INVESTIGATING DRIVER COMPREHENSION OF ALL-RED CLEARANCE INTERVALS WITH PERMISSIVE LEFT-TURN INDICATIONS

Submitted by: Francis Tainter
Dear NEITE Members:

The leaves are falling, the days are getting shorter, and another Red Sox season has come to a close; this time in a good way. Autumn and election season are upon us. Yes, that’s correct; the New England Section of ITE has put forward an amazing group of candidates to join the Section’s Executive Board. Many changes are coming to ITE within the next few years so it is important for each member to submit their ballot and help steer the New England Section in a direction that will keep our organization strong. Each member should have already received an electronic ballot within the last week (check your “junk” or “spam” folders). I hope that each member will take the time to research each of the candidates and assist in our new Board member selections.

Speaking of new Board members, my year as President is coming to a close. Over my past five years serving on the New England Section Executive Board, it has been a privilege to grow and get to know many new faces throughout the New England region. It has been a great experience, although not yet, and I would like to thank all of those members that have given advice and help along the way. With the new beginnings, it is a great opportunity for members or those who wish to become members, to get more involved with ITE. I know for myself, that participating and involving myself with ITE has helped me gain a wealth of knowledge on our profession, our industry, and my daily life. Heading into 2019, the New England Section will be looking for help from our many members across New England. Many of the Section’s committees are seeking assistance. This is a great opportunity for members to get more engaged with the Section; and with ITE in general. For those who wish to get involved please do not hesitate to contact me.

Annual Meeting
Once again, the New England Section will be meeting the first Monday in December for our Annual Meeting in Warwick, Rhode Island.

The Continuing Education Committee has organized a Leadership Development Program as our all-day workshop, as presented by Sarah Scala Consulting. The training will focus on development of presentation skills for use in transportation industry meetings and events, building skills in coaching and listening as a leader in the transportation industry, building conflict management skills and awareness of styles to strengthen effectiveness, and development of awareness for different leadership styles. We hope that many of our Section members can attend. Our great technical sessions have also been organized by our Program Committee. Please see the attached meeting flyer for more information.

New England Chronicle
This is the last edition of the New England Chronicle for the 2018 calendar year and the final issue with Rachel A. Dooley, P.E., PTOE and her team at VHB as Editor. Rachel has done an outstanding job over the past three years of reaching our goal of releasing four issues per year, as well as maintaining a standard of excellence in providing great information to our Section membership. Although the Chronicle has remained successful, we as a Section have had a difficult time soliciting new articles and for members to contribute their experiences, opportunities, challenges, and innovative strategies to the New England Section community. As we continue into 2019, I ask that each member consider providing their experiences in the transportation profession to the incoming Chronicle team.

I look forward to working with everyone as I move forward into my last year on the Board. If you have any questions or suggestions, please contact me at (978) 794-1792 or at sgregorio@theengineeringcorp.com.

I hope to hear from you NEITE—Together we are the best!

Samuel W. Gregorio, P.E., PTOE
ITE New England Section President

NEITE’s mission is to serve its members, the transportation profession, and the public by facilitating professional development and education, promoting the exchange of ideas, and enhancing the professional practice to provide safe efficient cost-effective and sustainable transportation solutions.
New England Section Directory

Executive Board:

President – Samuel W. Gregorio PE, PTOE
TEC, Inc.
146 Dascomb Road | Andover, MA 01810
P: (978) 794.1792 | sggregorio@theengineeringcorp.com

Vice President – Thomas A. Errico, PE
TY Lin International
12 Northbrook Drive | Falmouth, ME 04105
P: (207) 347.4354 | thomas.errico@tylin.com

Secretary – Ian A. McKinnon, PE, PTOE
Howard Stein Hudson
11 Beacon Street, Suite 1010 | Boston, MA 02108
P: (617) 348.3341 | imckinnon@hshassoc.com

Treasurer – Matthew J. Kealey, PE, PTOE
VHB
101 Walnut Street | Watertown, MA 02472
P: (617) 924.1770 | mkealey@vhb.com

Senior Director – Jennifer Conley, PE, PTOE
WSP
500 Unicorn Park Drive | Woburn, MA 01801
P: (802) 345.2321 | jennifer.conley@wsp.com

Immediate Past President – Rebecca L. Brown, PE, PTOE
Greenman-Pedersen, Inc.
181 Ballardvale St, Suite 202 | Wilmington, MA 01887
P: (978) 570.2946 | rebecabrown@ghnep.com

State Chapter Presidents:

Connecticut – Kevin Burnham
P: (860) 594.3485 | kevin.burnham@ct.gov

Maine – Bruce Munger, PE, PTOE
P: (207) 774.5155 | bmunger@hntb.com

Massachusetts – Jeffrey T. Bandini, PE, PTOE
P: (617) 338.0063 | jbandini@nitscheng.com

New Hampshire – Stephen Haas, PE
P: (603) 669.5555 | shaas@hoyletanner.com

Rhode Island – Peter J. Pavao, PE, PTOE
P: (401) 457.2056 | pavao@vhb.com

Vermont – Jennifer Conley, PE, PTOE
P: (802) 345.2321 | jennifer.conley@wsp.com

Standing Committee Chairs:

Awards – Joseph C. Balskus, PE, PTOE
P: (203) 482.0956 | jbalskus@wsp.com

Charter/Bylaws – Kim E. Hazarvarian, Ph.D., PE, PTOE
P: (603) 226.4013 | keh@tepplic.com

Chronicle Action – Samuel W. Gregorio PE, PTOE
P: (978) 794.1792 | sggregorio@theengineeringcorp.com

Chronicle Editor – Rachel A. Dooley, PE, PTOE
P: (401) 457.2028 | rdooley@vhb.com

Continuing Education – Douglas S. Halpert, PE
P: (978) 570.5782 | dhalpert@ghnep.com

Desjardins Scholarship – Faysal J. Hussein, PE, PTOE
P: (857) 206.8756 | fhussein@Nitscheng.com

Emerging Professionals – Christina Dube, E.I.T.
P: (781) 641.8332 | cdube@vhb.com

Goals/Objectives – Rebecca L. Brown, PE, PTOE
P: (978) 570.2946 | rebecabrown@ghnep.com

Historian – John P. Thompson, PE
P: (203) 294.2035 | jpthompsonpe4@aol.com

Industrial Support – William P. McNamara
P: (401) 231.6780 | billmc@oceanstatesignal.com

Legislative Liaison – Jeffery R. Parenti, PE, PTOE, ENV SP
P: (508) 228.0912 | jparenti@state.ma.us

Membership – Justin M. Curewitz, PE
P: (857) 255.1982 | JCurewitz@BETA-inc.com

Nominating – Kenneth J. Petraglia, PE, PTOE
P: (857) 368.9441 | michelle.danila@state.ma.us

Past Presidents Council – Michelle Danila, PE, PTOE
P: (978) 570.2946 | michael.danila@state.ma.us

Program – Keith E. Weners, E.I.T.
P: (413) 241.5872 | kweners@vhb.com

Public Relations – Ariel Greenlaw, PE
P: (207) 228.0912 | agreenlaw@hntb.com

Strategic Plan – Joseph A. Hallisey, PE, PTOE
P: (860) 815.0269 | joseph.hallisey@wsp.com

