Crosier Kilgour & Partners Ltd.
CONSULTING STRUCTURAL ENGINEERS

January 10, 2011 Our File No. 2010-1074

Winnipeg Parking Authority
495 Portage Avenue
Winnipeg, Manitoba
R3B 2E4

Attention: Mr. Drew Gunson

Dear Mr. Gunson:

Re: Civic Centre Car Park; 171 Princess Street
Budget Update

At your request, the following letter provides an updated estimate of construction costs for the Civic Centre Car Park. The budgets provide are based on the recommendations summarized in the Crosier Kilgour & Partners' letter dated January 27, 2010.

Please note that accurate estimation of construction costs for remediation projects are difficult to provide because of the inherent number of variables associated with working on an existing structure. Hidden conditions can exist that can greatly increase the cost of repair which may not be exposed until construction is well under way. The repair scenarios presented are conceptual in nature and based on our observations, engineering judgment, and experience with the repair and rehabilitation of parking structures. Wherever possible, historic or recently obtained pricing has been used for estimating costs. The estimated construction costs provided must therefore be considered order-of-magnitude cost and are intended for discussion and decision making purposes only. Further investigation would be required in order to refine the budget pricing.

SHORT TERM PARKADE MAINTENANCE

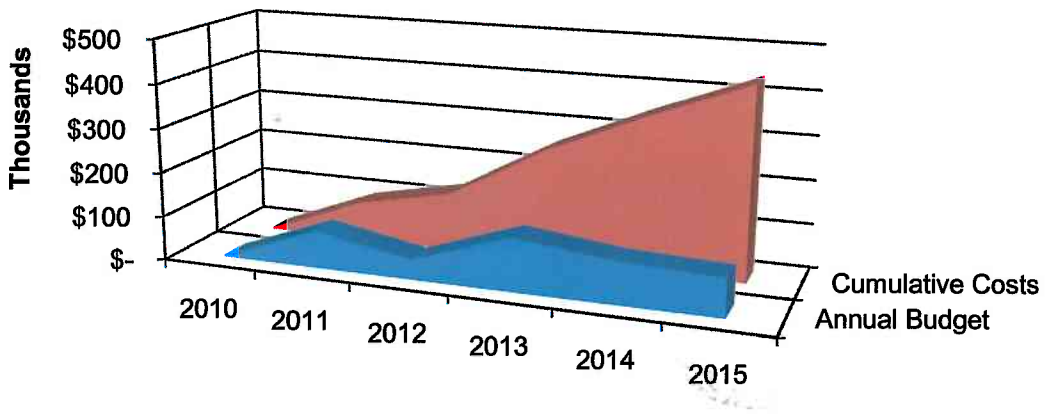
This represents the minimum scope of work required in order to maintain the facility in a safe and useable condition for a period not exceeding 5 years. At the end of the 5 years it is assumed that the structure will be closed permanently. The scope of maintenance work would therefore be kept to a minimum and would largely consist of structural repairs required to maintain the structure in a useable and safe condition. The costs projection does not give consideration to mechanical, electrical, or operational items as they are beyond our scope of expertise. The following table provides an updated schedule of maintenance and shoring for the next five years.

