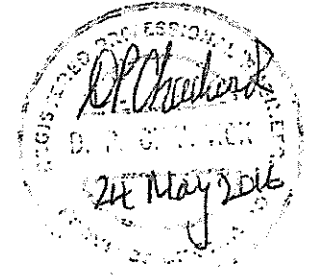
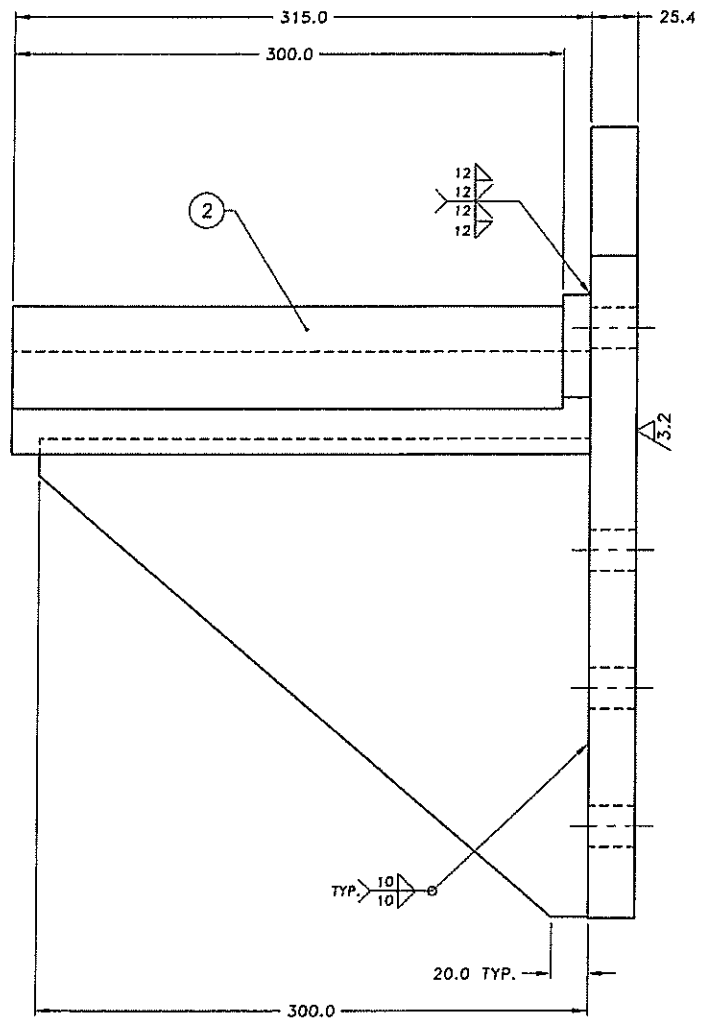
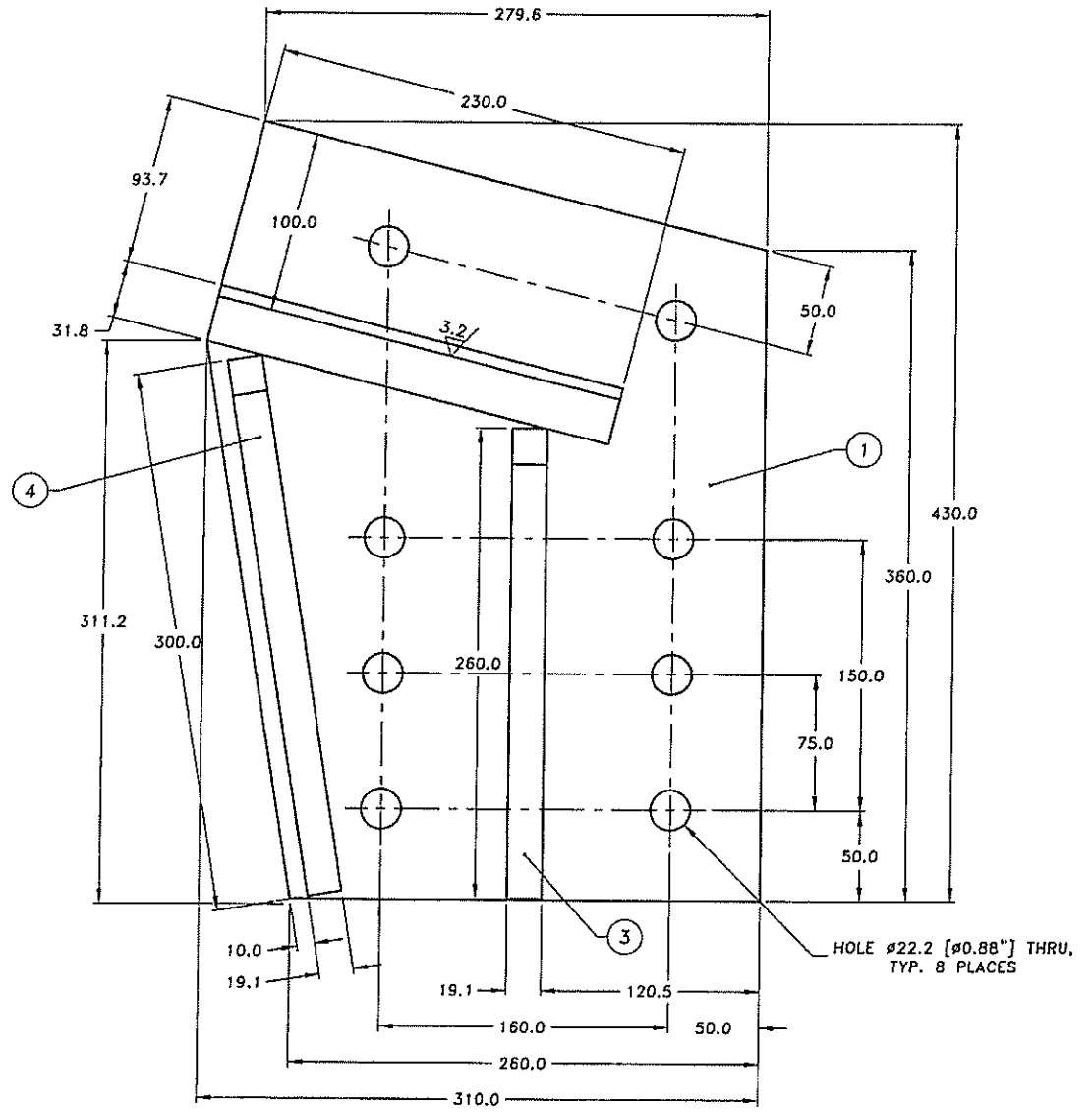
MMM GROUP

Chadwick Engineering Ltd.

Project title / Titre du projet
KINGSTON MILLS SWING BRIDGE REHABILITATION
RIDEAU CANAL
KINGSTON ONTARIO

Drawing title / Titre du dessin		
BUMPER BRACKET WELDMENT		
Scale / Echelle 1:4		
Drawn by / Dessiné par	Date	
FJ	MARCH 2016	
Designed by / Conçu par	Date	
FJ		
Checked by / Vérifié par	Date	
DPC		
Approved by / Approuvé par	Date	
DPC	APR 2016	
Project No./No. du projet	Client No./No du Client	Sheet No./Feuille No.
3515015	CE 1911-2-022	M022
Drawing Reference No./Numéro de Référence du Dessin		

BILL OF MATERIAL			
ITEM	QTY	MATERIAL	DESCRIPTION
1	1	A36	PLATE 31.8 (1 1/4") THICK x 310 x 430
2	1	A36	PLATE 31.8 (1 1/4") THICK x 230 x 315
3	1	A36	PLATE 19.1 (3/4") THICK x 260 x 300
4	1	A36	PLATE 19.1 (3/4") THICK x 300 x 300



ALL DIMENSIONS IN MILLIMETERS		
UNSPECIFIED TOLERANCES:		
DECIMAL:	X.XXX	± .05 [.002]
	X.XX	± .25 [.01]
	X.X	± .50 [.02]
REMOVE ALL BURRS AND SHARP EDGES		
Ra micrometer	Ra micro-inch	Roughness Grade Number
50	2000	N12
25	1000	N11
12.5	500	N10
6.3	250	N9
3.2	125	N8
1.6	63	N7
0.8	32	N6
0.4	16	N5
0.2	8	N4
0.1	4	N3
0.05	2	N2
0.025	1	N1

No.	Date	Description	Drawn by Dessiné par	Approved Approuvé
2	20/05/16	ISSUED FOR TENDER	FJ	DC
1	25/04/16	RELEASED FOR REVIEW	FJ	-

Revision / Révision	
A	Detail number No. du détail
B	Location dng. no. No. sur dessin
C	Drawing sheet no. No. du dessin

Client Acceptance / Acceptation du client
 Signature _____ Date _____
 File No./No. de dossier _____

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

 Client Service Team for Parks Canada Ontario Region / Équipe des services à la clientèle pour Parcs Canada Région de l'Ontario

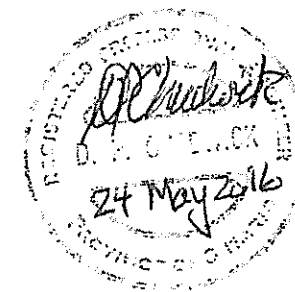
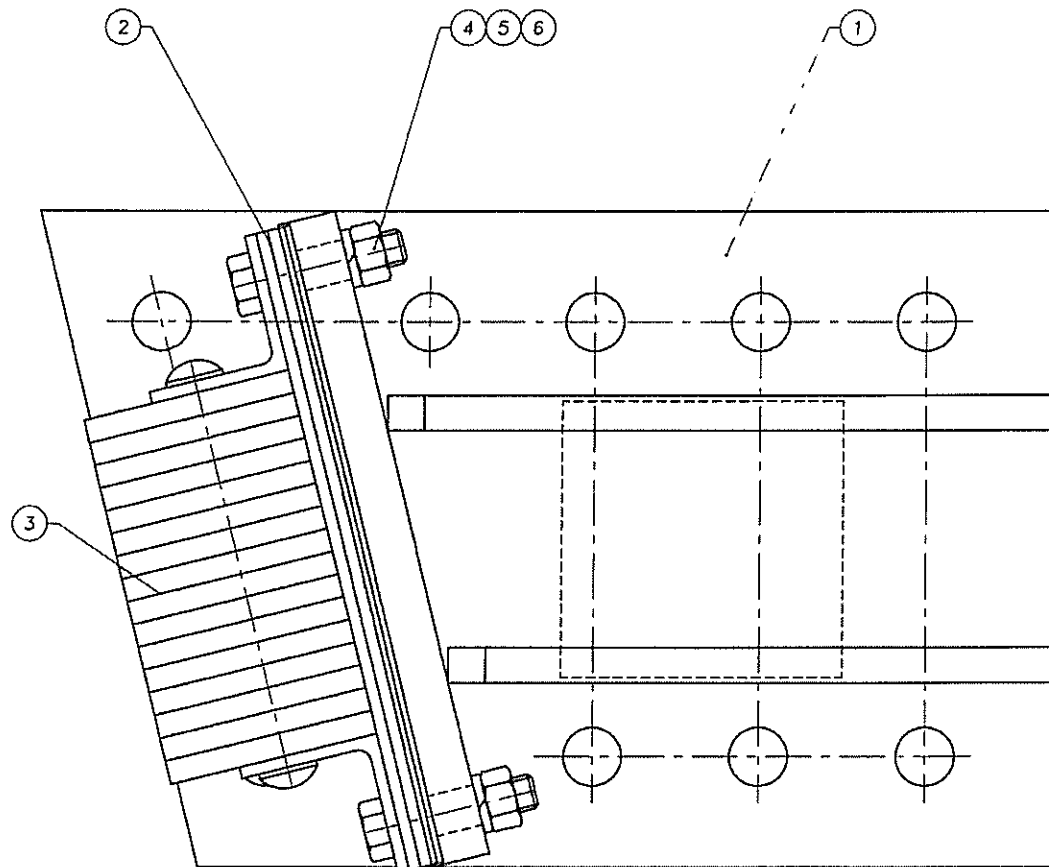


Project title / Titre du projet
KINGSTON MILLS SWING BRIDGE REHABILITATION
RIDEAU CANAL
KINGSTON ONTARIO

Drawing title / Titre du dessin
REACTION BRACKET WELDMENT
BRIDGE MOUNTED

Scale / Echelle 1:2	Drawn by / Dessiné par FJ	Date MARCH 2016
Designed by / Conçu par FJ	Checked by / Vérifié par DPC	Date
Approved by / Approuvé par DPC	Date APR 2016	
Project No./No. du projet 3515015	Client No./No. du Client CE 1911-2-023	Sheet No./Feuille No. M023

BILL OF MATERIAL			
ITEM	QTY	MATERIAL	DESCRIPTION
1	1		1911-2-022 ITEM 1 BUMPER BRACKET WELDMENT
2	1		1911-2-022 ITEM 2 BUMPER SHIM PACK
3	1		BUMPER, LOADING DOCK SUPPLY LLC, PART NO. B4510-12
4	4	S.S. 316	HEX HEAD CAP SCREW 3/4"-10 UNC x 3 1/4" LONG
5	4	S.S. 316	HEX NUT 3/4"-10 UNC
6	4	S.S. 316	LOCKWASHER 3/4" DIAMETER



No	Date	Description	Drawn by Dessiné par	Approved Approuvé
2	20/05/16	ISSUED FOR TENDER	FJ	DC
1	25/04/16	RELEASED FOR REVIEW	FJ	-

Revision / Révision	
A	Detail number No. du détail
B	Location on drawing No. sur dessin
C	Drawing sheet number No. du dessin

Client Acceptance / Acceptation du client
 Signature _____ Date _____
 File No / No. de dossier _____

Public Works and Government Services Canada / Travaux publics et Services gouvernementaux Canada
 Client Service Team for Parks Canada - Ontario Region / Équipe des services à la clientèle pour Parcs Canada Région de l'Ontario

Canada

MMM GROUP

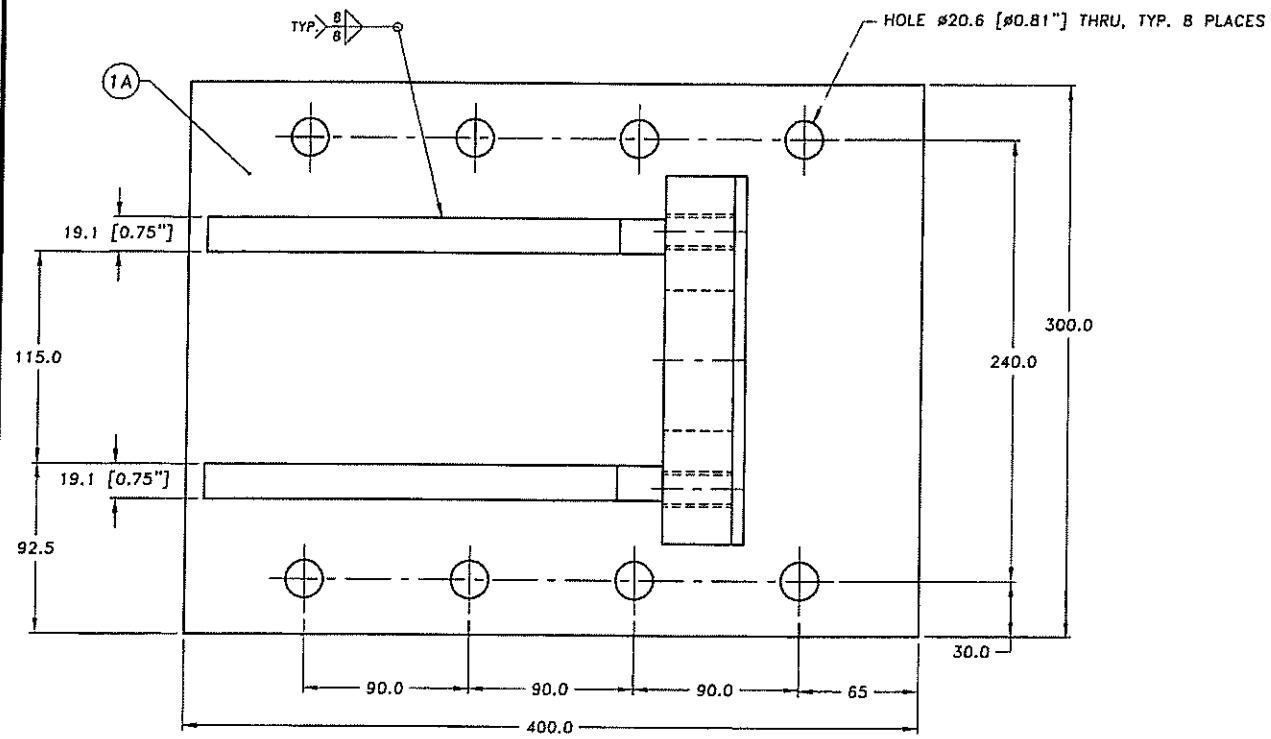
Chadwick Engineering Ltd.

Project Title / Titre du projet
KINGSTON MILLS SWING BRIDGE REHABILITATION
RIDEAU CANAL
KINGSTON ONTARIO

Drawing Title / Titre du dessin
BUMPER BRACKET ASSEMBLY

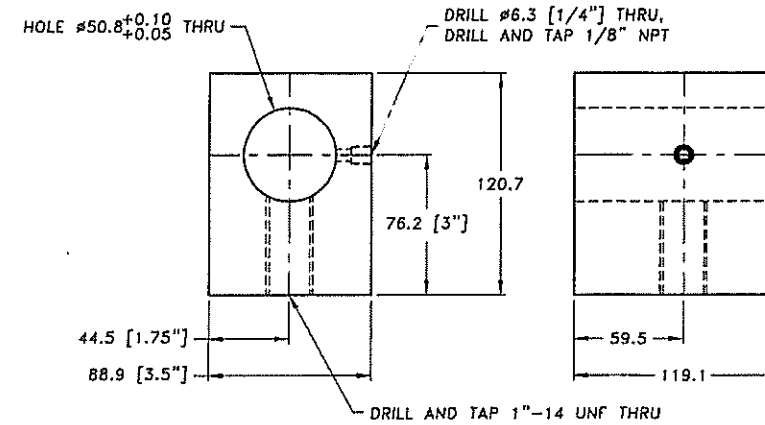
Scale / Echelle
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 Drawn by / Dessiné par: FJ Date: MARCH 2016
 Designed by / Conçu par: FJ Date:
 Checked by / Vérifié par: DPC Date:
 Approved by / Approuvé par: DPC Date: APR 2016

Project No./No. du projet: 3515015
 Client No./No. du Client: CE 1911-2-024
 Sheet No./Feuille N°: M024
 Drawing Reference No./Numéro de Référence du Dessin:

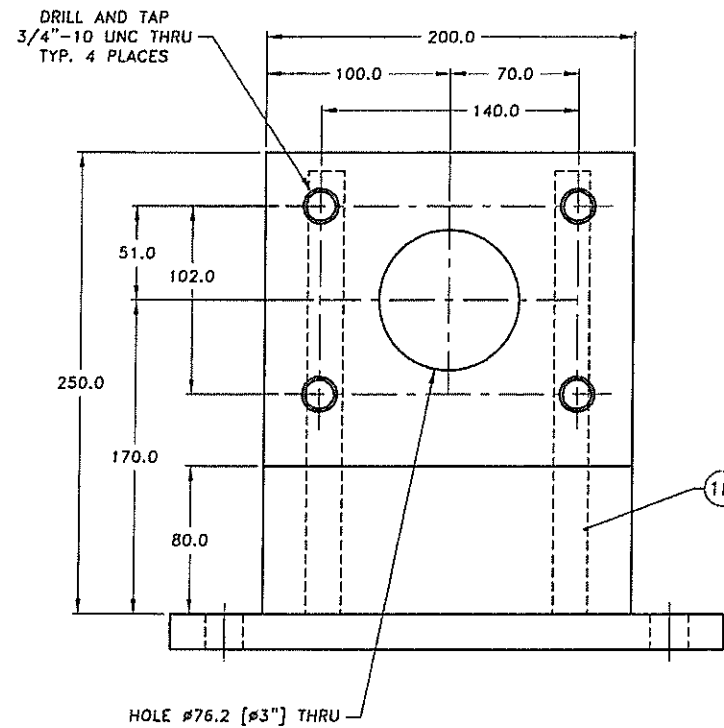
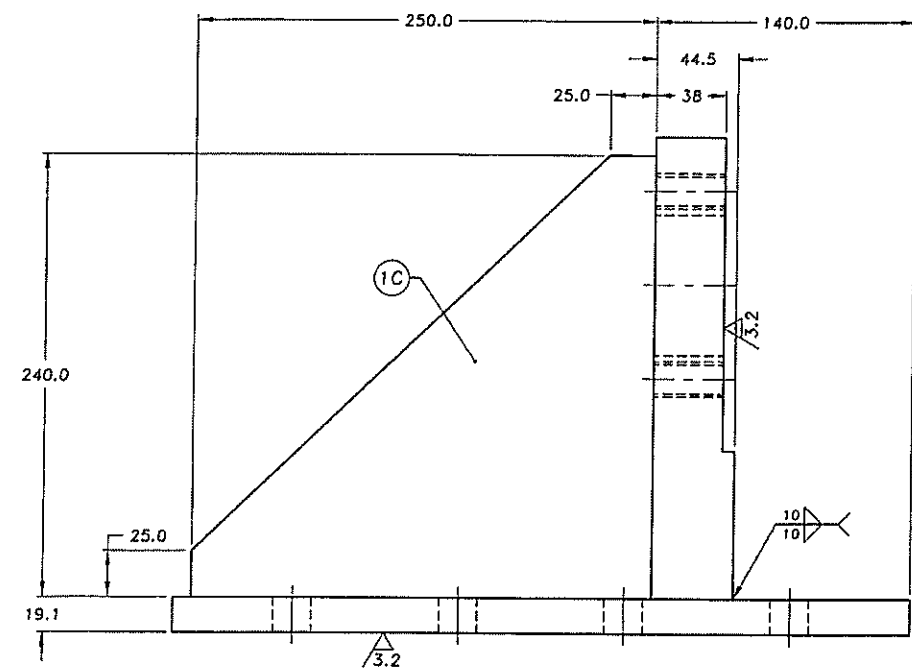


BILL OF MATERIAL			
ITEM	QTY	MATERIAL	DESCRIPTION
1			WEDGE CYLINDER BRACKET WELDMENT
1A	1	A36	PLATE 25.4 (1") THICK x 300 x 400
1B	1	A36	PLATE 44.5 (1.75") THICK x 200 x 250
1C	2	A36	PLATE 19.1 (0.75") THICK x 240 x 250
2			WEDGE CYLINDER ROD EYE
	1	A36	PLATE 88.9 (3.5") THICK x 120.7 x 119.1
3			WEDGE CYLINDER TRUNNION BLOCK
3A	1	A36	PLATE 44.5 (1.75") THICK x 76.2 x 140
3B	1	SAC 660	BRONZE BUSHING 1.625" O.D x 1.375" I.D x 1.5" LONG
			McMASTER-CARR PART NO. 6381K585

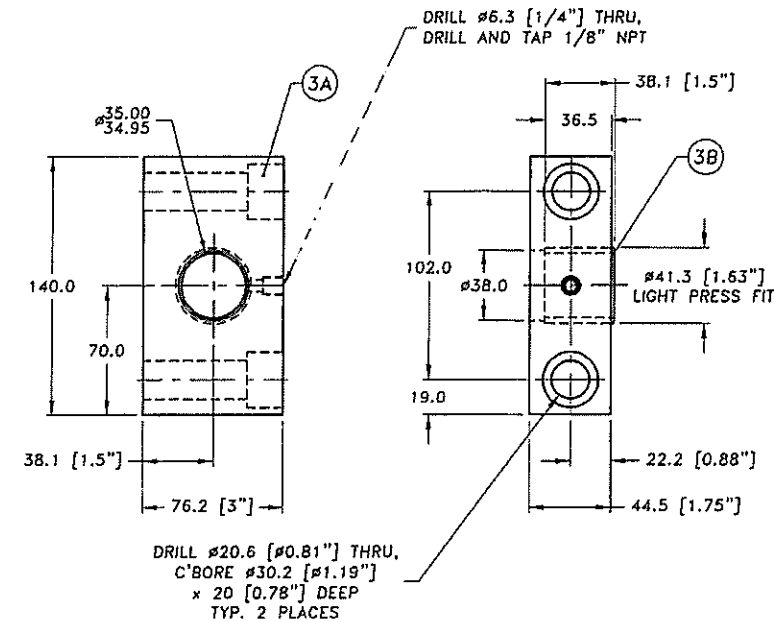
ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE NOTED.



② WEDGE CYLINDER ROD EYE



① WEDGE CYLINDER BRACKET WELDMENT



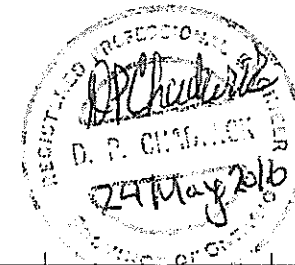
③ WEDGE CYLINDER TRUNNION BLOCK

ALL DIMENSIONS IN MILLIMETERS

UNSPECIFIED TOLERANCES:
 DECIMAL: X.XXX ± .05 [.002]
 X.XX ± .25 [.01]
 X.X ± .50 [.02]

REMOVE ALL BURRS AND SHARP EDGES

Ra micrometer	Ra micro-inch	Roughness Grade Number
50	2000	N12
25	1000	N11
12.5	500	N10
6.3	250	N9
3.2	125	N8
1.6	63	N7
0.8	32	N6
0.4	16	N5
0.2	8	N4
0.1	4	N3
0.05	2	N2
0.025	1	N1



No	Date	Description	Drawn by	Approved
2	20/05/16	ISSUED FOR TENDER	FJ	DC
1	25/04/16	RELEASED FOR REVIEW	FJ	-

Revision / Révision	
A	Détail number / No. du détail
B	Location dwg. no. / No. sur dessin
C	Drawing sheet no. / No. de dessin

Client Acceptance / Acceptation du client
 Signature _____ Date _____
 File No / No. de dossier _____

Public Works and Government Services Canada / Travaux publics et Services gouvernementaux Canada
 Client Service Team for Parks Canada Ontario Region / Équipe des services à la clientèle pour Parcs Canada Région de l'Ontario

Canada

MMM GROUP

Chadwick Engineering Ltd.

Project title / Titre du projet
KINGSTON MILLS SWING BRIDGE REHABILITATION

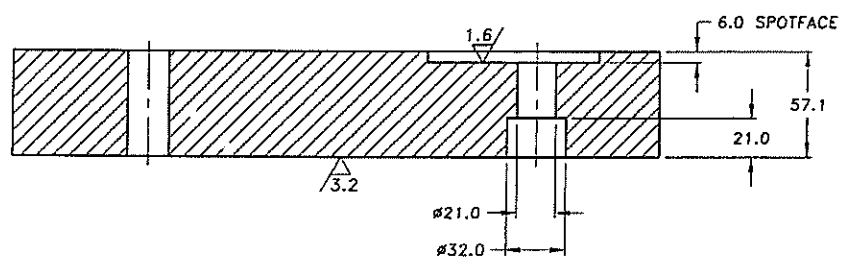
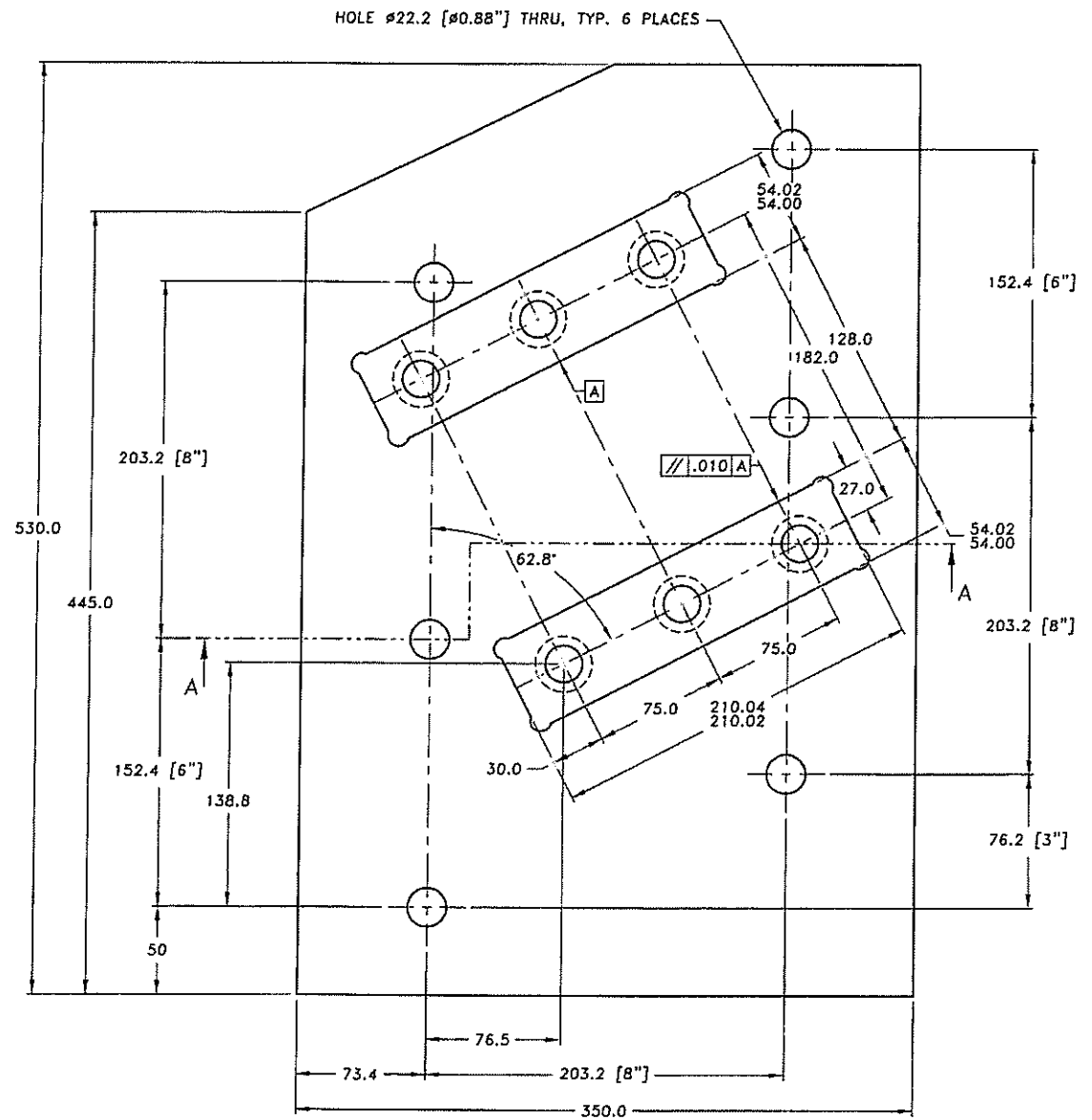
RIDEAU CANAL
 KINGSTON ONTARIO

Drawing title / Titre du dessin
WEDGE CYLINDER SUPPORT BRACKET WELDMENT AND DETAIL PARTS

Scale / Echelle		
1:2		
Drawn by / Dessiné par	Date	
FJ	MARCH 2016	
Designed by / Conçu par	Date	
FJ		
Checked by / Vérifié par	Date	
DPC		
Approved by / Approuvé par	Date	
DPC	APR 2016	
Project No / No. du projet	Client No. / No. du Client	Sheet No. / Feuille No.
3515015	CE 1911-2-025	
Drawing Reference No. / Numéro de Référence du Dessin		M025

BILL OF MATERIAL			
ITEM	QTY	MATERIAL	DESCRIPTION
1			N.W. BEARING SEAT WHEEL BASE
1		A36	PLATE 63.5 (2.5") THICK x 350 x 530

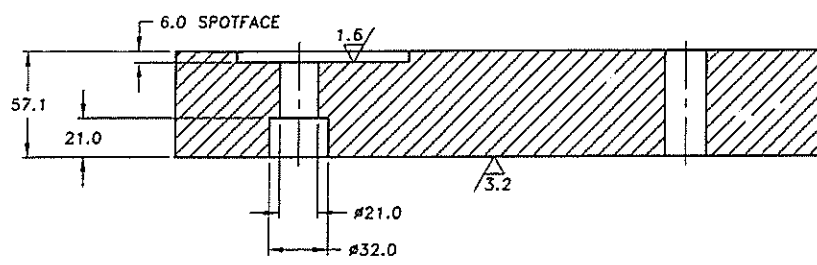
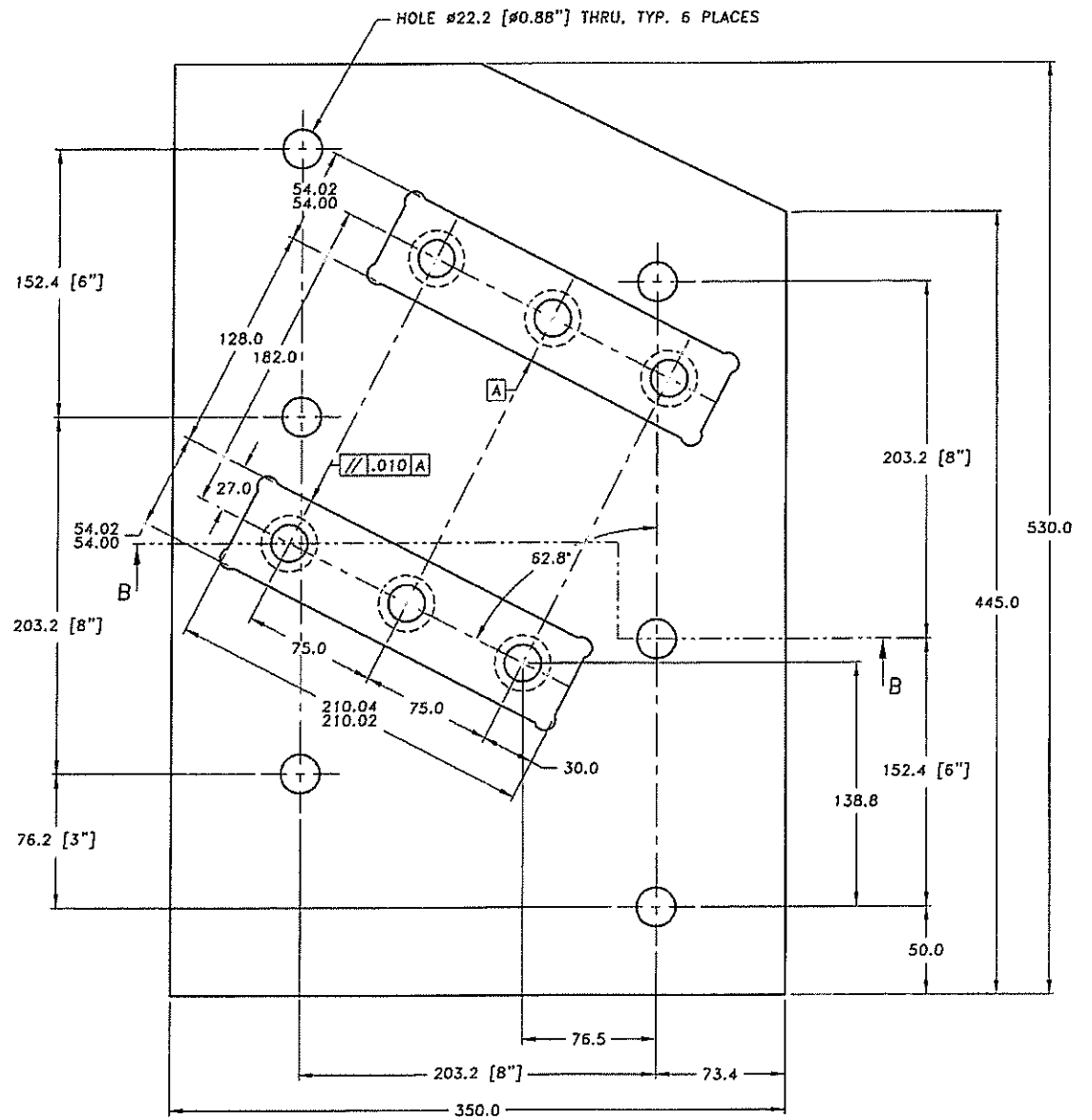
ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE NOTED.



