

Memorandum

To: Mark Stagg, Jay Martino, Kathleen Bradshaw
From: Lou Luglio, P.E., Don Tone, P.E., Luke Martinek, P.E., LEED AP, Nanette H Bourne
Date: July 7, 2021
Re: 1 Bradford Road, Mount Vernon, NY - Traffic and Stormwater Assessment

Provided in this memorandum is a review of the Site Plan & Notes (dated January 16, 2020, as revised on October 16, 2020) for the proposed Stagg Development Corporate Office Headquarters located at 1 Bradford Road in Mount Vernon, New York (the "Project Site" or "site"). The memorandum incorporates the results of field observations completed on July 6, 2021 to document the existing condition of Wilson Woods Park Road, the available sight distance on Wilson Woods Park Road at the entrance to the Project Site, and the available space to allow trucks to enter and exit the Project Site. This is an update to the December 4, 2020 memorandum under the same title as this memorandum.

This review is divided into two sections. Section 1 contains the Traffic Assessment and Section 2 contains an assessment of the Stormwater Management Plan.

1. Traffic Assessment

1.1 Existing Conditions

Site Description

The property is bound by Willson's Woods Park to the north and east, Bradford Road to the west, and the Metro North railway to the south. Willson's Woods Park is under the jurisdiction of Westchester County and is one of the oldest parks in Westchester County. The park operates daily year-round between 8:00 AM and dusk.

Site Access and Adjacent Roadway Network

Site access is provided via a full-movement driveway on Wilson Woods Park Road at the southeast corner of the property. It should be noted that although the address is 1 Bradford Road, the driveway intersects directly with Wilson Woods Park Road.

Wilson Woods Park Road is a two-way, two-lane roadway with a posted speed limit of 25 MPH. Trucks are prohibited except for making local deliveries. Walking paths are provided in some areas and weave in and out of the park near the roadway. Parking is prohibited on both sides of the roadway. The roadway is categorized by NYSDOT as a Major Collector Roadway (Class 17) which is defined as a roadway that provides traffic circulation within residential neighborhoods, commercial and industrial areas. A primary purpose of a major collector roadway is to collect traffic from local streets and channel it into the arterial system. The roadway was observed to be in fair to good condition along its length, similar to the condition of multiple roadways in southern Westchester County.

Lincoln Avenue is a two-way, two-lane roadway that facilitates east-west travel within the City of Mount Vernon. The roadway is categorized by NYSDOT as a Principal Arterial Roadway (Class

14) which is defined as a roadway serving major centers of activity of a metropolitan area on high traffic volume corridors; and carries a high proportion of the total urban area travel on a minimum segment of mileage.

Bradford Road is a two-way, two-lane roadway that is also defined as a Major Collector Roadway by NYSDOT. The road provides a north-south connection to Wilson Woods Park Road from the southerly park entrance to the residential neighborhood near Beechwood Avenue. The roadway passes underneath the Metro North railway bridge (trestle) that has posted maximum vehicle height clearance of 12'-3" – thus prohibiting most trucks from traversing from Wilson Woods Park Road to the adjacent neighborhood. South of the railroad trestle, sidewalks are provided on both sides and parking is prohibited.

1.2 Proposed Conditions

Proposed Development and Site Operations

The proposed land use for the project site would be defined as a General Office Building that will provide a total of 38,000 square feet of office space. The immediate plan is for Stagg Development to occupy 9,000 square feet of the building (5,600 square feet on the penthouse floor and 3,400 square feet on the second floor) as its new corporate headquarters, with the remainder of the space to be leased to other commercial tenants.

Most of the building and site have already been constructed but are not occupied. There are two existing loading bays on the southern side of the building that will remain. In addition, a 1-story, 18-foot-tall accessory garage building located in the southwest portion of the site near the adjacent railroad will be completed as an accessory garage building. The existing telecommunications (cell) tower will remain along with existing and related access easements.

Stagg's offices will include approximately 30 to 35 employees, most of whom will drive their vehicles to the site and remain parked during the workday. It is anticipated the office space will operate daily for standard weekday office work with some employees having staggered hours typically between 8:00 AM and 8:00 PM, as anticipated in a post-Covid condition. A limited number of employees may work on the weekend, which is usually limited to Saturday.

