

**GOVERNMENT OF THE DISTRICT OF COLUMBIA**  
**DEPARTMENT OF TRANSPORTATION**



**d. Policy, Planning and Sustainability Administration**

**MEMORANDUM**

**TO:** District of Columbia Board of Zoning Adjustment

**FROM:** Samuel Zimbabwe   
Associate Director

**DATE:** February 23, 2016

**SUBJECT:** BZA Case No. 17703A – Sidwell Friends School

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**PROJECT SUMMARY**

Sidwell Friends School (the “Applicant”) seeks to modify an approved Board of Zoning Adjustment (“BZA”) order (#17703) to allow consolidation of its Lower School onto its District of Columbia location. The site is bounded by Wisconsin Avenue, Upton Street, 37<sup>th</sup> Street, and Quebec Street NW (Square 1825, Lots 816) in the R-1-B Zone District. The Applicant seeks to acquire the existing Washington Home and Hospices, renovating it for Lower School use. Additionally, a new Campus Center and Lower School gymnasium will be constructed. The overall proposed Sidwell Friends campus will consist of:

- 187,910 square foot (sf) Lower School
- 71,631 sf Middle School
- 74,316 sf Upper School
- 353 off-street vehicle parking spaces
- 45 long-term bicycle parking spaces

**SUMMARY OF DDOT REVIEW**

The District Department of Transportation (DDOT) is committed to achieve an exceptional quality of life in the nation’s capital by encouraging sustainable travel practices, safer streets, and outstanding access to goods and services. As one means to achieve this vision, DDOT works through the zoning process to ensure that impacts from new developments are manageable within and take advantage of the District’s multimodal transportation network.

The purpose of DDOT’s review is to assess the potential safety and capacity impacts of the proposed action on the District’s transportation network and, as necessary, propose mitigations that are commensurate with the action. After an extensive, multi-administration review of the case materials submitted by the Applicant, DDOT finds:

## **Site Design**

- A robust network of public streets surrounds the Sidwell Friends School site. These streets include Wisconsin Avenue, Upton Street, 37<sup>th</sup> Street, and Quebec Street NW, providing multimodal access to the school;
- The street network has the potential to disperse site traffic in a way that minimizes the action's impact on the external road network and improves connectivity to the adjacent neighborhoods;
- The school occupies nearly the entirety of this large block, necessitating vehicular access points and pedestrian and bicycle accommodations to allow access for users to and through the school campus;
- Loading access for the school is proposed to occur from existing access points on Wisconsin Avenue and 37<sup>th</sup> Street;
- Vehicular access to the Site is proposed via one of five driveways on Wisconsin Avenue, one on Upton Street, and one on 37<sup>th</sup> Street;
- Both Upper and Middle School access will be via the entrances on Wisconsin Avenue, while the Lower School will utilize the Upton and 37<sup>th</sup> Street entrances;
- 353 onsite off-street vehicular parking places will be provided, with 307 of these within a parking garage. Of these, 25 are additional proposed surface spaces as part of this addition, which may not be necessary due to underutilization and should be reexamined by the Applicant;
- 45 long-term bicycle parking spaces are proposed within the school facilities; and
- DDOT is currently conducting an independent safety analysis of the Wisconsin/Upton intersection. The analysis is expected to be finished in 2016, and will recommend physical and operational improvements.

## **Travel Assumptions**

- The action is expected to generate a significant number of new vehicle, transit, and pedestrian trips and a moderate number of bicycle trips;
- The background growth, trip distribution, trip assignment, and trip generation assumptions proposed by the Applicant are reasonable if supported by an appropriate transportation network and TDM measures;
- The mode split assumptions are heavily dependent on the TDM program, which proposes a 30% reduction in auto trips;
- The amount of vehicle parking for the school is high; and
- The actual number of vehicle trips generated by the site will exceed projections if TDM measures are unsuccessful.

## **Analysis**

- The Applicant utilized generally sound methodology to perform the analysis;
- Existing conditions at multiple intersections exhibit poor levels of service, in large part due to school traffic;
- The action is projected to increase travel delays and queues in some locations in the area, however not greatly affecting the network if the 30% vehicular trip reduction is realized;
- If the TDM reduction in vehicular traffic is successful, future school users are likely to utilize transit, walking, and bicycling as well as autos, in a manner similar to projections, requiring a transportation network supportive of these modes, some of which is inadequate;
- Existing transit service and on-street bicycle infrastructure should have capacity to accommodate future demand;

- The volume of predicted pedestrians along these streets and at crossings of some intersections is relatively high and requires pedestrian accommodations to address this need.
- Pedestrian accommodations surrounding the school are in several cases inadequate and should be upgraded by the Applicant to meet pedestrian needs;
- The Applicant proposes some mitigating measures, which DDOT supports and should be implemented following ongoing coordination and permitting with DDOT. Additional measures to mitigate multimodal safety, traffic, and access concerns for the school are necessary;
- The Applicant proposes a Transportation Demand Management (TDM) plan intended to promote non-auto trips and elicit the reduction in vehicular trips. Additionally, an ongoing robust performance monitoring plan is proposed that will provide the opportunity to adjust TDM measures for effectiveness; and
- DDOT finds the TDM plan adequate to sufficiently encourage travel behavior change with the important modification noted below and finds the performance monitoring plan thorough and likely effective if well-coordinated with DDOT.

DDOT has no objection to the requested action with the following conditions:

### **Mitigations**

#### *Infrastructure Improvements*

- Provide pedestrian improvements along the main routes to and from the school, particularly those leading to origins for students walking to school (such as the Tenleytown-AU MetroRail station). These improvements are necessary to provide the requisite level of safety and mobility for users. Specifically, the Applicant must provide the following:
  - Stripe parallel line crosswalks on the eastern (Sidwell) and western (Rodman Street) leg of the Wisconsin Avenue/Rodman Street intersection with adjusted stop bars and meeting ADA compatibility;
  - Add detectable warnings to the eastern leg of the Wisconsin Avenue/Rodman Street intersection;
  - Stripe parallel line crosswalks, add detectable warnings, and add pedestrian signal heads on the eastern and western legs of the Wisconsin Avenue/Post Office/Sidwell intersection meeting ADA compatibility;
  - Evaluate and install “No Right Turn on Red 7AM – 7 PM” signs at the following locations as directed:
    - Eastern and western legs of the Wisconsin Avenue/Post Office/Sidwell intersection,
    - Eastern and western legs of the Wisconsin Avenue/Upton Street intersection;
  - A pedestrian path/sidewalk into the school property from the Wisconsin Avenue/Post Office/Sidwell intersection and the next service drive/entrance to the south;
  - New sidewalk where it is missing along 37<sup>th</sup> Street north of the school (from Upton Street past the alley, on the west side of the street);
- Subject to the DDOT safety evaluation, implement recommended actions, which could include removal of the vehicular traffic diverter on the east leg of the Upton Street/Wisconsin Avenue intersection restricting turns, and installation of a new raised crosswalk or contribution towards a raised intersection at 37th Street and Upton Street to facilitate safe pedestrian movement and calm traffic on these streets. The traffic calming islands at both Wisconsin/Upton and Reno/Upton would likely remain in place.

