



District Department of Transportation

Guidance for Comprehensive Transportation Review

Version 1.0 – June 2019



Guidance for Comprehensive Transportation Review

The *Guidance for Comprehensive Transportation Review* is part of a suite of documents developed to outline and support the District Department of Transportation (DDOT) development review function within the Neighborhood Planning Branch of the Planning and Sustainability Division (PSD). The DDOT Neighborhood Planning team is tasked with evaluating the impacts of certain land development actions on the District’s transportation network. This suite of documents provides guidance on the preparation of a Comprehensive Transportation Review (CTR) by an Applicant along with direction to DDOT staff guiding the review process.

The document suite includes:

Document Title	Date of Most Recent Revision	Current Version
<i>Guidance for Comprehensive Transportation Review</i>	June 2019	1.0
<i>CTR Scoping Form</i>	June 2019	1.1

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Table of Contents

Abbreviations and Acronyms	6
Introduction	8
<i>What's New?</i>	8
<i>Overview of Development Review Process</i>	9
CTR Requirements.....	12
<i>Thresholds for Analyses</i>	12
Comprehensive Transportation Review (CTR) Study	12
Transportation Statement.....	12
Standalone Traffic Impact Analysis (TIA).....	13
<i>Low Impact Development Exemption from CTR and TIA</i>	13
<i>Other Types of Analyses and Plans</i>	14
<i>Format and Deliverables</i>	16
CTR Guidance	19
1.0 Site Design	19
1.1 Site Access.....	20
1.1.1 Curb Cuts.....	20
1.1.2 Internal Circulation	21
1.1.3 Connectivity	21
1.2 Loading.....	22
1.2.1 Loading Relief from ZR16 or DDOT Standards	23
1.2.2 Loading Management Plan (LMP).....	23
1.2.3 Curbside Loading.....	23
1.3 Vehicle Parking.....	24
1.3.1 Zoning Parking Requirements	25
1.3.2 Appropriate Level of Vehicle Parking.....	26
1.3.3 Parking Garage Design	30
1.3.4 Parking Garage Queueing Analysis	30
1.3.5 Shared Parking and Off-Site Parking Agreements.....	30
1.4 Bicycle Parking	31
1.4.1 Short-Term Bicycle Parking	31
1.4.2 Long-Term Bicycle Parking	31



- 1.4.3 Showers and Changing Facilities 32
- 1.5 Streetscape and Public Realm 32
 - 1.5.1 Public Space Design Guidance 33
- 1.6 Sustainable Transportation Elements 34
- 1.7 Heritage, Special, and Street Trees 35
 - 1.7.1 Heritage and Special Trees 35
 - 1.7.2 Street Tree Inventory 36
- 2.0 Travel Assumptions 37
 - 2.1 Mode Split 37
 - 2.2 Trip Generation 37
 - 2.2.1 Data Sources 38
 - 2.2.2 Person-Trip Methodology 39
 - 2.2.3 Trip Reductions 40
 - 2.2.4 TripsDC Tool 41
- 3.0 Multi-Modal Network Evaluation 43
 - 3.1 Strategic Planning Elements 43
 - 3.2 Pedestrian Network 43
 - 3.3 Bicycle Network 44
 - 3.3.1 Review of Bicycle Facilities 45
 - 3.3.2 Level of Traffic Stress (LTS) 45
 - 3.3.3 Capital Bikeshare (CaBi) 46
 - 3.4 Transit Network 46
 - 3.4.1 Transit Analysis 47
 - 3.4.2 Bus Stops and Shelters 47
 - 3.5 Curbside Management 48
 - 3.5.1 Curbside Analysis 48
 - 3.5.2 Residential Permit Parking (RPP) 49
 - 3.5.3 On-Street Parking Occupancy Study 49
 - 3.6 Safety Analysis 50
 - 3.6.1 Other Types of Safety Analyses 50
 - 3.7 Motorcoaches 51
- 4.0 Traffic Impact Analysis (TIA) 52
 - 4.1 TIA Study Area 52



- 4.1.1 Pre-Approval of Study Intersections 53
- 4.2 TIA Data Collection..... 53
- 4.3 TIA Study Scenarios..... 54
 - 4.3.1 Long Range Planning Scenarios..... 54
- 4.4 TIA Methodology..... 55
 - 4.4.1 Roadway Capacity Analysis 55
 - 4.4.2 Merge/Diverge/Weave Analysis 56
 - 4.4.3 Roundabouts..... 57
- 4.5 Transportation Network Improvements..... 57
- 4.6 Local and Regional Traffic Growth 58
 - 4.6.1 Local Growth / Background Development..... 58
 - 4.6.2 Regional Growth 58
- 4.7 Trip Distribution 59
- 5.0 Mitigations..... 61
 - 5.1 DDOT’s Significant Impact Policy 61
 - 5.1.1 High Vehicle Parking Provision..... 61
 - 5.1.2 Capacity Impacts at Intersections 61
 - 5.1.3 Non-Automotive Network Impacts..... 62
 - 5.2 DDOT’s Approach to Mitigation..... 62
 - 5.3 Transportation Demand Management (TDM) 63
 - 5.3.1 Commuter Benefits Law..... 64
 - 5.4 Performance Monitoring 64
 - 5.5 Non-Automotive Network Enhancements..... 65
 - 5.5.1 Pedestrian Facilities 65
 - 5.5.2 Bicycle Facilities..... 65
 - 5.5.3 Transit Facilities..... 66
 - 5.5.4 Private Shuttles 66
 - 5.6 Roadway Operational and Geometric Changes 66
 - 5.6.1 Operational and Geometric Changes..... 67
 - 5.6.2 Intersection Control 67
 - 5.6.3 Traffic Calming 68
 - 5.6.4 Transportation Mitigation Fund..... 69
- 6.0 Looking Ahead to Future Editions 70



Tables

Table 1 Required Graphics and Deliverables in CTR	17
Table 2 DDOT-Preferred Vehicle Parking Rates	27
Table 3 Average Vehicle Occupancy for Selected Trip Purposes	39
Table 4 Step-by-Step Multimodal Trip Generation	40
Table 5 LOS Based on Delay at Intersections	56
Table 6 LOS for Merge/Diverge Segments	56
Table 7 LOS for Weave Segments	57

Figures

Figure 1 DDOT Development Review Process Flowchart.....	11
Figure 2 Proximity to Metrorail Stations.....	28
Figure 3 Proximity to Priority Transit Routes.....	29

Appendices

- Appendix A – CTR Scoping Form
- Appendix B – Land Development and CTR Resources
- Appendix C – Sample TDM Plans and Resources
- Appendix D – Sample Performance Monitoring Plans
- Appendix E – Sample Loading Management Plan
- Appendix F – Capital Bikeshare Station and Bicycle Parking Rack Designs
- Appendix G – Turning Movement Counts Templates
- Appendix H – Standard Synchro-SimTraffic Inputs and Settings
- Appendix I – Heritage and Special Tree Permit Information



Abbreviations and Acronyms

AASHTO – American Association of State and Highway Transportation Officials
ADA – Americans with Disabilities Act
BID – Business Improvement District
BLOS – Bicycle Level of Service
BRL – Building Restriction Line
BZA – Board of Zoning Adjustment
CaBi – Capital Bikeshare
CID – Community Improvement District
CLRP – TPB’s Constrained Long-Range Plan
CTPP – Census Transportation Planning Products
CTR – Comprehensive Transportation Review
DCMR – District of Columbia Municipal Regulations
DCRA – District of Columbia Department of Consumer and Regulatory Affairs
DDOT – District Department of Transportation
DEM – DDOT Design and Engineering Manual
DMV – Department of Motor Vehicles
DPW – Department of Public Works
DOEE – District Department of Energy and Environment
EISF – Environmental Impact Screening Form
EV – Electric Vehicles
FHWA – Federal Highways Administration
GSA – U.S. General Services Administration
HAWK – High-intensity Activated crossWalk
HCM – Highway Capacity Manual
HCS – Highway Capacity Software
HSIP – Highway Safety Improvements Program
IJR / IMR – Interchange Justification Report / Interchange Modification Report
ITE – Institute of Transportation Engineers
IZIS – Interactive Zoning Information System
LMP – Loading Management Plan
LOS – Level of Service
LTR – Large Tract Review
LTS – Level of Traffic Stress
MOE – Methods of Evaluation
MOT – Maintenance of Traffic
MUTCD – Manual on Uniform Traffic Control Devices
MWCOG – Metropolitan Washington Council of Governments
NCPC – National Capital Planning Commission
NEPA – National Environmental Policy Act
OP – District of Columbia Office of Planning
PDRM – Preliminary Design Review Meeting



PGTD – DDOT Parking and Ground Transportation Division
PMP – Performance Monitoring Plan
PSC – Public Space Committee
PSD – DDOT Planning and Sustainability Division
PROWAG – Public Rights-of-Way Accessibility Guidelines
PUD – Planned Unit Development
PUDO – Pick-Up/Drop-Off
STIP – DDOT State Transportation Improvement Plan
RRFB – Rectangular Rapid Flash Beacon
ROP – Residential Only Parking
RPP – Residential Permit Parking
ROW – Right-of-Way
TAZ – Traffic Analysis Zone
TCO – Traffic Control Officer
TCP – Traffic Control Plan
TDM – Transportation Demand Management
TESD – DDOT Traffic Engineering and Signals Division
TIA – Traffic Impact Analysis
TIP – TPB’s Transportation Improvement Plan
TIPP – Transportation Improvements Phasing Plan
TMC – Turning Movement Counts
TMP – Transportation Management Plan
TOPP – Traffic Operations and Parking Plan
TOPS – Transportation Online Permitting System
TOSD – DDOT Transportation Operations and Safety Division
TPB – MWCOC’s Transportation Planning Board
UFD – DDOT Urban Forestry Division
V/C – Volume-to-Capacity Ratio
VMT – Vehicle Miles Traveled
WMATA – Washington Metropolitan Area Transit Authority
ZA – Zoning Administrator
ZC – Zoning Commission
ZR16 – 2016 Zoning Regulations (DCMR 11)

Introduction

The District Department of Transportation (DDOT) is committed to achieving an exceptional quality of life in the nation's capital through sustainable travel practices, safe streets, and outstanding access to goods and services. DDOT's *Guidance for Comprehensive Transportation Review* provides direction for performing a Comprehensive Transportation Review (CTR) study as part of the development review and public space permitting processes. This document describes DDOT's approach to evaluating a land development project in its totality and determining an action's impacts on the transportation network.

A relevant action includes zoning cases from the Zoning Commission (ZC) and the Board of Zoning Adjustment (BZA), Large Tract Reviews (LTR), Right-of-Way (ROW) dedication or closure, or public space permitting where DDOT operations or infrastructure may be impacted. It may also include land development or disposition actions of either the District or Federal governments (i.e., NEPA).

The purpose of the CTR is to evaluate the impacts of a relevant action on the District's multimodal transportation network and determine appropriate mitigations to address potential impacts. As such, a CTR will:

- Evaluate and determine the most optimal site design, specifically site access, loading, vehicle parking, and adjacent public space;
- Identify the additional generated pedestrian, bicycle, vehicle, and transit trips a proposed action would bring to the area;
- Determine how these additional trips will impact the transportation network;
- Propose actions that would mitigate the impacts; and
- Identify the potential impacts on the transportation network of the proposed mitigations.

DDOT requires the Applicant to design the site and complete a CTR consistent with DDOT's Vision Zero strategy, the MoveDC mobility plan, the Design and Engineering Manual (DEM), and other agency policies and practices. The information provided herein is intended to explain when a CTR is necessary, the scope and scale of analysis, and deliverables expected. It also provides some technical guidance on how to perform the analysis.

What's New?

DDOT was an early national leader, with the 2012 Beta Version of the *Guidance for Comprehensive Transportation Review*, in shifting away from evaluating throughput and delay for automobile drivers to requiring a multi-modal network analysis and implementing the person-trip generation methodology.

DDOT has since contributed to the Institute of Transportation Engineers (ITE) data collection efforts and publications so that these methods can be applied in other states, regions, and cities.

This 2019 Edition of the *Guidance for Comprehensive Transportation Review* continues the evolution of site development review beyond the multi-modal analysis and towards a focus on higher quality project design that incentivizes dense, mixed-use, and transit-oriented development. To accomplish this, DDOT stresses the importance of low parking ratios, access to multi-modal travel options, a strong Transportation

Demand Management (TDM) program, optimal site design, and a safe and attractive pedestrian-realm designed to be accessible for all users. These are all critical components to creating low-impact and sustainable development that encourages alternatives to traditional auto-ownership lifestyles and reduces single-occupancy vehicle usage.

Noteworthy changes in the 2019 Edition include the following:

- Developments are expected to have a parking supply below the DDOT-preferred parking rates (see Table 2), based on land use and distance to transit, or will be required to provide substantive TDM or non-auto improvements as mitigation. DDOT began using these parking rates in 2017 for all reviewed land development cases to advance the 75% non-auto mode split MoveDC goal;
- If the development proposal has a low parking supply and high-quality site design, as determined by DDOT, Applicants may now request an exemption from the CTR and TIA (see Low Impact Development Exemption section below for criteria);
- Greater focus on implementing Vision Zero principles throughout all aspects of the project and guidance on expected pedestrian realm design;
- Standardized TDM Plans by land use were created (see Appendix C) to ensure a consistent and effective suite of TDM strategies are implemented for each new development;
- Established parameters for using DDOT's *TripsDC* trip generation webtool for infill residential-over-retail developments;
- A street tree inventory within a 3-block radius is now required. Installation of missing tree boxes and street trees is now an accepted mitigation alternative;
- DDOT's Transportation Safety and Operations Division (TOSD) and new Vision Zero Office will take the lead on studying design and safety at intersections throughout the District. The three-year vehicle crash analysis is no longer required in CTRs. Instead, individual developments are expected to focus on pedestrian safety in all aspects of their site and public space design, review DDOT's Vision Zero Action Plan, and implement any recommendations at nearby intersections from DDOT-led safety studies;
- A review of Capital Bikeshare (CaBi) station demand data is now required as part of the bicycle network analysis;
- A parking garage queueing analysis is now required for certain projects to evaluate vehicle backups through the pedestrian realm and onto public streets; and
- Standardized Synchro and SimTraffic inputs were created to ensure consistency in analysis (see Appendix H).

Overview of Development Review Process

The development review process begins when the Applicant or oversight body contacts DDOT's Neighborhood Planning Branch within the Planning and Sustainability Division (PSD) to inform of a proposed action. A DDOT Case Manager is then assigned to lead the review process and function as the liaison between the Agency, review body, and the project's sponsor ("Applicant") from project inception through scoping, zoning review, and permitting. The DDOT Case Manager reviews the details of the action



and determines, in coordination with the Applicant, if a CTR or another appropriate level of analysis is required.

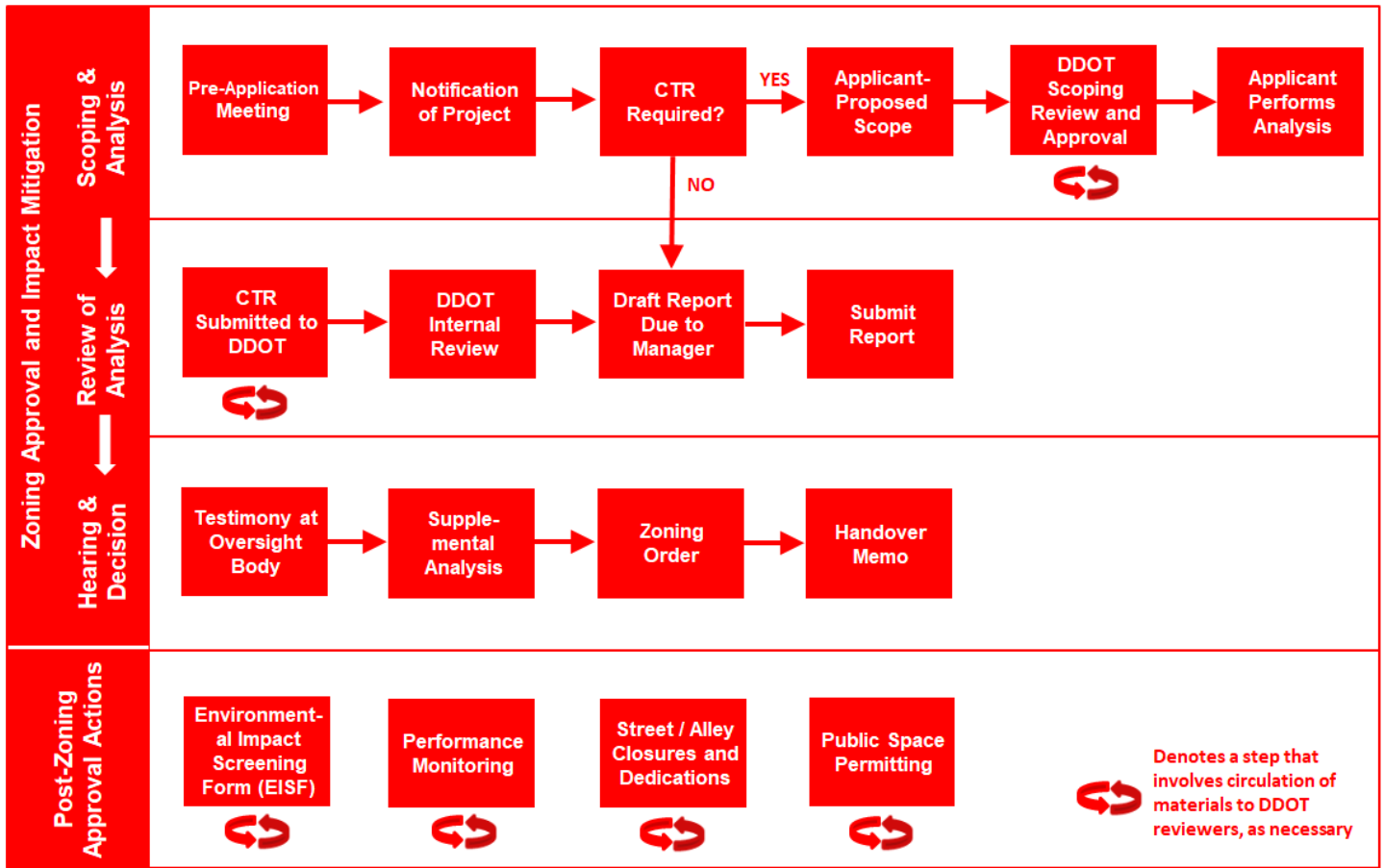
Once a relevant action has been determined to trigger a CTR, the Applicant should submit a filled out *CTR Scoping Form* (Appendix A) to the DDOT Case Manager which will include a detailed site design and an initial proposal of travel assumptions, type of analysis to be performed, and methodology. The *Scoping Form* is then circulated within DDOT for review and comment.

The scope should be tailored to the scale of the proposed action. An action expected to have minimal impacts would complete a focused and limited analysis or potentially no analysis, whereas an action expected to have greater impacts would complete a broad, multi-modal, in-depth analysis. Accordingly, it will not be necessary for every Applicant to complete every task described in the *Guidance for Comprehensive Transportation Review*. The Applicant and DDOT Case Manager will coordinate to define the scope, type, and scale of analysis appropriate to the action.

For CTRs with a TIA component, DDOT will complete its review of the scope and provide initial comments to the Applicant within four (4) weeks of *Scoping Form* submittal. DDOT's turnaround time is three (3) weeks for all lower tier transportation studies. The Applicant is strongly encouraged to arrange a pre-application scoping meeting with the DDOT Case Manager. At this meeting, DDOT and the Applicant will walk through the project, discuss and resolve any issues pertaining to site access and loading, and discuss the proposed CTR assumptions and methodologies.

The Applicant then completes their analysis based on the agreed upon scope and submits it to DDOT for review at least 45 days prior to a hearing date. DDOT reviews the analysis and documents its findings in a report that is submitted to the appropriate oversight body, usually 10 days prior to a hearing or oversight review. The report findings, required mitigations, and negotiated proffers are considered in greater detail during public space permitting and must be implemented prior to the Applicant obtaining their Certificate of Occupancy from the Department of Consumer and Regulatory Affairs (DCRA).

Figure 1 | DDOT Development Review Process Flowchart





CTR Requirements

The level of transportation analysis required with the Applicant's submission is dependent upon the proposed action and the scale of development. Discussed below are the various thresholds for different types of analyses and plans that will be required by the DDOT Case Manager during scoping.

Thresholds for Analyses

Comprehensive Transportation Review (CTR) Study

A CTR is required when a proposed development generates 100 or more total person trips OR 25 or more vehicle trips in the peak direction (i.e., higher of either inbound or outbound) during any of the critical peak hours. The Traffic Impact Analysis (TIA) component of a CTR is triggered if the development generates 25 or more peak hour vehicle trips in the peak direction. When calculating whether a CTR or TIA is required, the mode split may be applied but all other reductions such as existing site traffic, pass-by, diverted, internal capture, and TDM, may not. However, any applicable reductions may be used and accounted for in the multi-modal trip generation calculations and assignment of trips within the study, as appropriate.

For Planned Unit Developments (PUD), Design Reviews, Large Tract Reviews (LTR), and Campus Plan cases where a site is being developed or redeveloped, the baseline condition for calculating whether a CTR or TIA is required is to assume a site is vacant and not currently generating any trips. For modifications, such as a Campus Plan amendment where only one building with no new parking spaces is being added or a PUD being amended to add a relatively small number of units, the baseline will be the maximum allowed under the previous approval or matter-of-right zoning and the analysis will evaluate the incremental increase in trips.

For BZA cases and Map Amendments, a CTR or TIA is only required when an Applicant is seeking approval for a new land use, an increase in density, or increase in a school's student/staff cap that yields 25 or more net new vehicle-trips in the peak direction, above and beyond the previous approval or currently allowable by zoning. All other BZA applications seeking transportation-related relief (e.g., loading or parking relief) will require a Transportation Statement rather than a CTR or TIA. To avoid several minor incremental approvals that add up to the equivalent of a large approval (i.e., a school raising the student cap by 20 students three times within 10 years) none of which individually met the trip threshold for conducting an analysis, DDOT will require a study after two consecutive approvals where a study was not conducted.

Transportation Statement

If a proposed action does not meet either the 100 person trip or 25 vehicle trip thresholds, then a limited Transportation Statement should be submitted that is scoped to the scale and specifics of the proposal. This document should be in memorandum format with attachments, as necessary, and must include all relevant information about the existing site, site history, current and past zoning actions, existing site operations, and any proposed changes to operations. Depending on the scale of action, the required information may be included in the Applicant's Statement in Support document rather than a standalone Transportation Statement.

Guidance for Comprehensive Transportation Review



Additional relevant information that must be provided includes trip generation, anticipated hours of operation, anticipated number of employees, residents, and customers, locations and quantity of vehicle parking, locations and quantity of bicycle parking, proximity to transit, anticipated modes of travel for users, and anticipated geographic market to serve. If the proposed zoning action includes a use with irregular hours and operations, such as a special events facility, more detailed information will be requested.

Standalone Traffic Impact Analysis (TIA)

In situations where a private development does not meet the CTR or TIA trip thresholds but is proposing a major operational change to the transportation network, would require a limited standalone TIA. Per DEM 38.2, this includes all proposals to reduce or add travel lanes, change the directionality of a street, convert a one-way street to two-way and vice versa, install or modify an existing traffic control device, make geometric modifications to an intersection, or as DDOT deems necessary. In these instances, the TIA scoping and analysis will be performed according to the criteria outlined in Section 4.0 of this document and DEM 38.3. If the proposed roadway change directly or indirectly impacts a Federal-aid eligible route, freeway, ramp, or Interstate, then an additional Interchange Modification Report (IMR) or Interchange Justification Report (IJR) will be required, as appropriate.

Low Impact Development Exemption from CTR and TIA

To incentivize infill development that support adjacent transit routes, DDOT offers a CTR and TIA exemption for projects that demonstrate a low parking supply, robust TDM program, and high quality pedestrian realm design. At the request of the Applicant, the DDOT Case Manager may waive the CTR and TIA requirements for projects that otherwise exceeds the 100 person trip or 25 vehicle trip thresholds, when all of the conditions below are met:

- Must be located within ½ mile of a Metrorail station or ¼ mile from a Streetcar, Circulator, or Priority Corridor Network Metrobus Route (see Figures 2 and 3);
- The total number of parking spaces provided on-site is below the amount calculated using DDOT's Preferred Vehicle Parking Rates for site's within ¼ mile of a Metrorail station (see Table 2);
- Site has 100 or fewer proposed parking spaces;
- Implement an Enhanced TDM Plan (see Appendix C);
- Ensure there is a complete pedestrian network that meets DDOT standards from the site to the nearest high-frequency transit stops. Applicant must install any missing or non-compliant sidewalks and curb ramps;
- Curb cuts and loading design meet DDOT standards or have received PSC approval (zoning relief from loading berths or service delivery spaces is acceptable);
- Site meets all ZR16 requirements for short- and long-term bicycle parking spaces and locker/shower facilities; and
- A minimum of two (2) electric vehicle charging stations are provided.

The Applicant will be required to submit a Transportation Statement to the DDOT Case Manager containing a narrative of the proposal, justification for waiving the CTR and TIA, and an outline of all commitments agreed to during scoping. After review and concurrence by the DDOT Case Manager, this document must be included in the case record for ZC and BZA applications and committed to in the Zoning Order. For case types without a Zoning Order, these commitments will be memorialized in the public space permit.

If the CTR is ultimately waived, the DDOT Case Manager may still require an analysis of the site access points, an evaluation of curbside uses, or other types of analyses to address specific site-related issues associated with the proposed project and zoning action.

Other Types of Analyses and Plans

There are situations where additional analysis and documentation will be required based on the specifics of the proposed action. Each of the following types of analyses and plans, when required, should be accompanied by a Transportation Statement or incorporated into a CTR or other study outside of the development process, as agreed to by the DDOT Case Manager:

- *Loading Management Plan (LMP)* – required by DDOT when relief from ZR16 loading requirements is being requested (i.e., providing fewer berths) or proposed loading design cannot physically meet DEM policies (i.e., back-in loading). See Appendix E for a sample LMP.
- *Transportation Demand Management (TDM) Plan* – required by DDOT for all developments that trigger a CTR, projects with high parking ratios (see Table 2), and projects with observed impacts to the transportation network. Also required by ZR16 when relief from 1 or more vehicle parking spaces is being requested. See Appendix C for a standardized TDM Plans by land use.
- *Performance Monitoring Plan (PMP)* – required by DDOT for all Campus Plans, larger schools and daycares, and other developments with high trip generation or single-occupancy vehicle rates. See Appendix D for several example PMPs.
- *On-Street Parking Occupancy Study* – required by DDOT when relief from 5 or more vehicle parking spaces is being requested from the BZA or if DDOT has concerns about site-generated vehicles parking in adjacent neighborhood. This study quantifies the availability of on-street vehicle parking spaces in the vicinity of the site under existing conditions and evaluates whether there will be parking capacity after the project has come online.
- *Pick-Up and Drop-Off Plan* – required by DDOT for any day care center or school with 20 or more students. This plan identifies pick-up and drop-off locations and demonstrates adequate circulation so that the flow of bicycles and vehicles is not impeded and queuing does not occur through the pedestrian realm. May also be required for churches, hotels, or any other use expected to have significant pick-up and drop-off operations, as necessary.
- *School Route Plan* – required by DDOT for all school projects. See DEM 38.3.7.3 for further guidance.

- *Parking Garage Circulation Study* – required by DDOT when a development includes a parking garage with 150 or more spaces and direct access to a public street to ensure vehicle stacking at the entrance does not queue into the adjacent roadway or across the sidewalk.
- *Curbside Management Plan* – required by DDOT in the CTR when a development proposes changes to the curbside uses (e.g., RPP, metered, rush hour restricted, pick-up/drop-off zone, etc.).
- *Signage and Marking Plan* – required by DDOT during the public space permitting process when the curbside uses and other changes to roadway operations are proposed (e.g., curb cuts, crosswalks, stop bars, turn lanes, etc.).
- *Tree Preservation / Tree Relocation Plan* – required by Urban Forestry Division (UFD) if Heritage, Special, or street trees that must be preserved are identified on-site or adjacent to the site.
- *Traffic Control Plan (TCP)* – required by DDOT during the public space permitting process. This plan will show which travel lanes, sidewalks, and bicycle facilities will be temporarily closed during construction and how all modes of travel will be accommodated, including the coordination with other nearby construction projects, and identifies responsible parties. This is similar to a Maintenance of Traffic (MOT) which is associated with public infrastructure projects.
- *Truck Routing Plan* – required when there are concerns by DDOT, ANC, or the community regarding the volume and sizes of delivery trucks in the neighborhood. The plan should demonstrate anticipated trucks routes to serve the site and adhere to any truck restrictions on the goDCgo Bus and Truck Map. This is typically only required for grocery stores and big box retail projects.

In situations where the impacts to the transportation network are significant, as determined by DDOT, the following additional documentation or processes may be triggered:

- *Transportation Improvements Phasing Plan (TIPP)* – required by DDOT for multi-phase projects where mitigation was identified. Also may be required where mitigations could not be memorialized in a BZA or Zoning Order (i.e., LTR, Map Amendment, other matter-of-right). The TIPP will link identified transportation improvements, TDM plan elements, and other commitments to individual blocks or buildings and will be enforced by DDOT during Environmental Impact Screening Form (EISF) review and public space permitting.
- *Transportation Management Plan (TMP)* – a comprehensive transportation plan typically required for large campus projects either by DDOT or US General Services Administration (GSA) and includes multiple components such as parking management strategies, TDM strategies, and a phasing plan for transportation improvements.
- *Traffic Operations and Parking Plan (TOPP)* – required by DDOT for projects that generate large amounts of vehicular traffic infrequently or irregularly. This plan includes planned locations of Traffic Control Officers (TCO), identifies temporary road closures, revised signal timing plans, and temporary signage, among other things. TOPPs are updated on an annual basis to adjust to changes in site operations. Examples: Nationals Ball Park and Audi Field.

- *Interchange Justification Report (IJR) / Interchange Modification Report (IMR)* – required by DDOT when new interchanges or modifications to an existing DC State Route highway or US Interstate are proposed. IMRs are also required for changes to local roadways that will directly or indirectly result in an impact to a Federal-aid eligible route. Additional approvals are required from Federal Highways Administration (FHWA) if an action impacts an Interstate highway or ramp.

The applicability and specific requirements for each of these studies will be determined during CTR scoping by the DDOT Case Manager.

Format and Deliverables

The basic format of the CTR study should follow the organization of this document and the *CTR Scoping Form*. Additional guidance on the format of the TIA component of a CTR is discussed in DEM 38.4.

At the time of submission to the DDOT Case Manager, the Applicant should provide the following:

- One (1) printed copy of the study without appendices;
- A PDF of the study with appendices;
- Traffic software analysis files; and
- Electronic files of traffic counts in DDOT-required spreadsheet format.

All of the digital files together should be under 15 MB in size, if possible, so that they can be emailed by the DDOT Case Manager to internal agency reviewers. If the files are larger, they should be provided on a flash drive or via a link to FTP site. Printouts of the traffic counts and traffic software analysis worksheets should be included in the study appendix.

Further guidance on the graphics and tables required in the CTR is provided in Table 1 below.



Table 1 | Required Graphics and Deliverables in CTR

CTR Section		Required Graphics / Tables / Deliverables
Site Design	Site Access	<ul style="list-style-type: none"> Project Location Map Site Circulation Plan
	Loading	<ul style="list-style-type: none"> Loading Area Design Truck Turning Diagrams (to/from site, alley, truck routes) Current Bus and Truck Restrictions Map (screenshot from goDCgo) Truck Routing Map to/from Site Loading Management Plan (LMP), as needed
	Vehicle Parking	<ul style="list-style-type: none"> Calculations with Comparison to ZR16 and DDOT’s Preferred Vehicle Parking Rates (Table 2) Map of Site’s Off-Street Parking Locations (both on- and off-site)
	Bicycle Parking	<ul style="list-style-type: none"> Calculations for short- and long-term bicycle parking spaces, lockers, and shower facilities and compared to ZR16 requirements Locations of internal bicycle parking spaces, routing to these spaces, and related support facilities including locker rooms, showers, storage areas, and service repair rooms
	Streetscape and Public Realm	<ul style="list-style-type: none"> Public Space Design Concept (more refined than the version reviewed at scoping)
	Street Trees	<ul style="list-style-type: none"> Inventory of existing and missing street trees within 3-block radius
Travel Assumptions	Mode Split	<ul style="list-style-type: none"> Mode Split Assumptions
	Trip Generation	<ul style="list-style-type: none"> Multi-Modal Trip Generation Summary (with applicable reductions)
Multi-Modal Network Evaluation	Pedestrian Network	<ul style="list-style-type: none"> Study Area and Walking Routes to Transit, Schools, Activity Centers Pedestrian Network Existing Conditions Pedestrian Network Future Conditions (note if improvements are programmed/proffered by others or proposed by Applicant)
	Bicycle Network	<ul style="list-style-type: none"> Study Area and Bicycling Routes to Transit, Schools, Activity Centers Bicycle Network Existing Conditions Bicycle Network Future Conditions (note if improvements are programmed/proffered by others or proposed by the Applicant) Capital Bikeshare Station Demand Analysis
	Transit Network	<ul style="list-style-type: none"> Transit Study Area and Map of Adjacent Transit Routes and Stations ADA Accessibility of Transit Stops
	Safety Analysis	<ul style="list-style-type: none"> Qualitative analysis of safety conditions at intersections and mid-blocks Sight triangles and sight distances at new site driveways, new intersections, and existing intersections with newly proposed signals
	Curbside Management	<ul style="list-style-type: none"> Existing Curbside Designations (two block radius from site) Proposed Curbside Management Plan



		<ul style="list-style-type: none"> ▪ Preliminary Proposed Signage and Marking Plan
	Pick-Up/Drop-off Plan	<ul style="list-style-type: none"> ▪ Graphic and narrative regarding pick-up/drop-off for schools and daycares
	On-Street Parking Occupancy Study	<ul style="list-style-type: none"> ▪ Study Area/Block Faces ▪ Block Face Parking Inventory and Restrictions ▪ Graphic and table showing vehicle parking space utilization by study period
	Parking Garage Queueing Analysis	<ul style="list-style-type: none"> ▪ Graphic and table showing parking garage and processing facilities along with processing speeds and queues
	Motorcoaches	<ul style="list-style-type: none"> ▪ Motorcoach loading/unloading plan and routing
Traffic Impact Analysis (TIA)	TIA Study Area	<ul style="list-style-type: none"> ▪ Study Intersections
	TIA Data Collection	<ul style="list-style-type: none"> ▪ Provide copies of the TMCs in study appendix and electronic versions in DDOT's required spreadsheet format at time of submission (see Appendix G).
	TIA Study Scenarios	<ul style="list-style-type: none"> ▪ Lane configurations and control devices for each scenario ▪ Projected traffic volumes for Existing, Background and Future scenarios
	TIA Methodology	<ul style="list-style-type: none"> ▪ Delay, LOS and V/C results for Existing, Background, and Future scenarios ▪ Queuing Results for Existing, Background, and Future scenarios ▪ Provide copies of analysis software outputs in study appendix and electronic versions of analysis files at time of study submission.
	Transportation Network Improvements	<ul style="list-style-type: none"> ▪ Map showing locations of background transportation network improvements (either programmed by DDOT in the STIP or proffered by others)
	Local and Regional Growth	<ul style="list-style-type: none"> ▪ Map showing background development projects near study area ▪ Table showing completion amounts/portions occupied of background developments ▪ Table and map showing projected regional growth assumptions (dependent on methodology). Proposed growth rates to be shown by facility, direction, and time of day ▪ Table showing trip generation assumptions for background developments ▪ Assignment of Background traffic for each development
	Trip Distribution	<ul style="list-style-type: none"> ▪ Percentage Distribution Map(s) by Land Use, Direction, and Time of Day ▪ Assignment of Site-Generated Trips ▪ Assignment of Pass-By and/or Re-Route Trips, as appropriate
Mitigations	Operational and Geometric Changes	<ul style="list-style-type: none"> ▪ Summary of Proposed Operational and Geometric Changes ▪ Proposed Changes in Greater Detail with ROW Implications ▪ Signal Warrant Analysis (all MUTCD warrants summarized in a single table)
	Transportation Demand Management (TDM)	<ul style="list-style-type: none"> ▪ TDM Plan (see Appendix C for standardized plans by land use)



CTR Guidance

The CTR process is divided into five sections – Site Design, Travel Assumptions, Multi-Modal Network Evaluation, Traffic Impact Analysis (TIA), and Mitigations. All of elements within these sections should be discussed during scoping to ensure the CTR is complete and site design and operations are appropriate. The CTR should be completed in accordance with the agreed upon *Scoping Form* and mitigations determined in accordance with DDOT’s Significant Impact Policy (see Section 5.1).