Student Chapter Liaison – Ted DeSantos
P: (860) 646.2469 | tdesantos@fando.com

Technical – Steven C. Findlen
P: (508) 823.2245 | sfndlen@mcmahonassociates.com

Technical – Walt Woo, PE, PTOE
P: (781) 221.1294 | walt.woo@stantec.com

Website – Colin T. White, PE
P: (978) 570.2979 | cwhite@ghnep.com

Useful Links

Institute of Transportation Engineers:
http://www.ite.org

ITE Northeastern District:
http://www.northeasternite.org

ITE New England Section:
http://www.neite.org

ITE Upstate New York Section:
http://www.itynypstate.org

ITE New York Metro Section:
http://ite-metsection.org

Young Professionals in Transportation - Boston Chapter
http://www.yptboston.org/

Boston Society of Civil Engineers:
http://www.bsces.org

American Society of Civil Engineers:
http://www.asce.org

ASCE New Hampshire Chapter:
http://www.ascenh.org

ASCE Vermont Chapter:
http://sections.asce.org/vermont

ASCE Maine Chapter:
http://www.mainacsce.org/main

ASCE Connecticut Chapter:
http://www.csce.org

ASCE Rhode Island Chapter:
http://riasce.org

Urban Land Institute:
http://www.uli.org

MA Association of Consultant Planners:
http://www.macponline.org

The American Planning Association
http://www.planning.org

AMA New England Chapter:
http://www.nnecapa.org

APA Massachusetts Chapter:
http://www.massapa.org

APA Connecticut Chapter:
http://www.ccapa.org

APA Rhode Island Chapter:
http://www.rhodeislandapa.org

2019 Northeastern District Meeting – Joseph C. Balskus, PE, PTOE
P: (203) 482.0956 | jbalskus@wsp.com

2019 Northeastern District Meeting – Joseph A. Hallisey, PE, PTOE
P: (860) 815.0269 | joseph.hallisey@wsp.com
Don’t Forget!

Sign up for the 2018 NEITE Annual Meeting All-Day Training

Mark your calendars for December 3, 2018 as Sarah Scala of Sarah Scala Consultants joins NEITE for an exciting leadership development training opportunity. Objectives include developing presentation skills, building skills in coaching and listening as a leader, strengthening conflict management skills, and developing awareness of different leadership styles. This training has been approved for 6 PDH’s. Full details are included on the registration form attached to this issue!

As a dynamic consultant, executive coach, and educator, Sarah Scala has over 18 years of experience in supporting organization development, leadership, coaching, talent management, learning design, team effectiveness, and change management for diverse client organizations. Sarah brings high energy, optimism, and adaptability to new challenges. She has led talent development initiatives for start-ups to Fortune 100 companies as a partner and trusted adviser. She is passionate about creating solutions that strengthen interpersonal skills and support positive change with individuals, teams, and organizations.

Find The New England Section Online

The New England Section of the Institute of Transportation Engineers is tuning in to social media. In order to provide quick updates on events and notices, past and present, the Section is active on Facebook, Twitter, and LinkedIn.

Please remember to receive all your updates, news, and Section information at the New England Section website: http://www.neite.org

For those members of the New England Section that would like to be included on the Google Group Section email list, please contact Ariel Greenlaw, PE at agreenlaw@hntb.com.

The Editor’s Minutes

RACHEL A. DOOLEY, PE, PTOE
Transportation Engineer
VHB

Hello New England Section!

The days are getting shorter and the temperatures are getting lower; fall is certainly here. As the holiday season approaches, there are many exciting upcoming ITE events. My home state, Rhode Island is hosting their annual joint meeting with NEITE this week. Less than 4 weeks after that will be the New England Section Annual Meeting at the Crowne Plaza in Warwick, RI. Both of these events are great fun to attend. I enjoy the Board meetings, the technical sessions, and the overall networking that occurs at both meetings. I hope that many of you will make the trip to one or both of these meetings.

This issue’s feature article comes from Francis Tainter, a graduate research assistant at the University of Massachusetts Amherst and former president of the student chapter there. His research investigates driver behavior at permissive left turns with a flashing yellow arrow versus a circular green indication and the impact of all-red clearance durations on driver behavior. It is a great article to better help us understand the general public in our designs. I want to welcome all within the New England Section to contribute their experiences, opportunities, challenges, and innovative strategies to the New England Chronicle. We would love to hear about what you are working on!

Also in this issue are the position statements of all four candidates for Junior Director of the New England Section. Please take a moment to read through these and don’t forget to cast your vote. You should have received an email with the ballot. Please reach out if you did not receive one. All four candidates are heavily involved within ITE and will make excellent Board members.

As a member of the Local Arrangements Committee, I feel it’s my duty to remind everyone about the 2019 Northeastern District Annual Meeting quickly approaching from May 8-10, 2019 in New Haven, Connecticut. Be on the look out for more details in an upcoming issue!

I would like to thank all of our sponsors for their continued support of the New England Chronicle. If you are interested in becoming a sponsor of the award-winning New England Chronicle, please contact Lisa Rutherford of Ocean State Signal (lrutherford@oceanstatesignal.com) or myself. I would also like to thank all of the contributors to this issue.

Finally, as this is my last issue as Editor, I would like to take this opportunity to thank everyone for their support, words of encouragement, and contributions over these last three years. The time has really flown and I have made so many connections and even friendships throughout all of New England. It wasn’t always easy, but it truly has been a great experience. A special thanks to Tess Schwartz of Tessera Engineering who has volunteered to take over as Editor in 2019. I look forward to continuing to work with all of you during my time on the Board. I hope you enjoy the Fall issue of 2018!

Rachel A. Dooley, PE, PTOE
Chronicle Editor
rdooley@vhb.com

On the Front Cover: The Shops at Highland Commons in Hudson, Massachusetts 
Photo Source: VHB ©

On the Back Cover: Exit 24 off of Route 2 in Westminster, Massachusetts 
Photo Source: VHB ©
Investigating Driver Comprehension of All-Red Clearance Intervals with Permissive Left-Turn Indications

FRANCIS TAINTER
Graduate Research Assistant
University of Massachusetts Amherst

INTRODUCTION
The flashing yellow arrow (FYA) permissive indication was evaluated with the NCHR Report 493 (Brehmer et al. 2003), and thereafter included in the 2009 edition of the MUTCD (FHWA 2009). Since this adoption in the national standards, state agencies across the country have introduced the FYA as permissive indications for left-turns. As of 2013, there were 31 states that had implemented FYAs (Schattler and Lund 2013); however, it is important to note that many other state agencies have adopted the FYA since. Various operational and safety implications from FYA implementation have been studied in recent years. Although many state agencies have adopted the FYA in PPLT phasing, transportation engineers across the country continue to seek robust guidelines with the safe and efficient implementation of these novel traffic control devices. In part, previous research has investigated the operational and safety impacts of signal clearance intervals in left-turn protected and permissive phasing. A need exists to investigate the transition intervals of PPLT phasing with FYA, particularly in developing guidelines for agencies to utilize in their decision-making and implementation procedures. This research aims to investigate the driver comprehension and driver behavior of existing PPLT phasing. With the understanding of existing design standards, a computer-based static evaluation examined the current state of driver comprehension with PPLT phasing sequences of circular green (CG) and FYA left-turn indications. In addition, a field study utilizing an innovative traffic data collection method was completed to evaluate the current state of driver behavior at intersections with PPLT phasing. This method utilized the combination of vehicle trajectory data collection paired with real-time signal phasing information to parallel with the left-turning vehicles. Through the combination of static evaluation and a field study, a correlation between driver comprehension and operations is evaluated.

