



STATE OF DELAWARE  
**DEPARTMENT OF TRANSPORTATION**  
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DOVER, DELAWARE 19903

JENNIFER COHAN  
SECRETARY

February 6, 2015

U.S. Department of Transportation  
Dockets Management Facility  
Room W12-140  
1200 New Jersey Avenue, S.E.  
Washington, D.C. 20590

**RE: FHWA Docket No. FHWA-2014-0039**  
*ET-Plus Guardrail End Terminal*

AGENCY: Federal highway Administration (FHWA) Department of Transportation (DOT)  
ACTION: Notice; Request for Information

This letter is in response to the Federal Highway Administration (FHWA) request for information on the above referenced federal register notice titled *ET-Plus Guardrail End Terminal*.

The Delaware Department of Transportation (DelDOT) is responsible for operating, maintaining and improving over 89 percent of the 13,500 lane miles of roads in Delaware, including both state and local roads, multiple toll facilities, over 1,000 traffic signals and over 250,000 signs. Delaware is one of only a few states with such a high percentage of public roads under the State Department of Transportation jurisdiction; the national average is approximately 20%.

DelDOT has reviewed FHWA's request for information related to the ET-Plus Guardrail End Terminal. DelDOT does not maintain the majority of detailed information that FHWA is requesting involving the ET-Plus. Crash reports in Delaware do not differentiate between the various styles of end terminals that are installed along our roadways. Therefore, we are unable to query only those crashes involving the ET-Plus and as such are not able to provide the specific crash narratives, crash diagrams, crash severity and other crash and vehicle related information that is requested in the Federal Notice. In addition, FHWA has requested "as installed" dimensions of the ET-Plus end terminal including the channel width, exit gap, guide chute exit height and outside guide channel length. Aside from the channel width dimension, DelDOT's guardrail inventory does not capture the other requested dimensions. A search of shop drawings from previously accepted construction projects would not yield credible results of this information as the guardrail end terminals may have been changed as part of maintenance contracts due to repairs and replacements.

While DelDOT is unable to provide the majority of detailed information requested by FHWA, we are able to provide the following information for your review and consideration:

1. Aggregate number of crashes in Delaware over the last five years that involve guardrail end treatments.
2. The channel width dimensions for the ET-Plus end treatments that DelDOT has in its inventory based upon a statewide inventory update conducted in November and December 2014.
3. A summary of DelDOT's ad-hoc in-service evaluation data of the ET-Plus guardrail end terminal.

**Guardrail End Terminal Crashes:**

Using the Department's *Crash Analysis Reporting System (CARS)*, aggregate numbers of crashes involving guardrail end terminals were queried. The data query covers the period between January 1, 2010 and December 31, 2014. In order to properly capture the total number of crashes involving a guardrail end terminal, we looked at both the "first harmful event" and "most harmful event" data entries and filtered out duplicate results. These two categories capture the first harmful and most harmful event of each individual crash. Table 1, below, depicts the number of crashes involving a guardrail end terminal by year and crash severity.

| <b>Table 1</b>   |                        |                      |            |          |            |
|--|------------------------|----------------------|------------|----------|------------|
| <b>Crashes Involving Guardrail End Terminals by Severity</b> |                        |                      |            |          |            |
|  | Non-Reportable Crashes | Property Damage Only | Injury     | Fatal    | Totals     |
| 2010   | 9                      | 68                   | 27         | 0        | 104        |
| 2011   | 8                      | 69                   | 34         | 0        | 111        |
| 2012   | 9                      | 62                   | 34         | 0        | 105        |
| 2013   | 9                      | 74                   | 33         | 0        | 116        |
| 2014*  | 15                     | 78                   | 22         | 1        | 116        |
| <b>Totals</b>  | <b>50</b>              | <b>351</b>           | <b>150</b> | <b>1</b> | <b>552</b> |

*\*Data up through 12/31/14 - Does not account crashes where the report has not yet been approved*

Table 2, on the next page, depicts the number of crashes involving a guardrail end terminal compared to the total number of reportable crashes statewide. As shown in Table 2, Delaware averages approximately 110 crashes per year involving a guardrail end terminal. The total number of crashes involving a guardrail end terminal constitutes half of a percent of all crashes that occur annually statewide.

| <b>Table 2<br/>Crashes Involving Guardrail End Terminals<br/>Comparison to Statewide Crashes</b> |                                      |                         |                         |
|--|--------------------------------------|-------------------------|-------------------------|
|  | Total Statewide Crashes <sup>1</sup> | # Crashes Guardrail End | % Crashes Guardrail End |
| 2010   | 20,697                               | 104                     | 0.502%                  |
| 2011   | 20,872                               | 111                     | 0.532%                  |
| 2012   | 21,202                               | 105                     | 0.495%                  |
| 2013   | 22,453                               | 116                     | 0.517%                  |
| 2014*  | 22,825                               | 116                     | 0.508%                  |
| <b>Totals</b>  | <b>108,049</b>                       | <b>552</b>              | <b>0.511%</b>           |

\*Data up through 12/31/14 - Does not account crashes where the report has not yet been approved

<sup>1</sup>Total crashes represents all reportable crashes (excludes non-reportable crashes)

**Delaware’s ET-Plus Inventory and Channel Width:**

As part of Delaware’s efforts to assess the number of ET-Plus guardrail end terminals in its inventory, DelDOT conducted a field review of all Type 1 (tangent style) guardrail end terminals in November and December 2014. The goal of the field review was to document each style of Type 1 end terminal on Delaware roadways and collect the channel width dimension of those terminals. Table 3 below depicts the number of each type of Type 1 end terminal on Delaware’s roadways.

| <b>Table 3<br/>Delaware’s Type 1 End Treatment Inventory</b> |                 |
|--|-----------------|
| <b>End Treatment Type</b>                                    | <b>Quantity</b> |
| <b>ET-Plus</b>   | <b>769</b>      |
| <b>ET-31</b>   | <b>489</b>      |
| <b>ET-2000</b>   | <b>337</b>      |
| <b>SKT-350</b>   | <b>477</b>      |
| <b>FLEAT 350</b>   | <b>229</b>      |
| <b>FLEAT MT</b>  | <b>11</b>       |
| <b>Quadtrend</b>   | <b>1</b>        |
| <b>Total</b>   | <b>2313</b>     |

As noted in the table, there are 769 ET-Plus guardrail end terminals in Delaware’s inventory. Attachment A provides a listing that depicts the location of each of the ET-Plus guardrail end terminals in our inventory and the associated channel width dimension of each of those devices. Channel width dimensions of the remaining end terminals in Delaware can be provided upon request of FHWA.

**Ad-hoc In-Service Evaluation:**

Due to the information being released regarding the ET-Plus guardrail end terminal, DelDOT began an in-service evaluation of its guardrail end terminals in September 2014. The in-service evaluation included the gathering of photographic information of end terminal strikes when our Maintenance and Operations (M&O) forces were called to inspect the devices after a crash. Our M&O forces were asked

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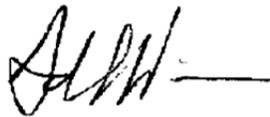
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to get photos of the device that was impacted, a measurement of the channel width of the device and a work order number for tracking purposes. From September 2014 to present, we gathered information on 12 end terminal impacts, 8 of which involved the ET-Plus. Table 4, in Attachment B, depicts the in-service evaluation information that DeIDOT obtained regarding the ET-Plus end terminal. Included with this letter are photographs of each end terminal strike identified in Table 4 as well as the associated crash report if a crash report existed for that particular incident.

The Delaware Department of Transportation appreciates the opportunity to respond to FHWA's request for information related to the ET-Plus guardrail end terminal. Please feel free to contact me if you would like to discuss any of our comments in greater detail. I can be reached at (302) 659-4073.

Sincerely,

A handwritten signature in black ink, appearing to read 'ASW', followed by a horizontal line.

Adam S. Weiser, P.E., PTOE  
Safety Programs Manager  
Division of Transportation Solutions

ASW

Cc: Rob McCleary, Chief Engineer

Mark Luszcz, Chief Traffic Engineer

Maureen Kelley, Guardrail Working Group Co-Chair

LaTonya Gilliam, NPDES Engineer

Patrick Kennedy, Operations and Safety Engineer, FHWA Delaware Division

**ATTACHMENT A**

# DelDOT\_EndTreatment Inventory\_ Trinity\_ ET Plus

| REFERENCE | ROAD_NAME           | DIRECTION | SIDE_OF_RD | DISTRICT_N       | ET_Type          | Channel_Wi |
|-----------|---------------------|-----------|------------|------------------|------------------|------------|
| 2012092   | Newport Rd          | NB        | Right      | North District   | Tangent - Type 1 | 4          |
| 2012023   | Concord Rd          | WB        | Right      | South District   | Tangent - Type 1 | 4          |
| 2012002   | Greenhurst Farm Rd  | SB        | Right      | South District   | Tangent - Type 1 | 4          |
| 2012115   | Bay Rd              | SB        | Right      | Central District | Tangent - Type 1 | 4          |
| 2079      | Brenford Rd         | NB        | Right      | Central District | Tangent - Type 1 | 4          |
| 2080      | Brenford Rd         | SB        | Right      | Central District | Tangent - Type 1 | 4          |
| 2012080   | Summit Bridge Rd    | NB        | Right      | Canal District   | Tangent - Type 1 | 4          |
| 2039      | Stein Hwy           | EB        | Right      | South District   | Tangent - Type 1 | 4          |
| 2040      | Stein Hwy           | EB        | Right      | South District   | Tangent - Type 1 | 4          |
| 2041      | Stein Hwy           | WB        | Right      | South District   | Tangent - Type 1 | 4          |
| 5078      | Alms House Rd       | WB        | Right      | South District   | Tangent - Type 1 | 4          |
| 1925      | Coastal Hwy         | NB        | Right      | South District   | Tangent - Type 1 | 4          |
| 1944      | Hillyard Rd         | NB        | Right      | Central District | Tangent - Type 1 | 4          |
| 5299      | Baker Mill Rd       | EB        | Right      | South District   | Tangent - Type 1 | 4          |
| 5345      | Rementer Rd         | SB        | Right      | South District   | Tangent - Type 1 | 4          |
| 5268      | Rifle Range Rd      | WB        | Right      | South District   | Tangent - Type 1 | 4          |
| 5289      | Clendaniel Pond Rd  | SB        | Right      | South District   | Tangent - Type 1 | 4          |
| 5289      | Clendaniel Pond Rd  | SB        | Right      | South District   | Tangent - Type 1 | 4          |
| 5298      | Baker Mill Rd       | WB        | Right      | South District   | Tangent - Type 1 | 4          |
| 5191      | Nassau Commans Blvd | SB        | Right      | South District   | Tangent - Type 1 | 4          |
| 5210      | Whitesville Rd      | WB        | Right      | South District   | Tangent - Type 1 | 4          |
| 5211      | Millsboro Hwy       | EB        | Right      | South District   | Tangent - Type 1 | 4          |
| 5214      | Millsboro Hwy       | WB        | Right      | South District   | Tangent - Type 1 | 4          |

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| REFERENCE | ROAD_NAME           | DIRECTION | SIDE_OF_RD | DISTRICT_N       | ET_Type          | Channel_Wi |
|-----------|---------------------|-----------|------------|------------------|------------------|------------|
| 5229      | Millsboro Hwy       | NB        | Right      | South District   | Tangent - Type 1 | 4          |
| 115       | Concord Rd          | WB        | Right      | South District   | Tangent - Type 1 | 4          |
| 5386      | Woodland Rd         | NB        | Right      | South District   | Tangent - Type 1 | 4          |
| 5383      | Woodland Rd         | SB        | Right      | South District   | Tangent - Type 1 | 4          |
| 5420      | Poplar St           | SB        | Right      | South District   | Tangent - Type 1 | 4          |
| 5447      | Sharptown Rd        | WB        | Right      | South District   | Tangent - Type 1 | 4          |
| 5451      | Branch School Rd    | NB        | Right      | South District   | Tangent - Type 1 | 4          |
| 1044      | John J Williams Hwy | EB        | Right      | South District   | Tangent - Type 1 | 4          |
| 0         |                     |           |            |                  | Tangent - Type 1 | 4          |
| 1054      | Coastal Hwy         | SB        | Right      | South District   | Tangent - Type 1 | 4          |
| 5674      | Bay Rd              | SB        | Right      | Central District | Tangent - Type 1 | 4          |
| 5677      | Bay Rd              | NB        | Left       | Central District | Tangent - Type 1 | 4          |
| 5683      | North Dupont Blvd   | NB        | Left       | Central District | Tangent - Type 1 | 4          |
| 122       | Seaford Rd          | NB        | Right      | South District   | Tangent - Type 1 | 4          |
| 5838      | Veale Rd            | EB        | Right      | Central District | Tangent - Type 1 | 4          |
| 164       | Central Ave         | NB        | Right      | South District   | Tangent - Type 1 | 4          |
| 111       | Hardscrabble Rd     | EB        | Right      | South District   | Tangent - Type 1 | 4          |
| 13        | Shawnee Rd          | EB        | Right      | South District   | Tangent - Type 1 | 4          |
| 5800      | Coastal Hwy         | SB        | Right      | South District   | Tangent - Type 1 | 4          |
| 1144      | New Rd              | SB        | Right      | South District   | Tangent - Type 1 | 4          |
| 1144      | New Rd              | SB        | Right      | South District   | Tangent - Type 1 | 4          |
| 1154      | John J Williams Hwy | SB        | Right      | South District   | Tangent - Type 1 | 4          |
| 5936      | Fast Landing Rd     | WB        | Right      | Central District | Tangent - Type 1 | 4          |
| 5989      | Little Creek Rd     | EB        | Right      | Central District | Tangent - Type 1 | 4          |
| 5991      | S Little Creek Rd   | WB        | Right      | Central District | Tangent - Type 1 | 4          |
| 5894      | McCauley Pond Rd    | NB        | Right      | Central District | Tangent - Type 1 | 4          |

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| REFERENCE | ROAD_NAME                 | DIRECTION | SIDE_OF_RD | DISTRICT_N       | ET_Type          | Channel_Wi |
|-----------|---------------------------|-----------|------------|------------------|------------------|------------|
|           | 6270 River Rd             | NB        | Right      | Canal District   | Tangent - Type 1 | 4          |
|           | 6254 Wrangle Hill Rd      | WB        | Right      | Canal District   | Tangent - Type 1 | 4          |
|           | 6563 Summit Bridge Rd     | NB        | Right      | Canal District   | Tangent - Type 1 | 4          |
|           | 6650 Vet Mem Hwy          | SB        | Right      | North District   | Tangent - Type 1 | 4          |
|           | 6854 JFK Memorial Hwy     | SB        | Right      | Canal District   | Tangent - Type 1 | 4          |
|           | 1405 Salem Church Rd      | SB        | Right      | Canal District   | Tangent - Type 1 | 4          |
|           | 7078 I-95                 | NB        | Left       | North District   | Tangent - Type 1 | 4          |
|           | 1434 Old Chooches Brdg Rd | EB        | Right      | Canal District   | Tangent - Type 1 | 4          |
|           | 1370 Basin Rd             | NB        | Right      | Canal District   | Tangent - Type 1 | 4          |
|           | 1386 I-95                 | SB        | Right      | North District   | Tangent - Type 1 | 4          |
|           | 1582 New Linden Hill Rd   | NB        | Right      | North District   | Tangent - Type 1 | 4          |
|           | 1599 Stoney Batter Rd     | WB        | Right      | North District   | Tangent - Type 1 | 4          |
|           | 7138 Martin Luther King B | WB        | Left       | North District   | Tangent - Type 1 | 4          |
|           | 7152 Centerville Rd       | NB        | Right      | North District   | Tangent - Type 1 | 4          |
|           | 3046 Fox Hunters Rd       | NB        | Right      | Central District | Tangent - Type 1 | 4          |
|           | <null><null>              | <null>    | <null>     | <null>           | Tangent - Type 1 | 4          |
|           | 1716 Vietnam Vet Hwy      | NB        | Right      | North District   | Tangent - Type 1 | 4          |
|           | 112514 <null>             | <null>    | <null>     | <null>           | Tangent - Type 1 | 4          |
|           | 3077 Centre Rd            | SB        | Right      | North District   | Tangent - Type 1 | 4          |
|           | 3079 Centre Rd            | NB        | Right      | North District   | Tangent - Type 1 | 4          |
|           | 112514 <null>             | <null>    | <null>     | <null>           | Tangent - Type 1 | 4          |
|           | 2013019 Victory Chapel Rd | SB        | Right      | Central District | Tangent - Type 1 | 4          |
|           | 7513 Old Kennett Rd       | SB        | Right      | North District   | Tangent - Type 1 | 4          |
|           | 7514 Old Kennett Rd       | SB        | Right      | North District   | Tangent - Type 1 | 4          |
|           | 2014039 US 13             | NB        | Left       | Canal District   | Tangent - Type 1 | 4          |
|           | 2014028 Canterbury Rd     | NB        | Right      | Central District | Tangent - Type 1 | 4          |

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| REFERENCE | ROAD_NAME                 | DIRECTION | SIDE_OF_RD | DISTRICT_N       | ET_Type          | Channel_Wi |
|-----------|---------------------------|-----------|------------|------------------|------------------|------------|
|           | 1763 Dupont Hwy           | SB        | Right      | Canal District   | Tangent - Type 1 | 4          |
| 2014022   | Todds Mill Rd             | NB        | Right      | Central District | Tangent - Type 1 | 4          |
| 111214    | <null>                    | <null>    | <null>     | <null>           | Tangent - Type 1 | 4          |
| 24.999    | <null>                    | <null>    | <null>     | <null>           | Tangent - Type 1 | 4          |
| 111314    | <null>                    | <null>    | <null>     | <null>           | Tangent - Type 1 | 4          |
|           | 9010 Shady Bridge Rd      | NB        | Right      | Central District | Tangent - Type 1 | 4          |
|           | 0                         |           |            |                  | Tangent - Type 1 | 4          |
| 111314    | <null>                    | <null>    | <null>     | <null>           | Tangent - Type 1 | 4          |
| 111314    | <null>                    | <null>    | <null>     | <null>           | Tangent - Type 1 | 4          |
| 111314    | <null>                    | <null>    | <null>     | <null>           | Tangent - Type 1 | 4          |
|           | 7537 Concord Pike         | NB        | Right      | North District   | Tangent - Type 1 | 4          |
|           | <null><null>              | <null>    | <null>     | <null>           | Tangent - Type 1 | 4          |
| 112014    | <null>                    | <null>    | <null>     | <null>           | Tangent - Type 1 | 4          |
| 2012096   | Old Kennett Rd            | NB        | Right      | North District   | Tangent - Type 1 | 4          |
| 2012023   | Concord Rd                | WB        | Right      | South District   | Tangent - Type 1 | 4          |
| 2012021   | Edwardsville Rd           | NB        | Right      | Central District | Tangent - Type 1 | 4          |
| 2012108   | Mount Olive Cemetary      | NB        | Right      | Central District | Tangent - Type 1 | 4          |
| 2012108   | Mount Olive Cemetary      | NB        | Right      | Central District | Tangent - Type 1 | 4          |
|           | 2071 Fork Landing Rd      | WB        | Right      | Central District | Tangent - Type 1 | 4          |
|           | 2074 Sudlersville Rd      | WB        | Right      | Central District | Tangent - Type 1 | 4          |
|           | 2077 Sudlersville Rd      | EB        | Right      | Central District | Tangent - Type 1 | 4          |
|           | 2031 Wesley Church Rd     | SB        | Right      | South District   | Tangent - Type 1 | 4          |
|           | 2016 Federalsburg Rd      | SB        | Right      | South District   | Tangent - Type 1 | 4          |
|           | 4029 Blackbird Landing Rd | SB        | Right      | Canal District   | Tangent - Type 1 | 4          |
|           | 1017 Seashore Hwy         | NB        | Right      | South District   | Tangent - Type 1 | 4          |
|           | 5017 Sussex Hwy           | SB        | Right      | South District   | Tangent - Type 1 | 4          |

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| REFERENCE | ROAD_NAME                | DIRECTION | SIDE_OF_RD | DISTRICT_N       | ET_Type          | Channel_Wi |
|-----------|--------------------------|-----------|------------|------------------|------------------|------------|
|           | 5232 Millsboro Hwy       | SB        | Right      | South District   | Tangent - Type 1 | 4          |
|           | 5243 Armory Rd           | SB        | Right      | South District   | Tangent - Type 1 | 4          |
|           | 5245 Omar Rd             | SB        | Right      | South District   | Tangent - Type 1 | 4          |
|           | 5245 Omar Rd             | SB        | Right      | South District   | Tangent - Type 1 | 4          |
|           | 5299 Baker Mill Rd       | EB        | Right      | South District   | Tangent - Type 1 | 4          |
|           | 0                        |           |            |                  | Tangent - Type 1 | 4          |
|           | 5267 Rifle Range Rd      | WB        | Right      | South District   | Tangent - Type 1 | 4          |
|           | 5276 Bowdens Garage Rd   | WB        | Right      | South District   | Tangent - Type 1 | 4          |
|           | 5277 Bowdens Garage Rd   | WB        | Right      | South District   | Tangent - Type 1 | 4          |
|           | 5278 Federalsburg Rd     | WB        | Right      | South District   | Tangent - Type 1 | 4          |
|           | 5293 Asbury Rd           | NB        | Right      | South District   | Tangent - Type 1 | 4          |
|           | 5293 Asbury Rd           | NB        | Right      | South District   | Tangent - Type 1 | 4          |
|           | 5210 Whitesville Rd      | WB        | Right      | South District   | Tangent - Type 1 | 4          |
|           | 5220 Daisey Rd           | WB        | Right      | South District   | Tangent - Type 1 | 4          |
|           | 5473 Park Ave            | SB        | Right      | South District   | Tangent - Type 1 | 4          |
|           | 5474 Park Ave            | NB        | Right      | South District   | Tangent - Type 1 | 4          |
|           | 5475 Donovans Rd         | NB        | Right      | South District   | Tangent - Type 1 | 4          |
|           | 5384 Woodland Rd         | NB        | Right      | South District   | Tangent - Type 1 | 4          |
|           | 5384 Woodland Rd         | NB        | Right      | South District   | Tangent - Type 1 | 4          |
|           | 0                        |           |            |                  | Tangent - Type 1 | 4          |
|           | 5452 Branch School Rd    | SB        | Right      | South District   | Tangent - Type 1 | 4          |
|           | 5453 Sharptown Rd        | EB        | Right      | South District   | Tangent - Type 1 | 4          |
|           | 1044 John J Williams Hwy | EB        | Right      | South District   | Tangent - Type 1 | 4          |
|           | 5742 Still Rd            | WB        | Right      | Central District | Tangent - Type 1 | 4          |
|           | 12 Shawnee Rd            | WB        | Right      | South District   | Tangent - Type 1 | 4          |
|           | 5837 Veale Rd            | WB        | Right      | Central District | Tangent - Type 1 | 4          |

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| REFERENCE | ROAD_NAME                | DIRECTION | SIDE_OF_RD | DISTRICT_N       | ET_Type          | Channel_Wi |
|-----------|--------------------------|-----------|------------|------------------|------------------|------------|
|           | 5838 Veale Rd            | EB        | Right      | Central District | Tangent - Type 1 | 4          |
|           | 0                        |           |            |                  | Tangent - Type 1 | 4          |
|           | 5843 Veale Rd            | EB        | Right      | Central District | Tangent - Type 1 | 4          |
|           | 1098 Patriot's Way       | SB        | Right      | South District   | Tangent - Type 1 | 4          |
|           | 13 Shawnee Rd            | EB        | Right      | South District   | Tangent - Type 1 | 4          |
|           | 5769 Killens Pond Rd     | SB        | Right      | Central District | Tangent - Type 1 | 4          |
|           | 5794 Sudlersville Rd     | SB        | Right      | Central District | Tangent - Type 1 | 4          |
|           | 5795 Sudlersville Rd     | SB        | Right      | Central District | Tangent - Type 1 | 4          |
|           | 1120 Wintien Rd          | NB        | Right      | South District   | Tangent - Type 1 | 4          |
|           | 1122 Wintien Rd          | NB        | Right      | South District   | Tangent - Type 1 | 4          |
|           | 6001 Trap Shooters Rd    | SB        | Right      | Central District | Tangent - Type 1 | 4          |
|           | 5935 Fast Landing Rd     | EB        | Right      | Central District | Tangent - Type 1 | 4          |
|           | 5989 Little Creek Rd     | EB        | Right      | Central District | Tangent - Type 1 | 4          |
|           | 6155 Sudlersville Rd     | EB        | Right      | Central District | Tangent - Type 1 | 4          |
|           | 6157 Sudlersville Rd     | WB        | Right      | Central District | Tangent - Type 1 | 4          |
|           | 6183 Dupont Hwy          | NB        | Right      | Canal District   | Tangent - Type 1 | 4          |
|           | 1166 Walther Rd          | SB        | Right      | Canal District   | Tangent - Type 1 | 4          |
|           | 1166 Walther Rd          | SB        | Right      | Canal District   | Tangent - Type 1 | 4          |
|           | 6102 Korean War Vet. Hwy | SB        | Left       | Central District | Tangent - Type 1 | 4          |
|           | 6310 Woodland Beach Rd   | WB        | Right      | Central District | Tangent - Type 1 | 4          |
|           | 6338 Chesapeake City Rd  | EB        | Right      | Canal District   | Tangent - Type 1 | 4          |
|           | 6276 River Rd            | SB        | Right      | Canal District   | Tangent - Type 1 | 4          |
|           | 6308 Woodland Beach Rd   | EB        | Right      | Central District | Tangent - Type 1 | 4          |
|           | 6247 Bayview Rd          | EB        | Right      | Canal District   | Tangent - Type 1 | 4          |
|           | 6511 Christina Pkwy      | EB        | Right      | Canal District   | Tangent - Type 1 | 4          |
|           | 6448 Korean War Vet. Hwy | NB        | Right      | Central District | Tangent - Type 1 | 4          |

