GranITE Chips

NEWSLETTER OF THE NEW HAMPSHIRE CHAPTER OF THE INSTITUTE OF TRANSPORTATION ENGINEERS

JULY 2006

SPRING TECHNICAL SESSION

March 30, 2006
Bedford, New Hampshire

The spring technical session was led by Timothy H. White, AICP, Senior Transportation Planner at the Southern New Hampshire Planning Commission (SNHPC) in Bedford, NH. Tim's presentation was entitled, "Trip Generation Study for Land Uses in the Southern New Hampshire Planning Commission Region."

The presentation focused on the results of empirical trip generation data that have been collected by the SNHPC as part of there annual counting program over the last several years. The purpose of the study was to develop a local trip generation database which would supplement the existing ITE database.

Tim White discussing SNHPC member communities.

ITE Trip Generation rates represent national averages and may vary from area to area, as demonstrated by the range of rates presented in ITE Trip Generation for any land use type.

There are land use types for which the ITE trip rates are based on only a few samples, while in other cases some land use types are not represented at all. ITE encourages supplementing these data with locally collected data.

To undertake this study, the SNHPC established the following criteria:

- Land uses selected must exist in the Southern New Hampshire region encompassing the Towns of Auburn, Bedford, Candia, Chester, Deerfield, Derry, Goffstown, Hooksett, Londonderry, New Boston, Raymond, Weare and the City of Manchester.
- Land uses selected should be valuable to the regional needs.
- Land uses selected should have small sample sizes in the published ITE reports.
- Land uses selected should be sites for which data can be captured readily and accurately.
- The total number of land use types selected for study should be manageable given the limited resources of the Commission.

Based on those criteria, the following land uses were selected:

Senior Adult Housing (detached and attached); Congregate Care Facility/Nursing Home; Bowling Alley; Day Care Center; Clinic; General Office Building <50 KSF; United States Post Office; Shopping Center <50 KSF; Fast Food Restaurant (Dunkin Donuts) with/without Drive-Through Window; Gasoline/Service Station with Convenience Market; Pharmacy/Drugstore with Drive-Through Window; Large Bookstore; Gas Station with Convenience Market and Quick Food; Drive-Through only Coffee Restaurant; and Recreation Ball/Soccer Complexes.

The data collected at these sites were summarized into daily and peak-hour trip generation characteristics, and subsequently compared with existing ITE data. In some instances, local data compared well with existing ITE data; however, in many instances local data were substantially different that existing ITE data.

For example, local data for Senior Adult Housing – Attached were comparable to ITE data on a daily basis, but weekday morning and weekday evening peak-hour trip rates were 4- to 7- times higher than existing ITE data. In addition, local data for Pharmacy/Drugstore with Drive-Through Window were approximately 36-percent higher than ITE data on a daily basis, while weekday morning and weekday evening peak-hour trip rates were approximately 29-percent higher than ITE trip rates.

Mr. White pointed out that these results are preliminary, as data collection is intended to be a multi-year project. Accordingly, the reliability of local trip-generation data will increase as the number of studied sites increases.

For more information, and to view the complete results of this study please visit the SNHPC web site at www.snhpc.org.

At the conclusion of his presentation, Bob Bollinger, NH Chapter President, presented Mr. White with an honorary "Granite Chip" to show our gratitude. Thank you, Tim.

Presentation of the "Granite Chip" to Tim White from Bob Bollinger.

HAPPY BIRTHDAY, INTERSTATE!

The Federal Highway Act, also know as the National Interstate and Defense Highways Act, was enacted on June 29, 1956, when President Dwight D. Eisenhower signed this bill into law. The construction of the interstate highway system is widely regarded as a

triumph of modern engineering that revolutionized the nation's roadway system.

The Federal-Aid Highway Act of 1956 called for uniform geometric and construction standards for the Interstate System. The standards were developed by the State highway agencies, acting through the American Association of State Highway and Transportation Officials (AASHTO) and adopted by the FHWA. The standards are included in the AASHTO publication *"A Policy on Design Standards."* Examples of design standards for the Interstate System include full control of access, design speeds of 50 to 70 miles per hour (depending on type of terrain), a minimum of two travel lanes in each direction, 12-foot lane widths, a 10-foot right paved shoulder, and a 4-foot left paved shoulder. Initially, the design had to be adequate to meet the traffic volumes expected in 1975. Later, the requirement was changed to a more general 20-year design period to allow for evolution of the System.

