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Planning Director
City of Portsmouth Planning Department
City Hall, 3rd Floor
1 Junkins Avenue
Portsmouth, NH 03801

June 3, 2019

Ref. T0884

Re: Cate Street Extension Traffic Study – Mixed Use Proposal
Transportation Peer 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 mixed used development located on the east side of US1 Bypass at the site of the Frank Jones Center in Portsmouth.

The following documents were received as part of our review:

- *Updated Traffic Impact and Site Access Study – Proposed Mixed-Use Site*, prepared for Torrington Properties by Stephen G. Pernaw & Co., Inc. – April 2019
- *West End Yards Site Plans* - prepared by Fuss & O'Neil, dated May 2019
- *Cate Street Roadway Plans* – prepared by Fuss & O'Neil, dated May 2019

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:

Updated Traffic Study

1. TEC previously performed a traffic engineering peer review of the *Draft Traffic Impact and Site Access Study,* dated July 18, 2018 and the *Response to Comments Memorandum*, dated September 25, 2018, both prepared by Stephen G. Pernaw & Co., Inc. Within the final response letter issued by TEC, dated October 2, 2018, comments regarding the Study Area, Traffic Counts, Background Growth, and Crash Data had been resolved satisfactorily. These elements have not changed within the Updated Study.

2. Site Trip Generation – The size of the proposed project has been modified from the original study. The current proposal includes 250 apartment units, 23 townhome units, and 44,000 Square Feet (SF) of commercial retail, restaurant and office space. The Updated Study 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 Updated Study

uses data found under Land Use Code (LUC) 220 – Multi-Family Housing (Low-Rise) for the townhouse units, LUC 221 – Multi-Family Housing (High Rise) for the apartment units, LUC 710 – General Office Building for the office areas, and LUC 932 – High Turnover (Sit-Down) Restaurant, LUC 930 – Fast Casual Restaurant, and LUC 820 – Shopping Center for the retail areas of the site. TEC concurs with these land uses and general traffic generation methodology. The total projected traffic generation for the subject site has been reduced by 26 trips during the weekday evening peak hour and 27 trips during the Saturday midday peak hour.

The traffic generated by the proposed project was distributed onto the adjacent roadway system consistent with the original study, which was based upon available Journey-to-Work data published by the US Census Bureau for persons residing in the City of Portsmouth for the residential portions of the development and for persons working in the City of Portsmouth for the office portion of the development. TEC concurs with the methodology.

3. Three alternatives were considered within the Updated Study – Full buildout of the site with the Cate Street Extension (Scenario A), Full buildout of the site without the Cate Street Extension (Scenario B), and Full buildout of the site with the Cate Street Extension and with the removal of the traffic signal and extension of the US1 Bypass center median at US1 Bypass / Cottage Street / Coakley Road intersection (Scenario C).

   The trip redistribution with the construction of the Cate Street Extension remains consistent with the travel patterns approved under the original study.

4. US 1 Bypass / Cottage Street / Coakley Road – The capacity and queue analyses for this intersection in Scenario A depict significant vehicle delay and queues on various approaches during the weekday evening peak hour in the 2020 Build condition, 2030 No Build and Build condition in Scenario A, with the Cate Street Extension in place. The addition of site generated traffic increases the delay and extends queue lengths on the northbound and westbound approaches. Suggested mitigation at this intersection includes the addition of a northbound right turn lane and shortening the northbound left turn lane queueing length to 50 feet. This mitigation is not proposed to be constructed in conjunction with the project. Within TEC's October 2, 2018 review letter, it was noted that adding a northbound right turn lane on the US 1 Bypass at Cottage Street / Coakley Road may encourage motorists to continue to use Cottage Street to cut through the neighborhood to Bartlett Street. The City has indicated that removing traffic from Cottage Street and the neighborhood is preferable. TEC continues to recommend that the Applicant consider the addition of a northbound right turn lane at Cate Street as an alternative to providing the northbound right turn lane at Cottage Street.

5. US 1 Bypass / Borthwick Avenue / Cate Street Extension – The capacity and queue analyses for this intersection in Scenario A depict increased vehicle delay and

queues along each approach during the weekday evening peak hour and the Saturday midday peak hour in the 2020 and 2030 Build conditions. The addition of site generated traffic increases the delay and extends the queues by one to two vehicles. Suggested mitigation at this intersection includes the modification of the westbound Cate Street Extension approach to provide a shared left/through/right turn lane and an exclusive right turn lane and extending the southbound left turn lane queueing length to approximately 200 feet. The proposed geometric improvements for the Cate Street Extension approach are contained within the current roadway design plans.

