APPENDIX B

Technical Memorandum #2:

Parking, Motorcoach, & Loading Analysis

INTRODUCTION

This technical memorandum addresses (1) parking conditions, (2) motorcoach loading and unloading activity, and (3) delivery truck loading and unloading activity. Analysis of these three items together illustrates the behavior of parked or idling vehicles, and their effect on the pedestrian, bicycle, and motor vehicle traffic on Union Street, within the corridor study area depicted in Figure A. In addition to the Union Street corridor, the study area for this memorandum also includes The Strand from King Street to Duke Street and the unit block (between Union Street and the Potomac River waterfront) of King, Prince, and Duke Streets as shown in Figure B.

This portion of the Union Street Corridor Study builds upon previous plans and studies including the 2008 City of Alexandria Comprehensive Transportation Master Plan, the 2010 Old Town Area Parking Study (OTAPS) and subsequent work of the Old Town Parking Study Work Group (OTAPS Work Group), the 2012 Alexandria Waterfront Small Area Plan (Waterfront Plan), the work of the Motorcoach Task Force (2008-2010), and the 2010 Alexandria Waterfront Traffic Impact Study. The following three sections include background, approach, observations, and analysis of (1) parking conditions, (2) motorcoach & King Street Trolley loading and unloading activity, and (3) delivery truck loading and unloading activity.

1. PARKING

Residents, tourists, employees and visitors all compete for parking in Old Town. Additionally, vehicles circulating to look for on-street parking may contribute to traffic congestion. This parking analysis serves as an extension of the 2010 Old Town Area Parking Study (OTAPS) for the blocks of Union Street not included in the OTAPS area.

Background

The OTAPS addressed parking on 85 city blocks, bounded by Princess Street to the north, the King Street Metrorail Station and railroad tracks to the west, Duke Street and Wolfe Street to the south and the Potomac River waterfront to the east. The purpose of this study was "to document existing parking conditions and to develop parking system recommendations to resolve existing issues and accommodate the continued evolution of Old Town". Parking utilization data generally indicated that availability of on-street parking is limited east of Alfred

Street within the proximity of restaurants, shops, the waterfront and the Torpedo Factory, but that off-street parking is underutilized. The study also found that loading, valet, taxi and other standing spaces reduce the supply of on-street parking.

Following the OTAPS, the OTAPS Work Group formed and worked throughout the summer of 2010 to further refine and strategize implementation of the OTAPS recommendations, leading to the following accomplishments:

- By April 2011, the City replaced single-space coin-only meters with multi-space meters that accept cash and credit with pay-by-phone anticipated for late 2012. Additionally, parking meters have been installed on the 100 and 200 blocks of King Street.
- By April 2011, parking rates increased from $1.00 per hour on most metered blocks to $1.75 per hour.
- The OTAPS recommended extending meter hours to encourage parkers to use off-street facilities and the Work Group recommended extending operations hours until 10:00 PM. As of May 2012, the City extended meter hours until 7:00 PM.
- In November 2011, the City began ongoing installation of parking trailblazer signs in Old Town to direct motorists to all publically-available parking garages (both City and privately owned) with signs on street lights and traffic signals.

The Waterfront Plan recommends designating a group to continue pursuit of the OTAPS Study recommendations along with related recommendations outlined in the Waterfront Plan. In May 2012, the City expanded and reconvened the OTAPS Work Group to serve in that capacity. The group will meet throughout summer 2012 to research and/or implement the following items:

- Consider strategies to increase parking availability for residents during the peak Friday and Saturday evening hours.
- Add meters in unmetered commercial areas.
- Make off-street parking facilities more desirable places to park.
- Set triggers to increase garage capacity.

In addition to the recommendations already implemented or presently under consideration, the OTAPS included the following recommendations:

- The OTAPS recommended decreasing "on-street meter parking duration in locations where the adjacent land use may benefit from higher turnover". In 2010, the OTAPS

Work Group decided that parking durations should be consistent throughout Old Town because shorter duration parking at specific locations would be too confusing for users.

- Install signage and pavement markings to clearly delineate where motorists should park to present parking adjacent to fire hydrants, in crosswalk zones, and encroaching on driveways.

Furthermore, at the first project advisory group meeting with the Alexandria Water front Commission (held on June 21, 2012), the Commission expressed concern regarding the nature of vehicles parking too close to stop signs, particularly at the intersection King Street and Union Street, and the challenge this poses for pedestrians who may not be seen by motorists as they attempt to cross the street.

Approach

The Union Street Corridor Study addresses parking utilization on the Union Street blocks that were not studied in the OTAPS: between Pendleton Street and Princess Street in the north and between Wolfe Street and Potomac Street at Jones Point Park in the south (see "Parking Utilization" in Figure B for exact observation locations). Parking utilization data collected and analyzed includes on-street parking supply (number of spaces), parking regulations and rates (including residential permit parking locations), and parking occupancy (number of spaces occupied, measured once per hour) during the following times:

- Weekday, 12:00 PM to 2:00 PM
- Weekday, 6:00 PM to 8:00 PM
- Friday, 12:00 PM to 2:00 PM
- Friday, 6:00 PM to 8:00 PM
- Saturday, 11:00 AM to 1:00 PM
- Saturday, 7:00 PM to 9:00 PM

There is no off-street parking along these portions of Union Street. This study also notes changes to parking regulations on the blocks of Union Street that were studied in the OTAPS.

Observations and Analysis

The parking types, residential districts, rates, and time restrictions are illustrated in Figures C through F, respectively. All on-street parking in the parking study area (north of Princess Street and south of Wolfe Street) is free (Figure E). The west side of Union Street between Potomac and Franklin Streets and the west side between Pendleton and Oronoco Streets were not signed, meaning parking is unrestricted ("General On-Street Parking" in Figure C). The east side of Union Street between Pendleton and Oronoco Streets is reserved for 4-hour motorcoach parking ("Tour Bus and Trolley Only Parking" in Figure C). The remaining blocks are 2- or 3-hour restricted residential permit parking (Figure D and F).