BACKGROUND
Implementation of FYA for Permissive Left-Turns
While many states have implemented these novel permissive signal indications in recent years, there is a need to evaluate the driver comprehension of FYA signals in terms of their effects on current operations. Previous research from Knodler et al. found that the FYA had very little impact on the existing solid yellow arrow (SYA) indication and discovered a high-level of comprehension with the FYA compared to CG indications (Knodler et al. 2005, Knodler et al. 2007a, Knodler et al. 2007b, Knodler and Fisher 2009). In addition to evaluating the comprehension of MUTCD regulated implementation of the FYA permissive indication in left-turns, previous research studied alternative methods of implementation. Through the results of a static evaluation, Noyce et al. found that FYA does not impact driver comprehension when bimodally implemented in the bottom or middle section of a three-section vertical signal (Noyce et al. 2007). A study completed by Hurwitz et al. evaluated the effects of FYA vertical positioning, with the inclusion of three- and four-section vertical signal displays. Through a dynamic driving simulator experiment, it was concluded that the inclusion of the FYA did not significantly impact driver fixation durations based on three- versus four-section signals (Hurwitz et al. 2014).

Safety Impacts of Red-Light Running
With the focus of this research on guidance implementation strategies for all-red clearance intervals in FYA sequencing, a sizable body of literature related to the safety impacts of all-red clearance intervals already exists. More specifically, red-clearance intervals are of crucial concern in intersection safety, as red-light running (RLR) remains one of the most common causes for intersection crashes. The NCHR Report 731 (McGee et al. 2012), concluded that the utilization of the Institute of Transportation Engineers (ITE) guidelines in designing yellow and red change intervals can lead to a significant reduction in red-light running related conflicts. More specifically, they concluded that the increase of red clearance intervals did not correlate to an increase in red-light running. Although significant research has not been conducted in crash effects with the implementation of red clearance intervals, Gates et al. found promising results in decreasing RLR-related crashes using a dynamic red clearance extension system (Gates and Noyce 2016). These studies both allude to the need for improving guidance for designing yellow and all-red clearance intervals, specifically in lowering red-light running related conflicts. Further implications of RLR stem from the dilemma one as defined by Gazis et al. (1960) and Zegeer et al. (1978). While investigating the Type I dilemma zone further, Gates et al. found that the comfortable deceleration rate of 10 ft/s^2 typical for timing yellow change intervals, may be overly conservative based on the intersection approach speed (Gates et al. 2007). Similarly, previous literature has focused on investigating the effects adjusting signal timing of change and clearance intervals that impact decision making for drivers in the dilemma zone (Elmivity et al. 2010, Hurwitz et al. 2012).

METHODOLOGY
In order to assess comprehension and driver behavior at permissive left turns with a FYA versus a CG indication and the impact of all-red clearance duration on driver behavior, a computer-based static evaluation and a field data collection study were performed. The computer-based static evaluation was administered as a two-fold experiment: an initial static evaluation to study overall PPLT phasing comprehension and a follow-up static evaluation to study the direct transition between protected and permissive indications. By investigating the varying levels of comprehension with FYA and CG permissive indications, this study aims to gain a more complete understanding of PPLT signal timing design.

Computer-Based Static Evaluation
The initial computer-based static evaluation was used to investigate the current driver comprehension of PPLT phasing, specifically with the CG and FYA displays. This study employed the survey platform SurveyMonkey® to develop the static evaluation. The development of the experimental design for this survey was based in part on previous research (Brehmer et al. 2003, MacClellan 2013). The work in the NCHR Report 493 (Brehmer et al. 2003) evaluated driver comprehension with respect to the decision making through PPLT. The work completed by MacClellan (2013) focused primarily on signal sequencing with CG and FYA indications for left-turns. The current research initiative further investigated the comprehension of signal sequencing, including the various PPLT phases schemes as found in Table 1. It is important to note here that the Lead-Lag phasing presented in the survey included scenarios with the protected phase displayed before the permissive phase and vice versa. An assortment of scenarios were created to evaluate each of the phase schemes; which were then presented to the participant in an equally randomized order to eliminate bias. Each scenario presented to the participants included a video displaying the sequence, a graphic representing the final display seen in the video, and a list of possible “Next signal display” selections.

Upon completion of the data analysis from the initial computer-based static evaluation, a follow-up survey was developed to further investigate driver comprehension of all-red clearance intervals. This survey was organized in a similar fashion to the previous one; however, four scenarios were specifically developed to evaluate the transition between protected and permissive left-turn phasing using both the CG and FYA indications. Two scenarios were designed with a five-section signal head, which evaluated participants’ prediction of the all-red clearance interval using the permissive CG indication. Two additional scenarios were designed with a four-section vertical signal head, which evaluated participants’ prediction of the all-red clearance interval using the permissive FYA indication. The follow-up study was assessed on the premise that drivers would not have participated in the initial static evaluation.
with leading protected phasing, including both the CG and FYA permissive indications. The intersection with the CG permissive left-turn indication was considered the control, with a circular all-red clearance interval transitioning between protected and permissive phasing. The FYA intersection locations included both signal sequences with and without an all-red clearance interval during this transition. The vehicle trajectories were captured at the following three intersection approaches that were selected based on the signal phasing and permissive indications as follows:

- Route 9 at South East Street – Amherst, MA (southbound approach)
- Whiting Farms Road at Lower Westfield Road – Holyoke, MA (eastbound approach)
- Springfield Road at Little River Road – Westfield, MA (westbound approach)

These locations were also selected as having no apparent impact from insufficient signal sight distance or significant grade changes. The intersection design and operational characteristics are presented in Table 2. Each data collection period was processed individually to filter the left-turning vehicles from each location. The filtering method consisted of locating the X-Y coordinates for each trajectory to pinpoint the left-turning vehicles. In addition to this, the signal timing information was connected to each trajectory, indicating the signal phase presented to each vehicle at the intersection stop bar.

RESULTS

Signal Sequence Comprehension Results

Initial Static Evaluation

A total of 212 licensed drivers from over 20 states across the United States (U.S.) participated in the administered online survey. Of the 212 participants, 49% were male and 51% were female. A total of 50% of the participants were between 18 and 24 years of age, 28% between 25 and 34 years of age, 9% between 35 and 44 years of age, 5% between 45 and 54 years of age, 5% between 55 and 64 years of age, and 1% were over 65 years of age. In total, 67.8 percent of drivers correctly predicted the next signal in the sequence over 50 percent of the time with each indication, which presents a theoretically significant finding alone.

Follow-Up Static Evaluation

A total of 107 licensed drivers that participated, of which 56% were male and 44% were female. A total of 58% of the participants were between 18 and 24 years of age, 22% were between 25 and 34 years of age, 7% were between 35 and 44 years of age, 6% were between 45 and 54 years of age, 6% were between 55 and 64 years of age, and 1% were over 65 years of age. The data provided in Table 3 presents the demographic characteristics of the participants and the percentage of correct responses by demographic group.

An evaluation of the driver comprehension for all phase schemes of PPLT was executed to compare the CG and the FYA permissive indications. Table 4 presents the correct responses for each of these phase schemes in the initial survey. In total, 67.8 percent of drivers correctly predicted the next signal in the sequence for the CG scenarios, while the FYA scenarios yielded only 57 percent correct responses. These differences were not statistically significant, which in and of itself presents a unique significance. Drivers were able to correctly predict the next signal in the sequence over 50 percent of the time with each indication, which presents a theoretically significant finding alone.