1.0 Site Design

Site design, which includes site access, loading, and public realm design, is the most critical aspect of a development. While transportation impacts can change over time, the site design will remain constant throughout the lifespan of the proposed development. Accordingly, new developments must provide a safe, accessible, and welcoming pedestrian experience that enhances the public realm, and serves as positive additions to the community.

A well-designed site is oriented toward non-automotive facilities, allows for safe and efficient circulation of people and vehicles, takes advantage of the District’s wide array of transportation systems so that a personal vehicle is not necessary for travel, accommodates loading on private property, and maximizes green space and pedestrian safety. Specifically, a site’s design should focus on minimizing vehicle and pedestrian conflicts at its access points (i.e., fewer curb cuts), loading facilities (i.e., no back-in loading), vehicle parking areas (i.e., fewer spaces), and public space adjacent to the site. If a site is well-designed, the need for developer mitigation and additional public resources to address site impacts can be greatly reduced.

At every step throughout the development process from the pre-application meeting with the Applicant to CTR scoping, plan submission to zoning or decision body, and permitting, DDOT staff will provide a thorough review of the site design. In its review, DDOT will consider various site design elements including right-of-way (ROW) distribution, site access and curb cuts, curbside management, on-site transportation facilities, Americans with Disabilities Act (ADA) accessibility compliance, and all streetscape and public realm elements subject to Public Space Committee (PSC) review. Public space design elements are formally approved as part of the public space permitting process that usually, but not always, follows approval from a decision body (e.g., BZA, ZC, NCPC).

DDOT is the District’s permitting authority for uses of space within the public ROW. All curb cuts, sidewalks, tree boxes, building projections, and other uses of the ROW areas between the back-of-curb and property line or Building Restriction Line (BRL) must be permitted by DDOT. Endorsement of public space design elements by a zoning body does not guarantee approval of the same elements during the public space permitting process. If there is a hardship with meeting DDOT standards (e.g., significant grade issues or site is small), it is strongly encouraged that the Applicant pursue Conceptual Approval from the PSC prior to moving forward with a formal development application. Obtaining Conceptual Approval from the PSC for a curb cut or non-standard public space element is recommended to prevent an Applicant from having to go



back to the ZC or BZA to amend their approved development plans at a later time if the public space permit is denied.

Many operational concerns and impacts resulting from a development are not necessarily related to increased travel demand but instead due to poor site design and circulation. Common site design problems include oversupply of vehicle parking, unsuitably located site access points, back-in loading, insufficient on-site queuing and processing space for site-generated vehicles, poor internal circulation, and limited connectivity with adjacent properties. These design shortcomings have negative consequences for the safety and operations of the project and the District's transportation network. Thus, they must be addressed through site design changes that work within and enhance the District's multimodal transportation network.

Potential site design mitigations include but are not limited to moving site access points and redesigning loading facilities to comply with District standards, regulations, and practice; ensuring parking facilities are designed with sufficient queuing and processing space; or reducing travel demand by reducing the parking supply. For larger projects, altering internal circulation routes to assign vehicles to less congested intersections and avoid high volume intersections may be appropriate.

1.1 Site Access

Site access should be provided in a manner that facilitates safe and efficient access by all modes of travel. Vehicular and loading access for the property must be provided from an alley where present. If an unbuilt "paper" alley is adjacent to the site, the Applicant is expected to construct the portion of the alley necessary to access the property. The CTR must show all site access points for vehicles along with their respective distances to the nearest intersection, alley, or adjacent driveway. Building entrances for pedestrians and bicyclists must be shown on the plans.

1.1.1 **Curb Cuts**

One of DDOT's central Vision Zero strategies is to minimize the number and impact of curb cuts and driveways on public space with each new development. Curb cuts are detrimental to the pedestrian realm as they create a conflict point between moving vehicles and pedestrians, and result in a loss of green space and street trees. All access must be provided from a public alley or private street, when available, to prevent the creation of new curb cuts. Any existing curb cuts that DDOT determines are no longer necessary to serve the site must be closed.

All curb cuts are subject to the public space permitting process, including review and approval by the PSC. As such, it is critical that the site access and curb cut locations be determined before almost any other aspect of the project and decision made on whether Conceptual Approval from the PSC will be pursued.

If a curb cut is proposed, the Applicant shall demonstrate that alternate access is not physically possible, a maximum of one (1) curb cut can serve the entire site, the curb cut is located on the lower volume street, and it meets DDOT design standards. Prior to pursuing a public space permit for a curb cut, the Applicant should evaluate several other options for avoiding the creation of a new curb cut, such as pursuing BZA

relief from vehicle parking or other site design requirements (i.e., rear yard, lot occupancy, etc.). When designing an unsignalized curb cut to a private development, note that it should be designed to be ramped up to the sidewalk with maximum curb radii of 6-feet and the sidewalk scoring extending flush across the driveway. Alleys, public streets, and signalized driveways may be designed at-grade with the existing street with curb and gutter and curb radii between 6 and 15 feet, depending on the type of facility.

Curb cuts to be closed and newly proposed curb cut with specifications (e.g., width, radii, access restrictions, sight distances, any modifications) must be shown on the plans and evaluated, in particular where such elements are inconsistent with DDOT standards. This evaluation will include a review of access points and their interaction with other area transportation facilities and circulation within the site. Curb cut policies can be found in DEM 31.5, *The Comprehensive Plan for the National Capital: Policy T-1.2.3*, and ZR16 Subtitle I § 600-603.

1.1.2 Internal Circulation

All on-site road facilities should be designed to accommodate projected demand on private property with minimal impacts to DDOT public space. Poor design of internal transportation facilities can lead to safety and operational impacts to the District's transportation network. The evaluation will define how these facilities are envisioned to be designed and function.

Detailed information must be provided on whether any new streets or alleys will be public or private and the anticipated mechanics for implementing them (e.g., easement, dedication, closure, etc.). Regardless, all new streets and alleys must be built to DDOT standards if they connect to a public street. Design of driveways and drive aisles on private property must comply with the requirements of ZR16 Subtitle C § 712. When an unbuilt "paper" alley is proposed to be constructed, the Department of Energy and Environment (DOEE) considers this a natural stormwater system converting to a paved impervious surface. This action triggers full stormwater regulations be implemented to mitigate any environmental impacts and ensure sustainability of the District's stormwater system. As such, the Applicant should be aware that DOEE may require the Applicant to make on- or off-site environmental mitigations.

Internal private roads that provide connectivity within a site are not subject to direct design review by DDOT during the development review process. While internal private roads do not fall directly under DDOT purview, how they operate can impact public roadways and understanding how they function is an integral component of development review. Often a developer will construct private roads on their site and then years later request DDOT take them over as public streets. When proposing private internal roads a developer is encouraged to construct them to DDOT standards. Streets not constructed to DDOT standards are unlikely to be accepted into the DDOT portfolio.

1.1.3 Connectivity

New development or redevelopment of large properties is an opportunity to restore the street grid network throughout the District. High urgency is given to restoring streets in the L'Enfant Plan that have been severed over the last hundred years, as well as other missing segments of letter, number, and State-named streets. DDOT requires "super blocks" (generally 600 feet in length or more) be broken up through

the creation of new local streets and alleys that result in smaller blocks sizes in the 300-400 foot range (DEM 31.5.d). This additional connectivity will help to disperse traffic, encourage walking, and allow for more “eyes on the street” and “defensible spaces.”

DDOT also strongly encourages the Applicant to pursue all opportunities for inter-parcel connections before considering new curb cuts and driveways (DEM 31.5.c). Inter-parcel connections minimize the number of curb cuts serving a site and allow for vehicles and pedestrians to connect directly to another property without needing to utilize the public street network. When inter-parcel connections are not possible, developments should provide internal stubs, as appropriate, so that future adjacent redevelopments can connect directly and reduce the need for additional curb cuts in the future.

1.2 Loading

Identification of and design for on-site freight needs is another critical element of building design. It is expected that new buildings will be designed to accommodate loading on-site meeting DDOT standards, policies, and practices. Heavy vehicle access to accommodate trash, loading, and deliveries should be designed in a safe and efficient manner, preserving safety across all non-vehicle modes and limiting impacts to traffic operations. For new developments, DDOT requires that loading take place on private property, via an adjacent alley, and that no backing maneuvers occur in the public realm (DEM 31.5). Trash should never be stored within the public ROW. The Applicant should be aware that the Department of Public Works (DPW) collects trash once per week at residential buildings with three (3) units or fewer. For commercial, mixed use, or residential properties with four (4) or more units, the property must contract a private trash collection service.

Subtitle C § 901.1 of ZR16 provides zoning requirements for loading facilities (e.g., berths, platforms, delivery spaces, dimensions). While ZR16 only requires 30-foot long loading berths, DDOT expects grocery stores, big box retail, and mixed-use developments with a major restaurant component to provide 55-foot berths to accommodate the larger food, beverage, and retail delivery trucks. Truck turning diagrams must be provided with all new developments, in the body of the CTR not the appendix, showing how trucks of these sizes can turn into and out of the loading berths, site driveways, and adjacent alleys from the street network. Additionally, the study will document all of the current bus and truck restrictions in the vicinity of the site.

It is strongly encouraged that the Applicant meets with DDOT staff early in the process to finalize the loading design and resolve any unique site challenges with meeting DDOT’s head-in/head-out policy. The following information should be provided regarding loading design and trash pick-up operations:

- Existing, proposed, and unbuilt “paper” alleys, driveways, and curb cuts utilized for heavy vehicle access;
- All existing and proposed loading areas and trash storage;
- The type and size of delivery and trash vehicles that will access the site;
- Demand based on the planned uses, including the size and type of trucks, number of deliveries anticipated, etc.;

- Truck turning templates to access the nearest truck route and alley, including any curbside parking spaces needing to be removed for accommodation of truck turns;
- A description of the proposed trash and recycling pick-up operations and trash handling plans;
- Time of day and access restrictions or requirements for loading;
- Designated truck routes that commercial vehicles currently use and any potential truck restrictions;
- Existing and proposed commercial loading zones near the site;
- Delivery and trash truck counts in the existing alley, as necessary; and
- A Loading Management Plan (LMP), as necessary.

1.2.1 Loading Relief from ZR16 or DDOT Standards

Before seeking zoning or public space design relief for loading facilities, the Applicant must demonstrate a hardship and explore all design options for accommodating head-in/head-out maneuvers from the public street network. These alternatives must include constructing an adjacent unbuilt “paper” alley, altering the footprint of the building to accommodate a hammerhead design, widening the alley onto private property for additional maneuvering space, sharing a curb cut with a neighboring property, and other creative designs that share a curb cut between loading facilities and parking garage entrance. All loading relief requests must be accompanied by an LMP.

1.2.2 Loading Management Plan (LMP)

For actions proposing on-street loading or trash pick-up, due to a severe site constraint, or loading facilities inconsistent with the DEM (e.g., oversized curb cuts, curb cuts too close together, or truck backing movements in public space), requires justification and an LMP. These elements are subject to DDOT public space permitting and may also require approval from DDOT’s Parking and Ground Transportation Division (PGTD) and DDOT’s Freight and Delivery Program if there are anticipated impacts to the existing curbside uses or signage.

The LMP will include the following elements:

- Identify limitations to truck size, loading times, and frequency of delivery;
- Identify truck routing to the site and limitations;
- Provide operational and staffing plans for addressing potential loading conflicts to improve safety conditions;
- Identify contingency plans if a request for an on-street loading zone is not granted; and
- Identify contingency plans for rare occurrences that require deviating from the LMP.

See Appendix E for a sample LMP. LMPs for ZC and BZA cases must be memorialized in the Zoning Order. For application types without an Order, the LMP will be included in the public space permit.

1.2.3 Curbside Loading

DDOT has established numerous on-street curbside commercial loading zones around the District, primarily in downtown and other areas where there is significant commercial activity with inadequate alley network.

These zones, as well as truck restrictions, can be found on the goDCgo Bus and Truck Map <http://godcgo.com/freight>. For BZA and ZC applications where the Applicant is seeking zoning relief from on-site loading facilities, the Applicant may only rely upon an existing on-street commercial loading zone if there is no alley access or there is a significant challenge using the existing alley. The loading zone must also be on the same block face as the proposed development.

A formal request to create a new on-street commercial loading zone must be submitted to and evaluated by DDOT during public space permitting. When such requests are made, changes must be justified by describing the benefits and lack of impacts such changes would generate for users in the vicinity. Secondary impacts to other competing curbside uses should also be addressed. DDOT will consider creation of a new commercial loading zone when it is established that all of the following criteria are met:

- Some feature of the site precludes accommodating loading needs on private property (either environmental constraints or small size of property);
- A site does not have direct access to an alley (if there is an unbuilt “paper” alley adjacent to the site DDOT expects the Applicant to build and use it);
- There is not a commercial loading zone already located in the vicinity of the site, as determined by DDOT; and
- There is a critical mass of commercial uses on the block that can further support usage of the new loading zone.

In many situations, DDOT may opt to sign a no parking zone instead of establishing a formal commercial loading zone, depending on the characteristics of the adjacent streets, current curbside restrictions, design challenges with the site, and other factors. In any event, curbside loading should only occur in a curbside lane of at least 8 feet in width and not impede the flow of vehicular traffic or bicycles on the street. The Applicant will still be required to demonstrate a hardship significant enough to warrant on-street loading or trash pick-up and must commit to an LMP to offset any impacts to roadway operations. DDOT may require the LMP include restrictions on the times and frequency of deliveries, as well as the size of the trucks.

For residential projects necessitating loading relief, move-ins and move-outs may occur curbside only if there is a row of on-street parking spaces on the site’s block face and residents obtain an “Emergency No Parking” permit from DDOT for use of an on-street parking space.

1.3 Vehicle Parking

The District’s roadway network is already built-out and currently experiences significant vehicle capacity and storage constraints. In order to meet the District’s goal of accommodating an increase of 200,000 new residents by the year 2035 without expanding roadway capacity, each development is expected to pursue strategies to reduce the supply and demand for vehicle parking, encourage the use of non-auto modes of travel, and support a reduction in automobile usage and ownership..

The overall parking demand created by a development is primarily a function of land use, square footage, price, and supply of parking, as well as availability, proximity, and frequency of high quality transit. The availability of inexpensive vehicle parking is often the main driver for vehicle trip generation resulting from

development projects. As such, the provision of on-site vehicle parking is a key component of the trip generation assessment of a development project. As discussed previously, the site design evaluation will include all proposed on-site vehicle parking spaces, access point(s), and the ability to process vehicles into and out of the site.

The Applicant should identify the parking provision as early as possible in coordination with the DDOT Case Manager. During the CTR scoping process, the Applicant must define the amount of parking being proposed, how it is priced and restricted, who the anticipated users are, and the anticipated supply and demand. An evaluation of the expected parking demand for the site, as well as proposed parking ratios by land use and any applicable parking reductions must be included in the *CTR Scoping Form*. Analysis of the expected parking demand should be included along with relevant data sources such as comparable site counts, DDOT data, or other similar sources. Parking space calculations, ratios by land use, and a comparison to ZR16 minimums and DDOT-preferred rates (see Table 2) should be provided in the CTR. These calculations should be clear and replicable.

Surface vehicle parking should never be provided in front of the building since it is detrimental to the pedestrian experience and often encourages more curb cuts than are necessary. In the event that it is unavoidable to provide surface parking that is visible from a public sidewalk or street, the Applicant must screen the parking with landscaping, in accordance with Subtitle C § 714 of ZR16.

1.3.1 Zoning Parking Requirements

The Applicant should be aware of several important sections of the zoning regulations (DCMR Title 11) pertaining to vehicle parking, noted below. The Zoning Administrator should be consulted early in the process if there is any confusion determining the zoning-required number of vehicle parking spaces, applicable parking reductions, or zoning-required TDM mitigations for excessive parking.

- **Minimum Parking Requirements (Subtitle C § 701.5)** – base parking calculations for each land use and zone without eligible reductions.
- **Transit Parking Reductions (Subtitle C § 702.1)** – 50% reduction allowed if site is within ½ mile of a Metrorail Station and ¼ mile from either Streetcar line or one of the specified Priority Corridor Network Metrobus routes (measured in a straight line from closest edge of site to street with bus line, not the stop or station itself, per ZA interpretation).
- **Parking Not Required in Several Zones (Subtitle C § 702.3)** – vehicle parking is not required in the D, SEFC, USN, MU-11, and CG zones. There are several caveats with the D-5 and CG zones.
- **TDM Plan Required for Parking Reductions (Subtitle C § 703.4)** – DDOT is required by zoning to approve a TDM Plan for all parking relief cases. Typically, DDOT will waive a TDM Plan for single-family homes, rowhouses, or townhouses requesting relief from 1 or 2 spaces. Larger multi-family residential buildings seeking parking relief should provide at least a Baseline TDM Plan (see Appendix C). If relief from 5 or more spaces is requested, Applicant must provide a Parking Occupancy Study (see later in this document).
- **Mitigation for Sites Significantly Over-Parked (Subtitle C § 707)** – for sites required to provide at least 20 spaces and are proposing more than two (2) times the minimum number of spaces

required by Subtitle C § 701.5 (excluding allowable parking reductions from calculation, per ZA interpretation), zoning requires installation of additional short-term bicycle spaces, street trees, electric vehicle stations, and car share spaces. If the double-parked site is providing 100 or more spaces above the minimum requirement, additional CaBi stations and short-term bicycle spaces are required. These zoning-required mitigations may not be double counted with elements in the TDM Plan, other mitigations required by DDOT, or amenities negotiated in the Community Benefits Agreement.

- **Credit for Carshare Spaces (Subtitle C § 708)** – a credit of three (3) parking spaces is allowable for each carshare space provided, up to a total of two (2) car share spaces, for a maximum credit of six (6) parking spaces.

1.3.2 Appropriate Level of Vehicle Parking

Since on-site vehicle parking is a permanent feature of a development that affects the trip generation characteristics of the site, it is critical that the Applicant not over-build parking. Availability of extra spaces has the potential to induce unanticipated vehicle trips on the transportation network. Additionally, over-building parking significantly increases the cost to construct a building, which is then passed onto the future tenants and is counter to the District's effort to make housing more affordable. If the Applicant provides more parking than calculated using the rates in Table 2 below, DDOT will require the parking supply be reduced or additional substantive TDM measures and non-auto network improvements be provided to offset future induced traffic. DDOT's Preferred Vehicle Parking Rates will be enforced during zoning review and at public space permitting for the site's curb cut.

These DDOT-preferred parking rates are set at levels that advance the MoveDC goal to increase the amount of District-wide home-work trips made by non-auto modes to 75%. Providing lower parking supplies, particularly in office and residential buildings, is an important strategy for supporting transit ridership and disincentivizing the use of a personal vehicle for home-work trips. In conjunction with a reduced supply of parking and a robust TDM program, vehicle parking will be unbundled from the cost to lease or purchase space in a building and priced appropriately (usually the average rate charged within ¼ mile of the site). Additional guidance on parking pricing is included within the standardized TDM Plans (Appendix C).

If a CTR or TIA is required, DDOT will require the assumed auto mode-share be adjusted upward to reflect the presence of a high on-site parking supply. Conversely, if a low parking ratio is provided, DDOT may permit the Applicant to reduce the expected automobile mode-share since the low parking provision acts as a natural constraint on the amount of vehicle trips that could be generated by the site. When determining the number of spaces to be provided on-site, the Applicant should also consider the complimentary nature of parking demand between uses, sharing parking facilities among land uses within the building, arrival and departure rates, and programs to minimize parking demand.



Table 2 | DDOT-Preferred Vehicle Parking Rates

Land Use		Less than ¼ Mile from Metrorail	¼ to ½ Mile from Metrorail OR Less than ¼ Mile from Priority Transit**	½ to 1 Mile from Metrorail	More than 1 Mile from Metrorail
Residential <i>(spaces/unit)</i>	DDOT: ZR16 Min-Max:	0.30 or less 0.17* - 0.67	0.40 or less 0.17* - 0.67	0.50 or less 0.33 – 0.67	0.60 or less 0.33 – 0.67
Office <i>(spaces/1,000 GSF)</i>	DDOT: ZR16 Min-Max:	0.40 or less 0.25* - 1.00	0.50 or less 0.25* - 1.00	0.65 or less 0.50 – 1.00	0.85 or less 0.50 – 1.00
Hotel <i>(spaces/1,000 GSF)</i>	DDOT: ZR16 Min-Max:	0.40 or less 0.25* - 1.00	0.45 or less 0.25* - 1.00	0.60 or less 0.50 – 1.00	0.75 or less 0.50 – 1.00
Retail *** <i>(spaces/1,000 GSF)</i>	DDOT: ZR16 Min-Max:	1.00 or less 0.67* - 2.66	1.25 or less 0.67* - 2.66	1.60 or less 1.33 – 2.66	2.00 or less 1.33 – 2.66
Other Uses	DDOT: ZR16 Min-Max:	75% of § 701.5 or less 50% - 200% of § 701.5*	90% of § 701.5 or less 50% - 200% of § 701.5*	120% of § 701.5 or less 100% - 200% of § 701.5	150% of § 701.5 or less 100% - 200% of § 701.5

Notes:

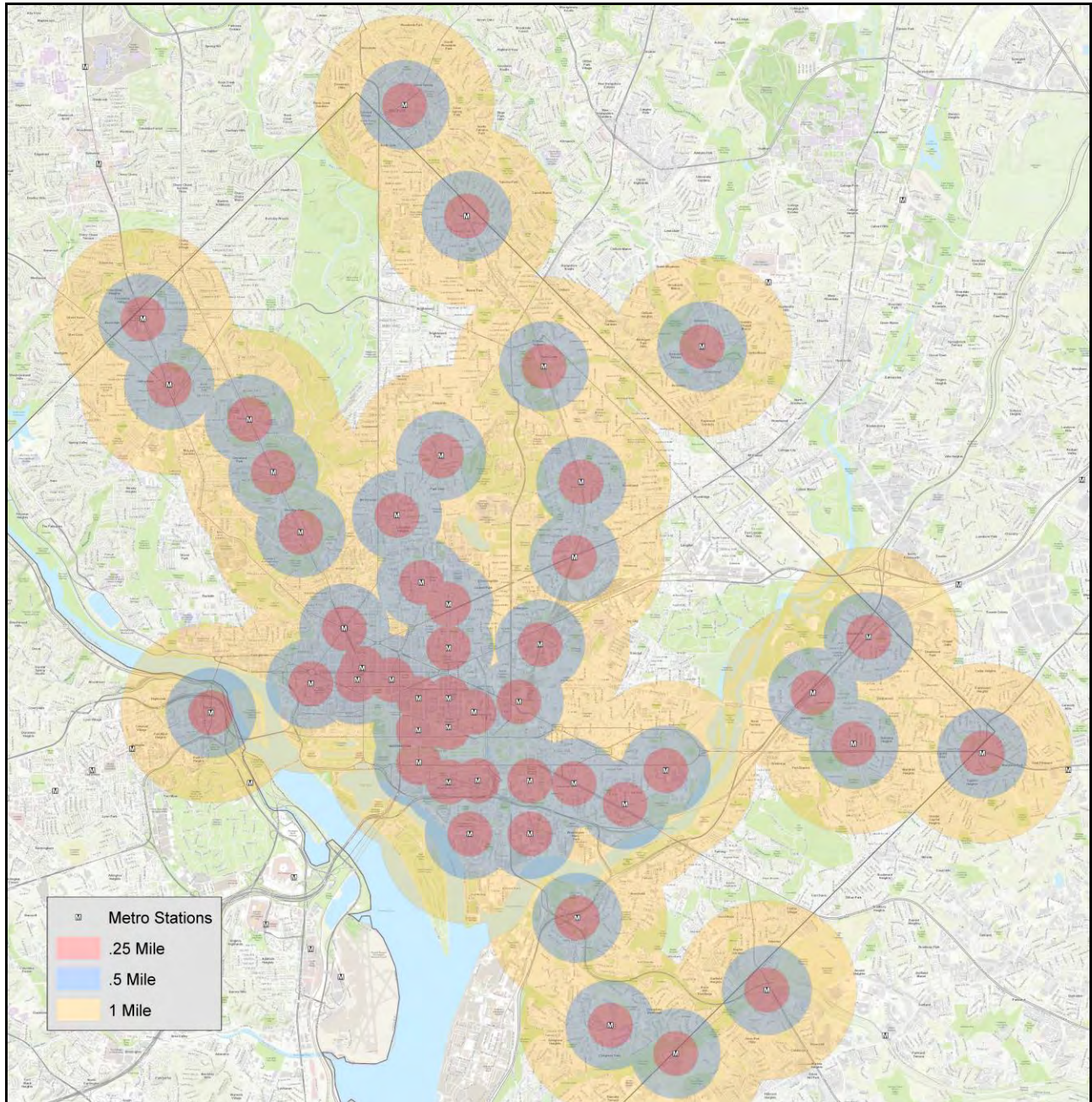
- * There is no vehicle parking requirement in Downtown “D” and several other zones. DDOT strongly encourages Applicants to provide no on-site vehicle parking where allowable by zoning.
- ** Priority transit includes the H Street Streetcar, Streetcar Benning Road Extension, DC Circulator, and Priority Corridor Network Metrobus Routes defined by zoning in DCMR 11, Subtitle C § 702.1(c).
- *** Retail rates can be used for either standalone buildings or first floor users of mixed-use projects. The Retail category also includes a wide range of related uses such as fast casual restaurant, bank, drinking establishment, pet grooming, coffee shop, grocery, etc.

DDOT developed and began using these parking rates in 2017 to evaluate the appropriateness of a project’s parking supply. They are now included in this edition so that an Applicant can right-size the amount of parking on-site prior to the initial scoping meeting with DDOT and prior to filing a land development application with the reviewing body.

DDOT’s preferred residential parking rates originated from the Park Right DC webtool which is based on parking demand data collected from 115 multi-family residential buildings around the District. The lowest and “best case” sites for each context of the District were selected to establish the residential parking rates. Office rates are based on 400 GSF per employee and non-auto mode-shares of 85%, 80%, 75%, and 65%, respectively, based on distance to transit. Hotel rates are based on 450 GSF per room and an assumption that the amount of parking per hotel room be roughly half of the per residential unit rate since visitors to hotels in the District typically do not arrive by personal vehicle (e.g., airplane, train, taxi, ride-hailing). This equates to approximately 1 space per 6 hotel rooms within ¼ mile of Metrorail and 1 space per 3 hotel rooms more than 1 mile from a Metrorail station. Rates for retail and all other uses are set proportionally to the ZR16 minimums based on the residential, office, and hotel rates. For atypical land uses, the Applicant should consult the DDOT Case Manager and, as appropriate, refer to other industry resources, published research, market research, and similar land uses in comparable geographies within and outside of the District.

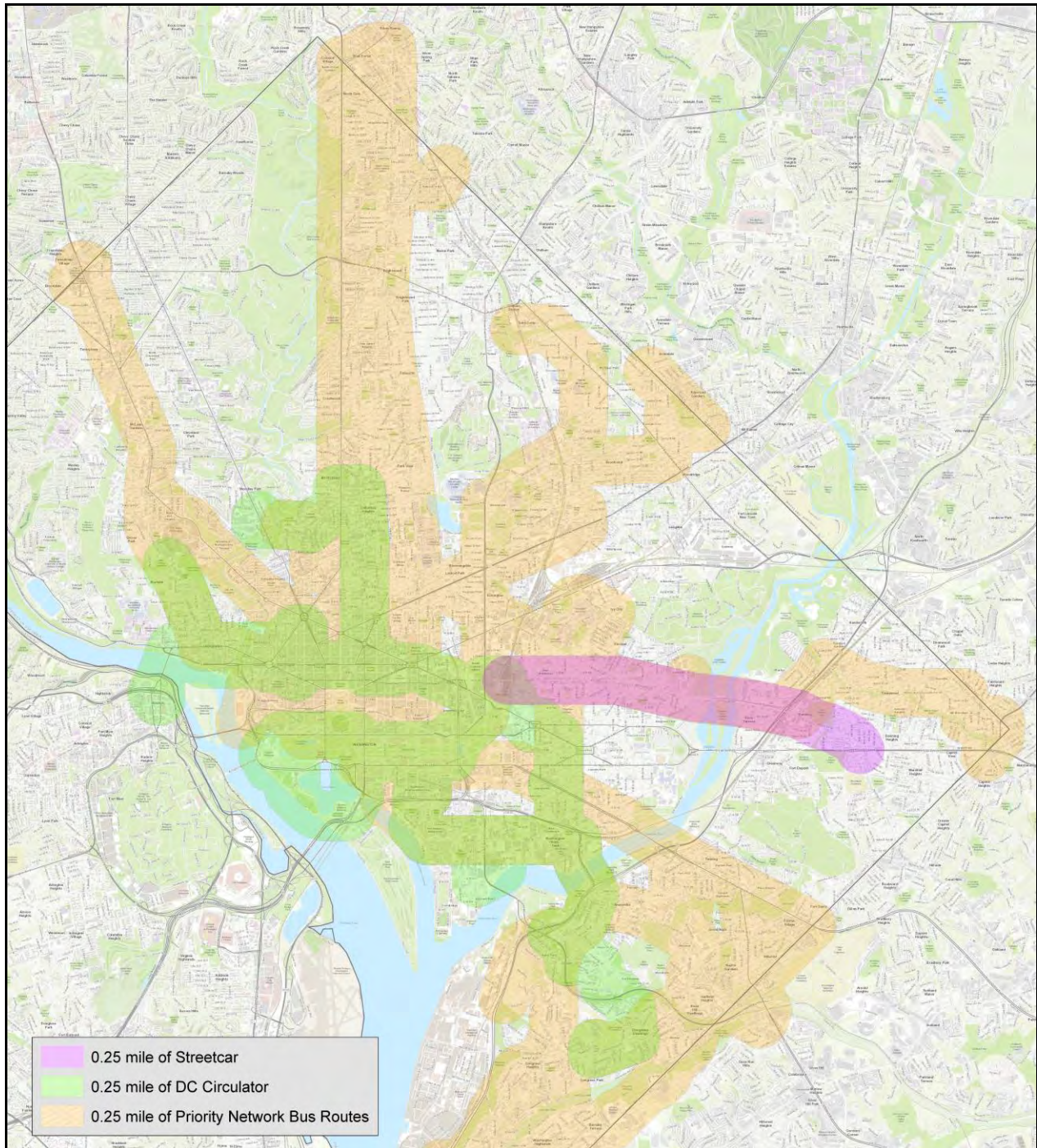
The Applicant should use Figures 2 and 3 below to determine the distance of the site from Metrorail and other Priority Transit routes. Distance from transit facilities and proposed land use will correspond with the appropriate DDOT-preferred parking rate in Table 2 above.

Figure 2 | Proximity to Metrorail Stations



A detailed and interactive map of distance from Metrorail Stations can be found at <https://arcgis/19aiqu>. Note that the buffers shown may differ slightly from how the Zoning Administrator calculates distance to Metrorail Stations for the purpose of 50% parking reductions in ZR16 Subtitle C § 702.1(a).

Figure 3 | Proximity to Priority Transit Routes



A more detailed and interactive map of distance from Streetcar, DC Circulator, and Priority Corridor Network Metrobus Routes can be found at <https://arcg.is/1CHTeB>. Note that the buffers shown may differ slightly from how the Zoning Administrator calculates distance to transit services for the purpose of 50% parking reductions in ZR16 Subtitle C § 702.1(b)(c).

1.3.3 Parking Garage Design

In keeping with best practices for repurposing under-utilized parking garages, all above-ground levels of parking and the first floor of below-grade parking should be designed in such a manner that it can be easily converted to usable space (i.e. residential units, hotel rooms, retail space, etc.) in the future. This typically includes designing parking garage floor plates that are flat (i.e., avoid ramps) and floor plates that have similar floor heights to those found in residential, office, or hotel buildings. DDOT prefers that any above-grade first-floor levels of parking not front or be visible from the street since it precludes efforts to activate the sidewalk space.

1.3.4 Parking Garage Queuing Analysis

Parking garage access and processing can impact adjacent public roadways and the pedestrian realm. An evaluation of on-site parking demand should be performed for parking garages with 150 or more spaces and direct access to a public street. If access to the garage is from a private internal street or public alley, this analysis is not required. A critical component of this evaluation includes an analysis of the ability to process vehicles into and out of the site, and required physical controls to the garage. The ingress and egress assessment will include a queuing analysis documenting the potential for spillover queues through public space and onto adjacent public streets that may result from the inability of parking processing facilities to allow for timely entry into the site.

The Applicant will identify existing and proposed alleys, driveways, and curb cuts utilized for parking and loading access, processing speed and conceptual layout of parking process facilities, and any queuing at the garage entrance. Applicant should follow the methodology documented in the publication, *Parking Structures: Planning, Design, Construction, Maintenance and Repair, 3rd Edition*.

1.3.5 Shared Parking and Off-Site Parking Agreements

DDOT encourages new developments to pursue shared parking agreements with other properties whose garages are underutilized and contain unused spaces, rather than constructing surface parking or additional garages. This can be particularly effective when a large new development consolidates all parking into one garage and allows each new building to be constructed with no parking (i.e., Ivy City). This type of arrangement allows for complimentary uses to share parking spaces, where one land use type can use spaces during the work day (i.e., office) and then another use in the evening or on weekends (i.e., movie theater or grocery store). If a shared parking garage is proposed for three (3) or more uses, the Applicant should provide a temporal distribution of expected parking demand for all of the uses and properties planning to use it.

DDOT strongly discourages developments from purposely over-building parking with the intent of leasing out the extra spaces to other nearby uses. This effectively creates two sets of parking garages housed within one garage and encourages additional driving into the District (for example: a multi-family residential building with 200 unused parking spaces that markets its extra spaces to nearby office workers, townhouse residents, or Nationals Ballpark event attendees). That is why it is critical that Applicants construct a vehicle parking supply consistent with the rates shown in Table 2. The Enhanced TDM Plan in

Appendix C, for sites that are over-parked, explicitly prohibits leasing unused spaces to entities outside of the building, unless the other property is providing zero (0) or a very low amount of on-site parking.

If existing off-site private parking garages are planned to be used as part of a new development, the spaces allocated to the property going through zoning review should not put the existing property containing the available parking in violation of their zoning requirements or any relevant BZA or ZC approvals. Evidence should be provided to DDOT and the relevant zoning body confirming the terms of the agreement for off-site parking. Any off-site parking proposed as part of the application will be counted toward the site's parking provision by DDOT for the purposes of determining if it is over-parked.

Off-site parking facilities reasonably expected to be used by site patrons or residents should be included in the off-site parking study area and distribution of site-generated trips within the TIA. This typically includes both curbside and private parking facilities between two and four blocks from the site. However, for larger projects, the study area may be larger based on the action being pursued, area parking patterns, and expected parking demand.

1.4 Bicycle Parking

Zoning requires a minimum number of short-term and long-term bicycle parking spaces for most uses except for single-family homes and residential flats (Subtitle C § 802.1). Zoning also requires showers and changing facilities for non-residential uses (Subtitle C § 806). DDOT expects all zoning requirements for bicycle facilities will be met and encourages Applicants to exceed these requirements as a way to further incentivize residents, employees, and visitors to travel by bicycle rather than by automobile. Bicycle parking requirements and guidance on the design of bicycle facilities can be found in Appendix F and the DDOT *Bike Parking Guide*.

Zoning requires sites significantly over-parked (Subtitle C § 707) to provide additional bicycle parking spaces, CaBi stations, and street trees. These are separate requirements above and beyond the base bicycle parking requirement and may not be counted toward DDOT's required TDM Plan.

1.4.1 Short-Term Bicycle Parking

Short-term bicycle parking spaces must be provided as inverted U-racks or other approved designs that provide two points of contact for the frame to be locked to. Wave racks, slot racks, and other types of designs where the frame of the bicycle cannot be secured to the rack should not be used. Per ZR16 Subtitle C § 804, racks must be located within 120 feet of the building entrance, preferably in the "furniture zone" of public space. Short-term bicycle parking spaces that do not meet the zoning requirements may not be counted toward a project's zoning calculations. A diagram showing the design of short-term bicycle racks that comply with both zoning and DDOT policies is included in Appendix F.

