Pembroke Corridor Study
Traffic Forecast Report and Model Amendment Report
Christian County
Item Number 2-381.00

Prepared for:
Kentucky Transportation Cabinet

Prepared by:
Qk4, Inc.

June 30, 2017
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1.0 Introduction

As part of Qk4’s Statewide Planning Services Agreement, the Kentucky Transportation Cabinet (KYTC) requested Qk4 provide the travel demand modeling and traffic analysis as part of the Pembroke Corridor Planning Study in Christian County, Kentucky. The purpose of the study is to improve truck access from the newly expanded Commerce Park to I-24. Trucks use US 41 (Weight Class AAA, 80,000 pounds) and KY 115 (Weight Class A, 44,000 pounds) to access I-24. In addition, the intersection of US 41 and KY 115 in Pembroke does not have the required turning radius for trucks.

1.1 Study Corridor

The study corridor encompasses US 41 and KY 115 in Christian County. In the study area, US 41 begins east of Pembroke at Krusteaz Way (MP 5.758) to the KY 115 intersection (MP 2.786). The corridor is classified as a Minor Arterial. KY 115 begins at I-24 and extends north to US 41. Near I-24, KY 115 is classified as a Minor Arterial. At the urban boundary, the functional classification changes to a Major Collector. The corridor includes intersections with side streets, driveways, and a CSX rail crossing at the northern end KY 115. Figure 1 shows the study corridors in amber.

Both corridors are two lanes wide with no bicycle facilities and limited pedestrian

Figure 1: Study Area
facilities. With the exceptions of the northern end of KY 115 and the southern end of US 41. All minor approaches in the study area are stop controlled. The US 41/ KY 115 intersection has a flashing yellow beacon.

2.0 Traffic Data

2.1 Turning Movements and Tube Counts

Traffic counts were collected on September 27-28, 2016 using Miovision cameras stationed at various locations along the corridor. Peak period turn movement counts (TMCs) were collected at five intersections. In addition, KY 115 at CSX railroad was counted to determine the number of trains and peak delays, and times to clear the tracks. The first four counts are illustrated in Figure 2. The five locations are shown in Figures 2 and 3.

- US 41/Frank Yost Lane (1) (24 hour count)
- US 41/John Rivers Road (2)
- US 41/KY 115 (3)
- KY 115/CSX Railroad (Train 48 hour count)
- I-24/KY 115 Westbound Ramps (4)
- I-24/KY 115 Eastbound Ramps (5)
Six 48-hour volume/classification counts were conducted using tubes to identify an accurate percentage of trucks in the corridor. Tube count locations are illustrated in blue on Figure 4. The TMCs are shown again in yellow.

KYTC conducted a class count at STA 303 by counting axel patterns to determine cars and trucks. With this method, there is potential to miss cars that are overlapping as trucks. This method may produce a lower ADT and possibly higher truck %. Therefore, a normal classification was not performed since each lane could not be counted independently because median space was not available to the place counters. A volume/axel count at STA 303 would count every two axels as a vehicle (semi-tractor trailers would count as 2.5 cars). This method
would produce a higher ADT than actual, 10,690 ADT. So, a 24-hour Miovision Turn Movement video count at the US 41/Frank Yost Lane recorded and counted actual vehicles to determine ADT and Truck %.

Figure 4: Traffic Count Locations
Both the TMCs and directional counts were collected in 15-minute increments and include cars and trucks. The TMCs were taken from 7:00 A.M. to 9:00 A.M. and from 3:00 P.M. to 6:00 P.M. Within these time periods, the two highest consecutive 60-minute periods were identified. Directional counts were used to establish the average daily traffic (ADT) along the corridor as well as help identify the AM and PM peak hours. The TMC are included in Appendix A.

Table 2 presents the peak hour volume entering and exiting US 41 and KY 115 from the TMCs collected through this study.