SECTION A-A

BILL OF MATERIAL			
ITEM	QTY	MATERIAL	DESCRIPTION
2			S.W. BEARING SEAT WHEEL BASE
1		A36	PLATE 63.5 (2.5") THICK x 350 x 530

ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE NOTED.



SECTION B-B

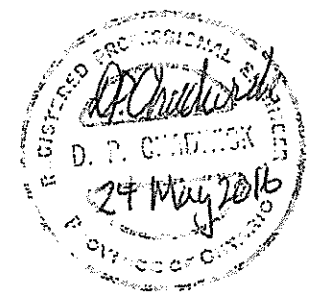
ALL DIMENSIONS IN MILLIMETERS

UNSPECIFIED TOLERANCES:

DECIMAL: X.XXX ± .05 [.002]
 X.XX ± .25 [.01]
 X.X ± .50 [.02]

REMOVE ALL BURRS AND SHARP EDGES

Ra micrometer	Ra micro-inch	Roughness Grade Number
50	2000	N12
25	1000	N11
12.5	500	N10
6.3	250	N9
3.2	125	N8
1.6	63	N7
0.8	32	N6
0.4	16	N5
0.2	8	N4
0.1	4	N3
0.05	2	N2
0.025	1	N1



No.	Date	Description	Drawn by Dessiné par	Approved Approuvé
2	20/05/16	ISSUED FOR TENDER	FJ	DC
1	25/04/16	RELEASED FOR REVIEW	FJ	-

Revision / Révision	
A	A Detail number No. du détail
B	B Location dwg. no. No. sur dessin
C	C Drawing sheet no. No. du dessin

Client Acceptance / Acceptation du client
 Signature _____ Date _____
 File No./No. de dossier _____

Public Works and Government Services Canada
 Travaux publics et Services gouvernementaux Canada
 Client Service Team for Parks Canada / Équipe des services à la clientèle pour Parcs Canada
 Ontario Region / Région de l'Ontario

Canada

MMM GROUP

Chadwick
Engineering Ltd.

Project title / Titre du projet
KINGSTON MILLS SWING BRIDGE REHABILITATION

RIDEAU CANAL
 KINGSTON ONTARIO

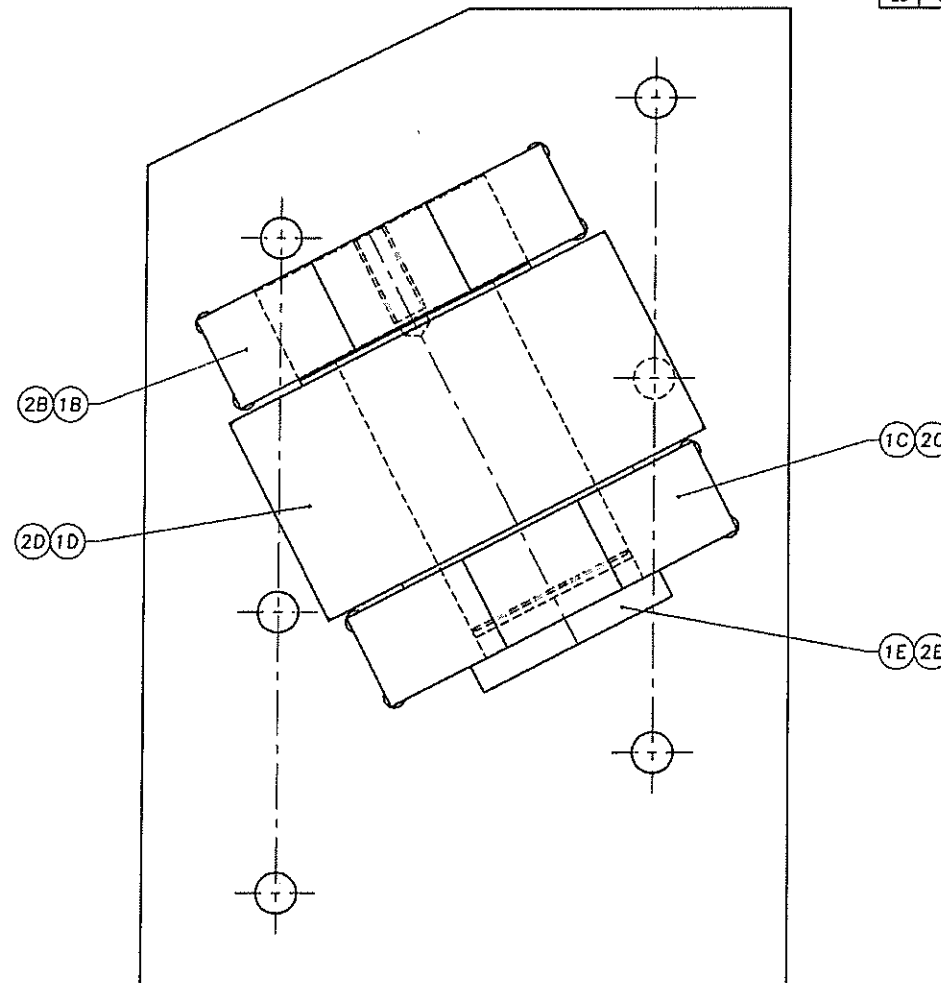
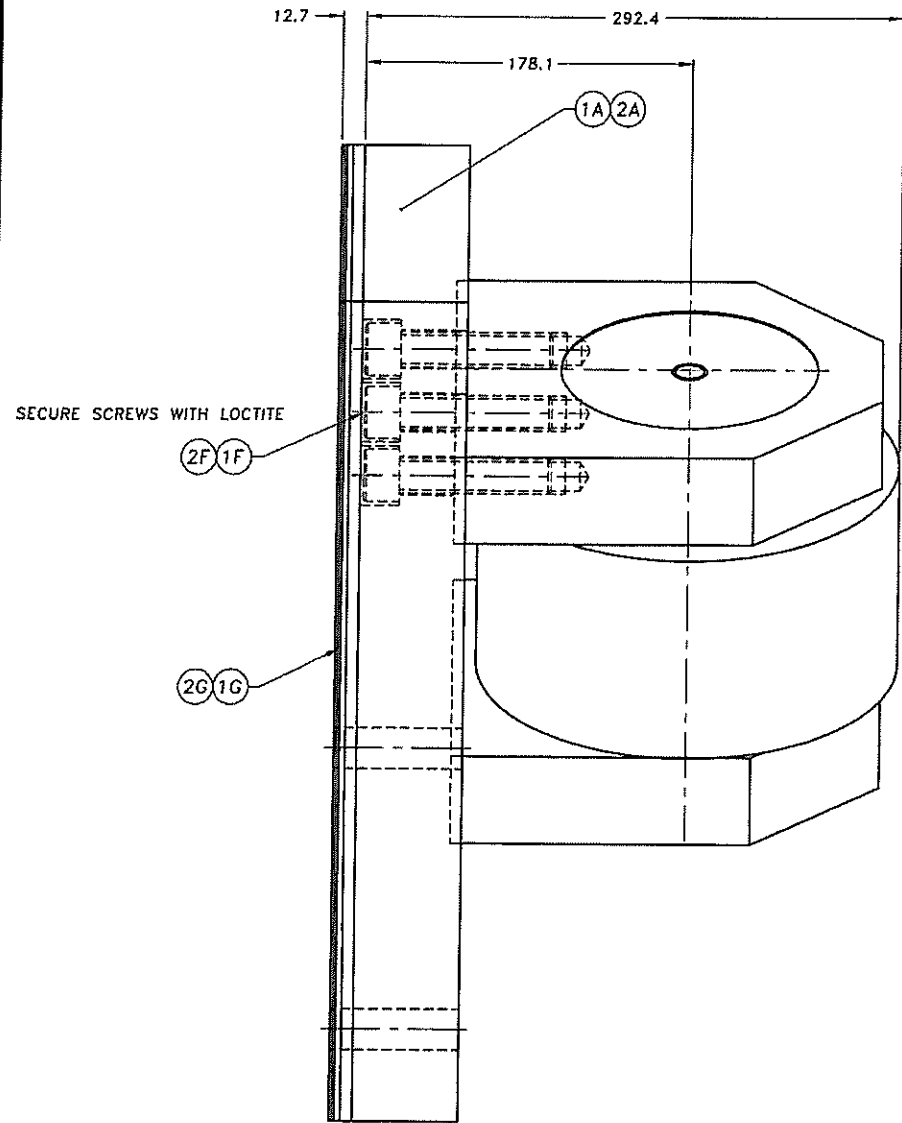
Drawing title / Titre du dessin
BEARING SEAT WHEEL BASE PLATE

Scale / Echelle: 1:2

Drawn by / Dessiné par	Date
FJ	MARCH 2016
Designed by / Conçu par	Date
FJ	
Checked by / Vérifié par	Date
DPC	
Approved by / Approuvé par	Date
DPC	15 APR 2016

Project No./No. du projet	Client No./No du Client	Sheet No / Feuille No
3515015	CE 1011-2-026	M026

Drawing Reference No./Numéro de Référence du Dessin



BILL OF MATERIAL			
ITEM	QTY	MATERIAL	DESCRIPTION
1			N.W. BEARING SEAT WHEEL ASSY (AS SHOWN)
1A	1		1911-2-026 ITEM 1 N.W. BEARING SEAT BASE PLATE
1B	1		1911-2-015 ITEM 2 SHAFT SUPPORT PLATE HEADEND SIDE
1C	1		1911-2-015 ITEM 3 SHAFT SUPPORT PLATE ENDCAP SIDE
1D	1	STEEL	PCI TRACK ROLLER 9" DIAMETER YOKE TYPE, PART NO. PTRY-9.00
1E	1	STEEL	PCI SHAFT WITH ENDCAP 3.75" DIAMETER, PART NO. YSH-3.750-R
1F	6	A574	SOCKET HEAD CAP SCREW 3/4"-10 UNC x 3 1/4" LONG
1G	1		1911-2-028 ITEM 3 BEARING SEAT WHEEL BRACKET SHIM PACK
2			S.W. BEARING SEAT WHEEL ASSY (OPPOSITE)
2A	1		1911-2-026 ITEM 2 S.W. BEARING SEAT BASE PLATE
2B	1		1911-2-015 ITEM 2 SHAFT SUPPORT PLATE HEADEND SIDE
2C	1		1911-2-015 ITEM 3 SHAFT SUPPORT PLATE ENDCAP SIDE
2D	1	STEEL	PCI TRACK ROLLER 9" DIAMETER YOKE TYPE, PART NO. PTRY-9.00
2E	1	STEEL	PCI SHAFT WITH ENDCAP 3.75" DIAMETER, PART NO. YSH-3.750-R
2F	6	A574	SOCKET HEAD CAP SCREW 3/4"-10 UNC x 3 1/4" LONG
2G	1		1911-2-028 ITEM 3 BEARING SEAT WHEEL BRACKET SHIM PACK

2	28/05/16	ISSUED FOR TENDER	FJ	DC
1	25/04/16	RELEASED FOR REVIEW	FJ	-
No.	Date	Description	Drawn by / Dessiné par	Approved / Approuvé

Re:ision / Révision

A Detail number
No. du détail

B Location cwg. no.
No. sur dessin

C Drawing sheet no.
N. du dessin

Client Acceptance / Acceptation du client

Signature _____ Date _____

File No./No. de dossier _____

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

Client Service Team for Parks Canada Ontario Region / Équipe des services à la clientèle pour Parcs Canada Région de l'Ontario



Project title / Titre du projet

KINGSTON MILLS SWING BRIDGE REHABILITATION

RIDEAU CANAL

KINGSTON ONTARIO

Drawing title / Titre du dessin

BEARING SEAT WHEEL ASSEMBLY

Scale / Echelle

1:2

Drawn by / Dessiné par: FJ Date: MARCH 2016

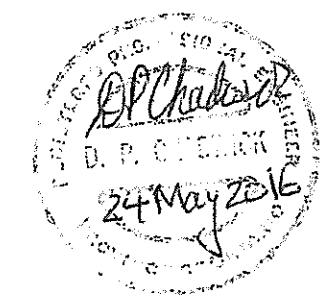
Designed by / Conçu par: FJ Date:

Checked by / Vérifié par: DPC Date:

Approved by / Approuvé par: DPC Date: APR 2016

Project No./N. du projet: 3515015 Client No./No. du Client: CE 1911-2-027 Sheet No./Feuille No: M027

Drawing Reference No./Numéro de Référence du Dessin: M027

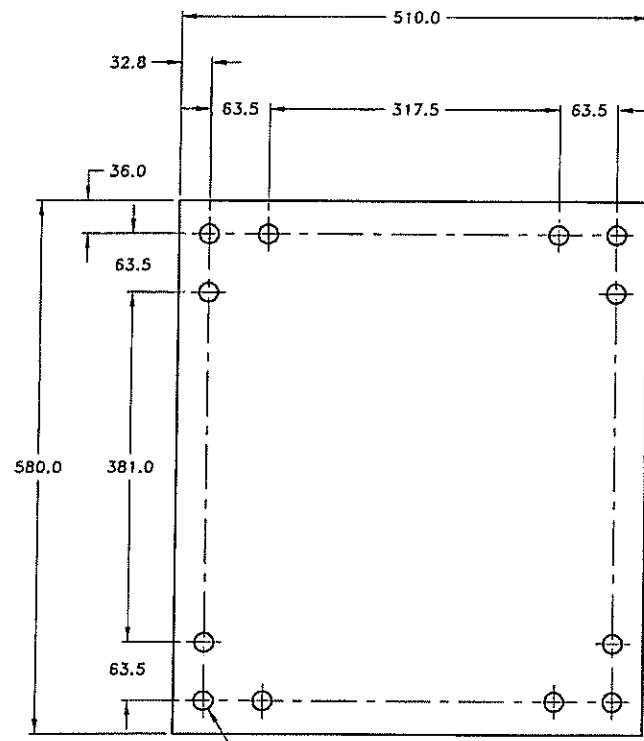


ALL DIMENSIONS IN MILLIMETERS

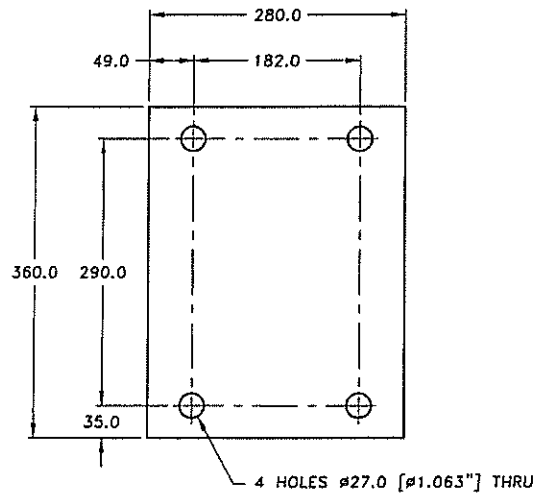
UNSPECIFIED TOLERANCES:

DECIMAL: X.XXX ± .05 [.002]
 X.XX ± .25 [.01]
 X.X ± .50 [.02]

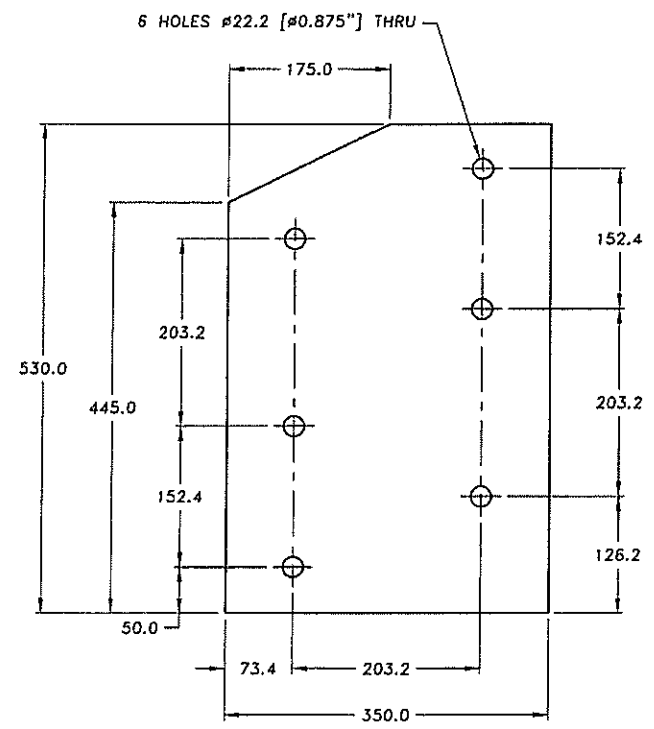
REMOVE ALL BURRS AND SHARP EDGES



① CENTER PIVOT SHIM PACK



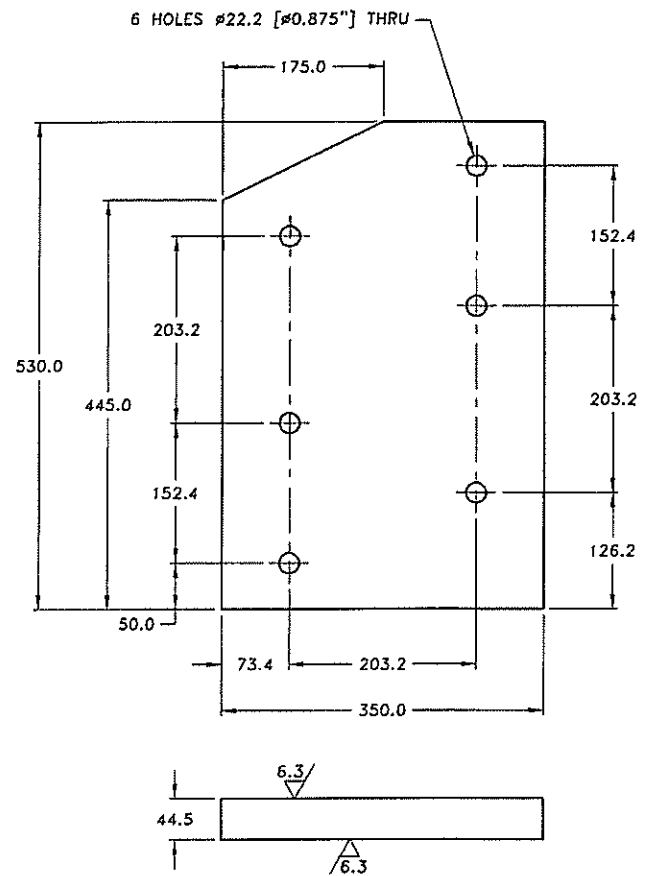
② WHEEL BRACKET SHIM PACK



③ BEARING SEAT WHEEL BRACKET SHIM PACK

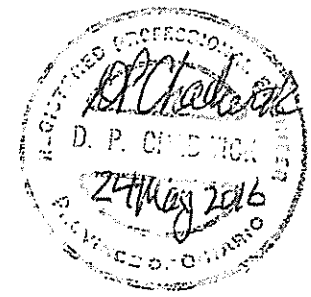
BILL OF MATERIAL			
ITEM	QTY	MATERIAL	DESCRIPTION
1			CENTER PIVOT SHIM PACK
1A	1	AISI 316	PLATE 6.35 (1/4") THICK x 510 x 580
1B	1	AISI 316	PLATE 3.2 (1/8") THICK x 510 x 580
1C	2	AISI 316	PLATE 1.6 (1/16") THICK x 510 x 580
2			WHEEL BRACKET SHIM PACK
2A	1	AISI 316	PLATE 6.35 (1/4") THICK x 280 x 360
2B	1	AISI 316	PLATE 3.2 (1/8") THICK x 280 x 360
2C	2	AISI 316	PLATE 1.6 (1/16") THICK x 280 x 360
3			BEARING SEAT WHEEL BRACKET SHIM PACK
3A	1	AISI 316	PLATE 6.35 (1/4") THICK x 350 x 530
3B	1	AISI 316	PLATE 3.2 (1/8") THICK x 350 x 530
3C	2	AISI 316	PLATE 1.6 (1/16") THICK x 350 x 530
4			BEARING SEAT WHEEL BRACKET SPACER
4	1	A36	PLATE 50.8 (2") THICK x 350 x 530

ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE NOTED.



④ BEARING SEAT WHEEL BRACKET SPACER

ALL DIMENSIONS IN MILLIMETERS		
UNSPECIFIED TOLERANCES:		
DECIMAL:	X.XXX	± .05 [.002]
	X.XX	± .25 [.01]
	X.X	± .50 [.02]
REMOVE ALL BURRS AND SHARP EDGES		
Ra micrometer	Ra micro-inch	Roughness Grade Number
50	2000	N12
25	1000	N11
12.5	500	N10
6.3	250	N9
3.2	125	N8
1.6	63	N7
0.8	32	N6
0.4	16	N5
0.2	8	N4
0.1	4	N3
0.05	2	N2
0.025	1	N1



No.	Date	Description	Drawn by	Approved
2	20/05/16	ISSUED FOR TENDER	FJ	DC
1	25/04/16	RELEASED FOR REVIEW	FJ	-

Revision / Révision	
A	Détail number / No. du détail
B	Location dwg. no. / No. sur de. sin.
C	Drawing sheet no. / No. du dessin

Client Acceptance / Acceptation du client
Signature _____ Date _____
File No./N° de dossier _____

Public Works and Government Services Canada / Travaux publics et Services gouvernementaux Canada
Client Service Team for Parks Canada Ontario Region / Équipe des services à la clientèle pour Parcs Canada Région de l'Ontario
Canada



Chadwick Engineering Ltd.

Project title / Titre du projet
KINGSTON MILLS SWING BRIDGE REHABILITATION
RIDEAU CANAL
KINGSTON ONTARIO

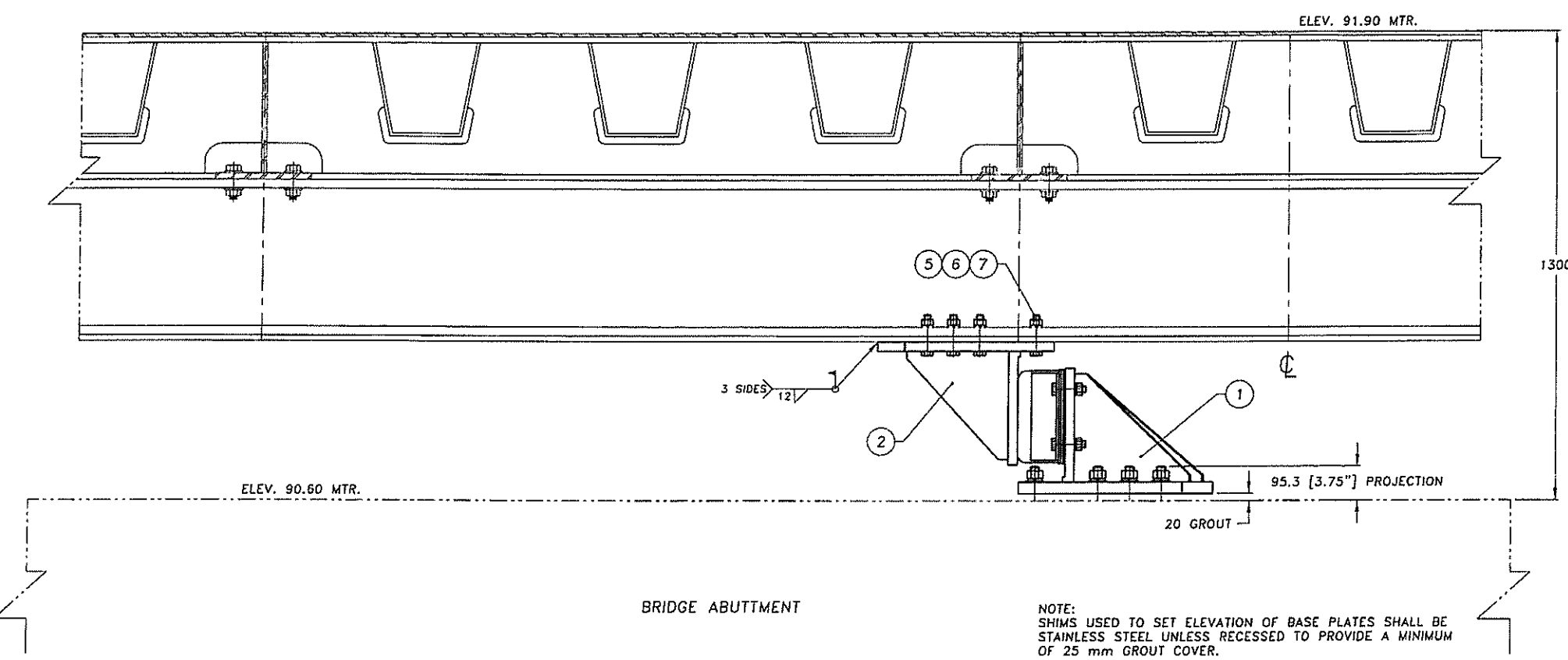
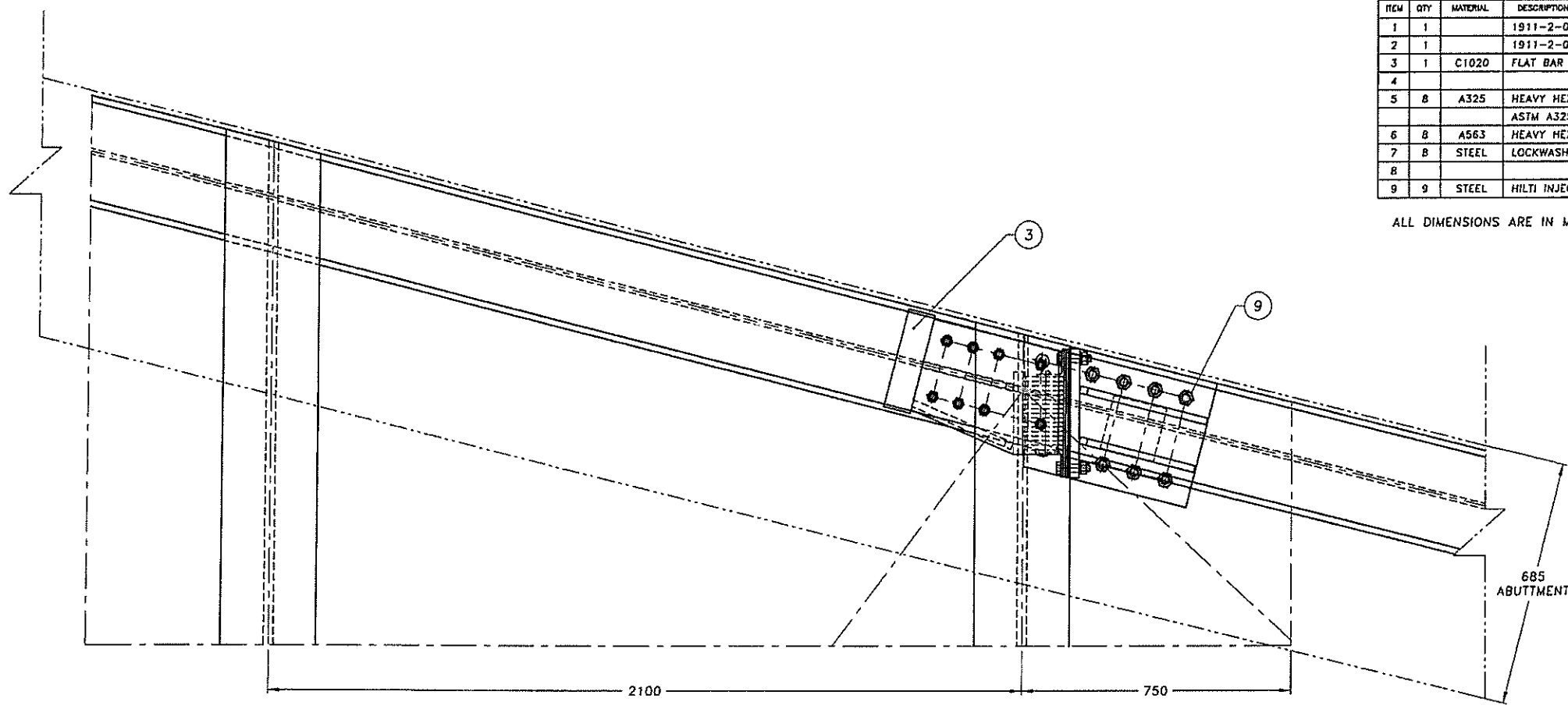
Drawing title / Titre du dessin
CENTER PIVOT AND WHEEL BRACKETS SHIM PACKS AND SPACER

Scale / Echelle	
1:4	
Drawn by / Dessiné par	Date
FJ	MARCH 2016
Designed by / Conçu par	Date
FJ	
Checked by / Vérifié par	Date
DPC	
Approved by / Approuvé par	Date
DPC	APR 2016

Project No./No. du projet	Client No./No. du Client	Sheet No./Feuille No.
3515015	CE 1011-2-028	M028

BILL OF MATERIAL			
ITEM	QTY	MATERIAL	DESCRIPTION
1	1		1911-2-024 BUMPER BRACKET ASSEMBLY
2	1		1911-2-023 REACTION BRACKET WELDMENT
3	1	C1020	FLAT BAR 25.4 (1") THICK x 76.2 (3") x 280 LONG
4			
5	8	A325	HEAVY HEX STRUCTURAL BOLT 3/4"-10 UNC x 4" LONG ASTM A325 TYPE 1 HOT DIPPED GALVANIZED
6	8	A563	HEAVY HEX NUT 3/4"-10 UNC, ASTM A563 GRADE DH HOT DIP CALV
7	8	STEEL	LOCKWASHER 3/4" DIAMETER
8			
9	9	STEEL	HILTI INJECTABLE ADHESIVE ANCHOR 1" HIT-HY 200-R

ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE NOTED.



