



MEMORANDUM

Date: February 23, 2017
To: Lee Richardson, Seattle Art Museum
From: Will Lisska and Sarah Keenan, Fehr & Peers
Subject: **Asian Art Museum Renovation and Expansion – Transportation and Parking Assessment**

SE16-0479

INTRODUCTION

As part of the Washington State Environmental Policy Act (SEPA) checklist process, development proposals within the City of Seattle that do not qualify for a Categorical Exclusion require the preparation of a traffic and parking study to disclose transportation impacts that could be caused by the proposed project and potential mitigation measures. Additionally, the traffic and parking study needs to establish consistency with City of Seattle transportation concurrency requirements, pursuant to the Washington State Growth Management Act (GMA). The following memorandum provides a transportation and parking assessment for the Seattle Asian Art Museum Expansion and Renovation Project that addresses SEPA and concurrency requirements.

PROJECT DESCRIPTION

The Asian Art Museum Expansion and Renovation Project (hereafter referred to as “Project”) includes a substantial alteration to the existing building and an expansion comprised of two new additions. The alteration scope includes upgrades to building utility and structural systems. The expansion scope includes both north and south additions to the building, totaling 13,885 square feet (s.f.):

- The **north addition** infills the existing loading dock area under the 1954 gallery, providing a larger receiving area and additional storage. It also includes a new freight elevator that serves all three levels of the building.



- The **east addition** includes new administrative offices, a new meeting space, and a new gallery. It also includes a glass-enclosed exit/circulation stair that wraps around the exterior of the addition and connects three levels.

A summary of the floor space by use for the two additions is provided in **Table 1**.

Table 1. Planned Floor Space in North and East Additions, by Use

Administrative Offices	2,568 s.f.
Event/Meeting Space	4,088 s.f.
Exhibit	4,248s.f.
Mechanical	1,490s.f.
Storage	1,491s.f.
Total	13,885 s.f.

Notes: s.f. = square feet

The new administrative offices will be used to replace existing office space in the building. The existing offices will be converted to new mechanical and museum support space. The Museum will maintain current staffing levels and relocate staff from the old offices to the new offices. The new event/meeting space is not expected to result in more frequent or larger events, but the new conference/meeting rooms will allow the Museum to offer a greater variety of venues to potential hosts. Certain events and meetings will be moved from existing venues to the new event spaces, and the existing event space will be converted into education facilities.

EXISTING CONDITIONS

Access to the Existing Street System

Vehicle Access – The Asian Art Museum is located in Volunteer Park, a 48-acre historic park in the Capitol Hill neighborhood. Primary access to the Museum is along Volunteer Park Road, which is an unstriped two-lane roadway running north-south through the park. In a vehicle, Volunteer Park Road is accessed from E Prospect Street or from 15th Avenue E via E Highland Drive, as seen in **Figure 1**. 15th Avenue E is a two-lane roadway classified as a minor arterial. E Prospect Street is a two-lane unstriped local roadway.

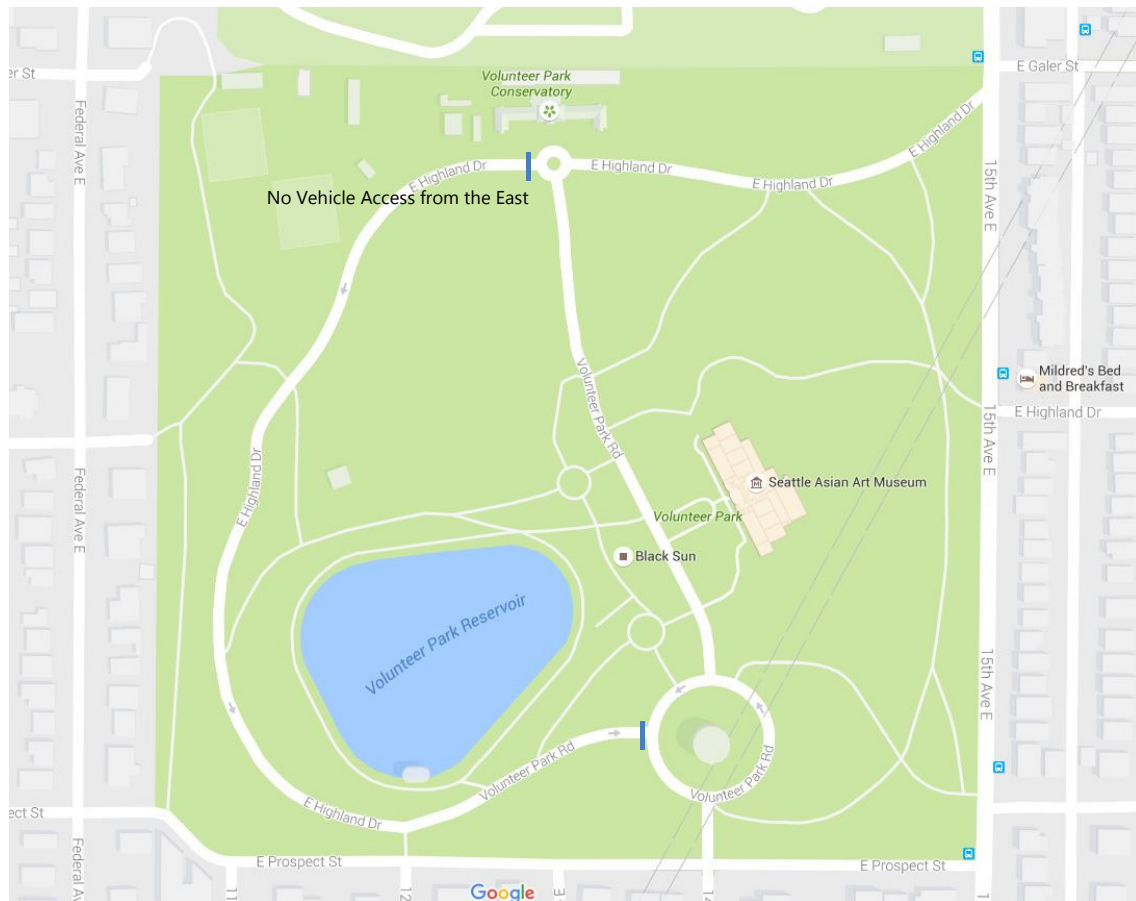


Figure 1. Asian Art Museum at Volunteer Park and Surrounding Street Network

All available parking within Volunteer Park is free public parking that is used concurrently by visitors to the Park grounds, Conservatory, and Museum. Approximately 42 striped parking spaces, including two ADA accessible stalls, are available in front of the Museum on Volunteer Park Road. There is additional free public parking on both sides of Volunteer Park Road north of the Museum (approximately 45 stalls); in front of the Conservatory (8 stalls); to the south of the Museum along Volunteer Park Road and within the water tower rotary (37 stalls); and on the north side of E Highland Drive (approximately 24 stalls). Nearby the Park, there is public on-street parking available on both sides of 15th Avenue E (approximately 104 stalls) and on the south side of E Prospect Street (approximately 46 stalls).

