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Estimation of Winter Snow Operation Performance Measures with Traffic Flow Data, Phase 2

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August 2015

Research Project
Final Report 2015-44

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16. Abstract (Limit: 250 words)

An automatic process is developed to determine the normal condition regain time (NCRT) using the traffic flow data for a given snow event. To reflect the different traffic flow behavior during day and night time periods, two types of the normal conditions are defined for each detector station. The normal condition for day time is defined with the average speed-density patterns under dry weather conditions, while the time-dependent average speed patterns are used for representing night time periods. In particular, the speed-density functions for the speed recovery and reduction periods were calibrated separately for a given location to address the well-known traffic hysteresis phenomenon. The resulting NCRT estimation process determines the NCRT as the time when the speed level on a given snow day recovers to the target level of the normal recovery speed at the corresponding density for the day time periods. The sample application results with the snow routes in Twin Cities, Minnesota, show the promising possibilities for the estimated NCRT values to be used as the reliable operational measures, which could address the subjectivity and inconsistency issues associated with the current bare-lane regain times determined through visual inspections.

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Estimation of Winter Snow Operation Performance Measures with Traffic Flow Data, Phase 2

Final Report

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EXECUTIVE SUMMARY

The capability to accurately and reliably estimate traffic conditions during snow events is of critical importance in improving the efficiency and effectiveness of winter maintenance strategies at the Minnesota Department of Transportation. Phase 1 of this research studied the feasibility of applying traffic-flow data by analyzing the variation process of the traffic speed and developed a prototype process to determine speed-recovery times for given snow events. The current research, Phase 2, expands this effort and develops a traffic-data-based alternative measure that can be automatically estimated with the traffic-flow data from the existing detectors on a freeway network. First, a comparative analysis was conducted with the traffic data collected under normal and snow conditions. The findings from this analysis include:

- Under normal dry weather conditions, the speed-density (u-k) relationship show clear and consistent patterns at a same location depending on the direction of the speed changes, i.e., speed reduction or recovery, while the specific shape of the u-k patterns can vary from station to station.
- This indicates it's feasile to determine a normal u-k pattern for a given location from the historical data depending on the direction of the speed changes, i.e., a normal reduction or recovery u-k pattern.
- The traffic data plots during snow events show significantly different patterns from those under normal dry weather conditions. The detailed analysis of the traffic patterns during the snow recovery periods indicates the u-k variations are substantially affected by road surface conditions, traffic demand level, and the snow plowing operations. In particular, it can be clearly observed that the data points in the u-k plane during the snow recovery periods are moving toward the normal day recovery u-k patterns.
- By comparing the u-k patterns during a snow event and those during the normal weather condition, it can be possible to identify the recovery status of the traffic flow at a given location.

Based on the above findings, the Normal Condition Regain Time (NCRT) is determined as the alternative measure for the snow maintenance operations. Further, a three-section piecewise functional relationship for the speed-density patterns during the speed reduction and recovery periods are identified to represent the normal condition for a given location, and an efficient process to calibrate the parameters of those functions was developed. Also, the average speed patterns during the night-time periods are identified for each detector station, since the night-time speed-density patterns are substantially different from those during day-time periods. Using those speed-density functions and the time-variant night-time average speeds as the normal traffic-flow patterns, an automatic process is developed to estimate the NCRT for the detector stations in the metro freeway network for selected snow events in 2014-15. Specifically, the time to reach 80% and 90% of the normal condition, NCRT-80 and NCRT-90, at the selected detector stations are determined for each corridor in the network. The estimation results are presented in a tablet and graphical format that can show the corridor-wide time-variant traffic conditions from the snow starting time to the normal condition regain time during a given snow event.

CHAPTER 1: INTRODUCTION

1.1 Background and Research Objectives

The capability to accurately and reliably estimate the traffic conditions during the snow events is of critical importance in improving the efficiency and effectiveness of the winter maintenance strategies at the Minnesota Department of Transportation. While the traffic flow data from the field detectors have been widely used for traffic operations, the research effort of applying traffic data to measure the performance levels of winter snow operations is still in its infancy. The literature search conducted in Phase 1 of this research has found out that the 'Time to bare pavement' is the most commonly used measure by the state DOTs for quantifying winter snow operations (1-5). However, it has been also noticed that no state DOT is directly applying traffic flow data to determine 'the time to bare pavement'. To be sure, most state DOTs, at this point, are relying on the visual inspection of the field crew in determining the bare pavement recovery times, whose estimates can have the inherent limitations because of the subjectivity and the inconsistency of human-based measurements.

Phase 1 of this research has studied the feasibility of applying traffic flow data by analyzing the variation process of the traffic speed and developing a prototype process to determine the speed-recovery times for given snow events was developed. The current research, Phase 2, expands this effort and develops a traffic-data based alternative measure that can be automatically estimated with the traffic flow data from the existing detectors on a freeway network. The main objectives of the current research include:

- Analysis of the traffic flow patterns during snow events under normal and snow conditions,
- Development of traffic data-based alternative measures and estimation process for snow maintenance operations.

Example application of the estimation process to the entire corridors in the metro freeway network for the selected snow events.

1.2 Report Organization

Chapter 2 collects the comprehensive data sets for two selected snow routes in the metro freeway network for both normal and snow conditions in 2012-14 winter seasons. The results from the comparative analysis of the collected data, focusing on the traffic flow patterns in the speed-density plane under different weather conditions, are also included in Chapter 2. Chapter 3 develops the traffic-data based alternative measures for snow operations. Further, the process to estimate those measures on the entire corridors in the metro freeway network is also developed and applied to the selected snow events in Chapter 3. Finally Chapter 4 presents the conclusions.

CHAPTER 2: DATA COLLECTION AND COMPARATIVE ANALYSIS OF TRAFFIC FLOW PATTERNS DURING NORMAL AND SNOW CONDITIONS

2.1 Collection of Traffic Flow and Snow Maintenance Data from Sample Snow Routes

Figure 2.1.1 shows the two sample snow routes selected for this study in cooperation with the Metro District, Minnesota Department of Transportation (MnDOT). The selected routes are:

1) TP9F35E1 – 694 & 35E
2) TP9F0941 – 94 & 52

The locations of the traffic flow detectors on each route are also shown in Figure 2.1.1.

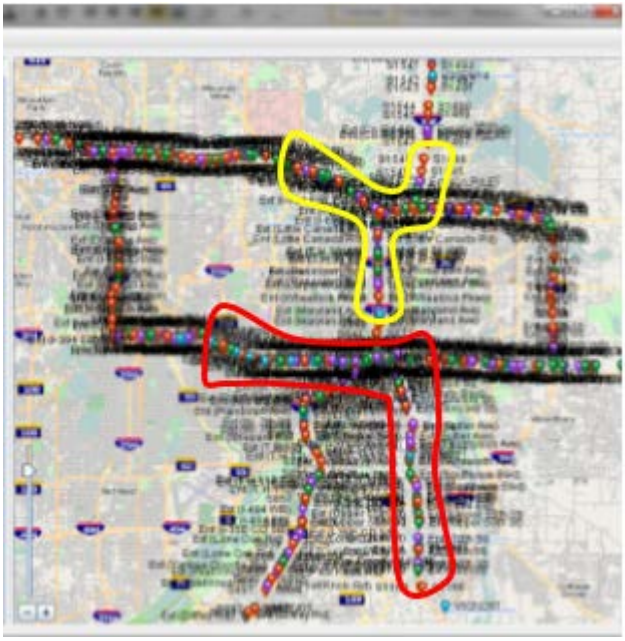


Figure 2.1.1: Two Sample Snow Routes used for Data Collection

First, using the weather data from the MnDOT's Road Weather Information System (RWIS), a set of the dry normal days in the 2012-13 winter season were identified. Figure 2.1.2 shows the MnDOT's SCANWEB site (http://rwis.dot.state.mn.us), where the historical road weather information can be accessed through its export pages. In this study, an interface is developed between the SCANWEB site and the TICAS (Traffic Information and Condition Analysis System) to read/download the road weather information collected from each RWIS sensor. Specifically, the interface accesses the information on the following export pages of the SCANWEB site:

- Surface History: http://rwis.dot.state.mn.us/scanweb/SfPcHistoryExp.asp
- Precipitation History: http://rwis.dot.state.mn.us/scanweb/PcHistoryExp.asp

- Atmospheric History: http://rwis.dot.state.mn.us/scanweb/AtmosOnlyHistoryExp.asp

Further, a process to automatically identify the nearest RWIS sensors for a given traffic detector was also developed and incorporated into the interface module, which downloads and saves the road weather data appropriate for the given traffic detectors in the local database for future reference.

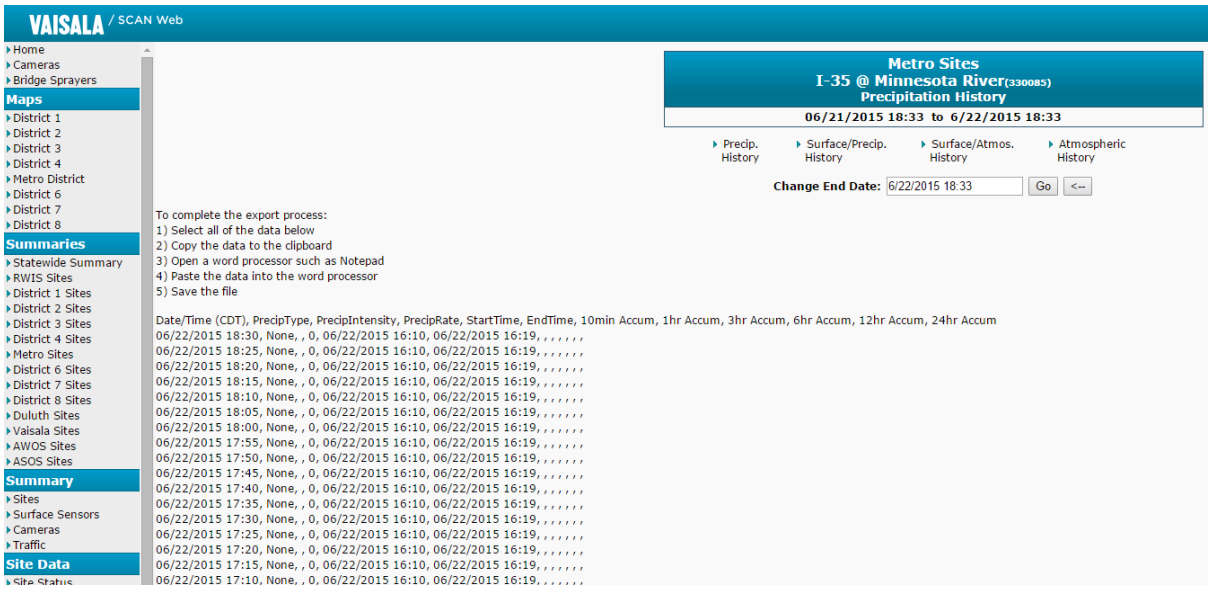


Figure 2.1.2: Sample Screen Shot of SCANWEB

The list of the dry normal days identified from the RWIS database for this study is shown in Table 2.1.1. For each day in this list, the traffic flow data, i.e., flow rate, speed and density, from all the detector stations on the sample two routes were collected using TICAS every 5-minute from 5:00 a.m. until 10:00 p.m. The collected data are used in the next section to analyze the traffic patterns under normal weather conditions.

Table 2.1.1: Normal Dry Days Selected for Data Collection

Month	Normal Dry Dates
12/2012	1, 2, 8, 11, 12, 13, 14, 17, 18, 21, 22, 25, 26, 29, 30
1/2013	1, 5, 6, 7, 14, 15, 17, 20, 21, 22, 24, 25, 26, 30
2/2013	15, 16, 17, 19, 20, 21, 24, 27, 28
3/2013	1, 2, 3, 11, 12, 13, 17, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 31
4/2013	8, 20, 27, 29

Snow Event Data and Traffic Flow Data during Snow Events

Table 2.1.2 and 2.1.3 include the list of the snow events and the maintenance data, including the snow start/end and the lane lost/regain times for each event, provided by the Metro District, MnDOT, for the 2012-13 winter season. In this study, for each snow event, a set of the traffic flow data were collected every 5-minute from all the detector stations on those two sample routes. The traffic data during each snow event were analyzed in the following section. Further, a set of the MnDOT CCTV screen shots showing the pavement conditions during the selected snow event were captured and stored. Figure 2.1.3 includes those screen captures on the I-694 and I-35E locations for the event on March 5, 2013. The road surface condition information captured from the screen shots are compared later with the traffic flow data and reported lane-regain times.

Table 2.1.2: 2 Snow Event Data on TP9F35E1

Plow Route		Weather Cond	Event Begin Date	Event End Date	Event Duration	Lane Lost Date	Lane Regain Date	Lost Duratio	Recovery Hours	Comments
TP9F35E1	I35E 105.784-115.742			SC						
		SNOW	12/07/2012 3:00 PM	12/08/2012 1:00 AM	10.0					
		SNOW	12/09/2012 12:00 AM	12/10/2012 1:00 AM	25.0	12/09/2012 2:30 AM	12/10/2012 4:00 AM	25.5	3.0	
		SNOW	12/24/2012 5:00 AM	12/24/2012 8:00 AM	3.0					
		SNOW	12/27/2012 3:00 PM	12/28/2012 11:30 AM	20.5	12/28/2012 12:00 AM	12/28/2012 8:00 AM	8.0	0.0	
		SNOW	01/02/2013 9:00 AM	01/02/2013 12:00 PM	3.0					LT SNOW
		SNOW	01/02/2013 9:00 AM	01/02/2013 12:00 PM	3.0					LT SNOW
		SNOW	01/13/2013 6:00 AM	01/13/2013 4:10 PM	10.2					LT SNOW
		SNOW	01/16/2013 3:00 AM	01/16/2013 7:00 AM	4.0	01/16/2013 5:30 AM	01/16/2013 6:45 AM	1.3	0.0	LT SNOW
		SNOW	01/23/2013 2:00 AM	01/23/2013 5:30 AM	3.5	01/23/2013 3:00 AM	01/23/2013 5:00 AM	2.0	0.0	SNOW
		SNOW	01/27/2013 1:00 PM	01/27/2013 11:00 PM	10.0	01/27/2013 3:00 PM	01/27/2013 11:00 PM	8.0	0.0	LT SNOW
		SNOW	02/01/2013 4:15 PM	02/02/2013 1:30 AM	9.3	02/01/2013 5:45 PM	02/02/2013 3:00 AM	9.3	1.5	
		SNOW	02/01/2013 4:15 PM	02/02/2013 1:30 AM	9.3	02/01/2013 5:45 PM	02/02/2013 3:00 AM	9.3	1.5	LT SNOW
		SNOW	02/02/2013 5:50 PM	02/03/2013 1:00 AM	7.2					
		SNOW	02/02/2013 5:50 PM	02/03/2013 1:00 AM	7.2					
		SNOW	02/03/2013 5:45 PM	02/04/2013 3:00 AM	9.3	02/03/2013 10:00 PM	02/04/2013 12:30 AM	2.5	0.0	LT SNOW
		SNOW	02/03/2013 5:45 PM	02/04/2013 3:00 AM	9.3	02/03/2013 10:00 PM	02/04/2013 12:30 AM	2.5	0.0	
		SNOW	02/04/2013 10:00 PM	02/05/2013 12:45 AM	2.8	02/04/2013 11:45 AM	02/05/2013 2:00 AM	14.3	1.3	
		SNOW	02/04/2013 10:00 PM	02/05/2013 12:45 AM	2.8	02/04/2013 11:45 PM	02/05/2013 2:00 AM	2.3	1.3	SNOW
		SNOW	02/04/2013 10:00 AM	02/05/2013 12:45 AM	14.8	02/04/2013 11:45 PM	02/05/2013 2:00 AM	2.3	1.3	
		SNOW	02/05/2013 4:50 AM	02/05/2013 6:15 AM	1.4					
		SNOW	02/05/2013 4:50 AM	02/05/2013 6:15 AM	1.4					
		SNOW	02/05/2013 4:50 AM	02/05/2013 6:15 AM	1.4					SNOW
		SNOW	02/10/2013 4:00 AM	02/10/2013 4:45 AM	0.8					
		SNOW	02/10/2013 4:00 AM	02/10/2013 4:45 AM	0.8					
		SNOW	02/10/2013 10:00 AM	02/10/2013 2:00 PM	4.0	02/10/2013 10:30 AM	02/10/2013 3:00 PM	4.5	1.0	RAIN SNOW
		SNOW	02/10/2013 9:45 AM	02/10/2013 2:00 PM	4.3	02/10/2013 10:00 AM	02/10/2013 3:00 PM	5.0	1.0	
		SNOW	02/10/2013 9:45 AM	02/10/2013 2:00 PM	4.3	02/10/2013 10:00 AM	02/10/2013 3:00 PM	5.0	1.0	
		SNOW	02/10/2013 9:00 PM	02/11/2013 3:00 AM	6.0					
		SNOW	02/10/2013 9:00 PM	02/11/2013 3:00 AM	6.0					
		SNOW	02/10/2013 9:00 PM	02/11/2013 3:00 AM	6.0					LT SNOW
		SNOW	02/13/2013 8:00 PM	02/14/2013 3:30 AM	7.5	02/14/2013 12:00 AM	02/14/2013 4:30 AM	4.5	1.0	
		SNOW	02/13/2013 8:00 PM	02/14/2013 3:30 AM	7.5	02/14/2013 12:00 AM	02/14/2013 4:30 AM	4.5	1.0	
		SNOW	02/22/2013 1:00 AM	02/22/2013 11:15 AM	10.3	02/22/2013 2:30 AM	02/22/2013 10:30 AM	8.0	0.0	
		SNOW	02/22/2013 1:00 AM	02/22/2013 11:15 AM	10.3	02/22/2013 2:30 AM	02/22/2013 10:30 AM	8.0	0.0	
		SNOW	03/04/2013 7:05 AM	03/05/2013 7:45 PM	36.7	03/04/2013 9:00 PM	03/05/2013 12:00 AM	3.0	0.0	
		SNOW	03/14/2013 3:45 AM	03/14/2013 9:00 AM	5.3	03/14/2013 5:15 AM	03/14/2013 9:30 AM	4.3	0.5	
		SNOW	03/15/2013 4:30 PM	03/15/2013 11:00 PM	6.5	03/15/2013 7:30 PM	03/15/2013 11:00 PM	3.5	0.0	
		SNOW	03/15/2013 4:30 PM	03/16/2013 12:00 AM	7.5	03/15/2013 12:00 PM	03/16/2013 1:00 AM	13.0	1.0	
		SNOW	03/18/2013 4:30 AM	03/18/2013 5:00 PM	12.5	03/18/2013 5:00 AM	03/18/2013 12:00 PM	7.0	0.0	
		SNOW	04/18/2013 11:00 AM	04/19/2013 2:00 AM	15.0	04/18/2013 1:00 AM	04/19/2013 5:00 AM	28.0	3.0	
		SNOW	04/22/2013 5:30 PM	04/23/2013 2:30 AM	9.0	04/22/2013 9:00 PM	04/23/2013 4:00 AM	7.0	1.5	
TOTAL FOR SC, TP9F35E1				**41** events	**327.92**			**192.3**	**20.8**	

Table 2.1.3: Snow Event Data on TP9F0941

Plow Route		Weather Cond	Event Begin Date	Event End Date	Event Duration	Lane Lost Date	Lane Regain Date	Lost Duratio	Recovery Hours	Comments
TP9F0941	I-94 236.319-246.150			SC						
		SNOW	12/07/2012 3:00 PM	12/08/2012 1:00 AM	10.0					
		SNOW	12/09/2012 12:00 AM	12/10/2012 1:00 AM	25.0	12/09/2012 2:30 AM	12/10/2012 3:00 AM	24.5	2.0	
		SNOW	12/24/2012 5:00 AM	12/24/2012 8:00 AM	3.0					
		SNOW	12/27/2012 3:00 PM	12/28/2012 11:30 AM	20.5	12/27/2012 10:30 PM	12/28/2012 3:30 AM	5.0	0.0	
		SNOW	01/02/2013 9:15 AM	01/02/2013 11:40 AM	2.4					LT SNOW
		SNOW	01/13/2013 6:00 AM	01/13/2013 4:05 PM	10.1					LT SNOW
		SNOW	01/16/2013 3:15 AM	01/16/2013 7:15 AM	4.0	01/16/2013 5:45 AM	01/16/2013 6:30 AM	0.8	0.0	LT SNOW
		SNOW	01/18/2013 1:00 AM	01/18/2013 5:00 AM	4.0					LT SNOW
		SNOW	01/18/2013 1:00 AM	01/18/2013 5:00 AM	4.0					LT SNOW
		SNOW	01/23/2013 3:30 AM	01/23/2013 6:00 AM	2.5	01/23/2013 3:30 AM	01/23/2013 5:00 AM	1.5	0.0	SNOW
		SNOW	01/27/2013 1:00 PM	01/28/2013 12:00 AM	11.0	01/27/2013 3:00 PM	01/28/2013 1:00 AM	10.0	1.0	LT SNOW
		SNOW	02/01/2013 4:10 PM	02/02/2013 1:25 AM	9.3	02/01/2013 5:30 PM	02/02/2013 4:30 AM	11.0	3.1	LT SNOW
		SNOW	02/01/2013 4:10 PM	02/02/2013 1:25 AM	9.3	02/01/2013 5:50 PM	02/02/2013 4:30 AM	10.7	3.1	
		SNOW	02/02/2013 5:50 PM	02/03/2013 1:00 AM	7.2					
		SNOW	02/02/2013 5:50 PM	02/03/2013 1:00 AM	7.2					
		SNOW	02/03/2013 6:00 PM	02/04/2013 3:30 AM	9.5	02/03/2013 11:00 PM	02/04/2013 1:30 AM	2.5	0.0	
		SNOW	02/03/2013 8:00 PM	02/04/2013 3:30 AM	7.5	02/03/2013 11:00 PM	02/04/2013 1:30 AM	2.5	0.0	LT SNOW
		SNOW	02/04/2013 10:00 PM	02/05/2013 12:45 AM	2.8	02/04/2013 11:30 AM	02/05/2013 2:00 AM	14.5	1.3	
		SNOW	02/04/2013 10:00 PM	02/05/2013 12:45 AM	2.8	02/04/2013 11:45 PM	02/05/2013 2:00 AM	2.3	1.3	SNOW
		SNOW	02/04/2013 10:00 AM	02/05/2013 12:45 AM	14.8	02/04/2013 11:30 PM	02/05/2013 2:00 AM	2.5	1.3	
		SNOW	02/05/2013 4:50 AM	02/05/2013 6:15 AM	1.4					SNOW
		SNOW	02/05/2013 4:15 AM	02/05/2013 6:25 AM	2.2					
		SNOW	02/05/2013 4:15 AM	02/05/2013 6:25 AM	2.2					
		SNOW	02/10/2013 4:00 AM	02/10/2013 4:45 AM	0.8					
		SNOW	02/10/2013 10:00 AM	02/10/2013 2:15 PM	4.3	02/10/2013 10:30 AM	02/10/2013 1:30 PM	3.0	0.0	
		SNOW	02/10/2013 10:00 AM	02/10/2013 2:15 PM	4.3	02/10/2013 10:30 AM	02/10/2013 1:30 PM	3.0	0.0	RAIN SNOW
		SNOW	02/10/2013 10:00 AM	02/10/2013 2:15 PM	4.3	02/10/2013 10:30 AM	02/10/2013 1:30 PM	3.0	0.0	
		SNOW	02/10/2013 9:00 PM	02/11/2013 3:00 AM	6.0					
		SNOW	02/10/2013 9:00 PM	02/11/2013 3:00 AM	6.0					LT SNOW
		SNOW	02/10/2013 9:00 PM	02/11/2013 3:00 AM	6.0					
		SNOW	02/13/2013 9:15 PM	02/14/2013 3:30 AM	6.3					
		SNOW	02/13/2013 9:15 PM	02/14/2013 3:30 AM	6.3					
		SNOW	02/22/2013 1:00 AM	02/22/2013 10:15 AM	9.3	02/22/2013 3:00 AM	02/22/2013 11:00 AM	8.0	0.8	
		SNOW	02/22/2013 1:00 AM	02/22/2013 10:15 AM	9.3	02/22/2013 3:00 AM	02/22/2013 11:00 AM	8.0	0.8	
		SNOW	03/04/2013 7:00 AM	03/05/2013 7:55 PM	36.9	03/04/2013 9:00 PM	03/05/2013 11:00 AM	14.0	0.0	
		SNOW	03/14/2013 3:45 AM	03/14/2013 4:15 AM	0.5					
		SNOW	03/15/2013 4:30 PM	03/16/2013 12:00 AM	7.5	03/15/2013 12:00 PM	03/16/2013 1:00 AM	13.0	1.0	
		SNOW	03/18/2013 4:30 AM	03/18/2013 5:00 PM	12.5	03/18/2013 4:45 AM	03/18/2013 10:00 AM	5.3	0.0	
		SNOW	04/12/2013 12:30 AM	04/12/2013 2:30 AM	2.0	04/12/2013 12:30 AM	04/12/2013 2:30 AM	2.0	0.0	
		SNOW	04/12/2013 4:30 AM	04/12/2013 12:00 PM	7.5	04/12/2013 4:30 AM	04/12/2013 3:30 PM	11.0	3.5	
		SNOW	04/12/2013 4:30 AM	04/12/2013 12:30 PM	8.0	04/12/2013 5:30 AM	04/12/2013 10:45 AM	5.3	0.0	
		SNOW	04/18/2013 11:00 AM	04/19/2013 2:00 AM	15.0	04/18/2013 7:30 PM	04/19/2013 4:30 AM	9.0	2.5	

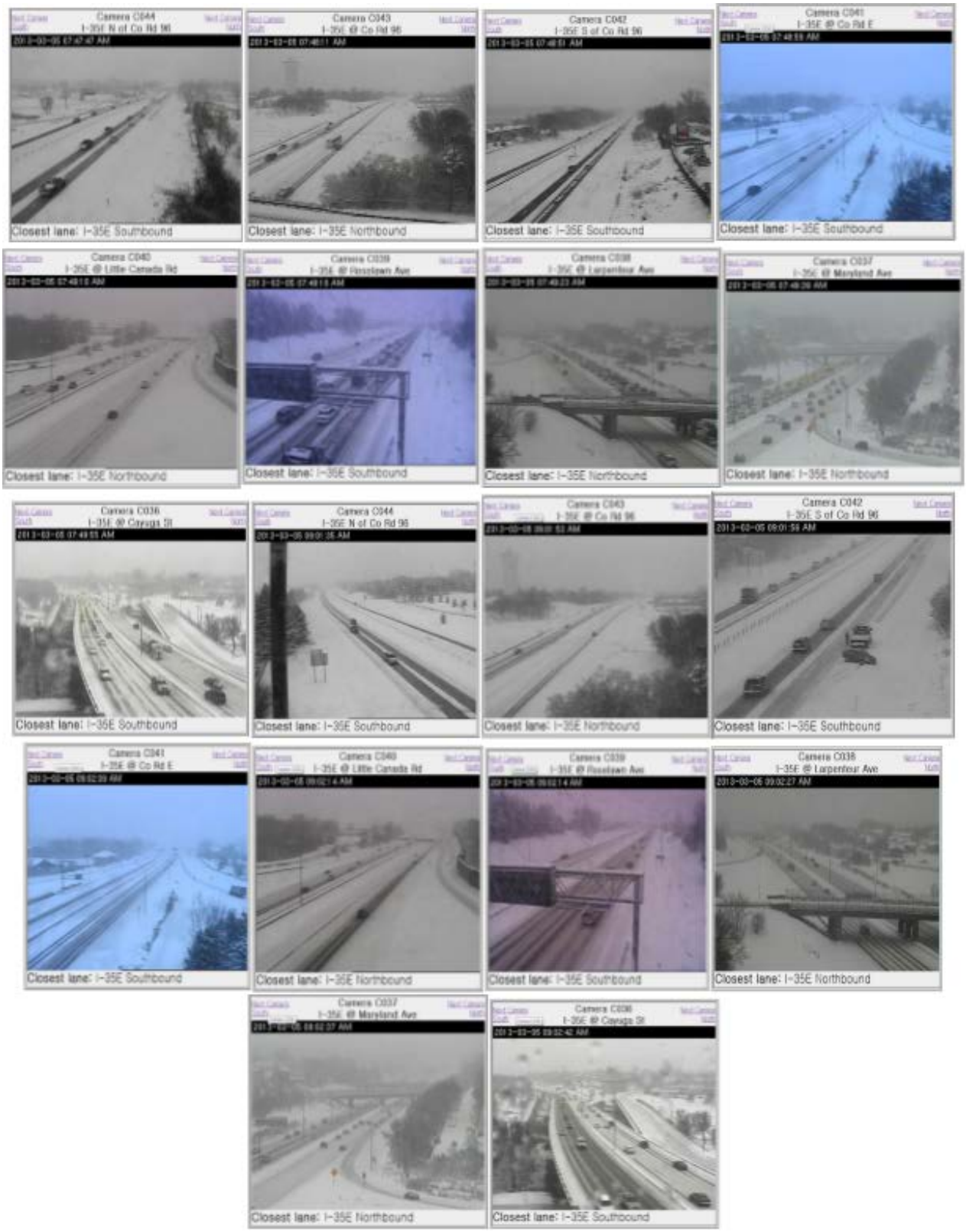


Figure 2.1.3: CCTV Screen Captures for I-35E Route on March 5, 2013

Figure 2.1.4: CCTV Screen Captures for I-694 Route on March 5, 2013

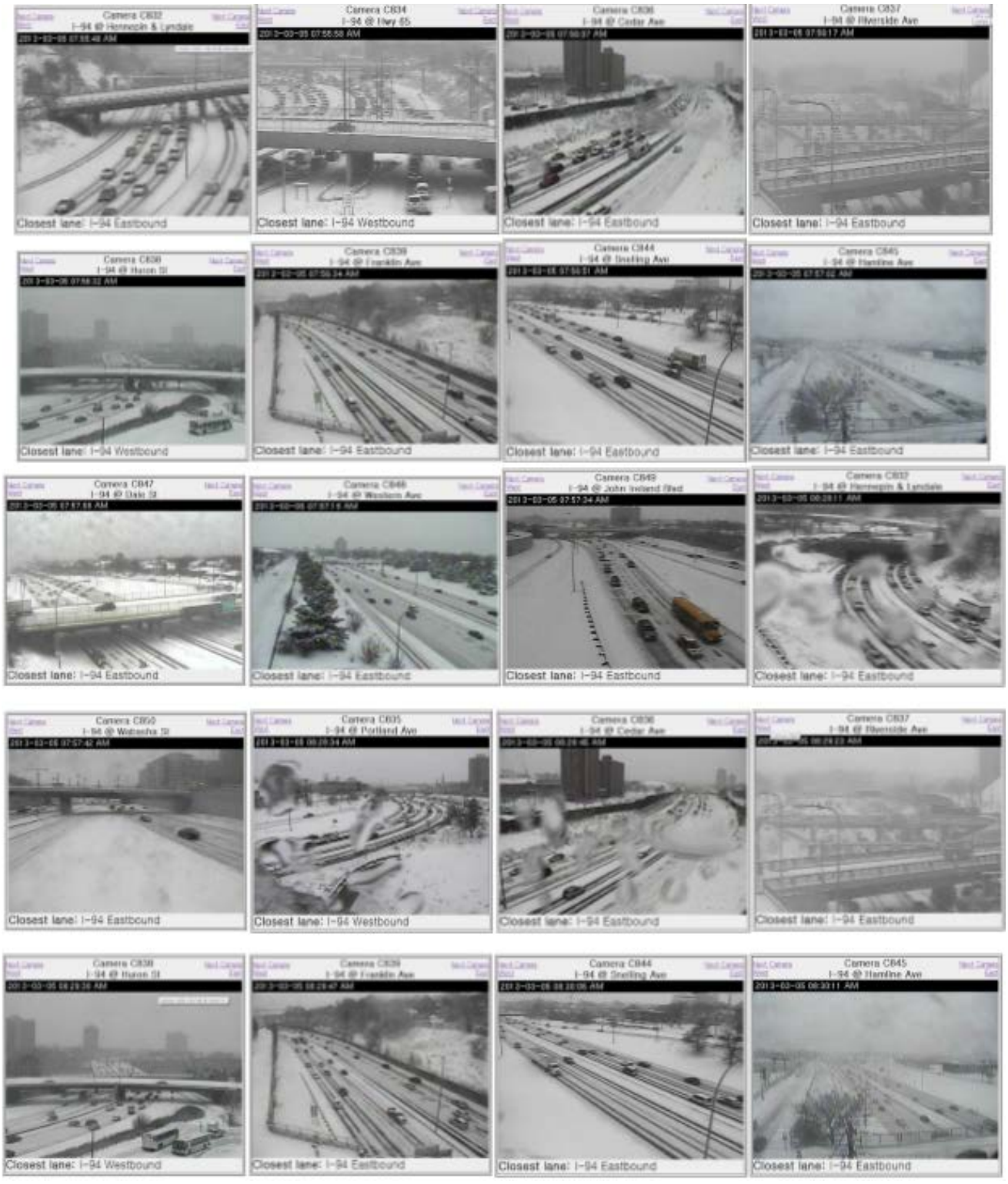


Figure 2.1.5: CCTV Screen Captures for I-94 Route on March 5, 2013

2.2 Analysis of Traffic Flow Patterns for Normal and Snow Days

In this section, the traffic flow data collected from the detectors on the sample snow routes are analyzed for both normal and snow conditions. Figure 2.2.1 shows the traffic flow patterns for 3 normal dry days at the Station 635 on the I-35E SB snow route. As noted in these figures, during normal days, the traffic flow exhibits consistently a common pattern in terms of the flow rate (q) – density (k) and the speed (u)-density (k) relationships. In particular, all 3 days clearly show the existence of the traffic hysteresis, i.e., the clock-wise loop pattern during the speed reduction/recovery periods in both q-k and u-k plots. The graphs in Figure 2.2.2 show the monthly q-k/u-k plots at the same station under the normal dry condition. As noted in these graphs, both q-k and u-k plots show the consistent patterns at a same location through time. Further, the q and u values with respect to a given k vary within certain boundaries that seem to be consistent over a 3-month period.

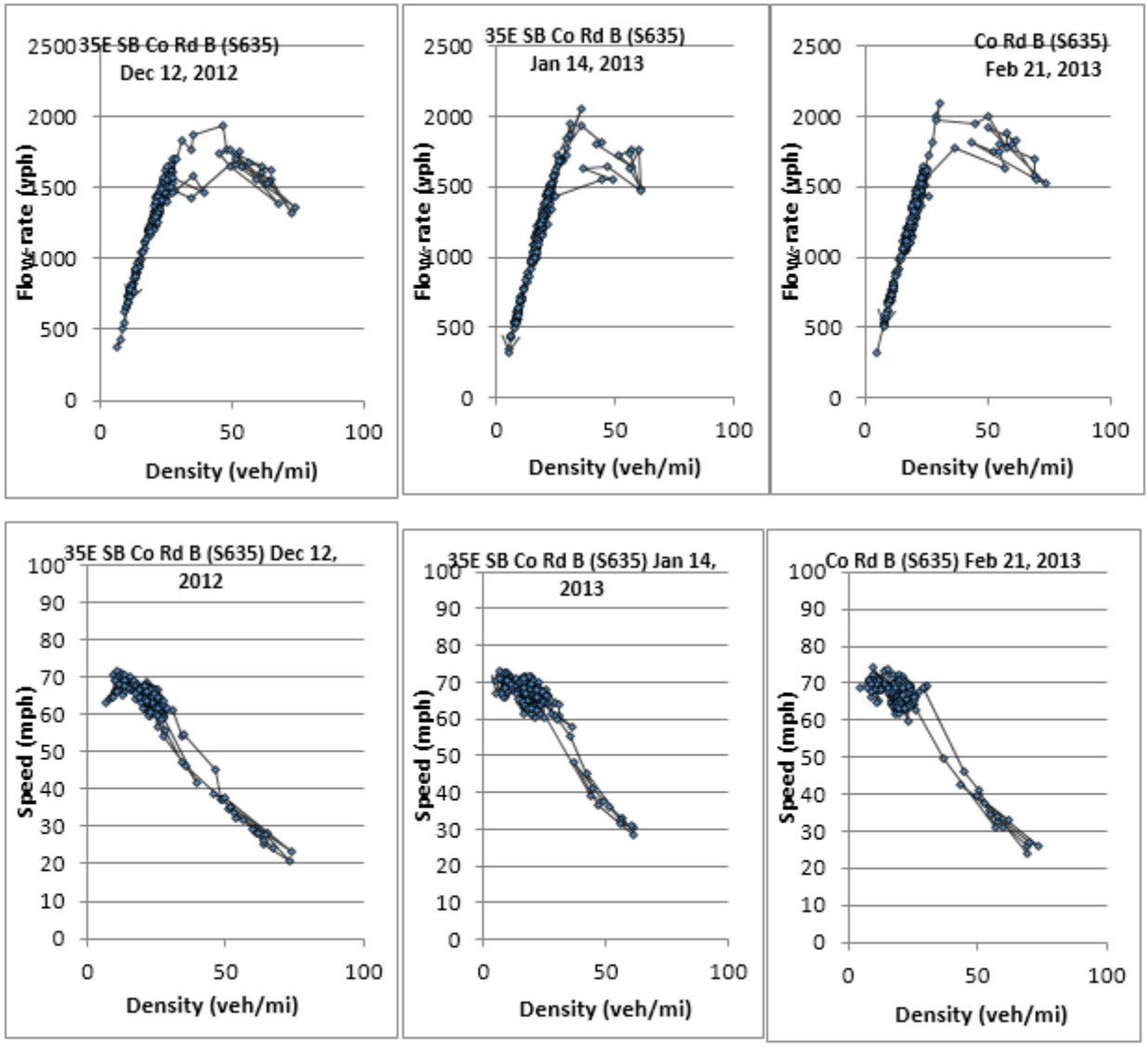


Figure 2.2.1: Typical Traffic Flow Patterns at a Station on Normal Dry Days (St 635 on 35E SB)

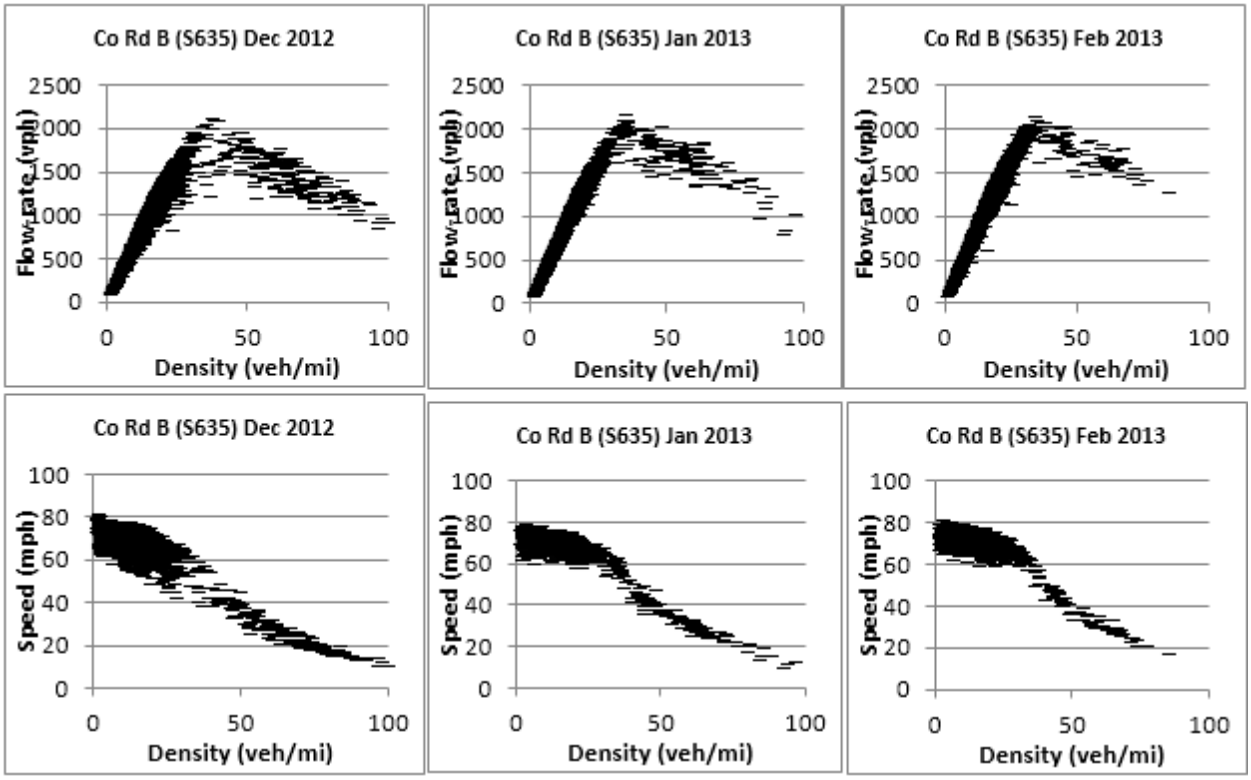


Figure 2.2.2: Monthly q-k and u-k plots for Normal Dry Days at St. 635

Figure 2.2.3 shows the section-wide average flow and speed variations over density for 3 normal dry days on the 35E SB snow route. It can be noted that the flow patterns on the section-wide q-k and u-k plots on the normal days exhibit the same features found from those at the Station 635, which is located on the same route.

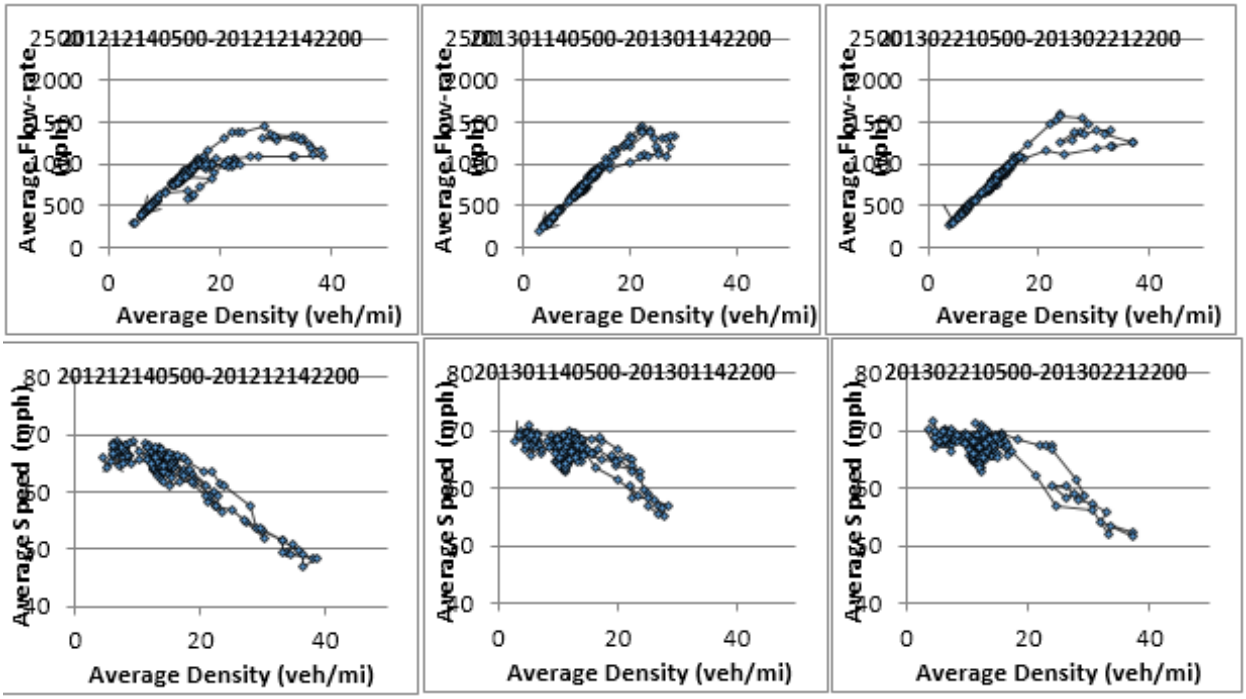


Figure 2.2.3: Typical Section-wide Average Traffic Flow Patterns on 3 Normal Days (35E SB Snow Route)

q-k and u-k relationships during snow events

Figures 2.2.3-5 show the q-k and u-k plots during 3 snow events in 2013 at the same location, i.e., Station 635 on I-35E SB. The reported bare-lane regain times are marked as the red-dots in those plots. In the speed-time and section-wide travel time graphs, the bare-lane regain times are denoted as the red lines. As indicated in these graphs, the q-k and u-k patterns show two distinct patterns, i.e., one under the normal weather condition before the snow started and the other during the snow event. It can be noted that the reported bare-lane regain time for each snow event is located near the point where the station speed level is recovered to approximately 80% of the average speed of the normal days at the same location. Further, the route-wide travel time at the reported bare-lane regain time is approximately 120% of the average travel time during the normal dry days.

The above traffic flow patterns under the normal and snow conditions are also noted with the data from the I-694 WB route. Figures 1.2.6-9 show the normal day traffic flow patterns as well as those during the snow events at Station 1083 and the I-694 WB snow route. As noted from the data at the I-35E route, the q-k/u-k graphs during snow events clearly show two different traffic patterns depending on the weather conditions and the reported bare-lane regain times are generally located in the transition region between those two flow patterns. The similarity of the station and section-wide q-k/u-k plots can also be seen with the I-694 WB data.

It can be further noted that the same type of the traffic hysteresis loop as shown in the q-k/u-k plots from the I-35E SB route is also observed from the station and section-wide q-k/u-k plots at I-694 WB route under the normal weather conditions. In particular, the daily station u-k plots clearly show the different

and consistent u-k variation patterns during the speed reduction and recovery periods, i.e., the speed levels during the recovery periods is consistently lower than those during the reduction periods. The u-k pattern difference between the speed reduction and recovery periods is consistently observed from the data collected from the multiple detectors, while the shape of the u-k variation patterns varies from the location to location.

Traffic Flow Patterns during Recovery Process

Figures 2.2.10-11 show two general recovery patterns in terms of the route-wide average speed and travel time variations through time. Figure 2.2.10 shows a typical case where the speed recovery only depends on the road surface conditions, i.e., due to the light traffic condition, the speed level is continuously recovered to the free-flow-speed, while Figure 2.2.11 shows the situation where the speed does not reach the posted speed-limit for some time after the bare-lane is regained because of the high traffic demand.

Next, the traffic flow patterns during the plowing operations were studied by analyzing the speed-density relationships during the snow plowing operations. Figures 1.2.12 includes the section-wide speed-density plots along with the CCTV screen shot captured during the plowing operation for the sample snow routes. The green dot in each speed-density plot indicates the data point corresponding to the particular time when the plow truck was observed through the CCTV. The green dot in each plot indicates the data point when the plow truck was spotted in each section.