- To prevent drop-offs from occurring at this location, remove the school zone parking restrictions along the west side of 37<sup>th</sup> Street, and actively manage to ensure no school drop-offs occur here; and

#### *TDM Plan*

- Implement the Transportation Demand Management Plan, Operations Management Plan, Monitoring Plan, and Loading Management Plan as outlined within the CTR.
- Specifically establish a trip generation goal of fewer than 531 vehicles inbound in the AM peak hour and 302 outbound in the PM school peak hour.
- Administer a student transit benefits program to cover all commuting transit expenses for all students who desire to ride transit, providing a school-sponsored SmarTrip card and managing this implementation, providing benefits consistent with the District's Kids Ride Free program.

### **Continued Coordination**

Given the complexity and size of the action, the Applicant is expected to continue to work with DDOT outside of the BZA process on the following matters:

- Public space, including curb and gutter, street trees and landscaping, street lights, sidewalks, and other features within the public rights of way, are expected to be to DDOT standards. Careful attention should continue to be paid to pedestrian and bicycle connections along the site's perimeter and adjacent infrastructure;
- Ongoing coordination in regard to the implementation of the Transportation Demand Management Plan, Operations Management Plan, Monitoring Plan, and Loading Management Plan;
- Several traffic signals will need modification as outlined in the CTR and this report. Signal modification will be coordinated as part of the public space permitting to optimize performance of the road network while providing ample pedestrian crossing time;
- Likewise, the other mitigation improvements in public space should be coordinated as part of the public space permitting. It is anticipated that the entirety of the public space surrounding the school site will be included in the public space permitting process;
- Coordination of the final design for vehicular access points is necessary to ensure that safe design is incorporated and pedestrian and cyclist connections are improved;
- All utility vaults are expected to be accommodated on private property;
- DDOT expects all loading facilities to meet DDOT standards, which includes no back-in movements across public space; and
- Coordination is expected to determine final curbside management.

### **TRANSPORTATION ANALYSIS**

DDOT requires applicants requesting an action from the Board of Zoning Adjustment (BZA) complete a Comprehensive Transportation Review (CTR) in order to determine the action's impact on the overall transportation network. Accordingly, an applicant is expected to show the existing conditions for each transportation mode affected, the proposed impact on the respective network, and any proposed mitigations, along with the effects of the mitigations on other travel modes. A CTR should be performed according to DDOT direction. The Applicant and DDOT coordinated on an agreed-upon scope for the CTR that is consistent with the scale of the action.

The review of the analysis is divided into four categories: site design, travel assumptions, analysis, and mitigations. The following review provided by DDOT evaluates the Applicant's CTR to determine its accuracy and assess the action's consistency with the District's vision for a cohesive, sustainable transportation system that delivers safe and convenient ways to move people and goods, while protecting and enhancing the natural, environmental, and cultural resources of the District.

## **Site Design**

Site design, which includes site access, loading, and public realm design, plays a critical role in determining a proposed action's impact on the District's infrastructure. While transportation impacts can change over time, the site design will remain constant throughout the lifespan of the proposed development, making site design a critical aspect of DDOT's development review process. Accordingly, new developments must provide a safe and welcoming pedestrian experience, enhance the public realm, and serve as positive additions to the community.

### Site Access

The Sidwell Friends School site is bounded by Wisconsin Avenue, Upton Street, 37<sup>th</sup> Street, and Quebec Street NW. As part of this action, the Applicant seeks to acquire the existing Washington Home and Hospices, renovating it for Lower School use to allow consolidation of its Lower School onto its District of Columbia location. Additionally, a new Campus Center and Lower School gymnasium will be constructed. With this addition, the school occupies nearly the entirety of this large block, necessitating vehicular access points and pedestrian and bicycle accommodations to allow access for users to and through the school campus.

Vehicular access is facilitated via one of seven driveway accesses. These include five driveways on Wisconsin Avenue, one on Upton Street, and one on 37th Street. Both Upper and Middle School access will be via the entrances on Wisconsin Avenue, while Lower School will utilize the Upton and 37th Street entrances. These vehicular entrances lead to a total of 353 onsite off-street vehicular parking places, 25 of these are proposed as part of this action. 307 of these are within a parking garage accessed off of Wisconsin Avenue, where faculty and staff, students, and visitors all park. While five entrances off of Wisconsin Avenue does not provide optimal access management, due to the existing layout of the school, no largescale modifications are anticipated. A new drop-off circle primarily for Middle School use is proposed north of the parking garage, with a new school building entrance at this location.

Loading access for the school is proposed to occur from existing access points on Wisconsin Avenue and 37th Street. In existing conditions, the loading is conducted only from Wisconsin, but will now be split between these entrances.

Pedestrian and bicycle access are provided via many of these same entrances. There are multiple access doors. This will also provide access to the 45 long-term bicycle parking spaces proposed within the school facilities.

The overall site layout and general circulation are shown in *Figure 1*.

