



N.G. JACOBSON & ASSOCIATES, INC.

August 1, 2003

Ms. Laurel Siddoway
Randall & Danskin, P.S.
1500 Bank of America Financial Center
601 West Riverside Avenue
Spokane, WA 99201-0653

Mr. Bruce C. Allen, MAI
Bruce C. Allen & Associates, Inc.
1230 NE 8th Street, Suite #200
Bellevue, WA 98005

Consulting
Engineers

**RE: River Park Square Parking Garage
NGJ #2238.101**

Dear Ms. Siddoway and Mr. Allen:

In late August 2002, Bruce C. Allen & Associates, Inc. contacted N.G. Jacobson & Associates, Inc. (NGJ) to provide parking consulting and engineering services to assist them with their appraisal work on this facility. On September 17, 2002 I visited the River Park Square Parking Garage with David Craig, a construction cost consultant to walk through and observe this completed facility in order to provide a preliminary opinion on the current physical condition of the entire garage. During this visit I was provided with a copy of Walker Parking Consultants June 14, 1996 Final Report on the Financial Feasibility Analysis & Condition Assessment report for the River Park Square Parking Garage. Additionally on this day we visited your office where I was able to do a very limited review of some of the construction documents for the parking garage expansion project and listened to a conference call made to Mr. Terry Goebel of Goebel Construction when questions about the work they performed on the garage were asked.

Following this site visit, I prepared a brief report dated October 4, 2002 describing my observations and offered preliminary comments on Walker Parking Consultants June 14, 1996 Section II - Condition Assessment report as well as a preliminary summary of findings and recommendations regarding the actual physical condition of the garage.

After a meeting with you, Denise Lane and David Craig on January 13, 2003, our firm prepared a proposal on January 27, 2003 to perform a more thorough physical condition appraisal with restoration scoping/estimates and 20 year life cycle cost evaluation of the freestanding (1,082 car) garage portion of River Park Square. This recommended scope of work was modified the week of July 14, 2003 when we were contacted to provide the following services by August 1, 2003:

1. A one day site visit on July 25, 2003.

500 Union Street
Suite # 435
Seattle, WA
98101-3901

E-Mail:
ngj@ngj.com

206-624-7863

FAX
206-624-8947



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2. Review of the 'as-built' construction of the parking facility.
3. An opinion from visual observations of the current physical condition of this facility.
4. Additional review of Goebel's construction files and other project records regarding the purchase and sale of this facility.
5. Review of Construction Drawings and Specifications on this project.
6. Preparation of order of magnitude project/construction estimates of the fair market cost of the addition/modifications proposed in 1998.
7. Preparation of an order of magnitude estimate of the actual garage delivered in 1999.
8. Review of Walker Parking Consultants Condition Assessment Report's 1996 restoration recommendations and cost estimates.
9. Review of the actual work performed in comparison with Walker's recommendations.
10. Brief analysis of the likely impact from deferred maintenance and restoration of their facility, including impacts on its service life and on-going costs.

FINDINGS / ANALYSIS

The new 223 stall basement level Nordstrom garage area appears to have been built and to be maintained in a first class order, condition and repair.

The nine level, 1,082 stall freestanding parking structure has not been constructed or maintained in a first class order, condition and repair.

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 (circa 1974) part of the parking garage. On the parking deck slab surfaces, we currently estimate that 4 percent of the slab area is in need of concrete repair. This quantity is twice as large as the areas estimated in the Walker Parking Consultants June 14, 1996 Condition Assessment report.

We agree with the 'Option C' scope of work recommendations identified in the 1996 Walker 'Condition Assessment report.' These recommendations included concrete repair to all concrete distress areas on the parking deck slab surfaces followed by a comprehensive traffic deck waterproofing system to mitigate against further concrete deterioration. We believe that these recommendations are a good long-term approach to repair and protect the structure to extend its service life and minimize its life-cycle costs.



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It is apparent from my observations of this facility that the majority of the 'Option C' work recommended in the Walker Condition Assessment report was not performed in 1998/1999.

The findings reported in Walker's 1996 Condition Assessment report identified low concrete strength (approx. $f_c = 3,000$ psi @ +20 years < $f_c = 4,000$ psi @ 28 days required by original design) and other corresponding poor concrete performance quality property results from the samples tested. Additionally, chloride ion content test results at the reinforcing steel depth of the slab were well above the threshold range (280-410 ppm) in concrete that will begin the corrosion process. These findings are serious and indicate an imperative for actions to repair, restore and protect it as a safe low life-cycle cost facility. This is of particular importance for this facility with a plan for adding on to a 22 year old (now 29 year) structure intended to operate well over an additional 20 years.