Pedestrian Access – There are many pedestrian paths throughout the park that connect to the Museum. The pedestrian paths are accessible via multiple points along E Prospect Street, Federal



Avenue E, and 15th Avenue E. Along 15th Avenue E, there is a sidewalk on the east side of the street and marked crosswalks at all pedestrian entrances to the park. Some pedestrians must walk along or cross Volunteer Park Road in order to reach the Museum, while pedestrians coming from the east can cut across the park lawn. Volunteer Park Road has sidewalks on both sides of the street and unmarked crosswalks at intersections.

The Project will upgrade and construct new paths to improve accessibility to the main museum entrance.

Bicycle Access – There is bicycle parking available in front of the Museum. Bicyclists access the Museum similar to vehicles from E Prospect Drive and 15th Avenue E. The 15th Avenue E corridor has shared-use arrows, or “sharrows”, indicating bicycles and vehicles should share the road. Additionally, all streets within Volunteer Park and many of the nearby residential streets are designed for low traffic speeds and volumes, allowing bicyclists to comfortably share the roadway with vehicles.

Currently, a single bike rack with space for nine bicycle is located across from the museum, next to the Black Sun sculpture. The Project will provide an additional bike rack with space for eight more parked bicycles.

Transit Access – Two King County Metro bus routes serve Volunteer Park. In immediate proximity to the Museum, Route 10 serves 15th Avenue E with 10 minute headways during the AM and PM peak periods. Route 49 has a stop located approximately one third of a mile from the Museum entrance along 10th Avenue E and provides service with 12 minute headways during peak periods. Additionally, the Capitol Hill Light Rail Station (Sound Transit) is located about one mile from the Museum, and Route 10 and Route 49 both have adjacent stops that allow for easy transfers.

Existing Museum Attendance and Employment

The Museum is open from 10 AM to 5 PM on Wednesdays through Sundays, with extended hours until 9 PM on Thursdays. Over the past five years, peak Museum attendance has ranged between 65,000 and 75,000 visitors per year. In an effort to disclose conditions and impacts related to the highest amount of potential growth due to the Project, the lower bound of this range (65,000



visitors per year) was selected for the analysis of existing conditions.¹ Assuming 255 days of public operation per year, this is estimated to be approximately 255 visitors per day.

The Museum hosts approximately two to five events per month, primarily in July, August, and December. The entire building has a maximum event capacity of 250 attendees, and attendance is often less than this capacity limit. Common event types include receptions, conferences, meetings, workshops, recitals, performances, and private functions. Attendees usually drive themselves, carpool, take transit, or use taxi/rideshare to access the Museum. For conference events, a shuttle from an off-site location is typically provided. The events typically start at 6:30 PM, with attendees arriving after the PM peak period of travel (4 – 6 PM). Ordinarily, 8 to 12 people would arrive to set up for events during the peak hour between 5 PM and 6 PM.

Employment data was provided by the Museum. The Museum has approximately 15 full time employees and 11 part time employees who work on-site fewer than 3 days per week. From this data, it was assumed that 21 employees work on-site during a typical weekday. Additionally, the Museum estimates 950 volunteer shifts per year, an average of 4 on-site volunteers per day. Thus, the total amount of daily Museum staffing is estimated as 25 people per day, including employees and volunteers.

PROJECT TRIP GENERATION AND FUTURE CONDITIONS

The Museum is a unique land use that has varying levels of traffic demand depending on the relative popularity of permanent and rotating exhibits as well as special events. This section describes the method by which vehicle trip generation growth was estimated for the Project.

¹ Initially, the Transportation and Parking Assessment assumed an existing year annual attendance of 85,000 visitors, which was observed during Fiscal Year 2015. However, it has since been clarified that annual attendance has more typically averaged between 65,000 to 75,000 visitors in recent years. Over the past 5 years, the annual attendance average has been 65,000, though the average attendance has risen to 75,000 in the past 3 years. During this 3 year period, the Seattle Art Museum leadership welcomed new management staff and began refreshing its approach to public programming. In an effort to disclose conditions and impacts related to the highest amount of potential growth due to the Project, the Transportation and Parking Assessment was updated to use the lower bound of the average attendance range (65,000 visitors per year) as the basis for the existing conditions analysis.



The Institute of Transportation Engineers (ITE) *Trip Generation Manual*, 9th edition, provides Land Use Code (LUC) 580 for museums. However, the data from ITE is based on one observation and is not statically reliable.

Instead, the trip generation was estimated using historical visitor counts and expected attendance growth following the Project. As mentioned previously, the Museum currently hosts around 65,000 public hour visitors per year – approximately 255 visitors on an average day assuming 255 days of public operation per year. The Museum hosts several “free days” each month², many of which result in the highest daily attendance totals for the year. For a recent year with annual attendance of around 65,000, the “free days” had an average daily attendance of 593 visitors.

The Museum expects annual public hour attendance to increase from 65,000 to 100,000 after the Project is complete. The increase in general attendance is expected because the Project will provide suitable facilities for a wider variety of art exhibits. The annual attendance increase would equate to 393 total visitors on a typical day, or 138 additional visitors per day. The number of visitors for a “free day” would be expected to increase to 912 visitors per day, or 319 additional visitors.