Table 1: Annual Parkade Maintenance Costs

December 2010		**Budget**	**Cumulative**
Temporary shoring at select locations		$2,500.00*	$2,500.00
*Estimated			
Year 1: February/March 2011			
Emergency concrete repairs/removal allowance		$3,000.00	
Shoring Installation		$66,205.00	
Bearing saddle installation		$9,455.00	
General Requirement (Mobilization, insurance, permits, etc.)		$7,000.00	
	Total	**$85,660.00**	**$88,160.00**
Year 2: 2012			
Emergency concrete repairs/removal allowance		$20,000.00	
Localized joint repairs to address leakage (Optional)		$25,000.00	
	Total	**$45,000.00**	**$133,160.00**
Year 3: 2013			
Emergency concrete repairs/removal allowance		$20,000.00	
Shoring Installation (Allow 20 locs. x $4,000.00 /loc.)		$80,000.00	
Bearing saddle installation (Allow 4 locs. X $3,000.00 /loc.)		$12,000.00	
Localized joint repairs to address leakage (Optional)		$10,000.00	
	Total	**$122,000.00**	**$255,160.00**
Year 4: 2014			
Emergency concrete repairs/removal allowance		$10,000.00	
Shoring Installation (Allow 20 locs. x $4,000.00 /loc.)		$75,000.00	
Localized joint repairs to address leakage (Optional)		$10,000.00	
	Total	**$95,000.00**	**$350,160.00**
Year 5: 2015			
Emergency concrete repairs/removal allowance		$10,000.00	
Shoring Installation (Allow 20 locs. x $4,000.00 /loc.)		$60,000.00	
Bearing saddle installation (Allow 4 locs. X $3,000.00 /loc.)		$6,000.00	
Localized joint repairs to address leakage (Optional)		$10,000.00	
	Total	**$86,000.00**	**$436,160.00**

Cumulative Construction Costs	**$436,160.00**
Contingency (15%)	$65,400.00
Sub-Total	**$501,560.00**
Consulting Fees (15%)	$75,200.00
Total Costs (not incl. taxes)	**$576,760.00**
GST	$28,800.00
PST on Consulting Fees (est.)	$900.00
Total Costs (incl. taxes)	**$606,460.00**

Chart 1: Annual Parkade Maintenance Costs



	2010	2011	2012	2013	2014	2015
Annual Budget	$2,500.00	$85,660.00	$45,000.00	$122,000.00	$95,000.00	$86,000.00
Cumulative Costs	$2,500.00	$88,160.00	$133,160.00	$255,160.00	$350,160.00	$436,160.00

LONG TERM PARKADE RESTORATION

Conceptually, the restoration would consist of repairing the structural deficiencies at the single-tee anchor locations, miscellaneous structural concrete repairs, and replacement and/or upgrading of the waterproofing and drainage systems throughout the parkade. The preferred solution includes installation of a "thick" waterproofing system on Levels 1 through 7 consisting of a concrete wearing course overtop a cold-applied liquid waterproofing system applied directly over the precast tees. This option would provide an effective service life in the order of 25+ years with minimal maintenance. Note however that further investigation would be necessary to determine if this option is structurally viable. An alternate system consisting of a surface applied traffic-bearing membrane on Levels 3 through 7, similar to what exists now, would be viable and would have similar construction costs. A reduced service-life in the order of 15 years would be anticipated. This is largely due to the nature of the traffic-bearing membrane which requires periodic recoating. Additional investigation and design would be required in order to finalize the scope of work and determine appropriate timing. Notwithstanding, a phased approach to construction to construction would be required assuming that the work would be restricted to summer months.

Please note that prior investigative work has not included the structural floor slab in the PSB Garage. Although a formal investigation has not been completed, visual observations suggest that delamination is widespread and would likely exceed 20% of the total surface area of the slab. We would also expect that chloride levels would be very high. Based on the extent of delamination, slab construction, anticipated high chloride contamination, costs of repair, and effective service-life, removal and replacement of the slab would likely be the most cost-effective solution over the long term. Estimated repair costs for slab replacement have therefore been included in the following table.