The parking utilization during the times studied by percent occupied are illustrated in Figures G through L. Friday and Saturday evenings had the highest occupancy rates with many blocks at or approaching 100% occupancy. Parked cars were observed close to stop signs, driveways, and intersections. Table A summarizes the Union Street occupancy data and compares it to the occupancy rates in the rest of the corridor from the 2010 OTAPS.

A car on Union Street parked beyond the stop sign and close to the intersection at Oronoco Street

Parking regulations on the blocks (between Princess and Wolfe Streets) of Union Street did not change since 2010 OTAPS, other than the switch to multi-space meters at a rate of $1.75 per hour following the OTAPS. Two parking spaces on the west side of Union Street between Prince and Duke Streets still have single-space meters with a rate of $1.25 per hour.

Numerous parking studies investigating the nature and impact of cruising, or circulating, for parking indicate that curb occupancy rate is a significant factor affecting the time spent circulating for parking. Therefore, most parking management strategies recommend maintaining about one parking space on each side of the street per block. To reduce circulating traffic looking for parking, the OTAPS Work Group sought to maintain 1-2 available parking spaces per block. At the locations analyzed in this study, this goal was achieved for all blocks during all hours, with the exception of Wilkes Street to Potomac Street at Jones Point Park

during the Saturday evening period. Without nearby off-street parking facilities, these blocks lack alternative parking options, and the 1-2 available spaces per block resulting in additional circulation.

Destinations like Windmill Hill Park in the south, Founders Park in the north, and shops and restaurants near King Street likely attract parkers along Union Street during the evenings most days of the week, especially Friday and Saturday.

2. MOTORCOACH & KING STREET TROLLEY

Tourism is a vital part of Old Town's economy, which brings tour buses and motorcoaches into Old Town on a regular basis. Given their large size and noise, these tour buses and motorcoaches often compete with the historic and residential nature of Old Town. Specific concerns included motorcoaches and tour buses (1) driving through residential areas, (2) blocking streets when loading and unloading, and (3) parking in undesignated spaces. In addition to the tour buses and motorcoaches, the King Street Trolley provides access for visitors and tourists into Old Town.

A motorcoach unloads passengers in an undesignated space on the 100 block of The Strand

Background

The Motorcoach Task Force was formed in 2008 to improve motorcoach routes, parking, enforcement, loading/unloading, and communication. The Task Force observed motorcoaches in designated parking and loading/unloading spaces in April and June 2009. The City approved an online parking reservation system for motorcoaches at the recommendation of the Task Force in March 2009. The Task Force also suggested new short-term motorcoach parking locations and a short-term parking fee of $10 per reservation of up to four hours to match current short-term off-street parking fee.

The Waterfront Plan includes a recommendation to "limit vehicular access to the unit block of King Street and The Street between Prince and King Streets to emergency vehicles, deliveries (limited hours), motorcoaches and the King Street Trolley".

During the first meeting with the Alexandria Waterfront Commission (held on June 21, 2012), the Commission expressed concern regarding management of motorcoaches in Old Town, particularly regarding enforcement of motorcoach rules and regulations. They expressed appreciation to the City for the information available online and to businesses who help to manage motorcoach loading, unloading and parking.

The Waterfront Plan included a recommendation to "increase King Street Trolley service between the King Street Metrorail Station and waterfront by decreasing headways and reinstating longer hours of operations". This recommendation was based on feedback from the King Street Trolley survey and the 2009 King Street Retail Study.

Approach

Motorcoach loading and unloading observations occurred along The Strand and the unit block of King Street during one weekday and one weekend three-hour peak period from 5:00 to 8:00 PM. These observations also included the King Street Trolley at its stop on the north side of the unit block of King Street (see Figure B for observation locations). The City of Alexandria designates two areas for motorcoach loading and unloading: (1) immediately adjacent to Union Street on the unit block of King Street and (2) on The Strand between Prince and Duke Streets (see Figures M and N for designated loading/unloading locations).

Observations & Analysis

The results of the motorcoach observations for three evening hours on a weekday and weekend are illustrated in Figures M and N, respectively. These figures show the observed motorcoach loading/unloading spaces, length of time motorcoaches occupied the curb, and number of motorcoaches occupying the curb. Four of the fourteen (14) motorcoaches observed used the designated space on King and none used the space on The Strand. On the weekday, a representative from the Potomac Riverboat Company directed motorcoaches to stop in the King Street space and in the three spaces along The Strand south of King Street, ensuring the motorcoaches did not block access to the Old Dominion Boat Club parking lot.

One sign on King Street indicates "Active Tour Bus Loading & Unloading Only" from 9 AM to 1 AM to the east of the King Street Trolley stop. No signs indicate the motorcoach loading/unloading space on The Strand.

On both the weekday and the weekend, a King Street Trolley typically departed the stop at Union and King Streets every 15 minutes at the :00, :15, :30, and :45 of each hour, with four trolleys in operation. On the weekend, trolleys idled for an average of 8 minutes each and occupied the curb for an average of 43 minutes per hour. On the weekday, trolleys idled for an average of 12 minutes each and occupied the curb for an average of 53 minutes per hour, meaning that a trolley was present nearly 90% of the time.

The King Street Trolley loads passengers at the unit block of King Street on a busy Saturday

3. Delivery Truck

Many of the businesses along Union Street have goods delivered via delivery trucks. These vehicles stop in portions of the roadway when unloading and loading, sometimes blocking the streets and making other uses feel unsafe. This analysis includes observations of delivery truck activity along Union Street on weekday and weekend mornings.

Background

Some establishments on or near Union Street have designated on-street loading/unloading areas. These include the Art League at 214-220 S Union Street with loading on the north side of the unit block of Duke Street and Architectural Ceramics at 203 S Union Street which has a loading space outside its storefront on the west side of Union Street. The Architectural Ceramics loading sign restricts parking for loading from 9 AM to 6 PM on Monday through Saturday and from 12 PM to 6 PM on Sunday. Brandt Property at 10 Prince Street has a loading zone on the south side of the unit block of Prince which designates loading from 8 AM to 5 PM Monday through Saturday, except holidays. See Figure O for a map of the designated loading locations.