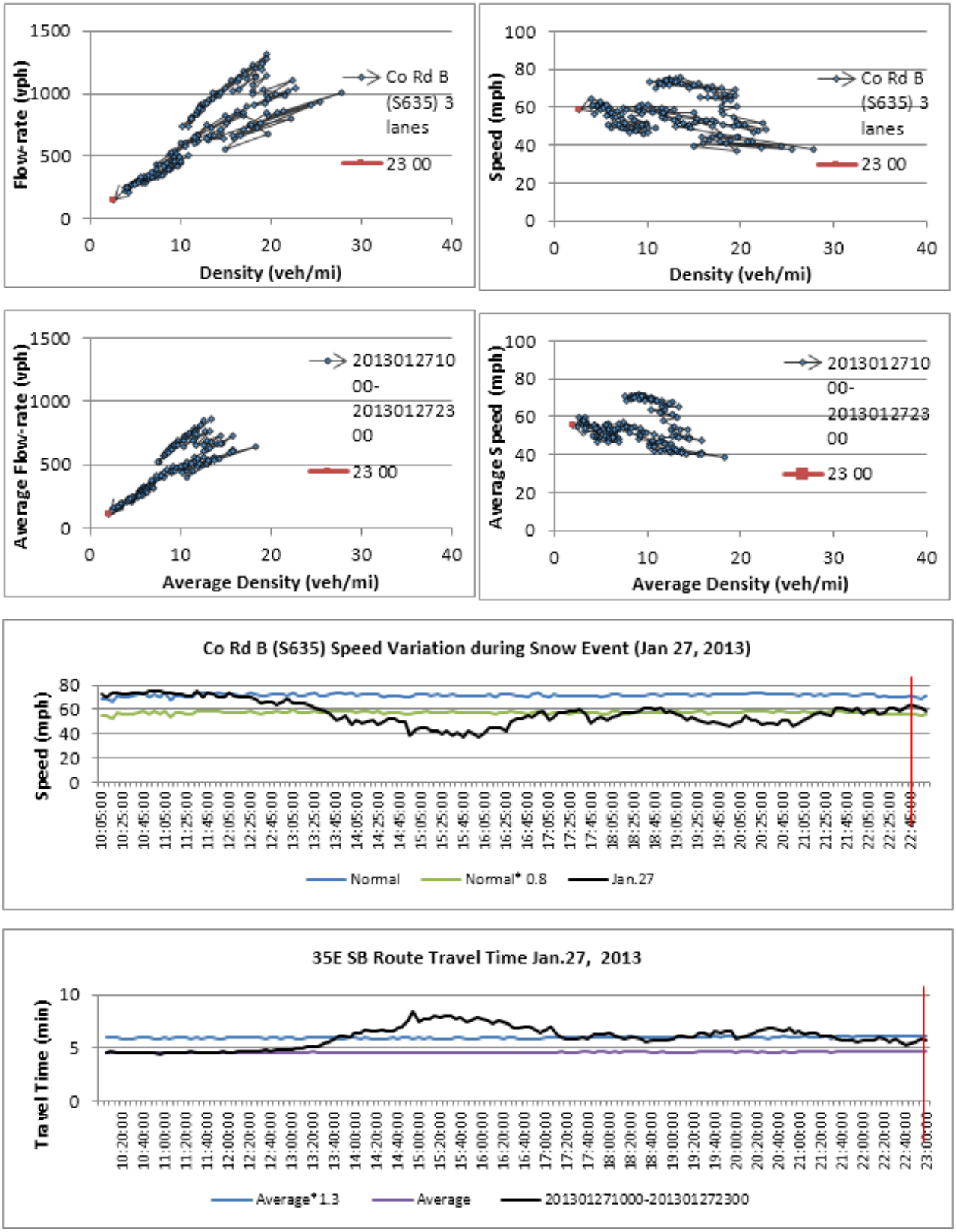


Figure 2.2.4: Traffic Flow Patters during Snow Event on Jan 27, 2013 (Station 635, I-35E SB)

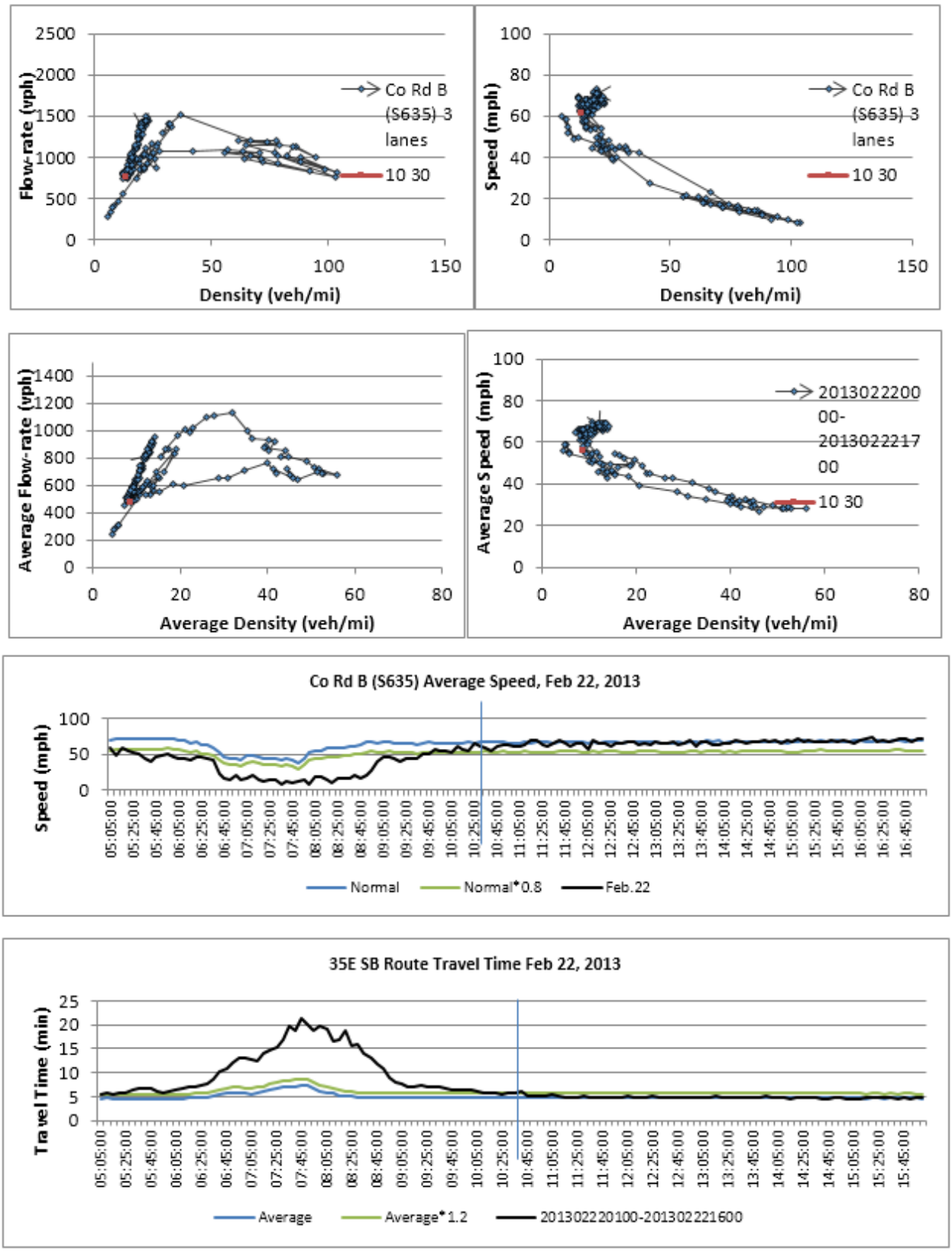
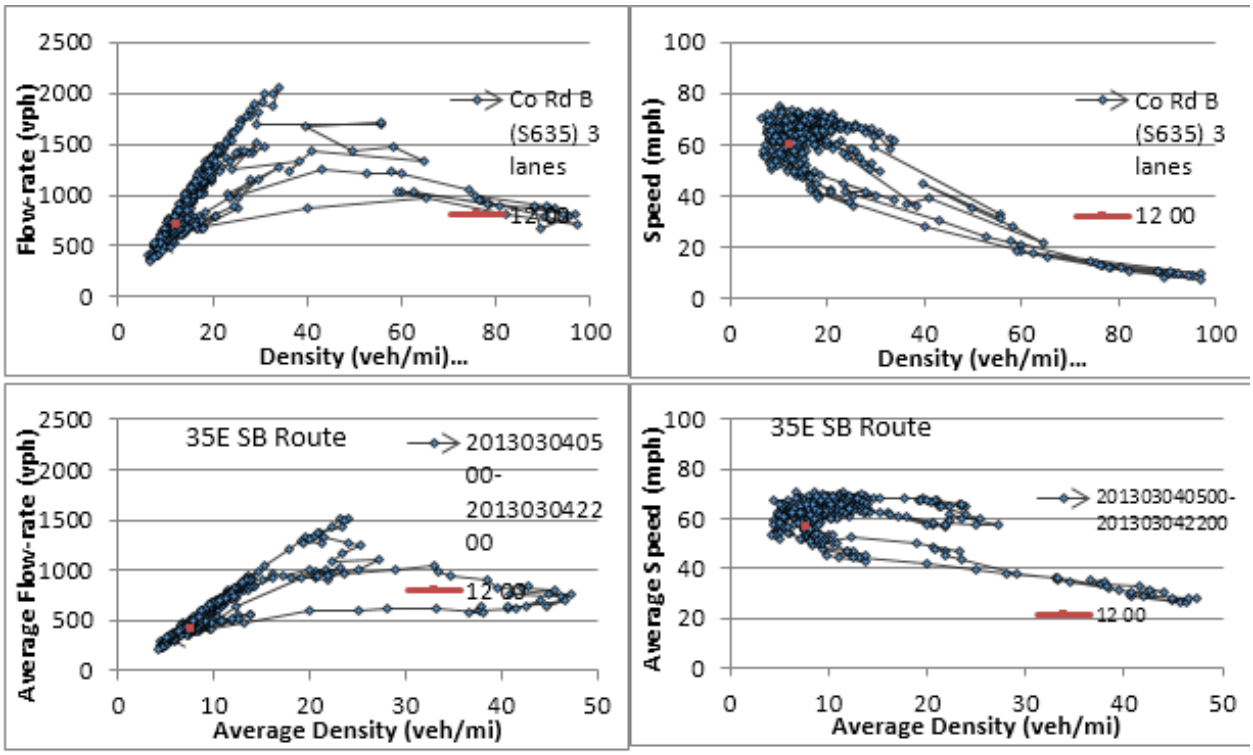
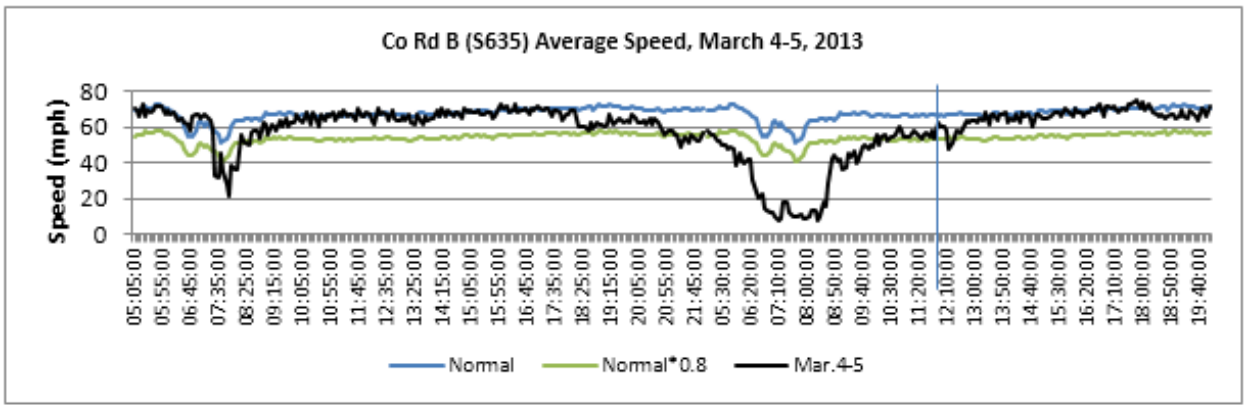


Figure 2.2.5: Traffic Flow Patterns during Snow Event on February 22, 2013 (St 635, I-35E SB)





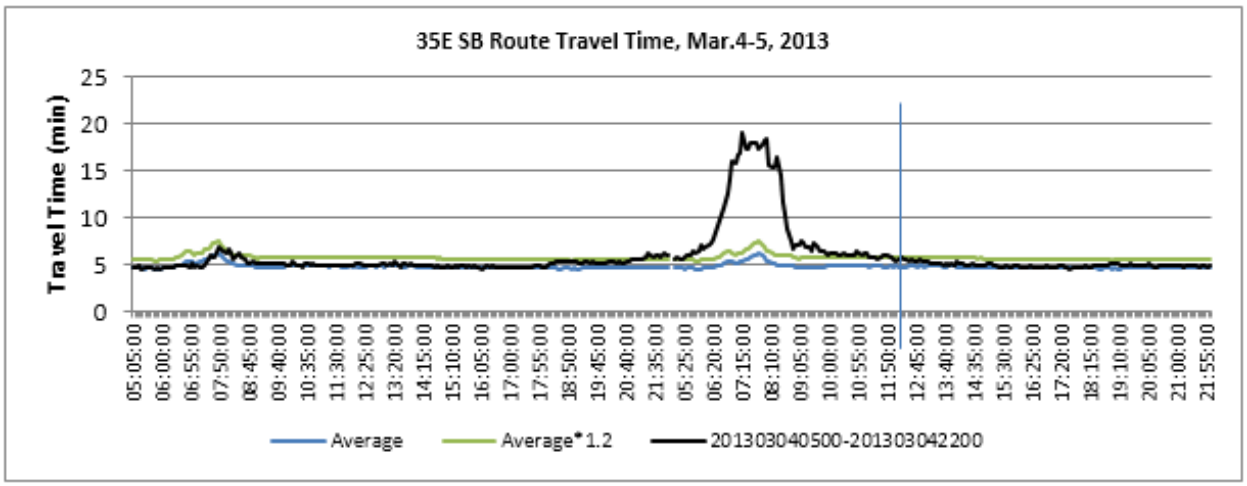


Figure 2.2.6: Traffic Flow Patterns during Snow Event on March 4-5.2013 (St. 635, I-35E SB)

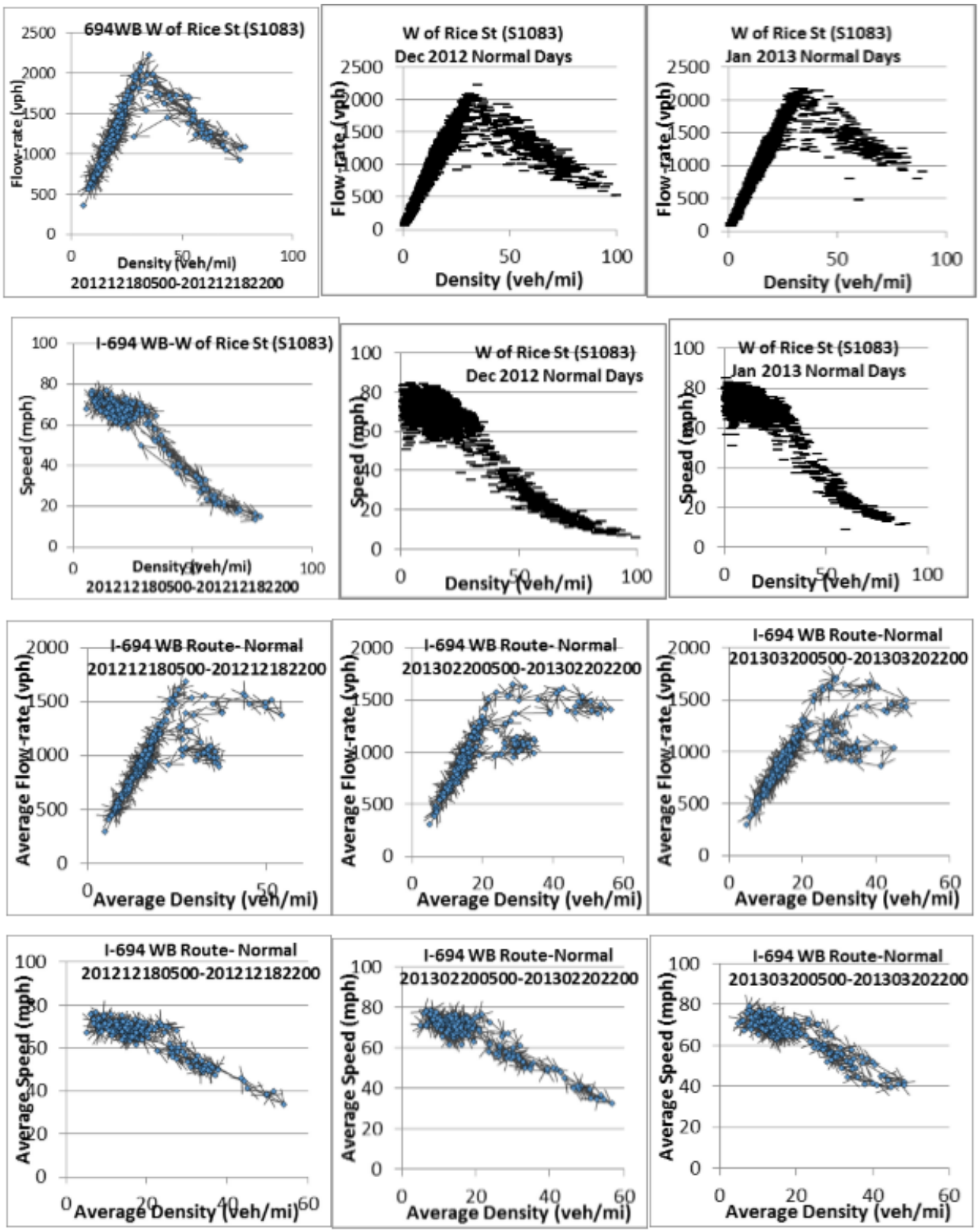


Figure 2.2.7: Typical Traffic Flow Patterns on Normal Dry Days at Station 1083 and I-694 WB Route

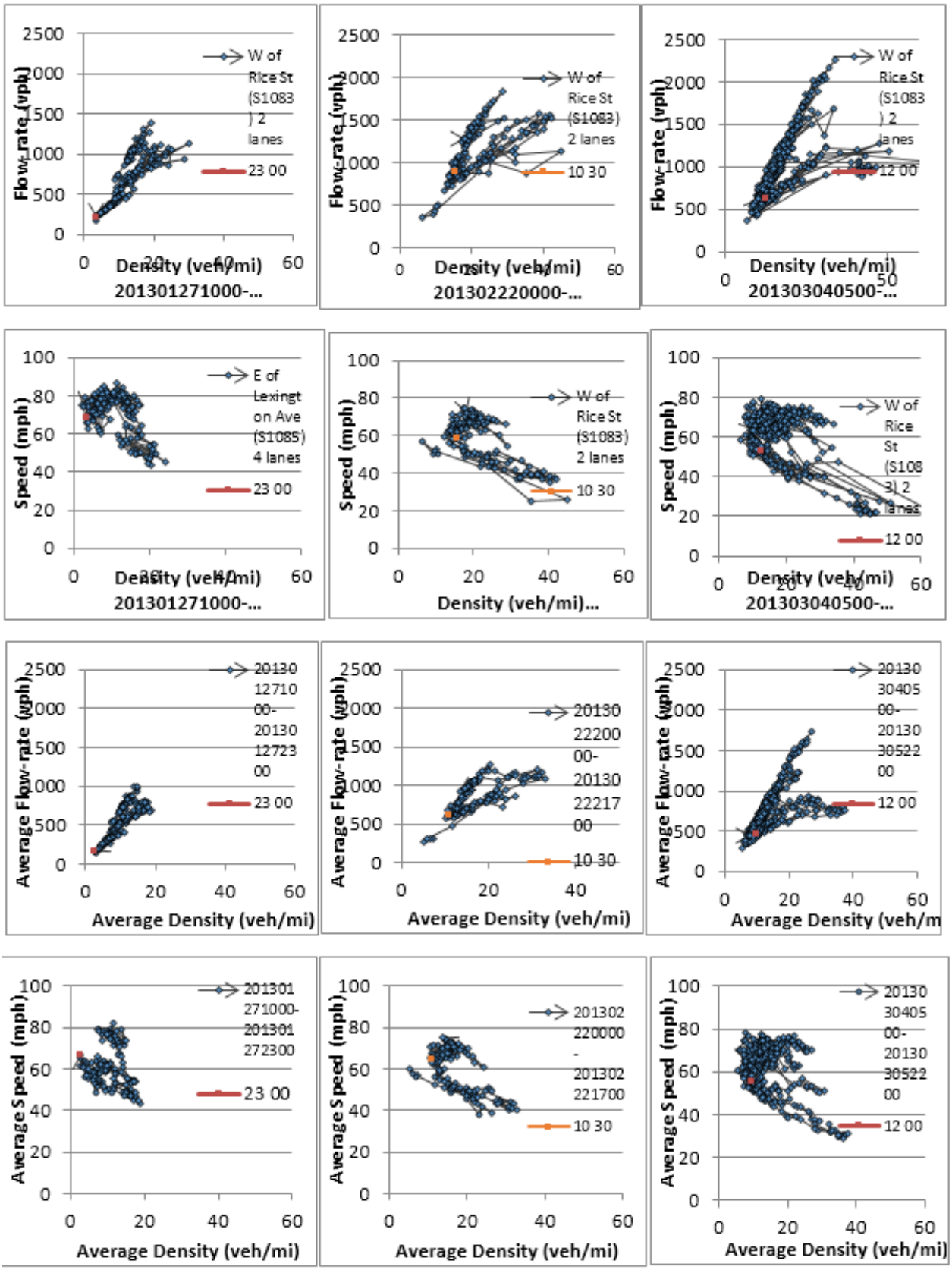


Figure 2.2.8: Traffic Flow Patterns during Snow Events at Station 1083 and 694 WB Route

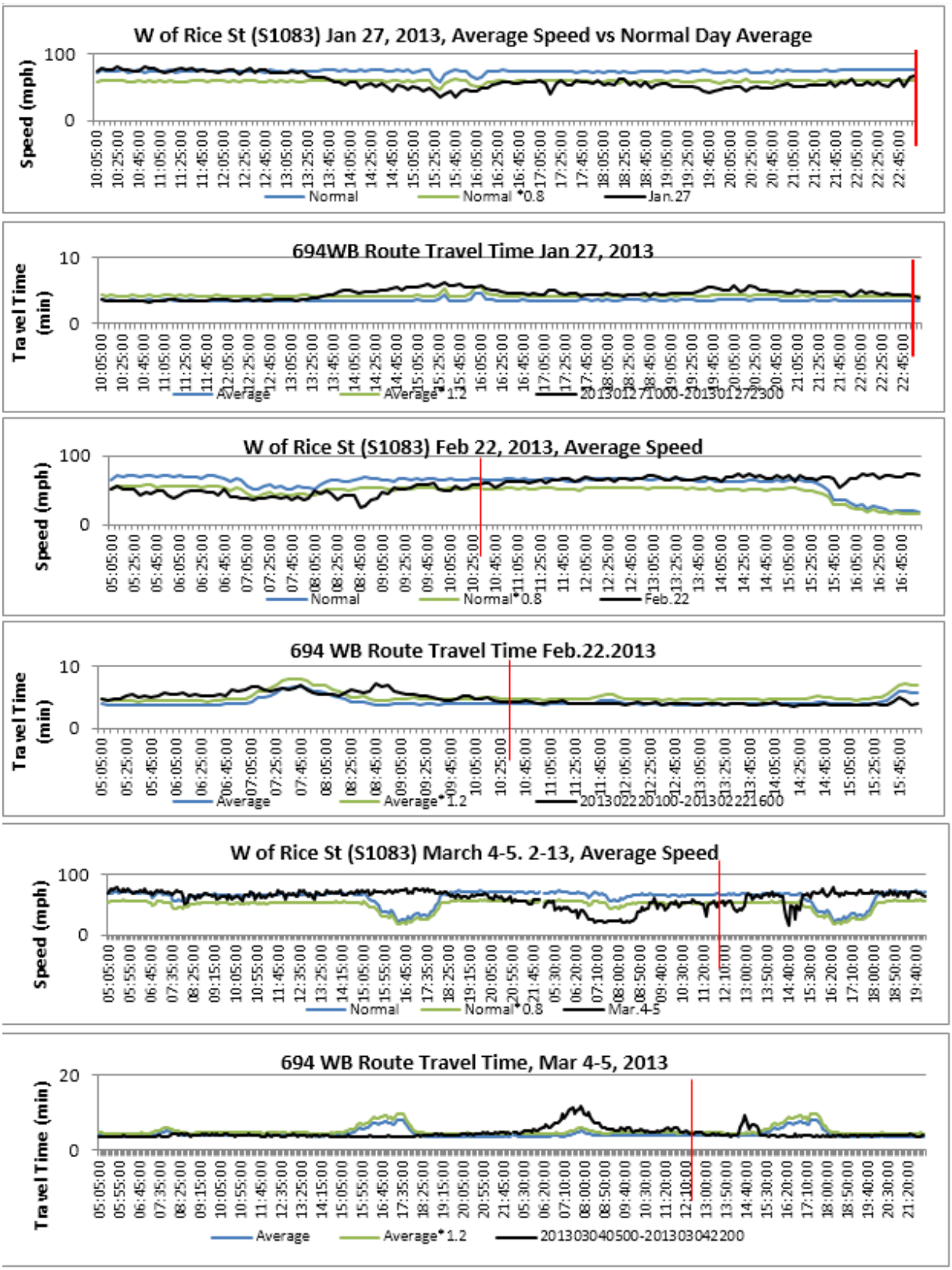


Figure 2.2.9: Station Speed and Section-wide Travel Time Variations during Normal and Snow Days

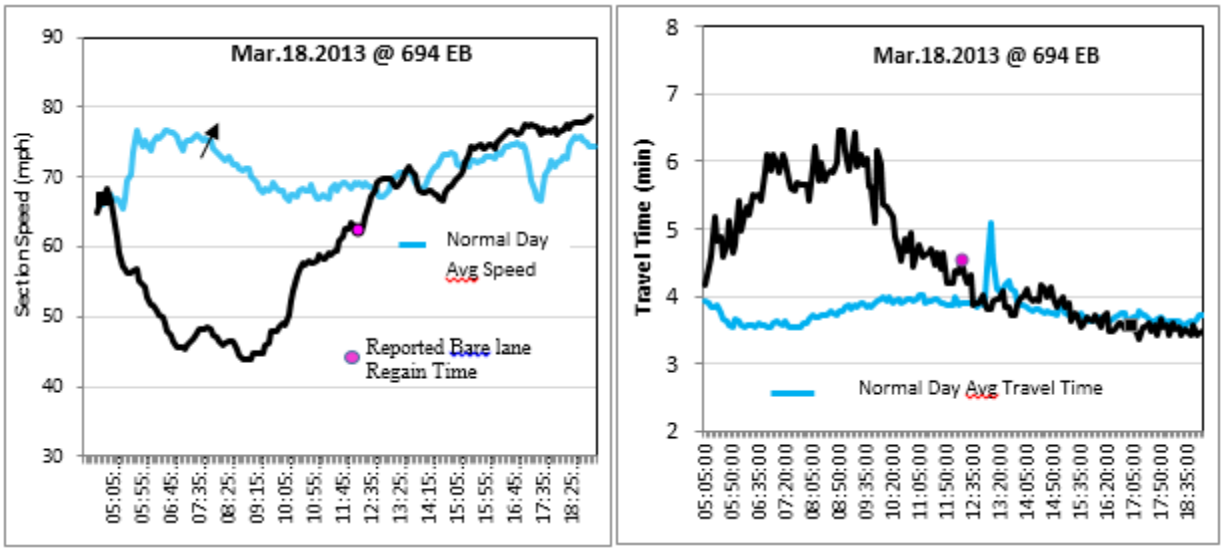


Figure 2.2.10: Section-wide Average Speed and Travel Time on 694EB route (3/18/2013)

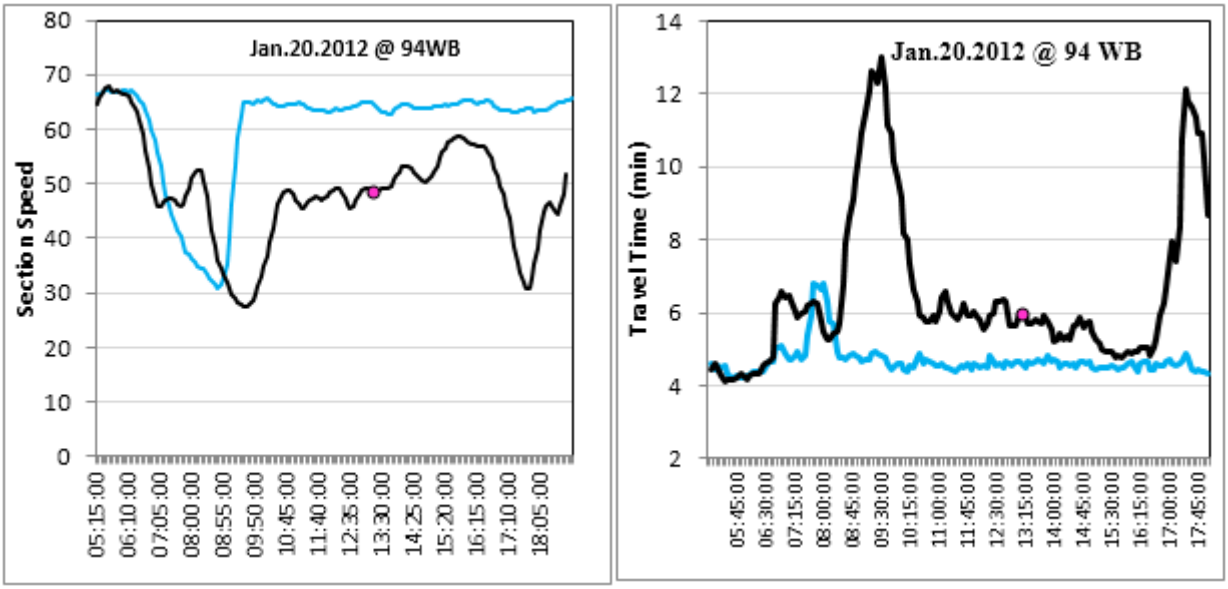


Figure 2.2.11: Section-wide Average Speed and Travel Time on 94WB route (1/20/2012)

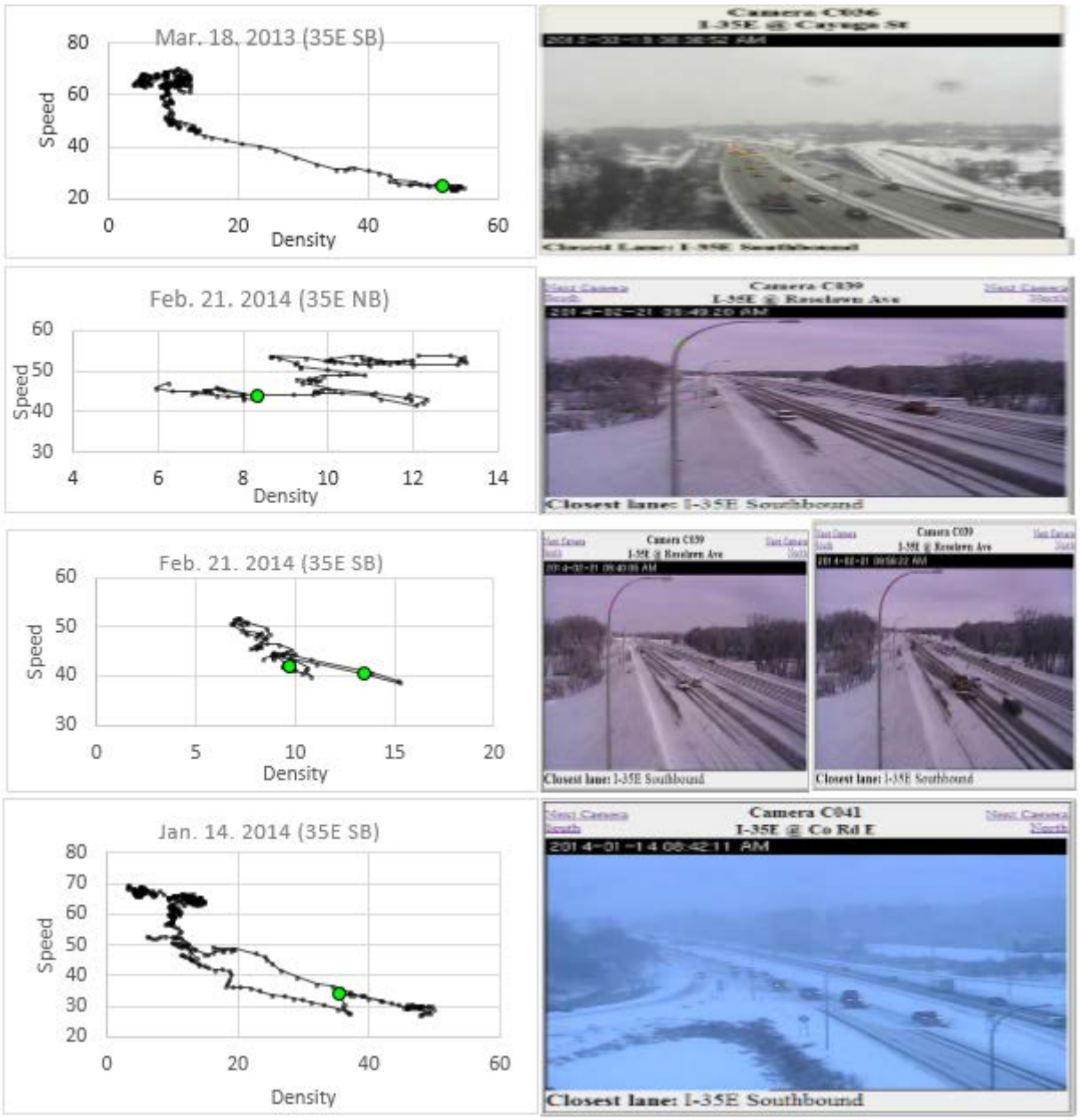


Figure 2.2.12: Speed-Density Patterns during Snow Plowing Operations

As shown in the above figures, the variations of the speed-density data points during the plowing operations exhibit unique behavioral patterns. As a plow trucks enter a given route and start to operate, the section-wide density starts to increase, while the section-wide speed level decreases as the vehicles behind the plow truck form a moving queue whose speed cannot exceed that of the truck. When the plowing truck leaves the road, the improved surface condition directly affects the behavior of the flow, i.e., the section-wide speed increases and the density decreases. It was also observed that, right before the density starts to increase, both density and speed levels decrease together for a short duration and this may indicate a transitional chaotic behavior of the flow at the beginning of the plowing operations. Such

speed/density fluctuations during the plowing operations often result in a loop-like pattern in the speed-density plane as shown in Figure 2.2.12.

Figure 2.2.13 includes the representative speed-density change patterns observed during the plowing operations, i.e., when the road surface condition was changed. The red dot in each graph indicates the Reported Bare-lane Regain Time for each event. The common features noted from these patterns include 1) the sudden drop/increase in traffic speed levels with the fluctuations of the density value, and 2) the faster increase in speed than the previous time intervals with the relatively small changes in the density level.

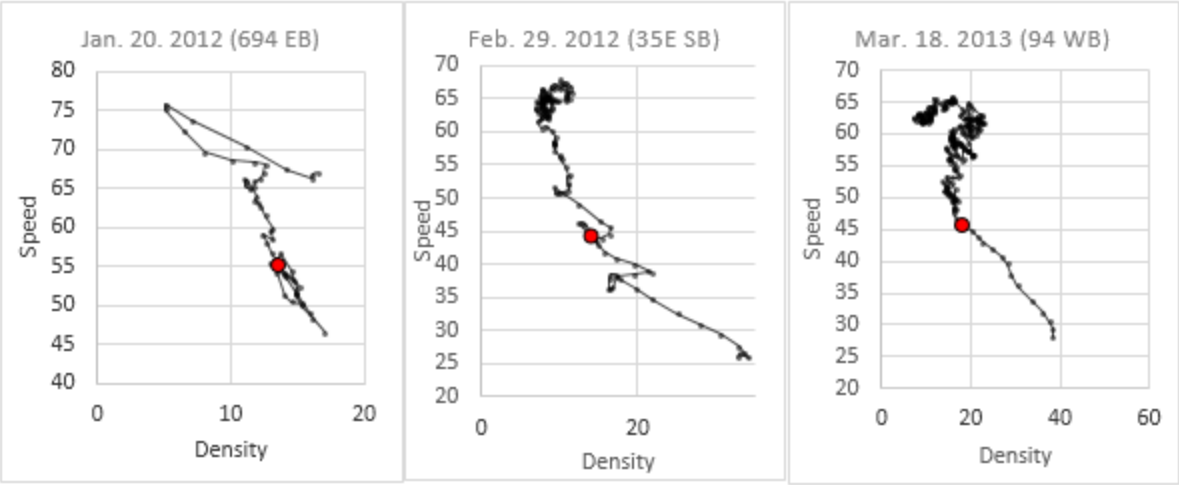


Figure 2.2.13: Speed-density change patterns during plowing operations

As analyzed in this chapter, the traffic flow patterns under the normal dry and snow conditions indicate:

1) The speed level at each station under the normal dry days can vary significantly through time depending on several factors including the traffic demand, accident and other random factors. Therefore, the time-dependent average speed at a station may not be able to represent the 'normal' condition at that particular time.
2) Under the normal dry weather conditions, the speed-density relationship at each detector station clearly show consistent patterns through time, while the specific shape of the u-k patterns can vary from station to station.
3) There are significant differences in terms of the u-k change patterns during the speed reduction and recovery periods at a same station. Further the u-k patterns during speed reduction and recovery periods are consistent at a same station through time. This indicates a representative speed value for a given density under the normal conditions can be determined from the historical data and that value can vary depending on the direction of the speed changes, i.e., either speed reduction or recovery.
4) The traffic data plots during the snow events show substantially different patterns from those under the normal dry weather conditions. The detailed analysis of the traffic patterns during the snow recovery periods indicates the u-k variations are substantially affected by the road surface conditions, traffic demand level and the snow plowing operations. In particular, it can be clearly observed that the data points in the u-k plane during the snow recovery periods are moving towards those observed under the normal recovery conditions.

5) By comparing the u-k patterns during a snow event and those from the normal weather condition at a same detector station, it can be possible to identify the recovery status of the traffic flow to its normal state at a given location.

CHAPTER 3: DEVELOPMENT AND APPLICATION OF TRAFFIC-DATA BASED ALTERNATIVE MEASURES FOR SNOW MAINTENANCE OPERATIONS

3.1 Traffic-Data based Alternative Measures

Figure 3.1.1 shows the speed variations during two snow events at Station 798 (Hwy 77) and Station 1095 (I-35). The speed patterns shown in these plots represent the typical snow-day, time-dependent speed patterns, which consist of the speed reduction and recovery periods. As noted in the previous chapter, the recovery-time to the normal traffic-flow pattern depends on the various factors including the precipitation amount, traffic demand level and the plowing operations. In this research, it is determined that, in corporation with MnDOT, the time to regain the normal traffic-flow pattern, i.e., Normal Condition Regain Time (NCRT), can be considered as the alternative measure. Further, as discussed in Chapter 2, the normal traffic-flow pattern at each detector station can be defined with the speed-density (u-k) relationships estimated with the data from the normal dry days. Figure 3.1.2 shows the u-k plots at two detector stations with the data collected from the normal dry days. As indicated in the graphs, the u-k data points from the multiple days under the normal weather condition exhibit consistent patterns. In particular, it is found out that the u-k patterns for the speed reduction and recovery periods can be defined separately, since these two patterns can be significantly different from each other depending on the geometry condition at a given location. Figure 3.1.3 shows the comparison of the snow day u-k patterns at two detector stations with the normal-day average u-k relationship determined for each station. By comparing the snow-day speed during the recovery period with the normal recovery speed at the corresponding density value in the u-k, the traffic flow state at a given time can be determined in terms of the percentage to the normal traffic condition. The alternative measure developed in this research can be defined as follows:

Normal Condition Regain Time (X%): the time to reach the X%, e.g., 80 or 90%, of the normal speed during the recovery period at the same density level.

Figures 3.1.3 and 3.1.4 show the 80% and 90% NCRT points at each detector in the speed-density and speed-time planes along with the reported lane regain times for the given snow event.

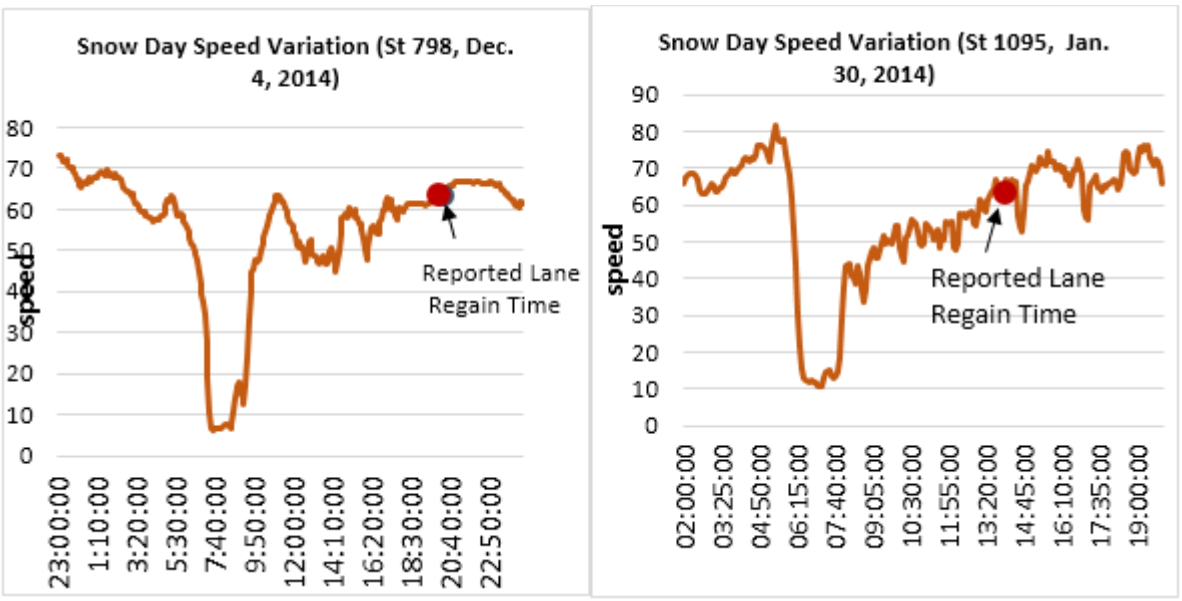


Figure 3.1.1: Snow Day Speed Variations at St 798 and St 1095

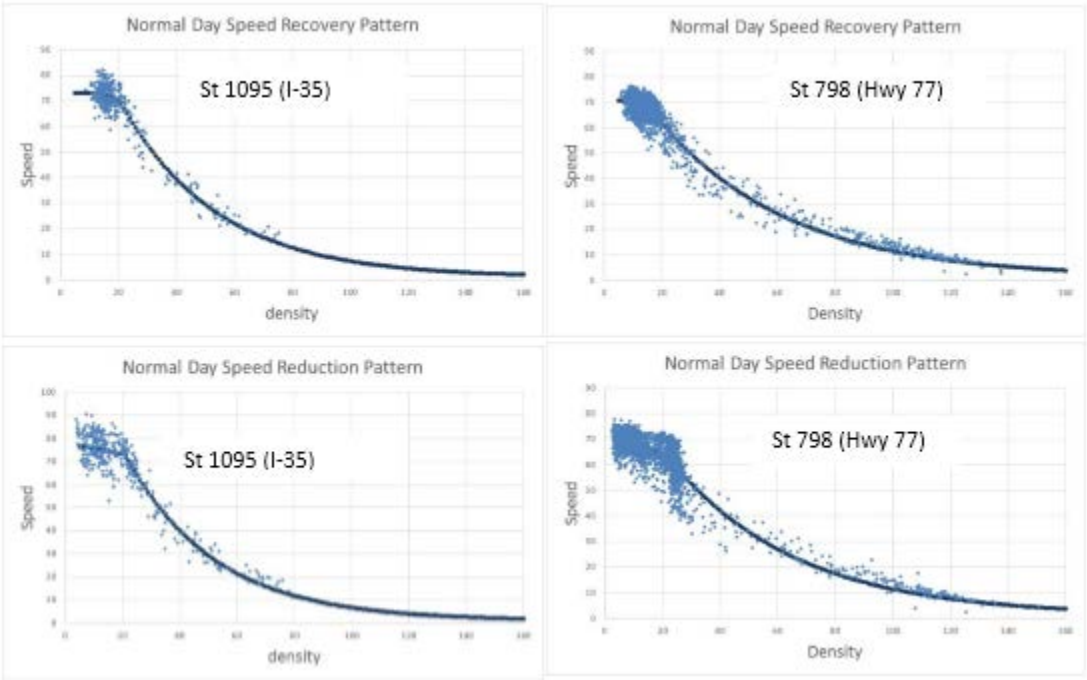


Figure 3.1.2: Normal Day Speed-Density Patterns at Station 1095 and 798

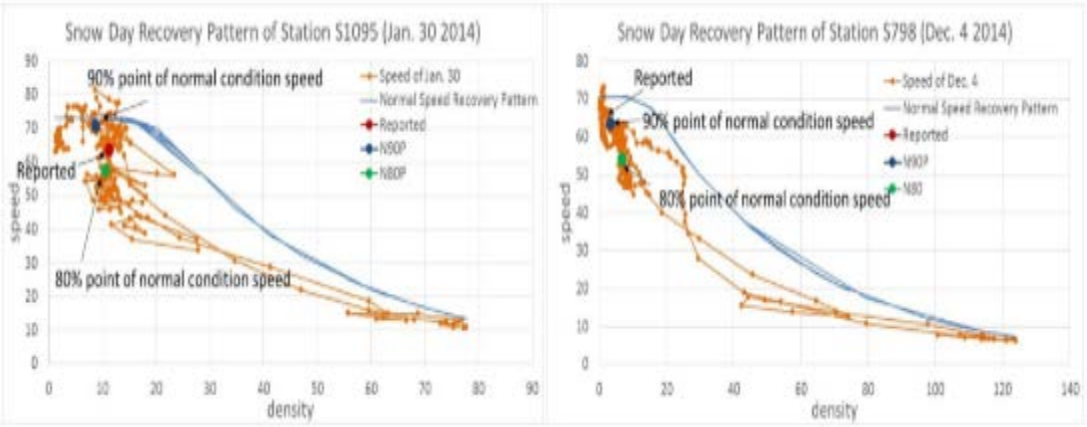


Figure 3.1.3: Speed-density variation during snow events

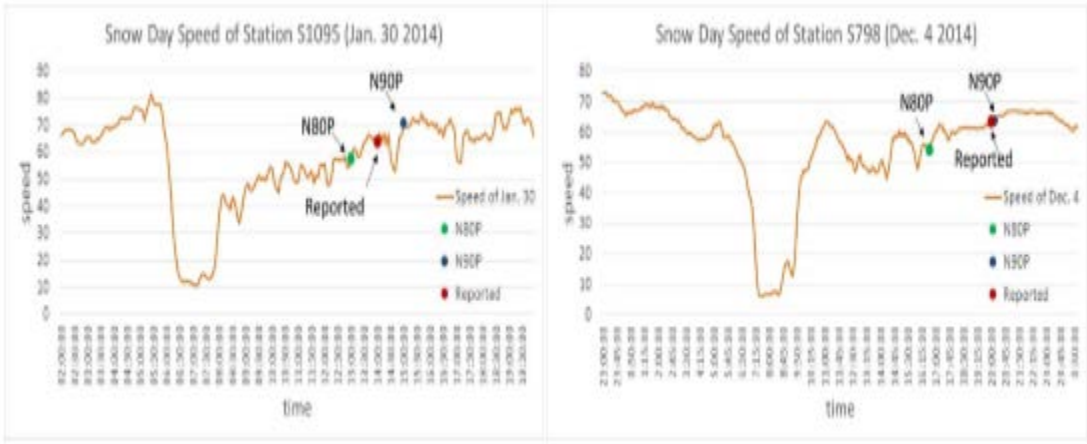


Figure 3.1.4: Normal condition regain times on the speed-time space

3.2 Determination of Normal Traffic Flow Patterns for Dry Weather Conditions

As the first step to develop a process to determine the normal condition regain time during snow events, a set of the functional relationships for the speed-density patterns under normal dry weather condition is developed by adopting a 3-section piecewise functional format. In this approach, the entire density region in the speed-density plane is divided into 3 sections, i.e., a low-density free-flow section, a transition from free-flow to congested region, and finally a congested section. Figure 3.2.1 shows the graphical format of the 3 section piecewise function.

