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Juliet T.H. Walker, AICP
Planning Director
City of Portsmouth Planning Department
City Hall, 3rd Floor
1 Junkins Avenue
Portsmouth, NH 03801

October 10, 2018

Ref. T0822

Re: 105 Bartlett Street Traffic Study – Residential Development
Transportation Peer Review – Response to Comments Review

Dear Ms. Walker:

On behalf of the City of Portsmouth, TEC, Inc. (TEC) has reviewed additional documents as part of the transportation engineering peer review of a proposed residential development located on the north side of Bartlett Street, to the north of the existing Ricci Lumber property in Portsmouth.

The following documents were received as part of our review:

- Response to Comments Memorandum, prepared by Stephen G. Pernaw & Co., Inc, dated October 1, 2018
- Additional Truck Turning Templates Memorandum, prepared by Stephen G. Pernaw & Co., Inc, dated October 9, 2018
- Clipper Traders – Supplemental Traffic Counts Memorandum, prepared by Stephen G. Pernaw & Co., Inc, dated October 9, 2018
- *Traffic Impact and Site Access Study – Proposed Residential Subdivision*, prepared for Clipper Traders, LLC by Stephen G. Pernaw & Co., Inc. – June 2018
- *Addendum One to the Traffic Impact and Access Study – Proposed Residential Subdivision*, prepared for Clipper Traders, LLC by Stephen G. Pernaw & Co., Inc. – August 2018
- *Proposed Subdivision Plans, Clipper Traders, LLC*, prepared by Ambit Engineering, Inc., dated June 18, 2018

Comments 1 thru 15 have been retained from the most recent TEC review letter dated September 17, 2018, originally issued as part of the project review. The Applicants response to comments is shown as **bold**; TEC responses are shown as *italic*.

Transportation Impact Evaluation

1. Study Area – Original comment was informational. No response was required.
2. Traffic Counts - Original comment was informational. No response was required.

[Plan](#) | [Permit](#) | [Design](#) | [Construct](#)

3. Background Growth - The TISAS and the Addendum use an annual traffic volume growth adjustment factor of 1.0 percent per year based on standard rates approved by NHDOT. TEC concurs with the adjustment factors based on NHDOT guidelines. Steven G. Pernaw and Company, Inc. (SGP) concurrently overlaid projected traffic volumes associated with four pending development projects within the study area. The future conditions in 2020 (opening year) and 2030 (10-year horizon) were studied in conformance with NHDOT requirements.

TEC notes that the mixed-use development along Cate Street, including the extension of Cate Street between US 1 Bypass and Bartlett Street, which is currently within the public hearing process, is not included within this study. TEC understands that the timing of the completion of the subject residential development will likely occur prior to or concurrent with the opening of the Cate Street Extension. Further, it is noted that the traffic from the mixed-use development will have an impact on the Bartlett Street study area intersections in the future. The mixed-use development traffic will not materially affect the Maplewood Avenue intersection studied within the Addendum. TEC recommends that SGP discuss the potential impact of the extension of Cate Street on the residential development access drive intersection with Bartlett Street.

SGP & Company, Inc. Response: The mixed-use development that involves the extension of Cate Street will have several different impacts at the Bartlett Street/Existing Shared Driveway intersection: 1) the site generated traffic from the mixed-used development will add vehicle-trips to Bartlett Street, 2) the extension of Cate Street will reduce vehicle-trips on certain sections of Bartlett Street due to local trip diversions, and 3) the extension of Cate Street will alter the travel patterns of those currently using the Existing Shared Driveway. For example, some drivers will exit left rather than exit right from the Existing Shared Driveway to reach the new alignment (Cate Street Extension). The net change on Bartlett Street during the weekday PM peak hour is approximately -200 vph north of the shared driveway and -50 vph south of the shared driveway.

TEC: TEC concurs with this assessment of the impact of the extension of Cate Street on the Bartlett Street / Existing Driveway intersection. No further response required.

