

Memo

Submitted To: Mike Hansen Properties, LLC

Submitted By: Corey Mack, PE, PTOE, Consulting Transportation Engineer

Project Name: Hansen Office New London – Site Transportation Assessment

Date: 22 March 2024

Wall Consultant Group (WCG) has completed a review of the proposed office located at 10 Main Street in New London, NH. This memo documents the proposed project's estimated trip generation and relevant existing roadway network characteristics.

This engineering assessment relies upon standards and guidelines set forth by the Town of New London Zoning Ordinance approved 28 March 2023, Driveway Policy Guidelines from the New Hampshire Department of Transportation (NHDOT) and standard engineering practice outlined by the Institute of Transportation Engineers (ITE), American Association of State Highway Transportation Officials (AASHTO), and other sources as noted.

Summary and Conclusions

- The Hansen Office Building at 10 Main Street in New London, NH proposes to construct a 2,880 square foot gross floor area small office building and associated parking and site infrastructure.
- The proposed project is expected to generate 5 AM and 6 PM peak hour trip ends in the build condition, well below the NHDOT threshold meriting further traffic capacity analyses.
- The estimated peak hour trip generation is within the range of observed weekday peak hour traffic volumes along Newport Road and Main Street and is negligible within the roadway system.
- The available stopping sight distance and intersection sight distance exceeds the required minimum distances for safety defined by AASHTO.

No offsite roadway infrastructure mitigation is recommended because of this project.

Based on the analysis conducted for this report, the proposed project is not expected to impact traffic on roads and highways or negatively affect the character of the area due to traffic generation. The proposed project will not result in unreasonable traffic congestion or exceed the capacity of roads and intersections in the vicinity of the project.

