



WELLS + ASSOCIATES

ART PLACE PHASE 2

WASHINGTON, DC

COMPREHENSIVE TRANSPORTATION REVIEW

February 2019



ZONING COMMISSION
District of Columbia
CASE NO. 06-100
EXHIBIT NO. 20A1

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Comprehensive Transportation Review Washington, DC

February 2019

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INTRODUCTION

OVERVIEW

The Morris and Gwendolyn Cafritz Foundation (the “Applicant”) proposes to redevelop a property on the west side of South Dakota Avenue between Ingraham Street and Kennedy Street. The property is located on Square 3765 (Lots 1,2,3,4,5,6,7,8, and 9) and Square 3767 (Lots 1,2,3, and 4). As shown on Figure 1, the site is bordered by South Dakota Avenue NE to the east, Ingraham Street NE to the south, a public alley to the west and Kennedy Street NE to the north. The site is divided by 4th Street NE running north to south through the western portion of the site. The Applicant has filed an application with the DC surveyor’s office to close 4th Street and the north-south public alley located between 4th Street and S. Dakota Avenue.

The proposed project will require modification to the 1st Stage PUD approval in addition to a 2nd Stage PUD approval. The site will be redeveloped with a mixed-use program including approximately 264 total multi-family residential units (234 market rate dwelling units and 30 artist housing units), including associated common amenity space and artist work space, family entertainment uses, and retail uses (including a ground level grocery store). The Project represents a significant investment in cultural, artistic and educational programming in an area of the city that is relatively underserved by such programming and resources.

In total, approximately 923 shared parking spaces will be provided on-site in structured garages and will be accessed via Ingraham Street, Kennedy Street, and the public alley along the west site boundary. Each entry location will provide full ingress/egress movements. Four (4) loading berths and two (2) service/delivery spaces are proposed. Commercial loading will be accessed via private 4th Street and residential loading will be accessed via the public alley on the western site boundary. The proposed site plan is shown on Figure 2.

The purpose of this report is to:

- Evaluate existing traffic operation and safety conditions,
- Evaluate future traffic conditions without the proposed project,
- Evaluate future traffic conditions with the proposed project,
- Identify existing mode choice alternatives,
- Identify any traffic operational impacts associated with the proposed project,
- Evaluate the operational functionality of the alley and its ability to serve the subject site and the adjacent abutting properties,
- Recommend transportation improvements (including roadway, operational, and/or demand management strategies) to mitigate the impact of the project and promote the safe and efficient flow of vehicular and pedestrian traffic associated with the proposed redevelopment.

STUDY SCOPE

This Comprehensive Transportation Review (CTR) was undertaken to assess the impacts of the proposed redevelopment on the surrounding roadway network. The scope of the study and proposed methodologies were approved by the District Department of Transportation (DDOT). The scoping document is included in Appendix A.

The following intersections were identified for detailed analysis and agreed to by DDOT:

- Riggs Road/South Dakota Avenue,
- Riggs Road/1st Place,
- Riggs Road/Chillum Place,
- South Dakota Avenue/Kennedy Street,
- South Dakota Avenue/Jefferson Street,
- South Dakota Avenue/Ingraham Street,
- South Dakota Avenue/Hamilton Street/Driveway, and
- South Dakota Avenue/Galloway Street.

EXISTING TRANSPORTATION FACILITIES

ROADWAY NETWORK

Existing Conditions

General details regarding the surrounding roadway segments, including functional classification, average daily traffic volume (ADT), and speed limit are summarized in Table 1. Under existing conditions, all roadways in the study area operate as two-way streets.

Future Conditions

For purposes of this study, no improvements are assumed completed by others within the study area. Improvements to the network proposed as part of the subject application will be detailed, as required, later in the report. It is noted that a HAWK signal is planned by DDOT to be installed at the intersection of Ingraham Street/South Dakota Avenue. Since traffic data was collected prior to installation, the HAWK signal was not assumed under existing conditions. If warranted and required to mitigate the impact of the proposed development, a full traffic signal will be evaluated under future conditions.

Kennedy Street is planned to be realigned in coordination with the future development of Art Place Blocks C and D. The Applicant has designed Block B as to not impede the future realignment of Kennedy Street. For purposes of this study, Kennedy Street was analyzed in its current location.

MULTI-MODAL TRANSPORTATION FACILITIES

The proposed site has ample access to the District's transportation network through rail and bus service due to its proximity to the Fort Totten Metro Station. Additionally, the pedestrian-friendly design of the development seeks to service pedestrian traffic and enhance the pedestrian corridor filling in service gaps between the Metro Station and the adjacent areas.

The development supports safe station access and promotes multi-modal options with pedestrian/bicycle friendly environment spaces that service tenants and the surrounding community.

Existing Public Transportation Facilities and Services

Metrorail Service

The site is located less than 0.25 miles from the Fort Totten Metro Station. The Fort Totten Metro Stations provides access to the Metro Red, Yellow and Green lines. The Red line provides service from the Shady Grove Metro Station to the Glenmont Metro Station. The Green line provides service from the Branch Avenue Metro Station to the Greenbelt Metro Station. The Yellow line operates between the Huntington Metro Station to the Fort Totten Metro Station from 10:00 AM to 3:00 PM and 7:30 PM to close during the week and all day on weekends.

The minimum, maximum, and average headways for the Red, Green and Yellow Lines are summarized in Table 2.

Table 1
 Roadway Segment Details

Roadway	Functional Classification	Average Daily Traffic* (vehicles per day)	Speed Limit (miles per hour)
S. Dakota Avenue	Principal Arterial	21,800	25
Riggs Road	Principal & Minor Arterial	29,100	25
Kennedy Street	Local	1,770 [‡]	25
Jefferson Street	Local	640 [‡]	25
Ingraham Street	Local	570 [‡]	25 [#]
Hamilton Street	Local	370 [‡]	25 [#]
Galloway Street	Local	1,950 [‡]	25
1 st Place	Collector	2,520 [‡]	15
Chillum Place	Local	620 [‡]	25 [#]

Notes:
 * The ADT volume is based on DDOT historical traffic volume data collected in 2016, which are the most recent data available.
 ‡ ADT is not provided on DDOT's Traffic Volume Map. It was estimated using the PM peak hour traffic volume and an assumed "k" factor of 10 percent.
 # Speed limit unposted in the study area; assumed to be 25 mph.

Table 2
 Metrorail Headways (in minutes)

Headway*	AM Rush 5:00 AM – 9:30 AM	Midday 9:30 AM – 3:00 PM	PM Rush 3:00 PM – 7:00 PM	Evening 7:00 PM – 9:30 PM	Late Night 9:30 PM – Close	Weekend Open – 9:30 PM	Weekend 9:30 PM – Close
Red Line[‡] (Shady Grove to Glenmont/Silver Spring)							
Min	0:04	0:12	0:04	0:08	0:15	0:12	0:15
Max	0:08	0:12	0:08	0:12	0:18	0:15	0:15
Green Line (Branch Avenue to Greenbelt)							
Min	0:08	0:12	0:08	0:12	0:20	0:12	0:20
Max	0:08	0:12	0:08	0:12	0:20	0:15	0:20
Yellow Line[#] (Huntington to Mt. Vernon/Ft. Totten)							
Min	N/A	0:12	N/A	0:12	0:20	0:12	0:20
Max	N/A	0:12	N/A	0:12	0:20	0:15	0:20
Notes:							
* Headways presented represent headways in both directions.							
‡ During the hours of 7:00 a.m. and 7:00 p.m., every other Red Line train will operate between Shady Grove and Silver Spring.							
# Yellow Line trains operate between Huntington & Mt Vernon Sq Monday through Friday from 5:00 a.m. to 10:00 a.m. and 3:00 p.m. to 7:30 p.m. and between Huntington and Fort Totten from 10:00 a.m. to 3:00 p.m. and 7:30 p.m. to close Monday through Friday, all day Saturday and all day Sunday.							

Bus Service

The Fort Totten Station, located less than 0.25 miles from the subject site, is also serviced by several Metrobus Routes. Metrobus Routes 60, 64, 80, E2, E3, E4, F6, K2, K6, K9, R1, and R2 all have boarding bays location at the Fort Totten Station and a number of these routes also have additional bus stops located within a ½ mile radius of the subject site.

The minimum, maximum, and average headways for the WMATA Metrobus routes are provided in Table 3.

Existing bus and Metrorail service is shown on Figure 3.

Existing Pedestrian Facilities

The District of Columbia's Multimodal Long-Range Transportation Plan's Pedestrian Element strives to make Washington, DC safer and more walkable by improving sidewalks, roadway crossings, and the quality of the pedestrian environment as well as by ensuring that the District's policies and procedures support walking.

The Pedestrian Element provides an overview of existing pedestrian conditions, establishes performance measures, and provides a plan for implementation through 2040. The Pedestrian Element recommends specific sidewalk improvement projects prioritized in tiers. There are Tier 1 and Tier 2 recommendations located in the study area along South Dakota Avenue, Galloway Street, and 1st Place. These improvements include missing sidewalks on these three links that based on current field conditions have since been built or reconstructed. There is an approximately 0.10 mile section of the south side of Galloway Street west of South Dakota Avenue that does not currently have a sidewalk.

The Pedestrian Element replaces the 2009 Pedestrian Master Plan which identified eight priority corridors based on areas of heavy pedestrian traffic and deficient walking conditions which remain a priority in the recommendations of the new Pedestrian Element. None of the study intersections are identified as a priority corridor for Ward 5.

The subject development's pedestrian plaza and circulation design component fulfill recommendations A.1 through A.4 outlined in the Pedestrian Element, improving the pedestrian network outside of downtown.

An assessment of existing conditions for all pedestrian facilities on the surrounding blocks of the proposed development, including generally the route to the nearest Metro Station, was conducted. A summary of the existing pedestrian facilities provided at each of the study intersections is presented in Table 4. The majority of the pedestrian facilities in a ¼ mile radius from the subject site are in good condition with the exception of the west side of Kennedy Street NE, some locations along the site frontage of South Dakota and several locations where warning strips are not provided. The pedestrian inventory is detailed in Figure 4.

Table 3
 Metrobus Headways (in minutes)

Headway	Northbound/Westbound			Southbound/Eastbound		
	AM Rush	Midday	PM Rush	AM Rush	Midday	PM Rush
Fort Totten-Petworth Line (60)						
Min	N/A	N/A	N/A	0:20	0:45	0:20
Max	N/A	N/A	N/A	0:20	0:45	0:20
Avg	N/A	N/A	N/A	0:20	0:45	0:20
Fort Totten-Petworth Line (64)						
Min	N/A	N/A	N/A	0:10	0:20	0:10
Max	N/A	N/A	N/A	0:20	0:20	0:20
Avg	N/A	N/A	N/A	0:15	0:20	0:15
North Capitol Street Line to the Kennedy Center (80)						
Min	N/A	N/A	N/A	0:12	0:30	0:15
Max	N/A	N/A	N/A	0:15	0:30	0:25
Avg	N/A	N/A	N/A	0:14	0:30	0:20
North Capitol Street Line to McPherson Square (80)						
Min	N/A	N/A	N/A	0:14	0:30	0:15
Max	N/A	N/A	N/A	0:20	0:30	0:25
Avg	N/A	N/A	N/A	0:17	0:30	0:20
Ivy City-Fort Totten Line (E2)						
Min	N/A	N/A	N/A	0:20	0:30	0:22
Max	N/A	N/A	N/A	0:30	0:30	0:22
Avg	N/A	N/A	N/A	0:25	0:30	0:22
Military Road-Crosstown Line (E4)						
Min	0:06	0:18	0:12	0:10	0:36	0:25
Max	0:10	0:18	0:15	0:55	0:36	0:40
Avg	0:08	0:18	0:14	0:33	0:36	0:33
New Carrollton-Fort Totten Line (F6)						
Min	N/A	N/A	N/A	0:30	1:00	0:30
Max	N/A	N/A	N/A	0:30	1:00	0:30
Avg	N/A	N/A	N/A	0:30	1:00	0:30
Takoma-Fort Totten Line (K2)						
Min	0:20	N/A	0:20	N/A	N/A	N/A
Max	0:20	N/A	0:20	N/A	N/A	N/A
Avg	0:20	N/A	0:20	N/A	N/A	N/A
New Hampshire Avenue-Maryland Line (K6)						
Min	0:20	0:20	0:12	N/A	N/A	N/A
Max	0:20	0:20	0:12	N/A	N/A	N/A
Avg	0:20	0:20	0:12	N/A	N/A	N/A
Limited-Stop Service New Hampshire Avenue-Maryland Line (K9)						
Min	0:15	N/A	0:15	N/A	N/A	N/A
Max	0:15	N/A	0:15	N/A	N/A	N/A
Avg	0:15	N/A	0:15	N/A	N/A	N/A
Riggs Road Line (R1, R2)						
Min	0:15	0:30	0:20	N/A	N/A	N/A
Max	0:25	0:35	0:20	N/A	N/A	N/A
Avg	0:20	0:33	0:20	N/A	N/A	N/A

Table 4
 Pedestrian Inventory by Intersection

Intersection	Pedestrian Heads/ Countdown	Type of Crosswalks	One Ramp/Cross walk	Tactile Warning Strip
Riggs Road/South Dakota Avenue (Signalized)	Yes	All Legs – High Visibility	Yes	Yes
Riggs Road/First Place (Signalized)	Yes	All Legs – Standard	Yes	Yes
Riggs Road/Chillum Place (Signalized)	Yes	All Legs – High Visibility	Yes	Yes
South Dakota Avenue/Kennedy Street (Signalized)	Yes	All Legs – High Visibility	Yes	Yes
South Dakota Avenue/Jefferson Street (Unsignalized)	No	North Leg – High Visibility East Leg – Standard	Yes	Yes ¹
South Dakota Avenue/Ingraham Street (Unsignalized)	No	All Legs – High Visibility	Yes	Yes ¹
South Dakota Avenue/Hamilton Street (Signalized)	Yes	All Legs – High Visibility	Yes	Yes
South Dakota Avenue/Galloway Street (Signalized)	Yes	All Legs – High Visibility	Yes	Yes
Notes:				
1. No tactile warning strips are provided on the east ramps.				

Planned/Programmed Pedestrian Improvements

Existing sidewalks and streetscapes along the site frontage on Ingraham Street, Kennedy Street, and South Dakota Avenue will be rebuilt and improved during construction of the proposed development. In addition, a shared pedestrian oriented street will be provided on future private 4th Street with adjacent outdoor seating. The main entrance to the family entertainment building, located at the corner of Ingraham and South Dakota will also be surrounded by a pedestrian plaza.

A HAWK signal is planned by DDOT and is currently being designed for the intersection of Ingraham Street/South Dakota Avenue. It is anticipated that the HAWK signal will be installed by the end of 2019. The HAWK signal would improve pedestrian safety conditions at the intersection by stopping through traffic on South Dakota Avenue with an actuated pedestrian phase. The intersection is located on a primary route between residential uses and the Fort Totten Metrorail station.

Existing Bicycle Facilities

The District's Multimodal Long-Range Transportation Plan's Bicycle Element seeks to create a more bicycle-friendly city by establishing high-quality bicycle facilities and programs that are safe and convenient.

The Bicycle Element provides bicycle levels of service (BLOS) for roadways in the District where bicycles share the road with vehicles. South Dakota Avenue NE and 1st Place/Galloway Street NE were rated to have a bicycle level of service of "C".

Finally, the Bicycle Plan identifies areas and corridors that are barriers to cyclists. These barriers include "freeways, railroad and highway grade separations, neighborhoods with heavy traffic, and other impediments to bicycle travel." North Capitol Street is the nearest identified barrier corridor. Fort Totten Metro Station is identified as an area for potential improved access if the site undergoes change. Additional bike infrastructure has been provided at the Fort Totten Metro station since the MoveDC plan was completed, such as provision of a Capital Bikeshare station, and bike lockers.

Planned/Programmed Bicycle Improvements

The Bicycle Element identifies the "Prince George's Connector" that would fill in connectivity gaps as part of the Metropolitan Branch Trail (MBT) and a cycle track along South Dakota Avenue NE from Riggs Road NE to New York Avenue NE as a Tier 3 priority recommendations.

The Prince George's Connector fills gaps from the existing MBT segment from the south (Union Station) to the north (Silver Spring, MD) and connects the MBT to the Northwest Branch Trail to the east (Prince George's County). Currently, the North-South connection is planned and construction has started with estimated completion in January 2020. When completed, the MBT

will connect downtown D.C. from Union Station to Silver Spring, MD (Silver Spring Metro Station) with an eight-mile multi-use trail with on-road and off-road facilities.

The proposed development enhances the bicycle environment providing public bicycle parking and services available to MBT cycle-track users. A bicycle repair station is planned on the first level of the parking garage for employees, residents, and retail tenants.

Capital Bikeshare

Capital Bikeshare is an automated bicycle rental or bicycle sharing program that provides 4,300 bicycles at over 500 stations across Washington, DC, Arlington, VA, Alexandria, VA, Montgomery County, MD, and Fairfax County, VA.

Membership, which is required to use Capital Bikeshare, includes five options for joining: single trip (\$2), 24 hours (\$8), three days (\$17), 30 days (\$28), or one year (\$85). Under any membership option, the first 30 minutes of use are free; users then are charged a usage fee for each additional 30-minute period. Bicycles can be returned to any station with an available dock.

As shown on Figure 3, the closest Bikeshare station is located less than ¼ mile from the site on the west side of the entrance to the Fort Totten Metrorail Station. The station at the Fort Totten Metro Station includes 19 docks. A second station is located at 3rd Street/South Dakota Avenue and includes 15 docks.

In addition to Capital Bikeshare services, there are six dockless vehicle companies operating in the District. Jump provides dockless bicycles while Skip, Spin (formerly Waybots), Bird, Lime, and Lyft operate dockless electric scooters. Participants are able to rent vehicles via an App provided by the dockless vehicle company and park in any location approved by the company.

Dockless bikesharing rates are based on a per ride and per minute basis. Jump dockless bikeshare rates start at \$2 per 30 minutes. Skip, Spin, Bird, Lyft, and Lime dockless scooters cost a flat fee of \$1 to unlock the scooter and another \$0.15 per minute used.

Car Sharing Services

Three car-sharing providers currently operate in the District. Zipcar requires a \$25 application fee and members can choose from three plans: occasional driving plan - \$70 per year (pay as you go based on the standard hourly or daily rate), monthly plan - \$7 per month (pay as you go based on the standard hourly or daily rate), or extra value plan - \$50 per month, \$75 per month (1 month rollover), \$125 per month (2 month rollover), and \$250 per month (2 month rollover) (after using up the monthly cash, pay as you go based on a discounted hourly or daily rate). Zipcars are available in the development west of the site. Zipcar locations are shown on Figure 3.

Car2Go requires a one-time \$5 application fee. Once registered, a member card is issued, which enables members to access an available car. Car2Go members can choose from two plans: smart

fortwo – \$0.41 per minute/\$15 per hour/\$59 per day, and Mercedes-Benz CLA & GLA – \$0.47 per minute/\$19 per hour/\$89 per day. No reservation is required and car usage is charged by the minute, with hourly and daily maximum fees. Unlike Zipcar, a Car2Go vehicle does not have to be returned to its original location; a Car2Go vehicle can be parked in any unrestricted curbside parking space, in any metered/paystation curbside parking space (without paying meter/paystation fees), or in any residential permit parking space. Car2Go currently has 500 vehicles in the District.

EXISTING CONDITIONS ANALYSIS

TRAFFIC VOLUMES

Existing vehicular turning movement, bicycle, and pedestrian counts were conducted on Tuesday, October 23, 2018 from 7:00 AM to 10:00 AM and 4:00 PM to 7:00 PM. Existing vehicular peak hour traffic volumes are shown on Figure 5. Peak hour pedestrian volumes are shown on Figure 6. Traffic count data are included in Appendix B. Individual peak hours were selected for each intersection to provide a conservative analysis. Therefore, volumes may not balance exactly between intersections.