ALL DIMENSIONS IN MILLIMETERS

UNSPECIFIED TOLERANCES:
 DECIMAL: X.XXX ± .05 [.002]
 X.XX ± .25 [.01]
 X.X ± .50 [.02]

REMOVE ALL BURRS AND SHARP EDGES

No.	Date	Description	Drawn by / Dessiné par	Approved / Approuvé
2	20/05/16	ISSUED FOR TENDER	FJ	DC
1	25/04/16	RELEASED FOR REVIEW	FJ	-

Client Acceptance / Acceptation du client
 Signature _____ Date _____
 File No / No. de dossier _____

Public Works and Government Services Canada / Travaux publics et Services gouvernementaux Canada
 Client Service Team for Parks Canada Ontario Region / Équipe des services à la clientèle pour Parcs Canada Région de l'Ontario

Canada

MMM GROUP

DRAFT
 Not for Construction / Non Complet

Project title / Titre du projet
KINGSTON MILLS SWING BRIDGE REHABILITATION
 RIDEAU CANAL
 KINGSTON ONTARIO

Drawing title / Titre du dessin
BUMPER INSTALLATION

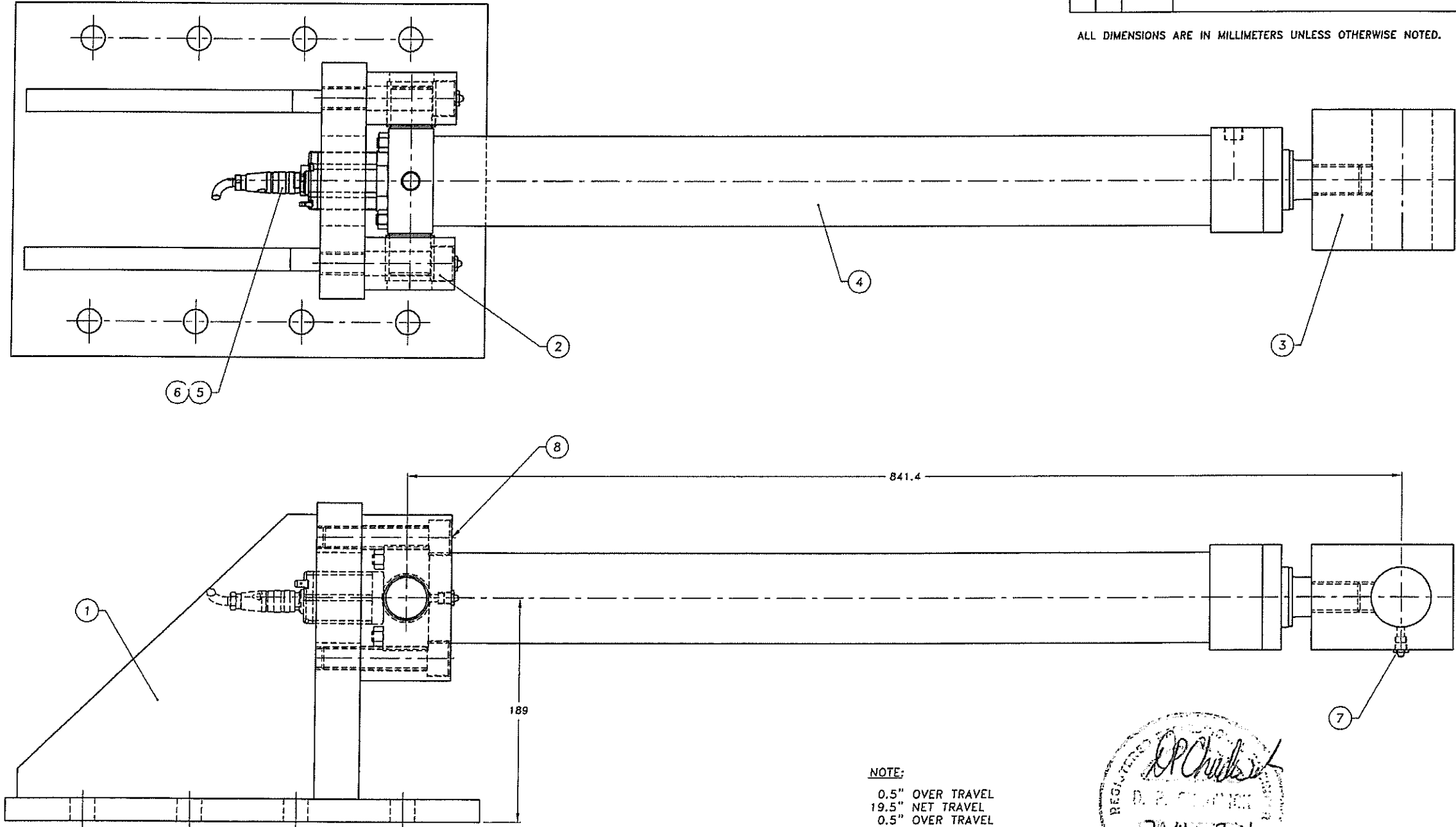
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 Drawn by / Dessiné par: FJ Date: M-RCH 2016
 Designed by / Conçu par: FJ Date:

Checked by / Vérifié par: DPC Date:
 Approved by / Approuvé par: DPC Date: /PR 2016

Project No. / No. du projet: 3515015
 Client No. / No. du Client: CE 1911-2-029
 Sheet No. / Feuille No.: M029

BILL OF MATERIAL			
ITEM	QTY	MATERIAL	DESCRIPTION
1	1		1911-2-025 ITEM 1 WEDGE CYLINDER BRACKET WELDMENT
2	2		1911-2-025 ITEM 3 WEDGE CYLINDER TRUNNION BLOCK
3	1		1911-2-025 ITEM 2 WEDGE CYLINDER ROD EYE
4	1	A36	PARKER ELECTROHYDRAULIC ACTUATOR 2.5" BORE x 24.5" STROKE PART NO. 2.50CDB2HXKTJS34A x 24.50 (S = 4" STOP TUBE) PORT POSITION #1 AT HEAD AND #2 AT CAP, 1/8" NPT BLEED PORTS SUPPLY WITH WITH GLOBAL SHIELD ROD COATING AND EPOXY PAINT
5	1		TEMPOSONIC MODEL GH ROD-STYLE SENSOR #GH 5 24.5 D60 1 A0 HYDRAULIC ROD-STYLE, US CUSTOMARY THREADS, FLAT-FACED FLANGED AND PRESSURE TUBE, 24.5" STROKE, 6-PIN DIN (M16) MALE, +24 Vdc (+20%, -15%), 4 mA TO 20 mA
6	1		TEMPOSONIC CABLE CONNECTOR, STRAIGHT EXIT, 6-PIN DIN (D60) P/N 560700
7	3	STEEL	GREASE FITTING 1/8 NPT
8	4	S.S. 316	SOCKET HEAD CAP SCREW 3/4"-10 UNC x 3 1/2" LONG

ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE NOTED.



NOTE:
 0.5" OVER TRAVEL
 19.5" NET TRAVEL
 0.5" OVER TRAVEL
 4.0" STOP TUBE
 24.5" TOTAL STROKE



ALL DIMENSIONS IN MILLIMETERS
 UNSPECIFIED TOLERANCES:
 DECIMAL: X.XXX ± .05 [.002]
 X.XX ± .25 [.01]
 X.X ± .50 [.02]
 REMOVE ALL BURRS AND SHARP EDGES

No.	Date	Description	Drawn by / Dessiné par	Approved / Approuvé
2	20/05/16	ISSUED FOR TENDER	FJ	DC
1	25/04/16	RELEASED FOR REVIEW	FJ	-

Revision / Révision	
A	Detail number / No. du détail
B	Location dwg. no. / No. sur dessin
C	Drawing sheet no. / No. du dessin

Client Acceptance / Acceptation du client
 Signature _____ Date _____
 File No / No. de dossier _____

Public Works and Government Service Canada / Travaux publics et Services gouvernementaux Canada
 Client Service Team for Parks Canada / Équipe des services à la clientèle pour Parcs Canada Ontario Region / Région de l'Ontario
Canada

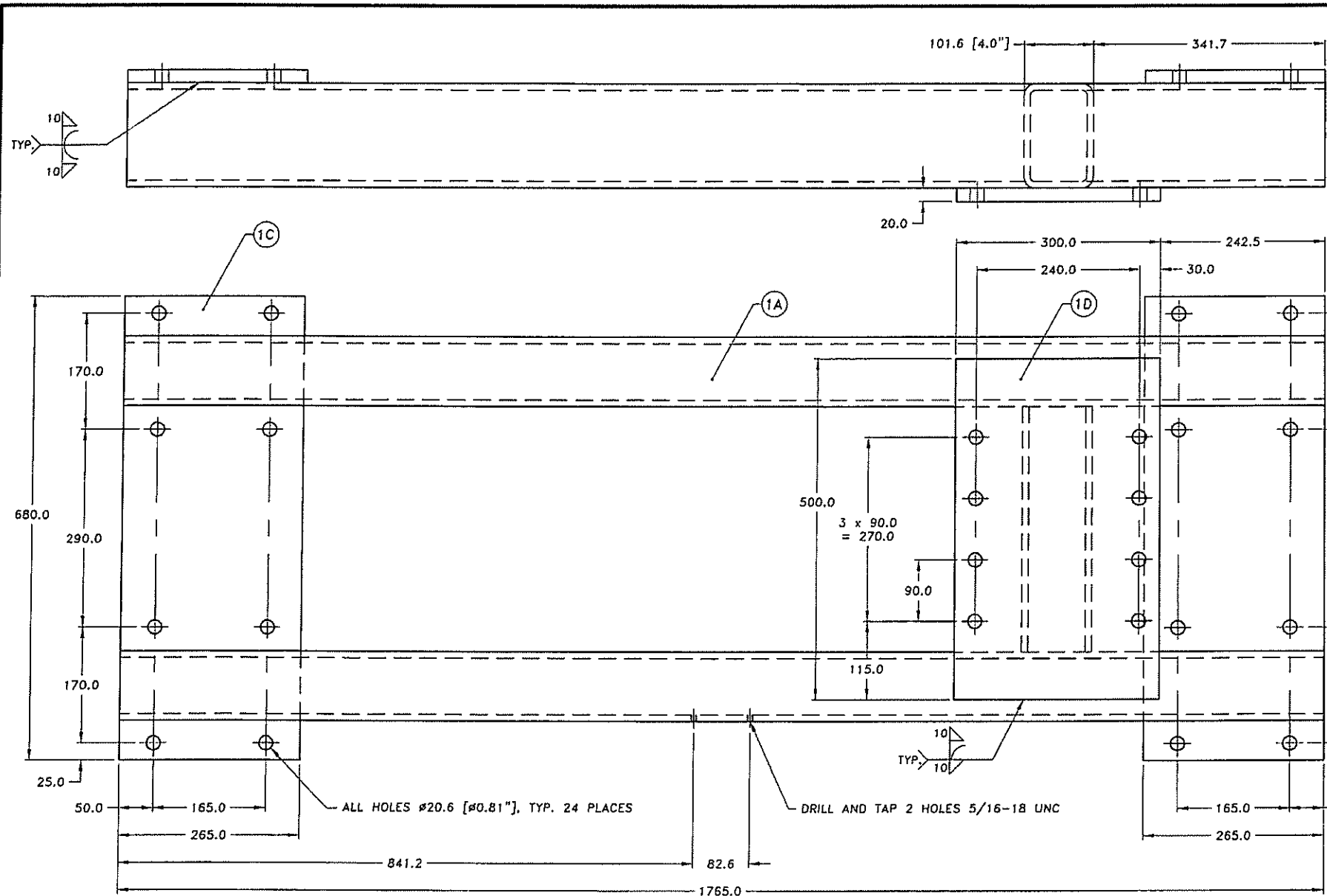


Chadwick Engineering Ltd.

Project title / Titre du projet
KINGSTON MILLS SWING BRIDGE REHABILITATION
RIDEAU CANAL
KINGSTON ONTARIO

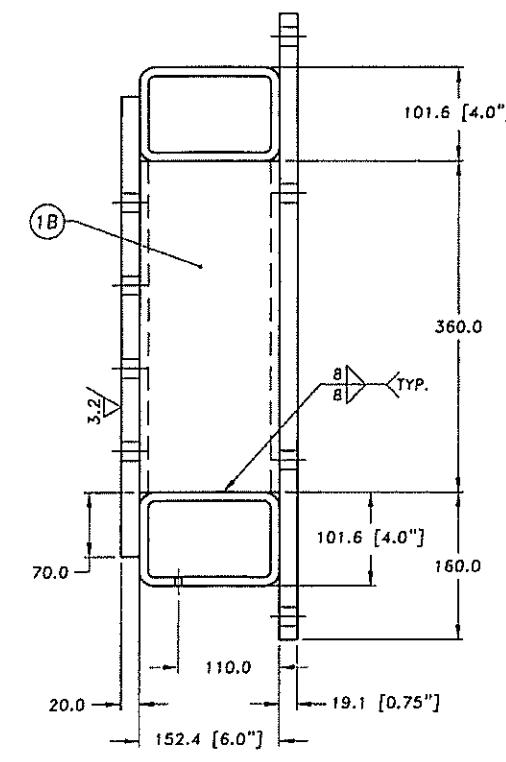
Drawing title / Titre du dessin
WEDGE CYLINDER ASSEMBLY

Scale / Echelle 1:2		
Drawn by / Dessiné par FJ	Date MARCH 2016	
Designed by / Conçu par FJ	Date	
Checked by / Vérifié par DPC	Date	
Approved by / Approuvé par DPC	Date APR 2016	
Project No / No. du projet 3515015	Client No. / No. du Client CE 1911-2-030	Sheet No. / Feuille No. M030
Drawing Reference No. / Numéro de Référence du Dessin		

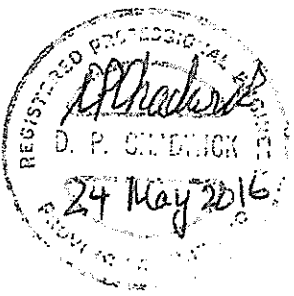
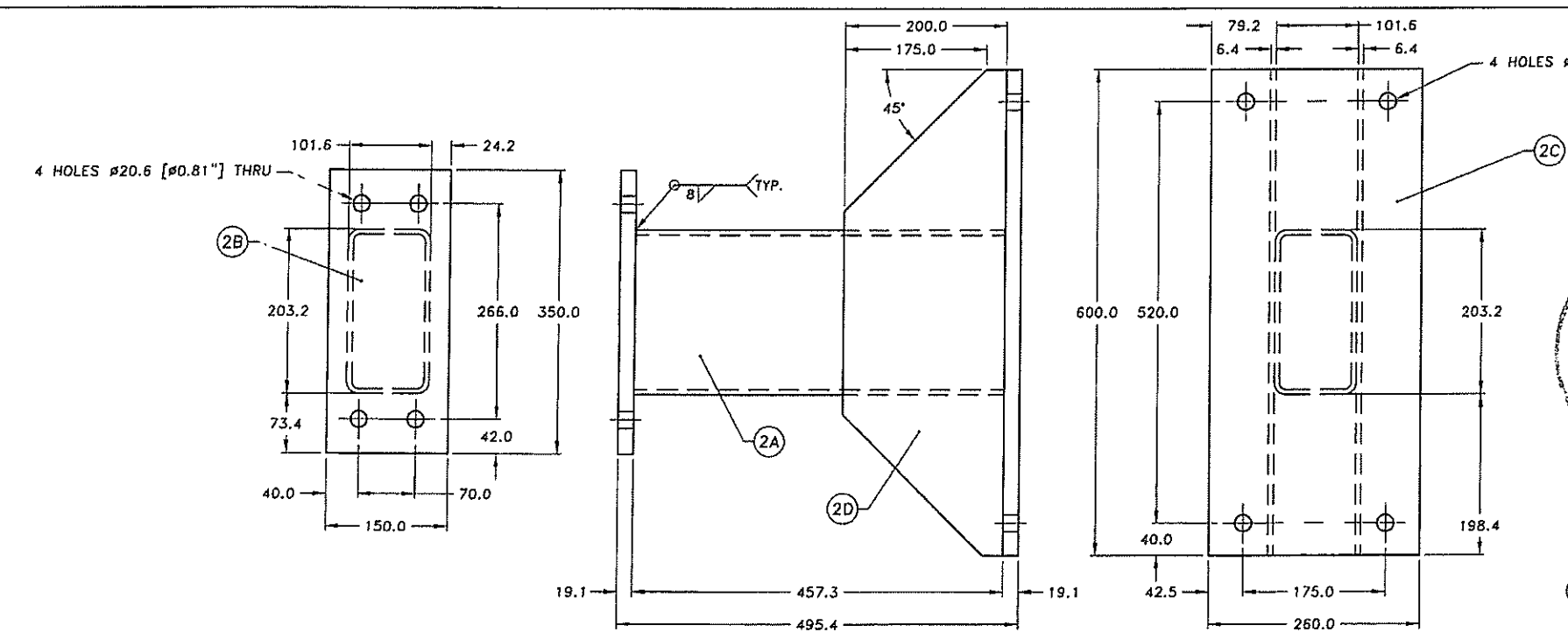


BILL OF MATERIAL			
ITEM	QTY	MATERIAL	DESCRIPTION
1			WEDGE CYLINDER BASE FRAME
1A	2	S0W	RECT.TUBE 101.6 x 152.4 x 9.5 WALL (4" x 6" x 3/8") x 1765 LG
1B	1	S0W	RECT.TUBE 101.6 x 152.4 x 9.5 WALL (4" x 6" x 3/8") x 360 LG
1C	2	A36	PLATE 19.1 (3/4") THICK x 265 x 680
1D	1	A36	PLATE 25.4 (1") THICK x 300 x 500
2			BEARING STAND-OFF
2A	1	S0W	RECT.TUBE 101.6 x 203.2 x 6.3 WALL (4" x 8" x 1/4") x 1765 LG
2B	1	A36	PLATE 19.1 (3/4") THICK x 150 x 350
2C	1	A36	PLATE 19.1 (3/4") THICK x 260 x 600
2D	2	A36	PLATE 6.4 (1/4") THICK x 200 x 600

ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE NOTED.



1 WEDGE CYLINDER BASE FRAME



2 BEARING STAND-OFF

ALL DIMENSIONS IN MILLIMETERS		
UNSPECIFIED TOLERANCES:		
DECIMAL:	X.XXX	± .05 [.002]
	X.XX	± .25 [.01]
	X.X	± .50 [.02]
REMOVE ALL BURRS AND SHARP EDGES		
Ra micrometer	Ra micro-inch	Roughness Grade Number
50	2000	N12
25	1000	N11
12.5	500	N10
6.3	250	N9
3.2	125	N8
1.6	63	N7
0.8	32	N6
0.4	16	N5
0.2	8	N4
0.1	4	N3
0.05	2	N2
0.025	1	N1

No.	Date	Description	Drawn by	Approved
2	20/05/16	ISSUED FOR TENDER	FJ	DC
1	25/04/16	RELEASED FOR REVIEW	FJ	-

Revision / Révision	
A	Detail number / No. du détail
B	Location change / No. sur dessin
C	Drawing sheet no. / No. du dessin

Client Acceptance / Acceptation du client
Signature _____ Date _____
File No / No. de dossier _____

Public Works and Government Services Canada / Travaux publics et Services gouvernementaux Canada
Client Service Team for Parks Canada Ontario Region / Équipe des services à la clientèle pour Parcs Canada Région de l'Ontario



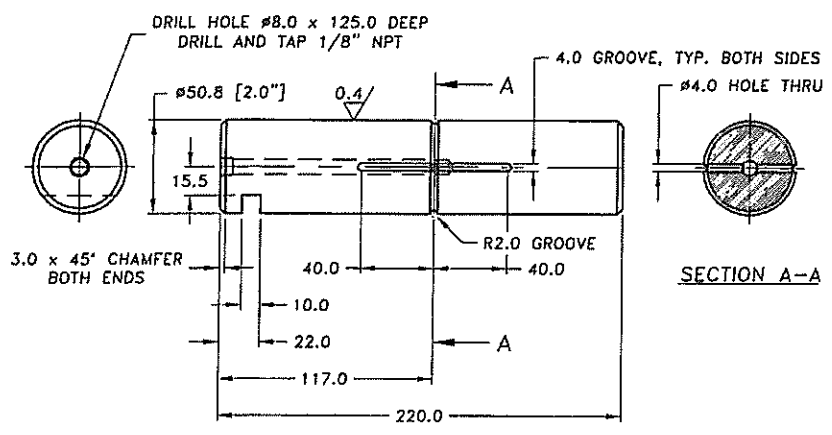
Project title / Titre du projet
KINGSTON MILLS SWING BRIDGE REHABILITATION

RIDEAU CANAL
KINGSTON ONTARIO

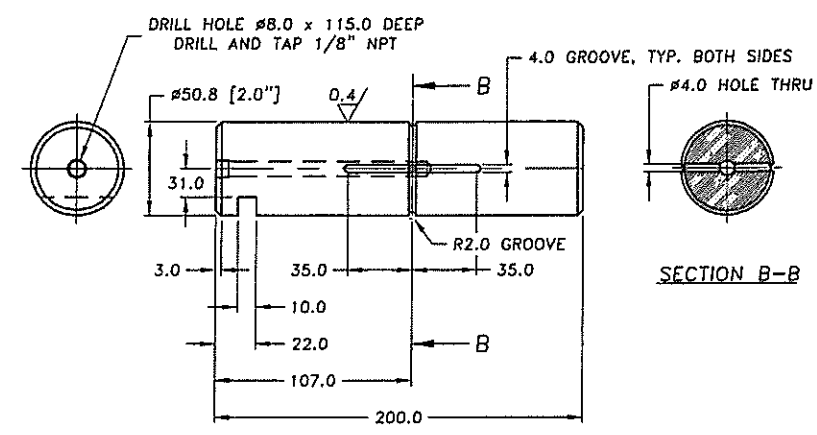
Drawing title / Titre du dessin
WEDGE CYLINDER BASE FRAME WELDMENT

Scale / Echelle	
1:4	
Drawn by / Dessiné par	Date
FJ	APR 2016
Designed by / Conçu par	Date
FJ	
Checked by / Vérifié par	Date
DPC	
Approved by / Approuvé par	Date
DPC	APR 2016

Project No./No. du projet	Client No./No du Client	Sheet No./Feuille No.
3515015	CE 1011-2-032	M032



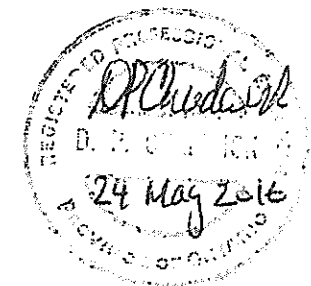
1 PIVOT PIN WEDGE CYL. KNUCKLE
SCALE 1:2



2 PIVOT PIN LINKAGE
SCALE 1:2

BILL OF MATERIAL			
ITEM	QTY	MATERIAL	DESCRIPTION
1			PIVOT PIN WEDGE CYLINDER KNUCKLE
1		1040	PRECISION GROUND SHAFTING 50.8 (2") DIAMETER x 220 LONG
2			PIVOT PIN LINKAGE
1		1040	PRECISION GROUND SHAFTING 50.8 (2") DIAMETER x 200 LONG
3			LEVER WEDGE CYLINDER
3A	2	1020	FLAT BAR 76.2 (3") THICK x 152.4 (6") x 310 LONG
3B	2	1020	PLATE 38.1 (1.5") THICK x 152 x 375
3C	1	1020	PLATE 9.5 (3/8") THICK x 114 x 200
3D	6	S.S. 316	HEX HEAD CAP SCREW 3/4"-10 UNC x 7" LONG
3E	6	S.S. 316	HEX NUT 3/4"-10 UNC
3F	6	S.S. 316	LOCKWASHER 3/4" DIAMETER
4			LEVER LINKAGE
4A	2	1020	FLAT BAR 76.2 (3") THICK x 152.4 (6") x 290 LONG
4B	2	1020	PLATE 38.1 (1.5") THICK x 152 x 230
4C	6	S.S. 316	HEX HEAD CAP SCREW 3/4"-10 UNC x 7" LONG
4D	6	S.S. 316	HEX NUT 3/4"-10 UNC
4E	6	S.S. 316	LOCKWASHER 3/4" DIAMETER
5			KEY PLATE
1		1020	FLAT BAR 9.5 (3/8") THICK x 38.1 (1.5") x 90 LONG

ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE NOTED.



No.	Date	Description	Drawn by	Approved
2	20/05/16	ISSUED FOR TENDER	FJ	DC
1	25/04/16	RELEASED FOR REVIEW	FJ	-

Revision / Révision	
A	Détail number / No. du détail
B	Location / No. / No. sur dessin
C	Drawing sheet no. / No. du dessin

Client Acceptance / Acceptation du client
Signature _____ Date _____
File No./No. de dossier _____

Public Works and Government Services Canada / Travaux publics et Services gouvernementaux Canada
Client Service Team for Parks Canada / Équipe des services à la clientèle pour Parcs Canada Ontario Region / Région de l'Ontario



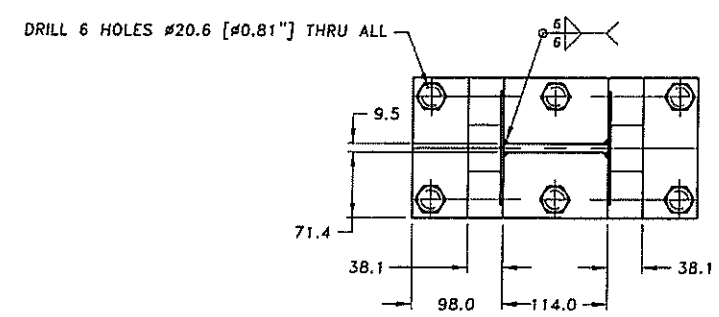
Project title / Titre du projet
KINGSTON MILLS SWING BRIDGE REHABILITATION

RIDEAU CANAL
KINGSTON ONTARIO

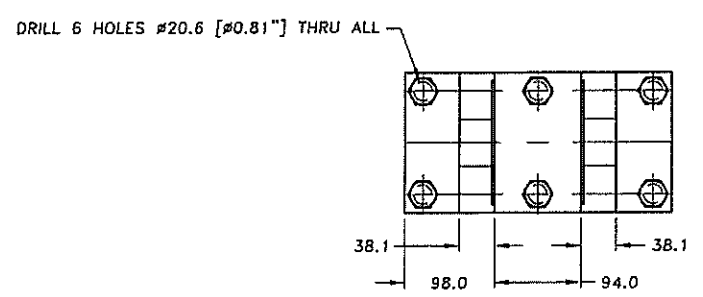
Drawing title / Titre du dessin
WEDGE CYLINDER LEVERS WELDMENT

Scale / Echelle	
1:4	
Drawn by / Dessiné par	Date
FJ	APR 2016
Designed by / Conçu par	Date
FJ	
Checked by / Vérifié par	Date
DPC	
Approved by / Approuvé par	Date
DPC	APR 2016

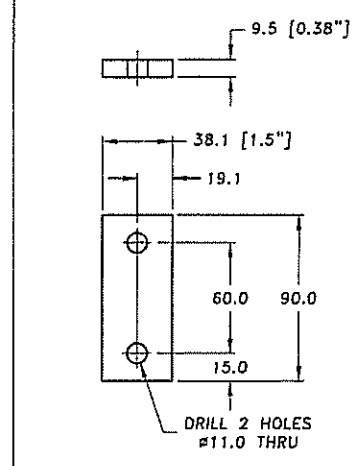
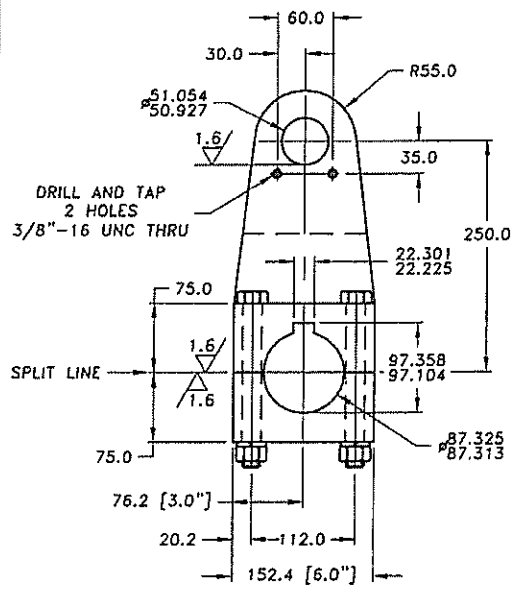
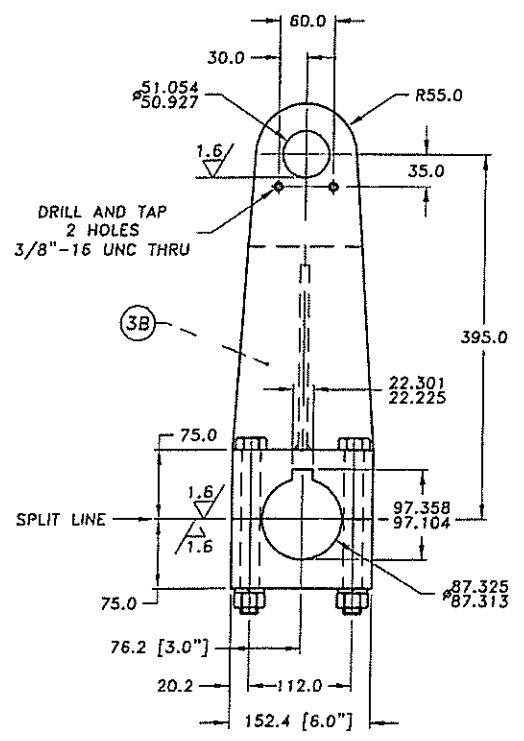
Project No./No. du projet	Client No./No du Client	Sheet No./Feuille No.
3515015	CE 1911-2-033	M033
Drawing Reference No./Numéro de Référence du Dessin		



3 LEVER WEDGE CYLINDER



4 LEVER LINKAGE



5 KEY PLATE
SCALE 1:2

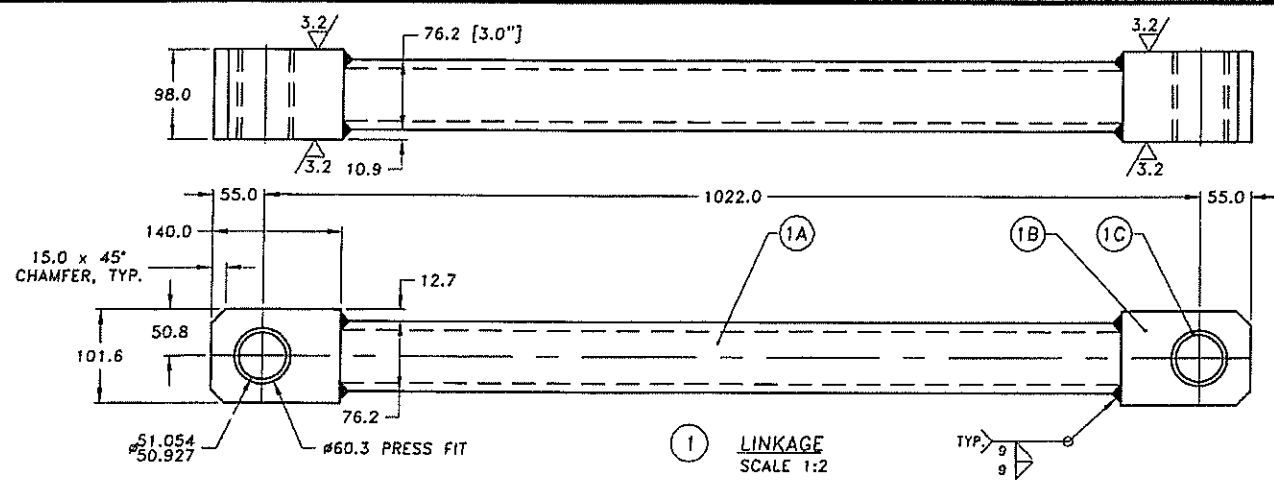
ALL DIMENSIONS IN MILLIMETERS

UNSPECIFIED TOLERANCES:

DECIMAL	±	Value	Value in brackets
X.XXX	±	.05	[.002]
X.XX	±	.25	[.01]
X.X	±	.50	[.02]

REMOVE ALL BURRS AND SHARP EDGES

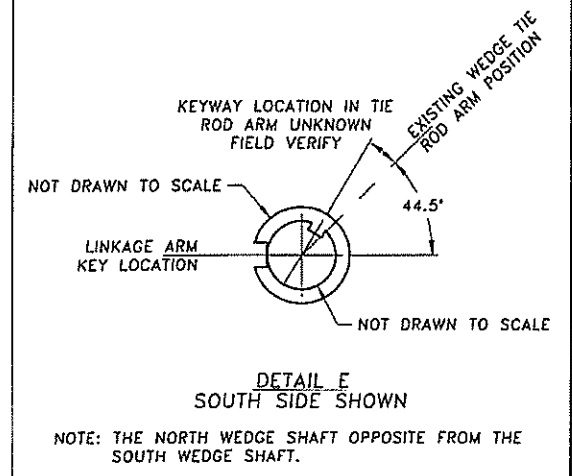
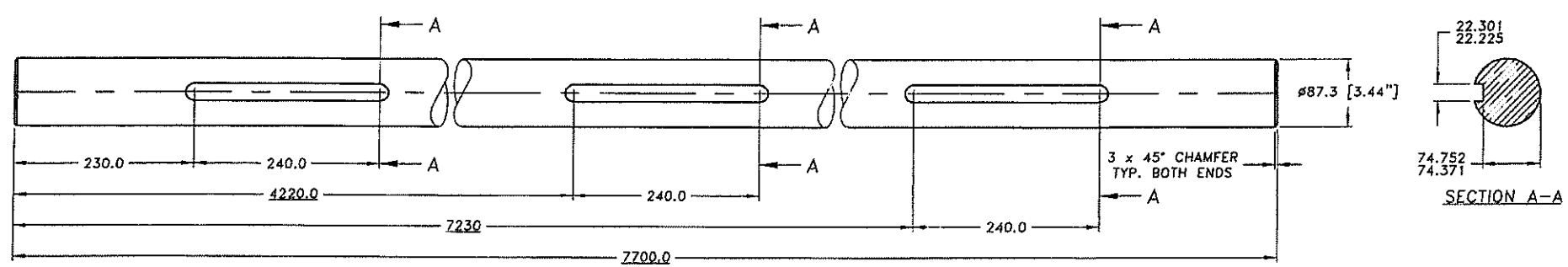
Ra micrometer	Ro micro-inch	Roughness Grade Number
50	2000	N12
25	1000	N11
12.5	500	N10
6.3	250	N9
3.2	125	N8
1.6	63	N7
0.8	32	N6
0.4	16	N5
0.2	8	N4
0.1	4	N3
0.05	2	N2
0.025	1	N1



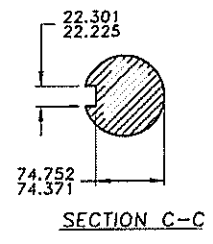
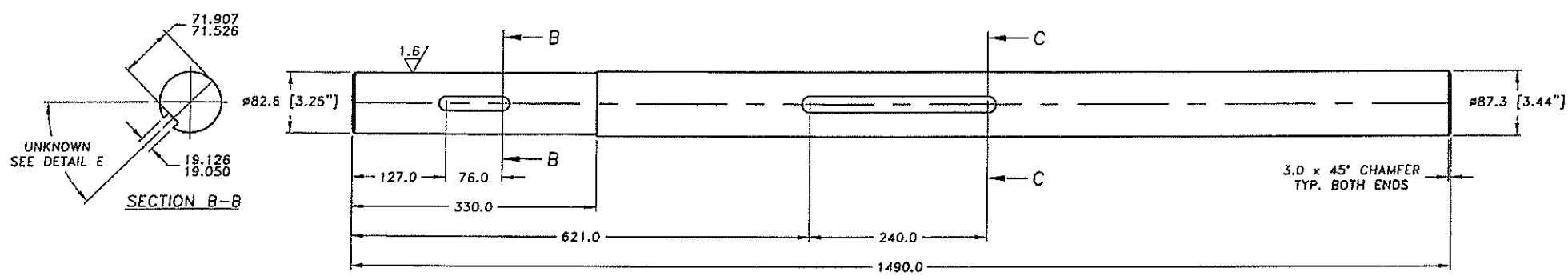
BILL OF MATERIAL			
ITEM	QTY	MATERIAL	DESCRIPTION
1			LINKAGE
1A	1	50W	SQUARE TUBING 76.2 x 76.2 x 9.5 (3" x 3" x 3/8") x 852 LONG
1B	2	1020	SQUARE BAR 101.6 (4") x 140 LONG
1C	2	SAE 660	BRONZE BUSHING 60.3 O.D. x 50.8 I.D. x 1010.6 LG. (2 3/8" O.D. x 2" I.D. x 4" LG.)
2			MAIN SHAFT
1	1	1020	ROUND BAR 87.3 (3 7/16") DIAMETER x 7700 LONG
3			NORTH WEDGE SHAFT
1	1	1020	ROUND BAR 87.3 (3 7/16") DIAMETER x 1490 LONG
4			SOUTH WEDGE SHAFT
1	1	1020	ROUND BAR 87.3 (3 7/16") DIAMETER x 1490 LONG



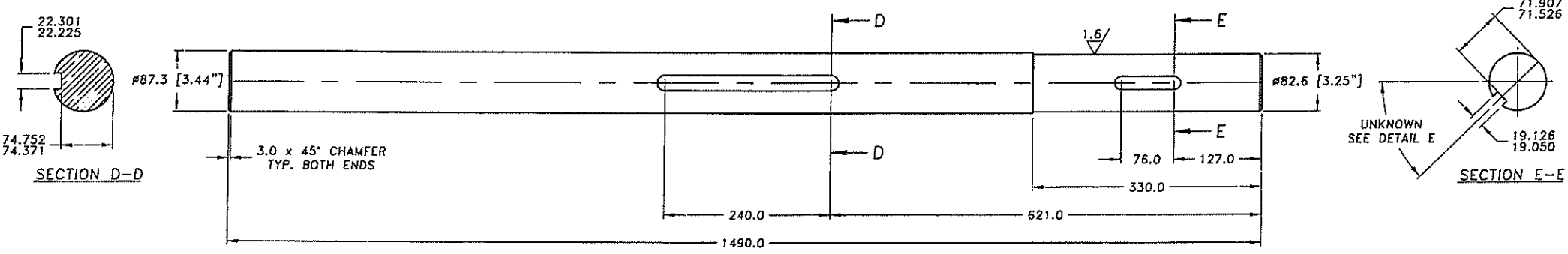
ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE NOTED.



