

WASHINGTON
UNION STATION
STATION EXPANSION

Draft Environmental Impact Statement for Washington
Union Station Expansion Project

Appendix A5e – Action Alternatives Refinement Report

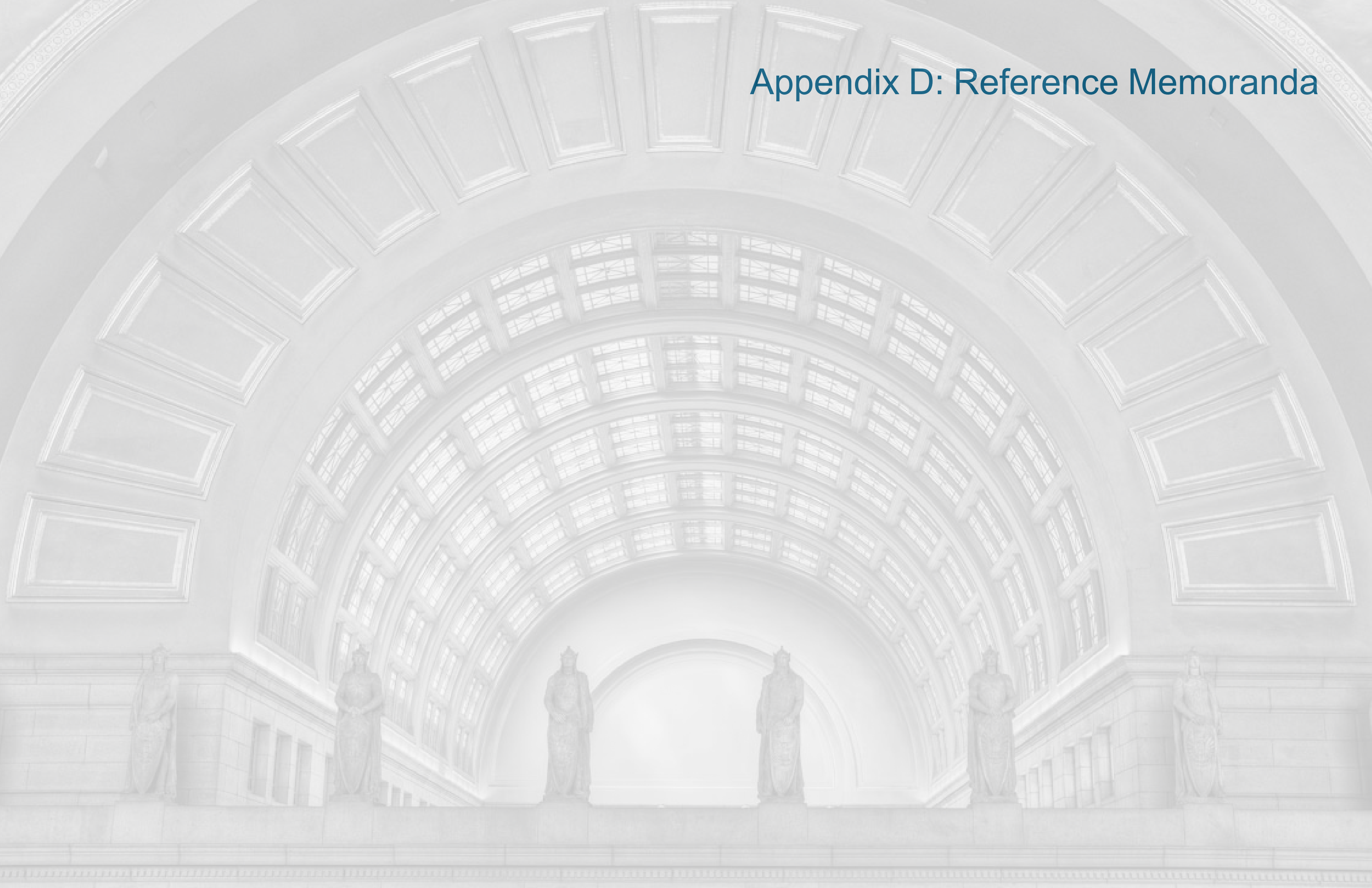
Appendix D – Reference Memoranda



U.S. Department of Transportation
Federal Railroad Administration

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Appendix D: Reference Memoranda