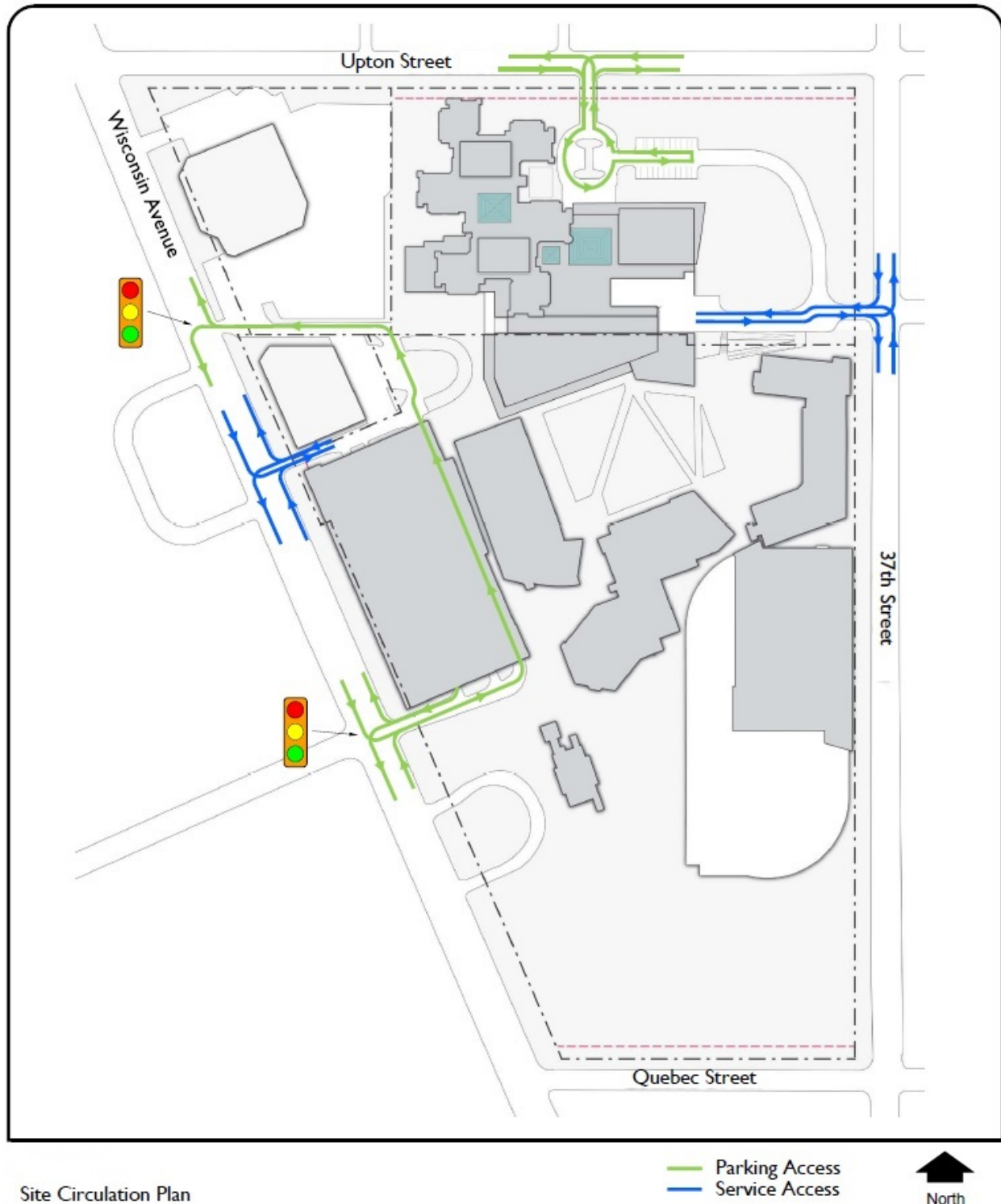


Figure 1 Site Design and Access (Source: Applicant)

The existing street network has the potential to disperse site traffic surrounding the site in a way that minimizes the action's impact on the road network in the vicinity. These roads serve as vehicle, bicycle, and pedestrian access points for the site. However, some modifications to the street network are

needed to conform to DDOT's standards and provide optimal conditions. These changes are discussed in the Mitigations section of this report.

### Curbside Management

Curbside management surrounding the school site will remain the same except for along 37<sup>th</sup> Street. The Applicant proposes to relocate Middle School drop-offs from the west side of 37<sup>th</sup> Street to a new circle within the school campus accessed from Wisconsin Avenue. With this shift, the current parking restrictions to allow school drop-offs on the west side of 37<sup>th</sup> Street will no longer be necessary. DDOT expects the Applicant to work with DDOT as part of the public space permitting process to return this length to standard parking. Additionally, the school is expected to control this area so that no drop-offs for their students take place on this stretch. Hearst Elementary is located across the street here and drop-offs will continue on the east side of the street for them. As such, removal of the west zone, which led to conflicts and safety concerns, will be a safety benefit.

### Loading

DDOT's practice is to accommodate vehicle loading in a safe and efficient manner, while at the same time preserving safety across non-vehicle modes and limiting any hindrance to traffic operations. For new developments, DDOT requires that loading take place in private space and that no back-up maneuvers occur in the public realm. This often results in loading being accessed through an alley network.

The Applicant's proposed loading locations are at the north end of the parking garage and near the south end of the new Lower School. These are accessed from Wisconsin Avenue and 37<sup>th</sup> Street, respectively. Both locations comply with DDOT's loading requirements and allow for onsite truck maneuvers. In existing conditions, all loading occurs on the Wisconsin side, but in the proposed scenario, approximately half the loading will occur on the 37<sup>th</sup> Street side. Additionally, the Applicant has prepared a loading management plan to facilitate operations at these locations.

DDOT expects the Applicant to comply with DDOT's standards for loading. Design of loading access will be further addressed as part of public space permitting.

### Streetscape and Public Realm

In line with District policy and practice, any substantial new building development or renovation 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, and other appropriate features within the public rights of way bordering the site.

The Applicant must work closely with DDOT and the Office of Planning 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. In conjunction with the District of Columbia Municipal Regulations, DDOT's *Design and Engineering Manual* will serve as the main public realm references for the Applicant. DDOT staff will be available to provide additional guidance during the public space permitting process. Specifically, DDOT suggests that the Applicant participate in a Preliminary Design Review Meeting (PDRM) to address design related issues prior to the submission of public space permit applications.

As such, all public space shall be designed and constructed to DDOT standards. DDOT notes the importance of sidewalks approaching and along the perimeter of the site to accommodate pedestrian and bicycle activity. The Applicant will be expected to address any sidewalk gaps or deficiencies present. The locations identified as part of this action are fully addressed in the pedestrian section following. All tree planting and tree survey issues will be addressed at the time of public space permitting, at which point the Applicant will submit an application to DDOT for removal of street trees and special trees. Finally, DDOT expects utility vaults to be accommodated on private property. Curb cuts proposed for new use are subject to the public space permitting process. Final design of the public space will be determined during DDOT's public space permitting process.