For trip generation estimation purposes, the growth in visitors per day must be converted to daily and PM peak hour vehicle trips. Daily trip The PM peak hour is the highest one hour between 4PM and 6PM during which traffic demand is the highest during a typical day. Since the Museum closes at 5PM on most days, the PM peak hour trip generation would likely consist of more vehicles exiting the site than entering. It is assumed that 10 percent of daily attendance would arrive during the PM peak hour and 20 percent of daily attendance would depart during the PM peak hour. This equates to an increase of 41 total visitors during the PM peak hour (14 entering; 27 exiting) on a typical day and an increase of 96 visitors during the PM peak hour (32 entering; 64 exiting) on a “free day.”

To convert visitors to vehicle trips, an average vehicle occupancy (AVO) of 1.4 is used. This AVO value was estimated based on a review of 2009 *National Household Travel Survey* data from the US Department of Transportation. This data indicated that the AVO for social/recreational trips is 2.2 persons/vehicle, and that the AVO for all purposes is 1.67. In reality, some visitors arrive by other modes transportation (e.g. walking, biking, transit, and taxi/rideshare), so the estimation of vehicle trip generation using an AVO of 1.4 can be considered a conservative approach.

² Monthly Free Days: First Thursdays (free to all), First Fridays (free to seniors 62+), First Saturdays (free to families), and Second Thursdays (free from 5 – 9 PM). Account for approximately 48 days of annual operation.



Below is summary of additional assumptions made for trip generation:

- All of the full time employees and half of the part time employees work on a typical weekday.
- All employees and volunteers drive alone and leave during the PM peak hour.
- There will be no increase in staffing levels on a typical day due to the Project.
- Special events will be primarily hosted after the peak hour.
- All visitors arrive by vehicle with an average vehicle occupancy of 1.4.

Based on the assumptions described in this section, the Project is expected to result in an increase of 30 PM peak hour vehicle trips (10 entering and 20 exiting) on a typical day and 68 added PM peak hour vehicle trips (23 entering and 45 exiting) on a “free day.” Results are summarized in **Table 2**.

Table 2. Project Vehicle Trip Generation

Project Scenario	Building Size	Trip Type	Typical Day			Free Admittance Day		
			Visitors	Vehicle Trip Generation		Visitors	Vehicle Trip Generation	
				Daily	PM Peak Hour		Daily	PM Peak Hour
Existing Condition	50,338 sf	Staff*	25	50	25	25	50	25
		Patrons	255	364	54	593	848	127
		Total	280	414	80	618	898	152
Existing Plus Project Conditions	64,223 sf	Staff*	25	50	25	25	50	25
		Patrons	393	562	84	912	1,302	195
		Total	418	612	109	937	1,352	220
Change with Project (Net New Vehicle Trips)	13,885 sf	Staff*	0	0	0	0	0	0
		Patrons	138	198	30	319	454	68
		Total	138	198	30	319	454	68

* Includes Museum employees (average of 21 daily) and volunteers (average of 4 daily)

The increase in PM peak hour vehicle trips due to the Project (30 trips on a typical day and 68 trips on a high-demand “free day”) is not expected to have a significant impact on traffic operations within the surrounding roadway network.



PARKING SUPPLY AND DEMAND

As mentioned in the Existing Conditions section, all available parking within Volunteer Park is free public parking that is used concurrently by visitors to the Park grounds, Conservatory, and Museum. Approximately 42 striped parking spaces, including two ADA accessible stalls, are available in front of the Museum on Volunteer Park Road. Additional free public parking is provided on access roadways throughout the Park (approximately 114 total stalls). Nearby streets on the boundary of the Park, including E Prospect Street and 15th Avenue E, also allow on-street parking (approximately 150 total stalls). All of these parking supplies are located within a quarter-mile walk of the museum entrance along existing sidewalks and paths. Public parking locations and supply are illustrated in **Figure 2**.

As part of the north addition, a new paved accessible entry will be constructed on the north side of the front lawn, from the parking area to the front of the Museum. This entry walk will mirror the existing paved walkway to the south of the front lawn but be constructed at ADA-compatible grades. The two existing ADA parking stalls will be moved from the south to the north end of the parking area to provide more direct access to the new ADA-compatible paved walkway. Any general parking stalls moved as part of this relocation will be fully replaced in the south end of the parking area.

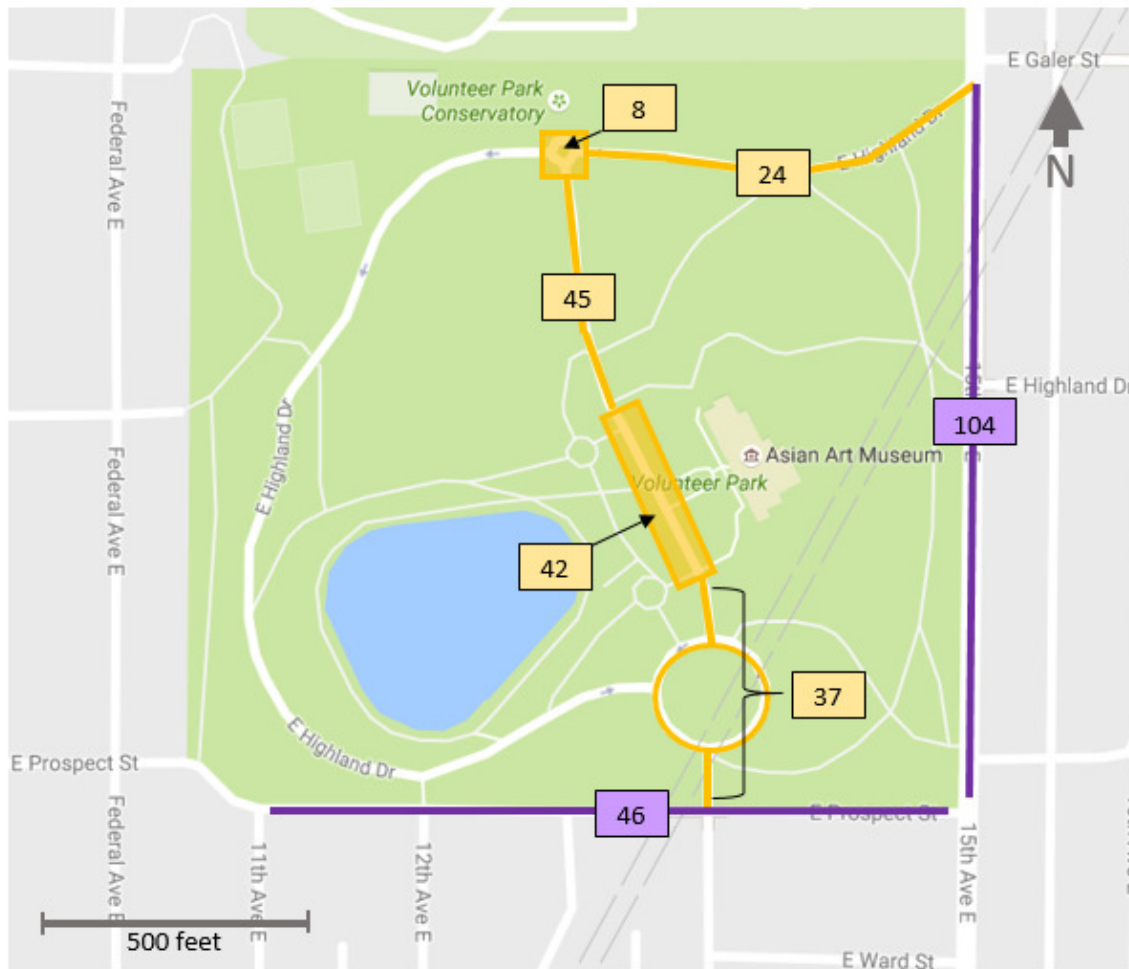
Seattle Municipal Code (SMC) 23.54.020 enables the Director to waive minimum off-street parking requirements for a use permitted in a Landmark structure. Due to the Landmark statuses of the Museum building and the Volunteer Park Grounds, the Project proposes to maintain the current vehicle parking supply in Volunteer Park (i.e. no parking stalls added).

