STAFF REPORT
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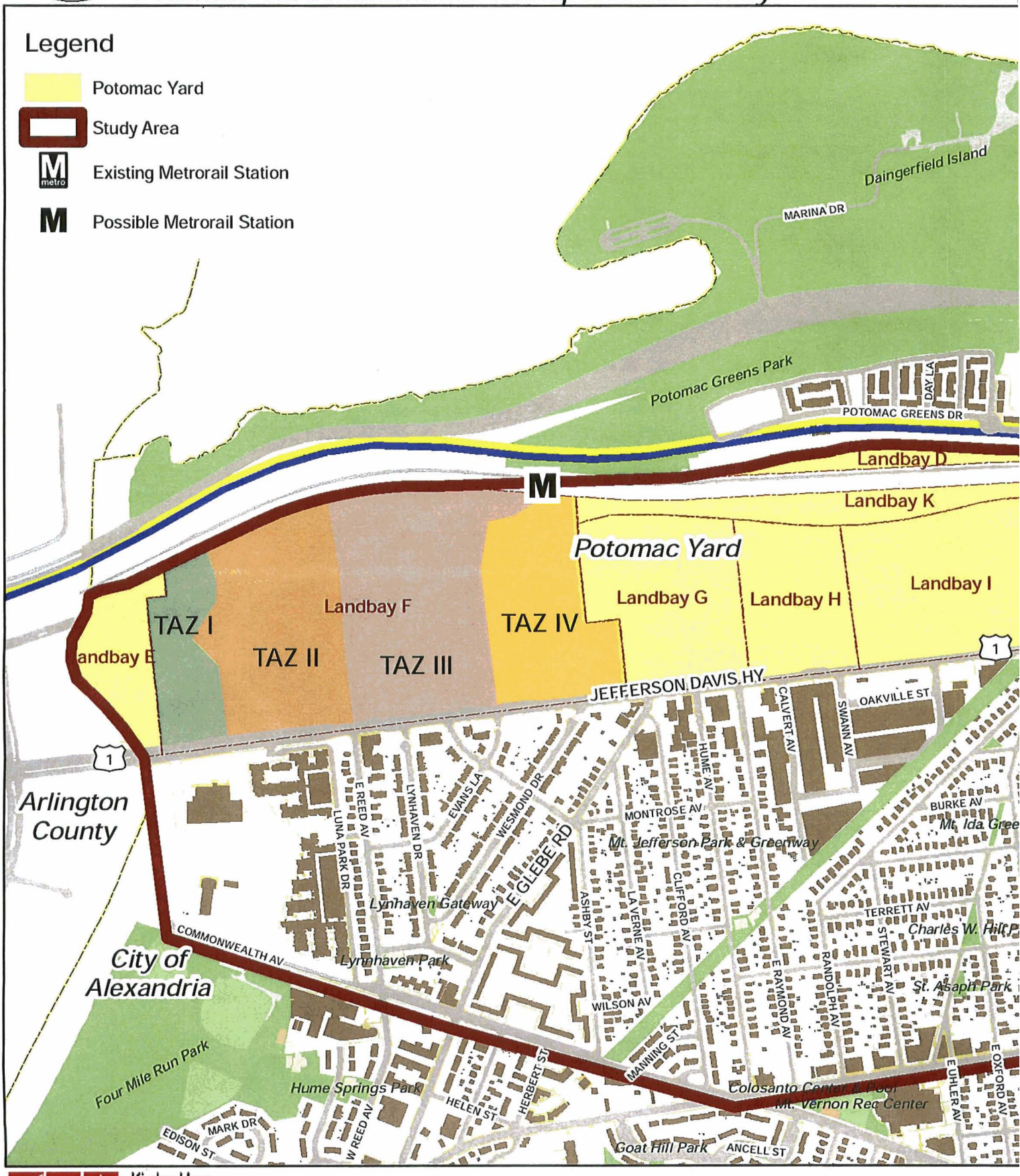
#4

Potomac Yard Multimodal Transportation Study



Kimley-Horn and Associates, Inc.

Figure 5-1: Study Area TAZs

Table 5-2 Proposed Landbay F Development Totals (2.5 FAR) and Potential Landbay L Development Totals (2.0 FAR)	
Landbay F	
Hotel	300 rooms
Office	1,475,000 sf
Residential	4750 dwelling units
Retail	
Large-Format	170,000 sf
Grocery Store	70,000 sf
Specialty	670,000 sf
Movie Theater	90,000 sf
Landbay L	
Residential	1,000 dwelling units
Specialty Retail	10,000 sf
Assumptions Residential units are an average of 1,000 square feet per dwelling unit Hotel rooms are an average of 750 square feet per room Source: City of Alexandria	

Weekday PM peak hour and daily person trips generated for each TAZ using rates provided in the ITE *Trip Generation Report, 8th Edition.* **Table 5-3** summarizes the PM peak hour and daily person trips generated by Potomac Yard Landbays F and L.

Table 5-3 Person Trips Generated by Proposed Landbay F Development and Potential Landbay L Development				
Land Use	**Daily**	**PM Peak Hour**		
		Total	**In**	**Out**
Landbay F				
Office	16,240	2,198	968	1,230
Residential	31,591	2,946	1,296	1,650
Hotel	2,751	177	78	99
Retail	41,608	3,153	1,433	1,720
Total Landbay F	***92,190***	***8,474***	***3,775***	***4,699***
Landbay L				
Residential	6,650	620	273	347
Retail	443	27	12	15
Total Landbay L	***7,093***	***647***	***285***	***362***
Source: Kimley-Horn and Associates, Inc.				

5.4 Mode Choice Assumptions

To accurately represent the anticipated trip-making patterns associated with the redevelopment of Potomac Yard, assumptions were developed to assign trips to transit, walk, bicycle, and auto modes. Assumptions were based on local, regional, and national experience and evidence at similar scale redevelopment projects in like contexts. Specifically, WMATA's *2005 Development-Related Ridership Survey* was consulted in addition to data from the Crystal City, Braddock Road, and King Street Metro stations and the U.S. Census, Journey to Work survey. Generally guiding the development of travel mode choice assumptions were the following:

- Potomac Yard will have compatible and complementary uses developed in a compact transit-oriented form supportive of non-auto trip-making (live/work/play)
- City policies encourage non-auto travel through strategic incentives and disincentives. This includes the Travel Demand Management program of the City of Alexandria TMP.
- Potomac Yard is within the urban core of Alexandria and the region with good access to all modes of transportation
- Potomac Yard is a natural extension of Alexandria's urban fabric
- Potomac Yard is proximate to surrounding compact residential neighborhoods
- Potomac Yard is proximate to Metrorail
- Significant transit investment for many technologies is planned locally and regionally and will positively affect Potomac Yard. Investments include the transit corridors in the Alexandria TMP, Arlington County's Master Transportation Plan transit corridors, and others included in the Washington Metropolitan Council of Governments long-range plan.
- Local and regional vehicular transportation networks have a finite car-carrying capacity. TCRP Report 128 found that a key road characteristic in supporting transit use is the location of a transit corridor adjacent to a highly congested auto corridor.

5.5 Internal Trips

Due to the mixture of land uses planned, many trips will have origins and destinations within Potomac Yard. In general, the propensity for trips to be "captured" internally varies based upon the conditions of the area – the pedestrian friendliness of the urban design, the configuration of the development, the availability and convenience of non-auto travel modes, and the mixture and sizes of uses.

Using methodologies outlined by ITE, the volume of internal capture trips was determined for Landbays F and L. The development and design patterns of Potomac Yard will encourage that trips be made by walking and biking. All internally captured trips were assigned to walk or bicycle modes. A table with a summary of internal trips for weekday PM peak hour trips is provided in **Appendix F.**

5.6 Mode Split

Non-internal trips were divided into external transit trips and external vehicle trips. External transit trips were assumed to be primarily accommodated on the CCPY transitway, Metrobus, DASH buses, and Metrorail (if applicable). Based on data provided by the City, Journey to Work information from the 2000 U.S. Census, and information contained in WMATA's *2005 Development-Related Ridership Study*, factors were developed to reflect the desirability of walking, bicycling, and taking transit to make external trips.

Logic and experience from data suggest that the TAZs closest to transit will have the highest rate of transit use. In the future, the combination of additional transit services, an improved urban environment, and improved pedestrian and bicycling facilities will likely result in more people having better access to and being more willing to use transit. As the land use in Potomac Yard further diversifies and the area becomes more active during more hours of the day, transit usage in currently off-peak periods and directions is likely to increase, similar to other urban villages in Alexandria and the greater Washington metropolitan area. The general assumptions for mode splits are shown in **Table 5-4**.

Table 5-4
Proposed Trip Generation Mode Split Assumptions

Land Use	Transit – Metrorail*	Transit – Metrobus, DASH, and CCPY	Pedestrian and Bicycle (non-auto)	Auto	Total
Office (adjacent to transit station)	35%	11%	6%	48%	100%
Office (within 1/4 mile of transit station)	21%	9%	6%	64%	100%
Residential (adjacent to transit station)	54%	1%	16%	29%	100%
Residential (within 1/4 mile of transit station)	48%	1%	15%	36%	100%
Residential (within 1/4 to 1/2 mile of transit station)	31%	5%	10%	54%	100%
Hotel	27%	4%	31%	38%	100%
Entertainment (theater)	26%	6%	11%	57%	100%
Retail (all, excluding large format)	29%	8%	27%	36%	100%
Retail (large format)	9%	5%	14%	73%	100%

Source: Kimley-Horn and Associates, Inc., References: WMATA 2005 Development-Related Ridership Study and 2000 U.S.

The location for each block of development and distance from the proposed Metrorail station is shown in **Figure 5-2.** A table with a summary of trips assigned to each mode is provided in **Appendix F.**

5.6 Pass-by Trips

Large retail centers such as the existing shopping center at Potomac Yard attract trips that are already on the network. These "pass-by" trips are not new trips, rather they are trips that stop at Potomac Yard during their primary trip. An example of a pass-by trip is that of a person stopping at a retail store on the way home from work. The PYPAG has a desire to maintain a strong retail presence in Landbay F. The proposed land use plan includes large format retail uses that will generate pass-by trips. For this analysis, it was assumed that 25 percent of the large format retail use trips will be pass-by trips. This is consistent with VDOT guidelines. A table with pass-by trips is provided in **Appendix F.**

Potomac Yard Multimodal Transportation Study

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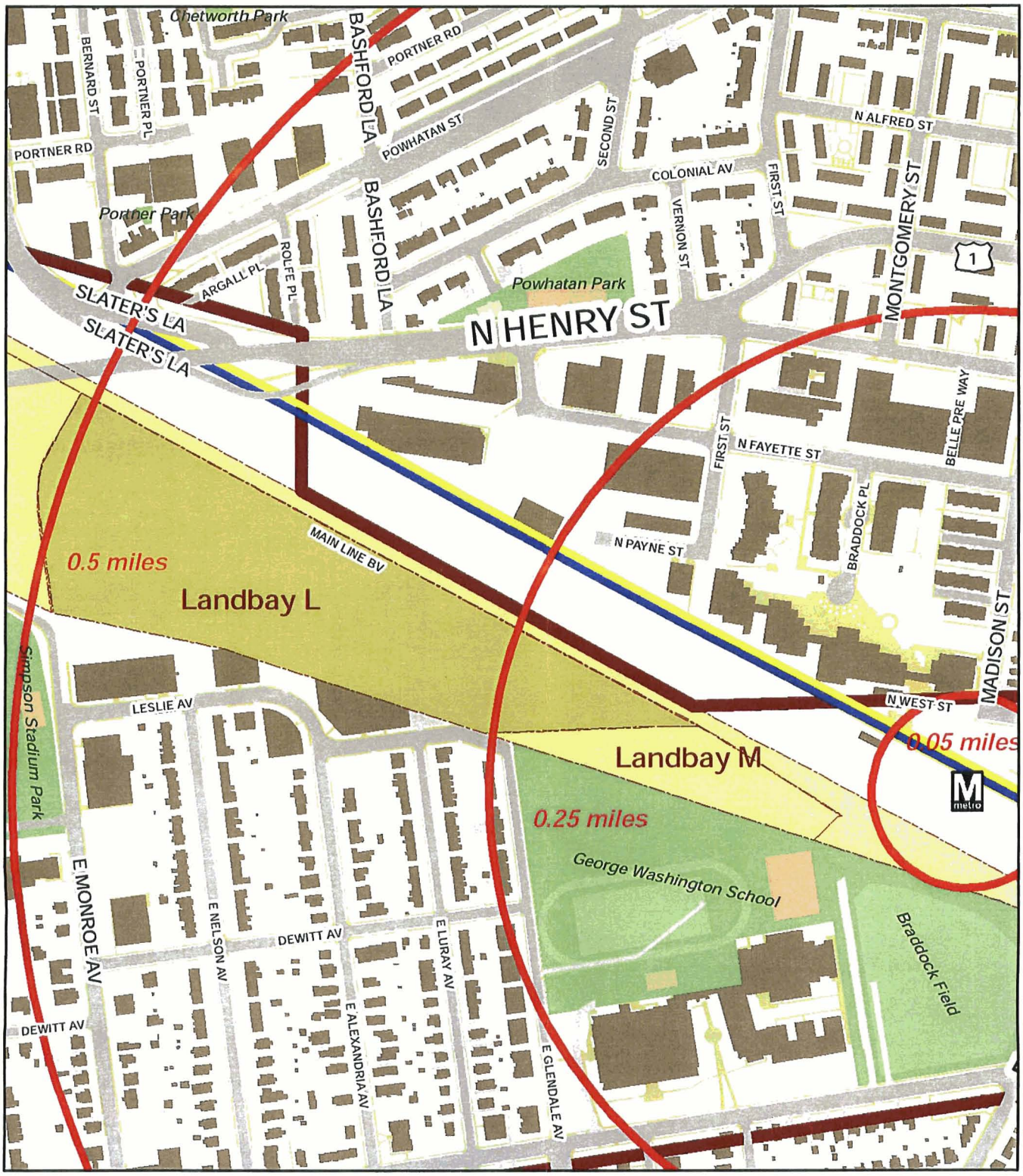
Figure 5-2: Distances from Metrorail Stations



6.0 Site Trip Distribution and Assignment

6.1 Trip Distribution

Following the assignment of internal trips and trips assigned to transit and other non-auto modes, the remaining vehicular trips were assigned to the street network for the PM peak hour. By reviewing the existing traffic patterns, considering nearby employment, shopping, and housing areas, and comparing data from the traffic study for Potomac Yard Landbays G, H, I, J, and K (the Potomac Yard Infrastructure Analysis)[2], external distributions of trips were established. The Potomac Yard Infrastructure Analysis distributions were altered to assign a greater percentage of traffic from Potomac Yard Landbays F and L to the north on Potomac Avenue. With the proposed development, Potomac Avenue will extend north across Four-Mile Run to Potomac Yard in Arlington. It will connect to S. Glebe Road and Crystal Drive. In the future, Crystal Drive will be a two-way street and 12th Street S. in Arlington County will be extended from S. Eads Street to S. Fern Street. Potomac Avenue and Crystal Drive will act as a main street along the east side of Potomac Yard and Crystal City and attract local and some regional trips. Directional distribution of trips for Potomac Yard Landbays F and L is shown in **Table 6-1.**

Table 6-1
Trip Distribution

Direction	Distribution
To/From North on US 1	26%
To/From Northwest on S. Glebe Road	7%
To/From North on George Washington Memorial Parkway	3%
To/From West on Reed Avenue and E. Glebe Road	10%
To/From West on Custis Avenue and Monroe Avenue	12%
To/From South on US 1 and Washington Street	30%
To/From North on Potomac Avenue	12%
Total	**100%**

Source: Kimley-Horn and Associates, Reference: Potomac Yard Infrastructure Analysis

6.2 Trip Assignment

The assignment of Potomac Yard weekday PM peak hour vehicular trips to the area road network is shown in the **Appendix F.**

[2] Potomac Yard Infrastructure Traffic Analysis performed by Wells and Associates, Inc. dated February 10, 2005 and revised on December 2, 2005

7.0 2030 Future Conditions with Potomac Yard Redevelopment in Landbay F

This chapter of the report examines 2030 future conditions with the proposed redevelopment plan for Potomac Yard Landbay F as well as with possible future development for Landbay L. This chapter includes an analysis and summary of 2030 future traffic volumes with the proposed development.

7.1 2030 Future Transportation Network with Development

The proposed transportation network with the proposed redevelopment of Potomac Yard Landbay F will include programmed transportation improvements discussed and assumed in the 2030 future conditions without development, as well as, the following:

Future Metrorail Station: A feasibility study is being performed for a potential Metrorail station likely to be located adjacent to Landbay F. The Metrorail station is needed to accommodate the planned development within Landbay F.

Internal Street Network: Landbay F would develop with a fine-grained interconnected network of streets.

Crystal City/Potomac Yard (CCPY) Transitway: The CCPY Transitway will travel through Potomac Yard and extend to Crystal City on the north and the Braddock Road Metrorail station on the south. The concept of dedicated right-of-way for transit was adopted by the Alexandria City Council under the Transportation Master Plan. The future transit service is envisioned to operate efficiently within dedicated lanes to the maximum extent feasible. The initial service concept for the CCPY corridor is bus rapid transit; however, as demand and usage increase, conversion to streetcar or similar rail transit is possible. The transitway will travel between US 1 and Potomac Avenue on the new internal street network of Landbay F. While a final determination has not been made, this study assumes the alignment will be along Diamond Road.

The proposed transportation network within Potomac Yard Landbay F includes pedestrian and bicycle facilities, an interconnected network of streets, Potomac Avenue, the Crystal City/Potomac Yard Transitway, and a future Metrorail station. The proposed transportation network described in the Master Plan may vary slightly in the specific Landbay F street network, transitway alignment, and Metrorail station configuration; however, it will result in similar future transportation conditions as those analyzed in this study.The proposed street network in Landbay F is shown in **Figure 7-1: Landbay F Framework Street Network**. The proposed future transportation network and study area intersection laneage used in the traffic analysis are shown in **Figure 7-2: Proposed Future Intersection Laneage and Traffic Control with Development.**

Potomac Yard Multimodal Transportation Study

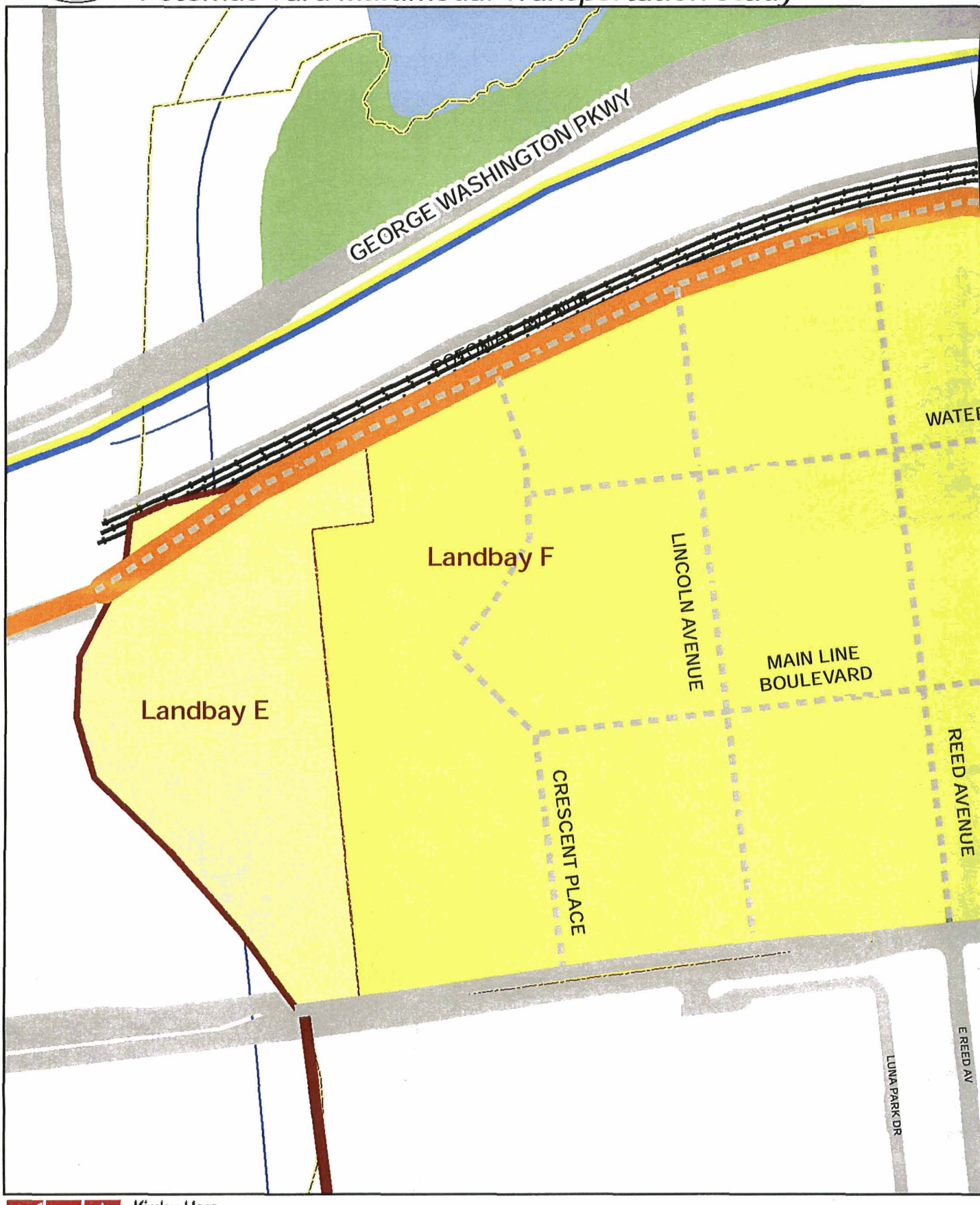


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Figure 7-1: Landbay F Framework Street Network

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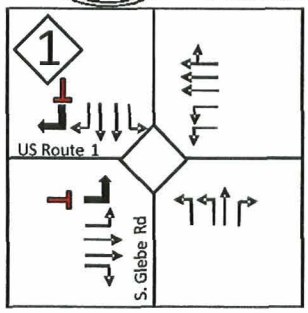

