



97.071

JAMES C. CODELL, III  
SECRETARY OF TRANSPORTATION

COMMONWEALTH OF KENTUCKY  
**TRANSPORTATION CABINET**  
FRANKFORT, KENTUCKY 40622

PAUL E. PATTON  
GOVERNOR

T. KEVIN FLANERY  
DEPUTY SECRETARY

**INTRA-DEPARTMENTAL MEMO**

**TO:** John Sacksteder, Director  
Division of Highway Design

**ATTN:** Daryl Greer

**FROM:** *Asst* Bruce S. Siria, Director *Bary House*  
Division of Transportation Planning

**DATE:** July 31, 1997

**SUBJECT:** Estill County Traffic Forecast  
KY 89 from Irvine City Limits  
to 0.5 miles North of Estill Co. High School  
Item No. 10-363.00

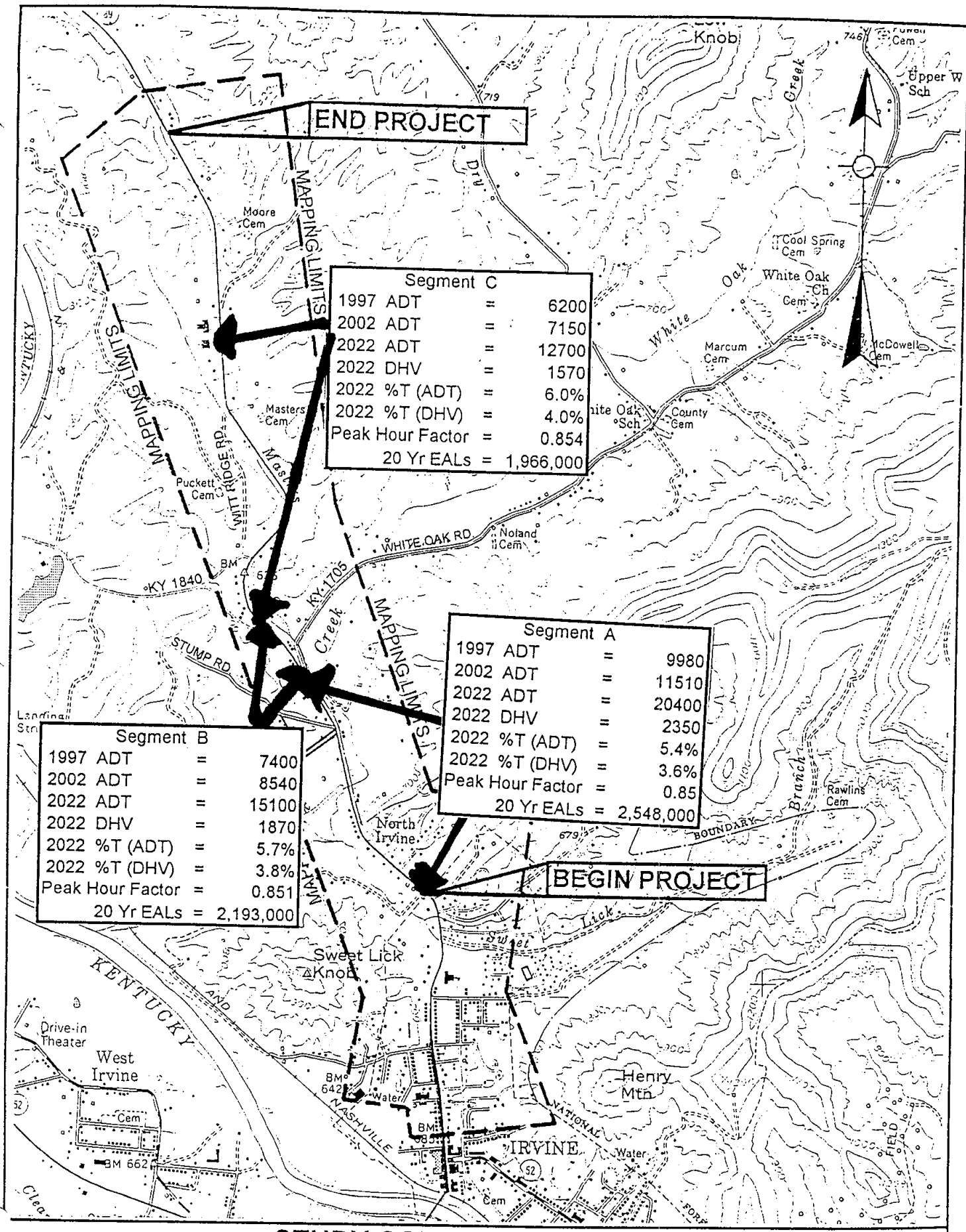
In response to your June 13, 1997 request for traffic forecasts on the subject project, we are providing current year (1997) ADTs, construction year (2002) ADTs, design year (2022) ADTs, truck percentages, turning movements, and estimated equivalent axleload accumulations on the attached map, worksheets and diagrams.