The Interstate route marker is a red, white, and blue shield, carrying the word "Interstate", and the route number. Officials of AASHTO developed the procedure for numbering the routes. Major Interstate routes are designated by one- or two-digit numbers.

Routes with odd numbers run north and south, while even numbered run east and west. For north-south routes, the lowest numbers begin in the west, while the lowest numbered east-west routes are in the south. By this method, Interstate Route 5 (I-5) runs north-south along the west coast, while I-10 lies east-west along the southern border.

The major route numbers generally traverse urban areas on the path of the major traffic stream. Generally, this major traffic stream will be the shortest and most direct line of travel.

While there are some exceptions, generally, connecting Interstate routes and full or partial circumferential beltways around or within urban areas carry a three-digit number. These routes are designated with the number of the main route and an even-numbered prefix. Supplemental radial and spur routes, connecting with the main route at one end, also carry a three-digit number, using the number of the main route with an odd-number prefix.

Although construction on the Interstate Highway system continues, it was officially regarded as complete in 1991 (though 1.5 miles of the original planned system remain unconstructed as of 2005). The initial cost estimate for the system was $25 billion over twelve years; it ended up costing $114 billion, taking 35 years to complete.

Did you know?

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- There are approximately 47,000 total miles in the Interstate Highway System.
- The longest north/south interstate route is I-95, which runs from Miami, FL to Houlton, ME (1,919.74 mi).
- The longest east/west interstate route is I-90, which runs from Seattle, WA to Boston, MA (3,020.54 mi).
- I-95 traverses through the most states; 15 in total from Florida to Maine, plus Washington, D.C.
- All but five state capitals are directly served by the interstate system: Juneau, Alaska; Dover, Delaware; Jefferson City, Missouri; Carson City, Nevada; and Pierre, South Dakota).
- New Hampshire has five interstate highways, with a total of 224.54 mi: I-89 with 60.87 mi; I-93 with 131.78 mi; I-95 with 16.11 mi; I-293 with 11.18 mi; and I-393 with 4.60 mi.

TRAFFIC PIONEER TAKES THE ULTIMATE PRIMARY TRIP

Alan M. Voorhees, a pioneer in the traffic engineering field, passed away on December 18, 2005. He was 83.

Voorhees was a decorated Navy veteran of WWII, serving in the Pacific Theater. After WWII he completed his undergraduate degree at Rensselaer Polytechnic Institute, and went on to earn a masters degree in City Planning at the Massachusetts Institute of Technology.

In 1952, Voorhees came to Washington, D.C. as a planning engineer with the Automobile Safety Foundation. While studying traffic patterns in nearby Baltimore, he applied a principle from marketing to measure housing, congestion and other urban uses to assess future transportation needs.

In doing so, Voorhees developed a mathematical formula to predict traffic patterns based on land use. This formula has been instrumental in the design of numerous transportation and public works projects around the world. In 1956 he wrote “A General Theory of Traffic Movement," which applied the gravity model to trip distribution, which translates trips generated in an area to a matrix that identifies the number of trips from each origin to each destination, which can then be loaded onto the network.

In 1961, he began his own engineering firm, Alan M. Voorhees & Associates, which eventually grew to have branches in ten U.S. cities, including Boston.

In 1967, his firm was bough by Planning Research Corp., but it remained an independent subsidiary until Mr. Voorhees left in 1977 to become dean of the College of Architecture, Art and Urban Science at the University of Illinois at Chicago Circle.

Rutgers University's Alan M. Voorhees Transportation Center, an institution that performs research on transportation policy, was named in his honor in 1998.

