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

September 17, 2018

Ref. T0822

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

Dear Ms. Walker:

On behalf of the City of Portsmouth, TEC, Inc. (TEC) has reviewed 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 Project consists of constructing 120 residential apartment units. Access to the Project is proposed via the existing Ricci Lumber driveway onto Bartlett Street and via the existing driveway onto Maplewood Avenue.

The following documents were received as part of our review:

- *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

TEC completed a review of these documents for the City of Portsmouth, and the following provides a summary of the comments that were compiled during our review:

### **Transportation Impact Evaluation**

1. Study Area – The Traffic Impact and Site Access Study (TISAS) and the Addendum evaluate a reasonable study area for the purposes of evaluating the potential traffic impacts to the surrounding street system with the construction of the proposed development. TEC concurs that the scope of the study is in general accordance with NHDOT guidelines.
2. Traffic Counts - Traffic counts used within the TISAS were conducted in April 2018 during a period in which area schools were in session. The counts used within the

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Addendum were conducted in August 2018. The April counts were seasonally adjusted upward by 3% during the weekday morning peak hour and 4% during the weekday evening peak hour, and the August counts were seasonally adjusted upward by 7% during the weekday morning peak hour and 2% during the weekday evening peak hour to reflect peak month conditions, consistent with NHDOT standards. This is generally reflective of summertime volumes in the seacoast area. TEC concurs with the use of these traffic volumes and adjustment factors based on NHDOT guidelines.

The weekday morning and evening peak commuter hours were studied within the TISAS and Addendum to determine the Project's overall effect on the roadway system. TEC concurs that these selected time periods are generally appropriate for a residential development, as the morning and evening peak hours of the residential dwelling units will typically overlap with the morning and evening peak commuter hours of the adjacent street system.

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.

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.
5. Site Trip Generation – The TISAS and Addendum uses data published in the industry standard Institute of Transportation Engineers (ITE) publication, *Trip Generation, 10th Edition* to estimate the traffic generated by the proposed development. The TISAS uses data found under Land Use Code (LUC) 221 – Multi-

Family Housing (High Rise) for the apartment units. TEC concurs with these land uses and general traffic generation methodology.

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.

7. Capacity and Queue Analysis - TEC generally concurs with the results of the capacity and queue analysis provided as part of the TISAS; utilizing *Highway Capacity Manual 2010* (HCM 2010) methodology as modeled by Synchro 10.
8. Overall, TEC concurs that the general impact of the Project on the control delay, queue, and level of service along the approaches to the study area intersections is anticipated to be nominal in terms of 'vehicular' traffic.
9. At the intersection of Islington Street / Bartlett Street / Pharmacy Driveway, the capacity and queue analyses depict significant vehicle delay and queues along the eastbound Bartlett Street approach and the northbound Islington Street left turn during the weekday evening peak hour in the 2020 and 2030 No Build conditions. The addition of site generated traffic increases the delay and projected queue lengths on these movements. Improvements at this intersection are under final design by the City for construction next year. No additional lanes will be provided with the planned improvements. Additional mitigation by the applicant is not likely to be warranted as the site generated traffic increases the overall volumes through the intersection by approximately 1%.
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.
11. The intersections of the site access with Bartlett Street and the site access with Maplewood Avenue are projected to operate with acceptable levels of service in the 2030 Build condition with the addition of site generated traffic.

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.
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.
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.
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.

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 Engineering Corporation"*



Elizabeth Oltman, PE  
Senior Traffic Engineer