TRENT-SEVERN CANAL
KAWARTHA LAKES - BOUNDARY ROAD
SWING BRIDGE No. 44

LIST of DRAWINGS:

STRUCTURAL:

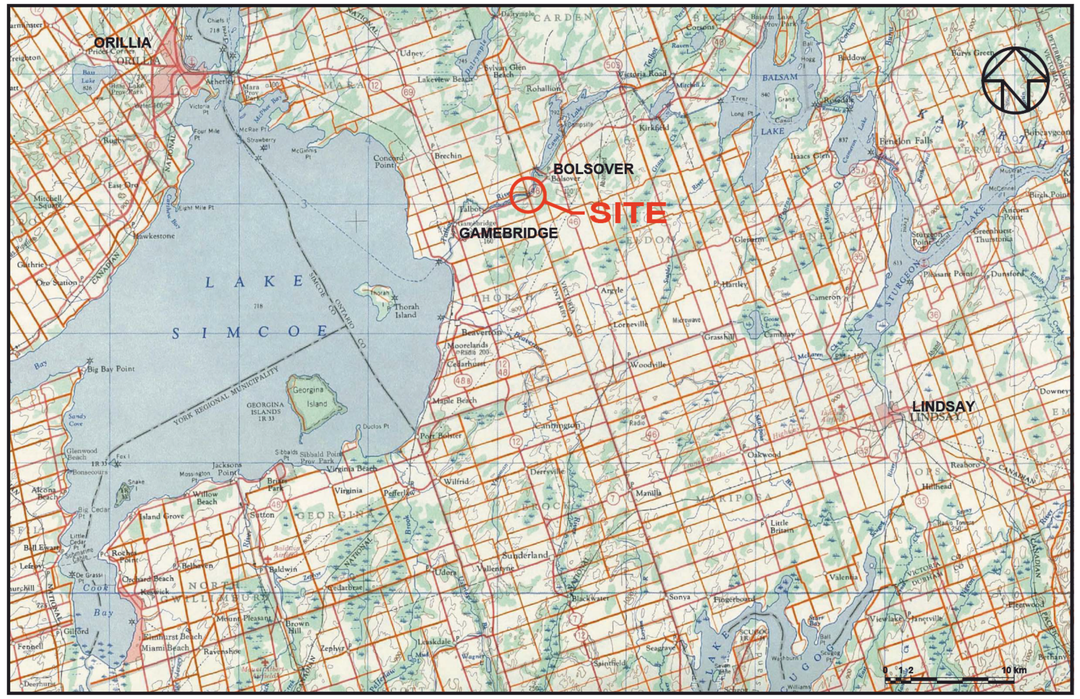
00 - COVER SHEET
01 - GENERAL ARRANGMENT
02 - PERMISSIBLE WORK and STORAGE AREA
03 - DETOUR
04 - SILTATION PREVENTION
05 - ROAD WORK c\w SIGNAGE and GUIDERAIL
06 - CONCRETE REPAIR OF ABUTMENTS and CENTRE PIER
07 - CONCRETE REPAIR OF ABUTMENTS and CENTRE PIER DETAILS
08 - STRUCTURAL STEEL CASTING and TURNING GEAR
09 - STRUCTURAL STEEL FLOOR DETAILS
10 - STRUCTURAL STEEL CENTRE GIRDER
11 - STRUCTURAL STEEL TRUSS END ELEVATION and DETAILS
12 - STRUCTURAL STEEL TRUSS MIDDLE ELEVATION and DETAILS
13 - STRUCTURAL STEEL and WOOD DECK, PLAN and DETAILS
14 - STRUCTURAL STEEL HANDRAIL
15 - STRUCTURAL STEEL FLOOR BEAMS, STRINGERS and LATERALS
16 - STRUCTURAL STEEL ERECTION DIAGRAM
17 - SLEEPER SLAB and APPROACH SLAB
18 - MISCELLANEOUS
19 - STANDARD GUIDERAIL DETAILS
20 - ELECTRICAL GENERAL LAYOUT
21 - STANDARD ELECTRICAL DETAILS I
22 - STANDARD ELECTRICAL DETAILS II

ELECTRICAL:

A1 to A5
B1 to B4
C1 to C10
D1 to D3
E1 to E15
F1 to F48

MECHANICAL:

200 - 01
201 - 01 to 06
202 - 01 to 03
203 - 01 to 26
204 - 01
M-15
M-16



KEY PLAN

Public Services and Procurement Canada
Services publics et Approvisionnement Canada

Ontario Region
Parks Canada Infrastructure Directorate
Heritage Canals and Engineering Works

Région de l'Ontario
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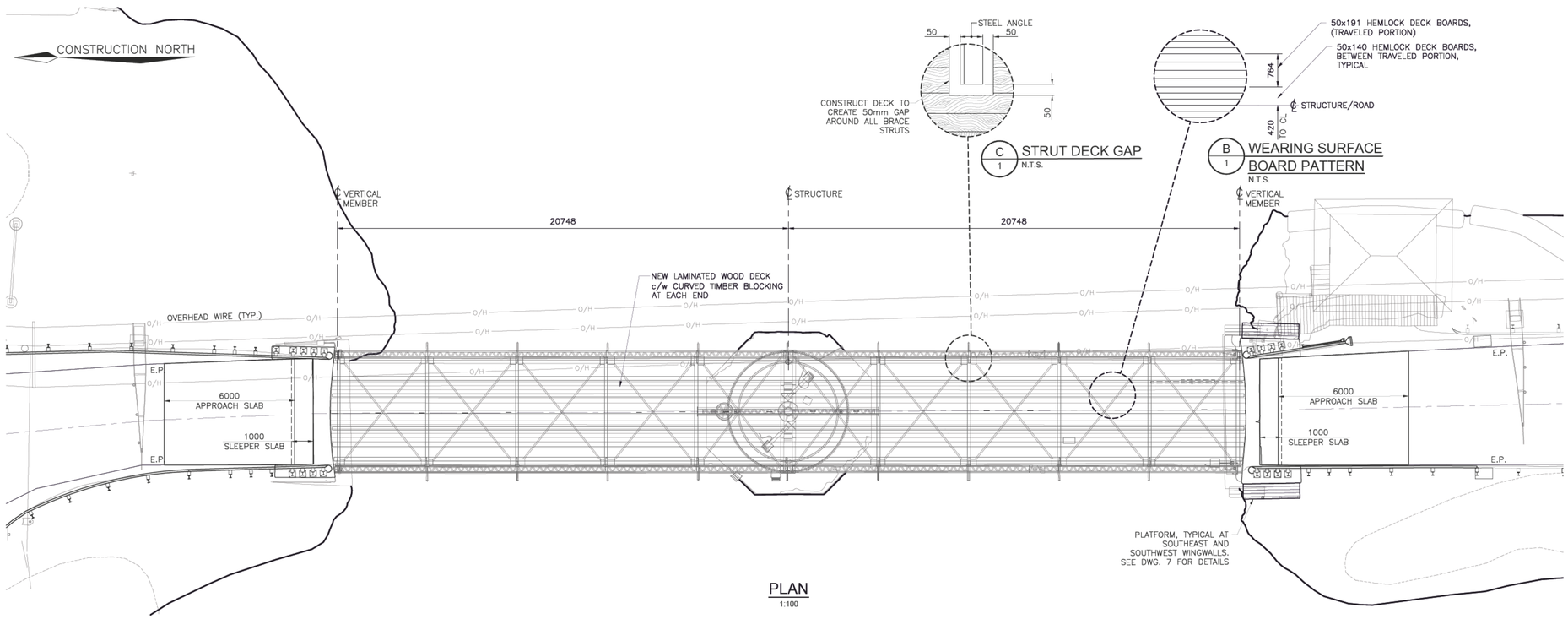
Parks Canada Parcs Canada

PRPC Project No. R.030025.844
WSP Project No. 15M-00675-01
OCTOBER, 10, 2019

B1 (1000 x 707)

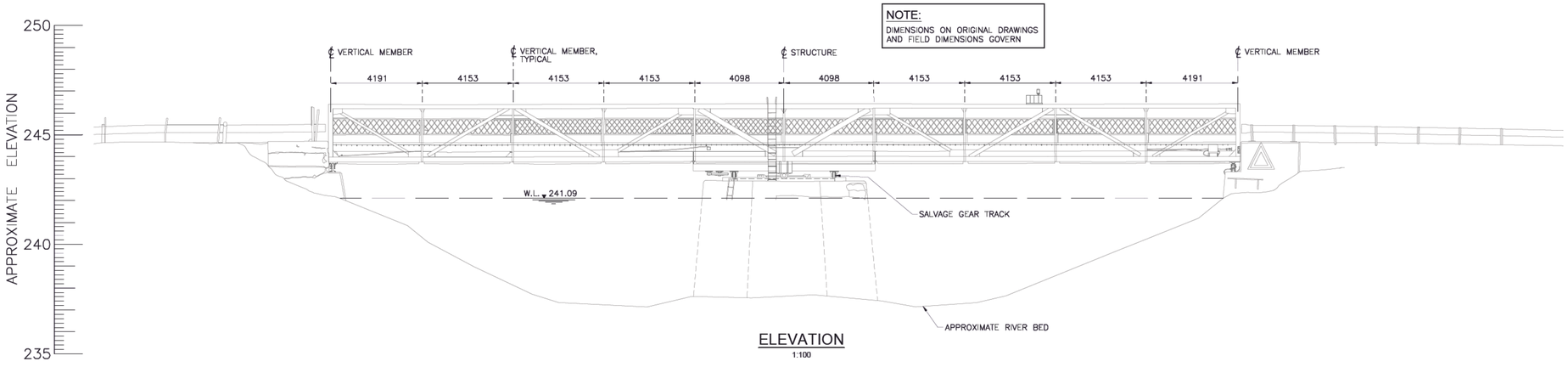


PLAN
1:100

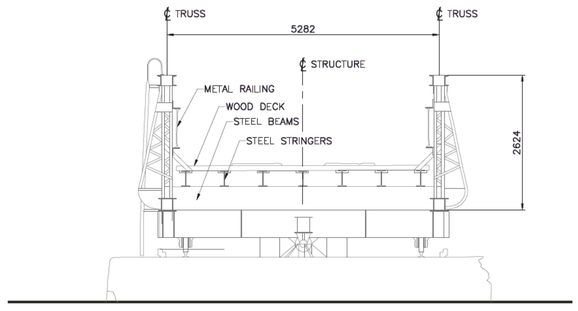
C 1 STRUT DECK GAP
N.T.S.

B 1 WEARING SURFACE BOARD PATTERN
N.T.S.

NOTE:
DIMENSIONS ON ORIGINAL DRAWINGS AND FIELD DIMENSIONS GOVERN

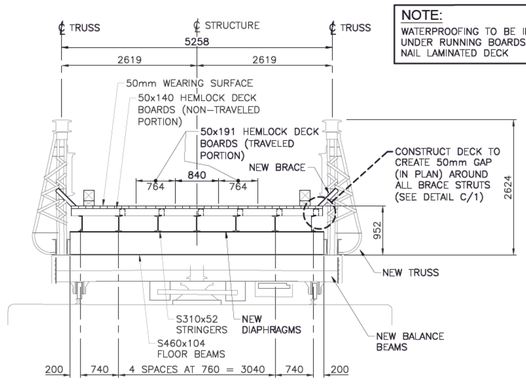


ELEVATION
1:100



1 1 TYPICAL EXISTING SECTION
1:50

NOTE:
WATERPROOFING TO BE INSTALLED UNDER RUNNING BOARDS OVER NAIL LAMINATED DECK



2 1 TYPICAL PROPOSED SECTION
1:50

NOTES:

GENERAL:

- DO NOT SCALE DRAWINGS
- ALL DIMENSIONS ARE IN MILLIMETERS UNLESS NOTED OTHERWISE.
- THE LATEST VERSION OF ALL REFERENCED DOCUMENTS AND STANDARDS SHALL APPLY.
- ALL WORK TO BE CARRIED OUT IN ACCORDANCE WITH THE CHBDC AND OPSS STANDARDS.
- DIMENSIONS RELATING TO EXISTING CONSTRUCTION MUST BE FIELD VERIFIED BY CONTRACTOR BEFORE STARTING ANY WORK OR FABRICATION.
- THE CONTRACTOR SHALL EXAMINE THE SITE AND SATISFY HIMSELF OF THE ACTUAL CONDITIONS AND REQUIREMENTS OF THE WORK.
- THE CONTRACTOR IS RESPONSIBLE FOR SAFETY ON THE JOB SITE AND DESIGN, INSTALLATION, AND SUPERVISION OF ALL TEMPORARY BRACING, LOADS, AND SUPPORTS.
- FEATURES OF CONSTRUCTION NOT FULLY SHOWN SHALL BE OF THE SAME CHARACTER AS SHOWN FOR SIMILAR CONDITIONS.
- INSTALL ALL NECESSARY SCAFFOLDING, HOARDING, ETC. TO COMPLETE THE WORK, ALL IN ACCORDANCE WITH MINISTRY OF LABOUR REQUIREMENTS.
- ACCESS, WORK AND STORAGE AREAS SHALL BE LIMITED TO THOSE AREAS DELINEATED ON THE DRAWINGS.
- PROVIDE PROTECTION TO FEATURES TO REMAIN TO THE SATISFACTION OF THE DEPARTMENTAL REPRESENTATIVE.
- MINIMIZE DUST AND NOISE.
- MAINTAIN WORK SITE IN A NEAT AND ORDERLY MANNER TO THE SATISFACTION OF THE DEPARTMENTAL REPRESENTATIVE.
- ALL DEBRIS SHALL BE REMOVED FROM THE WORK SITE ON A DAILY BASIS THROUGHOUT THE DURATION OF THE PROJECT.
- ALL DISPOSALS SHALL BE IN ACCORDANCE WITH THE RELEVANT SECTIONS OF THE SPECIFICATIONS.
- REINSTATE AND MAKE GOOD ALL DISRUPTED AREAS TO THE SATISFACTION OF THE DEPARTMENTAL REPRESENTATIVE AFTER COMPLETION OF THE WORK.
- DESIGN LOAD: CHBDC-CL625 TRUCK.
- BASED ON PAST EXPERIENCE THE WATER ELEVATIONS HAVE BEEN APPROXIMATELY 240.7 AND FLUCTUATED BETWEEN 240.4± AND 241.1 BETWEEN THE MONTHS OF OCTOBER AND MAY.

STRUCTURAL STEEL:

- STEEL SHALL CONFORM TO CAN/CSA G40.20-04/G40.21-13 (R2018) GRADE 350W.
- STEEL IS DESIGNED TO AND SHALL BE FABRICATED AND ERECTED IN ACCORDANCE WITH THE CISC "CODE OF STANDARD PRACTICE FOR STRUCTURAL STEEL" AND CAN/CSA S16.1.
- TENSION CONTROL BOLTS WITH HEADS RESEMBLING RIVETS CONFORMING TO ASTM F1852 SHALL BE USED FOR ALL VISIBLE CONNECTIONS IN HIDDEN AREAS OF THE STRINGER CONNECTIONS. BOLTS SHALL CONFORM TO ASTM STANDARD A325 or A325M, AND SHALL MATCH THE SIZE OF THE RIVETS SPECIFIED OR SHALL BE AS SHOWN. BOLT THREADS SHALL BE EXCLUDED FROM THE SHEAR PLANES.
- WELDING SHALL BE MADE WITH E480xx ELECTRODES IN ACCORDANCE WITH CSA W59-18 AND SHALL BE PERFORMED BY A WELDER QUALIFIED UNDER CSA W47.1-03. SURFACES TO BE WELDED SHALL BE THOROUGHLY CLEANED OF ALL FOREIGN MATERIAL.
- THE FABRICATOR SHALL BE CERTIFIED TO THE REQUIREMENTS OF CSA STANDARD W47.1 (DIVISION 1 or 2)
- ALL NEW STRUCTURAL STEEL COMPONENTS DESIGNATED FOR GALVANIZING SHALL BE HOT DIP GALVANIZED AFTER FABRICATION IN ACCORDANCE WITH CAN/CSA G164-18
- UNLESS OTHERWISE NOTED, THE MINIMUM FILLET WELD SHALL BE AS FOLLOWS:

MATERIAL THICKNESS OF THICKER PART JOINED (mm)	MINIMUM SIZE OF FILLET WELD (mm)
TO 12 INCLUSIVE	5
OVER 12 TO 20	6
OVER 20 TO 40	8
OVER 40 TO 60	10
OVER 60 TO 120	12

- THE CONTRACTOR SHALL ENSURE THE STABILITY OF ALL COMPONENTS DURING HANDLING, TRANSPORTATION AND ERECTION AND UNTIL THE STRUCTURAL STEEL IS IN ITS FINAL LOCATION WITH ALL PERTINENT BRACING, CONNECTIONS AND SUPPORTS IN PLACE AND THE GOOD OPERATION OF THE BRIDGE IS CONFIRMED.

SCOPE OF WORK:

1. REMOVE EXISTING BRIDGE AFTER SALVAGING DESIGNATED PARTS.
2. COMPLETE CONCRETE REPAIRS ON PIERS AND ABUTMENTS.
3. BUILD NEW REPLICA BRIDGE, SALVAGING PARTS DESIGNATED FOR SALVAGE ON DRAWINGS 8, 9, 13 15 & 18. REPLACE ALL OTHERS.
4. REPLACE HYDRAULICS AND ELECTRICAL SYSTEMS.
5. PAINT ALL STEEL IN STRICT CONFORMANCE WITH SPECIFICATION.
6. COMMISSION BRIDGE AND MAKE ADJUSTMENTS SUCH THAT BRIDGE OPERATES SMOOTHLY AND AS INTENDED IN THE SPECIFICATION.
7. INSTALL NEW LAMINATED WOOD DECK, WATERPROOFING, AND RUNNING BOARDS.
8. REBUILD ROADWAY, FULL DEPTH.

NOTE:

1. THE ABOVE IS NOT INTENDED TO BE AN EXHAUSTIVE LIST OF ALL ITEMS REQUIRED TO COMPLETE THE WORK, NOR IS IT INTENDED TO BE A SEQUENCE OF WORK.
2. IT IS INTENDED THAT THE WORK OF THIS CONTRACT WILL BE DONE PRIMARILY WITH THE BRIDGE IN THE OPEN POSITION IN ORDER TO FACILITATE HOUSING AND HEATING, ACCESS TO THE SITE, ENVIRONMENTAL IMPACT CONTROL, ETC.

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NOTE:

THE LOCATIONS OF UTILITES ARE APPROXIMATE ONLY AND THE EXACT LOCATIONS SHOULD BE DETERMINED BY CONSULTING THE MUNICIPAL AUTHORITIES AND UTILITY COMPANIES CONCERNED. THE CONTRACTOR SHALL PROVE THE LOCATION OF UTILITIES AND SHALL BE RESPONSIBLE FOR ADEQUATE PROTECTION FROM DAMAGE DURING CONSTRUCTION.

BENCHMARKS:

B.M. No.1

SWING BRIDGE OVER TRENT CANAL, 396m EAST OF LOCK No. 37, TABLET IN TOP OF RETAINING WALL ON NORTHEAST SIDE AND AT SOUTHEAST END OF BRIDGE, 30cm NORTHEAST AND 30cm SOUTHWEST OF SOUTHEASTERLY CORNER.

B.M. No.2

CONCRETE CULVERT UNDER HWY 48, 0.4 kM WEST OF THE JCT OF HWY 48, AND KING ST IN BOLSOVER, 2.0 kM EAST OF ELDON-THORAH TOWN LINE RD, AND 18.4m SOUTH OF CENTRELINE OF HWY 48. TABLET IS SET VERTICALLY IN TOP OF CULVERT, 1.05m WEST OF EAST FACE, AND 94cm NORTH OF SOUTH END OF CULVERT. (ELEV. 245.786m)

B.M. No.3

STEEL ROD WITH BRASS CAP BENCH MARK ON SOUTH SIDE OF HWY 48, AND ON EAST SIDE OF HWY 46, 0.6 kM EAST OF THE JCT OF HWY 48 AND KING ST IN BOLSOVER, AND 84.5m SOUTH OF CENTRELINE OF HWY 48. BENCH MARK IS SET 21.6m EAST OF CENTRELINE OF HWY 46, 17.2m S.E. OF A METAL LIGHT STANDARD, 83cm WEST OF EAST RIGHT-OF-WAY FENCE OF HWY 46, AND IS MARKED BY A STEEL MARKER 50cm NORTH OF BENCH MARK. (ELEV. 251.958m)

revision		date
04		
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Do not scale drawings.
Verify all dimensions and conditions on site and immediately notify the Departmental Representative of all discrepancies.

A/C A Detail No. No. du detail
B drawing no. - where detail required dessin no. - ou detail exige
C drawing no. - where detailed dessin no. - ou detaille
A/B/C

project title / titre du projet
KAWARTHA LAKES Ontario
BOUNDARY ROAD
SWING BRIDGE REPLACEMENT
TRENT-SEVERN WATERWAY

drawing title / titre du dessin
GENERAL ARRANGEMENT

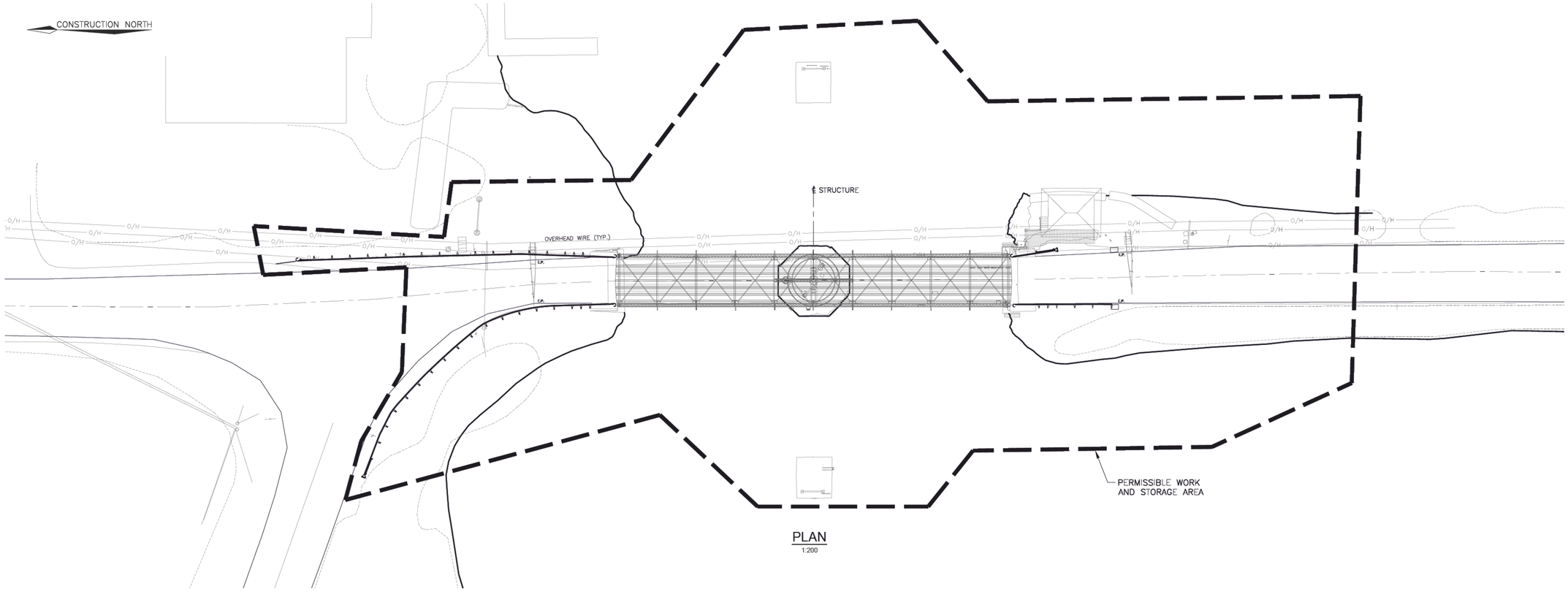
drawn by / dessine par: G. MOTA / P.C. MASON
designed by / conc par: D.A. HUCTWITH
approved by / approuve par:
bid / offre — project manager / administrateur de projets
project date / date du projet: 2019-10-10
project no. / no. du projet: R.030025.844
drawing no. / dessine no.: 1

B1 (1000 x 707)

0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 millimetres

NOTES:

- THE GROUNDS OF THE SITE ARE PART OF A HERITAGE SITE AND ARE TO BE DISTURBED AS LITTLE AS POSSIBLE.
- LIMIT AREAS WHERE THE SURFACE OF THE EARTH IS DISTURBED.
- IF ANY ARTIFACT IS UNCOVERED, STOP WORK IN THE AREA AND CONTACT DEPARTMENTAL REPRESENTATIVE.
- SECURE THE SITE WHENEVER WORKERS ARE NOT PRESENT ON THE SITE.
- VISIT THE SITE, OR ARRANGE FOR THE SITE TO BE CHECKED AT A MINIMUM OF ONE-WEEK INTERVALS, OR MORE FREQUENTLY AS APPROPRIATE BASED ON CONDITIONS OF THE SITE.
- BASED ON PAST EXPERIENCE, THE WATER ELEVATIONS HAVE BEEN APPROXIMATELY 240.7 AND FLUCTUATED BETWEEN 240.4 AND 241.1 BETWEEN THE MONTHS OF OCTOBER AND MAY.



PLAN
1:200

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Parks Canada / Parcs Canada

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LICENCED PROFESSIONAL ENGINEER
D.A. HUCTWITH
6-10 2019
PROVINCE OF ONTARIO

LICENCED PROFESSIONAL ENGINEER
Z. F. WASIEWICZ
19/10/9
PROVINCE OF ONTARIO

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03		
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revision		date

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KAWARTHA LAKES Ontario

BOUNDARY ROAD
SWING BRIDGE REPLACEMENT
TRENT-SEVERN WATERWAY

drawing title / titre du dessin
PERMISSIBLE WORK and STORAGE AREA

drawn by / dessine par: G. MOTA / P.C. MASON

designed by / conc par: D.A. HUCTWITH

approved by / approuve par:

bid / offre — project manager / administrateur de projets

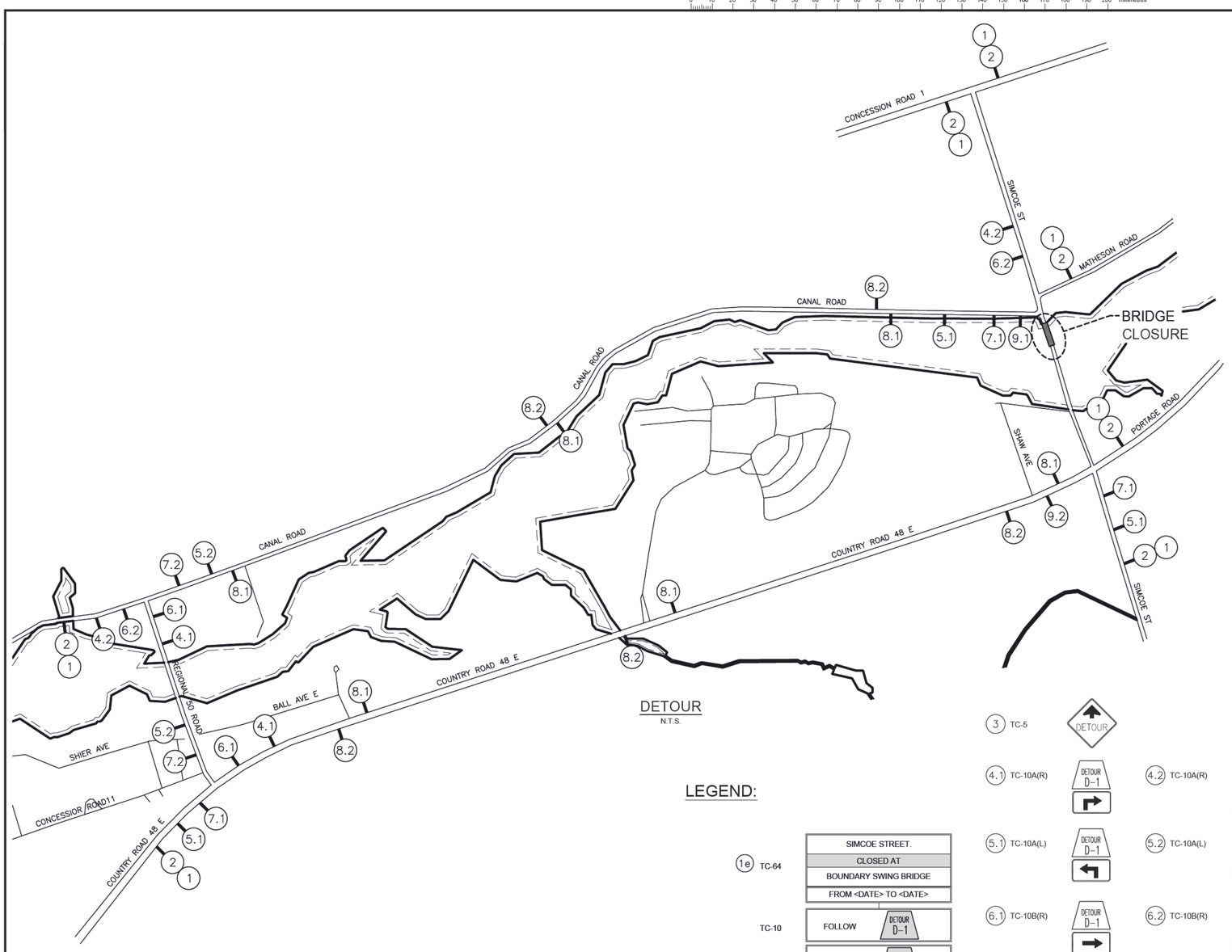
project date / date du projet: 2019-10-10

project no. / no. du projet: R.030025.844

drawing no. / dessine no.: 2

B1 (1000 x 707)

0 10 20mm 40 60 80 100 120 140 160 180 200mm



DETOUR
N.T.S.

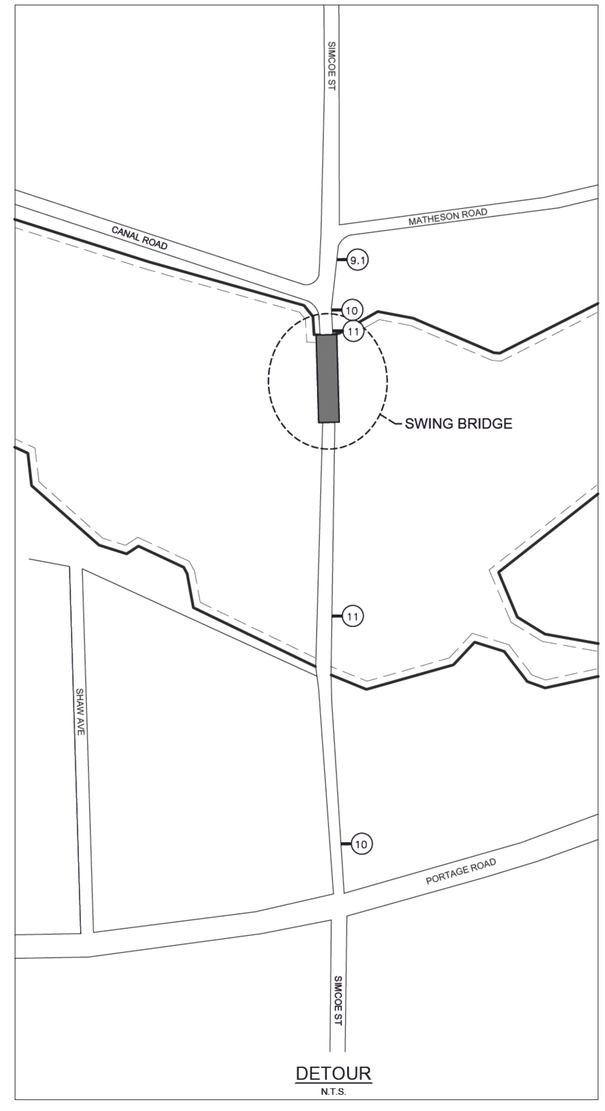
LEGEND:

1e	TC-64	SIMCOE STREET. CLOSED AT BOUNDARY SWING BRIDGE FROM <DATE> TO <DATE>
	TC-10	FOLLOW DETOUR D-1
	TC-10	FOLLOW DETOUR D-2
1e	TC-64	TO BE CLOSED AT (ADVANCE NOTICE TAB)
2f	TC-64F	RUE SIMCOE. FERMÉ À PONT BATTANT DE BOUNDARY DE <DATE> À <DATE>
	TC-10F	SUIVRE DETOUR D-1
	TC-10F	SUIVRE DETOUR D-2
2f	TC-10F	SERA FERMÉ À (ADVANCE NOTICE TAB)

3	TC-5	DETOUR	
4.1	TC-10A(R)	DETOUR D-1	
			4.2 TC-10A(R) DETOUR D-2
5.1	TC-10A(L)	DETOUR D-1	
			5.2 TC-10A(L) DETOUR D-2
6.1	TC-10B(R)	DETOUR D-1	
			6.2 TC-10B(R) DETOUR D-2
7.1	TC-10B(L)	DETOUR D-1	
			7.2 TC-10B(L) DETOUR D-2
8.1	TC-10C	DETOUR D-1	
			8.2 TC-10C DETOUR D-2
9.1	TC-10D	DETOUR D-1 ENDS	
			9.2 TC-10D DETOUR D-2 ENDS
	TC-7	YELLOW FLASHER	
10	TC-7tA	ROAD CLOSED/ROUTE FERMÉE	
	TC-8tB	LOCAL TRAFFIC ONLY/ TRAFIC LOCAL SEULEMENT	
11	TCB	TEMPORARY CONCRETE BARRIERS	RB-92 ROAD CLOSED

NOTES:

- CONTRACTOR TO EVALUATE CONDITIONS RELATIVE TO OTM BOOK 7
- SIGNS 1 AND 2 WITHOUT TC-64 AND, WITH ADVANCED NOTICE TABS, TO BE ERECTED FOURTEEN (14) CALENDAR DAYS PRIOR TO SCHEDULED BRIDGE CLOSURE DATE. REMOVE ADVANCE NOTICE TABS ON DATE OF BRIDGE CLOSURE.
- ALL OTHER SIGNS TO BE INSTALLED THREE (3) DAYS BEFORE CLOSURE TO ALLOW FOR INSPECTION AND ADJUSTMENTS (COVER/BAG SIGNS UNTIL CLOSURE).
- BARRIERS TO BE INSTALLED ACROSS ROAD AT BOTH ENDS OF JOB SITE.
- PLAN ILLUSTRATES THE MINIMUM SIGN REQUIREMENTS, AUGMENT OR ADJUST SIGNS SHOWN WITH ADDITIONAL SIGNS REQUIRED BY THE ONTARIO TRAFFIC MANUAL, BOOK 7 TEMPORARY CONDITIONS, AND AS REQUIRED TO ADDRESS CONCERNS.
- ALL DELINEATORS AND SIGNAGE/FLAGGING SHALL BE PROVIDED BY THE CONTRACTOR IN ACCOROADANCE WITH THE ONTARIO TRAFFIC MANUAL, BOOK 7, TEMPORARY CONDITIONS. DETOUR SIGNING, ADVISORY SPEED AND LANE CLOSURE SIGNS (INCLUDING ADVANCE WARNING or CLOSURE SIGNS) SHALL BE PROVIDED, INSTALLED, MAINTAINED AND REMOVED BY THE CONTRACTOR.
- THE CONTRACTOR SHALL ENSURE THAT PEDESTRIAN ACCESS WITHIN THE PROJECT LIMITS IS MONITORED AT ALL TIMES



DETOUR
N.T.S.

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D.A. HUCTWITH — 6+10 2019 — PROVINCE OF ONTARIO

Z. F. WASIEWICZ — 19/10/10 — PROVINCE OF ONTARIO

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C drawing no. - where detailed dessin no. - ou detaille

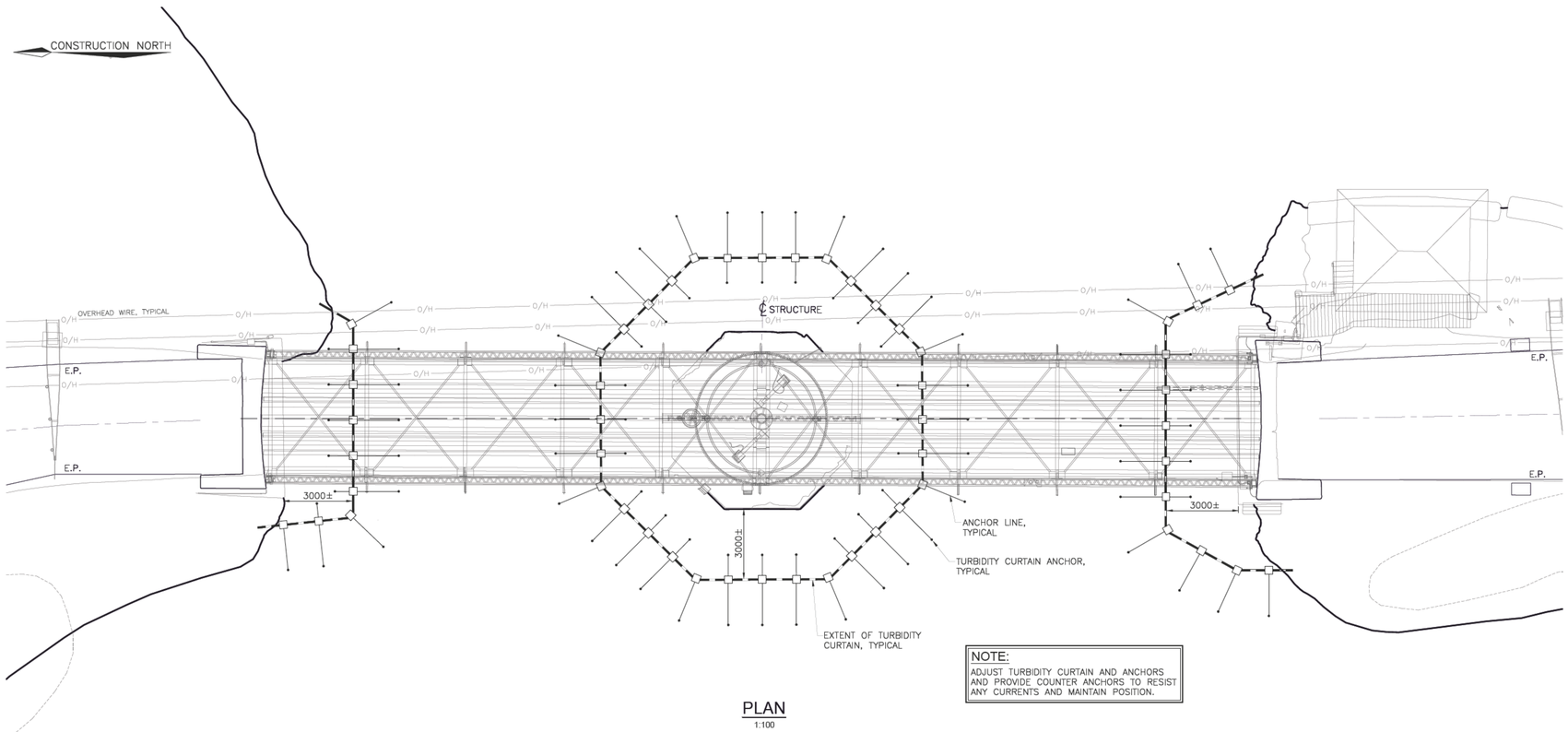
project title / titre du projet
KAWARTHA LAKES Ontario

BOUNDARY ROAD
SWING BRIDGE REPLACEMENT
TRENT-SEVERN WATERWAY

drawing title / titre du dessin
DETOUR

drawn by / dessine par: G. MOTA / P.C. MASON
designed by / conc par: D.A. HUCTWITH
approved by / approuve par:
bid / offre
project manager / administrateur de projets
project date / date du projet: 2019-10-10
project no. / no. du projet: R.030025.844
drawing no. / dessine no.: 3

B1 (1000 x 707)



PLAN
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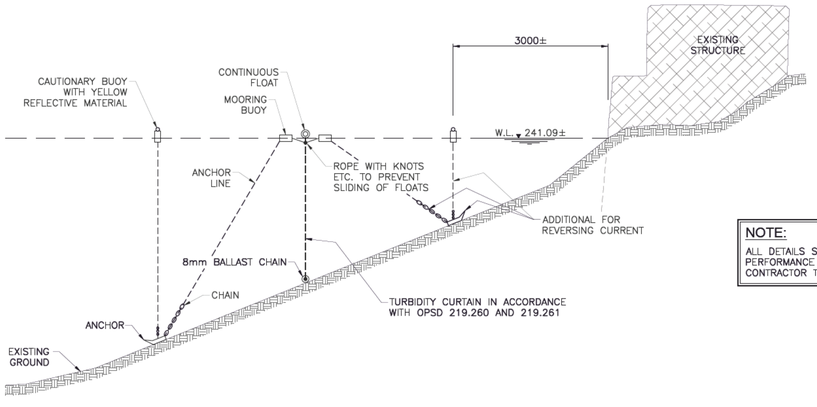
NOTE:
ADJUST TURBIDITY CURTAIN AND ANCHORS AND PROVIDE COUNTER ANCHORS TO RESIST ANY CURRENTS AND MAINTAIN POSITION.

GENERAL NOTES:

- TURBIDITY CURTAINS UTILIZED SHOULD BE U.S. DEPARTMENT of TRANSPORTATION, U.S. D.O.T. TYPE II MARINE GRADE TURBIDITY CURTAINS.
- TURBIDITY CURTAINS TO BE IN ACCORDANCE WITH OPSS 805.
- MINIMUM DEPTH OF TURBIDITY CURTAIN TO BE 1.8m.
- FLOTATION DEVICES SHALL BE CLEAN STEEL DRUMS, STYROFOAM or OTHER SUITABLE MATERIAL AND OF SUFFICIENT SIZE AND SPACING TO PROVIDE CONTINUOUS SUPPORT TO THE NETTING AT THE WATER SURFACE.
- ANCHORS AT BASE OF CURTAINS SHALL BE OF SUFFICIENT SIZE AND SPACING TO PROVIDE CONTINUOUS CONTACT OF TURBILITY CURTAIN WITH RIVER BOTTOM.
- FLOATATION AND ANCHOR DEVICES TO FOLLOW GUIDELINES IN M.T.O. DRAINAGE MANAGEMENT MANUAL, PARTS 1 and 2, CHAPTER 6.
- IN-RIVER WORK SHALL BE PROHIBITED BETWEEN MARCH 1 AND JULY 15.

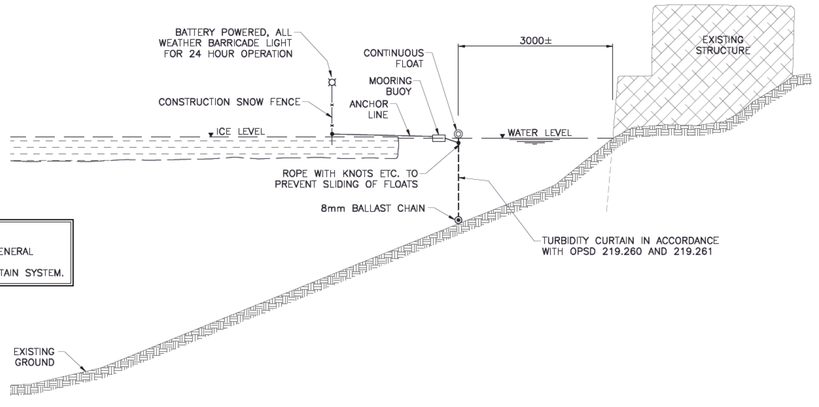
SCHEME FOR LAKE SILTATION PROTECTION DURING CONSTRUCTION:

- CAREFULLY REMOVE DETERIORATED CONCRETE AND ASSOCIATED MATERIALS. NO CONCRETE OR OTHER DETERIORATED MATERIAL IS TO BE DROPPED INTO THE RIVER. PROVIDE NECESSARY PRECAUTIONS AND CATCHMENT SYSTEM TO ENSURE NO CONTAMINATION OF LAKE ENVIRONMENT.
- INSTALL TURBIDITY CURTAINS c/w FLOATS AND ANCHORS TO THE EXTREMITIES INDICATED. (2m MIN. CLEAR OF ALL IN-WATER COMPLETED WORK) MAINTAIN NET THROUGHOUT THE DURATION OF THE WORK TO THE SATISFACTION OF THE DEPARTMENTAL REPRESENTATIVE. DEPLOY TURBIDITY CURTAINS IN A MANNER (i.e. MOVE IN A DIRECTION FROM CLOSE TO SHORE/STRUCTURES OUTWARD) THAT PREVENT ENTRAPMENT OF FISH INSIDE THE CURTAIN.
- PROCEED WITH IN-WATER WORK ONLY AFTER TURBIDITY CURTAINS ARE INSTALLED AND INSTALLATION IS APPROVED.
- TURBIDITY CURTAINS ARE ONLY TO BE REMOVED AFTER ALL IN-WATER WORKS ARE COMPLETE AND APPROVAL HAS BEEN GIVEN BY THE DEPARTMENTAL REPRESENTATIVE.
- CONTRACTOR SHALL SUPPLY AND MAINTAIN M.O.E.-APPROVED "SPILLS KIT" ON SITE AT ALL TIMES.



TYPICAL TURBIDITY CURTAIN ANCHORAGE SYSTEM
USING MARINE ANCHORS
1:50

NOTE:
ALL DETAILS SHOWN ILLUSTRATE GENERAL PERFORMANCE AND FUNCTIONALITY. CONTRACTOR TO DESIGN AND MAINTAIN SYSTEM.



TYPICAL TURBIDITY CURTAIN ANCHORAGE SYSTEM
FOR ICE CONDITIONS
1:50

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LICENSED PROFESSIONAL ENGINEER D.A. HUCTWITH 2019 10 10 PROVINCE OF ONTARIO

LICENSED PROFESSIONAL ENGINEER Z. F. WASENCZ 19/10/10 PROVINCE OF ONTARIO

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03		
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C drawing no. - where detailed dessin no. - ou detaille

project title / titre du projet
KAWARTHA LAKES Ontario

BOUNDARY ROAD
SWING BRIDGE REPLACEMENT
TRENT-SEVERN WATERWAY

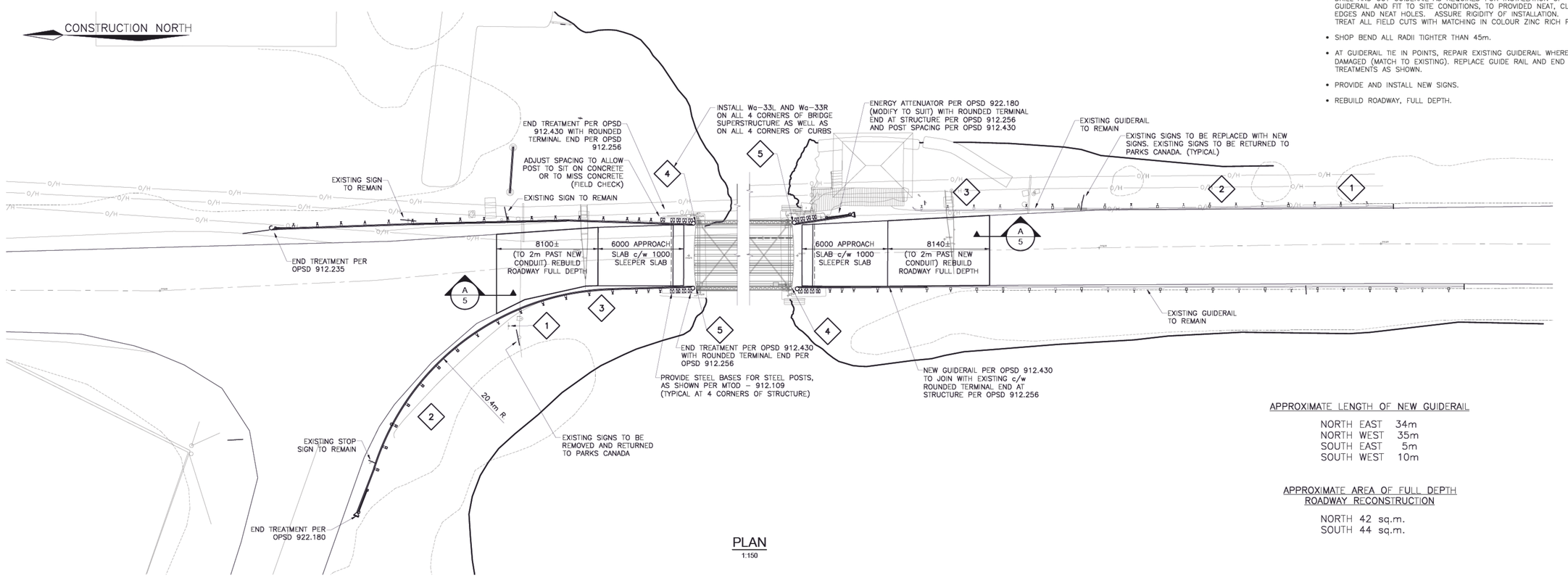
drawing title / titre du dessin
SILTATION PROTECTION

drawn by / dessine par: P.C. MASON
designed by / conc par: D.A. HUCTWITH
approved by / approuve par:
bid / offre
project manager / administrateur de projets
project date / date du projet: 2019-10-10
project no. / no. du projet: R.030025.844
drawing no. / dessine no.: 4

B1 (1000 x 707)

NOTES:

- DRILL AND CUT GUIDERAIL AS REQUIRED FOR INSTALLATION OF GUIDERAIL AND FIT TO SITE CONDITIONS, TO PROVIDED NEAT, CLEAN EDGES AND NEAT HOLES. ASSURE RIGIDITY OF INSTALLATION. TREAT ALL FIELD CUTS WITH MATCHING IN COLOUR ZINC RICH PAINT.
- SHOP BEND ALL RADII TIGHTER THAN 45m.
- AT GUIDERAIL TIE IN POINTS, REPAIR EXISTING GUIDERAIL WHERE DAMAGED (MATCH TO EXISTING). REPLACE GUIDE RAIL AND END TREATMENTS AS SHOWN.
- PROVIDE AND INSTALL NEW SIGNS.
- REBUILD ROADWAY, FULL DEPTH.



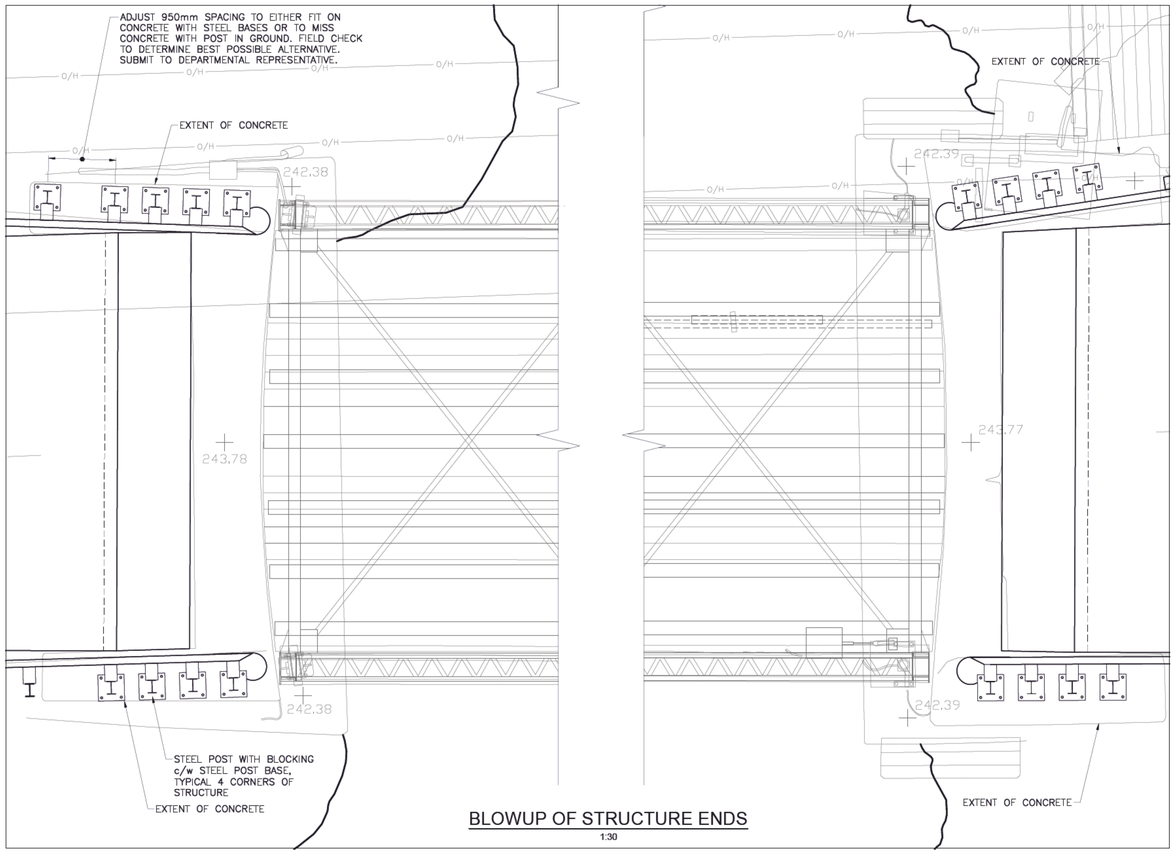
PLAN
1:150

APPROXIMATE LENGTH OF NEW GUIDERAIL

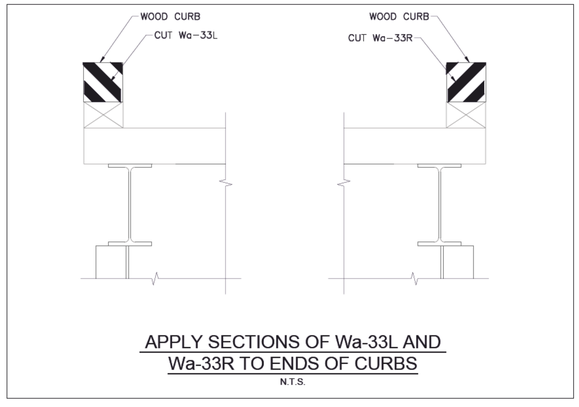
NORTH EAST 34m
NORTH WEST 35m
SOUTH EAST 5m
SOUTH WEST 10m

APPROXIMATE AREA OF FULL DEPTH ROADWAY RECONSTRUCTION

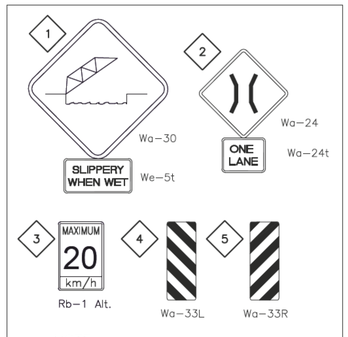
NORTH 42 sq.m.
SOUTH 44 sq.m.



BLOWUP OF STRUCTURE ENDS
1:30

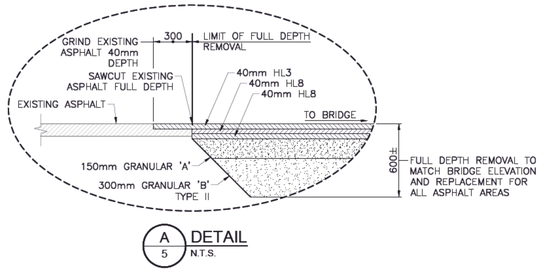


APPLY SECTIONS OF Wa-33L AND Wa-33R TO ENDS OF CURBS
N.T.S.



NOTE:
FINAL SIGN POSITION TO BE DETERMINED ON SITE.

PERMANENT SIGNS TO BE ADDED BOTH ENDS OF BRIDGE



A/5 DETAIL
N.T.S.

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Direction de l'infrastructure de Parcs Canada
Canaux historiques et travaux d'ingénierie

Parks Canada Parcs Canada

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LICENSED PROFESSIONAL ENGINEER D.A. HUCTWITH 2020 PROVINCE OF ONTARIO

LICENSED PROFESSIONAL ENGINEER Z. F. WASEWICZ 19/10/10 PROVINCE OF ONTARIO

revision		date
04		
03		
02		
01	ROADWAY RECONSTRUCTION AREA REVISION	2020/03/10

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

A/C A Detail No. No. du detail
B drawing no. - where detail required dessin no. - ou detail exige
C drawing no. - where detailed dessin no. - ou detaille
A/B C

project title
titre du projet
KAWARTHA LAKES Ontario

BOUNDARY ROAD
SWING BRIDGE REPLACEMENT
TRENT-SEVERN WATERWAY

drawing title
titre du dessin
ROAD WORK c\w
SIGNAGE and GUIDERAIL

drawn by
dessine par G. MOTA / P.C. MASON

designed by
conc par D.A. HUCTWITH

approved by
approuve par

bid
offre

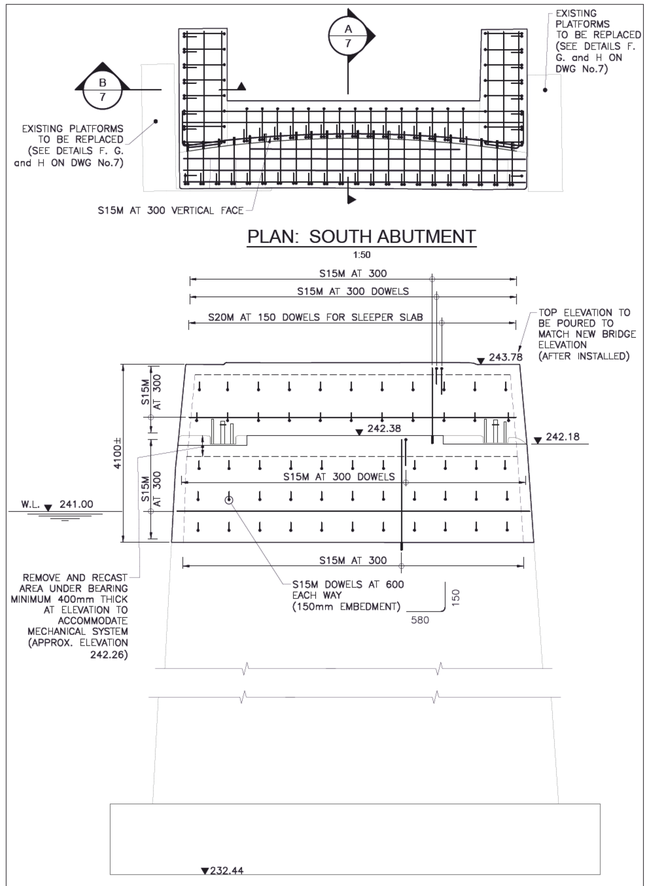
project manager
administrateur de projets

project date
date du projet 2019-10-10

project no.
no. du projet R.030025.844

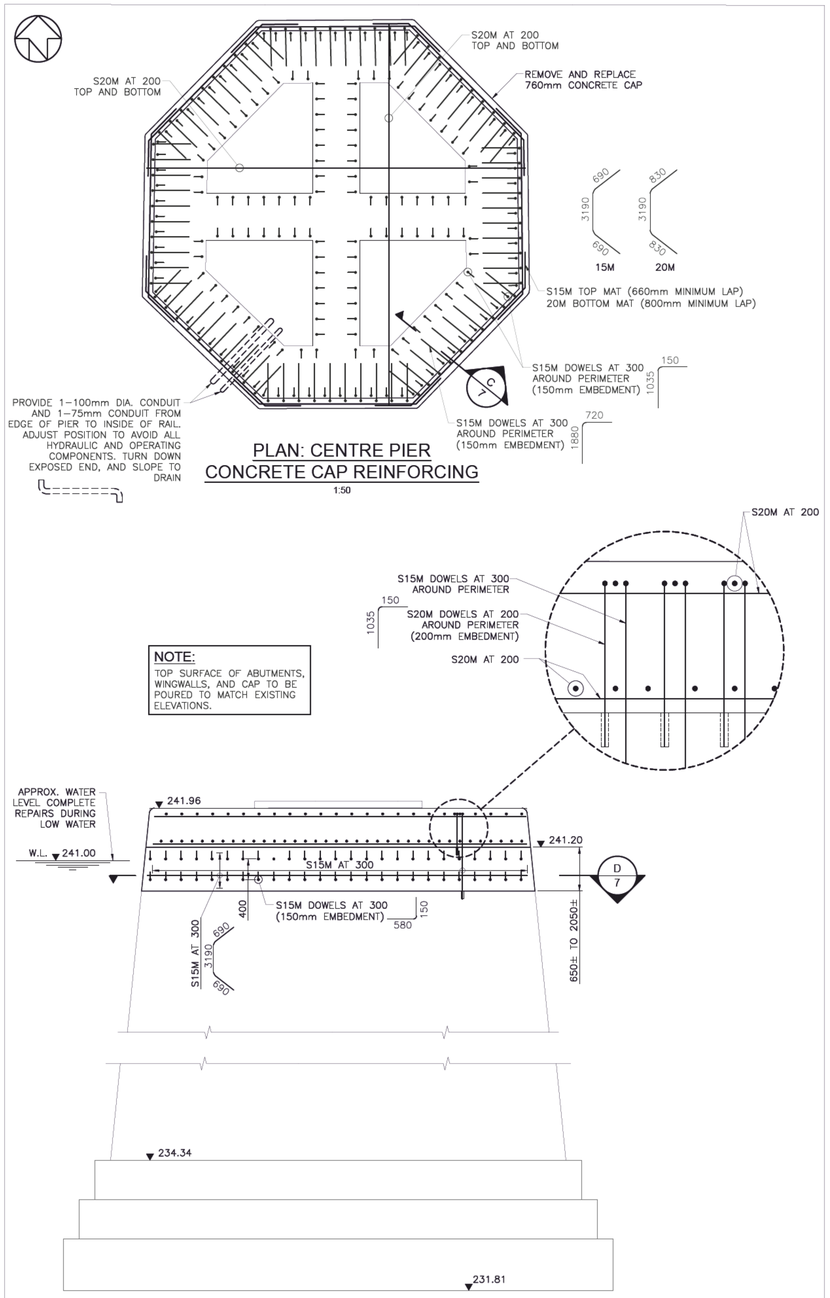
drawing no.
dessine no. 5

ELECTRICAL PANEL
SOUTH ABUTMENT
N.T.S.



PLAN: SOUTH ABUTMENT
1:50

ELEVATION: SOUTH ABUTMENT
1:50



PLAN: CENTRE PIER
CONCRETE CAP REINFORCING
1:50

NOTE:
TOP SURFACE OF ABUTMENTS, WINGWALLS, AND CAP TO BE POURED TO MATCH EXISTING ELEVATIONS.

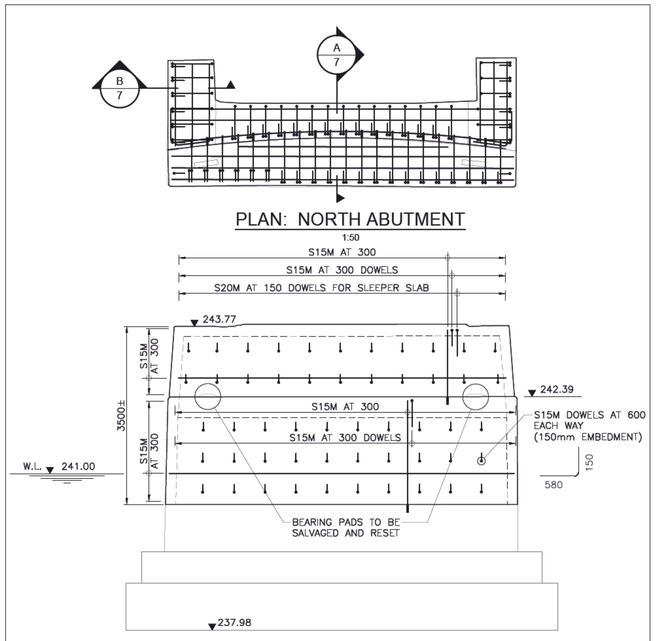
ELEVATION: CENTRE PIER
1:50

NOTE:
REMOVE AND RESET ALL ANCHORAGES, BEARING BLOCKS, ACTIVE AND NON-ACTIVE LATCH PIN ATTACHMENTS, HOOPS FOR GUIDE RAIL, MAIN BEARING CASTING USING HILTI HAS SUPER ASTM A193 37 STAINLESS STEEL THREADED ROD SET IN EPOXY ON BOTH ABUTMENTS AND PIERS. PAINT ALL ITEMS WITH FULL COATING SYSTEM. DIAMETER OF PIN TO BE 2mm LESS THAN HOLE AND ALL ANCHORS TO BE SET IN EPOXY TO DEVELOP FULL STRENGTH OF ANCHORS.

GENERAL NOTES:

- CLASS OF CONCRETE TO BE 35 MPa C1 EXPOSURE.
- FORMWORK SHALL CONFORM TO CSA STANDARD S269.3-M92 (R2013) "CONCRETE FORMWORK."
- ALL EXPOSED CONCRETE EDGES TO HAVE 20mm x 20mm CHAMFER
- SAW CUT 25mm AT EDGE OF ALL REMOVALS PRIOR TO REMOVING CONCRETE
- COMPLETE REMOVALS BEFORE CONFIRMING DOWEL DIMENSIONS. EXISTING CONCRETE QUALITY VARIES AND ADJUSTMENTS MUST BE MADE IN REINFORCING TO SUITE ACTUAL REMOVALS. REMOVAL EXTENTS TO BE SUPERVISED BY AND/OR APPROVED BY DEPARTMENTAL REPRESENTATIVE.
- CLEAR COVER TO REINFORCING STEEL TO BE 70±20mm
- STAINLESS STEEL BARS SHALL BE TYPE 316 LN OR DUPLEX 2205 WITH A MINIMUM YIELD STRENGTH OF 500MPa. REINFORCING STEEL SHALL BE GRADE 400W.
- ALL REINFORCING STEEL SHALL BE DETAILED, FABRICATED, PLACED, AND SUPPORTED IN ACCORDANCE WITH REINFORCING STEEL INSTITUTE OF CANADA MANUAL OF STANDARD PRACTICE AND CAN/CSA-A23.3 UNLESS OTHERWISE INDICATED.
- REINFORCING BARS MARKED WITH PREFIX 'S' DENOTE STAINLESS STEEL BARS. (ALL REINFORCING BARS IN CONCRETE ON THIS PROJECT, INCLUDING DOWELS, REGARDLESS OF DESIGNATION ON DRAWINGS IS TO BE STAINLESS STEEL).
- BARS MARKED CONTINUOUS SHALL BE DEVELOPED BY CLASS B TENSION LAPS WHERE SPLICED.
- ALL DOWELS WILL HAVE 90 DEGREE BENDS, NOT MINIMUM HOOKS.
- ALL DOWELS AND ANCHORS INTO EXISTING CONCRETE SHALL BE SET IN EPOXY EQUIVALENT TO "HILTI HIT HY200." ABOVE WATER AND "HILTI HIT-RE 500 V3" BELOW WATER.
- * DENOTES THAT LENGTH AND NUMBER OF BARS VARIES WITH EXISTING GROUND ELEVATION.
- BASED ON PAST EXPERIENCE THE WATER ELEVATIONS HAVE BEEN BETEEEN APPROXIMATELY 240.4 AND 241.1 BETWEEN THE MONTHS OF OCTOBER AND MAY.

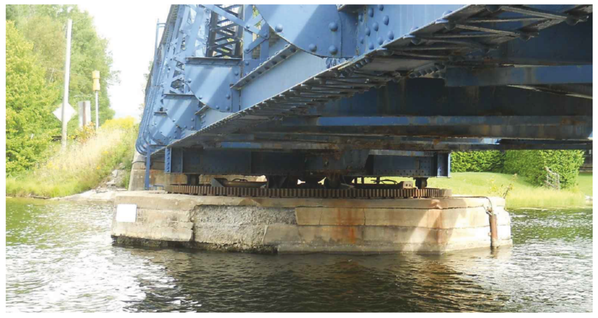
NOTE:
NOMINAL REMOVALS ARE SHOWN ON THESE DRAWINGS. ACTUAL REMOVALS, BASED ON EXISTING CONDITIONS AT THE TIME, MAY DIFFER. REBAR LENGTHS ARE TO BE ADJUSTED TO SUIT.



PLAN: NORTH ABUTMENT
1:50

ELEVATION: NORTH ABUTMENT
1:50

SOUTH ABUTMENT (PHOTO)
N.T.S.



CENTRE PIER (PHOTO)
N.T.S.

NORTH ABUTMENT (PHOTO)
N.T.S.

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Parks Canada / Parcs Canada

wsp

D.A. HUCTWITH
6+10 2019
PROFESSIONAL ENGINEER
PROVINCE OF ONTARIO

Z. F. WASEWICZ
19/10/10
PROFESSIONAL ENGINEER
PROVINCE OF ONTARIO

04		
03		
02		
01	CONCRETE STREGTH REVISION	2020/03/10
revision		date

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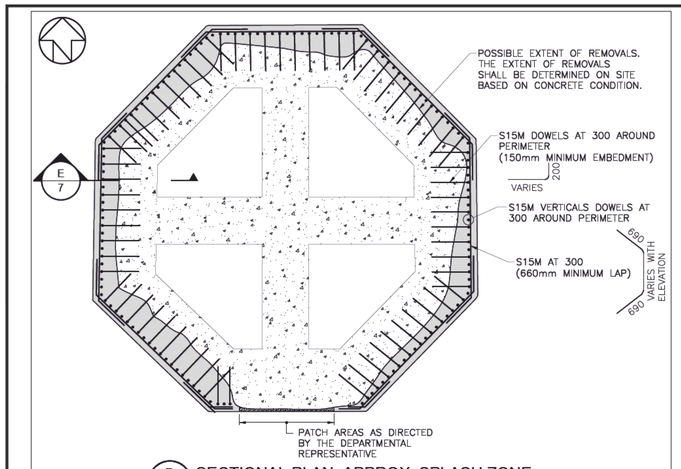
A Detail No. No. du detail
B drawing no. - where detail required dessin no. - ou detail exige
C drawing no. - where detailed dessin no. - ou detaille

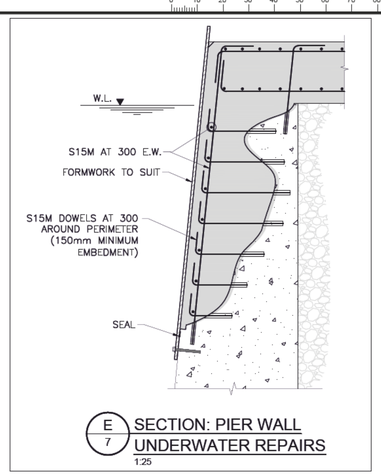
project title
titre du projet
KAWARTHA LAKES Ontario
BOUNDARY ROAD
SWING BRIDGE REPLACEMENT
TRENT-SEVERN WATERWAY

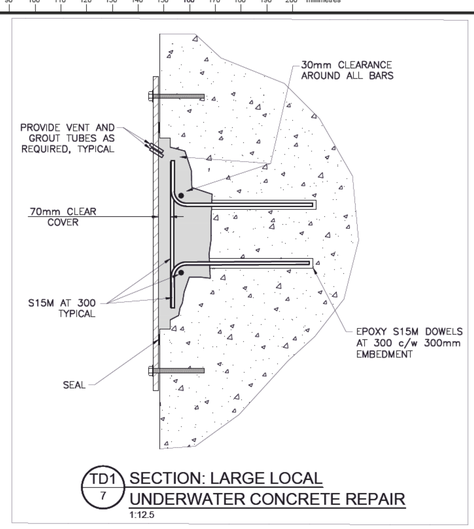
drawing title
titre du dessin
CONCRETE REPAIR OF ABUTMENTS and CENTRE PIER

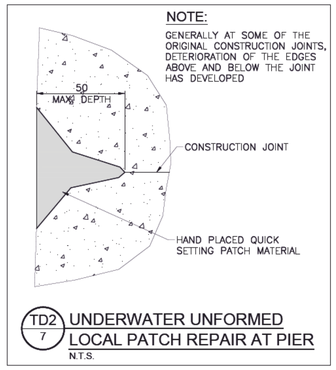
drawn by / dessine par: G. MOTA / P.C. MASON
designed by / conc par: D.A. HUCTWITH
approved by / approuve par:
bid / offre
project manager / administrateur de projets
project date / date du projet: 2019-10-10
project no. / no. du projet: R.030025.844
drawing no. / dessine no.: 6

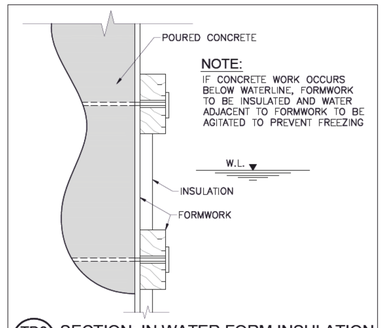
B1 (1000 x 707)

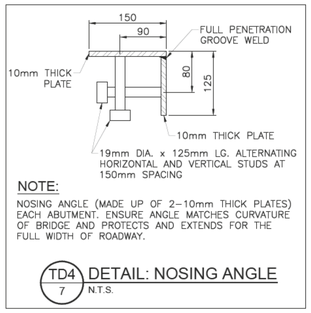


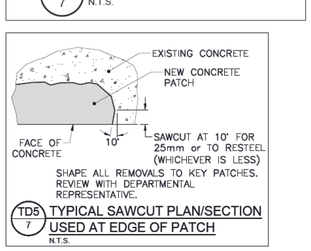


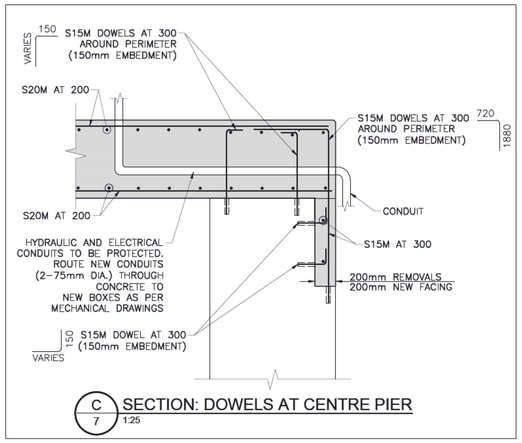


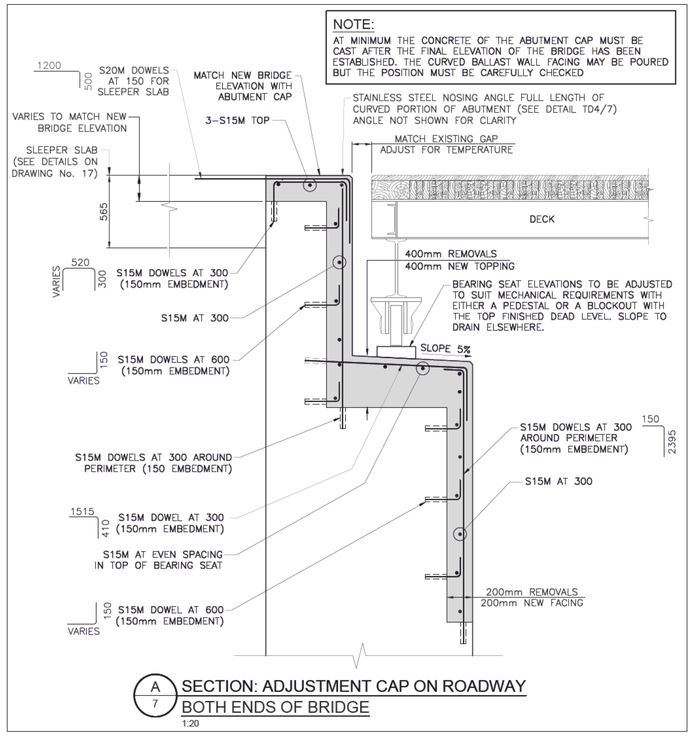


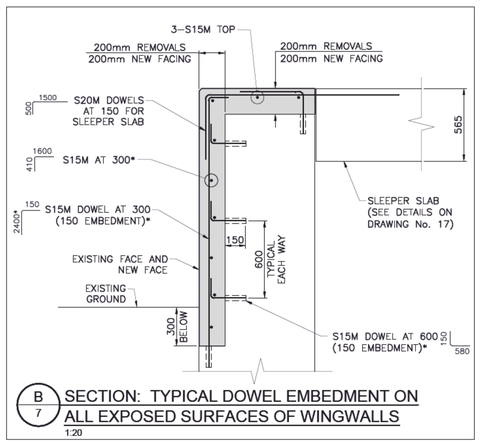


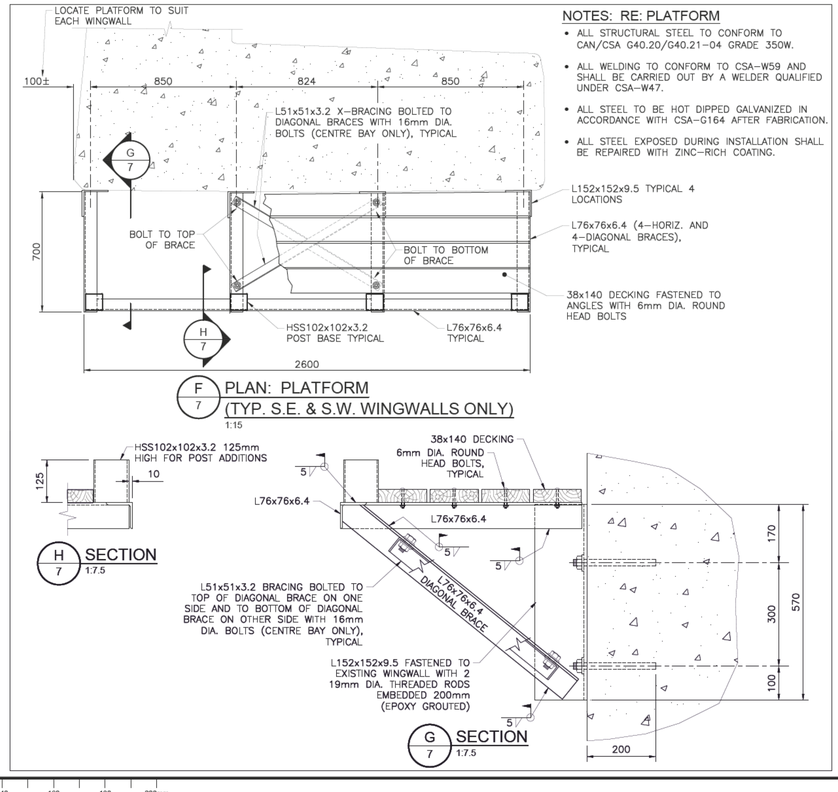












TYPICAL UNDER WATER CONCRETE REPAIR NOTES:

- UNLESS NOTED OTHERWISE IN THE CONTRACT DOCUMENTS, CONCRETE PATCHES SHALL BE BY THE FORM AND PUMP TREMIE METHOD.
- SAWCUT AT LIMITS OF REMOVAL SHALL BE 25mm DEEP OR TO THE FIRST LAYER OF REINFORCING STEEL, WHICHEVER IS LESS (UNLESS OTHERWISE NOTED) OR IN CONFORMANCE WITH PRODUCT LITERATURE.
- REMOVE DELAMINATED, LOOSE OR DETERIORATED CONCRETE AS DIRECTED BY THE CONTRACT ADMINISTRATOR.
- WHERE THE BOND BETWEEN CONCRETE AND REINFORCING STEEL IS BROKEN, OR WHERE MORE THAN HALF OF THE PERIMETER OF THE BAR IS EXPOSED, THE CONCRETE SURROUNDING THE BARS LOCALLY SHALL BE REMOVED TO A DEPTH OF 30mm BEHIND THE BAR.
- PREPARE CONCRETE SURFACE IN ACCORDANCE WITH OPSS 930.
- RE–TIE EXPOSED REINFORCING STEEL BARS AT EVERY SECOND INTERSECTION.
- REPLACE BADLY CORRODED OR DAMAGED REINFORCING STEEL BARS AS DIRECTED BY THE CONTRACT ADMINISTRATOR.
- TYPICAL COVER TO REINFORCING STEEL SHALL BE AS SHOWN ON THIS DRAWING, UNLESS SPECIFIED ELSEWHERE.

GENERAL NOTES:

- CLASS OF CONCRETE TO BE 35 MPa C1 EXPOSURE.
- FORMWORK SHALL CONFORM TO CSA STANDARD S269.3–M92 (R2013) "CONCRETE FORMWORK."
- ALL EXPOSED CONCRETE EDGES TO HAVE 20mm x 20mm CHAMFER
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wsp

D.A. HUCTWITH — 2019-10-10 — PROFESSIONAL ENGINEER — PROVINCE OF ONTARIO
Z. F. WASEWICZ — 19/10/10 — LICENSED PROFESSIONAL ENGINEER — PROVINCE OF ONTARIO

revision		date
04		
03		
02		
01		

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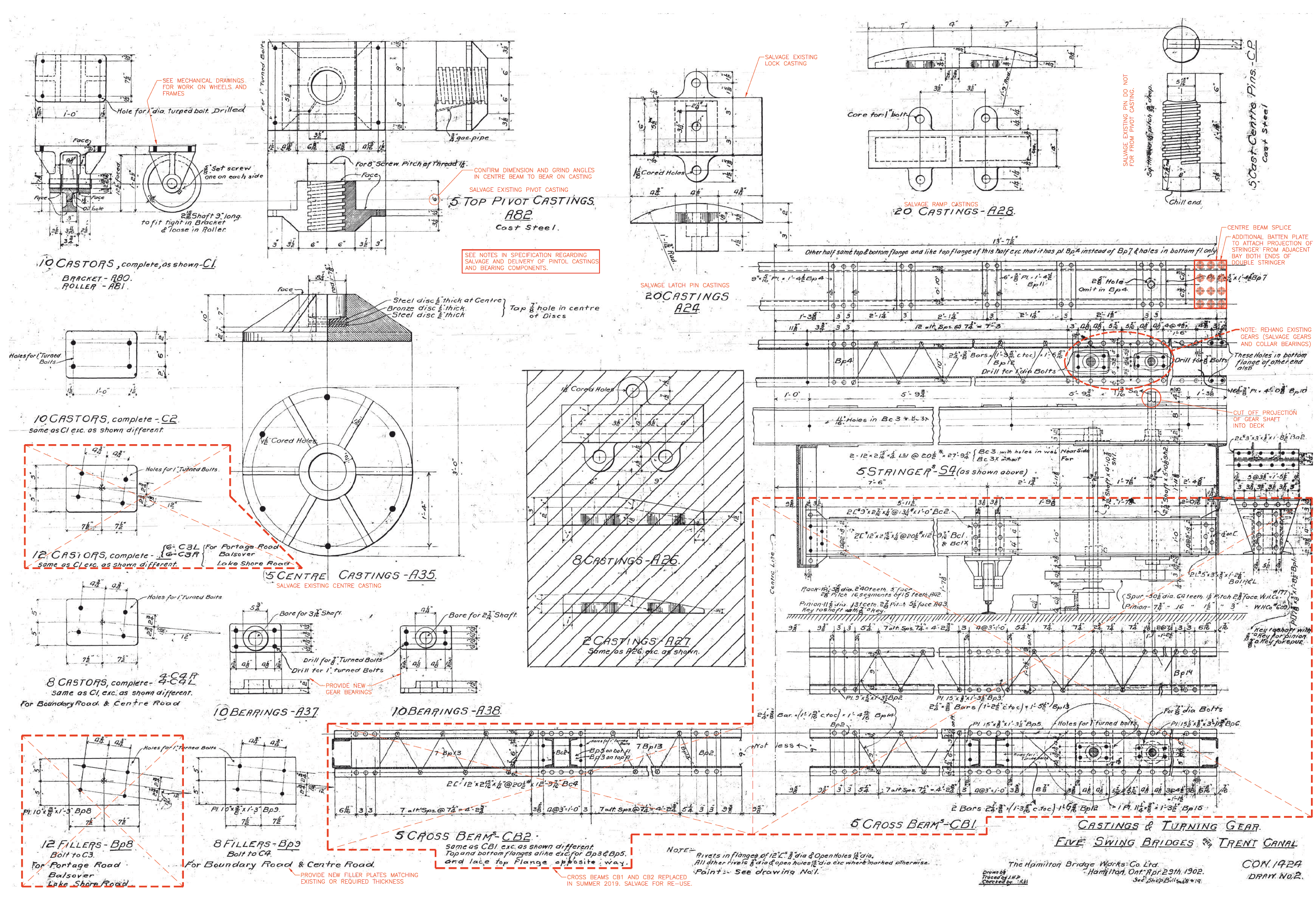
A C — A Detail No. No. du detail; B drawing no. - where detail required dessin no. - ou detail exige; C drawing no. - where detailed dessin no. - ou detaille — A B C

project title / titre du projet
KAWARTHA LAKES Ontario
BOUNDARY ROAD
SWING BRIDGE REPLACEMENT
TRENT-SEVERN WATERWAY

drawing title / titre du dessin
CONCRETE REPAIR OF ABUTMENTS and CENTRE PIER DETAILS

drawn by / dessine par: G. MOTA / P.C. MASON
designed by / conc par: D.A. HUCTWITH
approved by / approuve par:
bid / offre
project manager / administrateur de projets
project date / date du projet: 2019-10-10
project no. / no. du projet: R.030025.844
drawing no. / dessine no.: 7

B1 (1000 x 707)



NOTE:
DIAMETER OF PIN TO BE 2mm LESS THAN HOLE AND ALL ANCHORS TO BE SET IN EPOXY TO DEVELOP FULL STRENGTH OF ANCHORS.

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Parks Canada / Parcs Canada

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LICENSED PROFESSIONAL ENGINEER D.A. HUCTWITH Oct 10 2019 PROVINCE OF ONTARIO

LICENSED PROFESSIONAL ENGINEER Z. F. WASIEWICZ 19/10/10 PROVINCE OF ONTARIO

revision		date
04		
03		
02		
01	WHEELS AND FRAMES NOTES REVISION	2020/03/10

Do not scale drawings.
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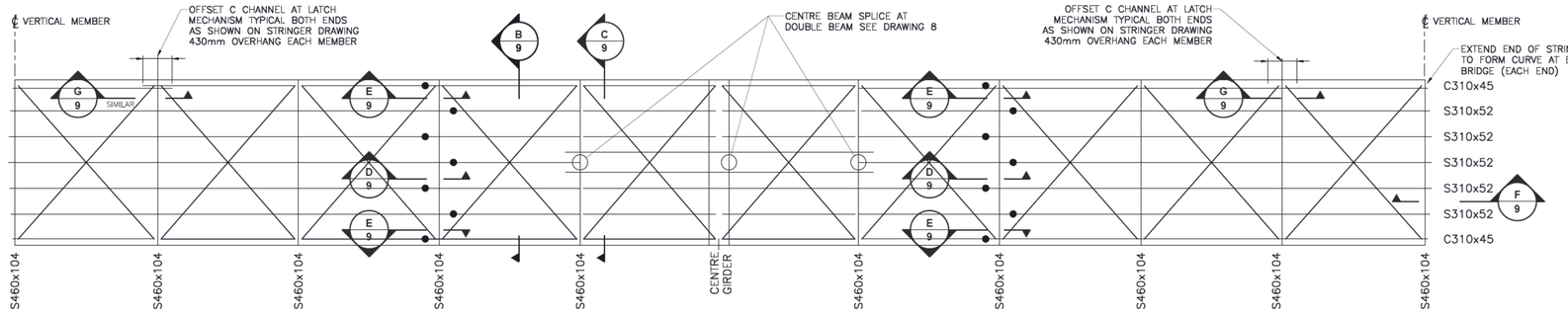
A Detail No. / No. du detail
B drawing no. - where detail required / dessin no. - ou detail exige
C drawing no. - where detailed / dessin no. - ou detaille

project title / titre du projet
KAWARTHA LAKES Ontario
BOUNDARY ROAD
SWING BRIDGE REPLACEMENT
TRENT-SEVERN WATERWAY

drawing title / titre du dessin
STRUCTURAL STEEL
CASTING and TURNING GEAR

drawn by / dessine par: G. MOTA
designed by / conc par: D.A. HUCTWITH
approved by / approuve par:
bid / offre
project manager / administrateur de projets
project date / date du projet: 2019-10-10
project no. / no. du projet: R.030025.844
drawing no. / dessine no.: 8

B1 (1000 x 707)

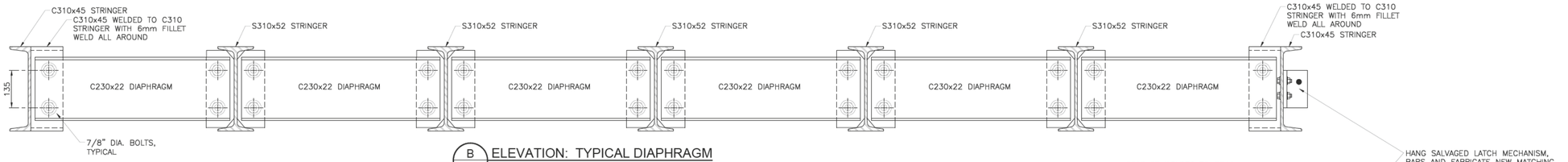


A 9 PLAN: STRINGER SPLICE LOCATIONS
1:75

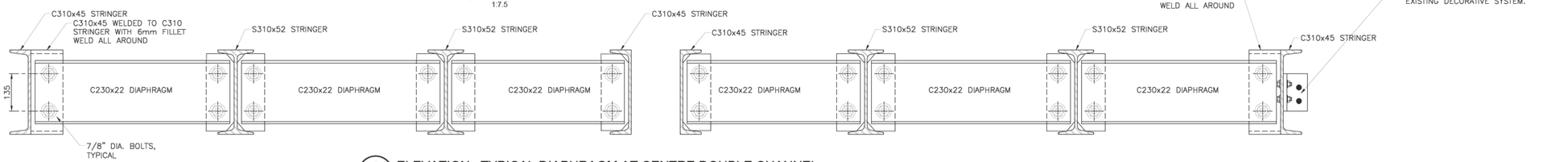
● DENOTES SPLICE LOCATION

NOTE:

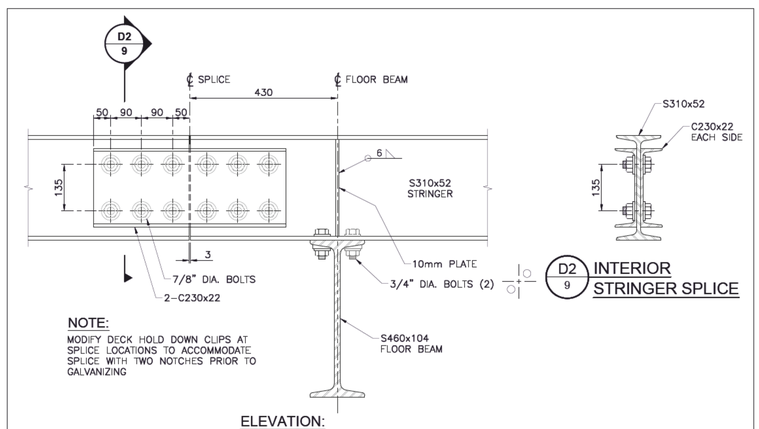
- ALL STRINGERS AND FLOOR BEAMS SHALL HAVE SIZES CHANGED FROM THOSE ON THE ORIGINAL DRAWINGS TO THOSE SHOWN ON THIS DRAWING. THE SECTIONS CHOSEN HAVE THE SAME GENERAL DIMENSIONS WITH SLIGHTLY WIDER FLANGES AND THICKER FLANGES AND WEBS THAN THE ORIGINAL SECTIONS. MAKE ADJUSTMENTS AT CONNECTIONS TO ACCOMMODATE CHANGES IN DIMENSIONS.
- THE FLOOR STRINGERS ARE CONNECTED TO BE CONTINUOUS OVER THE FLOOR BEAMS.
- DIAPHRAGMS ARE TO BE PLACED AT ALL FLOOR BEAM LINES.
- STIFFENERS ARE TO BE PLACED AT ALL FLOOR BEAMS.



B 9 ELEVATION: TYPICAL DIAPHRAGM AT EACH FLOOR BEAM
1:7.5



C 9 ELEVATION: TYPICAL DIAPHRAGM AT CENTRE DOUBLE CHANNEL OVER BEAMS AND CENTRAL GIRDER
1:7.5

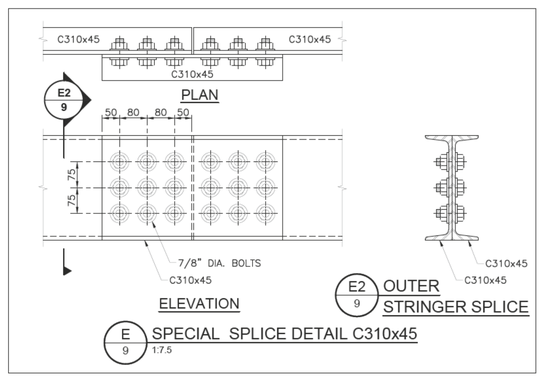


NOTE:
MODIFY DECK HOLD DOWN CLIPS AT SPLICE LOCATIONS TO ACCOMMODATE SPLICE WITH TWO NOTCHES PRIOR TO GALVANIZING

ELEVATION:

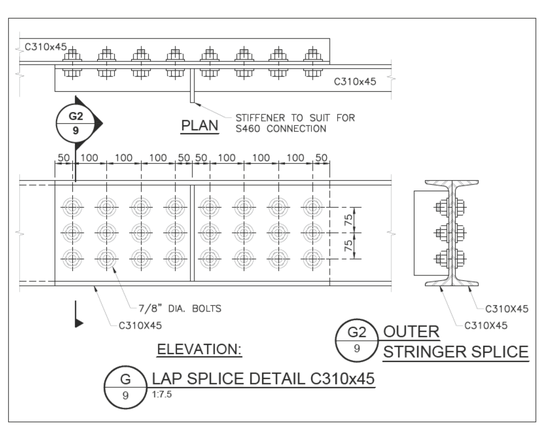
D 9 TYPICAL SPLICE DETAIL S310x52
1:7.5

D2 9 INTERIOR STRINGER SPLICE



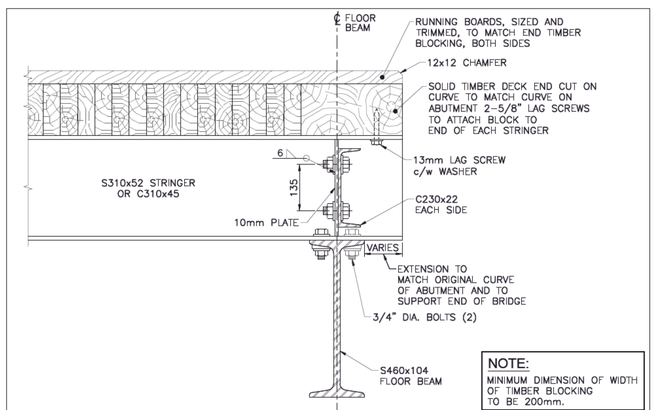
E 9 SPECIAL SPLICE DETAIL C310x45
1:7.5

E2 9 OUTER STRINGER SPLICE



G 9 LAP SPLICE DETAIL C310x45
1:7.5

G2 9 OUTER STRINGER SPLICE



NOTE:
MINIMUM DIMENSION OF WIDTH OF TIMBER BLOCKING TO BE 200mm.