Table 2. Field Study - Site Locations and Descriptions

<table>
<thead>
<tr>
<th>Left-Turn Approach Analyzed</th>
<th>Intersection Name</th>
<th>Number of Approach Lanes (LT)</th>
<th>Left-Turn Volume (veh)</th>
<th>Posted Speed Limit (mph)</th>
<th>Width of Intersection (ft)</th>
<th>Device Distance from Stop Bar (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Site 1: CG</td>
<td>5 East St. at Route 9 (Belchertown Rd.)</td>
<td>2 (1)</td>
<td>366</td>
<td>25</td>
<td>70</td>
<td>145</td>
</tr>
<tr>
<td>SR 5 East St.</td>
<td></td>
<td>4 (1)</td>
<td>234</td>
<td>30</td>
<td>85</td>
<td>180</td>
</tr>
<tr>
<td>Site 2: FYA (with AR)</td>
<td>Lower Westfield Rd. at Whitting Farms Rd.</td>
<td>3 (1)</td>
<td>456</td>
<td>40</td>
<td>75</td>
<td>310</td>
</tr>
<tr>
<td>Site 3: FYA (without AR)</td>
<td>Route 20 (Springfield Rd.) at Little River Rd.</td>
<td>10 (1)</td>
<td>102</td>
<td>17</td>
<td>85</td>
<td>145</td>
</tr>
</tbody>
</table>

Table 3. Demographic information from initial computer based static evaluation

<table>
<thead>
<tr>
<th>Demographic</th>
<th>Level</th>
<th>No. of Participants</th>
<th>Percentage Correct Responses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender</td>
<td>Male</td>
<td>102</td>
<td>59.2</td>
</tr>
<tr>
<td></td>
<td>Female</td>
<td>105</td>
<td>52.2</td>
</tr>
<tr>
<td>Age</td>
<td>18-24</td>
<td>102</td>
<td>55.9</td>
</tr>
<tr>
<td></td>
<td>25-34</td>
<td>58</td>
<td>59.1</td>
</tr>
<tr>
<td></td>
<td>35-44</td>
<td>19</td>
<td>55.8</td>
</tr>
<tr>
<td></td>
<td>45-54</td>
<td>10</td>
<td>48.1</td>
</tr>
<tr>
<td></td>
<td>55-64</td>
<td>11</td>
<td>58.6</td>
</tr>
<tr>
<td></td>
<td>65+</td>
<td>6</td>
<td>30.6</td>
</tr>
<tr>
<td>Driving Experience</td>
<td>Fewer than 5 years</td>
<td>24</td>
<td>59.2</td>
</tr>
<tr>
<td></td>
<td>5 to 9 years</td>
<td>107</td>
<td>55.1</td>
</tr>
<tr>
<td></td>
<td>More than 10 years</td>
<td>75</td>
<td>56.8</td>
</tr>
</tbody>
</table>

Table 4. Breakdown of correct responses for phase schemes, including overall CG versus FYA

<table>
<thead>
<tr>
<th>Permissive Indication</th>
<th>Phase Scheme</th>
<th>Percentage Correct Responses</th>
<th>Average Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Circular Green</td>
<td>Dual Leading</td>
<td>55.0%</td>
<td>67.8%</td>
</tr>
<tr>
<td></td>
<td>Lead-Lag (Lagging Side)</td>
<td>90.8%</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Lead-Lag (Leading Side)</td>
<td>70.5%</td>
<td></td>
</tr>
<tr>
<td>Flashing Yellow Arrow</td>
<td>Dual Lagging</td>
<td>55.0%</td>
<td>57.0%</td>
</tr>
<tr>
<td></td>
<td>Dual Leading</td>
<td>57.9%</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Lead-Lag (Lagging Side)</td>
<td>44.5%</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Lead-Lag (Leading Side)</td>
<td>85.2%</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Dual Lagging</td>
<td>40.4%</td>
<td></td>
</tr>
</tbody>
</table>

Continued on Page 7
the age of 65. In total, 19% of drivers participating had fewer than 5 years of driving experience, 45% had between 5 and 9 years of driving experience, and 36% had more than 10 years of driving experience. Again, the data provided in Table 5 presents the demographic characteristics of the participants and the percentage of correct responses by demographic group.

In the follow-up static evaluation, four scenarios were presented to analyze the scenarios in which drivers predicted the all-red clearance interval of PPLT phasing with CG and FYA permissive indications. From the results, it became apparent that drivers had an overall strong understanding in predicting the all-red clearance intervals. There were 72 percent correct responses for the all-red in the CG permissive scenarios, and 59 percent correct responses for the all-red in the FYA permissive scenarios. There were only 40 percent correct responses predicting the CG permissive indications and 38 percent correct responses predicting the FYA permissive indications. Overall, there was a stronger comprehension of the CG permissive indication scenarios as before; however, the marginal difference between the scenarios of CG and FYA indications were not significant. These results from the follow-up static evaluation further proves the stronger comprehension levels of the CG permissive indication over the FYA.

**Connection Between Static Evaluation and Field Study Vehicle Trajectories**

The vehicle trajectory field study was initiated to create a connection between the trajectories of left-turning vehicles at PPLT signalized intersections and the corresponding signal timing information. It was evident through the static evaluation analysis that the CG indications had a higher comprehension rate compared to the FYA indication scenarios. To control for this in the field evaluation, this study compared the CG permissive indication location in Amherst, MA and the FYA permissive indication (with an all-red clearance interval) location in Holyoke, MA. In addition to this, a direct comparison was made between the FYA permissive indication locations in Holyoke, MA and Westfield, MA, which differed with their inclusion and exclusion of the all-red clearance intervals, respectively. The following measures were obtained and are presented in Table 6.

<table>
<thead>
<tr>
<th>Demographic</th>
<th>Level</th>
<th>No. of Participants</th>
<th>Percentage Correct Responses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender</td>
<td>Male</td>
<td>60</td>
<td>55.3</td>
</tr>
<tr>
<td></td>
<td>Female</td>
<td>57</td>
<td>48.5</td>
</tr>
<tr>
<td>Age</td>
<td>18-24</td>
<td>62</td>
<td>51.9</td>
</tr>
<tr>
<td></td>
<td>25-34</td>
<td>24</td>
<td>60.3</td>
</tr>
<tr>
<td></td>
<td>35-44</td>
<td>8</td>
<td>55.0</td>
</tr>
<tr>
<td></td>
<td>45-54</td>
<td>6</td>
<td>58.3</td>
</tr>
<tr>
<td></td>
<td>55-64</td>
<td>6</td>
<td>26.7</td>
</tr>
<tr>
<td></td>
<td>65+</td>
<td>1</td>
<td>75.0</td>
</tr>
<tr>
<td>Driving Experience</td>
<td>Fewer than 5 years</td>
<td>20</td>
<td>48.5</td>
</tr>
<tr>
<td></td>
<td>5 to 9 years</td>
<td>48</td>
<td>54.7</td>
</tr>
<tr>
<td></td>
<td>More than 10 years</td>
<td>38</td>
<td>51.6</td>
</tr>
</tbody>
</table>

Table 5. Demographic information from follow-up study

Fig. 2. Field Evaluation Vehicle Trajectories and Intersection Information

---

**Section Calendar**

**November 2018**

RIITE/NEITE Annual Joint Meeting
November 8, 2018
Providence Marriott Downtown
Providence, Rhode Island

CTITE/CTDOT YEG Networking Event
November 15, 2018
Thomas Hooker Brewery
Hartford, Connecticut

**December 2018**

NEITE Annual Meeting
December 3, 2018
Crowne Plaza
Warwick, Rhode Island

**January 2019**

NEITE-VT ITE Joint Meeting
January 24, 2019
Killington Resort
Killington, Vermont

**May 2019**

2019 Northeastern District Annual Meeting
May 8th-10th, 2019
Omni New Haven at Yale Hotel
New Haven, Connecticut

Please send all calendar announcements, including the name of event, the contact person, event location, and date to New England Section webmaster Colin T. White, PE and Chronicle Editor Rachel A. Dooley, PE at cwhite@gpinet.com and rdooley@vhb.com.
Continued from Page 7

at each intersection: vehicles per cycle, vehicles per second of yellow (change) time, vehicles per second of all-red (clearance) time, and average elapsed time after onset of yellow. Each of the intersection locations and their respective vehicle trajectories are presented in Fig. 2 on the previous page. This graphic includes a sample of vehicle trajectories captured at each intersection, paired with their corresponding signal timing information.