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>AM Peak Hour</td>
<td>North</td>
<td>Enter 30</td>
<td>60</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>South</td>
<td>Enter 100</td>
<td>140</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Exit 160</td>
<td>140</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>East</td>
<td>Enter 0</td>
<td>140</td>
<td>270</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Exit 70</td>
<td>180</td>
<td>0</td>
<td>310</td>
<td></td>
</tr>
<tr>
<td></td>
<td>West</td>
<td>Enter 310</td>
<td>0</td>
<td>250</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Exit 230</td>
<td>130</td>
<td>0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>PM Peak Hour</td>
<td>North</td>
<td>Enter 40</td>
<td>130</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>South</td>
<td>Enter 180</td>
<td>220</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Exit 360</td>
<td>150</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>East</td>
<td>Enter 220</td>
<td>240</td>
<td>390</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Exit 0</td>
<td>190</td>
<td>0</td>
<td>290</td>
<td></td>
</tr>
<tr>
<td></td>
<td>West</td>
<td>Enter 440</td>
<td>0</td>
<td>180</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Exit 260</td>
<td>250</td>
<td>0</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The resultant 2016 traffic volumes and associated turn movements and traffic operations are illustrated on Figure 5.
Figure 5: 2016 Traffic and Levels of Service
2.2 Train Counts

Using Miovision during the same peak periods, 51 trains were observed in a 48 hours period. Table 2 summarizes the minutes trains took to clear the tracks.

Table 2: CSX Train Observations

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Hours Observed</td>
<td>48</td>
</tr>
<tr>
<td>Train Crossings</td>
<td>51</td>
</tr>
<tr>
<td>AM Peak Period Crossings</td>
<td>5</td>
</tr>
<tr>
<td>PM Peak Period Crossings</td>
<td>10</td>
</tr>
<tr>
<td>Average Disruption (minutes)</td>
<td>0:03:43</td>
</tr>
<tr>
<td>Maximum Disruption (minutes)</td>
<td>0:37:51</td>
</tr>
<tr>
<td>AM Peak Period Average Disruption (minutes)</td>
<td>0:04:58</td>
</tr>
<tr>
<td>PM Peak Period Average Disruption (minutes)</td>
<td>0:05:49</td>
</tr>
<tr>
<td>Peak Period Minimum Disruption (minutes)</td>
<td>0:01:51</td>
</tr>
<tr>
<td>Peak Period Maximum Disruption (minutes)</td>
<td>0:15:23</td>
</tr>
<tr>
<td>All - 85th percentile</td>
<td>0:07:44</td>
</tr>
<tr>
<td>Mean</td>
<td>0:03:43</td>
</tr>
</tbody>
</table>

Total peak disruptions for the two days counted are shown in Table 3.

Table 3: Peak Train Disruptions

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>9/27 AM Peak Total Disruption (min)</td>
<td>0:00:00</td>
</tr>
<tr>
<td>9/27 PM Peak Total Disruption (min)</td>
<td>0:35:16</td>
</tr>
<tr>
<td>9/28 AM Peak Total Disruption (min)</td>
<td>0:24:52</td>
</tr>
<tr>
<td>9/28 PM Peak Total Disruption (min)</td>
<td>0:22:56</td>
</tr>
</tbody>
</table>

3.0 Travel Times

The corridor from Frank Yost Lane to I-24 was driven once in each direction during normal daytime hours. This average travel time was also compared to the 2010 Christian County Model times. Table 4 summarizes the travel data for these trips.

Table 4: Corridor Travel Times

<table>
<thead>
<tr>
<th>Direction</th>
<th>Field Measured Travel Time</th>
<th>2010 Christian County Travel Demand Model</th>
</tr>
</thead>
<tbody>
<tr>
<td>John Rivers Road to I-24</td>
<td>12:28.34</td>
<td>11.932</td>
</tr>
<tr>
<td>I-24 to John Rivers Road</td>
<td>12:42.17</td>
<td></td>
</tr>
</tbody>
</table>
Figure 6: Christian County Travel Demand Model Travel Times
4.0 Committed Projects

Table 5 list committed projects in the model. No additional projects were added beyond the build scenarios for the Pembroke Corridor Study.

