



CITY OF PORTAGE LA PRAIRIE

STRUCTURAL ASSESSMENT OF THE ISLAND PARK BRIDGE

JANUARY 2008

KGS
GROUP

KONTZAMANIS ▪ GRAUMANN ▪ SMITH ▪ MACMILLAN INC.
CONSULTING ENGINEERS & PROJECT MANAGERS

January 7, 2008

File No. 07-186-01

City of Portage la Prairie
Operations Department Office
495 – 11th St. N.W.
Portage la Prairie, Manitoba
R1N 0L8

ATTENTION: Mr. Kelly Braden, P.Eng.
Director of Operations

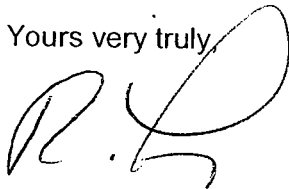
RE: Structural Assessment of the Island Park Bridge

Dear Mr. Braden:

Attached please find 15 (fifteen) copies of our report documenting the findings of our condition assessment of the Island Park Bridge and our recommendations for: load rating the bridge; short term bridge remediation; and long term upgrading.

We look forward to presenting and discussing the report at a City Council meeting on January 14th, follow which we can make amendments to the report if required. In the interim should you have any questions please call the undersigned.

Yours very truly,



Robert J. Long, P.Eng.
Senior Structural Engineer

RJL/jr
Enclosure

EXECUTIVE SUMMARY

KGS Group was retained by the City of Portage La Prairie to complete a structural assessment of the Island Park Bridge. The bridge is a 700 foot long, two lane timber bridge. The bridge was originally constructed in the late 1920's. The north end of the bridge underwent extensive repair in 1987.

The scope of the assessment has included: a review of prior documentation; a visual condition assessment; and an analysis of the structural capacity of the bridge.

Based on the assessment recommendations are provided for: load restrictions; short term rehabilitation; and long term upgrade options.

The assessment has identified a number of areas in significant disrepair particularly in the south end of the bridge. Requirements for the short term repair of these deficiencies are itemized. The estimated cost of this repair is \$40,000.00. These short term repairs should not be considered permanent and are only intended to be interim measures to provide time to assess and implement a long term solution.

Options for a long term upgrade are:

- To restore the existing bridge at limited load restrictions that do not meet existing vehicle needs. This will require repair to the north end of the bridge and replacing the south end of the bridge. The estimated cost of this option is \$600,000.00.
- To construct a causeway to replace the entire bridge with essentially no load restriction. A short span link would be provided in the centre of the causeway. The estimated cost of this option is \$1,620,000.00.

A significant limitation to the existing bridge is the restricted load capacity. When constructed in the 1920's the design requirements were substantially less than present day vehicular loads. Repairing and/or replacing the bridge in kind perpetuates the load limitations of the original bridge. The bridge has been analysed based on the evaluation criteria provided in the Canadian Highway Bridge Design Code – CAN/CSA-S6-06. Because of the relatively short bridge spans, the capacity of the bridge is limited by maximum axle loads as opposed to gross vehicular weights. The maximum allowable axle load assuming double axles placed 4 feet apart is 14,800 lbs (6,730 kg) per axle (13,460 kg for both axles). The allowable limit can be increased to 17,100 lbs (7,800 kg) per axle (15,600 kg for both axles) if the vehicle speed is <10 km/hr. This is comparable to Class B Highway axle loads. The weighted average load factor used in the analysis is 1.5. These maximum allowable loads are based on the implementation of the short term remedial repair. A restored bridge will have a similar load capacity. A causeway can be constructed with an unrestricted load capacity.

These maximum allowable axle loads are reasonable consistent with the current bridge load rating which is based on the analysis completed in 1986. The maximum allowable single axle loads based on the 1986 analysis are 10,900 kg for normal traffic and 14,550 kg for special permanent loads. It is understood that vehicles with axle loads similar to Class A Highway Loads (i.e. 17,000 kg) and greater are currently using the bridge. As these loads exceed the load rating for the bridge, there is a risk of partial or complete failure should this practice be continued.

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2. Island Park Bridge Long-Term Upgrade (Causeway – Option “B” Budget Cost Estimate

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 - S1 – General Arrangement Plan, Elevations and Cross Sections
 - P1 – Proposed Bridge Options – General Arrangement Plan and Sections
 - DS1 – Temporary Support for Pile Cap Beam – Conceptual Detail
- B. Condition Assessment
 - Condition Charts
 - SK1 – Pile and Pile Cap
 - SK2 - Stringers
 - Photographs
- C. Design Vehicle Configuration
- D. Request for Proposal

1.0 INTRODUCTION

On November 7, 2007, KGS Group was commissioned to complete a structural assessment of the Island Park Bridge. The Request for Proposal is attached to Appendix D of this report.

The scope of this assessment has included the following:

- A review of prior documentation
- A visual condition assessment
- An analysis of the structural capacity of the bridge

Based on the assessment recommendations are provided for:

- Load restrictions for the existing bridge
- Short term rehabilitation
- Long term upgrade options

Section 2.0 of this report provides background information. The condition assessment is provided in Section 3.0. The bridge load rating analysis is provided in Section 4.0. Recommendations for short term rehabilitation and long term upgrade options are provided in Sections 5.0 and 6.0 respectively.

2.0 BACKGROUND

The Island Park Bridge is a two lane bridge which provides vehicle and pedestrian access to recreational facilities and residences on the Island. Prior to 1987 the bridge also provided support for a water line.

The bridge was originally constructed in the late 1920's. Considerable heaving of the piles was experienced in some locations within a year after construction and as a result a portion of the bridge was reconstructed on longer piles. The bridge underwent an extensive upgrade in 1987. The 1987 upgrade reconstructed the north two thirds of the bridge with bridge components similar to the original construction. The existing causeway which forms part of the pedestrian access was placed in the early 1970's.

Drawing S1 in Appendix A provides a general arrangement plan, elevation and cross section of the existing bridge. The total length of the bridge is 700 feet. The roadway width is 25' – 4". Bridge components include: pile bents at \pm 24 feet o.c. (each bent has five timber piles); 12" x 12" timber pile cap beams; 13 – 6" x 18" timber stringers across the width of the bridge spanning between the pile bents; 2" x 4" transverse nailed laminated decking; 2" asphalt overlay; timber posted guardrail. All members are assumed to be douglas fir. A significant difference between the original construction and the replacement structure of 1987 is the use of longer timber piles. The original piles are speculated to be 30 feet in length. These piles have experienced frost jacking in numerous locations. The replacement piles are 45 feet in length and have a working load capacity of 28,000 lbs. All piles behave as friction piles.

A soils investigation of the site was completed as a part of the 1986 bridge evaluation. At that time four test holes were drilled on the causeway. The existing causeway consists of up to 3 m of clay fill mixed with sand, organics and silt. In one test hole there was stone/brick rubble between 0.6 m and 1.8 m below grade. The underlying natural soil consists of approximately 1 m of organic soil/silt; 2.5 m sand; and stiff clay to the end of the test hole at 16.8 m below causeway grade.

The 1987 structural analysis of the bridge rated the bridge as having an operating rating corresponding to a AASHTO HS 20 design vehicle (a truck with a gross vehicle weight of 80,000 lbs) and an inventory rating corresponding to an AASHTO H15 design truck i.e. 15 tons

for normal traffic. The maximum axle loads for the HS20 and H15 loadings are 32,000 lbs (14,545 kg) and 24,000 lbs (10,900 kg) respectively. Currently vehicles such as gravel, concrete and waste collection trucks with GVW in the order of 80,000 lbs regularly use the bridge. Vehicles such as compressor trucks, exhibition rides, construction equipment, highway tractor and trailers with GVW up to 110,000 lb and single axle loads of 35,000 lb (17,000 kg) are using the bridge on a periodic basis.