Comparing Circular Green and Flashing Yellow Arrow Indications with All-Red
In order to compare the intersections in Amherst and Holyoke, the rates of red-light-running were normalized to account for the varying vehicle demand at each intersection. The demand per intersection was evaluated based on vehicles per cycle. Using a 2-score statistical test, the ratios provided for the Amherst and Holyoke locations in Table 6 yielded statistical significance. The average elapsed time after onset of yellow presented above was evaluated using paired t-tests, which yielded a statistical difference between the Amherst and Holyoke locations. This being said, the location with a CG permissive left-turn indication had a significantly higher number of vehicles traversing the intersection during the yellow and all-red intervals. Vehicles more frequently utilized the change and clearance intervals as extensions of the protected left-turn phase.

Comparing Flashing Yellow Arrow Indication with and without All-Red
In comparing the intersections in Holyoke and Westfield, the rates of “sneakers” needed to be normalized based on the varying vehicle demand at each intersection. The term “sneakers” has been used in previous literature to describe the act of drivers proceeding through the intersection during the transition between protected and permissive phasing, once the opposing traffic has been provided a permissive indication (Breher et al. 2003). As previously mentioned, the demand per intersection was evaluated based on vehicles per cycle. A 2-score statistical test was used to evaluate the ratios between the Holyoke and Westfield locations presented in Table 6. The Westfield location did not include the all-red phase; however, the vehicles per second of yellow (change) time was statistically different between each intersection. More so, a paired t-test was used to find the significant difference between the elapsed time after onset yellow at each intersection. It was apparent that vehicles were likely to traverse the intersection well beyond the onset of the yellow interval at the Westfield intersection.

CONCLUSIONS
This research aimed at investigating driver comprehension and behavior related to the presence or absence of all-red clearance intervals for left turning movements. Two static evaluations as well as a vehicle trajectory field study were conducted, which focused on operational characteristics associated with drivers traversing intersections with PPLT phasing.

• Overall, respondents had a higher rate of comprehension in predicting the next signal in sequences involving the five-section signal, with a CG permissive indication. Anecdotal evidence suggests that there still exists significant confusion in comprehending the four-section signal with the FYA permissive indication. Potential reasoning for this exists with the regional misconception, and latent integration of the FYA in various state agencies across the country.

• The follow-up static evaluation revealed that drivers were more likely to predict the all-red interval in five-section signals with CG permissive indications, as compared to the four-section signal with FYA permissive indications. The follow-up study also revealed that the prediction of the permissive indication following the all-red clearance interval was stronger in the CG indication sequences compared to the FYA sequences.

• The summary of responses suggests that drivers will be more likely to predict the sequencing of five-section signals with CG permissive indications, as compared to the sequencing of four-section signals with FYA permissive indications. This was backed by investigating the general PPLT phase sequencing in the initial static evaluation and the specific prediction of all-red intervals in the follow-up study.

• The field evaluation resulted in a much larger number of RLR’s at the intersections with the CG permissive indication. This result confirms that there is a correlation between driver comprehension of signal sequencing and permissive signal indication.

• While focusing on the number of drivers traversing the intersection after the onset of a SYA indication, there were a significantly larger number of “sneakers” at the intersection in Westfield, MA (FYA with AR) than at the intersection in Holyoke, MA (FYA with AR). While this poses an additional question of familiarity in signal sequencing, the lack of an all-red interval at the Westfield, MA location also yielded concern in potential vehicle conflicts.

Next steps will include a full-scale driving simulator study to evaluate the behavioral characteristics of drivers approaching intersections with varying all-red clearance intervals at PPLT intersections. Future work could also focus on additional field evaluations to conduct conflict analyses with advanced vehicle detection systems with an emphasis on studying conflicts during the transition between protective and permissive left-turns at CG and FYA signalized intersections.

Table 6. Normalized vehicle demand at the three data collection locations

<table>
<thead>
<tr>
<th>Intersection Location and PPLT Phasing Type</th>
<th>Amherst, MA</th>
<th>Holyoke, MA</th>
<th>Westfield, MA</th>
</tr>
</thead>
<tbody>
<tr>
<td>CG with All-Red</td>
<td>11.7</td>
<td>9,9</td>
<td>14.4</td>
</tr>
<tr>
<td>FYA with All-Red</td>
<td>11.0</td>
<td>12.7</td>
<td>6.74</td>
</tr>
<tr>
<td>FYA without All-Red</td>
<td>0.31</td>
<td>0.25</td>
<td>0.67</td>
</tr>
<tr>
<td>Throughput volume (veh/cycle)</td>
<td>0.17</td>
<td>0.15</td>
<td>0.56</td>
</tr>
<tr>
<td>Vehicles per second of yellow time (veh/sec)</td>
<td>0.37</td>
<td>0.63</td>
<td>N/A</td>
</tr>
<tr>
<td>Vehicles per second of all-red time (veh/sec)</td>
<td>1.92</td>
<td>0.99</td>
<td>4.88</td>
</tr>
<tr>
<td>Average elapsed time after onset of yellow (sec)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

REFERENCES
New England Section Annual Meeting

**Date:** December 3, 2018

**Meeting Location:**
Crowne Plaza at the Crossings
801 Greenwich Avenue
Warwick, Rhode Island 02886

**Meeting Schedule:**
- 8:30 AM - 3:30 PM: All-Day Professional Workshop
- 10:00 AM - 2:00 PM: NEITE Executive Board Meeting
- 2:15 PM - 4:15 PM: Technical Sessions
- 4:30 PM - 6:30 PM: Cocktail/Networking Hour with Student Poster Session
- 6:30 PM: Dinner

**Registration Costs:**

<table>
<thead>
<tr>
<th></th>
<th>ITE Member</th>
<th>ITE Non-Member</th>
<th>ITE Member</th>
<th>ITE Non-Member</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tech Sessions / Dinner</td>
<td>$80</td>
<td>$100</td>
<td>$215</td>
<td>$245</td>
</tr>
<tr>
<td>Workshop / Tech / Dinner</td>
<td>$40</td>
<td>$60</td>
<td>$130</td>
<td>$160</td>
</tr>
</tbody>
</table>

All Walk-Ins: Add $25

REGISTRATIONS DUE BY MONDAY, NOVEMBER 26, 2018

**All-Day Professional Workshop - 6 PDHs**

**Developing Leadership Skills**

Presented by: Sarah Scala, Founder and Principal Consultant, Sarah Scala Consulting

This one-day workshop will focus on four key topics:

- Develop presentation skills
- Build skills in coaching and listening as a leader
- Strengthen conflict management skills and awareness of styles
- Develop awareness of different leadership styles (see additional information on page 4)

**Technical Sessions - 2 PDHs**

**Commonwealth Avenue Bridge Replacement Project - Planning, Design, and Construction**

- Jointly presented by the Massachusetts Department of Transportation and Consultant Teams

Registration Flyer available at [www.neite.org](http://www.neite.org)

DON'T FORGET TO BRING A GIFT (w/ BUSINESS CARD) FOR THE DOOR PRIZE!

