

A Collaborative Plan for Curbside Freight Delivery in Washington, DC, USA

THE ALLOCATION OF CURBSIDE SPACE ALONG STREETS IN DOWNTOWN AREAS IS A CHALLENGING TASK. MANY CITIES IMPOSE RESTRICTIONS ON TRUCK PARKING IN DOWNTOWN AREAS IN ORDER TO FACILITATE TRAFFIC FLOW. UNLESS SUFFICIENT OFF-STREET LOADING SPACE IS AVAILABLE FOR TRUCKS, THE RESTRICTIONS MAKE IT DIFFICULT FOR TRUCKING COMPANIES TO DELIVER SHIPMENTS. A COLLABORATIVE EFFORT IS NEEDED TO FIND AN OPTIMAL SOLUTION FOR ALL PARTIES.

BY ELLEN JONES, ARUN CHATTERJEE, PH.D., P.E. AND ROBERT L. MARSILI JR.

INTRODUCTION

The allocation of curbside space for different uses along streets in downtown areas of large cities is a difficult and challenging task. This is especially true for major roads that carry considerable traffic. Many cities impose restrictions on truck parking in downtown areas in order to facilitate traffic flow. It is often overlooked that unless sufficient off-street loading space is available for trucks, the restrictions make it difficult for trucking companies to deliver shipments to downtown businesses, and delivery vehicles often have to double-park and impede traffic flow.

Restrictions on curbside truck parking can create traffic congestion and can be detrimental to the operation of businesses. The solution for this dilemma requires the recognition that different parties are involved with this issue and that the perspective of each should be examined. A collaborative effort is needed to find an optimal solution that is practical and acceptable to all parties. An example of such a collaborative effort is the downtown congestion management project in Washington, DC, USA, which deals with the use of downtown curbsides for various purposes.

This feature presents the highlights and strategies of the curbside management program, focusing on the process used, actions taken and evaluation results of its effectiveness one year after implementation. It deals primarily with curbside loading zones and also examines

the availability of off-street loading spaces. The focus is K Street, NW, between 12th

and 21st Streets, which is an important part of the congestion management project. One part of this stretch of K Street falls in the Downtown Business Improvement District (BID); the other part falls in the Golden Triangle BID.

THE PROBLEM ALONG K STREET

K Street, NW, is a major arterial road in Washington, DC. It has frontage (or service) roads on both sides (north and south) separated from the through lanes by raised islands, referred to as "outer separation." Frontage/service roads are meant to serve adjacent land uses and, in the case of K Street, these roads accommodate curbside parking and one travel lane, which is meant to provide access to curbside parking.

Loading zones for freight delivery vehicles and taxis are along the frontage roads; however, bus stops are located on the through lanes adjacent to the outer separation. Frontage/service roads are supposed to keep the traffic along the through lanes from being interrupted by parking maneuvers; however, on K Street, these frontage roads become congested as the demand for parking exceeds the supply of curb space. Freight delivery vehicles and taxi cabs double-park on the travel lanes of frontage roads, blocking the flow of traffic along these roads.

Consequently, trucks and taxis begin to use the through lanes adjacent to the outer separation for loading/unloading activities, although it is illegal to do so. The congestion on frontage/service roads spills over onto through lanes and creates a serious traffic problem. Figure 1 shows a typical K Street scene with the frontage/service road on one side. It also shows one freight delivery vehicle parked on the through lane and another maneuvering to park there. Figure 2 shows a Circulator bus moving along a through lane and one truck double-parked on the service lane on the other side.

To manage the traffic congestion problem along K Street, the District Department of Transportation (DDOT) partnered with the Downtown and Golden Triangle BIDs in developing a congestion management program, which included curb space allocation strategies. A BID in Washington, DC, is organized and es-

tablished by property owners to enhance the economic vitality of a designated commercial area. The cost of BID services is financed by a self-imposed tax on the properties within the designated area.

Currently, there are six established BIDs, which provide programs that address district-wide issues such as cleanliness, maintenance, safety, promotion and economic development. The congestion management program and curb space management strategies cover two of these districts—the Downtown BID and Golden Triangle BID.

PROCESS

One of the key aspects of the process for developing the curb space management plan for K Street was collaboration. DDOT got together with the Downtown and Golden Triangle BIDs to form a coalition. Other organizations involved with this effort included the Department of Public Works (DPW) and the Volpe National Transportation Systems Center.

