Packing Structures Planning & Design

At Carl Walker, parking is as much an art as it is a science. It is a structural challenge that skillfully blends parking and engineering concepts with innovative solutions designed to streamline and simplify a world in motion. Parking structures have unique characteristics that distinguish them from other buildings. As parking consultants, one of our strengths is an extensive background in planning and designing parking structures for virtually every use and for every type of client, and in each case intelligently balancing aesthetics, functionality, durability, and cost for maximum benefit to the owner, the user, and the environment.

Over the years, our parking professionals and structural engineers have been responsible for more than 5,500 successful projects. We are “All Things Parking” and provide the entire range of parking design capabilities:

- Feasibility & Site Analyses
- Prime Design
- Planning/Functional Design
- Structural Engineering
- Sustainable Design
- Lighting & Drainage
- Revenue, Security & Access Control Systems
- Design/Build Scope Documents
- Graphics & Wayfinding Systems
- Owner’s Representative Services

Studies & Operations Consulting

Parking is not simply about storing cars. It is about providing a valuable link in the transportation system between where you live and your destination. Whether that is a city center, the office, university, hospital, airport or an event, you want to get where you are going without inconvenience, interruptions and lost time. The Carl Walker team specializes in solving problems and providing successful solutions for real world applications.

For any parking system to be successful, there needs to be a combination of visionary strategic planning, defined organizational goals and effective management. Carl Walker provides comprehensive downtown, campus, and transportation planning services, along with organizational assessments and policy development assistance for a wide range of client types. We understand how parking is supported by strong management and organizational success. We can help make the most of your parking investment with enhanced customer service, proper technology applications, maximizing revenue, and implementing practical, common sense policies that actually work.

- Management & Operational Reviews
- Organizational & Policy Assessment
- Supply & Demand Analysis
- Transportation & Parking Master Plans
- Marketing, Branding & Customer Service
- Feasibility Studies
- Technology Assessments
- Revenue & Rate Analysis
- Enforcement Policy & Operations

Restoration Engineering

Carl Walker provides restoration engineering for existing parking structures, but our expertise does not end there. Our group of Restoration Specialists is knowledgeable and experienced in the evaluation and repair of a variety of structures, including building facades/enclosures, supported plaza systems, tunnels, bridges, stadiums, etc.

Carl Walker’s restoration specialists help clients understand the condition of their facilities, assess repair and maintenance options, and design and facilitate the restoration program. Our goal is to work with our clients to develop a balanced restoration program to meet the repair and maintenance needs of the structures, as well as the functional and operational goals of a facility.

Program Development
- Capital Improvement Plan Development
- Life Cycle Cost Analysis
- Maintenance Manual Preparation
- Due Diligence Review
- Public Private Partnerships

Evaluation Services
- Forensic Investigation
- Structural Analysis
- Condition Assessment
- Parking Garage Survey
- Façade/Building Envelope Survey
- Plaza Leaking/Waterproofing Review

Restoration Engineering
- Repair/Rehabilitation
- Leak Mitigation
- Corrosion Protection
- Building Envelope Repair
- Structural Strengthening & Adaptive Reuse

Montgomery College Parking Structure, Rockville, Maryland

Parking Structure Outlook for 2016

By Gary Cudney, P.E., President/CEO

Carl Walker is pleased to provide its annual statistical analysis of parking structure construction costs and new parking structure market forecast. At Carl Walker, we specialize in parking structure design, structural engineering, parking studies, parking operations consulting, and restoration of parking structures, plazas, facades, and other buildings. We maintain a database of completed parking structure projects and have developed a methodology to analyze the historical cost information to assist our clients and the industry.

Our construction cost database contains hundreds of completed parking structure projects of varying size, scope, and geographic location. For this forecast, we only omit the cost of parking structures that are completely below grade, since the cost of such structures is much higher. The cost data is assigned factors based on the time of bidding and location of the parking structure. The time factor is based on the Building Cost Index (BCI), published by Engineering News-Record (ENR). The location factor is taken from the yearly edition of the RS Means Building Construction Cost Data. Applying these two factors to actual construction cost data adjusts the cost to a current national basis and from that we determine the national median. The national median can then be re-adjusted to reflect a median construction cost in almost every city in America.