3.0 CONDITION ASSESSMENT

A visual inspection of the bridge was completed on November 9th and 16th, 2007. The result of this inspection are recorded on condition charts SK1 and SK2 and associated photographs - reference Appendix B. The number system used to identify piles, pile cap beams and stringers is shown on Drawing S-1.

In summary observations are as follows:

- **Piles** - There are 3 piles with complete loss of capacity (broken or totally rotted out); 5 piles which have severe splitting; and 9 piles with partial or minor splitting. All damaged piles are the original piles at the south end of the bridge. Some of the original piles are also experiencing frost jacking. All piles installed in 1987 are in good condition.
- **Piles Cap Beams** - There is 1 pile cap beam with significant splitting and 7 beams with minor splitting. All are at the south end of the bridge. Pile caps at the north end of the bridge are in good condition.
- **Stringers** - There are 11 stringers with significant splitting and 19 with minor splitting. The stringers with more significant splitting are typically exterior stringers which are more exposed to weathering. One stringer in the north end of the bridge has been split by an original abandoned pile which is frost jacking. The 1987 rehabilitation replaced some but not all of the stringers in the north end of the bridge.
- **Guardrail Post** - The timber guardrail posts are in poor condition in numerous locations – reference: example photograph numbers 27 to 30. The approach guardrail posts on the south end of the bridge are broken or missing in all locations – reference; Photograph numbers 33 and 34.
- **Timber Deck** - The underside of the timber deck appears to be in good condition in all areas. The top of the decking is not exposed and could not be assessed. The 1987 upgrade did not require extensive deck replacement.
- **Asphalt** - The asphalt overlay is in poor condition in many areas – reference: Photograph numbers 31 and 32. The 1987 drawings do not specify a membrane between decking and asphalt.
- **Sidewalk** - The sidewalk attached to the west side of the centre section of the bridge is in fair condition. One member was recently replaced – reference: Photograph number 35. The handrail is 6 inches lower than required by current codes.

4.0 LOAD RATING

The structural capacity of the bridge has been evaluated based on the Canadian Highway Bridge Design Code – CAN/CSA – S6-06.

The analysis is based on the wheel configuration of a design vehicle – reference Appendix C. This design vehicle is the loading used to design highway bridges in most Canadian jurisdictions. The evaluation accounts for: the level of redundancy of a member; the mode of potential failure; level of inspection access; dynamic load effects; level of traffic ie: highway class (Class C has been assumed, ADT 100-1000, ADTT 50-250); and condition. The average weighted load factor (safety factor) used in the analysis is approximately 1.5.

The flexural and shear strength of each bridge component – decking, stringers and pile cap beams – were calculated relative to the critical moment and shear for that member. The shear strength of the pile cap beams was found to be the most critical and governing mode of failure. Because of the relatively short spans of the bridge, axle loads vs gross vehicle weight are most critical. The timber piles for the south end of the bridge are estimated to have an allowable capacity of 18,000 lbs assuming a pile length of 30 feet.

Based on the analyses, the maximum allowable axle load assuming a pair of axles four feet apart is 14,800 lb (6,730 kg) per axle. This also assumes a maximum speed of 50 km/hr. With the speed reduced to <10 km/hr, the allowable load per axle is increased to 17,100 lb (7,800 kg) per axle. These maximum allowable loads are based on the implementation of the short term remedial repair as discussed in Section 5.0.

The code also makes provisions for special permit loads for which the bridge is analysed using reduced load factors. Given the poor condition of the south end of the bridge an allowance for this higher infrequent load condition is not considered appropriate.

5.0 SHORT TERM REHABILITATION

The condition assessment has identified a number of members in disrepair. The north two thirds of the bridge, have undergone an extensive upgrade in 1987, is still in relatively good condition and with a reasonable level of repair the useful life of this section of the bridge could be extended to 20 to 25 years with the load restrictions as discussed in Section 4.0. The south third of bridge is, however, in poor condition and anything other than a major repair or replacement will have limited benefit in extending the life of the bridge.

Should there be advantages to extending the use of the south end of the bridge by four to five years with minimal repair, the following remedial work is considered necessary:

- Provide steel frames to bridge between piles in the three locations where the piles are broken or severely decayed – reference Section DS-1.
- Band all piles which are split - total of 14 piles
- Replace interior stringers which have severe splitting – total of 3 stringers
- Replace all guardrail posts which have significant decay. This would include all approach guardrail posts at the south end of the bridge – approximately 30 posts.

The cost of this remedial work is estimated to be \$40,000.00. The maximum short term benefit of this repair should be considered to be no more than 4 to 5 years. During this time the bridge should be annually inspected to assess whether any additional repair is required.

6.0 LONG TERM UPGRADE OPTIONS

Two options to upgrading the bridge for the long term are:

Option A – Restore Existing Bridge

This option will provide for upgrading to the south end of the bridge similar to the reconstruction of the north end of the bridge which was completed in 1987. Restoration work will include:

- Removing and replacing the asphalt over the entire bridge.
- Replace all deck members and stringers in the north end of the bridge which are in disrepair.
- Reconstruct the south end of the bridge with new piles; new pile cap beams; new stringers and decking as required; new abutment.
- New guardrail for the length of the bridge.
- New walkway

The estimated cost of this option is \$600,000.00. A cost breakdown is provided in Table 1.

This option is substantially lower in cost than Option B. Disadvantages relative to Option B are: higher on-going maintenance costs; higher future replacement costs; restricted load capacity which does not adequately provide for existing vehicle needs.

Option B – Causeway with Short Span Link

This option is shown on drawing P1. With this option the existing walkway bridge will be demolished and the existing causeway will be widened and extended to include 2 lane vehicle access. A short span link will be provided to link the centre of the causeways. Options for the link are: a short span bridge; multi plate metal arch; concrete box or arched culvert.

The estimate cost of this option is \$1,620,000.00. A cost breakdown is provided in Table 2.

Although higher in cost, this option has the advantages of lower maintenance costs; minimal future replacement costs; and higher/unrestricted load capacity, meeting the needs of vehicles using this route.

Other potential alternates are:

- A causeway option with 2 lanes each way. The estimated cost premium to Option B is \$950,000.00.
- A causeway to replace the south section of the bridge leaving the north section in place. The estimate cost of this option is \$900,000.00. This option has all the disadvantages of Option A. In addition the constructed of this option will require all the temporary works of Option B with only a portion of the causeway constructed.
- Replacing the existing bridge with a new bridge. The estimated cost of this option is \$6.0 million.
- Upgrading the existing bridge as per Option A and providing a single lane causeway for heavy vehicles. The estimated cost of this option is \$1,450,000.