2 MAIN SHAFT



3 NORTH WEDGE SHAFT



ALL DIMENSIONS IN MILLIMETERS
UNSPECIFIED TOLERANCES:
DECIMAL: X.XXX ± .05 [.002]
X.XX ± .25 [.01]
X.X ± .50 [.02]

REMOVE ALL BURRS AND SHARP EDGES

Ra micrometer	Ra micro-inch	Roughness Grade Number
50	2000	N12
25	1000	N11
12.5	500	N10
6.3	250	N9
3.2	125	N8
1.6	63	N7
0.8	32	N6
0.4	16	N5
0.2	8	N4
0.1	4	N3
0.05	2	N2
0.025	1	N1

4 SOUTH WEDGE SHAFT

No	Date	Description	Drawn by / Dessiné par	Approved / Approuvé
2	20/05/16	ISSUED FOR TENDER	FJ	DC
1	23/04/16	RELEASED FOR REVIEW	FJ	-

Client Acceptance / Acceptation du client
Signature _____ Date _____
File No / No de dossier _____

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

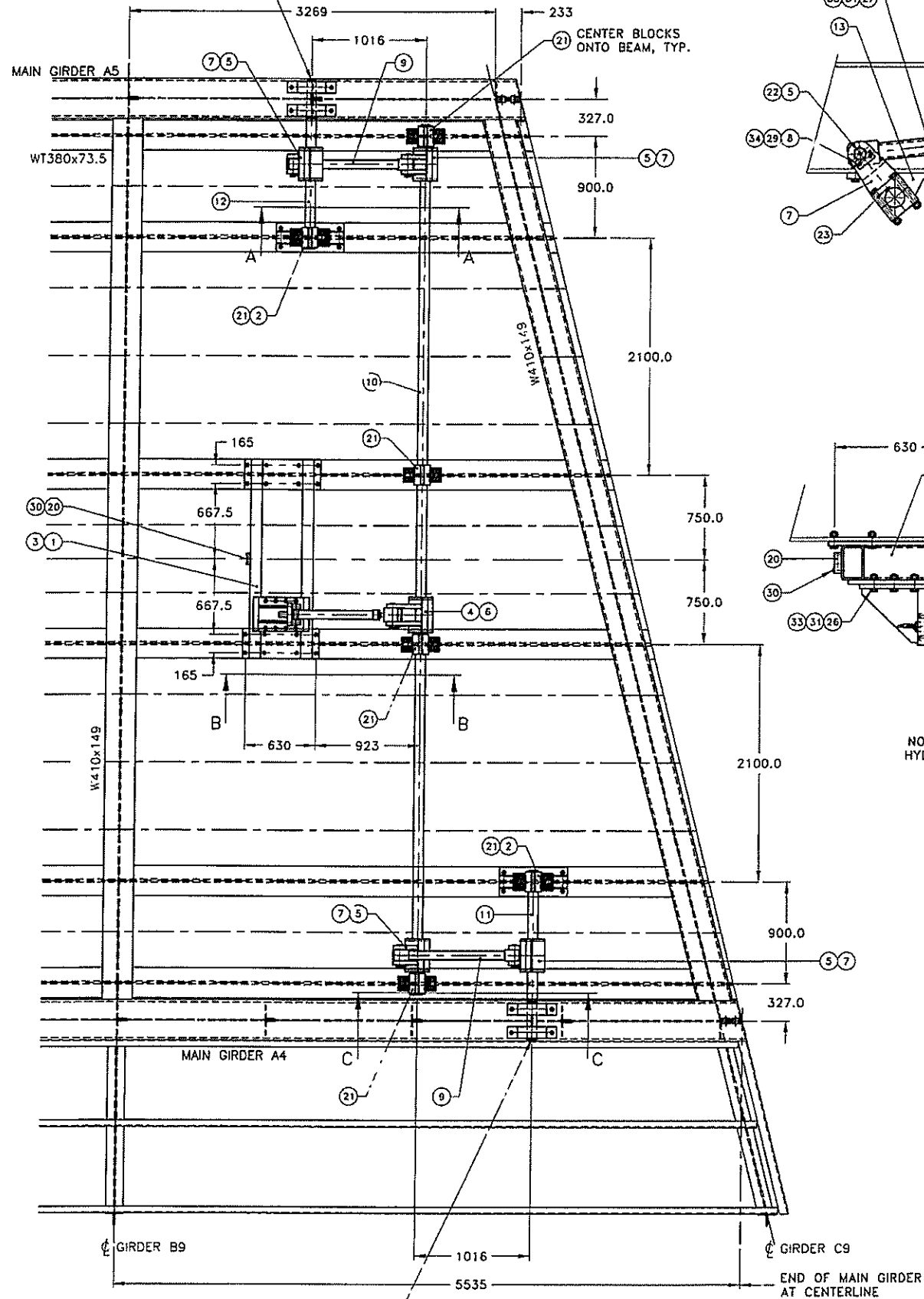
Client Service Team for Parks Canada / Équipe des services à la clientèle pour Parcs Canada Région de l'Ontario

Project title / Titre du projet
KINGSTON MILLS SWING BRIDGE REHABILITATION

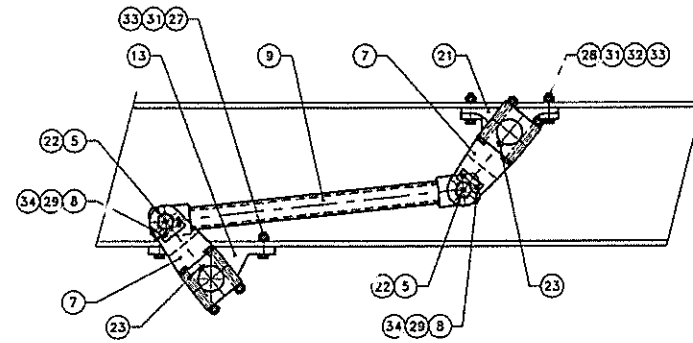
RIDEAU CANAL
KINGSTON ONTARIO

Drawing title / Titre du dessin		
WEDGES LINKAGE AND SHAFTS DETAILS		
Scale / Echelle: 1:4		
Drawn by / Dessiné par: FJ	Date: APR 2016	
Designed by / Conçu par: FJ	Date:	
Checked by / Vérifié par: DPC	Date:	
Approved by / Approuvé par: DPC	Date: APR 2016	
Project No / No. du projet: 3515015	Client No / No du Client: CE 1011-2-034	Sheet No / Feuille No.: M034
Drawing Reference No / Numéro de Référence du Dessin		

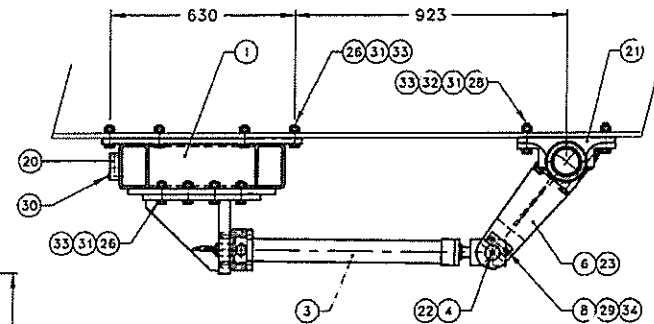
EXISTING LOCATION OF BEARING BLOCKS F7
REUSE COMPLETE WEDGE BLOCK AND
LINKAGE WITH LEVER ARM G8. CHECK AND
IF NEEDED REPLACE BRONZE BUSHING IN F7.



EXISTING LOCATION OF BEARING BLOCKS F7
REUSE COMPLETE WEDGE BLOCKS AND
LINKAGE WITH LEVER ARM G8. CHECK AND
IF NEEDED REPLACE BRONZE BUSHING IN F7
(SEE DWG. 9437 SHEET 7)

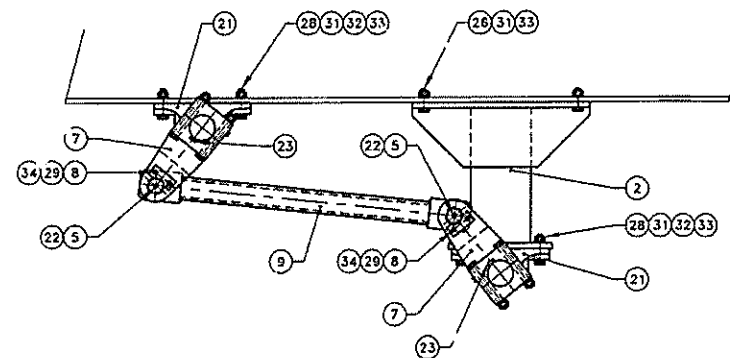


SECTION A-A



SECTION B-B

NOTE: WEDGES IN LOCKED POSITION,
HYDRAULIC CYLINDER 0.5" EXTENDED.



SECTION C-C

BILL OF MATERIAL

ITEM	QTY	MATERIAL	DESCRIPTION
1	1		1911-2-032 ITEM 1 WEDGE CYLINDER BASE FRAME
2	2		1911-2-032 ITEM 2 BEARING STAND-OFF
3	1		1911-2-030 WEDGE CYLINDER ASSEMBLY
4	1		1911-2-033 ITEM 1 PIVOT PIN WEDGE CYLINDER KNUCKLE
5	4		1911-2-033 ITEM 2 PIVOT PIN LINKAGE
6	1		1911-2-033 ITEM 3 LEVER WEDGE CYLINDER
7	4		1911-2-033 ITEM 4 LEVER LINKAGE
8	5		1911-2-033 ITEM 5 KEY PLATE
9	2		1911-2-034 ITEM 1 LINKAGE
10	1		1911-2-034 ITEM 2 MAIN SHAFT
11	1		1911-2-034 ITEM 3 NORTH WEDGE SHAFT
12	1		1911-2-034 ITEM 4 SOUTH WEDGE SHAFT
13	4		9434-7 BEARING F7
14			
15			
16			
17			
18			
19			
20	1	ALUM.	SUN COUNTER BALANCE VALVE SAE-B, P/N XPK
21	6		DODGE BRONZE-BUSHED RIGID SPLIT JOURNAL BEARING 3 7/16" DIAMETER, PART NO. 005085 DESC. P4B-BZR-307
22	5	STEEL	GREASE FITTING 1/8" NPT
23	5	STEEL	KEY STOCK 7/8" SOAURE x 240 mm LONG
24	2	STEEL	KEY STOCK 3/4" SQUARE x 76 mm LONG
25			
26	32	S.S. 316	HEX HEAD CAP SCREW 3/4"-10 UNC x 2 1/2" LONG
27	8	S.S. 316	HEX HEAD CAP SCREW 3/4"-10 UNC x 3" LONG
28	24	S.S. 316	HEX HEAD CAP SCREW 3/4"-10 UNC x 3 1/2" LONG
29	10	S.S. 316	HEX HEAD CAP SCREW 3/8"-16 UNC x 1 1/4" LONG
30	2	S.S. 316	HEX HEAD CAP SCREW 5/16"-18 UNC x 1 3/4" LONG
31	64	S.S. 316	HEX NUT 3/4"-10 UNC
32	24	S.S. 316	FLAT WASHER 3/4" DIAMETER
33	64	S.S. 316	LOCKWASHER 3/4" DIAMETER
34	10	S.S. 316	LOCKWASHER 3/8" DIAMETER
35			



2	20/05/16	ISSUED FOR TENDER	FJ	DC
1	25/04/16	RELEASED FOR REVIEW	FJ	-

No.	Date	Description	Drawn by / Dessiné par	Approved / Approuvé

Client Acceptance / Acceptation du client
Signature _____ Date: _____
File No./N. de dossier _____



Canada

MMM GROUP

Chadwick
Engineering Ltd.

Project title / Titre du projet
**KINGSTON MILLS SWING BRIDGE
REHABILITATION**
RIDEAU CANAL
KINGSTON ONTARIO

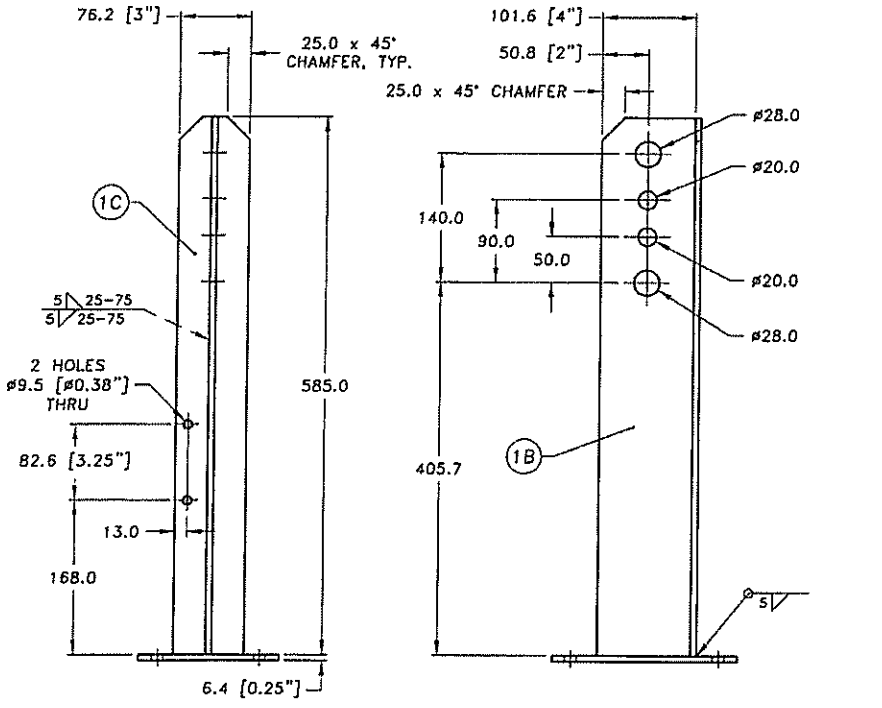
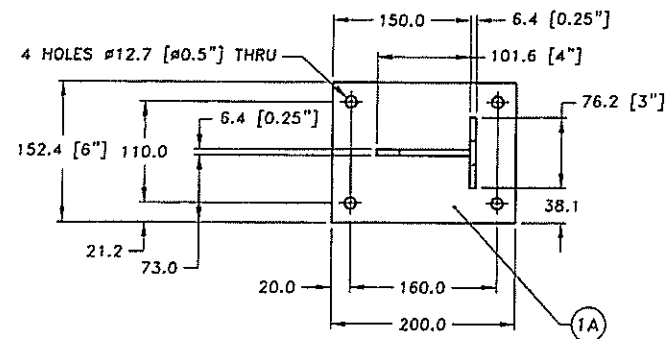
Drawing title / Titre du dessin
**BRIDGE STRUCTURE
WEDGE MECHANISM LAYOUT**

Scale / Echelle
AS SHOWN
Drawn by / Dessiné par: FJ Date: APRIL 2016
Designed by / Conçu par: FJ Date:

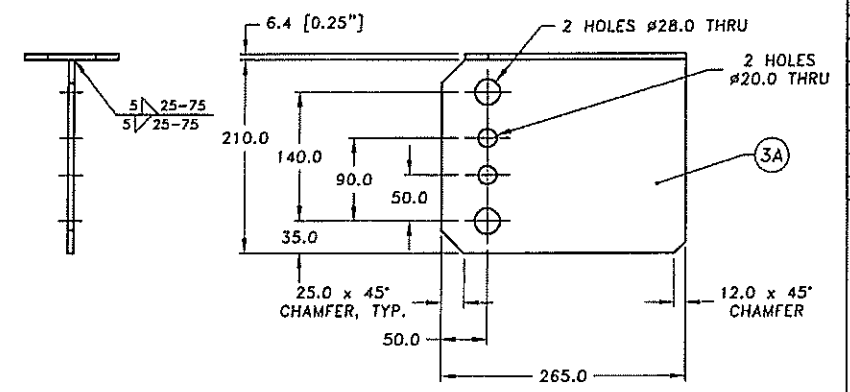
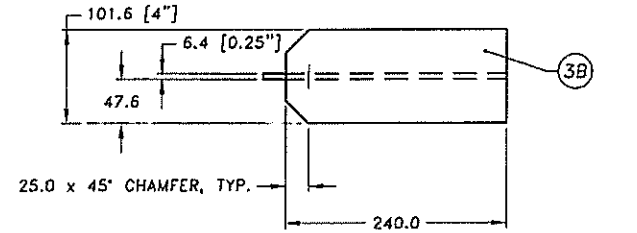
Checked by / Vérifié par: DPC Date:
Approved by / Approuvé par: DPC Date: APR 2016

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Drawing Reference No./Numéro de Référence du Dessin

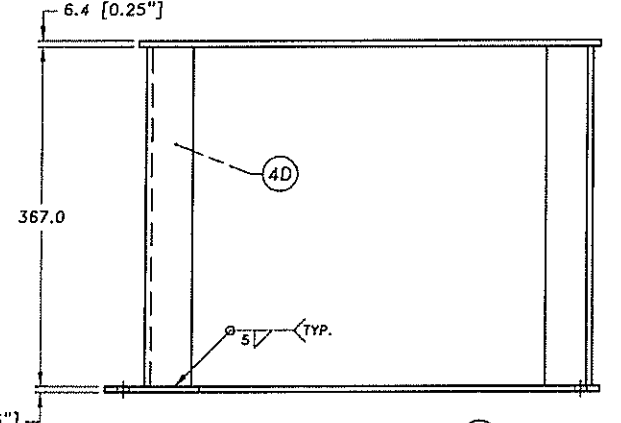
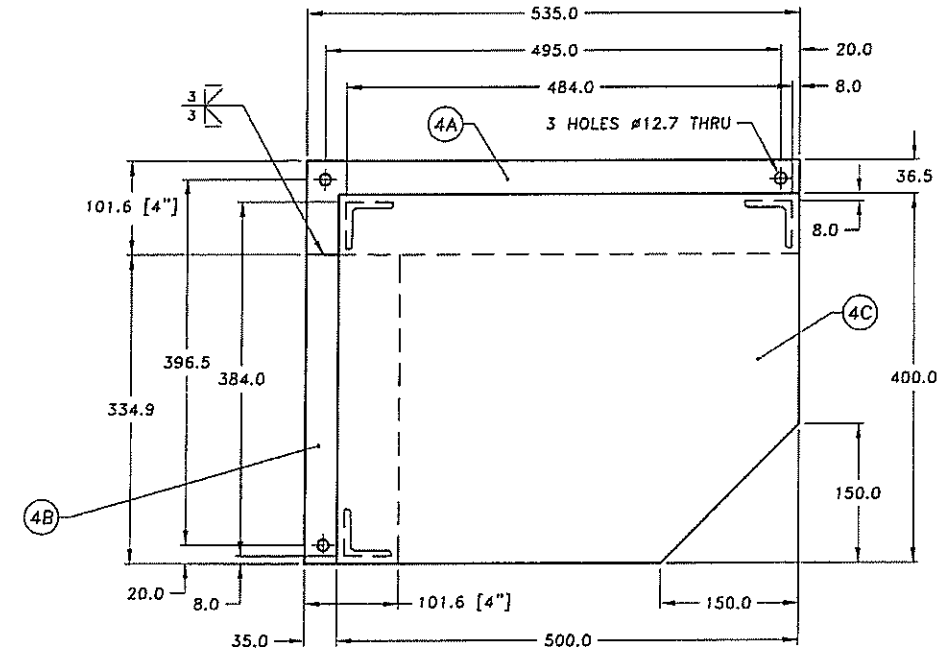
ALL DIMENSIONS IN MILLIMETERS
UNSPECIFIED TOLERANCES:
DECIMAL: X.XXX ± .05 [.002]
 X.XX ± .25 [.01]
 X.X ± .50 [.02]
REMOVE ALL BURRS AND SHARP EDGES



1 FREE STANDING HOSE SUPPORT



3 LOAD GIRDER HOSE SUPPORT



4 HOSE BLOCK SUPPORT

BILL OF MATERIAL			
ITEM	QTY	MATERIAL	DESCRIPTION
1			FREE STANDING HOSE SUPPORT
1A	1	S.S. 316	FLAT BAR 6.4 x 152.4 (1/4" x 6") x 200 LONG
1B	1	S.S. 316	FLAT BAR 6.4 x 101.6 (1/4" x 4") x 585 LONG
1C	1	S.S. 316	FLAT BAR 6.4 x 76.2 (1/4" x 3") x 585 LONG
2			VALVE SUPPORT SWING CYLINDER
2A	1	S.S. 316	FLAT BAR 6.4 x 76.2 (1/4" x 3") x 254 LONG
2B	1	S.S. 316	FLAT BAR 6.4 THICK x 152.4 (1/4" x 6") x 230 LONG
3			LOAD GIRDER HOSE SUPPORT
3A	1	S.S. 316	PLATE 6.4 (1/4") THICK x 210 x 265
3B	1	S.S. 316	FLAT BAR 6.4 x 101.6 (1/4" x 4") x 240 LONG
4			HOSE BLOCK SUPPORT
4A	1	S.S. 316	FLAT BAR 6.4 x 101.6 (1/4" x 4") x 535 LONG
4B	1	S.S. 316	FLAT BAR 6.4 x 101.6 (1/4" x 4") x 335 LONG
4C	1	S.S. 316	PLATE 6.4 (1/4") THICK x 400 x 500
4D	3	S.S. 316	ANGLE 2" x 2" x 1/4" x 367 mm LONG

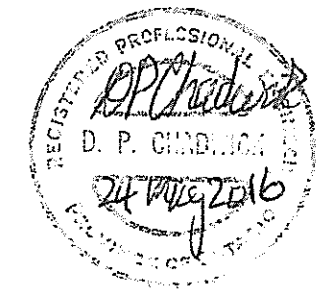
ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE NOTED.

No.	Date	Description	Drawn by	Approved
2	20/05/16	ISSUED FOR TENDER	FJ	DC
1	23/04/16	RELEASED FOR REVIEW	FJ	-

Revision / Révision	
A	A Detail number / No. du détail
B	Location drawing no. / No. sur dessin
C	Drawing sheet no. / No. du dessin

Client Acceptance / Acceptation du client
 Signature _____ Date _____
 File No./No. de dossier _____

Public Works and Government Services Canada / Travaux publics et Services gouvernementaux Canada
 Client Service Team for Parks Canada Ontario Region / Équipe des services à la clientèle pour Parcs Canada Région de l'Ontario



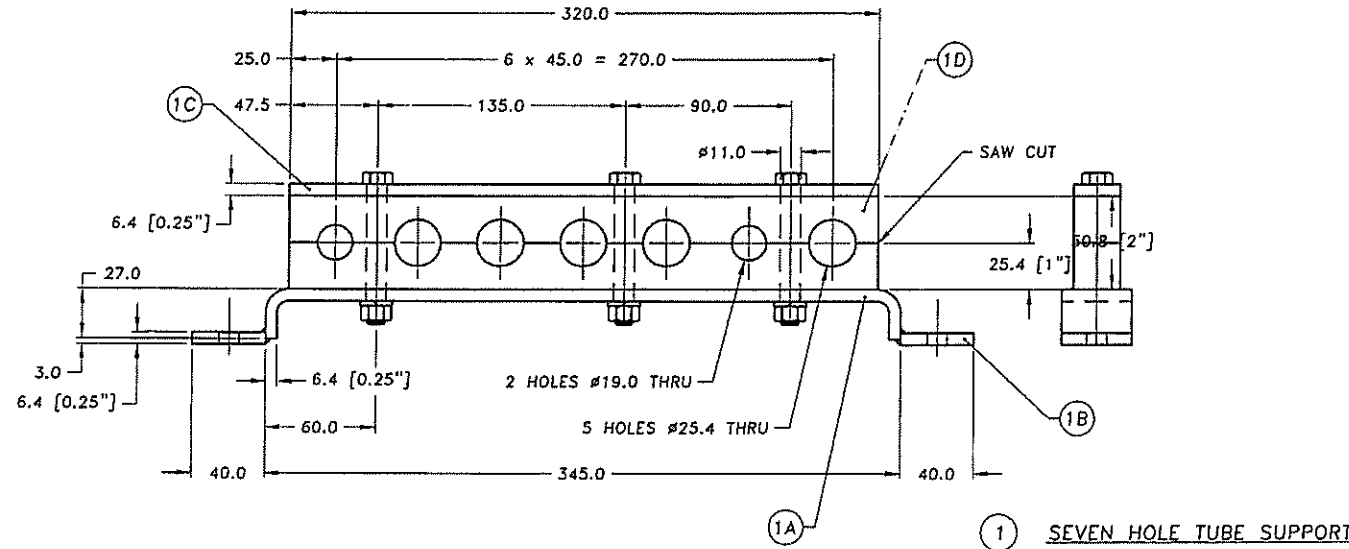
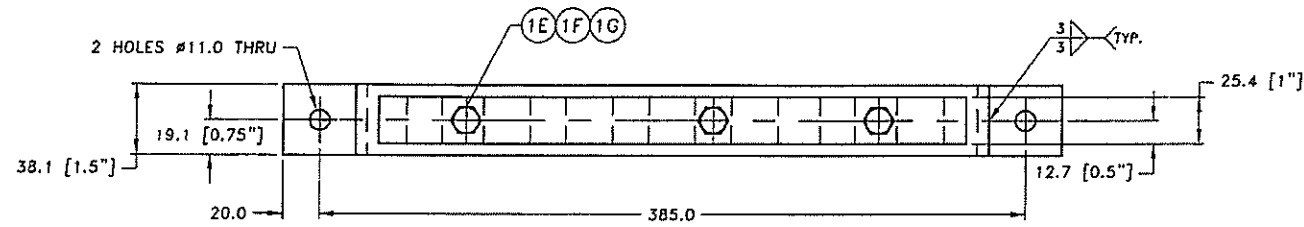
Project title / Titre du projet
KINGSTON MILLS SWING BRIDGE REHABILITATION

RIDEAU CANAL
KINGSTON ONTARIO

Drawing title / Titre du dessin
HYDRAULIC SERVICES SUPPORT BRACKETS DETAILS

ALL DIMENSIONS IN MILLIMETERS		
UNSPECIFIED TOLERANCES:		
DECIMAL:	X.XXX	± .05 [.002]
	X.XX	± .25 [.01]
	X.X	± .50 [.02]
REMOVE ALL BURRS AND SHARP EDGES		
Ra micrometer	Ra micro-inch	Roughness Grade Number
50	2000	N12
25	1000	N11
12.5	500	N10
6.3	250	N9
3.2	125	N8
1.6	63	N7
0.8	32	N6
0.4	16	N5
0.2	8	N4
0.1	4	N3
0.05	2	N2
0.025	1	N1

Scale / Echelle	
1:4	
Drawn by / Dessiné par	Date
FJ	APR 2016
Designed by / Conçu par	Date
FJ	
Checked by / Vérifié par	Date
DPC	
Approved by / Approuvé par	Date
DPC	APR 2016
Project No. / No. du projet	Client No. / No. du Client
3515015	CE 1911-2-037
Drawing Reference No. / Numéro de Référence du Dessin	Sheet No. / Feuille No.
	M037



BILL OF MATERIAL			
ITEM	QTY	MATERIAL	DESCRIPTION
1			SEVEN HOLE TUBE SUPPORT
1A	1	S.S. 316	FLAT BAR 6.4 x 38.1 (1/4" x 1 1/2") x 373 LONG
1B	2	S.S. 316	FLAT BAR 6.4 x 38.1 (1/4" x 1 1/2") x 40 LONG
1C	1	S.S. 316	FLAT BAR 6.4 x 25.4 (1/4" x 1") x 320 LONG
1D	1	UHMW	FLAT BAR 25.4 x 50.8 (1" x 2") x 320 LONG
1E	3	S.S. 316	HEX HEAD CAP SCREW 3/8"-16 UNC x 3" LONG
1F	3	S.S. 316	HEX NUT 3/8"-16 UNC
1G	3	S.S. 316	LOCK WASHER 3/8" DIAMETER
2			FOUR HOLE TUBE SUPPORT
2A	1	S.S. 316	FLAT BAR 6.4 x 38.1 (1/4" x 1 1/2") x 238 LONG
2B	2	S.S. 316	FLAT BAR 6.4 x 38.1 (1/4" x 1 1/2") x 40 LONG
2C	1	S.S. 316	FLAT BAR 6.4 x 25.4 (1/4" x 1") x 185 LONG
2D	1	UHMW	FLAT BAR 25.4 x 50.8 (1" x 2") x 185 LONG
2E	2	S.S. 316	HEX HEAD CAP SCREW 3/8"-16 UNC x 3" LONG
2F	2	S.S. 316	HEX NUT 3/8"-16 UNC
2G	2	S.S. 316	LOCK WASHER 3/8" DIAMETER
3			FOUR HOLE HOSE BLOCK
3A	2	S.S. 316	FLAT BAR 6.4 x 25.4 (1/4" x 1") x 194 LONG
3B	1	UHMW	FLAT BAR 25.4 x 76.2 (1" x 3") x 204 LONG
3C	3	S.S. 316	HEX HEAD CAP SCREW 3/8"-16 UNC x 4" LONG
3D	3	S.S. 316	HEX NUT 3/8"-16 UNC
3E	3	S.S. 316	LOCK WASHER 3/8" DIAMETER

ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE NOTED.

No.	Date	Description	Drawn by	Approved
2	20/05/16	ISSUED FOR TENDER	FJ	DC
1	25/04/16	RELEASED FOR REVIEW	FJ	-

Revision / Révision

A List number
No. du détail
B Location dwg no.
No. sur dessin
C Drawing sheet no.
No. du dessin

Client Acceptance / Acceptation du client
Signature _____ Date _____
File No / No. de dossier _____

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

Client Service Team for Parks Canada Ontario Region
Équipe des services à la clientèle pour Parcs Canada Région de l'Ontario

Canada

MMM GROUP

Chadwick
Engineering Ltd.

