

Ms. Juliet T. H. Walker, AICP
Planning Director
Planning Department
1 Junkins Avenue
Portsmouth, NH 03801

August 6, 2019

Ref. T0884

Re: Cate Street Extension Roadway Design Peer Review #4

Dear Ms. Walker:

On behalf of the City of Portsmouth, TEC, Inc. (TEC) has completed an engineering peer review of the revised Cate Street Extension roadway design based on updated and supplemental material submitted by the Applicant and dated July 2019, including responses to peer review comments previously offered by TEC in a letter dated July 9, 2019. The following details the results of this review:

Reference Documents:

The following documents provided by the City of Portsmouth Planning Department were included as part of this review:

- *Cate Street Roadway Plans*, prepared by Fuss & O'Neill – dated July 2019
- *West End Yards Site Plans*, prepared by Fuss & O'Neill – dated July 2019
- *Cate Street Extension Roadway Design Peer Review Response Matrix*, prepared by Fuss & O'Neill – dated July 17, 2019
- City of Portsmouth comments, received August 5, 2019

After review of the reference documents cited above, TEC offers the following comments shown in **BOLD** and recommendations to be addressed by the Applicant, at the discretion and direction of the City. The comment numbering from the June 4, 2019 peer review has been utilized for consistency, with new comments added at the end:

Horizontal Alignment and Roadway Plan Review:

1. **Comment adequately addressed.**

2. Clarify limits of proposed pavement treatment throughout the work limits (e.g. full depth pavement, cold plane & overlay, etc). While the Typical Sections indicate that Cate Street / Cate Street Extension will be full depth pavement, it is not clear if the same treatment is warranted or proposed on Bartlett Street and at the Cate Street intersections with US Route 1 Bypass and Bartlett Street. Add notes on the Roadway Plans and/or with corresponding shading included in legend on Sheet CN-003. Also label/shade the section of median island to be removed on US Route 1 Bypass.

The Applicant should provide notes or legend within the plans to describe the work being done to the pavement of US Route 1 Bypass, or reference to separate US Route 1 Bypass project plans that will be needed for permitting with NHDOT.

3. **Comment adequately addressed.**
4. **Comment adequately addressed.**
5. The tight curves and proximity of the town houses to the edge of the roadway severely limits sight lines along the roadway and for vehicles turning from the site driveways onto Cate Street.

Sight distance comment is adequately addressed with the addition of new sheet CT-104 included in the plans that shows sight distances meeting or exceeding the minimum stopping sight distance for a 25 mph design speed at the three (3) site driveways in the vicinity of the revised reverse curve.

- a. Plans should identify features in front of the town houses and the Applicant shall confirm that any vertical elements within the sight triangles will be low enough to not obstruct sight lines. Also provide note on Roadway Plans and Landscaping Plans indicating that only low height shrubs and ground cover shall be allowed within the sight triangles.

It is noted that the landscaping proposed on the south side of Cate Street is limited, and addresses the sight distance comment as requested. Notes should be added to the plans to ensure the sight distance triangles shall be kept clear of any features that could reach a height of more than 3-feet.

- b. Sight distance easement(s) will be needed to ensure that clear sight triangles may be maintained.

Fuss & O'Neal response:

Sight distance easements will be developed and added to the Subdivision and Easement Plans and shown on the Roadway Plans.

Applicant shall show the sight distance triangles and associated easements on Sheet CT-104 or other sheet as appropriate within the Roadway Plans.

6. **Comment is adequately addressed.**
7. **Comment is adequately addressed.**
8. The turning path of a WB-62 appears to encroach on the entire width of the bike lane at the beginning of the multi-use path. A bicyclist could get caught and run over by a truck in this area if it doesn't realize that a truck will be coming into its lane. Truck encroachment into the bike lane will not be allowed. The Applicant should explore all options to provide additional lane widening and/or revised alignment.

Applicant has addressed comment by adding "Sharrow" bicycle shared lane markings from the beginning of the multi-use path to Bartlett Street. However, Applicant shall correct the direction of the "Sharrow" symbols at approximate Station 15+00, as they are shown in the wrong direction.

9. **Comment is adequately addressed.**
10. **Comment is adequately addressed.**

Vertical Alignment Review:

11. **Comment is adequately addressed.**
12. **Comment is adequately addressed.**

Traffic Signs & Pavement Markings

13. Alignment warning signs have been added to the plans per MUTCD Section 2C.07. Given that the reverse curves on Cate Street and the curve from Cate Street onto Bartlett Street have different design speeds, and in an effort to reduce sign clutter to the extent feasible, we recommend the following:
 - a. Prior to reverse curves in both directions – W1-3R with W13-1P. **Applicant shall revise W13-1P signs at Station 9+50 RT and Station 15+75 LT to indicate 25 mph, consistent with the newly revised horizontal geometry that meets a 25 mph design speed. This sign shall also be added to the Sign Details sheet in addition to the 20 mph plaque.**
 - b. Prior to horizontal curve at Cate Street/Bartlett Street intersection, in each direction – W1-1R/L with W13-1P. **The W1-1R & W13-1P signs are shown as requested; however, the sign assembly at Station 16+75 is shown on the left side of the road which is not MUTCD standard placement. Applicant shall relocate this sign assembly to the right side of the road.**

- c. At mid-point of horizontal curve at Cate Street/Bartlett Street intersection, outside of curve facing each direction – W1-6R/L (as currently proposed).
Comment is adequately addressed.
 - d. Eliminate currently proposed W1-6 signs at reverse curves, as these are optional if 25 mph design speed is accommodated.
Comment is adequately addressed.
- 14. **Comment is adequately addressed.**
 - 15. **Comment is adequately addressed.**
 - 16. **Comment is adequately addressed.**
 - 17. **Comment is adequately addressed.**
 - 18. There is a NO LEFT TURN (R3-2) sign proposed on the site development plans at the easternmost site driveway onto Cate Street (approximate Station 14+40 RT); please clarify the purpose of this turn restriction. To effectively prohibit left turns, it should be done physically, with a raised island. Also, the R3-2 sign should be shown on the Roadway Plans and sign summary sheet.

