



Re: Hamlet Improvement Project –
Study and Recommendations for Traffic Horizontal Geometry

Town of New Castle
200 South Greeley Avenue
Chappaqua, NY 10514

Attn: Mr. Robert J. Cioli, P.E.
Town Engineer

Re: Transportation Engineering Services
Hamlet Improvement Project – Study and Recommendations for Traffic Horizontal
Geometry

Dear Mr. Cioli,

Sam Schwartz Engineering, DPC (Sam Schwartz) has reviewed and revised the proposed traffic horizontal geometry of the Hamlet of Chappaqua Infrastructure & Streetscape Improvement Project. Per the scope of services, the review focused on the following intersections:

- South & North Greeley Avenue / King Street / Lower King Street – Proposed curb line and striping geometry
- Senter Street / King Street – Proposed curb line and striping geometry
- Lower King Street / Allen Place – Investigation of existing and proposed geometry and evaluation of feasibility for implementation of two-way traffic flow

In support of this review, The Town of New Castle provided *Sam Schwartz* with previously approved final design plans and a technical memorandum for proposed roadway improvements:

- Streetscape & Infrastructure Improvement Project Final Design Submission, prepared by WSP, dated 01-27-2017 (WSP Plans)
- Downtown Chappaqua Interim and Permanent Improvements at the King Street (NY 120) and North/South Greeley Avenue Intersection & The Quaker Road (NY 120) and South Greeley Avenue Intersection – Technical Memorandum

The following summarizes the work performed, findings, recommendations, and next steps.

Revisions to Final Design Plans

Per discussions with the Town at a field meeting on January 8, 2019 and results of turning movement analysis of initially proposed geometry, *Sam Schwartz* was directed to revise the WSP plans to include the following:

- Revised horizontal geometry, including curb lines, travel lanes, and striped parking along King Street, Senter Street and Greeley Avenue to adequately accommodate turning movements for a New Castle Fire Truck, WB-40, and Single Unit (30') Truck
- Revised striping along Lower King Street to accommodate two-way traffic flow and parallel parking
- Revised parking striping along Allen Place to accommodate more parking spaces and mitigate spaces that would need to be removed to accommodate the proposed two-way flow along Lower King Street



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The revised set of draft plans was prepared and is attached to this memorandum. The revised geometry can adequately accommodate the design vehicle’s turning movements and per existing topographical mapping provided, can be built to ADA-compliance.

Impacts to Parking

As a result of the proposed roadway geometry, several parking spaces adjacent to intersections were to be removed to accommodate turning movements of design vehicles. According to an aerial imagery review, the WSP proposed geometry accommodates two less parking spaces within the limits of the improvement project. To estimate the number of spaces existing where parking is permitted but not striped, a parking space length of 22’ was used, and it was assumed no parking is permitted within 10’ of driveways and 15’ of fire hydrants. Table 1 below compares the number of parking spaces for the existing and proposed geometries. Comparing the parking quantities for each of the proposed geometries, it was determined that:

- *Sam Schwartz* Proposed Geometry Option A accommodates one more space than the WSP proposed geometry
- *Sam Schwartz* Proposed Geometry Option B accommodates the same number of spaces than the WSP proposed geometry

It should be noted that for both *Sam Schwartz* proposed geometry options, the number of spaces along Lower King Street are reduced to allow for two-way traffic flow. To mitigate the loss of these spaces, Allen Place was redesigned with 90-degree parking and re-striped to accommodate ten additional spaces from the existing condition.