The site will provide a total of 130 parking spaces in an improved parking lot for tenants' employees. Limited parking for construction trucks will also be provided at the rear of the site - typical construction trucks include tri-axle trucks, cargo box trucks, and construction box vehicles. The largest of these vehicles will be a Kenworth triaxle dump truck approximately 26 feet in length. It is anticipated that a maximum of three (3) of the applicant's construction vehicles will be dispatched from the premises to job sites in the morning. Some trucks will return to the site in the late afternoon, while others will remain at job sites. The primary purpose of the truck parking spaces will be to hold vehicles between construction projects. Once the vehicle has been assigned to a construction project the vehicle will typically remain on the construction site. The applicant anticipates approximately six (6) construction-related truck trips per day (3 leaving in the morning and 3 returning at the end of the workday).

Site Trip Generation

The *Institute of Transportation Engineers (ITE) Trip Generation Manual, 10th Edition with February 2020 Supplement* was used to estimate the number of site vehicle trips for the proposed 38 KSF of office (ITE Land Use Code (LUC) 710 General Office).

Conservatively, no credit was taken for the previously approved use for the site. As such, all site trips estimated for the proposed condition are considered “new” trips. The estimate of site generated vehicle trips is shown in **TABLE 1**.

As shown, the site is expected to generate 63 new vehicle trips in AM peak hour (54 in, 9 out), and 46 trips in the PM peak hour (7 in, 39 out).

TABLE 1 – New Site Generated Vehicle Trips

ITE Land Use	Unit of Measure	Expected Size		Direction	AM Peak Hour	PM Peak Hour
General Office #710	GFA	38,000		Enter	54	7
				Exit	9	39
				Total	63	46

Distribution and Assignment

The projected peak hour site-generated vehicle trips were assigned to the traffic volume network based on access to the primary roadways and major highways. Based on the local area roadway network, site observations and engineering judgment, Sam Schwartz made the following projections regarding trip assignments:

- New vehicle trips at the site driveway would be split approximately 75% to/from the north and 25% to/from the south.
- Approximately 60% of the site traffic would access the site via the Hutchinson River Parkway (30% from the north and 30% from the south).
- Approximately 20% of the site traffic would arrival/depart from points east and west using Lincoln Avenue (10% from each direction).
- The 25% of trips would be a combination of local trips and those trips using Beechwood Avenue to connect to the area highways, such as the Hutchinson River Parkway.

The Distribution and Assignment of AM and PM peak hour site trips are provided in figures contained in the attached **Appendix**.