OPERATIONAL ANALYSIS

Capacity Analysis

Capacity/level of service (LOS) analyses were conducted at the study intersections based on the existing lane use and traffic control shown on Figure 7, existing traffic volumes shown on Figure 5, existing pedestrian volumes shown on Figure 6, and existing traffic signal timings obtained from DDOT, included in Appendix C.

Synchro software (Version 10) was used to evaluate levels of service at the study intersections during the peak hours. Synchro is a macroscopic model used to evaluate the effects of changing intersection geometrics, traffic demands, traffic control, and/or traffic signal settings and to optimize traffic signal timings. The levels of service reported were taken from the Highway Capacity Manual (HCM) 2000 reports generated by Synchro. Level of service descriptions are included in Appendix D. The results of the analyses are summarized in Table 5 and capacity analysis worksheets are included in Appendix E.

As shown in Table 5, under existing conditions, all study intersections operate at acceptable overall levels of service (LOS) “D” or better with the following exception:

- Riggs Road/South Dakota Avenue (AM Peak Hour)

In addition, all approaches operate at acceptable levels of service (i.e. a LOS D or better), except for the following:

- South Dakota Avenue/Jefferson Street - The westbound left-right movements operate at LOS "E" during the AM peak hour, and
- South Dakota Avenue/Ingraham Street - The eastbound and westbound approaches operate at LOS "F" and "E", respectively, during the PM peak hour.

Queue Analysis

A queue analysis was conducted under existing conditions. The 95th percentile queue lengths were calculated using SimTraffic based on 10 averaged simulation runs. The results are summarized in Table 6. Queue reports are provided in Appendix E.

As shown in Table 6, the following lane groups have 95th percentile queues that exceed the available storage under existing conditions:

Riggs Road/South Dakota Avenue/3rd Street NE

- Eastbound left from Riggs Road to 3rd Street NE (PM)
- Eastbound through on Riggs Road (PM)
- Eastbound right from Riggs Road to South Dakota Avenue (PM)
- Southbound left from 3rd Street NE to Riggs Road (PM)
- Southbound through from 3rd Street NE to South Dakota Avenue (AM)

Riggs Road/First Place

- Eastbound through on Riggs Road (AM/PM)
- Eastbound right from Riggs Road to First Place (PM)
- Northbound right from First Place to Riggs Road (AM)

South Dakota Avenue/Kennedy Street

- Westbound left-through-right from Kennedy Street to South Dakota Avenue (AM)
- Northbound left-through-right from South Dakota Avenue to Kennedy Street (AM)

South Dakota Avenue/Galloway Street

- Northbound left-through-right from South Dakota Avenue to Galloway Street (AM/PM)

Queues that extend to adjacent intersections are typical in urban environments where intersections are closely spaced.

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Table 5
Intersection Level of Service Summary^{1,2}

Intersection	Control	Lane Group Approach	Existing Conditions (2018)				Future Conditions without Development (2023)				Future Conditions with Development (2023)			
			AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour	
			LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay
1. Riggs Road/South Dakota Avenue	Signalized	EBL	E	75.6	E	67.8	E	77.3	E	72.9	E	77.9	E	72.8
		EBT	E	64.2	E	56.2	E	64.2	E	56.8	E	63.9	E	56.1
		EBR	E	71.9	D	50.7	E	64.9	D	50.6	E	66.1	D	54.0
		WBL	C	30.2	D	42.4	C	28.6	D	50.8	C	29.9	F	92.3
		WBTR	D	45.1	C	33.7	D	43.2	C	33.0	D	43.2	C	33.0
		NBL	E	65.9	E	79.3	F	117.3	F	109.1	F	158.0	F	171.7
		NBTR	C	24.6	C	33.4	C	26.7	C	34.2	C	27.2	D	36.1
		SBL	D	48.6	E	57.9	D	49.2	E	61.3	D	49.2	E	64.1
		SBTR	E	57.8	E	57.7	E	59.7	E	58.9	E	60.6	E	60.4
		Overall	E	55.3	D	51.9	E	64.9	E	57.1	E	74.4	E	69.3
2. Riggs Road/First Place	Signalized	EBT	C	34.2	D	48.1	D	36.4	E	72.5	D	38.1	F	97.0
		EBR	C	24.2	C	20.3	C	24.7	C	21.7	C	24.9	C	21.8
		WBL	C	21.8	D	38.3	C	26.3	D	47.3	C	29.3	D	49.3
		WBT	C	24.1	B	11.2	C	31.9	B	12.4	D	35.3	B	15.7
		NBL	F	127.0	D	46.2	F	177.0	D	49.4	F	177.0	D	49.4
		NBR	C	22.7	C	28.4	C	22.7	C	28.6	C	22.7	C	28.6
		Overall	D	42.8	C	32.6	D	54.9	D	44.8	E	56.2	E	57.2
3. Riggs Road/Chillum Place	Signalized	EBLTR	A	2.3	A	6.1	A	2.5	A	6.7	A	2.5	A	7.0
		WBLTR	A	3.6	A	4.1	A	3.8	A	4.7	A	3.9	A	4.9
		NBLTR	D	43.2	D	37.8	D	43.2	D	38.0	D	43.2	D	38.0
		SBLTR	D	41.0	D	49.5	D	40.9	D	51.0	D	40.9	D	51.0
		Overall	A	7.4	A	9.7	A	7.2	B	10.1	A	7.1	B	10.1
4. South Dakota Avenue/Kennedy Street	Signalized	EBLTR/EBL	C	33.2	D	36.8	D	35.8	D	36.3	E	68.2	F	157.5
		EBTR	-	-	-	-	-	-	-	-	-	-	-	-
		WBLTR	F	116.6	D	44.6	F	218.5	D	52.9	F	185.7	D	43.2
		NBLTR	B	10.8	A	2.5	B	10.7	A	5.2	B	11.3	A	6.8
		SBLTR	A	6.3	A	6.1	A	6.9	A	8.1	A	7.5	B	11.8
		Overall	C	24.0	A	7.5	D	40.3	B	11.1	D	37.4	C	23.9
5. South Dakota Avenue/Jefferson Street	Unsignalized	WBLR	E	38.9	D	25.1	E	49.8	D	25.3	F	67.9	C	24.1
		NBTR	A	0.0	A	0.0	A	0.0	A	0.0	A	0.0	A	0.0
		SBTR	A	0.7	A	2.0	A	0.7	A	2.1	A	0.7	A	2.1
6. South Dakota Avenue/Ingraham Street	Unsignalized	EBLTR	D	29.5	F	54.1	E	47.4	F	59.6	F	78.0	F	788.0
		WBLTR	D	33.7	E	41.3	E	45.7	E	43.9	F	64.6	F	108.7
		NBLTR	A	1.0	A	0.6	A	1.1	A	0.7	A	2.3	A	3.3
		SBLTR	A	0.1	A	0.5	A	0.1	A	0.5	A	0.1	A	0.5
	Signalized	EBLTR	-	-	-	-	-	-	-	-	-	-	-	-
		WBLTR	-	-	-	-	-	-	-	-	-	-	-	-
		NBLTR	-	-	-	-	-	-	-	-	-	-	-	-
		SBLTR	-	-	-	-	-	-	-	-	-	-	-	-
		Overall	-	-	-	-	-	-	-	-	-	-	-	-
		7. South Dakota Avenue/Hamilton Street	Signalized	EBLTR	D	41.6	D	44.8	D	42.4	D	44.1	D	42.4
WBLTR	D			43.1	D	43.3	D	43.1	D	43.3	D	43.1	D	43.3
NBLTR	A			8.3	A	4.0	A	9.7	A	6.6	A	9.7	A	6.6
SBLTR	A			8.7	A	6.5	B	11.5	A	9.2	B	11.9	A	8.7
Overall	A			9.2	A	5.6	B	12.0	A	8.9	B	12.2	A	8.6
8. South Dakota Avenue/Galloway Street	Signalized	EBLTR	D	45.0	D	54.1	E	57.4	E	70.4	E	57.4	E	70.4
		WBLTR	E	77.8	D	36.7	F	93.0	D	37.5	F	93.0	D	37.5
		NBLTR	B	13.8	B	14.7	B	17.3	C	27.6	B	19.9	D	45.8
		SBLTR	C	21.9	B	15.8	C	22.4	B	16.1	C	23.2	B	17.1
		Overall	C	25.0	C	20.4	C	29.0	C	28.6	C	30.1	D	37.4

Notes:

- Capacity analysis based on Highway Capacity Manual methodology, using Synchro 10.
- Roadway names in **bold** are considered east/west for purposes of this analysis.



Table 6
 Intersection Queue Summary ^{1,2,3,4,5}

Intersection	Traffic Control	Lane Group	Storage Length	Existing Conditions				Future Conditions without Development (2023)				Future Conditions with Development (2023)			
				AM Peak Hour Queue (ft)		PM Peak Hour Queue (ft)		AM Peak Hour Queue (ft)		PM Peak Hour Queue (ft)		AM Peak Hour Queue (ft)		PM Peak Hour Queue (ft)	
				50th	95th	50th	95th	50th	95th	50th	95th	50th	95th	50th	95th
1. Riggs Road/South Dakota Avenue/3rd Street NE	Signalized	EBL	105	24	78	96	180	29	79	96	180	28	84	90	176
		EBT	230	99	167	386	494	101	170	382	501	101	162	360	478
		EBR	230	51	100	170	286	66	129	180	292	78	150	213	327
		WBL	235	37	138	45	125	62	183	85	189	81	208	126	232
		WBT	500	204	307	180	275	225	348	178	269	219	328	179	280
		NBL	400	196	309	135	206	252	372	175	282	274	396	220	348
		NBT	470	42	145	80	151	64	274	94	169	111	409	123	277
		SBL	75	3	24	33	95	5	35	40	102	5	32	36	99
		SBT	190	101	203	111	187	118	230	116	203	138	251	120	215
2. Riggs Road/First Place	Signalized	EBT	390	300	440	420	468	337	451	420	469	362	442	420	468
		EBR	220	110	220	100	224	113	227	115	229	112	225	108	226
		WBL	390	49	104	68	135	57	126	71	136	60	137	70	144
		WBT	680	183	323	168	261	247	376	196	311	276	409	218	338
		NBL	350	120	133	108	148	122	130	113	146	122	129	114	143
		NBR	350	264	406	159	324	307	375	201	360	306	383	194	355
3. Riggs Road/Chillum Place	Signalized	EBLTR	650	31	95	141	371	42	121	148	380	45	122	144	357
		WBLTR	260	85	171	84	169	97	192	110	206	97	186	122	222
		NBLTR	370	50	100	52	115	51	102	47	97	46	96	49	97
		SBLTR	220	35	77	69	125	35	73	72	130	37	81	70	125
4. South Dakota Avenue/Kennedy Street	Signalized	EBLTR	245	12	37	18	48	40	78	30	69	91	146	102	152
		WBLTR	220	166	271	67	121	212	304	93	172	241	307	96	170
		NBLTR	210	122	229	75	160	167	276	103	200	184	290	142	261
		SBLTR	675	79	164	109	213	94	199	127	231	108	215	158	261
5. South Dakota Avenue/Jefferson Street	Unsignalized	WBLR	640	53	100	14	41	66	129	14	40	79	165	14	42
		NBLR	215	8	45	5	35	19	85	10	51	27	108	23	95
		SBLR	215	11	42	34	96	11	49	40	104	14	52	46	120
6. South Dakota Avenue/Ingraham Street	Unsignalized	EBLTR	280	32	68	39	76	35	68	42	80	62	122	127	193
		WBLTR	850	6	26	11	35	6	26	13	39	8	29	12	41
		NBLTR	195	34	114	23	80	49	150	33	110	66	167	82	181
		SBLTR	220	14	56	16	58	18	67	18	66	23	77	18	64
7. South Dakota Avenue/Hamilton Street	Signalized	EBLTR	100	1	11	1	8	35	75	31	67	36	72	33	73
		WBLTR	575	15	42	8	28	17	42	9	28	16	46	8	27
		NBLTR	430	99	260	38	126	146	292	92	216	146	300	109	241
		SBLTR	180	68	169	53	160	93	200	94	198	110	232	92	193
8. South Dakota Avenue/Galloway Street	Signalized	EBLTR	555	115	234	142	267	190	355	194	331	192	360	166	290
		WBLTR	600	83	158	36	83	85	159	37	83	79	149	37	84
		NBLTR	220	301	437	253	396	350	442	348	442	361	436	368	421
		SBLTR	420	130	222	175	268	144	239	195	307	156	267	218	338

Notes:
 1. Capacity analysis based on an average of 10 SimTraffic Simulations, using SimTraffic 10.
 2. Roadway names in **bold** are considered east/west for purposes of this analysis.

SAFETY ANALYSIS

Crash data at the study intersections were obtained from DDOT and are included in Appendix F. The information provided by DDOT included the total number of crashes over the latest three years of available data (i.e. 2015, 2016, and 2017) at each intersection and was further categorized by type of crash. As shown in Table 7, the crash rates at Riggs Road/South Dakota Avenue and Riggs Road/1st Place are above 1.0, which is considered high by DDOT.

Table 7
 Crash Data Summary

Intersection	Type of Control	No. of Crashes* (3 Years)	ADT# (veh/day)	Crash Rate (MEV)
1 Riggs Rd & S. Dakota Ave.	Signal	3	31,540	1.77
2 Riggs Rd & 1 st Pl	Signal	8	29,310	1.18
3 Riggs Rd & Chillum Pl	Signal	10	17,600	0.62
4 S. Dakota Ave & Kennedy St	Signal	10	19,010	0.77
5 S. Dakota Ave & Jefferson St	Two-Way Stop	1	19,130	0.57
6 S. Dakota Ave & Ingraham St	Two-Way Stop	2	17,840	0.31
7 S. Dakota Ave & Hamilton St	Signal	11	19,470	0.42
8 S. Dakota Ave & Galloway St	Signal	36	20,890	0.92

Note:
 * 2015-2017 traffic accident data was provided by DDOT.
 # Intersection ADT is determined by assuming that ADT equates to 10% of Weekday AM/PM peak hour volumes, whichever is higher.

Riggs Road/South Dakota Avenue

A review of the crash types at the Riggs Road/South Dakota Avenue intersection reveals that approximately seven percent of the identified accidents were rear end collisions. Side swipe collisions made up 18 percent of the identified crashes at the intersection. Two accidents involved a bicyclist. One accident involved a pedestrian. The majority of the crashes at this intersection (67 percent) were not identified by crash type in the data provided.

The majority of collisions (54 percent) occurred during the daytime (i.e. 7:30 AM – 6:30 PM). Approximately 35 percent of the crashes occurred during the AM or PM peak periods (i.e. 7:30 – 9:30 AM and 4:00 – 6:30 PM). A majority of the collisions (71 percent) also occurred under clear weather conditions.

More information regarding the direction of travel and type of crash would be required to make recommendations to improve safety.

Riggs Road/1st Place

A review of the crash types at the Riggs Road/1st Place intersection reveals that 21 percent of the identified collisions involved side swipe collisions. The majority (71 percent) were not identified by type. No accidents involved a pedestrian or bicyclist.

A review of the crash data at this intersection reveals the majority of collisions (55 percent) occurred during the daytime (i.e. 7:30 AM – 6:30 PM). Approximately 32 percent of the crashes occurred during the AM and PM peak periods (i.e. 7:30 – 9:30 AM and 4:00 – 6:30 PM). A majority of the collisions (66 percent) also occurred under clear weather conditions. More detailed information regarding the direction of travel and type of crash would be required to develop specific recommendations to improve safety at the intersection.

FUTURE BACKGROUND CONDITIONS

TRAFFIC VOLUMES

Overview

In order to forecast year 2023 background traffic volumes in the study area without the proposed redevelopment, increases in traffic associated with growth outside the immediate site vicinity (regional growth) and increases in traffic associated with planned or approved but not yet constructed developments in the study area (pipeline developments) were considered.

Regional Growth

DDOT's historical average daily traffic (ADT) volume maps were examined to determine an appropriate growth rate for the study area. The historical ADTs indicate that traffic volumes in the study area have declined in several of the last ten years, with an average overall growth of less than one-half percent. A conservative growth rate of one-half percent per year, compounded annually over five years (2018 to 2023) was applied to the existing vehicular volumes shown on Figure 5. The estimated regional growth is shown on Figure 8.

Pipeline Developments

Any trips generated by matter-of-right or zoning-approved developments outside of the immediate study area are assumed included in the regional growth rate. In addition, five pipeline developments planned in the study area were identified during the scoping process. As summarized in Table 8, the developments are estimated to generate approximately 533 AM peak hour trips and 664 PM peak hour trips. Traffic volumes for the pipeline developments and their locations are shown on Figures 9A/B. Individual pipeline development forecasts are included in Appendix G. A summary of the pipeline developments is provided below.

Table 8
Pipeline Trip Generation Summary

Land Use	ITE Code	Setting/Location	Size	Units	AM Peak Hour			PM Peak Hour		
					In	Out	Total	In	Out	Total
Art Place Phase 1 - Vacant Space¹										
<i>Residential</i>			88	DU	60	294	354	552	285	837
<i>Non-auto Trips</i>			<u>64%</u>	<u>68%</u>	<u>38</u>	<u>188</u>	<u>227</u>	<u>375</u>	<u>194</u>	<u>569</u>
Vehicle Trips					22	106	127	177	91	268
Fort Totten South²										
<i>Residential</i>			185	DU	50	245	295	310	160	470
<i>Non-auto Trips</i>			<u>60%</u>	<u>62%</u>	<u>30</u>	<u>147</u>	<u>177</u>	<u>192</u>	<u>99</u>	<u>291</u>
Vehicle Trips					20	98	118	118	61	179
6000 New Hampshire Avenue³										
Single Family Homes			38	DU	9	27	36	28	16	44
Condo/Townhome			131	DU	11	53	64	50	25	75
Vehicle Trips					20	80	100	78	41	119
Metro Day School; PUD Modification										
Faculty Trips			26	Staff	26	0	26	0	26	26
Individual Van Trips			110	Individuals	9	9	18	0	0	0
Vehicle Trips					35	9	44	0	26	26
12 Condominium Units (To Be Removed)					(1)	(4)	(5)	(4)	(2)	(6)
W/o Day School					20	80	100	78	41	119
With Day School					54	85	139	74	65	139
5600 2nd Street NE										
<i>Mini-Warehouse⁴</i>	151	General Urban/Suburban	177,707	SF	14	11	25	23	23	46
Vehicle Trips					14	11	25	23	23	46
Art Place Block C School										
<i>Elementary School⁵</i>	520	General Urban/Suburban	250	Students	92	76	168	22	21	43
<i>Non-auto Trips⁶</i>			<u>26%</u>		<u>24</u>	<u>20</u>	<u>44</u>	<u>6</u>	<u>5</u>	<u>11</u>
Vehicle Trips					68	56	124	16	16	32
Total Pipeline Vehicle Trips					178	356	533	408	256	664
Notes										
1 Calculated using TrispDC, assuming occupancy of the existing Art Place Phase 1.										
2 Calculated using TripsDC, densities taken from Fort Totten South plans dated May 24, 2018.										
3 Trip generation from Kimley-Horns Traffic Analysis Memorandum dated January 24, 2013.										
4 Trip generation taken from Wells + Associates Traffic Analysis Memorandum dated August 15, 2016.										
5 Calculated using ITE Trip Generation Manual, 10th edition.										
6 Mode split assumptions from Wells + Associates December 2015 Sidwell Friends School Comprehensive Transportation Review.										

Art Place Phase 1

Art Place Phase 1 (Block A) is a mixed-use development that features a total of 520 residential dwelling units (DU) and 91,420 SF of retail uses. At the time traffic counts were collected, approximately 432 DUs and 10,565 SF of ground floor retail space were occupied. Site trip distributions for the development were taken from the Transportation Impact Study for the Fort Totten Redevelopment prepared by Wells + Associates, dated October 2008. Trip generation for this pipeline development was estimated using TripsDC. Based on TripsDC estimates, Art Place Phase 1 development will generate 127 AM peak hour vehicle trips and 268 PM peak hour vehicle trips.