---

**BOSTON TRAFFIC DATA**

Proud to Support ITE

MassDOT Pre-Qualified, DBE/MBE Certified

Tel: (978) 746-1259

DataRequest@BostonTrafficData.com
Candidates for New England Section Directors (Cont. on Page 11)

**Justin M. Curewitz, PE, PTOE**

**Business Address:**
BETA Group, Inc.
315 Norwood Park South
Norwood, MA 02062

**Business Title:** Project Engineer

**Education:** M.S., Civil Engineering – Transportation Option (2016) and B.S., Civil and Environmental Engineering (2011) from University of Massachusetts Lowell, Lowell, MA

**Work History:** I am a licensed transportation engineer with over 7 years of experience in transportation and traffic engineering. Within my current position at BETA Group, Inc., I have been involved in a variety of projects including: traffic signal design; pedestrian/bicycle accessibility studies; and traffic impact assessments.

**Positions held for ITE:**
- Member, University of Massachusetts Amherst ITE Student Service Award, 2014
- Member, University of Massachusetts WTS Student Chapter, 2012 – 2014
- Member, Chi Epsilon Honor Society

**Goals I would like to achieve:**
As the current membership committee chair for the New England Section and a younger member of the Section, my focus has been and will continue to be the success and growth of the Section. To achieve this goal, I hope to increase the membership of the section through advocating for a greater outreach to the students population, increasing the membership of our student sections, both within existing student chapters and by working with local colleges and universities to form new student chapters. As a student in college, I was unaware of ITE and all the benefits that came with becoming a member. From having this experience, it makes me wonder just how many other students and young engineers could benefit from ITE. ITE has done an excellent job at providing education, professional development, and networking to its members and the goal is to communicate these benefits with the younger members and students. Our section has a great opportunity to share ideas and knowledge through our existing members. With the significant amount of younger members in our section eager to learn about new technologies and designs, our more experienced members have the ability to impart their knowledge and experience to the future generations.

In addition, the need to retain membership and draw an increase in participation at events, meetings, and trainings is another goal for the future. Having greater input from the members as to the specific topics that they would like to see as training or technical presentations will allow us to boost attendance and draw the attention of the entire section. Topics that will educate the section and keep us on the forefront of standards, technology, planning efforts and policies are keys to the success in years to come. Many of our section committees are comprised of just a single member chairing, organizing and administering the tasks associated with the committee. Educating and encouraging members on the various committees, what they do and how to become more involved is paramount for participation throughout the Section.

I will advocate for more social events such as the PawSox, SeaDogs and Fisher Cats games solely for networking and interactions. Often time events are tied into a technical session or a presentation, but having one or two social events to interact with section members outside of the workplace and typical meeting spaces would allow interaction that would otherwise not take place. Given the proper planning and location, these social outings would foster a more personal environment that would in turn generate more ITE participation. As part of these events, I would like to see more site tours and construction applications. Our technical presentations during section meetings are a wealth of information and engineering; however, seeing these applications implemented first-hand is a great opportunity for closure of these newer technologies or specific engineering tools that have been used.

**Christian Hodge (Dube), E.I.T.**

**Business Address:**
VHB
99 High Street, 10th Floor
Boston, MA 02110

**Business Title:** Transportation Consultant

**Education:** Master of Science in Civil Engineering, 2015, Bachelor of Science in Civil and Environmental Engineering, 2013, University of Massachusetts Amherst, Amherst, MA

**Work History:** After I completed my Master’s thesis with Dr. Michael Knodler, Jr. at the University of Massachusetts Amherst, I began working with VHB in the Boston office in January 2015 within the Transportation Planning andOperations group as a transportation consultant.

**Positions held for ITE:**
- Member, Institute of Transportation Engineers, 2011 – Present
- Chair, NEITE Emerging Professionals Group, 2016 – Present
- Co-Chair, NEITE Emerging Professionals Group, 2015
- Vice President, UMass Amherst ITE Student Chapter, 2013 – 2014
- Student Liaison, UMass Amherst ITE Student Chapter, 2011 – 2013
- Portsmouth 2016 LAC, Northeastern District
- New Haven 2019 LAC, Northeastern District

**Goals:** Two goals that I am passionate about are member retention and increased member participation. I have been actively involved with ITE and the state, district, and international level since joining in 2011. I recognize the organization’s struggle to retain membership. I could have easily let my membership expire and could have left the organization, but I saw the value in continuing my ITE membership when transitioning from a student to a consultant. Through my years as an ITE member, I was fortunate to build strong connections around the region and was introduced to the New England Emerging Professionals Group. Although I chose to continue my ITE involvement, there are many past members who did not see the same value of an ITE membership. We need to find a way to adapt our organization and see how we can tailor our meetings and events to better fit the needs of our members.

For nearly three years, I have served as the committee chair for the Emerging Professionals Group, and I believe that we have made great strides. This year, the group organized and initiated the first year of our New England ITE Mentoring Program. The overarching goal of this program is to increase member interaction and participation across the New England state chapters. As someone who experienced the struggle of transitioning from a student to a young transportation professional, I wanted to take action and try to connect students and younger members with transportation professionals. As Junior Director, I will continue to work on innovative programs and events that will increase member collaboration and add value to an ITE membership.

**Professional Registration:** Engineer in Training, MA

**Awards and Honors:**
- ITE Journal, Member Spotlight, April 2017 Edition
- NEITE Emerging Professional Award, 2016
- University of Massachusetts Amherst ITE Student Service Award, 2014
Candidates for New England Section Directors (Cont. from Page 10)

Hans Kuebler, PE
Business Address:
Howard Stein Hudson
11 Beacon Street, Suite 1010
Boston, MA 02108
Business Title: Civil Engineer

Education: Bachelor of Science in Civil Engineering, Northeastern University, Boston, MA, 2011

Work History:
- Project Engineer, Acadia Engineers and Constructors, August 2011 – November 2012
- Civil Engineer, Howard Stein Hudson, November 2012-Present

Positions held for ITE:
- Member, Institute of Transportation Engineers, 2010-Present
- Secretary, Massachusetts Chapter, 2012-2014
- Vice President, Massachusetts Chapter, 2014-2016
- President, Massachusetts Chapter, 2016-2018

Positions held in other professional organizations: Member, American Society of Civil Engineers, 2013-Present, Secretary, Boston Society of Civil Engineers – Construction Institute, 2014-2016, Vice Chair, Boston Society of Civil Engineers – Construction Institute, 2016-2017, Chair, Boston Society of Civil Engineers – Construction Institute, 2017-2018

Professional Registrations: Professional Engineer, Commonwealth of Massachusetts

Goals: Over the past 6 years I have been fortunate to be a part of the continued success of the Massachusetts Chapter of ITE to help it grow and evolve, and my goal is to translate that success from the State Section level to the continued growth at the New England Section level. Over that time, we have implemented several successful annual events, such as hosting Northeastern Capstone group presentations, as well as holding seasonal outtings such as the Red Sox summer social. These have been in addition to our successful joint annual MAITE / NEITE meeting held in Waltham each Fall. These events have served as valuable networking and learning opportunities for existing and new members.

A key to our continued growth and success has been two-fold. We have collaborated often with other similar professional organizations to demonstrate the value ITE can bring across the professional transportation field while also gaining new perspectives from their organizations. We have also engaged students and young professionals in our events, and with that, have gained new sustained members attending and contributing to our growth.

My goal is to continue to foster the collaborative success by continuing to engage other chapters and organizations to better serve NEITE and all transportation professionals. Thank you for your consideration for this position.