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| REFERENCE | ROAD_NAME          | DIRECTION | SIDE_OF_RD | DISTRICT_N       | ET_Type          | Channel_Wi |
|-----------|--------------------|-----------|------------|------------------|------------------|------------|
| 6722      | Del City Port Penn | NB        | Right      | Canal District   | Tangent - Type 1 | 4          |
| 0         |                    |           |            |                  | Tangent - Type 1 | 4          |
| 6689      | Vietnam Vet Hwy    | NB        | Right      | North District   | Tangent - Type 1 | 4          |
| 0         |                    |           |            |                  | Tangent - Type 1 | 4          |
| 6575      | College Ave        | NB        | Left       | Canal District   | Tangent - Type 1 | 4          |
| 0         |                    |           |            |                  | Tangent - Type 1 | 4          |
| 6954      | Limestone Rd       | NB        | Right      | North District   | Tangent - Type 1 | 4          |
| 6813      | Paddock Rd         | EB        | Right      | Canal District   | Tangent - Type 1 | 4          |
| 0         |                    |           |            |                  | Tangent - Type 1 | 4          |
| 0         |                    |           |            |                  | Tangent - Type 1 | 4          |
| 0         |                    |           |            |                  | Tangent - Type 1 | 4          |
| 1433      | Old Cooches Rd     | EB        | Right      | Canal District   | Tangent - Type 1 | 4          |
| 1598      | Stoney Batter Rd   | EB        | Right      | North District   | Tangent - Type 1 | 4          |
| 1602      | Stoney Batter Rd   | EB        | Right      | North District   | Tangent - Type 1 | 4          |
| 1612      | JFK Memorial Hwy   | NB        | Median     | Canal District   | Tangent - Type 1 | 4          |
| 7086      | Philadelphia Pike  | WB        | Right      | North District   | Tangent - Type 1 | 4          |
| 7152      | Centerville Rd     | NB        | Right      | North District   | Tangent - Type 1 | 4          |
| 112214    | <null>             | <null>    | <null>     | <null>           | Tangent - Type 1 | 4          |
| <null>    | <null>             | <null>    | <null>     | <null>           | Tangent - Type 1 | 4          |
| 3094      | Bay Rd             | NB        | Right      | Central District | Tangent - Type 1 | 4          |
| 112514    | <null>             | <null>    | <null>     | <null>           | Tangent - Type 1 | 4          |
| 2013026   | Mahan Corner Rd    | NB        | Right      | Central District | Tangent - Type 1 | 4          |
| 2013017   | Victory Chapel Rd  | NB        | Right      | Central District | Tangent - Type 1 | 4          |
| 0         |                    |           |            |                  | Tangent - Type 1 | 4          |
| 7510      | Yorklyn Rd         | NB        | Right      | North District   | Tangent - Type 1 | 4          |
| 2014027   | Canterbury Rd      | SB        | Right      | Central District | Tangent - Type 1 | 4          |

**ATTACHMENT A**

| REFERENCE            | ROAD_NAME            | DIRECTION | SIDE_OF_RD | DISTRICT_N       | ET_Type          | Channel_Wi |
|----------------------|----------------------|-----------|------------|------------------|------------------|------------|
| 2014030              | Canterbury Rd        | SB        | Right      | Central District | Tangent - Type 1 | 4          |
| 2014021              | Todds Mill Rd        | SB        | Right      | Central District | Tangent - Type 1 | 4          |
| 2014022              | Todds Mill Rd        | NB        | Right      | Central District | Tangent - Type 1 | 4          |
| 7590 13 SB to 295 SB |                      | SB        | Right      | Canal District   | Tangent - Type 1 | 4          |
| 7613 295 NB to 9 SB  |                      | NB        | Left       | Canal District   | Tangent - Type 1 | 4          |
| 24.999               | <null>               | <null>    | <null>     | <null>           | Tangent - Type 1 | 4          |
| 111314               | <null>               | <null>    | <null>     | <null>           | Tangent - Type 1 | 4          |
| 111314               | <null>               | <null>    | <null>     | <null>           | Tangent - Type 1 | 4          |
| 111314               | <null>               | <null>    | <null>     | <null>           | Tangent - Type 1 | 4          |
| 24.999               | <null>               | <null>    | <null>     | <null>           | Tangent - Type 1 | 4          |
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| 112114               | <null>               | <null>    | <null>     | <null>           | Tangent - Type 1 | 4          |
| 2012041              | O'Neals Rd           | NB        | Right      | South District   | Tangent - Type 1 | 4          |
| 2012064              | I-95                 | SB        | Right      | Canal District   | Tangent - Type 1 | 4          |
| 2052                 | Dupont Blvd          | NB        | Right      | South District   | Tangent - Type 1 | 4          |
| 2069                 | Fork Landing Rd      | EB        | Right      | Central District | Tangent - Type 1 | 4          |
| 2078                 | Brenford Rd          | NB        | Right      | Central District | Tangent - Type 1 | 4          |
| 2029                 | Craigs Mill Rd       | WB        | Right      | South District   | Tangent - Type 1 | 4          |
| 2030                 | Craigs Mill Rd       | EB        | Right      | South District   | Tangent - Type 1 | 4          |
| 2030                 | Craigs Mill Rd       | EB        | Right      | South District   | Tangent - Type 1 | 4          |
| 2016                 | Federalburg Rd       | SB        | Right      | South District   | Tangent - Type 1 | 4          |
| 2021                 | Sussex Hwy           | NB        | Right      | South District   | Tangent - Type 1 | 4          |
| 4028                 | Blackbird Landing Rd | NB        | Right      | Canal District   | Tangent - Type 1 | 4          |
| 1828                 | Old Newark Rd        | EB        | Right      | Canal District   | Tangent - Type 1 | 4          |
| 0                    |                      |           |            |                  | Tangent - Type 1 | 4          |
| 1006                 | Hickman Rd           | WB        | Right      | Central District | Tangent - Type 1 | 4          |

## ATTACHMENT A

| REFERENCE | ROAD_NAME                | DIRECTION | SIDE_OF_RD | DISTRICT_N       | ET_Type          | Channel_Wi |
|-----------|--------------------------|-----------|------------|------------------|------------------|------------|
|           | 1009 Seashore Hwy        | WB        | Right      | South District   | Tangent - Type 1 | 4          |
|           | 5018 Sussex Hwy          | SB        | Right      | South District   | Tangent - Type 1 | 4          |
|           | 5135 Middleford Rd       | SB        | Right      | South District   | Tangent - Type 1 | 4          |
|           | 1922 Sunnyside Rd        | NB        | Right      | Central District | Tangent - Type 1 | 4          |
|           | 1923 Sunnyside Rd        | SB        | Right      | Central District | Tangent - Type 1 | 4          |
|           | 1003 Hickman Rd          | EB        | Right      | Central District | Tangent - Type 1 | 4          |
|           | 1005 Hickman Rd          | WB        | Right      | Central District | Tangent - Type 1 | 4          |
|           | 5233 Millsboro Hwy       | SB        | Right      | South District   | Tangent - Type 1 | 4          |
|           | 5246 Omar Rd             | NB        | Right      | South District   | Tangent - Type 1 | 4          |
|           | 5358 River Rd            | NB        | Right      | South District   | Tangent - Type 1 | 4          |
|           | 5178 Coastal Hwy         | NB        | Right      | South District   | Tangent - Type 1 | 4          |
|           | 5188 Coastal Hwy         | NB        | Right      | South District   | Tangent - Type 1 | 4          |
|           | 5190 Coastal Hwy         | SB        | Right      | South District   | Tangent - Type 1 | 4          |
|           | 5209 Whitesville Rd      | EB        | Right      | South District   | Tangent - Type 1 | 4          |
|           | 5473 Park Ave            | SB        | Right      | South District   | Tangent - Type 1 | 4          |
|           | 5476 Lavinia St          | SB        | Right      | South District   | Tangent - Type 1 | 4          |
|           | 5513 Laurel Rd           | WB        | Right      | South District   | Tangent - Type 1 | 4          |
|           | 5515 Laurel Rd           | EB        | Right      | South District   | Tangent - Type 1 | 4          |
|           | 5387 Woodland Rd         | SB        | Right      | South District   | Tangent - Type 1 | 4          |
|           | 0                        |           |            |                  | Tangent - Type 1 | 4          |
|           | 5383 Woodland Rd         | SB        | Right      | South District   | Tangent - Type 1 | 4          |
|           | 5455 Sharptown Rd        | WB        | Right      | South District   | Tangent - Type 1 | 4          |
|           | 1045 John J Williams Hwy | WB        | Right      | South District   | Tangent - Type 1 | 4          |
|           | 5639 Mud Mill Rd         | WB        | Right      | Central District | Tangent - Type 1 | 4          |
|           | 5706 Fenwick Rd          | EB        | Right      | South District   | Tangent - Type 1 | 4          |
|           | 321 Lewes Georgetown     | EB        | Right      | South District   | Tangent - Type 1 | 4          |

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| REFERENCE | ROAD_NAME                | DIRECTION | SIDE_OF_RD | DISTRICT_N       | ET_Type          | Channel_Wi |
|-----------|--------------------------|-----------|------------|------------------|------------------|------------|
|           | 321 Lewes Georgetown     | EB        | Right      | South District   | Tangent - Type 1 | 4          |
|           | 312 Cave Neck Rd         | EB        | Right      | South District   | Tangent - Type 1 | 4          |
|           | 5831 Dupont Hwy          | NB        | Right      | Central District | Tangent - Type 1 | 4          |
|           | 5842 Veale Rd            | WB        | Right      | Central District | Tangent - Type 1 | 4          |
|           | 113 County Seat Hwy      | WB        | Right      | South District   | Tangent - Type 1 | 4          |
|           | 5867 Halltown Rd         | EB        | Right      | Central District | Tangent - Type 1 | 4          |
|           | 1098 Patriot's Way       | SB        | Right      | South District   | Tangent - Type 1 | 4          |
|           | 5750 Little Mastens Cnr  | NB        | Right      | Central District | Tangent - Type 1 | 4          |
|           | 1122 Wintien Rd          | NB        | Right      | South District   | Tangent - Type 1 | 4          |
|           | 1123 Wintien Rd          | SB        | Right      | South District   | Tangent - Type 1 | 4          |
|           | 1143 New Rd              | SB        | Right      | South District   | Tangent - Type 1 | 4          |
|           | 0                        |           |            |                  | Tangent - Type 1 | 4          |
|           | 0                        |           |            |                  | Tangent - Type 1 | 4          |
|           | 6146 Clayton Delaney Rd  | WB        | Right      | Canal District   | Tangent - Type 1 | 4          |
|           | 6186 Korean War Vet. Hwy | SB        | Right      | Canal District   | Tangent - Type 1 | 4          |
|           | 6200 Korean War Vet. Hwy | NB        | Right      | Canal District   | Tangent - Type 1 | 4          |
|           | 1163 Walther Rd          | SB        | Right      | Canal District   | Tangent - Type 1 | 4          |
|           | 6347 Summit Bridge Rd    | SB        | Right      | Canal District   | Tangent - Type 1 | 4          |
|           | 6271 River Rd            | NB        | Right      | Canal District   | Tangent - Type 1 | 4          |
|           | 1311 13 SB to Basin Rd   | NB        | Left       | Canal District   | Tangent - Type 1 | 4          |
|           | 6253 Wrangle Hill Rd     | EB        | Right      | Canal District   | Tangent - Type 1 | 4          |
|           | 6407 Dupont Pkwy         | SB        | Left       | Canal District   | Tangent - Type 1 | 4          |
|           | 6445 Korean War Vet. Hwy | NB        | Left       | Central District | Tangent - Type 1 | 4          |
|           | 0                        |           |            |                  | Tangent - Type 1 | 4          |
|           | 0                        |           |            |                  | Tangent - Type 1 | 4          |
|           | 6576 College Ave         | SB        | Left       | Canal District   | Tangent - Type 1 | 4          |

**ATTACHMENT A**

| REFERENCE | ROAD_NAME         | DIRECTION | SIDE_OF_RD | DISTRICT_N       | ET_Type          | Channel_Wi |
|-----------|-------------------|-----------|------------|------------------|------------------|------------|
| 6948      | Limestone Rd      | SB        | Right      | North District   | Tangent - Type 1 | 4          |
| 0         |                   |           |            |                  | Tangent - Type 1 | 4          |
| 0         |                   |           |            |                  | Tangent - Type 1 | 4          |
| 7064      | I-95              | NB        | Left       | North District   | Tangent - Type 1 | 4          |
| 0         |                   |           |            |                  | Tangent - Type 1 | 4          |
| 7079      | I-95              | NB        | Left       | North District   | Tangent - Type 1 | 4          |
| 1424      | Pike Creek Rd     | EB        | Right      | North District   | Tangent - Type 1 | 4          |
| 1605      | Stoney Batter Rd  | WB        | Right      | North District   | Tangent - Type 1 | 4          |
| 1637      | JFK Memorial Hwy  | NB        | Right      | Canal District   | Tangent - Type 1 | 4          |
| 1656      | 95 NB to 273 WB   | WB        | Left       | Canal District   | Tangent - Type 1 | 4          |
| 7099      | Concord Pike      | NB        | Right      | North District   | Tangent - Type 1 | 4          |
| 1493      | Lancaster Pike    | NB        | Right      | North District   | Tangent - Type 1 | 4          |
| 7147      | Centerville Rd    | SB        | Right      | North District   | Tangent - Type 1 | 4          |
| 3044      | Fox Hunters Rd    | SB        | Right      | Central District | Tangent - Type 1 | 4          |
| 3060      | Cabbage Pond Rd   | EB        | Right      | South District   | Tangent - Type 1 | 4          |
| 24.999    | <null>            | <null>    | <null>     | <null>           | Tangent - Type 1 | 4          |
| 112414    | <null>            | <null>    | <null>     | <null>           | Tangent - Type 1 | 4          |
| 112414    | <null>            | <null>    | <null>     | <null>           | Tangent - Type 1 | 4          |
| 112514    | <null>            | <null>    | <null>     | <null>           | Tangent - Type 1 | 4          |
| 112514    | <null>            | <null>    | <null>     | <null>           | Tangent - Type 1 | 4          |
| 3552      | Middleford Rd     | EB        | Right      | South District   | Tangent - Type 1 | 4          |
| 3553      | Middleford Rd     | EB        | Right      | South District   | Tangent - Type 1 | 4          |
| 24.999    | <null>            | <null>    | <null>     | <null>           | Tangent - Type 1 | 4          |
| 24.999    | <null>            | <null>    | <null>     | <null>           | Tangent - Type 1 | 4          |
| 2013014   | Jamison Corner Rd | NB        | Right      | Canal District   | Tangent - Type 1 | 4          |
| 2013015   | Jamison Corner Rd | NB        | Right      | Canal District   | Tangent - Type 1 | 4          |

**ATTACHMENT A**

| REFERENCE | ROAD_NAME                 | DIRECTION | SIDE_OF_RD | DISTRICT_N       | ET_Type          | Channel_Wi |
|-----------|---------------------------|-----------|------------|------------------|------------------|------------|
|           | 7512 Yorklyn Rd           | NB        | Right      | North District   | Tangent - Type 1 | 4          |
| 2013003   | Christiana Mall Rd        | EB        | Right      | Canal District   | Tangent - Type 1 | 4          |
|           | 7602 JFK Memorial Hwy     | SB        | Right      | Canal District   | Tangent - Type 1 | 4          |
|           | 7377 295 NB to NewCas Ave | NB        | Right      | Canal District   | Tangent - Type 1 | 4          |
| 24.999    | <null>                    | <null>    | <null>     | <null>           | Tangent - Type 1 | 4          |
|           | 9007 Shady Bridge rd      | SB        | Right      | Central District | Tangent - Type 1 | 4          |
| 111314    | <null>                    | <null>    | <null>     | <null>           | Tangent - Type 1 | 4          |
|           | 8764 Dupont Hwy           | SB        | Right      | Canal District   | Tangent - Type 1 | 4          |
| 111514    | <null>                    | <null>    | <null>     | <null>           | Tangent - Type 1 | 4          |
| 24.999    | <null>                    | <null>    | <null>     | <null>           | Tangent - Type 1 | 4          |
| 2012095   | Old Kennett Rd            | NB        | Right      | North District   | Tangent - Type 1 | 4          |
|           | 2055 Dupont Blvd          | SB        | Right      | South District   | Tangent - Type 1 | 4          |
|           | 2070 Fork Landing Rd      | EB        | Right      | Central District | Tangent - Type 1 | 4          |
|           | 2033 Wesley Church Rd     | SB        | Right      | South District   | Tangent - Type 1 | 4          |
|           | 2042 Woodyard Rd          | EB        | Right      | South District   | Tangent - Type 1 | 4          |
|           | 2019 Sussex Hwy           | NB        | Right      | South District   | Tangent - Type 1 | 4          |
|           | 4049 N Little Creek Rd    | WB        | Right      | Central District | Tangent - Type 1 | 4          |
|           | 4050 N Little Creek Rd    | WB        | Right      | Central District | Tangent - Type 1 | 4          |
|           | 1016 Seashore Hwy         | SB        | Right      | South District   | Tangent - Type 1 | 4          |
|           | 1007 Seashore Hwy         | WB        | Right      | South District   | Tangent - Type 1 | 4          |
|           | 5147 Nine Foot Rd         | EB        | Right      | South District   | Tangent - Type 1 | 4          |
|           | 5149 Nine Foot Rd         | WB        | Right      | South District   | Tangent - Type 1 | 4          |
|           | 5149 Nine Foot Rd         | WB        | Right      | South District   | Tangent - Type 1 | 4          |
|           | 1943 Hilyatd Rd           | SB        | Right      | Central District | Tangent - Type 1 | 4          |
|           | 5246 Omar Rd              | NB        | Right      | South District   | Tangent - Type 1 | 4          |
|           | 5269 Rifle Range Rd       | EB        | Right      | South District   | Tangent - Type 1 | 4          |

**ATTACHMENT A**

| REFERENCE | ROAD_NAME            | DIRECTION | SIDE_OF_RD | DISTRICT_N       | ET_Type          | Channel_Wi |
|-----------|----------------------|-----------|------------|------------------|------------------|------------|
| 5292      | Asbury Rd            | SB        | Right      | South District   | Tangent - Type 1 | 4          |
| 5292      | Asbury Rd            | SB        | Right      | South District   | Tangent - Type 1 | 4          |
| 5150      | Nine Foot Rd         | EB        | Right      | South District   | Tangent - Type 1 | 4          |
| 5198      | Coastal Hwy          | NB        | Left       | South District   | Tangent - Type 1 | 4          |
| 5213      | Millsboro Hwy        | WB        | Right      | South District   | Tangent - Type 1 | 4          |
| 5219      | Daisey Rd            | EB        | Right      | South District   | Tangent - Type 1 | 4          |
| 5229      | Millsboro Hwy        | NB        | Right      | South District   | Tangent - Type 1 | 4          |
| 5476      | Lavinia St           | SB        | Right      | South District   | Tangent - Type 1 | 4          |
| 5524      | Laurel Rd            | EB        | Right      | South District   | Tangent - Type 1 | 4          |
| 115       | Concord Rd           | WB        | Right      | South District   | Tangent - Type 1 | 4          |
| 5389      | Woodland Rd          | NB        | Right      | South District   | Tangent - Type 1 | 4          |
| 1039      | John J. Williams hwy | SB        | Right      | South District   | Tangent - Type 1 | 4          |
| 5446      | Sharptown Rd         | EB        | Right      | South District   | Tangent - Type 1 | 4          |
| 5451      | Branch School Rd     | NB        | Right      | South District   | Tangent - Type 1 | 4          |
| 5454      | Sharptown Rd         | EB        | Right      | South District   | Tangent - Type 1 | 4          |
| 320       | Lewes Georgetown     | WB        | Right      | South District   | Tangent - Type 1 | 4          |
| 320       | Lewes Georgetown     | WB        | Right      | South District   | Tangent - Type 1 | 4          |
| 123       | Seaford Rd           | SB        | Right      | South District   | Tangent - Type 1 | 4          |
| 123       | Seaford Rd           | SB        | Right      | South District   | Tangent - Type 1 | 4          |
| 0         |                      |           |            |                  | Tangent - Type 1 | 4          |
| 5858      | Veale Rd             | WB        | Right      | Central District | Tangent - Type 1 | 4          |
| 5762      | Carpenter Bridge Rd  | NB        | Right      | Central District | Tangent - Type 1 | 4          |
| 5776      | Dupont Hwy           | NB        | Right      | Central District | Tangent - Type 1 | 4          |
| 5790      | Sudlersville Rd      | NB        | Right      | Central District | Tangent - Type 1 | 4          |
| 1153      | John J Williams Hwy  | NB        | Right      | South District   | Tangent - Type 1 | 4          |
| 1153      | John J Williams Hwy  | NB        | Right      | South District   | Tangent - Type 1 | 4          |

**ATTACHMENT A**

| REFERENCE | ROAD_NAME                | DIRECTION | SIDE_OF_RD | DISTRICT_N       | ET_Type          | Channel_Wi |
|-----------|--------------------------|-----------|------------|------------------|------------------|------------|
|           | 1131 Beaver Dam Rd       | NB        | Right      | South District   | Tangent - Type 1 | 4          |
|           | 5986 Little Creek Rd     | EB        | Right      | Central District | Tangent - Type 1 | 4          |
|           | 5918 Frederica Rd        | SB        | Right      | Central District | Tangent - Type 1 | 4          |
|           | 5921 Bay Rd              | SB        | Right      | Central District | Tangent - Type 1 | 4          |
|           | 1229 Pulaski Hwy         | EB        | Right      | Canal District   | Tangent - Type 1 | 4          |
|           | 6195 Korean War Vet. Hwy | SB        | Right      | Canal District   | Tangent - Type 1 | 4          |
|           | 1160 Walther Rd          | SB        | Right      | Canal District   | Tangent - Type 1 | 4          |
|           | 1191 Pulaski Hwy         | EB        | Right      | Canal District   | Tangent - Type 1 | 4          |
|           | 1206 Pulaski Hwy         | WB        | Right      | Canal District   | Tangent - Type 1 | 4          |
|           | 6268 River Rd            | SB        | Right      | Canal District   | Tangent - Type 1 | 4          |
|           | 6342 Chesapeake City Rd  | WB        | Right      | Canal District   | Tangent - Type 1 | 4          |
|           | 0                        |           |            |                  | Tangent - Type 1 | 4          |
|           | 1239 Christiana Rd       | WB        | Right      | Canal District   | Tangent - Type 1 | 4          |
|           | 6562 Summit Bridge Rd    | SB        | Right      | Canal District   | Tangent - Type 1 | 4          |
|           | 0                        |           |            |                  | Tangent - Type 1 | 4          |
|           | 6632 Montchanin Rd       | NB        | Right      | North District   | Tangent - Type 1 | 4          |
|           | 1669 JFK Memorial Hwy    | SB        | Right      | Canal District   | Tangent - Type 1 | 4          |
|           | 1679 I-95                | SB        | Right      | North District   | Tangent - Type 1 | 4          |
|           | 1498 Old Wilmington Rd   | EB        | Right      | North District   | Tangent - Type 1 | 4          |
|           | 1518 Lancaster Pike      | WB        | Right      | North District   | Tangent - Type 1 | 4          |
|           | 1521 Neport Gap Pike     | WB        | Right      | North District   | Tangent - Type 1 | 4          |
|           | 3047 Fox Hunters Rd      | NB        | Right      | Central District | Tangent - Type 1 | 4          |
|           | 1697 Vietnam Vet Hwy     | NB        | Right      | North District   | Tangent - Type 1 | 4          |
| 112414    | <null>                   | <null>    | <null>     | <null>           | Tangent - Type 1 | 4          |
| 24.999    | <null>                   | <null>    | <null>     | <null>           | Tangent - Type 1 | 4          |
| 112514    | <null>                   | <null>    | <null>     | <null>           | Tangent - Type 1 | 4          |

