



WELLS + ASSOCIATES

THE MARET SCHOOL BALL FIELDS

COMPREHENSIVE TRANSPORTATION REVIEW

January 2022



Board of Zoning Adjustment
District of Columbia
CASE NO. 201643
EXHIBIT NO. 06A1

THE MARET SCHOOL BALL FIELDS

Comprehensive Transportation Review

Washington, D.C.

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INTRODUCTION

OVERVIEW

This report presents a Comprehensive Transportation Review (CTR) conducted for the Maret School's proposed plan to construct off-campus ball fields. The proposed site is approximately five acres and is located at 5901 Utah Avenue NW in the Upper Chevy Chase neighborhood of Washington, DC. The proposed facility would be located adjacent to the Episcopal Center for Children (ECC). Maret School (referred to herein as the Applicant, Maret, or the School) has signed a long-term lease with the ECC that will allow Maret to use the grounds behind the ECC's buildings, as well as the smallest of its four buildings, to create new athletic fields, including a multi-sport field (to be used for football, soccer, and lacrosse) and baseball diamond. The existing 4,720 square foot (SF) media center building will be converted to locker room and equipment storage space.

The site is in the R-1-B zone and generally is bordered by Nebraska Avenue on the southeast, the retained ECC buildings and a public alley on the west, a public alley on the north, and single-family homes on the east (as shown on Figure 1). Approximately 48 off-street surface parking spaces and accommodations for a bus drop-off on Nebraska Avenue will be provided. Access to the proposed parking will be provided via a new curb cut on Nebraska Avenue.

The proposed facility (as shown on Figure 2) would supplement Maret's existing athletic facilities on its campus located at 3000 Cathedral Avenue NW. Historically, Maret has used athletic facilities throughout the District to fulfill its athletic needs, including Duke Ellington Field, Wilson High School, Taft Junior High School, Jelleff Recreation Center, and the University of the District of Columbia. Creation of the new ball fields would not only provide Maret with necessary facilities for its athletic programs but also would provide a significant community benefit by allowing local schools, youth sports programs, and residents of the surrounding community to use the fields.

Because the proposed site is in a residential zone, the proposed project will require the approval of a Special Exception application by the Board of Zoning Adjustment (BZA). The purpose of this report is to:

- Evaluate existing traffic operational and safety conditions,
- Evaluate future traffic conditions without the proposed development,
- Evaluate future traffic conditions with the proposed development,
- Identify existing mode choice alternatives,
- Identify any traffic operational impacts associated with the proposed development,
- Evaluate the appropriateness of the proposed parking,

- Evaluate effectiveness of the proposed loading facilities, and
- Recommend transportation improvements (including roadway, operational, and transportation management strategies) to mitigate the impact of the development and promote the safe and efficient flow of vehicular and pedestrian traffic associated with the proposed development.

STUDY SCOPE

This study was undertaken to assess the impacts of the proposed development on the surrounding roadway network. The scope of the study and proposed methodologies were approved by the District Department of Transportation (DDOT) prior to beginning the study. The agreed upon scoping document is included in Appendix A.

The study area was selected based on those intersections that potentially could be impacted by the proposed development. The following study intersections were selected for detailed analysis:

1. Nebraska Avenue/Utah Avenue,
2. Utah Avenue/Rittenhouse Street/30th Street,
3. Nebraska Avenue/Rittenhouse Street/27th Street, and
4. Military Road/27th Street.

TRANSPORTATION FACILITIES

ROADWAY NETWORK

Existing Conditions

General details regarding the surrounding roadway segments, including functional classification, average daily traffic (ADT) volume, and speed limit are summarized in Table 1. All roadways in the study area operate as two-way streets.

Table 1
 Existing Conditions by Roadway Segment Details

Roadway	Functional Classification	Average Daily Traffic (vehicles per day) ¹	Speed Limit (miles per hour)
Nebraska Avenue NW	Collector	7,072	25
Utah Avenue NW	Collector	4,182	20-25 ²
Rittenhouse Street NW	Local	2,000	25
Military Road NW	Principal Arterial	29,393	25
27 th Street NW	Collector	3,908	25 ²

¹ 2018 AADT from opendata.dc.gov.
² 15 mph School Zone (“When Children are Present”) speed limit posted NB and SB in advance of the Rittenhouse Street intersection.

Future Conditions

A project to reconstruct Oregon Avenue NW in Ward 4 from Military Road to Western Avenue and Western Avenue from Oregon Avenue to 31st Street is currently underway. This DDOT project will improve roadways for multimodal transportation and create a safe environment for cyclists and pedestrians.

The reconstruction project has been designed to improve and/or implement the following:

- Roadway Improvements,
- Installation of a new sidewalk - west side,
- New curb and gutters,
- Streetlights,
- Signage and pavement markings,
- Drainage structures and systems,
- LID facilities, and
- Construction of a new bridge over Pinehurst Run.

Although the reconstruction of Oregon Avenue NW will not increase the capacity of the road significantly, it will improve safety for all road users. Traffic counts for the Maret School project were collected before the reconstruction of Oregon Avenue NW and were not affected by the road construction project.

MULTI-MODAL TRANSPORTATION FACILITIES

Existing Public Transportation Facilities and Services

Public transportation facilities in the vicinity of the site include bus stops immediately south of the site.

Bus Service

The site is approximately 600 feet from bus stops serving Metrobus route M4. Within about 0.3 miles of the site, the bus stop at Nebraska Avenue/30th Place NW serves both Metrobus route M4 and E4. The M4 route provides a connection to the Friendship Heights Metro Station, which is located approximately 1.6 miles from the site. Existing bus service is shown on Figure 3.

