



# HAMILTON COUNTY

## HIGHWAY DEPARTMENT

June 27, 2005

Diane Hamstra  
58 Granite Dr.  
Carmel, IN 46032

**FILE COPY**

Re: Speed Limit Reduction  
146<sup>th</sup> St. from Carey Rd. to Oak Ridge Rd.  
Washington Township

Dear Ms. Hamstra,

The Hamilton County Highway Department has received your letter dated August 30, 2004, and investigated you request.

The investigation was done in accordance with the Indiana Manual on Uniform Traffic Control Devices (MUTCD). This investigation included investigating the accident history along this segment of road, making field observations about the character and condition of the road and doing a speed survey. The MUTCD states that the 85<sup>th</sup> percentile speed from the speed study shall be used to determine posted speed limits.

The result of our investigation is that the speed limit on 146<sup>th</sup> St. from Oak Ridge Rd. to Carey Rd. should remain a 45 mph zone.

I know that this is not what you wanted the Highway Department to do, but lowering the speed limit does not mean that drivers will drive slower. Attached is an information sheet that was put together by the Center for Transportation Research and Education and the Iowa Department of Transportation that explains some of the reasons why speed limits are set where they are.

Lowering the speed limit does not mean that the average speed will change significantly. It is a common myth that if the speed limit is posted at X most drivers will drive at X+10. This is a myth that is in large part perpetuated by speed limits being set too low. What happens when a speed limit is set at a reasonable speed is that most drivers will obey the speed limit. When the speed limit is set too low a small percentage of drivers will obey the posted speed limit about 15 percent will as usual not care and the rest will drive at a speed that they feel is appropriate for the road conditions. The result is that there are cars driving at all kinds of different speeds along the road, which poses higher risks of accidents. When the speed limit is set appropriately the majority of the cars and the small percentage who follow the posted speed limit will then be driving at about the same speed. The result is that the speed range of vehicles is smaller. Studies have shown that accidents are more common when vehicles have a large difference in the speeds that they are traveling, and thus when vehicles are traveling at about the same speed accidents are less likely.

In your letter you said that most of the traffic travels at 55 to 60 mph. Only a small percentage of drivers are traveling in excess of 55 mph. The worst place had only seven percent of traffic exceeding 55mph and most of the locations that we checked had between one and two percent of the traffic exceeding 55 mph.

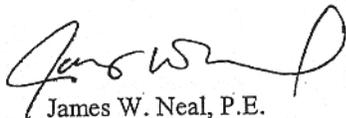
In your letter you said that the speed limit should be consistent. The speed limit on 146<sup>th</sup> St. is consistent. The posted speed limit from S.R. 37 to Ditch Rd. is 45 mph with the exception of the school zone at Our Lady of Mount Carmel.

You also indicate that the shopping centers necessitate lowering the speed limit. There are traffic signals to allow drivers into and out of the new shopping centers (Clay Terrace and Cool Creek Commons), and there are traffic signals for the side streets that lead to the older shopping centers.

Your other main concern appears to be finding a gap to enter and exit subdivisions. Lowering the speed limit will not make it any easier to find a gap, and it will actually make it more difficult to find a gap to enter or exit 146<sup>th</sup> St. As I previously mentioned artificially lowering the speed limit leads to a larger range of travel speeds on the road. Increasing the range of travel speeds along the road will actually make it harder to find an appropriate gap in traffic. This is especially true for teenage drivers and elderly drivers. These groups have more difficulty judging the speed of oncoming traffic and determining what is an appropriate gap. It is better for elderly and teenage drivers if traffic is approaching at about the same speed.

Thank you for voicing your concerns with our department, and bringing these issues to our attention. It is letters such as yours, which help us address changing traffic conditions and appropriately post the roads.

Sincerely,



James W. Neal, P.E.  
County Highway Engineer

JWN:CFB:cfb

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# Investigation

June 21, 2005

**Location:** 146<sup>th</sup> St. from Carey Rd. to Oak Ridge Rd.

**Generated By:** Diane Hamstra

## Explanation\Decision

**A. BACKGROUND:** received letter from Diane Hamstra for investigation of speed limit reduction on 146<sup>th</sup> St. from Carey Rd. to Oak Ridge Rd.

### **B. SITE INVESTIGATION**

This section of road is was reconstructed and widened out to four lane sections with a median and five lane sections in 2002. The roadway was designed using a 70 kph (43.5mph) design speed. The entire length of road has 8 inch barrier curb. The through lanes are 12' wide. The roadway is currently posted at 45 mph with a 30 mph school zone adjacent to Our Lady of Mount Carmel School.

Most of the side streets between Western Way and Oak Ridge Rd. do not have acceleration or deceleration lanes. There are a Two Way Left Turn Lanes(TWLTL) and left turn lanes to enter the subdivision side streets.

### **C. ACCIDENT HISTORY**

The crash history for this section of road was checked from 1/1/02 to the present. See the attached sheet for a summary of crash causes by year. There are more causes than crashes because some crashes have multiple causes. There does not appear to be an crash problem associated with travel speeds.

### **D. TRAFFIC STUDIES**

A previous study was done in 2002. The result of that study was that the speed limit was raised from 40 to 45 mph.

New counts were done. See the attached sheet for the counter locations, 85<sup>th</sup> percentile speeds and 24 hound traffic volume. The 85<sup>th</sup> percentile speeds varied from 46.9 mph to 53.2 mph.

### **E. RECOMMENDATIONS:**

Make no changes at this time. The 85<sup>th</sup> percentile speeds would indicate a 45 to 50 mph speed limit. With the design speed of 43.5 mph a 45 mph speed limit is better than 50 mph limit.

**INVESTIGATED BY:** Chris Burt c 

**TYPE OF RESPONSE/DATE:** letter to Diane Hamstra after approval by Commissioners.

Diane Hamstra  
58 Granite Dr.  
Carmel, IN 46032  
Tel. # 575-0828

RECEIVED

AUG 31 2004

HAMILTON CO. HIGHWAY DEPT.

August 30, 2004

Dear Mr. Neal,

I am writing to apprise you of a serious situation. The traffic on 146th Street between Oakridge and Carey Road is hazardous because the speed limit is too high. I live in a subdivision that has its only exit and entrance at Rolling Hill Dr. and John Street and 146th Street. It is often very difficult to get onto 146th Street because the speed limit is 45mph. In addition, most of the traffic travels at 55 to 60 mph., and bikers and walkers complicate the exit and entrance onto 146th street, particularly near my area right next to the Monon. Below is a list of reasons to lower the speed limit between Oakridge and Carey Road and to make it a consistent 35 mph.

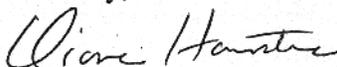
**Reasons to Lower the Speed Limit to 35 mph. Between Oakridge and Carey Rd.**

1. Someone is going to get seriously hurt because people are taking risks when trying to exit and enter 146th from many of the subdivisions on 146th.
2. Our Lady of Mt. Carmel School and field are busy much of the day, and there are even now businesses along the thoroughfare.
3. The Monon at Roher Rd. and 146th necessitates a lower speed limit.
4. There will be a new shopping center, Clay Terrace, which will demand that traffic slow down.
5. There are other businesses across from Clay Terrace that should necessitate a lower speed limit so that cars slow down in their approach.
6. Closer towards Carey Rd. after the bridge are businesses and shopping areas that necessitate a lower speed limit.
7. The speed limit should be consistent between Oakridge and Carey. Presently, it is 30 by the school, and then one block east of the school, it is suddenly 45 and even 45 past the Monon, Best Buys, the new Clay Terrace, Kohls, Lowes and the Regal, not to mention the new strip mall behind the theatre.
8. There are some older people, as well as young drivers, in the subdivisions who have been having a hard time getting onto and off 146th St.

In short, 146th, specifically between Oakridge and John St. and all of the way past Carey Rd., has become a highway instead of a residential access to highways and an access to businesses thoroughfare because of the increased speed east of Oakridge.

Please consider making the speed limit a consistent 35 mph. between Oakridge and Carey Rd. Many of us in the affected subdivisions would greatly appreciate your taking steps to protect our families. If you have made the decision to do so prior to receiving this letter, you may use my letter to support that decision.

