

MEMORANDUM



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TO: Aaron Zimmerman, PTP – DDOT
Patrick Reed, AICP – DDOT

FROM: Jami L. Milanovich, P.E.

COPY: Jon Cummings – Westbrook Partners
David Avitabile – Goulston & Storrs

RE: 2300 16th Street NW

DATE: February 23, 2018

Based on discussions during our meeting on February 6, 2018, two issues required follow-up related to the above-reference project. First, we wanted to provide you with some additional details and context regarding the community's request for signal timing changes at the 16th Street/Crescent Place intersection. Second, we have evaluated the curb side usage along Belmont Street and Crescent Place to determine the number of parking spaces that will be gained/lost.

Signal Timing Changes at 16th Street/Crescent Place

As mentioned during our meeting, the project team has met numerous times over the last few years with the neighbors surrounding the proposed project at 2300 16th Street NW. The community has consistently expressed their desire to have a traffic signal installed at the intersection of 16th Street and Belmont Street. As demonstrated in the 2300 16th Street NW Comprehensive Transportation Review (CTR), AM and PM peak hour traffic signal warrants are not met under existing conditions nor under projected future conditions. Of note, a single lane side street approach requires a minimum peak hour volume of 100 vehicles per hour (vph) to meet the Peak Hour Volume Warrant. The peak hour volume on the Belmont Street approach is currently 15 vph during the peak hour and is projected to be 38 vph during the peak hour upon completion of the project, significantly below the required threshold. A review of crash data for the intersection (also included in the CTR) indicates that the Crash Experience Warrant is not met either.

Given the minimal traffic volumes on Belmont Street and the proximity of the adjacent traffic signal at the 16th Street/Crescent Place intersection, it is unlikely that a traffic signal could be installed at Belmont Street at any point in the future.

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In lieu of a traffic signal, the community asked us to evaluate several potential traffic signal changes at the 16th Street/Crescent Place intersection, which they believe would help the operation of the 16th Street/Belmont Street in its unsignalized state. A summary of the requested timing changes is provided below:

1. Conversion from an actuated traffic signal to a pre-timed traffic signal. This change would help create gaps in traffic on 16th Street, which would help facilitate traffic turning from Belmont Street onto 16th Street.
2. Extension of the green time for the Crescent Place phase. Currently, Crescent Place receives a maximum of 19 seconds of green during the AM and PM peak periods (the intersection operates at a 110 second cycle during both peak periods). It should be noted that an increase in green time for the side street phase was not identified in the CTR as necessary to accommodate future traffic volumes at the intersection.
3. Increase to the Min Gap time for the Crescent Place phase. The community indicated that the signal does not always hold the green interval long enough to serve the demand on Crescent Place. The traffic signal timing plan for the intersection indicates that the Min Gap currently is set at 3.0 seconds.
4. Increase the pedestrian interval for pedestrians crossing 16th Street at this intersection. Though not related to the operation of Belmont Street, the community has indicated that they believe the pedestrian time is insufficient for some pedestrian to cross 16th Street. The traffic signal timing plan indicates that the Walk interval is 7.0 seconds and the Flashing Don't Walk interval is 10.0 seconds for pedestrians crossing 16th Street. Our calculations of these pedestrian intervals indicate that the Walk and Flashing Don't Walk intervals meet DDOT's criteria. The calculations are attached.

On-Street Parking/Curbside Management

In conjunction with the proposed project, a new curb cut is proposed on Belmont Street and an existing curb cut will be closed on Crescent Place. As shown on Figures 1 and 2 and summarized in Table 1, the addition of a new curb cut will result in a loss of two parking spaces on Belmont Street and removal of the existing curb cut will result in the addition of two parking spaces on Crescent Place for a net change of zero parking spaces in the neighborhood.

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Table 1
Summary of On-Street Parking

| Segment ^p | Existing Length | Existing Parking Count | Proposed Length | Proposed Parking Count |
|----------------------|-----------------|------------------------|-----------------|------------------------|
| A | 95' | 5 | 80' | 4 ^{†,‡} |
| B | 60' | 3 | 40' | 2 [†] |
| C | 50' | 3 | 50' | 0 ^μ |
| D | 90' | 5 | 135' | 7 |
| E | 45' | 0 | NA | NA |
| Total | | 16 | | 13 |

^p Segments are as shown on Figures 1 and 2.

[†] Two spaces lost on Belmont Street due to new curb cut. Note that the area in the vicinity of the proposed curb cut has contradictory signage: Sign 2 indicates no parking is allowed, but Sign 3 indicates parking is permitted. Community members have indicated that parking in this area previously was restricted to allow fire truck access to Beekman Place). The no parking area was removed, and three parking spaces were gained, which is reflected in the existing parking count for Segment B.