<table>
<thead>
<tr>
<th>Project No.</th>
<th>Roadway</th>
<th>Improvement</th>
<th>Time frame</th>
</tr>
</thead>
<tbody>
<tr>
<td>2-100.50</td>
<td>Pennyryle parkway extension</td>
<td>New road</td>
<td>2016</td>
</tr>
<tr>
<td>2-136.00</td>
<td>E.T.Breathitt parkway</td>
<td>New road</td>
<td>2016</td>
</tr>
<tr>
<td>2-7010.00</td>
<td>KY-380</td>
<td>New road</td>
<td>2016</td>
</tr>
<tr>
<td>KY-05</td>
<td>Gate 4 extension</td>
<td>New road</td>
<td>2025</td>
</tr>
<tr>
<td>KY-06</td>
<td>KY-400 (State line Rd.)</td>
<td>From 2 to 3 lanes</td>
<td>2025</td>
</tr>
<tr>
<td>KY-07/08</td>
<td>KY-115 (Pembroke-Oak grove Rd.)</td>
<td>From 2 to 3 lanes</td>
<td>2025</td>
</tr>
<tr>
<td>KY-12</td>
<td>Oatts-Riggins Rd.</td>
<td>New road</td>
<td>2025</td>
</tr>
<tr>
<td>KY-02</td>
<td>Hugh hunter/Gritton church Rd.</td>
<td>Reconstruction</td>
<td>2035</td>
</tr>
<tr>
<td>KY-04</td>
<td>I-24</td>
<td>From 4 to 6 lanes</td>
<td>2035</td>
</tr>
<tr>
<td>KY-10</td>
<td>KY-117</td>
<td>New road</td>
<td>2035</td>
</tr>
<tr>
<td>KY-11</td>
<td>Gate 5 extension</td>
<td>New road</td>
<td>2035</td>
</tr>
<tr>
<td>K-13</td>
<td>KY-1453 (Elmo Rd)</td>
<td>From 2 to 3 lanes</td>
<td>2035</td>
</tr>
<tr>
<td>K-14</td>
<td>KY-109 (Bradshaw Rd)</td>
<td>From 2 to 3 lanes</td>
<td>2035</td>
</tr>
</tbody>
</table>

5.0 Traffic Generators

The major traffic generators in or near the study area are a proposed “mega” Industrial park just north of the I-24/KY 115 interchange (Figure 7) and the existing Commerce Park (Figure 8).
Figure 8: Traffic Generators in the Region
Commerce Park along US 41 east of Pembroke is a major traffic generator in the study area and is shown in Figure 8, upper left hand corner. Figure 9 illustrates the home and job growth in the Christian County Travel Demand Model between 2010 and 2040. Due to the large number of jobs shown in the TAZ between the existing Commerce Park and the "mega
industrial park,” additional, employment/jobs were not added to the study area.

6.0 Signal Warrant

US 41 and Frank Yost Way operates at LOS F due to left turns in the PM peak hour. A signal warrant analysis for 2016 was performed. The intersection only meets three of the eight hours required for Warrant 1A to warrant a signal. For Warrant 1B, it did not meet warrants for any hour. It does barely meet the peak hour warrant; however, KYTC usually requests an intersection meet Warrant 1A or 1B also.

7.0 Growth Rates

A growth rate of 1.03% was found by comparing assignments between the 2016 and 2040 Christian County Travel Demand Models. After the study area for the project was determined, a subset of the 2016 model network was selected and exported. This subarea can be seen below (Figure 10). This subset was joined with the 2040 dataview, and the same selection was also applied to the 2040 model. The cumulative flow rates for all subarea links were calculated for both the 2016 and 2040 models and compared to determine the proposed growth rate of 1.03%. It was found that the vehicle type prohibition in the travel demand model was not working correctly which resulted in trucks being assigned to smaller roads that do not realistically carry heavy trucks. These trucks were noted and accounted for when looking at vehicle assignments to KY 115.