Memo

DATE: February 2017, Updated May 2020

REFERENCE#: Washington Union Station Expansion

SUBJECT: Alternative Bus Program

The Proponents developed a memorandum in summer 2016 as part of the Concept Development process, and, with FRA, further refined this memorandum through the fall of that year to document the 2040 bus program requirements for the WUS Station Expansion Project.¹ Washington Union Station is and would continue to serve as both the city’s and the region’s intermodal transportation facility and would continue to be the primary intercity bus facility an important component to the local and regional transportation network. The District of Columbia, Congresswoman Eleanor Holmes Norton, and bus operators continue to endorse the location of the facility and that the importance that the facility be sized appropriately to meet future bus demand. The 2016 memorandum estimated that 47 bus slips were needed to meet the 2040 demand (see Table 1). During the fall 2016 public engagement process, commenters requested that FRA and the Proponents reconsider a smaller bus facility for the Project. Using data compiled for the previous bus memorandum, a new approach was developed for comparative purposes. The new approach changes the previous assumption that buses would be in the bus facility for up to **two hours** to the assumption that buses must exit the facility within **thirty minutes**. It is estimated that a minimum of 25 bus slips would be needed in this time-constrained approach; however given the complications of a strict active management approach and physical constraints, larger bus programs are recommended.

¹ The 2016 memorandum is included in Appendix H of the 2016 *Washington Union station Expansion Project Final Concept Development and Evaluation Report*.

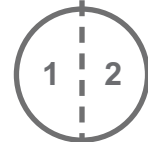


Table 1: Summary of Initial Bus Growth Projections

Bus Type	2016 Active Spaces	2016 Staging Spaces ²	2040 Growth Factor	2040 Total Active Spaces	Additional 2040 Spaces for Operational Flexibility	2040 Total Active Spaces Needed
Intercity	19	0	19%	23	2	25
DC Circulator	4	1	0%	4	0	4
Shuttle	2	4	0%	0	0	0
Tour/Charter	8	7	51%	12	2	14
Daily Sightseeing ³	2	0	-	51%	1	4
Total	35	12	-	-	5	47

Initial Alternative Future Estimate

In 2016, the bus facility saw daily peaks at nearly thirty bus movements during the peak hour of 5 pm based on Union Station Parking Garage bus counts and intercity carrier information. Based on this information, the Project team considered alternative approaches to adopt an “active management” strategy for the bus facility. “Active management,” or “dynamic management,” is an approach used in the United Kingdom and New Zealand to more dynamically allocate bus slips to providers and decrease turn times for buses.⁴ As part of this active management approach, a thirty-minute time limit on bus operations has the potential to reduce the number of slips needed to manage daily peak demand by increasing the throughput of each slip.⁵ This approach is consistent with planning to improve the efficiency of rail operations for 2040. As shown below, the reduced slip program is not anticipated to be lower than 25.

Based on the same peak hour data detailed in the fall 2016 memorandum,⁶ an initial refined bus program was developed. It was expected that two-thirds of the slips (ten) would be used to accommodate intercity service, while one-third (five) would accommodate tour, charter, and daily sightseeing. Only one slot would be allocated to DC Circulator if it were to remain in the facility. Applying the same growth factors as in Table 2, it was projected that 25 bus slips would minimally meet the 2040 program demand.

² Layover spaces are those used for the multiple-hour parking of buses. Active spaces are used for the active loading and unloading of passengers.

³ Martz and Gray Line daily tours, not hop-on, hop-off services like Old Town Trolley.

⁴ See: Jeffrey Tumlin, *Sustainable Transportation Planning: Tools for Creating Vibrant, Healthy, and Resilient Communities*. Hoboken, NJ: John Wiley & Sons, 2012; Jarrett Walker, “Christchurch: A New Transit Hub,” *Human Transit*. November 30, 2015. Accessed at: <https://humantransit.org/2015/11/christchurch-a-new-transit-hub.html>; David Crawford, “Vehicle identification systems aid dynamic bus operations,” *ITS International* April 24, 2013. Accessed at: <https://www.itsinternational.com/its8/feature/vehicle-identification-systems-aid-dynamic-bus-operations/>

⁵ This daily peak demand is based on regular spring/summer service and avoids peaks-of-the-peak like the Cherry Blossom Festival.

⁶ The methodologies to reach the 47-slip number and the more reduced program are different because the demands on the bus slips are different when the facility is more tightly constrained.

Table 2: Initial Alternative Minimum Bus Program Estimates

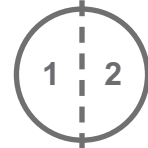
Bus Type	2016 Active Spaces	2016 Staging Spaces	2040 Growth Factor	2040 Active Spaces	2040 Staging Spaces
Intercity	10	0	19%	12	0
Tour/Charter/Daily	5	0	51%	8	
Sightseeing					
DC Circulator	1	0	0%	1	0
Shuttle	0	4			4
Total	16	-		21	4

Following the development of this alternative estimate, FRA and the Proponents further refined the approach based on stakeholder feedback and more detailed consideration of the risks and challenges associated with an active management approach. FRA and Union Station Redevelopment Corporation (USRC) held briefings and discussions with Greyhound/Bolt Bus, Megabus, and Peter Pan regarding the initial revised approach in December 2017.