The improvements as designed will not fully mitigate the impact of the site generated traffic, but do reduce delays on the Borthwick Avenue approach and the Cate Street Extension approach during the weekday evening peak hour. Within TEC's peer review letter of May 31, 2019 of the roadway geometry, concerns have been raised regarding the alignment of the Cate Street Extension opposite Borthwick Avenue. Extending the southbound left turn lane is not proposed to be constructed in conjunction with the project. The reconstruction of the Cate Street Extension as proposed will require the review and approval of NHDOT through their Access Permit process. TEC recommends that the acquisition of an Access Permit from NHDOT be a condition of any approvals for this project.

6. The following informational comment from TEC's October 2, 2018 peer review letter remains relevant: *The southbound left turn lane of US 1 Bypass at Borthwick Avenue / Cate Street Extension is projected to have a 95% queue length (the generally accepted maximum queue length) of 11 vehicles, or 275 feet in the weekday evening peak hour and 13 vehicles, or 325 feet, in the Saturday midday peak hour. The left turn queue length may extend past the provided storage length during some signal cycles within peak periods, even with the proposed longer storage length. This increase in delay may encourage vehicles to divert to back to the intersection of US 1 Bypass / Cottage Street / Coakley Road to make a left turn.*

7. The Updated Study analyzes Scenario C, which includes the removal of the traffic signal and close the US 1 Bypass center median through the Cottage Street / Coakley Road intersection. Consideration of this alternative was performed at the request of the City within the prior review for the subject project. With the redistribution of vehicle traffic due to these changes, the operation of the intersection of US 1 Bypass / Cate Street Extension / Borthwick Avenue will degrade, with significant queues and delays on each approach during the weekday evening peak hour. Additional turning lanes on the Cate Street Extension and/or changing the existing split phasing of the side streets may be necessary to mitigate this condition. While it appears that sufficient right of way is available on the Cate Street Extension to provide a westbound left turn lane, providing this geometry to accommodate this potential future scenario is not proposed with this project.

Additional coordination between the City and NHDOT will be necessary should NHDOT move forward with consideration of the signal removal.

8. Islington Street / Bartlett Street / Pharmacy Driveway – The capacity and queue analyses depict a minor increase in vehicle delay along the eastbound Bartlett Street approach during the weekday evening peak hour in the 2020 and 2030 Build conditions. The addition of site generated traffic increases the delay on this approach, but does not increase the projected queue lengths. Suggested mitigation at this intersection includes increasing the signal cycle length to 120 seconds. Within TEC's October 2, 2018 review letter, it was noted that the proposed timing change reduces the delays on the Bartlett Street approach; however, the queue length increases, potentially blocking the Cate Street / Bartlett Street intersection. TEC recommends continued monitoring of this intersection to ensure the signal timings minimize the queue lengths along Bartlett Street to the extent possible.

9. Cate Street / Bartlett Street – The Updated Study analyzes this intersection using several different geometric layouts for the unsignalized intersection. With the addition of site generated traffic, the Cate Street approach to the intersection increases in delay and degrades in levels of service in the 2030 Build condition in both the weekday evening and Saturday midday peak hours. The alternative preferred by the City includes realigning northbound Bartlett Street to become the through movement onto Cate Street (Alternative Configuration C within the Updated Study). This alignment relocates the delay onto the Bartlett Street southbound movement, but will allow for a safer intersection geometry and increased visibility for turning movements. This configuration would potentially have an added benefit of diverting more traffic from Bartlett Street north of Cate Street and removing additional through vehicles from the neighborhood. The realignment would eliminate northbound left turn queuing vehicles by creating a free flow movement for motorists traveling from Islington Street onto Bartlett Street and then onto Cate Street. This free flow movement would be particularly efficient for emergency vehicles using the Cate Street Extension to access Portsmouth Regional Hospital. The realignment of northbound Bartlett Street to become the through movement into Cate Street is contained within the current roadway design plans.

   The analyses within the report for the Cate Street / Bartlett Street intersection are conducted for the 2030 Build weekday evening peak hour condition. Significant delays are shown on the Bartlett Street southbound approach once it is under stop-control. TEC notes that the volumes for 2030 are likely conservative and the realignment may not experience these delays in the near term. TEC requests that additional analyses be performed for the 2018 Existing, 2020 No Build, 2020 Build and 2030 No Build conditions for Configuration C of the Cate Street / Bartlett Street intersection to show the progression of the operation of this intersection.

10. As within the original study, the remaining unsignalized intersections of US 1 Bypass / Site Driveway, Bartlett Street / Shared Driveway and Cate Street with the three site driveways will all operate with acceptable levels of service in the 2030 Build condition with the addition of site generated traffic.

Site Plan

11. A landscape plan is provided. The calculated AASHTO Intersection Sight Distances and resulting sight triangles should be shown for the site driveway intersections with the Cate Street Extension to ensure all plantings in the area of these intersections will not impede sight lines to/from the project driveways and the Cate Street Extension.