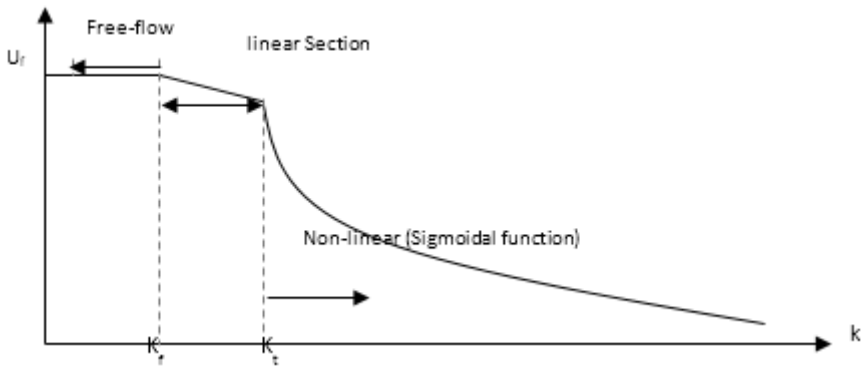


Figure 3.2.1: Piecewise speed-density function

In the low density free-flow region, the traffic speed maintains the free-flow speed, u_f, for a given geometry and is not affected by the density level up to a certain value, K_f. As the density further increases, the speed starts to decrease and it has been observed that, up to a certain level of density, K_t, the speed-density variation generally exhibits a linear pattern, while a non-linear speed-density relationship can be clearly noted for the density values beyond K_t, where the speed change rate significantly starts to increase. In this research, the values of u_f, K_f, K_t were determined for each station using the normal day traffic data for both the speed reduction and recovery periods. The functional form of each density section is as follows:

For $k \leq K_f$: *Free-flow region,* $u = u_f$

$K_f < k \leq K_t$: *Linea region,* $u = a^*k + b$

$K_t < k$: *Non-linear region,* $u = 1 + c / (1 + exp(k))^d$

In the above formula, a, b, c, d are the parameters that can be calibrated with the traffic data for each detector station. The sigmoid function above has been tried by other research group (6) and in this research an efficient process to determine the parameters in the function has been developed. Figures 3.2.2 -3 illustrate the process to determine u_f, K_f, and K_t values for each station using the traffic data collected under normal dry conditions. In this research, the processes shown in those figures are combined into one comprehensive module, which determines all the parameters in the speed reduction/recovery functions. The speed reduction function for a station is developed with the traffic data collected during the speed-reduction periods under the normal dry condition, while the traffic data from the speed recovery periods are used to determine the speed recovery function. Figure 3.2.4 shows a set of the example speed recovery/reduction functions calibrated for the Station 1542 on the I-35E southbound.

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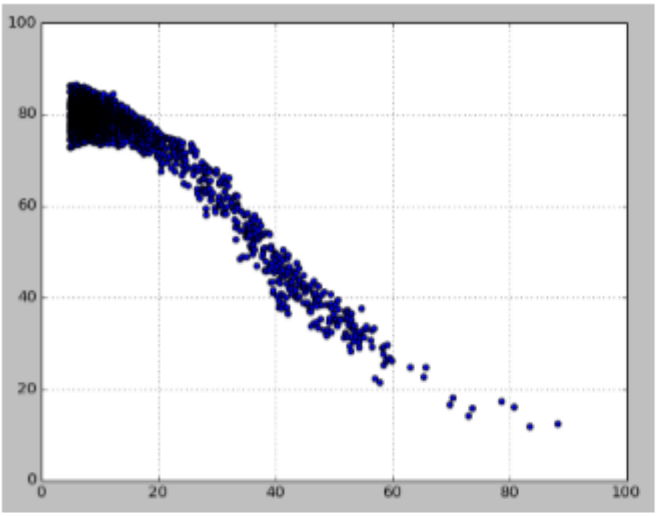
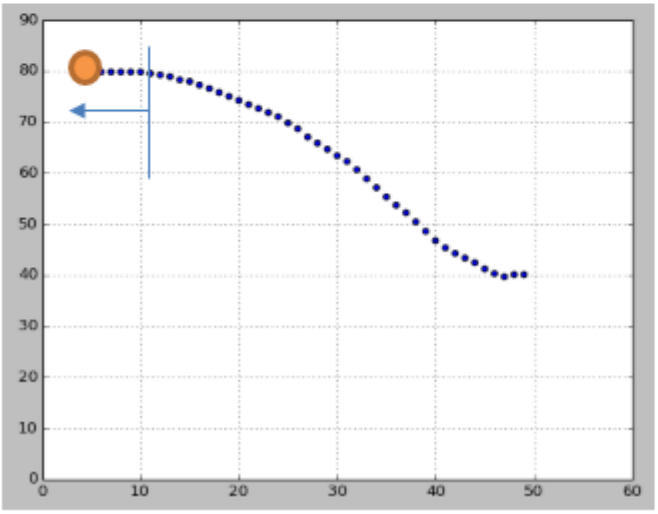


Collect speed and density data during recovery periods from multiple dry-days



Determine average ***speed*** for each k value

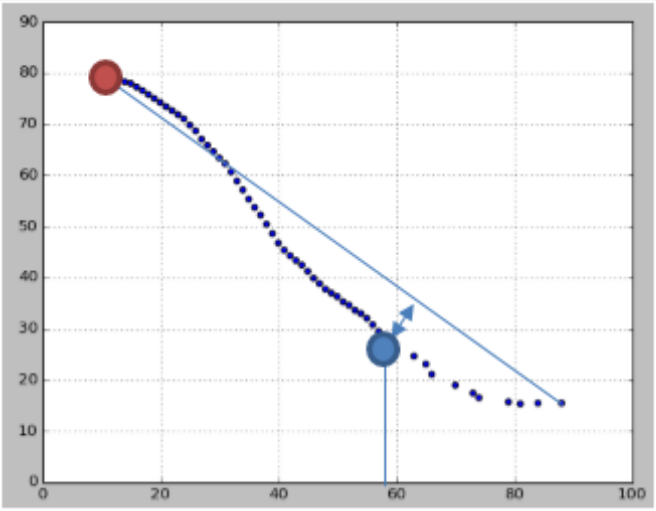
Develop 'Trend' set using average speeds

Set **Free Flow Speed u_f = Max speed of Trend**

Density range for FFS:
from 0
to the first *k* whose speed is less than FFS

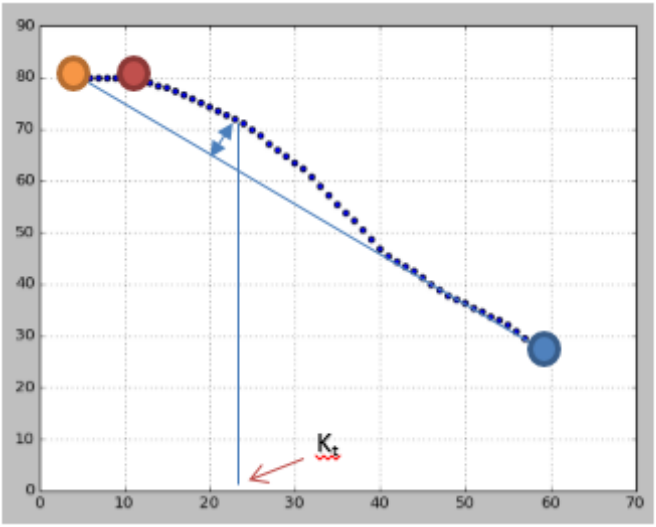
K_f = Maximum k within FFS k range

Figure 3.2.2: Process to determine u_f and K_f



Make a linear function from K_r (orange circle) to the last data point

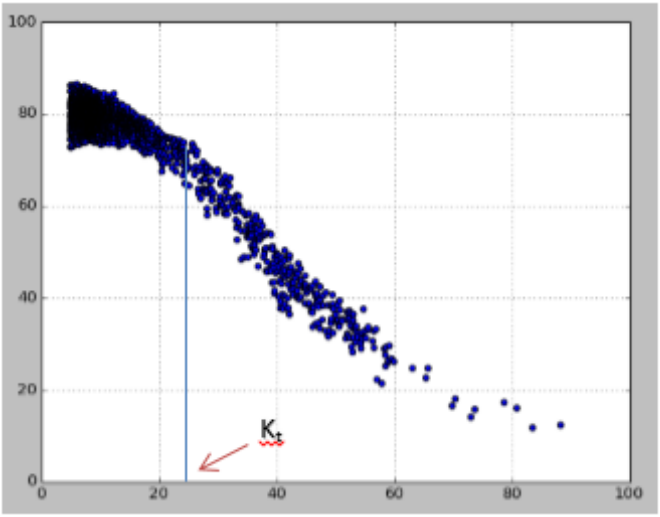
Find the Max Distance Point (blue circle) to the linear function among the data points under the linear function



Make a linear function from the Max Distance Point (blue circle) to the first data point found in the previous step in Figure 3.2.2

Find the Max Distance Point to the linear function from the data points over the linear function.

Set K_t = the k value of the Max Distance Point



K_t on the original data plot

Figure 3.2.3: Process to determine K_t

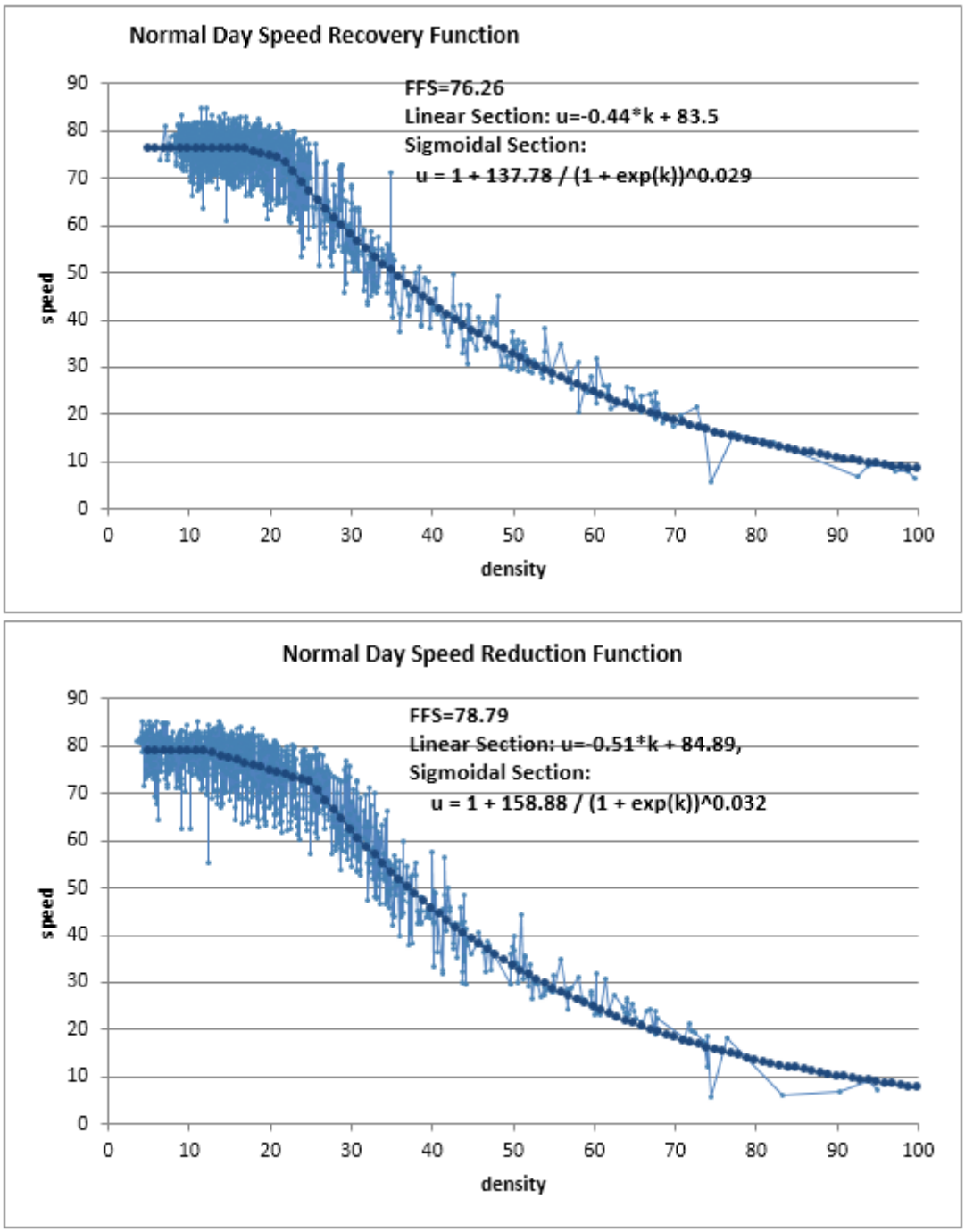


Figure 3.2.4: Normal Speed Recovery/Reduction Functions at Station S1542 (I-35E SB)

Normal Traffic Flow Patterns during Night Time Periods

Figure 3.2.5 shows the speed-density data collected from two stations under the normal dry-day night time periods, during which the traffic demand is generally light and results in very low density values ranging from 0 to 10 veh/mile/lane. While the speeds at those low density values during the day-time periods usually correspond to the relatively stable free flow speed level, as noted in these figures, the speed-density relationships during the night periods do not show such trends. Further, as Figure 3.2.6 indicates, the average speed during the night time periods reaches the lowest level between 1:00 and 2:00 a.m., while the amount of the speed reduction varies from the location to location. The preliminary observation indicates the locations with the lighting facility tend to have less amount of speed reduction than those without lighting.

To address the above issues, in this research, a 'time-variant normal speed pattern' was identified for each detector station for the night time periods. The red lines in Figure 3.2.6 indicate the normal speed pattern at each station during the night time periods. These patterns were determined by smoothing the time-dependent average speed values collected under the normal dry conditions. These time-variant average speed patterns represent the 'normal' conditions at each station during the night time period, while the speed reduction/recovery functions developed in the previous section are used as the normal traffic states during the day time periods.

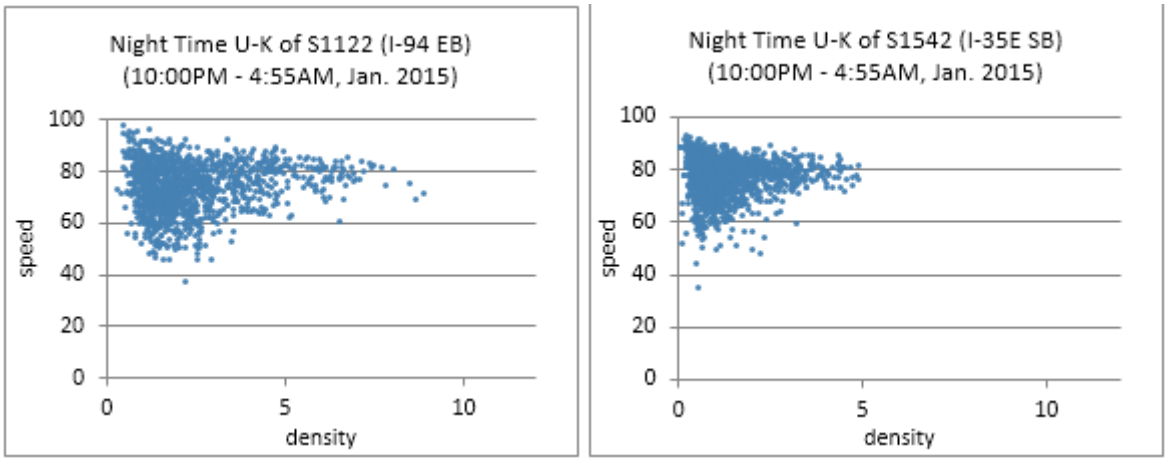


Figure 3.2.5: Night time speed-density patterns at Station1122 and 1542

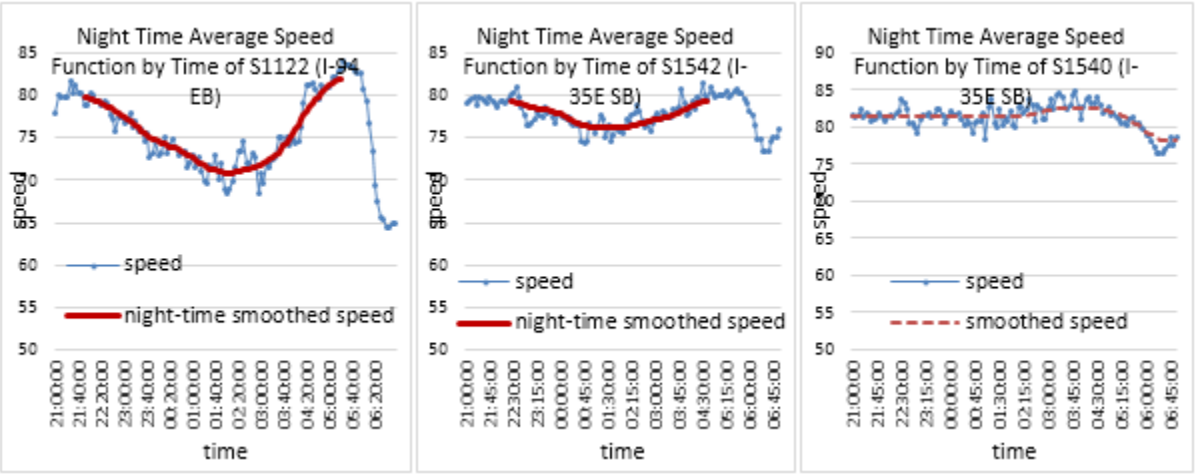


Figure 3.2.6: Speed variations through time during night time (S1083, S1542, S1540)

3.3 Process to Determine Normal Condition Regain Times at Detector Stations

Figure 3.3.1 illustrates the process to determine the normal condition regain time (NCRT) using the traffic data collected from each detector station. The step by step process can be summarized as follows:

1) Collect the traffic data, speed and density, from the normal dry days for each detector in a given route during the winter period, i.e., the dry days in November, December, January and February.
2) For each detector station, identify the speed recovery/reduction periods and night time periods for all normal days.
3) Identify the functional relationships between speed and density for the day-time periods developed in the previous section. Also, identify the average speed patterns for the night time periods for each station.
4) For a given snow event, collect the speed-density data for each detector station and identify the speed recovery start point.
5) Starting from the speed recovery start point, compare the speed value at each time interval during the snow event with that of the normal speed corresponding to the same density level, i.e.,

   90% or 80% Normal Condition Regain Time, t => $U_{i,s,t} / U_{i,n,(K)} = 0.9$ or 0.8

   where, $U_{i,s,t}$ *= Speed at Station i at time t during the snow event,*

   $K_{i,s,t}$ *= Density at Station i at time t during the snow event,*

   $U_{i,n,t(Ki,s,t)}$ *= Speed level at Station i during normal recovery process corresponding to the same Density level as* $K_{i,s,t}$

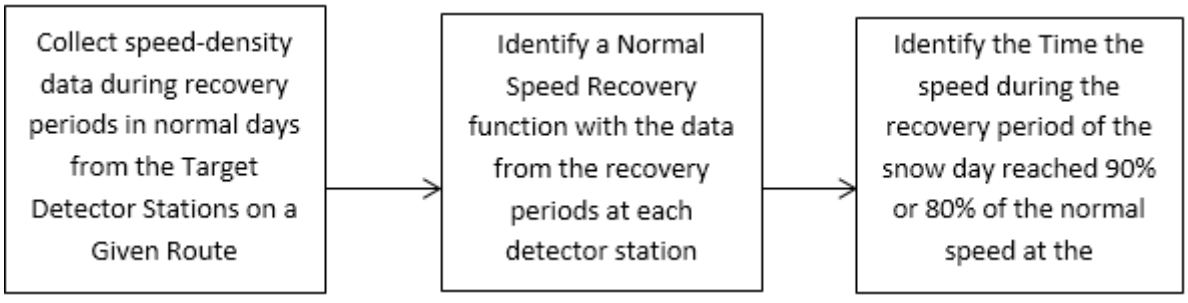


Figure 3.3.1: NCRT Estimation process for a given snow event

In this research, a computer module was developed to automate the above process whose pseudo-code is as follows:

```
 Function find_normal_regain_time(targetStation, targetPeriod)
   Set u As speed data in recovery section of targetStation for targetPeriod
   Set k As density data in recovery section of targetStation for targetPeriod
   Call get_normal_pattern_function With targetStation and targetPeriod Return normalPatternFunc
   Call normalPatternFunc With k Return normalPatternU
   Set ratios As list calculated by u[t] / normalPatternU[t] for all time steps t
   Set n80p As the start point of the section that the ratio value is greater than 0.8
   Set n90p As the start point of the section that the ratio value is greater than 0.9
   Return (n80p, n90p)
End Function

Function get_normal_pattern_function(targetStation, targetPeriod)
   Call make_pattern_data With targetStation and targetPeriod Return patternData
   Set polynomial As None
   For order=2 To 10:
      Set tmp_polynomial As polynomial function that order of function is order
      Set avg_error As average absolute difference
                          between make_pattern_data and generated data by function
      If avg_error is minimum Then
         Set polynomial As tmp_polynomial
      End If
   End For
   Return polynomial
End Function

Function make_pattern_data(targetStation, targetPeriod)
   Set patternData As dictionary
   Call get_normal_days With targetPeriod Return periods
   For period In periods
      Call get_normal_day_data With targetStation and period Return (patern_a_day, lowCount, u, k)
      If not lowCount Then Continue
      For key In pattern_a_day
         Append pattern_a_day[key] To patternData[key]
      End For
   End For
   Return patternData
End Function

Function get_normal_days(targetPeriod)
  Set months As list of month in the same winter season of targetPeriod
  Set days As list
  For month in months:
     Set days As list of days in the month
     For day in days:
        If day is weekday and not holiday and dry Then
```

```
            Append day To days
          End If
        End For
      End For
      Return days
End Function

Function get_normal_day_data(targetStation, period)
    Set u As speed data list of the targetStation
    Set k As density data list of the targetStation
    Set minIdx As index of minimum speed point
    Set lowCount As 0
    Set freeCount As 0
    Set patterns as dictionary
    For idx=minIdx To length of data:
        If speed is greater than speed limit Then
            Add 1 To freeCount
            If freeCount is greater than number of data for 1 hour Then
                Break
            End If
        End If
        If speed is low Then
            Add 1 To lowCount
        End If
        Set patterns[k[idx]] As u[idx]
    End For
    Return (patterns, lowCount, u, k)
End Function
```

3.4 Example Application of the NCRT Estimation Process for Selected Routes and Events

In this section, the NCRT estimation process developed in the previous section is applied to two snow routes, i.e., TP9P35SI in Lakeville, and TP5J0771 in Cedar**,** as shown in Figure 3.4.1 and 3.4.2. These routes were selected in cooperation with the Metro District, MnDOT. Further, the 2013-14 snow event data for those routes was also obtained from the Metro District.

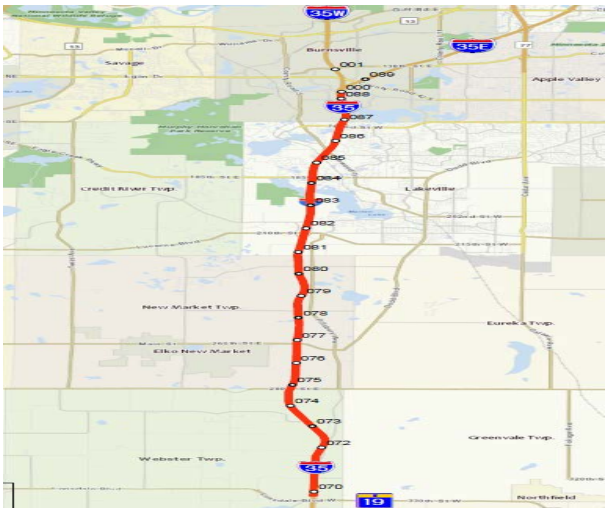


Figure 3.4.1: Route TP9P35SI

Figure 3.4.2: Route TP5J0771

First, the target detector station is identified for each route, i.e., Station 1095 for I-35 and Station 798 for the Hwy 77 route, and the normal speed reduction/recovery functions were developed for each station with the speed data collected during the normal dry days. Table 3.4.1 includes the parameters of the piecewise functions calibrated for the normal speed-density patterns at those two stations.

Table 3.4.1: 1 Normal Speed Reduction/Recovery Functions for I-35

Direction	Station	Snow Event	Type	Normal Pattern Function
NB	S1095	2013-2014	Recovery	0 <= k <= 14: u = 73.055,
				14 < k <= 21: u = -0.507*x + 80.432,
				21 < k : u = 1 + 127.823 / (1 + exp(k))^0.03
			Reduction	0 <= k <= 8: u = 76.627,
				8 < k <= 21: u = -0.26*x + 78.451,
				21 < k : u = 1 + 141.054 / (1 + exp(k))^0.032
SB	S916	2013-2014	Recovery	0 <= k <= 10: u = 79.004,
				10 < k <= 18: u = -0.52*x + 83.969,
				18 < k : u = 1 + 118.343 / (1 + exp(k))^0.026
			Reduction	0 <= k <= 13: u = 78.581,
				13 < k <= 24: u = -0.322*x + 82.704,
				24 < k : u = 1 + 157.583 / (1 + exp(k))^0.031

Table 3.4.2: Normal Speed Reduction/Recovery Functions for Hwy 77

Direction	Station	Snow Season	Type	Normal Pattern Function
NB	S798	2013-2014	Recovery	0 <= k <= 8: u = 70.687,
				8 < k <= 16: u = -0.412*x + 74.065,
				16 < k : u = 1 + 94.369 / (1 + exp(k))^0.022
			Reduction	0 <= k <= 9: u = 68.552,
				9 < k <= 22: u = -0.371*x + 71.76,
				22 < k : u = 1 + 102.718 / (1 + exp(k))^0.023
SB	S807	2013-2014	Recovery	0 <= k <= 12: u = 67.897,
				12 < k <= 29: u = -0.321*x + 71.581,
				29 < k : u = 1 + 106.707 / (1 + exp(k))^0.019
			Reduction	0 <= k <= 17: u = 68.414,
				17 < k <= 29: u = -0.281*x + 73.362,
				29 < k : u = 1 + 118.22 / (1 + exp(k))^0.021

Figures 3.4.3-4 show the NCRT estimation results for the snow events in 2012-14 for the both Lakeville and Cedar Routes. As indicated in these figures, the estimated NCRT time, either 90% or 80% of the normal speed level, closely follows the reported lane-regain time (RRT) in most events, while 90% NCRT appears to be closer to the RRT than 80% NCRTs. The speed levels at the estimated NCRT points are compared with those at the RRT points in Figures 3.4.5-6. As indicated in these figures, the speed values at the 90% NCRT points are closer to the free-flow speed levels in most events than those at the report lane-regain times. Table 3.4.3 summarizes the NCRT estimation results for all the snow events along with the reported lane-regain times.

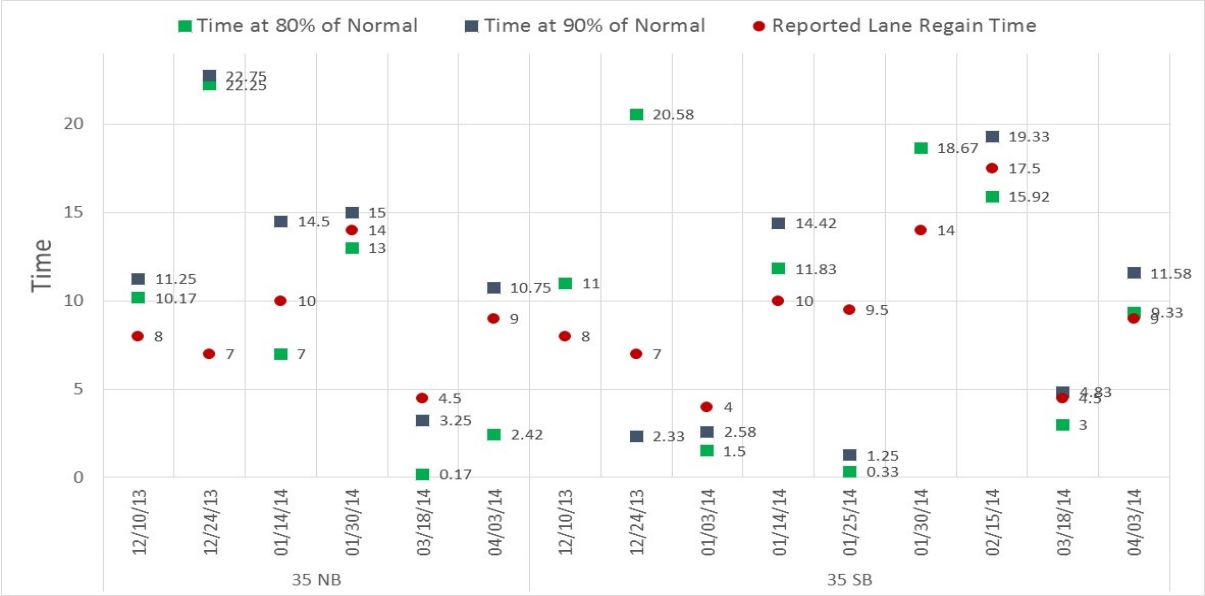


Figure 3.4.3: Normal condition regain time estimation results for I-35 during 2013-2014

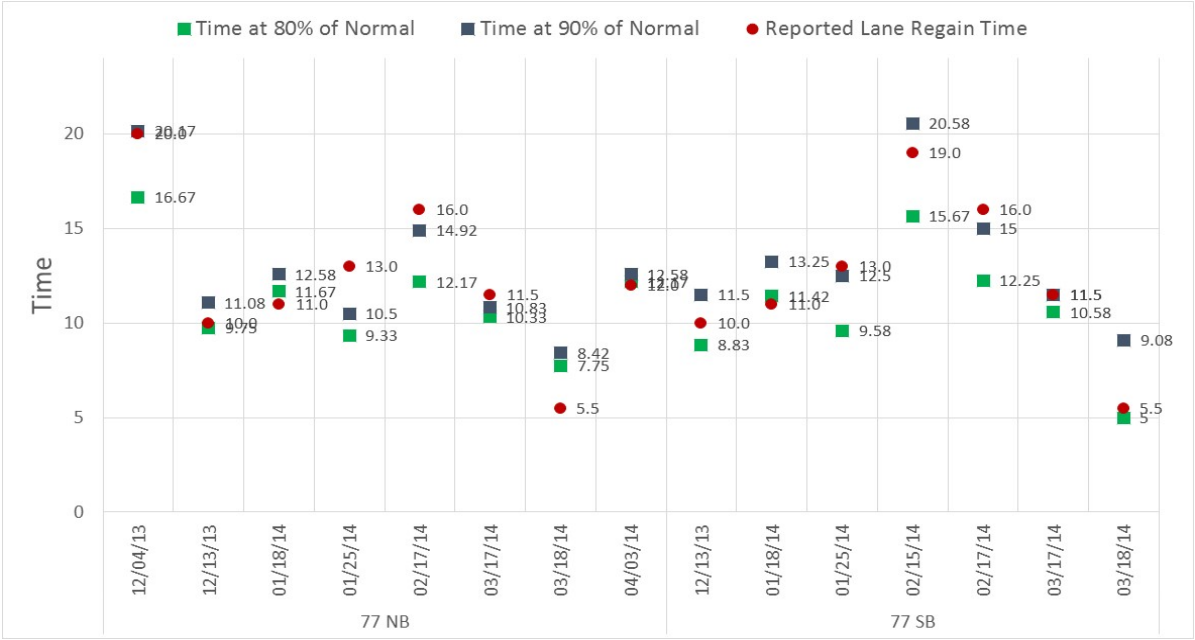


Figure 3.4.4: Normal condition regain time estimation results for T.H.77 during 2013-2014

I-35, 2013-2014

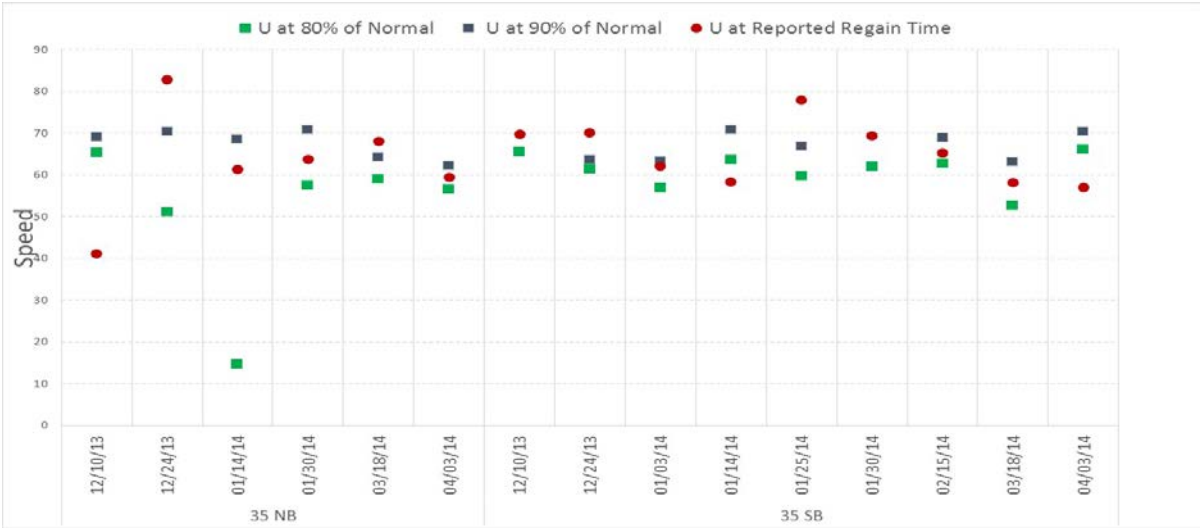


Figure 3.4.5: Speed comparison for I-35 during 2013-2014

T.H.77, 2013-2014

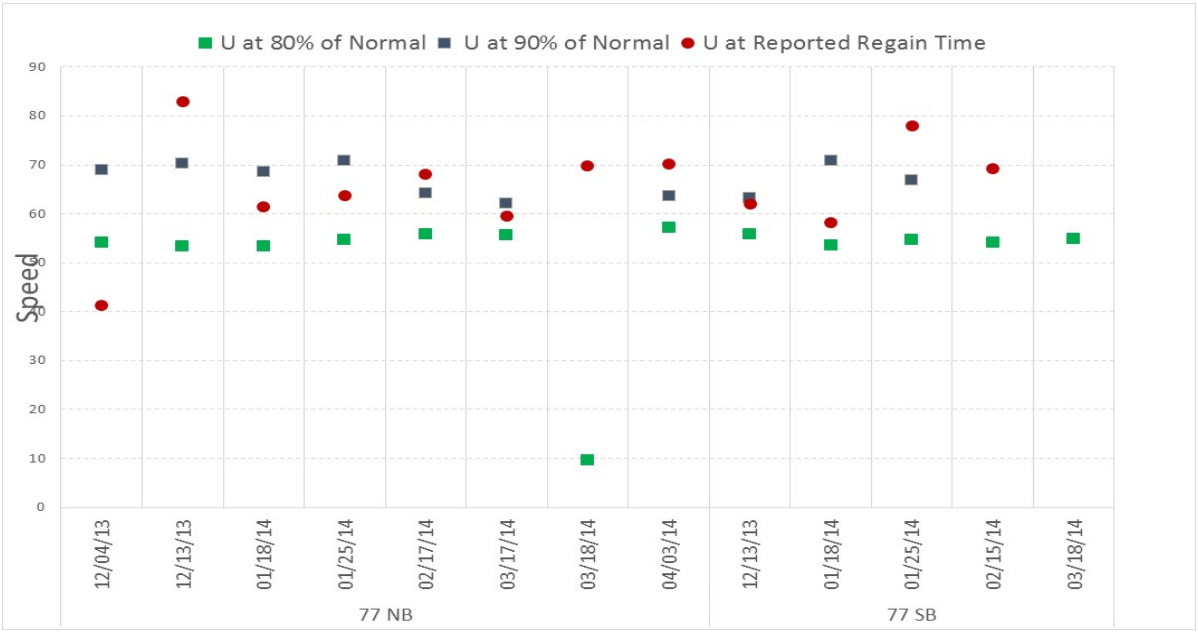


Figure 3.4.6: Speed comparison for T.H.77 during 2013-2014

Table 3.4.3: Summary Results for 2013-14 Snow Events

Route	Date	N80P	N90P	Reported	U at N80P	U at N90P	U at Reported
35 NB	12/10/13	10:10	11:15	08:00	65.3	69	41.2
	12/24/13	22:15	22:45	07:00	51.1	70.3	82.9
	01/14/14	07:00	14:30	10:00	14.6	68.5	61.4
	01/30/14	13:00	15:00	14:00	57.4	70.8	63.7
	03/18/14	00:10	03:15	04:30	58.9	64.2	68.1
	04/03/14	02:25	10:45	09:00	56.5	62.2	59.5
35 SB	12/10/13	11:00	-	08:00	65.6	-	69.8
	12/24/13	20:35	02:20	07:00	61.4	63.6	70.1
	01/03/14	01:30	02:35	04:00	56.9	63.2	62
	01/14/14	11:50	14:25	10:00	63.6	70.8	58.3
	01/25/14	00:20	01:15	09:30	59.7	66.8	78
	01/30/14	18:40	-	14:00	62	-	69.3
	02/15/14	15:55	19:20	17:30	62.7	68.9	65.2
	03/18/14	03:00	04:50	04:30	52.7	63.1	58.2
	04/03/14	09:20	11:35	09:00	66.1	70.4	57.1
77 NB	12/04/13	16:40	20:10	20:00	54.1	63.6	63.4
	12/13/13	09:45	11:05	10:00	53.3	64.6	57.1
	01/18/14	11:40	12:35	11:00	53.3	63.6	53.5
	01/25/14	09:20	10:30	13:00	54.6	63.2	70.5
	02/17/14	12:10	14:55	16:00	55.9	64.2	71.7
	03/17/14	10:20	10:50	11:30	55.6	66.3	70
	03/18/14	07:45	08:25	05:30	9.7	48.8	50.5
	04/03/14	12:10	12:35	12:00	57.2	66.9	50.5
77 SB	12/13/13	08:50	11:30	10:00	55.9	61.2	51.8
	01/18/14	11:25	13:15	11:00	53.5	61.2	52.9
	01/25/14	09:35	12:30	13:00	54.6	62	61.8
	02/15/14	15:40	20:35	19:00	54.2	62.7	61
	02/17/14	12:15	15:00	16:00	54.1	61	62.2
	03/17/14	10:35	11:30	11:30	54.1	62.2	62.2
	03/18/14	05:00	09:05	05:30	54.8	62	56

3.5 Application of NCRT Estimation Process to Metro Freeway Network for 2014-15 Winter Events

In this section, the NCRT estimation process for individual detector stations is expanded to the metro freeway network. Figure 3.5.1 shows the architecture of the network-wide NCRT estimation process. The major modules of the network-wide NCRT estimation system include the traffic data management module, target detector station identification module, the normal speed reduction/recovery function calibration module, normal condition recovery time estimation module and finally the report generation module. The main input to the system includes the start/end time of each snow event and the time periods to collect the traffic data under normal dry conditions.

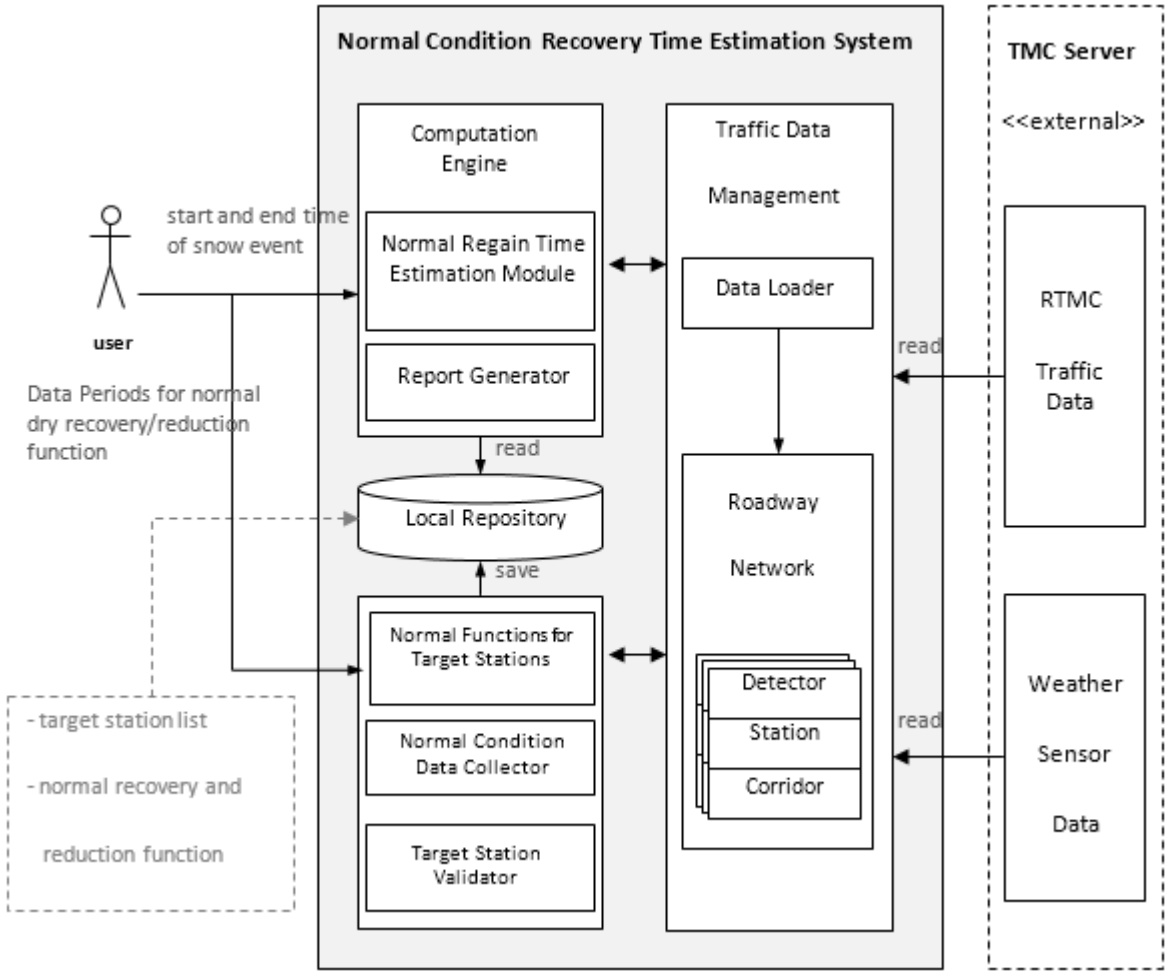


Figure 3.5.1: Overview of the Network-wide NCRT Estimation Process

Application of the Network-wide NCRT Estimation Process for 2014-15 Winter Snow Events

To apply the NCRT estimation process to the entire metro freeway network, a set of the target detector stations were first identified and the data from each station were collected to determine normal traffic flow patterns for both day time, i.e., the speed-density functions, as well as for the night time periods. The selection of the target stations depends on the availability of the speed-density data needed to develop the speed reduction/recovery functions at each station. I.e., the detector stations with the traffic data ranging from the free flow to highly congested state need to be available to be selected as the target stations. Figure 3.5.2 shows the locations of the selected target stations for the metro network and Table 3.5.1 includes the detailed list of those target stations identified in this research. For each target detector station, the normal day speed reduction/recovery functions, as well as the night time average speed patterns were developed and stored in the database.

Figure 3.5.2: Target Detector Station Locations

Using the above target detector stations, the network-wide normal condition recovery times was applied to the two snow events in the 2014-15 winter season for the entire metro freeway network in the Twin Cities, Minnesota. Specifically for each target detector station on each corridor, the following times and the speed levels at each time were determined and summarized in the graphical and tabular format.

- Times when 90%, 80%, 70%, 60% and 50% of the Normal Speed under the same density level were reached during both speed reduction/recovery periods
- Time when the final recovery started.

Further, the reported snow start/end time and lane regain times are also included in the output graphics and tables for each snow event. In this research, the snow events on November 10, 2014, and February

10, 2015, were used as the sample events and the normal condition recovery times were estimated for each target station on the entire metro network. Figures 3.5.3 and 4 show the sample NCRT estimation results for I-35E northbound (November 10, 2014) and I-35W northbound (February, 10, 2015) corridors. The NCRT estimation results for other corridors are included in the Appendix.

