

## **Appendix A: Structured Parking Analysis**

### **Summary**

Structured parking garages should be budgeted at \$30,000 per stall (2009 dollars) for the Overlake area of Redmond. Simple parking garages constructed above grade are the most cost effective manner to increase parking capacity of urban center sites. For budgeting purposes, below grade parking structures carry a 50% premium over above grade parking structures. A budgetary cost for below grade parking structures is \$45,000 per stall. These costs are associated with long span, stand-alone parking structures only. Wrapping the structures with commercial buildings or adding retail at the ground level significantly increases the cost. Identifying access points, walkable locations, and a centralized location for a parking structure is critical to the success of the structure. Traffic from parking structures can significantly affect peak flow in the local vicinity of the project and may affect traffic at intersections if not properly considered. A traffic analysis would need to be done at a later stage to determine these impacts.

### **Recent structured parking projects**

There have been many parking structures constructed locally within the past ten years by Sound Transit and King County Metro. These structures are typically used to provide parking capacity at key regional transit facilities. The cost data from these projects have been used to create a budgetary cost per stall for the Overlake parking structures. Many of these local parking structures also include transit centers with bus platforms and in some cases with rail platforms. Table 1 below breaks out the different components included as part of each project.

Table 1: Key Program Elements

<b>Project</b>	<b>Owner</b>	<b>Garage</b>	<b>Bus Platform</b>	<b>Rail Platform</b>
Eastgate Park & Ride	King County	X	X	-
Central Base	King County	X	-	-
Federal Way Transit Center	Sound Transit	X	X	-
Issaquah Highlands	King County	X	X	-
Issaquah Transit Center	Sound Transit	X	X	-
Lakewood Station	Sound Transit	X	X	X
Redmond Park & Ride	King County	X	-	-

## Parking Structure Issues

Based on the City of Redmond Community Development Guide and on typical parking structure design practices, parking structure dimensions can be developed for planning level discussions. This translates to the following assumptions:

- Typical stall width and depth are 8'-6" x 18'
- Minimum aisle width based on stall width and depth is 25'-6"
- Assumed all standard size stalls (no compacts)
- Typical single bay width is 62'
- Typical floor height is 10'-6"
- Typical column spacing is every three parking stalls or 25'-6"
- Recommended minimum length of garage is 345'
- Recommended minimum ramp length is 204' with a ramp slope of 5.15%
- Recommended minimum width of garage is 186' (3 bays at 62' each)
- Assumed 300 square feet per stall for budgeting purposes

## Cost Issues

Recent project cost data are shown in Table 2 below. The "entire project" column is the overall cost of the project which may include: real estate, design, permitting, construction, administration, and soft costs. As was noted above, many of these projects include additional program elements. A comparison below shows the raw cost per stall to construct just the garage versus the whole project. Raw cost per stall is an approximation of the parking structure portion of the project derived from the recorded contract bid price.

This cost information is for typical above grade parking structures only. Any parking structure that is wrapped with commercial buildings or contains retail on the ground level will have a significantly larger cost and there are some locations within Overlake Village where such treatment would be required. Additionally, if a parking structure requires special treatment, such as elaborate architectural cladding or an inefficient layout to fit a site, the costs will also be increased.

For 2009 dollars a budgetary value of \$30,000 per stall is a good approximation based on recently constructed facilities. In order to create an actual budget estimate, a project site for the garage will need to be chosen and a 15% design report will need to be completed.

Table 2: Historical Cost / Stall Data

Garage Information			Cost (\$) / Stall			
Parking Garage	Date	No. of Stalls	Garage Construction	Entire Construction	Entire Project (actual dollars)	Entire Project (2008 dollars)*
Eastgate Park & Ride	2003	1319	\$ 7,891	\$ 10,425	\$ 20,470	\$ 21,514
Central Base	2003	1044	\$ 9,898	\$ 11,000	\$ 25,862	\$ 27,181
Federal Way Transit Center	2004	1215	\$ 12,493	\$ 17,606	\$ 32,428	\$ 33,745
Issaquah Highlands	2004	1040	\$ 13,959	\$ 16,553	\$ 25,577	\$ 26,616
Issaquah Transit Center	2005	819	\$ 21,200	\$ 28,069	\$ 36,020	\$ 37,111
Lakewood Station	2006	600	\$ 24,196	\$ 28,692	\$ 54,833	\$ 55,935
Downtown Redmond Park & Ride	2008	385	\$ 18,550	\$ 20,622	\$ 25,974	\$ 25,974
<b>Average:</b>					\$	32,582