If you have any questions, please call Rob Bostrom of this Division.

BSS:SLD ✓

Attachments

c: Gary Sharpe  
William Madden - D10  
George Best



**END PROJECT**

| Segment C        |   |           |
|------------------|---|-----------|
| 1997 ADT         | = | 6200      |
| 2002 ADT         | = | 7150      |
| 2022 ADT         | = | 12700     |
| 2022 DHV         | = | 1570      |
| 2022 %T (ADT)    | = | 6.0%      |
| 2022 %T (DHV)    | = | 4.0%      |
| Peak Hour Factor | = | 0.854     |
| 20 Yr EALs       | = | 1,966,000 |

| Segment A        |   |           |
|------------------|---|-----------|
| 1997 ADT         | = | 9980      |
| 2002 ADT         | = | 11510     |
| 2022 ADT         | = | 20400     |
| 2022 DHV         | = | 2350      |
| 2022 %T (ADT)    | = | 5.4%      |
| 2022 %T (DHV)    | = | 3.6%      |
| Peak Hour Factor | = | 0.85      |
| 20 Yr EALs       | = | 2,548,000 |

| Segment B        |   |           |
|------------------|---|-----------|
| 1997 ADT         | = | 7400      |
| 2002 ADT         | = | 8540      |
| 2022 ADT         | = | 15100     |
| 2022 DHV         | = | 1870      |
| 2022 %T (ADT)    | = | 5.7%      |
| 2022 %T (DHV)    | = | 3.8%      |
| Peak Hour Factor | = | 0.851     |
| 20 Yr EALs       | = | 2,193,000 |

**BEGIN PROJECT**

**STUDY CORRIDOR FOR KY 89**  
**SCALE - 1:24000**

# FORECAST OF EQUIVALENT SINGLE AXLE LOAD ACCUMULATIONS

## ROUTE ID:

|                  |   |                 |              |
|------------------|---|-----------------|--------------|
| County           | Estill  | Date            | 7/24/97      |
| Road Name        | Irvine-Winchester Road  | Name            | S. Davenport |
| Functional Class | 7 - Rural Major Collector   | TC 10-1 No.     | 62608        |
| Project Numbers  | FD04 033 0089 012-015 025 D   | Route No.       | KY 89        |
| Project Limits   | City Limits of Irvine to 0.5 mi. North of KY 1840<br>at Estill County High School | Item No.        | 10-00363.00  |
| Segment Limits   | City limits of Irvine to KY 1705  | Beg. MP         | 12           |
|                  |   | End MP          | 15           |
|                  |   | T.F. No.        | 97.071       |
|                  |   | Number of Lanes | 2            |
|                  |   | 1 or 2 way      | 2            |

## REFERENCES:

|                    |   |                   |      |
|--------------------|---|-------------------|------|
| Previous Forecasts | 95.177<br>This replaces previous submittals | Present Year      | 1997 |
| Volume             | Volume Count, Various Stns                  | Construction Year | 2002 |
| Truck Percent      | Truck% Calculation Wksht.                   | Median Year       | 2012 |
| ESAL Information   | 1995 Aggregated ESALs                       | Design Year       | 2022 |

## TRAFFIC PARAMETERS:

|                                   | Present<br>Year | Annual<br>Change | Construction<br>Year | Median<br>Year | Design<br>Year |
|-----------------------------------|-----------------|------------------|----------------------|----------------|----------------|
| Volume (AADT)                     | 9980            | 2.900%           | 11510                | 15320          | 20400          |
| Percent Trucks (%T)               | 5.4%            | 0.000%           | 5.4%                 | 5.4%           | 5.4%           |
| Percent Trucks Hauling Coal (%CT) | 1.30%           | -2.819%          | 1.13%                | 0.85%          | 0.64%          |
| <i>Non-Coal Trucks:</i>           |                 |                  |                      |                |                |
| Axles/Truck (A/T)                 | 2.865           | 0.000%           | 2.865                | 2.865          | 2.865          |
| ESALs/Axle (ESAL/A)               | 0.244           | 0.000%           | 0.244                | 0.244          | 0.244          |
| <i>Coal Trucks:</i>               |                 |                  |                      |                |                |
| Axles/Truck (A/CT)                | 4.577           | 0.000%           | 4.577                | 4.577          | 4.577          |
| ESALs/Axle (ESAL/CA)              | 1.625           | 0.000%           | 1.625                | 1.625          | 1.625          |