1.4.2 Long-Term Bicycle Parking

Long-term bicycle parking spaces must be provided in an easily accessible location from the building lobby or located in the parking garage level closest to the ground floor. For smaller projects with lower zoning requirements, long-term parking can be provided by installing outdoor bicycle storage lockers or a small

room or closet within the building. For medium-sized and larger projects, long-term bicycle parking should be provided in a storage room that meets the design requirements of Subtitle C § 805. While not required by zoning, DDOT strongly encourages an Applicant to provide an accompanying service repair room containing space and tools for residents or employees to repair their bicycles. A diagram showing the design of long-term bicycle racks that comply with both zoning and DDOT policies is included in Appendix F.

1.4.3 Showers and Changing Facilities

Per Subtitle C § 806, showers and lockers are required for all non-residential uses that occupy 25,000 SF or more space in newly constructed buildings or existing buildings that are expanding by 25% or more in size. These must be shown and labeled on the site plan and calculations included in the CTR. Showers and lockers will ideally be located adjacent to the long-term bicycle storage room and connected via hallways to the elevator or lobby. Showers and locker facilities must be available and accessible at all times to all employees and other building occupants triggering the zoning requirement.

1.5 Streetscape and Public Realm

Throughout most of the District, property lines are located at the building face rather than the back of sidewalk. Therefore, DDOT is charged with regulating and enforcing the design and functionality of the space between the property lines (building faces) on both sides of the street. As such, any permanent or temporary fixture proposed within the public ROW, such as bay windows, building projections, or café patios, for example, requires a public space permit. This gives DDOT a unique opportunity to ensure a high quality streetscape throughout the District.

In line with District policy and practice, any new building or substantial renovation project is expected to rehabilitate streetscape infrastructure between the curb and the property lines. This includes curb and gutters, street trees and landscaping, street lights, sidewalks, connectivity to the sidewalk, curb ramps, and other appropriate features within the public ROW bordering the site.

The Applicant must work closely with DDOT and the Office of Planning (OP) to ensure that the design of the public realm meets current standards and will substantially upgrade the appearance and functionality of the streetscape for public users needing to access the property or circulate around it. The Applicant may refer to the DCMR (Titles 11, 12A, and 24) and DEM for specific guidance on the regulation of public space. A summary of these can be found in the *Public Realm Design Manual*. DDOT strongly encourages all Applicants to participate in a Preliminary Design Review Meeting (PDRM) with DDOT and OP, as early in the development review process as possible, to address design related issues prior to the submission of public space permit applications.

A conceptual streetscape and public realm plan is required as part of the CTR. The conceptual plans must identify:

- A conceptual layout of the streetscape and public realm including curb cuts, vaults, sidewalk widths, curb ramps, street trees, building projections, building entrances, and other relevant elements;

- Placement of any mitigations or amenities that require utilization of public space (i.e., removal of slip lane, café patio, curb extensions, or public art); and
- Non-standard or controversial elements subject to PSC review.

During the development review process, DDOT will provide a cursory review of the proposed public space design to prepare the Applicant for issues that might arise during permitting.

1.5.1 Public Space Design Guidance

Final design of the adjacent public space is subject to DDOT's public space permitting process, which typically occurs after an action has been approved by the zoning or decision body. However, if any element in public space is controversial or does not meet DDOT standards, it is recommended that the Applicant pursue Conceptual Approval by the PSC before moving forward on the zoning action. This allows the Applicant to then design the approved non-standard element(s) into the project and avoid having to go back to the BZA or ZC to amend their plans. It is also recommended that any non-standard or controversial public space improvements being considered for the Community Benefits Agreement first be approved by the PSC, especially if it becomes a condition of ANC support for the ZC or BZA approval.

The Applicant should keep in mind several important policies and principles as the public space design concept is being developed:

- Projects should not externalize private site operations or site design elements into the public ROW, especially when they can be accommodated on private property;
- If there is not a policy specifically regulating the design of a feature in public space, then it is not allowed in the public ROW without expressed approval by the PSC;
- Site access must be provided from an adjacent built or unbuilt "paper" alley. If an alley has not yet been constructed, the Applicant must build a portion or the entire length to serve the site. If this cannot be physically accomplished, a curb cut must be located on the lower volume street, in the safest location (considering both sight distance and traffic control), and meet all other DDOT standards;
- Close or combine as many existing and proposed curb cuts as possible. Clear justification should be given and hardship demonstrated for more than one (1) curb cut proposed to a property;
- Building entrances must be at-grade with the sidewalk and not have doors that swing into public space. If stairs or ramps are necessary, they should be accommodated internal to the building on private property from the at-grade entrance. DDOT typically only allows stairs and ramps in public space in rare situations where they are needed to respond to the existing grade of the site or street and not to the preferred design of the building;
- Sidewalks must be straight and pedestrian access routes ("clear paths" 6-10 feet depending on context of city) must be accommodated first before anything else in public space (e.g., projections, café patios, etc.);
- Public space should comply with ADA design best practices in the *Public Rights-of-Way Accessibility Guidelines* (PROWAG);

- Existing bus stops, shelters, and CaBi stations must be accommodated during construction and assumed to remain in place and upgraded to ADA compliance after development has been constructed;
- All vaults should be moved out of public space and onto private property. If a building has 100% lot coverage, then vaults should be moved to the alley. If they cannot be accommodated in the alley, they must be moved as close to the building as possible, covered, and screened with landscaping;
- The “public parking” green space area should not be re-graded and must maintain the existing natural topography;
- Paving in public space should always be minimized and green space maximized;
- Trash storage and vehicle parking are not allowed in the public parking area;
- Maximize the number of street trees provided;
- Experiment with artwork and “tactical urbanism” in public space;
- Buildings should be visually interesting and activated at the ground level for pedestrians. As such, DDOT encourages the Applicant to take advantage of regulations allowing building projections, balconies, bay windows and café patios;
- Explore all opportunities for removing channelized turn lanes and installing curb extensions. Both improve pedestrian safety by slowing vehicles and shortening pedestrian crossing distances;
- Laybys are not allowed in public space since they result in fewer street trees, more pavement, faster vehicle traffic, and fewer on-street parking spaces;
- Bollards are not allowed in public space since they often detract from the quality of the streetscape. The rare exceptions where bollards are allowed are for buildings with high security clearances or curbless street concepts. In either situation, they must be approved by the PSC and be of a design that enhances the streetscape; and
- Private pedestrian bridges and tunnels are not allowed above or below a public street or alley, except with expressed approval by the PSC. Such facilities take away from the vitality of the ground-level pedestrian realm and preclude DDOT from using the full depth (or height) of the public ROW.

Public space permit applications can be filed via DDOT’s Transportation Online Permitting System (TOPS). A “construction” permit is required for any permanent elements or fixtures in public space (e.g., curb cut, sidewalk, trees, bay windows). An “occupancy” permit is required for anything that may occupy the ROW on a more temporary basis (e.g., café patio, parklet, shuttle service).

1.6 Sustainable Transportation Elements

Low pollution vehicle infrastructure promotes environmentally responsible vehicle usage which improves emission-based impacts. Such infrastructure can range from practical implementations that would promote use of vehicles powered by alternative or low emission fuels to the installation of vehicle charging stations for electric vehicles (EV). The CTR should identify any such infrastructure, such as EV charging stations, car share spaces, vanpool spaces, and CNG and FlexFuel-preferred or reduced rate spaces. DDOT recommends, as a best practice, one (1) out of every 50 vehicle parking spaces be served by an EV charging station. The



parking garage should also be designed with electrical conduit so that additional EV charging stations can easily be installed later.

DDOT strongly encourages an Applicant, particularly with larger projects, to come to an agreement with a car share service provider and reserve spaces on-site for car-sharing vehicles. Easy access to car-sharing vehicles, as part of residential projects, incentivizes future residents not to own a vehicle, thus reducing the number of vehicle trips generated by a project and further reducing the need for on-site vehicle parking. Subtitle C § 708 of ZR16 allows an Applicant to receive a three (3) space credit toward the site's vehicle parking minimum for each car-share space provided, up to two (2) car-share spaces (max credit of six spaces).

1.7 Heritage, Special, and Street Trees

The presence and expansion of the tree inventory within the public ROW and on adjacent property are important to the District's canopy growth goals. Tree canopies absorb stormwater, reduce heat islands, add vitality to the streetscape, and shade pedestrians from the sun and ultra-violet rays. Additionally, trees provide tremendous safety benefits when installed next to the street as they protect pedestrians from moving vehicles that hop the curb. The Applicant should take every opportunity to install more street trees and tree boxes in conjunction with their project.

1.7.1 Heritage and Special Trees

Heritage trees are defined as having a circumference of 100 inches or more. They are typically located on private property, but may also be found in the "public parking" area adjacent to the subject site. Heritage trees are protected by the District's Tree Canopy Protection Amendment Act of 2016 and must be preserved either in place or by relocation (transplant) if determined to be non-hazardous by the DDOT Urban Forestry Division (UFD).

Special Trees are defined as being between 44 inches and 99.99 inches in circumference. Similar to Heritage Trees, they are typically found on private property but may also be found in the "public parking" area. Special trees may be removed with a permit. However, if a Special Tree is designated to remain by UFD, protection is necessary.

The Applicant must work with UFD and the designated Ward Arborist as early in the planning process as possible to identify Heritage Trees and Special Trees. Since Heritage Trees cannot be topped, cut down, removed, girdled, broken or destroyed, their presence will impact the site design.

A Tree Preservation Plan or Tree Relocation Plan is required by UFD for all non-hazardous Heritage Trees. Special Trees as well as street trees within public space identified to be preserved may also require a Tree Preservation Plan. Norway Maple, Ailanthus, and Mulberry trees are exempt species. No fee is required to remove these trees, however a permit must be obtained from DDOT via TOPS. Violation of the Tree Canopy Protection Amendment Act of 2016 is subject to a fine of not less than \$300 per inch circumference. More information on Heritage and Special Tree regulations, permits, fees, and fines are provided in Appendix I.

1.7.2 Street Tree Inventory

Street trees are defined as being smaller than 44-inches in circumference and are located within the public ROW, typically in the “furniture zone” between the sidewalk and curb. New street trees proposed with a development require a public space permit and should be shown on the plan set submitted for the project’s public space design review.

As part of the CTR, the Applicant will conduct an inventory of existing and missing tree boxes and street trees, consistent with DDOT public space regulations (DEM 37.5), within a three (3) block radius of the site, or as otherwise scoped depending on neighborhood block sizes. The analysis should identify any opportunities where future plantings and tree boxes can be installed by UFD or others. Depending on the impacts identified in the CTR, Applicant-installation of off-site (not in the public space immediately adjacent to the site) tree boxes and street trees may be an acceptable option as part of the mitigation package, in lieu of other improvements, at the discretion of the DDOT Case Manager.

2.0 Travel Assumptions

Establishing reasonable and defensible travel assumptions is the first step in assessing travel impacts on the transportation network and a key element of the DDOT scoping process. A variety of sources provide insight into various travel assumptions, but typically no single document or source provides a complete projection of future travel demand. Usually, a variety of sources are reviewed and the results are synthesized into a series of assumptions regarding future travel demand. Applicants are required to develop and validate travel assumptions. These assumptions are then proposed to DDOT during the scoping process.

It is expected that all assumptions used for the analysis are documented, justified, based on accepted industry best practices and locally-originated (where available), have contextually relevant data sources, and agreed to by DDOT in the scoping process. In some instances, DDOT may provide technical direction on how to perform a certain type of analysis in the appendices or in a supplemental document outside of these Guidelines. Whether specific direction is provided or not, DDOT reviews all assumptions, potentially suggests refinement, and provides approval to the Applicant for their use.

2.1 Mode Split

Each trip a person makes is made by a certain means of travel, such as vehicle, bicycle, walking, and transit. This means of travel is referred to as a “mode” of transportation. A variety of elements impact the mode of travel, including density of development, diversity of land uses, distance from origin or destination, design of the public realm, proximity to transit options, and availability and cost of vehicle parking.

Mode split assumptions used in the analysis should be informed by a variety of sources including the most recent *Census Transportation Planning Products (CTPP)*, *2017 National Household Travel Survey*, *2005 WMATA Development-Related Ridership Survey*, *2016 Transportation Planning Board (TPB) Commuter Connections State of the Commute Survey Report*, or other recent planning studies or CTRs in the area. The sources of data noted above should be used as guides only. In general, mode split assumptions should differ by land use but should not differ by study period, except with use of TripsDC which produces different mode splits by peak hour. Professional judgement should always be exercised and all assumptions chosen must ultimately be logical and defensible.

Depending on the site’s vehicle parking provision, the DDOT Case Manager may require the auto mode-share be revised upward to account for unanticipated induced vehicle trips attracted to the site. Conversely, the DDOT Case Manager may permit the Applicant to adjust the vehicle mode-share downward if a low parking ratio and sufficient TDM program are proposed since they may act as a natural constraint on the maximum number of vehicle trips attracted to the site.

2.2 Trip Generation

Trip generation refers to the number of persons added to the transportation network, regardless of mode, resulting from a development project. It is inclusive of trips utilizing the site land uses as well as trips utilizing parking facilities of the site that may be destined for an off-site land use. The trip generation

assumptions should be data-driven; consider academic research and relevant data sources; and be consistent with site design, programming, and the local transportation network. Specifically, trip generation should respond to the level and type of vehicle parking provided along with the site's proposed TDM program.

Proposed trip generation estimates must be provided by mode, type of trip, land use, and development phase. Modes include transit (rail and bus), bicycle, walk, and automobile. When applicable, the CTR should include motorcoach and loading trips. Existing site trips must be included in the trip generation table and based on actual counts, when possible, and not on estimated trip generation calculations. The trip generation table submitted during scoping and in the study must include trips for each mode during the weekday commuter AM and PM peaks, weekday daily total, Saturday mid-day peak, and other non-standard peaks, as necessary, and further broken down into entering, exiting, and total trips (see Table 4 below). For horizontal and vertical mixed-use developments containing three (3) or more distinct uses, include the temporal distribution of trips and parking demand throughout the day for the combined development program.

DDOT understands that as a development proposal moves from inception and scoping to site evaluation and approval by the decision body, the project and trip generation estimates may evolve. The Applicant must consult the DDOT Case Manager if the proposed development program, land uses, or density changes significantly. The agreed upon trip generation methodology must not be revised between scoping and study submission without DDOT concurrence. However, minor changes to trip generation estimates, without DDOT concurrence, based on a small increase or decrease in the number of units or square feet of development is acceptable.

2.2.1 Data Sources

National resources for estimating vehicle trip generation are generally focused on the suburban context and are often not appropriate for use without modification in the District. DDOT will accept local trip generation rates, rates of comparable urban areas, or national rates adjusted with the local context. It may be appropriate to use one or more of the following resources to determine reasonable trip generation assumptions:

- Most recent version of Institute Transportation Engineers (ITE) *Trip Generation Manual*;
- Forecasting tools such as the *MXD* tool (i.e., *TripsDC*);
- DDOT urban trip generation data;
- Trip counts from comparable sites using person-trip data collection methodology;
- Market studies or calculations based on anticipated site operations (preferred for smaller projects or atypical uses);
- Other peer-reviewed publications, such as *ITE Journal* or NCHRP reports, as available and appropriate; and
- Travel demand model-based methodology using jobs, housing, and socio-economic data (typically for the largest campus-like projects such as St. Elizabeths).

When using the *ITE Trip Generation Manual*, the Applicant must specify whether rates or equations have been used to calculate trips, with justification. Additionally, most developments should use the following land use categories because they either have a high R-squared or have a larger number of data points:

- Retail: Shopping Center (820)
- Office: General Office (710)
- Hotel: Hotel (310)
- Residential: Single Family Detached (210) or Multi-Family Housing (220-222)

Provide clear justification for using any category other than those specified above. Smaller neighborhood-oriented projects expecting a high walking mode share or unique travel behavior (e.g., pet grooming business, restaurant, boutique retail, day care) or land uses that do not easily fit with the *ITE Trip Generation Manual* category definitions (e.g., senior-related uses, memory care, assisted living facilities) should apply an alternate trip generation methodology such as conducting trip counts at sites with similar characteristics, review of market studies, or calculating trips based on site-specific operations and expected temporal distribution.

2.2.2 Person-Trip Methodology

DDOT’s multi-modal approach to site-level development is to view trip generation in terms of person-trips rather than vehicle-trips. Many times it will be necessary to use a suburban-oriented vehicle-based data source as a starting point (i.e., *ITE Trip Generation Manual*) when developing trip generation estimates. If using suburban-oriented vehicle-based data sources, which will have a nearly 100% auto mode-share, trips must be first converted into person trips using an automobile occupancy rate. Once the number of person trips have been determined, the agreed upon mode split is applied to determine the number of persons traveling to and from a site by each mode. The automobile occupancy rate is then applied one last time to determine the specific number of vehicles attracted to the site. Regardless of which trip generation data source and methodology are ultimately selected, trips should always be provided by mode in person trips.

The most recent automobile occupancy rates from the 2017 *National Household Travel Survey* are shown below in Table 3 with a detailed step-by-step trip generation calculation example in Table 4.

Table 3 | Average Vehicle Occupancy for Selected Trip Purposes

Trip Purpose				
To/From Work	Shopping	Other Family / Personal Errands *	Social / Recreation	All Other Purposes **
1.18 <i>(persons/veh)</i>	1.82 <i>(persons/veh)</i>	1.82 <i>(persons/veh)</i>	2.10 <i>(persons/veh)</i>	1.67 <i>(persons/veh)</i>
<p><u>Source:</u> 2017 <i>National Household Travel Survey</i>, Table 16</p> <p><u>Notes:</u></p> <p>* “Other Family/Personal Errands” includes trips such as to post office, dry cleaners, or library.</p> <p>** “All Others Purposes” includes trips to school, church, doctor, dentist, and work-related business trips.</p>				



Table 4 | Step-by-Step Multimodal Trip Generation

Step 1: Determine base vehicle trip generation for each land use using ITE <i>Trip Generation Manual</i>								
Land Use	ITE Code	Quantity	AM Peak Hour			PM Peak Hour		
			Enter	Exit	Total	Enter	Exit	Total
Multi-Family Housing	221	106	9 veh/hr 26%	27 veh/hr 74%	36 veh/hr 100%	29 veh/hr 61%	18 veh/hr 39%	47 veh/hr 100%
Note: If starting with person trips rather than vehicle trips from ITE <i>Trip Generation Manual</i> , skip to Step 3 and apply the assumed mode split to the total person trips generated.								
Step 2: Convert vehicle trips to person trips (multiply ITE vehicle trips by auto occupancy rate)								
Land Use	Auto Occupancy Rate <i>(from Table 3)</i>	AM Peak Hour			PM Peak Hour			
		Enter	Exit	Total	Enter	Exit	Total	
Multi-Family Housing	1.18 ppl/veh	11 ppl/hr	32 veh/hr	42 veh/hr	34 veh/hr	21 veh/hr	55 veh/hr	
Step 3: Determine person trips by mode (multiply total person trips by assumed mode split)								
Land Use	Mode	Share	AM Peak Hour			PM Peak Hour		
			Enter	Exit	Total	Enter	Exit	Total
Multi-Family Housing	Auto	40%	4 ppl/hr	13 ppl/hr	17 ppl/hr	14 ppl/hr	8 ppl/hr	22 ppl/hr
	Transit	40%	4 ppl/hr	13 ppl/hr	17 ppl/hr	14 ppl/hr	8 ppl/hr	22 ppl/hr
	Bike	10%	1 ppl/hr	3 ppl/hr	4 ppl/hr	3 ppl/hr	3 ppl/hr	6 ppl/hr
	Walk	10%	1 ppl/hr	3 ppl/hr	4 ppl/hr	3 ppl/hr	3 ppl/hr	6 ppl/hr
Step 4: Convert auto person trips back to vehicles per hour (divide auto person trips by occupancy rate)								
Land Use	Auto Occupancy Rate <i>(from Table 3)</i>	AM Peak Hour			PM Peak Hour			
		Enter	Exit	Total	Enter	Exit	Total	
Multi-Family Housing	1.18 ppl/veh	3 veh/hr	11 veh/hr	14 veh/hr	12 veh/hr	7 veh/hr	19 veh/hr	
Step 5: Trip generation summary by mode (for each land use)								
Land Use	Mode	AM Peak Hour			PM Peak Hour			
		Enter	Exit	Total	Enter	Exit	Total	
Multi-Family Housing	Auto	3 veh/hr	11 veh/hr	14 veh/hr	12 veh/hr	7 veh/hr	19 veh/hr	
	Transit	4 ppl/hr	13 ppl/hr	17 ppl/hr	14 ppl/hr	8 ppl/hr	22 ppl/hr	
	Bike	1 ppl/hr	3 ppl/hr	4 ppl/hr	3 ppl/hr	3 ppl/hr	6 ppl/hr	
	Walk	1 ppl/hr	3 ppl/hr	4 ppl/hr	3 ppl/hr	3 ppl/hr	6 ppl/hr	
Step 6: Combine Step 5 calculations for each land use into one summary table for the entire development. Also, table must include weekday daily total and Saturday mid-day peak hours for all uses.								

2.2.3 Trip Reductions

It may be appropriate to include reductions to vehicle travel demand depending on the proposed uses and context of the site location. If agreed upon with DDOT, note the type and level of the proposed reduction along with supporting documentation. Generally, the industry standard practice of applying an “internal capture” reduction for mixed-use developments is not used in the District because internal synergies

between uses are captured in the walk trips produced in the multi-modal trip generation estimates. Similarly, a TDM reduction is not specifically applied in trip generation estimates because this reduction is built into multi-modal trip generation methodology given much of the District's transit-oriented context. Pass-by rates in the District are minimal and should only apply to major retail-dominant destinations, grocery stores, and gas stations. An adjusted pass-by/diverted trips methodology should be developed if the proposed development is not located on a road classified as arterial or higher. This is to avoid the potential of taking a large pass-by/diverted trips reduction from a neighborhood street that does not carry much traffic.

Additional adjustments to the trip generation estimates may be made, as appropriate, if the number of vehicle parking spaces proposed is significantly lower or higher than expected for the context of the neighborhood. During the process of completing the study, it may be found that some of the initial trip generation assumptions are inappropriate, in particular as it relates to discovery of available off-site parking supply. If so, the Applicant should immediately consult with the DDOT Case Manager for potential revisions to the assumed trip generation. If necessary, trip generation rate adjustments may be required and the *Scoping Form* should be revised and reviewed again by the DDOT Case Manager.

Upon completion of the trip generation projections, the Applicant should evaluate how the proposed development's projected trip generation corresponds to District policy direction encouraging non-automotive trip generation and to the travel demand character of the surrounding area. Adherence to these policy goals is expected.

2.2.4 TripsDC Tool

DDOT's TripsDC webtool <https://tripsdc.org/> was developed based on a person-trip data collection effort at 55 residential buildings around the District, all of which contained a first floor retail component. The tool takes into account a site's parking provision, distance from transit, and several other factors when calculating the mode split. The data used to build TripsDC was collected locally which is more representative of the travel characteristics in the District and was locally calibrated and validated. More information regarding the underlying data and methodology can be found in the *TripsDC Handbook*.

DDOT requires this tool be used to develop trip generation estimates for residential-over-retail projects that meet all of the following parameters:

- Proposed development is not standalone residential (i.e., must have a retail component) and is not entirely affordable or micro-housing;
- Contains a neighborhood-oriented retail or grocery component (full-size brand name grocers are allowed) and is not considered "destination retail";
- Is located within ½ mile of a Metrorail station or ¼ mile from a Streetcar, Circulator, or Priority Corridor Network Metrobus Route (see Figures 2 and 3);
- Has a parking ratio between 0.3 and 0.7 spaces per unit;
- Has between 75 and 750 residential units; and

- The surrounding neighborhood is established without recent major changes to employment or street networks.

The Applicant and DDOT Case Manager should collaborate and exercise professional judgement when determining whether TripsDC will be utilized or if a unique situation arises necessitating a different methodology. In cases where a mixed-use development includes more than residential-over-retail components (i.e., also has office or hotel) then a more traditional trip generation methodology, such as utilizing the ITE *Trip Generation Manual*, may be appropriate. Ultimately, the DDOT Case Manager will make the final decision on which approach the Applicant should take.

3.0 Multi-Modal Network Evaluation

This section defines the analysis type, scale of the effort, and necessary performance metrics that must be evaluated to determine potential impacts to the District's multi-modal transportation network. This effort should be commensurate with the action and must be proposed as part of the scoping process. Only elements relevant to the proposed action should be included in the scope. Ultimately, the parameters of the analysis agreed to by both the Applicant and the DDOT Case Manager must be in accordance with agency standards and industry best practices and follow a multi-modal approach. The study area for each modal element (pedestrian, bicycle, transit, and vehicle) should encompass potential impacts to that mode. Though each modal study area is unique, it is expected that they will largely overlap.

3.1 Strategic Planning Elements

DDOT sets the vision for the District's transportation network, as well as the parameters defining how it should be accessed and altered by development projects. Land development projects should be designed in a manner consistent with this vision and DDOT's approach to access management. The CTR will address how the proposed action considers District planning goals and localized study recommendations.

Documents that reference these specific areas include:

- MoveDC and its relevant modal elements;
- Vision Zero Action Plan (most recent version);
- Capital Bikeshare Development Plan;
- Washington Metropolitan Area Transit Authority's Metrorail and Metrobus Plans;
- DDOT Livability Studies;
- Permanent System of Highways for the District of Columbia a.k.a. "DC Highway Plan" (often shown on official plats from the Office of the Surveyor);
- District of Columbia Comprehensive Plan;
- Office of Planning (OP) Small Area Plans; and
- DDOT Corridor Studies (i.e., DC Streetcar, Transit Development Plan, Streetscape Design Plans).

The Applicant should specifically note where the action and its potential impacts are consistent with these planning documents. Likewise, the Applicant should note where the action is not consistent and provide adequate justification.

3.2 Pedestrian Network

The District is committed to enhancing pedestrian safety and accessibility by ensuring consistent investment in pedestrian infrastructure by both the public and private sectors. DDOT expects new developments to serve the needs of all trips they generate, including pedestrian trips. Walking is expected to be an important mode of transportation for all developments as it advances DDOT's goal of supporting non-automotive travel.

The pedestrian study area will be defined commensurate with the land use(s) proposed and the nature of the travel demand it is anticipated to generate. At a minimum, it must extend ¼ mile beyond the site in

each direction and encompass critical walking routes to nearby transit stops, schools, community centers, parks, recreation centers, and other activity centers and major pedestrian generators. For land uses expected to attract large numbers of neighborhood residents such as grocery stores, a radial study area should be considered with sufficient accessible pedestrian connections to all such walkable destinations.

The CTR will evaluate the adequacy of the pedestrian network in the pedestrian study area and within the site for serving site-generated pedestrian trips. Qualitative evaluation of physical condition of the pedestrian experience within the study area should also be performed. Specifically, the assessment of the pedestrian network should include, at a minimum, a review of the following:

- Missing sidewalks, curb ramps, or other features necessary for pedestrian connectivity;
- Clear, accessible, and minimum pedestrian path widths (6 feet in residential areas, 8 feet in commercial areas, and 10 feet downtown);
- Sidewalk condition and slopes, including any deteriorating facilities, vaults, or potential safety issues;
- Crosswalk conditions including pavement marking and type (i.e., ladder or parallel lines) and presence of stop bar;
- ADA compliance at intersections and transit facilities including presence of accessible clear paths, curb ramps with detectable warning surface, and signals with audible pedestrian countdown;
- Assessment of physical barriers, such as grade separation, major roads, topography, etc., to potential destinations;
- Adequacy of pedestrian signal timings (at TIA study area intersections only);
- Appropriate pedestrian regulatory and warning signs; and
- Street lighting conditions.

Design criteria for the pedestrian realm are found in DEM Chapter 31, PROWAG, and the *Public Realm Design Manual*. DDOT expects the Applicant to upgrade and complete the pedestrian network in the immediate vicinity of the project site. If impacts to the roadway network are identified as part of the TIA, the Applicant should propose off-site pedestrian, bicycle, and transit upgrades as mitigation that further support non-auto travel, in lieu of capacity expanding roadway improvements.

3.3 Bicycle Network

The District is committed to improving bicycle safety and accessibility by ensuring consistent investment in bicycle infrastructure by both the public and private sectors. DDOT expects new developments to service the needs of all trips they generate, including bicycle trips. Bicycling is expected to be an important mode of transportation for all developments as it advances DDOT's goal of supporting non-automotive travel. Increasingly, the bicycle network is used by "new mobility" devices such as scooters, Segways, and e-bikes. With this growth in mobility, the bicycle network is in more demand than ever, and adding new bicycle components into development projects is part of the District's overall strategy to grow the network.

3.3.1 Review of Bicycle Facilities

The bicycle study area will follow similar direction as the pedestrian study area, but with a ½ mile radius from the site, and focus on transit connections and linkages to schools, other pedestrian generators and activity centers. The evaluation will also consider bicycle connectivity to facilities located outside of the immediate vicinity (i.e., off-road trails or cycle tracks).

Analysis of the existing and future conditions of the bicycle network will be quantitative and qualitative to determine if adequate bicycle and bikeshare facilities exist to meet the resulting demand. As noted previously, the CTR will show the proposed on-site bicycle accommodations, including a description of access to facilities for bicyclists, parking, and storage locations. Specifically, the assessment of the bicycle network should include, at a minimum, an evaluation of the following:

- Connections to proximate bicycle facilities such as cycle tracks, bicycle lanes, and trails;
- Connections to transit, schools, and major activity centers;
- Conflicts with access to the site or on-street loading movements;
- Gaps or insufficiencies in facilities in the bicycle study area;
- CaBi stations in the bicycle study area
- Assessment of CaBi utilization at most proximate station(s);
- For sites larger than one block, internal bicycle circulation and connectivity;
- Appropriate bicycle regulatory, warning, and wayfinding signs; and
- Street lighting conditions, where bicycle facilities are present.

Design criteria for bicycle facilities (trails and lanes) are found in the DEM Chapter 29 and ZR16 Subtitle C § 801.3 and 804 for bicycle parking. Review the MoveDC Plan and consult the DDOT Case Manager to determine which facilities are DDOT's highest priorities.

3.3.2 Level of Traffic Stress (LTS)

Level of Traffic Stress (LTS) measures the level of comfort a bicyclist feels when riding on a particular roadway segment. This level of comfort is most influenced by the number of vehicle travel lanes, speed of vehicle traffic, type of bicycle facility, and skill of user. The LTS analysis produces a score on a scale of 1 through 4, with 1 being the most comfortable for bicyclists of a wide range of skills and 4 representing the least comfortable and therefore only available to the most avid of cyclists. Typically, streets with lower speeds and bicycle lanes with physical separation from moving traffic (i.e., cycletrack or trail) tend to score a 1 or 2, while streets with no bicycle facilities or higher traffic speeds tend to score a 3 or 4. DDOT's goal is create a connected network of LTS 2 or better linking residential neighborhoods to downtown offices and activity centers throughout the District.

At the time of this writing, DDOT is beginning the process of updating the MoveDC Mobility Plan, which may change the methodology in the Bicycle Element from bicycle level of service (BLOS) to LTS. After the updated MoveDC plan has been released, DDOT will require all CTR to include a screenshot of the LTS map for the area surrounding the site. In the interim, depending on the location of the site and whether the

corridor is being considered by DDOT for bicycle facilities, the Applicant may be required to include an LTS analysis to aid DDOT's decision on the appropriate bicycle treatment.

3.3.3 Capital Bikeshare (CaBi)

The bicycle network analysis will include an evaluation of the adequacy of Capital Bikeshare (CaBi) service in the vicinity of the site. The Applicant should review the *Capital Bikeshare Development Plan*, a resource that was developed in 2015 and guides DDOT's expansion plans for the CaBi system. Data on the demand for CaBi stations within the study area can be obtained from the Capital Bikeshare Tracker website.

While there are stations in the CaBi system with 11 or 15 docks, DDOT's policy is that all new bikeshare stations have a minimum of 19 docks with 12 bicycles. CaBi stations should be installed in an easily accessible location within public space or on private property with an agreement. In limited circumstances, a station may be installed in the street if an adjacent bicycle lane is present. Installation of a new 19-dock station requires a space 50 feet in length by 6 feet in depth (see design guidance for CaBi stations in Appendix F).

If an existing CaBi station is located along the site frontage, the Applicant must accommodate it so that it can remain useable during construction. Additionally, the Applicant must assume the station will stay in place after the development has been constructed and should design it in their public space plans. If it is not physically possible to stay in its original location, DDOT expects the Applicant to demonstrate this hardship, propose a viable alternative location, and fund the station relocation.

DDOT may require the Applicant to install a 19-dock station or series of 4-plate expansions in the following situations:

- There is an impact to the CaBi network or insufficient capacity at a nearby station;
- There is a noticeable gap the system and an identified high priority location for installation;
- The TIA demonstrates an impact to the roadway network; or
- The site is significantly over-parked.

Installation of a proprietary bikeshare or bicycle rental system that is not compatible with CaBi is not an acceptable mitigation or TDM. The Applicant should identify early in the process if CaBi stations are required by ZR16 as mitigation for sites with excessive amounts of vehicle parking (i.e., more than double the ZR16 requirement per Subtitle C § 707). As of May 2019, the cost of a 19-dock station is \$85,000 (including 12 bicycles and one (1) year of maintenance costs) and \$8,100 for an expansion plate of four (4) docks with two (2) bicycles. Relocation of an existing station costs \$3,200. Note that these prices typically increase every year. Contact DDOT CaBi staff or the DDOT Case Manager for the most current pricing.

3.4 Transit Network

DDOT and the Washington Metropolitan Area Transit Authority (WMATA) have partnered to provide extensive public transit service in the District of Columbia. DDOT's goal is to leverage this investment to increase the share of non-auto travel so that economic development opportunities increase with minimal infrastructure investment.

Transit service is evaluated in the CTR when the proposed action is anticipated to increase travel demand by rail or bus modes. The purpose of the analysis is to determine the quality and adequacy of transit service in the vicinity of the site. Easy access to a high-quality service is important as transit systems work hand-in-hand with other Transportation Demand Management (TDM) measures to support increased usage of non-auto modes and a reduction in personal automobile ownership and usage. Conversely, it is critical that developments be well-designed, well-connected, high-density, and mixed-use when proposed in the vicinity of Metrorail, Streetcar, Circulator, Transitway, and WMATA bus service, to boost ridership and support expanded services in the future.

3.4.1 Transit Analysis

When determining the transit study area, the context of the neighborhood, type of proposed uses, and distance to transit services should be considered. Generally, people making work-based trips via Metrorail are willing to walk further distances to access transit and not willing to walk as far for bus service. As such, Metrorail stations within one (1) mile of the site and other transit facilities within ½ mile of a site will be included in the study area.

Evaluation measures will focus on the sufficiency of transit to accommodate the transit needs generated by the proposed action. For small actions, a qualitative evaluation is appropriate, but large actions necessitate a robust quantitative approach. The evaluation should assess:

- Peak, off peak, and weekend headways and span of service for all routes with stops in the transit study area;
- Identify overlapping routes that may collectively offer more frequent service;
- Accessibility to major generators by transit;
- Existing bus and rail capacity for routes within the study area and a comparison to the action's number of new transit trips;
- Existing bus and rail daily ridership for adjacent routes for weekday and weekend days;
- General condition of all existing transit stops, wayfinding, benches, and transit service information in the study area including ADA compliance;
- Presence of and demand for installation of bus shelters; and
- The site plan's accommodation of and proposal for transit service, including any changes to bus stops or other transit infrastructure necessary due to development.

3.4.2 Bus Stops and Shelters

All existing bus stops and shelters along the site frontage must be accommodated during construction, upgraded to compliance with ADA, and assumed to be returned to their original locations after construction, and designed into the public space plans. If a bus stop or shelter has to be moved due to physical challenges in the original location, the Applicant must demonstrate this hardship and work with DDOT and WMATA to find an alternate location. The Applicant must fund the bus stop relocation, including shelter installation, electrification of shelter, installation of signage, and construction of a concrete bus pad.



Guidance on the design of bus facilities can be found in DEM Chapter 34, the 2009 *WMATA Guidelines for the Design and Placement of Transit Stops*, and 2008 *WMATA Station Site and Access Planning Manual*. WMATA will make the final decision on whether a bus stop should be upgraded to include a shelter. Typically, a shelter is required to be installed when a bus stop exceeds 100 riders per day.

3.5 Curbside Management

Curbside space is a limited resource with multiple competing demands placed upon it. This space on the street is commonly utilized for vehicle parking in the District. However, in more densely populated or in commercial areas, this space tends to serve a diverse set of uses. It is DDOT's mission to ensure safe and equitable curbside access for people and goods.