Risks and challenges to implementing this alternative approach that were identified included the following:

- This approach may increase the amount of bus-related traffic on adjacent streets as compared to the previous bus program approach. Tour buses that are dropping off Station visitors may need to depart and return, potentially doubling the tour bus traffic associated with the Station. While Intercity buses would likely seek to immediately load an outbound trip after dropping off passengers, there may be times when the same bus's departure is more than 30 minutes later. These situations would lead to additional traffic on the adjacent street grid as these buses would need to exit and re-enter the facility.
- The successful operation of this facility depends on tight management of bus operations and limited tolerance for delays. In the Washington, DC traffic environment, keeping buses to a 30-minute schedule particularly during the PM peak may be difficult. Existing peak dwell times may often exceed 30 minutes. Additionally, Greyhound/Bolt Bus and Megabus indicated to FRA and USRC that driver breaks need to be accommodated, in part to meet federal requirements related to service hours.⁷
- In FRA and USRC-convened meetings with Greyhound/Bolt Bus, Megabus, and Peter Pan in December 2017, the operators indicated that while achieving a 30-minute turn time was possible, it would only be achieved with sufficient space for buses to stage within the facility. This staging space would permit buses to queue early for their space to reduce potential delays from traffic congestion and to accommodate driver breaks or relief.
- While the western extension of the streetcar is assumed in the No-Action Alternative, recent actions by the Council of the District of Columbia and the District Department of Transportation (DDOT) have indicated that more extensive east-west bus service may play the mobility role of the

⁷ See, for example, 49 CFR Part 295.



proposed Streetcar. As a result, the bus facility may serve an important role as a terminus station and/or turnaround for that enhanced bus service.

- The initial estimates used for the program rely on the *NEC FUTURE FEIS* modeling for the Action Alternatives of that undertaking. Under the NEC FUTURE conditions, a low-cost Metropolitan rail service absorbs some intercity demand that would otherwise go to intercity bus. In the No-Action Alternative, intercity bus is assumed to grow at 27 percent versus the 19 percent used in the Action Alternatives. Consideration of the larger growth rate would better future-proof the facility.
- DDOT and local community groups at times have expressed concerns about bus traffic impacts on H Street, the extended DC Streetcar, and on adjacent neighborhoods.
- DDOT and other stakeholders want to better understand where the buses will be parked once they have exited the facility. This location is not reasonably known at this time as bus companies have discretion to plan their operations and own parking facilities at will and do not make plans so far into the future. Today Greyhound, Martz, and Peter Pan have parking and maintenance facilities in Tuxedo, Maryland and Megabus's facilities are located in Landover, Maryland. All are along the U.S. 50 corridor in Prince George's County. Nothing in the WUS Alternatives would preclude the operators from retaining these locations.
- During high volume events, such as the Cherry Blossom festival, the bus facility will likely not meet demands, as the facility documented in the previous memo was not designed for "peak of the peak" operations. During peak periods, buses may queue on adjacent streets as they wait to enter the facility.
- It is possible that this alternative approach can lead to a more efficient bus facility. However, circulation requirements for the buses in the bus terminal may limit the cost savings from this approach. The overall footprint of the facility may not change dramatically, as the turn radii of the buses and sufficient safe waiting areas for the passengers could require that the facility provide a certain amount of space to ensure that buses can safely maneuver within the facility and so that passengers have comfortable waiting and circulation areas without conflicts with moving buses.
- The high turnover rate in the facility would have design implications for the passenger circulation area. As part of the efforts to improve the passenger experience at WUS, sufficient passenger circulation space at the bus facility for more peaked demand is important.

Refined Alternative Future Program

Based on the considerations provided above and additional comments received, FRA further evaluated an appropriate planning size for the bus facility at WUS. Based on the proposed changes below, the planning program remains a minimum of **25 slips**, but the allocation of slips has shifted, as shown in Table 3.

- Shuttles would be removed from the bus facility, with an alternative location to be identified.
- A space for DC Circulator would remain in the bus facility to provide potential future service and flexibility based on DDOT's direction on potential enhanced east-west service in the absence of the western extension of the DC Streetcar.
- The intercity spaces would be grown by 27 percent to tolerate more future demand at the facility.
- A total of three staging spaces would be provided to help better manage the active approach. These three spaces would provide bus slips that could accommodate buses that arrived early or late due to fluctuations in traffic patterns and could accommodate buses where driver breaks may reduce ability to adhere to the 30-minute schedule.