Pedestrian Facilities

MoveDC 2021 is the City's long-range transportation plan that establishes goals, policies, strategies, and metrics to guide the City's investment in transportation facilities and programs over the next 25 years. *MoveDC* establishes seven goals in the area of safety, equity, mobility, project delivery, management and operations, sustainability, and enjoyable spaces. These goals are supported by 18 policies and 41 strategies established in the plan to help achieve the goals.

MoveDC 2021 highlights policies and needs for pedestrians. The goal for pedestrian infrastructure is to have a safe, connected sidewalk on every street in the District. *MoveDC 2021* includes the following pedestrian strategies:

- Maintain a database of asset conditions,
- Use Complete Streets principles to make streets and sidewalks safer for all users,
- Develop new ways to measure the effectiveness of different modes in projects,
- Implement road diets to make streets safer,
- Make intersections safer for pedestrians,
- Increase public art on streets and sidewalks, especially art that improves safety,
- Expand street tree coverage,
- Improve walkability and pedestrian amenities with more car free zones and plazas,
- Maintain and update the ADA transition plan, and

- Build more trails in the Capital Trails Network.

MoveDC 2021 provides a Pedestrian Friendliness Index Map, which characterizes the walkability of an area based on sidewalk availability, building accessibility, and street network design. The subject site is located in a moderate walkability zone.

Based on the existing condition of the study intersections within ¼ mile of the site, all crosswalks have one ramp at each crosswalk (two ramps per corner) and have visible signs and pavement markings. Crosswalk conditions are shown in Table 2.

Table 2
 Pedestrian Inventory by Intersection

Intersection	Ped Countdown Heads?	Type of Crosswalks	One Ramp Per Crosswalk?	Tactile Warning Strip
Nebraska Avenue/ Utah Avenue	Yes	All Legs – High Visibility	Yes	Yes
Utah Avenue/ Rittenhouse Street/30 th Street	N/A	All Legs – High Visibility	Yes	Yes
Nebraska Avenue/ Rittenhouse Street	N/A	Two Legs – High Visibility (NEB & SWB) Two Legs – Standard	Yes	Yes
Military Road/ 27 th Street	Yes	All Legs – High Visibility	Yes	Yes

As mentioned previously, the reconstruction of Oregon Avenue includes the construction of a sidewalk along the west side of the roadway along with other safety improvements that will improve pedestrian and bicycle access to the Maret Ball Fields, once the reconstruction is complete.

The existing sidewalk situation is shown on Figure 4.

Bicycle Facilities

MoveDC 2021 identifies the Priority Bicycle Network, which includes roadways with existing bicycle facilities and roadways for which bicycle facilities are proposed. Currently, no on-street bicycle lanes are present within ½ mile of the site. Existing trails do exist within ½ mile of the site through Rock Creek Park. Notably, a north-south trail runs along the east side of Oregon Avenue and an east-west trail runs along the north side of Bingham Drive, east of Oregon Avenue.

Based on the *moveDC 2021* Bicycle Priority Map, an on-street bicycle facility is proposed (but not yet funded) on Nebraska Avenue, which would provide a connection to the Oregon Avenue Trail and Bingham Drive Trail.

An on-street bicycle facility also is proposed along Military Road, east of Nebraska Avenue.

Capital Bikeshare

As shown on Figure 5, the closest Bikeshare station is located at the Northampton Street NW/Broad Branch Road NW intersection, approximately 0.6 mile from the site location, and includes 18 docks.

The Draft Capital Bikeshare Development Plan Update (May 2020) outlined a system-wide expansion plan. The Draft Plan estimates that 81 new stations could be added to the program while remaining within existing fiscal constraints. Simultaneously, the program would refurbish 194 stations and replace 2,533 bicycles either retired due to end-of-life or lost due to theft and vandalism. E-bikes would replace half of all bicycles retired at the end of their useful life.

The proposed station locations are identified as DDOT-planned stations or stations recommended by the CaBi project team. Stations recommended by the project team were classified as low priority and high priority. Based on the Draft Capital Bikeshare Development Plan Update (May 2020), two high-priority stations and one low-priority station are recommended near the project site, as shown on Figure 5.

Car Sharing Services

Two car-sharing providers currently operate in the District. Zipcar uses a reserved space model, meaning cars must be returned to the same designated parking spaces from which they were picked up. No Zipcars are located near the site.

Free2Move uses a point-to-point model, which means a vehicle does not have to be returned to its original location; a Free2Move vehicle can be parked in any unrestricted curbside parking space, in any metered curbside parking space (without paying meter fees), or in any residential permit parking space. Free2Move currently has 600 vehicles in the District.

EXISTING CONDITIONS ANALYSIS

TRAFFIC VOLUMES

Vehicular turning movement counts were obtained for the PM and the Saturday peak hours. Given ongoing pandemic traffic patterns and as scoped with DDOT, historic Saturday count data was obtained from Streetlight Data for all study intersections. Streetlight Data provides transportation metrics based on location data from mobile devices and mobility trends on the road. Data from 2017 and 2019 were compared at all study intersections. The 2019 traffic volumes were used since they were higher than the 2017 data. The 2019 volumes were then grown to 2021 based on the growth rate approved by DDOT during the scoping process. Historic PM count data was obtained from Quality Counts for 2017 at the Nebraska Avenue/Utah Avenue and Military Road/27th Street intersections, and from Streetlight for the Utah Avenue/Rittenhouse Street/30th Street and Nebraska Avenue/ Rittenhouse Street intersections. As with the Saturday data, these counts were also grown to 2021 based on the growth rate approved by DDOT during the scoping process. Since the PM data originated from different sources, these counts were balanced throughout the study area.

Balanced 2021 vehicular peak hour traffic volumes are shown on Figure 6. Traffic count data are included in Appendix B.