### Sustainable Transportation Elements

Sustainable transportation measures are targeted to promote environmentally responsible types of transportation in addition to the transportation mode shift efforts of TDM programs. These measures can range anywhere from practical implementations that would promote use of vehicles powered by alternative fuels to more comprehensive concepts such as improving pedestrian access to transit in order to increase potential use of alternative modes of transportation. Within the context of DDOT's development review process, the objective to encourage incorporation of sustainable transportation elements into the development proposals is to introduce opportunities for improved environmental quality (air, noise, health, etc.) by targeting emission-based impacts.

Based on the size of this action and the number of vehicular parking spaces, DDOT recommends that the Applicant provide at least one 240-volt electric car charging station within the vehicular parking garage.

### **Travel Assumptions**

The purpose of the CTR is to inform DDOT's review of a proposed action's impacts on the District's transportation network. To that end, selecting reasonable and defensible travel assumptions is critical to developing a realistic analysis.

### Background Developments and Regional Growth

As part of the analysis of future conditions, DDOT requires applicants to account for future growth in traffic on the network or what is referred to as background growth. The Applicant coordinated with DDOT on the appropriate background developments to include in the analysis. Generally, only projects that were both approved and included an origin or destination in proximity to the study area are included in the analysis. The Georgetown Day School expansion, Tenley View project, Cathedral Commons, and the Washington College of Law were included as background developments.

DDOT also requires applicants account for regional growth. This can be done by assuming a general growth rate or by evaluating growth patterns forecast in MWCOC's regional travel demand model. The Applicant coordinated with DDOT on an appropriate measure to account for regional growth that accurately accounted for background developments.



## Off-Street Vehicle Parking

The overall parking demand created by the development is primarily a function of land use, development square footage, and price/supply of parking spaces. However, in urban areas, other factors contribute to the demand for parking, such as the availability of high quality transit, frequency of transit service, and proximity to transit.

An existing parking garage at the Sidwell Friends School contains 307 vehicular parking spaces. There are some additional onsite spaces also available, 25 of these proposed as part of this addition. Overall, 353 onsite off-street vehicular parking places will be provided. It is noted that, due to the TDM measures anticipated, it is not expected all these spaces will be utilized. While these extra spaces might be expected to induce additional vehicular traffic, this effect is countered by the proposed vehicular trip cap goal whereby the school will be seeking to reduce vehicle trips. Additionally, since the garage exists, modification is not practicable. If vehicular parking spaces are underutilized, future removal of surface parking spaces may make sense. As such, DDOT suggests the Applicant delay installation of the additional 25 vehicular parking places until after the initial performance monitoring surveys. Conversion of existing surface pavement to green space would be beneficial.

The Applicant should therefore reexamine the proposed parking provision based on an analysis of existing parking utilization with the proposed trip reduction and considering the need of future users. Reducing the supply of parking would serve to reduce the impact on the District's roadways.

## Trip Generation

Each trip a person makes is made by a certain means of travel, such as vehicle, bicycle, walking, etc. The 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 use, design of the public realm, availability and cost of parking, among many others.

The Applicant provided trip generation estimates utilizing extensive surveys of their existing school facilities. The assumed existing mode split was also tabulated. For future conditions, the Applicant evaluated two trip generation scenarios. The first would apply the existing trip generation rates to the new school population. The second elicits a 30% vehicular trip reduction via a TDM program the school commits to. DDOT finds these methods appropriate. Based on the latter trips generated with a reduction, the resulting mode split can be estimated. The Applicant estimates the following future travel mode split:

| Travel Mode           | Students | Faculty/Staff |
|-----------------------|----------|---------------|
| Auto                  | 75.3%    | 66.5%         |
| Non-Auto <sup>2</sup> | 24.7%    | 33.5%         |

<sup>1</sup> Because there is no available information to estimate the number of peak hour trips attributable to students versus faculty/staff, calculations assume an equal weight given to students and faculty/staff.

<sup>2</sup> Non-Auto mode split calculation includes possible increases in carpoolers.

Figure 2 Anticipated Mode Split (Source: Applicant)

Based on the trip generation and mode split assumptions discussed above, the Applicant predicted the following level of weekday peak hour trip generation:

| Trip Type                          | AM         |            |            | PM School  |            |            | PM Commuter |           |           |
|------------------------------------|------------|------------|------------|------------|------------|------------|-------------|-----------|-----------|
|                                    | In         | Out        | Total      | In         | Out        | Total      | In          | Out       | Total     |
| Sidwell Friends Lower School       |            |            |            |            |            |            |             |           |           |
| Total Existing Trips <sup>1</sup>  | 157        | 178        | 335        | 103        | 148        | 251        | 42          | 21        | 63        |
| Trips/student                      | 0.52       | 0.59       | 1.12       | 0.34       | 0.49       | 0.84       | 0.14        | 0.07      | 0.21      |
| Proposed Cap Increase <sup>2</sup> | 14         | 15         | 29         | 9          | 13         | 22         | 4           | 2         | 6         |
| Sidwell Friends Upper School       |            |            |            |            |            |            |             |           |           |
| Proposed Cap Increase <sup>2</sup> | 41         | 23         | 64         | 13         | 19         | 32         | 9           | 15        | 24        |
| Sidwell Friends Middle School      |            |            |            |            |            |            |             |           |           |
| Proposed Cap Increase <sup>2</sup> | 12         | 12         | 24         | 4          | 5          | 9          | 2           | 3         | 5         |
| Existing Washington Home Trips     |            |            |            |            |            |            |             |           |           |
| Trips to be Removed                | -37        | -13        | -50        | -18        | -33        | -51        | -8          | -25       | -33       |
| <b>Total</b>                       | <b>187</b> | <b>215</b> | <b>402</b> | <b>111</b> | <b>152</b> | <b>263</b> | <b>49</b>   | <b>16</b> | <b>65</b> |

<sup>1</sup> W+A conducted a trip generation count of the existing Bethesda campus on May 21, 2015.

<sup>2</sup> The percent increase in the student population is slightly higher than for the staff/faculty. Therefore, the proposed trips were calculated based on trips/student. It was assumed the cap increases at each school would be proportional to the existing number of students at each school.