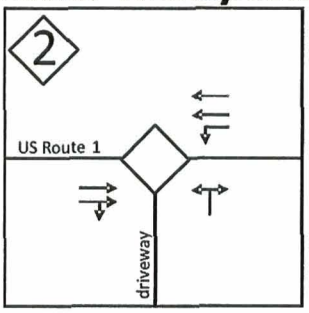

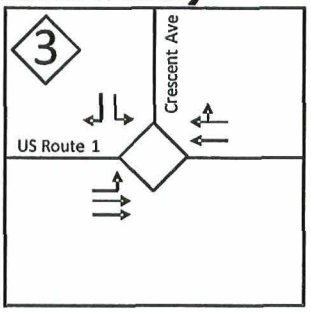

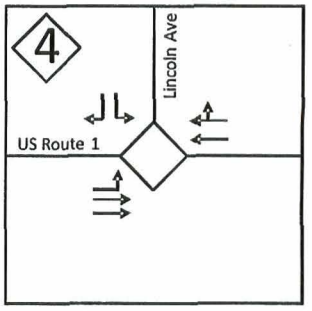

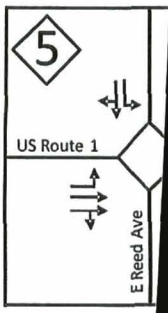

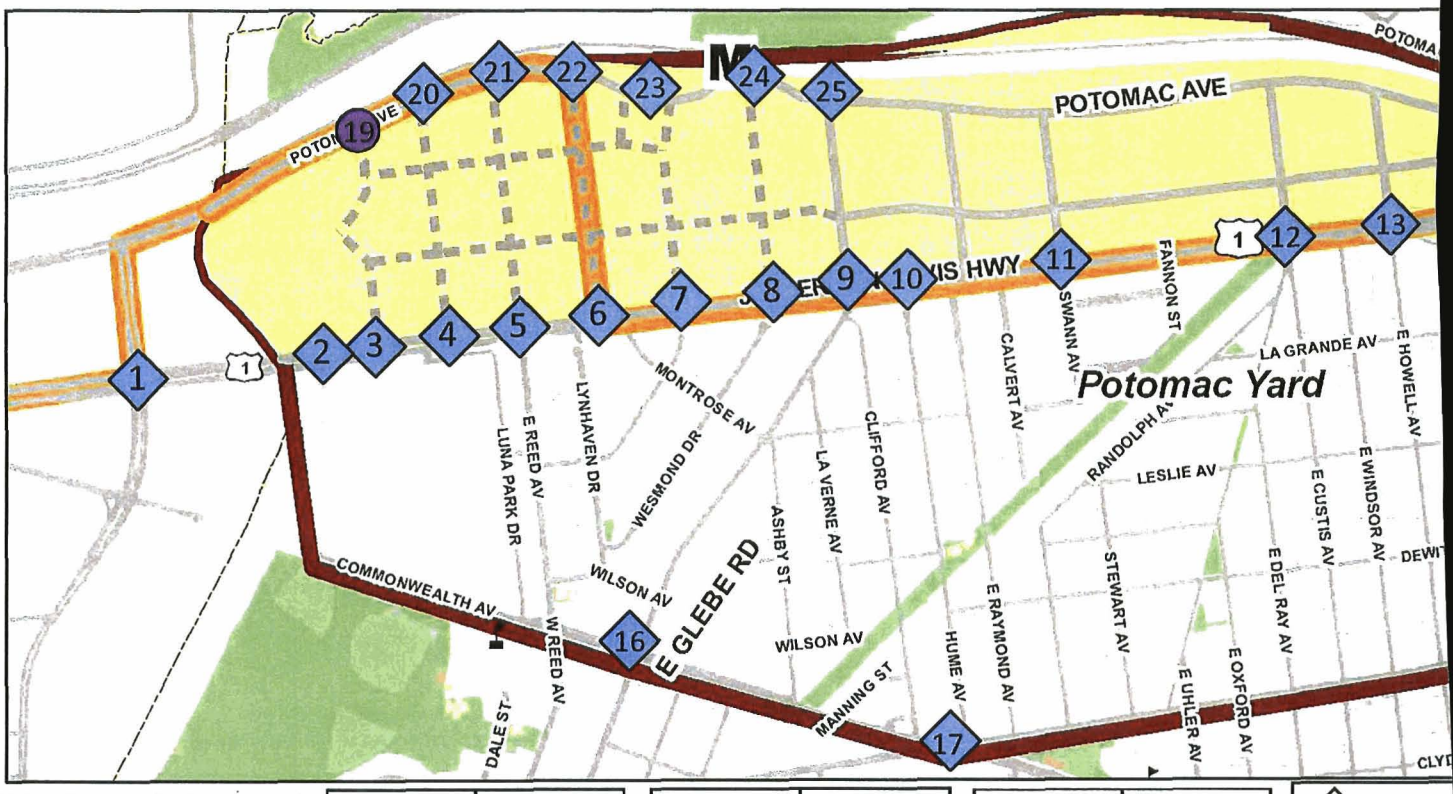

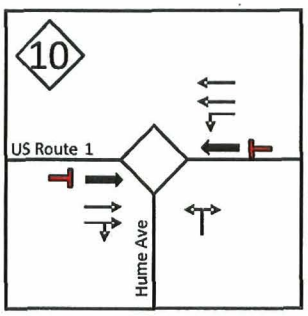

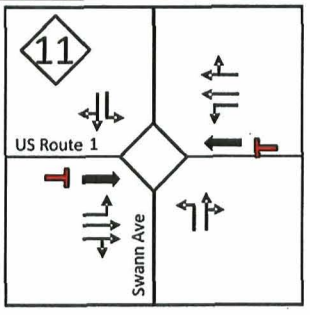

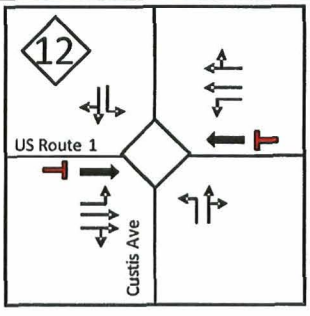

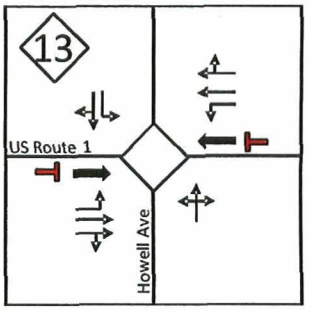

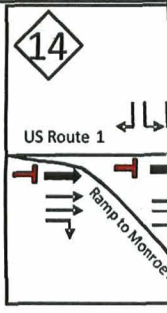

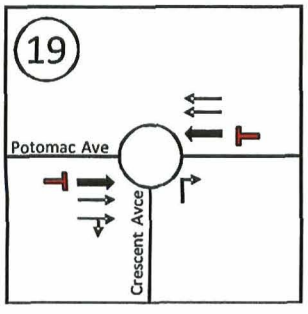

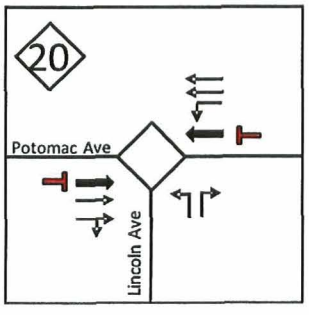

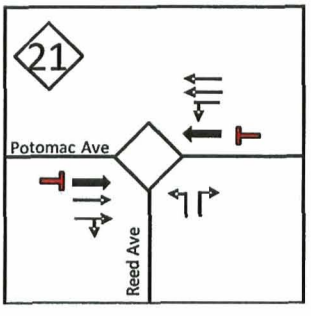

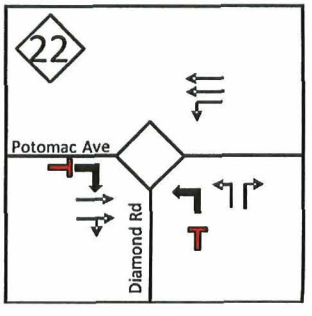

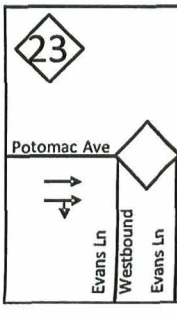

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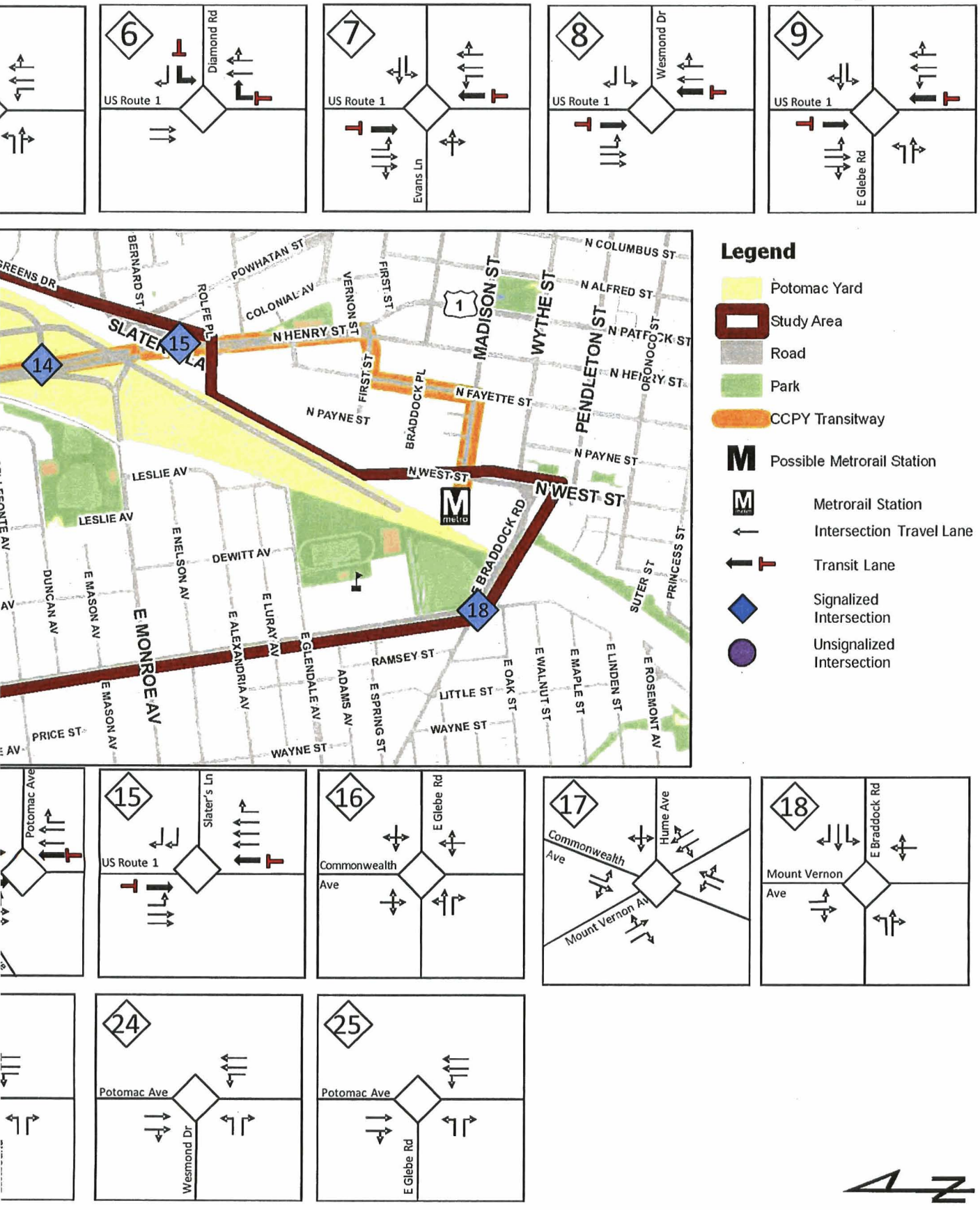
gure 7-2: Proposed Future Intersection Laneage and Traffic Control with Development



7.2 2030 Future Traffic Volumes with Development

Weekday PM peak hour volumes analyzed in this scenario were created by aggregating future volumes without development and volumes generated by Potomac Yard Landbays F and L and subtracting volumes generated by the existing Potomac Yard retail center. **Figure 7-3** shows the 2030 future weekday PM peak hour volumes with development.

7.3 2030 Future Conditions with Development Capacity Analysis

The 2030 future conditions with development analysis was based on the proposed 2030 transportation network and 2030 future weekday PM peak hour volumes with development.

Intersection Capacity Analysis

Level of service results of this analysis are summarized in **Table 7-1**. The Synchro HCM reports with future conditions without development levels of service are provided in **Appendix G**.

Table 7-1
2030 Future Conditions with Development Intersection Levels of Service (LOS) and Average Delay in Seconds for Weekday PM Peak Hour

Intersection	Existing Conditions	2030 Future Conditions without Development	2030 Future Conditions with Development
1. US 1 and S. Glebe Road	C (29)	C (32)	C (29)
2. US 1 and driveway (near Four-Mile Run)	C (22)	C (23)	B (13)
3. US 1 and future Crescent Place	N/A	N/A	A (7)
4. US 1 and future Lincoln Avenue	N/A	N/A	A (8)
5. US 1 and E. Reed Avenue	C (22)	E (71)	E (67)
6. US 1 and future Diamond Avenue	N/A	N/A	A (3)
7. US 1 and Evans Lane	C (24)	B (17)	B (15)
8. US 1 and future Wesmond Drive	N/A	N/A	B (11)
9. US 1 and E. Glebe Road	D (37)	F (83)	F (94)
10. US 1 and Hume Avenue	A (1)	A (3)	A (2)
11. US 1 and Swann Avenue	A (2)	A (6)	A (6)

* Future conditions assume the construction of the transitway on US 1, Diamond Road, and Potomac Avenue
** Under Future Conditions with Development, US 1 signals are timed with lead-lag left turns and coordinated with 140-second cycle length. Potomac Avenue is timed with coordinated, 90-second cycle length signals.
*** See page 57 for further discussion of intersection LOS analysis

Table 7-1 (continued)
2030 Future Conditions with Development Intersection Levels of Service (LOS) and Average Delay in Seconds for Weekday PM Peak Hour

Intersection	Existing Conditions	2030 Future Conditions without Development	2030 Future Conditions with Development
12. US 1 and E. Custis Avenue	A (2)	A (5)	A (4)
13. US 1 and E. Howell Avenue	A (2)	B (14)	B (12)
14. US 1 and existing E. Monroe	E (63)	C (28)	E (63)
15. US 1 and Slaters Lane	B (15)	B (17)	B (17)
16. Commonwealth Avenue and E. Glebe	B (11)	B (11)	B (17)
17. Commonwealth Avenue and Mt. Vernon	A (6)	C (31)	D (37)
18. Mt. Vernon Avenue and E. Braddock	B (13)	C (32)	C (33)
19. Potomac Avenue and future Crescent	N/A	N/A	A (0)
20. Potomac and future Lincoln Avenue	N/A	N/A	A (9)
21. Potomac Avenue and future Reed	N/A	N/A	A (8)
22. US 1 and future Diamond Avenue	N/A	N/A	A (9)
23. Potomac Avenue and future Evans Lane	N/A	N/A	A (5)
24. Potomac and future Wesmond Drive	N/A	N/A	A (3)
25. Potomac Avenue and E. Glebe Road	N/A	C (21)	A (9)

* Future conditions assume the construction of the transitway on US 1, Diamond Road, and Potomac Avenue
** Under Future Conditions with Development, US 1 signals are timed with lead-lag left turns and coordinated with 140-second cycle length. Potomac Avenue is timed with coordinated, 90-second cycle length signals.
*** See page 57 for further discussion of intersection LOS analysis

The results of the 2030 future conditions with development intersection capacity analysis shows that several of the study area intersections operate near-, at-, or over-capacity under future conditions with development during the PM peak hour. The following intersections were found to operate near-, at-, or over-capacity under future conditions without development:

- US 1 and E. Reed Avenue: LOS E
- US 1 and E. Glebe Road: LOS F
- US 1 and Potomac Avenue: LOS E

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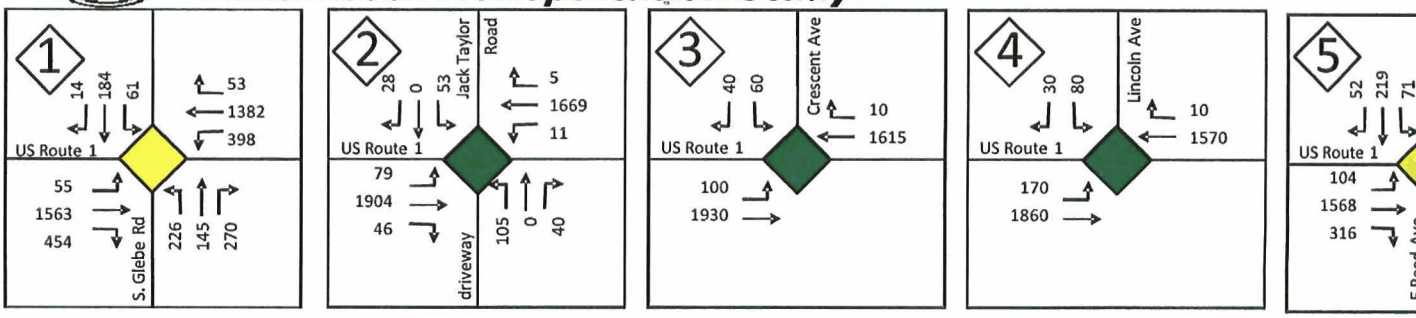
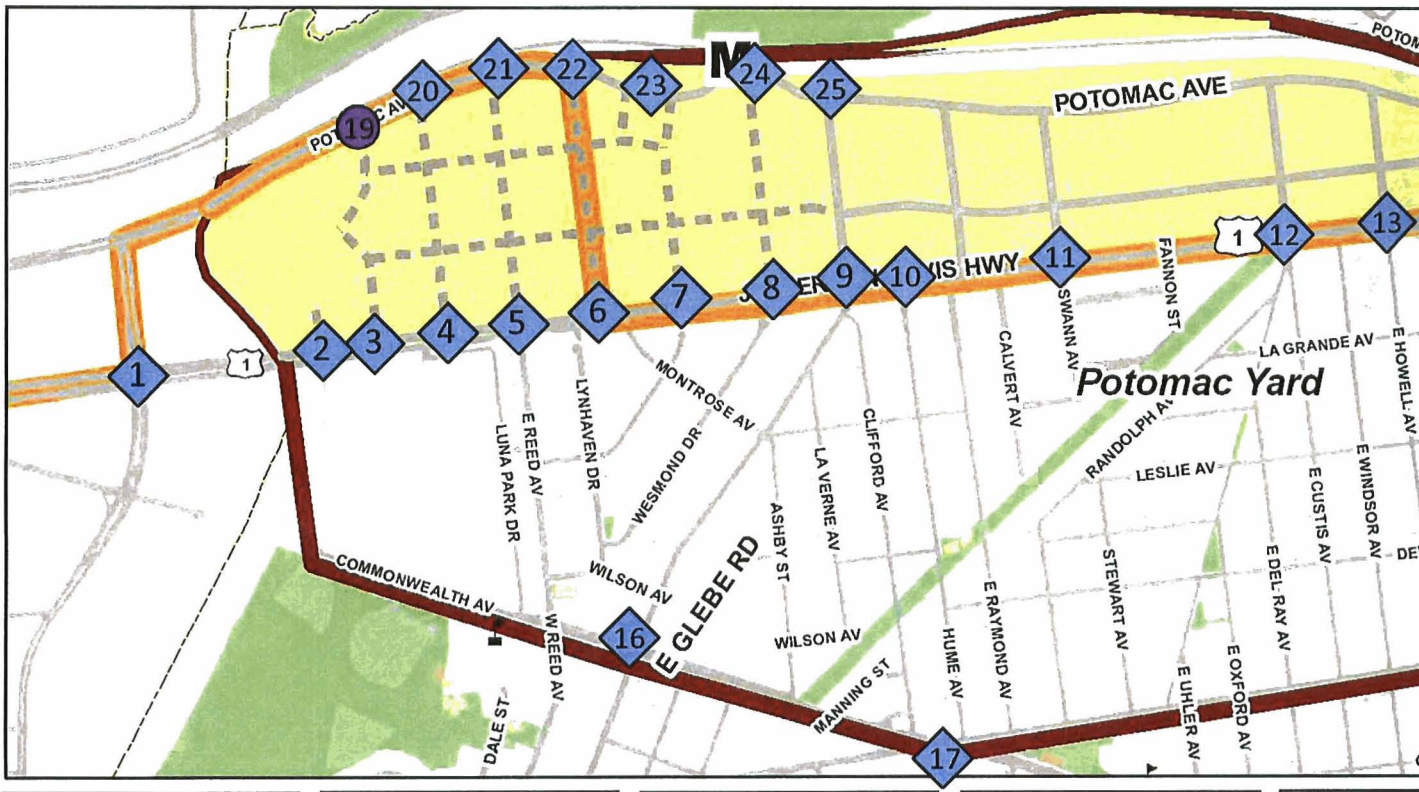
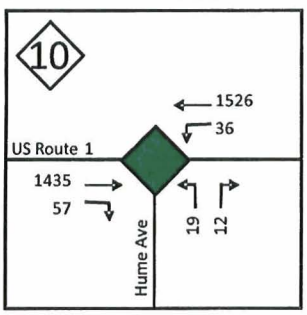
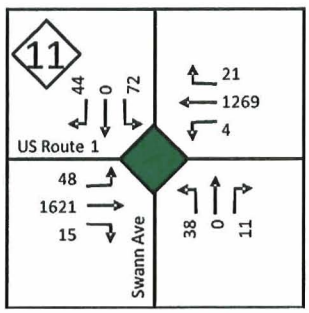
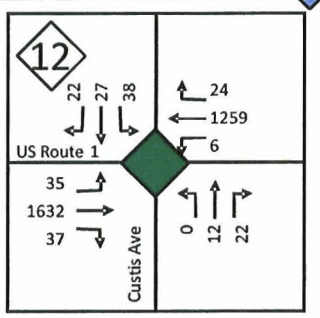
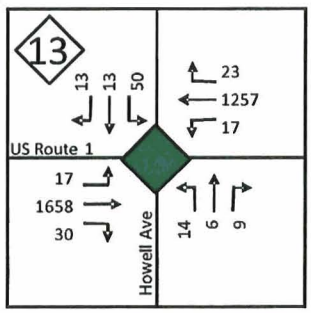