**ATTACHMENT A**

| REFERENCE | ROAD_NAME            | DIRECTION | SIDE_OF_RD | DISTRICT_N       | ET_Type          | Channel_Wi |
|-----------|----------------------|-----------|------------|------------------|------------------|------------|
| 112514    | <null>               | <null>    | <null>     | <null>           | Tangent - Type 1 | 4          |
| 3555      | Middleford Rd        | WB        | Right      | South District   | Tangent - Type 1 | 4          |
| 2013016   | Victory Chapel Rd    | NB        | Right      | Central District | Tangent - Type 1 | 4          |
| 7508      | Yorklyn Rd           | NB        | Right      | North District   | Tangent - Type 1 | 4          |
| 7509      | Yorklyn Rd           | SB        | Right      | North District   | Tangent - Type 1 | 4          |
| 7513      | Old Kennett Rd       | SB        | Right      | North District   | Tangent - Type 1 | 4          |
| 2014001   | Augustine Rd         | EB        | Right      | North District   | Tangent - Type 1 | 4          |
| 2014013   | S. Carters Rd        | WB        | Right      | Central District | Tangent - Type 1 | 4          |
| 7373      | NewCas Ave to 295 NB | NB        | Right      | Canal District   | Tangent - Type 1 | 4          |
| 24.999    | <null>               | <null>    | <null>     | <null>           | Tangent - Type 1 | 4          |
| 111314    | <null>               | <null>    | <null>     | <null>           | Tangent - Type 1 | 4          |
| 8558      | JFK Memorial Hwy     | EB        | Left       | Canal District   | Tangent - Type 1 | 4          |
| 111314    | <null>               | <null>    | <null>     | <null>           | Tangent - Type 1 | 4          |
| 111414    | <null>               | <null>    | <null>     | <null>           | Tangent - Type 1 | 4          |
| 111614    | <null>               | <null>    | <null>     | <null>           | Tangent - Type 1 | 4          |
| 7568      | Grubb Rd             | EB        | Right      | North District   | Tangent - Type 1 | 4          |
| <null>    | <null>               | <null>    | <null>     | <null>           | Tangent - Type 1 | 4          |
| <null>    | <null>               | <null>    | <null>     | <null>           | Tangent - Type 1 | 4          |
| 2012003   | Greenhurst Farm Rd   | NB        | Right      | South District   | Tangent - Type 1 | 4          |
| 2012022   | Edwardsville Rd      | SB        | Right      | Central District | Tangent - Type 1 | 4          |
| 2012019   | Greenville Rd        | WB        | Right      | Central District | Tangent - Type 1 | 4          |
| 2056      | Dupont Blvd          | NB        | Right      | South District   | Tangent - Type 1 | 4          |
| 2072      | Fork Landing Rd      | WB        | Right      | Central District | Tangent - Type 1 | 4          |
| 2033      | Wesley Church Rd     | SB        | Right      | South District   | Tangent - Type 1 | 4          |
| 2088      | Milltown Rd          | NB        | Right      | North District   | Tangent - Type 1 | 4          |
| 2041      | Stein Hwy            | WB        | Right      | South District   | Tangent - Type 1 | 4          |

**ATTACHMENT A**

| REFERENCE | ROAD_NAME            | DIRECTION | SIDE_OF_RD | DISTRICT_N       | ET_Type          | Channel_Wi |
|-----------|----------------------|-----------|------------|------------------|------------------|------------|
| 2119      | Sussex Hwy           | NB        | Right      | South District   | Tangent - Type 1 | 4          |
| 2024      | Sussex Hwy           | NB        | Right      | South District   | Tangent - Type 1 | 4          |
| 2028      | Redden Rd            | WB        | Right      | South District   | Tangent - Type 1 | 4          |
| 2050      | Shortly Rd           | NB        | Right      | South District   | Tangent - Type 1 | 4          |
| 1836      | Kirkwood-St.Georges  | EB        | Right      | Canal District   | Tangent - Type 1 | 4          |
| 4030      | Blackbird Landing Rd | SB        | Right      | Canal District   | Tangent - Type 1 | 4          |
| 1835      | Howell School Rd     | EB        | Right      | Canal District   | Tangent - Type 1 | 4          |
| 5100      | Columbia Rd          | NB        | Right      | South District   | Tangent - Type 1 | 4          |
| 5100      | Columbia Rd          | NB        | Right      | South District   | Tangent - Type 1 | 4          |
| 5103      | Saint George Rd      | WB        | Right      | South District   | Tangent - Type 1 | 4          |
| 1931      | Coastal Hwy          | NB        | Left       | South District   | Tangent - Type 1 | 4          |
| 1004      | Hickman Rd           | EB        | Right      | Central District | Tangent - Type 1 | 4          |
| 5357      | River Rd             | SB        | Right      | South District   | Tangent - Type 1 | 4          |
| 0         |                      |           |            |                  | Tangent - Type 1 | 4          |
| 5268      | Rifle Range Rd       | WB        | Right      | South District   | Tangent - Type 1 | 4          |
| 5279      | Federalsburg Rd      | EB        | Right      | South District   | Tangent - Type 1 | 4          |
| 5280      | Federalsburg Rd      | WB        | Right      | South District   | Tangent - Type 1 | 4          |
| 5288      | Clendaniel Pond Rd   | NB        | Right      | South District   | Tangent - Type 1 | 4          |
| 5294      | Asbury Rd            | SB        | Right      | South District   | Tangent - Type 1 | 4          |
| 5295      | Asbury Rd            | NB        | Right      | South District   | Tangent - Type 1 | 4          |
| 5200      | Nassan Commans Blvd  | EB        | Right      | South District   | Tangent - Type 1 | 4          |
| 5465      | Conaway Rd           | NB        | Right      | South District   | Tangent - Type 1 | 4          |
| 5466      | Conaway Rd           | SB        | Right      | South District   | Tangent - Type 1 | 4          |
| 5466      | Conaway Rd           | SB        | Right      | South District   | Tangent - Type 1 | 4          |
| 5475      | Donovans Rd          | NB        | Right      | South District   | Tangent - Type 1 | 4          |
| 5507      | Trap Pond Rd         | EB        | Right      | South District   | Tangent - Type 1 | 4          |

**ATTACHMENT A**

| REFERENCE | ROAD_NAME                 | DIRECTION | SIDE_OF_RD | DISTRICT_N       | ET_Type          | Channel_Wi |
|-----------|---------------------------|-----------|------------|------------------|------------------|------------|
|           | 5519 Laurel Rd            | EB        | Right      | South District   | Tangent - Type 1 | 4          |
|           | 5521 Laurel Rd            | WB        | Right      | South District   | Tangent - Type 1 | 4          |
|           | 5385 Woodland Rd          | NB        | Right      | South District   | Tangent - Type 1 | 4          |
|           | 5378 Seashore Hwy         | EB        | Right      | South District   | Tangent - Type 1 | 4          |
|           | 5379 Seashore Hwy         | WB        | Right      | South District   | Tangent - Type 1 | 4          |
|           | 1040 John J. Williams hwy | NB        | Right      | South District   | Tangent - Type 1 | 4          |
|           | 5446 Sharptown Rd         | EB        | Right      | South District   | Tangent - Type 1 | 4          |
|           | 5461 Sussex Hwy           | NB        | Right      | South District   | Tangent - Type 1 | 4          |
|           | 33 Fleatown Rd            | EB        | Right      | South District   | Tangent - Type 1 | 4          |
|           | 0                         |           |            |                  | Tangent - Type 1 | 4          |
|           | 0                         |           |            |                  | Tangent - Type 1 | 4          |
|           | 5826 Dupont Hwy           | SB        | Right      | Central District | Tangent - Type 1 | 4          |
|           | 5837 Veale Rd             | WB        | Right      | Central District | Tangent - Type 1 | 4          |
|           | 5839 Veale Rd             | EB        | Right      | Central District | Tangent - Type 1 | 4          |
|           | 5840 Veale Rd             | WB        | Right      | Central District | Tangent - Type 1 | 4          |
|           | 0                         |           |            |                  | Tangent - Type 1 | 4          |
|           | 5842 Veale Rd             | WB        | Right      | Central District | Tangent - Type 1 | 4          |
|           | 5843 Veale Rd             | EB        | Right      | Central District | Tangent - Type 1 | 4          |
|           | 5857 Veale Rd             | EB        | Right      | Central District | Tangent - Type 1 | 4          |
|           | 5877 Upper King Rd        | NB        | Right      | Central District | Tangent - Type 1 | 4          |
|           | 5 Dupont Blvd             | NB        | Right      | South District   | Tangent - Type 1 | 4          |
|           | 5791 Sudlersville Rd      | NB        | Right      | Central District | Tangent - Type 1 | 4          |
|           | 5796 Sudlersville Rd      | NB        | Right      | Central District | Tangent - Type 1 | 4          |
|           | 5797 Sudlersville Rd      | NB        | Right      | Central District | Tangent - Type 1 | 4          |
|           | 310 Sweet Briar Rd        | NB        | Right      | South District   | Tangent - Type 1 | 4          |
|           | 1123 Wintien Rd           | SB        | Right      | South District   | Tangent - Type 1 | 4          |

**ATTACHMENT A**

| REFERENCE | ROAD_NAME                | DIRECTION | SIDE_OF_RD | DISTRICT_N       | ET_Type          | Channel_Wi |
|-----------|--------------------------|-----------|------------|------------------|------------------|------------|
|           | 1143 New Rd              | SB        | Right      | South District   | Tangent - Type 1 | 4          |
|           | 1130 Beaver Dam Rd       | SB        | Right      | South District   | Tangent - Type 1 | 4          |
|           | 6000 Trap Shooters Rd    | NB        | Right      | Central District | Tangent - Type 1 | 4          |
|           | 5920 Bay Rd              | NB        | Right      | Central District | Tangent - Type 1 | 4          |
|           | 1104 Cedar Beach Rd      | EB        | Right      | South District   | Tangent - Type 1 | 4          |
|           | 1162 Walther Rd          | SB        | Right      | Canal District   | Tangent - Type 1 | 4          |
|           | 0                        |           |            |                  | Tangent - Type 1 | 4          |
|           | 6249 Wrangle Hill Rd     | WB        | Right      | Canal District   | Tangent - Type 1 | 4          |
|           | 6418 Dupont Pkwy         | SB        | Right      | Canal District   | Tangent - Type 1 | 4          |
|           | 6702 I-95                | SB        | Right      | North District   | Tangent - Type 1 | 4          |
|           | 6946 Limestone Rd        | NB        | Right      | North District   | Tangent - Type 1 | 4          |
|           | 6765 Korean War Vet. Hwy | SB        | Right      | Canal District   | Tangent - Type 1 | 4          |
|           | 6801 Wrangle Hill Rd     | WB        | Right      | Canal District   | Tangent - Type 1 | 4          |
|           | 0                        |           |            |                  | Tangent - Type 1 | 4          |
|           | 7076 I-95                | NB        | Left       | North District   | Tangent - Type 1 | 4          |
|           | 0                        |           |            |                  | Tangent - Type 1 | 4          |
|           | 1385 I-95                | SB        | Right      | North District   | Tangent - Type 1 | 4          |
|           | 1495 Yorklyn Rd          | NB        | Right      | North District   | Tangent - Type 1 | 4          |
|           | 7119 Lancaster Pike      | EB        | Right      | North District   | Tangent - Type 1 | 4          |
|           | 1514 Lancaster Pike      | EB        | Right      | North District   | <null>           | 4          |
|           | 0                        |           |            |                  | Tangent - Type 1 | 4          |
|           | 3060 Cabbage Pond Rd     | EB        | Right      | South District   | Tangent - Type 1 | 4          |
|           | <null><null>             | <null>    | <null>     | <null>           | Tangent - Type 1 | 4          |
|           | <null><null>             | <null>    | <null>     | <null>           | Tangent - Type 1 | 4          |
|           | 1719 Vietnam Vet Hwy     | NB        | Right      | North District   | Tangent - Type 1 | 4          |
|           | 3061 Cabbage Pond Rd     | WB        | Right      | South District   | Tangent - Type 1 | 4          |

**ATTACHMENT A**

| REFERENCE | ROAD_NAME                | DIRECTION | SIDE_OF_RD | DISTRICT_N       | ET_Type          | Channel_Wi |
|-----------|--------------------------|-----------|------------|------------------|------------------|------------|
|           | 3061 Cabbage Pond Rd     | WB        | Right      | South District   | Tangent - Type 1 | 4          |
| 24.999    | <null>                   | <null>    | <null>     | <null>           | Tangent - Type 1 | 4          |
| 112514    | <null>                   | <null>    | <null>     | <null>           | Tangent - Type 1 | 4          |
|           | 5100 Columbia Rd         | NB        | Right      | South District   | Tangent - Type 1 | 4          |
| 112514    | <null>                   | <null>    | <null>     | <null>           | Tangent - Type 1 | 4          |
|           | 7265 Eagles Nest Landing | WB        | Right      | Canal District   | Tangent - Type 1 | 4          |
|           | 3078 Centre Rd           | SB        | Right      | North District   | Tangent - Type 1 | 4          |
| 112514    | <null>                   | <null>    | <null>     | <null>           | Tangent - Type 1 | 4          |
| 24.999    | <null>                   | <null>    | <null>     | <null>           | Tangent - Type 1 | 4          |
| <null>    | <null>                   | <null>    | <null>     | <null>           | Tangent - Type 1 | 4          |
| <null>    | <null>                   | <null>    | <null>     | <null>           | Tangent - Type 1 | 4          |
| 2013012   | Jamison Corner Rd        | SB        | Right      | Canal District   | Tangent - Type 1 | 4          |
| 2014004   | Augustine Rd             | EB        | Right      | North District   | Tangent - Type 1 | 4          |
| 2014015   | S. Carters Rd            | EB        | Right      | Central District | Tangent - Type 1 | 4          |
| 24.999    | <null>                   | <null>    | <null>     | <null>           | Tangent - Type 1 | 4          |
| 111214    | <null>                   | <null>    | <null>     | <null>           | Tangent - Type 1 | 4          |
| 111314    | <null>                   | <null>    | <null>     | <null>           | Tangent - Type 1 | 4          |
| 111314    | <null>                   | <null>    | <null>     | <null>           | Tangent - Type 1 | 4          |
| 111314    | <null>                   | <null>    | <null>     | <null>           | Tangent - Type 1 | 4          |
| 111314    | <null>                   | <null>    | <null>     | <null>           | Tangent - Type 1 | 4          |
| 111314    | <null>                   | <null>    | <null>     | <null>           | Tangent - Type 1 | 4          |
| 111314    | <null>                   | <null>    | <null>     | <null>           | Tangent - Type 1 | 4          |
| 111414    | <null>                   | <null>    | <null>     | <null>           | Tangent - Type 1 | 4          |
| 111614    | <null>                   | <null>    | <null>     | <null>           | Tangent - Type 1 | 4          |
| <null>    | <null>                   | <null>    | <null>     | <null>           | Tangent - Type 1 | 4          |
|           | 3850 Old Furnace Rd      | WB        | Right      | South District   | Tangent - Type 1 | 4          |
|           | 3851 Old Furnace Rd      | EB        | Right      | South District   | Tangent - Type 1 | 4          |

**ATTACHMENT A**

| REFERENCE | ROAD_NAME           | DIRECTION | SIDE_OF_RD | DISTRICT_N       | ET_Type          | Channel_Wi |
|-----------|---------------------|-----------|------------|------------------|------------------|------------|
| 112114    | <null>              | <null>    | <null>     | <null>           | Tangent - Type 1 | 4          |
| 2012001   | Greenhurst Farm Rd  | SB        | Right      | South District   | Tangent - Type 1 | 4          |
| 2053      | Dupont Blvd         | SB        | Right      | South District   | Tangent - Type 1 | 4          |
| 2089      | Dupont Blvd         | SB        | Right      | South District   | Tangent - Type 1 | 4          |
| 2034      | Wesley Church Rd    | NB        | Right      | South District   | Tangent - Type 1 | 4          |
| 2042      | Woodyard Rd         | EB        | Right      | South District   | Tangent - Type 1 | 4          |
| 2022      | Sussex Hwy          | SB        | Right      | South District   | Tangent - Type 1 | 4          |
| 4065      | Korean War Vet. Hwy | NB        | Right      | Central District | Tangent - Type 1 | 4          |
| 4086      | Korean War Vet. Hwy | SB        | Right      | Central District | Tangent - Type 1 | 4          |
| 1015      | Trinity Church Rd   | WB        | Right      | South District   | Tangent - Type 1 | 4          |
| 1017      | Seashore Hwy        | NB        | Right      | South District   | Tangent - Type 1 | 4          |
| 1008      | Seashore Hwy        | EB        | Right      | South District   | Tangent - Type 1 | 4          |
| 1009      | Seashore Hwy        | WB        | Right      | South District   | Tangent - Type 1 | 4          |
| 1010      | Seashore Hwy        | EB        | Right      | South District   | Tangent - Type 1 | 4          |
| 5077      | Alms House Rd       | EB        | Right      | South District   | Tangent - Type 1 | 4          |
| 5147      | Nine Foot Rd        | EB        | Right      | South District   | Tangent - Type 1 | 4          |
| 5148      | Nine Foot Rd        | WB        | Right      | South District   | Tangent - Type 1 | 4          |
| 5148      | Nine Foot Rd        | WB        | Right      | South District   | Tangent - Type 1 | 4          |
| 1868      | Clark's Corner Rd   | SB        | Right      | Canal District   | Tangent - Type 1 | 4          |
| 1922      | Sunnyside Rd        | NB        | Right      | Central District | Tangent - Type 1 | 4          |
| 1944      | Hillyard Rd         | NB        | Right      | Central District | Tangent - Type 1 | 4          |
| 5231      | MillsBoro Hwy       | NB        | Right      | South District   | Tangent - Type 1 | 4          |
| 5301      | Concord Rd          | SB        | Right      | South District   | Tangent - Type 1 | 4          |
| 5278      | Federalburg Rd      | WB        | Right      | South District   | Tangent - Type 1 | 4          |
| 5212      | Millsboro Hwy       | EB        | Right      | South District   | Tangent - Type 1 | 4          |
| 5465      | Conaway Rd          | NB        | Right      | South District   | Tangent - Type 1 | 4          |

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| REFERENCE | ROAD_NAME            | DIRECTION | SIDE_OF_RD | DISTRICT_N       | ET_Type          | Channel_Wi |
|-----------|----------------------|-----------|------------|------------------|------------------|------------|
| 5477      | Lavinia St           | NB        | Right      | South District   | Tangent - Type 1 | 4          |
| 5514      | Laurel Rd            | WB        | Right      | South District   | Tangent - Type 1 | 4          |
| 5517      | Laurel Rd            | WB        | Right      | South District   | Tangent - Type 1 | 4          |
| 5520      | Laurel Rd            | EB        | Right      | South District   | Tangent - Type 1 | 4          |
| 116       | Concord Rd           | EB        | Right      | South District   | Tangent - Type 1 | 4          |
| 0         |                      |           |            |                  | Tangent - Type 1 | 4          |
| 1038      | Robinsville Rd       | NB        | Right      | South District   | Tangent - Type 1 | 4          |
| 1039      | John J. Williams hwy | SB        | Right      | South District   | Tangent - Type 1 | 4          |
| 1043      | Phillips Branch Rd   | EB        | Right      | South District   | Tangent - Type 1 | 4          |
| 5456      | Sharptown Rd         | WB        | Right      | South District   | Tangent - Type 1 | 4          |
| 5638      | Brenford Rd          | NB        | Right      | Central District | Tangent - Type 1 | 4          |
| 5617      | Henry Cowgill Rd     | EB        | Right      | Central District | Tangent - Type 1 | 4          |
| 1053      | Coastal Hwy          | SB        | Right      | South District   | Tangent - Type 1 | 4          |
| 5743      | Still Rd             | EB        | Right      | Central District | Tangent - Type 1 | 4          |
| 5676      | Bay Rd               | SB        | Right      | Central District | Tangent - Type 1 | 4          |
| 311       | Cave Neck Rd         | WB        | Right      | South District   | Tangent - Type 1 | 4          |
| 5832      | Dupont Hwy           | SB        | Right      | Central District | Tangent - Type 1 | 4          |
| 113       | County Seat Hwy      | WB        | Right      | South District   | Tangent - Type 1 | 4          |
| 114       | County Seat Hwy      | EB        | Right      | South District   | Tangent - Type 1 | 4          |
| 0         |                      |           |            |                  | Tangent - Type 1 | 4          |
| 7         | Dupont Blvd          | SB        | Right      | South District   | Tangent - Type 1 | 4          |
| 0         |                      |           |            |                  | Tangent - Type 1 | 4          |
| 5784      | Mount Friendship Rd  | NB        | Right      | Central District | Tangent - Type 1 | 4          |
| 5792      | Sudlersville Rd      | SB        | Right      | Central District | Tangent - Type 1 | 4          |
| 5801      | Coastal Hwy          | NB        | Right      | South District   | Tangent - Type 1 | 4          |
| 1124      | Wintien Rd           | SB        | Right      | South District   | Tangent - Type 1 | 4          |

**ATTACHMENT A**

| REFERENCE | ROAD_NAME                 | DIRECTION | SIDE_OF_RD | DISTRICT_N       | ET_Type          | Channel_Wi |
|-----------|---------------------------|-----------|------------|------------------|------------------|------------|
|           | 6000 Trap Shooters Rd     | NB        | Right      | Central District | Tangent - Type 1 | 4          |
|           | 5934 Fast Landing Rd      | EB        | Right      | Central District | Tangent - Type 1 | 4          |
|           | 5987 Little Creek Rd      | WB        | Right      | Central District | Tangent - Type 1 | 4          |
|           | 5987 Little Creek Rd      | WB        | Right      | Central District | Tangent - Type 1 | 4          |
|           | 6154 Sudlersville Rd      | EB        | Right      | Central District | Tangent - Type 1 | 4          |
|           | 1163 Walther Rd           | SB        | Right      | Canal District   | Tangent - Type 1 | 4          |
|           | 1201 Pulaski Hwy          | WB        | Left       | Canal District   | Tangent - Type 1 | 4          |
|           | 6348 Summit Bridge Rd     | SB        | Right      | Canal District   | Tangent - Type 1 | 4          |
|           | 6353 Red Lion Rd          | NB        | Right      | Canal District   | Tangent - Type 1 | 4          |
|           | 1315 95/295 N to Basin Rd | NB        | Left       | Canal District   | Tangent - Type 1 | 4          |
|           | 0                         |           |            |                  | Tangent - Type 1 | 4          |
|           | 1284 Sunset Lake Rd       | NB        | Right      | Canal District   | Tangent - Type 1 | 4          |
|           | 1341 Possum Park Rd       | SB        | Right      | Canal District   | Tangent - Type 1 | 4          |
|           | 6652 Vet Mem Hwy          | SB        | Right      | North District   | Tangent - Type 1 | 4          |
|           | 0                         |           |            |                  | Tangent - Type 1 | 4          |
|           | 6719 Del City Port Penn   | SB        | Right      | Canal District   | Tangent - Type 1 | 4          |
|           | 0                         |           |            |                  | Tangent - Type 1 | 4          |
|           | 6628 Montchanin Rd        | NB        | Right      | North District   | Tangent - Type 1 | 4          |
|           | 7180 JFK Memorial Hwy     | SB        | Left       | Canal District   | Tangent - Type 1 | 4          |
|           | 7100 Concord Pike         | NB        | Right      | North District   | Tangent - Type 1 | 4          |
|           | 0                         |           |            |                  | Tangent - Type 1 | 4          |
|           | 24.999 <null>             | <null>    | <null>     | <null>           | Tangent - Type 1 | 4          |
|           | 112214 <null>             | <null>    | <null>     | <null>           | Tangent - Type 1 | 4          |
|           | <null> <null>             | <null>    | <null>     | <null>           | Tangent - Type 1 | 4          |
|           | <null> <null>             | <null>    | <null>     | <null>           | Tangent - Type 1 | 4          |
|           | 5100 Columbia Rd          | NB        | Right      | South District   | Tangent - Type 1 | 4          |

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| REFERENCE | ROAD_NAME           | DIRECTION | SIDE_OF_RD | DISTRICT_N       | ET_Type          | Channel_Wi |
|-----------|---------------------|-----------|------------|------------------|------------------|------------|
| 112514    | <null>              | <null>    | <null>     | <null>           | Tangent - Type 1 | 4          |
| 7511      | Yorklyn Rd          | NB        | Right      | North District   | Tangent - Type 1 | 4          |
| 7511      | Yorklyn Rd          | NB        | Right      | North District   | Tangent - Type 1 | 4          |
| 2014002   | Augustine Rd        | WB        | Right      | North District   | Tangent - Type 1 | 4          |
| 2014014   | S. Carters Rd       | WB        | Right      | Central District | Tangent - Type 1 | 4          |
| 2014064   | Griffith Lake Dr    | SB        | Right      | Central District | Tangent - Type 1 | 4          |
| 7630      | Kirkwood Hwy to 141 | SB        | Left       | North District   | Tangent - Type 1 | 4          |
| 111314    | <null>              | <null>    | <null>     | <null>           | Tangent - Type 1 | 4          |
| 111314    | <null>              | <null>    | <null>     | <null>           | Tangent - Type 1 | 4          |
| 111314    | <null>              | <null>    | <null>     | <null>           | Tangent - Type 1 | 4          |
| 111314    | <null>              | <null>    | <null>     | <null>           | Tangent - Type 1 | 4          |
| 111314    | <null>              | <null>    | <null>     | <null>           | Tangent - Type 1 | 4          |
| 6370      | Sunset Lake Rd      | NB        | Right      | Canal District   | Tangent - Type 1 | 4          |
| 111614    | <null>              | <null>    | <null>     | <null>           | Tangent - Type 1 | 4          |
| 24.999    | <null>              | <null>    | <null>     | <null>           | Tangent - Type 1 | 4          |
| 3820      | Dupont Pkwy         | NB        | Right      | Canal District   | Tangent - Type 1 | 4          |
| 2012097   | Old Kennett Rd      | SB        | Right      | North District   | Tangent - Type 1 | 4          |
| 2012040   | O'Neals Rd          | SB        | Right      | South District   | Tangent - Type 1 | 4          |
| 2012004   | Greenhurst Farm Rd  | NB        | Right      | South District   | Tangent - Type 1 | 4          |
| 2012019   | Greenville Rd       | WB        | Right      | Central District | Tangent - Type 1 | 4          |
| 2051      | Shortly Rd          | NB        | Right      | South District   | Tangent - Type 1 | 4          |
| 2075      | Sudlersville Rd     | WB        | Right      | Central District | Tangent - Type 1 | 4          |
| 2076      | Sudlersville Rd     | EB        | Right      | Central District | Tangent - Type 1 | 4          |
| 2012020   | Greenville Rd       | EB        | Right      | Central District | <null>           | 4          |
| 2023      | Sussex Hwy          | SB        | Right      | South District   | Tangent - Type 1 | 4          |
| 2049      | Shortly Rd          | SB        | Right      | South District   | Tangent - Type 1 | 4          |