Project title / Titre du projet
KINGSTON MILLS SWING BRIDGE REHABILITATION

RIDEAU CANAL
KINGSTON ONTARIO

Drawing title / Titre du dessin
HYDRAULIC SERVICES HOSE SUPPORTS DETAILS

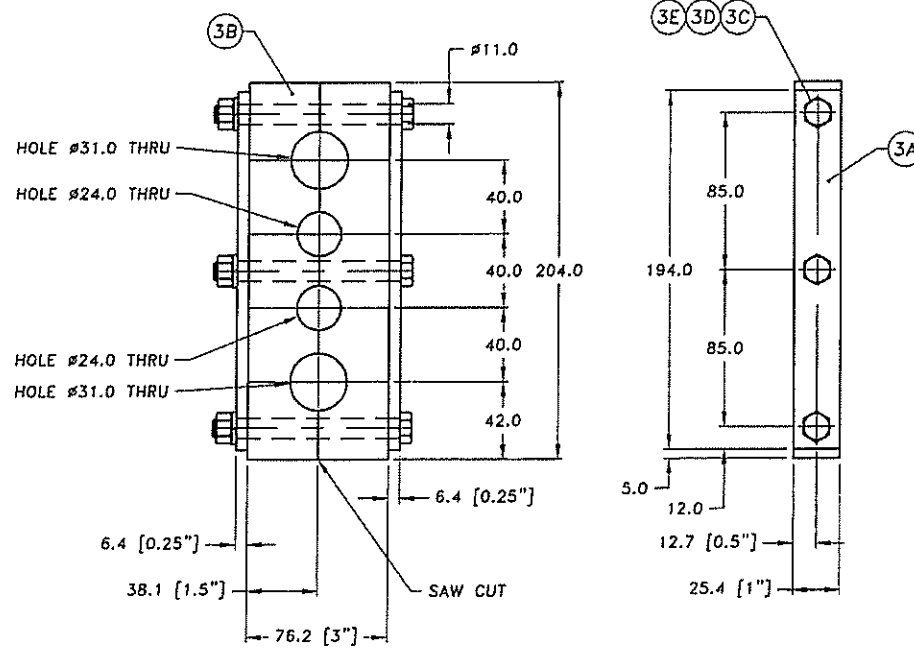
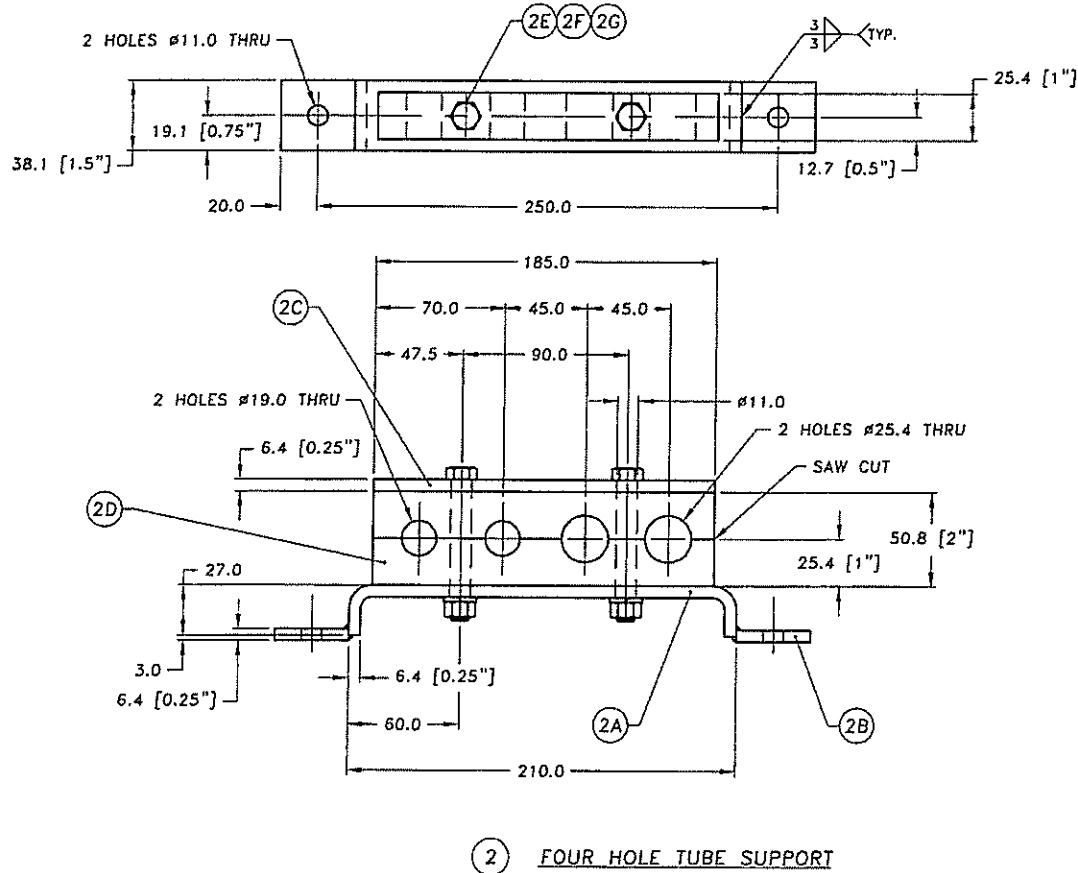
ALL DIMENSIONS IN MILLIMETERS

UNSPECIFIED TOLERANCES:
DECIMAL: X.XXX ± .05 [.002]
X.XX ± .25 [.01]
X.X ± .50 [.02]

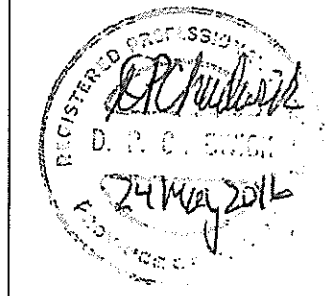
REMOVE ALL BURRS AND SHARP EDGES

Ra micrometer	Ra micro-inch	Roughness Grade Number
50	2000	N12
25	1000	N11
12.5	500	N10
6.3	250	N9
3.2	125	N8
1.6	63	N7
0.8	32	N6
0.4	16	N5
0.2	8	N4
0.1	4	N3
0.05	2	N2
0.025	1	N1

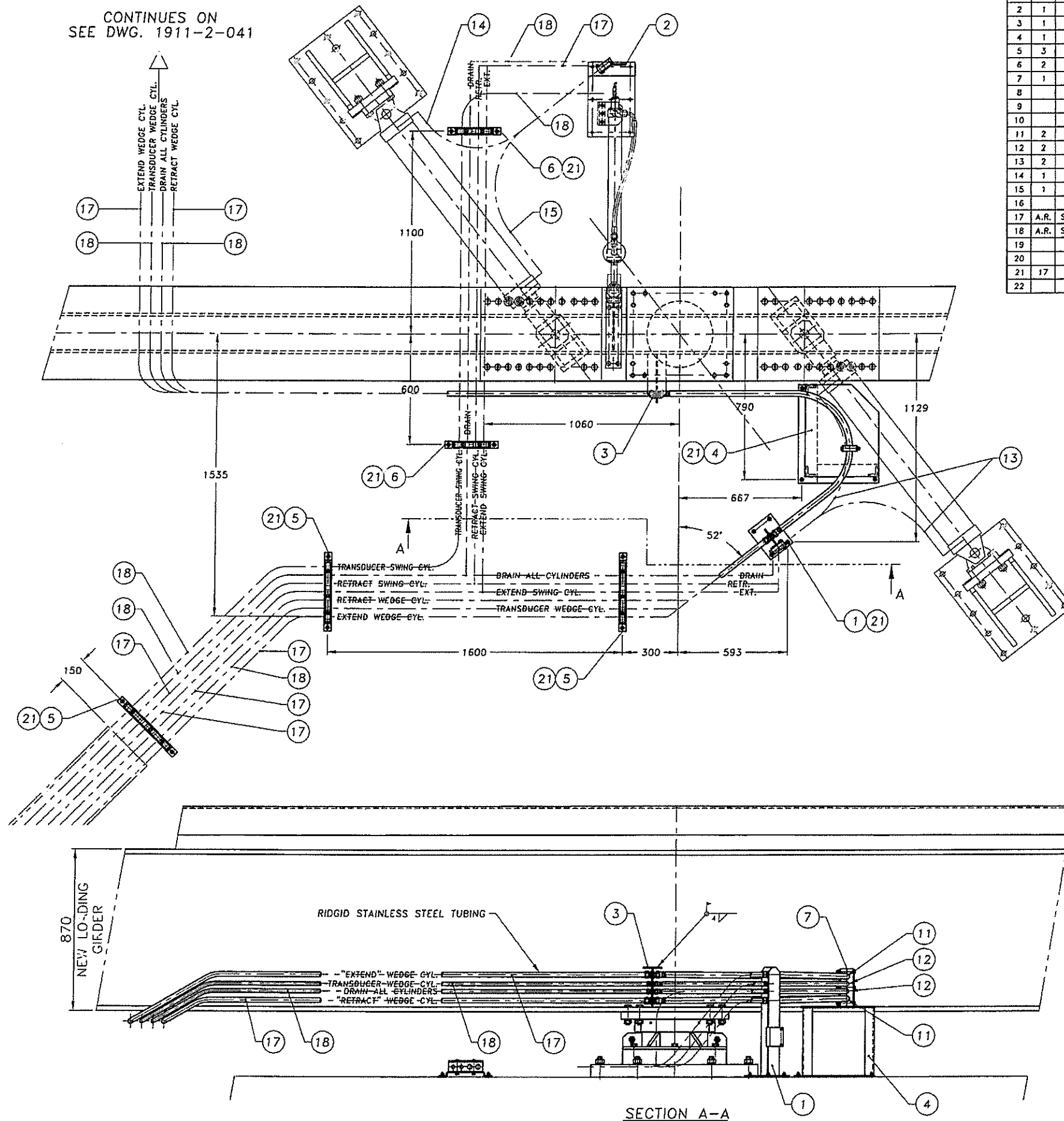
Scale / Echelle	
1:2	
Drawn by / Dessiné par	Date
FJ	APR 2016
Designed by / Conçu par	Date
FL	
Checked by / Vérifié par	Date
DPC	
Approved by / Approuvé par	Date
DPC	APR 2016
Project No / No. du projet	Client No./No. du Client
3515015	CE 1911-2-038
Drawing Reference No./Numéro de Référence du Dessin	Sheet No./Feuille No.
	M038



3 FOUR HOLE HOSE BLOCK



CONTINUES ON
SEE DWG. 1911-2-041



BILL OF MATERIAL			
ITEM	QTY	MATERIAL	DESCRIPTION
1	1		1911-2-037 ITEM 1 FREE STANDING HOSE SUPPORT
2	1		1911-2-037 ITEM 2 VALVE SUPPORT SWING CYLINDER
3	1		1911-2-037 ITEM 3 LOAD GIRDER HOSE SUPPORT
4	1		1911-2-037 ITEM 4 HOSE BLOCK SUPPORT
5	3		1911-2-038 ITEM 1 SEVEN HOLE TUBE SUPPORT
6	2		1911-2-038 ITEM 2 FOUR HOLE TUBE SUPPORT
7	1		1911-2-038 ITEM 3 FOUR HOLE HOSE BLOCK
8			
9			
10			
11	2	100R12	HYDRAULIC HOSE ASSEMBLY 3/4" I.D. x 1850 mm LONG
12	2	100R12	HYDRAULIC HOSE ASSEMBLY 1/2" I.D. x 1850 mm LONG
13	2	100R12	HYDRAULIC HOSE ASSEMBLY 3/4" I.D. x 1000 mm LONG
14	1	100R12	HYDRAULIC HOSE ASSEMBLY 3/4" I.D. x 1200 mm LONG
15	1	100R12	HYDRAULIC HOSE ASSEMBLY 3/4" I.D. x 1400 mm LONG
16			
17	A.R.	S.S. 316	HYDRAULIC TUBING 1" O.D. x 0.109" WALL
18	A.R.	S.S. 316	HYDRAULIC TUBING 3/4" O.D. x 0.083" WALL
19			
20			
21	17	ST.	CONCRETE ANCHOR 3/8" DIAMETER C/W HEX NUT AND WASHER
22			

NOTES:
- ALL HOSES TO BE 100R12
- ALL HOSE FITTING STAINLESS STEEL 316
- ALL TUBING STAINLESS STEEL 316

No	Date	Description	Drawn by	Approved
2	20/05/16	ISSUED FOR TENDER	FJ	DC
1	25/04/16	RELEASED FOR REVIEW	FJ	-

Revision / Révision	
A	Detail number No. du détail
B	Location dwg. no. No. sur dessin
C	Drawing sheet no. No. du dessin

Client Acceptance / Acceptation du client
Signature _____ Date _____
File No / No. de dossier _____

Public Works and Government Services Canada
Travaux publics et Services gouvernementaux Canada
Client Service Team for Parks Canada Ontario Region
Equipe des services à la clientèle pour Parc Canada Région de l'Ontario

Canada

MMM GROUP

Chadwick
Engineering Ltd.

Project title / Titre du projet
KINGSTON MILLS SWING BRIDGE REHABILITATION
RIDEAU CANAL
KINGSTON ONTARIO

Drawing title / Titre du dessin
HYDRAULICS SWING CYLINDERS TUBE AND HOSE LAYOUT

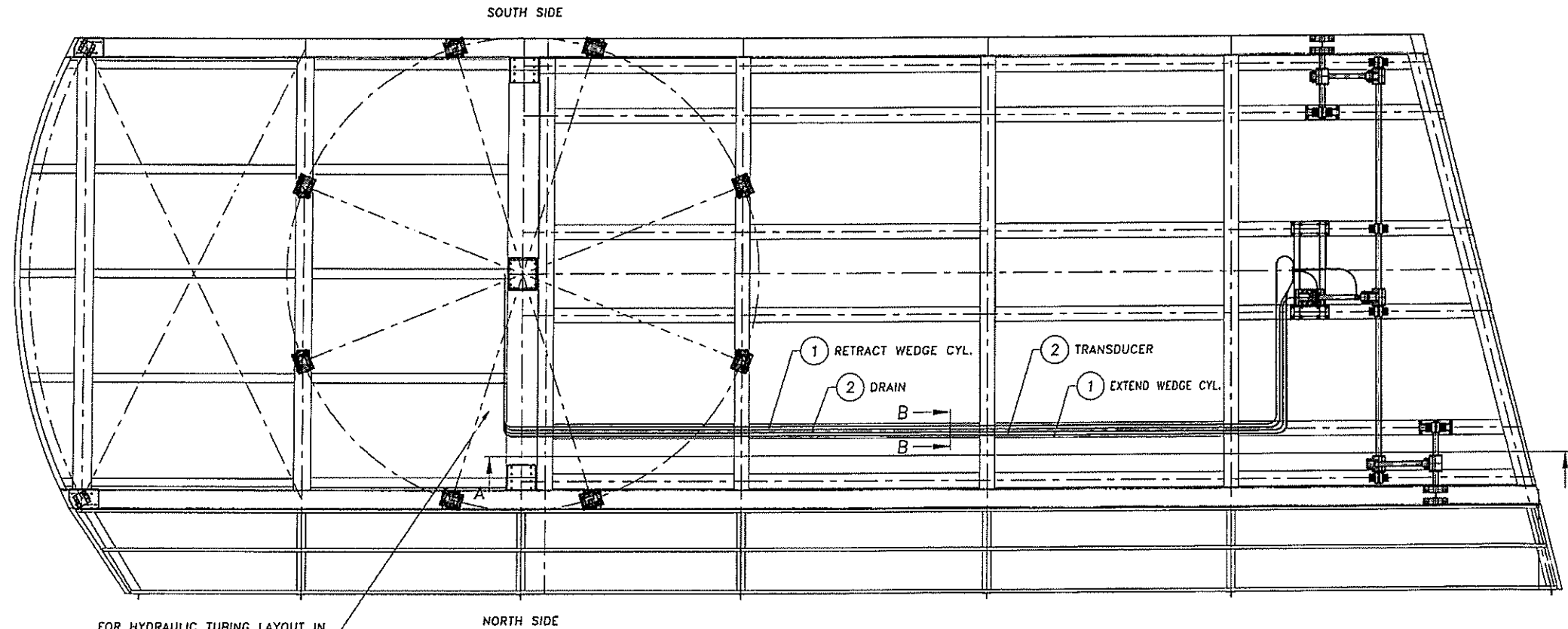
Scale / Echelle
1:12
Drawn by / Dessiné par
FJ APRIL 2016
Designed by / Conçu par
FJ
Checked by / Vérifié par
OPC
Approved by / Approuvé par
OPC APR 2016

Project No / No. du projet
3515015
Client No / No du Client
1911-2-039
Sheet No / Feuille No.
M039



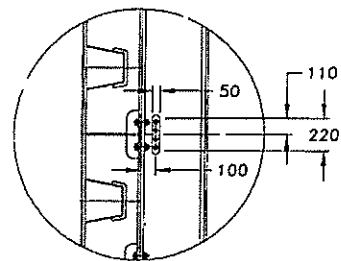
BILL OF MATERIAL			
ITEM	QTY	MATERIAL	DESCRIPTION
1	A.R.	S.S. 316	HYDRAULIC TUBING 1" O.D. x 0.109" WALL
2	A.R.	S.S. 316	HYDRAULIC TUBING 3/4" O.D. x 0.083 WALL

- NOTES:
- ALL HOSES TO BE 100R12
 - ALL HOSE FITTING STAINLESS STEEL 316
 - ALL TUBING STAINLESS STEEL 316
 - READ THIS DRAWING IN CONJUNCTION WITH DRAWING 1911-2-039

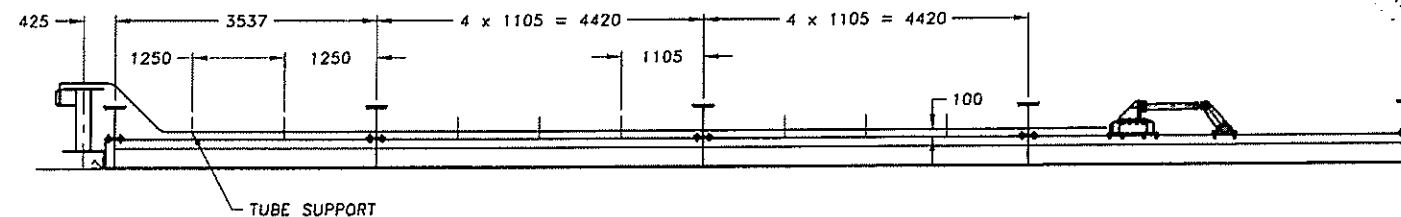


FOR HYDRAULIC TUBING LAYOUT IN THIS AREA SEE DWG. 1911-2-039

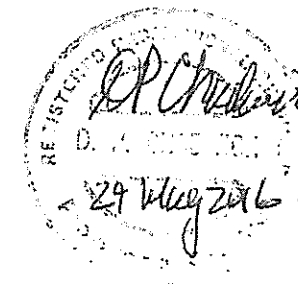
BOTTOM VIEW BRIDGE FRAME



SECTION B-B



SECTION A-A



No.	Date	Description	Drawn by / Dessiné par	Approved / Approuvé
2	20/05/16	ISSUED FOR TENDER	FJ	DC
1	25/04/16	RELEASED FOR REVIEW	FJ	-

Revision / Révision	
A	A Lettill number / No. du détail
B	B Location dwg. no. / No. sur dessin
C	C Drawing sheet no. / No. du dessin

Client Acceptance / Acceptation du client
 Signature _____ Date _____
 File No / No. de dossier _____

Public Works and
 Government Services
 Canada
 Travaux publics et
 Services gouvernementaux
 Canada
 Client Service Team
 for Parks Canada
 Ontario Region
 Équipe des services à la
 clientèle pour Parcs Canada
 Région de l'Ontario

Canada

MMM GROUP

Chadwick
 Engineering Ltd.

Project title / Titre du projet
**KINGSTON MILLS SWING BRIDGE
 REHABILITATION**

RIDEAU CANAL
 KINGSTON ONTARIO

Drawing title / Titre du dessin
**UNDERSIDE BRIDGE ARRANGEM'T
 HYDRAULIC HOSE LAYOUT
 WEDGE CYLINDER**

Scale / Echelle
 NOT TO SCALE

Drawn by / Dessiné par
 FJ Date
 APRIL 2016

Designed by / Conçu par
 FJ Date

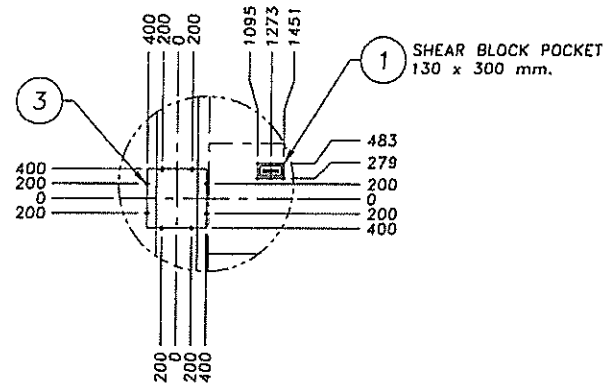
Checked by / Vérifié par
 DPC Date

Approved by / Approuvé par
 DPC Date
 APR 2016

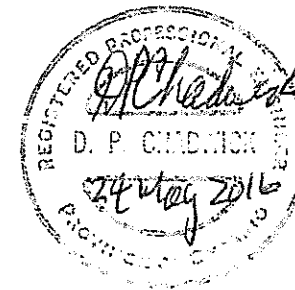
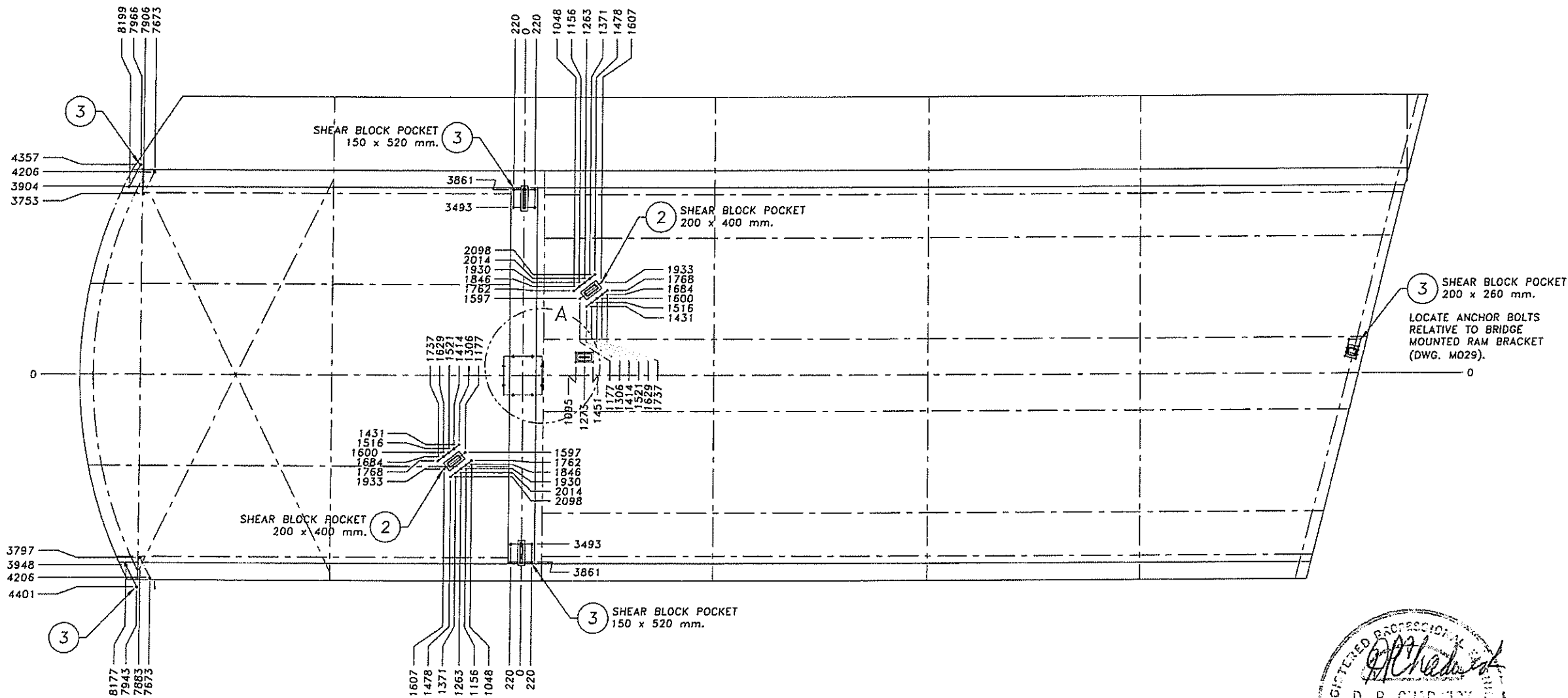
Project No / No. du projet 3515015	Client No. / No. du Client CE 1911-2-041	Sheet No. / Feuille No. M041
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BILL OF MATERIAL			
ITEM	QTY	MATERIAL	DESCRIPTION
1	6	A193-B7	HILTI INJECTABLE ADHESIVE ANCHOR HIT-HY 200-R, 5/8 x 7 5/8
2	33	A193-B7	HILTI INJECTABLE ADHESIVE ANCHOR HIT-HY 200-R, 1 x 16
3	30	A193-B7	HILTI INJECTABLE ADHESIVE ANCHOR HIT-HY 200-R, 1 1/4 x 16

NOTE:
SHIMS USED TO SET ELEVATION OF BASE PLATES SHALL BE STAINLESS STEEL UNLESS RECESSED TO PROVIDE A MINIMUM OF 25 mm GROUT COVER.



DETAIL A



2	20/05/16	ISSUED FOR TENDER	FJ	DC
1	23/04/16	RELEASED FOR REVIEW	FJ	-
No	Date	Description	Drawn by Dessiné par	Approved Approuvé
Revision / Révision				
A	Detail number No. du détail		A	
B	Location drawing No. sur dessin		B	
C	Drawing sheet no. No. du dessin		C	

Client Acceptance / Acceptation du client
Signature _____ Date _____
File No / No de dossier _____

Public Works and Government Services Canada / Travaux publics et Services gouvernementaux Canada
Client Service Team for Paris Canada Ontario Region / Equipe des services à la clientèle pour Paris Canada Région de l'Ontario

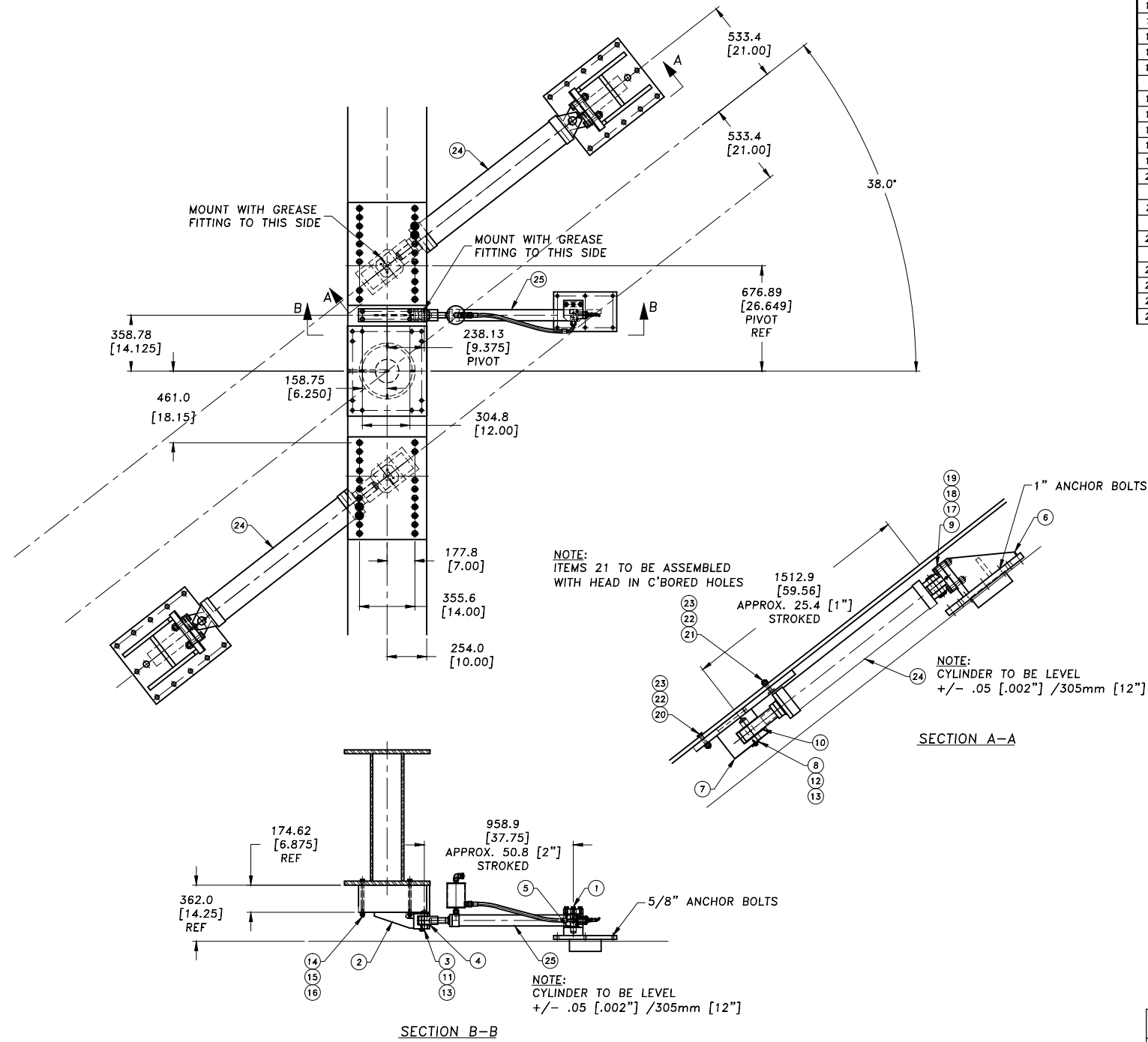


Project title / Titre du projet
KINGSTON MILLS SWING BRIDGE REHABILITATION
RIDEAU CANAL
KINGSTON ONTARIO

Drawing title / Titre du dessin
ANCHOR BOLT LAYOUT

Scale / Echelle	
NOT TO SCALE	
Drawn by/ Dessiné par	Date
FJ	APRIL 2016
Designed by/ Conçu par	Date
FJ	
Checked by/ Vérifié par	Date
DPC	
Approved by / Approuvé par	Date
DPC	APR 2016

Project No / No. du projet	Client No. / No du Client	Sheet No. / Feuille No.
3515015	CE 1911-2-042	M042
Drawing Reference No - Numéro de Référence du Dessin		



BILL OF MATERIAL			
ITEM	QTY	MATERIAL	DESCRIPTION
1	1		1911-2-101 SLAVE CYLINDER PIER BRACKET
2	1		1911-2-104 SLAVE CYLINDER LOAD GIRDER BRACKET
3	1		1911-2-106, ITEM 1 PIVOT PIN
4	1		1911-2-106, ITEM 3 WASHER (3.2mm, 1/8")
5	1		1911-2-106, ITEM 4 WASHER (6.35mm, 1/4")
6	1		1911-2-108 SWING CYLINDER PIER BRACKET
7	1		1911-2-110 SWING CYLINDER LOAD GIRDER BRACKET
8	1		1911-2-111, ITEM 1 PIVOT PIN
9	1		1911-2-111, ITEM 3 MODIFIED EYE BRACKET
10	1		1911-2-111, ITEM 4 WASHER (3.2mm, 1/8")
11	2	316 S.S.	3/8-16 UNC x 7/8" LG. HEX HD CAP SCREW
12	4	316 S.S.	3/8-16 UNC x 1" LG. HEX HD CAP SCREW
13	6	316 S.S.	3/8" LOCKWASHER
14	4	316 S.S.	5/8-11 UNC x 9" LG. HEX HD CAP SCREW (McMASTER-CARR #92186A830 OR EQUIV.)
15	4	316 S.S.	5/8-11 UNC HEX NUT
16	4	316 S.S.	5/8" LOCKWASHER
17	8	316 S.S.	1-8 UNC x 4 1/2" LG. HEX HD CAP SCREW
18	8	316 S.S.	1-8 UNC HEX NUT
19	8	316 S.S.	1" LOCKWASHER
20	36	A325	3/4-10 UNC x 3 3/4" LG. HEAVY HEX HD STRUCTURAL BOLT* (McMASTER-CARR #91583A187 OR EQUIV.)
21	4	A325	3/4-10 UNC x 3 1/4" LG. HEAVY HEX HD STRUCTURAL BOLT* (McMASTER-CARR #91583A181 OR EQUIV.)
22	40	A194	3/4-10 UNC EXTRA WIDE HEX NUT* (McMASTER-CARR #95025A415 OR EQUIV.)
23	40	STEEL	3/4" SPLIT LOCK WASHER* (McMASTER-CARR #95160A250 OR EQUIV.)
24	2		1911-2-112 SWING CYLINDER ASSEMBLY
25	1		1911-2-113 SLAVE CYLINDER ASSEMBLY
26	-		-

NOTE:
ALL ITEMS WITH * ARE TO BE HOT DIPPED GALVANIZED

No.	Date	Description	Drawn by	Approved
1	25/04/16	RELEASED FOR REVIEW	RR	-

Revision / Révision

A	A Detail number No. du détail	A
B	B Location dwg. no. No. sur dessin	B C
C	C Drawing sheet no. No. du dessin	

Client Acceptance / Acceptation du client
Signature _____ Date _____
File No./No. de dossier _____

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

Client Service Team for Parks Canada / Équipe des services à la clientèle pour Parcs Canada Région de l'Ontario

Project title / Titre du projet
KINGSTON MILLS SWING BRIDGE REHABILITATION

RIDEAU CANAL

KINGSTON **ONTARIO**

Drawing title / Titre du dessin
SWING & SLAVE CYLINDER ASSEMBLY

Ra micrometer	Ra micro-inch	Roughness Grade Number
50	2000	N12
25	1000	N11
12.5	500	N10
6.3	250	N9
3.2	125	N8
1.6	63	N7
0.8	32	N6
0.4	16	N5
0.2	8	N4
0.1	4	N3
0.05	2	N2
0.025	1	N1

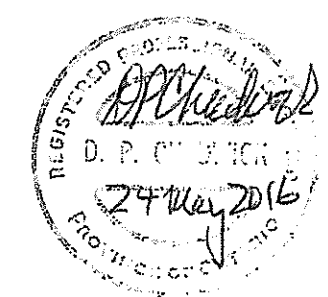
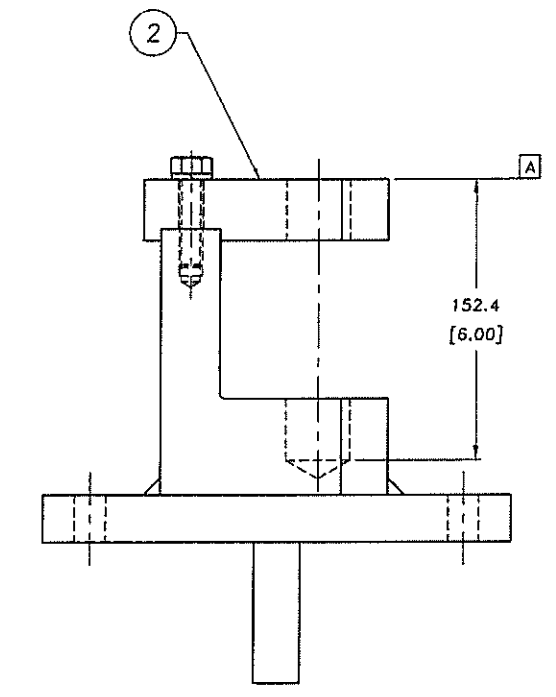
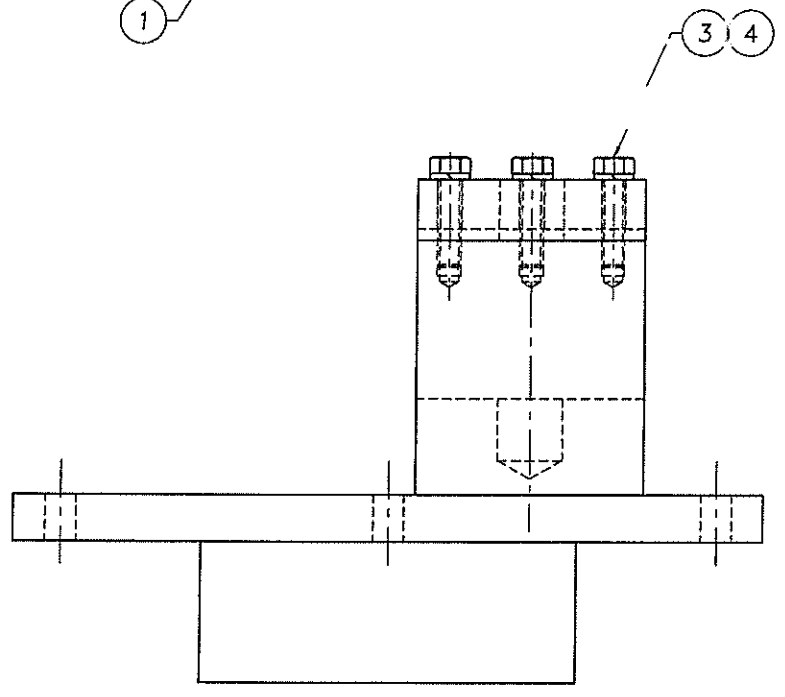
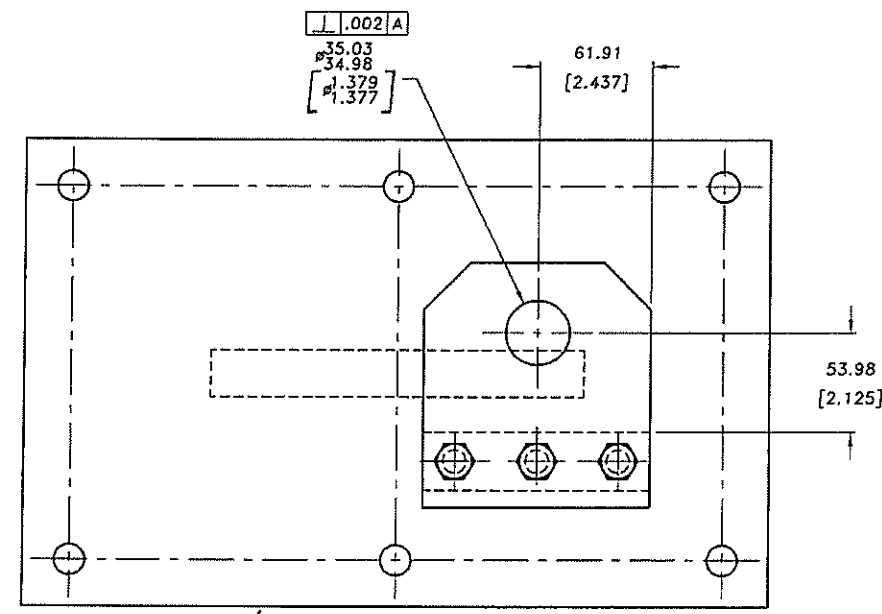
ALL DIMENSIONS IN MILLIMETERS

UNSPECIFIED TOLERANCES:
DECIMAL: X.XXX ± .05 [.002]
 X.XX ± .25 [.01]
 X.X ± .50 [.02]

REMOVE ALL BURRS AND SHARP EDGES

Scale / Échelle 1:8		
Drawn by/ Dessiné par	Date	
RR	MARCH 2016	
Designed by/ Conçu par	Date	
RR		
Checked by/ Vérifié par	Date	
DPC		
Approved by / Approuvé par	Date	
DPC	APR 2016	
Project No./No. du projet 3515015	Client No./No du Client 1911-2-100	Sheet No./ Feuille No.
Drawing Reference No./Numéro de Référence du Dessin		M100

BILL OF MATERIAL			
ITEM	QTY	MATERIAL	DESCRIPTION
1	1		1911-2-102 SLAVE CYLINDER PIER BRACKET BASE
2	1		1911-2-103 SLAVE CYLINDER PIER BRACKET TOP PLATE
3	3	S.S.	1/2-13 UNC x 2" LG. HEX HD CAP SCREW
4	3	S.S.	1/2" LOCKWASHER



ALL DIMENSIONS IN MILLIMETERS

UNSPECIFIED TOLERANCES:

DECIMAL: X.XXX ± .05 [.002]
 X.XX ± .25 [.01]
 X.X ± .50 [.02]

REMOVE ALL BURRS AND SHARP EDGES

Ra micrometer	Ra micro-inch	Roughness Grade Number
50	2000	N12
25	1000	N11
12.5	500	N10
6.3	250	N9
3.2	125	N8
1.6	63	N7
0.8	32	N6
0.4	16	N5
0.2	8	N4
0.1	4	N3
0.05	2	N2
0.025	1	N1

No.	Date	Description	Drawn by	Approved
2	29/05/16	ISSUED FOR TENDER	FJ	DC
1	25/04/16	RELEASED FOR REVIEW	RR	-

Revision / Révision

A Detail number No. du détail
 B Location dwg. no. No. sur dessin
 C Drawing sheet no. No. du dessin

Client Acceptance / Acceptation du client
 Signature _____ Date _____
 File No./No. de dossier _____

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

Client Service Team for Parks Canada / Équipe des services à la clientèle pour Parcs Canada Région de l'Ontario

Canada

MMM GROUP

Chadwick Engineering Ltd.