[‡] As recently as June 2011, a portion of Segment A on the north side of Belmont Street, was signed as "No parking." Changes made after June 2011 resulted in 1-2 additional parking spaces.

^μ Three spaces lost on Belmont Street to better accommodate two-way traffic (i.e. the removal of these parking spaces would allow for two, 11' travel lanes as opposed to two, 9' travel lanes).

As we discussed at our meeting on February 6th, some members of the community asked as to evaluate the removal of parking on the two-way portion of Belmont Street (between 16th Street and Beekman Place) to provide wider travel lanes to better facilitate two-way traffic. Our recommendation, as outlined in the CTR, was to remove the three parking spaces on the south side of Belmont, between Beekman Place and 16th Street (as opposed to the north side) for two reasons:

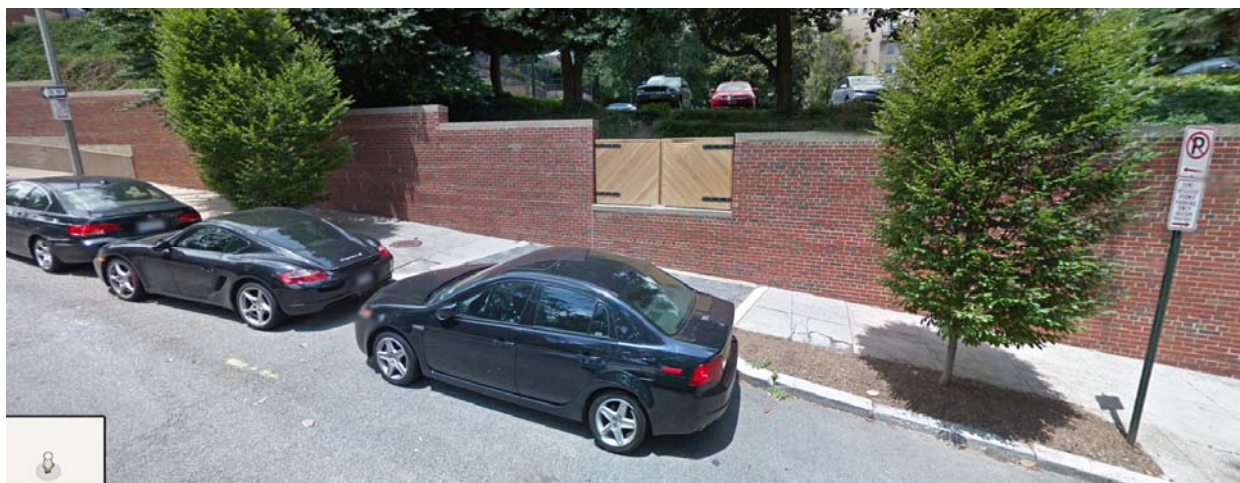
1. The north side of the street is restricted to Resident Only Permit Parking from 7:00 AM to 8:30 PM, while the south side allows for a two-hour window for non-permit holders during the same time frame. The loss of the less restrictive parking would have less of an impact on the neighborhood.
2. Three parking spaces exist on the south side of the street between 16th Street and Beekman Place (see Segment C on Figure 1), while four will exist on the north side of the street between the proposed curb cut and 16th Street (see Segment A on Figure 2). The removal of parking between 16th Street and the nearest curb cut (Beekman Place on the south side of the street and the proposed curb cut on the north side of the street) makes the most sense from a logistical perspective. Since there are fewer parking spaces on the south side of the street, removal of those spaces would have less of an impact on the neighborhood.

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Removal of parking on the south side of Belmont Street, would allow for two, 11-foot travel lanes. Currently, the travel lanes are only 9 feet wide.

