

STRUCTURAL NOTES

1. DESIGN SPECIFICATIONS
- 1.1 NEW COMPONENTS: CANADIAN HIGHWAY BRIDGE DESIGN CODE CAN / CSA-06 WITH SUPPLIMENTS 1 AND 2 ISSUED MAY 2010 AND OCT.2011 RESPECTIVELY
- 1.2 EXISTING COMPONENTS TO REMAIN EVALUATED BY SERVICEABILITY LIMIT STATES.
2. CONSTRUCTION SPECIFICATIONS
- 2.1 CANADA NATIONAL MASTER SPECIFICATION (NMS).
3. LIVE LOAD
- 3.1 NEW COMPONENTS : CL-625-ONT VEHICULAR LIVE LOADING .
4. GENERAL
- 4.1 DO NOT SCALE THESE DRAWINGS.
- 4.2 DIMENSIONS AND DETAILS SHOWN IN THESE PLANS ARE BASED ON THE ORIGINAL CONSTRUCTION PLANS. THE CONTRACTOR SHALL VERIFY DIMENSIONS AND ELEVATIONS PRIOR TO THE START OF CONSTRUCTION. ANY NECESSARY ADJUSTMENTS SHALL BE SUBMITTED BY THE CONTRACTOR FOR THE DEPARTMENTAL REPRESENTATIVE REVIEW.
- 4.3 COORDINATE ALL WORK SHOWN ON THE STRUCTURAL DRAWINGS WITH MECHANICAL, ELECTRICAL , ALL OTHER DISCIPLINES AND EXISTING CONDITIONS (EXISTING CONDITIONS ARE ASSUMED). REPORT ANY INCONSISTENCIES TO THE DEPARTMENTAL REPRESENTATIVE BEFORE PROCEEDING WITH THE WORK.
- 4.4 FOR MATERIALS , REFER TO THE VARIOUS DIVISIONS OF SPECIFICATIONS.
- 4.5 CONTRACTOR SHALL TAKE MEASURES TO PROTECT EXISTING UTILITIES AND FACILITIES DURING CONSTRUCTION.
- 4.6 EXISTING REINFORCING STEEL IS SHOWN IN IMPERIAL UNITS. NEW REINFORCING STEEL IS SHOWN IN METRIC UNITS.
- 4.7 EXISTING AND NEW STRUCTURAL STEEL MEMBERS ARE SHOWN IN IMPERIAL SECTIONS.
- 4.8 ALL THE NEW REINFORCEMENT BARS TO BE GALVANIZED WITH Fy=58 KSI (400 MPa). SEE SPECIFICATION.
- 4.9 CONCRETE STRENGTH FOR ALL NEW ELEMENTS TO BE f'c=5.08 KSI (35 MPa). SEE SPECIFICATION.
- 4.10 ALL THE NEW BOLTS SHOWN AS HSB TO BE A325 UNLESS NOTES OTHERWISE ON DRAWINGS.
5. EXISTING STRUCTURE
- 5.1 EXISTING STRUCTURAL INFORMATION IS BASED UPON DRAWINGS PREPARED BY C.C. PARKER AND ASSOCIATES LTD DATED 13/11/1958 AND 23/4/1982.
- 5.2 EXISTING CONDITIONS ARE ASSUMED. REPORT ANY VARIATIONS TO THE DEPARTMENTAL REPRESENTATIVE. BEFORE PROCEEDING WITH THE WORK.
6. FOUNDATIONS
- 6.1 FOUNDATION DESIGN IS BASED UPON A GEOTECHNICAL REPORT PREPARED FOR THE PROJECT BY SOIL-MAT ENGINEERS AND CONSULTANTS LTD., REPORT NO. SM 135013-G, DATED APRIL 23, 2013.
- 6.2 SET FOUNDATIONS ON UNDISTURBED SOIL CAPABLE OF SUPPORTING AN ALLOWABLE BEARING PRESSURE OF 14.5 PSI (100KPa) AT ULS AND 10.9 PSI (75KPa) AT SLS.
- 6.3 FOUNDATION OF NEW BARRIER, TRAFFIC AND PEDESTRIAN GATES ARE DESIGNED FOR THE FORCES SHOWN ON DRAWING S-13.