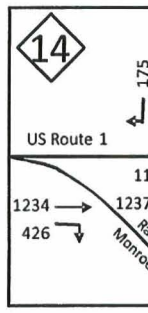


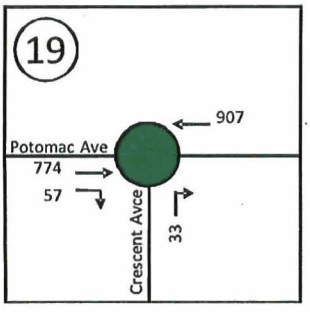


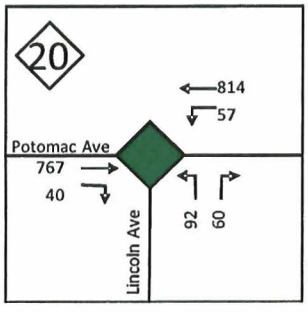


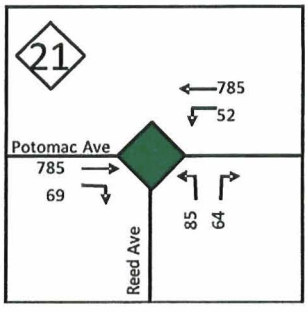


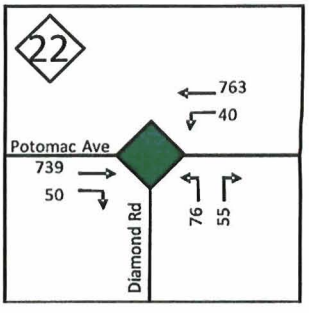


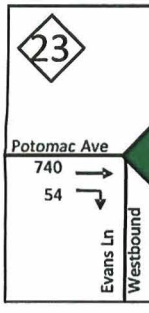






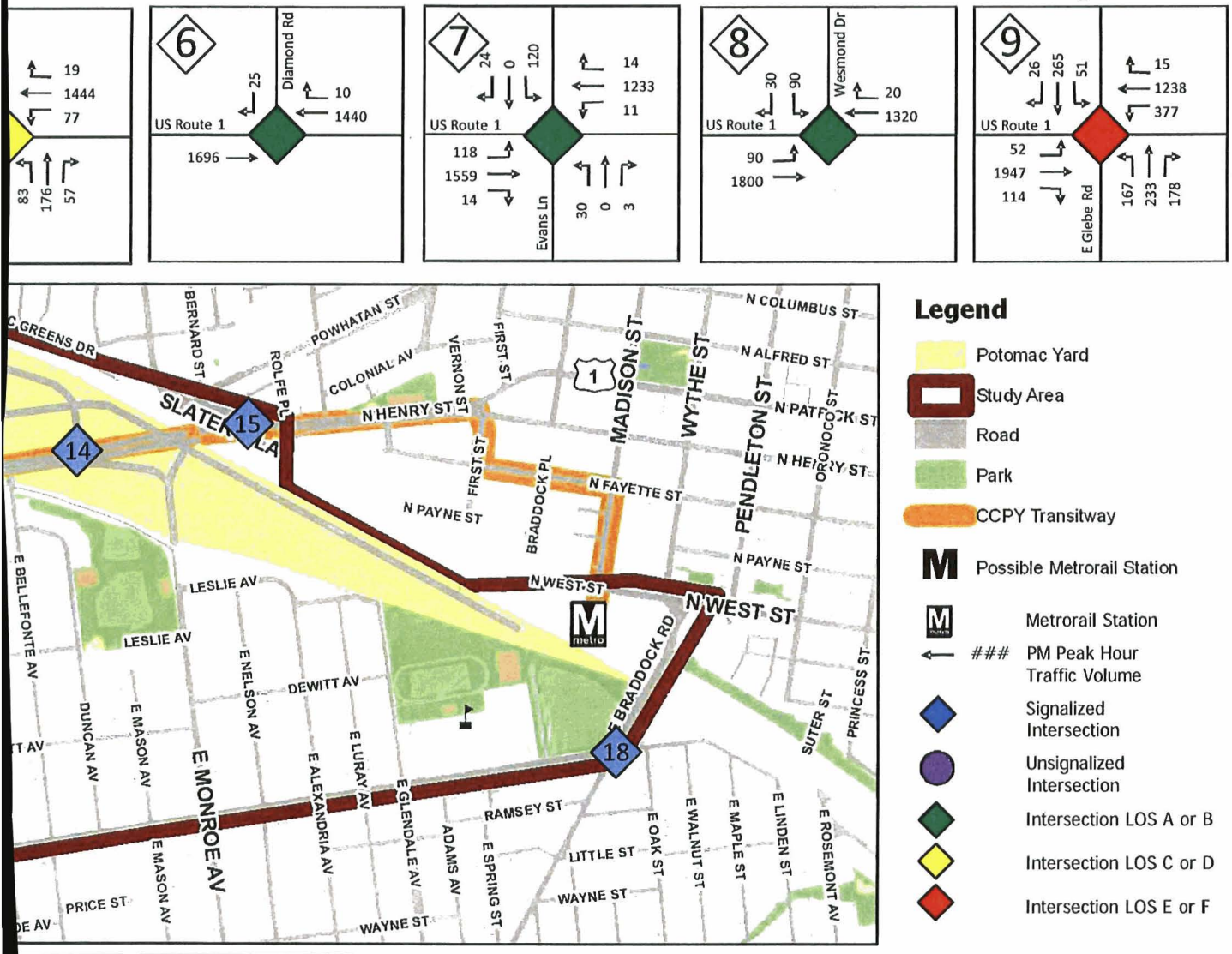


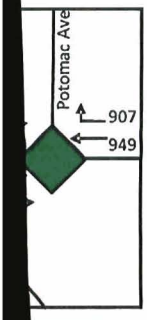


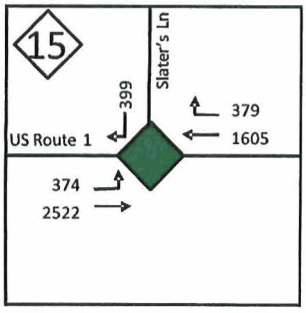


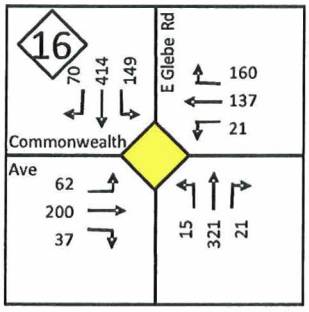
Kimley-Horn and Associates, Inc.

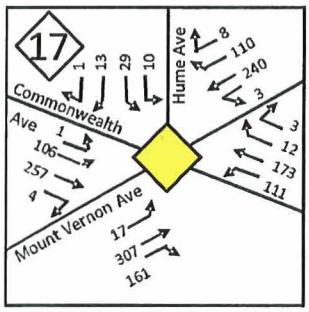
Figure 7-3: Future Intersection Volumes and Levels of Service with Development

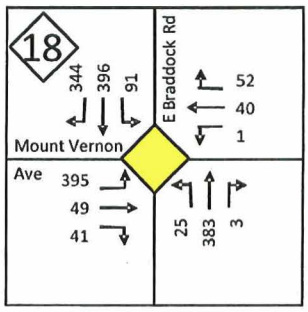


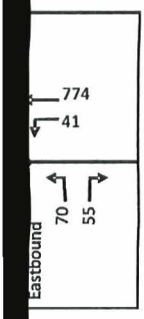


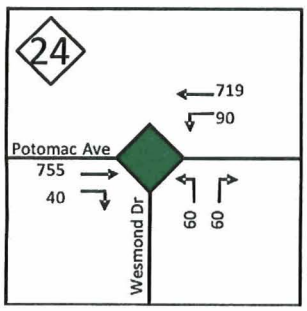


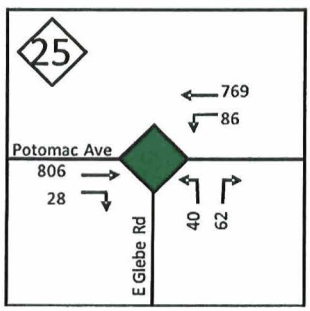












0 375 750 1,500 2,250 Feet

For the projected level of development to be accommodated at acceptable LOS at the US 1 and E. Glebe Road intersection, assuming that vehicle trip assignments occur as rigidly as assumed in this traffic study, additional intersection modifications would be needed. Without further widening intersections and streets, traffic could instead be accommodated by more even distribution among all intersections and streets along US 1. Understanding that interconnected networks of streets facilitate the balancing of traffic at intersections, the proposed interconnected network of new streets within Landbay F will facilitate the balancing of turning movements among the many intersections with US 1. As a result of the balancing of traffic across the network, operation of study area intersections are anticipated to be acceptable.

It is recommended that the eastbound (Glebe Road) leg of the intersection be modified to provide an exclusive left-turn lane, through lane, and right-turn lane. With this improvement, the calculated overall level of service for the intersection will remain LOS F; however the improvement will reduce the impact of development on the eastbound (Glebe Road) approach by reducing delay and queue lengths. The level of service calculation assumes that the pedestrian phase will be called each signal, which is conservative since it will not be called each cycle. On cycles when the pedestrian signal is not called, the US 1 mainline will receive more green time and perform at a better level of service.

Similar to the poor level of service calculated for the intersection of US 1 and E. Glebe Road, the LOS E experienced at the intersection of US 1 and Potomac Avenue may be attributed to an over-assignment of westbound left turns from Potomac Avenue to US 1. Operations at the intersection are likely to be better than calculated because the traffic will balance among the many intersections along US 1.

With the future street network completed, the remaining study intersections are anticipated to operate at acceptable LOS. The additional north-south capacity created by adding Potomac Avenue, the improvement of US 1 through the provision of left turn lanes at intersections, and the improvement to side-street approaches to intersections will help to efficiently move traffic. To provide further efficiency within the street network, signals will be retimed and coordinated to accommodate the transitway, pedestrian and bicycle movements, and vehicular traffic.

US 1 Corridor Travel Times and Speeds

Table 7-2 shows a summary of weekday PM peak hour travel times and average speeds on US 1 in the study area under existing conditions, under conditions without the proposed development, and under conditions with the proposed development.

Table 7-2 2030 Future Conditions with Development Average Weekday PM Peak Hour Travel Speeds and Times for US 1						
	Southbound			Northbound		
Scenario	Speed (mph)	Travel Time (min)	Increase in Travel Time (from existing)	Speed (mph)	Travel Time (min)	Increase in Travel Time (from existing)
Existing	20.9	5.0	-	22.3	4.5	-
Future Conditions without Development	13.1	7.5	50%	14.7	7.0	56%
Future Conditions with Development	16.6	7.0	40%	12.1	8.5	89%

* Future conditions assume the construction of the transitway on US 1, Diamond Road, and Potomac Avenue
**Under Future Conditions with Development, US 1 signals are timed with lead-lag left turns and coordinated with 140-second cycle length. Potomac Avenue is timed with coordinated, 90-second cycle length signals.
Source: Kimley-Horn and Associates, Inc.

As shown in the table, as the level of traffic increases, contributed to by a number of factors, weekday PM peak hour travel speed decreases and delay increases on US 1.

Impact on Local Streets

In addition to reduction in travel speed on US 1, volumes will increase on some local streets and minor collector streets. Future forecasts were prepared for E. Reed Avenue, E. Glebe Road, Hume Avenue, Swann Avenue, Custis Avenue, and Howell Avenue within the study area. As shown in **Table 7-3**, to be conservative E. Reed Avenue and E. Glebe Road were assumed to carry forecasted local and minor collector street traffic.

Table 7-3 2030 Future Conditions with Development Additional Weekday PM Peak Hour Two-Way Traffic (number of vehicles)						
Scenario	E. Reed Avenue	E. Glebe Road	Hume Avenue	Swann Avenue	Custis Avenue	Howell Avenue
Future Conditions without Development	0	277	0	0	56	32
Future Conditions with Development	470	414	0	0	0	0

Note: No traffic was assigned to Custis or Howell Avenues to internationally reflect a worst-case conditions on other east-west streets.
Source: Kimley-Horn and Associates, Inc.

7.4 Conclusions on 2030 Total Future Conditions with Potomac Yard Development

With the addition of traffic volumes that will accompany the proposed redevelopment of Potomac Yard Landbay F as well as possible future development of Landbay L, analyses indicate that all study intersections will operate acceptably with the exception of the intersection of US 1 and E. Glebe Road. To accommodate forecasted volumes associated with the proposed redevelopment on Potomac Yard Landbay F, the following measures should be considered:

- Increasing capacity on streets intersecting US 1 (E. Reed Avenue, E. Glebe Avenue, and Evans Lane) by providing additional lanes.
- Adding an additional east-west connection between Commonwealth Avenue and US 1 to the west of Potomac Yard Landbay F to increase capacity and spread trips along local and minor collector streets.
- Increasing non-auto mode share. The increase in non-auto mode share will need to be supported by policies to discourage single-occupant vehicle travel and the facilities, programs, and services to support these policies.
- Encouraging the use of Potomac Avenue to better balance traffic in the north/south direction.
- Balancing the assignment of Potomac Yard Landbay F trips to the entire Potomac Yard street network.

8.0 MULTIMODAL TRANSPORTATION RECOMMENDATIONS

This chapter presents multimodal transportation recommendations in support of the redevelopment of Potomac Yard Landbay F. Future transportation and development policies and multimodal infrastructure are anticipated to allow the development to meet or exceed the goals for internal capture and mode split that were used in forecasting and evaluating traffic generated by the proposed development. Transportation recommendations in this chapter are described in the following sections:

- **Transportation Demand Management (TDM):** policies, strategies, and programs consistent with city policies that promote and encourage transportation choice
- **Street Network:** general street and intersection recommendations
- **Traffic Calming:** recommendations and guidelines for local streets
- **Transit:** recommendations for the CCPY transitway, Metrorail, and bus service
- **Bicycle and Pedestrian:** general guidelines and future network configuration
- **Parking:** curb space management guidelines, parking requirements, and other programs and policies to manage parking demand
- **Phasing of Improvements:** the implementation of transportation recommendations to correspond with anticipated phases of development

8.1 BEST PRACTICES FOR TRANSPORTATION IN URBAN ENVIRONMENTS

Urban places and cities follow a very different model for moving people than do suburban areas. The focus of suburban areas is primarily on vehicular level of service and the movement of vehicles. In successful urban areas, the focus is on the movement of people by all modes of transportation—walking, bicycling, transit, and driving. There are many points to consider with regard to transportation in urban environments and these points are supported by the visions, goals, objectives, and strategies in the City of Alexandria Comprehensive Transportation Master Plan (the TMP).

Alexandria's Transportation Vision: *The City of Alexandria envisions the enhancement of its transportation system to further promote and encourage the use of alternative travel modes while reducing dependence on travel by private automobile. The City's multimodal approach and planning efforts will foster the establishment of transit-oriented, pedestrian-friendly villages, focused on the creation, preservation, and enhancement of neighborhoods. This will result in increased community cohesion and the formation of a more urban, vibrant, and sustainable city. Promoting a balance between travel efficiency and quality of life will provide Alexandrians real opportunities for travel mode choice, and continued environmental and economic sustainability.*

Transportation Master Plan: *The City expects that any amendment to the Potomac Yard/Potomac Greens Small Area Plan which results in density beyond what is currently approved will include reasonable provisions to address the development and funding of an additional Metrorail station.*

Transportation Planning Concepts and Best Practices

Congestion: To achieve some transportation system goals, planning for a manageable level of traffic congestion is a good practice and is an important factor in increasing transit ridership, bicycle usage, and pedestrian activity. Slow speeds make non-auto modes more attractive, competitive, and in some cases safer. Alexandria's TMP sought to focus transit investments on mobility needs in corridors where transit can specifically address issues such as traffic flow in congested areas and be coupled with access to Metrorail stations and coordinated parking, pedestrian, and bicycle improvements.

Design for all day: Often, roads and intersections are designed so that traffic (auto) volumes during the busiest 15 minutes of the busiest hour of one day a week can be accommodated with little to no delay. Results of this approach can include the creation of large intersections that are unfriendly to all non-auto modes, high transportation infrastructure costs, unrealistic expectations from drivers, and vehicle carrying capacity that goes mostly underused 23 or more hours of the day.

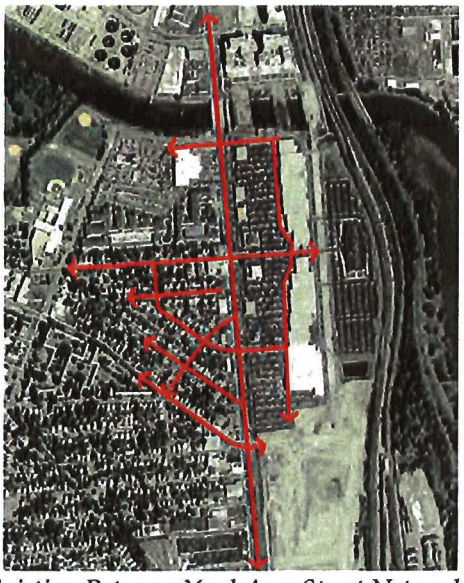
Interconnected network of streets: Not only does a grid or web of streets spread the load of traffic over many, rather than few streets, it allows different streets to perform different functions, including serving different users. The TMP focuses on the ability of streets to safely accommodate all modes of travel through an "emphasis on reducing the size of larger blocks through the redevelopment site planning process" and "creation of a street-grid where possible that reduces the traffic load on arterial streets, resulting in reduced travel distances to destinations, reduced vehicle miles, and creating more direct access to services."

Example of a fine-grained street network: Old Town Alexandria

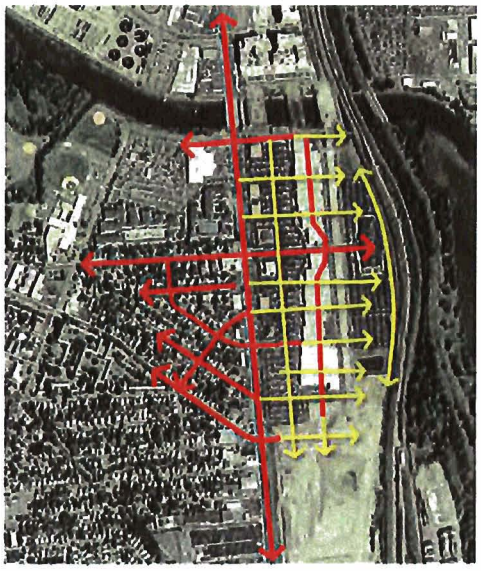
Example of a less-connected street network: Fairfax County, Fair Lakes Area

The proposed Potomac Yard network will be comprised of a set of north-south and east-west streets. The network will provide the following benefits:

- Complementing the street network in the existing neighborhoods to the west of US 1
- Enabling each street to be narrower and become less of a barrier to pedestrian and bicycle connectivity and accommodation
- Better managing traffic by limiting choke points and distributing traffic among many, rather than fewer, streets
- Providing more opportunities for pedestrians to cross streets, reducing walk travel time and distance, which will encourage more trips to be made by pedestrians
- Permitting more efficient emergency responses
- Increasing the amount of curbspace, which can be used for loading, passenger pick ups/drop offs, and on-street parking



Existing Potomac Yard Area Street Network



Conceptual Future Potomac Yard Area Street Network

Interconnectivity between all modes of Transportation: Successful urban areas deliberately plan, encourage, and create connections between all modes of transportation. The TMP advocates that new transit services be fully integrated with existing regional services and coordinated with proposed future services to best serve the City's citizens. Similarly, the TMP recognizes the importance and value of the connection between transit, pedestrians, and bicycles. The TMP recommends additional sidewalks and pathways as well as bike racks of buses, bike infrastructure, and supporting programs to increase usage of transit services and offer more opportunities for bicycling and walking.

Complete Streets: The street network defines spaces for pedestrians, bicycles, transit, landscaping, moving vehicles, and parked vehicles. In the overall street network, individual streets perform different functions and accommodate different modes in different ways. Every street does not have to accommodate all modes, but within the entire network of streets, each mode must be accommodated. The accommodation of pedestrians, bicycles, transit, and vehicles were considered in the development of the future street network for Potomac Yard. Elements to be included on Potomac Yard streets, some of which are shown in **Figure 8-1: Elements of a Complete Street,** are the following:

- 14- to 20-foot sidewalks and landscape strips or tree wells
- Bicycle lanes, sidepaths, and shared-use paths
- 10- to 12-foot wide travel lanes for general vehicles and 12-foot wide travel lanes for transit vehicles
- 8-foot wide parallel parking lanes (includes gutter pan)
- Left-turn lanes at major intersections
- High-visibility crosswalks with accessible curb ramps at marked crosswalks
- Pedestrian count-down signal heads at all signalized intersections and pedestrian crossings
- Pedestrian push buttons where the pedestrian signal phase needs to be called
- Curb extensions that shadow on-street parking and reduce pedestrian crossing distances at intersections
- Median refuge islands at marked crosswalks on roadways with long crossings

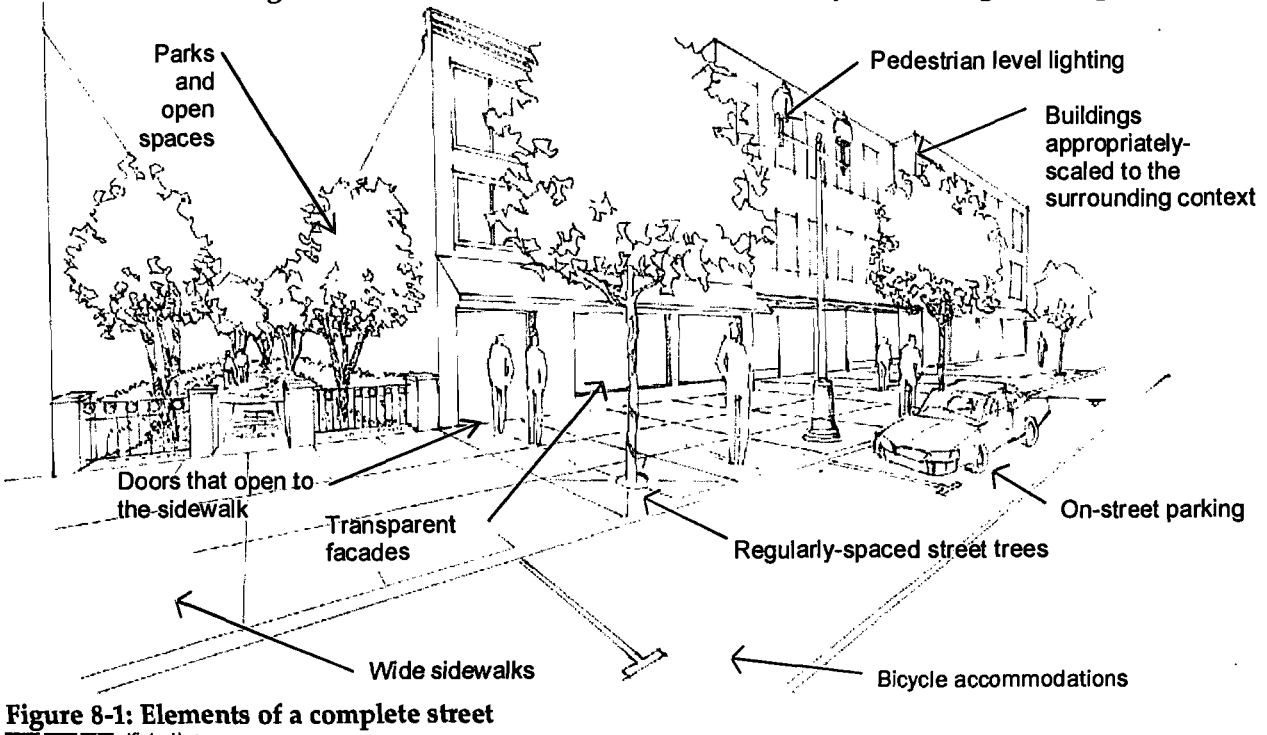


Figure 8-1: Elements of a complete street

Kimley-Horn and Associates, Inc

Compact urban form/density: With greater densities and complementary uses close to one another, there is a much higher probability that people will walk, bicycle, and take transit from one place to another. The TMP "advocates policy to encourage future transit supportive land-use" by reviewing all new land use and development adjacent to designated transit corridors to encourage an appropriate mixture and density around transit stations.

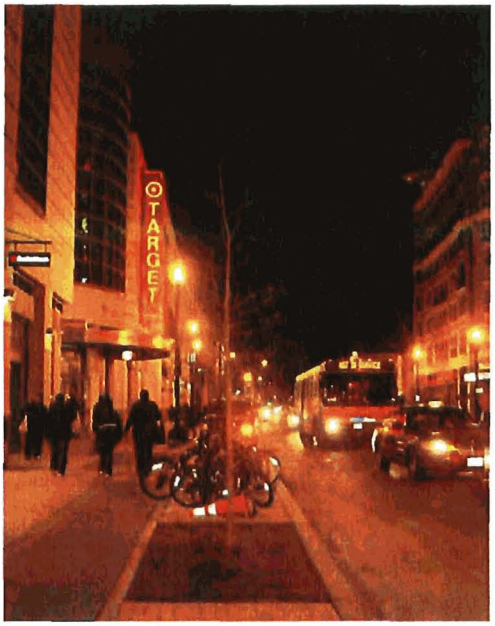
People-moving capacity: In urban areas, capacity in common terms refers to the system's ability to move people, whether they choose to drive, walk, bicycle, or take transit. A diverse system has a much greater ability to move a larger number of people from place to place. The TMP states that "the City of Alexandria policy regarding its street network is targeted toward providing mobility for all users and alternatives to the private automobile" and calls for the City to develop a "Complete Streets" policy developing multimodal corridor design guidelines.