Sincerely,



Diane Hamstra

| <b>2002</b>                 | <b>10</b>    |
|-----------------------------|--------------|
| <b>Cause</b>                | <b>Count</b> |
| Failure to Yield            | 6            |
| Snow/Ice on Road            | 2            |
| Unsafe Speed                | 1            |
| Improper Lane Usage         | 1            |
| Following Too Closely       | 1            |
| Disregard of Signal or sign | 1            |

| <b>2003</b>           | <b>10</b>    |
|-----------------------|--------------|
| <b>Cause</b>          | <b>Count</b> |
| Failure to Yield      | 4            |
| Following Too Closely | 3            |
| Ran off Road Left     | 2            |
| Animal in Roadway     | 2            |

| <b>2004</b>           | <b>34</b>    |
|-----------------------|--------------|
| <b>Cause</b>          | <b>Count</b> |
| Failure to Yield      | 14           |
| Following Too Closely | 11           |
| Improper Lane Usage   | 3            |
| Roadway Surface       | 2            |
| Improper Turning      | 2            |
| Improper Passing      | 2            |
| Ran off Road          | 1            |
| Pedestrian Action     | 1            |
| Speed/Weather         | 1            |
| Alcoholic Beverage    | 1            |
| Driver Distracted     | 1            |
| Overcorrecting        | 1            |
| Driver Asleep         | 1            |

| <b>2005</b>           | <b>11</b>    |
|-----------------------|--------------|
| <b>Cause</b>          | <b>Count</b> |
| Following Too Closely | 5            |
| Failure to Yield      | 4            |
| Brake Failure         | 1            |
| Disregard Signal      | 1            |

# Hamilton County Highway Department

1700 South 10th St.  
Noblesville, IN 46060

Street : 146th St.  
Location : 1450' West of Carey Rd.  
Study : Speed Survey

Site: 146th

Direction: WBD

Data for Thursday 4/14/2005

### Vehicle Count Statistics

**Daily Total**  
**9,468**

| AM | Peak Hour | 07:00 | PM | Peak Hour | 04:45 |
|----|-----------|-------|----|-----------|-------|
|    | Volume    | 882   |    | Volume    | 733   |
|    | Factor    | 0.91  |    | Factor    | 0.89  |

### Speed Statistics

| MPH         | 1-14 | 15-19 | 20-24 | 25-29 | 30-34 | 35-39 | 40-44 | 45-49 | 50-54 | 55-59 | 60-64 | 65-69 | 70-999 |
|-------------|------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|--------|
| Bin Totals  | 0    | 2     | 1     | 11    | 58    | 521   | 2,281 | 3,856 | 2,077 | 464   | 85    | 38    | 74     |
| % of Totals | 0.0  | 0.0   | 0.0   | 0.1   | 0.6   | 5.5   | 24.1  | 40.7  | 21.9  | 4.9   | 0.9   | 0.4   | 0.8    |

Avg. Speed 47.10 MPH

| %ile Speeds | 10%      | 15%      | 50%      | 85%      | 90%      |
|-------------|----------|----------|----------|----------|----------|
|             | 40.8 MPH | 41.8 MPH | 47.4 MPH | 53.2 MPH | 54.3 MPH |

### Pace

Speed 40-50 MPH  
Number in pace 6,137  
% in pace 64.8

| Speed Exceeded | 45(MPH) | 55(MPH) | 65(MPH) |
|----------------|---------|---------|---------|
| Percentage     | 69.6    | 7.0     | 1.2     |
| Totals         | 6,594   | 661     | 112     |

### Class Statistics

|             | Cars & Bikes | 2 Axle Tire | 2 Axle Long | 2 Axle Buses | 3 Axle 6 Tire | 4 Axle Single | 4 Axle Single | 5 Axle Double | 5 Axle Double | 6 Axle Double | 6 Axle Multi | 6 Axle Multi | 6 Axle Multi |
|-------------|--------------|-------------|-------------|--------------|---------------|---------------|---------------|---------------|---------------|---------------|--------------|--------------|--------------|
| Bin Totals  | 188          | 5,887       | 2,203       | 51           | 225           | 68            | 57            | 503           | 35            | 158           | 36           | 28           | 29           |
| % of Totals | 2.0          | 62.2        | 23.3        | 0.5          | 2.4           | 0.7           | 0.6           | 5.3           | 0.4           | 1.7           | 0.4          | 0.3          | 0.3          |

### Gap Statistics

| [Secs]      | 5-9  | 10-14 | 15-19 | 20-24 | 25-29 | 30-34 | 35-39 | 40-44 | 45-49 | 50-54 | 55-59 | 60-64 | 65-999 |
|-------------|------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|--------|
| Bin Totals  | 976  | 406   | 264   | 211   | 157   | 131   | 78    | 80    | 51    | 31    | 20    | 15    | 107    |
| % of Totals | 38.6 | 16.1  | 10.4  | 8.3   | 6.2   | 5.2   | 3.1   | 3.2   | 2.0   | 1.2   | 0.8   | 0.6   | 4.2    |

### Error Statistics

| Sensor                 | A       | B      |
|------------------------|---------|--------|
| Total Hits             | 26,166  | 26,982 |
| Percent Used           | 91.0    | 88.0   |
| Avg Axles Per Vehicle  | 2.28    |        |
| Avg Two Axle Wheelbase | 9.5 ft. |        |

# Hamilton County Highway Department

1700 South 10th St.  
Noblesville, IN 46060

Street : 146th St.  
Location : 1450' West of Carey Rd.  
Study : Speed Survey

Site: 146th  
Date: 04/14/05

Direction: WBD

| Begin Time       | Total | 1-14 MPH | 15-19 MPH | 20-24 MPH | 25-29 MPH | 30-34 MPH | 35-39 MPH | 40-44 MPH | 45-49 MPH | 50-54 MPH | 55-59 MPH | 60-64 MPH | 65-69 MPH | 70-99 MPH | Avg |
|------------------|-------|----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----|
| 12:AM            | 27    | 0        | 0         | 0         | 0         | 0         | 0         | 6         | 18        | 3         | 0         | 0         | 0         | 0         | 46  |
| 01:00            | 12    | 0        | 0         | 0         | 0         | 0         | 0         | 3         | 6         | 1         | 1         | 0         | 0         | 1         | 50  |
| 02:00            | 11    | 0        | 0         | 0         | 0         | 0         | 2         | 4         | 3         | 2         | 0         | 0         | 0         | 0         | 44  |
| 03:00            | 6     | 0        | 0         | 0         | 0         | 0         | 0         | 1         | 2         | 2         | 0         | 0         | 0         | 1         | 54  |
| 04:00            | 30    | 0        | 0         | 0         | 0         | 1         | 1         | 7         | 15        | 3         | 3         | 0         | 0         | 0         | 46  |
| 05:00            | 115   | 0        | 0         | 0         | 1         | 1         | 1         | 9         | 48        | 41        | 11        | 3         | 0         | 0         | 49  |
| 06:00            | 456   | 0        | 2         | 1         | 0         | 1         | 5         | 53        | 181       | 147       | 56        | 4         | 3         | 3         | 49  |
| 07:00            | 882   | 0        | 0         | 0         | 0         | 4         | 31        | 128       | 396       | 253       | 55        | 11        | 2         | 2         | 48  |
| 08:00            | 677   | 0        | 0         | 0         | 0         | 2         | 18        | 115       | 285       | 177       | 58        | 8         | 4         | 10        | 49  |
| 09:00            | 468   | 0        | 0         | 0         | 0         | 3         | 18        | 90        | 191       | 118       | 26        | 9         | 3         | 10        | 49  |
| 10:00            | 504   | 0        | 0         | 0         | 0         | 3         | 22        | 136       | 221       | 91        | 16        | 5         | 1         | 9         | 47  |
| 11:00            | 612   | 0        | 0         | 0         | 1         | 2         | 38        | 162       | 235       | 144       | 19        | 7         | 0         | 4         | 47  |
| 12:PM            | 584   | 0        | 0         | 0         | 5         | 8         | 46        | 129       | 226       | 138       | 22        | 4         | 1         | 5         | 47  |
| 01:00            | 508   | 0        | 0         | 0         | 0         | 3         | 26        | 117       | 198       | 128       | 27        | 4         | 2         | 3         | 47  |
| 02:00            | 567   | 0        | 0         | 0         | 0         | 2         | 36        | 162       | 203       | 123       | 24        | 8         | 3         | 6         | 47  |
| 03:00            | 538   | 0        | 0         | 0         | 0         | 1         | 23        | 130       | 212       | 132       | 28        | 3         | 2         | 7         | 48  |
| 04:00            | 635   | 0        | 0         | 0         | 0         | 0         | 44        | 155       | 274       | 114       | 31        | 4         | 7         | 6         | 47  |
| 05:00            | 728   | 0        | 0         | 0         | 3         | 11        | 42        | 203       | 292       | 135       | 27        | 9         | 4         | 2         | 46  |
| 06:00            | 682   | 0        | 0         | 0         | 1         | 1         | 60        | 217       | 277       | 103       | 20        | 0         | 1         | 2         | 46  |
| 07:00            | 641   | 0        | 0         | 0         | 0         | 8         | 52        | 233       | 224       | 101       | 15        | 2         | 3         | 3         | 46  |
| 08:00            | 363   | 0        | 0         | 0         | 0         | 4         | 34        | 114       | 152       | 48        | 10        | 1         | 0         | 0         | 45  |
| 09:00            | 239   | 0        | 0         | 0         | 0         | 2         | 19        | 70        | 107       | 31        | 7         | 2         | 1         | 0         | 46  |
| 10:00            | 117   | 0        | 0         | 0         | 0         | 1         | 1         | 21        | 59        | 28        | 6         | 0         | 1         | 0         | 48  |
| 11:00            | 66    | 0        | 0         | 0         | 0         | 0         | 2         | 16        | 31        | 14        | 2         | 1         | 0         | 0         | 47  |
| Daily            | 9,468 | 0        | 2         | 1         | 11        | 58        | 521       | 2,281     | 3,856     | 2,077     | 464       | 85        | 38        | 74        | 47  |
| Totals           |       |          |           |           |           |           |           |           |           |           |           |           |           |           |     |
| Percent of Total |       | 0.0      | 0.0       | 0.0       | 0.1       | 0.6       | 5.5       | 24.1      | 40.7      | 21.9      | 4.9       | 0.9       | 0.4       | 0.8       |     |