3.5.1 Curbside Analysis

The CTR will contain graphics showing the existing and proposed future allocation of all curbside uses for a two-block radius of the site, along with the net change in the number of on-street spaces, time of day restrictions, and other restrictions. The proposal must be consistent with District regulations and DDOT standards, policies, and practices as described in the DCMR, DEM, and other agency guiding documents. Proposed curbside management elements should be informed by demand assessments performed as part of the analysis, as deemed necessary by DDOT.

Curbside uses to be identified include but are not limited to metered parking, rush hour restricted parking, Residential Permit Parking (RPP), no parking zones, motorcoach parking, bus stops, pick-up/drop-off (PUD) zones, hotel valet, and other flexible uses such as parklets, CaBi stations, or on-street bicycle parking corrals.

The preliminary curbside management plan provided in the CTR will not be approved by DDOT during the zoning process. Depending on the proposed changes to curbside uses adjacent to a development, DDOT will provide initial feedback on whether the proposal is appropriate given the surrounding neighborhood context and consistent with agency policy. The Applicant will be required to submit a more detailed signage and marking plan via TOPS during the public space permitting process. That application will be reviewed and approved by DDOT's Parking and Ground Transportation Division (PGTD) and Transportation Operations and Safety Division (TOSD). DDOT expects the Applicant to fund the installation of all new signage for curbside restrictions, as well as multi-space meters on blocks when meters are required.

The Applicant should assume that curbside uses will reset with redevelopment of a property or a major change in land use. As such, DDOT expects curbside policies and time restrictions will be re-evaluated and updated as a block redevelops. When considering future curbside uses, keep in mind that DDOT prefers a lane of vehicle parking on each side of the street, when bicycle lanes are not present or planned, in order to reduce vehicle speeds and provide an additional buffer between vehicles and pedestrians. DDOT typically anticipates residential parking restrictions in rowhouse and single-family home neighborhoods and metered spaces in high density residential neighborhoods and areas with commercial activity or other uses conducive to high-turnover of on-street parking spaces.

DDOT will consider “no parking” entrance zones, commercial loading zones, and other types of valet or pick-up/drop-off (PU DO) zones, on a case-by-case basis. For larger developments with significant pick-up and drop-off activity, the Applicant should consider working with ride-hailing services to set up a “geofence” within the ride hailing apps that pre-defines pick-up and drop-off locations. See Section 1.2.3 for further guidance on curbside loading.

3.5.2 Residential Permit Parking (RPP)

All residents living in single-family and rowhouse neighborhoods that have existing Residential Permit Parking (RPP) signage along their block face are eligible to obtain an RPP pass from the Department of Motor Vehicles (DMV). The RPP pass allows for curbside parking of personal vehicles in designated zones. RPP zone numbers correspond to the Ward the street is located in (there are a handful of exceptions like after Ward boundaries are redrawn). RPP districts usually offer 2-hour parking for non-residents during the day. Resident Only Parking (ROP) districts are restricted to only holders of RPP passes during certain times with no exceptions for other types of users.

DDOT does not approve new RPP districts as part of the development review process. If the Applicant is in negotiations with a neighborhood regarding the creation of new RPP blocks, the neighborhood should be directed to have the ANC submit a resolution to PGTD requesting DDOT consider allowing the new RPP block faces. Further information can be provided by the DDOT Case Manager.

DDOT also does not enforce covenants proposed by the developer to opt-out of the RPP program. The only way DDOT can exclude a particular address from the RPP program is to exclude the entire block face. If a block face with RPP or ROP restrictions redevelops with commercial or multi-family buildings, DDOT expects that meters will be installed and residential restrictions removed. Residents of the neighborhood or ANC must then re-petition DDOT if they would like to re-establish previous RPP and ROP zones.

3.5.3 On-Street Parking Occupancy Study

An evaluation of on-street parking occupancy is required by DDOT when an Applicant is requesting relief from five (5) or more ZR16-required on-site vehicle parking spaces. This assessment may also be required as part of other zoning or permitting cases if DDOT has concerns about site-generated vehicles parking in adjacent residential neighborhoods. The study area for a parking occupancy study is two (2) blocks in each direction from the site, consistent with a reasonable expected walking distance from a parked vehicle. The analysis should include the following information:

- Count of all valid curbside parking spaces within the study area by block face, hour, and restriction type (such as meter, RPP, etc.);
- Note off-street public parking facilities in the study area and the amount of available spaces;
- Note illegal parking in high-demand areas to ensure accurate demand estimates;
- Identify the availability of curbside parking spaces in terms of occupancy percentage and the total number of available spaces when street cleaning or another event limiting street parking does not occur; and

- Assess utilization of public off-street parking facilities and their availability if parking is expected to occur at such facility.

Vehicle parking occupancy counts should be collected hourly during periods of peak demand. These are typically the weekday evening period (6:00 PM – 10:00 PM) for residential developments, the weekday morning period (7:00 AM – 9:00 AM) if site is within ¼ mile of a Metrorail station, and weekend peak periods if a retail or restaurant component is proposed.

Based on the results of the parking occupancy study, the CTR will provide an evaluation of curbside parking restrictions and, where available, other public parking facilities to accommodate any potential excess vehicle parking demand generated by a project. If there is an observed shortage of on-street vehicle parking to meet the current or future needs, possible mitigation options include implementing a robust TDM Plan and changing curbside regulations for a block. DDOT generally does not support increasing on-site vehicle parking as it increases the likelihood of traffic congestion on the roadway network.

3.6 Safety Analysis

DDOT requires the Applicant conduct a qualitative safety analysis for all modes to demonstrate the site will not create new or exacerbate existing safety issues. An evaluation of safety conditions for pedestrians, bicycles, and drivers at intersections that may be impacted by a land development proposal is a critical component of DDOT's Vision Zero strategy.

As part of all CTRs for land development projects, the study will note whether any study intersections have been identified by DDOT as high crash locations, include a review of any safety studies that have been conducted by DDOT through the Vision Zero program or Highway Safety Improvements Program (HSIP), and provide a review of the latest edition of DDOT's Vision Zero Action Plan in the vicinity of the site. At a minimum, an evaluation of sight triangles and sight distances must be provided for all site driveways, new intersections, and intersections with proposed traffic signals in accordance with DEM 30.5.1, DEM 32.12, and the latest version of the American Association of State and Highway Transportation Officials' (AASHTO) "Green Book." No permanent object greater than 24-inches in height is permitted to encroach the line of sight of any part of the sight distance triangle. These items include but are not limited to berms, buildings, vehicles parked on private property, cut slopes, hedges, bushes, utility cabinets, and tall plantings. Street trees in public space and vehicles parked along the curb are the only exceptions.

In addition, the Applicant will show where any of the following site features exist that result in decreased safety, both as an existing site condition and as a proposed condition: roadway geometry, curb radii, and excessive grades.

3.6.1 Other Types of Safety Analyses

Depending on the location and specifics of the proposed project, DDOT may also require one or more additional types of safety analyses on a case-by-case basis. These could include a three-year collision study, gap study, spot speed study, travel time and delay study, parking study, geometric review, traffic control device study, and traffic calming analysis. These are all discussed in greater detail in DEM 38.3.7.

3.7 Motorcoaches

Motorcoach accommodation is not a requirement of zoning but is often needed for facilities such as hotels, museums, event venues, or other tourist-oriented uses. For land uses requesting an on-street motorcoach pick-up and drop-off area, DDOT requires an evaluation of demand for the facilities.

Provision of motorcoach facilities and shuttles proposed in public space are subject to a DDOT occupancy permit, per DCMR 24-3306, which can be filed through TOPS. Applications for on-street motorcoach pick-up and drop-off areas will be reviewed for conformance with District traffic safety requirements, transportation network policies, and streetscape design elements. An evaluation of impacts on pedestrian and vehicular traffic, bus service schedule, peak hour concentration, anticipated traffic conditions, the number of passengers expected to board or disembark at any given time, the anticipated impact on nearby public transit systems, and any other effect on the proposed operations of the existing transportation network must be provided. The study will include the following information:

- Show the existing and proposed parking locations;
- Provide an estimate of the volume and frequency of motorcoach vehicle activity;
- Provide information regarding on- and off- site load and unloading;
- Show potential routes to and from designated truck routes;
- Demonstrate impacts to public space (outside of the curb), if any; and
- Show the net change and loss to other curbside uses.

While a review of loading facilities on private space is not approved by DDOT, loading access is a major element reviewed as part of the public space permitting process to ensure that queuing does not occur in the adjacent public space or in the roadway. If on-street motorcoach parking is proposed, a plan for installation of signage and meters is required, at the Applicant's expense, subject to approval by DDOT.

4.0 Traffic Impact Analysis (TIA)

DDOT requires all land development proposals that are expected to generate 25 or more vehicle trips in the peak direction (i.e., highest of inbound or outbound during any study period) after mode split has been applied and without any reductions taken, undergo a Traffic Impact Analysis (TIA). The TIA functions the roadway network evaluation component of the broader multi-modal CTR.

DDOT also requires a TIA for projects expected to modify roadway capacity or operations. This applies to infrastructure projects that may generate a transportation-related impact, including streetscape projects, roadway diets, new roadway construction, and other proposed roadway design or operational changes. The format and organization of the TIA should follow the guidance in DEM 38.4. The scope of a TIA is outlined in the following sections.

4.1 TIA Study Area

The TIA study area must include all intersections that may reasonably be impacted by the proposed action. This would include arterials, collectors, and local streets providing access to the site, as well as nearby critical intersections and signalized intersections where added site traffic may affect operations. At a minimum, the study area will include intersections where site impacts are most likely to occur, including:

- All site access points;
- All internal roads;
- Nearest signalized and unsignalized intersections along the roadway where site is located;
- Major signalized and unsignalized intersections within study area, with a minimum of one (1) signalized intersection in each direction;
- Additional signalized intersections along the corridor in a coordinated system;
- Intersections along adjacent arterials or major collectors expected to realize large numbers of new through trips or moderate number of turn movements;
- All major turning points along anticipated travel routes for site-generated traffic;
- All intersections as part of clustered signal; and
- Intersections where traffic resulting from the action may necessitate a change in control, from 2-way to all-way stop controlled or from unsignalized to signalized.

DDOT acknowledges that not all affected intersections will be included in the study area and there will be intersections outside of the study area which realize new trips. However, DDOT expects minimal to no increase in delay outside the study area as a result of the proposed action.

In some situations it may be appropriate to exclude intersections from mitigation evaluation for the following reasons:

- Intersections with well-known existing or expected poor conditions where traffic resulting from the action is a small percentage of future traffic (i.e., South Capitol Street and I Street SE/SW); and

- Intersections which are proposed for relatively near-term improvements or currently undergoing major changes to the transportation network (i.e., lanes under construction along Maine Avenue SW prior to the opening of the DC Wharf).

The DDOT Case Manager will make the final decision on whether to include or exclude an intersection. If an intersection is excluded from the mitigation evaluation, it still may need to be counted and included in the Synchro network for the broader study area. Additional guidance on the selection of study intersections is provided in DEM 38.3.2.

4.1.1 Pre-Approval of Study Intersections

An Applicant may request the DDOT Case Manager expedite approval of study intersections prior to approval of the remainder of the *Scoping Form* in order to collect traffic counts during an eligible time period (i.e., prior to a major holiday or schools going into summer recess). In this situation, the Applicant should provide the DDOT Case Manager a list of proposed intersections, locations of existing signalized intersections, the proposed percentage distribution, and proposed trip generation estimates.

4.2 TIA Data Collection

The basic element of data collection is the Turning Movement Count (TMC). TMCs are required for all vehicles, bicycles, pedestrians, and trucks at all intersections of the TIA study area. Counts should be collected in 15 minute increments during the periods of 6:30 – 9:30 AM and 4:00 – 7:00 PM on a typical Tuesday, Wednesday, or Thursday when Congress and public schools are in session, the Federal government is not in a shutdown, weather is not a factor, and during non-holiday weeks. Additional analysis periods may be required by DDOT based on the project location and proposed uses. This includes Saturday peak periods for developments with significant retail uses (typically, 11:00 AM to 2:00 PM), Sunday peak periods for projects including or adjacent to church uses, and weekday evening game-day peak periods for projects adjacent to major sporting facilities. If the site is currently in use, the Applicant must count all existing driveways and report the TMC data as existing site trips in the trip generation summary table.

Previously collected TMCs may be used if they are less than two (2) years old at the time of CTR submission. If a major change to the transportation network or adjacent land uses has recently occurred then use of previous counts should be avoided and new counts collected. If traffic counts over one (1) year old are used, a growth rate should be applied for that period of time to create the present-year Existing Conditions scenario. In situations where a land development case takes a significant amount of time to work through the zoning review process, DDOT will request TMCs be refreshed when the counts have surpassed three (3) years old from date of collection.

A data collection plan commensurate with the performance measures and study areas must be proposed and include the type of data to be collected, the locations where it will be collected, and the length of time it will be collected. Additional data collection, not related to TMCs, is often required to support various performance measures. This data may be quantitative or qualitative. The data collection method proposed in the *Scoping Form* should connect the data to the relevant performance measures. Some of the relevant

potential data types include corridor travel time runs and 24-hr tube counts. In locations where a traffic signal is proposed or may be required by DDOT, the Applicant should collect a minimum of 14-hours of traffic data in order to conduct the 8-hour volume signal warrant analysis.

4.3 TIA Study Scenarios

Robust analysis will be provided on a set of scenarios comparing build and no-build options in the near- and long-term. Such analysis helps pinpoint an action's impact on the transportation network compared to a no-build scenario. The Applicant must propose an anticipated build-out year for each phase and the entire project. For most smaller or medium size projects, the build-out year will typically be two (2) or three (3) years into the future. For larger projects, it could be as many as five (5) years or broken into several phases.

The TIA must include the following scenarios:

- Existing Conditions;
- Background Conditions (No-Build);
- Total Future Conditions (with Development);
- Total Future Conditions (with Development and Mitigation);
- Additional Scenarios for Each Phase, as necessary;
- Total Future Conditions +5 Years, as required; and
- Long Range +20 Years, as required.

When completing the TIA, travel forecasts should be made for each scenario to determine the impacts from site-generated trips. All forecasts must consider relevant elements of the travel assumptions, in particular trip generation and growth in travel demand along with any programmed transportation improvements. Existing and future traffic volumes should be shown in graphic form.

If the proposed development will be constructed in phases, each future Background (No Build) scenario should not include site-generated traffic from earlier phases so that the cumulative impacts of each phase, rather than the incremental impacts, can be assessed. Ultimately, mitigations will be expected for the action as a whole. These expected mitigations will be allotted to each development phase as appropriate. Additional mitigations may be necessary for interim conditions, where larger scale developments are constructed in phases. When mitigations for adverse travel conditions are proposed, additional travel analysis should be provided to demonstrate the ability of mitigations to remedy potential impacts.

Additionally, Applicants seeking flexibility in the development program may be required to separately analyze each of the development proposals under consideration. Alternatively, DDOT may determine that the most impactful development scenario be analyzed to establish the worst case scenario.

4.3.1 Long Range Planning Scenarios

The +5 years and +20 years scenarios are usually only required for larger developments or if major nearby changes to transportation network in the future are anticipated. These scenarios are generally considered to be "planning scenarios" intended only to inform DDOT and typically mitigation by the Applicant is not required based on their results. If the +20 years scenario is required, consideration should be given to

syncing with the current Metropolitan Washington Council of Governments (MWCOC) long range forecast year, which may be slightly shorter or longer than 20 years.

4.4 TIA Methodology

The TIA will conduct roadway capacity and queueing analyses for each study period and development scenario using the Highway Capacity Manual (HCM) methodology in accordance with the requirements of DEM 38.3. The results of these analyses will be compared against DDOT's Significant Impact Policy and determine appropriate mitigations, as necessary, consistent with DDOT's approach to mitigation, which are discussed in Mitigations (Section 5.0).

4.4.1 Roadway Capacity Analysis

DDOT aims to provide a safe and efficient roadway network that provides for the timely movement of people, goods, and services, without sacrificing bicycle or pedestrian safety. As part of the evaluation of travel demand generated by the site, DDOT requires analysis of traffic conditions for the agreed upon study intersections for the current year and after the facility opens both with and without the site development or proposed transportation network changes.

Level of Service (LOS), Volume-to-Capacity (V/C), and queue lengths should be determined using Synchro 9 or newer or a comparable software. LOS must be reported by approach and for the overall intersection while V/C ratios are to be reported by lane group/movement. The average (50th percentile) and 95th percentile queue lengths will be reported by lane group/movement.

SimTraffic (10 simulations averaged) or comparable software should be used in situations where a queueing issue was observed in the initial analysis results and a more fine-grain analysis is needed to further determine the appropriate solution (i.e., extend a left-turn lane or determine appropriate amount of green time for an approach). Additional guidance on the capacity and queueing analyses can be found in DEM 38.3.5.1 and 38.3.5.2.

See Appendix H for standardized DDOT-approved Synchro and SimTraffic settings. Signal timing sheets for each signalized intersection can be obtained by contacting DDOT's Traffic Engineering and Signals Division (TESD) or the DDOT Case Manager. The signal timings used for Existing Conditions should be consistently used throughout all study scenarios (except for the "with Mitigation" analysis) to allow for an appropriate comparison between results from each scenario. LOS and delay thresholds are shown in Table 5 below.

Table 5 | LOS Based on Delay at Intersections

LOS	Signalized Intersection	Unsignalized Intersection
A	≤ 10 sec	≤ 10 sec
B	> 10-20 sec	> 10-15 sec
C	> 20-35 sec	> 15-25 sec
D	> 35-55 sec	> 25-35 sec
E	> 55-80 sec	> 35-50 sec
F	> 80 sec	> 50 sec

Source: DDOT DEM Table 38-1

4.4.2 Merge/Diverge/Weave Analysis

For study intersections that include ramp segments, a merge/diverge/weave analysis must be performed according to a DDOT approved HCM methodology for the segment of freeway connecting to the ramp. Typically, this means utilizing the Highway Capacity Software (HCS) to evaluate the ramp segment LOS (i.e., density of vehicles per lane per mile). Additional guidance on requirements for a merge/diverge/weave analysis can be found in DEM 38.3.5.3. LOS thresholds for ramp segments are shown below in Table 6 and Table 7.

Table 6 | LOS for Merge/Diverge Segments

LOS	Density (passenger cars per mile per lane)	Comments
A	≤ 10	Unrestricted operations
B	> 10 to 20	Merging and diverging maneuvers noticeable to drivers
C	> 20 to 28	Influence area speeds begin to decline
D	> 28 to 35	Influence area turbulence becomes intrusive
E	> 35	Turbulence felt by virtually all drivers
F	Demand exceeds capacity	Ramp and roadway queues form

Source: DDOT DEM Table 38-2

Table 7 | LOS for Weave Segments

LOS	Density (passenger cars per mile per lane)	
	Freeway Weave Segments	Weave Segments on Multilane Highways or Roadways
A	0 to 10	0 to 12
B	> 10 to 20	> 12 to 24
C	> 20 to 28	> 24 to 32
D	> 28 to 35	> 32 to 36
E	> 35	> 36
F	Demand exceeds capacity	

Source: DDOT DEM Table 38-3

4.4.3 Roundabouts

SIDRA or other comparable software should be used to conduct a capacity analysis at intersections controlled by a roundabout. However, it is noted that most of the traffic circles in the District do not qualify as a “roundabout” because the intersections are too large, complicated, not self-regulated, and are often signalized. As such, these should instead be evaluated as traditional intersections for the purpose of the TIA.

4.5 Transportation Network Improvements

The TIA will account for approved and funded transportation projects within the study area that are expected to be implemented prior to the development’s build-out year. Other planned or proffered projects that may affect the site or travel patterns of an action may also be considered in the analysis.

The Applicant should review the following documents to determine potential future improvements to the District’s transportation network, including DDOT and Washington Metropolitan Area Transit Authority (WMATA) projects:

- The District’s *State Transportation Improvements Program (STIP)* submitted as part of the District’s contribution to TPB’s current *Transportation Improvement Program (TIP)*, which includes all programmed projects over a six (6) year time horizon;
- Other known DDOT projects that fall outside of the STIP and TIP (e.g., traffic signals, bike lanes, turn lanes, pedestrian facilities, restripings, curbside changes, etc.);
- The TPB’s current *Constrained Long-Range Transportation Plan (CLRP)*, which includes all planned projects with funding sources reasonably expected to be available over a 20-25 year horizon by DDOT, WMATA, and neighboring jurisdictions; and
- Aspirational planning efforts such as MoveDC projects, unfunded WMATA bus line improvements, and the Transit Development Plan (i.e., Circulator and Streetcar).

Final decision for inclusion of background transportation projects in the analysis will be made by the DDOT Case Manager.

4.6 Local and Regional Traffic Growth

The TIA will account for travel growth due to new and recently approved nearby developments, as well as growth due to changes in regional population and employment. Regional growth results from population and employment changes outside general study area while local growth, otherwise known as background development, is growth expected in the immediate vicinity due to recently approved or constructed developments. This section defines appropriate background development and regional growth assumptions that will inform the travel forecast performed in the analysis.

4.6.1 Local Growth / Background Development

The Applicant will propose a set of background developments to be included in the analysis that have been approved and are anticipated to be constructed and opened prior to the build-out year or have recently come online since traffic counts were collected. These background projects include all known matter-of-right and zoning-approved developments within the study area and any projects outside of the study area in which site-generated traffic is projected to be distributed through the selected study intersections. The Applicant will provide a map of all relevant background developments to be included.

One or more of the following resources should be consulted to determine which developments to include:

- Previous zoning and permitting cases;
- Washington DC Economic Partnership pipeline;
- Office of Planning (OP) Case Manager;
- Local Business Improvement District (BID); and
- Community Improvement District (CID).

The DDOT Case Manager will approve the list of nearby projects to be included in the analysis of future local travel demand.

4.6.2 Regional Growth

The analysis will account for growth or other changes to regional travel passing through the proposed study area. The growth rates ultimately agreed upon will be annually compounding and applied starting with the year the traffic counts were collected.

The forecast of growth must be data-driven and may utilize a methodology focused on one or more of the following:

- Extrapolation from historical daily traffic volumes;
- MWCOG's travel demand model forecast; or
- Previously conducted CTRs or other planning studies that considered trends in the area's circulation system through either a proportion or extrapolation estimate.

DDOT's preference is for regional traffic growth rates to be calculated by extrapolating 10 or more years of historical traffic data, when possible, as compared to relying solely on the outputs from the MWCOG model. The MWCOG model can be used as a starting point for determining where regional traffic originates and is destined, but caution should be exercised given several major shortcomings with the model. It is primarily intended for regional air quality analysis and is better suited for transportation projects that are regional in scale. For example, there are numerous streets throughout the District, and significantly more outside of the District, that are not included in the model. Additionally, the land use and socioeconomic assumptions (e.g., jobs, households, etc.) for each Traffic Analysis Zone (TAZ) are subject to regional "jobs-to-housing" rebalancing and not appropriately calibrated for site level development.

Since the District's arterials typically operate at capacity during the weekday commuter peak periods, maximum annual growth rates of 0.50% in the peak direction of traffic and 2.0% in the non-peak direction should be used regardless of methodology. Similarly, a minimum growth rate of 0.10% per year should be used in situations where available data shows there has been zero or negative growth in recent years. Regional growth rates may be revised upward or downward, in consultation with the DDOT Case Manager, depending on the level of traffic growth assumed from background developments or whether there have been changes to the transportation network that have resulted in significant changes to travel patterns (i.e., a road was closed for a year during construction of an adjacent development or a new roadway has been constructed and will divert future traffic).

The selected method and data sources must be appropriate to the scale of the action as well as the scale of area growth. It is acceptable to use relevant DDOT studies or previously conducted CTR studies in the area to augment the proposed methodology. Whatever the methodology, it should be fully documented with sufficient detail so the findings can be replicated. The DDOT Case Manager will approve the projected annual traffic growth rates or the acceptability of corollary analytical techniques to assess growth. The sources of data noted above should be used as guides only. Professional judgement should be exercised and the assumptions chosen must ultimately be logical and defensible.

4.7 Trip Distribution

The trip distribution demonstrates the anticipated origins and destinations of site-generated trips and assignment of trips to specific links on the transportation network. The Applicant will propose a percentage distribution of site-generated trips for the project. In order to ensure appropriate routing of trips throughout the study area and balance between site and garage driveways, the distribution percentages should be shown turning at intersections throughout the transportation network and agreed to by the DDOT Case Manager prior to commencing the study. A distribution graphic must be included for each land use and direction of site trips (i.e., inbound and outbound). Additionally, the study should document proposed pass-by distributions and the re-routing of existing or future vehicles based on any recent or anticipated changes to the transportation network.

There are a variety of methods that may be utilized depending on the size of the proposed development. The exploration of various methodologies is encouraged and the Applicant should document how the trip

distribution and assignment were calculated. The proposed methodology is subject to approval by the DDOT Case Manager.

For the vast majority of development projects, trips generated by the site may be distributed and assigned to the network based on one or more of the following:

- Previous major studies in the area;
- Planning analysis of the area;
- Market studies; or
- Economic and population census.

For large campus-scale developments (e.g., DC Wharf, St. Elizabeths, McMillan), a more analytic approach utilizing the regional travel demand model from MWCOG or other macro level travel data may be needed to inform the distribution and assignment process.

The Applicant must come to agreement with the DDOT Case Manager during scoping on the distribution and assignment of trips and provide robust documentation of these assumptions within the report. The agreed upon trip distribution methodology should not be revised between scoping and study submission without DDOT concurrence. Consult the DDOT Case Manager if any major changes are necessary. Given the District's urban context and grid network, the Applicant is permitted the flexibility to assume a portion of trips (up to 5% of site-generated trips through an intersection) may be re-routed from their original routes to an alternate route due to traffic congestion without additional approval by the DDOT Case Manager.

5.0 Mitigations

Applicants will propose mitigations for all action impacts that degrade modes to unacceptable performance levels or that generate travel demand in a way inconsistent with District goals based on the Significant Impact Policy, as outlined further below. All proposed mitigations must be evaluated as to their effectiveness in justifying proposed impacts and be consistent with DDOT's approach to mitigation. The mitigation measures must be assessed using the Methods of Evaluation (MOE) chosen for analysis of Existing conditions, by comparing the Future conditions with and without the proposed mitigations. A summary table of the Total Future analysis with the proposed mitigation measures, and for each phase of multi-phase developments, will be presented and a map of the analysis results also be prepared for each MOE.

5.1 DDOT's Significant Impact Policy

DDOT uses two primary criteria for determining if an action will have an impact on the transportation network: 1) presence of a significant supply of on-site vehicle parking; and 2) unacceptable increase of delay, Level of Service (LOS), Volume-to-Capacity (V/C), or vehicle queuing at study intersections. Each are further elaborated on below.

5.1.1 High Vehicle Parking Provision

As discussed in Vehicle Parking (Section 1.3), DDOT considers high parking ratios an "impact" because the availability of additional spaces encourages driving to and from the proposed development. It is DDOT's preference that the Applicant reduce the high parking supply to a level commensurate with the rates shown in Table 2. If that is not possible then the Applicant will be required to provide additional substantial elements in the TDM Plan (i.e., a CaBi station) and construct off-site pedestrian, bicycle, or transit improvements.

5.1.2 Capacity Impacts at Intersections

An action's "significant impact" to the roadway network is defined in DEM 38.3.5.1 through 38.3.5.4 as follows:

- When the proposed project causes any one or more intersection approaches to exceed the established LOS threshold. This threshold will be set for each project and will be defined as LOS "E" or "F" as requested by DDOT; or
- When the proposed project causes any one or more intersection approaches with an existing LOS "E" or "F" to experience an increase in vehicle delay of 5% or more; or
- When the proposed project causes the 95th percentile queue length to exceed the available capacity of an approach or turn lane; or
- When the proposed project causes the 95th percentile queue length to exceed the available capacity in the short- or long-term planning horizon to experience an increase in queue of 150 feet or more; or
- When the proposed project causes a movement or lane group's V/C ratio to increase above 1.0; or

- When the proposed project causes any deficient movement or lane group's V/C ratio to increase by 5 percent or more.

The Applicant must propose and demonstrate a workable solution for any capacity or queueing issues identified in the TIA. DDOT will review the mitigation proposal and decide whether to require the Applicant to implement those improvements. DDOT may instead require the Applicant provide a different non-auto network improvement, make a contribution to the Transportation Mitigation Fund, or implement a demand-reducing amenity (i.e., additional TDM or reduced parking). When determining the appropriate mitigation, DDOT will consider a combination of the improvement's effectiveness in shifting mode share from auto to non-auto modes and the cost of alternative mitigation.

5.1.3 Non-Automotive Network Impacts

Definitions for impacts to non-auto transportation networks and infrastructure are less quantitative than impacts to the roadway network. In general, any action is said to have an impact and requires mitigation if:

- It leads to overcrowding infrastructure such as sidewalks, bike lanes, or transit service and facilities. This pedestrian or bicycle congestion may be measured via HCM methodologies, other quantitative means (such as area of sidewalk per pedestrian, etc.), or shown via qualitative site and facility analysis; and
- There are any inadequate or missing pedestrian facilities, bicycle facilities, or CaBi stations in the vicinity of the site that are anticipated to be used by site-generated trips.

DDOT expects the Applicant will fill gaps in the non-automotive network and fix substandard non-automotive facilities, as identified in the CTR.

5.2 DDOT's Approach to Mitigation

DDOT's approach to mitigate vehicle trip impacts to the transportation network is to first establish optimal site design and operations to support efficient site circulation. When these efforts alone cannot properly mitigate an action's impact, reducing vehicle parking; implementing TDM measures; and making upgrades to the pedestrian, bicycle, and transit networks to encourage use of non-auto modes shall be proposed. Only when these options are exhausted will DDOT consider capacity-increasing changes to the roadway network because such changes often have detrimental impacts to non-auto travel and are often contrary to the District's multi-modal transportation goals.

In some instances, it may not be feasible to mitigate impacts to all modes. For example, established high-density areas typified by heavy vehicular traffic and constrained ROW will have few if any options for improving traffic operations. In these cases, the CTR must describe the challenges in mitigating impacts, with a particular focus on constrained ROW and negative secondary impacts on other modes. The Applicant shall instead explore and commit to other non-auto mitigations that have the potential to reduce demand for vehicular travel to the site. Performance monitoring may be appropriate in certain circumstances in order to ensure that a development's actual impacts do not exceed the impacts projected during zoning review and could require additional mitigation measures.

Mitigations are not to be confused with the “amenities” negotiated between the Applicant and ANC as part of a zoning action’s Community Benefits and Amenities Agreement (terminology of agreement name varies by case). Any change required to the transportation network by DDOT to reduce or minimize an action’s impacts is considered “mitigation,” not an “amenity,” and cannot be double-counted in the zoning process. The DDOT Case Manager will be available to provide feedback on the feasibility, appropriateness, and specific design of proposed transportation “amenities,” as needed.

All actions with proposed mitigation measures to be implemented over multiple phases will require the Applicant to commit to an implementation schedule by phase. For cases that do not have a BZA or Zoning Order to memorialize commitments (i.e. LTRs, map amendments, and other matter-of-right actions), DDOT will require the Applicant to provide a *Development and Transportation Improvements Phasing Plan*. This plan will tie the implementation of transportation improvements to individual buildings or blocks and will be enforced by DDOT during EISF review and public space permitting.

5.3 Transportation Demand Management (TDM)

Transportation Demand Management (TDM) is a set of strategies, programs, services, and physical elements that influence travel behavior by mode, frequency, time, route, or trip length in order to encourage use of non-automotive modes, encourage reductions in single occupancy vehicle usage and automobile ownership. In the District, this typically means implementing infrastructure or programs to maximize the use of mass transit, bicycle, and pedestrian facilities and reduce single occupancy vehicle trips during peak periods.

The MoveDC Mobility Plan has set a goal of 75% of all home-work trips be made by non-automotive modes. DDOT expects development projects to minimize their potential impact on the transportation network by reducing their automotive travel demand. This can be accomplished by implementing a robust TDM program in conjunction with minimizing the availability of vehicle parking and pricing parking appropriately.

All developments that are required to submit a CTR must propose and commit to implementing a TDM Plan. The specific elements within the TDM Plan vary depending on the land use, site context, proximity to transit, scale of the development, and other factors. Standard TDM Plans by land use are included in Appendix C. Applicants are encouraged to propose additional cutting-edge or creative TDM measures beyond what is included in the reference. TDM strategies should be categorized by land use and the targeted transportation user (i.e., school employee, resident, office worker, etc.). TDM plans should not include items typically provided in a Transportation Management Plan (TMP) such as parking strategies, traffic circulation strategies, pick-up/drop-off strategies, or roadway improvements.

DDOT will require additional elements be added to the Baseline and Enhanced TDM Plans, as necessary, depending on any identified impacts to the transportation network or if the proposed parking ratio is higher than DDOT expects for the neighborhood context (see Table 2, Figure 2, and Figure 3). These additional strategies could include new or expanded CaBi stations, CaBi memberships, bicycle parking spaces, carsharing spaces, upgraded transit shelters, improved wayfinding, or subsidized transit fares.

Smaller projects or other actions seeking narrow zoning relief where a CTR is not required may also be required to commit to a TDM Plan based on anticipated impacts to the transportation network. In cases where vehicle parking relief is being requested from the BZA, DDOT is required to review and approve at TDM Plan per ZR16 Subtitle C § 703.4. However, for rowhouses, single-family homes, and flats where relief from 1 or 2 spaces is requested, DDOT does not require TDM measures be implemented.

If a project currently has a TDM Plan in effect or is already implementing piecemeal TDM strategies, these should be documented in the *Scoping Form* and in the CTR. This situation most frequently occurs with Campus Plans, charter schools, and day cares that have not sought a zoning action in a number of years. If a TDM Plan is already in effect, DDOT considers zoning review for an increase in the maximum number of students and faculty or other change to the site to be an opportunity for refreshing, updating, and reevaluating the effectiveness of the current strategies.

Following zoning approval, DDOT's TDM and goDCgo program manager will reach out to the property owner and future building tenants to offer assistance on meeting the site's TDM commitments. This is a free service to the Applicant offered by DDOT. Additional TDM implementation resources are provided at the end of Appendix C.

It is strongly encouraged that the Applicant build a relationship with DDOT's TDM program, goDCgo, after the zoning review stage, as well as prior to and after the building has been constructed and occupied. GoDCgo offers numerous services to property owners to comply with proffered TDM Plans and implement effective TDM strategies.

5.3.1 Commuter Benefits Law

Office tenants with 20 or more employees are required by the District's Commuter Benefits law (also known as the Sustainable DC Act of 2014) to choose and implement one of three major TDM strategies (provide a shuttle service, directly subsidize transit rides, or enroll employees in pre-tax transit contribution program). It should be noted that these are not enforced as part of the zoning process, are implemented by future tenants (not the property owner), and subject to change by the Council of the District of Columbia. Therefore, this program may not be included in or credited toward the site's TDM Plan. However, each TDM Plan will include a requirement that the tenants' future Transportation Coordinators provide proof to goDCgo that the Commuter Benefits law is being fulfilled.

5.4 Performance Monitoring

The CTR provides a projection of a project's likely transportation impacts. However, in an urban environment that is rapidly developing and changing, the projections may not provide enough certainty to reveal an action's true future impacts, particularly for large scale developments. A Performance Monitoring Plan (PMP) provides the framework for increasing the level of certainty concerning expected impacts to future travel conditions. Most development proposals do not warrant a PMP because they are not anticipated to significantly impact the transportation network. As such, a PMP is generally only required for very large development projects (i.e., DC Wharf), university Campus Plans and other school-related projects expected to generate a high number of single occupancy vehicles.

A PMP establishes thresholds for new trips an action can generate, defines post-completion evaluation criteria and methodology, and establishes potential remediating measures. DDOT's goal is to customize the PMP to address the potential impacts identified and is not meant to be punitive or overburden developers with expensive future capital liabilities for potential infrastructure upgrades. Instead, remedies focus on cost-effective programmatic changes such as altering parking costs, additional TDM measures, or minor upgrades to DDOT facilities.

The Applicant is expected to coordinate with the DDOT Case Manager on the development of a customized PMP that addresses these needs. Specific elements of the PMP include establishing a trip cap, methods and metrics for data collection, timing of monitoring, basis for comparison, follow-up monitoring, monitoring sunset, and additional mitigation. Several PMP examples are including in Appendix D.

5.5 Non-Automotive Network Enhancements

As another option in the mitigation toolbox, the Applicant should look for opportunities to upgrade site-adjacent and off-site pedestrian, bicycle, and transit facilities prior to considering improvements that increase roadway capacity. The Applicant should focus particularly on improvements to facilities that link between the site and transit facilities, schools, parks, and other major activity centers.