F 9 END OF BRIDGE DETAIL
1:7.5

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Parks Canada Parcs Canada

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D.A. HUCTWITH
2019-10-10
PROVINCE OF ONTARIO

Z. F. WASIEWICZ
19/10/10
PROVINCE OF ONTARIO

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C drawing no. - where detailed dessin no. - ou detaille
A/B/C

project title
titre du projet
KAWARTHA LAKES Ontario

BOUNDARY ROAD
SWING BRIDGE REPLACEMENT
TRENT-SEVERN WATERWAY

drawing title
titre du dessin
STRUCTURAL STEEL FLOOR DETAILS

drawn by
dessine par G. MOTA

designed by
conc par D.A. HUCTWITH

approved by
approuve par

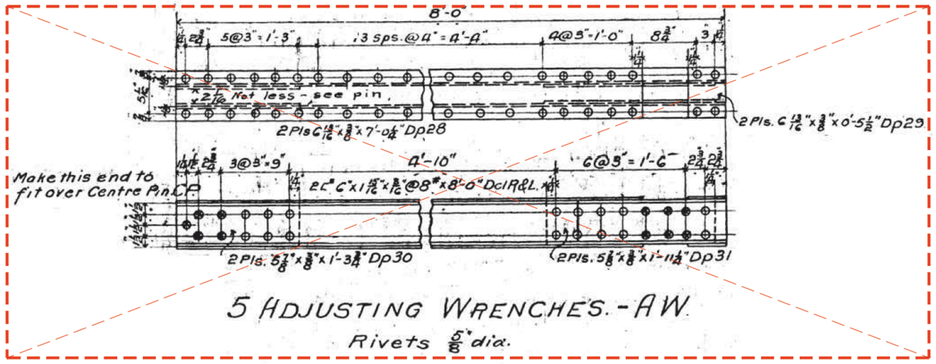
bid
offre

project manager
administrateur de projets

project date
date du projet 2019-10-10

project no.
no. du projet R.030025.844

drawing no.
dessine no. 9



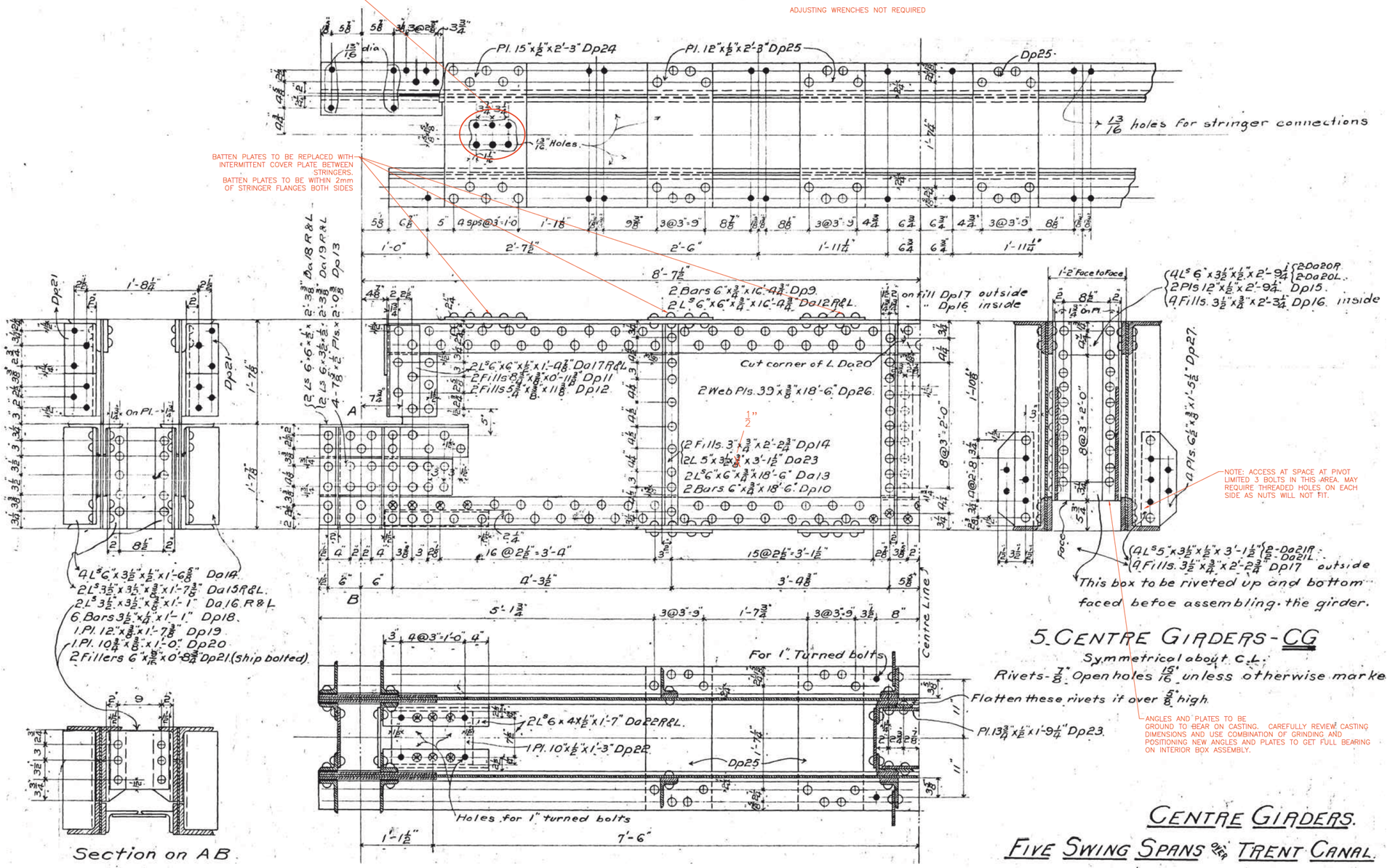
5 ADJUSTING WRENCHES. - AW.

Rivets ⅞" dia.

ADJUSTING WRENCHES NOT REQUIRED

REVIEW BOLT HOLE REQUIREMENT WITH CROSS BRACE LOCATION LIKELY ONLY ONE SET OF THREE HOLES WILL BE REQUIRED AT EACH END OF MAIN BEAM.

BATTEN PLATES TO BE REPLACED WITH INTERMITTENT COVER PLATE BETWEEN STRINGERS.
BATTEN PLATES TO BE WITHIN 2mm OF STRINGER FLANGES BOTH SIDES



4L 6"x3½"x½"x1'-6⅝" Da14.
2L 3½"x3½"x¾"x1'-7⅜" Da15R&L.
2L 3½"x3½"x¾"x1'-1" Da16 R&L
6 Bars 3½"x¼"x1'-1" Dp18.
1 Pl. 12"x⅜"x1'-7⅞" Dp19
1 Pl. 10¾"x⅜"x1'-0" Dp20
2 Fillers 6"x⅜"x0'-8¾" Dp21 (Ship bolted)

Section on AB

5. CENTRE GIRDERS - CG

Symmetrical about C.L.

Rivets - ⅞" Open holes 15/16" unless otherwise marke

CENTRE GIRDERS.

FIVE SWING SPANS over TRENT CANAL.

The Hamilton Bridge Works Co. Limited
Hamilton, Ont. Apr 30th. 1902

Drawn by E.H.D.
Traced by C.J.M & J.H.P
Checked by.

CON. 1424
DRAW #4.

Shop Bills 19-20-21

NOTE:

REPLACE CENTRE BEAM TO MATCH ORIGINAL CONFIGURATION AND AS MODIFIED BY THESE DRAWINGS INCLUDING ALL CONNECTIONS, WHEEL SUPPORTS, ETC.
THIS IS A REPRODUCTION OF THE ORIGINAL DRAWING. FIELD MEASURE AND VERIFY EXISTING CONNECTIONS AND DIMENSIONS.
WHERE RIVETS ARE INDICATED, TENSION CONTROL BOLTS SHALL BE SUBSTITUTED WITH THE MATCHING DIAMETER AND A RIVET HEAD.

REPLACE 3 TOP BATTEN PLATES WITH 12mm THICK PLATES BETWEEN EACH STRINGER AND BETWEEN THE C CHANNEL STRINGERS AND STRINGERS FOR THE FULL WIDTH OF BRIDGE, MAXIMUM BOLT SPACING 150mm. PROVIDE BOLT PATTERN OF BATTEN PLATE PLUS ADDITIONAL BOLTS TO MEET MAXIMUM SPACING.

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LICENSED PROFESSIONAL ENGINEER D.A. HUCTWITH 2019 10 10 PROVINCE OF ONTARIO

LICENSED PROFESSIONAL ENGINEER Z. F. WASIEWICZ 19/10/10 PROVINCE OF ONTARIO

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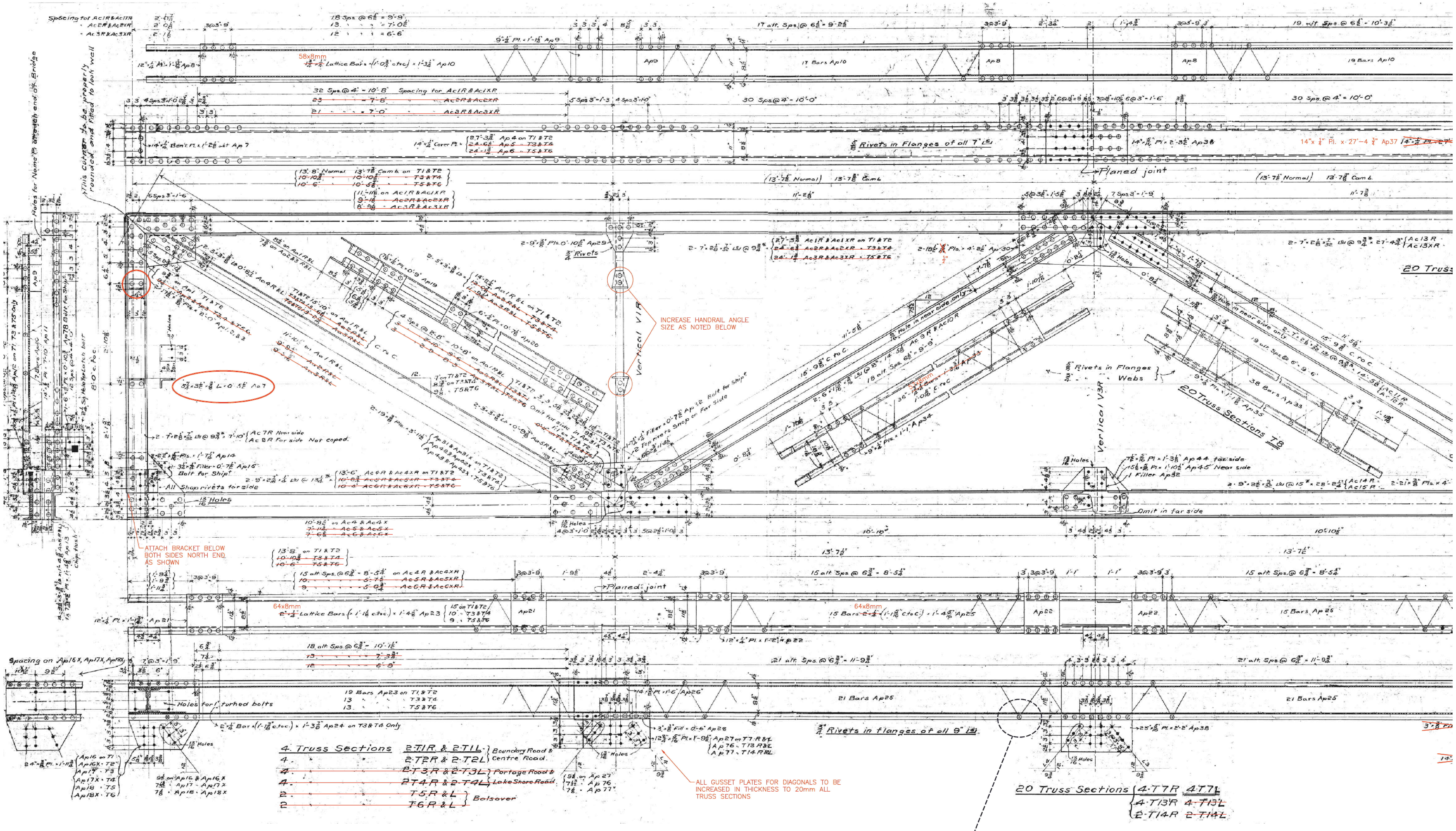
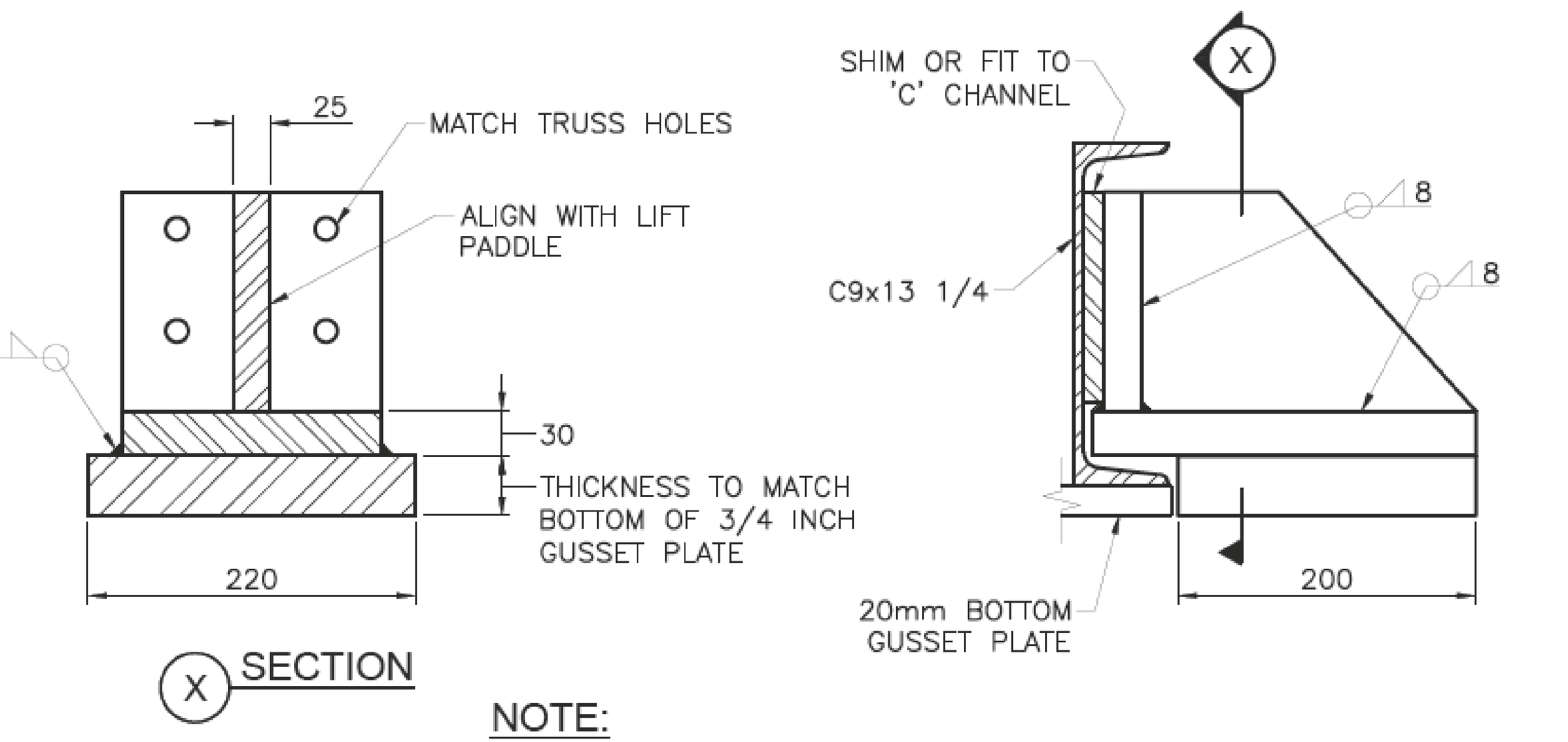
C drawing no. - where detailed dessin no. - ou detaille

project title / titre du projet
KAWARTHA LAKES Ontario
BOUNDARY ROAD
SWING BRIDGE REPLACEMENT
TRENT-SEVERN WATERWAY

drawing title / titre du dessin
STRUCTURAL STEEL
CENTRE GIRDER

drawn by / dessine par: G. MOTA
designed by / conc par: D.A. HUCTWITH
approved by / approuve par:
bid / offre
project manager / administrateur de projets
project date / date du projet: 2019-10-10
project no. / no. du projet: R.030025.844
drawing no. / dessine no.: 10



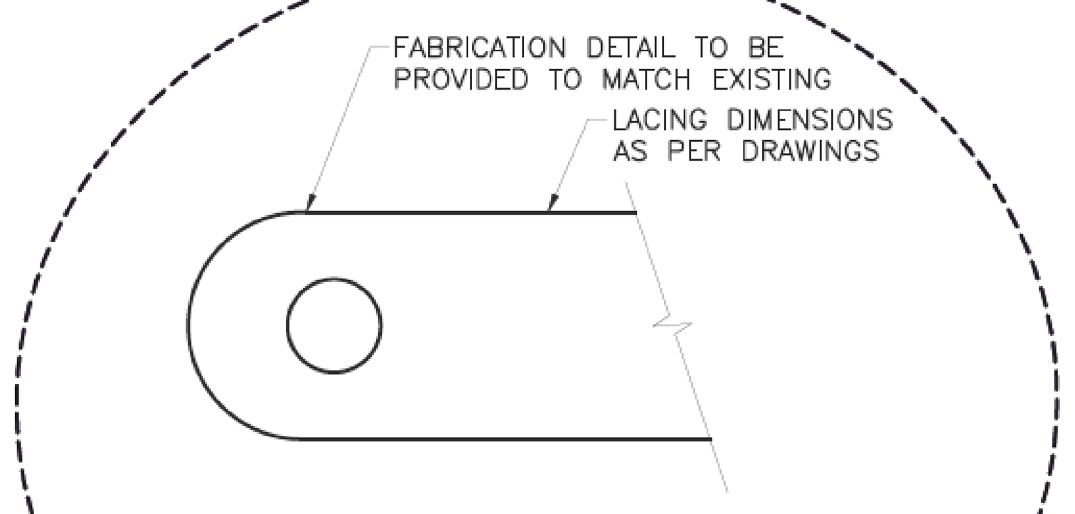


NOTE:

ACCOMMODATE MECHANICAL AND ELECTRICAL HOLES AND CONFIGURATION WHERE REQUIRED

BRACETS FOR MECANICAL SUPPORT
NORTH END BOTH SIDES

1:5



TYPICAL END OF LACING

N.T.S.

ALL LACING WITH 5/8" BOLTS MINIMUM 57mm WIDE
ALL LACING WITH 3/4" BOLTS MINIMUM 64mm WIDE

NOTE:

DIMENSIONS ON DRAWINGS RESULT IN APPROXIMATELY 2⅝" CAMBER ON THE BRIDGE.

INCREASE ALL OFFSET ANGLES SUPPORTING HANDRAIL TO ELIMINATE NOTCHES IN HANDRAIL.

L5 ¼"x3 ½"x ⅜" → L178x102x13

L5 ¼"x3 ½"x ⅜" → L203x152x13

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LICENSED PROFESSIONAL ENGINEER D.A. HUCTWITH PROVINCE OF ONTARIO

LICENSED PROFESSIONAL ENGINEER Z. F. WASIEWICZ 19/10/10 PROVINCE OF ONTARIO

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C drawing no. - where detailed / dessin no. - ou detaille

project title / titre du projet
KAWARTHA LAKES Ontario
BOUNDARY ROAD
SWING BRIDGE REPLACEMENT
TRENT-SEVERN WATERWAY

drawing title / titre du dessin
STRUCTURAL STEEL
TRUSS END ELEVATION
and DETAILS

drawn by / dessine par: G. MOTA

designed by / conc par: D.A. HUCTWITH

approved by / approuve par:

bid / offre

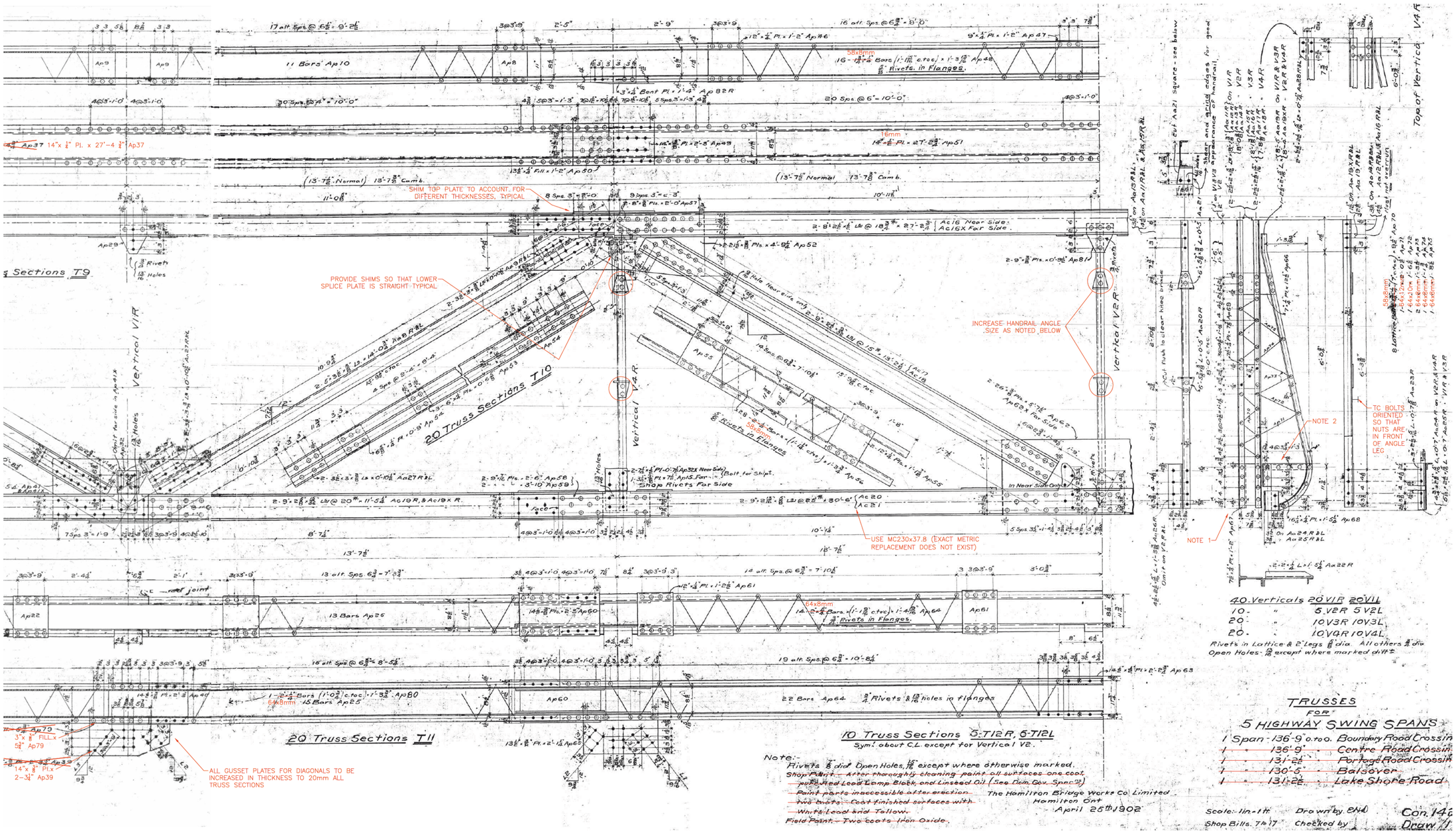
project manager / administrateur de projets

project date / date du projet: 2019-10-10

project no. / no. du projet: R.030025.844

drawing no. / dessine no.: 11

B1 (1000 x 707)



SPLICE IN TOP CORD
N.T.S.

NOTE:

DIMENSIONS ON DRAWINGS RESULT IN APPROXIMATELY 2⅜" CAMBER ON THE BRIDGE.

NOTE 1 : REQUIRED ANGLE FROM TRUSS TO FLOOR STRINGER AT EACH PANEL POINT SHOWN ON OLD STRINGER DRAWING.

NOTE 2: PROVIDE ONE ADDITIONAL RIVET AT TOP AND ONE ADDITIONAL RIVET ON CURVE TO REDUCE SPACING BETWEEN RIVETS ON VERTICAL MEMBER.

INCREASE ALL OFFSET ANGLES SUPPORTING HANDRAIL TO ELIMINATE NOTCHES IN HANDRAIL.

L5 ¼"x3 ½"x 3/8" ⟶ L178x102x13

L5 ¼"x3 ½"x 3/8" ⟶ L203x152x13

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D.A. HUCTWITH — LICENSED PROFESSIONAL ENGINEER — PROVINCE OF ONTARIO
Z. F. WASEWICZ — LICENSED PROFESSIONAL ENGINEER — PROVINCE OF ONTARIO

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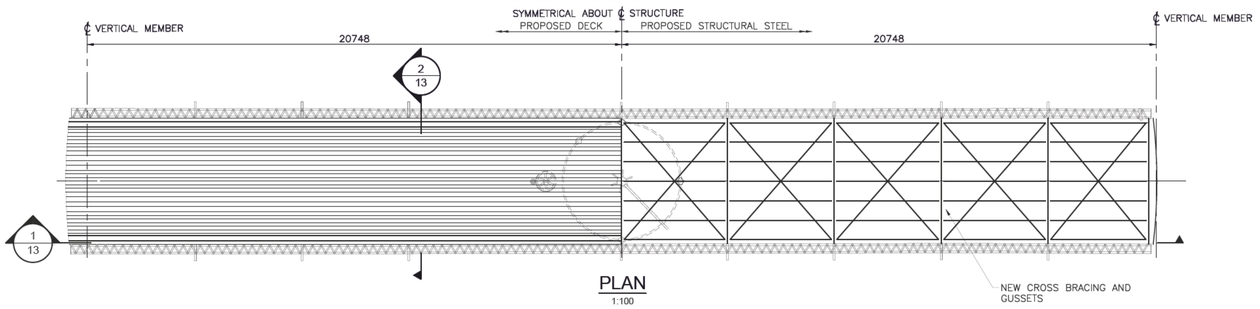
project title / titre du projet
KAWARTHA LAKES Ontario

BOUNDARY ROAD
SWING BRIDGE REPLACEMENT
TRENT-SEVERN WATERWAY

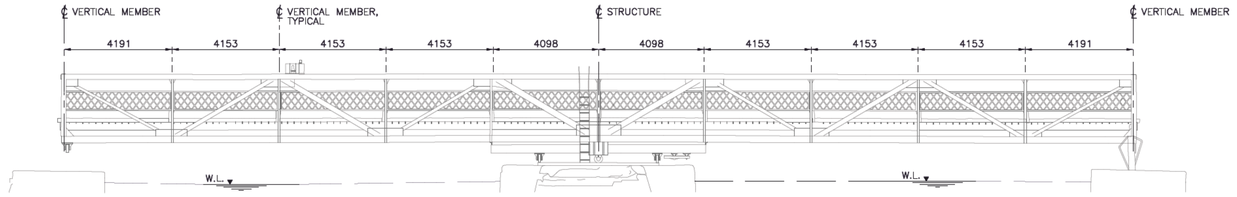
drawing title / titre du dessin
STRUCTURAL STEEL
TRUSS MIDDLE ELEVATION
and DETAILS

drawn by / dessine par: G. MOTA
designed by / conc par: D.A. HUCTWITH
approved by / approuve par:
bid / offre
project manager / administrateur de projets
project date / date du projet: 2019-10-10
project no. / no. du projet: R.030025.844
drawing no. / dessine no.: 12

B1 (1000 x 707)



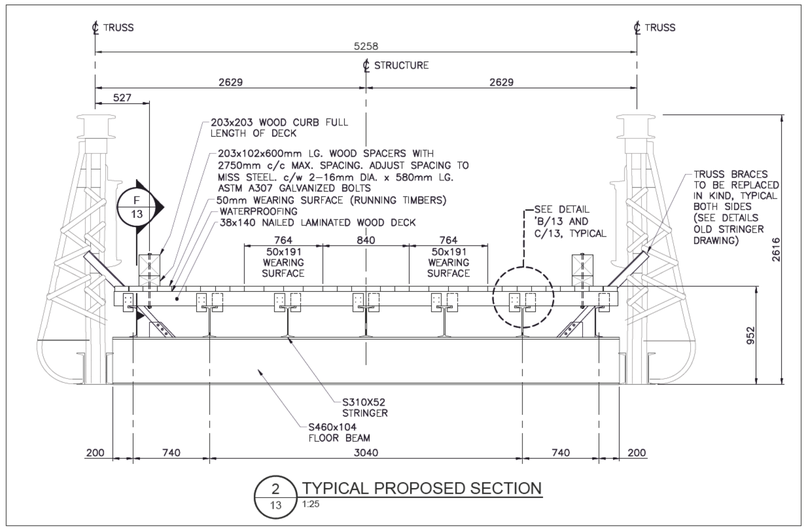
PLAN
1:100



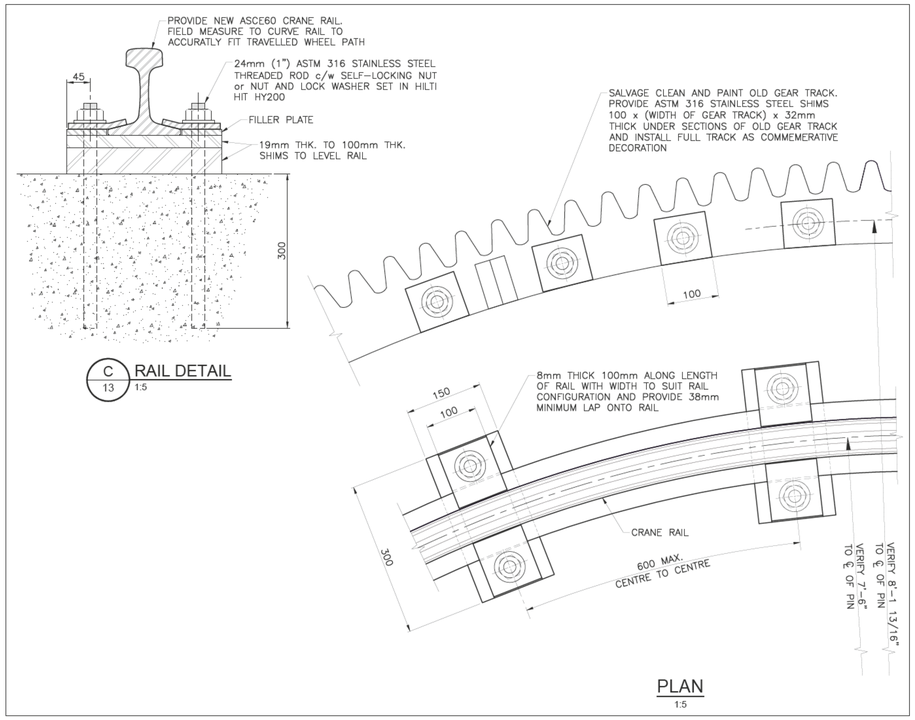
1/13 ELEVATION
1:100

GEAR TRACK

GEAR TRACK DETAIL

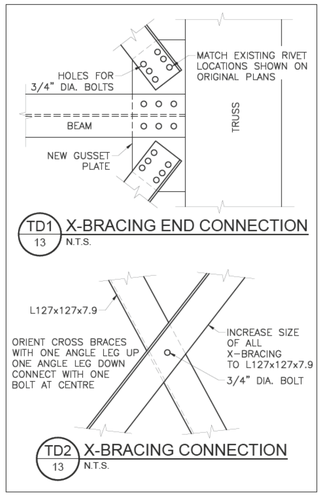


2/13 TYPICAL PROPOSED SECTION
1:25



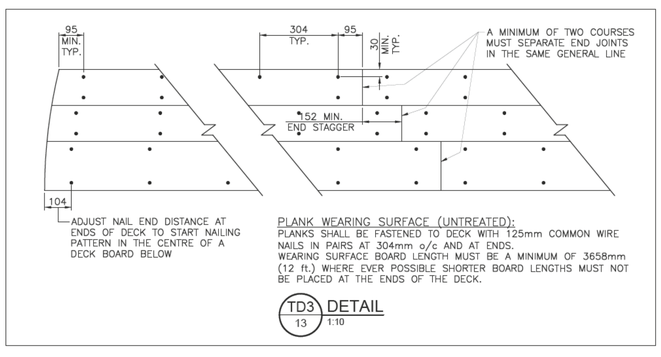
C/13 RAIL DETAIL
1:5

PLAN
1:5



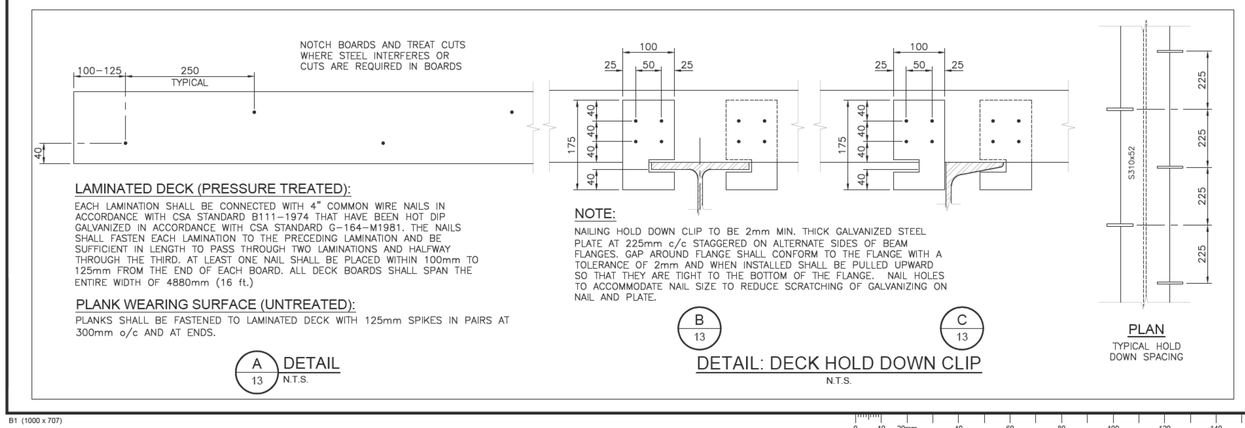
TD1/13 X-BRACING END CONNECTION
N.T.S.

TD2/13 X-BRACING CONNECTION
N.T.S.



PLANK WEARING SURFACE (UNTREATED):
PLANKS SHALL BE FASTENED TO DECK WITH 125mm COMMON WIRE NAILS IN PAIRS AT 304mm o/c AND AT ENDS.
WEARING SURFACE BOARD LENGTH MUST BE A MINIMUM OF 3658mm (12 ft.) WHERE EVER POSSIBLE SHORTER BOARD LENGTHS MUST NOT BE PLACED AT THE ENDS OF THE DECK.

TD3/13 DETAIL
1:10



LAMINATED DECK (PRESSURE TREATED):
EACH LAMINATION SHALL BE CONNECTED WITH 4" COMMON WIRE NAILS IN ACCORDANCE WITH CSA STANDARD B111-1974 THAT HAVE BEEN HOT DIP GALVANIZED IN ACCORDANCE WITH CSA STANDARD G-164-M1981. THE NAILS SHALL FASTEN EACH LAMINATION TO THE PRECEDING LAMINATION AND BE SUFFICIENT IN LENGTH TO PASS THROUGH TWO LAMINATIONS AND HALFWAY THROUGH THE THIRD. AT LEAST ONE NAIL SHALL BE PLACED WITHIN 100mm TO 125mm FROM THE END OF EACH BOARD. ALL DECK BOARDS SHALL SPAN THE ENTIRE WIDTH OF 4880mm (16 ft.)

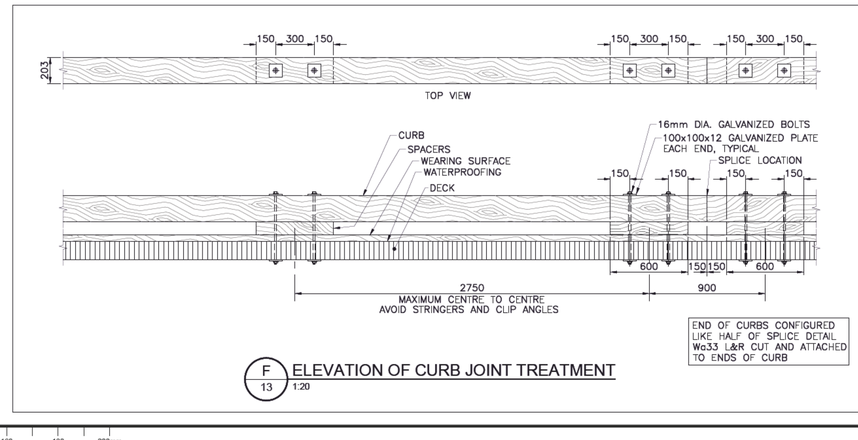
PLANK WEARING SURFACE (UNTREATED):
PLANKS SHALL BE FASTENED TO LAMINATED DECK WITH 125mm SPIKES IN PAIRS AT 300mm o/c AND AT ENDS.

A/13 DETAIL
N.T.S.

NOTE:
NAILING HOLD DOWN CLIP TO BE 2mm MIN. THICK GALVANIZED STEEL PLATE AT 225mm c/c STAGGERED ON ALTERNATE SIDES OF BEAM FLANGES. GAP AROUND FLANGE SHALL CONFORM TO THE FLANGE WITH A TOLERANCE OF 2mm AND WHEN INSTALLED SHALL BE PULLED UPWARD SO THAT THEY ARE TIGHT TO THE BOTTOM OF THE FLANGE. NAIL HOLES TO ACCOMMODATE NAIL SIZE TO REDUCE SCRATCHING OF GALVANIZING ON NAIL AND PLATE.

B/13 C/13 DETAIL: DECK HOLD DOWN CLIP
N.T.S.

PLAN
TYPICAL HOLD DOWN SPACING



F/13 ELEVATION OF CURB JOINT TREATMENT
1:20

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D.A. HUCTWITH
Apr 10 2019
PROFESSIONAL ENGINEER
PROVINCE OF ONTARIO

Z. F. WASEWICZ
19/10/10
LICENSED PROFESSIONAL ENGINEER
PROVINCE OF ONTARIO

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A/B C

project title
titre du projet
KAWARTHA LAKES Ontario

BOUNDARY ROAD
SWING BRIDGE REPLACEMENT
TRENT-SEVERN WATERWAY

drawing title
titre du dessin
STRUCTURAL STEEL and WOOD DECK PLAN and DETAILS

drawn by
dessine par G. MOTA / P.C. MASON

designed by
conc par D.A. HUCTWITH

approved by
approuve par

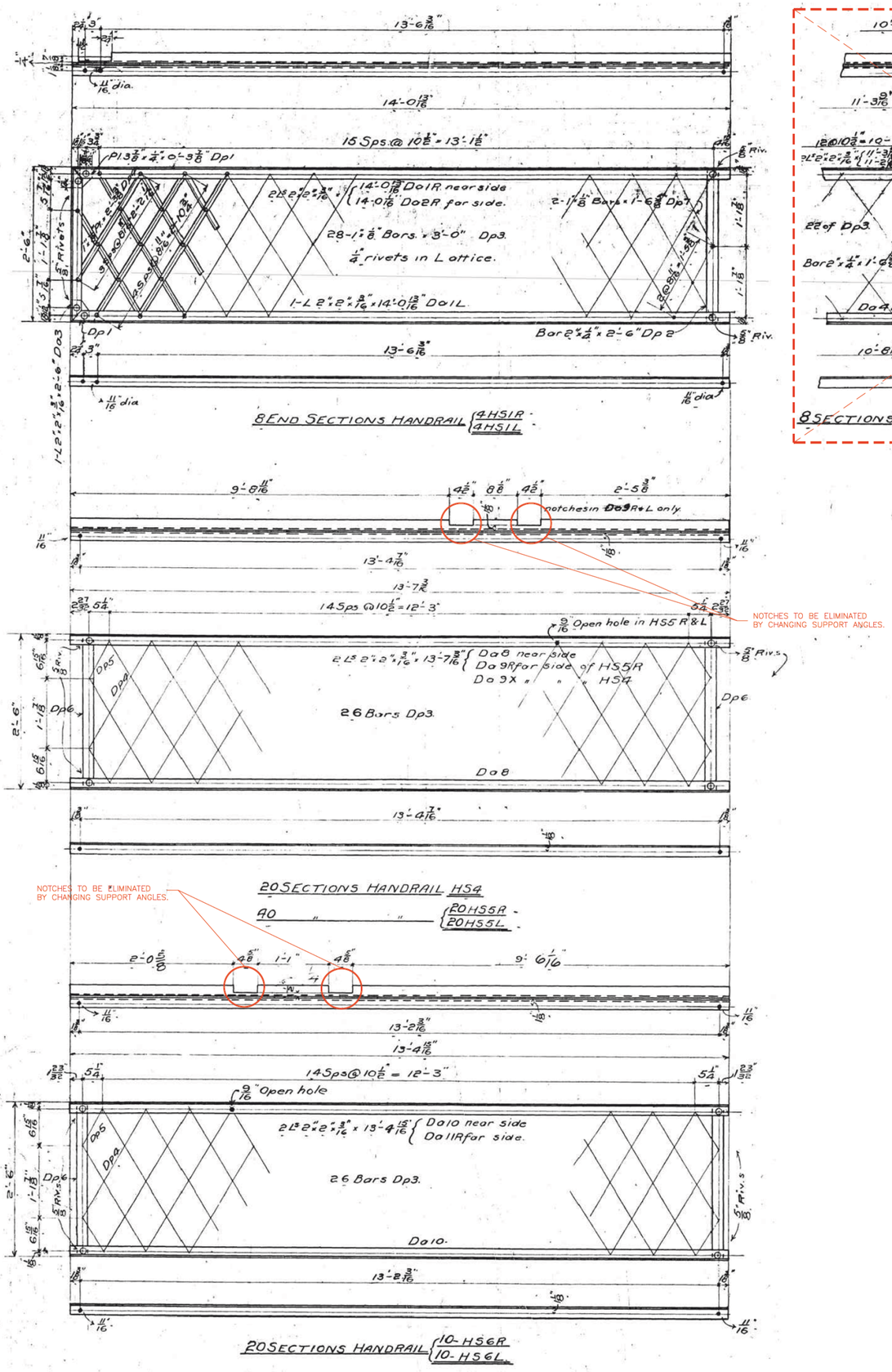
bid
offre

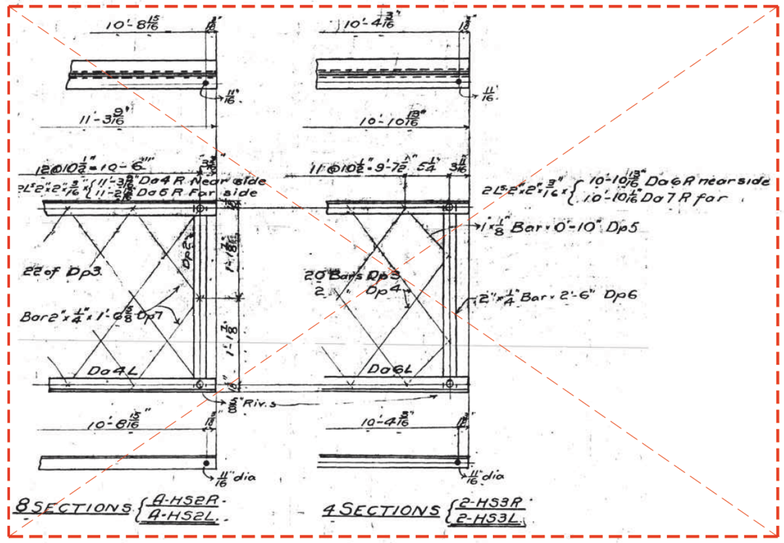
project manager
administrateur de projets

project date
date du projet 2019-10-10

project no.
no. du projet R.030025.844

drawing no.
dessine no. 13





NOTE:

- ALL RAILINGS TO BE REPLICATED, HOWEVER CROSSING OF LACING TO BE SEAL WELDED.
- RAILINGS TO BE FULLY PRIMED THEN ASSEMBLED PRIOR TO MID COAT AND TOP COAT APPLICATIONS.
- BOLT LACING INTO RAILING FRAMES AND BOLT COMPLETED ASSEMBLY ONTO BRIDGE
- RAILING FRAMES MUST BE STRAIGHT PRIOR TO APPLICATION OF MID COAT AND TOP COAT
- INCREASE SIZE OF ALL CLIP ANGLES SUPPORTING RAILING TO ELIMINATE NOTCHES.

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Z. F. WASIEWICZ — LICENSED PROFESSIONAL ENGINEER — 19/10/9 — PROVINCE OF ONTARIO

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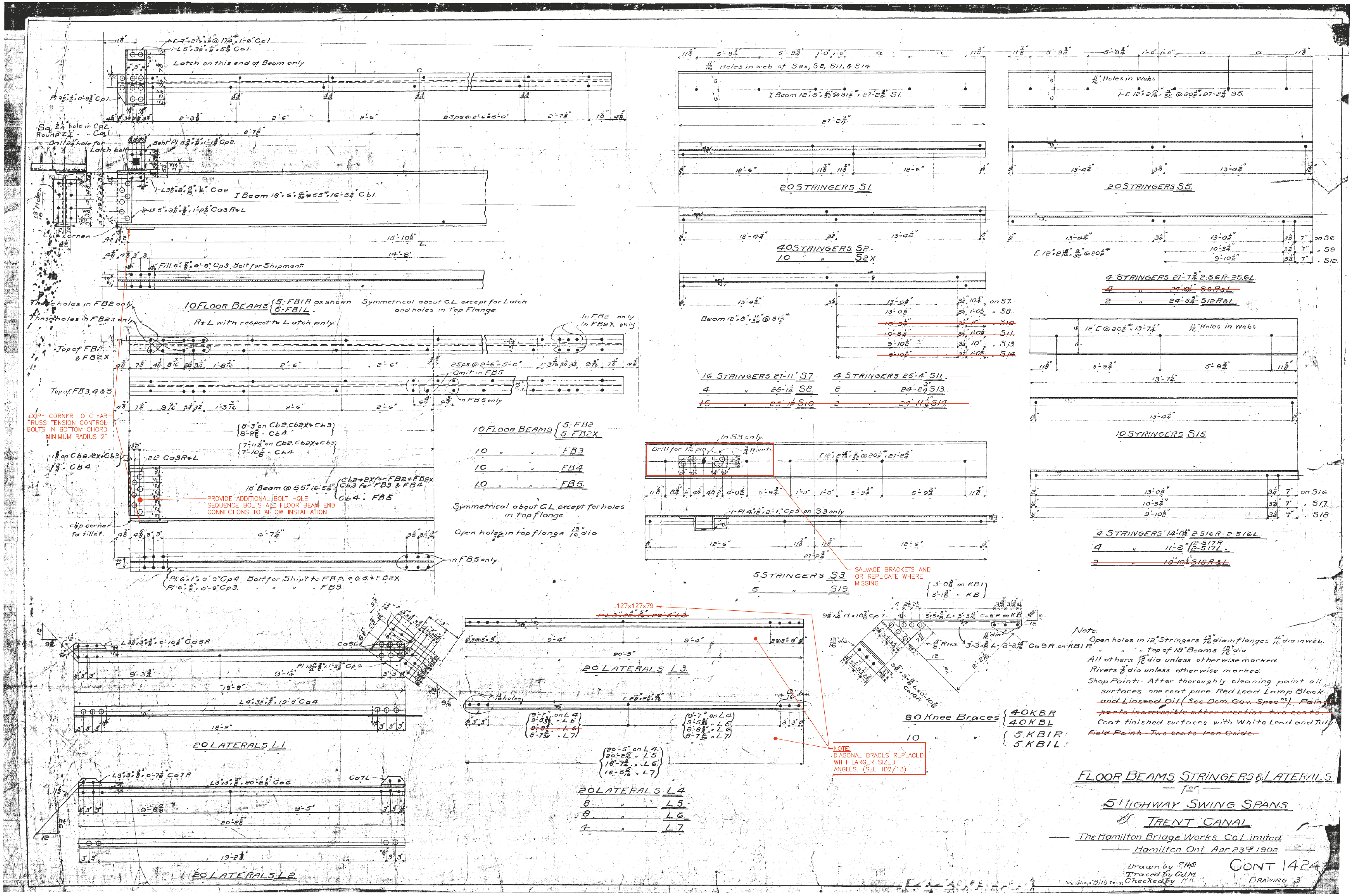
project title / titre du projet
KAWARTHA LAKES Ontario

BOUNDARY ROAD
SWING BRIDGE REPLACEMENT
TRENT-SEVERN WATERWAY

drawing title / titre du dessin
STRUCTURAL STEEL HANDRAIL

drawn by / dessine par: G. MOTA
designed by / conc par: D.A. HUCTWITH
approved by / approuve par:
bid / offre
project manager / administrateur de projets
project date / date du projet: 2019-10-10
project no. / no. du projet: R.030025.844
drawing no. / dessine no.: 14

B1 (1000 x 707)



NOTE: STRINGER AND FLOOR BEAM SIZES AS PER NEW DRAWING WITH DIAPHRAGMS AND CONTINUOUS DECK STRINGERS. DETAILS AS PER THIS DRAWING WHERE NEW DRAWINGS DO NOT CHANGE DETAILS.

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LICENSED PROFESSIONAL ENGINEER
D.A. HUCTWITH
Oct 10 2019
PROVINCE OF ONTARIO

LICENSED PROFESSIONAL ENGINEER
Z. F. WASIEWICZ
19/10/10
PROVINCE OF ONTARIO

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project title / titre du projet
KAWARTHA LAKES Ontario
BOUNDARY ROAD
SWING BRIDGE REPLACEMENT
TRENT-SEVERN WATERWAY

drawing title / titre du dessin
STRUCTURAL STEEL
FLOOR BEAMS, STRINGERS and LATERALS

drawn by / dessine par: G. MOTA

designed by / conc par: D.A. HUCTWITH

approved by / approuve par:

bid / offre

project manager / administrateur de projets

project date / date du projet: 2019-10-10

project no. / no. du projet: R.030025.844

drawing no. / dessine no.: 15

B1 (1000 x 707)

T2L for Boundary Road & Centre Road
T4L - Portage Road & Lake Shore Road
T6L - Balsover

T1L for Boundary Road & Centre Road
T3L - Portage & Lake Shore Road
T5L - Balsover

Outside Elevation of Truss

T7L for Boundary & Centre Rds
T13L - Portage & Lake Shore Rds
T14L - Balsover

T7L for Boundary and Centre Roads
T13L - Portage and Lake Shore Roads
T14L - Balsover

Inside Elevation of Truss

136'-9" o.to.o. bott chord on Boundary & Centre Road
131'-2" " " Portage & Lake Shore Road
130'-5" " " Balsover

Screw End R. to floor with 3/8 dia x 4" Woodscrews

Ep1. on Boundary and Centre Roads
Ep2. on remaining Spans

T1R, T3R, & T5R

LR4 for Boundary & Centre Road
LR5 - Portage & Lake Shore Road
T1L, LR6 - Balsover

T1L, T3L, & T5L

T2L, T4L & T6L

Wall Plate WP1 on Boundary and Centre Roads
WP2 on Remaining Spans

Lay the under Floor with 7" nails and the upper Floor with 6" nails.

Plan showing Floor

Plan showing Laterals

Erector will adjust the pivot so that the castor wheels have a slight clearance above the rail, the pivot carrying the entire load.
The casting A35 should have a steel disc in the bottom, then a bronze disc and a concave steel disc on top.
A plate 12" sq. is provided to cover hole in floor over shaft.
This is to be set in a recess.
Paint two coats after erection.

Note:-
For Strains, Sections, Dimensions and such additional information see Diag. A.
Field Paint - Two coats Iron Oxide.

17'-3" c.to.c.

End Elevation

Section Elevation

Automatic. Latch.

ERECTION DIAGRAM - SWING BRIDGES
OVER
THE TRENT CANAL
AT BOUNDRY ROAD, CENTRE ROAD,
LAKE SHORE ROAD, PORTAGE ROAD, AND BALSOVER

Submitted by - The Hamilton Bridge Works Co. Limited
Hamilton Ont
Jan. 25th 1902
Altered from Design 29th April 1902
Marks Revised 21st July 1902
Revised Feb. 20 1902

Con. 1424
Diag. B.

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D.A. HUCTWITH — LICENCED PROFESSIONAL ENGINEER — PROVINCE OF ONTARIO
Z. F. WASENCZ — LICENCED PROFESSIONAL ENGINEER — 19/10/10 — PROVINCE OF ONTARIO

revision		date
04		
03		
02		
01		

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A Detail No. No. du detail
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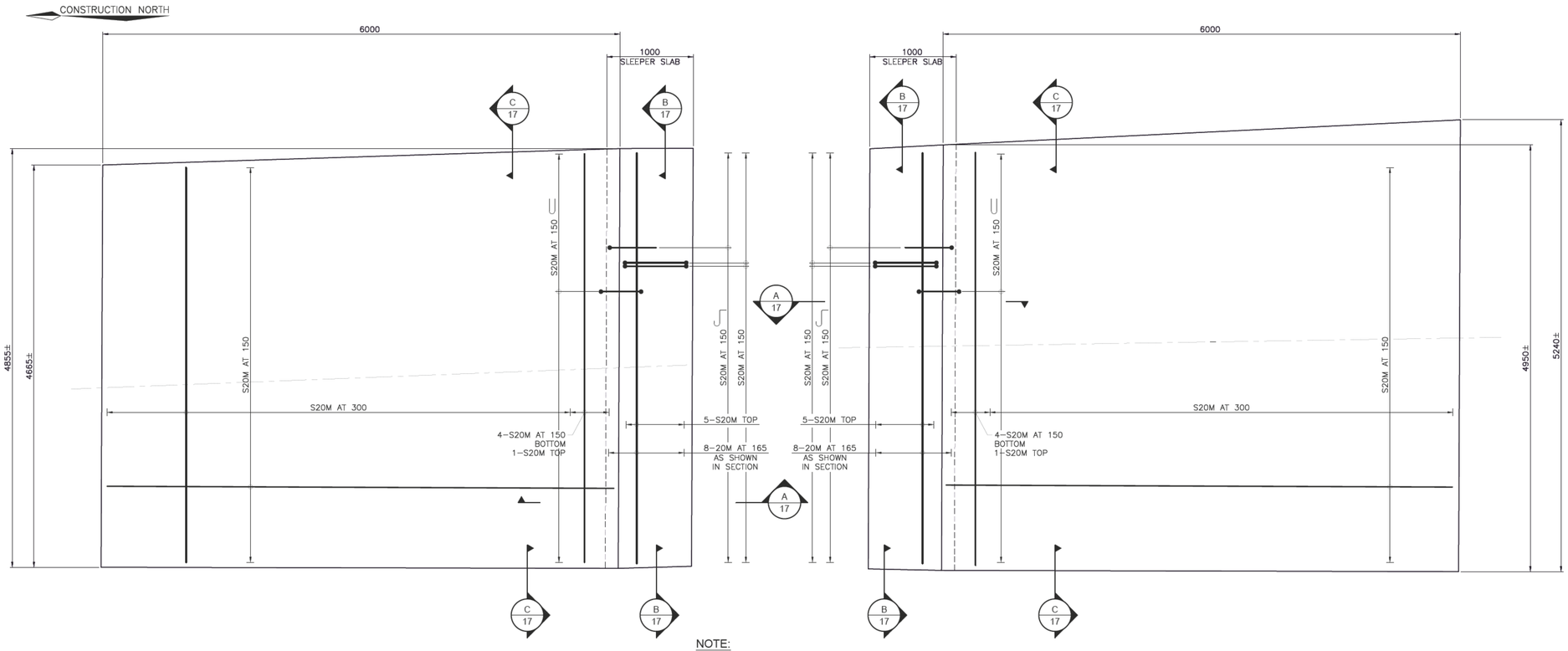
C drawing no. - where detailed dessin no. - ou detaille

project title / titre du projet
KAWARTHA LAKES Ontario
BOUNDARY ROAD
SWING BRIDGE REPLACEMENT
TRENT-SEVERN WATERWAY

drawing title / titre du dessin
STRUCTURAL STEEL
ERECTION DIAGRAM

drawn by / dessine par: G. MOTA
designed by / conc par: D.A. HUCTWITH
approved by / approuve par:
bid / offre
project manager / administrateur de projets
project date / date du projet: 2019-10-10
project no. / no. du projet: R.030025.844
drawing no. / dessine no.: 16

B1 (1000 x 707)

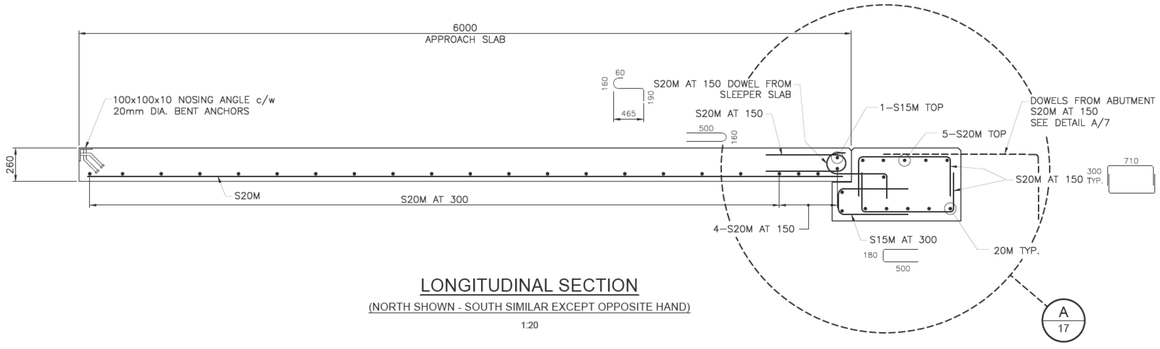


NOTE:
FOR ANGLE AND ORIENTATION OF APPROACH SLABS, SEE GENERAL ARRANGEMENT DRAWING. APPROACH SLABS TO MATCH EXISTING ROADWAY ASPHALT LIMITS.

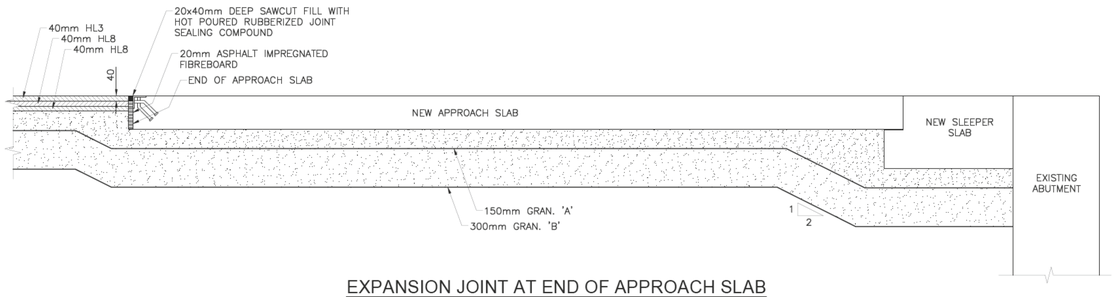
PLAN
1:25

NOTES:

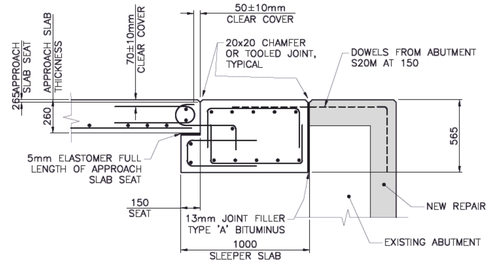
1. CLEAR COVER TO REINFORCING STEEL 70±20mm EXCEPT AS NOTED.
2. LAYOUT OF REINFORCING STEEL WILL BE SIMILAR FOR LEFT HAND AND ZERO DEGREE SKEW.
3. BARS MARKED WITH PREFIX 'S' DENOTE STAINLESS STEEL BARS.
4. STAINLESS STEEL BARS SHALL BE TYPE 316 LN OR DUPLEX 2205 WITH A MINIMUM YIELD STRENGTH OF 500MPa. REINFORCING STEEL SHALL BE GRADE 400W.



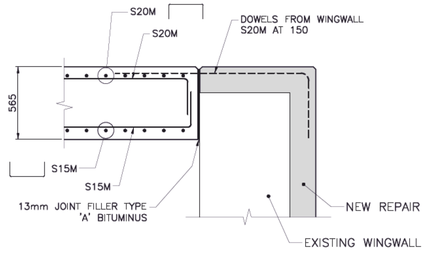
LONGITUDINAL SECTION
(NORTH SHOWN - SOUTH SIMILAR EXCEPT OPPOSITE HAND)
1:20



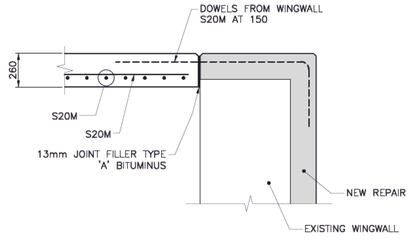
EXPANSION JOINT AT END OF APPROACH SLAB
1:20



A 17 AT BRIDGE ABUTMENT
1:20



B 17 AT WINGWALL
1:20



C 17 AT WINGWALL
1:20

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LICENSED PROFESSIONAL ENGINEER
D.A. HUCTWITH
PROVINCE OF ONTARIO

LICENSED PROFESSIONAL ENGINEER
Z. F. WASENCZ
19/10/10
PROVINCE OF ONTARIO

revision		date
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A/B/C

project title / titre du projet
KAWARTHA LAKES Ontario

BOUNDARY ROAD
SWING BRIDGE REPLACEMENT
TRENT-SEVERN WATERWAY

drawing title / titre du dessin
SLEEPER SLAB and APPROACH SLAB

drawn by / dessine par: P.C. MASON
designed by / conc par: D.A. HUCTWITH
approved by / approuve par:
bid / offre
project manager / administrateur de projets
project date / date du projet: 2019-10-10
project no. / no. du projet: R.030025.844
drawing no. / dessine no.: 17

PHOTO 1

PHOTO 2

REPLACE THE EXISTING HOUSING SUPPORT BRACKETS ETC. SUCH THAT THE MECHANISM FOR THE LATCH CAN BE USED. COAT ALL PORTIONS OF THE LATCH MECHANISM AND CONSTRUCT THE HOUSING FROM ASTM GRADE 316 STAINLESS STEEL

PHOTO 3

PHOTO 4

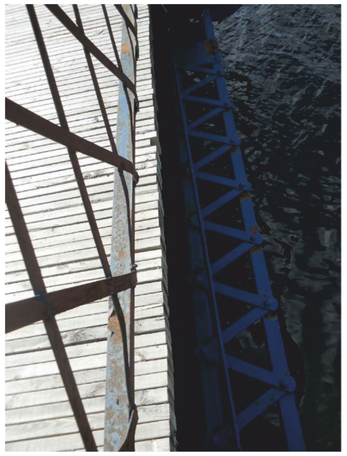


PHOTO 5

PHOTO 6

PHOTO 7

REMOVE EXISTING LADDER AND REPLACE WITH NEW LADDER MATCHING EXISTING CONDITIONS

PHOTO 8

REPLACE DAMAGED END STOP ON REST PIER WITH NEW MATCHING CURRENT DESIGN

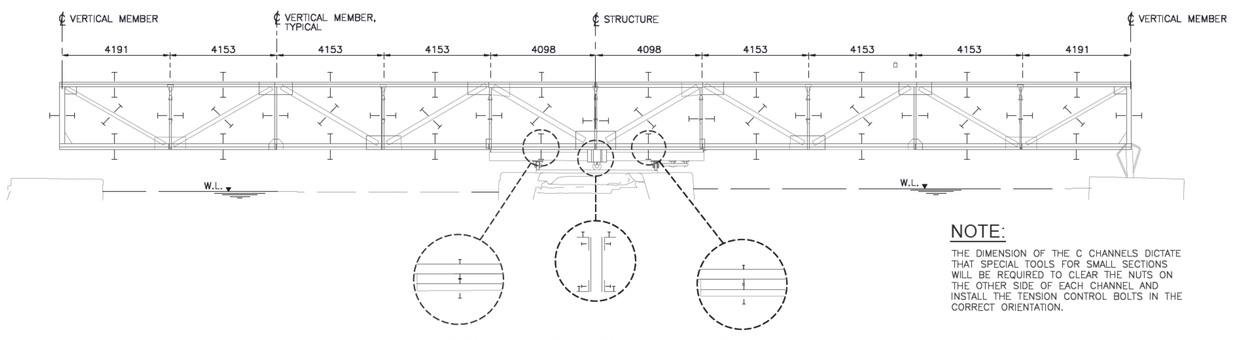
PHOTO 9

CONTRACTOR TO NOTE CURRENT POSITION OF LIGHTING AND APPROXIMATE GEOMETRY OF SHIELDING. ALL NAVIGATION LIGHT HOUSING, WIRING AND LIGHTS WILL BE REPLACED WITH THE HOUSING MODIFIED SO THAT THEY ARE BOLTED AND NOT WELDED TO THE TRUSS AND THE LIGHTS ARE CAGED LED LIGHTS INTENDED FOR A MARINE ENVIRONMENT. MOUNTING POSITION AND HEIGHT TO REMAIN THE SAME

PHOTO 10

NOTE:

REINSTATE EXISTING LATCH SYSTEM ON NEW BRIDGE. SALVAGE ALL ARMS AND RODS SUPPLEMENTING EXISTING RODS WITH RODS SUPPLIED BY THE PARKS CANADA TRENT SEVERN WATERWAY

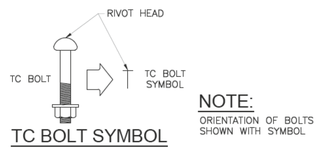


TC BOLT ORIENTATION: ELEVATION

N.T.S.

NOTE:

THE DIMENSION OF THE C CHANNELS DICTATE THAT SPECIAL TOOLS FOR SMALL SECTIONS WILL BE REQUIRED TO CLEAR THE NUTS ON THE OTHER SIDE OF EACH CHANNEL AND INSTALL THE TENSION CONTROL BOLTS IN THE CORRECT ORIENTATION.

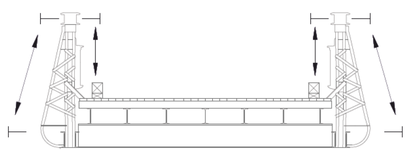


TC BOLT SYMBOL

1:50

NOTE:

ORIENTATION OF BOLTS SHOWN WITH SYMBOL



TC BOLT ORIENTATION: SECTION

1:50

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LICENSED PROFESSIONAL ENGINEER Z. F. WASIEWICZ 19/10/10 PROVINCE OF ONTARIO

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project title / titre du projet
KAWARTHA LAKES Ontario

BOUNDARY ROAD
SWING BRIDGE REPLACEMENT
TRENT-SEVERN WATERWAY

drawing title / titre du dessin
MISCELLANEOUS

drawn by / dessine par: G. MOTA

designed by / conc par: D.A. HUCTWITH

approved by / approuve par:

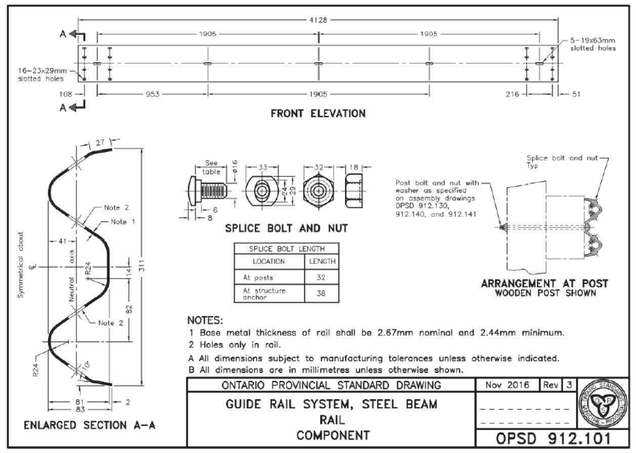
bid / offre

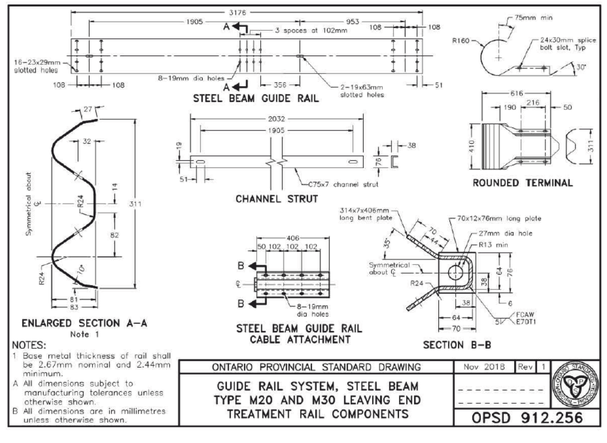
project manager / administrateur de projets

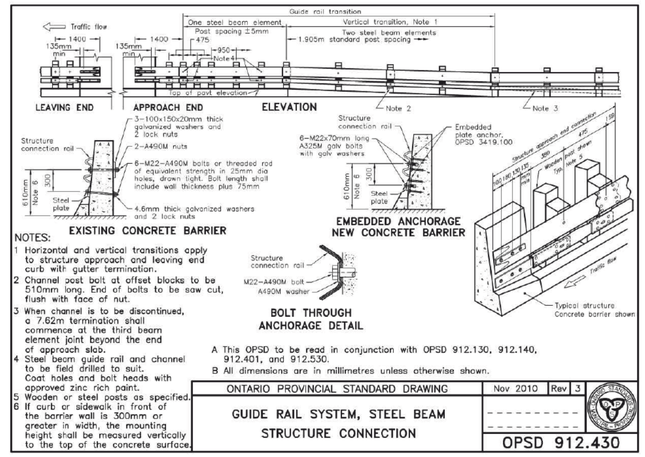
project date / date du projet: 2019-10-10

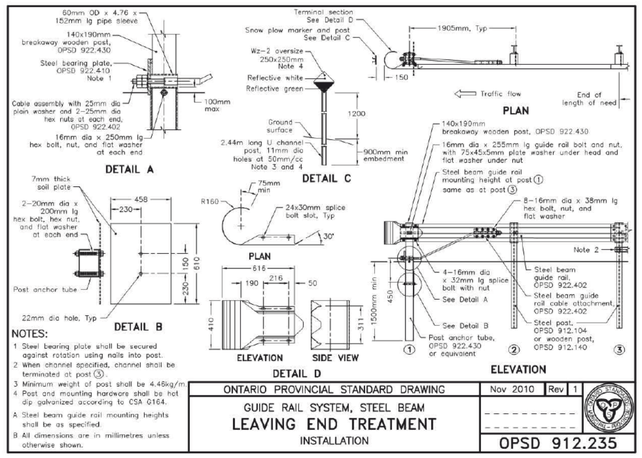
project no. / no. du projet: R.030025.844

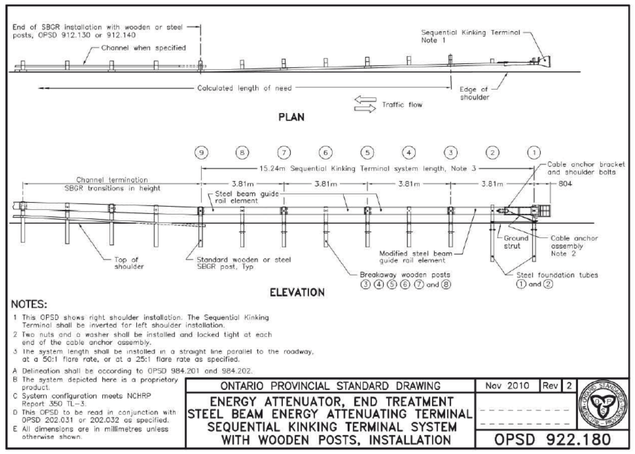
drawing no. / dessine no.: 18

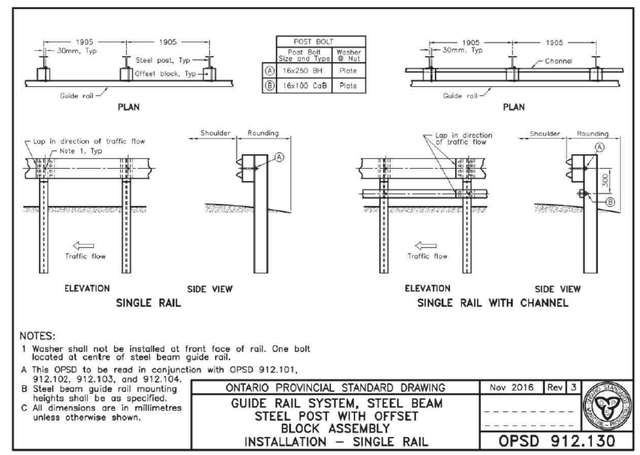


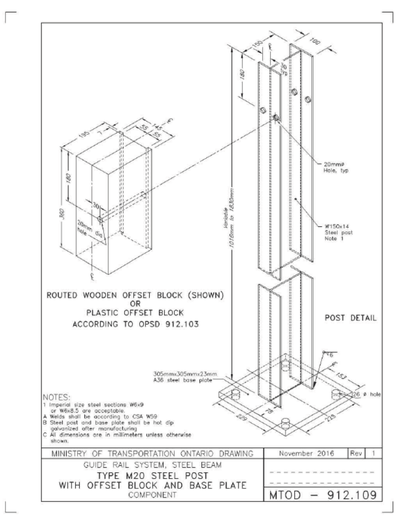












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NOTE:

STANDARD DRAWINGS SHOWN HERE FOR REFERENCE. OBTAIN FULL SIZE VERSIONS FOR USE.

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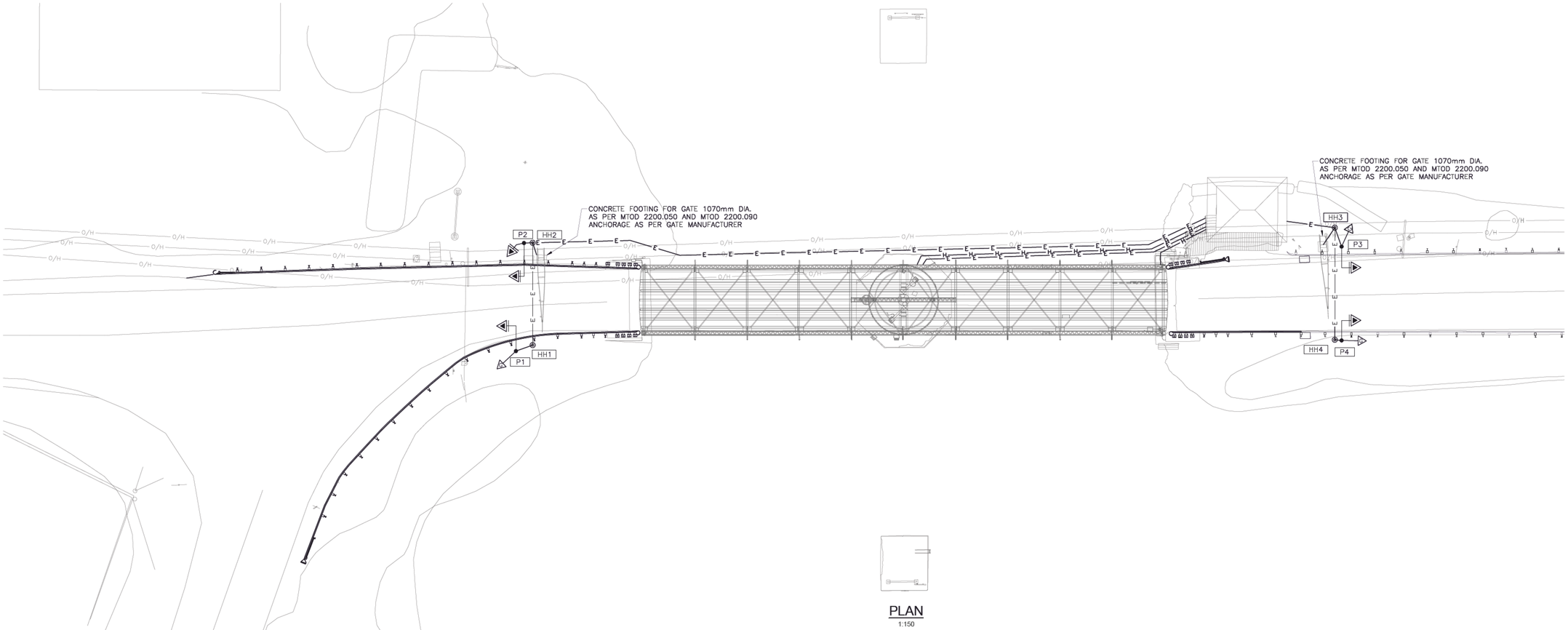
KAWARTHA LAKES Ontario
BOUNDARY ROAD
SWING BRIDGE REPLACEMENT
TRENT-SEVERN WATERWAY

drawing title / titre du dessin
STANDARD GUIDERAIL DETAILS

drawn by / dessine par: P.C. MASON
designed by / conc par: D.A. HUCTWITH
approved by / approuve par:
bid / offre
project manager / administrateur de projets
project date / date du projet: 2019-10-10
project no. / no. du projet: R.030025.844
drawing no. / dessine no.: 19

B1 (1000 x 707)



PLAN
1:150

ELECTRICAL LEGEND:

ALL EQUIPMENT ARE NEW, UNLESS SHOWN IN THINNER LINE (EXISTING)

- PXX — POLE IDENTIFICATION
- ● — POLE MOUNTED LUMINAIRE AND BRACKET
- FBXX — FLASHING BEACON IDENTIFICATION
- POLE MOUNTED FLASHING BEACON
- GROUND ROD
- TRAFFIC SIGNAL HEAD ON MAST ARM
- HH– — HANDHOLE IDENTIFICATION
- HANDHOLE
- DIRECT BURIED DUCT (SIZE AND TYPE AS PER WIRING DIAGRAM)
- X — CONCRETE ENCASED DUCT (SIZE AND TYPE AS PER WIRING DIAGRAM)
- MAINTENANCE HOLE
- MHXXX — MAINTENANCE HOLE IDENTIFICATION
- O/H — EXISTING OVERHEAD WIRES
- E — E — E — GENERAL ROUTE OF ELECTRICAL LINES
- H — H — H — GENERAL ROUTE OF HYDRAULIC LINES

WIRING AND CONDUIT IDENTIFICATION:

ALL EQUIPMENT ARE NEW, UNLESS SHOWN IN THINNER LINE (EXISTING)

2-2/C #14 LV-75mm — wiring identification note
- duct size, aerial or direct buried type of cable:
  - LV low voltage
  - IGRD insulated ground (green)
- AWG size of conductor
- number of conductors in cable, not required for single conductor
- number of cables

- MAINTENANCE HOLE / HANDHOLE
- COMMON HANDHOLE

ABBREVIATION LIST:

DWG – DRAWING
IGRD – INSULATED GROUND WIRE
LV – LOW VOLTAGE
P – POLE
LED – LIGHT EMITTING DIODE
OPSD – ONTARIO PROVINCIAL STANDARD DRAWINGS
E/P – EDGE OF PAVEMENT
BHG – BEHIND GUIDE RAIL
E/S – EDGE OF SHOLDER
TS – TRAFFIC SIGNAL

CHARTS:

POLE SCHEDULE

ID	POLE HEIGHT	POLE TYPE	TRAFFIC SIGNAL HEAD ON MAST ARM	LUMINAIRE WITH BRACKET	STATION	OFFSET (m)
P1	10.5 m	SECTIONAL STEEL	1 – 2.0m ARM	–	–	1.7m BHG
P2	7.5 m	SECTIONAL STEEL (HEAVY CLASS)	2 – 0.6m ARM	–	–	1.0m BHG
P3	10.5 m	SECTIONAL STEEL	1 – 2.0m ARM	–	–	0.6m BHG
P4	7.0 m	SECTIONAL STEEL	1 – 0.6m ARM	–	–	0.6m BHG

HANDHOLE SCHEDULE

ID	DESCRIPTION	STANDARD	STATION	OFFSET (m)
HH1	HANDHOLE	OPSD 2112.04	–	1.7m BHG
HH2	HANDHOLE	OPSD 2112.04	–	1.0m BHG
HH3	HANDHOLE	OPSD 2112.04	–	2.1m BHG
HH4	HANDHOLE	OPSD 2112.04	–	0.6m BHG

NOTE:
AT HANDHOLES, POLES, TRAFFIC GENERAL LAYOUT SIGNAL HEADS, ARMS, ATTACHMENT AND ASSOCIATED WORK, THE STANDARDS AND DRAWINGS OF THE OPS, OPSD, AND MTOD SHALL BE USED AS DETAILS.

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LICENSED PROFESSIONAL ENGINEER Z. F. WASEWICZ 19/10/10 PROVINCE OF ONTARIO

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KAWARTHA LAKES Ontario
BOUNDARY ROAD
SWING BRIDGE REPLACEMENT
TRENT-SEVERN WATERWAY

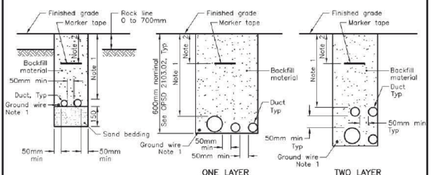
drawing title / titre du dessin
ELECTRICAL GENERAL LAYOUT

drawn by / dessine par: P.C. MASON
designed by / conc par: D.A. HUCTWITH
approved by / approuve par:
bid / offre
project manager / administrateur de projets
project date / date du projet: 2019-10-10
project no. / no. du projet: R.030025.844
drawing no. / dessine no.: 20

B1 (1000 x 707)

MINIMUM TRENCH WIDTH FOR ONE LAYER AND TWO LAYER DUCT ARRANGEMENT

No. OF 100 mm DUCTS	No. OF LAYERS	NUMBER OF 50 mm DUCTS									
		0	1	2	3	4	5	6	7	8	9	10
0	1	N/A	150	205	300	460	610	N/A	N/A	N/A	N/A	N/A
	2	N/A	N/A	N/A	N/A	205	300	350	460	460	610	610
1	1	150	255	460	610	610	N/A	N/A	N/A	N/A	N/A	N/A
	2	N/A	N/A	205	255	300	460	460	610	610	610	N/A
2	1	300	460	610	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	2	150	255	255	460	460	610	610	610	N/A	N/A	N/A
3	1	460	610	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	2	300	300	460	460	610	610	610	N/A	N/A	N/A	N/A
4	1	610	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	2	300	460	460	610	610	N/A	N/A	N/A	N/A	N/A	N/A

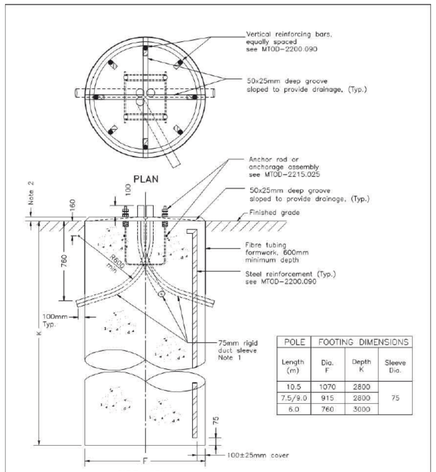


IN ROCK — ONE LAYER ARRANGEMENT IN EARTH — TWO LAYER ARRANGEMENT IN EARTH

NOTES:
1 Ground wire shall be installed in the duct or trench as specified in the Contract Documents.
2 Depth of marker tape shall be as specified in the Ontario Electrical Safety Code.

A Cable brick or concrete slab shall be installed where specified in the Contract Documents. See OPSD 2100.050.
B This OPSD shall be read in conjunction with OPSD 2103.02.
C Contractor has the option of installing one or two layer duct arrangement.
D N/A – Not Applicable, undesirable or exceeding equipment limits.
E All dimensions are in millimetres unless otherwise shown.

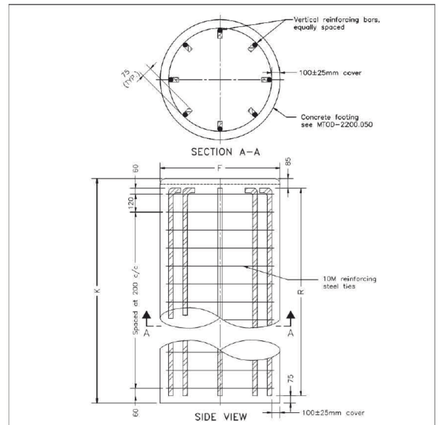
ONTARIO PROVINCIAL STANDARD DRAWING	Nov 2013	Rev	1
DUCT INSTALLATION IN TRENCHES			
	OPSD 2101.01		



POLE	FOOTING DIMENSIONS			
Length (m)	Dia. F	Depth K	Sleeve Dia.
10.5	1070	2800	75
7.5/9.0	915	2800	
6.0	760	3000	

NOTES:
1. Minimum of two sleeves required for each concrete footing. Three sleeves as specified.
2. Top of footing shall be installed at 40mm ±15mm above finished grade in paved or concrete areas and 75mm ±25mm above finished grade in earth or granular areas.
A For installation details for use where rock is encountered, see MTOD-2200.031.
B All dimensions are in millimetres unless otherwise shown.
C Unless otherwise indicated in the contract, diameter F may be chosen from those shown in the table.

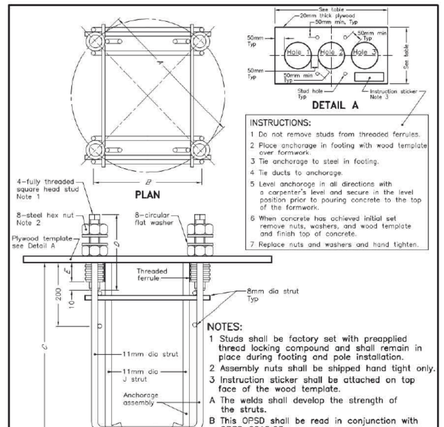
MINISTRY OF TRANSPORTATION ONTARIO DRAWING	September 2015	Rev	3
CONCRETE FOOTING IN EARTH FOR HEAVY CLASS STEEL POLE AND SECTIONAL STEEL POLE			
	MTOD – 2200.050		



Pole Length (m)	Footing Diameter F	Footing Depth K	Vertical Bars Quantity	Size	Length R	10M Ties LD	Qty.
10.5	1070	2800	8	20M	2640	870	13
7.5/9.0	915	2800	8	20M	2640	715	13
6.0	760	3000	8	20M	2640	560	14

NOTE:
A All dimensions are in millimetres unless otherwise shown.

MINISTRY OF TRANSPORTATION ONTARIO DRAWING	September 2015	Rev	2
REINFORCING STEEL FOR CONCRETE FOOTING FOR HEAVY CLASS STEEL POLE AND SECTIONAL STEEL POLE IN EARTH			
	MTOD 2200.090		

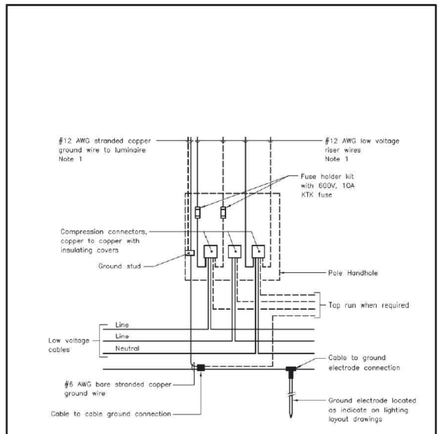


INSTRUCTIONS:
1 Do not remove studs from threaded ferrules.
2 Place anchorage in footing with wood template over formwork.
3 Tie anchorage to steel in footing.
4 Tie ducts to anchorage.
5 Level anchorage in all directions with a carpenter's level and secure in the level position prior to pouring concrete to the top of the formwork.
6 When concrete has achieved initial set remove nuts, washers, and wood template and finish top of concrete.
7 Replace nuts and washers and hand tighten.

NOTES:
1 Studs shall be factory set with preapplied thread locking compound and shall remain in place during footing and pole installation.
2 Assembly nuts shall be shipped hand tight only.
3 Instruction sticker shall be attached on top face of the wood template.
A The welds shall develop the strength of the struts.
B This OPSD shall be read in conjunction with OPSD 2215.03.
C All dimensions are in millimetres unless otherwise shown.

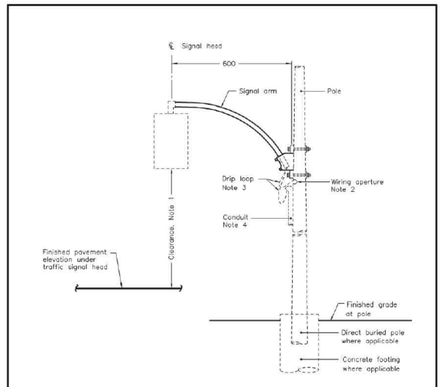
ASSEMBLY DIMENSIONS						WOOD TEMPLATE DIMENSIONS			
STUD DIA	STUD LENGTH D	BOLT CIRCLE DIA A	STUD DISTANCE B	FERRULE LENGTH C	ANCHORAGE DEPTH C	LENGTH	WIDTH	HOLE DIA 1 and 3	2
32mm (1-1/4")	230	406	287	75	250mm FOR STRUCTURES	1000	400	247	306
					457	1000	400	247	306
		449	318		457	1000	418	225	349
19mm (3/4")	180	190	135	38	305	600	300	155	90

ONTARIO PROVINCIAL STANDARD DRAWING	Nov 2015	Rev	4
ANCHORAGE ASSEMBLY FOR LIGHTING AND SIGNAL POLES			
	OPSD 2215.02		



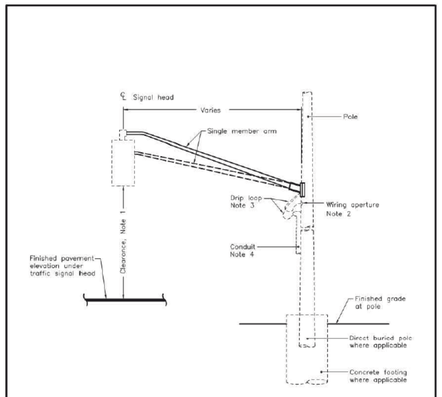
NOTE:
1 Broken lines indicate additional conductors for double luminaire installation.

ONTARIO PROVINCIAL STANDARD DRAWING	Nov 2013	Rev	1
POLE WIRING DIAGRAM 120/240V SYSTEM			
	OPSD 2255.020		



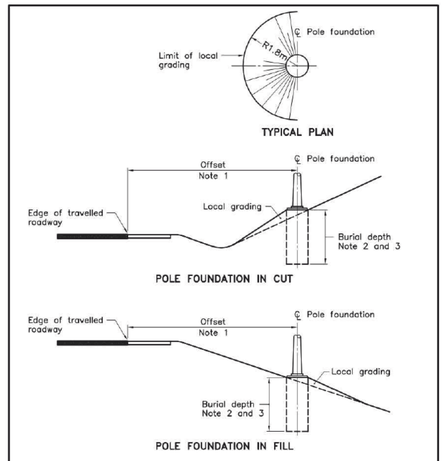
NOTES:
1 The bottom of the signal head shall be a minimum of 5.0m above the highest point on the roadway, regardless of whether the signal head is above the pavement or not.
2 Wiring aperture shall be 25mm diameter field drilled complete with rubber grommet, 25mm below arm attachment or 25mm below overlapping sectional steel joints, deburred, and protected with zinc rich paint.
3 Drip loops shall be provided.
4 For external conduit system on wooden or concrete poles refer to OPSD 2552.010 or OPSD 2554.010.
A For arm attachment details refer to OPSD 2500.020.
B For traffic signal head wiring details refer to OPSD 2528.010.
C Traffic signal hanger details shall be as specified.
D All dimensions are in millimetres unless otherwise shown.

ONTARIO PROVINCIAL STANDARD DRAWING	Nov 2017	Rev	2
600mm SIGNAL ARM AND SIGNAL HEAD			
	OPSD 2500.010		



NOTES:
1 The bottom of the signal head shall be a minimum of 5.0m above the highest point on the roadway, regardless of whether the signal head is above the pavement or not.
2 Wiring aperture shall be 25mm diameter field drilled complete with rubber grommet, 25mm below arm attachment or 25mm below overlapping sectional steel joints, deburred, and protected with zinc rich paint.
3 Drip loops shall be provided.
4 For external conduit system on wooden or concrete poles refer to OPSD 2552.010 or OPSD 2554.010.
A For arm attachment details refer to OPSD 2500.020.
B For traffic signal head wiring details refer to OPSD 2528.010.
C Traffic signal hanger details shall be as specified.
D All dimensions are in millimetres unless otherwise shown.

ONTARIO PROVINCIAL STANDARD DRAWING	Nov 2017	Rev	0
SINGLE MEMBER ARM AND SIGNAL HEAD			
	OPSD 2501.010		



NOTES:
1 Offset dimension as specified in the Contract Documents.
2 Burial depth shall be measured from the highest grade elevation at pole foundation.
3 For burial depths see OPSD 2200.01.
A All dimensions are in millimetres unless otherwise shown.

ONTARIO PROVINCIAL STANDARD DRAWING	Nov 2013	Rev	0
LOCAL GRADING AT POLE FOUNDATIONS			
	OPSD 2210.010		

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Ontario Region
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Parks Canada / Parcs Canada

wsp

NOTE:
STANDARD DRAWINGS SHOWN HERE FOR REFERENCE. OBTAIN FULL SIZE VERSIONS FOR USE.