Virtue Feed and Grain at 106 S Union Street has a Special Use Permit that requires their delivery trucks to load and unload at the rear (east end) of Wales Alley, immediately adjacent to the restaurant. No other Special Use Permits in the area include provisions on delivery truck loading and unloading.

At the first Waterfront Commission meeting (held on June 21, 2012), the Commission almost unanimously agreed that the top concern regarding delivery truck activity is trucks blocking the street. They also expressed that trucks make the street unsafe, that idling trucks contribute to pollution, and that larger trucks are a greater disturbance to other modes of transportation.

A cyclist passes on the sidewalk while delivery trucks block 100 block of N Union Street

Approach

The Union Street Corridor study includes observations of delivery truck loading and unloading activity along Union Street between Duke and Queen Streets (see Figure B for exact observation locations). The observation periods were one weekday morning and one weekend morning period from 6 AM to 10 AM. Furthermore, parking occupancy counts at 15-minute intervals during the same periods help determine occupancy on the block during peak loading times.

Observations & Analysis

The weekday and weekend delivery truck activity by total time trucks occupy the curb, quantity of trucks by size, and location on or adjacent to Union Street are illustrated in Figures P and Q. Class 3 vehicles are two-axle, four-tire single-unit vehicles such as pickups and vans. Class 5 vehicles are two-axle six-tire single-unit trucks. Class 8 vehicles are four or fewer axle

single-trailer trucks. During the observation periods, no trucks had more than 4 axles and no trucks blocked the street by double parking.

The charts on Figures P and Q illustrate curb occupancy from parked cars and loading vehicles for each block over the four-hour period. These charts assume that a parked car occupies 18 feet, a class 3 vehicle occupies 26 feet, a class 5 vehicle occupies 34 feet and a class 8 vehicle occupies 48 feet of curb space. The available curb space on the east and west side of each block is indicated by the orange lines. As shown on these charts, the demand for both the loading/unloading delivery vehicles and the parked cars could be accommodated on one side of the street during the hours observed. On the two blocks between Cameron and Prince Streets, parking was concentrated closest to King Street, while delivery trucks were evenly disbursed along each block.

Vehicles on the blocks of Union Street to the north and south of King Street generally parked on the portion of the block close to King Street. The west side of Union Street from Queen to Prince and the east side from Prince to Duke are no-parking zones. Some delivery trucks loading/unloading in these zones during the hours observed, but passenger vehicles did not.

Delivery truck drivers typically moved their truck as close to their destination as possible on the street, even when this meant moving the truck 50-100 feet on the same block.

	Side of Street	Parking Type	Number of Spaces	Weekday Afternoon (12 - 1 PM)	Weekday Afternoon (1 - 2 PM)	Weekday Evening (6 - 7 PM)	Weekday Evening (7 - 8 PM)	Friday Afternoon (12 - 1 PM)	Friday Afternoon (1 - 2 PM)	Friday Evening (6 - 7 PM)	Friday Evening (7 - 8 PM)	Saturday Afternoon (11 AM - 12 PM)	Saturday Afternoon (12 - 1 PM)	Saturday Evening (7 - 8 PM)	Saturday Evening (8 - 9 PM)	Weekday Afternoon (12 - 1 PM)	Weekday Afternoon (1 - 2 PM)	Weekday Evening (6 - 7 PM)	Weekday Evening (7 - 8 PM)	Friday Afternoon (12 - 1 PM)	Friday Afternoon (1 - 2 PM)	Friday Evening (6 - 7 PM)	Friday Evening (7 - 8 PM)	Saturday Afternoon (11 AM - 12 PM)	Saturday Afternoon (12 - 1 PM)	Saturday Evening (7 - 8 PM)	Saturday Evening (8 - 9 PM)
UNION STREET		Regular	0												2												
from Pendleton St	East	Handicap	0													20%	0%	40%	60%	0%	0%	0%	60%	0%	40%	80%	120%
to Oronoco St		MC or Trolley	5	1	0	2	3	0	0	0	3	0	2	4	4												
		Regular	12	12	13	1	7	12	12	11	11	12	13	12	13												
	West	Handicap	0													100%	108%	8%	58%	100%	100%	92%	92%	100%	108%	100%	108%
		MC or Trolley	0																								
from Oronoco St		Regular	20	13	18	14	18	13	17	19	19	17	14	20	20												
to Princess St	East	Handicap	0													65%	90%	70%	90%	65%	85%	95%	95%	85%	70%	100%	100%
		MC or Trolley	0																								
		Regular	8	6	7	7	7	7	8	7	7	6	8	8	8												
	West	Handicap	0													75%	88%	88%	88%	88%	100%	88%	88%	75%	100%	100%	100%
		MC or Trolley	0																								
from Wolfe St		Regular	0	0	0	0	0	0	0	0	0	0	0	0	0												
to Wilkes St	East	Handicap	0																								
		MC or Trolley	0																								
		Regular	21	16	15	14	18	14	14	16	18	15	13	19	20												
	West	Handicap	0													76%	71%	67%	86%	67%	67%	76%	86%	71%	62%	90%	95%
		MC or Trolley	0																								
from Wilkes St		Regular	2	1	2	2	0	1	1	1	0	0	0	1	0												
to Gibbon St	East	Handicap	0													50%	100%	100%	0%	50%	50%	50%	0%	0%	0%	50%	0%
		MC or Trolley	0																								
		Regular	14	11	7	4	13	14	14	15	13	7	9	17	17												
	West	Handicap	0													79%	50%	29%	93%	100%	100%	107%	93%	50%	64%	121%	121%
		MC or Trolley	0																								
from Gibbon St		Regular	16	7	6	16	16	8	10	17	12	15	14	19	16												
to Franklin St	East	Handicap	0													44%	38%	100%	100%	50%	63%	106%	75%	94%	88%	119%	100%
		MC or Trolley	0																								
		Regular	10	7	5	9	10	5	7	10	9	10	10	12	10												
	West	Handicap	0													70%	50%	90%	100%	50%	70%	100%	90%	100%	100%	120%	100%
		MC or Trolley	0																								
from Franklin St		Regular	0	0	0	0	0	0	0	0	0	0	0	0	0												
to Jones Point Park	East	Handicap	0																								
		MC or Trolley	0																								
		Regular	15	10	11	15	14	14	14	15	16	13	14	16	16												
	West	Handicap	0													67%	73%	100%	93%	93%	93%	100%	107%	87%	93%	107%	107%
		MC or Trolley	0																								
TOTAL UNION ST (Corridor Study)		Regular	118	83	84	82	103	88	97	111	105	95	95	124	122												
		Handicap	0	0	0	0	0	0	0	0	0	0	0	0	0	68%	68%	68%	86%	72%	79%	90%	88%	77%	79%	104%	102%
		MC or Trolley	5	1	0	2	3	0	0	0	3	0	2	4	4												
TOTAL UNION ST (OTAPS Study)		Regular	112	111	96	76	98	100	95	107	120	92	104	105	105												
		Handicap	2	2	1	1	1	1	1	1	0	1	0	0	0	99%	85%	68%	87%	89%	84%	95%	105%	82%	91%	92%	92%
		MC or Trolley	0	0	0	0	0	0	0	0	0	0	0	0	0												
TOTAL UNION STREET		Regular	230	194	180	158	201	188	192	218	225	187	199	229	227												
		Handicap	2	2	1	1	1	1	1	1	0	1	0	0	0	83%	76%	68%	86%	80%	81%	92%	96%	79%	85%	98%	97%
		MC or Trolley	5	1	0	2	3	0	0	0	3	0	2	4	4												