4. Crash Data – No motor vehicle crash data was provided within the TISAS or Addendum. SGP should obtain and review crash data at the study area intersections to determine whether any specific crash trends exist. This is primarily of concern at the two site access points onto Bartlett Street and Maplewood Avenue. The crash data typically indicates the number, type, and severity of crashes at the study area intersections for the most recent three years on record. SGP should further provide documentation of other traffic safety related issues/deficiencies at the intersections and subject roadways, such as sight distances, if applicable.

SGP & Company, Inc. Response: Crash data from the State of New Hampshire Department of Transportation for the most recent three-year

period (2013 to 2015) was researched to identify accident rates and patterns in the study area. Over the three-year period, the Location Data Reports indicate that 2,407 crashes were recorded on a city-wide basis. It should be noted that this database is considered to be a subset of the total collisions as not all incidents are required to be reported to the State. Of these, thirteen crashes contained sufficient detail to locate them in the study area. These reports, along with a summary table, are attached (see Attachments 1-3).

Five crashes occurred in the vicinity of the Bartlett Street/Cate Street intersection. There was one collision that resulted in personal injury and the majority (80%) of the crashes involved two or more vehicles. Inclement weather or unfavorable surface conditions may have been a contributing factor in four of the five collisions.

Eight collisions occurred in the vicinity of the Bartlett Street/Islington Street intersection. There was one crash that resulted in injury to one person. All of the crashes involved two vehicles. Inclement weather or unfavorable surface conditions were not a contributing factor in any of these eight collisions.

No fatalities were reported in this study group. There were no discernible trends in terms of crash frequency as four crashes occurred in 2013, three occurred in 2014, and six occurred in 2015. In terms of monthly variations, August was the highest months (3 crashes) and the lowest months included January, April, and June (0 crashes each). In terms of daily variations, four crashes over the three-year period occurred on Fridays, and the lowest days were Mondays, Tuesdays, Thursdays and Saturdays with one crash each.

TEC: TEC: Upon review of the data provided, TEC concurs that an identifiable crash issue and/or trend does not exist at the study area intersections. No further response necessary.

5. Site Trip Generation – Original comment was informational. No response was required.
6. Trip Distribution – The traffic generated by the proposed Project was distributed onto the adjacent roadway system based upon existing travel patterns at the Bartlett Street driveway. The Addendum relocates approximately a third of the site traffic to the Maplewood Avenue driveway. SGP should confirm this distribution based on available Journey to Work data published by the US Census and considering other in-City trips related to school or shopping activities.

As previously noted, the impact of the extension of Cate Street from Bartlett Street to US 1 Bypass was not considered within this report. Therefore, no site traffic was distributed toward US 1 Bypass via Cate Street. TEC recommends SGP provide a discussion on whether the residential development site generated traffic will divert to this connection.

SGP & Company, Inc. Response: An alternative trip distribution analysis based on Journey to Work data suggests that the primary trips will be distributed 57% West and 43% East on Bartlett Street, rather than a 50-50 split. When these percentages are applied to the trip generation estimates for the subject site, the net change in turning movement volumes is negligible (+/- 2 PM peak hour trips). The extension of Cate Street from Bartlett Street to US1 Bypass was not considered in this traffic study as it preceded the traffic study for the Cate Street project, and is not an approved project at this juncture. Nevertheless, it is expected that a portion of the site generated traffic from this residential development will utilize the new Cate Street extension; if/when that project comes to fruition. It should be noted that the non-residential trips currently using the shared driveway are also expected to utilize Cate Street extension, and this has been accounted for in the traffic study for the Cate Street project.

TEC: TEC concurs that the revised distribution is a negligible change and with the description of traffic that may use the future Cate Street Extension. No additional response required.