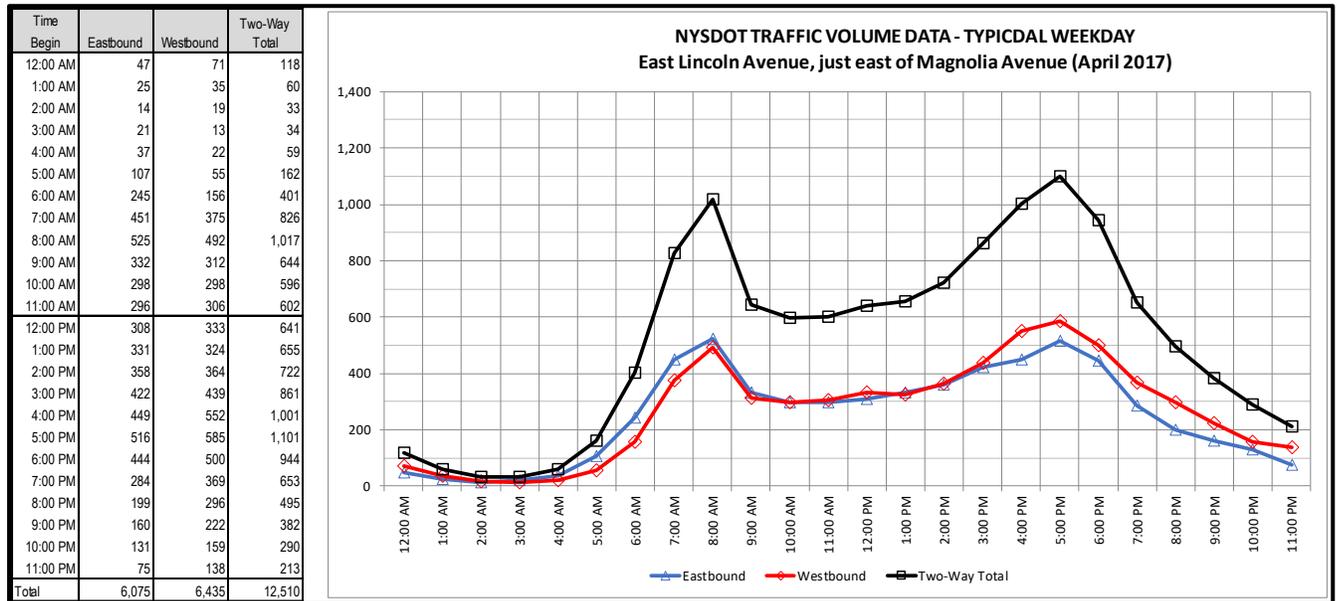
Area Traffic Volumes

Continuous 24-hour vehicle counts were obtained from the New York State Department of Transportation traffic database for East Lincoln Avenue. The traffic counts were collected in April 2017, representing a typical pre-COVID-19 weekday condition, also reflecting conditions prior to the East Lincoln Avenue bridge replacement project—a major nearby public construction project that has temporarily disrupted travel patterns. **FIGURE 1** presents a summary of the traffic count data. Traffic data for Wilson Woods Park Road was not available.

Based on a review of the data in **FIGURE 1**, East Lincoln Avenue reflects a typical temporal distribution with distinct commuter peaks for the AM and PM peak hours with closely balanced

volumes in each direction. In the eastbound direction, traffic peaks at 525 vehicles at 8:00AM. In the westbound direction the peak is at 585 vehicles at 5:00PM. The theoretical capacity for a principal arterial roadway, as determined by standard traffic engineering guidelines, is approximately 700 vehicles per lane per hour (determine the actual capacity for a specific roadway segment would require a traffic modeling capacity analysis).

FIGURE 1 – New York State Traffic Volume Data – East Lincoln Avenue



Based on the trip generation estimate and the trip assignments, the intersection of East Lincoln Avenue at Wilson Woods Park Road would experience a total increase of 29 vehicles during the AM peak hour and 23 vehicles during the PM peak hour. This represents less than a 5% increase in overall traffic volumes at the intersection. An initial assessment indicates that the area roadways will have capacity to absorb and accommodate the “new” vehicle trips generated as a result of the proposed development.

Driveway Sight Distance

The *American Association of State and Highway Transportation Officials Green Book 2018* (“AASHTO Green Book 2018”) recommends that a minimum of 155 feet of stopping sight distance be provided for a design speed of 25 MPH. Based on field observations and a review of available high-resolution aerial imagery, the site driveway will continue to provide adequate stopping sight distance to facilitate site access. Specifically, field observations on July 6, 2021 and a review of available high-resolution aerial imagery indicate that with trimming and maintenance of vegetation in the sight triangles, there is adequate sight distance to both the south of the entrance to the Project Site and to the north of the entrance to the Project Site along Wilson Woods Park Road / Bradford Road. A sight distance exhibit detailing these calculations is included in the attached **Appendix**.

Available Turning Radii for Trucks Entering and Leaving the Project Site

Based on a site survey completed on July 6, 2021, and an assessment of the required turning radius for the largest truck (tri-axle dump truck) that would enter and exit the Project Site, there would be sufficient room at the entrance to the Project Site on Wilson Woods Park Road to safely

enter and exit the Project Site. Based on a review of the proposed project site plan, there would be sufficient space within the Project Site to safely turn this size vehicle.

1.3 Recommendations and Conclusion

Based on the initial assessment from a traffic engineering perspective, the site would not produce a significant volume of traffic during the morning or evening peak hours. The local roadway network has available capacity to accommodate the site traffic, and the project would not cause adverse traffic impacts to the adjacent roadway network.

Nevertheless, it will be important for the applicant to emphasize to their employees (and tenants), that the building is located within a park environment, so drivers need to be aware of the surrounding recreational activities (biking, walking and jogging) and be in strict compliance with the 25-mph speed limit. Travel safety advisories should be submitted by the building management on a regular basis (maybe four times a year, at the beginning of each season). The operating hours of the park (8AM to dusk) do not coincide with the peak evening commutation hours of the office for many months of the year.

Wilson Woods Park Road presently provides local delivery truck access to the Westchester County Willson's Woods Park facilities located within the park. However, existing posted signage at the start of Wilson Woods Park Road southbound near East Lincoln Avenue indicates that trucks are not permitted through.