## ESAL CALCULATIONS:

$$\text{Total Median Year Daily ESALs} = (\text{AADT} \times (1 - \%T) \times .005) + (\text{AADT} \times \%T \times (\text{A/T}) \times (\text{ESAL/A})) + (\text{AADT} \times (\%T) \times (\%CT) \times (\text{A/CT}) \times (\text{ESAL/CA})) = \boxed{697.952}$$

$$\text{Design ESALs in Critical Lane} = \text{Median Daily ESALs} \times 365 \times 20 \times \text{Lane Adj.} = \boxed{2,548,000}$$

# FORECAST OF EQUIVALENT SINGLE AXLE LOAD ACCUMULATIONS

## ROUTE ID:

|                  |   |                 |              |
|------------------|---|-----------------|--------------|
| County           | Estill  | Date            | 7/24/97      |
| Road Name        | Irvine-Winchester Road  | Name            | S. Davenport |
| Functional Class | 7 - Rural Major Collector   | TC 10-1 No.     | 62608        |
| Project Numbers  | FD04 033 0089 012-015 025 D   | Route No.       | KY 89        |
| Project Limits   | City Limits of Irvine to 0.5 mi. North of KY 1840<br>at Estill County High School | Item No.        | 10-00363.00  |
| Segment Limits   | KY 1705 to KY 1840  | Beg. MP         | 12           |
|                  |   | End MP          | 15           |
|                  |   | T.F. No.        | 97.071       |
|                  |   | Number of Lanes | 2            |
|                  |   | 1 or 2 way      | 2            |

## REFERENCES:

|                    |   |                   |      |
|--------------------|---|-------------------|------|
| Previous Forecasts | 95.177<br>This replaces previous submittals | Present Year      | 1997 |
| Volume             | Volume Count, Various Stns                  | Construction Year | 2002 |
| Truck Percent      | 1986 Class Count, Stn A01                   | Median Year       | 2012 |
| ESAL Information   | 1995 Aggregated ESALs                       | Design Year       | 2022 |

## TRAFFIC PARAMETERS:

|                                   | Present<br>Year | Annual<br>Change | Construction<br>Year | Median<br>Year | Design<br>Year |
|-----------------------------------|-----------------|------------------|----------------------|----------------|----------------|
| Volume (AADT)                     | 7400            | 2.900%           | 8540                 | 11360          | 15100          |
| Percent Trucks (%T)               | 5.7%            | 0.000%           | 5.7%                 | 5.7%           | 5.7%           |
| Percent Trucks Hauling Coal (%CT) | 3.32%           | -2.813%          | 2.88%                | 2.16%          | 1.63%          |
| <i>Non-Coal Trucks:</i>           |                 |                  |                      |                |                |
| Axles/Truck (A/T)                 | 2.865           | 0.000%           | 2.865                | 2.865          | 2.865          |
| ESALs/Axle (ESAL/A)               | 0.244           | 0.000%           | 0.244                | 0.244          | 0.244          |
| <i>Coal Trucks:</i>               |                 |                  |                      |                |                |
| Axles/Truck (A/CT)                | 4.577           | 0.000%           | 4.577                | 4.577          | 4.577          |
| ESALs/Axle (ESAL/CA)              | 1.625           | 0.000%           | 1.625                | 1.625          | 1.625          |

## ESAL CALCULATIONS:

$$(AADT \times (1 - \%T) \times .005) + (AADT \times \%T \times (A/T) \times (ESAL/A)) + (AADT \times (\%T) \times (\%CT) \times (A/CT) \times (ESAL/CA)) = \boxed{600,558}$$

Total Median Year Daily ESALs

$$\text{Median Daily ESALs} \times 365 \times 20 \times \text{Lane Adj.} = \boxed{2,193,000}$$