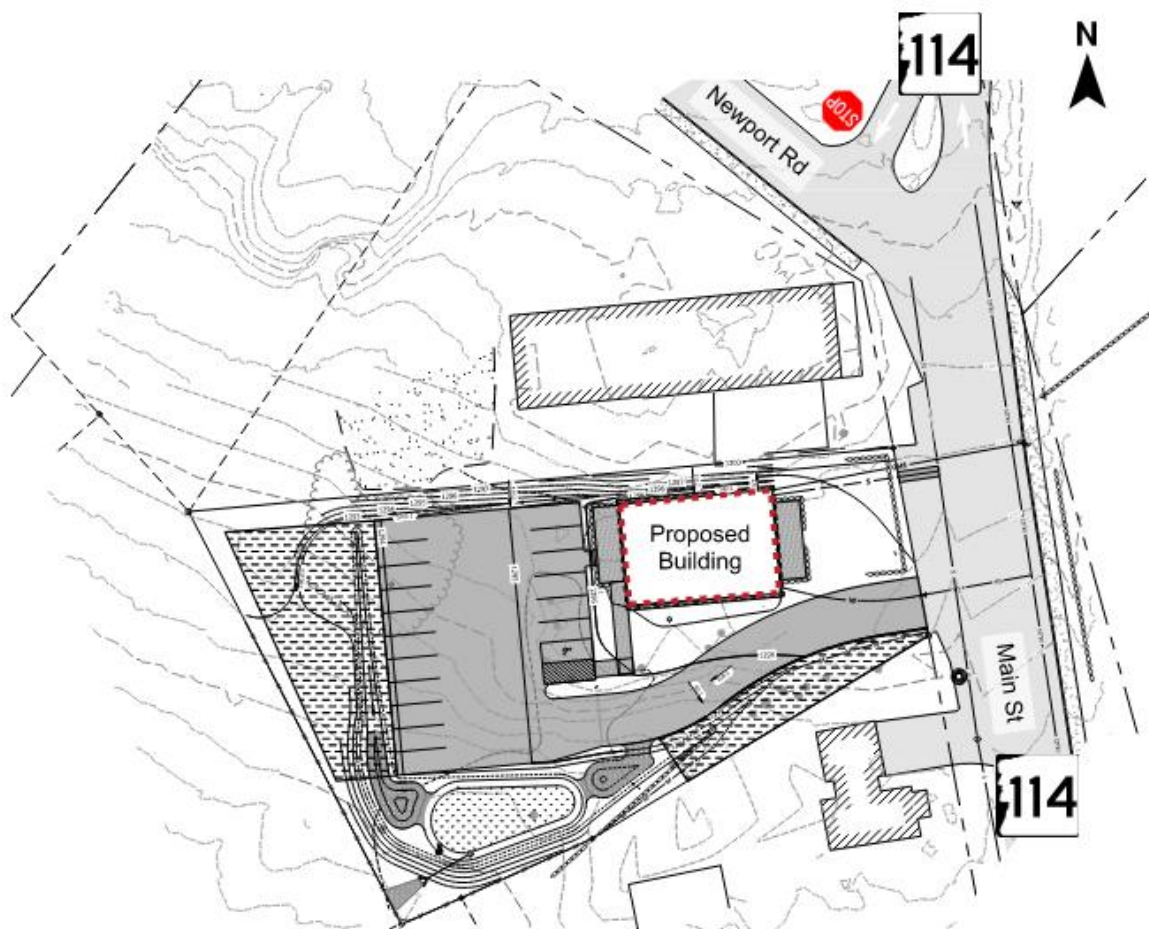
Proposed Project Parameters

The Hansen Office Project proposes to construct a professional services office building on a 72' x 40' footprint (Figure 1), with a total interior gross floor area of 2,880 square feet (SF), roughly consisting of:

- 1,640 SF gross leasable area
- 1,240 SF common / storage / mechanical space

The site plan has illustrated 18 parking spaces, including one van-accessible parking space.

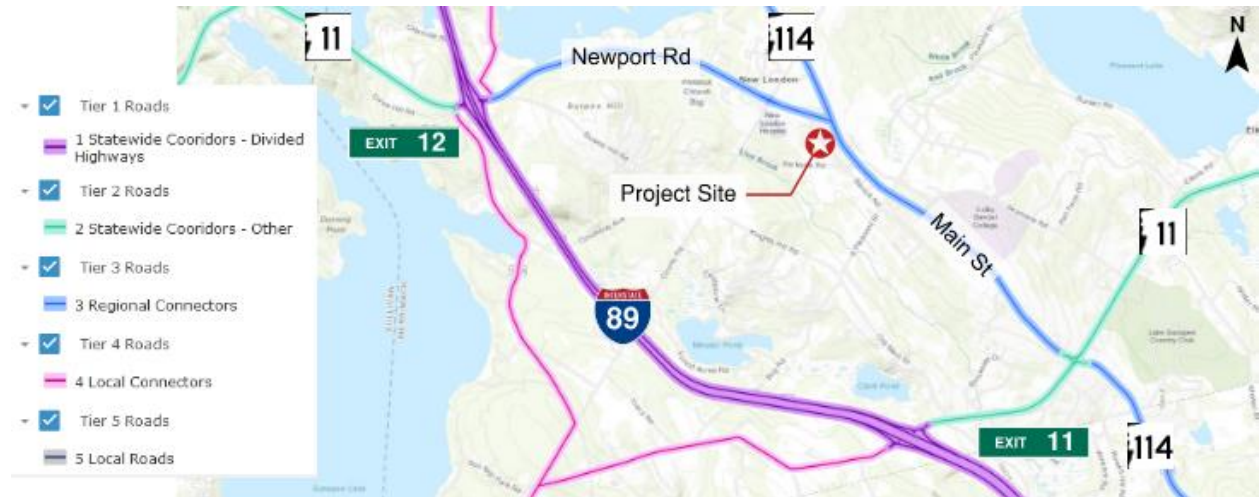
FIGURE 1: PROPOSED SITE PLAN WITH WCG MARKUP (FROM HORIZONS ENGINEERING, DATED OCTOBER 2023)



The site is located on roughly 0.7 acres. The property formerly consisted of a single-family residential unit, demolished in April 2021.

Figure 2 illustrates the approximate proposed site development boundary relative to the adjacent roadway system. The project is located on Main Street (NH-114) in New London, NH. Main Street (NH-114) is a Tier 3 Regional Connector state highway under NHDOT jurisdiction. The site is in the Commercial "C" zoning district.

FIGURE 2: LOCATION OF HANSEN OFFICE PROJECT IN NEW LONDON, NEW HAMPSHIRE



Existing Transportation Network

The proposed Hansen Office Project is accessed from Main Street (NH-114). I-89 Exit 12 is roughly 2.5 miles west of the site along Newport Road, and I-89 Exit 11 is roughly 3.5 miles south of the project site along NH-11 via Main Street.

Main Street is a bituminous concrete asphalt surfaced road. The road is approximately 28-feet wide with a posted speed limit of 30 MPH. Approximately 100 feet north of the project site, Newport Road – NH-114 through movement forms a roughly 175-ft radius curve with an advisory speed of 25 MPH. The southbound approach of NH-114 intersects within this curve.

The nearest available traffic data from the New Hampshire Department of Transportation Data Management System (MS2) is presented in Table 1.