| Percentile Speeds | 10%  | 15%  | 50%  | 85%  | 90%  |
|-------------------|------|------|------|------|------|
|                   | 40.8 | 41.8 | 47.4 | 53.2 | 54.3 |

10 MPH Pace Speed : 40 - 50  
Number in pace : 6,137  
% in pace : 64.8

Speed Exceeded : 45 MPH 55 MPH 65 MPH  
Percentage : 69.6 7.0 1.2  
Totals : 6,594 661 112

# Hamilton County Highway Department

1700 South 10th St.  
Noblesville, IN 46060

Street : 146th St.  
Location : 1450' West of Carey Rd.  
Study : Speed Survey

Site: 146th

Direction: EBD

Data for Thursday 4/14/2005

### Vehicle Count Statistics

**Daily Total**  
**9,061**

| AM | Peak Hour Volume Factor | 07:15<br>534<br>0.86 | PM | Peak Hour Volume Factor | 05:15<br>944<br>0.89 |
|----|-------------------------|----------------------|----|-------------------------|----------------------|
|    |                         |                      |    |                         |                      |

### Speed Statistics

**MPH**

1- 14 15- 19 20- 24 25- 29 30- 34 35- 39 40- 44 45- 49 50- 54 55- 59 60- 64 65- 69 70- 999

|             |     |     |     |     |     |     |       |       |       |     |     |     |     |
|-------------|-----|-----|-----|-----|-----|-----|-------|-------|-------|-----|-----|-----|-----|
| Bin Totals  | 0   | 0   | 0   | 11  | 100 | 763 | 2,541 | 3,752 | 1,442 | 330 | 53  | 19  | 50  |
| % of Totals | 0.0 | 0.0 | 0.0 | 0.1 | 1.1 | 8.4 | 28.0  | 41.4  | 15.9  | 3.6 | 0.6 | 0.2 | 0.6 |

Avg. Speed 45.98 MPH

| %ile Speeds | 10%      | 15%      | 50%      | 85%      | 90%      |
|-------------|----------|----------|----------|----------|----------|
|             | 40.1 MPH | 41.0 MPH | 46.5 MPH | 51.9 MPH | 53.4 MPH |

### Pace

Speed 40-50 MPH

Number in pace 6,293  
% in pace 69.5

| Speed Exceeded | 45(MPH) | 55(MPH) | 65(MPH) |
|----------------|---------|---------|---------|
| Percentage     | 62.3    | 5.0     | 0.8     |
| Totals         | 5,646   | 452     | 69      |

### Class Statistics

Cars & Bikes | 2 Axle | 2 Axle | 3 Axle | 4 Axle | <5 Axle | 5 Axle | >6 Axle | <6 Axle | 6 Axle | >6 Axle

|             | Cars & Bikes | 2 Axle | 2 Axle | 3 Axle | 4 Axle | <5 Axle | 5 Axle | >6 Axle | <6 Axle | 6 Axle | >6 Axle |     |     |
|-------------|--------------|--------|--------|--------|--------|---------|--------|---------|---------|--------|---------|-----|-----|
| Bin Totals  | 239          | 5,967  | 1,793  | 67     | 228    | 80      | 35     | 396     | 44      | 144    | 23      | 24  | 21  |
| % of Totals | 2.6          | 65.9   | 19.8   | 0.7    | 2.5    | 0.9     | 0.4    | 4.4     | 0.5     | 1.6    | 0.3     | 0.3 | 0.2 |

### Gap Statistics

[Secs] 5- 9 10- 14 15- 19 20- 24 25- 29 30- 34 35- 39 40- 44 45- 49 50- 54 55- 59 60- 64 65- 999

|             |      |      |      |     |     |     |     |     |     |     |     |     |     |
|-------------|------|------|------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Bin Totals  | 979  | 476  | 249  | 152 | 111 | 69  | 38  | 30  | 25  | 19  | 14  | 7   | 119 |
| % of Totals | 42.8 | 20.8 | 10.9 | 6.6 | 4.9 | 3.0 | 1.7 | 1.3 | 1.1 | 0.8 | 0.6 | 0.3 | 5.2 |

### Error Statistics

| Sensor       | A      | B      |
|--------------|--------|--------|
| Total Hits   | 27,418 | 29,842 |
| Percent Used | 80.0   | 73.0   |

Avg Axles Per Vehicle 2.24  
Avg Two Axle Wheelbase 9.3 ft.

# Hamilton County Highway Department

1700 South 10th St.  
Noblesville, IN 46060

Street : 146th St.  
Location : 1450' West of Carey Rd.  
Study : Speed Survey

Site: 146th  
Date: 04/14/05

Direction: EBD

| Begin Time       | Total | 1-14 MPH | 15-19 MPH | 20-24 MPH | 25-29 MPH | 30-34 MPH | 35-39 MPH | 40-44 MPH | 45-49 MPH | 50-54 MPH | 55-59 MPH | 60-64 MPH | 65-69 MPH | 70-99 MPH | Avg |
|------------------|-------|----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----|
| 12:AM            | 37    | 0        | 0         | 0         | 0         | 2         | 3         | 10        | 15        | 7         | 0         | 0         | 0         | 0         | 45  |
| 01:00            | 26    | 0        | 0         | 0         | 0         | 0         | 2         | 9         | 13        | 2         | 0         | 0         | 0         | 0         | 45  |
| 02:00            | 25    | 0        | 0         | 0         | 0         | 0         | 0         | 4         | 12        | 4         | 3         | 0         | 2         | 0         | 50  |
| 03:00            | 19    | 0        | 0         | 0         | 0         | 0         | 0         | 4         | 9         | 4         | 0         | 2         | 0         | 0         | 49  |
| 04:00            | 15    | 0        | 0         | 0         | 0         | 1         | 0         | 2         | 7         | 3         | 2         | 0         | 0         | 0         | 48  |
| 05:00            | 55    | 0        | 0         | 0         | 0         | 0         | 1         | 6         | 22        | 22        | 4         | 0         | 0         | 0         | 49  |
| 06:00            | 265   | 0        | 0         | 0         | 0         | 0         | 0         | 33        | 124       | 81        | 24        | 2         | 1         | 0         | 49  |
| 07:00            | 518   | 0        | 0         | 0         | 0         | 6         | 10        | 96        | 236       | 136       | 27        | 3         | 1         | 3         | 48  |
| 08:00            | 454   | 0        | 0         | 0         | 0         | 1         | 15        | 98        | 199       | 106       | 27        | 2         | 0         | 6         | 48  |
| 09:00            | 374   | 0        | 0         | 0         | 2         | 0         | 29        | 92        | 173       | 63        | 13        | 1         | 0         | 1         | 46  |
| 10:00            | 337   | 0        | 0         | 0         | 1         | 3         | 25        | 101       | 138       | 54        | 8         | 2         | 1         | 4         | 46  |
| 11:00            | 396   | 0        | 0         | 0         | 0         | 3         | 34        | 111       | 161       | 67        | 14        | 3         | 1         | 2         | 46  |
| 12:PM            | 519   | 0        | 0         | 0         | 0         | 9         | 52        | 127       | 229       | 76        | 21        | 2         | 1         | 2         | 46  |
| 01:00            | 541   | 0        | 0         | 0         | 1         | 7         | 37        | 147       | 237       | 91        | 16        | 2         | 1         | 2         | 46  |
| 02:00            | 602   | 0        | 0         | 0         | 2         | 8         | 53        | 199       | 225       | 86        | 18        | 5         | 1         | 5         | 46  |
| 03:00            | 740   | 0        | 0         | 0         | 2         | 3         | 58        | 188       | 334       | 103       | 38        | 6         | 1         | 7         | 47  |
| 04:00            | 802   | 0        | 0         | 0         | 0         | 9         | 67        | 244       | 344       | 106       | 19        | 6         | 3         | 4         | 46  |
| 05:00            | 917   | 0        | 0         | 0         | 1         | 20        | 104       | 290       | 328       | 127       | 32        | 6         | 1         | 8         | 45  |
| 06:00            | 650   | 0        | 0         | 0         | 1         | 5         | 52        | 166       | 296       | 98        | 23        | 5         | 0         | 4         | 46  |
| 07:00            | 584   | 0        | 0         | 0         | 0         | 8         | 74        | 195       | 220       | 68        | 15        | 1         | 2         | 1         | 45  |
| 08:00            | 495   | 0        | 0         | 0         | 0         | 6         | 80        | 206       | 146       | 43        | 9         | 3         | 1         | 1         | 44  |
| 09:00            | 372   | 0        | 0         | 0         | 0         | 7         | 45        | 121       | 152       | 40        | 6         | 1         | 0         | 0         | 45  |
| 10:00            | 209   | 0        | 0         | 0         | 1         | 2         | 14        | 62        | 90        | 37        | 3         | 0         | 0         | 0         | 46  |
| 11:00            | 109   | 0        | 0         | 0         | 0         | 0         | 8         | 30        | 42        | 18        | 8         | 1         | 2         | 0         | 47  |
| Daily            | 9,061 | 0        | 0         | 0         | 11        | 100       | 763       | 2,541     | 3,752     | 1,442     | 330       | 53        | 19        | 50        | 46  |
| Totals           |       |          |           |           |           |           |           |           |           |           |           |           |           |           |     |
| Percent of Total |       | 0.0      | 0.0       | 0.0       | 0.1       | 1.1       | 8.4       | 28.0      | 41.4      | 15.9      | 3.6       | 0.6       | 0.2       | 0.6       |     |