CAPACITY ANALYSIS

Capacity/level of service (LOS) analyses were conducted at the study intersections based on the 2021 peak hour traffic volumes shown on Figure 6 and the existing lane use and traffic control shown on Figure 7.

Synchro software (Version 10.3, Build 151) was used to evaluate levels of service at the study intersections for the PM and Saturday Commuter peak hours. Synchro is a macroscopic model used to evaluate the effects of changing intersection geometrics, traffic demands, traffic control, and/or traffic signal settings and to optimize traffic signal timings. The levels of service reported were taken from the Highway Capacity Manual (HCM) 2000 reports generated by Synchro¹. Level of service descriptions are included in Appendix C. The results of the analyses are summarized in Table 3. Capacity analysis worksheets for existing conditions are included in Appendix D.

¹ HCM 2000 reports typically are used because HCM 2010 does not allow for many of the non-standard intersection configurations present in the District. Because HCM 2000 does not provide queue results for all-way stop control intersection, the HCM 6th Edition results were used for those study intersections.

Table 3 – Levels of Service Placeholder

As shown in Table 3, all approaches at the study intersections operate at a LOS D or better under existing conditions, with the exception of the following intersections/approaches:

- Intersection #1 (Nebraska Avenue/Utah Avenue)
 - The eastbound (Nebraska Avenue) approach operates at a LOS E during the PM peak hour.
- Intersection #4 (Military Road/27th Street)
 - The eastbound approach operates at a LOS F during the PM and Saturday peak hours.
 - The westbound approach operates at a LOS F during the PM and Saturday peak hours.
 - The southbound approach operates at a LOS F during the PM peak hour.

QUEUE ANALYSIS

A queuing analysis was conducted for the study intersections under existing conditions using the 50th and 95th percentile queue lengths reported by HCM 2000 and 6th Edition (HCM 6th Edition) was only used for queues at all-way stop intersections since HCM 2000 does not provide queues for such intersections). The results are summarized in Table 4. Queue reports for existing conditions are provided in Appendix D.

As shown in Table 4, the results of the queuing analysis indicate that the existing queues would be adequately accommodated within the existing turn lane bays (where present) or without spilling back through adjacent intersections, with the following exceptions:

- Intersection #1 (Nebraska Avenue/Utah Avenue)
 - The 95th percentile eastbound (Nebraska Avenue) approach currently exceeds the available storage during the PM and Saturday peak hours.
- Intersection #4 (Military Road/27th Street)
 - The 50th and 95th percentile eastbound (Military Road) shared left-through and through-right lane groups currently exceed the available storage length during the PM and Saturday peak hours.
 - The 50th and 95th percentile queues for the westbound through movement (Military Road) currently exceed the available storage length during the Saturday peak hour.

Table 4 – Queueing Placeholder

SAFETY EVALUATION

Per DDOT's request, a qualitative safety evaluation was undertaken surrounding the site. The following elements were reviewed:

- Sidewalk conditions of all study intersections within ¼ mile of the site, and
- Signage and markings associated with the two unsignalized intersections of Utah Avenue/Rittenhouse Street and Nebraska Avenue/Rittenhouse Street.

Sidewalk Conditions

Sidewalks along the site frontage on Nebraska Avenue are in good condition. No obstructions or tripping hazards were observed. Likewise, sidewalks along the Utah Avenue on the west of the site are in good condition. No obstructions or tripping hazards were observed.

All the sidewalks from the site to the nearest bus stops are in good condition.

Crosswalk Signage and Markings

According to DDOT's Design and Engineering Manual, crosswalks must meet the following criteria:

- 10 feet wide on local streets, 15 feet wide on collector streets, and 20 feet wide on major arterials with high pedestrian volumes,
- High-visibility markings at all uncontrolled crosswalks,
- Equipped with ADA ramps on both sides of the crosswalk, and
- Located at the nearest intersection to all bus stops.

The Manual on Uniform Traffic Control Devices offers the following additional guidance regarding signage at crosswalks:

- Pedestrian warning signs may be used to alert road users in advance of the crosswalk,
- Where advanced warning signs are used, they should be supplement with "Ahead" or "xx feet" plaques,
- If a post-mounted pedestrian warning sign is placed at the location of the crossing point a diagonal downward pointing arrow plaque shall be mounted below the sign.

All crosswalks at Utah Avenue/Rittenhouse Street/30th Street intersection (all-way stop controlled) are high visibility and are approximately 15 feet wide. ADA ramps are present on both sides of each crosswalk as well as tactile warning strips. School area signs are posted on the northbound and southbound approaches of Utah Avenue in advance of Rittenhouse Street.

Northbound and southbound crosswalks on Nebraska Avenue at its intersection with Rittenhouse Street are uncontrolled. Both crosswalks are high visibility and are approximately 15 feet wide. Advanced Pedestrian Warning signs are present 150 feet in advance of each crosswalk with appropriate distance plaques. Pedestrian crossing signs are posted at each crosswalk; however, the required downward pointing arrow plaque is missing from each sign. Crosswalks on the Rittenhouse Street approaches are marked with two parallel lines, and they meet the standards for a local street. ADA ramps are present on both sides of each crosswalk as well as tactile warning strips.

Crosswalks at the signalized intersection of Nebraska Avenue and Utah Street are all high visibility and approximately 15 feet wide. ADA ramps are present on both sides of each crosswalk as well as tactile warning strips.

According to the DDOT's *2017 Vision Zero Data*, serious injuries decreased for nearly all modes of transportation, but compared to 2016, fatalities increased. No fatal crashes within ½ mile of the project were noted in the *Vision Zero Plan*.