\*assumes 1% annual-compounded inflation in cost with 2003 as base year

## Traffic Issues

Traffic issues are important to consider when determining the location of the garage. Depending on the use of the structure, peak flows could potentially produce large amounts of traffic within a certain area in a short time period. Considerations for determining location should include: proximity to intersections and traffic lights, and queuing length needed for entering the structure without creating delays in surface street traffic. Similarly the number of entrances, exits, and ramps in the structure, and its internal circulation pattern are critical to giving the structure an appropriate level of service for the users. In order to determine the impacts a parking structure would have on the traffic in the local vicinity, a traffic study would need to be completed. A small parking structure, one with 400 to 600 stalls, may work with only one entrance/exit; however two entrances/exits are always advisable. A medium size parking structure including between 600 – 1200 stalls would likely only require two exits/entrances and one internal ramp. Above 1200 stalls a third entrance/exit and a second internal ramp improve the level of service significantly. Structures with more than 1500 spaces would require a more detailed study to determine ramping and entry/exit configurations.

## Site Usage Issues

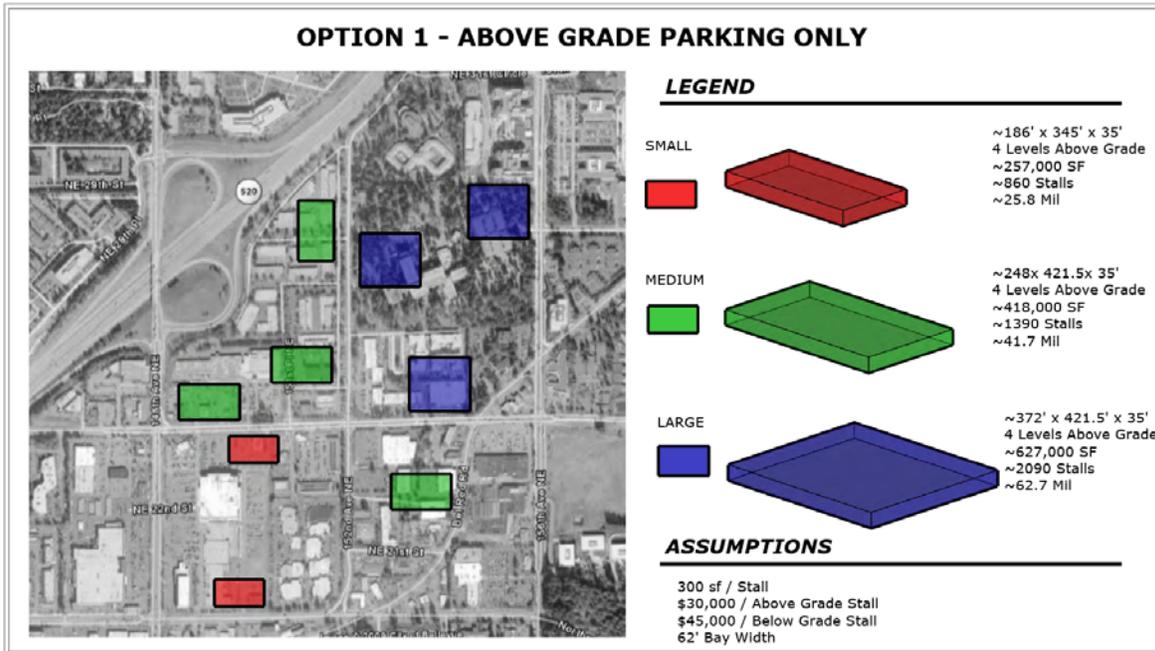
Often the most cost effective height for a suburban parking structure is typically 3 – 6 stories. Approximate dimensions can be used to generate an approximate footprint, which can then be used to develop a planning level number of stalls. Using a value of ~300 square feet per stall, this works out to a few typical parking structure sizes, including:

- ~186' x ~345' x 4 stories = ~257,000 SF (~ 860 stalls)
- ~186' x ~345' x 6 stories = ~385,000 SF (~1280 stalls)
- ~248' x ~421.5' x 6 stories = ~627,000 SF (~2090 stalls)

Reducing the number of stories for any given parking structure will increase the footprint if the same number of stalls needs to be provided. This can significantly reduce the amount of property available for other development. The use of below grade parking can reduce the overall height of the structures; however, below grade parking typically has a 50% premium to that of above grade parking.

### **Conclusion and Future Steps**

From a planning level perspective, above grade parking structures are budgeted at \$30,000 per stall (2009 dollars). Similarly, from a planning level, below grade parking structures are budgeted at a 50% premium or \$45,000 per stall. Future steps include choosing a specific project site for a parking structure and developing a 15% design report in order to more accurately capture any site-specific costs. Additionally, a traffic analysis would need to be done to better determine the location and layout of each parking structure and the impacts that each will have on traffic in the local vicinity. The costs considered here are associated with stand-alone parking structures only. Any additional criteria should be considered separately. In order to better understand the actual costs associated with each parking structure proposed, it is important to choose a site and move forward into developing a design that fits the site.

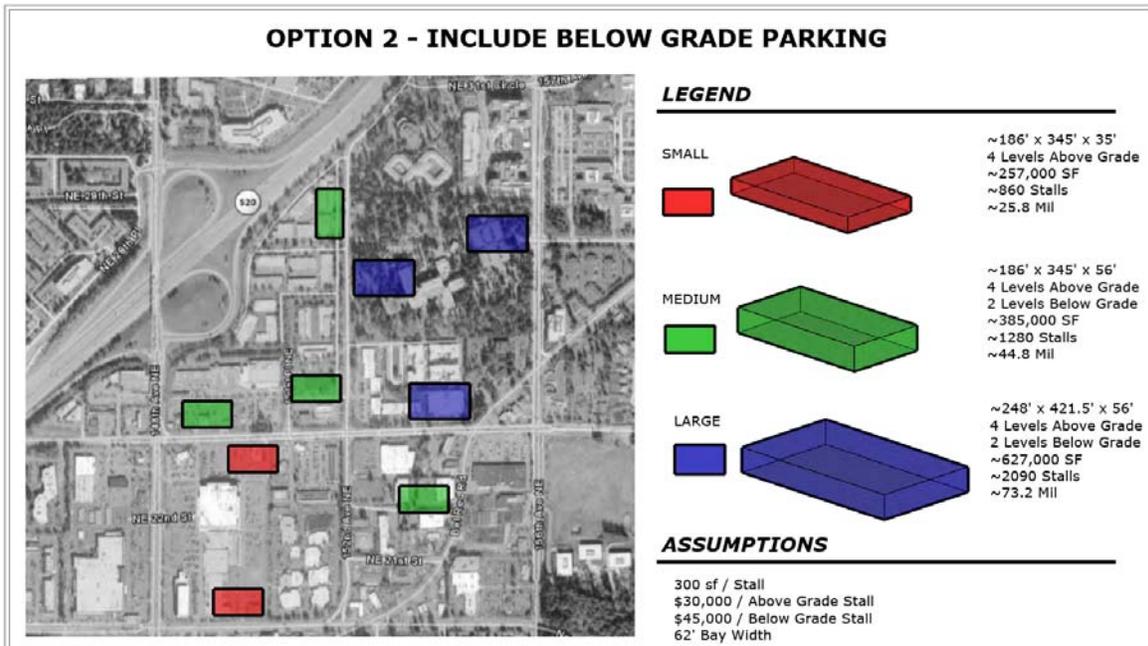


### OVERLAKE PARKING MANAGEMENT PLAN

PARKING FACILITIES OPTION 1 - Above Grade Parking Only

1

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### OVERLAKE PARKING MANAGEMENT PLAN

PARKING FACILITIES OPTION 2 - Include Below Grade Parking

2

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