To remedy the potential confusion that existing local delivery trucks encounter on their way to park facilities and for the limited number of future Project Site truck trips (up to six per day), Sam Schwartz recommends that Stagg coordinate with Westchester County to make the following off-site roadway improvements:

1. Supplement the two (2) presently installed "NO TRUCKS" signs (MUTCD R5-2) on Wilson Woods Park Road just south of Lincoln Avenue with the "EXCEPT LOCAL DELIVERY" (NYR7-3p) plaque from the New York State Supplement to the 2009 MUTCD.
2. On Wilson Woods Park Road just south of the site driveway and before the railway trestle, a new "NO TRUCKS" R5-2 sign should be installed.
3. On the Project Site driveway approach and across the street on Wilson Woods Park Road, a "NO LEFT TURN" sign with supplemental "TRUCKS" plaque should be installed to prohibit trucks from turning left from the Project Site driveway (MUTCD R3-2 with "TRUCKS" plaque).

The site triangles shown on the "Intersection Sight Distance" Exhibit in the attached Appendix demonstrate that to maintain safe ingress/egress, this area should be kept free and clear of obstructions and overgrown vegetation to ensure that vehicles exiting the site driveway have adequate sight distance. It is recommended that Stagg coordinate with Westchester County to remove the dense and overgrown vegetation immediately north of the entrance to the Project Site on Wilson Woods Park Road and design a landscaped entry to the area that is dominated by low growing shrubs to maintain safe sight distance to the north of the entrance to the site.

2. Stormwater Management Plan

As requested, Sam Schwartz reviewed the approach, pre-redevelopment conditions, the design documents, and the construction work performed to date for stormwater management for the previously developed 1 Bradford Road office renovation project. In addition, Sam Schwartz has provided recommendations for additional measures that are recommended to be undertaken by the applicant, as should be detailed as part of Site Plan Approval plans to ensure the stormwater management system will be constructed in compliance with New York State stormwater regulations. It is understood that the storm sewer system in Mt. Vernon is managed as a Municipal Separate Storm Sewer System (MS4) which applies New York State Department of Environmental Conservation (NYSDEC) State Pollutant Discharge Elimination System (SPDES) permitting regulations.

2.1 Existing Conditions

Based on a review of existing records and survey data, the +/- 3-acre site was previously developed with impervious paved parking areas, buildings/structures, concrete stairs and sidewalks, and minimally landscaped pervious coverage. The site generally drained from south to north across the paved parking area to a single drywell via a drop inlet opening that was not functionally connected to an adjacent sewer main traversing the center of the site. Two sewer manholes exist within the site that are connected to a +/-12" diameter sewer pipe that flows from southeast to southwest across the site towards Bradford Road. Inverts at each manhole are measured at 16'8" and 11' below grade respectively. Further study will be performed by the applicant to verify the downstream discharge connection point of this sewer to municipally owned sewer facilities and whether it is suitable to receive stormwater discharges from the site.

Design and Construction Documentation

The proposed site plan includes removal and reconstruction of the paved parking areas, the addition of a new building structure, concrete perimeter walls and modified landscaping throughout. Due to an increase in impervious surfaces for the proposed redevelopment, the architect applied a calculation method known as the Long Term Hydrologic Impact Analysis (L-THIA) which is a simplified calculation derived from Natural Resource Conservation Service (NRCS) Technical Release (TR-55) methodology utilized to arrive at a volume of stormwater detention requirements for a redeveloped site associated with the increase in impervious cover. The design storm utilized in the calculation is a 7.5" storm in 24-hours. The architect and applicant also performed two percolation tests on the site each with a rate of infiltration documented at 4 minutes per inch. Silt fence details were included for use in temporary erosion control during construction activities.

The L-THIA based TR-55 calculation method indicated a stormwater storage volume of 8,083 cubic feet would be required to address the increased impervious cover area. This volume of storage was addressed by providing 102 open bottom cultech stormwater chambers set atop a setting bed of crushed stone and layers of geotextile filter fabric. Each cultech unit achieves 79.26 cubic feet of storage. While percolation rates were favorable for subgrade soils, additional storage credit was not applied in this calculation to determine the number of cultech units required, which is a more conservative approach to meet storage volume requirements. A storm catch basin drain inlet and 8" pvc pipe network was designed to capture stormwater and deliver it throughout the

site into the underground storage detention area comprised of cultech units with an 8" outflow pipe connecting the cultech storage volume area to the existing sewer that traverses the site.