Not comprehensively sealing the cracks and applying a traffic deck waterproofing coating to all approximately 250,000 SF of parking decks as recommended in the Walker report in 1998/1999 has allowed the parking decks additional exposure to chloride ions, from roadway de-icing salts carried in by vehicles, that in combination with moisture exposure cause additional chloride content build-up and diffusion in the concrete decks.

We could not find any information on the Architectural or Structural Drawings or Specifications by Callison Architecture and Coffman Engineers that identifies the Option C repair and restoration work recommended in Walker Parking Consultants Condition Assessment report.

From our review of Robert B. Goebel - General Contractors, Inc. and their sub-contractor - Pioneer Waterproofing, Inc. schedule of values for the 1998/1999 project and our visual observations of the (circa 1974) garage decks and spandrels we have identified that costs were apportioned to this work and have visually observed that some of this work was performed. Our best estimate from our review of the contractor's identified costs for this work and our observations of the work actually performed is that approximately \$340,000 of value per Walkers recommendations was put into the garage in 1999.

To evaluate the order of magnitude impact of five years of deferred restoration on the older (circa 1974) part of the garage, we prepared two life cycle cost estimates for restoration and waterproofing of this part of the facility for an additional 20 years of service life (see Appendix A). The first estimate shows the work that we have estimated was actually performed in 1999, with the balance of the Walker reports recommendation completed in 2004, and at 5 year intervals. The cost shown on this estimate in 2004, and 5 years after, include anticipated impacts from an additional 5 years of chloride and moisture exposure and corrosion related distress to the structure. For comparison, the second estimate shows the full Walker recommendations, implemented in 1999, with the



anticipated on going restoration and major maintenance costs at 5 year intervals there after. These estimates identify an increase in the ongoing life-cycle costs to the structure from the deferred restoration. This increase will become more severe at an ever-increasing rate if a comprehensive restoration plan implementation is delayed even further. These parking decks if not fully restored and protected will over time likely reach a point where the physical damage, caused by corrosion related distress, will require the complete replacement the parking decks in the structure and be the lowest cost alternative for repair.

The order of magnitude estimate, in 1999 dollars, to provide the same scope of restoration work recommended in the Walker's Condition Assessment report with an estimated increase in quantities of repair required at the present time as well as a higher mark up factor for performing the work in stages to accommodate the ongoing operations for public parking in this facility is \$ 2,035,200.

At the request of Bruce C. Allen and Associates, NGJ, with the assistance of Mr. David Craig a construction cost consultant, has prepared an order of magnitude estimate. A summary of our order of magnitude cost estimates prepared for Bruce C. Allen and Associates, Inc. for the year 1999 in Spokane, Washington notes the following:

1. Cost to modify and add 332 parking stalls to the original 750 stall freestanding garage, provide repair and restoration to the original garage per Walker Parking Consultants June 14, 1996 recommendations and estimate and build a new 232 basement level Nordstrom's garage to the same size and configuration as River Park Square, including internal and external speed ramps;

\$ 5,496,471 - add 332 stalls to freestanding garage
 \$ 2,995,458 - 223 stall Nordstrom basement garage
 \$ 1,411,000 - restore exist. 750 stall freestanding garage

Total \$ 9,902,921 * excluding W.S.S.T.

* estimate does not include costs for Nordstrom store podium slab above basement garage or ground floor retail slab-on-grade below the freestanding garage footprint.

Illustrating our initial physical condition review findings; Appendix C has photographs and commentary from my July 25, 2003 site visit to the River Park Square Parking Garage. Included in NGJ's October 4, 2002 report, Appendix D includes the photographs and associated commentary from my September 17, 2002 site visit.

CONCLUSIONS

The 1999 addition to the (circa 1974) freestanding parking garage was not built to a first class condition. Nor was the majority of restoration and repairs recommended and identified as 'option C' in the Walker Parking Consultants 1996 Condition Assessment



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provided at that time. It is also apparent from my site visits to the garage that the parking garage has not been operated and maintained in a first class order, condition and repair. Deferred major maintenance, restoration and repair to the freestanding garage will have a significant impact on this facilities life cycle costs and these costs are likely to continue to rapidly increase over time if no action is taken.

The 223 stall below grade parking facility, built under the Nordstrom store, appears to have been built to a first class condition in 1999, and to have been reasonably maintained in that condition.

