

## TECHNICAL MEMORANDUM

To: David Muller

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Date: November 3, 2025

Subject: Notley Road – Vehicle Gap Study

Ryan Stuart Development

**Exhibit 67**  
**OZAH Case No: H-159**

### Introduction

This memorandum summarizes the findings of a gap study conducted at the intersection of Notley Road and Petwyn Court. The study evaluates the availability and duration of traffic gaps during peak hours (7:30 to 8:30 AM and 5:00 to 6:00 PM) to accommodate vehicles turning onto or from Petwyn Court.

A gap refers to the time interval between vehicles, measured in seconds. The analysis compares observed gaps to the critical gap (the minimum time needed for a single vehicle to complete a turn) and the follow-up gap (the minimum time required for subsequent vehicles to use the same gap). The required gap assumptions in this analysis are based on the *Highway Capacity Manual* (HCM), 6<sup>th</sup> edition.

The following HCM assumptions were used:

- Westbound left-turn from Notley Road to Petwyn Court (left turn from a two-lane major street)
  - Critical Gap: 4.1 seconds
  - Follow-up Gap: 2.2 seconds
- Northbound right-turn from Petwyn Court to eastbound Notley Road (right turn from two-lane minor street)
  - Critical Gap: 6.2 seconds
  - Follow-up Gap: 3.3 seconds
- Northbound left-turn from Petwyn Court to westbound Notley Road (left turn from two-lane minor street, 1-stage)
  - Critical Gap: 7.1 seconds
  - Follow-up Gap: 3.5 seconds

Gap data was observed and collected using video recordings from Tuesday, February 25, 2025, when schools and the federal government were in session.

The results of the gap study, observations, and proposed traffic volumes are summarized as follows:

- Gaps are widely available to accommodate turning movements onto and from Petwyn Court
- Existing turning movements at Petwyn Court can be accommodated within the available gaps
- The proposed development is not expected to have a detrimental impact on the availability of adequate gaps at the Petwyn Court intersection.

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### ***Gap Availability for Westbound Left-Turns from Notley Road to Petwyn Court***

Per the HCM, left-turning vehicles from Notley Road require a minimum 4.1-second gap in the opposing eastbound traffic with subsequent follow-up vehicles each needing 2.2 additional seconds in order to be able to use the same gap.

#### **Observed Gap Data:**

Table 1 and Table 2 summarize the number of eastbound gaps during the AM and PM peak hours. The following observations were made:

- Number of adequate gaps meeting the required HCM critical gap minimum (assumed as 5 seconds or longer):
  - AM Peak: 149 adequate gaps
  - PM Peak: 183 adequate gaps
- Adequate gap vehicle capacity based on the HCM critical and follow-up gap requirements:
  - AM Peak: 403 vehicles
  - PM Peak: 464 vehicles

Our peak hour traffic counts showed no vehicles turned left during the AM peak hour and 2 left-turning vehicles during the PM peak hour.

#### **Proposed Peak Hour Trips:**

The proposed development is expected to generate:

- AM Peak Hour: 18 additional eastbound trips
  - approximately 1 additional vehicle every 3 minutes
- PM Peak Hour: 12 additional eastbound trips
  - approximately 1 additional vehicle every 5 minutes

The observed gaps can comfortably support the proposed traffic volumes while maintaining adequate gaps for left-turns from Notley Road to Petwyn Court.

### ***Gap Availability for Northbound Right-Turns from Petwyn Court to Notley Road***

Per the HCM, right-turning vehicles from Petwyn Court require a minimum 6.2-second gap in eastbound traffic, with subsequent follow-up vehicles each needing 3.3 additional seconds to use the same gap.

#### **Observed Gap Data:**

Table 3 and Table 4 detail gap availability in eastbound traffic on Notley Road during the AM and PM peak hours, respectively. The following observations were made:

- Number of adequate gaps meeting the HCM critical gap minimum (assumed as 7 seconds or longer):
  - AM Peak: 125 adequate gaps
  - PM Peak: 158 adequate gaps
- Based on HCM criteria, the corresponding vehicle capacity is:
  - AM Peak: 251 vehicles
  - PM Peak: 296 vehicles

Peak hour counts showed 1 right-turning vehicle during the AM peak hour and 1 right-turn during the PM peak hour.