Table 3.5.1: List of Target Detector Stations for Normal Condition Recovery Time Estimation

Corridor	Station IDs	#
I-35 (NB)	S1095	1
I-35E (NB)	S884, S885, S886, S827, S828, S829, S830, S831, S832, S833, S834, S836, S837, S838, S839, S619, S620, ST3516, ST3513, ST3512, ST3510, S1448, S1485	23
I-35E (SB)	S1540, S1541, S1542, S1543, S1544, S1545, S1546, S1548, S1464, ST3502, S635, ST3503, S636, S637, ST3505, S638, ST3506, ST3507, S847, S848, S849, S850, S851, S852, S853, S855, S890, S899, S900, S905	30
I-35W (NB)	S71, S1600, S72, S32, S1601, S33, S35, S1602, S77, S37, S38, S39, S1603, S34, S45, S46, S1704, S47, S52, S1705, S53, S54, S1706, S55, S56, S57, S58, S1707, S59, S60, S1708, S62, S63, S565, S568, S573, S574, S652, S653, S654, S655, S656, S657, S659, S664, S665, S666, S667, S668, S669, S670	51
I-35W (SB)	S678, S679, S680, S681, S682, S683, S684, S685, S686, S691, S692, S694, S695, S696, S578, S579, S580, S583, S584, S586, S3, S4, S1709, S5, S6, S7, S8, S9, S10, S11, S1711, S12, S14, S1712, S15, S16, S17, S18, S19, S20, S21, S22, S23, S13, S24, S25, S26, S27, S1606, S28, S29, S30, S31	53
I-394 (EB)	S264, S266, S269, S270, S273, S275, S276, S277, S279, S280, S281, S282, S284, S286, S288	15
I-394 (WB)	S287, S285, S283, S319, S320, S321, S336, S337, S340, S341, S342, S343, S344	13
I-494 (EB)	S700, S701, S702, S703, S711, S713, S714, S292, S293, S294, S295, S296, S475, S1010, S733, S477, S478, S192, S194, S195, S196, S198, S120, S200, S201, S116, S863, S1198, S1199, S1201, S1202, S1203, S1363, S1204, S1205, S1208	36
I-494 (WB)	S1031, S1032, S1033, S1035, S1184, S1187, S1190, S864, S1192, S1193, S506, S507, S1818, S115, S182, S183, S185, S187, S188, S1011, S480, S1009, S483, S487, S488, S511, S512, S513, S515, S516, S517, S518, S718, S719, S720, S721, S722, S723	38
I-694 (EB)	S131, S134, S142, S145, S147, S163, S165, S166, S173, S175, S203, S1074, S1077, S1080, S1455, S1393, S1394, S1399, S1402, S1405, S1406, S1028	22
I-694 (WB)	S1410, S1411, S1412, S1418, S1420, S1422, S1423, S1424, S1458, S1459, S1461, S1083, S204, S199, S178, S172, S151, S153, S154, S158	20
I-94 (EB)	S1740, S1741, S1116, S1117, S1118, S1120, S1121, S1122, S205, S207, S211, S219, S223, S225, S229, S231, S130, S235, S240, S244, S135, S246, S140, S141, S103, S109, S110, S465, S554, S466, S467, S775, S468, S1814, S469, S776, S1815, S479, S489, S778, S490, S1816, S491, S499, S509, S779, S780, S781, S1042	49
I-94 (WB)	S1058, S1060, S1066, S1067, S1068, S1069, S792, S790, S97, S546, S789, S788, S548, S787, S1808, S549, S786, S1809, S550, S785, S552, S555, S553, S561, S559, S560, S1817, S1943, S76, S86, S89, S252, S251, S249, S247, S126, S243, S241, S128, S234, S129, S232, S230, S224, S220, S218, S216, S213, S208, S206, S1106, S1107, S1108, S1109, S1110	55
T.H.10 (EB)	S942, S943, S944, S945, S946, S947, S961, S962	8
T.H.10 (WB)	S1822, S979, S980, S981, S982, S1137, S984, S989, S990	9
T.H.100 (NB)	S378, S379, S380, S381, S382, S383, S384, S386, ST1000, S387, S388, S389, S391, S392, S393, S394, S406, S931, S932, S933, S934, S935, S1614	23
T.H.100 (SB)	S1615, S1616, S936, S937, S938, S939, S1014, S1015, S1016, S398, S403, S404, S407, S408, S409, S410, ST1001, S413, S414, S415, S421	21

T.H.212 (EB)	S841, S842, S843, S860, S862, S423, S424, S425	8
T.H.212 (WB)	S361, S364, S444, S445, S449, S820, S821, S823	8
T.H.36 (EB)	S587, S590, S591, S592, S593, S594, S595, S604, S596, S597, S598, S601, S602, S603	14
T.H.36 (WB)	S607, S608, S609, S610, S611, S589, S612, S613, S614, S615, S617, S618	12
T.H.5 (EB)	S861	1
T.H.52 (NB)	S1176, S1177	2
T.H.55 (EB)	S519	1
T.H.62 (EB)	S311, S313, S314, S315, S316, S67, S328, S322, S323	9
T.H.62 (WB)	S1136, S331, S333, S334, S133, S127, S350, S351, S352, S353, S354	11
T.H.77 (SB)	S541, S542, S543, S807, S808, S809	6
U.S.169 (NB)	S1611, S1144, S1145, S430, S431, S432, S433, S434, S435, S437, S438, S440, S441, S442, S443, S770, S769, S768, S767, S766, S765, S764, S763, S762, S761, S221	26
U.S.169 (SB)	S750, S751, S749, S222, S748, S747, S744, S742, S736, S741, S740, S739, S738, S737, S446, S448, S450, S451, S452, S453, S455, S456, S457, S458, S1147	25

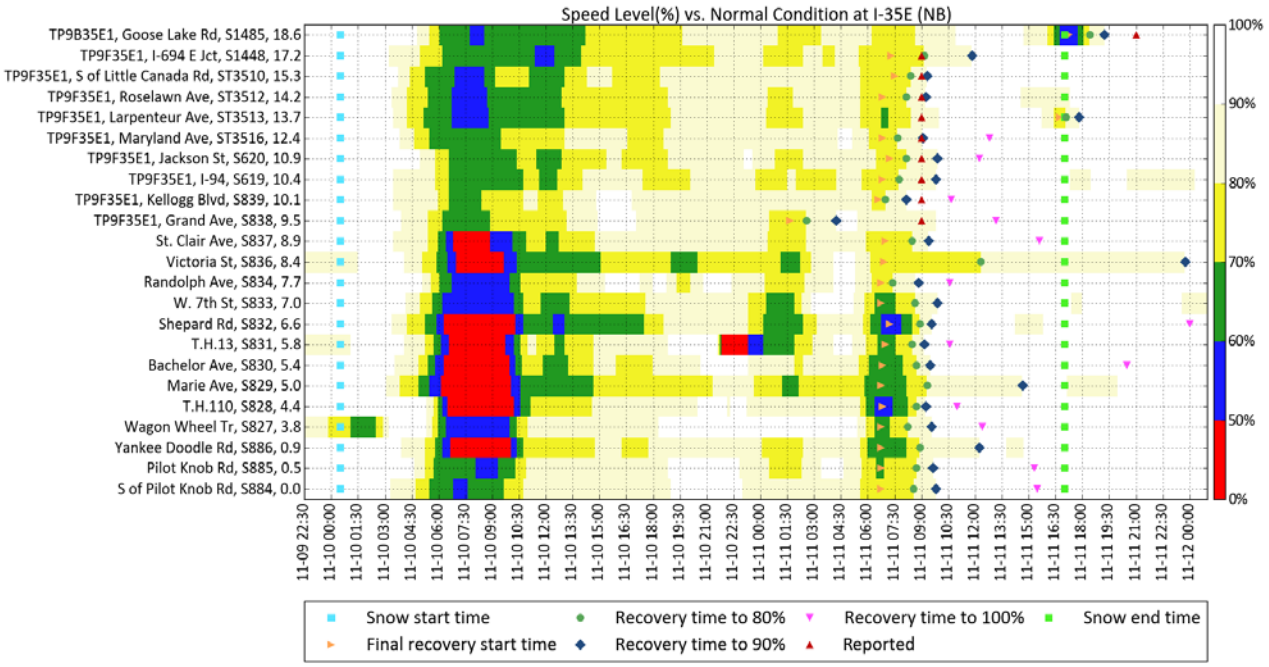


Figure 3.5.3: NCRT Estimation Results for I-35E NB (November 10-11, 2014)

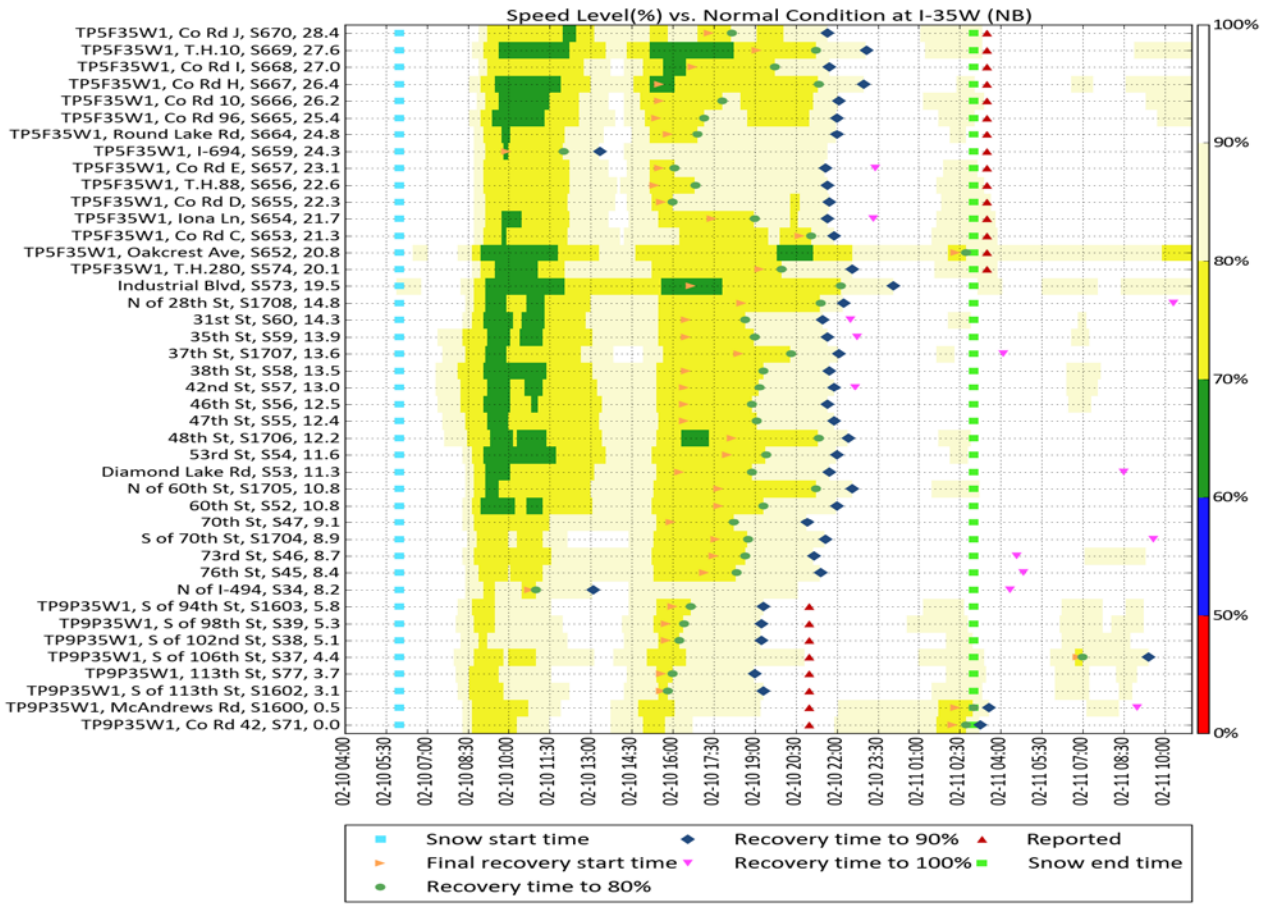


Figure 3.5.4: NCRT Estimation Results for I-35W NB (February 10-11, 2015)

CHAPTER 4: CONCLUSIONS

This report summarizes the results from the current research, Phase 2, to develop traffic-data-based alternative measures for winter snow maintenance operations and an automatic process to estimate those measures for the metro freeway network in Minnesota. First, a comparative analysis was conducted with the traffic data collected under normal and snow conditions. The findings from this analysis include:

- The speed level at each detector station under the normal dry days can vary significantly through time depending on the several factors including traffic demand, accidents and other random factors. Therefore, the time-dependent average speed at a station may not represent the 'normal' condition at that particular time.
- Under the normal dry weather conditions, the speed-density relationship at each detector station clearly shows consistent patterns, while the specific shape of the u-k patterns can vary from station to station.
- There are significant differences in terms of the u-k change patterns during the speed reduction and recovery periods at a same station under normal dry conditions. Further the u-k patterns during the speed reduction and recovery periods are consistent at the same station through time. This indicates a representative speed value for a given density under normal conditions can be determined from the historical data and that value can vary depending on the direction of the speed changes, i.e., either downward or upward.
- The traffic data plots during the snow events show significantly different patterns from those under normal dry weather conditions. The detailed analysis of the traffic patterns during the snow recovery periods indicates the u-k variations are substantially affected by road surface conditions, traffic demand level, and snow plowing operations. In particular, it can be clearly observed that the data points in the u-k plane during the snow recovery periods are moving toward the normal-day recovery u-k patterns.
- By comparing the u-k patterns during a snow event and those from normal weather condition, it can be possible to identify the recovery status of the traffic flow at a given location.

Based on the above findings, the Normal Condition Regain Time (NCRT) is determined as the alternative measure for the snow maintenance operations. Further, the functional relationships for the speed-density patterns during the speed reduction and recovery periods are identified to represent the normal condition for a given location and an efficient process to calibrate the parameters of those functions was developed. Also, average speed patterns are identified for each detector station for the night-time periods, whose speed-density patterns are substantially different from those during day-time periods. Using those speed-density functions and the average speed patterns representing normal traffic conditions, an automatic process to estimate the NCRT for the target detector stations in the metro freeway network was developed and applied to the selected snow events in 2014-15. Specifically, the times to reach 80% and 90% of the normal condition, NCRT-80 and NCRT-90, were determined for the selected detector stations in each corridor in the network. The estimation results are presented in a graphical format, which shows the corridor-wide time-dependent variations of the traffic conditions for a given snow event.

Future research needs to include the development of an operational version of the NCRT estimation system that can be used on a daily basis to analyze and improve the snow maintenance operations. The development of an on-line version that can be used for coordinating snow operations in real time is also recommended. The analysis of the relationship between the NCRT measures and snow operational

strategies, e.g., plowing starting time and methods, would be valuable in developing effective winter maintenance strategies.

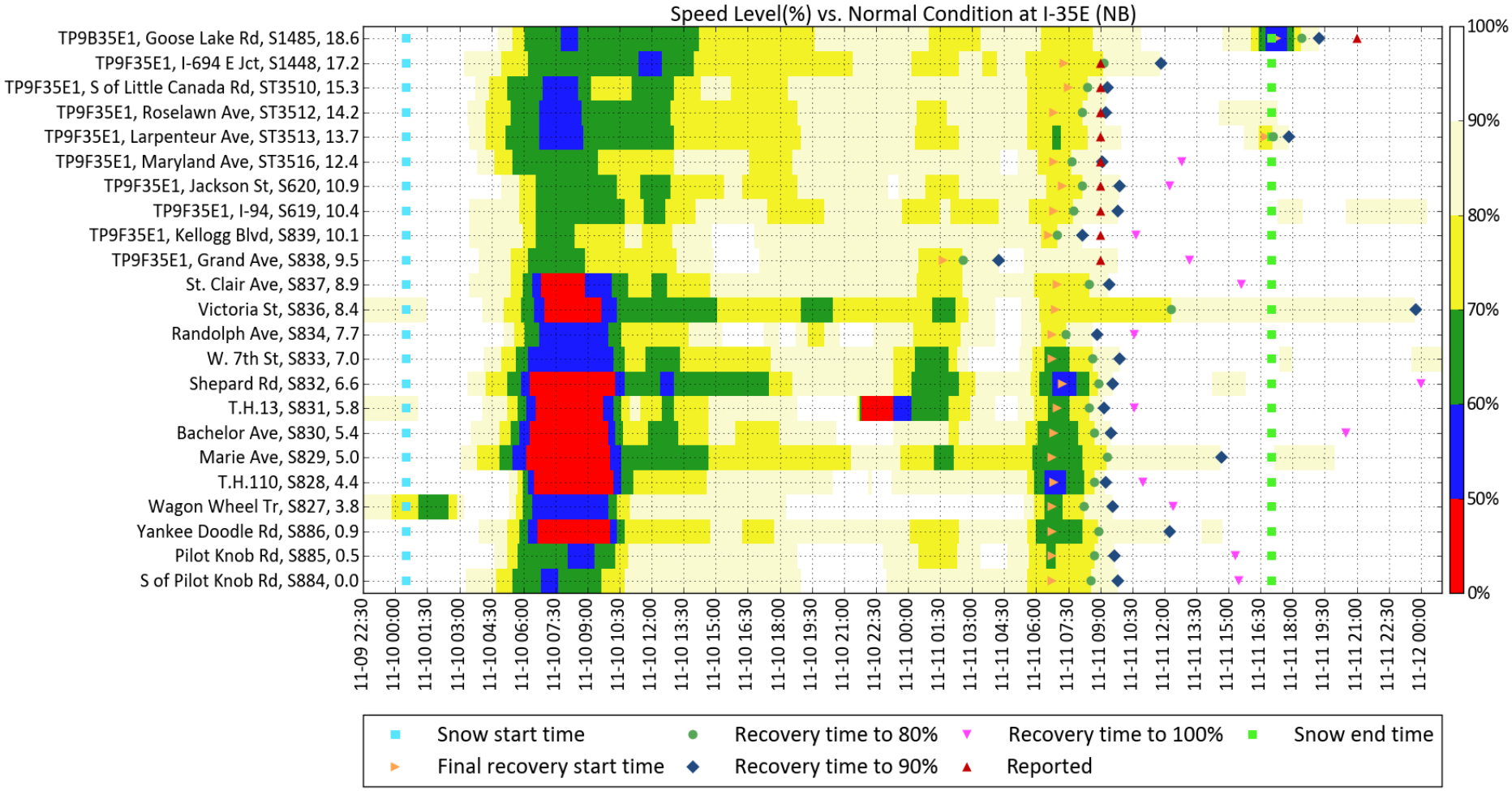
REFERENCES

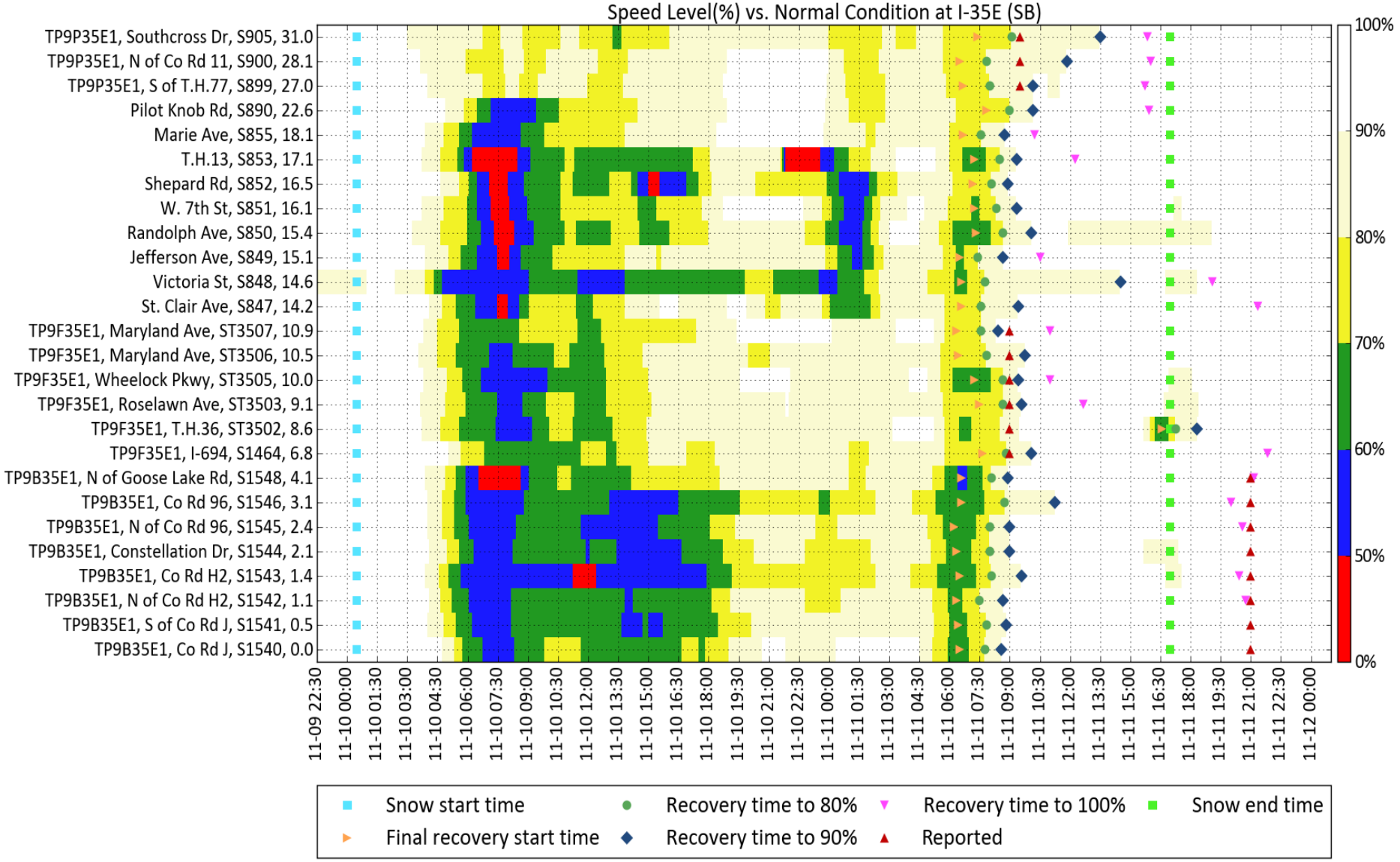
1. T., Maze, C., Albrecht, D., Kroeger, J., Wiegand, 2007, *Performance Measures for Snow and Ice Control Operations*, NCHRP 136, Washington, D.C.
2. Q., Lin and W., Nixon, 2009, *Performance Measurement for Highway Winter Maintenance Operation*, Technical Report for Iowa Highway Research Board, Iowa City, Iowa
3. C., Lee, W., Loh, X., Qin, M., Sproul , 2008, *Development of New Performance Measure for Sinter Maintenance by Using Vehicle Speed Data*, Transportation Research Record 2055, pp. 89-98.
4. C., Lee, B., Ran, 2004, *Pilot Study of Speed-Recovery Duration as a Measure of Winter Maintenance Performance*, Transportation Research Record 1877, pp. 137-143.
5. Z., Helmut, O., Erdinc, S., Kiran, 2006, *Evaluation of ODOT Roadway/Weather Sensor Systems for Snow & Ice Removal Operations-Part V: Vehicular Speed Associated with Winter pavement Conditions*, Final Report for Ohio Department of Transportation, Ohio University, Athens, OH
6. H., Wang, J., Li, Q., Chen, D., Ni, 2011, *Logistic modeling of the equilibrium speed–density relationship*, Transportation Research Part A, doi:10.1016/j.tra.2011.03.010

Appendix A. Network-wide Normal Condition Recovery Time Estimation Results for Snow Event on November 11, 2014

Appendix A. Network-wide Normal Condition Recovery Time Estimation Results for Snow Event on November 11, 2014

Snow Event: 2014-11-10 00:30 ~ 2014-11-11 17:00




Speed Level(%) vs. Normal Condition at I-35E (SB)
TP9P35E1, Southcross Dr, S905, 31.0
TP9P35E1, N of Co Rd 11, S900, 28.1
TP9P35E1, S of T.H.77, S899, 27.0
Pilot Knob Rd, S890, 22.6
Marie Ave, S855, 18.1
T.H.13, S853, 17.1
Shepard Rd, S852, 16.5
W. 7th St, S851, 16.1
Randolph Ave, S850, 15.4
Jefferson Ave, S849, 15.1
Victoria St, S848, 14.6
St. Clair Ave, S847, 14.2
TP9F35E1, Maryland Ave, ST3507, 10.9
TP9F35E1, Maryland Ave, ST3506, 10.5
TP9F35E1, Wheelock Pkwy, ST3505, 10.0
TP9F35E1, Roselawn Ave, ST3503, 9.1
TP9F35E1, T.H.36, ST3502, 8.6
TP9F35E1, I-694, S1464, 6.8
TP9B35E1, N of Goose Lake Rd, S1548, 4.1
TP9B35E1, Co Rd 96, S1546, 3.1
TP9B35E1, N of Co Rd 96, S1545, 2.4
TP9B35E1, Constellation Dr, S1544, 2.1
TP9B35E1, Co Rd H2, S1543, 1.4
TP9B35E1, N of Co Rd H2, S1542, 1.1
TP9B35E1, S of Co Rd J, S1541, 0.5
TP9B35E1, Co Rd J, S1540, 0.0
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100%
90%
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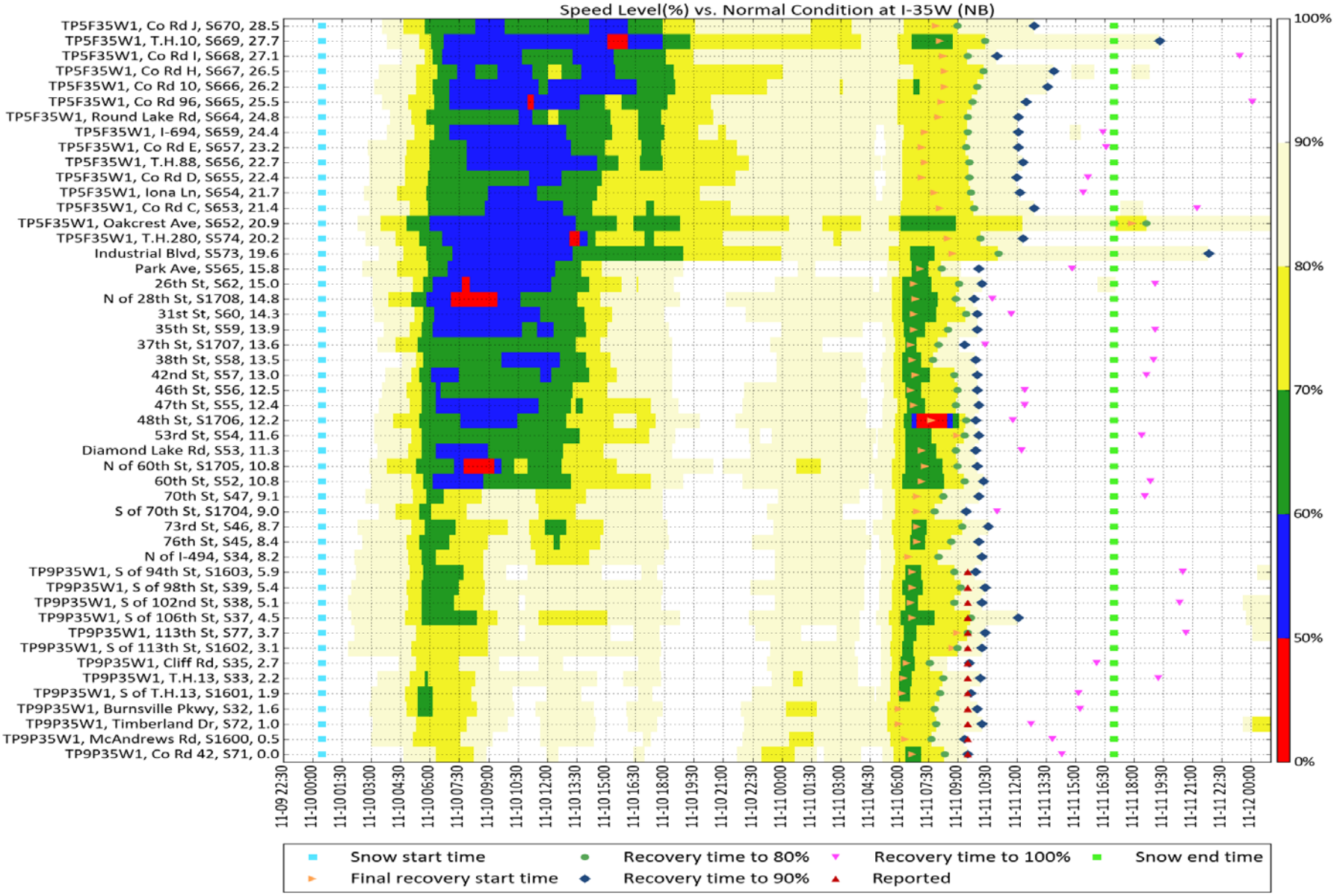
Snow start time
Recovery time to 80%
Recovery time to 100%
Snow end time
Final recovery start time
Recovery time to 90%
Reported


Speed Level(%) vs. Normal Condition at I-35W (NB)
TP5F35W1, Co Rd J, S670, 28.5
TP5F35W1, T.H.10, S669, 27.7
TP5F35W1, Co Rd I, S668, 27.1
TP5F35W1, Co Rd H, S667, 26.5
TP5F35W1, Co Rd 10, S666, 26.2
TP5F35W1, Co Rd 96, S665, 25.5
TP5F35W1, Round Lake Rd, S664, 24.8
TP5F35W1, I-694, S659, 24.4
TP5F35W1, Co Rd E, S657, 23.2
TP5F35W1, T.H.88, S656, 22.7
TP5F35W1, Co Rd D, S655, 22.4
TP5F35W1, Iona Ln, S654, 21.7
TP5F35W1, Co Rd C, S653, 21.4
TP5F35W1, Oakcrest Ave, S652, 20.9
TP5F35W1, T.H.280, S574, 20.2
Industrial Blvd, S573, 19.6
Park Ave, S565, 15.8
26th St, S62, 15.0
N of 28th St, S1708, 14.8
31st St, S60, 14.3
35th St, S59, 13.9
37th St, S1707, 13.6
38th St, S58, 13.5
42nd St, S57, 13.0
46th St, S56, 12.5
47th St, S55, 12.4
48th St, S1706, 12.2
53rd St, S54, 11.6
Diamond Lake Rd, S53, 11.3
N of 60th St, S1705, 10.8
60th St, S52, 10.8
70th St, S47, 9.1
S of 70th St, S1704, 9.0
73rd St, S46, 8.7
76th St, S45, 8.4
N of I-494, S34, 8.2
TP9P35W1, S of 94th St, S1603, 5.9
TP9P35W1, S of 98th St, S39, 5.4
TP9P35W1, S of 102nd St, S38, 5.1
TP9P35W1, S of 106th St, S37, 4.5
TP9P35W1, 113th St, S77, 3.7
TP9P35W1, S of 113th St, S1602, 3.1
TP9P35W1, Cliff Rd, S35, 2.7
TP9P35W1, T.H.13, S33, 2.2
TP9P35W1, S of T.H.13, S1601, 1.9
TP9P35W1, Burnsville Pkwy, S32, 1.6
TP9P35W1, Timberland Dr, S72, 1.0
TP9P35W1, McAndrews Rd, S1600, 0.5
TP9P35W1, Co Rd 42, S71, 0.0
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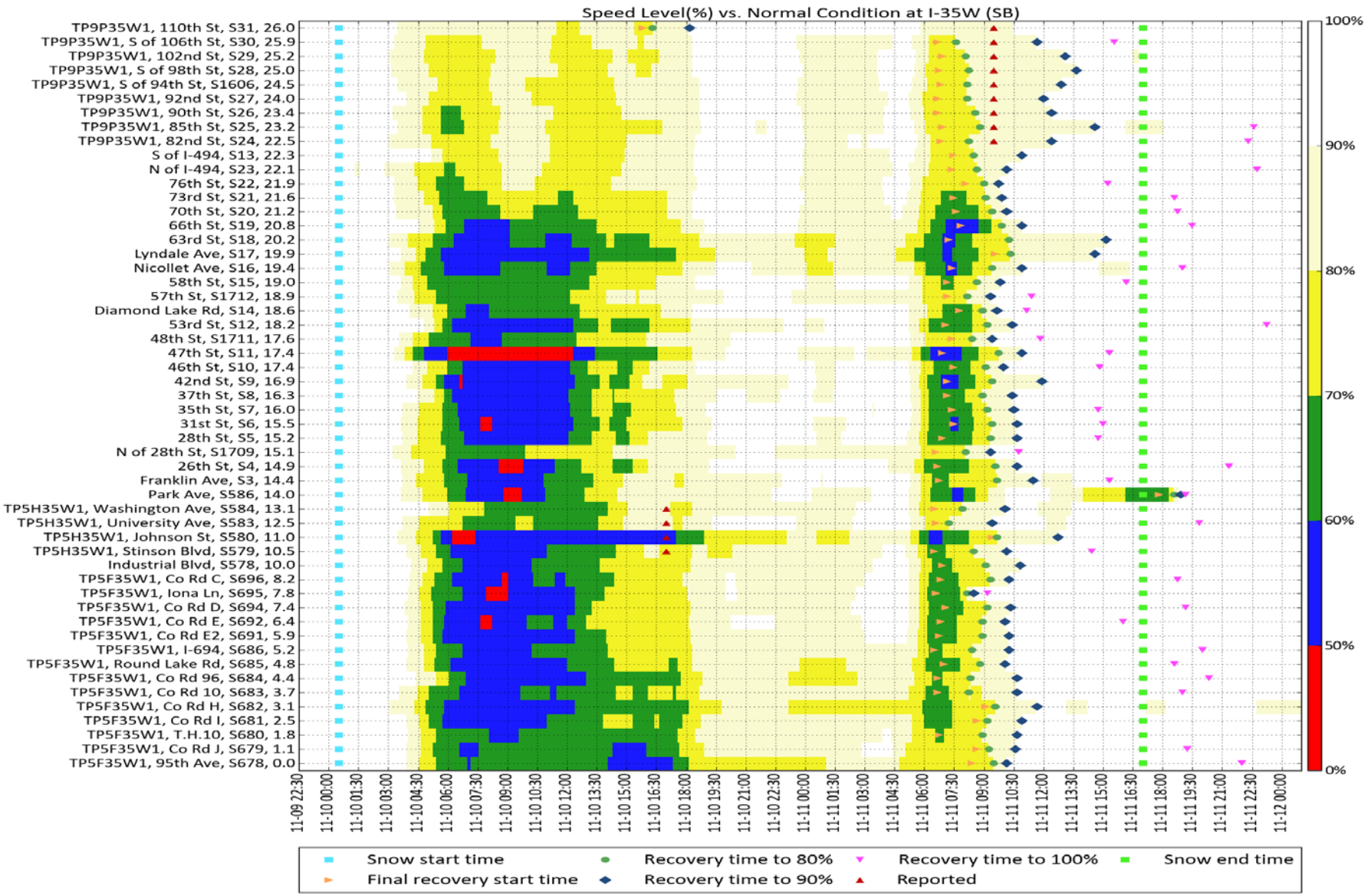
Snow start time
Recovery time to 80%
Recovery time to 100%
Snow end time
Final recovery start time
Recovery time to 90%
Reported


Speed Level(%) vs. Normal Condition at I-35W (SB)
TP9P35W1, 110th St, S31, 26.0
TP9P35W1, S of 106th St, S30, 25.9
TP9P35W1, 102nd St, S29, 25.2
TP9P35W1, S of 98th St, S28, 25.0
TP9P35W1, S of 94th St, S1606, 24.5
TP9P35W1, 92nd St, S27, 24.0
TP9P35W1, 90th St, S26, 23.4
TP9P35W1, 85th St, S25, 23.2
TP9P35W1, 82nd St, S24, 22.5
S of I-494, S13, 22.3
N of I-494, S23, 22.1
76th St, S22, 21.9
73rd St, S21, 21.6
70th St, S20, 21.2
66th St, S19, 20.8
63rd St, S18, 20.2
Lyndale Ave, S17, 19.9
Nicollet Ave, S16, 19.4
58th St, S15, 19.0
57th St, S1712, 18.9
Diamond Lake Rd, S14, 18.6
53rd St, S12, 18.2
48th St, S1711, 17.6
47th St, S11, 17.4
46th St, S10, 17.4
42nd St, S9, 16.9
37th St, S8, 16.3
35th St, S7, 16.0
31st St, S6, 15.5
28th St, S5, 15.2
N of 28th St, S1709, 15.1
26th St, S4, 14.9
Franklin Ave, S3, 14.4
Park Ave, S586, 14.0
TP5H35W1, Washington Ave, S584, 13.1
TP5H35W1, University Ave, S583, 12.5
TP5H35W1, Johnson St, S580, 11.0
TP5H35W1, Stinson Blvd, S579, 10.5
Industrial Blvd, S578, 10.0
TP5F35W1, Co Rd C, S696, 8.2
TP5F35W1, Iona Ln, S695, 7.8
TP5F35W1, Co Rd D, S694, 7.4
TP5F35W1, Co Rd E, S692, 6.4
TP5F35W1, Co Rd E2, S691, 5.9
TP5F35W1, I-694, S686, 5.2
TP5F35W1, Round Lake Rd, S685, 4.8
TP5F35W1, Co Rd 96, S684, 4.4
TP5F35W1, Co Rd 10, S683, 3.7
TP5F35W1, Co Rd H, S682, 3.1
TP5F35W1, Co Rd I, S681, 2.5
TP5F35W1, T.H.10, S680, 1.8
TP5F35W1, Co Rd J, S679, 1.1
TP5F35W1, 95th Ave, S678, 0.0
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Snow start time
Recovery time to 80%
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Final recovery start time
Recovery time to 90%
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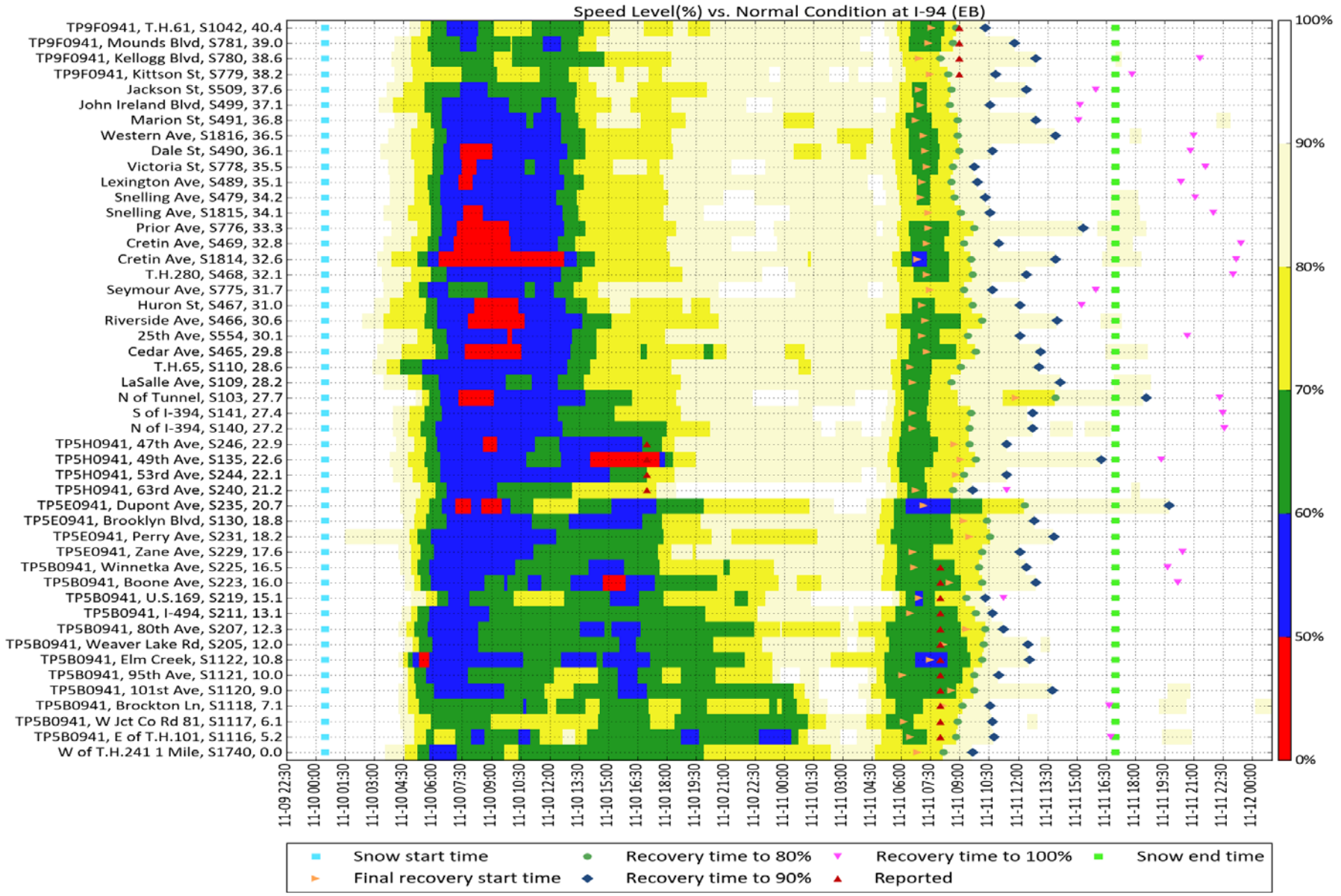
Speed Level(%) vs. Normal Condition at I-94 (EB)
TP9F0941, T.H.61, S1042, 40.4
TP9F0941, Mounds Blvd, S781, 39.0
TP9F0941, Kellogg Blvd, S780, 38.6
TP9F0941, Kittson St, S779, 38.2
Jackson St, S509, 37.6
John Ireland Blvd, S499, 37.1
Marion St, S491, 36.8
Western Ave, S1816, 36.5
Dale St, S490, 36.1
Victoria St, S778, 35.5
Lexington Ave, S489, 35.1
Snelling Ave, S479, 34.2
Snelling Ave, S1815, 34.1
Prior Ave, S776, 33.3
Cretin Ave, S469, 32.8
Cretin Ave, S1814, 32.6
T.H.280, S468, 32.1
Seymour Ave, S775, 31.7
Huron St, S467, 31.0
Riverside Ave, S466, 30.6
25th Ave, S554, 30.1
Cedar Ave, S465, 29.8
T.H.65, S110, 28.6
LaSalle Ave, S109, 28.2
N of Tunnel, S103, 27.7
S of I-394, S141, 27.4
N of I-394, S140, 27.2
TP5H0941, 47th Ave, S246, 22.9
TP5H0941, 49th Ave, S135, 22.6
TP5H0941, 53rd Ave, S244, 22.1
TP5H0941, 63rd Ave, S240, 21.2
TP5E0941, Dupont Ave, S235, 20.7
TP5E0941, Brooklyn Blvd, S130, 18.8
TP5E0941, Perry Ave, S231, 18.2
TP5E0941, Zane Ave, S229, 17.6
TP5B0941, Winnetka Ave, S225, 16.5
TP5B0941, Boone Ave, S223, 16.0
TP5B0941, U.S.169, S219, 15.1
TP5B0941, I-494, S211, 13.1
TP5B0941, 80th Ave, S207, 12.3
TP5B0941, Weaver Lake Rd, S205, 12.0
TP5B0941, Elm Creek, S1122, 10.8
TP5B0941, 95th Ave, S1121, 10.0
TP5B0941, 101st Ave, S1120, 9.0
TP5B0941, Brockton Ln, S1118, 7.1
TP5B0941, W Jct Co Rd 81, S1117, 6.1
TP5B0941, E of T.H.101, S1116, 5.2
W of T.H.241 1 Mile, S1740, 0.0
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Snow start time
Recovery time to 80%
Recovery time to 100%
Snow end time
Final recovery start time
Recovery time to 90%
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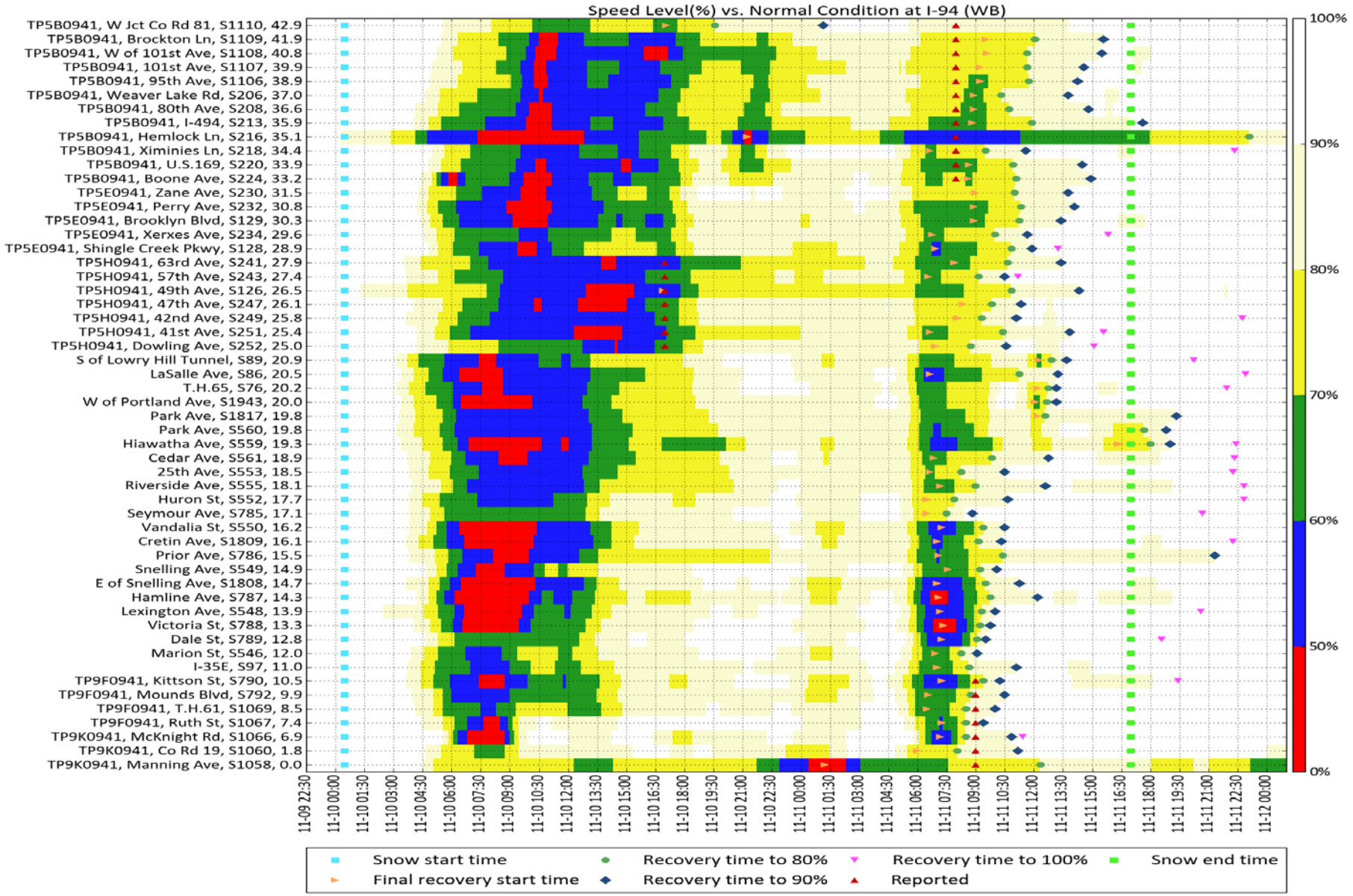
Speed Level(%) vs. Normal Condition at I-94 (WB)
TP5B0941, W Jct Co Rd 81, S1110, 42.9
TP5B0941, Brockton Ln, S1109, 41.9
TP5B0941, W of 101st Ave, S1108, 40.8
TP5B0941, 101st Ave, S1107, 39.9
TP5B0941, 95th Ave, S1106, 38.9
TP5B0941, Weaver Lake Rd, S206, 37.0
TP5B0941, 80th Ave, S208, 36.6
TP5B0941, I-494, S213, 35.9
TP5B0941, Hemlock Ln, S216, 35.1
TP5B0941, Ximinies Ln, S218, 34.4
TP5B0941, U.S.169, S220, 33.9
TP5B0941, Boone Ave, S224, 33.2
TP5E0941, Zane Ave, S230, 31.5
TP5E0941, Perry Ave, S232, 30.8
TP5E0941, Brooklyn Blvd, S129, 30.3
TP5E0941, Xerxes Ave, S234, 29.6
TP5E0941, Shingle Creek Pkwy, S128, 28.9
TP5H0941, 63rd Ave, S241, 27.9
TP5H0941, 57th Ave, S243, 27.4
TP5H0941, 49th Ave, S126, 26.5
TP5H0941, 47th Ave, S247, 26.1
TP5H0941, 42nd Ave, S249, 25.8
TP5H0941, 41st Ave, S251, 25.4
TP5H0941, Dowling Ave, S252, 25.0
S of Lowry Hill Tunnel, S89, 20.9
LaSalle Ave, S86, 20.5
T.H.65, S76, 20.2
W of Portland Ave, S1943, 20.0
Park Ave, S1817, 19.8
Park Ave, S560, 19.8
Hiawatha Ave, S559, 19.3
Cedar Ave, S561, 18.9
25th Ave, S553, 18.5
Riverside Ave, S555, 18.1
Huron St, S552, 17.7
Seymour Ave, S785, 17.1
Vandalia St, S550, 16.2
Cretin Ave, S1809, 16.1
Prior Ave, S786, 15.5
Snelling Ave, S549, 14.9
E of Snelling Ave, S1808, 14.7
Hamline Ave, S787, 14.3
Lexington Ave, S548, 13.9
Victoria St, S788, 13.3
Dale St, S789, 12.8
Marion St, S546, 12.0
I-35E, S97, 11.0
TP9F0941, Kittson St, S790, 10.5
TP9F0941, Mounds Blvd, S792, 9.9
TP9F0941, T.H.61, S1069, 8.5
TP9F0941, Ruth St, S1067, 7.4
TP9K0941, McKnight Rd, S1066, 6.9
TP9K0941, Co Rd 19, S1060, 1.8
TP9K0941, Manning Ave, S1058, 0.0
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Snow start time
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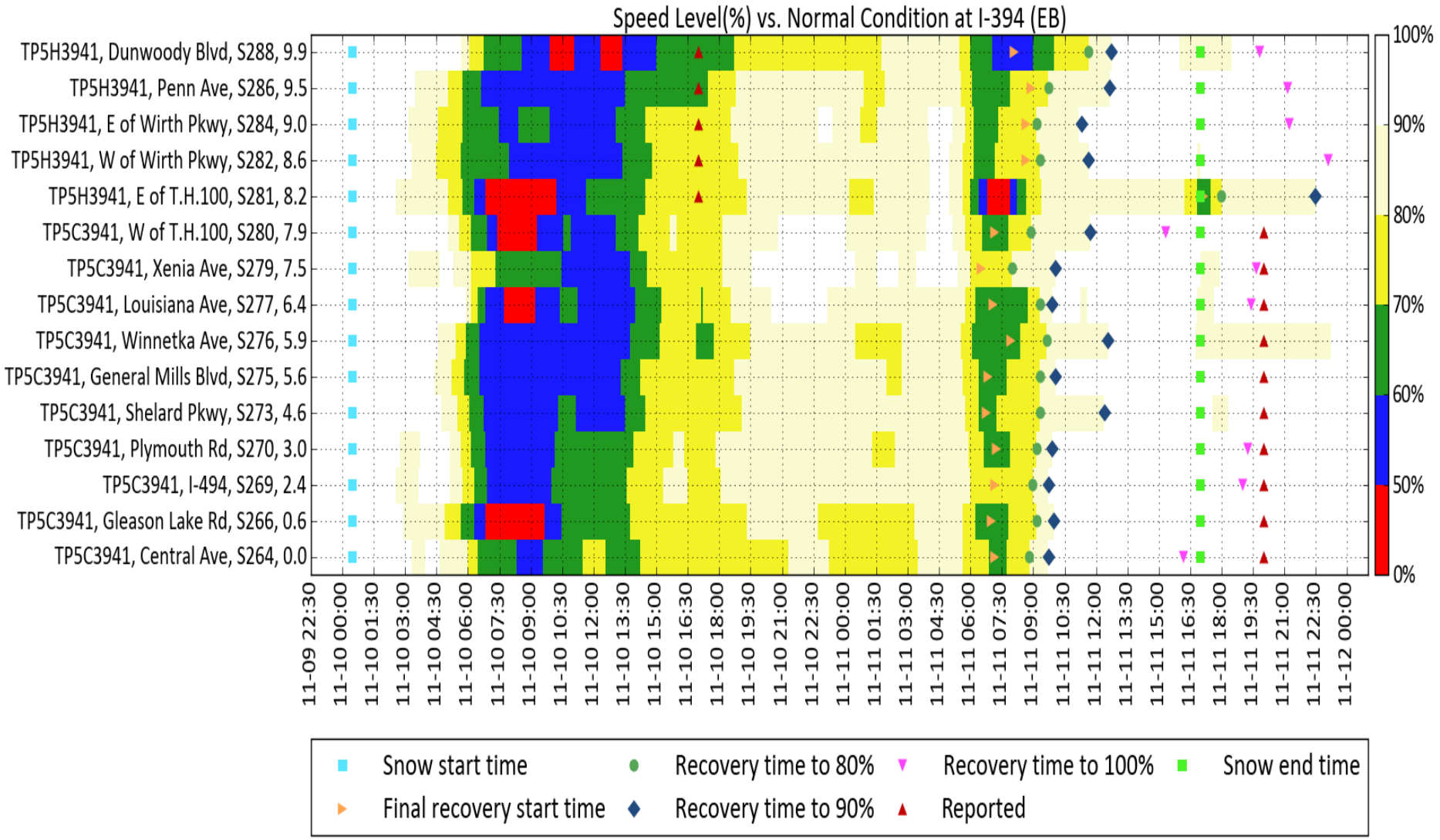
Recovery time to 100%
Snow end time
Final recovery start time
Recovery time to 90%
Reported