5.5.1 Pedestrian Facilities

When determining appropriate pedestrian mitigations, special attention should be paid to facilities that promote pedestrian safety and advance DDOT's Vision Zero strategy. Examples include installing missing sidewalk segments, widening sidewalks, correcting non-ADA compliant curb ramps, removing right-turn slip lanes, refurbishing crosswalks and pedestrian signage, installing curb extensions to shorten wide pedestrian crossings, installing pedestrian signal heads, and planting new street trees. Improvements to the pedestrian network should be accessible for all users and encourage a reduction in speeds of vehicles which in turn reduces the likelihood of collision with a pedestrian or bicyclist as well as the severity of the crash. For larger projects, both internal and external pedestrian circulation should be considered.

5.5.2 Bicycle Facilities

For larger projects, providing protected or conventional bike lanes and space for, or contributing to, a multi-use trail may be appropriate during the development process. Typically, on-street bicycle facilities are not required unless a project is large enough to cover an entire block or more. Smaller projects adjacent to DDOT-planned bicycle lanes are expected to reserve space along the site frontage, as appropriate, to ensure the facility can be installed. However, an Applicant may be required as mitigation to upgrade facilities to a greater degree of cyclist protection where appropriate (i.e., converting conventional bicycle lanes to separated facilities by flipping the parking and bicycle lane). Additionally, an action's impact on the transportation network may necessitate developer-contributed CaBi station(s), expansion of existing CaBi station(s), and/or reservation of space on public or private property to accommodate a future station.

5.5.3 Transit Facilities

Improved access to and quality of bus stops and Metrorail stations should be considered for mitigation. Examples include coordinating with DDOT and WMATA on bus stop relocation to locations that are preferred for safety and operations, ensuring ADA-accessibility, electrification of bus shelters, and installation of real-time digital displays or new wayfinding signage. Suggested relocations of existing bus stops will be evaluated on their impact to transit service reliability; rider safety and accessibility; compliance with applicable laws, policies, standards, and approaches; and other relevant metrics. If it is determined by DDOT and WMATA that a stop is to be moved, the Applicant is expected to fully fund the relocation including the shelter, landing pad, bus pad, benches, signage, and shelter electrification.

When an action is anticipated to generate significant new transit trips or exceed existing transit capacity, additional transit services may be required. This could come in the form of shuttle service, improved bicycle/pedestrian connections to other transit facilities, or contributing to planned WMATA or District transit improvement projects. Capacity-increasing enhancements such as improved vertical and horizontal circulation and additional fare gates at rail stations may be appropriate.

See the 2009 WMATA *Guidelines for the Design and Placement of Bus Stops* for a hierarchy of mitigation improvements. Additional bus stop design guidance is provided in Chapter 34 of the DEM.

5.5.4 Private Shuttles

The Applicant may explore providing a private shuttle service linking the site to another site or an existing transit hub. This type of service can be an effective way to support DDOT's goals of reducing use of single-occupancy vehicles and supporting public transit ridership. However, DDOT's preference is for the Applicant to collaborate with local public agencies to improve existing transit service or potentially help fund the re-routing of buses to serve the site.

Private shuttles that pick-up or drop-off on any public street along the travel route will trigger the requirement for a public space *occupancy permit*. Any associated signage, shelters, or landing pads in the DDOT right-of-way will also require a public space *construction permit*. During public space permitting, DDOT will review the proposed travel routes, frequency of shuttles, hours of operation, and locations of the stations. Shuttle routes should not directly overlap with existing Metrorail, Metrobus, and Circulator routes. An agreement between the Applicant and WMATA is required in order to utilize Metrobus stops or Metrorail pick-up and drop-off areas.

5.6 Roadway Operational and Geometric Changes

Only after all reasonable mitigations related to site design, non-automotive facilities, and TDM strategies are evaluated will DDOT consider physical roadway improvements or changes to the operational character of the transportation network. Given the constrained ROW and the District's commitment to multimodal transportation, mitigations that facilitate vehicle travel often have negative consequences to other modes. Any geometric or operational changes will need to be further evaluated in the CTR. Examples of operational

changes include signal re-timing, implementing transit signal priority, installing turn restrictions, altering the capacity or direction of a street, and installing traffic calming devices.

All geometric improvements such as pavement markings, signs, adding through or turn lanes, curb extensions, traffic signals, and changes in medians, will be presented in scaled drawing, preferably on a current aerial map. Sufficient dimensions shall be shown to facilitate DDOT's review. ROW needs will also be identified on the plan, if necessary to implement the improvement(s).

5.6.1 Operational and Geometric Changes

If traffic operation changes on a street are proposed (i.e., closing, direction change, road diet, etc.), analysis and clear rationale should be provided to support the change. In addition to operational changes, restrictions to site access points at other intersections may be appropriate, including turning and time-of-day restrictions. Restrictions may need to be reinforced through design elements, such as internal signage, physical barriers, or channelization identified in the project impact assessment phase.

The DDOT Case Manager will review the proposed changes and determine if they are feasible, effective, and appropriate. The mitigations shall be designed in sufficient detail for DDOT to evaluate their potential effectiveness. Proposals for widening roads or installing turn lanes must be accompanied by a ROW analysis to determine if the available ROW is sufficient to accommodate the proposed mitigation, along with impacts to existing street trees and on-street parking. Preliminary engineering may be needed to determine the feasibility of proposed changes. If DDOT agrees to the geometric or physical changes based on the project impact assessment, the Applicant will coordinate with DDOT on final design during the public space permitting process.

5.6.2 Intersection Control

For all proposed signals to be constructed by the Applicant, a warrant analysis based on the Manual on Uniform Traffic Control Devices (MUTCD) and DEM 41.2 must be provided. If the proposed traffic control device is a traffic signal, High-intensity Activated crossWalk beacon (HAWK), or Rectangular Rapid Flash Beacon (RRFB) and is primarily driven by traffic conditions anticipated by the "Total Future" scenario, the Applicant will be required to provide a traffic control justification report in support of the recommendations. The justification report shall include future traffic volume analysis of the threshold necessary to reach the signal warrant thresholds. DDOT requires the Applicant to conduct all warrants in the MUTCD, including the eight-hour volume warrant, and summarize which are met in a single table. Any proposed traffic signals must be designed according to the standards outlined in DEM 41.5 and coordinated with TESD. It is noted that DDOT typically will not allow the installation of a traffic signal within 300 feet of another signal (DEM 41.5.2). However, exceptions may be made if the proposed signal can be integrated in as a cluster with an adjacent signal.

Signal re-timings and cycle length changes may be identified and proposed as mitigation in the TIA. DDOT operates many closely-spaced coordinated signals and as such, typically does not re-time isolated signals or an entire corridor in conjunction with a specific land development project. Additionally, it is unclear if or when the vehicle traffic will materialize as projected in the TIA. Instead, DDOT requires the Applicant to

explore ways to reduce automobile usage in lieu of a signal timing adjustment, which could include additional TDM strategies, non-automotive network improvements, or making a monetary contribution toward off-site transportation improvements. If signal changes beyond a timing adjustment are proposed, such as changes to signal phasing, cycle lengths, or introduction of a new signal, then queuing and capacity impacts along a relevant portion of the coordinated corridor should be included as part of the mitigation effort. Signal timing changes should be analyzed for delays to non-auto modes. DDOT may not support the proposal if it results in a negative impact to non-auto modes. Furthermore, changes to signals may necessitate additional signal hardware, software, and ADA accommodations to facilitate requested operational changes which would be implemented at the expense of the Applicant.

For all intersections where the Applicant is proposing a change in intersection control, such as converting an existing two-way stop control intersection to all-way stop control, an assessment of appropriate traffic control shall be performed. Applicant must follow the procedure outlined in the latest version of DDOT's forthcoming *Traffic Safety Assessments and Operating Procedures* which will be posted on the DDOT website. Additional guidance can be obtained from the DDOT Case Manager and TOSD staff.

5.6.3 Traffic Calming

DDOT understands that Applicants coordinate with the community regarding their development proposal and negotiate with the ANC on the *Community Benefits and Amenities Agreement* for some period of time prior to engaging with DDOT. Often, existing or feared commuter traffic on neighborhood streets (a.k.a. "cut-through traffic") is a top concern of the residents. In response, the community and ANC request the Applicant or DDOT pre-emptively install traffic calming devices in anticipation of the development. Before requesting a specific traffic calming device, DDOT prefers the Applicant and community engage with the DDOT Case Manager and TOSD staff to determine the specific problem to be solved. Once the problem has been identified, DDOT can determine the appropriate solution. More often than not, alteration to on-street parking restrictions, improved signage, and striping changes can address the community concern. Additionally, the Applicant and community should be aware that traffic calming measures are used to control vehicle speeds not volume.

If it is determined that a traffic calming device within the roadway, such as speed humps or mini-roundabouts, is feasible and appropriate under Future conditions, DDOT will require the negotiated traffic calming devices be funded and installed only after a follow-up study has been conducted at least 6 months after the development has opened or after a certain number of units or square footage has come online. This is to ensure that traffic calming measures are warranted and appropriate given the nature of the roadway and extent of resident safety concerns.

It is DDOT policy that traffic calming devices, such as speed humps and chicanes, will only be considered on local 2-lane streets. For 4- and 6- lane roads or 2-lane roads with a higher classification, only signage, striping changes, curb extensions, and improved enforcement will be considered. Traffic calming will not be considered for roads affected by temporary construction projects. More guidance on traffic calming design and procedures can be found in DEM Chapter 40.



The Applicant is encouraged to discuss any traffic calming proposals with and obtain feedback on the preliminary concepts from the DDOT Case Manager and staff from TOSD, TESD, and the Green Infrastructure Team, during the development review process. Formal approval of these types of devices will come from TOSD outside of the public space permitting process. Other traffic calming or tactical urbanism strategies that are permanent in nature and also serve DDOT’s Vision Zero strategy, such as curb extensions and removal of slip lanes, can be designed, reviewed, approved, and installed as part of the regular public space permitting process. These types of improvements should be shown on the public space design plans submitted to TOPS.

5.6.4 Transportation Mitigation Fund

DDOT has set up a transportation mitigation fund so that Applicants can make monetary contributions towards upgrades to the transportation network. There are a number of situations where this may be appropriate:

- Proffering a monetary contribution toward pedestrian, bicycle, and transit improvements in the vicinity of the site to offset identified impacts;
- Proffering a monetary contribution in lieu of installing a specifically identified improvement;
- Multiple developers contributing a portion to a single improvement (i.e., traffic signal); and
- An environmental constraint is preventing the developer from constructing a proffered improvement;

It has been DDOT’s experience that it is less expensive and quicker for the developer to construct an improvement rather than making a contribution and DDOT making the installation. If both DDOT and the Applicant agree to move forward with a monetary commitment, the proffered amount and intended use will need to be memorialized in a memorandum and accompany the payment to DDOT.

6.0 Looking Ahead to Future Editions

DDOT intends to update this document on a 12-18 month basis to incorporate the newest best practices that have been developed by DDOT or have emerged from the industry. There are a number of areas currently being explored by DDOT that were not ready to be included in the 2019 Edition. However, in the coming years, DDOT will continue to be heavily involved in industry efforts to conduct research and advance the state of the practice in the following areas and will incorporate them into future versions of this document as appropriate:

- Continue to search for new opportunities to implement the District’s Vision Zero goals and improve ADA accessibility for all users;
- Explore the use of the Vehicle Miles Traveled (VMT) metric at the site-level;
- Continue to research the implications of ride-hailing services on trip generation, automobile ownership, transit usage, curbside usage, and mode shift during commuter peaks and off-peaks;
- Explore the potential for splitting vehicular trip generation into trips by personal vehicles and trips by ride-hailing service;
- Continue to research the relationship between availability of vehicle parking, automobile-ownership, and vehicle trip generation;
- Explore the use of new metrics and development of methodologies for quantitatively evaluating non-automobile modes of travel;
- Quantify the impacts of individual and cumulative TDM strategies;
- Understand and respond to rapidly evolving urban freight and curbside management challenges;
- Research and adjust policies to prepare for and respond to changing demographics and the associated evolution of commuting patterns and preferences;
- Understand and measure the impacts of micro-mobility and other last-miles travel options;
- Understand differing transportation needs for affluent and affordable projects;
- Continue the integration of disparate databases and GIS layers to create useful tools for CTRs;
- Explore implementation of either development or transit impact fees;
- Establish best practices for deterring crime through site design;
- Explore new ways for DDOT to fix mistakes from the Interstate and Urban Renewal eras to re-establish the District’s grid network and break down barriers to historically segregated neighborhoods;
- Explore new ways to address other District and societal goals, where possible, such as creating environmentally sustainable infrastructure, supporting healthy lifestyles, increasing availability of affordable housing, improving access to jobs, and contributing to a reduction in overall carbon emissions; and
- Prepare for the arrival of autonomous vehicles and ensure this technology does not encourage additional single occupancy vehicle usage, longer vehicle trips, or undermine public transit.

If any public agencies, research organizations, or private entities are currently innovating in these areas or would like to collaborate on a future research effort, please contact aaron.zimmerman@dc.gov.



District Department of Transportation

Appendix A - CTR Scoping Form

District Department of Transportation (DDOT) Comprehensive Transportation Review (CTR) Scoping Form



The purpose of the Comprehensive Transportation Review (CTR) study is to evaluate potential impacts to the transportation network that can be expected to result from an approved action by the Zoning Commission (ZC), Board of Zoning Adjustment (BZA), Public Space Committee (PSC), a Federal or District agency, or an operational change to the transportation network. The Scoping Form accompanies the *Guidance for Comprehensive Transportation Review* and provides the Applicant an opportunity to propose a scope of work to evaluate the potential transportation impacts of the project.

Directions: The CTR Scoping Form contains study elements that an Applicant is expected to complete in order to determine the scope of the analysis. An Applicant should fill out this *Scoping Form* with a proposed scope of analysis commensurate with the requested action and submit to DDOT for review and concurrence. Accordingly, not all elements and figures identified in the *Scoping Form* are required for every action, and there may be situations where additional analyses and figures may be necessary. Once a completed Scoping Form is submitted, DDOT will provide feedback on the initial parameters of an appropriate analysis scope. DDOT’s turnaround times are four (4) weeks for CTRs with a Traffic Impact Analysis (TIA) and three (3) weeks for all other lower tier studies. After the *Scoping Form* has been finalized and agreed to by DDOT, the Applicant is required to expand upon the elements outlined in this Form within the study.

Scoping Information
Date(s) Scoping Form Submitted to DDOT:
DDOT Case Manager:
Date(s) Scoping Form Comments Returned to Applicant:
Date Scoping Form Finalized:

Project Overview	Proposed Development Program
Project Name:	Use(s)
Case Type & No. (ZC, BZA, PSC, etc.):	Residential (dwelling units):
ANC/SMD:	Retail (square feet):
Applicant/Developer Name:	Office (square feet):
Transportation Consultant and Contact Info:	Hotel (rooms):
Land Use Counsel and Contact Info:	Other:
Site Street Address:	# of Vehicle Parking Spaces:
Site Square & Block:	# of Carshare spaces:
Current Zoning and/or Overlay District:	# of Electric Vehicle Stations:
Estimated Date of Hearing:	# of Bicycle Parking Spaces (long- and short-term)
Small Area Plan (if applicable):	Long-term:
Livability Study (if applicable):	Short-term:
Within ½ Mile of Metrorail or ¼ mile of Streetcar/Circulator/Priority Bus?:	Loading Berths/Spaces:

A Word version of this Scoping Form can be provided by the DDOT Case Manager upon request.

Documents to be Submitted to DDOT: *Any action requiring a CTR or some other evaluation of on-site or off-site transportation facilities must submit one of the following documents to DDOT. It must be appropriately scoped for the specific action proposed and document all relevant site operations and transportation analyses.*

- CTR Study** (100 or person total person trips, or 25 or more peak hour vehicle trips in peak direction, or as deemed necessary by DDOT)
- Transportation Statement** (limited scope based on specifics of project or if Low Impact Development Exemption from CTR and TIA is requested)
- Standalone TIA** (project proposes a change to roadway capacity, operations, or directionality, has a site access challenge, or as deemed necessary by DDOT)
- Other, specify:** _____
- Include one (1) hard copy of final report, PDF of report w/appendices, traffic analysis files, and traffic counts in DDOT-required spreadsheet format (total size of all digital files under 15 MB, if possible)

Existing Site and Description of Action: *Describe the type(s) of regulatory approval(s) being requested and any background information on the project relevant to the requested action such as the existing uses, amount of vehicle parking, and other notable proposed changes on-site.*

Prior Related Action(s), Conditions, and Commitments: *Note any prior approvals by ZC, BZA, or PSC (Campus Master Plan, First Stage PUD, student/faculty cap, etc.) for the site and list all relevant conditions and proffers still in effect from the previous approval and status of completion. Attach a copy of the Decision section from the previous Zoning Order if still in effect.*

Section 1: SITE DESIGN

DDOT reviews the site plan to evaluate consistency with DDOT’s standards, policies, and approach to access as documented in the most recent Design and Engineering Manual (DEM). If the proposal for use of public space is found to be inconsistent with the agency approach, DDOT will note this regardless of its relevance to the action. It is DDOT’s position that issues regarding public space be addressed at the earliest possible opportunity to ensure the highest quality project design and to minimize project delays and the need to re-design a site in the future.

CATEGORY & GUIDELINES	CONSULTANT PROPOSAL	DDOT COMMENTS
<p>Site Access</p> <p>Show site access points for all modes. Include proposed curb cut locations, curb cuts to be closed, access controls (e.g., right-in/out, signalized), sight distances and sight triangles from access points and new intersections, driveway widths and spacing, on- and off-site parking locations, inter-parcel connections, public/private status of driveways, alleys, and streets, and whether easements, dedications, or closures are proposed.</p> <p><i>Access must be located off an adjacent existing or “paper” alley, otherwise off the lower volume street. Note any deviations from curb cut policies (DEM 31.5) w/justification and if Conceptual Approval by the Public Space Committee (PSC) has/is being sought. Subtitle I § 600-603 of ZR16 further restricts where curb cuts can be located.</i></p> <p><i>DDOT will not support curb cut design relief unless there is a clear hardship preventing a project from meeting all DDOT standards and other alternatives have been explored.</i></p> <p><i>All proposed private streets connecting to a public street must be built to DDOT standards and have a public access easement. Design of driveways and drive aisles on private property must comply with Subtitle C § 711 of ZR16.</i></p>	<p><input type="checkbox"/> Scoping Graphic: Project Location Map</p> <p><input type="checkbox"/> Scoping Graphic: Site Circulation Plan</p> <p><input type="checkbox"/> Scoping Graphic: Plat for Site’s Square and Lot from Office of the Surveyor (if official plat not available, provide plans from SURDOCs)</p>	
<p>Loading</p> <p>Discuss and show the quantity and sizes of loading berths/delivery spaces, trash storage locations, on- and off-site loading locations, turnaround design, nearby commercial loading zones, and anticipated demand, operations, and routing of delivery and trash vehicles. Identify the sizes of trucks anticipated to serve the site and design vehicles to be used in truck turning diagrams. Provide truck turning diagrams in the body of the report not the appendix.</p> <p><i>DDOT requires head-in and head-out truck movements through public space (DEM 31.5) and that direct internal pedestrian connections be provided between retail bays and loading facilities. Note any proposed deviations or requested relief from ZR16 or DDOT standards with justification. If any relief is being sought then a Loading Management Plan (LMP) is required. A template LMP is provided in Appendix E.</i></p>	<p><input type="checkbox"/> Scoping Graphic: Location of loading area w/ internal building routing</p> <p><input type="checkbox"/> Scoping Graphic: Truck Turning Diagrams (to/from the site, alley, truck routes)</p>	
<p>Vehicle Parking</p> <p>Identify all off-street parking locations (on- and off-site) and justify the amount of on-site vehicle parking, including a comparison to the number of spaces required by ZR16 and any previous approvals. Provide parking calculations and parking ratios by land use, including any eligible ZR16 vehicle parking reductions (i.e., within ¼ mile of Priority Bus Route, within ½ mile of Metrorail Station, providing</p>		

<p>carshare spaces, located within a D zone, etc.).</p> <p><i>Review the DDOT Preferred Parking Rates (Table 2). If the total parking provision proposed exceeds the amount calculated using ratios in that table then the number of spaces should be reduced or substantial TDM / non-auto improvements be provided. If parking provision is significantly out of line with appropriate parking ratios, one way or the other, then mode split and trip generations estimates will be adjusted.</i></p> <p><i>Confirm whether ZR16 TDM Mitigations will be required, per Subtitle C § 707.3, for providing more than double the amount of required vehicle parking. Coordinate with the Zoning Administrator as early in the process as possible for an official determination.</i></p> <p><i>A TDM Plan is required for BZA parking reduction cases, per Subtitle C § 703.4. If relief is being requested from 5 or more spaces, then a Parking Occupancy Study is required (see Multi-Modal section).</i></p>	<p><input type="checkbox"/> Scoping Table: Parking Calculations with Comparison to ZR16 and DDOT’s Preferred Vehicle Parking (Table 2)</p> <p><input type="checkbox"/> Scoping Graphic: Off-Street Parking Locations (both on- and off-site)</p>	
<p>Bicycle Parking</p> <p>Identify the locations of proposed bicycle parking and justify the amount of long- and short-term spaces proposed. Provide a calculation of the number of spaces required by ZR16.</p> <p><i>Long-term bicycle parking spaces must be easily accessible from building lobby or located in the parking garage level closest to the ground floor. Lockers and showers must be included with non-residential long-term bicycle storage rooms, per Subtitle C § 806. Provide calculations for required lockers and showers.</i></p> <p><i>Short-term bicycle parking must be accommodated by installing inverted U-racks along the perimeter of the site in the ‘furniture zone’ of public space, near the site entrance(s).</i></p>	<p><input type="checkbox"/> Scoping Graphic: Locations of internal bicycle parking spaces, routing to these spaces, and related support facilities including locker rooms, showers, storage areas, and service repair rooms</p>	
<p>Streetscape and Public Realm</p> <p>Provide a conceptual layout of the streetscape and public realm including at minimum: curb cuts, vaults, sidewalk widths, street trees, grade changes, building projections, short-term bicycle parking, and any existing bus stops. Also provide the permit tracking numbers and PSC hearing date, if known, for any approved public space designs.</p> <p><i>DDOT expects new developments to rehabilitate the streetscape between the curb and property line and meet all public space design standards. Streetscape must meet ADA requirements and ensure nothing impedes accessible curb access or pedestrian circulation.</i></p> <p><i>Note any non-compliant public space elements requiring a DCRA code modification or PSC approval.</i></p> <p><i>A summary of public space best practices is provided in Section 1.5. DDOT standards are documented in the DEM, Public Realm Design Manual, and corridor Streetscape Guidelines (if applicable).</i></p>	<p><input type="checkbox"/> Scoping Graphic: Preliminary Public Space Concept</p>	

<p>Sustainable Transportation Elements Identify all sustainable transportation elements, such as electric vehicle (EV) charging stations and carshare spaces proposed to be included in the project. Electrical conduit should be installed in parking garage so that additional EV stations can be provided later.</p> <p><i>DDOT recommends 1 per 50 vehicle spaces be served by an EV station. DDOT encourages providing car share spaces on-site to reduce the ZR16 parking requirement and support non-car ownership lifestyles.</i></p>		
<p>Heritage, Special, and Street Trees Heritage Trees are defined as having a circumference of 100 inches or more and are typically located on private property. They are protected by the District’s Tree Canopy Protection Amendment Act of 2016 and must be preserved if deemed non-hazardous by Urban Forestry Division (UFD). Special Trees are between 44 inches and 99.99 inches in circumference and may be removed with a permit.</p> <p><i>Note whether there are existing Heritage Trees on-site or in adjacent public space. The presence of Heritage Trees will impact site design since they may not be cut down. Work w/the UFD Ward Arborist to determine if there are Heritage or Special Trees on-site that must be preserved and if Tree Preservation or Relocation Plans are required.</i></p> <p><i>Conduct an inventory of existing and missing street trees within a 3-block radius of the site (design standards are in DEM 37.5). Identify any opportunities for UFD or the Applicant (as part of the mitigations package) to install missing treeboxes and street trees.</i></p>	<p><input type="checkbox"/> Scoping Graphic: Street Tree Inventory Study Area</p>	
<p>Section 2: TRAVEL ASSUMPTIONS</p>		
<p>CATEGORY & GUIDELINES</p>	<p>CONSULTANT PROPOSAL</p>	<p>DDOT COMMENTS</p>
<p>Mode Split Provide mode split assumptions with sources and justification. Sources of data could include the most recent <i>Census Transportation Planning Products (CTPP)</i> the 2005 <i>WMATA Development-Related Ridership Survey</i>, or previous planning studies and CTRs. Note that the walking mode share will account for internal trip synergies for mixed use developments.</p> <p><i>Adjustments to mode split assumptions may be made, as appropriate, if the number of vehicle parking spaces proposed is significantly lower or higher than expected for the context of the neighborhood.</i></p> <p><i>The agreed upon mode split assumptions may not be revised between scoping and CTR submission without DDOT concurrence.</i></p>	<p><input type="checkbox"/> Scoping Table: Mode Split Assumptions</p>	

Trip Generation

Provide site-generated person trip generation estimates, utilizing the most recent version of ITE *Trip Generation Manual* or another agreed upon methodology such as manual doorway or driveway counts at similar facilities. Estimates must be provided by mode, type of trip, land use, and development phase during weekday AM and PM commuter peaks, Saturday mid-day peak, and daily totals. CTR must also include existing site trip generation based on observed counts. Modes include transit, bicycle, walk, and automobile.

DDOT TripsDC tool will be used to determine trip generation estimates for residential-over-retail projects (see Section 2.2.4 for parameters).

Auto occupancy rates by travel purpose published in the 2017 National Household Travel Survey should be used when calculating person trips based on suburban vehicle trip data in Trip Generation Manual (see Table 3).

Adjustments to trip generation may be made, as appropriate, if the number of vehicle parking spaces proposed is significantly lower or higher than expected for the context of the neighborhood.

Pass-by rates in the District are minimal and should only apply to major retail-dominant destinations, grocery stores, and gas stations. An adjusted pass-by/diverted trips methodology should be developed if development is not located on a road classified as arterial or higher.

The agreed upon trip generation methodology may not be revised between scoping and CTR submission without DDOT concurrence. Consult the DDOT Case Manager if site plan, development program, land uses, or density changes significantly.

Scoping Table: Multi-Modal Trip Gen Summary (w/mode split and applicable reductions, as appropriate)

Section 3: MULTI-MODAL NETWORK EVALUATION

A CTR study is required if the project generates at least 100 peak hour person trips or 25 vehicle trips in the peak direction (highest of inbound or outbound) in any study period. Existing site traffic, pass-by, TDM, internal capture or other reductions may not be taken in the calculation to determine if the project meets these thresholds. However, they may be taken in the TIA, as appropriate, if a study is triggered. Analyses in the Multi-Modal Network Evaluation section are required in all CTRs, unless otherwise specified. A Transportation Statement may only require some of the following sections depending on the specifics of the project and zoning action.

The requirement for a CTR may be waived if site is within ½ mile from Metrorail or ¼ mile from Priority Transit, the total vehicle parking supply below level expected within ¼ mile of Metrorail Station (see Table 2), maximum 100 parking spaces, an Enhanced TDM Plan is implemented, site access and loading design are acceptable, there is a complete pedestrian network in the vicinity of the site, and meets all ZR16 bike parking and locker/shower requirements. Additional criteria may be found in the Low Impact Development Exemption section of *Guidance for CTR*.

CATEGORY & GUIDELINES	CONSULTANT PROPOSAL	DDOT COMMENTS
<p>Strategic Planning Elements</p> <p>Identify relevant planning efforts and demonstrate how the proposed action is consistent with District-wide planning documents, as well as localized studies. Note in scoping form any recommendations from these documents relevant to the development proposal.</p> <p>The evaluation will consider at least the following high level/District-wide documents:</p>		

<ul style="list-style-type: none"> ● MoveDC and its relevant modal elements ● DDOT Livability Study (relevant to the project) ● OP Small Area Plans (relevant to the project) ● DC Highway Plan (shown on official plat) ● District of Columbia Comprehensive Plan ● Vision Zero Action Plan ● Capital Bikeshare Development Plan ● Washington Metropolitan Area Transit Authority’s (WMATA) Metrorail and Metrobus Plans ● DDOT Corridor studies (e.g., Transit Development Plan, Streetscape Design Plans and Guidelines) <p><i>Details on additional relevant plans and studies may be provided by the DDOT Case Manager.</i></p>		
<p>Pedestrian Network</p> <p>Evaluate the condition of the existing pedestrian network and forecast the project’s impact. Evaluation must include, at a minimum, critical walking routes, sidewalk widths, network completeness, whether facilities meet DDOT and ADA standards, and whether pedestrian signal timings are adequate (within vehicle study area).</p> <p><i>Study area will include, at a minimum, all roadway segments and multi-use trails within a ¼ mile radius from the site, with a focus on connectivity to Metrorail, transit stops, schools, and major activity centers.</i></p>	<p><input type="checkbox"/> Scoping Graphic: Pedestrian Study Area w/Walking Routes to Transit, Schools, Activity Centers</p>	
<p>Bicycle Network</p> <p>Evaluate the condition of the existing bicycle network and forecast the project’s impact, including to Capital Bikeshare (CaBi). Evaluation must include, at a minimum, bicycle network completeness, types of facilities, and adequacy of CaBi locations and availability. Bikeshare station demand data can be obtained from the <i>CaBi Tracker</i> website.</p> <p><i>Study area will include, at a minimum, all roadway segments and multi-use trails within a ½ mile radius from the site, with a focus on connectivity to Metrorail, transit stops, schools, major activity centers, and other bicycle trails or facilities.</i></p> <p><i>Note where bike lanes conflict with access to the site or on-street loading movements associated with the project.</i></p> <p><i>If a CaBi station is currently located along the site frontage, the Applicant must assume the station will stay in place after the development has been constructed and must be designed in the public space plans. If it is not physically possible to stay in place, then DDOT expects the Applicant to demonstrate this hardship, propose a viable alternative location, and fund the station relocation. The minimum size of a new CaBi station is 19 docks with 12 bikes.</i></p>	<p><input type="checkbox"/> Scoping Graphic: Bicycle Study Area w/Bicycling Routes to Transit, Schools, Activity Centers</p>	
<p>Transit Network</p> <p>Evaluate, at a minimum, existing transit stop locations, adjacent bus routes and Metro headways, planned transit improvements, and an assessment of existing transit stop conditions (e.g., ADA compliance,</p>		

<p>bus shelters, benches, wayfinding, etc.). For Metrorail stations, refer to the 2009 WMATA Station Site and Access Planning Manual, as well as various station capacity studies.</p> <p><i>Study area is 1.0 mile for Metrorail stations and ½ mile for Streetcar, Circulator, and WMATA buses.</i></p> <p><i>All existing bus stops and shelters must be accommodated during construction, assumed to be returned to the original location after construction, and designed into the public space plans. If a bus stop and/or shelter must be moved then the Applicant will fund the relocation and obtain approval from DDOT and WMATA for the new location. Applicant must fund the electrification of all new or relocated shelters.</i></p>	<p><input type="checkbox"/> Scoping Graphic: Transit Study Area with Adjacent Routes and Stations</p> <p><input type="checkbox"/> Scoping Graphic: Screenshots from DDOT transit maps showing where the site falls within buffers from Metrorail and Priority Transit</p>	
<p>Safety Analysis</p> <p>Qualitatively evaluate safety conditions at intersections and along blocks within the vehicle study area.</p> <p><i>Perform a review of DDOT Vision Action Plan. Note whether any study intersections have been identified by DDOT as high crash locations, if any safety studies have been previously conducted, and discuss the recommendations. Depending on the results of the TIA, DDOT may require improvements to nearby intersections previously identified as having known safety issues.</i></p>		
<p>Curbside Management</p> <p>Propose a curbside management plan that is consistent with current DDOT policies and practices. The curbside management plan must delineate existing and proposed on-street parking designations/restrictions, including but not limited to pick-up/drop-off zones, commercial loading zones, multi-space meters, RPP, and net change in number of on-street spaces as a result of the proposal.</p> <p><i>Note that the preliminary curbside management plan will not be approved by DDOT during the zoning process. Applicant must submit a more detailed signage and marking plan via TOPS for formal review and approval by DDOT-PGTD during public space permitting. DDOT expects the Applicant to fund the installation of multi-space meters on blocks where meters are required.</i></p>	<p><input type="checkbox"/> Scoping Graphic: Existing Curbside Designations (min. 2 block radius of site)</p>	
<p>Pick-Up and Drop-Off Plan</p> <p>This plan is required for all schools and daycares with 20 or more students. It may also be required for churches, hotels, or any other use expected to have significant pick-up and drop-off operations, as necessary. The plan will identify pick-up and drop-off locations and demonstrate adequate circulation so that the flow of bicycles and vehicles is not impeded and queueing does not occur through the pedestrian realm.</p> <p><i>DDOT will require this plan for schools and daycares currently in operation even if the relief requested from the BZA is not related to a student cap increase.</i></p>		
<p>On-Street Parking Occupancy Study</p> <p>This analysis is required if BZA relief from 5 or more on-site vehicle parking spaces is being requested. It may also be required as part of a</p>		

<p>ZC or permitting case if DDOT has concerns about site-generated vehicles parking in adjacent residential neighborhoods.</p> <p><i>Vehicle parking occupancy counts will be collected hourly during periods of peak demand. These are typically the weekday evening period (6-10 PM) for residential developments, weekday morning period (7-9 AM) if within ¼ mile of Metrorail, and weekend peak periods if there is a commercial component. Parking availability must be assessed a maximum of 2 blocks in each direction from the site, unless otherwise agreed upon. Also include inventory of off-street parking garages in vicinity of site.</i></p>	<p><input type="checkbox"/> Scoping Graphic: Study Area/Block Faces</p>	
<p>Parking Garage Queueing Analysis</p> <p>If site contains 150 or more vehicle parking spaces <u>and</u> direct access to a public street, evaluate on-site vehicle queueing demand and provide analysis demonstrating parking entrance and ramps can properly process vehicles without queuing onto public streets. Provide proposed parking supply, queuing analysis, and physical controls to parking area, if applicable.</p>		
<p>Motorcoaches</p> <p>Propose methodology for data collection and analysis. Describe and show the parking locations, anticipated demand, existing areas on- and off-site for loading and unloading (and desired loading times restrictions, if any), and potential routes to and from designated truck routes. If on-street motorcoach parking is proposed, a plan for installation of signage and meters is required, subject to DDOT-PGTD approval. This section is typically only required for uses that generate significant tourist activity (hotels, museums, cruises, etc.).</p>		

Section 4: TRAFFIC IMPACT ANALYSIS (TIA)

The TIA component of a CTR is required when a development generates 25 or more peak hour vehicle trips in the peak direction (higher of either inbound or outbound vehicles in any study peak period), after mode split is applied. Existing site traffic, pass-by, TDM, internal capture or other reductions may not be applied when calculating whether a TIA is required. Applicable reductions may be used in the multi-modal trip generation summary and assignment of trips within the TIA, as appropriate. A standalone TIA may also be required if the project proposes a change to roadway capacity, operations, or directionality; has a site access challenge; or as otherwise deemed necessary by DDOT.