TABLES

Table 1
Island Park Bridge
Long-Term Upgrade (Restore Existing Bridge - Opt. "A")
Portage La Prairie, MB
Budget Cost Estimate

Description of Work	Qty	Units	Unit Price	Cost
Mobilization/Demobilization	1	L/S	\$60,000	\$60,000
Construction of Temporary Detour	1	L/S	\$30,000	\$30,000
Remove Asphalt (Entire Bridge)	1	L/S	\$30,000	\$30,000
Remove South 1/3 of Existing Bridge	1	L/S	\$25,000	\$25,000
Rep. Stringers/Decking as Req'd (North 2/3 Bridge)	24	each	\$3,000	\$72,000
Install New Piles	35	each	\$1,500	\$52,500
New Pile Cap Beams	11	each	\$1,500	\$16,500
New Abutment	1	L/S	\$20,000	\$20,000
Repair Stringers/Decking as Req'd (South 1/3 Bridge)	1	L/S	\$45,000	\$45,000
Remove Old and Install New Sidewalk	1	L/S	\$35,000	\$35,000
New Curb	1	L/S	\$6,000	\$6,000
New Guardrail	1	L/S	\$60,000	\$60,000
New Asphalt Overlay (2")	25000	sf	\$2	\$50,000
Contingency (20%)	1	L/S	\$100,000	\$100,000
Total Cost (+GST)				\$602,000

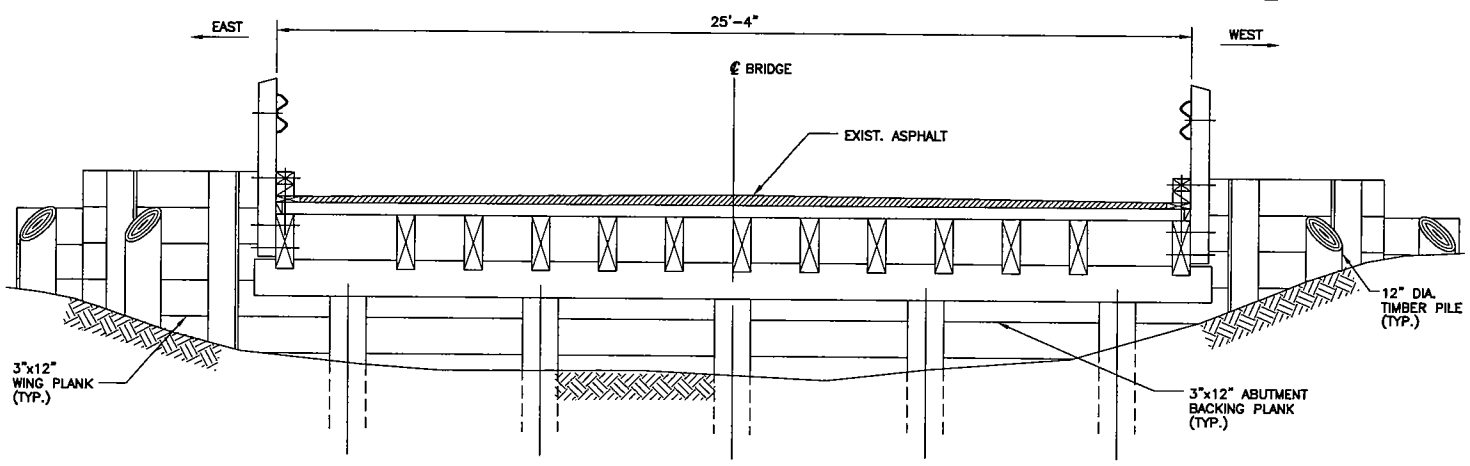
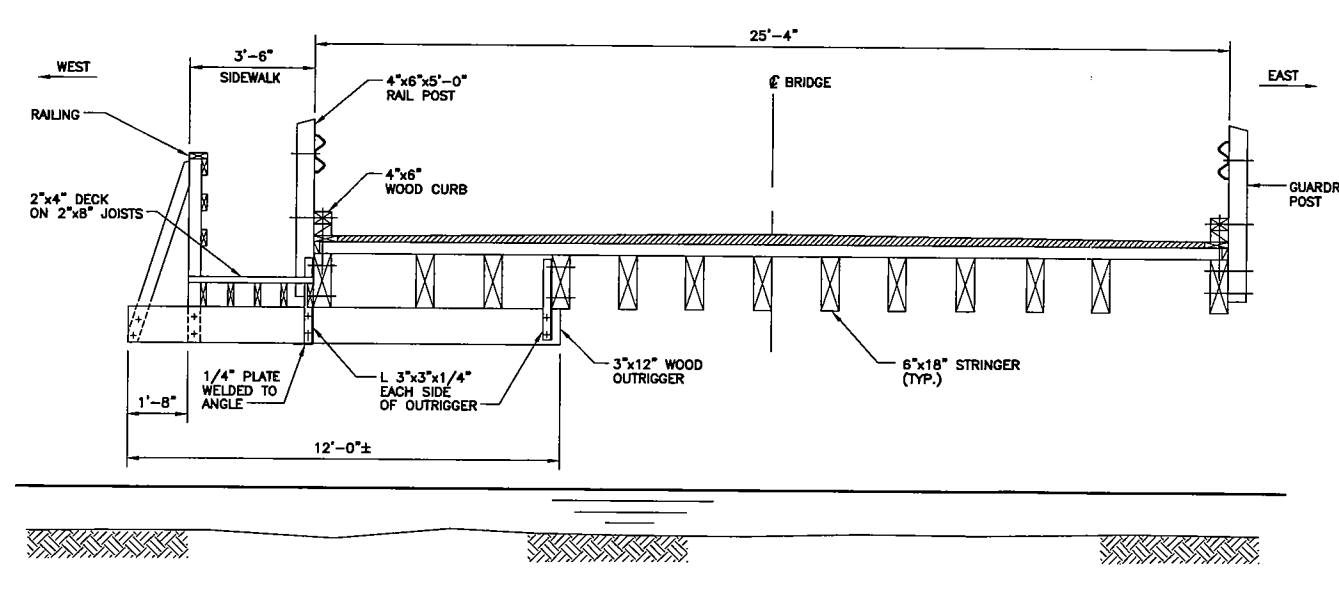
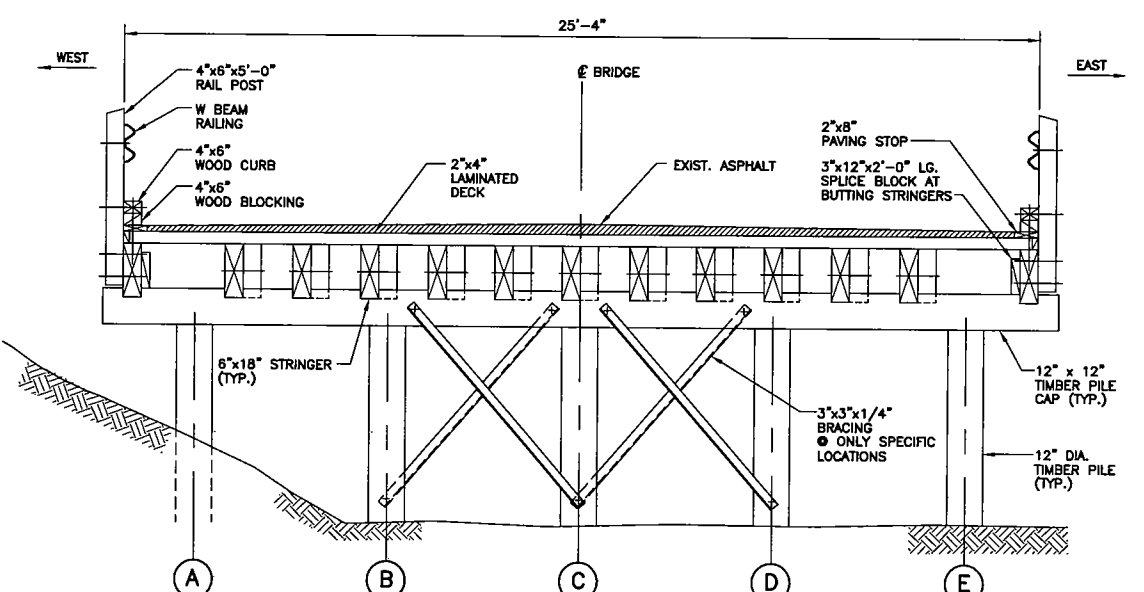
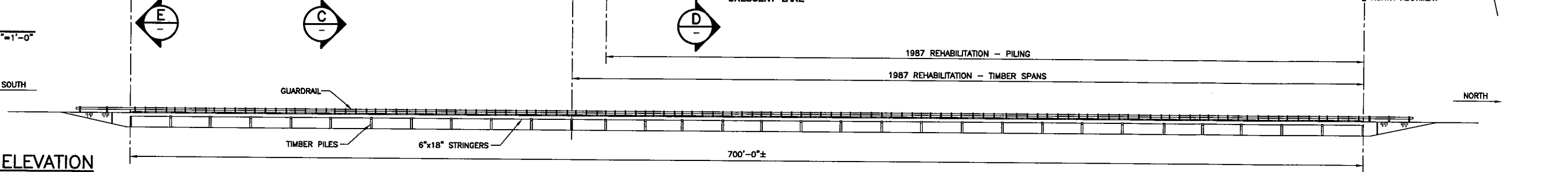
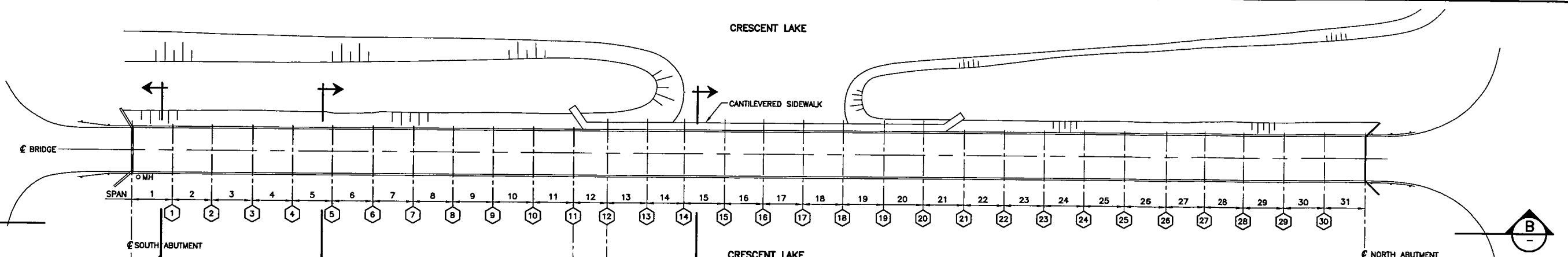
Table 2
Island Park Bridge
Long-Term Upgrade (Causeway - Opt. "B")
Portage La Prairie, MB
Budget Cost Estimate