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| REFERENCE | ROAD_NAME            | DIRECTION | SIDE_OF_RD | DISTRICT_N       | ET_Type          | Channel_Wi |
|-----------|----------------------|-----------|------------|------------------|------------------|------------|
| 7492      | Gov. Printz Blvd     | SB        | Right      | North District   | Tangent - Type 1 | 4          |
| 1008      | Seashore Hwy         | EB        | Right      | South District   | Tangent - Type 1 | 4          |
| 1010      | Seashore Hwy         | EB        | Right      | South District   | Tangent - Type 1 | 4          |
| 5015      | Sussex Hwy           | SB        | Right      | South District   | Tangent - Type 1 | 4          |
| 5019      | Sussex Hwy           | NB        | Right      | South District   | Tangent - Type 1 | 4          |
| 5136      | Middleford Rd        | SB        | Right      | South District   | Tangent - Type 1 | 4          |
| 5150      | Nine Foot Rd         | EB        | Right      | South District   | Tangent - Type 1 | 4          |
| 1923      | Sunnyside Rd         | SB        | Right      | Central District | Tangent - Type 1 | 4          |
| 1924      | Coastal Hwy          | NB        | Left       | South District   | Tangent - Type 1 | 4          |
| 1931      | Coastal Hwy          | NB        | Left       | South District   | Tangent - Type 1 | 4          |
| 5275      | Bowdens Garage Rd    | EB        | Right      | South District   | Tangent - Type 1 | 4          |
| 5200      | Nassan Commans Blvd  | EB        | Right      | South District   | Tangent - Type 1 | 4          |
| 5220      | Daisey Rd            | WB        | Right      | South District   | Tangent - Type 1 | 4          |
| 5474      | Park Ave             | NB        | Right      | South District   | Tangent - Type 1 | 4          |
| 5510      | Laurel Rd            | EB        | Right      | South District   | Tangent - Type 1 | 4          |
| 0         |                      |           |            |                  | Tangent - Type 1 | 4          |
| 130       | Holly Hill Rd        | SB        | Right      | Central District | Tangent - Type 1 | 4          |
| 5388      | Woodland Rd          | SB        | Right      | South District   | Tangent - Type 1 | 4          |
| 5390      | Woodland Rd          | NB        | Left       | South District   | Tangent - Type 1 | 4          |
| 1038      | Robinsville Rd       | NB        | Right      | South District   | Tangent - Type 1 | 4          |
| 1040      | John J. Williams hwy | NB        | Right      | South District   | Tangent - Type 1 | 4          |
| 5424      | Woodland Church Rd   | NB        | Right      | South District   | Tangent - Type 1 | 4          |
| 5425      | Ellis Mill Rd        | NB        | Right      | South District   | Tangent - Type 1 | 4          |
| 5448      | Sharptown Rd         | WB        | Right      | South District   | Tangent - Type 1 | 4          |
| 5452      | Branch School Rd     | SB        | Right      | South District   | Tangent - Type 1 | 4          |
| 5462      | Sussex Hwy           | SB        | Right      | South District   | Tangent - Type 1 | 4          |

**ATTACHMENT A**

| REFERENCE | ROAD_NAME                | DIRECTION | SIDE_OF_RD | DISTRICT_N       | ET_Type          | Channel_Wi |
|-----------|--------------------------|-----------|------------|------------------|------------------|------------|
|           | 311 Cave Neck Rd         | WB        | Right      | South District   | Tangent - Type 1 | 4          |
|           | 5825 Dupont Hwy          | NB        | Right      | Central District | Tangent - Type 1 | 4          |
|           | 114 County Seat Hwy      | EB        | Right      | South District   | Tangent - Type 1 | 4          |
|           | 0                        |           |            |                  | Tangent - Type 1 | 4          |
|           | 0                        |           |            |                  | Tangent - Type 1 | 4          |
|           | 5887 Dupont Hwy          | SB        | Left       | Central District | Tangent - Type 1 | 4          |
|           | 5761 Carpenter Bridge Rd | SB        | Right      | Central District | Tangent - Type 1 | 4          |
|           | 173 Coastal Hwy          | NB        | Right      | South District   | Tangent - Type 1 | 4          |
|           | 1121 Wintien Rd          | NB        | Right      | South District   | Tangent - Type 1 | 4          |
|           | 6188 Korean War Vet. Hwy | SB        | Left       | Canal District   | Tangent - Type 1 | 4          |
|           | 6145 Clayton Delaney Rd  | EB        | Right      | Canal District   | Tangent - Type 1 | 4          |
|           | 1309 Basin Rd to 13 SB   | SB        | Right      | Canal District   | Tangent - Type 1 | 4          |
|           | 6515 Nottingham Rd       | WB        | Right      | Canal District   | Tangent - Type 1 | 4          |
|           | 0                        |           |            |                  | Tangent - Type 1 | 4          |
|           | 6682 I-95                | NB        | Right      | North District   | Tangent - Type 1 | 4          |
|           | 6632 Montchanin Rd       | NB        | Right      | North District   | Tangent - Type 1 | 4          |
|           | 6633 Montchanin Rd       | SB        | Right      | North District   | Tangent - Type 1 | 4          |
|           | 6865 Korean War Vet. Hwy | SB        | Left       | Canal District   | Tangent - Type 1 | 4          |
|           | 0                        |           |            |                  | Tangent - Type 1 | 4          |
|           | 7072 I-95                | SB        | Left       | North District   | Tangent - Type 1 | 4          |
|           | 7077 I-95                | SB        | Left       | North District   | Tangent - Type 1 | 4          |
|           | 0                        |           |            |                  | Tangent - Type 1 | 4          |
|           | 1604 Stoney Batter Rd    | WB        | Right      | North District   | Tangent - Type 1 | 4          |
|           | 1677 JFK Memorial Hwy    | SB        | Right      | Canal District   | Tangent - Type 1 | 4          |
|           | 3045 Fox Hunters Rd      | SB        | Right      | Central District | Tangent - Type 1 | 4          |
| 112114    | <null>                   | <null>    | <null>     | <null>           | Tangent - Type 1 | 4          |

**ATTACHMENT A**

| REFERENCE | ROAD_NAME            | DIRECTION | SIDE_OF_RD | DISTRICT_N       | ET_Type          | Channel_Wi |
|-----------|----------------------|-----------|------------|------------------|------------------|------------|
|           | 1717 Vietnam Vet Hwy | NB        | Right      | North District   | Tangent - Type 1 | 4          |
| 112414    | <null>               | <null>    | <null>     | <null>           | Tangent - Type 1 | 4          |
| 112514    | <null>               | <null>    | <null>     | <null>           | Tangent - Type 1 | 4          |
| 112514    | <null>               | <null>    | <null>     | <null>           | Tangent - Type 1 | 4          |
| 112514    | <null>               | <null>    | <null>     | <null>           | Tangent - Type 1 | 4          |
| 112514    | <null>               | <null>    | <null>     | <null>           | Tangent - Type 1 | 4          |
| 112514    | <null>               | <null>    | <null>     | <null>           | Tangent - Type 1 | 4          |
| 112514    | <null>               | <null>    | <null>     | <null>           | Tangent - Type 1 | 4          |
| <null>    | <null>               | <null>    | <null>     | <null>           | Tangent - Type 1 | 4          |
| 2013026   | Mahan Corner Rd      | NB        | Right      | Central District | Tangent - Type 1 | 4          |
|           | 7509 Yorklyn Rd      | SB        | Right      | North District   | Tangent - Type 1 | 4          |
|           | 7512 Yorklyn Rd      | NB        | Right      | North District   | Tangent - Type 1 | 4          |
|           | 1759 Dupont Hwy      | NB        | Right      | Canal District   | Tangent - Type 1 | 4          |
|           | 1764 Dupont Hwy      | SB        | Left       | Canal District   | Tangent - Type 1 | 4          |
| 2014021   | Todds Mill Rd        | SB        | Right      | Central District | Tangent - Type 1 | 4          |
| 111214    | <null>               | <null>    | <null>     | <null>           | Tangent - Type 1 | 4          |
|           | 9009 Shady Bridge Rd | NB        | Right      | Central District | Tangent - Type 1 | 4          |
| 111314    | <null>               | <null>    | <null>     | <null>           | Tangent - Type 1 | 4          |
|           | 6375 Sunset Lake Rd  | SB        | Right      | Canal District   | Tangent - Type 1 | 4          |
| 24.999    | <null>               | <null>    | <null>     | <null>           | Tangent - Type 1 | 4          |
| 111814    | <null>               | <null>    | <null>     | <null>           | Tangent - Type 1 | 4          |
| 24.999    | <null>               | <null>    | <null>     | <null>           | Tangent - Type 1 | 4          |
| 112014    | <null>               | <null>    | <null>     | <null>           | Tangent - Type 1 | 4          |
|           | 3822 Choptank Rd     | SB        | Right      | Canal District   | Tangent - Type 1 | 4          |
|           | 3824 Choptank Rd     | NB        | Right      | Canal District   | Tangent - Type 1 | 4          |
| 112114    | <null>               | <null>    | <null>     | <null>           | Tangent - Type 1 | 4          |

**ATTACHMENT A**

| REFERENCE | ROAD_NAME            | DIRECTION | SIDE_OF_RD | DISTRICT_N       | ET_Type          | Channel_Wi |
|-----------|----------------------|-----------|------------|------------------|------------------|------------|
| 2012065   | I-95                 | SB        | Right      | Canal District   | Tangent - Type 1 | 4          |
| 2012041   | O'Neals Rd           | NB        | Right      | South District   | Tangent - Type 1 | 4          |
| 2012021   | Edwardsville Rd      | NB        | Right      | Central District | Tangent - Type 1 | 4          |
| 2012022   | Edwardsville Rd      | SB        | Right      | Central District | Tangent - Type 1 | 4          |
| 2012114   | Bay Rd               | NB        | Right      | Central District | Tangent - Type 1 | 4          |
| 7433      | Hillside Mill Rd     | EB        | Right      | North District   | Tangent - Type 1 | 4          |
| 2012020   | Greenville Rd        | EB        | Right      | Central District | Tangent - Type 1 | 4          |
| 2032      | Wesley Church Rd     | NB        | Right      | South District   | Tangent - Type 1 | 4          |
| 2027      | Redden Rd            | EB        | Right      | South District   | Tangent - Type 1 | 4          |
| 4027      | Blackbird Landing Rd | NB        | Right      | Canal District   | Tangent - Type 1 | 4          |
| 4049      | N Little Creek Rd    | WB        | Right      | Central District | Tangent - Type 1 | 4          |
| 4050      | N Little Creek Rd    | WB        | Right      | Central District | Tangent - Type 1 | 4          |
| 1015      | Trinity Church Rd    | WB        | Right      | South District   | Tangent - Type 1 | 4          |
| 1007      | Seashore Hwy         | WB        | Right      | South District   | Tangent - Type 1 | 4          |
| 5016      | Sussex Hwy           | NB        | Right      | South District   | Tangent - Type 1 | 4          |
| 5135      | Middleford Rd        | SB        | Right      | South District   | Tangent - Type 1 | 4          |
| 1950      | Dupont Blvd          | SB        | Right      | Canal District   | Tangent - Type 1 | 4          |
| 5230      | Millsboro Hwy        | NB        | Right      | South District   | Tangent - Type 1 | 4          |
| 5234      | Millsboro Hwy        | SB        | Right      | South District   | Tangent - Type 1 | 4          |
| 5234      | Millsboro Hwy        | SB        | Right      | South District   | Tangent - Type 1 | 4          |
| 5298      | Baker Mill Rd        | WB        | Right      | South District   | Tangent - Type 1 | 4          |
| 5301      | Concord Rd           | SB        | Right      | South District   | Tangent - Type 1 | 4          |
| 5288      | Clendaniel Pond Rd   | NB        | Right      | South District   | Tangent - Type 1 | 4          |
| 5295      | Asbury Rd            | NB        | Right      | South District   | Tangent - Type 1 | 4          |
| 5179      | Coastal Hwy          | SB        | Right      | South District   | Tangent - Type 1 | 4          |
| 5219      | Daisey Rd            | EB        | Right      | South District   | Tangent - Type 1 | 4          |

**ATTACHMENT A**

| REFERENCE | ROAD_NAME                | DIRECTION | SIDE_OF_RD | DISTRICT_N       | ET_Type          | Channel_Wi |
|-----------|--------------------------|-----------|------------|------------------|------------------|------------|
|           | 5477 Lavinia St          | NB        | Right      | South District   | Tangent - Type 1 | 4          |
|           | 5516 Laurel Rd           | EB        | Right      | South District   | Tangent - Type 1 | 4          |
|           | 5518 Laurel Rd           | WB        | Right      | South District   | Tangent - Type 1 | 4          |
|           | 5522 Laurel Rd           | WB        | Right      | South District   | Tangent - Type 1 | 4          |
|           | 130 Holly Hill Rd        | SB        | Right      | Central District | Tangent - Type 1 | 4          |
|           | 5392 Woodland Rd         | SB        | Right      | South District   | Tangent - Type 1 | 4          |
|           | 1045 John J Williams Hwy | WB        | Right      | South District   | Tangent - Type 1 | 4          |
|           | 34 Fleatown Rd           | WB        | Right      | South District   | Tangent - Type 1 | 4          |
|           | 5695 Fenwick Rd          | EB        | Right      | South District   | Tangent - Type 1 | 4          |
|           | 0                        |           |            |                  | Tangent - Type 1 | 4          |
|           | 5785 Mount Friendship Rd | SB        | Right      | Central District | Tangent - Type 1 | 4          |
|           | 5793 Sudlersville Rd     | SB        | Right      | Central District | Tangent - Type 1 | 4          |
|           | 1124 Wintien Rd          | SB        | Right      | South District   | Tangent - Type 1 | 4          |
|           | 1154 John J Williams Hwy | SB        | Right      | South District   | Tangent - Type 1 | 4          |
|           | 5937 Fast Landing Rd     | WB        | Right      | Central District | Tangent - Type 1 | 4          |
|           | 1131 Beaver Dam Rd       | NB        | Right      | South District   | Tangent - Type 1 | 4          |
|           | 1103 Cedar Beach Rd      | WB        | Right      | South District   | Tangent - Type 1 | 4          |
|           | 6146 Clayton Delaney Rd  | WB        | Right      | Canal District   | Tangent - Type 1 | 4          |
|           | 6156 Sudlersville Rd     | WB        | Right      | Central District | Tangent - Type 1 | 4          |
|           | 0                        |           |            |                  | Tangent - Type 1 | 4          |
|           | 6050 Dupont Hwy          | SB        | Left       | Central District | Tangent - Type 1 | 4          |
|           | 1164 Walther Rd          | NB        | Right      | Canal District   | Tangent - Type 1 | 4          |
|           | 0                        |           |            |                  | Tangent - Type 1 | 4          |
|           | 6309 Woodland Beach Rd   | WB        | Right      | Central District | Tangent - Type 1 | 4          |
|           | 6271 River Rd            | NB        | Right      | Canal District   | Tangent - Type 1 | 4          |
|           | 1274 Churchmans Rd       | NB        | Right      | North District   | Tangent - Type 1 | 4          |

**ATTACHMENT A**

| REFERENCE | ROAD_NAME           | DIRECTION | SIDE_OF_RD | DISTRICT_N       | ET_Type          | Channel_Wi |
|-----------|---------------------|-----------|------------|------------------|------------------|------------|
| 6254      | Wrangle Hill Rd     | WB        | Right      | Canal District   | Tangent - Type 1 | 4          |
| 6549      | Summit Bridge Rd    | NB        | Right      | Canal District   | Tangent - Type 1 | 4          |
| 6446      | Korean War Vet. Hwy | SB        | Right      | Central District | Tangent - Type 1 | 4          |
| 6685      | I-95                | NB        | Right      | North District   | Tangent - Type 1 | 4          |
| 6926      | Korean War Vet. Hwy | SB        | Right      | Canal District   | Tangent - Type 1 | 4          |
| 6949      | Limestone Rd        | SB        | Right      | North District   | Tangent - Type 1 | 4          |
| 0         |                     |           |            |                  | Tangent - Type 1 | 4          |
| 0         |                     |           |            |                  | Tangent - Type 1 | 4          |
| 6776      | Korean War Vet. Hwy | SB        | Right      | Canal District   | Tangent - Type 1 | 4          |
| 7067      | I-95                | NB        | Left       | North District   | Tangent - Type 1 | 4          |
| 7075      | I-95                | NB        | Left       | North District   | Tangent - Type 1 | 4          |
| 0         |                     |           |            |                  | Tangent - Type 1 | 4          |
| 1419      | Polly Drummond Hill | NB        | Right      | North District   | Tangent - Type 1 | 4          |
| 0         |                     |           |            |                  | Tangent - Type 1 | 4          |
| 1463      | Lancaster Pike      | SB        | Right      | North District   | Tangent - Type 1 | 4          |
| 1464      | Lancaster Pike      | NB        | Right      | North District   | Tangent - Type 1 | 4          |
| 6996      | River Rd            | NB        | Right      | Canal District   | Tangent - Type 1 | 4          |
| 1378      | Basin Rd            | SB        | Left       | North District   | Tangent - Type 1 | 4          |
| 1382      | Basin Rd to 95      | NB        | Left       | North District   | Tangent - Type 1 | 4          |
| 1586      | New Linden Hill Rd  | NB        | Right      | North District   | Tangent - Type 1 | 4          |
| 7232      | I-95                | NB        | Left       | North District   | Tangent - Type 1 | 4          |
| 1554      | Centerville Rd      | SB        | Right      | North District   | Tangent - Type 1 | 4          |
| 1580      | New Linden Hill Rd  | NB        | Right      | North District   | Tangent - Type 1 | 4          |
| 112414    | <null>              | <null>    | <null>     | <null>           | Tangent - Type 1 | 4          |
| 1699      | 495 NB to 13 Bus    | NB        | Left       | Canal District   | Tangent - Type 1 | 4          |
| 112514    | <null>              | <null>    | <null>     | <null>           | Tangent - Type 1 | 4          |

**ATTACHMENT A**

| REFERENCE | ROAD_NAME                 | DIRECTION | SIDE_OF_RD | DISTRICT_N       | ET_Type          | Channel_Wi |
|-----------|---------------------------|-----------|------------|------------------|------------------|------------|
|           | 7290 Mill Creek Rd        | NB        | Right      | North District   | Tangent - Type 1 | 4          |
|           | 3554 Middleford Rd        | WB        | Right      | South District   | Tangent - Type 1 | 4          |
|           | 24.999 <null>             | <null>    | <null>     | <null>           | Tangent - Type 1 | 4          |
|           | 2013018 Victory Chapel Rd | SB        | Right      | Central District | Tangent - Type 1 | 4          |
|           | 7507 Yorklyn Rd           | NB        | Right      | North District   | Tangent - Type 1 | 4          |
|           | 8505 Churchmans Rd        | WB        | Right      | Canal District   | Tangent - Type 1 | 4          |
|           | 8553 I-95                 | SB        | Left       | Canal District   | Tangent - Type 1 | 4          |
|           | 111314 <null>             | <null>    | <null>     | <null>           | Tangent - Type 1 | 4          |
|           | 111314 <null>             | <null>    | <null>     | <null>           | Tangent - Type 1 | 4          |
|           | 111514 <null>             | <null>    | <null>     | <null>           | Tangent - Type 1 | 4          |
|           | 6374 Sunset Lake Rd       | SB        | Right      | Canal District   | Tangent - Type 1 | 4          |
|           | <null> <null>             | <null>    | <null>     | <null>           | Tangent - Type 1 | 4          |
|           | 3809 Kirkwood Hwy         | SB        | Right      | North District   | Tangent - Type 1 | 4          |
|           | <null> <null>             | <null>    | <null>     | <null>           | Tangent - Type 1 | 4          |
|           | <null> <null>             | <null>    | <null>     | <null>           | Tangent - Type 1 | 4          |

Count 766  
REFERENCE

**ATTACHMENT B**  
**FHWA Request for Information**  
**ET-Plus Guardrail End Terminal**  
**Ad-Hoc In-Service Evaluation – Supporting Documentation**

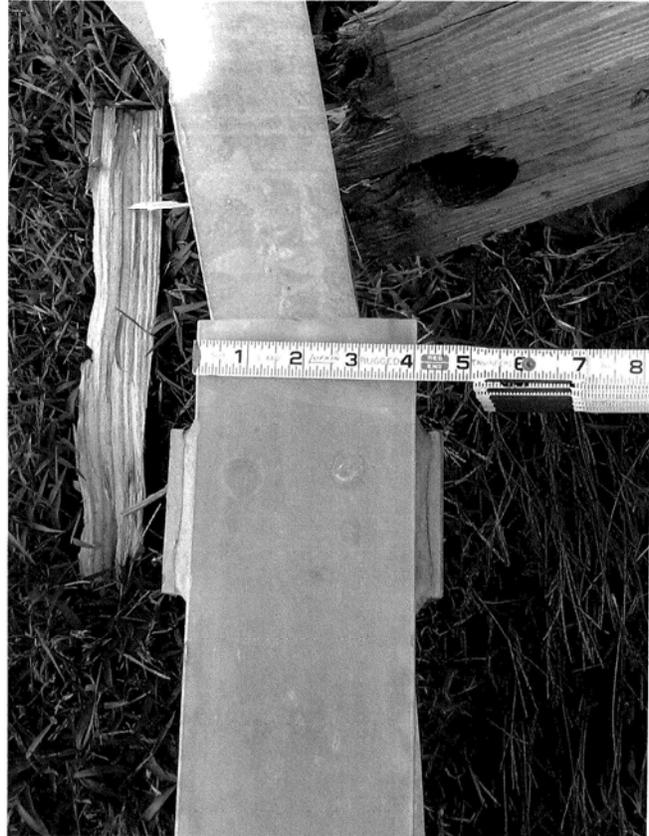
**Table 4**  
**In-Service Evaluation Data**

| Location Identifier | Maximo | Date of Crash | Location                                    | Maintenance District | Complaint #  | End Terminal Type | Channel Width (in.) | Crash Report |
|---------------------|--------|---------------|---|----------------------|--------------|-------------------|---------------------|--------------|
| 1                   | 657554 | 9/22/2014     | I-495 NB / Rt 13 NB Off-Ramp                | North                | 01-14-075783 | ET-Plus           | 4                   | Yes          |
| 2                   | 664619 | N/A           | DE Route 1 NB @ Exit 119                    | Canal                | N/A          | ET-Plus           | 4                   | No           |
| 3                   | N/A    | 11/6/2014     | DE Route 273 EB @ DE Route 1 Ramps          | Canal                | 02-14-088753 | ET-Plus           | 4                   | Yes          |
| 4                   | 666448 | 11/6/2014     | I-95 SB Ramp to DE Route 141                | North                | 06-14-088824 | ET-Plus           | 4                   | Yes          |
| 5                   | N/A    | 11/18/2014    | US Route 13 @ Rifle Range Road              | South                | N/A          | ET-Plus           | 4                   | No           |
| 6                   | N/A    | 12/29/2014    | I-495 NB, 3/4 Mile North of 12th Street     | North                | 01-14-103817 | ET-Plus           | 4                   | Yes          |
| 7                   | N/A    | 12/24/2014    | I-495 NB, median, 200' south of Rogers Road | North                | 01-14-102708 | ET-Plus           | 4                   | Yes          |
| 8                   | 667047 | 11/11/2014    | I-95 SB at Naamans Road                     | North                | 01-14-090170 | ET-2000           | 5                   | Yes          |
| 9                   | N/A    | N/A           | DE Route 41, 1000' south of DE Route 34     | North                | N/A          | ET-2000           | 5                   | No           |
| 10                  | N/A    | 11/26/2014    | DE Route 1 NB @ DE Route 273                | Canal                | 02-14-094638 | ET-2000           | 5                   | Yes          |
| 11                  | N/A    | 10/18/2014    | I-95 SB, south of DE Route 141              | North                | 06-14-083415 | ET-Plus           | 4                   | Yes          |
| 12                  | N/A    | N/A           | DE Route 1 NB, north of DE Route 299        | Canal                | N/A          | ET-2000           | 5                   | No           |