<p>CATEGORY & GUIDELINES</p>	<p>CONSULTANT PROPOSAL</p>	<p>DDOT COMMENTS</p>
<p>TIA Study Area and Data Collection</p> <p>Identify study intersections commensurate with the impact of the proposed project and the travel demand it will generate. Study area must include all major signalized and unsignalized intersections, intersections expected to realize large numbers of new traffic, and intersections that may experience changing traffic patterns. Additional guidance on selecting study intersections is provided in DEM 38.3.2.</p> <p><i>Turning Movement Counts (TMC) will be collected in 15-minute increments during the weekday morning (6:30 AM to 9:30 AM) and evening (4:00 PM to 7:00 PM) peak periods on Tuesdays through Thursdays during non-holiday weeks, while schools and Congress are in session, the Fed govt is not in a shutdown, and weather is not an issue, unless otherwise agreed upon. Saturday mid-day peak period (generally 11:00 AM to 1:00 PM) will be studied if development</i></p>		

<p><i>program is retail-heavy. TMCs will include vehicles, pedestrians, bicyclists, and % truck traffic. TMCs will be collected at all existing site driveways and reported as existing conditions in trip generation summary.</i></p> <p><i>Previously collected TMCs may be used if they are less than 2 years old at the time of study submission. DDOT may require counts be refreshed once TMCs reach 3 years old or if a major transportation or land use change occurs. A growth rate will be applied to TMCs older than 12 months to create present year Existing Conditions.</i></p>	<p><input type="checkbox"/> Scoping Graphic: Study Intersections</p> <p><input type="checkbox"/> Provide hard copies of TMCs in CTR appendix and electronic copies in DDOT-required spreadsheet format at time of submission.</p>	
<p>TIA Study Scenarios</p> <p>Propose an appropriate set of scenarios to analyze. Note the anticipated build-out year and project phasing. Analysis scenarios to be considered:</p> <ul style="list-style-type: none"> ● Existing Conditions (Current Year) ● Background Conditions (No-Build) ● Total Future Conditions (With Development) ● Total Future Conditions (With Development and Mitigation) ● Additional Scenarios For Each Phase, as necessary ● Total Future Conditions (+5 Years), as required ● Long Range +20 Years Planning Scenario, as required 		
<p>TIA Methodology</p> <p>Propose an appropriate methodology for the capacity analysis including the type of software program to be used. Per DEM 38.3.5.1, HCM methodology will be used to determine Level of Service (LOS), v/c, and vehicle queue lengths. LOS must be reported by intersection approach and v/c by lane group. DDOT prefers Synchro 9 or newer software for capacity and queueing analyses. SimTraffic (10 simulations averaged) should be used to further evaluate an observed queueing issue and determine a solution, as necessary.</p> <p><i>DDOT's required standard Synchro and SimTraffic inputs/settings are provided in Appendix H.</i></p> <p><i>Merge/weave/diverge analysis is required if any of the study intersections include a highway, freeway, or Interstate ramp (DEM 38.3.5.3). HCS software should be used for this analysis.</i></p>	<p><input type="checkbox"/> Will provide copies of Synchro, SimTraffic, and other analysis software printouts in study appendix and electronic copies of analysis files at time of CTR submission.</p>	
<p>Transportation Network Improvements</p> <p>List and map all roadway, transit, bicycle, and pedestrian projects funded by DDOT or WMATA, or proffered by others, in the vicinity of the study area and expected to open for public use prior to the proposal's anticipated build-out year. Review the STIP, CLRP, and proffers/commitments for other nearby developments.</p>	<p><input type="checkbox"/> Scoping Graphic: Locations of background transportation network improvements</p>	
<p>Local Traffic Growth</p> <p>List and map developments to be analyzed as local background growth. This will include known matter-of-right and zoning-approved developments within ¼ mile of site and others more than ¼ mile from site if their traffic is distributed through study intersections. Document the portions of developments anticipated to open by the projected build-out year.</p>	<p><input type="checkbox"/> Scoping Graphic: Background development projects near study area</p> <p><input type="checkbox"/> Scoping Table: Completion amounts/portions occupied of background developments</p>	

<p>Regional Traffic Growth</p> <p>Propose a methodology to account for growth in regional travel demand passing through the study area. An appropriate methodology could include reviewing historic AADT traffic counts, MWCOG model growth rates, data from other planning studies, or recently conducted nearby CTRs. These sources should only be used as a guide.</p> <p><i>Generally, maximum annually compounding growth rates of 0.5% in peak direction and 2.0% in non-peak direction are acceptable. Growth rates based should be based on DDOT historical data from 10+ years, if available. Adjustments to the rates may be necessary depending on the amount of traffic assumed from local background developments or if there were recent changes to the transportation network.</i></p>	<p><input type="checkbox"/> Scoping Table: Projected regional growth assumptions (dependent on methodology), show growth rates by facility, direction, and time of day</p> <p><input type="checkbox"/> Scoping Graphic: Projected regional growth assumptions (dependent on methodology), show growth rates by facility, direction, and time of day</p>	
<p>Trip Distribution</p> <p>Provide sources and justification for proposed percentage distribution of site-generated trips. Additionally, document proposed pass-by distributions and the re-routing of existing or future vehicles based on any changes to the transportation network.</p> <p><i>Percentage distributions must be shown turning at intersections throughout the transportation network and at site driveways and garage entrances to ensure appropriate routing assumptions.</i></p> <p><i>The agreed upon trip distribution methodology may not be revised between scoping and CTR submission without concurrence by DDOT Case Manager.</i></p> <p><i>Given the District's urban context and grid network, a small portion of trips (up to 5% of trips through an intersection) may be re-routed from their original routes to an alternate route due to traffic congestion.</i></p>	<p><input type="checkbox"/> Scoping Graphic(s): Percentage Distribution by Land Use, Direction, Time of Day</p>	
<p>Section 5: MITIGATION</p>		
<p>The completed CTR must detail all proposed mitigations. The purpose of discussing mitigation at the scoping stage is to highlight DDOT's Significant Impact Policy, DDOT's approach to mitigation, and to give the Applicant an opportunity to gain initial feedback on potential mitigations that may ultimately be proposed. Any mitigation strategies discussed and included in the <i>Scoping Form</i> are considered non-binding until formally evaluated in the study and committed to as part of a related action.</p>		
<p>CATEGORY & GUIDELINES</p>	<p>CONSULTANT PROPOSAL</p>	<p>DDOT COMMENTS</p>

<p>DDOT Significant Impact Policy</p> <p><u>Vehicle Parking Supply</u> DDOT considers a high parking provision as an ‘impact’ that needs to be mitigated since it is a permanent site feature that encourages additional driving and yield vehicle trips in the future that were not contemplated in the study. Appropriate mitigations include reducing vehicle parking, implementing substantive TDM strategies, off-site non-automotive network upgrades, and making monetary contributions to DDOT for non-auto improvements. See Table 2 to determine if a site is over-parked based on land use and distance to transit.</p> <p><u>Capacity Impacts at Intersections</u> All site-generated vehicular impacts to the transportation network during study peak hours must be mitigated, per DEM 38.3.5, if any of the following occur:</p> <ul style="list-style-type: none"> ● Degradation of an approach or intersection to LOS E or F or intersection v/c ratio increases to 1.0 or greater from Background to Total Future Conditions. ● If an approach or intersection exceeds LOS E or F or movement/lane group exceeds 1.0 v/c ratio under Background Conditions then an increase in delay or v/c ratio by 5% or more under Total Future Conditions. ● If 95th percentile vehicle queuing length exceeds available capacity of approach or turn lane under Total Future Conditions. ● If 95th percentile queue length of an approach or turn lane increases by 150 feet or more from Background to Total Future Conditions. 	<p><input type="checkbox"/> <i>The Applicant acknowledges DDOT’s Significant Impact Policy.</i></p> <p><input type="checkbox"/> <i>The study will comply with all other policies in the Guidance for Comprehensive Transportation Review and the Category & Guidelines column of this Scoping Form not explicitly documented in the Consultant Proposal or DDOT Comments columns.</i></p> <p><input type="checkbox"/> <i>The study will include all of the required graphics, tables, and deliverables for the relevant sections determined during scoping, as shown in Table 1 of Guidance for Comprehensive Transportation Review.</i></p>	
<p>DDOT Approach to Mitigation</p> <p>DDOT’s approach to mitigation is to first establish optimal site design and operations to support efficient site circulation. When these efforts alone cannot properly mitigate an action’s impact, reducing on-site vehicle parking, implementing TDM measures, making upgrades to the pedestrian, bicycle, and transit networks to encourage use of non-automotive modes, or monetary contribution to DDOT for non-auto improvements must be proposed. Only when these options are exhausted will DDOT consider capacity-increasing changes to the roadway network because such changes often have detrimental impacts on non-automotive travel and are often contrary to the District’s multi-modal transportation goals.</p>	<p><input type="checkbox"/> <i>The Applicant acknowledges DDOT’s approach to mitigation that prioritizes (in order of DDOT preference) optimal site design, reducing vehicle parking, implementing more TDM strategies, making non-automotive network improvements, and making a monetary contribution to DDOT for non-auto improvements before considering options that increase roadway capacity or alter roadway operations.</i></p>	
<p>Transportation Demand Management (TDM)</p> <p>A TDM Plan is typically required to offset site-generated impacts to the transportation network or in situations where a site provides more parking than DDOT determines is practical for the use and surrounding context. TDM strategies are also an integral part of the District’s transportation options. As such, a Baseline TDM plan is required in all CTRs regardless of impacts to the network. An Enhanced Plan or greater is required if the site is over-parked per Table 2 or there are roadway impact identified. Sample TDM plans by land use and tier can be found in Appendix C.</p>	<p><input type="checkbox"/> <i>The Applicant will include at least a Baseline TDM Plan. The TDM plan will increase to Enhanced Plan or beyond depending on the parking ratio and other impacts identified in the study.</i></p>	

<p><i>Document all existing TDM strategies being implemented on-site (even outside of a formal TDM Plan) and those being proposed and committed to by the Applicant. Elements of the TDM Plan included in CTR must be broken down by land use and user (i.e., employee, faculty, resident, visitor, etc.).</i></p>		
<p>Performance Monitoring Plan (PMP)</p> <p>DDOT may require a PMP in situations where anticipated vehicle trips are large in magnitude, unpredictable, or necessitate a vehicle trip cap. Typically, this is required for schools expected to have a significant amount of single occupancy vehicle trips or very large developments.</p> <p>The monitoring plan will establish thresholds for new trips a project can generate, define post-completion evaluation criteria and methodology, determine the frequency of reporting, and establish potential remediating measures (e.g., adjust trip caps or implement additional TDM strategies).</p> <p><i>Document any existing performance monitoring Plans in effect and any proposed changes.</i></p>		
<p>Roadway Operational and Geometric Changes</p> <p>Describe all proposed roadway operational and geometric changes in CTR with supporting analysis and warrants in the study appendix. Detail must be provided on any ROW implications of proposed mitigations. All proposed changes in traffic control must be conducted following the procedures outlined in the <i>Manual of Uniform Traffic Control Devices</i> (MUTCD).</p> <p><i>Note any preliminary ideas being considered.</i></p>		
<p>Section 6: ADDITIONAL TOPICS FOR DISCUSSION DURING SCOPING</p>		
<p>CATEGORY & GUIDELINES</p>	<p>CONSULTANT PROPOSAL</p>	<p>DDOT COMMENTS</p>
<p>ANC Discussions and Feedback</p> <p>Provide an update on the status of Community Benefits Agreement, any ANC concerns, or other concerns expressed by the community.</p>		
<p>Miscellaneous Items for Discussion</p> <p>These items could include relevant on-going discussions with other agencies and stakeholders or seeking direction other types of analyses to be included (i.e., traffic calming proposal, TOPP, TMP).</p>		



District Department of Transportation

Appendix B - Land Development and CTR Resources



District Department of Transportation (DDOT)

- MoveDC Mobility Plan: <http://wemovedc.org/index.html>
- Design and Engineering Manual (DEM): <https://ddot.dc.gov/page/design-and-engineering-manual>
- Public Realm Design Manual: <https://ddot.dc.gov/PublicRealmDesignManual>
- Vision Zero Initiative and Action Plan: <https://www.dcvisionzero.com/>
- Vision Zero Safety Map: <http://visionzero.ddot.dc.gov/VisionZero/>
- DDOT State Transportation Improvements Program (STIP): <http://stip.wemovedc.org/>
- Livability Study Program: <https://ddot.dc.gov/page/livability-program>
- Streetscape Plans and Transportation Studies: <https://ddot.dc.gov/page/studies-and-research>
- Transportation Online Permitting System (TOPS): <https://tops.ddot.dc.gov>
- Public Space Committee (PSC): <https://ddot.dc.gov/page/public-space-committee-meetings>
- DDOT Development Review webpage: <https://ddot.dc.gov/page/development-review>
- Map of Metrorail Stations (¼, ½, 1.0 mile buffers): <https://arcg.is/19ajqu>
- Map of Priority Transit Routes (¼ buffers): <https://arcg.is/1CHTeb>
- TripsDC: <https://tripsdc.org/>
- Park Right DC: <http://parkrightdc.org/>
- goDCgo: <https://godcgo.com/>
- goDCgo Truck/Bus Restrictions and Loading Zones: <http://godcgo.com/dc-truck-and-bus-map/>
- Residential Parking Permit (RPP) Database: <https://ddot.dc.gov/service/residential-permit-parking>
- District Mobility: <https://districtmobility.org/>
- DDOT Bike Parking Design Guide: <https://ddot.dc.gov/publication/bike-parking-guide>
- Capital Bikeshare Development Plan: <https://ddot.dc.gov/capitalbikeshare>
- Capital Bikeshare Station Map: <https://secure.capitalbikeshare.com/map/>
- Capital Bikeshare Station Demand Data: <http://cabitracker.com/>
- DC Circulator Transit Development Plan: <https://ddot.dc.gov/publication/dc-circulator-transit-development-plan-update>
- DDOT Traffic Safety Assessments and Operating Procedures (forthcoming): <https://ddot.dc.gov/service/traffic-safety-assessment>
- Policy & Process for Access to the District of Columbia Interstation and Freeway System: <https://ddot.dc.gov/page/policy-and-process-access-district-columbia-interstate-and-freeway-system>
- Historical Traffic Volume Maps: <https://ddot.dc.gov/page/traffic-volume-maps>
- DDOT Historic Collections of Transportation Pictures: <https://ddotlibrary.omeka.net/>
- DDOT Compendium of Documents: <https://comp.ddot.dc.gov/SitePages/Home.aspx>
- Howard University MS2 Turning Movement Counts Database: <https://www.hutrc.org/transportation-safety-data-center>
- Construction Permits via TOPS: <https://www.arcgis.com/home/webmap/viewer.html?useExisting=1&layers=fc7da7bd29d4493481b17d032e117d09&layerId=0>

Washington Metropolitan Area Transit Authority (WMATA)

- Guidelines for the Design and Placement of Transit Stops: <https://www.wmata.com/initiatives/plans/upload/WMATA-Guidelines-Design-and-Placement-of-Transit-Stops.pdf>



- Station Site and Access Planning Manual: <https://www.wmata.com/initiatives/plans/upload/SSAPM.pdf>
- Development-Related Ridership Survey: https://www.wmata.com/initiatives/plans/upload/2005_Development-Related_Ridership_Survey.pdf

DC Office of Zoning

- Interactive Zoning Information System (IZIS): <https://dcoz.dc.gov/service/interactive-zoning-information-system>
- 2016 Zoning Regulations (ZR16): <https://dcoz.dc.gov/zrr/zr16>
- ZR16 Zoning Map: <http://maps.dcoz.dc.gov/zr16/#>

DC Office of Planning

- Comprehensive Plan: <https://planning.dc.gov/page/comprehensive-plan>
- Small Area Plans: <https://planning.dc.gov/page/small-area-plans-studies-and-reports>
- PropertyQuest: <https://propertyquest.dc.gov/>

Metropolitan Washington Council of Governments (MWCOC)

- Regional Travel Demand Modeling: <https://www.mwcog.org/transportation/data-and-tools/modeling/>
- 6-Year Transportation Improvement Program (TIP): <https://www.mwcog.org/transportation/plans/transportation-improvement-program/>
- Constrained Long Range Plan (CLRP): <http://www1.mwcog.org/clrp/>
- Commuter Connections State of the Commute Survey Report: https://www.mwcog.org/assets/1/28/Item_5_-_2016_SOC_Draft_Technical_Report_092016.pdf

Other Important Resources

- Office of the Surveyor Land Record Management System (SURDOCS): <https://dcraonline-rms.dcra.dc.gov/SurDocsPublic/>
- DC Atlas Plus Mapping: <http://atlasplus.dcgis.dc.gov/>
- DC ArcGIS Mapping: <https://dcgis.maps.arcgis.com/home/index.html>
- National Household Travel Survey (NHTS): <https://nhts.ornl.gov/>
- Census Transportation Planning Products (CTPP): https://www.fhwa.dot.gov/planning/census_issues/ctpp/
- National Capital Planning Commission (NCPCC), Comprehensive Plan for the National Capital: <https://www.ncpc.gov/plans/compplan/>
- Manual on Uniform Traffic Control Devices (MUTCD): <https://mutcd.fhwa.dot.gov/>
- Public Rights of Way Accessibility Guidelines (PROWAG): <https://www.access-board.gov/guidelines-and-standards/streets-sidewalks/public-rights-of-way/proposed-rights-of-way-guidelines>
- Parking Structures: Planning, Design, Construction, Maintenance and Repair, 3rd Edition: <http://worldcat.org/isbn/0792372131>



- Open Data DC: <http://opendata.dc.gov/>
- Washington DC Economic Partnership Pipeline: <http://search.wdcep.com/>
- Institute of Transportation Engineers (ITE), Trip Generation Manual and Parking Generation: https://ecommerce.ite.org/IMIS/iCommerce/Bookstore/Search_BookStore/iCommerce/Orders/SearchBookStore.aspx
- Institute of Transportation Engineers (ITE), Multi-Modal Transportation Impact Analysis (MTIA) – yet to be released
- American Association of State and Highway Transportation Officials (AASHTO), A Policy on Geometric Design of Highways and Streets (“Green Book”): <https://store.transportation.org/>
- Transportation Research Board (TRB), Highway Capacity Manual (HCM): <http://www.trb.org/Main/Blurbs/175169.aspx>
- DC Business Improvement Districts (BID): <https://dslbd.dc.gov/service/business-improvement-districts-bids>



District Department of Transportation

Appendix C - Sample TDM Plans and Resources



Residential TDM Strategies

Baseline Plan (Residential)

All PUDs, LTRs, Design Reviews, and other projects where TDM is required by DDOT will start with a Baseline Plan. This Plan is intended for developments that are up to 10% over-parked (per Table 2) AND no intersection impacts were identified in the TIA.

Include all of the following:

- Unbundle the cost of vehicle parking from the lease or purchase agreement for each residential unit and charge a minimum rate based on the average market rate within a quarter mile.
- Identify Transportation Coordinators for the planning, construction, and operations phases of development. The Transportation Coordinators will act as points of contact with DDOT, goDCgo, and Zoning Enforcement.
- Will provide Transportation Coordinators' contact information to goDCgo, conduct an annual commuter survey of employees on-site, and report TDM activities and data collection efforts to goDCgo once per year.
- Transportation Coordinators will develop, distribute, and market various transportation alternatives and options to the residents, including promoting transportation events (i.e., Bike to Work Day, National Walking Day, Car Free Day) on property website and in any internal building newsletters or communications.
- Transportation Coordinators will receive TDM training from goDCgo to learn about the TDM conditions for this project and available options for implementing the TDM Plan.
- Provide welcome packets to all new residents that should, at a minimum, include the Metrorail pocket guide, brochures of local bus lines (Circulator and Metrobus), carpool and vanpool information, CaBi coupon or rack card, Guaranteed Ride Home (GRH) brochure, and the most recent DC Bike Map. Brochures can be ordered from DDOT's goDCgo program by emailing info@godcgo.com.
- Provide residents who wish to carpool with detailed carpooling information and will be referred to other carpool matching services sponsored by the Metropolitan Washington Council of Governments (MWCOG) or other comparable service if MWCOG does not offer this in the future.
- Transportation Coordinator will subscribe to goDCgo's residential newsletter.
- Post all TDM commitments on website, publicize availability, and allow the public to see what commitments have been promised.
- Provide a FREE SmarTrip card to every new resident and a complimentary Capital Bikeshare coupon good for one ride.
- Will meet ZR16 short- and long-term bicycle parking requirements. Long-term bicycle space will be provided free of charge to residents. [specify the minimum number provided]
- Long-term bicycle storage rooms will accommodate non-traditional sized bikes including cargo, tandem, and kids bikes.

Enhanced Plan (Residential)



Intended for developments that are up to 20% over-parked (per Table 2) OR minor intersection impacts were identified in the TIA.

Include everything in Baseline Plan plus all of the following:

- Install a Transportation Information Center Display (electronic screen) within the lobby containing information related to local transportation alternatives. At a minimum the display should include information about nearby Metrorail stations and schedules, Metrobus stops and schedules, car-sharing locations, and nearby Capital Bikeshare locations indicating the availability of bicycles.
- Will not lease unused residential parking spaces to anyone aside from tenants of the building (e.g., will not lease to other nearby office employees, single-family home residents, or sporting events).
- Designate [insert number] parking spaces in the vehicle parking garage for car-sharing and micro-mobility services to use with right of first refusal. If an agreement has not been reached with one of these services to occupy all of the dedicated spaces, the Applicant will provide one (1) [additional] year of membership to Capital Bikeshare for each resident after the building has opened.
- Provide an annual CaBi membership to each resident for the first year after the building opens.
- Designate two (2) parking spaces for vans to be used by District residents who vanpool to work.
- Additional short- and long-term bicycle parking spaces above ZR16 requirements. [specify amount]
- Provide a bicycle repair station in each long-term bicycle parking storage room.
- Provide one (1) collapsible shopping cart (utility cart) for every 50 residential units, for a total of [insert number] to encourage residents to walk to the grocery shopping and run errands.

Menu of additional strategies (Residential)

Intended for developments that are over-parked by more than 20% (per Table 2) OR impacts identified at multiple intersections OR severe intersection impacts were identified in the TIA.

Include everything in Baseline and Enhanced plans plus choose from the following (non-exhaustive) menu based on severity of impacts and parking ratio:

- To encourage teleworking, a business center will be provided on-site and available for free to residents 24 hours per day, 7 days per week. Access to a copier and internet services will be included.
- Provide an annual membership to Bikeshare to each resident for [insert number] year(s) after the building opens.
- Provide SmarTrip cards pre-loaded with [insert \$] for all new [residents or employees] for [insert number] year(s) after the building opens.
- Fund and install a 19-dock Capital Bikeshare (CaBi) station with 12 bikes and fund one-year of maintenance and operations costs.
- Fund and install the expansion of the Capital Bikeshare (CaBi) station located at [insert location] by [insert number] docks.
- Will hold a transportation event for residents, employees, and members of the community once per year for a total of [insert number] years. Examples include resident social, walking tour of local transportation options, goDCgo lobby event, transportation fair, WABA Everyday Bicycling seminar, bicycle safety/information class, bicycle repair event, etc.).



Office TDM Strategies

Baseline Plan (Office)

All PUDs, LTRs, Design Reviews, and other projects where TDM is required by DDOT will start with a Baseline Plan. This Plan is intended for developments that are up to 10% over-parked (per Table 2) AND no intersection impacts were identified in the TIA.

Include all of the following:

- Unbundle the cost of parking from the cost to lease an office unit and only hourly, daily, or weekly rates will be charged. Free parking, validation, or discounted rates will not be offered.
- Identify Transportation Coordinators for the planning, construction, and operations phases of development. There will be a Transportation Coordinator for each tenant and the entire site. The Transportation Coordinators will act as points of contact with DDOT, goDCgo, and Zoning Enforcement.
- Will provide Transportation Coordinators' contact information to goDCgo, conduct an annual commuter survey of employees on-site, and report TDM activities and data collection efforts to goDCgo once per year. All employer tenants must survey their employees and report back to the Transportation Coordinator.
- Transportation Coordinators will develop, distribute, and market various transportation alternatives and options to the employees, including promoting transportation events (i.e., Bike to Work Day, National Walking Day, Car Free Day) on property website and in any internal building newsletters or communications.
- Transportation Coordinators will receive TDM training from goDCgo to learn about the TDM conditions for this project and available options for implementing the TDM Plan.
- Will notify goDCgo each time a new office tenant moves in and provide TDM information to each tenant as they move in.
- Will provide links to CommuterConnections.com and goDCgo.com on property websites.
- Transportation Coordinator will implement a carpooling system such that individuals working in the building who wish to carpool can easily locate other employees who live nearby.
- Distribute information on the Commuter Connections Guaranteed Ride Home (GRH) program, which provides commuters who regularly carpool, vanpool, bike, walk, or take transit to work with a free and reliable ride home in an emergency.
- Transportation Coordinator will demonstrate to goDCgo that tenants with 20 or more employees are in compliance with the DC Commuter Benefits Law and participate in at least one of the three transportation benefits outlined in the law (employee-paid pre-tax benefit, employer-paid direct benefit, or shuttle service), as well as any other commuter benefits related laws that may be implemented in the future.
- Provide employees who wish to carpool with detailed carpooling information and will be referred to other carpool matching services sponsored by the Metropolitan Washington Council of Governments (MwCOG) or other comparable service if MwCOG does not offer this in the future.
- Designate a minimum of [insert number] preferential carpooling spaces and [insert number] preferential vanpooling spaces in a convenient location within the parking garage for employee use.

Guidance for Comprehensive Transportation Review



- Provide a free SmarTrip card and one (1) complimentary Capital Bikeshare coupon good for a free ride to each new employee.
- Will meet ZR16 requirements for showers and lockers for use by employees. [specify the minimum number provided]
- Will meet ZR16 short- and long-term bicycle parking requirements. Long-term bicycle parking will be provided free of charge to all employees. [specify the minimum number provided]
- Long-term bicycle storage rooms will accommodate non-traditional sized bikes including cargo and tandem bikes.

Enhanced Plan (Office)

Intended for developments that are up to 20% over-parked (per Table 2) OR minor intersection impacts were identified in the TIA.

Include everything in Baseline Plan plus all of the following:

- Install a Transportation Information Center Display (electronic screen) within the lobby containing information related to local transportation alternatives. At a minimum the display should include information about nearby Metrorail stations and schedules, Metrobus stops and schedules, car-sharing locations, and nearby Capital Bikeshare locations indicating the availability of bicycles.
- Will not lease unused parking spaces to anyone aside from tenants of the building (e.g., will not lease to other nearby office employees, single-family home residents, or sporting events).
- Provide an annual CaBi membership to each employee for the first year after the building opens.
- Employers will participate in the Capital Bikeshare Corporate Membership program and offer discounted annual memberships to employees.
- Provide a FREE parking space for all vehicles that employees use to vanpool to work.
- Additional short- and long-term bicycle parking spaces above ZR16 requirements. [specify amount]
- Provide a bicycle repair station in each long-term bicycle parking storage room.

Menu of additional strategies (Office)

Intended for developments that are over-parked by more than 20% (per Table 2) OR impacts identified at multiple intersections OR severe intersection impacts were identified in the TIA.

Include everything in Baseline and Enhanced plans plus choose from the following (non-exhaustive) menu based on severity of impacts and parking ratio:

- Provide an annual membership to Bikeshare to each employee for [insert number] year(s) after the building opens.
- Provide SmarTrip cards pre-loaded with [insert \$] for all new employees for [insert number] year(s) after the building opens.
- Fund and install a 19-dock Capital Bikeshare (CaBi) station with 12 bikes and fund one-year of maintenance and operations costs.
- Fund and install the expansion of the Capital Bikeshare (CaBi) station located at [insert location] by [insert number] docks.
- Designate [insert number] parking spaces in the vehicle parking garage for car-sharing and micro-mobility services to use with right of first refusal. If an agreement has not been reached with one of



these services to occupy all of the dedicated spaces, the Applicant will provide [insert alternative from Menu].

- Will hold a transportation event for employees and members of the community once per year for a total of [insert number] years. Examples include resident social, walking tour of local transportation options, goDCgo lobby event, transportation fair, WABA Everyday Bicycling seminar, bicycle safety/information class, bicycle repair event, etc.).



Retail TDM Strategies

Baseline Plan (Retail)

All PUDs, LTRs, Design Reviews, and other projects where TDM is required by DDOT will start with a Baseline Plan. This Plan is intended for developments that are up to 10% over-parked (per Table 2) AND no intersection impacts were identified in the TIA.

Include all of the following:

- Unbundle the cost of parking from the cost to lease the building or unit and only hourly, daily, or weekly rates will be charged. Free parking, validation, or discounted rates will not be offered.
- Identify Transportation Coordinators for the planning, construction, and operations phases of development. The Transportation Coordinators will act as points of contact with DDOT, goDCgo, and Zoning Enforcement. There will be a Transportation Coordinator for each tenant and the entire site. The Transportation Coordinators will act as points of contact with DDOT, goDCgo, and Zoning Enforcement.
- Will provide Transportation Coordinators' contact information to goDCgo, conduct an annual commuter survey of employees on-site, and report TDM activities and data collection efforts to goDCgo once per year.
- Transportation Coordinators will develop, distribute, and market various transportation alternatives and options to employees and [customers, patrons, attendees], including promoting transportation events (i.e., Bike to Work Day, National Walking Day, Car Free Day) on property website and in any internal building newsletters or communications.
- Transportation Coordinators will receive TDM training from goDCgo to learn about the TDM conditions for this project and available options for implementing the TDM Plan.
- Will post "getting here" information in a visible and prominent location on the website with a focus on non-automotive travel modes. Also, links will be provided to goDCgo.com, CommuterConnections.com, transit agencies around the metropolitan area, and instructions for [customers, attendees, patrons] discouraging parking on-street in Residential Permit Parking (RPP) zones.
- Transportation Coordinator will demonstrate to goDCgo that tenants with 20 or more employees are in compliance with the DC Commuter Benefits Law and participate in one of the three transportation benefits outlined in the law (employee-paid pre-tax benefit, employer-paid direct benefit, or shuttle service), as well as any other commuter benefits related laws that may be implemented in the future.
- Provide employees who wish to carpool with detailed carpooling information and will be referred to other carpool matching services sponsored by the Metropolitan Washington Council of Governments (MwCOG) or other comparable service if MwCOG does not offer this in the future.
- Provide a free SmarTrip card and one (1) complimentary Capital Bikeshare coupon good for a free ride to each new employee.
- Will meet ZR16 requirements for showers and lockers for use by employees. [specify the minimum number provided]



- Will meet ZR16 short- and long-term bicycle parking requirements. Long-term bicycle parking will be provided free of charge to all employees. [specify the minimum number provided]
- Long-term bicycle storage rooms will accommodate non-traditional sized bikes including cargo, tandem, and kids bikes.

Enhanced Plan (Retail)

Intended for developments that are up to 20% over-parked (per Table 2) OR minor intersection impacts were identified in the TIA.

Include everything in Baseline Plan plus all of the following:

- Install a Transportation Information Center Display (electronic screen) within the lobby containing information related to local transportation alternatives. At a minimum the display should include information about nearby Metrorail stations and schedules, Metrobus stops and schedules, car-sharing locations, and nearby Capital Bikeshare locations indicating the availability of bicycles.
- Will not lease unused parking spaces to anyone aside from tenants of the building (e.g., will not lease to other nearby office employees, single-family home residents, or sporting events).
- Provide an annual CaBi membership to each employee for the first year after the building opens.
- Employers will participate in the Capital Bikeshare Corporate Membership program and offer discounted annual memberships to employees.
- Provide a FREE parking space for all vehicles that employees use to vanpool to work.
- Coordinate with [BID, WMATA, ANC] on a way finding plan along walking routes to the property from the [insert Metrorail or other transit] station.
- Additional short- and long-term bicycle parking spaces above ZR16 requirements. [specify amount]
- Provide a bicycle repair station in each long-term bicycle parking storage room.

Menu of additional strategies (Retail)

Intended for developments that are over-parked by more than 20% (per Table 2) OR impacts identified at multiple intersections OR severe intersection impacts were identified in the TIA.

Include everything in Baseline and Enhanced plans plus choose from the following (non-exhaustive) menu based on severity of impacts and parking ratio:

- Designate [insert number] parking spaces in the vehicle parking garage for car-sharing and micro-mobility services to use with right of first refusal. If an agreement has not been reached with one of these services to occupy all of the dedicated spaces, the Applicant will provide [insert alternative from Menu].
- Provide an annual membership to Bikeshare to each employee for [insert number] year(s) after the building opens.
- Provide SmarTrip cards pre-loaded with [insert \$] for all new [residents or employees] for [insert number] year(s) after the building opens.
- Fund and install a 19-dock Capital Bikeshare (CaBi) station with 12 bikes and fund one-year of maintenance and operations costs.
- Fund and install the expansion of the Capital Bikeshare (CaBi) station located at [insert location] by [insert number] docks.



- Will hold a transportation event for customers, employees, and members of the community once per year for a total of [insert number] years. Examples include resident social, walking tour of local transportation options, lobby event, transportation fair, WABA Everyday Bicycling seminar, etc.).



Hotel and Tourist Destinations TDM Strategies

Baseline Plan (Hotel and Tourist)

All PUDs, LTRs, Design Reviews, and other projects where TDM is required by DDOT will start with a Baseline Plan. This Plan is intended for developments that are up to 10% over-parked (per Table 2) AND no intersection impacts were identified in the TIA.

Include all of the following:

- Unbundle the cost of parking from the cost to lease the building and only hourly, daily, or weekly rates will be charged. Free parking, validation, or discounted rates will not be offered.
- Identify Transportation Coordinators for the planning, construction, and operations phases of development. The Transportation Coordinators will act as points of contact with DDOT, goDCgo, and Zoning Enforcement. There will be a Transportation Coordinator for each tenant and the entire site. The Transportation Coordinators will act as points of contact with DDOT, goDCgo, and Zoning Enforcement.
- Will provide Transportation Coordinators' contact information to goDCgo, conduct an annual commuter survey of employees on-site, and report TDM activities and data collection efforts to goDCgo once per year.
- Transportation Coordinators will develop, distribute, and market various transportation alternatives and options to employees and [customers, patrons, attendees], including promoting transportation events (i.e., Bike to Work Day, National Walking Day, Car Free Day) on property website and in any internal building newsletters or communications.
- Transportation Coordinators will receive TDM training from goDCgo to learn about the TDM conditions for this project and available options for implementing the TDM Plan.
- Front office and customer-facing staff will be provided training by goDCgo (either in-person or webinar) to learn of the non-automotive options for traveling to the property.
- Provide guests with goDCgo's Get around Guide by making it available on the property website and in printed format for front office or customer-facing staff.
- Transportation Coordinator will subscribe to goDCgo's hospitality newsletter.
- Will meet ZR16 requirements for showers and lockers for use by employees, [specify the minimum number provided]
- Will meet ZR16 short- and long-term bicycle parking requirements. Long-term bicycle parking will be provided free of charge to all employees. [specify the minimum number provided]
- Long-term bicycle storage rooms will accommodate non-traditional sized bikes including cargo, tandem, and kids bikes.
- [Hotel or destination] will participate in the Capital Bikeshare Corporate Membership program and offer discounted annual memberships to employees.
- Will post "getting here" information in a visible and prominent location on the website with a focus on non-automotive travel modes. Also, links will be provided to goDCgo.com, CommuterConnections.com, transit agencies around the metropolitan area, and instructions for [customers, attendees, patrons] discouraging parking on-street in Residential Permit Parking (RPP) zones.



- Provide comprehensive transportation information and directions on [hotel or destination] website, including promoting the use of non-automotive modes of transportation and links to website for goDCgo, Capital Bikeshare, DC Circulator, and the Washington Metropolitan Area Transit Authority (WMATA).
- Provide brochures with information on non-automotive options for traveling to the property available at all times in a visible location in the lobby.
- Transportation Coordinator will demonstrate to goDCgo that tenants with 20 or more employees are in compliance with the DC Commuter Benefits Law and participate in one of the three transportation benefits outlined in the law (employee-paid pre-tax benefit, employer-paid direct benefit, or shuttle service), as well as any other commuter benefits related laws that may be implemented in the future.
- Provide employees who wish to carpool with detailed carpooling information and will be referred to other carpool matching services sponsored by the Metropolitan Washington Council of Governments (MWCOG) or other comparable service if MWCOG does not offer this in the future.

Enhanced Plan (Hotel and Tourist)

Intended for developments that are up to 20% over-parked (per Table 2) OR minor intersection impacts were identified in the TIA.

Include everything in Baseline Plan plus all of the following:

- Install a Transportation Information Center Display (electronic screen) within the lobby containing information related to local transportation alternatives. At a minimum the display should include information about nearby Metrorail stations and schedules, Metrobus stops and schedules, car-sharing locations, and nearby Capital Bikeshare locations indicating the availability of bicycles.
- Will not lease unused parking spaces to anyone aside from tenants of the building (e.g., will not lease to other nearby office employees, single-family home residents, or sporting events).
- Provide an annual CaBi membership to each employee for the first year after the building opens.
- Purchase Capital Bikeshare one-day passes in bulk to have on hand for guests.
- Employers will participate in the Capital Bikeshare Corporate Membership program and offer discounted annual memberships to employees.
- Provide a FREE parking space for all vehicles that employees use to vanpool to work.
- Coordinate with [BID, WMATA, ANC] on a way finding plan along walking routes to the property from the [insert Metrorail or other transit] station.
- Additional short- and long-term bicycle parking spaces above ZR16 requirements. [specify amount]
- Provide a bicycle repair station in each long-term bicycle parking storage room.

Menu of additional strategies (Hotel and Tourist)

Intended for developments that are over-parked by more than 20% (per Table 2) OR impacts identified at multiple intersections OR severe intersection impacts were identified in the TIA.