7. Capacity and Queue Analysis - Original comment was informational. No response was required.
8. Original comment was informational. No response was required.
9. Original comment was informational. No response was required.
10. SGP analyzed the intersection of Bartlett Street / Cate Street without the addition of the multi-use development and extension of Cate Street. With the addition of the residential development site traffic and without the additional multi-use development site traffic, the intersection operates with acceptable levels of service in the 2020 and 2030 Build conditions. TEC notes that the condominium development under construction at 30 Cate Street will be widening the Cate Street approach to the intersection to provide an exclusive right turn lane as a condition of their approval. The analyses within the TISAS should be revised to reflect the eastbound right turn lane as constructed within the No Build and Build analyses.

SGP & Company, Inc. Response: The No Build and Build analyses have been updates as required, and Table 4A has been updated accordingly (See Attachments 4-12).

TEC: The analyses have been updated as requested. The left turn movement from Cate Street will operate with delays and LOS F in the 2030 Build condition during the weekday evening peak hour. No further response necessary.

11. Original comment was informational. No response was required.

12. TEC agrees that the site access onto Maplewood Avenue should be gate controlled to allow access to residents and emergency vehicles only. This will prevent cut-through traffic within the development by the general public. The location of the gate will be confirmed during the site plan review process. TEC recommends that delivery and refuse vehicles should be restricted from using this access and should be directed to the Bartlett Street access.

SGP & Company, Inc. Response: Comment acknowledged; no response necessary.

TEC: Agreed, this item can be addressed in the site plan review process. No further response is required.

13. TEC concurs with the determination that the site access onto Bartlett Street warrants the addition of a left turn lane on the southbound approach of Bartlett Street during the existing condition. SGP has provided a Concept Plan within the TISAS illustrating the potential for a two-way left turn lane along the site frontage of Bartlett Street. Due to the constrained width and horizontal geometry of Bartlett Street in the vicinity of Cate Street, TEC does not recommend the construction of a two-way left turn lane along this section of Bartlett Street. Further, large trucks use, and are proposed to continue to use, the existing driveway to access Ricci Lumber and other commercial uses on the site. These vehicles are consistently observed to cross the double-yellow centerline of Bartlett Street when turning right exiting from the driveway onto northbound Bartlett Street. The provision of a southbound left turn lane into the site access would be desirable from a safety standpoint for vehicles turning into the site as well as through vehicles along Bartlett Street. However, the intersection of the site access with Bartlett Street would need to be redesigned to ensure safe and efficient turning movements for all size vehicles prior to construction of this improvement. TEC recommends this intersection be considered for redesign during the site plan review process to accommodate all vehicles and provide the southbound left turn lane, if possible.

SGP & Company, Inc. Response: It is not possible to provide both a southbound left-turn lane on Bartlett Street and a sufficient pavement area for large trucks to exit right from the driveway due to space limitations. Based on the TEC recommendation not to construct a two-way left turn lane along the section of Bartlett Street, we recommend that consideration be given to prohibiting right turn departures by large trucks once the Cate Street Extension project is completed (by others). In response to the TEC recommendation to consider a redesign of this intersection in conjunction with the site plan review process, we offer Exhibit 1, a preliminary conceptual plan for discussion purposes only. This design includes a 5-foot bike lane, a 2-foot bike lane buffer and two 11-foot travel lanes on the site access road. The following exhibits (that

follow Attachment 12) show the implications associated with several Design Vehicle movements.

- **Exhibit 1-A: A single-unit box truck (SU) works well with this design and there is no lane encroachment on Bartlett Street.**
- **Exhibit 1-B: A WB-50 tractor-trailer truck is able to exit right without lane encroachment on Bartlett Street; however the full width of the site access road is required.**
- **Exhibit 1-C: A WB-50 tractor-trailer truck is able to enter from the south without lane encroachment on Bartlett Street; however it requires the full width of the site access road.**
- **Exhibit 1-D: A WB-50 tractor-trailer truck is able to enter the site access road from the north without lane encroachment on Bartlett Street; however it requires most of the width of the site access road.**
- **Exhibit 1-E: A WB-50 tractor-trailer truck is able to exit left from the site access road with no issues.**
- **Exhibit 1-F: A WB-67 tractor-trailer truck is able to exit right from the site access road with this design; however it requires the full width of both the site access road and Bartlett Street.**