Description of Work	Qty	Units	Unit Price	B1 - Cost	B2 - Cost	B3 - Cost
Mobilization/Demobilization	1	L/S	\$80,000	\$80,000	\$80,000	\$80,000
Construction of Temporary Detour	1	L/S	\$35,000	\$35,000	\$35,000	\$35,000
Remove Existing Bridge	1	L/S	\$35,000	\$35,000	\$35,000	\$35,000
Excavation	1	L/S	\$65,000	\$65,000	\$65,000	\$65,000
Backfill						
Pit Run	6000	CM	\$45	\$270,000	\$270,000	\$270,000
Clay Fill	16000	CM	\$18	\$288,000	\$288,000	\$288,000
A-Base	400	CM	\$50	\$20,000	\$20,000	\$20,000
Link Structure						
B1 - Bridge	1	L/S	\$400,000	\$400,000	\$0	\$0
B2 - Metal Arch	1	each	\$350,000	\$0	\$350,000	\$0
B3 - Concrete Culvert	1	L/S	\$600,000	\$0	\$0	\$600,000
Asphalt (4")	2000	SM	\$40	\$80,000	\$80,000	\$80,000
Walkway Reconstruction	1	L/S	\$15,000	\$15,000	\$15,000	\$15,000
Lighting	1	L/S	\$80,000	\$80,000	\$80,000	\$80,000
Landscaping	1	L/S	\$30,000	\$30,000	\$30,000	\$30,000
Contingency (20%)	1	L/S		\$280,000	\$270,000	\$320,000
Total Cost (+GST)				\$1,678,000	\$1,618,000	\$1,918,000