LICENCED PROFESSIONAL ENGINEER D.A. HUCTWITH 2019 10 29 PROVINCE OF ONTARIO

LICENCED PROFESSIONAL ENGINEER Z. F. WASIEWICZ 19/10/10 PROVINCE OF ONTARIO

revision		date
04		
03		
02		
01		

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

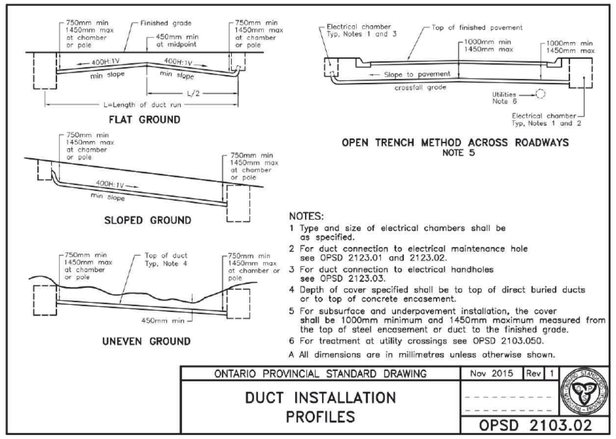
A/C Detail No. / No. du detail
B drawing no. - where detail required / dessin no. - ou detail exige
C drawing no. - where detailed / dessin no. - ou detaille
A/B/C

project title / titre du projet
KAWARTHA LAKES Ontario
BOUNDARY ROAD
SWING BRIDGE REPLACEMENT
TRENT-SEVERN WATERWAY

drawing title / titre du dessin
STANDARD ELECTRICAL DETAILS I

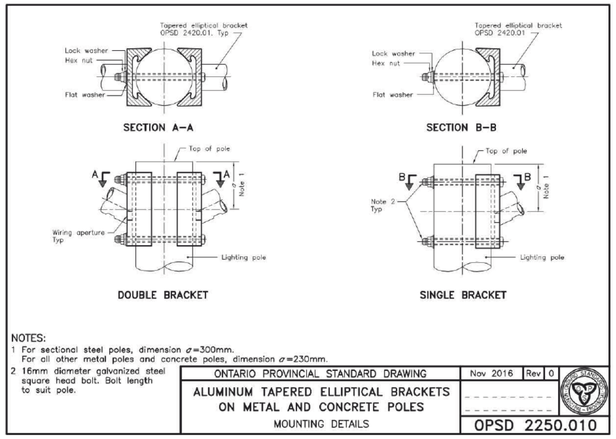
drawn by / dessine par: P.C. MASON
designed by / conc par: D.A. HUCTWITH
approved by / approuve par:
bid / offre:
project manager / administrateur de projets:
project date / date du projet: 2019-10-10
project no. / no. du projet: R.030025.844
drawing no. / dessine no.: 21

B1 (1000 x 707)



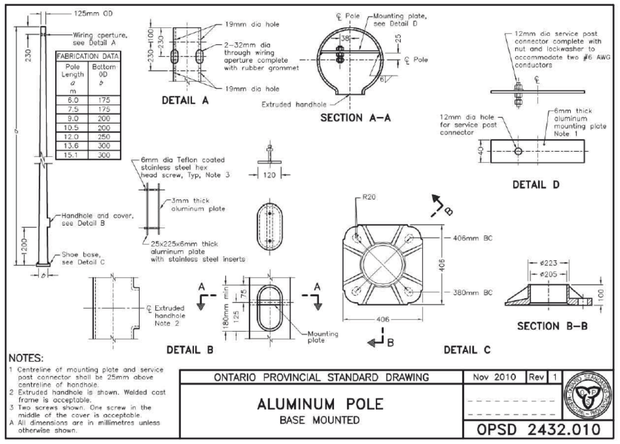
NOTES:
1 Type and size of electrical chambers shall be as specified.
2 For duct connection to electrical maintenance hole see OPSD 2123.01 and 2123.02.
3 For duct connection to electrical handholes see OPSD 2123.03.
4 Depth of cover specified shall be to top of direct buried ducts or to top of concrete encasement.
5 For subsurface and underpavement installation, the cover shall be 1000mm minimum and 1450mm maximum measured from the top of steel encasement or duct to the finished grade.
6 For treatment at utility crossings see OPSD 2103.050.
A All dimensions are in millimetres unless otherwise shown.

ONTARIO PROVINCIAL STANDARD DRAWING	Nov 2015	Rev 1
DUCT INSTALLATION PROFILES		OPSD 2103.02



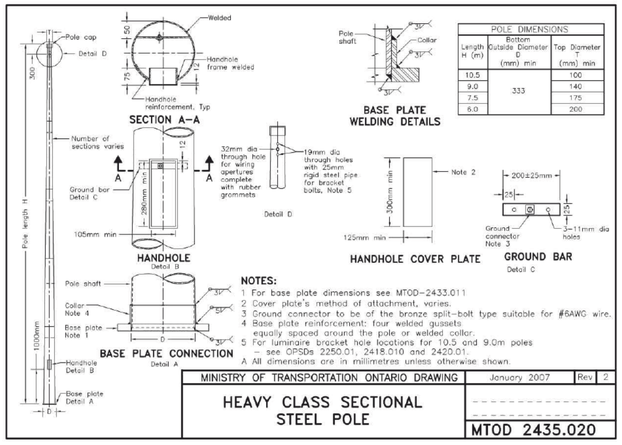
NOTES:
1 For sectional steel poles, dimension σ=300mm.
For all other metal poles and concrete poles, dimension σ=230mm.
2 16mm diameter galvanized steel square head bolt. Bolt length to suit pole.

ONTARIO PROVINCIAL STANDARD DRAWING	Nov 2016	Rev 0
ALUMINUM TAPERED ELLIPTICAL BRACKETS ON METAL AND CONCRETE POLES MOUNTING DETAILS		OPSD 2250.010



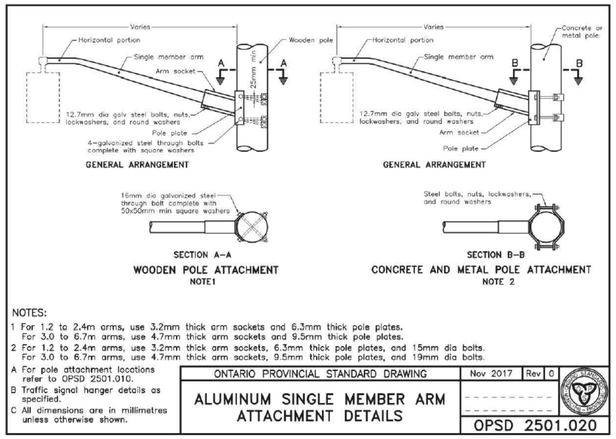
NOTES:
1 Centreline of mounting plate and service post connector shall be 25mm above centreline of handhole.
2 Extruded handhole is shown. Welded cast frame is acceptable.
3 Two screws shown. One screw in the middle of the cover is acceptable.
A All dimensions are in millimetres unless otherwise shown.

ONTARIO PROVINCIAL STANDARD DRAWING	Nov 2010	Rev 1
ALUMINUM POLE BASE MOUNTED		OPSD 2432.010



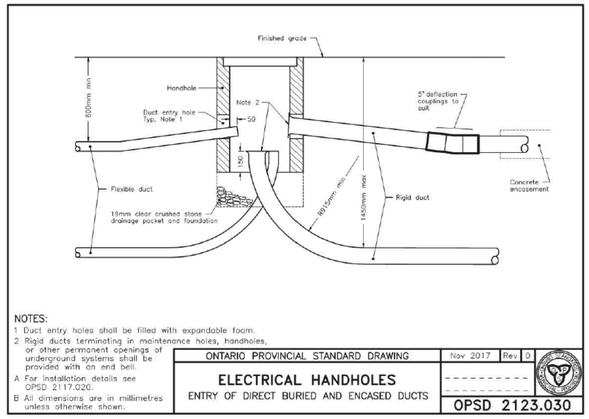
NOTE:
A All dimensions are in millimetres unless otherwise shown.

ONTARIO PROVINCIAL STANDARD DRAWING	Nov 2014	Rev 4
POLE MOUNTING DETAILS FOR BASE MOUNTED METAL POLE		OPSD 2215.03



NOTES:
1 For 1.2 to 2.4m arms, use 3.2mm thick arm sockets and 6.3mm thick pole plates.
For 3.0 to 6.7m arms, use 4.7mm thick arm sockets and 9.5mm thick pole plates.
2 For 1.2 to 2.4m arms, use 3.2mm thick arm sockets, 6.3mm thick pole plates, and 15mm dia bolts.
For 3.0 to 6.7m arms, use 4.7mm thick arm sockets, 9.5mm thick pole plates, and 19mm dia bolts.
A For pole attachment locations refer to OPSD 2501.010.
B Traffic signal hanger details as specified.
C All dimensions are in millimetres unless otherwise shown.

ONTARIO PROVINCIAL STANDARD DRAWING	Nov 2017	Rev 0
ALUMINUM SINGLE MEMBER ARM ATTACHMENT DETAILS		OPSD 2501.020



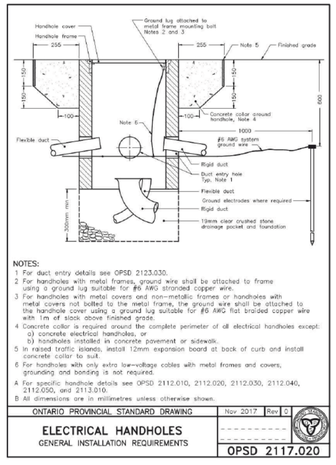
NOTES:
1 Duct entry holes shall be filled with expandable foam.
2 Rigid ducts terminating in maintenance holes, handholes, or other permanent openings of underground systems shall be provided with an end bell.
A For installation details see OPSD 2117.020.
B All dimensions are in millimetres unless otherwise shown.

ONTARIO PROVINCIAL STANDARD DRAWING	Nov 2017	Rev 0
ELECTRICAL HANDHOLES ENTRY OF DIRECT BURIED AND ENCASED DUCTS		OPSD 2123.030

POLE DIMENSIONS			
Length H (m)	Bottom Outside Diameter D (mm) min	Top Diameter (mm) min	
10.5	333	100	
9.0		140	
7.5		175	
6.0		200	

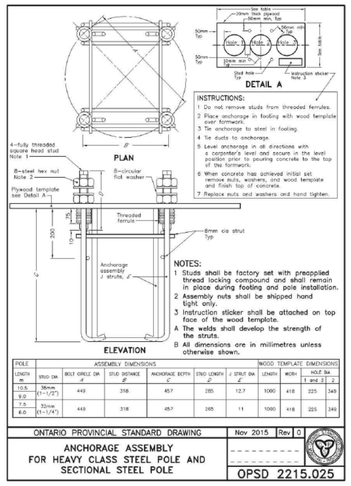
NOTES:
1 For base plate dimensions see MTOD–2433.011
2 Cover plate's method of attachment, varies.
3 Ground connector to be of the bronze split–bolt type suitable for #6AWG wire.
4 Base plate reinforcement: four welded gussets equally spaced around the pole or welded collar.
5 For luminaire bracket hole locations for 10.5 and 9.0m poles – see OPSDs 2250.01, 2418.010 and 2420.01.
A All dimensions are in millimetres unless otherwise shown.

MINISTRY OF TRANSPORTATION ONTARIO DRAWING	January 2007	Rev 2
HEAVY CLASS SECTIONAL STEEL POLE		MTOD 2435.020



NOTES:
1 For duct entry details see OPSD 2123.030.
2 For handholes with metal frames, ground wire shall be attached to frame using a ground lug suitable for #6 AWG stranded copper wire.
3 For handholes with metal covers and non–metallic frames or handholes with metal covers not bolted to the metal frame, the ground wire shall be attached to the handhole cover using a ground lug suitable for #6 AWG flat braided copper wire with 1m of slack above finished grade.
4 Concrete collar is required around the complete perimeter of all electrical handholes except:
a) concrete electrical handholes, or
b) handholes installed in concrete pavement or sidewalk.
5 In raised traffic islands, install 12mm expansion board at back of curb and install concrete collar to suit.
6 For handholes with only extra low–voltage cables with metal frames and covers, grounding and bonding is not required.
A For specific handhole details see OPSD 2112.010, 2112.020, 2112.030, 2112.040, 2112.050, and 2113.010.
B All dimensions are in millimetres unless otherwise shown.

ONTARIO PROVINCIAL STANDARD DRAWING	Nov 2017	Rev 2
ELECTRICAL HANDHOLES GENERAL INSTALLATION REQUIREMENTS		OPSD 2117.020



POLE	ASSEMBLY DIMENSIONS								WOOD TEMPLATE DIMENSIONS	
LENGTH m	STUD DIA	BOLT CIRCLE DIA d	STUD DISTANCE Ø	ANCHORAGE DEPTH C	STUD LENGTH e	/ STRUT DIA f	/ STRUT LENGTH g	LENGTH	WIDTH	HOLE DIA 1 and 3	2
10.5	36mm (1–1/2")	449	318	457	285	12.7	1080	418	225	345	
9.0											
7.5	32mm (1–1/4")	449	318	457	285	11	1080	418	225	345	
6.0											

ONTARIO PROVINCIAL STANDARD DRAWING	Nov 2015	Rev 0
ANCHORAGE ASSEMBLY FOR HEAVY CLASS STEEL POLE AND SECTIONAL STEEL POLE		OPSD 2215.025

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Parks Canada Parcs Canada

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D.A. HUCTWITH
Apr 10 2019
PROVINCE OF ONTARIO

Z. F. WASEWICZ
19/10/10
PROVINCE OF ONTARIO

revision		date
04		
03		
02		
01		

Do not scale drawings.
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A Detail No. No. du detail
B drawing no. - where detail required dessin no. - ou detail exige
C drawing no. - where detailed dessin no. - ou detaille

project title / titre du projet
KAWARTHA LAKES Ontario
BOUNDARY ROAD
SWING BRIDGE REPLACEMENT
TRENT-SEVERN WATERWAY

drawing title / titre du dessin
STANDARD ELECTRICAL DETAILS II

drawn by / dessine par: P.C. MASON
designed by / conc par: D.A. HUCTWITH
approved by / approuve par:
bid / offre
project manager / administrateur de projets
project date / date du projet: 2019-10-10
project no. / no. du projet: R.030025.844
drawing no. / dessine no.: 22

B1 (1000 x 707)

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WSP KINGSTON

Job number	Project No. R.030025.844
Customer	PARKS CANADA
Place of Installation	TRENT-SEVERN WATERWAY
Location	CANADA
Commission	2019

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

Design (company)	Chadwick Engineering Ltd.
Project name	1911-1 Boundry Rd Swing Bridge
Path	S:\EPLAN\Master Data\Projects\Chadwick
Project Description	Boundary Road Swing Bridge #44 Rehabilitation

Client Acceptance / Acceptation du client

Signature _____ Date _____

File No./No. de dossier _____

Customer	PARKS CANADA
Project lead	
Responsible for project	

Project Start 2018-09-21
Project Finish 2018-09-21 by JRobinson

Last Modification 2019-10-04 by jrobinson

Number of pages 83

HIGHER LEVEL =A_PREFACE
MOUNTING LOCATION

REVISION Revision D

Chadwick Engineering Ltd. 594 Norris Crt. Kingston, Ontario Canada K7P 2R9 www.chadwickengineering.com

NOTES

CLIENT PARKS CANADA PUBLIC WORKS AND GOVERNMENT SERVICES CANADA

ALTERNATE DWG. NO.

DATE 2019-01-16

DRAWN BY TCampbell

CHECKED

TITLE TRENT-SEVERN WATERWAY BOUNDARY ROAD #44 SWING BRIDGE Title page / cover sheet

FULL PAGE ID =A_PREFACE/A1

DRAWING NO. 1911-1-003

PAGE A1

PREVIOUS PAGE:

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A_PREFACE		A1	Title page / cover sheet		2019-05-23	jrobinson
		A2	Table of contents : =A_PREFACE/A1 - =E_CONTROL+CP1/E6		2019-10-04	jrobinson
		A3	Table of contents : =E_CONTROL+CP1/E7 - =F_LAYOUTS+MS2/F21		2019-10-04	jrobinson
		A4	Table of contents : =F_LAYOUTS+MS2/F22 - =F_LAYOUTS+JB4/F48		2019-10-04	jrobinson
		A5	Structure identifier overview		2019-09-13	jrobinson
B_SPECS		B1	TAG FORMATS		2019-05-23	jrobinson
		B2	WIRE & CABLE SPECIFICATION		2019-05-23	jrobinson
		B3	CONDUCTOR SIZE CONVERSION CHART		2019-05-23	jrobinson
		B4	FIELD DEVICE SPECIFICATIONS		2019-09-18	jrobinson
C_INSTALL		C1	EXISTING SITE ARRANGEMENT		2019-08-08	jrobinson
		C2	EXISTING SITE VIEW - NORTH APPROACH		2019-09-19	jrobinson
		C3	EXISTING SITE VIEW - SOUTH APPROACH		2019-09-19	jrobinson
		C4	ELECTRICAL INSTALLATION		2019-09-19	jrobinson
		C5	SUBMARINE CABLE ARRANGEMENT		2019-09-09	jrobinson
		C6	CABLE AND TRENCH ROUTING		2019-09-13	jrobinson
		C7	Cable overview : -C-GEN1 - -C47		2019-09-12	jrobinson
		C8	Cable overview : -C48 - -C71		2019-10-04	jrobinson
		C9	Cable overview : -C72 - -C121		2019-09-18	jrobinson
		C10	Cable overview : -C121 - -C143		2019-09-18	jrobinson
D_POWER	F	D1	INCOMING 120VAC/240VAC DISTRIBUTION		2019-10-04	jrobinson
	F	D2	+LP1 - 120VAC/240VAC DISTRIBUTION (CIRCUITS 1-16)		2019-10-04	jrobinson
	F	D3	+LP1 - 120VAC/240VAC DISTRIBUTION (CIRCUITS 17-32)		2019-09-19	jrobinson
E_CONTROL	CP1	E1	240V/1Φ/60HZ HYDRAULIC POWER (PUMPS & HEATER)		2019-09-09	jrobinson
	CP1	E2	120VAC/24VDC - POWER DISTRIBUTION		2019-09-18	jrobinson
	CP1	E3	PROPORTIONAL VALVE CONTROL (SWING ONLY)		2019-10-04	jrobinson
	CP1	E4	DIRECTIONAL VALVE CONTROL		2019-10-04	jrobinson
	CP1	E5	BRIDGE POSITION STATUS		2019-10-04	jrobinson
	CP1	E6	END LIFT & LOCK POSITION STATUS		2019-10-04	jrobinson

HIGHER LEVEL
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MOUNTING LOCATION

REVISION
Revision D

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DATE 2019-10-04
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ALTERNATE DWG. NO.

TITLE
TRENT-SEVERN WATERWAY
BOUNDARY ROAD #44 SWING BRIDGE
Table of contents : =A_PREFACE/A1 - =E_CONTROL+CP1/E6

FULL PAGE ID
=A_PREFACE/A2

DRAWING NO.
1911-1-003

PAGE
A2

Table of contents

CE_1911-2 TOC

HIGHER LEVEL =A_PREFACE
MOUNTING LOCATION

REVISION Revision D

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594 Norris Crt.
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PUBLIC WORKS AND GOVERNMENT SERVICES CANADA

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ALTERNATE DWG. NO.

TITLE TRENT-SEVERN WATERWAY
BOUNDARY ROAD #44 SWING BRIDGE
Table of contents : =E_CONTROL+CP1/E7 - =F_LAYOUTS+MS2/F21

FULL PAGE ID =A_PREFACE/A3

DRAWING NO.

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TOTAL PAGES: 83

2019-10-04 :LAST PAGE MODIFICATION DATE

A4 :NEXT PAGE

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CE_1911-2 TOC

HIGHER LEVEL
=A_PREFACE
MOUNTING LOCATION

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DATE 2019-10-04

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TITLE
TRENT-SEVERN WATERWAY
BOUNDARY ROAD #44 SWING BRIDGE
Table of contents : =F_LAYOUTS+MS2/F22 - =F_LAYOUTS+JB4/F48

FULL PAGE ID
=A_PREFACE/A4

DRAWING NO.

PAGE
A4

TOTAL PAGES: 83

2019-10-04 :LAST PAGE MODIFICATION DATE

A5 :NEXT PAGE

PREVIOUS PAGE: A3

Structure identifier overview : IDENTIFIES TEXT AND SYMBOLS UTILIZED TO ORGANIZE ELECTRICAL EQUIPMENT, DEVICES AND DOCUMENTATION.

CE_F24_002

Full designation	Type of Designation	Description Specific	Description General (Description2)
=A_PREFACE	Higher-level function	Table of Contents	
=B_SPECS	Higher-level function	Specifications	
=C_INSTALL	Higher-level function	Installation Drawings	
=D_POWER	Higher-level function	Power Drawings	
=E_CONTROL	Higher-level function	Elementary Drawings	
=F_LAYOUTS	Higher-level function	Equipment Layout Drawings	
+LP1	Mounting location	120/240VAC Distribution Panel	
+F	Mounting location	Field Devices	
+CP1	Mounting location	Main Control Panel	
+OS1	Mounting location	Main Operator Station	
+MS2	Mounting location	Speed Control Setup	
+JB1	Mounting location	North Side Traffic Control	
+JB2	Mounting location	Centre Pier Junction Box	
+JB3	Mounting location	Locking Pin Junction Box	
+JB4	Mounting location	End Lifts Junction Box	
+STR1	Mounting location	Hydraulic Pump 1 Starter	
+STR2	Mounting location	Hydraulic Pump 2 Starter	
+F.F	Mounting location		
+OS1.JB2	Mounting location		

= PREFIX IDENTIFIES A "HIGHER LEVEL FUNCTION". IT REPRESENTS A PHYSICAL AREA SUCH AS A MACHINE CENTRE OR PLANT AREA OR CAN BE USED BY THE DESIGNER TO ORGANIZE PROJECT DOCUMENTS.
+ PREFIX IDENTIFIES A "MOUNTING LOCATION" SUCH AS AN ELECTRICAL ENCLOSURE, JUNCTION BOX, MOTOR CONTROL CENTER ETC....
- PREFIX IDENTIFIES A "DEVICE" SUCH AS A PROXIMITY SWITCH, MOTOR, PUSH BUTTON ETC....
/ PREFIX IDENTIFIES A PAGE REFERENCE
& PREFIX IDENTIFIES A DOCUMENT TYPE SUCH AS PREFACE, STRUCTURE, SCHEMATICS, CONSTRUCTION, REPORTS ETC...

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REVISION: Revision D
NOTES:
CLIENT: PARKS CANADA
PUBLIC WORKS AND GOVERNMENT
SERVICES CANADA
ALTERNATE DWG. NO.:
DATE: 2019-09-13
DRAWN BY: jrobinson
CHECKED:
TITLE: TRENT-SEVERN WATERWAY
BOUNDARY ROAD #44 SWING BRIDGE
Structure identifier overview
FULL PAGE ID: =A_PREFACE/A5
DRAWING NO.:
PAGE: A5

DEVICE TAG FORMAT

IDENTIFIERCOUNTER	IDENTIFIER	PAGE	COUNTER
	NFPA STANDARD DESIGNATION	PAGE ID	PROJECT COUNTER
Example: PB21	PB	2	1

TERMINAL STRIP LABELING

TERMINALS WITHIN THE SAME VERTICAL LINE ARE ASSUMED TO BE IN THE SAME TERMINAL STRIP. THE UPPERMOST TERMINAL WILL HAVE A TERMINAL STRIP DEVICE TAG.
AN EFFORT WAS MADE TO MAKE THE TERMINAL STRIP NUMBER THE PAGE NUMBER ON THE ELECTRICAL SCHEMATICS.

WIRE LABEL FORMAT

PAGECOLUMNROW	IDENTIFIER	PAGE	COUNTER
	NFPA STANDARD DESIGNATION	PAGE ID	PROJECT COUNTER
Example: TB21	TB	2	1

CABLE DEFINITION LABELING

CABLE DEFINITONS WITHIN THE SAME VERTICAL LINE ARE ASSUMED TO BE IN THE SAME CABLE. THE UPPERMOST CABLE DEFINITION WILL HAVE A CABLE DEVICE TAG.
AN EFFORT WAS MADE TO MAKE THE CABLE NUMBER THE PAGE NUMBER ON THE ELECTRICAL SCHEMATICS.

CABLE LABEL FORMAT

IDENTIFIERPAGECOLUMNROW	IDENTIFIER	PAGE	COUNTER
	NFPA STANDARD DESIGNATION	PAGE ID	PROJECT COUNTER
Example: C21	C	2	1

SYMBOL SET

NFPA

HIGHER LEVEL =B SPECS
MOUNTING LOCATION

REVISION Revision D

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ALTERNATE DWG. NO.

DATE 2016-03-04
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TITLE TRENT-SEVERN WATERWAY
BOUNDARY ROAD #44 SWING BRIDGE
TAG FORMATS

FULL PAGE ID =B_SPECS/B1
DRAWING NO. 1911-1-003

PAGE B1

PREVIOUS PAGE: =A_PREFACE/A5

GENERIC WIRE SPECIFICATION

UNLESS OTHERWISE SPECIFIED, CONDUCTORS ARE DEFINED AS FOLLOWS:

WIRES CONNECTED TO PLC MODULES SHALL BE TEW, 18AWG, STRANDED
GENERAL CONTROL PANEL WIRING SHALL BE TEW, 16AWG, STRANDED
MINIMUM SIZE OF WIRES PULLED IN CONDUIT SHALL BE T90, 14AWG, STRANDED

CONDUCTOR COLOURS
BLACK --> UNGROUNDED CONDUCTORS WITH VOLTAGE GREATER THAN 120VAC
RED --> UNGROUNDED CONDUCTORS WITH VOLTAGE EQUAL TO 120VAC
WHITE --> GROUNDED CURRENT CARRYING CONDUCTOR (NEUTRAL)
GREEN --> GROUND CONDUCTOR
BLUE --> CONDUCTOR WITH VOLTAGE LESS THAN OR EQUAL TO 24VDC
YELLOW --> UNGROUNDED CONDUCTOR THAT REMAINS ENERGIZED, WHEN THE SUPPLY DISCONNECTION MEANS, IS IN THE OFF POSITION

PAIRED COLOUR CODE
WHITE --> POSITIVE POTENTIAL CONDUCTOR
BLACK--> NEGATIVE POTENTIAL CONDUCTOR

TRIAD COLOUR CODE
WHITE --> POSITIVE POTENTIAL CONDUCTOR (SUPPLY)
RED --> SIGNAL CONDUCTOR
BLACK--> NEGATIVE POTENTIAL CONDUCTOR (COMMON)

CABLE SPECIFICATIONS

UNLESS OTHERWISE SPECIFIED, CABLES ARE DEFINED AS FOLLOWS:

1. ALL CABLES AS PER CABLE SCHEDULE OR EQUIVALENT. EQUIVALENT SPECIFIED CABLES MUST BE APPROVED BY DEPARTMENTAL REPRESENTATIVE.
2. SUBMARINE CABLES TO BE ARMOURED TYPE MADE BY ELECTRO-CABLES AS NOTED IN ELECTRICAL SPECIFICATION SECTION 26 05 17.
3. MULTICONDUCTOR CABLES ARE 300V, PVC, STRANDED, 16 AWG MINIMUM,CSA
4. PROPORTIONAL VALVE CABLES ARE 300V, PVC, OIL RESISTANT, 18AWG, TWISTED PAIR, 2 PAIR, SHIELDED, STRANDED, CSA AS PER CABLE SCHEDULE.
5. DIRECTIONAL VALVE CABLES ARE 300V, PVC, OIL RESISTANT, 18AWG, 3 CONDUCTOR, STRANDED, CSA.

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TITLE
TRENT-SEVERN WATERWAY
BOUNDARY ROAD #44 SWING BRIDGE
WIRE & CABLE SPECIFICATION

FULL PAGE ID
=B_SPECS/B2

DRAWING NO.
1911-1-003

PAGE
B2

AWG to mm² CONVERSION TABLE	
AWG/kcmil	[mm²]*
20	0.52
18	0.82
16	1.31
14	2.08
12	3.31
10	5.26
8	8.36
6	13.3
4	21.2
2	33.6
1	42.4
1/0	53.5
2/0	67.4
3/0	85.0
4/0	107
250	127
300	152
350	177
400	203
450	228
500	253
600	304
750	380
800	405
1000	507

* Equivalent mm² cross-sectional area

mm² to AWG CONVERSION TABLE		
mm²	[mm²] *	AWG/kcmil
0.5	0.52	20
0.75	0.82	18
1.5	1.31	16
2.5	2.08	14
2.5	3.31	12
4	3.31	12
6	5.26	10
10	8.36	8
16	13.3	6
25	21.2	4
35	33.6	2
35	42.4	1
50	53.5	1/0
70	67.4	2/0
95	85.0	3/0
95	107	4/0
120	107	4/0
120	127	250
150	152	300
185	177	350
185	203	400
240	228	450
240	253	500
300	304	600
400	380	750
400	405	800
500	507	1000

Multiple AWG choices — consult responsible engineer for required ampacity

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DATE: 2016-03-04
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TITLE: TRENT-SEVERN WATERWAY
BOUNDARY ROAD #44 SWING BRIDGE
CONDUCTOR SIZE CONVERSION CHART

FULL PAGE ID: =B_SPECS/B3
DRAWING NO.: 1911-1-003

PAGE: B3

GENERAL SPECIFICATIONS

1. REFER TO ELECTRICAL SPECIFICATION 26 05 17, MECHANICAL SPECIFICATION 13 10 00 AND ALL OTHER RELEVANT PROJECT SPECIFICATIONS.

2. THIS DOCUMENTATION IS INTENDED TO PROVIDE THE DESIGN CONCEPT ONLY AND IS NOT INTENDED TO BE USED 'AS IS' FOR CONSTRUCTION PURPOSES. THIS DESIGN CONCEPT INCLUDING IDENTIFIED MATERIALS SHOULD BE FOLLOWED AS CLOSELY AS POSSIBLE HOWEVER IT IS CRITICAL THAT ALL DRAWINGS BE CHECKED BY THE CONTRACTOR BEFORE MANUFACTURE TO CONFIRM THAT ALL COMPONENTS AND ASSEMBLIES MEET THE RELEVANT SPECIFICATIONS. IT IS ALSO CRITICAL THE INTERFACE OF ALL COMPONENTS AND COMPONENT/CABLE/RACEWAY SIZING IS CORRECT. THE CONTRACTOR IS RESPONSIBLE TO COMPLETE ALL NECESSARY DETAILS INCLUDING BUT NOT LIMITED TO COMPONENTS, WIRING DETAILS, WIRE AND CABLE NUMBERS, TERMINATIONS, DEVICE TERMINAL NUMBERS ETC. IN ORDER TO MANUFACTURE A FULLY FUNCTIONAL SYSTEM THAT MEETS ALL APPLICABLE ELECTRICAL SAFETY CODES AND FUNCTIONAL REQUIREMENTS OF THE BRIDGE OPERATION.

3. FIELD DEVICE PRODUCTS:

3.1 TRANSFER SWITCH: SQUARE D MODEL C82344

3.2 GENERATOR CONNECTION PLUGS AND RECEPTACLES: CROUSE HINDS ARKTITE SERIES - NEMA 4 WATERTIGHT, 60AMP, 4 WIRE, 600VAC. SPRING LOADED CLOSING CAPS SHALL BE SUPPLIED WITH EACH CONNECTOR.

3.3 HYDRAULIC PROPORTIONAL CONTROLLERS: LYNCH MODEL LE PGX (HPU DEVICES BY MECHANICAL)

3.4 TRAFFIC CONTROL: B&B ROADWAY
- GATES:VW SERIES, (GATE FASTENERS TO BE PURCHASED WITH GATE FROM MANUFACTURERS SUPPLIER AS PER MANUFACTUERS RECOMMENDATIONS)
- MARINE NAVIGATION LIGHTS: SS-4 SERIES

3.5 TRAFFIC LIGHTS: 120V, LED TYPE, MANUFATURER AND MODEL TO BE APPROVED BY PARKS CANADA.

3.6 POSITION LIMIT SWITCHES: EATON E50SA SERIES

3.7 OUTDOOR ENCLOSURES, JUNCTION & PULL BOXES: HAMMOND STAINLESS STEEL NEMA 4X, WITH PADLOCK OPTION AND LOCKS - ALL LOCKS TO BE CO-ORDINATED WITH SINGLE KEY CODE.

3.8. MOTOR STARTERS: ALLEN BRADLEY ENCLOSED TYPE 109 SERIES WITH OVERLOAD RESET BUTTON.

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TITLE
TRENT-SEVERN WATERWAY
BOUNDARY ROAD #44 SWING BRIDGE
FIELD DEVICE SPECIFICATIONS

FULL PAGE ID
=B_SPECS/B4

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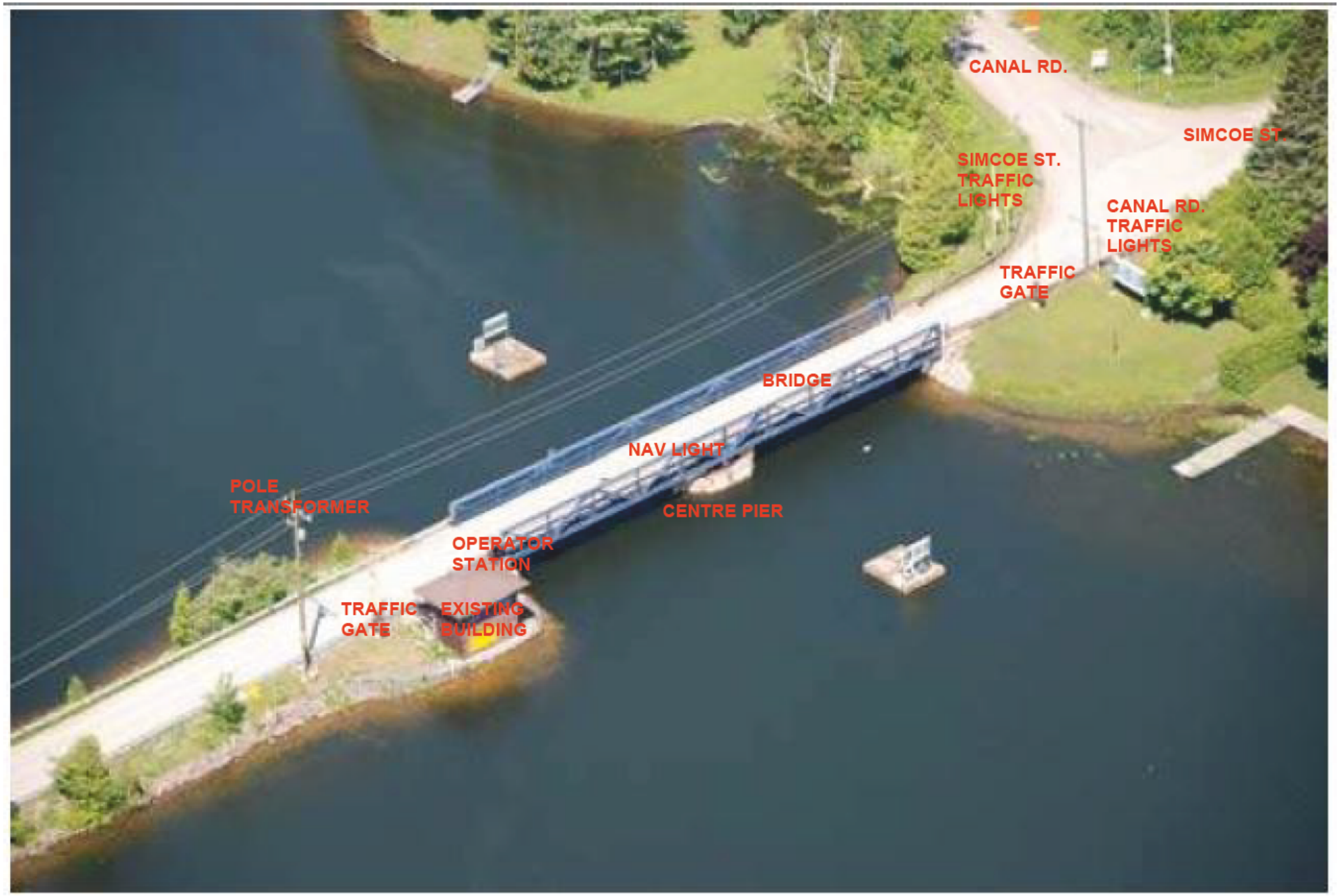
1911-1-003

PAGE
B4



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TITLE
TRENT-SEVERN WATERWAY
BOUNDARY ROAD #44 SWING BRIDGE
EXISTING SITE ARRANGEMENT

FULL PAGE ID
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1911-1-003

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C1

PREVIOUS PAGE: =B_SPECS/B4

TOTAL PAGES: 83

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C2 :NEXT PAGE

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DATE 2019-05-21

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TITLE
TRENT-SEVERN WATERWAY
BOUNDARY ROAD #44 SWING BRIDGE
EXISTING SITE VIEW - NORTH APPROACH

FULL PAGE ID
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1911-1-003

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C2

PREVIOUS PAGE: C1

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MOUNTING LOCATION

REVISION Revision D	CLIENT PARKS CANADA PUBLIC WORKS AND GOVERNMENT SERVICES CANADA	DATE 2019-05-21	TITLE TRENT-SEVERN WATERWAY BOUNDARY ROAD #44 SWING BRIDGE EXISTING SITE VIEW - SOUTH APPROACH	FULL PAGE ID =C_INSTALL/C3
		DRAWN BY jrobinson		DRAWING NO. 1911-1-003
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PAGE
C3

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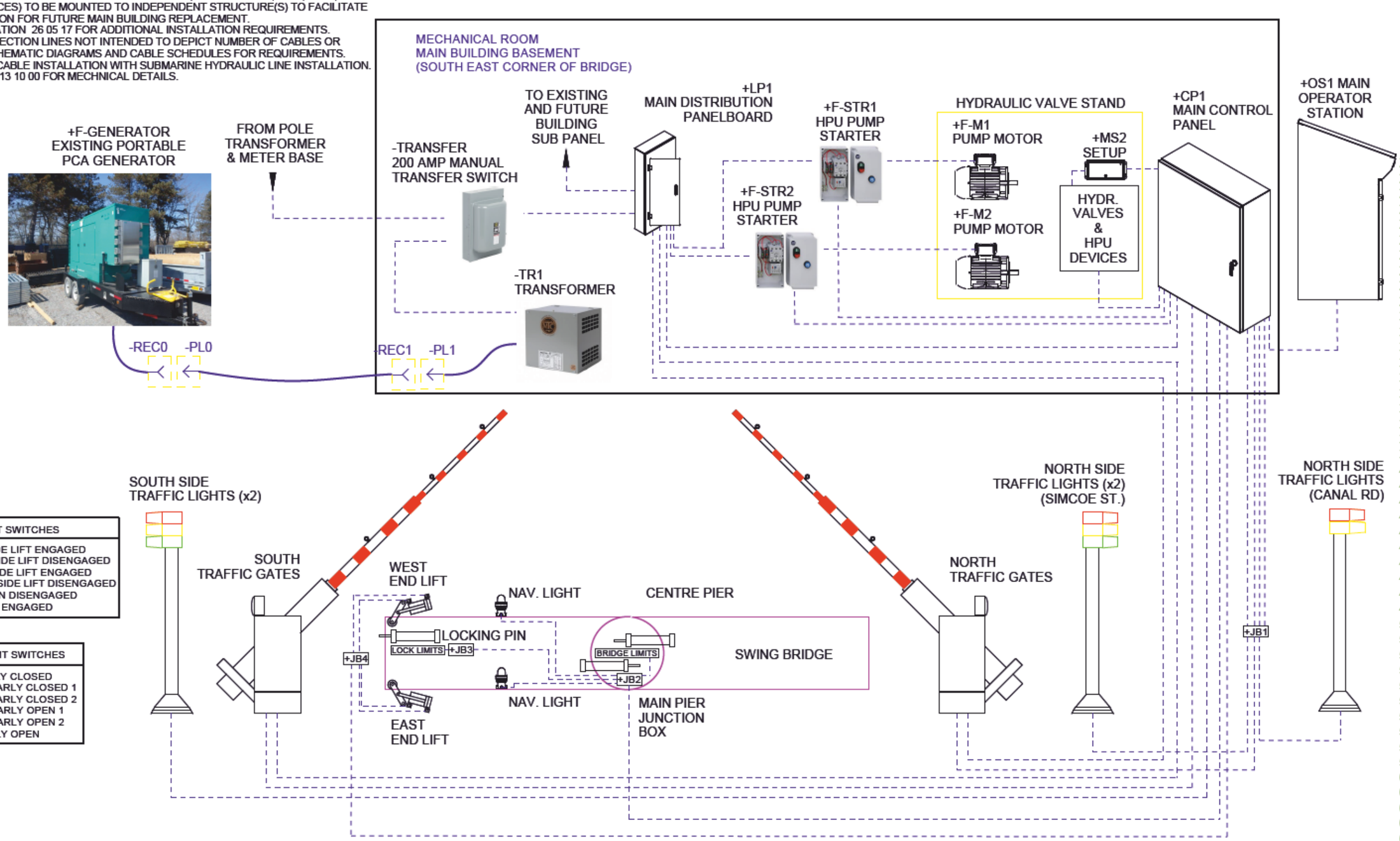
NOTES

WORKMANSHIP:
1. ALL RACEWAY, FITTINGS, FASTENERS, HARDWARE TO BE STAINLESS STEEL .
2. INSTALLATION TO CONFORM WITH ONTARIO ELECTRICAL SAFETY CODE.

CABLE TYPES:
1. SEE WIRE AND CABLE SPECIFICATION SHEET B2 FOR DETAILS.

GENERAL INSTALLATION NOTES:
1. REDUNDANT "NEARLY LIMITS" (i.e.BNC1 AND BNC2 OR BNO1 AND BNO2) TO BE INSTALLED ON INDEPENDENTLY MOUNTED BRACKETRY AND INDEPENDENTLY MOUNTED TARGETS.
2. ALL CONDUIT AND CABLE CONNECTIONS IN MECHANICAL ROOM (i.e. +TRANSFER, +LP1, +CP1, +STR(X), AND HPU FIELD DEVICES) TO BE MOUNTED TO INDEPENDENT STRUCTURE(S) TO FACILITATE REMOVAL AND RE-INSTALLATION FOR FUTURE MAIN BUILDING REPLACEMENT.
3. SEE ELECTRICAL SPECIFICATION 26 05 17 FOR ADDITIONAL INSTALLATION REQUIREMENTS.
4. DASHED ELECTRICAL CONNECTION LINES NOT INTENDED TO DEPICT NUMBER OF CABLES OR CONNECTIONS, REFER TO SCHEMATIC DIAGRAMS AND CABLE SCHEDULES FOR REQUIREMENTS.
5. CO-ORDINATE SUBMARINE CABLE INSTALLATION WITH SUBMARINE HYDRAULIC LINE INSTALLATION. SEE SPECIFICATION SECTION 13 10 00 FOR MECHNICAL DETAILS.



END LIFT & LOCK LIMT SWITCHES
(+F-LIFT-E-ENGD) - EAST SIDE LIFT ENGAGED
(+F-LIFT-E-DENGD) - EAST SIDE LIFT DISENGAGED
(+F-LIFT-W-ENGD) - WEST SIDE LIFT ENGAGED
(+F-LIFT-W-DENGD) - WEST SIDE LIFT DISENGAGED
(+F-LOCK-DENGD) - LOCK PIN DISENGAGED
(+F-LOCK-ENGD) - LOCK PIN ENGAGED

BRIDGE POSITION LIMT SWITCHES
(+F-BFC) - BRIDGE FULLY CLOSED
(+F-BNC1) - BRIDGE NEARLY CLOSED 1
(+F-BNC2) - BRIDGE NEARLY CLOSED 2
(+F-BNO1) - BRIDGE NEARLY OPEN 1
(+F-BNO2) - BRIDGE NEARLY OPEN 2
(+F-BFO) - BRIDGE FULLY OPEN

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TITLE
TRENT-SEVERN WATERWAY
BOUNDARY ROAD #44 SWING BRIDGE
ELECTRICAL INSTALLATION

FULL PAGE ID
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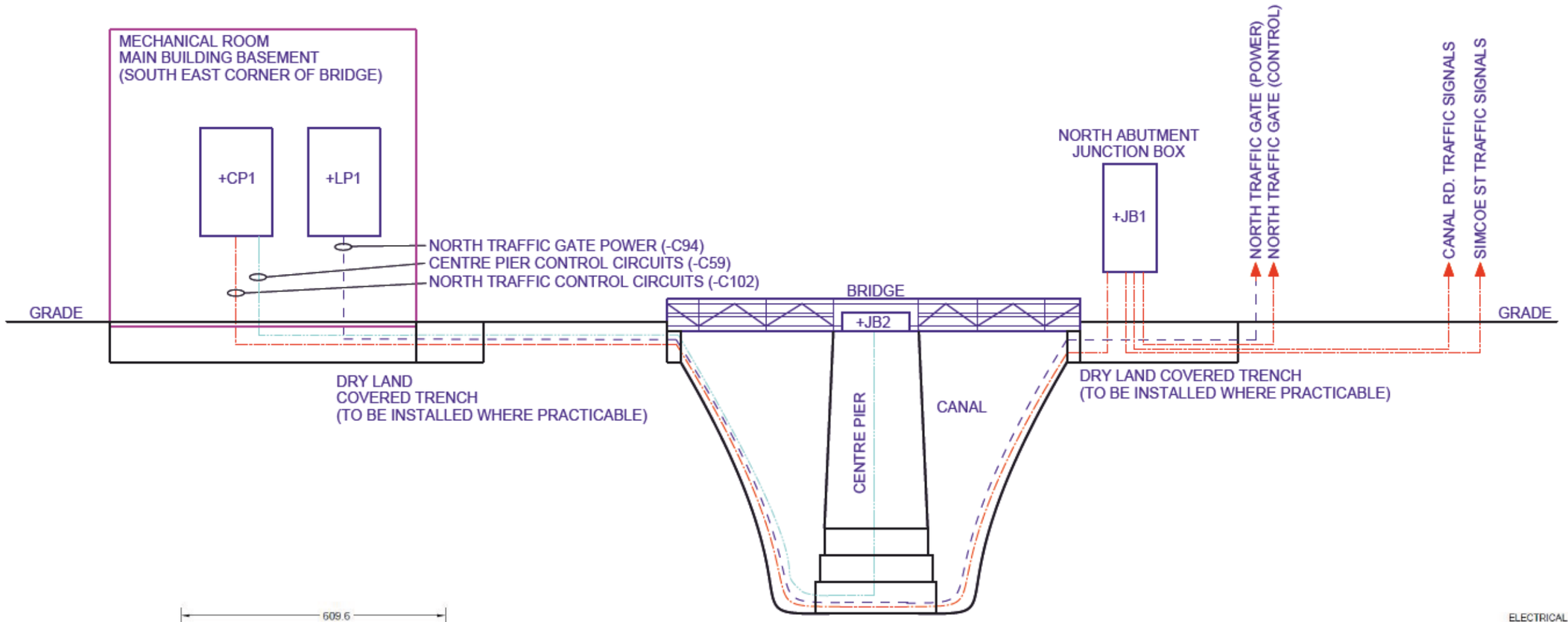
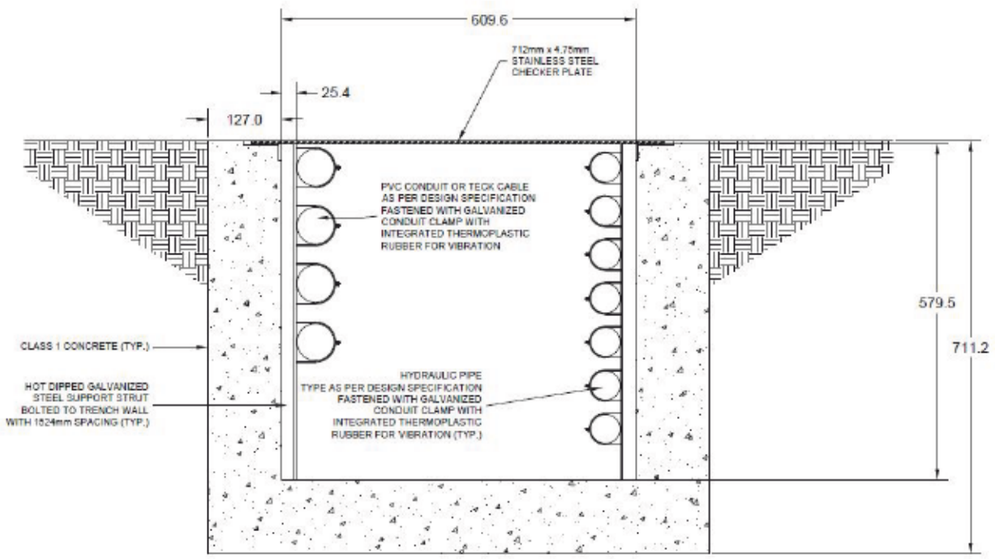
1911-1-003

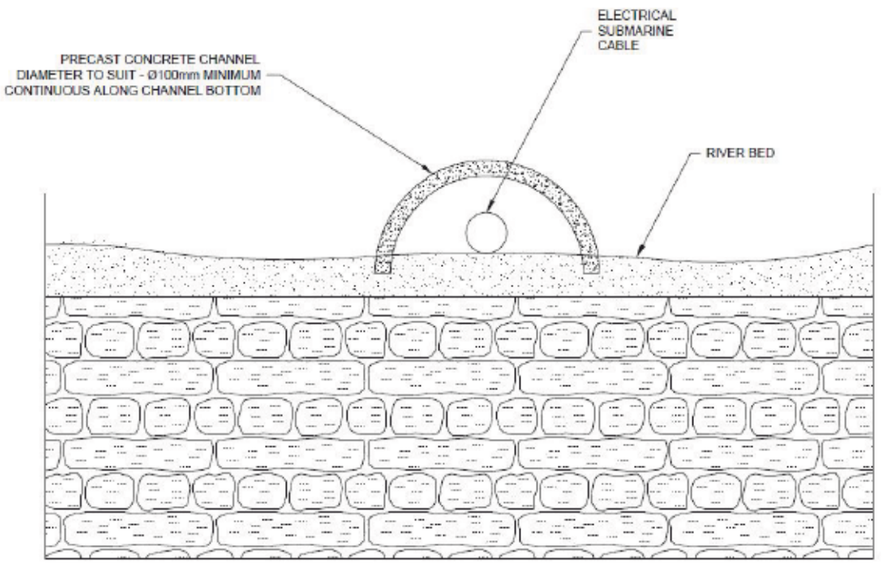
PAGE
C4

PREVIOUS PAGE: C3





DRY LAND TRENCH DETAIL



SUBMARINE CABLE PROTECTION DETAIL

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		DRAWN BY: jrobinson		DRAWING NO.: 1911-1-003
	ALTERNATE DWG. NO.	CHECKED		PAGE: C5

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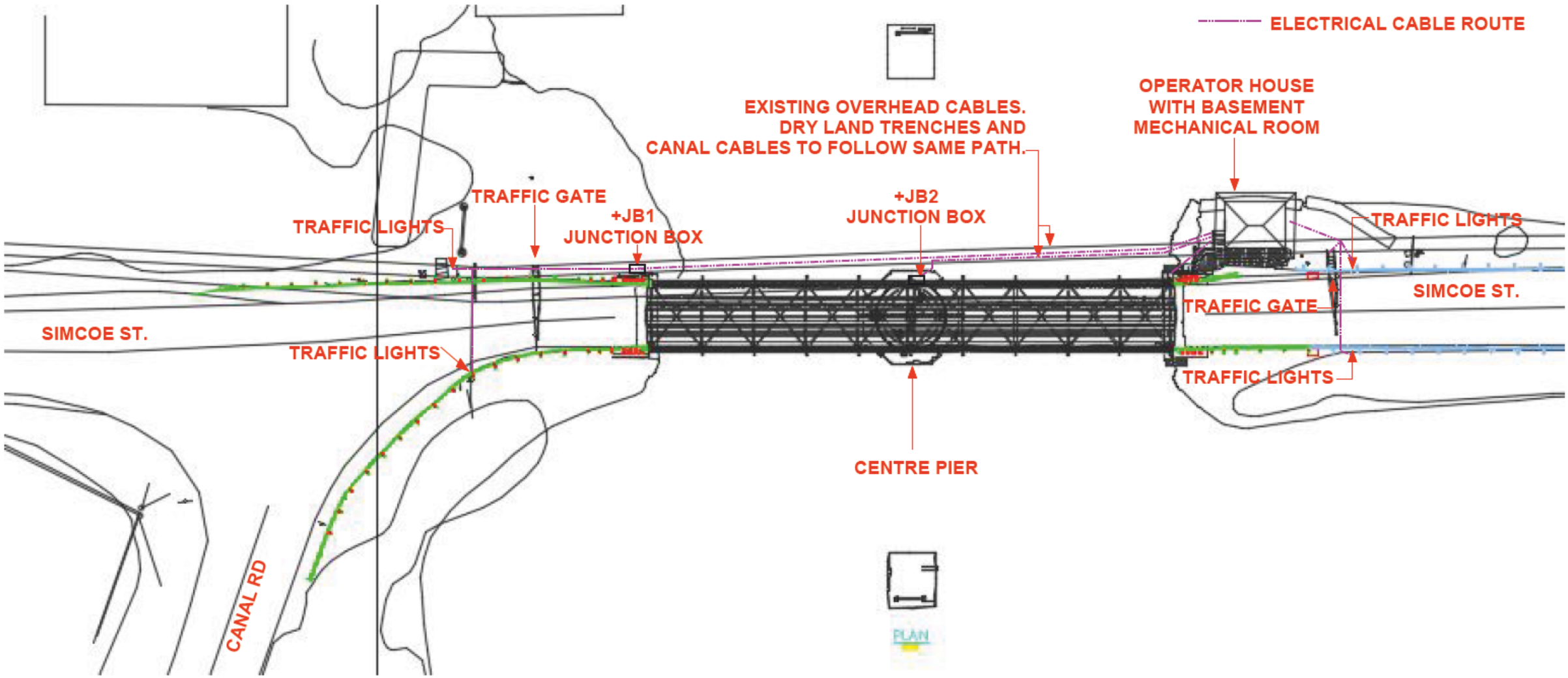

NOTES:

1. SEE WSP DRAWING NO. 18, 19 AND 20 FOR ADDITIONAL TRAFFIC CONTROL EQUIPMENT INSTALLATION LOCATION DETAILS AND REQUIREMENTS.

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TITLE
TRENT-SEVERN WATERWAY
BOUNDARY ROAD #44 SWING BRIDGE
CABLE AND TRENCH ROUTING

FULL PAGE ID
=C_INSTALL/C6

DRAWING NO.
1911-1-003

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C6

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TOTAL PAGES: 83

2019-10-04 :LAST PAGE MODIFICATION DATE

C7 :NEXT PAGE

Cable overview : Intended for installation of cables between enclosures and devices. Cable installer to mark each end of the cable with the "Cable Name".

CE_F10_001

Cable name	Source (from)	Target (to)	Cable Specification Manufacturer/Part number/Description	Number of Cond.	Cond. used	Cable OD. mm	Cross-section	Estimate Length m	Remark	Functional Descripton	Graphical page of cable diagram
-C-GEN1	+F-REC0	+F-GENERATOR	SWI / 55809102 / - ICEA where applicable	4	4	1.08	6	3.048			
-C-GEN2	+F-PL0	+F-REC1	SWI / 55809102 / - ICEA where applicable	4	4	1.08	6	15.24			
-C-GEN3	+F-PL1	+F-TR1	SWI / 55809102 / - ICEA where applicable	4	3	1.08	6	3.048			
		+F-GENERATOR-T1									
-C-SRVC			GC / 11288.015300 / TECK90 Cable, 1000 V, CSA Type, -40ºC to	4	0		10			+MAIN SERVICE FEEDER	
-C10	+F-GENERATOR-T1	+LP1-PE	GC / 11288.015300 / TECK90 Cable, 1000 V, CSA Type, -40ºC to	4	4		10			+LP1 POWER SUPPLY (OR CONDUIT AND SINGLE CONDUCTOR)	
	+LP1-CBMAIN	+F-TRANSFER									
	+LP1-BB-N										
-C11	+LP1-CB2	+STR1-A1-C	ECI / T6XAAUS08-2C-BFT4-HL / Conductor: Bare 7 stranded annealed	2	3		8			HYDRAULIC PUMP 1 STARTER SUPPLY	
	+LP1-PE	+F-M1									
-C12	+F-M1	+STR1-A1-OL	ECI / T6XAAUS08-2C-BFT4-HL / Conductor: Bare 7 stranded annealed	2	2		8			HYDRAULIC PUMP 1 MOTOR FEED	
-C13	+LP1-CB6	+STR2-A2-C	ECI / T6XAAUS08-2C-BFT4-HL / Conductor: Bare 7 stranded annealed	2	3		8			HYDRAULIC PUMP 2 STARTER SUPPLY	
	+LP1-PE	+F-M2									
-C14	+F-M2	+STR2-A2-OL	ECI / T6XAAUS08-2C-BFT4-HL / Conductor: Bare 7 stranded annealed	2	2		8			HYDRAULIC PUMP 2 MOTOR FEED	
-C15	+LP1-CB11	+F-TS11	ECI / T6XAAUS14-2C-BFT4-HL / Conductor: Bare 7 stranded annealed	2	3		14				
	+LP1-PE	+F-HTR									
-C21	+CP1-TB22	+LP1-N1	ECI / T6XAAUS12-4C-BFT4-HL / Conductor: Bare 7 stranded annealed	4	5		12			CONTROL PANEL +CP1 POWER SUPPLY	
	+LP1-PE	+CP1-PE1									
	+LP1-CB5	+CP1-DSC21									
	+LP1-CB7										
	+LP1-CB9										
-C31	+CP1-TB31	+MS2-TB31	LAPP / 2221293 / I 304	2x3	6	11.4	0,82			BRIDGE SWING OPEN PROPORTIONAL DRIVER	
-C32	+CP1-TB32	+MS2-TB32	LAPP / 2221293 / I 304	2x3	6	11.4	0,82			BRIDGE SWING CLOSE PROPORTIONAL DRIVER	
-C33	+MS2-TB31	+F-PCV_OPN	LAPP / 2221286 / I 304	2x2	4	10,4mm	0,82			BRIDGE SWING OPEN PROPORTIONAL DRIVER	
-C34	+MS2-TB32	+F-PCV_CLS	LAPP / 2221286 / I 304	2x2	4	10,4mm	0,82			BRIDGE SWING CLOSE PROPORTIONAL DRIVER	
-C41	+CP1-TB41	+OS1-TB42	LAPP / 221641 / Power and control cables / Wide range use / PVC	41G	39	25 mm	1.5			OPERATOR STATION (+OS1) CONTROL CIRCUITS	
	+CP1-TB42	+OS1-TB41									
	+CP1-TB43	+OS1-TB43									
	+CP1-TB61	+OS1-TB61									
	+CP1-TB71	+OS1-TB71									
	+CP1-TB81	+OS1-TB81									
	+CP1-TB151	+OS1-TB151									
	+OS1-TB51	+CP1-TB51									
		+CP1-PE1									
-C42	+CP1-TB41	+F-SOL1	LAPP / 311803 / ÖLFLEX® POWER QUAD II is a PVC cordage with	3	3	7,2	0,82			HYDRAULIC FIELD LINE WARMUP VALVE	
	+CP1-PE2										
-C43	+CP1-TB41	+F-SOL2	LAPP / 311803 / ÖLFLEX® POWER QUAD II is a PVC cordage with	3	3	7,2	0,82			EMERGENCY CLOSE VALVE	
	+CP1-PE2										
-C44	+CP1-TB42	+F-SOL5	LAPP / 311803 / ÖLFLEX® POWER QUAD II is a PVC cordage with	3	3	7,2	0,82			SWING CLOSE	
	+CP1-PE2										
-C45	+CP1-TB42	+F-SOL3	LAPP / 311803 / ÖLFLEX® POWER QUAD II is a PVC cordage with	3	3	7,2	0,82			LOCKING PIN EXTEND (ENGAGE)	
	+CP1-PE2										
-C46	+CP1-TB42	+F-SOL4	LAPP / 311803 / ÖLFLEX® POWER QUAD II is a PVC cordage with	3	3	7,2	0,82			END LIFTS EXTEND (ENGAGE)	
	+CP1-PE2										
-C47	+CP1-TB43	+F-SOL6	LAPP / 311803 / ÖLFLEX® POWER QUAD II is a PVC cordage with	3	3	7,2	0,82			LOCKING PIN RETRACT (DISENGAGE)	
	+CP1-PE2										

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DATE 2019-09-12
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TITLE
TRENT-SEVERN WATERWAY
BOUNDARY ROAD #44 SWING BRIDGE
Cable overview : -C-GEN1 - -C47

FULL PAGE ID
=C_INSTALL/C7

DRAWING NO.

PAGE
C7

Cable overview : Intended for installation of cables between enclosures and devices. Cable installer to mark each end of the cable with the "Cable Name".

CE_F10_001

Cable name	Source (from)	Target (to)	Cable Specification Manufacturer/Part number/Description	Number of Cond.	Cond. used	Cable OD. mm	Cross-section	Estimate Length m	Remark	Functional Descripton	Graphical page of cable diagram
-C48	+CP1-TB43	+F-SOL7	LAPP / 311803 / ÖLFLEX® POWER QUAD II is a PVC cordage with	3	3	7,2	0,82			END LIFTS RETRACT (DISENGAGE)	
	+CP1-PE2										
-C49	+CP1-TB43	+F-SOL8	LAPP / 311803 / ÖLFLEX® POWER QUAD II is a PVC cordage with	3	3	7,2	0,82			SWING OPEN	
	+CP1-PE2										
-C51	+JB2-TB41	+F-BFC	LAPP / 221612 / ÖLFLEX® TRAY II	12	9	14,4	1,31			BRIDGE FULLY CLOSED LIMIT (-BFC)	
	+JB2-TB51										
	+JB2-TB111										
	+JB2-TB121										
	+JB2-PE										
-C52	+JB2-TB51	+F-BFO	LAPP / 221607 / ÖLFLEX® TRAY II		6	10,5	1,31			BRIDGE FULLY OPEN LIMIT (+BFO)	
	+JB2-TB141										
	+JB2-PE										
-C53	+JB2-TB51	+F-BNC1	LAPP / 221604 / Power and control cables / Wide range use / PVC	4G	4	8,9 mm	1,5			BRIDGE NEARLY CLOSED LIMIT (-BNC1)	
	+JB2-PE										
-C54	+JB2-TB51	+F-BNC2	LAPP / 221605 / ÖLFLEX® TRAY II	5	5	9,7	1,31			BRIDGE NEARLY CLOSED LIMIT (-BNC2)	
	+JB2-PE										
-C55	+JB2-TB51	+F-BNO1	LAPP / 221605 / ÖLFLEX® TRAY II	5	4	9,7	1,31			BRIDGE NEARLY OPEN LIMIT (-BNO1)	
	+JB2-PE										
-C56	+JB2-TB51	+F-BNO2	LAPP / 221605 / ÖLFLEX® TRAY II	5	5	9,7	1,31			BRIDGE NEARLY OPEN LIMIT (-BNO2)	
	+JB2-PE										
-C59	+CP1-TB41	+JB2-TB41	ECI / 6PESAUS14-30C-V / 600V SIA POWER CABLE	25	25		0,82			CENTRE PIER CONTROL CIRCUITS (+JB2)	
	+CP1-TB42	+JB2-TB51									
	+CP1-TB51	+JB2-TB61									
	+CP1-TB61	+JB2-TB111									
	+CP1-TB111	+JB2-TB121									
	+CP1-TB121	+JB2-TB141									
	+CP1-TB141	+JB2-PE									
	+CP1-PE1										
-C61	+JB4-TB61	+F-LIFT-E-ENGD-(1)	LAPP / 221603 / ÖLFLEX TRAY II 16/3c, Power and control cables /	3	3	8,3	1,5			LIFT ENGAGED LIMIT (EAST)	
		+F-LIFT-E-ENGD									
-C62	+JB4-TB61	+F-LIFT-W-ENGD-(1)	LAPP / 221603 / ÖLFLEX TRAY II 16/3c, Power and control cables /	3	3	8,3	1,5			LIFT ENGAGED LIMIT (WEST)	
		+F-LIFT-W-ENGD									
-C63	+JB4-TB61	+F-LIFT-E-DENGD-(2)	LAPP / 221603 / ÖLFLEX TRAY II 16/3c, Power and control cables /	3	3	8,3	1,5			LIFT DISENGAGED LIMIT (EAST)	
		+F-LIFT-E-DENGD									
-C64	+JB4-TB61	+F-LIFT-W-DENGD-(2	LAPP / 221603 / ÖLFLEX TRAY II 16/3c, Power and control cables /	3	3	8,3	1,5			LIFT DISENGAGED LIMIT (WEST)	
		+F-LIFT-W-DENGD									
-C65	+JB4-TB61	+CP1-TB61	ECI / 6PESAUS14-5C-V / 600V SIA POWER CABLE	5	4		1,5			LOCKING PIN DISENGAGED LIMIT	
		+CP1-PE1	ECI / 6PESAUS14-5C-V / 600V SIA POWER CABLE								
-C66	+JB2-TB61	+JB3-TB61	ECI / 6PESAUS14-5C-V / 600V SIA POWER CABLE	5	5		1,5			LOCKING PIN DISENGAGED LIMIT	
	+JB2-PE										
-C67	+JB3-TB61	+F-LOCK-DENGD-(1)	LAPP / 221603 / ÖLFLEX TRAY II 16/3c, Power and control cables /	3	3	8,3	1,5			LOCKING PIN EXTENDED LIMIT (DISENGAGED)	
		+F-LOCK-DENGD									
-C68	+JB3-TB61	+F-LOCK-ENGD-(2)	LAPP / 221603 / ÖLFLEX TRAY II 16/3c, Power and control cables /	3	3	8,3	1,5			LOCKING PIN RETRACTED LIMIT (ENGAGED)	
		+F-LOCK-ENGD									
-C71	+CP1-TB71	+F-PSL	LAPP / 311803 / ÖLFLEX® POWER QUAD II is a PVC cordage with	3	3	7,2	0,82			HYDRAULIC SUPPLY FILTER PRESSURE	
	+CP1-PE3										

HIGHER LEVEL
=C INSTALL
MOUNTING LOCATION

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Revision D

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ALTERNATE DWG. NO.

DATE 2019-10-04
DRAWN BY jrobinson
CHECKED

TITLE
TRENT-SEVERN WATERWAY
BOUNDARY ROAD #44 SWING BRIDGE
Cable overview : -C48 - -C71

FULL PAGE ID
=C_INSTALL/C8

DRAWING NO.

PAGE
C8

Cable overview

: Intended for installation of cables between enclosures and devices. Cable installer to mark each end of the cable with the "Cable Name".

CE_F10_001

Cable name	Source (from)	Target (to)	Cable Specification Manufacturer/Part number/Description	Number of Cond.	Cond. used	Cable OD. mm	Cross-section	Estimate Length m	Remark	Functional Descripton	Graphical page of cable diagram
-C72	+CP1-TB71	+F-PSH-SUP	LAPP / 311803 / ÖLFLEX® POWER QUAD II is a PVC cordage with	3	3	7,2	0,82			HYDRAULIC SUPPLY FILTER PRESSURE	
	+CP1-PE3										
-C73	+CP1-TB71	+F-PSH-RTN	LAPP / 311803 / ÖLFLEX® POWER QUAD II is a PVC cordage with	3	3	7,2	0,82			HYDRAULIC RETURN FILTER PRESSURE	
	+CP1-PE3										
-C74	+CP1-TB71	+F-TSH	LAPP / 221603 / ÖLFLEX TRAY II 16/3c, Power and control cables /	3	3	8,3	1,5			HI OIL TEMPERATURE SWITCH	
	+CP1-PE3										
-C75	+CP1-TB71	+F-LSL	LAPP / 221603 / ÖLFLEX TRAY II 16/3c, Power and control cables /	3	3	8,3	1,5			LOW OIL LEVEL SWITCH	
	+CP1-PE3										
-C76	+CP1-TB71	+F-LSLL	LAPP / 221604 / Power and control cables / Wide range use / PVC	4G	4	8,9 mm	1,5			LOW OIL SHUT DOWN SWITCH	
	+CP1-PE3										
-C79	+CP1-TB51	+OS1-TB51	LAPP / 221625 / ÖLFLEX® TRAY II	25	24	18,8mm	1,31			OPERATOR STATION (+OS1) CONTROL CIRCUITS	
	+CP1-TB71	+OS1-TB71									
	+CP1-TB91	+OS1-TB91									
	+CP1-TB92	+OS1-TB92									
	+CP1-TB101	+OS1-TB101									
	+CP1-TB111	+OS1-TB111									
	+CP1-TB121	+OS1-TB121									
-C81	+CP1-TB71	+F-STR1-OL	LAPP / 221609 / ÖLFLEX® TRAY II	9	8	12,1	1,31			HYDRAULIC PUMP NO. 1 CONTROL	
	+CP1-TB81	+F-STR1-C									
	+F-STR1-PE	+CP1-PE1									
-C82	+CP1-TB71	+F-STR2-OL	LAPP / 221609 / ÖLFLEX® TRAY II	9	8	12,1	1,31			HYDRAULIC PUMP NO. 2 CONTROL	
	+CP1-TB81	+F-STR2-C									
	+F-STR2-PE	+CP1-PE1									
-C91	+F-SGATE-TB1	+CP1-TB91	LAPP / 221412 / ÖLFLEX TRAY II 14/12c, Power and control cables /	12	3	16,2	2,5			SOUTH TRAFFIC GATE CONTROL	
	+F-SGATE		LAPP / 221412 / ÖLFLEX TRAY II 14/12c, Power and control cables /			16,2					
-C92	+F-NGATE-TB1	+CP1-TB92	LAPP / 221412 / ÖLFLEX TRAY II 14/12c, Power and control cables /	12	3	16,2	2,5			NORTH TRAFFIC GATE CONTROL	
	+F-NGATE		LAPP / 221412 / ÖLFLEX TRAY II 14/12c, Power and control cables /			16,2					
-C93	+F-SGATE	+LP1-N2	ECI / T6XAAUS12-3C-BFT4-HL / Conductor: Bare 7 stranded annealed	3	4		12			SOUTH TRAFFIC GATE POWER	
	+F-SGATE-TB1	+LP1-CB14									
-C94	+F-NGATE	+LP1-CB10	ECI / T6XAAUS12-3C-BFT4-HL / Conductor: Bare 7 stranded annealed	3	4		12			NORTH TRAFFIC GATE POWER	
	+F-NGATE-TB1	+LP1-N2									
-C101	+F-SGATE	+CP1-TB101	ECI / 6PESAUS14-5C-V / 600V SIA POWER CABLE	5	5		14			SOUTH TRAFFIC GATE LIMITS	
		+CP1-PE1									
-C102	+CP1-TB101	+JB1-TB101	ECI / 6PESAUS14-18C-V / 600V SIA POWER CABLE	18	8		14			NORTH SIDE TRAFFIC CONTROL (+JB1)	
	+CP1-TB121	+JB1-TB121									
	+CP1-PE1	+JB1-PE									
-C103	+F-NGATE	+JB1-TB101	ECI / 6PESAUS14-5C-V / 600V SIA POWER CABLE	5	5		14			NORTH TRAFFIC GATE LIMITS	
		+JB1-PE									
-C111	+CP1-TB111	+F-S-LTS-E-GREEN	ECI / 6PESAUS14-5C-V / 600V SIA POWER CABLE	5	5		10			SOUTH TRAFFIC LIGHTS	
	+F-S-LTS-E	+F-S-LTS-E-RED									
		+F-S-LTS-E-YELLOW									
		+CP1-PE1									
-C112	+F-S-LTS-E-RED	+F-S-LTS-W-RED	ECI / 6PESAUS14-5C-V / 600V SIA POWER CABLE	5	4		10			SOUTH TRAFFIC LIGHTS	
	+F-S-LTS-E-YELLOW	+F-S-LTS-W-YELLOW									
	+F-S-LTS-E	+F-S-LTS-W									
-C121	+JB1-TB121	+F-N-LTS-E-RED	ECI / 6PESAUS14-5C-V / 600V SIA POWER CABLE	5	5		10			NORTH TRAFFIC LIGHTS	

Cable overview : Intended for installation of cables between enclosures and devices. Cable installer to mark each end of the cable with the "Cable Name".

CE_F10_001

Cable name	Source (from)	Target (to)	Cable Specification Manufacturer/Part number/Description	Number of Cond.	Cond. used	Cable OD. mm	Cross-section	Estimate Length m	Remark	Functional Descripton	Graphical page of cable diagram
	+F-N-LTS-E	+F-N-LTS-E-YELLOW									
		+F-N-LTS-E-GREEN									
		+JB1-PE									
-C122	+F-N-LTS-E-RED	+F-N-LTS-W	ECI / 6PESAUS14-5C-V / 600V SIA POWER CABLE	5	4		10			SOUTH TRAFFIC LIGHTS	
	+F-N-LTS-E-YELLOW										
	+F-N-LTS-E										
-C131	+JB1-TB121	+F-CANAL-RED	ECI / 6PESAUS14-5C-V / 600V SIA POWER CABLE	5	4		14			CANAL RD NORTH SIDE RED TRAFFIC LIGHT	
	+F-N-LTS-E-RED	+F-CANAL-YEL									
	+F-CANAL	+JB1-PE									
-C141	+CP1-TB121	+OS1-TB121	LAPP / 221625 / ÖLFLEX® TRAY II	25	6	18,8mm	1,31			OPERATOR STATION (+OS1) CONTROL CIRCUITS	
	+CP1-TB141	+OS1-TB141									
-C142	+JB2-TB141	+F-NAV-EAST-LT1	ECI / 6PESAUS14-5C-V / 600V SIA POWER CABLE	4	4		10			EAST NAVIGATION LIGHT	
	+F-NAV-EAST	+F-NAV-EAST-LT2									
		+JB2-PE									
-C143	+F-NAV-EAST-LT1	+F-NAV-WEST-LT1	ECI / 6PESAUS14-3C-V / 600V SIA POWER CABLE	4	3		10			WEST NAVIGATION LIGHT	
	+F-NAV-EAST-LT2	+F-NAV-WEST									
	+F-NAV-EAST										

HIGHER LEVEL
=C INSTALL
MOUNTING LOCATION

REVISION
Revision D

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DATE 2019-09-18

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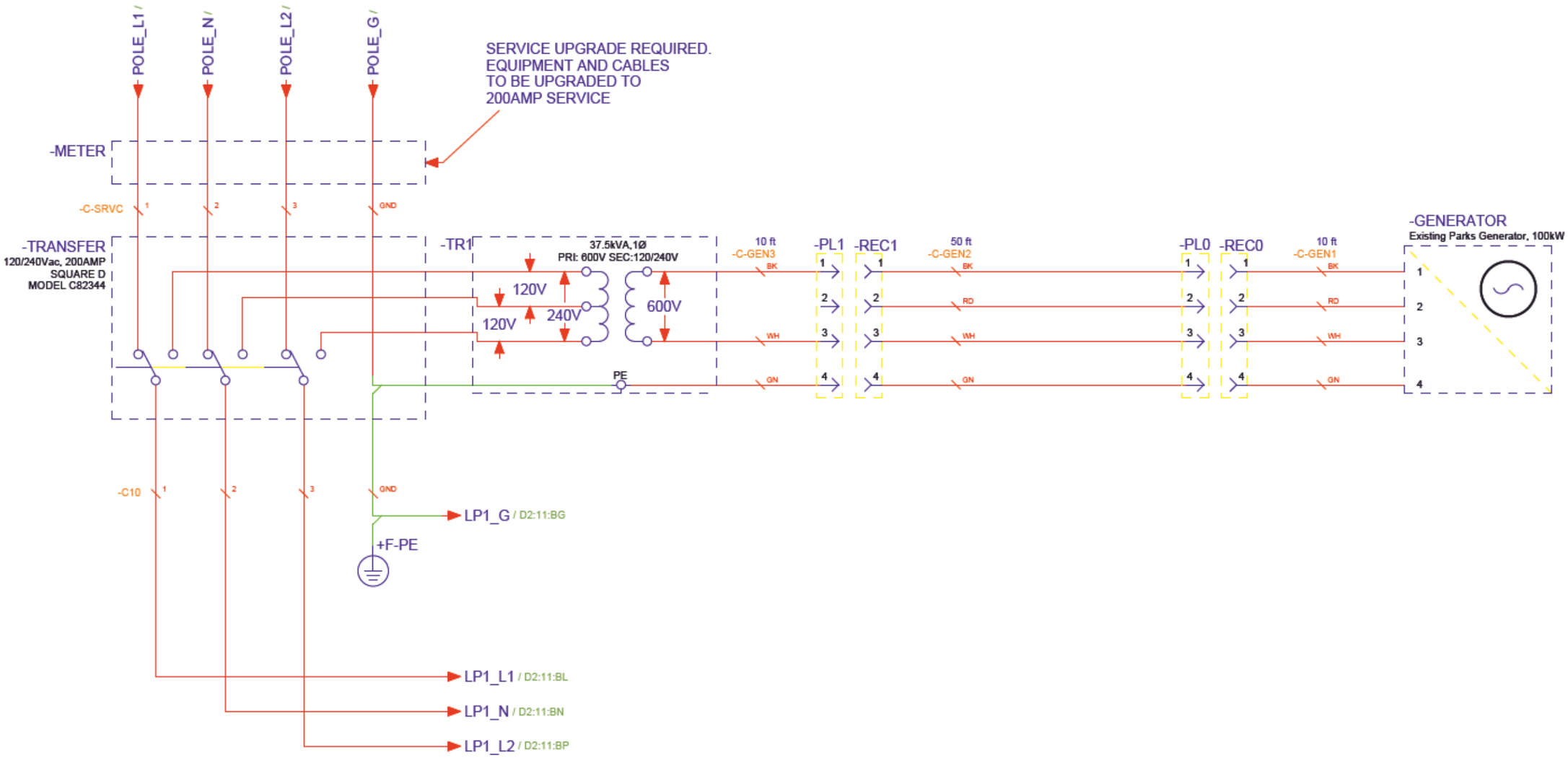
TITLE
TRENT-SEVERN WATERWAY
BOUNDARY ROAD #44 SWING BRIDGE
Cable overview : -C121 - -C143

FULL PAGE ID
=C_INSTALL/C10

DRAWING NO.

PAGE
C10

PREVIOUS PAGE: C9



HIGHER LEVEL
=D POWER
MOUNTING LOCATION
+F

REVISION: Revision D	CLIENT: PARKS CANADA PUBLIC WORKS AND GOVERNMENT SERVICES CANADA	DATE: 2016-03-04	TITLE: TRENT-SEVERN WATERWAY BOUNDARY ROAD #44 SWING BRIDGE INCOMING 120VAC/240VAC DISTRIBUTION	FULL PAGE ID: =D_POWER+F/D1
		DRAWN BY: JRobinson		DRAWING NO.: 1911-1-003
NOTES	ALTERNATE DWG. NO.	CHECKED		PAGE: D1

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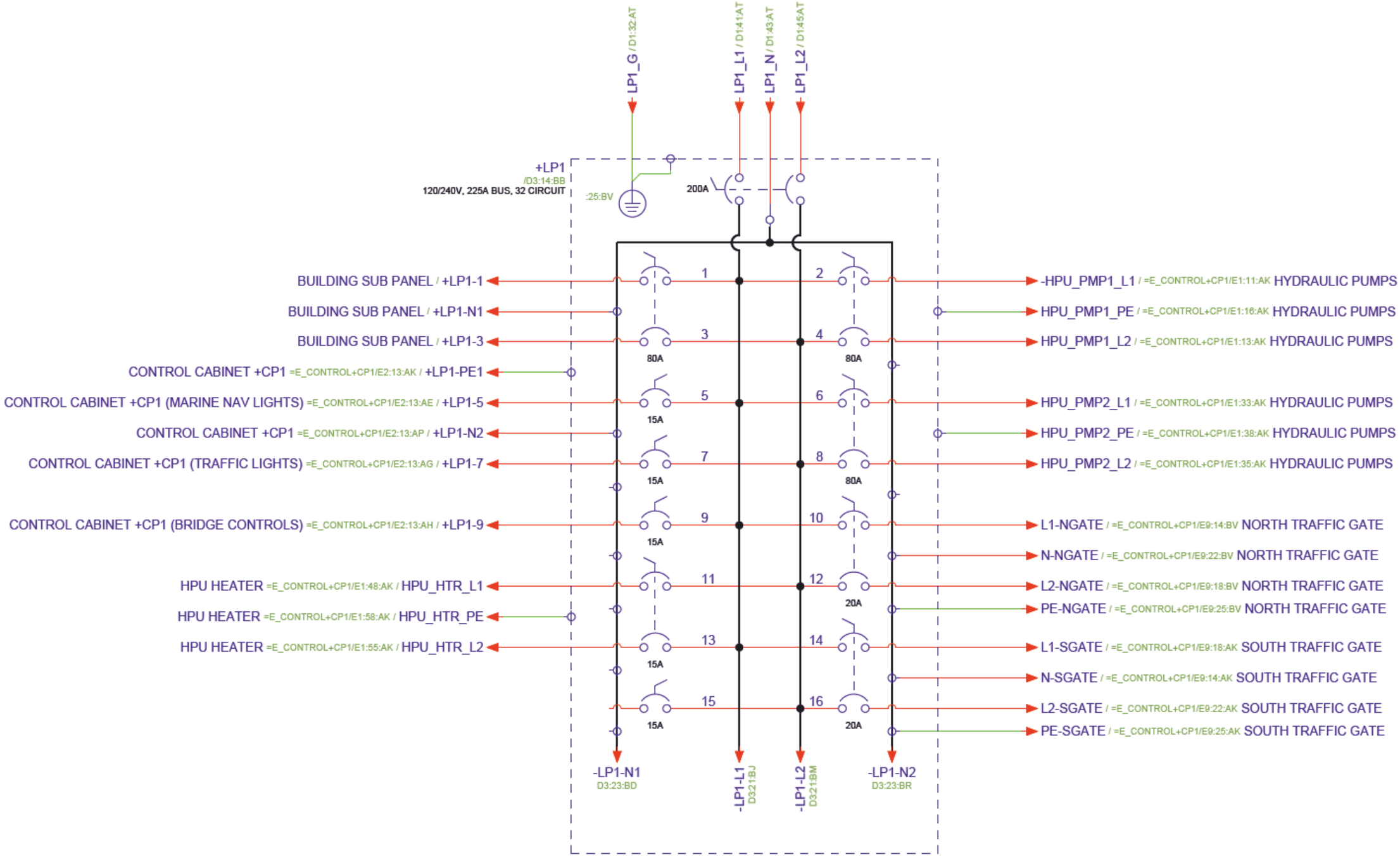
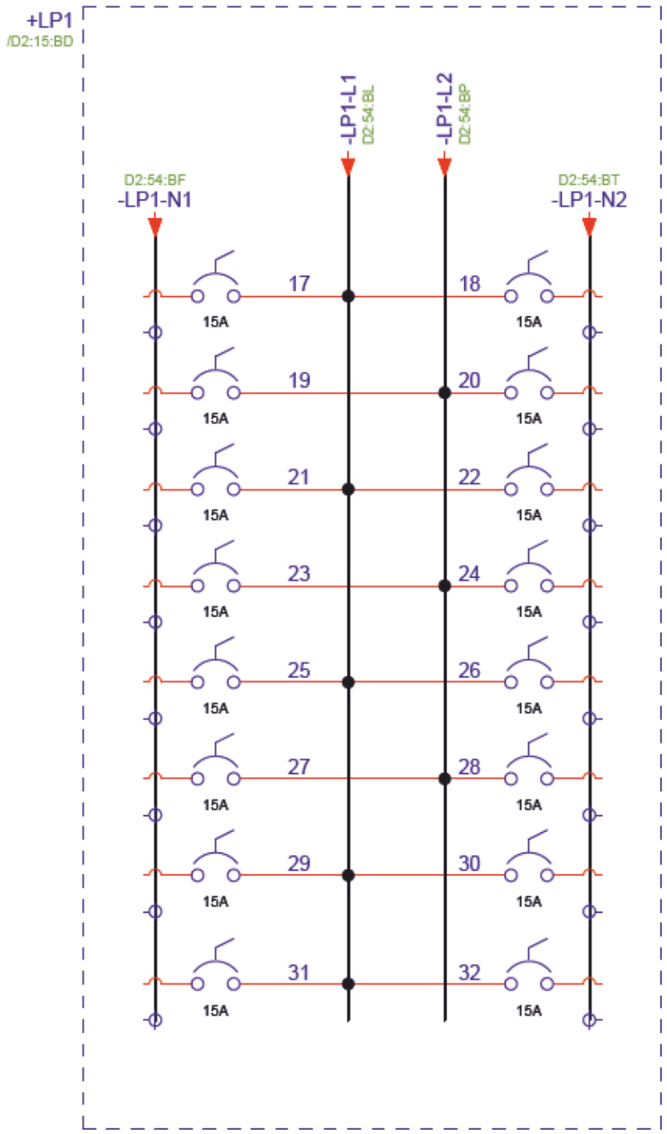


HIGHER LEVEL
=D POWER
MOUNTING LOCATION
+F

REVISION Revision D	CLIENT PARKS CANADA PUBLIC WORKS AND GOVERNMENT SERVICES CANADA	DATE 2016-03-04	TITLE TRENT-SEVERN WATERWAY BOUNDARY ROAD #44 SWING BRIDGE +LP1 - 120VAC/240VAC DISTRIBUTION (CIRCUITS 1-16)	FULL PAGE ID =D_POWER+F/D2
Chadwick Engineering Ltd. 594 Norris Crt. Kingston, Ontario Canada K7P 2R9 www.chadwickengineering.com	NOTES	DRAWN BY JRobinson		DRAWING NO. 1911-1-003
	ALTERNATE DWG. NO.	CHECKED		PAGE D2

TOTAL PAGES: 83
2019-10-04 :LAST PAGE MODIFICATION DATE
D3 :NEXT PAGE
PREVIOUS PAGE: D1



HIGHER LEVEL
=D_POWER
MOUNTING LOCATION
+F

REVISION: Revision D	CLIENT: PARKS CANADA PUBLIC WORKS AND GOVERNMENT SERVICES CANADA	DATE: 2016-03-04 DRAWN BY: JRobinson CHECKED	TITLE: TRENT-SEVERN WATERWAY BOUNDARY ROAD #44 SWING BRIDGE +LP1 - 120VAC/240VAC DISTRIBUTION (CIRCUITS 17-32)	FULL PAGE ID: =D_POWER+F/D3 DRAWING NO.: 1911-1-003	PAGE: D3

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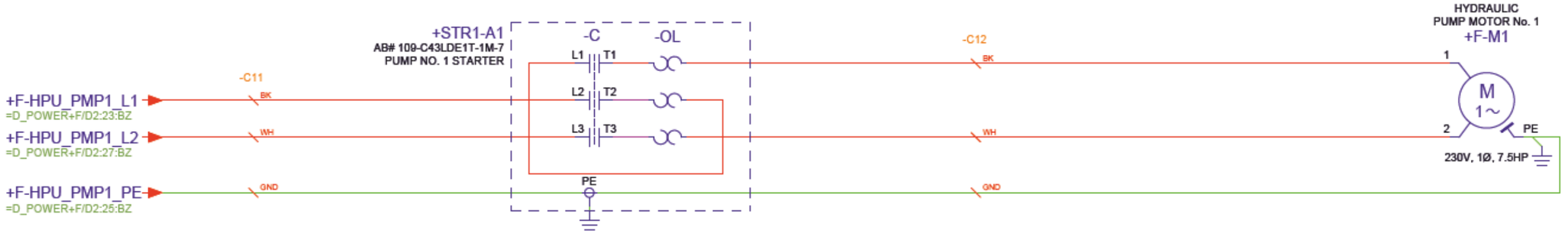
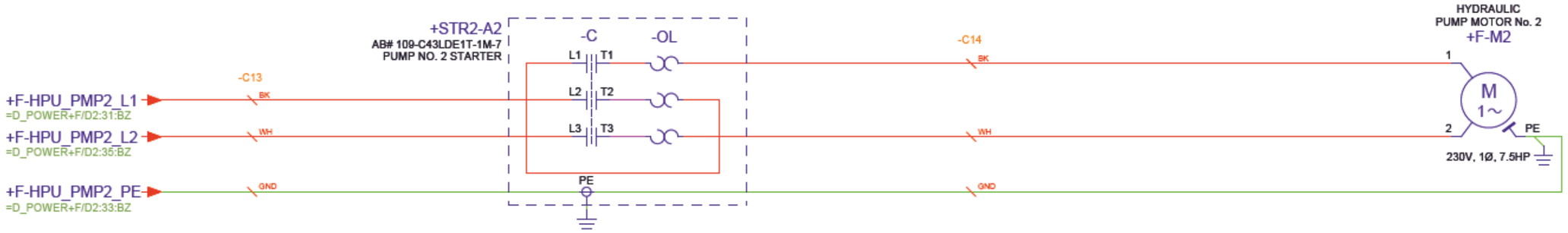
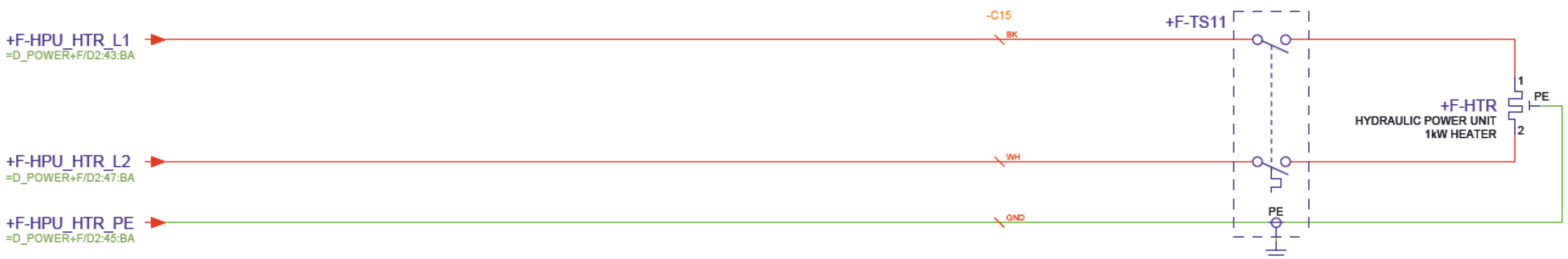
NOTES







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NOTES
NOV 10, 2016 - Issued for Construction Approval

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ALTERNATE DWG. NO.

