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DEPARTMENT OF TRANSPORTATION
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SECRETARY

MEMORANDUM

To: Peter Haag, P.E., PTOE
Chief of Traffic Engineering

From: Mir Wahed, P.E., PTOE
JMT

Date: July 22, 2020

Location: Marsh Road & Harvey Road/Grubb Road

Project Overview:

Marsh Road and Harvey/Grubb Road is an existing five leg intersection in New Castle County, Delaware near the town of Arden. The Delaware Department of Transportation (DelDOT) has received many concerns from the public on both the inefficiency and safety issues occurring at this intersection, which initiated a traffic study. The northbound and southbound Marsh Road and eastbound Grubb Road approaches at the intersection are configured with a shared through/left turn lane and a separate right turn lane. Currently, left turning vehicles must wait for a gap in opposing traffic to complete a turn at this intersection. This operation encourages through movements along these approaches to execute illegal maneuvers and use the right turn lanes to bypass the left turning vehicles which has created a safety concern. DelDOT's proposed improvements will reconfigure these approaches to provide a shared through/right turn lane and a separate left turn lane. New signal heads will also be proposed allowing for protected-permissive left turn movements. DelDOT hosted a Virtual Workshop from March 2nd, 2020 to March 31st, 2020 which presented a conceptual plan of the improvements as well as a list of the advantages and disadvantages for this proposed reconfiguration.

This memo summarizes the comments from the Marsh Road & Harvey Road/Grubb Road Virtual Workshop. DelDOT received a total of 40 comments from the general public via electronic submission (SurveyMonkey). Before the virtual workshop was made available, 9 additional comments were received from the public through DelDOT's "report an issue" feature on their website and 3 were received at a public meeting held in the Arden community on 2/11/2020. The 52 comments received are summarized in Table 1 below. Based on a review of the comments, 42 (81%) supported the proposed reconfiguration of Marsh & Harvey/Grubb Road, while 10 responses (19%) were against it or proposed an alternative solution such as the installation of a roundabout.

Table 1: Public Comments and Responses

| No. | Type of Comment | Responses |
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| 1 | <ul style="list-style-type: none"> a. Details for ADA ramp design and its level of impact not identified. The ADA requirements may likely result in significant challenges and should be identified as early as possible. b. Will expansion of sidewalks beyond the intersection be required or proposed? c. Has there been any operational analysis work done to compare existing and proposed conditions? I'd like to see technical data comparing level of service, delay, queue length, etc. d. Are any traffic simulations available? e. Is there any estimate on crash reduction and is the overall cost of the project justified? f. Currently the construction at Marsh and I-95 may be altering traffic patterns in the area. Is the traffic data used in the analysis from before construction or considering its impact at the study intersection? | <ul style="list-style-type: none"> a. ADA ramps will be provided at intersection corners where proposed crosswalks will be added. Crosswalks will be added at the three legs of the intersection. Exact locations of ramps will be determined as part of the ongoing design process. b. Due to physical constraints and required Right-of-Way, only a connection to the existing sidewalk on the south west corner will be provided. c. Operational analyses for multiple options were conducted and compared. Results of these analysis can be made available. d. Simulations were used as part of the traffic analysis at the intersection and can be made available. e. Crash reductions at the intersection were estimated using Highway Safety Manual analysis and an analysis of existing crashes was conducted. No cost-benefit analysis was performed. f. As part of construction monitoring at the Marsh Road & I-95 interchange, data collected at the intersection of Marsh Road & Grubb Road/Harvey Road in 2017. The intersection traffic data was compared to data collected during various phases of construction. No significant changes in the traffic pattern at the intersection were observed. |
| 2 | Think the study looks great, agrees with proposed changes | Comment received |
| 3 | Only adding more lanes/widening the intersection by buying up some of the land will alleviate the issue. | Acquiring necessary Right-of-Way would require significant project expansion and would extend the |