Fort Totten South

Fort Totten South will feature approximately 185 residential dwelling units and 30,000 SF of ground floor retail space. Development tabulations for the site were taken from preliminary site plans prepared by Mushinsky Voelzke Associates, dated May 24, 2018. Site trip distributions were calculated consistent with the residential distributions approved for the Art Place development. Trip generation for Fort Totten South was estimated using TripsDC. According to TripsDC estimates, the Fort Totten South development will generate 118 AM peak hour vehicle trips and 179 PM peak hour vehicle trips.

6000 New Hampshire Avenue

6000 New Hampshire Avenue proposes the relocation of the Metro Day School, which includes approximately 22 staff members and approximately 84 students. Site trip assignments for the development were taken from the Modification of 6000 New Hampshire Avenue Memorandum prepared by Kimley-Horn and Associates, Inc., dated January 31, 2013. According to the study, the relocation of the Metro Day School to 6000 New Hampshire Avenue will generate an estimated 39 AM peak hour vehicle trips and 20 PM peak hour vehicle trips.

5600 2nd Street

5600 2nd Street will feature a four-story storage facility of approximately 154,160 SF of gross floor area. Site trip assignments for the development were taken from the Fort Totten Storage Center Memorandum prepared by Wells + Associates, dated August 15, 2016. According to the study, the 5600 2nd Street redevelopment will generate an estimated 25 AM peak hour vehicle trips and 46 PM peak hour vehicle trips.

Future School (Block C)

A potential school to be located on Block C is assumed to be an elementary school that can accommodate a maximum of 250 students. Since the school is an approved use for Block C, trips were generated for that portion of the site under background conditions. Trip generation was

calculated with ITE Trip Generation Manual, 10th edition using Land Use Code 520 (Elementary School). The proposed development will generate an estimated 124 AM peak hour vehicle trips and 32 PM peak hour vehicle trips.

Background Forecasts

Background 2023 traffic forecasts (without the proposed redevelopment) were developed by combining the existing traffic volumes (Figure 5), Regional Growth (Figure 8), and the Pipeline Site Trip Assignments (Figure 9). The resulting 2023 background traffic forecasts are shown on Figure 10.

OPERATIONAL ANALYSIS

Capacity Analysis

Capacity/level of service (LOS) analyses were conducted at the study intersections based on the existing lane use and traffic control shown on Figure 7, future background traffic forecasts shown on Figure 10, and existing DDOT traffic signal timings.

The level of service results for the 2023 background conditions without the proposed project are presented in Appendix H and summarized in Table 5. As shown in Table 5, under background conditions, many of the study intersections will experience increases in delay as a result of the background traffic growth and pipeline projects. Consistent with existing conditions, the following intersection continues to operate at an overall LOS “E” or LOS “F”:

- Riggs Road/South Dakota Avenue (AM Peak Hour)

Under future background conditions, the following intersections are projected in increase to operate at an overall LOS “E” or “F”:

- Riggs Road/South Dakota Avenue (PM Peak Hour)
- Riggs Road/First Place (PM Peak Hour)

Additionally, the following lane groups also will operate at a LOS “E” or “F” during the AM or PM peak hours under background conditions:

- South Dakota Avenue/Jefferson Street - The westbound left-right movement increases from LOS “E” to LOS “F”, and
- South Dakota Avenue/Ingraham Street - The eastbound and westbound approaches operate at LOS “F” and “E”, respectively, during the AM peak hour in addition to the PM peak hour.

Queue Analysis

A queue analysis was conducted for 2023 conditions without the Art Place Phase 2 redevelopment. The 95th percentile queue lengths were calculated using SimTraffic methodology based on the average of ten simulation runs. The results are summarized in Table 6. Queue reports are provided in Appendix H.

As shown in Table 6, the 95th percentile queues at several study intersections will increase under background conditions. The following lane groups have 95th percentile queues are projected to exceed the available storage:

Riggs Road/South Dakota Avenue/3rd Street NE

- Eastbound left from Riggs to 3rd Street NE (PM)
- Eastbound through from Riggs Road (PM)
- Eastbound right from Riggs Road to South Dakota Avenue (AM)
- Southbound left from 3rd Street NE to Riggs Road (PM)
- Southbound through from 3rd Street NE to South Dakota Avenue (AM/PM)

Riggs Road/First Place

- Eastbound through from Riggs Road (AM/PM)
- Eastbound right from Riggs Road to First Place (AM/PM)
- Northbound right from First Place to Riggs Road (AM)

South Dakota Avenue/Kennedy Street

- Westbound left-through-right from Kennedy Street (AM)
- Northbound left-through-right from South Dakota (AM)

South Dakota Avenue/Hamilton Street

- Southbound left-through-right from South Dakota Avenue to Hamilton Street (AM/PM)

South Dakota Avenue/Galloway Street

- Northbound left-through-right from South Dakota (AM/PM)

SITE ANALYSIS

OVERVIEW

The subject site is located within 0.25 miles of the Fort Totten Metrorail station in Ward 5. The proposed project will require modification to the 1st Stage PUD approval in addition to a 2nd Stage PUD approval. The site is currently developed with the Riggs Plaza Apartment buildings. One of the existing apartment buildings will remain.

The proposed redevelopment will include approximately 270 total multi-family residential units (234 market rate dwelling units and 30 artist housing units shown on current plans) including associated common amenity space and artist work space, family entertainment uses, and retail uses (including a ground level grocery store).

Currently, the family entertainment and cultural uses are planned to be tenanted by Meow Wolf and Explore!. Meow Wolf is an immersive and interactive experience that transports audiences of all ages into fantastic realms of story and exploration. The exhibit generally includes art installations, video and music production, and extended reality content. Entry to Meow Wolf will be controlled via timed ticket entry, which will control visitor arrivals. Explore! is a children's museum with art installations and interactive activities for children of all ages. Explore! inspires children to be curious thinkers, creators, communicators, and collaborators. Additional cultural/entertainment space will also be provided within the building.

SITE ACCESS

As shown on Figure 1, vehicular access to the site is proposed via curb cuts on Ingraham Street, Kennedy Street, and the public alley on the western site boundary. The curb cuts on Ingraham Street and Kennedy Street will provide access primarily for the commercial uses while the curb cut off of the private alley is design for the designated residential parking spaces. Sight distance triangles are provided on Figure 12A/B.

Primary pedestrian access to the commercial building is envisioned at the corner of Ingraham Street/South Dakota Avenue through the pedestrian plaza and into the circular building. Several additional entrances are provided along the building frontage on South Dakota Avenue, Ingraham Street, and Kennedy Street. As shown on Figure 11, three pick-up drop-off "PUDO" zones are proposed on the site. A PUDO zone is proposed on both Ingraham Street and South Dakota Avenue at the northwest corner of the intersection and the third is proposed on South Dakota Avenue south of Kennedy Street. Each of the PUDO zones are approximately 60 to 80 feet in width. Along the South Dakota Avenue frontage of the building, a 180 foot motorcoach and bus loading/parking zone is proposed.

As shown on Figures 11 and 15, the long-term bicycle storage for both the retail and residential areas are located in the ground floor level or first level below grade of the parking garage. Bicycle

access to the commercial long-term spaces is provided via the curb cuts on Ingraham Street and Kennedy Street and through the pedestrian access to the garage area from the sidewalk on South Dakota Avenue. Showers and lockers are provided for the commercial long-term bicycle spaces. The residential bike storage can be accessed within the residential area of the garage, either via the curb cut on the public alley or within the building via the elevators.

Figure 13 shows the pedestrian and bicycle access and circulation for the project.

TRIP GENERATION ANALYSIS

Total Trips

The total number of person-trips (including auto trips, pedestrian trips, transit trips, and bicycle trips) anticipated to be generated by the proposed mix of uses was estimated based on the Institute of Transportation Engineer's (ITE's) Trip Generation Manual, 10th Edition for the retail and museum uses (Land Use Codes 580 and 820, respectively), TripsDC for the residential uses, historic Wells + Associates data for community Live Theatre uses, and estimated weekly visitors to the Meow Wolf. For more details see Appendix A.

Based on the aforementioned methodology, the proposed development would generate 878 **total person trips** during the AM peak hour and 1,904 **total person trips** during the PM peak hour.

Non-Auto Mode Split

A portion of the trips generated by the proposed redevelopment would be made by non-auto modes of transportation. The percentage of non-auto trips is related to the prevalence of transit and other alternative transportation services, the walkability of the site, and the degree to which non-auto modes of transportation are encouraged such as through implementation of a Transportation Demand Management Plan.

The number of non-auto trips generated by each proposed use was estimated based on Trips DC for the residential uses and the 2005 WMATA ridership survey for the commercial uses. During the AM and PM peak hours, a non-auto mode split of approximately 43% was assumed for the museum and entertainment uses, 53% for the retail uses. Based on TripsDC, a non-auto of 64% was assumed during the AM peak hour and 71% during the PM peak hour for the residential uses. The remaining vehicular trip generation will be made up of taxis, ride-for-hire (including Uber and Lyft), and personal vehicles. A portion of the trips generated for the museum and family entertainment uses was assumed to arrive via motorcoach or school bus.

The trip generation for the proposed mix of uses, including vehicle trips and person trips delineate by non-auto mode, is summarized in Table 9. As shown in Table 9, based on the non-auto mode splits, the site is estimated to generate 250 AM peak hour vehicle trips and 480 PM peak hour vehicle trips.

Table 9
Site Trip Generation Summary

Land Use	ITE Code	Setting/Location	Size	Units	AM Peak Hour			PM Peak Hour		
					IN	OUT	TOTAL	IN	OUT	TOTAL
Residential										
Person Trips ¹			264	D.U.	96	273	369	318	204	522
Non-auto Person Trips	64%	71%			61	175	236	226	145	371
Transit	28%	20%			27	76	103	63	41	104
Bike	4%	4%			4	11	15	13	8	21
Walk	32%	47%			31	87	118	149	96	245
Vehicle Trips	36%	29%			35	98	133	92	59	151
Shopping Center										
ITE Trips ²	820	General Urban/Suburban	84,800	SF (GLA)	120	74	194	231	250	481
Person Trips ⁵	AVO 2.0				236	145	381	453	490	943
Vehicle Person Trips					111	68	179	213	230	443
Non-auto Person Trips	Ret.	Entert.			125	77	202	240	260	500
Metro ³	0.29	0.26	27%		64	39	103	122	132	255
Bus ³	0.08	0.06	7%		17	10	27	32	34	66
Walk/Bike ³	0.27	0.11	19%		45	27	72	86	93	179
Walk			14%		33	21	54	64	70	134
Bike			5%		11	7	18	21	23	45
Vehicle Trips					56	35	91	109	117	226
Live Theater										
Total			250	Seats	3	2	5	88	15	103
Rate per seat ⁴					-	-	-	0.35	0.06	0.40
Person Trips ⁵	AVO 2.0				6	4	10	175	30	205
Vehicle Person Trips					4	2	6	100	17	117
Non-auto Person Trips		Entert.			2	2	4	75	13	88
Metro ³		0.11	11%		2	1	3	19	4	23
Motorcoach	48	0.15	15%		-	-	-	30	-	30
MetroBus ³		0.06	6%		1	0	1	10	2	12
Walk/Bike ³		0.11	11%		1	-	1	19	4	23
Walk			8%		1	-	1	14	3	17
Bike			3%		-	-	0	5	1	6
Motorcoach Trips					-	-	-	1	-	1
Vehicle Trips					2	1	3	50	9	59
All Vehicle Trips					2	1	3	51	9	60
Meow Wolf										
Person Trips ⁶	AVO 3.19		77,204	SF	15	2	17	27	142	169
Vehicle Person Trips					9	1	10	15	81	96
Non-auto Person Trips		Entert.			6	1	7	12	61	73
Metro ³		0.11	11%		3	1	4	3	16	19
Motorcoach	48	0.15	15%		-	-	-	-	25	25
MetroBus ³		0.06	6%		1	0	1	2	8	10
Walk/Bike ³		0.11	11%		2	0	2	3	16	19
Walk			8%		2	-	2	2	12	14
Bike			3%		0	0	0	1	4	5
Motorcoach Trips					-	-	-	-	1	1
Vehicle Trips					3	0	3	5	25	30
All Vehicle Trips					3	0	3	5	26	31
Museum										
ITE Trips ²	580	General Urban/Suburban	113,452	SF	27	4	32	3	17	20
Person Trips ⁵	AVO 3.19				87	15	102	10	55	65
Vehicle Person Trips					50	9	59	6	31	37
Non-auto Person Trips		Entert.			37	6	43	4	24	28
Metro ³		0.11	11%		9	2	11	1	6	7
Motorcoach	48	0.15	15%		15	-	15	-	10	10
MetroBus ³		0.06	6%		5	1	6	1	3	4
Walk/Bike ³		0.11	11%		9	2	11	1	6	7
Walk			8%		7	1	8	1	4	5
Bike			3%		2	1	3	-	2	2
Motorcoach Trips					1	-	1	-	1	1
Vehicle Trips					16	2	18	2	10	12
All Vehicle Trips					17	2	19	2	11	13
Total Proposed Development										
Total Person Trips					440	439	879	983	921	1,904
Non-auto Person Trips					231	261	492	557	503	1,060
Personal Vehicle Trips					111	136	249	257	220	477
Motorcoach Trips					1	-	1	1	2	3
All Vehicle Trips					112	136	250	258	222	480

Notes:

- ¹ Residential trip generation (including non-auto mode split) calculated using tripsDC.org.
- ² Trips generated using Institute of Transportation Engineers (ITE) Trip Generation, 10th Edition.
- ³ Metro, bus, and walk/bike mode splits taken from WMATA 2005 Ridership Survey. The walk mode split was assumed to be 75% of the total walk/bike split.
- ⁴ Based on counts collected by W + A on Thursday, March 10, 2016 and reflects a show with 90% attendance at an off-site venue.
- ⁵ Average Vehicle Occupancy from National Household Travel Survey
- ⁶ Meow Wolf trip generation estimates calculated based on an assumed 9,500 weekly visitors.

Site Trip Distribution and Assignment

The distribution of peak hour site trips generated by the proposed development was based on existing traffic patterns in the study area, approved and recently constructed background projects, and general knowledge of commuter routes to/from the site. The anticipated site trip distributions are shown in Table 10.

Table 10
 Site Trip Distributions

Roadway	Direction (to/from)	Residential Distribution	Retail Distribution
Riggs Road	West	50%	30%
	East	15%	25%
South Dakota Avenue	South	35%	30%
3 rd Street	North	0%	15%
Total		100%	100%

The anticipated distributions were applied to the trip generation. The resulting site trip assignments are shown on Figure 14.

PARKING AND LOADING ASSESSMENT

Parking Requirements

A summary of the required parking per proposed use is summarized in Table 11 based on the parking requirements prescribed in the District of Columbia Zoning Regulations of 2016 (ZR16). Based on the information provided, approximately 636 parking spaces are required for the proposed mix of uses. As proposed, the structured parking garage on site will provide approximately 923 spaces. Therefore, the site would exceed the minimum parking requirements per the Zoning Regulations. The proposed parking spaces are a reduction from the 1,100 parking spaces proposed and approved as part of the 1st Stage PUD application for the site.

At this time, it is anticipated that the shared retail and entertainment use spaces will be managed with a parking space based payment system rather than entry and exit gates. The residential parking will be primarily accessed via the alley access point and may use an entry gate with code or card reader. Based on the volumes assigned to this driveway, no queue impact is anticipated on the public alley.

Table 11
 Parking Summary for Art Place Phase 2

Required (per §701.5)	Provided	Approved For Block B as Part of 1 st Stage PUD
Residential (264 DU) = 1 per 3 DU in excess of 4 units $260/3 = 87$ spaces	87 spaces [†] (0.33 sp/unit)	-
Retail (111,502 SF) = 1.33 per 1,000 SF in excess of 3,000 SF $108.5 * 1.33 = 144$ spaces	835 spaces [‡] (2.66 sp/kSF)	-
Entertainment, Assembly, and Performing Arts (202,415 SF) = 2 per 1,000 SF $202.4 * 2 = 405$ spaces		-
636 spaces	923 spaces	1,100 spaces
[†] 87 parking spaces are designated for residential uses in the garage. [‡] The proposed retail and cultural uses will share parking. As such, an allocation of parking between the uses has not been determined.		

As summarized in Table 12, based on the size of the proposed uses, 119 long-term bicycle spaces and 65 short-term bicycle parking spaces are required for the subject Application. The Applicant proposes to meet or exceed the long-term bicycle parking requirements and provide the spaces within secure several bike rooms on the first level of the parking garage. The residential and commercial bicycle spaces will be provided in different bike rooms with different access methods. Short term spaces will be provided at grade per DDOT requirements.

Table 12
 Bicycle Parking Summary

Long-term Bicycle Parking		Short-term Bicycle Parking	
Required (per §802.1)	Provided	Required (per §802.1)	Provided
Residential (264 DU) = 1 per 3 DU $264/3 = 88$ spaces	88 spaces [†]	Residential (264 DU) = 1 per 20 DU $264/20 = 13$ spaces	13 spaces
Retail (111,502 SF) = 1 per 10,000 SF $11.15 * 1 = 11$ spaces	11 spaces	Retail (111,502 SF) = 1 per 3,500 SF $31.86 * 1 = 32$ spaces	32 spaces
Entertainment, Assembly, and Performing Arts (202,415 SF) = 1 per 10,000 SF $20.24 * 1 = 20$ spaces	20 spaces	Entertainment, Assembly, and Performing Arts (202,415 SF) = 1 per 10,000 SF $20.24 * 1 = 20$ spaces	20 spaces
Total	119 spaces		65 spaces
[†] ZR 16 (§802.2) indicates that after the first 50 spaces for a use are provided, additional spaces are required at ½ the rate specified in §802.1. However, DC Law requires one bicycle space per three units for residential developments and does allow a reduction after the first 50 spaces.			

PROPOSED LOADING

As summarized in Table 13, based on the size of the commercial and residential uses, four loading berths are required. Three loading berths are proposed for the commercial building off of private 4th Street and one berth is proposed for the residential uses off of the public alley along the western site boundary. One service/delivery space is proposed in each of the commercial and residential buildings, totaling two spaces for the site. Trash service also is expected to take place in the loading areas. The loading facilities and circulation within the buildings are shown on Figure 15. Direction truck routing to/from the loading facilities is shown on Figure 16.

Table 13
 ZR16 Minimum Loading Berths and Service/Delivery Space Requirements

Use	Minimum Loading Berths	Minimum Service/Delivery Spaces
Residential (264 DU)	1	1
Retail (111,502 SF)	3	1
Entertainment, Assembly, and Performing Arts (202,415 SF)	2	0
Proposed	4	2

Swept-area diagrams for various truck sizes for each loading berth are included in Appendix I.

MOTORCOACH CIRCULATION AND PARKING

Private motorcoach and school bus traffic is anticipated for the museum, family entertainment, and live theatre uses on the subject site. For purposes of this analysis and for the design of the loading and parking facilities, approximately 15% of the trips generated by the specified uses was assumed to arrive and depart via motorcoach or school buses. As discussed above and shown on Figure 11, a dedicated bus loading and parking area is proposed on South Dakota Avenue.

During the PM peak period, a maximum of approximately three buses would be on-site at the same time. The parking and loading area for the buses designated mid-block on South Dakota Avenue is approximately 180 feet long and would provide sufficient space for these operations during the PM peak period. In addition to the designated bus area, the PUDO zones could be utilized by buses for pick-up and drop-off. The Meow Wolf site is anticipated to be the primary driver of the motorcoach traffic on this site. Groups arriving by motorcoach will be scheduled well in advance with coordinated arrival times to eliminate the potential for unexpected bus arrivals above what can be accommodated in the space shown in Figure 11. Groups who for bus information will be provided routing and direction information by the respective tenant.