| Percentile Speeds | 10%  | 15%  | 50%  | 85%  | 90%  |
|-------------------|------|------|------|------|------|
|                   | 40.1 | 41.0 | 46.5 | 51.9 | 53.4 |

10 MPH Pace Speed : 40 - 50  
Number in pace : 6,293  
% in pace : 69.5

Speed Exceeded : 45 MPH 55 MPH 65 MPH  
Percentage : 62.3 5.0 0.8  
Totals : 5,646 452 69

# Hamilton County Highway Department

1700 South 10th St.  
Noblesville, IN 46060

Street : 146th St.  
Location : 745' West of Greyhound Pass  
Study : Speed Survey

Site: 146th

Direction: EB

Data for Tuesday 4/5/2005

### Vehicle Count Statistics

**Daily Total**  
**6,370**

| AM | Peak Hour | 11:00 | PM | Peak Hour | 05:15 |
|----|-----------|-------|----|-----------|-------|
|    | Volume    | 375   |    | Volume    | 633   |
|    | Factor    | 0.79  |    | Factor    | 0.92  |

### Speed Statistics

| MPH         | 1-  | 14  | 15  | 19  | 20  | 24    | 25    | 29    | 30  | 34  | 35  | 39  | 40  | 44 | 45 | 49 | 50 | 54 | 55 | 59 | 60 | 64 | 65 | 69 | 70 | 999 |
|-------------|-----|-----|-----|-----|-----|-------|-------|-------|-----|-----|-----|-----|-----|----|----|----|----|----|----|----|----|----|----|----|----|-----|
| Bin Totals  | 0   | 0   | 0   | 23  | 261 | 1,364 | 2,423 | 1,758 | 447 | 56  | 19  | 6   | 13  |    |    |    |    |    |    |    |    |    |    |    |    |     |
| % of Totals | 0.0 | 0.0 | 0.0 | 0.4 | 4.1 | 21.4  | 38.0  | 27.6  | 7.0 | 0.9 | 0.3 | 0.1 | 0.2 |    |    |    |    |    |    |    |    |    |    |    |    |     |

Avg. Speed 42.82 MPH

| %ile Speeds | 10%      | 15%      | 50%      | 85%      | 90%      |
|-------------|----------|----------|----------|----------|----------|
|             | 36.3 MPH | 37.5 MPH | 43.2 MPH | 48.8 MPH | 49.7 MPH |

### Pace

Speed 40-50 MPH  
Number in pace 4,181  
% in pace 65.6

| Speed Exceeded | 45(MPH) | 55(MPH) | 65(MPH) |
|----------------|---------|---------|---------|
| Percentage     | 36.1    | 1.5     | 0.3     |
| Totals         | 2,299   | 94      | 19      |

### Class Statistics

|             | Cars & Bikes | 2 Axle | 2 Axle | 3 Axle | 4 Axle | <5 Axle | 5 Axle | >6 Axle | <6 Axle | 6 Axle | >6 Axle |     |     |
|-------------|--------------|--------|--------|--------|--------|---------|--------|---------|---------|--------|---------|-----|-----|
|             | Tlrs         | Long   | Buses  | 6 Tire | Single | Single  | Double | Double  | Multi   | Multi  | Multi   |     |     |
| Bin Totals  | 119          | 4,169  | 1,356  | 21     | 162    | 119     | 47     | 223     | 56      | 63     | 9       | 18  | 8   |
| % of Totals | 1.9          | 65.4   | 21.3   | 0.3    | 2.5    | 1.9     | 0.7    | 3.5     | 0.9     | 1.0    | 0.1     | 0.3 | 0.1 |

### Gap Statistics

| [Secs]      | 5    | 9    | 10   | 14  | 15  | 19  | 20  | 24  | 25  | 29  | 30  | 34  | 35  | 39 | 40 | 44 | 45 | 49 | 50 | 54 | 55 | 59 | 60 | 64 | 65 | 999 |
|-------------|------|------|------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|----|----|----|----|----|----|----|----|----|----|----|----|-----|
| Bin Totals  | 873  | 426  | 273  | 214 | 166 | 127 | 92  | 80  | 65  | 44  | 30  | 26  | 159 |    |    |    |    |    |    |    |    |    |    |    |    |     |
| % of Totals | 33.9 | 16.5 | 10.6 | 8.3 | 6.4 | 4.9 | 3.6 | 3.1 | 2.5 | 1.7 | 1.2 | 1.0 | 6.2 |    |    |    |    |    |    |    |    |    |    |    |    |     |

### Error Statistics

| Sensor                 | A       | B      |
|------------------------|---------|--------|
| Total Hits             | 15,634  | 15,854 |
| Percent Used           | 95.0    | 94.0   |
| Avg Axles Per Vehicle  | 2.22    |        |
| Avg Two Axle Wheelbase | 9.5 ft. |        |

# Hamilton County Highway Department

1700 South 10th St.  
Noblesville, IN 46060

Street : 146th St.  
Location : 745' West of Greyhound Pass  
Study : Speed Survey