TEC: In response to input received at the Technical Advisory Committee, SGP revised the intersection concept plan (Submitted October 9, 2018) to provide tighter curb radii, a 7-foot sidewalk rather than a bicycle lane, and angled parking along the access roadway. With this configuration, SU-30 design vehicles, such as delivery vehicles and some emergency vehicles, can enter and exit the site without encroachment on opposing travel lanes. The right turn exiting movement for WB-50 vehicles, will encroach onto the southbound through lane of Bartlett Street; however the redesign allows for the vehicles to turn from the exiting lane of the access roadway and not turn from the entering lane. A WB-62, the largest tractor trailer used in design, will not be able to perform a right turn movement from the access roadway onto Bartlett Street northbound without crossing sidewalk or turning from the entering lane of the access roadway. TEC concurs with the recommendation that large trucks should be prohibited from turning right onto Bartlett Street with the extension of Cate Street between Bartlett Street and US 1 Bypass.

14. Routing the residential development traffic through the existing commercial development changes the nature of the access from Bartlett Street and through the commercial portions of the site to a circulation road rather than a driveway. During the site plan review process, the on-site circulation should be analyzed to remove or reconfigure the existing head-in parking for the commercial uses along the new access roadway. In addition, TEC recommends reviewing the on-site truck circulation to potentially relocate these vehicles from the primary access to the existing secondary driveway onto Bartlett Street along the south side of the commercial buildings.

SGP & Company, Inc. Response: Comment acknowledged; alternative circulation plans will be investigated during the site plan review process.

TEC: The revised (October 9, 2018) concept plans show angled parking along the east side of the access roadway. TEC continues to recommend that the head-in parking be removed or reconfigured to parallel parking along the building frontage due to conflicts that may occur with through vehicles. This item can be addressed in the site plan review process. No further response is required.

SGP conducted weekday morning and evening peak hour counts at the entrance to the Great Rhythm Brewing Company and Play All Day dog daycare center parking lot per the request of the Technical Advisory Committee. The two land uses will likely have the largest conflict with the new residential traffic during the weekday evening peak commuter hour. During the site plan review process, as the access roadway design is refined, TEC recommends ensuring sufficient sight distances for vehicles exiting this parking lot by defining the driveway location and parking layout. No further response is required.

15. Sight Distances – The sight distances reported in the Addendum are visually represented rather than measured in accordance with the American Association of State Highway and Transportation Officials (AASHTO) requirements. There are two types of sight distances required at an intersection: Intersection Sight Distance (ISD), which is the sight distance necessary for vehicles exiting a stop condition to enter the through traffic flow without the through vehicles slowing down significantly; and Stopping Sight Distance (SSD), which is the sight distance necessary for through vehicles to see a vehicle entering the roadway and be able to avoid collision. It appears that sufficient sight distances are provided at both site access points to meet the minimum SSD for a vehicle travel speed of 30 mph.

During the site plan review process, the Applicant shall provide a plan within the set that depicts the AASHTO minimum sight distance to/from each of the site access intersections onto Bartlett Street and Maplewood Avenue. The sight line clear areas should be compared against future proposed Landscaping Plans to confirm that the sight lines will remain clear as reported in the traffic study. The Applicant should commit to remove and maintain vegetation along the site frontage consistently to ensure that sight lines remain unobstructed at the site access intersections.

SGP & Company, Inc. Response: Ambit Engineering, Inc. will prepare said plans in conjunction with the site plan review process.

TEC: Agreed, this item can be addressed in the site plan review process. No further response is required.

105 Bartlett Street Traffic Study
Transportation Peer Review – Response to Comments
October 10, 2018
Page 8 of 8

Upon the receipt of additional, revised, and/or new documentation for the Project, TEC reserves the right to provide additional comments as needed. If you have any questions regarding the peer review, please do not hesitate to contact us at (978) 794-1792. Thank you for your consideration.

Sincerely,
TEC, Inc.
*"The **E**ngineering **C**orporation"*



Elizabeth Oltman, PE
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