Additionally, a code amendment is under consideration, which states:

Parking and loading for the proposed expansion is required as provided in SMC 23.54.015 and 23.54.035. As a Type I decision, the Director may reduce parking and loading requirements to an amount not less than the amount needed to provide adequate parking and loading facilities, as demonstrated to the satisfaction of the Director by a parking and loading study prepared by a licensed professional engineer and submitted to the Director by the applicant.



The following sections provide an assessment of existing parking occupancy levels during several scenarios and the adequacy of existing parking supplies within the Park to meet the needs of the proposed Project.



Volunteer Park Roadways

- On-street parking location
- Parking lot / right angle parking
- XX Number of parking stalls

Boundary Roadways

- Neighborhood on-street parking
- XX Number of parking stalls

Total Parking = 150

Total Parking = 156

Figure 2. Asian Art Museum at Volunteer Park – Public Parking Locations and Supply



Existing Parking Occupancy

Observations of parking occupancy were conducted for public parking locations within a quarter-mile walk of the Museum entrance, illustrated in **Figure 2**. Observations were conducted on two days in November 2016 that represented weekly peak attendance and evening event scenarios:

- **Weekly Peak Attendance Scenario** – Saturday, November 12 from noon to 5 PM – represents peak demand conditions for Museum, Conservatory, and Park grounds during a typical week. A new museum exhibit had just opened the previous day, so museum attendance was also expected to be higher than average.
- **Evening Event Scenario** – Thursday, November 10 from 5:30 PM to 7:30 PM –extended Museum hours to 9 PM were in effect (Museum typically closes at 5 PM). This day included a members-only preview for a new exhibition. This was also a Second Thursday “free day” with free admittance for the extended hours from 5 PM to 9 PM.

The number of occupied parking stalls in each location was recorded every 30 minutes for both observation periods. Outside of the striped parking lots (in front of the Museum and the Conservatory) the baseline on-street parking supply was determined using the maximum observed vehicle occupancy combined with an estimate of the number of remaining spaces (using an average of 20 feet per space). Data and findings from the observations are summarized in **Tables 3 and 4** below.



Table 3. Observed Parking Occupancy – Weekly Peak Attendance Scenario

Time	Observed Occupancy				Occupancy Rate ^c			
	Asian Art Museum Lot	Other Public Parking in Volunteer Park	E Prospect Street ^a	15th Avenue E ^b	Asian Art Museum Lot	Other Public Parking in Volunteer Park	E Prospect Street ^a	15th Avenue E ^b
12 PM	27	54	36	62	64%	47%	78%	60%
1 PM	25	50	34	60	60%	44%	74%	58%
2 PM	22	36	31	59	52%	32%	67%	57%
3 PM	29	42	29	60	69%	37%	63%	58%
4 PM	24	38	29	59	57%	33%	63%	57%
5 PM	16	17	24	59	38%	15%	52%	57%
Total Supply	42	114	46	104				

^a from 11th Avenue E to 15th Avenue E
^b from E Prospect Street to E Galer Street
^c observed occupancy divided by total supply
 Hour of peak occupancy demand indicated in **bold** font
 Observation Date: Saturday, November 12, 2016.

Table 4. Parking Occupancy – Evening Event Scenario

Time	Observed Occupancy				Occupancy Rate ^c			
	Asian Art Museum Lot	Other Public Parking in Volunteer Park	E Prospect Street ^a	15th Avenue E ^b	Asian Art Museum Lot	Other Public Parking in Volunteer Park	E Prospect Street ^a	15th Avenue E ^b
5 PM	8	8	22	52	19%	7%	48%	50%
6 PM	12	7	22	56	29%	6%	48%	54%
7 PM	11	6	23	59	26%	5%	50%	57%
Total Supply	42	114	46	104				

^a from 11th Avenue E to 15th Avenue E
^b from E Prospect Street to E Galer Street
^c observed occupancy divided by total supply
 Hour of peak occupancy demand indicated in **bold** font
 Observation Date: Thursday, November 10, 2016.
 Museum Operations Notes: Observation occurred during Second Thursday “free day” with free admittance for the extended hours from 5 PM to 9 PM as well as a Members-only preview for a new exhibition.

The findings indicate that the peak hour for parking demand during the weekly peak attendance scenario occurred from 12 PM to 1 PM, with 27 of 42 stalls in front of the Museum occupied and 54 of 114 parking spaces throughout the park occupied. Additionally, 98 of 150 on-street spaces were occupied on E Prospect Street and 15th Avenue E.



Parking demand was not substantial during the Evening Event scenario, with only 17 of 154 parking spaces occupied throughout the Park and 82 of 150 spaces on E Prospect Street and 15th Avenue E occupied on during the peak observed hour (7 PM to 8 PM).