DATE 2018-09-21

DRAWN BY jrobinson

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TITLE
TRENT-SEVERN WATERWAY
BOUNDARY ROAD #44 SWING BRIDGE
240V/1Φ/60HZ HYDRAULIC POWER
(PUMPS & HEATER)

FULL PAGE ID =E_CONTROL+CP1/E1

DRAWING NO. 1911-1-003

PAGE E1

HIGHER LEVEL =E_CONTROL

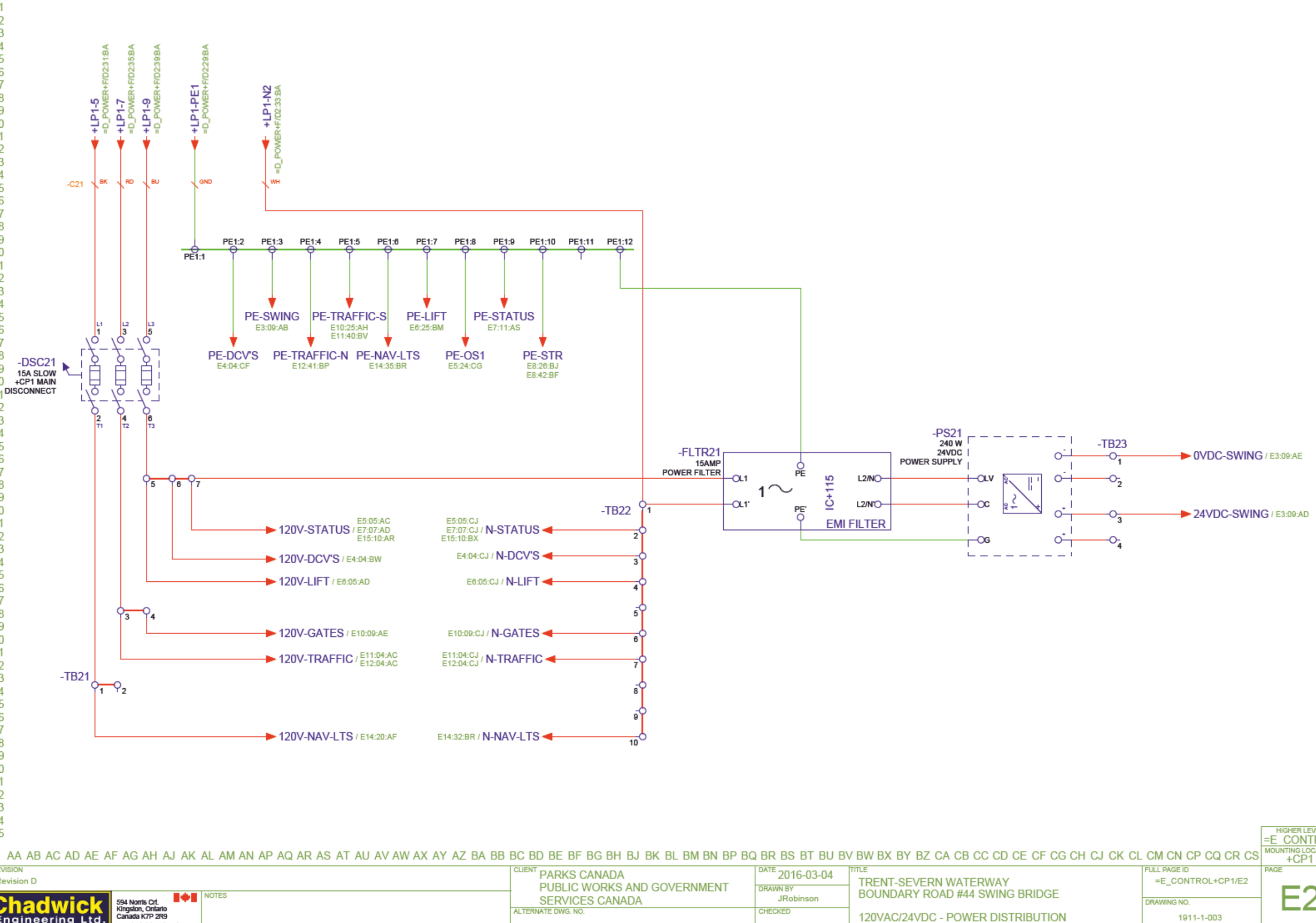
MOUNTING LOCATION +CP1

PREVIOUS PAGE: =D_POWER+R03

TOTAL PAGES: 83

2019-10-04 :LAST PAGE MODIFICATION DATE

E2 :NEXT PAGE



HIGHER LEVEL
=E_CONTROL
MOUNTING LOCATION
+CP1

REVISION Revision D	CLIENT PARKS CANADA PUBLIC WORKS AND GOVERNMENT SERVICES CANADA	DATE 2016-03-04	TITLE TRENT-SEVERN WATERWAY BOUNDARY ROAD #44 SWING BRIDGE 120VAC/24VDC - POWER DISTRIBUTION	FULL PAGE ID =E_CONTROL+CP1/E2	PAGE E2
		DRAWN BY JRobinson		DRAWING NO. 1911-1-003	
	ALTERNATE DWG. NO.	CHECKED			

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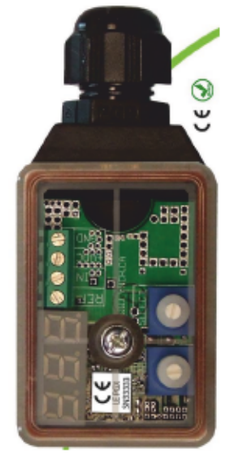
NOTES

PE-SWING
E225:AP
24VDC-SWING
E241:CP
0VDC-SWING
E237:CP

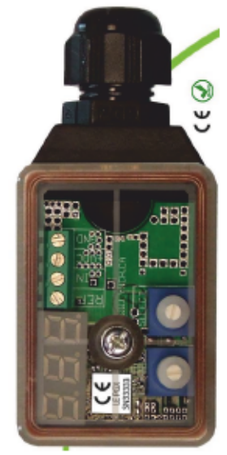
+MS2
Speed Control Setup

-TB31
-C31
-TB31
-C33
+F-PCV_OPN
LYNCH MODEL LE PGX
SWING BRIDGE OPEN
VALVE DRIVER
GND
+VDC
IN
REF
2A SLOW
-BNO-R
/E5:58:BY
-BNO-R
-OPEN-R
/E4:44:CB
-OPN-LO
10000 Ω
LOW SPEED
-OPN-HI
10000 Ω
HIGH SPEED
-TB31



BRIDGE SWING OPEN
PROPORTIONAL DRIVER

-TB32
-C32
-TB32
-C34
+F-PCV_CLS
LYNCH MODEL LE PGX
SWING BRIDGE CLOSE
VALVE DRIVER
GND
+VDC
IN
REF
2A SLOW
-BNC-R
/E5:44:BY
-BNC-R
-CLOSE-R
/E4:20:CB
-CLS-LO
10000 Ω
LOW SPEED
-CLS-HI
10000 Ω
HIGH SPEED
-TB32



BRIDGE SWING CLOSE
PROPORTIONAL DRIVER

HIGHER LEVEL
=E_CONTROL
MOUNTING LOCATION
+CP1

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DATE 2016-03-04
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TITLE
TRENT-SEVERN WATERWAY
BOUNDARY ROAD #44 SWING BRIDGE

PROPORTIONAL VALVE CONTROL (SWING ONLY)

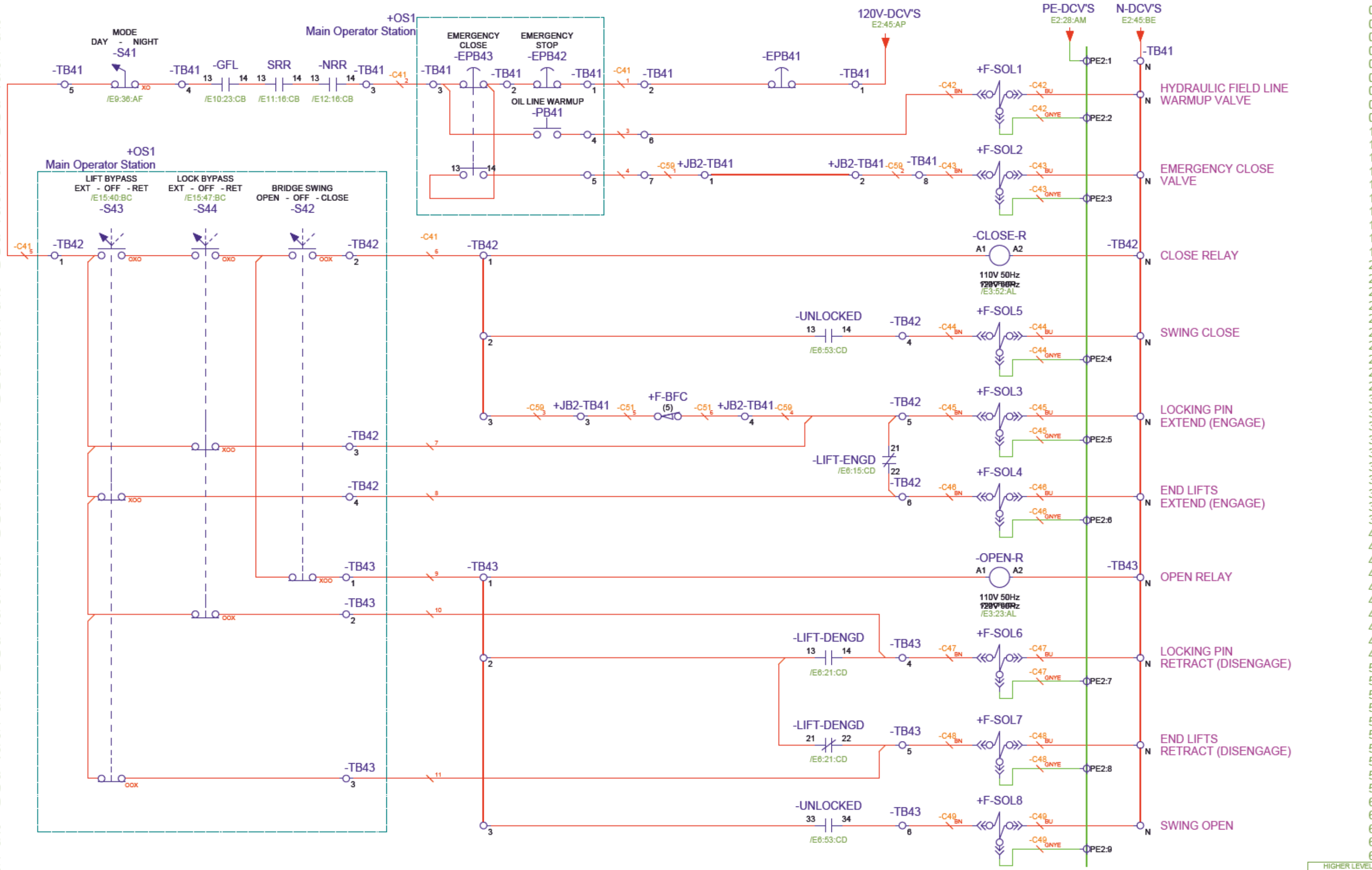
FULL PAGE ID
=E_CONTROL+CP1/E3

DRAWING NO.
1911-1-003

PAGE
E3

PREVIOUS PAGE: E2

TOTAL PAGES: 83
2019-10-04 :LAST PAGE MODIFICATION DATE
E4 :NEXT PAGE



HIGHER LEVEL
=E_CONTROL
MOUNTING LOCATION
+CP1

REVISION: Revision D	CLIENT: PARKS CANADA PUBLIC WORKS AND GOVERNMENT SERVICES CANADA	DATE: 2018-12-14 DRAWN BY: jrobinson	TITLE: TRENT-SEVERN WATERWAY BOUNDARY ROAD #44 SWING BRIDGE DIRECTIONAL VALVE CONTROL	FULL PAGE ID: =E_CONTROL+CP1/E4 DRAWING NO.: 1911-1-003
Chadwick Engineering Ltd. 594 Norris Crt. Kingston, Ontario Canada K7P 2R9 www.chadwickengineering.com	NOTES	ALTERNATE DWG. NO. CHECKED		PAGE: E4

PREVIOUS PAGE: E3

TOTAL PAGES: 83 | 2019-10-04 :LAST PAGE MODIFICATION DATE | E5 :NEXT PAGE

BRIDGE SPAN POSITION LIMIT SWITCH CONTACTS			
O = Open / X = Closed			
	DIS-ENGAGED		ENGAGED
(1)	O	O	X
(2)	X	O	O
(3)	O	X	X
(4)	X	X	O
(5)	O	O	X
(6)	X	O	O

120V-STATUS
E2:43:AP

N-STATUS
E2:43:BE

CLUSTER LEGEND

BRIDGE POSITION STATUS
▲: NEARLY CLOSED
◄: FULLY CLOSED
►: FULLY OPEN
▼: NEARLY OPEN

-TB51 1 -C59 5 +JB2-TB51 1 -C51 1 +F-BFC (1) -C51 2 +JB2-TB51 5 -C59 6 -TB51 2

GNYE GND +JB2-PE:3

-TB51 2 -C52 1 +F-BFO (1) -C52 2 6 -C59 7 3

GNYE GND +JB2-PE:4 /E14:23:AN

+OS1 Main Operator Station
-C41 12 13 14 15

-TB51 1 2 3 4 -PL51 120 V AC R A A G

-TB51 N -C79 34 -TB51 N

PE -C41 GNYE PE-OS1 E2:28:AZ

BRIDGE FULLY CLOSED
-BFC-R
A1 A2
110V 50Hz
120V 60Hz

700-CF310D
/E9:51:AN
/E9:51:BY

-TB51 3 -C53 1 +F-BNC1 (1) -C53 2 7 -C54 1 +F-BNC2 (1) -C54 2 +JB2-TB51 11 -C59 8 4

(5) 3 8 3 (5) 4

GNYE GND +JB2-PE:5

GNYE GND +JB2-PE:6

-C59 9 12 5

-PL51 120 V AC R A A G

BRIDGE POSITION STATUS
▲: NEARLY CLOSED
◄: FULLY CLOSED
►: FULLY OPEN
▼: NEARLY OPEN

BRIDGE NEARLY CLOSED
-BNC-R
A1 A2
110V 50Hz
120V 60Hz

700-CF310D
/E3:47:AL
/E3:50:AL

-TB51 4 -C55 1 +F-BNO1 (1) -C55 2 9 -C56 1 +F-BNO2 (1) -C56 2 13 -C59 10 6

(5) 3 10 3 (5) 4

GNYE GND +JB2-PE:7

GNYE GND +JB2-PE:8

-C59 11 14 7

BRIDGE NEARLY OPEN
-BNO-R
A1 A2
110V 50Hz
120V 60Hz

700-CF310D
/E3:18:AL
/E3:21:AL

HIGHER LEVEL
=E_CONTROL
MOUNTING LOCATION
+CP1

REVISION: Revision D	CLIENT: PARKS CANADA PUBLIC WORKS AND GOVERNMENT SERVICES CANADA	DATE: 2016-03-04	TITLE: TRENT-SEVERN WATERWAY BOUNDARY ROAD #44 SWING BRIDGE BRIDGE POSITION STATUS	FULL PAGE ID: =E_CONTROL+CP1/E5	PAGE: E5
		DRAWN BY: JRobinson		DRAWING NO.: 1911-1-003	
		CHECKED			
NOTES	ALTERNATE DWG. NO.				

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END LIFT CYLINDERS LIMIT SWITCH CONTACTS		
	DIS-ENGAGED	ENGAGED
(1)	X	O
(2)	O	X

LOCKING PIN LIMIT SWITCH CONTACTS		
	DIS-ENGAGED	ENGAGED
(1)	O	X
(2)	X	O

120V-LIFT
E2:47:AP

N-LIFT
E2:47:BE

-TB61 -C65 +JB4-TB61 -C61 +F-LIFT-E-ENGD (1) -C61 +JB4-TB61 -C62 +F-LIFT-W-ENGD (1) -C62 +JB4-TB61 -C65 -TB61

-TB61 -C65 +JB4-TB61 -C63 +F-LIFT-E-DENGD (2) -C63 +JB4-TB61 -C64 +F-LIFT-W-DENGD (2) -C64 -TB61

GNYE GND PE

PE-LIFT
E2:25:AX

-PL41 120 V AC

-LIFT-ENGD A1 A2 110V 50Hz 120V 60Hz

-LIFT-DENGD A1 A2 110V 50Hz 120V 60Hz

-C41

+OS1
Main Operator Station

-PL41 120 V AC -TB61

-PL42 120 V AC

-C41

-TB61 -C59 +JB2-TB61 -C66 +JB3-TB61 -C67 +F-LOCK-DENGD (1) -C67 +JB3-TB61 -C66 +JB2-TB61 -C59 -TB61

-TB61 -C59 +JB2-TB61 -C68 +F-LOCK-ENGD (2) -C68 -C59 -TB61

GNYE GND PE +JB2-PE:9

-PL42 120 V AC

-UNLOCKED A1 A2 110V 50Hz 120V 60Hz

-LOCKED A1 A2 110V 50Hz 120V 60Hz

CLUSTER LEGEND

END LIFTS EXTENDED (ENGAGED)
700-CF310D
/E9:51:AR
/E4:36:BW
/E9:51:CB

END LIFTS RETRACTED (DISENGAGED)
700-CF310D
/E4:50:BT
/E4:57:BT

◄: END LIFTS ENGAGED
►: END LIFTS DISENAGAGED

◄: LOCKING PIN ENGAGED
►: LOCKING PIN DISENAGAGED

LOCKING PIN EXTENDED (DISENGAGED)
700-CF310D
/E4:26:BT
/E4:63:BT

LOCKING PIN RETRACTED (ENGAGED)
700-CF310D
/E9:51:AV
/E9:51:CF

HIGHER LEVEL =E_CONTROL
MOUNTING LOCATION +CP1

REVISION Revision D

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NOTES

CLIENT PARKS CANADA
PUBLIC WORKS AND GOVERNMENT SERVICES CANADA

ALTERNATE DWG. NO.

DATE 2018-12-13

DRAWN BY jrobinson

CHECKED

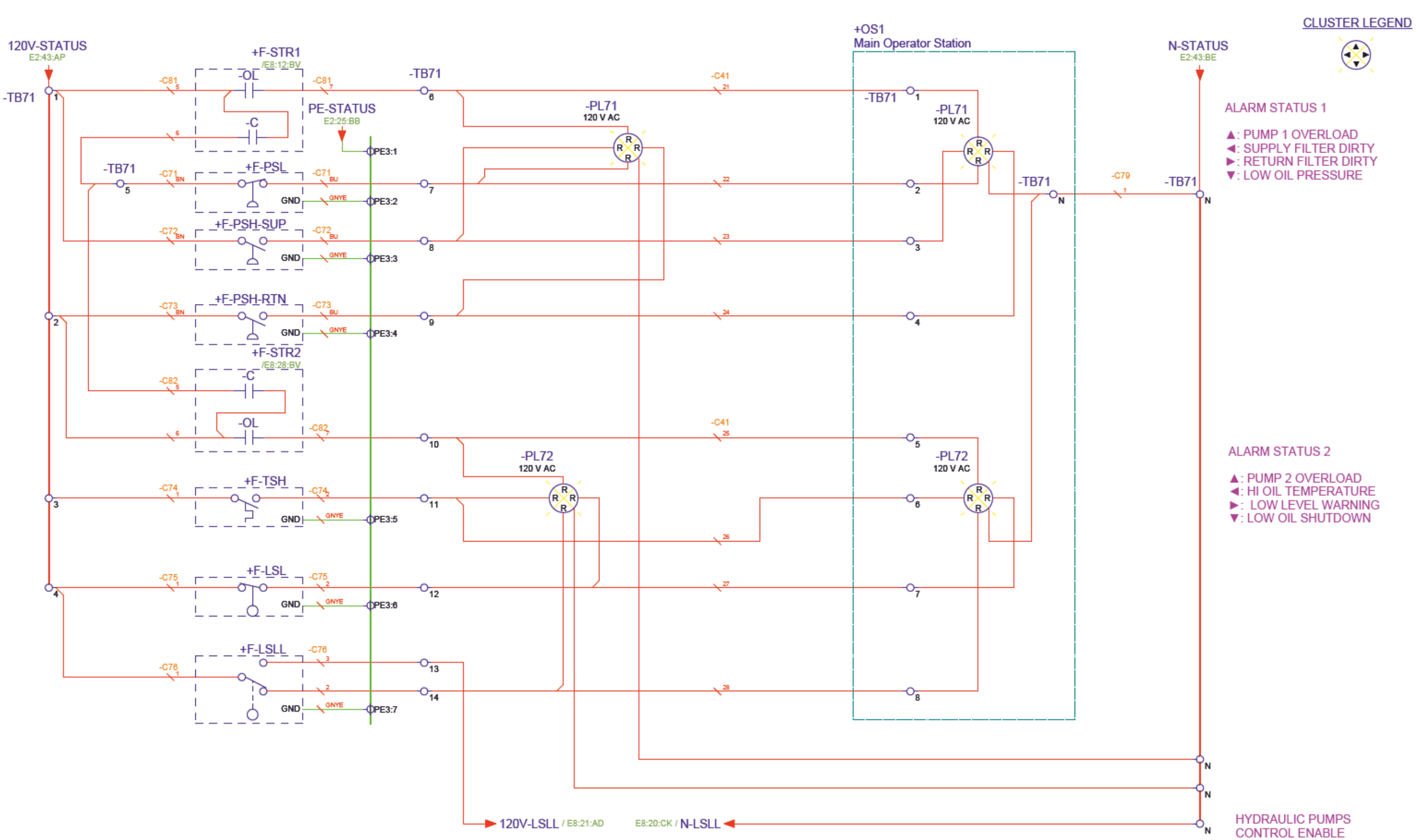
TITLE TRENT-SEVERN WATERWAY
BOUNDARY ROAD #44 SWING BRIDGE

END LIFT & LOCK POSITION STATUS

FULL PAGE ID =E_CONTROL+CP1/E6

DRAWING NO. 1911-1-003

PAGE E6



HIGHER LEVEL
=E_CONTROL
MOUNTING LOCATION
+CP1

REVISION: Revision D	CLIENT: PARKS CANADA PUBLIC WORKS AND GOVERNMENT SERVICES CANADA	DATE: 2018-12-18	TITLE: TRENT-SEVERN WATERWAY BOUNDARY ROAD #44 SWING BRIDGE HYDRAULIC POWER UNIT STATUS	FULL PAGE ID: =E_CONTROL+CP1/E7
		DRAWN BY: jrobinson		DRAWING NO.: 1911-1-003
	ALTERNATE DWG. NO.	CHECKED		PAGE: E7

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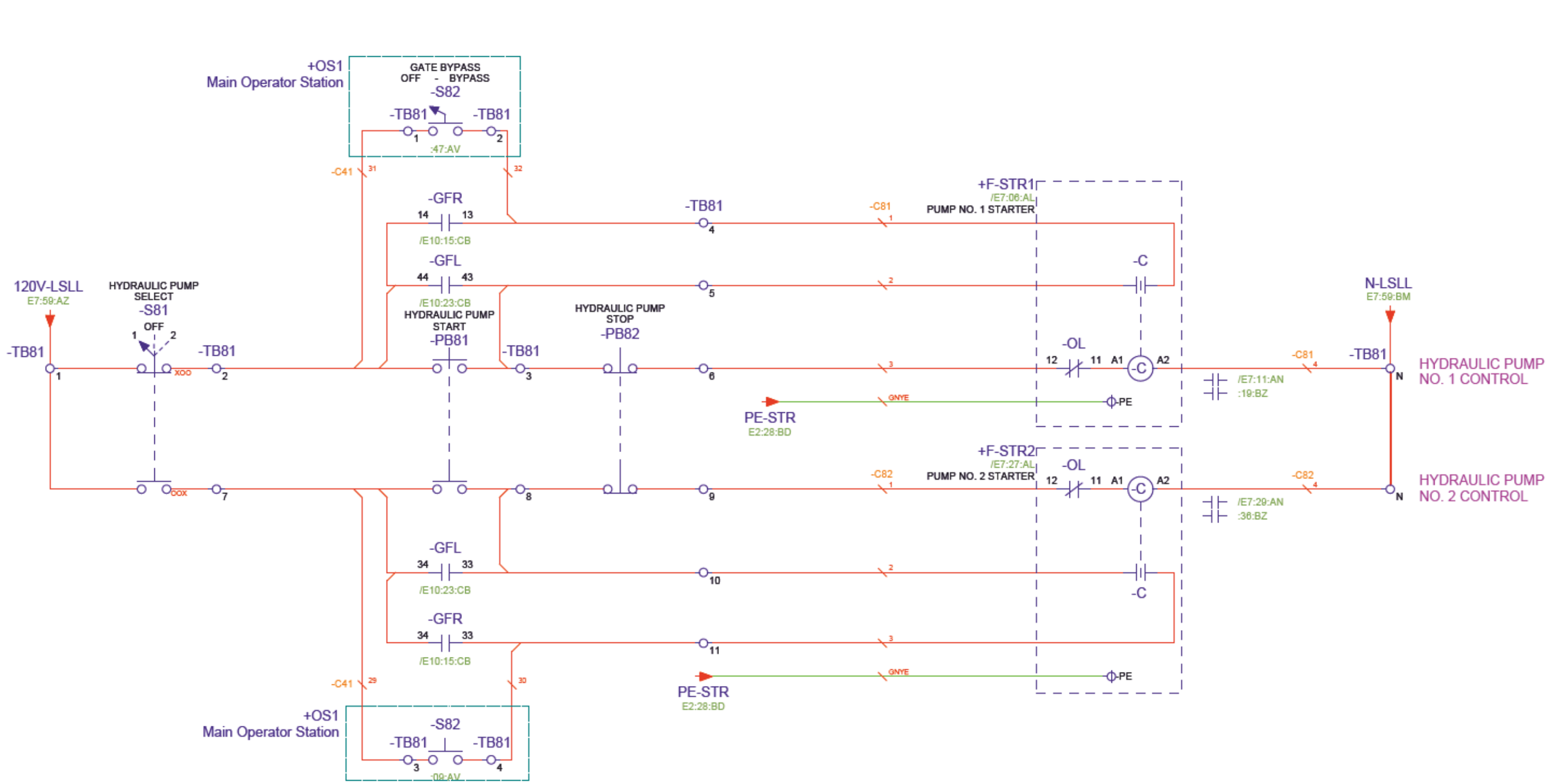
NOTES

PREVIOUS PAGE: E6

TOTAL PAGES: 83

2019-10-04 :LAST PAGE MODIFICATION DATE

E8 :NEXT PAGE

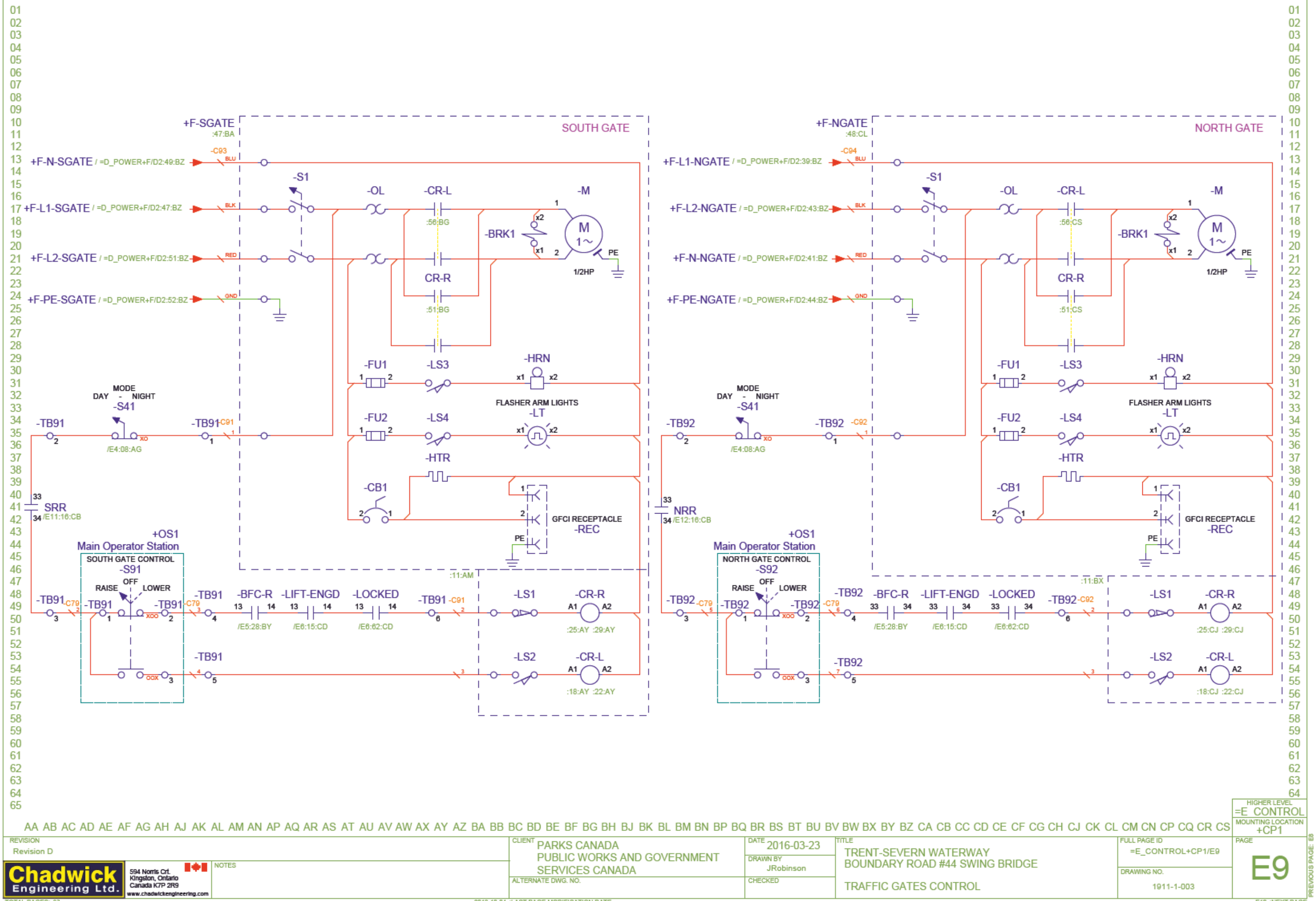


HIGHER LEVEL
=E_CONTROL
MOUNTING LOCATION
+CP1

REVISION: Revision D	CLIENT: PARKS CANADA PUBLIC WORKS AND GOVERNMENT SERVICES CANADA	DATE: 2018-12-19 DRAWN BY: jrobinson	TITLE: TRENT-SEVERN WATERWAY BOUNDARY ROAD #44 SWING BRIDGE HYDRAULIC PUMP CONTROL	FULL PAGE ID: =E_CONTROL+CP1/E8 DRAWING NO.: 1911-1-003
Chadwick Engineering Ltd. 594 Norris Crt. Kingston, Ontario Canada K7P 2R9 www.chadwickengineering.com	NOTES	ALTERNATE DWG. NO.	CHECKED	PAGE: E8

PREVIOUS PAGE: E7

TOTAL PAGES: 83 | 2019-10-04 :LAST PAGE MODIFICATION DATE | E9 :NEXT PAGE

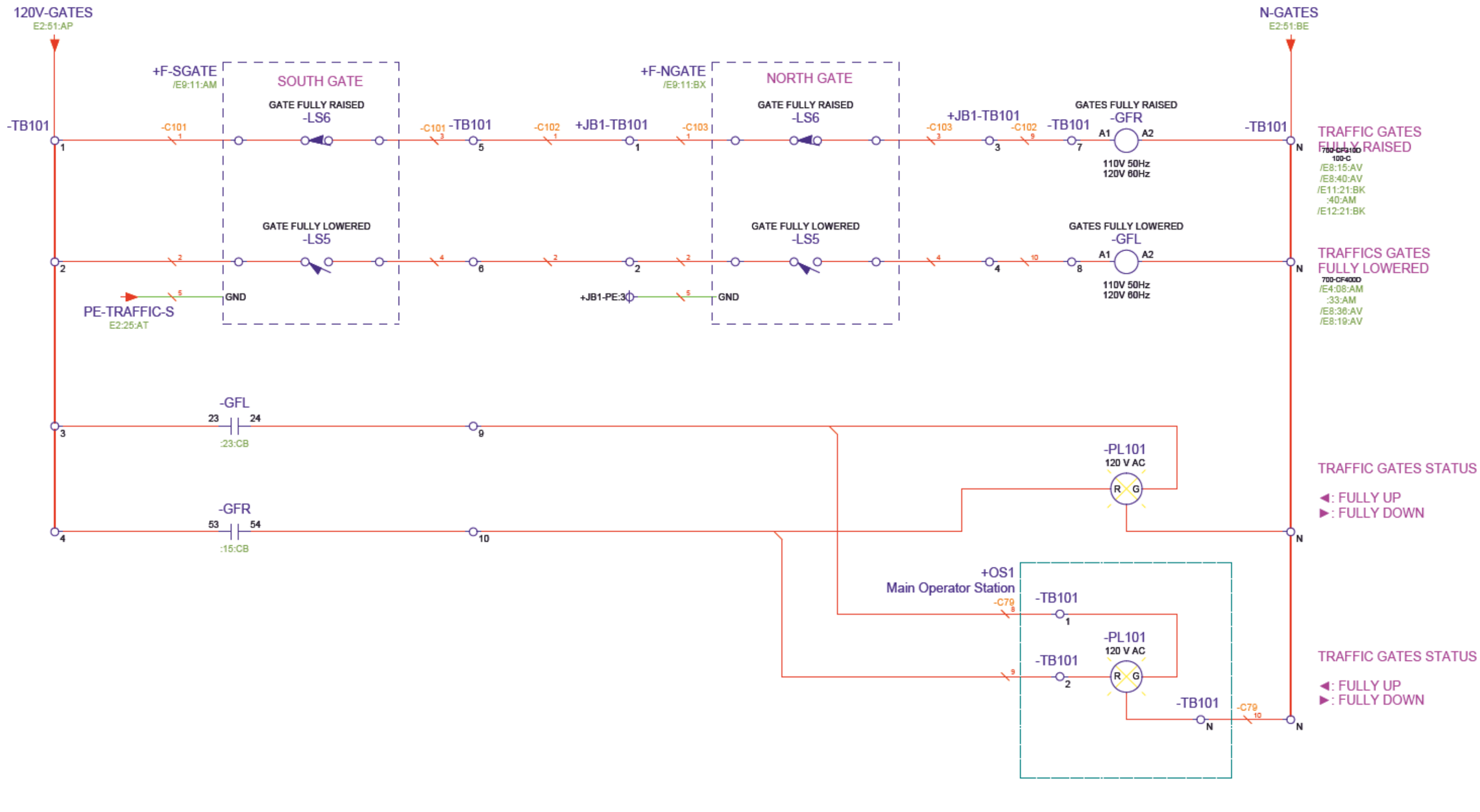


HIGHER LEVEL: =E_CONTROL
MOUNTING LOCATION: +CP1

REVISION: Revision D	CLIENT: PARKS CANADA PUBLIC WORKS AND GOVERNMENT SERVICES CANADA	DATE: 2016-03-23 DRAWN BY: JRobinson	TITLE: TRENT-SEVERN WATERWAY BOUNDARY ROAD #44 SWING BRIDGE TRAFFIC GATES CONTROL	FULL PAGE ID: =E_CONTROL+CP1/E9 DRAWING NO.: 1911-1-003
Chadwick Engineering Ltd. 594 Norris Crt. Kingston, Ontario Canada K7P 2R9 www.chadwickengineering.com	NOTES	ALTERNATE DWG. NO. CHECKED		PAGE: E9

PREVIOUS PAGE: E8

TOTAL PAGES: 83 | 2019-10-04 :LAST PAGE MODIFICATION DATE | E10 :NEXT PAGE



REVISION: Revision D	CLIENT: PARKS CANADA PUBLIC WORKS AND GOVERNMENT SERVICES CANADA	DATE: 2019-01-10 DRAWN BY: TCampbell CHECKED:	TITLE: TRENT-SEVERN WATERWAY BOUNDARY ROAD #44 SWING BRIDGE TRAFFIC GATES STATUS
Chadwick Engineering Ltd. 594 Norris Crt. Kingston, Ontario Canada K7P 2R9 www.chadwickengineering.com	NOTES	ALTERNATE DWG. NO.	FULL PAGE ID: =E_CONTROL+CP1/E10 DRAWING NO.: 1911-1-003

HIGHER LEVEL: =E_CONTROL
MOUNTING LOCATION: +CP1
PAGE: E10

TOTAL PAGES: 83
2019-10-04 :LAST PAGE MODIFICATION DATE
E11 :NEXT PAGE
PREVIOUS PAGE: E9

120V-TRAFFIC
E2:53:AP

+OS1
Main Operator Station
MODE
DAY - NIGHT
-S41
/E4:08:AG

SOUTH TRAFFIC SIGNAL
GREEN - AMBER - RED
-S111
:10:AN

N-TRAFFIC
E2:53:BE

-STR
120Vac/dc
700-HT12AU120
700-HN100
:16:AY
:33:BC
SOUTH TIMER RELAY

-SAR
110V 50Hz
120V 60Hz
700-CF310D
:33:AJ
:38:AJ
SOUTH AMBER RELAY

-SRR
110V 50Hz
120V 60Hz
700-CF310D
/E4:08:AP
/E9:42:AA
SOUTH RED RELAY

-SGR
110V 50Hz
120V 60Hz
700-CF220D
:33:AY
/E12:21:BP
SOUTH GREEN RELAY

-CSR-S
:57:CA
0.1 - 10 A, 115/230 V
Current Input

+F-S-LTS-E
+F-S-LTS-W
-RED
SOUTH TRAFFIC LIGHTS (RED)

-YELLOW
SOUTH TRAFFIC LIGHTS (YELLOW)

-GREEN
SOUTH TRAFFIC LIGHTS (GREEN)

PE-TRAFFIC-S
E2:25:AT

-PL111
120 V AC
SOUTH TRAFFIC LIGHTS
▲: AMBER
◀: GREEN
▶: RED

-CSR-S
:26:BH
0.1 - 10 A, 115/230 V
Power Supply
SOUTH RED
CURRENT SENSING RELAY

-SAF
120VAC/DC
700-HV32AAU120
700-HN100
:38:AF
SOUTH AMBER FLASHER RELAY

REVISION: Revision D	CLIENT: PARKS CANADA PUBLIC WORKS AND GOVERNMENT SERVICES CANADA	DATE: 2018-12-21 DRAWN BY: jrobinson CHECKED	TITLE: TRENT-SEVERN WATERWAY BOUNDARY ROAD #44 SWING BRIDGE SOUTH TRAFFIC LIGHTS
Chadwick Engineering Ltd. 594 Norris Crt. Kingston, Ontario Canada K7P 2R9 www.chadwickengineering.com	NOTES	ALTERNATE DWG. NO.	FULL PAGE ID: =E_CONTROL+CP1/E11 DRAWING NO.: 1911-1-003

HIGHER LEVEL: =E_CONTROL
MOUNTING LOCATION: +CP1
PAGE: E11
PREVIOUS PAGE: E10

TOTAL PAGES: 83
2019-10-04 :LAST PAGE MODIFICATION DATE
E12 :NEXT PAGE

120V-TRAFFIC
E2:53:AP

+OS1
Main Operator Station
MODE
DAY - NIGHT
-S41
/E4:08:AG

NORTH TRAFFIC SIGNAL
GREEN - AMBER - RED
-S121
:10:AN

N-TRAFFIC
E2:53:BE

-NTR
120Vac/dc
700-HT12AU120
700-HN100
:16:AY
:33:BC

NORTH TIMER RELAY

-NAR
110V 50Hz
120V 60Hz
700-CF310D
:33:AJ
:38:AJ

NORTH AMBER RELAY

-NRR
110V 50Hz
120V 60Hz
700-CF310D
/E4:08:AS
/E9:42:BL

NORTH RED RELAY

-NGR
110V 50Hz
120V 60Hz
700-CF220D
/E11:21:BN
:33:AY

NORTH GREEN RELAY

-CSR-N
:57:CA
0.1 - 10 A, 115/230 V
Current Input

+F-N-LTS-E
-RED
-YELLOW
-GREEN
CANAL-N / E13:26:AQ
CANAL-RED / E13:15:AQ
CANAL-YEL / E13:22:AQ
+F-N-LTS-W

NORTH TRAFFIC LIGHTS (RED)
NORTH TRAFFIC LIGHTS (YELLOW)
NORTH TRAFFIC LIGHTS (GREEN)

PE-TRAFFIC-N /
E2:28:AR
GND

-PL121
120 V AC

NORTH TRAFFIC LIGHTS

▲: AMBER
◀: GREEN
►: RED

+OS1
Main Operator Station

-CSR-N
:26:BH
0.1 - 10 A, 115/230 V
Power Supply

NORTH RED
CURRENT SENSING RELAY

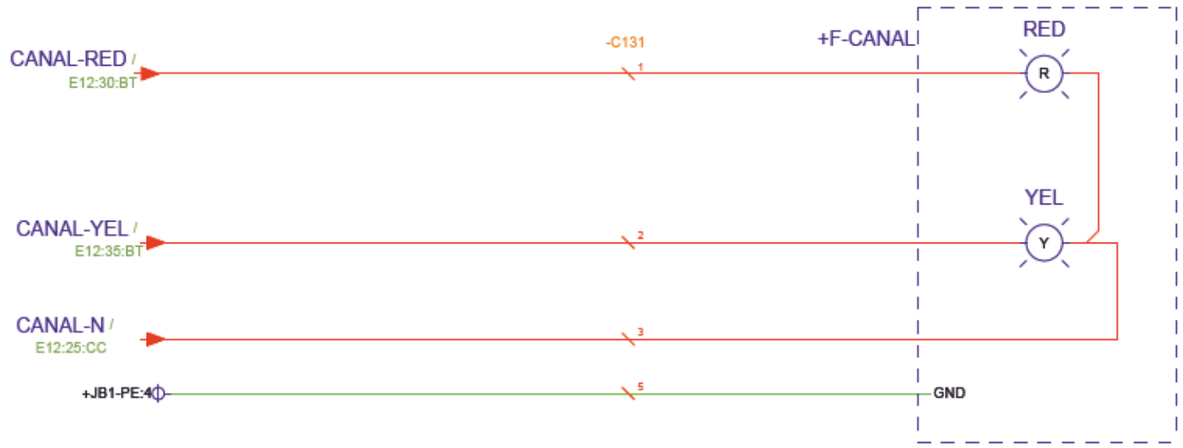
-NAF
120VAC/DC
700-HV32AAU120
700-HN100
:38:AF

NORTH AMBER FLASHER RELAY

REVISION: Revision D	CLIENT: PARKS CANADA PUBLIC WORKS AND GOVERNMENT SERVICES CANADA	DATE: 2016-03-08 DRAWN BY: JRobinson CHECKED	TITLE: TRENT-SEVERN WATERWAY BOUNDARY ROAD #44 SWING BRIDGE NORTH TRAFFIC LIGHTS - SIMCOE APPROACH
Chadwick Engineering Ltd. 594 Norris Crt. Kingston, Ontario Canada K7P 2R9 www.chadwickengineering.com	NOTES	ALTERNATE DWG. NO.	FULL PAGE ID: =E_CONTROL+CP1/E12 DRAWING NO.: 1911-1-003

HIGHER LEVEL: =E_CONTROL
MOUNTING LOCATION: +CP1
PAGE: E12

TOTAL PAGES: 83
2019-10-04 :LAST PAGE MODIFICATION DATE
E13 :NEXT PAGE
PREVIOUS PAGE: E11



CANAL RD
NORTH SIDE
RED TRAFFIC LIGHT

CANAL RD
NORTH SIDE
YELLOW TRAFFIC LIGHT

HIGHER LEVEL
=E_CONTROL
MOUNTING LOCATION
+CP1

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ALTERNATE DWG. NO.

DATE 2019-01-10

DRAWN BY
TCampbell

CHECKED

TITLE
TRENT-SEVERN WATERWAY
BOUNDARY ROAD #44 SWING BRIDGE

NORTH SIDE TRAFFIC LIGHTS - CANAL RD APPROACH

FULL PAGE ID
=E_CONTROL+CP1/E13

DRAWING NO.
1911-1-003

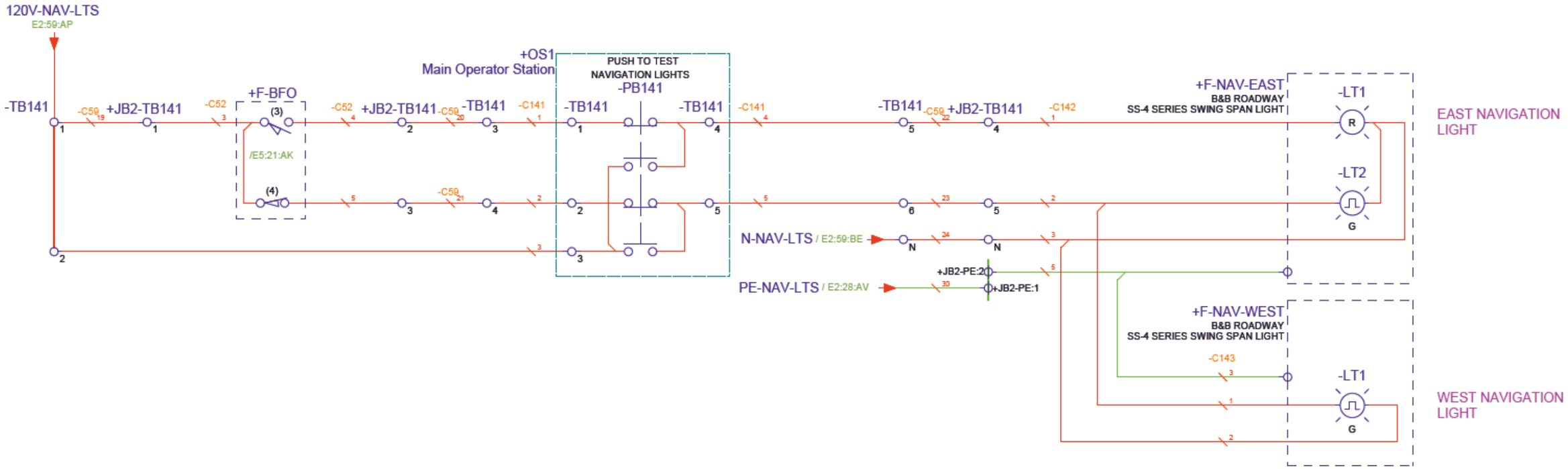
PAGE
E13

PREVIOUS PAGE: E12

TOTAL PAGES: 83

2019-10-04 :LAST PAGE MODIFICATION DATE

E14 :NEXT PAGE



HIGHER LEVEL: =E_CONTROL
MOUNTING LOCATION: +CP1

REVISION: Revision D

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ALTERNATE DWG. NO.

DATE: 2018-10-01
DRAWN BY: jrobinson
CHECKED

TITLE: TRENT-SEVERN WATERWAY
BOUNDARY ROAD #44 SWING BRIDGE

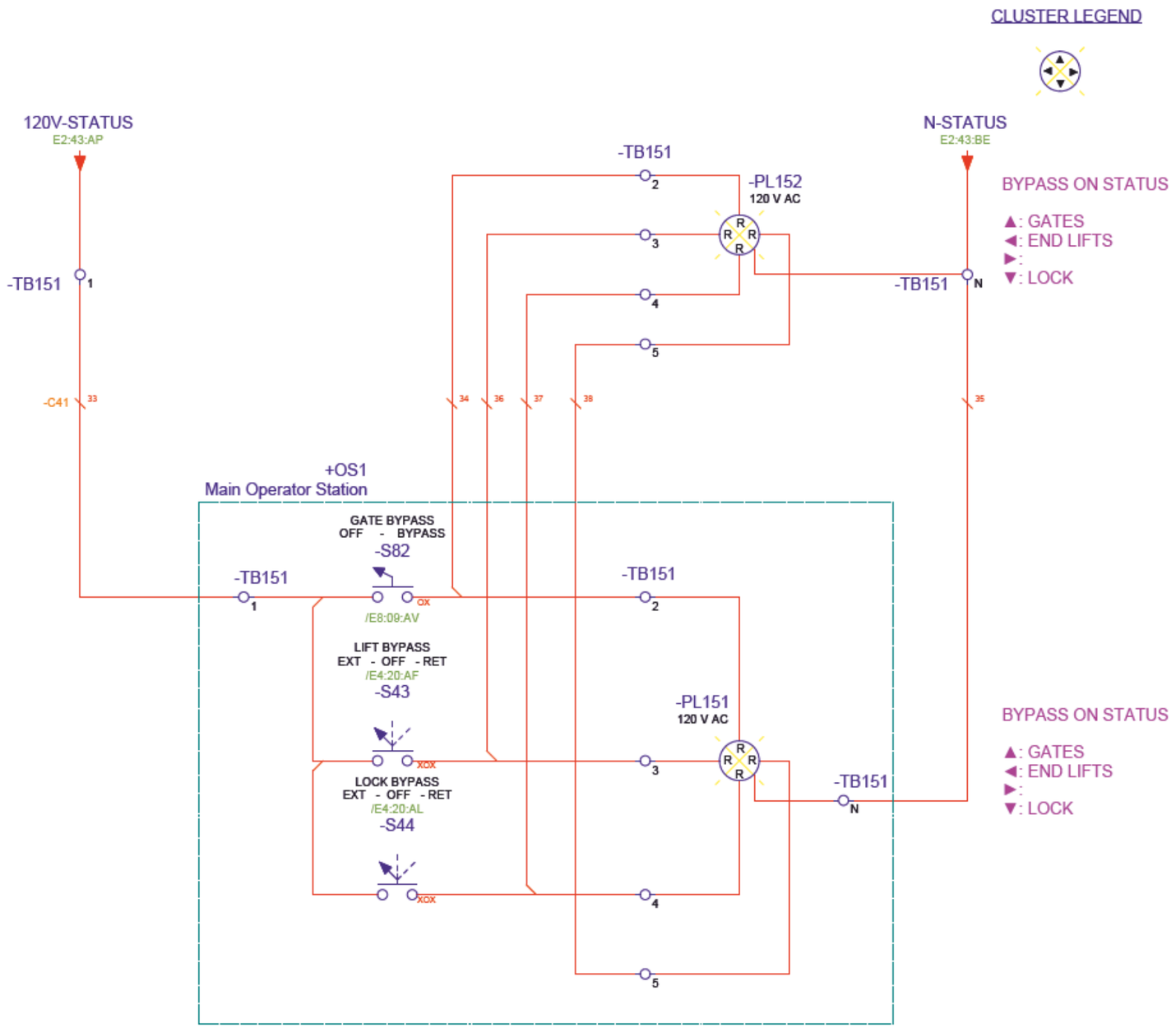
NAVIGATION LIGHTS

FULL PAGE ID: =E_CONTROL+CP1/E14
DRAWING NO.: 1911-1-003

PAGE: E14

PREVIOUS PAGE: E13

TOTAL PAGES: 83
2019-10-04 :LAST PAGE MODIFICATION DATE
E15 :NEXT PAGE



REVISION: Revision D	CLIENT: PARKS CANADA PUBLIC WORKS AND GOVERNMENT SERVICES CANADA	DATE: 2019-09-04	TITLE: TRENT-SEVERN WATERWAY BOUNDARY ROAD #44 SWING BRIDGE BYPASS STATUS	FULL PAGE ID: =E_CONTROL+CP1/E15	PAGE: E15
Chadwick Engineering Ltd. 594 Norris Crt. Kingston, Ontario Canada K7P 2R9 www.chadwickengineering.com	NOTES: NOV 10, 2016 - Issued for Construction Approval	DRAWN BY: jrobinson		DRAWING NO.: 1911-1-003	
	ALTERNATE DWG. NO.	CHECKED			

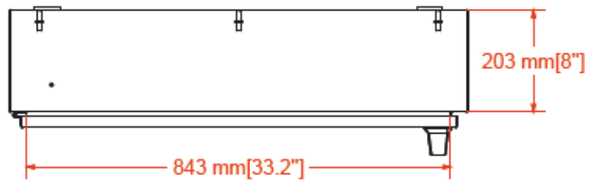
HIGHER LEVEL: =E_CONTROL
MOUNTING LOCATION: +CP1

TOTAL PAGES: 83
2019-10-04 :LAST PAGE MODIFICATION DATE
=F_LAYOUTS/F1 :NEXT PAGE
PREVIOUS PAGE: E14

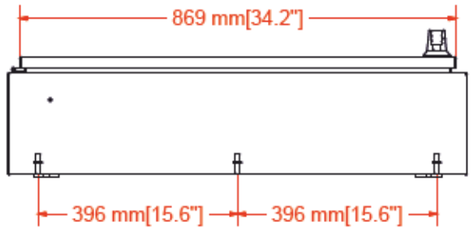
-ENC_EXT_1

ENCLOSURE
PART No. HW48368GYHK
for more information visit
www.hammfg.com
Data subject to change without notice
Isometric drawing Not to Scale

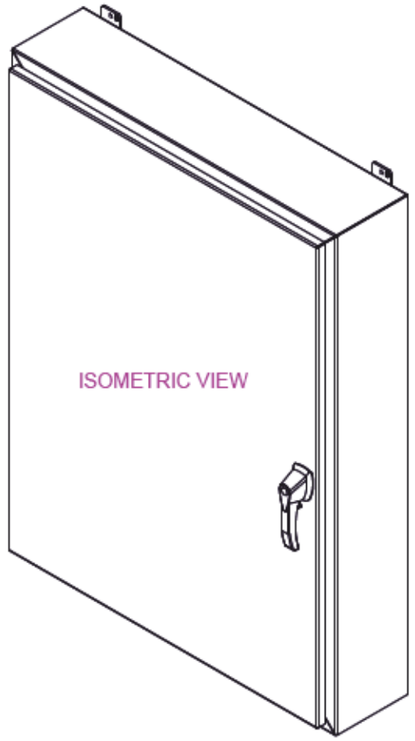
INNER PANEL
PART No. 18P4533
for more information visit
www.hammfg.com
Data subject to change without notice
Isometric drawing Not to Scale



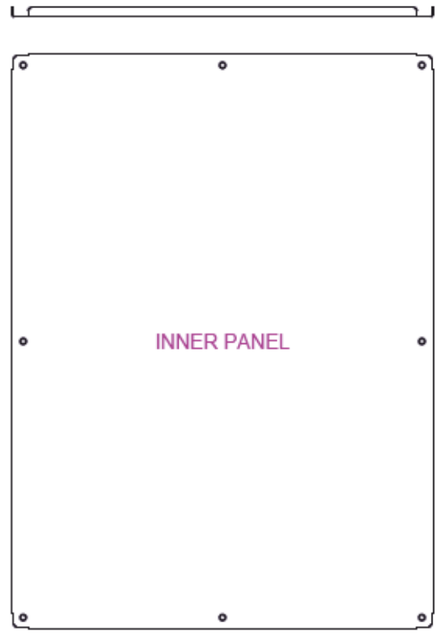
TOP VIEW



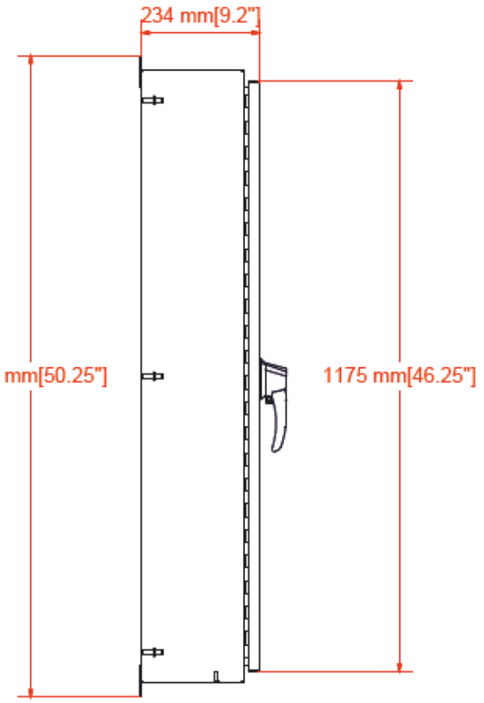
BOTTOM VIEW


ISOMETRIC VIEW

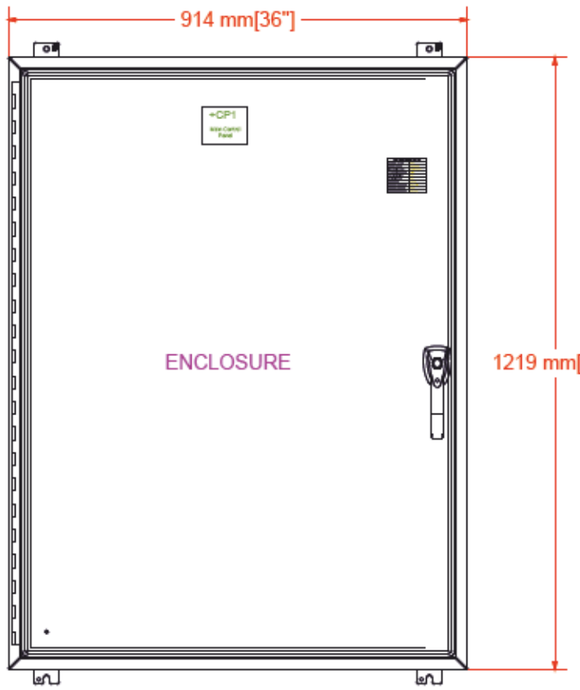
TOP VIEW


INNER PANEL

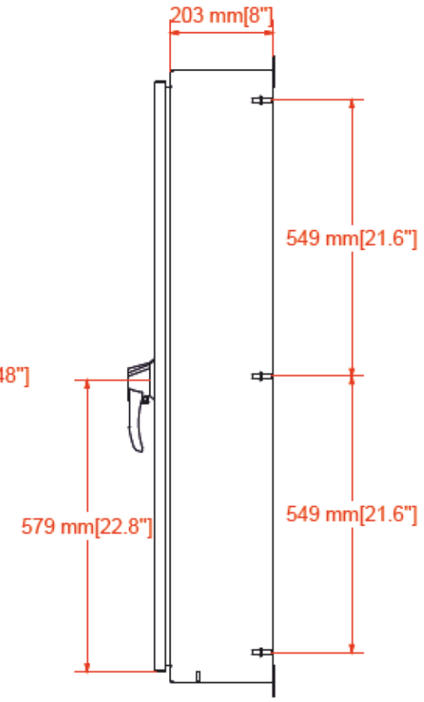
SIDE VIEW



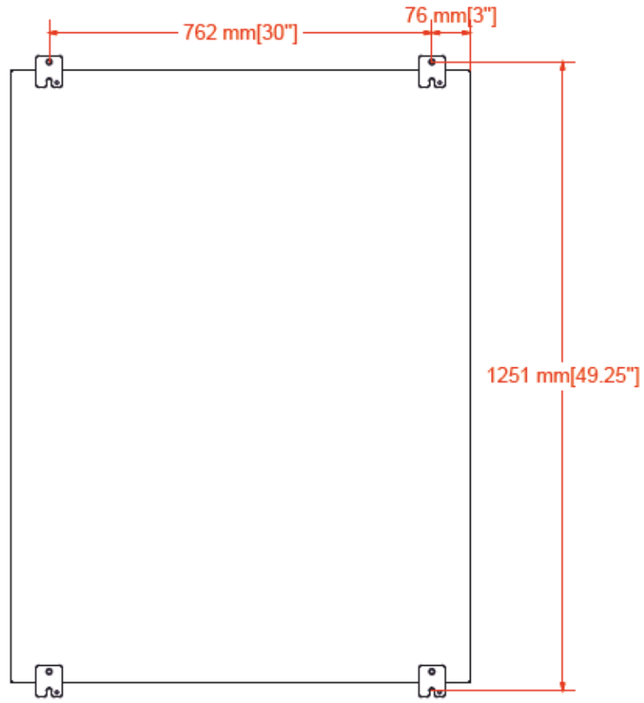
SIDE VIEW



FRONT VIEW



SIDE VIEW



REAR VIEW

HIGHER LEVEL
=F LAYOUTS
MOUNTING LOCATION
+CP1

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NOTES

CLIENT
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SERVICES CANADA

ALTERNATE DWG. NO.

DATE 2019-01-15

DRAWN BY TCampbell

CHECKED

TITLE
TRENT-SEVERN WATERWAY
BOUNDARY ROAD #44 SWING BRIDGE
+CP1 ENCLOSURE DETAIL

FULL PAGE ID
=F_LAYOUTS+CP1/F1

DRAWING NO.
1911-1-003

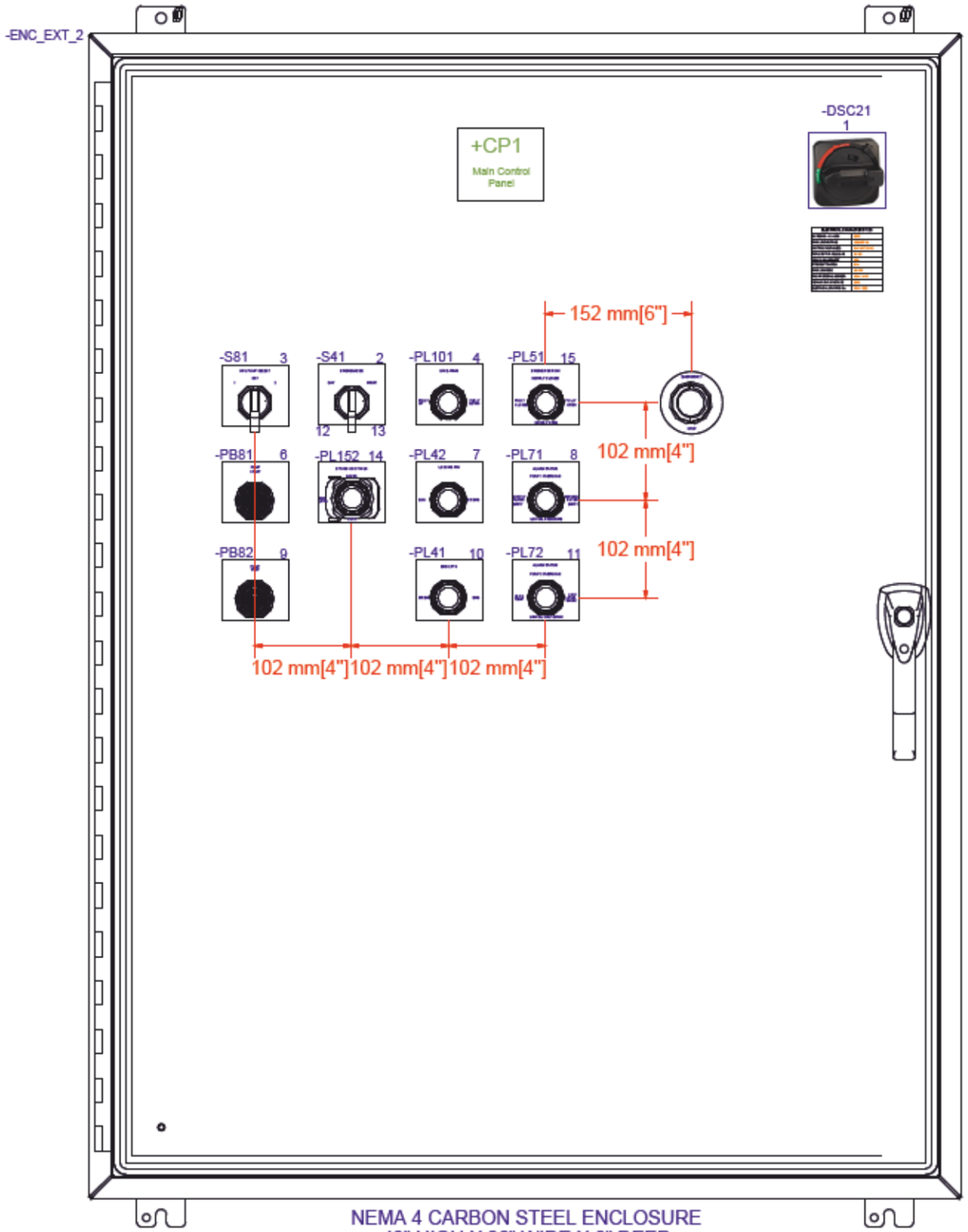
PAGE
F1

PREVIOUS PAGE: =E_CONTROLE15

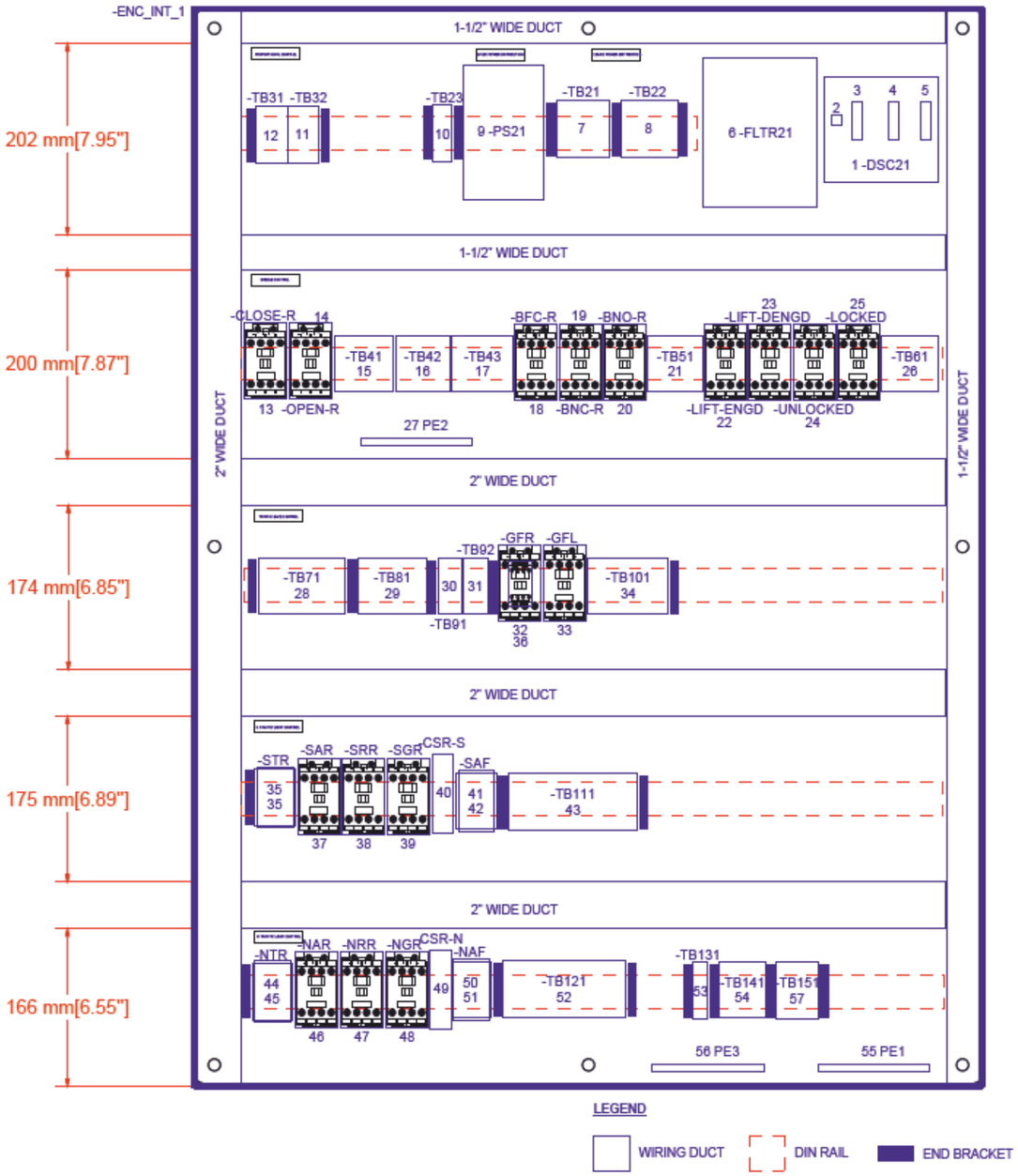
TOTAL PAGES: 83

2019-10-04 :LAST PAGE MODIFICATION DATE

F2 :NEXT PAGE



NEMA 4 CARBON STEEL ENCLOSURE
48" HIGH X 36" WIDE X 8" DEEP



GENERAL PANEL BUILD NOTES:

1. REPLACE ENTIRE CONTROL PANEL WITH ENCLOSURE AND MATERIALS AS DETAILED IN THIS DRAWING.

2. FOLLOW WIRING SPECIFICATIONS DETAILED ON SHEET B3.

3. EACH DEVICE REQUIRES A DEVICE IDENTIFICATION LEGEND PLATE.

4. ENCLOSURE REQUIRES IDENTIFICATION AND ELECTRICAL CHARACTERISTICS LEGEND PLATES SIMILAR TO LABELS DEPICTED ON THIS DRAWING.

5. ENCLOSURE BILLS OF MATERIAL IS NOT INTENDED TO BE A COMPLETE LISTING OF ALL REQUIRED PARTS. SEE PANEL LEGEND FOR BILLS OF MATERIAL.

6. ALL CONDUIT/CABLE TO ENTER/EXIT AT BOTTOM OF ENCLOSURE. NO TOP ENTRY PERMITTED.

HIGHER LEVEL: =F LAYOUTS
MOUNTING LOCATION: +CP1

REVISION: Revision D

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NOTES

CLIENT: PARKS CANADA
PUBLIC WORKS AND GOVERNMENT SERVICES CANADA

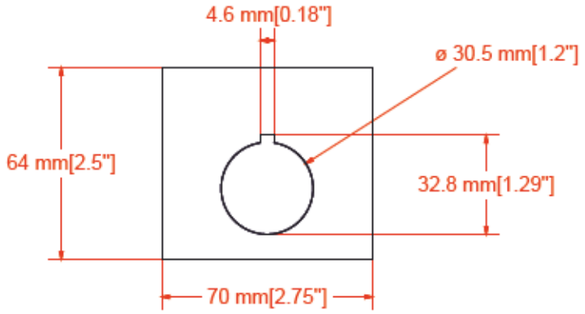
ALTERNATE DWG. NO.

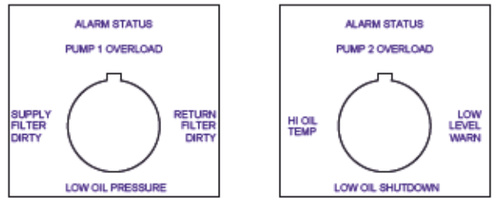
DATE: 2016-03-21
DRAWN BY: JRobinson
CHECKED

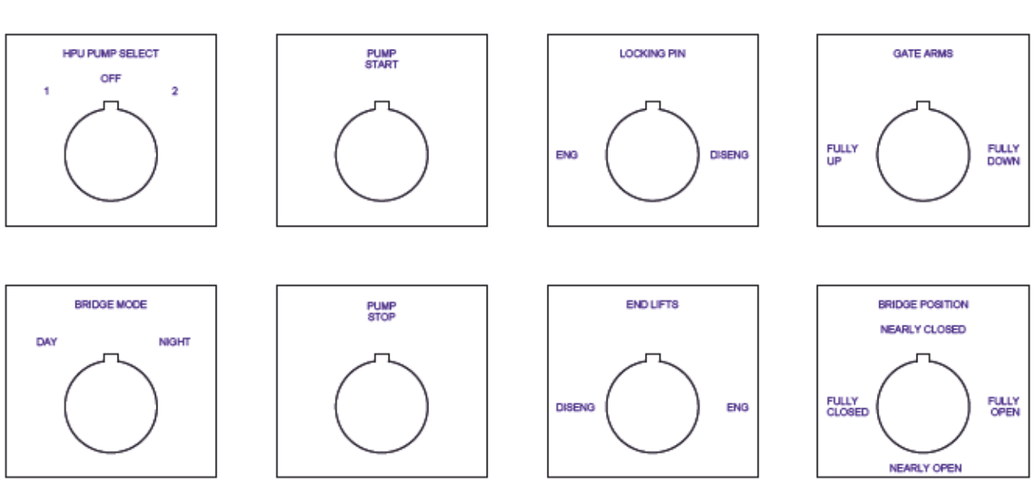
TITLE: TRENT-SEVERN WATERWAY
BOUNDARY ROAD #44 SWING BRIDGE
+CP1 DEVICE LAYOUT

FULL PAGE ID: =F_LAYOUTS+CP1/F2
DRAWING NO.: 1911-1-003

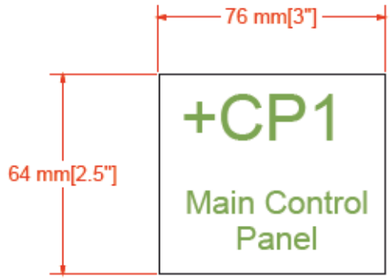
PAGE: F2



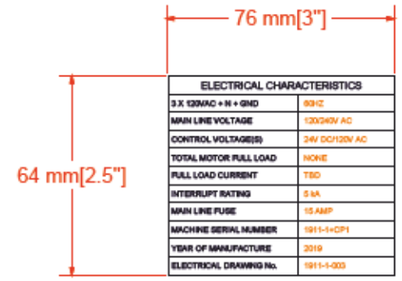




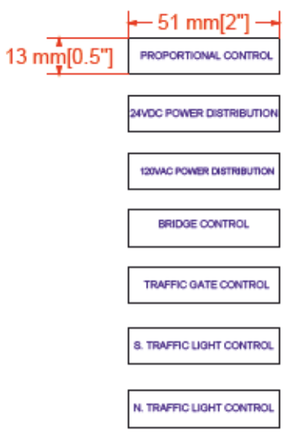
DEVICE IDENTIFICATION LEGEND PLATES



ENCLOSURE IDENTIFICATION LEGEND PLATE



ELECTRICAL CHARACTERISTICS LEGEND PLATE



INNER PANEL IDENTIFICATION LEGEND PLATES

HIGHER LEVEL: =F_LAYOUTS
MOUNTING LOCATION: +CP1

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CLIENT: PARKS CANADA
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ALTERNATE DWG. NO.

DATE: 2019-01-07
DRAWN BY: TCampbell
CHECKED

TITLE: TRENT-SEVERN WATERWAY
BOUNDARY ROAD #44 SWING BRIDGE
+CP1 LEGEND DETAILS

FULL PAGE ID: =F_LAYOUTS+CP1/F3
DRAWING NO.: 1911-1-003

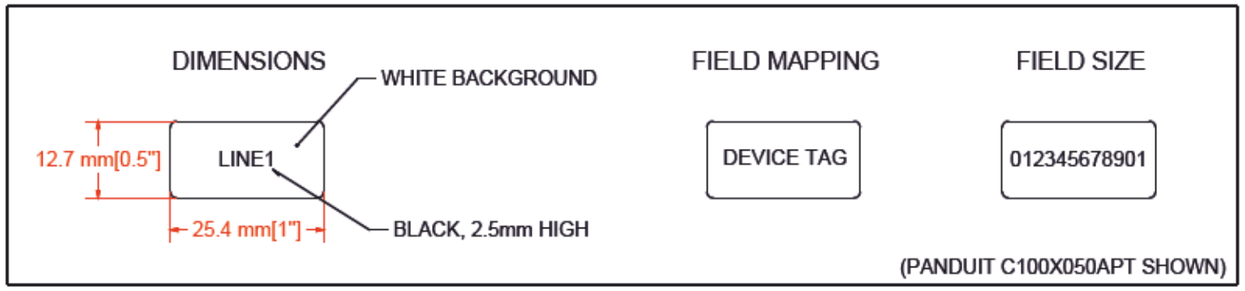
PAGE: F3

Device Tag List : Enclosure Backpanel Labels ie. relays, push buttons, disconnects, fuses etc...

CE_F03_000 Enclosure Backpanel Labels

Backpanel labels for enclosure

+CP1



BFC-R	GFL	PB81	PL152	TB23	TB92
BNC-R	GFR	PB82	PS21	TB31	TB101
BNO-R	LIFT-DENGD	PE1	S41	TB32	TB111
CLOSE-R	LIFT-ENGD	PE2	S81	TB41	TB121
CSR-N	LOCKED	PE3	SAF	TB42	TB141
CSR-S	NAF	PL41	SAR	TB43	TB151
DSC21	NAR	PL42	SGR	TB51	UNLOCKED
ENC_EXT_1	NGR	PL51	SRR	TB61	
ENC_INT_1	NRR	PL71	STR	TB71	
EPB41	NTR	PL72	TB21	TB81	
FLTR21	OPEN-R	PL101	TB22	TB91	

HIGHER LEVEL: =F LAYOUTS
MOUNTING LOCATION: +CP1

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ALTERNATE DWG. NO.

DATE: 2019-09-05

DRAWN BY: jrobinson

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TITLE: TRENT-SEVERN WATERWAY
BOUNDARY ROAD #44 SWING BRIDGE
Device Legend Plates

FULL PAGE ID: =F_LAYOUTS+CP1/F4

DRAWING NO.

PAGE: F4

Enclosure legend Mounting Panel: +CP1-ENC_EXT_2

CE_F18_001

Item number	Device tag	Manufacturer	Order number	Description	Placement	Function text
1	-DSC21	Allen-Bradley (IEC Data)	194R-HS4	Operating Handle, With Defeater, Black, NEMA Type 3R/3/12/4/4X - IP66	=E_CONTROL/E2:31:AE	+CP1 MAIN
2	-S41	Allen-Bradley (IEC Data)	800TC-H17A	30.5mm Type 4/13 2 Pos Sel. Switch-Non-Illum., White, Knob Lever Maint., 1 NO-1	=E_CONTROL/E4:08:AG	MODE
3	-S81	Allen-Bradley (IEC Data)	800TC-J17A	30.5mm Type 4/13 3 Pos. Sel. Switch-Non-Illum., White, Knob Lever, Operator	=E_CONTROL/E8:24:AH	HYDRAULIC PUMP
4	-PL101	Allen-Bradley (IEC Data)	800TC-PCL216	30.5mm Type 4/13 Pilot Light, Xfmr, Push-to-Test, Incand., 2 light Cluster	=E_CONTROL/E10:36:CB	TRAFFIC GATE STATUS
6	-PB81	Allen-Bradley (IEC Data)	800TC-A1A2	30.5mm Type 4/13 Mom. Contact PB, Non-Illum., Green, Flush Hd, 2 NO, Finger	=E_CONTROL/E8:24:AV	HYDRAULIC PUMP
7	-PL42	Allen-Bradley (IEC Data)	800TC-PCL216	30.5mm Type 4/13 Pilot Light, Xfmr, Push-to-Test, Incand., 2 light Cluster	=E_CONTROL/E6:56:BX	LOCKING PIN STATUS
8	-PL71	Allen-Bradley (IEC Data)	800TC-PCL416RRRR	30.5mm Type 4/13 Pilot Light, Xfmr, Push-to-Test, Incand., 4 light Cluster	=E_CONTROL/E7:11:BF	ALARM STATUS
9	-PB82	Allen-Bradley (IEC Data)	800TC-B6A4	30.5mm Type 4/13 Mom. Contact PB, Non-Illum., Red, Extended Hd, 2 NC, Finger	=E_CONTROL/E8:24:BC	HYDRAULIC PUMP
10	-PL41	Allen-Bradley (IEC Data)	800TC-PCL216	30.5mm Type 4/13 Pilot Light, Xfmr, Push-to-Test, Incand., 2 light Cluster	=E_CONTROL/E6:17:BX	END LIFTS STATUS
11	-PL72	Allen-Bradley (IEC Data)	800TC-PCL416RRRR	30.5mm Type 4/13 Pilot Light, Xfmr, Push-to-Test, Incand., 4 light Cluster	=E_CONTROL/E7:35:BC	ALARM STATUS
12	-S41	Allen-Bradley (IEC Data)	800TC-XA4	Contact Block, Shallow Block, 2 N.C.	=E_CONTROL/E4:08:AG	MODE
13	-S41	Allen-Bradley (IEC Data)	800TC-XA4	Contact Block, Shallow Block, 2 N.C.	=E_CONTROL/E4:08:AG	MODE
14	-PL152	Allen-Bradley (IEC Data)	800TC-PCL416RRRR	30.5mm Type 4/13 Pilot Light, Xfmr, Push-to-Test, Incand., 4 light Cluster	=E_CONTROL/E15:12:BP	
15	-PL51	Allen-Bradley (IEC Data)	800TC-PCL416RAAG	30.5mm Type 4/13 Pilot Light, Xfmr, Push-to-Test, Incand., 4 light Cluster	=F_LAYOUTS/F2	

Terminal strip layouts and parts are detailed on the terminal line up diagrams.

HIGHER LEVEL =F_LAYOUTS

MOUNTING LOCATION +CP1

REVISION Revision D

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ALTERNATE DWG. NO.

DATE 2019-10-04

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TITLE TRENT-SEVERN WATERWAY
BOUNDARY ROAD #44 SWING BRIDGE
Enclosure legend : +CP1-DSC21 - +CP1-PL51

FULL PAGE ID =F_LAYOUTS+CP1/F5

DRAWING NO.

PAGE F5

Enclosure legend

Mounting Panel: +CP1-ENC_INT_1

CE_F18_001

Item number	Device tag	Manufacturer	Order number	Description	Placement	Function text
1	-DSC21	Allen-Bradley (IEC Data)	194R-C30-1753	194R NextGen Disconnect Switch, Open, CC fuse, 30 A, 3 Pole	=E_CONTROL/E2:31:AE	+CP1 MAIN
2	-DSC21	Allen-Bradley (IEC Data)	194R-R2	Operating Shaft, Extended Length, 457mm (18.0 in.)	=E_CONTROL/E2:31:AE	+CP1 MAIN
3	-DSC21	Littlefuse	CCMR015	FUSE, CLASS CC, TIME DELAY, 1 1/2" x 13/32" (10mm x 38mm), UL, CSA,	=E_CONTROL/E2:31:AE	+CP1 MAIN
4	-DSC21	Littlefuse	CCMR015	FUSE, CLASS CC, TIME DELAY, 1 1/2" x 13/32" (10mm x 38mm), UL, CSA,	=E_CONTROL/E2:31:AE	+CP1 MAIN
5	-DSC21	Littlefuse	CCMR015	FUSE, CLASS CC, TIME DELAY, 1 1/2" x 13/32" (10mm x 38mm), UL, CSA,	=E_CONTROL/E2:31:AE	+CP1 MAIN
6	-FLTR21	EMERSON	IC+115	Active Tracking Filter, 1 phase, 115V, 15A	=E_CONTROL/E2:37:BP	POWER FILTER
7	-TB21				=F_LAYOUTS/F2	
8	-TB22				=F_LAYOUTS/F2	
9	-PS21	Schneider Electric	ABL8RPS24100	ABL8RPS24100: Power Supply, 24V DC, 240 W, regulated SMPS - 3-phase -	=E_CONTROL/E2:35:CB	24VDC
10	-TB23				=F_LAYOUTS/F2	
11	-TB32				=F_LAYOUTS/F2	
12	-TB31				=F_LAYOUTS/F2	
13	-CLOSE-R	Allen-Bradley (NFPA only)	700-CF310D	MCS-CF Control Relay, IEC, 3 N.O. / 1 N.C. Contacts, 110V 50Hz / 120V 60Hz	=E_CONTROL/E4:20:CB	CLOSE CONTROL RELAY
14	-OPEN-R	Allen-Bradley (NFPA only)	700-CF310D	MCS-CF Control Relay, IEC, 3 N.O. / 1 N.C. Contacts, 110V 50Hz / 120V 60Hz	=E_CONTROL/E4:44:CB	OPEN CONTROL RELAY
15	-TB41				=F_LAYOUTS/F2	
16	-TB42				=F_LAYOUTS/F2	
17	-TB43				=F_LAYOUTS/F2	
18	-BFC-R	Allen-Bradley (NFPA only)	700-CF310D	MCS-CF Control Relay, IEC, 3 N.O. / 1 N.C. Contacts, 110V 50Hz / 120V 60Hz	=E_CONTROL/E5:28:BY	BRIDGE FULLY CLOSED
19	-BNC-R	Allen-Bradley (NFPA only)	700-CF310D	MCS-CF Control Relay, IEC, 3 N.O. / 1 N.C. Contacts, 110V 50Hz / 120V 60Hz	=E_CONTROL/E5:44:BY	BRIDGE NEARLY CLOSED
20	-BNO-R	Allen-Bradley (NFPA only)	700-CF310D	MCS-CF Control Relay, IEC, 3 N.O. / 1 N.C. Contacts, 110V 50Hz / 120V 60Hz	=E_CONTROL/E5:58:BY	BRIDGE NEARLY OPEN
21	-TB51				=F_LAYOUTS/F2	
22	-LIFT-ENGD	Allen-Bradley (NFPA only)	700-CF310D	MCS-CF Control Relay, IEC, 3 N.O. / 1 N.C. Contacts, 110V 50Hz / 120V 60Hz	=E_CONTROL/E6:15:CD	END LIFTS ENGAGED
23	-LIFT-DENGD	Allen-Bradley (NFPA only)	700-CF310D	MCS-CF Control Relay, IEC, 3 N.O. / 1 N.C. Contacts, 110V 50Hz / 120V 60Hz	=E_CONTROL/E6:21:CD	END LIFTS DISENGAGED
24	-UNLOCKED	Allen-Bradley (NFPA only)	700-CF310D	MCS-CF Control Relay, IEC, 3 N.O. / 1 N.C. Contacts, 110V 50Hz / 120V 60Hz	=E_CONTROL/E6:53:CD	LOCKING PIN ENGAGED
25	-LOCKED	Allen-Bradley (NFPA only)	700-CF310D	MCS-CF Control Relay, IEC, 3 N.O. / 1 N.C. Contacts, 110V 50Hz / 120V 60Hz	=E_CONTROL/E6:62:CD	LOCKING PIN ENGAGED
26	-TB61				=F_LAYOUTS/F2	
27	-PE2	Schneider Electric	PK12GTA	Load Center Ground Bar Assembly, 12 connections, (1) #14--#4 or (2) #14 or #12	=E_CONTROL/E4:06:CG	
28	-TB71				=F_LAYOUTS/F2	
29	-TB81				=F_LAYOUTS/F2	
30	-TB91				=F_LAYOUTS/F2	
31	-TB92				=F_LAYOUTS/F2	
32	-GFR	Allen-Bradley (NFPA only)	700-CF310D	MCS-CF Control Relay, IEC, 3 N.O. / 1 N.C. Contacts, 110V 50Hz / 120V 60Hz	=E_CONTROL/E10:15:CB	GATES FULLY RAISED
33	-GFL	Allen-Bradley (NFPA only)	700-CF400D	MCS-CF Control Relay, IEC, 4 N.O. Contacts, 110V 50Hz / 120V 60Hz	=E_CONTROL/E10:23:CB	GATES FULLY LOWERED
34	-TB101				=F_LAYOUTS/F2	
35	-STR	Allen-Bradley (IEC Data)	700-HT12AU120	700-HT General Purpose Tube Base Timing Relay, On Delay Timer ,0.1 to 10	=E_CONTROL/E11:06:CB	SOUTH TIMER RELAY
36	-GFR	Allen-Bradley (NFPA only)	100-FA22	IEC Auxiliary Contact Block, Front Mounting, 2 N.O. 2 N.C.	=E_CONTROL/E10:15:CB	GATES FULLY RAISED
37	-SAR	Allen-Bradley (NFPA only)	700-CF310D	MCS-CF Control Relay, IEC, 3 N.O. / 1 N.C. Contacts, 110V 50Hz / 120V 60Hz	=E_CONTROL/E11:10:CB	SOUTH AMBER RELAY
38	-SRR	Allen-Bradley (NFPA only)	700-CF310D	MCS-CF Control Relay, IEC, 3 N.O. / 1 N.C. Contacts, 110V 50Hz / 120V 60Hz	=E_CONTROL/E11:16:CB	SOUTH RED RELAY
39	-SGR	Allen-Bradley (IEC Data)	700-CF220D	MCS-CF Control Relay, IEC, 2 N.O. / 2 N.C. Contacts, 110V 50Hz / 120V 60Hz	=E_CONTROL/E11:21:CB	SOUTH GREEN RELAY
40	-CSR-S	Allen-Bradley (IEC Data)	809S-C1-10A-230	Single Phase Current Relay, 1...10A AC/DC max monitoring, 115/230V AC control	=E_CONTROL/E11:57:CA	SOUTH RED
41	-SAF	Allen-Bradley (IEC Data)	700-HV32AAU120	General Purpose Tube Base Repeat Cycle Timing Relay, Adjustable Timing Mode,	=E_CONTROL/E11:63:CB	SOUTH AMBER FLASHER RELAY
43	-TB111				=F_LAYOUTS/F2	
44	-NTR	Allen-Bradley (IEC Data)	700-HT12AU120	700-HT General Purpose Tube Base Timing Relay, On Delay Timer ,0.1 to 10	=E_CONTROL/E12:06:CB	NORTH TIMER RELAY
46	-NAR	Allen-Bradley (NFPA only)	700-CF310D	MCS-CF Control Relay, IEC, 3 N.O. / 1 N.C. Contacts, 110V 50Hz / 120V 60Hz	=E_CONTROL/E12:10:CB	NORTH AMBER RELAY
47	-NRR	Allen-Bradley (NFPA only)	700-CF310D	MCS-CF Control Relay, IEC, 3 N.O. / 1 N.C. Contacts, 110V 50Hz / 120V 60Hz	=E_CONTROL/E12:16:CB	NORTH RED RELAY
48	-NGR	Allen-Bradley (IEC Data)	700-CF220D	MCS-CF Control Relay, IEC, 2 N.O. / 2 N.C. Contacts, 110V 50Hz / 120V 60Hz	=E_CONTROL/E12:21:CB	NORTH GREEN RELAY
49	-CSR-N	Allen-Bradley (IEC Data)	809S-C1-10A-230	Single Phase Current Relay, 1...10A AC/DC max monitoring, 115/230V AC control	=E_CONTROL/E12:57:CA	NORTH RED
50	-NAF	Allen-Bradley (IEC Data)	700-HV32AAU120	General Purpose Tube Base Repeat Cycle Timing Relay, Adjustable Timing Mode,	=E_CONTROL/E12:63:CB	NORTH AMBER FLASHER RELAY
52	-TB121				=F_LAYOUTS/F2	
53	-TB131				=F_LAYOUTS/F2	
54	-TB141				=F_LAYOUTS/F2	
55	-PE1	Schneider Electric	PK12GTA	Load Center Ground Bar Assembly, 12 connections, (1) #14--#4 or (2) #14 or #12	=E_CONTROL/E2:21:AK	+CP1 MAIN GROUND BUS
56	-PE3	Schneider Electric	PK12GTA	Load Center Ground Bar Assembly, 12 connections, (1) #14--#4 or (2) #14 or #12	=E_CONTROL/E7:12:AU	
57	-TB151				=F_LAYOUTS/F2	

Terminal strip layouts and parts are detailed on the terminal line up diagrams.

HIGHER LEVEL =F_LAYOUTS

MOUNTING LOCATION +CP1

REVISION Revision D

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CLIENT PARKS CANADA
PUBLIC WORKS AND GOVERNMENT SERVICES CANADA

ALTERNATE DWG. NO.

DATE 2019-10-04

DRAWN BY jrobinson

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TITLE TRENT-SEVERN WATERWAY
BOUNDARY ROAD #44 SWING BRIDGE
Enclosure legend : +CP1-DSC21 - +CP1-TB151

FULL PAGE ID =F_LAYOUTS+CP1/F6

DRAWING NO.

PAGE F6

Parts list ; Project Bill of Material, by Device Tag

CE_F01_002

Device tag Schematic Reference	Qty	Unit	Description	Order number	Manufacturer	Device Description
-ENC_EXT_1 /F1	1		Formed 14 gauge steel bodies and doors. Continuously welded seams ground smooth. Formed lip on enclosure to exclude flowing liquids and contaminants. Powder coated black zinc diecast pad lockable handle with 3 point roller latching system secures door. Stainless steel continuous hinge	HW48368GYHK	Hammond Manufacturing	
-ENC_EXT_1 /F1	1		Steel panels are 12 gauge steel and are finished in white. Larger panels have two or four formed flanges. Some larger panels are 10 gauge. Panel mounting hardware not included (provided with enclosure).	18P4533	Hammond Manufacturing	
-ENC_INT_1 /F2	48	pcs	Accessories, End bracket, 100 pcs per package	1061200000	Weidmüller	
-ENC_INT_1 /F2	3600	mm	Mounting rail, TS 35, TS 35 x 7.5, with slot, Steel, galvanized, chromium-plated, 2000 mm per length	0514500000	Weidmüller	
-ENC_INT_1 /F2	4	ft	Panduct® type F narrow slot wiring duct, 1" W x 3" H, 6' length, PVC, light gray.	F1X3LG6	Panduit	
-ENC_INT_1 /F2	4	ft	Duct cover, 1" W x 6' length, PVC, light gray.	C1LG6	Panduit	
-ENC_INT_1 /F2	6	ft	1.5"(38mm) x 3" (80mm) Narrow Finger Design Wire Duct, PVC, Light Gray. Cover sold separate.	F1.5X3LG6	Panduit	
-ENC_INT_1 /F2	6	ft	Duct cover, 1.5" W x 6' length, PVC, light gray.	C1.5LG6	Panduit	
-ENC_INT_1 /F2	10	ft	Panduct® type F narrow slot wiring duct, 2" W x 3" H, 6' length, PVC, light gray.	F2X3LG6	Panduit	
-ENC_INT_1 /F2	10	ft	Duct cover, 2" W x 6' length, PVC, light gray.	C2LG6	Panduit	

HIGHER LEVEL =F LAYOUTS
MOUNTING LOCATION +CP1

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ALTERNATE DWG. NO.

DATE 2019-04-24

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TITLE TRENT-SEVERN WATERWAY
BOUNDARY ROAD #44 SWING BRIDGE
Mounting Panel Hardware

FULL PAGE ID =F_LAYOUTS+CP1/F7

DRAWING NO.