Quality of the experience: Consistent with the previous points, the quality of, and consideration of future investment in the transportation system should not be determined by a single mode, which is often the case. The TMP "seeks to initiate an unprecedented paradigm shift, putting Alexandrian's first and providing them with innovative options for transportation. The successful implementation of this Plan [the TMP] will allow all Alexandrians the opportunity to choose, on a daily basis, if they want to walk, bike, or take transit to their destination."

Vehicle speed: While high vehicular travel speeds may be appealing to through traffic, they are not always viewed favorably by residents, businesses, bicyclists, transit users, or pedestrians along the same street. In urban places, slow and steady is a much more successful approach to corridor operations. The TMP states that the "most dangerous areas for walking have high-speed roads and poor pedestrian facilities." The traffic calming section of the TMP provides a list of measures that the City uses to slow traffic and make streets safer for pedestrians and bicyclists.

Travel time: Travel time will never be equal among all modes, but should be competitive based on value—actual monetary cost of the trip, quality of travel experience, time, and other similar considerations. The transit section of Alexandria's TMP understands that transit is not viewed as a comparable alternative to the private automobile. To make transit more competitive, reliable, and attractive, the recommended solution presented in the TMP is to "secure dedicated, congestion-free, transit rights-of-way for future transit services using advanced technology."

Parking: Great places aren't limited by the parking they can provide or the vehicular trips they can accommodate. Whether or not a parking space is available and how much parking will cost, heavily influences people's decision whether or not to drive to a place. Parking should be available for those that choose to drive and are willing to pay its cost. At the same time, incentives—financial and otherwise—should be provided to those that choose not to drive. The TMP states that a comprehensive parking management strategy that is fully integrated with the City's plans for transit, streets, bicycles, and pedestrians, functions in coordination with these plans—furthering the City's overall goals and wider transportation vision. The plan also provides parking management principles that include shared parking, parking pricing, peak parking management, and maximum parking ratios.



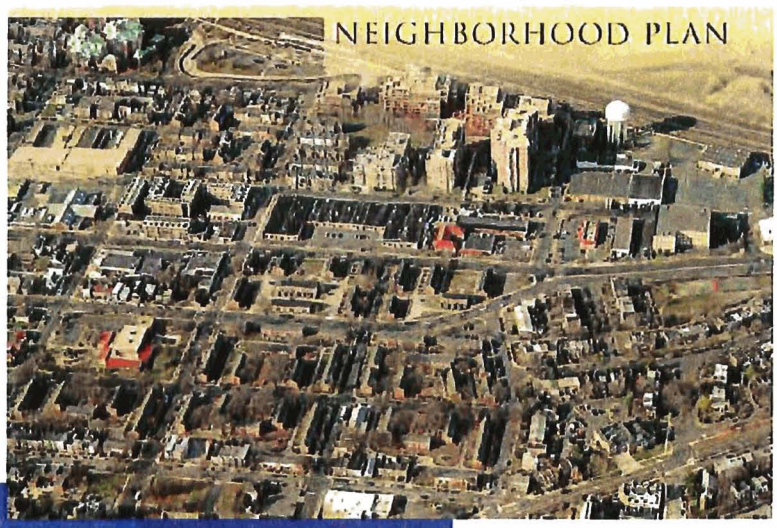
Columbia Heights Shopping Center, Washington, D.C.

Columbia Heights Parking Garage
Source: Washington Post Article Entitled *"At NW Mall, So Many Spaces, So Little Need"*

Citywide Experience in Implementing Best Practices

Much like its regional neighbors, Alexandria has departed from auto-centric policies and planning practices. While the City continues to implement improvements to its transportation system to benefit vehicles, significant road widening to accommodate increases in travel demand is not at the center of the City's transportation improvement program. At a practical level, street rights-of-way are very constrained and the value (benefit vs. actual cost) of widening streets to accommodate, in some cases non-Alexandria

traffic, is low. In general, Alexandria's overall transportation focus is oriented toward making the most efficient use of the existing vehicular network (while protecting neighborhoods) and increasing the people-moving capacity of the transportation and transit systems.



Braddock Metro Neighborhood Plan

Eisenhower Avenue Development

Regional Experience in the Urban Core

Locating housing, services, and employment where it can be well-served by transit is at the center of the overall growth strategy of Alexandria, Arlington, and the District of Columbia. The cost of allowing development in locations that are not, or could be conveniently served by transit, is too high. One of the land use policies included in the City of Alexandria's comprehensive plan states that large-scale and high density office concentrations should be limited to designated areas where high density concentrations are appropriate and where the traffic impacts on residential neighborhoods will be relatively limited.

Being at the urban core of the region, Alexandria, Arlington, and the District of Columbia recognize that widening streets to accommodate regional traffic growth is not beneficial to the health of their communities. Instead, each of these areas has chosen to diversify their transportation system and increase its ability to move people through approaches that include:

- **Vehicular lane reductions:** removing vehicular travel lanes on streets to make more room for pedestrians, bicycles, and transit users
- **Pedestrian network additions and enhancements:** new sidewalks, widened sidewalks, pedestrian safety improvements at intersections and between blocks (bulb-outs, pedestrian heads, pavement markings, medians, etc.), and similar measures
- **Bicycle network additions and enhancements:** bike lanes, paths, bike parking areas, bike sharing, bike stations, and other facilities
- **Transit service increases and facilities improvements:** shelters, benches, lighting, paved waiting areas, more frequent service, longer trains, more routes, more direct routes, super stops, BRT/transitway planning
- **Parking and Transportation Demand Management (TDM):** limiting parking, charging a fee for parking, sharing parking, transit passes, unbundling parking cost, transit incentives, required TDM plans and monitoring, and similar measures

As each of these areas has become more dense and populations have either stabilized or grown in the last 20 years, traffic growth on many major roadways has been moderate or has simply not occurred. Using Wilson Boulevard in Arlington as an example because it is well-documented, the volume of daily traffic has not changed in the corridor in more than 20 years, despite the significant increase in density. In 1980, Wilson Boulevard carried approximately 19,500 vehicles per day. Measured in 2000, Wilson Boulevard was carrying 18,600 vehicles per day. To accommodate the tremendous increases in density in the corridor, transit, walk, and bicycle mode shares have increased exponentially.

8.2 Transportation Demand Management

Background

The City's transportation vision is to encourage use of alternative modes of transportation, reducing dependence on the private automobile. Potomac Yard is envisioned as a transit-oriented, pedestrian-friendly, urban place. It will have a multimodal transportation network and facilities that include a Metrorail station, the CCPY transitway, bicycle facilities, and pedestrian accommodations.

TDM will be used to ensure that travel behavior that underlies the assumptions in this study will become reality. The City of Alexandria's Local Motion program promotes transportation choice. With strategic implementation, TDM can have a significant impact in reducing vehicular trips to and from Potomac Yard, as it has in other areas of Alexandria.

Alexandria's Local Motion includes travel tools, programs, and resources including news, notices, useful links. Local Motion is administered by the City's Office of Transit Services and Programs. A list of programs includes:

- **Air Quality Action Days** – a workplace-based outreach program notifying participants of unhealthful air days and encouraging alternative forms of transportation on these days
- **Carshare Alexandria!** – the City provides a monetary incentive to residents and businesses to encourage use of carsharing service
- **Employer Services** – the City provides an Employer Services Outreach Specialist to work with businesses to find transportation solutions for employees tailored to each organization. Applicable programs and solutions include:
  - eNews, Local Motion display, RSS feed
  - Local Motion employer kits
  - Bike to Work Day
  - Metro SmartBenefits® and Metrochecks

Alexandria's Local Motion Webpage

- **Guaranteed Ride Home** – Commuter Connections provides a free ride home to eligible commuters
- **Local Motion Ambassadors** – volunteers who live and/or work in the city assist with promoting transit, walking, and bicycling as realistic travel options
- **Telework** – the Telework!VA program, administered by the Virginia Department of Rail and Public Transportation, provides financial assistance for companies establishing or expanding telework programs

In the proposed Potomac Yard development, TDM programs that encourage travel modes other than single occupancy vehicles will contribute in a significant way to creating a livable development and protecting the adjacent residential neighborhoods. Over time, the vehicular transportation network is likely to steadily approach capacity and traffic delays will increase on major roadways, which will increase the value of other travel choices available in an area.

Regardless of whether and at what density Potomac Yard Landbay F is developed, US 1 will eventually reach its vehicular capacity. If local trips do not use available road capacity, inevitably regional trips will consume the available capacity. When Alexandria further urbanizes, a larger proportion of all trips made on US 1 are likely to be local and of a shorter length. The investments in the multimodal transportation network that are already planned in addition to those that will be partially funded through the proposed development of Landbay F will create substantial people moving capacity to accommodate increases in travel demand associated with continued development in Alexandria as well as in Potomac Yard specifically. Coupled with a strong network of multimodal transit options, TDM can help to improve the quality and number of transportation choices in the community.

Recommendations

The following TDM measures are recommended for the proposed development:

- Require the establishment of a Transportation Management Plan (TMP) district. All new development will be required to participate in the TMP district.
- Establish a district-wide TMP, managed by a coordinator to oversee TDM strategies which include:
  - Carsharing – allocate curb space to carsharing service and advertise the Carshare Alexandria! program
  - Ridesharing program – advertise Alexandria Rideshare and provide incentives for ridesharing
  - Transit – provide services (Metrorail, CCPY Transitway, Metrobus, DASH) and incentives to use transit (see section **8.5: Transit Recommendations**)
- Pedestrian and bicycle - provide a high-quality network and amenities (see section **8.6: Pedestrian and Bicycle Recommendations**)
- Parking – employ appropriate parking ratios, require shared parking, and implement parking management (see section **8.7: Parking Recommendations**)
- Employ aggressive TDM performance measures. The TMP coordinator should establish benchmarks and evaluate current and future TDM strategies and make necessary adjustments to achieve the goals of the plan to reduce single occupant vehicle trips and increase travel by other modes.

8.3 Street Network

Background

The recommended interconnected street network for Potomac Yard will complement the existing street network. The street network serving Potomac Yard Landbay F will be comprised of US 1, Main Line Boulevard, Water Street, and Potomac Avenue in the north-south direction and seven east-west streets north of E. Glebe Road. When complete, Potomac Avenue will be a new major route that will connect US 1 to the south with Crystal Drive in Arlington to the north. It will provide additional north-south capacity for local and regional trips helping to relieve US 1 and other north-south corridors.

Street hierarchy determines what elements and functions should have priority on a given street. In this study, street categories include Primary, A, B, and C, which are described in the following:

- **Primary streets** focus on providing mobility and are critical in moving longer trips made by any mode of transportation. These streets should have high-quality pedestrian accommodation, transit facilities, (shelters, benches, etc.) and may provide bicycle facilities on-street or adjacent to the street.

Example of a Primary Street: Washington Street, Alexandria, VA

- **Class A streets** connect an area to the primary street network and are critical in distributing people once they leave the primary street network. These streets have few individual site driveways and accommodate all modes of transportation relatively equally. They should provide high-quality pedestrian accommodation and also may accommodate bicycles and on-street parking. Class A streets in Alexandria include King Street, Mount Vernon Avenue in Del Ray, and 18th Street.

Example of a Class A Street: Mount Vernon Avenue in Del Ray, Alexandria, VA

- **Class B streets** provide a balance of mobility and access to land. They typically provide high-quality pedestrian accommodation, accommodate bicycles, and have on-street parking. Class B streets typically have individual driveways and allow some on-street loading and service. An example of a Class B street in Alexandria is Cameron Street.

Example of a Class B Street: Cameron Street, Alexandria, VA

- **Class C streets** accommodate local land access and service functions such as loading and unloading. They provide varying levels of pedestrian accommodation, often have no specific bicycle accommodation, and may allow on-street parking. Class C streets typically have frequent individual driveways, on-street loading, and service activities.

Recommendations

Corridor Cross-sections – **Figure 8-2** shows the recommended street network with the number of lanes and street hierarchy for each new street in Landbay F. **Table 8-1** shows recommendations for elements of each type of street in the Potomac Yard network.

Table 8-1
General Recommendations for Street Elements

Element	Hierarchy				
	Type A without transit	**Type A with transit**	**Type B without transit**	**Type C without transit**	**Type C with transit**
Width of Pedestrian Realm (sidewalk and landscape strip)	18 to 22 feet	20 feet (minimum)	18 to 20 feet	20 feet (minimum)	14 feet
On-street Parking	Both sides of street	Depends on transit configuration	One or both sides of street	Both sides of street	Both sides of street
Bicycle Facility (where applicable)	5 foot bicycle lane or 14 foot sharrow lane	None	5 foot bicycle lane or 14 foot sharrow lane	None	None
Vehicular Lane Width	10 to 11 feet	12 feet	11 feet	12 feet	12 feet
Turn Lane Width (where applicable)	10 to 12 feet	None	None	10 to 12 feet	None
Transit Lane Width	None	12 feet	None	None	12 feet

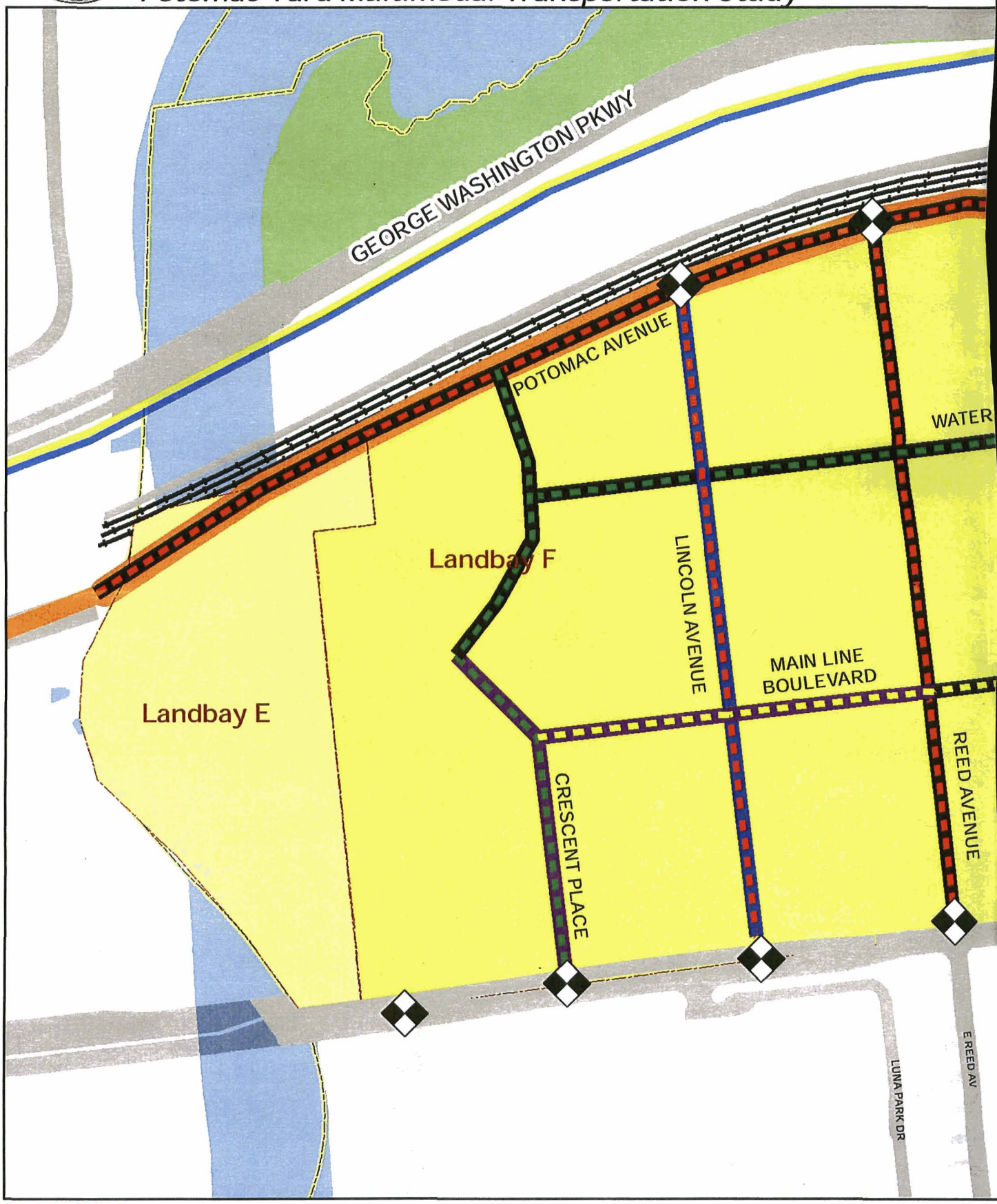
Source: Kimley-Horn and Associates, Inc.; Reference: City of Alexandria

Intersection Traffic Control and Laneage – The recommended points of access for Potomac Yard Landbay F, future intersection laneage, and traffic control are shown in **Figure 8-3: Recommended Future Intersection Traffic Control and Laneage.**

The traffic signal at the intersection of US 1 and future Diamond Road will have a transit phase and vehicular access will be restricted to right-in, right-out. The traffic signal at the intersection of Potomac Avenue and future Diamond Road also will have a transit phase.

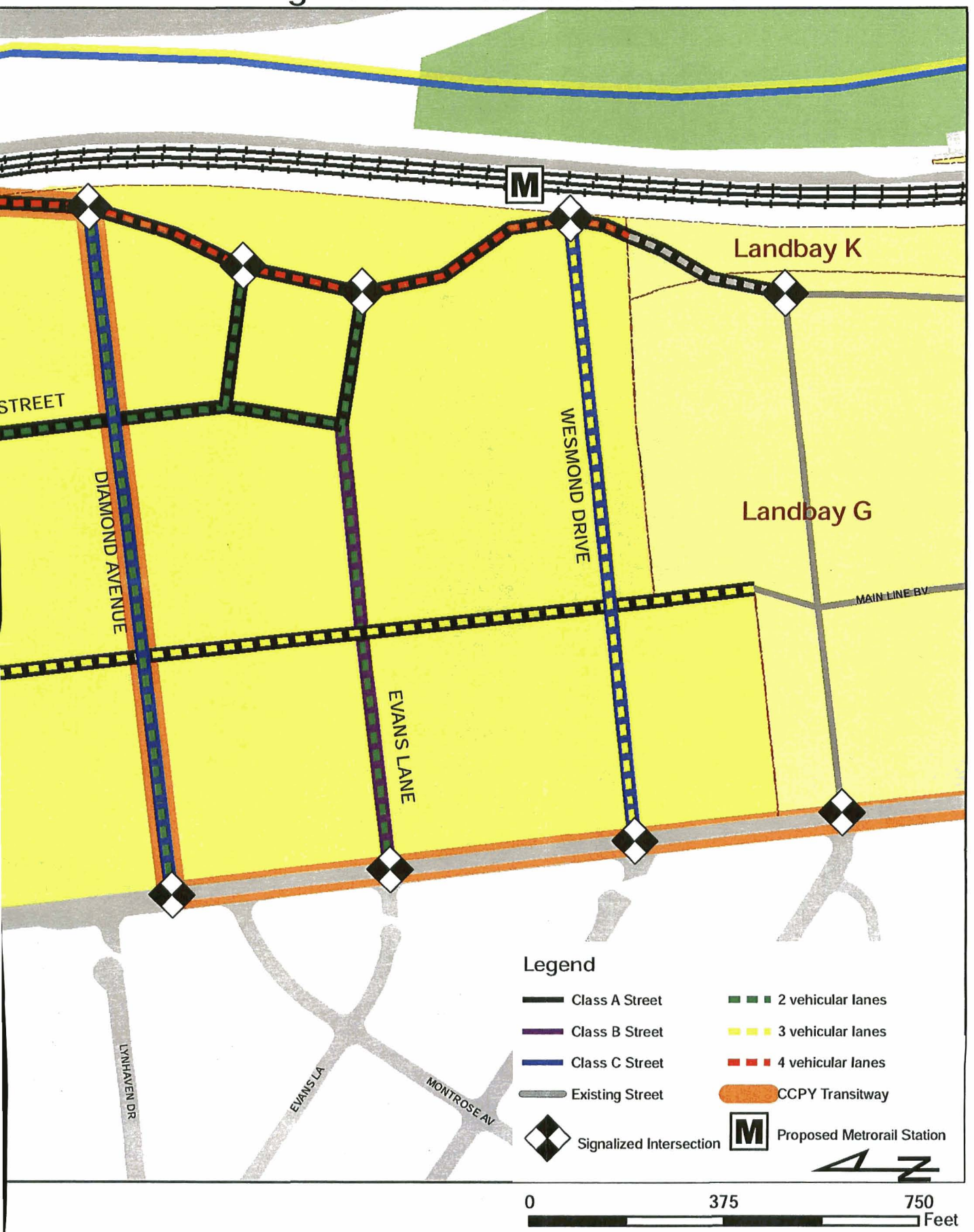
Commonwealth Ave – Extend a new east-west public street between Commonwealth Avenue and US 1. The new street will intersect with US 1 at an existing signalized intersection at a location yet to be determined between Four-Mile Run and Reed Avenue.

Potomac Yard Multimodal Transportation Study

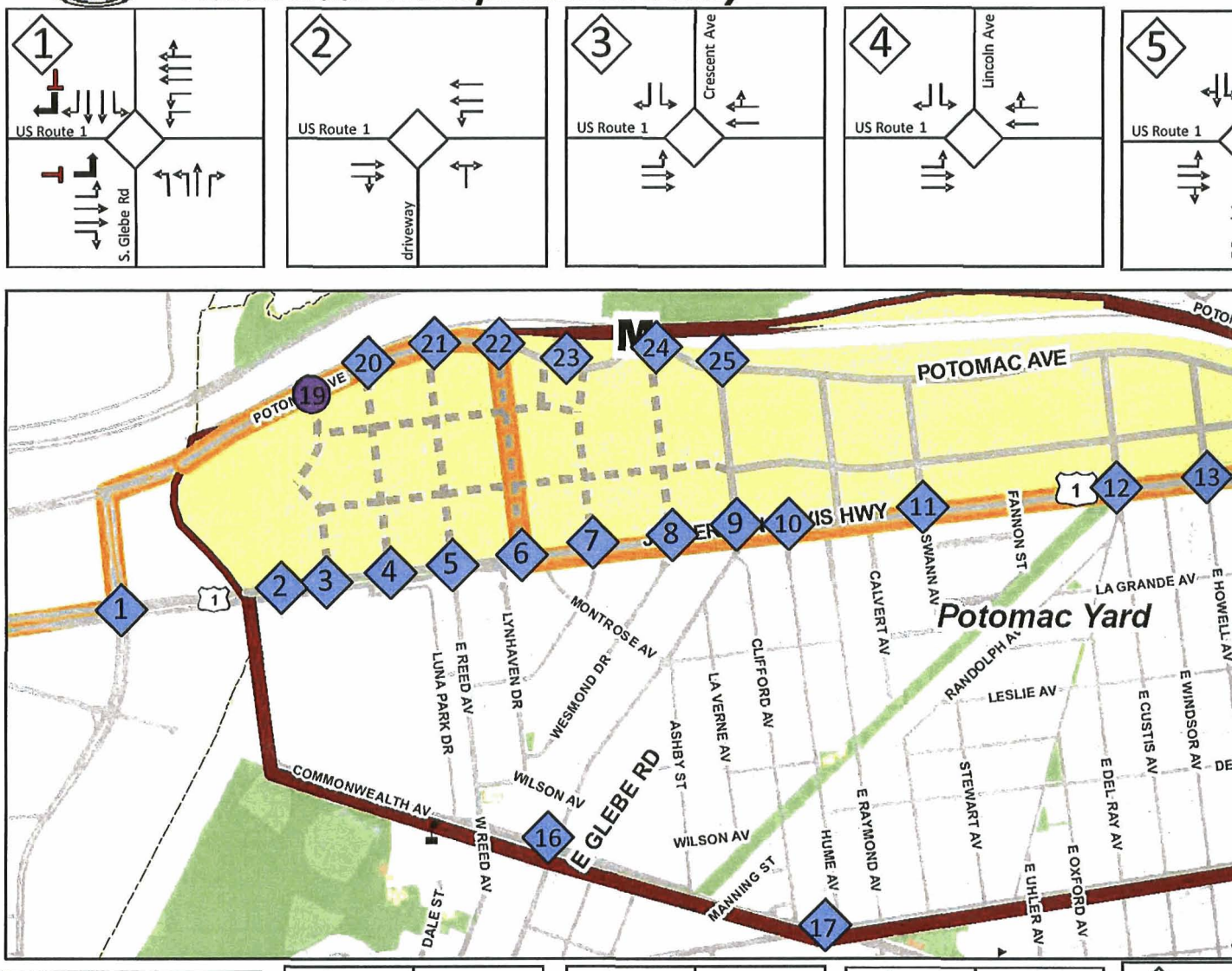


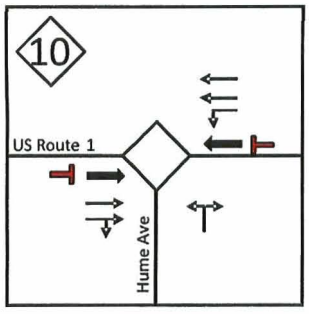
Kimley-Horn and Associates, Inc.