### Proposed Peak Hour Trips:

The proposed development is expected to generate:

- AM Peak Hour: 18 additional eastbound trips and 20 southbound lefts
  - approximately 1 vehicle every minute and a half
- PM Peak Hour: 12 additional eastbound trips and 13 southbound lefts
  - approximately 1 vehicle every 2 and half minutes

The observed gaps can comfortably support the proposed traffic volumes while maintaining adequate gaps for right-turns from Petwyn Court to Notley Road.

### ***Gap Availability for Northbound Left-Turns from Petwyn Court to Notley Road***

Per the HCM, left-turning vehicles from Petwyn Court require a minimum 7.1-second gap in both directions of traffic, with subsequent follow-up vehicles each needing at least 3.5 additional seconds to use the same gap.

### Observed Gap Data:

Table 5 and Table 6 present the number of recorded gaps along Notley Road based on traffic traveling in both directions during the AM and PM peak hours, respectively. The following observations were made:

- Number of adequate gaps meeting the HCM critical gap minimum (assumed as 8 seconds or longer):
  - AM Peak: 147 adequate gaps
  - PM Peak: 153 adequate gaps
- Based on HCM criteria, the estimated corresponding vehicle capacity for these gaps is:
  - AM Peak: 229 vehicles
  - PM Peak: 215 vehicles

Peak hour traffic counts showed no vehicles turned left during the AM peak hour and 2 left-turning vehicles during the PM peak hour.

### Proposed Peak Hour Trips:

The proposed development is expected to generate:

- AM Peak Hour: 50 additional trips assigned to this intersection (18 eastbound throughs, 20 southbound lefts, 6 westbound throughs, and 6 westbound rights)
  - approximately 1 vehicle per minute
- PM Peak Hour: 59 additional trips assigned to this intersection (12 eastbound throughs, 13 southbound lefts, 16 westbound throughs, and 18 westbound rights)
  - approximately 1 vehicle per minute

The observed gaps can comfortably support the proposed traffic volumes while maintaining adequate gaps for left-turns from Petwyn Court to Notley Road.

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## Gap Availability and Future Traffic Signal at New Hampshire Avenue

Community feedback has highlighted concerns about eastbound queues at the New Hampshire Avenue and Notley Road intersection, which may hinder turning movements at Petwyn Court. While the gap study confirms that the proposed development will not adversely affect access to or from Petwyn Court, the Applicant will work with the Maryland State Highway Administration (SHA) to advance the installation of a warranted traffic signal at the New Hampshire Avenue intersection.

This future traffic signal is expected to:

- Improve traffic flow by providing dedicated signal time for eastbound Notley Road traffic to turn onto New Hampshire Avenue
- Reduce eastbound queuing
- Create more gaps for turning vehicles at Petwyn Court

While the traffic signal is warranted under existing conditions, improved operations at this intersection are a priority for the project and the Applicant will continue coordination with Planning, MCDOT, and SHA during Preliminary Plan to address the funding and construction timeline of the signal.

Table 1: Gap Analysis Results - Westbound Left into Petwyn Court (AM Peak)

Observed Gap Length	1 - 2	3 - 4	5 - 6	7 - 8	9 - 10	11 - 12	13 - 14	15 - 16	17 - 18	19 - 20	21 - 22	23 - 24	25 - 26	27 - 28	29 - 30	30+	Total Gaps Observed	Total Gaps ≥ 5 sec.
# of Observed Gaps	36	34	24	19	14	7	10	7	7	4	6	0	4	4	3	40	219	149
Vehicle Capacity within Gap Length (Gaps with Acceptable Critical & Follow-up Time)	0	0	1	1	1	2	2	2	3	3	3	4	4	4	5	5		
# of Adequate Gaps (Vehicular Capacity)	0	0	24	19	14	14	20	14	21	12	18	0	16	16	15	200	Total Vehicular Capacity	403

Table 2: Gap Analysis Results - Westbound Left into Petwyn Court (PM Peak)