The goal of Vision Zero is no fatalities and no serious injuries on the transportation system. In order to achieve the Vision Zero goal, the *Vision Zero Plan* identifies a number of strategies to improve safety. The strategies are categorized into four themes: 1) create safer streets, 2) protect vulnerable users, 3) prevent dangerous driving, and 4) be transparent and responsive.

The proposed project includes several operational recommendations to the transportation network that will further the Vision Zero goals, as indicated below:

- The curb cut on Nebraska Avenue has been designed such that no vehicles (including trash trucks) will need to back into the site. All backing maneuvers would occur internally, on private property.
- The hours of trash service have been restricted to avoid times when traffic generated by the ball fields is highest.
- A flagger will be required to be positioned in the parking lot during certain situations when the parking lot is expected to reach capacity to ensure that traffic seeking parking spaces does not back up onto Nebraska Avenue.

2024 BACKGROUND CONDITIONS

TRAFFIC VOLUMES

Overview

The proposed ball fields are anticipated to be constructed and open in 2024. In order to forecast year 2024 background traffic volumes in the study area without the proposed project, increases in traffic associated with growth outside the immediate site vicinity (regional growth) and increases in traffic associated with approved but not yet constructed developments in the study area (pipeline developments) were considered.

Regional Growth

DDOT's historical average daily traffic (ADT) volume maps were examined to determine an appropriate growth rate for the study area. Based on the calculated growth rates as summarized in the scoping document (included in Appendix A), an annual growth rate of 0.5 percent, compounded annually, was used for the study area.

Pipeline Developments

The Episcopal Center for Children (ECC), located at 5901 Utah Avenue NW, is a nondenominational, nonprofit organization that has been dedicated to serving the needs of children and their families for the past 125 years. In June 2019, the ECC suspended operation for its Kindergarten through 8th grade therapeutic school for children with emotional challenges from the greater Washington, D.C. Metropolitan area. The ECC is planning to open an after-school enrichment program for neighborhood children in pre-K through 3rd grade in January 2022. The after-school program is expected to serve approximately 30 neighborhood children from 3:00 PM to 6:00 PM.

Beginning in Fall 2022, the ECC plans to reinstitute its day school program serving approximately 20 to 25 students with approximately 25 faculty/staff. During the 2017-2018 school year, the ECC operated a day school with an enrollment of 40 to 45 students. Since the weekday traffic counts used for the analyses contained herein were taken from 2017, traffic from the day school at the ECC already was included in the counts. Because the after-school program was not in operation when the counts were conducted, the traffic associated with the after school program was included in the future traffic forecasts. The pick-up and drop-off activities were assumed to utilize the school's circular driveway that connects Utah Avenue and Nebraska Avenue. Estimated trips generated by the ECC's after school program are shown in Figure 8.

Background Forecasts

Background 2024 traffic forecasts were developed by combining the traffic volumes grown to the year 2024 with the pipeline traffic volumes. The resulting 2024 background traffic forecasts (without the project) are shown on Figure 9.

CAPACITY ANALYSIS

Capacity/level of service (LOS) analyses were conducted at the study intersections based on the existing lane use and traffic control shown on Figure 7 and the future background traffic forecasts shown on Figure 9.

The results of the analyses are summarized in Table 3. Capacity analysis worksheets are included in Appendix E. As shown in Table 3, background conditions generally are consistent with existing conditions for all study intersections, with the intersection of Military Road and 27th Street generally expected to experience additional delay.

QUEUE ANALYSIS

A queuing analysis was conducted for the study intersections under 2024 background conditions using the 50th and 95th percentile queues reported by Synchro. The results are summarized Table 4. Queue reports are provided in Appendix E.

As shown in Table 4, the 50th and 95th percentile queues at the study intersections under 2024 background conditions generally are consistent with existing conditions. No additional lane groups are expected to exceed available storage other than those that currently exceed the available storage under existing conditions.

SITE ANALYSIS

OVERVIEW

The subject site is approximately five acres located on Square 2319, Lot 0832 in Ward 4 and within the boundaries of ANC 3G02. The proposed facility would be located adjacent to the Episcopal Center for Children (ECC). Maret School has signed a long-term lease with the ECC that will allow Maret to use the grounds behind the ECC's buildings, as well as the smallest of its four buildings, to create new athletic fields, including a multi-sport field (to be used for football, soccer, and lacrosse) and baseball diamond. The existing 4,720 sf media center building will be converted to locker room and equipment storage space.

Approximately 48 surface parking spaces would be provided on site with access via a new curb cut on Nebraska Avenue. A 100-foot pick-up/drop-off (PUDO) zone to accommodate buses is proposed on Nebraska Avenue along the site frontage. When not occupied by buses, the PUDO zone should be used for parents picking up or dropping off children at the ball fields or the ECC.

The proposed facility would supplement Maret's existing athletic facilities on its campus located at 3000 Cathedral Avenue NW. Historically, Maret has used athletic facilities throughout the District to fulfill its athletic needs, including Duke Ellington Field, Wilson High School, Taft Junior High School, Jelleff Recreation Center, and the University of the District of Columbia. Creation of the new ball fields would not only provide Maret with necessary facilities for its athletic programs but also would provide a significant community benefit by allowing local schools, youth sports programs, and residents of the surrounding community to use the fields.

SITE ACCESS AND CIRCULATION

While existing curb cuts do serve the adjacent ECC property, the Maret site is not currently served by any curb cuts on Nebraska Avenue. Under the proposed plan, one curb cut is proposed along Nebraska Avenue. The project team explored the possibility of providing access to the property via the abutting alley; however, it was determined to be infeasible due to the loss of additional trees, grading challenges, and significant opposition from the neighbors abutting the alley. In conjunction with the new curb, an existing adjacent curb cut that serves the ECC will be closed.

Vehicular, pedestrian, and bicycle circulation is shown on Figure 10.