Figure 10: Travel Demand Model Subarea
8.0 Vehicle Miles and Vehicle Hours Traveled (VMTs and VHTs)

No Build and Build scenarios were examined for a connector (one connector alignment was modeled) and US 41 and KY 115 widening between US 41 at the Commerce Park along KY 115 to I-24. The Build versus No Build daily change in VHT and VMT is shown in Table 6. If the connector is not constructed, and US 41 and KY 115 are widened, the model showed no change in VMT or VHT over the No Build scenario.

- 37 Change in VHT
- 891 Change in VMT

Table 6: No Build Versus Build VHTs and VMTs

<table>
<thead>
<tr>
<th></th>
<th>No Build</th>
<th>Build</th>
</tr>
</thead>
<tbody>
<tr>
<td>Auto VHT</td>
<td>69,208</td>
<td>69,183</td>
</tr>
<tr>
<td>Auto VMT</td>
<td>3,509,063</td>
<td>3,508,629</td>
</tr>
<tr>
<td>Truck VHT</td>
<td>7,917</td>
<td>7,905</td>
</tr>
<tr>
<td>Truck VMT</td>
<td>442,537</td>
<td>442,080</td>
</tr>
<tr>
<td>Total VHT</td>
<td>77,125</td>
<td>77,088</td>
</tr>
<tr>
<td>Total VMT</td>
<td>3,951,600</td>
<td>3,950,709</td>
</tr>
</tbody>
</table>

The resultant for projected 2040 No Build and Build Traffic volumes and projected operations are shown in Figures 11 and 12, respectively.
Figure 11: 2040 No Build Traffic Volumes and Operations

Note: Intersection movements are highlighted with LOS D, E, or F.
Figure 12: 2040 Build Traffic Volumes and Operations
APPENDIX A:
EXISTING TURNING MOVEMENT COUNTS
**DHV TURN MOVEMENT FORECASTS SHOULD NOT BE USED FOR SIGNAL TIMING OR WARRANT ANALYSIS**

### 2016 AM Design Hour

- **Frank Yost Ln**
  - US 41 to Frank Yost Ln: 10
  - Frank Yost Ln to US 41: 75
  - 25% of vehicles

### 2016 PM Design Hour

- **Frank Yost Ln**
  - US 41 to Frank Yost Ln: 150
  - Frank Yost Ln to US 41: 40
  - 79% of vehicles

### Notes

- K-Factors, Directional Distributions, and Peak Hour Factors were determined from a 2016 Turning Movement Count. AM and PM DHVs represent 30th highest hour estimates for each turn maneuver.

### Project Details

- **Project:** Pembroke Corridor Study
- **Item Number:** 2-381.00
- **MARS Number:** 0
- **Request Date:** 0
- **Analyst:**
- **Year:** 2016
- **Intersection:** US 41 & Frank_Yost_Ln
- **Intersection:** US 41 & Frank_Yost_Ln
- **Intersection:** US 41 & Frank_Yost_Ln

**TM 1**
NOTE: K-Factors, Directional Distributions, and Peak Hour Factors were determined from a 2016 Turning Movement Count. AM and PM DHVs represent 30th highest hour estimates for each turn maneuver.
NOTE: K-Factors, Directional Distributions, and Peak Hour Factors were determined from a 2016 Turning Movement Count. AM and PM DHVs represent 30th highest hour estimates for each turn maneuver.
**DHV TURN MOVEMENT FORECASTS SHOULD NOT BE USED FOR SIGNAL TIMING OR WARRANT ANALYSIS**

**TUR**

**2016 AM Design Hour**

**2016 PM Design Hour**

**NOTE:** K-Factors, Directional Distributions, and Peak Hour Factors were determined from a 2016 Turning Movement Count. AM and PM DHVs represent 30th highest hour estimates for each turn maneuver.
**DHV TURN MOVEMENT FORECASTS SHOULD NOT BE USED FOR SIGNAL TIMING OR WARRANT ANALYSIS**