Carl Walker is excited to present the forecast for parking structure costs for March 2016. As of March 2016, our statistical data indicates that the median construction cost for a new parking structure is $19,037 per space and $56.99 per square foot, increasing 2.4% from March 2015, when the median cost was $18,599 per space based on our historical database. This relatively minor increase is reflective of the fact that while construction markets are growing, material price increases were very low due to foreign competition, low fuel prices, and labor rates were stable even as the market ramped up. The table below lists the 2016 median parking structure construction cost in various U.S. cities.

It should be noted that the construction cost data does not include costs for items such as land acquisition, architectural and engineering fees, environmental evaluations, materials testing, special inspections, geotechnical borings and recommendations, financing, owner administrative and legal, or other project soft costs. Soft costs are typically about 15% to 20% of construction costs, but can be higher for owners who allocate their internal costs directly to the project.

<table>
<thead>
<tr>
<th>Location</th>
<th>Median Parking Structure Construction Cost 2016 $/Space</th>
<th>Median Parking Structure Construction Cost 2016 $/SF</th>
</tr>
</thead>
<tbody>
<tr>
<td>National Median</td>
<td>$19,037 per space</td>
<td>$56.99 per square foot</td>
</tr>
<tr>
<td>Montgomery College</td>
<td>$21,562 per space</td>
<td>$71.66 per square foot</td>
</tr>
<tr>
<td>Arizona</td>
<td>$22,078 per space</td>
<td>$80.99 per square foot</td>
</tr>
<tr>
<td>California</td>
<td>$21,350 per space</td>
<td>$64.24 per square foot</td>
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<tr>
<td>Colorado</td>
<td>$22,311 per space</td>
<td>$74.92 per square foot</td>
</tr>
<tr>
<td>Florida</td>
<td>$21,803 per space</td>
<td>$82.42 per square foot</td>
</tr>
<tr>
<td>Georgia</td>
<td>$21,565 per space</td>
<td>$74.28 per square foot</td>
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<tr>
<td>Illinois</td>
<td>$21,257 per space</td>
<td>$66.22 per square foot</td>
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<tr>
<td>Indiana</td>
<td>$21,843 per space</td>
<td>$67.28 per square foot</td>
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<tr>
<td>Massachusetts</td>
<td>$21,572 per space</td>
<td>$73.93 per square foot</td>
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<tr>
<td>Michigan</td>
<td>$21,294 per space</td>
<td>$72.14 per square foot</td>
</tr>
<tr>
<td>Nevada</td>
<td>$22,094 per space</td>
<td>$72.14 per square foot</td>
</tr>
<tr>
<td>New York</td>
<td>$21,956 per space</td>
<td>$81.25 per square foot</td>
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<td>Ohio</td>
<td>$21,619 per space</td>
<td>$73.13 per square foot</td>
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<td>Oregon</td>
<td>$21,728 per space</td>
<td>$76.58 per square foot</td>
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<tr>
<td>Pennsylvania</td>
<td>$21,566 per space</td>
<td>$80.07 per square foot</td>
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<td>Texas</td>
<td>$21,891 per space</td>
<td>$72.97 per square foot</td>
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<tr>
<td>Washington</td>
<td>$21,558 per space</td>
<td>$70.73 per square foot</td>
</tr>
<tr>
<td>Wisconsin</td>
<td>$21,712 per space</td>
<td>$75.36 per square foot</td>
</tr>
</tbody>
</table>

Carl Walker, Inc. 800.394.7275 www.carlwalker.com
I am often asked what features are included within the “median construction cost”. A median cost parking structure typically includes such features as:

- 8’ 0” to 8’ 9” wide parking spaces
- Precast concrete superstructure
- Attractive precast concrete façade, but with basic reveal pattern
- Glass backed elevators and unenclosed stairs clad with glass curtain wall to the exterior
- Basic wayfinding and signage
- Shallows spread footing foundations
- All above grade construction
- Open parking structure with natural ventilation, without mechanical ventilation or fire sprinklers
- Little or no grade level commercial space
- Basic parking access and revenue control system
- Energy efficient fluorescent lighting

The construction cost of the parking structure will be higher than the median if it includes such enhanced features as:

- 8’ 9” to 9’ 0” wide parking spaces for better user comfort
- Cast-in-place post-tensioned concrete superstructure for lower maintenance
- Attractive façade with precast, brick, metal panels, and other materials
- Green Garage Certification following the Green Parking Council standards
- Enhanced LED lighting with occupancy and photocell computer controls
- Custom wayfinding and signage system
- Storm water management including on-site retention/detention
- Deep foundations, such as caissons or pilings
- Below grade construction
- Enclosed stair towers due to local code requirements
- Enclosed parking structure without natural ventilation where mechanical ventilation and fire sprinklers are required
- Grade level commercial space
- Mixed use development where the parking is integrated with office, retail, residential, or other uses
- State-of-the-art parking access and revenue control system
- License plate recognition
- Parking guidance system
- Count system with variable message LED signs
- Pay-on-foot stations
- Wi-Fi and cellular services

PARKING INDUSTRY CONSTRUCTION ECONOMIC FORECAST

The construction industry is enjoying good growth and “for the first time in recent memory, in 2015 the nonresidential construction sector actually exceeded expectations.” Construction of mixed use and stand-alone parking structures has also grown and this growth should continue in the near term as construction spending in the institutional sector (i.e. city governments, higher education, and healthcare) is predicted to grow almost 7% during 2016 and 2017 and growth in the commercial, office, and retail sectors are predicted to be even higher.

As the construction economy continues to grow, escalation of construction costs and longer construction schedules can be expected in many areas of the country due to labor shortages in construction trades and professional positions and as construction companies increase margins. It is predicted that construction inflation could be approximately double consumer inflation! Predictions by industry experts point to increased levels of construction in all sectors for 2016 and 2017.

- The American Institute of Architects (AIA) chief economist, Kermit Baker, PhD, stated “The momentum that the construction market has built up in 2015 will generate a healthy performance for the industry in 2016.” While there has been fluctuation and regional differences in the AIA Architectural Billings Index (ABI), Baker further reports that “The average ABI score in 2015 was just a little lower than 51.5, suggesting another year of healthy growth in 2016 [construction].”

- The AIA also compiles a Consensus Construction Forecast based on predictions of seven leading U.S. non-residential construction forecasters in the U.S. The Consensus Construction Forecast indicates the non-residential building construction industry is expecting continued growth. After an estimated 15% growth in nonresidential construction during 2015, the consensus panel projects about 8% growth for 2016 and 7% for 2017, with increases in activity projected for the office sector of 12.8% (2016) and 8.8% (2017), healthcare sector of 6.6% (2016) and 6.9% (2017), and education sector of 6.5% (2016) and 6.6% (2017).

- Gilbane Building Company, in their Market Conditions in Construction report, reported more than a 15% increase in non-residential building construction in 2015 and they forecast a near repeat of last year’s growth during 2016 of almost 14.0%!

- Gilbane also reports that labor and material costs will increase as fees, margins and demand expand such that construction inflation could increase 4% to 6% for 2016 and 2017.

- Turner Construction’s Turner Building Cost Index which tracks construction cost escalation rose 4.5% during 2015. Their 2015 Fourth Quarter Forecast states that “The high volume of work underway continues to put upward pressure on skilled labor...which has driven selective trade cost increases.”

Additionally, the Turner 2016 First Quarter Forecast indicates a 1.15% increase in costs for the quarter and that “The shortage of skilled labor is outweighing the impact of declining materials prices. As the volume of work remains relatively high, we expect subcontractors to continue to be strategic in pursuits, ultimately resulting in upward cost pressures.”

- The Engineering News-Record (ENR) recently reported their first quarter 2016 Construction Industry Confidence Index (CIC) decreased to 61 points on a scale of 100. The decline in the CIC represents concern about the uncertainties for the future despite the fact that the construction market continues to grow. The vast majority of the 239 executives of large construction and design firms responding to the survey believe that their markets are in a growth mode, but may flatten out in 2017.

SUMMARY

The sustained growth in architectural firm backlogs reported by the Architectural Billings Index (ABI) is a positive indicator for near term growth in the construction of parking structures. In absence of any major political or economic event, construction activity is forecasted to grow about 7% to 8% the next two years, including the institutional and commercial sectors that traditionally build parking structures.

With the improved construction activity, project costs are expected to escalate to a greater level than the projected increase in material and labor costs would indicate. Furthermore, shortages of skilled construction workers could restrain market growth and raise project costs. Because of these factors, Gilbane forecasts construction inflation will be approximately double that of consumer inflation and in the 4% to 6% range over the next two years.

The parking professionals at Carl Walker will be happy to assist with budgeting of your next parking structure. If you have any questions or would like specific cost information for your area, contact Gary Cuddy at gcuddy@carlwalker.com or 800-PARK (800-394-7275).

REFERENCES