Site: 146th  
Date: 04/05/05

Direction: EB

| Begin Time       | Total | 1-14 MPH | 15-19 MPH | 20-24 MPH | 25-29 MPH | 30-34 MPH | 35-39 MPH | 40-44 MPH | 45-49 MPH | 50-54 MPH | 55-59 MPH | 60-64 MPH | 65-69 MPH | 70-99 MPH | Avg |
|------------------|-------|----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----|
| 12:AM            | 25    | 0        | 0         | 0         | 0         | 1         | 2         | 7         | 9         | 4         | 2         | 0         | 0         | 0         | 46  |
| 01:00            | 12    | 0        | 0         | 0         | 0         | 0         | 0         | 4         | 4         | 4         | 0         | 0         | 0         | 0         | 47  |
| 02:00            | 8     | 0        | 0         | 0         | 0         | 0         | 1         | 3         | 2         | 2         | 0         | 0         | 0         | 0         | 45  |
| 03:00            | 7     | 0        | 0         | 0         | 1         | 0         | 0         | 2         | 3         | 1         | 0         | 0         | 0         | 0         | 43  |
| 04:00            | 8     | 0        | 0         | 0         | 0         | 0         | 0         | 1         | 5         | 2         | 0         | 0         | 0         | 0         | 48  |
| 05:00            | 43    | 0        | 0         | 0         | 0         | 0         | 1         | 12        | 15        | 12        | 2         | 1         | 0         | 0         | 48  |
| 06:00            | 129   | 0        | 0         | 0         | 0         | 1         | 13        | 32        | 52        | 27        | 2         | 2         | 0         | 0         | 46  |
| 07:00            | 313   | 0        | 0         | 0         | 0         | 0         | 25        | 108       | 110       | 61        | 9         | 0         | 0         | 0         | 46  |
| 08:00            | 316   | 0        | 0         | 0         | 1         | 7         | 37        | 99        | 127       | 34        | 9         | 1         | 0         | 1         | 45  |
| 09:00            | 288   | 0        | 0         | 0         | 0         | 4         | 41        | 107       | 99        | 29        | 5         | 0         | 0         | 3         | 45  |
| 10:00            | 284   | 0        | 0         | 0         | 1         | 10        | 51        | 103       | 92        | 21        | 4         | 2         | 0         | 0         | 43  |
| 11:00            | 375   | 0        | 0         | 0         | 1         | 15        | 97        | 148       | 99        | 13        | 1         | 1         | 0         | 0         | 42  |
| 12:PM            | 414   | 0        | 0         | 0         | 3         | 15        | 122       | 171       | 82        | 19        | 0         | 1         | 1         | 0         | 42  |
| 01:00            | 434   | 0        | 0         | 0         | 1         | 28        | 113       | 176       | 101       | 13        | 0         | 0         | 1         | 1         | 42  |
| 02:00            | 456   | 0        | 0         | 0         | 3         | 28        | 112       | 179       | 112       | 20        | 0         | 0         | 1         | 1         | 42  |
| 03:00            | 470   | 0        | 0         | 0         | 1         | 27        | 101       | 177       | 134       | 24        | 3         | 2         | 0         | 1         | 43  |
| 04:00            | 566   | 0        | 0         | 0         | 2         | 29        | 110       | 229       | 167       | 22        | 3         | 3         | 1         | 0         | 43  |
| 05:00            | 626   | 0        | 0         | 0         | 1         | 27        | 175       | 242       | 140       | 31        | 7         | 2         | 0         | 1         | 42  |
| 06:00            | 516   | 0        | 0         | 0         | 2         | 20        | 117       | 185       | 148       | 37        | 2         | 1         | 0         | 4         | 43  |
| 07:00            | 412   | 0        | 0         | 0         | 4         | 27        | 105       | 170       | 85        | 18        | 3         | 0         | 0         | 0         | 42  |
| 08:00            | 293   | 0        | 0         | 0         | 0         | 9         | 90        | 124       | 56        | 13        | 0         | 1         | 0         | 0         | 42  |
| 09:00            | 211   | 0        | 0         | 0         | 1         | 8         | 34        | 85        | 62        | 18        | 0         | 0         | 2         | 1         | 44  |
| 10:00            | 121   | 0        | 0         | 0         | 0         | 4         | 13        | 44        | 39        | 17        | 2         | 2         | 0         | 0         | 45  |
| 11:00            | 43    | 0        | 0         | 0         | 1         | 1         | 4         | 15        | 15        | 5         | 2         | 0         | 0         | 0         | 45  |
| Daily            | 6,370 | 0        | 0         | 0         | 23        | 261       | 1,364     | 2,423     | 1,758     | 447       | 56        | 19        | 6         | 13        | 43  |
| Totals           |       |          |           |           |           |           |           |           |           |           |           |           |           |           |     |
| Percent of Total |       | 0.0      | 0.0       | 0.0       | 0.4       | 4.1       | 21.4      | 38.0      | 27.6      | 7.0       | 0.9       | 0.3       | 0.1       | 0.2       |     |

| Percentile Speeds | <u>10%</u> | <u>15%</u> | <u>50%</u> | <u>85%</u> | <u>90%</u> |
|-------------------|------------|------------|------------|------------|------------|
|                   | 36.3       | 37.5       | 43.2       | 48.8       | 49.7       |

10 MPH Pace Speed : 40 - 50  
Number in pace : 4,181  
% in pace : 65.6

|                  |               |               |               |
|------------------|---------------|---------------|---------------|
| Speed Exceeded : | <b>45 MPH</b> | <b>55 MPH</b> | <b>65 MPH</b> |
| Percentage :     | 36.1          | 1.5           | 0.3           |
| Totals :         | 2,299         | 94            | 19            |

# Hamilton County Highway Department

1700 South 10th St.  
Noblesville, IN 46060

Street : 146th St  
Location : 415' West of Greyhound Pass  
Study : Speed Survey

Site: 146th

Direction: WB

Data for Tuesday 4/5/2005

### Vehicle Count Statistics

|                    |           |                  |              |           |                  |              |
|--------------------|-----------|------------------|--------------|-----------|------------------|--------------|
| <b>Daily Total</b> | <b>AM</b> | <b>Peak Hour</b> | <b>07:15</b> | <b>PM</b> | <b>Peak Hour</b> | <b>05:15</b> |
| 7,323              |           | Volume           | 580          |           | Volume           | 638          |
|                    |           | Factor           | 0.85         |           | Factor           | 0.83         |

### Speed Statistics

| MPH         | 1-14 | 15-19 | 20-24 | 25-29 | 30-34 | 35-39 | 40-44 | 45-49 | 50-54 | 55-59 | 60-64 | 65-69 | 70-999 |
|-------------|------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|--------|
| Bin Totals  | 0    | 1     | 30    | 154   | 532   | 2,129 | 2,941 | 1,170 | 260   | 60    | 21    | 8     | 17     |
| % of Totals | 0.0  | 0.0   | 0.4   | 2.1   | 7.3   | 29.1  | 40.2  | 16.0  | 3.6   | 0.8   | 0.3   | 0.1   | 0.2    |

Avg. Speed 40.85 MPH

| %ile Speeds | 10%      | 15%      | 50%      | 85%      | 90%      |
|-------------|----------|----------|----------|----------|----------|
|             | 35.0 MPH | 35.9 MPH | 41.4 MPH | 46.9 MPH | 48.4 MPH |

### Pace

|                |           |
|----------------|-----------|
| Speed          | 35-45 MPH |
| Number in pace | 5,070     |
| % in pace      | 69.2      |

| Speed Exceeded | 45(MPH) | 55(MPH) | 65(MPH) |
|----------------|---------|---------|---------|
| Percentage     | 21.0    | 1.4     | 0.3     |
| Totals         | 1,536   | 106     | 25      |

### Class Statistics

|             | Cars & 2 Axle |       | 2 Axle 3 Axle |       | 4 Axle | <5 Axle | 5 Axle | >6 Axle | <6 Axle | 6 Axle | >6 Axle |       |       |
|-------------|---------------|-------|---------------|-------|--------|---------|--------|---------|---------|--------|---------|-------|-------|
|             | Bikes         | Tirs  | Long          | Buses | 6 Tire | Single  | Single | Double  | Double  | Double | Multi   | Multi | Multi |
| Bin Totals  | 106           | 5,014 | 1,388         | 21    | 180    | 58      | 101    | 249     | 28      | 128    | 13      | 17    | 20    |
| % of Totals | 1.4           | 68.5  | 19.0          | 0.3   | 2.5    | 0.8     | 1.4    | 3.4     | 0.4     | 1.7    | 0.2     | 0.2   | 0.3   |

### Gap Statistics

| [Secs]      | 5-9  | 10-14 | 15-19 | 20-24 | 25-29 | 30-34 | 35-39 | 40-44 | 45-49 | 50-54 | 55-59 | 60-64 | 65-999 |
|-------------|------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|--------|
| Bin Totals  | 744  | 490   | 397   | 255   | 210   | 160   | 94    | 63    | 45    | 36    | 29    | 16    | 126    |
| % of Totals | 27.9 | 18.4  | 14.9  | 9.6   | 7.9   | 6.0   | 3.5   | 2.4   | 1.7   | 1.4   | 1.1   | 0.6   | 4.7    |

### Error Statistics

| Sensor                 | A       | B      |
|------------------------|---------|--------|
| Total Hits             | 18,823  | 18,954 |
| Percent Used           | 94.0    | 94.0   |
| Avg Axles Per Vehicle  | 2.24    |        |
| Avg Two Axle Wheelbase | 9.4 ft. |        |

# Hamilton County Highway Department

1700 South 10th St.  
Noblesville, IN 46060

Street : 146th St  
Location : 415' West of Greyhound Pass  
Study : Speed Survey