APPENDICES

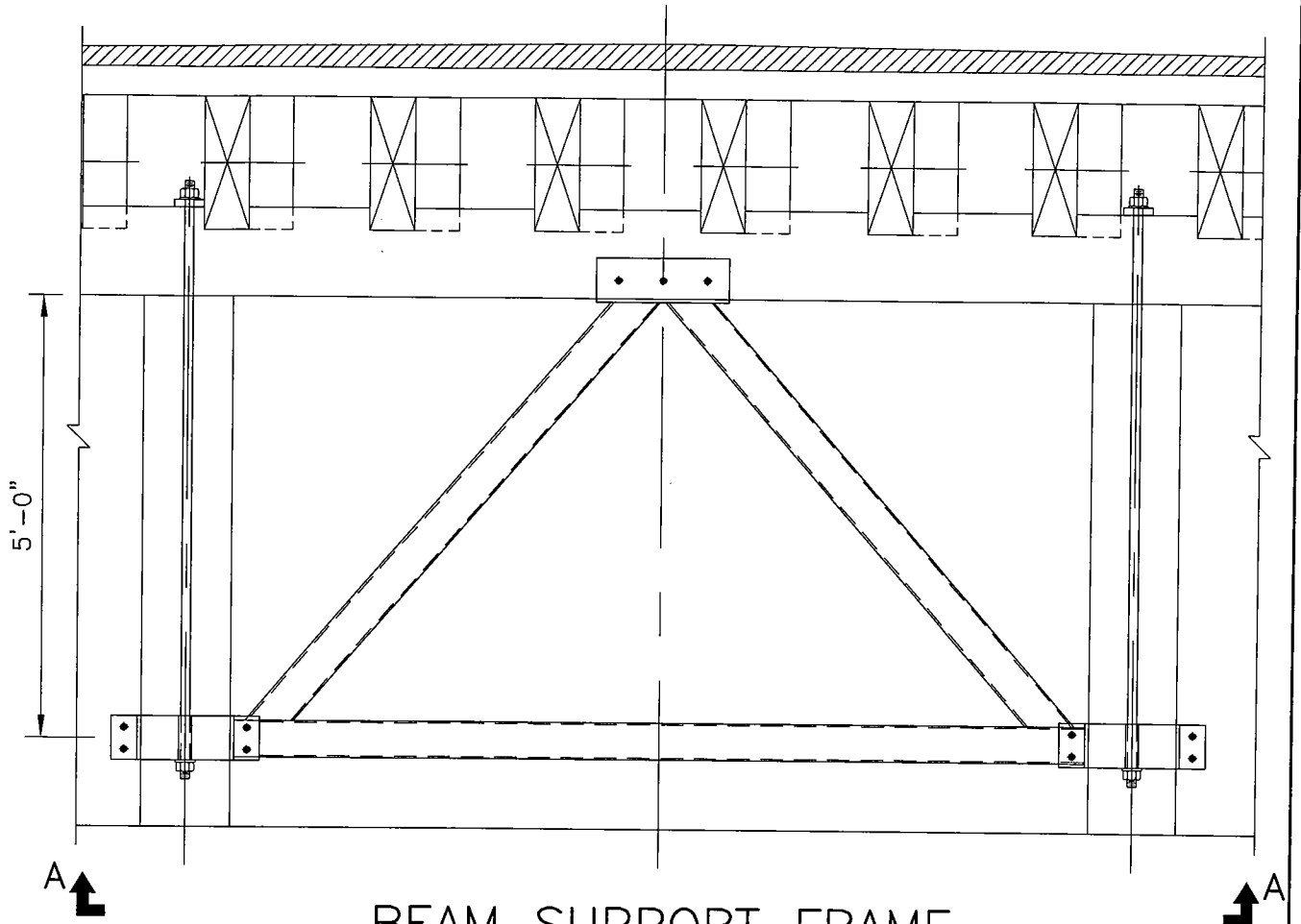
APPENDIX A
DRAWINGS

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DRAWING WHERE SECTION OR DETAIL WAS INDICATED		
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KGS CONSULTING ENGINEERS & PROJECT MANAGERS GROUP WINNIPEG (204) 896-1200 THUNDER BAY (807) 345-2233		
CLIENT: CITY OF PORTAGE LA PRAIRIE		
PROJECT: ISLAND PARK BRIDGE CITY OF PORTAGE LA PRAIRIE STRUCTURAL ASSESSMENT		
DRAWING DESCRIPTION: GENERAL ARRANGEMENT PLAN, ELEVATIONS AND CROSS SECTIONS		
ENG. STAMP	DESIGNED BY: RJL	DRAWN BY: JF
	CHECKED BY: -	CHECKED BY: -
	APPROVED BY: -	
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CLIENT Dwg. No.		REV: A

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BEAM SUPPORT FRAME

SCALE: 1/2"=1'-0"



DETAIL "A-A"

SCALE: 1/2"=1'-0"

KGS GROUP	CITY OF PORTAGE LA PRAIRIE	
	ISLAND PARK BRIDGE	
TEMPORARY SUPPORT FOR PILE CAP BEAM CONCEPTUAL DETAIL		
DEC.05/2007		DS-1

APPENDIX B
CONDITION ASSESSMENT

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PILE CONDITION SCHEDULE

BENT No.	PILE No.				
	A	B	C	D	E
1					
2				C1 P1	C2 P2
3		C2 P3			
4				C3 P4	
5	C2 P5	C4		C6	C4 P6
6		C6			C6
7		C3	C4		C7 P7
8	C3				
9	P8	C3	C1 P9		
10			C2 P10		C2 P11
11	C3		C8 P12	C6	
12					
30	TO NEW (1987) 				

LEGEND

- CONDITION
- C1 - BROKEN
 - C2 - SEVERE SPLITTING
 - C3 - PARTIAL SPLITTING
 - C4 - MINOR SPLITTING
 - C5 - MISALIGNED
 - C6 - NO CONTACT
 - C7 - BANDED
 - C8 - ROTTED OUT
- PHOTO No.

PILE CAP CONDITION SCHEDULE

BENT NO.	CONDITION	PHOTO NO.
1	S2	-
2	S2	-
3	S2	-
4	S2	P13
5	-	-
6	S2	P14
7	S2	-
8	-	-
9	S1	P15
10	-	-
11	-	-
12	-	-
13	S2	P16
14-28	NEW (1987)	-
29	S3	-
30	NEW (1987)	-

LEGEND

- CONDITION
- S1 - SEVERE SPLITTING
 - S2 - MINOR SPLITTING
 - S3 - MINOR CHECKING

KGS GROUP

CITY OF
PORTAGE LA PRAIRIE

ISLAND PARK BRIDGE

BRIDGE COMPONENTS
PILE AND PILE CAP
CONDITION CHARTS

DEC.03/2007

SK1

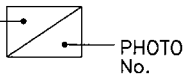
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 8 1/2"x11"/PLOT SCALE: 1

STRINGER CONDITION SCHEDULE

SPAN NO.	STRINGER NO. (WEST TO EAST)												
	1	2	3	4	5	6	7	8	9	10	11	12	13
1													
2	D2 P17												
3												D1 P18	
4												D1	
5													
6												D2 P19	
7												D2 P20	
8	D1 P21											D2	
9													
10	D1 P22												
11													
12												D2	
13												D2	
14													
15												D1	
16												D1	
17						D2							
18				D2									
19							D2						
20							D1 P23						
21													
22	D2						D2	D2					
23													
24		D2											
25	D2												D1
26		D1 P24	D1 P25										D2
27													
28												D2	
29	D1 P26											D1	
30		D2										D2	
31												D2	

LEGEND

- CONDITION
- D1 - SEVERE SPLITTING
 - D2 - MINOR SPLITTING



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CITY OF
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ISLAND PARK BRIDGE

**BRIDGE COMPONENTS
STRINGER
CONDITION CHARTS**

DEC.03/2007

SK2



Photo 1 – Pile (broken)



Photo 2 – Pile (severe splitting)



Photo 3 – Pile (severe splitting)



Photo 4 – Pile (partial splitting)



Photo 5 – Pile (severe splitting)



Photo 6 – Pile (minor splitting)



Photo 7 – Pile (banded)



Photo 8 – Pile (jacking up, crushing shim)



Photo 9 – Pile (broken)



Photo 10 – Pile (severe splitting)



Photo 11 – Pile (severe splitting)



Photo 12 – Pile (partial splitting)



Photo 13 – Pile cap (minor splitting)



Photo 14 – Pile cap (minor splitting)



Photo 15 – Pile cap (severe splitting)



Photo 16 – Pile cap (minor splitting)



Photo 17 – Stringer (minor splitting)



Photo 18 – Stringer (severe splitting)



Photo 19 – Stringer (minor splitting)



Photo 20 – Stringer (minor splitting)



Photo 21 – Stringer (severe splitting)



Photo 22 – Stringer (severe splitting)



Photo 23 – Pile (jacking up)



Photo 24 – Stringer (severe splitting)



Photo 25 – Stringer (severe splitting)



Photo 26 – Stringer (severe splitting)



Photo 27 – Handrail post damage



Photo 28 – Handrail post damage



Photo 29 – Handrail post damage



Photo 30 – Handrail post damage



Photo 31 – Asphalt condition



Photo 32 – Asphalt condition



Photo 33 – Guardrail post missing



Photo 34 – Guardrail post missing



Photo 35 – Added stringer

APPENDIX C
DESIGN VEHICLE CONFIGURATION

Appendix A14.2

Evaluation Level 1 (Vehicle Trains) in Ontario

In the Province of Ontario, for Evaluation Level 1, the CL1-625-ONT Truck, shown in Figure A14.2 (a), or the CL1-625-ONT Lane Load, shown in Figure A14.2 (b), shall be used instead of the CL1-W Truck and CL1-W Lane Load, respectively.