Figure 3 Additional Weekday Peak Hour Vehicle Trip Generation (Source: Applicant)

| Trip Type                                                                           | AM         |     |       | PM School  |     |       |
|-------------------------------------------------------------------------------------|------------|-----|-------|------------|-----|-------|
|                                                                                     | In         | Out | Total | In         | Out | Total |
| <b>Existing Trips</b>                                                               |            |     |       |            |     |       |
| Upper/Middle Schools (from Table 14)                                                | 602        | 405 | 1,007 | 194        | 283 | 477   |
| Lower School (from Table 16)                                                        | 157        | 178 | 335   | 103        | 148 | 251   |
| Subtotal – All Divisions<br>(1,150 students and 190 faculty/staff)                  | 759        | 583 | 1,342 | 297        | 431 | 728   |
| <b>Incremental Increase Associated with Proposed Cap Increase (without TDM)</b>     |            |     |       |            |     |       |
| Upper/Middle School                                                                 | +53        | +35 | +88   | +17        | +24 | +41   |
| Lower School                                                                        | +14        | +15 | +29   | +9         | +13 | +22   |
| Sub-total – All Divisions                                                           | +67        | +50 | +127  | +26        | +37 | +63   |
| <b>Proposed Trips (without TDM)</b>                                                 |            |     |       |            |     |       |
| Proposed Upper/Middle Schools                                                       | 655        | 440 | 1,095 | 211        | 307 | 518   |
| Proposed Lower School                                                               | 171        | 193 | 364   | 112        | 161 | 273   |
| Subtotal – All Divisions<br>(1,250 students and 260 faculty/staff)                  | 826        | 633 | 1,459 | 323        | 468 | 791   |
| <b>Proposed Trips (with TDM) <sup>1</sup></b>                                       |            |     |       |            |     |       |
| Proposed Upper/Middle Schools<br>30% off Existing Trips                             | 421        | 283 | 704   | 136        | 198 | 334   |
| Proposed Lower School<br>30% off Existing Trips                                     | 110        | 125 | 235   | 72         | 104 | 176   |
| Subtotal – All Divisions<br>(1,150 – 1,250 students and 190 – 260<br>faculty/staff) | 531        | 408 | 939   | 208        | 302 | 510   |
| <b>Trip Gen Goal – All Divisions</b>                                                | <b>939</b> |     |       | <b>510</b> |     |       |

<sup>1</sup> Note that there will be no trips added for the “incremental increase associated with the proposed cap increase” when the TDM program is in place.

Figure 4 Total Weekday Peak Hour Vehicle Trip Generation (Source: Applicant)

The proposed action is expected to generate a significant number of vehicular trips during the morning and evening peak hours, however, with the TDM reduction, the total number would be lower than existing conditions. Commensurately, non-auto trips will rise significantly.

#### Trip Distribution and Assignment

To model trip distribution, the Applicant assumed that trips would approximate existing travel patterns. As such, a detailed analysis of existing home origins was completed and these assigned trip routes. Therefore, the Applicant created unique trip distribution routes for each geographic cluster of students and staff.

The Applicant worked with DDOT to perform a driveshed analysis utilizing these expected routes. This driveshed analysis was then used to distribute the vehicle trips throughout the study area intersections. The analysis revealed that approximately  $\frac{1}{4}$  of the trips travel to and from the south which is generally the off-peak direction of travel. Approximately  $\frac{1}{2}$  of the trips travel to and from the north or west, with the remainder coming from the east.

DDOT is in agreement with the methodology used to determine trip distribution and resulting assignments.

#### Study Area and Data Collection

The Applicant in conjunction with DDOT identified 20 intersections where detailed vehicle, bicycle, and pedestrian counts would be conducted and a level of service analyses performed. These intersections are immediately adjacent to the site and include intersections radially outward from the site that have the greatest potential to see moderate to significant increases in vehicle delay. DDOT acknowledges that not all affected intersections are 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.

The Applicant collected weekday intersection data in May, October, and November 2015. In general, DDOT agrees with the timeframe and collection dates. None of the collection dates occurred outside of the school calendar.

### **Analysis**

To determine the action's impacts on the transportation network, a CTR includes an extensive multi-modal analysis of the existing baseline conditions, future conditions, and future conditions with the proposed action and mitigations. The Applicant completed their analysis based on the assumptions described above.

#### Roadway Capacity and Operations

DDOT aims to provide a safe and efficient roadway network that provides for the timely movement of people, goods and services. As part of the evaluation of travel demand generated by the site, DDOT requests 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 any transportation changes. In this case, the Applicant proposes a 30% reduction in vehicular trips as a result of their TDM program.

Analysis provided by the Applicant shows that vehicle traffic impacts from the action, with the 30% reduction, will minimally impact the operations of intersections in the study area as measured by Level of Service (LOS). The following intersections are impacted by trips generated via this action:

*Impacted Intersections: Total Future without TDM*

- 37th Street/Van Ness Street
- Wisconsin Avenue/Van Ness Street
- Wisconsin Avenue/Fannie Mae/Post Office/Sidwell Driveway

*Impacted Intersections: Total Future with TDM*

- Wisconsin Avenue/Van Ness Street
- Wisconsin Avenue/Fannie Mae/Post Office/Sidwell Driveway

To further assess impacts on roadway operations, queue length increases were examined. While the queue length at some intersections increases as a result of the proposed action, the queue length decreases at other intersections. Overall, the Applicant's analysis indicates no changes in queue lengths are significant. In summary, impacts are worse if the TDM reduction is not realized, illustrating the importance of its effectiveness, but with the reduction and proposed mitigations not significant.

Transit Service

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

The northern edge of the site is located approximately ½ mile, roughly a ten minute walk, from the Tenleytown-AU MetroRail Station on the Red Line.

The site is also well-served by high-frequency bus routes. These routes run adjacent to the site, or stop at the Tenleytown Metro Station. Bus routes include:

- 30N & 30S – Friendship Heights - Southeast Line
- 31,33 – Wisconsin Avenue Line
- 96 – East Capitol Street – Cardozo Line
- H2, H3, H4 – Crosstown Line
- X3 – Benning Road Line

Pedestrian Facilities

The District is committed to enhance the pedestrian accessibility by ensuring consistent investment in pedestrian infrastructure on the part of both the public and private sectors. DDOT expects projects to serve the needs of all trips they generate, including pedestrian trips. Walking is expected to be an important mode of transportation for the school.

