

**TECHNICAL REPORT**

Concerning Traffic Impacts of the

**PEACH COUNTRY TRACTOR PROPOSED**

**CONTRACTOR STORAGE YARD (LOTS 7.02, 8 &9)**

Township of Monroe, Gloucester County, New Jersey

**Prepared For**

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RFI #21JN0029

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22 February 2021

# PEACH COUNTRY TRACTOR PROPOSED CONTRACTOR STORAGE YARD

(LOTS 7.02, 8 &9)

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## **A. INTRODUCTION**

We have been retained by Glenn Groves and Jerry Lodge to perform an independent assessment of the traffic impacts of the proposed Peach Country Tractor Contractor Storage Yard in the Township of Monroe, Gloucester County, New Jersey.

This investigation was performed to compare potential traffic impacts of the proposed use versus potential impacts from development under the current zoning designation.

## **B. MATERIALS REVIEWED**

- 1) Traffic Impact Study for Peach Country Tractor Self-Storage Units and Existing Retail Building, prepared by Horner & Canter and dated December 18, 2020.
- 2) Traffic counts for North Tuckahoe Road (County Route 555) available from the New Jersey Department of Transportation.
- 3) Traffic counts for North Tuckahoe Road (County Route 555) available from the Delaware Valley Regional Planning Commission.
- 4) New Jersey Department of Transportation Straight Line Diagrams.
- 5) Drone video footage from April 14, 2019.
- 6) Video of driveway operations from April 25-May 1, 2019.
- 7) Institute of Transportation Engineers (ITE) Trip Generation Manual, 10<sup>th</sup> Edition Supplement.
- 8) Institute of Transportation Engineers (ITE) Trip Generation Manual, 10<sup>th</sup> Edition.
- 9) Institute of Transportation Engineers (ITE) Trip Generation Handbook, 3<sup>rd</sup> Edition.
- 10) Institute of Transportation Engineers (ITE) Traffic Impact Analyses for Site Development, An ITE Recommended Practice (publication RP-020D-E), 2010.
- 11) Highway Capacity Manual, 2010 Edition.
- 12) American Association of State and Highway Transportation Officials (AASHTO) publication A Policy on Geometric Design of Highways and Streets, 2018 Edition.
- 13) Ordinances for Township of Monroe, Gloucester County, New Jersey.
- 14) Gloucester County Specification Manual, Revised December, 2006.
- 15) Google Street View Images.
- 16) Google Earth images, including historic images.

### C. BACKGROUND

The subject property is located within a BP (Business Professional) Zone in the Township of Monroe. The BP Zone permits the following uses as of right:

1. Wholesale distribution and warehousing
2. Community Commercial
3. Planned Business
4. Planned Commercial
5. Municipal Structures
6. Assisted-living Facility
7. Public Service Infrastructure
8. Craft Alcoholic Beverage Establishment

The BP Zone permits the following uses on a conditional basis:

1. Single-family detached dwelling units.
2. Twin/two-family buildings.
3. Light Industrial.
4. Vehicle Storage Yards.

Figure 1 shows the location of the property in question on a Google Earth image.



Source: Google Earth

Figure 1 – Site Location

Peach Country Tractor's subject property consists of an approximately 54 acre tract located on Block 14301, Lots 4, 7-10. The property currently contains a retail store, a mulching operation, and storage for materials and vehicles. The proposal consists of the development of Lots 7.02, 8 & 9, which consist of approximately 16 acres. The proposed development will consist of approximately 76,800 square feet of contractor storage within 8 buildings, and 120 parking spaces of varying sizes for contractor vehicles. The site is currently being used by some of the contractors that are expected to be part of the proposed contractor's yard.

#### **D. DESCRIPTION OF BASELINE TRAFFIC CONDITIONS**

In the vicinity of the subject site, North Tuckahoe Road (County Route 555) is a two lane with shoulders urban minor arterial roadway under the jurisdiction of Gloucester County with a 50 mile per hour speed limit. According to New Jersey Department of Transportation counts, the traffic volume for North Tuckahoe Road (County Route 555) adjacent to the subject lots is approximately 11,500 vehicles per day. Airport Drive is a two lane private roadway with a width of approximately 26 feet.