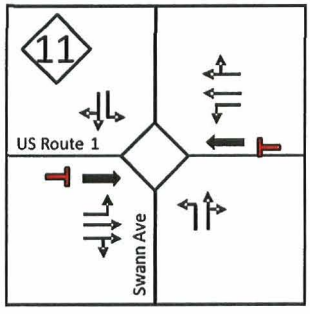
Figure 8-2: Recommended Street Network

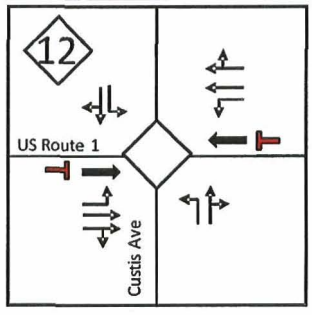


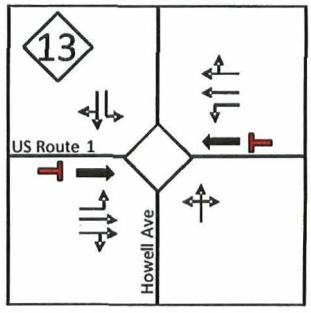
Potomac Yard
Multimodal Transportation Study

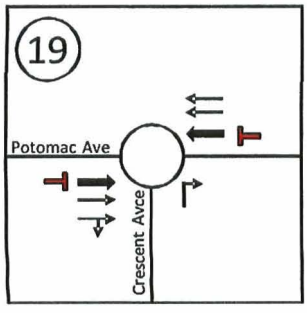


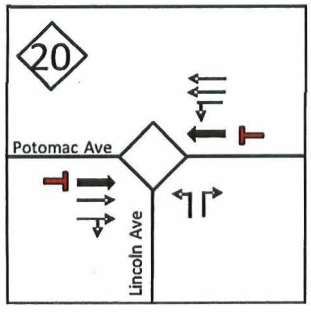


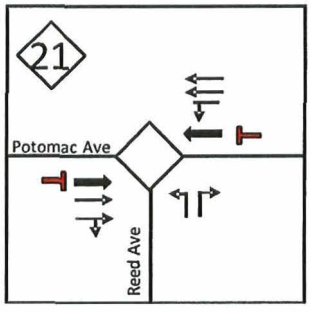


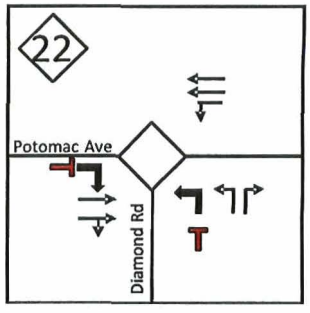


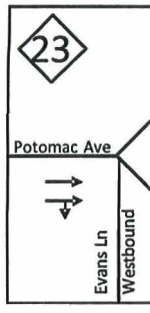






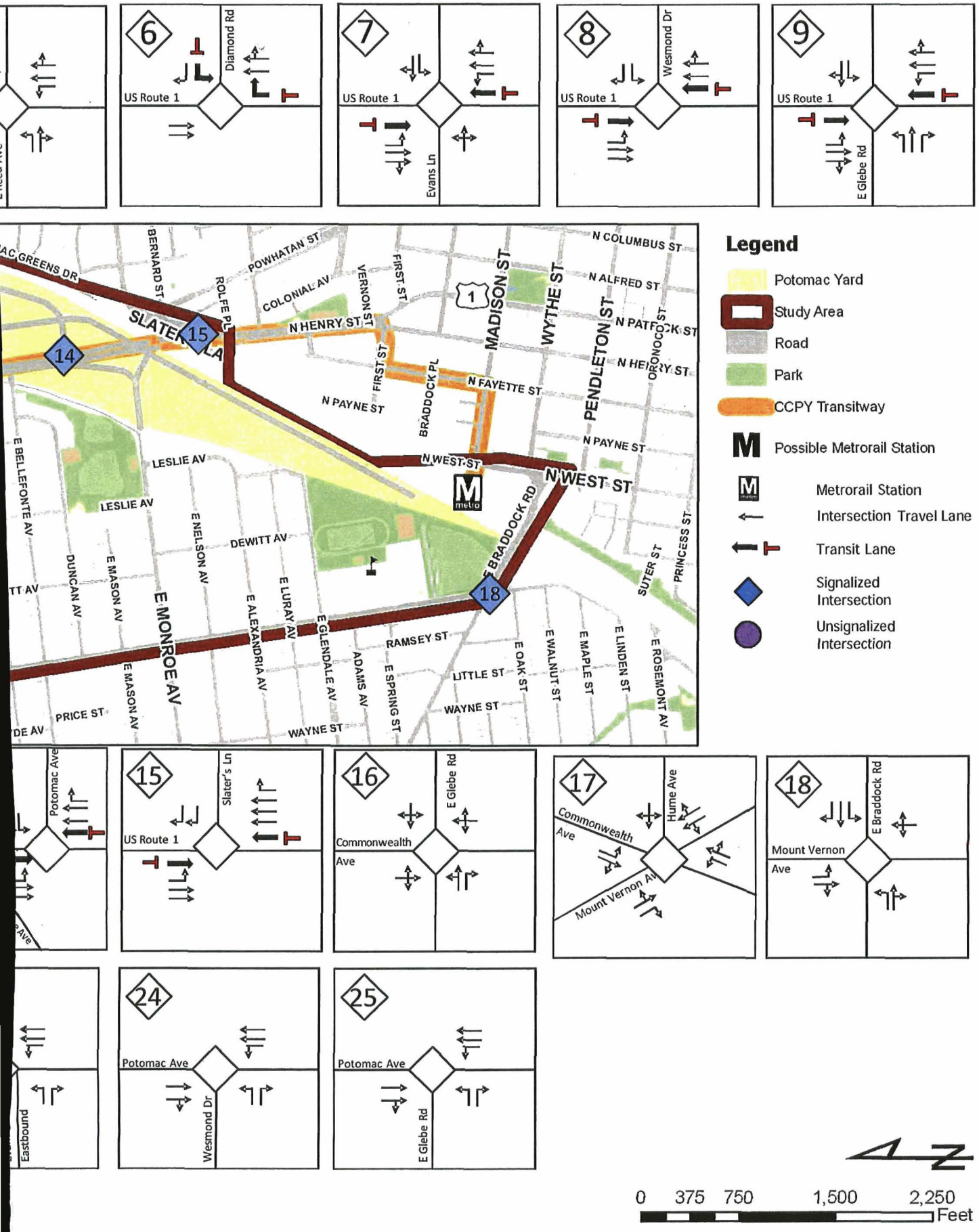






Kimley-Horn and Associates, Inc.

Figure 8-3: Recommended Future Intersection Laneage and Traffic Control



Modifications to Existing Intersections – Modifications are recommended to improve safety and operations as well as accommodate the future transitway. With the implementation of the transitway, the following intersections should be modified to provide an exclusive left-turn lane, an exclusive through lane, and a shared through and right-turn lane in the northbound (US 1) and southbound (US 1) directions:

- US 1 and Commonwealth Avenue extension
- US 1/Reed Avenue
- US 1/Evans Lane
- US 1/E. Glebe Road*

*The intersection of US 1 and E. Glebe Road should be modified to provide an exclusive left-turn lane, through lane, and right-turn lane in the eastbound (Glebe Road) direction.

Additional recommendations for these intersections include:

- Evaluation of signal cycle length to improve traffic progression and side-street operations at intersections along US 1
- Implementation of lead-lag left-turn phasing to improve intersection operations
- Removal of existing split phasing at side street approaches at US 1 intersections
- Modification of signal phasing for side street approaches at US 1 intersections to include left-turn phases as needed

8.4 Traffic Calming

Background

Connectivity between Potomac Yard and adjacent neighborhoods is important. The recommended street network within Potomac Yard Landbay F will be spaced to complement the street network in Del Ray and Lynhaven. Increased connectivity within the local street network is beneficial to improving local mobility and access as well as in helping to distribute local trips on the local street network.

The appropriate application of traffic calming measures will help to preserve desirable street characteristics in neighborhoods adjacent to Potomac Yard. Existing local streets in Del Ray and Lynhaven, illustrated in **Figure 8-4: Typical Local Street**, already incorporate natural traffic calming features such as narrow travel lanes, on-street parking, and appropriate streetscapes. Comprehensive application of additional traffic calming measures can further minimize the attractiveness of neighborhood streets to cut-through traffic.

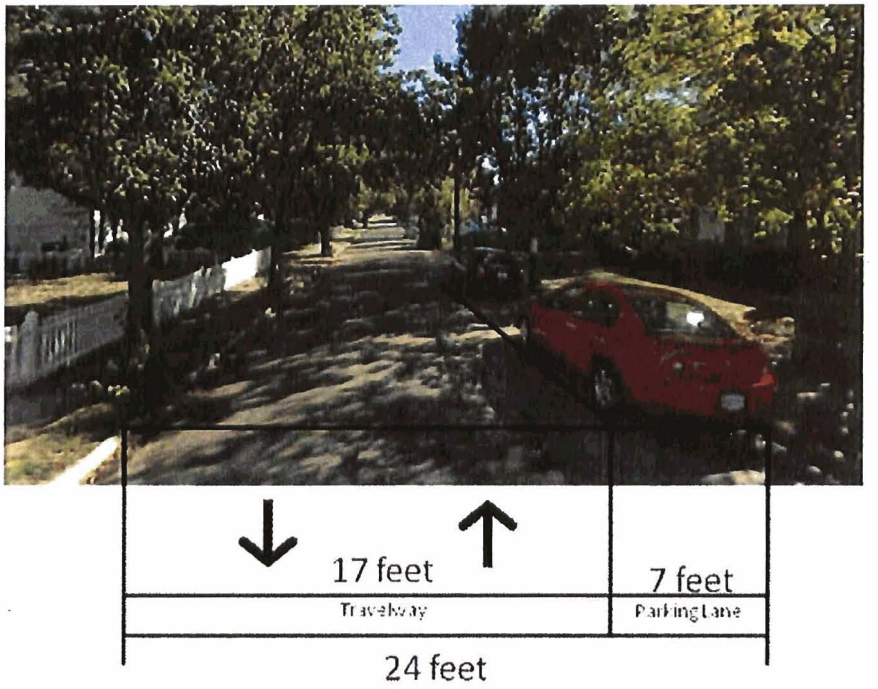


Figure 8-4 Typical Local Street (Custis Street)

Recommendations

Measures to enhance connectivity with adjacent neighborhoods are recommended to include:

- Allowing all turning movements at the intersection of US 1 and E. Reed Street
- Studying the possibility of allowing all turning movements at the intersections of US 1 and Evans Lane, Wesmond Road, and Lynhaven Street

Prior to development levels in Potomac Yard Landbay F exceeding existing vehicular trip generation levels of existing Potomac Yard Landbay F, preliminary traffic calming measures are recommended to be installed as shown in **Figure 8-6: Preliminary Traffic Calming Plan.** Measures are recommended to include:

- Vertical and street entrance treatments on Luna Park Drive, Clifford Avenue, Hume Avenue, E. Del Ray Avenue, E. Custis Avenue, E. Windsor Avenue, E. Howell Avenue, E. Bellefonte Avenue, and E. Monroe Avenue
- Mini circles at the intersections of Clifford Avenue and Turner Road, Hume Avenue and Turner Road, E. Del Ray Avenue and Dewitt Avenue, E. Custis Avenue and Dewitt Avenue, and E. Howell Avenue and Dewitt Avenue

Following the implementation of the traffic calming measures in the Preliminary Traffic Calming Plan, traffic volumes and speeds should be recorded on key local streets to establish a baseline for future evaluation. As development continues in Potomac Yard Landbay F, traffic volumes and speeds should be reviewed periodically. Local or collector

streets in the area bounded by E. Reed Avenue to the north, Monroe Avenue to the south, US 1 to the east, and Commonwealth Avenue to the west and have access to US 1 (signalized or unsignalized), as well as Russell Road, should be monitored as to traffic speed and volume. If speed and/or volume meet the criteria described in the City of Alexandria's Neighborhood Traffic Calming Program (NTCP) Guide, it is recommended to consider the installation of appropriate traffic calming measures. The NTCP guide includes a traffic calming toolbox with measures such as gateways, diverters, pedestrian refuge islands, bulb outs, pavement markings, street narrowing, speed cushions, and similar street and intersection modifications.

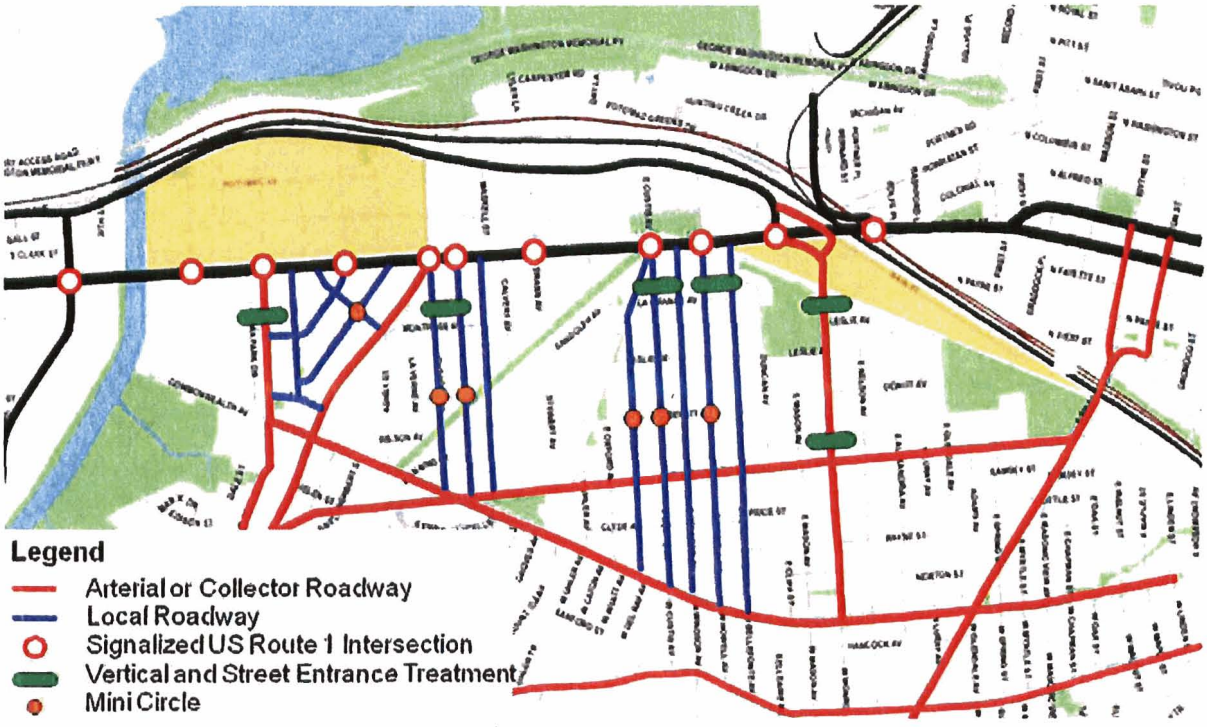


Figure 8-6: Preliminary Traffic Calming Plan

Example Mini Circles

8.5 Transit Network

Background

The Potomac Yard study area will be served by new transit services to supplement existing regional services, City bus services, and City paratransit. In addition to planning a transit system with a wide array of services, connectivity between transit services, biking, and walking is essential to ensuring travel choice for area residents, workers, and visitors.

Multimodal Transportation Facility – There will be more transportation options available for residents, workers, and visitors of Potomac Yard. A facility to intentionally connect and coordinate transportation services would perform a vital function in encouraging travel choice.

Metrorail Services – The Potomac Yard study area will be better served by the Yellow and Blue lines when a new station is constructed between Crystal City and Braddock Road. The proximity of the proposed new Metrorail station to Landbay F and other adjacent Potomac Yard landbays is anticipated to support a higher transit mode share than bus and transitway services would achieve alone.

CCPY Transitway – The Crystal City/Potomac Yard Transitway is planned to travel through Potomac Yard and extend north to the Crystal City Metrorail Station in Arlington County and south to the Braddock Road Metrorail Station. In Alexandria, the transit corridor would run between the Braddock Road Metro station and Four-Mile Run. From the Braddock Road Metro station, the CCPY service would follow Madison Street, Fayette Street, and First Street to US 1, where it would turn north. The service then would travel north on US 1, turn east on future Diamond Road travelling through Potomac Yard Landbay F. It then would turn north on Potomac Avenue and travel to Arlington County. In the study area, the transitway is planned to operate in dedicated lanes that are compatible with the operating requirements of bus rapid transit or streetcar. The initial service concept for the corridor is median-running bus rapid transit.

Bus Services – Bus services will continue to be important in Potomac Yard. They will provide service to local destinations and to the CCPY Transitway and to Metrorail.

Recommendations

Transit system recommendations are shown on **Figure 8-7: Recommended Transit Network** and further described in the following:

Multimodal Transportation Facility

- Construct a multimodal transportation facility east of Potomac Avenue between Diamond Avenue and Wesmond Drive as shown in **Figure 8-7**. (This location is adjacent to the proposed Potomac Yard Metrorail station). The facility is recommended to:

- Accommodate Metrorail, the Crystal City/Potomac Yard Transitway, bus services, and other publicly accessible transportation services
- Provide elements to accommodate commuting bicyclists and provide commuter-oriented retail and services

Metrorail

- Coordinate with WMATA, the National Park Service (NPS), the Federal Highway Administration (FHWA), transit agencies, CSX, and the landowners in Potomac Yard to resolve issues related to the new Metrorail station such as impacts on NPS property, scenic easements, wetlands, BAR, financing, and phasing
- Construct a new Metrorail station adjacent to Potomac Yard Landbay F as shown in **Figure 8-7** that includes a pedestrian bridge between Landbay F and Potomac Greens

CCPY Transitway

- Reserve right-of-way along US 1 north of Diamond Road to allow for possible future continuation of the dedicated transitway along US 1 into Arlington County
- Coordinate with Arlington County to the extent feasible in the selection of the transit technology and design vehicle for the CCPY Transitway
- Explore options to incorporate innovative and sustainable technologies into the transitway, such as:
  - Solar or hybrid electric power
  - Wayside energy storage substations
  - LED lighting
  - Water-efficient landscaping
  - Recycled building materials
- Design the CCPY Transitway stations as Smart Stations. The TMP identifies design features that should be included in smart stops, shelters, and stations such as:
  - Wireless technology for personal passenger information
  - Environmental design and operation
  - Weather protected interior spaces with seating, lighting, off-vehicle fare collection, and vendors

Swift bus station in Washington State with seating, shelter, information kiosk, and ticket vending machines
Source: Community Transit

- Construct the CCPY Transitway with stations at the following locations:
  - Median of US 1 at the intersection with E. Glebe Road
  - Median of US 1 at the intersection with Diamond Road
  - Median of Potomac Avenue at the intersection with Diamond Road

Bus Services

- As needed, maintain and supplement existing Metrobus and DASH services to provide shorter headways and off-peak or weekend service
- Provide connections between bus services, the transitway, and Metrorail
- Study the possibility of extending the 9S CCPY shuttle service south into Alexandria
- Provide bus shelters with benches and travel information, and at high volume bus stops in Potomac Yard, consider stops having features of the Smart Stops, Shelters, and Stations listed in the TMP
- Provide circulator bus service within Potomac Yard and consider extension to serve adjacent neighborhoods. It should provide connectivity to transitway stations and the Metrorail station

Metrobus Route 9S service in Crystal City

Bus Pad and Bus Shelter on Valley Drive in Alexandria

Potomac Yard Multimodal Transportation Study

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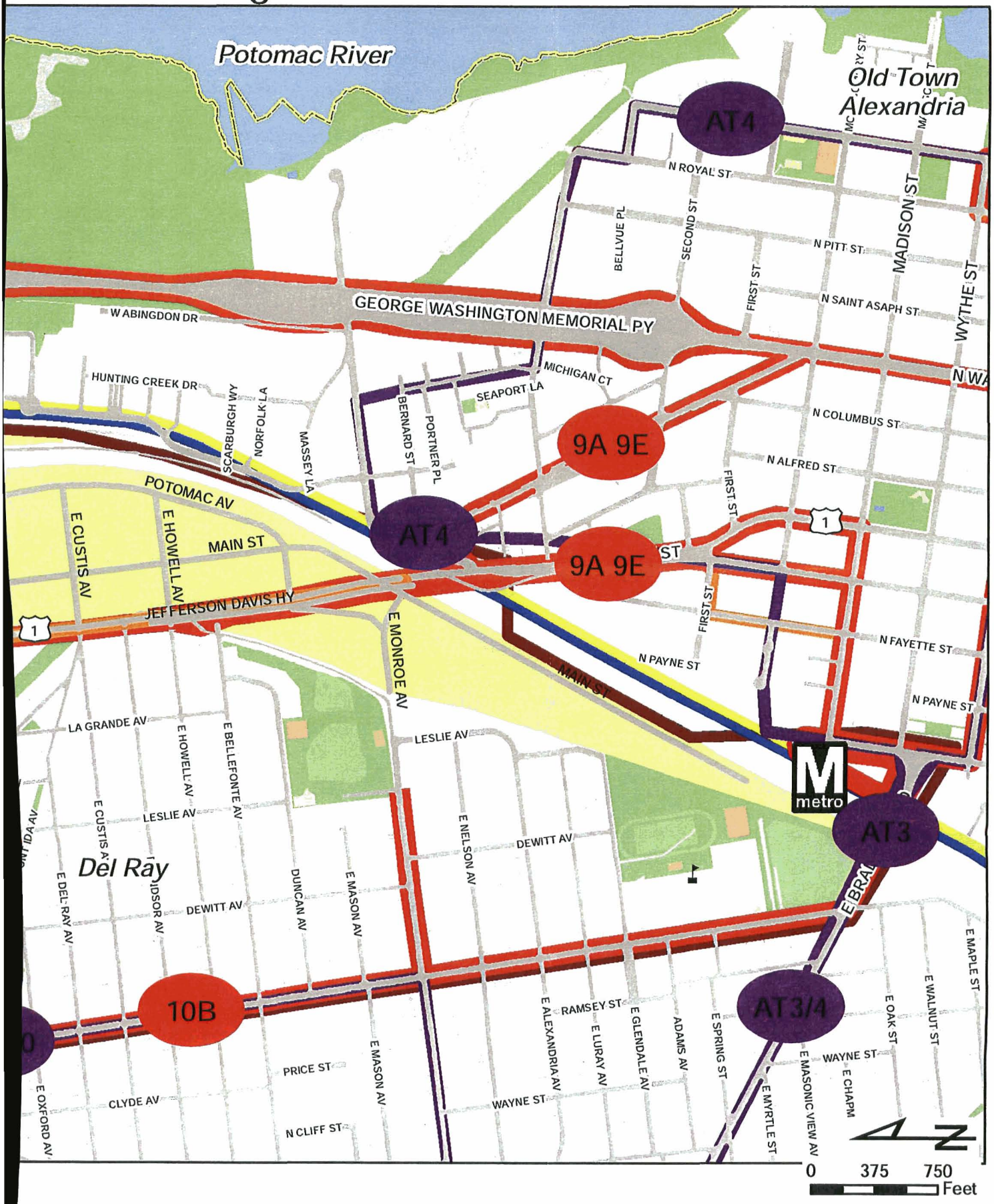
Figure 8-7: Recommended Transit Network



8.6 Pedestrian and Bicycle Network

Background

Providing safe and efficient pedestrian and bicycle facilities is essential to accommodating the proposed development in Potomac Yard and creating a vibrant and sustainable place. Every trip, even those made by car or transit, begins with walking. This alone necessitates design of places that accommodate pedestrians. The future transportation network has been planned so that walking and bicycling will represent a sizable proportion of future trips. To meet that goal, the pedestrian and bicycle networks should be interconnected, consistent, safe, and serve the area's residents, employees, and visitors. This plan identifies a system of pedestrian and bicycle facilities to serve the transportation and recreation needs of the proposed development's residents, employees, and visitors. The facilities will connect to the existing local and regional trail networks and future facilities in other parts of Potomac Yard and surrounding areas.