Include everything in Baseline and Enhanced plans plus choose from the following (non-exhaustive) menu based on severity of impacts and parking ratio:










- Designate [insert number] parking spaces in the vehicle parking garage for car-sharing and micro-mobility services to use with right of first refusal. If an agreement has not been reached with one of these services to occupy all of the dedicated spaces, the Applicant will provide [insert alternative from Menu].
- Provide an annual membership to Bikeshare to each employee for [insert number] year(s) after the building opens.
- Provide SmarTrip cards pre-loaded with [insert \$] for all new [residents or employees] for [insert number] year(s) after the building opens.
- Fund and install a 19-dock Capital Bikeshare (CaBi) station with 12 bikes and fund one-year of maintenance and operations costs.
- Fund and install the expansion of the Capital Bikeshare (CaBi) station located at [insert location] by [insert number] docks.
- Will hold a transportation event for employees, patrons, and members of the community once per year for a total of [insert number] years. Examples include resident social, walking tour of local transportation options, lobby event, transportation fair, WABA Everyday Bicycling seminar, etc.).




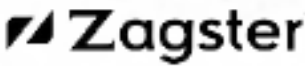







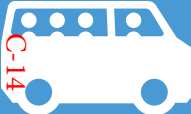
EMPLOYER VENDOR CONTACTS


goDCgo has assembled this guide for employers looking to offer commuter transportation amenities. For more information and pricing, please contact each vendor directly. If you have other vendors in mind, please share their info with us at info@goDCgo.com.



Don't forget to join goDCgo's Employer **Ambassador Awards** so all your efforts can be recognized.

	Vendor	Service	Contact
<p>DDOT</p> 		<p>Capital Bikeshare is the regional bikeshare system and offers unlimited access to over 4,000 bicycles at 485 stations.</p> <ul style="list-style-type: none"> • Corporate accounts to purchase annual memberships for employees 	<p>Direct: 202-299-2186 Email: info@godcgo.com Web: godcgo.com Address: 55 M St SE, Suite 400 Washington, DC 20003</p> <p>Capital Bikeshare Advertising</p> <ul style="list-style-type: none"> • Outfront Media • lauren.tyrrell@outfrontmedia.com
		<p>For questions about city stipulations/public right of way contact Kim Lucas, Bicycle and Pedestrian Program at DDOT.</p>	<p>Direct: 202-671-0534 Email: Kimberly.Lucas@dc.gov</p>
<p>CYCLING</p> 		<p>Bike racks, and other bicycle parking products for commercial bike parking.</p> <ul style="list-style-type: none"> • Bike Racks • Bike Shelters • Bike Lockers • Bike Repair Stations • Street Design • Dero Zap (commuter wellness program manager) 	<p>Direct: 888-337-6729 Web: dero.com</p> <p>Address: 42 Northern Stacks Dr Minneapolis, MN 55421</p>
		<p>The innovators at Duo-Gard create sustainable Bus Shelters, Smoking Shelters, Translucent Skylights, Translucent Canopies, and Bike Shelters.</p> <ul style="list-style-type: none"> • Bike Shelters • Bike Racks • Bike Lockers • Bike Cages • Bike Rooms & Indoor Parking • Bike Repair Stations • Scooter & Skateboard Racks • Additional Products 	<p>Direct: 734-207-9700 Web: duo-gard.com/bike-parking-and-infrastructure/</p> <p>Address: 40442 Koppnick Rd Canton, MI 48187</p>
		<p>Ground Control Systems provides high quality and secure bicycle parking racks, outdoor shelters, metal skateboard racks, indoor & outdoor bicycle lockers.</p> <ul style="list-style-type: none"> • Bike Lockers • Bike Corrals • Educational Kiosk • Bicycle Shelters • Campus & Urban Solutions • Indoor & Outdoor Bike Rooms • Skateboard & Scooter Racks • Snowboard & Ski Racks • Repair Stations & Pumps 	<p>Direct: 800-630-7225 Web: groundcontrolsystems.com</p> <p>Address: 708 Alhambra Blvd, Suite 200 Sacramento, CA 95816</p>

Vendor	Service	Contact
<p>CYCLING</p> 	<p>The Washington Area Bicyclist Association creates a healthy, more livable region by promoting bicycling for fun, fitness, and affordable transportation and advocates for better bicycling conditions and transportation choices.</p>  <p>Cycling Courses</p> <ul style="list-style-type: none"> • City Cycling • Family Bicycling • Everyday Biking Seminar 	<p>Direct: 202-518-0524 Email: education@waba.org Web: waba.org</p> <p>Address: 2599 Ontario Rd NW Washington, DC 20009</p>
<p>TRANSIT SCREENS</p>  <p>Provide transit information in your lobby to residents</p>	 <p>Zagster makes bike-sharing possible for every community. Zagster is the leading provider of bike share programs for cities, universities, businesses and more.</p> <p>Redmon Group is an interactive multimedia and technology company. We design and develop custom digital experiences that enable, train, and entertain.</p>  <ul style="list-style-type: none"> • Mobile • Interactives • E-learning • Digital Signage (i.e. Transit Screen) • Websites  <p>A global information company making cities healthier, sustainable and more accessible for everyone.</p> <ul style="list-style-type: none"> • Transit Screens 	<p>Direct: 844-924-7837 Email: sales@zagster.com Web: zagster.com</p> <p>Direct: 703-838-5461 Web: redmon.com</p> <p>Address: 211 North Union St, Suite 350 Alexandria, VA 22314</p> <p>Direct: 202-688-5006 Email: sales@transitscreen.com Web: transitscreen.com</p> <p>Address: 1133 15th St NW, 12th Floor Washington, DC 20005</p>
<p>BICYCLE REPAIR</p> 	 <p>On-site bike repair for employees.</p>  <p>On-site bike repair for employees.</p>	<p>Direct: 202-417-7305 Email: service@handybikesdc.com Web: Handybikesdc.com</p> <p>Direct: 888-414-0299 Email: inquiries@velofix.com Web: velofix.com</p>
<p>BIKE CLUBS</p>	 <p>Organize a bike club and company group rides.</p>	<p>Direct: 202- 822-1333 Email: bikeleague@bikeleague.org Web: bikeleague.org</p>
<p>CAR SHARE</p> 	<p>Zipcar</p> <p>Rent cars by the hour or day for business use.</p> <p>car2go</p> <p>Rent cars by the hour or day for business use.</p>	<p>Web: zipcar.com</p> <p>Web: car2go.com</p>
<p>VAN POOL</p> 	<p>Rideshare by Enterprise</p> <p>Rideshare by Enterprise will identify employees who live near one another and help them form a vanpool.</p>	<p>Direct: 301-212-6490 Email: enterpriserideshare@ehi.com Web: enterpriserideshare.com/vanpool/en.html</p>

Vendor	Service	Contact
	On-site Promotions, Seminars & Webinars Invite goDCgo on-site to talk with employees about their available benefits and transportation choices. Contact Employer Services Manager team.	Direct: 202-299-2186 Email: info@godcgo.com Web: goDCgo.com
Commuter Benefit Providers/ Resources	Informational Brochures Complimentary ordering and delivery of transportation maps, brochures, and Get Around Guides to stock your front desk or welcome packets.	Direct: 202-299-2186 Email: info@godcgo.com Web: goDCgo.com
	SmartBenefits WMATA's free program for administering transit benefits in the DC area	For new customers to get started: Direct: 202-962-2784 Email: smartbenefits@wmata.com Web: wmata.com/smartbenefits/
	Wage Works Third-party provider of pre-tax commuter programs that help employees reduce the cost of their daily commute	Direct: 1-866-602-3887 Email: dana.elkins@wageworks.com Web: wageworks.com
	Commuter Direct CommuterDirect.com® allows you to purchase transit tickets and passes online and have them delivered to your home or office. CommuterDirect.com account holders can set up renewable orders to automatically receive the tickets and passes they need for their commute. MARC, VRE, and MTA Commuter Bus riders can use SmartBenefits funds to purchase tickets through CommuterDirect.com.	Direct: 703-228-7433 Email: questions@commuterdirect.com Web: commuterdirect.com
	Edenred Commuter Benefit Solutions Third-party benefit administrator of comprehensive commuter benefit solutions	Direct: 800-531-2828 Email: sales@commuterbenefits.com Web: commuterbenefits.com

Additional Resources

SmarTrip Cards	WMATA Bulk sales of SmarTrip cards (orders of 25+).	Direct: 202-962-5700 Email: smartrip@wmata.com
Informational Brochures	Circulator DC Circulator provides public transportation to the District's main attractions and most lively neighborhoods at a cost of only \$1.	Direct: 202-671-2020 Web: dccirculator.com/connect/contact-us
	Metro Rail & Bus Washington Area's Rapid Transit and Bus Service.	Direct: 202-637-7000 Web: wmata.com/ezbulk
	VRE The Virginia Railway Express is a regional rail service that connects the Northern Virginia suburbs to Union Station in Washington, D.C.	Email: Gotrains@vre.org
MARC A commuter rail service that serves the Washington-Baltimore Metropolitan Area.	Email: marc@mta.maryland.gov	
Telework Spaces	DC Workspaces Cove WeWork Full-service facilities provide a professional work environment, including a variety of work settings across the District so employees can work productively while remote .	DC Workspaces: dcworkspaces.com Cove CoWorking Space: cove.is WeWork CoWorking and Office Space: wework.com



District Department of Transportation

Appendix D - Sample Performance Monitoring Plans



PMP Case Study 1: The Catholic University of America (Zoning Order 12-10A)

[First component: Parking policies that reduce availability over time]

- The maximum number of parking spaces shall be 1,920; the current total of 1,927 shall be reduced to 1,920 by the end of 2012. The University shall further eliminate at least 45 surface parking spaces on the Main Campus as part of the first development application submission. The University shall only propose new parking facilities that can be offset by elimination of an equal or greater number of parking spaces in other campus parking facilities.
 - The University shall further reduce the maximum number of parking spaces to 1,892 by the end of 2022.
- Continue to prohibit freshmen residents from parking vehicles on campus, with exceptions for those students who need a car for medical purposes or are in the Reserve Officers’ Training Corps;
- Reduce parking fees for carpool drivers. Carpool drivers shall be given priority in issuance of permits;
- Eliminate provision of free faculty and staff parking permits, currently provided by various University departments, for all new faculty and staff hired after May 25, 2012;
- Increase average parking permit fees per table below:

Table 6: FY 2019 Proposed Parking Permit Fee Schedule

Year	AY 2012	AY 2018	AY 2019	Effective Annual Rate Increase (AY18-AY19)	Total Increase (AY2012-AY2019)
Surface Parking					
Staff/ Faculty	\$425	\$625	\$665	6.4%	56%
Evening	\$245	\$345	\$360	4.3%	47%
Garage (Covered) Parking					
Staff/ Faculty	\$515	\$700	\$700	0.0%	35%
Evening	\$275	\$375	\$375	0.0%	36%
Student Parking					
Commuter Students per year, surface	\$425	\$625	\$665	6.4%	56%
Commuter Students per year, garage	\$515	\$700	\$700	0.0%	36%
Resident Students per year, surface	\$485	\$695	\$735	5.8%	52%
Resident Students per year, garage	\$565	\$770	\$770	0.0%	36%
Evening Students per year, surface	\$245	\$345	\$360	4.3%	47%
Evening Students per year, garage	\$275	\$375	\$375	0.0%	36%

[Second component: Transportation Demand Management (TDM) program commitments]

- The University shall implement the following TDM and Sustainability measures, as follows:
 - Measures to be required permanently:
 - Continue employee pre-tax payroll deduction for public transit costs;
 - Continue to operate a free Catholic University shuttle service to the Brookland-CUA Metro station and off-campus housing;
 - Assign a staff member the role of implementing the TDM Plan and provide their contact information to DDOT and goDCgo;
 - Email students, faculty and staff before the start of each semester to share transportation information and incentives;
 - Provide information on the Catholic University website in a prominent and visible location regarding non-automotive travel options; and

- Provide information for non-automotive travel options in student common areas and provide at student orientation.
 - Measures to be completed prior to Fall 2018 semester:
 - Install 338 new bike spaces on campus (understanding that as of 2018, a total of 274 spaces have already been installed, leaving 64 additional spaces to be installed). At least eight inverted U-racks (16 spaces) shall be located near the Bates lot);
 - Work with a carshare company to provide two carshare vehicle spaces in easily accessible locations on campus; and
 - Fund and install a Transit Screen in a student common area, such as the Pryzbyla Center;
 - Measures to be completed prior to Fall 2019 semester:
 - Fund and install a 19-dock Capital Bikeshare station on the University's campus and provide one year's maintenance and operation; and
 - Measures to be implemented, as necessary:
 - Offer new carpool incentives and rideshare matching services to campus commuters through Commuter Connections, and/or other service providers;
 - Increase Campus Shuttle frequency during peak periods to every 10 minutes, if demand is present;
 - Expand Campus Shuttle to provide rides seven days a week and operate at least 30 minutes before/after Metro opens/closes, if demand is present;
 - Offer discounted Capital Bikeshare memberships to students;
 - Increase employee participation in pre-tax transit benefits;
 - Fund and install Transit Screens in additional student common areas;
 - Provide additional carshare spaces in easily accessible locations on campus;
 - Increase parking permit fees over the increases required pursuant to paragraph (b) of this condition;
 - Impose limitations on the number of parking permits issued;
 - Target access restrictions to commuter parking; and
 - Introduce new or increase existing financial incentives for alternative mode options.

[Third component: performance monitoring metrics, criteria, and timing]

- The University shall monitor its parking supply on an annual basis and report to DDOT on Single Occupancy Vehicle ("SOV") mode share reductions and implementation of TDM measures, with a goal of meeting a 55% non-automotive mode split or 41% SOV mode share (per goal cited in the 2012 Catholic University Master Plan) for employees and students who commute to campus. The University commits to a performance monitoring plan that requires it to:
 - Submit annual TDM monitoring reports to DDOT for a minimum of two consecutive years, beginning with the Fall 2018 semester;
 - TDM monitoring reports shall include the following at a minimum:
 - Student enrollment and number of faculty/staff;
 - Mode splits from Catholic University Commuter Survey for the most recent semester, broken down separately for students and faculty/staff;



- At a minimum, mode share data shall be collected for the following modes: single occupancy vehicles, carpool/vanpool, walk, bicycle, bus, Metrorail, commuter rail, and other/telework;
 - Vehicle parking space occupancy counts;
 - Bicycle parking occupancy counts;
 - Documentation of any changes to TDM program from previous year, including new or innovative policies being implemented not explicitly required in the TDM Plan; and
 - A TDM work plan/timeline for the upcoming school year;
- The TDM monitoring report shall include entering and exiting vehicle traffic counts for the morning commuter and school afternoon peak hours every two years, or as specified by DDOT through future coordination or monitoring;
 - TDM monitoring reports will no longer be required to be submitted to DDOT when two consecutive annual reports demonstrate that the Applicant is in compliance with the 55% non-automotive travel requirement or Catholic University single-occupant vehicle mode share reaches 41% or lower; and
 - If the results of the Catholic University mode share data do not demonstrate at least one percentage point improvement toward either the nonautomotive or SOV mode share goals since the previous TDM monitoring report, then the Applicant will be required to adjust and improve the TDM program gaining DDOT approval on these adjustments.
- In order to afford DDOT adequate time to assess the impacts of a project that includes parking, the University shall meet with DDOT to scope any further processing application that includes parking facilities prior to submitting the application. The University shall submit a Comprehensive Transportation Review (“CTR”) study to DDOT at least 45 days prior to the hearing. The supplemental information will be provided to justify the proposed parking facilities and demonstrate progress in decreasing SOV mode share.



PMP Case Study 2: Latin American Montessori Bilingual (LAMB) Public Charter School / Kingsbury Center – 5000 14th Street NW (BZA Order 19581)

[First component: Physical pedestrian network upgrades]

- The Applicant shall fund and construct the following improvements to the pedestrian network to encourage a reduction in automobile mode share and to mitigate travel delay impacts at nearby intersections:
 - A sidewalk along the southern side of Gallatin Street between Piney Branch Road and 14th Street N.W. with new curb ramps and crosswalks, as required, as well as crosswalks specifically across Gallatin Street, N.W. at both Piney Branch Road and Iowa Avenue to connect pedestrians to the existing sidewalk on the northern side;
 - New curb ramps on the northern and southern sides of Emerson Street at 15th Street, N.W. and stripe crosswalks, subject to DDOT approval; and
 - Upgrades to all existing sub-standard curb ramps at the intersection of 14th Street and Farragut Street, N.W.

[Second component: Transportation Demand Management (TDM) program commitments]

- The School shall implement the following transportation demand management (TDM) plan:
 - Student TDM Elements
 - The School will encourage carpooling and publically recognize at Peace Ceremonies any parent who regularly drives three or more students to school;
 - The School will offer DC One Cards to all students to encourage the use of public transportation;
 - The School will require all drop-off and pick-up activities to be within areas specifically designated on the Property;
 - The School will offer a parent listserv which will allow parents to find carpool matches;
 - The School will coordinate bike safety/education courses for students.
 - Faculty/Staff TDM Elements
 - The School will offer a transit benefit program to faculty and staff to encourage the use of public transportation;
 - All faculty and staff who drive to school will be instructed to park on campus;
 - The School will encourage carpooling and publically recognize any faculty or staff who regular drives two additional faculty or staff members to school; and
 - All faculty/staff will complete training on TDM procedures.
 - School-Wide TDM Elements
 - The School will continue to work with the neighborhood through periodic public meetings to ensure any traffic concerns can be addressed in a timely manner;
 - The School will assign a staff member to serve as Transportation Management Coordinator (TMC) who will be responsible for oversight of the TDM plan,

- adherence to driving and parking regulations, and encourage and facilitate carpooling;
 - The School will implement policies for deliveries to the campus to minimize the impact of this traffic on the neighborhood;
 - The School will install outdoor bicycle parking racks to promote additional bicycle activity on-campus; and
 - The School will participate in the Safe Routes to School Program.
- The School shall post a sign on the Piney Branch Road gate(s) indicating that they shall be used for exit only.

[Third component: performance monitoring metrics, criteria, and timing]

- Starting in the first year of LAMB's operations at the building, LAMB shall implement the performance monitoring plan (PMP) as follows:
 - The School shall submit a report to DDOT once per year. The report will include the following elements:
 - Student enrollment and number of faculty/staff;
 - Total entering vehicle traffic counts for students, faculty, and staff at all site driveways for the busiest morning school drop-off hour. This count must be equal to or less than 295 vehicles, prorated based on the number of staff members and students enrolled at the time of reporting;
 - Mode splits, broken down separately for students and faculty/staff, obtained by counters (not travel surveys);
 - Vehicle occupancy counts;
 - Drop-off/pick-up area queue lengths and potential spill-back into public space using video counts (queues must not spill over into public space); and
 - Documentation of any changes to the transportation demand management (TDM) plan from the previous year, including new or innovative policies being implemented but not explicitly required in the TDM plan.
 - Data collection will be performed on a yearly basis. Data collection will occur on a typical school day during the Spring session when weather conditions are normal. A "typical" school day is defined as a Tuesday, Wednesday, or Thursday when regular school hours are in effect, during a week without holidays, and far enough into the school year that parents, students, and faculty/staff members are accustomed to school operations. Data collection shall include the following:
 - Obtaining student enrollment and faculty/staff numbers from LAMB at the time of reporting;
 - Manual counters or video counters will be employed at each of the four site driveways between the hours of 7:00 AM and 9:30 AM on a typical school day in order to determine the total entering vehicles during the morning peak hour. These counters will also be used to determine whether or not the pick-up/dropoff queues extend into public space and the mode splits;
 - Manual counters will be employed at the pick-up/drop-off area(s) and the parking lot to count the number of students in each vehicle and the number of employees



carpooling. These counts will take place on the same day as the driveway counts; and

- A survey of families and faculty/staff will be conducted and cross referenced against the field observations to help determine mode splits by students and faculty/staff.
- The School will be considered in compliance with the PMP if the vehicle trip target for the busiest morning school drop-off hour is met (i.e., less than or equal to 295 entering vehicles, factored based on the number of enrolled students and staff members) and if pick-up/drop-off queues are shown to stay within private property.
- The submission of performance monitoring reports will continue until (1) a minimum of three years of reports have been submitted or LAMB increases its enrollment to a maximum of 600 students, whichever is later, and (2) the two latest consecutive years demonstrate that the school is in compliance with the PMP.



PMP Case Study 3: Wharf DC – Second Phase of Waterfront Redevelopment (ZC Order 11-03J)

[First component: Physical bicycle and pedestrian network upgrades]

- The Applicant shall fund and construct the following improvements in the vicinity of the PUD Site, subject to DDOT approval:
 - Remove the channelized southbound right-turn lane on 6th Street, S.W., subject to DDOT approval, to improve pedestrian safety and accessibility along this critical walking path from the Waterfront Metrorail Station to the Wharf. The scope of this mitigation measure shall be limited only to the northwest corner of the intersection and include moving the traffic signal pole, increasing the curb radius on the corner, constructing new curb ramps, striping new crosswalks to connect with the new curb ramps, and restoring the former channelized lane to a combination of sidewalk and green space, subject to DDOT public space review.
 - Stripe the missing crosswalk across the southern leg of the intersection of 6th Street and Maine Avenue, S.W.;
 - Upgrade the curb ramps on the northwest corner of the intersection of 7th Street and Maine Avenue, S.W., as identified in the CTR, if not already completed by others; and
 - Stripe a crosswalk and construct curb ramps, subject to DDOT approval, on M Place, S.W. (i.e., the curved portion of 6th Street S.W.) to create a safe pedestrian crossing from the sidewalk connecting the Titanic Memorial to Parcel 11;
 - Install a grade-separated bi-directional cycle track along the southern side of Maine Avenue SW; and
 - Install shared lane markings ("sharrows") and other improvements along 6th Street, M Place, and Water Street SW that will connect the Maine Avenue SW cycle track to the Anacostia Riverwalk Trail;
 - Fund the installation of two (2) new Capital Bikeshare stations, one (1) along Maine Avenue SW and one (1) near Waterfront Park. Both stations will have a minimum of 19-docks;
 - Fund an expansion of the existing Capital Bikeshare station at the intersection of Maine Avenue and 7th Street SW by a minimum of four (4) docks, provided adequate space is available to accommodate the expansion of the existing Capital Bikeshare station.

[Second component: Transportation Demand Management (TDM) program commitments]

- The Applicant agrees to commit to the following TDM elements for the life of the project, as proposed by DDOT:
 - Significantly exceed Zoning requirements to provide bicycle parking/storage facilities at the proposed-development. This includes secure parking located on-site and short-term bicycle parking around the perimeter of the site;
 - Unbundle the cost of vehicle parking from the cost of each office lease and only offer daily, weekly, or monthly parking rates.
 - Install Transportation Information Center Displays (electronic screens) within each of the lobbies in Phase 2 (residential, office, and hotel) containing information related to transit alternatives.
 - Identify TDM Leaders (for planning, construction, and operations). TDM Leaders will work with residents and employees in the development to distribute and market various transportation alternatives and options;

- Provide TDM coordinator's contact information to DDOT and goDCgo;
 - Provide TDM materials to new residents in the Residential Welcome Package materials;
 - Provide residents and employees who wish to carpool with detailed carpooling information, including information on other carpool matching services sponsored by the Metropolitan Washington Council of Governments (MWCOG), or other similar comparable service if MWCOG does not offer this in the future;
 - Continue to coordinate with the SW BID on a way finding plan along walking routes from the L'Enfant and Waterfront Metrorail stations. Particular focus should be placed on adding signage at the Metrorail stations directing visitors toward The Wharf;
 - Improve the District Wharf website to stress non-automotive options for traveling to the site, provide greater detail about these options, and add other visuals such as maps;
 - Designate carpooling and vanpooling spaces in a convenient location within each parking garage; and
 - Provide one shopping cart (utility cart) for every 100 residential units to encourage residents to walk to the grocery store and run errands; and
- The Applicant will expand, enhance or remove TDM elements from the TDM Plan, as necessary, to meet the performance monitoring goals set forth in the TDM monitoring plan. If the first round of TDM monitoring on Phase 2 exceeds vehicular trip targets by 10%, the Applicant agrees to implement some or all of the following three measures, with flexibility to suggest comparable measures with DDOT's approval:
 - Provide an annual Capital Bikeshare membership to every resident of Phase 2 age 16 and above for the first five (5) years of occupancy and an equivalent value toward the use of a carshare service for the first three (3) years of occupancy; and
 - Provide family-friendly facilities at residential buildings such as secure storage for strollers.

[Third component: performance monitoring metrics, criteria, and timing]

- The performance monitoring plan is split into two parts, (1) the primary monitoring plan reviews site generated trips and is the focus of TDM monitoring, and (2) a secondary monitoring plan that reviews event management and curbside operations.
 - The primary performance monitoring plan includes the following:
 - The first monitoring cycle will occur once Phase 1 (Parcels 1 through 5, 11 and Pier 4) reaches 70% of commercial occupancy and 90% of residential occupancy.
 - Data will be collected only during the months of September through October and March through May when both DC Public Schools and Congress are in session. Data will be collected for three days, a Tuesday, Wednesday and Thursday.
 - The data collected will include all vehicular trips generated by the development during the AM and PM commuter peak hours, and will be based on counts of garage in and outs, and pick-up/drop-off activity generated by The Wharf Phase 1. A methodology for collecting the data will be presented to DDOT prior to the counts for their review and comment.
 - The total peak hour trip generation of The Wharf Phase 1 will be compared to the projections contained within the May 14, 2012 CTR. The trip generation thresholds used can be altered based on occupancy and completeness of various Parcels within The Wharf Phase 1. A methodology for setting the trip thresholds will be presented to DDOT prior to the counts for their review and comment. If the counts

- exceed projections by more than 10%, the applicant will update the TDM and mitigation plan by adding or enhancing TDM elements.
- The counts and proposed changes to the TDM plan, if any, will be documented and sent to DDOT for their review. The applicant will provide DDOT sufficient time to review and comment on any proposed TDM changes prior to their implementation.
 - The monitoring cycle will repeat every six months. If three consecutive monitoring cycles do not exceed projected trips by more than 10%, then monitoring will cease.
 - If two consecutive monitoring cycles show trips exceeding projected trips by over 10%, then the applicant will perform a TDM survey of employees and residents to help identify what further TDM adjustments are needed.
 - A second phase of monitoring will begin once Phase 2 (Parcels 6 through 10) reaches 70% of commercial occupancy and 90% of residential occupancy. This phase of monitoring will follow the same methodology as the monitoring plan for Phase 1, as described above and documented in the November 28, 2012 Phase 1 plan. Trip generation thresholds for Phase 2 will be established based on the projected total peak hour trip generation analyzed in the September 18, 2017 CTR.
- The secondary monitoring plan includes observing and adjusting operational aspects of the site. Its purpose is not to determine how the site impacts travel on adjacent streets, but rather to ensure that the site is operating well and not negatively impacting public space. It includes the following:
- The first secondary monitoring report will occur once Phase 1 (Parcels 1 through 5, 11 and Pier 4) reaches 70% of commercial occupancy and 90% of residential occupancy.
 - A second will be performed once Phase 2 (Parcels 6 through 10) reaches 70% of commercial occupancy and 90% of residential occupancy.
 - Data will be collected and observations made only during the months of September through October and March through May when both DC Public Schools and Congress are in session. A methodology for collecting the data will be presented to DDOT prior to the counts for their review and comment.
 - The data collected and observations made will include:
 - Evening commuter peak hour trip generation during an event at Wharf Hall;
 - Saturday peak trip generation for the project, with and without an event;
 - Peak parking occupancy on site, during a weekday and Saturday, both with and without events;
 - Peak bicycle parking occupancy on site during a weekday and Saturday, both with and without events;
 - Pedestrian crossings along the site frontage across Maine Avenue, during a weekday evening peak and Saturday peak, both with and without events
 - Observations (including counts and longest length of queues) at all pick-up/drop-off areas, including taxis, charter buses, and valet operations. Times to be based on highest reported activities, such as Friday nights during events and Saturdays during events, and during peak tour boat demand.
 - The observations and data collected will be documented and presented to DDOT, along with a list of operational adjustments planned. The applicant will provide



DDOT sufficient time to review and comment on any proposed changes prior to their implementation.

- Additional monitoring of the items listed above will be based on their performance in the initial monitoring cycle and discussions with DDOT.



District Department of Transportation

Appendix E - Sample Loading Management Plan



LOADING MANAGEMENT PLAN (LMP)

[State the location, length, and number of loading zones planned for the building. Indicate which DEM or ZR16 requirement cannot be met that trigger the need for this LMP. Indicate what uses will share the berth(s), what times will be allotted to each use, what the requirements are for using the loading berth(s), and the process for reserving the berth(s). Indicate access points, access or egress restrictions (ex. No left turns out of the berth or no left turns out of the alley or side street), and whether or not back-in loading will occur (any why).

Example Paragraphs to be Included with LMP:

The primary loading facilities are planned along the southern edge of the site on State Street. The current development plans show two 30' berths and one 20' delivery space to serve the site, which is reduced from the zoning requirement. Because this is a mixed-use project, the loading berths will be shared by both the residential and retail components of the site. The site has been designed to accommodate head-in/head-out truck movements per DDOT standards. Usage between retail and residential loading will be managed via a dock manager with residential loading scheduled when the loading areas are not used for retail loading. Tenants will be required to notify the front desk/loading dock manager when moving in or moving out. Retail loading typically occurs between 7:00am and noon. As such, it is anticipated that residential loading activities will primarily be scheduled during afternoon periods. Loading and service vehicles will access and exit the site from Famous Avenue and onto Jefferson Street or from 8th Avenue to access State Street.

The goals of this plan are to maintain a safe environment for all users of the site, loading dock, streets, 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 components of the loading management plan that will be implemented for the life of the project are as follows:

[Note that the following bullets must be included in the LMP and memorialized in the development's approval documents (i.e., Zoning Order and/or public space permit for the curb cuts depending on process and type of relief being sought). The LMP may be adjusted as necessary to address the specific loading challenges with the proposal]

- A loading dock manager will be designated by the building management who will be on duty during delivery hours. The dock manager will be responsible for coordinating with vendors and tenants to schedule deliveries and will work with the community and neighbors to resolve any conflicts should they arise.
- A lease provision will require all tenants to use only the loading area for all deliveries and move-in and move-out activities.
- All tenants will be required to schedule deliveries that utilize the loading area (any loading operation conducted using a truck 20-feet in length or larger).
- The dock manager will schedule deliveries using the berths 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 to not compromise safety or impede [drive aisle, street, alley, intersection] functionality.



- The dock manager will schedule residential loading activities so as not to conflict with retail deliveries. All residential loading will need to be scheduled with the dock manager and it is anticipated that residential loading will take place primarily during [afternoons/evenings], when the retail loading activity is minimal.
- 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 [State Street] except during those times when a truck is actively entering or exiting a loading berth.
- Service vehicle/truck traffic interfacing with [State Street] traffic will be monitored during peak periods and management measures will be taken if necessary to reduce conflicts between truck and vehicular movements.
- The dock manager will monitor the timing of the [retail and/or residential] deliveries to see if any adjustments need to be made to ensure any conflicts with the retail loading and residential loading activities are minimized.
- Trucks using the loading dock 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 goDCgo Motorcoach Operators Guide, and the primary access routes shown on the DDOT Truck and Bus Route Map (godcgo.com/freight).
- 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 (ex. No left turn onto [State Street]). The dock manager will also distribute flyer materials, such as the MWCOG Turn Your Engine Off brochure, to drivers as needed to encourage compliance with idling laws. The dock manager will also post these materials and other relevant notices in a prominent location within the loading area.

Additional Loading Management Strategies to Include as necessary.

- Delivery trucks over [select size] in length will be prohibited from serving the site. [include this bullet if there is a geometric challenge (i.e., curb radii, alley width, loading berth design, length of loading zone, etc) revealed in the AutoTurn diagrams]
- Delivery trucks will be prohibited from serving the site between the hours of [select time frame]. [include this bullet if site is in a highly congested area, located within or near a major generator of traffic, there is a challenge with using the alley, there are timed curbside restrictions, or there is some other legitimate neighborhood concern with delivery vehicles]
- [residential projects with curbside move-ins/outs] Residents utilizing moving trucks greater than 20 feet in length shall be required to obtain “Emergency, No Parking” signs during the duration of the move. The fees for this service will be paid by the resident.
- [In high pedestrian and/or school zones] In addition to the presence of a dock manager, a truck detection and pedestrian warning system will be installed at the loading dock. This system will include sensors installed to



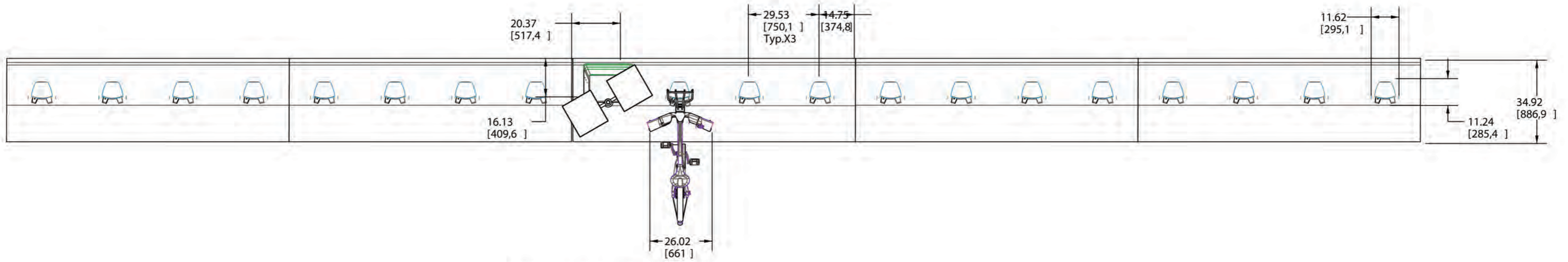
monitor truck movements into and out of the loading facilities with flashing beacons alerting pedestrian to trucks that may be entering or exiting the loading facilities.

- [In high pedestrian and/or school zones] In addition to the presence of a dock manager, a flagger will be present whenever a vehicle is entering/exiting the loading dock. This flagger will alert pedestrian/bicyclists/other vehicles to trucks that may be entering or exiting the loading facilities.
- [In special event areas] No deliveries should occur within three hours of a game or other event.
- [Additional bullets should be included as necessary to address specific truck turning, trash pick-up, or design relief issues associated with the site or zoning action]

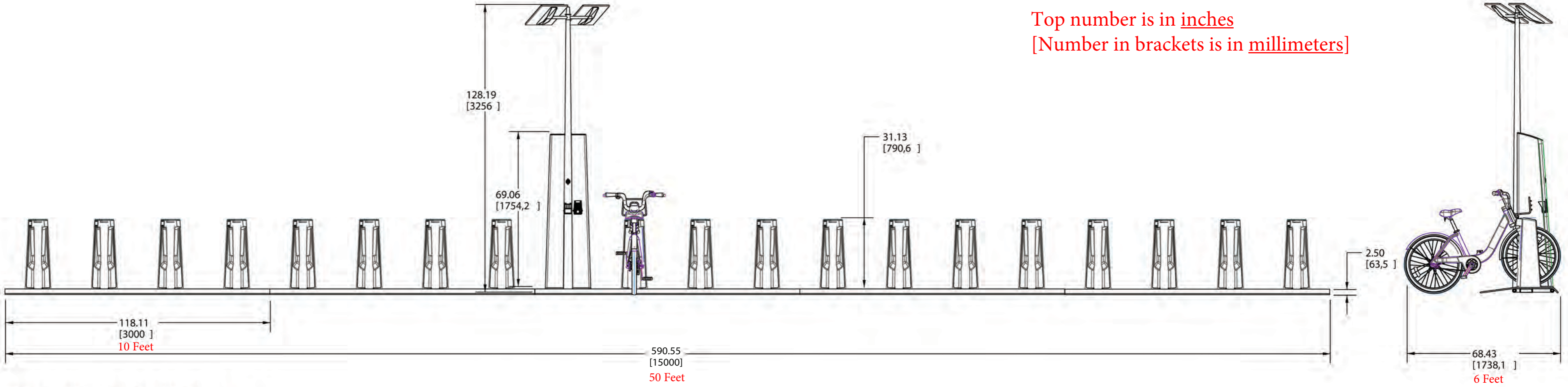


District Department of Transportation

Appendix F - Capital Bikeshare Station and Bicycle Parking Rack Design



Top number is in inches
 [Number in brackets is in millimeters]



5 technical platforms
19 docks

Capital Bikeshare Station Design

BICYCLE PARKING REQUIREMENTS

Signs

When bicycle parking spaces are required, signs must be posted in a prominent place at each entrance to the building or structure stating where bicycle parking spaces are located.³ The sign must have a white background with black lettering that is at least 2 inches in height.⁴

Maintenance

A property owner shall provide and maintain all required bicycle parking spaces for as long as the structure that the bicycle parking spaces are designed to serve exists. Maintenance of required bicycle parking spaces shall include keeping all racks and spaces clear of snow, ice, and any other obstructions.⁵

Bicycle Rack Design

There are a variety of designs for bicycle racks produced by many manufacturers. Bike racks can be purchased as single units, with a capacity of locking 2 bikes (one on each side), or as multiple units attached together, with a larger capacity. However, not all manufactured bicycle racks meet the District's standards. Common rack styles that are acceptable include the "Inverted U" and "Post and Ring" racks (see Figure 1). Custom designs and "artistic" racks can also be used, provided they meet the following performance criteria for bicycle racks and are approved by DDOT. Product advertising is not permitted on custom bike racks.