CURBSIDE MANAGEMENT

A curbside bus PUDO zone on Nebraska Avenue along the site frontage is proposed to facilitate drop-off/pick-up operations for the site. When not in use by buses for Maret practices and games, the PUDO zone should operate as five-minute PUDO for parents picking up or dropping off students at the ball fields or the ECC. Other existing curbside parking is not planned to be modified with this project. The loss of two parking spaces to accommodate the proposed curb cut will be offset by the gain of two spaces resulting from the closure of the adjacent curb cut currently serving the ECC. In total, six parking spaces will be lost to accommodate the 100-foot PUDO zone. The existing curbside uses are shown on Figure 11A. The proposed curbside management is shown on Figure 11B.

PROPOSED PARKING

Vehicular Parking

Based §701.5 of ZR16, private education uses require “2 spaces for each 3 teachers and other employees, plus...1 space for each 10 seats in the largest...area usable for public assembly.” The proposed plan would provide 80 permanent bleacher seats plus 80 portable bleacher seats. In addition, approximately 10 faculty/staff are anticipated (including coaches, referees, and umpires). As a result, 16 spaces are required to meet the spectator and participant parking needs (160 people/10 parking spaces) and seven spaces are required to meet the “teacher or other employee” parking needs (10 employees x 2 spaces/3 employees), resulting in a minimum parking requirement of 23 parking spaces for the site. The project plans to provide approximately 48 spaces on-site, exceeding this minimum requirement.

Bicycle Parking

Per §802.1 of ZR16, private education uses require one long-term bicycle space for every 7,500 sf of GFA in excess of 4,000 sf and one short-term bicycle parking space per 2,000 sf of GFA. Since GFA “does not include floor area devoted to off-street parking or loading facilities, including aisles, ramps, and maneuvering space, **or space devoted exclusively to bicycle storage or support (lockers and showers) facilities**” [emphasis added] per §803.2 of ZR16, the remaining square footage in the 4,720 sf media center building would be less than 4,000 SF and no long-term bicycle parking would be required. As such, two short-term bicycle parking spaces would be required for the 4,720 sf converted media center building. The Applicant plans to provide 12 spaces on six bicycle racks, exceeding this minimum requirement.

PROPOSED LOADING

Per §901.1 of ZR16, educational uses with less than 30,000 SF of GFA are not required to provide loading facilities. However, trash storage is planned adjacent to the parking lot. Trash pick-up routing is shown in Appendix F.

ON-STREET PARKING ASSESSMENT

To assess the availability of on-street parking in the neighborhood, Wells + Associates performed a detailed parking inventory for all streets within $\frac{1}{4}$ mile of the subject site. Figure 12 shows the number of on-street parking spaces on each road segment. Approximately 1,178 total on-street parking spaces are located in the surveyed area. Detailed parking occupancy counts were also conducted on Wednesday, September 15, 2021, at 30-minute intervals from 4:30 PM to 7:00 PM and Saturday, September 25, 2021, at 30-minute intervals from 8:30 AM to 12:30 PM. Block by block parking occupancy counts are included in the Appendix G.

As shown in Table 5, the weekday peak parking demand for the study area occurred at 7:00 PM when 523 of the 1,178 neighborhood street parking spaces were occupied, resulting in a parking occupancy of approximately 44 percent. The Saturday peak parking demand for the study area occurred at 8:30 AM when 519 of the 1,178 neighborhood street parking spaces were occupied, also resulting in a parking occupancy of approximately 44 percent. Graphs showing parking occupancy by time of day for the study area for the weekday and weekend study periods are shown in Figures 13 and 14, respectively.

The assessment of on-street parking in the vicinity of the site indicates that on-street parking within the study area is substantially underutilized. Specifically, 655 and 659 on-street parking spaces were available during the weekday and Saturday peak periods, respectively. Therefore, sufficient capacity exists in the neighborhood to accommodate additional parking needs on-street.

Table 5
 Parking Occupancy Summary

Time of Day	Total Occupied Spaces	Percent Occupied
WEEKDAY (1,178 total on-street parking spaces)		
4:30 PM	450	38%
5:00 PM	452	38%
5:30 PM	492	42%
6:00 PM	504	43%
6:30 PM	521	44%
7:00 PM	523	44%
SATURDAY (1,178 total on-street parking spaces)		
8:30 AM	519	44%
9:00 AM	491	42%
9:30 AM	480	41%
10:00 AM	469	40%
10:30 AM	469	40%
11:00 AM	473	40%
11:30 AM	459	39%
12:00 PM	464	39%
12:30 PM	430	37%

TRIP GENERATION ANALYSIS

Overview

The total number of trips generated by the proposed development would be comprised of vehicular, pedestrian, bicycle, and transit trips. To provide a conservative analysis, all trips were assumed to be either vehicular trips or bus trips (reflecting the fact that all Maret team members and visiting team members and most coaches will travel to/from the site via bus during the school year).

Trip generation estimates were derived based on information provided by Maret, which included the frequency of games/practices, the number of individuals using the field in each circumstance, and the number of anticipated spectators. The number of vehicular trips for each situation was then estimated based on an average vehicle occupancy (AVO) of 2.1 persons per vehicle (per the recommended AVO for social/recreational trips in DDOT's *Guidance for Comprehensive Transportation Review*).

Maret team members and coaches and visiting team students and coaches will be required to travel to/from the site via bus during the school year, with the exception of coaches traveling from their workplace who would pass the site to get to Maret's campus (e.g a coach who works in Silver Spring would meet the team at the fields). Maret estimates that no more than five coaches would travel by car rather than by bus. Bus trips were added to the vehicular trips to determine the total number of peak hour trips for the project.