The Applicant performed an inventory of the pedestrian infrastructure in the vicinity and noted any substandard conditions. While the existing pedestrian facilities are insufficient in places, there overall



exists a decent network. In addition to assessing the routes to the school, DDOT asked the Applicant to assess the ability for pedestrians to walk through the school campus so it does not serve to cut off routes through the neighborhood. The proposed site design includes many opportunities to promote walking. The Applicant worked with DDOT to design new paths/sidewalks that accompany the site's layout providing excellent pedestrian facilities internal to the site. It is expected that the public will be able to access these facilities during certain hours of the day, and the school has currently specified such access during the hours of 6-8 AM and 8-11 PM weekdays and on weekends, which DDOT supports. The school's pedestrian circulation is shown in *Figure 5*.

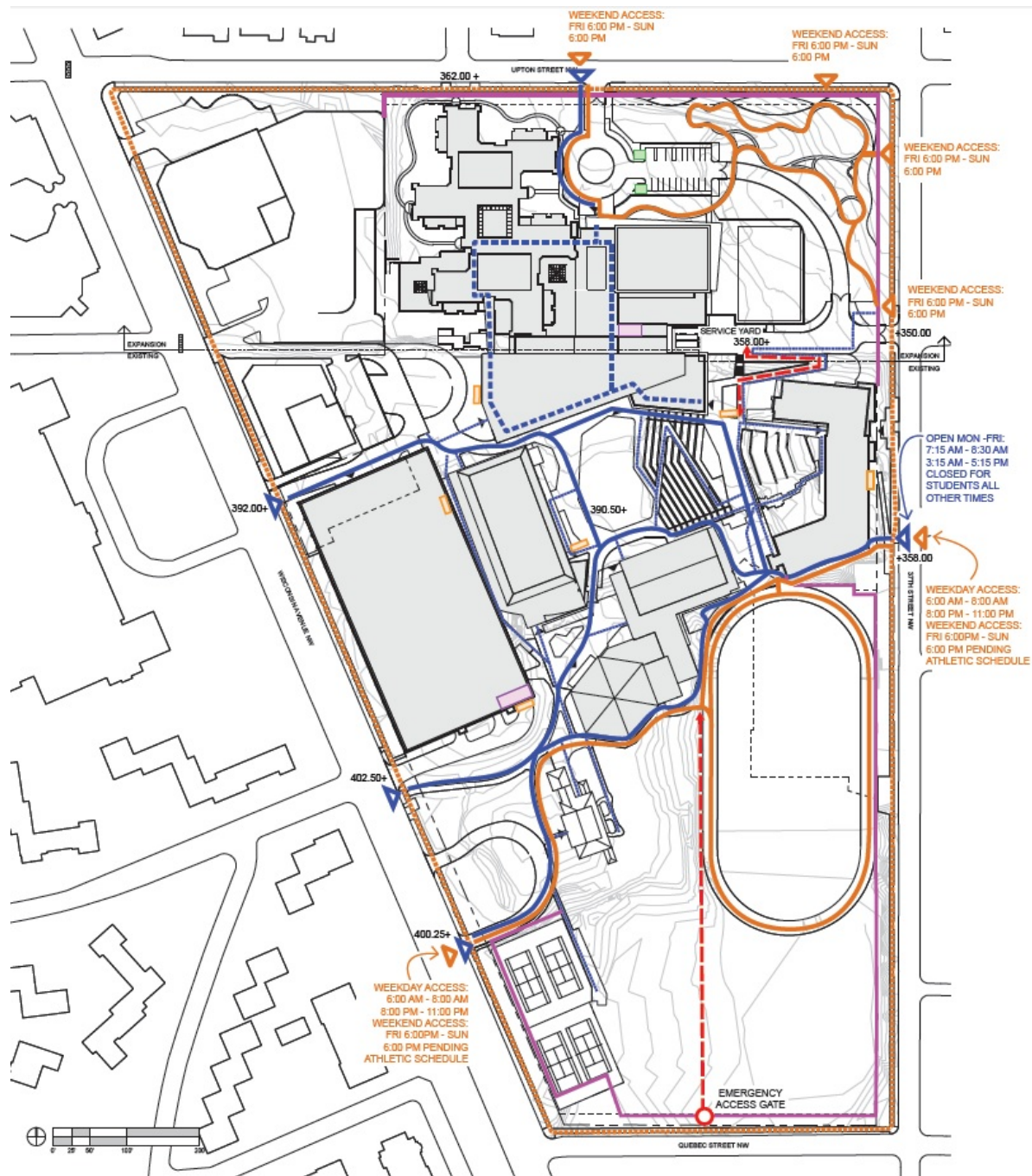


Figure 5 Site Pedestrian Circulation Plan (Source: Applicant)

To address the existing deficiencies in the pedestrian network leading to the school, several infrastructure improvements are expected from the Applicant. Specifically, the following deficiencies must be addressed:

- Missing or substandard crosswalks on the eastern (Sidwell) and western (Rodman Street) leg of the Wisconsin Avenue/Rodman Street intersection;
- Missing detectable warnings on the eastern leg of the Wisconsin Avenue/Rodman Street intersection;
- Missing crosswalks, detectable warnings, and pedestrian signal heads on the eastern and western legs of the Wisconsin Avenue/Post Office/Sidwell intersection;
- Dedicated pedestrian path/sidewalk into the school property from the Wisconsin Avenue/Post Office/Sidwell intersection and the next service drive/entrance to the south;
- Missing sidewalk along 37<sup>th</sup> Street north of the school (from Upton Street past the alley, on the west side of the street).

While other missing sidewalk along the south side of Upton Street between 37<sup>th</sup> Street and Reno Road and along the north side of Tilden Street east of 37<sup>th</sup> Street could be installed by the school, DDOT has not deemed these as necessary to support this action.

As discussed in the Site Access section, the Applicant is expected to work with DDOT through the public space permitting process to include these pedestrian infrastructure improvements and to ensure that pedestrian access points provide safe and convenient site access, with a focus on connecting to adjacent neighborhoods and connections to major trip production or attraction areas such as the Metro station. DDOT expects the Applicant to meet all DDOT standards for pedestrian facilities.