**NOTE: The following pictures and crash reports cover the ET-Plus devices shown above only (Locations 1-7 and 11).**

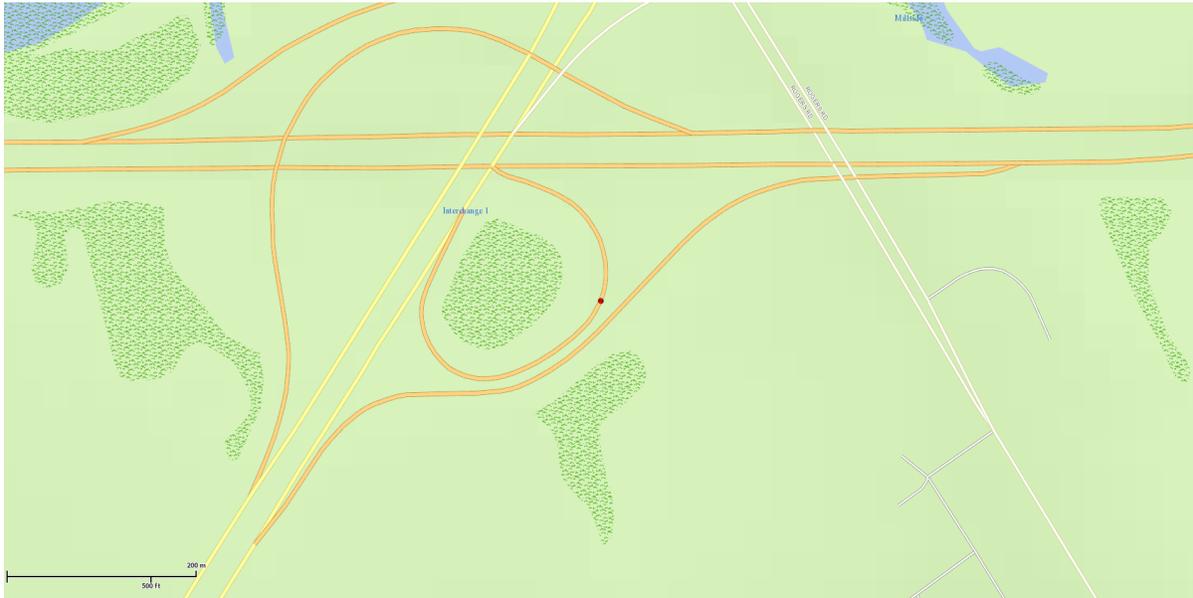
**ATTACHMENT B**  
**FHWA Request for Information**  
**ET-Plus Guardrail End Terminal**  
**Ad-Hoc In-Service Evaluation – Supporting Documentation**

**Location #1 – I-495 NB at the US Route 13 NB off-ramp**



# Delaware Department of Transportation Crash Analysis Reporting System Crash Report

**Crash Study Time Period:** 09/22/2014 to 09/22/2014  
**Query Type:**  
**Description:**  
**Study Requested By:**  
**Study Generated By:** TDTSASW  
**Number of Crashes:** 1  
**Includes Non-Reportable Crashes:** N  
**Study Code:**



**Delaware Department of Transportation  
Crash Analysis Reporting System  
Crash Report**

**Property Damage Only**

|  |                   |  |                             |
|--|-------------------|--|-----------------------------|
| Complaint No.: <b>01-14-075783 - 000</b> |                   | Agency: <b>01 (TROOP 1 STATE POLICE)</b> |                             |
| Date of Crash: <b>09/22/2014</b>         |                   | Time of Crash: <b>17:21</b>              | County: <b>New Castle</b>   |
| Grid: <b>106350</b>                      | Sector: <b>18</b> | Latitude: <b>39.71575</b>                | Longitude: <b>-75.55603</b> |
| Reporting Officer: <b>CPL/3 HUBER</b>    |                   | Badge No.: <b>00168</b>                  |                             |

**Crash Location**

|   |                                    |                                |                                    |
|---|------------------------------------|--------------------------------|------------------------------------|
| Officer Defined Location:<br><b>On Westbound EXIT 1 664.53 Feet South East From DUPONT PARKWAY US13 0.68 Miles from Wilmington Municipality</b> |                                    |                                |                                    |
| Roadway ID: <b>212</b>  | Maintenance Road: <b>006215</b>    | Intersection Maintenance Road: |                                    |
| Milepoint: <b>0.21</b>  | Functional Code: <b>Interstate</b> | Direction: <b>West</b>         | Road Junction: <b>Non-Junction</b> |

**Crash Circumstances**

|   |   |                                   |
|---|---|-----------------------------------|
| Injuries Involved: <b>None Involved</b>                                 | No. of Fatalities: <b>0</b>                           | No. Injuries: <b>0</b>            |
| Manner of Impact: <b>Not a collision between two vehicles</b>           | Location of First Unstable Situation: <b>Shoulder</b> |                                   |
| First Harmful Event: <b>Guardrail End (Collision With Fixed Object)</b> |   |                                   |
| Location of First Harmful Event: <b>Shoulder</b>                        |   |                                   |
| Primary Contributing Circumstance: <b>Unknown</b>                       |   |                                   |
| Environment Contributing Circumstance: <b>None</b>                      | Roadway Contributing Circumstance: <b>None</b>        |                                   |
| Lighting Condition: <b>Daylight</b>                                     | Surface Condition: <b>Dry</b>                         |                                   |
| Weather Condition: <b>Clear</b>   |   |                                   |
| School Bus Involved: <b>No</b>  | Work Zone Involved: <b>No</b>                         | State Property Damage: <b>Yes</b> |

**Delaware Department of Transportation  
Crash Analysis Reporting System  
Crash Report**

**Property Damage Only**

**Vehicle - 001**

|   |   |   |
|---|---|---|
| Vehicle: <b>001</b>                               | Vehicle Style: <b>Passenger Car</b>                     | Total Occupants: <b>0</b>                                 |
| Commercial Vehicle: <b>No</b>                     | Trailer Attached: <b>No</b>                             |   |
| Registration: <b>HIDDEN</b>                       | State/Country: <b>Pennsylvania</b>                      | Expires: <b>07/31/2015</b>                                |
| <b>VIN: HIDDEN</b>                                |   |   |
| Model Year: <b>2002</b>                           | Make: <b>VOLK</b>                                       | Model: <b>Jetta</b>                                       |
| Vehicle Configuration:                            | Cargo Body Type:  | Gross Vehicle Weight Rating:<br><b>10,000 lbs or less</b> |
| Most Damaged Area: <b>Front Center</b>            | 1st Point of Impact: <b>Front Center</b>                |   |
| Extent of Damage/Removal: <b>Disabling Damage</b> | Direction of Force to Vehicle: <b>Right Side Front</b>  |   |
| Equipment Failure 1:                              | Equipment Failure 2:                                    |   |
| Insurance Status: <b>Unknown</b>                  |   |   |
| <b>Insurance Company: HIDDEN</b>                  |   |   |
| <b>Insurance Policy No.: HIDDEN</b>               |   |   |
| <b>Owner Name: HIDDEN</b>                         |   |   |
| <b>Owner Business Name: HIDDEN</b>                |   |   |
| <b>Owner Address: HIDDEN</b>                      |   |   |
| City: <b>Philadelphia</b>                         | State/Country: <b>Pennsylvania</b>                      | Zip Code: <b>19142</b>                                    |
| First Event: <b>Guardrail End</b>                 |   |   |
| Most Harmful Event: <b>Guardrail End</b>          |   |   |
| Posted/Statutory Speed Limit: <b>35</b>           | Hit and Run: <b>Driver or Car and Driver Left Scene</b> |   |
| Manuever/Action Taken: <b>Other</b>               | Traffic Control Device: <b>Lane Markings</b>            |   |
| Inoperative/Missing: <b>No</b>                    |   |   |
| Trafficway: <b>One-Way Trafficway</b>             | Direction Travelled: <b>Northeast</b>                   |   |

**Driver of Vehicle - 001**

|                              |                             |                       |
|------------------------------|-----------------------------|-----------------------|
| <b>Full Name: HIDDEN</b>     |                             |                       |
| <b>License No.: HIDDEN</b>   |                             |                       |
| Gender:                      | Birth Date:                 |                       |
| <b>Address: HIDDEN</b>       |                             |                       |
| City:                        | State/Country:              | Zip Code:             |
| Seating Position:            | Motorcycle Crash: <b>No</b> |                       |
| Driver Distraction:          |                             |                       |
| Condition at Time of Crash:  |                             |                       |
| Alcohol Suspected/Confirmed: | Drugs Suspected/Confirmed:  |                       |
| Alcohol Test Status:         | Alcohol Test Type:          | Alcohol Test Results: |

**Delaware Department of Transportation  
Crash Analysis Reporting System  
Crash Report**

**Property Damage Only**

|                          |                      |                              |                    |
|--------------------------|----------------------|------------------------------|--------------------|
| Drug Test Status:        |                      | Drug Test Type:              | Drug Test Results: |
| Injury Status:           |                      | Primary Area of Body Injury: |                    |
| Airbag:                  | Occupant Protection: |                              | Ejection:          |
| Description of Injuries: |                      |                              |                    |
| Driver Action:           |                      |                              |                    |
|                          |                      |                              |                    |

**State Property Damage - 001**

|   |  |                                |                        |
|---|--|--------------------------------|------------------------|
| Type of Property: <b>State Property</b>                   | Description: <b>(Safety Feature) - Guardrail</b> |                                |                        |
| Owner Business Name: <b>State Of Delaware</b> Owner Name: |  | Was Owner Notified: <b>Yes</b> |                        |
| Owner Address: <b>169 Brick Store Landing RD</b>          |  |                                |                        |
| City: <b>Smyrna</b>                                       | State/Country: <b>Delaware</b>                   |                                | Zip Code: <b>19977</b> |

**Witness**

|                            |                                |  |                        |
|----------------------------|--------------------------------|--|------------------------|
| Full Name: <b>HIDDEN</b>   |                                |  |                        |
| License No.: <b>HIDDEN</b> | Gender: <b>Male</b>            | Birth Date: <b>11/07/1982 - 31 years old</b> |                        |
| City: <b>Middletown</b>    | State/Country: <b>Delaware</b> |  | Zip Code: <b>19709</b> |

**Delaware Department of Transportation  
Crash Analysis Reporting System  
Crash Report**

**Property Damage Only**

**Narrative -000**

FROM THE SCENE OF THE ACCIDENT. V-1 WAS TRAVELING 495 N/B GETTING OFF AT US RT 13 DUPONT HIGHWAY S/B RAMP. UNKNOWN OP-1 COULD NOT NEGOTIATE THE RAMP CURB. V-1 LEFT THE ROAD AND STRUCK THE END OF THE GUARD RAIL FOR POI-1 10' NE/O SW/EOR ON THE RAMP. V-1 CONTINUED ACROSS THE GRASS ACROSS THE ON RAMP TO 495 N/B FROM DUPONT HIGHWAY S/B. V-1 THEN WITH ITS FRONT BUMPER STRUCK A TREE FOR POI-2 AND FRP APPROX; 100' NE/O PO-1. W-1 WAS INTERVIEWED AT THE SCENE. W-1 STATED HE WAS ON THE ON RAMP TO 495 N/B FROM DUPONT HIGHWAY. W-1 STATED HE LOOKED OVER TO THE RIGHT AND OBSERVED A BLACK VEHICLE IN THE DITCH WITH ITS DOOR OPEN. W-1 STATED HE PULLED ONTO THE SHOULDER AND CHECKED THE VEHICLE. W-1 STATED HE DID NOT SEE ANYONE IN THE VEHICLE AND THE WINDSHIELD WIPERS WERE ON. I CHECKED THE WOODS FOR ANYONE WITH NEGATIVE RESULTS. A COMPUTER CHECK ON PA JLL4884 REVEALED THE VEHICLE IS NOT STOLEN AND COMES BACK TO A 2002 VOLKSWAGEN JETTA. THE VEHICLE IS REGISTERED TO A ██████████ OUT OF ██████████ ██████████. THE VEHICLE WAS TOWED BY CPG TOWING. I CONTACTED HQ COMMUNICATIONS AND SPOKE WITH DISPATCHER REYNOLDS AND HAD THE VEHICLE ENTERED INTO THE SYSTEM AS STORED. I WAS ABLE TO LOCATE A TELEPHONE NUMBER OF ██████████ FOR THE OWNER OF THE VEHICLE. I CONTACTED THE OWNER OF THE VEHICLE VIA PUBLIC SERVICE. ██████████ STATED HE DOES OWN THE VEHICLE, BUT IT IS CURRENTLY NOT IN HIS POSSESSION. ██████████ STATED HE HAD ALLOWED A FRIEND BY THE NAME OF ██████████ TO BORROW THE VEHICLE TO GO TO THE AUTO PARTS STORE. ██████████ ADVISED THE SUBJECT WAS ONLY SUPPOSED TO BE IN PHILLY. ██████████ STATED HE DOES NOT KNOW THE SUBJECTS LAST NAME BUT WILL GET TO THE BOTTOM OF IT. I ADVISED ██████████ THAT HE HAD TO BRING THE OPERATOR TO DSP TROOP 1 PRIOR TO ME RELEASING THE VEHICLE. SEE SUPPLEMENT TO FOLLOW REFERENCE WHO THE OPERATOR OF THE VEHICLE WAS.

**Delaware Department of Transportation  
Crash Analysis Reporting System  
Crash Report  
Property Damage Only**



**Attachments**

**ATTACHMENT B**  
**FHWA Request for Information**  
**ET-Plus Guardrail End Terminal**  
**Ad-Hoc In-Service Evaluation – Supporting Documentation**

**Location #2 – DE Route 1 NB @ Exit 119, Median**



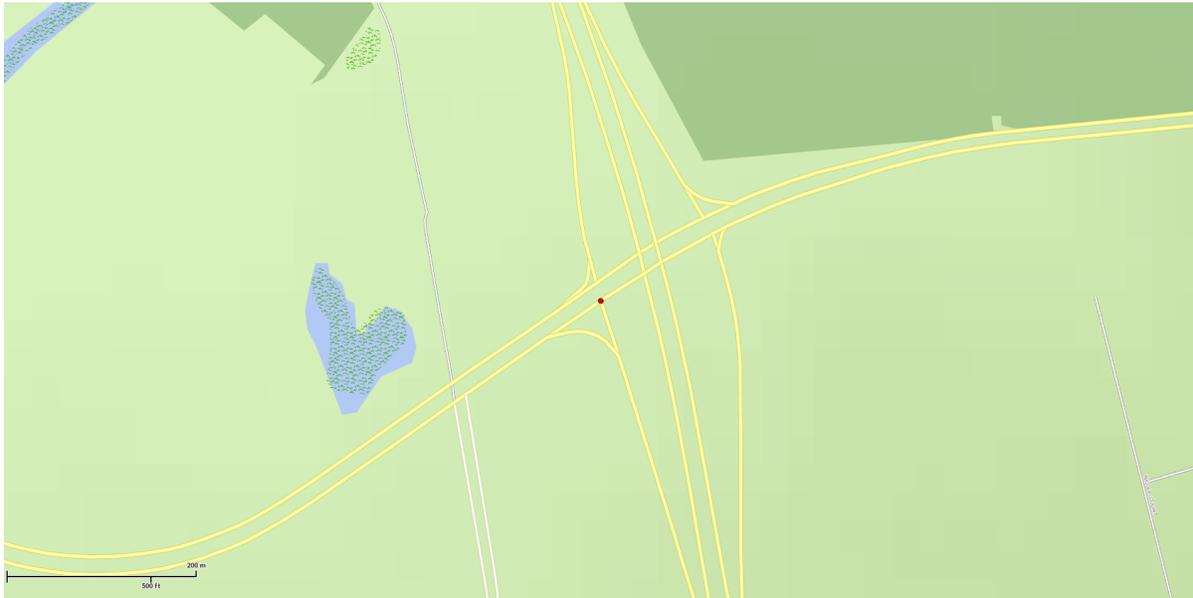
**ATTACHMENT B**  
**FHWA Request for Information**  
**ET-Plus Guardrail End Terminal**  
**Ad-Hoc In-Service Evaluation – Supporting Documentation**

**Location #3 – DE Route 273 WB @ DE Route 1 Ramp**



# Delaware Department of Transportation Crash Analysis Reporting System Crash Report

**Crash Study Time Period:** 11/06/2014 to 11/06/2014  
**Query Type:**  
**Description:**  
**Study Requested By:**  
**Study Generated By:** TDTSASW  
**Number of Crashes:** 1  
**Includes Non-Reportable Crashes:** N  
**Study Code:**



**Delaware Department of Transportation  
Crash Analysis Reporting System  
Crash Report**

**Personal Injury Crash**

|  |                   |  |                             |
|--|-------------------|--|-----------------------------|
| Complaint No.: <b>02-14-088753 - 000</b> |                   | Agency: <b>02 (TROOP 2 STATE POLICE)</b> |                             |
| Date of Crash: <b>11/06/2014</b>         |                   | Time of Crash: <b>06:34</b>              | County: <b>New Castle</b>   |
| Grid: <b>084336</b>                      | Sector: <b>23</b> | Latitude: <b>39.66083</b>                | Longitude: <b>-75.65325</b> |
| Reporting Officer: <b>CPL CALIO</b>      |                   | Badge No.: <b>01378</b>                  |                             |

**Crash Location**

|   |   |                                |                                    |
|---|---|--------------------------------|------------------------------------|
| Officer Defined Location:<br><b>On Eastbound CHRISTIANA ROAD SR273 At the intersection of 2.57 Miles from New Castle Municipality</b> |   |                                |                                    |
| Roadway ID: <b>101</b>  | Maintenance Road: <b>006328</b>                         | Intersection Maintenance Road: |                                    |
| Milepoint: <b>0</b>   | Functional Code: <b>Other Expressways/<br/>Freeways</b> | Direction: <b>East</b>         | Road Junction: <b>Intersection</b> |

**Crash Circumstances**

|   |   |                                   |
|---|---|-----------------------------------|
| Injuries Involved: <b>Injuries Involved</b>   | No. of Fatalities: <b>0</b>                             | No. Injuries: <b>1</b>            |
| Manner of Impact: <b>Angle</b>  | Location of First Unstable Situation: <b>On Roadway</b> |                                   |
| First Harmful Event: <b>Motor Vehicle in Transport (Collision With Person, Motor Vehicle, or Non-Fixed)</b> |   |                                   |
| Location of First Harmful Event: <b>On Roadway</b>  |   |                                   |
| Primary Contributing Circumstance: <b>Disregard Traffic Signal</b>  |   |                                   |
| Environment Contributing Circumstance: <b>None</b>  | Roadway Contributing Circumstance: <b>None</b>          |                                   |
| Lighting Condition: <b>Dark-Lighted</b>   | Surface Condition: <b>Wet</b>                           |                                   |
| Weather Condition: <b>Rain</b>  |   |                                   |
| School Bus Involved: <b>No</b>  | Work Zone Involved: <b>No</b>                           | State Property Damage: <b>Yes</b> |

**Delaware Department of Transportation  
Crash Analysis Reporting System  
Crash Report**

**Personal Injury Crash**

**Vehicle - 001**

|   |   |   |
|---|---|---|
| Vehicle: <b>001</b>                                   | Vehicle Style: <b>SUV</b>                             | Total Occupants: <b>1</b>                                 |
| Commercial Vehicle: <b>No</b>                         | Trailer Attached: <b>No</b>                           |   |
| Registration: <b>HIDDEN</b>                           | State/Country: <b>Delaware</b>                        | Expires: <b>04/30/2015</b>                                |
| VIN: <b>HIDDEN</b>                                    |   |   |
| Model Year: <b>2007</b>                               | Make: <b>HYUN</b>                                     | Model: <b>Veracruz</b>                                    |
| Vehicle Configuration:                                | Cargo Body Type:                                      | Gross Vehicle Weight Rating:<br><b>10,000 lbs or less</b> |
| Most Damaged Area: <b>Front Center</b>                | 1st Point of Impact: <b>Front Center</b>              |   |
| Extent of Damage/Removal: <b>Disabling Damage</b>     | Direction of Force to Vehicle: <b>Right Side Rear</b> |   |
| Equipment Failure 1:                                  | Equipment Failure 2:                                  |   |
| Insurance Status: <b>Insured</b>                      |   |   |
| Insurance Company: <b>HIDDEN</b>                      |   |   |
| Insurance Policy No.: <b>HIDDEN</b>                   |   |   |
| Owner Name: <b>HIDDEN</b>                             |   |   |
| Owner Business Name: <b>HIDDEN</b>                    |   |   |
| Owner Address: <b>HIDDEN</b>                          |   |   |
| City: <b>NEWARK</b>                                   | State/Country: <b>Delaware</b>                        | Zip Code: <b>19711</b>                                    |
| First Event: <b>Motor Vehicle In Transport</b>        |   |   |
| Most Harmful Event: <b>Motor Vehicle in Transport</b> |   |   |
| Posted/Statutory Speed Limit: <b>45</b>               | Hit and Run:  |   |
| Manuever/Action Taken: <b>Turning Left</b>            | Traffic Control Device: <b>Traffic Control Signal</b> |   |
| Inoperative/Missing: <b>No</b>                        |   |   |
| Trafficway: <b>Two-Way, Not Divided</b>               | Direction Travelled: <b>Southbound</b>                |   |

**Driver of Vehicle - 001**

|   |  |                        |
|---|--|------------------------|
| Full Name: <b>HIDDEN</b>  |  |                        |
| License No.: <b>HIDDEN</b>                                      |  |                        |
| Gender: <b>Female</b>   | Birth Date: <b>08/16/1990 - 24 years old</b> |                        |
| Address: <b>HIDDEN</b>  |  |                        |
| City: <b>Newark</b>   | State/Country: <b>Delaware</b>               | Zip Code: <b>19711</b> |
| Seating Position: <b>Front Seat – Left Side (Driver's Side)</b> | Motorcycle Crash: <b>No</b>                  |                        |
| Driver Distraction: <b>None</b>                                 |  |                        |
| Condition at Time of Crash: <b>Apparently Normal</b>            |  |                        |
| Alcohol Suspected/Confirmed: <b>No</b>                          | Drugs Suspected/Confirmed: <b>No</b>         |                        |
| Alcohol Test Status:  | Alcohol Test Type:                           | Alcohol Test Results:  |

**Delaware Department of Transportation  
Crash Analysis Reporting System  
Crash Report**

**Personal Injury Crash**

|  |                              |                    |
|--|------------------------------|--------------------|
| Drug Test Status:                            | Drug Test Type:              | Drug Test Results: |
| Injury Status: <b>No injury</b>              | Primary Area of Body Injury: |                    |
| Airbag:                                      | Occupant Protection:         | Ejection:          |
| Description of Injuries:                     |                              |                    |
| Driver Action: <b>No Contributing Action</b> |                              |                    |
|  |                              |                    |

**State Property Damage - 001**

|   |  |                        |
|---|--|------------------------|
| Type of Property: <b>State Property</b>                   | Description: <b>(Safety Feature) - Guardrail</b> |                        |
| Owner Business Name: <b>State Of Delaware</b> Owner Name: | Was Owner Notified: <b>Yes</b>                   |                        |
| Owner Address: <b>169 Brick Store Landing RD</b>          |  |                        |
| City: <b>Smyrna</b>                                       | State/Country: <b>Delaware</b>                   | Zip Code: <b>19977</b> |

**Delaware Department of Transportation  
Crash Analysis Reporting System  
Crash Report**

**Personal Injury Crash**

**Vehicle - 002**

|  |   |   |
|--|---|---|
| Vehicle: <b>002</b>  | Vehicle Style: <b>Minivan/Passenger Van</b>           | Total Occupants: <b>1</b>                                 |
| Commercial Vehicle: <b>No</b>                                      | Trailer Attached: <b>No</b>                           |   |
| Registration: <b>HIDDEN</b>  | State/Country: <b>New Jersey</b>                      | Expires: <b>01/30/2015</b>                                |
| <b>VIN: HIDDEN</b>   |   |   |
| Model Year: <b>2003</b>  | Make: <b>FORD03</b>                                   | Model: <b>E350</b>  |
| Vehicle Configuration:   | Cargo Body Type:                                      | Gross Vehicle Weight Rating:<br><b>10,000 lbs or less</b> |
| Most Damaged Area: <b>Left Side Front</b>                          | 1st Point of Impact: <b>Left Side</b>                 |   |
| Extent of Damage/Removal: <b>Disabling Damage</b>                  | Direction of Force to Vehicle: <b>Rear Left</b>       |   |
| Equipment Failure 1:   | Equipment Failure 2:                                  |   |
| Insurance Status: <b>Insured</b>                                   |   |   |
| Insurance Company: <b>HIDDEN</b>                                   |   |   |
| Insurance Policy No.: <b>HIDDEN</b>                                |   |   |
| Owner Name: <b>HIDDEN</b>  |   |   |
| Owner Business Name: <b>HIDDEN</b>                                 |   |   |
| Owner Address: <b>HIDDEN</b>                                       |   |   |
| City: <b>PENNS GROVE</b>   | State/Country: <b>New Jersey</b>                      | Zip Code: <b>08069</b>                                    |
| First Event: <b>Motor Vehicle In Transport</b>                     |   |   |
| Most Harmful Event: <b>Motor Vehicle in Transport</b>              |   |   |
| Posted/Statutory Speed Limit: <b>45</b>                            | Hit and Run:  |   |
| Manuever/Action Taken: <b>Movements Essentially Straight Ahead</b> | Traffic Control Device: <b>Traffic Control Signal</b> |   |
| Inoperative/Missing: <b>No</b>                                     |   |   |
| Trafficway: <b>Two-Way, Not Divided</b>                            | Direction Travelled: <b>Eastbound</b>                 |   |