The PM peak hour trip generation is expected to vary depending on the season and the types of games/practices hosted by Maret. For analysis purposes, the PM peak hour trip generation was based on days when Maret games that have spectators (such as soccer, lacrosse, and baseball games) are followed by the fields being used by outside users. In other words, traffic exiting the Maret games and traffic from outside groups entering to use the fields would occur within the same hour.

During the Saturday peak hour, the trip generation used for purposes of analysis was based on the use of the fields by outside youth sports groups and reflects back-to-back sporting events (i.e. traffic exiting one game overlaps with traffic entering for the next).

The anticipated programming for the ball fields, including the estimated number of trips for each sporting event, is included in Appendix G. The peak hour trip generation estimates are included in Table 6.

Table 6
 The Maret Ball Fields Peak Hour Trip Generation²

User	AM PEAK HOUR			PM PEAK HOUR			SAT PEAK HOUR		
	IN	OUT	TOTAL	IN	OUT	TOTAL	IN	OUT	TOTAL
Local DC School Rental - Cars‡	0	0	0	33	23	56	48	48	96
Local DC School Rental - Buses‡	1	1	2	0	0	0	0	0	0
Maret Soccer Games - Cars†	0	0	0	0	34	34	0	0	0
Maret Soccer Games - Buses†	0	0	0	0	2	2	0	0	0
Total	1	1	2	33	59	92	48	48	96

† Soccer games occur in Sept., Oct., and 1st 3 weeks of Nov.
 ‡ AM and PM peak hour trips for local DC School Rental based on anticipated usage in Sept., Oct., and the 1st 3 weeks of Nov. - PM. Saturday peak hour trips for local DC School Rental based on anticipated usage in Sept., Oct., the 1st 3 weeks of Nov., Mar., Apr., and May.

As shown in Table 6, the school would be expected to generate 2 vehicle trips (1 inbound, 1 outbound) during the AM peak hour, 94 vehicle trips (33 inbound, 61 outbound) during the PM peak hour, and 96 (48 inbound, 48 outbound) vehicle trips during the Saturday peak hour.

Site Trip Distribution and Assignment

The distribution of new peak hour site trips generated by the ball fields was based on the location of the site and the anticipated origin of the majority of users considering the primary routes around the site. The PM and Saturday peak hour distributions are shown on Figure 15.

The trip distributions then were applied to the vehicle trip generation for the ball fields. The resulting traffic assignments for the PM and Saturday peak hours are as shown on Figure 16.

² Since completion of the analysis, the programming estimates for the field were refined resulting in a slightly reduced PM peak hour trip generation estimate (two fewer PM peak hour vehicle trips). Therefore, the analysis included herein is based on 36 PM peak hour vehicle trips rather than 34.

TRANSPORTATION MANAGEMENT PLAN

The Maret School will implement a Transportation Management Plan to help facilitate ingress to, egress from, and the flow of traffic on site and to reduce the impact of the proposed development. The Transportation Management Plan will consist of: 1) a Transportation Demand Management (TDM) Plan and 2) an Operations Management Plan. Each plan is summarized below.

Transportation Demand Management

Traffic and parking congestion can be solved in one of two ways: 1) increase supply or 2) decrease demand. Increasing supply requires building new roads, widening existing roads, building more parking spaces, or operating additional transit service. These supply solutions are often infeasible in constrained urban environments and, where feasible, can be expensive, time consuming, and in many instances, unacceptable to businesses, government agencies, and/or the general public. Alternatively, the demand for travel and parking can be influenced by Transportation Demand Management (TDM) plans. Typical TDM measures include incentives to use transit or other non-auto modes of transportation, bicycle and pedestrian amenities, parking management, alternative work schedules, telecommuting, and better management of existing resources. TDM plans are most effective when tailored to a specific project or user group.

Proposed Components of TDM Plan

In order to more effectively reduce school-generated traffic volumes, the School will enhance bicycle infrastructure to encourage non-auto modes of travel. Additionally, provisions will be made for transporting Maret students and visiting teams to/from the site via buses during the school year. Maret proposes the following strategies as part of their TDM plan:

Infrastructure Improvements:

1. Provide a minimum of six short-term bicycle racks (12 spaces) on the property.
2. Subject to DDOT approval, designate a bus drop-off/pick-up zone on Nebraska Avenue, as shown on Figure 10, with sufficient length to accommodate two full size school buses.

Non-Auto Travel:

1. During the school year, all Maret School team members and most coaches will be required to travel to and from the ball fields by bus for practices, except team members who live in the neighborhood or who ride Metrobus. Team members who live in the neighborhood will be permitted to walk or bike to practice. Up to five coaches may be permitted to drive to/ from the ball fields.

2. During the school year, all Maret School and visiting team members and most coaches will be required to travel to the ball fields by bus for games, except those who live in the neighborhood or use Metrobus. Team members who live in the neighborhood will be permitted to walk or bike. The buses will transport team members from the fields after the conclusion of the games. Team members whose parents attended the game may leave with their parents or on the bus. Up to five coaches may be permitted to drive to/from the ball fields.
3. During the preseason (three weeks from mid-August to Labor Day), up to 12 team members and five coaches will be permitted to travel to the ball fields via personal vehicles for both the morning and afternoon practice sessions. Other team members and coaches will travel to the ball fields via bus.
4. Other visitors to the ball fields will be encouraged to use the adjacent Metrobus M4 line, providing connectivity to the Tenleytown Metrorail station when feasible.