#### Bicycle Facilities

The District of Columbia is committed to enhancing bicycle access by ensuring consistent investment in bicycle infrastructure by both the public and private sectors. DDOT expects new developments to serve the needs of all trips they generate, including bicycling trips. The site is currently located approximately 1.5 miles from the trails within Rock Creek Park. Directly within the vicinity of the school, no dedicated bicycle lanes exist, however bicycling is often conducted via the local streets.

Currently, one Capital Bikeshare station is located within one-quarter mile of the site at 39<sup>th</sup> Street/Veazey Street, with another two stations located at Wisconsin/Albemarle (near the Tenleytown Metro Station) and at Wisconsin/Newark.

The Applicant has committed to providing long- and short-term bicycle facilities, as well as showers and changing facilities for staff and students. DDOT sought a total of 45 long-term bicycle parking spaces to facilitate student and faculty/staff parking and an additional total of 84 short-term bicycle parking spaces. The exact location of short-term bicycle facilities will be determined during the public space permitting process.

#### Safety

DDOT requires that the Applicant conduct a safety analysis to demonstrate that the site will not create new, or exacerbate existing, safety issues for all travel modes. DDOT asks for an evaluation of crashes at

study area intersections as well as a sight distance analysis along the public space where there is expected to be conflicts between competing modes (e.g. crosswalks, driveway entrances, etc.)

The Applicant's analysis of DDOT crash data reveals five intersections within the study area that have a crash rate of 1.0 Million Entering Vehicles (MEV) or higher.

| Intersection                                                   | Type of Control    | No. of Crashes (3 Years) | ADT (veh/day) | Crash Rate (MEV) |
|----------------------------------------------------------------|--------------------|--------------------------|---------------|------------------|
| Wisconsin Avenue/Warren Street                                 | Signal             | 29                       | 24,790        | 1.07             |
| Wisconsin Avenue/39 <sup>th</sup> Street                       | Free Flow          | 9                        | 26,620        | 0.31             |
| Wisconsin Avenue/Van Ness Street                               | Signal             | 37                       | 35,200        | 0.96             |
| Wisconsin Avenue/Upton Street                                  | Signal             | 53                       | 29,910        | 1.62             |
| Wisconsin Avenue/Rodman Street/Sidwell Driveway                | Signal             | 23                       | 25,300        | 0.83             |
| Wisconsin Avenue/Quebec Street                                 | One-way Stop       | 6                        | 31,500        | 0.17             |
| Wisconsin Avenue/Porter Street                                 | Signal             | 18                       | 29,600        | 0.56             |
| Wisconsin Avenue/Idaho Avenue                                  | Signal             | 4                        | 25,540        | 0.14             |
| 37 <sup>th</sup> Street/Warren Street                          | All-way Stop       | 0                        | 2,360         | 0                |
| 37 <sup>th</sup> Street/Van Ness Street                        | All-way Stop       | 5                        | 9,330         | 0.49             |
| 37 <sup>th</sup> Street/Upton Street                           | All-way Stop       | 6                        | 3,580         | 1.53             |
| 37 <sup>th</sup> Street/Tilden Street/Washington Home Driveway | All-way Stop       | 2                        | 2,460         | 0.74             |
| 37 <sup>th</sup> Street/Quebec Street                          | All-way Stop       | 5                        | 3,500         | 1.30             |
| 37 <sup>th</sup> Street/Porter Street                          | All-way Stop       | 3                        | 5,930         | 0.46             |
| 38 <sup>th</sup> Street/Van Ness Street                        | All-way Stop       | 1                        | 8,220         | 0.11             |
| 38 <sup>th</sup> Street/Upton Street                           | All-way Stop       | 4                        | 2,010         | 1.82             |
| Upton Street/Reno Road                                         | One-way Stop       | 4                        | 17,390        | 0.21             |
| Upton Street/Site Driveway                                     | One-way Stop       | N/A                      | 1,420         | N/A              |
| Wisconsin Avenue/Service Driveway                              | NA - Entrance Only | N/A                      | 23,860        | N/A              |

**Figure 6 Intersection Safety (Source: Applicant)**

The intersection with the most incidents is the Wisconsin Avenue/Upton Street intersection. Due to this incidence, DDOT will be continuing to assess operations at this intersection. The presence of a vehicular traffic diverter on the east leg of the Upton Street/Wisconsin Avenue intersection may be contributing to this intersection's safety issues. Following continued assessment, DDOT expects the Applicant to work with DDOT to remove the diverter portion of the existing island. The traffic calming portion would remain. In conjunction with this removal, traffic calming measures at the 37<sup>th</sup> and Upton intersection (which also exhibits a high crash rate) such as a raised crosswalk or intersection should be implemented. DDOT anticipates that these measures will carry the triple benefit of improving traffic safety, pedestrian safety, and dispersing school traffic across more streets reducing the load on others.

The Applicant will be required to coordinate with DDOT during the public space permitting process to ensure that safe design is incorporated into new streets and vehicular access points.

## **Mitigations**

As part of all major development review cases, DDOT requires the Applicant to mitigate the impacts of the development in order to positively contribute to the District's transportation network. The mitigations must sufficiently diminish the action's vehicle impact and promote non-auto travel modes. This can be done through Transportation Demand Management (TDM), physical improvements, operations, and performance monitoring.

DDOT preference is to mitigate vehicle traffic impacts first through establishing an optimal site design and operations to support efficient site circulation. When these efforts alone cannot properly mitigate an action's impact, TDM measures may be necessary to manage travel behavior to minimize impact. Only when these other options are exhausted will DDOT consider capacity-increasing changes to the transportation network because such changes often have detrimental impacts on non-auto travel and are often contrary to the District's multi-modal transportation goals.

The following analysis is a review of the Applicant's proposed mitigations and a description of DDOT's suggested conditions for inclusion in the order.

### Site Circulation, Operations, and Design

The site should be designed in a manner to facilitate internal movement of people and vehicles such that the potential impacts to the external transportation network are minimized. When potential impacts are unavoidable, operational changes, such as limitations on turn movements or changes in directionality of roadways, can be an effective way to manage a site's potential transportation impact.

The school site will largely stay the same as existing conditions, but with the addition of the driveway accesses to the former Washington Home and Hospices and a new shared loop to facilitate drop-off/pick-up on the Wisconsin Avenue side. The critical operations period is during drop-off and pick-up hours. The current design allows for Lower School drop-off via the former Washington Home and Hospices location. The Upper and Middle Schools will utilize the existing infrastructure as well as a new circle driveway and entrance created as part of this project. Pick-ups will mirror these locations.