Table 3: Refined Alternative Bus Program

Bus Type	2016 Active Spaces	2016 Staging Spaces	2040 Growth Factor	2040 Active Spaces	2040 Staging Spaces
Intercity	10	0	27%	13	3
Tour/Charter/Daily Sightseeing	5	0	51%	8	0
DC Circulator	1	0	0%	1	0
Shuttle	0	4			0
Total	16	4		22	3

Continued Planning for the Future

FRA and the Proponents incorporated a minimum facility of 25 slips into each DEIS Action Alternative. For all Action Alternatives except Alternative A-C, the physical layout of the facility would permit that program to be met on either a single one-level facility or through the combined facility and pick-up/drop-off area as in Alternative C, East and West Options. In Alternative A-C, only 20 slips could be accommodated on a single level due to the physical constraints associated with seeking to keep bus facility within Federal air-rights, as much as possible, in that alternative. Therefore, a two-level bus facility is incorporated. While a 25-slip facility with active management would minimally accommodate the bus program as defined with the constraints as defined above, several stakeholders, including bus operators such as Greyhound/Bolt Bus and Megabus, the American Bus Association,⁸ the National Park Service (NPS), and Congresswoman Eleanor Holmes Norton have expressed support for a facility that could optimally serve both intercity and tour/charter demands. In her February 28, 2020 letter to the National Capital Planning Commission (NCPC), Congresswoman Holmes Norton called for WUS to “retain a sufficient number of bus slips to support the continuation of a thriving intercity bus business, accommodate the needs of both bus companies and travelers, and ensure that travelers retain a wide range of options that will meet their needs in terms of destination, departure times, frequency and price.”⁹ The tour and charter bus program supports tourism activity to Washington, DC and is consistent with the *Comprehensive Plan for the Nation’s Capital, Federal Elements*. Specifically, the Visitors & Commemoration Element calls for the improved management of tour bus demand.¹⁰

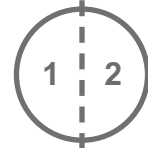
Consistent with this concern, the Preferred Alternative, Alternative A-C, provides a bus facility that features up to 40 slips on two levels. The two-level bus facility in this alternative that is needed to meet the 25-slip program provides an opportunity to evaluate a larger bus program in respond to stakeholder comment. The 40 slips would be accommodated by incorporating two 20-slip levels with center island

⁸ The American Bus Association represents tour/charter bus operators.

⁹ Letter from Congresswoman Eleanor Holmes Norton to Manuel Acosta, Executive Director, NCPC. February 28, 2020.


¹⁰ NCPC. “Visitors & Commemoration Element.” *Comprehensive Plan for the Nation’s Capital, Federal Elements*. Policy VC.A.6.

waiting areas for customers. If not needed for buses, the second level could be operationally flexible, however, and potentially accommodate some pick-up/drop-off demand. The size and operation of the bus facility may continue to be refined by FRA and Proponents during the preparation of the FEIS and during the design phase of the Project.



MEMORANDUM

TO: Drew Morrison (VHB)

FROM: Kevin A. Forma 

DATE: April 17, 2018

SUBJECT: Bus Facility Design Considerations

Cc: David Valenstein (FRA); Beverley Swaim-Staley (USRC)

USRC is submitting this memo regarding the design of the proposed bus facilities within the current range of 6 Alternatives being refined as part of the Washington Union Station (WUS) Expansion Project Environmental Impact Study (EIS). The comments below can be applied to all alternatives, however are in particular relevant to Alternative C, both East and West concepts.

Exit Redundancy

USRC does not support any alternatives which do not provide redundant ingress and egress to the proposed bus facility. Providing this redundancy is crucial in a facility that will require potentially complex repair and maintenance due to its location. Future repairs and maintenance may require a single entrance to be closed for a period of weeks and months which will necessitate a redundant entrance to be utilized so the station can continue to provide an adequate level of service to both the bus operators as well as the patrons.

Design Considerations

Regarding the proposal to provide 90-degree angled parking. USRC believes that changing the nature of the operations of within the bus deck to a more active approach will necessitate a changing the bus deck to a more regional or commuter approach to the design, meaning providing an appropriate parking angle for safe and efficient bus and passenger movements to accommodate the future volumes at the station.