Speed Level(%) vs. Normal Condition at I-394 (EB)
TP5H3941, Dunwoody Blvd, S288, 9.9
TP5H3941, Penn Ave, S286, 9.5
TP5H3941, E of Wirth Pkwy, S284, 9.0
TP5H3941, W of Wirth Pkwy, S282, 8.6
TP5H3941, E of T.H.100, S281, 8.2
TP5C3941, W of T.H.100, S280, 7.9
TP5C3941, Xenia Ave, S279, 7.5
TP5C3941, Louisiana Ave, S277, 6.4
TP5C3941, Winnetka Ave, S276, 5.9
TP5C3941, General Mills Blvd, S275, 5.6
TP5C3941, Shelard Pkwy, S273, 4.6
TP5C3941, Plymouth Rd, S270, 3.0
TP5C3941, I-494, S269, 2.4
TP5C3941, Gleason Lake Rd, S266, 0.6
TP5C3941, Central Ave, S264, 0.0
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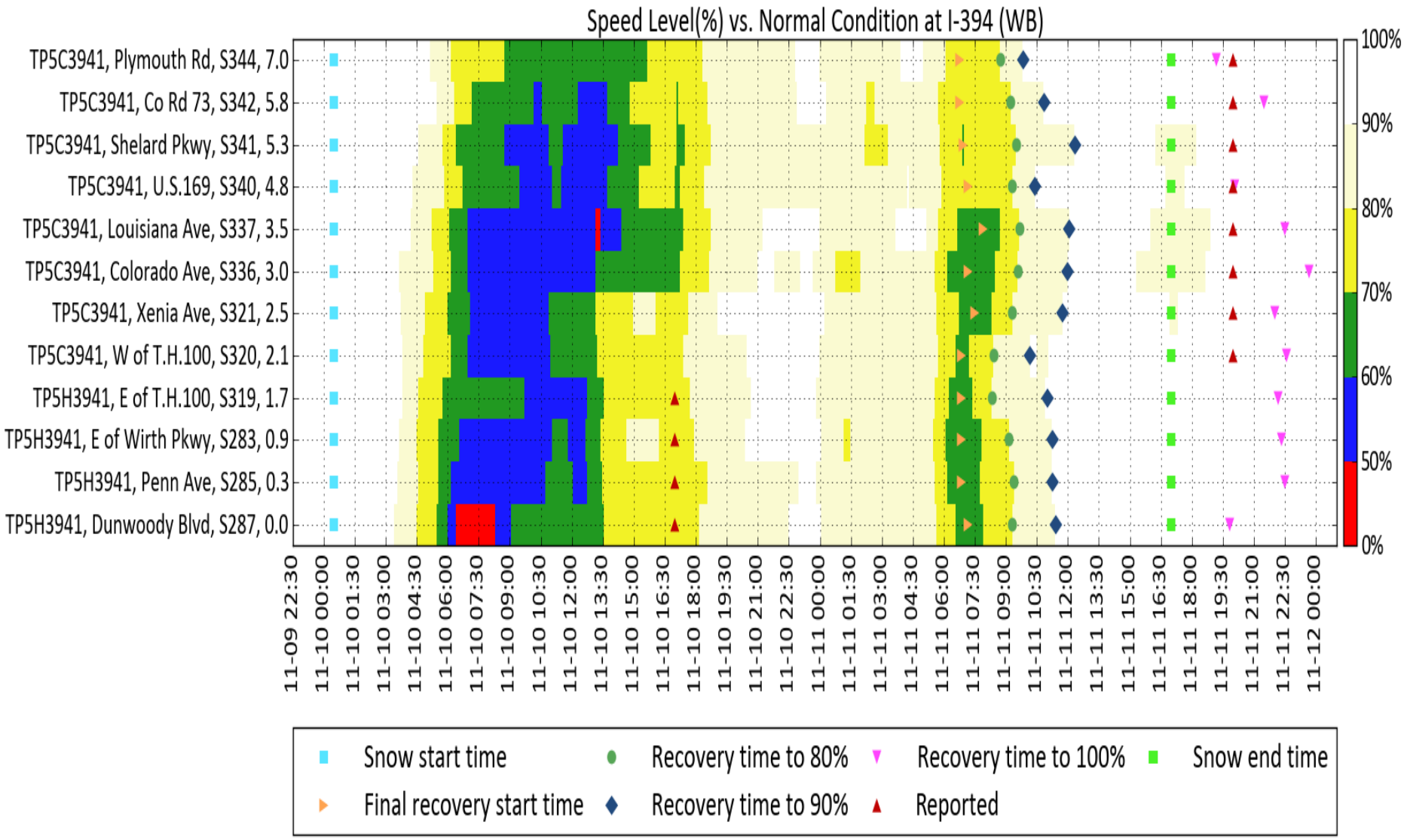
Snow start time
Recovery time to 80%
Recovery time to 100%
Snow end time
Final recovery start time
Recovery time to 90%
Reported


Speed Level(%) vs. Normal Condition at I-394 (WB)
TP5C3941, Plymouth Rd, S344, 7.0
TP5C3941, Co Rd 73, S342, 5.8
TP5C3941, Shelard Pkwy, S341, 5.3
TP5C3941, U.S.169, S340, 4.8
TP5C3941, Louisiana Ave, S337, 3.5
TP5C3941, Colorado Ave, S336, 3.0
TP5C3941, Xenia Ave, S321, 2.5
TP5C3941, W of T.H.100, S320, 2.1
TP5H3941, E of T.H.100, S319, 1.7
TP5H3941, E of Wirth Pkwy, S283, 0.9
TP5H3941, Penn Ave, S285, 0.3
TP5H3941, Dunwoody Blvd, S287, 0.0
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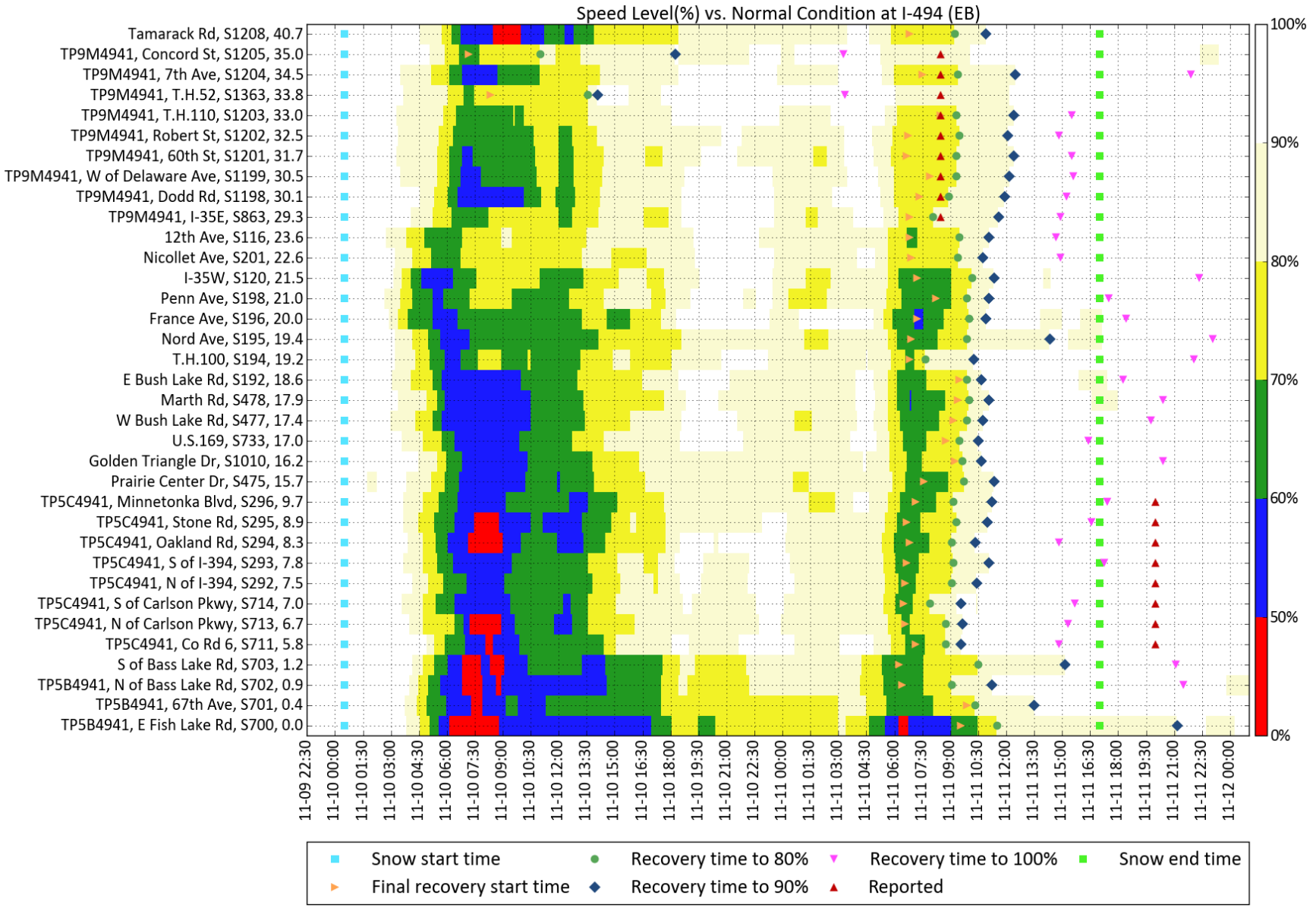
Snow start time
Recovery time to 80%
Recovery time to 100%
Snow end time
Final recovery start time
Recovery time to 90%
Reported


Speed Level(%) vs. Normal Condition at I-494 (EB)
Tamarack Rd, S1208, 40.7
TP9M4941, Concord St, S1205, 35.0
TP9M4941, 7th Ave, S1204, 34.5
TP9M4941, T.H.52, S1363, 33.8
TP9M4941, T.H.110, S1203, 33.0
TP9M4941, Robert St, S1202, 32.5
TP9M4941, 60th St, S1201, 31.7
TP9M4941, W of Delaware Ave, S1199, 30.5
TP9M4941, Dodd Rd, S1198, 30.1
TP9M4941, I-35E, S863, 29.3
12th Ave, S116, 23.6
Nicollet Ave, S201, 22.6
I-35W, S120, 21.5
Penn Ave, S198, 21.0
France Ave, S196, 20.0
Nord Ave, S195, 19.4
T.H.100, S194, 19.2
E Bush Lake Rd, S192, 18.6
Marth Rd, S478, 17.9
W Bush Lake Rd, S477, 17.4
U.S.169, S733, 17.0
Golden Triangle Dr, S1010, 16.2
Prairie Center Dr, S475, 15.7
TP5C4941, Minnetonka Blvd, S296, 9.7
TP5C4941, Stone Rd, S295, 8.9
TP5C4941, Oakland Rd, S294, 8.3
TP5C4941, S of I-394, S293, 7.8
TP5C4941, N of I-394, S292, 7.5
TP5C4941, S of Carlson Pkwy, S714, 7.0
TP5C4941, N of Carlson Pkwy, S713, 6.7
TP5C4941, Co Rd 6, S711, 5.8
S of Bass Lake Rd, S703, 1.2
TP5B4941, N of Bass Lake Rd, S702, 0.9
TP5B4941, 67th Ave, S701, 0.4
TP5B4941, E Fish Lake Rd, S700, 0.0
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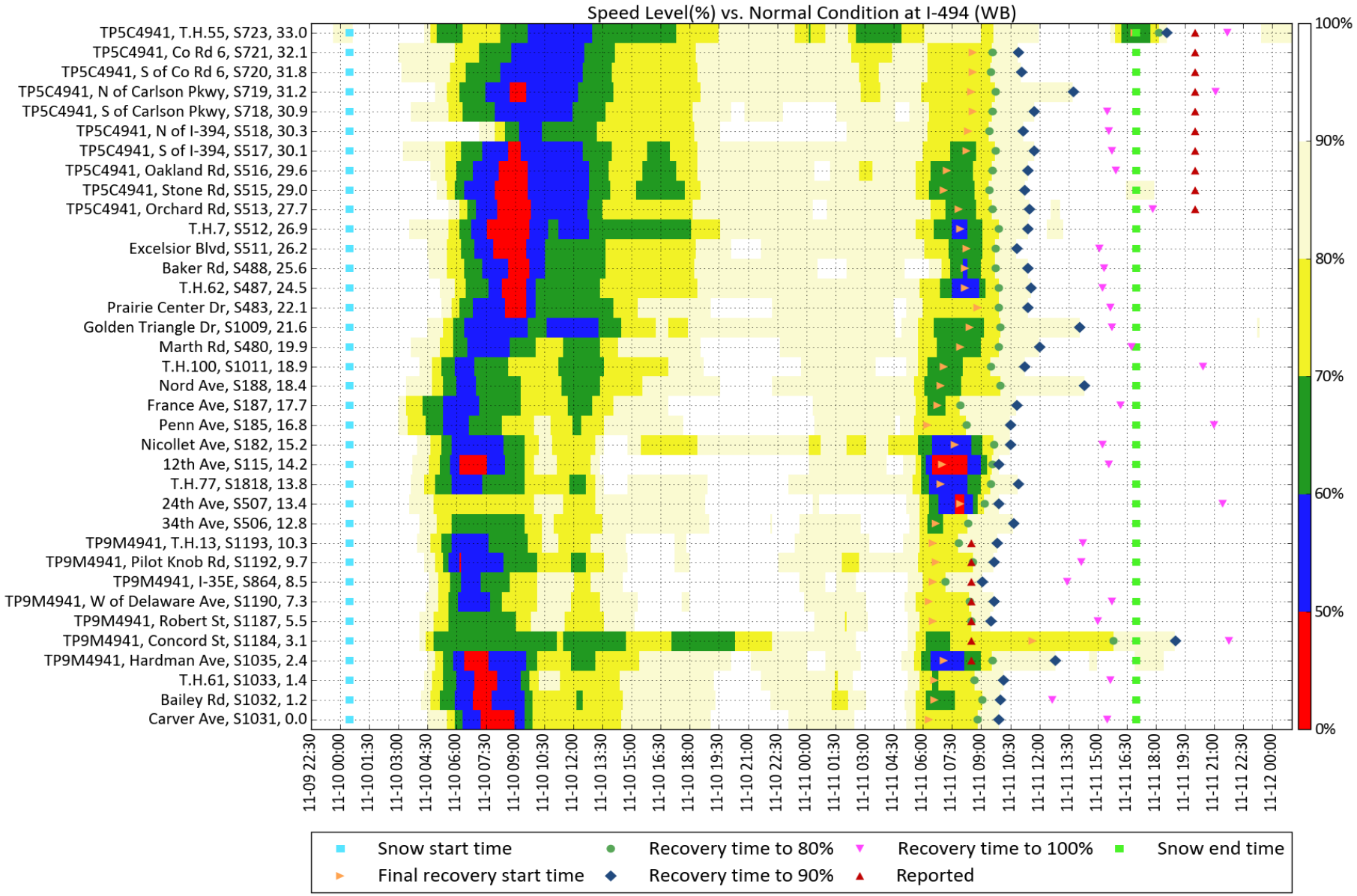
Snow start time
Recovery time to 80%
Recovery time to 100%
Snow end time
Final recovery start time
Recovery time to 90%
Reported


Speed Level(%) vs. Normal Condition at I-494 (WB)
TP5C4941, T.H.55, S723, 33.0
TP5C4941, Co Rd 6, S721, 32.1
TP5C4941, S of Co Rd 6, S720, 31.8
TP5C4941, N of Carlson Pkwy, S719, 31.2
TP5C4941, S of Carlson Pkwy, S718, 30.9
TP5C4941, N of I-394, S518, 30.3
TP5C4941, S of I-394, S517, 30.1
TP5C4941, Oakland Rd, S516, 29.6
TP5C4941, Stone Rd, S515, 29.0
TP5C4941, Orchard Rd, S513, 27.7
T.H.7, S512, 26.9
Excelsior Blvd, S511, 26.2
Baker Rd, S488, 25.6
T.H.62, S487, 24.5
Prairie Center Dr, S483, 22.1
Golden Triangle Dr, S1009, 21.6
Marth Rd, S480, 19.9
T.H.100, S1011, 18.9
Nord Ave, S188, 18.4
France Ave, S187, 17.7
Penn Ave, S185, 16.8
Nicollet Ave, S182, 15.2
12th Ave, S115, 14.2
T.H.77, S1818, 13.8
24th Ave, S507, 13.4
34th Ave, S506, 12.8
TP9M4941, T.H.13, S1193, 10.3
TP9M4941, Pilot Knob Rd, S1192, 9.7
TP9M4941, I-35E, S864, 8.5
TP9M4941, W of Delaware Ave, S1190, 7.3
TP9M4941, Robert St, S1187, 5.5
TP9M4941, Concord St, S1184, 3.1
TP9M4941, Hardman Ave, S1035, 2.4
T.H.61, S1033, 1.4
Bailey Rd, S1032, 1.2
Carver Ave, S1031, 0.0
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Snow start time
Recovery time to 80%
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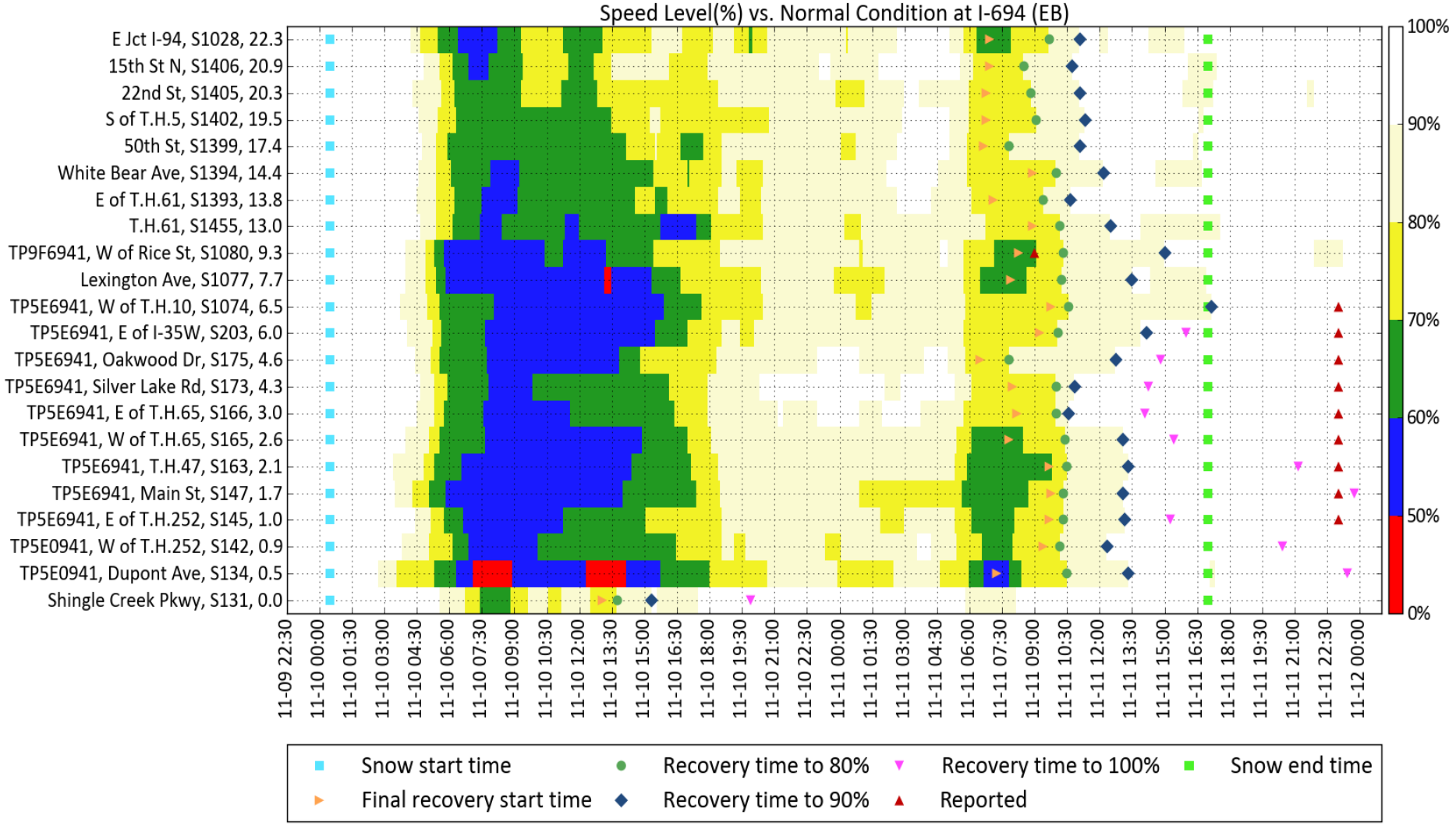
Snow end time
Final recovery start time
Recovery time to 90%
Reported


Speed Level(%) vs. Normal Condition at I-694 (EB)
E Jct I-94, S1028, 22.3
15th St N, S1406, 20.9
22nd St, S1405, 20.3
S of T.H.5, S1402, 19.5
50th St, S1399, 17.4
White Bear Ave, S1394, 14.4
E of T.H.61, S1393, 13.8
T.H.61, S1455, 13.0
TP9F6941, W of Rice St, S1080, 9.3
Lexington Ave, S1077, 7.7
TP5E6941, W of T.H.10, S1074, 6.5
TP5E6941, E of I-35W, S203, 6.0
TP5E6941, Oakwood Dr, S175, 4.6
TP5E6941, Silver Lake Rd, S173, 4.3
TP5E6941, E of T.H.65, S166, 3.0
TP5E6941, W of T.H.65, S165, 2.6
TP5E6941, T.H.47, S163, 2.1
TP5E6941, Main St, S147, 1.7
TP5E6941, E of T.H.252, S145, 1.0
TP5E0941, W of T.H.252, S142, 0.9
TP5E0941, Dupont Ave, S134, 0.5
Shingle Creek Pkwy, S131, 0.0
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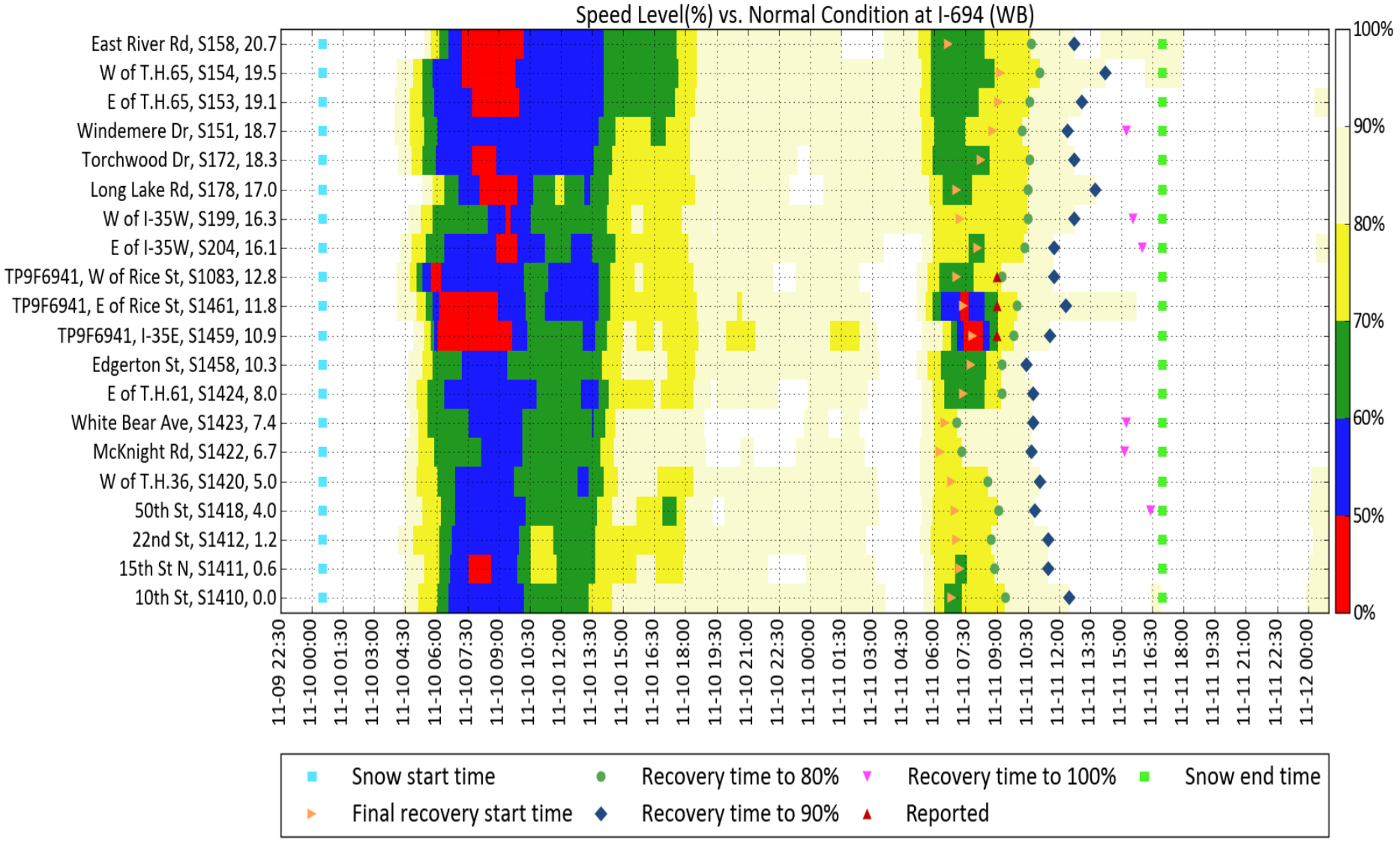
Snow start time
Recovery time to 80%
Recovery time to 100%
Snow end time
Final recovery start time
Recovery time to 90%
Reported


Speed Level(%) vs. Normal Condition at I-694 (WB)
East River Rd, S158, 20.7
W of T.H.65, S154, 19.5
E of T.H.65, S153, 19.1
Windemere Dr, S151, 18.7
Torchwood Dr, S172, 18.3
Long Lake Rd, S178, 17.0
W of I-35W, S199, 16.3
E of I-35W, S204, 16.1
TP9F6941, W of Rice St, S1083, 12.8
TP9F6941, E of Rice St, S1461, 11.8
TP9F6941, I-35E, S1459, 10.9
Edgerton St, S1458, 10.3
E of T.H.61, S1424, 8.0
White Bear Ave, S1423, 7.4
McKnight Rd, S1422, 6.7
W of T.H.36, S1420, 5.0
50th St, S1418, 4.0
22nd St, S1412, 1.2
15th St N, S1411, 0.6
10th St, S1410, 0.0
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Snow start time
Recovery time to 80%
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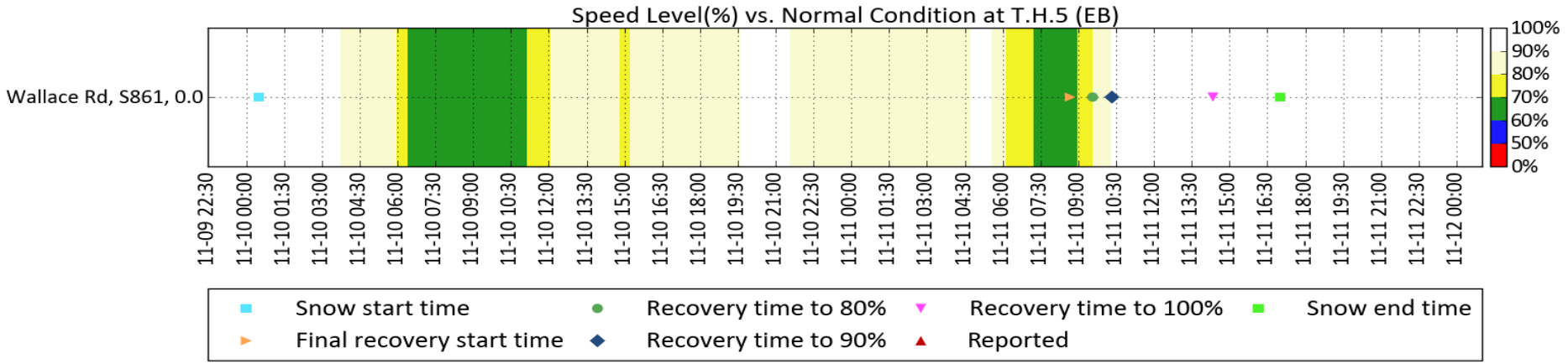
Snow end time
Final recovery start time
Recovery time to 90%
Reported


Speed Level(%) vs. Normal Condition at T.H.5 (EB)
Wallace Rd, S861, 0.0
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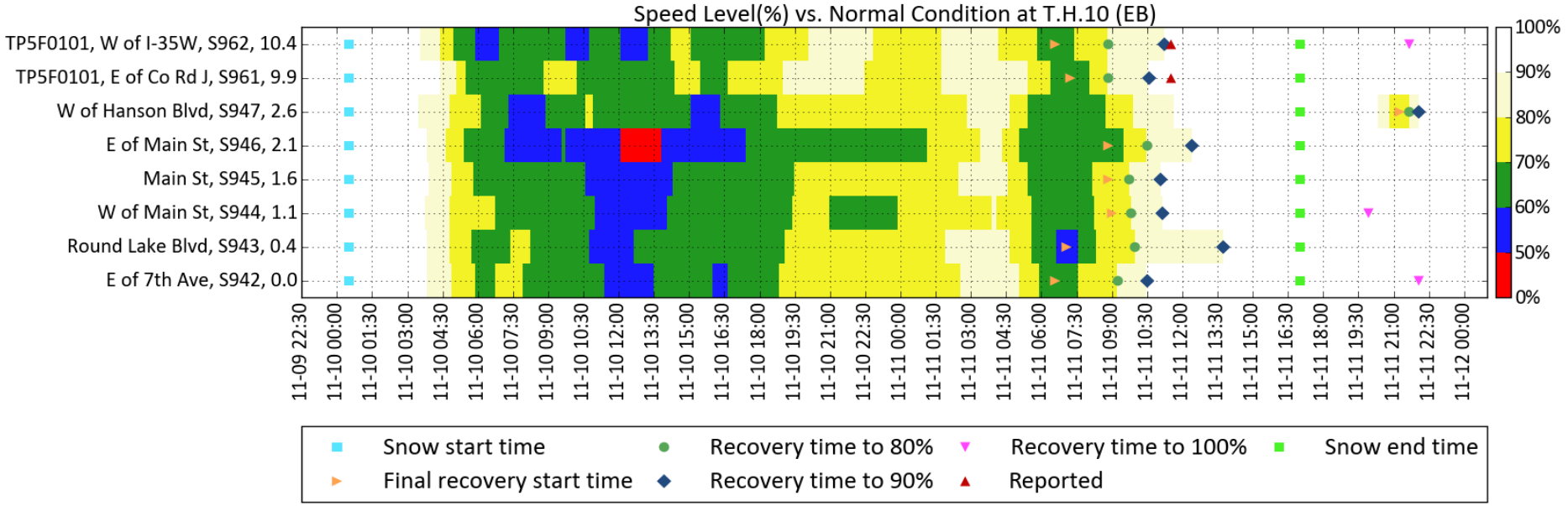
Snow start time
Recovery time to 80%
Recovery time to 100%
Snow end time
Final recovery start time
Recovery time to 90%
Reported


Speed Level(%) vs. Normal Condition at T.H.10 (EB)
TP5F0101, W of I-35W, S962, 10.4
TP5F0101, E of Co Rd J, S961, 9.9
W of Hanson Blvd, S947, 2.6
E of Main St, S946, 2.1
Main St, S945, 1.6
W of Main St, S944, 1.1
Round Lake Blvd, S943, 0.4
E of 7th Ave, S942, 0.0
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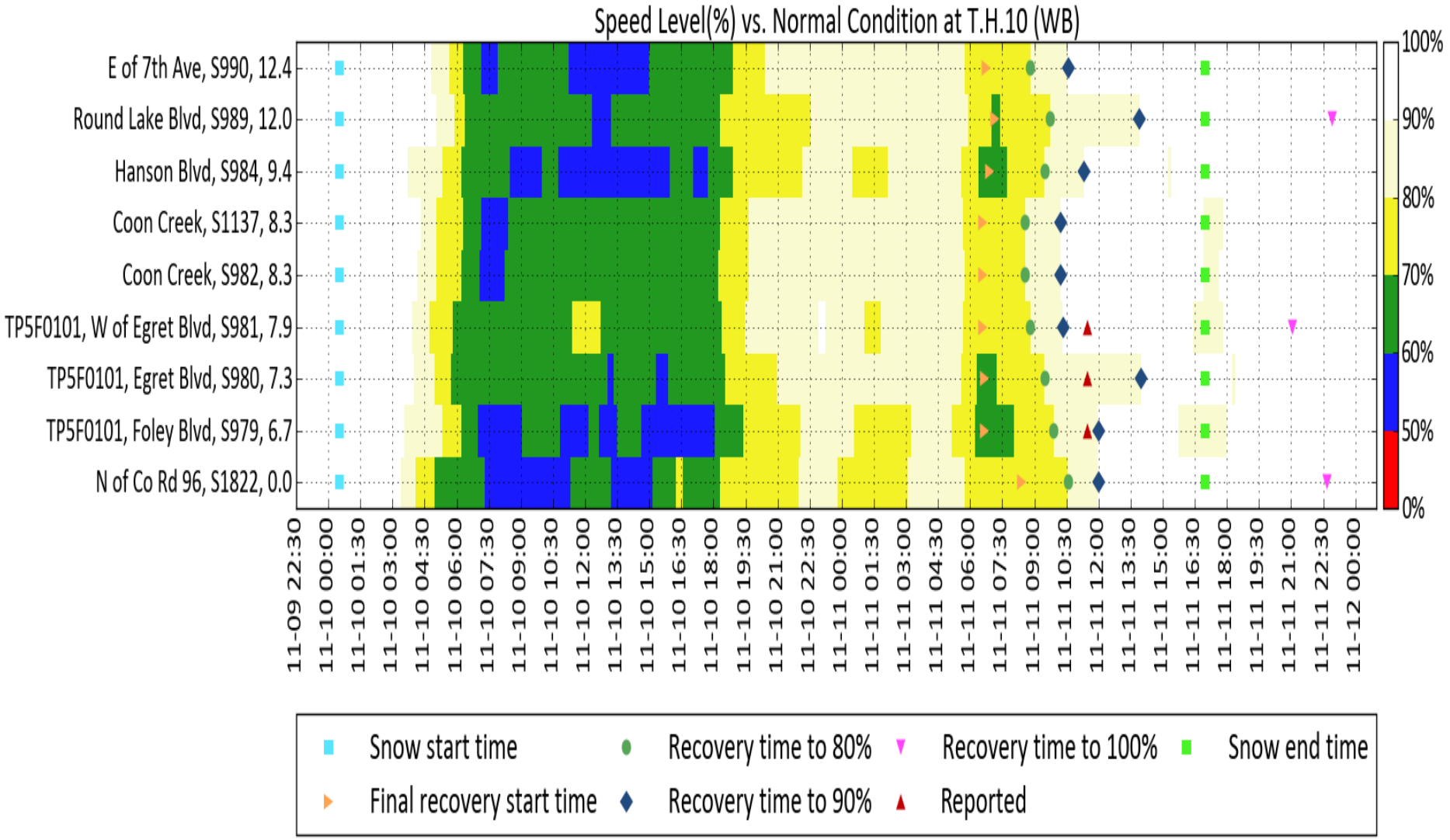
Snow start time
Recovery time to 80%
Recovery time to 100%
Snow end time
Final recovery start time
Recovery time to 90%
Reported


Speed Level(%) vs. Normal Condition at T.H.10 (WB)
E of 7th Ave, S990, 12.4
Round Lake Blvd, S989, 12.0
Hanson Blvd, S984, 9.4
Coon Creek, S1137, 8.3
Coon Creek, S982, 8.3
TP5F0101, W of Egret Blvd, S981, 7.9
TP5F0101, Egret Blvd, S980, 7.3
TP5F0101, Foley Blvd, S979, 6.7
N of Co Rd 96, S1822, 0.0
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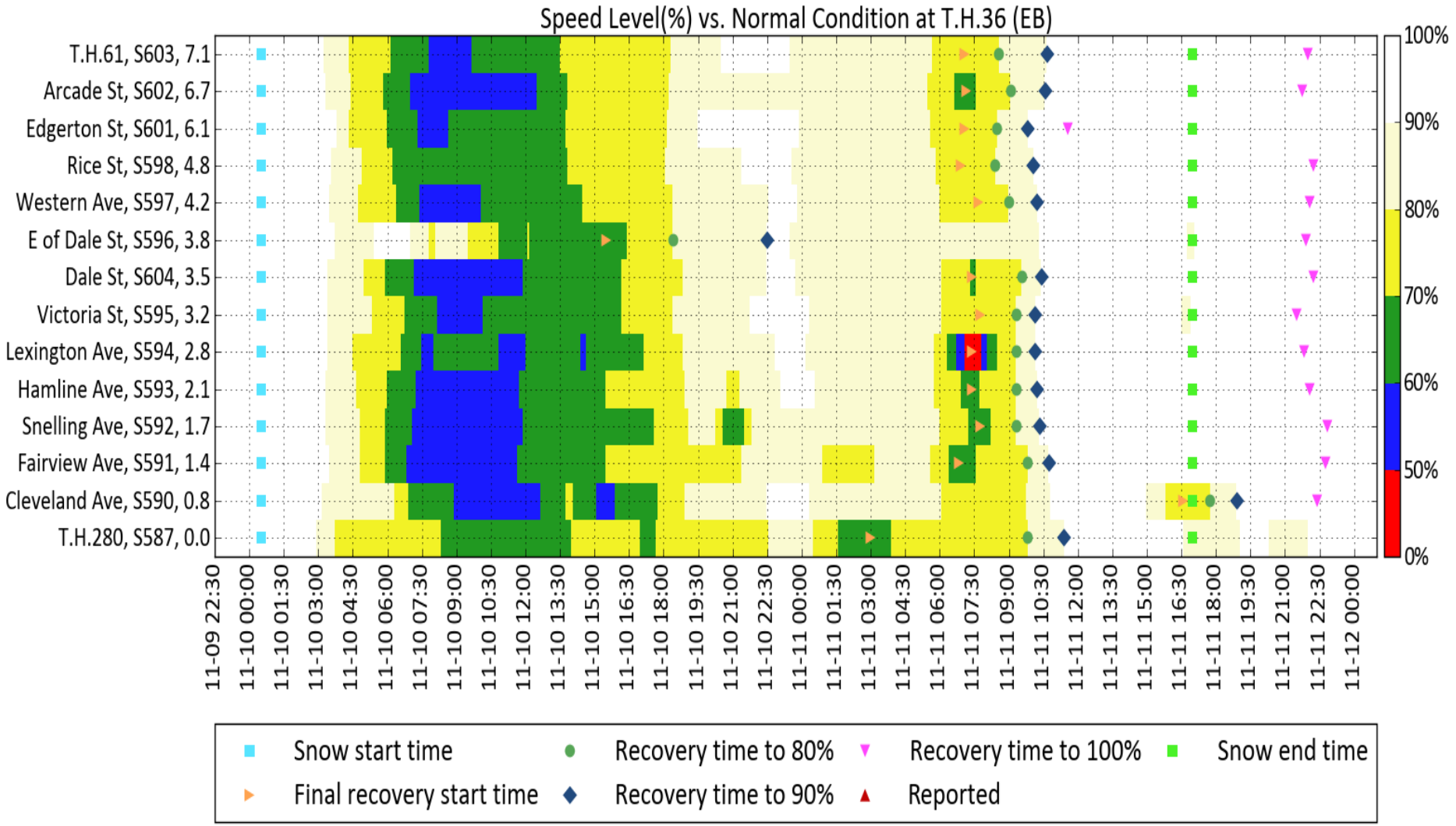
Snow start time
Recovery time to 80%
Recovery time to 100%
Snow end time
Final recovery start time
Recovery time to 90%
Reported


Speed Level(%) vs. Normal Condition at T.H.36 (EB)
T.H.61, S603, 7.1
Arcade St, S602, 6.7
Edgerton St, S601, 6.1
Rice St, S598, 4.8
Western Ave, S597, 4.2
E of Dale St, S596, 3.8
Dale St, S604, 3.5
Victoria St, S595, 3.2
Lexington Ave, S594, 2.8
Hamline Ave, S593, 2.1
Snelling Ave, S592, 1.7
Fairview Ave, S591, 1.4
Cleveland Ave, S590, 0.8
T.H.280, S587, 0.0
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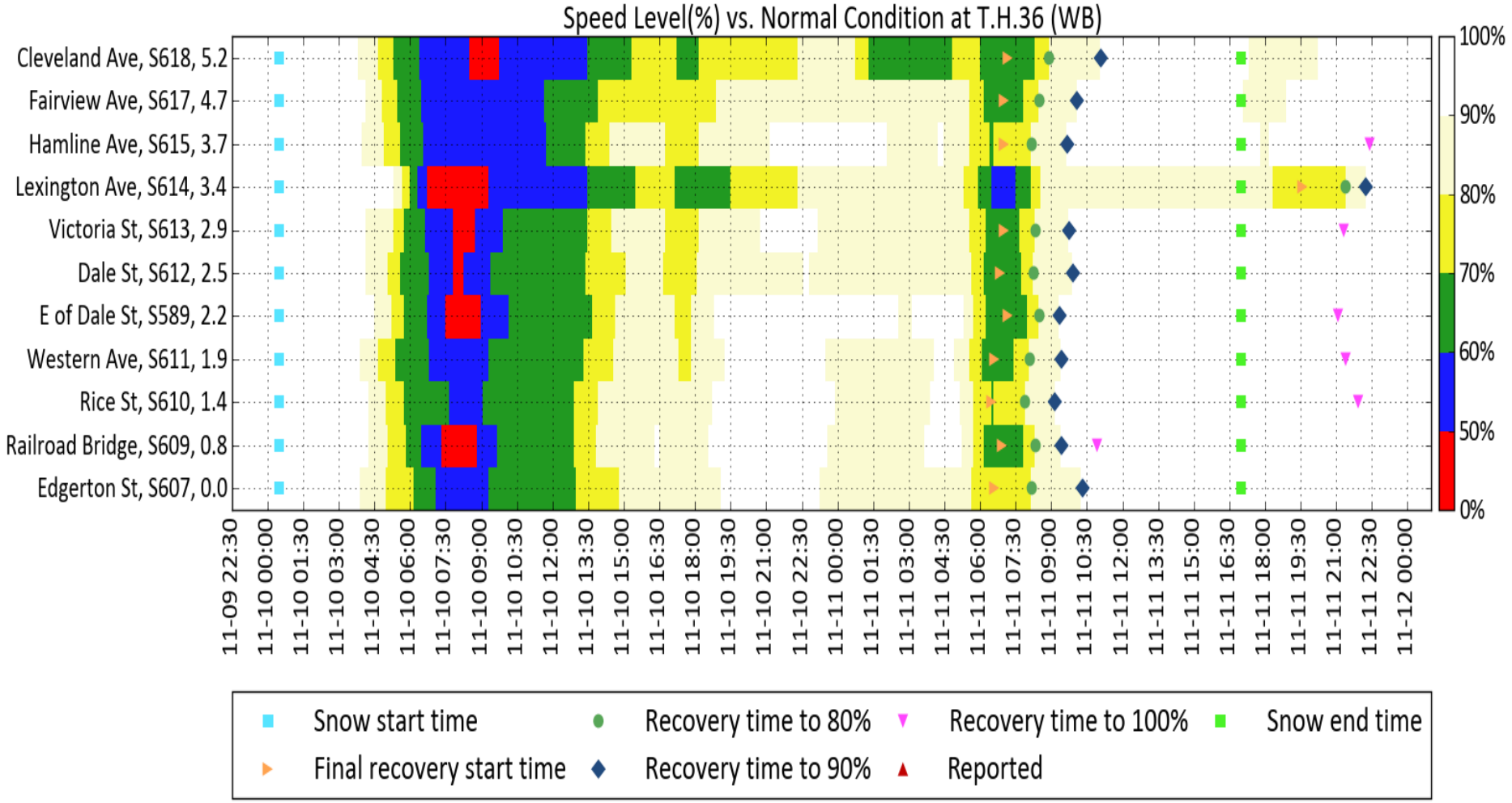
Snow start time
Recovery time to 80%
Recovery time to 100%
Snow end time
Final recovery start time
Recovery time to 90%
Reported