Responding to Randall and Danskin's questions whether the freestanding garage would remain operable without significant repair and restoration work being performed up to the year 2019(?). It is our opinion from our review of this structure that the damage threshold will very likely be reached by this time leaving the complete replacement of the parking deck slabs as the only viable alternative for this facility to be safe to park in.

If you have any questions or comments, please do not hesitate to contact me.

Sincerely,

N.G. JACOBSON & ASSOCIATES, INC.

Gregory N. Jacobson, P.E.

GNJ/sgb

Enclosures:

Resume for Greg Jacobson

List of Other Cases

Technical and Building Code Reference Information

List of Information Obtained from Randall & Danskin

Appendix A: Life Cycle Costs

Appendix B: October 4, 2002 NGJ Report

Appendix C: July 25, 2003 Site Photographs

Appendix D: September 17, 2002 Site Photographs



GREGORY N. JACOBSON, P.E., President - Principal/Project Manager

Education: B.S. Civil Engineering, 1978, University of Washington
3-1/2 Years History & Philosophy, University of Washington 1971- 1974

Registration: Washington # 26103; Alaska # 8744

Project Experience:

- o Building Structures
- o Highways & Pavement Design
- o Bridges
- o Waterfront Facilities
- o Contract Administration
- o Parking Facilities
- o Parking & Transportation Studies
- o Investigative & Forensic Engineering
- o Restoration Engineering
- o Seismic Analysis & Upgrades Design

N. G. Jacobson & Associates, Inc., 1980 - Present:

Representative Structural/Civil Experience:

- o Structural Engr. Services - Valley Medical Center, Auburn South Clinic, Auburn, WA
- o Structural Design - WSDOT Maintenance Facilities at Colfax and Forks, WA
- o I-90 Seattle Access Viaduct Structure, Seattle, WA
- o I-90 Rainier Avenue Interchange, Seattle, WA
- o University of WA, Tacoma Branch, Tacoma, WA - Parking Lot Development
- o Puget Sound Naval Shipyard, 1,915-Car Parking Structure, Bremerton, WA
- o Providence General Medical Center Parking Structure, Phases I & II, Everett, WA
- o Highline Community Hospital Parking Structure, Burien, WA
- o Valley Medical Center, Phases I & II, Renton, WA
- o Anchorage International Airport Parking Structure, Anchorage, AK
- o Providence Medical Center Parking Structure, Seattle, WA
- o Watermark Parking Garage, Seattle, WA

Restoration Engineering - Investigations & Design:

- o Sea-Tac Intl. Airport, Satellite Transit System Concrete Running Beam Investigation & Restoration Planning, Sea-Tac, WA
- o Sea-Tac Intl. Airport Parking Garage - Major Maintenance, Phase II, Sea-Tac, WA
- o Spokane Intl. Airport, Parking Deck/Spiral Entrance/Exit Ramp Cond. Anal., Spokane, WA
- o Walker Center Parking Structure, Salt Lake City, UT
- o J. C. Penney Parking Structure, Anchorage, AK
- o Providence General Medical Center Parking Structure, Everett, WA
- o Captain Cook Parking Garage, Anchorage, AK
- o Washington Athletic Club Parking Structure, Seattle, WA
- o Seattle Trade Center Parking Structure, Seattle, WA
- o Struct. Investigation & Restoration Planning - Bremerton Ferry Terminal, Bremerton, WA
- o Alki/Schmitz Park Seawall Restoration, Seattle, WA
- o First Hill Medical Building - Post-Tension Tendon Failure Investigation, Seattle, WA
- o Shoreline Protection, Restoration & Breakwater, Golden Gardens Park, Seattle, WA
- o First Hill Condominium - Structural Repairs & Concrete Restoration, Seattle, WA
- o Tongass Ave. & Water St. Viaducts-Struct. Investigation & Rehab Review, Ketchikan, AK
- o Sea-Tac International Airport, Third Floor Van Lanes Structural Upgrade, SeaTac, WA
- o 2nd and Pike Parking Garage, Seattle, WA

Professional Organizations:

- o Structural Engineers Association of WA
- o American Society of Civil Engineers
- o American Consulting Engineers Council
- o Construction Specifications Institute
- o International Parking Institute-Professional
- o International Concrete Repair Institute
- o Post Tension Institute
- o American Concrete Institute

N. G. JACOBSON & ASSOCIATES, INC.

**LISTING OF OTHER CASES
THAT GREGORY N. JACOBSON, P.E.
HAS TESTIFIED AS AN EXPERT
AT TRIAL OR BY DEPOSITION
(1999-2003)**

CASE: Ashraf vs. Costco

CLIENT: COSTCO's ATTORNEY; Lee Smart Cook Patterson PS, Inc.
Attn. Mr. Jeffery P. Downer

CASE: Tovah Corp. vs. City of Issaquah, et.al.