To identify some possible changes that may need to occur USRC looked for any information available on design standards for bus facilities and various projects, including but not limited to, Chicago, Miami, Philadelphia, Denver, San Francisco, and East Lansing, Michigan.

Pedestrian Design

There is only minimal information regarding any standards for the design of loading bays for bus decks, much of the standards appear to be dependent upon the individual station activity,

however our research has found at least one academic article on urban bus station design by Enne de Boer and Joost van Rossum of the Technical University of Delft in the Netherlands, titled: “Towards Systematic Design of Urban Bus Stations, Reinforcing a weak link in a public transport chain.” In the article, Boer and Rossum discuss layouts for designing urban bus stations including the angle in which the buses park along with the design and potential issues with visibility, pedestrian safety, walking distance, security, and pedestrian flow which will all need to be considered when attempting to design the bus deck at WUS. As discussed by Boer and Rossum’s designing for maximum pedestrian flow and safety can be accomplished by positioning buses parallel to the curb or loading zone, however this design will require a large square footage for the facility which may be an impractical approach to designing the bus facility at WUS. In addition, due to the operational nature of intercity buses a parallel layout does not provide the needed access to both sides of the bus. The paper discusses smaller layouts which can be accomplished by angling the buses which provide for a smaller footprint, however pedestrian flows and pedestrian safety become compromised as the angle of the bays deepens and may not provide an adequate tradeoff for overall space reduction.

In USRC’s opinion designing a facility which does not provide space for efficient pedestrian flow would not be compatible with the intent of designing an efficient facility thus allowing for the reduction in bus bays as is currently being studied by the EIS.

Bus Bay Design

As discussed above, there is little available information on the design of loading bays, so USRC has looked at the design of several bus facilities around the country as noted on the previous page. Each city had a different approach to the development of their transit centers depending upon type of buses utilizing the facility and space constraints in the project development area, however it is important to note that not one facility was planning to utilize 90-degree parking angles in their design.

The City of Denver has recently completed an underground bus deck which is 1,000 feet in length, is the size of three football fields, and was designed with 22 gates with shallow angled bus slips (see Fig 1). It provides ample room for buses and passengers to maneuver which will allow buses to depart every 48 seconds according to the project documents.

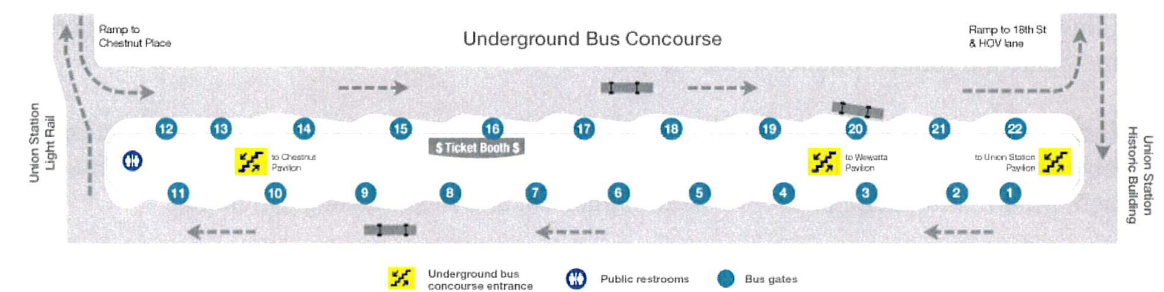


Figure 1

Source: Regional Transportation District-Denver

Access ramps are positioned underground perpendicular to the station with multiple access points for both commuter and commercial passengers which helps to facilitate easier transfer points between multiple transit modes and allows for more efficient passenger and bus movements.

Similarly, using an example from the Port Authority of New York and New Jersey (PA), in Appendix A, from the documentation for their International Design + Deliverability Competition for the Bus Terminal in New York City as another example of efficient design for regional bus service the PA has recommended a similar design for their facility using shallow saw tooth bus bays, which:

- Enables independent entry and exit from the bus bay
- Does not require the driver to back up into the bus driveway to exit the bus bay
- Accommodates ADA access along the full length of the bus
- Offers greater busy bay productivity than gate configurations

In addition, bus layover and staging in the PA design concept would be accommodated with direct connections to the passenger terminal (not on-street connections) or providing space on the passenger bus deck directly. It is important to note that in the design competition documents, the PA has noted that the design of the commuter versus intercity bus decks require a different design approach as noted in Figure 3 below.