NHITE NEEDS YOUR HELP

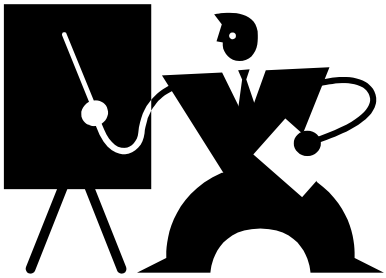
NHITE is currently seeking to fill a number of volunteer positions within the organization: **Newsletter Editor**, **Program Chair**, and **Nominating Committee Chair**. These positions do not require a significant time commitment. If you are interested in finding out more information about these positions, please feel free to contact any of our current Chapter officers; contact information is included at the end of the Newsletter.

In addition, NHITE is currently soliciting nominations for 2007 officers. If you are interested in seeking an elected position in NHITE and would like more information, please feel free to contact any of our current Chapter officers.

Did you know?

According to the New Hampshire Board of Licensure for Professional Engineers, active participation in a professional or technical society, which includes serving as an officer and/or actively participating in a committee, shall equal 2 professional development hours.

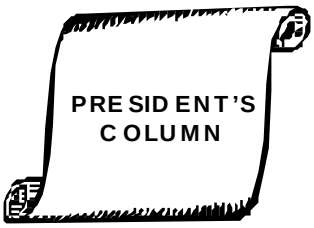
CALL FOR MEETING TOPICS



NHITE does its best to provide informative and interesting meetings and seminars, but we are always looking for input from our members on future topics.

- Have you worked on an interesting project lately (private, municipal, or State project)?
- Have you conducted any independent studies/research (trip generation, trip linking, delay or queuing studies), and would like to share your results with colleagues?
- Are there any meeting topics that you would like to see covered in the future that have not been covered recently?

If you answered "yes" to any of these questions, and would like to possibly present at a future NHITE meeting, please contact a Chapter officer with all the details.



This is my first column as President of NHITE, and I would like to start by thanking Kevin Dandrade, who served us well as President for the previous two years.

Secondly, I would like to thank all of those who cast your vote for President in my favor. As is usually the case with NHITE elections, it was a hotly contested race, but I was able to squeak by.

I would also like to extend a note of thanks to the current NHITE officers who have provided service to the organization this year and who have volunteered their time and resources for the betterment of the organization: Nick Sanders – Vic President; Andre Betit – Secretary-Treasurer; and Dave DeBaie – Membership Chair.

In order for the NHITE Chapter to provide the best service to our members, we need your input. Members are always encouraged to offer their thoughts, insights, and suggestions on future meeting topics, and the general administration of the Chapter; we are here for you, and we want you to be involved.

Accordingly, as someone who has been actively involved in NHITE for the past seven years, I urge you to do the same. Whether you seek to become a Chapter officer or volunteer; offer your project experience for a future meeting topic; or contribute an article for publications of "Granite Chips," I can assure you that being involved is well worth the effort.

With that being said, I would like to wish all of you a great year, and I look forward to receiving your input and seeing you at future Chapter events.

Respectfully Submitted,

Robert E. Bollinger, P.E., PTOE
NHITE President

Our Sponsors

NHITE JOB POSTINGS

Highway Engineers

- B.S. in Civil Engineering. MSCE w/concentration in Transportation preferred.
- Minimum 4-7 years experience in design of roadways and interstates, including drainage within a transportation specialty. P.E. desired.
- Strong knowledge of Microstation (InRoads platform preferred).
- Strong writing skills and ability to effectively work within a multi-discipline design team.

  CLD – In our 30th year in business
- Work in our Manchester, NH office on a variety of interesting and challenging projects! With a growing team!
- Comprehensive benefits package.
- Competitive salary.

Qualified candidates, please contact Lisa King at CLD Consulting Engineers, Inc., 540 Commercial Street, Manchester, NH 03101 or via fax at 603-668-8802 or via email at lisak@cldengineers.com. Phone inquiries 603-668-8223 x 111. Visit our website at www.cldengineers.com! We are an Equal Opportunity Employer and encourage all qualified candidates to apply!

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Nominating Committee Chair

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Granite Chips Newsletter Editor

VACANT – Please contact Bob Bollinger if you are interested. This position does not require a significant time commitment.