TABLE 1: AVAILABLE TRAFFIC DATA NEAR THE PROJECT SITE

Site	Newport Rd 82335068	Main St (NH-114) 82335055
Location Description	b/w Exit 12 and Otterville Rd	b/w Squires Ln and NH-11
SF Group / GF Region	2 / D - Southwest	2 / D - Southwest
Date range	8/1/2023 – 8/3/2023	8/18/2020 – 8/20/2020
Days of observations	3	3
Daily Observed Traffic Range (low – high, vpd)	7,444 – 7,570	7,045 – 7,594
Observed Weekday Peak Hour Range (low – high, vph)	678 – 709	650 – 683
Estimated 2023 AADT (vpd)	6,365	6,910

vpd: vehicles per day
vph: vehicles per hour

There is a sidewalk along the east side of Main Street opposite the project area, crossing to the south side of Newport Road at the NH-114 intersection. There is no dedicated bicycle facility along Main Street / NH-114 or Newport Road. There is no scheduled fixed route transit service proximate to the study area. The nearest fixed route transit service is the Dartmouth Coach stop at the Exit 12 Park & Ride, roughly 2.5 miles west of the project site.

Estimated Trip Generation

Trip generation refers to the number of vehicle trips originating at or destined for a particular land use development. The proposed project will generate new trip ends from the new land use being developed: small office building.

Data from the Institute of Transportation Engineers (ITE) can be applied to estimate trip generation associated with the proposed small office land use. As defined by the ITE Trip Generation Handbook, 11th Edition:

ITE Land Use Code (LUC) 712 – Small Office Building: A small office building is the same as a general office building (Land Use 710) but with less than or equal to 10,000 square feet of gross floor area. The building typically houses a single tenant. It is a location where affairs of a business, commercial or industrial organization, or professional person or firm are conducted.

TABLE 2: ESTIMATED TRIP GENERATION ASSOCIATED WITH THE PROPOSED PROJECT

	ITE LUC 712 – Small Office - 2.88 KSF GFA		
	Entering Trip	Exiting Trips	Total Trips
Weekday AM Peak Hour of Adjacent Street Traffic	4	1	5
Weekday PM Peak Hour of Adjacent Street Traffic	2	4	6
Total Weekday	21	21	42

As shown in Table 2, the proposed project is estimated to generate 5 trip ends in the AM peak hour, 6 trips ends in the PM peak hour, and 42 trip ends over an average weekday.

The observed weekday peak hour traffic volume along Newport Road varied from 678 -709 vehicles per hour, exhibiting a range of 31 vehicles per hour in an average weekday peak hour (Table 1). Similarly, the observed weekday peak hour traffic volume along Main Street varied from 650 – 683 vehicles per hour, exhibiting a range of 33 vehicles per hour in an average weekday peak hour (Table 1). The estimated new trip generation associated with the proposed project is considerably less than the daily variation that currently travels along the road network. The trip generation of the proposed project is negligible within the entire road network.

Sight Distance Review

As defined in the 2018 publication *A Policy on Geometric Design of Highways and Streets*, from the American Association of State Highway and Transportation Officials (AASHTO), sight distance is the “the length of roadway ahead that is visible to the driver.”¹ Sight distances of sufficient length are necessary at all points along a roadway to ensure vehicles can safely stop or avoid colliding with potential obstructions or other vehicles on the roadway.

Standard practice in assessing intersection safety and operations involves measuring two separate sight distances – **stopping sight distance** and **intersection sight distance**.

Stopping sight distance (SSD) is the visible distance along a roadway between an advancing motorist and a potential obstacle in the roadway. It is measured from a point representing the approaching driver’s eye and a point representing an obstacle in the roadway.² Stopping sight distances of adequate length are needed along all roadways, both at and away from intersections, so that drivers travelling at design speeds can react to potential obstacles and safely brake to avoid collisions. Design minimum stopping sight distances are calculated based on factors such as design speed, response times, and grades as reported in the *2018 Policy on Geometric Design of Highways and Streets*.³

Intersection sight distance (ISD) is the distance available along the major road travelled way corresponding with the maximum visibility between an advancing motorist on the major road and an entering motorist on an intersecting minor road. It is measured between a point representing the advancing driver’s eye above the major road and a point representing the entering driver’s eye above the intersecting road.⁴

The *2018 Policy on Geometric Design of Highways and Streets* states that the available intersection sight distance should be at least equal to the required stopping sight distance along the major road.