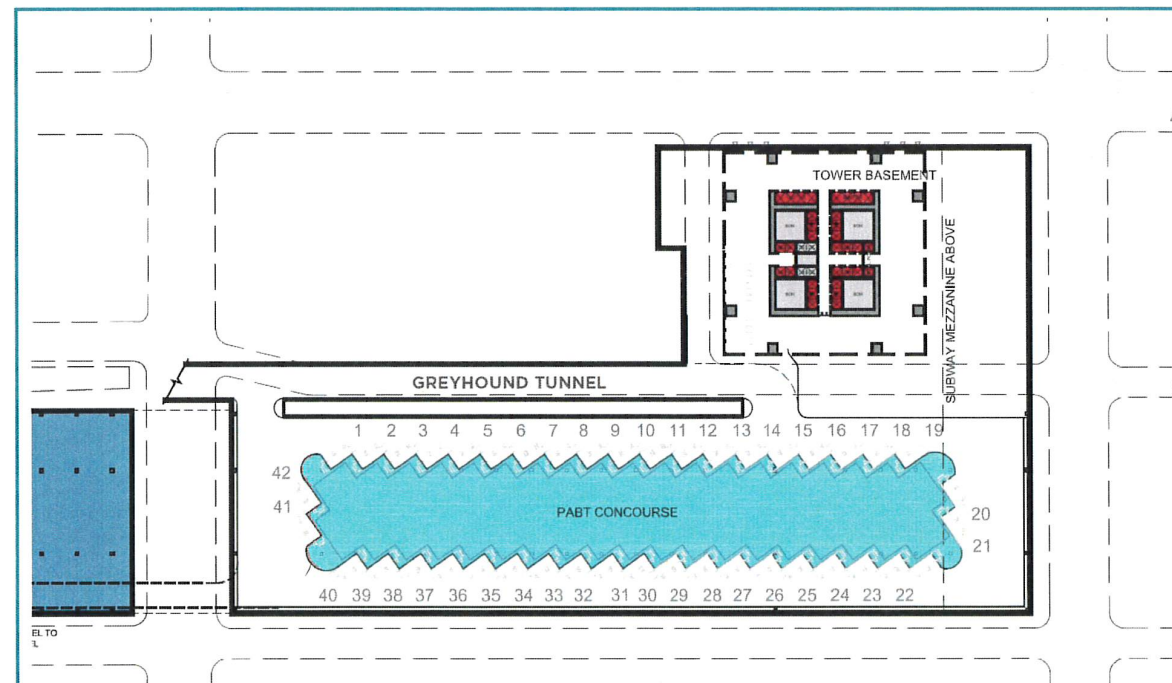


Figure Source: Appendix A: The Emerging Design + Deliverability Brief, Port Authority

Summary

The proper design of the bus facility, which is an important intermodal component of the WUS Station Expansion Project, is critical in order to provide a space that is both safe and functional for passengers and bus operators. The functionality of the bus facility, from both a passenger and bus operation perspective, is especially critical to the assumption that the facility will be more actively managed in the future, as is being currently contemplated in the EIS. USRC feels that it is critical that any design accommodate a secondary entrance as well as appropriate positioned bus bays to accomplish this goal.

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Memo

DATE: October 12, 2017
TO: BBB, Grimshaw
FROM: VHB
REFERENCE: Washington Union Station Expansion
SUBJECT: DRAFT Bicycle Planning Guidance

As part of concept development, pedestrian and bicycle access were identified as key program elements. To date, these elements have remained at a high level of design, which is appropriate with the current phase of the Project. However, in the last public meeting, members of the bicycle community expressed concern that bicycle planning was taking a backseat to other elements of the Project, perhaps to the detriment of bicycle planning. Meanwhile, the multimodal design work that VHB has done has suggested approaches for handling bicycle traffic around WUS. With that in mind, VHB would like to propose a number of planning areas that should be addressed through this planning exercise and shared with the public and agencies in the January 2018 meetings. VHB believes that accommodations for bicycle parking, bicycle storage, Bikeshare (including potentially dockless Bikeshare), and access need to be considered at this juncture.