Speed Level(%) vs. Normal Condition at T.H.36 (WB)
Cleveland Ave, S618, 5.2
Fairview Ave, S617, 4.7
Hamline Ave, S615, 3.7
Lexington Ave, S614, 3.4
Victoria St, S613, 2.9
Dale St, S612, 2.5
E of Dale St, S589, 2.2
Western Ave, S611, 1.9
Rice St, S610, 1.4
Railroad Bridge, S609, 0.8
Edgerton St, S607, 0.0
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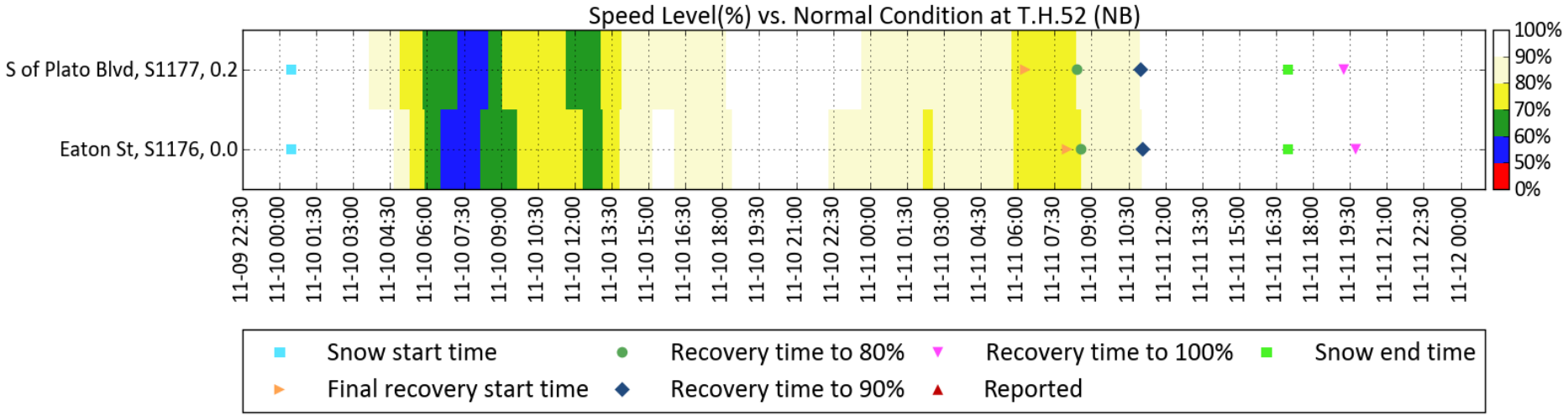
Snow start time
Recovery time to 80%
Recovery time to 100%
Snow end time
Final recovery start time
Recovery time to 90%
Reported


Speed Level(%) vs. Normal Condition at T.H.52 (NB)
S of Plato Blvd, S1177, 0.2
Eaton St, S1176, 0.0
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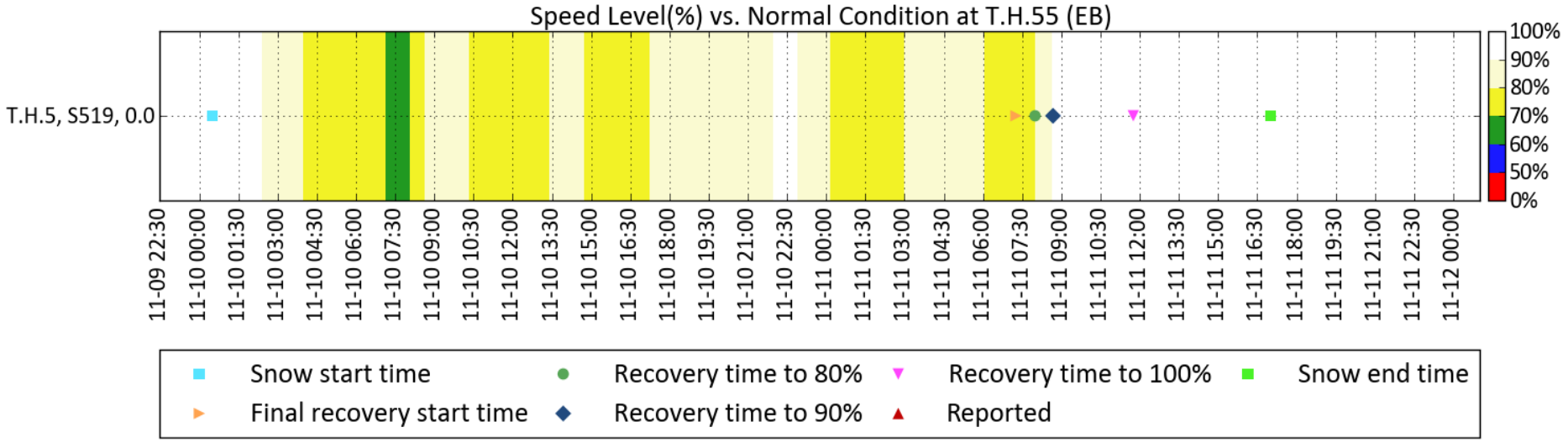
Snow start time
Recovery time to 80%
Recovery time to 100%
Snow end time
Final recovery start time
Recovery time to 90%
Reported


Speed Level(%) vs. Normal Condition at T.H.55 (EB)
T.H.5, S519, 0.0
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Snow start time
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Snow end time
Final recovery start time
Recovery time to 90%
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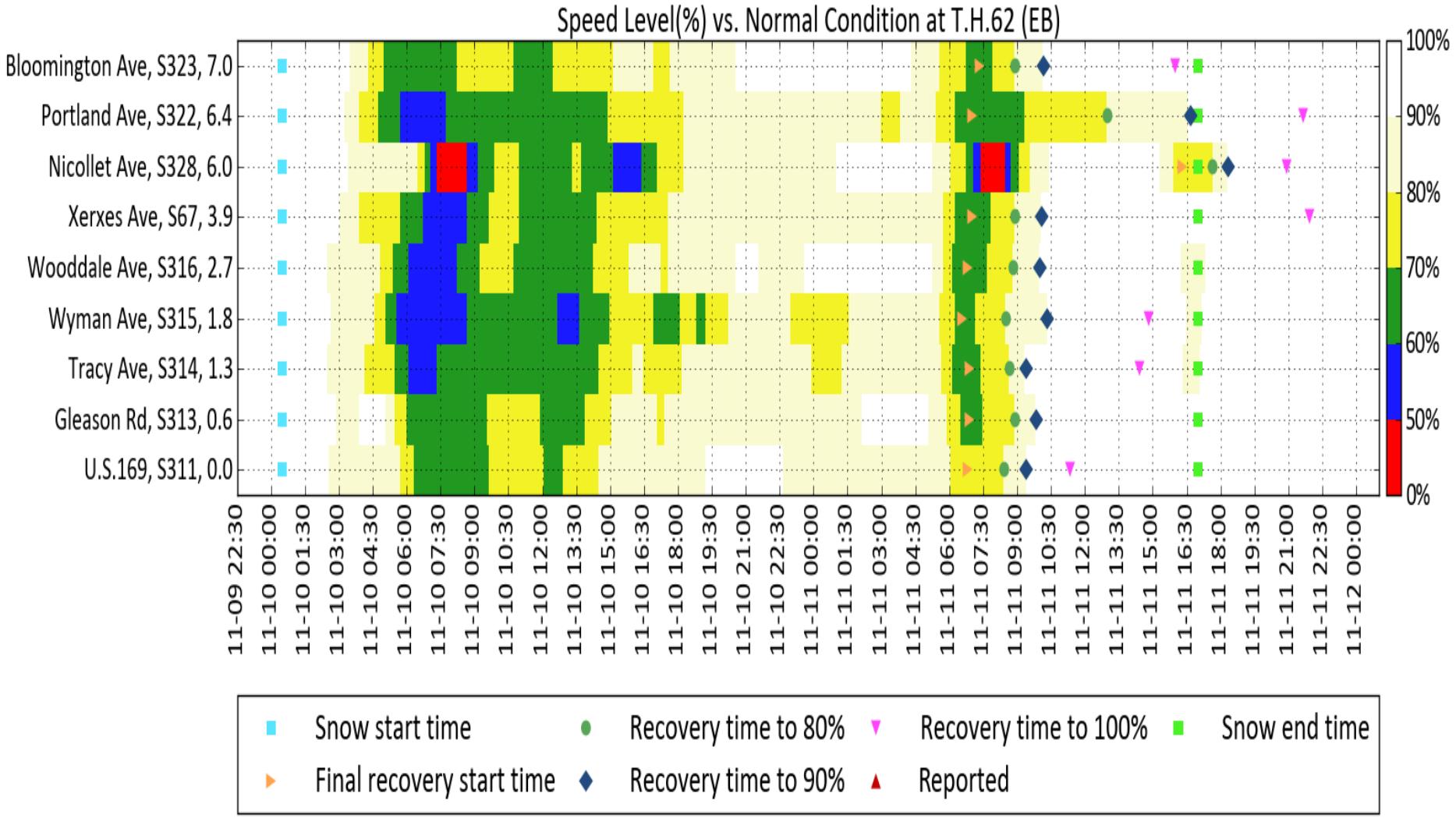
Speed Level(%) vs. Normal Condition at T.H.62 (EB)
Bloomington Ave, S323, 7.0
Portland Ave, S322, 6.4
Nicollet Ave, S328, 6.0
Xerxes Ave, S67, 3.9
Wooddale Ave, S316, 2.7
Wyman Ave, S315, 1.8
Tracy Ave, S314, 1.3
Gleason Rd, S313, 0.6
U.S.169, S311, 0.0
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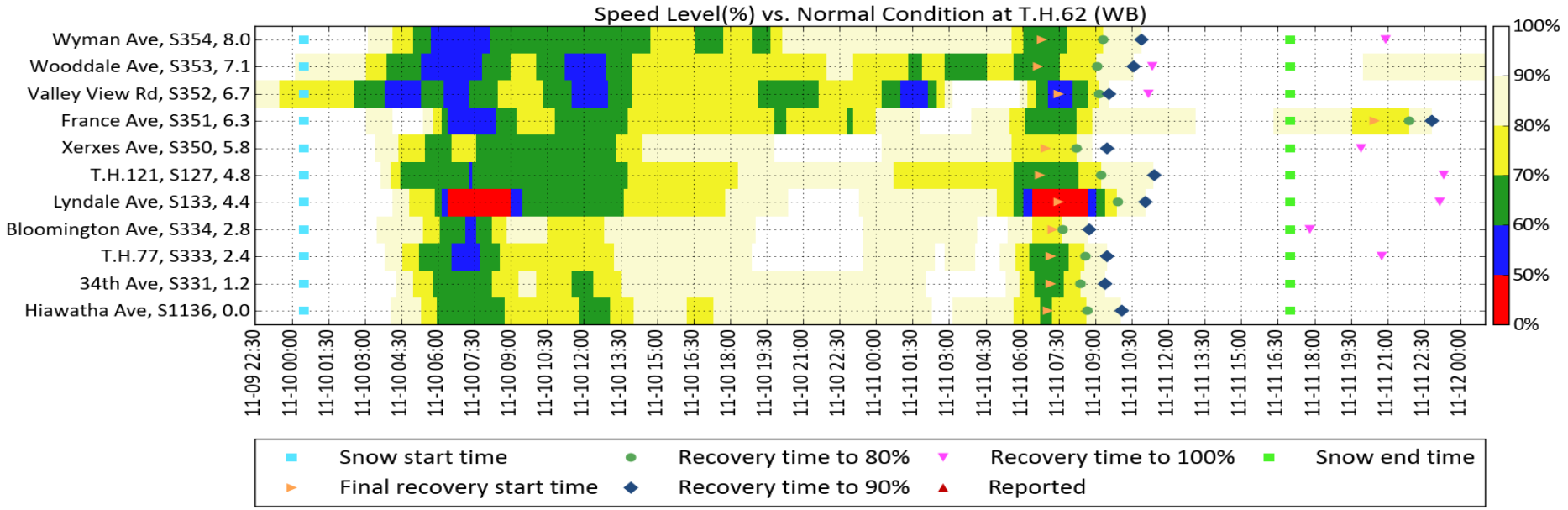
11-11 13:30
11-11 15:00
11-11 16:30
11-11 18:00
11-11 19:30
11-11 21:00
11-11 22:30
11-12 00:00
Snow start time
Recovery time to 80%
Recovery time to 100%
Snow end time
Final recovery start time
Recovery time to 90%
Reported


Speed Level(%) vs. Normal Condition at T.H.62 (WB)
Wyman Ave, S354, 8.0
Wooddale Ave, S353, 7.1
Valley View Rd, S352, 6.7
France Ave, S351, 6.3
Xerxes Ave, S350, 5.8
T.H.121, S127, 4.8
Lyndale Ave, S133, 4.4
Bloomington Ave, S334, 2.8
T.H.77, S333, 2.4
34th Ave, S331, 1.2
Hiawatha Ave, S1136, 0.0
100%
90%
80%
70%
60%
50%
0%
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11-10 01:30
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11-10 07:30
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11-10 22:30
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11-11 01:30
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11-11 18:00
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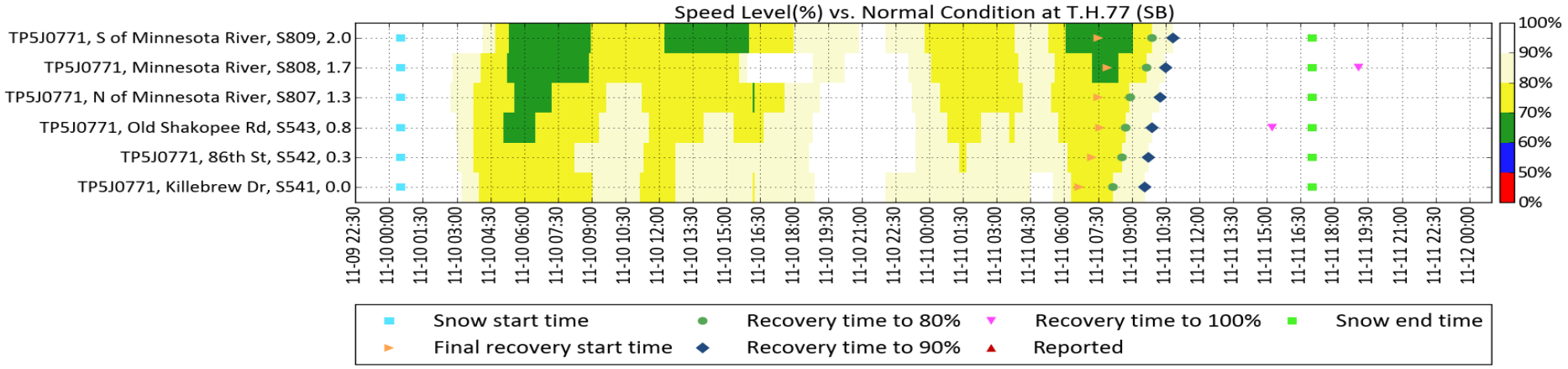
11-11 21:00
11-11 22:30
11-12 00:00
Snow start time
Recovery time to 80%
Recovery time to 100%
Snow end time
Final recovery start time
Recovery time to 90%
Reported


Speed Level(%) vs. Normal Condition at T.H.77 (SB)
TP5J0771, S of Minnesota River, S809, 2.0
TP5J0771, Minnesota River, S808, 1.7
TP5J0771, N of Minnesota River, S807, 1.3
TP5J0771, Old Shakopee Rd, S543, 0.8
TP5J0771, 86th St, S542, 0.3
TP5J0771, Killebrew Dr, S541, 0.0
100%
90%
80%
70%
60%
50%
0%
11-09 22:30
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11-10 04:30
11-10 06:00
11-10 07:30
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11-10 21:00
11-10 22:30
11-11 00:00
11-11 01:30
11-11 03:00
11-11 04:30
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11-11 15:00
11-11 16:30
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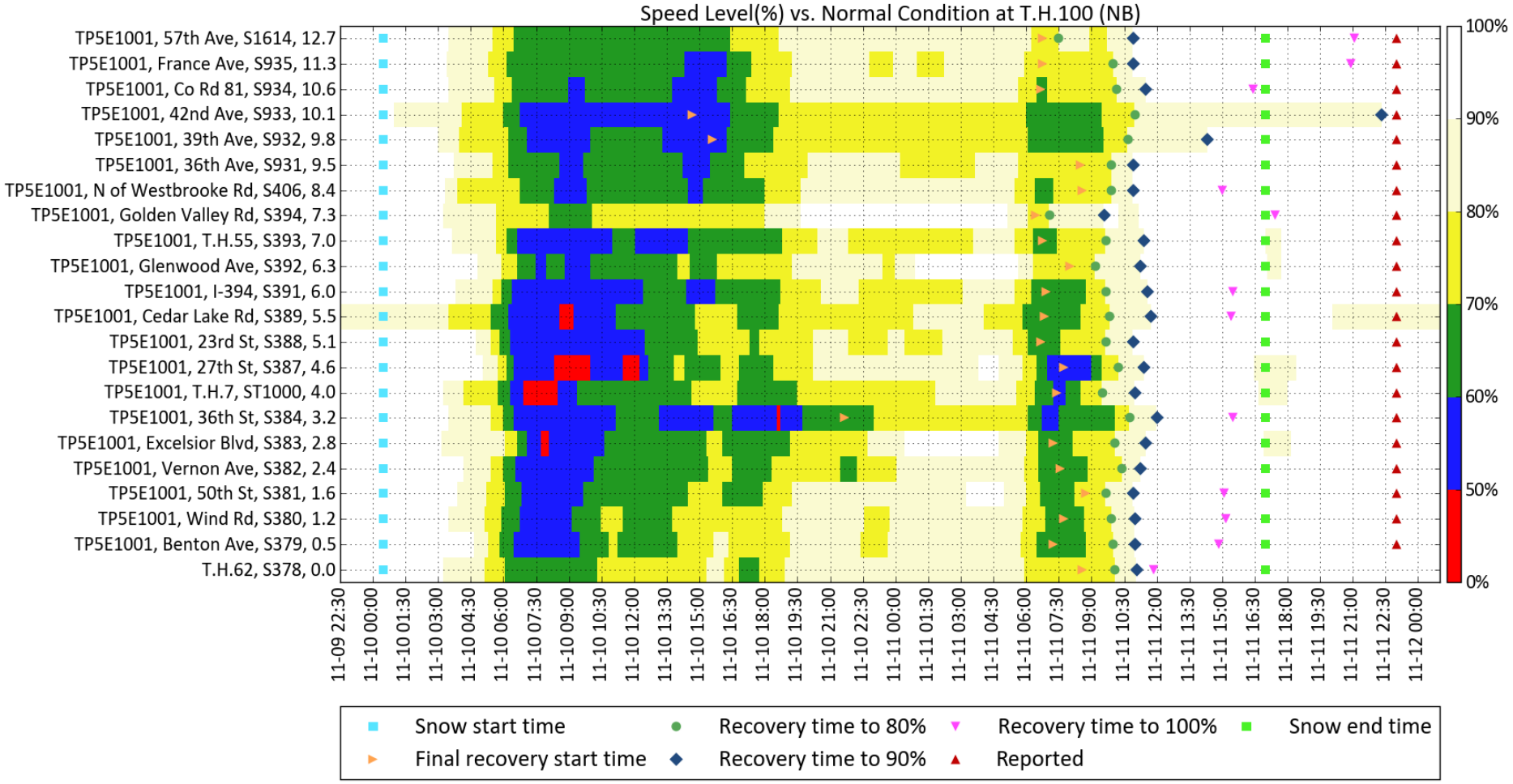
11-12 00:00
Snow start time
Recovery time to 80%
Recovery time to 100%
Snow end time
Final recovery start time
Recovery time to 90%
Reported


Speed Level(%) vs. Normal Condition at T.H.100 (NB)
TP5E1001, 57th Ave, S1614, 12.7
TP5E1001, France Ave, S935, 11.3
TP5E1001, Co Rd 81, S934, 10.6
TP5E1001, 42nd Ave, S933, 10.1
TP5E1001, 39th Ave, S932, 9.8
TP5E1001, 36th Ave, S931, 9.5
TP5E1001, N of Westbrooke Rd, S406, 8.4
TP5E1001, Golden Valley Rd, S394, 7.3
TP5E1001, T.H.55, S393, 7.0
TP5E1001, Glenwood Ave, S392, 6.3
TP5E1001, I-394, S391, 6.0
TP5E1001, Cedar Lake Rd, S389, 5.5
TP5E1001, 23rd St, S388, 5.1
TP5E1001, 27th St, S387, 4.6
TP5E1001, T.H.7, ST1000, 4.0
TP5E1001, 36th St, S384, 3.2
TP5E1001, Excelsior Blvd, S383, 2.8
TP5E1001, Vernon Ave, S382, 2.4
TP5E1001, 50th St, S381, 1.6
TP5E1001, Wind Rd, S380, 1.2
TP5E1001, Benton Ave, S379, 0.5
T.H.62, S378, 0.0
100%
90%
80%
70%
60%
50%
0%
11-09 22:30
11-10 00:00
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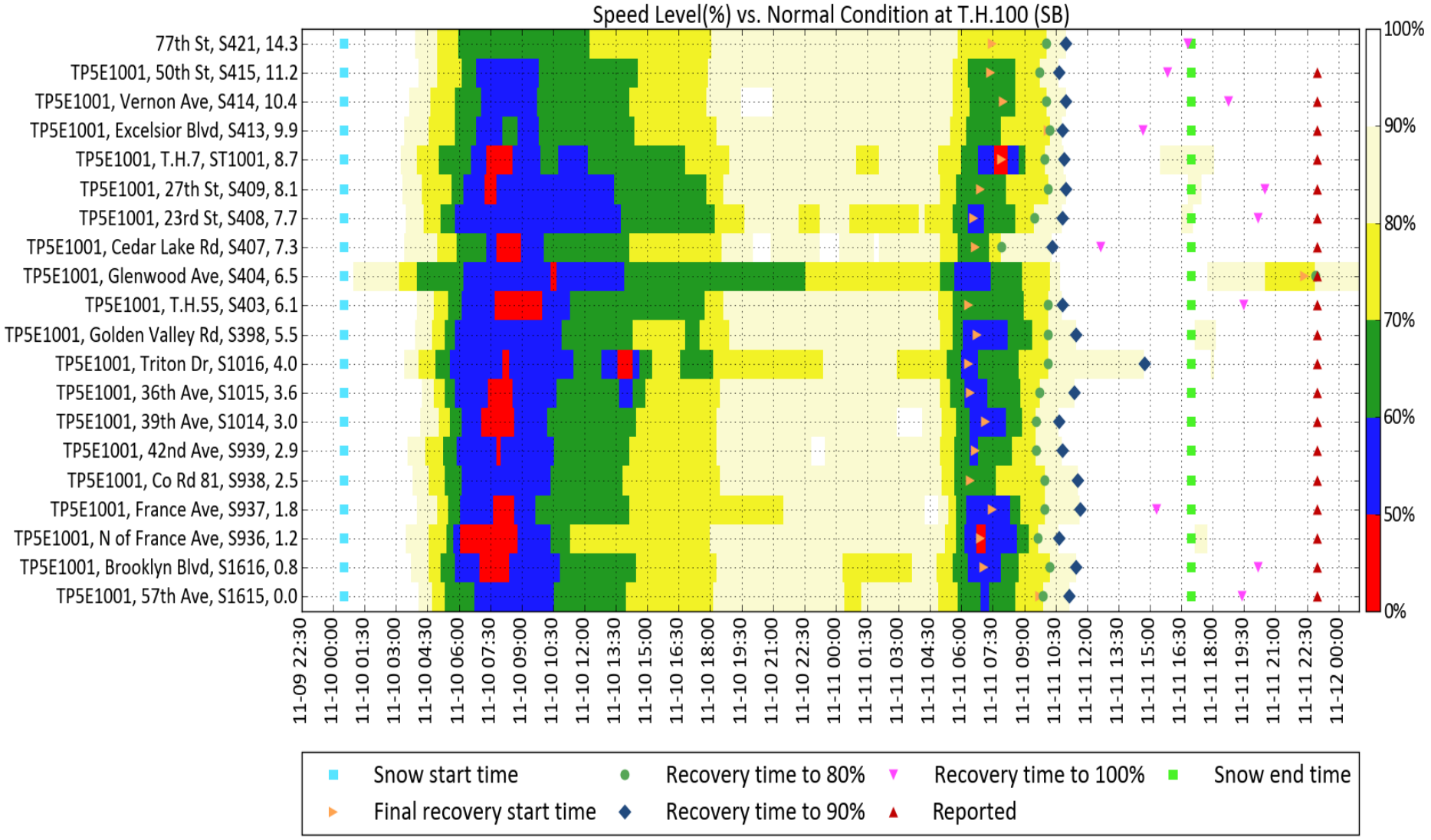
Snow start time
Recovery time to 80%
Recovery time to 100%
Snow end time
Final recovery start time
Recovery time to 90%
Reported


Speed Level(%) vs. Normal Condition at T.H.100 (SB)
77th St, S421, 14.3
TP5E1001, 50th St, S415, 11.2
TP5E1001, Vernon Ave, S414, 10.4
TP5E1001, Excelsior Blvd, S413, 9.9
TP5E1001, T.H.7, ST1001, 8.7
TP5E1001, 27th St, S409, 8.1
TP5E1001, 23rd St, S408, 7.7
TP5E1001, Cedar Lake Rd, S407, 7.3
TP5E1001, Glenwood Ave, S404, 6.5
TP5E1001, T.H.55, S403, 6.1
TP5E1001, Golden Valley Rd, S398, 5.5
TP5E1001, Triton Dr, S1016, 4.0
TP5E1001, 36th Ave, S1015, 3.6
TP5E1001, 39th Ave, S1014, 3.0
TP5E1001, 42nd Ave, S939, 2.9
TP5E1001, Co Rd 81, S938, 2.5
TP5E1001, France Ave, S937, 1.8
TP5E1001, N of France Ave, S936, 1.2
TP5E1001, Brooklyn Blvd, S1616, 0.8
TP5E1001, 57th Ave, S1615, 0.0
11-09 22:30
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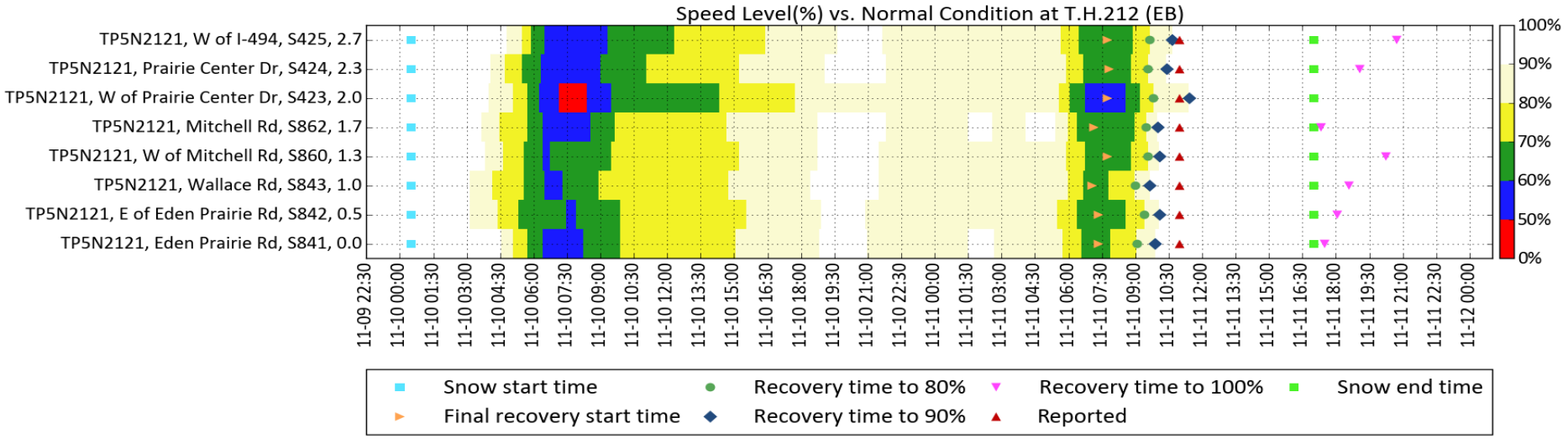
50%
0%
Snow start time
Recovery time to 80%
Recovery time to 100%
Snow end time
Final recovery start time
Recovery time to 90%
Reported


Speed Level(%) vs. Normal Condition at T.H.212 (EB)
TP5N2121, W of I-494, S425, 2.7
TP5N2121, Prairie Center Dr, S424, 2.3
TP5N2121, W of Prairie Center Dr, S423, 2.0
TP5N2121, Mitchell Rd, S862, 1.7
TP5N2121, W of Mitchell Rd, S860, 1.3
TP5N2121, Wallace Rd, S843, 1.0
TP5N2121, E of Eden Prairie Rd, S842, 0.5
TP5N2121, Eden Prairie Rd, S841, 0.0
100%
90%
80%
70%
60%
50%
0%
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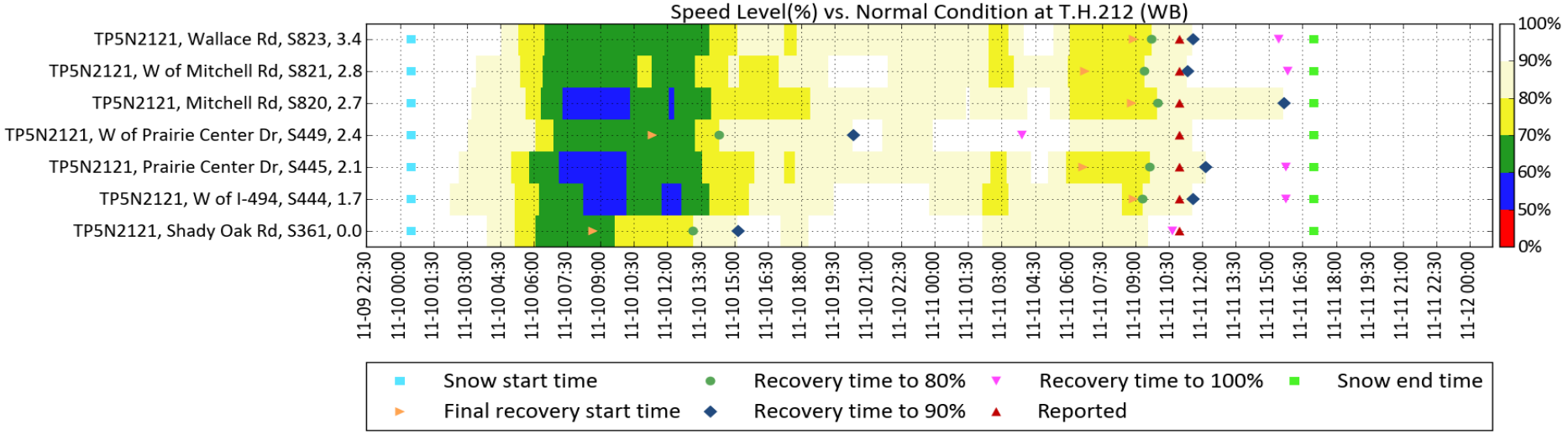
11-11 13:30
11-11 15:00
11-11 16:30
11-11 18:00
11-11 19:30
11-11 21:00
11-11 22:30
11-12 00:00
Snow start time
Recovery time to 80%
Recovery time to 100%
Snow end time
Final recovery start time
Recovery time to 90%
Reported


Speed Level(%) vs. Normal Condition at T.H.212 (WB)
TP5N2121, Wallace Rd, S823, 3.4
TP5N2121, W of Mitchell Rd, S821, 2.8
TP5N2121, Mitchell Rd, S820, 2.7
TP5N2121, W of Prairie Center Dr, S449, 2.4
TP5N2121, Prairie Center Dr, S445, 2.1
TP5N2121, W of I-494, S444, 1.7
TP5N2121, Shady Oak Rd, S361, 0.0
100%
90%
80%
70%
60%
50%
0%
11-09 22:30
11-10 00:00
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11-10 04:30
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11-10 09:00
11-10 10:30
11-10 12:00
11-10 13:30
11-10 15:00
11-10 16:30
11-10 18:00
11-10 19:30
11-10 21:00
11-10 22:30
11-11 00:00
11-11 01:30
11-11 03:00
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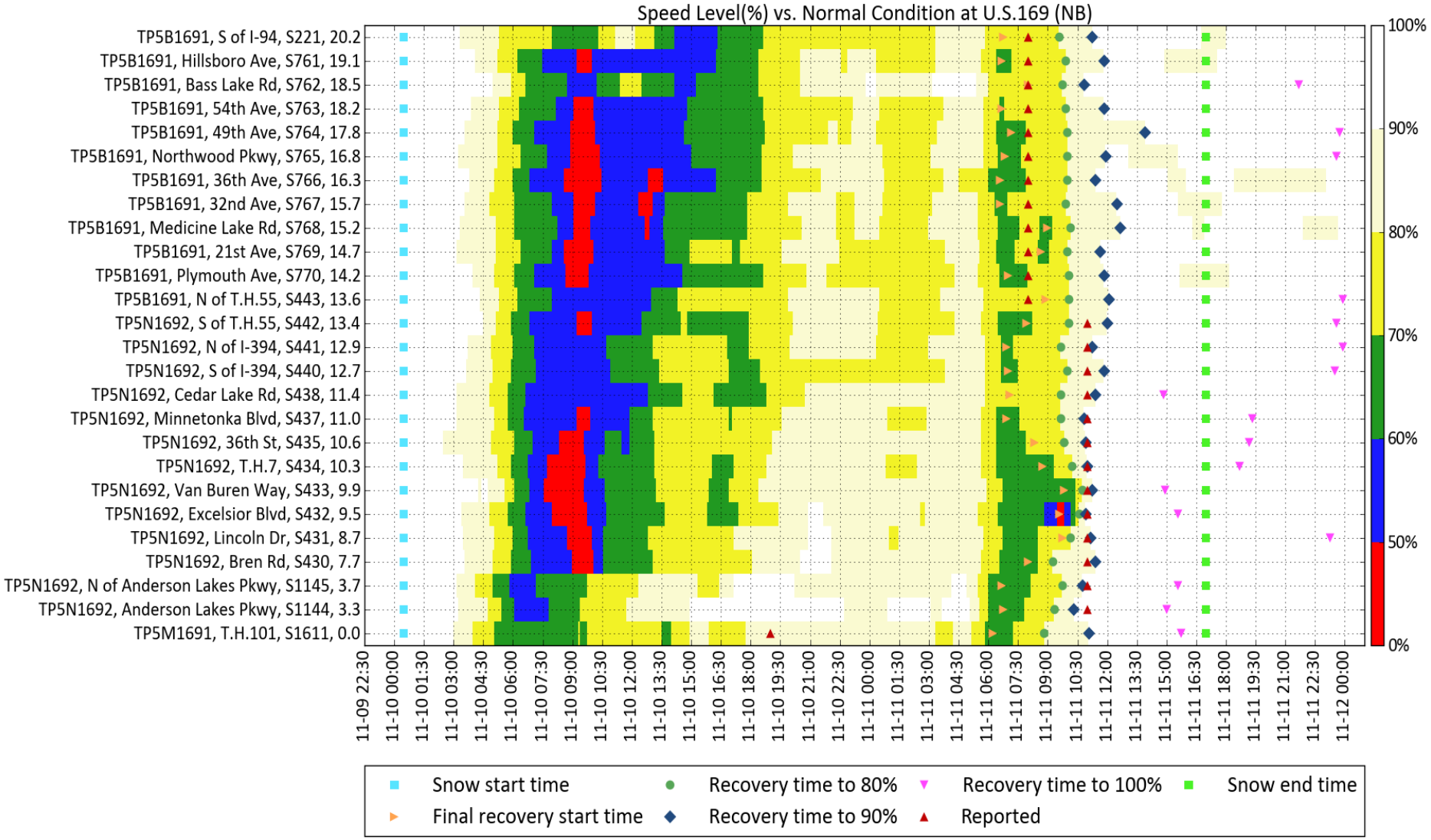
11-11 15:00
11-11 16:30
11-11 18:00
11-11 19:30
11-11 21:00
11-11 22:30
11-12 00:00
Snow start time
Recovery time to 80%
Recovery time to 100%
Snow end time
Final recovery start time
Recovery time to 90%
Reported


Speed Level(%) vs. Normal Condition at U.S.169 (NB)
TP5B1691, S of I-94, S221, 20.2
TP5B1691, Hillsboro Ave, S761, 19.1
TP5B1691, Bass Lake Rd, S762, 18.5
TP5B1691, 54th Ave, S763, 18.2
TP5B1691, 49th Ave, S764, 17.8
TP5B1691, Northwood Pkwy, S765, 16.8
TP5B1691, 36th Ave, S766, 16.3
TP5B1691, 32nd Ave, S767, 15.7
TP5B1691, Medicine Lake Rd, S768, 15.2
TP5B1691, 21st Ave, S769, 14.7
TP5B1691, Plymouth Ave, S770, 14.2
TP5B1691, N of T.H.55, S443, 13.6
TP5N1692, S of T.H.55, S442, 13.4
TP5N1692, N of I-394, S441, 12.9
TP5N1692, S of I-394, S440, 12.7
TP5N1692, Cedar Lake Rd, S438, 11.4
TP5N1692, Minnetonka Blvd, S437, 11.0
TP5N1692, 36th St, S435, 10.6
TP5N1692, T.H.7, S434, 10.3
TP5N1692, Van Buren Way, S433, 9.9
TP5N1692, Excelsior Blvd, S432, 9.5
TP5N1692, Lincoln Dr, S431, 8.7
TP5N1692, Bren Rd, S430, 7.7
TP5N1692, N of Anderson Lakes Pkwy, S1145, 3.7
TP5N1692, Anderson Lakes Pkwy, S1144, 3.3
TP5M1691, T.H.101, S1611, 0.0
100%
90%
80%
70%
60%
50%
0%
11-09 22:30
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11-10 03:00
11-10 04:30
11-10 06:00
11-10 07:30
11-10 09:00
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11-10 19:30
11-10 21:00
11-10 22:30
11-11 00:00
11-11 01:30
11-11 03:00
11-11 04:30
11-11 06:00
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11-11 13:30
11-11 15:00
11-11 16:30
11-11 18:00
11-11 19:30
11-11 21:00
11-11 22:30
11-12 00:00
Snow start time
Recovery time to 80%
Recovery time to 100%
Snow end time
Final recovery start time
Recovery time to 90%
Reported

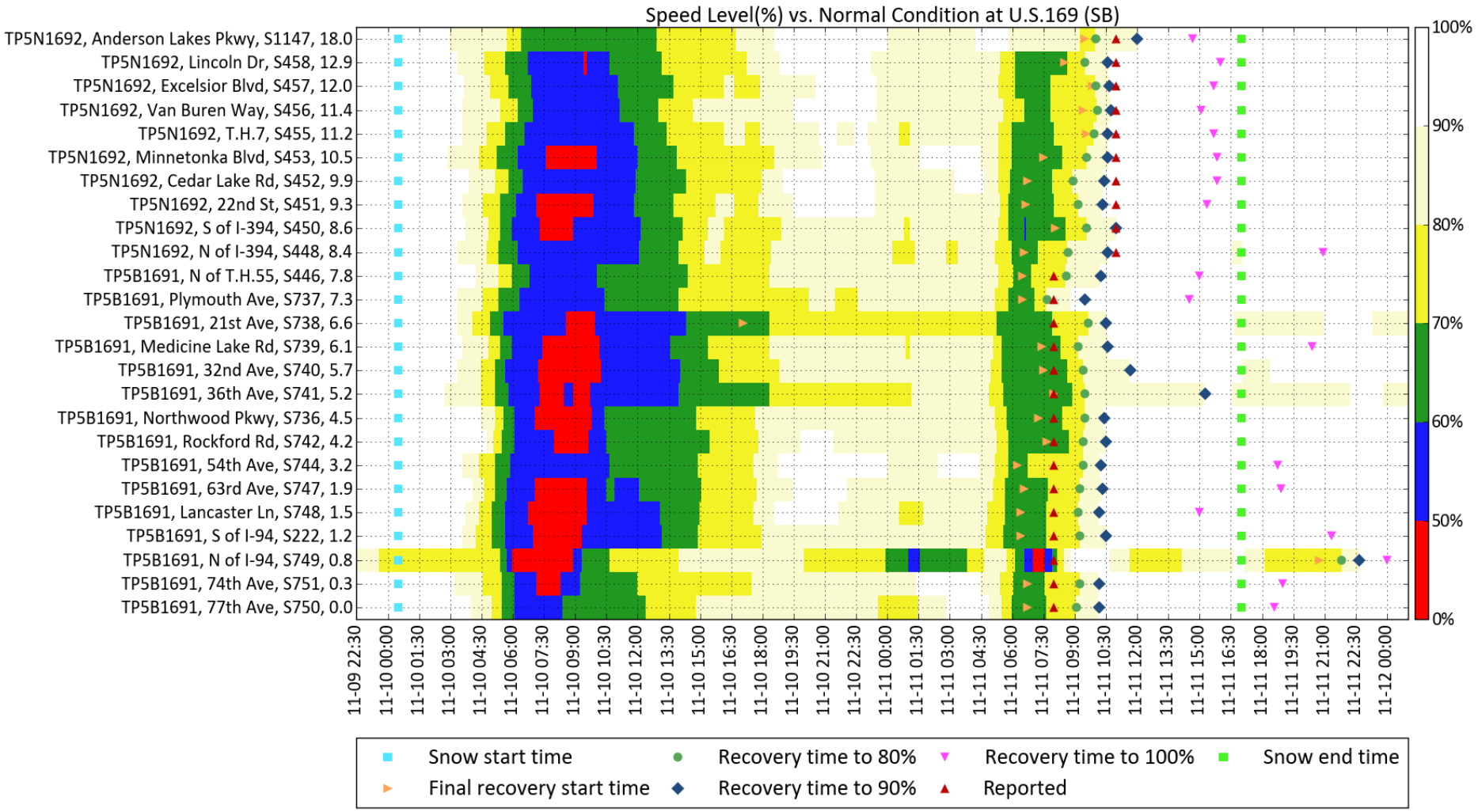


Figure x.x Speed Level Graphs to Normal Condition for All Corridors

Table I.1 Normal Recovery Time and Speed for All Corridors

Snow Start Time	2014-11-10 00:30
Snow End Time	2014-11-11 17:00

Corridor/RouteID	Station	Time					Speed (mph)				
		Recovery Start	N80	N90	N100	Reported	Recovery Start	N80	N90	N100	Reported
I-35W (NB)/TP9P35W1	S71	11-11 06:40	11-11 08:20	11-11 09:30	11-11 14:20	11-11 09:30	45.9	36.4	70.2	74.1	70.2
	S1600	11-11 06:20	11-11 07:40	11-11 09:20	11-11 13:50	11-11 09:30	46.1	15.2	64.4	75	68.2
	S72	11-11 06:00	11-11 07:55	11-11 10:15	11-11 12:45	11-11 09:30	47.1	13.1	67.9	77.3	63
	S32	11-11 06:00	11-11 07:50	11-11 10:00	11-11 15:15	11-11 09:30	43.7	10.8	66.5	73.4	62.7
	S1601	11-11 06:10	11-11 08:05	11-11 09:40	11-11 15:10	11-11 09:30	34.9	11.1	73.4	75.7	67.3
	S33	11-11 06:15	11-11 08:15	11-11 10:10	11-11 19:15	11-11 09:30	31.6	19	72.6	80.2	61.5
	S35	11-11 06:25	11-11 07:35	11-11 09:35	11-11 16:05	11-11 09:30	33.9	17.5	61.9	75.9	48.3
	S1602	11-11 08:45	11-11 09:00	11-11 10:15		11-11 09:30	36.5	38	68.6		50.3
	S77	11-11 09:00	11-11 09:30	11-11 10:25	11-11 20:40	11-11 09:30	37.3	44.8	67.5	75.6	44.8
	S37	11-11 06:40	11-11 09:40	11-11 12:05		11-11 09:30	48.1	64.4	66.6		57.6
	S38	11-11 06:35	11-11 08:50	11-11 10:15	11-11 20:20	11-11 09:30	47.9	54.2	66.9	75.7	57.1
	S39	11-11 06:40	11-11 09:10	11-11 10:25		11-11 09:30	46.9	56.2	65.2		56.2
	S1603	11-11 06:40	11-11 08:50	11-11 09:55	11-11 20:30	11-11 09:30	45.4	53.9	64.8	72.7	56
I-35W (NB)	S34	11-11 06:30	11-11 08:00	11-11 10:15			46.3	54.7	62.9		
	S45	11-11 06:55	11-11 08:40	11-11 10:05			44.6	51.7	61.1		
	S46	11-11 06:55	11-11 09:15	11-11 10:35			46.1	53.1	61.9		
	S1704	11-11 06:55	11-11 07:50	11-11 09:25	11-11 11:00		44.9	49.6	53.1	60.6	
	S47	11-11 06:55	11-11 08:15	11-11 10:05	11-11 18:35		46	53.7	58.9	65.4	
	S52	11-11 07:10	11-11 09:20	11-11 10:20	11-11 18:50		35.3	50.8	59.2	63.8	
	S1705	11-11 07:20	11-11 09:00	11-11 10:00			35.9	50.7	57		
	S53	11-11 07:10	11-11 08:55	11-11 09:55	11-11 12:15		31.6	47.9	57.3	63.2	
	S54	11-11 09:00	11-11 09:20	11-11 10:05	11-11 18:25		46	48.7	56.6	62.3	

Corridor/RouteID	Station	Time					Speed (mph)				
		Recovery Start	N80	N90	N100	Reported	Recovery Start	N80	N90	N100	Reported
	S1706	11-11 07:40	11-11 09:25	11-11 09:55	11-11 11:50		16.4	50.1	56.4	62.2	
	S55	11-11 06:45	11-11 08:55	11-11 10:05	11-11 12:25		33	46.2	57.8	63.6	
	S56	11-11 06:35	11-11 09:00	11-11 10:00	11-11 12:25		33	44.9	58.7	63.2	
	S57	11-11 06:50	11-11 08:50	11-11 10:00	11-11 18:40		31.9	25.3	59.2	63.7	
	S58	11-11 06:40	11-11 07:45	11-11 09:55	11-11 19:00		31	16.2	59.4	66.3	
	S1707	11-11 06:35	11-11 08:00	11-11 09:20	11-11 10:25		31.6	17.1	49.1	59.4	
	S59	11-11 06:45	11-11 08:30	11-11 10:00	11-11 19:05		32.2	20.9	60.2	65.3	
	S60	11-11 06:45	11-11 09:25	11-11 10:00	11-11 11:45		34.4	44.9	59.9	63.8	
	S1708	11-11 06:50	11-11 08:55	11-11 09:50	11-11 10:45		22.8	26.6	45.9	58.4	
	S62	11-11 06:45	11-11 09:05	11-11 10:15	11-11 19:05		26.1	31.7	56.1	63.1	
	S565	11-11 07:05	11-11 08:10	11-11 10:05	11-11 14:50		35.1	22.4	49.1	55.1	
	S573	11-11 08:45	11-11 11:05	11-11 21:50			45.2	52	59.4		
I-35W (NB)/TP5F35W1	S574	11-11 08:30	11-11 10:10	11-11 12:20			46.1	51.8	58.9		
	S652	11-11 17:55	11-11 18:40				43.9	60.6			
	S653	11-11 08:05	11-11 09:50	11-11 12:55	11-11 21:15		48.1	55.9	60.6	66.1	
	S654	11-11 07:50	11-11 09:40	11-11 12:10	11-11 15:25		52.9	61.6	66.7	66.3	
	S655	11-11 07:10	11-11 09:35	11-11 12:00	11-11 15:40		46.9	55.1	62	61.6	
	S656	11-11 07:20	11-11 09:35	11-11 12:20			50	54.8	60.7		
	S657	11-11 07:10	11-11 09:25	11-11 12:05	11-11 16:35		48.6	54.2	61.7	61.4	
	S659	11-11 07:20	11-11 09:30	11-11 12:05	11-11 16:25		50.4	56.1	61.7	53.7	
	S664	11-11 08:00	11-11 09:30	11-11 12:05			54	59.6	66.5		
	S665	11-11 08:10	11-11 09:45	11-11 12:30	11-12 00:05		54.4	59.8	69	76.3	
	S666	11-11 08:20	11-11 10:00	11-11 13:35			55.5	61.9	70.4		
	S667	11-11 08:20	11-11 10:20	11-11 13:55			51.9	59.4	66.9		
	S668	11-11 08:15	11-11 09:30	11-11 11:00	11-11 23:25		52.5	57.4	66.3	71.5	
	S669	11-11 08:05	11-11 10:25	11-11 19:20			50.1	61.2	69.7		
	S670	11-11 07:55	11-11 09:00	11-11 12:55			57	64	69.8		