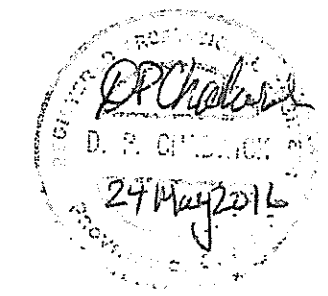
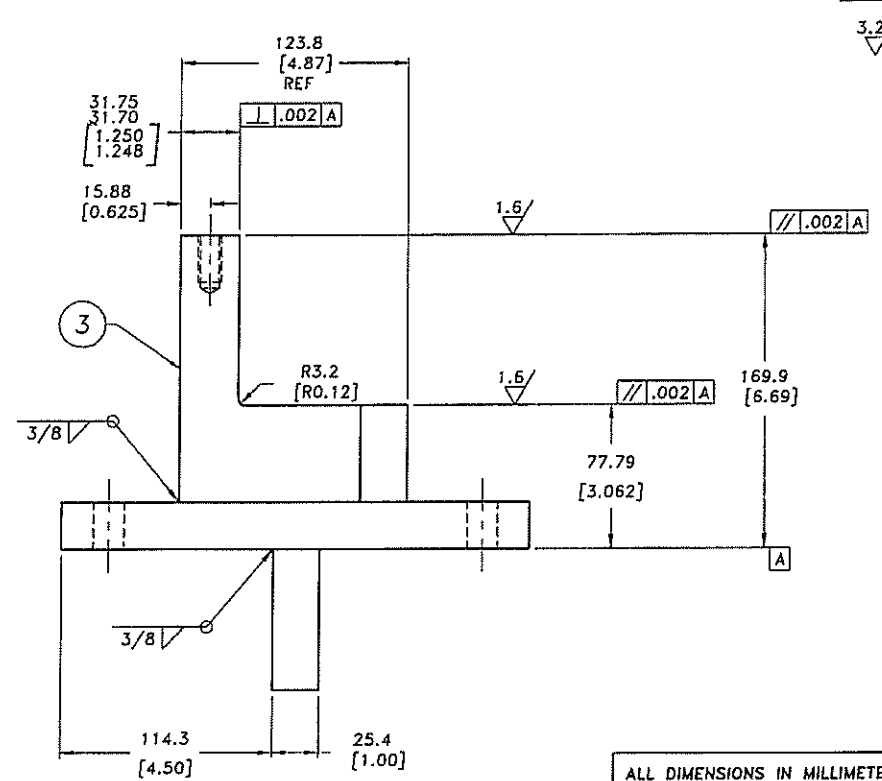
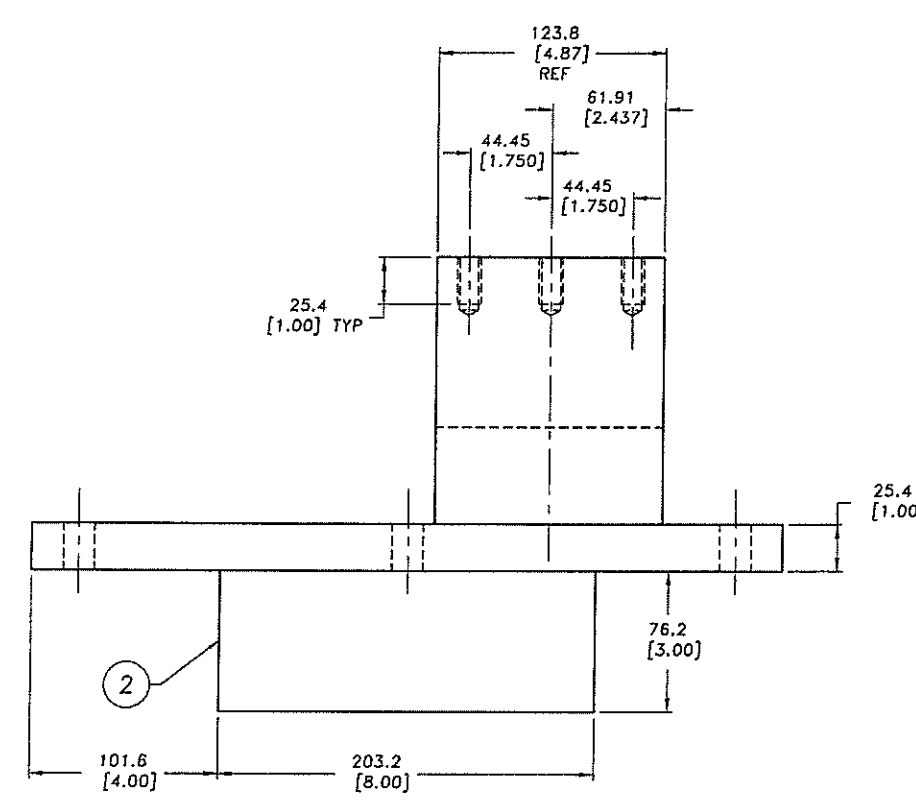
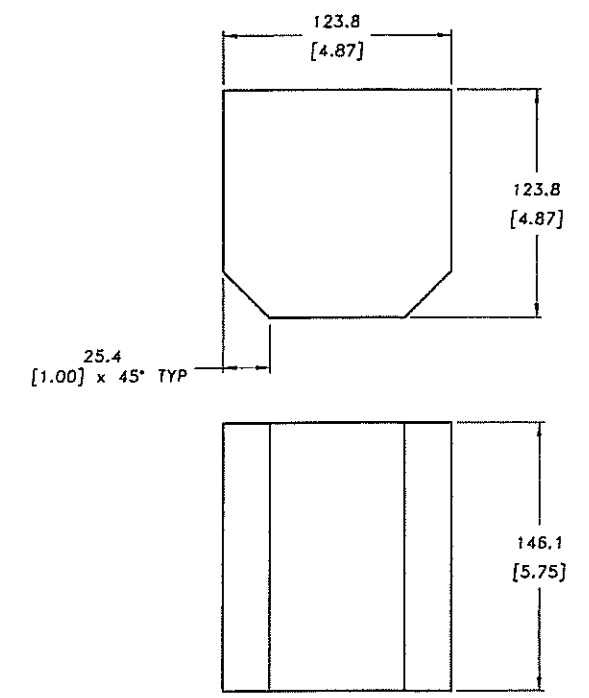
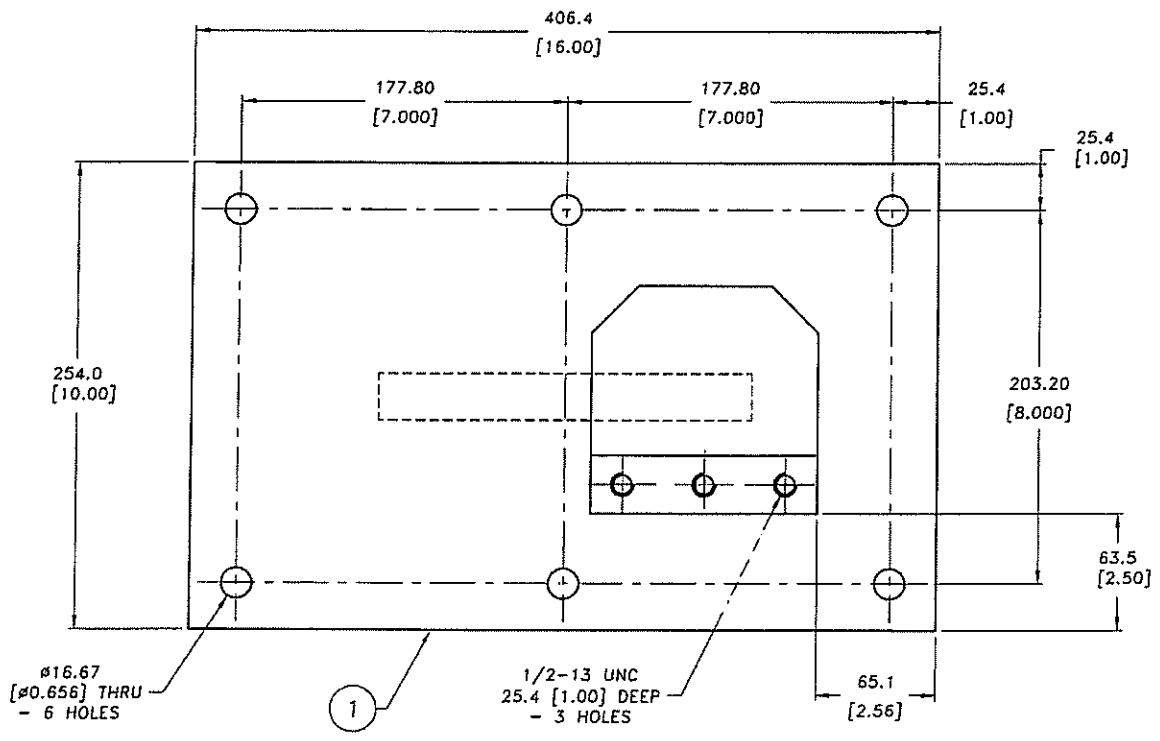
Project title / Titre du projet
KINGSTON MILLS SWING BRIDGE REHABILITATION

RIDEAU CANAL
 KINGSTON ONTARIO

Drawing title / Titre du dessin
SLAVE CYLINDER PIER BRACKET FINAL MACHINING
3

Scale / Echelle		
1:1		
Drawn by / Dessiné par	Date	
RR	MARCH 2016	
Designed by / Conçu par	Date	
RR		
Checked by / Vérifié par	Date	
DPC		
Approved by / Approuvé par	Date	
DPC	APR 2016	
Project No / No du projet	Client No / No du Client	Sheet No / Feuille No.
3515015	1911-2-101	M101
Drawing Reference No./Numéro de Référence du Dessin		

BILL OF MATERIAL			
ITEM	QTY	MATERIAL	DESCRIPTION
1	1	1020	BAR 1 x 10 x 16" LG.
2	1	1020	BAR 1 x 3 x 8" LG.
3	1	1020	BAR 5 x 5 x 6" LG.
4			



NOTE:
STRESS RELIEVE & MACHINE AFTER WELDING

ALL DIMENSIONS IN MILLIMETERS
UNSPECIFIED TOLERANCES:
DECIMAL: X.XXX ± .05 [0.002]
X.XX ± .25 [0.01]
X.X ± .50 [0.02]
REMOVE ALL BURRS AND SHARP EDGES

Ra micrometer	Ra micro-inch	Roughness Grade Number
50	2000	N12
25	1000	N11
12.5	500	N10
6.3	250	N9
3.2	125	N8
1.6	63	N7
0.8	32	N6
0.4	16	N5
0.2	8	N4
0.1	4	N3
0.05	2	N2
0.025	1	N1

No	Date	Description	Drawn by / Dessiné par	Approved / Approuvé
2	20/05/16	ISSUED FOR TENDER	FJ	DC
1	23/04/16	RELEASED FOR REVIEW	RR	-

Revision / Révision	
A	Detail number / No. du détail
B	Location dwg no / No sur dessin
C	Drawing sheet no. / No. du dessin

Client Acceptance / Acceptation du client
Signature _____ Date _____
File No./No de dossier _____

Public Works and Government Services Canada / Travaux publics et Services gouvernementaux Canada
Client Service Team for Parks Canada Ontario Region / Equip. des services à la clientèle pour Parcs Canada Région de l'Ontario
Canada



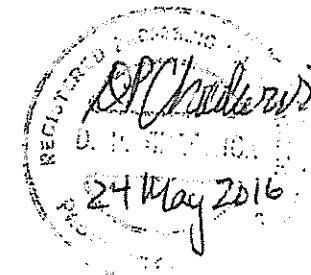
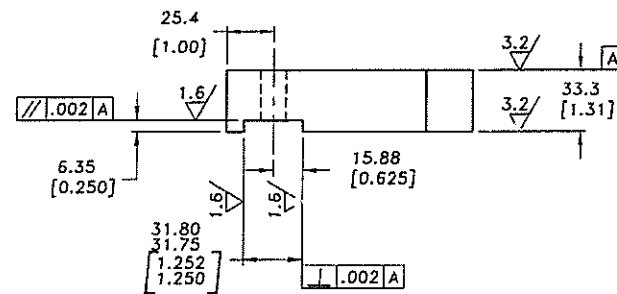
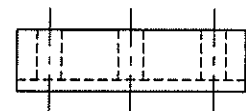
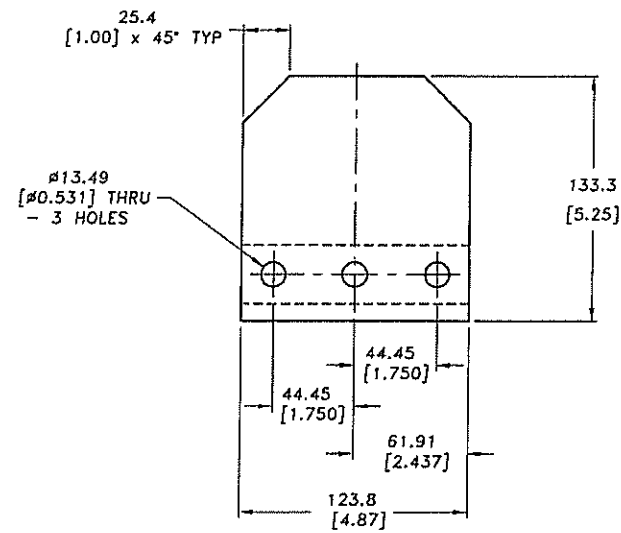
Chadwick Engineering Ltd.

Project title / Titre du projet
KINGSTON MILLS SWING BRIDGE REHABILITATION
RIDEAU CANAL
KINGSTON ONTARIO

Drawing title / Titre du dessin
SLAVE CYLINDER PIER BRACKET BASE WELDMENT/MACHINING 3

Scale / Echelle		
1:1		
Drawn by / Dessiné par	EJF	
RR	MARCH 2016	
Designed by / Conçu par	Date	
RR	Date	
Checked by / Vérifié par	Date	
DFJ	Date	
Approved by / Approuvé par	Date	
DPC	APR 2016	
Project No./No. du projet	Client No./No du Client	Sheet No./Feuille No.
3515015	1911-2-102	M102
Drawing Reference No./Numéro de Référence du Dessin		

BILL OF MATERIAL			
ITEM	QTY	MATERIAL	DESCRIPTION
1	1	1020	BAR 1 1/2 x 5 x 5 1/4" LG.
2			



No.	Date	Description	Drawn by / Dessiné par	Approved by / Approuvé par
2	20/05/16	ISSUED FOR TENDER	FJ	DC
1	25/04/16	RELEASED FOR REVIEW	RR	-

Revision / Révision	
A	Detail number / No. du détail
B	Location dwg. no. / No. sur dessin
C	Drawing sheet no. / No. du dessin

Client Acceptance / Acceptation du client
 Signature _____ Date _____
 File No./No. de Dossier _____

Public Works and Government Services Canada / Travaux publics et Services gouvernementaux Canada
 Client Service Team for Parks Canada Ontario Region / Équipe des services à la clientèle pour Parcs Canada Région de l'Ontario



Project title / Titre du projet
KINGSTON MILLS SWING BRIDGE REHABILITATION
RIDEAU CANAL
KINGSTON ONTARIO
 Drawing title / Titre du dessin
SLAVE CYLINDER PIER BRACKET TOP PLATE
3

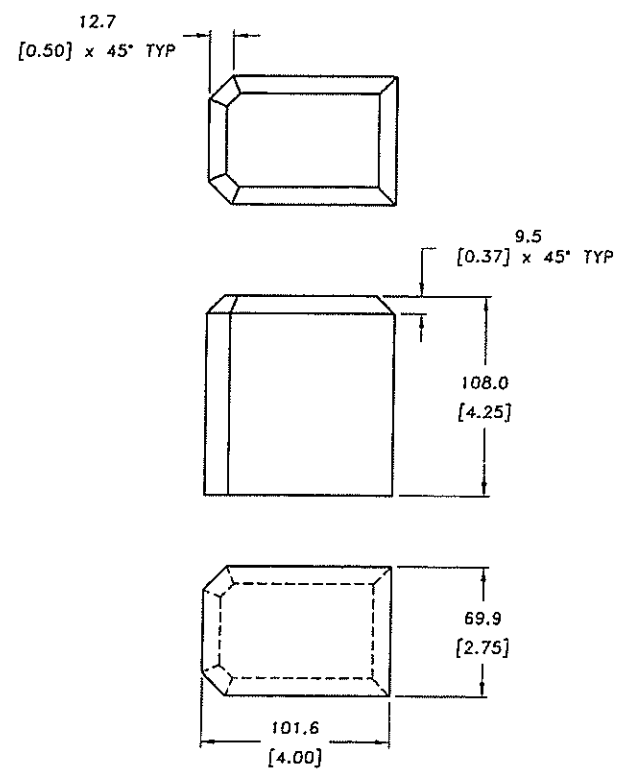
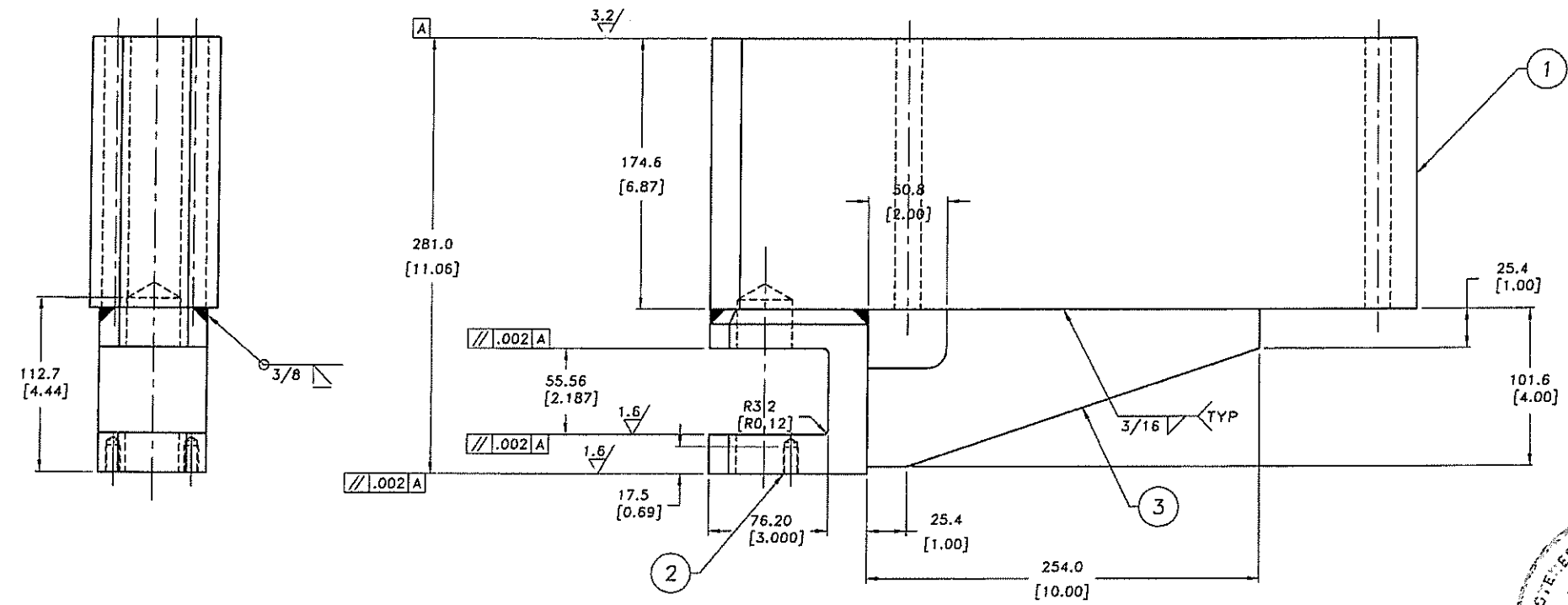
Scale / Echelle	Roughness Grade Number	
1:1	Ra micrometer	Ra micro-inch
50	2000	N12
25	1000	N11
12.5	500	N10
6.3	250	N9
3.2	125	N8
1.6	63	N7
0.8	32	N6
0.4	16	N5
0.2	8	N4
0.1	4	N3
0.05	2	N2
0.025	1	N1

ALL DIMENSIONS IN MILLIMETERS
 UNSPECIFIED TOLERANCES:
 DECIMAL: X.XXX ± .05 [.002]
 X.XX ± .25 [.01]
 X.X ± .50 [.02]
 REMOVE ALL BURRS AND SHARP EDGES

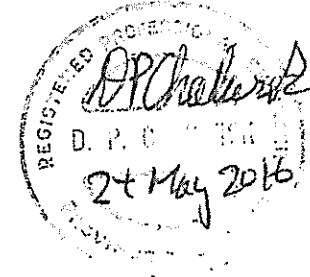
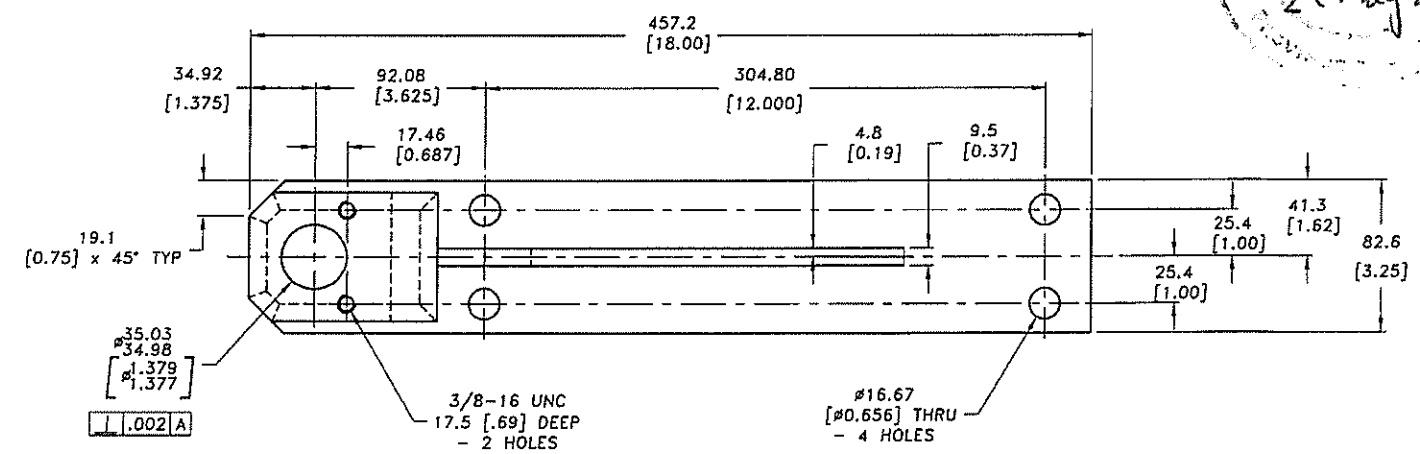
Scale / Echelle		Date	
1:1	Drawn by / Dessiné par	RR	MARCH 2016
	Designed by / Conçu par	RR	
	Checked by / Vérifié par	DPC	
	Approved by / Approuvé par	DPC	MAY 2016
Project No./No. du projet	Client No./No du Client	Sheet No./Feuille No.	
3515015	1911-2-103	M103	
Drawing Reference No./Numéro de Référence du Dessin			

BILL OF MATERIAL			
ITEM	QTY	MATERIAL	DESCRIPTION
1	1	1020	BAR 3 1/4 x 7 x 18" LG.
2	1	1020	BAR 2 3/4 x 4 x 4 1/4" LG.
3	1	1020	BAR 3/8 x 4 x 10" LG.
4			

NOTE:
STRESS RELIEVE & MACHINE AFTER WELDING



ITEM 2 DETAIL
3.2/ ALL OVER



No.	Date	Description	Drawn by / Dessiné par	Approved / Approuvé
2	20/05/16	ISSUED FOR TENDER	FJ	DC
1	25/04/16	RELEASED FOR REVIEW	RR	-

Revision / Révision	
A	A Detail number / No. du détail
B	Location dwg. no. / No. sur dessin
C	Drawing sheet no. / No. du dessin

Client Acceptance / Acceptation du client
Signature _____ Date _____
File No./No. de dossier _____

Public Works and Government Services Canada / Travaux publics et Services gouvernementaux Canada
Client Service Team for Parks Canada Ontario Region / Équipe de services à la clientèle pour Parcs Canada Région de l'Ontario

Canada

MMM GROUP

Chadwick Engineering Ltd.

Project title / Titre du projet
KINGSTON MILLS SWING BRIDGE REHABILITATION

RIDEAU CANAL
KINGSTON ONTARIO

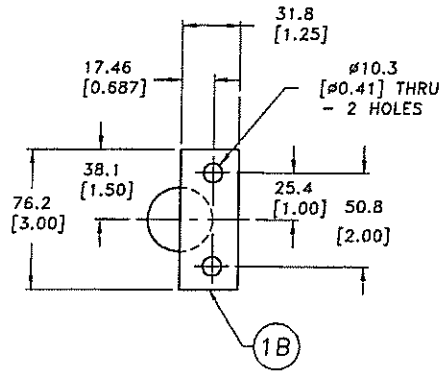
Drawing title / Titre du dessin
SLAVE CYLINDER LOAD GIRDER BRACKET WELDMENT/MACHINING

Scale / Echelle	
1:1	
Drawn by / Dessiné par	Date
RR	MARCH 2016
Designed by / Conçu par	Date
RR	
Checked by / Vérifié par	Date
DPC	
Approved by / Approuvé par	Date
DPC	MAR 2016

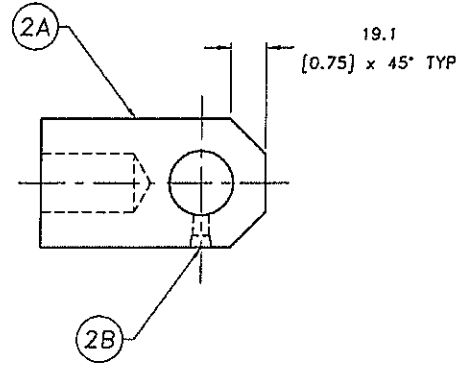
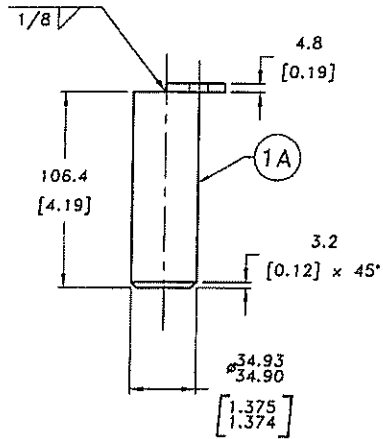
Ra micrometer	Ra micro-inch	Roughness Grade Number
50	2000	N12
25	1000	N11
12.5	500	N10
6.3	250	N9
3.2	125	N8
1.6	63	N7
0.8	32	N6
0.4	16	N5
0.2	8	N4
0.1	4	N3
0.05	2	N2
0.025	1	N1

ALL DIMENSIONS IN MILLIMETERS
UNSPECIFIED TOLERANCES:
DECIMAL: X.XXX ± .05 [.002]
 X.XX ± .25 [.01]
 X.X ± .50 [.02]
REMOVE ALL BURRS AND SHARP EDGES

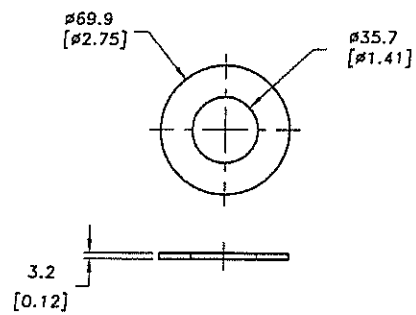
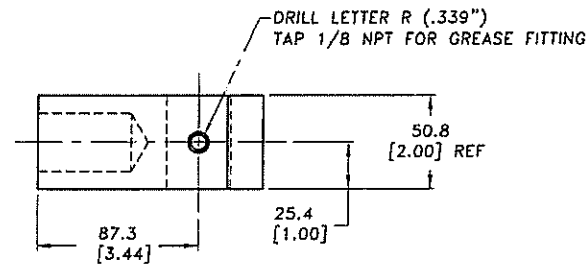
Project No./No. du projet	Client No./No du Client	Sheet No./Feuille No
3515015	1011-2-104	M104