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ABBREVIATIONS

A.ROD	ANCHOR ROD	LE	LEFT END
AEC	ARCHITECTURALLY EXPOSED CONCRETE	LG.	LONG/LENGTH
AESS	ARCHITECTURALLY EXPOSED STRUCTURAL STEEL	UL	UPPER LEVEL BM/JOIST
AF	FACTORED AXIAL LOAD	LL	LOWER LEVEL BM/JOIST
	(+ INDICATES TENSION,	LLH	LIVE LOAD
	- INDICATES COMPRESSION)	LLV	LONG LEG HORIZONTAL
ALT.	ALTERNATE	LSV	LONG LEG VERTICAL
ARCH.	ARCHITECTURAL	LSH	LONG SIDE HORIZONTAL
		LP	LOW POINT
B, BOT.	BOTTOM		
BCP	BORED CONCRETE PILE	MAX.	MAXIMUM
BEW	BOTTOM EACH WAY	Mf	FACTORED MOMENT
BLL	BOTTOM LOWER LAYER	MJ	MOVEMENT JOINT
BM.	BEAM	MIN.	MINIMUM
BOC	ELEV BOT. OF CAISSON (BORED CONCRETE PILE)		
BOF	ELEV BOTTOM OF FOOTING	MPa	MOMENT CONNECTION
BOP	ELEV BOTTOM OF PILE	MTf	MEGA PASCAL
BP	BEARING/BASE PLATE		FACTORED TORSION
BSMT.	BASEMENT	NF	NEAR FACE
BUL	BOTTOM UPPER LAYER	NTS	NOT TO SCALE
BUP	BOTTOM OF UNDERPINNING		
		O/C	ON CENTRE
CA	COLUMN ABOVE ONLY (NO COLUMN BELOW)	O/O	OUT TO OUT
CAM.	CAMBER	OPEN, OPG.	OPENING
CANT.	CANTILEVER		
CB	COLUMN BELOW	P	POINT LOAD
C/C	CENTRE TO CENTRE	Pf	FACTORED POINT LOAD
CEL	CUT OFF ELEVATION FOR PILES	PSI	POUNDS PER SQUARE INCH
CF	CONCRETE FIREPROOFED	PL OR P	PLATE
CIP	CAST-IN-PLACE	PSF	POUND PER SQUARE FOOT
CJ	CONSTRUCTION JOINT		
CL	CLEAR	RA	ROCK ANCHOR
CL	CENTRELINE	R/C	REINFORCED CONCRETE
CNT	STEEL DECK CORE NOMINAL THICKNESS	RD	ROOF DRAIN
COMP.	COMPOSITE	REINF.	REINFORCEMENT
COL.	COLUMN	RE	RIGHT END
CONC.	CONCRETE	RF	RIGID FRAME
CONT.	CONTINUOUS	Rf	FACTORED VERTICAL REACTION
CP	CONNECTION PLATE	RHf	FACTORED HORIZONTAL REACTION
DCA	DRILLED CONCRETE ANCHOR	SCA	STEEL COLUMN ABOVE (NO STEEL COLUMN BELOW)
DET.	DETAIL	SDF	STEP DOWN FOOTING IN DIRECTION OF ARROW
D.F-L	DOUGLAS FIR-LARCH		
DIA.	DIAMETER	SDL	SUPERIMPOSED DL (EXCLUDING SELF-WEIGHT)
DIM.	DIMENSION	SECT.	SECTION
DL	DEAD LOAD IN PSF	SIM.	SIMILAR
DMA	DRILLED MASONRY ANCHOR	SJ	STEEL JOIST
DN.	DOWN	SLS	SERVICEABILITY LIMIT STATE
DO	DITTO	SL	SLAB
DP.	DEEP	SL 1, SL2	SHELF ANGLE 1, ETC
DWG.	DRAWING	SOG	SLAB ON GRADE
DWL.	DOWEL	SPA	SPACES
		SPF	SPRUCE PINE FIR
EA.	EACH	SS	STAINLESS STEEL
ECR	EPOXY COATED REINFORCEMENT	STIR.	STIRRUP
EE	EACH END	STIFF.	STIFFENER
EF	EACH FACE		
EJ, EXP.JT.	EXPANSION JOINT	t	THICKNESS
EL., ELEV.	ELEVATION	T	TOP
EMBED.	EMBEDMENT	TBR	TO BE REMOVED
EQ.	EQUAL	TEW	TOP EACH WAY
EX., EXIST.	EXISTING	THK.	THICK
		TJ	TIE JOIST
FD	FLOOR DRAIN	TLE	TOP LEFT END
FF	FAR FACE	TLL	TOP LOWER LAYER
FIN.	FINISHED	TOC	TOP OF CAISSON (BORED CONCRETE PILE)
FL.	FLOOR	TOF	TOP OF FOOTING
FMC	FULL MOMENT CONNECTION	TOP	TOP OF PILE
FEET	FEET	TPC	TOP OF PILE CAP
FTG.	FOOTING	TRE	TOP RIGHT END
f'c	COMPRESSIVE STRENGTH OF CONC	TUL	TOP UPPER LAYER
fy	YIELD STRENGTH	TYP.	TYPICAL
GALV.	GALVANIZED STEEL	ULS	ULTIMATE LIMIT STATE
GB	GRADE BEAM	U/S	UNDERSIDE
GL	GRIDLINE	U/N	UNLESS NOTED
G/R	GUIDE RAIL	UPT.	UPTURNED
h	TOTAL THICKNESS		
H, HOR.	HORIZONTAL	VB	VERTICAL BRACING
HDG	HOT DIPPED GALVANIZED	V, VEF	VERTICAL, VERTICAL EACH FACE
HEF	HORIZONTAL EACH FACE	VF	FACTORED SHEAR
HH	HOOK-HOOK (HOOK EACH END)	VIC	VERTICAL IN CENTRE
		V, VERT., VERTS.	VERTICAL, VERTICALS
HIC	HORIZONTAL IN CENTRE	VSC	VERTICALLY SLOTTED CONNECTION
HK.	HOOK		TO ALLOW FOR DEFLECTION
HP	HIGH POINT	VXB	VERTICAL 'X' BRACING
HSB	HIGH STRENGTH BOLT	WC	WIND COLUMN
		WWF	WELDED WIRE FABRIC
IBA	INTEGRITY BARS ADDED	ZRP	ZINC RICH PAINT
IBE	INTEGRITY BARS EXTERIOR		
IBI	INTEGRITY BARS INTERIOR		
IN.	INCH, INCHES		
JG	JOIST GIRDER		
kN	KILO NEWTON		
kPa	KILO PASCAL		
KSI	KILO POUNDS PER SQUARE INCH		
LB.	POUND, POUNDS		
ld	TENSION DEVELOPMENT LENGTH OF REBAR		
ldc	COMPRESSION DEVELOPMENT LENGTH OF REBAR		
L	SINGLE ANGLE		
LL	DOUBLE ANGLES		