CLIENT: ST Paul Fire and Marine Insurance Company

ATTORNEY: Hight Green Yalowitz

CASE: Strom vs. Fred Meyer

CLIENT: Fred Meyer's attorney; Lawrence & Versnel, PLLC.

CASE: Clark Hicks vs. Contractor

CLIENT: Hi-Tech Construction, Inc.

CASE: Alvin & Verla Kwiram vs. Weathervane Window Company

CLIENT: Alvin and Verla Kwiram

CASE: Arlene A. Wright vs. One Carillon Point Owners Association *

CLIENT: Travelers Property Casualty Co.

ATTORNEY: Bullivant Houser Bailey, PC.
Attn: Mr. Dino Vasquez

***Note:** Gregory N. Jacobson deposition is scheduled for
August 1, 2003.





**LIST OF TECHNICAL AND BUILDING CODE REFERENCE INFORMATION
CONSIDERED IN FORMING MY OPINIONS ON THE PHYSICAL CONDITION
AND QUALITY OF THE PARKING STRUCTURE**

- 1994 Uniform Building Code
- "Parking Garage Maintenance Manual" - NPA/PCC 1991 (and 1999 Update Draft)
- "The Dimensions of Parking," 3rd Edition - ULI and NPA/PCC, 1993.
- ACI (American Concrete Institute) 318-95 - Building Code Requirements for Structural Concrete
- ACI 362.1R-97 - Guide for the Design of Durable Parking Structures
- ACI 364.1R-94 - Guide for the Evaluation of Concrete Structures Prior to Rehabilitation
- ACI 437R-91 (Reapproved 1997) - Strength Evaluation of Existing Concrete Structures
- ACI 201.1R-92 - Guide for Making a Condition Survey of Concrete in Service
- ACI 222R-96 - Corrosion of Metals in Concrete
- ACI 224.1R-93 (Reapproved 1998) - Causes, Evaluation, and Repair of Cracks in Concrete Structures
- ACI 546R-96 - Concrete Repair Guide
- Concrete Repair and Maintenance - Illustrated by Peter H. Emmons - Published 1993 by R. S. Means Company, Inc.



**LIST OF INFORMATION OBTAINED FROM RANDALL & DANSKIN, P.S.
FOR OUR ANALYSIS:**

1. Financial Feasibility Analysis & Condition Assessment for the River Park Square Parking Garage - Final Report by Walker Parking Consultants/Engineers, Inc. (June 14, 1996)
2. Parking Covenants - River Park Square (Spokane, Washington) - Effective May 5, 1998
3. Parking Agreement - River Park Square Parking Facility - Effective May 5, 1998
4. Parking Facility Purchase and Sale Agreement - dated: August 1, 1998
5. Summary of cost estimates for River Park Square Parking Garage Analysis - draft transmittal dated: January 20, 1997 by Coopers & Lybrand, L.L.P.
6. River Park Square Value Analysis 18 May 1998 by Meng
7. Contract and fee exhibits by Robert B. Goebel - General Contractors, Inc. provided in reference to the subpoena to produce documents for the River Park Square Project Bond Litigation, Case No. CS-01-0127-EFS from Randall and Danskin. This includes 1) Contracts per item (e) of the above referenced subpoena. 2) Invoice dated 12/10/99 for River Park Square Renovations, with AIA Document G703 attached. 3) Invoice dated 3/10/00 for River Park Square Renovation - Parking Garage, with AIA Document G703 attached.
8. Reduced copy of River Park Square Garage Structural Drawings by Callison Architecture and Coffman Engineers - Drawings SG0.01 through SG4.01D showing revision 21 dated March 30, 1999
9. Parking Garage River Park Square Project Manual - Bid and Permit Set, dated February 9, 1998 by Callison Architecture (References Nordstrom Garage only)
10. River Park Square Project Manual - Construction set for River Park Square Phase One by Callison Architecture, dated November 9, 1998
11. River Park Square Architectural Drawings A0.00 through A9.00 for Project No. 193126.11 dated August 21, 1998 by Callison Architecture