Figure A14.2 (a) Level 1 Evaluation Loads with CL1-625-ONT Truck

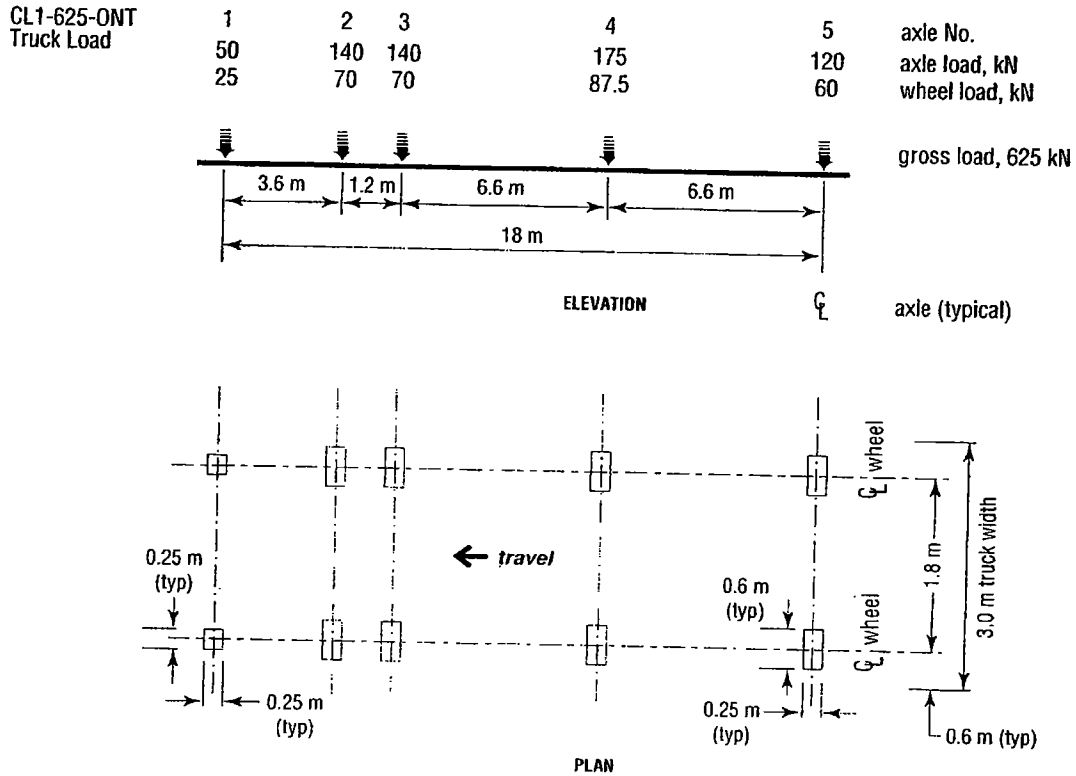
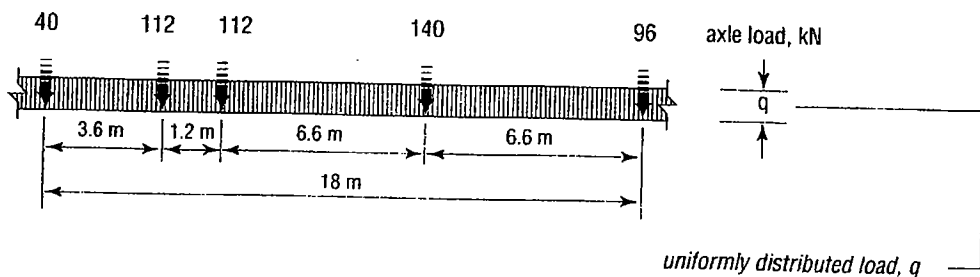


Figure A14.2 (b) CL1-625-ONT Lane Load



Highway Class	A	B	C or D
q , (kN/m)	9	8	7

For definition of Highway Class, see Section 1.

Appendix A14.3

Evaluation Level 2 (Two Unit Vehicles) in Ontario

In the Province of Ontario, for Evaluation Level 2, the CL2-625-ONT Truck, shown in Figure A14.3 (a), or the CL2-625-ONT Lane Load, shown in Figure A14.3 (b), shall be used instead of the CL2-W Truck and CL2-W Lane Load, respectively.

Figure A14.3 (a) Level 2 Evaluation Loads with CL2-625-ONT Truck

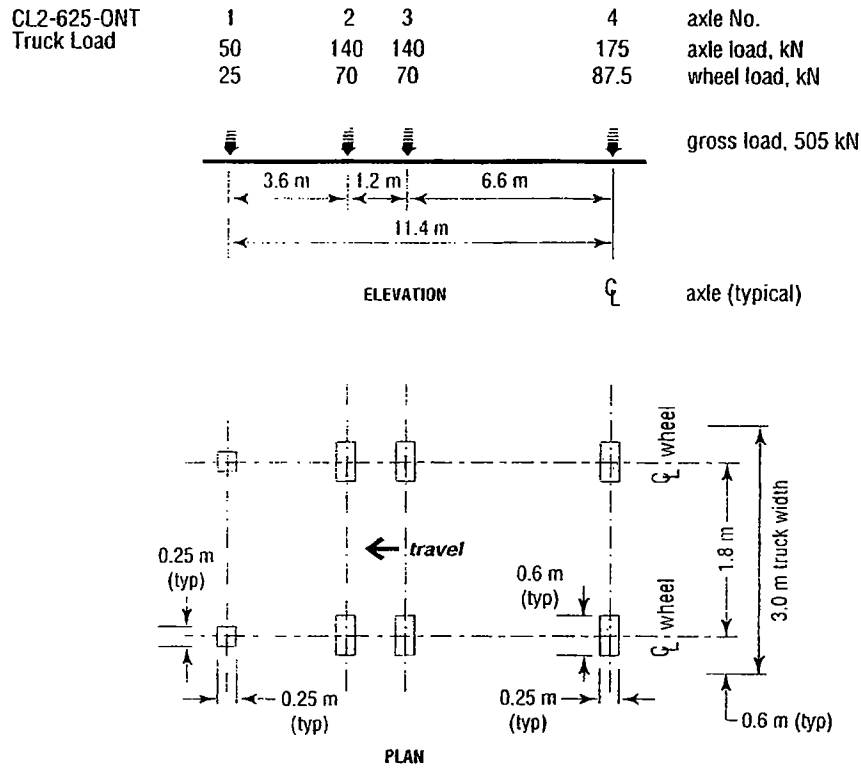
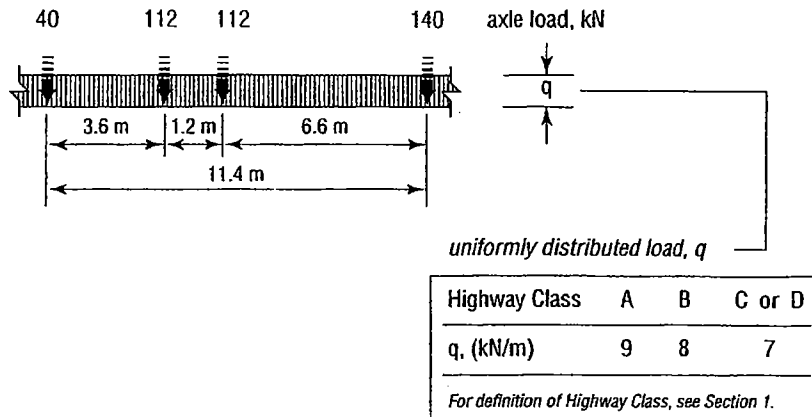


Figure A14.3 (b) CL2-625-ONT Lane Load



Appendix A14.4

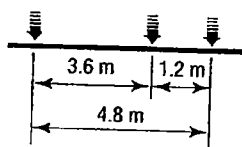
Evaluation Level 3 (Single Unit Vehicles) in Ontario

In the Province of Ontario, for Evaluation Level 3, the CL3-625-ONT Truck, shown in Figure A14.4 (a), or the CL3-625-ONT Lane Load, shown in Figure A14.4 (b), shall be used instead of the CL3-W Truck and CL3-W Lane Load, respectively.