Table 1 - Parking Space Quantity Comparison

On-Street Parking along:	Existing Geometry	WSP Proposed Geometry	<i>Sam Schwartz</i> Proposed A	<i>Sam Schwartz</i> Proposed B
Allen Place	23	23	33	33
South Greeley Avenue	39	39	39	39
North Greeley Avenue	48	48	47	47
King Street	20	20	20	19
Lower King Street	16	14	6	6
Senter Street	2	2	2	2
Total within project limits	148*	146	147	146

**This is the maximum possible number of parking spaces under ideal conditions. Parking on South/North Greeley and King Street are not striped and based on field observations of existing parking pattern, the actual number of parking spaces is anticipated to be less than 148.*

Proposed Two-way Traffic Flow along Lower King Street

Geometrics - Per the revised plans attached, the existing curb line geometry of Lower King Street can accommodate two-way traffic flow with the proposed revised striping if angled on-street parking is converted to parallel. To mitigate the potential loss of these spaces, striping along Allen Street was revised (see proposed roadway plans) to accommodate additional spaces.

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Operations – While two-way traffic flow is feasible from a roadway geometrical standpoint, it is anticipated that the change in traffic flow along Lower King Street will cause operational and circulation impacts, particularly to the Greeley Avenue / Lower King Street / King Street (NY 120) intersection.

As Lower King Street currently operates as one-way westbound, any vehicles that currently park along Lower King Street, Allen Place, the retail parking lot to the east of Allen Place, and the Metro North Chappaqua Station lots exit the complex onto Greeley Avenue via Woodburn Avenue. Figure 1 below shows an inventory of each parking area in the retail/Metro North station complex to the southwest of the project that currently utilize Woodburn Avenue to exit.



Figure 1 - Existing Parking utilizing Woodburn Avenue

If Lower King Street accommodates two-way traffic, a number of vehicles exiting the complex would utilize Lower King Street eastbound instead of Woodburn Avenue. Based on the locations of the parking spaces in proximity to Lower King Street and orientation of aisles between rows of parking, the following assumptions can be made if two-way traffic flow are implemented:

- Vehicles exiting on-street parking along Lower King Street and Allen Place north of the Metro North Station would exit via Lower King Street.



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- Vehicles exiting parking spaces in the retail lot to the east of Allen Place would exit via Lower King Street.
- Vehicles exiting parking spaces in the Metro North lot north of Woodburn Avenue would exit via both Lower King Street and Woodburn Avenue (assume 50% split).
- Vehicles exiting parking spaces in the Metro North lot south of Woodburn Avenue would continue to exit via Woodburn Avenue.

As impacts to traffic operations at the Greeley Avenue / Lower King Street / King Street (NY 120) intersection have not yet been quantified, *Sam Schwartz* recommends further traffic analysis to determine the feasibility of implementing two-way traffic flow along Lower King Street.

Recommendations and Next Steps

Before proceeding with implementation of two-way traffic flow along Lower King Street, *Sam Schwartz* recommends the following next steps:

1. Analyze trip generation and distribution to determine added demand to Lower King Street eastbound.
2. Perform an operational (LOS) analysis using Trafficware Synchro software to determine impacts of the added demand to the proposed traffic signal.
3. If the two-way flow is feasible, revise proposed traffic signal plans and signal timing for the intersection, as appropriate
4. Evaluate the overall traffic circulation for the retail/Metro North station parking site. Identify existing operational deficiencies and develop improvement recommendations.
5. Perform general traffic engineering and circulation review at specific locations, as needed.

In order to conduct the recommended analyses and plan revisions above, additional data will be required. *Sam Schwartz* understands that as part of earlier efforts and development of design plans, some of the needed data may have been collected, and analysis performed. In order to streamline this effort, *Sam Schwartz* will coordinate with the Town to obtain and utilize available data and completed analyses, as appropriate. *Sam Schwartz* is available to complete this additional work under our existing On-Call Traffic Engineering Services Agreement and will be happy to coordinate with the Town to develop a scope of services and fee proposal.

If you have any questions, please do not hesitate to contact us directly.

Regards,

A handwritten signature in blue ink, appearing to read "Lou Luglio".

Lou Luglio, P.E.
Vice President

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Attached: Roadway Plans_SSE 20190124.pdf