### TURN MOVEMENT (2016)

**2016 AM Design Hour**
- **I-24**
  - **Eastbound**: 670 vehicles
  - **Westbound**: 0 vehicles
- **KY 115**
  - **Northbound**: 270 vehicles
  - **Southbound**: 400 vehicles

**2016 PM Design Hour**
- **I-24**
  - **Eastbound**: 690 vehicles
  - **Westbound**: 0 vehicles
- **KY 115**
  - **Northbound**: 390 vehicles
  - **Southbound**: 540 vehicles

NOTE: K-Factors, Directional Distributions, and Peak Hour Factors were determined from a 2016 Turning Movement Count. AM and PM DHVs represent 30th highest hour estimates for each turn maneuver.

INTERSECTION: KY 115 & I-24 EB Ramps

**TM 5**

PROJECT: Pembroke Corridor Study

ITEM NUMBER: 2-381.00

MARS NUMBER: 0

REQUEST DATE: 0

ANALYST: 0

YEAR: 2016 Design Hour Volumes

PROJECT: Pembroke Corridor Study

NOTE: K-Factors, Directional Distributions, and Peak Hour Factors were determined from a 2016 Turning Movement Count. AM and PM DHVs represent 30th highest hour estimates for each turn maneuver.
APPENDIX B:
NO BUILD TURNING MOVEMENTS
**NOTE:** K-Factors, Directional Distributions, and Peak Hour Factors were determined from a 2040 Turning Movement Count. AM and PM DHVs represent 30th highest hour estimates for each turn maneuver.

**TURN MOVEMENT (2040)**

**DHV TURN MOVEMENT FORECASTS SHOULD NOT BE USED FOR SIGNAL TIMING OR WARRANT ANALYSIS**

**2040 ADT**

- US 41
  - 11600
    - 50% 50%
  - 720
    - 2510 2580
    - 5810 2510 2880 3950
    - 50% 50% 3440 3000

- Frank Yost Ln
  - 50% 50%
    - 1300
      - 600 200 500
    - 3950
      - 390 380 680
      - 50% 50% 3460

**2040 AM Design Hour**

- US 41
  - 100
    - 30 0 10
    - 210
    - 10 30
    - 230
    - 20
    - 170 430 180 20
    - 430
    - 30
    - 33%

- Frank Yost Ln
  - 20%
    - 50
    - 80%
    - 1300
      - 600 200 500
      - 3950
      - 390 380 680
      - 50% 50% 3460

**2040 PM Design Hour**

- US 41
  - 200
    - 50
    - 10
    - 230
    - 200 0 30
    - 460
    - 30
    - 60%
    - 20
    - 170 430 180 20
    - 430
    - 30
    - 33%
    - 690
    - 67%

**Location Map**

- INTERSECTION: US 41 & Frank Yost Ln
- Pembroke Corridor Study
- 2-381.00
- 0
- Saturday, January 00, 1900
- Pembroke Corridor Study

**ITEM NUMBER:** 2-381.00

**MARS NUMBER:** 0

**REQUEST DATE:** Saturday, January 00, 1900

**ANALYST:** 0

**YEAR:** 2040 No Build ADT and Design Hour Volumes

**INTERSECTION:** US 41 & Frank Yost Ln

*Note: Individual Turns Not Necessarily Reflective of Precision Shown*
**TURN MOVEMENT (2040)**

**Note:** HDV turn movement forecasts should not be used for signal timing or warrant analysis.

**Location Map**

INTERSECTION: US 41 & Jorn Rivers Rd

**2040 No Build ADT and Design Hour Volumes**

**2040 ADT**

**2040 AM Design Hour**

**2040 PM Design Hour**

---

**TM 2**

PROJECT: Pembroke Corridor Study

ITEM NUMBER: 2-381.00

MARS NUMBER: 0

REQUEST DATE: Saturday, January 00, 1900

ANALYST: 0

YEAR: 2040

INTERSECTION: US 41 & Jorn Rivers Rd

NOTE: K-Factors, Directional Distributions, and Peak Hour Factors were determined from a 2040 Turning Movement Count. AM and PM DHVs represent 30th highest hour estimates for each turn maneuver.