Corridor/RouteID	Station	Time					Speed (mph)				
		Recovery Start	N80	N90	N100	Reported	Recovery Start	N80	N90	N100	Reported
I-35W (SB)/TP5F35W1	S678	11-11 08:25	11-11 09:30	11-11 10:10	11-11 22:00		56.5	62.1	63.3	76.8	
	S679	11-11 08:40	11-11 09:15	11-11 10:35	11-11 19:15		56.3	60.8	68.2	72.4	
	S680	11-11 06:45	11-11 08:55	11-11 10:40			18.5	58.6	66.8		
	S681	11-11 08:40	11-11 09:10	11-11 10:55			50.6	55.1	65.9		
	S682	11-11 09:05	11-11 09:35	11-11 11:40			57.3	61.2	70.2		
	S683	11-11 06:40	11-11 08:15	11-11 10:40	11-11 19:00		25.8	35.7	65.3	72.9	
	S684	11-11 06:40	11-11 08:20	11-11 10:40	11-11 20:20		21	25.2	66.1	73.6	
	S685	11-11 07:00	11-11 08:50	11-11 10:05	11-11 18:35		18.3	57.5	61.2	74.1	
	S686	11-11 06:30	11-11 08:25	11-11 10:15	11-11 20:00		24.4	35.4	63.7	71.9	
	S691	11-11 06:45	11-11 08:55	11-11 10:15			27	55.5	63.4		
	S692	11-11 06:50	11-11 08:55	11-11 10:05	11-11 16:00		38.5	56.2	61	70.7	
	S694	11-11 07:05	11-11 09:10	11-11 10:20	11-11 19:10		39.7	53.2	59.2	68.1	
	S695	11-11 06:35	11-11 08:10	11-11 08:30	11-11 09:10		39.6	37.4	40.7	44.4	
	S696	11-11 06:50	11-11 09:20	11-11 10:15	11-11 18:45		35.8	53.5	61	68.3	
I-35W (SB)	S578	11-11 06:55	11-11 09:05	11-11 10:50			31.9	44.4	56		
I-35W (SB)/TP5H35W1	S579	11-11 06:30	11-11 08:30	11-11 10:10	11-11 14:25	11-10 17:00	38.2	17.6	52.6	58.8	43.6
	S580	11-11 09:25	11-11 09:40	11-11 12:45		11-10 17:00	44.1	46	55.3		32.5
	S583	11-11 06:35	11-11 07:15	11-11 09:25	11-11 19:50	11-10 17:00	37.7	31	48.3	59.4	46.2
	S584	11-11 06:30	11-11 07:55	11-11 10:05		11-10 17:00	40.9	38.4	53.3		46.9
I-35W (SB)	S586	11-11 17:50	11-11 18:35	11-11 18:55	11-11 19:10		24.2	26	52.6	57.8	
	S3	11-11 06:45	11-11 09:40	11-11 11:30	11-11 15:20		36.6	44.1	50.6	51.9	
	S4	11-11 06:40	11-11 09:35	11-11 10:40	11-11 21:20		42.6	55.8	65	69.5	
	S1709	11-11 06:35	11-11 08:05	11-11 09:20	11-11 10:45		42.4	45.3	51.6	57.5	
	S5	11-11 06:55	11-11 09:20	11-11 10:40	11-11 14:45		39.7	52.7	63.5	66.8	
	S6	11-11 07:30	11-11 09:25	11-11 10:40	11-11 15:00		37.2	54.3	64.7	66.3	
	S7	11-11 07:25	11-11 09:10	11-11 10:30	11-11 14:45		38	53.8	63.2	66.5	
	S8	11-11 07:10	11-11 08:55	11-11 10:25			37.4	53.3	63.9		

Corridor/RouteID	Station	Time					Speed (mph)				
		Recovery Start	N80	N90	N100	Reported	Recovery Start	N80	N90	N100	Reported
	S9	11-11 07:10	11-11 09:25	11-11 11:55			34.2	55.3	64.6		
	S10	11-11 07:30	11-11 09:05	11-11 10:00	11-11 14:50		35.8	52.1	58.5	64	
	S11	11-11 06:55	11-11 09:45	11-11 10:55	11-11 15:20		32.2	53.7	64.4	62.8	
	S1711	11-11 07:25	11-11 08:25	11-11 09:25	11-11 11:50		36.1	45.7	55.8	62.9	
	S12	11-11 07:05	11-11 09:10	11-11 10:25	11-11 23:15		35.1	53	59.4	65.2	
	S14	11-11 07:45	11-11 08:55	11-11 09:40	11-11 11:10		38.9	50.4	60.8	66.3	
	S1712	11-11 07:10	11-11 08:10	11-11 09:20	11-11 11:25		41.4	18.3	56	64.5	
	S15	11-11 07:10	11-11 08:40	11-11 09:50	11-11 16:10		40.9	19.8	56.9	65.2	
	S16	11-11 07:25	11-11 09:25	11-11 10:55	11-11 19:00		32.7	47.6	55.3	60.8	
	S17	11-11 09:35	11-11 10:20	11-11 14:35			47.1	49	55.2		
	S18	11-11 07:15	11-11 10:15	11-11 15:10			25.3	47.9	51.4		
	S19	11-11 07:50	11-11 09:55	11-11 10:55	11-11 19:30		27.4	49.9	57.2	59.9	
	S20	11-11 07:35	11-11 09:25	11-11 10:10	11-11 18:45		38.9	53.1	62.7	66.5	
	S21	11-11 07:30	11-11 09:05	11-11 09:55	11-11 18:35		36.7	52.2	59.4	65.7	
	S22	11-11 08:05	11-11 09:00	11-11 09:45	11-11 15:15		43.1	54.8	61.2	64	
	S23	11-11 07:25	11-11 08:40	11-11 10:10	11-11 22:45		54.2	54.7	68.4	73.2	
	S13	11-11 07:30	11-11 08:30	11-11 10:55			57	59.5	71.3		
I-35W (SB)/TP9P35W1	S24	11-11 06:50	11-11 08:15	11-11 12:25	11-11 22:20	11-11 09:30	58.8	60.9	68.7	76.8	62.5
	S25	11-11 06:55	11-11 08:50	11-11 14:35	11-11 22:35	11-11 09:30	54.3	59.2	62.4	72.4	58.6
	S26	11-11 06:40	11-11 08:35	11-11 12:25		11-11 09:30	53.8	61.4	69.1		61.8
	S27	11-11 06:40	11-11 08:10	11-11 12:00		11-11 09:30	54	60.8	65.4		62.1
	S1606	11-11 06:50	11-11 08:10	11-11 12:55		11-11 09:30	58.1	62.1	68.7		64.2
	S28	11-11 06:45	11-11 08:15	11-11 13:40		11-11 09:30	56.3	62.7	70.3		62.2
	S29	11-11 06:55	11-11 08:05	11-11 13:05		11-11 09:30	58	62.9	68.9		63.6
	S30	11-11 06:40	11-11 07:35	11-11 11:40	11-11 15:35	11-11 09:30	52.6	60.1	67.7	72.3	63.2
	S31	11-10 15:50	11-10 16:20	11-10 18:10		11-11 09:30	51.1	50	66.7		66.6
U.S.169 (NB)/TP5M1691	S1611	11-11 06:15	11-11 08:50	11-11 11:05	11-11 15:45	11-10 19:00	16.2	16.2	62.8	73.2	64.8

Corridor/RouteID	Station	Time					Speed (mph)				
		Recovery Start	N80	N90	N100	Reported	Recovery Start	N80	N90	N100	Reported
U.S.169 (NB)/TP5N1692	S1144	11-11 06:45	11-11 09:20	11-11 10:20	11-11 15:00	11-11 11:00	30.5	54.3	64.8	69	66.2
	S1145	11-11 06:40	11-11 09:45	11-11 10:45	11-11 15:35	11-11 11:00	32.5	50.6	65	71.6	65.1
	S430	11-11 08:00	11-11 09:15	11-11 11:25		11-11 11:00	42.2	47	62.2		58
	S431	11-11 09:45	11-11 10:10	11-11 11:10	11-11 23:15	11-11 11:00	14.3	57	58.4	65.1	58.3
	S432	11-11 09:35	11-11 10:35	11-11 10:55	11-11 15:35	11-11 11:00	4.9	27.9	58.6	60	57.1
	S433	11-11 09:50	11-11 10:45	11-11 11:15	11-11 14:55	11-11 11:00	36.1	57.3	59.9	62	57.9
	S434	11-11 08:45	11-11 10:15	11-11 11:00	11-11 18:40	11-11 11:00	41.8	51.9	58.6	64.3	58.6
	S435	11-11 08:20	11-11 09:50	11-11 10:55	11-11 19:10	11-11 11:00	36.5	52	59.9	64.7	57.3
	S437	11-11 06:55	11-11 09:40	11-11 10:50	11-11 19:20	11-11 11:00	39.7	50.1	60.6	64.7	58.7
	S438	11-11 07:05	11-11 09:40	11-11 11:25	11-11 14:50	11-11 11:00	41.5	49.8	59.9	60.1	58.9
	S440	11-11 07:00	11-11 10:00	11-11 11:50	11-11 23:30	11-11 11:00	42.1	52.4	59.4	67.6	56.1
	S441	11-11 06:55	11-11 09:40	11-11 11:15	11-11 23:55	11-11 11:00	42.5	49.9	58.7	67.2	58.2
	S442	11-11 07:55	11-11 10:05	11-11 12:00	11-11 23:35	11-11 11:00	39	53.2	59.9	66.5	57.9
U.S.169 (NB)/TP5B1691	S443	11-11 08:55	11-11 10:05	11-11 12:05	11-11 23:55	11-11 08:00	41.3	50.2	55.3	61.5	39.3
	S770	11-11 07:00	11-11 10:05	11-11 11:50		11-11 08:00	45.5	56.2	62.1		43.1
	S769	11-11 08:40	11-11 10:00	11-11 11:40		11-11 08:00	53.9	66.2	71.7		52.3
	S768	11-11 09:00	11-11 10:10	11-11 12:40		11-11 08:00	42.8	55.1	59.3		42.8
	S767	11-11 06:35	11-11 09:55	11-11 12:30		11-11 08:00	37.1	50	56.4		42.3
	S766	11-11 06:35	11-11 10:00	11-11 11:25		11-11 08:00	39.1	55.9	61.2		42.8
	S765	11-11 06:50	11-11 10:00	11-11 11:55	11-11 23:35	11-11 08:00	40.4	52	58.7	65	41.5
	S764	11-11 07:10	11-11 10:00	11-11 13:55	11-11 23:45	11-11 08:00	48.6	58.8	62.2	71.4	47.7
	S763	11-11 06:40	11-11 09:55	11-11 11:50		11-11 08:00	42.2	53.1	59.5		45
	S762	11-11 08:00	11-11 09:45	11-11 10:50	11-11 21:40	11-11 08:00	48.4	58.3	64.1	75.4	48.4
	S761	11-11 06:40	11-11 09:55	11-11 11:50		11-11 08:00	35.9	53.1	58.8		46.8
	S221	11-11 06:45	11-11 09:35	11-11 11:15		11-11 08:00	42.2	47.9	56		50.1
T.H.100 (NB)	S378	11-11 08:35	11-11 10:05	11-11 11:05	11-11 11:50		46.2	52.3	62.9	62.3	
T.H.100 (NB)/TP5E1001	S379	11-11 07:15	11-11 10:00	11-11 11:00	11-11 14:50	11-11 23:00	40.3	51.6	57.5	59.8	62.3

Corridor/RouteID	Station	Time					Speed (mph)				
		Recovery Start	N80	N90	N100	Reported	Recovery Start	N80	N90	N100	Reported
	S380	11-11 07:45	11-11 09:55	11-11 11:00	11-11 15:10	11-11 23:00	30.6	50.7	57.7	60.4	62.6
	S381	11-11 08:45	11-11 09:40	11-11 10:55	11-11 15:05	11-11 23:00	28	48.2	58.3	60.1	63.4
	S382	11-11 07:35	11-11 10:25	11-11 11:15		11-11 23:00	18.3	41.7	59.7		61.9
	S383	11-11 07:15	11-11 10:05	11-11 11:30		11-11 23:00	27	54.5	60.8		64.6
	S384	11-10 21:40	11-11 10:45	11-11 12:00	11-11 15:30	11-11 23:00	40.1	52.1	59.4	58.4	64
	ST1000	11-11 07:25	11-11 09:30	11-11 11:00		11-11 23:00	10.2	42.6	53.1		57.5
	S387	11-11 07:45	11-11 10:15	11-11 11:25		11-11 23:00	30.6	54.1	57.8		64.4
	S388	11-11 06:40	11-11 09:40	11-11 10:55		11-11 23:00	38.6	50.6	59.2		65.6
	S389	11-11 06:50	11-11 09:50	11-11 11:45	11-11 15:25	11-11 23:00	43.3	54.7	62.7	61	64.2
	S391	11-11 06:55	11-11 09:40	11-11 11:35	11-11 15:30	11-11 23:00	38.7	51	55.9	56.3	59.2
	S392	11-11 08:00	11-11 09:10	11-11 11:15		11-11 23:00	48.7	50.4	60.9		65.6
	S393	11-11 06:45	11-11 09:40	11-11 11:25		11-11 23:00	43.6	56.6	60.1		64.2
	S394	11-11 06:25	11-11 07:05	11-11 09:35	11-11 17:25	11-11 23:00	50.2	55.1	62.6	62.6	71.1
	S406	11-11 08:35	11-11 09:55	11-11 10:55	11-11 15:00	11-11 23:00	55.5	65.9	74	75.4	80.9
	S931	11-11 08:30	11-11 09:55	11-11 10:55		11-11 23:00	50.4	56.3	62.7		67
	S932	11-10 15:35	11-11 10:40	11-11 14:20		11-11 23:00	39.3	53.8	60.6		64
	S933	11-10 14:40	11-11 11:00	11-11 22:20		11-11 23:00	36.3	58.5	64.7		64
	S934	11-11 06:40	11-11 10:10	11-11 11:30	11-11 16:25	11-11 23:00	44.4	56.4	63.4	63.6	66.7
	S935	11-11 06:45	11-11 10:00	11-11 10:55	11-11 20:55	11-11 23:00	47.8	56.4	64.2	67.6	66.4
	S1614	11-11 06:45	11-11 07:30	11-11 10:55	11-11 21:05	11-11 23:00	51.5	55	61.4	68.7	69.4
U.S.169 (SB)/TP5B1691	S750	11-11 06:45	11-11 09:05	11-11 10:10	11-11 18:35	11-11 08:00	15.4	48.9	58.7	66.9	34.3
	S751	11-11 06:45	11-11 09:15	11-11 10:10	11-11 19:00	11-11 08:00	15.5	47.9	53.4	59	27.9
	S749	11-11 20:45	11-11 21:50	11-11 22:40	11-12 00:00	11-11 08:00	61.5	74.2	86.2	92.7	26.2
	S222	11-11 06:25	11-11 09:15	11-11 10:30	11-11 21:20	11-11 08:00	12.3	46.1	55.4	60.8	13.2
	S748	11-11 06:25	11-11 09:10	11-11 10:10	11-11 15:00	11-11 08:00	19.2	37.2	58.9	64.1	20
	S747	11-11 06:35	11-11 09:15	11-11 10:20	11-11 18:55	11-11 08:00	21.3	40.1	54.4	58.9	24.5
	S744	11-11 06:15	11-11 09:25	11-11 10:15	11-11 18:45	11-11 08:00	29.9	43.8	56.3	62.8	16

Corridor/RouteID	Station	Time					Speed (mph)				
		Recovery Start	N80	N90	N100	Reported	Recovery Start	N80	N90	N100	Reported
	S742	11-11 07:40	11-11 09:25	11-11 10:30		11-11 08:00	12.9	23.2	59.2		10.5
	S736	11-11 07:15	11-11 09:30	11-11 10:25		11-11 08:00	14.4	21.3	54.1		9.2
	S741	11-11 08:00	11-11 09:30	11-11 15:15		11-11 08:00	7.3	18.3	54.6		7.3
	S740	11-11 07:30	11-11 09:25	11-11 11:40		11-11 08:00	12.6	18.2	53.2		7.6
	S739	11-11 07:25	11-11 09:10	11-11 10:35	11-11 20:25	11-11 08:00	14.9	20.7	56.6	64	10.8
	S738	11-10 17:05	11-11 09:40	11-11 10:30		11-11 08:00	43	39.2	60.8		10.6
	S737	11-11 06:30	11-11 07:40	11-11 09:30	11-11 14:30	11-11 08:00	29.2	7.8	43.8	56	8.7
	S446	11-11 06:30	11-11 08:35	11-11 10:15	11-11 15:00	11-11 08:00	30.6	9	52.4	55.4	7.6
U.S.169 (SB)/TP5N1692	S448	11-11 06:35	11-11 08:40	11-11 10:35	11-11 20:55	11-11 11:00	34.2	10.6	56.5	65.6	59.9
	S450	11-11 08:05	11-11 09:35	11-11 11:00		11-11 11:00	12.8	43.5	57.7		57.7
	S451	11-11 06:40	11-11 09:10	11-11 10:20	11-11 15:20	11-11 11:00	34	26.9	57.4	61.1	59.6
	S452	11-11 06:45	11-11 08:55	11-11 10:25	11-11 15:50	11-11 11:00	32.8	21.6	57.9	60.2	61
	S453	11-11 07:30	11-11 09:35	11-11 10:35	11-11 15:50	11-11 11:00	29.8	48	57.3	61	60.6
	S455	11-11 09:35	11-11 09:55	11-11 10:35	11-11 15:40	11-11 11:00	18.5	34.4	55.1	60.4	59
	S456	11-11 09:25	11-11 10:05	11-11 10:45	11-11 15:05	11-11 11:00	30.7	50.4	62	64.5	61.7
	S457	11-11 09:50	11-11 10:00	11-11 10:40	11-11 15:40	11-11 11:00	46.6	49.9	59.4	63.6	64.4
	S458	11-11 08:30	11-11 09:30	11-11 10:35	11-11 16:00	11-11 11:00	36.1	41.6	58.6	62.7	64.3
	S1147	11-11 09:30	11-11 10:00	11-11 12:00	11-11 14:40	11-11 11:00	53.2	60	69.8	75.3	70.7
T.H.77 (SB)/TP5J0771	S541	11-11 06:40	11-11 08:10	11-11 09:35			51.5	52.8	62.5		
	S542	11-11 07:15	11-11 08:35	11-11 09:45			49.6	52.8	60.4		
	S543	11-11 07:35	11-11 08:45	11-11 09:55	11-11 15:15		49.4	54.3	62.2	66.5	
	S807	11-11 07:30	11-11 08:55	11-11 10:15			48	54.9	60.9		
	S808	11-11 07:55	11-11 09:40	11-11 10:30	11-11 19:05		48.1	56.5	65.2	71.3	
	S809	11-11 07:30	11-11 09:55	11-11 10:50			39.2	52.7	61.8		
I-35E (NB)	S884	11-11 06:45	11-11 08:35	11-11 09:50	11-11 15:30		42	58.1	63.4	71.8	
	S885	11-11 06:45	11-11 08:45	11-11 09:40	11-11 15:20		40	59.2	70.1	75.9	
	S886	11-11 06:45	11-11 08:55	11-11 12:15			25.1	59.7	71.7		

Corridor/RouteID	Station	Time					Speed (mph)				
		Recovery Start	N80	N90	N100	Reported	Recovery Start	N80	N90	N100	Reported
	S827	11-11 06:45	11-11 08:15	11-11 09:35	11-11 12:25		24	32.5	66.9	76.5	
	S828	11-11 06:50	11-11 08:45	11-11 09:15	11-11 11:00		20.7	67.6	74	80.5	
	S829	11-11 06:45	11-11 09:20	11-11 14:40			19.7	53.7	57		
	S830	11-11 06:50	11-11 08:45	11-11 09:30	11-11 20:30		30.3	51.5	57.3	62.5	
	S831	11-11 07:00	11-11 08:30	11-11 09:10	11-11 10:35		38	38.6	62.7	69.6	
	S832	11-11 07:15	11-11 08:55	11-11 09:35	11-12 00:00		39.6	57.5	61.9	67	
	S833	11-11 06:45	11-11 08:40	11-11 09:55			29.9	43	52.1		
	S834	11-11 06:45	11-11 07:25	11-11 08:50	11-11 10:35		37.1	39.9	48.5	52.2	
	S836	11-11 06:55	11-11 12:20	11-11 23:45			34.8	51.7	57		
	S837	11-11 07:00	11-11 08:30	11-11 09:25	11-11 15:35		36.4	42.1	49.2	52.3	
I-35E (NB)/TP9F35E1	S838	11-11 01:40	11-11 02:35	11-11 04:15	11-11 13:10	11-11 09:00	37.9	44.2	48	52	50.1
	S839	11-11 06:35	11-11 07:00	11-11 08:10	11-11 10:40	11-11 09:00	43.1	41.3	46.8	53.2	52.2
	S619	11-11 06:50	11-11 07:45	11-11 09:50		11-11 09:00	40.3	44.9	51.1		48.2
	S620	11-11 07:15	11-11 08:10	11-11 09:55	11-11 12:15	11-11 09:00	44	47.7	55.7	58.9	52.9
	ST3516	11-11 06:50	11-11 07:40	11-11 09:05	11-11 12:50	11-11 09:00	40.9	44.9	52.5	57.2	51.6
	ST3513	11-11 16:45	11-11 17:05	11-11 17:50		11-11 09:00	15.6	40.8	54		54
	ST3512	11-11 06:50	11-11 08:10	11-11 09:15		11-11 09:00	44.1	50	55.9		55.9
	ST3510	11-11 07:30	11-11 08:25	11-11 09:20		11-11 09:00	45.4	51	55.8		56.7
	S1448	11-11 07:20	11-11 09:10	11-11 11:50		11-11 09:00	49.5	54.9	62.6		55
I-35E (NB)/TP9B35E1	S1485	11-11 17:15	11-11 18:25	11-11 19:15		11-11 21:00	34.3	65.7	70.1		72
T.H.62 (WB)	S1136	11-11 07:05	11-11 08:40	11-11 10:05			37.1	47.9	51.9		
	S331	11-11 07:10	11-11 08:25	11-11 09:25			31.5	42.7	54.2		
	S333	11-11 07:10	11-11 08:35	11-11 09:30	11-11 20:45		16.3	40	54.2	62	
	S334	11-11 07:15	11-11 07:40	11-11 08:45	11-11 17:50		40.2	37.2	50.3	63.2	
	S133	11-11 07:30	11-11 09:55	11-11 11:05	11-11 23:10		4.8	48.6	52	58.9	
	S127	11-11 06:45	11-11 09:15	11-11 11:25	11-11 23:20		14.2	39.2	51.5	58	
	S350	11-11 07:00	11-11 08:15	11-11 09:30	11-11 19:55		26.4	15.9	44.6	55.8	

Corridor/RouteID	Station	Time					Speed (mph)				
		Recovery Start	N80	N90	N100	Reported	Recovery Start	N80	N90	N100	Reported
	S351	11-11 20:30	11-11 21:55	11-11 22:50			56.4	54.5	58.9		
	S352	11-11 07:30	11-11 09:10	11-11 09:35	11-11 11:10		27.4	44.9	78.1	88.4	
	S353	11-11 06:40	11-11 09:05	11-11 10:35	11-11 11:20		30	34.8	50.2	62.6	
	S354	11-11 06:50	11-11 09:20	11-11 10:55	11-11 20:55		29.5	33.3	49.7	54.5	
T.H.212 (EB)/TP5N2121	S841	11-11 07:20	11-11 09:05	11-11 09:55	11-11 17:30	11-11 11:00	8.9	55.6	62.9	67.7	63.1
	S842	11-11 07:20	11-11 09:25	11-11 10:05	11-11 18:05	11-11 11:00	14.4	55.8	68.7	72.6	66.6
	S843	11-11 07:05	11-11 09:00	11-11 09:40	11-11 18:35	11-11 11:00	11.5	25.9	67.9	75.8	68.6
	S860	11-11 07:45	11-11 09:35	11-11 10:05	11-11 20:15	11-11 11:00	13.1	61.8	68.1	73.6	65.2
	S862	11-11 07:10	11-11 09:30	11-11 10:00	11-11 17:20	11-11 11:00	15.2	55.8	64.7	69.7	65.4
	S423	11-11 07:45	11-11 09:50	11-11 11:25		11-11 11:00	23	59.4	62.9		61.8
	S424	11-11 07:50	11-11 09:35	11-11 10:25	11-11 19:05	11-11 11:00	24.2	56.4	60.4	68.8	59.6
	S425	11-11 07:45	11-11 09:40	11-11 10:40	11-11 20:45	11-11 11:00	25.2	55.2	60.7	67.9	59.3
T.H.62 (EB)	S311	11-11 06:50	11-11 08:25	11-11 09:25	11-11 11:20		37.3	38.5	48.1	56.3	
	S313	11-11 06:55	11-11 08:55	11-11 09:50			31.9	27.7	51.5		
	S314	11-11 06:55	11-11 08:40	11-11 09:25	11-11 14:25		28	35.5	36.4	54.6	
	S315	11-11 06:35	11-11 08:30	11-11 10:20	11-11 14:50		30.7	27.8	52.6	53.9	
	S316	11-11 06:50	11-11 08:50	11-11 10:00			20.9	31.4	53.3		
	S67	11-11 07:00	11-11 08:55	11-11 10:05	11-11 21:55		37	50.2	56.8	65.3	
	S328	11-11 16:20	11-11 17:40	11-11 18:20	11-11 20:55		24.9	42.9	52.4	57.2	
	S322	11-11 07:00	11-11 13:00	11-11 16:40	11-11 21:40		31.6	54.3	52.4	59.3	
	S323	11-11 07:20	11-11 08:55	11-11 10:10	11-11 16:00		35.2	41.7	53.3	51.6	
T.H.10 (WB)	S1822	11-11 08:25	11-11 10:35	11-11 12:00	11-11 22:40		39	45.8	50.6	56.3	
T.H.10 (WB)/TP5F0101	S979	11-11 06:40	11-11 09:55	11-11 12:00		11-11 11:30	51.2	62.4	67.7		67.1
	S980	11-11 06:40	11-11 09:30	11-11 14:00		11-11 11:30	50.8	60.8	68		67.5
	S981	11-11 06:35	11-11 08:50	11-11 10:20	11-11 21:05	11-11 11:30	48.5	62.1	63.8	72.7	69.4
T.H.10 (WB)	S982	11-11 06:35	11-11 08:35	11-11 10:15			48.8	60.2	68		
	S1137	11-11 06:35	11-11 08:35	11-11 10:15			44.8	55.8	63.1		

Corridor/RouteID	Station	Time					Speed (mph)				
		Recovery Start	N80	N90	N100	Reported	Recovery Start	N80	N90	N100	Reported
	S984	11-11 06:55	11-11 09:30	11-11 11:20			55.4	63.1	71.7		
	S989	11-11 07:10	11-11 09:45	11-11 13:55	11-11 22:55		48.8	59.5	66.2	73.2	
	S990	11-11 06:45	11-11 08:50	11-11 10:35			53.2	65.7	71.6		
T.H.212 (WB)/TP5N2121	S361	11-10 08:40	11-10 13:10	11-10 15:10	11-11 10:40	11-11 11:00	42.2	56	60	71.9	68.3
	S444	11-11 08:55	11-11 09:20	11-11 11:35	11-11 15:45	11-11 11:00	48.5	51.2	58.5	61.7	56.4
	S445	11-11 06:40	11-11 09:40	11-11 12:10	11-11 15:45	11-11 11:00	49.6	55.5	65	67.8	62
	S449	11-10 11:20	11-10 14:20	11-10 20:20	11-11 03:55	11-11 11:00	44	57	64.7	65.8	61.5
	S820	11-11 08:50	11-11 10:00	11-11 15:40		11-11 11:00	48.3	59.3	62.6		58.2
	S821	11-11 06:45	11-11 09:25	11-11 11:20	11-11 15:50	11-11 11:00	49	55.3	62	66.1	62.8
	S823	11-11 08:55	11-11 09:45	11-11 11:35	11-11 15:25	11-11 11:00	51	57.2	64.6	69.2	63.2
T.H.36 (WB)	S607	11-11 06:35	11-11 08:10	11-11 10:20			19.7	25.3	56.7		
	S609	11-11 06:55	11-11 08:20	11-11 09:25	11-11 10:55		11	19.2	58.1	66.7	
	S610	11-11 06:30	11-11 07:55	11-11 09:10	11-11 21:55		24.7	12.5	60.1	68.4	
	S611	11-11 06:35	11-11 08:05	11-11 09:25	11-11 21:25		14.8	12.9	58.3	65.9	
	S589	11-11 07:10	11-11 08:30	11-11 09:20	11-11 21:05		9.8	14.1	56.2	65.2	
	S612	11-11 06:50	11-11 08:15	11-11 09:55			6	12.8	61.3		
	S613	11-11 07:00	11-11 08:20	11-11 09:45	11-11 21:20		10.3	15.5	57.6	65.2	
	S614	11-11 19:35	11-11 21:25	11-11 22:15			64	67.6	68.5		
	S615	11-11 07:00	11-11 08:10	11-11 09:40	11-11 22:25		9.6	10.8	58.9	66.6	
	S617	11-11 07:00	11-11 08:30	11-11 10:05			15.1	16.1	55.7		
	S618	11-11 07:10	11-11 08:55	11-11 11:05			16.3	37.8	56.6		
T.H.10 (EB)	S942	11-11 06:35	11-11 09:15	11-11 10:30	11-11 22:05		41	55.4	68.1	74.5	
	S943	11-11 07:05	11-11 10:00	11-11 13:45			38.1	60.9	68.8		
	S944	11-11 09:00	11-11 09:50	11-11 11:10	11-11 19:55		53.8	58.4	65.4	73.9	
	S945	11-11 08:50	11-11 09:45	11-11 11:05			50.5	59.9	65.9		
	S946	11-11 08:50	11-11 10:30	11-11 12:25			45.2	60.8	66.7		
	S947	11-11 21:15	11-11 21:40	11-11 22:05			45.4	67.7	72.3		

Corridor/RouteID	Station	Time					Speed (mph)				
		Recovery Start	N80	N90	N100	Reported	Recovery Start	N80	N90	N100	Reported
T.H.10 (EB)/TP5F0101	S961	11-11 07:15	11-11 08:50	11-11 10:35		11-11 11:30	34.6	59	64.1		64.5
	S962	11-11 06:35	11-11 08:50	11-11 11:15	11-11 21:40	11-11 11:30	31.7	55.7	58.7	69.8	61.6
T.H.100 (SB)/TP5E1001	S1615	11-11 09:45	11-11 09:55	11-11 11:10	11-11 19:25	11-11 23:00	54.4	55.3	60	66.4	66.1
	S1616	11-11 07:05	11-11 10:15	11-11 11:30	11-11 20:10	11-11 23:00	9.2	52.5	60.3	67.8	67.3
	S936	11-11 06:55	11-11 09:40	11-11 10:40		11-11 23:00	14.2	51.6	57.3		61.5
	S937	11-11 07:30	11-11 10:00	11-11 11:40	11-11 15:20	11-11 23:00	15.5	61.1	70.6	75.8	69.7
	S938	11-11 06:25	11-11 10:00	11-11 11:35		11-11 23:00	28.4	53.1	58.5		63.4
	S939	11-11 06:40	11-11 09:35	11-11 10:50		11-11 23:00	29.7	49.5	58.4		63.9
	S1014	11-11 07:10	11-11 09:35	11-11 10:40		11-11 23:00	11.9	50.2	59.5		62.4
	S1015	11-11 06:25	11-11 09:45	11-11 11:25		11-11 23:00	27.2	51.6	61.4		64.5
	S1016	11-11 06:20	11-11 10:10	11-11 14:45		11-11 23:00	30.9	56	65.2		65.6
	S398	11-11 06:45	11-11 10:10	11-11 11:30		11-11 23:00	20.9	55.6	61.8		62.1
	S403	11-11 06:20	11-11 10:10	11-11 10:50	11-11 19:30	11-11 23:00	17.4	52.8	63.2	67.4	63.4
	S404	11-11 22:25	11-11 22:55			11-11 23:00	59.9	58.5			58
	S407	11-11 06:40	11-11 07:55	11-11 10:20	11-11 12:40	11-11 23:00	30.4	13.5	54.3	58.8	59.3
	S408	11-11 06:35	11-11 09:30	11-11 10:50	11-11 20:10	11-11 23:00	28.9	26.4	58.8	64.6	63.4
	S409	11-11 06:55	11-11 10:10	11-11 11:00	11-11 20:30	11-11 23:00	25.4	49.1	60.2	64.7	66.4
	ST1001	11-11 07:55	11-11 10:00	11-11 10:55		11-11 23:00	20	32.7	55.5		59.1
	S413	11-11 10:10	11-11 10:15	11-11 10:50	11-11 14:40	11-11 23:00	48.8	39.1	55.9	64.4	64.7
	S414	11-11 08:00	11-11 10:05	11-11 11:00	11-11 18:45	11-11 23:00	29.2	44.8	57.5	59.4	60.3
	S415	11-11 07:25	11-11 09:45	11-11 10:40	11-11 15:50	11-11 23:00	31.9	49.6	55.5	59.8	60.7
T.H.100 (SB)	S421	11-11 07:30	11-11 10:05	11-11 11:00	11-11 16:50		46.6	50.5	61.9	54.4	
T.H.36 (EB)	S587	11-11 03:00	11-11 09:50	11-11 11:25			38	48.3	54.2		
	S590	11-11 16:35	11-11 17:45	11-11 18:55	11-11 22:25		24.1	44.8	52.3	59.7	
	S591	11-11 06:50	11-11 09:50	11-11 10:45	11-11 22:45		47	52.8	59.6	67.4	
	S592	11-11 07:45	11-11 09:20	11-11 10:20	11-11 22:50		33.7	51.9	59.9	64.8	
	S593	11-11 07:25	11-11 09:20	11-11 10:15	11-11 22:05		35.3	55	61.4	66	

Corridor/RouteID	Station	Time					Speed (mph)				
		Recovery Start	N80	N90	N100	Reported	Recovery Start	N80	N90	N100	Reported
	S594	11-11 07:25	11-11 09:20	11-11 10:10	11-11 21:50		19.7	54.6	60.1	66.2	
	S595	11-11 07:45	11-11 09:20	11-11 10:10	11-11 21:30		42.6	53	59.7	65.3	
	S604	11-11 07:25	11-11 09:35	11-11 10:25	11-11 22:15		45.9	52.5	60.2	66.2	
	S596	11-10 15:30	11-10 18:25	11-10 22:30	11-11 21:55		39.5	51.4	59.5	65.8	
	S597	11-11 07:40	11-11 09:00	11-11 10:15	11-11 22:05		48.3	54.6	61.9	67.9	
	S598	11-11 06:55	11-11 08:25	11-11 10:05	11-11 22:15		47.3	53.1	62.3	66.5	
	S601	11-11 07:05	11-11 08:30	11-11 09:50	11-11 11:35		45.4	48.1	55.7	62.2	
	S602	11-11 07:10	11-11 09:05	11-11 10:35	11-11 21:45		40.9	48.1	54.2	60.3	
	S603	11-11 07:05	11-11 08:35	11-11 10:40	11-11 22:00		43.1	47.2	53.1	60.8	
I-394 (EB)/TP5C3941	S264	11-11 07:10	11-11 08:50	11-11 09:45	11-11 16:10	11-11 20:00	45.6	54.9	62.6	71.8	70.2
	S266	11-11 07:00	11-11 09:10	11-11 10:00		11-11 20:00	32.5	54.6	64.3		65
	S269	11-11 07:10	11-11 09:00	11-11 09:45	11-11 19:00	11-11 20:00	41.6	53.1	59.5	68	66.9
	S270	11-11 07:15	11-11 09:10	11-11 09:55	11-11 19:15	11-11 20:00	41.4	53.9	60.2	68.6	67.7
	S273	11-11 06:45	11-11 09:20	11-11 12:25		11-11 20:00	43.1	54.3	61.1		63.7
	S275	11-11 06:50	11-11 09:20	11-11 10:05		11-11 20:00	41.9	54.9	63.1		68.7
	S276	11-11 07:55	11-11 09:40	11-11 12:35		11-11 20:00	31.1	52.4	60.2		57.7
	S277	11-11 07:05	11-11 09:20	11-11 09:55	11-11 19:25	11-11 20:00	34.5	49	57.6	64	63.8
	S279	11-11 06:30	11-11 08:00	11-11 10:05	11-11 19:40	11-11 20:00	45.4	30.4	59.4	66.1	67.2
	S280	11-11 07:10	11-11 08:55	11-11 11:45	11-11 15:20	11-11 20:00	16	48.5	60.6	59.7	66.6
I-394 (EB)/TP5H3941	S281	11-11 17:10	11-11 18:00	11-11 22:30		11-10 17:00	18.6	49.3	65.4		48.5
	S282	11-11 08:40	11-11 09:20	11-11 11:40	11-11 23:05	11-10 17:00	44.6	48.3	56.7	67.1	45.6
	S284	11-11 08:40	11-11 09:10	11-11 11:20	11-11 21:15	11-10 17:00	45	49.2	56.6	63.8	46.6
	S286	11-11 08:55	11-11 09:45	11-11 12:40	11-11 21:10	11-10 17:00	41.8	50	49	65.2	44.2
	S288	11-11 08:05	11-11 11:40	11-11 12:45	11-11 19:50	11-10 17:00	20.8	46.4	49.7	70.6	43.6
I-694 (WB)	S1410	11-11 06:50	11-11 09:25	11-11 12:30			49.2	62.4	65.3		
	S1411	11-11 07:15	11-11 08:55	11-11 11:30			45.5	59.5	69.3		
	S1412	11-11 07:05	11-11 08:45	11-11 11:30			53.8	57.9	69		

Corridor/RouteID	Station	Time					Speed (mph)				
		Recovery Start	N80	N90	N100	Reported	Recovery Start	N80	N90	N100	Reported
	S1418	11-11 07:00	11-11 09:05	11-11 10:50	11-11 16:25		55.4	64.5	71.6	64.5	
	S1420	11-11 06:50	11-11 08:35	11-11 11:05			47.3	53.7	67.5		
	S1422	11-11 06:15	11-11 07:20	11-11 10:40	11-11 15:10		52.3	37.9	61.2	70.1	
	S1423	11-11 06:30	11-11 07:05	11-11 10:45	11-11 15:15		57.4	26.2	71.4	77.7	
	S1424	11-11 07:25	11-11 09:15	11-11 10:45			37.2	55.7	63.1		
	S1458	11-11 07:45	11-11 09:15	11-11 10:25			32.4	54.7	59.3		
I-694 (WB)/TP9F6941	S1459	11-11 07:50	11-11 09:50	11-11 11:35		11-11 09:00	12.1	54.1	61.9		50.5
	S1461	11-11 07:25	11-11 10:00	11-11 12:20		11-11 09:00	21.9	55.2	64.9		40
	S1083	11-11 07:05	11-11 09:15	11-11 11:45		11-11 09:00	36.1	48.4	62		30.9
I-694 (WB)	S204	11-11 08:05	11-11 10:20	11-11 11:45	11-11 16:00		42.8	49.4	67.5	64.2	
	S199	11-11 07:15	11-11 10:30	11-11 12:45	11-11 15:35		47.7	56.1	63.2	64.6	
	S178	11-11 07:05	11-11 10:30	11-11 13:45			37.1	47.1	58.6		
	S172	11-11 08:15	11-11 10:35	11-11 12:45			44.2	51.7	63.9		
	S151	11-11 08:50	11-11 10:15	11-11 12:25	11-11 15:15		45	56.6	60.7	65.5	
	S153	11-11 09:05	11-11 10:35	11-11 13:05			40.1	43.6	63.2		
	S154	11-11 09:10	11-11 11:05	11-11 14:15			42.1	55.2	62.5		
	S158	11-11 06:40	11-11 10:40	11-11 12:45			26.4	36.2	60.1		
I-494 (EB)/TP5B4941	S700	11-11 09:35	11-11 11:30	11-11 21:10			40.4	52	61		
	S701	11-11 09:55	11-11 10:20	11-11 13:30			54.5	59.8	64.9		
	S702	11-11 06:25	11-11 09:05	11-11 11:15	11-11 21:30		25.9	18.2	68.4	70.5	
I-494 (EB)	S703	11-11 06:15	11-11 10:30	11-11 15:10	11-11 21:05		22.8	57.5	63.5	71.5	
I-494 (EB)/TP5C4941	S711	11-11 07:10	11-11 08:45	11-11 09:35	11-11 14:50	11-11 20:00	40.2	15	61.2	67.9	69.7
	S713	11-11 06:35	11-11 08:45	11-11 09:40	11-11 15:20	11-11 20:00	45.3	18.2	65.7	71.6	72.4
	S714	11-11 06:30	11-11 07:55	11-11 09:35	11-11 15:40	11-11 20:00	41.5	11.3	53.4	71	71.1
	S292	11-11 06:35	11-11 09:05	11-11 10:25		11-11 20:00	43.8	19.4	68.4		72.5
	S293	11-11 06:40	11-11 09:10	11-11 11:05	11-11 17:15	11-11 20:00	31.3	20	61.5	59.8	69.7
	S294	11-11 06:50	11-11 09:05	11-11 10:20	11-11 14:50	11-11 20:00	27	27.5	49.3	69.7	69.8

Corridor/RouteID	Station	Time					Speed (mph)				
		Recovery Start	N80	N90	N100	Reported	Recovery Start	N80	N90	N100	Reported
	S295	11-11 06:40	11-11 09:20	11-11 11:00	11-11 16:35	11-11 20:00	40.2	41.1	65.2	54.9	71.8
	S296	11-11 07:10	11-11 09:10	11-11 11:15	11-11 17:25	11-11 20:00	41	44	62.6	64.9	69.6
I-494 (EB)	S475	11-11 07:35	11-11 09:45	11-11 11:20			36.2	56.7	64.1		
	S1010	11-11 09:15	11-11 09:40	11-11 10:40	11-11 20:25		49.7	51.2	58.2	67.6	
	S733	11-11 08:45	11-11 09:30	11-11 10:30	11-11 16:25		49.4	51.7	65	75.2	
	S477	11-11 09:10	11-11 09:55	11-11 10:45	11-11 19:45		48.8	54.4	61.8	67.3	
	S478	11-11 09:25	11-11 10:00	11-11 11:05	11-11 20:25		47.6	52.8	66.4	72.3	
	S192	11-11 09:30	11-11 09:55	11-11 10:40	11-11 18:15		43	41.2	59.6	67.7	
	S194	11-11 06:50	11-11 07:40	11-11 10:15	11-11 22:05		35.1	14.6	60.3	74.6	
	S195	11-11 06:55	11-11 09:55	11-11 14:20	11-11 23:05		31.9	48.4	62.3	73.1	
	S196	11-11 07:15	11-11 10:00	11-11 10:55	11-11 18:25		24.5	44.6	59.5	62.1	
	S198	11-11 08:15	11-11 09:55	11-11 11:05	11-11 17:30		38.6	46.7	59.3	52.4	
	S120	11-11 07:15	11-11 10:10	11-11 11:20	11-11 22:20		36.8	51.4	55.1	65.5	
	S201	11-11 06:55	11-11 09:25	11-11 10:45	11-11 14:55		44.9	54	58.9	63.1	
	S116	11-11 06:50	11-11 09:30	11-11 11:05	11-11 14:40		44.2	52.8	59.5	61.5	
I-494 (EB)/TP9M4941	S863	11-11 06:50	11-11 08:05	11-11 11:35	11-11 14:55	11-11 08:30	59.2	63.6	68.4	78.5	63.5
	S1198	11-11 07:20	11-11 08:55	11-11 11:55	11-11 15:15	11-11 08:30	58.8	67.1	75.9	80	61.5
	S1199	11-11 07:55	11-11 09:20	11-11 12:10	11-11 15:35	11-11 08:30	54.6	62.8	70.5	75	52.9
	S1201	11-11 06:40	11-11 09:20	11-11 12:25	11-11 15:30	11-11 08:30	47	58.4	67.9	69.8	45.8
	S1202	11-11 06:45	11-11 09:30	11-11 12:05	11-11 14:50	11-11 08:30	52.7	62.7	70.6	72.3	53.7
	S1203	11-11 08:30	11-11 09:20	11-11 12:25	11-11 15:30	11-11 08:30	51.4	61.3	69.8	75.1	51.4
	S1363	11-10 08:20	11-10 13:35	11-10 14:05	11-11 03:20	11-11 08:30	47.4	55.9	59.8	56.4	59.9
	S1204	11-11 07:30	11-11 09:25	11-11 12:30	11-11 21:55	11-11 08:30	52.1	62.1	69.9	79.3	60.9
	S1205	11-10 07:10	11-10 11:00	11-10 18:15	11-11 03:15	11-11 08:30	49.4	56.9	70.7	64.3	64.3
I-494 (EB)	S1208	11-11 06:50	11-11 09:15	11-11 10:55			57.1	60.5	71.9		
I-694 (EB)	S131	11-10 13:05	11-10 13:45	11-10 15:20	11-10 19:55		63.6	64.1	64.4	82.4	
I-694 (EB)/TP5E0941	S134	11-11 07:15	11-11 10:30	11-11 13:20	11-11 23:25		27.7	58.9	62	69.4	