The Applicant has prepared analysis that shows queues for both these locations should be contained onsite, with no backing up into public space anticipated. DDOT notes that this is critical, and operations that allow queuing to be minimized will be important. No queuing into public space would be acceptable to DDOT, and it is expected that monitoring of these queues will be part of the ongoing performance monitoring. If queues do arise, there may need to be operational or geometric adjustments made in the future.

The Applicant has worked closely with DDOT to improve pedestrian circulation throughout their site and as well to the school. Pedestrian and bike access to a school is paramount, and DDOT expects safe access to be provided. The Applicant should work with DDOT to implement these improvements, which will be further coordinated as part of public space permitting. Several necessary improvements will require infrastructure improvements within the public right-of-way.



### Physical Improvements to the Right-of-Way

Physical improvements to the right-of-way (i.e., striping changes, turn lanes, traffic signals, additional lanes) are occasionally needed in order to accommodate site-generated traffic.

The Applicant proposed a series of physical improvements. DDOT generally agrees with the improvements as outlined in the Applicant's Comprehensive Transportation Review dated February 23, 2016, but all physical changes would be subject to DDOT approval during permitting. Specifically, DDOT generally agrees with exploring the following changes to be made in conjunction with ongoing DDOT coordination and approval:

- Modify the phasing at the Wisconsin Avenue/Post Office/Sidwell so that the Sidwell and Fannie Mae driveways run concurrently;
- Install optically programmed signal heads on the Post Office driveway approach to shield their visibility from the Sidwell driveway; and
- Explore adjustment of timing at the Wisconsin Avenue/Van Ness intersection to eke out additional performance at this intersection and mitigate impacts from school traffic.

DDOT also expects the following additional improvements to be included, subject to final DDOT permitting, to further improve safety and operations for all modes:

- Stripe parallel line crosswalks on the eastern (Sidwell) and western (Rodman Street) leg of the Wisconsin Avenue/Rodman Street intersection with adjusted stop bars and meeting ADA compatibility;
- Add detectable warnings to the eastern leg of the Wisconsin Avenue/Rodman Street intersection;
- Stripe parallel line crosswalks, add detectable warnings, and add pedestrian signal heads on the eastern and western legs of the Wisconsin Avenue/Post Office/Sidwell intersection meeting ADA compatibility;
- Evaluate and install "No Right Turn on Red 7AM – 7 PM" signs at the following locations as directed:
  - Eastern and western legs of the Wisconsin Avenue/Post Office/Sidwell intersection,
  - Eastern and western legs of the Wisconsin Avenue/Upton Street intersection;
- A pedestrian path/sidewalk into the school property from the Wisconsin Avenue/Post Office/Sidwell intersection and the next service drive/entrance to the south; and
- New sidewalk where it is missing along 37<sup>th</sup> Street north of the school (from Upton Street past the alley, on the west side of the street).

### Transportation Demand Management

As part of all major development review cases, DDOT requires the Applicant to produce a comprehensive TDM plan to help mitigate an action's transportation impacts. 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 help achieve highly efficient and sustainable use of transportation facilities. 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 Applicant's proposed TDM measures play a role in achieving the desired and expected mode split.

The specific elements within the TDM plan vary depending on the land uses, site context, proximity to transit, scale of the development, and other factors. The TDM plan must help achieve the assumed trip generation rates to ensure that an action's impacts will be properly mitigated. Failure to provide a robust TDM plan could lead to unanticipated additional vehicle trips that could negatively impact the District's transportation network.

The Applicant proposed the following major TDM strategies (amongst several others, as outlined within the CTR):

- Designate a TDM coordinator responsible for administering, organizing, marketing, and accomplishing the TDM plan;
- Implement a shuttle system to/from key origin locations and the Tenleytown/AU MetroRail station;
- Provide a location for a Capital Bikeshare station;
- Install a Transit Screen in the new Campus Center;
- Provide a bike maintenance facility and make showers and lockers available for biking or running commuters; and
- Provide reserved parking spaces for carpools within the parking garage.

Overall, this TDM program represents a significant investment. However, a major addition sought by DDOT must be included to ensure the TDM program is effective in encouraging the use of alternative modes of transportation. DDOT seeks to include a full transit subsidy for all students who desire to ride transit (and only those students). The school should administer a student transit benefits program to provide this transit benefit, providing a school-sponsored SmarTrip card and managing this implementation.

With this addition, DDOT would be supportive of the Applicant's proposed measures, and believes these elements will be effective. Performance monitoring, as described following, will be necessary to continue moving towards optimally effective TDM measures. All TDM measures should be reassessed at that time.

### *Performance Monitoring*

The CTR provides a projection of an action's likely transportation impacts. However, in an urban environment that is rapidly developing and changing, the projections may not provide enough certainty to reveal the true future impacts of an action, particularly at the scale of this one. A performance monitoring plan provides the framework for increasing the level of certainty concerning expected impacts so that DDOT and the public can have a better idea of expected future travel conditions. A performance monitoring plan establishes thresholds for trips an action can generate, defines post-completion evaluation criteria and methodology, and establishes potential remediating measures.

DDOT's goal is to customize the performance monitoring plan to address the potential impacts identified. The Applicant has proposed a comprehensive monitoring program including the following elements:

- Queuing from the ingress points for school drop-off/pick-up, and
- Traffic counts and mode split analysis to assess TDM program effectiveness.

To provide a measure by which the success of the TDM program and the proposed 30% reduction can be assessed, the Applicant has proposed a vehicular trip generation goal against which future trips will be measured. Specifically they propose to:

- Establish a trip generation goal of 939 vehicles (531 inbound, 408 outbound) in the AM peak hour and 510 (208 inbound, 302 outbound) in the PM school peak hour.

In the event that the school exceeds the projected vehicle trip generation, then the Applicant will be required to work with DDOT to adjust the TDM program. Specifically, DDOT will expect the Applicant to implement a parking fee for vehicles parking on the school campus, consider removing surface parking places, or implement other TDM measures or monitoring goals as deemed most appropriate at that time.

With this goal in place, and as well a commitment to make modifications if necessary to meet the goal and make the TDM program effective, DDOT is supportive of the Performance Monitoring Plan.

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