TBAG

TAMPA BAY APPLICATIONS GROUP

An Open Forum for Transportation-Related Issues

Back To School

August 2004

"FROM THE CHAIR"

By: Christopher Hatton, P.E., Kimley-Horn and Associates, Inc.
2004 Chairman for the Tampa Bay Applications Group

The May 20, 2004 TBAG "Innovative Methodologies and Techniques" Workshop was a huge success with over 65 professionals in attendance. A very special "thank you" to all of our members for supporting our speakers in this always fun "workshop" format.

At the first workstation was **David Troemel** and **Sandra Gorman**, Kimley-Horn, who presented a "Case Study Using Synchro" that focused on a large scale network for all of Collier County. The Synchro model that has been developed enables the County to utilize highway capacity analysis methods to determine more detailed vehicular roadway capacities.

David and Sandra stop for a photo before heading back to work at Kimley-Horn.

The second workstation included a presentation by **Hoyt Davis, Mary Ross** and **Rodney Bunner**, Gannett-Fleming, on "Using the Internet to Evaluate Long Range Transportation (LRTP) Projects". This workstation provided a demonstration of the Project Evaluation Website currently in use for the Miami-Dade LRTP Update.

Hoyt, Mary, and Rodney smile after finishing their demonstration using the Internet to evaluate LRTP projects.

ATTENTION!!!

TBAG Meeting: August 26, 2004

Demian Miller, Tindale-Oliver, manned a workstation on the "FDOT High Crash Screening Database System". This workstation demonstrated the unique features of the database developed to manage crash data history, analyze crash data attributes, produce collision diagrams and assemble relevant work program data. A TBAG thank you to **Ping (Peter) Hsu**, District 7 Assistant District Safety Engineer, for helping with the newsletter article and this workstation.

We look forward to seeing you at our next meeting on August 26, 2004 (see details on page 4)!!!

Demian chats with Peter after his "crash" presentation, which was no "accident".

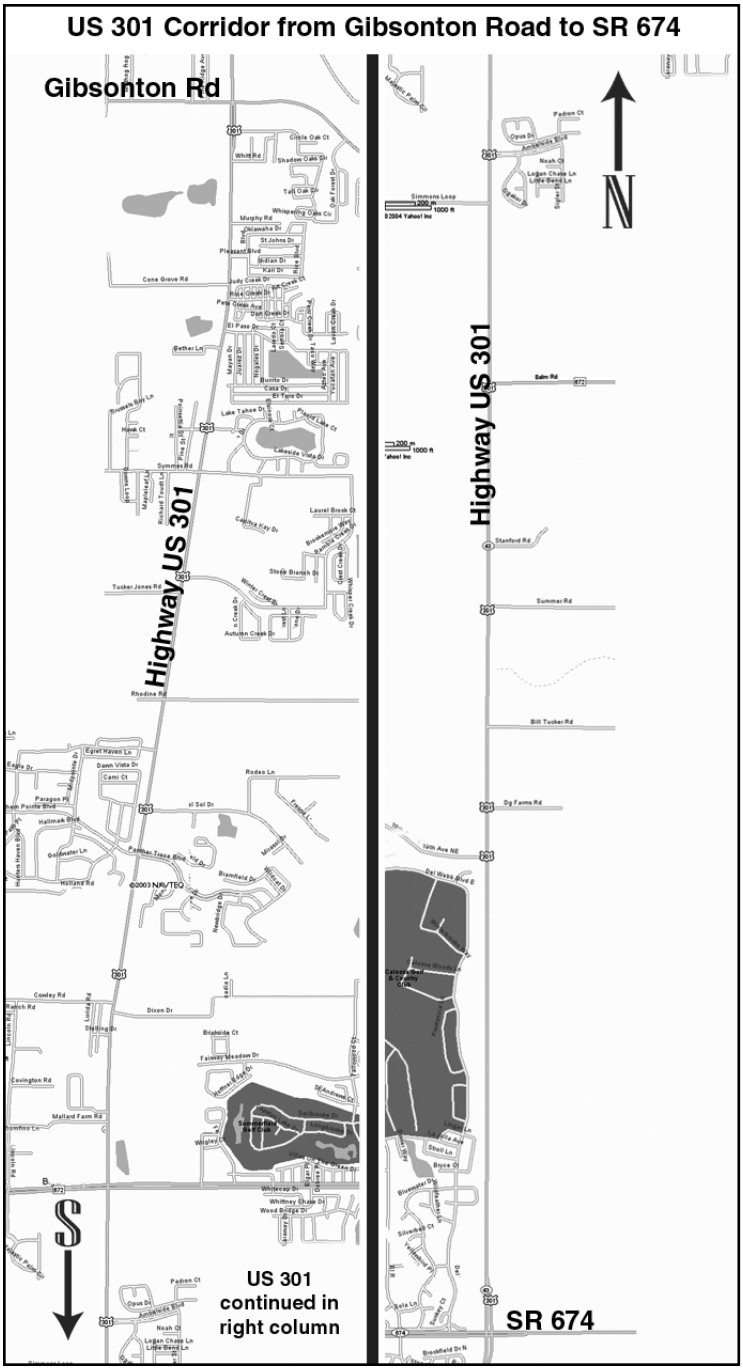
In This Issue:

Improving US Highway 301
Hillsborough County's Cooperative Venture

By: Jonathan Paul, AICP and William Sefekar
Hillsborough County Planning and Growth Management Transportation Division

During the past year and a half, Hillsborough County has experienced a major influx of residential development in South County, particularly along the US Highway 301 corridor from Gibsonton Road to SR 674. This area is presently a two-lane undivided roadway, 8.5 miles in length, carrying between 10,000 to 20,000 vehicles a day. With over a dozen major subdivisions in the works (close to 10,000 residential units), "something" needed to be done quickly to address future roadway capacity. Major funding is not presently allocated for US 301, except for five (5) million dollars for design work in fiscal year 2009/2010.

The "something" turned out to be a *de facto* development moratorium for all new development, which was not part of an existing DRI or approved development. The initial response by developers was, "What needs to be done to get approval?" The answer: Widen US 301 from Gibsonton Road to SR 674 to a four-lane divided roadway.



A few years ago, the widening of US 301 would have been relatively simple. There is between 182 and 200 feet of right-of-way along the corridor and the roadway is presently built along the western side. Ten (10) plus years ago, Bruce B. Downs was in a similar situation and developers widened the roadway to four (4) lanes from Bearss Avenue to County Line Road, a distance of almost nine (9) miles.

However, stormwater permitting has become much more stringent than it was when Bruce B. Downs was widened by developers. In the past, stormwater could be retained in roadside swales and roadway elevation did not have to be addressed along the entire corridor. Today, stormwater must be retained off-site in ponds and the roadway elevation must be consistent along the corridor; permitting requirements that cannot be met correctly if US 301 is widened in a piece-by piece process.

Is the *de facto* development moratorium here to stay for US 301? NO! There is an alternative. Hillsborough County, FDOT, and the developers are trying to devise a process to widen US 301 and provide the capacity needed to serve development with a more systematic and timely process. Major progress has already been made in working out the details, but the $50 million price tag is high. Can this precedent breaking approach really work? What will happen? Watch for updates on this exciting new cooperative in future issues of the TBAG newsletter.

Polk County Congestion Management Study

By: Michael Dorweiler, AICP PBS&J, Inc.

Polk County is centrally located within the state of Florida. It is one of the largest counties in land area within the state (roughly the size of Delaware) and includes the Lakeland-Winter Haven metropolitan statistical area (MSA), as well as a number of smaller municipalities and rural communities. Due to the County's size, a number of factors are considered when deciding where money should be spent for future transportation improvements.

The Polk Transportation Planning Organization (TPO) annually compiles a list of deficient or near deficient roadway segments that have existing volume to capacity (v/c) ratios approaching or exceeding 1.0. This list provides a starting point for determining the roadway segments that may be overcapacity, but do not have capacity improvements (i.e., adding additional through lanes) programmed in the next 5 to 10 years.

The *Polk County Congestion Management Study* has been studying road segments that made the Year 2002 list to identify whether non-capacity improvements could be made in the short-term. Non-capacity improvements are considered transportation system management (TSM) projects and tend to be less costly to implement. Improvements of this nature include signal retimings, restriping existing lanes at intersections or adding turn lanes. They are considered interim actions that will increase capacity and, as a result, improve level of service (LOS) until a major capacity project can be funded and programmed.

Each of the top 15 segments that appeared on the TPO's list of potentially deficient roadway segments was evaluated. For this effort, various factors and data were collected for each roadway segment.

* *Annual average daily traffic (AADT)*
* *K factor (ratio of the peak hour volume to AADT)*
* *D factor (proportion of peak hour volume occurring in higher volume direction)*
* *Peak hour factor (measure of traffic fluctuation during peak hour)*
* *Segment length*
* *Number of lanes*
* *Shoulder type*
* *Area type*
* *Posted speed*
* *Signals per mile.*

In addition, given the influence signalized intersections can have on the operating characteristics for a roadway segment, the following intersection features were collected along the deficient roadway segments:

* *Approach lanes*
* *Lane widths*
* *Signal phasing*
* *Signal timing*
* *Crosswalk locations.*

The information collected was then used to develop more roadway specific service volumes than those available in the *2002 Florida Department of Transportation Quality/Level of Service Handbook, Generalized Tables* and, as such, gave a better indication if a roadway segment was indeed deficient.

