

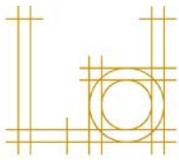
Technical Memorandum

TO: James Cheeks
CC: Rahul Jain, Greg Severson
From: Kenneth Kekessie, PE, Legion Design
Date: 11/1/2013
Re: Blair Road, Cedar Street and 4th Street Intersection Improvement

This technical memorandum addresses the design changes required to complete the design of the Blair Road, Cedar Street and 4th Street Intersection Improvement. The changes were the result of a public meeting held with the ANC 4B Transportation Sub-committee and residents on Thursday October 10, 2013 to present the 65% design plans in a public forum to elicit comments and concerns from the residents and then formulate appropriate responses to their concerns within the context of the original design concept. The four main concerns raised during the presentation were:

1. Reinstating the existing crosswalks, from Triangle Park across Blair Road to the east and across 4th Street to the west, and installing new traffic signal on Blair Road and driveway to the businesses located on the east side of study intersection.
2. Closure of the existing median opening on Cedar Street, which currently serves as an exit point for left turning vehicles on westbound Cedar Street and is used for left turns by residents of Cedar Crossing condominiums located north of Cedar Street.
3. Installation of bollards at the northeastern corner of Blair Road and Cedar Street to protect pedestrians on the sidewalk to the left along northbound Blair Road.
4. Removing the proposed sidewalks on the eastside of Blair Road, between Cedar Street and Butternut Street, NW.

This study intersection was designed several years ago using older design standards at the time. DDOT has attempted to redesign the study intersection to current Engineering and Design Standards.



1. Reinstating Existing Crosswalks and Installing New Traffic Signal

The residents and ANC members have requested following changes be incorporated in the final design plans for Blair Road/Cedar Street/4th Street intersection:

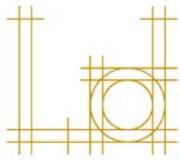
- Reinstatement of the existing crosswalks from Triangular Park across Blair Road to the east and across 4th Street to the west.
- Install new traffic signal on Blair Road and driveway to businesses located on the east side of Blair Road/Cedar Street/4th Street intersection. The new traffic signal would be synchronized with the main signal for the study intersection.

The primary purpose of the Road Safety Audit (RSA) was to identify issues and develop recommendations for traffic safety for all roadway users; motorists, transit, pedestrians and bicyclists. The design was predicated on the results of the RSA study.

The existing crosswalk locations (from Triangle Park to Blair Road and Cedar Street) and the skewed intersection geometry causes significant confusion for motorists on 4th Street and Blair Road in determining who has the right-of-way. Motorist confusion in conjunction with the improperly aligned traffic signal heads results in vehicular conflicts between motorists on Blair Road and 4th Street.

In addition, the intersection offset between the existing crosswalks at Triangle Park and study intersection, obstructs the sight distance creating conflicts between motorists and pedestrians/bicyclists utilizing the crosswalks:

- Motorists traveling northbound on Blair Road cannot observe pedestrians or bicyclists in both east and west crosswalks across the Cedar Street.
- Motorists traveling southbound on Blair Road cannot observe pedestrians or bicyclists in crosswalks from Triangle Park to Blair Road and 4th Street.
- Westbound left-turning vehicles cannot observe pedestrians or bicyclists in crosswalk from Triangle Park to Blair Road.



The RSA study concluded that existing crosswalks at Triangle Park be removed because they impact safety of pedestrians, bicyclists and motorists. DDOT cannot design for unsafe pedestrian conditions. However, residents are adamant that the crosswalks not be removed because it serves as an important walking route in the neighborhood and that its removal will not preclude pedestrians from using those routes regardless of safety.

Further, the ANC 4B Transportation Sub-Committee proposed new signal phasing at Blair Road/Cedar Street/4th Street intersection with exclusive phase for pedestrians (aka Barnes Dance); i.e. pedestrians are allocated exclusive walk time while all the motor vehicles are stopped. Traffic analysis shows implementing the proposed new signal phasing, especially Barnes Dance, would cause the study intersection to operate at deficient service level (LOS F) with considerable traffic delays and significant vehicle queuing.

However, with the reticence shown by the residents and the ANC members, it appears that longer wait times for vehicles as well traffic safety for all roadway users is secondary to their immediate concerns. Hence, traffic analysis was performed for following improvements:

- Relocate the existing crosswalk from Triangular Park across Blair Road to the south side of existing driveway for businesses east of the study intersection.
- Install a new traffic signal at the relocated crosswalk on Blair Road and existing driveway for businesses east of the study intersection. The new traffic signal would be synchronized with traffic signal for the study intersection.
- Remove the existing crosswalk from Triangular Park across 4th Street.

The results of vehicle delay and queuing for AM peak-hour and PM peak-hour are summarized in **Table 1** and **Table 2** respectively.