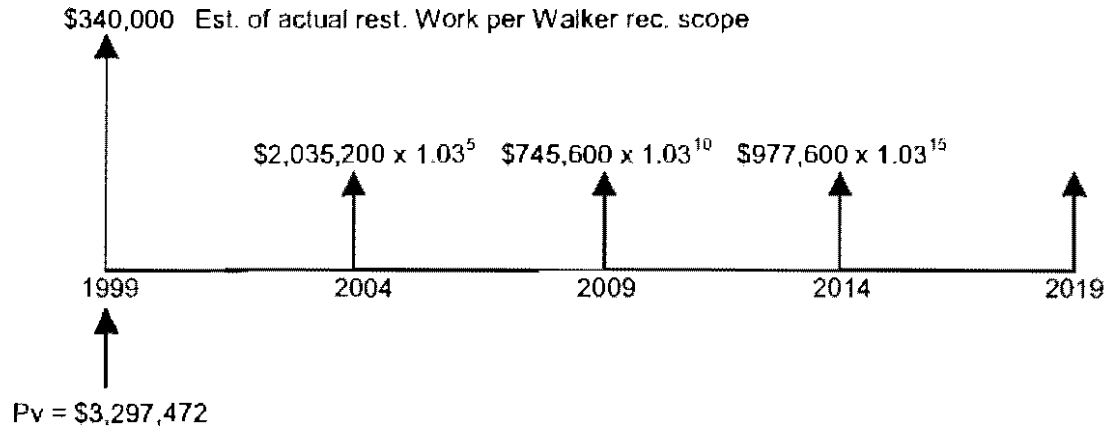


12. River Park Square Mechanical/HVAC Drawings M0.01 through M4.03 dated February 28, 1998 with revisions to October 5, 1998 by Callison Architecture and Coffman Engineers
13. Witherspoon, Kelley, Davenport & Toole August 19, 1999 letter to Roy Koegen of Perkins Cole and Michael Ormsby of Preston Gates & Ellis, P.S. regarding River Park Square
14. Robert B. Goebel - General Contractors, Inc. September 16, 1998 letter to Retail Development Services, Inc. regarding River Park Square Redevelopment
15. Robert B. Goebel - General Contractors, Inc. Invoice Summary AIA G703
Estimated Progress Sheets
Application #17 - September 9, 1999
Application #15 - June 30, 1999
Application #22 - March 10, 2000
16. Pioneer Waterproofing Company, Inc. AIA Document G702, Application and Certification for Payment, dated August 31, 1998
17. Robert B. Goebel, General Contractors Inc., August 20, 1999 letter to Bob Robideaux, Robideaux & Company regarding the River Park Square Parking Garage and the Completion of Work and Parking Deck Coating

APPENDIX A – Life Cycle Costs



RIVER PARK SQUARE PARKING GARAGE, SPOKANE, WASHINGTON
20 Year Life Cycle Cost Evaluation of Existing Parking Garage



Estimated Life Cycle Costs are the Total Equivalent Cost at Present Values Based on the Following Assumptions:

Interest Rate: 6%/Year
 Inflation: 3%/Year
 Project Life: 20 Years

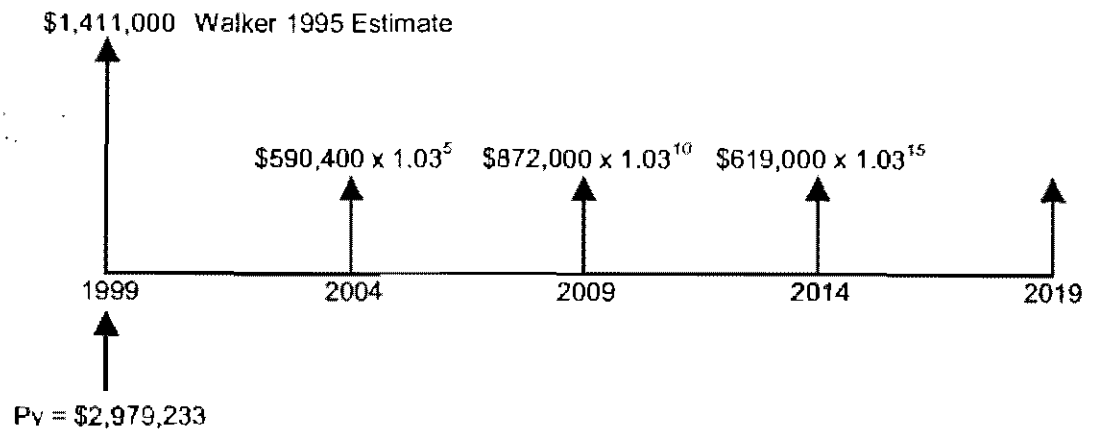
Estimate of On-going Future

Repair/Restoration Costs:	5 YR	10 YR	15 YR
Concrete Slab Repair	\$300,000	\$90,000	\$110,000
Conc. Slab Soffit, Beam, Column Repair	\$175,000	\$100,000	\$60,000
Precast Spandrel Repair	\$95,000	\$32,000	\$40,000
New Traffic Membrane System	\$500,000	\$0	\$0
Recoat W.P. Membrane	\$23,000	\$155,000	\$313,000
Crack and Joint Sealant	\$106,000	\$35,000	\$25,000
Pavement Markings	\$13,000	\$4,000	\$13,000
Misc. Repair/Restoration			
Waterproofing	\$50,000	\$50,000	\$50,000
Expansion Joint Seal	\$10,000	\$0	\$0
Sub-Total	\$1,272,000	\$466,000	\$611,000
Mark-up Factor 0.6*	\$763,200	\$279,600	\$366,600
TOTAL ESTIMATE	\$2,035,200	\$745,600	\$977,600

* Markup factor includes: Contractor general conditions (including barriers, and traffic control), overhead and profit, contingencies, sales tax and soft costs for design and construction management.



**RIVER PARK SQUARE PARKING GARAGE, SPOKANE, WASHINGTON
20 Year Life Cycle Cost Evaluation per Walker Parking Consultants
1996 Condition Assessment Report's Recommendations**



Estimated Life Cycle Costs are the Total Equivalent Cost at Present Values Based on the Following Assumptions:

Interest Rate: 6%/Year
 Inflation: 3%/Year
 Project Life: 20 Years

Estimate of On-going Future

Repair/Restoration Costs:	5 YR	10 YR	15 YR
Concrete Slab Repair	\$36,000	\$60,000	\$90,000
Conc. Slab Soffit, Beam, Column Repair	\$100,000	\$60,000	\$60,000
Precast Spandrel Repair	\$18,000	\$24,000	\$32,000
Recoat W.P. Membrane	\$116,000	\$313,000	\$116,000
Crack and Joint Sealant	\$35,000	\$25,000	\$35,000
Pavement Markings	\$4,000	\$13,000	\$4,000
Misc. Repair/Restoration			
Waterproofing	\$50,000	\$50,000	\$50,000
Expansion Joint Seal	\$10,000	\$0	\$0
Sub-Total	\$369,000	\$545,000	\$387,000
Mark-up Factor 0.6*	\$221,400	\$327,000	\$232,200
TOTAL ESTIMATE	\$590,400	\$872,000	\$619,200

* Markup factor includes: Contractor general conditions (including barriers, and traffic control), overhead and profit, contingencies, sales tax and soft costs for design and construction management.

October 4, 2002

Mr. Bruce C. Allen, MAI, President/Principal
Bruce C. Allen & Associates, Inc.
12320 N.E. 8th Street, Suite # 200
Bellevue, Washington 98005

**RE: CITY OF SPOKANE DOWNTOWN SHOPPING CENTER
RIVERPARK SQUARE PARKING GARAGE
NGJ # 2238.101**

Dear Bruce:

I visited the Riverpark Square Garage in Spokane, WA with David Craig on September 17, 2002. During this visit, I briefly reviewed the Condition Assessment section of the June 14, 1996 'Financial Feasibility Analysis and Condition Assessment Riverpark Square Garage' report by Walker Parking Consultants and walked through the parking garage with David Craig. Later this day in the afternoon, I visited the offices of Randall & Danskin, P.S. where I listened to a speaker phone conversation primarily between David Craig and Mr. Terry Goebel – Goebel Construction, the General Contractor for this project.

It was raining outside on the day of our visit. Observations with the resultant rain water present inside the garage, from roof deck runoff, precipitation collected through the perimeter wall openings and being carried in by vehicles, was helpful in identifying many current problems with this facility. Captioned photographs (attached), taken during this visit, illustrate many of our observations described in this letter.