The tools used for the more detailed analyses were the ARTPLAN and HIGHPLAN programs that support the *2002 FDOT Q/LOS Handbook*. Another tool used was the 2000 Highway Capacity Software (HCS) Arterial Module, based on the *2000 Highway Capacity Manual*. This was used for urban corridors where there was a need for more detailed analysis due to signal spacing considerations and heavy traffic volumes. The HCS Signalized Intersection Module was used for all signal input assumptions in both the ARTPLAN and HCS Arterial Module roadway segment analyses. In this way, the signal influence along the corridor was considered for the roadway segment analyses.

While more detailed tools are available for a more refined analysis (i.e., microscopic traffic simulation models), the purpose of using the tools outlined above was to provide an efficient and economical methodology for determining how the roadway segments were operating.

Based on the data collected, the original 15 roadway segments were

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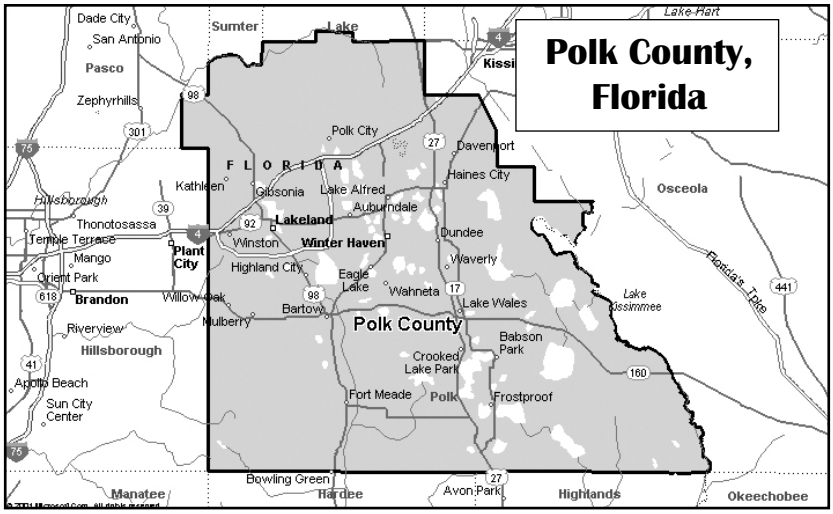

ATTENTION

Tampa Bay Applications Group

August 26, 2004

FDOT District Seven Office from 12:00 p.m. to 2:00 p.m.
(Auditorium Opens at 11:30 a.m.)

BRING YOUR BROWN BAG LUNCH TO TBAG!

"LAND USE AND TRANSPORTATION"

Steve Polzin, Center for Urban Transportation Research
The Case For More Moderate Growth in VMT: A Critical Juncture in U.S. Travel Behavior Trends

This presentation will discuss recent national trends in travel behavior and vehicle miles of travel as they relate to socio-economic and land use conditions and changes in the transportation system. A database has been developed over time based upon investigations of trends and conditions in transportation, VMT relationships with land use, and travel behavior as revealed by an analysis of the *National Household Travel Survey* data. This discussion will provide observations as supported by this collection of data on how evolving trends in travel behavior and underlying socio-demographic conditions may influence the growth of travel demand in the future and influence our decisions as planners and policy makers.

Collier County Transportation Planning Staff and Michael Gorton, URS
New Collier County Transportation Concurrency Management System is Synthesis of FSUTMS and GIS

This presentation will discuss the unique aspects of the new Collier County Transportation Concurrency Management System (TCMS). The TCMS is a geodatabase application that determines what roadway capacity is available by subtracting current traffic volumes and vested trips from a roadway's adopted capacity. In 2002, records showed about 300 Planned Unit Developments that had potential vested roadway capacity, but trip generation and distribution was unclear. An application was developed that could calculate the roadway capacity that was already potentially vested and project future alternative scenarios. The TCMS was developed using FSUTMS, Microsoft Access and ESRI ArcGIS to bring all of the necessary pieces of data together and to automate (using FSUTMS) select zone analysis for each PUD.

Danny Lamb, FDOT, District 7 and Wade White, Citilabs, Inc.
Why do We Need an Area Type Model?

In January of 2004, Mr. Lamb and Mr. White presented their paper, "Development of an Empirically-Based Area Type Model," at the TRB's 83rd Annual Meeting in Washington, D.C. For this discussion, the methodology and other specifics behind the Area Type Model will be discussed. Regional trip attraction issues such as inconsistent results in trip attractions for "mature" verses "rapidly growing" areas or overestimation of trips in "CBDs" verses "other major activity centers" will be presented and discussed in light of this type of model, as well as conclusions on its application in the Tampa Bay area.

New Collier County Transportation Concurrency Management System is Synthesis of GIS and FSUTMS

By Michael E. Gorton, URS Corporation, Inc.