Toole Design Group

Union Street Corridor Study
City of Alexandria
Alexandria, VA

Table A: Union Street
Parking Occupancy Rates

Union Street Corridor Study
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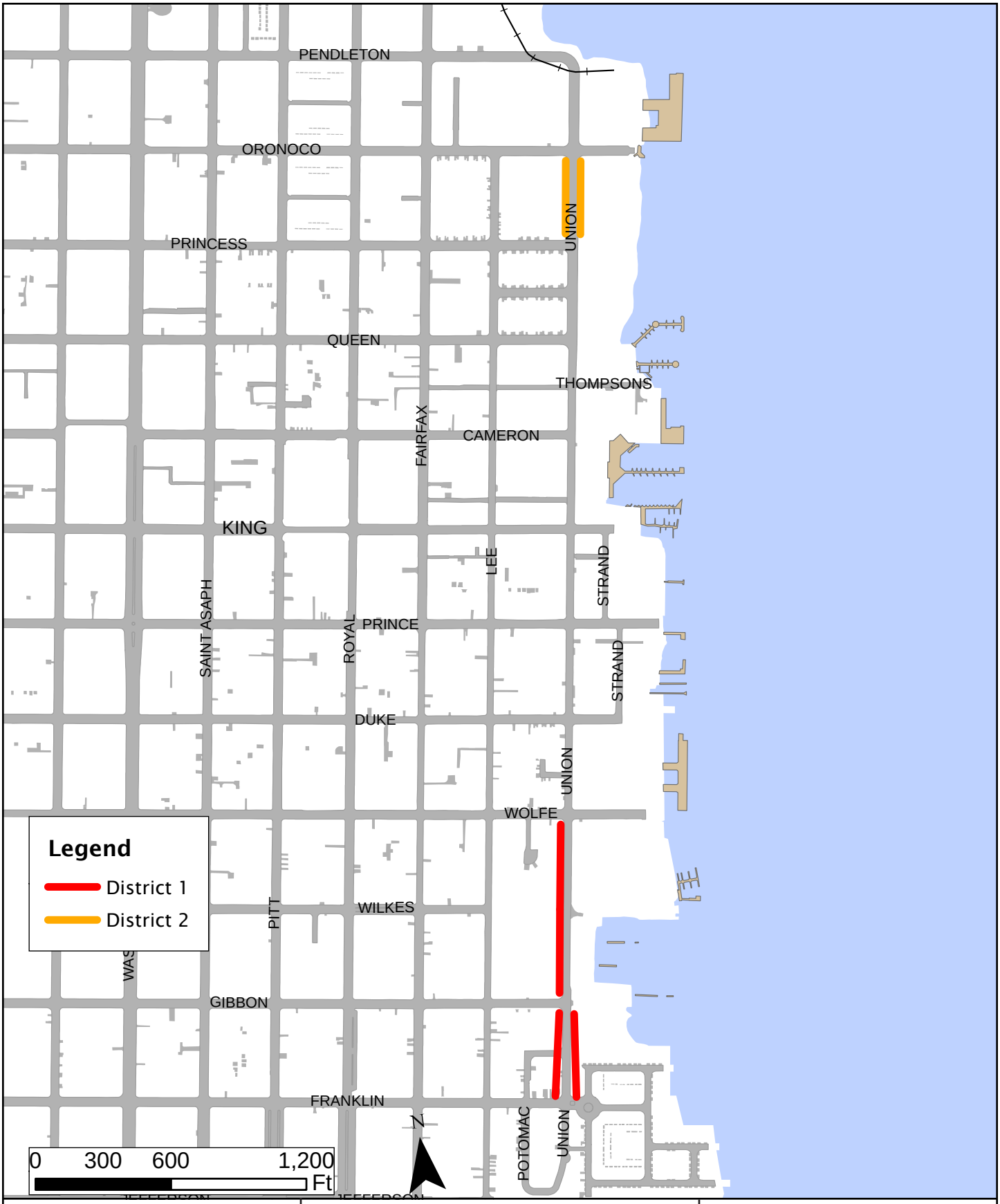
Figure A: Project Location Map

Union Street Corridor Study
City of Alexandria
Alexandria, VA

Figure B:
Observations and Data Collection Location Map

Union Street Corridor Study
City of Alexandria
Alexandria, VA

Figure C: On-Street Parking Locations



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Alexandria, VA

Figure D: Residential District Parking Restrictions

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Figure E: On-Street Parking Rates