Jeffrey Santacruce, PE, PTOE
Business Address:
Weston & Sampson
7 Perimeter Road
Manchester, NH 03103
Business Title: Senior Project Manager
Traffic Engineering Leader

Education: Bachelor of Science in Civil Engineering, University of New Hampshire, 1994

Work History: I am a licensed Professional Engineer with over 24 years of experience in both the public and private sector having worked for the New Hampshire Department of Transportation early on in my career before transitioning to the consulting world. I have worked on a wide range of projects including roadway and traffic signal improvements at single intersections to interstate widening projects. I have also worked as a construction inspector throughout my career, which I feel helps me to be a better designer because I understand how things are built and can visualize how things will go together in the field. Throughout my career I have always strived to move forward and grow. If you ask any of my current or former colleagues, they will tell you that I never said no when a task was asked of me. I liked the challenge and was always willing to lend a hand.

Positions held for ITE:
NHITE Chapter President, Vice President, Secretary/Treasurer

Professional Registrations: Registered Professional Engineer in New Hampshire, Maine, Massachusetts, Vermont, Connecticut, Florida (Pending) and a Professional Traffic Operations Engineer

Goals: As Chapter President it allowed me to get a better insight into the workings of the New England Section, their role, and how they interact with the Chapters. There were many times when I wondered if the Section and even National could do more for the Chapters. My goal will be to work with the Section Leadership to make sure we are doing as much as we can to help the Chapters be the best they can and achieve their goals, whether it be increased membership, bringing new and interesting presentations to Chapter meetings or just showing up at their events to show we support them. With the new One ITE initiative being rolled out at the international level it will be interesting to see how the roles of the Sections and Chapter change over the coming months and I am eager to be involved to help ITE move forward and grow.

In addition, I noticed as Chapter President that I kept seeing the same faces at every meeting. The faces I had known throughout my career. We weren’t getting very many new younger members showing up. We need to find a way to reach out and be relevant to the younger generation. One of the ways to do this is to reach out to the companies they work for to show them that ITE membership matters, because ultimately, they are the ones paying the dues and allowing the young engineers the time to come to our events. If the companies believe memberships matters, then the young engineers will see that and believe it matters as well.

Thank you for considering me for this position.

Elections for the 2019 Board are currently underway. Please submit your ballot by November 22, 2018. Ballots were emailed to all eligible voting members. If you did not receive a ballot, please contact Ken Patraglia at kpetraglia@comcast.net.

Also nominated for the 2019 Board are:
- Thomas Errico (President)
- Ian McKinnon (Vice President)
- Ken Cram (Secretary)
- Jennifer Conley (Treasurer)
MAITE/NEITE hosted its annual meeting in Waltham on Thursday, September 20, 2018. The event featured all-day training by Lisa Nisenson on Smart Cities: Planning, Policy, Infrastructure Design, and Active Transportation. The technical sessions were presented by John Diaz and Colin White of Greenman-Pedersen, Inc. (GPI) on Transit Signal Priority and by Jeff Parenti of Massachusetts’ Department of Conservation and Recreation (DCR) on the Morrissey Boulevard Improvement Project.

The dinner program was headlined by MBTA’s Chief Engineer - Erik Stoothoff who gave insight into the MBTA’s plans for the future for infrastructure and business practices.

Congratulations again to Nicholas Campbell, graduate student from UMass Amherst and Gina DePasquale, undergraduate from University of Hartford CT for their Desjardins Scholarship Awards and thank you for keeping this wonderful tradition going.

Connecticut ITE is pleased to announce that they will be co-hosting the third annual after work networking event with the CTDOT Young Engineers Group. The event will take place on November 15th and will be held at the Thomas Hooker Brewery in the historic Colt Building in Hartford. Please contact Carl Duesler (Carl.Duesler@wsp.com) for details. Keep an eye out for an announcement in the upcoming weeks regarding the annual Winter Meeting with ITS-CT, which is still in the planning stages.

Applications for the future February 1 - 28, 2019 computer-based exams of Professional Traffic Operations Engineer (PTOE) and Professional Transportation Planner (PTP) are due December 6, 2018.

Please note that applications received after the deadline will require an additional $75 late fee to process the application, in addition to the application and examination fee that must accompany the application. TPCB will try to accommodate late applications, but there is no guarantee they will be able to do so.

For a list of available exam cities, please visit: http://castleworldwide.com/mainsite/ibtsites/default.aspx
Committee, Chapter, and Student Chapter Updates

VERMONT STATE CHAPTER
Chapter President: Jennifer Conley, PE, PTOE

Vermont ITE will hold its annual Ski Day in conjunction with the joint NE ITE/VT ITE January meeting at Killington Resort on January 24, 2019. New England ITE and Vermont ITE members join to ski Killington for the morning and then attend the board meeting and/or tech sessions in the afternoon, followed by networking during happy hour. Please contact Jenn Conley at Jennifer.Conley@wsp.com for more information or to register.

RHODE ISLAND STATE CHAPTER
Chapter President: Peter J. Pavao, PE, PTOE

RIITE with the NEITE Emerging Professionals Group hosted a presentation and site walk of the new I-295 interchange at Route 5 (Greenville Avenue) in Johnston, Rhode Island. There were approximately 25 attendees present who enjoyed a presentation on the project that was sparked by the development of new Citizens Bank headquarters just to the northwest of the interchange. The presentation was followed by a site walk to observe the new interchange during the evening peak hour. Afterward, drinks and appetizers were enjoyed at the Thirsty Beaver Pub.

RIITE's Annual Joint Meeting with the New England Section of ITE will be held on Thursday, November 8th, 2018 at the Providence Marriott. This year we are pleased to announce RIDOT Director Peter Alviti, P.E., along with Kelly Coates from Carpinato Group, LLC as our keynote speakers to discuss Public Private Partnerships (P3) in Rhode Island. This year we will also be holding two technical sessions! Ocean State Signal will be providing a training session on transitioning to ATC. Additionally, VHB, MassDOT, RIDOT, and Louis Berger will be hosting a round-table discussion on Adaptive Signal Systems! We look forward to seeing many of you there.

Welcome to the Newest ITE New England Section Members
Total NEITE Membership: 628 persons

Kevin Danh (Connecticut Department of Transportation)
Siuyan Cao
Russell P. Isler (Toole Design Group, LLC)
Thomas C. Houston (PSC)
Jennifer Newton (University of Connecticut)
Katherine Patch (Fuss & O'Neill)
Can Wu (University of Massachusetts Amherst)
Ayushi Gupta (University of Massachusetts)
Anthony Michael Alamia (Boston University)
Danah Hamzeh (TEC, Inc.)
Jingyue Zhang (University of Connecticut)
Stephen Michna (University of Connecticut)
John Robert Deskaivich (Fuss & O'Neill)
Robert Brisson (University of Massachusetts)
Odara Vanessa Cole (Northeastern University)
Ryan Proctor (Ducharme and Dillis Civil Design Group)
Rekha Korlipara (Fuss & O'Neill, Inc.)
Yuanchang Xie (University of Massachusetts Lowell)
Lawrence Murphy
Linda C. Greer (Fuss & O'Neill)

Professional Services Directory

Vermont State Chapter
Chapter President: Jennifer Conley, PE, PTOE

RIITE with the NEITE Emerging Professionals Group hosted a presentation and site walk of the new I-295 interchange at Route 5 (Greenville Avenue) in Johnston, Rhode Island. There were approximately 25 attendees present who enjoyed a presentation on the project that was sparked by the development of new Citizens Bank headquarters just to the northwest of the interchange. The presentation was followed by a site walk to observe the new interchange during the evening peak hour. Afterward, drinks and appetizers were enjoyed at the Thirsty Beaver Pub.