STRUCTURAL WORK ITEMS

- 1 DEMOLISH AND PROPERLY DISPOSE OF STRUCTURAL ELEMENTS AS SHOWN ON THE DEMOLITION PLANS. STRUCTURAL DEMOLITION ITEMS INCLUDE THE CONTROL HOUSE WALL, MOTOR ROOM R/C FLOOR SLAB/WALL, REINFORCED CONCRETE SUPPORT FOR GATES, GATES, CURBING, PIPE RAILING, GUIDE RAIL, SIDEWALK, MISCELLANEOUS STRUCTURAL STEEL COMPONENTS AND HARDWARE.
- 2 DESIGN, FURNISH , INSTALL AND REMOVE TEMPORARY STRUCTURES INCLUDING FLOOR SLAB SUPPORT, TEMPORARY SHIELDING , TEMPORARY SHEETING, EQUIPMENT/MACHINERY HOISTING STRUCTURES.
- 3 EXCAVATE AND PROPERLY BACKFILL FOR CONSTRUCTION OF NEW GATES.
- 4 CONSTRUCT NEW R/C STRUCTURAL ELEMENTS AS SHOWN ON THE PLANS. NEW R/C ELEMENTS INCLUDE GATE SUPPORTS, PLATFORMS, CURBS, SIDEWALKS AND NEW FLOOR SLABS.
- 5 APPLY EPOXY WATERPROOFING ON CONCRETE SURFACES AS SHOWN ON THE CONTRACT PLANS.
- 6 FURNISH & INSTALL NEW STRUCTURAL STEEL COMPONENTS AS SHOWN ON THE CONTRACT PLANS. NEW STRUCTURAL STEEL COMPONENTS INCLUDE DECK JOINT CHECKERED PLATES, STEEL ARMORING, WALL COMPONENTS, PIPE RAILING, MISCELLANEOUS STEEL ELEMENTS, CONDUIT SUPPORT ON CATWALK AND MISCELLANEOUS HARDWARE.
- 7 FURNISH AND INSTALL NEW WALL PANELS.
- 8 FURNISH AND INSTALL RIGID METALLIC CONDUIT AS SHOWN ON THE CONTRACT PLANS.
- 9 FURNISH AND INSTALL NEW ROADWAY GUIDE RAIL, POSTS, HARDWARE ETC AND SHOWN ON THE CONTRACT PLANS.
- 10 PROVIDE MAINTENANCE AND PROTECTION OF TRAFFIC AND TRAFFIC CONTROL DEVICES AS DETAILED IN THE CONTRACT SPECIFICATIONS.
- 11 RESTORE SITE TO THE SATISFACTION OF THE DEPARTMENTAL REPRESENTATIVE.



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06	FOR TENDER	2013-06-04
05	FINAL DESIGN COMPLETION	2013-06-31
04	99% DESIGN COMPLETION	2013-05-31
03	90% DESIGN SUBMITTAL, NOT FOR CONSTRUCTION	2013-03-31
02	66% DESIGN SUBMITTAL, NOT FOR CONSTRUCTION	2013-02-14
01	33% DESIGN SUBMITTAL, NOT FOR CONSTRUCTION	2012-12-10
revision		date

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

A

B

C

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

project title
titre du projet
HAMILTON ONTARIO
BURLINGTON CANAL
VERTICAL LIFT BRIDGE
REPLACEMENT OF CONTROLS,
DRIVES AND OVERHEAD CABLES

drawing title
titre du dessin
STRUCTURAL NOTES,
ABBREVIATIONS AND
INDEX OF DRAWINGS

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2013-03-31

project no.
no. du projet
R.012641.001

drawing no.
dessiné no.
S-01

SCALE: N.T.S.