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| | | time and scope to implement any improvements at this intersection. Current reconfiguration allows for improvements to be implemented quickly. |
| 4 | <p>a. If the buildings weren't so close to the street, a traffic circle would be a good idea. However, the current recommendation is a much cheaper option and makes sense all around.</p> <p>b. Would Harvey and Grubb get separate light cycles?</p> | <p>a. Acquiring necessary Right-of-Way to install a roundabout would require significant project expansion and would extend the time and scope to implement any improvements at this intersection. Current reconfiguration allows for improvements to be implemented quickly.</p> <p>b. The signal phasing will be finalized as part of the ongoing design process. Based on the traffic analysis, providing separate light cycles for Grubb Road and Harvey Road would cause significant congestion at the intersection. The reconfiguration does allow for a variety of different signal phasing to be implemented along the side-streets.</p> |
| 5 | <p>a. Proposed traffic pattern will revert back to how it was years ago, if it worked then it'll work now.</p> <p>b. I never witness bikes heading north onto Marsh Road at intersection.</p> | Comments received |
| 6 | <p>Concerned about:</p> <p>a. Bike lanes</p> <p>b. Inhibition of RTOR</p> | <p>a. Acquiring necessary Right-of-Way to install bike lanes would require significant project expansion and would extend the time and scope to implement any improvements at this intersection. Current reconfiguration allows for improvements to be implemented quickly. Additional signage can be installed to warn drivers of bicycle operations.</p> <p>b. Traffic analysis did not reveal any congestion issues related to the RTOR inhibition. It should be noted that no new RTOR restrictions are planned to be implemented.</p> |
| 7 | Study is important because something needs to change at that intersection | Comment received |
| 8 | This is worth studying but I don't think the intersection is that bad as | Based on the traffic study, the |

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| | is. I hope any changes won't make it more unsafe and create more lengthy waits. | reconfiguration should improve safety and operations at the intersection. |
| 9 | No comment or concerns about the study at this time | Comment received |
| 10 | Thinks the advantages of proposed changes outweigh disadvantages. | Comment received |
| 11 | This is a good first step. A roundabout or "more aggressive solution" is necessary. Building/land may be lost but that's no comparison to one life saved. | Acquiring necessary Right-of-Way would require significant project expansion and would extend the time and scope to implement any improvements at this intersection. Current reconfiguration allows for improvements to be implemented quickly. |
| 12 | No comments or concerns about the study. | Comment received |
| 13 | <ul style="list-style-type: none"> a. Wants more exploration of a traffic circle (roundabout) idea. The intersection needs traffic calming and not just new light cycles and turn lanes. b. Biking is taking your life in your hands at the intersection and the pedestrian component seems poorly planned there. c. Signage needs to be placed from Lancashire at Chestnut, Millers and Wind, up to Harvey, that passing on the shoulder is prohibited as people barrel past stopped turning cars. | <ul style="list-style-type: none"> a. Acquiring necessary Right-of-Way would require significant project expansion and would extend the time and scope to implement any improvements at this intersection. Current reconfiguration allows for improvements to be implemented quickly. b. Additional pedestrian crosswalks and sidewalks will be implemented at the intersection as part of this project. Due to ROW constraints, separate bike lanes cannot be accommodated at the intersection. c. Striping at the intersection will be reconfigured. This will address the concern of vehicles bypassing using the right turn lane. |
| 14 | No construction is needed or large amount of money spent. Just change the lane patterns and add a green arrow to the light. | Comment received |
| 15 | No comments or concerns about the study | Comment received |
| 16 | Likes the idea of creating a left turn lane | Comment received |
| 17 | <ul style="list-style-type: none"> a. Motorists turning left from Harvey Road to Marsh Road often "linger" waiting for a gap in opposing traffic while others going thru/right go around them. To ultimately solve, the intersection needs to grow in size. b. Proposed improvement at least makes it safer and more predictable. This has been a long time coming. THANK YOU. | <ul style="list-style-type: none"> a. Acquiring necessary Right-of-Way would require significant project expansion and would extend the time and scope to implement any improvements at this intersection. Current reconfiguration allows for improvements to be implemented quickly. b. Comment received |
| 18 | <ul style="list-style-type: none"> a. Wish people weren't "asshats" and this wasn't necessary. Wish putting a trooper here 3 days a week during busy times over several months would help. b. Worried about the offset issue. Very busy and distracting | <ul style="list-style-type: none"> a. Comment received b. During the design process or implementation effort, additional skip line can be |

