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18 September 2003

Mr. Ladd Leavens
Davis Wright Tremaine LLP
2600 Century Square 15001 Fourth Avenue
Seattle, WA 98101-1688

Re: River Park Square Parking Garage
Limited Condition Assessment
WJE No. 2003.3542

Dear Mr. Leavens:

At your request, Wiss, Janney, Elstner Associates, Inc. (WJE) has performed a limited condition assessment of the parking garage at the River Park Square in downtown Spokane, Washington. Our assessment to date is based on visual observations made during a site visit on 14 September 2003, where I met with Mr. Duane Swinton and Mr. Robert Smith, and review of three reports provided by your office; a 1996 report by Walker Parking (Walker), a 4 October 2002 report by N.G. Jacobson & Associates, Inc. (NGJ), and a 1 August 2003 report by NGJ.

At your request, the purpose of this letter is to respond to the findings of the NGJ reports.

BUILDING DESCRIPTION

The original portion of the garage was constructed in 1974 and is an elevated 7-story structure with reinforced concrete columns, beams, and decks. Three additional stories were reportedly added to the structure around 1999 and a single below-grade level was added beneath the existing grade level retail space. Portions of the new elevated levels are of post-tensioned concrete construction.

The garage is attached to the River Park Square Mall, which abuts the garage on the east and south elevations. The north elevation of the garage is exposed and partially open. Precast, exposed aggregate concrete guardrail panels are attached to the elevated concrete decks and comprise the majority of the cladding on the north elevation. At the northeast and northwest corners, the CMU stairwells are clad with red brick. The west elevation abuts a Nordstrom store, which is shorter than the garage. The upper levels of the garage on the west elevation are partially open between short segments of wall and spandrel beams.

BACKGROUND

The 1996 report by Walker identified high levels of chlorides in the concrete decks of the original parking structure. Limited areas of corrosion-induced delaminations accounting for approximately 2 percent of the total deck area at the time were identified. Gravity load induced cracking and shrinkage cracking was also identified in decks and beams. Walker proposed three repair schemes, each of which involved patch repairs to surface delaminations and routing and sealing cracks. Option A was limited to patching delaminations and sealing cracks, Option B included application of a penetrating concrete sealer, and Option C included installation of a traffic topping.

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Repairs, primarily to address delaminations and cracking of the concrete decks, were reportedly performed in 1985 and again in 1998/99 as part of the renovation work. The work performed has been a combination of overlays, coatings, area spot patching, routing and sealing cracks, and sealant installation. Some combination of this work has been done periodically throughout the life of the garage as maintenance. However, it was reported that little maintenance has been performed since the repairs in 1998/99.

Reportedly, the repairs performed in 1998/99 were a combination of the recommendations in the Walker report. A traffic-bearing surface coating was installed over the lower one-and-a-half levels. Delaminated areas were patched and cracks were routed and sealed. It is not clear whether a penetrating sealer was installed over the remainder of the deck surfaces; however it does appear that a trowel-applied, cementitious coating was applied over the remaining deck surfaces and it has been reported that penetrating silane sealers have been used in the past.

REVIEW OF NGJ FINDINGS

General

NGJ concluded that the basement level garage was "built and maintained to a first class order, condition or repair", but that the nine level elevated parking structure, including both the newer and older portions, was not "built and maintained to a first class order, condition or repair." To begin with, it is not clear what is meant by NGJ by the term "first class order, condition or repair." Based on our visual observations, the quality of construction of the below-grade portion of the garage appears to be similar to that observed in areas of the elevated structure. We are unaware of any concrete strength samples, crack surveys, or other indicators that have been taken in the below-grade portion of the garage to compare quality of construction to that of the newer portion of the elevated garage. Typical shrinkage cracks were observed in the concrete slab-on-grade in the basement garage and the majority of the ceiling/soffit was either covered by a drop ceiling or painted.

We certainly acknowledge that more effort has been put forth in the basement level garage to make it architecturally pleasing through painting and other finishes. In addition, fewer adverse effects relating to water infiltration were observed in the basement than in the elevated garage. This however, appears to be less the result of a higher quality of construction than it is to the fact that the basement garage is a more protected structure that is not subject to as much water infiltration. Even water carried into this portion of the garage will simply leak through cracks in the slab-on-grade and will not result in efflorescence build-up in accessible areas. As a result, the below-grade garage simply does not warrant the same maintenance measures that are necessary in structures such as the elevated garage, which are exposed to a more adverse environment.

STRUCTURAL ISSUES

The structural issues cited by NGJ to support their statement that the original portion of the garage is not "first class" was that "Significant reinforcing steel corrosion related distress is present and occurring on the parking deck slabs, slab soffits, beams, girders and precast spandrels on the original part of the parking garage." During our walk-through, we did not observe any corrosion related distress to beams and



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girders. In limited locations, rust staining was observed in cracks near the ends of some beams, however the rust appeared to be leaching from nearby cracks in the deck and certainly is not indicative of "significant corrosion related distress." We observed very little, if any, "significant" corrosion related distress to slab soffits and precast panels. Very limited rust staining was observed at slab soffit cracks. Even more limited were observations of any "distress" to the concrete of the soffits as a result of possible corrosion. We did not have access to the ceiling soffits, but only a very few locations were visually observed where spalling or delaminations, which may have been related to corrosion, were present. Very little corrosion related distress to the precast spandrel panels was observed. The NGJ report only identifies two locations, in photos, where a crack was observed in the lower leg of the panel near the edge. While it is likely that the cracking identified by NGJ is related to corrosion of embedded reinforcing steel at this location, it does not appear to be related to corrosion of an anchor.