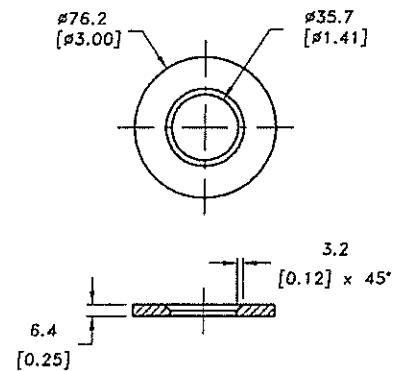
ITEM 1 PIVOT PIN DETAIL



ITEM 2 MODIFIED KNUCKLE

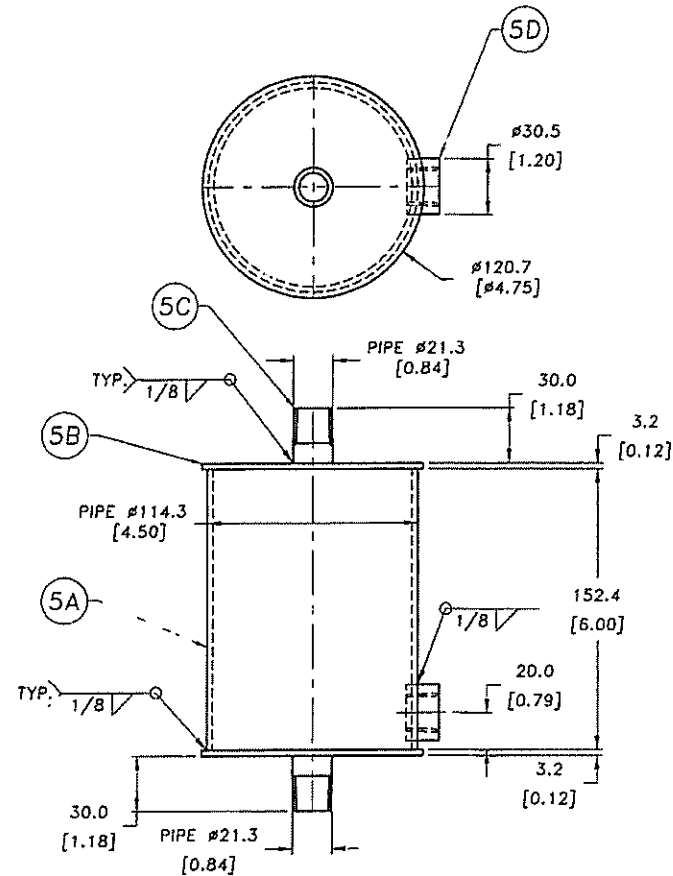


ITEM 3 WASHER DETAIL



ITEM 4 WASHER DETAIL

BILL OF MATERIAL			
ITEM	QTY	MATERIAL	DESCRIPTION
1	1		PIVOT PIN
1A	1	A580 S.S.	COLD DRAWN & CENT. GRD. #1 3/8 x 4 3/16" LG.
1B	1	A276 S.S.	BAR 3/16 x 1 1/4 x 3" LG.
2			MODIFIED KNUCKLE
2A	1	STEEL	KNUCKLE PARKER #69094
2B	1	S.S.	1/8" STRAIGHT SHORT GREASE FITTING
3	1	BRONZE	660 BAR # 2 3/4 x 1/8" THICK
4	1	BRONZE	660 BAR # 3 x 1/4" THICK
5			OIL RESERVOIR
5A	1	S.S. 316	PIPE 4" - SCH 10 x 6" LONG
5B	2	S.S. 316	FLANGE 4 3/4" DIAMETER x 1/8" THICK
5C	2	S.S. 316	PIPE 1/2" - SCH 40 x 1 3/16" LONG
5D	1	S.S. 316	HALF COUPLING 1/2" NPT



ITEM 5 OIL RESERVOIR

RECEIVED
 DPC Chadwick
 24 May 2016

ALL DIMENSIONS IN MILLIMETERS

UNSPECIFIED TOLERANCES:
 DECIMAL: X.XXX ± .05 [.002]
 X.XX ± .25 [.01]
 X.X ± .50 [.02]

REMOVE ALL BURRS AND SHARP EDGES

Ra micrometer	Ra micro-inch	Roughness Grade Number
50	2000	N12
25	1000	N11
12.5	500	N10
6.3	250	N9
3.2	125	N8
1.6	63	N7
0.8	32	N6
0.4	16	N5
0.2	8	N4
0.1	4	N3
0.05	2	N2
0.025	1	N1

2	20/05/16	ISSUED FOR TENDER	FJ	DC
1	25/04/16	RELEASED FOR REVIEW	RR	-
No.	Date	Description	Drawn by Dessiné par	Approved Approuvé

Revision / Révision



A Detail number
No. du détail
B Location dwg. no.
No. sur dessin
C Drawing sheet no.
No. du dessin

Client Acceptance / Acceptation du client
 Signature _____ Date _____
 File No./No. de dossier _____

Public Works and Government Services Canada
 Travaux publics et Services gouvernementaux Canada
 Client Service Team / Équipe des services à la clientèle pour Parcs Canada Ontario Region
 Ontario Région de l'Ontario

Canada

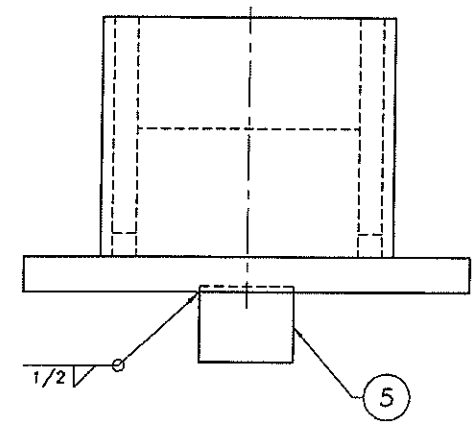
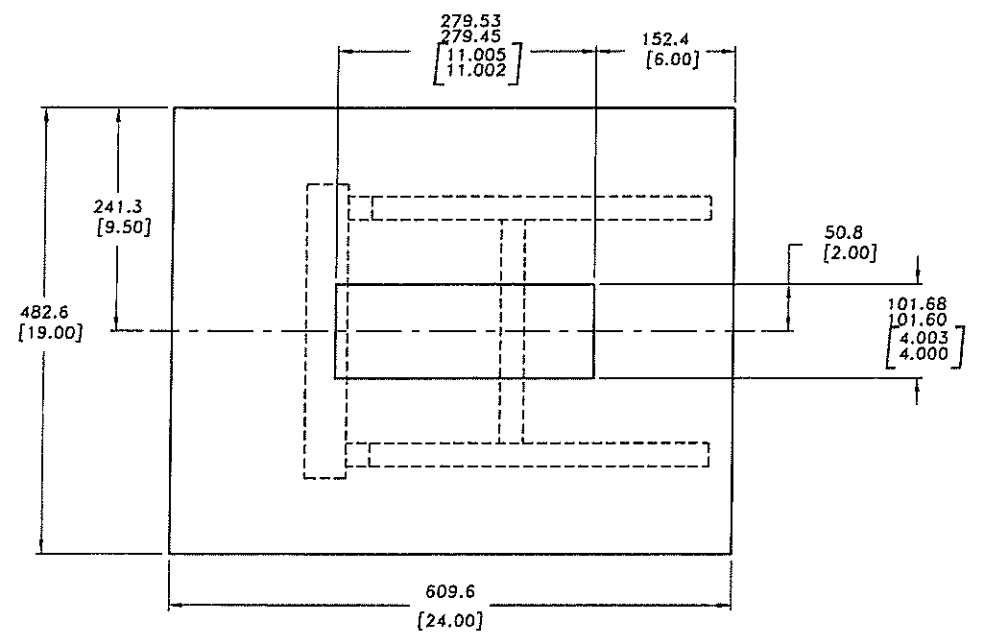
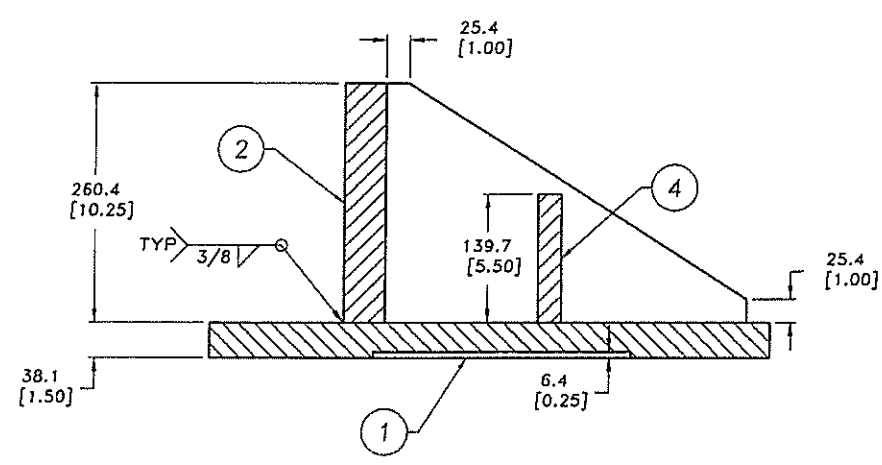
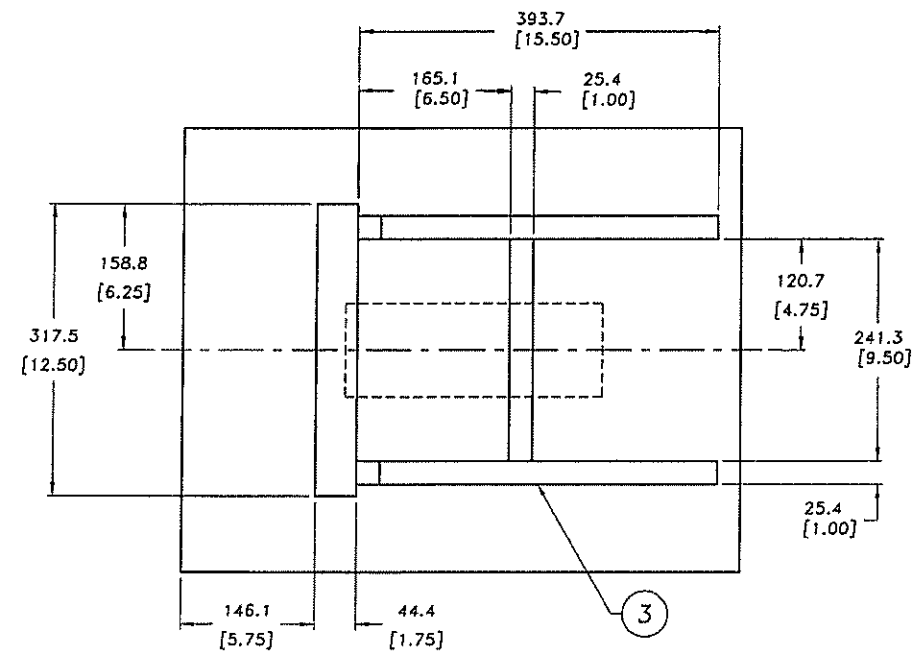
MMM GROUP

Chadwick Engineering Ltd.

Project title / Titre du projet
 KINGSTON MILLS SWING BRIDGE REHABILITATION
 RIDEAU CANAL
 KINGSTON ONTARIO

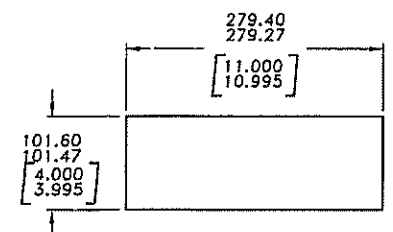
Drawing title / Titre du dessin
 SLAVE CYLINDER PIN, KNUCKLE & WASHER DETAILS

Scale / Echelle 1:1		
Drawn by / Dessiné par RR	Date MARCH 2016	
Designed by / Conçu par RR	Date	
Checked by / Vérifié par DPC	Date	
Approved by / Approuvé par DPC	Date APR 2016	
Project No./No. du projet 3515015	Client No./No. du Client 1911-2-106	Sheet No./Feuille No. M106
Drawing Reference No./numéro de Référence du Dessin		

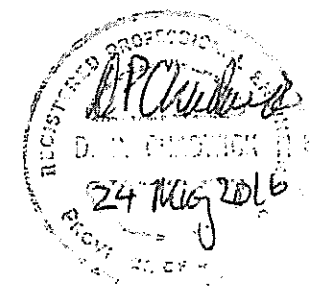


NOTE:
WELD ITEM 5 IN PLACE AFTER
MACHINING POCKET

BILL OF MATERIAL			
ITEM	QTY	MATERIAL	DESCRIPTION
1	1	1020	PLATE 1 1/2 x 19 x 24" LG.
2	1	1020	PLATE 1 3/4 x 10 1/4 x 12 1/2" LG
3	2	1020	PLATE 1 x 10 1/4 x 15 1/2
4	1	1020	PLATE 1 x 5 1/2 x 9 1/2" LG
5	1	1020	BAR 3 1/4 x 4 x 11" LG.
6			



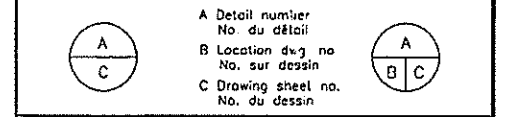
ITEM 5 DETAIL
3.2/ ALL OVER



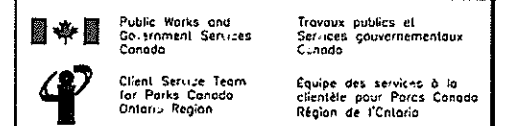
Ra micrometer	Ra micro-Inch	Roughness Grade Number
50	2000	N12
25	1000	N11
12.5	500	N10
6.3	250	N9
3.2	125	N8
1.6	63	N7
0.8	32	N6
0.4	16	N5
0.2	8	N4
0.1	4	N3
0.05	2	N2
0.025	1	N1

ALL DIMENSIONS IN MILLIMETERS
UNSPECIFIED TOLERANCES:
DECIMAL: X.XXX ± .05 [.002]
X.XX ± .25 [.01]
X.X ± .50 [.02]
REMOVE ALL BURRS AND SHARP EDGES

2	20/06/16	ISSUED FOR TENDER	FJ	DC
1	25/04/16	RELEASED FOR REVIEW	RR	-
No.	Date	Description	Drawn by	Approved



Client Acceptance / Acceptation du client
Signature _____ Date _____
File No./No de dossier _____



Canada



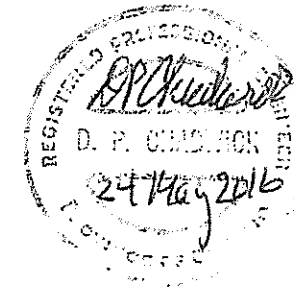
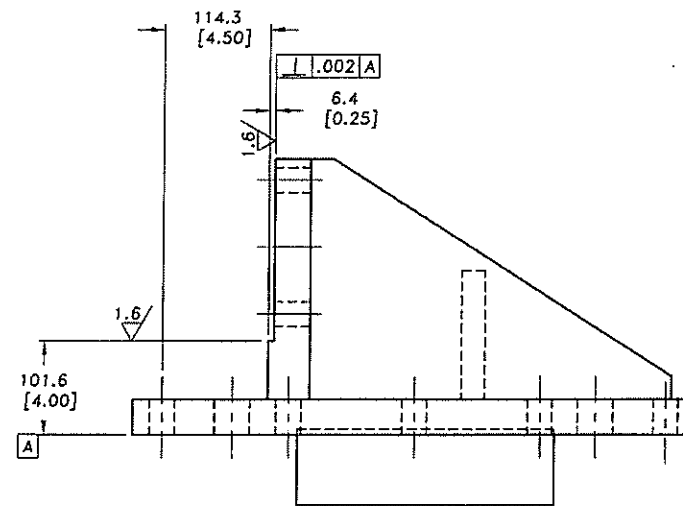
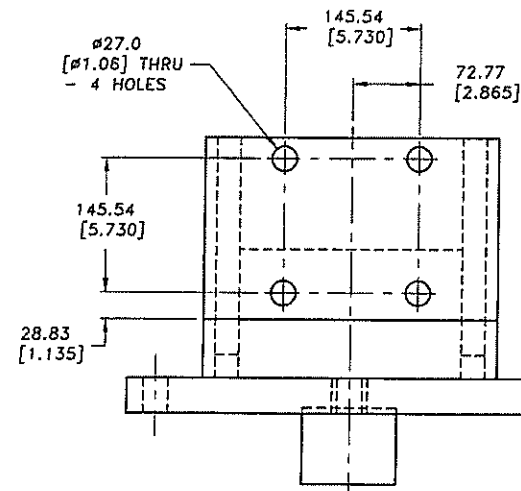
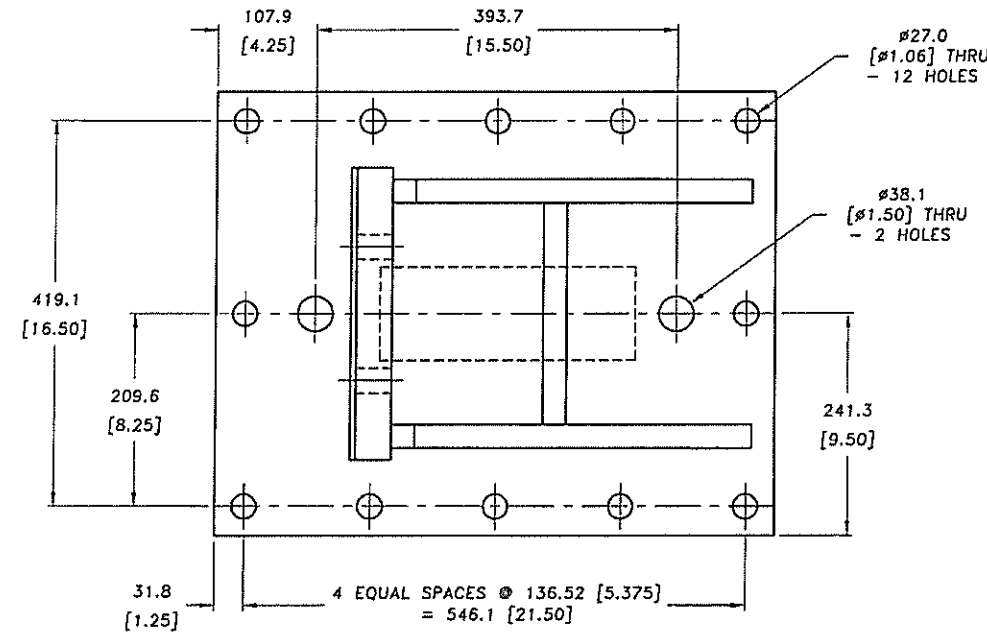
Chadwick Engineering Ltd.

Project title / Titre du projet
KINGSTON MILLS SWING BRIDGE REHABILITATION
RIDEAU CANAL
KINGSTON ONTARIO
Drawing title / Titre du dessin
SWING CYLINDER PIER BRACKET WELDMENT

Scale / Echelle 1:2		
Drawn by / Dessiné par RR	Date MARCH 2016	
Designed by / Conçu par RR	Date	
Checked by / Vérifié par DPC	Date	
Approved by / Approuvé par DPC	Date APR 2016	
Project No./No. du projet 3515015	Client No./No du Client 1911-2-107	Sheet No./Feuille No. M107
Drawing Reference No./Numéro de Référence du Dessin		

BILL OF MATERIAL			
ITEM	QTY	MATERIAL	DESCRIPTION
1	1		1911-2-107 SWING CYLINDER PIER BRACKET WELDMENT
2			

NOTE:
STRESS RELIEVE & MACHINE AFTER WELDING



ALL DIMENSIONS IN MILLIMETERS

UNSPECIFIED TOLERANCES:
DECIMAL: X.XXX ± .05 [.002]
X.XX ± .25 [.01]
X.X ± .50 [.02]

REMOVE ALL BURRS AND SHARP EDGES

Ra micrometer	Ra micro-Inch	Roughness Grade Number
50	2000	N12
25	1000	N11
12.5	500	N10
6.3	250	N9
3.2	125	N8
1.6	63	N7
0.8	32	N6
0.4	16	N5
0.2	8	N4
0.1	4	N3
0.05	2	N2
0.025	1	N1

No.	Date	Description	Drawn by	Approved
2	29/05/16	ISSUED FOR TENDER	FJ	DC
1	25/01/16	RELEASED FOR REVIEW	RR	-

Revision / Révision	
A	Détail number / No. du détail
B	Location drawing / No. sur dessin
C	Drawing sheet no. / No. du dessin

Client Acceptance / Acceptation du client
Signature _____ Date _____
File No./No de dossier _____

Public Works and Government Services Canada / Travaux publics et Services gouvernementaux Canada
Client Service Team for Parks Canada Ontario Region / Équipe des services à la clientèle pour Parcs Canada Région de l'Ontario

Canada

MMM GROUP

Chadwick Engineering Ltd.

Project title / Titre du projet
KINGSTON MILLS SWING BRIDGE REHABILITATION

RIDEAU CANAL
KINGSTON ONTARIO

Drawing title / Titre du dessin
SWING CYLINDER PIER BRACKET MACHINING

Scale / Echelle
1:2

Drawn by / Dessiné par
RR MARCH 2016

Designed by / Conçu par
RR

Checked by / Vérifié par
DPC

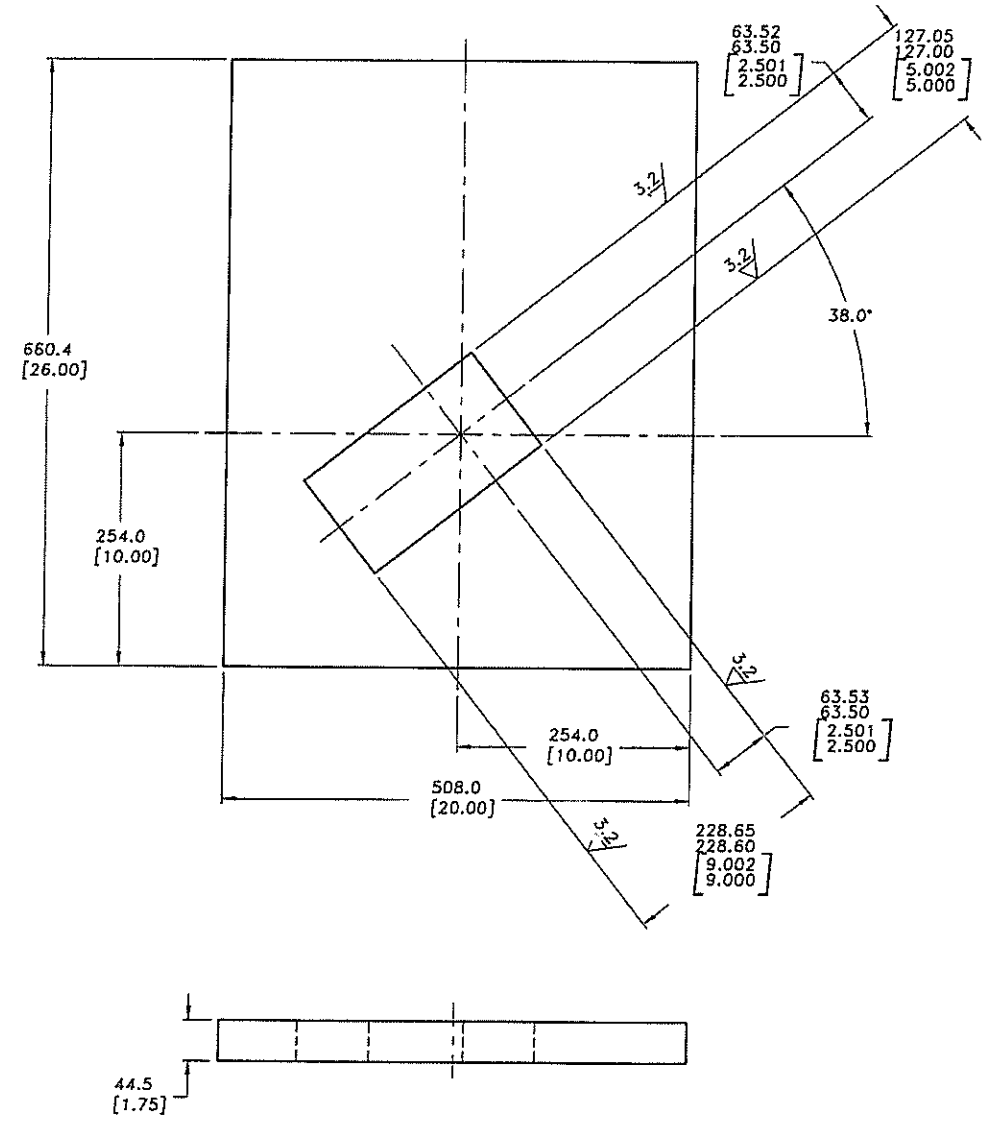
Approved by / Approuvé par
DPC APR 2016

Project No./No. du projet
3515015

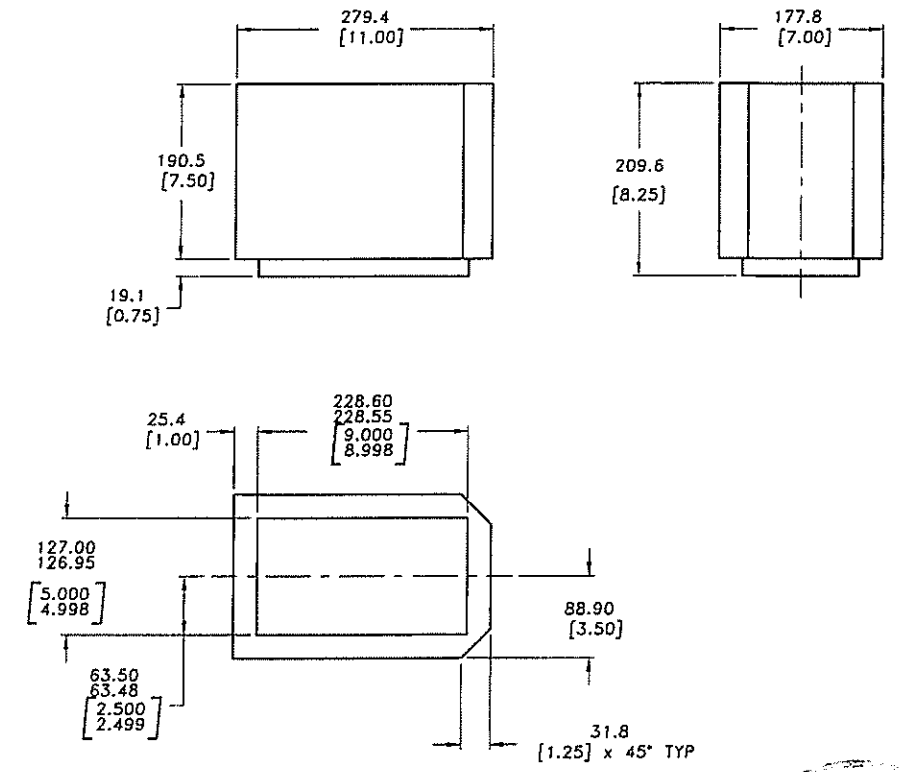
Client No./N^o du Client
1911-2-108

Sheet No./Feuille No.
M108

BILL OF MATERIAL			
ITEM	QTY	MATERIAL	DESCRIPTION
1	1	1020	PLATE 1 3/4 x 20 x 26" LG.
2	1	1020	BAR 7 x 8 1/4 x 11" LG
3			



ITEM 1 DETAIL



ITEM 2 DETAIL

3.2/ ALL OVER



ALL DIMENSIONS IN MILLIMETERS

UNSPECIFIED TOLERANCES:
 DECIMAL: X.XXX ± .05 [.002]
 X.XX ± .25 [.01]
 X.X ± .50 [.02]

REMOVE ALL BURRS AND SHARP EDGES

Ra micrometer	Ra micro-inch	Roughness Grade Number
50	2000	N12
25	1000	N11
12.5	500	N10
6.3	250	N9
3.2	125	N8
1.6	63	N7
0.8	32	N6
0.4	16	N5
0.2	8	N4
0.1	4	N3
0.05	2	N2
0.025	1	N1

No.	Date	Description	Drawn by	Approved
2	20/05/16	ISSUED FOR TENDER	FJ	DC
1	25/04/16	RELEASED FOR REVIEW	RR	-

Revision / Révision	
A	Detail number / No du détail
B	Location dwg no / No. sur dessin
C	Drawing sheet no. / No. du dessin

Client Acceptance / Acceptation du client
 Signature _____ Date _____
 File No./No. de dossier _____

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

Client Service Team for Parks Canada Ontario Region / Équipe des services à la clientèle pour Parcs Canada Région de l'Ontario

Canada



Chadwick Engineering Ltd.

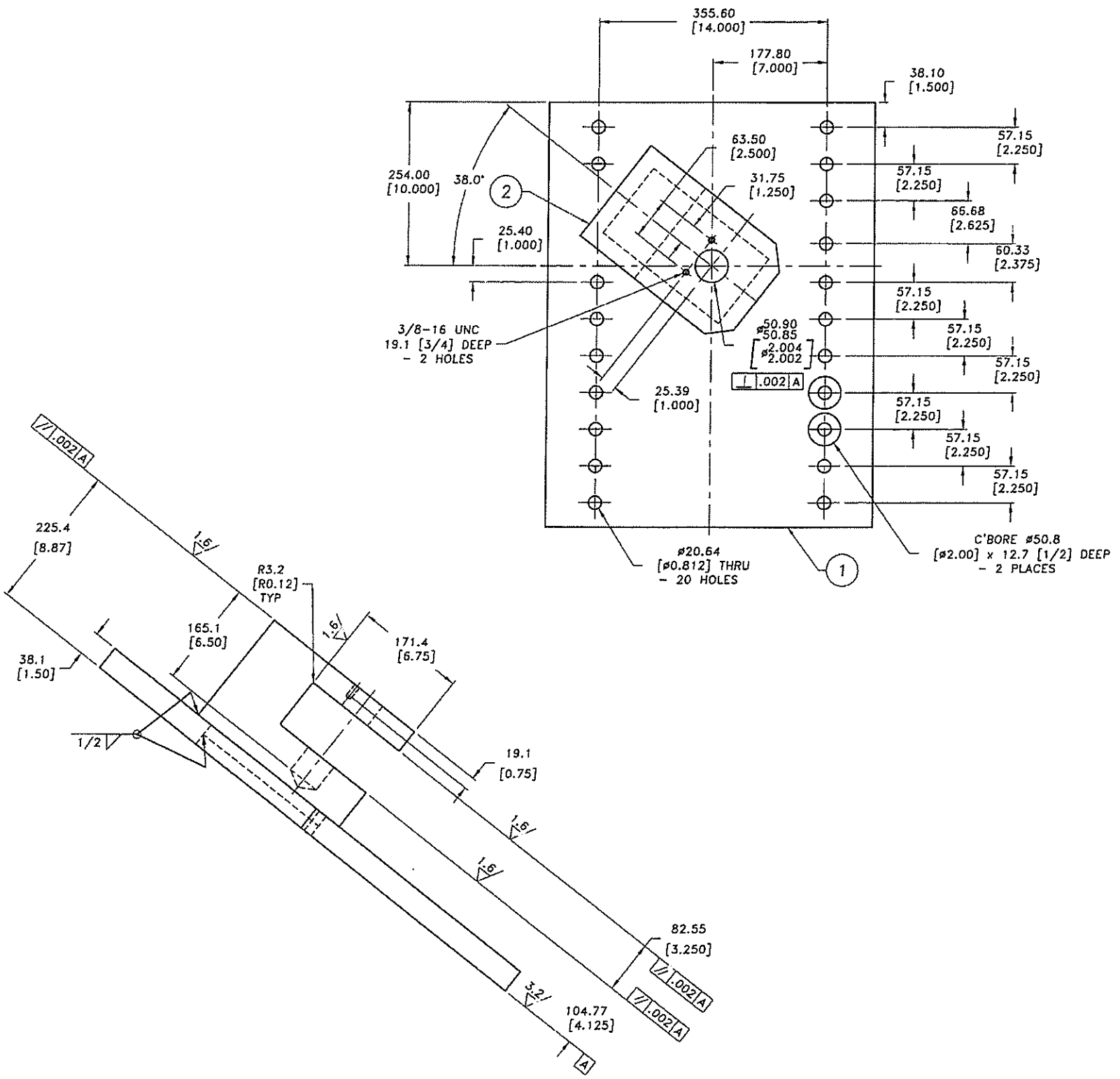
Project title / Titre du projet
KINGSTON MILLS SWING BRIDGE REHABILITATION
RIDEAU CANAL
KINGSTON ONTARIO

Drawing title / Titre du dessin
SWING CYLINDER LOAD GIRDER BRACKET DETAILS

Scale / Echelle 1:2		
Drawn by / Dessiné par RR	Date MARCH 2016	
Designed by / Conçu par RR	Date	
Checked by / Vérifié par DPC	Date	
Approved by / Approuvé par DPC	Date APR 2016	
Project No./No. du projet 3515015	Client No./No du Client 1911-2-109	Sheet No./Feuille No. M109
Drawing Reference No./Numéro de Référence du Dessin		

BILL OF MATERIAL			
ITEM	QTY	MATERIAL	DESCRIPTION
1	1		1911-2-009 ITEM 1
2	1		1911-2-009 ITEM 2
3			

NOTE:
STRESS RELIEVE & MACHINE AFTER WELDING



No.	Date	Description	Drawn by	Approved
2	20/05/16	ISSUED FOR TENDER	FJ	DC
1	25/04/16	RELEASED FOR REVIEW	RR	-

Revision / Révision	
A	Detail number No. du détail
B	Location dwg. no. No. sur dessin
C	Drawing sheet no. No. du dessin

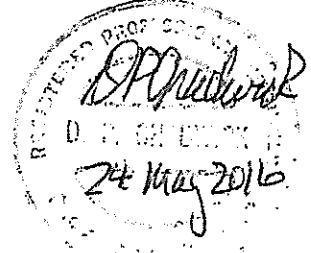
Client Acceptance / Acceptation du client
Signature _____ Date _____
File No./No. de dossier _____

Public Works and Government Services Canada
Travaux publics et Services gouvernementaux Canada
Client Service Team for Parks Canada Ontario Region
Équipe des services à la clientèle pour Parcs Canada Région de l'Ontario



Project title / Titre du projet
KINGSTON MILLS SWING BRIDGE REHABILITATION
RIDEAU CANAL
KINGSTON ONTARIO

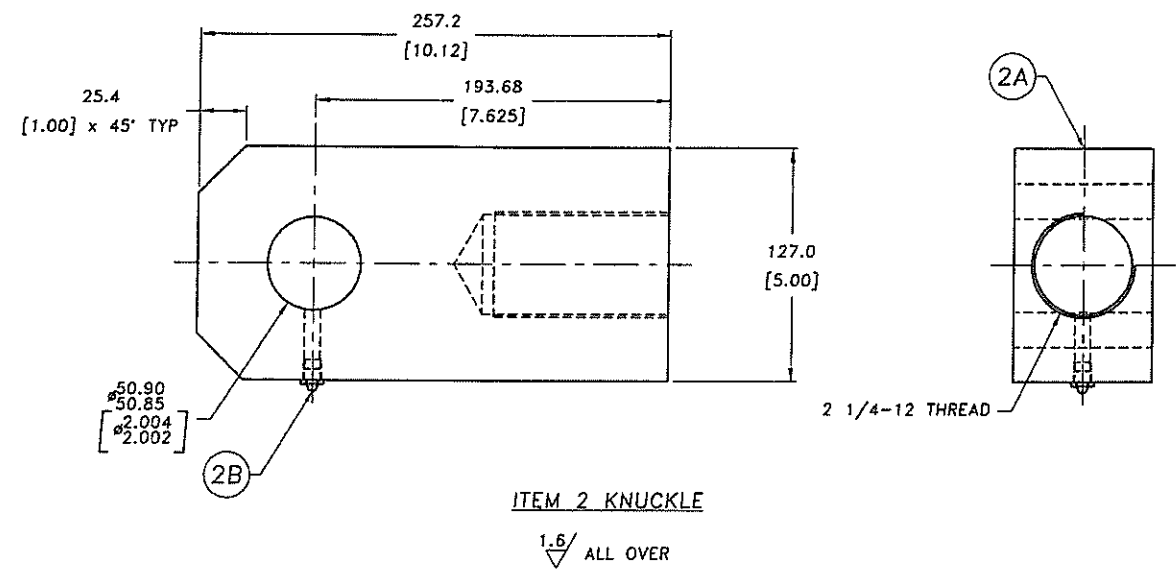
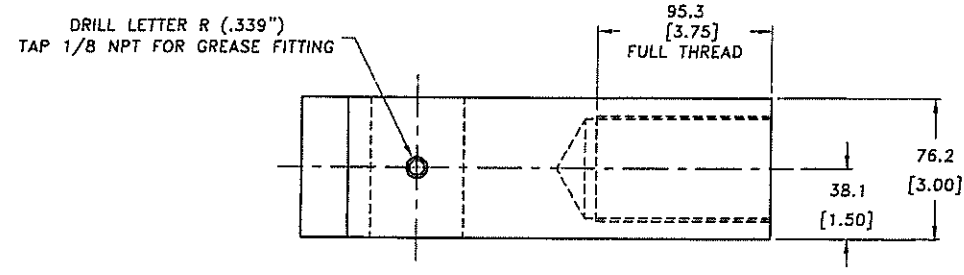
Drawing title / Titre du dessin
SWING CYLINDER LOAD GIRDER BRACKET WELDMENT/MACHINING