Bicycle Rack Requirements

Bicycle racks must meet the following requirements:

- The frame and one wheel can be locked to the rack with a secure U-shaped lock ("U-lock") without removing a wheel from the bicycle.⁶
- The frame can be supported in at least two places so it cannot be pushed over or easily fall.⁷
- The rack must be securely anchored.



"Inverted-U" racks are an example of an acceptable rack design. These racks provide two points of contact, can secure a bicycle with a U-lock, and are securely anchored. They are also properly spaced from one another; and are located near the building entrance.

The following are additional features of acceptable bicycle racks:

- The rack is installed on a permanent foundation (e.g., concrete pad) to ensure stability.
- It is secured with tamper-proof nuts, if surface mounted.
- The rack design keeps both bike wheels on the ground (except for the portion of long-term bike parking racks that may be vertical).
- It can support a variety of bicycle sizes and frame shapes.
- The diameter of locking pole is between 1.5 inches and 2.5 inches.
- Galvanized or stainless steel racks are recommended (and required for racks on public property). Outdoor racks must also be coated with PVC or thermoplastic.

³ District of Columbia Zoning Code (DC Zoning Code), Subtitle C, Chapter 8, Section 801.1

⁴ District of Columbia Municipal Regulations (DC Regs), Section 2910

⁵ DC Zoning Code, Section 801.2

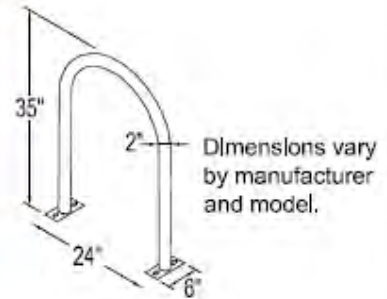
⁶ DC Zoning Code, Section 801.3

⁷ Ibid.

Figure 1: Acceptable Bike Rack Designs (DDOT Bicycle Facility Design Guide)

BICYCLE RACK DESIGNS

PREFERRED "U Rack" DESIGN



ACCEPTABLE DESIGNS



Golden Triangle
BID Style



Downtown
BID Style



UNACCEPTABLE DESIGNS



This type of rack can bend the wheel,



This type of rack does not support the bicycle frame in at least 2 places.

RACK ELEMENTS

The rack must:

- Support the bicycle frame in at least 2 places, allowing the frame and wheel to be locked using a U-lock or cable lock.
- Prevent the wheel of the bicycle from tipping over.
- Not damage the bicycle.
- Be durable and securely anchored.
- Allow front-in or back-in parking.

Unacceptable Bicycle Racks

Bicycle racks must *NOT*:

- Support the bicycle at only one point.
- Support the bicycle only by one wheel.
- Allow the bicycle to fall, which can damage the bike and block pedestrian right-of-way.
- Have sharp edges that can be hazardous to the visually impaired.
- Connect to each other with a bar on top (that can block handlebars and baskets).
- Suspend any part of the bike in the air or require that the bicycle be lifted to get it into position, except for the portion of long-term bike parking racks that may be vertical (see next section for detail).⁸

8 DC Zoning Code, Section 805.9



Examples of bicycle racks that are not approved. The designs do not properly support bicycles and lead to improper and inefficient parking.

Long-term Bicycle Parking

Long-term parking is intended for people making longer stays at a location, and shall be available for employees, residents, and other building occupants.⁹

Location and Level

Bicycle parking must be designed for convenient daily use, not simply for short-term storage of bicycles. All required long-term bicycle parking spaces must be located within the building for which they are required.

Required long-term bicycle parking must be no lower than the first cellar level or the first complete parking level below ground, and no higher than the first above-ground level.

Access may be provided by an elevator with interior dimensions of 80 inches by 54 inches.

Long-term Bicycle Parking Types

All residential buildings must provide long-term parking in the form of acceptable bicycle racks or lockers.¹⁰ In new and substantially renovated buildings, the zoning requires that all required long-term spaces must be provided indoors (in a parking garage or a bicycle storage room). A minimum of 50 percent of required long-term bicycle parking spaces shall allow the bicycles for be placed horizontally on the floor or ground, without the bicycle being suspended.¹¹ For older buildings, indoor parking is preferred but may not always be feasible. In these cases, if bicycle parking spaces must be located outside of the building, the spaces shall be secure, covered, and adjacent to the building.¹²

Parking Garages

Bicycle parking in parking garages must be clearly marked and separated from motor vehicle parking by a physical barrier, such as a wheel stop or bollards.¹³ Bicycle racks inside parking garages must meet the security standards of short-term racks or lockers.



Indoor bike parking can include vertical or double-tier racks, as long as the racks are securely bolted to the building and it is possible to lock the bike frame and one wheel with a standard U-lock.

Bicycle Rooms

Where long-term parking is provided in a bicycle room, the room shall have solid walls or floor-to-ceiling fencing. The room shall have locked doors. The entire room must be visible from the entry door. A motion-activated security light in a tamper-proof case must be provided in each bicycle room.

⁹ DC Regs, Section 1215.4

¹⁰ DC Zoning Code, Section 805.3

¹¹ DC Zoning Code, Section 805.9

¹² DC Regs, Section 1215.1

¹³ DC Zoning Code, Section 805.4 and DC Regs, Section 1215.7



Examples of acceptable short-term rack designs in DC.
(photo credits: Elvert Barnes)

Short-term Bicycle Parking

Short-term bicycle parking is intended primarily to serve visitors, such as retail patrons making trips of up to a few hours. It is sometimes called “visitor parking;” however, it may serve other bicycle users as needed.

Location

Short-term bicycle parking must be located in a publicly-accessible space within a maximum of 120 feet of pedestrian entrances¹⁴ (25 feet is preferred). The location must be well-lit and convenient to the building it is meant to serve.¹⁵

Safe locations for short-term bicycle parking also have these features:

- They are in full view, near pedestrian traffic and windows, and in well-lit areas to maximize visibility and minimize vandalism.
- They are under cover to protect bicycles from inclement weather.
- They are far enough away from the street or parking spaces so that bicycles will not be damaged by cars, set back if possible (see Distance from Curb).
- They do not obstruct pedestrian traffic, including when a bike is parked and when empty.

Additional Features of Accessible Locations

Accessible locations for short term parking have these characteristics:

- They are located between building entrances and roads, bike lanes, and paths.
- The pedestrian access route is at least 48 inches wide (60 inches or more is preferred).¹⁶
- The pedestrian access route does not have a slope greater than 5 percent (8 percent if level landing is provided every 30 feet of linear distance).

¹⁴ DC Zoning Code, Section 804.2

¹⁵ DC Zoning Code, Section 804.6

¹⁶ DC Zoning Code, Section 805.8 and DC Regs, Section 1215.

Short-term Bicycle Parking in Public Space

Required short-term parking must be on the same lot as the building meeting the requirement, or on public space within 20 feet after obtaining approval through the application process.

DDOT encourages short-term bike parking in public space for visitors and customers. Private developers and property owners may not install racks in the public right-of-way without formal permission from the city. To apply for a permit, visit <http://.tops.ddot.dc.gov> or contact the DDOT bike parking office at (202) 673-6813.

DDOT is also able to install bicycle racks in public space at the request of the public. To submit a request for a rack, please contact 311 or contact the DDOT bike parking office at (202) 673-6813.

In-Street Bike Racks

Occasionally, when demand for bike parking is high and sidewalk space is limited, bicycle parking corrals are installed in the street, typically in the parking lane. In-street corrals are best on low-volume streets or on streets where a bicycle lane separates the corral from moving traffic. A physical barrier such as flexible bollards and curb stops should separate the bike corral from traffic including parked cars.



Examples of in-street bicycle parking in the District of Columbia. Flexible posts separate traffic from the bike parking.

Layout Dimensions

Proper layout of bicycle racks is essential to ensure that they will safely and conveniently accommodate the intended number of bicycles. Racks must be located in a safe and accessible place with adequate space to maneuver a bicycle in and out. Each required bicycle parking space must be accessible without moving another bicycle.¹⁷

Layout Must Follow These Minimum Dimensions:

Each required long-term bicycle parking space shall be:

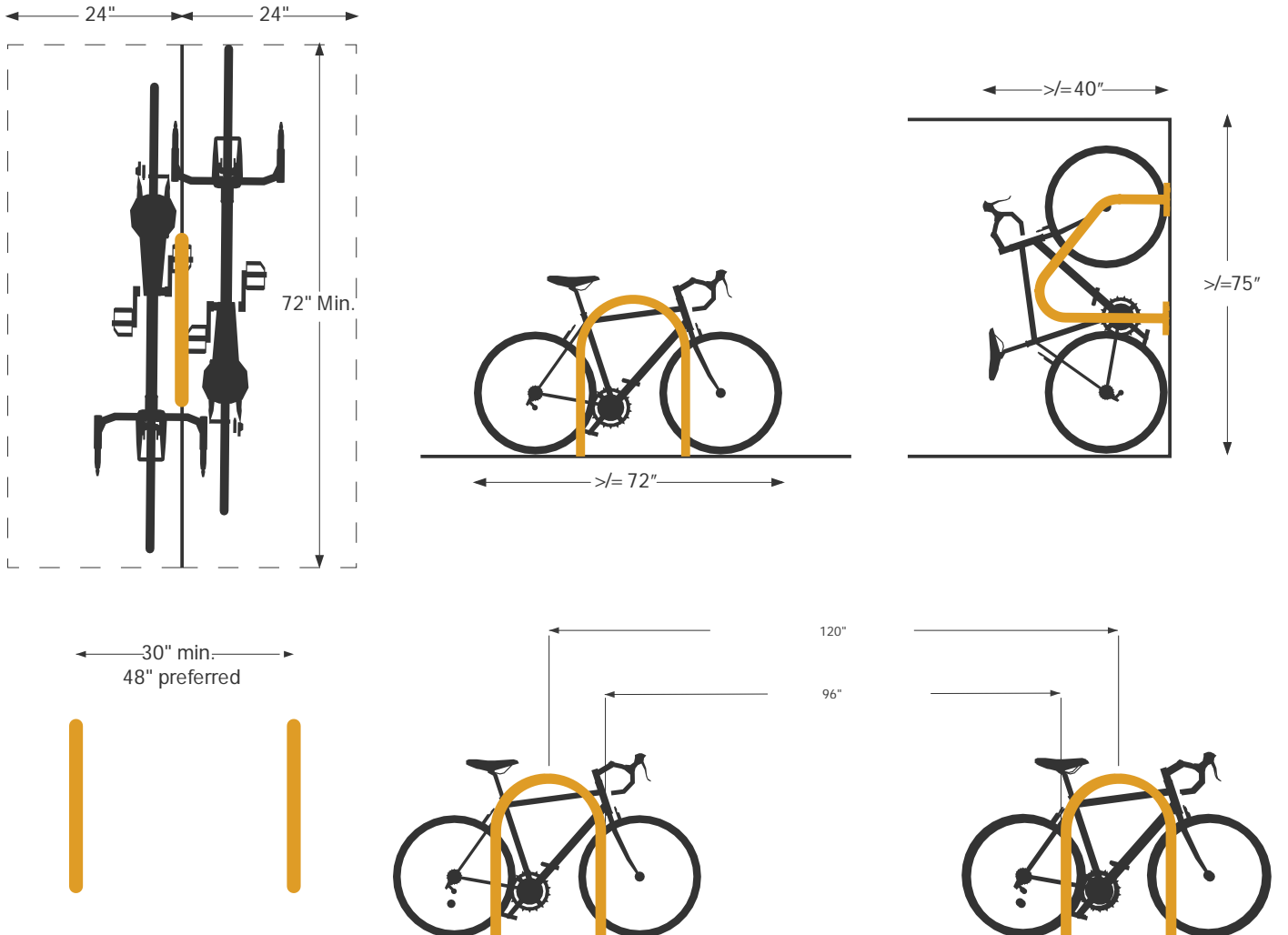
- A minimum width of 24 inches, and shall be:
 - » A minimum of 72 inches in length if the bicycles are to be placed horizontally; or
 - » A minimum of 40 inches in length if the bicycles are to be placed vertically¹⁸

Distance to other Racks:

Rack units aligned parallel to each other (side by side) must be at least 30 inches apart; 48 inches is recommended. This includes racks that are sold as multiple rack units attached together.

Rack units aligned end to end must be at least 96 inches apart (120 inches from center to center), leaving a 48 inch clear space between bicycles.¹⁹

Figure 2: Linear Rack Spacing

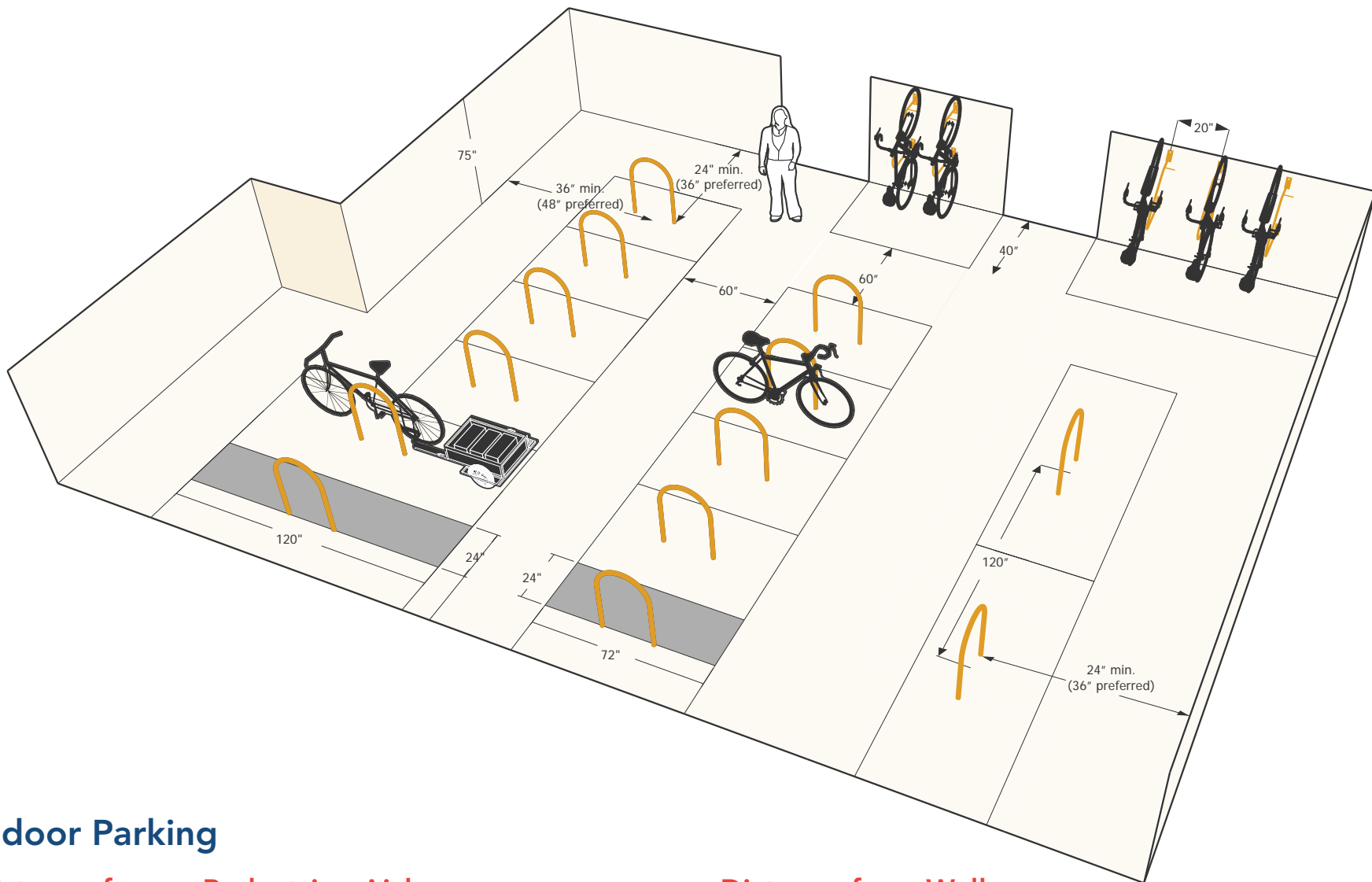


17 DC Zoning Code, Section 801.4

18 DC Zoning Code, Section 805.10

19 DC Zoning Code, Section 801.3

Figure 3: Bike Room Rack Dimension/Spacing



Indoor Parking

Distance from a Pedestrian Aisle:

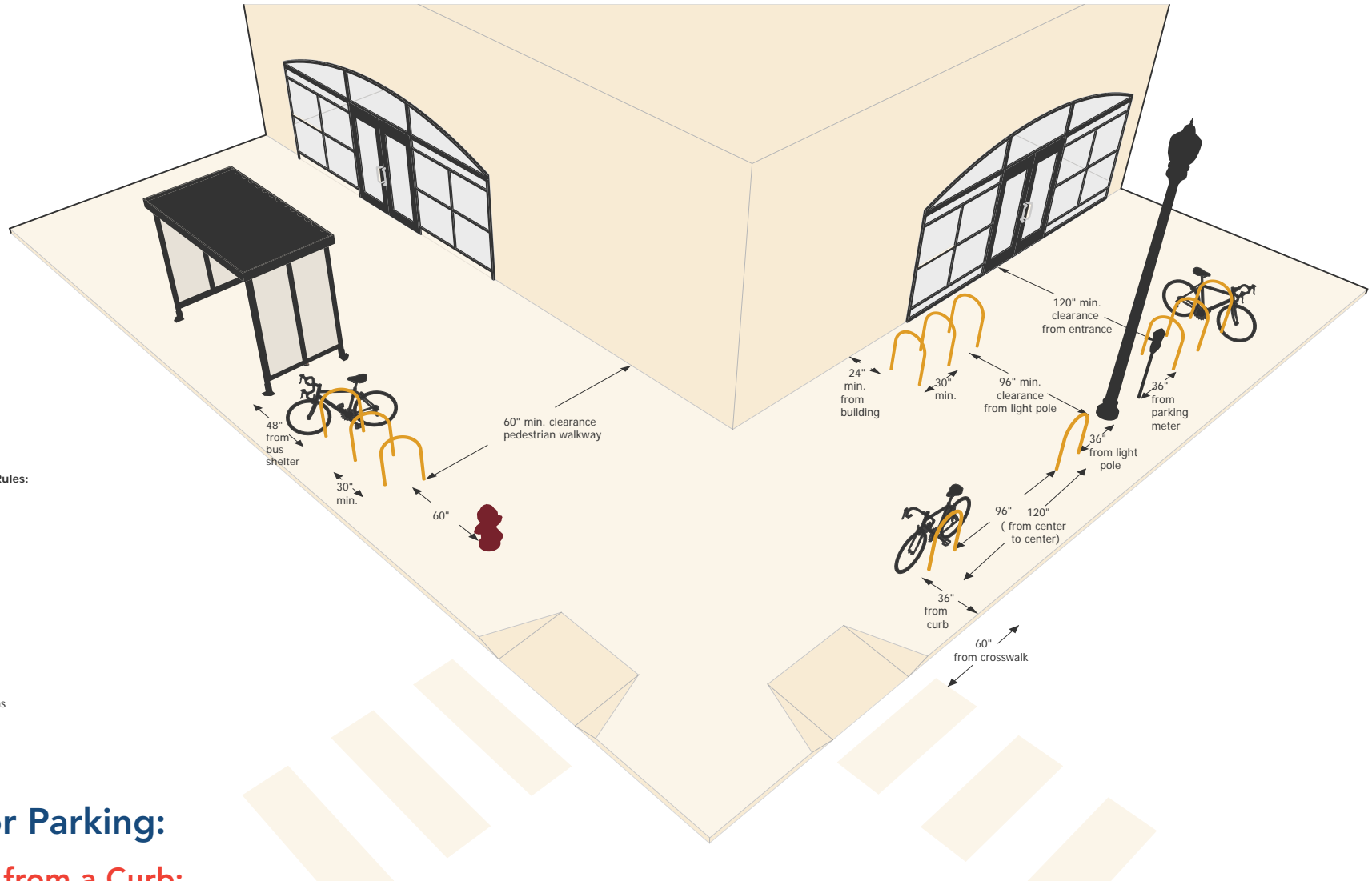
For long-term parking, a 60 inch wide pedestrian aisle must be provided, measured from the perimeter of the 72-inch bike parking space.

Where 20 or more bicycle parking spaces are required, at least 5 percent of the spaces should be 120 inches long to allow space for tandems and trailers.

Distance from Wall:

- Rack units placed perpendicular to a wall should be at least 48 inches from the wall to the center of the rack; 36 inches is the minimum required.
- Rack units parallel to a wall should be at least 36 inches from the rack to the wall; 24 inches is the minimum required.

Figure 4: Outdoor bike parking spacing and dimensions



Other rack Placement Rules:

4' from:
 Loading zone
 Bus stop
 Bus bench

3' from:
 Newspaper rack
 US mailbox
 Sign pole
 Driveway
 Tree space
 Trash can
 Utility meter
 Manhole
 Other street furniture
 Other sidewalk obstructions

Outdoor Parking:

Distance from a Curb:

- Rack units placed perpendicular to the curb should be at least 48 inches from the curb to the center of the rack; a minimum of 36 inches is required.
- Rack units placed parallel to the curb must be at least 24 inches from the curb to the rack; 36 inches is recommended.

Other Distances:

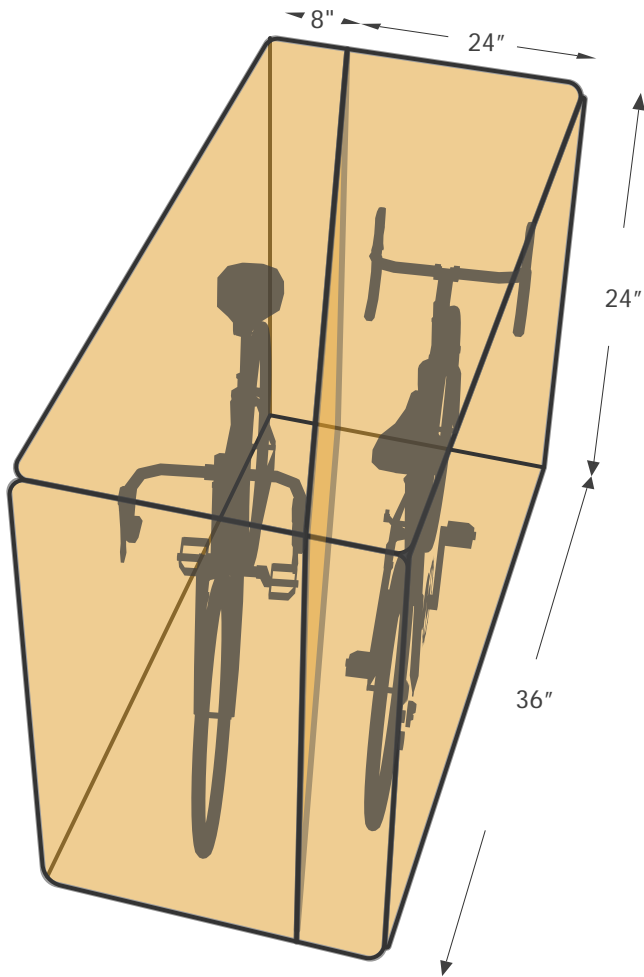
- Racks should be at least 60 inches from curbside fire hydrants and 72 inches from wall fire hydrants.

Bicycle Lockers

Bicycle lockers must be securely anchored and meeting the following minimum dimension:

- 24 inches wide at the door
- 8 inches wide at the opposite end
- 72 inches in length, and
- 48 inches in height

Figure 5: Bicycle Locker Dimensions





District Department of Transportation

Appendix G - Turning Movement Counts Templates

MS2 TMC CARS & TRUCKS TEMPLATE: KEY

ANY CELL IN GRAY AND RED **SHOULD NOT BE EDITED**

Cars

- B4 = Collected by_Company name
- B5 = Date_Date at which the Turning Movement count took place [mm/dd/yyyy]
- B6 = IntID_ Intersection ID **[THIS NUMBER WILL ONLY BE ENTERED BY HUTRC STAFF]**
- B7 = Time Interval_ Length of count interval in minutes [15,60]
- B8 = Last Row with Data_ Row where the last data point had been entered [Row number, for example: 68]
- B9 = Road Name # 1_ Name of major road at study location, include quadrant[For example: Georgia Avenue NW]
- B10 = Road Name # 2_ Name of minor road at study location, include quadrant[For example: Georgia Avenue NW]
- A11 = Time_Time at which each interval began h:mm AM/PM [For example: 5:00 PM]
- B11= SBR_Southbound Right
- C11= SBT_Southbound Through
- D11= SBL_Southbound Left
- E11= SBPD_Southbound Pedestrians: number of pedestrians crossing the north leg of the intersection
- F11= WBR_Westbound Right
- G11= WBT_Westbound Through
- H11= WBL_Westbound Left
- I11= WBPD_Westbound Pedestrians: number of pedestrians crossing the east leg of the intersection
- J11= NBR_Northbound Right
- K11= NBT_Northbound Through
- L11= NBL_Northbound Left
- M11= NBPD_Northbound Pedestrians: number of pedestrians crossing the south leg of the intersection
- N11= EBR_Eastbound Right
- O11= EBT_Eastbound Through
- P11= EBL_Eastbound Left
- Q11= EBPD_Eastbound Pedestrians: number of pedestrians crossing the west leg of the intersection

Trucks [Just fill out data in here]

EXAMPLE: Trucks Only

Turning Movement Count
Import Type: TRUCK
BASIC
Collected By: Billy
Date: 1/23/2006
IntID: HUTRC
15 Minute Counts
19
Fifth Street, NW
River Road, NW

Do Not Edit Gray Cells
 Enter Information In Yellow Cells
 Red Cells Contain Helpful Information

TIME	SBR	SBT	SBL	SBPD	WBR	WBT	WBL	WBPD	NBR	NBT	NBL	NBPD	EBR	EBT	EBL	EBPD
7:00 AM	0	0	0		0	0	0		0	1	0		0	0	0	
7:15 AM	0	0	0		0	0	0		0	2	0		0	0	0	
7:30 AM	0	0	0		0	0	0		0	3	0		0	0	0	
7:45 AM	0	0	0		0	0	0		0	4	0		0	0	0	
5:00 PM	0	0	0		0	0	0		0	3	0		0	0	0	
5:15 PM	0	0	0		0	0	0		0	4	0		0	0	0	
5:30 PM	0	0	0		0	0	0		0	2	0		0	0	0	
5:45 PM																

MS2 TMC BICYCLES TEMPLATE: KEY

ANY CELL IN GRAY AND RED **SHOULD NOT BE EDITED**

Bicycles

- A4 = Collected by_ Company name
- A5 = Date_ Date at which the Turning Movement count took place [mm/dd/yyyy]
- A6 = IntID_ Intersection ID **[THIS NUMBER WILL ONLY BE ENTERED BY HUTRC STAFF]**
- A7 = Time Interval_ Length of count interval in minutes [15,60]
- A8 = Last Row with Data_ Row where the last data point had been entered [Row number, for example: 68]
- A9 = Road Name # 1_ Name of major road at study location, include quadrant[For example: Georgia Avenue NW]
- A10 = Road Name # 2_ Name of minor road at study location, include quadrant[For example: Georgia Avenue NW]
- A11 = Time_ Time at which each interval began h:mm AM/PM [For example: 5:00 PM]
- B11= SBR_ Southbound Right
- C11= SBT_ Southbound Through
- D11= SBL_ Southbound Left
- E= **DO NOT EDIT THIS COLUMN**
- F11= WBR_ Westbound Right
- G11= WBT_ Westbound Through
- H11= WBL_ Westbound Left
- I= **DO NOT EDIT THIS COLUMN**
- J11= NBR_ Northbound Right
- K11= NBT_ Northbound Through
- L11= NBL_ Northbound Left
- M= **DO NOT EDIT THIS COLUMN**
- N11= EBR_ Eastbound Right
- O11= EBT_ Eastbound Through
- P11= EBL_ Eastbound Left
- Q= **DO NOT EDIT THIS COLUMN**



District Department of Transportation

Appendix H - Standard Synchro-SimTraffic Inputs and Settings

Synchro/SimTraffic Coding Standards for Traffic Impact Analysis in the District of Columbia

Category / Item	Description
GENERAL	
Synchro Version	Version 9 or newer
File Naming	Project Name-Alternative-Peak Period
Background Mapping	As needed for coding. Do not keep image in the file as it makes the file size too large
Basic Network Drawing	Match field conditions. All links should be long enough to capture the back of queue
Bends	Minimize bend nodes by using link curvature; check final approach directions; check add/drop lane locations
HCM 2000	Use HCM 2000 analysis methodology for capacity analysis
Unsignalized Intersections	Do not code unsignalized intersections, except 1) they are a study intersection, 2) they are an interchange ramp (code both entry and exit ramps), 3) a high volume intersection that is needed for volume balancing, or 4) location of a lane drop
SCENARIO MANAGER	
Description	Project Name
Data Date	Approximate date of when most data was collected
Time	Leave blank
Alternative	Description of Alternative
Timing Plan ID	Peak Period
Analyst	Company Initials
Report / Output Requirements	Include project name, alternative, and peak period.
LANE SETTINGS	
Approach Orientation	All approaches should be oriented N, S, E, or W. Exception include intersections with more than 2 intersecting streets (e.g. 5-legs)
Lanes and Sharing	Per signs and pavement markings and/or observations (e.g. through lanes with on-street parking may function as right turn bays)
Street Name	Road name and quadrant (NE, NW, SE or SW)
Link Speed	Use Posted Speed. Exceptions will be reviewed- Analyst must present speed profiles and observations to support request
Lane Width	Field verification
Grade	Field verification
Area Type	Use CBD
Storage Length	Use field measurements
Storage Lanes (#)	Field verification
Right Turn Channelized	Use FREE, YIELD, or SIGNAL with right-turn overlap as appropriate
Channelized Curb Radius (ft)	Field measured
Add Lanes (#)	Field verification
Lane Utilization Factor	Use default values. If field observations indicate significantly uneven utilization within a lane group, a field study may be necessary to calculate a more appropriate value.
Right Turns on Red	Field verification
VOLUME SETTINGS	
Traffic Volume	Based on turning movement counts. Use each INTERSECTION'S worst-case peak volumes (not the system peak) and balance volumes between signals. At least one (1) vehicle should be coded into Synchro for each legal movement, even if zero (0) vehicles were observed making that movement.
Conflicting Peds	Based on turning movement counts
Conflicting Bicycles	Based on turning movement counts. Coded only for bicyclists utilizing a shared-use path, cycle track, bike lane to the outside of right turn lane, or crosswalk unless the movement is protected only.
Peak Hour Factor (PHF)	Site-specific by INTERSECTION (not approach or lane group) based on peak hour count data. Use PHF from Existing Conditions through all scenarios. Do not increase the PHF to a standard 0.90 or 0.92 under Background and Total Future Conditions as done in some other jurisdictions.
Growth Factor	As needed on case-by-case basis
Heavy Vehicles	Use existing count data. If data is not available, assume 5% for arterials and freeways or default of 2% for all other functional classifications.
Bus Blockages	Code if field observations confirm instances of bus boarding/alighting impedes traffic flow at an intersection. At each stop, use route numbers to look up schedules on WMATA's website to determine blockages per hour. Field verify which movements are blocked.
Adj. Parking Lane	Per roadway inventory sheet
Parking Manuevers	As needed on case-by-case basis
Link OD Volumes	As needed on case-by-case basis
Traffic in shared lane	Use default values. If field observations indicate significantly uneven utilization within a lane group, a field study may be necessary to calculate a more appropriate value.

Synchro/SimTraffic Coding Standards for Traffic Impact Analysis in the District of Columbia

Category / Item	Description
NODE SETTINGS	
Node #	Use ACISA number for signalized intersections. Numbering should be consistent between models and supporting materials.
Offset Value (s)	Per dial sheet
Offset Reference Style	If phase based, use begin of yellow. If interval based, use begin of green.
Offset Reference Phase	If phase based, per dial sheet settings. If interval based, first interval on dial sheet.
TIMING SETTINGS	
Turn Type	Per TS / dial sheet
Phase Numbering	Per TS / dial sheet
Minimum Initial	Per dial sheet
Yellow Time	Per dial sheet
All-Red Time	Per dial sheet
Allow Lead/Lag Optimize	No, do not flag. Order to be determined on a case-by-case basis.
Recall Mode	Per dial sheet
Lost Time Adjust (s)	-2.0
PHASING SETTINGS	
Vehicle Extension	Per dial sheet
Pedestrian Phase	Per dial sheet
Walk Time	Per dial sheet
Flash Don't Walk	Per dial sheet
Pedestrian Calls	Use for actuated intersections only. Otherwise leave blank
DETECTOR SETTINGS	
Detectors shall be included for actuated signals where appropriate.	
SIMULATION SETTINGS	
Lane Alignment	Based on pavement markings or field observations
Enter Blocked Intersection	Assume "No" for intersections and "2 veh" for nodes
Median Width	Field verification
Link Offset	Field verification
Crosswalk Width	Field verification
TWTL	Field verification
Headway Factor	Assume default, but may adjust as needed for calibration
Turning Speed	Use default values of 15mph and 9mph for left and right turn movements, respectively. May be adjusted for ramp movements, channelized right turns, and multi-leg intersections.
Positioning Distances	Use default values. May be adjusted during calibration process based on field observations.
SIMTRAFFIC SETTINGS	
Seeding Interval Duration	Long enough to distribute traffic throughout the entire network. Minimum of 15 minutes.
Recording Interval Duration	60 minutes
Growth Factor Adjust	Yes
PHF Adjust	No
Anti-PHF Adjust	No
Percentile Adjust	No
Number of Runs	10

*DDOT staff reserve the right to adjust the above coding standards on a per project basis.



District Department of Transportation

Appendix I - Heritage and Special Tree Permit Information

Government of the District of Columbia

Department of Transportation



DDOT SPECIAL/HERITAGE TREE vs. STREET TREE PERMITTING PROCESS

	SPECIAL TREES	STREET TREES
SIZE	<u>Special Tree</u> - between 44 and 100 inches circumference <u>Heritage Tree**</u> - circumference of 100 inches or more	no size restriction
LOCATION	behind sidewalk in parking dimension and on private property (Public parking dimension = area from back of sidewalk to the property line which may or may not coincide with the building restriction line.)	between curb and sidewalk or within the required sidewalk dimension when a sidewalk has not been installed.
APPLICATION	https://tops.ddot.dc.gov - select Special Tree Removal Permit	https://tops.ddot.dc.gov - select Construction/Excavation Permit, Landscaping
REVIEW PERIOD	40 days from date assigned	15 business days from date assigned
COMPENSATION	Non-Hazardous	payment @ \$200 per inch diameter (select Tree Removal)
	Hazardous	planting new tree(s) @ 1-to-1 ratio (select Replacement Tree)
	Exempt Species	does not apply
PROCESS	measure at 4½ feet above the ground Submit a plan (e.g. existing conditions, demolition or erosion & sediment control) showing all special trees to be removed. Plan should include the location, species, and size of each tree. Planting is not an option to compensate for special tree removals; see compensation requirements above. **Refer to the Tree Canopy Protection Amendment Act of 2016 for the definition and protection of Heritage Trees.	measure at 4½ feet above the ground Submit a plan showing all street trees to be removed and their size (diameter). Planting is not an option to compensate for healthy street tree removals; see compensation requirements above. New tree plantings shall be considered part of the overall public space streetscape improvement. New street trees shall be planted as per current DDOT Green Infrastructure Standards.

Please call DDOT Urban Forestry Administration at 202-671-5133 should there be any further questions.

updated 12/13/16



District Department of Transportation