**PROJECT:** Pembroke Corridor Study

**ITEM NUMBER:** 2-381.00

**MARS NUMBER:** TM 2

**REQUEST DATE:** Saturday, January 00, 1900

**ANALYST:** 0

**YEAR:** 2040

**INTERSECTION:** US 41 & Jorn Rivers Rd

**NOTE:**

- K-Factors, Directional Distributions, and Peak Hour Factors were determined from a 2040 Turning Movement Count. AM and PM DHVs represent 30th highest hour estimates for each turn maneuver.
- HDV turn movement forecasts should not be used for signal timing or warrant analysis.

**LOCATION MAP**

**INTERSECTION:** US 41 & Jorn Rivers Rd

---

**Note:** Individual Turns Not Necessarily Reflective of Precision Shown
TURN MOVEMENT (2040)

**DHV TURN MOVEMENT FORECASTS SHOULD NOT BE USED FOR SIGNAL TIMING OR WARRANT ANALYSIS

**PROJECT:** Pembroke Corridor Study
**ITEM NUMBER:** 2-381.00
**MARS NUMBER:** 0
**REQUEST DATE:** Saturday, January 00, 1900
**ANALYST:** 0
**YEAR:** 2040
**INTERSECTION:** US 41 & KY 115

**NOTE:** K-Factors, Directional Distributions, and Peak Hour Factors were determined from a 2040 Turning Movement Count. AM and PM DHVs represent 30th highest hour estimates for each turn maneuver.

**Location Map**

**INTERSECTION: US 41 & KY 115**
**TURN MOVEMENT (2040)**

**NOTE:** K-Factors, Directional Distributions, and Peak Hour Factors were determined from a 2040 Turning Movement Count. AM and PM DHVs represent 30th highest hour estimates for each turn maneuver.

**TM 4**

**PROJECT:** Pembroke Corridor Study  
**ITEM NUMBER:** 2-381.00  
**MARS NUMBER:** 0  
**REQUEST DATE:** Saturday, January 00, 1900  
**ANALYST:** 0  
**YEAR:** 2040 No Build  
**INTERSECTION:** KY 115 & I-24 WB Ramps

**Location Map**

**2040 ADT**

**2040 AM Design Hour**

**2040 PM Design Hour**

**2040 PM Design Hour**

**Note:** Individual Turns Not Necessarily Reflective of Precision Shown

**Location Map**

**INTERSECTION:** KY 115 & I-24 WB Ramps

**TM 4**

**PROJECT:** Pembroke Corridor Study  
**ITEM NUMBER:** 2-381.00  
**MARS NUMBER:** 0  
**REQUEST DATE:** Saturday, January 00, 1900  
**ANALYST:** 0  
**YEAR:** 2040 No Build  
**INTERSECTION:** KY 115 & I-24 WB Ramps

**Location Map**

**2040 ADT**

**2040 AM Design Hour**

**2040 PM Design Hour**

**Note:** Individual Turns Not Necessarily Reflective of Precision Shown

**Location Map**
**TM 5**

**PROJECT:** Pembroke Corridor Study  
**ITEM NUMBER:** 2-381.00  
**MARS NUMBER:** 0  
**REQUEST DATE:** Saturday, January 00, 1900  
**ANALYST:**  
**YEAR:** 2040 No Build ADT and Design Hour Volumes  
**INTERSECTION:** KY 115 & I-24 EB Ramps

NOTE: K-Factors, Directional Distributions, and Peak Hour Factors were determined from a 2040 Turning Movement Count. AM and PM DHVs represent 30th highest hour estimates for each turn maneuver.