PAGE F7

ENCLOSURE
PART No. 2CSC2024
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Data subject to change without notice
Isometric drawing Not to Scale

PADLOCK ADAPTOR

PADLOCK ADAPTOR
PART No. EPA
for more information visit
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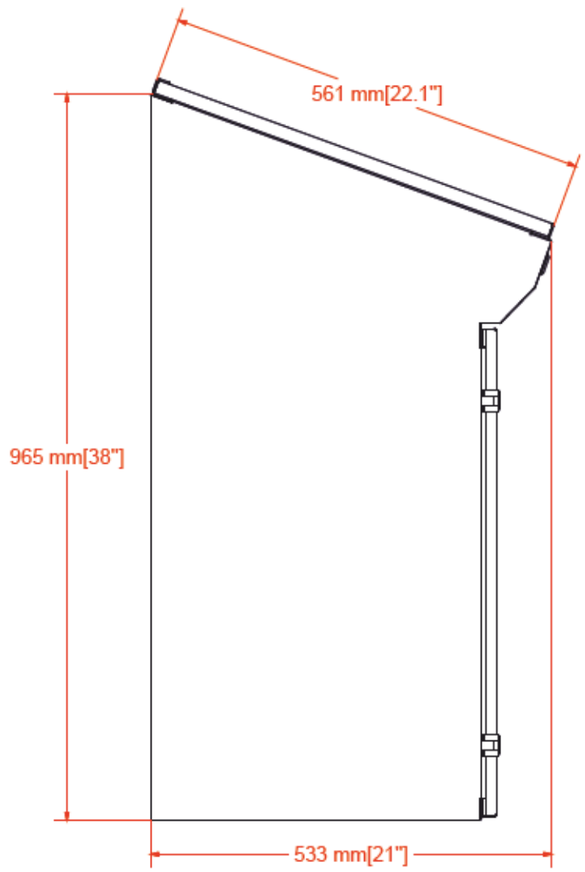
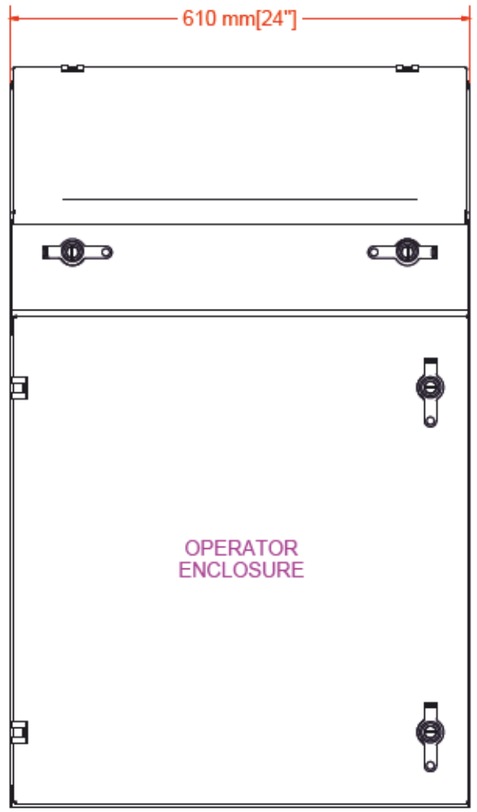
Data subject to change without notice
Isometric drawing Not to Scale



LEFT SIDE VIEW



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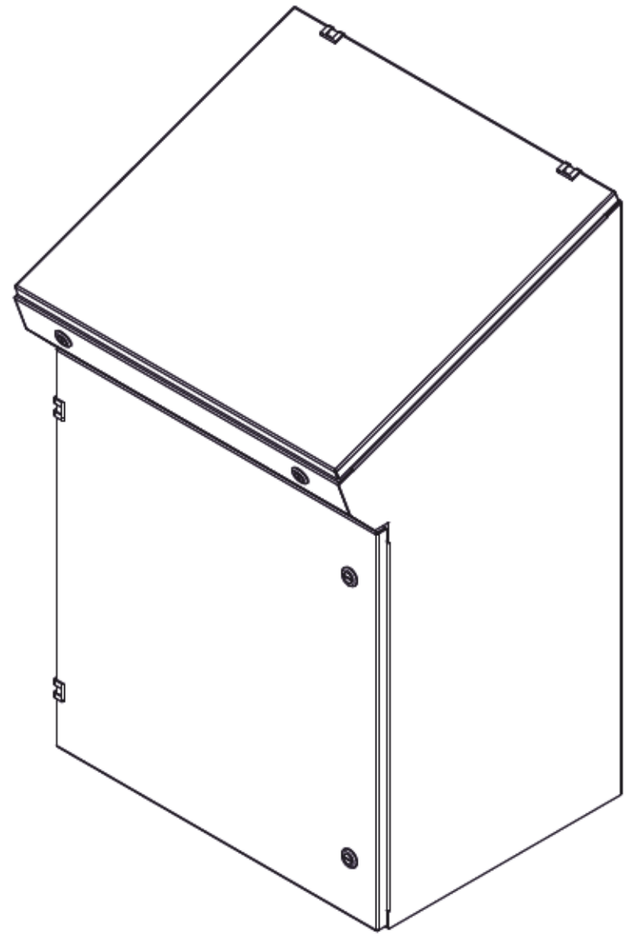

ISOMETRIC VIEW

HIGHER LEVEL =F_LAYOUTS
MOUNTING LOCATION +OS1

REVISION: Revision D	CLIENT: PARKS CANADA, PUBLIC WORKS AND GOVERNMENT SERVICES CANADA	DATE: 2018-12-19	TITLE: TRENT-SEVERN WATERWAY, BOUNDARY ROAD #44 SWING BRIDGE, +OS1 ENCLOSURE DETAIL	FULL PAGE ID: =F_LAYOUTS+OS1/F8
		DRAWN BY: TCampbell		DRAWING NO.: 1911-1-003
	ALTERNATE DWG. NO.	CHECKED		PAGE: F8

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NOTES

-PLINTH_EXT_1

PLINTH

PART No. 2CSP82418

for more information visit
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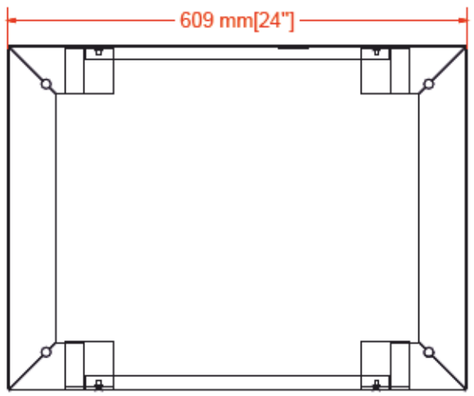
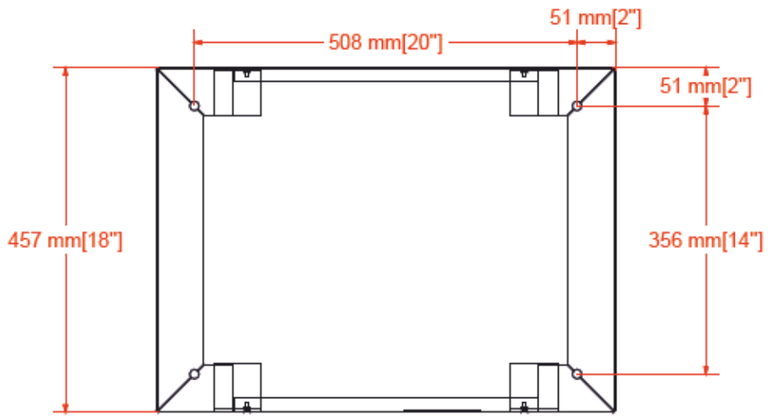
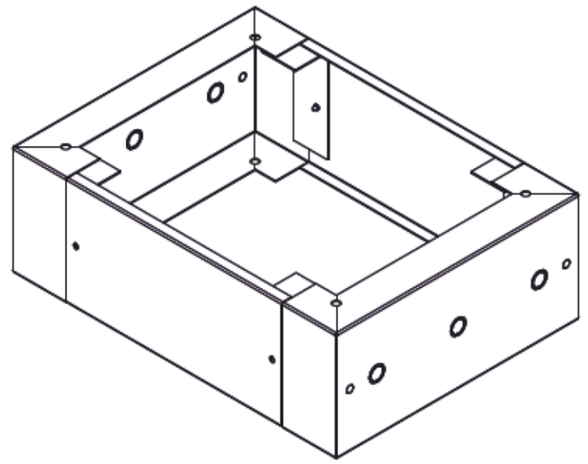
Data subject to change without notice



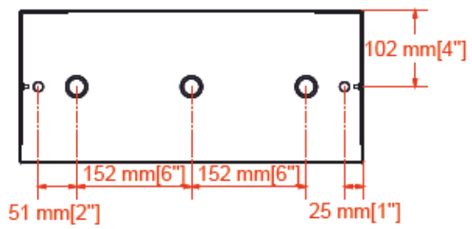
TOP VIEW



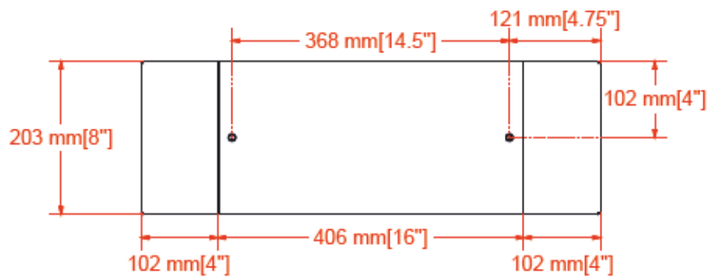
BOTTOM VIEW



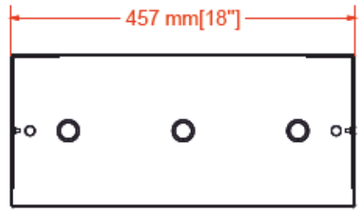
ISOMETRIC VIEW



SIDE VIEW



FRONT VIEW



SIDE VIEW

HIGHER LEVEL =F LAYOUTS
MOUNTING LOCATION +OS1

REVISION Revision D

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ALTERNATE DWG. NO.

DATE 2019-01-15

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TITLE TRENT-SEVERN WATERWAY
BOUNDARY ROAD #44 SWING BRIDGE
+OS1 PLINTH DETAIL

FULL PAGE ID =F_LAYOUTS+OS1/F9

DRAWING NO. 1911-1-003

PAGE F9

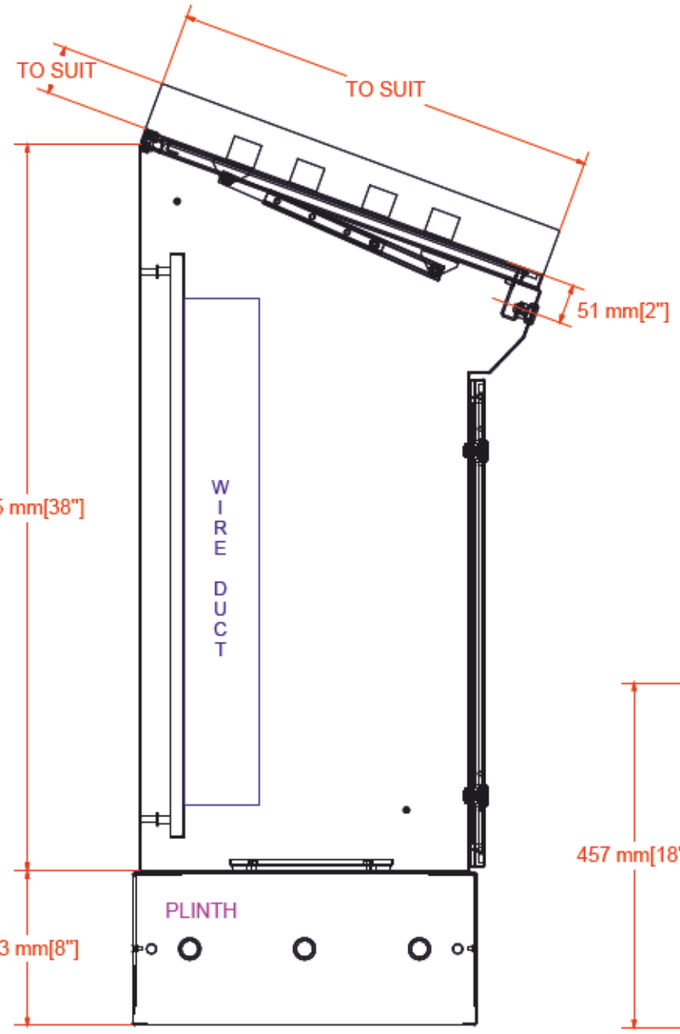
NOTES:

1. DRAIN HOLE REQUIRED FOR OUTER ENCLOSURE

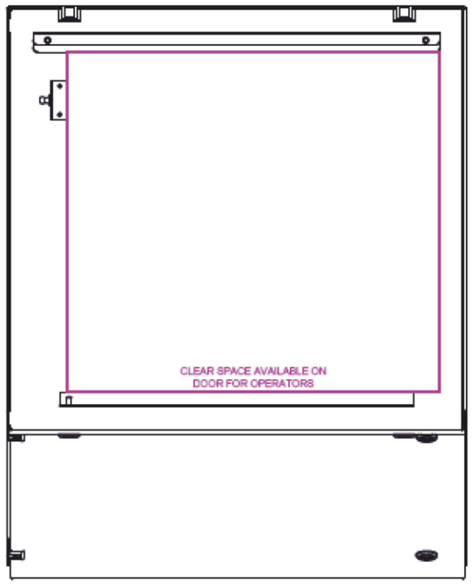
2. OUTER ENCLOSURE/PLINTH WILL ANCHOR TO CONCRETE PAD.

3. CREATE CUSTOM LID TO COVER OPERATORS. MUST BE STAINLESS STEEL, LOCKABLE AND HINGED. GAS STRUTS REQUIRED TO SUPPORT LID OPEN WHILE OPERATOR STATION IN USE.

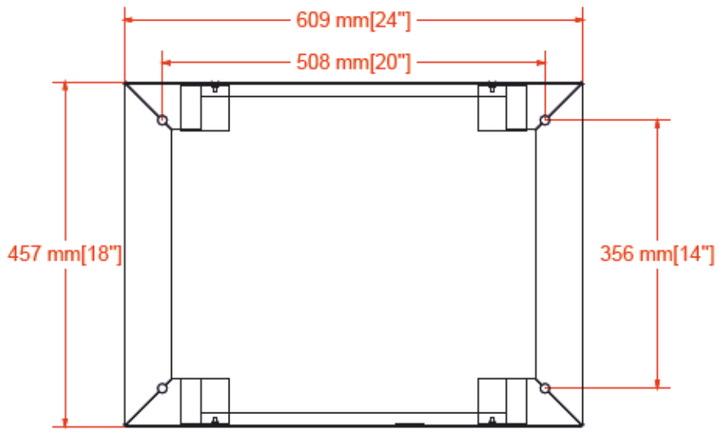
EXAMPLE OF CUSTOM COVER WITH GAS STRUTS



LEFT SIDE VIEW



TOP VIEW (ENCLOSURE)



BOTTOM VIEW (PLINTH)

HIGHER LEVEL: =F_LAYOUTS
MOUNTING LOCATION: +OS1

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CLIENT: PARKS CANADA
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ALTERNATE DWG. NO.

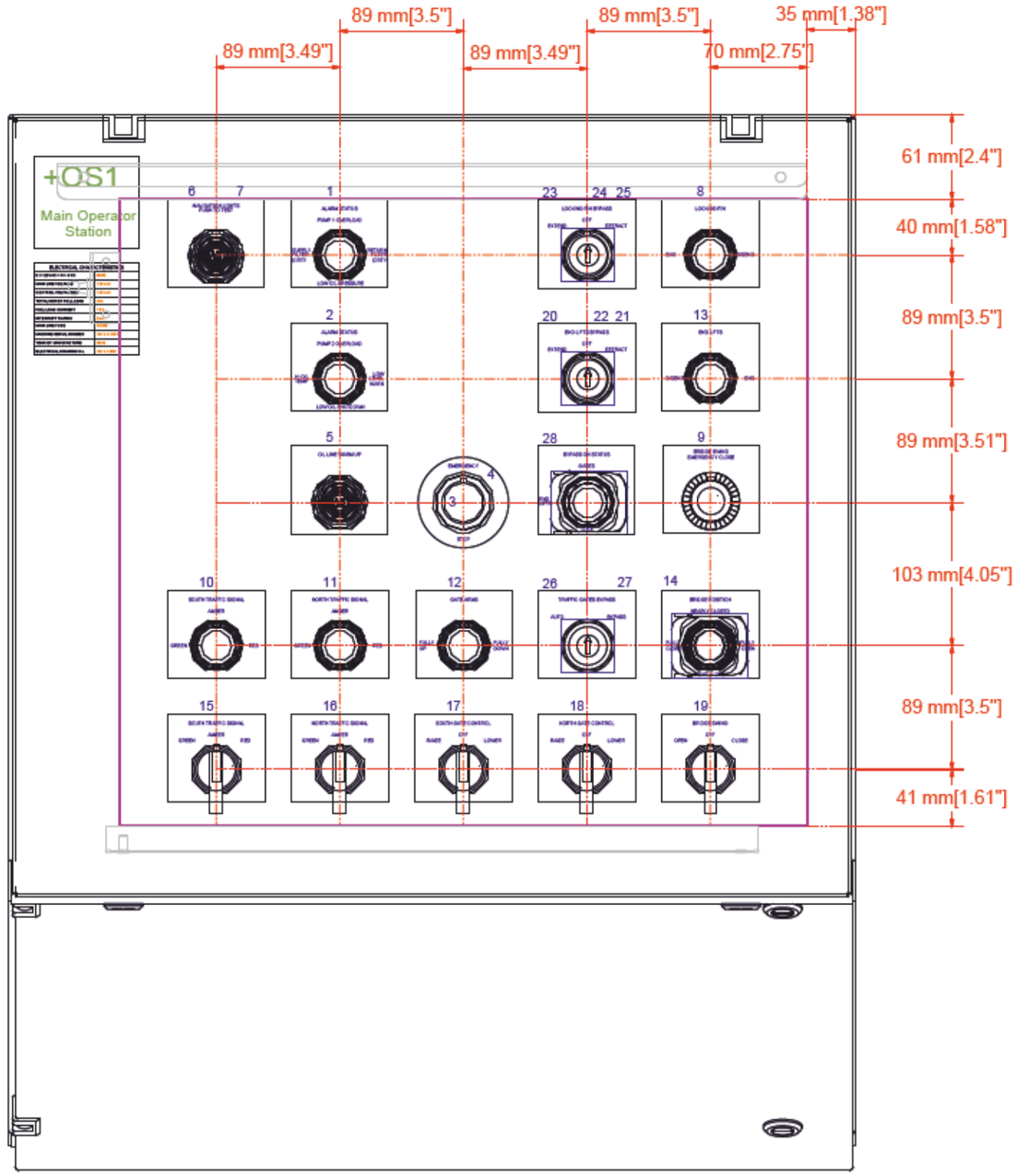
DATE: 2018-12-19
DRAWN BY: TCampbell
CHECKED

TITLE: TRENT-SEVERN WATERWAY
BOUNDARY ROAD #44 SWING BRIDGE
+OS1 STATION DETAIL

FULL PAGE ID: =F_LAYOUTS+OS1/F10
DRAWING NO.: 1911-1-003

PAGE: F10

-ENC_EXT_2



HIGHER LEVEL
=F LAYOUTS
MOUNTING LOCATION
+OS1

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DATE
2018-12-21

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TITLE
TRENT-SEVERN WATERWAY
BOUNDARY ROAD #44 SWING BRIDGE
+OS1 DEVICE LAYOUT

FULL PAGE ID
=F_LAYOUTS+OS1/F11

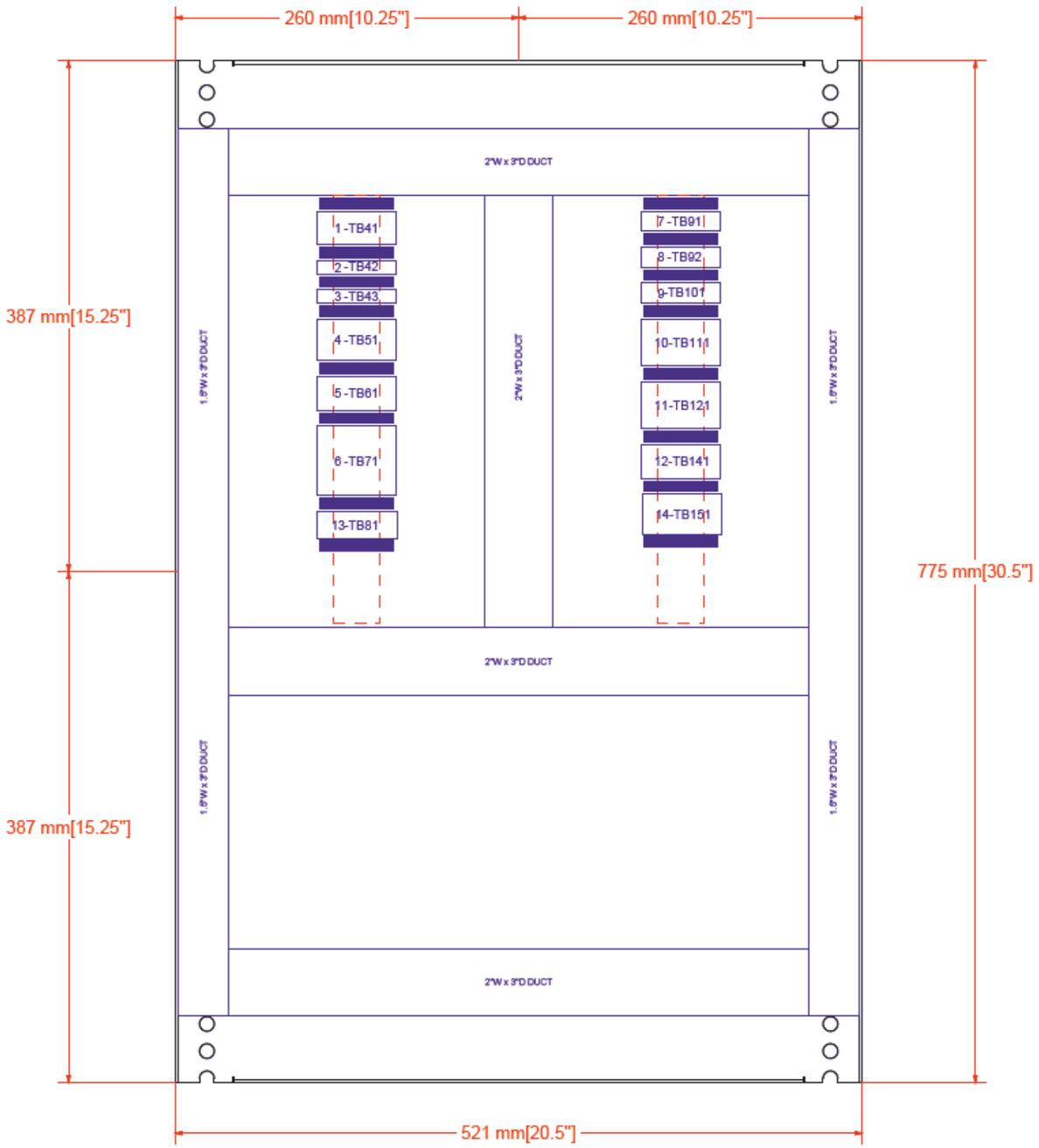
DRAWING NO.
1911-1-003

PAGE
F11

-ENC_INT_1

INNER PANEL
PART No. 2CWCP24
for more information visit
www.hammfg.com
Data subject to change without notice
Isometric drawing Not to Scale

LEGEND
- WIRING DUCT
- DIN RAIL
- END BRACKET



HIGHER LEVEL
=F_LAYOUTS
MOUNTING LOCATION
+OS1

REVISION: Revision D	CLIENT: PARKS CANADA PUBLIC WORKS AND GOVERNMENT SERVICES CANADA	DATE: 2019-01-07	TITLE: TRENT-SEVERN WATERWAY BOUNDARY ROAD #44 SWING BRIDGE +OS1 ENCLOSURE PANEL DETAIL	FULL PAGE ID: =F_LAYOUTS+OS1/F12	PAGE: F12
		DRAWN BY: TCampbell		DRAWING NO.: 1911-1-003	
NOTES	ALTERNATE DWG. NO.	CHECKED			

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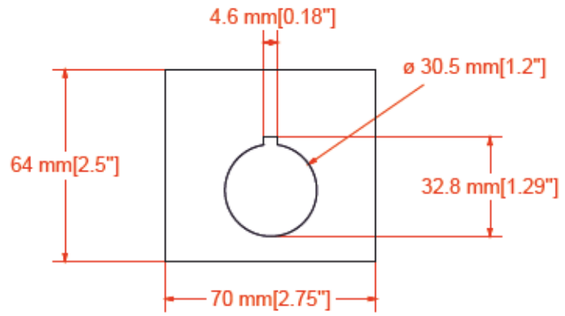
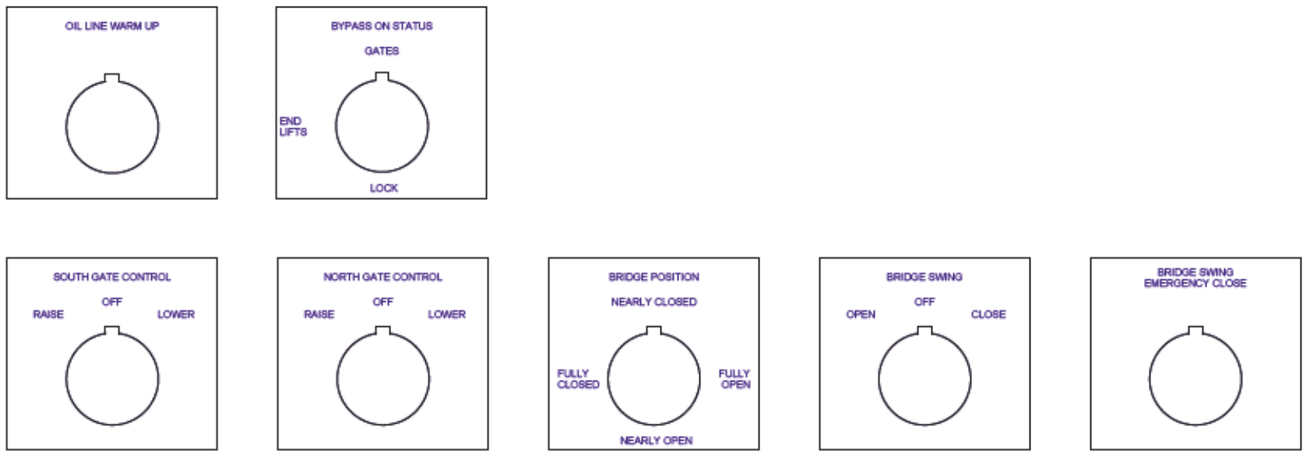
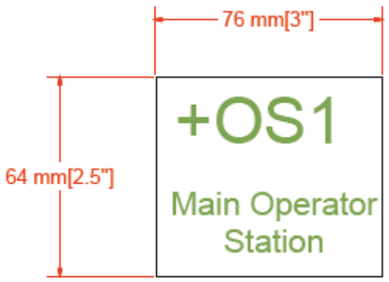
TOTAL PAGES: 83
2019-10-04 :LAST PAGE MODIFICATION DATE
F13 :NEXT PAGE
PREVIOUS PAGE: F11





DEVICE IDENTIFICATION LEGEND PLATES



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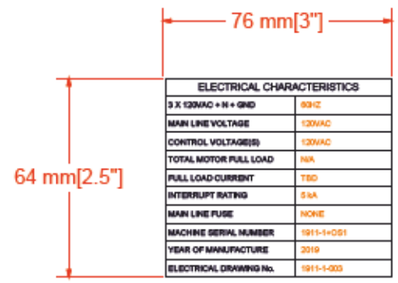

ELECTRICAL CHARACTERISTICS LEGEND PLATE

HIGHER LEVEL: =F_LAYOUTS
MOUNTING LOCATION: +OS1

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ALTERNATE DWG. NO.

DATE: 2019-01-07
DRAWN BY: TCampbell
CHECKED

TITLE: TRENT-SEVERN WATERWAY
BOUNDARY ROAD #44 SWING BRIDGE
+OS1 LEGEND PLATE DETAIL

FULL PAGE ID: =F_LAYOUTS+OS1/F13
DRAWING NO.: 1911-1-003

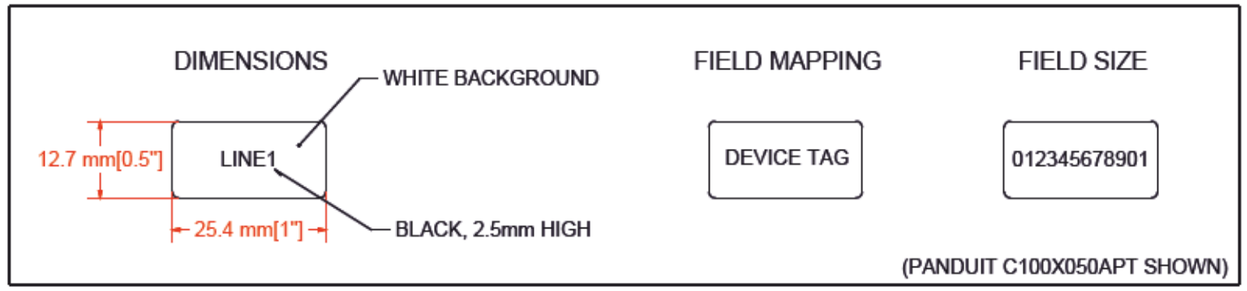
PAGE: F13

Device Tag List : Enclosure Backpanel Labels ie. relays, push buttons, disconnects, fuses etc...

CE_F03_000 Enclosure Backpanel Labels

Backpanel labels for enclosure

+OS1



ENC_EXT_1	PL101	S111	TB111
ENC_INT_1	PL111	S121	TB121
EPB42	PL121	TB41	TB141
EPB43	PL151	TB42	TB151
PB41	PLINTH_EXT_1	TB51	
PB141	S42	TB61	
PL41	S43	TB71	
PL42	S44	TB81	
PL51	S82	TB91	
PL71	S91	TB92	
PL72	S92	TB101	

HIGHER LEVEL =F LAYOUTS
MOUNTING LOCATION +OS1

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DATE 2019-09-05

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TITLE TRENT-SEVERN WATERWAY
BOUNDARY ROAD #44 SWING BRIDGE
Device Legend Plates

FULL PAGE ID =F_LAYOUTS+OS1/F14

DRAWING NO.

PAGE F14

PREVIOUS PAGE: F13

Enclosure legend Mounting Panel: +OS1-ENC_EXT_2

CE_F18_001

Item number	Device tag	Manufacturer	Order number	Description	Placement	Function text
1	-PL71	Allen-Bradley (IEC Data)	800TC-PCL416RRRR	30.5mm Type 4/13 Pilot Light, Xfmr, Push-to-Test, Incand., 4 light Cluster	=E_CONTROL+CP1/E7:11:BX	
2	-PL72	Allen-Bradley (IEC Data)	800TC-PCL416RRRR	30.5mm Type 4/13 Pilot Light, Xfmr, Push-to-Test, Incand., 4 light Cluster	=E_CONTROL+CP1/E7:35:BX	
3	-EPB42	Allen-Bradley (IEC Data)	800TC-FX6D2	30.5mm Type 4/13 2 Pos. PB-Non-Illum., Mushroom Hd (Push-Pull), Red, 1 NC,	=E_CONTROL+CP1/E4:08:BD	EMERGENCY
4	-EPB42	Allen-Bradley (IEC Data)	800T-X646EM	800T Legend Plate, Emerg. Stop IEC Ring	=E_CONTROL+CP1/E4:08:BD	EMERGENCY
5	-PB41	Allen-Bradley (IEC Data)	800TC-A2A	30.5mm Type 4/13 Mom. Contact PB, Non-Illum., Black, Flush Hd, 1 NO-1 NC,	=E_CONTROL+CP1/E4:11:BD	OIL LINE WARMUP
6	-PB141	Allen-Bradley (IEC Data)	800TC-A9A	30.5mm Type 4/13 Mom. Contact PB, Non-Illum., Yellow, Flush Hd, 1 NO-1 NC with	=E_CONTROL+CP1/E14:25:BF	NAVIGATION LIGHTS
7	-PB141	Allen-Bradley (IEC Data)	800TC-XA	Contact Block, Shallow Block, 1 N.O. - 1 N.C. with guards on terminals	=E_CONTROL+CP1/E14:25:BF	NAVIGATION LIGHTS
8	-PL42	Allen-Bradley (IEC Data)	800TC-PCL216	30.5mm Type 4/13 Pilot Light, Xfmr, Push-to-Test, Incand., 2 light Cluster	=E_CONTROL+CP1/E6:39:CB	
9	-EPB43	Allen-Bradley (IEC Data)	800T-FXQH2RA1	30.5mm Type 4/13 2 Pos. PB-Illum., Push-Pull, Red, Mushrm Hd, LED, 12...130V	=E_CONTROL+CP1/E4:08:AZ	EMERGENCY
10	-PL111	Allen-Bradley (IEC Data)	800TC-PCL316GAXR	30.5mm Type 4/13 Pilot Light, Xfmr, Push-to-Test, Incand., 3 light Cluster	=E_CONTROL+CP1/E11:49:CA	SOUTH TRAFFIC LIGHTS
11	-PL121	Allen-Bradley (IEC Data)	800TC-PCL316GAXR	30.5mm Type 4/13 Pilot Light, Xfmr, Push-to-Test, Incand., 3 light Cluster	=E_CONTROL+CP1/E12:49:CA	SOUTH TRAFFIC LIGHTS
12	-PL101	Allen-Bradley (IEC Data)	800TC-PCL216	30.5mm Type 4/13 Pilot Light, Xfmr, Push-to-Test, Incand., 2 light Cluster	=E_CONTROL+CP1/E10:48:CB	
13	-PL41	Allen-Bradley (IEC Data)	800TC-PCL216	30.5mm Type 4/13 Pilot Light, Xfmr, Push-to-Test, Incand., 2 light Cluster	=E_CONTROL+CP1/E6:28:CB	
14	-PL51	Allen-Bradley (IEC Data)	800TC-PCL416RAAG	30.5mm Type 4/13 Pilot Light, Xfmr, Push-to-Test, Incand., 4 light Cluster	=E_CONTROL+CP1/E5:15:BX	
15	-S111	Allen-Bradley (IEC Data)	800TC-J17A	30.5mm Type 4/13 3 Pos. Sel. Switch-Non-Illum., White, Knob Lever, Operator	=E_CONTROL+CP1/E11:10:AN	SOUTH TRAFFIC SIGNAL
16	-S121	Allen-Bradley (IEC Data)	800TC-J17A	30.5mm Type 4/13 3 Pos. Sel. Switch-Non-Illum., White, Knob Lever, Operator	=E_CONTROL+CP1/E12:10:AN	NORTH TRAFFIC SIGNAL
17	-S91	Allen-Bradley (IEC Data)	800TC-J17A	30.5mm Type 4/13 3 Pos. Sel. Switch-Non-Illum., White, Knob Lever, Operator	=E_CONTROL+CP1/E9:51:AF	SOUTH GATE CONTROL
18	-S92	Allen-Bradley (IEC Data)	800TC-J17A	30.5mm Type 4/13 3 Pos. Sel. Switch-Non-Illum., White, Knob Lever, Operator	=E_CONTROL+CP1/E9:51:BS	NORTH GATE CONTROL
19	-S42	Allen-Bradley (IEC Data)	800TC-J17A	30.5mm Type 4/13 3 Pos. Sel. Switch-Non-Illum., White, Knob Lever, Operator	=E_CONTROL+CP1/E4:20:AR	BRIDGE SWING
20	-S43	Allen-Bradley (IEC Data)	800T-J631A	30.5mm Type 4/13 3 Pos. Cyl. Lock Sel. Switch, Spring Rtn fr/ Both, Lock Center,	=E_CONTROL+CP1/E4:20:AF	LIFT BYPASS
21	-S43	Allen-Bradley (NFPA only)	800TC-XA2	Contact Block, Shallow Block, 2 N.O. - 2 N.C.L.B. with guard	=E_CONTROL+CP1/E4:20:AF	LIFT BYPASS
22	-S43	Allen-Bradley (NFPA only)	800TC-XA2	Contact Block, Shallow Block, 2 N.O. - 2 N.C.L.B. with guard	=E_CONTROL+CP1/E4:20:AF	LIFT BYPASS
23	-S44	Allen-Bradley (IEC Data)	800T-J631A	30.5mm Type 4/13 3 Pos. Cyl. Lock Sel. Switch, Spring Rtn fr/ Both, Lock Center,	=E_CONTROL+CP1/E4:20:AL	LOCK BYPASS
24	-S44				=E_CONTROL+CP1/E4:20:AL	LOCK BYPASS
25	-S44				=E_CONTROL+CP1/E4:20:AL	LOCK BYPASS
26	-S82	Allen-Bradley (NFPA only)	800T-H31A	30.5mm Type 4/13 2 Pos. Cylinder Lock Sel. Switch, Maint., Lock-Left, Std. Key,	=E_CONTROL+CP1/E8:09:AV	GATE BYPASS
27	-S82	Allen-Bradley (NFPA only)	800TC-XA2	Contact Block, Shallow Block, 2 N.O. - 2 N.C.L.B. with guard	=E_CONTROL+CP1/E8:09:AV	GATE BYPASS
28	-PL151	Allen-Bradley (IEC Data)	800TC-PCL416RRRR	30.5mm Type 4/13 Pilot Light, Xfmr, Push-to-Test, Incand., 4 light Cluster	=E_CONTROL+CP1/E15:39:BP	

Terminal strip layouts and parts are detailed on the terminal line up diagrams.

HIGHER LEVEL =F_LAYOUTS

MOUNTING LOCATION +OS1

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ALTERNATE DWG. NO.

DATE 2019-10-04

DRAWN BY jrobinson

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TITLE TRENT-SEVERN WATERWAY
BOUNDARY ROAD #44 SWING BRIDGE
Enclosure legend : +OS1-PL71 - +OS1-PL151

FULL PAGE ID =F_LAYOUTS+OS1/F15

DRAWING NO.

PAGE F15

Enclosure legend Mounting Panel: +OS1-ENC_INT_1

CE_F18_001

Item number	Device tag	Manufacturer	Order number	Description	Placement	Function text
1	-TB41				=F_LAYOUTS/F12	
2	-TB42				=F_LAYOUTS/F12	
3	-TB43				=F_LAYOUTS/F12	
4	-TB51				=F_LAYOUTS/F12	
5	-TB61				=F_LAYOUTS/F12	
6	-TB71				=F_LAYOUTS/F12	
7	-TB91				=F_LAYOUTS/F12	
8	-TB92				=F_LAYOUTS/F12	
9	-TB101				=F_LAYOUTS/F12	
10	-TB111				=F_LAYOUTS/F12	
11	-TB121				=F_LAYOUTS/F12	
12	-TB141				=F_LAYOUTS/F12	
13	-TB81				=F_LAYOUTS/F12	
14	-TB151				=F_LAYOUTS/F12	

Terminal strip layouts and parts are detailed on the terminal line up diagrams.

HIGHER LEVEL =F_LAYOUTS

MOUNTING LOCATION +OS1

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DATE 2019-09-05

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TITLE TRENT-SEVERN WATERWAY
BOUNDARY ROAD #44 SWING BRIDGE
Enclosure legend : +OS1-TB41 - +OS1-TB151

FULL PAGE ID =F_LAYOUTS+OS1/F16

DRAWING NO.

PAGE F16

Parts list ; Project Bill of Material, by Device Tag

CE_F01_002

Device tag Schematic Reference	Qty	Unit	Description	Order number	Manufacturer	Device Description
-ENC_EXT_1 /F8	1		Formed 14 gauge steel bodies with 14 gauge steel door and lid. Also offered with formed 14 gauge 304 stainless steel bodies with 14 gauge 304 stainless steel door and lid. Smooth, continuously welded seams without knockouts or holes. Body stiffeners are provided where required for	2CSC2024	Hammond Manufacturing	
-ENC_EXT_1 /F8	4		For use with EN4SD /S2000 Series Enclosures. Padlock adaptor fits directly over the slotted quarter turn preventing access. 14 gauge 304 stainless steel. Stainless steel mounting hardware provided Once installed, the bolts cannot be removed without the door open. Easy installed in the	EPA	Hammond Manufacturing	
-ENC_INT_1 /F12	16	pcs	Accessories, End bracket, 100 pcs per package	1061200000	Weidmüller	
-ENC_INT_1 /F12	700	mm	Mounting rail, TS 35, TS 35 x 7.5, with slot, Steel, galvanized, chromium-plated, 2000 mm per length	0514500000	Weidmüller	
-ENC_INT_1 /F12	1	ft	1.5"(38mm) x 3" (80mm) Narrow Finger Design Wire Duct, PVC, Light Gray. Cover sold separate.	F1.5X3LG6	Panduit	
-ENC_INT_1 /F12	1	ft	Duct cover, 1.5" W x 6' length, PVC, light gray.	C1.5LG6	Panduit	
-ENC_INT_1 /F12	1	ft	Panduct® type F narrow slot wiring duct, 2" W x 3" H, 6' length, PVC, light gray.	F2X3LG6	Panduit	
-ENC_INT_1 /F12	1	ft	Duct cover, 2" W x 6' length, PVC, light gray.	C2LG6	Panduit	
-ENC_INT_1 /F12	1		Fits 24" wide consoles 12 gauge steel panels. Available in 4 widths. Mounts onto panel mounting studs in consolet. Finished in white.	2CWCP24	Hammond Manufacturing	
-PLINTH_EXT_1 /F9	1		Features removable front and rear panels for easy access to bottom for cabling or transport by forklift. For cable access, features 3 double knockouts on each end. Available in 4" and 8" heights. Available in 24", 36", 48" and 60" widths. Maintains NEMA rating of system. Formed 14 gauge	2CSP82418	Hammond Manufacturing	

-ENC_EXT_1

ENCLOSURE

PART No. EJ14126

for more information visit

www.hammfg.com

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PADLOCK ADAPTER

PART No. EJPA

for more information visit

www.hammfg.com

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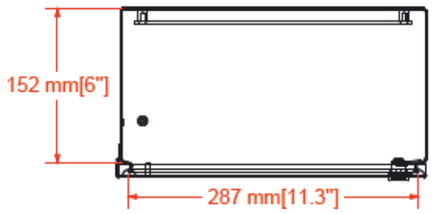
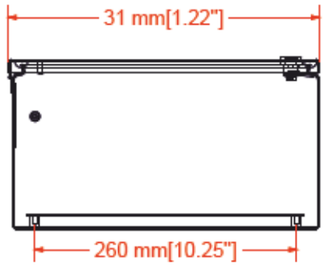
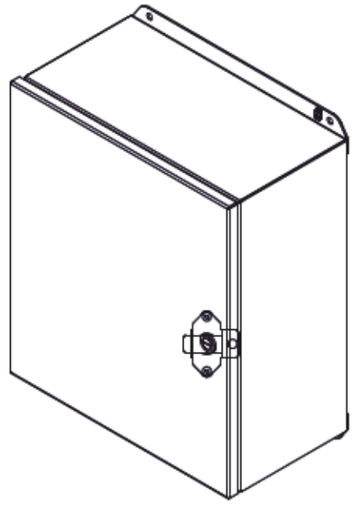
Isometric drawing Not to Scale



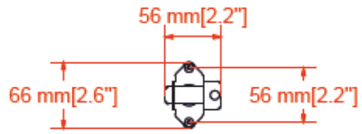
TOP VIEW



BOTTOM VIEW



ISOMETRIC VIEWS



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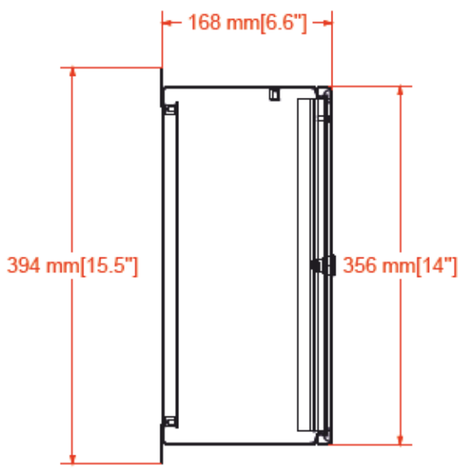
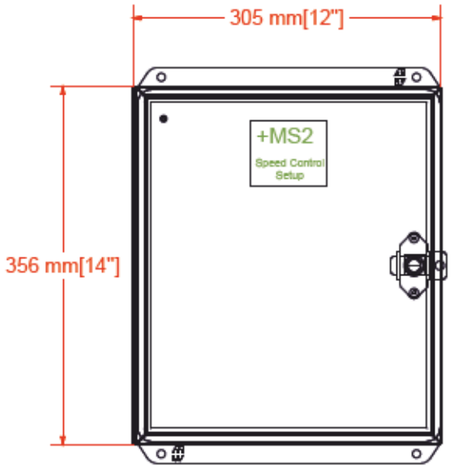
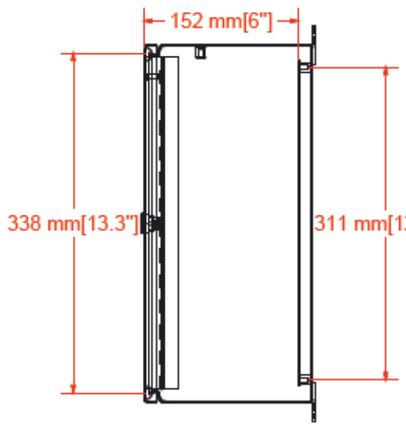


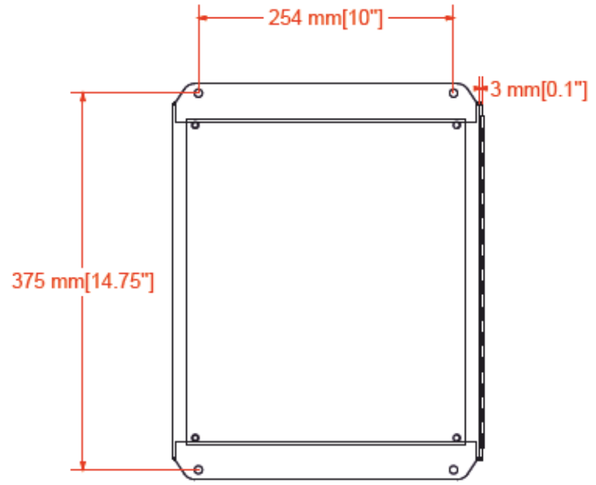
SIDE VIEW



FRONT VIEW



SIDE VIEW



REAR VIEW

HIGHER LEVEL =F_LAYOUTS

MOUNTING LOCATION +MS2

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ALTERNATE DWG. NO.

DATE 2019-01-14

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TITLE TRENT-SEVERN WATERWAY
BOUNDARY ROAD #44 SWING BRIDGE
+MS2 ENCLOSURE DETAIL

FULL PAGE ID =F_LAYOUTS+MS2/F20

DRAWING NO. 1911-1-003

PAGE F20

-JB_EXT_1

PART No. 1414SCI

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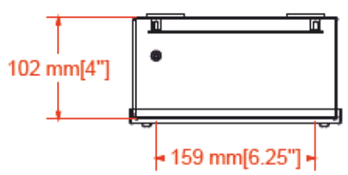
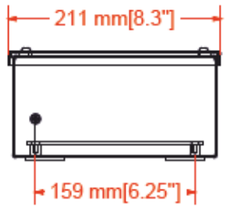
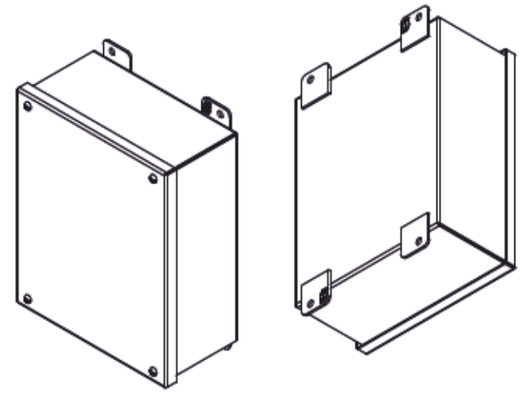


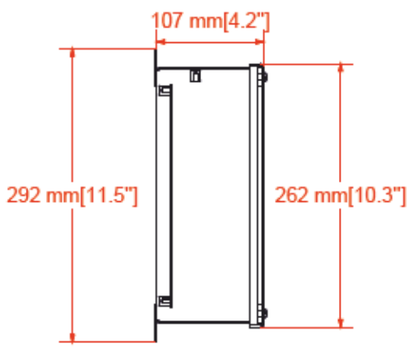
TOP VIEW



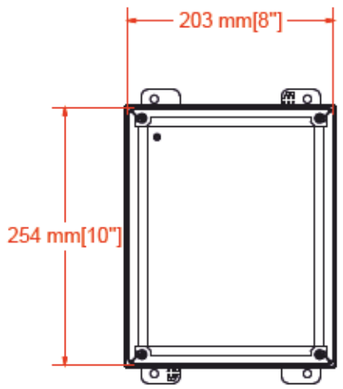
BOTTOM VIEW



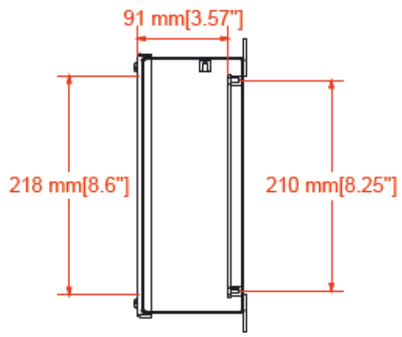
ISOMETRIC VIEWS



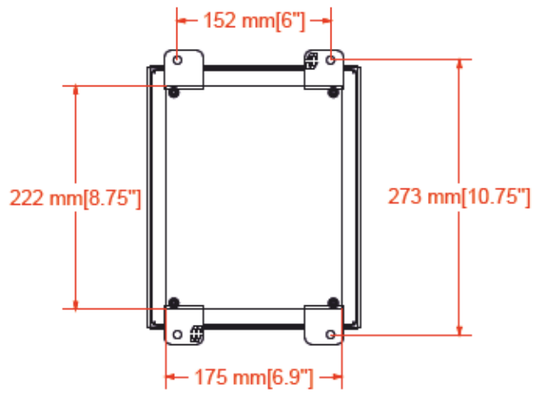
SIDE VIEW



FRONT VIEW



SIDE VIEW



REAR VIEW

HIGHER LEVEL: =F_LAYOUTS
MOUNTING LOCATION: +MS2

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ALTERNATE DWG. NO.

DATE: 2019-01-04
DRAWN BY: TCampbell
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TITLE: TRENT-SEVERN WATERWAY
BOUNDARY ROAD #44 SWING BRIDGE
+MS2 JUNCTION BOX DETAIL

FULL PAGE ID: =F_LAYOUTS+MS2/F21
DRAWING NO.: 1911-1-003

PAGE: F21

PREVIOUS PAGE: F20

TOTAL PAGES: 83

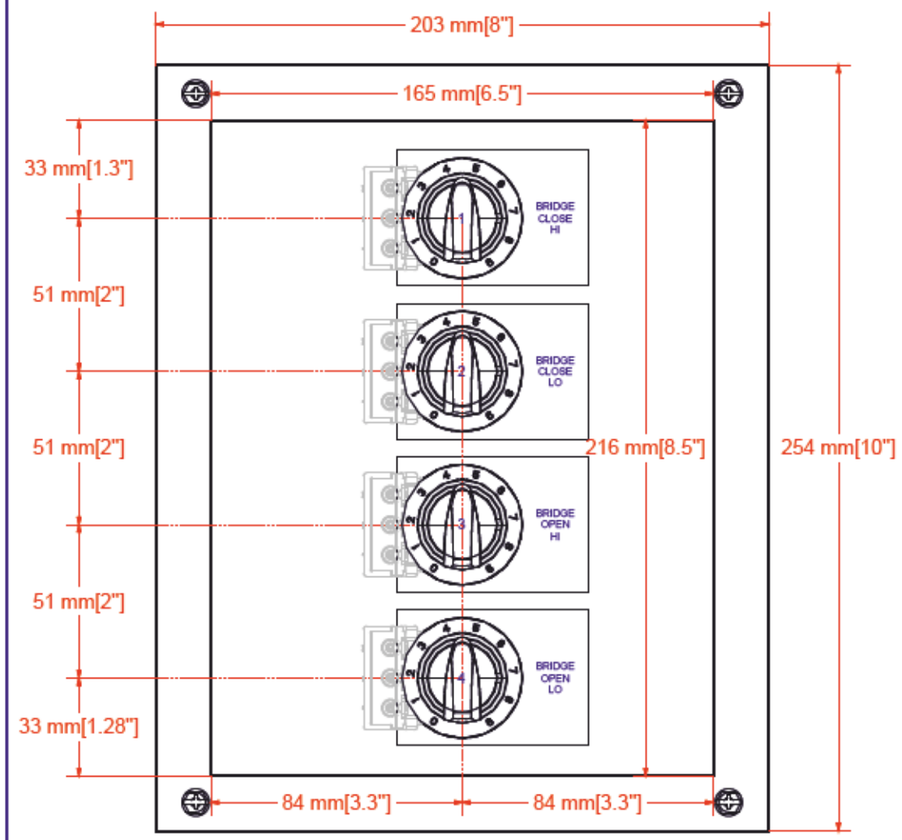
2019-10-04 :LAST PAGE MODIFICATION DATE

F22 :NEXT PAGE

LEGEND

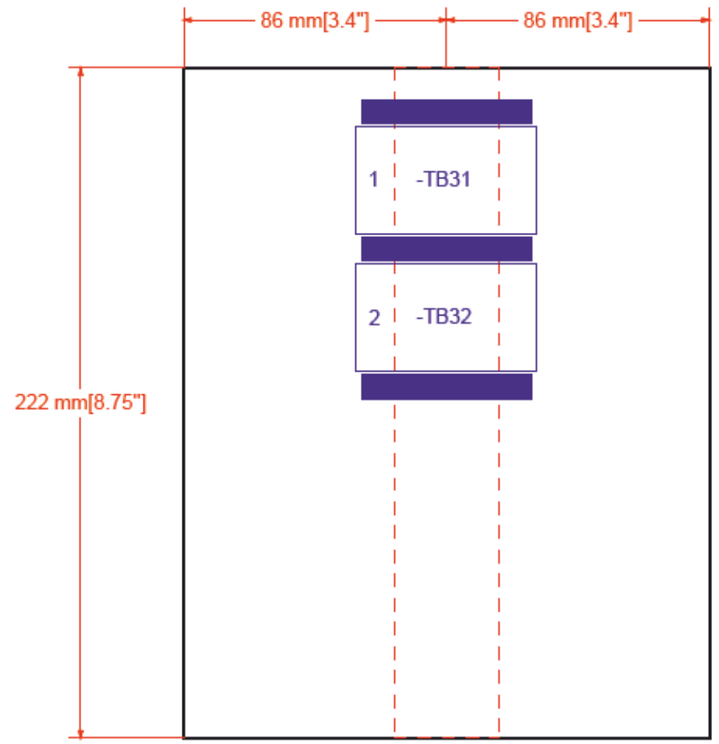
WIRING DUCT | DIN RAIL | END BRACKET

-JB_EXT_2



COVER PANEL DETAIL

-JB_INT_1



INNER PANEL DETAIL

HIGHER LEVEL =F_LAYOUTS
MOUNTING LOCATION +MS2

REVISION: Revision D	CLIENT: PARKS CANADA, PUBLIC WORKS AND GOVERNMENT SERVICES CANADA	DATE: 2019-01-04	TITLE: TRENT-SEVERN WATERWAY, BOUNDARY ROAD #44 SWING BRIDGE, +MS2 DEVICE LAYOUT	FULL PAGE ID: =F_LAYOUTS+MS2/F22
		DRAWN BY: TCampbell		DRAWING NO.: 1911-1-003
	ALTERNATE DWG. NO.	CHECKED		PAGE: F22

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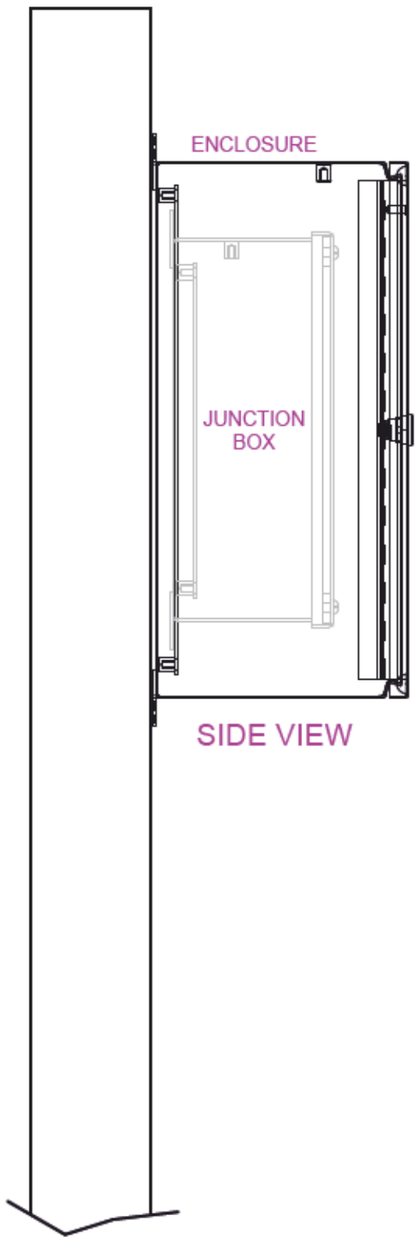
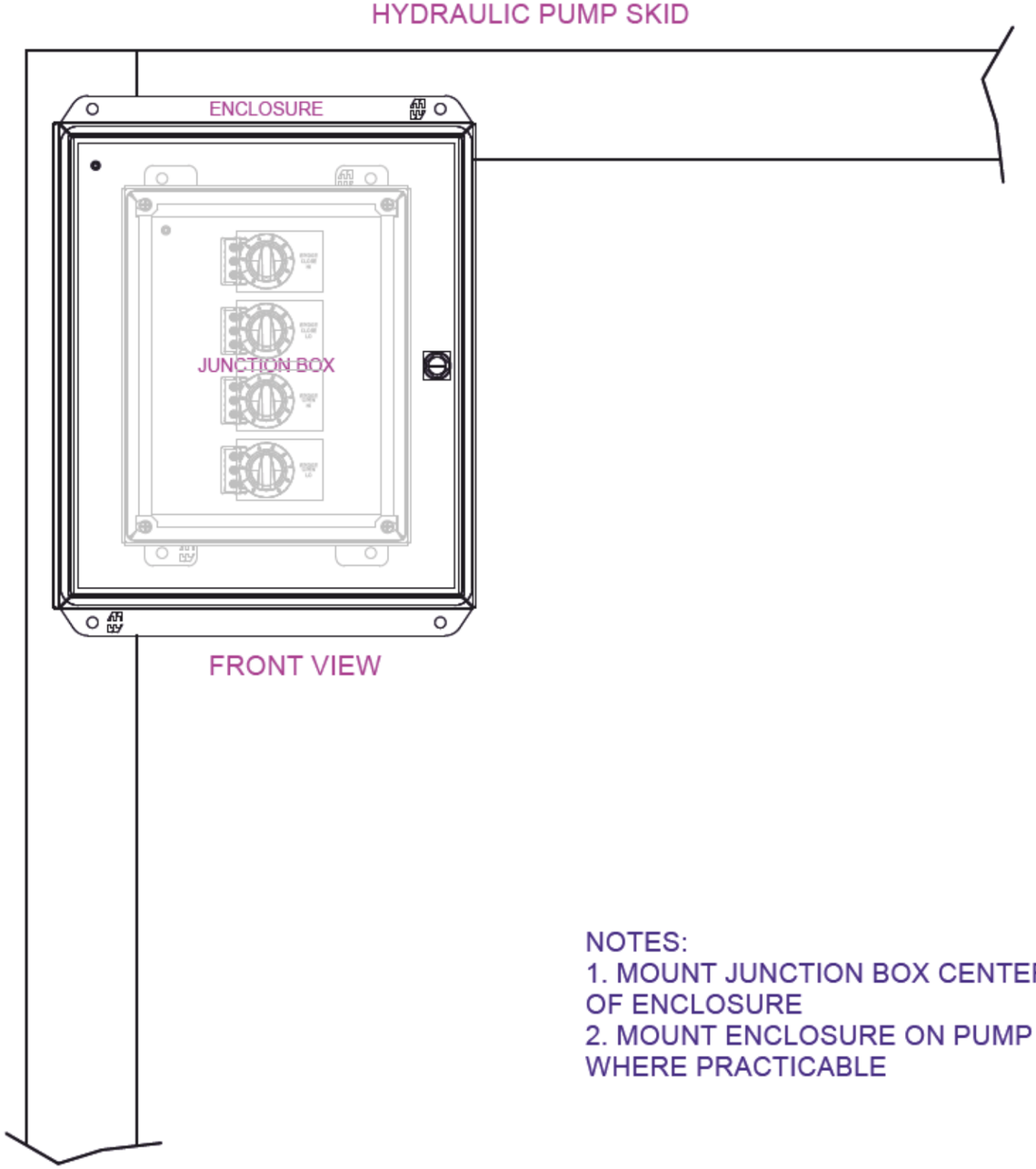


SIDE VIEW

HYDRAULIC PUMP SKID



FRONT VIEW

NOTES:
1. MOUNT JUNCTION BOX CENTERED INSIDE OF ENCLOSURE
2. MOUNT ENCLOSURE ON PUMP SKID WHERE PRACTICABLE

HIGHER LEVEL
=F_LAYOUTS
MOUNTING LOCATION
+MS2

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TCampbell

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TITLE
TRENT-SEVERN WATERWAY
BOUNDARY ROAD #44 SWING BRIDGE
+MS2 ENCLOSURE LAYOUT

FULL PAGE ID
=F_LAYOUTS+MS2/F23

DRAWING NO.
1911-1-003

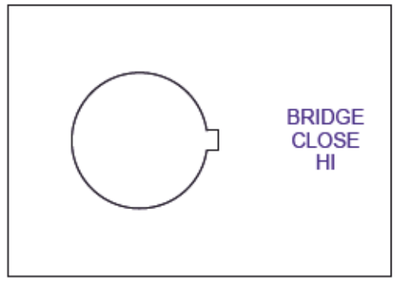
PAGE
F23

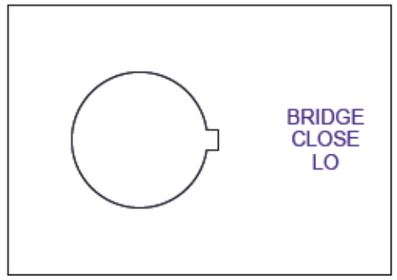
PREVIOUS PAGE: F22

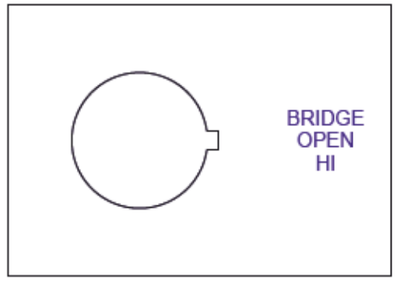
TOTAL PAGES: 83

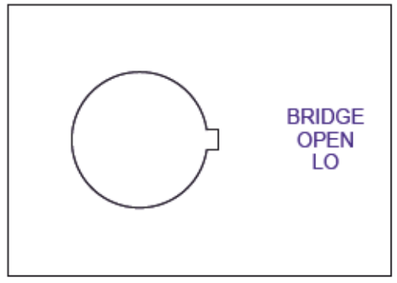
2019-10-04 :LAST PAGE MODIFICATION DATE

F24 :NEXT PAGE

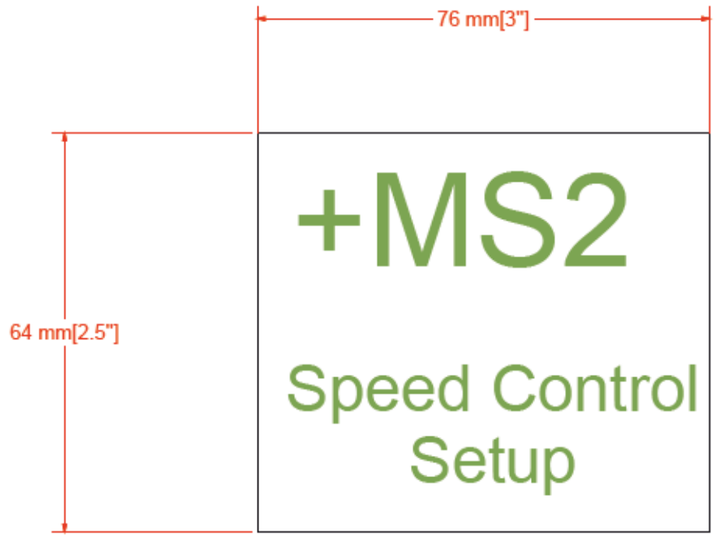




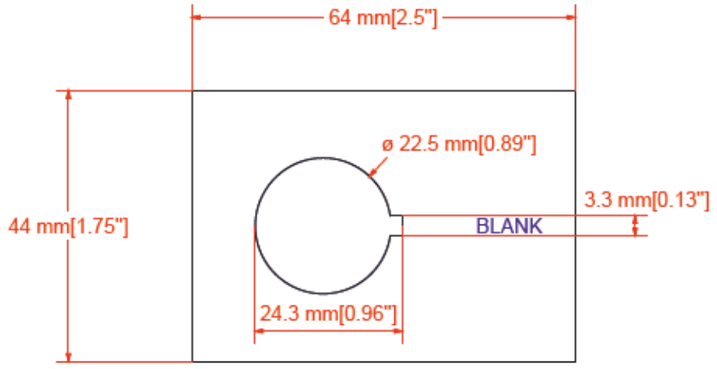




DEVICE IDENTIFICATION LEGEND PLATES



ENCLOSURE IDENTIFICATION LEGEND PLATE



HIGHER LEVEL
=F_LAYOUTS
MOUNTING LOCATION
+MS2

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TITLE
TRENT-SEVERN WATERWAY
BOUNDARY ROAD #44 SWING BRIDGE
+MS2 LEGEND DETAILS

FULL PAGE ID
=F_LAYOUTS+MS2/F24

DRAWING NO.
1911-1-003

PAGE
F24

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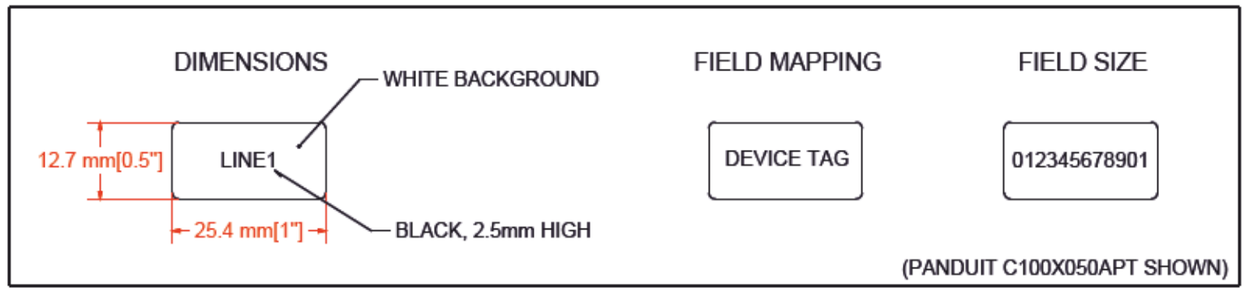
NOTES

Device Tag List : Enclosure Backpanel Labels ie. relays, push buttons, disconnects, fuses etc...

CE_F03_000 Enclosure Backpanel Labels

Backpanel labels for enclosure

+MS2



CLS-HI	TB31
CLS-LO	TB31
ENC_EXT_1	TB31
JB_EXT_1	TB32
JB_INT_1	TB32
OPN-HI	TB32
OPN-LO	TB32
TB31	TB32
TB31	TB32
TB31	TB32
TB31	

HIGHER LEVEL =F_LAYOUTS

MOUNTING LOCATION +MS2

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DATE 2019-01-16

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TITLE TRENT-SEVERN WATERWAY
BOUNDARY ROAD #44 SWING BRIDGE
Device Legend Plates

FULL PAGE ID =F_LAYOUTS+MS2/F25

DRAWING NO.

PAGE F25

Enclosure legend Mounting Panel: +MS2-JB_EXT_2

CE_F18_001

Item number	Device tag	Manufacturer	Order number	Description	Placement	Function text
1	-CLS-HI	Allen-Bradley (IEC Data)	800FP-POT6	Plastic, Single Turn Potentiometer, 10000 Ohm, , Standard Pack (Qty. 1)	=E_CONTROL+CP1/E3:48:BK	
2	-CLS-LO	Allen-Bradley (IEC Data)	800FP-POT6	Plastic, Single Turn Potentiometer, 10000 Ohm, , Standard Pack (Qty. 1)	=E_CONTROL+CP1/E3:45:BF	
3	-OPN-HI	Allen-Bradley (IEC Data)	800FP-POT6	Plastic, Single Turn Potentiometer, 10000 Ohm, , Standard Pack (Qty. 1)	=E_CONTROL+CP1/E3:19:BK	
4	-OPN-LO	Allen-Bradley (IEC Data)	800FP-POT6	Plastic, Single Turn Potentiometer, 10000 Ohm, , Standard Pack (Qty. 1)	=E_CONTROL+CP1/E3:16:BF	

Terminal strip layouts and parts are detailed on the terminal line up diagrams.

HIGHER LEVEL =F_LAYOUTS

MOUNTING LOCATION +MS2

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DATE 2019-01-16

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TITLE TRENT-SEVERN WATERWAY
BOUNDARY ROAD #44 SWING BRIDGE
Enclosure legend : +MS2-CLS-HI - +MS2-OPN-LO

FULL PAGE ID =F_LAYOUTS+MS2/F26

DRAWING NO.

PAGE F26

Enclosure legend Mounting Panel: +MS2-JB_INT_1

CE_F18_001

Item number	Device tag	Manufacturer	Order number	Description	Placement	Function text
1	-TB31				=F_LAYOUTS/F22	
2	-TB32				=F_LAYOUTS/F22	

Terminal strip layouts and parts are detailed on the terminal line up diagrams.

HIGHER LEVEL
=F_LAYOUTS
MOUNTING LOCATION
+MS2

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TITLE
TRENT-SEVERN WATERWAY
BOUNDARY ROAD #44 SWING BRIDGE
Enclosure legend : +MS2-TB31 - +MS2-TB32

FULL PAGE ID
=F_LAYOUTS+MS2/F27

DRAWING NO.

PAGE
F27

PREVIOUS PAGE: F26

TOTAL PAGES: 83

2019-10-04 :LAST PAGE MODIFICATION DATE

F28 :NEXT PAGE

Parts list ; Project Bill of Material, by Device Tag

CE_F01_002

Device tag Schematic Reference	Qty	Unit	Description	Order number	Manufacturer	Device Description
-ENC_EXT_1 /F20	1		Body and cover are formed from 16 gauge steel. Smooth, continuously welded seams without knockouts, cutouts, or holes. Formed lip on enclosure to exclude flowing liquids and contaminants. 14 gauge welded brackets provide for enclosure mounting. Continuously hinged cover has 304	EJ14126	Hammond Manufacturing	
-ENC_EXT_1 /F20	1		Padlock adapter fits directly over the slotted quarter turn preventing access. 2mm thick 14 gauge stainless steel. Stainless steel mounting hardware provided. Once installed, the bolts cannot be removed without the door open. Easy installed in the field. Padlock not included. Maintains	EJPA	Hammond Manufacturing	
-JB_EXT_1 /F21	1		Body formed from 16 gauge or 14 gauge steel. Covers are formed from 14 gauge steel. Smooth, continuously welded seams without knockouts, cutouts or holes. Welded brackets provide for enclosure mounting. Cover is secured with captive, plated steel screws, threaded into sealed	1414SCI	Hammond Manufacturing	
-JB_INT_1 /F22	3	pcs	Accessories, End bracket, 100 pcs per package	1061200000	Weidmüller	
-JB_INT_1 /F22	250	mm	Mounting rail, TS 35, TS 35 x 7.5, with slot, Steel, galvanized, chromium-plated, 2000 mm per length	0514500000	Weidmüller	

HIGHER LEVEL
=F LAYOUTS
MOUNTING LOCATION
+MS2

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DATE 2019-04-24

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TITLE
TRENT-SEVERN WATERWAY
BOUNDARY ROAD #44 SWING BRIDGE
Mounting Panel Hardware

FULL PAGE ID
=F_LAYOUTS+MS2/F28

DRAWING NO.

PAGE
F28

-JB_EXT_1

ENCLOSURE

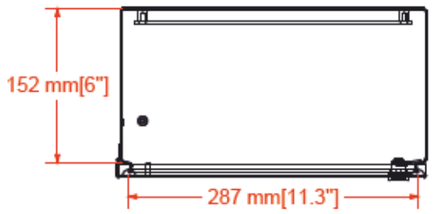
PART No. EJ14126SS

for more information visit
www.hammfg.com

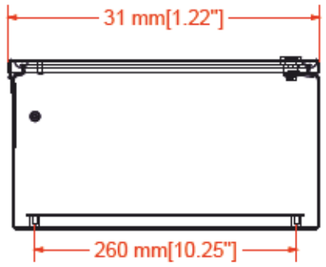
Data subject to change without notice

Isometric drawing Not to Scale

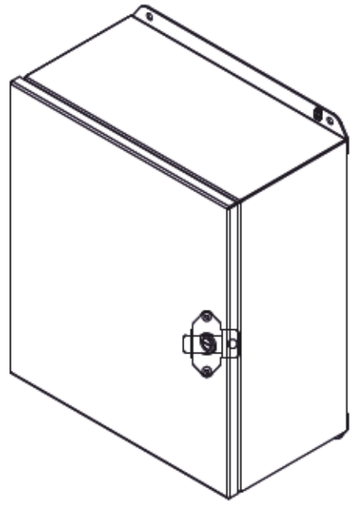
PADLOCK ADAPTER
PART No. EJPA
for more information visit
www.hammfg.com
Data subject to change without notice
Isometric drawing Not to Scale



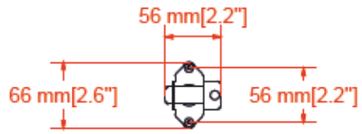
TOP VIEW



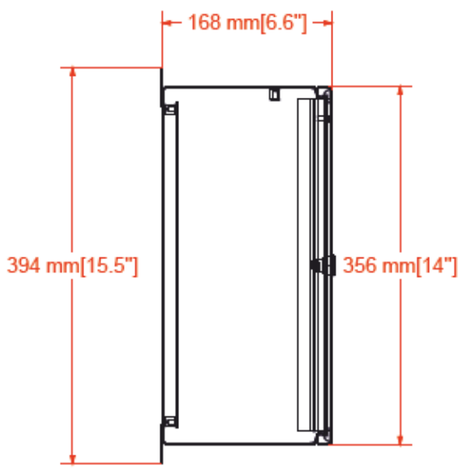
BOTTOM VIEW



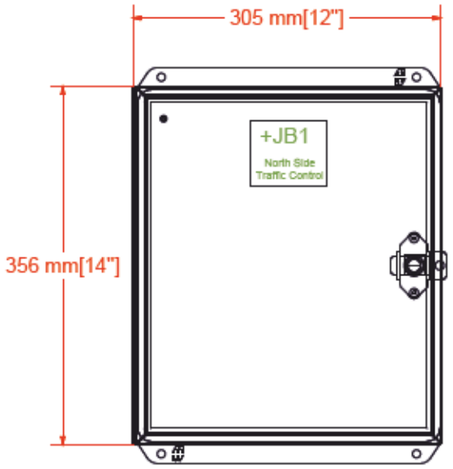
ISOMETRIC VIEWS



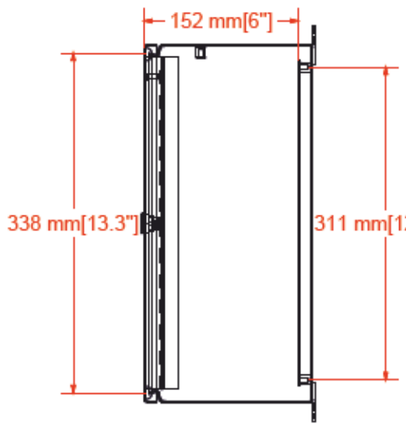
FRONT VIEW



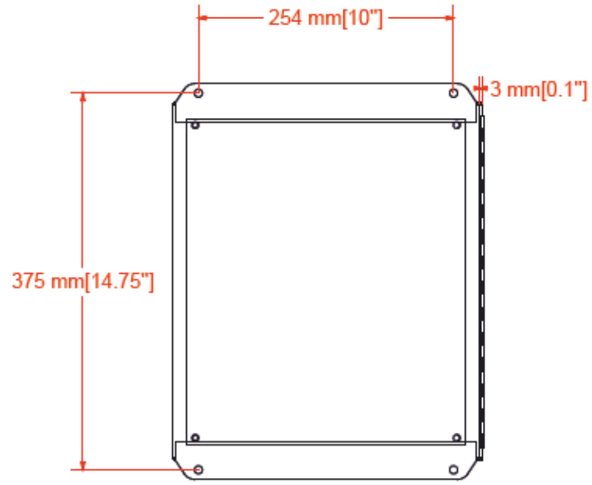
SIDE VIEW



FRONT VIEW



SIDE VIEW



REAR VIEW

HIGHER LEVEL
=F_LAYOUTS
MOUNTING LOCATION
+JB1

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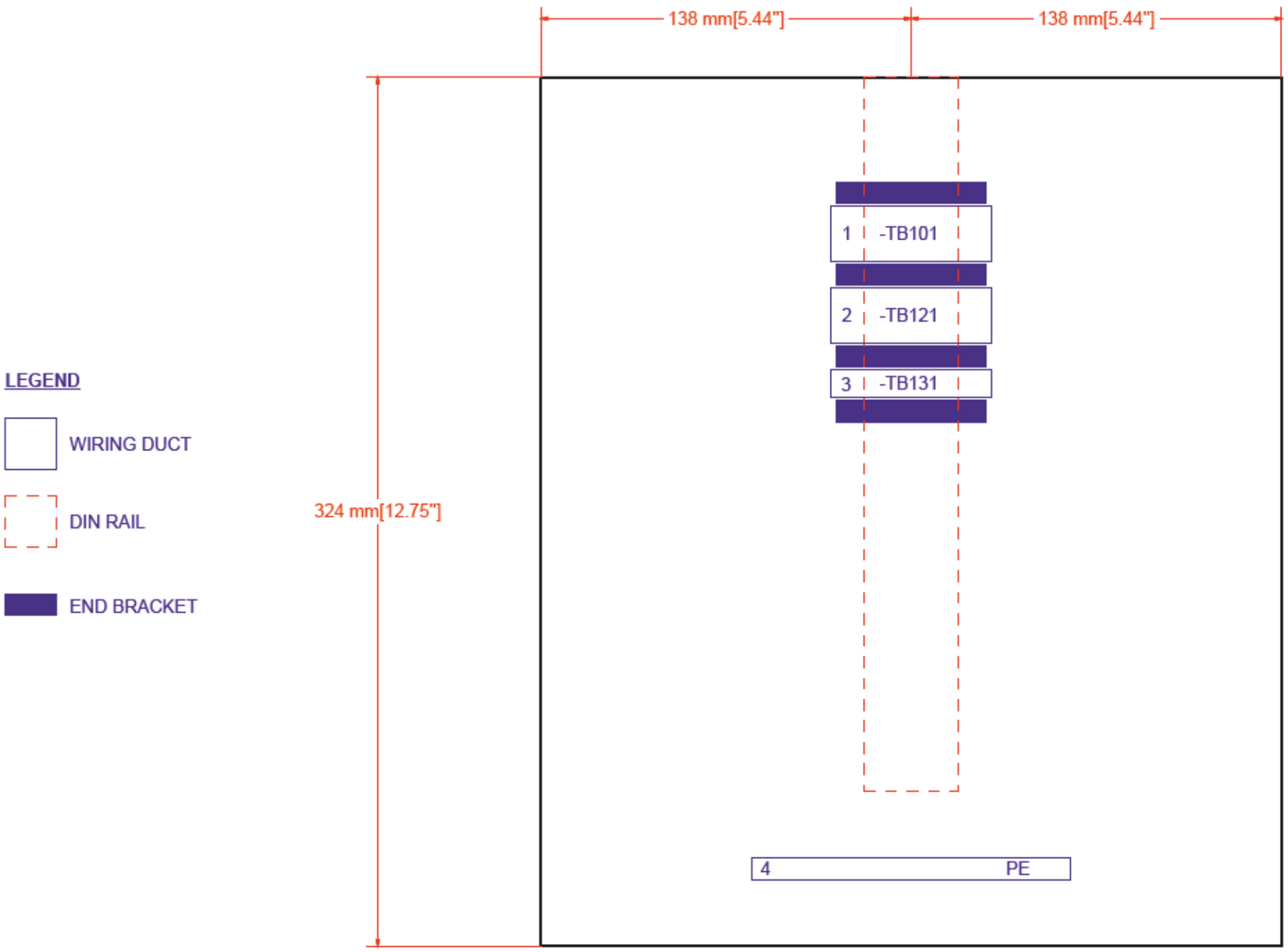
TITLE
TRENT-SEVERN WATERWAY
BOUNDARY ROAD #44 SWING BRIDGE
+JB1 JUNCTION BOX DETAIL

FULL PAGE ID
=F_LAYOUTS+JB1/F29

DRAWING NO.
1911-1-003

PAGE
F29

-JB_INT_1



LEGEND

- WIRING DUCT
- DIN RAIL
- END BRACKET

ENCLOSURE IDENTIFICATION
LEGEND PLATE

INNER PANEL DETAIL

HIGHER LEVEL: =F_LAYOUTS
MOUNTING LOCATION: +JB1

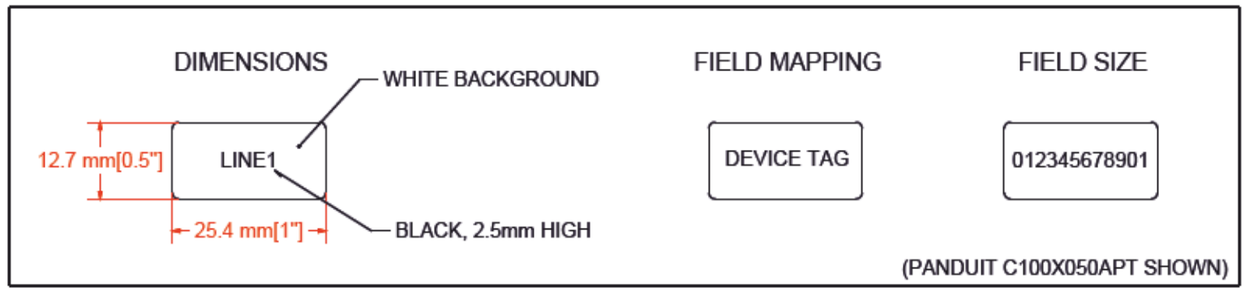
REVISION: Revision D	CLIENT: PARKS CANADA PUBLIC WORKS AND GOVERNMENT SERVICES CANADA	DATE: 2019-01-16	TITLE: TRENT-SEVERN WATERWAY BOUNDARY ROAD #44 SWING BRIDGE +JB1 INNER PANEL LAYOUT/LEGEND DETAILS	FULL PAGE ID: =F_LAYOUTS+JB1/F30	PAGE: F30
Chadwick Engineering Ltd. 594 Norris Crt. Kingston, Ontario Canada K7P 2R9 www.chadwickengineering.com	NOTES	DRAWN BY: TCampbell		DRAWING NO.: 1911-1-003	
	ALTERNATE DWG. NO.	CHECKED			

Device Tag List : Enclosure Backpanel Labels ie. relays, push buttons, disconnects, fuses etc...

CE_F03_000 Enclosure Backpanel Labels

Backpanel labels for enclosure

+JB1



JB_EXT_1

JB_INT_1

TB101

TB101

TB101

TB101

TB121

TB121

TB121

HIGHER LEVEL
=F LAYOUTS
MOUNTING LOCATION
+JB1

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DATE 2019-09-13

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TITLE
TRENT-SEVERN WATERWAY
BOUNDARY ROAD #44 SWING BRIDGE
Device Legend Plates

FULL PAGE ID
=F_LAYOUTS+JB1/F31

DRAWING NO.

PAGE
F31

PREVIOUS PAGE: F30

TOTAL PAGES: 83

2019-10-04 :LAST PAGE MODIFICATION DATE

F32 :NEXT PAGE

Enclosure legend Mounting Panel: +JB1-JB_INT_1

CE_F18_001

Item number	Device tag	Manufacturer	Order number	Description	Placement	Function text
1	-TB101				=F_LAYOUTS/F30	
2	-TB121				=F_LAYOUTS/F30	
3	-TB131				=F_LAYOUTS/F30	
4	-PE	Schneider Electric	PK12GTA	Load Center Ground Bar Assembly, 12 connections, (1) #14–#4 or (2) #14 or #12	=E_CONTROL+CP1/E12:41:BU	

Terminal strip layouts and parts are detailed on the terminal line up diagrams.

HIGHER LEVEL =F_LAYOUTS

MOUNTING LOCATION +JB1

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DATE 2019-01-18

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TITLE TRENT-SEVERN WATERWAY
BOUNDARY ROAD #44 SWING BRIDGE
Enclosure legend : +JB1-TB101 - +JB1-PE

FULL PAGE ID =F_LAYOUTS+JB1/F32

DRAWING NO.

PAGE F32

PREVIOUS PAGE: F31

TOTAL PAGES: 83

2019-10-04 :LAST PAGE MODIFICATION DATE

F33 :NEXT PAGE

Parts list ; Project Bill of Material, by Device Tag

CE_F01_002

Device tag Schematic Reference	Qty	Unit	Description	Order number	Manufacturer	Device Description
-JB_EXT_1 /F29	1		Body and cover are formed from 16 guage 304 or 316 stainless steel. Smooth, continuously welded seams without knockouts, cutouts, or holes. Formed lip on enclosure to exclude flowing liquids and contaminants. 14 gauge welded brackets provide for enclosure mounting. Continuously	EJ14126SS	Hammond Manufacturing	
-JB_EXT_1 /F29	1		Padlock adapter fits directly over the slotted quarter turn preventing access. 2mm thick 14 gauge stainless steel. Stainless steel mounting hardware provided. Once installed, the bolts cannot be removed without the door open. Easy installed in the field. Padlock not included. Maintains	EJPA	Hammond Manufacturing	
-JB_INT_1 /F30	4	pcs	Accessories, End bracket, 100 pcs per package	1061200000	Weidmüller	
-JB_INT_1 /F30	350	mm	Mounting rail, TS 35, TS 35 x 7.5, with slot, Steel, galvanized, chromium-plated, 2000 mm per length	0514500000	Weidmüller	

HIGHER LEVEL
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MOUNTING LOCATION
+JB1

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DATE 2019-04-24

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TITLE
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BOUNDARY ROAD #44 SWING BRIDGE
Mounting Panel Hardware

FULL PAGE ID
=F_LAYOUTS+JB1/F33

DRAWING NO.

PAGE
F33

-JB_EXT_1

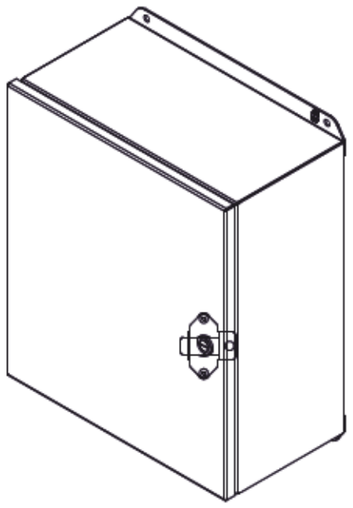
ENCLOSURE

PART No. EJ14126SS

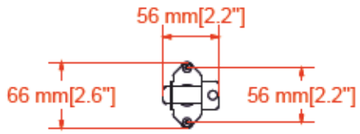
for more information visit
www.hammfg.com

Data subject to change without notice

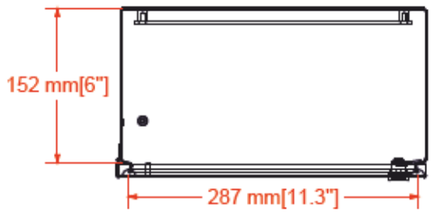
Isometric drawing Not to Scale



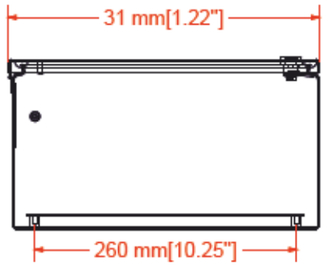
PADLOCK ADAPTER
PART No. EJPA
for more information visit
www.hammfg.com
Data subject to change without notice
Isometric drawing Not to Scale



FRONT VIEW

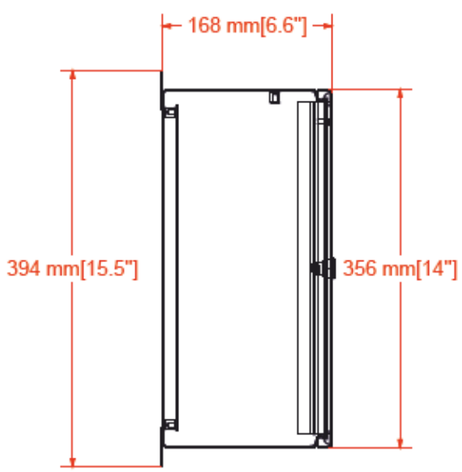


TOP VIEW

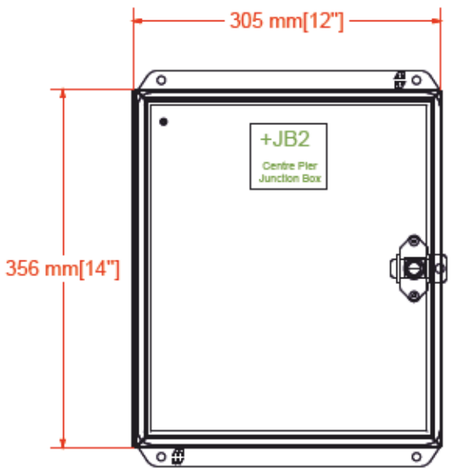


BOTTOM VIEW

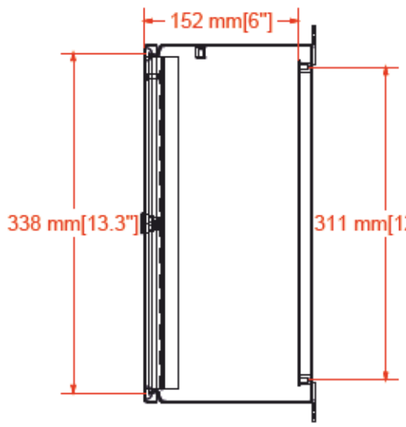
ISOMETRIC VIEWS



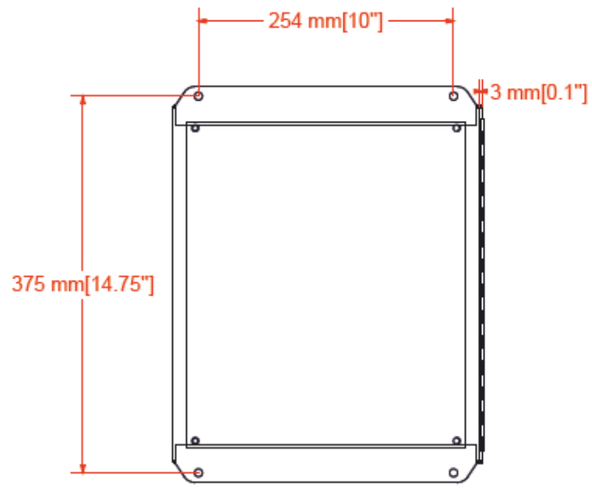
SIDE VIEW



FRONT VIEW



SIDE VIEW

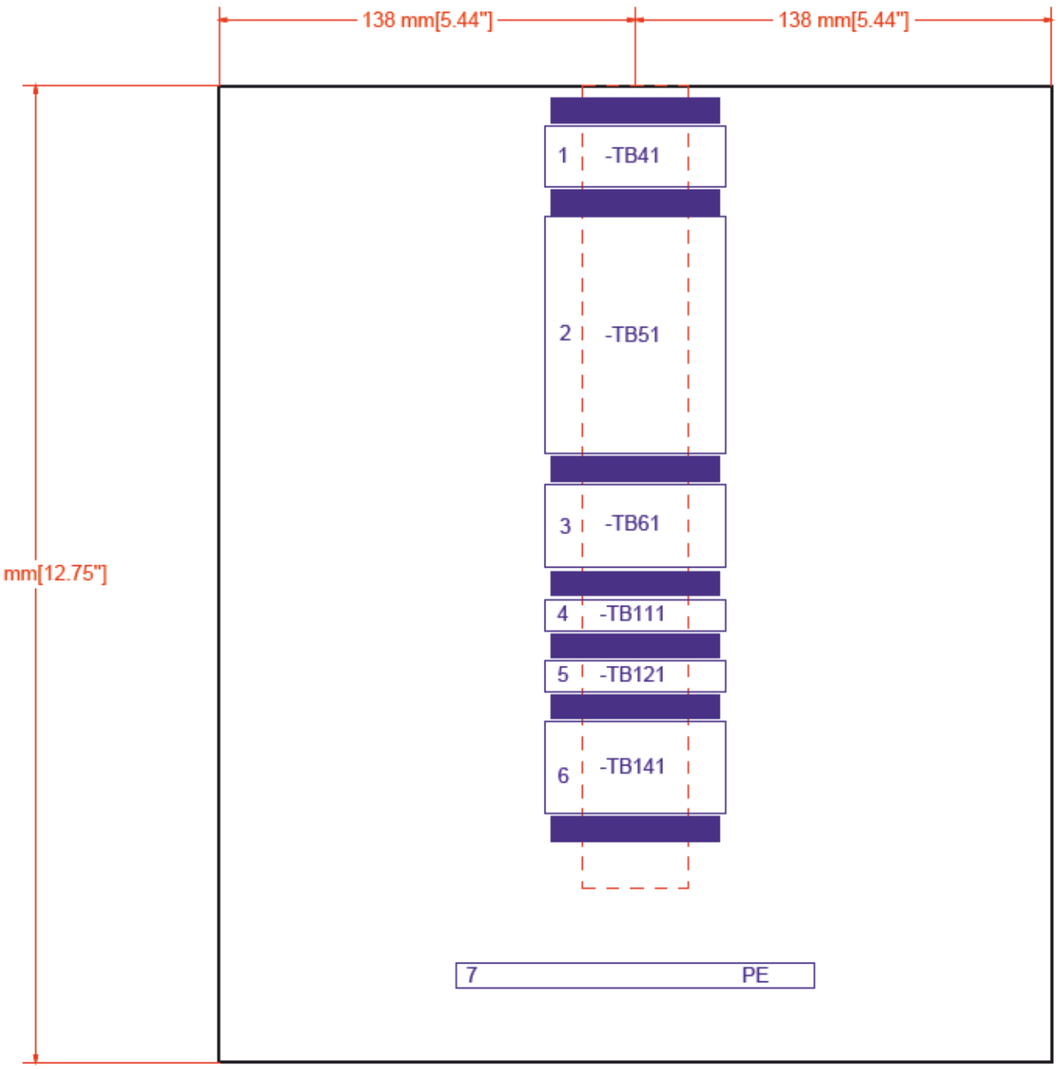


REAR VIEW

HIGHER LEVEL: =F_LAYOUTS
MOUNTING LOCATION: +JB2

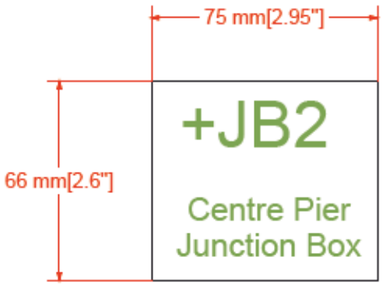
REVISION: Revision D	CLIENT: PARKS CANADA PUBLIC WORKS AND GOVERNMENT SERVICES CANADA	DATE: 2019-01-16 DRAWN BY: TCampbell	TITLE: TRENT-SEVERN WATERWAY BOUNDARY ROAD #44 SWING BRIDGE +JB2 JUNCTION BOX DETAIL	FULL PAGE ID: =F_LAYOUTS+JB2/F34 PAGE: F34
Chadwick Engineering Ltd. 594 Norris Crt. Kingston, Ontario Canada K7P 2R9 www.chadwickengineering.com	NOTES	ALTERNATE DWG. NO. CHECKED		DRAWING NO.: 1911-1-003

-JB_INT_1



LEGEND

- WIRING DUCT
- DIN RAIL
- END BRACKET



ENCLOSURE IDENTIFICATION
LEGEND PLATE

INNER PANEL DETAIL

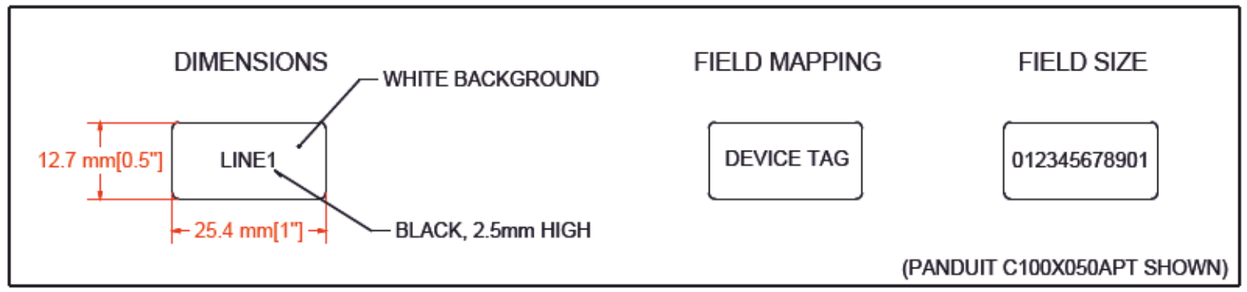
REVISION: Revision D	CLIENT: PARKS CANADA PUBLIC WORKS AND GOVERNMENT SERVICES CANADA	DATE: 2019-01-16	TITLE: TRENT-SEVERN WATERWAY BOUNDARY ROAD #44 SWING BRIDGE +JB2 INNER PANEL LAYOUT/LEGEND DETAILS	FULL PAGE ID: =F_LAYOUTS+JB2/F35	HIGHER LEVEL: =F_LAYOUTS
Chadwick Engineering Ltd. 594 Norris Crt. Kingston, Ontario Canada K7P 2R9 www.chadwickengineering.com	NOTES	DRAWN BY: TCampbell		DRAWING NO.: 1911-1-003	MOUNTING LOCATION: +JB2
	ALTERNATE DWG. NO.	CHECKED			PAGE: F35

Device Tag List : Enclosure Backpanel Labels ie. relays, push buttons, disconnects, fuses etc...