Estimated Parking Occupancy during Free Admittance Days

Since parking occupancy data collection was limited to the two scenarios described in the previous section, parking occupancy levels for the Free Admittance Day conditions were estimated using available data. Estimates were prepared for both weekday and weekend Free Admittance Day conditions to account for the differences in parking occupancy and arrival/departure patterns.

Weekday Free Admittance Estimate

Weekday Free Admittance Days at the Museum include First Thursdays (free to all), First Fridays (free to seniors 62+), and Second Thursdays (free from 5 – 9 PM). Because First Thursday and Second Thursday attract more visitors during the PM peak period due to the extended hours of operation, Thursday can be considered the most relevant weekday for impact assessment. The steps used to estimate parking occupancies for this scenario are listed below:

- **Determine daily total of free day visitors** – As previously discussed, the Museum has approximately 255 visitors on an average day. However, the Museum also hosts several “free days” each month, many of which result in the highest daily attendance totals for the year. The “free days” had an average daily attendance of 593 visitors.
- **Convert additional visitors to vehicle trips** – As indicated in **Table 2** and described in the Project Trip Generation section, the number vehicle trips to and from the museum on a typical day is estimated as 414, including both visitors and staff. By contrast, the comparable number of vehicle trips on a free admittance day is estimated as 898, an increase of 484 vehicle trips (242 arrivals, 242 departures). This additional trip generation estimate is conservative in that it assumes all visitors arrive by personal vehicle, rather than walking, biking, taking transit, or using other modes that do not require on-street parking.
- **Arrival and departure rates** – Museum visitor arrival and departure rates by hour were assumed, as shown in **Table 5**. Peak hourly demand was assumed to occur between 5 PM and 7 PM, with 20 percent of daily attendance arriving each hour during this span and 15 percent departing. Arrivals and departures before 5 PM would be spread out over 7 hours, with each hour accounting for approximately 5 – 6 percent of the total daily attendance.



Table 5. Assumed Arrival and Departure Rates on Free Admittance Weekday (Thursday)

Time Period	Arrival Rate	Departure Rate
Before 5 PM	40%	30%
5 PM	20%	15%
6 PM	20%	15%
7 PM	15%	20%
8 PM	5%	20%
9 PM (museum closed)	0%	0%
Total	100%	100%

- **Estimate additional arrivals and departures by hour** – Using the arrival and departure rate assumptions in **Table 5**, we calculated the total extra vehicle parking demand that would occur during each hour of the weekday Free Admittance scenario. This was calculated as the total parking occupied by event attendees in the previous hour, plus the arrivals, and minus the departures. Results of this calculation are summarized in **Table 6**.

Table 6. Arrival and Departure Total – Weekday Free Admittance Scenario

Time Period	Arrivals	Departures	Total Extra Parking Demand*
Before 5 PM	97	73	24
5 PM	48	36	36
6 PM	48	37	47
7 PM	37	48	36
8 PM	12	48	0
9 PM (museum closed)	0	0	0
Total Added Trip Generation	242	242	-

*calculated as the total parking occupied by event attendees in the previous hour, plus the arrivals, and minus the departures

- **Apply additional parking demand to observed occupancy data** – The hourly additional parking demand totals for the weekday Free Admittance Day scenario (**Table 6**) were added to the observed evening occupancies (**Table 4**). It was assumed that additional demand would allocate first to the parking lot in front of the Museum and then remaining demand would allocate to other parking locations within the Park. The calculated occupancies for the weekday Free Admittance scenario is summarized in **Table 7**.



Table 7. Estimated Occupancy – Weekday Free Admittance Scenario

Time	Estimated Occupancy				Occupancy Rate ^c			
	Asian Art Museum Lot	Other Public Parking in Volunteer Park	E Prospect Street ^a	15th Avenue E ^b	Asian Art Museum Lot	Other Public Parking in Volunteer Park	E Prospect Street ^a	15th Avenue E ^b
5 PM	42	10	22	52	100%	9%	48%	50%
6 PM	42	24	22	56	100%	21%	48%	54%
7 PM	42	11	23	59	100%	10%	50%	57%
Total Supply	42	114	46	104				

^a from 11th Avenue E to 15th Avenue E
^b from E Prospect Street to E Galer Street
^c estimated occupancy divided by total supply
 Hour of peak occupancy demand indicated in **bold** font

The results in **Table 7** indicate that, under Weekday Free Admittance conditions, the lot in front of the Museum would be full from 5 PM to 8 PM, but parking would still be available in other locations throughout the Park. During the peak hour of demand (6 PM to 7 PM), 66 of 156 public parking spaces throughout the park would be occupied. Because approximately 90 spaces would remain available within the park, it is not expected that Museum parking demand would need to be accommodated by supplies in the surrounding neighborhoods (e.g. E Prospect Street and 15th Avenue E).

Weekend Free Admittance Estimate

Weekend Free Admittance Days at the Museum include First Saturdays (free to families). The steps used to estimate parking occupancies for this scenario are listed below:

- **Determine daily total of free day visitors** –The “free days” had an average daily attendance of 593 visitors.
- **Convert additional visitors to vehicle trips** – As indicated in **Table 2** and described in the Project Trip Generation section, the number vehicle trips to and from the museum on a typical day is estimated as 414, including both visitors and staff. By contrast, the comparable number of vehicle trips on a free admittance day is estimated as 898, an increase of 484 vehicle trips (242 arrivals, 242 departures). This additional trip generation estimate is conservative in that it assumes all visitors arrive by personal vehicle, rather than walking, biking, taking transit, or using other modes that do not require on-street parking.



- **Arrival and departure rates** – Museum visitor arrival and departure rates by hour for the weekend Free Admittance day scenario were assumed, as shown in **Table 8**. Peak demand was assumed to occur between 12 PM and 2 PM, with 20 percent of daily attendance arriving each hour during this span and 15 percent departing.