Site: 146th  
Date: 04/05/05

Direction: WB

| Begin Time       | Total | 1-14 MPH | 15-19 MPH | 20-24 MPH | 25-29 MPH | 30-34 MPH | 35-39 MPH | 40-44 MPH | 45-49 MPH | 50-54 MPH | 55-59 MPH | 60-64 MPH | 65-69 MPH | 70-99 MPH | Avg |
|------------------|-------|----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----|
| 12:AM            | 33    | 0        | 0         | 0         | 0         | 1         | 13        | 10        | 8         | 0         | 1         | 0         | 0         | 0         | 41  |
| 01:00            | 11    | 0        | 0         | 0         | 0         | 0         | 3         | 2         | 4         | 1         | 1         | 0         | 0         | 0         | 45  |
| 02:00            | 18    | 0        | 0         | 0         | 0         | 0         | 4         | 10        | 4         | 0         | 0         | 0         | 0         | 0         | 42  |
| 03:00            | 8     | 0        | 0         | 0         | 0         | 0         | 3         | 2         | 2         | 1         | 0         | 0         | 0         | 0         | 43  |
| 04:00            | 8     | 0        | 0         | 0         | 0         | 0         | 0         | 2         | 5         | 0         | 1         | 0         | 0         | 0         | 47  |
| 05:00            | 43    | 0        | 0         | 0         | 0         | 3         | 4         | 11        | 16        | 5         | 3         | 0         | 0         | 1         | 46  |
| 06:00            | 262   | 0        | 0         | 0         | 1         | 9         | 44        | 87        | 82        | 29        | 7         | 1         | 1         | 1         | 44  |
| 07:00            | 533   | 0        | 0         | 1         | 6         | 21        | 121       | 214       | 119       | 37        | 11        | 2         | 1         | 0         | 43  |
| 08:00            | 446   | 0        | 0         | 3         | 7         | 24        | 78        | 183       | 112       | 30        | 7         | 1         | 0         | 1         | 43  |
| 09:00            | 372   | 0        | 0         | 1         | 16        | 41        | 99        | 128       | 66        | 16        | 0         | 4         | 1         | 0         | 40  |
| 10:00            | 374   | 0        | 0         | 3         | 19        | 37        | 93        | 140       | 63        | 15        | 0         | 0         | 1         | 3         | 40  |
| 11:00            | 456   | 0        | 0         | 4         | 14        | 44        | 156       | 173       | 49        | 11        | 3         | 1         | 0         | 1         | 40  |
| 12:PM            | 495   | 0        | 1         | 3         | 14        | 49        | 188       | 165       | 62        | 10        | 1         | 1         | 0         | 1         | 39  |
| 01:00            | 508   | 0        | 0         | 6         | 11        | 42        | 157       | 220       | 57        | 11        | 1         | 1         | 0         | 2         | 40  |
| 02:00            | 453   | 0        | 0         | 2         | 16        | 25        | 131       | 194       | 69        | 12        | 2         | 1         | 0         | 1         | 41  |
| 03:00            | 494   | 0        | 0         | 4         | 25        | 41        | 128       | 212       | 70        | 9         | 3         | 2         | 0         | 0         | 40  |
| 04:00            | 528   | 0        | 0         | 0         | 12        | 33        | 148       | 234       | 76        | 14        | 3         | 3         | 2         | 3         | 41  |
| 05:00            | 632   | 0        | 0         | 1         | 7         | 36        | 192       | 303       | 74        | 14        | 3         | 1         | 0         | 1         | 41  |
| 06:00            | 505   | 0        | 0         | 1         | 0         | 27        | 181       | 212       | 66        | 11        | 4         | 1         | 1         | 1         | 41  |
| 07:00            | 427   | 0        | 0         | 0         | 2         | 30        | 159       | 181       | 41        | 12        | 1         | 1         | 0         | 0         | 40  |
| 08:00            | 316   | 0        | 0         | 1         | 4         | 37        | 105       | 110       | 49        | 6         | 2         | 1         | 1         | 0         | 40  |
| 09:00            | 231   | 0        | 0         | 0         | 0         | 23        | 73        | 84        | 41        | 7         | 2         | 0         | 0         | 1         | 41  |
| 10:00            | 111   | 0        | 0         | 0         | 0         | 6         | 33        | 47        | 16        | 6         | 3         | 0         | 0         | 0         | 42  |
| 11:00            | 59    | 0        | 0         | 0         | 0         | 3         | 16        | 17        | 19        | 3         | 1         | 0         | 0         | 0         | 43  |
| Daily            | 7,323 | 0        | 1         | 30        | 154       | 532       | 2,129     | 2,941     | 1,170     | 260       | 60        | 21        | 8         | 17        | 41  |
| Totals           |       |          |           |           |           |           |           |           |           |           |           |           |           |           |     |
| Percent of Total |       | 0.0      | 0.0       | 0.4       | 2.1       | 7.3       | 29.1      | 40.2      | 16.0      | 3.6       | 0.8       | 0.3       | 0.1       | 0.2       |     |

| Percentile Speeds | 10%  | 15%  | 50%  | 85%  | 90%  |
|-------------------|------|------|------|------|------|
|                   | 35.0 | 35.9 | 41.4 | 46.9 | 48.4 |

10 MPH Pace Speed : 35 - 45  
Number in pace : 5,070  
% in pace : 69.2

| Speed Exceeded | 45 MPH | 55 MPH | 65 MPH |
|----------------|--------|--------|--------|
| Percentage     | 21.0   | 1.4    | 0.3    |
| Totals         | 1,536  | 106    | 25     |

# Hamilton County Highway Department

1700 South 10th St.  
Noblesville, IN 46060

Street : 146th St.  
Location : 650' West of Western Way  
Study : Speed Survey

Site: 146th

Direction: EB

Data for Tuesday 4/5/2005

### Vehicle Count Statistics

|                    |           |                  |              |           |                  |              |
|--------------------|-----------|------------------|--------------|-----------|------------------|--------------|
| <b>Daily Total</b> | <b>AM</b> | <b>Peak Hour</b> | <b>11:00</b> | <b>PM</b> | <b>Peak Hour</b> | <b>05:00</b> |
|                    |           | Volume           | 616          |           | Volume           | 869          |
|                    |           | Factor           | 0.85         |           | Factor           | 0.96         |

### Speed Statistics

| MPH            | 1-        | 14  | 15  | 19  | 20- | 24    | 25-   | 29       | 30- | 34  | 35- | 39  | 40- | 44 | 45-      | 49 | 50- | 54 | 55- | 59 | 60- | 64       | 65- | 69 | 70- | 999 |  |  |          |  |  |  |  |  |  |
|----------------|-----------|-----|-----|-----|-----|-------|-------|----------|-----|-----|-----|-----|-----|----|----------|----|-----|----|-----|----|-----|----------|-----|----|-----|-----|--|--|----------|--|--|--|--|--|--|
| Bin Totals     | 0         | 34  | 207 | 83  | 264 | 1,305 | 2,999 | 2,844    | 774 | 110 | 17  | 5   | 10  |    |          |    |     |    |     |    |     |          |     |    |     |     |  |  |          |  |  |  |  |  |  |
| % of Totals    | 0.0       | 0.4 | 2.4 | 1.0 | 3.1 | 15.1  | 34.7  | 32.9     | 8.9 | 1.3 | 0.2 | 0.1 | 0.1 |    |          |    |     |    |     |    |     |          |     |    |     |     |  |  |          |  |  |  |  |  |  |
| Avg. Speed     | 43.04 MPH |     |     |     |     |       |       |          |     |     |     |     |     |    |          |    |     |    |     |    |     |          |     |    |     |     |  |  |          |  |  |  |  |  |  |
| %ile Speeds    | 10%       |     |     |     |     |       |       | 15%      |     |     |     |     |     |    | 50%      |    |     |    |     |    |     | 85%      |     |    |     |     |  |  | 90%      |  |  |  |  |  |  |
|                | 36.1 MPH  |     |     |     |     |       |       | 37.7 MPH |     |     |     |     |     |    | 44.1 MPH |    |     |    |     |    |     | 49.3 MPH |     |    |     |     |  |  | 50.3 MPH |  |  |  |  |  |  |
| Pace           | 40-50 MPH |     |     |     |     |       |       |          |     |     |     |     |     |    |          |    |     |    |     |    |     |          |     |    |     |     |  |  |          |  |  |  |  |  |  |
| Number in pace | 5,843     |     |     |     |     |       |       |          |     |     |     |     |     |    |          |    |     |    |     |    |     |          |     |    |     |     |  |  |          |  |  |  |  |  |  |
| % in pace      | 67.5      |     |     |     |     |       |       |          |     |     |     |     |     |    |          |    |     |    |     |    |     |          |     |    |     |     |  |  |          |  |  |  |  |  |  |
| Speed Exceeded | 45(MPH)   |     |     |     |     |       |       | 55(MPH)  |     |     |     |     |     |    | 65(MPH)  |    |     |    |     |    |     |          |     |    |     |     |  |  |          |  |  |  |  |  |  |
|                | 43.5      |     |     |     |     |       |       | 1.6      |     |     |     |     |     |    | 0.2      |    |     |    |     |    |     |          |     |    |     |     |  |  |          |  |  |  |  |  |  |
|                | 3,760     |     |     |     |     |       |       | 142      |     |     |     |     |     |    | 15       |    |     |    |     |    |     |          |     |    |     |     |  |  |          |  |  |  |  |  |  |