TOTAL FUTURE CONDITIONS

TRAFFIC FORECASTS

Total future traffic forecasts with the proposed redevelopment were determined by combining the background volumes shown on Figure 10 with the site traffic volumes shown on Figure 14A/B yield the 2023 total future traffic forecasts shown on Figure 17.

OPERATIONAL ANALYSIS

Capacity Analysis

Capacity analyses were performed at the study intersections using the lane use and traffic control shown on Figure 7, the total future peak hour traffic forecasts shown on Figure 17, and existing traffic signal timings, consistent with background conditions. The level of service results for the 2023 total future conditions with the proposed redevelopment are included in Appendix J and summarized in Table 5.

By comparing total future levels of service (with the proposed redevelopment) to background levels of service (without the proposed redevelopment), the impact of the proposed development can be identified. In accordance with DDOT methodology, an impact is defined as follows:

- Degradation in approach level of service to LOS E or LOS F or
- Increase in approach delay by more than five seconds when compared to background conditions for intersection approaches operating at an overall LOS E or LOS F under background conditions.

As shown on Table 5, many of the study intersections and specific movements are projected to operate with unacceptable levels of service (LOS E or F) under background conditions without the proposed redevelopment. The unacceptable levels of service are a result of existing congestion and the anticipated growth in the area associated with the approved pipeline projects. Five study intersections, which mostly operate beyond capacity under background future conditions, are projected to experience increases in delay of more than five seconds under total future conditions. Specifically, the impacts are as follows:

- Riggs Road/South Dakota Avenue
- Riggs Road/First Place
- South Dakota Avenue/Kennedy Street
- South Dakota Avenue/Jefferson Street
- South Dakota Avenue/Ingraham Street

Queue Analysis

A queue analysis was conducted for 2023 total future conditions with the Art Place Phase 2 redevelopment. The 95th percentile queue lengths were calculated using the SimTraffic microsimulation model with ten simulation runs. The results are summarized in Table 6 and queue reports are provided in Appendix J.

By comparing total future queues to background queues, the impact of the proposed development can be identified. In accordance with DDOT guidelines, an impact is defined as an increase in the 95th percentile queue greater than 150 feet when compared to background conditions. As shown in Table 6, none of the studied queues would increase by more than 150 feet.

The following lane groups have 95th percentile queues are projected to exceed the available storage:

Riggs Road/South Dakota Avenue/3rd Street NE

- Eastbound left from Riggs to 3rd Street NE (PM)
- Eastbound through from Riggs Road (PM)
- Eastbound right from Riggs Road to South Dakota Avenue (AM)
- Northbound left from South Dakota Avenue to Riggs Road (AM)
- Southbound left from 3rd Street NE to Riggs Road (PM)
- Southbound through from 3rd Street NE to South Dakota Avenue (AM/PM)

Riggs Road/First Place

- Eastbound through from Riggs Road (AM/PM)
- Eastbound right from Riggs Road to First Place (AM/PM)
- Northbound right from First Place to Riggs Road (AM/PM)

South Dakota Avenue/Kennedy Street

- Westbound left-through-right from Kennedy Street (AM)
- Northbound left-through-right from South Dakota (AM)

South Dakota Avenue/Hamilton Street

- Southbound left-through-right from South Dakota Avenue to Hamilton Street (AM/PM)

South Dakota Avenue/Galloway Street

- Northbound left-through-right from South Dakota (AM/PM)

IMPROVEMENT ANALYSIS

In order to mitigate the impact of the proposed redevelopment, as outlined above, a series of improvements were evaluated to determine their effectiveness in offsetting the impact of the proposed redevelopment. Improvements considered for each intersection are discussed below.

Riggs Road/South Dakota Avenue

The intersection of Riggs Road/South Dakota Avenue experiences several movements operating at LOS “E” during the AM and PM peak hours under existing conditions. Under background future conditions, the westbound left movement would increase beyond capacity and operates at LOS “F” during the AM and PM peak hours. The subject development would minimally increase traffic volumes at the westbound left movement which operates beyond capacity under background future conditions and create an exponential increase in delay. As shown in Table 14, signal timing split improvements to increase the green time for the movements which exceed capacity would mitigate average overall delays below background future conditions.

The intersection of Riggs Road/South Dakota Avenue is already designed with several separated turn lanes and protected phases for heavy traffic movements. In lieu of geometric or operational improvements, the Applicant proposes to implement a Transportation Demand Management (TDM) Plan aimed at reducing vehicular trips to and from the proposed project. Details of the TDM Plan are provided in a subsequent section.

Riggs Road/First Place

The intersection of Riggs Road/First Place has two movements which operate at LOS “E” or “F”. The eastbound through operates at LOS “E” during the PM peak hour and the northbound left operates at LOS “F” during that AM peak hour. The subject development only forecasts mainline through movements at the intersection. Since the eastbound through operates beyond capacity under background future conditions, the minimal site traffic creates an exponential increase in delay. As shown in Table 14, signal timing split improvements to increase the green time for the movements which exceed capacity would mitigate average overall delays within five seconds of background future conditions.

The intersection of Riggs Road/First Place carries a minimal amount of site traffic and would operate at acceptable overall levels of service with signal timing split improvements. In lieu of geometric or operational improvements, the Applicant proposes to implement a Transportation Demand Management (TDM) Plan aimed at reducing vehicular trips to and from the proposed project. Details of the TDM Plan are provided in a subsequent section.

South Dakota Avenue/Kennedy Street

Impacts at the South Dakota Avenue/Kennedy Street intersection are expected to be largely concentrated to the outbound traffic on the eastbound approach. The subject site increases the levels of service for the eastbound approach to LOS “E” and “F” during the AM and PM peak hours, respectively. Under background future conditions, the westbound approach operates beyond capacity.

In order to mitigate the impact of the subject development, a dedicated left-turn lane was analyzed on the eastbound approach. A conceptual design of the eastbound approach is presented on Figure 18. As shown on Table 14, the left-turn lane would mitigate the delay and queues to well below background conditions without the subject site. Synchro worksheets are provided in Appendix K.

South Dakota Avenue/Ingraham Street

Under existing conditions, the eastbound and westbound minor street approaches operate at LOS “F” and “E”, respectively, during the PM peak hour. Under background future conditions, the minor street approaches increase to unacceptable levels of service in both the AM and PM peak hours. A peak hour signal warrant analysis was completed for the intersection of South Dakota Avenue/Ingraham Street and is included in Appendix L. The analyses indicated that the peak hour signal warrant would be met under total future conditions with the development during both the AM and PM peak hour.

DDOT staff has indicated that a HAWK signal will be installed at the intersection of South Dakota Avenue/Ingraham Street. This signal would be able to be upgraded to a full traffic signal. Based on the warrants, it is recommended that a full signal be installed concurrent with the occupancy of the subject development.

South Dakota Avenue/Jefferson Street

At the intersection of South Dakota Avenue/Jefferson Street, the minor westbound left-right movement operates at LOS “E” during both the existing and background future conditions. The installation of a full traffic signal at the intersection of South Dakota Avenue/Ingraham Street improves vehicle progression of the South Dakota Avenue corridor and significantly reduces minor street delays at the intersection of South Dakota Avenue/Jefferson Street. The recommended signal installation at the intersection of South Dakota Avenue/Ingraham Street would mitigate delays below existing and background future conditions.

Table 14
Intersection Level of Service Summary^{1,2}

Intersection	Control	Lane Group Approach	Future Conditions without Development (2023)				Future Conditions with Development (2023)				Future Conditions with Improvements with Development (2023)			
			AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour	
			LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay
1. Riggs Road/South Dakota Avenue <u>Proposed Mitigation Measures</u> 1. Signal timing split improvements	Signalized	EBL	E	77.3	E	72.9	E	77.9	E	72.8	F	83.4	E	77.5
		EBT	E	64.2	E	56.8	E	63.9	E	56.1	E	70.2	E	70.5
		EBR	E	64.9	D	50.6	E	66.1	D	54.0	E	57.0	D	53.6
		WBL	C	28.6	D	50.8	C	29.9	F	92.3	D	35.4	F	106.6
		WBTR	D	43.2	C	33.0	D	43.2	C	33.0	D	53.3	D	42.1
		NBL	F	117.3	F	109.1	F	158.0	F	171.7	F	83.4	E	77.1
		NBTR	C	26.7	C	34.2	C	27.2	D	36.1	C	22.8	C	29.7
		SBL	D	49.2	E	61.3	D	49.2	E	64.1	D	49.2	E	64.1
		SBTR	E	59.7	E	58.9	E	60.6	E	60.4	E	60.1	E	60.4
		Overall	E	64.9	E	57.1	E	74.4	E	69.3	E	59.4	E	59.3
2. Riggs Road/First Place <u>Proposed Mitigation Measures</u> 1. Signal timing split improvements	Signalized	EBT	D	36.4	E	72.5	D	38.1	F	97.0	D	38.1	E	76.8
		EBR	C	24.7	C	21.7	C	24.9	C	21.8	C	24.9	A	2.8
		WBL	C	26.3	D	47.3	C	29.3	D	49.3	C	27.0	D	53.2
		WBT	C	31.9	B	12.4	D	35.3	B	15.7	C	31.9	B	13.8
		NBL	F	177.0	D	49.4	F	177.0	D	49.4	F	177.0	E	55.1
		NBR	C	22.7	C	28.6	C	22.7	C	28.6	C	22.7	C	31.0
		Overall	D	54.9	D	44.8	E	56.2	E	57.2	D	54.7	D	46.7
3. Riggs Road/Chillum Place	Signalized	EBLTR	A	2.5	A	6.7	A	2.5	A	7.0	A	2.5	A	7.0
		WBLTR	A	3.8	A	4.7	A	3.9	A	4.9	A	3.9	A	4.9
		NBLTR	D	43.2	D	38.0	D	43.2	D	38.0	D	43.2	D	38.0
		SBLTR	D	40.9	D	51.0	D	40.9	D	51.0	D	40.9	D	51.0
		Overall	A	7.2	B	10.1	A	7.1	B	10.1	A	7.1	B	10.1
4. South Dakota Avenue/Kennedy Street <u>Proposed Mitigation Measures</u> 1. Separated eastbound left and through-right lanes	Signalized	EBLTR/EBL	D	35.8	D	36.3	E	68.2	F	157.5	C	30.4	E	61.0
		EBTR	-	-	-	-	-	-	-	-	C	24.2	C	29.5
		WBLTR	F	218.5	D	52.9	F	185.7	D	43.2	D	42.7	D	36.5
		NBLTR	B	10.7	A	5.2	B	11.3	A	6.8	C	25.1	B	13.4
		SBLTR	A	6.9	A	8.1	A	7.5	B	11.8	B	15.3	B	16.9
		Overall	D	40.3	B	11.1	D	37.4	C	23.9	C	23.7	C	20.2
5. South Dakota Avenue/Jefferson Street	Unsignalized	WBLR	E	49.8	D	25.3	F	67.9	C	24.1	E	42.0	C	19.0
		NBTR	A	0.0	A	0.0	A	0.0	A	0.0	A	0.0	A	0.0
		SBTR	A	0.7	A	2.1	A	0.7	A	2.1	A	0.7	A	2.1
6. South Dakota Avenue/Ingraham Street <u>Proposed Mitigation Measures</u> 1. Add signal	Unsignalized	EBLTR	E	47.4	F	59.6	F	78.0	F	788.0	-	-	-	-
		WBLTR	E	45.7	E	43.9	F	64.6	F	108.7	-	-	-	-
		NBLTR	A	1.1	A	0.7	A	2.3	A	3.3	-	-	-	-
		SBLTR	A	0.1	A	0.5	A	0.1	A	0.5	-	-	-	-
	Signalized	EBLTR	-	-	-	-	-	-	-	-	D	42.1	D	49.3
		WBLTR	-	-	-	-	-	-	-	-	D	38.8	C	32.2
		NBLTR	-	-	-	-	-	-	-	-	B	10.4	A	8.0
Overall	-	-	-	-	-	-	-	-	-	B	11.3	B	13.6	
7. South Dakota Avenue/Hamilton Street	Signalized	EBLTR	D	42.4	D	44.1	D	42.4	D	44.1	D	42.4	D	44.1
		WBLTR	D	43.1	D	43.3	D	43.1	D	43.3	D	43.1	D	43.3
		NBLTR	A	9.7	A	6.6	A	9.7	A	6.6	A	9.7	A	6.3
		SBLTR	B	11.5	A	9.2	B	11.9	A	8.7	A	9.0	A	4.5
		Overall	B	12.0	A	8.9	B	12.2	A	8.6	B	10.6	A	6.4
8. South Dakota Avenue/Galloway Street	Signalized	EBLTR	E	57.4	E	70.4	E	57.4	E	70.4	E	57.4	E	70.4
		WBLTR	F	93.0	D	37.5	F	93.0	D	37.5	F	93.0	D	37.5
		NBLTR	B	17.3	C	27.6	B	19.9	D	45.8	B	19.9	C	33.5
		SBLTR	C	22.4	B	16.1	C	23.2	B	17.1	C	22.5	C	21.4
		Overall	C	29.0	C	28.6	C	30.1	D	37.4	C	29.8	C	33.0

Notes:
1. Capacity analysis based on Highway Capacity Manual methodology, using Synchro 10.
2. Roadway names in **bold** are considered east/west for purposes of this analysis.

TRANSPORTATION DEMAND MANAGEMENT

Traffic and parking congestion can be solved in one of two ways: 1) increase supply or 2) decrease demand. Increasing supply requires building new roads, widening existing roads, building more parking spaces, or eliminating on-street parking to provide additional travel lanes. These solutions are often infeasible in constrained conditions in urban environments and, where feasible, can be expensive, time consuming, and in many instances, unacceptable to businesses, government agencies, and/or the general public. The demand for travel and parking can be influenced by TDM plans implemented by those in the private sector. Typical TDM measures include incentives to use transit or other non-auto modes of transportation, bicycle and pedestrian amenities, parking management, alternative work schedules, telecommuting, and better management of existing resources. TDM plans are most effective when tailored to a specific project or user group.

While the location of the proposed redevelopment proximate to the Fort Totten Metro Station will naturally encourage the use of non-auto modes of transportation, the Applicant also has developed a TDM plan with strategies to reduce the number of vehicles at the proposed project.

Specific TDM measures will include:

1. A member of the property management team will be designated as the Transportation Management Coordinator (TMC). The TMC will be responsible for ensuring that information regarding transportation options is disseminated to retail and residential tenants of the building. The position may be part of other duties assigned to the individual.
2. The property management website will include information on and/or links to current transportation programs and services, such as:
 - Capital Bikeshare,
 - Car-sharing services,
 - Ride-hailing services (e.g. Lyft or Uber),
 - Transportation Apps (e.g. Metro, Citymapper, Spotcycle, Transit),
3. An electronic display will be provided in residential lobby as well as the main cultural building lobby and will provide public transit information such as nearby Metrorail stations and schedules, Metrobus stops and schedules, car-sharing locations, and nearby Capital BikeShare locations indicating the number of bicycles available at each location.
4. Shower and changing facilities will be provided in the retail bike parking area building for employees who bike, walk, or jog to work.
5. Convenient and covered secure bike parking facilities will be provided in accordance with the minimum required by ZR16.
6. A bicycle repair station will be provided on the P1 level of the garage.
7. Two electric car charging stations will be provided in the garage.

8. The cost of parking spaces for tenants will be unbundled from leases.

In addition to the specific TDM strategies describe above, the Applicant proposes to located a Capital Bikeshare station on the site. The Capital Bikeshare station will further decrease single-occupancy vehicle trips for the site and provide mitigation for those impacts that cannot be addressed by operational improvements to the vehicular traffic.

LOADING MANAGEMENT PLAN

In order to ensure that the loading and service for the project does not adversely impact the surrounding roadway network, a loading management plan will be implemented for the development. The goals of the plan are to maintain a safe environment for all users of the site, loading dock, street, and nearby intersections; minimize undesirable impacts to pedestrians and to building tenants; reduce conflicts between truck traffic using the loading facilities and other street users; and ensure smooth operation of the loading facilities through appropriate levels of management and scheduled operations. The following are the components of the loading management plan:

- 1) A loading dock manager will be designated by the building management (duties may be part of other duties assigned to the individual). He or she will coordinate with vendors and tenants to schedule deliveries and will coordinate with the community and neighbors to resolve any conflicts should they arise.
- 2) All tenants will be required to schedule deliveries that utilize the loading dock (any loading operation conducted using a truck 20' in length or larger) and all loading activities are required to occur at the loading docks.
- 3) The dock manager will schedule deliveries such that the dock's capacity is not exceeded. In the event that an unscheduled delivery vehicle arrives while the dock is full, that driver will be directed to return at a later time when a berth will be available so as not to compromise safety or impede street or intersection function.
- 4) The dock manager will monitor inbound and outbound truck maneuvers and will ensure that trucks accessing the loading dock do not block vehicular, bike, or pedestrian traffic along the alley (except during those times when a truck is actively entering or exiting a loading berth).
- 5) Trucks larger than a WB-50 will not be permitted to make deliveries to the residential loading docks. Trucks larger than a WB-67 will not be permitted to make deliveries to the commercial loading dock.
- 6) Trucks using the loading docks will not be allowed to idle and must follow all District guidelines for heavy vehicle operation including but not limited to DCMR 20 – Chapter

9, Section 900 (Engine Idling), the regulations set forth in DDOT's Freight Management and Commercial Vehicle Operations document, and the primary access routes listed in the DDOT Truck and Bus Route Map (godcgo.com/truckandbusmap).

- 7) The dock manager will be responsible for disseminating suggested truck routing maps to the building's tenants and to drivers from delivery services that frequently utilize the development's loading dock as well as notifying all drivers of any access or egress restrictions. The dock manager will also distribute materials as DDOT's Freight Management and Commercial Vehicle Operations document to drivers as needed to encourage compliance with idling laws. The dock manager will also post these documents and notices in a prominent location within the service areas.

- 8) An approximately 180 foot designated bus area is proposed on the west curb of South Dakota Street midway between Ingraham Street and Kennedy Street. This area will be monitored and programed by the loading dock manager of the building. The loading dock manager will be responsible for coordinating the different uses in the building and authorizing group sizes and arrival times for the bus area. Further, the loading dock manager will be responsible for disseminating information on the bus parking and loading area to potential visiting groups. In addition to the designated bus area, three PUDO zones are proposed. Buses would be able to perform pick-up drop-off operations at a PUDO zone and park off-site if desired.

CONCLUSIONS AND RECOMMENDATIONS

1. The Art Place project is spearheading the transformation of the Fort Totten Metro area into a mixed-use, transit-oriented environment. The project provides a walkable community with access to retail shops, museums and entertainment uses, and restaurants while also having nearby access to transit.
2. The subject site is served by the Fort Totten Metro Stations (Red, Green, and Yellow Lines) and several Metrobus routes.
3. The site will be redeveloped with a mixed-use program including approximately 264 multi-family residential units, including associated common amenity space and 30 units of artists housing and work space, family entertainment uses, and retail uses (including a ground level grocery store). The proposed development is anticipated to generate 250 AM peak hour vehicle trips and 480 PM peak hour vehicle trips upon completion.
4. Approximately 923 parking spaces will be provided in the structured garage. A total of four loading berths and two service/delivery spaces are proposed to serve the commercial and residential components of the project. The provided parking would meet the minimum parking requirement and is a reduction from what was approved in the 1st Stage PUD.
5. Vehicular access to the structured parking garage is provided via Ingraham Street, Kennedy Street, and the public alley on the western site boundary. Access to the commercial and residential loading facilities is proposed via private 4th Street and the public alley on the western site boundary, respectively.
6. In addition to the 0.5 percent growth rate, approximately five pipeline projects were assumed. Pipeline projects in the vicinity of the site are expected to generate 533 AM peak hour vehicle trips and 664 PM peak hour vehicle trips prior to build out of the subject development.
7. Based on the results of the capacity and peak hour signal warrant analysis completed for the intersection of South Dakota Avenue/Ingraham Street, it is recommended that a full traffic signal be designed and installed in coordination with buildout of the development.
8. Separated left and through-right lanes were evaluated at the intersection of South Dakota Avenue/Kennedy Street. The improvement would mitigate the delay below background conditions without the subject development.
9. The Applicant should implement a comprehensive TDM plan to encourage use of non-auto modes of transportation and to offset the impact of the proposed redevelopment.
10. The Applicant should implement a loading management plan to facilitate the loading, service, and motorcoach/school bus operations on-site and minimize the impact on the surrounding roadway network.