“Sight distance is also provided at intersections to allow the drivers of stopped vehicles a sufficient view of the intersecting highway to decide when to enter the intersecting

¹ American Association of State Highway and Transportation Officials, *A Policy on Geometric Design of Highways and Streets*, Seventh Edition (Washington D.C.: American Association of State Highway and Transportation Officials, 2018). Page 3-2.

² As noted in the *2018 Policy on Geometric Design of Highways and Streets* (page 3-15), the height of the driver’s eye is assumed to be 3.5’ above the road surface and the height of a potential obstacle is 2.0’ above the road surface.

³ American Association of State Highway and Transportation Officials, *A Policy on Geometric Design of Highways and Streets*, Seventh Edition (Washington D.C.: American Association of State Highway and Transportation Officials, 2018). Page 3-5 to 3-6.

⁴ As noted in the *2018 Policy on Geometric Design of Highways and Streets* (page 3-16), the height of the driver’s eye of the approaching vehicle is assumed to be 3.5’ above the road surface of the major road and the height of the driver’s eye of the entering vehicle is assumed to 3.5’ above the minor road surface. The decision point offset from the travel way varies with sight conditions (page 9-38); in this case we assume the decision point is 15-feet from the travel way.

highway or to cross it. If the available sight distance for an entering or crossing vehicle is at least equal to the appropriate stopping sight distance for the major road, then drivers have sufficient sight distance to anticipate and avoid collisions.”

However, when possible, it is desirable to have intersection sight distances that exceed the design minimum stopping sight distances to offer improved operations, such that major road traffic need not decelerate to accommodate entering traffic.

“However, in some cases a major-road vehicle may need to stop or slow to accommodate the maneuver by a minor road vehicle. To enhance traffic operations, intersection sight distances that exceed stopping sight distances are desirable along the major road.”

Based on the posted speed limit of 30 MPH and a relatively level grade (<3%), the design minimum stopping sight distance is 200 feet along Northbound Main Street; with the 25 MPH advisory speed limit, the design minimum stopping sight distance is 155 feet along eastbound Newport Road. The target minimum intersection sight distance for turning traffic is 290 feet to the left and 335 feet to the right.

Furthermore, NHDOT requires a minimum of 400-feet of all season safe sight distance, similar to intersection sight distance, for new driveways accessing the state highway.

ISD and SSD were measured at the proposed site driveway location. The resulting ISD and SSD observations are detailed in the following pictures and table.

FIGURE 3: DRIVER’S PERSPECTIVE TO THE LEFT (NORTH) AND RIGHT (SOUTH) FROM THE PROPOSED SITE DRIVEWAY



TABLE 3: REQUIRED AND MEASURED SIGHT DISTANCES AT THE EXISTING SITE DRIVEWAY

	Required Minimum	Design Target	Measured
Stopping Sight Distance	200’ Northbound 155’ Southbound	n/a	>500’ NB (met) 175’ SB (met)
Intersection Sight Distance	left, to north: 155’ right, to south: 200’	left, to north: 290’ right, to south: 335’	left, to north: 175’ (met) right, to south: >500’ (met)

The observed stopping sight distances at the proposed site driveway exceeds the AASHTO required minimum safe stopping sight distance. While the minimum required NHDOT all season safe sight distance is not met to/from the north, the proposed driveway location is the most ideal location to serve the property with the maximum sight distance.

Site Plan Review

WCG evaluated the proposed site plan (Figure 1) for safe and efficient vehicle and pedestrian circulation. The following features are recommended to be considered by the site design team:

- Consider including electric vehicle charging infrastructure, or underground conduit to an identified location for future installation of an electric vehicle charger.
- Consider including conveniently located bicycle racks. Ideally the racks are protected from the elements, either covered or indoors. If not feasible at this time, consider identifying a future location for the installation of bicycle racks.
- Consider increasing the depth of the eastern head-in parking aisle and providing curb / wheel stops to provide a walking space along the parking spaces to the rear entrance steps.
- Consider providing a walking path from the front entrance to the driveway, and along the driveway to Main Street for defined pedestrian access to the front entrance from the roadway. If not feasible at this time, consider identifying a potential layout for future construction of the walkway when feasible.

Conclusions and Recommended Mitigation

Given the relatively low estimated trip generation and the existing daily variation in peak hour traffic volumes, the proposed project is not expected to result in capacity or congestion impacts. No safety issue was identified. Based on the analysis conducted for this report, the proposed project is not expected to impact traffic on roads and highways or negatively affect the character of the area due to traffic generation. No offsite roadway infrastructure mitigation is recommended as a result of this project.