Below are my initial findings, comments and followup recommendations from my September 17, 2002 review:

CIRCA 1974 PARKING GARAGE - VISUAL OBSERVATIONS:

- Significant floor slab cracking along beam areas and elsewhere on the parking decks.
- Many existing cracks are unsealed.
- Most rout and seal crack repairs appear to be in poor condition.
- Many precast spandrel panels are in poor physical condition with scaling and delaminations present.
- Precast spandrel joint sealant failed, missing and ineffective.
- Significant previous slab patching (concrete repairs).
- Anodic ring corrosion delaminations around many concrete repair patches indicating ongoing active corrosion.
- Significant other slab delaminations and spalling from corrosion related distress sounded and visible. Microcell moving towards more macro cell corrosion activity affecting larger slab areas.
- No surface applied waterproofing applied to parking decks except the lowest level elevated ramps.
- Shear type cracking noted in transfer beam at West end of the structure. Frame action resistance under building movement likely.

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- Building is relatively long (357') without expansion joints. Significant temperature related expansion and contraction movement likely, particularly given range high and low temperature extremes in the Spokane area.
- Leakage occurs in numerous locations throughout the parking deck slab. Besides chloride exposure through the full slab section, this type of leakage deposit is damaging to vehicle paint finishes.
- The garage appears to have minimal if any concrete restoration or repairs performed in recent years after the expansion project.
- The long-term strength and safety of the precast spandrel connections with continued concrete deterioration and steel corrosion is a concern in both the old and new garage addition. With no redundancy in connections, failure of only one of the discrete steel precast spandrel connections could lead to a progressive failure.

CIRCA 1998 PARKING GARAGE ADDITION – VISUAL OBSERVATIONS:

- Significant through slab leakage noted at slab cracks and pour joints.
- Re-used precast spandrel wall panels in many cases have moderate to severe scaling type concrete deterioration present. At some locations it appears that loose concrete pieces could fall onto the sidewalk below.
- No caulking between precast wall panels allows water to flow under panels on top of the slab exposing it to chlorides and can also access the precast connection anchor bolt areas.
- Leakage through spandrels is running down outside faces of columns, possibly exposing grouted P.T. beam and slab stress end pockets to moisture ingress problems.
- Most pour joints and random cracks on the slab are unsealed and leaking.
- Many parts of the garage appear to be unfinished. Examples include:
 - UngROUTED precast anchors.
 - Unfinished masonry veneer.
 - Nails protruding from concrete slab soffits and walls.
 - Unsealed slab and precast joints.
 - Inferior quality concrete finishes in many locations, including P.T. grout pockets.

PRELIMINARY REVIEW COMMENTS OF WALKER PARKING CONSULTANTS JUNE 14, 1996 FINAL REPORT – SECTION II – CONDITION ASSESSMENT:

- It is apparent from my September 17, 2002 site visit that much, if not most of, the Walker Parking Consultants' Condition Assessment Report recommended Option C restoration and comprehensive waterproofing work was not performed on the original Circa 1974 garage before, during or after the Circa 1998 parking garage expansion project.

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- This report identifies that chloride (road salt) exposure and ingress below the surface of the parking deck slabs is causing significant corrosion related distress problems on the parking deck slabs and that continued applications of a silane sealer are likely "too little, too late."
- As was common at the time of this garage's construction, there is minimal ($\leq 3/4"$) protective concrete cover over the slab and beams top reinforcing steel. The minimal concrete cover protection and significant slab cracking present at the beams has allowed chloride levels to build up at the reinforcing steel depth where, in combination with moisture and oxygen exposure, an environment has been created where corrosion can and has occurred and will continue to occur at an ever expanding rate without protective intervention actions.
- No mention of the post-tension steel condition was noted in the Walker report. Given the age, cracking and leakage problems evident, it is very possible as has been common in many other older P.T. parking structures that corrosion problems with the P.T. could be occurring.
- Circa 1985 the parking garage had significant restoration and repair work performed. This work included delamination repairs, precast spandrel repairs, floor slab crack routing and sealing and a silane sealer applied on the parking deck slabs to the floors and precast spandrels. Ongoing repair work followed every 2 or 3 years.
- The 'Rubber Road' product over the retail areas on the lower levels of the structure reported to be unavailable actually is still available from Concrete Sealant's Company - Toronto, Canada.
- The ASTM C-42 core test reported strength for four cores tested in this report ranged from a low of 2770 psi to a high of 3260 psi. These are relatively low structural concrete strengths and much less than the minimum strength of 4000 psi reported to have been required in the original design. Given the relatively good quality of aggregates available in the Spokane area, this low strength of the concrete indicates that the garage concrete mix utilized is likely of a poor performing quality in terms of chloride penetration and diffusion resistance, as well as other long-term durability properties. Additionally, these low strengths reported indicate that the structure is not as strong in its load carrying capacity as it was originally designed to be.
- Petrographic analysis of the concrete cores samples obtained in Walker's review further indicates the concrete is of relatively poor quality in terms of it having moderately to poor cement past-aggregate bond.
- This report further notes that their analysis indicates 'the slab has adequate flexural capacity in spite of apparent deficient concrete.' This structural review reporting, however, does not say whether the slab was reviewed for potential section and bond

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strength reductions with concrete delaminations present, or if shear capacity of the beams and girders with a 3000 psi concrete strength was also checked.