Recommendations

Pedestrian Facilities

Generally, pedestrian accommodations should include the following:

- High-quality sidewalks on both sides of every street within the proposed development
- Sidewalk buffers (utility/landscape strips)
- High-visibility marked crosswalks with accessible curb ramps (may be high-visibility crosswalk)
- Median crossing islands on streets with more than three lanes, especially on streets with high volumes of traffic
- Curb extensions (blub-outs)
- Pedestrian crosswalk signals at all signalized intersections
- Pedestrian push buttons where the pedestrian signal phase needs to be called
- Pedestrian level lighting

Unsignalized street crossing with sidewalks, marked crosswalk, accessible curb ramps, and curb extensions on Valley Drive

Bicycle Facilities

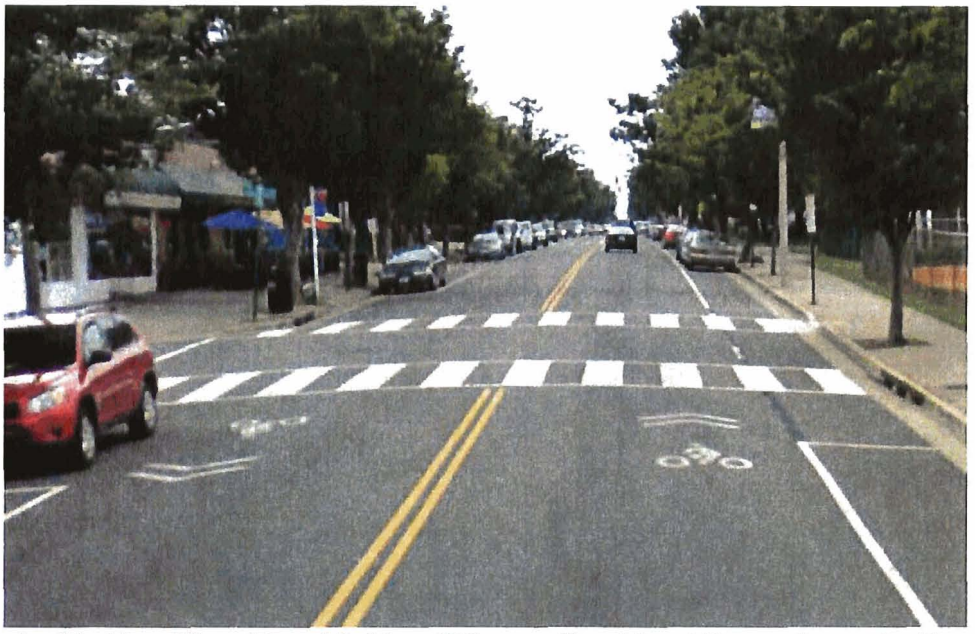
Figure 8-8: Recommended Bikeway and Trail Network shows the existing, planned, and recommended bicycle and trail network. The recommended trail network will promote mobility within the proposed development and connectivity to other parts of Potomac Yard and regionally. The following are recommended:

Off street facilities

- Construct a shared-use path along the east side of Potomac Avenue and coordinate with Arlington County to construct a direct connection across Four-Mile Run. Construct a shared-use path along the east side of Potomac Yard Landbay L connecting to the Braddock Road Metrorail station. These paths will connect to the planned path along Potomac Yard Landbays G, H, I, and J. The shared-use path along the east side of Potomac Yard will connect to Arlington County, the planned pedestrian bridge from Potomac Yard Park across the railroad track to Potomac Greens, and Braddock Road Metrorail station.
- Construct a shared-use path in the linear park along the north side of Potomac Yard Landbay F. The path should connect to the existing path along Four-Mile Run from Mount Vernon Avenue to US 1. This trail would provide access to the Four-Mile Run trail in Arlington County, which leads to the W&OD trail.
- Extend the existing shared-use trail located in Mt. Jefferson Park and Greenway in the Del Ray community from its existing terminus to US 1.
- Maintain/improve the existing sidepath along the east side of US 1 along the Potomac Yard Landbay F frontage.
- A portion of the proposed Metrorail station will serve as a pedestrian bridge

On street facilities

- Construct bicycle lanes on E. Reed Street from US 1 to the shared-use trail along the east side of Potomac Yard.
- Construct shared lanes with sharrow markings on Evans Lane from US 1 to Potomac Avenue. Provide a connection to the shared-use trail along the east side of Potomac Yard.
- Construct shared lanes with markings on Main Line Boulevard from Lincoln Avenue to E. Glebe Road.
- Designate the following as shared roadways:
  - Crescent Place from US 1 to Water Street
  - Diamond Road from US 1 to Potomac Avenue
  - Wesmond Road from Route 1 to Potomac Avenue



Example of the Use of Shared Lane Markings ("Sharrows") on Mount Vernon Avenue in Alexandria

Bicycle Parking

- Install bicycle racks throughout Potomac Yard Landbay F
- Install bicycle lockers at the multimodal transportation facility and at Crescent Park or nearby

Bicycle Locker at Metrorail Station
Source: www.wmata.com

The different bicycle facilities recommended are further described in Appendix E of the City of Alexandria Pedestrian and Bicycle Mobility Plan. For general guidance on bicycle facility design, the most recent AASHTO Guide for the Development of Bicycle Facilities or VDOT Bicycle Facility Guidelines should be followed. Alexandria's guideline for the shared lane marking is included in Appendix E of the City of Alexandria Pedestrian and Bicycle Mobility Plan.

Potomac Yard Multimodal Transportation Study

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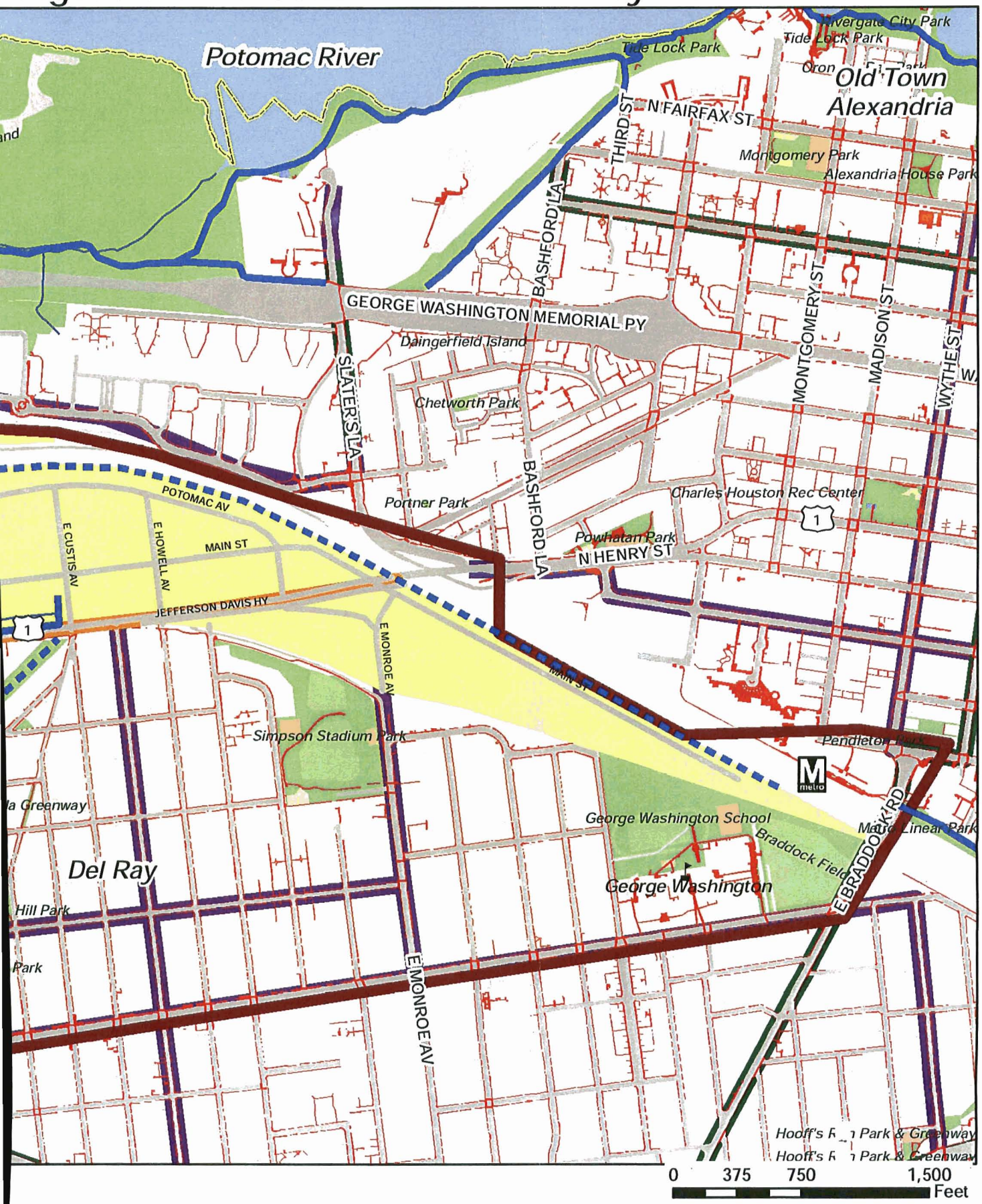
Figure 8-8: Recommended Bikeway and Trail Network



8.7 PARKING

Background

Parking is an essential part of the transportation system. Two main types of parking, short-term and long-term parking, should be accommodated in a mixed-use environment. The way parking is provided is a key determinant in travel mode choice. Thus, parking management is one of the most influential elements in travel demand management. Parking spaces in an urban area are a valuable commodity. On-street parking requires curb space which competes with other uses such as loading, emergency functions, and service activity. Off-street parking is expensive and adds significantly to the cost of development. It often utilizes capital that could otherwise be allocated to other infrastructure. This section describes parking management, off-street parking requirements for Potomac Yard Landbay F, and on-street parking and curb space management.

Parking Management – Parking management focuses on maximizing the use of the parking supply without encouraging more vehicle trips.

Shared Parking – Shared parking offers the chance to efficiently use the same parking spaces for multiple land uses and complementary peak demand times, thereby reducing the number of total spaces needed in an area. Shared parking also promotes a "park once" strategy where drivers can park and then use another mode of transportation to travel between destinations in the same general area. When each business provides their own on-site parking, there far less incentive for people to park once and then walk to other locations. Potomac Yard Landbay F will have a mix of land uses that can benefit from shared parking.

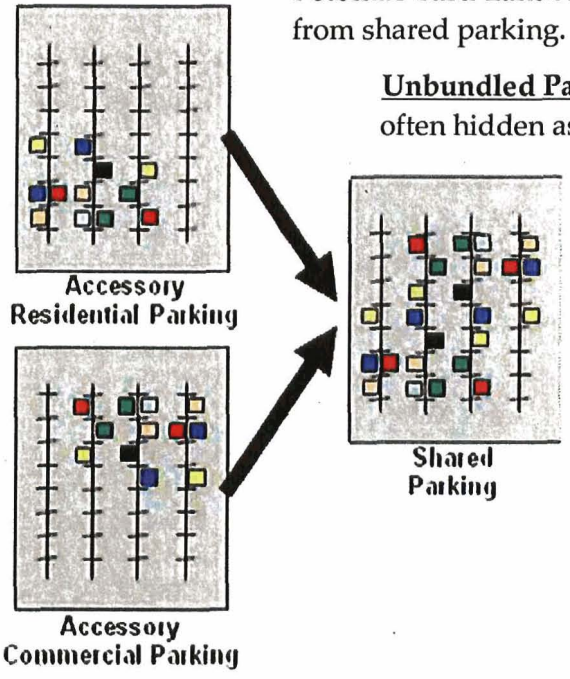


Figure 8-9: Shared Parking Exhibit

Unbundled Parking Costs – Parking is never free, but it is often hidden as part of the sale or rental price of housing and commercial space. Bundling its cost with residential and commercial property rents results in higher vehicle ownership and more traffic. When the true cost of parking is revealed, people are better able to make travel decisions.

Parking Cash-Out or Transit Passes – In addition to providing free or reduced price parking for employees, employers should be encouraged to offer the cash value of the parking subsidy to any employee who does not drive to work. Alternately, the employer could offer employees a transit pass or other comparable subsidy to those that do not drive and park.

Optimized Parking Use/User Information – Given the expense of building parking in urban environments, it makes financial sense to optimize the use of the existing parking system prior to expanding the number of spaces. An optimized parking system has the potential to be 85 percent or more occupied during peak periods, whereas non-optimized systems are typically viewed as full at a much lower usage. To reach levels of occupancy near to and above 85 percent, it is typically necessary to provide information as to the location and number of available spaces in real-time to those searching for parking. Parking guidance systems achieve this and also have the ability to monitor parking utilization.

Comprehensive Parking Wayfinding Signage – Signage guides drivers to desired parking areas and helps to reduce trip-making associated with searching for parking. Parking wayfinding signs are typically located on key ingress routes and at key decision points along routes. Signage typically provides information that indicates the location of parking and its intended purpose (short- or long-term, public or private, pay or free).

Parking Ratios – Traditionally, parking ratios are established to ensure that enough parking is provided on a site to accommodate the maximum parking demand. When minimum parking requirements are used, they may contribute to an increase traffic in an area by making parking overly convenient and thus making driving disproportionately attractive as related to other modes of transportation. Minimum parking requirements often discourage developers, employers, residents, and other property owners from implementing strategies that reduce traffic and parking demand. An alternative to parking minimums, parking maximums constrain the number of parking spaces that can be placed on-site at new developments. Parking maximums have been shown to successfully reduce traffic volumes and congestion because there is less parking available to attract people with their cars. The use of parking maximums is not new in Alexandria; the City has already established parking maximums in parts of the Eisenhower East plan.

Recommendations

Off-street Parking

The following off-street parking requirements are recommended for Potomac Yard Landbay F:

- Locate all parking below ground, to the extent feasible.
- Parking garage access should be provided from the east-west streets within Potomac Yard Landbay F. No access should be provided from US 1, Potomac Avenue, or Main Line Boulevard.
- Establish a shared parking district for Potomac Yard Landbay F. The district will have its own set of parking requirements which should include:
  - *Recommended parking ratios will be added at a later date*
  - Reserved preferential parking spaces for rideshare vehicles

- A minimum of one carsharing space for every 20 dedicated on-site parking spaces
- Shared parking
- Unbundling the full cost of parking from the cost of housing units (rental and condominium), commercial space, and from the costs of other goods and services, with limited exceptions
- Encouragement for employers to offer alternatives to a parking space for those who do not drive

- Implement a parking guidance system
- Comprehensive parking wayfinding signage

Curb Space Management and On-Street Parking

The following is recommended for curb space management:

- Allocation of curb space depending on the specific land uses of the adjacent block. Based on potential to serve the most users and support the overall transportation system, the following hierarchy is recommended in the planning of curb space in Potomac Yard Landbay F:

1. Safety features like fire hydrants, curb nubs for pedestrians, and sight lines for drivers
2. Public multi-user vehicles (e.g. bus stops, taxi-stands, and carsharing)
3. Periodic/temporary uses (e.g. shuttles and private buses, vending, loading and deliveries)
4. Dedicated short-term parking (e.g. paratransit drop0off and short-term meters)
5. Long-term parking of vehicles (e.g. tour buses, valet parking, and all-day meters)

Zipcar on-street parking space

- Dedicate remnant areas in parking lanes or garages for the exclusive use of small vehicles such as microcars, scooters, bicycles, and motorcycles
- Appropriately locate features such as curb nubs, fire hydrants, and bus stops to maximize available curb space length
- Minimize the number and sizes of driveway curb cuts
- Consider using multi-space pay-and-display parking meters to increase parking capacity, minimize clutter on the sidewalk, provide better revenue control, and benefit users

The following is recommended for on-street parking:

- Parking on both sides of A, B, and C (typology) streets in Potomac Yard Landbay F dependent on curb space management hierarchy
- Parking meter rates and time limits to encourage turnover and space availability in retail areas
- Rates at long-term meters higher than off-street parking
- Operate parking meters to 9:00 p.m. in areas of Landbay F that serve entertainment and restaurant activities

8.8 Phasing of Improvements

Background

To accommodate the travel demand increases attributed to the redevelopment of Potomac Yard Landbay F, a robust multimodal transportation network is recommended. The capital program for the recommended future transportation network will include large investments such as the transitway, the reconstruction of US 1, and future Metrorail station, as well as other investments such as the construction of new local streets, sidewalks, and bicycle facilities. Due to the cost associated with the large investments in the transportation system, some of the recommended transportation infrastructure is likely to be built in phases. Assuming that the transitway and Metrorail station represent the most significant investments, the following three phases of implementation were developed and the development levels accompanying the phases are described in this section:

- Phase 1: Prior to transitway and Metrorail station
- Phase 2: Transitway implemented and operational
- Phase 3: Transitway and Metrorail station implemented and operational

Phasing Analysis

An analysis was completed to estimate the quantity of development that could be accommodated by the street network within each of the three phases of transportation infrastructure implementation. Within the analysis, the major multimodal transportation recommendations of the plan were assigned to the three phases. Specific levels of development, based on acceptable traffic operations thresholds, were identified for each phase.

As major transit investments begin operation and larger quantities of mixed-use development are occupied, trip-making patterns of the development will shift toward non-auto modes of transportation. The larger quantity of development that is a part of Phase 3 will produce far fewer vehicle trips per square foot of development than Phases 1 and 2.

Trip generation evaluations to determine the density (of development) levels for Phases 1 and 2 was performed based on assumptions discussed in Chapters 5 and 7. Existing traffic count data at the existing driveways for Potomac Yard was used to understand the number of vehicular trips generated by the existing retail center.

Trip generation calculations performed for the 2.5 FAR scenario were used to measure the number of vehicle trips that will be generated by full Landbay F buildout. The difference between the vehicular trips that will generated by full Landbay F buildout and existing volumes were one measure used to evaluate the level of development that could be accommodated within each phase. Generally, it is recommended that occupied development in Landbay F generate an equal or lesser number of vehicular trips than the difference between existing traffic generation and full build-out (Landbay F) traffic generation. The traffic volume threshold tabulation is shown in **Table 8-2: Threshold Estimation**.

Table 8-2
Threshold Estimation
(number of vehicular trips)

	PM Peak Hour			Daily		
	Total	**In**	**Out**	**Total**	**In**	**Out**
2.5 FAR Scenario	3,950	1,790	2,160	41,860	20,900	20,960
Existing Retail	-1,700	-970	-730	-19,510	-11,130	-8,380
Threshold	**2,250**	**820**	**1,430**	**22,350**	**9,770**	**12,580**

Note: Numbers of vehicular trips shown are rounded to the nearest 10.
Source: Kimley-Horn and Associates, Inc.

In addition to the specific trip threshold analysis, other elements such as other development in the area, trip-making characteristics of differing levels of development, and major road improvement phasing were considered in establishing development thresholds for each phase. Specific considerations such as US 1 modification phasing, local street and intersection modification implementation, and potential currently unknown development in the vicinity of Potomac Yard were among the other factors reviewed. Based on the quantitative and qualitative evaluations, the following summarizes the development levels associated with each major infrastructure phase:

- **Phase 1: Prior to transitway and Metrorail station** – 0.50 FAR assuming that the land use mix is approximately equivalent to the 2.5 FAR scenario. As density levels on Landbay F increase to meet or exceed 0.50 FAR, high-frequency local transit services would need to be operated to either the Braddock Road or Crystal City Metro stations and the transitway would need to begin construction with the

intention of reaching completion and operational status prior to overall densities in Lanbay F meeting or exceeding 0.75 FAR.

- **Phase 2: Transitway implemented and operational** – 0.75 FAR assuming that the land use mix is approximately equivalent to the 2.5 FAR scenario. As density levels on Landbay F increase to meet or exceed 1.25 FAR, services on the transitway would need to be in full operation with service frequencys and duration similar to Metrorail service. At the same time, the Potomac Yard Metrorail station would need to be under construction with the intention of reaching completion and operational status prior to overall development densities in Landbay F meeting or exceeding 1.25 FAR.
- **Phase 3: Transitway and Metrorail station implemented and operational** – 1.25 FAR assuming that the land use mix is approximately equivalent to the 2.5 FAR scenario.