Table 8. Assumed Arrival and Departure Rates on Free Admittance Weekend

Time Period	Arrival Rate	Departure Rate
Before noon	15%	10%
12 PM	20%	15%
1 PM	20%	15%
2 PM	20%	20%
3 PM	15%	20%
4 PM	10%	20%
5 PM (museum closed)	0%	0%
Total	100%	100%

- **Estimate additional arrivals and departures by hour** – Using the arrival and departure rate assumptions in **Table 8**, we calculated the total extra vehicle parking demand that would occur during each hour of the weekend Free Admittance scenario. This was calculated as the total parking occupied by event attendees in the previous hour, plus the arrivals, and minus the departures. Results of this calculation are summarized in **Table 9**.

Table 9. Arrival and Departure Total – Weekend Free Admittance Scenario

Time Period	Arrivals	Departures	Total Extra Parking Demand*
Before noon	37	24	13
12 PM	48	37	22
1 PM	48	37	33
2 PM	48	48	33
3 PM	37	48	22
4 PM	24	48	0
5 PM (museum closed)	0	0	0
Total Added Trip Generation	242	242	-

*calculated as the total parking occupied by event attendees in the previous hour, plus the arrivals, and minus the departures

- **Apply additional parking demand to observed occupancy data** – The hourly additional parking demand totals for Free Admittance Day scenario (**Table 9**) were added to the observed weekly peak occupancies (**Table 3**). It was assumed that additional demand



would allocate first to the parking lot in front of the Museum and then remaining demand would allocate to other parking locations within the Park. The calculated occupancies for the weekend Free Admittance scenario is summarized in **Table 10**.

Table 10. Estimated Occupancy – Weekend Free Admittance Scenario

Time	Estimated Occupancy				Occupancy Rate ^c			
	Asian Art Museum Lot	Other Public Parking in Volunteer Park	E Prospect Street ^a	15th Avenue E ^b	Asian Art Museum Lot	Other Public Parking in Volunteer Park	E Prospect Street ^a	15th Avenue E ^b
12 PM	42	63	36	62	100%	55%	78%	60%
1 PM	42	68	34	60	100%	60%	74%	58%
2 PM	42	51	31	59	100%	45%	67%	57%
3 PM	42	53	29	60	100%	46%	63%	58%
4 PM	24	38	29	59	57%	33%	63%	57%
5 PM	16	17	24	59	38%	15%	52%	57%
Total Supply	42	114	46	104				

^a from 11th Avenue E to 15th Avenue E
^b from E Prospect Street to E Galer Street
^c estimated occupancy divided by total supply
 Hour of peak occupancy demand indicated in **bold font**

The results in **Table 10** indicate that, under weekend Free Admittance conditions, the lot in front of the Museum would be full from 12 PM to 4 PM, but parking would still be available in other locations throughout the Park. During the peak hour of demand (1 PM to 2 PM), 110 of 156 public parking spaces throughout the park would be occupied. Because more than 40 spaces would remain available within the park, it is not expected that Museum parking demand would need to be accommodated by supplies in the surrounding neighborhoods (e.g. E Prospect Street and 15th Avenue E).

Estimated Parking Occupancy with Project

As described in the Project Trip Generation section, the Museum expects that Museum attendance could increase from 65,000 to up to 100,000 visitors per year once the Project is completed. To determine the adequacy of existing parking supplies to meet future parking demand with the completed Project, the four parking scenarios (Weekly Peak Attendance, Evening Event, weekday Free Admittance, and weekend Free Admittance) were assessed.



Evening Event Scenario with Project

As previously discussed, Museum events typically start at 6:30 PM, with attendees arriving after the PM peak period of travel (4 – 6 PM). Ordinarily, 8 to 12 people would arrive to set up for events during the peak hour between 5 PM and 6 PM. The typical number of set-up staff is not expected to change with the Project. Additionally, the maximum building capacity for events will be 250 people (same as current capacity), and, in general, the number of attendees for evening events is not expected to significantly increase. However, it should be noted that during Evening Event scenario observations, nearly 140 parking spaces were available within Volunteer Park after 6 PM, suggesting that the parking supply within the Park could accommodate the parking demand for larger events at the Museum without spillover to adjacent neighborhoods.

Weekday Free Admittance Scenario with Project

The weekday Free Admittance scenario represents the heaviest potential demand for parking associated with the public hours operation of the Museum during a typical weekday. For this reason, potential parking impacts for the with Project conditions were assessed under weekday Free Admittance occupancy conditions, with the understanding that typical weekday with Project parking demands would be lower and result in fewer impacts, if applicable. The steps used to estimate weekday Free Admittance with Project parking occupancies are listed below:

- **Determine increase in vehicle trips with Project** – As indicated in **Table 3** and described in the Project Trip Generation section, the number vehicle trips to and from the museum on a Free Admittance day is estimated as 898, including both visitors and staff. By contrast, the comparable number of vehicle trips with the Project completed is estimated as 1,352, an increase of 454 vehicle trips (227 arrivals, 227 departures). This additional trip generation estimate is conservative in that it assumes all visitors arrive by personal vehicle, rather than walking, biking, taking transit, or using other modes that do not require on-street parking.
- **Arrival and departure rates** – Museum visitor arrival and departure rates by hour were assumed to be the same as those for the weekday Free Admittance *without* Project calculation process, shown in **Table 5**.
- **Estimate additional arrivals and departures by hour** – Using the arrival and departure rate assumptions in **Table 5**, we calculated the total extra vehicle parking demand that would occur during each hour of the weekday Free Admittance with Project scenario. This was calculated as the total parking occupied by event attendees in the previous hour, plus



the arrivals, and minus the departures. Results of this calculation are summarized in **Table 11**.

- **Apply additional parking demand to observed occupancy data** – The hourly additional parking demand totals for weekday Free Admittance with Project scenario (**Table 11**) were added to the estimated weekday Free Admittance *without* Project occupancies (**Table 7**). It was assumed that additional demand would allocate to available parking locations within the Park. The calculated occupancies for the weekday Admittance Day with Project scenario is summarized in **Table 12**.