- The nine chloride samples tested at 0-1", 1"-2" and 2"-3" depths in this report confirm the presence of chloride exposure and harmful concentration levels at the reinforcing steel level below the surface. As over six years has elapsed since the time of these chloride tests were made and a waterproofing membrane has not been applied, it is likely that these levels have increased. At this point in time, additional chloride testing is recommended.
- From our review of the Walker report, appraisal methods and findings, plus my recent brief site review, it appears the Option C recommendations identified were prudent and would have been adequate to significantly extend the service life of the structure.
- Because many of these relatively comprehensive recommendations were not followed in the garage expansion project or afterwards, it is likely, as further exposure and deterioration has occurred, that an increased scope of work will be necessary to repair, restore and protect the structure at this point in time over what was needed in 1996.

PRELIMINARY SUMMARY OF FINDINGS AND RECOMMENDATIONS:

It is apparent that many of the most important Option C work items recommended in the Walker Condition Appraisal Report were not performed on the original (Circa 1974) parking structure.

It is also apparent that the (Circa 1998) garage addition was not built to a "first class" condition when compared to other parking garages in Washington State and beyond. This statement includes observations of exposed finishes, significant through slab leakage, the precast spandrel conditions and other indications showing this facility is vulnerable to early onset of durability problems likely requiring high ongoing and life cycle costs to maintain.

As verbally reported by Mr. Terry Goebel of Goebel Construction, the General Contractor on the garage expansion project, the plans and technical specifications requirements for the garage restoration and expansion project does not fully define all of the construction requirements and details incorporated into the constructed project. He said many work items incorporated into the project were identified through 'Requests for Information' (RFI's) and 'Supplemental Details' (SD's) correspondence between his Construction Company, the Developer, and Developer's Design Consultants during the Construction Phase.

The original 1974 part of the Riverpark Square Parking Garage is currently in poor condition. From my limited review, it is apparent that the parking decks are inadequately protected against chloride exposure and that significant corrosion related distress and other concrete deterioration processes are continuing to occur on the parking deck slabs, precast

Mr. Bruce C. Allen, MAI, President/Principal
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spandrels, as well as columns and walls, throughout the structure. Implementation of a well planned, comprehensive major maintenance program that addresses this structure's existing conditions, as well as prioritizes repairing, restoring and protecting this structure should be implemented as soon as possible. Otherwise, left unmaintained and unprotected, this garage will continue to deteriorate at an ever expanding rate and will at some time in the near future reach a damage level or threshold where repair and restoration may no longer be the most economical solution.

There are numerous locations in the old and new parts of the parking garage where through slab leakage is occurring. This type of leakage allows chlorides the ability to build up high concentration levels deep inside the slab, creating an environment where reinforcing steel corrosion can occur not only close to the surface but deeper inside the members. Additionally, this leakage where it drips on cars will cause damages to paint finishes. Left unrepaired, we recommend that all parking stall areas where leakage is occurring be closed off to prevent damaging vehicles parked in the facility.

Taking test cores for strength and petrographic evaluation of the precast spandrels is recommended.

Additional structural review, including review of the transfer girder with shear type cracking present in the old garage, is recommended as well as a more general review of entire structural system using the lower reported concrete strengths.

An updated physical condition review/condition appraisal of the old, as well as new garage, is recommended. This review should also identify a prioritized restoration/repair scope of work and budget cost estimates. Additionally, a materials engineering analysis may also be prudent, particularly in the older part of the structure, both to study projections of continued chloride diffusion rates in the concrete as well as evaluate for a materials perspective various repair and protection intervention strategies and their impact on extending this facility's service life.

Please do not hesitate to contact me with any questions or comments you may have in your review of this letter.

Sincerely,

N. G. JACOBSON & ASSOCIATES, INC.

Gregory N. Jacobson, P.E., President
GNJ/gr
Enclosures: Photos (20) – 2 Sets of this Letter Report

APPENDIX C – July 25, 2003 Site Photographs