RIITE's Annual Joint Meeting with the New England Section of ITE will be held on Thursday, November 8th, 2018 at the Providence Marriott. This year we are pleased to announce RIDOT Director Peter Alviti, P.E., along with Kelly Coates from Carpinato Group, LLC as our keynote speakers to discuss Public Private Partnerships (P3) in Rhode Island. This year we will also be holding two technical sessions! Ocean State Signal will be providing a training session on transitioning to ATC. Additionally, VHB, MassDOT, RIDOT, and Louis Berger will be hosting a round-table discussion on Adaptive Signal Systems! We look forward to seeing many of you there.
The New England Chronicle

Professional Services Directory

Gillon Associates
Civil & Transportation Engineering
John T. Gillon, P.E.

e-mail: jt.gillon@comcast.net

111 River Street
Weymouth, MA 02191-2104

TETRA TECH
Delivering innovative transportation focused infrastructure & safety solutions

Road/Intersection Safety Audits
Traffic Signal Systems/ITS
Complete Streets

Chris Cahoon, PE, Vice President
130 Nokomis Road, Marlborough, MA 01752
508-794-2241 | chris.cahoon@techtet.com | 47, www.techtet.com

Safe, efficient, sustainable multimodal solutions
ITS Planning and Deployment
Traffic Engineering
Advance Traffic Management Services
Transportation Planning
Traffic Signal Design
Advanced Communication Systems
Traffic Operations Centers

www.vhb.com

The Engineering Corp.

Plan | Permit | Design | Construct

50 Unicorn Park Drive
Woburn, MA 01801
781-992-1792

We know the people. We know the process. Get the results you expect.

- Bridge Engineering
- Traffic Engineering
- Transportation Planning
- Highway/Design
- Civil Engineering
- Structural Engineering
- Environmental Mitigation and Permitting
- Public/Private Partnerships
- Land Surveying

More than 10 years of serving state, local, and private clients.
How can we be of service to you?

www.baysideengineering.com

SAFETY AUDITS
COMPLETE STREETS PLANNING
ROUNDABOUT & SIGNAL DESIGN
ACCESS MANAGEMENT STUDIES

GREEN INTERNATIONAL AFFILIATES, INC.

www.greenintl.com

Employment Opportunities

Do you want to work in an area known for its food, music, night life, culture, and outdoor adventures? If so, come join us at Gorrill Palmer. We are seeking a talented and career minded individual to work in the fast paced Transportation Planning Group at our corporate office located in South Portland, Maine as a Project Manager / Senior Project Engineer. Candidates will have the opportunity to work on a wide range of projects in the New England area.

Project Manager/Senior Project Engineer—Transportation Planning
South Portland, Maine

Applicant must be knowledgeable in the principles and practices of transportation planning and engineering. The primary focus of the knowledge shall be with the latest designs and technology of traffic impact and access studies, traffic signal operations and intersection design using cutting edge technology such as Adaptive Traffic Controllers, computer modeling using the latest version of software such as Synchro / SimTraffic Version 10, parking and corridor studies using modern techniques such as shared parking, and traffic control plans to support our construction groups.

As an essential member of the Transportation Planning Group, the successful candidate will be responsible for managing projects, budgets, and design engineers. Leading the design and development of signal plans, specifications and estimates as well as managing and directing

Looking for a resource to improve your network connections? Willing to share your industry experiences to help guide young engineers? Let the NEITE Emerging Professionals Group help!

Looking for a resource to improve your network connections? Willing to share your industry experiences to help guide young engineers? Let the NEITE Emerging Professionals Group help!

Now accepting mentor and mentee applicants for the program’s 2nd year! Apply here using our Google Form or in-person at the NEITE Annual Meeting in Warwick, Rhode Island. Application deadline December 31, 2018.

For Detailed Employment Opportunity Information, please visit: http://neite.org/job-opportunities/
Employment Opportunities

VHB’s passionate professionals include engineers, scientists, planners, and designers who partner with public and private clients in the transportation, real estate, institutional, and energy industries, as well as federal, state, and local governments.

Together, we work to improve mobility, enhance communities and economic vitality, and balance development and infrastructure needs with environmental stewardship.

Transportation/Traffic Engineer
Wethersfield, Connecticut

VHB’s growing Wethersfield, CT office is seeking a Transportation/Traffic Engineer to join our Transportation Systems group team and work with energetic and ambitious team members on exciting projects in the southern New England area. The selected candidate will work on a variety of exciting public, private and institutional projects within broad cross-section of markets, including municipal, state agencies, higher education, federal lands and aviation.

Responsibilities
- Work under a senior project manager on a variety of projects and tasks
- Design and analysis of urban traffic signal systems
- Prepare traffic impact, corridor and intersection improvement studies
- Manage time and junior level staff on projects
- Work with a team of professionals in a variety of transportation-related areas to develop multi-modal mobility solutions which consider all users integrating Complete Street concepts within urban and suburban communities
- Design of transportation engineering and planning projects
- Conduct multi-modal transportation analyses
- Prepare traffic impact, parking, transit, corridor and intersection improvement studies
- Conduct research and preparation of reports, and presenting findings and results to clients

Skills and Abilities
- Excellent verbal, written and interpersonal communication skills
- Team oriented with strong capability to work independently
- Motivated to lead and mentor others
- Ability to think critically and strategically

Qualifications
- BS in Civil Engineering or related field
- 5+ years of civil/transportation engineering and planning experience
- Synchro and HCS experience required
- Experience with PTV VISSIM a plus
- Experience with AutoCAD a plus
- Licensed Professional Engineer preferable

Traffic Engineer
Watertown, Massachusetts

VHB’s growing Watertown, MA office is looking for a mid-level Transportation/Traffic Engineer to join our Transportation group. The selected candidate will work with a team of transportation planners and engineers on a variety of public, private and institutional projects within broad cross-section of markets, including municipal, state agencies, higher education, federal lands and aviation.

Responsibilities
- Work with a team of professionals in a variety of transportation-related areas to develop mobility solutions which consider all users integrating Complete Street concepts within urban and suburban communities
- Design of transportation engineering and planning projects
- Conduct multi-modal transportation analyses
- Prepare traffic impact, parking, transit, corridor and intersection improvement studies
- Conduct research and preparation of reports, and presenting findings and results to clients

Skills and Abilities
- Excellent verbal, written and interpersonal communication skills
- Team oriented with strong capability to work independently
- Ability to think critically and strategically

Qualifications
- BS in Civil Engineering or related field
- 5+ years of civil/transportation engineering and planning experience
- Synchro and HCS experience required
- Experience with PTV VISSIM a plus
- Experience with AutoCAD a plus
- Licensed Professional Engineer preferable

For Detailed Employment Opportunity Information, please visit: [http://neite.org/job-opportunities/](http://neite.org/job-opportunities/)
Call for Abstracts

2018 ITE New England Section Annual Meeting – December 3rd
Crowne Plaza Warwick, RI

The 2018 NEITE Annual Meeting will be including a student poster session. We invite all undergraduate, graduate students and recent graduates to submit an abstract (250 word limit) describing their transportation related research.

This is a great opportunity to showcase your research, network and meet potential employers.

Please submit abstracts to Abstracts.NEITE@gmail.com

Abstracts are due by November 12th.

VHB Contributing Staff
Rachel Dooley, PE, PTOE
Jennifer Allen

Special thanks to:
Lisa Rutherford,
Ocean State Signal Co.