Table 2: Long Term Parkade Restoration Costs

Level 1/Level 2	Est. Qty.	Unit Price	Budget Cost
Repair/modify existing precast single-tee connections.	129 locs.	$5,000.00 /loc.	$645,000.00
Structural concrete repairs to precast single-tees and cast-in-place concrete.	N/A	Allow	$50,000.00
Remove existing 4" topping and waterproofing membrane.	34,500 ft²	$6.00 /ft²	$207,000.00
Replace existing and install new floor drains tied into existing.	N/A	Allow	$50,000.00
Install new cold-applied liquid membrane and drainage composite.	34,500 ft²	$7.00 /ft²	$241,500.00
Install new 2" rigid insulation	34,500 ft²	$2.50 /ft²	$86,250.00
Install new 4"± concrete topping sloped to drains	34,500 ft²	$12.00 /ft²	$414,000.00
Expansion joint waterproofing	250 lin.ft.	$150.00 /lin.ft.	$37,500.00
Level 3/Level 4			
Repair/modify existing precast single-tee connections.	132 locs.	$5,000.00 /loc.	$660,000.00
Structural concrete repairs to precast single-tees and cast-in-place concrete.	N/A	Allow	$50,000.00
Remove existing 2" bonded concrete topping.	34,500 ft²	$8.00 /ft²	$276,000.00
Replace existing and install new floor drains tied into existing.	N/A	Allow	$50,000.00
Install new cold-applied liquid membrane and drainage composite.	34,500 ft²	$7.00 /ft²	$241,500.00
Install new 3"± concrete topping sloped to drains	34,500 ft²	$12.00 /ft²	$414,000.00
Expansion joint waterproofing	250 lin.ft.	$150.00 /lin.ft.	$37,500.00
Level 5/Level 6			
Repair/modify existing precast single-tee connections.	132 locs.	$5,000.00 /loc.	$660,000.00
Structural concrete repairs to precast single-tees and cast-in-place concrete.	N/A	Allow	$50,000.00
Remove existing 2" bonded concrete topping.	34,500 ft²	$9.00 /ft²	$310,500.00
Replace existing and install new floor drains tied into existing.	N/A	Allow	$50,000.00
Install new cold-applied liquid membrane and drainage composite.	34,500 ft²	$7.00 /ft²	$241,500.00
Install new 3"± concrete topping sloped to drains	34,500 ft²	$12.00 /ft²	$414,000.00
Expansion joint waterproofing	250 lin.ft.	$150.00 /lin.ft.	$37,500.00
Level 7			
Repair/modify existing precast single-tee connections.	66 locs.	$5,000.00 /loc.	$330,000.00
Structural concrete repairs to precast single-tees and cast-in-place concrete.	N/A	Allow	$25,000.00
Remove existing 2" bonded concrete topping.	17,250 ft²	$9.00 /ft²	$155,250.00
Replace existing and install new floor drains tied into existing.	N/A	Allow	$25,000.00
Install new cold-applied liquid membrane and drainage composite.	17,250 ft²	$7.00 /ft²	$120,750.00
Install new 3"± concrete topping sloped to drains	17,250 ft²	$12.00 /ft²	$207,000.00
Expansion joint waterproofing	125 lin.ft.	$150.00 /lin.ft.	$18,750.00

Table 2: Long Term Parkade Restoration Costs cont...

Parkade Ramps			
Structural concrete repairs (Allow 5% of surface area)	540 ft²	$50.00 /ft²	$27,000.00
Install new traffic-bearing epoxy membrane	10,800 ft²	$20.00 /ft²	$216,000.00
PSB Garage			
Removal and replacement of existing 5" structural slab including new drains and waterproofing membrane.	25,000 ft²	$80.00 /ft²	$2,000,000.00
		Estimated Construction Costs	**$8,348,500.00**
		Contingency (15%)	$1,252,300.00
		Sub-Total	**$9,600,800.00**
		Consulting Fees (12%)	$1,152,100.00
		Total Costs (not incl. taxes)	**$10,752,900.00**
		GST	$537,600.00
		PST on Consulting Fees (est.)	$14,500.00
		Total Costs (incl. taxes)	**$11,305,000.00**

In terms of timing and phasing, due to safety concerns the intent of the proposed phasing would be to prioritize areas which represent a structural or safety concerns, such as the single-tee connections and concrete repairs, before proceeding with items such as waterproofing. At this time, it is presumed that deferral of the PSB Garage restoration would be viable. Further investigation would be required to determine deferral is viable. The following table provides a proposed schedule for repairs.