FIGURES

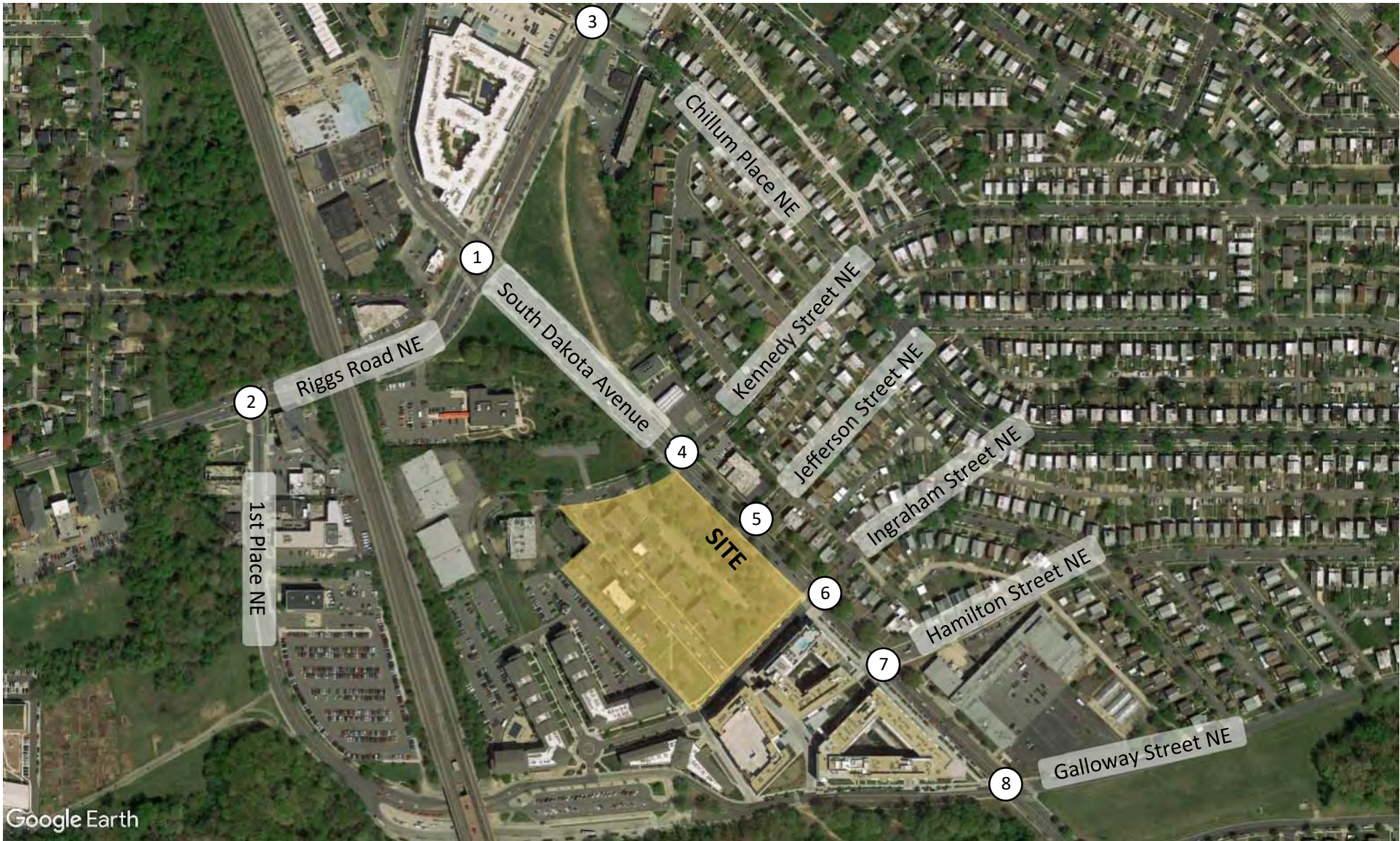


Figure 1

Project Loacon and Proposed Study Area`



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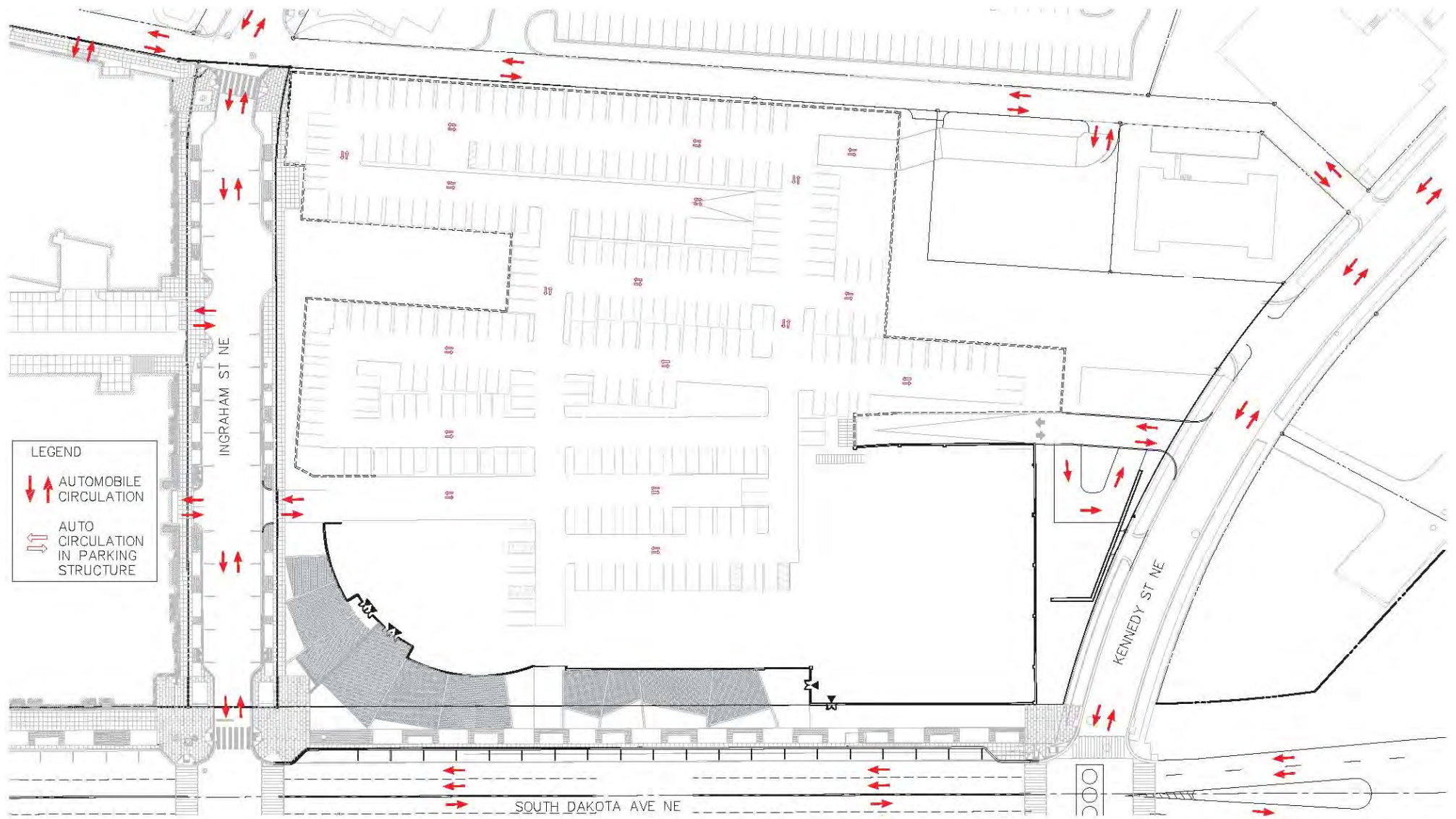


Figure 2
Project Site Plan



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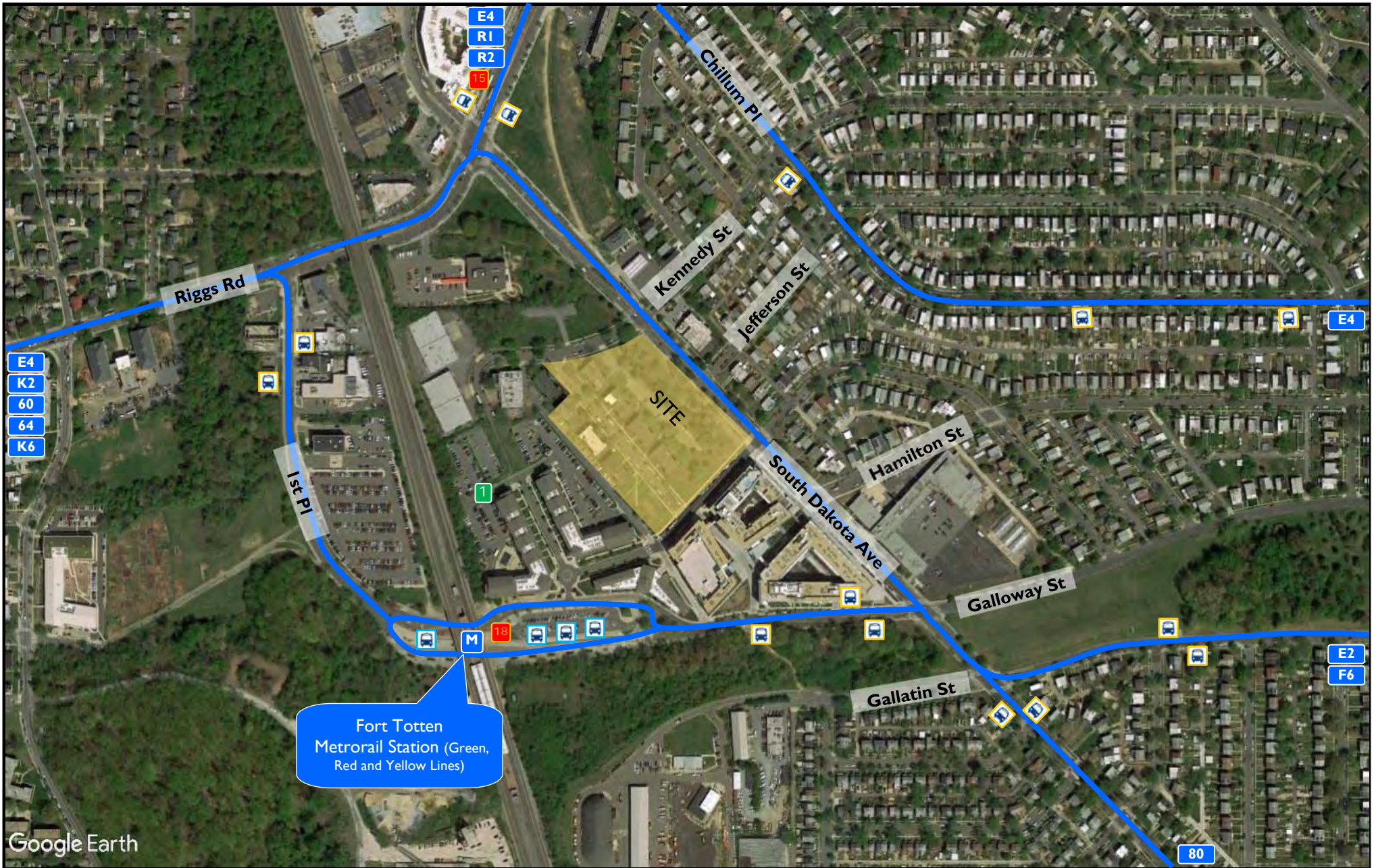








Figure 3
Multi-Modal Transporta. on Network

- Bus Stop - Shelter  No Shelter 
 -  Metrobus Route  Capital Bikeshare Locations (Number of Docks)
 -  Metrorail Station (Green, Red and Yellow Lines)
 -  Zipcar Locations (Number of Zipcars)
- *Zipcar locations change frequently accurate as of 2/14/19



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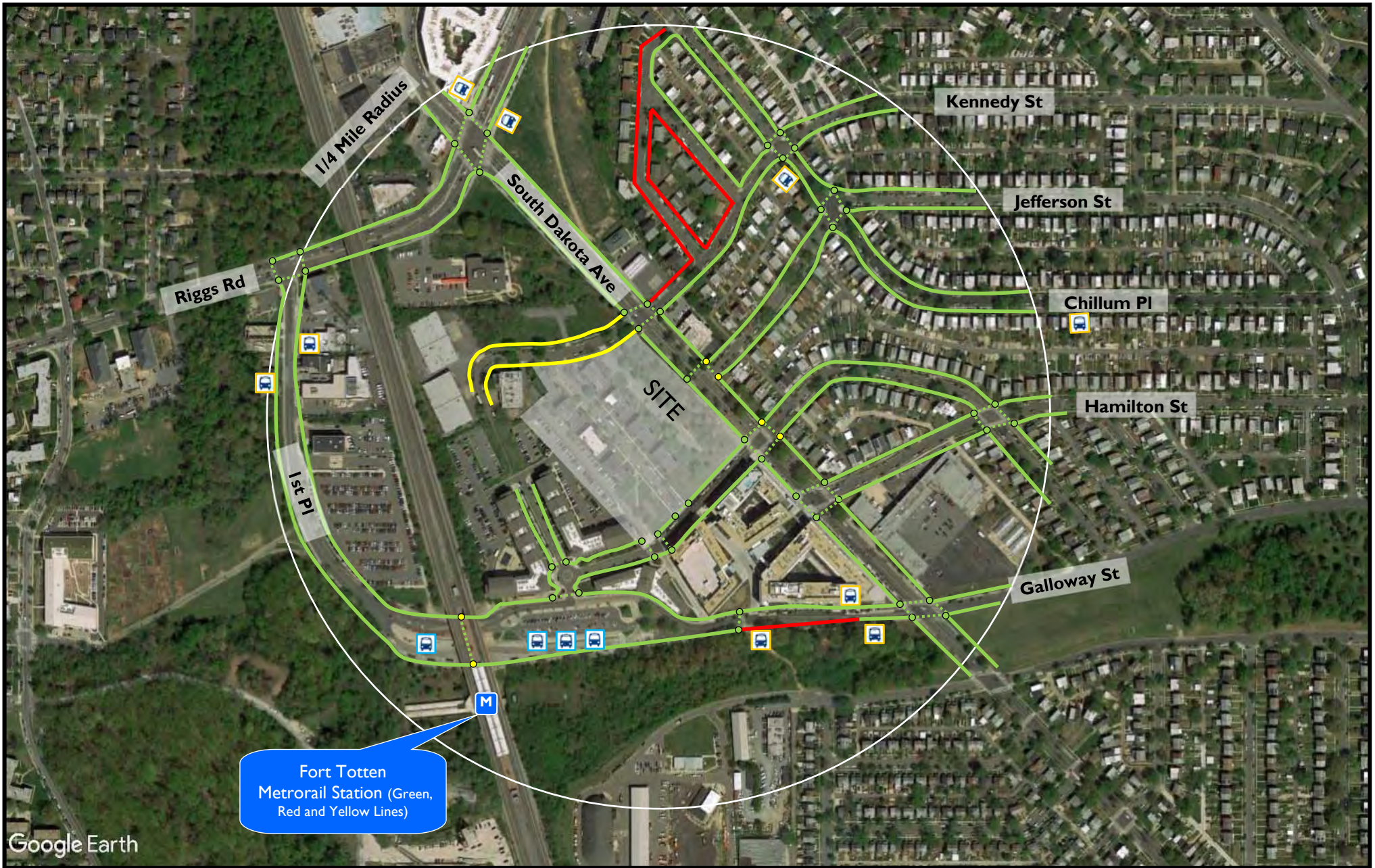














Figure 4
Pedestrian Facilities Map

- | | | | |
|---|--|---|--|
| Bus Stop - Shelter  |  Curb ramp in good condition |  Crosswalk in good condition |  Sidewalk in good condition |
| Bus Stop - No Shelter  |  Curb ramp shared for multiple crosswalks OR missing warning strips |  Crosswalk in poor condition (does not meet standards) |  Sidewalk in poor condition (does not meet standards) |
| Metrorail Station  |  No curb ramps |  No Crosswalk |  No sidewalk |



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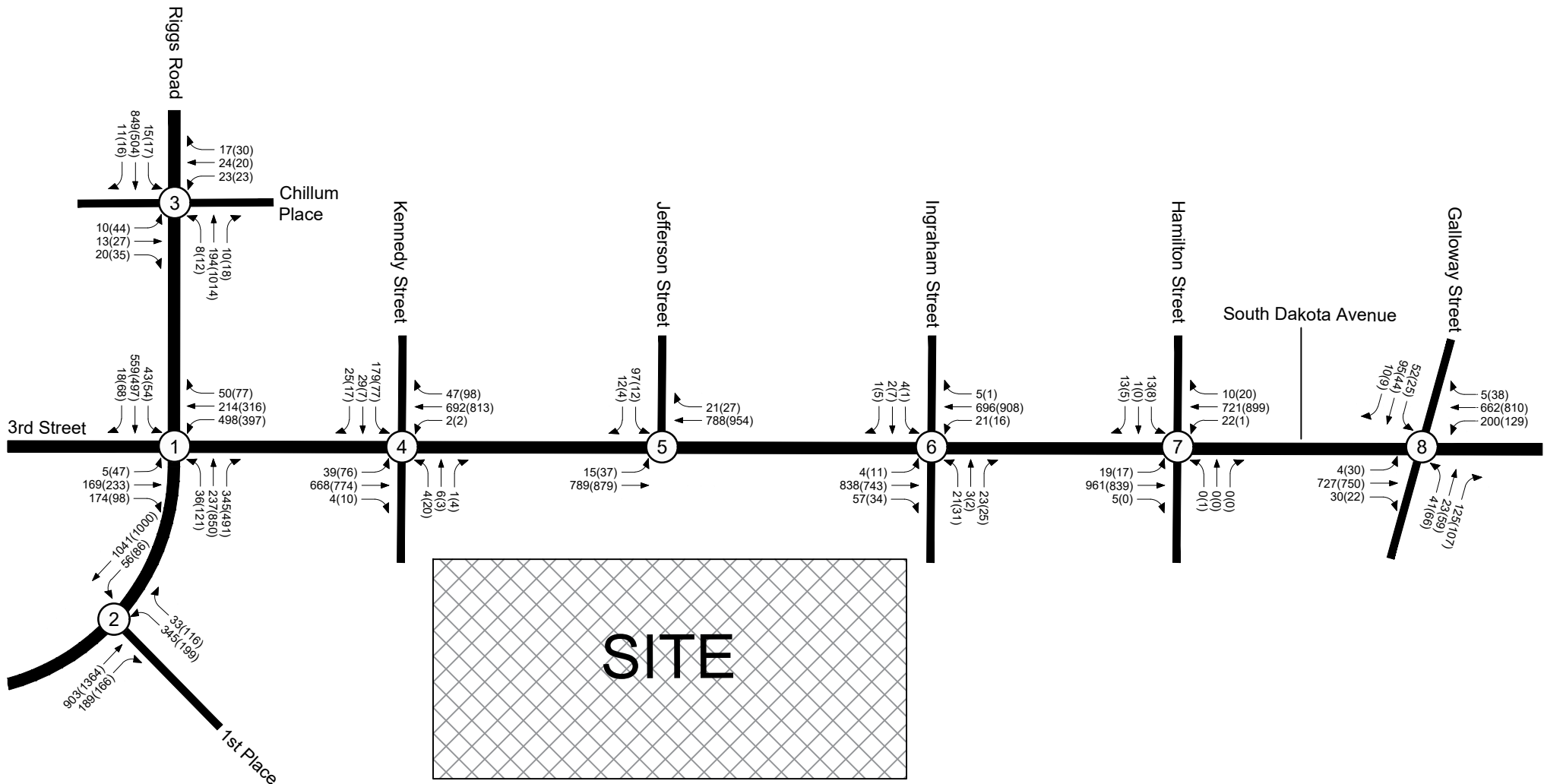


