



Traffic Solutions
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January 10, 2021

Amanda Lessard
Planning Director
Town of Windham
8 School Street
Windham, Maine 04062

RE: Fielding Oil – Roosevelt Trail (Job #41878) – Response to Traffic Review
Comments

Dear Amanda:

Traffic Solutions is providing, herewith, written response to your review comments dated December 31, 2020 for the proposed “**Fielding Condos**” project. Each of your review comments are noted, as follows, in italic print followed by an appropriate response in “**bold**” print.

1. *The Traffic Assessment does not provide an estimate of the Saturday peak hour and daily traffic.*

The earlier trip projections for the proposed project were estimated based upon trip tables presented in the tenth edition of the Institute of Transportation Engineers (ITE) “TRIP GENERATION” handbook for Land-Use #221 Multi-family Housing (Mid-Rise). The ITE publication provides the following trip rates for a Saturday and Saturday peak hour:

Saturday = 4.91 trips/dwelling unit

Saturday Peak Hour = 0.44 trips/dwelling unit.

These trip rates suggest the proposed 24-unit project will generate 118 daily trips and 11 peak hour trips on a typical Saturday.

2. *Section 1204 also requires the traffic analysis for projects that require site plan approval to determine the traffic impact of new trips generated by the development project that pass through the North Route 302 Capitol Improvement District within the peak commuter hour. The traffic analysis estimates the project will generate 11 trips in the evening peak hour. Please provide an estimate for how many of those peak hour trips are estimated to pass through the Route 302/Anglers Road intersection as the impact fee is \$382.65 per peak hour trip through that intersection.*

Figure 1, attached, is a “stick” diagram that presents the expected travel assignment for trips generated by the proposed project during the PM peak hour. Directionally, as noted in the Traffic Assessment report dated December 17, 2020; seven (7) of the 11 total evening peak hour trips enter the site and the remaining four trips exit. An evening peak traffic count collected at the River Road/Route 302 intersection during the summer months of 2020 shows 56% of the peak hour traffic (4:15 to 5:15 p.m.) travel northerly and 44% travel southerly on Route 302 in the evening peak hour. The 11 site trips generated in the PM peak hour were assigned to the proposed site driveway intersection at Route 302 applying both stated directional and corridor travel distribution patterns. Based upon the site trip assignment presentation, a total of two vehicle trips are likely to pass through the Route 302/Angler’s Road intersection. Accordingly, the impact fee assessment for the proposed project is \$765.30.

3. *Typically for projects with entrances on Route 302 the Board would like to see some comments from a traffic engineer on the need for turning lanes to serve the proposed project. The Traffic Assessment submitted does not provide any such conclusions.*

Figure 8-16 (Guidelines for Right-Turn Lanes at Unsignalized Intersections on 2-lane Highways) from the MaineDOT’s Highway Design Guide was used to determine if projected 2021 Post-Development Design Hour Traffic Volumes meet the minimum warrants for a dedicated right-turn lane on the southbound approach of Route 302. The proposed development is forecast to generate a total of one (1) right-turn movement during the AM peak hour and three (3) trips in the PM peak hour. MaineDOT’s chart establishes a minimum right-turn volume of 40 vehicles per hour; whereby, a dedicated right-turn lane should be considered unless other factors (e.g., high accident rate) indicate a lane is needed. Accordingly, Traffic Solutions concludes that a dedicated right-turn lane into the proposed development is; thereby, not warranted.

The National Cooperative Highway Research Program (NCHRP) report 457, in Table 2-5, provides a process to determine if projected traffic conditions at an intersection warrant a dedicated left-turn lane from the major street to the proposed lower volume roadway. MaineDOT has adopted this process as their standard for determining if a dedicated left-turn lane should be considered at an intersection. Through traffic volumes on Route 302 used in the analysis were estimated based upon 2016 traffic counts conducted by MaineDOT on July 18/19, 2016 (MDOT Count Station #230525000705). This traffic count station is located just south of River Road on Route 302. The AM peak hour volume is 1,208 vehicles and the afternoon peak hour volume is 1,504 vehicles. Both data sets were adjusted by an annual growth rate of 1% per year to approximate 2021 peak traffic volumes for Route 302. The adjusted through volumes used in the analysis are: 1,268 for the AM peak hour and 1,579 for the PM peak hour. The last step completed was to develop directional volumes for both peak hour times. The directional travel percentages noted in the response to

Item #2 above were used to form the directional volumes for both peak hours. The directional through volumes used in the analysis are noted as follows:

AM Peak Hour
456 vph. NB
812 vph. SB

PM Peak Hour
884 vph. NB
695 vph. SB

Traffic Solutions conducted separate analyses for both the 2021 Post-Development AM peak hour and the 2021 Post-Development PM peak hour conditions. The following traffic inputs were used in that analysis: 1) the predicted opposing volume on the major roadway (V_o); 2) the advancing volume on the major street (V_a) and, 3) the percent volume of left-turns ($Lt\%$) in the advancing volume. The applied data for each of the three traffic inputs are highlighted, as follows, for both travel conditions:

2020 Post-Development – AM Peak Hour

$V_o = 813$
 $V_a = 457$
 $Lt\% = 1\%$ [1 left turn]

2020 Post-Development – PM Peak Hour

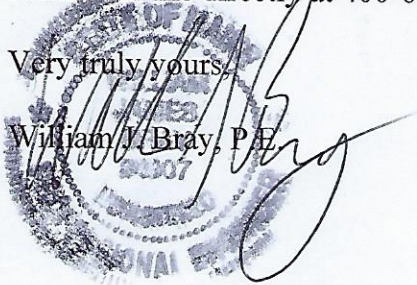
$V_o = 698$
 $V_a = 888$
 $Lt\% = 1\%$ [4 left turns]

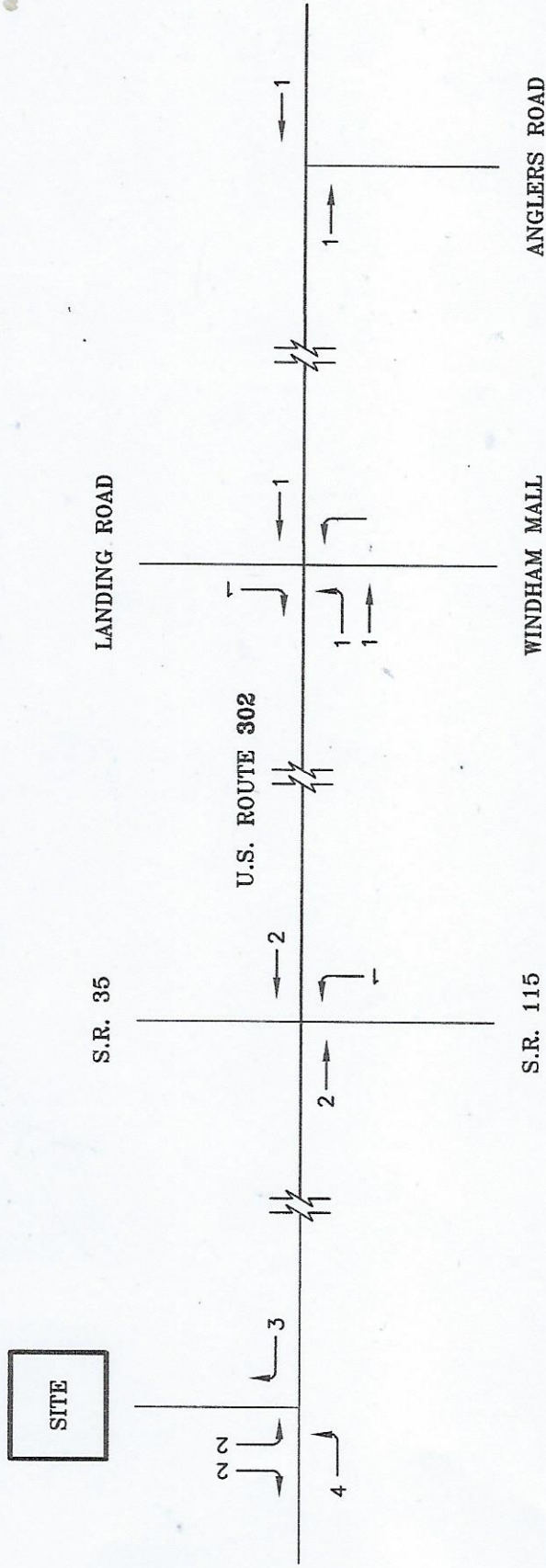
The results of the left-turn analyses show a left-turn lane is not warranted during either peak hour travel condition.

Please call me directly at 400-6890 with questions of clarification or further traffic related items.

Very truly yours,

William J. Bray, P.E.





SITE TRIP ASSIGNMENT
PM PEAK HOUR
FIGURE 1

Figure 2 - 5. Guideline for determining the need for a major-road left-turn bay at a two-way stop-controlled intersection.