The L-THIA TR-55 calculations, cultech system sizing, percolation test results and stormwater management design and erosion and sediment control methods are detailed on construction documents sheet Site Storm Plan SP-004.00 last revision dated 8/10/2020.

Construction

The storm drainage pipe network, catch basins drain inlets, and cultech unit stormwater volume storage area depicted in the Site Storm Plan SP-004.00 has been built and an inspection report was prepared by Certified Testing Laboratories with photo documentation provided and a written report of field observations by the inspector. Based on a review of the inspection report, the cultech units appear to have been installed according to design specifications and in accordance with typical installation methodologies for layering geotextile filter fabric and crushed stone setting beds below open bottom storage units. As-built elevations were provided by the applicant and upon review show positive drainage from catch basins into the cultech storage volume area.

2.2 Additional steps to be taken to meet NYSDEC SPDES Permit Requirements

A detailed Stormwater Pollution Prevention Plan (SWPPP) will need to be prepared in accordance with NYSDEC requirements for land disturbance in excess of 1-acre associated with redevelopment and will include both temporary and permanent erosion control measures and stormwater Best Management Practices (BMPs) designed in accordance with the New York State Stormwater Management Design Manual (SMDM).

Temporary Erosion Controls

A stabilized stone construction entrance and, except at areas where new perimeter walls achieve the same effect, additional silt fence should be added to the perimeter of the site where stormwater may drain downhill towards perimeter chain link fences and could send sediment onto adjacent properties.

Stormwater Quantity Management

As a continuation of the simplified L-THIA calculation method, and in accordance with the standard NYSDEC SPDES permit and NYS SMDM requirements, a full NRCS TR-55 calculation and stormwater model will be developed to provide unit hydrograph calculations demonstrating that the currently built detention system meets the stormwater quantity requirements to restrict peak post redevelopment stormwater discharge rates from the site to rates that are at or below the discharge rates associated with the 1 year, 2 year, 10 year, and 100 year storms in the pre-redevelopment conditions as required. As part of this design calculation modeling, in order to provide adequate reduction of post-redevelopment discharge rates to pre-redevelopment discharge rates for the requisite design storms modifications to the existing installed infrastructure may include any of the following: additional detention storage chambers and/or modifications to the size or invert elevation, or possible removal of the discharge pipe from the detention system to the sewer main within the site. Should it be determined that the existing sewer on site and the associated downstream sewers are not suitable for receiving a new storm sewer connection from

the cultech detention system area, then it is likely that the stormwater quantity volume storage requirements associated with the proposed redevelopment will be fully managed through on-site retention and infiltration practices, including use of the existing cultech system and any expansion of additional units if required.

Stormwater Quality Management

In accordance with NYSDEC SPDES permit requirements a required water quality volume (WQv) will be calculated according to Chapter 4 of the NYS SMDM based on the impervious coverage increase from the pre-redeveloped conditions to the post re-developed conditions. Percolation rates will be reconfirmed in the areas below the open bottom cultech detention chambers in order to determine if recharge rates are adequate to meet a portion of the WQv required. In addition, percolation rates will be confirmed in proposed landscaped areas on the north side of the property and within the pervious areas of the interior and perimeter landscaped curbed islands throughout the parking lot to determine if there is any potential for infiltration based green infrastructure options that can be designed to meet a portion of the WQv. Because the site can be classified as a redevelopment, proprietary stormwater management practices, such as hydrodynamic separators, may also be utilized to meet WQv requirements. Pipe connections between the most downstream catch basins that collect the most significant amounts of stormwater in the northern portions of the site will be retrofitted with hydrodynamic separators, if required, in order to make up any deficit in WQv requirements that cannot be achieved by infiltration recharge below the open bottom cultech chambers. Based on percolation rates verified by additional testing, where allowable based on guidelines set forth on the NYS SMDM, additional green infrastructure practice options beyond the infiltration recharge provided beneath the cultech chambers, such as rain gardens and bioswales, will be designed in new locations in the northern regions of the parking lot area and through retrofitting the existing painted parking islands with perforated subdrainage pipes and preamble soils.