Corrosion related distress was observed on the top surface of many of the elevated concrete decks. Most of the distress was in the form of a delamination of the concrete or a previous patch. Some cracks were observed that may also be related to corrosion of embedded reinforcing steel, although most of the cracks observed appeared related to deflections due to gravity loading and/or concrete shrinkage. Although a chain drag of the surface was not performed, only one obvious corrosion related delamination/spall location was observed at the upper, new portion of the garage. It is not clear how NGJ arrived at their 4 percent estimation of total deck area as delaminated, but we assume this number is limited to 4 percent of the deck area of the older portion of the garage and does not include the bottom one-and-a-half levels that were coated previously with a membrane. Regardless, an estimate of only 4 percent of total deck area delamination is not an excessive number in a nearly 30-year-old parking structure.

Many of the previous patch repairs are currently delaminated. In some instances, as mentioned by NGJ, the concrete around the perimeter of a previous patch is delaminated, indicating a ring anode effect has taken place. When these areas are repaired, the new patch will necessarily be larger than the previous patched area. Not all of the old patches are failing however. It was observed that many of the old patches are sound and appear to be performing well.

A beneficial effect of the three story addition to the garage is that less roof water appears to be getting to the middle and lower stories of the garage. Efflorescence was observed at cracks on the underside of the upper (newer) floor decks indicating water penetration, however very little efflorescence was observed at the middle and lower levels, those of the older portion of the garage. As a result, it appears that much less surface water is getting to the older garage decks than there was before the addition.

We did not observe any corrosion related distress to the decks at the lower story-and-a-half where the traffic bearing, waterproof membrane was installed in 1998/99. It was reported that there are no active leaks from this level to the restaurant space below. It was observed that the membrane is worn through in many locations and will need to be replaced sometime in the future. Unless leaks are reported, or excessive distress is uncovered that was not observed, it does not appear that the membrane has to be replaced immediately.

While some light to moderate surface scaling was observed on the concrete deck surfaces of the older portion of the garage, we did not observe an excessive amount of scaling. Generally, this may be attributable to the coating that was observed on all of the decks. The coating appeared to be a trowel-



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applied, cementitious coating and may have been substituted for the membrane application during repairs in 1998/99.

Precast Panels

NGJ implied that missing sealant between the guardrail panels is a defect because it was recommended by Walker in 1996 that sealant should be installed between the panels. In general, it was observed during our visit that sealant was installed between the panels in the older portions of the garage and not in the newer portions. At a few locations in the older portion, however, the sealant was also missing. The intended function of the sealant is not clear. NGJ stated that the lack of sealant may lead to corrosion of the embedded panel anchors. NGJ also stated that water leaks through the panels to the street below as a result of the missing sealant. During our visit, the panel anchorages did not appear to be corroding or deteriorating. If the anchors are embedded in concrete, the alkaline environment of the concrete should protect the embedded anchors. Even if installed as observed at some of the lower levels, the sealant would not provide a waterproof seal to the embedded anchors, and is therefore of limited use. Water can still get to the anchors from the exterior side of the panels. Regardless, nearly 30 years in service with minimal anchor distress is an excellent track record. In general, it appears that water leakage through the open joints at upper level panels will be caught by the lower level panels.

Cosmetic Issues

Many of the items mentioned by NGJ appear to be cosmetic in nature. The efflorescence staining on the grout pockets at the prestress anchorages and the rust staining of the steel pans for the stair treads in the stairwells all appear to be cosmetic issues.

The efflorescence observed at the grout pockets does not indicate corrosion of the prestress tendons or anchorages as implied by NGJ. No rust staining was observed at these locations and it is common for water passing through a grout patch to leave efflorescence.

The rust noted by NGJ at the interior stair treads does not appear to be sufficient to affect the integrity of the stairs and is simply a cosmetic issue that can be address by painting.

CONCLUSIONS AND RECOMMENDATIONS

We agree with NGJ that Option C from the 1996 Walker report, which would have resulted in a waterproof traffic-bearing membrane over all deck surfaces, would have provided the greatest level of protection from corrosion to the decks. However, that does not mean that the other options presented, and the repair procedures implemented in 1998/99 (which were a combination of the options presented by Walker) were inadequate or imprudent. Based on the current condition of the membrane, it appears that it has a 4 to 5 year service life and would have required maintenance or repair at this time even if applied over all surfaces.

Based on the information provided in the Walker report, the concrete decks in the original portion of the building are not extremely dense. As a result, a silane sealer will likely achieve good penetration into the concrete surface and may provide protection longer than would normally be expected.

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We recommend that the areas experiencing delaminations be repaired. New patches, utilizing dense cementitious material and epoxy coating of exposed reinforcing steel will likely result in a solid patch that will last and will lessen the likelihood of an anode ring effect occurring around the patch in the future.

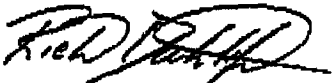
Often times, concrete patches fail earlier than expected because of inadequate surface preparation and installation of the patch material. We do not have enough information to determine if some of the delaminated patches have occurred due to poor installation or surface preparation at the time they were installed.

Attached is a current curriculum vitae listing my qualifications, publications, and other cases in which I have testified as an expert at trial or by deposition. My compensation in this matter will be \$150 per hour.

Please call if you have any questions.

Very truly yours,

WISS, JANNEY, ELSTNER ASSOCIATES, INC.



Richard A. Dethlefs, P.E., S.E.
Project Manager

WJE Report RPS garage