### Class Statistics

|             | Cars & Bikes | 2 Axle Trs | 2 Axle Long | 2 Axle Buses | 3 Axle 6 Tire | 3 Axle Single | 4 Axle Single | <5 Axl Double | 5 Axle Double | >6 Axl Double | <6 Axl Multi | 6 Axle Multi | >6 Axl Multi |
|-------------|--------------|------------|-------------|--------------|---------------|---------------|---------------|---------------|---------------|---------------|--------------|--------------|--------------|
| Bin Totals  | 71           | 5,635      | 2,027       | 25           | 251           | 155           | 78            | 250           | 63            | 57            | 9            | 22           | 9            |
| % of Totals | 0.8          | 65.1       | 23.4        | 0.3          | 2.9           | 1.8           | 0.9           | 2.9           | 0.7           | 0.7           | 0.1          | 0.3          | 0.1          |

### Gap Statistics

| [Secs]      | 5-    | 9    | 10-  | 14  | 15- | 19  | 20- | 24  | 25- | 29  | 30- | 34  | 35- | 39 | 40- | 44 | 45- | 49 | 50- | 54 | 55- | 59 | 60- | 64 | 65- | 999 |
|-------------|-------|------|------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|----|-----|----|-----|----|-----|----|-----|----|-----|----|-----|-----|
| Bin Totals  | 1,956 | 721  | 385  | 208 | 147 | 60  | 50  | 38  | 28  | 16  | 17  | 20  | 131 |    |     |    |     |    |     |    |     |    |     |    |     |     |
| % of Totals | 51.8  | 19.1 | 10.2 | 5.5 | 3.9 | 1.6 | 1.3 | 1.0 | 0.7 | 0.4 | 0.5 | 0.5 | 3.5 |    |     |    |     |    |     |    |     |    |     |    |     |     |

### Error Statistics

| Sensor                 | A       | B      |
|------------------------|---------|--------|
| Total Hits             | 19,856  | 19,869 |
| Percent Used           | 98.0    | 98.0   |
| Avg Axles Per Vehicle  | 2.17    |        |
| Avg Two Axle Wheelbase | 9.5 ft. |        |

# Hamilton County Highway Department

1700 South 10th St.  
Noblesville, IN 46060

Street : 146th St.  
Location : 650' West of Western Way  
Study : Speed Survey

Site: 146th  
Date: 04/05/05

Direction: EB

| Begin Time       | Total | 1-14 MPH | 15-19 MPH | 20-24 MPH | 25-29 MPH | 30-34 MPH | 35-39 MPH | 40-44 MPH | 45-49 MPH | 50-54 MPH | 55-59 MPH | 60-64 MPH | 65-69 MPH | 70-99 MPH | Avg |
|------------------|-------|----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----|
| 12:AM            | 27    | 0        | 0         | 0         | 0         | 0         | 2         | 7         | 11        | 6         | 1         | 0         | 0         | 0         | 46  |
| 01:00            | 10    | 0        | 1         | 1         | 0         | 0         | 2         | 1         | 2         | 3         | 0         | 0         | 0         | 0         | 40  |
| 02:00            | 8     | 0        | 0         | 0         | 0         | 0         | 0         | 1         | 5         | 2         | 0         | 0         | 0         | 0         | 48  |
| 03:00            | 9     | 0        | 0         | 0         | 0         | 0         | 1         | 4         | 4         | 0         | 0         | 0         | 0         | 0         | 44  |
| 04:00            | 10    | 0        | 0         | 0         | 0         | 0         | 0         | 2         | 5         | 2         | 1         | 0         | 0         | 0         | 48  |
| 05:00            | 66    | 0        | 1         | 2         | 0         | 0         | 6         | 20        | 22        | 13        | 1         | 0         | 1         | 0         | 45  |
| 06:00            | 240   | 0        | 2         | 9         | 3         | 2         | 20        | 63        | 85        | 45        | 10        | 1         | 0         | 0         | 45  |
| 07:00            | 562   | 0        | 0         | 15        | 8         | 11        | 35        | 173       | 221       | 83        | 15        | 0         | 0         | 1         | 45  |
| 08:00            | 508   | 0        | 1         | 12        | 2         | 4         | 50        | 173       | 188       | 62        | 14        | 2         | 0         | 0         | 44  |
| 09:00            | 458   | 0        | 2         | 15        | 1         | 6         | 42        | 139       | 192       | 48        | 12        | 0         | 0         | 1         | 44  |
| 10:00            | 483   | 0        | 2         | 9         | 5         | 12        | 51        | 156       | 180       | 54        | 10        | 2         | 1         | 1         | 44  |
| 11:00            | 616   | 0        | 1         | 15        | 3         | 12        | 103       | 233       | 202       | 41        | 4         | 1         | 1         | 0         | 43  |
| 12:PM            | 587   | 0        | 1         | 13        | 7         | 20        | 103       | 232       | 160       | 44        | 6         | 0         | 0         | 1         | 42  |
| 01:00            | 550   | 0        | 1         | 15        | 6         | 31        | 106       | 184       | 164       | 31        | 8         | 2         | 0         | 2         | 42  |
| 02:00            | 547   | 0        | 6         | 13        | 3         | 28        | 82        | 213       | 162       | 36        | 3         | 1         | 0         | 0         | 42  |
| 03:00            | 580   | 0        | 2         | 7         | 7         | 14        | 83        | 189       | 214       | 58        | 2         | 2         | 2         | 0         | 44  |
| 04:00            | 679   | 0        | 1         | 13        | 10        | 26        | 115       | 240       | 216       | 49        | 4         | 3         | 0         | 2         | 43  |
| 05:00            | 869   | 0        | 1         | 14        | 11        | 39        | 173       | 293       | 262       | 68        | 7         | 1         | 0         | 0         | 42  |
| 06:00            | 708   | 0        | 5         | 17        | 5         | 17        | 130       | 264       | 222       | 41        | 7         | 0         | 0         | 0         | 42  |
| 07:00            | 493   | 0        | 1         | 16        | 5         | 22        | 105       | 205       | 112       | 24        | 1         | 1         | 0         | 1         | 41  |
| 08:00            | 284   | 0        | 1         | 7         | 2         | 11        | 48        | 100       | 89        | 24        | 1         | 0         | 0         | 1         | 43  |
| 09:00            | 199   | 0        | 2         | 8         | 2         | 5         | 35        | 64        | 60        | 22        | 1         | 0         | 0         | 0         | 42  |
| 10:00            | 110   | 0        | 2         | 5         | 2         | 0         | 10        | 26        | 51        | 11        | 2         | 1         | 0         | 0         | 44  |
| 11:00            | 49    | 0        | 1         | 1         | 1         | 4         | 3         | 17        | 15        | 7         | 0         | 0         | 0         | 0         | 43  |
| Daily            | 8,652 | 0        | 34        | 207       | 83        | 264       | 1,305     | 2,999     | 2,844     | 774       | 110       | 17        | 5         | 10        | 43  |
| Totals           |       |          |           |           |           |           |           |           |           |           |           |           |           |           |     |
| Percent of Total |       | 0.0      | 0.4       | 2.4       | 1.0       | 3.1       | 15.1      | 34.7      | 32.9      | 8.9       | 1.3       | 0.2       | 0.1       | 0.1       |     |

|                   |            |            |            |            |            |
|-------------------|------------|------------|------------|------------|------------|
| Percentile Speeds | <u>10%</u> | <u>15%</u> | <u>50%</u> | <u>85%</u> | <u>90%</u> |
|                   | 36.1       | 37.7       | 44.1       | 49.3       | 50.3       |

10 MPH Pace Speed : 40 - 50  
Number in pace : 5,843  
% in pace : 67.5

|                |        |        |        |
|----------------|--------|--------|--------|
| Speed Exceeded | 45 MPH | 55 MPH | 65 MPH |
| Percentage     | 43.5   | 1.6    | 0.2    |
| Totals         | 3,760  | 142    | 15     |

# Hamilton County Highway Department

1700 South 10th St.  
Noblesville, IN 46060

Street : 146th St.  
Location : 650' West of Western Way  
Study : Speed Survey

Site: 146th

Direction: WBD

Data for Tuesday 4/5/2005

### Vehicle Count Statistics

**Daily Total**  
**7,736**

| AM | Peak Hour | 07:30 | PM | Peak Hour | 05:15 |
|----|-----------|-------|----|-----------|-------|
|    | Volume    | 504   |    | Volume    | 693   |
|    | Factor    | 0.88  |    | Factor    | 0.95  |

### Speed Statistics

**MPH**

1- 14 15- 19 20- 24 25- 29 30- 34 35- 39 40- 44 45- 49 50- 54 55- 59 60- 64 65- 69 70- 999

|             |     |     |     |     |     |       |       |       |     |     |     |     |     |
|-------------|-----|-----|-----|-----|-----|-------|-------|-------|-----|-----|-----|-----|-----|
| Bin Totals  | 0   | 0   | 4   | 13  | 198 | 1,194 | 3,091 | 2,493 | 610 | 98  | 13  | 5   | 17  |
| % of Totals | 0.0 | 0.0 | 0.1 | 0.2 | 2.6 | 15.4  | 40.0  | 32.2  | 7.9 | 1.3 | 0.2 | 0.1 | 0.2 |