Figure 5
Existing Peak Hour Traffic Volumes

AM PEAK HOUR
PM PEAK HOUR
000(000)



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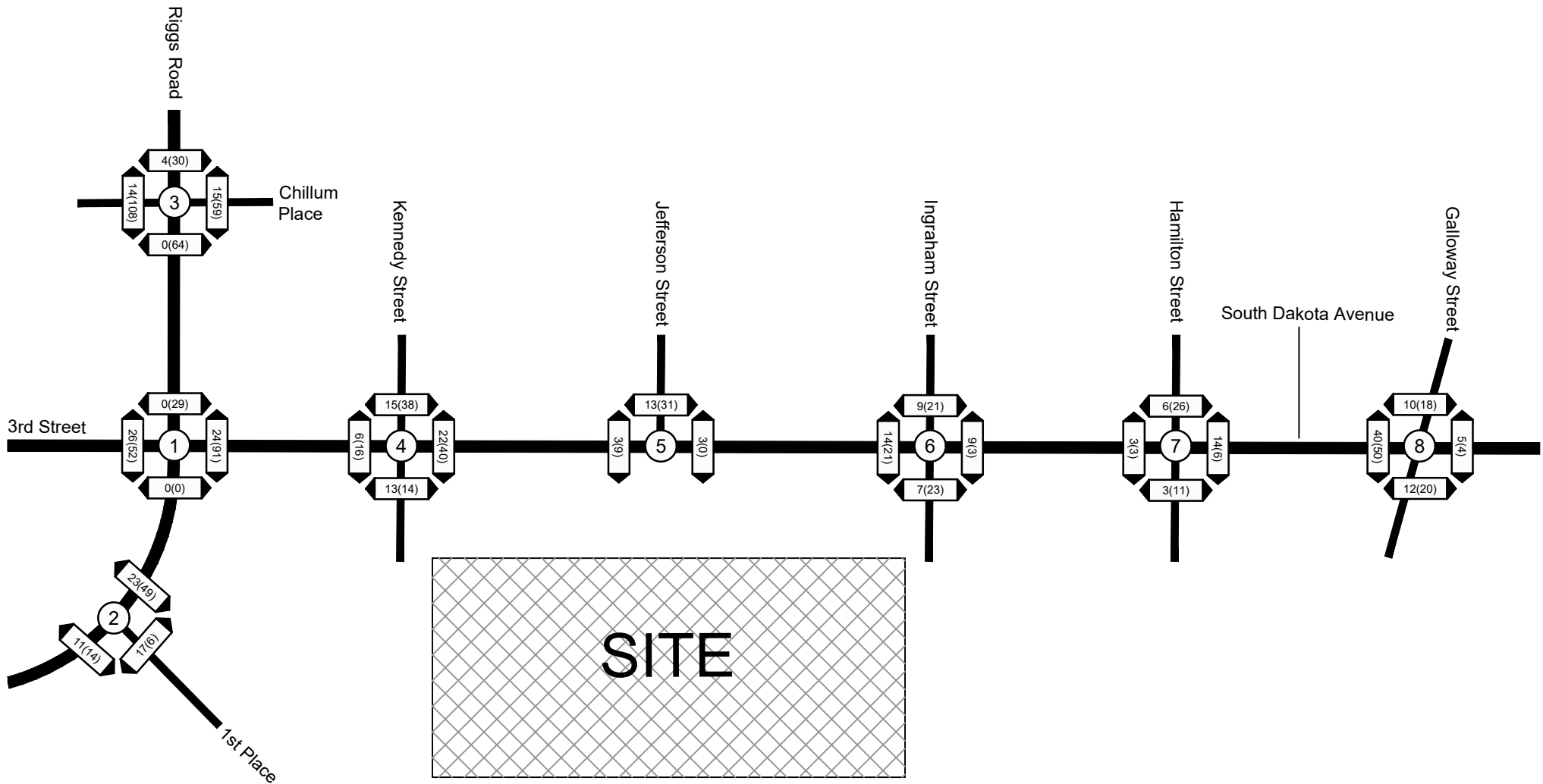


Figure 6
Existing Pedestrian Volumes

AM PEAK HOUR
PM PEAK HOUR
000(000)



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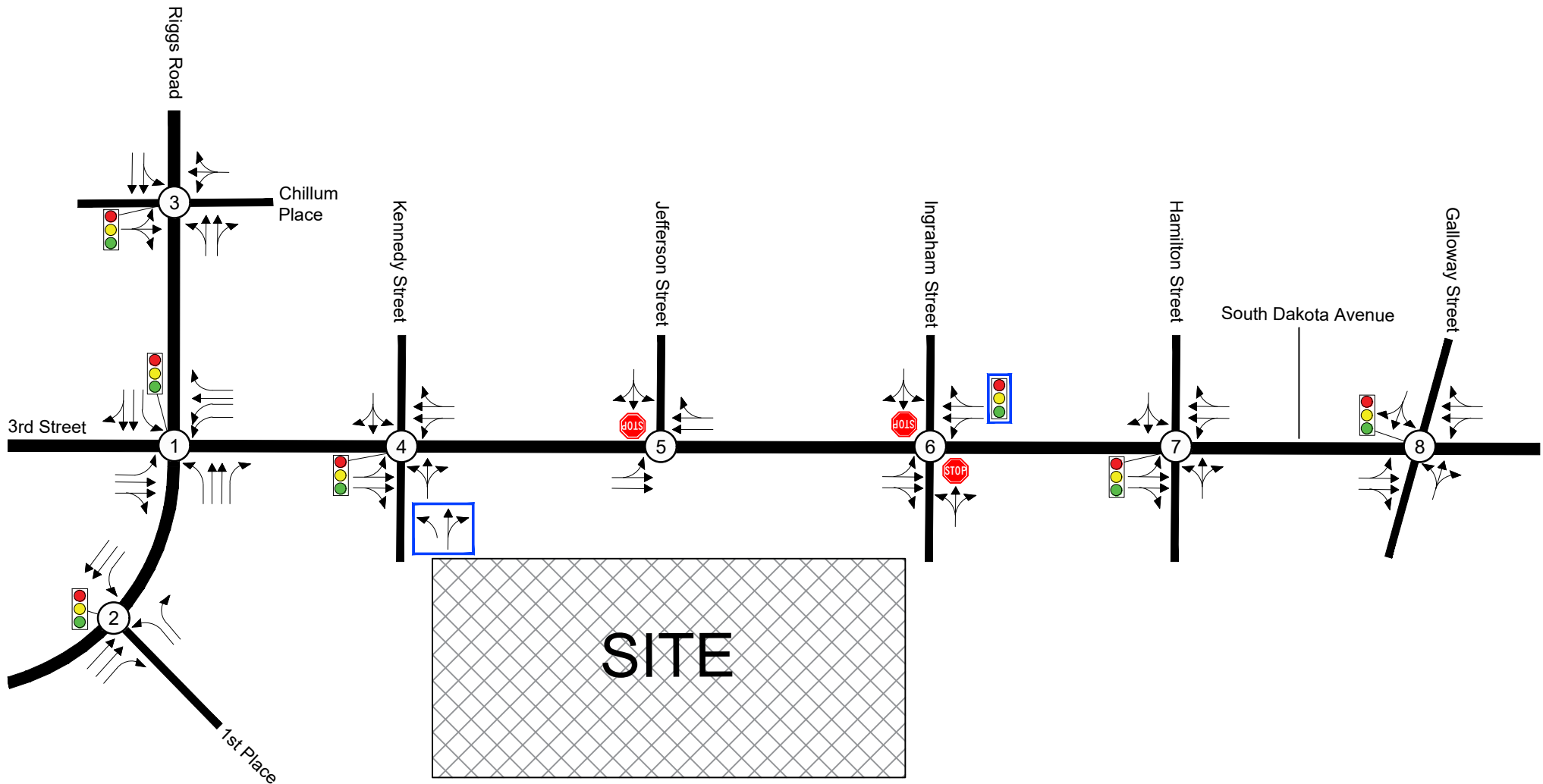


Figure 7
Lane Use and Traffic Control

- ← Represents One Travel Lane
- 🚦 Signalized Intersection
- 🛑 Stop Sign
- 📐 Future Improvement

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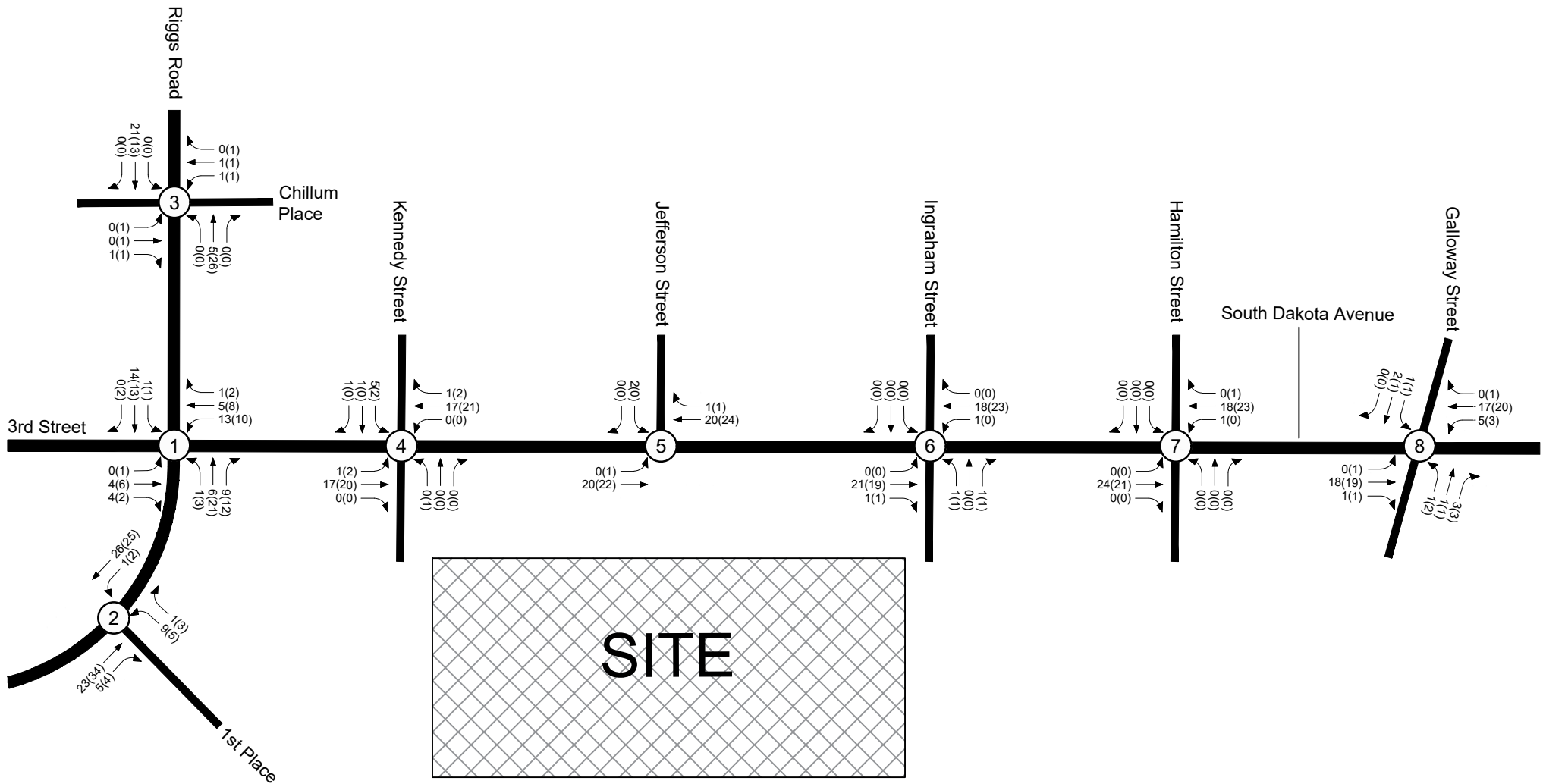


Figure 8
Existing Peak Hour Regional Growth Traffic Volumes

AM PEAK HOUR
PM PEAK HOUR
000(000)



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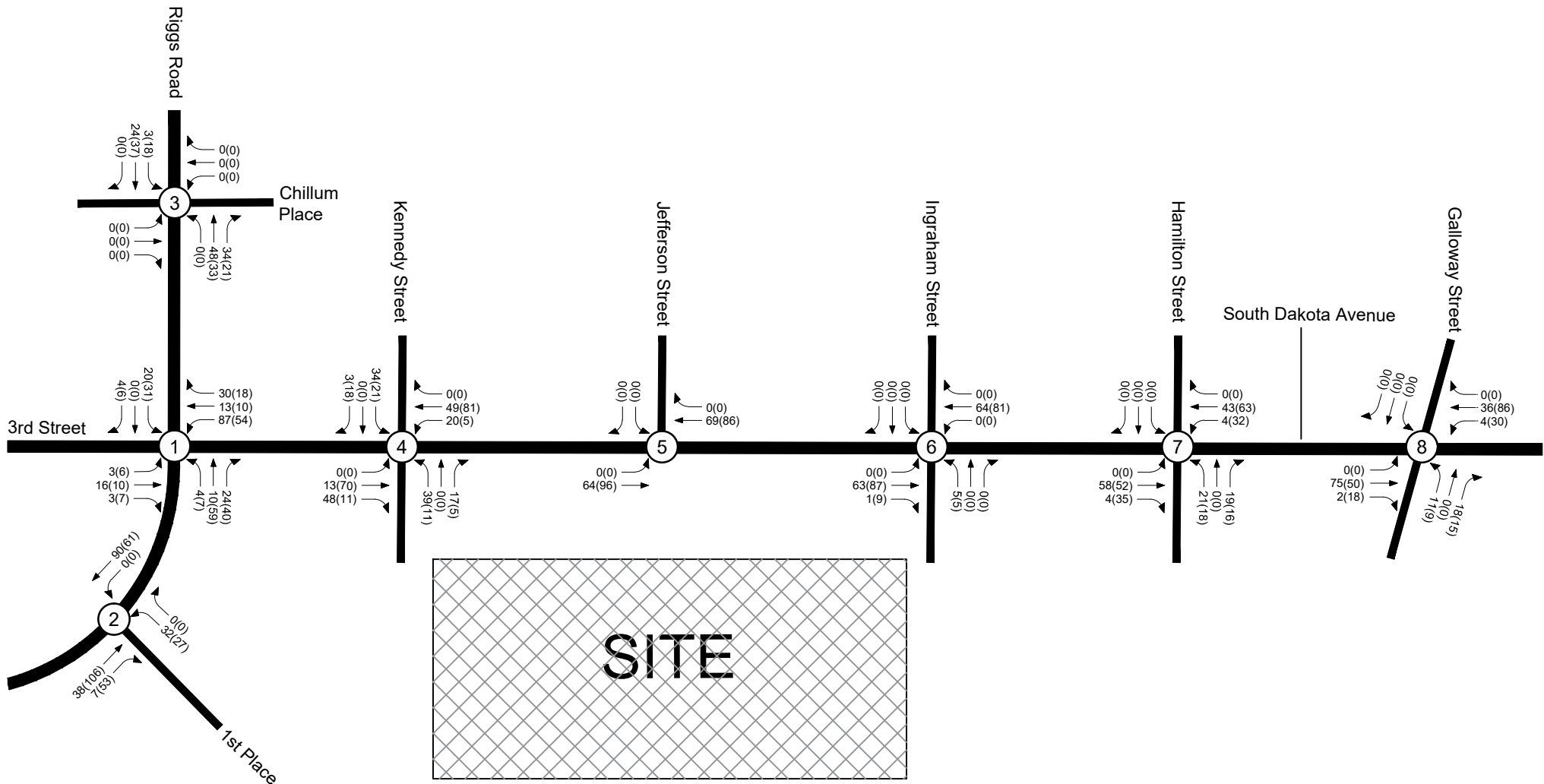


Figure 9A
Total Pipeline Development Peak Hour Traffic Volumes

AM PEAK HOUR
PM PEAK HOUR
000(000)



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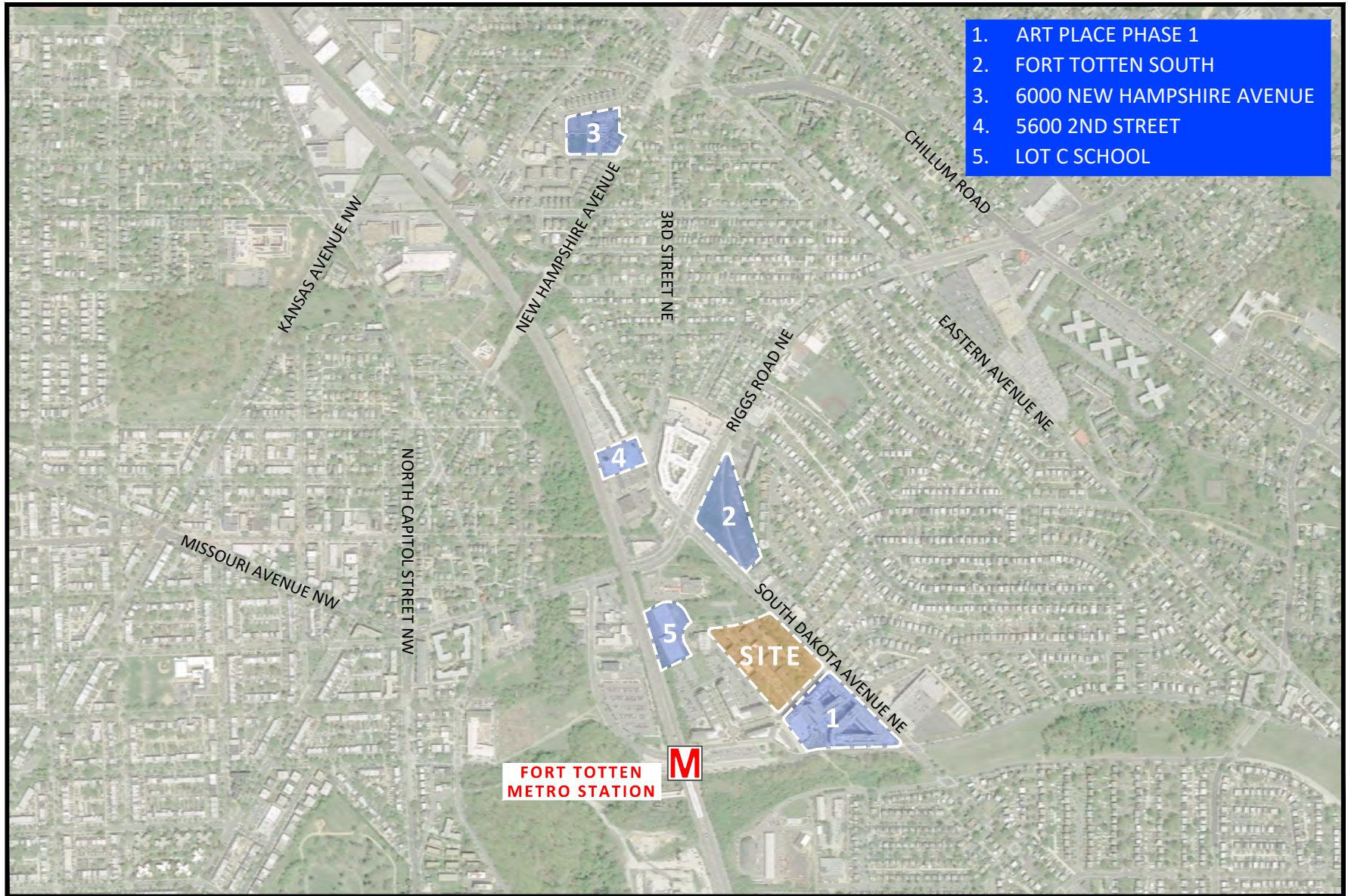