Operations Management Plan

In addition to the TDM plan, Maret will implement an Operations Management Plan to promote safe and efficient traffic flow into and out of the site. The following are the components of the plan:

1. Provide notification to Maret parents, visiting teams, and all outside users of the fields including the following:
 - When the on-site parking lot is full, park only in legal on-street parking spaces (i.e. do not block driveways or park in alleys) and obey any parking restrictions in place and
 - Obey all traffic laws when traveling to/from the site.
2. Provide flaggers in the parking lot to direct traffic to available spaces in the lot during games/practices in which the parking lot is expected to be at or near capacity. Flaggers to be provided by Maret or by groups who may be leasing the field.
3. Trash and recycling receptacles will be located in the corner of the parking lot. Trash trucks will use the Nebraska Avenue curb cut and will circulate through the parking lot in order to pick up trash and recycling. Trash and recycling pick up will be restricted during the following hours:
 - Between 9:00 PM and 7:00 AM, in accordance with DCMR §20-2806,
 - During the school year, from 3:00 PM to 5:00 PM on weekdays and from 10:00 AM to 5:00 PM on Saturdays, and
 - During the summer months, no trash pick-up before 9:00 AM or after 3:00 PM on weekdays and no trash pick-up from 10:00 AM to 5:00 PM on Saturdays.

2024 TOTAL FUTURE CONDITIONS

TRAFFIC FORECASTS

Total future traffic forecasts with the proposed ball fields were determined by combining the 2024 background traffic forecasts shown in Figure 9 with the site traffic volumes shown on Figure 16 to yield the 2024 total future traffic forecasts shown on Figure 17.

CAPACITY ANALYSIS

Capacity analyses were performed at the study intersections using the total future peak hour traffic forecasts shown on Figure 17. The level of service results for the 2024 total future conditions with the proposed development are included in Appendix H and summarized in Table 3.

By comparing total future levels of service to background levels of service, the impact of the proposed development can be identified. In accordance with the methodology outlined in DDOT's *Guidance for Comprehensive Transportation Review*, an impact is defined as follows:

- Degradation in overall or approach level of service to LOS E or LOS F, or
- Increase in intersection volume-to-capacity (v/c) ratio to 1.0 or greater with the addition of site-generated traffic, or
- Increase in overall or approach delay or v/c ratio by five percent or more when compared to background conditions for intersections operating at an approach delay of LOS E or LOS F.

As shown in Table 3, impacts were identified at the following locations:

- Intersection #1 (Nebraska Avenue/Utah Avenue)
 - The eastbound (Nebraska Avenue) approach is projected to drop from a LOS E to a LOS F during the PM peak hour.
- Intersection #4 (Military Road/27th Street)
 - The eastbound (Military Road) approach operates at a LOS F during the PM and Saturday peak hours and the total future delay increases by more than 5 percent during the Saturday peak hour.
 - The westbound approach (Military Road) operates at a LOS F during the PM and Saturday peak hours and the total future delay increases by more than 5 percent during the Saturday peak hour.
 - The southbound approach operates at a LOS F during the PM peak hour and the total future delay increases by more than 5 percent.

QUEUE ANALYSIS

A queuing analysis was conducted for the study intersections under 2024 total future conditions. Synchro was used to conduct the analyses, using the 95th percentile queue lengths. The results are summarized in Table 4 and queue reports are provided in Appendix H.

By comparing total future queues to background queues, the impact of the proposed development can be identified. In accordance with DDOT guidelines, an impact is defined as:

- An increase in the 95th percentile queue greater than 150 feet when compared to background conditions, or
- A 95th percentile queue that exceeds the available storage length as the result of the proposed development.

As shown in Table 4, total future 50th and 95th percentile queues are projected to be generally consistent with background conditions. No adverse queuing impacts are expected.

IMPROVEMENT ANALYSIS

Overview

Based on the analysis, the proposed project would have level of service impacts at the Nebraska Avenue/Utah Avenue and Military Road/27th Street intersections. A summary of improvement opportunities is noted below.

Intersection #1 (Nebraska Avenue/Utah Avenue)

Currently, this intersection operates with a cycle length of just 50 seconds during the PM peak hour. Such a short cycle length is very unusual. While the queues remain relatively short due to the short cycle length, the Synchro analysis indicates that the natural cycle (or the shortest cycle length at which the intersection would achieve acceptable levels of service) is 60 seconds. Given that there are no other signalized intersections within ½ mile of the Nebraska Avenue/Utah Avenue intersection, an increased cycle length of 60 seconds is recommended. The 60 second cycle length would allow all approaches to operate at acceptable levels of service (i.e. a LOS D or better) while maintaining 50th and 95th percentile queue lengths general consistent with current conditions.

Intersection #4 (Military Road/27th Street)

This intersection can be mitigated by removing parking on the southbound approach to provide a separate southbound left turn lane. Given that parking on east side of 27th Street is already restricted on school days during school hours, this restriction would need to be instituted at all times to create the southbound left turn lane. In addition, parking on the eastbound approach

of the intersection should be restricted on Saturdays to create two eastbound through lanes, as the intersection operates during the PM peak period. Since this mitigation would require new parking restrictions, non-automotive mitigation measures could be provided in lieu of roadway mitigation measures.

The improvement analysis is summarized in Table 3 and shown in Appendix I.