12. A school bus waiting area should be provided at an appropriate location in consultation with the City. The Applicant should meet with the City of Portsmouth School Department and Department of Public Works to determine this location and provide detail information on the location and associated amenities within the Site Plans.

13. The Applicant has provided turning templates showing the ability of a SU-40 refuse vehicle to access the proposed dumpster locations. The turning templates should show a complete circulation path to access, circulate, and egress the site through the internal parking areas without leaving the paved surface or conflicting with parked cars.

14. The Applicant has provided turning templates showing the ability of a WB-50 large truck to circulate the site. Turning movement plan CT-103 should be modified to show the circulation path without the truck path conflicting with parked cars.

15. The Applicant should provide vehicle turning templates to verify that a City of Portsmouth "Tower 5" fire apparatus can circulate freely throughout the site in the event of an emergency.

16. The Applicant should coordinate with the City of Portsmouth Fire Department for preferred locations of fire lanes (if needed), confirmation of hydrant locations, and sign requirements for fire lanes within the site. TEC does note that the current Site Plans as provided include locations for fire hydrants.

17. The Applicant should coordinate with the City of Portsmouth Fire Department on whether direct access to the rear of Building A is required given the length of the structure.

18. As provided, the Site Plan depicts an on-site sidewalk network along one side of each access driveway and along the building side of the parking areas. The on-site

sidewalk connects with the proposed sidewalk along the south side of Cate Street. A crosswalk should be added within the parking area between the parking field and the center of the Commercial Building to identify and define this potential vehicle/pedestrian conflict area. The Applicant should identify other areas of potential conflicts between the parking fields and the building entrances.

19. A sign summary shall be included which depicts the sign legend, sign size, and sign lettering dimensions in compliance with the Manual on Uniform Traffic Control Devices (MUTCD).

20. Within the townhome portion of the site, the easternmost internal intersection near the visitor parking spaces has the stop bar and stop sign shown incorrectly. Please revise to the right side of the street.

21. Section 10.1112.31 of the City of Portsmouth Zoning Ordinance indicates that the parking requirement for residential uses is 0.5 spaces per unit for units less than 500 SF, 1.0 spaces per unit for units between 500 and 750 SF and 1.3 spaces per unit for units greater than 750 SF. In addition, for a group of dwellings greater than four on one lot, one visitor space must be provided for each 5 units. The Site Plan shows 144 units that are less than 750 SF and 106 units that are greater than 750 SF. This equates to 282 spaces for the residents and 50 visitor spaces required, or 332 spaces total for the apartment units.

22. The 23 townhouse units will require 30 parking spaces for the residents and 5 visitor parking spaces, or a total of 35 spaces per Section 10.1112.31 of the City of Portsmouth Zoning Ordinance. It appears that two spaces are provided internally for each townhouse unit as garage spaces, however, this is not specifically clarified. An 8-foot wide by variable length area is shown in front of each townhouse. This area should not be considered as a parking space for each unit.

23. Section 10.1112.32 of the City of Portsmouth Zoning Ordinance indicates that the parking requirement for commercial uses is 1 space per 300 SF for retail uses, 1 space per 100 SF for restaurant uses and 1 space per 350 SF for office uses. The Site Plan shows 5,800 SF of retail (20 spaces), 13,600 SF of restaurant (136 spaces) and 15,900 SF of office (46 spaces), for a total of 202 spaces required.

    Section 10.1112.61 allows for shared parking on a site with multiple uses. The Applicant has applied this shared parking Ordinance for the commercial areas of the site only. Section 10.5B83.20 indicates that for sites with multiple lots, parking is not required to be provided on the same lot as the subject use. TEC recommends that the shared parking provision be applied to the entire property. The most conservative time period for shared parking for the land uses on the subject site is the weekday evening period between 6:00 PM and Midnight. Applying the Parking

Occupancy Rates found within Section 10.1112.61, a total of 531 spaces will be required for the combined commercial uses and the residential units. The Site Plan shows a total of 505 parking spaces provided, including the townhouse garage spaces. Therefore, this portion of the Ordinance is not satisfied.

Shared Parking Analysis

Land Use	**Required**	**Shared Parking Scenario** **Weekday Evening (6:00 PM to Midnight)**	**Required**
250 Units Apartments	332	100%	332
23 Townhouse Units	35	100%	35
15,900 SF Office	46	20%	10
5,800 SF Retail	20	90%	18
13,600 SF Restaurant	136	100%	136
Total Required	569		531

Please do not hesitate to contact me directly if you have any questions concerning our review at 978-794-1792.Thank you for your consideration.

Sincerely,
TEC, Inc.
*"**T**he **E**ngineering **C**orporation"*

Elizabeth Oltman, PE
Director of Transportation Planning