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| | <p>intersection and wonders if some people would be dazed and miss the offset and hit a tree including myself. However, based on other near misses caused by the existing layout makes the reconfiguration worth it.</p> <p>c. Please observe this issue at all major intersection in the Wilmington/Claymont Area.</p> | <p>added along the offset movements to help guide drivers and mitigate offset issues.</p> <p>c. Comment received</p> |
| 19 | No comments/concerns about the study | Comment received |
| 20 | <p>a. This new lane configuration will make it more difficult for motorists turning left from Harvey Rd to Marsh to see oncoming traffic from Grubb Road. This is already an existing issue and this configuration may make it worse. A potential fix could be a designated green light just for Harvey Road traffic, it will need to be long enough for at least 10 cars to get thru in rush hour</p> <p>b. Another challenge will be to time the lights to allow an adequate number of cars through at any one signal, now that we're adding left turn arrows. Too few and road rage will be prevalent. Take signal timing in mind or the intersection will become a quagmire of frustration for all drivers.</p> | <p>a. Due to geometric constraints, a separate left turn lane cannot be added along the Harvey Road approach. Potential sight distance issues will be investigated as part of the design process that is currently ongoing. One option could be to provide advanced green time to the Harvey Road approach. With that, the Grubb Road approach left turns would be permissive left turns only.</p> <p>b. Based on traffic analysis conducted at the intersection, the signal timings can be programmed to provide acceptable operations.</p> |
| 21 | Make sure the timing of the lights is sufficient to accommodate traffic | Based on traffic analysis conducted at the intersection, the signal timings can be programmed to provide acceptable operations. |
| 22 | Desperately needed changes that greatly benefit the community as a whole. | Comment received |
| 23 | Harvey Road north light should be green 10 seconds ahead of oncoming traffic to allow left turns through. At high traffic times people will still maneuver around left turners. | Comment received |
| 24 | <p>a. NB, SB and EB approaches have a skewed alignment thru intersection, this has potential to cause a side strike accident between a left turn movement and through lane movement if there is a vehicle stopped for an opposing left turn.</p> <p>b. Sharing the SB Marsh Road through lane and right turn lane may increase rear end crashes due to the tight turning radius and intersection geometrics.</p> <p>c. As an avid cyclist, mixing the through lane movement into what is now a shoulder or right turn lane will increase bike stress level.</p> <p>d. Why are curb ramps and pedestrian crossing proposed when there are no defined sidewalks or paths specific to ped use? This could confuse peds and cause conflicts with motorized users.</p> <p>e. Driver behavior is causing the problem</p> <p>f. Constraints of a historic building coupled with Ardens attitude of "not in my backyard" and belief Arden is more sovereign than the state will not allow a full intersection rebuild to resolve all issues.</p> <p>g. Adding dedicated through lanes and turn lanes on all legs of the intersections, properly aligning the legs and adding bike lanes is the real solution.</p> | <p>a. During the design process or implementation effort, additional skip line can be added along the offset movements to help guide drivers and mitigate offset issues.</p> <p>b. Comment received. Approximately 50% of the crashes currently occurring at the intersection were identified to be correctable with the reconfiguration.</p> <p>c. Comment received. Additional signage can be installed to provide warnings to vehicles of bicycle operations at the intersection. It should be noted,</p> |