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Figure F: Parking Time Restrictions

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Figure G: Friday Afternoon Parking Utilization

Union Street Corridor Study
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Figure H: Friday Evening Parking Utilization

Union Street Corridor Study
City of Alexandria
Alexandria, VA

Figure I: Saturday Afternoon Parking Utilization

Union Street Corridor Study
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Figure J: Saturday Evening Parking Utilization

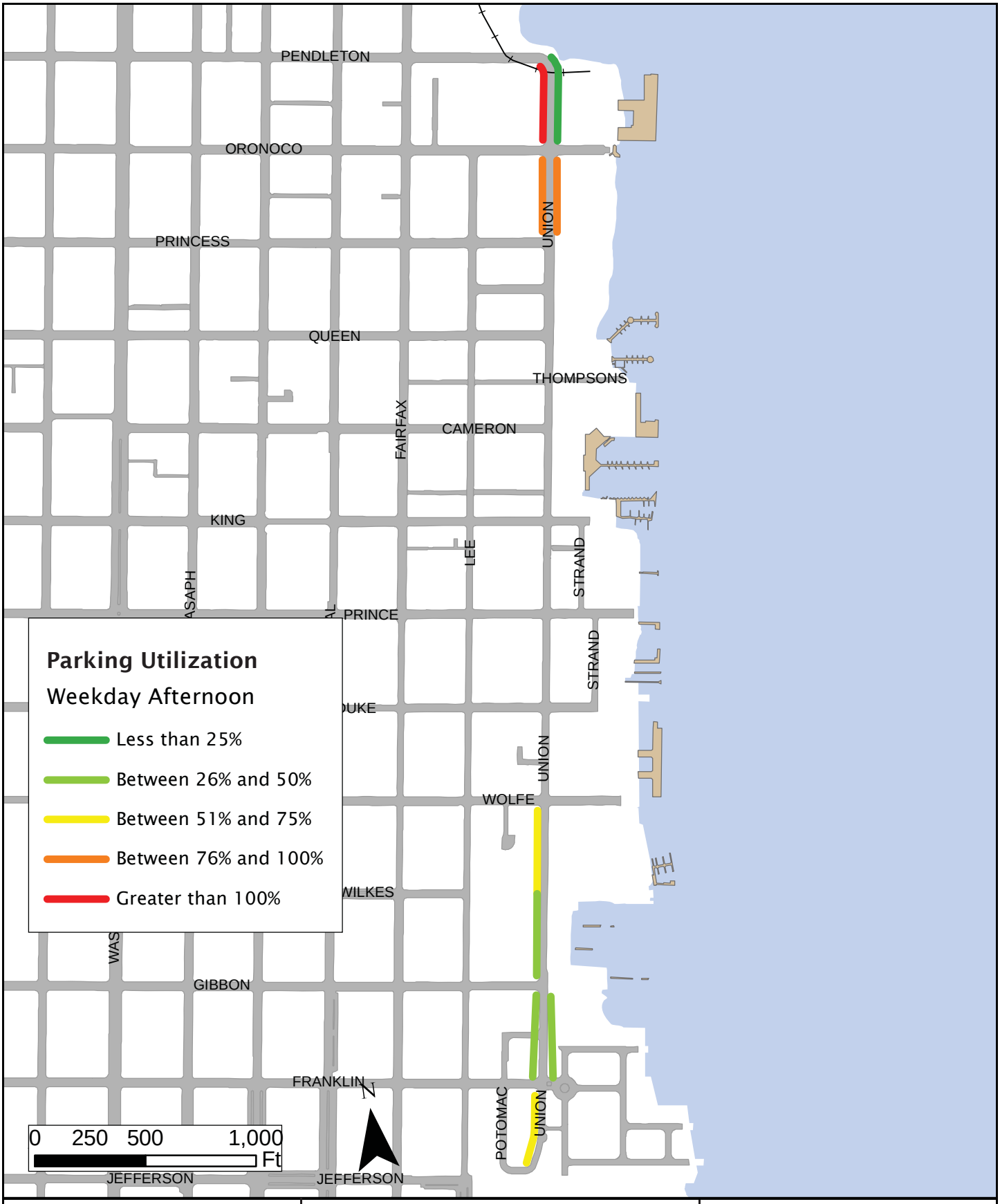

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Figure K: Weekday Afternoon Parking Utilization

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Figure L: Weekday Evening Parking Utilization

