Indiana Department of Transportation

MAJOR MOVES

THE NEW US 31
HAMILTON COUNTY

Traffic Forecast Report
2015 & 2035 Forecasts

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Contents

	Page
Introduction	2-3
Growth Rate Projection & Application	3
Annual Average Daily Traffic (AADT) Volumes	3-4
Design Hourly Volumes (DHV)	4
Heavy Vehicle Percentages	5
Summary	5

Appendix
- EIS Footprint
- Forecast Summary Sheets
- Interchange Diagrams

Introduction

INDOT has requested that traffic forecasts be prepared at locations in Marion and Hamilton Counties in conjunction with a proposed Improvement Project along US 31 from I-465 to SR 38/Sheridan Avenue. Volumes were forecasted for the years 2015 (construction year) and 2035 (design year) at the following locations:

Interchanges (per EIS Footprint):

1. US 31 (Meridian Street) and I-465
2. US 31 (Meridian Street) and 106th Street
3. US 31 (Meridian Street) and 116th Street
4. US 31 (Meridian Street) and 131st Street/Main Street
5. US 31 (Meridian Street) and 136th Street/Old Meridian Street
6. US 31 (Meridian Street) and 146th Street/Greyhound Pass/151st Street
7. US 31 (Meridian Street) and 161st Street
8. US 31 (Meridian Street) and SR 32
9. US 31 (Meridian Street) and 191st Street
10. US 31 (Meridian Street) and SR 38/Sheridan Avenue
11. US 421 (Michigan Road) and I-465
12. SR 431 (Keystone Avenue) and I-465

Intersections (per EIS Footprint):

1. US 31 (Meridian Street) and 86th Street
2. US 31 (Meridian Street) and 91st Street
3. US 31 (Meridian Street) and 96th Street
4. 106th Street and Illinois Street
5. 106th Street and Pennsylvania Street
6. 111th Street and Pennsylvania Street
7. 111th Street and Liverpool Drive
8. 116th Street and Illinois Street
9. 116th Street and Old Meridian Street/Hospital entrance
10. 116th Street and Pennsylvania Street
11. 126th Street/Carmel Drive and Pennsylvania Street
12. 131st Street/Main Street and 126th Street/Carmel Drive/Meridian Corners Boulevard
13. 131st Street/Main Street and Pennsylvania Street
14. 136th Street and Rohrer Road
15. Rohrer Road and Eglin Drive
16. 136th Street & Oakridge Road/Illinois Street
17. 136th Street & Memory Lane
18. Old Meridian Street and Smokey Row Road
19. 146th Street and Clay Terrace Boulevard/Western Way
20. 146th Street and Greyhound Pass
21. 151st Street and signalized commercial access (Thatcher Lane)
22. 161st Street and Farr Hills Drive
23. 161st Street and Westfield Boulevard/Union Street
24. SR 32 and Sun Park Drive
25. SR 32 and Poplar Street/Shamrock Drive
26. 191st Street and Union extension
27. US 31 (Meridian Street) and 216th Street

The configuration of the Preferred Alternative for the US 31 Improvement Project was provided in the "Preferred Alternative and Mitigation Package" dated October 8, 2004 and prepared by Parsons Transportation Group; a copy of it is included in the Appendix.

Growth Rate Projection & Application

A model of the existing roadway network was created in Cube, a demand modeling software suite created by Citilabs, using Cube Tranplan and Cube Voyager. The basis for the model was the latest version of the Indianapolis Metropolitan Planning Organization (MPO) Travel Demand Model, which operates in the TransCAD software package. The appropriate area was extracted from the MPO model and converted from TransCAD to Cube. This new subarea network was then refined to add the necessary roadway and zonal detail along the US 31 corridor. This subarea model was named the US 31 Demand Model for the purposes of this document.

The Origin/Destination table in the US 31 Demand Model was matched to existing corridor-wide counts via an iterative, semi-automatic procedure that progressively modifies the assigned turning movement volumes at individual intersections until these volumes fall within a specified threshold. This procedure was performed separately for cars and trucks for the AM and PM peak hours, as well as for the 24-hour Annual Average Daily Traffic (AADT), resulting in three 2007 Origin/Destination matrices broken down into car and truck trips.

Traffic volume projections were requested for the years 2015 (construction year) and 2035 (design year). Growth rate information for these forecast years, based on projected development, was taken directly from the Indianapolis MPO Travel Demand Model. JEK worked with MPO staff to determine the best estimate of future growth and future roadway network geometry in the MPO region. These growth rates were then applied to the US 31 Demand Model on a zone-by-zone basis, providing a more complex growth forecast than traditional area- or corridor-wide growth rates.