**TURN MOVEMENT (2040)**

****DHV TURN MOVEMENT FORECASTS SHOULD NOT BE USED FOR SIGNAL TIMING OR WARRANT ANALYSIS

**2040 ADT**

**2040 AM Design Hour**

**2040 PM Design Hour**

**Location Map**

Note: Individual Turns Not Necessarily Reflective of Precision Shown
APPENDIX C:
BUILD TURNING MOVEMENTS
TM 1

NOTE: K-Factors, Directional Distributions, and Peak Hour Factors were determined from a 2040 Turning Movement Count. AM and PM DHVs represent 30th highest hour estimates for each turn maneuver.

TURN MOVEMENT (2040)

**DHV TURN MOVEMENT FORECASTS SHOULD NOT BE USED FOR SIGNAL TIMING OR WARRANT ANALYSIS**

PROJECT: Pembroke Corridor Study
ITEM NUMBER: 2-381.00
MARS NUMBER: 0
REQUEST DATE: Saturday, January 00, 1900
ANALYST: 0
YEAR: 2040 Build ADT and Design Hour Volumes
INTERSECTION: US 41 & Frank_Yost_Ln

Location Map

Frank Yost Ln

Frank Yost Ln

Frank Yost Ln

Frank Yost Ln

2040 ADT

2040 AM Design Hour

2040 PM Design Hour

Note: Individual Turns Not Necessarily Reflective of Precision Shown
NOTE: K-Factors, Directional Distributions, and Peak Hour Factors were determined from a 2040 Turning Movement Count. AM and PM DHVs represent 30th highest hour estimates for each turn maneuver.

TURN MOVEMENT (2040)

**DHV TURN MOVEMENT FORECASTS SHOULD NOT BE USED FOR SIGNAL TIMING OR WARRANT ANALYSIS**
TM 3

PROJECT: Pembroke Corridor Study
ITEM NUMBER: 2-381.00
MARS NUMBER: 0
REQUEST DATE: Saturday, January 00, 1900
ANALYST: 0
YEAR: 2040
INTERSECTION: US 41 & KY 115

NOTE: K-Factors, Directional Distributions, and Peak Hour Factors were determined from a 2040 Turning Movement Count. AM and PM DHVs represent 30th highest hour estimates for each turn maneuver.

**DHV TURN MOVEMENT FORECASTS SHOULD NOT BE USED FOR SIGNAL TIMING OR WARRANT ANALYSIS**

INTERSECTION: US 41 & KY 115

**TURN MOVEMENT (2040)**

ITEM NUMBER: 2-381.00

NOTE: Individual Turns Not Necessarily Reflective of Precision Shown
NOTE:  K-Factors, Directional Distributions, and Peak Hour Factors were determined from a 2040 Turning Movement Count. AM and PM DHVs represent 30th highest hour estimates for each turn maneuver.

**DHV TURN MOVEMENT FORECASTS SHOULD NOT BE USED FOR SIGNAL TIMING OR WARRANT ANALYSIS**

ITEM NUMBER: 2-381.00
MARS NUMBER: 0
REQUEST DATE: Saturday, January 00, 1900
PROJECT: Pembroke Corridor Study
INTERSECTION: KY 115 & I-24 WB Ramps

2040 Build  ADT and Design Hour Volumes

Location Map

TM 4

KY 115

2040 ADT

2040 AM Design Hour

2040 PM Design Hour

Note: Individual Turns Not Necessarily Reflective of Precision Shown
**Note:** K-Factors, Directional Distributions, and Peak Hour Factors were determined from a 2040 Turning Movement Count. AM and PM DHVs represent 30th highest hour estimates for each turn maneuver.

**TURN MOVEMENT (2040)**

**Note:** DHV TURN MOVEMENT FORECASTS SHOULD NOT BE USED FOR SIGNAL TIMING OR WARRANT ANALYSIS.