**Driver of Vehicle - 002**

|   |  |                        |
|---|--|------------------------|
| Full Name: <b>HIDDEN</b>  |  |                        |
| License No.: <b>HIDDEN</b>                                      |  |                        |
| Gender: <b>Female</b>   | Birth Date: <b>04/26/1977 - 37 years old</b> |                        |
| Address: <b>HIDDEN</b>  |  |                        |
| City: <b>PENNS GROVE</b>  | State/Country: <b>New Jersey</b>             | Zip Code: <b>08069</b> |
| Seating Position: <b>Front Seat – Left Side (Driver's Side)</b> | Motorcycle Crash: <b>No</b>                  |                        |
| Driver Distraction: <b>None</b>                                 |  |                        |
| Condition at Time of Crash: <b>Apparently Normal</b>            |  |                        |
| Alcohol Suspected/Confirmed: <b>No</b>                          | Drugs Suspected/Confirmed: <b>No</b>         |                        |

**Delaware Department of Transportation  
Crash Analysis Reporting System  
Crash Report**

**Personal Injury Crash**

|  |  |  |                              |
|--|--|--|------------------------------|
| Alcohol Test Status:                                       |  | Alcohol Test Type:                       | Alcohol Test Results:        |
| Drug Test Status:  |  | Drug Test Type:                          | Drug Test Results:           |
| Injury Status: <b>Nonfatal Injury - Non-incapacitating</b> |  | Primary Area of Body Injury: <b>Head</b> |                              |
| Airbag: <b>Deployed - Front</b>                            | Occupant Protection: <b>Shoulder and Lap Belt Used</b> |  | Ejection: <b>Not Ejected</b> |
| Description of Injuries:                                   |  |  |                              |
| Driver Action: <b>Ran Red Light</b>                        |  |  |                              |
| Violation 1 - <b>FAILURE TO STOP AT A RED LIGHT</b>        |  |  |                              |

**Witness**

|                            |                                |  |
|----------------------------|--------------------------------|--|
| <b>Full Name: HIDDEN</b>   |                                |  |
| License No.: <b>HIDDEN</b> | Gender: <b>Male</b>            | Birth Date: <b>01/05/1979 - 35 years old</b> |
| City: <b>New Castle</b>    | State/Country: <b>Delaware</b> | Zip Code: <b>19720</b>                       |

**Delaware Department of Transportation  
Crash Analysis Reporting System  
Crash Report**

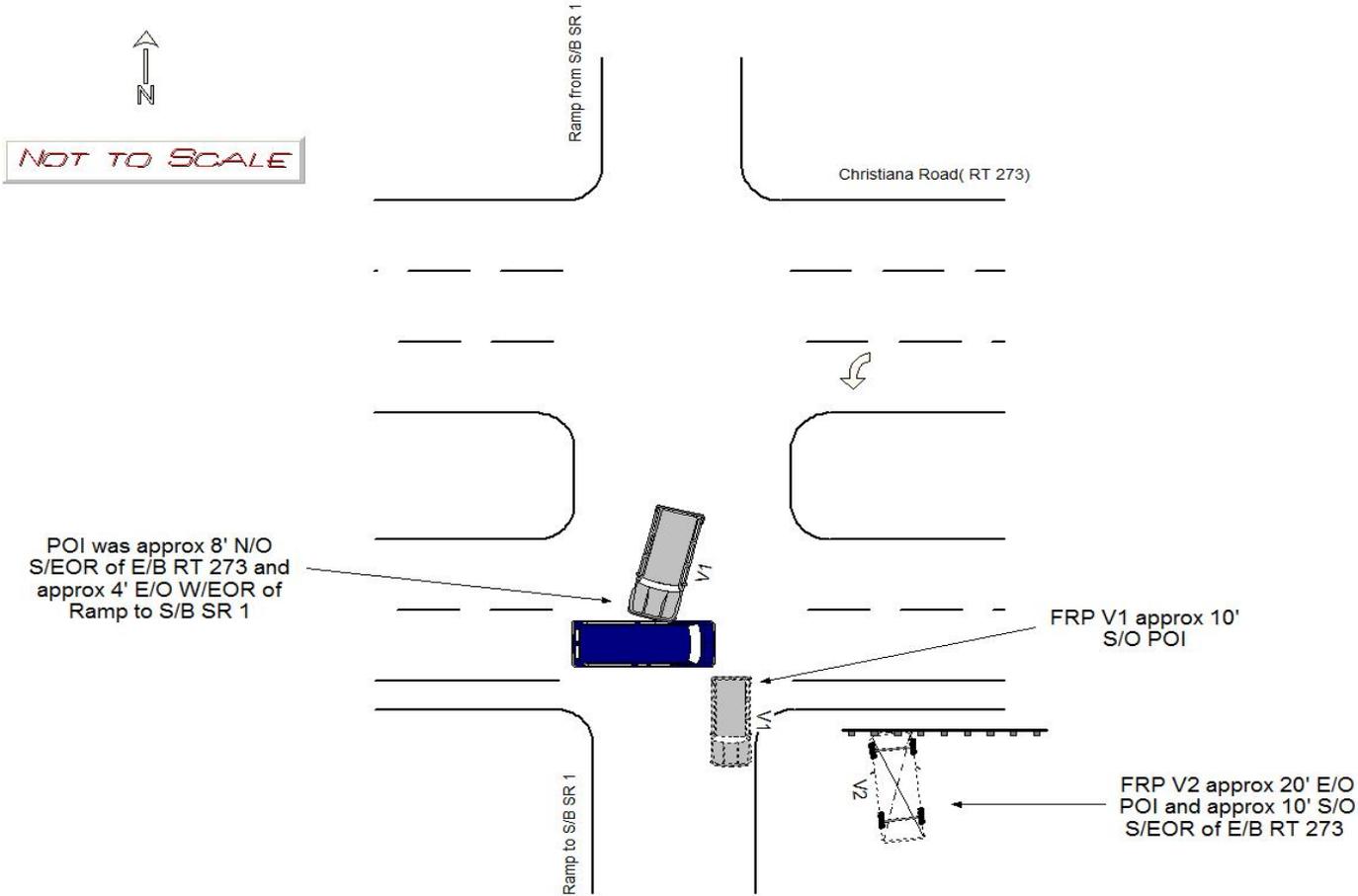
**Personal Injury Crash**

**Narrative -000**

V1 was traveling on W/B Christiana Road( RT 273) and had entered the left turn lane for S/B SR 1. V2 was traveling E/B on RT 273 in the right lane. V1 turned left towards the ramp to S/B SR 1 and V2 proceeded E/B through the intersection. The front right corner of V1 struck the left side of V2 for POI. POI was located approximately 8' N/O S/EOR of E/B RT 273 and approximately 4' E/O W/EOr of ramp to S/B SR 1. V1 came to an FRP approximately 10' S/O POI. V2 spun in a counter clockwise direction approximately 90 degrees. V2 struck a guardrail and rolled over onto its passenger side and ultimately onto its roof. V2's FRP was approximately 20' E/O POI and approximately 10' S/O S/EOR of Rt 273. OP1 stated that she was traveling W/B on RT 273. OP1 stated that she had entered the left turn lane for S/B SR 1. OP1 stated that she was the first car stopped at the red light. OP1 stated that the left turn signal then changed to green and she proceeded to turn left into the intersection. OP1 stated that while she was turning she observed V2 enter the intersection in the right lane and collide with her vehicle. OP1 stated that V2 was traveling E/B on RT 273. OP1 stated that she was unable to avoid the collision. OP1 sustained an injury to her left forearm possibly from the airbag but she declined going to the hospital in an ambulance. OP1 stated that she will seek medical attention on her own. OP2 stated that she is from New Jersey and that she had just left a warehouse in the area. OP2 stated that she was traveling E/B on RT 273 in the right lane. OP2 stated that she observed a light to be green. OP2 later stated she may have seen a the light at the next intersection turn green and mistakenly think it was for her intersection. W1 stated that he was on W/B RT 273 and had entered the left turn lane for S/B SR 1. W1 stated that he was the second vehicle at the red light and that he was directly behind V1. W1 stated that he observed their left turn signal to turn green and V1 proceeded to turn left. W1 stated that he observed V2 traveling E/B on RT 273 in the right lane and he observed the collision between the two vehicles. W1 stated that he assisted OP2 in exited the overturned van. OP2 was transported to Christiana Hospital by EMS. DELDOT responded to the scene in reference to damage to the guardrail. A section approximately 30' in length had been damaged. I observed several cycles of the traffic control signal and I observed it to be functioning properly. Reynolds Towing responded to the scene and removed both vehicles. OP1 was provided with a copy of the Driver Information Exchange Report and a copy of the Tow Slip. I responded to Christiana Hospital and made contact with OP2. I provided OP2 with a copy of the Driver Information Exchange Report and a copy of the Tow Slip. OP2 was issued a citation for failing to stop at a red light.

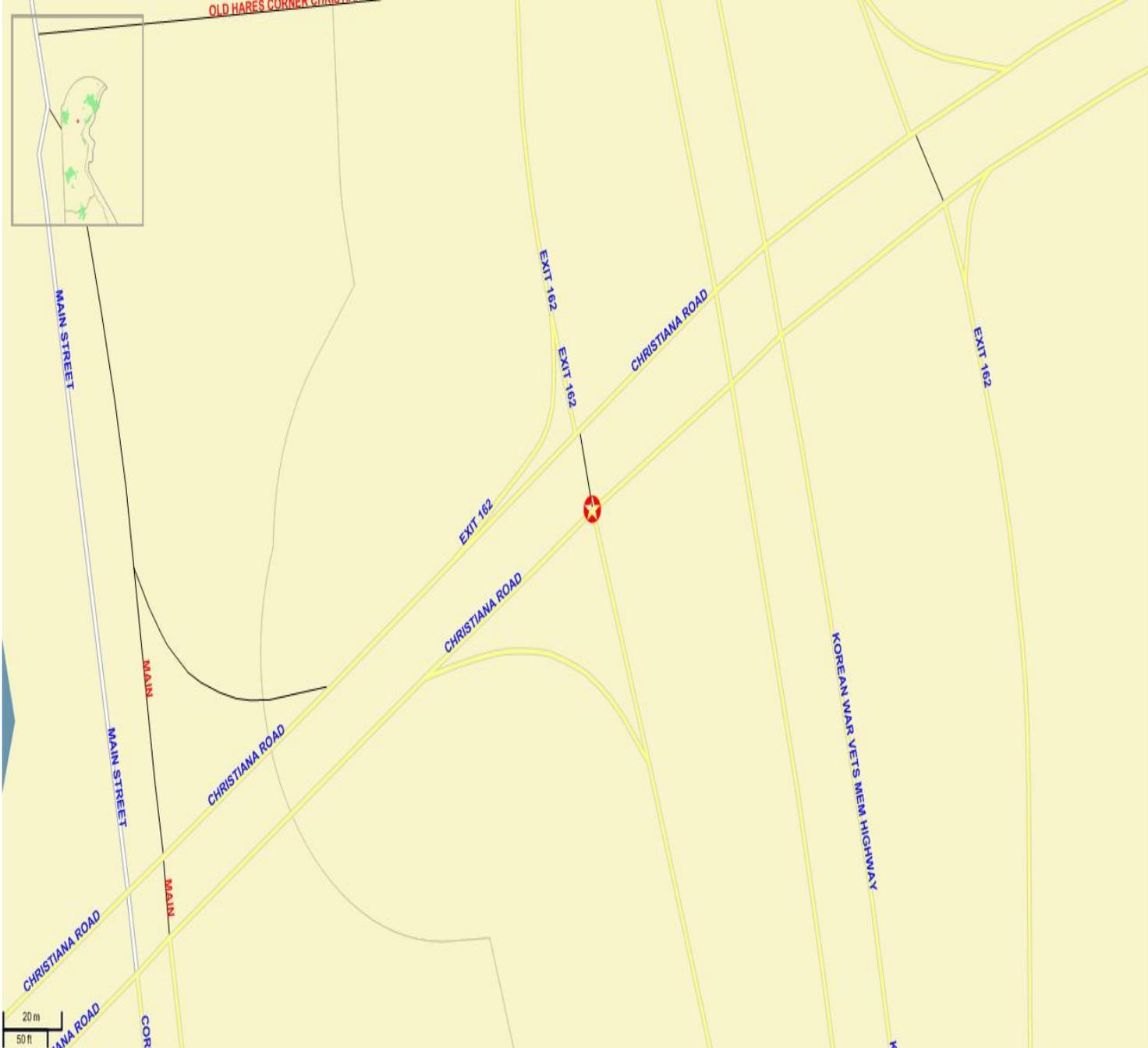
Delaware Department of Transportation  
Crash Analysis Reporting System  
Crash Report

Personal Injury Crash



**Delaware Department of Transportation  
Crash Analysis Reporting System  
Crash Report**

**Personal Injury Crash**



**Attachments**

**ATTACHMENT B**  
**FHWA Request for Information**  
**ET-Plus Guardrail End Terminal**  
**Ad-Hoc In-Service Evaluation – Supporting Documentation**

**Location #4 – I-95 SB Ramp to DE Route 141**



# Delaware Department of Transportation Crash Analysis Reporting System Crash Report

**Crash Study Time Period:** 11/06/2014 to 11/06/2014  
**Query Type:**  
**Description:**  
**Study Requested By:**  
**Study Generated By:** TDTSASW  
**Number of Crashes:** 1  
**Includes Non-Reportable Crashes:** N  
**Study Code:**



**Delaware Department of Transportation  
Crash Analysis Reporting System  
Crash Report**

**Non-Reportable**

|  |                   |  |                             |
|--|-------------------|--|-----------------------------|
| Complaint No.: <b>06-14-088824 - 000</b> |                   | Agency: <b>06 (TROOP 6 STATE POLICE)</b> |                             |
| Date of Crash: <b>11/06/2014</b>         |                   | Time of Crash: <b>11:15</b>              | County: <b>New Castle</b>   |
| Grid: <b>090346</b>                      | Sector: <b>68</b> | Latitude: <b>39.70275</b>                | Longitude: <b>-75.60636</b> |
| Reporting Officer: <b>CPL MILLER</b>     |                   | Badge No.: <b>01345</b>                  |                             |

**Crash Location**

|  |                                    |                                |                                    |
|--|------------------------------------|--------------------------------|------------------------------------|
| Officer Defined Location:<br><b>On Southbound US202 123.58 Feet South West From I-95 - RAMP US202 0.50 Miles from Newport Municipality</b> |                                    |                                |                                    |
| Roadway ID: <b>204</b>   | Maintenance Road: <b>006088</b>    | Intersection Maintenance Road: |                                    |
| Milepoint: <b>0.02</b>   | Functional Code: <b>Interstate</b> | Direction: <b>South</b>        | Road Junction: <b>Non-Junction</b> |

**Crash Circumstances**

|   |   |                                   |
|---|---|-----------------------------------|
| Injuries Involved: <b>None Involved</b>   | No. of Fatalities: <b>0</b>   | No. Injuries: <b>0</b>            |
| Manner of Impact: <b>Not a collision between two vehicles</b>   | Location of First Unstable Situation: <b>On Roadway</b>                                       |                                   |
| First Harmful Event: <b>Motor Vehicle in Transport (Collision With Person, Motor Vehicle, or Non-Fixed)</b> |   |                                   |
| Location of First Harmful Event: <b>Shoulder</b>  |   |                                   |
| Primary Contributing Circumstance: <b>Mechanical defects</b>  |   |                                   |
| Environment Contributing Circumstance: <b>Weather Conditions</b>  | Roadway Contributing Circumstance: <b>Road Surface Condition (wet, icy, snow, slush, etc)</b> |                                   |
| Lighting Condition: <b>Daylight</b>   | Surface Condition: <b>Wet</b>   |                                   |
| Weather Condition: <b>Cloudy</b>  |   |                                   |
| School Bus Involved: <b>No</b>  | Work Zone Involved: <b>No</b>   | State Property Damage: <b>Yes</b> |

**Delaware Department of Transportation  
Crash Analysis Reporting System  
Crash Report  
Non-Reportable**

**Vehicle - 001**

|  |   |   |
|--|---|---|
| Vehicle: <b>001</b>  | Vehicle Style: <b>Passenger Car</b>                   | Total Occupants: <b>1</b>                                 |
| Commercial Vehicle: <b>No</b>                                | Trailer Attached: <b>No</b>                           |   |
| Registration: <b>HIDDEN</b>                                  | State/Country: <b>Pennsylvania</b>                    | Expires: <b>07/31/2015</b>                                |
| <b>VIN: HIDDEN</b>   |   |   |
| Model Year: <b>2006</b>                                      | Make: <b>CHEV</b>                                     | Model: <b>Impala</b>                                      |
| Vehicle Configuration:                                       | Cargo Body Type:                                      | Gross Vehicle Weight Rating:<br><b>10,000 lbs or less</b> |
| Most Damaged Area: <b>Rear Right</b>                         | 1st Point of Impact: <b>Right Side</b>                |   |
| Extent of Damage/Removal: <b>Minor Damage</b>                | Direction of Force to Vehicle: <b>Right Side Rear</b> |   |
| Equipment Failure 1:   | Equipment Failure 2:                                  |   |
| Insurance Status: <b>Insured</b>                             |   |   |
| <b>Insurance Company: HIDDEN</b>                             |   |   |
| <b>Insurance Policy No.: HIDDEN</b>                          |   |   |
| <b>Owner Name: HIDDEN</b>                                    |   |   |
| <b>Owner Business Name: HIDDEN</b>                           |   |   |
| <b>Owner Address: HIDDEN</b>                                 |   |   |
| City: <b>Philadelphia</b>                                    | State/Country: <b>Pennsylvania</b>                    | Zip Code: <b>19144</b>                                    |
| First Event: <b>Guardrail End</b>                            |   |   |
| Most Harmful Event: <b>Motor Vehicle in Transport</b>        |   |   |
| Posted/Statutory Speed Limit: <b>25</b>                      | Hit and Run:  |   |
| Manuever/Action Taken: <b>Negotiating a Curve</b>            | Traffic Control Device: <b>No Controls</b>            |   |
| Inoperative/Missing:   |   |   |
| Trafficway: <b>Two-Way, Divided, Positive Median Barrier</b> | Direction Travelled: <b>Southbound</b>                |   |

**Driver of Vehicle - 001**

|   |  |                        |
|---|--|------------------------|
| <b>Full Name: HIDDEN</b>  |  |                        |
| <b>License No.: HIDDEN</b>                                      |  |                        |
| Gender: <b>Male</b>   | Birth Date: <b>08/13/1992 - 22 years old</b> |                        |
| <b>Address: HIDDEN</b>  |  |                        |
| City: <b>Philadelphia</b>                                       | State/Country: <b>Pennsylvania</b>           | Zip Code: <b>19144</b> |
| Seating Position: <b>Front Seat – Left Side (Driver's Side)</b> | Motorcycle Crash: <b>No</b>                  |                        |
| Driver Distraction: <b>None</b>                                 |  |                        |
| Condition at Time of Crash: <b>Apparently Normal</b>            |  |                        |
| Alcohol Suspected/Confirmed: <b>No</b>                          | Drugs Suspected/Confirmed: <b>No</b>         |                        |
| Alcohol Test Status:  | Alcohol Test Type:                           | Alcohol Test Results:  |

**Delaware Department of Transportation  
Crash Analysis Reporting System  
Crash Report  
Non-Reportable**

|   |                      |                              |                    |
|---|----------------------|------------------------------|--------------------|
| Drug Test Status:                               |                      | Drug Test Type:              | Drug Test Results: |
| Injury Status: <b>No injury</b>                 |                      | Primary Area of Body Injury: |                    |
| Airbag:   | Occupant Protection: |                              | Ejection:          |
| Description of Injuries:                        |                      |                              |                    |
| Driver Action: <b>Other Contributing Action</b> |                      |                              |                    |
|   |                      |                              |                    |

**State Property Damage - 001**

|   |  |                               |                        |
|---|--|-------------------------------|------------------------|
| Type of Property: <b>State Property</b>                   | Description: <b>(Safety Feature) - Guardrail</b> |                               |                        |
| Owner Business Name: <b>State Of Delaware</b> Owner Name: |  | Was Owner Notified: <b>No</b> |                        |
| Owner Address: <b>169 Brick Store Landing RD</b>          |  |                               |                        |
| City: <b>Smyrna</b>                                       | State/Country: <b>Delaware</b>                   |                               | Zip Code: <b>19977</b> |

**Delaware Department of Transportation  
Crash Analysis Reporting System  
Crash Report**

**Non-Reportable**

**Narrative -000**

V1 WAS TRAVELING S/B ON I95 ATTEMPTING TO EXIT ONTO SR141 N/B RAMP, V1 WAS NEGOTIATING THE TURN WHEN HIS STEERING LOCKED, CAUSING HIM TO STRIKE THE END OF THE GUARDRAIL FOR POI#1 APPROX. 4FT S/O SEOR. FRP WAS APPROXIMATELY 20 FT S/O POI#1. OP1 ADVISED HE WAS TRAVELLING S/B ON I95 S/B ATTEMPTING TO TURN ONTO SR141 N/B RAMP. OP1 ADVISED HIS STEERING "LOCKED." OP1 ADVISED HE STRUCK THE END OF THE GUARDRAIL CAUSING MINOR DAMAGE TO SAME. OP1 WAS ISSUED AN ACCIDENT EXCHANGED FORM, NOTHING FURTHER.

**Delaware Department of Transportation  
Crash Analysis Reporting System  
Crash Report  
Non-Reportable**



**Attachments**

*Disclaimer for CARS: Crash data and associated police reports are intended for DeIDOT use only and shall not be transmitted, copied, distributed or provided to any entity other than DeIDOT unless written approval is received from the DeIDOT Legal Section. Police reports are the property of the Delaware State Police.*

**ATTACHMENT B**  
**FHWA Request for Information**  
**ET-Plus Guardrail End Terminal**  
**Ad-Hoc In-Service Evaluation – Supporting Documentation**

**Location #5 – US Route 13 @ Rifle Range Road**



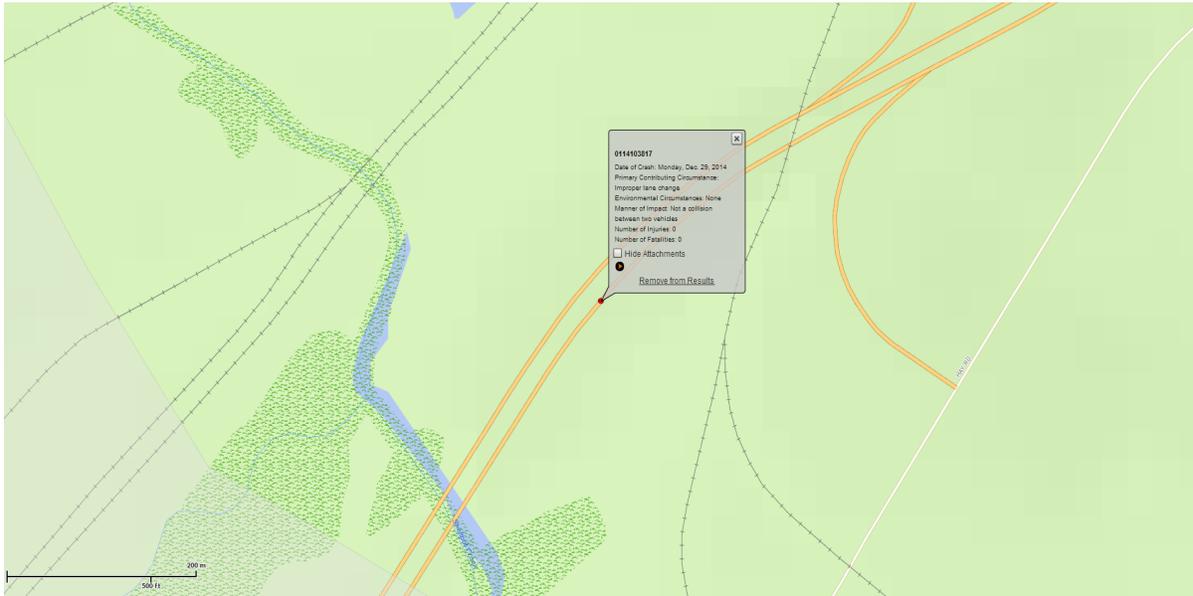
**ATTACHMENT B**  
**FHWA Request for Information**  
**ET-Plus Guardrail End Terminal**  
**Ad-Hoc In-Service Evaluation – Supporting Documentation**

**Location #6 – I-495 NB, ¾ Mile North of 12<sup>th</sup> Street**



# Delaware Department of Transportation Crash Analysis Reporting System Crash Report

**Crash Study Time Period:** 12/29/2014 to 12/29/2014  
**Query Type:**  
**Description:**  
**Study Requested By:**  
**Study Generated By:** TDTSASW  
**Number of Crashes:** 1  
**Includes Non-Reportable Crashes:** N  
**Study Code:**



**Delaware Department of Transportation  
Crash Analysis Reporting System  
Crash Report**

**Property Damage Only**

|   |                   |  |                             |
|---|-------------------|--|-----------------------------|
| Complaint No.: <b>01-14-103817 - 000</b>  |                   | Agency: <b>01 (TROOP 1 STATE POLICE)</b> |                             |
| Date of Crash: <b>12/29/2014</b>          |                   | Time of Crash: <b>06:46</b>              | County: <b>New Castle</b>   |
| Grid: <b>116358</b>                       | Sector: <b>18</b> | Latitude: <b>39.74745</b>                | Longitude: <b>-75.51074</b> |
| Reporting Officer: <b>CPL/1 JOANNIDES</b> |                   | Badge No.: <b>00977</b>                  |                             |