Design ESALs in Critical Lane

# FORECAST OF EQUIVALENT SINGLE AXLE LOAD ACCUMULATIONS

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| Segment Limits   | KY 1840 to 0.5 mi. North of Estill County High                                    | Beg. MP         | 12           |
|                  |   | End MP          | 15           |
|                  |   | T.F. No.        | 97.071       |
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| Previous Forecasts | 95.177<br>This replaces previous submittals | Present Year      | 1997 |
| Volume             | Volume Count, Various Stns                  | Construction Year | 2002 |
| Truck Percent      | 1986 Class Count, Stn A01                   | Median Year       | 2012 |
| ESAL Information   | 1995 Aggregated ESALs                       | Design Year       | 2022 |

## TRAFFIC PARAMETERS:

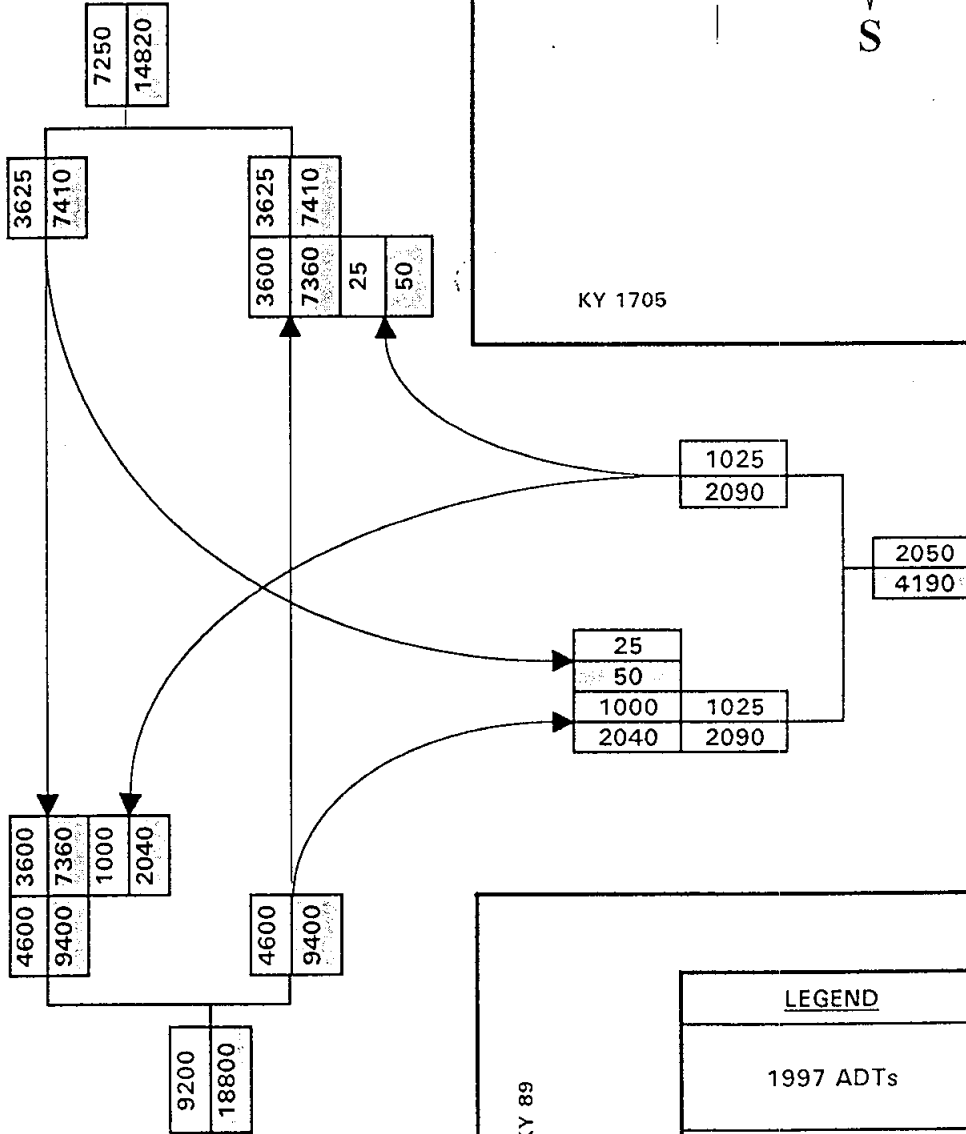
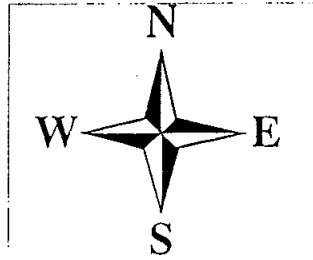
|                                   | Present<br>Year | Annual<br>Change | Construction<br>Year | Median<br>Year | Design<br>Year |
|-----------------------------------|-----------------|------------------|----------------------|----------------|----------------|
| Volume (AADT)                     | 6200            | 2.900%           | 7150                 | 9520           | 12700          |
| Percent Trucks (%T)               | 6.0%            | 0.000%           | 6.0%                 | 6.0%           | 6.0%           |
| Percent Trucks Hauling Coal (%CT) | 3.76%           | -2.827%          | 3.26%                | 2.45%          | 1.84%          |
| <i>Non-Coal Trucks:</i>           |                 |                  |                      |                |                |
| Axles/Truck (A/T)                 | 2.865           | 0.000%           | 2.865                | 2.865          | 2.865          |
| ESALs/Axle (ESAL/A)               | 0.244           | 0.000%           | 0.244                | 0.244          | 0.244          |
| <i>Coal Trucks:</i>               |                 |                  |                      |                |                |
| Axles/Truck (A/CT)                | 4.577           | 0.000%           | 4.577                | 4.577          | 4.577          |
| ESALs/Axle (ESAL/CA)              | 1.625           | 0.000%           | 1.625                | 1.625          | 1.625          |