Table 11. Additional Arrival and Departure Total – Weekday Free Admittance with Project Scenario

Time Period	Arrivals	Departures	Total Extra Parking Demand*
Before 5 PM	91	69	22
5 PM	45	34	33
6 PM	45	34	44
7 PM	34	45	33
8 PM	12	45	0
9 PM (museum closed)	0	0	0
Total Added Trip Generation	227	227	-

*calculated as the total parking occupied by event attendees in the previous hour, plus the arrivals, and minus the departures

Table 12. Estimated Occupancy – Weekday Free Admittance with Project Scenario

Time	Estimated Occupancy				Occupancy Rate ^c			
	Asian Art Museum Lot	Other Public Parking in Volunteer Park	E Prospect Street ^a	15th Avenue E ^b	Asian Art Museum Lot	Other Public Parking in Volunteer Park	E Prospect Street ^a	15th Avenue E ^b
5 PM	42	43	22	52	100%	38%	48%	50%
6 PM	42	68	22	56	100%	60%	48%	54%
7 PM	42	44	23	59	100%	39%	50%	57%
Total Supply	42	114	46	104				

^a from 11th Avenue E to 15th Avenue E
^b from E Prospect Street to E Galer Street
^c estimated occupancy divided by total supply
 Hour of peak occupancy demand indicated in **bold** font



The results in **Tables 11** and **12** indicate that under the weekday Free Admittance with Project scenario, the demand for public parking would increase by 44 parked vehicles during the peak hour of demand (6 PM to 7 PM) compared to without Project conditions. These 44 extra parked vehicles could be accommodated by available parking supplies within the Park. In total, 110 of 156 public parking spaces throughout the park would be occupied. Because more than 40 spaces would remain available within the park, Museum parking demand would not need to be accommodated by supplies in the surrounding neighborhoods (e.g. E Prospect Street and 15th Avenue E).

Because parking demand would be accommodated by available Park parking supplies under the weekday Free Admittance Day with Project scenario, it is anticipated that the increase in typical weekday parking demands due to the Project could also be accommodated.

Weekend Free Admittance Scenario with Project

The weekend Free Admittance scenario represents the heaviest potential demand for parking associated with the weekend public hours operation of the Museum. The steps used to estimate weekend Free Admittance Day with Project parking occupancies are listed below:

- **Determine increase in vehicle trips with Project** – As indicated in **Table 3** and described in the Project Trip Generation section, the number vehicle trips to and from the museum on a Free Admittance day is estimated as 898, including both visitors and staff. By contrast, the comparable number of vehicle trips with the Project completed is estimated as 1,352, an increase of 454 vehicle trips (227 arrivals, 227 departures). This additional trip generation estimate is conservative in that it assumes all visitors arrive by personal vehicle, rather than walking, biking, taking transit, or using other modes that do not require on-street parking.
- **Arrival and departure rates** – Museum visitor arrival and departure rates by hour were assumed to be the same as those for the weekend Free Admittance Day *without* Project calculation process, shown in **Table 8**.
- **Estimate additional arrivals and departures by hour** – Using the weekend arrival and departure rate assumptions in **Table 8**, we calculated the total extra vehicle parking demand that would occur during each hour of the weekend Free Admittance with Project scenario. This was calculated as the total parking occupied by event attendees in the previous hour, plus the arrivals, and minus the departures. Results of this calculation are summarized in **Table 13**.
- **Apply additional parking demand to observed occupancy data** – The hourly additional parking demand totals for the weekend Free Admittance with Project scenario (**Table 13**)



were added to the estimated Free Admittance Day *without* Project occupancies (**Table 10**). It was assumed that additional demand would allocate to available parking locations within the Park. The calculated occupancies for the Free Admittance Day with Project scenario is summarized in **Table 14**.

Table 13. Additional Arrival and Departure Total – Free Admittance Day with Project Scenario

Time Period	Arrivals	Departures	Total Extra Parking Demand*
Before noon	35	24	11
12 PM	45	34	22
1 PM	45	34	33
2 PM	45	45	33
3 PM	34	45	22
4 PM	23	45	0
5 PM (museum closed)	0	0	0
Total Added Trip Generation	227	227	-

*calculated as the total parking occupied by event attendees in the previous hour, plus the arrivals, and minus the departures

Table 14. Estimated Occupancy – Free Admittance Day with Project Scenario

Time	Estimated Occupancy				Occupancy Rate ^c			
	Asian Art Museum Lot	Other Public Parking in Volunteer Park	E Prospect Street ^a	15th Avenue E ^b	Asian Art Museum Lot	Other Public Parking in Volunteer Park	E Prospect Street ^a	15th Avenue E ^b
12 PM	42	85	36	62	100%	75%	78%	60%
1 PM	42	101	34	60	100%	89%	74%	58%
2 PM	42	84	31	59	100%	74%	67%	57%
3 PM	42	75	29	60	100%	66%	63%	58%
4 PM	24	38	29	59	57%	33%	63%	57%
5 PM	16	17	24	59	38%	15%	52%	57%
Total Supply	42	114	46	104				

^a from 11th Avenue E to 15th Avenue E
^b from E Prospect Street to E Galer Street
^c estimated occupancy divided by total supply
 Hour of peak occupancy demand indicated in **bold** font

The results in **Tables 13** and **14** indicate that under the weekend Free Admittance with Project scenario, the demand for public parking would increase by 33 parked vehicles during the peak hour



of demand (1 PM to 2 PM) compared to without Project conditions. These 33 extra parked vehicles could be accommodated by available parking supplies within the Park. In total, 143 of 156 public parking spaces throughout the park would be occupied. Because approximately 13 spaces would remain available within the park, Museum parking demand would not need to be accommodated by supplies in the surrounding neighborhoods (e.g. E Prospect Street and 15th Avenue E).

Because parking demand would be accommodated by available Park parking supplies under the weekend Free Admittance with Project scenario, it is anticipated that the increase in typical weekend parking demands due to the Project could also be accommodated.

Potential Parking Management Strategies

Occasionally, some Park events, such as the annual Shakespeare in the Park theater series, could overlap with Museum events, temporarily increasing the demand for parking in excess of current parking supplies within the Park. For these instances of overlapping heavy demand, Seattle Parks and Recreation could consider temporarily reopening the western loop of Volunteer Park Road for vehicle parking. If vehicles are able to park on one side of the street, this temporary opening could yield over 100 additional parking spaces.

LOADING BERTHS

This section summarizes loading berth operations under both existing Museum conditions and the proposed Project conditions, identifying and describing any potential impacts.

Existing Loading Berth Operations

The Museum currently maintains one loading berth for deliveries to the loading dock, located on the north side of the building. A summary of typical truck delivery activities and the frequency of loading berth use, as reported by Museum operations staff, is provided in **Attachment A**.