- 1. The H Street Concourse entrances offer opportunities for bicycle facilities.** With the 1st Street Cycletrack and the Metropolitan Branch Trail passing by, the entrances to the H Street Concourse are strong candidates for bicycle parking, Bikeshare, and bicycle storage. Perhaps the area opposite the entrances under the H Street Bridge could be repurposed for bicycle storage facilities.
- 2. An interior bicycle parking facility in the H Street Concourse or parking facility should be considered.** Bicycle commuters increasingly expect a fully-enclosed environment in which to store their bicycles. Can retail space be made available for this purpose? Can easy access to a storage facility in the parking garage be accommodated?
- 3. Bicycles will be rolled through the interior of the Station.** All train services at WUS are increasingly encouraging bicycles on board. Therefore, the design team should be aware that travelers with bicycles will be rolling their bicycles through the concourses, old and new. This may have an impact on materials and other design decisions.
- 4. The front of the historic station needs more Bikeshare and bicycle parking on both east and west sides.** Today, Capital Bikeshare only exists on the east side, which is not particularly useful for westbound traffic (see more on that point below). In keeping with proper historic preservation practice, there is a need to make sure people can rack their bicycles and acquire Bikeshare on either side of the front of WUS.
- 5. The Project should consider placeholder “corrals” for dockless Bikeshare.** Dockless Bikeshare firms have recently sprung up in Washington, D.C. The long-term viability and regulatory context of these

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services are unclear. Nevertheless, it may be wise to seek to accommodate them through designated corrals that will hopefully minimize the spatial clutter from these services.

- 6. Safe bicycle access to, and across, the front of the historic station is a challenge.** To reach the main front entrance, or to cross from the east side to the west side, bicycles face a daunting challenge. VHB recommends that the front of WUS be a “walk your bike” zone. The goal may be to get bicyclists to reach the 1st Street cycletrack on the west and the Massachusetts Avenue lanes on the east by walking across existing or planned pedestrian areas.
- 7. The private developer desires bicycle access via both a greenway and the east ramp.** Whether bicycle access can be accommodated on the east ramp should be considered.

VHB believes these encapsulate the planning issues before the design team regarding bicycles, which should be at least partially addressed before January. Information from the current draft multimodal model outputs indicate that, in the AM peak, 131 bicyclists arrive at the station and 143 depart. In the PM peak, 148 arrive and 163 depart. With midday activity and longer-term storage of bicycles for Amtrak riders and based on the existing conditions data below, VHB estimates a total demand of around 500 bicycles, across both privately-owned and shared bicycle options.

From the multimodal existing conditions report completed previously, it is estimated that 100 bicycles can be stored in the Bikestation west of WUS. The main Bikeshare station on the east side of the historic station can accommodate 34 bicycles. Stations within one or two blocks of WUS can accommodate another 80 bicycles. In 2015, the WUS Bikeshare station had an average of 550 weekday total trips (both starts and ends) and 300 weekend total trips (both starts and ends).

This information should be helpful in planning bicycle facilities in and around WUS. Given the interest in sharing refined bicycle planning with the public, a time should be identified, likely in early November, to discuss these approaches with FRA. Once FRA approves the approach, materials will be prepared for the public meeting.

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Memo

DATE: January 2018
TO: Grimshaw
FROM: VHB
REFERENCE: Washington Union Station Expansion
SUBJECT: DRAFT 2040 Loading Dock Volume Analysis

At present, there are two loading docks at Washington Union Station – known respectively as the west and east loading docks. The west loading dock is accessed on First Street NE between Columbus Circle and According to data collected in April and May 2017, there are an average of 109 trips made by vehicles per day on a weekday to the east and west loading docks at Washington Union Station (the Station). Future demand for loading dock slips at the Station in 2040 must be forecast in order to incorporate an adequate number of slips in the action alternative designs for the Washington Union Station Expansion Environmental Impact Statement (EIS). The loading docks serve three important functions at the Station: train operations, retail operations, and Package Express, a service that ships good via Amtrak trains. Based on the projected growth in retail (50%) and the inclusion of a hotel (which results in linen and food deliveries), VHB assumes an estimate of **75% growth in demand** for the east and west loading dock slips combined.

Existing Conditions

To determine the existing conditions, the current average volume of individual trips for each hour of the weekday (weekend data was removed because the volumes were low and skewed the data) was calculated for the west loading dock based on two weeks of hourly data collected in May 2017. The percentage of the total daily trip volume that each hour represented at the west dock was extrapolated to predict the hourly volume for the east dock on weekdays, as there is no hourly volume data currently available for the east dock. To note, the east dock daily trip volume data included vehicle trips destined for both Union Station and Station Place. The analysis conducted utilized only the Union Station data. The hour with the peak average loading dock trip volume is 10:00AM - 11:00AM, with an average of 12 vehicles currently utilizing the combined docks at that hour. The 8:00AM – 9:00AM and 9:00AM – 10:00AM hours also average 8 and 9 vehicle trips, or 8% percent of the overall daily trips respectively. The 10:00AM – 11:00AM hour represents 10% of the overall daily trips, and therefore the peak load hour is not viewed as an outlier. Finally, increasing the current average hourly trip volumes for the east and west docks by a growth factor of 75% resulted in a prediction of **a peak average load of 20 vehicles** utilizing loading docks during the 10:00AM – 11:00AM hour on a weekday at the Station in 2040. See Table 1 for more details.