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| | | <p>the existing illegal movements of through vehicles utilizing the right turn lanes also creates a safety issue for bicyclists.</p> <p>d. Will provide multi-modal mobility, a more complete-streets design, and connections from the existing bus stops located at the intersection</p> <p>e. Comment received</p> <p>f. Comment received</p> <p>g. Acquiring necessary Right-of-Way would require significant project expansion and would extend the time and scope to implement any improvements at this intersection. Current reconfiguration allows for improvements to be implemented quickly.</p> |
| 25 | Thinks the plan as proposed is “darn good” | Comment received |
| 26 | No comments or concerns about study | Comment received |
| 27 | <p>a. Request trip right/left arrows similar to foulk</p> <p>b. Pedestrian crosswalk? It’s the edge of a village.</p> | <p>a. Unsure of comment’s exact meaning. Signal phasing will be finalized by the ongoing design process. Protected-permissive left turns can be implemented along three of the intersection approaches with the new intersection layout.</p> <p>b. Will provide multi-modal mobility, a more complete-street design, and connections from the existing bus stops located at the intersection</p> |
| 28 | The traffic light for cars coming from Harvey – have you considered a green with an extended arrow, like the light on Harvey and Veale? | The signal phasing will be finalized by the ongoing design process. Providing advanced green time to the Harvey Road approach is being considered due to the potential sight distance issue along this approach. |
| 29 | No comments or concerns about study | Comment received |
| 30 | <p>a. I think Harvey Road needs a shoulder for people and bikes. It causes a hazard even going 25 MPH. You break down on Harvey and you are a sitting duck</p> <p>b. I like the turn lights. I have always thought that would help there.</p> | <p>a. Acquiring necessary Right-of-Way would require significant project expansion and would extend the time and scope to implement any improvements at this intersection. Current reconfiguration allows for improvements to be implemented quickly.</p> <p>b. The signal phasing will be finalized by the ongoing design process. Protected-permissive left turns can be implemented</p> |

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| | | along three of the intersection approaches with the reconfiguration of the intersection. |
| 31 | More signs for no turn on red | Comment received. It should be noted that no new “No Turn on Red” restrictions will be implemented. The existing restriction along northbound Marsh Road will be maintained. |
| 32 | <ul style="list-style-type: none"> a. I try to avoid current intersection as much as possible since I fear high risk for an accident. Existing liability is high b. Approve the enhancements. Reduce liability to state for dangerous intersection. Save lives. | Comments received |
| 33 | A left turn signal for turning onto Harvey Road would solve the whole problem | The signal phasing will be finalized by the ongoing design process. Providing advanced green time to the Harvey Road approach is being considered due to the potential sight distance issue along this approach. |
| 34 | <ul style="list-style-type: none"> a. The survey does not say where the proposed signal heads will be placed, and how many will there be. I would like to know this. b. Also please explain through movement offsets. | <ul style="list-style-type: none"> a. The number of and location of signal heads will be finalized during the design process which is currently ongoing. This information can be made available in the future. b. The through movement offset is the amount of lateral distance through vehicles would have to shift left or right to stay in their lane. |
| 35 | <ul style="list-style-type: none"> a. We always say it’s poorly laid out. We were wondering why it hasn’t been done sooner b. The way it is now is dangerous and causes needless backups. | Comments received |
| 36 | A lot of impatient drivers who don’t obey the law are always using Papa Johns lot to bypass the red light. Not only are they doing this but doing it rather fast! | Comment received |
| 37 | <ul style="list-style-type: none"> a. Agree with proposal, often wondered why there was a right turn lane on Marsh in both directions and no left turn lane, when it was obvious most of the traffic was through traffic being held up by left turning traffic. b. Don’t see why sidewalks and ADA ramps are needed when there is so little (if any) foot traffic at this intersection. Only time I’ve seen foot traffic in this area is during the Arden Fair c. Needs more advertisement. Only just heard about it at Gov. Carney’s Sate of the State at Brandywine Lib on 3/6. I live in Greentree and often use Chestnut St to get to Marsh and then south to Silverside or Wilson. Were there proposal notification signs posted at the intersection? I don’t remember seeing any. | <ul style="list-style-type: none"> a. Comment received b. Will provide multi-modal mobility, a more complete-street design, and connections from the existing bus stops located at the intersection c. Comment received. Advertisement for the virtual workshop was posted with the Delaware News Journal in February. |
| 38 | Looks much safer than currently, I like the yellow turn lights. Hadn’t seen them done that way before. | Comment received |
| 39 | Traveling towards Marsh Rd, Harvey Road is only a single lane. Why can’t the state widen Harvey Rd through Arden? | Acquiring necessary Right-of-Way would require significant project |