The collaborative effort did not stop with these groups getting together; the stakeholders also were invited to participate in the process of developing the plan. The stakeholders in this case included the property managers and street-level retail businesses in buildings along the selected corridors, who were invited to discuss their delivery needs and how the curbside was functioning to meet their needs. Workshops were organized for this purpose. After the curb space regulation was revised, the managers were asked to share their opinions about the recommended changes.

In addition to building/property managers, the freight delivery companies serving the corridors were contacted. Letters were sent to more than 300 companies to keep them informed of the changes being proposed. In September 2006, DDOT informed these companies about loading zone extensions to 100 feet where possible and the new requirement for paying for the use of loading zones.

In March 2007, the DPW's parking enforcement program communicated its stepped-up parking enforcement efforts for loading zone and double-parking violations on K Street, NW. Property managers along the targeted K Street corridor also received informational letters from DDOT and DPW in hopes that they



Figure 1. Typical K Street service and through lanes.



Figure 2. Circulator bus and truck loading on K Street, NW.

would spread the word to their tenants and delivery companies.

STRATEGIES AND ACTIONS

The goal of the program was to reduce traffic congestion along major corridors in the downtown area and facilitate freight delivery to businesses. This was accomplished through several actions. Most of the actions related to loading zones and pricing strategies were implemented in October 2006.

Reallocation of Curb Space and Revised Regulatory Signage

Allocation of curb space for various uses such as loading zones, bus stops and

automobile parking is a dynamic process. DDOT has to make changes in allocation from time to time in response to demands for the use of the space. However, the desired changes are not accompanied by necessary changes in regulatory signs in all cases. In some cases the old signs were not removed, resulting in confusion on the part of drivers and parking enforcement officers.

To rectify the confusing situation, the Downtown and Golden Triangle BIDs compiled inventories of all regulatory signage in the curb space for the 14 most highly congested downtown corridors and street segments as identified by DDOT. DDOT and BID staff observed and ana-

lyzed the existing conditions created by these regulations and developed new curb space regulatory plans for each block face in the priority corridors.

Providing Longer Loading Zones

To help reduce congestion, two principles were used in developing the new plans for curb space allocation. First, commercial loading zones were moved to the approach end of each block face wherever possible to make parking at the curb easier and thereby reduce double-parking. Second, K Street loading zones were extended to 100 feet in length wherever possible to increase the supply of curbside commercial loading area. All block faces along this stretch of K Street (between 12th and 21st Streets) were provided with loading zones.

Using New Multi-Space Meters

To better manage curb parking, multi-space meters were installed along K Street, NW, between 12th and 21st Streets. These meters offer multiple benefits to curb parking:

- More vehicles can potentially fit in the previously single-space metered zones.
- The meters accept credit cards as well as coins.
- The meters do not accept money during hours when parking is illegal.
- Because one or two meters on each block face replace many single-space meters, there is more space for pedestrians on sidewalks and the streetscape aesthetic is improved.

Using Pricing Strategy: Metered Loading Zones

Observations of existing conditions confirmed that there was a high incidence of commercial vans using loading zones for free all-day parking. Some freight delivery vehicles also were occupying loading zones for a long time, and in some cases these vehicles could have used the loading areas in the back of buildings. The 15-minute limit for vehicles using a loading zone was generally disregarded.

To encourage more efficient use of the loading zones and increased vehicle turnover, metering of the loading zones along K Street was introduced shortly after the installation of the multi-space

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meters. The loading zone rate is \$1 per hour. In Washington, DC, meter rates are established by legislation, a requirement that has inhibited the establishment of market-based parking rates. Curbside loading over 90 minutes requires a special permit to be obtained in advance from the DDOT Public Space Office.

In the future, multi-space meter technology has the potential to offer a pricing scheme, or a rate structure, that varies depending on the time of day and/or length of stay.

Enhancing Parking Enforcement and Citations

Strategies for controlling curbside parking cannot be successful without enforcement. DPW increased its parking enforcement efforts on K Street, NW, between 12th and 21st Street in tandem with the other changes and measures that were implemented. The loading zone changes and multi-space meter installations were in place by October 2006, at which time the increased enforcement also kicked in. The number of citations for violations issued in May 2007 was 50 percent more than the number issued in September 2006. The in-

creased enforcement could be an important factor in the reduction of traffic congestion and travel times along K Street.