**Crash Location**

|   |                                    |                                |                                    |
|---|------------------------------------|--------------------------------|------------------------------------|
| Officer Defined Location:<br><b>On Northbound I-495,VIETNAM VETERANS MEM.HIGHWAY I495 0.26 Miles South West From RAMP 629-1 0.21 Miles from Wilmington Municipality</b> |                                    |                                |                                    |
| Roadway ID: <b>89</b>   | Maintenance Road: <b>00060</b>     | Intersection Maintenance Road: |                                    |
| Milepoint: <b>5.42</b>  | Functional Code: <b>Interstate</b> | Direction: <b>North</b>        | Road Junction: <b>Non-Junction</b> |

**Crash Circumstances**

|   |   |                                   |
|---|---|-----------------------------------|
| Injuries Involved: <b>None Involved</b>   | No. of Fatalities: <b>0</b>                             | No. Injuries: <b>0</b>            |
| Manner of Impact: <b>Not a collision between two vehicles</b>   | Location of First Unstable Situation: <b>On Roadway</b> |                                   |
| First Harmful Event: <b>Motor Vehicle in Transport (Collision With Person, Motor Vehicle, or Non-Fixed)</b> |   |                                   |
| Location of First Harmful Event: <b>Shoulder</b>  |   |                                   |
| Primary Contributing Circumstance: <b>Improper lane change</b>  |   |                                   |
| Environment Contributing Circumstance: <b>None</b>  | Roadway Contributing Circumstance: <b>None</b>          |                                   |
| Lighting Condition: <b>Dark-Not Lighted</b>   | Surface Condition: <b>Dry</b>                           |                                   |
| Weather Condition: <b>Cloudy</b>  |   |                                   |
| School Bus Involved: <b>No</b>  | Work Zone Involved: <b>No</b>                           | State Property Damage: <b>Yes</b> |

**Delaware Department of Transportation  
Crash Analysis Reporting System  
Crash Report**

**Property Damage Only**

**Vehicle - 001**

|  |   |   |
|--|---|---|
| Vehicle: <b>001</b>  | Vehicle Style: <b>Passenger Car</b>               | Total Occupants: <b>1</b>                                 |
| Commercial Vehicle: <b>No</b>                                      | Trailer Attached: <b>No</b>                       |   |
| Registration: <b>HIDDEN</b>  | State/Country: <b>Delaware</b>                    | Expires: <b>05/16/2015</b>                                |
| <b>VIN: HIDDEN</b>   |   |   |
| Model Year: <b>2000</b>  | Make: <b>TOYT</b>                                 | Model: <b>Solara</b>                                      |
| Vehicle Configuration:   | Cargo Body Type:                                  | Gross Vehicle Weight Rating:<br><b>10,000 lbs or less</b> |
| Most Damaged Area: <b>Right Side</b>                               | 1st Point of Impact: <b>Right Side</b>            |   |
| Extent of Damage/Removal: <b>Disabling Damage</b>                  | Direction of Force to Vehicle: <b>Front Right</b> |   |
| Equipment Failure 1:   | Equipment Failure 2:                              |   |
| Insurance Status: <b>Insured</b>                                   |   |   |
| Insurance Company: <b>HIDDEN</b>                                   |   |   |
| Insurance Policy No.: <b>HIDDEN</b>                                |   |   |
| Owner Name: <b>HIDDEN</b>  |   |   |
| Owner Business Name: <b>HIDDEN</b>                                 |   |   |
| Owner Address: <b>HIDDEN</b>                                       |   |   |
| City: <b>WILMINGTON</b>  | State/Country: <b>Delaware</b>                    | Zip Code: <b>19810</b>                                    |
| First Event: <b>Guardrail End</b>                                  |   |   |
| Most Harmful Event: <b>Guardrail End</b>                           |   |   |
| Posted/Statutory Speed Limit: <b>65</b>                            | Hit and Run:                                      |   |
| Manuever/Action Taken: <b>Movements Essentially Straight Ahead</b> | Traffic Control Device: <b>Lane Markings</b>      |   |
| Inoperative/Missing: <b>No</b>                                     |   |   |
| Trafficway: <b>Two-Way, Divided, Positive Median Barrier</b>       | Direction Travelled: <b>Northbound</b>            |   |

**Driver of Vehicle - 001**

|   |  |                        |
|---|--|------------------------|
| Full Name: <b>HIDDEN</b>  |  |                        |
| License No.: <b>HIDDEN</b>                                      |  |                        |
| Gender: <b>Male</b>   | Birth Date: <b>12/09/1986 - 28 years old</b> |                        |
| Address: <b>HIDDEN</b>  |  |                        |
| City: <b>Wilmington</b>   | State/Country: <b>Delaware</b>               | Zip Code: <b>19810</b> |
| Seating Position: <b>Front Seat – Left Side (Driver's Side)</b> | Motorcycle Crash: <b>No</b>                  |                        |
| Driver Distraction: <b>None</b>                                 |  |                        |
| Condition at Time of Crash: <b>Apparently Normal</b>            |  |                        |
| Alcohol Suspected/Confirmed: <b>No</b>                          | Drugs Suspected/Confirmed: <b>No</b>         |                        |

**Delaware Department of Transportation  
Crash Analysis Reporting System  
Crash Report**

**Property Damage Only**

|  |                      |                              |                       |
|--|----------------------|------------------------------|-----------------------|
| Alcohol Test Status:                         |                      | Alcohol Test Type:           | Alcohol Test Results: |
| Drug Test Status:                            |                      | Drug Test Type:              | Drug Test Results:    |
| Injury Status: <b>No injury</b>              |                      | Primary Area of Body Injury: |                       |
| Airbag:                                      | Occupant Protection: |                              | Ejection:             |
| Description of Injuries:                     |                      |                              |                       |
| Driver Action: <b>No Contributing Action</b> |                      |                              |                       |
|  |                      |                              |                       |

**State Property Damage - 001**

|   |  |                                |                        |
|---|--|--------------------------------|------------------------|
| Type of Property: <b>State Property</b>                   | Description: <b>(Safety Feature) - Guardrail</b> |                                |                        |
| Owner Business Name: <b>State Of Delaware</b> Owner Name: |  | Was Owner Notified: <b>Yes</b> |                        |
| Owner Address: <b>169 Brick Store Landing RD</b>          |  |                                |                        |
| City: <b>Smyrna</b>                                       | State/Country: <b>Delaware</b>                   |                                | Zip Code: <b>19977</b> |

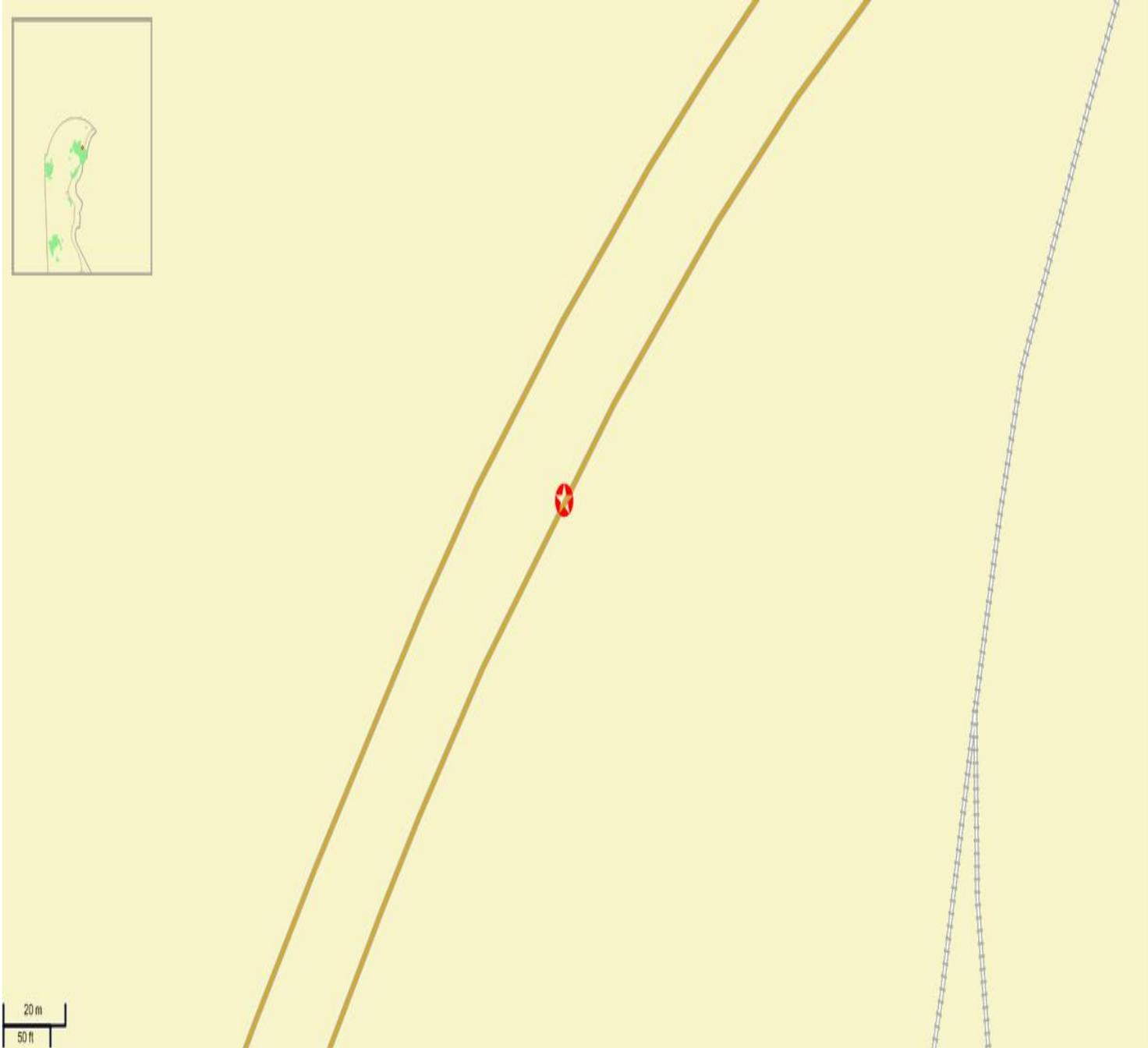
**Delaware Department of Transportation  
Crash Analysis Reporting System  
Crash Report**

**Property Damage Only**

**Narrative -000**

V-1 WAS TRAVELING N/B ON I-495 IN THE RIGHT TRAVEL LANE N/O 12TH ST. NCV-1, AN UNKNOWN BOX TRUCK, WAS TRAVELING N/B IN THE CENTER TRAVEL LANE TO THE LEFT OF V-1. NCV-1 MADE AN UNSAFE LANE CHANGE TO THE RIGHT PUSHING V-1 OFF OF THE ROADWAY FOR POI 1 WITH A GUARDRAIL END APPROXIMATELY 12' E/O THE EEOR N/B I-495, .2 MILES N/O THE NEOR W/B 12TH ST. V-1 CAME TO A CONTROLLED STOP N/B ON THE RIGHT SHOULDER OF I-495, APPROXIMATELY 100' N/O POI FOR FRP V-1. NCV-1 CONTINUED N/B ON I-495. OP1 ADVISED HE WAS TRAVELING N/B ON I-495 IN THE RIGHT TRAVEL LANE N/O 12TH ST. OP1 ADVISED AN UNKNOWN WHITE BOX TRUCK (NCV-1) WAS TRAVELING N/B ON I-495 IN THE CENTER TRAVEL LANE. OP1 STATED V-1 MADE A LANE CHANGE INTO THE RIGHT LANE CAUSING OP1 TO VEER TO THE RIGHT TO AVOID COLLIDING WITH THE TRUCK. OP1 ADVISED THE TRUCK FORCED V-1 OFF OF THE ROADWAY AND INTO A GUARDRAIL END ALONG THE EEOR N/ B I-495. OP1 STATED THERE WAS NO CONTACT BETWEEN V-1 AND NCV-1. OP1 WAS UNABLE TO PROVIDE ANY FURTHER INFORMATION ON THE UNKNOWN BOX TRUCK.

**Delaware Department of Transportation  
Crash Analysis Reporting System  
Crash Report  
Property Damage Only**



**Attachments**

**ATTACHMENT B**

**FHWA Request for Information  
ET-Plus Guardrail End Terminal  
Ad-Hoc In-Service Evaluation – Supporting Documentation**

**Location #7 – I-495 NB, median, 200' south of Rogers Road**



# Delaware Department of Transportation Crash Analysis Reporting System Crash Report

**Crash Study Time Period:** 12/24/2014 to 12/24/2014  
**Query Type:**  
**Description:**  
**Study Requested By:**  
**Study Generated By:** TDTSASW  
**Number of Crashes:** 1  
**Includes Non-Reportable Crashes:** N  
**Study Code:**



**Delaware Department of Transportation  
Crash Analysis Reporting System  
Crash Report**

**Personal Injury Crash**

|  |                   |  |                             |
|--|-------------------|--|-----------------------------|
| Complaint No.: <b>01-14-102708 - 000</b> |                   | Agency: <b>01 (TROOP 1 STATE POLICE)</b> |                             |
| Date of Crash: <b>12/24/2014</b>         |                   | Time of Crash: <b>16:10</b>              | County: <b>New Castle</b>   |
| Grid: <b>106350</b>                      | Sector: <b>18</b> | Latitude: <b>39.71693</b>                | Longitude: <b>-75.55418</b> |
| Reporting Officer: <b>CPL/1 KUKAN</b>    |                   | Badge No.: <b>01194</b>                  |                             |

**Crash Location**

|   |                                    |                                |                                    |
|---|------------------------------------|--------------------------------|------------------------------------|
| Officer Defined Location:<br><b>On Northbound I-495,VIETNAM VETERANS MEM.HIGHWAY I495 281.92 Feet West From ROGERS ROAD 0.56 Miles from Wilmington Municipality</b> |                                    |                                |                                    |
| Roadway ID: <b>89</b>   | Maintenance Road: <b>00060</b>     | Intersection Maintenance Road: |                                    |
| Milepoint: <b>2.18</b>  | Functional Code: <b>Interstate</b> | Direction: <b>North</b>        | Road Junction: <b>Non-Junction</b> |

**Crash Circumstances**

|  |   |                        |
|--|---|------------------------|
| Injuries Involved: <b>Injuries Involved</b>  | No. of Fatalities: <b>0</b>                             | No. Injuries: <b>1</b> |
| Manner of Impact: <b>Not a collision between two vehicles</b>                      | Location of First Unstable Situation: <b>On Roadway</b> |                        |
| First Harmful Event: <b>Guardrail End (Collision With Fixed Object)</b>            |   |                        |
| Location of First Harmful Event: <b>On Roadway</b>                                 |   |                        |
| Primary Contributing Circumstance: <b>Driving in a careless or reckless manner</b> |   |                        |
| Environment Contributing Circumstance: <b>None</b>                                 | Roadway Contributing Circumstance: <b>None</b>          |                        |
| Lighting Condition: <b>Daylight</b>  | Surface Condition: <b>Wet</b>                           |                        |
| Weather Condition: <b>Cloudy</b>   |   |                        |
| School Bus Involved: <b>No</b>   | Work Zone Involved: <b>No</b>                           | State Property Damage: |

**Delaware Department of Transportation  
Crash Analysis Reporting System  
Crash Report**

**Personal Injury Crash**

**Vehicle - 001**

|  |   |   |
|--|---|---|
| Vehicle: <b>001</b>  | Vehicle Style: <b>Passenger Car</b>               | Total Occupants: <b>1</b>                                 |
| Commercial Vehicle: <b>No</b>                                      | Trailer Attached: <b>No</b>                       |   |
| Registration: <b>HIDDEN</b>  | State/Country: <b>Delaware</b>                    | Expires: <b>12/05/2015</b>                                |
| <b>VIN: HIDDEN</b>   |   |   |
| Model Year: <b>2004</b>  | Make: <b>FORD</b>                                 | Model: <b>Mustang</b>                                     |
| Vehicle Configuration:   | Cargo Body Type:                                  | Gross Vehicle Weight Rating:<br><b>10,000 lbs or less</b> |
| Most Damaged Area: <b>Front Left</b>                               | 1st Point of Impact: <b>Front Left</b>            |   |
| Extent of Damage/Removal: <b>Disabling Damage</b>                  | Direction of Force to Vehicle: <b>Front Right</b> |   |
| Equipment Failure 1:   | Equipment Failure 2:                              |   |
| Insurance Status: <b>No Proof of Insurance</b>                     |   |   |
| <b>Insurance Company: HIDDEN</b>                                   |   |   |
| <b>Insurance Policy No.: HIDDEN</b>                                |   |   |
| <b>Owner Name: HIDDEN</b>  |   |   |
| <b>Owner Business Name: HIDDEN</b>                                 |   |   |
| <b>Owner Address: HIDDEN</b>                                       |   |   |
| City: <b>WILMINGTON</b>  | State/Country: <b>Delaware</b>                    | Zip Code: <b>19805</b>                                    |
| First Event: <b>Guardrail End</b>                                  |   |   |
| Most Harmful Event: <b>Guardrail End</b>                           |   |   |
| Posted/Statutory Speed Limit: <b>65</b>                            | Hit and Run:                                      |   |
| Manuever/Action Taken: <b>Movements Essentially Straight Ahead</b> | Traffic Control Device: <b>Lane Markings</b>      |   |
| Inoperative/Missing: <b>No</b>                                     |   |   |
| Trafficway: <b>Two-Way, Divided, Positive Median Barrier</b>       | Direction Travelled: <b>Northbound</b>            |   |

**Driver of Vehicle - 001**

|   |  |                        |
|---|--|------------------------|
| <b>Full Name: HIDDEN</b>  |  |                        |
| <b>License No.: HIDDEN</b>                                      |  |                        |
| Gender: <b>Male</b>   | Birth Date: <b>03/03/1988 - 26 years old</b> |                        |
| <b>Address: HIDDEN</b>  |  |                        |
| City: <b>Newark</b>   | State/Country: <b>Delaware</b>               | Zip Code: <b>19713</b> |
| Seating Position: <b>Front Seat – Left Side (Driver's Side)</b> | Motorcycle Crash: <b>No</b>                  |                        |
| Driver Distraction: <b>None</b>                                 |  |                        |
| Condition at Time of Crash: <b>Apparently Normal</b>            |  |                        |
| Alcohol Suspected/Confirmed: <b>No</b>                          | Drugs Suspected/Confirmed: <b>No</b>         |                        |

**Delaware Department of Transportation  
Crash Analysis Reporting System  
Crash Report**

**Personal Injury Crash**

|  |  |  |                              |
|--|--|--|------------------------------|
| Alcohol Test Status:   |  | Alcohol Test Type:                       | Alcohol Test Results:        |
| Drug Test Status:  |  | Drug Test Type:                          | Drug Test Results:           |
| Injury Status: <b>Nonfatal Injury - Non-incapacitating</b>   |  | Primary Area of Body Injury: <b>Neck</b> |                              |
| Airbag: <b>Deployed - Front</b>  | Occupant Protection: <b>Shoulder and Lap Belt Used</b> |  | Ejection: <b>Not Ejected</b> |
| Description of Injuries:   |  |  |                              |
| Driver Action: <b>Operating vehicle in erratic, reckless, careless, negligent or aggressive manner</b>   |  |  |                              |
| Violation 1 - <b>CARELESS DRIVING-</b><br>Violation 2 - <b>Driving While Suspended or Revoked</b><br>Violation 3 - <b>FAILURE TO HAVE INSURANCE IDENTIFICATION IN POSSES</b><br>Violation 4 - <b>FAILURE TO HAVE REGISTRATION CARD IN POSSESSION</b><br>Violation 5 - <b>FAILURE TO ANSWER SUMMONS-</b><br>Violation 6 - <b>DRIVING WITH EXPIRED LICENSE</b> |  |  |                              |

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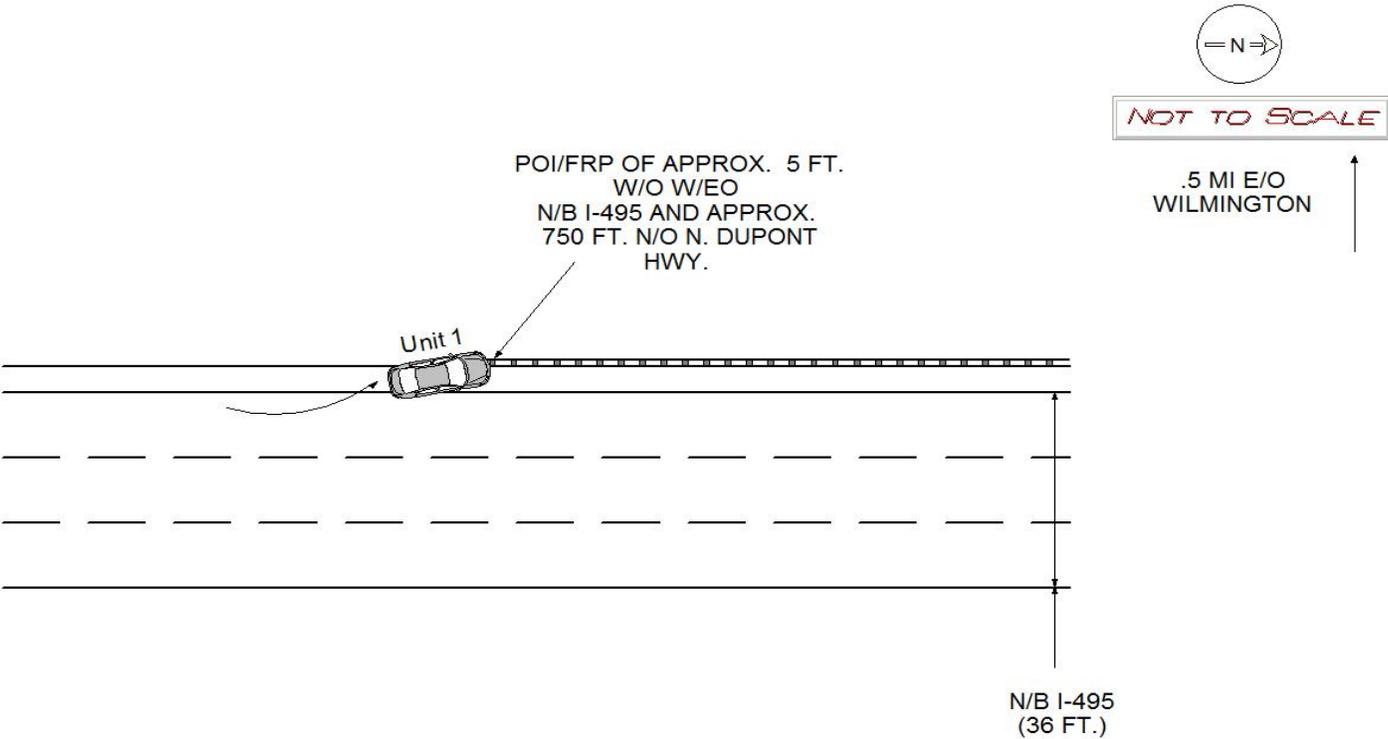
**Delaware Department of Transportation  
Crash Analysis Reporting System  
Crash Report**

**Personal Injury Crash**

**Narrative -000**

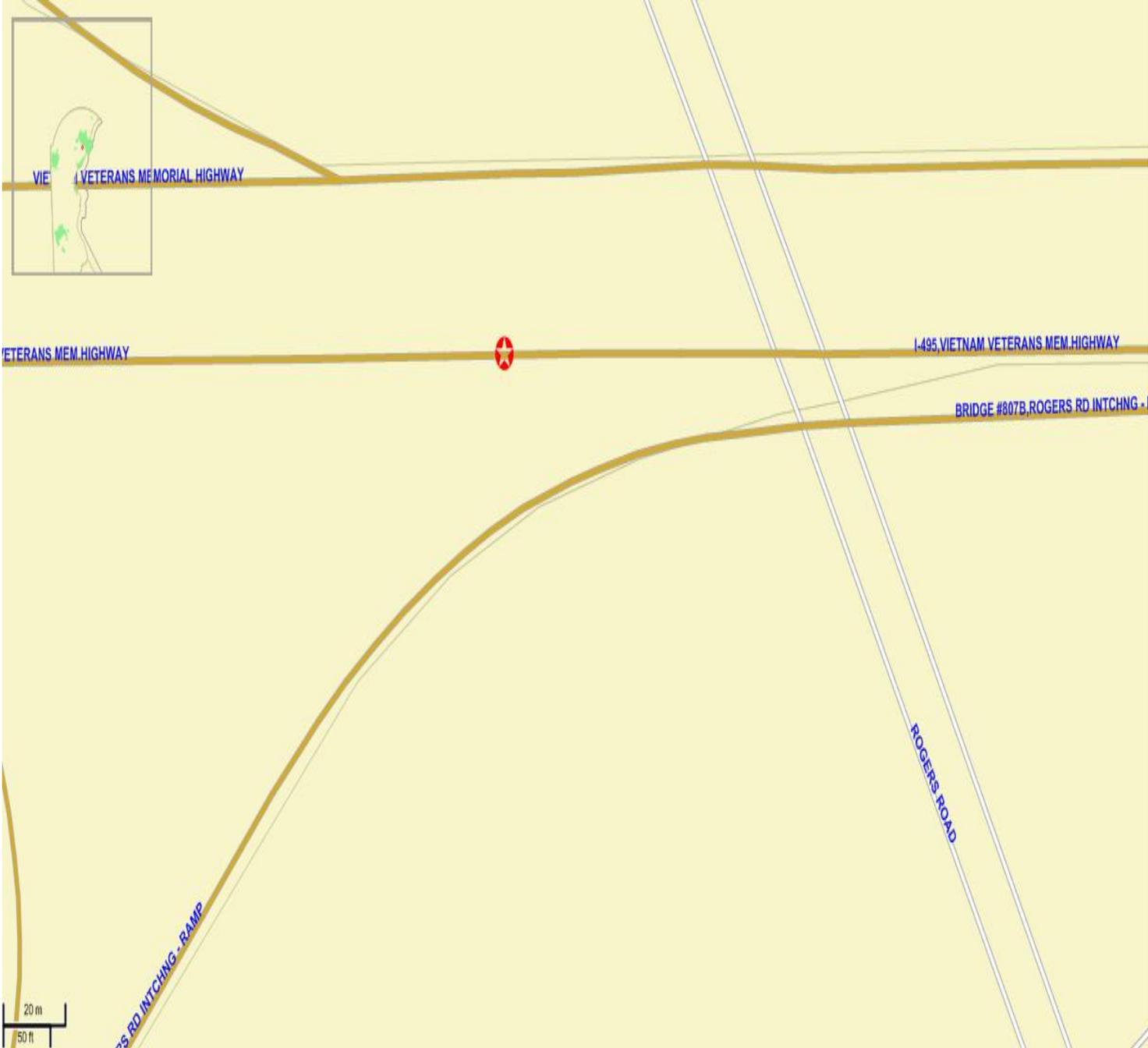
V1 WAS TRAVELING N/B IN THE LEFT LANE OF I-495. AS V1 CONTINUED TO TRAVEL, V1 LEFT THE ROADWAY TO THE LEFT FOR A MOMENT. WHEN DOING SO, V1'S LEFT TIRES WENT INTO THE GRASS MEDIAN. OP1 THEN TRIED TO CORRECT THIS AND STEER BACK ONTO THE ROADWAY. OP1 THEN LOST CONTROL OF HIS VEHICLE AND STRUCK THE GUARDRAIL END FOR A POI/FRP OF APPROX. 5 FT. W/O W/EO N/B I-495 AND APPROX. 750 FT. N/O N. DUPONT HWY. OP1'S STATEMENT CONCURRED WITH THE ABOVE SUMMARY. HE ADVISED THAT HE WAS SUFFERING FROM NECK AND BACK PAINS. HE WAS SUBSEQUENTLY TRANSPORTED TO CHRISTIANA EMERGENCY ROOM, VIA EMS. A COMPUTER CHECK REVEALED THAT OP1 WAS DRIVING WITH AN EXPIRED AND SUSPENDED LICENSE. HE WAS SUBSEQUENTLY CITED FOR THIS AS WELL AS CARELESS DRIVING AND FAILURE TO HAVE INSURANCE IDENTIFICATION IN POSSESSION. OP1 WAS PROVIDED WITH A COPY OF THE DRIVER'S INFORMATION EXCHANGE REPORT.