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| | | expansion and would extend the time and scope to implement any improvements at this intersection. Current reconfiguration allows for improvements to be implemented quickly. |
| 40 | <p>a. The lane in front of my house will have cars coming closer to the sidewalk. Concern is car speed. It must be posted clearly! Currently cars come into the right turn lane on Grubb long before it's allowed and when I am working in my front yard, those cars that are speeding scare me. How will speed be monitored? You need police there to give out tickets to prompt people to obey the speed limit that will be posted after the changes are made.</p> <p>b. You need to talk to the neighbors who will be impacted on Grubb Road. 2210 and 2212</p> | <p>a. Comment received. Coordination can occur with Delaware State Police for additional enforcement.</p> <p>b. Comment received.</p> |
| 41 | Please move forward with the proposed improvements at the intersection. This is a dangerous, heavily traveled intersection that I drive through multiple times a day with my children. (Comment received from DelDOT's "report an issue" feature prior to Virtual Workshop) | Comment received. |
| 42 | I strongly recommend investigating the feasibility of a roundabout at the intersection. The traffic counts indicate the intersection is within the FHWA guidelines for maximum volumes in a 1-lane roundabout. There are significant constraints with the building on the north side and the acute angles of some of the turns. A roundabout would significantly slow traffic for better safety for all users/modes while giving each approach the opportunity to enter the intersection without waiting for a light. I'd like to see a microsimulation of such a concept at peak and other times. (Comment received from DelDOT's "report an issue" feature prior to Virtual Workshop) | A roundabout was originally considered by the traffic study which investigated several intersection alternatives. A roundabout was found to alleviate congestion and was predicted to reduce crash frequencies. However, the implementation of this option may not be feasible due to geometric constraints. A roundabout can be investigated further as a long-term solution, but the implementation would require a significant project resulting in increased costs and time to construct compared to the proposed improvements. |
| 43 | I firmly believe the Harvey Road/Marsh Road intersection should consider a traffic circle. (Comment received from DelDOT's "report an issue" feature prior to Virtual Workshop) | A roundabout was originally considered by the traffic study which investigated several intersection alternatives. A roundabout was found to alleviate congestion and was predicted to reduce crash frequencies. However, the implementation of this option may not be feasible due to geometric constraints. A roundabout can be investigated further as a long-term solution, but the implementation would require a significant project resulting in |