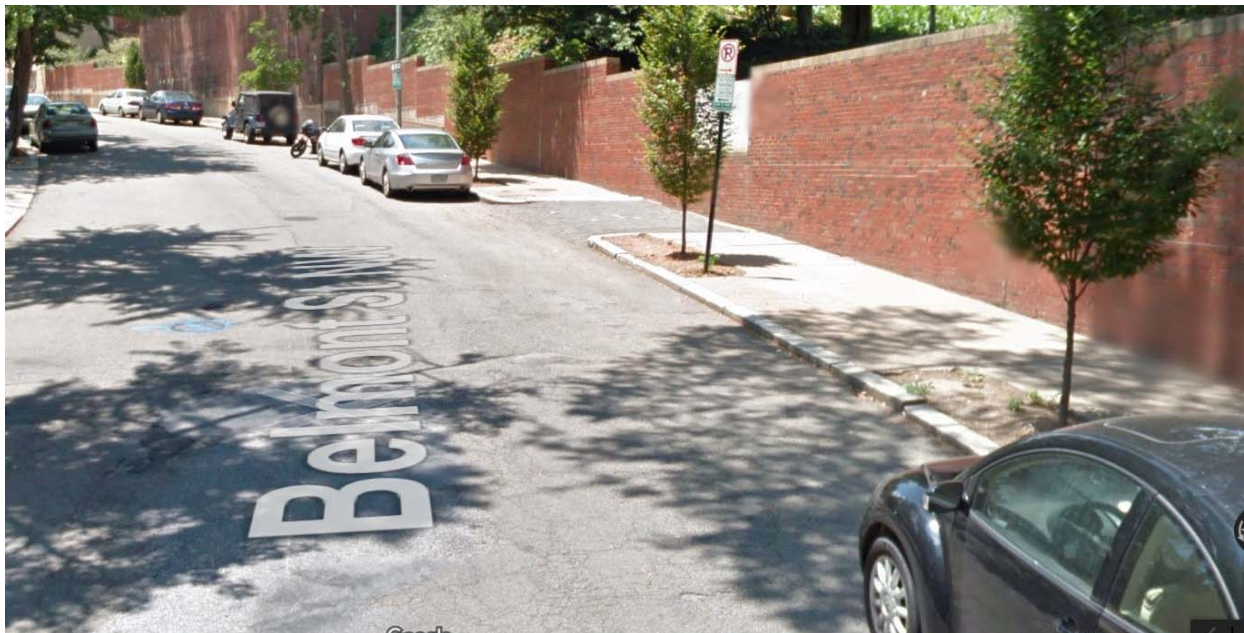
Although the removal of these spaces on the south side of Belmont Street would result in a net loss of three spaces for the neighborhood, a review of historical photographs along Belmont Street indicates that several spaces were added to the parking supply relatively recently. On the north side of Belmont Street, opposite Beekman Place, the parking signage is contradictory. As shown on Figure 1, Sign 2 (No Parking) appears to be a remnant from a couple of years ago. The photo below, from June 2014, shows that a “No Parking” sign on the west side of the curb cut (which has since been removed) was missing. Although the curb cut was no longer in use at the time of this picture, community members have indicated that the “No Parking” restrictions were still in place at some point in time to allow fire trucks to access Beekman Place on the opposite side of the street. Lifting of these parking restrictions resulted in three additional parking spaces.



Additionally, a portion of the area on the north side of Belmont Street, labeled as Segment A on Figure 1 used to be “No Parking.” As shown in the photograph on the next page, as recently as June 2011, the entire stretch on the north side of Belmont Street from Beekman Place to 16th Street was signed as “No Parking.” Changes made after June 2011 resulted in one to two additional parking spaces.

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Conclusions

In conclusion, we respectfully request that DDOT evaluate the feasibility of implementing some or all of the timing changes requested by the community. Though not required to mitigate the impact of the proposed development of 2300 16th Street, the neighborhood has requested that we explore these changes to improve existing traffic operations in the area.

Based on the on-street parking evaluation, the proposed project would result in no net change to the on-street parking supply in the neighborhood. Should the community and DDOT support the removal of three spaces on the south side of Belmont Street to improve two-way circulation, a net loss of three parking spaces would result compared to current conditions. However, as demonstrated herein, Belmont Street previously had four to five fewer spaces than it does today. The increase in the on-street parking supply over the last few years has had an impact on traffic operations on Belmont Street. Certainly, the travel lanes on the two-way portion of Belmont Street were narrowed by allowing parking on the north side of the street. And, according to community members, the other area where parking was gained previously restricted parking in order to facilitate fire truck access to Beekman Place.

Please do not hesitate to contact me at jlmilanovich@wellsandassociates.com or (703) 917-6620 should you require additional information or have any questions or regarding the information presented herein.