It should be noted that there has been discussion of a future truck ban on SR 431 (Keystone Avenue). As directed by INDOT, the possible truck ban was not included in the US 31 Demand Model. If the truck ban comes to fruition, all truck traffic from SR 431 (Keystone Avenue) could reasonably be transferred to the US 31 Corridor.

Annual Average Daily Traffic (AADT) Volumes

Traffic data was assembled from existing sources and new counts. Some volumes between 86th Street and 96th Street were acquired from counts taken in 2006 by URS Corporation. Year 2006 volumes for the interchange of I-465 and SR 431 (Keystone Avenue) were taken from the *I-465 North Leg Traffic Forecast* that was prepared by Edwards and Kelcey. All other counts were conducted by United Consulting Engineers in May, June, and July 2007; by INDOT in June and July 2007; and by Hanson Professional Services, Inc. in June, July, and September 2007. All counts were hourly, taken over a 48-hour period. As directed by INDOT, counts conducted prior to 2007 were adjusted to 2007 levels by applying the rate used to factor 2005 counts to year 2006 for the appropriate functional class (as rates used to factor 2006 counts to year 2007 had not been published at the time); the above mentioned rates can be found in "Annual Growth Factors by Functional Class 1997 – 2006."

To convert from 2007 ADT to 2007 AADT, five-year average seasonal adjustment factors were applied based on "Seasonal Adjustment Factors by Functional Class: 2002-2006." (Again, these factors were applied as directed by INDOT. More recent rates had not been published at the time.) The raw count data was adjusted for seasonal variation using the following factors:

TABLE 1 – SEASONAL ADJUSTMENT FACTORS

Count Date	May 2007	June 2007	July 2007	September 2007
Urban Interstates *(I-465 and ramps)*	0.979	0.934	0.939	0.981
Urban Principal Arterials, Minor Arterials, Collectors and Locals *(US 31 south of 202nd St. and all cross-streets south of 202nd St.)*	0.979	0.953	0.976	0.973
Rural Principal Arterials and Minor Arterials *(US 31 from 202nd St. north)*	0.951	0.920	0.929	0.968
Rural Major Collectors, Minor Collectors and Locals *(all cross-streets north of, and including, 202nd St.)*	0.950	0.928	0.953	0.985

Non-classified counts were adjusted per multiple axle correction factors calculated from classified peak hour turn movement counts, the majority of which were conducted in August and September 2007. After all existing link counts were adjusted to obtain 2007 AADT volumes, the volumes were balanced where appropriate. These balanced link AADT volumes were calibrated to the proposed roadway network in the Cube model to obtain all AADT information for 2015 (construction year) and 2035 (design year); all AADT information is included in the Appendix.

Design Hourly Volumes (DHV)

In order to determine the AM and PM peak hours, the sums of all hourly volumes along US 31 were considered. From these totals, the AM peak hour (design hour) was found to be 7:00-8:00, and the PM peak hour (design hour) was found to be 4:00-5:00.

In order to obtain existing DHV volumes, peak hour raw volumes were first isolated from the 48-hour data and averaged over the two days at each location. The final DHV volumes were obtained by then adjusting the averaged, raw volumes following the same procedures used to obtain AADT volumes (apply the annual growth factor for counts conducted prior to 2007; apply the seasonal adjustment factor; and apply the multiple axle correction factor for non-classified counts).

The existing 2007 DHV volumes were applied to the existing roadway network and adjusted to balance (for AM Cars, AM Trucks, PM Cars, and PM Trucks). Existing turn movement volumes were computed using peak hour turn movement counts conducted in August and September 2007 (as mentioned above) and TMOVES software. These existing, balanced volumes were calibrated to the proposed roadway network in the Cube model to obtain all information for 2015 (construction year) and 2035 (design year); this information is included in the Appendix.

Heavy Vehicle Percentages

Existing truck percentages for each location were based either on 48-hour classification counts or classified peak hour turn movement counts. The commercial vehicle percentage at each location was assumed to grow based on rates developed by the MPO for the forecast years. All heavy vehicle percentage information is included in the Appendix.

Summary

Traffic projections for the roadways and interchanges involved in the future US 31 Improvement Project (as listed above) have been provided for the years 2015 and 2035. The Forecast Summary Sheets and Interchange Diagrams follow in the Appendix. At each location and for each year, the following is provided: AM DHV and % Trucks, PM DHV and % Trucks, and AADT and % Trucks.