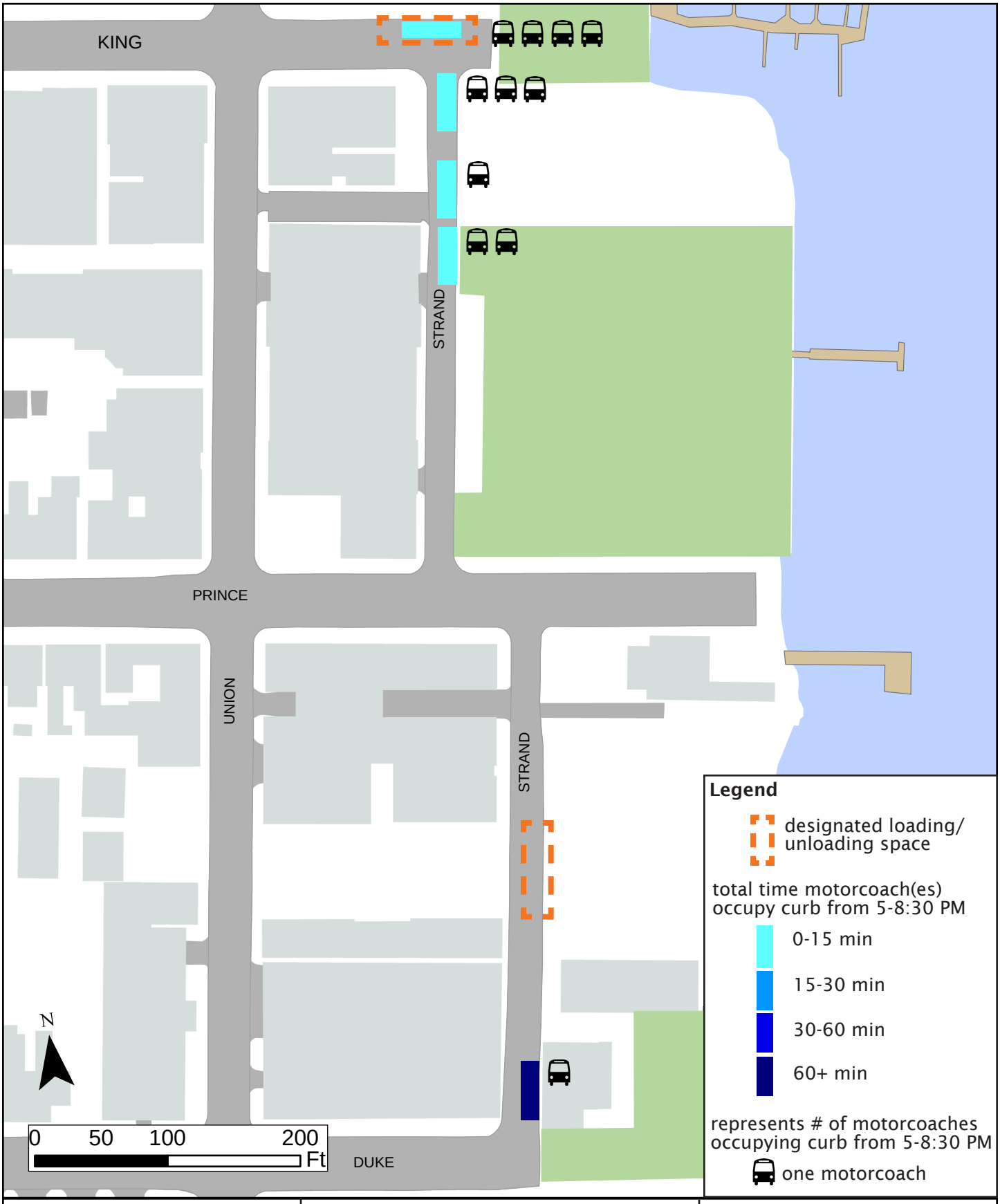

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Figure M: Weekday Motorcoach Location Map

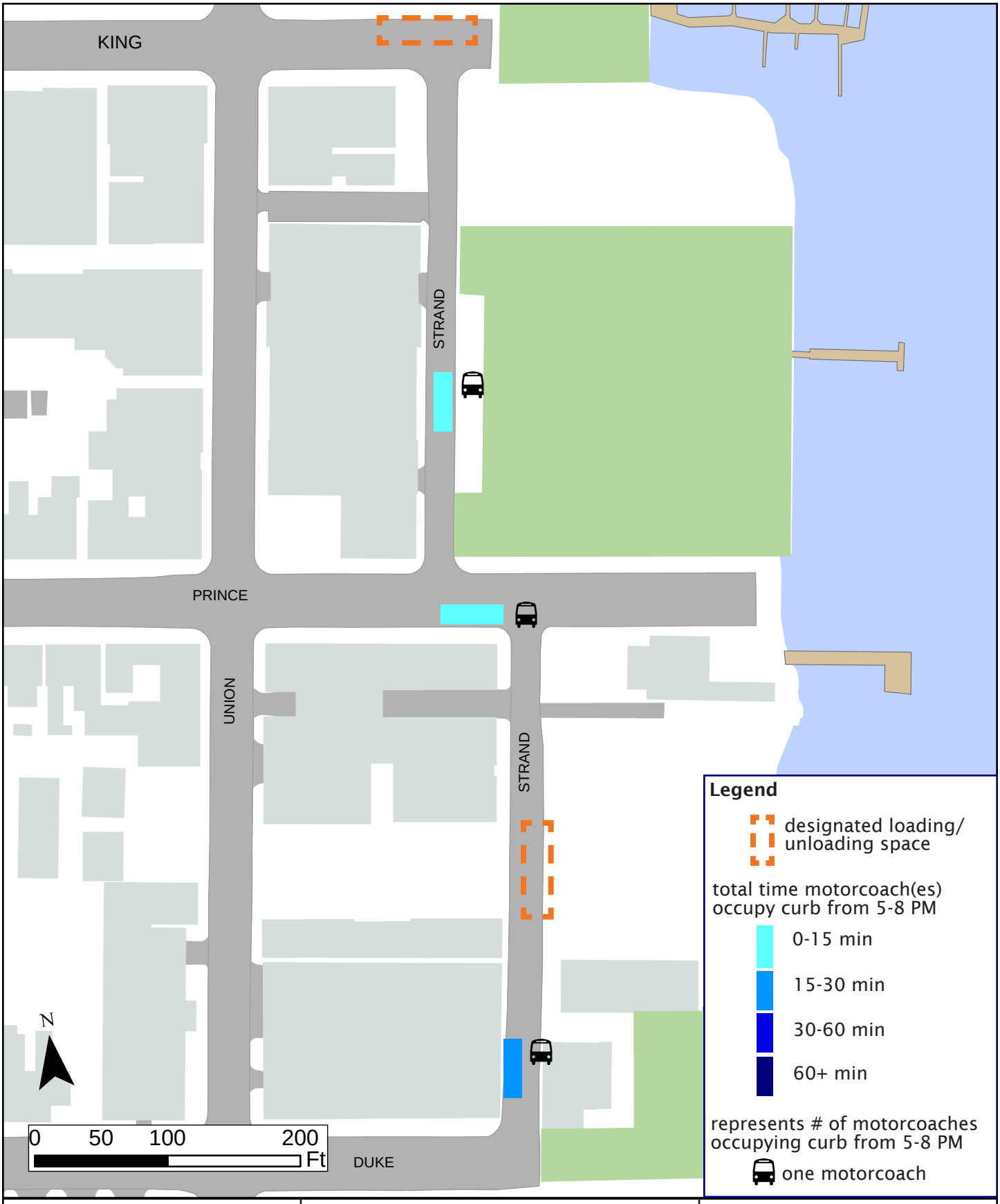

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Figure N: Weekend Motorcoach Location Map