During a typical week, the loading berth accommodates one to two art deliveries by van, box truck, or semi-truck. During installation and de-installation of rotating exhibits, the loading berth accommodates up to six deliveries per day for three to five days per week. During this period, deliveries are scheduled and coordinated to ensure that each vehicle is provided exclusive use of the loading dock and that delivery vehicles are able to immediately park in the loading berth upon arrival, avoiding blockage of local traffic on Volunteer Park Road. Furthermore, the loading dock temporary storage and staging area within the Museum building cannot accommodate more than



one vehicle load of deliveries. This means that the Museum must schedule adequate time between deliveries to provide time for staff to move items to/from the temporary loading dock storage area.

Proposed Project Loading Berth Operations

As specified by SMC 23.54.035, the Museum building's current floor area (50,338 square feet) requires one loading berth. By the same code, the total floor area after completion of the proposed Project (64,223 square feet) would require two loading berths. One of the proposed Project site plans under consideration for the Project maintains a single loading berth in an effort to minimize the impervious surface area of the loading dock driveway and to maximize the retention of adjacent green space.³

Despite the increase in building square footage, the Project is not expected to significantly increase the amount of loading dock delivery activity during a typical week or during installation/de-installation of rotating exhibits. Even after expansion, deliveries would still need to be scheduled to allow for exclusive use of the loading berth by the delivery vehicle, because, similar to existing conditions, the temporary storage area adjacent to the loading dock would not be able to store the contents of more than one delivery vehicle at a time. Because Museum operations staff would continue to coordinate and schedule one-at-a-time deliveries, a second loading berth is not necessary or practical for Museum operations. For these reasons, the provision of a single loading berth can be considered adequate for the Project design.

³ In order to allow an exception to the loading berth requirement, a code amendment is under consideration, which states: "Parking and loading for the proposed expansion is required as provided in SMC 23.54.015 and 23.54.035. As a Type I decision, the Director may reduce parking and loading requirements to an amount not less than the amount needed to provide adequate parking and loading facilities, as demonstrated to the satisfaction of the Director by a parking and loading study prepared by a licensed professional engineer and submitted to the Director by the applicant."



IMPACTS AND MITIGATION MEASURES

As described in the previous sections, no significant traffic, parking, or loading impacts are expected as a result of this Project. However, event organizers and Museum operations staff could consider the following demand management strategies to facilitate multimodal access to the Museum:

- Take steps to monitor how people arrive at the Museum (e.g. surveys).
- Provide information about parking and access by public transit to potential visitors and event attendees.
- Consider adding secure bike parking at additional locations near the Museum or temporary bike parking infrastructure for certain events that might have an increased share of attendees arriving by bike.
- Consider opportunities for off-site parking agreements with properties that may have excess parking supply during event hours, such as nearby churches.
- Consider offering event shuttles to the Museum from convenient locations, such as the Capitol Hill Light Rail Station.
- Coordinate with Seattle Parks and Recreation to enable temporary openings of the western loop of Volunteer Park Road during days with multiple events occurring at the Museum and within the Park to provide more on-street parking spaces.

CONCURRENCY ANALYSIS

The City of Seattle measures transportation concurrency based on whether any of the adopted PM peak hour volume-to-capacity (v/c) thresholds are exceeded along City screenline with the addition of a new development. In accordance with Seattle's concurrency system, recent v/c calculations for screenlines in proximity to the Museum were collected from the 2015 Seattle Comprehensive Plan Draft EIS and summarized for reference in **Table 15**. The following screenlines were analyzed:

- 5.16 – Ship Canal – University and Montlake Bridges
- 8.0 – South of Lake Union – Valley Street to Denny Way
- 10.12 – South of S Jackson St – 12th Ave S to Lakeside Ave S
- 12.12 – East of CBD – South Jackson St to Howell St

Under existing conditions, all screenlines in proximity to the Museum are below the applicable PM peak hour v/c thresholds and, thus, satisfy the level of service (LOS) standards. The estimated vehicle trip growth from the Project could add up to 30 vehicle trips (20 outbound and 10 inbound) across



each of the four screenlines under typical PM peak hour conditions. This will not cause the screenline volume-to-capacity ratio to exceed the LOS standard at any of the four analysis locations, as shown in **Table 15**.

Table 15. Concurrency Analysis

Screenline	Level of Service Standard	Existing PM Peak Hour V/C		Existing + Project PM Peak Hour V/C*	
		Northbound / Eastbound	Southbound / Westbound	Northbound / Eastbound	Southbound / Westbound
5.16 – Ship Canal – University and Montlake Bridges	1.2	0.80	0.87	0.81	0.88
8.0 – South of Lake Union – Valley Street to Denny Way	1.2	0.78	0.78	0.78	0.78
10.12 – South of S Jackson St – 12th Ave S to Lakeside Ave S	1.0	0.48	0.58	0.48	0.59
12.12 – East of CBD – South Jackson St to Howell St	1.2	0.35	0.45	0.35	0.45

v/c = volume-to-capacity ratio

* 30 additional vehicle trips (20 outbound and 10 inbound)

Source: Seattle Comprehensive Plan DEIS, May 2015.



ATTACHMENT A



Seattle Art Museum

Asian Art Museum – Loading Dock and Shipment Frequency

October 18, 2016 from Lauren Mellon, Chief Registrar

There are two “states” or periodic cycles experienced by the loading dock:

General Operating Cycle – Throughout the Year

SAM Art Van

Normal art transfers/movements not during an exhibition

1 day a week with one trip a day

Art Delivery via Semi truck or large box truck

Normal art transfers/movements not during an exhibition

2 days a month

Installation/De-installation of Rotating Exhibits – Twice a Year

Typically, there is a one-month period between major exhibitions and these load movements happen twice a year.

SAM Art Van

Art transfers / movements with staff during an exhibition installation or strike at AAM

5 days a week with 1 to 3 trips per day

Transfer from Offsite Storage (large trucks)

during an exhibition (installation or strike) at AAM

2-3 days a week

Art Delivery via Semi truck or large box truck

during an exhibition (installation or strike) at AAM

3 -5 days a week often multiple trips per day

Exhibition construction contractors (often large vehicles and box truck)

during an exhibition (installation or strike) at AAM

3 days a week