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Table 1 – 2017 & 2040 Weekday Hourly Loading Dock Volumes

Time:	West Hourly Total	West Hourly Share	East Future Hourly Total	West Future Hourly Total with 75% growth	East Future Hourly Total with 75% growth	Combined Hourly Loading Dock Volume with 75% growth
12:00AM - 1:00AM	1	1%	1	1	1	2
1:00AM - 2:00AM	2	3%	2	3	3	6
2:00AM - 3:00AM	1	2%	1	2	2	4
3:00AM - 4:00AM	1	2%	1	2	2	4
4:00AM - 5:00AM	3	5%	3	4	5	9
5:00AM - 6:00AM	4	7%	4	6	6	13
6:00AM - 7:00AM	3	5%	3	5	5	10
7:00AM - 8:00AM	2	3%	2	3	3	6
8:00AM - 9:00AM	4	8%	4	7	8	15
9:00AM - 10:00AM	4	8%	5	8	8	16
10:00AM - 11:00AM	6	10%	6	10	10	20
11:00AM - 12:00PM	3	6%	4	6	6	12
12:00PM - 1:00PM	3	5%	3	5	5	10
1:00PM - 2:00PM	4	7%	4	7	7	14
2:00PM - 3:00PM	3	6%	3	6	6	12
3:00PM - 4:00PM	3	5%	3	5	5	10
4:00PM - 5:00PM	2	3%	2	3	3	6
5:00PM - 6:00PM	1	2%	1	2	2	4
6:00PM - 7:00PM	1	2%	1	2	2	5
7:00PM - 8:00PM	1	1%	1	1	1	2
8:00PM - 9:00PM	1	2%	1	1	1	3
9:00PM - 10:00PM	0	0%	0	0	0	0
10:00PM - 11:00PM	1	2%	1	2	2	4
11:00PM - 12:00AM	1	2%	1	2	2	3
TOTALS:	53	100%	56	92	97	189

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Contributing Factors

The number of slips required by Package Express and the Commissary at the Station were also considered in the analysis. Package Express is a service provided by Amtrak to ship goods on Amtrak trains. The Commissary provides food and beverage service for Amtrak trains. Trip volumes for Package Express deliveries are projected to increase 10% to 12% year-over-year nationally into 2040. The volume of Package Express trips at Washington Union Station were not provided by Amtrak, but Amtrak indicated that a “similar area” in terms of square footage as provided today within the west loading dock would be sufficient in 2040. The loading dock needs of the Commissary deliveries occur almost exclusively in the late evening and early morning hours, outside of the peak volume hour of 10:00AM – 11:00AM, and therefore do not impact the maximum number of loading dock slips required at the Station.

Future Conditions

In order to accommodate the projected future demand for loading dock slips, it is recommended that the new loading dock in the action alternatives be sized to accommodate approximately 12 to 14 slips, and that the east and west loading docks be at least partially retained. If the east dock is assumed to support the same trip volume per day as it currently does, it could accommodate a maximum of 6 vehicles per hour in 2040. The west dock also currently accommodates a maximum of 6 vehicles per hour, but for the purposes of this analysis, the west dock is assumed to operate at a reduced capacity in 2040 given the potential improvements to the WMATA station that make use of the loading dock space and the reconfiguration of, and future uses on, First Street. Therefore, the west dock is projected to retain a level of functionality for the Package Express loading needs, but since the complete level of functionality is unknown, the analysis does not attribute any additional loading vehicle demand to the west dock beyond Package Express.

The remaining slip demand predicted for 2040 is 14 vehicle trips per hour based on the projected volume of 20 vehicles in the peak hour of 10:00AM – 11:00AM minus the 6 vehicles accommodated per hour at the east dock and the west dock exclusively handling Package Express. This demand will be assumed by the proposed new loading dock, which will handle the bulk of the expanded Station’s loading needs. The available data on loading vehicle volume does not break down the average length of time spent in the loading dock facility by a vehicle, but given that the current east and west loading docks are handling an average of 12 vehicles in the peak hour with relatively small slip spaces and challenging maneuverability layouts, it appears reasonable to assume that a new loading dock with 12 to 14 slips could accommodate the future demand at the Station. At least two of these slips could be designed to accommodate smaller vehicles, since many deliveries are from relatively compact vehicles. The overall proposed size for the facility is therefore generally consistent with the space available at the identified location for the new loading dock between 2nd and K Streets.



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