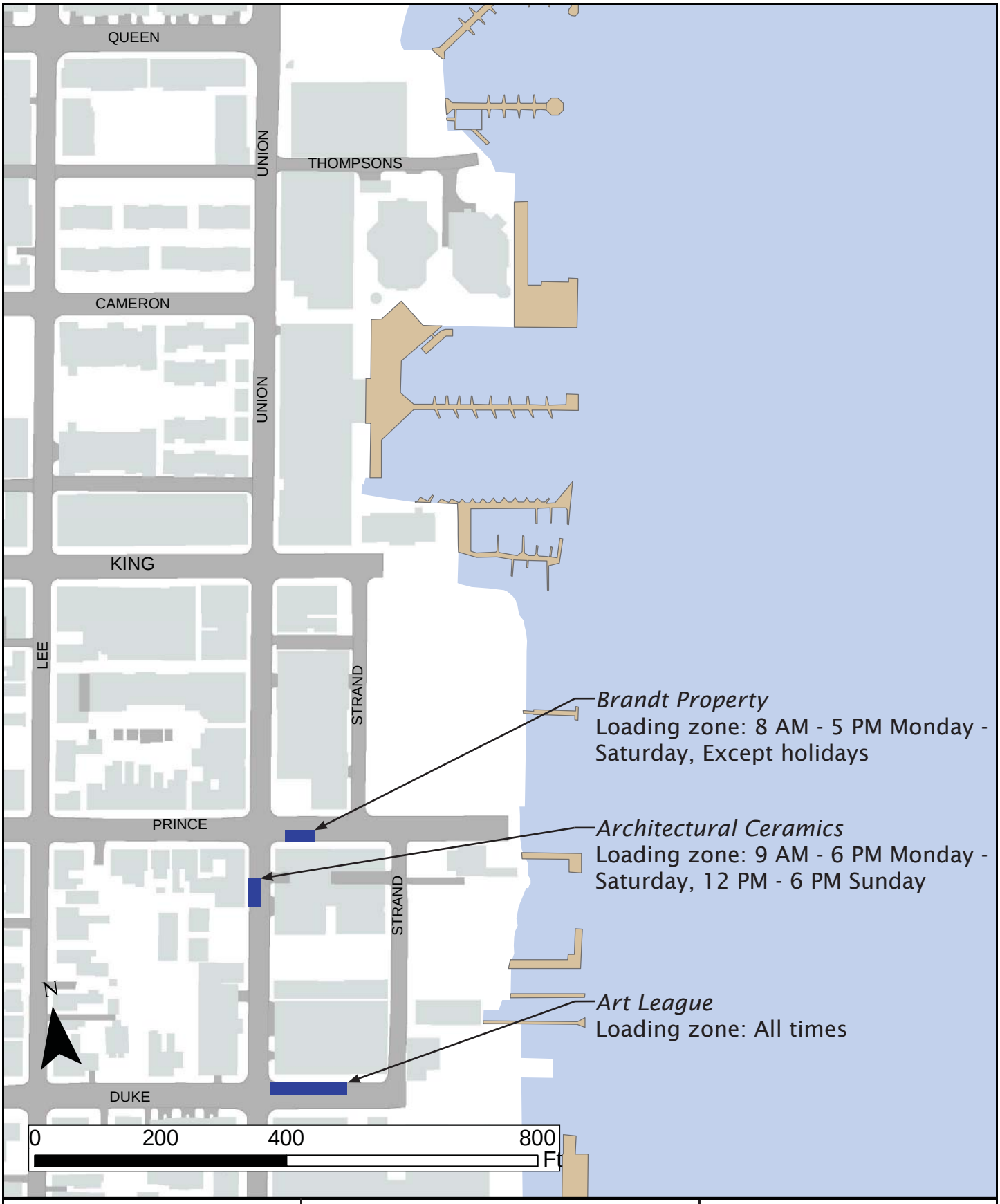

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Figure O : Loading Zone Location Map