Figure 9B
Pipeline Development Location



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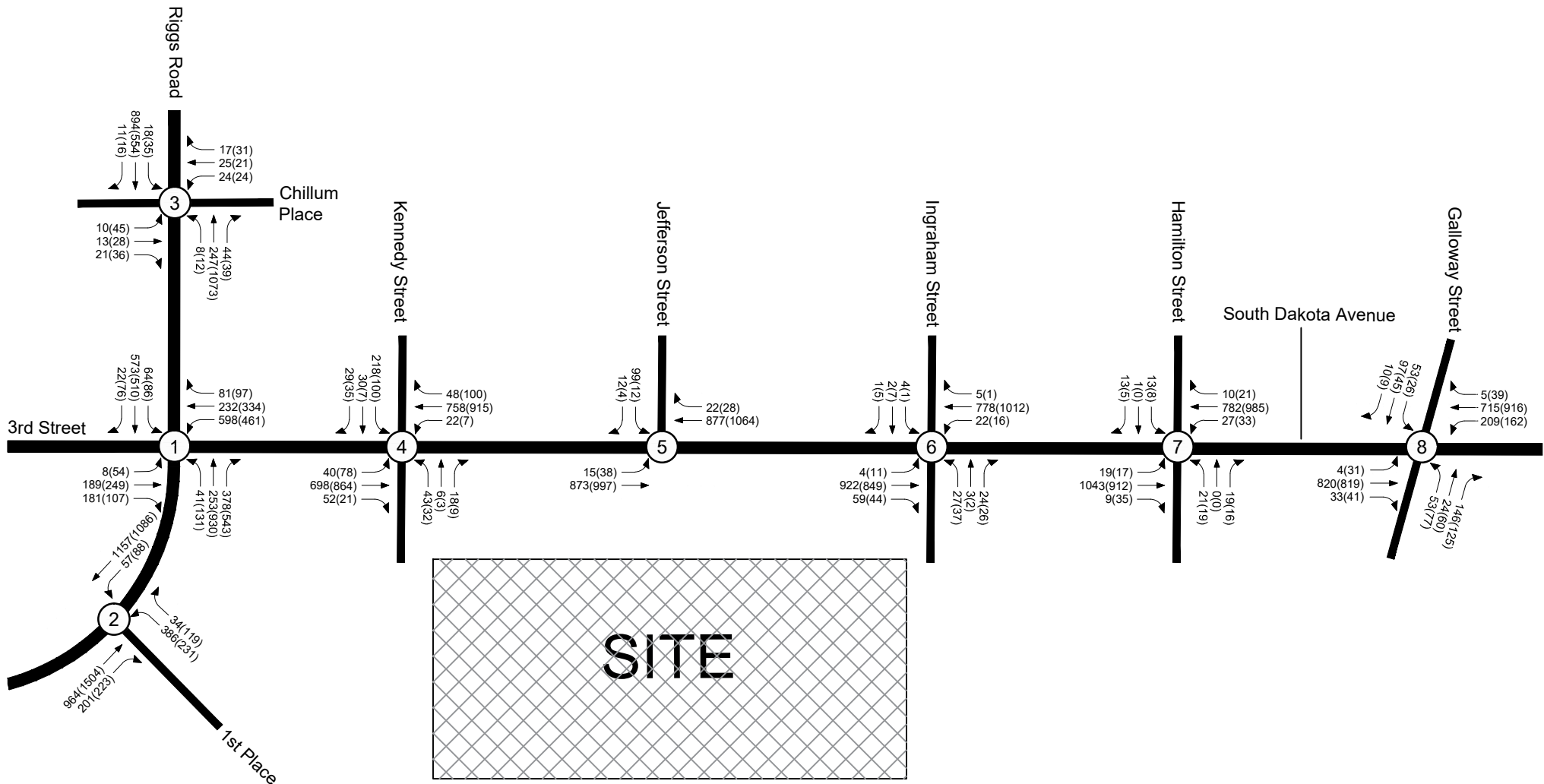


Figure 10
2023 Background Peak Hour Traffic Volumes

AM PEAK HOUR
PM PEAK HOUR
000(000)






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Figure 11
Preliminary Curbside Use Diagram

-  BUS LOADING AND PARKING
-  PICK-UP/DROP-OFF (PUDO)
-  LONG-TERM BIKE PARKING (RETAIL)


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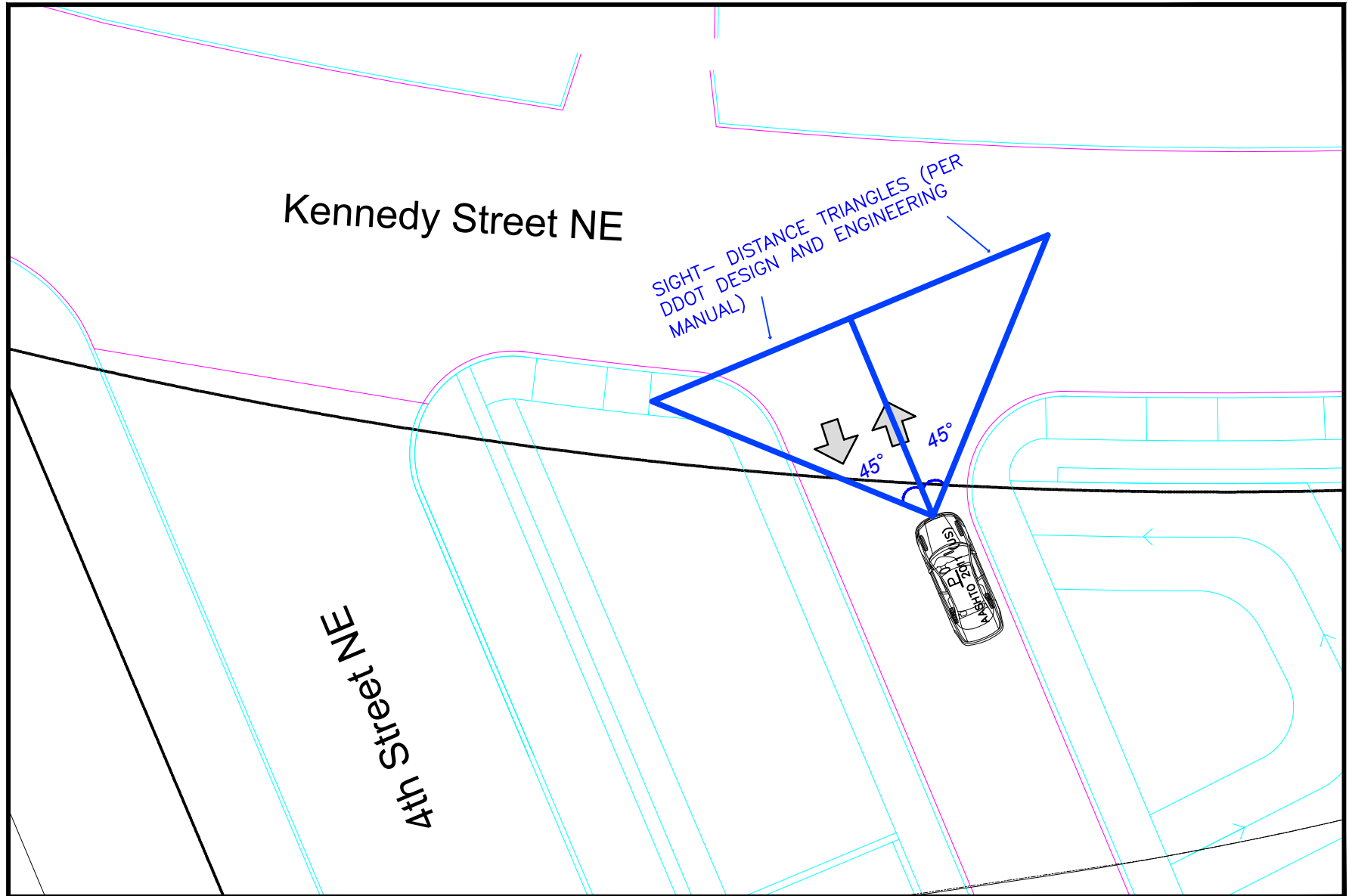


Figure 12A
Sight Distance Triangles



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Washington, D.C.



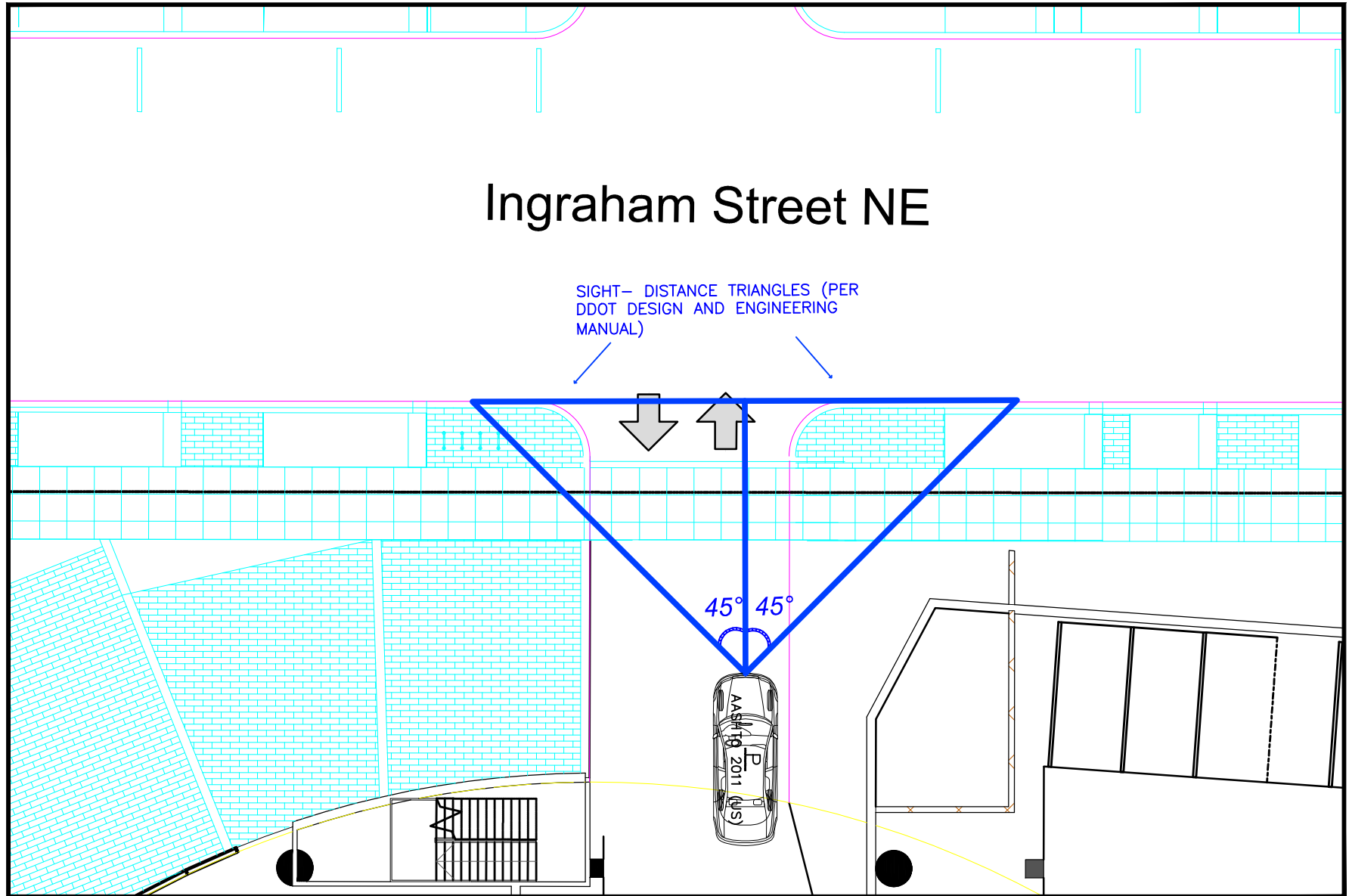


Figure 12B
Sight Distance Triangles



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1700 Pennsylvania Avenue, NW
Washington, D.C.

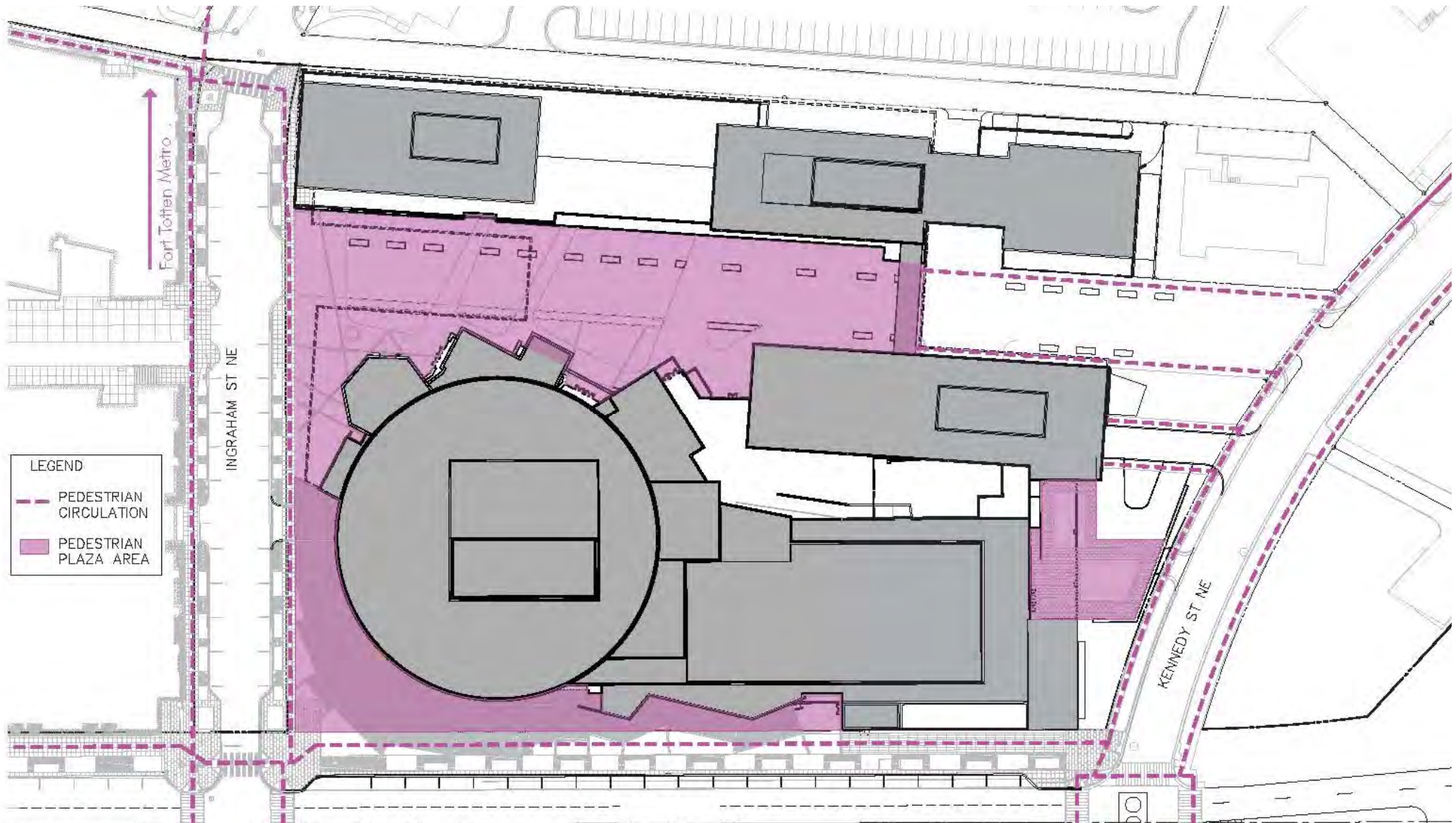


Figure 13
Pedestrian and Bicycle Circulation



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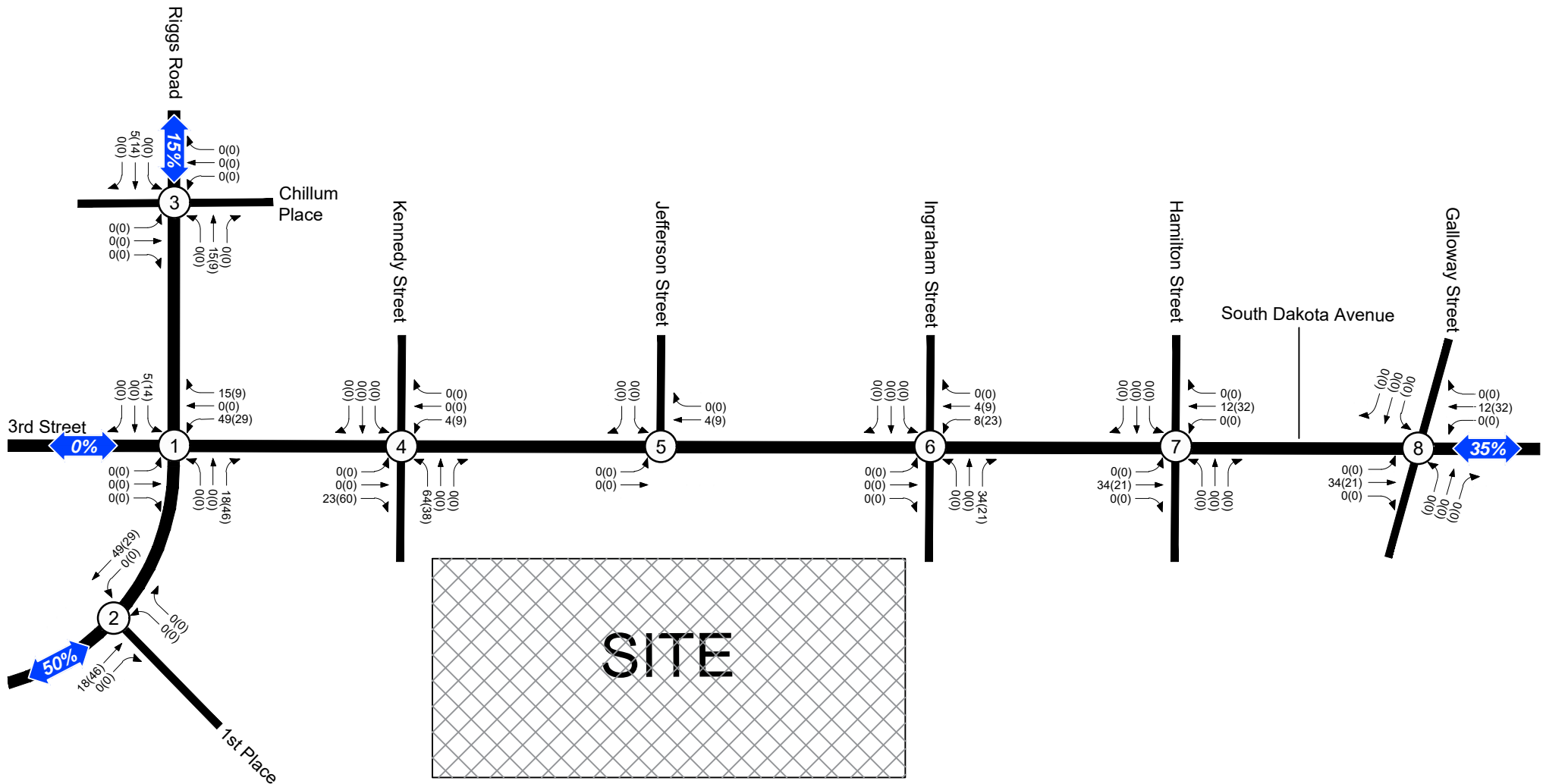