## ESAL CALCULATIONS:

|   |           |
|---|-----------|
| $\text{Total Median Year Daily ESALs} = (\text{AADT} \times (1 - \%T) \times .005) + (\text{AADT} \times \%T \times (A/T) \times (ESAL/A)) + (\text{AADT} \times (\%T) \times (\%CT) \times (A/CT) \times (ESAL/CA)) =$ | 538,387   |
| $\text{Design ESALs in Critical Lane} = \text{Median Daily ESALs} \times 365 \times 20 \times \text{Lane Adj.} =$   | 1,966,000 |

KY 89

Irvine, KY  
 KY 1705 @ KY 89  
 1997 & 2022  
 Estimated Traffic

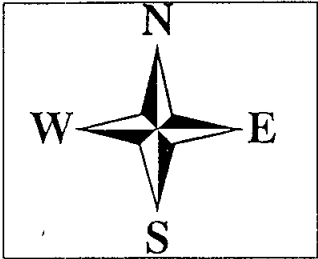


KY 1705

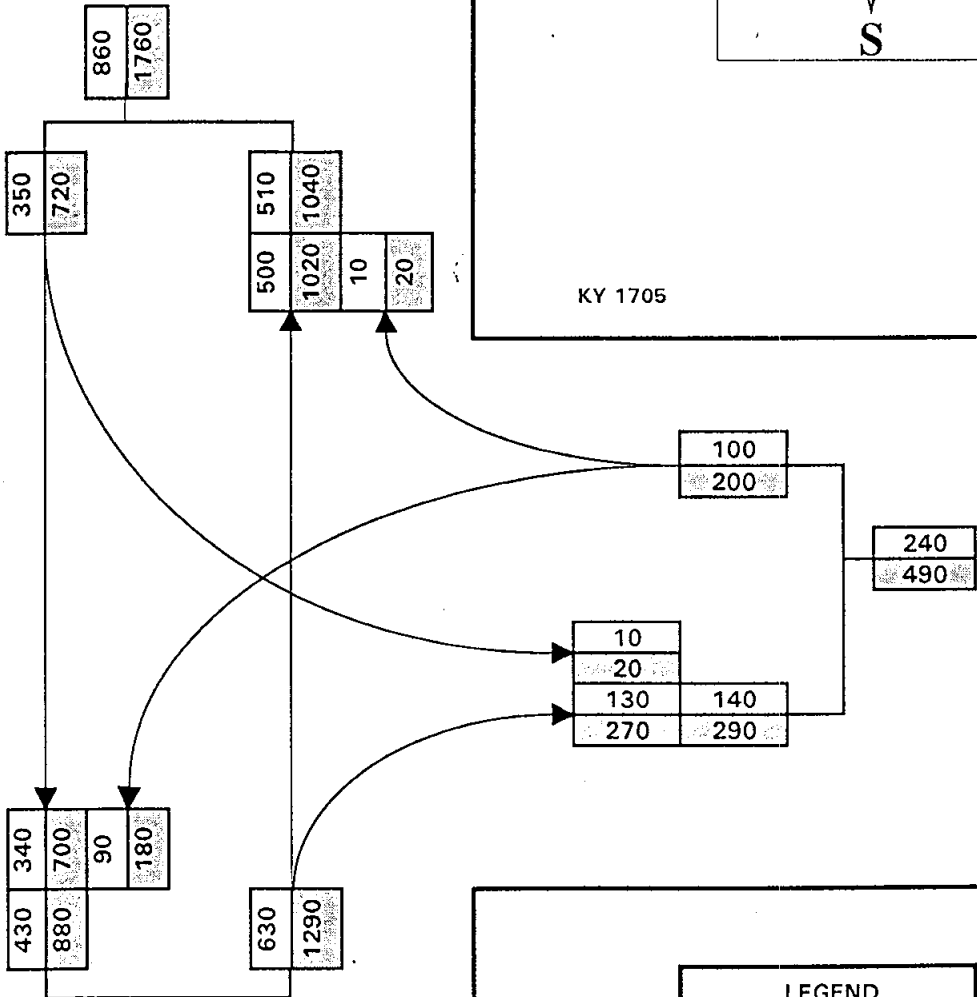
KY 89

| LEGEND    |
|-----------|
| 1997 ADTs |
| 2022 ADTs |

Irvine, KY  
 KY 1705 @ KY 89  
 1997 & 2022  
 Estimated AM DHVs



KY 89

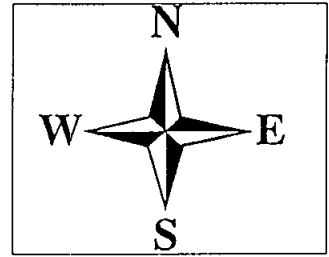


KY 1705

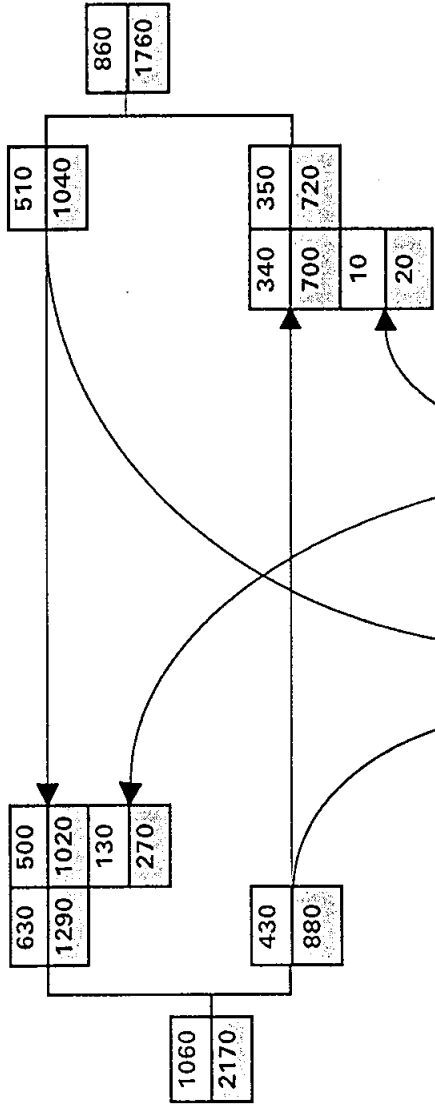
| LEGEND       |
|--------------|
| 1997 AM DHVs |
| 2022 AM DHVs |