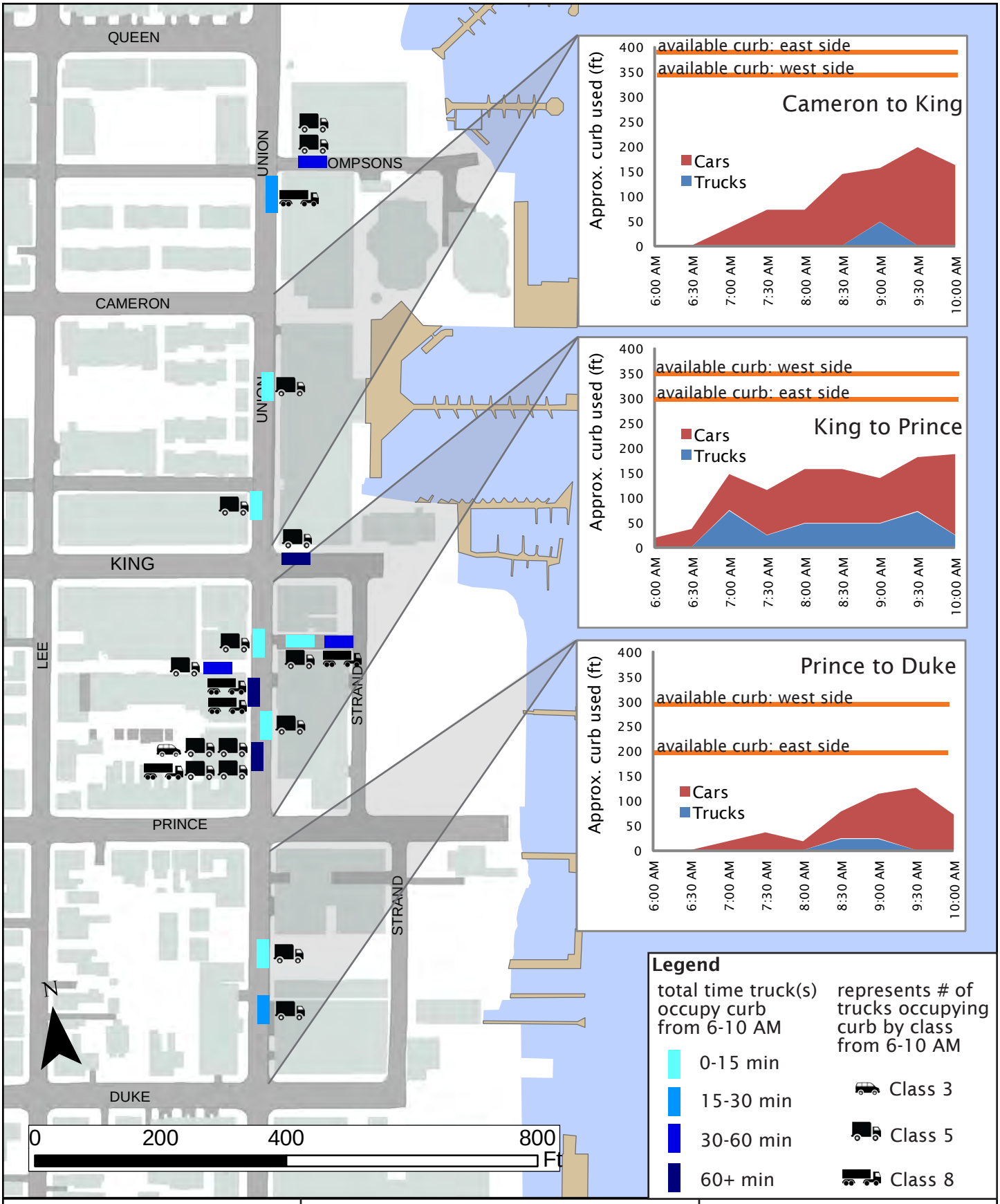

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Figure P : Weekday Loading Location Map

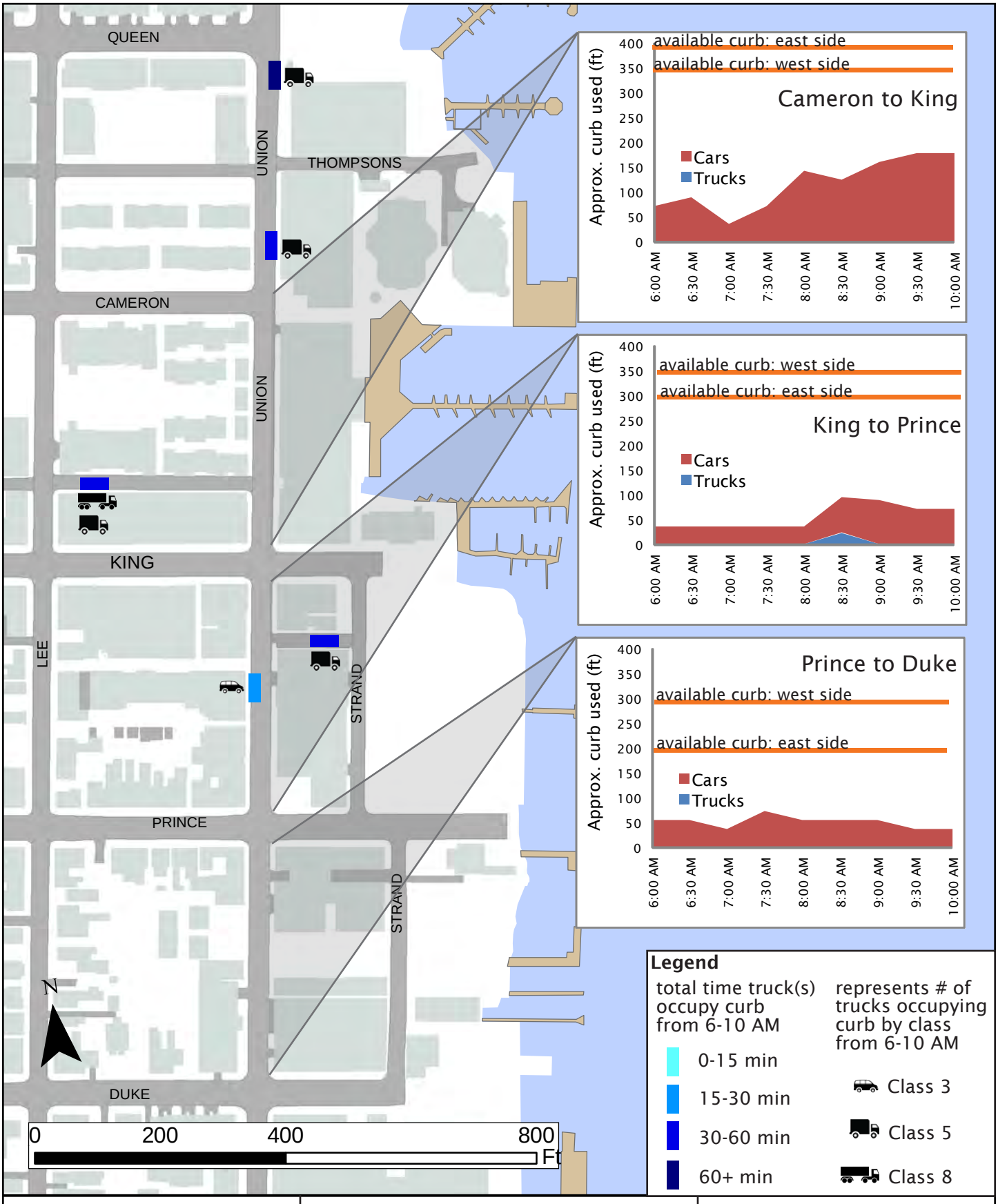

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Figure Q: Weekend Loading Location Map