Figure 14A
Site Residential Peak Hour Traffic Volumes

XX%
Site Distribution

AM PEAK HOUR
PM PEAK HOUR
000(000)

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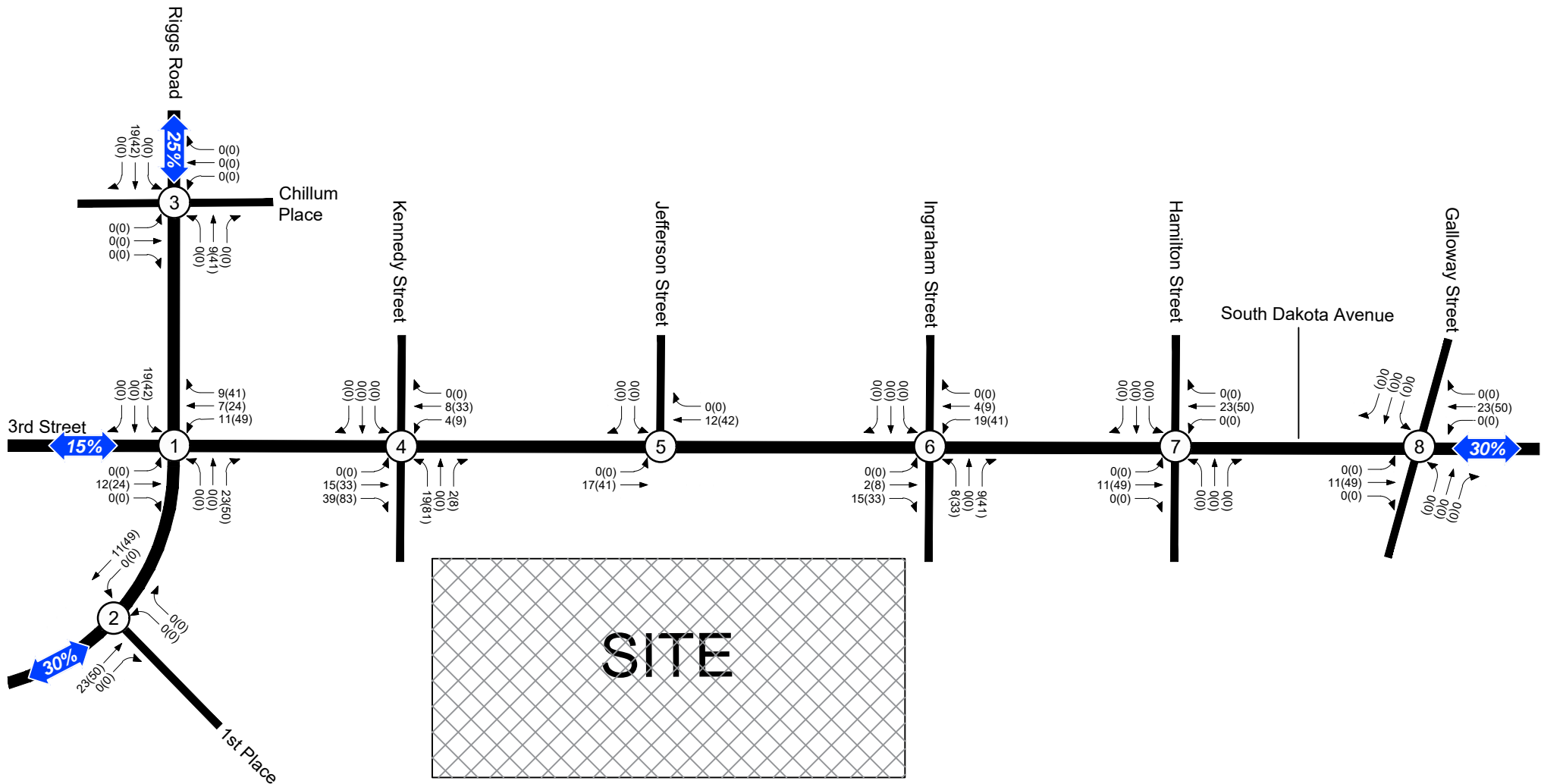


Figure 14B

Site Retail Peak Hour Traffic Volumes



Site Distribution

AM PEAK HOUR
PM PEAK HOUR
000(000)



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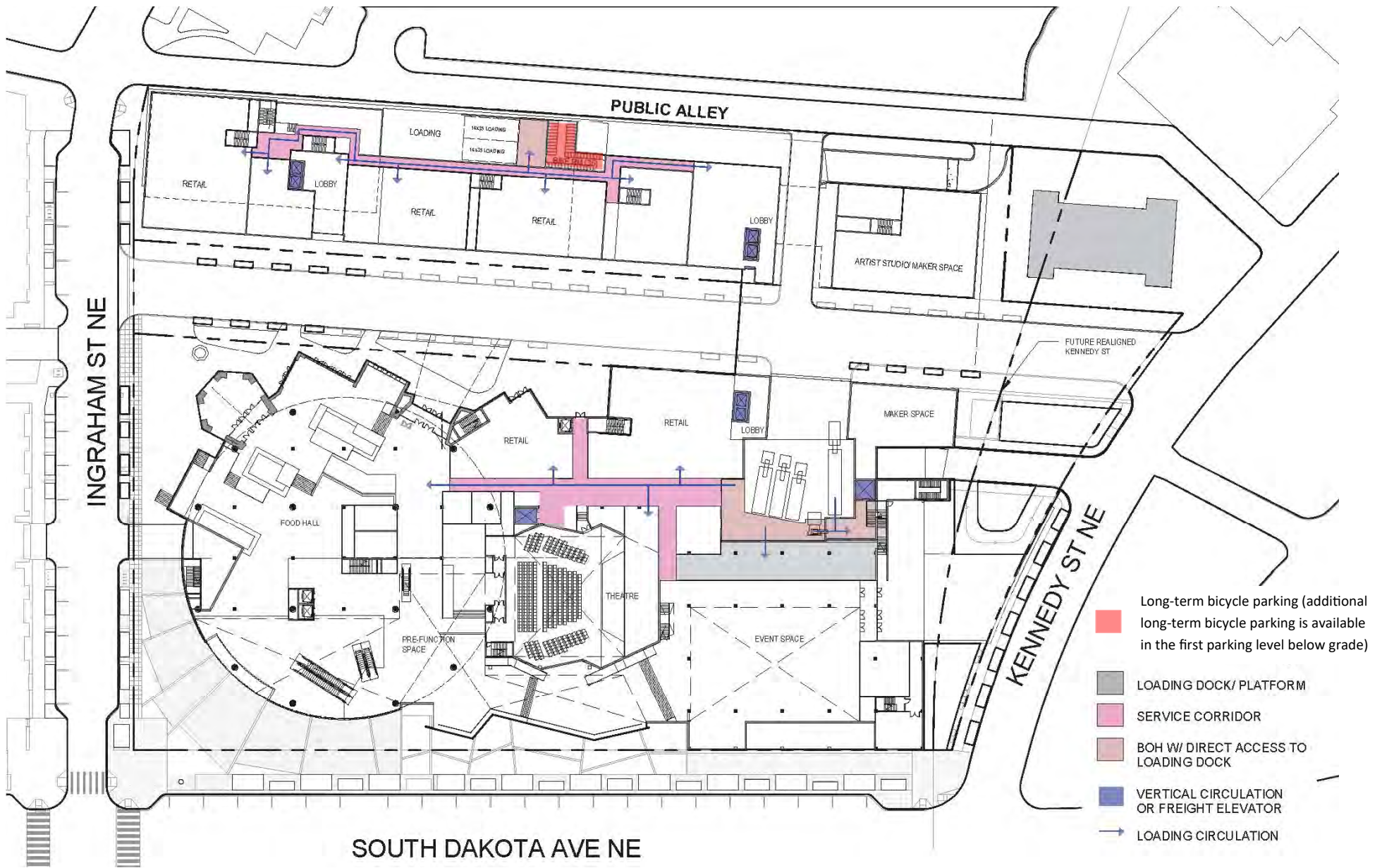


Figure 15
Site Loading Plan



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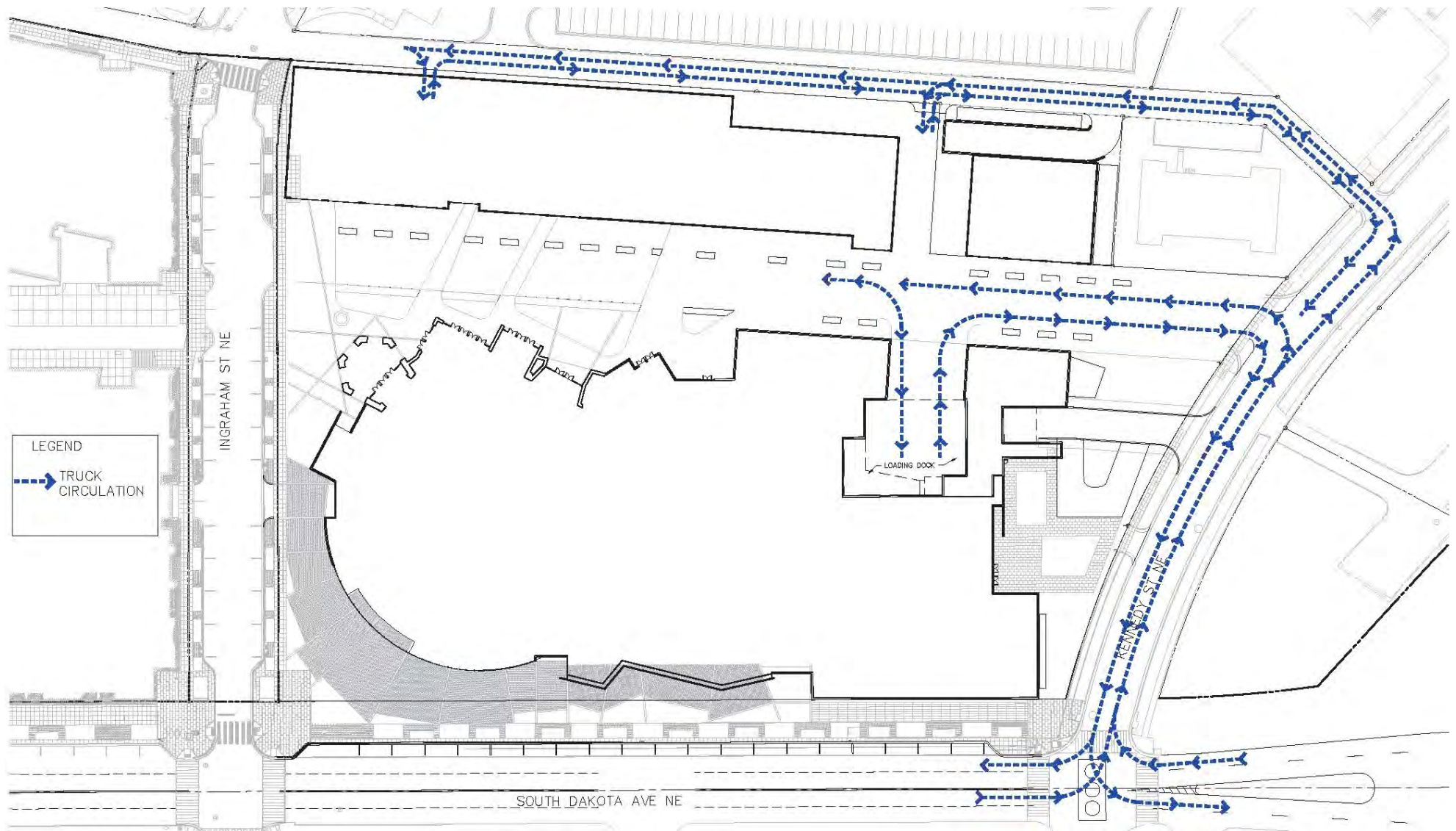


Figure 16
Truck Routing To/From Loading Facilities



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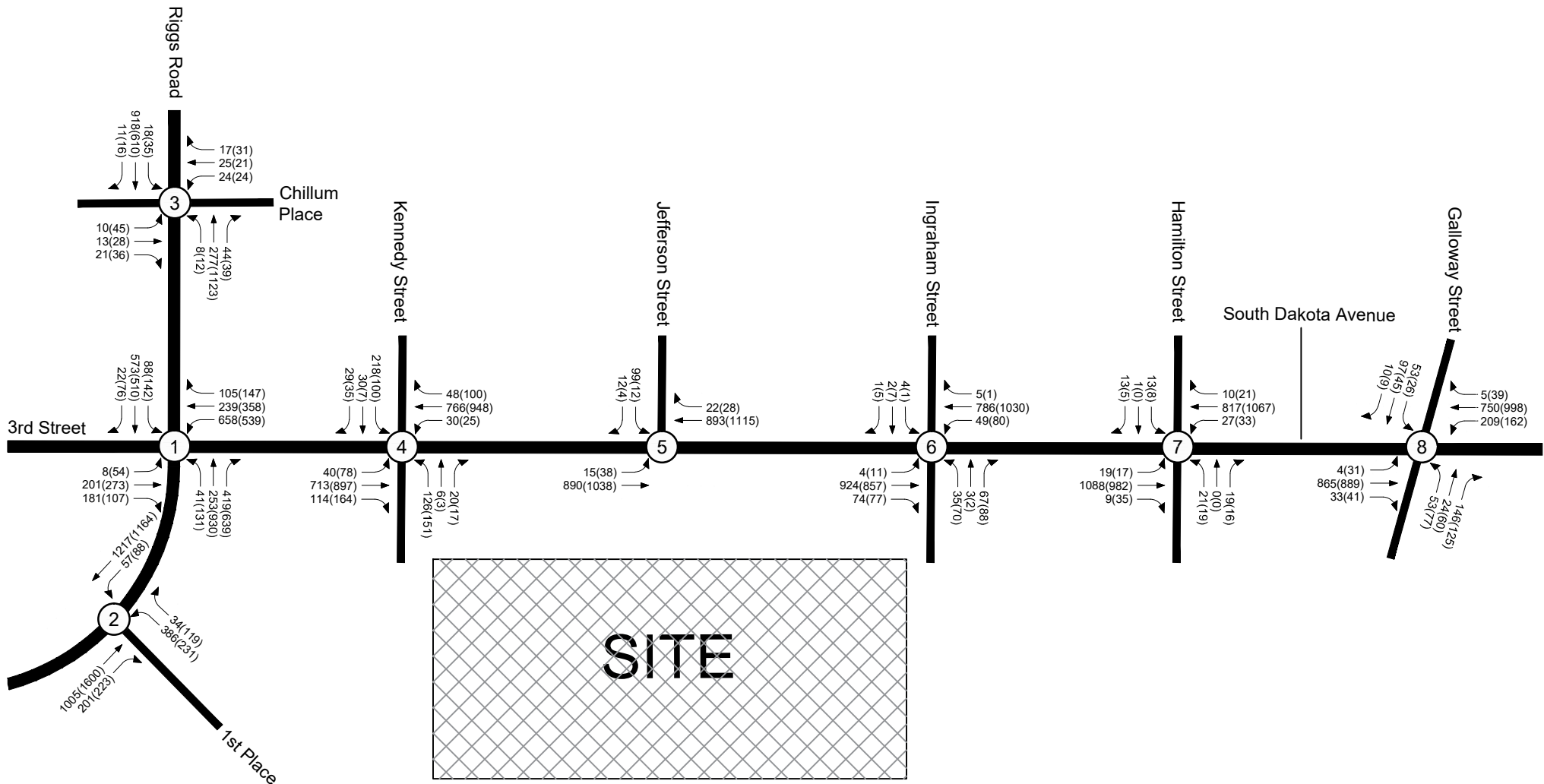


Figure 17

2023 Total Future Peak Hour Traffic Volumes

AM PEAK HOUR
PM PEAK HOUR
000(000)



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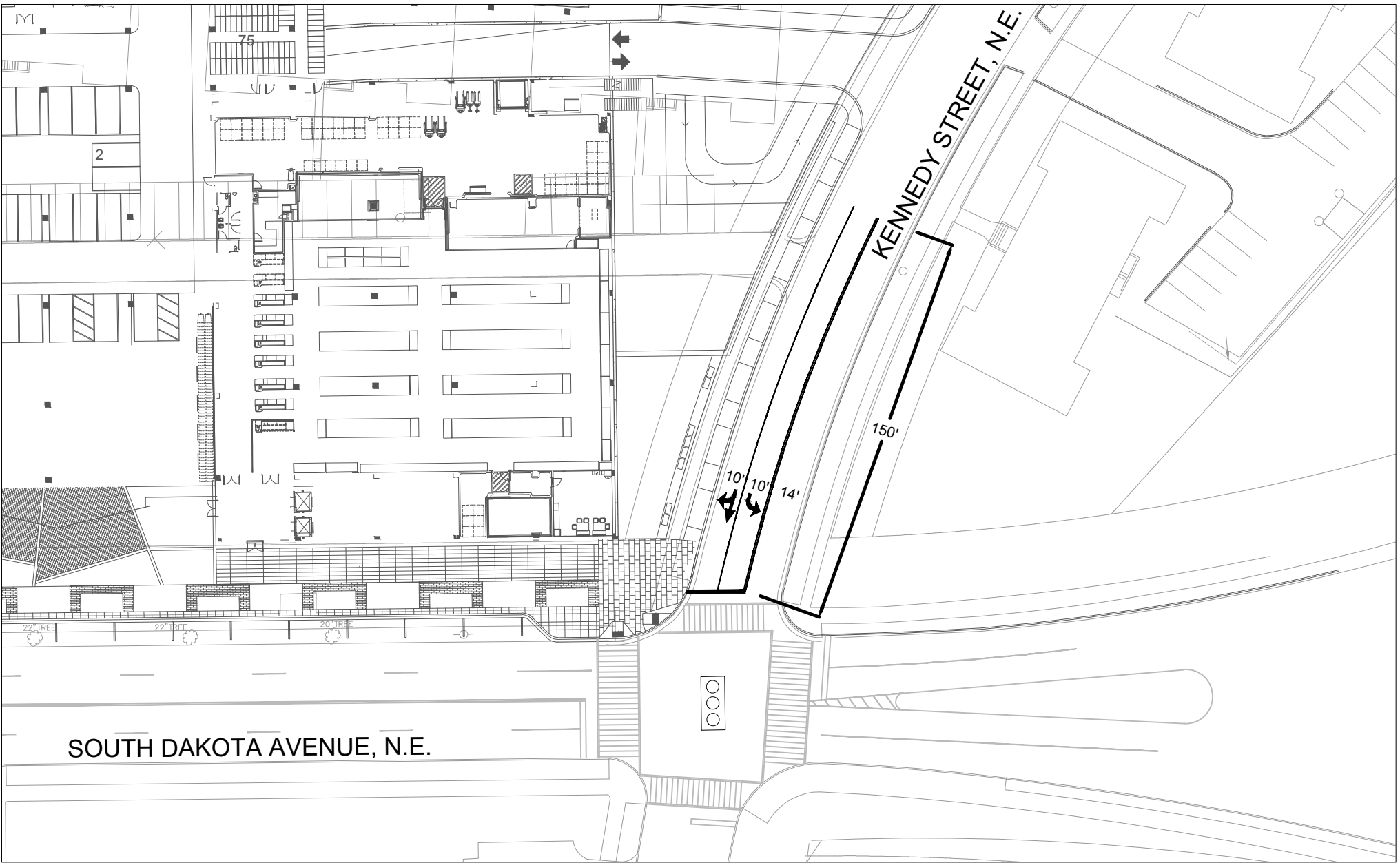


Figure 18

Kennedy Street & South Dakota Avenue Conceptual Design Plan



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