KY 89

Irvine, KY  
 KY 1705 @ KY 89  
 1997 & 2022  
 Estimated PM DHVs



KY 89

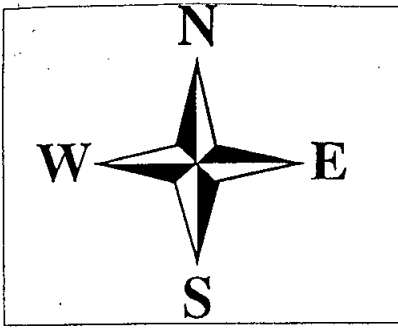


KY 1705

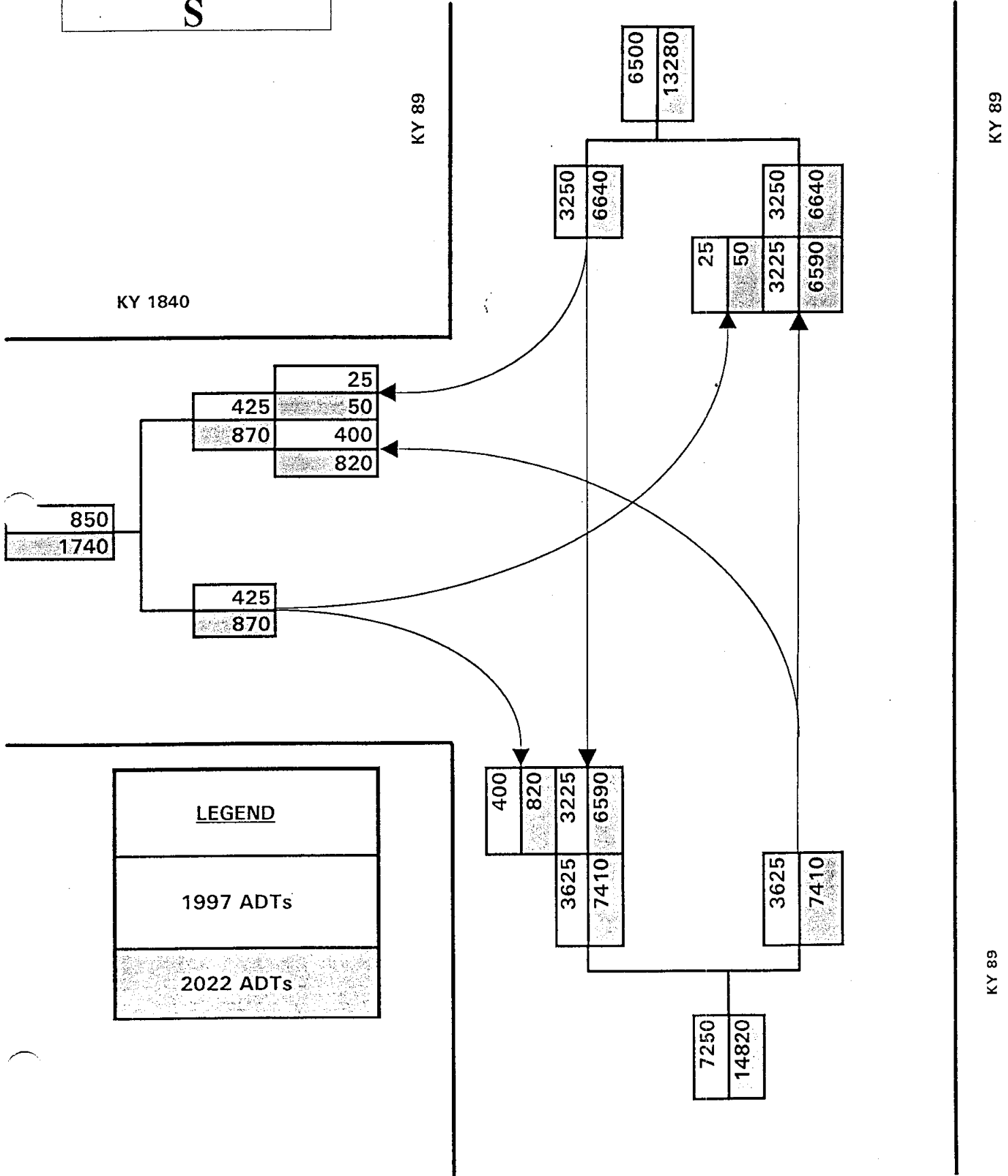
KY 89

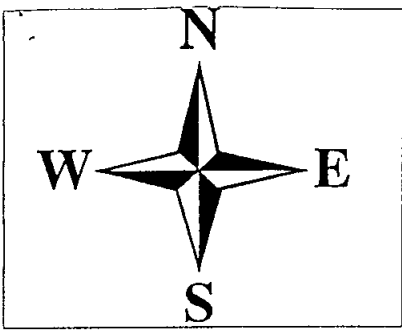
| LEGEND       |  |
|--------------|--|
| 1997 PM DHVs |  |
| 2022 PM DHVs |  |