Delaware Department of Transportation  
Crash Analysis Reporting System  
Crash Report  
Personal Injury Crash



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**Delaware Department of Transportation  
Crash Analysis Reporting System  
Crash Report  
Personal Injury Crash**



**Attachments**

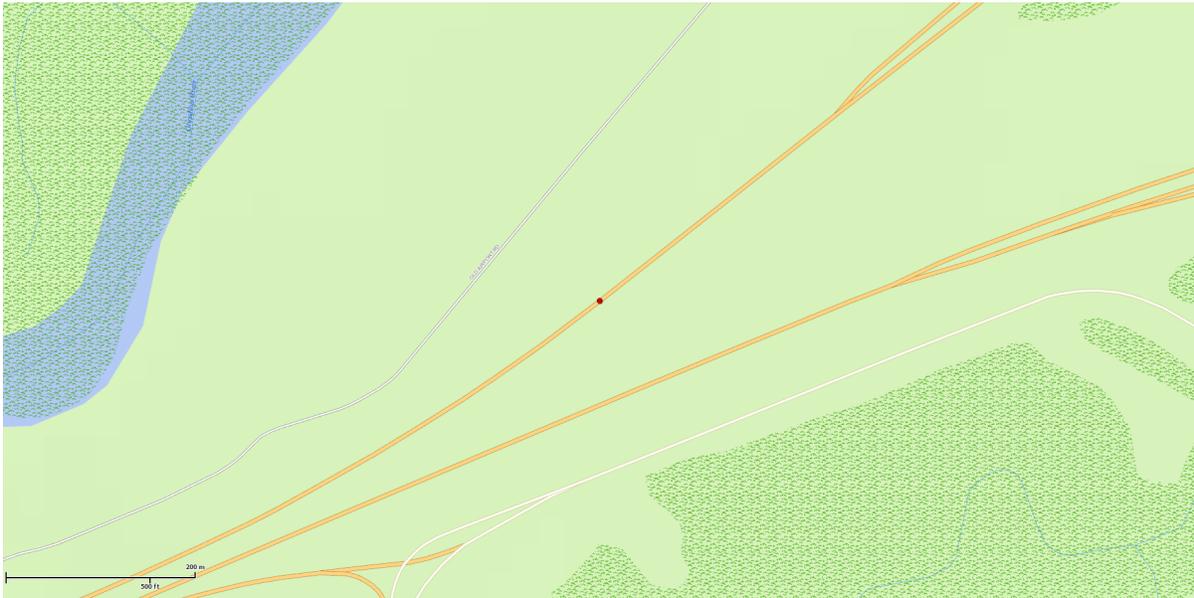
**ATTACHMENT B**  
**FHWA Request for Information**  
**ET-Plus Guardrail End Terminal**  
**Ad-Hoc In-Service Evaluation – Supporting Documentation**

**Location #11 – I-95 SB, south of DE Route 141, right shoulder**



# Delaware Department of Transportation Crash Analysis Reporting System Crash Report

**Crash Study Time Period:** 10/18/2014 to 10/18/2014  
**Query Type:**  
**Description:**  
**Study Requested By:**  
**Study Generated By:** TDTSASW  
**Number of Crashes:** 1  
**Includes Non-Reportable Crashes:** N  
**Study Code:**



**Delaware Department of Transportation  
Crash Analysis Reporting System  
Crash Report**

**Personal Injury Crash**

|  |                   |  |                             |
|--|-------------------|--|-----------------------------|
| Complaint No.: <b>06-14-083415 - 000</b> |                   | Agency: <b>06 (TROOP 6 STATE POLICE)</b> |                             |
| Date of Crash: <b>10/18/2014</b>         |                   | Time of Crash: <b>23:53</b>              | County: <b>New Castle</b>   |
| Grid: <b>092346</b>                      | Sector: <b>68</b> | Latitude: <b>39.69812</b>                | Longitude: <b>-75.61375</b> |
| Reporting Officer: <b>TPR KING</b>       |                   | Badge No.: <b>01119</b>                  |                             |

**Crash Location**

|   |                                    |                                |                                    |
|---|------------------------------------|--------------------------------|------------------------------------|
| Officer Defined Location:<br><b>On Westbound JOHN F KENNEDY MEMORIAL HIGHWAY I95 0.56 Miles South West From BASIN ROAD SR141 0.45 Miles from Newport Municipality</b> |                                    |                                |                                    |
| Roadway ID: <b>100</b>  | Maintenance Road: <b>00056</b>     | Intersection Maintenance Road: |                                    |
| Milepoint: <b>6.27</b>  | Functional Code: <b>Interstate</b> | Direction: <b>West</b>         | Road Junction: <b>Non-Junction</b> |

**Crash Circumstances**

|   |   |                                   |
|---|---|-----------------------------------|
| Injuries Involved: <b>Injuries Involved</b>   | No. of Fatalities: <b>0</b>                             | No. Injuries: <b>1</b>            |
| Manner of Impact: <b>Sideswipe, same direction</b>  | Location of First Unstable Situation: <b>On Roadway</b> |                                   |
| First Harmful Event: <b>Motor Vehicle in Transport (Collision With Person, Motor Vehicle, or Non-Fixed)</b> |   |                                   |
| Location of First Harmful Event: <b>On Roadway</b>  |   |                                   |
| Primary Contributing Circumstance: <b>Unknown</b>   |   |                                   |
| Environment Contributing Circumstance: <b>None</b>  | Roadway Contributing Circumstance: <b>None</b>          |                                   |
| Lighting Condition: <b>Dark-Lighted</b>   | Surface Condition: <b>Dry</b>                           |                                   |
| Weather Condition: <b>Clear</b>   |   |                                   |
| School Bus Involved: <b>No</b>  | Work Zone Involved: <b>No</b>                           | State Property Damage: <b>Yes</b> |

**Delaware Department of Transportation  
Crash Analysis Reporting System  
Crash Report**

**Personal Injury Crash**

**Vehicle - 001**

|  |   |   |
|--|---|---|
| Vehicle: <b>001</b>  | Vehicle Style: <b>Passenger Car</b>                   | Total Occupants: <b>3</b>                                 |
| Commercial Vehicle: <b>No</b>                                      | Trailer Attached: <b>No</b>                           |   |
| Registration: <b>HIDDEN</b>  | State/Country: <b>Delaware</b>                        | Expires: <b>05/03/2017</b>                                |
| <b>VIN: HIDDEN</b>   |   |   |
| Model Year: <b>2012</b>  | Make: <b>HYUN</b>                                     | Model: <b>Elantra</b>                                     |
| Vehicle Configuration:   | Cargo Body Type:                                      | Gross Vehicle Weight Rating:<br><b>10,000 lbs or less</b> |
| Most Damaged Area: <b>Right Side</b>                               | 1st Point of Impact: <b>Left Side Rear</b>            |   |
| Extent of Damage/Removal: <b>Disabling Damage</b>                  | Direction of Force to Vehicle: <b>Right Side Rear</b> |   |
| Equipment Failure 1:   | Equipment Failure 2:                                  |   |
| Insurance Status: <b>Insured</b>                                   |   |   |
| Insurance Company: <b>HIDDEN</b>                                   |   |   |
| Insurance Policy No.: <b>HIDDEN</b>                                |   |   |
| Owner Name: <b>HIDDEN</b>  |   |   |
| Owner Business Name: <b>HIDDEN</b>                                 |   |   |
| Owner Address: <b>HIDDEN</b>                                       |   |   |
| City: <b>NEW CASTLE</b>  | State/Country: <b>Delaware</b>                        | Zip Code: <b>19720</b>                                    |
| First Event: <b>Motor Vehicle In Transport</b>                     |   |   |
| Most Harmful Event: <b>Motor Vehicle in Transport</b>              |   |   |
| Posted/Statutory Speed Limit: <b>55</b>                            | Hit and Run:  |   |
| Manuever/Action Taken: <b>Movements Essentially Straight Ahead</b> | Traffic Control Device: <b>Lane Markings</b>          |   |
| Inoperative/Missing: <b>No</b>                                     |   |   |
| Trafficway: <b>Two-Way, Divided, Positive Median Barrier</b>       | Direction Travelled: <b>Southbound</b>                |   |

**Driver of Vehicle - 001**

|   |  |                        |
|---|--|------------------------|
| Full Name: <b>HIDDEN</b>  |  |                        |
| License No.: <b>HIDDEN</b>                                      |  |                        |
| Gender: <b>Female</b>   | Birth Date: <b>03/08/1972 - 42 years old</b> |                        |
| Address: <b>HIDDEN</b>  |  |                        |
| City: <b>New Castle</b>   | State/Country: <b>Delaware</b>               | Zip Code: <b>19720</b> |
| Seating Position: <b>Front Seat – Left Side (Driver's Side)</b> | Motorcycle Crash: <b>No</b>                  |                        |
| Driver Distraction: <b>None</b>                                 |  |                        |
| Condition at Time of Crash: <b>Apparently Normal</b>            |  |                        |
| Alcohol Suspected/Confirmed: <b>No</b>                          | Drugs Suspected/Confirmed: <b>No</b>         |                        |

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**Personal Injury Crash**

|  |                              |                       |
|--|------------------------------|-----------------------|
| Alcohol Test Status:                         | Alcohol Test Type:           | Alcohol Test Results: |
| Drug Test Status:                            | Drug Test Type:              | Drug Test Results:    |
| Injury Status: <b>No injury</b>              | Primary Area of Body Injury: |                       |
| Airbag:                                      | Occupant Protection:         | Ejection:             |
| Description of Injuries:                     |                              |                       |
| Driver Action: <b>No Contributing Action</b> |                              |                       |
|  |                              |                       |

**Passenger of Vehicle - 001**

|   |  |                        |
|---|--|------------------------|
| <b>Full Name: HIDDEN</b>                          |  |                        |
| License Number:                                   | License Class:                               |                        |
| Gender: <b>F</b>                                  | Birth Date: <b>02/02/2000 - 14 years old</b> |                        |
| <b>Address: HIDDEN</b>                            |  |                        |
| City: <b>New Castle</b>                           | State/Country: <b>Delaware</b>               | Zip Code: <b>19720</b> |
| Seating Position: <b>Second Seat – Right Side</b> | Motorcycle Crash: <b>No</b>                  |                        |
| Injury Status: <b>No injury</b>                   |  |                        |
| Injury Description:                               | Primary Area of Body Injury:                 |                        |
| Airbag:   | Occupant Protection:                         | Ejection:              |
| Type of Transport                                 | Transport Location:                          |                        |

**Passenger of Vehicle - 001**

|  |  |                        |
|--|--|------------------------|
| <b>Full Name: HIDDEN</b>                         |  |                        |
| License Number:                                  | License Class:                               |                        |
| Gender: <b>M</b>                                 | Birth Date: <b>05/14/1997 - 17 years old</b> |                        |
| <b>Address: HIDDEN</b>                           |  |                        |
| City: <b>New Castle</b>                          | State/Country: <b>Delaware</b>               | Zip Code: <b>19720</b> |
| Seating Position: <b>Front Seat – Right Side</b> | Motorcycle Crash: <b>No</b>                  |                        |
| Injury Status: <b>No injury</b>                  |  |                        |
| Injury Description:                              | Primary Area of Body Injury:                 |                        |
| Airbag:  | Occupant Protection:                         | Ejection:              |
| Type of Transport                                | Transport Location:                          |                        |

**Delaware Department of Transportation  
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**Personal Injury Crash**

**State Property Damage - 001**

|  |  |                                |
|--|--|--------------------------------|
| Type of Property: <b>State Property</b>          | Description: <b>(Safety Feature) - Guardrail</b> |                                |
| Owner Business Name: <b>State Of Delaware</b>    | Owner Name:                                      | Was Owner Notified: <b>Yes</b> |
| Owner Address: <b>169 Brick Store Landing RD</b> |  |                                |
| City: <b>Smyrna</b>                              | State/Country: <b>Delaware</b>                   | Zip Code: <b>19977</b>         |

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**Personal Injury Crash**

**Vehicle - 002**

|  |   |   |
|--|---|---|
| Vehicle: <b>002</b>  | Vehicle Style: <b>Passenger Car</b>                   | Total Occupants: <b>2</b>                                 |
| Commercial Vehicle: <b>No</b>                                | Trailer Attached: <b>No</b>                           |   |
| Registration: <b>HIDDEN</b>                                  | State/Country: <b>Delaware</b>                        | Expires: <b>12/15/2014</b>                                |
| <b>VIN: HIDDEN</b>   |   |   |
| Model Year: <b>1999</b>                                      | Make: <b>HOND</b>                                     | Model: <b>Accord</b>                                      |
| Vehicle Configuration:                                       | Cargo Body Type:                                      | Gross Vehicle Weight Rating:<br><b>10,000 lbs or less</b> |
| Most Damaged Area: <b>Front Right</b>                        | 1st Point of Impact: <b>Front Center</b>              |   |
| Extent of Damage/Removal: <b>Disabling Damage</b>            | Direction of Force to Vehicle: <b>Right Side Rear</b> |   |
| Equipment Failure 1:   | Equipment Failure 2:                                  |   |
| Insurance Status: <b>Unknown</b>                             |   |   |
| <b>Insurance Company: HIDDEN</b>                             |   |   |
| <b>Insurance Policy No.: HIDDEN</b>                          |   |   |
| <b>Owner Name: HIDDEN</b>                                    |   |   |
| <b>Owner Business Name: HIDDEN</b>                           |   |   |
| <b>Owner Address: HIDDEN</b>                                 |   |   |
| City: <b>NEW CASTLE</b>                                      | State/Country: <b>Delaware</b>                        | Zip Code: <b>19720</b>                                    |
| First Event: <b>Motor Vehicle In Transport</b>               |   |   |
| Most Harmful Event: <b>Motor Vehicle in Transport</b>        |   |   |
| Posted/Statutory Speed Limit: <b>55</b>                      | Hit and Run:  |   |
| Manuever/Action Taken: <b>Unknown</b>                        | Traffic Control Device: <b>Lane Markings</b>          |   |
| Inoperative/Missing: <b>No</b>                               |   |   |
| Trafficway: <b>Two-Way, Divided, Positive Median Barrier</b> | Direction Travelled: <b>Southbound</b>                |   |

**Driver of Vehicle - 002**

|   |  |                        |
|---|--|------------------------|
| <b>Full Name: HIDDEN</b>  |  |                        |
| <b>License No.: HIDDEN</b>                                      |  |                        |
| Gender: <b>Male</b>   | Birth Date: <b>02/13/1994 - 20 years old</b> |                        |
| <b>Address: HIDDEN</b>  |  |                        |
| City: <b>Wilmington</b>   | State/Country: <b>Delaware</b>               | Zip Code: <b>19805</b> |
| Seating Position: <b>Front Seat – Left Side (Driver's Side)</b> | Motorcycle Crash: <b>No</b>                  |                        |
| Driver Distraction: <b>Unknown</b>                              |  |                        |
| Condition at Time of Crash: <b>Unknown</b>                      |  |                        |
| Alcohol Suspected/Confirmed: <b>No</b>                          | Drugs Suspected/Confirmed: <b>No</b>         |                        |
| Alcohol Test Status:  | Alcohol Test Type:                           | Alcohol Test Results:  |

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**Personal Injury Crash**

|                               |                              |                    |
|-------------------------------|------------------------------|--------------------|
| Drug Test Status:             | Drug Test Type:              | Drug Test Results: |
| Injury Status: <b>Unknown</b> | Primary Area of Body Injury: |                    |
| Airbag:                       | Occupant Protection:         | Ejection:          |
| Description of Injuries:      |                              |                    |
| Driver Action: <b>Unknown</b> |                              |                    |
|                               |                              |                    |

**Passenger of Vehicle - 002**

|  |   |                              |
|--|---|------------------------------|
| <b>Full Name: HIDDEN</b>                               |   |                              |
| License Number: <b>1601412</b>                         | License Class:                                      |                              |
| Gender: <b>M</b>                                       | Birth Date: <b>03/04/1992 - 22 years old</b>        |                              |
| <b>Address: HIDDEN</b>                                 |   |                              |
| City: <b>Wilmington</b>                                | State/Country: <b>Delaware</b>                      | Zip Code: <b>19809</b>       |
| Seating Position: <b>Front Seat – Right Side</b>       | Motorcycle Crash: <b>No</b>                         |                              |
| Injury Status: <b>Nonfatal Injury - Incapacitating</b> |   |                              |
| Injury Description:                                    | Primary Area of Body Injury: <b>Upper Extremity</b> |                              |
| Airbag: <b>Not Deployed</b>                            | Occupant Protection: <b>Unknown</b>                 | Ejection: <b>Not Ejected</b> |
| Type of Transport: <b>EMS</b>                          | Transport Location: <b>Christiana Hospital</b>      |                              |

**Delaware Department of Transportation  
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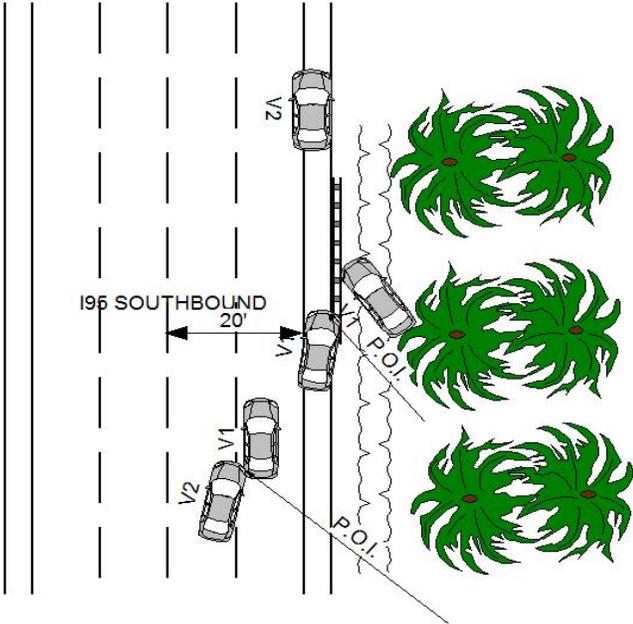
**Personal Injury Crash**

**Narrative -000**

ON SATURDAY OCTOBER 18, 2014 DSP TROOP 6 UNITS WERE DISPATCHED TO THE AREA OF I95 S/B JUST S/O OF RT. 141. UPON ARRIVAL EMS CREWS WERE ATTEMPTING TO TAKE THE PASSENGER OF V2 OUT OF THE VEH. SAID PASSENGER WAS IN THE FRONT PASSENGER'S SEAT, AND DUE TO HIS INJURIES IT WAS CLEAR HE WAS NOT DRIVING V2. THE OPERATOR OF V2 WAS NOT ON SCENE. THE STATE POLICE HELICOPTER RESPONDED TO THE AREA TO SEARCH FOR OP2 WITH NEGATIVE RESULTS. I THEN CONTACTED AND INTERVIEWED THE OPERATOR OF V1 OP1 STATED THAT SHE HAD RECENTLY ENTERED ONTO I95 S/B FROM N/B RT. 141. OP1 STATED THAT SHE WAS SUDDENLY REAR ENDED WHICH SENT HER VEH INTO THE GUARDRAIL. OP1 STATED SHE DID NOT SEE WHERE THE VEH CAME FROM. OP1 STATED THAT SHE JUST NOTICED A DARK COLORED VEH PASSING HER VEH AFTER THE INITIAL IMPACT. EXAMINATION OF THE CRASH SCENE REVEALED THAT V1 SUFFERED INITIAL IMPACT FROM THE LEFT SIDE REAR. BASED ON THE TESTIMONY OF OP1 ALONG WITH THE EVIDENCE ON THE SCENE, I CAN STATE THAT V1 WAS TRAVELING S/B ON I95 IN THE RIGHT LANE. V2'S RIGHT SIDE FRONT COLLIDED WITH V1'S LEFT SIDE REAR FOR A 1ST POI OF S/B I95 APPROX .25 MI S/O OF RT. 141 AND APPROX 10' E/O THE W/E.O.R. V1 SPUN INTO THE GUARDRAIL FOR A 2ND POI OF S/B I95 APPROX 20' S/O POI 1, AND APPROX 10' W/O THE W/E.O.R. V1 THEN CONTINUED INTO THE DITCH FOR A FRP OF S/B I95 APPROX 10' S/O POI 2 AND APPROX 25' W/O THE W/E.O.R. V2'S FRP IS UNK AS IT APPEARED THAT THE OPERATOR OF SAME PARKED THE VEH ON THE SHOULDER PRIOR TO FLEEING THE SCENE. ON 10-28-14 I CONTACTED AND INTERVIEWED THE PASSENGER OF V2 (HEREIN AFTER REFERRED TO AS P3). P3 WAS STILL HOSPITALIZED ON THIS DATE. P3 STATED THAT HE AND OP2 WERE DRINKING AT A PARTY EARLIER IN THE DAY, ON THE DATE OF THIS COLLISION. P3 STATED THAT HE RIDING ALL DAY WITH OP2 IN V2. P3 STATED THAT AFTER THE PARTY BOTH HE AND OP2 WENT TO THE HOME OF THE REGISTERED OWNER OF V2 (DANA MURREY LUCAS). P3 STATED THAT LUCAS'S SON SUFFERED A INJURY AT HOME AND LUCAS TRANSPORTED HER SON TO CHRISTIANA HOSPITAL IN A NON-RELATED VEH. P3 STATED THAT HE AND OP2 WERE RESPONDING TO THE HOSPITAL ALSO, WHEN THIS CRASH TOOK PLACE. P3 STATED THAT HE DOESN'T REMEMBER THE COLLISION BUT IS CLEAR ON THE EVENTS JUST PRIOR. AT CER LUCAS AND HER SON CHECKED INTO THE HOSPITAL JUST MINUTES AFTER THE COLLISION OCCURRED WITCH ELIMINATED THEM AS SUSPECTS. LUCAS ADVISED THAT OP2 WAS OPERATING HER VEHICLE. I WILL ATTEMPT TO SECURE AN ARREST WARRANT FOR OP2 VIA A LEISS REPORT. AN PRE-ARREST INTAKE HAS BEEN SCHEDULED WITH THE ATTORNEY GENERAL'S OFFICE

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NOT TO SCALE



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