The Collier County Transportation Concurrency Management System (TCMS) is the synthesis of GIS and FSUTMS that is guiding the implementation of new transportation concurrency ordinances. Under development since 2002, the TCMS is a Microsoft Access geodatabase application that determines what roadway capacity is available by subtracting current traffic volumes and vested trips from a roadway's adopted capacity.

The Collier County Transportation Department is using the system to evaluate potential impacts of proposed development to roadway capacity. The system is also being used to determine short- and long-range improvements to meet roadway needs.

The system relies on a fusion of FSUTMS, Microsoft Access, and ESRI ArcGIS to bring all the necessary pieces of data together. The application front end was created in Access to take advantage of the ArcGIS geodatabase platform. With full GIS functionality, Collier County intends to automate mapping functions and to eventually serve data from the TCMS over the Internet.

The real crux of the application development is the data itself. In 2002, records showed about 300 Planned Unit Developments (PUD) that had potential vested roadway capacity. While these developments had potential rights to roadway capacity, detailed traffic studies were not required as part of historic development approvals, and trip generation and distribution was unclear.

To solve this data problem, Collier County used FSUTMS and the standard ITE trip generation methodologies. However the problem was complicated both by the large number of developments and the need to test alternative transportation improvement scenarios.

The solution lay in automating the FSUTMS trip distribution procedures for the PUDs. By creating a database of project centroids, network access points, and special trip generator data, planners created separate highway-only model runs that automatically ran from external trip generation to highway assignment for each PUD. These separate runs were executed through a batch process to perform select zone analysis for each PUD.

This method allowed planners to quickly build project traffic trip distribution tables to import into the TCMS. The database joined the distribution information with peak-hour, peak-direction ITE trip generation data to determine, together with segment-by-segment traffic counts, how much roadway capacity remained. Development impacts from a trip making perspective were then evaluated against the remaining capacity.

The TCMS remains a work in progress. Efforts to improve its ability to make testing alternative development and transportation improvement scenarios more streamlined are on going. However, the methods behind this system have gained acceptance with transportation managers, developers, and the Collier County Board of County Commissioners, making it a viable tool in the decision making process.

TRANSPORTATION COURSES USF FALL SCHEDULE 2004

August 23 to December 3, 2004 -
Final Exams from Dec 4 to 10.

For registration/enrollment and course content information, please contact the USF Civil and Environmental Engineering Department at 813-974-2275.

TTE 4004 001 Transportation Engineering I
Mon, Wed 2-3:15 pm, ENG 004
Instructor: John Lu (Ref: 82480)

CGN 6933 901 Computer Apps in Traffic Engineering
Thurs 5-7:50 pm, CUTR 202
Instructor: Huaguo Zhou (Ref: 82477)

TTE 5205 901 Traffic Systems Engineering
Tues 5-7:50 pm, CUTR 202
Instructor: Larry Hagen (Ref: 82481)

TTE 5501 901 Transportation Planning & Economics
Mon, Fri 4-5:15 pm, CUTR 202
Instructor: Ram Pendyala (Ref: 82482)

TTE 6835 901 Pavement Design
Mon, Wed 6-7:15 pm, CUTR 202
Instructor: Manjriker Gunaratne (Ref: 88445)

TTE 6930 001 Graduate Transportation Seminar
Mon 11-11:50 AM, CUTR 202
Instructor: Ram Pendyala (Ref: 83129)

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then subdivided into 33 smaller segments based on differing characteristics along the original segment (i.e., AADT, speed limit, signal spacing, etc). In addition, 32 key intersections were also analyzed using the HCS Signalized Intersection Module. The output from these analyses was used as input for the segment analyses. Once deficient roadway segments were identified, short-term TSM improvements were reviewed for possible LOS and capacity improvements.

Of the 33 segments, only 6 were found to be below the LOS standard for the segment, meaning that the segment was indeed deficient. TSM intersection improvements were then identified to improve 3 of the 6 deficient segments. The TSM improvements included minor intersection improvements such as signal retimings, intersection lane restriping and the addition of turn lanes.

Although money is not currently available for some of these improvements, the Study allowed the Polk TPO to begin planning for some short-term improvements and possibly adding them to the 5-year Transportation Improvement Program (TIP). The Study also helped identify facilities in which major capacity improvements would be needed in order to bring the facility to an acceptable LOS.

Year 2004 TBAG Program Dates

August 26, 2004
12:00pm - 2:00pm

October 28, 2004
12:00pm - 2:00pm

2004 Awards Banquet
Date to be Announced

The Tampa Bay Applications Group Newsletter is published under contract to the FDOT District Seven Planning Office in Tampa. FSUTMS users and TBAG members contribute all information and material contained in the newsletter. Please contact the editors to submit articles for future issues or to get on the mailing list.

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