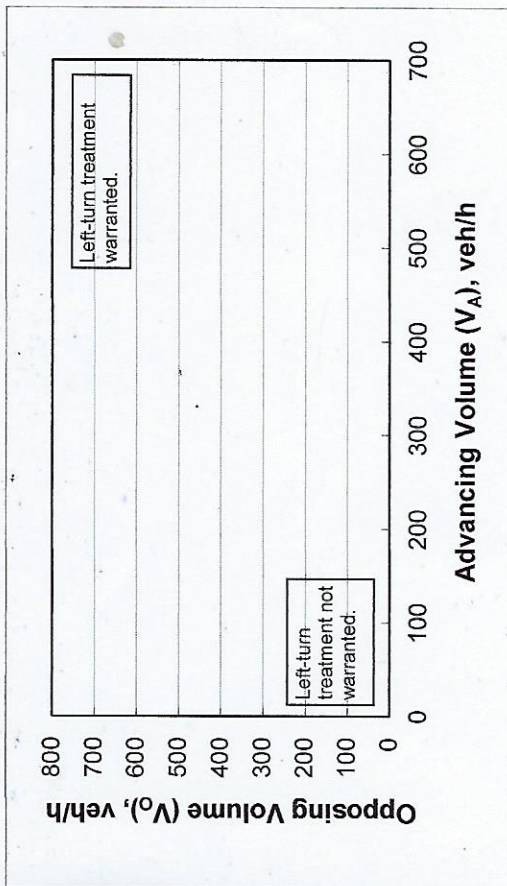
2-lane roadway (English)

INPUT

Variable	Value
85 th percentile speed, mph:	35
Percent of left-turns in advancing volume (V_A), %:	0%
Advancing volume (V_A), veh/h:	457
Opposing volume (V_O), veh/h:	813

OUTPUT

Variable	Value
Limiting advancing volume (V_A), veh/h:	1723
Guidance for determining the need for a major-road left-turn bay:	
Left-turn treatment NOT warranted.	



CALIBRATION CONSTANTS

Variable	Value
Average time for making left-turn, s:	3.0
Critical headway, s:	5.0
Average time for left-turn vehicle to clear the advancing lane, s:	1.9

2021 POST-DEVELOPMENT - AM PEAK HOUR

Figure 2 - 5. Guideline for determining the need for a major-road left-turn bay at a two-way stop-controlled intersection.

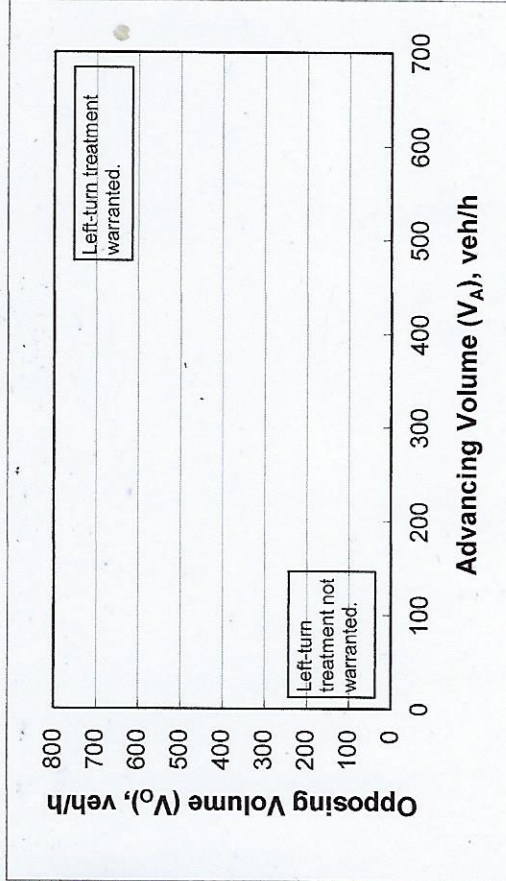
2-lane roadway (English)

INPUT

Variable	Value
85 th percentile speed, mph:	35
Percent of left-turns in advancing volume (V_A), %:	1%
Advancing volume (V_A), veh/h:	888
Opposing volume (V_O), veh/h:	698

OUTPUT

Variable	Value
Limiting advancing volume (V_A), veh/h:	1223
Guidance for determining the need for a major-road left-turn bay:	
Left-turn treatment NOT warranted.	



CALIBRATION CONSTANTS

Variable	Value
Average time for making left-turn, s:	3.0
Critical headway, s:	5.0
Average time for left-turn vehicle to clear the advancing lane, s:	1.9

2021 Post-Development - PM Peak Hour