CE_F03_000 Enclosure Backpanel Labels

Backpanel labels for enclosure

+JB2



JB_EXT_1	TB51	TB61	TB141
JB_INT_1	TB51	TB61	
TB41	TB51	TB111	
TB41	TB51	TB111	
TB41	TB51	TB121	
TB41	TB51	TB121	
TB51	TB51	TB141	
TB51	TB51	TB141	
TB51	TB51	TB141	
TB51	TB61	TB141	
TB51	TB61	TB141	

HIGHER LEVEL =F LAYOUTS
MOUNTING LOCATION +JB2

REVISION Revision D

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NOTES

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ALTERNATE DWG. NO.

DATE 2019-01-18

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TITLE TRENT-SEVERN WATERWAY
BOUNDARY ROAD #44 SWING BRIDGE
Device Legend Plates

FULL PAGE ID =F_LAYOUTS+JB2/F36

DRAWING NO.

PAGE F36

PREVIOUS PAGE: F35

Enclosure legend Mounting Panel: +JB2-JB_INT_1

CE_F18_001

Item number	Device tag	Manufacturer	Order number	Description	Placement	Function text
1	-TB41				=F_LAYOUTS/F35	
2	-TB51				=F_LAYOUTS/F35	
3	-TB61				=F_LAYOUTS/F35	
4	-TB111				=F_LAYOUTS/F35	
5	-TB121				=F_LAYOUTS/F35	
6	-TB141				=F_LAYOUTS/F35	
7	-PE	Schneider Electric	PK12GTA	Load Center Ground Bar Assembly, 12 connections, (1) #14–#4 or (2) #14 or #12	=E_CONTROL+CP1/E14:35:BV	

Terminal strip layouts and parts are detailed on the terminal line up diagrams.

HIGHER LEVEL =F_LAYOUTS

MOUNTING LOCATION +JB2

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DATE 2019-01-18

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TITLE TRENT-SEVERN WATERWAY
BOUNDARY ROAD #44 SWING BRIDGE
Enclosure legend : +JB2-TB41 - +JB2-PE

FULL PAGE ID =F_LAYOUTS+JB2/F37

DRAWING NO.

PAGE F37

Parts list ; Project Bill of Material, by Device Tag

CE_F01_002

Device tag Schematic Reference	Qty	Unit	Description	Order number	Manufacturer	Device Description
-JB_EXT_1 /F34	1		Body and cover are formed from 16 guage 304 or 316 stainless steel. Smooth, continuously welded seams without knockouts, cutouts, or holes. Formed lip on enclosure to exclude flowing liquids and contaminants. 14 gauge welded brackets provide for enclosure mounting. Continuously	EJ14126SS	Hammond Manufacturing	
-JB_EXT_1 /F34	1		Padlock adapter fits directly over the slotted quarter turn preventing access. 2mm thick 14 gauge stainless steel. Stainless steel mounting hardware provided. Once installed, the bolts cannot be removed without the door open. Easy installed in the field. Padlock not included. Maintains	EJPA	Hammond Manufacturing	
-JB_INT_1 /F35	7	pcs	Accessories, End bracket, 100 pcs per package	1061200000	Weidmüller	
-JB_INT_1 /F35	350	mm	Mounting rail, TS 35, TS 35 x 7.5, with slot, Steel, galvanized, chromium-plated, 2000 mm per length	0514500000	Weidmüller	

HIGHER LEVEL
=F LAYOUTS
MOUNTING LOCATION
+JB2

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ALTERNATE DWG. NO.

DATE 2019-04-24

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TITLE
TRENT-SEVERN WATERWAY
BOUNDARY ROAD #44 SWING BRIDGE
Mounting Panel Hardware

FULL PAGE ID
=F_LAYOUTS+JB2/F38

DRAWING NO.

PAGE
F38

-JB_EXT_1

ENCLOSURE

PART No. EJ14126SS

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Data subject to change without notice

Isometric drawing Not to Scale

PADLOCK ADAPTER

PART No. EJPA

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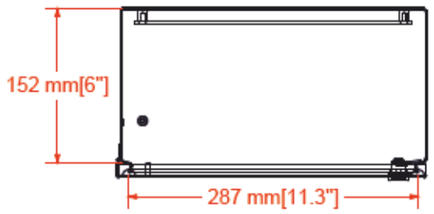
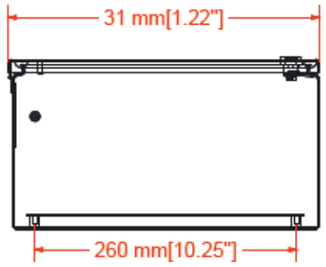
Data subject to change without notice

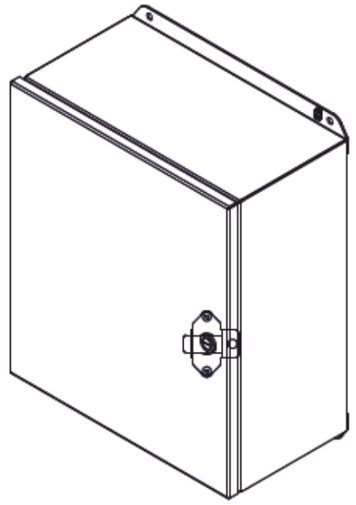
Isometric drawing Not to Scale



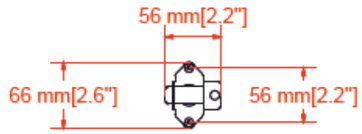
TOP VIEW



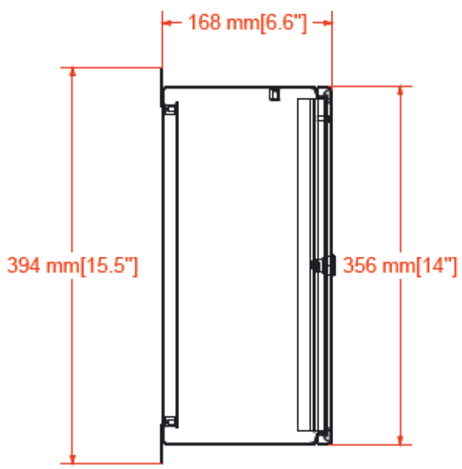
BOTTOM VIEW



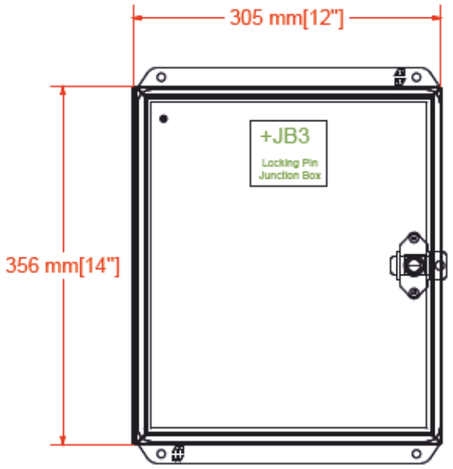
ISOMETRIC VIEWS



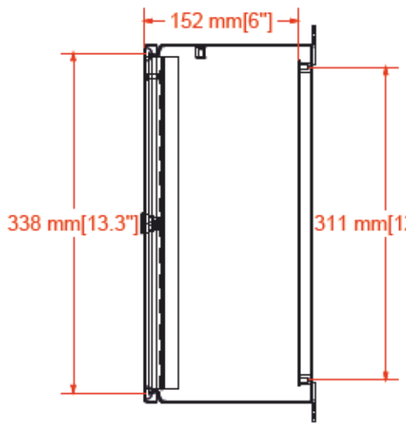
FRONT VIEW



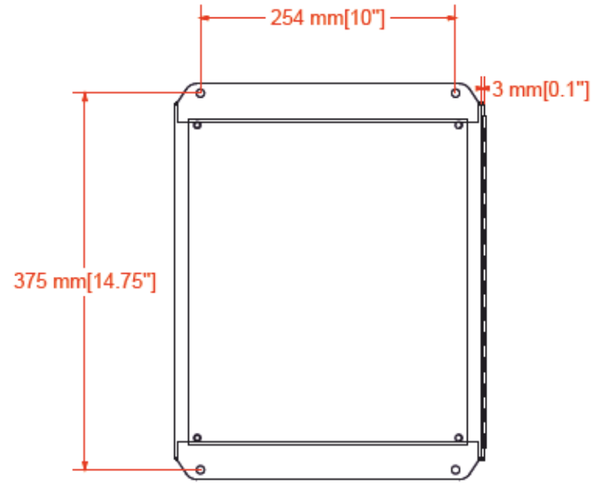
SIDE VIEW



FRONT VIEW



SIDE VIEW



REAR VIEW

HIGHER LEVEL =F_LAYOUTS

MOUNTING LOCATION +JB3

REVISION Revision D

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CLIENT PARKS CANADA
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ALTERNATE DWG. NO.

DATE 2019-01-18

DRAWN BY TCampbell

CHECKED

TITLE TRENT-SEVERN WATERWAY
BOUNDARY ROAD #44 SWING BRIDGE
+JB3 JUNCTION BOX DETAIL

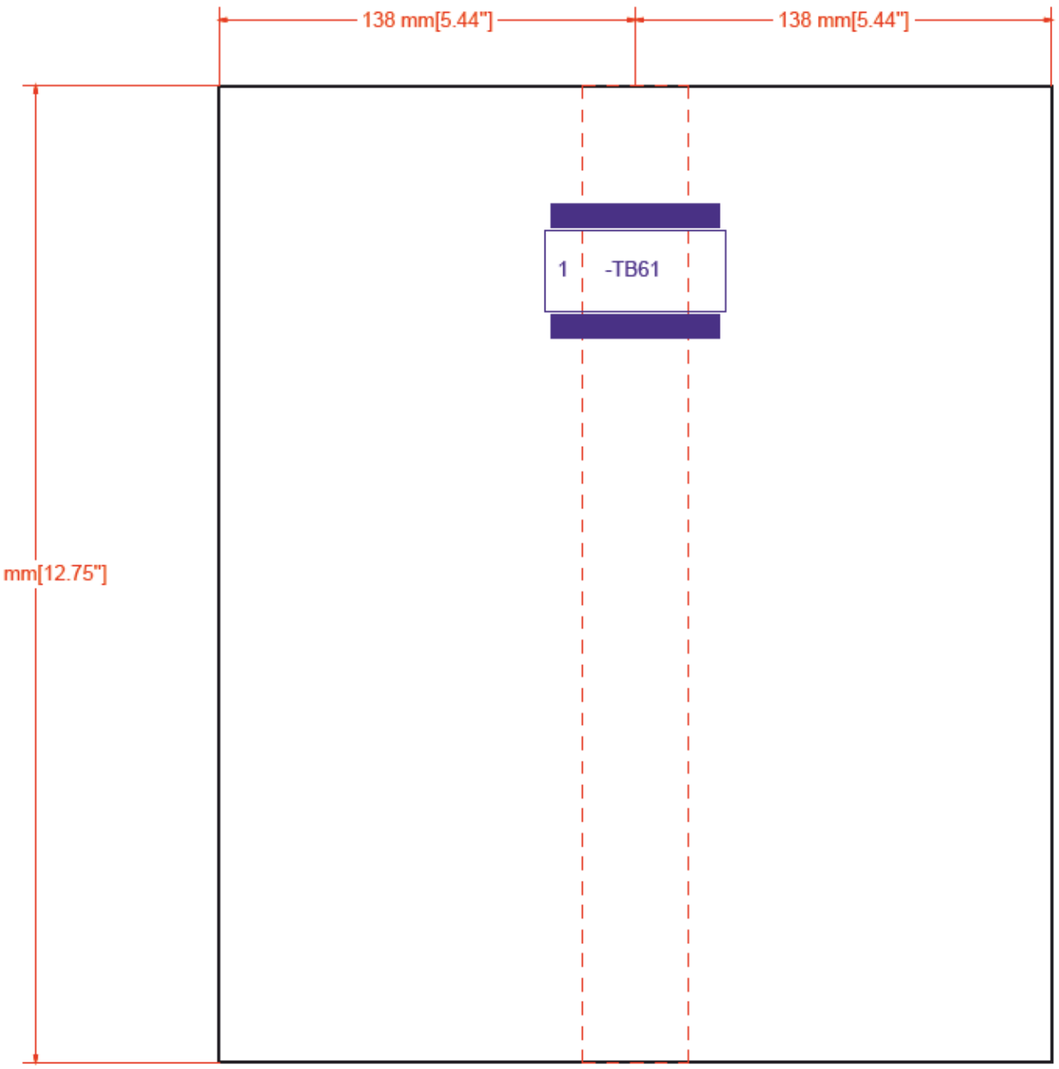
FULL PAGE ID =F_LAYOUTS+JB3/F39

DRAWING NO. 1911-1-003

PAGE F39

PREVIOUS PAGE: +JB2/F38

-JB_INT_1



LEGEND

- WIRING DUCT
- DIN RAIL
- END BRACKET

ENCLOSURE IDENTIFICATION
LEGEND PLATE

INNER PANEL DETAIL

HIGHER LEVEL: =F_LAYOUTS
MOUNTING LOCATION: +JB3

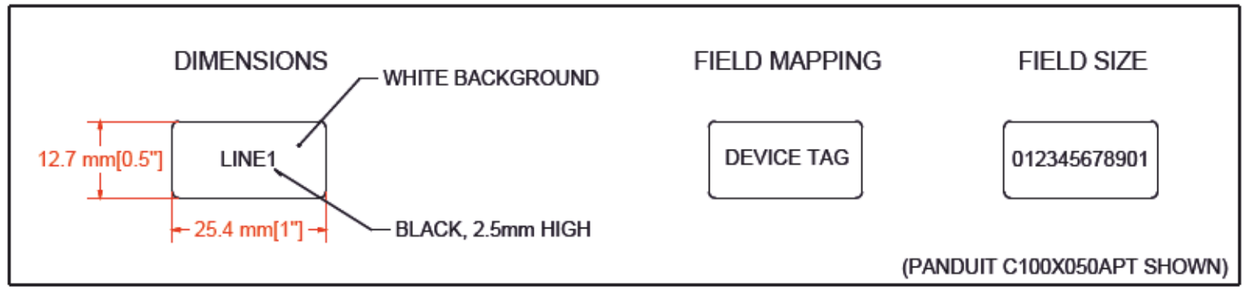
REVISION: Revision D	CLIENT: PARKS CANADA PUBLIC WORKS AND GOVERNMENT SERVICES CANADA	DATE: 2019-01-18	TITLE: TRENT-SEVERN WATERWAY BOUNDARY ROAD #44 SWING BRIDGE +JB3 INNER PANEL LAYOUT/LEGEND DETAILS	FULL PAGE ID: =F_LAYOUTS+JB3/F40	PAGE: F40
Chadwick Engineering Ltd. 594 Norris Crt. Kingston, Ontario Canada K7P 2R9 www.chadwickengineering.com	NOTES	DRAWN BY: TCampbell		DRAWING NO.: 1911-1-003	
	ALTERNATE DWG. NO.	CHECKED			

Device Tag List : Enclosure Backpanel Labels ie. relays, push buttons, disconnects, fuses etc...

CE_F03_000 Enclosure Backpanel Labels

Backpanel labels for enclosure

+JB3



JB_EXT_1

JB_INT_1

TB61

HIGHER LEVEL
=F LAYOUTS

MOUNTING LOCATION
+JB3

REVISION
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DATE 2019-01-18

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TITLE
TRENT-SEVERN WATERWAY
BOUNDARY ROAD #44 SWING BRIDGE
Device Legend Plates

FULL PAGE ID
=F_LAYOUTS+JB3/F41

DRAWING NO.

PAGE
F41

PREVIOUS PAGE: F40

Enclosure legend Mounting Panel: +JB3-JB_INT_1

CE_F18_001

Item number	Device tag	Manufacturer	Order number	Description	Placement	Function text
1	-TB61				=F_LAYOUTS/F40	

Terminal strip layouts and parts are detailed on the terminal line up diagrams.

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DATE: 2019-01-18

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TITLE: TRENT-SEVERN WATERWAY
BOUNDARY ROAD #44 SWING BRIDGE
Enclosure legend : +JB3-TB61 - +JB3-TB61

FULL PAGE ID: =F_LAYOUTS+JB3/F42

DRAWING NO.:

HIGHER LEVEL: =F_LAYOUTS

MOUNTING LOCATION: +JB3

PAGE: F42

Parts list ; Project Bill of Material, by Device Tag

CE_F01_002

Device tag Schematic Reference	Qty	Unit	Description	Order number	Manufacturer	Device Description
-JB_EXT_1 /F39	1		Body and cover are formed from 16 guage 304 or 316 stainless steel. Smooth, continuously welded seams without knockouts, cutouts, or holes. Formed lip on enclosure to exclude flowing liquids and contaminants. 14 gauge welded brackets provide for enclosure mounting. Continuously	EJ14126SS	Hammond Manufacturing	
-JB_EXT_1 /F39	1		Padlock adapter fits directly over the slotted quarter turn preventing access. 2mm thick 14 gauge stainless steel. Stainless steel mounting hardware provided. Once installed, the bolts cannot be removed without the door open. Easy installed in the field. Padlock not included. Maintains	EJPA	Hammond Manufacturing	
-JB_INT_1 /F40	2	pcs	Accessories, End bracket, 100 pcs per package	1061200000	Weidmüller	
-JB_INT_1 /F40	350	mm	Mounting rail, TS 35, TS 35 x 7.5, with slot, Steel, galvanized, chromium-plated, 2000 mm per length	0514500000	Weidmüller	

HIGHER LEVEL
=F LAYOUTS
MOUNTING LOCATION
+JB3

REVISION
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ALTERNATE DWG. NO.

DATE 2019-04-24

DRAWN BY TCampbell

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TITLE
TRENT-SEVERN WATERWAY
BOUNDARY ROAD #44 SWING BRIDGE
Mounting Panel Hardware

FULL PAGE ID
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DRAWING NO.

PAGE
F43

PREVIOUS PAGE: F42

-JB_EXT_1

ENCLOSURE

PART No. EJ14126SS

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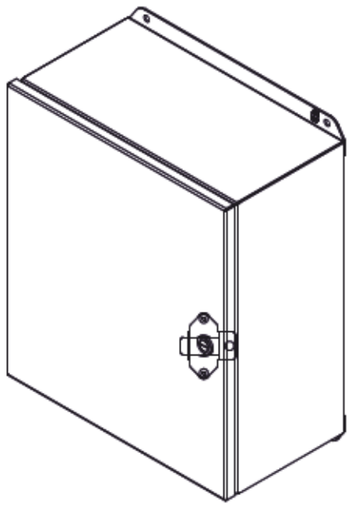
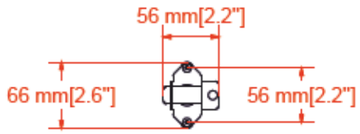
Data subject to change without notice

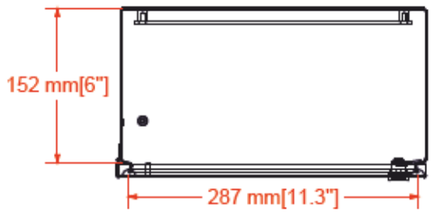
Isometric drawing Not to Scale



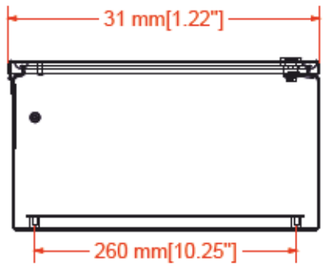
PADLOCK ADAPTER
PART No. EJPA
for more information visit
www.hammfg.com
Data subject to change without notice
Isometric drawing Not to Scale



FRONT VIEW

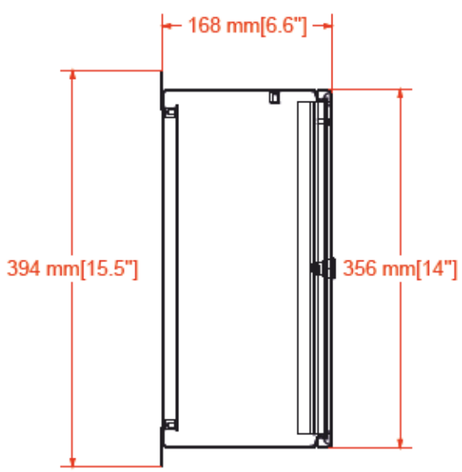


TOP VIEW

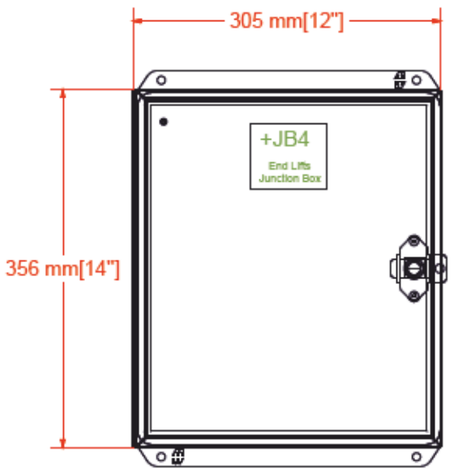


BOTTOM VIEW

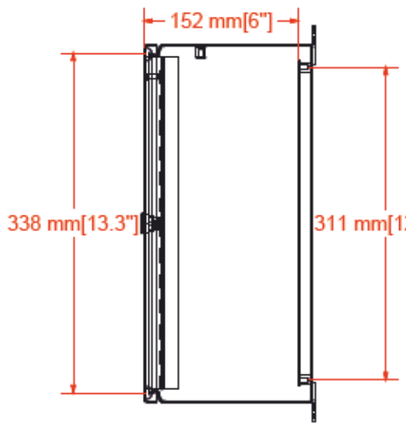
ISOMETRIC VIEWS



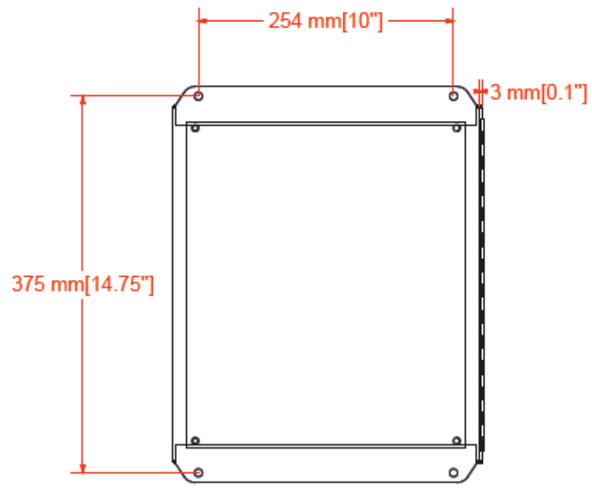
SIDE VIEW



FRONT VIEW



SIDE VIEW



REAR VIEW

HIGHER LEVEL: =F_LAYOUTS
MOUNTING LOCATION: +JB4

REVISION: Revision D	CLIENT: PARKS CANADA PUBLIC WORKS AND GOVERNMENT SERVICES CANADA	DATE: 2019-01-18	TITLE: TRENT-SEVERN WATERWAY BOUNDARY ROAD #44 SWING BRIDGE +JB4 JUNCTION BOX DETAIL	FULL PAGE ID: =F_LAYOUTS+JB4/F44
		DRAWN BY: TCampbell		DRAWING NO.: 1911-1-003
	ALTERNATE DWG. NO.	CHECKED		PAGE: F44

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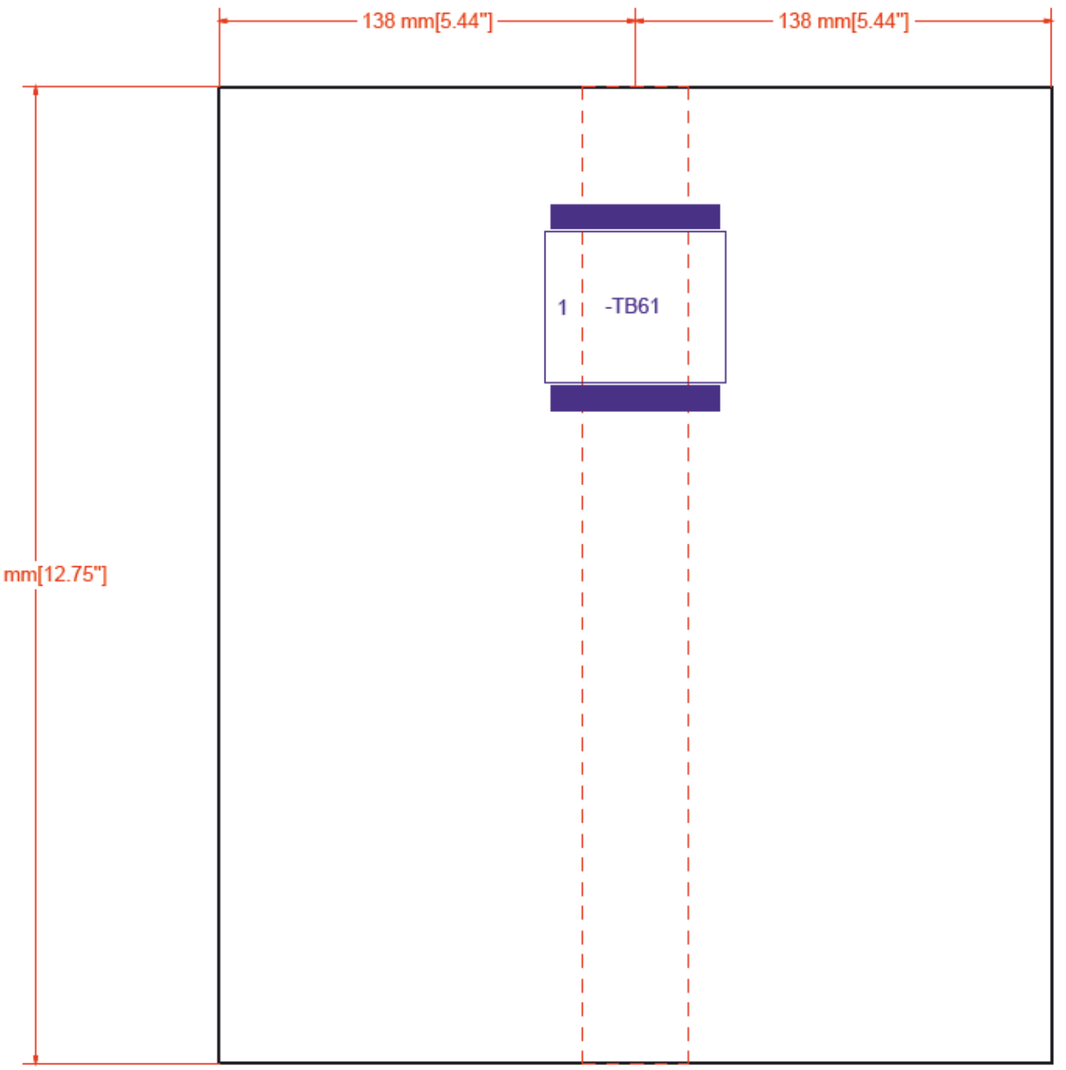
NOTES

-JB_INT_1



LEGEND

- WIRING DUCT
- DIN RAIL
- END BRACKET

ENCLOSURE IDENTIFICATION
LEGEND PLATE

INNER PANEL DETAIL

HIGHER LEVEL: =F_LAYOUTS
MOUNTING LOCATION: +JB4

REVISION: Revision D	CLIENT: PARKS CANADA PUBLIC WORKS AND GOVERNMENT SERVICES CANADA	DATE: 2019-01-18 DRAWN BY: TCampbell	TITLE: TRENT-SEVERN WATERWAY BOUNDARY ROAD #44 SWING BRIDGE +JB4 INNER PANEL LAYOUT/LEGEND DETAILS	FULL PAGE ID: =F_LAYOUTS+JB4/F45 DRAWING NO.: 1911-1-003
	ALTERNATE DWG. NO.	CHECKED		PAGE: F45

Chadwick Engineering Ltd.
594 Norris Crt.
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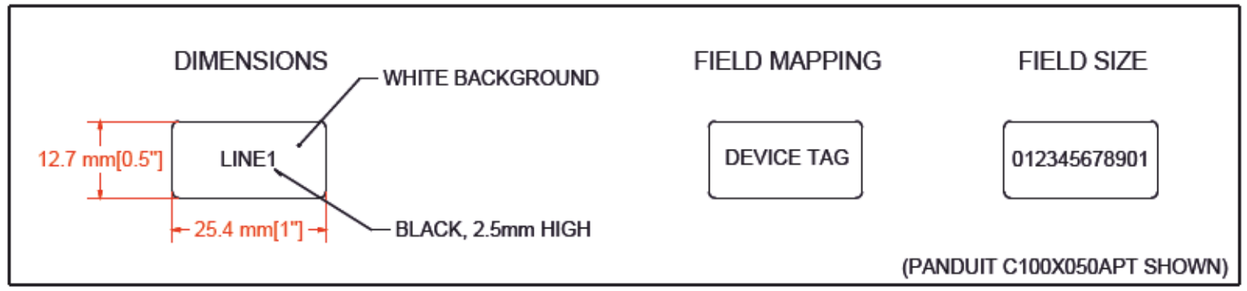
NOTES

Device Tag List : Enclosure Backpanel Labels ie. relays, push buttons, disconnects, fuses etc...

CE_F03_000 Enclosure Backpanel Labels

Backpanel labels for enclosure

+JB4



- JB_EXT_1
- JB_INT_1
- TB61

HIGHER LEVEL
=F LAYOUTS
MOUNTING LOCATION
+JB4

REVISION
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ALTERNATE DWG. NO.

DATE 2019-01-18

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TITLE
TRENT-SEVERN WATERWAY
BOUNDARY ROAD #44 SWING BRIDGE
Device Legend Plates

FULL PAGE ID
=F_LAYOUTS+JB4/F46

DRAWING NO.

PAGE
F46

Enclosure legend Mounting Panel: +JB4-JB_INT_1

CE_F18_001

Item number	Device tag	Manufacturer	Order number	Description	Placement	Function text
1	-TB61				=F_LAYOUTS/F45	

Terminal strip layouts and parts are detailed on the terminal line up diagrams.

HIGHER LEVEL =F_LAYOUTS

MOUNTING LOCATION +JB4

REVISION Revision D

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ALTERNATE DWG. NO.

DATE 2019-01-18

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CHECKED

TITLE TRENT-SEVERN WATERWAY
BOUNDARY ROAD #44 SWING BRIDGE
Enclosure legend : +JB4-TB61 - +JB4-TB61

FULL PAGE ID =F_LAYOUTS+JB4/F47

DRAWING NO.

PAGE F47

PREVIOUS PAGE: F46

Parts list ; Project Bill of Material, by Device Tag

CE_F01_002

Device tag Schematic Reference	Qty	Unit	Description	Order number	Manufacturer	Device Description
-JB_EXT_1 /F44	1		Body and cover are formed from 16 guage 304 or 316 stainless steel. Smooth, continuously welded seams without knockouts, cutouts, or holes. Formed lip on enclosure to exclude flowing liquids and contaminants. 14 gauge welded brackets provide for enclosure mounting. Continuously	EJ14126SS	Hammond Manufacturing	
-JB_EXT_1 /F44	1		Padlock adapter fits directly over the slotted quarter turn preventing access. 2mm thick 14 gauge stainless steel. Stainless steel mounting hardware provided. Once installed, the bolts cannot be removed without the door open. Easy installed in the field. Padlock not included. Maintains	EJPA	Hammond Manufacturing	
-JB_INT_1 /F45	2	pcs	Accessories, End bracket, 100 pcs per package	1061200000	Weidmüller	
-JB_INT_1 /F45	350	mm	Mounting rail, TS 35, TS 35 x 7.5, with slot, Steel, galvanized, chromium-plated, 2000 mm per length	0514500000	Weidmüller	

HIGHER LEVEL
=F LAYOUTS
MOUNTING LOCATION
+JB4

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ALTERNATE DWG. NO.

DATE 2019-04-24

DRAWN BY TCampbell

CHECKED

TITLE
TRENT-SEVERN WATERWAY
BOUNDARY ROAD #44 SWING BRIDGE
Mounting Panel Hardware

FULL PAGE ID
=F_LAYOUTS+JB4/F48

DRAWING NO.

PAGE
F48

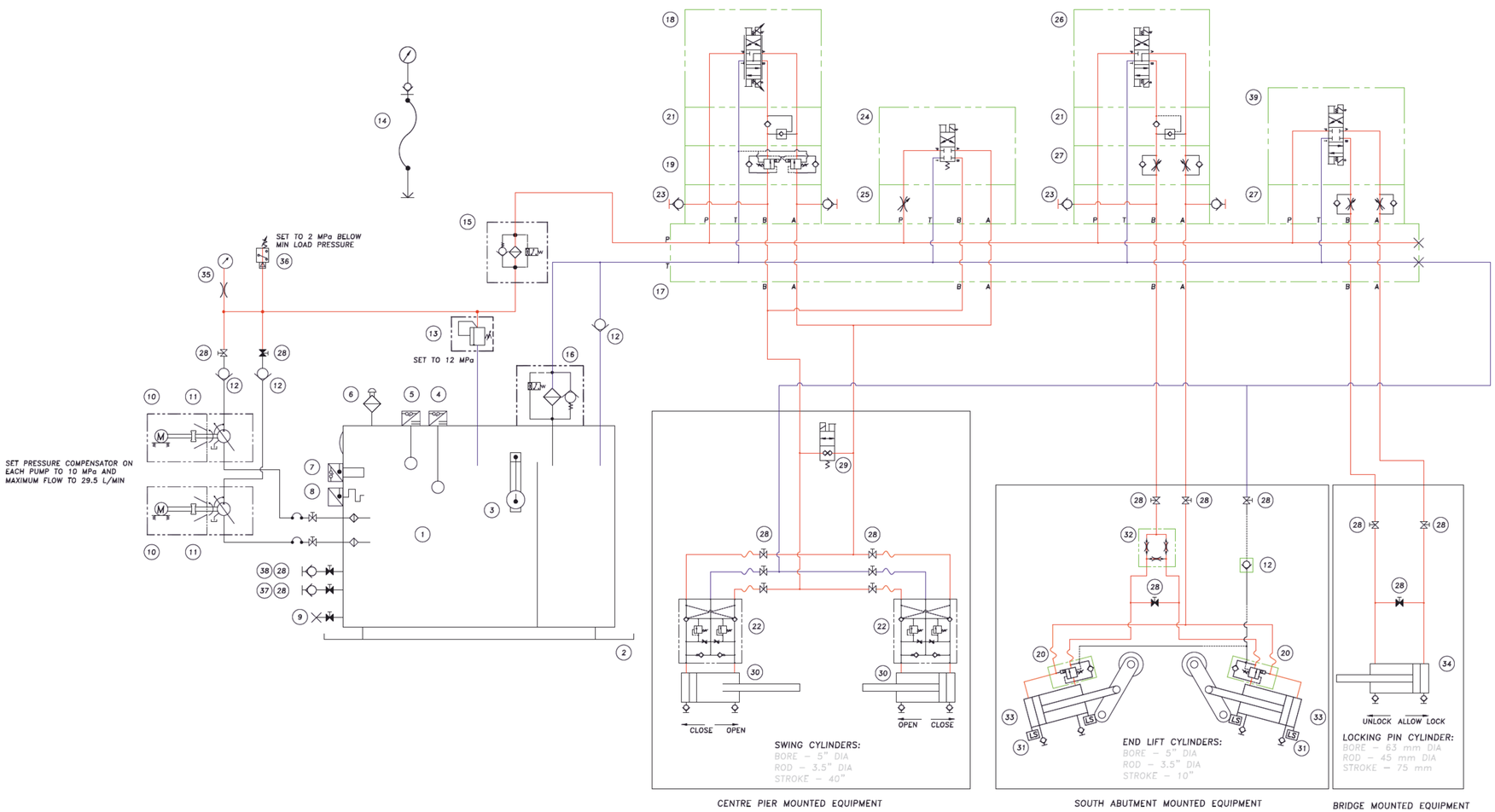
NOTES:
1. FLUID TO BE GREENPLUS HYDRAULIC FLUID ES.
2. ALL SEAL MATERIAL TO BE BUNA "N".
2. ALL DIRECTIONAL VALVE SOLENOIDS AND PROX/LIMIT SWITCHES TO BE 120 VAC.

BILL OF MATERIAL

ITEM	QTY	DESCRIPTION	PART NO.
1	1	HYDRAULIC RESERVOIR – 40 GALLON – STAINLESS STEEL	
2	1	RESERVOIR CONTAINMENT STAND (FULL CAPACITY OF RESERVOIR)	
3	1	LEVEL/TEMPERATURE INDICATOR	
4	1	LEVEL SWITCH – LOW LOW	
5	1	LEVEL SWITCH – LOW	
6	1	TANK FILLER CAP – VENTED	
7	1	TEMPERATURE SWITCH	
8	1	HEATER – 1 KW	
9	1	BALL VALVE – 1/2"	
10	2	MOTOR – 7.5 HP, HIGH EFF, 1750 RPM, 240 V, TEFC, SF 1.15	
11	2	HYD. PUMP, 7.8 GPM, PRES. COMPENSATED – PARKER	PVP1630RL
12	4	CHECK VALVE ASSEMBLY	
13	1	RELIEF VALVE ASSEMBLY	
14	1	TEST HOSE C/W 0–3000 PSI GAUGE	
15	1	PRESSURE FILTER, 3 MICRON ELEMENT, STAUFF SAE12	SF030G10B–JBPT24
16	1	RETURN LINE FILTER, IN TANK, STAUFF, 10 MICRON ELEMENT	RF014–G10B/U/G42/G
17	1	MANIFOLD, D03, 4 STN. PARALLEL, LYNCH	BD03GPS04SDUAAAA
18A	1	PROPORTIONAL VALVE, D03, 24 VDC DIRECT SOLENOID, ATOS	DHZO–A–073–D5
18B	2	RAMP CONTROL SOLENOID CONNECTOR FOR ITEM 18A	LE PG X
19	1	COUNTERBALANCE VALVE ASSEMBLY, VENTED, D03 SANDWICH	CWCL–LGN–MBY
20A	2	COUNTERBALANCE VALVE, 4 PORT VENTED, 3:1 PILOT – SUN	CWCALHN
20B	2	DIRECT MOUNT MANIFOLD FOR ITEM 20A	
21	2	FULL TIME REGENERATION ASSEMBLY, D03 – SUN	YDCF–XCN–AA
22A	1	CROSS PORT RELIEF AND ANTICAVITATION CHECK MANIFOLD	
22B	2	VENTED PILOT TO OPEN CHECK VALVE – SUN	CVCV–XCN
22C	2	FREE FLOW NOSE TO SIDE CHECK VALVE – SUN	CXDA–XCN
22D	2	FULLY ADJUSTABLE NEEDLE VALVE – SUN	NFCC–LCN
22E	2	DIRECT ACTING RELIEF VALVE – SUN	RDDA–LAN

BILL OF MATERIAL

ITEM	QTY	DESCRIPTION	PART NO.
23	2	DAMAN TAPPING PLATE 1/4 NPTF C/W	DD03TPAB4P
		HYDROTECKNIK TEST POINTS	
24	1	DIREC. CONTROL VALVE, CLOSED NEUTRAL, 4/2, SINGLE SOLENOID	VSD03M–5AJ–AR–CSA–33L
		120 VAC, CONTINENTAL	
25	1	NEEDLE VALVE SANDWICH, D03, METER–IN "P" – SUN	NFCC–LCN–GBP
26	1	DIREC. CONTROL VALVE, FLOAT NEUTRAL, 4/3 DBL. SOL. D03	VSD03M–3F–A–CSA–33L
		120 VAC – CONTINENTAL	
27	2	DUAL FLOW CONTROL, METER IN A AND B, D03 – SUN	NCCB LCN–GBY
28	20	BALL VALVE – 3/4"	
29	1	2–WAY, DIRECT ACTING, SOL. OPERATED DIRECT. BLOCKING	DTC–AXN211–A3K
		POPPET VALVE, 120 VAC	
30	2	CYLINDER – 5" BORE, 3.5" ROD, 40" STROKE C/W CUSHIONS	DWG #201–02
		STAINLESS ROD AND AIR BLEEDS	
31	4	CYLINDER MOUNTED LIMIT SWITCH – END OF STROKE ACTUATION	
32	1	SYNCHRONIZING FLOW DIVIDER/COMBINER VALVE ASSEMBLY – SUN	FSCS–XAN–C7J
33	2	CYLINDER – 5" BORE, 3.5" ROD, 10" STROKE C/W CUSHIONS,	DWG #203–16
		STAINLESS ROD, AIR BLEEDS AND LIMIT SWITCHES.	
34	1	CYLINDER, 63M BORE, 45MM ROD, 75MM STROKE, STAINLESS ROD	
35	1	PRESSURE GAUGE AND GAUGE ISOLATOR	
36	1	PRESURE SWITCH ASSEMBLY	
37	1	QUICK CONNECT, 3/4" MALE – PARKER	6602–12–12
38	1	QUICK CONNECT, 3/4" FEMALE – PARKER	6601–12–12
39	1	DIREC. CONTROL VALVE, BLOCKED NEUTRAL, 4/3 DBL. SOL. D03	VSD03M–3A–A–CSA–33L
		120 VAC, CONTINENTAL	



CENTRE PIER MOUNTED EQUIPMENT

SOUTH ABUTMENT MOUNTED EQUIPMENT

BRIDGE MOUNTED EQUIPMENT

No.	Date	Description	Drawn by Dessiné par	Approved Approuvé
B	2019/10/04	CORRECTIONS FROM PARKS CANADA	DAF	DPC
A	2019/09/18	CORRECTIONS FROM PARKS CANADA	DAF	DPC

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 _____

Parks Canada Parcs Canada

Canada

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Chadwick Engineering Ltd.

Project title / Titre du projet

BOUNDARY ROAD SWING BRIDGE REHABILITATION

TRENT–SEVERN WATERWAY

ONTARIO

Drawing title / Titre du dessin

HYDRAULIC SCHEMATIC

Scale / Échelle
NOT TO SCALE

Drawn by/ Dessiné par — Date

Designed by/ Conçu par
DPC
Date
JANUARY 2019

Checked by/ Vérifié par — Date

Approved by / Approuvé par
DPC
Date
JANUARY 2019

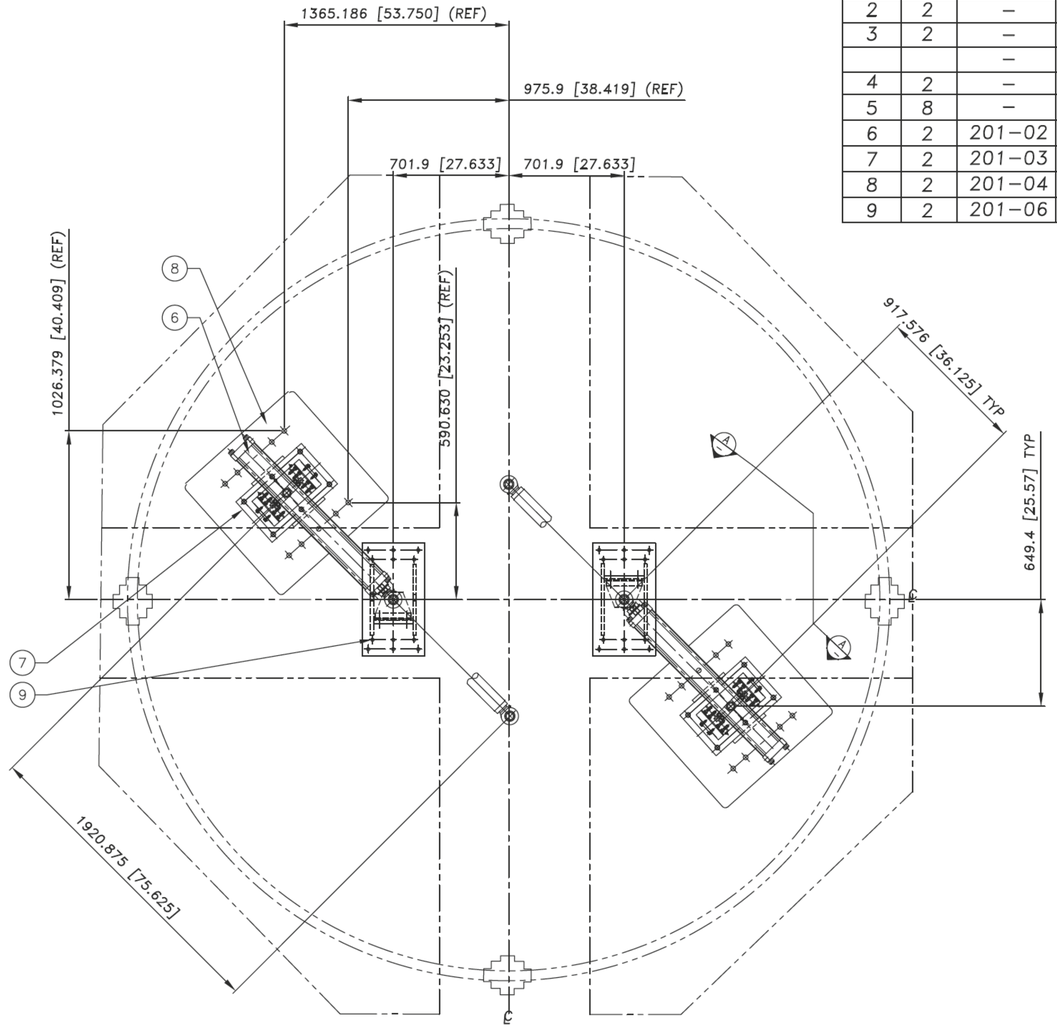
Project No./No. du projet — Client No./No du Client — Sheet No./ Feuille No.
01

Drawing Reference No./Numéro de Référence du Dessin
200

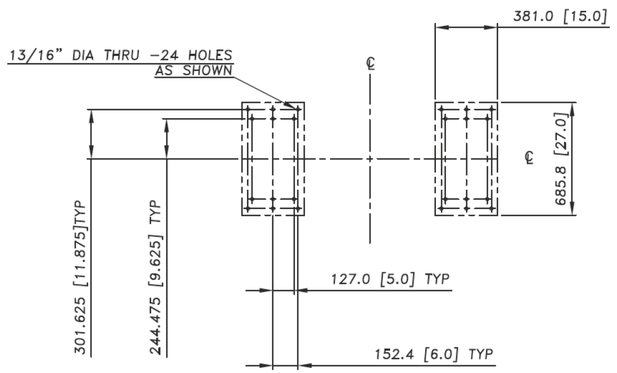
BILL OF MATERIAL

ITEM	QTY	DWG NO.	DESCRIPTION	MATERIAL
1	12	–	1–8 UNC X 3–1/4" LG HEX HD BOLT C/W HARDENED STEEL WASHER	A325 GALV.
2	2	–	PARKER CLEVIS BRACKET FOR 5" DIA BORE HYD CYL PART# 0839510000	–
3	2	–	PARKER PIVOT PIN C/W 2 RETAINING RINGS FOR 5"DIA BORE HYD CYL	–
		–	PART# 0839670000	–
4	2	–	PARKER SPHERICAL ROD EYE FOR 5" DIA BORE HYD CYL PART#0961000175	–
5	8	–	7/8–9 UNC X 4–1/4" LG HEX HD BOLT C/W NUTS AND HARDENED WASHERS	A325 GALV.
6	2	201–02	SWING CYLINDER	–
7	2	201–03	GIMBAL ASSEMBLY	–
8	2	201–04	GIMBAL BASE	–
9	2	201–06	CYLINDER BRACKET	–

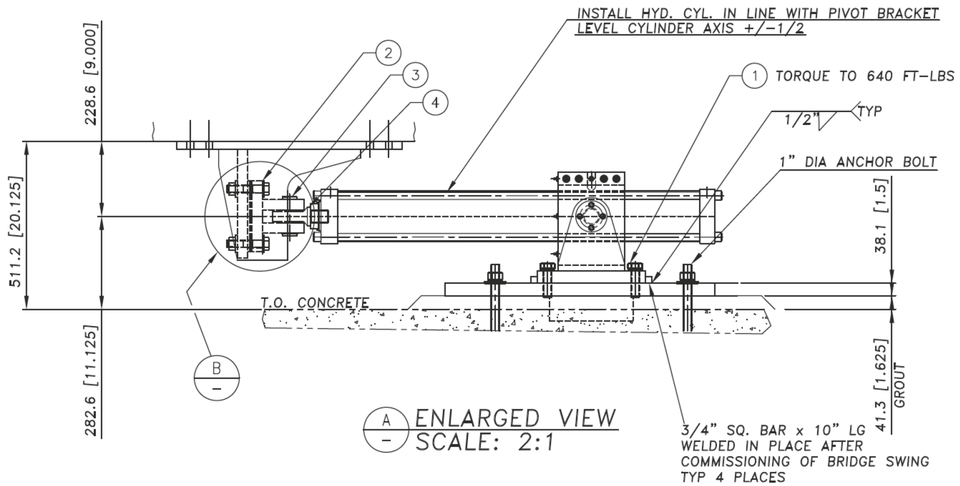
PRODUCTS LISTED SET A STANDARD BY WHICH SUBSTITUTES WILL BE JUDGED



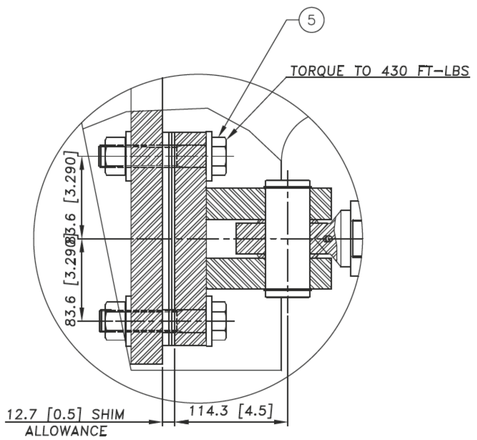
GIMBAL MOUNTING GENERAL ARRANGEMENT – PLAN VIEW



BOTTOM OF BRIDGE – PLAN VIEW



A – ENLARGED VIEW
SCALE: 2:1



B – ENL DETAIL
SCALE: 6:1

1. DIMENSIONS ARE IN MILLIMETERS
2. TOLERANCES

X. DECIMALS	+/– 0.5
.X DECIMALS	+/– 0.1
.XX DECIMALS	+/– 0.05
ANGLES	+/– 0.5 DEG
HOLE SIZES	+/– 1mm
SURFACES	3.2 MICROMETER

No.	Date	Description	Drawn by Dessine par	Approved Approuve
A	2019/09/18	MIRRORED SWING ORIENTATION	DAF	DPC

Revision / Révision

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 _____

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Project title / Titre du projet

BOUNDARY ROAD SWING BRIDGE REHABILITATION

TRENT–SEVERN WATERWAY

ONTARIO

Drawing title / Titre du dessin

SWING CYLINDER INSTALLATION

Scale / Échelle: NOT TO SCALE

Drawn by/ Dessiné par — Date

Designed by/ Conçu par — Date

Checked by/ Vérifié par — Date

Approved by / Approuvé par: DPC — Date: January 2019

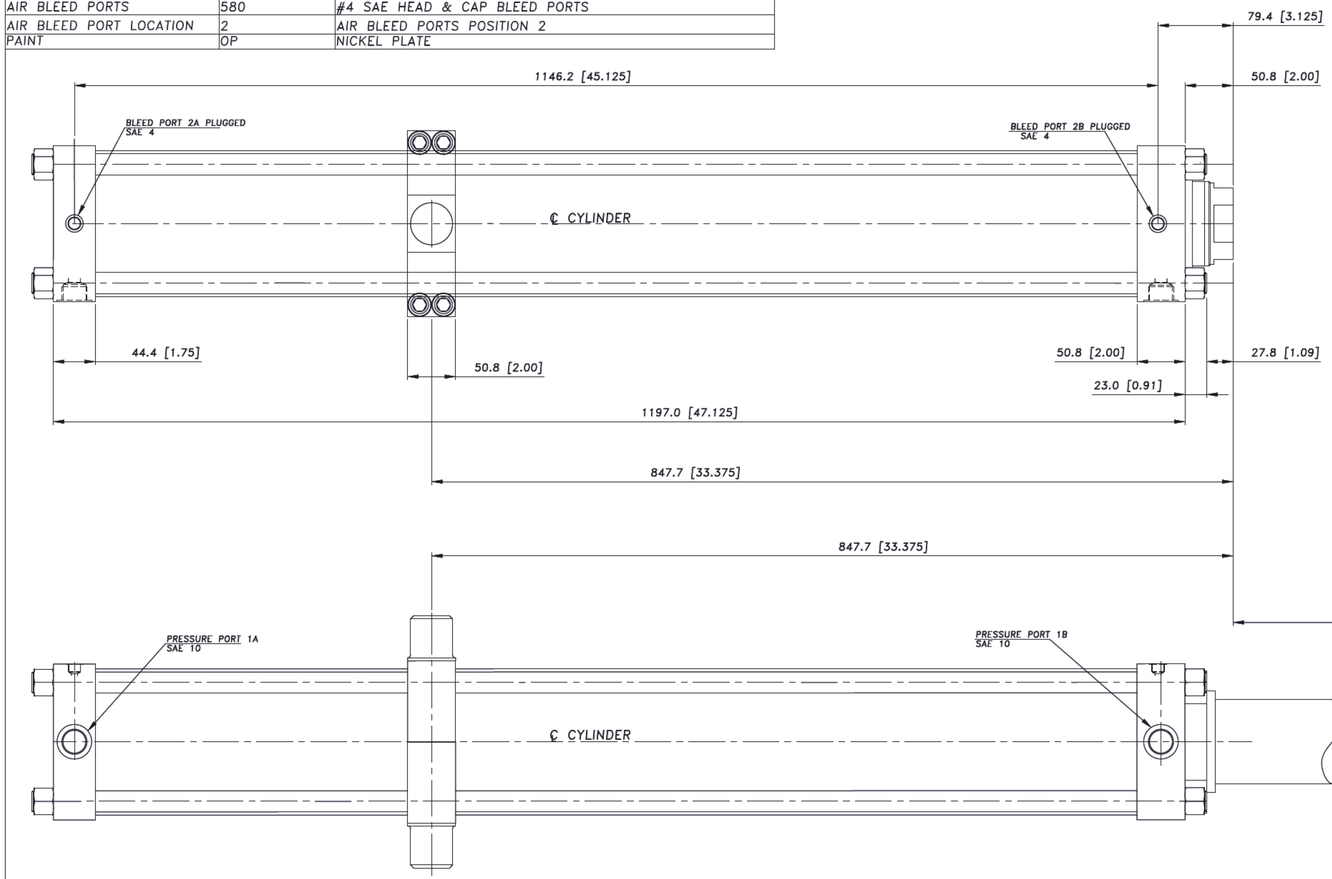
Project No./No. du projet | Client No./No du Client | Sheet No./ Feuille No.: 01

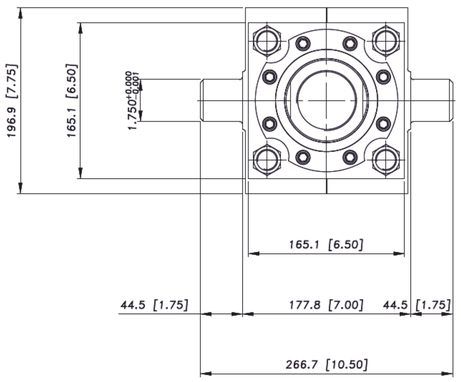
Drawing Reference No./Numéro de Référence du Dessin: 201

PARKER CYLINDER SPECIFICATIONS		
COMPONENT	CODE	DESCRIPTION
BORE	5.00	INCH
CUSHION HEAD	C	CUSHION HEAD
MOUNTING	DD	INTERMEDIATE FIXED TRUNNION (NFPA MT4)
SERIES	2HD	HEAVY DUTY HYDRAULIC TIE ROD BOLT-ON GLAND STYLE
PISTON SEAL	H	HP POLYURETHANE PISTON SEAL
PISTON MAGNET	N	NO MAGNET
GLAND AND SEAL	H	STANDARD GLAND WITH LIPSEAL
PORT TYPE	T	SAE STRAIGHT THREAD O-RING
SEALS	1	STANDARD (CLASS 1)
SPECIAL	S	SPECIAL MODIFICATIONS
PISTON ROD NUMBER	C2D350	3.50 INCH
PISTON ROD END	3	STYLE 3 SPECIAL
PISTON ROD END THREAD	A	IMPERIAL INTEGRAL CUT THREADS
CUSHION CAP	C	CUSHION CAP
STROKE	40.000	INCH
XI DIMENSION	33.375	INCH
PORT SIZE - HEAD	SA10	#10 SAE
PORT LOCATION - HEAD	1	PORT POSITION 1 - HEAD
PORT SIZE - CAP	SA10	#10 SAE
PORT LOCATION - CAP	1	PORT POSITION 1 - CAP
NEEDLE LOCATION - HEAD	4	NEEDLE VALVE POSITION 4 - HEAD
NEEDLE LOCATION - CAP	4	NEEDLE VALVE POSITION 4 - CAP
PISTON ROD WIPER	EW	METALLIC ROD WIPER
PISTON ROD END THREAD	F	FEMALE PISTON ROD THREAD
PISTON ROD END THREAD	1.500-12	1 1/2-12 UNF
PISTON ROD END A DIM	2.250	INCH
PISTON ROD WRENCH FLATS	2F	STANDARD 2 WRENCH FLATS
PISTON ROD END EXTENSION	WF	WF DIMENSION
PISTON ROD END EXTENSION	2.250	INCH
PISTON ROD MATERIAL	0174	17-4 PH STAINLESS STEEL PISTON ROD MATERIAL
PISTON ROD PLATING	GB	GLOBAL SHIELD PISTON ROD PLATING .0010 INCH THICK
AIR BLEED PORTS	580	#4 SAE HEAD & CAP BLEED PORTS
AIR BLEED PORT LOCATION	2	AIR BLEED PORTS POSITION 2
PAINT	OP	NICKEL PLATE

PART NUMBER: 203-16
DESCRIPTION: HYDRAULIC CYLINDER
(PARKER SERIES 2HD SPECIAL)
QUANTITY: 2

PRODUCTS LISTED SET A STANDARD BY WHICH SUBSTITUTES WILL BE JUDGED





5" DIA BORE HYDRAULIC CYLINDER

1. DIMENSIONS ARE IN MILLIMETERS
2. TOLERANCES

X. DECIMALS	+/- 0.5
.X DECIMALS	+/- 0.1
.XX DECIMALS	+/- 0.05
ANGLES	+/- 0.5 DEG
HOLE SIZES	+/- 1mm
SURFACES	3.2 MICROMETER

No.	Date	Description	Drawn by / Dessine par	Approved / Approuve
A	2019/09/19	ADDED PARKER ORDER SPEC. CHANGED PORTS	DAF	DPC

Revision / Révision

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 _____

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BOUNDARY ROAD SWING BRIDGE REHABILITATION

TRENT-SEVERN WATERWAY

ONTARIO

Drawing title / Titre du dessin

SWING CYLINDER DETAILS

Scale / Échelle
NOT TO SCALE

Drawn by/ Dessiné par — Date

Designed by/ Conçu par — Date

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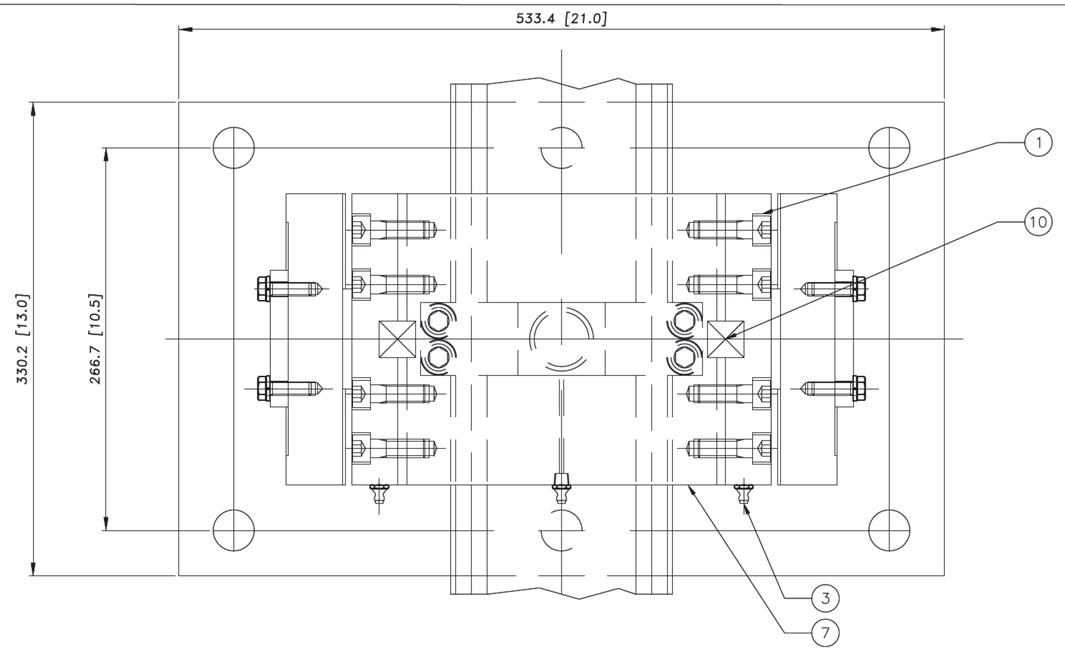
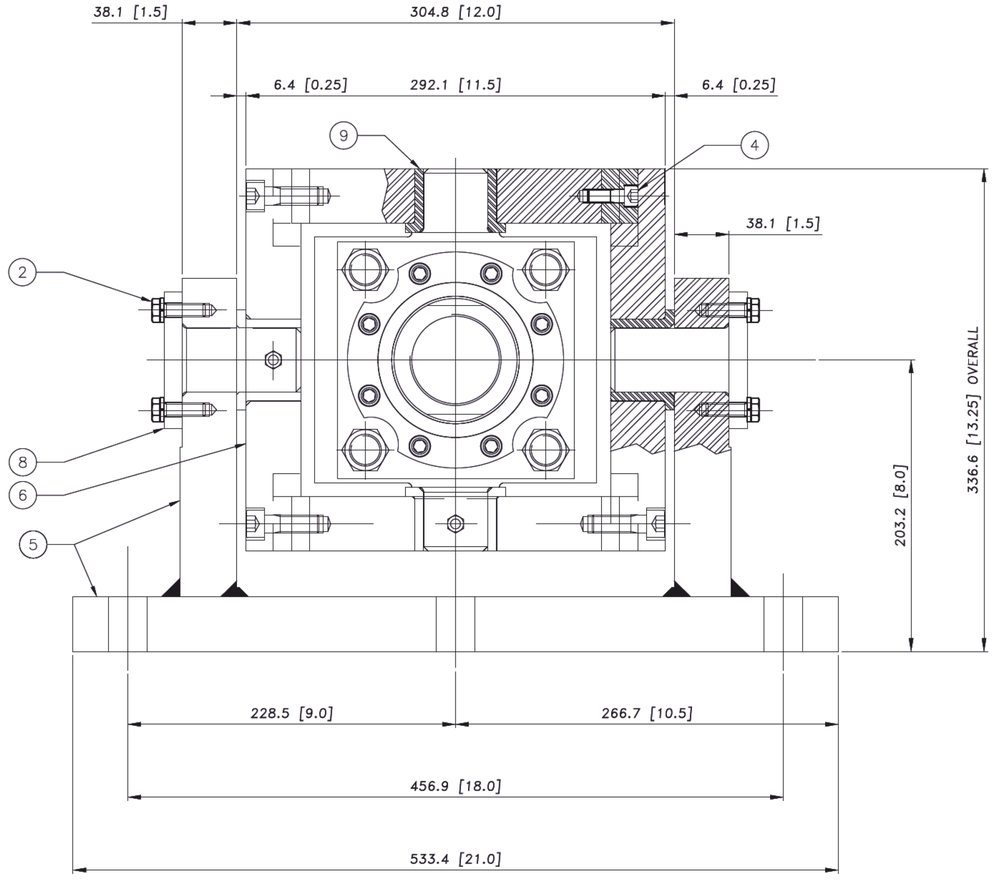
DPC — January 2019

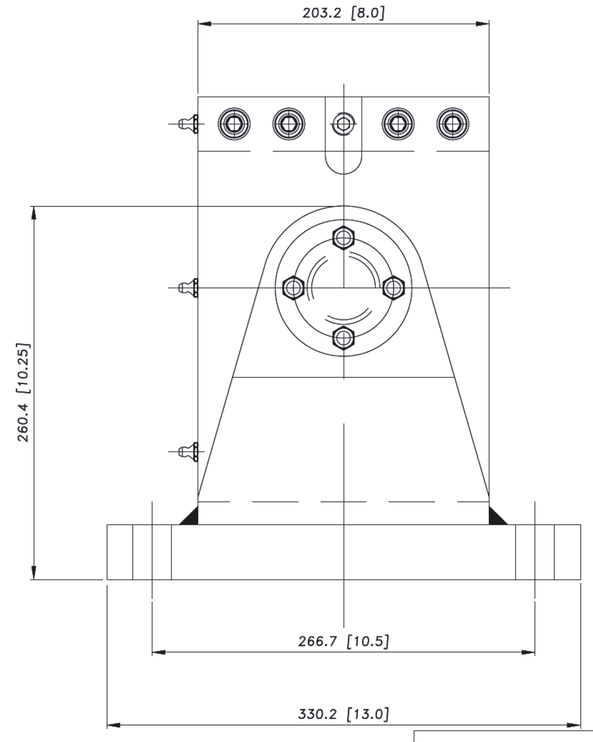
Project No./No. du projet | Client No./No du Client | Sheet No./ Feuille No. 02

Drawing Reference No./Numéro de Référence du Dessin
201





GIMBALL MOUNTING ASSEMBLY



BILL OF MATERIAL

ITEM	QTY	DWG	DESCRIPTION	MATERIAL
1	2		HEX SOCK HD CAP SCREW 1/2"–13 UNC X 1 1/2" LG	316SS
2	8		HEX SOCK HD CAP SCREW 3/8" UNC X 1" LG C/W L.W.	316SS
3	4		ALEMITE HYD LUB FITTING 1/8" NPTF	CAT#1669–B
4	4		HEX SOCK HD CAP SCREW 3/8" UNC X 1" LG	316SS
5	1	201–04	GIMBAL BASE	
6	2	201–05	GIMBAL SIDE PLATE – ITEM 1	
7	2	201–05	GIMBAL TOP/BOTTOM PLATE – ITEM 2	
8	2	201–05	GIMBAL PIN – ITEM 3	
9	4	201–05	GIMBAL BUSHING – ITEM 4	
10	4	201–05	GIMBAL KEY – ITEM 5	

PRODUCTS LISTED SET A STANDARD BY WHICH SUBSTITUTES WILL BE JUDGED

NOTES:
1. ALL STEEL WORK TO BE THERMALLY STRESS RELIEVED, SAND BLASTED, PRIMED AND PAINTED AS PER CONTRACT PAINT SPECIFICATION.
2. ALL WELDING AND THERMAL STRESS RELIEVING MUST CONFORM TO CSA W59 STANDARDS.
3. ALL MACHINED SURFACES MUST BE COATED WITH LPS–3 OR EQUAL CORROSION INHIBITOR.

1. DIMENSIONS ARE IN MILLIMETERS
2. TOLERANCES

X. DECIMALS	+/– 0.5
.X DECIMALS	+/– 0.1
.XX DECIMALS	+/– 0.05
ANGLES	+/– 0.5 DEG
HOLE SIZES	+/– 1mm
SURFACES	3.2 MICROMETER

No.	Date	Description	Drawn by Dessine par	Approved Approuve
A	2019/09/19	CORRECTED ITEM NUMBERS	DAF	DPC

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 _____

Parks Canada / Parcs Canada

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Chadwick Engineering Ltd.

Project title / Titre du projet

BOUNDARY ROAD SWING BRIDGE REHABILITATION

TRENT–SEVERN WATERWAY

ONTARIO

Drawing title / Titre du dessin

GIMBAL ASSEMBLY

Scale / Échelle
NOT TO SCALE

Drawn by/ Dessiné par — Date

Designed by/ Conçu par — Date

Checked by/ Vérifié par — Date

Approved by / Approuvé par — Date
DPC — January 2019

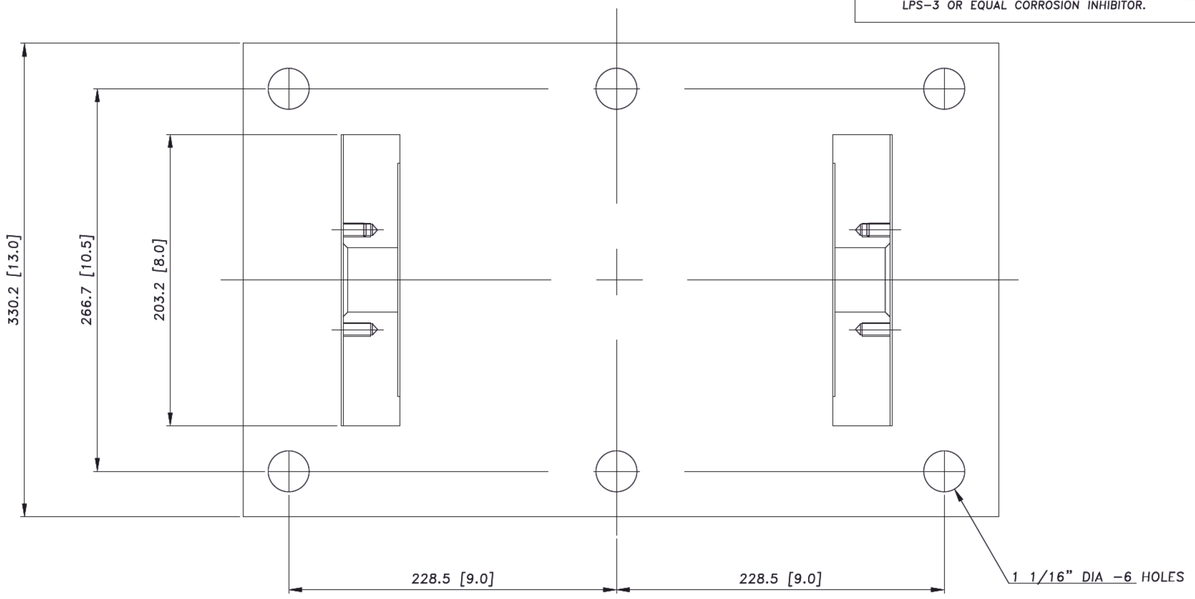
Project No./No. du projet | Client No./No du Client | Sheet No./ Feuille No. 03

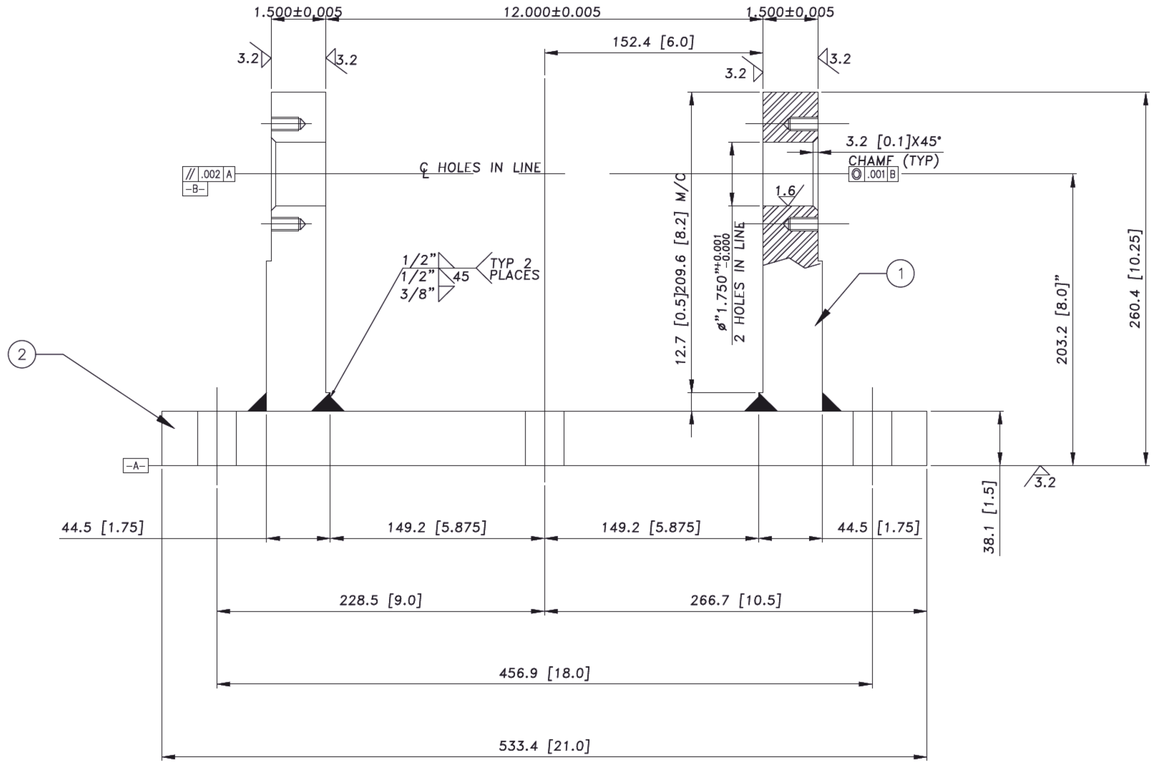
Drawing Reference No./Numéro de Référence du Dessin
201

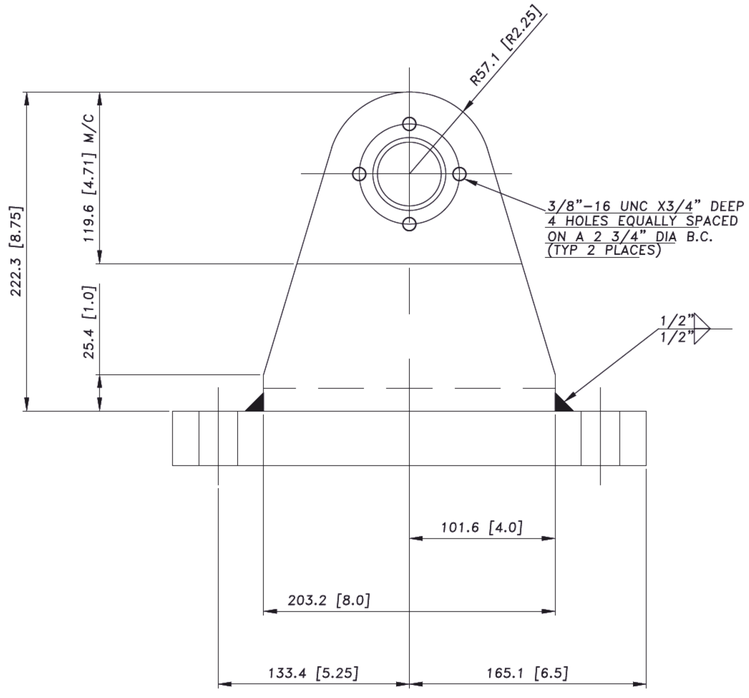
NOTES:
1. ALL STEEL WORK TO BE THERMALLY STRESS RELIEVED, SAND BLASTED, PRIMED AND PAINTED AS PER CONTRACT PAINT SPECIFICATION.
2. ALL WELDING AND THERMAL STRESS RELIEVING MUST CONFORM TO CSA W59 STANDARDS.
3. ALL MACHINED SURFACES MUST BE COATED WITH LPS-3 OR EQUAL CORROSION INHIBITOR.

BILL OF MATERIAL

ITEM	QTY	DESCRIPTION	MATERIAL
1	2	PLATE 1 3/4" X 8 X 8 3/4"	CSA G40.21 -50W
2	1	PLATE 1 3/4" X 13 X 21"	CSA G40.21 -50W







1. DIMENSIONS ARE IN MILLIMETERS
2. TOLERANCES

X. DECIMALS	+/- 0.5
.X DECIMALS	+/- 0.1
.XX DECIMALS	+/- 0.05
ANGLES	+/- 0.5 DEG
HOLE SIZES	+/- 1mm
SURFACES	3.2 MICROMETER

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 _____

Parks Canada / Parcs Canada

Canada

wsp

Chadwick Engineering Ltd.

Project title / Titre du projet

BOUNDARY ROAD SWING BRIDGE REHABILITATION

TRENT-SEVERN WATERWAY

ONTARIO

Drawing title / Titre du dessin

GIMBAL BASE

Scale / Échelle
NOT TO SCALE

Drawn by/ Dessiné par — Date

Designed by/ Conçu par — Date

Checked by/ Vérifié par — Date

Approved by / Approuvé par — Date
DPC — January 2019

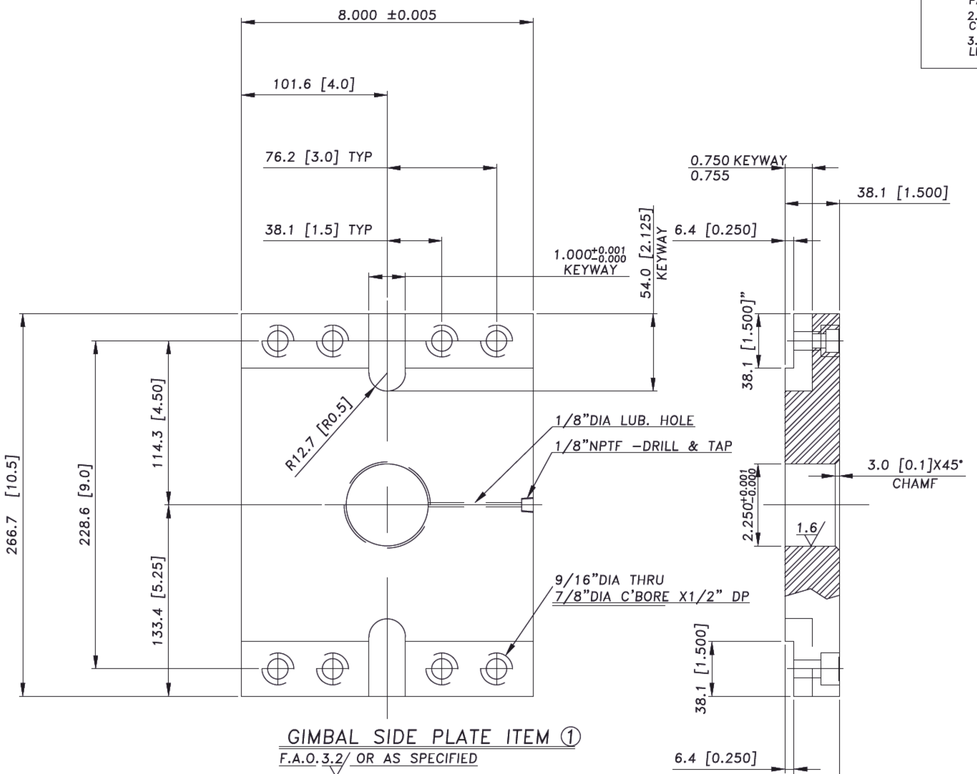
Project No./No. du projet | Client No./No du Client | Sheet No./ Feuille No.
04

Drawing Reference No./Numéro de Référence du Dessin
201

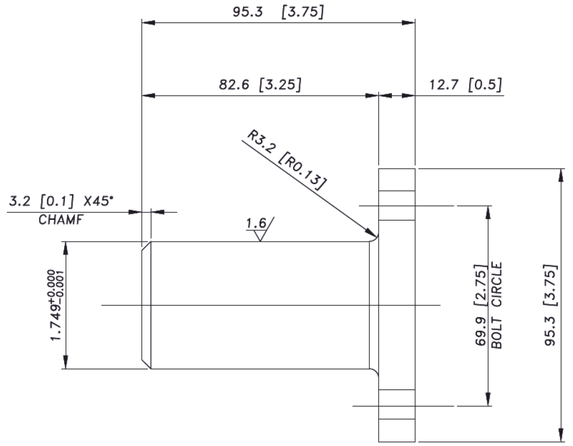
NOTES:
1. ALL STEEL WORK TO BE THERMALLY STRESS RELIEVED, SAND BLASTED, PRIMED AND PAINTED AS PER CONTRACT PAINT SPECIFICATION.
2. ALL WELDING AND THERMAL STRESS RELIEVING MUST CONFORM TO CSA W59 STANDARDS.
3. ALL MACHINED SURFACES MUST BE COATED WITH LPS-3 OR EQUAL CORROSION INHIBITOR.

BILL OF MATERIAL

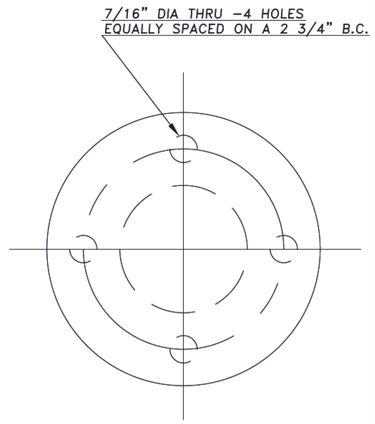
ITEM	QTY	DESCRIPTION	MATERIAL
1	2	PLATE 10-1/2" x 8" x 1-1/2" THK	CSA G40.21 -50W
2	2	PLATE 9" x 8" x 1-1/2" THK	CSA G40.21 -50W
3	2	RD BAR 3-3/4" DIA. x 3-3/4" LG	AISI PREHT 4140
4	4	RD BAR 2-3/4" DIA x 1-3/4" LG	AMPCO -18
5	4	RECT BAR 1" x 1" x 1-1/2" LG	AISI 1045

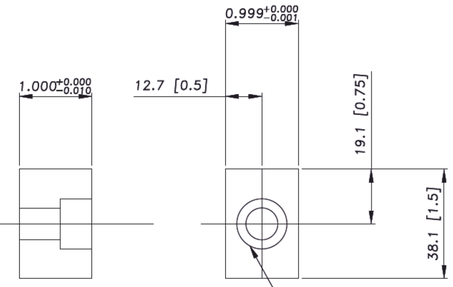


GIMBAL SIDE PLATE ITEM ①
F.A.O. 3.2/ OR AS SPECIFIED

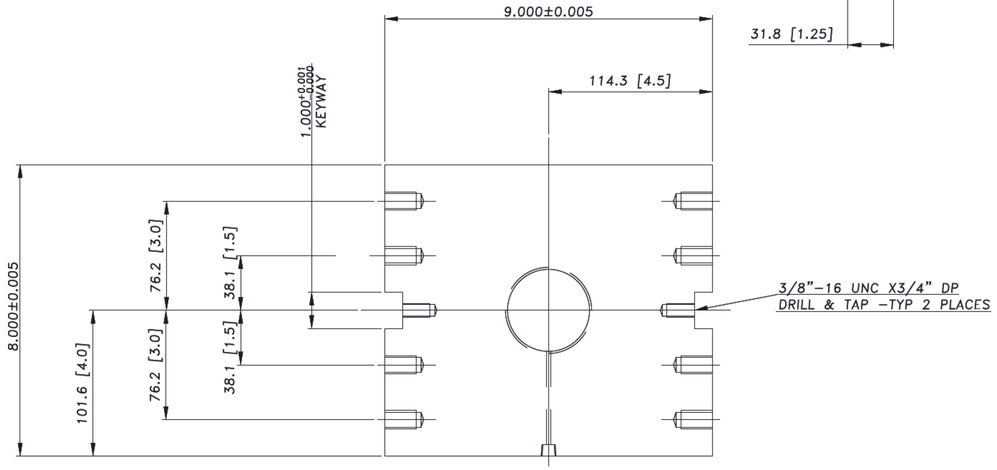


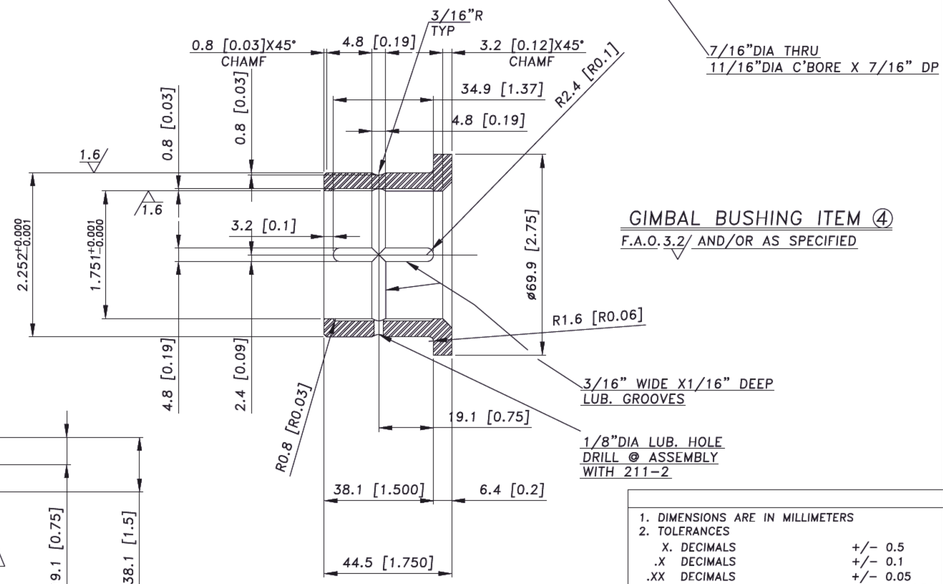
GIMBAL PIN ITEM ③
F.A.O. 3.2/ AND/OR AS SPECIFIED



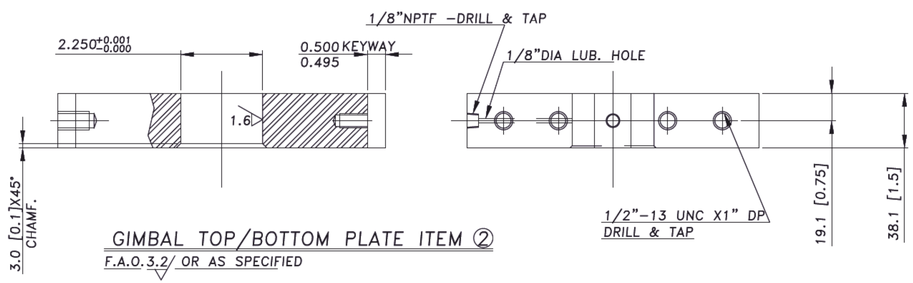


GIMBAL KEY ITEM ⑤
F.A.O. 1.6/AND/OR AS SPECIFIED





GIMBAL BUSHING ITEM ④
F.A.O. 3.2/ AND/OR AS SPECIFIED



GIMBAL TOP/BOTTOM PLATE ITEM ②
F.A.O. 3.2/ OR AS SPECIFIED

1. DIMENSIONS ARE IN MILLIMETERS
2. TOLERANCES

X. DECIMALS	+/- 0.5
.X DECIMALS	+/- 0.1
.XX DECIMALS	+/- 0.05
ANGLES	+/- 0.5 DEG
HOLE SIZES	+/- 1mm
SURFACES	3.2 MICROMETER

No.	Date	Description	Drawn by Dessine par	Approved Approuve

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 _____

Parks Canada / Parcs Canada

Canada

wsp

Chadwick Engineering Ltd.

Project title / Titre du projet

BOUNDARY ROAD SWING BRIDGE REHABILITATION

TRENT-SEVERN WATERWAY

ONTARIO

Drawing title / Titre du dessin

GIMBAL PART DETAILS

Scale / Échelle
NOT TO SCALE

Drawn by/ Dessiné par — Date

Designed by/ Conçu par — Date

Checked by/ Vérifié par — Date

Approved by / Approuvé par — Date

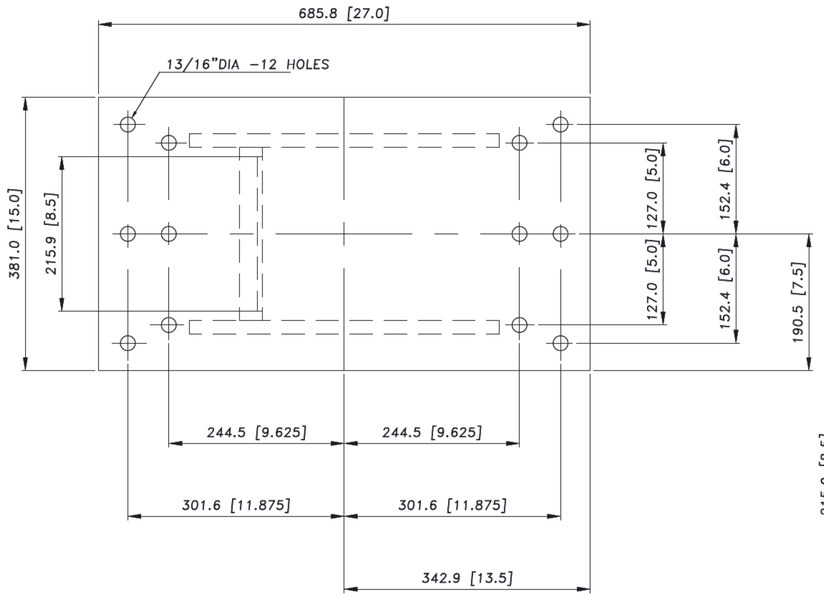
Project No./No. du projet | Client No./No du Client | Sheet No./ Feuille No. 05

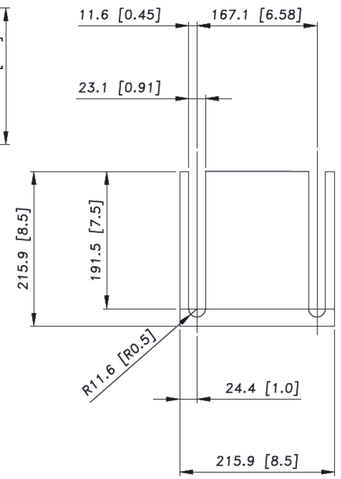
Drawing Reference No./Numéro de Référence du Dessin 201

NOTES:
1. ALL STEEL WORK TO BE THERMALLY STRESS RELIEVED, SAND BLASTED, PRIMED AND PAINTED AS PER CONTRACT PAINT SPECIFICATIONS.
2. ALL WELDING AND THERMAL STRESS RELIEVING MUST CONFORM TO CSA W59 STANDARDS.
3. ALL MACHINED SURFACES MUST BE COATED WITH LPS-3 OR EQUAL CORROSION INHIBITOR.

BILL OF MATERIAL

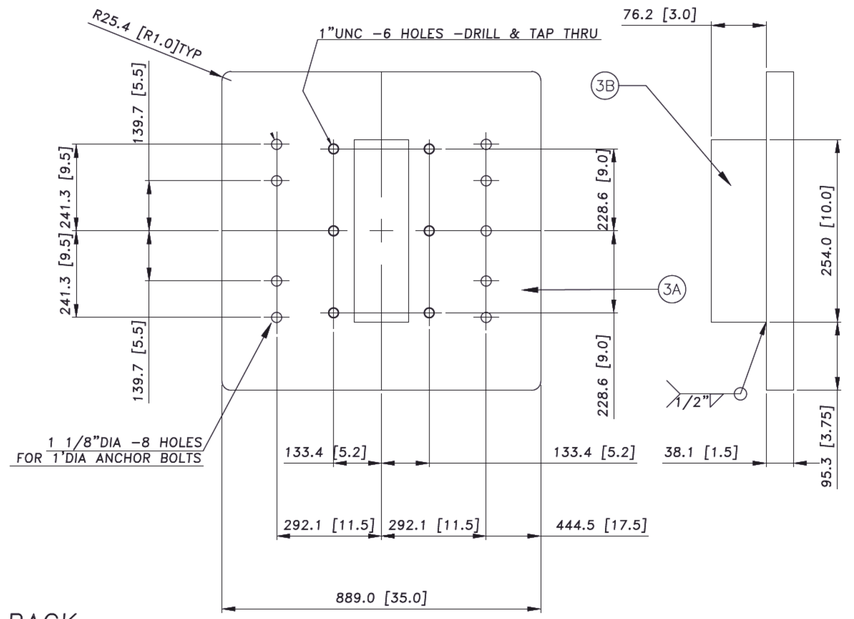
ITEM	QTY	DESCRIPTION	MATERIAL
1	2	CYLINDER CLEVIS BRACKET	
1A	1	PLATE 15" x 27" x 1-1/4" THK	CSA G40.21 -50W
1B	2	PLATE 13 1/4" x 17" x 3/4" THK	CSA G40.21 -50W
1C	1	PLATE 9 1/2" x 13 1/4" x 1-1/4" THK	CSA G40.21 -50W
2	2	CYLINDER CLEVIS SHIM PACK	316 S.S.
3	2	GIMBAL BASE PLATE	
3A	2	PLATE 35" x 35" x 1-1/2" THK	CSA G40.21 -50W
3B	2	RECT BAR 3" x 3" x 10" LG	CSA G40.21 -50W



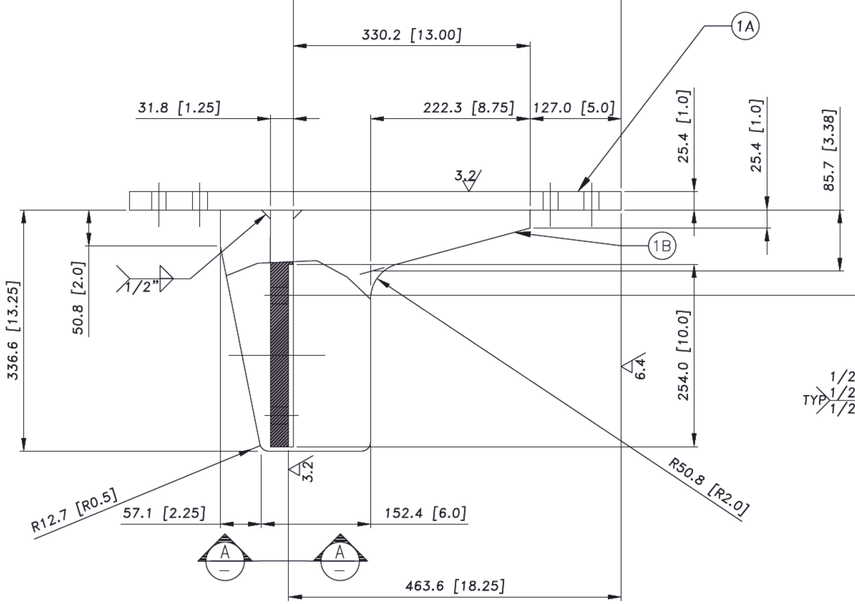


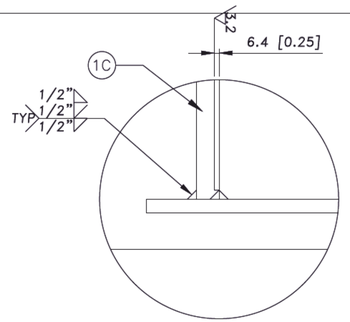
1/2" THICK SHIM PACK MADE UP OF:
1 - 1/4" THICK S.S.
1 - 1/8" THICK S.S.
2 - 1/16" THICK S.S.