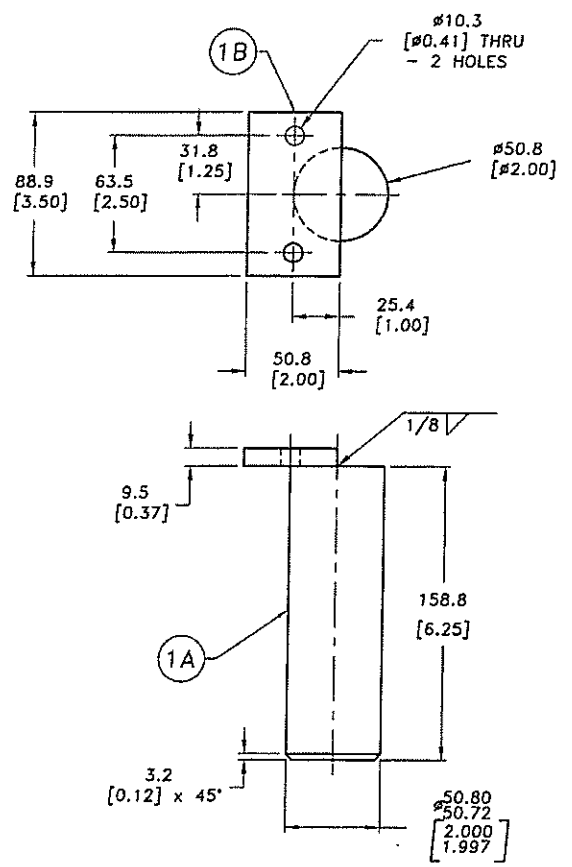
Ra micrometer	Ra micro-Inch	Roughness Grade Number
50	2000	N12
25	1000	N11
12.5	500	N10
6.3	250	N9
3.2	125	N8
1.6	63	N7
0.8	32	N6
0.4	16	N5
0.2	8	N4
0.1	4	N3
0.05	2	N2
0.025	1	N1

ALL DIMENSIONS IN MILLIMETERS
UNSPECIFIED TOLERANCES:
DECIMAL: X.XXX ± .05 [.002]
X.XX ± .25 [.01]
X.X ± .50 [.02]
REMOVE ALL BURRS AND SHARP EDGES

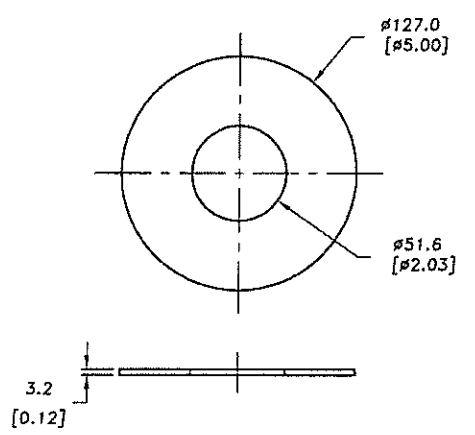
Scale / Echelle		
1:2		
Drawn by/ Dessiné par	Date	
RR	MAY 2016	
Designed by/ Conçu par	Date	
RR		
Checked by/ Vérifié par	Date	
DPC		
Approved by/ Approuvé par	Date	
DPC	24 May 2016	
Project No./No. du projet	Client No./No. du Client	Sheet No./Feuille No.
3515015	1911-2-110	M110
Drawing Reference No./Numéro de Référence du Dessin		



ITEM 2 KNUCKLE

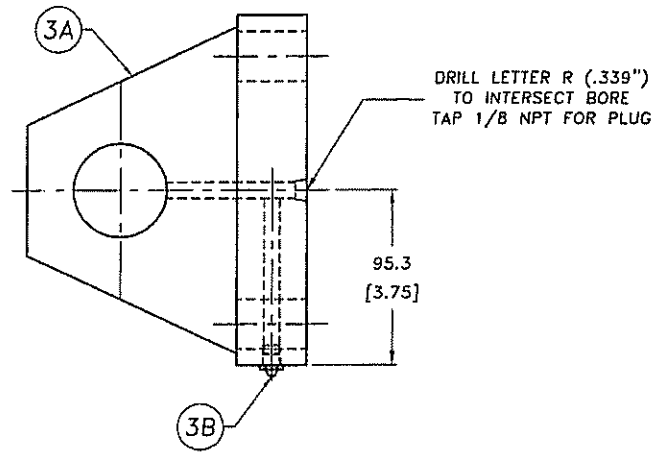


ITEM 1 PIVOT PIN DETAIL

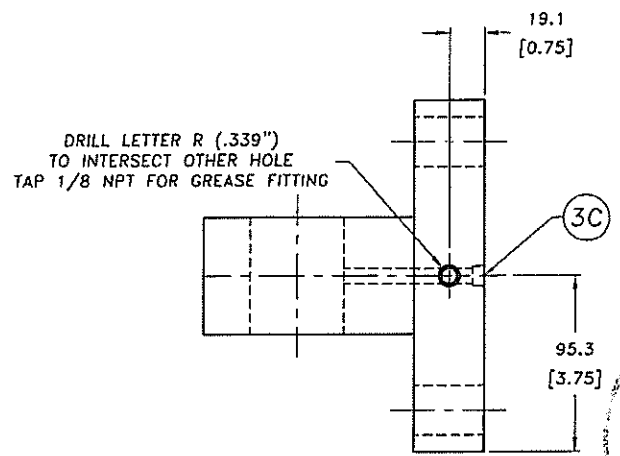


ITEM 4 WASHER DETAIL

BILL OF MATERIAL			
ITEM	QTY	MATERIAL	DESCRIPTION
1	1		PIVOT PIN
1A	1	A580 S.S.	COLD DRAWN & CENT. GRD. #2 x 6 1/4" LG.
1B	1	A275 S.S.	BAR 3/8 x 2 x 3 1/2" LG.
2	1		KNUCKLE
2A	1	4140	PRE HEAT TREATED BAR 3 x 5 x 10 1/8" LG.
2B	1	S.S.	1/8" STRAIGHT SHORT GREASE FITTING
3			MODIFIED EYE BRACKET
3A	1	STEEL	EYE BRACKET PARKER #85363
3B	1	S.S.	1/8" STRAIGHT SHORT GREASE FITTING
3C	1	316 S.S.	1/8" NPT HEX SOCKET PLUG McMASTER-CARR #4452K541 OR EQUIV.
4	1	BRONZE	660 BAR # 5 x 1/8" THICK
5			



ITEM 3 MODIFIED EYE BRACKET



ALL DIMENSIONS IN MILLIMETERS

UNSPECIFIED TOLERANCES:
 DECIMAL: X.XXX ± .05 [.002]
 X.XX ± .25 [.01]
 X.X ± .50 [.02]

REMOVE ALL BURRS AND SHARP EDGES

Ra micrometer	Ra micro-inch	Roughness Grade Number
50	2000	N12
25	1000	N11
12.5	500	N10
6.3	250	N9
3.2	125	N8
1.6	63	N7
0.8	32	N6
0.4	16	N5
0.2	8	N4
0.1	4	N3
0.05	2	N2
0.025	1	N1

2	20/05/16	ISSUED FOR TENDER	FJ	DC
1	25/04/16	RELEASED FOR REVIEW	RR	-
No.	Date	Description	Drawn by	Appr. ed
			Destiné par	Approuvé

Revision / Révision	
A	Détail number / No. du détail
B	Location dwg. no. / No. sur dr. in
C	Drawing sheet no. / No. du dessin

Client Acceptance / Acceptation du client
 Signature _____ Date _____
 File No./No. de dossier _____

Public Works and Government Services Canada / Travaux publics et Services gouvernementaux Canada
 Client Service Team for Parks Canada Ontario Region / Équipe des services à la clientèle pour Parcs Canada Région de l'Ontario
Canada

MMM GROUP

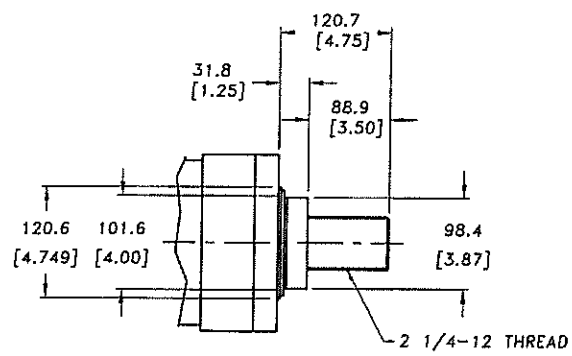
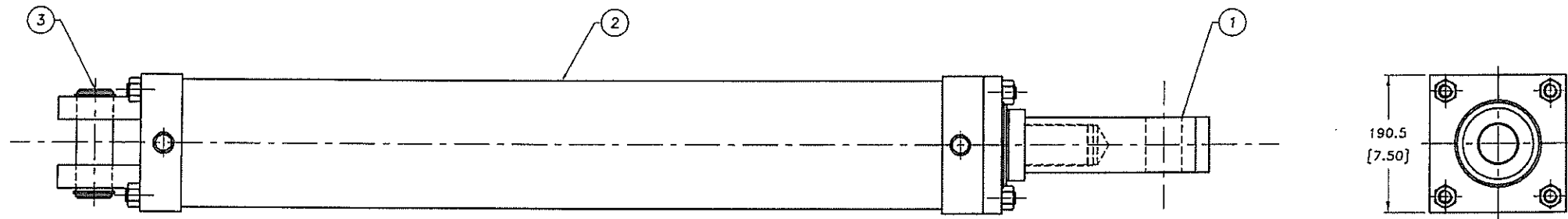
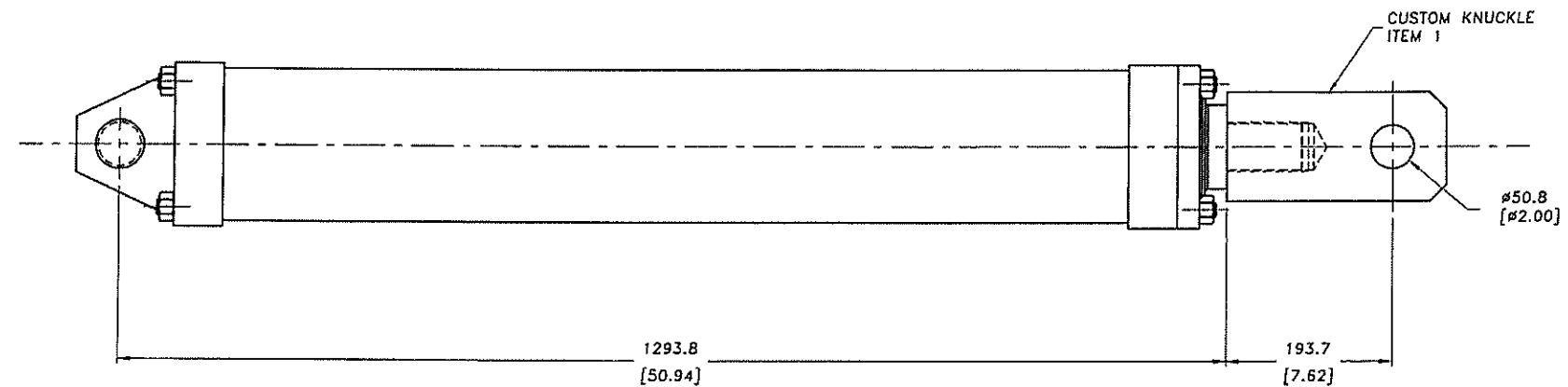
Chadwick Engineering Ltd.

Project title / Titre du projet
KINGSTON MILLS SWING BRIDGE REHABILITATION
RIDEAU CANAL
 KINGSTON ONTARIO

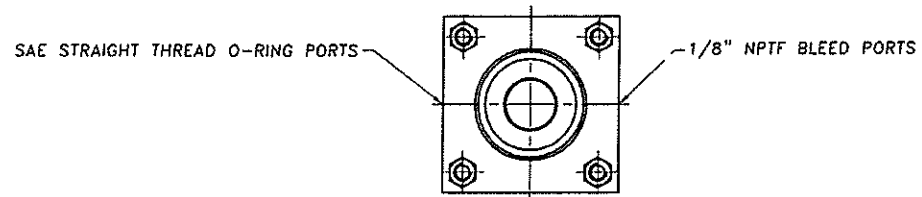
Drawing title / Titre du dessin
SWING CYLINDER PIN, WASHER, KNUCKLE & MODIFIED EYE BRACKET

Scale / Echelle 1:1		
Drawn by/ Dessiné par RR	Date MARCH 2016	
Designed by/ Conçu par RR	Date	
Checked by/ Vérifié par DPC	Date	
Appr. ed by / Approuvé par DPC	Date APR 2016	
Project No./No. du projet 3515015	Client No./No. du Client 1011-2-111	Sheet No./Feuille No. M111
Drawing Reference No./Numéro de Référence du Dessin		

BILL OF MATERIAL			
ITEM	QTY	MATERIAL	DESCRIPTION
1	1		1911-2-111, ITEM 2 KNUCKLE
2	1		PARKER 2H HEAVY DUTY HYDRAULIC CYLINDER #6"BB-2HLTS23A38.8"
			6" BORE, CAP FIXED CLEVIS MOUNTED, LIPSEAL PISTON, SAC STRAIGHT
			THREAD O-RING PORT, 1/8" NPTF BLEED PORTS, 4" STOP TUBE,
			PISTON ROD #2, ROD DIA. MM = 4", PISTON ROD END STYLE 3
			WITH UNF THREADS (SEE SKETCH), STROKE = 38.8", SUPPLY WITH
			GLOBAL SHIELD ROD COATING
3	1		PARKER PIN #68373 (SUPPLIED WITH CYLINDER)



ROD END MODIFICATION



SAE PORTS AND AIR BLEED PORTS POSITIONS ON HEAD & CAP END

ALL DIMENSIONS IN MILLIMETERS

UNSPECIFIED TOLERANCES:
 DECIMAL: X.XXX ± .05 [.002]
 X.XX ± .25 [.01]
 X.X ± .50 [.02]

REMOVE ALL BURRS AND SHARP EDGES

Ra micrometer	Ra micro-inch	Roughness Grade Number
50	2000	N12
25	1000	N11
12.5	500	N10
6.3	250	N9
3.2	125	N8
1.6	63	N7
0.8	32	N6
0.4	16	N5
0.2	8	N4
0.1	4	N3
0.05	2	N2
0.025	1	N1

No.	Date	Description	Drawn by	Approved
2	20/05/16	ISSUED FOR TENDER	FJ	DC
1	25/04/16	RELEASED FOR REVIEW	RR	-

Revision / Révision	
A	Detail number / No. du détail
B	Location dwg. no. / No. sur dessin
C	Drawing sheet no. / No. du dessin

Client Acceptance / Acceptation du client
 Signature _____ Date _____
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Public Works and Government Services Canada / Travaux publics et Services gouvernementaux Canada
 Client Service Team for Parks Canada Ontario Region / Équipe des services à la clientèle pour Parcs Canada Région de l'Ontario

Canada

MMM GROUP

Chadwick Engineering Ltd.

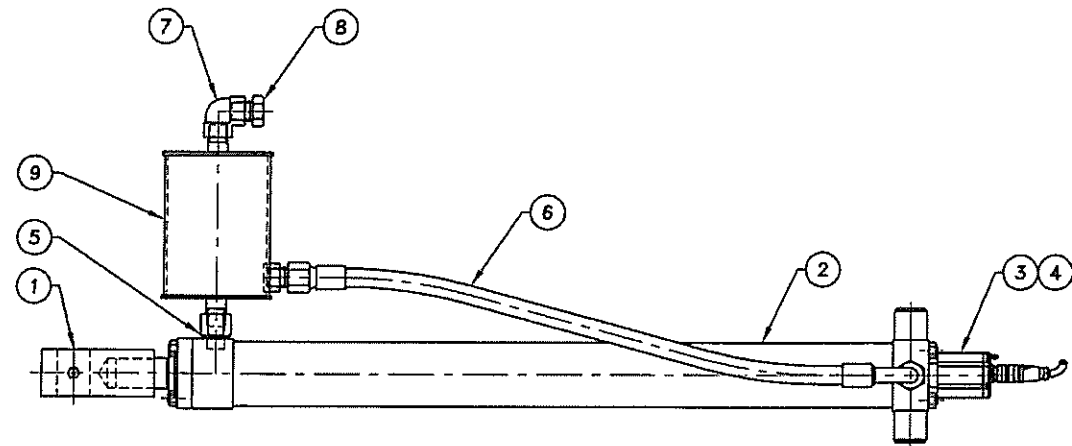
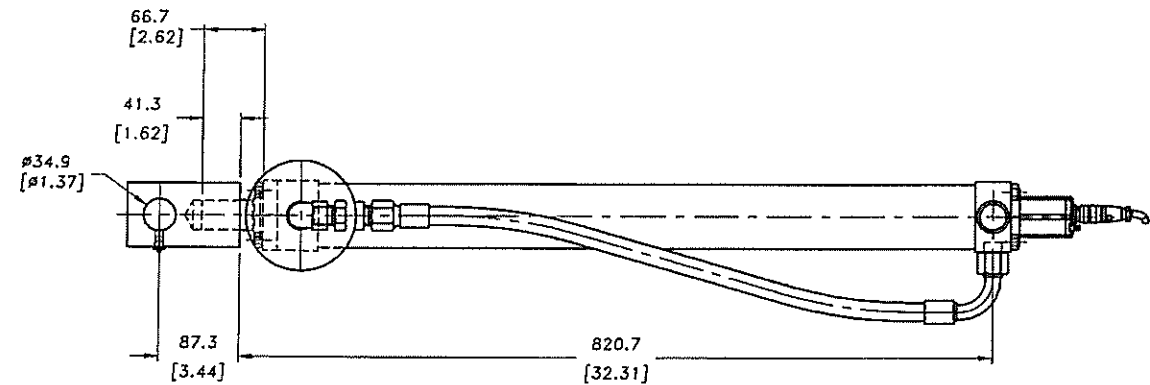
Project title / Titre du projet
KINGSTON MILLS SWING BRIDGE REHABILITATION

RIDEAU CANAL
 KINGSTON ONTARIO

Drawing title / Titre du dessin
SWING CYLINDER ASSEMBLY

Scale / Echelle		
1:2		
Drawn by / Dessiné par	Date	
RR	MARCH 2016	
Designed by / Conçu par	Date	
RR		
Checked by / Vérifié par	Date	
DPC		
Approved by / Approuvé par	Date	
DPC	APR 2016	
Project No./No. du projet	Client No./No du Client	Sheet No./Feuille No
3515015	1911-2-112	M112
Drawing Reference No./Numéro de Référence du Dessin		

RR Kulkarni
 24 May 2016



ITEM	QTY	MATERIAL	DESCRIPTION
1	1		PARKER KNUCKLE #69094
2	1		PARKER 2H HEAVY DUTY HYDRAULIC CYLINDER #2"DB-2HLTS2BA26.8"
			2" BORE, CAP TRUNNION MOUNTED, LIPSEAL PISTON, SAE STRAIGHT
			THREAD O-RING PORT, PISTON ROD #2, ROD DIA. MM = 1 3/8"
			PISTON ROD END STYLE 8 WITH UNF THREADS, STROKE = 26.8"
			HEAD END PORT POSITION #2, CAP END PORT POSITION #1
			SUPPLY WITH WITH GLOBAL SHIELD ROD COATING AND EPOXY PAINT
3	1		TEMPOSONIC MODEL GH ROD-STYLE SENSOR #GH 5 26.8 D60 1 A0
			HYDRAULIC ROD-STYLE, US CUSTOMARY THREADS, FLAT-FACED
			FLANGED AND PRESSURE TUBE, 26.8" STROKE, 6-PIN DIN (M16)
			MALE, +24 Vdc (+20%, -15%), 4 mA TO 20 mA
4	1		TEMPOSONIC CABLE CONNECTOR, STRAIGHT EXIT, 6-PIN DIN (D60)
			P/N 560700
5	1	S.S. 316	MALE O-RING BOSS TO FEMALE NPT PIPE, SAE #6 x 1/2" NPT
6	1		HYDRAULIC 1/2" HOSE ASSEMBLY WITH S.S. 316 FITTINGS
7	1	S.S. 316	THREADED FEMALE 90 DEGREES ELBOW 1/2" NPT
8	1	S.S. 316	BREATHER VENT 1/2" NPT
9	1		1911-2-106 ITEM 5 OIL RESERVOIR

No	Date	Description	Drawn by Dessiné par	Approved Approuvé
2	20/05/16	ISSUED FOR TENDER	FJ	DC
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Revision / Revision	
A	Detail number No du détail
B	Location dwg no No. sur dessin
C	Drawing sheet no No. du dessin

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 File No./No de dossier _____

Public Works and Government Services Canada / Travaux publics et Services gouvernementaux Canada
 Client Service Team for Parks Canada Ontario Region / Équipe des services à la clientèle pour Parcs Canada Région de l'Ontario

Canada

MMM GROUP

Chadwick Engineering Ltd.

Chadwick
 24 May 2016

Project title / Titre du projet

KINGSTON MILLS SWING BRIDGE REHABILITATION

RIDEAU CANAL

KINGSTON ONTARIO

Drawing title / Titre du dessin

SLAVE CYLINDER ASSEMBLY

Scale / Echelle
1:2

Drawn by / Dessiné par
RR Date
MARCH 2016

Designed by / Conçu par
RR Date

Checked by / Vérifié par
DPC Date

Approved by / Approuvé par
DPC Date
APR 2016

Project No./No. du projet
3515015 Client No./No du Client
1911-2-113 Sheet No./Feuille No.

Drawing Reference No./Numéro de Référence du Dessin
M113

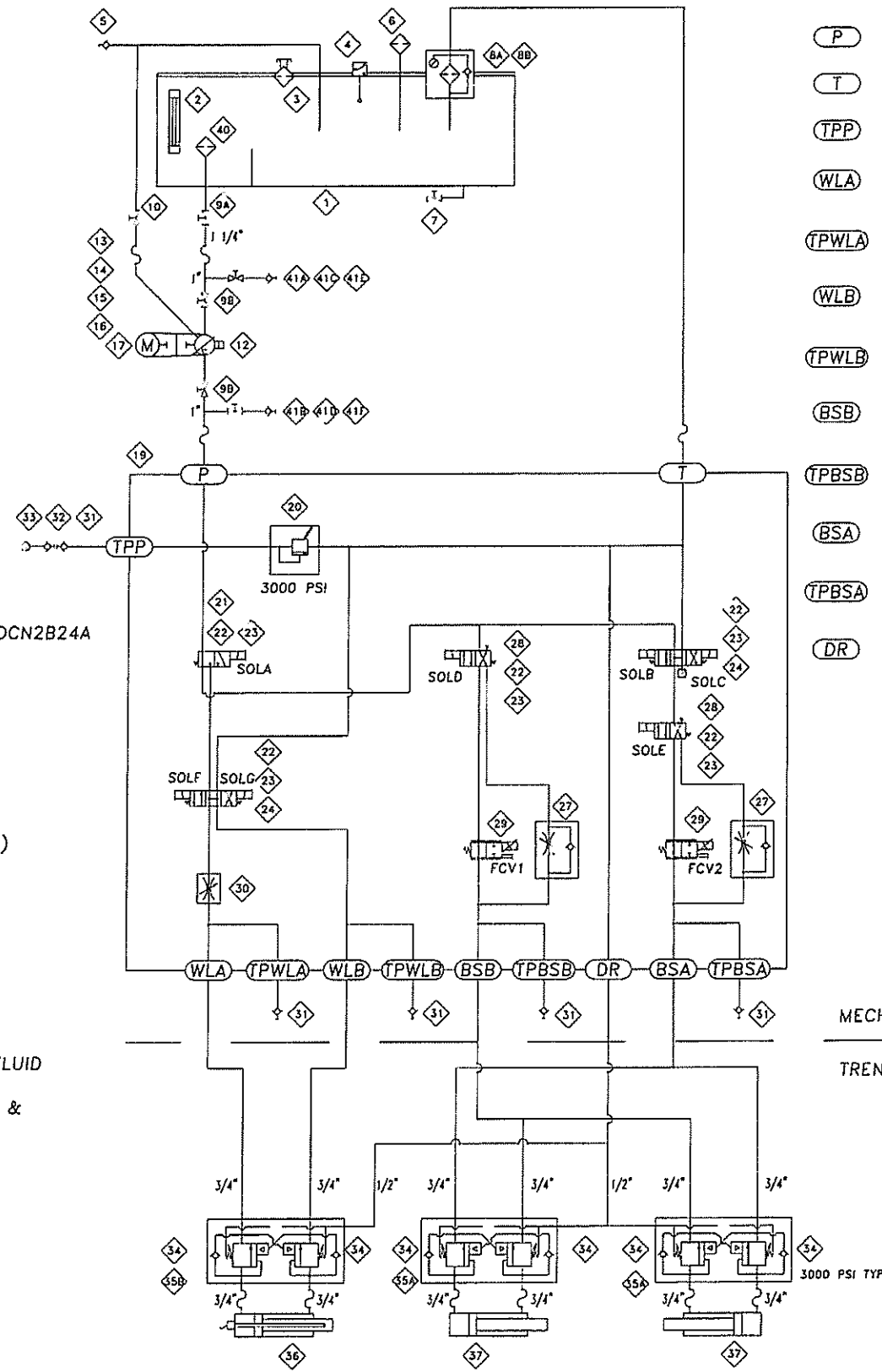
Ra micrometer	Ra micro-inch	Roughness Grade Number
50	2000	N12
25	1000	N11
12.5	500	N10
6.3	250	N9
3.2	125	N8
1.6	63	N7
0.8	32	N6
0.4	16	N5
0.2	8	N4
0.1	4	N3
0.05	2	N2
0.025	1	N1

ALL DIMENSIONS IN MILLIMETERS
 UNSPECIFIED TOLERANCES:
 DECIMAL: X.XXX ± .05 [.002]
 X.XX ± .25 [.01]
 X.X ± .50 [.02]
 REMOVE ALL BURRS AND SHARP EDGES

ITEM QTY DESCRIPTION

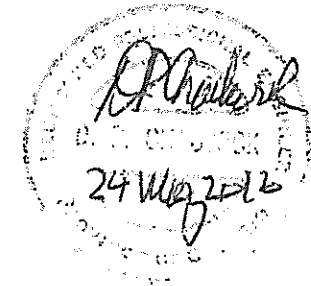
- 1 1 TRL70 J1C RESERVOIR 304 SS, WITH STAND
- 2 1 OIL LEVEL INDICATOR LVA20TA
- 3 1 FILLER BREATHER TABOFL10B M00C80
- 4 1 LEVEL FLOAT SWITCH RL-GI-T3S2A A500
- 5 1 PUMP CASE DRAIN QDC
- 6 1 TRICEPTOR 934330
- 7 1 1/2" DRAIN BALL VALVE
- 8A 1 RTB30210CP25C17C1 INTANK FILTER
- *8B 1 ELEMENT FOR 8A 934204
- 9A 1 1 1/4" BALL VALVE
- 9B 4 1" BALL VALVE
- 10 1 1/2" BALL VALVE
- 12 1 PARKER PVP1630R2P12 VAR. VOL. P. R. COMP. PISTON PUMP
- 13 1 DRIVE COUPLING INSERT L150
- 14 1 MOTOR COUPLING L150 1 3/8"
- 15 1 PUMP COUPLING L150 3/4"
- 16 1 PUMP MOTOR ADAPTER #1959 215TC/SAE 2A
- 17 1 7 1/2 Hp 1 PH 60 Hz 230V 1740 RPM TEFC MOTOR
- 19 1 EFP 017 20002 HYDRAULIC MANIFOLD BLOCK
- *20 1 SUN RELIEF VALVE RDDA LAN
- *21 1 PARKER D1VW020BNJW4 4/2 24 VDC CONTROL VALVE
- *22 7 PARKER 24 VDC COIL
- *23 7 PARKER HIRSMAN CONNECTOR C/W SURGE SUPPRESSION & LIGHT
- *24 2 PARKER D1VW002CNJW4 4/3 24 VDC CONTROL VALVE
- *27 2 SUN FLOW CONTROL NCCB-LCN-GBA
- *28 2 PARKER D1VW030HNJW4 4/2 24 VDC CONTROL VALVE
- *29 2 SUN ELECTRO-PROPORTIONAL FLOW CONTROL, NORMALLY OPEN FPCHDCN2B24A
- *30 1 SUN NEEDLE VALVE NFCC LCN-GBA
- 31 5 PD361 TEST PORT MQDC
- 32 1 PD242 TEST PORT FQDC
- 33 1 Q812 0-5000 PSI GAUGE
- *34 6 SUN CWCA LHM COUNTER-BALANCE VALVE
- *35A 2 SUN XPK SAE10 PORTS SWING CYLINDER MANIFOLD BLOCK
- *35B 1 SUN XPJ SAE8 PORTS WEDGE CYLINDER MANIFOLD BLOCK
- *36 1 PARKER 2.50 DB 2HLTS34A24.50 WEDGE CYL. WITH TRANSDUCER (SEE 1911-2-030)
- *37 2 PARKER 6.00 BB 2HLTS23A38.80 SWING CYLINDER (SEE 1911-2-112)
- *38 1 PARKER 2.0 DB 2HLT28A26.8 SLAVE CYL. WITH TRANSDUCER (SEE 1911-2-113)
- 40 1 STR0704 SG2M90 IN-TANK STRAINER
- 41A 1 PUMP SUCTION QDC 1" MALE 6602-16
- 41B 1 PUMP PRESSURE QDC 3/4" FEMALE 6601-12
- 41C 1 PUMP SUCTION QDC 1" FEMALE 6601-16
- 41D 1 PUMP PRESSURE QDC 3/4" MALE 6602-12
- 41E 1 DUST PLUG FOR 41A - 41C
- 41F 1 DUST PLUG FOR 41B - 41D
- *42 205 LITERS ENVIRONMENTALLY SAFE & BIODEGRADABLE HYDRAULIC FLUID (ISO GRADE 46) CONFORMING TO:
 -ISO 9439 - INTERNATIONAL WATER QUALITY EVALUATION STANDARD &
 -ASTM D 5864 - STANDARD TEST METHOD FOR DETERMINING THE AEROBIC/AQUATIC BIODEGRADATION OF LUBRICANTS.
 (MUST BE COMPATIBLE WITH NBR (NITRILE/BUNA N) SEAL MATERIALS)

*NEW ITEMS OR ITEMS TO BE REPLACED



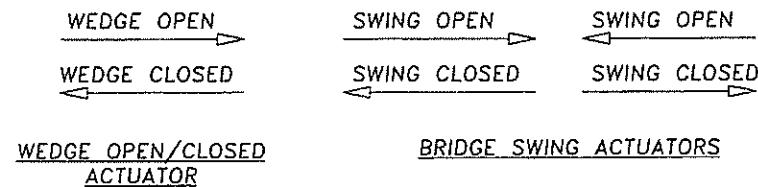
LEDGEND

- (P) PRESSURE
- (T) TANK
- (TPP) TEST PRESSURE PORT
- (WLA) WEDGE ACTUATOR EXTEND (WEDGE OPEN)
- (TPWLA) TEST PRESSURE OF WEDGE ACTUATOR EXTEND
- (WLB) WEDGE ACTUATOR RETRACT (WEDGE CLOSED)
- (TPWLB) TEST PRESSURE OF WEDGE ACTUATOR RETRACT
- (BSB) BRIDGE SWING ACTUATORS EXTEND (SWING OPEN)
- (TPBSB) TEST PRESSURE OF BRIDGE SWING ACTUATORS EXTEND
- (BSA) BRIDGE SWING ACTUATORS RETRACT (SWING CLOSED)
- (TPBSA) TEST PRESSURE OF BRIDGE SWING ACTUATORS RETRACT
- (DR) DRAIN PORT FROM COUNTERBALANCE VALVES 34



MECHANICAL ROOM

TRENCH/BRIDGE AREA



2	20/05/16	ISSUED FOR TENDER	FJ	DC
1	25/04/16	RELEASED FOR REVIEW	RR	DPC
No.	Date	Description	Drawn by / Dessiné par	Approved / Approuvé

Revision / Révision	
A	B
C	C

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Public Works and Government Services Canada / Travaux publics et Services gouvernementaux Canada
 Client Service Team for Parks Canada Ontario Region / Équipe des services à la clientèle pour Parcs Canada Région de l'Ontario

Canada

MMM GROUP

Chadwick Engineering Ltd.

Project title / Titre du projet
KINGSTON MILLS SWING BRIDGE REHABILITATION
RIDEAU CANAL
 KINGSTON ONTARIO

Drawing title / Titre du dessin
HYDRAULIC SCHEMATIC

Scale / Echelle
 NOT TO SCALE
 Drawn by / Dessiné par RR Date APRIL 2016
 Designed by / Conçu par RR Date
 Checked by / Vérifié par DPC Date
 Approved by / Approuvé par DPC Date APR 2016

Project No./No. du projet 3515015	Client No./No du Client 1911-2-114	Sheet No./Feuille No. M114
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