EVALUATION

Travel Time Study

A travel time study is a practical and useful method to evaluate the effectiveness of congestion management strategies along a travel corridor, and a study for K Street was performed by the Downtown BID in collaboration with Volpe and DDOT. Travel time data for pre- and post-implementation periods were collected along the through lanes for three different modes using a car, a bicycle and a transit bus (Circulator bus), respectively. The Washington Area Bicyclist Association (WABA) participated in the data collection. The data were stratified by several time periods within the peak and off-peak hours: a.m. peak, a.m. off-peak, lunch peak, p.m. off-peak and p.m. peak.

The analysis of the before and after travel time data was performed for all cases, each case representing a combination of a specific mode and a time period. The analysis indicated that automobile and bicycle travel times were considerably shorter in the post-implementation study and the difference was statistically significant in most cases; the reduction in Circulator bus travel time was notable but not statistically significant.

The average reduction in travel times was 13 percent for autos, 14 percent for bicycles and 4 percent for buses. The lesser travel time reduction for buses could be due to an approximate 11-percent increase in ridership on the Circulator bus when the study took place, which produced longer dwell times at bus stops. The variability of travel times also was reduced. Simply stated, shorter and more reliable travel times on K Street were observed after DDOT's implementation of curbside space management measures.

The travel time study was conducted under consistently clear weather conditions so as not to skew results with inclement weather. Due to the fact that so many changes were made—rearranged curbside regulations, longer loading zones, metered loading zones, increased enforcement—it is not possible to attribute the positive results to any of these specific measures.

OFF-STREET LOADING ISSUES

An analysis of curbside supply of loading space for freight vehicles will not be complete without an examination of the supply of off-street loading space, which usually is provided inside buildings as loading docks. Zoning ordinances of many cities include requirements about the number of loading docks or berths to be provided for a specified amount of building floor space. The Washington, DC, zoning requirements for office building loading berths are one berth for 20,000–50,000 square feet gross floor area; two berths for 50,000–200,000 square feet floor area; and three for floor area greater than 200,000 square feet.

Most of the buildings on K Street are large office buildings, and most are required to have two loading docks. Variances to the zoning code are frequently given to developers, especially in poor economic times, to encourage them to build in a city. Surveys done by the BIDs in Washington, DC, have found that the supply of off-street loading docks in the downtown is good; however, access to these loading spaces in many cases is via narrow alleys, which are often blocked by illegally parked vehicles. Illegal parking in alleys not only blocks entry to the off-street loading space but also blocks exit from these spaces. This presents a serious problem for freight delivery companies.

LESSONS TO BE LEARNED

Several useful guidelines can be identified based on the experience gained from the effort reported in this feature. It would be appropriate for other cities to consider these guidelines to solve similar problems.

- Strategies for curb space use and allocation should be developed in consultation with all stakeholders, including freight carriers, building owners and managers. The strategies for K Street were developed in a collaborative manner involving DDOT, BIDs and other stakeholders.
- If adequate curbside space is not provided for loading/unloading activities, double-parking by freight delivery vehicles is likely to occur. If that happens, the flow of through-traffic will be seriously impaired. This is a real

possibility, and the solution requires a creative approach for accommodating the needs of freight pick-up and delivery. The strategies for K Street included the provision of longer loading zones of nearly 100 feet in length on all block faces. In order to make it easy to access the loading zones, they were located at the approach end of each block face.

- Freight carriers understand the value of time for their business, and they are willing to risk paying fines for double-parking in order to make on-time deliveries and pick-ups, which their customers demand. It is very likely that the carriers would be willing to pay a reasonable fee to use curb space. The technology for parking meters currently is quite advanced, and it can be utilized to develop a pricing strategy that would encourage turnover of users and ration the limited space in a fair manner. The strategies for K Street included the use of meters for loading zones. Although at this time DDOT is using a flat rate for the use of loading zones, the possibility of using rates varying according to the length of stay and the time of day exists for the future.
- The demand for curbside loading zones is related to the availability of off-street loading space. Therefore, it is imperative that cities include requirements in their zoning ordinances for new buildings to provide off-street loading spaces in proportion to floor area. Attention must be paid to providing adequate access to off-street loading spaces. In the case of K Street, it appears that a fair amount of off-street loading space is available in the adjacent buildings, but these are not being utilized fully because of difficulties in accessing them. In the case of K Street, narrow alleys provide access to the back of adjacent buildings where off-street loading spaces are located, and these alleys often are blocked by parked vehicles.

The approach and strategies used for identifying and solving problems related to curbside parking of freight delivery ve-

hicles along K Street should provide useful guidance to other cities to address similar problems in their respective areas. ■

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