CYLINDER CLEVIS SHIM PACK
ITEM ②



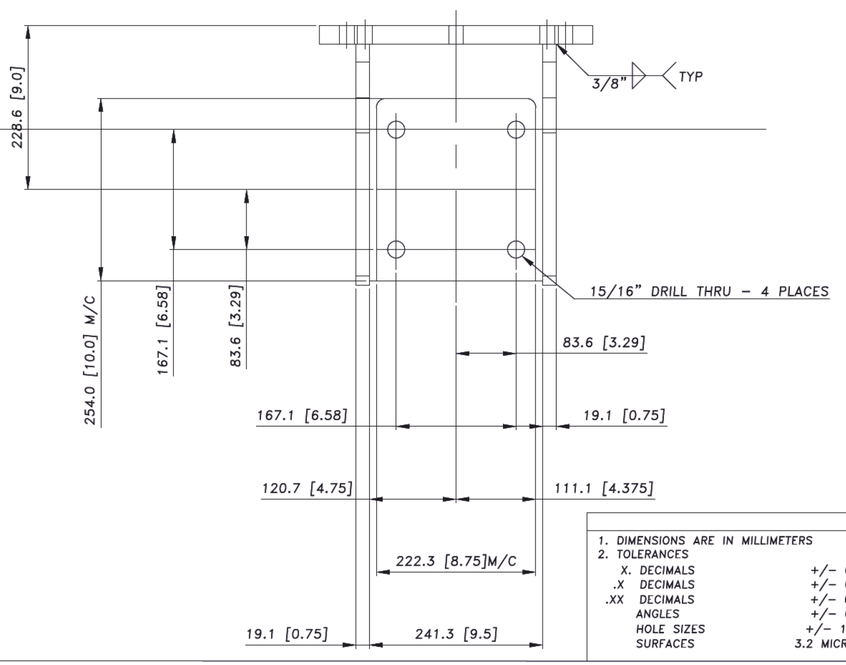
GIMBAL ASSEMBLY BASE PLATE ITEM ③





PARTIAL SECTION A-A

CYLINDER CLEVIS BRACKET ITEM ①
STEEL WELDED CONSTRUCTION



1. DIMENSIONS ARE IN MILLIMETERS
2. TOLERANCES

X. DECIMALS	+/- 0.5
.X DECIMALS	+/- 0.1
.XX DECIMALS	+/- 0.05
ANGLES	+/- 0.5 DEG
HOLE SIZES	+/- 1mm
SURFACES	3.2 MICROMETER

No.	Date	Description	Drawn by Dessine par	Approved Approuve

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 _____

Parks Canada Parcs Canada

Canada

wsp

Chadwick Engineering Ltd.

Project title / Titre du projet

BOUNDARY ROAD SWING BRIDGE REHABILITATION

TRENT-SEVERN WATERWAY

ONTARIO

Drawing title / Titre du dessin

CYLINDER CLEVIS BRACKET, SHIM PACK & GIMBAL BASE

Scale / Échelle
NOT TO SCALE

Drawn by/ Dessiné par — Date

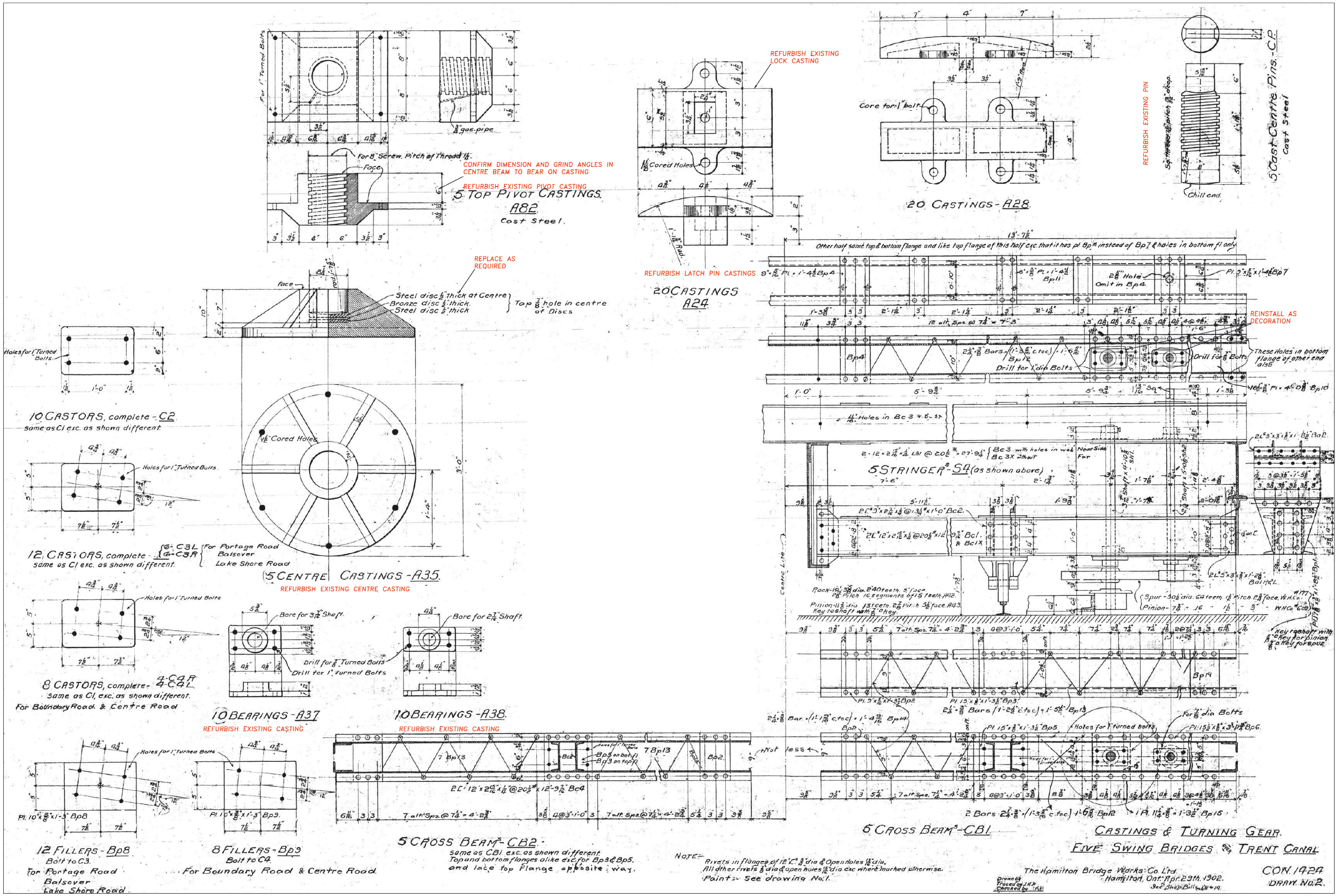
Designed by/ Conçu par — Date

Checked by/ Vérifié par — Date

Approved by / Approuvé par — Date
DPC — January 2019

Project No./No. du projet | Client No./No du Client | Sheet No./ Feuille No. 06

Drawing Reference No./Numéro de Référence du Dessin
201



No.	Date	Description	Drawn by / Dessine par	Approved / Approuve
A	2019-09-04	REMOVED WHEELS FROM DWG	DAF	

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 ______

Parks Canada / Parcs Canada

Canada

wsp

Chadwick Engineering Ltd.

Project title / Titre du projet

BOUNDARY ROAD SWING BRIDGE REHABILITATION

TRENT–SEVERN WATERWAY

ONTARIO

Drawing title / Titre du dessin

CENTRE PIVOT EXISTING EQUIPMENT

Scale / Échelle: NOT TO SCALE

Drawn by/ Dessiné par — Date

Designed by/ Conçu par — Date

Checked by/ Vérifié par — Date

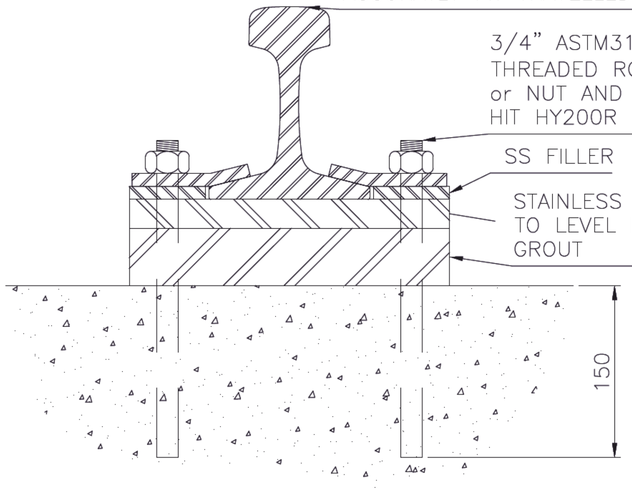
Approved by / Approuvé par: DPC — Date: January 2019

Project No./No. du projet

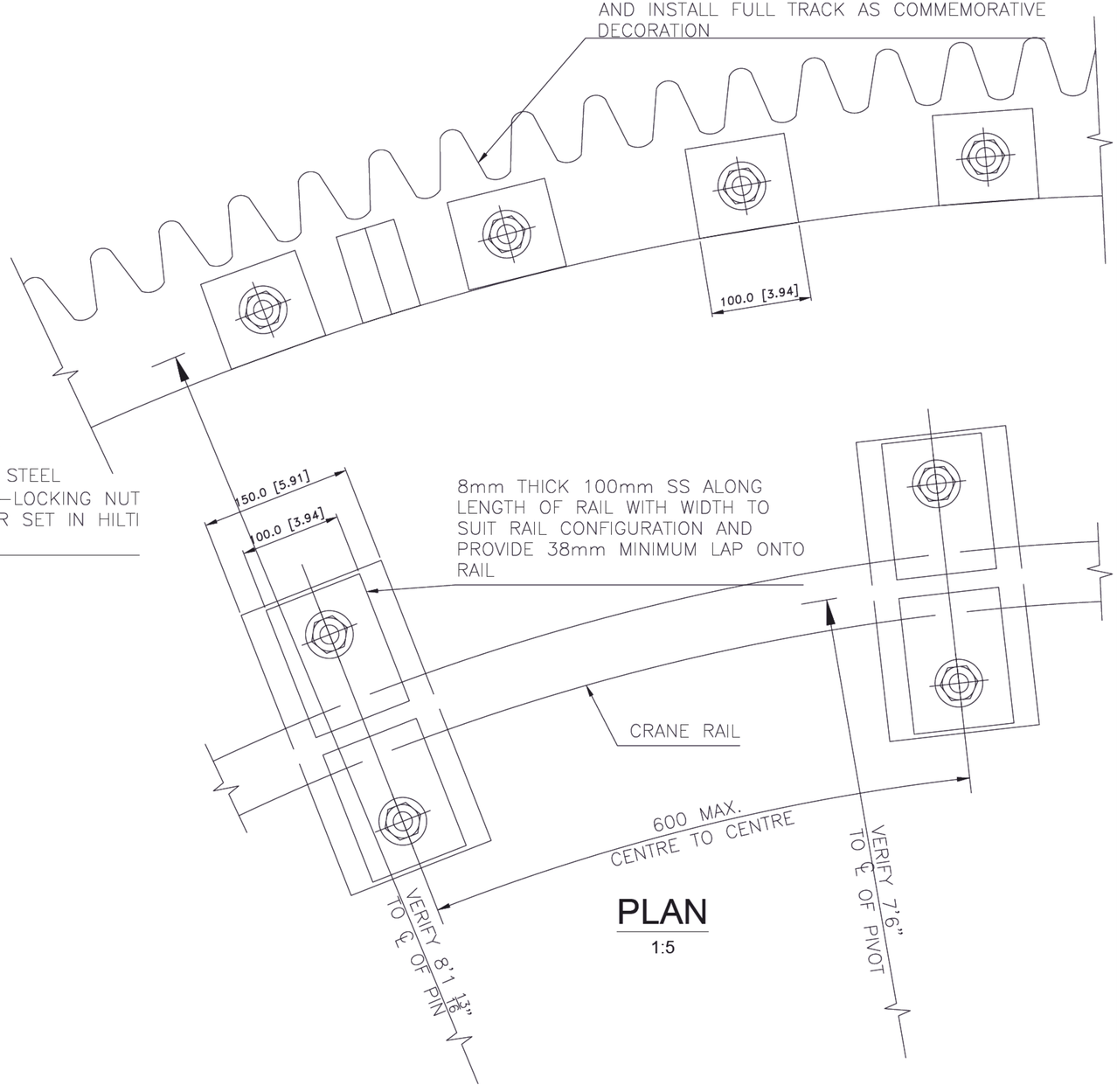
Client No./No du Client

Drawing Reference No./Numéro de Référence du Dessin: 202

Sheet No./Feuille No.: 01



C / x RAIL DETAIL
1:5



PLAN
1:5

1. DIMENSIONS ARE IN MILLIMETERS
2. TOLERANCES

X. DECIMALS	+/- 0.5
.X DECIMALS	+/- 0.1
.XX DECIMALS	+/- 0.05
ANGLES	+/- 0.5 DEG
HOLE SIZES	+/- 1mm
SURFACES	3.2 MICROMETER

No.	Date	Description	Drawn by Dessine par	Approved Approuve

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 _____

Parks Canada Parcs Canada

Canada

wsp

Chadwick Engineering Ltd.

Project title / Titre du projet

BOUNDARY ROAD SWING BRIDGE REHABILITATION

TRENT-SEVERN WATERWAY

ONTARIO

Drawing title / Titre du dessin

RAIL (BALANCE WHEEL) INSTALLATION

Scale / Échelle
NOT TO SCALE

Drawn by/ Dessiné par — Date

Designed by/ Conçu par — Date

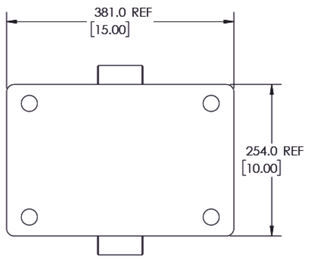
Checked by/ Vérifié par — Date

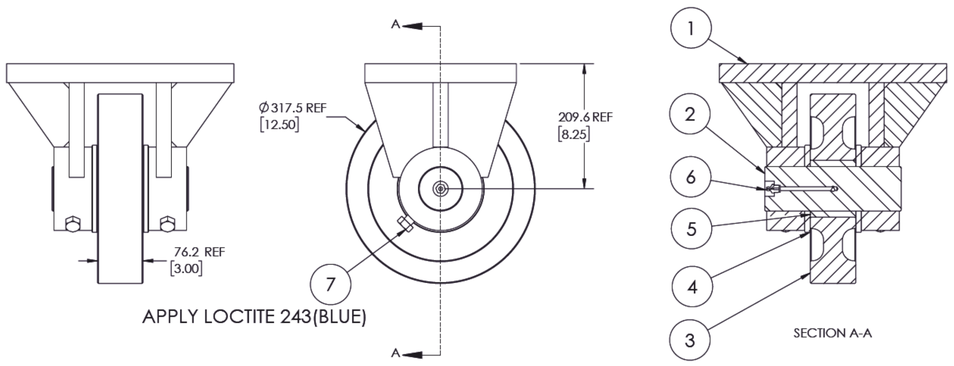
Approved by / Approuvé par — Date
DPC — January 2019

Project No./No. du projet | Client No./No du Client | Sheet No./ Feuille No.
02

Drawing Reference No./Numéro de Référence du Dessin
202

ITEM NO.	QTY.	PART NO.	DESCRIPTION	SPEC
1	1	202-03-01	BRACKET	
2	1	202-03-02	SHAFT	
3	1	202-03-03	WHEEL	
4	2	202-03-04	THRUST WASHER	
5	1	202-03-05	BUSHING	
6	1	McMASTER-CARR #1293K32	303 STAINLESS STEEL GREASE FITTING STRAIGHT, 1/4 PTF MALE, 53/64" OVERALL LENGTH	
7	2		HEX HEAD CAP SCREW 5/8-11 UNC x 1 3/4 LG. FULL THREAD	A4 (316)





B	2020-03-06	REMOVED REFERENCE TO REFURBISHMENT	DAF	DAF
A	2019-12-17	CORRECTED MATERIAL CALLOUT	DAF	DPC
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

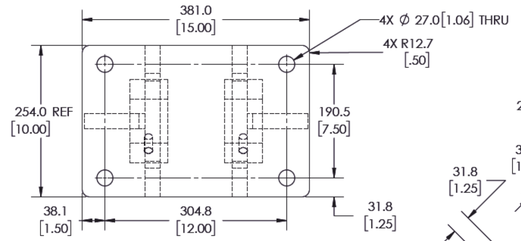
Client Acceptance / Acceptation du client

Signature _____ Date _____

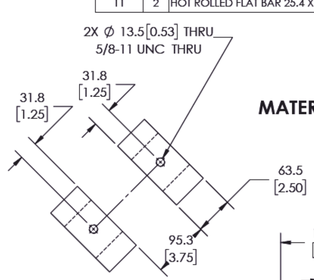
File No./No. de dossier _____

Parks Canada Parcs Canada

Canada

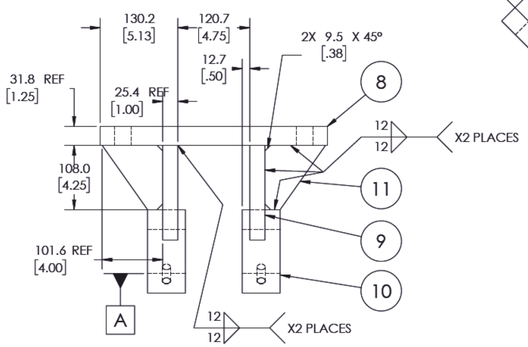


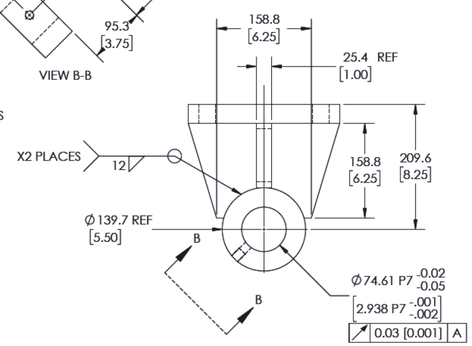
ITEM NO.	QTY.	DESCRIPTION	MATERIAL	LENGTH (MM)
8	1	HOT ROLLED FLAT BAR 31.8 X 254 [1.25" X 10"]	CSA G40.21 44W / 300W	381
9	2	HOT ROLLED FLAT BAR 25.4 X 254 [1" X 10"]	CSA G40.21 44W / 300W	161.925
10	2	HOT ROLLED ROUND BAR 139.7 [5.5"]	CSA G40.21 44W / 300W	63.5
11	2	HOT ROLLED FLAT BAR 25.4 X 101.6 [1" X 4"]	CSA G40.21 44W / 300W	114.3



202-03-01 - BRACKET
MATERIAL: CSA G40.21 44W / 300W

B

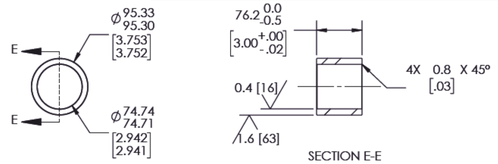




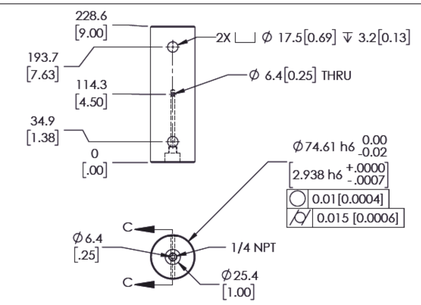
ITEM NO.	QTY.	DESCRIPTION	MATERIAL	LENGTH (MM)
4	1	ROUND BAR 152.4 [6"]	AMPCO 18	15

202-03-04 - THRUST WASHER A
MATERIAL: AMPCO 18

ITEM NO.	QTY.	DESCRIPTION	MATERIAL	LENGTH (MM)
5	1	ROUND BAR 101.6 [4"]	AMPCO 18	82

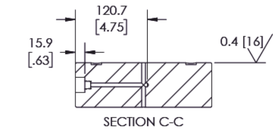


202-03-05 - BUSHING
MATERIAL: AMPCO 18

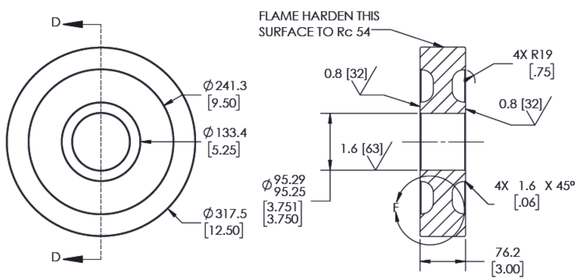


ITEM NO.	QTY.	DESCRIPTION	MATERIAL	LENGTH (MM)
2	1	ROUND BAR 76.2 [3"]	AISI 630 C1150	235

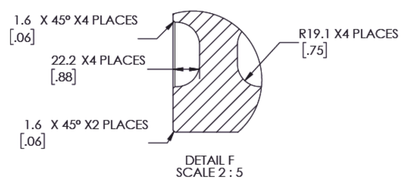
202-03-02 - SHAFT
MATERIAL: AISI 630 C1150



ITEM NO.	QTY.	DESCRIPTION	MATERIAL	LENGTH (MM)
3	1	HOT ROLLED ROUND BAR 330.2 [13"]	AISI 4140	85



202-03-03 - WHEEL
MATERIAL: AISI 4140
FINISH: COAT ALL EXPOSED SURFACES WITH LPS-3 OR EQUIVALENT



1. DIMENSIONS ARE IN MILLIMETERS
2. TOLERANCES

X. DECIMALS	± 0.5
.X DECIMALS	± 0.1
.XX DECIMALS	± 0.05
ANGLES	± 0.5 DEG
HOLE SIZES	± 1mm
SURFACES	3.2 MICROMETER

wsp

Chadwick Engineering Ltd.
www.chadwickengineering.com

Project title / Titre du projet

BOUNDARY ROAD SWING BRIDGE REHABILITATION

TRENT-SEVERN WATERWAY

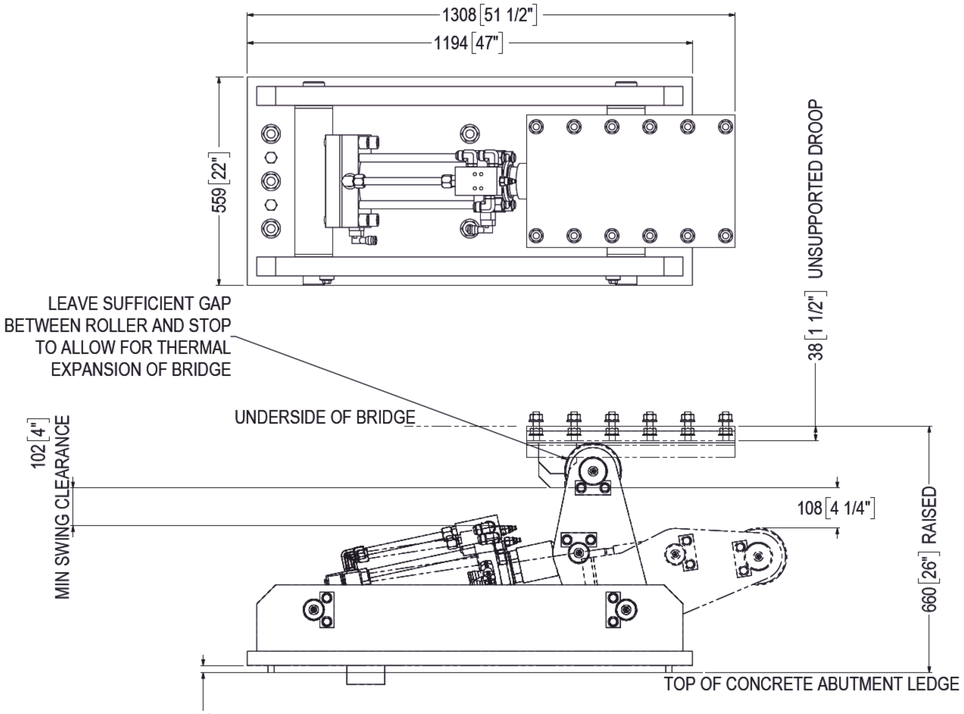
ONTARIO

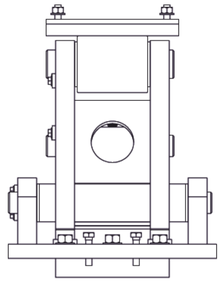
Drawing title / Titre du dessin

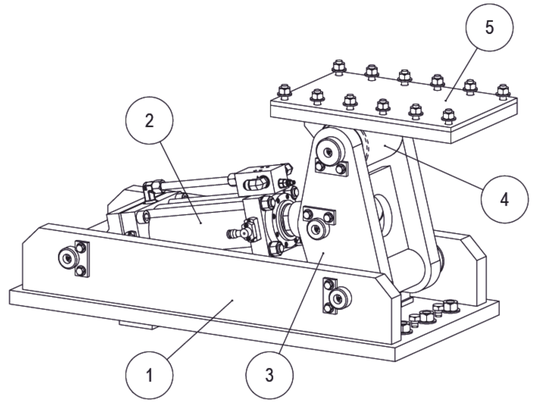
BALANCE WHEEL ASSEMBLY

Scale / Échelle	1:5
Drawn by/ Dessiné par	DAF
Date	2019-09-03
Designed by/ Conçu par	DAF
Date	2019-09-03
Checked by/ Vérifié par	DAF
Date	2020-03-06
Approved by / Approuvé par	DPC
Date	2019-09-19
Project No./No. du projet	
Client No./No du Client	
Sheet No./ Feuille No.	03
Drawing Reference No./Numéro de Référence du Dessin	202

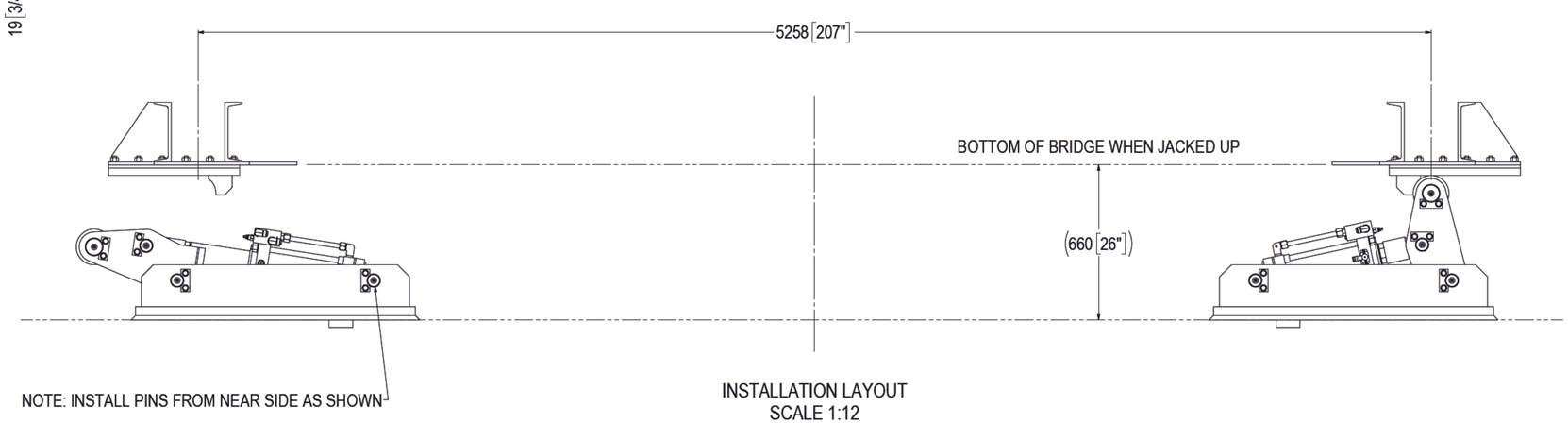
PART NUMBER: 203-01
DESCRIPTION: LIFT ASSEMBLY
QUANTITY: 2







BILL OF MATERIALS			
ITEM NO.	QTY.	PART NUMBER	DESCRIPTION
1	1	203-02	BASE ASSEMBLY
2	1	203-03	CYLINDER ASSEMBLY
3	1	203-04	PIVOT ARM ASSEMBLY
4	1	203-05	ROLLER ASSEMBLY
5	1	203-06	ROLLER PLATE ASSEMBLY



INSTALLATION LAYOUT
SCALE 1:12

NOTE: ALL DIMENSIONS ARE REFERENCE ONLY

1. DIMENSIONS ARE IN MILLIMETERS
2. TOLERANCES

X.	DECIMALS	± 0.5
.X	DECIMALS	± 0.1
.XX	DECIMALS	± 0.05
	ANGLES	± 0.5 DEG
	HOLE SIZES	± 1mm
	SURFACES	3.2 MICROMETER

No.	Date	Description	Drawn By / Dessiné par	Approved / Approuvé
A	2019-08-30	CORRECTED LOCATION DIMENSIONS	DAF	DPC

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 _____

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Canada

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Project title / Titre du projet

BOUNDARY ROAD SWING BRIDGE REHABILITATION

TRENT-SEVERN WATERWAY

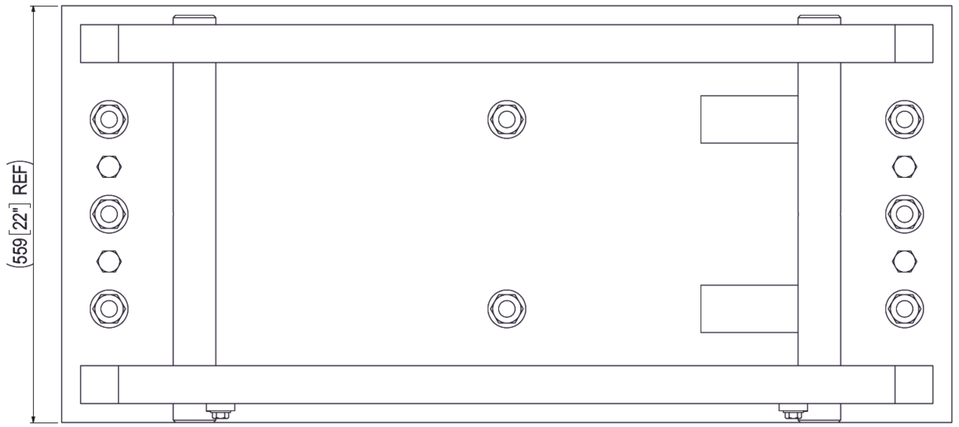
ONTARIO

Drawing title / Titre du dessin

LIFT ASSEMBLY

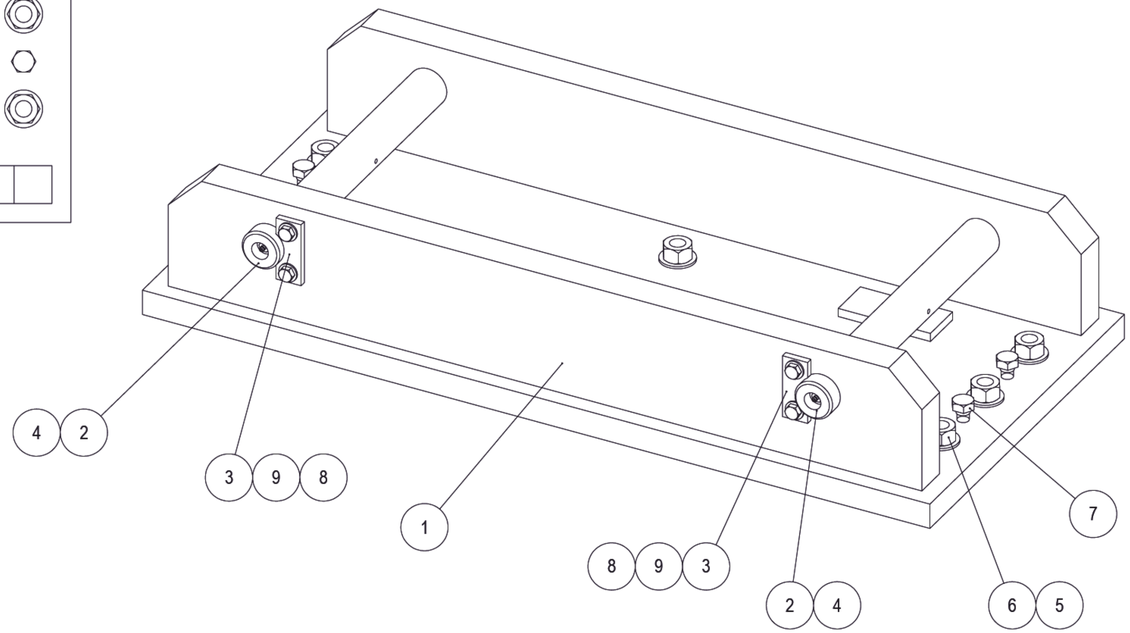
Scale / Échelle	1:8
Drawn by / Dessiné par	M_D
Date	2019-01-14
Designed by / Conçu par	M_D
Date	2019-01-07
Checked by / Vérifié par	DPC
Date	2019-01-28
Approved by / Approuvé par	DPC
Date	2019-01-28
Project No./No. du projet	
Client No./No du Client	
Sheet No./ Feuille No.	01
Drawing Reference No./Numéro de Référence du Dessin	203

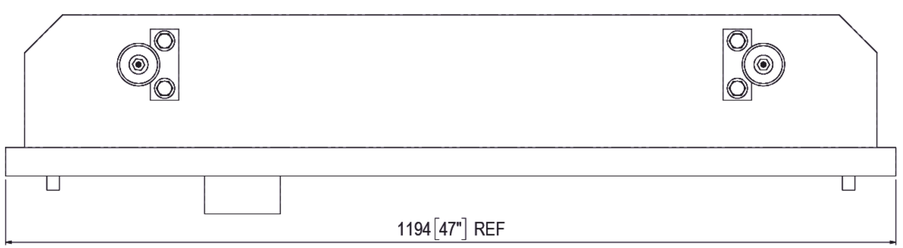
PART NUMBER: 203-02
DESCRIPTION: BASE ASSEMBLY
QUANTITY: 2

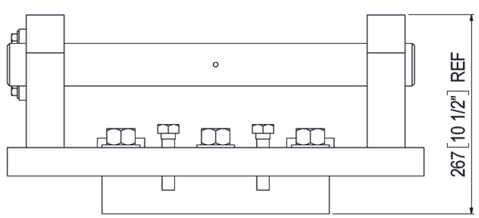


BILL OF MATERIALS

ITEM NO.	QTY.	PART NUMBER	DESCRIPTION
1	1	203-07	BASE
2	2	203-08	PIVOT SHAFT
3	2	203-09	
4	2	MCMASTER-CARR P/N 1293K32	GREASE FITTING, 303 SS
5	8	1"	SAE FLAT WASHER, 316 SS
6	8	1"-8	HEX NUT, 316 SS
7	4	3/4"-10 UNC X 3" LG	HEX HEAD CAP SCREW, 316 SS
8	4	1/2"	SAE FLAT WASHER, 316 SS
9	4	1/2"-13 UNC X 1 1/4" LG	HEX HEAD CAP SCREW, 316 SS







1. DIMENSIONS ARE IN MILLIMETERS
2. TOLERANCES

X.	DECIMALS	± 0.5
.X	DECIMALS	± 0.1
.XX	DECIMALS	± 0.05
	ANGLES	± 0.5 DEG
	HOLE SIZES	± 1mm
	SURFACES	3.2 MICROMETER

No.	Date	Description	Drawn By Desine par	Approved Approuve
		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 _____

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BOUNDARY ROAD SWING BRIDGE REHABILITATION

TRENT-SEVERN WATERWAY

ONTARIO

Drawing title / Titre du dessin

BASE ASSEMBLY

Scale / Échelle
1:4

Drawn by/ Dessiné par: M_D — Date: 2019-01-14

Designed by/ Conçu par: M_D — Date: 2019-01-07

Checked by/ Vérifié par: DPC — Date: 2019-01-21

Approved by / Approuvé par: DPC — Date: 2019-01-21

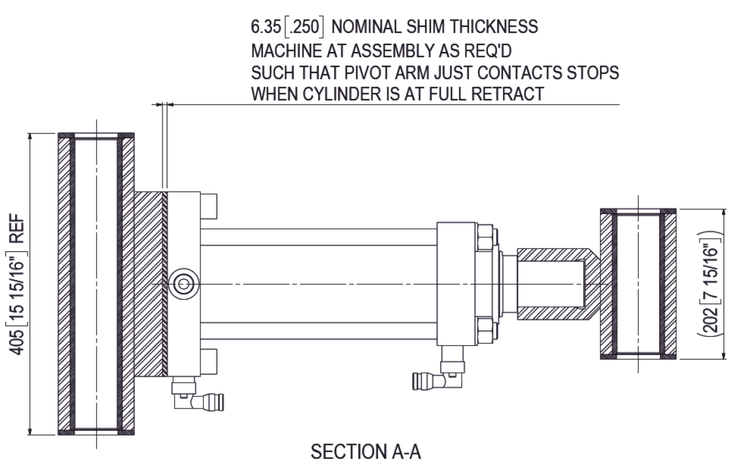
Project No./No. du projet | Client No./No du Client | Sheet No./ Feuille No. 02

Drawing Reference No./Numéro de Référence du Dessin 203

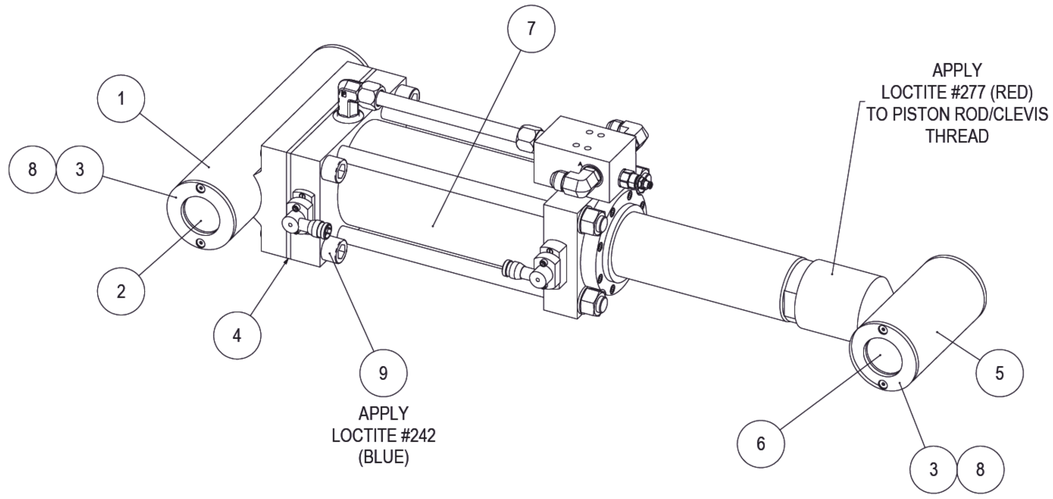
PART NUMBER: 203-03
DESCRIPTION: CYLINDER ASSEMBLY
QUANTITY: 2

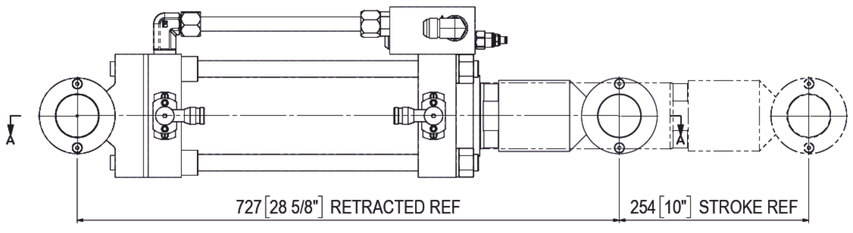
BILL OF MATERIALS

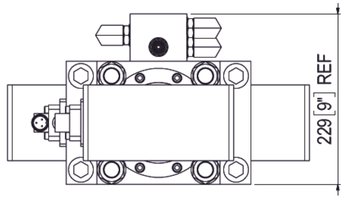
ITEM NO.	QTY.	PART NUMBER	DESCRIPTION
1	1	203-10	
2	1	203-11	
3	4	203-12	
4	1	203-13	
5	1	203-14	
6	1	203-15	
7	1	203-16	
8	8	1/2"-13 UNC X 1 1/2" LG	FLAT HEAD CAP SCREW, 316 SS
9	4	7/8"-9 UNC X 3 3/4" LG	SOCKET HEAD CAP SCREW, STEEL, GR. 8, ZINC PL



SECTION A-A







1. DIMENSIONS ARE IN MILLIMETERS
2. TOLERANCES

X.	DECIMALS	± 0.5
.X	DECIMALS	± 0.1
.XX	DECIMALS	± 0.05
	ANGLES	± 0.5 DEG
	HOLE SIZES	± 1mm
	SURFACES	3.2 MICROMETER

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 _____

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Canada

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Project title / Titre du projet

BOUNDARY ROAD SWING BRIDGE REHABILITATION

TRENT-SEVERN WATERWAY

ONTARIO

Drawing title / Titre du dessin

CYLINDER ASSEMBLY

Scale / Échelle: 1:4

Drawn by/ Dessiné par: M_D — Date: 2019-01-14

Designed by/ Conçu par: M_D — Date: 2019-01-07

Checked by/ Vérifié par: DPC — Date: 2019-01-21

Approved by / Approuvé par: DPC — Date: 2019-01-21

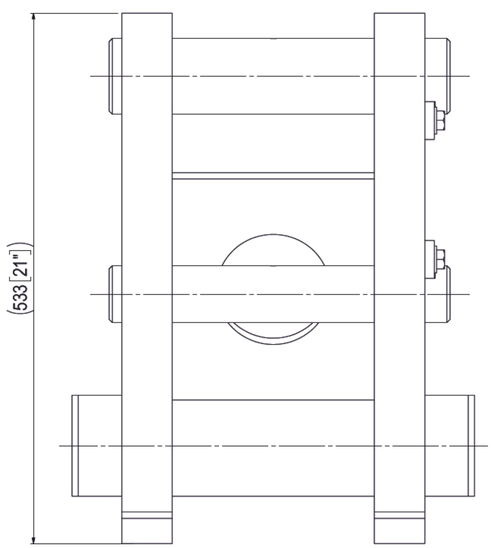
Project No./No. du projet | Client No./No du Client | Sheet No./ Feuille No.: 03

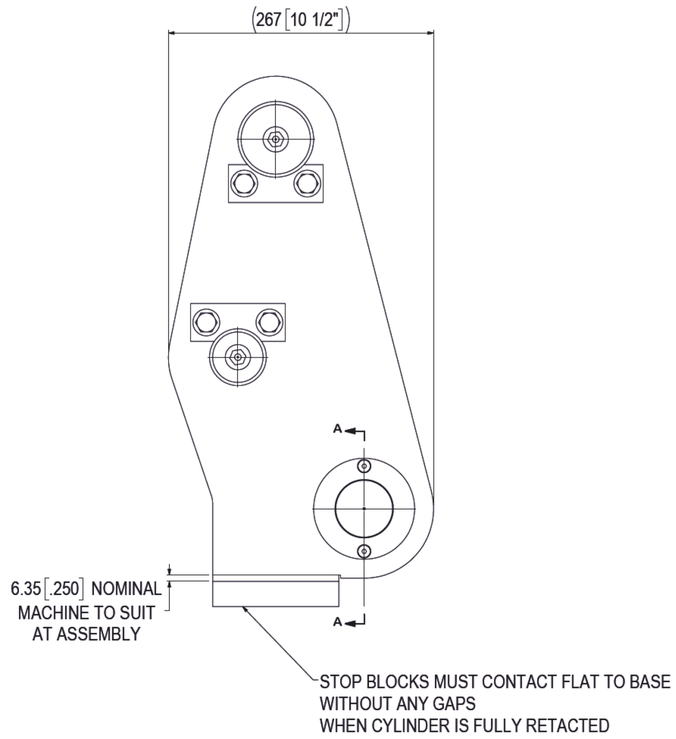
Drawing Reference No./Numéro de Référence du Dessin: 203

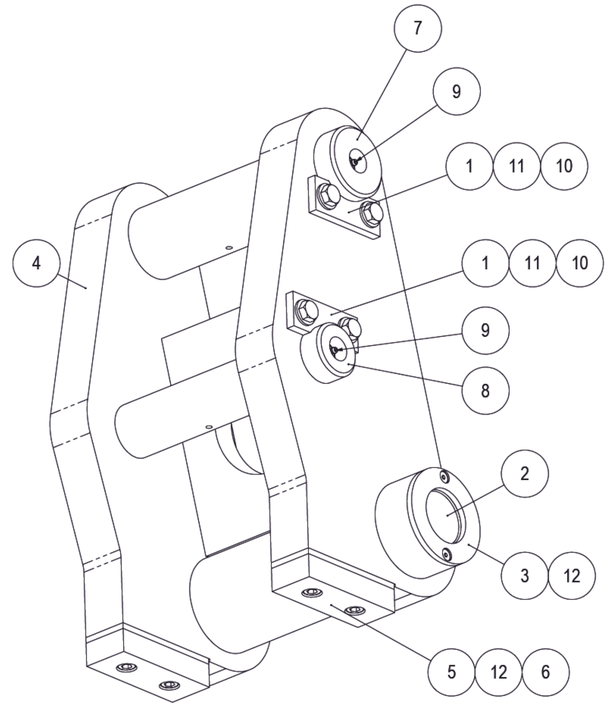
PART NUMBER: 203-04
DESCRIPTION: PIVOT ARM ASSEMBLY
QUANTITY: 2

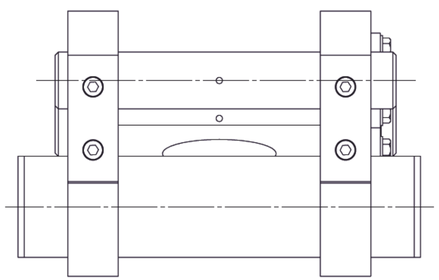
BILL OF MATERIALS

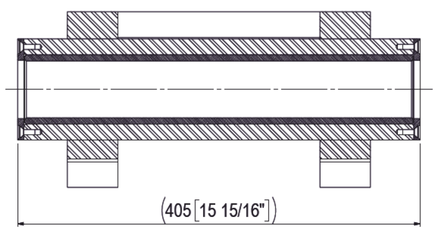
ITEM NO.	QTY.	PART NUMBER	DESCRIPTION
1	2	203-09	
2	1	203-11	
3	2	203-12	
4	1	203-17	
5	2	203-18	
6	2	203-19	
7	1	203-20	ROLLER SHAFT
8	1	203-21	
9	2	MCMASTER-CARR P/N 1293K32	GREASE FITTING, 303 SS
10	4	1/2"	SAE FLAT WASHER, 316 SS
11	4	1/2"-13 UNC X 1 1/4" LG	HEX HEAD CAP SCREW, 316 SS
12	8	1/2"-13 UNC X 1 1/2" LG	SOCKET HEAD CAP SCREW, 316 SS











SECTION A-A

1. DIMENSIONS ARE IN MILLIMETERS
2. TOLERANCES

X. DECIMALS	± 0.5
.X DECIMALS	± 0.1
.XX DECIMALS	± 0.05
ANGLES	± 0.5 DEG
HOLE SIZES	± 1mm
SURFACES	3.2 MICROMETER

No.	Date	Description	Drawn By Desine par	Approved Approuve
		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 _____

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BOUNDARY ROAD SWING BRIDGE

TRENT-SEVERN WATERWAY

ONTARIO

Drawing title / Titre du dessin

PIVOT ARM ASSEMBLY

Scale / Échelle
1:3

Drawn by/ Dessiné par: M_D — Date: 2019-01-14

Designed by/ Conçu par: M_D — Date: 2019-01-07

Checked by/ Vérifié par: DPC — Date: 2019-01-28

Approved by / Approuvé par: DPC — Date: 2019-01-28

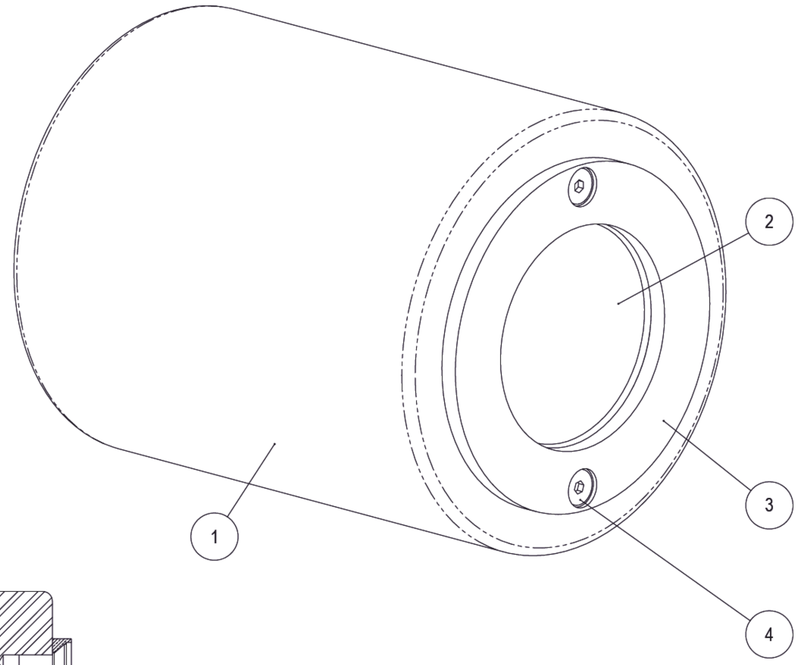
Project No./No. du projet | Client No./No du Client | Sheet No./ Feuille No. 04

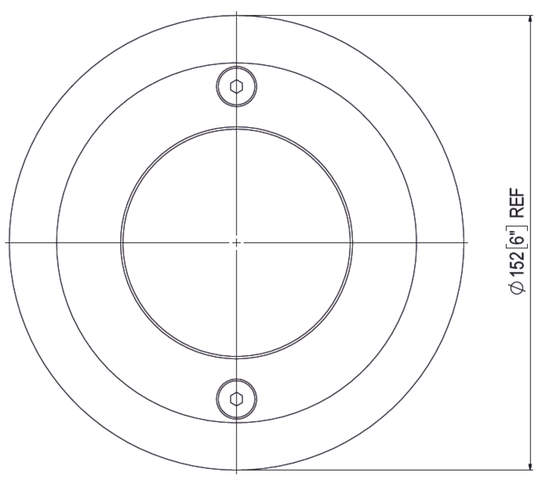
Drawing Reference No./Numéro de Référence du Dessin: 203

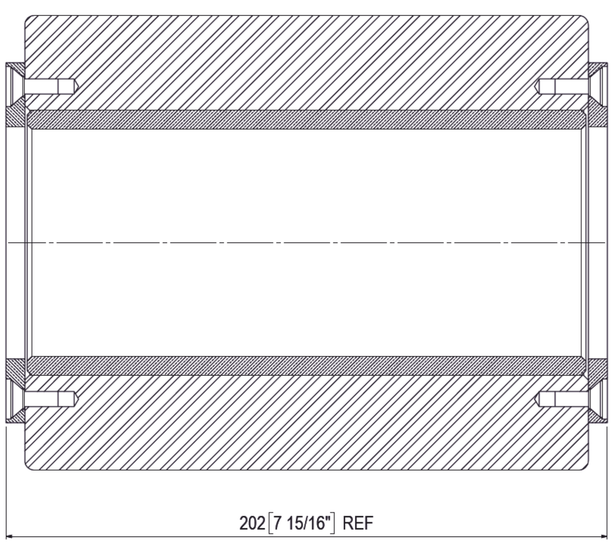
PART NUMBER: 203-05
DESCRIPTION: ROLLER ASSEMBLY
QUANTITY: 2

BILL OF MATERIALS

ITEM NO.	QTY.	PART NUMBER	DESCRIPTION
1	1	203-22	
2	1	203-23	
3	2	203-24	
4	4	1/2"-13 UNC X 1 1/2" LG	FLAT HEAD CAP SCREW, 316 SS







SECTION A-A

1. DIMENSIONS ARE IN MILLIMETERS
2. TOLERANCES

X. DECIMALS	± 0.5
.X DECIMALS	± 0.1
.XX DECIMALS	± 0.05
ANGLES	± 0.5 DEG
HOLE SIZES	± 1mm
SURFACES	3.2 MICROMETER

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 _____

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Project title / Titre du projet

BOUNDARY ROAD SWING BRIDGE REHABILITATION

TRENT-SEVERN WATERWAY

ONTARIO

Drawing title / Titre du dessin

ROLLER ASSEMBLY

Scale / Échelle: 1:1

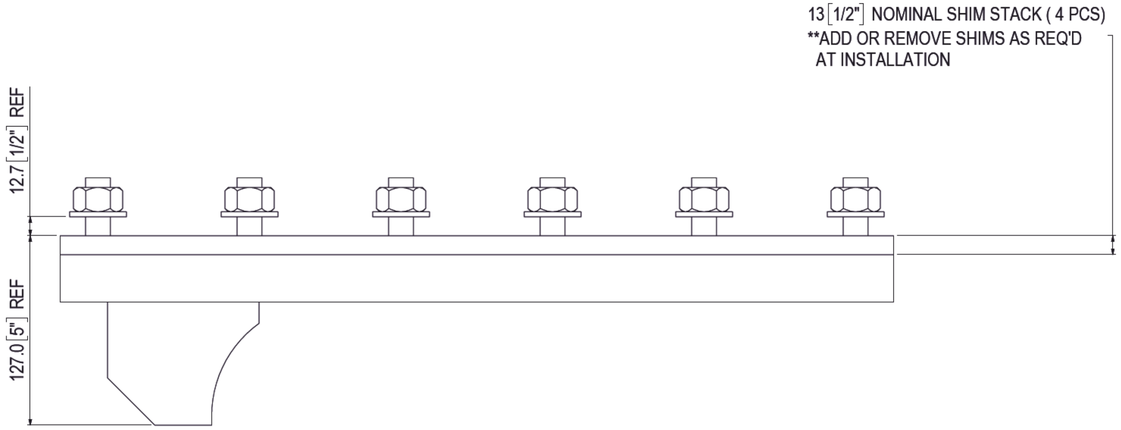
Drawn by/ Dessiné par: M_D	Date: 2019-01-14
Designed by/ Conçu par: M_D	Date: 2019-01-07
Checked by/ Vérifié par: DPC	Date: 2019-01-21
Approved by / Approuvé par: DPC	Date: 2019-01-21

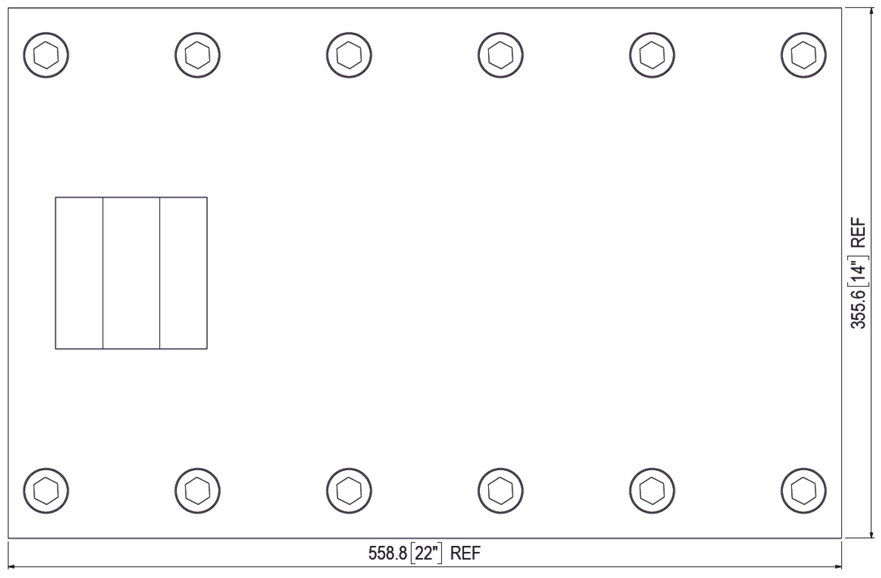
Project No./No. du projet	Client No./No du Client	Sheet No./ Feuille No.
Drawing Reference No./Numéro de Référence du Dessin: 203		05

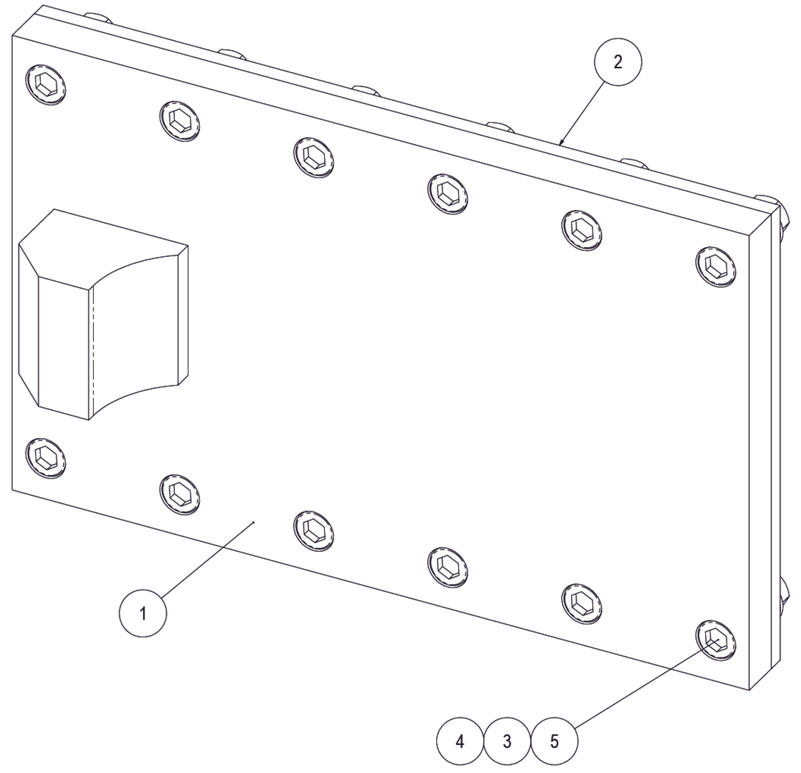
PART NUMBER: 203-06
DESCRIPTION: ROLLER PLATE ASSEMBLY
QUANTITY: 2

BILL OF MATERIALS

ITEM NO.	QTY.	PART NUMBER	DESCRIPTION
1	1	203-25	
2	**	203-26	
3	12	3/4"	SAE FLAT WASHER, 316 SS
4	12	3/4"-10 UNC	HEX NUT, 316 SS
5	12	3/4"-10 UNC X 2 1/2" LG	SOCKET HEAD CAP SCREW, 316 SS







1. DIMENSIONS ARE IN MILLIMETERS
2. TOLERANCES

X. DECIMALS	± 0.5
.X DECIMALS	± 0.1
.XX DECIMALS	± 0.05
ANGLES	± 0.5 DEG
HOLE SIZES	± 1mm
SURFACES	3.2 MICROMETER

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 _____

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Project title / Titre du projet
BOUNDARY ROAD SWING BRIDGE REHABILITATION
TRENT-SEVERN WATERWAY
ONTARIO

Drawing title / Titre du dessin
ROLLER PLATE ASSEMBLY

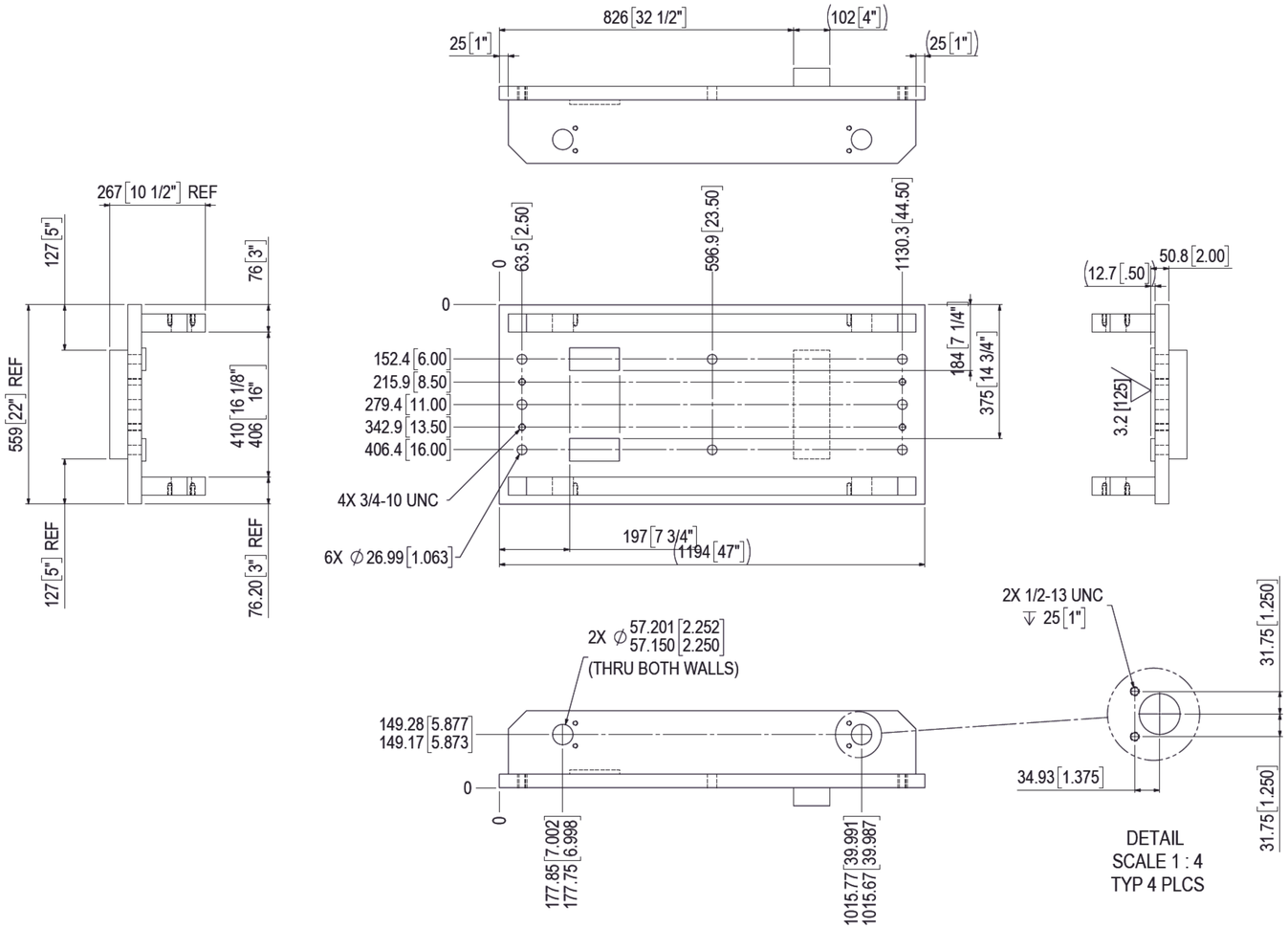
Scale / Échelle: 1:2

Drawn by/ Dessiné par: M_D — Date: 2019-01-14
Designed by/ Conçu par: M_D — Date: 2019-01-07
Checked by/ Vérifié par: DPC — Date: 2019-01-21
Approved by / Approuvé par: DPC — Date: 2019-01-21

Project No./No. du projet | Client No./No du Client | Sheet No./ Feuille No.: 06
Drawing Reference No./Numéro de Référence du Dessin: 203

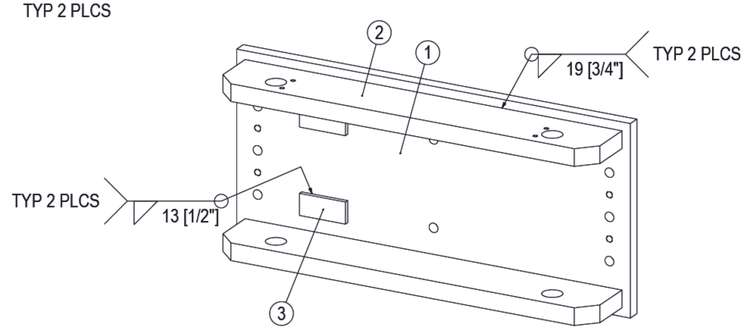
PART NUMBER: 203-07
DESCRIPTION: BASE
MATERIAL: SEE CUT LIST
FINISH: PAINT (DO NOT PAINT TAPPED HOLES OR PRECISION BORES)
QUANTITY: 2

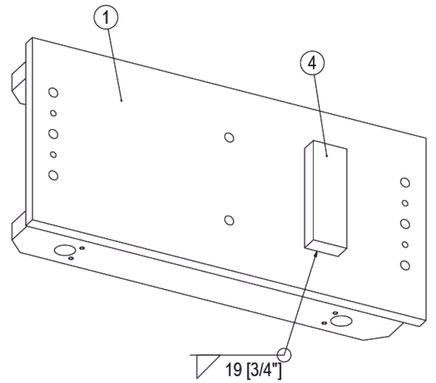
WELDMENT CUT LIST			
ITEM	QTY.	MATERIAL	CUT LENGTH
1	1	CSA G40.21-44W HRS PL, 51 [2"] THK	178 X 1143 [7" X 45"]
2	1	CSA G40.21-44W HRS PL, 38 [1 1/2"] THK	559 X 1194 [22" X 47"]
3	2	CSA G40.21-44W HRS FB, 19 X 64 [3/4" X 2 1/2"]	140 [5 1/2"]
4	1	CSA G40.21-44W HRS FB, 51 X 102 [2" X 4"]	305 [12"]

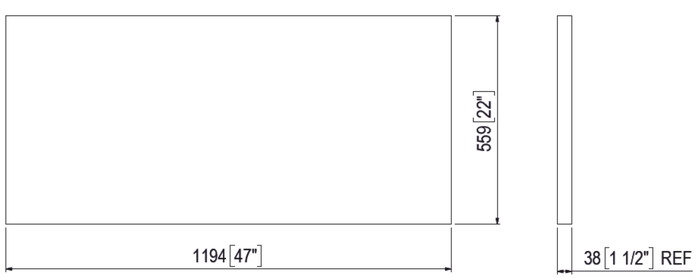


DETAIL
SCALE 1 : 4
TYP 4 PLCS

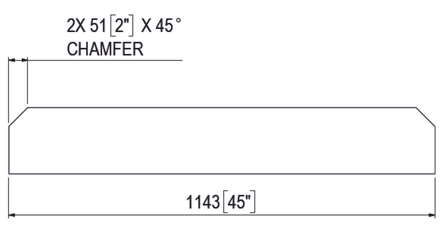
NOTE:
CLAMP ITEM 3 TO ITEM 1
DURING WELDING
TO ELIMINATE ANY GAPS
TYP 2 PLCS



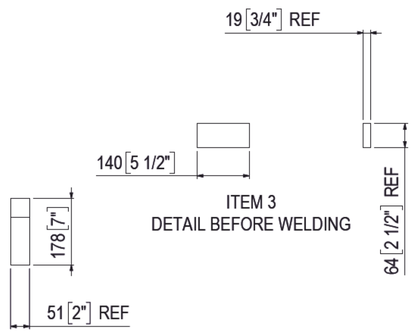




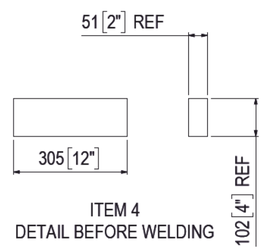
ITEM 1
DETAIL BEFORE WELDING



ITEM 2
DETAIL BEFORE WELDING



ITEM 3
DETAIL BEFORE WELDING



ITEM 4
DETAIL BEFORE WELDING

1. DIMENSIONS ARE IN MILLIMETERS
2. TOLERANCES

X.	DECIMALS	± 0.5
.X	DECIMALS	± 0.1
.XX	DECIMALS	± 0.05
	ANGLES	± 0.5 DEG
	HOLE SIZES	± 1mm
	SURFACES	3.2 MICROMETER

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 _____

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Project title / Titre du projet

BOUNDARY ROAD SWING BRIDGE REHABILITARION

TRENT-SEVERN WATERWAY

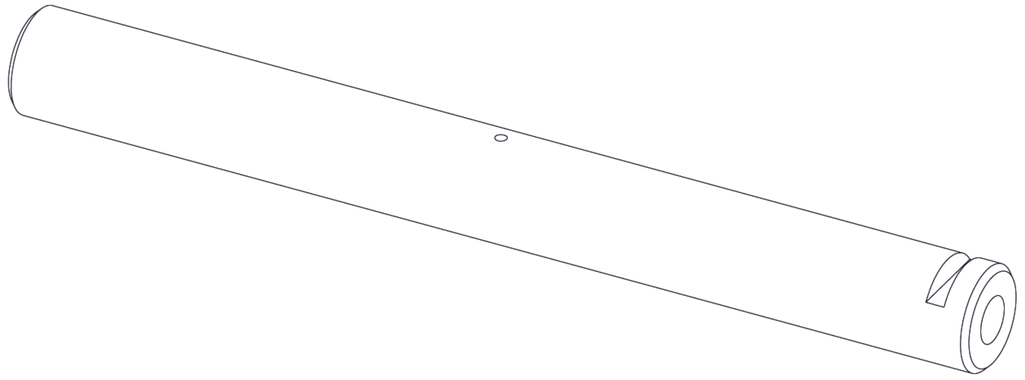
ONTARIO

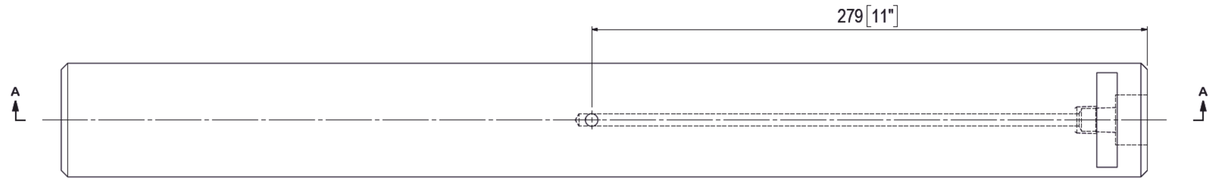
Drawing title / Titre du dessin

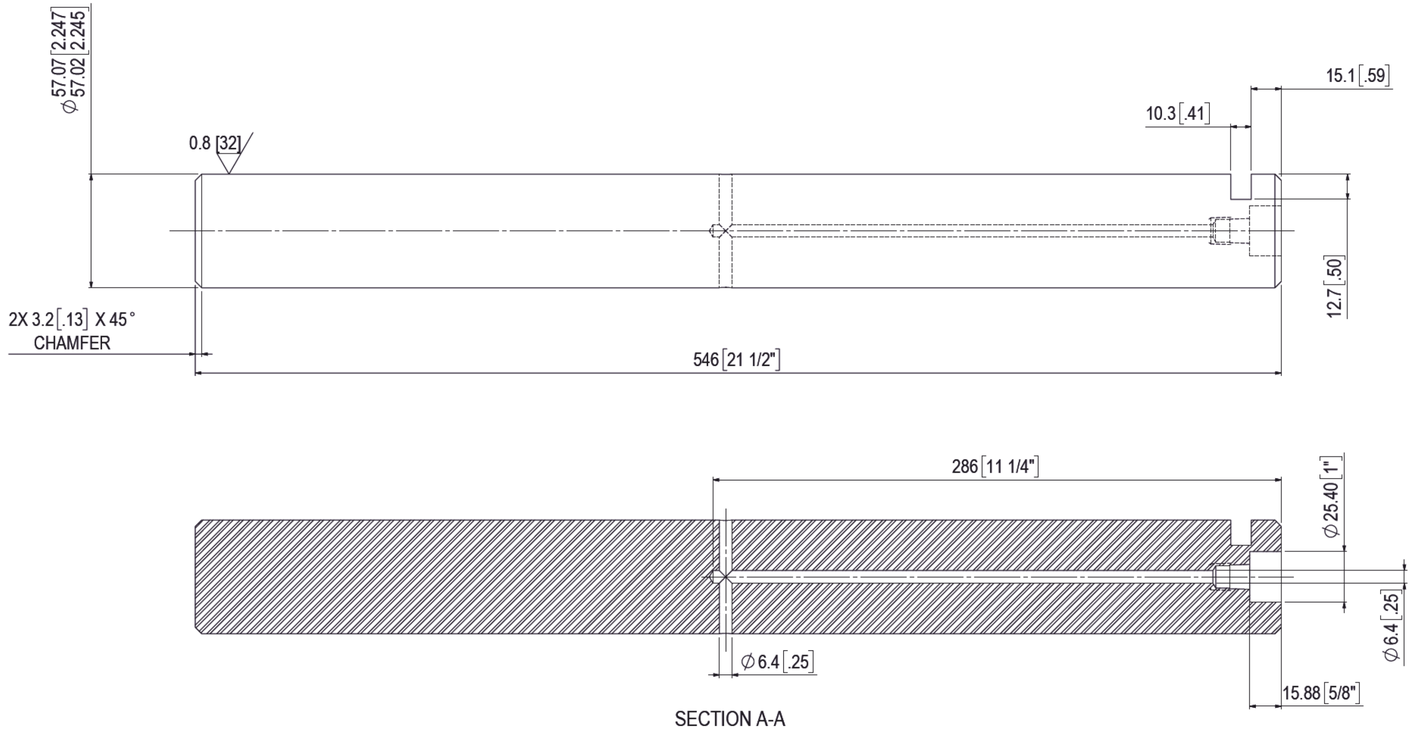
BASE

Scale / Échelle	1:8
Drawn by/ Dessiné par	M_D
Date	2019-01-14
Designed by/ Conçu par	M_D
Date	2019-01-07
Checked by/ Vérifié par	DPC
Date	2019-01-21
Approved by / Approuvé par	DPC
Date	2019-01-21
Project No./No. du projet	
Client No./No du Client	
Sheet No./ Feuille No.	07
Drawing Reference No./Numéro de Référence du Dessin	203

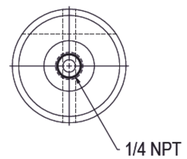
PART NUMBER: 203-08
DESCRIPTION: PIVOT SHAFT
MATERIAL: 17-4 PH SS RND, CONDITION H1150
ø57 [2 1/4"] X 546 [21 1/2"]" LG
FINISH: NONE
QUANTITY: 4







SECTION A-A



1. DIMENSIONS ARE IN MILLIMETERS
2. TOLERANCES

X. DECIMALS	± 0.5
.X DECIMALS	± 0.1
.XX DECIMALS	± 0.05
ANGLES	± 0.5 DEG
HOLE SIZES	± 1mm
SURFACES	3.2 MICROMETER

No.	Date	Description	Drawn By / Dessine par	Approved / Approuve
A	2019-08-29	ADDED COUNTERBORE	DAF	DPC

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 _____

Parks Canada / Parcs Canada

Canada

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Project title / Titre du projet

BOUNDARY ROAD SWING BRIDGE REHABILITATION

TRENT-SEVERN WATERWAY

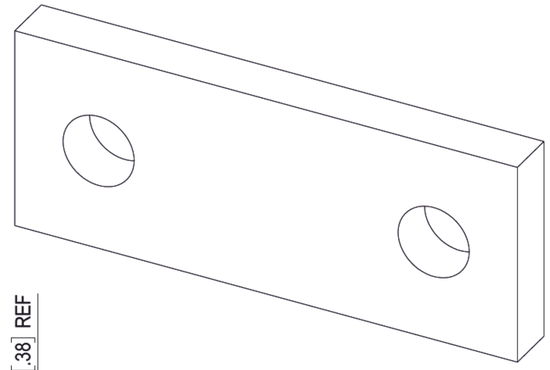
ONTARIO

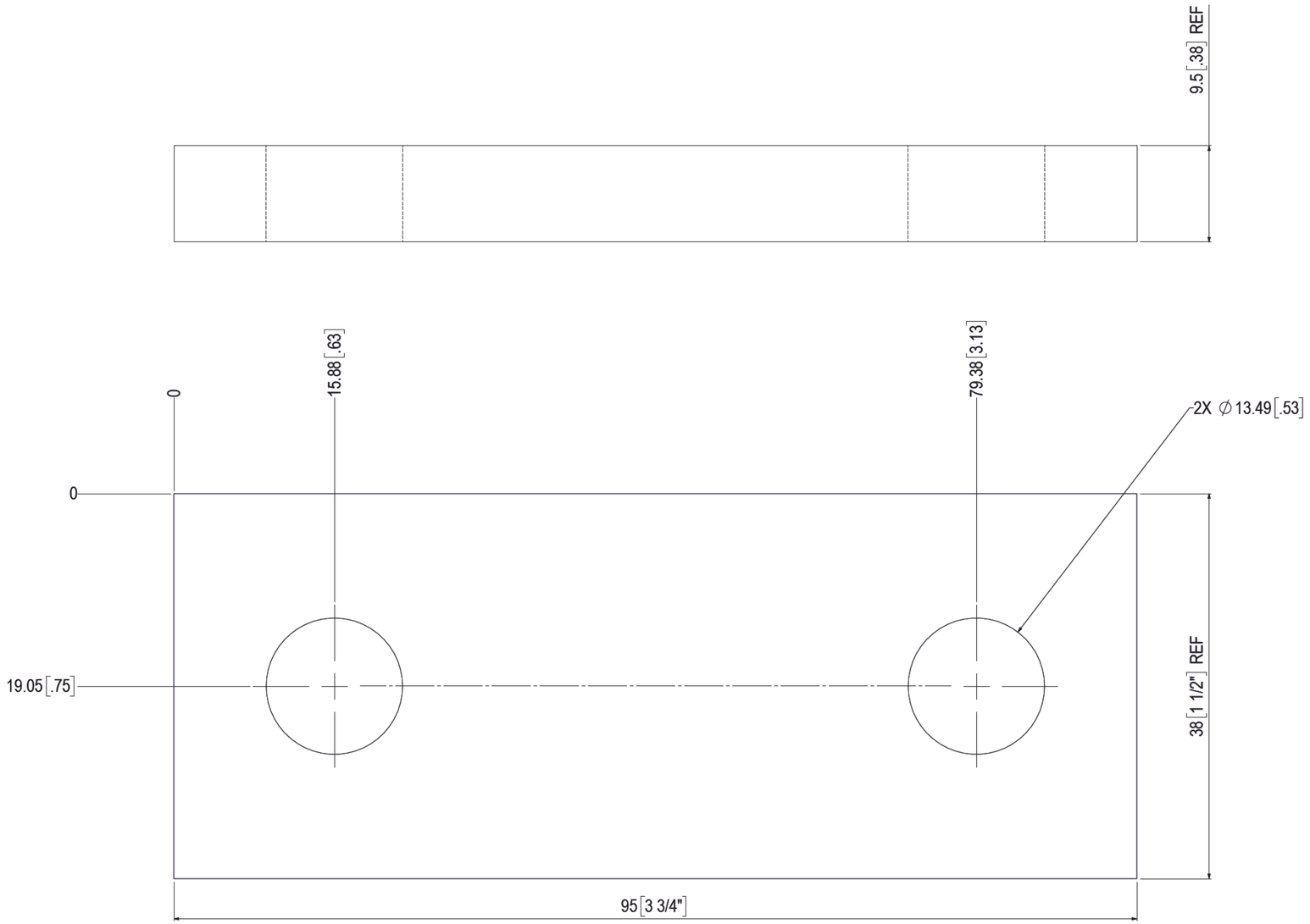
Drawing title / Titre du dessin

PIVOT SHAFT

Scale / Échelle	2:3
Drawn by/ Dessiné par	M_D
Date	2019-01-14
Designed by/ Conçu par	M_D
Date	2019-01-08
Checked by/ Vérifié par	DPC
Date	2019-01-28
Approved by / Approuvé par	DPC
Date	2019-01-28
Project No./No. du projet	
Client No./No du Client	
Sheet No./ Feuille No.	8
Drawing Reference No./Numéro de Référence du Dessin	203

PART NUMBER: 203-09
DESCRIPTION:
MATERIAL: AISI 316 SS FB
10 X 38 [3/8" X 1 1/2"] X 95 [3 3/4"] LG
FINISH: NONE
QUANTITY: 8





1. DIMENSIONS ARE IN MILLIMETERS
2. TOLERANCES

X. DECIMALS	± 0.5
.X DECIMALS	± 0.1
.XX DECIMALS	± 0.05
ANGLES	± 0.5 DEG
HOLE SIZES	± 1mm
SURFACES	3.2 MICROMETER

No.	Date	Description	Drawn By Dessine par	Approved Approuve
		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 _____

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Project title / Titre du projet
BOUNDARY ROAD SWING BRIDGE REHABILITATION
TRENT-SEVERN WATERWAY
ONTARIO

Drawing title / Titre du dessin
SHAFT RETAINER

Scale / Échelle: 4:1

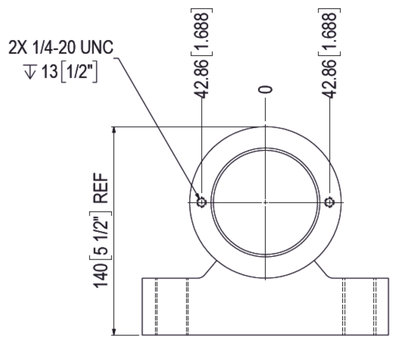
Drawn by/ Dessiné par: M_D	Date: 2019-01-14
Designed by/ Conçu par: M_D	Date: 2019-01-07
Checked by/ Vérifié par: M_D	Date: 2019-01-21
Approved by / Approuvé par: DPC	Date: 2019-01-21

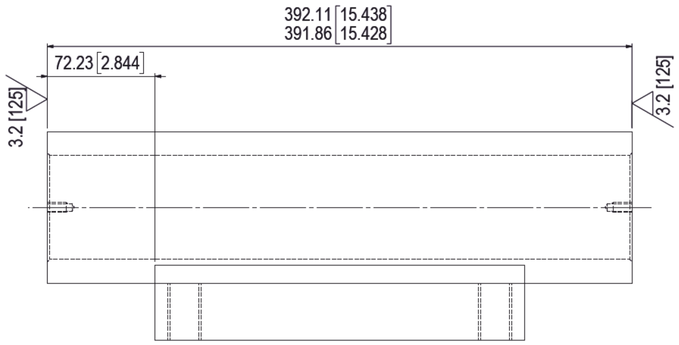
Project No./No. du projet	Client No./No du Client	Sheet No./ Feuille No.
		09

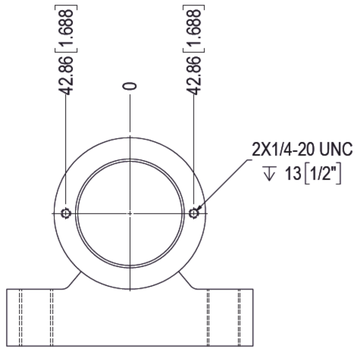
Drawing Reference No./Numéro de Référence du Dessin: 203

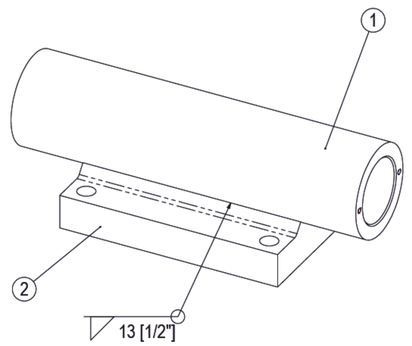
PART NUMBER: 203-10
DESCRIPTION:
MATERIAL: SEE CUT LIST
FINISH: PAINT (DO NOT PAINT MACHINED HOLES)
QUANTITY: 2

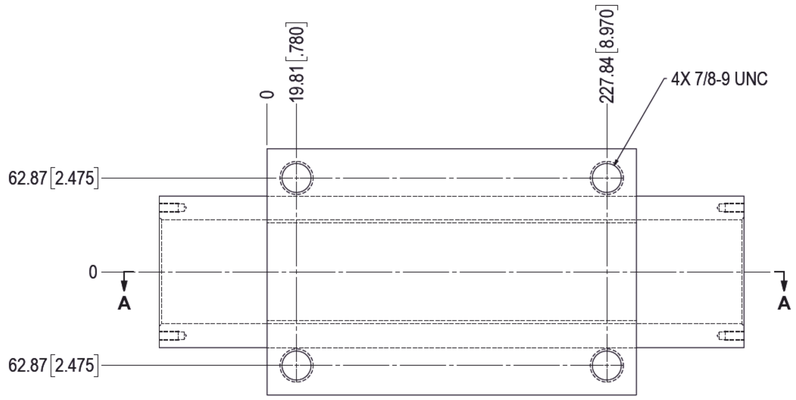
WELDMENT CUT LIST			
ITEM	QTY.	MATERIAL	CUT LENGTH
1	1	CSA G40.21-44W HRS RND, ø102 [4"]	400 [15 3/4"]
2	1	CSA G40.21-44W HRS PL, 56 [2 1/4"] THK	165 X 248 [6 1/2" X 9 3/4"]

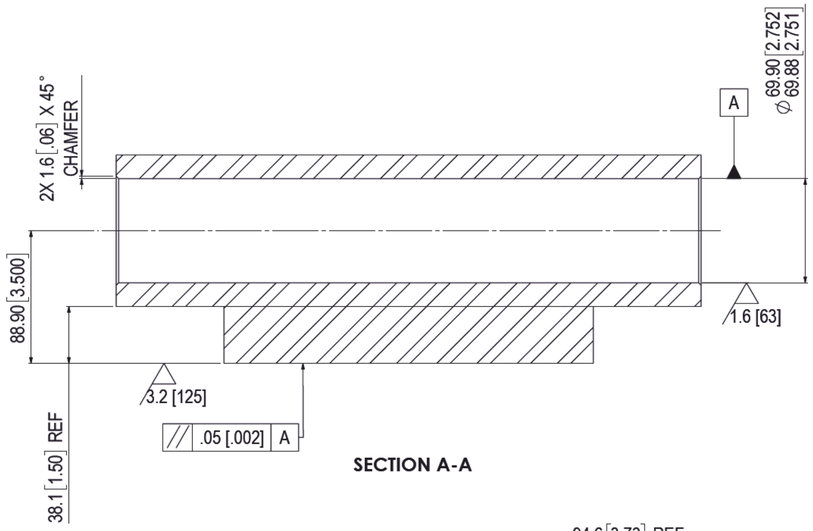




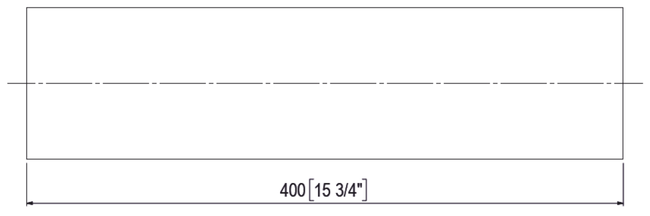




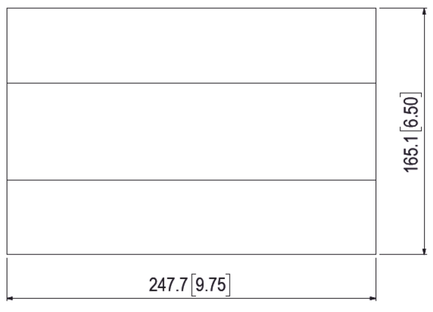




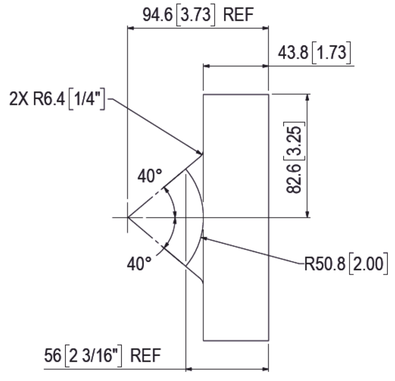
SECTION A-A



ITEM 1
DETAIL BEFORE WELDING



ITEM 2
DETAIL BEFORE WELDING



1. DIMENSIONS ARE IN MILLIMETERS
2. TOLERANCES

X.	DECIMALS	± 0.5
.X	DECIMALS	± 0.1
.XX	DECIMALS	± 0.05
	ANGLES	± 0.5 DEG
	HOLE SIZES	± 1mm
	SURFACES	3.2 MICROMETER

No.	Date	Description	Drawn By Desine par	Approved Approuve
		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 _____

Parks Canada Parcs Canada

Canada

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Chadwick Engineering Ltd.
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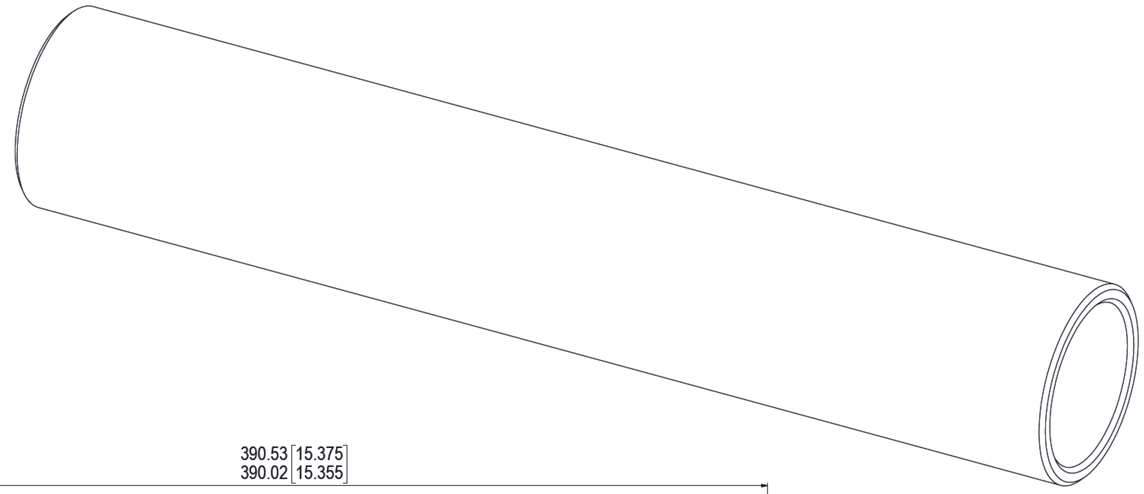
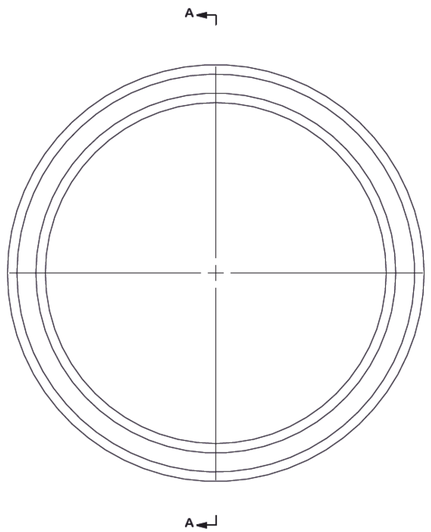
Project title / Titre du projet
BOUNDARY ROAD SWING BRIDGE
TRENT-SEVERN WATERWAY
ONTARIO

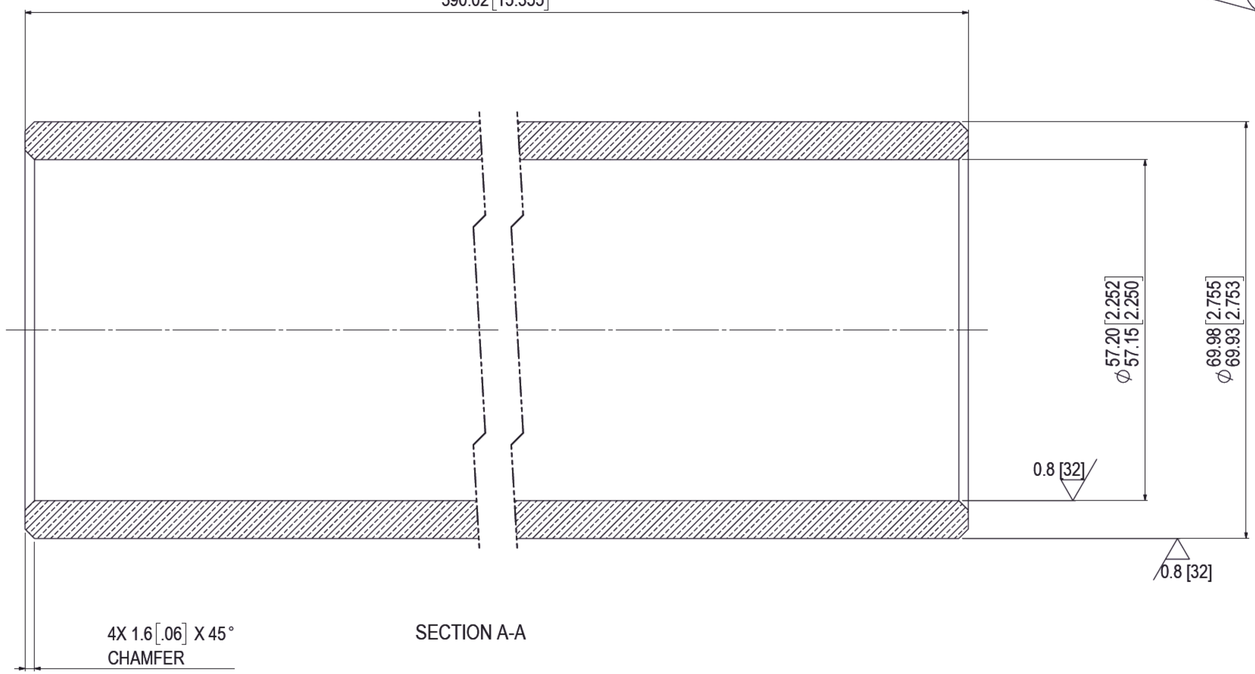
Drawing title / Titre du dessin
CYLINDER CLEVIS

Scale / Échelle	1:2
Drawn by/ Dessiné par	M_D
Date	2019-01-14
Designed by/ Conçu par	M_D
Date	2019-01-07
Checked by/ Vérifié par	DPC
Date	2019-01-21
Approved by / Approuvé par	DPC
Date	2019-01-21
Project No./No. du projet	
Client No./No du Client	
Sheet No./ Feuille No.	10
Drawing Reference No./Numéro de Référence du Dessin	203