Phased Recommendations

The Potomac Yard Landbay F plan includes new streets, reconfiguration of existing intersections, additions to the bicycle and pedestrian network, and significant investment in transit. The phasing of street improvements will depend on the pace and location of redevelopment. The exception to this will be Potomac Avenue, which will be extended north to Arlington County as required as part of existing planning and zoning approvals. The recommended phasing of major transportation elements is described in the following:

Prior to Redevelopment

- Potomac Avenue – extend to Arlington County *(Section 8.3)*

With Redevelopment of Any Level

- Establish and/or monitor the TMP district
- Implement traffic calming measures as needed to manage traffic on neighborhood streets
- Construct internal streets serving the blocks being developed with appropriate vehicle lanes, pedestrian, bicycle, and on-street parking facilities *(Section 8.3 and Section 8.7)*. The specific details of the street construction need to be specified prior to rezoning of the property.
- Connect Main Line Boulevard *(Section 8.3)*
- Install shelters and/or smart stops at bus stops along developing blocks as appropriate *(Section 8.5)*
- Improve the existing bicycle and pedestrian sidepath along the east side of US 1 along Landbay F frontage *(Section 8.6)*
- Install bicycle parking along developing blocks as appropriate *(Section 8.6)*
- Follow parking requirements of the shared parking district *(Section 8.7)*

Phase 1: Prior to Transitway and Metrorail Station

- Establish a TMP district and write the transportation management plan *(Section 8.2)*
- Implement the preliminary traffic calming plan *(Section 8.4)*
- Extend Metrobus Route 9S service to Potomac Yard Landbay F *(Section 8.5)*
- Construct a shared-use path along the east side of Potomac Yard Landbay F and coordinate with Arlington County to construct a direct connection across Four-Mile Run *(Section 8.6)*
- Construct a shared-use path in the linear park along the north of Potomac Yard Landbay F connecting to the existing path along Four-Mile Run at US 1 *(Section 8.6)*
- Extend the existing shared-use trail located in the Mt. Jefferson Park and Greenway in the Del Ray community from its existing terminus to US 1 *(Section 8.6)*
- Establish a shared parking district *(Section 8.7)*
- Implement a parking guidance system and comprehensive wayfinding signage *(Section 8.7)*

Transitway

- Construct the transitway between Braddock Road Metrorail station and Arlington *(Section 8.5)*
- Construct intersection improvements at the following locations *(Section 8.3)*:
  - US 1/Jack Taylor Road
  - US 1/E. Reed Avenue
  - US 1/Evans Lane
  - US 1/E. Glebe Road
- Retime signals along US 1 between Arlington and Potomac Avenue *(Section 8.3)*
- Begin operation of an internal bus circulator service *(Section 8.5)*

Phase 2: Transitway Implemented and Operational

Prior to the occupancy of any development in Phase 2, the transitway is recommended to be implemented as well as the following major improvements:

- Monitor TDM performance measures and adjust transportation management plan accordingly to achieve performance goals if needed *(Section 8.2)*
- Monitor local streets in adjacent neighborhoods and implement additional traffic calming measures as needed *(Section 8.4)*

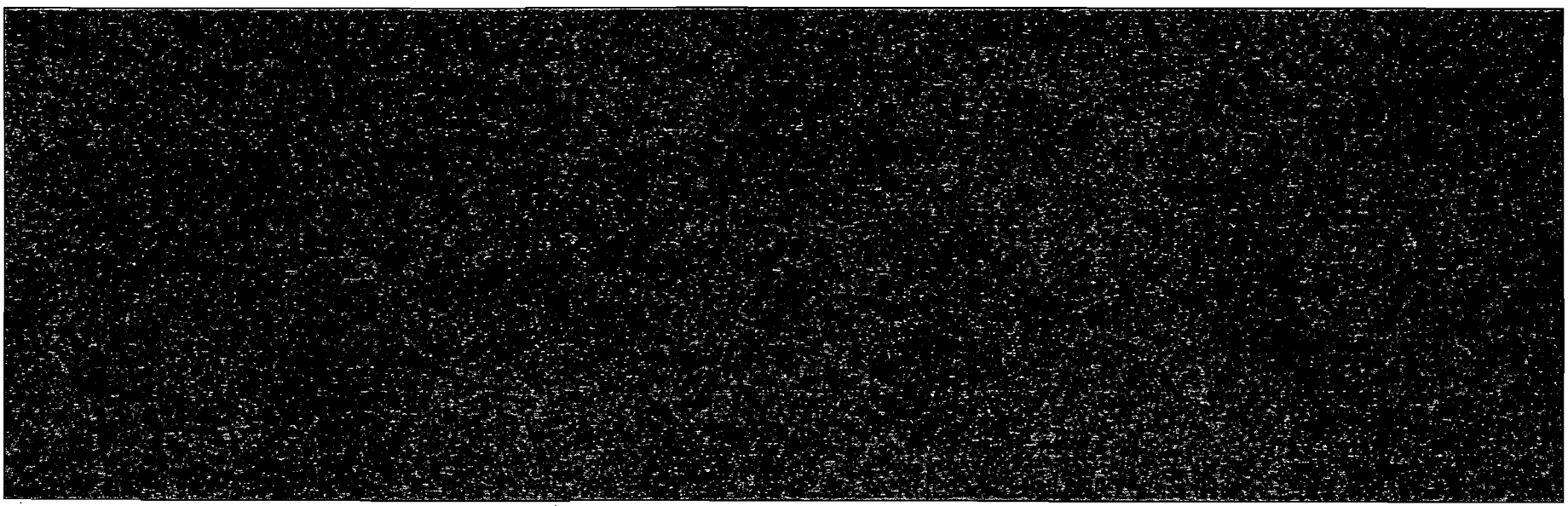
Metrorail Station

- Construct the Metrorail station *(Section 8.5)*
- Construct portion of the Metrorail station to serve as a pedestrian bridge *(Section 8.5)*
- Construct the multimodal transportation facility *(Section 8.5)*

Retail Market Feasibility Study for Planned Retail Developments at Potomac Yard; Alexandria, Virginia

RREEF, McCAFFERY INTERESTS, INC., AND MRP REALTY

October 28, 2008



BACKGROUND AND OBJECTIVES

The owners of existing and planned retail developments in the Potomac Yard Coordinated Development District (CDD) have retained RCLCO (Robert Charles Lesser & Co.) to conduct an independent third-party analysis of the market support for retail space contemplated for the Potomac Yard master-planned community. The purpose of this study is to assist the property owners and the City of Alexandria in confirming that the retail assumed for both the redeveloped Potomac Yard Retail Center and the planned Town Center can be supported by the future market demand, and that both centers are effectively differentiated so that they are complementary clusters of sustainable retail activity.

Background

Potomac Yard is an urban, mixed-use, coordinated development with multiple owners. The Potomac Yard Retail Center was the first phase of Potomac Yard to be developed and has already become a thriving retail destination. The owners of the Potomac Yard Retail Center (RREEF) plan to redevelop their property (referred to as Land Bay F and the "Retail Center") as an urban, transit-oriented development including retail, residential, office, and hotel uses. The intention is to create a mixed-use environment with a regional urban retail destination based on the Market Common brand developed by McCaffery Interests, with a focus on combining lifestyle retail with the existing base of big-and medium-box retail.

Two adjacent land bays (referred to as Land Bays G and H/I and collectively as the "Town Center") have Coordinated Development District Concept Plan approval (CDD 2008-0001) for mixed-use densities and the owner (MRP Realty) is working with the City on approval of Development Special Use Permits for the design of the Town Center. Approval of the first phase of the Town Center is expected in early 2009 with approval of the next phase following in 2009. The Town Center and the subsequent redevelopment of the Retail Center are intended to function as two distinct, but complementary districts. The City of Alexandria and the owners of the Retail Center and Town Center want both districts to thrive with successful retail contributing to the vitality of both locations.

With this as background, the objectives of RCLCO's involvement has been to conduct a retail market analysis in order to determine the depth of demand for retail space by merchandize category at the site under a build-out scenario. Key assumptions for this engagement have included the following:

- Retail demand must be supported by full build out of the planned projects.

- Buildout at the site is achieved in 2020.
- A new Potomac Yard Metrorail station will be operational at the Town Center under the buildout scenario.

Scope of Work

The analytical tasks RCLCO undertook leading to the fulfillment of the above objectives included the following:

A. Project Initiation

1. RCLCO participated in a kick-off meeting with City staff, property owners of Potomac Yard, and relevant project team members to obtain a debriefing about the project and any relevant information from prior work completed relative to the assignment, and to refine the goals and objectives of this analysis and scope of work to ensure that this engagement addressed the needs/desires of all interested parties.

B. Retail Market Analysis

1. RCLCO conducted a retail market analysis to determine the trade area and depth of demand for retail space, taking into account the planned residential, hotel and office development within the whole Potomac Yard CDD, and assuming that there will be a Metrorail station in this location.

   a) RCLCO visited each of the subject properties and evaluated the development potential in light of each site's location, access, and visibility, current and/or proposed neighboring uses, topography, views, vegetation, other natural and/or man-made features, and other pertinent factors.

   b) RCLCO obtained and analyzed secondary data relative to the historical and current performance of the relevant retail market; and examined tenant types and mix, absorption, occupancy, rental rates and terms, and construction trends, as available, to gauge the health of the market.

2. RCLCO studied and compared competitive retail centers with Potomac Yard evaluating such metrics as vehicular accessibility, retail mix by merchandise category, trade area, and degree of success.

   a) RCLCO compiled information on relevant existing retail developments in the competitive market area, relative to size, quality, location, tenant types, lease rates, and trade area and market audiences served.

   b) RCLCO conducted targeted interviews with brokers and managers representing comparable retail space in order to determine likely tenants and supportable rents for retail space, specific building requirements, and most likely range of store sizes that will be desirable.

   c) RCLCO compiled and analyzed information on relevant planned and proposed retail properties in the competitive market area, including location, size, configuration, construction timetable, anticipated tenant profiles, etc.; and assessed their potential influence on the subject property.

3. RCLCO used the market analysis to determine the total demand for retail space in Landbay G, Landbay H, and Landbay F of Potomac Yard at buildout.

   a) RCLCO compiled assumptions regarding the timing and amount of residential and commercial development planned for Potomac Yard from the owners and other knowledgeable sources as input into the demand analysis.

   b) RCLCO compiled and analyzed relevant demographic and retail spending data for the trade area, forecast demand for various retail categories in the trade area at buildout, and estimated the share of this demand that the project will be able to capture taking account of existing and planned competition.

The key findings and conclusions emanating from the scope of work outlined above are summarized in the Summary of Market Findings section of this report below.

SUMMARY OF MARKET FINDINGS

Based upon an analysis of the economic and demographic underpinnings of demand for retail space, and an understanding of the current and likely future supply and character of space in the competitive market area of the Potomac Yard site, by 2020 there is sufficient market support for a significant retail concentration above and beyond what is currently being offered at the existing Potomac Yard Retail Center. The existing retail center on the site consists of approximately 590,000 square feet of retail space, with a concentration of big and medium box retail tenants, including a Target, Best Buy, Barnes & Noble, Petsmart, Staples Regal Cinemas, and Shoppers Food Warehouse grocery store. Our demand analysis has found support for significantly more retail space in a variety of retail categories by 2020:

- Approximately 495,000 square feet of Major Comparison Retailers in retail categories such as department and general merchandise stores, electronics stores, home furnishing Stores, and book stores. These types of big and medium box stores are that are currently in the existing retail center, although the physical form of these types of retailers need not be the same. These types of tenants are key anchors of a retail center serving a broader community, as they draw in demand from a wide geographic market area and in turn create consumer traffic that helps support other retailers.

- Approximately 230,000 square feet of In-line Comparison Retailers. These are the types of smaller tenants who typically fill in the spaces between the larger anchor tenants. These tenants sell hard and soft comparison goods such as apparel and apparel accessories, jewelry, home goods and furniture, books and music, electronics, and other specialty goods.

- Approximately 325,000 square feet of Neighborhood Retailers. These include the wide variety of retailers serving consumers everyday needs, most notably grocery stores, pharmacies, and other convenience and sundry retailers. Specifically, we have found support for approximately 175,000 square feet of grocery stores, which equates to three to four grocery stores of varying sizes and formats.

- Approximately 220,000 square feet of Food and Beverage, which includes full-service, sit-down restaurants (115,000 square feet); limited-service, take-out, fast-food, and fast-casual restaurants (90,000 square feet); and bars and clubs (15,000 square feet).

These demand projections support the conceptual programs for both the planned Town Center (Landbay G, Landbay H, and the northern portion of Landbay I) and the redeveloped Retail Center (Landbay F, where the existing Potomac Yard Retail Center now sits) as contemplated at build out in 2020. This includes support from current and future projected households and workers in defined market areas, as well as future residents and workers on the fully developed sites. Together, the two centers will

create a powerful and compelling retail and entertainment destination for both local and regional retail patrons. The two retail clusters will be competitive in many ways, but will compliment each other, and help drive more total traffic than each could do independently. They will also be significantly differentiated in the marketplace: the Retail Center combining big tenant, lifestyle and entertainment, and neighborhood-serving retail concepts into a regional-serving retail destination, with the Town Center focused more on the lifestyle and neighborhood retail concepts and serving more local residents and workers. Given the relative scarcity of retail offerings in this market area, and the future projected growth in the defined trade areas and on the site, multiple retail clusters serving similar but still distinct retail segments, are clearly supportable.

Specifically, the market support for this significant retail concentration in two distinct but complimentary retail districts is justified by a number of locational, supply, and demand market findings:

- The Potomac Yard site is a large-scale, infill redevelopment opportunity that is unique within the regional context and can truly deliver a vibrant, mixed-use environment.

- The site is particularly well suited for the development of a mix of retail development concepts, given its superior access and visibility, and its proximity to significant concentrations of current and future high median household incomes and quality office space.

- The site is already established as a thriving big box and entertainment retail destination that effectively competes in a relatively large trade area, and future retail uses and types – specifically the incorporation of a lifestyle and restaurant component — will be able to leverage this existing market momentum with both consumers and retailers.

- The addition of a broader mix of retail uses on the site – specifically a lifestyle component that offers a broader range of in-line comparison retail tenants and restaurants – is the natural evolution of the existing retail destination and the currently planned town center for Landbay G.

- Upgraded neighborhood-serving retail space is needed in the market, both to capture current pent-up demand and future demand growth, but also to replace existing but aging neighborhood retail options – specifically new and varied grocery store and specialty foods options.

- Future urban development at the site will demand, and drive, significant retail offerings, but is not a necessary component to support a successful increase in retail at the site.

- The arrival of a Metrorail station adjacent to Landbay G will provide an additional catalyst for an urban, mixed-use development at the site.

- The retail projects at the site will fill a significant hole in the retail market, specifically the lack of new, larger-scale, urban retail offerings in Alexandria and the surrounding areas. It could be unique for an urban site to offer popular retail anchors such as Target and Best Buy mixed in with a lifestyle retail concept. This unique concept will help the site draw from a broader area than just a smaller lifestyle retail cluster, and will also help the draw of the larger anchor tenants, as some share of consumers from the broader market area will drive by a closer store in order to shop at the same store in a more vibrant, pedestrian-oriented, active, mixed-use core with a wider variety of retail options.

- Future competitive market pressures, especially the continuing advancement of retail offerings in Arlington, the District of Columbia, and Prince George's County, as well as emerging urban cores in Alexandria, will present a limiting factor on the supportable size of the retail presence at Potomac Yard.

- However, the Potomac Yard site will continue to have strong access to a large concentration of under-served households and employees in eastern Alexandria, and the ability to offer retail at the assumed scale will continue to be a unique competitive attribute in the surrounding urban markets, which will fully support the depth of retail currently assumed.

- Future on-site residents and workers will drive further demand, but by 2020 only accounts for approximately 15% of projected demand.

- The planned retail development at Potomac Yard will allow the City of Alexandria to compete more effectively with neighboring jurisdictions for retail sales at a range of retailers. Specifically, it will help recapture sales currently leaking out of the City in retail store categories such as in-line comparison retail, restaurants, and neighborhood retail.

Discussion of Retail Concepts

While there is some inherent overlap in the planned retail components of the two developments, as currently envisioned the Town Center and Retail Center will serve different roles and fulfill distinct retail needs in the evolving marketplace.

Landbay F – the redeveloped Retail Center – will serve as a retail destination for a broad market area. The collection of larger, anchor retailers – such as Target, Best Buy, a movie theater, etc. – will draw demand from a significant portion of a five-mile radius and beyond, especially since the retailers at the project are relatively unique in an urban setting. This key demand driver,

in addition to strong local demand and demand from future residents and workers on site, will support the lifestyle retail component, allowing this cluster of retail to support a broader variety of retail and restaurant types than would be possible in a retail cluster serving only local demand. The Retail Center cluster will also have a compelling market story as a neighborhood-serving cluster, including basic goods and services such as a grocery, pharmacy, convenience, banks, etc. The demand for this local-serving retail can be supported by households and workers in the immediate market area in the mid term, but over time the assumed numbers of households and workers on site will provide near complete support for a neighborhood-serving retail cluster.

The assumed amount of retail at the planned Retail Center is appropriate given its market supply and demand context, and is comparable to other destination retail cores that have combined regional or community-serving, lifestyle, and neighborhood retail. Ballston (700,000 square feet anchored by the 580,000 square foot Ballston Common Mall), Pentagon (approximately 1.5 million square feet in Fashion Centre, Pentagon Centre, and Pentagon Row), and the emerging urban retail destination along 14h Street, NW in the District (approximately 750,000 square feet of retail anchored by the 540,000 square foot DC USA project) are but a few examples of multi-purpose retail cores of a comparable size and scale. The larger anchor tenants will be combined with a strong lifestyle retail concept – such is found in Market Common at Clarendon and Reston Town Center, among other notable lifestyle retail cores – that will provide smaller retailers, and restaurant and entertainment options. Finally, the neighborhood retail cluster will compete primarily with other local grocery, pharmacy, and convenience options, but will have the unique advantage of locating within a large retail cluster that serves a broader market. The multi-purpose concept is key – nearly 400,000 square feet of the assumed space at the Retail Center will be large and medium retail stores, which have proven market support in the current retail power center, and the approximately 155,000 square feet of in-line specialty/comparison retail space and 80,000 square feet of restaurant space is supportable given the presence of these large anchors.

Due in part because of its smaller size and scale, the Town Center will likely fill primarily a neighborhood and lifestyle retail need – basic goods and services, boutique and comparison retailers, and restaurant and entertainment – serving the needs of households and employment in the surrounding market areas, as well as residents and workers on site. The assumed scale of this development is in line with other neighborhood-serving and lifestyle urban retail cores in the region -- retail clusters in the 200,000 to 500,000 square foot range, with notable examples such as the Village at Shirlington, Market Common at Clarendon, and Pentagon Row (Arlington), Bethesda Row (Bethesda, MD), and Downtown Silver Spring (Silver Spring, MD). For these analogous retail clusters the concept of "neighborhood" is often broadly defined (as many of these clusters are destinations for many surrounding residential neighborhoods, often serving areas many miles from the center), and this will also be the case for the Town Center, which will be able to expand its market presence by leveraging traffic to the Retail Center, the mixed-use nature of the development, and the presence of Metrorail.

The Retail Center will be more directly linked to the larger retail concentration anchored by big- and medium-box tenants, while the Town Center's lifestyle retail component will be primarily unanchored, and therefore these two retail clusters will look and feel different in many ways. Particularly, the Retail Center should have the opportunity to attract a broader range of retail tenants, particularly prominent national tenants who require, or at least strongly prefer, direct proximity to major retail anchors. However, the two lifestyle components of the Retail Center and Town Center will be similar in many ways, with both serving a broad range of consumers as well as local consumer needs, and both attracting national in-line tenants in a variety of retail categories (apparel and accessories, home goods, other comparison and specialty goods, and restaurants and entertainment). Therefore, these two retail clusters will be competitive, but we have found that significant support exists to support both and that there will be significant market differentiation between the two, as well as a complimentary relationship where consumer traffic to one helps support the other.

The neighborhood-serving retail and services market likely offers another potential source for cannibalization between the two planned projects at Potomac Yard. However, even this potential source of direct competition will likely be muted given the nature of the planned projects, with the Retail Center project envisioning a larger neighborhood-serving concentration (with a larger grocery anchor of roughly 50,000 square feet) that can leverage the overall power of the retail destination, and the Town Center likely targeting a smaller grocer (30,000 to 35,000 square feet) that is more typical in an emerging location. Over time, the projected household and employment growth on and around the sites, in addition to current pent-up demand in the local market area, will support both neighborhood-serving cores as planned.

The significant amount of planned residential, office, and hotel development planned for the sites will be a significant driver of retail demand, but the planned retail development will not depend on these uses to be viable in the mid term. Future demand from households and office workers in surrounding market areas will provide sufficient support for the planned retail scale and mix. Future development on the site will only further strengthen the retail opportunity at this location.

We have assumed for the purposes of this analysis that Metrorail will be provided at its planned location, just east of Landbay G. Transit has historically been perceived to have less of an impact on larger retailers, due mostly to the belief that shoppers with bags would not find a train ride an acceptable mode of transportation, but there is emerging anecdotal evidence that in urban locations this is not as much of an absolute, especially as many urban consumers choose not to own a car. Even so, the greatest impact of a Metrorail station at the site will be that it connects the lifestyle and entertainment/restaurant components of the two projects with an expanded market area along the Metrorail system.

In both the Retail Center and Town Center it is critical that the built environment follows well-tested urban retail best practices: These include:

- Active streetfronts with a variety of retail experiences -- this should include, large active windows, avoidance of large blocks of dead space, and where possible, restaurants with café seating in order to bring the retail experience onto the sidewalk;

- Two-sided retail streets are critical to creating a critical mass of retail activity;

- Small retail blocks that further establish the sense of a critical mass of activity – a small retail cluster typically should not extend its retail core over more than a few blocks, although larger retail clusters can spread farther if key retail anchors are placed appropriately at the ends of the retail corridor;

- District or central parking is appropriate, as is shared parking, but the reality of parking needs cannot be ignored, even with transit – on-street parking should also be provided as an option;

- Local, independent retailers can add a refreshing and authentic flavor, but policies should not over-prescribe local retailer presence, as developers depend on credit-worthy tenants to make often slim retail deals financially viable.

- The two retail concepts are not wholly dependent upon each other, and they can be successful without the benefit of the other. However, both projects will benefit greatly by connections to and coordination with each other, preferably along a single "main street" anchored at each end by these retail clusters.

This engagement was conducted by Marc McCauley, Senior Principal and Charles Hewlett, Managing Director, of the Washington, D.C., office of RCLCO. If you have any questions regarding the conclusions and recommendations included herein, or wish to learn about other RCLCO advisory services, please call (310) 914-1800.

SUBJECT SITE ASSESSMENT

A description of the development program assumptions is provided in Exhibit 1. The existing Potomac Yard Retail Center (Land Bay F) comprises 590,000 square feet of retail space, primarily in big and medium box stores (including a multiplex theater). The planned redevelopment of the existing retail center will add approximately 260,000 square feet of retail space, primarily in specialty/comparison retail, a fitness center/spa, 60,000 square feet of restaurant space, and potentially another entertainment-oriented use. Much off the existing tenant base – most critically the Target store and the multiplex theater – will remain as future tenants, although very likely not in the same buildings.

For the purposes of this study we have assumed that Town Center on Land Bays G, H and Part of I, will comprise 220,000 square feet of retail space in two phases, with the first phase delivering the vast majority (200,000 square feet) of retail space. The Town Center will potentially offer a mix of neighborhood-oriented good and services (58,500 square feet), specialty/comparison retail (68,500 square feet), restaurants (59,500 square feet), and a fitness center (33,5000 square fee).