Table 1: Vehicle Delay and Queue Summary – AM Peak Hour

Intersection	LOS	Delay	EBTR	WBL	WBT	WBR	NB LTR	SB LTR
Blair/Cedar/4th St	F	135.5 sec/veh	208 feet	218 feet	255 feet	57 feet	550 feet	543 feet
New Traffic Signal	D	36.7 sec/veh					103 feet	123 feet

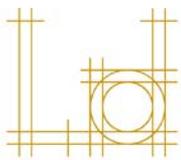


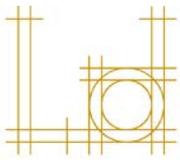
Table 2: Vehicle Delay and Queue Summary – PM Peak Hour

Intersection	LOS	Delay	EBTR	WBL	WBT	WBR	NB LTR	SB LTR
Blair/Cedar/4th St	F	124.5 sec/veh	195 feet	169 feet	108 feet	0 feet	429 feet	615 feet
New Traffic Signal	C	28.4 sec/veh					91 feet	104 feet

The traffic analysis for the above design improvements shows:

- Blair Road Road/Cedar Street Street/4th Street intersection would operate at deficient service level, LOS F, during both AM and PM peak hours.
- Significant vehicle queuing on Blair Road at both intersections.
- Peak traffic queues on southbound approach of new signal would extend up to the intersection of Blair Road/Cedar Street/4th Street. This would create following conflicts:
 - Vehicular conflicts between vehicles on Blair Road and Cedar Street
 - Pedestrian-vehicular conflicts between southbound vehicles on Blair Road and pedestrians in both north and south crosswalk across Blair Road
- Peak traffic queues on northbound approach of Blair Road/Cedar Street/4th Street intersection would extend well beyond the new signal on Blair Road/existing driveway. This would create following conflicts:
 - Vehicular conflicts between northbound vehicles on Blair Road and entering/exiting vehicles from the existing driveway
 - Pedestrian-vehicular conflicts between northbound vehicles on Blair Road and pedestrians in the relocated crosswalk adjacent to the existing driveway

The study intersection operates at service level D (delay of 42.5 seconds/vehicle) during AM peak and service level F (delay of 82.5 seconds/vehicle) during PM peak, under existing traffic conditions. The improvements proposed by residents and ANC members would worsen the existing service level to F during both AM and PM peak (see Table 1 and Table 2). This would trigger analysis of environmental impacts required by National Environmental Policy Act (NEPA) because the service level of study intersection gets worse with proposed improvements compared to the existing traffic conditions.

***Resolution***

A signalized crosswalk is to be installed across Blair Road, south of the existing business driveway; stop bars would be installed both north and south of crosswalk; confirmation that the curb ramps meet current ADA standards.

2. Median opening on Cedar Street

Some residents have requested that DDOT not close the existing median on the east leg of Cedar Street because it allows them to make left-turn maneuvers from the driveway of Cedar Crossing Condominiums onto eastbound on Cedar Street.

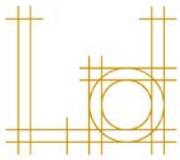
The northbound right-turning vehicles and southbound left-turning vehicles on Blair Road do not have adequate sight distance to observe vehicles making left-turn maneuvers at the existing median opening on Cedar Street. Hence, vehicles turning left at median opening are in conflict with northbound right-turning vehicles and southbound left-turning vehicles along Blair Road. In addition, the median opening on Cedar Street also encourages pedestrian jaywalking, especially for Metrorail commuters.

Resolution

The existing median opening on the east leg of Cedar Street would be closed to eliminate direct vehicular conflicts at this location. A pedestrian fence would also be installed at the median to prohibit pedestrian jaywalking.

3. Bollards on the Northeast corner of the intersection

The sidewalks abutting retaining walls and entrances to the residences along the right side of northbound Blair Road is about 4' wide. At the northeast corner of the intersection of Cedar Street and Blair Road, these narrow sidewalks present a hazard to pedestrians during periods of peak pedestrian traffic because pedestrians tend to encroach on the travel lanes in an effort to get around others. It is recommended that protective bollards be installed along that section to provide a measure of protection to the pedestrians while at the same time discouraging encroachment into the travel lanes.

***Resolution***

Due to nature of required coordination with DDOT, State Historic Preservation Office (SHPO), and others, it is suggested that the project move forward and should needed approvals be granted, design plans will be modified.

4. Removing proposed sidewalks on east side of Blair Road

DDOT had proposed installing sidewalks on east side of Blair Road, between Butternut Street and Cedar Street, to provide pedestrian connectivity to the Takoma Metrorail Station and retail businesses on the southeast corner of the study intersection. However, residents and ANC members have opposed DDOT's proposal of installing sidewalks.

Resolution

DDOT will not install new sidewalks on the east side of Blair Road, between Butternut Street and Cedar Street.

Additionally, please note responses to the following questions submitted to project team:

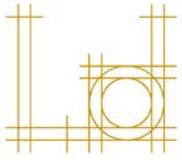
- **What is a Technical Memorandum?**

In general, a *technical memorandum* serves to address in specific terms a variety of issues including analyzing a particular technical problem, reporting on research results, or documenting technical matters for which clarification or confirmation is requested.

- **What are the final plans?**

Final plans are those plans submitted as a 100% submission for final review, comments and approval by the District Department of Transportation (DDOT). Specific to Blair/Cedar/4th, it is anticipated that the design team is working to submit 90% plans for DDOT review and comment the week of November 1st, 2013, with 100% submission anticipated the week of November 28th, 2013 barring no major comments or revisions.

- **What is the construction start date?**



In general, once DDOT approved plans have gone to bid and a contractor selected, construction typically starts 120 days from final (design) plan approval date.

- **What will be the hours of construction?**

Per DDOT standards and guidelines, construction hours are from 9:30AM to 3:30PM Mondays through Fridays. Work on Saturdays must be first approved by DDOT and DCRA, with a 72-hour notice given to residents and businesses within the project area.

- **What is the definitive end date?**

The definitive end date is the date on which the construction plans, specifications and cost estimates is certified as complete and accepted by DDOT. Definitive end date for construction activities will be determined as per the contract signed between a selected Contractor and DDOT.