PART NUMBER: 203-11
DESCRIPTION:
MATERIAL: AMPCO 18 (AL BRNZ) TUBE
70 [2 3/4"] OD X 51 [2"] ID X 391 [15 3/8"]" LG
FINISH: NONE
QUANTITY: 4







SECTION A-A

1. DIMENSIONS ARE IN MILLIMETERS
2. TOLERANCES

X.	DECIMALS	± 0.5
.X	DECIMALS	± 0.1
.XX	DECIMALS	± 0.05
	ANGLES	± 0.5 DEG
	HOLE SIZES	± 1mm
	SURFACES	3.2 MICROMETER

No.	Date	Description	Drawn By Desine par	Approved Approuve
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 _____

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Canada

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Project title / Titre du projet

BOUNDARY ROAD SWING BRIDGE REHABILITATION

TRENT-SEVERN WATERWAY

ONTARIO

Drawing title / Titre du dessin

PIVOT BUSHING

Scale / Échelle: 2:1

Drawn by/ Dessiné par: M_D — Date: 2019-01-14

Designed by/ Conçu par: M_D — Date: 2019-01-07

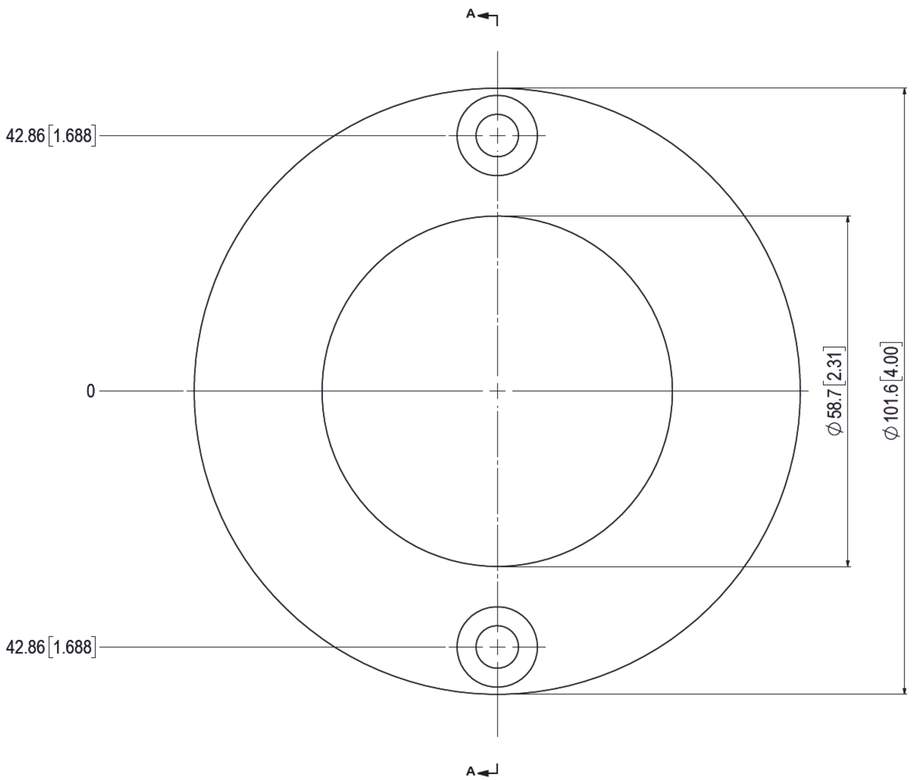
Checked by/ Vérifié par: DPC — Date: 2019-01-21

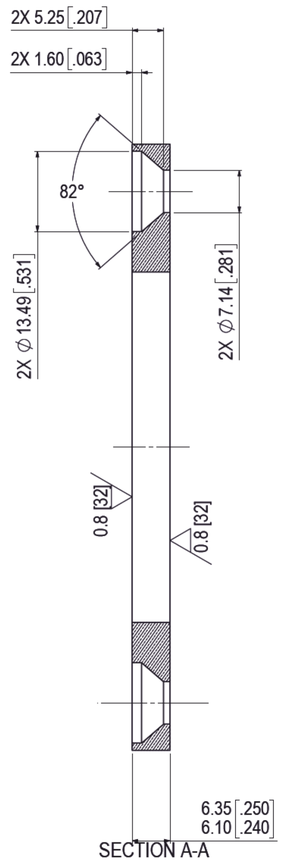
Approved by / Approuvé par: DPC — Date: 2019-01-21

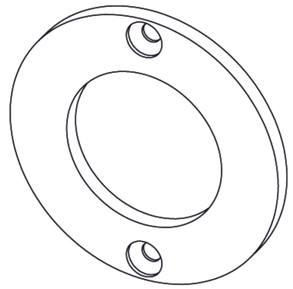
Project No./No. du projet | Client No./No du Client | Sheet No./ Feuille No.: 11

Drawing Reference No./Numéro de Référence du Dessin: 203

PART NUMBER: 203-12
DESCRIPTION:
MATERIAL: AMPCO 18 (AL BRNZ) PL
ø102 [ø4"] X 6 [1/4"] THK
FINISH: NONE
QUANTITY: 12







1. DIMENSIONS ARE IN MILLIMETERS
2. TOLERANCES

X.	DECIMALS	± 0.5
.X	DECIMALS	± 0.1
.XX	DECIMALS	± 0.05
	ANGLES	± 0.5 DEG
	HOLE SIZES	± 1mm
	SURFACES	3.2 MICROMETER

No.	Date	Description	Drawn By Desine par	Approved Approuve
		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 _____

Parks Canada / Parcs Canada

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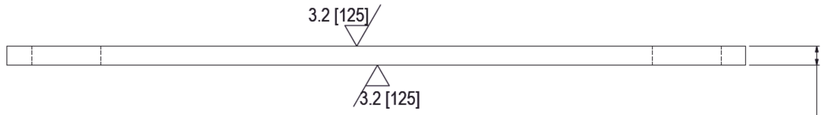
Project title / Titre du projet
BOUNDARY ROAD SWING BRIDGE REHABILITATION
TRENT-SEVERN WATERWAN
ONTARIO

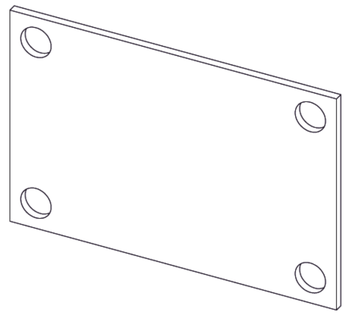
Drawing title / Titre du dessin
PIVOT THRUST WASHER

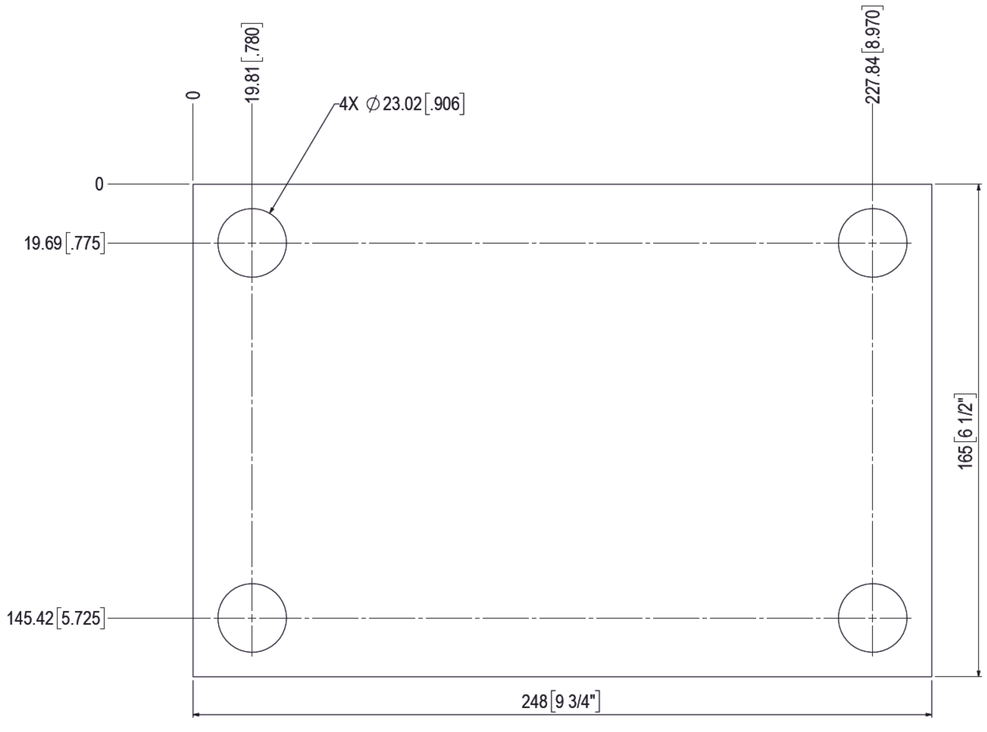
Scale / Échelle	2:1
Drawn by/ Dessiné par	M_D
Date	2019-01-14
Designed by/ Conçu par	M_D
Date	2019-01-07
Checked by/ Vérifié par	DPC
Date	2019-01-21
Approved by / Approuvé par	DPC
Date	2019-01-21
Project No./No. du projet	
Client No./No du Client	
Sheet No./ Feuille No.	12
Drawing Reference No./Numéro de Référence du Dessin	203

PART NUMBER: 203-13
DESCRIPTION:
MATERIAL: AISI 316 SS PL
165 X 248 [6 1/2" X 9 3/4"] X 10 [3/8"] THK
FINISH: NONE
QUANTITY: 2



6.35 [.250] NOMINAL
MACHINE AT ASSEMBLY TO SUIT





1. DIMENSIONS ARE IN MILLIMETERS
2. TOLERANCES

X. DECIMALS	± 0.5
.X DECIMALS	± 0.1
.XX DECIMALS	± 0.05
ANGLES	± 0.5 DEG
HOLE SIZES	± 1mm
SURFACES	3.2 MICROMETER

No.	Date	Description	Drawn By Desine par	Approved Approuve

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 _____

Parks Canada / Parcs Canada

Canada

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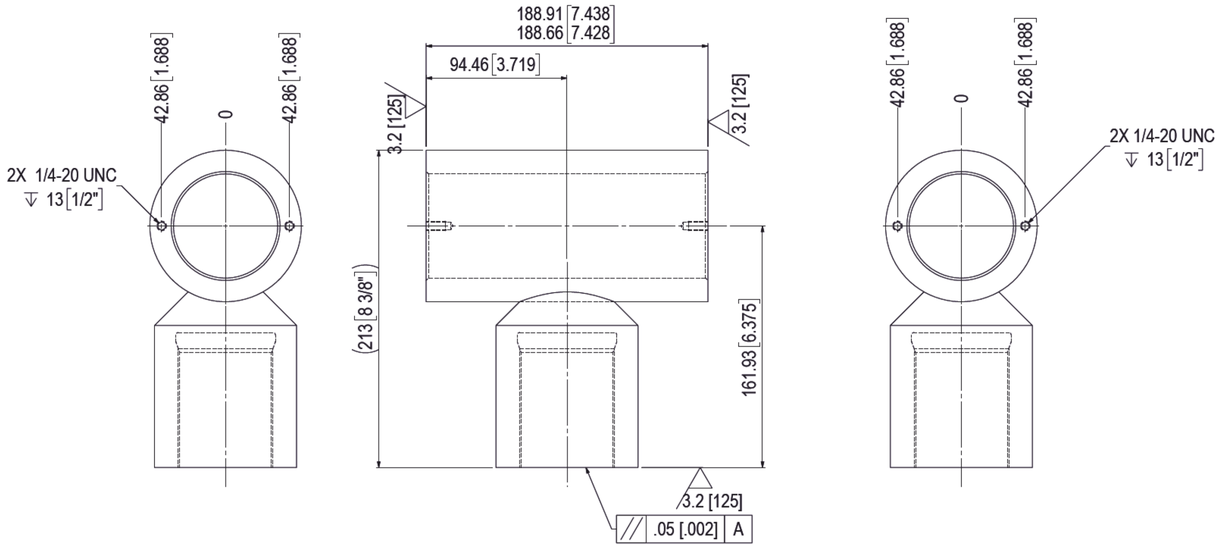
Project title / Titre du projet
BOUNDARY ROAD SWING BRIDGE REHABILITATION
TRENT-SEVERN WATERWAY
ONTARIO

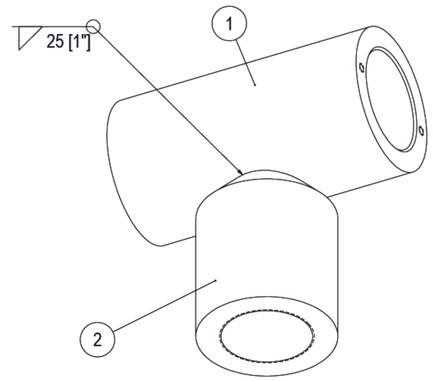
Drawing title / Titre du dessin
CLEVIS SHIM

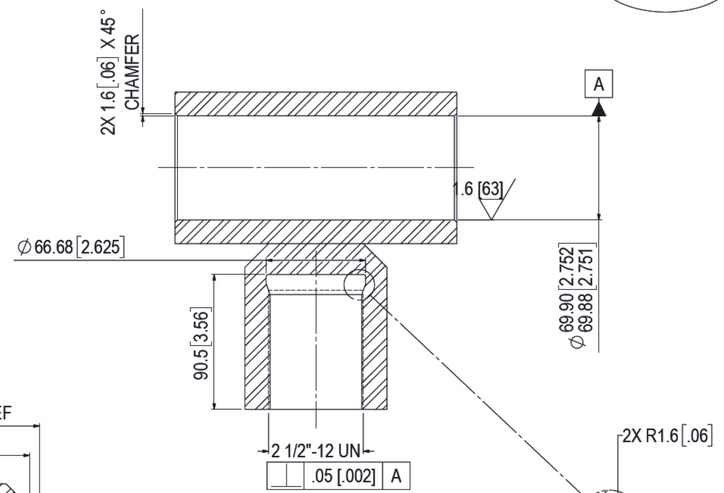
Scale / Échelle: 1:1
Drawn by/ Dessiné par: M_D — Date: 2019-01-14
Designed by/ Conçu par: M_D — Date: 2019-01-07
Checked by/ Vérifié par: DPC — Date: 2019-01-21
Approved by / Approuvé par: DPC — Date: 2019-01-21
Project No./No. du projet
Client No./No du Client
Sheet No./ Feuille No.: 13
Drawing Reference No./Numéro de Référence du Dessin: 203

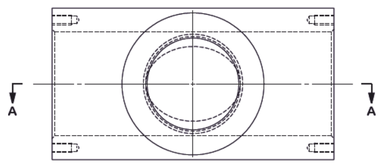
PART NUMBER: 203-14
DESCRIPTION:
MATERIAL: SEE CUT LIST
FINISH: PAINT (DO NOT PAINT MACHINED HOLES)
QUANTITY: 2

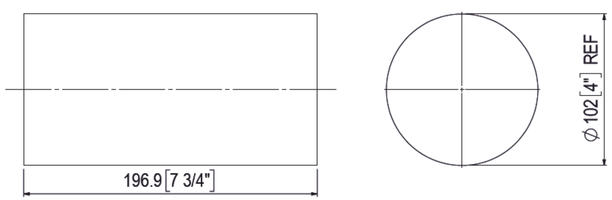
WELDMENT CUT LIST			
ITEM	QTY.	MATERIAL	CUT LENGTH
1	1	CSA G40.21-44W HRS RND, ø102 [4"]	197 [7 3/4"]
2	1	CSA G40.21-44W HRS RND, ø95 [3 3/4"]	124 [4 7/8"]



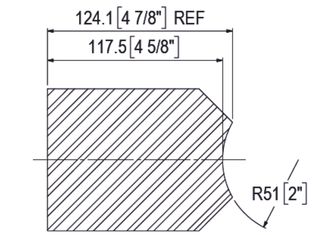


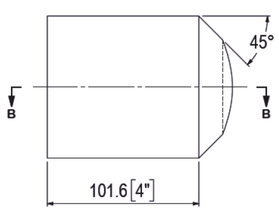


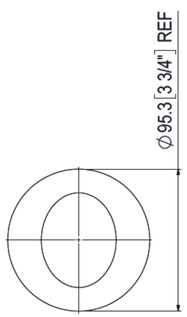




ITEM 1
DETAIL BEFORE WELDING







ITEM 2
DETAIL BEFORE WELDING

1. DIMENSIONS ARE IN MILLIMETERS
2. TOLERANCES

X. DECIMALS	± 0.5
.X DECIMALS	± 0.1
.XX DECIMALS	± 0.05
ANGLES	± 0.5 DEG
HOLE SIZES	± 1mm
SURFACES	3.2 MICROMETER

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 _____

Parks Canada / Parcs Canada

Canada

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Project title / Titre du projet

BOUNDARY ROAD SWING BRIDGE REHABILITATION

TRENT-SEVERN WATERWAY

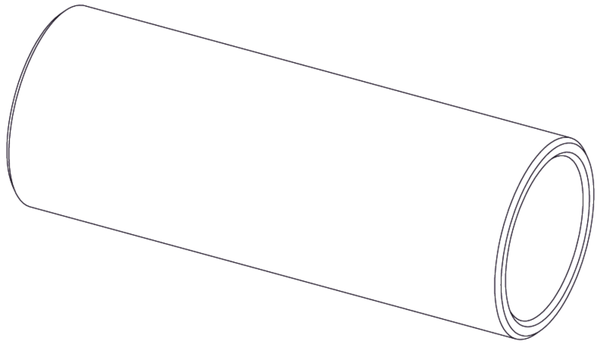
ONTARIO

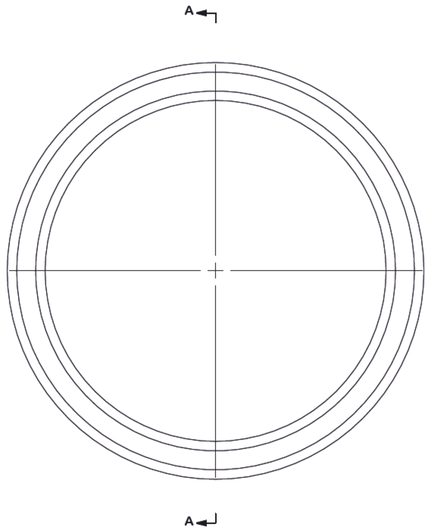
Drawing title / Titre du dessin

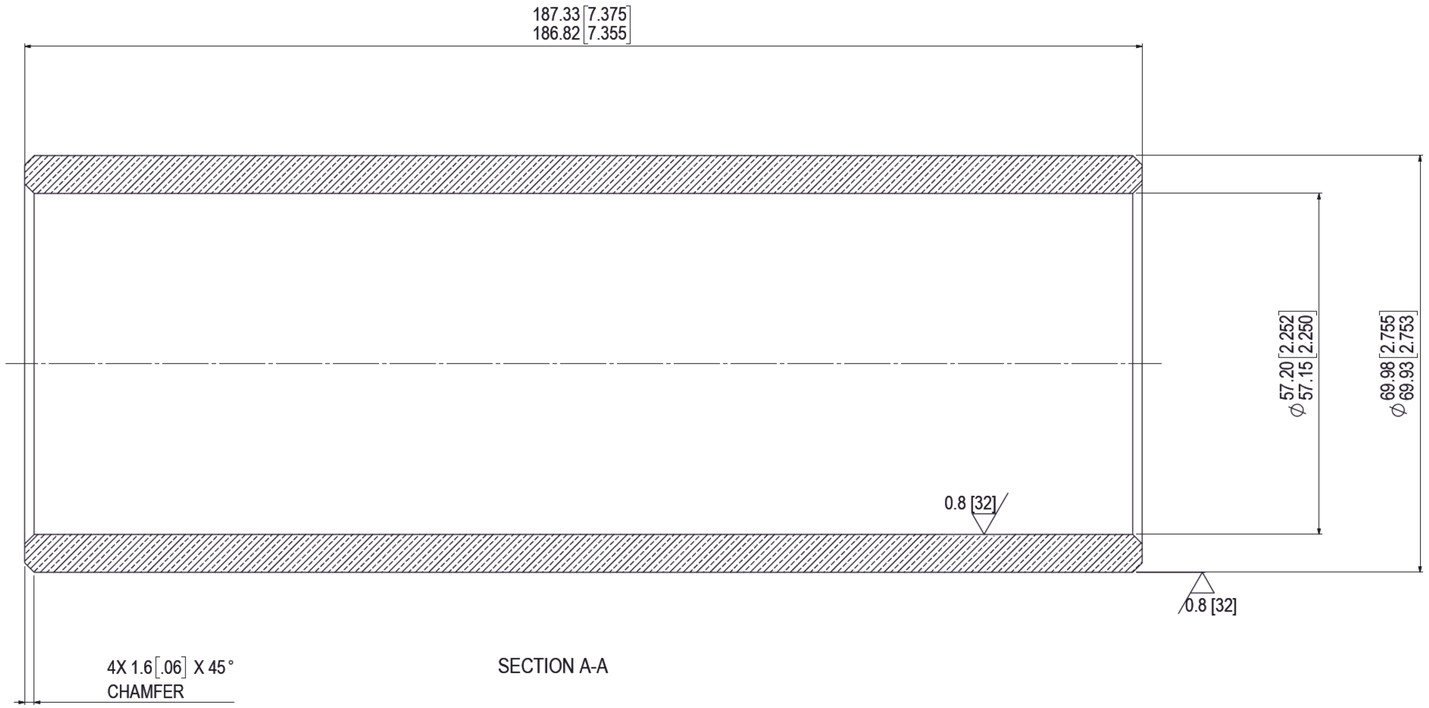
ROD CLEVIS

Scale / Échelle	1:2
Drawn by/ Dessiné par: M_D	Date: 2019-01-14
Designed by/ Conçu par: M_D	Date: 2019-01-07
Checked by/ Vérifié par: DPC	Date: 2019-01-21
Approved by / Approuvé par: DPC	Date: 2019-01-21
Project No./No. du projet	Client No./No du Client
Drawing Reference No./Numéro de Référence du Dessin: 203	Sheet No./ Feuille No.: 14

PART NUMBER: 203-15
DESCRIPTION:
MATERIAL: AMPCO 18 (AL BRNZ) TUBE
70 [2 3/4"] OD X 51 [2"] ID X 187 [7 3/8"]" LG
FINISH: NONE
QUANTITY: 2







SECTION A-A

1. DIMENSIONS ARE IN MILLIMETERS
2. TOLERANCES

X. DECIMALS	± 0.5
.X DECIMALS	± 0.1
.XX DECIMALS	± 0.05
ANGLES	± 0.5 DEG
HOLE SIZES	± 1mm
SURFACES	3.2 MICROMETER

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 _____

Parks Canada Parcs Canada

Canada

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Project title / Titre du projet

BOUNDARY ROAD SWING BRIDGE REHABILITATION

TRENT-SEVERN WATERWAY

ONTARIO

Drawing title / Titre du dessin

CLEVIS BUSHING

Scale / Échelle
2:1

Drawn by/ Dessiné par
M_D
Date
2019-01-14

Designed by/ Conçu par
M_D
Date
2019-01-07

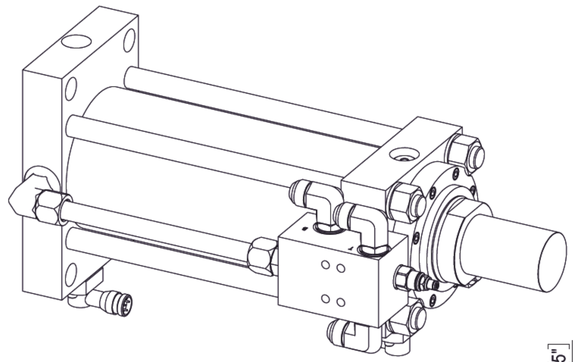
Checked by/ Vérifié par
DPC
Date
2019-01-21

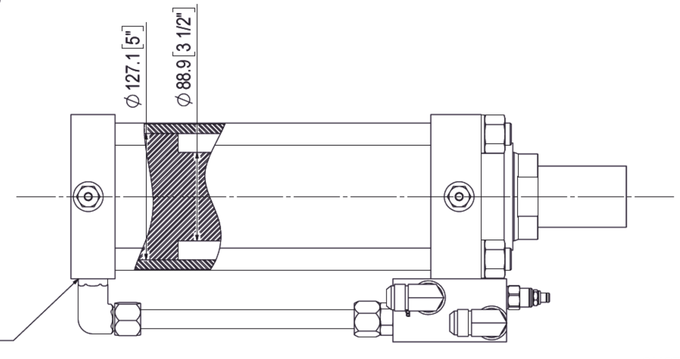
Approved by / Approuvé par
DPC
Date
2019-01-21

Project No./No. du projet | Client No./No du Client | Sheet No./ Feuille No.
15

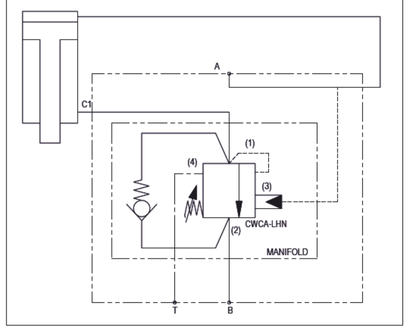
Drawing Reference No./Numéro de Référence du Dessin
203

PART NUMBER: 203-16
DESCRIPTION:
QUANTITY: 2

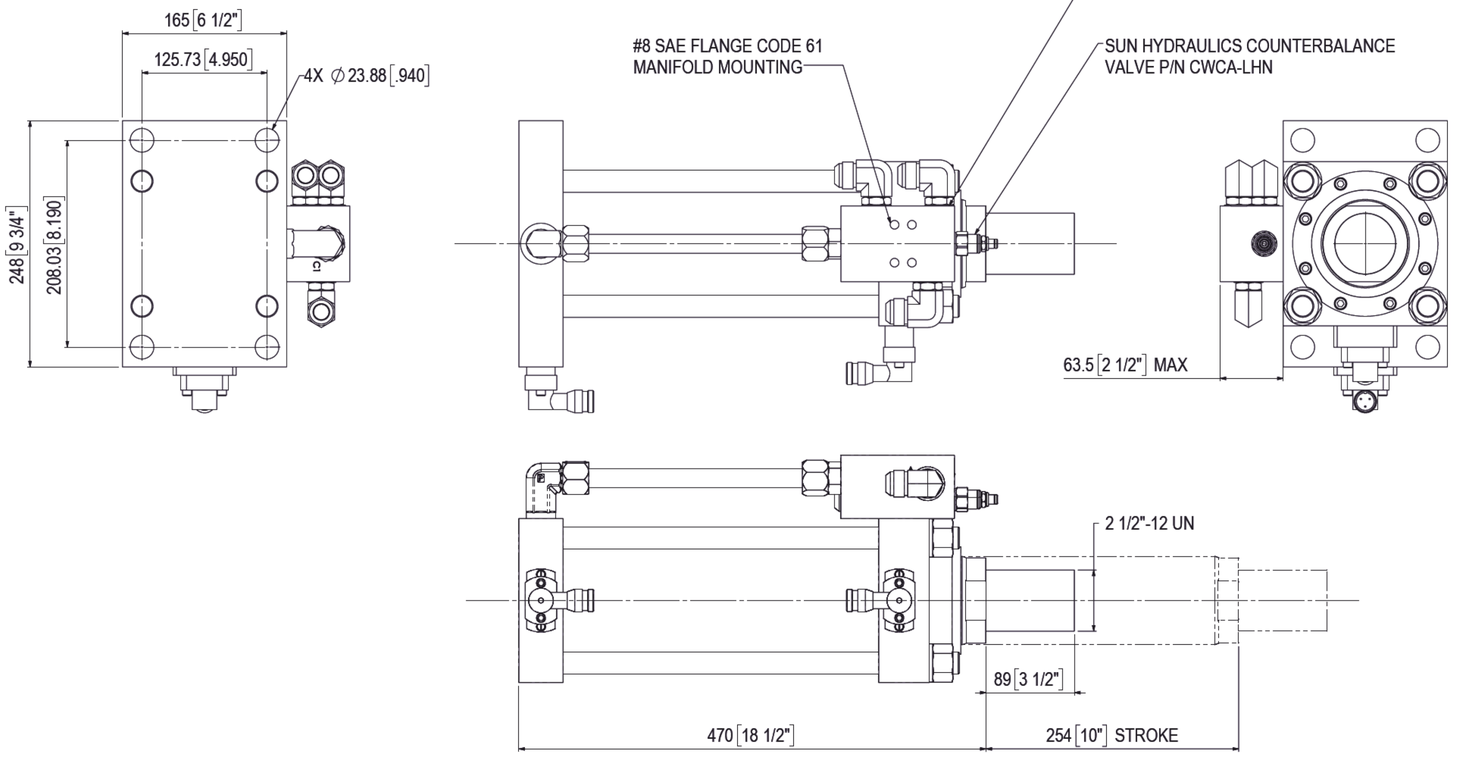




DIRECT-MOUNT MANIFOLD SCHEMATIC



PARKER CYLINDER SPECIFICATIONS		
COMPONENT	CODE	DESCRIPTION
BORE	5.00	INCH
CUSHION HEAD	C	CUSHION HEAD
MOUNTING	HH	CAP RECTANGULAR
SERIES	2HD	HEAVY DUTY HYDRAULIC TIE ROD BOLT-ON GLAND STYLE
PISTON SEAL	H	HP POLYURETHANE PISTON SEAL
PISTON MAGNET	N	NO MAGNET
GLAND AND SEAL	H	STANDARD GLAND WITH LIPSEAL
PORT TYPE	MF	SPECIAL MANIFOLD PORTS
SEALS	1	STANDARD (CLASS 1)
SPECIAL	S	SPECIAL MODIFICATIONS
PISTON ROD NUMBER	C2D350	3.50 INCH
PISTON ROD END	4	STYLE 4 SMALL MALE
PISTON ROD END THREAD	A	IMPERIAL INTEGRAL CUT THREADS
CUSHION CAP	C	CUSHION CAP
STROKE	10.000	INCH
PORT SIZE - HEAD	SF8	1/2 INCH (#8) SAE FLANGE - CODE 61 - MANIFOLD MOUNT
PORT LOCATION - HEAD	1	
PORT SIZE - CAP	SA10	#10 SAE
PORT LOCATION - CAP	1	
PROXIMITY SWITCH - HEAD	ES7H	EPS7 - INDUCTIVE
SWITCH LOCATION - HEAD	4	
SWITCH ORIENTATION - HEAD	A	
ACTUATION POINT - HEAD	GG	END OF STROKE
PROXIMITY SWITCH - CAP	ES7H	EPS7 - INDUCTIVE
SWITCH LOCATION - CAP	4	
SWITCH ORIENTATION - CAP	A	
ACTUATION POINT - CAP	GG	END OF STROKE
SWITCH CODE	H14AGG-14AGG	
NEEDLE LOCATION - HEAD	2	
NEEDLE LOCATION - CAP	2	
PISTON ROD WIPER	EW	METALLIC ROD WIPER
PISTON ROD WRENCH FLATS	2F	STANDARD 2 WRENCH FLATS
PISTON ROD MATERIAL	0174	17-4 PH STAINLESS STEEL PISTON ROD MATERIAL
PISTON ROD PLATING	GB	GLOBAL SHIELD PISTON ROD PLATING .0010 INCH THICK
PAINT	OP	NICKEL PLATE
PART SPECIAL INSTRUCTIONS		DIRECT-MOUNT MANIFOLD VIA SAE FLANGE CODE 61 MOUNT. FOR SUN HYDRAULICS COUNTERBALANCE VALVE P/N CWCA-LHN PER DRAWING & SCHEMATIC **SUPPLIER TO PROVIDE FINAL DRAWING FOR APPROVAL BEFORE PROCEEDING WITH MANUFACTURE



NOTE: ALL DIMENSIONS SHOWN ARE FOR REFERENCE ONLY

1. DIMENSIONS ARE IN MILLIMETERS
2. TOLERANCES

X. DECIMALS	± 0.5
.X DECIMALS	± 0.1
.XX DECIMALS	± 0.05
ANGLES	± 0.5 DEG
HOLE SIZES	± 1mm
SURFACES	3.2 MICROMETER

No.	Date	Description	Drawn By Desine par	Approved Approuve
A	2019-08-30	UPDATED CYLINDER AND VALVE SPEC	DAF	DPC

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 _____

Parks Canada Parcs Canada

Canada

wsp

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www.chadwickengineering.com

Project title / Titre du projet
BOUNDARY ROAD SWING BRIDGE REHABILITATION
TRENT-SEVERN WATERWAY
ONTARIO

Drawing title / Titre du dessin
HYDRAULIC CYLINDER
PARKER 2HD SPECIAL

Scale / Échelle: 1:3

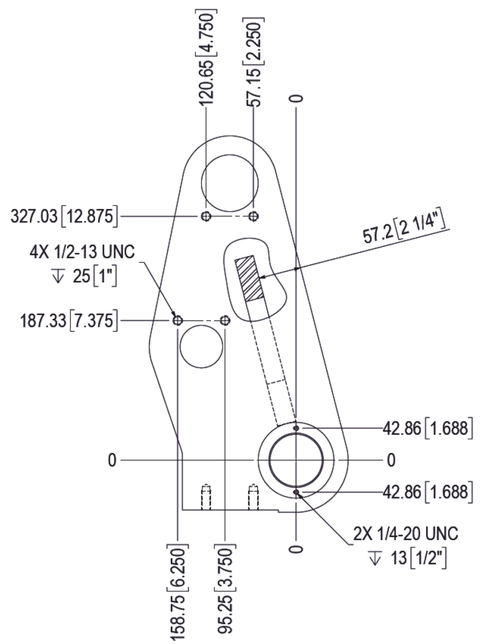
Drawn by/ Dessiné par: M_D	Date: 2019-01-14
Designed by/ Conçu par: M_D	Date: 2019-01-07
Checked by/ Vérifié par: DPC	Date: 2019-01-21
Approved by / Approuvé par: DPC	Date: 2019-01-21

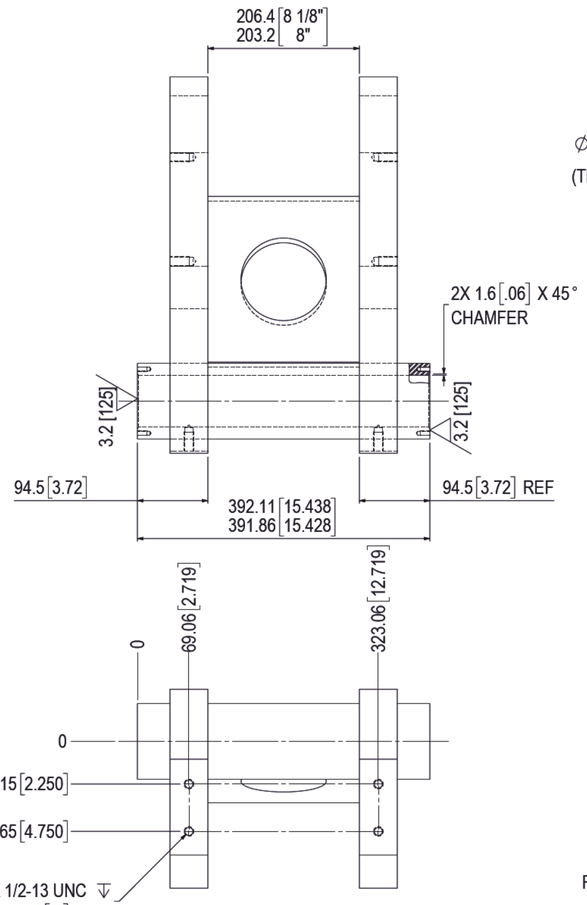
Project No./No. du projet	Client No./No du Client	Sheet No./ Feuille No.
1911-1		16

Drawing Reference No./Numéro de Référence du Dessin: 203

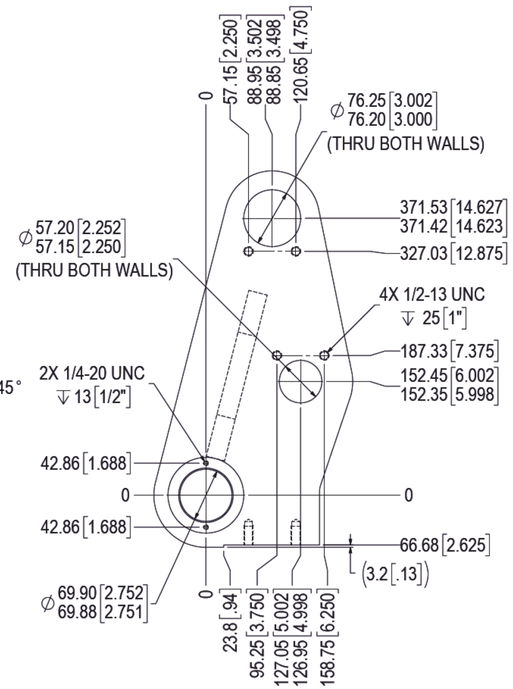
PART NUMBER: 203-17
DESCRIPTION:
MATERIAL: SEE CUT LIST
FINISH: PAINT (DO NOT PAINT TAPPED HOLES OR PRECISION BORES)
QUANTITY: 2

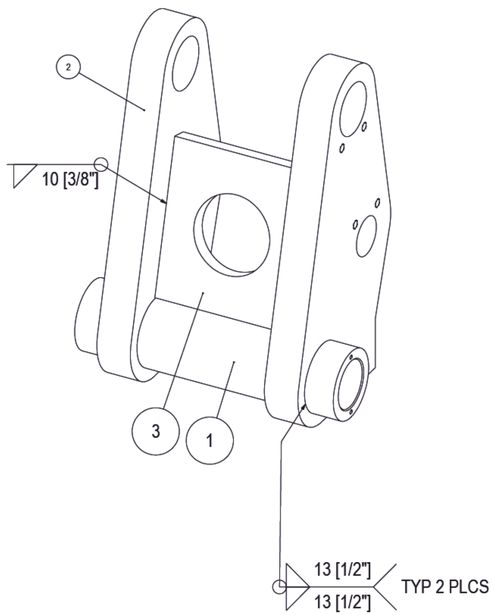
WELDMENT CUT LIST			
ITEM	QTY.	MATERIAL	CUT LENGTH
1	1	CSA G40.21-44W HRS RND, ø102 [4"]	400 [15 3/4"]
2	2	CSA G40.21-44W HRS PL, 51 [2"] THK	267 X 505 [10 1/2" X 14 5/8"]
3	1	CSA G40.21-44W HRS PL, 25 [1"] THK	203 X 230 [8" X 9 1/32"]

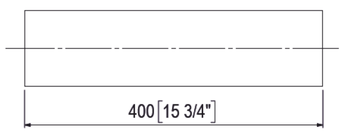




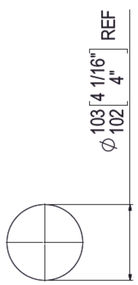
NOTE: HIDDEN LINES REMOVED IN THIS VIEW FOR CLARITY

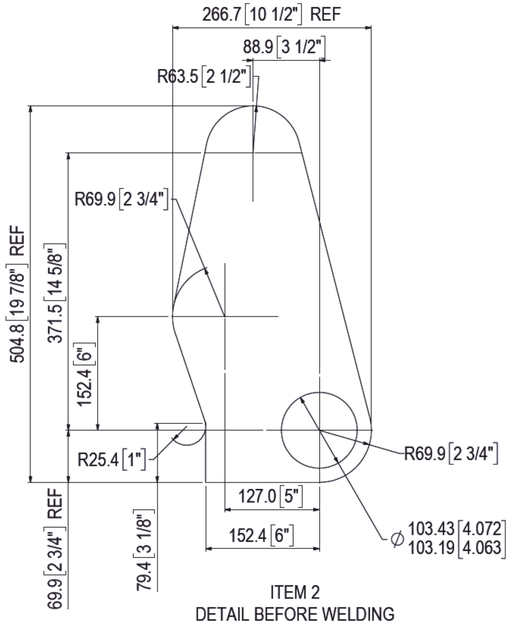




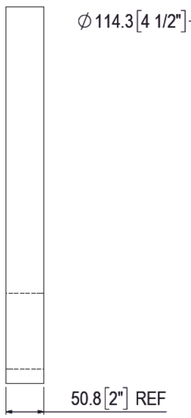


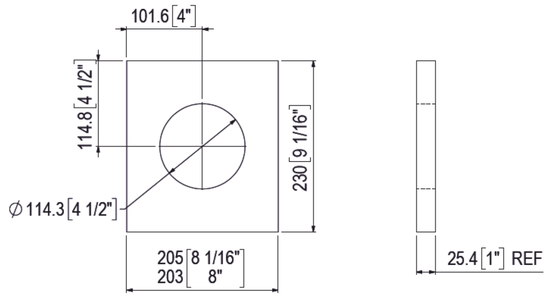
ITEM 1
DETAIL BEFORE WELDING





ITEM 2
DETAIL BEFORE WELDING





ITEM 3
DETAIL BEFORE WELDING

1. DIMENSIONS ARE IN MILLIMETERS
2. TOLERANCES

X.	DECIMALS	± 0.5
.X	DECIMALS	± 0.1
.XX	DECIMALS	± 0.05
	ANGLES	± 0.5 DEG
	HOLE SIZES	± 1mm
	SURFACES	3.2 MICROMETER

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 _____

Parks Canada / Parcs Canada

Canada

wsp

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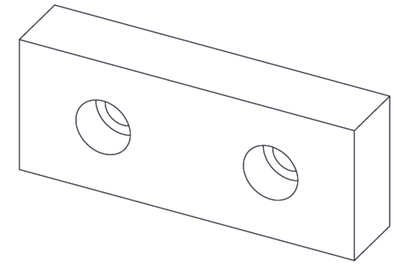
www.chadwickengineering.com

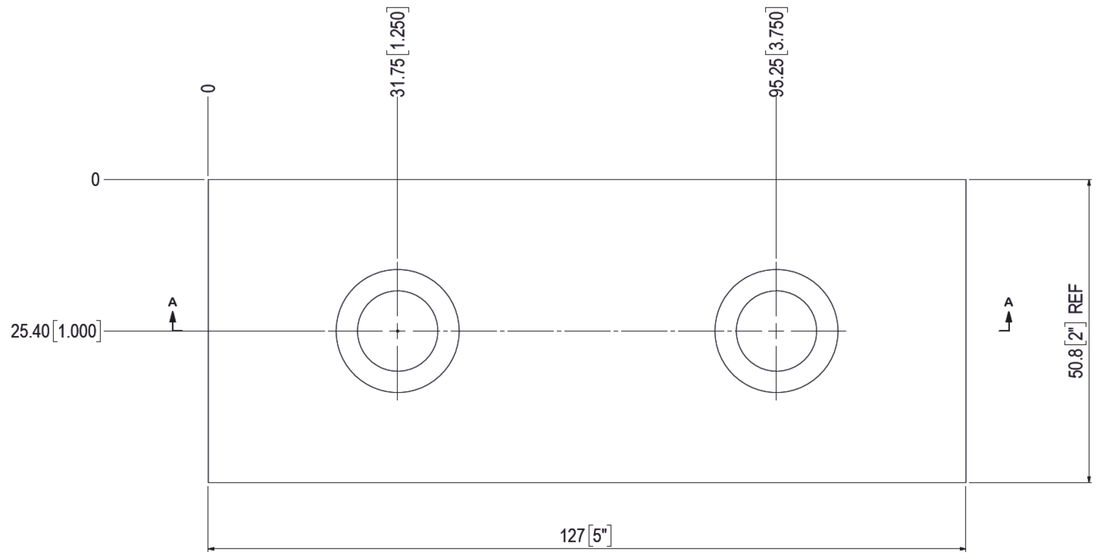
Project title / Titre du projet
BOUNDARY ROAD SWING BRIDGE REHABILITATION
TRENT-SEVERN WATERWAY
ONTARIO

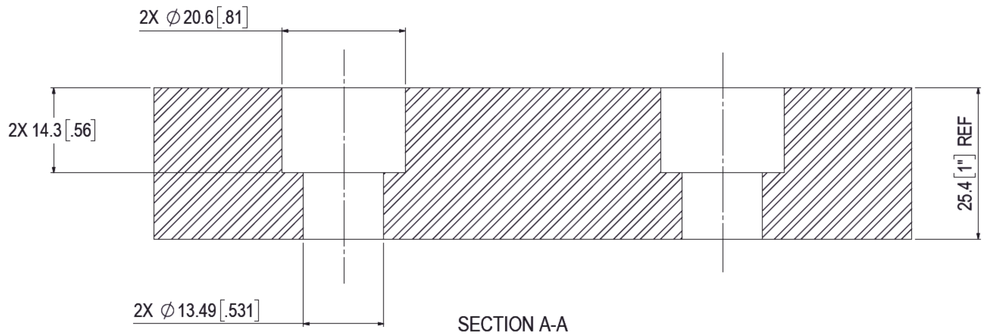
Drawing title / Titre du dessin
PIVOT ARM

Scale / Échelle	1:4
Drawn by/ Dessiné par: M_D	Date: 2019-01-14
Designed by/ Conçu par: M_D	Date: 2019-01-07
Checked by/ Vérifié par: DPC	Date: 2019-01-21
Approved by / Approuvé par: DPC	Date: 2019-01-21
Project No./No. du projet	Client No./No du Client
Drawing Reference No./Numéro de Référence du Dessin: 203	Sheet No./ Feuille No.: 17

PART NUMBER: 203-18
DESCRIPTION:
MATERIAL: AISI 316 SS FB
25 X 51 [1" X 2"] X 127 [5]" LG
FINISH: NONE
QUANTITY: 4







SECTION A-A

No.	Date	Description	Drawn By Dessine par	Approved Approuve
		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 _____

Parks Canada / Parcs Canada

Canada

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Project title / Titre du projet
BOUNDARY ROAD SWING BRIDGE REHABILITATION
TRENT-SEVERN WATERWAY
ONTARIO

Drawing title / Titre du dessin
STOP BLOCK

Scale / Échelle: 2:1

Drawn by/ Dessiné par: M_D — Date: 2019-01-14

Designed by/ Conçu par: M_D — Date: 2019-01-07

Checked by/ Vérifié par: DPC — Date: 2019-01-21

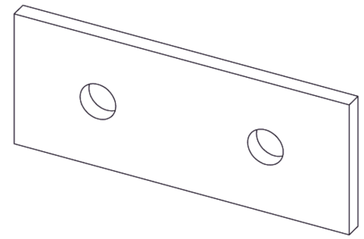
Approved by / Approuvé par: DPC — Date: 2019-01-21

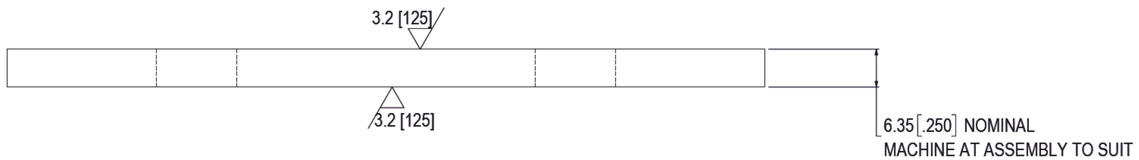
Project No./No. du projet: 1911-1
Client No./No du Client:
Sheet No./ Feuille No.: 18
Drawing Reference No./Numéro de Référence du Dessin: 203

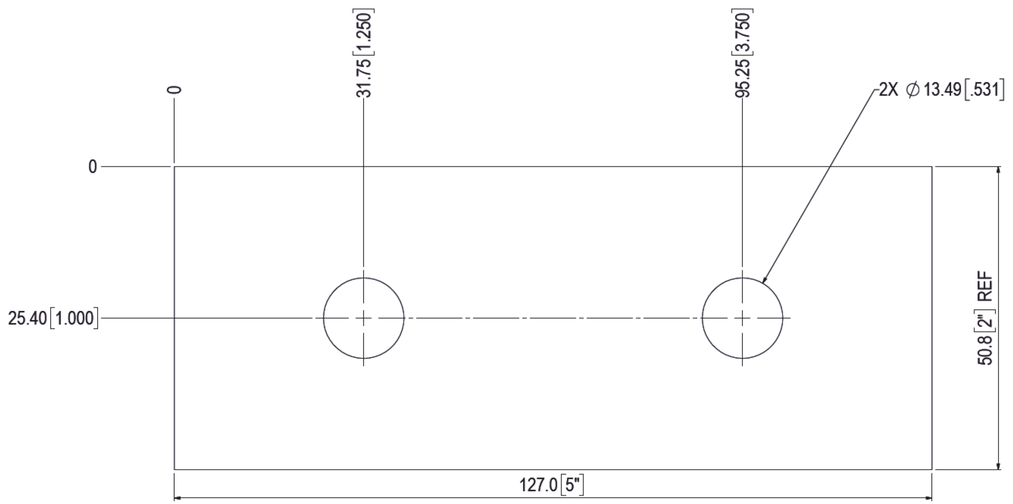
1. DIMENSIONS ARE IN MILLIMETERS
2. TOLERANCES

X.	DECIMALS	± 0.5
.X	DECIMALS	± 0.1
.XX	DECIMALS	± 0.05
	ANGLES	± 0.5 DEG
	HOLE SIZES	± 1mm
	SURFACES	3.2 MICROMETER

PART NUMBER: 203-19
DESCRIPTION:
MATERIAL: AISI 316 SS FB
10 X 51 [3/8" X 2"] X 127 [5"] LG
FINISH: NONE
QUANTITY: 4







1. DIMENSIONS ARE IN MILLIMETERS
2. TOLERANCES

X.	DECIMALS	± 0.5
.X	DECIMALS	± 0.1
.XX	DECIMALS	± 0.05
	ANGLES	± 0.5 DEG
	HOLE SIZES	± 1mm
	SURFACES	3.2 MICROMETER

No.	Date	Description	Drawn By Desine par	Approved Approuve
		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 _____

Parks Canada / Parcs Canada

Canada

wsp

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www.chadwickengineering.com

Project title / Titre du projet

BOUNDARY ROAD SWING BRIDGE REHABILITATION

TRENT-SEVERN WATERWAY

ONTARIO

Drawing title / Titre du dessin

STOP SHIM

Scale / Échelle: 2:1

Drawn by/ Dessiné par: M_D — Date: 2019-01-14

Designed by/ Conçu par: M_D — Date: 2019-01-07

Checked by/ Vérifié par: DPC — Date: 2019-01-21

Approved by / Approuvé par: DPC — Date: 2019-01-21

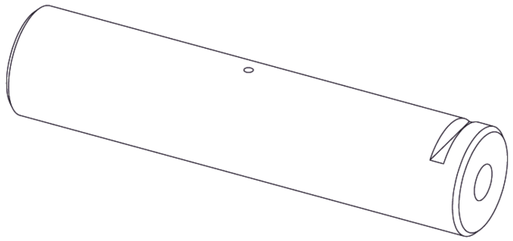
Project No./No. du projet: 1911-1

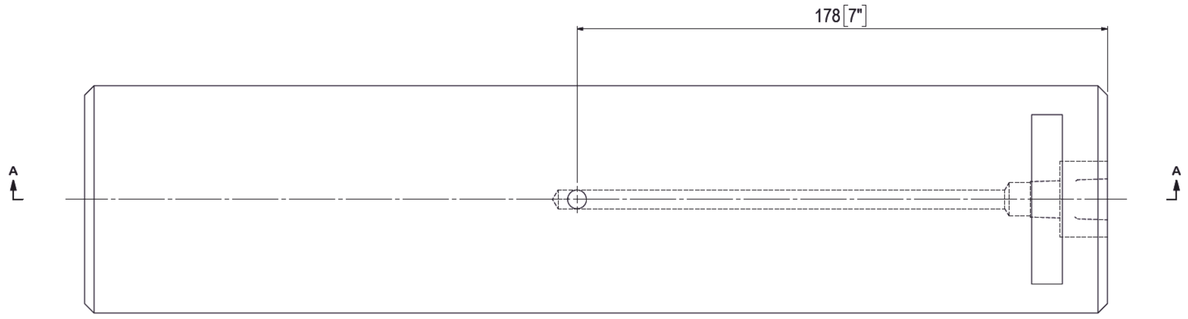
Client No./No du Client:

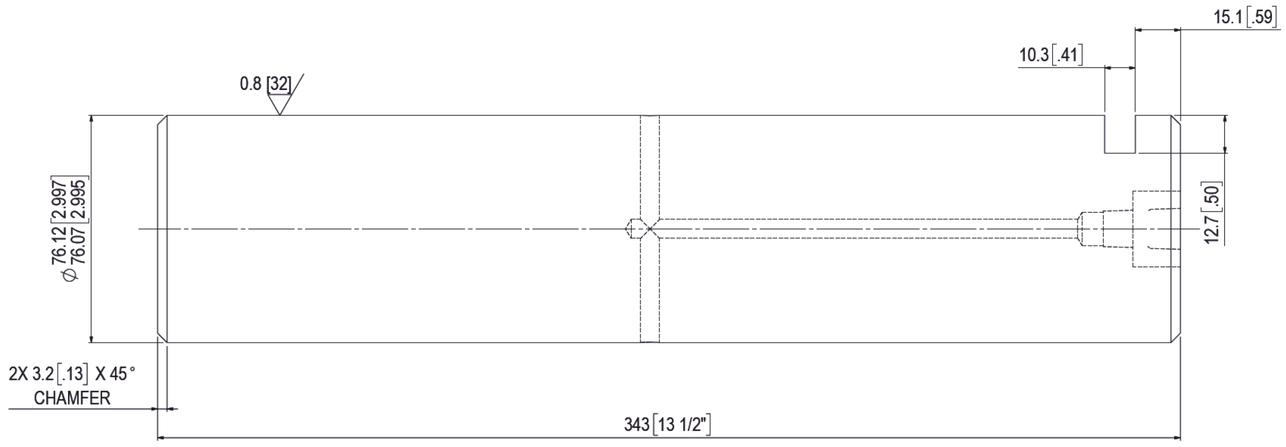
Sheet No./ Feuille No.: 19

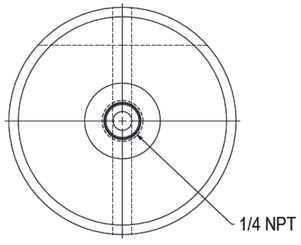
Drawing Reference No./Numéro de Référence du Dessin: 203

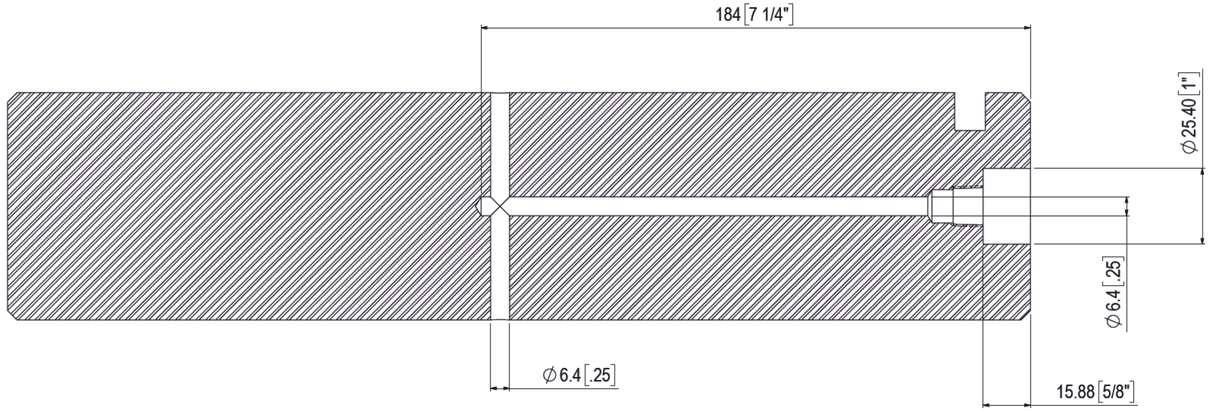
PART NUMBER: 203-20
DESCRIPTION: ROLLER SHAFT
MATERIAL: 17-4 PH SS RND, CONDITION H1150
ø76 [3"] X 343 [13 1/2"]" LG
FINISH: NONE
QUANTITY: 2











SECTION A-A

1. DIMENSIONS ARE IN MILLIMETERS
2. TOLERANCES

X.	DECIMALS	± 0.5
.X	DECIMALS	± 0.1
.XX	DECIMALS	± 0.05
	ANGLES	± 0.5 DEG
	HOLE SIZES	± 1mm
	SURFACES	3.2 MICROMETER

No.	Date	Description	Drawn By / Dessiné par	Approved / Approuvé
A	2019-08-30	ADDED COUNTERBORE	DAF	DPC

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 _____

Parks Canada / Parcs Canada

Canada

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Project title / Titre du projet

BOUNDARY ROAD SWING BRIDGE REHABILITATION

TRENT-SEVERN WATERWAY

ONTARIO

Drawing title / Titre du dessin

ROLLER SHAFT

Scale / Échelle: 1:1

Drawn by/ Dessiné par: M_D — Date: 2019-01-14

Designed by/ Conçu par: M_D — Date: 2019-01-07

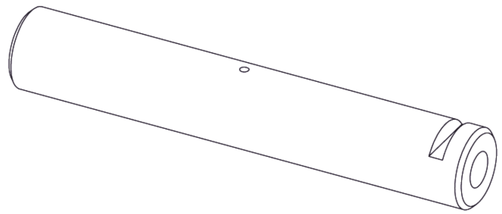
Checked by/ Vérifié par: DPC — Date: 2019-01-28

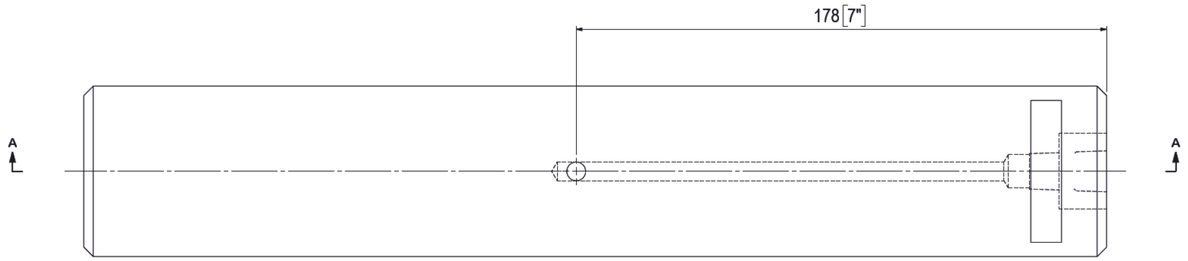
Approved by / Approuvé par: DPC — Date: 2019-01-28

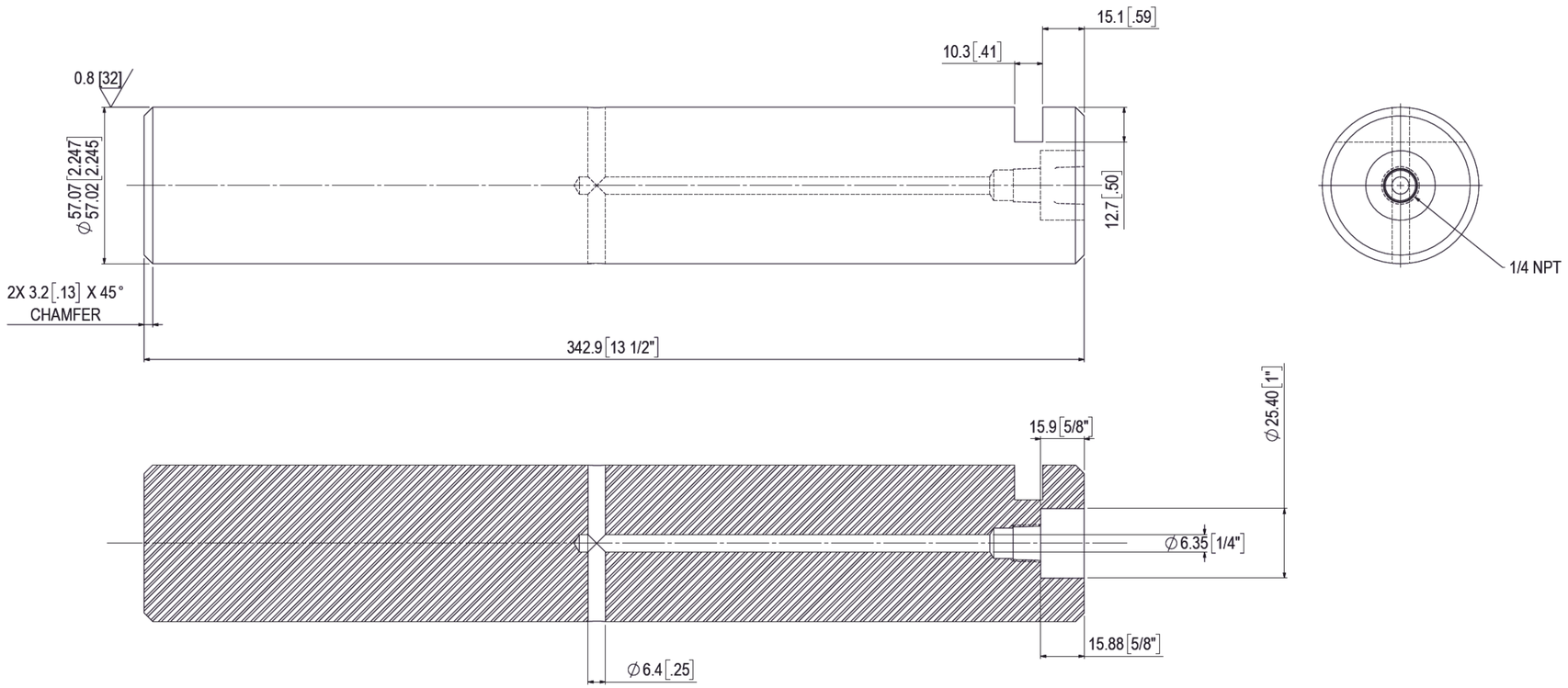
Project No./No. du projet | Client No./No du Client | Sheet No./ Feuille No.: 20

Drawing Reference No./Numéro de Référence du Dessin: 203

PART NUMBER: 203-21
DESCRIPTION:
MATERIAL: 17-4 PH SS RND, CONDITION H1150
ø57 [2 1/4"] X 343 [13 1/2"] LG
FINISH: NONE
QUANTITY: 2







SECTION A-A

1. DIMENSIONS ARE IN MILLIMETERS
2. TOLERANCES

X.	DECIMALS	± 0.5
.X	DECIMALS	± 0.1
.XX	DECIMALS	± 0.05
	ANGLES	± 0.5 DEG
	HOLE SIZES	± 1mm
	SURFACES	3.2 MICROMETER

No.	Date	Description	Drawn By / Dessine par	Approved / Approuve
A	2019-08-30	ADDED COUNTERBORE	DAF	DPC

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 _____

Parks Canada / Parcs Canada

Canada

wsp

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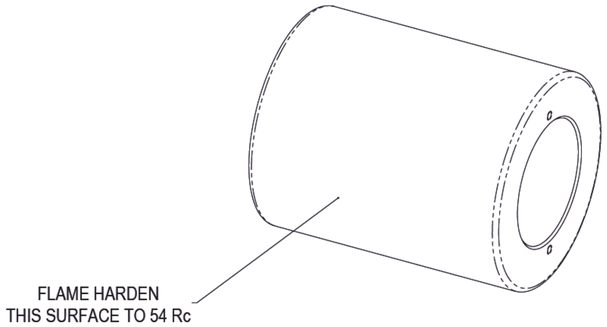
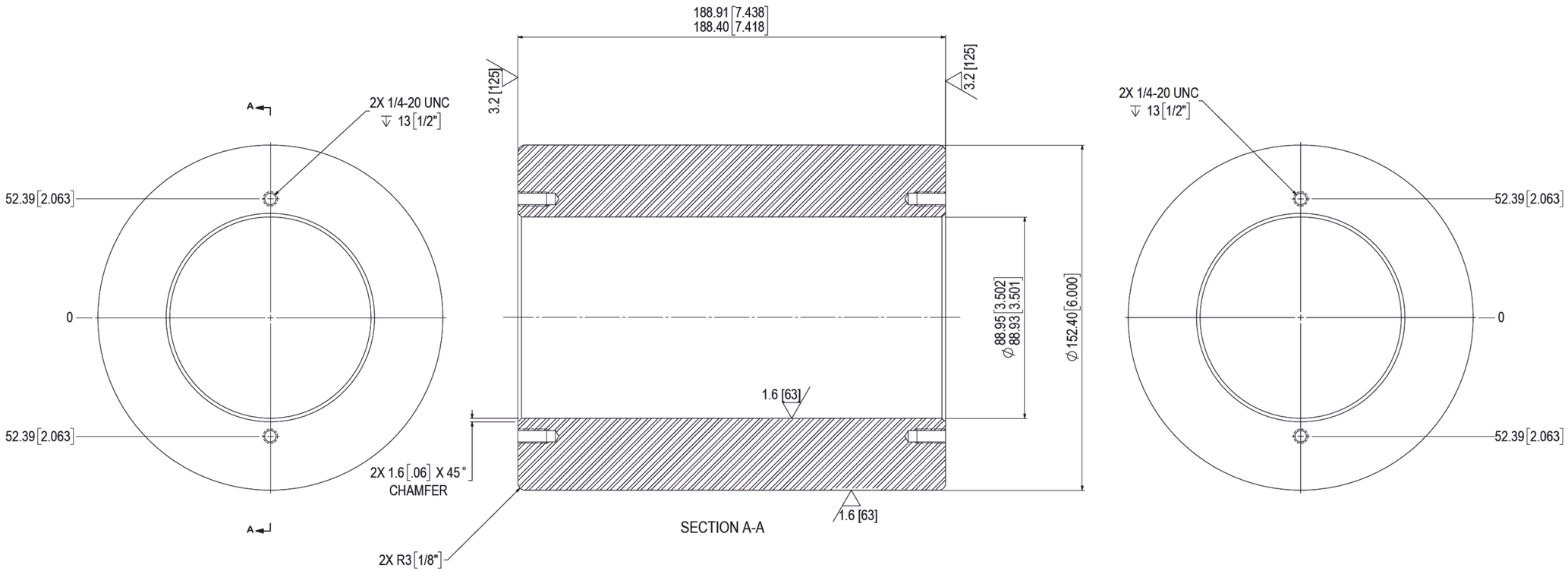
Project title / Titre du projet
BOUNDARY ROAD SWING BRIDGE REHABILITATION
TRENT-SEVERN WATERWAY
ONTARIO

Drawing title / Titre du dessin
CLEVIS SHAFT

Scale / Échelle	1:1
Drawn by/ Dessiné par	M_D
Date	2019-01-14
Designed by/ Conçu par	M_D
Date	2019-01-07
Checked by/ Vérifié par	DPC
Date	2019-01-21
Approved by / Approuvé par	DPC
Date	2019-01-21
Project No./No. du projet	1911-1
Client No./No du Client	
Sheet No./ Feuille No.	21
Drawing Reference No./Numéro de Référence du Dessin	203

PART NUMBER: 203-22
DESCRIPTION:
MATERIAL: AISI 4140 HTSR RND
ø152 [6"] X 189 [7 7/16"] LG
HEAT TREAT: FLAME HARDEN TO 54 Rc ON O.D.
FINISH: ALL EXPOSED SURFACES MUST BE COATED
WITH LPS-3 OR EQUIVALENT
QUANTITY: 2





No.	Date	Description	Drawn By Desine par	Approved Approuve
		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 _____

Parks Canada Parcs Canada

Canada

wsp

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www.chadwickengineering.com

Project title / Titre du projet

BOUNDARY ROAD SWING BRIDGE REHABILITATION

TRENT-SEVERN WATERWAY

ONTARIO

Drawing title / Titre du dessin

ROLLER

Scale / Échelle
1:1

Drawn by/ Dessiné par
M_D
Date
2019-01-14

Designed by/ Conçu par
M_D
Date
2019-01-07

Checked by/ Vérifié par
DPC
Date
2019-01-21

Approved by / Approuvé par
DPC
Date
2019-01-21

Project No./No. du projet
1911-1

Client No./No du Client

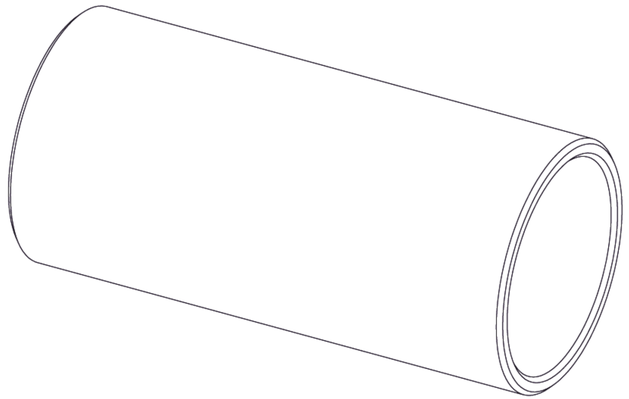
Sheet No./ Feuille No.
22

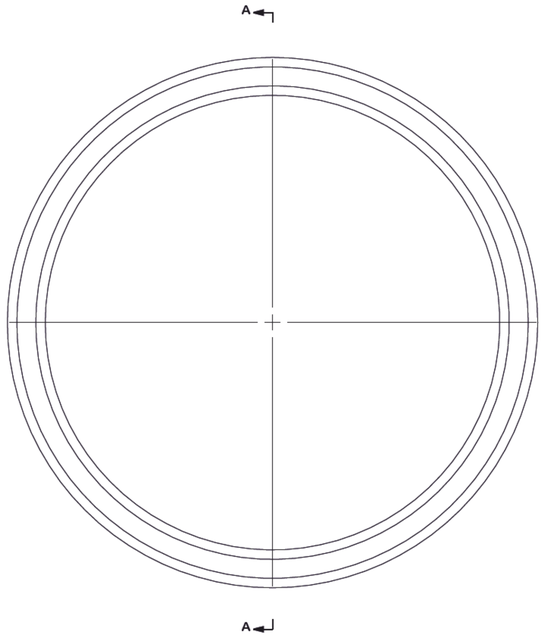
Drawing Reference No./Numéro de Référence du Dessin
203

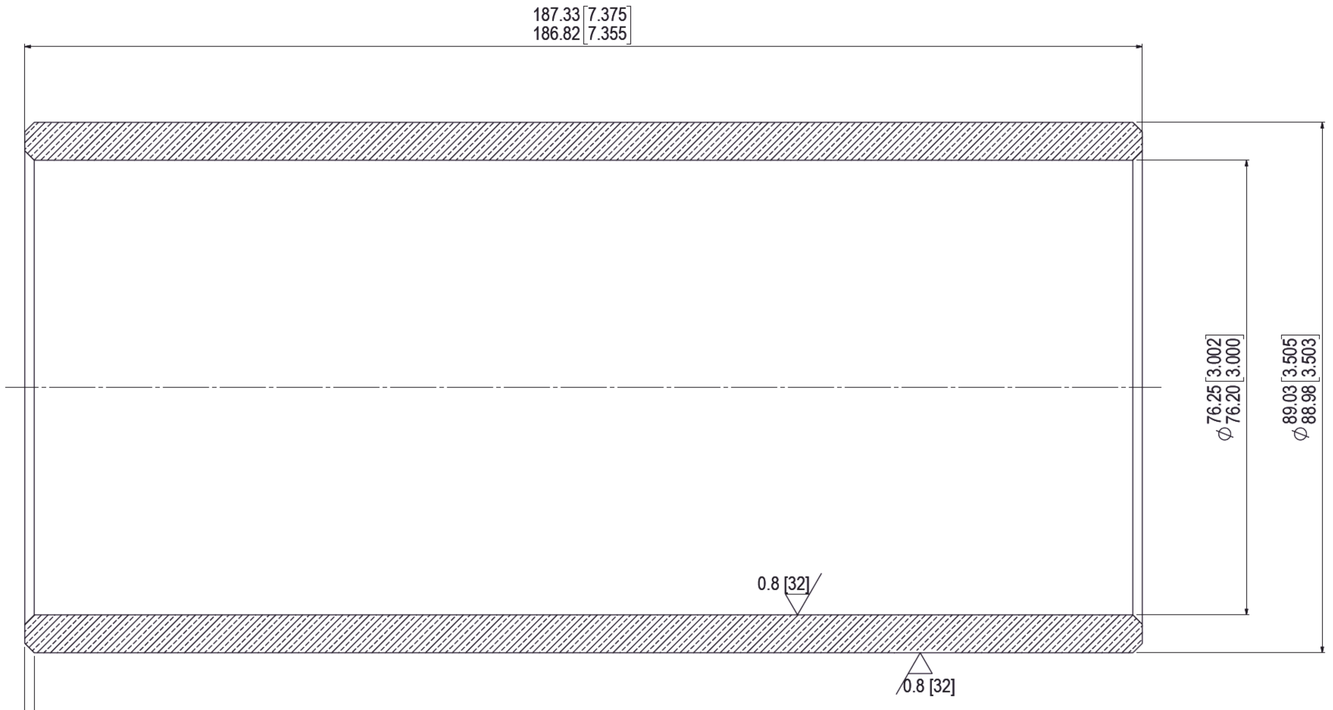
1. DIMENSIONS ARE IN MILLIMETERS
2. TOLERANCES

X. DECIMALS	± 0.5
.X DECIMALS	± 0.1
.XX DECIMALS	± 0.05
ANGLES	± 0.5 DEG
HOLE SIZES	± 1mm
SURFACES	3.2 MICROMETER

PART NUMBER: 203-23
DESCRIPTION:
MATERIAL: AMPCO 18 (AL BRNZ) TUBE
89 [3 1/2"] OD X 64 [2 1/2"] ID X 187 [7 3/8"]" LG
FINISH: NONE
QUANTITY: 2







SECTION A-A

1. DIMENSIONS ARE IN MILLIMETERS
2. TOLERANCES

X.	DECIMALS	± 0.5
.X	DECIMALS	± 0.1
.XX	DECIMALS	± 0.05
	ANGLES	± 0.5 DEG
	HOLE SIZES	± 1mm
	SURFACES	3.2 MICROMETER

No.	Date	Description	Drawn By Dessine par	Approved Approuve
		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 _____

Parks Canada / Parcs Canada

Canada

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Project title / Titre du projet
BOUNDARY ROAD SWING BRIDGE REHABILITATION
TRENT-SEVERN WATERWAY
ONTARIO

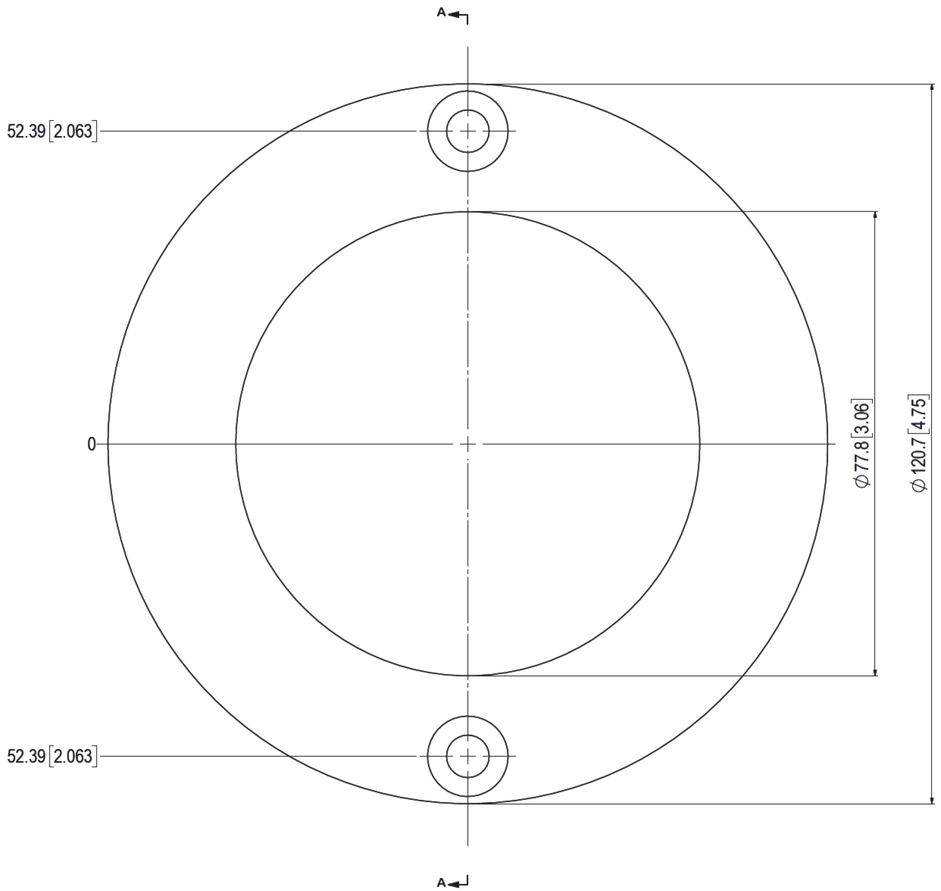
Drawing title / Titre du dessin
ROLLER SLEEVE BUSHING

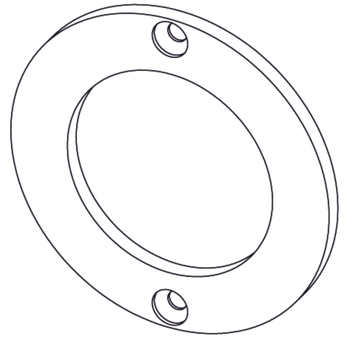
Scale / Échelle
2:1

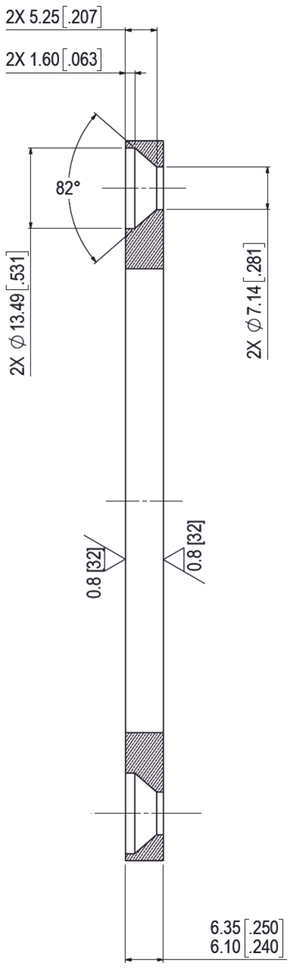
Drawn by/ Dessiné par: M_D — Date: 2019-01-14
Designed by/ Conçu par: M_D — Date: 2019-01-07
Checked by/ Vérifié par: DPC — Date: 2019-01-21
Approved by / Approuvé par: DPC — Date: 2019-01-21

Project No./No. du projet: 1911-1
Client No./No du Client:
Sheet No./ Feuille No.: 23
Drawing Reference No./Numéro de Référence du Dessin: 203

PART NUMBER: 203-24
DESCRIPTION:
MATERIAL: AMPCO 18 (AL BRNZ) PL
ø121 [ø4 3/4"] X 6 [1/4"] THK
FINISH: NONE
QUANTITY: 4







SECTION A-A

1. DIMENSIONS ARE IN MILLIMETERS
2. TOLERANCES

X.	DECIMALS	± 0.5
.X	DECIMALS	± 0.1
.XX	DECIMALS	± 0.05
	ANGLES	± 0.5 DEG
	HOLE SIZES	± 1mm
	SURFACES	3.2 MICROMETER

No.	Date	Description	Drawn By Dessine par	Approved Approuve
		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 _____

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Canada

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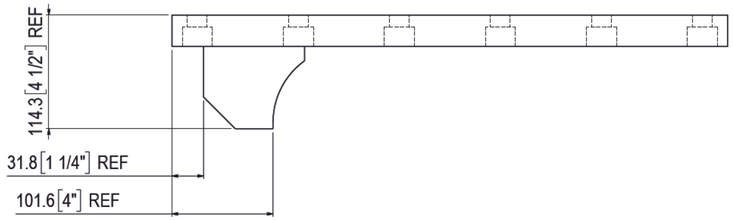
Project title / Titre du projet
BOUNDARY ROAD SWING BRIDGE REHABILITATION
TRENT-SEVERN WATERWAY
ONTARIO

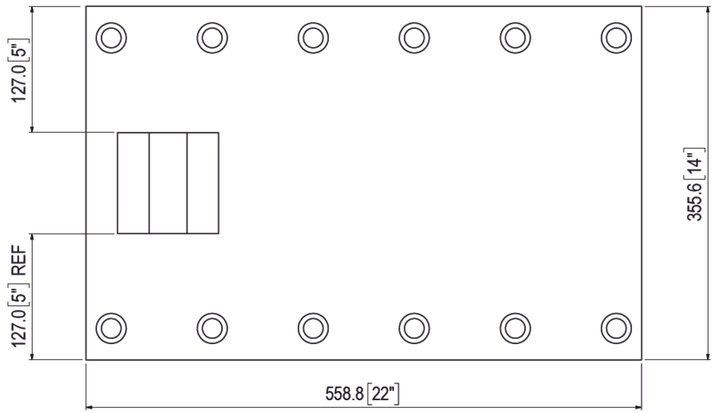
Drawing title / Titre du dessin
ROLLER THRUST BEARING

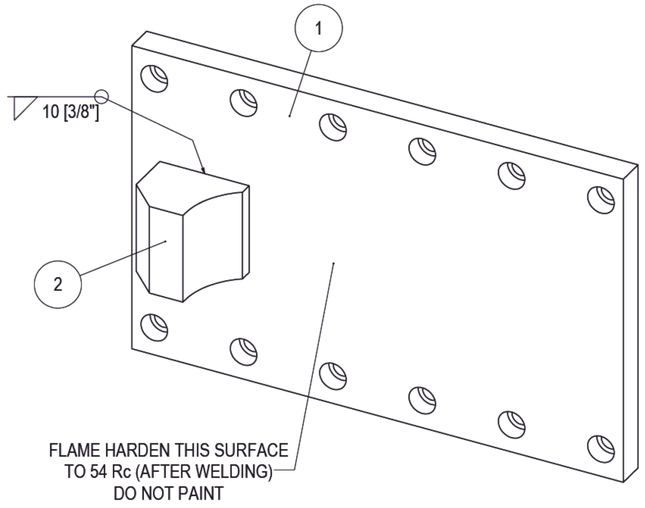
Scale / Échelle	2:1
Drawn by/ Dessiné par	M_D
Date	2019-01-14
Designed by/ Conçu par	M_D
Date	2019-01-07
Checked by/ Vérifié par	DPC
Date	2019-01-24
Approved by / Approuvé par	DPC
Date	2019-01-21
Project No./No. du projet	1911-1
Client No./No du Client	
Sheet No./ Feuille No.	24
Drawing Reference No./Numéro de Référence du Dessin	203

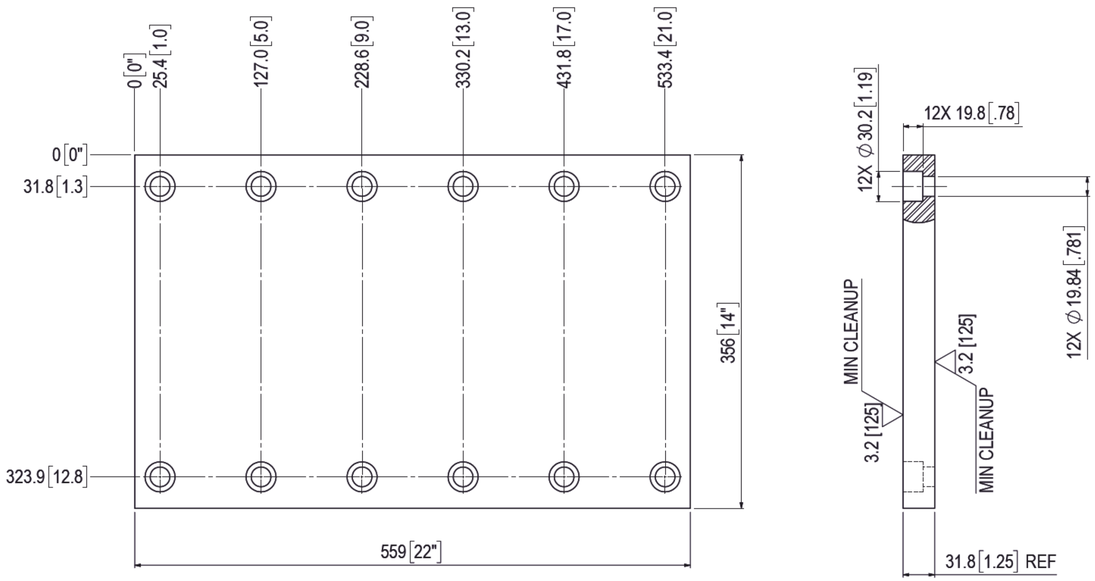
PART NUMBER: 203-25
DESCRIPTION:
MATERIAL: SEE CUT LIST
HEAT TREAT: FLAME HARDEN TO 54 Rc (SURFACE AS NOTED)
FINISH: PAINT (DO NOT PAINT HARDENED SURFACE)
ALL UNPAINTED SURFACES MUST BE COATED
WITH LPS-3 OR EQUIVALENT
QUANTITY: 2

WELDMENT CUT LIST			
ITEM	QTY.	MATERIAL	CUT LENGTH
1	1	AISI 4140 HTSR PL, 32 [1 1/4"] THK	356 X 559 [14" X 22"]
2	1	AISI 4140 HTSR SQ, 102 X 102 [4" X 4"]	83 [3 1/4"]

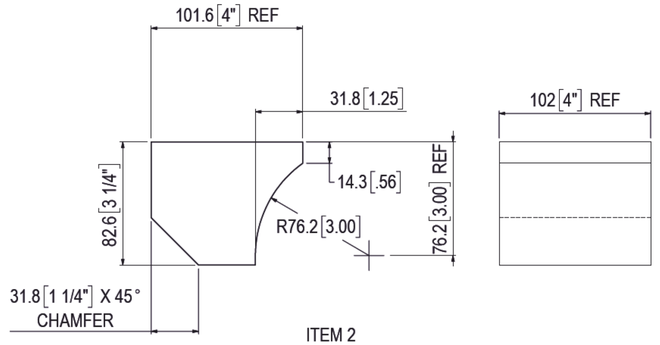








ITEM 1
DETAIL BEFORE WELDING



ITEM 2
DETAIL BEFORE WELDING
SCALE 1:2

1. DIMENSIONS ARE IN MILLIMETERS
2. TOLERANCES

X. DECIMALS	± 0.5
.X DECIMALS	± 0.1
.XX DECIMALS	± 0.05
ANGLES	± 0.5 DEG
HOLE SIZES	± 1mm
SURFACES	3.2 MICROMETER

No.	Date	Description	Drawn By Desine par	Approved Approuve
		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 _____

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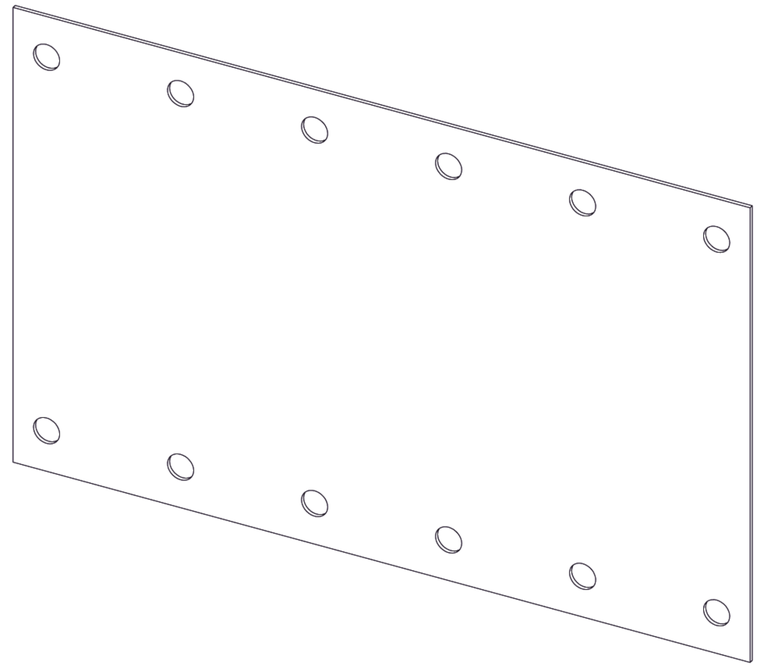
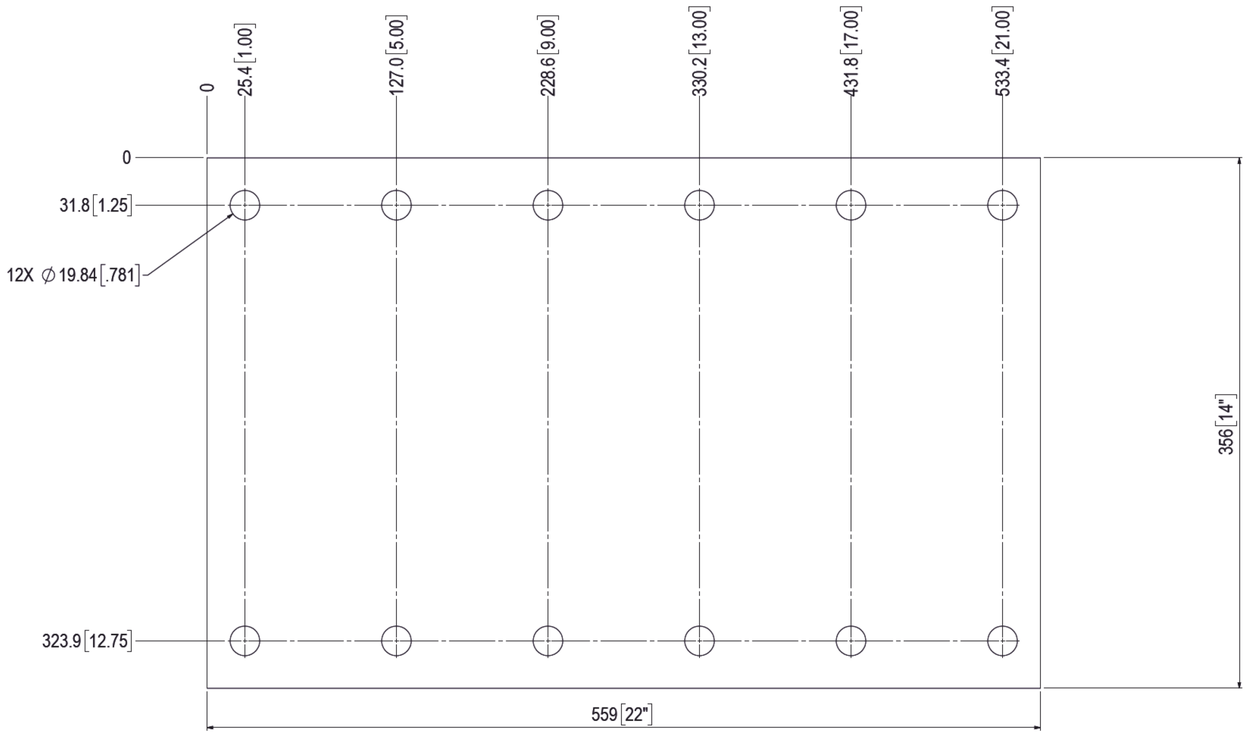
Project title / Titre du projet
BOUNDARY ROAD SWING BRIDGE REHABILITATION
TRENT-SEVERN WATERWAY
ONTARIO

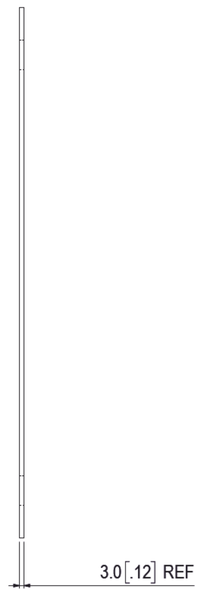
Drawing title / Titre du dessin
ROLLER PLATE

Scale / Échelle	1:3
Drawn by/ Dessiné par	M_D
Date	2019-01-14
Designed by/ Conçu par	M_D
Date	2019-01-07
Checked by/ Vérifié par	DPC
Date	2019-01-21
Approved by / Approuvé par	DPC
Date	2019-01-21
Project No./No. du projet	1911-1
Client No./No du Client	
Sheet No./ Feuille No.	25
Drawing Reference No./Numéro de Référence du Dessin	203

PART NUMBER: 203-26
DESCRIPTION:
MATERIAL: AISI 316 SS SHT
356 X 559 [14" X 22"] X 3 [1/8"] THK
FINISH: AS RECEIVED
QUANTITY: 16







NOTE: NOMINAL SHIM STACK HEIGHT IS 1/2" PER SIDE

1. DIMENSIONS ARE IN MILLIMETERS
2. TOLERANCES

X.	DECIMALS	± 0.5
.X	DECIMALS	± 0.1
.XX	DECIMALS	± 0.05
	ANGLES	± 0.5 DEG
	HOLE SIZES	± 1mm
	SURFACES	3.2 MICROMETER

No.	Date	Description	Drawn By Desine par	Approved Approuve

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 _____

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Project title / Titre du projet

BOUNDARY ROAD SWING BRIDGE REHABILITATION

TRENT-SEVERN WATERWAY

ONTARIO

Drawing title / Titre du dessin

ROLLER SHIM PLATE

Scale / Échelle
1:2

Drawn by/ Dessiné par
M_D
Date
2019-01-14

Designed by/ Conçu par
M_D
Date
2019-01-07

Checked by/ Vérifié par
DPC
Date
2019-01-21

Approved by / Approuvé par
2019-01-21
Date

Project No./No. du projet
1911-1

Client No./No du Client

Sheet No./ Feuille No.
26

Drawing Reference No./Numéro de Référence du Dessin
203

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 _____

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Project title / Titre du projet

BOUNDARY ROAD SWING BRIDGE REHABILITATION

TRENT–SEVERN WATERWAY

ONTARIO

Drawing title / Titre du dessin

SWING POSITION LIMIT SWITCH INSTALLATION

Scale / Échelle
NOT TO SCALE

Drawn by/ Dessiné par — Date

Designed by/ Conçu par — Date

Checked by/ Vérifié par — Date

Approved by / Approuvé par — Date
DPC — January 2019

Project No./No. du projet	Client No./No du Client	Sheet No./ Feuille No.
Drawing Reference No./Numéro de Référence du Dessin: 204		01