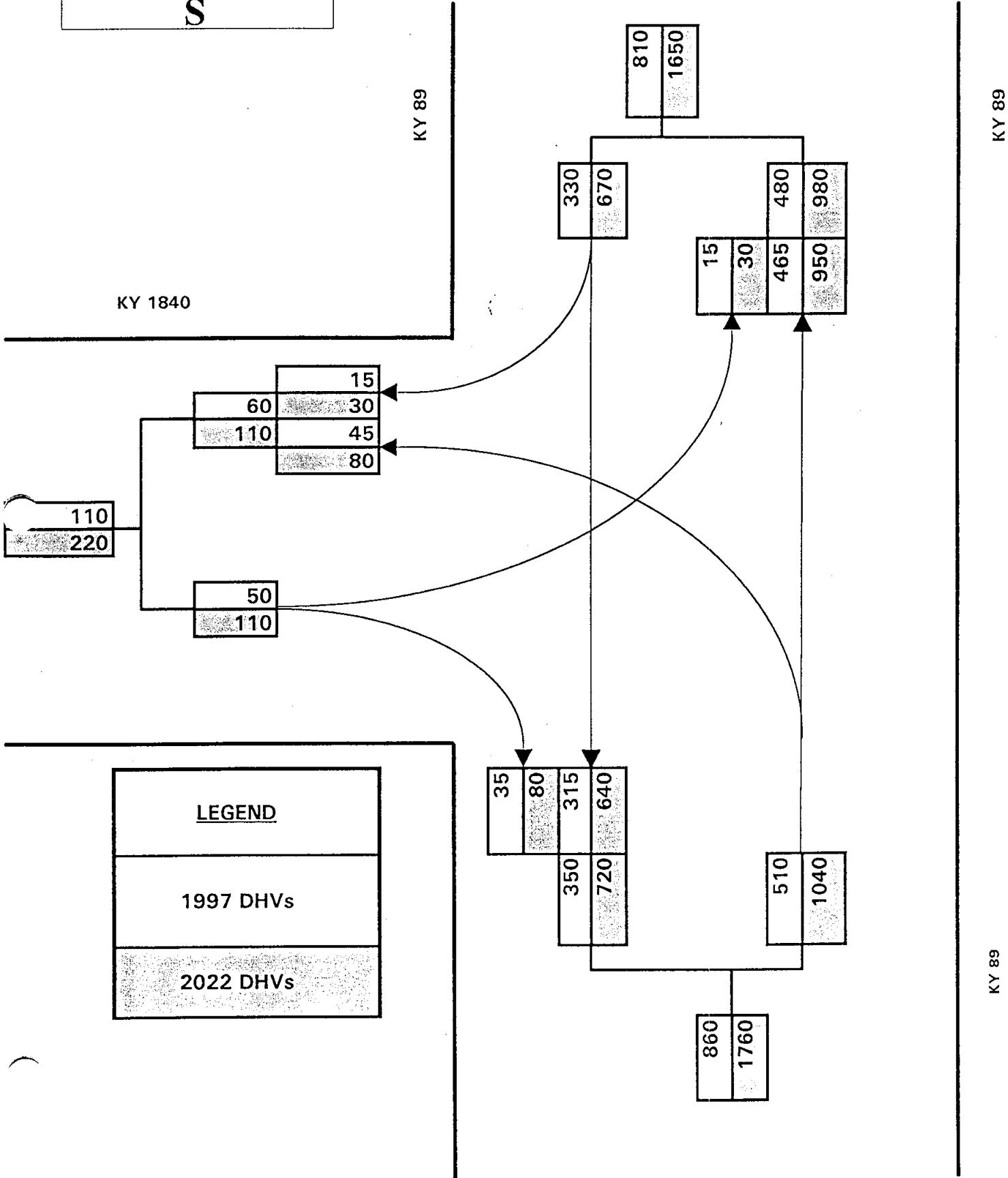


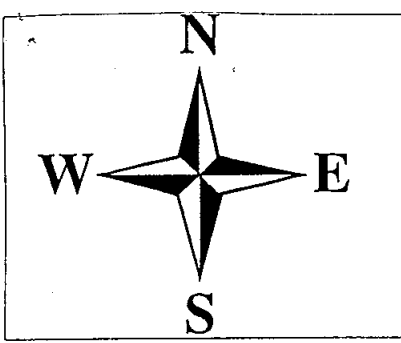
Irvine, KY  
 KY 1840 @ KY 89  
 1997 & 2022  
 Estimated Traffic





Irvine, KY  
 KY 1840 @ KY 89  
 1997 & 2022  
 Estimated AM DHVs





Irvine, KY  
 KY 1840 @ KY 89  
 1997 & 2022  
 Estimated PM DHVs