Avg. Speed 43.64 MPH

**%ile Speeds**

| 10%      | 15%      | 50%      | 85%      | 90%      |
|----------|----------|----------|----------|----------|
| 37.3 MPH | 39.0 MPH | 44.0 MPH | 49.2 MPH | 49.9 MPH |

### Pace

Speed 40-50 MPH  
Number in pace 5,584  
% in pace 72.2

**Speed Exceeded**

45(MPH) 55(MPH) 65(MPH)

|            |       |     |     |
|------------|-------|-----|-----|
| Percentage | 41.8  | 1.7 | 0.3 |
| Totals     | 3,236 | 133 | 22  |

### Class Statistics

Cars & 2 Axle | 2 Axle | 3 Axle | 4 Axle | <5 Axle | 5 Axle | >6 Axle | <6 Axle | 6 Axle | >6 Axle  
Bikes | Tirs | Long | Buses | 6 Tire | Single | Single | Double | Double | Double | Multi | Multi | Multi

|             |     |       |       |     |     |     |     |     |     |     |     |     |     |
|-------------|-----|-------|-------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Bin Totals  | 83  | 5,125 | 1,647 | 18  | 225 | 67  | 133 | 258 | 38  | 89  | 15  | 18  | 20  |
| % of Totals | 1.1 | 66.2  | 21.3  | 0.2 | 2.9 | 0.9 | 1.7 | 3.3 | 0.5 | 1.2 | 0.2 | 0.2 | 0.3 |

### Gap Statistics

**[Secs]**

5- 9 10- 14 15- 19 20- 24 25- 29 30- 34 35- 39 40- 44 45- 49 50- 54 55- 59 60- 64 65- 999

|             |       |      |      |     |     |     |     |     |     |     |     |     |     |
|-------------|-------|------|------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Bin Totals  | 1,116 | 586  | 451  | 257 | 192 | 138 | 91  | 60  | 35  | 25  | 20  | 10  | 127 |
| % of Totals | 35.9  | 18.9 | 14.5 | 8.3 | 6.2 | 4.4 | 2.9 | 1.9 | 1.1 | 0.8 | 0.6 | 0.3 | 4.1 |

### Error Statistics

| Sensor       | A      | B      |
|--------------|--------|--------|
| Total Hits   | 19,019 | 19,100 |
| Percent Used | 96.0   | 96.0   |

Avg Axles Per Vehicle 2.23  
Avg Two Axle Wheelbase 9.5 ft.

# Hamilton County Highway Department

1700 South 10th St.  
Noblesville, IN 46060

Street : 146th St.  
Location : 650' West of Western Way  
Study : Speed Survey

Site: 146th  
Date: 04/05/05

Direction: WBD

| Begin Time | Total | 1-14 MPH | 15-19 MPH | 20-24 MPH | 25-29 MPH | 30-34 MPH | 35-39 MPH | 40-44 MPH | 45-49 MPH | 50-54 MPH | 55-59 MPH | 60-64 MPH | 65-69 MPH | 70-99 MPH | Avg |
|------------|-------|----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----|
| 12:AM      | 36    | 0        | 0         | 0         | 0         | 1         | 2         | 9         | 18        | 4         | 1         | 0         | 1         | 0         | 46  |
| 01:00      | 16    | 0        | 0         | 0         | 0         | 0         | 2         | 4         | 5         | 4         | 0         | 0         | 1         | 0         | 47  |
| 02:00      | 14    | 0        | 0         | 0         | 0         | 0         | 1         | 5         | 4         | 2         | 2         | 0         | 0         | 0         | 47  |
| 03:00      | 10    | 0        | 0         | 0         | 0         | 2         | 1         | 1         | 4         | 2         | 0         | 0         | 0         | 0         | 44  |
| 04:00      | 9     | 0        | 0         | 0         | 0         | 0         | 3         | 4         | 0         | 0         | 1         | 1         | 0         | 0         | 44  |
| 05:00      | 36    | 0        | 0         | 0         | 0         | 1         | 5         | 7         | 13        | 6         | 4         | 0         | 0         | 0         | 46  |
| 06:00      | 235   | 0        | 0         | 0         | 0         | 3         | 10        | 60        | 106       | 47        | 8         | 1         | 0         | 0         | 47  |
| 07:00      | 463   | 0        | 0         | 0         | 1         | 2         | 32        | 120       | 233       | 61        | 12        | 1         | 0         | 1         | 46  |
| 08:00      | 429   | 0        | 0         | 0         | 0         | 9         | 41        | 147       | 165       | 52        | 10        | 2         | 1         | 2         | 45  |
| 09:00      | 384   | 0        | 0         | 0         | 2         | 14        | 56        | 149       | 114       | 39        | 6         | 0         | 0         | 4         | 44  |
| 10:00      | 374   | 0        | 0         | 1         | 0         | 8         | 57        | 152       | 131       | 23        | 2         | 0         | 0         | 0         | 43  |
| 11:00      | 419   | 0        | 0         | 0         | 1         | 18        | 91        | 164       | 121       | 21        | 3         | 0         | 0         | 0         | 43  |
| 12:PM      | 559   | 0        | 0         | 2         | 0         | 23        | 114       | 254       | 128       | 29        | 5         | 0         | 2         | 2         | 43  |
| 01:00      | 494   | 0        | 0         | 0         | 3         | 9         | 79        | 226       | 141       | 34        | 2         | 0         | 0         | 0         | 43  |
| 02:00      | 467   | 0        | 0         | 0         | 1         | 18        | 73        | 197       | 147       | 23        | 3         | 1         | 0         | 4         | 43  |
| 03:00      | 509   | 0        | 0         | 0         | 1         | 20        | 92        | 191       | 154       | 40        | 8         | 2         | 0         | 1         | 43  |
| 04:00      | 577   | 0        | 0         | 0         | 0         | 17        | 82        | 242       | 182       | 46        | 7         | 0         | 0         | 1         | 44  |
| 05:00      | 672   | 0        | 0         | 0         | 0         | 8         | 93        | 274       | 222       | 63        | 10        | 0         | 0         | 2         | 44  |
| 06:00      | 554   | 0        | 0         | 0         | 2         | 10        | 80        | 241       | 186       | 29        | 5         | 1         | 0         | 0         | 43  |
| 07:00      | 499   | 0        | 0         | 0         | 1         | 12        | 92        | 222       | 142       | 26        | 3         | 1         | 0         | 0         | 43  |
| 08:00      | 432   | 0        | 0         | 0         | 1         | 7         | 84        | 188       | 120       | 25        | 4         | 3         | 0         | 0         | 43  |
| 09:00      | 330   | 0        | 0         | 1         | 0         | 10        | 63        | 144       | 93        | 18        | 1         | 0         | 0         | 0         | 43  |
| 10:00      | 152   | 0        | 0         | 0         | 0         | 3         | 33        | 61        | 44        | 10        | 1         | 0         | 0         | 0         | 43  |
| 11:00      | 0     | 0        | 0         | 0         | 0         | 0         | 0         | 0         | 0         | 0         | 0         | 0         | 0         | 0         | 0   |
| Daily      | 7,670 | 0        | 0         | 4         | 13        | 195       | 1,186     | 3,062     | 2,473     | 604       | 98        | 13        | 5         | 17        | 44  |

Totals

|                  |     |     |     |     |     |      |      |      |     |     |     |     |     |
|------------------|-----|-----|-----|-----|-----|------|------|------|-----|-----|-----|-----|-----|
| Percent of Total | 0.0 | 0.0 | 0.1 | 0.2 | 2.5 | 15.5 | 39.9 | 32.2 | 7.9 | 1.3 | 0.2 | 0.1 | 0.2 |
|------------------|-----|-----|-----|-----|-----|------|------|------|-----|-----|-----|-----|-----|

|                   |            |            |            |            |            |
|-------------------|------------|------------|------------|------------|------------|
| Percentile Speeds | <u>10%</u> | <u>15%</u> | <u>50%</u> | <u>85%</u> | <u>90%</u> |
|                   | 37.3       | 39.0       | 44.0       | 49.2       | 49.9       |

10 MPH Pace Speed : 40 - 50  
Number in pace : 5,535  
% in pace : 72.2

|                |        |        |        |
|----------------|--------|--------|--------|
| Speed Exceeded | 45 MPH | 55 MPH | 65 MPH |
| Percentage     | 41.9   | 1.7    | 0.3    |
| Totals         | 3,210  | 133    | 22     |