Comment is adequately addressed. It is noted that the R3-2 sign has been removed.
 - 19. **Comment is adequately addressed.**

Pedestrian and Bicycle Accessibility Review:

- 20. **Comment is adequately addressed.**
- 21. **Comment is adequately addressed.**
- 22. The flashing beacons for the crosswalks should be rectangular rapid flashing beacons, not the circular style shown in the detail. Revise detail on Sheet CD-551.

The flashing beacon detail is still incorrect as shown. The Applicant shall update the detail to meet MUTCD standards per Interim Approval 21.
- 23. A STOP AHEAD sign should be provided on Bartlett Street in advance of the reconfigured intersection with Cate Street at Station 20+00 per MUTCD standards.

A "Stop Ahead" sign (W3-1A) has been added to the plans at Station 22+00 RT; however, this is not an MUTCD standard sign. Applicant shall use a standard MUTCD sign (e.g. W3-1) as appropriate (see MUTCD figure 2A-4).

General Comments:

24. Overall, the plans are still missing curbing layout details, and lane and shoulder dimensions where changes in width occur. All plans should be checked for completeness.

Applicant indicated that a curbing and striping plan is forthcoming; however, this is not yet included in the Roadway Plans. We recommend the Applicant add dimensions and labels to fully lay out the striping and curbing on the Roadway Plan and Profile sheets.

25. The proposed drainage modifications in the Cate Street / Bartlett Street intersection should be shown on the plans.

Shown on Sheet CG-105, at the northwest corner of Bartlett Street and Cate Street, existing CB 3760 is proposed to be impacted by the proposed sidewalk and the drainage structures appear to not have been re-designed accordingly. **The Applicant should provide a proposed drainage design for the northwest corner of Bartlett Street and Cate Street to incorporate disposition of all impacted existing drainage structures and proposed drainage structures.**

CB 63 at Station 16+50 RT is shown incorrectly in the roadway and should be shown against the new curb line. Applicant should revise CB 63.

It appears that there is an existing catch basin at Station 15+85 RT that would be impacted by the site driveway curb return. Applicant shall consider relocation of this catch basin to the new curb line.

26. **Comment is adequately addressed.**

27. **Comment is adequately addressed.**

28. The traffic study needs to be updated to reflect the new proposed lane usage on Cate Street Extension at the US Route 1 Bypass intersection.

The updated Traffic Study Memorandum including analyses of the revised intersection was received on July 26, 2019.

29. For construction details of drain manholes shown on Sheet CD-530, use NHDOT Standard Details.

Applicant did not revise the Drain Manhole detail to be consistent with NHDOT Standard Details.

30. **Comment is adequately addressed.**
31. **Remove R3-XX sign at approximate Station 20+75 RT, as it appears to be redundant with the R3-8(15) sign at Station 21+00 RT.**
32. **Remove the diagonal hatching from the painted median island at the U-Haul driveway intersection. Applicant shall show painted island design to meet NHDOT Standard PM-6.**
33. **The right-turning movement from Cate Street Extension onto US Route 1 Bypass is still problematic. On Sheet CT-101 the WB-62 truck turn encroaching into the southbound side of US Route 1 Bypass is not acceptable. The lanes and/or curb return radius should be modified to eliminate this potential right turn conflict and encroachment into opposing lanes.**

Applicant shall clarify if the existing mast arm is being relocated with the US Route 1 Bypass work associated with this Cate Street project and to be permitted through NHDOT.

Site Plan Comments:

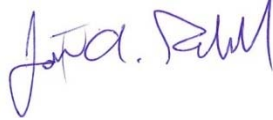
34. **The parking spaces at the easternmost driveway on Cate Street are too close to the driveway intersection with Cate Street. At least one or two should be eliminated or located elsewhere, so as not to cause conflicts with traffic turning in and out of the driveway.**
35. **On CT-201, the truck backing in behind the retail building will be maneuvering within the pedestrian shared space area. Trucks should be restricted to hours when pedestrians are not expected to be present.**
36. **The Site Plans should include an inverted U-style bike rack detail.**

Traffic Comments:

37. **The traffic analysis shows the left turn phasing on US Route 1 Bypass at the two intersections changing from a leading phase to a lead-lag phase. This change will require the approval of NHDOT, and may not be acceptable to them.**
38. **Any changes to the signal operations, lane use, or alignment at the two US Route 1 Bypass intersections that arise during NHDOT review of the traffic study and require changes to the signal analysis should also be provided to the City for review.**

Upon the receipt of additional, revised, and/or new documentation for the project, TEC reserves the right to provide additional comments as needed. Please do not hesitate to contact us directly at 978-794-1792 if you should have any questions concerning this peer review. Thank you for your consideration.

Sincerely,
TEC, Inc.
"The Engineering Corporation"



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