The New Jersey Department of Transportation collected traffic volumes on North Tuckahoe Road (County Route 555) near the subject site from Wednesday, September 25, 2019 to Tuesday, October 1, 2019. The Delaware Valley Regional Planning Commission conducted traffic counts in the same area on Wednesday, October 2, 2019 and from Tuesday, January 14, 2020 to Thursday, January 16, 2020. The average peak hour volumes for North Tuckahoe Road (County Route 555) in September-October 2019 were found to be 785 vehicles, 1,030 vehicles, and 881 vehicles during the weekday morning, weekday evening, and Saturday midday peak hours respectively. The average weekday counts in January 2020 were found to be slightly lower, with 701 vehicles and 955 vehicles during the weekday morning and evening peak hours respectively. Both of these counts were prior to any COVID-related shutdowns in New Jersey.

Traffic Impact Study for Peach Country Tractor Self-Storage Units and Existing Retail Building, prepared by Horner & Canter and dated December 18, 2020, included traffic counts conducted from 7-9 am and 4-6 pm on Wednesday, July 22, 2020 and from 11 am – 2 pm on Saturday, July 25, 2020 at the intersection of North Tuckahoe Road (County Route 555) and Airport Drive and at the North Tuckahoe Road (County Route 555) driveway for Peach Country Tractor. Horner & Canter's peak hour volumes found for the comparative location to the NJDOT and DVRPC counts mentioned earlier were 593 vehicles, 837 vehicles, and 821 vehicles during the weekday morning weekday evening, and Saturday midday peak hours respectively.

## E. ANALYSIS

### Review of the Horner & Canter Traffic Study and Testimony

The December 18, 2020 Traffic Impact Study for Peach Country Tractor Self-Storage Units and Existing Retail Building, prepared by Horner & Canter had several deficiencies with respect to an appropriate study for the case in question. The specific issues are as follows:

1. The baseline traffic counts on North Tuckahoe Road (County Route 555) were too low to be representative of typical conditions, either due to COVID related restrictions, seasonality, or both.
2. The trip generation of the proposed use was improperly determined and was under-estimated.
3. No comparison to potential development under the present zoning was provided, to allow the relative traffic impacts from the proposed use to be properly reviewed, compared and considered by the zoning board.
4. All of the new trips were assumed to use Airport Drive, and this is contrary to the site design and testimony.
5. The selection of the incorrect peak driveway volumes were used for analysis.
6. The study recommended no roadway improvements to accommodate the proposed use, such as added left turn lanes or widened shoulders.
7. The Horner & Canter study did not address the issue of vehicle queuing for the gate at the North Tuckahoe Road (County Route 555) Driveway being too short.

These specific areas are outlined below.

#### **1. Baseline Traffic Counts**

As indicated earlier within the study, the traffic counts on North Tuckahoe Road (County Route 555) used in the Horner & Canter traffic impact study were not representative of typical conditions. The counts were abnormally low either due to COVID impacts on traffic, seasonality, or both. The publicly and readily available counts from the Fall of 2019 were higher by **32** percent, **23** percent, and **7** percent during the weekday morning, weekday evening, and Saturday midday peak hours respectively. **In their December 18, 2020 report, Horner and Canter failed to adjust their traffic counts to appropriate conditions within their analysis using publicly available recent traffic data, in accordance with standard practice in the industry.**

#### **2. Trip Generation**

Horner & Canter correctly indicated that the Institute of Transportation Engineers (ITE) Trip Generation Manual, 10<sup>th</sup> Edition does not address vehicle storage yards for contractors within it. Therefore, they incorrectly assumed a trip generation with no basis. Horner & Canter further incorrectly assumed that the storage units were the equivalent of retail self-storage units, whereas in fact the ITE Trip Generation Manual does not address the proposed contractor storage units. The ITE Trip Generation Handbook, 3<sup>rd</sup>

Edition recommends that practitioners should collect local data when the “study site is not compatible with the ITE Land Use Code definition”. Horner & Canter failed to do so.

In this instance, the proposed use is already present on the proposed site, albeit to a lesser extent. Based on drone footage from Sunday, April 14, 2019, along with Google Earth photography, approximately 40 contractor vehicles (i.e. 33 percent of the proposed use) presently use the site, along with several parked storage trailers. Therefore, the proposed usage with 120 parking spaces would be approximately triple the existing site usage.

The 2019 video footage confirms that the busiest hours to and from the subject lots are from approximately 6:30-7:30 am and 4:30-5:30 pm for the weekday morning and evening peak hours respectively, and all day on Saturdays. The video footage also verifies that the trip generation from the retail store is minimal during these hours. The counts performed by Horner & Canter can be used to determine the peak trip generation for the existing uses of the Peach Country Tractor site. These counts were confirmed by the driveway video footage from April 25-May 1, 2019, along with the estimated trips for the retail operation. Table 1 contains the resultant trip generation for the existing use.