CONCLUSIONS AND RECOMMENDATIONS

The conclusions and recommendations of this study are as follows:

1. The proposed site is approximately five acres and is located at 5901 Utah Avenue NW. Maret has signed a long-term lease with the ECC that will allow Maret to use the grounds behind the ECC's buildings, as well as the smallest of its four buildings, to create new athletic fields, including a multi-sport field and baseball diamond. The existing media center building will be converted to locker room and equipment storage space.
2. A new curb cut on Nebraska Avenue will be constructed. A 100' bus loading zone is proposed along Nebraska Avenue to accommodate the movement of students to and from the ball fields from the school.
3. When the bus loading zone is not in use by buses, it should be designated as a pick-up/drop-off zone for parents dropping off or picking up children.
4. Weekday peak parking demand for the study area occurred at 7:00 PM when 523 of the 1,178 neighborhood street parking spaces were occupied, resulting in an occupancy of approximately 44 percent. The Saturday peak parking demand for the study area occurred at 8:30 AM when 519 of the 1,178 neighborhood street parking spaces were occupied, also resulting in a parking occupancy of 44 percent.
5. Sufficient on-street parking is available to accommodate overflow parking demand for certain games/practices where the number of parked vehicles is expected to exceed the on-site parking supply.
6. During the weekday PM peak hour, when Maret games that include spectators (such as soccer, lacrosse, and baseball games) overlap with field use by outside users, the project would generate an estimated 87 peak hour vehicle trips. On a typical Saturday, when the field is used by youth sports groups, the project would generate an estimated 96 peak hour vehicle trips.
7. Based on the analysis, the minor impact at the Nebraska Avenue/Utah Avenue intersection could be mitigated by increasing the cycle length from 50 seconds to 60 seconds during the PM peak hour.
8. Impacts at the Military Road/27th Street intersection may be mitigated by the restriction of on-street parking for additional travel lanes or non-auto safety or infrastructure improvements in the study area.
9. With the implementation of the Transportation Management Plan, modification of the cycle length at the Nebraska Avenue/Utah Avenue intersection, and the removal of parking at the Military Road/27^e Street intersection to create additional capacity at the intersection, ***or other non-auto infrastructure improvements to encourage the use of non-auto modes of travel***, the proposed project would not have an adverse impact on the surrounding off-site intersections.

FIGURES

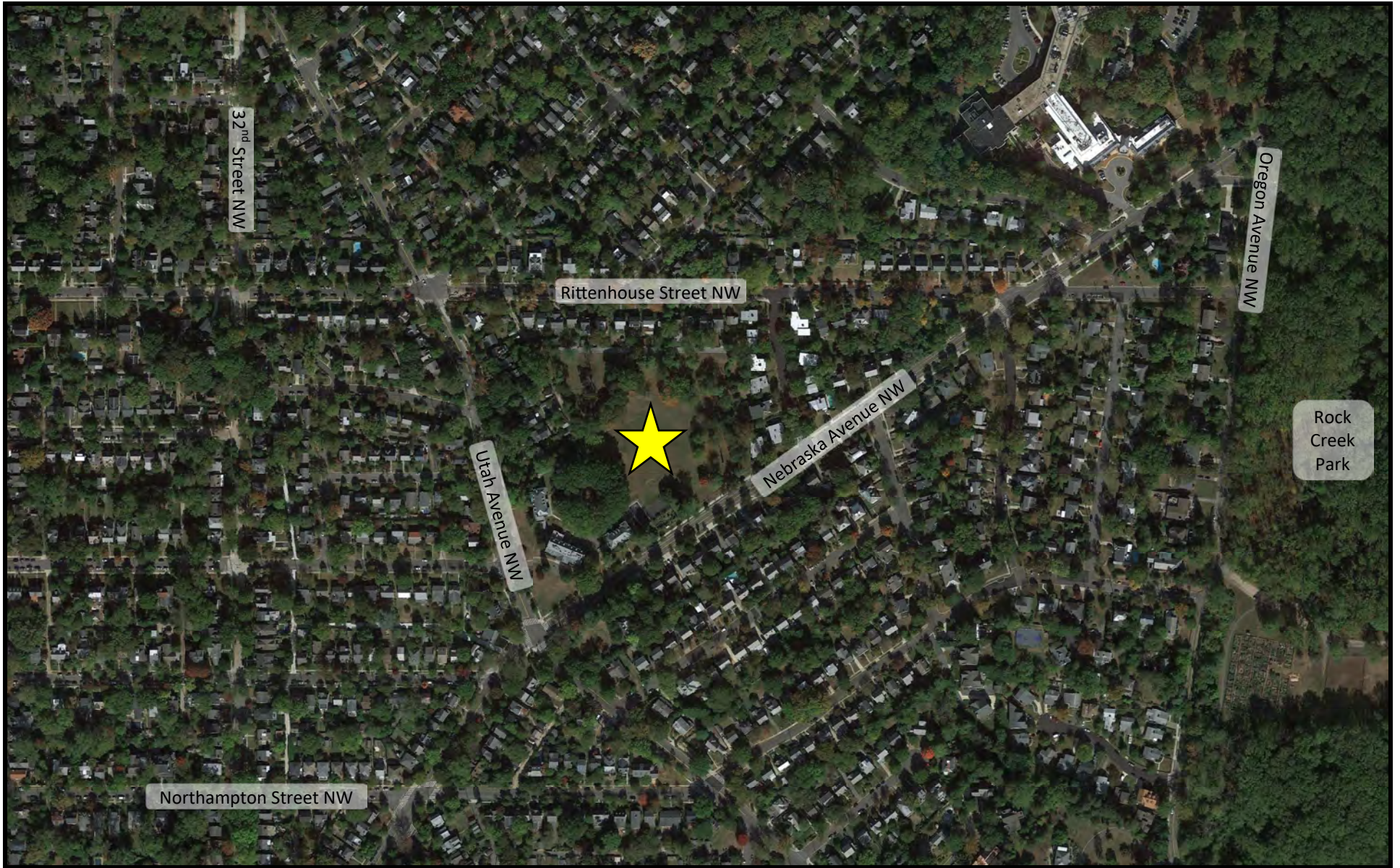


Figure 1
Site Location

 Site Location



NORTH

Maret Ball Fields
Washington, DC





Source: Vika Capitol—NTS

Figure 2
Proposed Plan



NORTH

**Maret Ball Fields
Washington, DC**