Table 3: Long Term Parkade Restoration Phasing

Year 1: Structural Repairs	**Est. Qty.**	**Unit Price**	**Budget Cost**
Repair/modify existing precast single-tee connections.	459 locs.	$5,000.00 /loc.	$2,295,000.00
Structural concrete repairs to precast single-tees and cast-in-place concrete.	N/A	Allow	$175,000.00
		Sub-Total: Year 1	**$2,470,000.00**

Year 2: Level 1/Level 2	**Est. Qty.**	**Unit Price**	**Budget Cost**
Remove existing 4" topping and waterproofing membrane.	34,500 ft²	$6.00 /ft²	$207,000.00
Replace existing and install new floor drains tied into existing.	N/A	Allow	$50,000.00
Install new cold-applied liquid membrane and drainage composite.	34,500 ft²	$7.00 /ft²	$241,500.00
Install new 2" rigid insulation	34,500 ft²	$2.50 /ft²	$86,250.00
Install new 4"± concrete topping sloped to drains	34,500 ft²	$12.00 /ft²	$414,000.00
Expansion joint waterproofing	250 lin.ft.	$150.00 /lin.ft.	$37,500.00
Structural concrete repairs to parkade ramps	90 ft²	$50.00 /ft²	$4,500.00
Install new traffic-bearing epoxy membrane	1,800 ft²	$20.00 /ft²	$36,000.00
		Sub-Total: Year 2	**$1,076,750.00**

Table 3: Long Term Parkade Restoration Phasing cont...

Year 3: Level 3/Level 4			
Remove existing 2" bonded concrete topping.	34,500 ft²	$8.00 /ft²	$276,000.00
Replace existing and install new floor drains tied into existing.	N/A	Allow	$50,000.00
Install new cold-applied liquid membrane and drainage composite.	34,500 ft²	$7.00 /ft²	$241,500.00
Install new 3"± concrete topping sloped to drains	34,500 ft²	$12.00 /ft²	$414,000.00
Expansion joint waterproofing	250 lin.ft.	$150.00 /lin.ft.	$37,500.00
Structural concrete repairs to parkade ramps	180 ft²	$50.00 /ft²	$9,000.00
Install new traffic-bearing epoxy membrane	3,600 ft²	$20.00 /ft²	$72,000.00
		Sub-Total: Year 3	**$1,100,000.00**
Year 4: Level 5/Level 6/Level 7			
Remove existing 2" bonded concrete topping.	51,750 ft²	$9.00 /ft²	$465,750.00
Replace existing and install new floor drains tied into existing.	N/A	Allow	$75,000.00
Install new cold-applied liquid membrane and drainage composite.	51,750 ft²	$7.00 /ft²	$362,250.00
Install new 3"± concrete topping sloped to drains	51,750 ft²	$12.00 /ft²	$621,000.00
Expansion joint waterproofing	375 lin.ft.	$150.00 /lin.ft.	$56,250.00
Structural concrete repairs to parkade ramps	270 ft²	$50.00 /ft²	$13,500.00
Install new traffic-bearing epoxy membrane	5,400 ft²	$20.00 /ft²	$108,000.00
		Sub-Total: Year 4	**$1,701,750.00**
Year 5: PSB Garage			
Removal and replacement of existing 5" structural slab including new drains and waterproofing membrane.	25,000 ft²	$80.00 /ft²	$2,000,000.00
		Sub-Total: Year 4	**$2,000,000.00**

I trust that this report provides you with the information you require. Upon your review, if you have any questions, please do not hesitate to call.

Yours truly,

Derek J. Mizak, P.Eng.

/djm



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Certificate of Authorization
Crosier Kilgour & Partners Ltd.
No. 235 Date: Jan 10/11