**TABLE 1 – Existing Trip Generation for Peach Country Tractor**

Use	Morning Peak Hour			Evening Peak Hour			Saturday Peak Hour		
	In	Out	Total	In	Out	Total	In	Out	Total
Total Trips	30	30	60	16	23	39	21	23	44
less: estimated retail	4	2	6	3	4	7	2	2	4
<b>Contractor Yard - 40 vehicles</b>	<b>26</b>	<b>28</b>	<b>54</b>	<b>13</b>	<b>19</b>	<b>32</b>	<b>19</b>	<b>21</b>	<b>40</b>

The proposed use can be expected to increase traffic on the site related to contractor activity three-fold. It is noted that in their traffic study, Horner & Canter did not deduct existing traffic. Table 2 contains a comparison of expected trip generation to that incorrectly assumed by Horner & Canter. As shown, the proposed use would be expected to generate 96-162 peak hour trips (64-80 of which are new), and this is 21-40 more trips than assumed by Horner & Canter.

**TABLE 2 – Proposed Trip Generation versus that Assumed by Horner & Canter**

Use	Morning Peak Hour			Evening Peak Hour			Saturday Peak Hour		
	In	Out	Total	In	Out	Total	In	Out	Total
Contractor Yard - 120 vehicles	78	84	162	39	57	96	57	63	120
less: existing Contractor Yard	26	28	54	13	19	32	19	21	40
<b>New Trips for Land Use</b>	<b>52</b>	<b>56</b>	<b>108</b>	<b>26</b>	<b>38</b>	<b>64</b>	<b>38</b>	<b>42</b>	<b>80</b>
Assumed by Horner & Canter	35	33	68	21	22	43	29	25	54
<b>Difference</b>	<b>17</b>	<b>23</b>	<b>40</b>	<b>5</b>	<b>16</b>	<b>21</b>	<b>9</b>	<b>17</b>	<b>26</b>

**Horner and Canter failed to follow standard practice in the industry when estimating trip generation by using local data when no ITE Land Use category exists for a proposed land use.**

### 3. Comparison to Current Zoning - Trip Generation

Under present zoning, the site proposed for the contractor vehicle and other storage could be developed as light industrial or warehouse use. Given the coverage limitations and parking requirements for each respective use, the site could be developed as either 100,000 square feet of light industrial use or 360,000 square feet of warehouse use. Peak hour trips generated for these uses were compared to the proposed use in Table 3 using the 10<sup>th</sup> Edition of the Institute of Transportation Engineers (ITE) Trip Generation Manual and its supplement. As shown, the proposed use results in more than double the trips during the weekday morning peak hour, an increase of about 50 percent over trips during the weekday evening peak hour, and nearly triple the trips during the Saturday midday peak hour.

**TABLE 3 – Proposed Trip Generation versus As of Right Developments**

Land Use	Size	Max % Lot Cover	Parking Spaces	Peak Hour Traffic (2-way)		
				Morning	Evening	Saturday
<b>Proposed Use</b>	<b>76,800 sf</b>	<b>49</b>	<b>120</b>	<b>162</b>	<b>96</b>	<b>120</b>
Light Industrial	100,000 sf	25	200	70	63	41
Warehouse	360,000 sf	65	240	61	68	18

It is recognized that zoning would also permit retail under the category of “Community Commercial”. A shopping center of approximately 150,000 square feet of floor area and 1,000 parking spaces could be developed on the proposed property under present zoning. However, such a development would invariably require substantial traffic improvements to the access such as signalization and the addition of turn lanes, and would possibly require off-tract improvements at down-stream intersections. Such improvements are not proposed by the proposed land use.

**The proposed use will result in a substantial increase in traffic over that permitted under current zoning without substantial access or off-tract traffic improvements.**

### 4. & 5. Distribution / Analysis of Traffic

For unsignalized intersection analysis, Level of Service (LOS) is determined by the combination of suitable gaps in traffic (i.e. through traffic volumes), the amount of traffic turning (i.e. seeking gaps), and the percent of vehicles that are heavy vehicles. Delays for intersections can change rather significantly due to changes in assumptions for each of these inputs.

Within their existing conditions analysis, Horner & Canter focused on the overall peak hours for the two intersections that they analyzed rather than the site peak hours. For instance, the morning peak hour that they analyzed (8-9 am) had 40 trips in and out of the Peach Country Tractor driveway, rather than the 60 trips in and out that could be found from 7-8 am. This error was continued for their analysis of future conditions. Horner & Canter also assigned all new site traffic to Airport Drive, whereas the site plan and testimony makes clear that contractors will be able to use whichever entrance that they prefer.