FIGURES



ATTACHMENT I
TRAFFIC SIGNAL TIMING CALCULATIONS

Project Name: 2300 16th Street NW
 Project Number: 5969
 Date: 2/2/2018
 Analyst: AG
 QC: JLM

| Approach | | Posted Speed Limit + 5 MPH | Design Speed (MPH) ¹ | w (ft) ² | Approach Grade (%) | Crossing Distance (ft) | Pedestrian Volume > 1,000 per hour? (Y or N) | Vehicle Intervals | | Pedestrian Intervals | | | | |
|----------------------------|-----------|-------------------------------|------------------------------------|------------------------|-----------------------|---------------------------|---|----------------------|----------|----------------------|------------------------|--------------------------|--------------------------|----------------------|
| Street Name | Direction | | | | | | | Y (sec) ³ | AR (sec) | PCT (sec) | FDW (sec) ⁶ | FDW B (sec) ⁴ | FDW C (sec) ⁵ | W (sec) ⁷ |
| 16th Street/Crescent Place | NB | 30 | 30 | 48 | 2 | 50 | N | 4 | 1 | 14 | 10 | 5 | 14 | 7 |
| 16th Street/Crescent Place | SB | 30 | 30 | 48 | -2 | 50 | N | 4 | 1 | 14 | 10 | 5 | 14 | 7 |

¹Design Speed is assumed to be posted speed limit unless a speed study is provided. If provided, design speed is the 85th percentile speed up to 10 MPH over the posted limit.
²Distance from the stop line to far side of the intersection. See Sheet3 for measurement diagrams.
³The minimum yellow interval is 4 seconds. The maximum recommended yellow interval is 6 seconds. See Sheet3 for Right Turn Phases calculations.
⁴This equation may be considered when there are capacity constraints.
⁵This equation may be considered when there are special pedestrian crossing needs.
⁶Minimum Flash Don't Walk time is 4 seconds.
⁷Where pedestrian volumes exceed 1,000 per hour, minimum walk time is 10 seconds. Otherwise, minimum walk time is 7 seconds. At locations with capacity issues walk time may be as low as 4 seconds, but this requires DDOT approval prior to implementation.

$$(3) \quad PCT = \frac{D_{crosswalk}}{S_{pedestrian}}$$

Where:

PCT = Pedestrian Clearance Time (sec.);
 D = Crossing distance, measured from curb to curb along the center of the crosswalk (ft.);
 S = Pedestrian walking speed (ft. /sec.);

- The pedestrian walking speed used shall be 3.5 ft. /sec., per MUTCD.

$$(4A) \quad FDW = PCT - MAX(Y, 3)$$

$$(4B) \quad FDW = PCT - MAX(Y+AR, 3)$$

$$(4C) \quad FDW = PCT$$

Where:

FDW = Flashing Don't Walk (sec.);
 PCT = Pedestrian Clearance Time (sec.);
 Y = Yellow interval;
 AR = All-Red Interval

- Equation 4A is preferred for most intersections while equations 4B or 4C may be considered if there are capacity constraints or if there are special pedestrian crossing needs, respectively.
- MAX (Y, 3) determines the maximum of either the 1) recommended Yellow interval, or 2) 3 seconds – whichever value is greater is utilized in the formula.
- MAX (Y+AR, 3) determines the maximum of either the 1) recommended Yellow plus All-Red intervals, or 2) 3 seconds – whichever value is greater is utilized in the formula.
- The minimum FDW interval shall be 4 seconds to account for pedestrian expectancy when crossing narrow streets.
- The recommended FDW shall be rounded up to the nearest integer value. For example, if the calculated value of FDW is 12.23 seconds, then the recommended value of FDW is rounded up to 13 seconds.
- For exclusive pedestrian phases, 4 seconds shall be subtracted from the calculated PCT to determine the FDW interval. In order to provide a 4-second Steady Don't Walk buffer interval at the completion of FDW, a 4-second Yellow interval shall be programmed into the controller. An All-Red interval following the pedestrian buffer interval shall not be provided.

$$(5) \quad W = MAX\left(\frac{D_{crosswalk} + 6}{V_{pedestrian}} - PCT, 7\right)$$

Where:

W = Walk (sec.);
 PCT = Pedestrian Clearance Time (sec.);
 D = crossing distance, measured from curb to curb along the center of the crosswalk (ft.);
 V = pedestrian walking speed (ft. /sec.)

- Equation (5) determines the maximum of the difference between the pedestrian clearance times for walking speeds of 3.0 feet per second 6 feet from the face of curb and 3.5 feet per second, or 7 seconds.
- The pedestrian walking speed used shall be 3.0 ft. /sec., per MUTCD.
- A minimum Walk time of 7 seconds shall be provided for pedestrian intervals where pedestrian volumes are lower than 1,000 per hour per intersection. Where pedestrian volumes exceed this value, a minimum Walk time of 10 seconds shall be provided. The SWA Team will review downtown area counts and develop a final recommendation.
- The minimum Walk interval may be set to a value lower than 7 seconds (up to 4 seconds minimum, per MUTCD) at locations with capacity issues. However, such recommendations require DDOT approval prior to implementation.
- The recommended Walk interval shall be rounded to the nearest integer value.