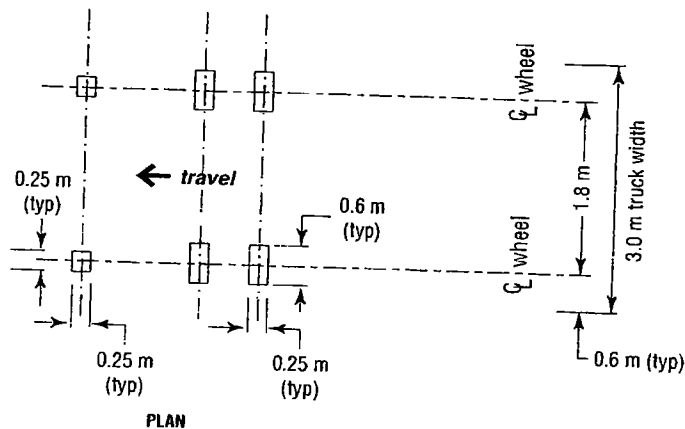
Figure A14.4 (a) Level 3 Evaluation Loads with CL3-625-ONT Truck

CL3-625-ONT Truck Load	1	2	3	axle No.
	50	140	140	axle load, kN
	25	70	70	wheel load, kN

gross load, 330 kN

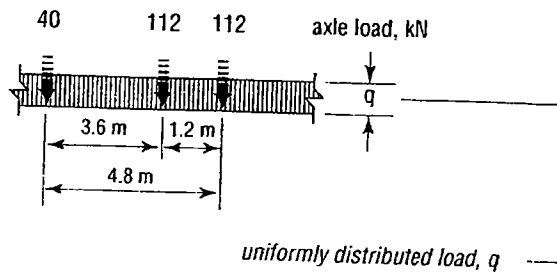


ELEVATION ζ axle (typical)



PLAN

Figure A14.4 (b) CL3-625-ONT Lane Load



uniformly distributed load, q

Highway Class	A	B	C or D
q , (kN/m)	9	8	7

For definition of Highway Class, see Section 1.

APPENDIX D
REQUEST FOR PROPOSAL

Request for Proposal

Engineering Services for the Structural Assessment of the Island Park Bridge

DEADLINE FOR RECEIPT OF PROPOSALS IS:

TIME: 2:00 P.M. LOCAL TIME
DATE: Wednesday, October 24, 2007
LOCATION: Operations Department
495 – 11th St NW
Portage la Prairie, Manitoba

EXCEPT WHERE EXTENDED BY ADDENDUM, PROPOSALS RECEIVED LATER THAN THE TIME STATED ABOVE WILL NOT BE ACCEPTED AND WILL BE RETURNED UNOPENED

SUBMISSIONS MARKED "Engineering Services for the Structural Assessment of the Island Park Bridge – 07 OPS 020" MAY BE MADE TO:

Mr. Kelly Braden, P.Eng.
Director of Operations
City of Portage la Prairie
495 – 11th St. N.W.
Portage la Prairie, Manitoba

GENERAL ENQUIRIES MAY BE DIRECTED TO:

Mr. Ian Milne, C.E.T.
Manager – Engineering Division
PHONE: (204) 239-8349

Proposal Package No. _____

INSTRUCTIONS

I.1 REQUEST FOR PROPOSAL NUMBER

For our reference, the Request for Proposal Number is 07 OPS 020.

I.2 PROJECT TITLE

Engineering Services for the Structural Assessment of the Island Park Bridge.

I.3 PROJECT DESCRIPTION/SCOPE

It is the intent of this contract that the Engineer, in a good and workmanlike manner, shall supply to the City of Portage la Prairie, engineering services for the Structural Assessment of the Island Park Bridge. The consultant will be expected to provide recommendations for immediate and long-term remedial repairs and restoration, as necessary, along with cost estimates for the vehicle and pedestrian bridges.

The scope of the work includes the assessment and evaluation of the existing bridge structure. The Engineer will not be required to design any remedial repairs to the structure and no detailed construction drawings are necessary. The Project is under the direction of the City of Portage la Prairie.

I.4 TIME AND DATE FOR FINAL RECEIPT OF PROPOSALS

Time and Date Set for Final Receipt of Proposals:

Time: 2:00 p.m. Portage la Prairie time

Date: October 24, 2007

At: City of Portage la Prairie
Operations Department Office
495 – 11th St. N.W.
Portage la Prairie, Manitoba

Except where extended by Addendum, Proposals received later than the time stated above will not be accepted and will be returned unopened.

I.5 GENERAL ENQUIRIES

General enquiries may be directed to:

Mr. Ian Milne, C.E.T.
Manager – Engineering Division
City of Portage la Prairie
Telephone No.: (204) 239-8349

I.6 PROJECT BACKGROUND

Island Park Bridge is the single public vehicle and pedestrian access to Island Park, Portage Industrial Exhibition Grounds, Portage Golf Course and several private residences, across Crescent Lake. It is located on Royal Road South, between Crescent Road East and International Drive. Island Park Bridge is a wooden structure of approximately 250m in length. It has an asphalt over wood deck and timber post and metal guard rail. A wooden pedestrian walkway of approximately 75m in length is cantilevered off the west side of the bridge.

In the mid-1980's the north two-thirds of the bridge piles were replaced with new driven timber piles, approximately 45 feet in length, driven approximately 37' into the lake bed. The wooden decking and asphalt pavement were replaced over the entire bridge. The southerly one-third of the bridge piles and pile cap beams were untouched.

In recent years, at least two piles in the southerly one-third of the bridge have split, and one row of piles in particular is subjected to significantly greater frost heave than the surrounding piles, causing a bump in the surface of the bridge.

Partial failure of one of the cantilevered beams supporting the north end of the pedestrian walkway has been observed.

A new Recreational Multiplex is scheduled for construction in 2008. This will introduce heavy construction-related loading on the bridge in the short-term, and significantly greater vehicle volumes in the long term.

Closure of the bridge for an extended period is not an option, without a secondary/temporary access to Island Park.

I.7 WORK REQUIREMENT

The desired work to be completed by the Consultant shall comprise of the following tasks. The Proponent should make every effort to identify other tasks that may, if acceptable to the City of Portage la Prairie, have a positive impact on the project. The successful consultant will be expected to co-ordinate all activities and tasks with the City.

The Engineering Services Contract will be administered and directed by the City of Portage la Prairie.

I.7.1 Engineering Services – General Requirements

- i) Organise and attend a project initiation meeting to review and confirm scope of work, schedule and contract price.
- ii) Maintain frequent contacts with the City to review project progress, and involve City staff in all stages of the project development.
- iii) Prepare and present the final drawings and design to the City of Portage la Prairie.

I.7.2 Engineering Services – Specific Requirements

- i) Review 1980's Assessment and Design Reports (Reid Crowther).
- ii) Assess condition of vehicle bridge and pedestrian walkway, with respect to railings, pavement, and deck.
- iii) Assess structural integrity of wooden piles, pile cap beams, deck beams, etc.
- iv) Recommend immediate remedial action for split piles, if needed.