The Potomac Yard Retail Center is a proven retail destination, and there are a number of attractive characteristics that lead to the conclusion that the proposed retail developments will also be successful, including:

Subject Property Competitive Advantages:

- Strategic regional location within close proximity to significant concentrations – and cores of growth – of high-income households and office employment.
- Excellent multimodal transportation access and visibility with high traffic counts.
- Established retail destination with strong track record of high sales volumes.
- Plan for an urban, mixed-use environment that will support vibrant, multi-purpose retail environment.
- Lack of similar retail environment, either existing or planned, with superior or equal access to the key pools of retail demand – including a majority of Alexandria households and employees – that will drive retail sales at the Potomac Yard.

While the positive attributes of the sites for retail development as assumed far outweigh any potential negative characteristics, the sites do have some market challenges, including:

Subject Property Market Challenges:

- As retail is established in emerging cores that have historically driven a significant share of demand at Potomac Yard, retail on the site may not benefit as much from retail expenditures leaking out of nearby jurisdictions.

- Adjacent land uses on the west of Route 1 are not consistent with the planned pedestrian-oriented, urban retail development at Potomac Yard. The existing retail has not been negatively impacted by these adjacent uses.

COMPETITIVE MARKET ASSESSMENT

The current and future competitive market area presents a strong opportunity to develop one or more new retail cores at Potomac Yard. In particular:

- The Crystal City submarket has enjoyed low retail vacancies, primarily due to the stability of the existing Potomac Yard Retail Center (Exhibits 5 and 6).

- The current power center is achieving very strong sales and is clearly benefiting from a wide market draw to the larger, power center anchor tenants that drive traffic at the center. Specifically, the center is pulling demand from under-served market areas in the District of Columbia and Prince George's County, as well as areas of closer-in Northern Virginia where access to large anchor tenants is also relatively limited.

- The current retail center is in a conventional, suburban format, and does not compete today as an urban lifestyle retail/entertainment core (with the exception of movie theater demand).

- The closest current and emerging competitive cores are in Crystal City, Pentagon City, Rosslyn-Ballston Corridor, Shirlington, Old Town Alexandria, but only Crystal City is within two miles of the subject site. We expect that retail at the subject site will compete with retail in these locations, but will be able to capture some share of demand within the two-mile ring and beyond, due to a strong mix of tenants at the proposed development.

    - Pentagon City offers an attractive mix of regional-serving retail with a small lifestyle component that is supported primarily by traffic to the larger retail cluster and much localized demand.

    - Crystal City is undergoing a process of reinvention, with the addition of some streetfront retail/restaurants, but the vast majority of space in Crystal City today is older and obsolete (and underground).

    - The Rosslyn-Ballston corridor is also a competitive cluster with a mix of regional and smaller-scale urban lifestyle retail; it is particularly a strong destination for nightlife and restaurants. Yet, this cluster is nearly five miles from the site, and does not offer the many of the big and medium box tenants that are significant consumer magnets and currently are on the Potomac Yard site.

- Shirlington is a smaller retail cluster serving primarily local households and workers. It will represent a competitive threat for households in this more local area, but is not a very strong threat regionally given its size and focus.

- The Landmark/Van Dorn area is a little less than 5 miles away, and while future growth/rejuvenation of that market will be competitive in some regard, it is far enough away to draw from significantly different sources of demand.

- Old Town has its own unique competitive niche, as a boutique retail and restaurant entertainment destination for City residents and beyond. This retail cluster will continue to evolve as competition from larger lifestyle retail clusters are delivered in the competitive market area. It will represent a strong competitor for the Potomac Yard site for certain aspects of retail, but in many more ways the Old Town environment and the proposed environment at Potomac Yard are highly differentiated and will often cater to different consumer needs.

- There is relatively limited retail being offered in the areas of Prince George's County and the District of Columbia that are closest in proximity and access to the site. These are strong sources of demand for the existing retail center.

- Suburban retail cores with bigger box components will represent competitive threats to that component of the retail program at Potomac Yard, but the overall experience -- mixed use, more urban, lifestyle retail – at Potomac Yard will be an attractive draw, and some share of consumers will in fact choose to drive by an existing store in a less vibrant suburban center to get to the same store in Potomac Yard.

- There are currently relatively few grocery options in the local market area of the subject site. A new Harris Teeter store just to the north in Arlington represents competition, but the next closest grocery store is an older Giant that has very likely outlived its usefulness.

- The three mile radius from the subject site is relatively under-served with regard to health clubs/fitness centers – especially relative to more urban – today – locations in Arlington and the District.

- The existing 16-screen multiplex theater at Potomac Yard Retail Center competes with a smaller, older theater in Shirlington and a 22-screen multiplex in the Hoffman area south of Old Town Alexandria. The current movie theater is reportedly performing quite well, and there are no known competitive threats that would change this success in the foreseeable future.

- The strength of the large-anchor draw at Potomac Yard will likely diminish somewhat in the foreseeable future, as some new projects are delivered in under-served areas; DC USA on 14th Street, NW, in the District, for example, has already

provided a larger-scale retail alternative (including a Target store) to District residents, and the planned large-scale retail offerings at the redeveloped Skyland Mal in Southeast, Washington, D.C. will also recapture demand back into the District that is currently leaking into other areas, including Potomac Yard.

- However, the universe of potential projects/sites that could add new, large-scale retail options is limited, and the Potomac Yard site will continue to be able to draw from a broad market area for these store types; the current superb performance of the current roster of anchor tenants at the Potomac Yard Retail Center is indicative of future demand.

DEMOGRAPHICS AND DEMAND

The demographic and retail demand analyses show strong support for additional retail development at Potomac Yard. The following describes the methodology and findings associated with demand analysis:

- Exhibit 19 provides a map of the trade area for retail at the subject site. We drew multiple radii (1-mile, 2-mile, 3.5-mile, and 5-mile) and identified Zip Code Market Areas within those radii that would likely contribute to retail demand potential at the site. A detailed retail demand analysis should extend beyond mere radii, in that consumer behavior within a broad area can differ dramatically depending on access to competitive retail clusters/stores, transportation options, perceptions, etc. A more defined geographic area allows for more distinct assumptions with regard to potential capture of current and future retail demand.

- The demand analysis incorporated four primary sources of demand: 1) market area households; 2) market area employees, distinguishing between office and non-office workers; 3) demand from these two previous sources of demand that originate from outside of the defined market areas; and, 4) future on-site residents and office workers on the two Potomac Yard development sites under study here. While there is a hotel component as part of the two redevelopment programs, demand from this source was not included, as it typically results in little demand relative to the other sources of demand.

- For the purposes of this analysis, we have assumed market area demand at 2020, which is the assumed build out date for the two projects. We have also analyzed current market demand conditions in 2008, in order to get a base assessment of demand and supply conditions.

- All retail expenditure data and analysis is in 2008 dollars; no escalations of expenditures have been assumed.

- The closest, core market areas for retail at Potomac Yard are projected to experience significant household growth and have strong average incomes (Exhibit 20). The identified market areas are build around zip codes, with zip codes being combined only when appropriate – areas with relatively similar, consistent access to the site and competitive cores. Within a 3.5-mile radius there are approximately 110,000 households.

- The demand analysis utilized MWCOG TAZ-level data as the primary source of household growth projections in the market areas. MWCOG data is often criticized as conservative; however, we have found that current estimates of market

area households from MWCOG consistently are larger than household estimates from Claritas, Inc., which is a widely-use source of demographic data. Household growth projections from MWCOG still may not fully reflect growth potential in certain areas, and therefore may still be considered conservative when looking at 2020 demand.

- Exhibit 21 (pages 24 to 57 in the Exhibit packet at the back of this report), provides the data on household retail expenditures. The 2008 retail expenditures were collected from Claritas, Inc., which translates data from the Consumer Expenditures Survey (CES), which is fielded by the Bureau of Labor Statistics in the Department of Labor, into store types. The translation of CES data into store types is an imperfect science, as many store types capture demand for a wide variety of consumer goods (and often the capture of these goods depends on the character and depth of the competitive market), but provides a good gauge of demand by store type across market areas.

- Since the total expenditures are likely low given a low household count (as described above), we calculated the prevailing retail expenditure per household by store type for each market area. We then applied this per household figure to MWCOG numbers for 2008 to 2020 in order to calculate total retail expenditures by store type.

- Exhibit 21 also provides retail sales data by store type, as collected by Claritas, Inc (this data is summarized in Exhibit 28). The retail sales data is generally reliable for broad analyses, although it is based on survey information, and therefore can sometimes miss pockets of retail activity. It is a useful data set to compare expenditures to existing sales in a given market area across a broad spectrum of store types.

- We have not projected retail sales for this analysis, essentially assuming that no net new retail is built from 2008 to 2020 in any of the given market areas. While this is not likely to occur, we will reflect future competitive supply in our capture rates of available demand (see below).

- The retail expenditures by store type for each market area are summarized in Exhibits 22A and 22B. In 2008 Alexandria households generates 1.68 billion dollars worth of retail expenditures, as compared to $2.57 billion in neighboring Arlington. Approximately $1.4 billion of retail expenditures fall in the 22305, 22301, 22302, 22202, and 22314 zip codes (which all fall primarily within the 2-mile radius).

- Retail expenditures in Alexandria are projected to grow 14% by 2020, in constant dollars, due to net new household growth in the City. The Crystal City/Pentagon City and Old Town/Carlyle submarkets are expected to grow in excess of city-wide growth, given future development potential in those areas (including at Potomac Yard).

- Exhibits 23A and 23B provide the results of the household demand-supply gap analysis for the selected market areas, as well as the City of Alexandria and Arlington County. This analysis shows the degree to which areas have become retail clusters, and should not be associated with oversupply, as: 1) demand from other sources of demand – such as area employees and consumers from outside of the defined market area – have not yet been factored in, and 2) retail markets are often built upon clustering, where small areas often capture retail sales far in excess of local household support.

- Exhibit 24 provides data on office and total employment in the select market areas and the City of Alexandria and Arlington County. Workers are an important source of retail demand across a wide variety of store types, and are especially critical components of creating an 18-hour retail environment. The subject site offers tremendous access to large office employment concentrations in Old Town/Carlyle and Crystal City, as well as future office space on the Potomac yard site.

- Exhibits 25 and 26A & B provide the data and analysis of retail demand originating from market area employees. Based upon data on expenditures from office workers from ICSC, we have calculated the per office worker expenditures by retail type, and distributed this demand potential into our retail store typologies based upon our experience with retail spending patterns of workers. We assumed that non-office workers would spend roughly half the amount on retail as do office workers. We have also assumed that only 60% of the retail spending could be theoretically captured, in order to avoid double counting among households that both live and work with the defined market areas. The 60% assumption was based on Census data that shows that roughly 60% of workers in the region work 25 minutes or more away from where they live.

- Exhibits 27A & B summarized the demand potential from households and employment for the market areas and the City of Alexandria and Arlington County. We have also assumed a factor for demand that originates from outside of the defined market areas – 5% for neighborhood retail, 10% for comparison retailers, and 20% for food and beverage.

- Exhibits 29A & B provide the demand-supply gap analysis for total demand potential in 2008 and 2020. The City of Alexandria in 2008 is a destination for some types of retail – particular general merchandize/department stores and home furnishing/home goods stores – but overall is leaking approximately $290 million in sales, including $178 million in food and beverage establishments and $156 million in neighborhood retail. The leakage volumes in Alexandria increase to $590 million by 2020 (once again, we have not assumed any increase in retail sales, so this assumes that no net new retail is built from 2008 to 2020).

- The Mount Vernon/Braddock and Crystal City/Pentagon City market areas capture more than $525 million in retail sales over demand originated within the market area, and this number only decreases to just under $240 million in 2020. The

existing retail center at Potomac Yard is a key component of the retail destination that has been created in the Mount Vernon/Braddock market area. The big box tenants that are located in this center are able to draw demand from a larger market area.

- The demand-supply gap analysis is only one piece of the analysis that determines potential capture at the subject site. Capture rates of demand potential in 2020, as shown in Exhibit 30A, also reflect an assessment of the character and quality of competitive retail clusters relative to the planned retail cluster at Potomac Yard (as discussed in the Competitive Market Analysis above). Our assumed capture rates are meant to reflect conservative estimates of demand – the theory being that support for a retail program using more conservative capture rates provides a greater margin of error for future success.

- Exhibit 30B summarizes the results of the capture rate analysis, while Exhibit 30C shows the distribution of 2020 demand by market area. Exhibit 31A and B provides a map showing the geographical boundaries of the Primary, Secondary, and Tertiary Market Areas. Exhibit 32 calculates the retail support generated by future households and workers on the site. The summary of all capture retail demand expenditures and the translation of that demand into square feet is provided in Exhibit 33. We have found:

    - The demand analysis indicates strong support for the variety of big- and medium-box retail anchors, which matches the current reports on actual performance of stores at the Potomac Yard Retail Center.

    - In addition, there is strong market support for in-line comparison retail space, driven in part by capture rates that assume traffic will be driven by highly successful anchor stores. There is also strong support for a significant restaurant cluster, which is a highly compatible with the traffic driven by the entertainment and comparison retail cluster.

    - There is strong support for grocery anchor and related neighborhood retail uses; these uses are dependent in part on future housing and office development on the site, with roughly 30% of the demand for a grocery store from this future source off demand. It is important to note that the full retail program is supportable even if this future housing and office development is slow to materialize as the demand analysis assumes fairly high threshold levels for sales per square foot ($850/sf). At a lower, but still acceptable threshold of $600/sf, there is ample demand to support the planned grocery and neighborhood retail space.

    - The Primary Market Area for all retail, taking into account only market area residents and households, without accounting for on-site residents, accounts for nearly 60% of all demand. The Primary Market Area consists

primarily of areas within a two-mile radius, as well as some areas to the north (Crystal City and Pentagon City) and south (Old Town and Carlyle) that are relatively underserved with regard to many of the retail options assumed at the two subject sites. For just Neighborhood Retail, the same Primary Market Area accounts for nearly 74% of all demand; neighborhood-serving retail generally draws from a smaller market area, although the broad draw of the large retail concentration as assumed will help draw in demand from a larger market area than just a typical, grocery-anchored center.

  - Approximately 15% of future demand will derive from future housing and office development on the site, but the success of the program is not dependent on this demand; although neighborhood retail will benefit greatly from some critical mass of housing on the site.

- We did not provide a statistical demand analysis for fitness center/spa or movie theater. Our analysis of competitive market conditions strongly suggests that there is a significant hole in the market for a fitness center component of the retail market, and future household growth on and around the site will only increase this pent-up demand. There is an existing, successful movie theater on site, and this market support will not be threatened by any competitive supply.

CRITICAL ASSUMPTIONS

The conclusions and recommendations presented in this report are based on our analysis of the information available to us from our own sources and from the client as of the date of this report. We assume that the information is correct, complete, and reliable.

Our conclusions and recommendations are based on certain assumptions about the future performance of the global, national, and/or local economy and real estate market, and on other factors similarly outside either our control or that of the client. We analyzed trends and the information available to us in drawing conclusions and making the appropriate recommendations. However, given the fluid and dynamic nature of the economy and real estate markets, it is critical to monitor the economy and markets continuously and to revisit the aforementioned conclusions and recommendations periodically to ensure that they stand the test of time.

We assume that, in the future, the economy and real estate markets will grow at a stable and moderate rate. However, history tells us that stable and moderate growth patterns are not sustainable over extended periods of time. Indeed, we find that the economy is cyclical and that the real estate markets are typically highly sensitive to business cycles. Our analysis does not necessarily take into account the potential impact of major economic "shocks" on the national and/or local economy and does not necessarily account for the potential benefits from a major "boom." Similarly, the analysis does not necessarily reflect the residual impact on the real estate market and the competitive environment of such a shock or boom. The future is always difficult to predict, particularly given changing consumer and market psychology. Therefore, we recommend the close monitoring of the economy and the marketplace. The project and investment economics should be "stress tested" to ensure that potential fluctuations in the economy and real estate market conditions will not cause failure.

In addition, we assume that economic, employment, and household growth will occur more or less in accordance with current expectations, along with other forecasts of trends and demographic and economic patterns. Along these lines, we are not taking into account any major shifts in the level of consumer confidence; in the cost of development and construction; in tax laws (i.e., property and income tax rates, deductibility of mortgage interest, and so forth); or in the availability and/or cost of capital and mortgage financing for real estate developers, owners, and buyers. Should any of the above change, this analysis should probably be updated, with the conclusions and recommendations summarized herein reviewed accordingly (and possibly revised).

We also assume that competitive projects will be developed as planned (active and future) and that a reasonable stream of supply offerings will satisfy real estate demand. Finally, we assume that major public works projects occur and are completed as planned.

GENERAL LIMITING CONDITIONS

Reasonable efforts have been made to ensure that the data contained in this study reflect accurate and timely information and are believed to be reliable. This study is based on estimates, assumptions, and other information developed by RCLCO from its independent research effort, general knowledge of the industry, and consultations with the client and its representatives. No responsibility is assumed for inaccuracies in reporting by the client, its agent, and representatives or in any other data source used in preparing or presenting this study. This report is based on information that to our knowledge was current as of the date of this report, and RCLCO has not undertaken any update of its research effort since such date.

Our report may contain prospective financial information, estimates, or opinions that represent our view of reasonable expectations at a particular time, but such information, estimates, or opinions are not offered as predictions or assurances that a particular level of income or profit will be achieved, that particular events will occur, or that a particular price will be offered or accepted. Actual results achieved during the period covered by our prospective financial analysis may vary from those described in our report, and the variations may be material. Therefore, no warranty or representation is made by RCLCO that any of the projected values or results contained in this study will be achieved.

Possession of this study does not carry with it the right of publication thereof or to use the name of "Robert Charles Lesser & Co." or "RCLCO" in any manner without first obtaining the prior written consent of RCLCO. No abstracting, excerpting, or summarization of this study may be made without first obtaining the prior written consent of RCLCO. This report is not to be used in conjunction with any public or private offering of securities or other similar purpose where it may be relied upon to any degree by any person other than the client without first obtaining the prior written consent of RCLCO. This study may not be used for any purpose other than that for which it is prepared or for which prior written consent has first been obtained from RCLCO.

Exhibit 1

DEVELOPMENT PROGRAM ASSUMPTIONS
POTOMAC YARD: LAND BAYS F, G, H, AND PARTIAL I
OCTOBER 2008

Land Bay F	Existing	Proposed
Office (GSF)	0	900,000 - 1,100,000
Retail (GSF)	590,000	800,000 - 900,000
Residential (Units)	0	4,500 - 5,000
Hotel (Rooms)	0	250 - 300

Retail Mix Assumptions (GSF) - Land Bay F Merchandise Category	Existing	Proposed
Big Box, Department Store	257,000	250,000
Specialty/Comparison	150,000	300,000
Neighborhood Goods/Services	88,000	90,000
Restaurants	20,000	80,000
Fitness/Spa	0	40,000
Entertainment	75,000	90,000
TOTALS	590,000	850,000

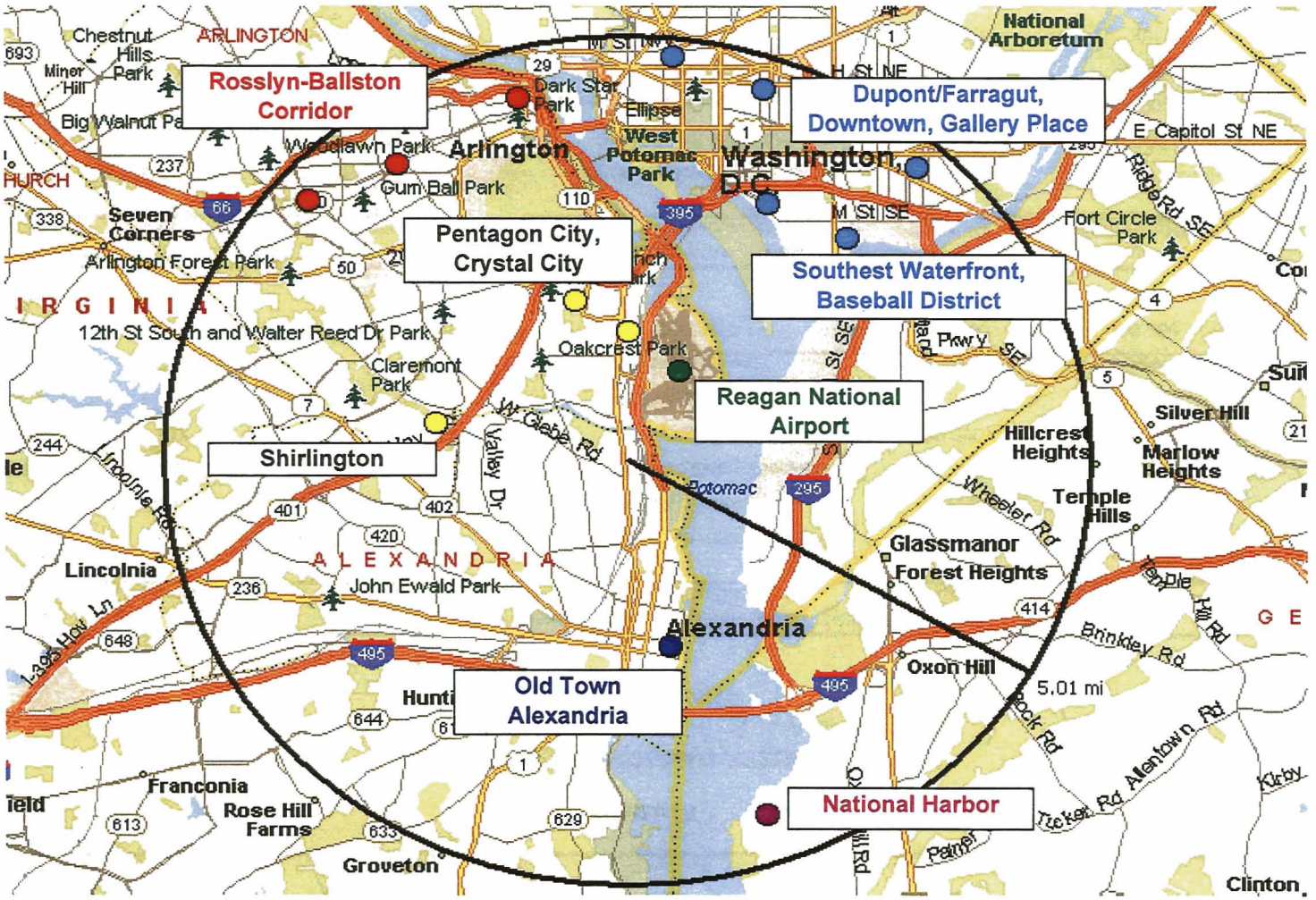
Land Bay G - Town Center	Approved	Proposed
Office (GSF)	800,000	691,000
Retail (GSF)	80,000	189,000
Residential (Units)	414	414
Hotel (Rooms)	625	625

Retail Mix Assumptions (GSF) - Land Bays G, H, Partial I Merchandise Category	Town Ctr	Town Ctr Ph II	Total
Big Box, Department Store	0	0	0
Specialty/Comparison	63,500	5,000	68,500
Neighborhood Goods/Services	48,500	10,000	58,500
Restaurants	54,500	5,000	59,500
Fitness/Spa	33,500	0	33,500
Entertainment	0	0	0
TOTALS	200,000	20,000	220,000

Land Bays H, Partial I - Town Center Phase II	Approved	Proposed
Office (GSF)	825,000	805,000
Retail (GSF)	5,000	20,000
Residential (Units)	400	400

Exhibit 2

SUBJECT SITE REGIONAL LOCATION
POTOMAC YARD SITE
OCTOBER 2008



STAFF REPORT
CONTINUED IN NEXT LINK