Lastly, Horner & Canter failed to adjust the percent of heavy vehicles on turning movements at the intersection of North Tuckahoe Road (County Route 555) and Airport Drive. This error, combined with their under-estimation of trips for the proposed use and the use of artificially low through volumes on North Tuckahoe Road (County Route 555) renders all level of service results that they found irrelevant.

**Horner and Canter failed to analyze the correct volume, distribution, and heavy vehicle percentage of traffic in their analysis, making their LOS results inaccurate and therefore irrelevant.**

#### **6. Need for Left Turn Lanes on North Tuckahoe Road (County Route 555)**

On high speed roadways such as North Tuckahoe Road (County Route 555), providing left turn lanes for access to high volume driveways improves safety and operational efficiency. Gloucester County requires the use of Highway Research Record (HRR) 211 to determine if left turn lanes are warranted, and require providing them if warranted. Within their traffic study, Horner & Canter evaluated these warrants and incorrectly found that left turn lanes were not warranted at either the Peach Country Tractor driveway or Airport Road. A review of these warrants with the correct traffic volumes for North Tuckahoe Road (County Route 555) and the correct trip generation reveals left turn lanes at the North Tuckahoe Road (County Route 555) and Airport Drive intersection, and possibly warranted at the North Tuckahoe Road (County Route 555) driveway for Peach Country Tractor, depending on the distribution of traffic for the proposed use to each driveway.

It should be noted that while Gloucester County still references Highway Research Record (HRR) 211, the recommended warrants for left turn lanes have been updated within American Association of State and Highway Transportation Officials (AASHTO) publication A Policy on Geometric Design of Highways and Streets, 2018 Edition. Within Table 9-24 of said publication, as few as 10 left turns per hour during the weekday morning peak hour and 5 left turns per hour during the weekday evening and Saturday peak hours would warrant left turn lanes at three leg intersections on North Tuckahoe Road (County Route 555). Therefore, the existing Peach Country Tractor driveway also warrants a left turn lane under AASHTO criteria.

**Left turn lanes on North Tuckahoe Road (County Route 555) at Airport Drive and at the driveway for Peach Country Tractor would be warranted by the proposed development.**

#### **7. Gate Location Relative to North Tuckahoe Road (County Route 555)**

The site plan for the proposed use indicates that the existing gate for Peach Country Tractor is to remain in its current location. According to the site plan, this gate is located approximately 25 feet from the right of way line for North Tuckahoe Road (County Route 555), and 14 feet from a roadway widening easement line. This leads to traffic stacking for the gate occasionally encroaching onto the right of way of North Tuckahoe Road (County Route 555), as shown in Figure 2, below. This constitutes an unexpected hazard for motorists on North Tuckahoe Road (County Route 555). The proposed increased intensity of use of the site, combined with a lack of control of which gate traffic can utilize, will lead to increased stacking of vehicles onto North Tuckahoe Road (County Route 555). The use of public right of



way for private purposes, such as vehicle stacking, is contrary to Gloucester County requirements. Having sufficient area for stacking at least one of the largest vehicles proposed to utilize this site off the public right-of-way would be appropriate in this instance. Consequently, the gate should be relocated further into the site as part of this development.



**Figure 2 – Stacking of Vehicles onto North Tuckahoe Road (County Route 555)**

**The current stacking of vehicles onto North Tuckahoe Road (County Route 555) due to gate location and operation, constitutes an unexpected hazard to vehicles on North Tuckahoe Road (County Route 555), that will be exacerbated by the proposed development.**

## **F. FINDINGS**

Within the bounds of reasonable engineering certainty, and subject to change if additional information becomes available, it is my professional opinion that:

1. In their December 18, 2020 report, Horner and Canter failed to adjust their traffic counts to appropriate conditions within their analysis using publicly available recent traffic data, in accordance with standard practice in the industry.
2. Horner and Canter failed to follow standard practice in the industry when estimating trip generation by using local data when no ITE Land Use category exists for a proposed land use.

3. The proposed use will result in a substantial increase in traffic over that permitted under current zoning without substantial access or off-tract traffic improvements.
4. Horner and Canter failed to analyze the correct volume, distribution, and heavy vehicle percentage of traffic in their analysis, making the results inaccurate.
5. Left turn lanes on North Tuckahoe Road (County Route 555) at Airport Drive and at the driveway for Peach Country Tractor would be warranted by the proposed development.
6. The current stacking of vehicles onto North Tuckahoe Road (County Route 555) due to gate location and operation, constitutes an unexpected hazard to vehicles on North Tuckahoe Road (County Route 555), that will be exacerbated by the proposed development.



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