REQUEST FOR PROPOSAL – 07 OPS 020

- v) Recommend general remedial measures to ensure structural integrity and functionality of the bridge.
- vi) Assess current vehicle load rating – maximum and daily use, and maximum speed rating for various weight vehicles.
- vii) Recommend current maximum vehicle load rating, and daily use rating, along with maximum speed limit.
- viii) Recommend maximum vehicle load rating once immediate remedial measures are complete. Recommend speed limit.
- ix) Recommend maximum vehicle load rating once longer term remedial measures, as needed, are complete. Recommend speed limit.
- x) Prepare conceptual design level cost estimates for the recommended measures noted above.
- xi) Make a presentation of the final report to City Council.

I.8 PROJECT DELIVERABLES

The City of Portage la Prairie is to receive the following upon completion and acceptance of the final designed walking path and lighting:

- i) One (1) set of computer compact disks containing copies of all digitally produced drawings and report. The document must be prepared in MS Word.
- ii) One (1) set of computer compact disks containing copies of all digitally produced spreadsheets. All spreadsheets must be done in Microsoft Excel.
- iii) Fifteen (15) copies of the Final Report.

I.9 SITE VISIT

Engineers considering submitting a proposal are encouraged to visit the site and familiarize themselves with the project. Visits can be arranged by contacting Mr. Ian Milne C.E.T. at (204) 239-8349.

I.10 PROJECT SCHEDULE

The completed report is expected by November 30, 2007.

I.11 PROPOSAL SUBMISSION

The technical portion of the Request for Proposal Submission shall be submitted enclosed in a sealed envelope. The envelope must be clearly marked "Engineering Services for the Structural Assessment of the Island Park Bridge – 07 OPS 020" and with the Proposer's name and address.

It is suggested that the technical proposal be limited to 10 pages, not including CV's, and contain an introduction describing the background, purpose, and scope of the study; a technical section, describing the approach to be taken; a personnel section describing the study team, and a schedule of the work to be done, with appropriate milestones explicitly indicated. Two copies of the technical proposal are to be submitted.

The fee submission shall be separate in a sealed envelope and clearly and similarly identified. It shall provide a detailed price breakdown, and a statement of total costs. It shall include a list of the study team members, their respective proposed hours, and their

respective charge-out rates. A table indicating staff, tasks and respective hours would be beneficial in aiding the City to evaluate proposals. Disbursements and other costs shall be specified. GST shall be specified separately. Fee submissions shall be in general accordance with the APEGM fee guidelines. The fee proposal shall specify an upset limit price. One copy of the Fee Proposal is to be submitted in a separately sealed envelope.

Engineers are requested to provide, with the proposal submission, significant detail on the scope of the work for each task and the associated fee.

Samples or other submissions required to accompany the Proposal Submission may be packaged separately, but shall clearly be marked with the Request for Proposal Number, the Proposer's name and address, and an indication that the contents are supplemental to his Proposal Submission.

Request for Proposal Submissions shall be submitted no later than the Time and Date Set for Final Receipt of Proposals in clause I.4.

Except where extended by Addendum, Request for Proposal Submissions received after the Time and Date Set for the Final Receipt of Proposals will not be accepted and will be returned unopened.

Please note the proposal submissions will not be accepted by facsimile transmission.

I.12 INSURANCE

The Engineer shall be required to provide proof of insurance coverage in the amount of \$2,000,000 for liability and property damage prior to the commencement of any work.

I.13 SIGNATURES

The Proposal Submission shall be signed in accordance with the following requirements:

- 1) If the Proposal is submitted by a sole proprietor carrying on business in his own name, his name shall be printed immediately above his signature; or
- 2) If the Proposal is submitted by a person carrying on business under a name other than his own, his business name shall be printed immediately above his signature; or
- 3) If the Proposal is submitted by a partnership, the full name of the firm or business shall be printed immediately above the signature of the partner or partners who have authority to sign for the partnership; or
- 4) If the Proposal is submitted by a corporation, the full name of the corporation shall be printed immediately above the signature of its duly authorised officers and the corporate seal affixed. If the corporate seal is not affixed to the tender, the signatures shall be witnessed and proof of signing authority shall be provided; and
- 5) The signatures of persons bidding must be in their respective handwriting.

Proposals submitted by agents proposing to represent principals must be accompanied by a Resolution of the principals or by an irrevocable Letter of Authority and Direction from the principals in a form satisfactory to the City Solicitor showing that the agents are duly authorised to sign and submit the Proposal Submission on behalf of the principals, which Contract, when so executed, will bind the principals and have the same effect as if it were duly signed by the principals.

I.14 DISCREPANCIES

Proposers, who find discrepancies or omissions in the Request for Proposal Package, or are unsure of the meaning or intent thereof, shall notify the Director of Operations.

The Director of Operations will, if deemed necessary, issue Addenda to all Proposers.

Addenda will be issued at least seventy-two (72) hours prior to the Time and Date Set for Final Receipt of Proposals. Proposers are advised to direct all questions or comments to the Director of Operations at least one hundred and twenty (120) hours prior to the Time and Date Set for Final Receipt of Proposals to all time for the preparation and distribution of necessary Addenda.

Notwithstanding the generality of the foregoing, the Director of Operations may extend the Time and Date Set for the Final Receipt of Proposals at any time for cause.

Oral interpretations made to any Proposer shall not affect a modification of any provision of the final Contract Documents.

I.15 COMPLIANCE WITH LAWS

The Engineer shall comply with and the work shall be in compliance with all laws of the Dominion of Canada, Province of Manitoba, and the By-Laws of the City of Portage la Prairie.

I.16 WORKERS COMPENSATION ACT

The Engineer shall comply with all the provisions of the Worker's Compensation Act, with respect to all persons employed by him.

I.17 TERMINATION OF THE CONTRACT

The City reserves the right to terminate the contract by submitting thirty (30) days notice in writing to the Engineer.

I.18 OPENING OF PROPOSAL SUBMISSIONS

Proposal Submissions will not be opened publicly.

I.19 WITHDRAWAL OF PROPOSAL SUBMISSIONS

Engineers may withdraw their Proposal Submission without penalty at any time prior to the Time and Date Set for Final Receipt of Proposal submissions.

I.20 REJECTION OF PROPOSAL SUBMISSIONS

The City may reject a Proposal Submission, as informal if the Proposal Submission is incomplete, obscure or conditional, or contains additions, deletions, alterations or other irregularities.

The City may reject Proposal Submissions that are submitted by Engineers who, in the judgement of the Director of Operations, are not qualified to conduct and complete the Work.

The City may reject all or any part of any Proposal Submission and/or waive technical requirements if, in the judgement of the Director of Operations, the interests of the City so require.

I.21 PROPOSAL SUBMISSION EVALUATION

The rating of all proposal submissions shall be completed using the City of Portage la Prairie Policy – Selection of Engineering Consultants – ENG-F. This policy will not be made available to prospective proponents.

Upon determination of the highest rated proposal submission, the Director of Operations will negotiate a contract format with the highest rated Engineer that contains, amongst other things, references the proposal submission and subsequent amendments thereto.

Engineers are requested to include with the proposal submission an unsigned draft contract for consideration by the City of Portage la Prairie. The proposal shall form an integral part of the final contract document.

After a contract has been ratified and duly authorised by the Engineer, the Director of Operations will submit an award recommendation to the City Manager for his approval.

The lowest cost proposal, or any proposal submission, not necessarily accepted.

I.22 METHOD OF PAYMENT

Payments shall be made monthly based on a percentage of actual hours worked and the initial estimated hours, up to the proposed upset limit price. Actual disbursement costs shall be paid on a cost plus 5% basis.

I.23 AWARD OF CONTRACT

The City expects to award the Contract, or announce that no award will be made on, or before, October 26, 2007.