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| | | <p>increased costs and time to construct compared to the proposed improvements.</p> |
| <p>44</p> | <p>a. By how much will the shoulder be narrowed on each side of the road? The SB lane is already a somewhat dangerous traverse for cyclists with little or no room to spare.</p> <p>b. If we just accept and assume that people are breaking the law with illegal passing, isn't it just as easy to accept that people will now just ignore the speed limit traveling straight through the intersection?</p> <p>c. Maybe a traffic circle would be better, though I'm not sure there is a big enough footprint.</p> <p>d. Maybe just change the lights so there is a left turn signal on NB and SB Marsh and stagger who gets to turn left from Marsh. Have traffic studies been performed to see what the real dynamics are for this intersection?</p> <p>(Comment received from DeIDOT's "report an issue" feature prior to Virtual Workshop)</p> | <p>a. The shoulders will be reduced in some areas as narrow as 2' to 3' but is being confirmed as part of the ongoing design process. Additional signage can be installed to provide warnings to vehicles of bicycle operations at the intersection. It should be noted, the existing illegal movements of through vehicles utilizing the right turn lanes also creates a safety issue for bicyclists.</p> <p>b. The offsets created between the through movements and receiving lanes as well as the lane shifts and minimal shoulders along the intersection may increase motorist discomfort and reduce traveling speeds through the intersection. Coordination can occur with Delaware State Police for increased enforcement as well.</p> <p>c. A roundabout was originally considered by the traffic study which investigated several intersection alternatives. A roundabout was found to alleviate congestion and was predicted to reduce crash frequencies. However, the implementation of this option may not be feasible due to geometric constraints. A roundabout can be investigated further as a long-term solution, but the implementation would require a significant project resulting in increased costs and time to construct compared to the proposed improvements.</p> <p>d. A study investigated this alternative. However, without the separation of left turn lanes,</p> |

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| | | the intersection anticipated to operate with significant delays and queue lengths. |
| 45 | You MUST change the Grub/Harvey and Marsh intersection. There is no reason to keep the Grub lanes as is! The “inconvenience” for those turning right to have those also going straight onto Harvey is nothing compared to the danger encountered there with the current setup. (Comment received from DelDOT’s “report an issue” feature prior to Virtual Workshop) | Comment received |
| 46 | You all need to make the right lane for turning right and straight (Comment received from DelDOT’s “report an issue” feature prior to Virtual Workshop) | Comment received |
| 47 | Dangerous situation. We need the signal when a person wants to make a SB left and cars try to go around him, a turn to the left and one to the right. (Comment received from DelDOT’s “report an issue” feature prior to Virtual Workshop) | Comment received |
| 48 | There are multiple accidents at Harvey and Marsh Road. It is dangerous and needs an improvement. We need this change ASAP (Comment received from DelDOT’s “report an issue” feature prior to Virtual Workshop) | Comment received |
| 49 | <p>a. I wholly approve the changes making an official left turn lane distinct from a turn right or go straight lane.</p> <p>b. Can there be something on the shoulders like cobblestone or rumble strips to disincentivize drivers intending to turn right using the shoulder. I’d even vote for a high curb.</p> <p>c. Can you ensure the left turn lanes have enough capacity for high volume days?</p> <p>(Comment received from DelDOT’s “report an issue” feature prior to Virtual Workshop)</p> | <p>a. Comment received</p> <p>b. The shoulders at the intersection will only be 1-2’ in width and will physically not allow drivers to create a third lane.</p> <p>c. A traffic analysis was conducted which evaluated the traffic operations at the intersection and determined the intersection would operate with acceptable delays and queue lengths.</p> |
| 50 | If any permanent or temporary easements are needed to construct improvements that require an agreement with homeowners, it should be noted that residents living in Arden lease the land from the Arden community or other property trust. (Comment received at Public Meeting held on 2/11) | Comment received |
| 51 | Can a measurement be added to the display depicting the changes in clear zone and lateral offset? (Comment received at Public Meeting held on 2/11) | As the clear zone / lateral offset shown in the presentation is estimated based on the concept plan and the decision whether to use lateral offset or clear zone must still be finalized during the design process, a misleading dimension does not want to be shown. |
| 52 | Vehicles making a right turn on red along NB Marsh Road are creating issues as the majority of them are incorrectly accessing Harvey Road. Would we be able to post additional signage to inform motorists of the 5-legged configuration of the intersection? (Comment received at Public Meeting held on 2/11) | As part of the design phase, additional signage can be investigated to further reinforce right turn on red restriction. |