Observed Gap Length	1 - 2	3 - 4	5 - 6	7 - 8	9 - 10	11 - 12	13 - 14	15 - 16	17 - 18	19 - 20	21 - 22	23 - 24	25 - 26	27 - 28	29 - 30	30+	Total Gaps Observed	Total Gaps ≥ 5 sec.
# of Observed Gaps	32	29	25	30	22	11	9	10	6	7	6	5	7	3	9	33	244	183
Vehicle Capacity within Gap Length (Gaps with Acceptable Critical & Follow-up Time)	0	0	1	1	1	2	2	2	3	3	3	4	4	4	5	5		
# of Adequate Gaps (Vehicular Capacity)	0	0	25	30	22	22	18	20	18	21	18	20	28	12	45	165	Total Vehicular Capacity	464

Table 3: Gap Analysis Results – Northbound Right out of Petwyn Court (AM Peak)

Observed Gap Length	1 - 2	3 - 4	5 - 6	7 - 8	9 - 10	11 - 12	13 - 14	15 - 16	17 - 18	19 - 20	21 - 22	23 - 24	25 - 26	27 - 28	29 - 30	30+	Total Gaps Observed	Total Gaps ≥ 7 sec.
# of Observed Gaps	36	34	24	19	14	7	10	7	7	4	6	0	4	4	3	40	219	125
Vehicle Capacity within Gap Length (Gaps with Acceptable Critical & Follow-up Time)	0	0	0	1	1	1	1	2	2	2	2	2	3	3	3	3		
# of Adequate Gaps (Vehicular Capacity)	0	0	0	19	14	7	10	14	14	8	12	0	12	12	9	120	Total Vehicular Capacity	251

Table 4: Gap Analysis Results – Northbound Right out of Petwyn Court (PM Peak)

Observed Gap Length	1 - 2	3 - 4	5 - 6	7 - 8	9 - 10	11 - 12	13 - 14	15 - 16	17 - 18	19 - 20	21 - 22	23 - 24	25 - 26	27 - 28	29 - 30	30+	Total Gaps Observed	Total Gaps ≥ 7 sec.
# of Observed Gaps	32	29	25	30	22	11	9	10	6	7	6	5	7	3	9	33	244	158
Vehicle Capacity within Gap Length (Gaps with Acceptable Critical & Follow-up Time)	0	0	0	1	1	1	1	2	2	2	2	2	3	3	3	3		
# of Adequate Gaps (Vehicular Capacity)	0	0	0	30	22	11	9	20	12	14	12	10	21	9	27	99	Total Vehicular Capacity	296

Table 5: Gap Analysis Results – Northbound Left out of Petwyn Court (AM Peak)

Observed Gap Length	1 - 2	3 - 4	5 - 6	7 - 8	9 - 10	11 - 12	13 - 14	15 - 16	17 - 18	19 - 20	21 - 22	23 - 24	25 - 26	27 - 28	29 - 30	30+	Total Gaps Observed	Total Gaps ≥ 8 sec.
# of Observed Gaps	90	83	49	15	20	19	20	12	8	6	9	2	9	6	4	17	369	147
Vehicle Capacity within Gap Length (Gaps with Acceptable Critical & Follow-up Time)	0	0	0	1	1	1	1	1	2	2	2	2	2	2	3	3		
# of Adequate Gaps (Vehicular Capacity)	0	0	0	15	20	19	20	12	16	12	18	4	18	12	12	51	Total Vehicular Capacity	229

Table 6: Gap Analysis Results – Northbound Left out of Petwyn Court (PM Peak)

Observed Gap Length	1 - 2	3 - 4	5 - 6	7 - 8	9 - 10	11 - 12	13 - 14	15 - 16	17 - 18	19 - 20	21 - 22	23 - 24	25 - 26	27 - 28	29 - 30	30+	Total Gaps Observed	Total Gaps ≥ 8 sec.
# of Observed Gaps	131	127	66	16	35	26	12	13	5	16	8	4	5	2	2	9	477	153
Vehicle Capacity within Gap Length (Gaps with Acceptable Critical & Follow-up Time)	0	0	0	1	1	1	1	1	2	2	2	2	2	2	3	3		
# of Adequate Gaps (Vehicular Capacity)	0	0	0	16	35	26	12	13	10	32	16	8	10	4	6	27	Total Vehicular Capacity	215