Corridor/RouteID	Station	Time					Speed (mph)				
		Recovery Start	N80	N90	N100	Reported	Recovery Start	N80	N90	N100	Reported
	S142	11-11 09:25	11-11 10:10	11-11 12:20	11-11 20:25		46.5	51.7	61	67	
I-694 (EB)/TP5E6941	S145	11-11 09:40	11-11 10:20	11-11 13:10	11-11 15:15	11-11 23:00	44.7	54.4	57.7	59.1	64.8
	S147	11-11 09:45	11-11 10:20	11-11 13:05	11-11 23:45	11-11 23:00	44.6	55.4	60.1	66.7	65.7
	S163	11-11 09:40	11-11 10:30	11-11 13:20	11-11 21:10	11-11 23:00	43.6	59.4	59.1	72.8	68.6
	S165	11-11 07:50	11-11 10:25	11-11 13:05	11-11 15:25	11-11 23:00	39.2	60	62.6	61.8	70.8
	S166	11-11 08:10	11-11 10:00	11-11 10:35	11-11 14:05	11-11 23:00	45.8	47.3	70.2	69	75.3
	S173	11-11 08:00	11-11 10:00	11-11 10:50	11-11 14:15	11-11 23:00	48.4	38.6	65.3	71.7	75.2
	S175	11-11 06:30	11-11 07:50	11-11 12:45	11-11 14:50	11-11 23:00	46.6	43.5	57	61.4	69.3
	S203	11-11 09:15	11-11 10:05	11-11 14:10	11-11 16:00	11-11 23:00	44.2	31.7	54.9	50.2	64.5
	S1074	11-11 09:45	11-11 10:35	11-11 17:10		11-11 23:00	34.5	55.7	61.8		64.5
I-694 (EB)	S1077	11-11 07:55	11-11 10:15	11-11 13:30			41.4	23.6	58		
I-694 (EB)/TP9F6941	S1080	11-11 08:15	11-11 10:20	11-11 15:00		11-11 09:00	48.8	49.3	64.9		44
I-694 (EB)	S1455	11-11 08:55	11-11 10:10	11-11 12:30			56	63.5	66.3		
	S1393	11-11 07:05	11-11 09:25	11-11 10:40			55	61.9	71.2		
	S1394	11-11 08:55	11-11 10:00	11-11 12:10			51	50.1	61.5		
	S1399	11-11 06:40	11-11 07:50	11-11 11:05			48.9	52.1	63.4		
	S1402	11-11 06:45	11-11 09:05	11-11 11:20			51.6	54.2	67.7		
	S1405	11-11 06:45	11-11 08:50	11-11 11:05			33.1	53.1	62.9		
	S1406	11-11 06:55	11-11 08:30	11-11 10:45			35.7	59.8	71.4		
	S1028	11-11 06:55	11-11 09:40	11-11 11:05			32.5	61.2	64.8		
T.H.5 (EB)	S861	11-11 08:40	11-11 09:35	11-11 10:20	11-11 14:20		24.3	59.1	65.2	70.9	
I-494 (WB)	S1031	11-11 06:20	11-11 08:50	11-11 09:55	11-11 15:30		48.2	54.6	66.6	69.3	
	S1032	11-11 06:35	11-11 09:05	11-11 10:00	11-11 12:40		41.3	54.2	66	67.8	
	S1033	11-11 06:35	11-11 08:40	11-11 10:10	11-11 15:40		45.6	46.8	68.6	75.3	
I-494 (WB)/TP9M4941	S1035	11-11 07:05	11-11 09:35	11-11 12:50		11-11 08:30	25.8	59	65.4		31.3
	S1184	11-11 11:40	11-11 15:50	11-11 19:00	11-11 21:45	11-11 08:30	42.4	45.4	63.6	63.5	34.1
	S1187	11-11 06:30	11-11 08:30	11-11 09:30	11-11 15:00	11-11 08:30	39	47.6	59.3	64.4	47.6

Corridor/RouteID	Station	Time					Speed (mph)				
		Recovery Start	N80	N90	N100	Reported	Recovery Start	N80	N90	N100	Reported
	S1190	11-11 06:20	11-11 08:25	11-11 09:40	11-11 15:45	11-11 08:30	42.4	47.9	61.3	72	50.5
	S864	11-11 06:30	11-11 07:10	11-11 09:05	11-11 13:25	11-11 08:30	52.5	53.2	61.3	76.3	59.5
	S1192	11-11 06:40	11-11 08:35	11-11 09:40	11-11 14:10	11-11 08:30	39.3	52.1	61.7	71.5	49.7
	S1193	11-11 06:30	11-11 07:50	11-11 09:50	11-11 14:15	11-11 08:30	46.3	32.6	67.3	73.1	54.9
I-494 (WB)	S506	11-11 06:40	11-11 08:20	11-11 10:40			37	21.6	61.4		
	S507	11-11 07:55	11-11 09:10	11-11 09:55	11-11 21:25		18.2	37.9	58.5	68.1	
	S1818	11-11 06:55	11-11 09:30	11-11 10:55			9.5	49.5	58.7		
	S115	11-11 07:00	11-11 09:35	11-11 09:55	11-11 15:35		14.7	61.2	64.1	64.7	
	S182	11-11 07:40	11-11 09:40	11-11 10:30	11-11 15:15		11.8	48	60.9	65.6	
	S185	11-11 06:15	11-11 08:15	11-11 10:30	11-11 21:00		37	13.8	56.6	64.9	
	S187	11-11 06:45	11-11 07:55	11-11 10:50	11-11 16:10		28	12.1	54.9	54.9	
	S188	11-11 06:55	11-11 10:00	11-11 14:20			39.4	57.8	65.8		
	S1011	11-11 07:05	11-11 09:30	11-11 11:15	11-11 20:25		37.5	40.3	67.7	78	
	S480	11-11 07:55	11-11 09:55	11-11 12:00	11-11 16:45		44.4	58.5	66.1	68.5	
	S1009	11-11 08:25	11-11 10:00	11-11 14:05	11-11 15:45		46.4	56.8	63.3	65.7	
	S483	11-11 08:50	11-11 09:55	11-11 11:25	11-11 15:40		52.4	56.5	66.2	70.6	
	S487	11-11 08:10	11-11 09:55	11-11 11:35	11-11 15:15		30.3	56.8	66.3	70.2	
	S488	11-11 08:10	11-11 09:45	11-11 11:25	11-11 15:20		38	57.8	66.6	70.2	
	S511	11-11 08:15	11-11 09:45	11-11 10:50	11-11 15:05		41.9	58.9	68.2	74.5	
	S512	11-11 07:55	11-11 09:55	11-11 11:25			28	60.9	67.8		
I-494 (WB)/TP5C4941	S513	11-11 07:50	11-11 09:35	11-11 11:30	11-11 17:50	11-11 20:00	36.1	57.3	68	61.2	72.1
	S515	11-11 07:05	11-11 09:25	11-11 11:15		11-11 20:00	44.6	33.3	66.1		71.3
	S516	11-11 07:15	11-11 09:35	11-11 11:25	11-11 15:55	11-11 20:00	46.9	48.3	68.2	63.1	73.5
	S517	11-11 08:15	11-11 09:45	11-11 11:45	11-11 15:45	11-11 20:00	44.8	56.2	66.3	64.4	71.3
	S518	11-11 08:20	11-11 09:25	11-11 11:10	11-11 15:35	11-11 20:00	49	50.9	62.8	67.2	69.4
	S718	11-11 08:35	11-11 09:35	11-11 11:45	11-11 15:30	11-11 20:00	49.5	56.4	63.6	67.8	70.9
	S719	11-11 08:30	11-11 09:45	11-11 13:45	11-11 21:05	11-11 20:00	46.3	55.1	62	72.4	68.6

Corridor/RouteID	Station	Time					Speed (mph)				
		Recovery Start	N80	N90	N100	Reported	Recovery Start	N80	N90	N100	Reported
	S720	11-11 08:35	11-11 09:30	11-11 11:05		11-11 20:00	47.1	51.3	59.2		63.7
	S721	11-11 08:35	11-11 09:35	11-11 10:55		11-11 20:00	45.6	52.8	60		63.5
	S723	11-11 16:55	11-11 18:10	11-11 18:35	11-11 21:40	11-11 20:00	24.3	62	66	71.5	70.2
I-394 (WB)/TP5H3941	S287	11-11 07:10	11-11 09:20	11-11 11:25	11-11 19:50	11-10 17:00	31.2	49.4	59	64.9	46.3
	S285	11-11 06:50	11-11 09:25	11-11 11:15	11-11 22:30	11-10 17:00	35.5	48.4	56.6	63	43.8
	S283	11-11 06:50	11-11 09:10	11-11 11:15	11-11 22:20	11-10 17:00	35.1	50	58.7	64.1	48.4
	S319	11-11 06:50	11-11 08:20	11-11 11:00	11-11 22:10	11-10 17:00	40.5	41.3	55.3	67.5	48.7
I-394 (WB)/TP5C3941	S320	11-11 06:50	11-11 08:25	11-11 10:10	11-11 22:35	11-11 20:00	43.3	42.8	61.2	70.1	67.5
	S321	11-11 07:30	11-11 09:20	11-11 11:45	11-11 22:00	11-11 20:00	40.8	51.6	57.7	62.2	61.3
	S336	11-11 07:10	11-11 09:35	11-11 12:00	11-11 23:40	11-11 20:00	38.8	52	60.2	62.5	59.5
	S337	11-11 07:55	11-11 09:40	11-11 12:05	11-11 22:30	11-11 20:00	40.4	53.7	57.6	61.3	60
	S340	11-11 07:10	11-11 09:20	11-11 10:25	11-11 20:05	11-11 20:00	44	52.2	58.5	63.2	62.5
	S341	11-11 06:55	11-11 09:30	11-11 12:20		11-11 20:00	45.1	52.2	58.1		60
	S342	11-11 06:45	11-11 09:15	11-11 10:50	11-11 21:30	11-11 20:00	46.3	51.8	60.1	64.9	63.4
	S344	11-11 06:45	11-11 08:45	11-11 09:50	11-11 19:10	11-11 20:00	46.8	48.7	58.2	60.7	59
T.H.52 (NB)	S1176	11-11 08:00	11-11 08:35	11-11 11:05	11-11 19:45		52.1	53.6	63.4	68.6	
	S1177	11-11 06:20	11-11 08:25	11-11 11:00	11-11 19:15		48.3	51.1	64.5	69.6	
T.H.55 (EB)	S519	11-11 07:15	11-11 08:00	11-11 08:40	11-11 11:45		43.7	44.2	55	63	
I-35E (SB)/TP9B35E1	S1540	11-11 06:30	11-11 07:45	11-11 08:35		11-11 21:00	42.6	64.9	69.5		77.8
	S1541	11-11 06:25	11-11 07:50	11-11 08:50		11-11 21:00	24.5	56.7	69.1		73.1
	S1542	11-11 06:20	11-11 07:30	11-11 08:40	11-11 20:45	11-11 21:00	31	39.5	67.2	77.5	77.3
	S1543	11-11 06:30	11-11 08:05	11-11 09:35	11-11 20:25	11-11 21:00	32.8	65	73.1	82.2	84.7
	S1544	11-11 06:20	11-11 08:00	11-11 09:00		11-11 21:00	29.9	61.3	68.5		75.2
	S1545	11-11 06:15	11-11 08:00	11-11 09:00	11-11 20:35	11-11 21:00	32	62	70.9	77.1	78.2
	S1546	11-11 06:35	11-11 08:45	11-11 11:15	11-11 20:00	11-11 21:00	20.9	62.7	68.5	76.9	77.9
	S1548	11-11 06:35	11-11 08:05	11-11 08:55	11-11 21:10	11-11 21:00	42.8	63.5	69.8	76.9	76.5
I-35E (SB)/TP9F35E1	S1464	11-11 07:40	11-11 08:50	11-11 10:05	11-11 21:50	11-11 09:00	44.6	53.1	61.7	66.5	53.3

Corridor/RouteID	Station	Time					Speed (mph)				
		Recovery Start	N80	N90	N100	Reported	Recovery Start	N80	N90	N100	Reported
	ST3502	11-11 16:35	11-11 17:15	11-11 18:20		11-11 09:00	8.9	53.7	56.7		53.8
	ST3503	11-11 07:30	11-11 08:40	11-11 09:35	11-11 12:40	11-11 09:00	42	49.3	56.3	61.6	51.2
	ST3505	11-11 07:15	11-11 08:40	11-11 09:25	11-11 11:00	11-11 09:00	13.8	48.5	55.1	60.7	50.9
	ST3506	11-11 06:25	11-11 07:50	11-11 09:45		11-11 09:00	28.8	15.4	56.4		51.2
	ST3507	11-11 06:20	11-11 07:35	11-11 08:25	11-11 11:00	11-11 09:00	24.9	12.5	37.5	57.4	47
I-35E (SB)	S847	11-11 06:35	11-11 07:35	11-11 09:25	11-11 21:20		40.5	40.1	52.2	60.7	
	S848	11-11 06:35	11-11 07:45	11-11 14:30	11-11 19:05		44.7	44.4	59.4	71.3	
	S849	11-11 06:30	11-11 07:25	11-11 08:40	11-11 10:30		36.5	39.6	47	54.9	
	S850	11-11 07:20	11-11 08:40	11-11 10:05			47.5	60.7	71.8		
	S851	11-11 07:15	11-11 08:20	11-11 09:20			41.1	38.9	53.5		
	S852	11-11 07:10	11-11 08:05	11-11 08:55			45.7	39.3	62.1		
	S853	11-11 07:15	11-11 08:30	11-11 09:20	11-11 12:15		45.8	54.4	61.1	70.6	
	S855	11-11 06:40	11-11 07:35	11-11 08:45	11-11 10:15		46.4	49.4	60.7	69.3	
	S890	11-11 07:50	11-11 09:00	11-11 10:10	11-11 15:55		54	59.5	67.2	70.5	
I-35E (SB)/TP9P35E1	S899	11-11 06:40	11-11 08:00	11-11 10:10	11-11 15:45	11-11 09:30	52.3	55	68	72.9	65
	S900	11-11 06:30	11-11 07:50	11-11 11:50	11-11 16:00	11-11 09:30	48.2	57.4	68.2	67.4	64.3
	S905	11-11 07:25	11-11 09:05	11-11 13:30	11-11 15:50	11-11 09:30	52.1	63.1	72.7	76.8	64.3
I-94 (EB)	S1740	11-11 06:50	11-11 08:10	11-11 09:40			34.9	59.1	64.8		
I-94 (EB)/TP5B0941	S1116	11-11 06:30	11-11 08:50	11-11 10:45	11-11 16:45	11-11 08:00	40.1	63.1	66.2	77.9	51.5
	S1117	11-11 06:10	11-11 08:55	11-11 10:40		11-11 08:00	40.7	64.7	70.5		50
	S1118	11-11 08:10	11-11 09:10	11-11 10:35	11-11 16:40	11-11 08:00	52.4	60.6	69.8	79.8	39.2
	S1120	11-11 08:35	11-11 09:45	11-11 13:45		11-11 08:00	24.3	68.2	75.9		28.1
	S1121	11-11 06:05	11-11 09:45	11-11 11:00		11-11 08:00	29.6	66.4	67.1		18.5
	S1122	11-11 07:30	11-11 10:10	11-11 12:35		11-11 08:00	33.6	65.2	73.3		28.1
	S205	11-11 08:10	11-11 10:15	11-11 12:30		11-11 08:00	20	67	73.4		26
	S207	11-11 09:20	11-11 10:20	11-11 11:15		11-11 08:00	47.3	65.6	77.9		19
	S211	11-11 06:30	11-11 09:50	11-11 10:40		11-11 08:00	38.4	59.9	62.4		39.3

Corridor/RouteID	Station	Time					Speed (mph)				
		Recovery Start	N80	N90	N100	Reported	Recovery Start	N80	N90	N100	Reported
	S219	11-11 06:55	11-11 09:20	11-11 10:20	11-11 11:15	11-11 08:00	43.7	66.7	78.9	82.5	63.4
	S223	11-11 08:30	11-11 10:10	11-11 12:55	11-11 20:10	11-11 08:00	44.8	65.1	73.4	79.6	37.5
	S225	11-11 06:40	11-11 10:00	11-11 12:25	11-11 19:40	11-11 08:00	44	60.5	69	75.6	40.2
I-94 (EB)/TP5E0941	S229	11-11 06:35	11-11 10:10	11-11 12:05	11-11 20:25		43.6	62.8	67.8	80.1	
	S231	11-11 09:30	11-11 10:35	11-11 13:50			53.4	68.1	71.8		
	S130	11-11 09:15	11-11 10:25	11-11 12:50			56.4	66.8	72		
	S235	11-11 07:10	11-11 12:20	11-11 19:45			32.2	56.6	61.4		
I-94 (EB)/TP5H0941	S240	11-11 06:45	11-11 08:40	11-11 09:40	11-11 11:25	11-10 17:00	34.8	48.3	57.9	65.1	52.1
	S244	11-11 08:50	11-11 09:15	11-11 11:25		11-10 17:00	49.3	51.9	59.5		44.5
	S135	11-11 09:05	11-11 09:50	11-11 16:15	11-11 19:20	11-10 17:00	51.3	55.2	61.6	69.7	21.7
	S246	11-11 08:45	11-11 09:30	11-11 11:25		11-10 17:00	34.3	53.9	60		39.2
I-94 (EB)	S140	11-11 06:35	11-11 09:30	11-11 12:45	11-11 22:35		14.8	24.2	52.3	60.5	
	S141	11-11 06:35	11-11 09:35	11-11 12:45	11-11 22:30		15.7	28.8	53	59.2	
	S103	11-11 11:55	11-11 13:55	11-11 18:35	11-11 22:20		37.8	48.6	46	59.2	
	S109	11-11 06:35	11-11 08:35	11-11 14:10			31.3	30.8	48.5		
	S110	11-11 06:30	11-11 09:05	11-11 13:05			32.1	35.2	49.6		
	S465	11-11 07:20	11-11 09:50	11-11 13:10			33.7	46.7	53.4		
	S554	11-11 07:05	11-11 09:25	11-11 12:05	11-11 20:40		38	45.6	53.8	61.4	
	S466	11-11 07:15	11-11 10:10	11-11 14:00			38.7	53.9	58.6		
	S467	11-11 07:05	11-11 09:40	11-11 12:05	11-11 15:15		43	52.2	60	64.3	
	S775	11-11 07:30	11-11 09:15	11-11 10:40	11-11 16:00		45.8	51.6	57.8	61.3	
	S468	11-11 07:20	11-11 09:40	11-11 12:25	11-11 23:00		40.2	53.8	57.2	69.6	
	S1814	11-11 06:50	11-11 09:35	11-11 13:55	11-11 23:10		31.6	45.5	52.1	56	
	S469	11-11 07:20	11-11 09:15	11-11 11:00	11-11 23:25		37.4	51.2	58.2	63.2	
	S776	11-11 07:25	11-11 09:45	11-11 15:20			38.2	51.5	55.7		
	S1815	11-11 07:25	11-11 09:05	11-11 10:35	11-11 22:00		34	42.8	49.9	55.4	
	S479	11-11 07:00	11-11 08:45	11-11 10:20	11-11 21:05		41.7	49.9	58.6	62.8	

Corridor/RouteID	Station	Time					Speed (mph)				
		Recovery Start	N80	N90	N100	Reported	Recovery Start	N80	N90	N100	Reported
	S489	11-11 07:05	11-11 08:35	11-11 09:55	11-11 20:20		44.6	52.1	57.7	65.8	
	S778	11-11 07:20	11-11 08:40	11-11 09:45	11-11 21:35		40.7	52	60.3	65.2	
	S490	11-11 07:15	11-11 09:00	11-11 10:40	11-11 20:50		41.9	52.6	60.6	66.5	
	S1816	11-11 07:10	11-11 08:55	11-11 13:55	11-11 21:00		33.2	44.9	49.6	54	
	S491	11-11 06:45	11-11 08:55	11-11 12:55	11-11 15:05		39.3	49.8	55	56.8	
	S499	11-11 07:00	11-11 08:30	11-11 10:35	11-11 15:10		40	50.2	57.3	54.5	
	S509	11-11 06:55	11-11 08:35	11-11 12:25	11-11 16:00		39	48	53.8	51.2	
I-94 (EB)/TP9F0941	S779	11-11 07:30	11-11 08:25	11-11 10:50	11-11 17:50	11-11 09:00	36.8	48.2	52.6	51.4	50.9
	S780	11-11 06:55	11-11 08:00	11-11 12:55	11-11 21:20	11-11 09:00	41.2	23.4	51	56.5	46.2
	S781	11-11 07:25	11-11 08:40	11-11 11:50		11-11 09:00	40	53.3	57.6		52.7
	S1042	11-11 07:35	11-11 08:50	11-11 10:20		11-11 09:00	44.8	58.4	63.4		58.2
I-94 (WB)/TP9K0941	S1058	11-11 01:15	11-11 12:20			11-11 09:00	26.4	57			48.6
	S1060	11-11 06:00	11-11 08:05	11-11 11:10		11-11 09:00	44.7	56	65.7		65.2
	S1066	11-11 07:10	11-11 08:30	11-11 10:50	11-11 11:25	11-11 09:00	8.2	68.1	64	79.2	61.6
I-94 (WB)/TP9F0941	S1067	11-11 07:15	11-11 08:30	11-11 09:25		11-11 09:00	13.3	55.3	62.3		57.3
	S1069	11-11 06:30	11-11 08:30	11-11 10:00		11-11 09:00	17.5	14.1	61.6		52.1
	S792	11-11 06:35	11-11 08:45	11-11 10:30		11-11 09:00	11.1	22	57		46.9
	S790	11-11 07:15	11-11 09:25	11-11 10:15	11-11 19:25	11-11 09:00	19.8	47.5	52.5	56.8	35.5
I-94 (WB)	S97	11-11 07:00	11-11 08:40	11-11 11:05			33.4	40.1	51.8		
	S546	11-11 06:55	11-11 08:15	11-11 09:05			31.5	17.5	51.2		
	S789	11-11 07:15	11-11 09:05	11-11 09:30	11-11 18:35		11.8	48.7	64.3	70	
	S788	11-11 07:20	11-11 09:15	11-11 09:45			13.6	52.6	55.8		
	S548	11-11 07:10	11-11 09:20	11-11 10:00	11-11 20:35		15.2	54.3	59.2	63	
	S787	11-11 07:05	11-11 09:45	11-11 12:10			23.8	57.5	66.9		
	S1808	11-11 07:00	11-11 09:30	11-11 11:15			24.1	47.5	51		
	S549	11-11 07:35	11-11 09:15	11-11 10:05			36	50.5	58.7		
	S786	11-11 07:05	11-11 10:25	11-11 21:20			38	54.7	62		

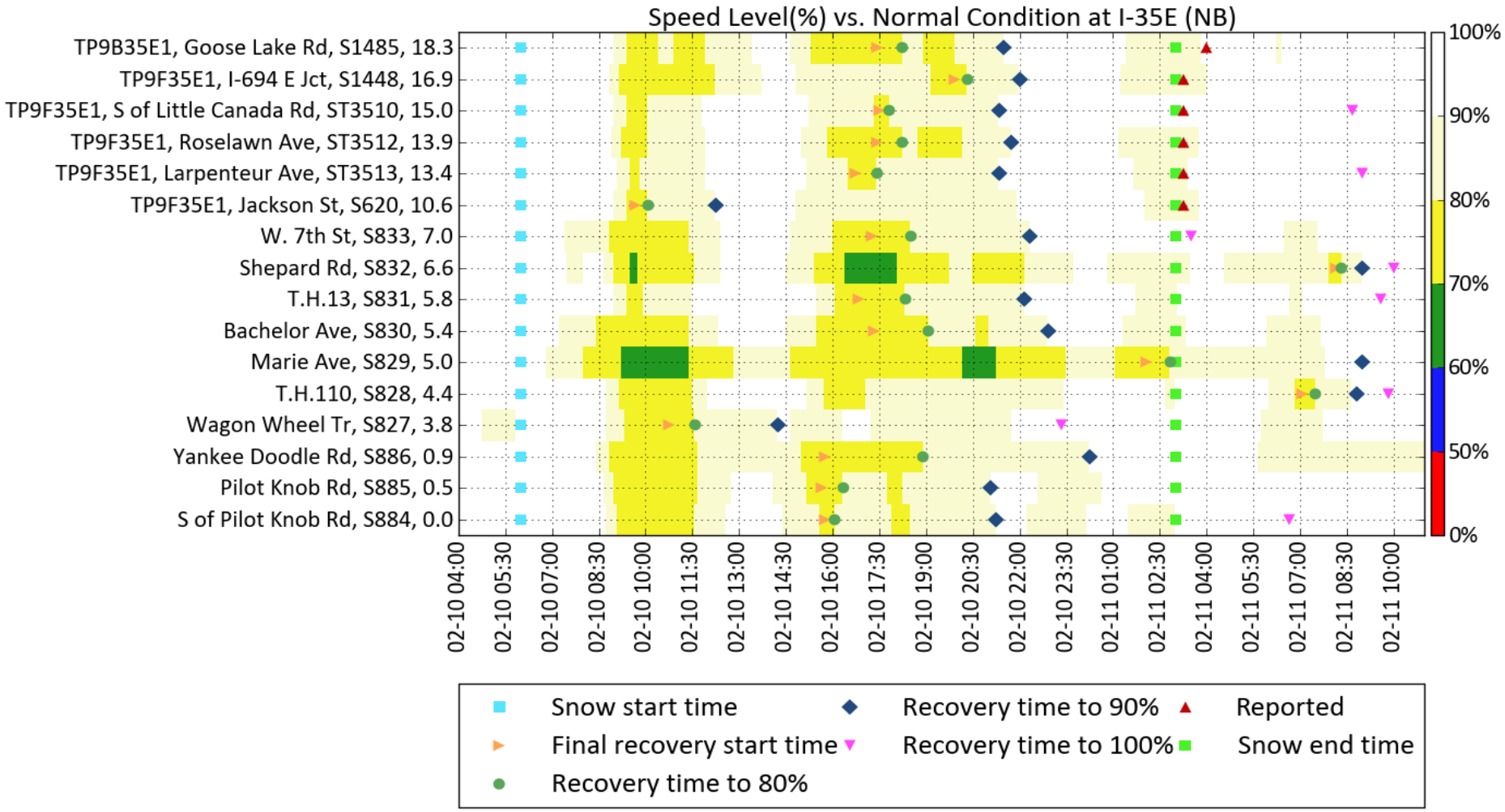
Corridor/RouteID	Station	Time					Speed (mph)				
		Recovery Start	N80	N90	N100	Reported	Recovery Start	N80	N90	N100	Reported
	S1809	11-11 07:00	11-11 09:10	11-11 10:20	11-11 22:15		27.7	42	51.9	57.9	
	S550	11-11 07:15	11-11 09:25	11-11 10:30			33.2	54.4	58.8		
	S785	11-11 06:30	11-11 07:30	11-11 08:50	11-11 20:40		39.5	34.8	47.6	60.9	
	S552	11-11 06:30	11-11 07:55	11-11 10:40	11-11 22:50		37.3	37	53.6	62	
	S555	11-11 07:10	11-11 09:00	11-11 12:35	11-11 22:50		35.6	41.4	53.7	59.7	
	S553	11-11 06:40	11-11 08:15	11-11 10:30	11-11 22:15		35.7	36.9	53.9	61.7	
	S561	11-11 06:50	11-11 09:50	11-11 12:45	11-11 22:20		33.8	39.6	51.8	59.8	
	S559	11-11 16:20	11-11 18:00	11-11 19:00	11-11 22:25		19.8	48.5	52.6	58.7	
	S560	11-11 17:00	11-11 17:40	11-11 18:50			17.9	34.8	48.1		
	S1817	11-11 12:10	11-11 12:35	11-11 19:20			14.9	11.4	51.5		
	S1943	11-11 12:05	11-11 12:40	11-11 13:10			8.7	8.9	49		
	S76	11-11 12:10	11-11 12:45	11-11 13:10	11-11 21:55		10.4	12.9	49.3	56.3	
	S86	11-11 06:40	11-11 11:15	11-11 13:15	11-11 22:55		21	51.8	40.8	60.7	
	S89	11-11 12:15	11-11 12:55	11-11 13:40	11-11 20:15		15.6	42.7	48.6	56.6	
I-94 (WB)/TP5H0941	S252	11-11 06:55	11-11 08:45	11-11 10:35	11-11 15:05	11-10 17:00	51.2	55.7	60.6	66.4	34.7
	S251	11-11 06:40	11-11 10:25	11-11 13:50	11-11 15:35	11-10 17:00	47.1	54	64.5	67	38.9
	S249	11-11 08:05	11-11 09:20	11-11 11:05	11-11 22:45	11-10 17:00	50.2	56.9	64.7	69.2	37.4
	S247	11-11 08:20	11-11 09:50	11-11 11:20		11-10 17:00	48.1	53.6	60.5		26.5
	S126	11-10 16:55	11-11 10:50	11-11 14:20		11-10 17:00	24.3	61.2	65.1		26.4
	S243	11-11 06:35	11-11 09:10	11-11 10:30	11-11 11:10	11-10 17:00	44.2	58.2	46.8	75	36
	S241	11-11 07:55	11-11 10:40	11-11 13:25		11-10 17:00	47	53.1	63.5		32.3
I-94 (WB)/TP5E0941	S128	11-11 06:55	11-11 10:50	11-11 11:55	11-11 13:15		36.3	56.5	65.3	76.6	
	S234	11-11 06:45	11-11 10:00	11-11 11:40	11-11 15:50		56.2	72.2	79.3	82.7	
	S129	11-11 08:55	11-11 11:15	11-11 13:25			53.2	59.7	71.3		
	S232	11-11 08:55	11-11 11:20	11-11 14:05			54.4	64	70.5		
	S230	11-11 09:00	11-11 11:00	11-11 13:45			60.8	63.2	70.1		
I-94 (WB)/TP5B0941	S224	11-11 08:35	11-11 11:05	11-11 14:55		11-11 08:00	54.5	68	71.7		61.6

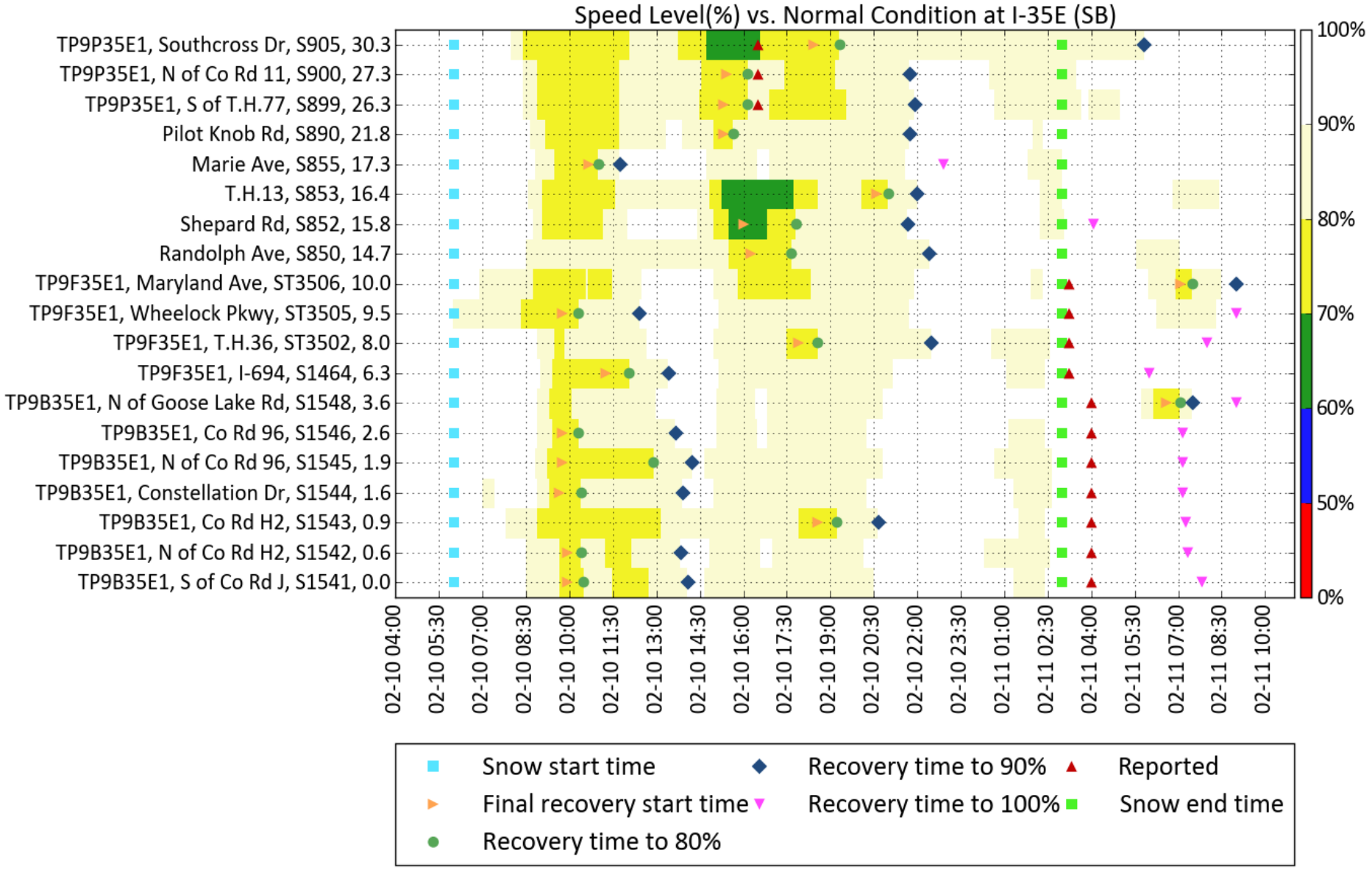
Corridor/RouteID	Station	Time					Speed (mph)				
		Recovery Start	N80	N90	N100	Reported	Recovery Start	N80	N90	N100	Reported
	S220	11-11 08:40	11-11 10:55	11-11 14:30		11-11 08:00	52	60.9	69.3		55.5
	S218	11-11 06:40	11-11 09:30	11-11 11:35	11-11 22:20	11-11 08:00	49.7	58.4	66.6	71.5	53.6
	S216	11-10 21:15	11-11 23:05			11-11 08:00	43.9	64.1			40.2
	S213	11-11 08:50	11-11 11:55	11-11 17:35		11-11 08:00	51.3	63.2	57.9		53.8
	S208	11-11 08:55	11-11 10:45	11-11 14:50		11-11 08:00	51.3	65.2	65.7		55.5
	S206	11-11 08:55	11-11 10:20	11-11 13:45		11-11 08:00	50.6	61.8	70.3		57.4
	S1106	11-11 09:15	11-11 11:45	11-11 14:15		11-11 08:00	54.7	66.9	72.4		56.7
	S1107	11-11 09:15	11-11 11:40	11-11 14:35		11-11 08:00	57	66.9	72.9		58.5
	S1108	11-11 09:35	11-11 11:40	11-11 15:30		11-11 08:00	56.8	67.7	64.3		60.7
	S1109	11-11 09:30	11-11 12:05	11-11 15:35		11-11 08:00	56.8	66.9	71.4		60
	S1110	11-10 17:05	11-10 19:35	11-11 01:10		11-11 08:00	49.9	65.1	68.9		67.7

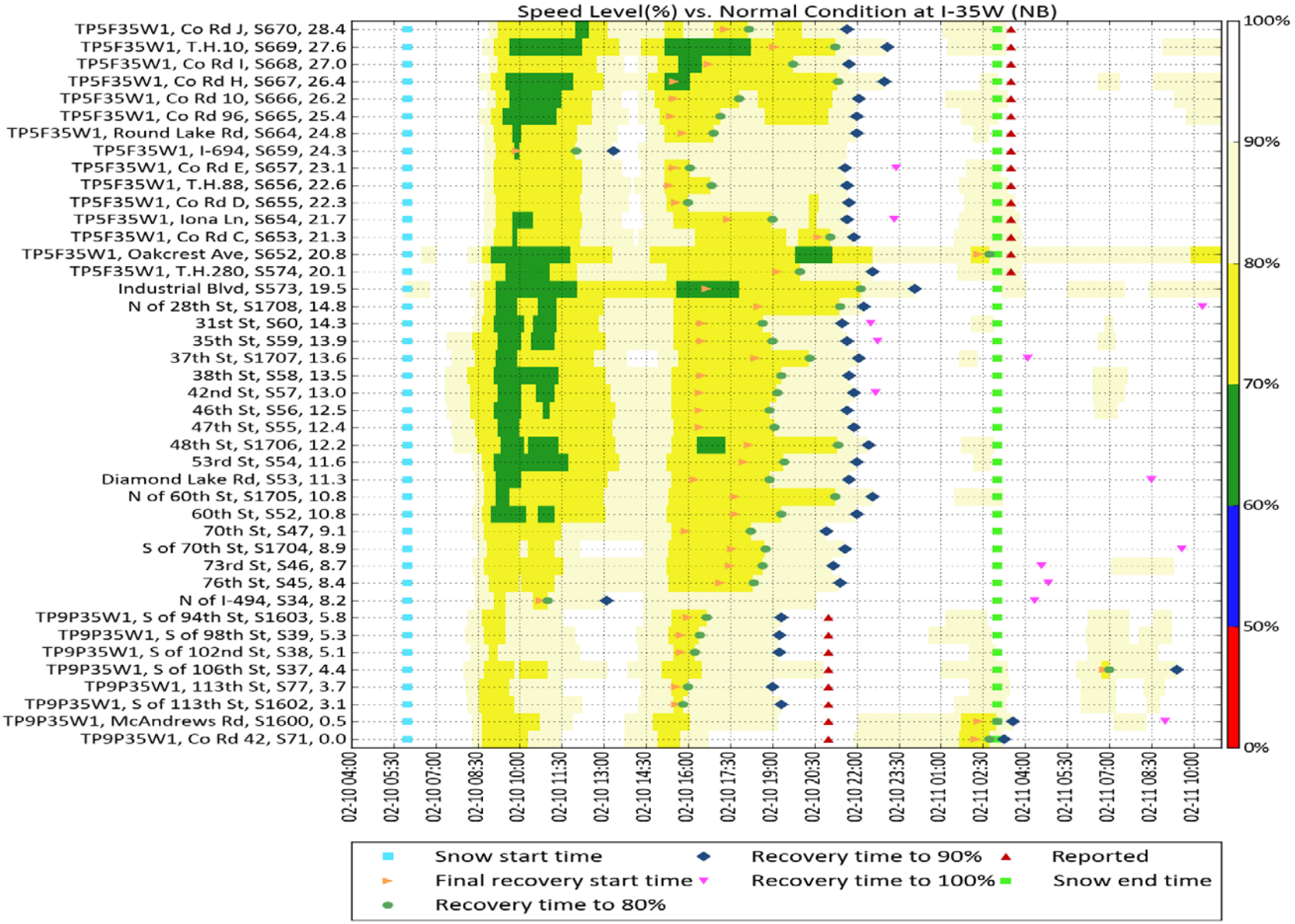
Appendix B. Network-wide Normal Condition Recovery Time Estimation Results for Snow Event on February 10, 2015

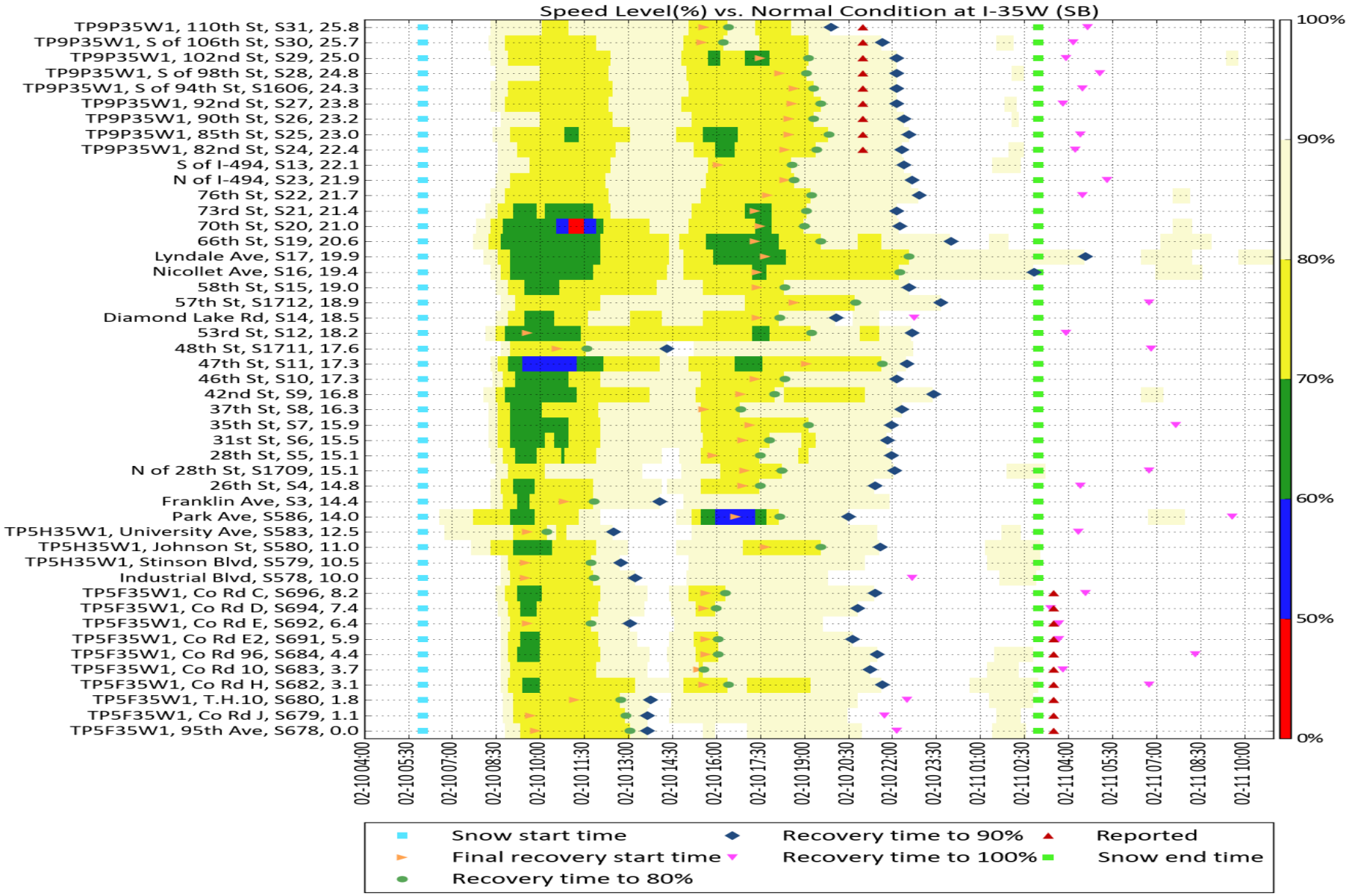
Appendix B. Network-wide Normal Condition Recovery Time Estimation Results for Snow Event on February 10, 2015

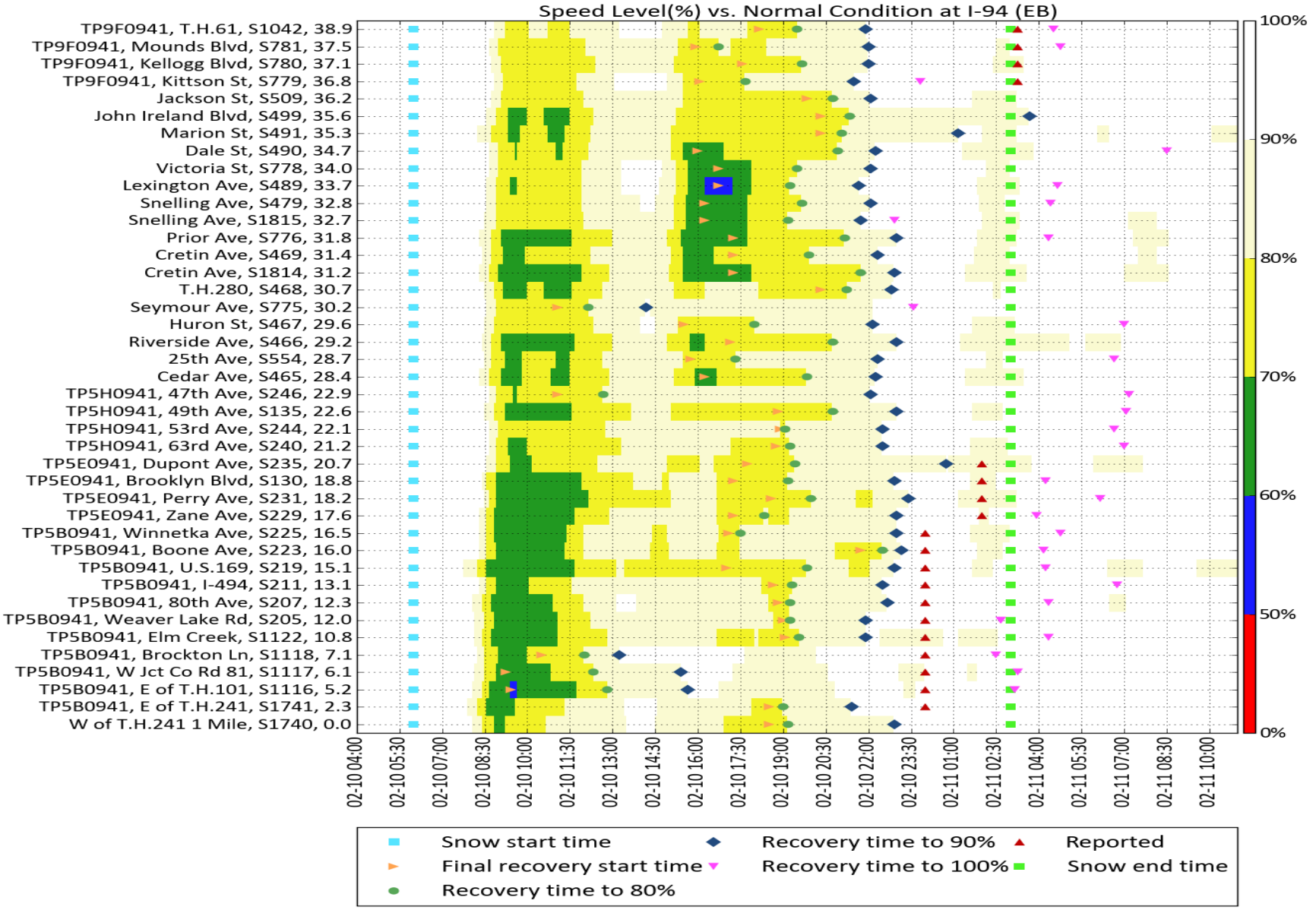
Snow Event: 2015-02-10 06:00 ~ 2015-02-11 03:00




Speed Level(%) vs. Normal Condition at I-35E (SB)
TP9P35E1, Southcross Dr, S905, 30.3
TP9P35E1, N of Co Rd 11, S900, 27.3
TP9P35E1, S of T.H.77, S899, 26.3
Pilot Knob Rd, S890, 21.8
Marie Ave, S855, 17.3
T.H.13, S853, 16.4
Shepard Rd, S852, 15.8
Randolph Ave, S850, 14.7
TP9F35E1, Maryland Ave, ST3506, 10.0
TP9F35E1, Wheelock Pkwy, ST3505, 9.5
TP9F35E1, T.H.36, ST3502, 8.0
TP9F35E1, I-694, S1464, 6.3
TP9B35E1, N of Goose Lake Rd, S1548, 3.6
TP9B35E1, Co Rd 96, S1546, 2.6
TP9B35E1, N of Co Rd 96, S1545, 1.9
TP9B35E1, Constellation Dr, S1544, 1.6
TP9B35E1, Co Rd H2, S1543, 0.9
TP9B35E1, N of Co Rd H2, S1542, 0.6
TP9B35E1, S of Co Rd J, S1541, 0.0
100%
90%
80%
70%
60%
50%
0%
02-10 04:00
02-10 05:30
02-10 07:00
02-10 08:30
02-10 10:00
02-10 11:30
02-10 13:00
02-10 14:30
02-10 16:00
02-10 17:30
02-10 19:00
02-10 20:30
02-10 22:00
02-10 23:30
02-11 01:00
02-11 02:30
02-11 04:00
02-11 05:30
02-11 07:00
02-11 08:30
02-11 10:00
Snow start time
Recovery time to 90%
Reported
Final recovery start time
Recovery time to 100%
Snow end time
Recovery time to 80%


Speed Level(%) vs. Normal Condition at I-35W (NB)
TP5F35W1, Co Rd J, S670, 28.4
TP5F35W1, T.H.10, S669, 27.6
TP5F35W1, Co Rd I, S668, 27.0
TP5F35W1, Co Rd H, S667, 26.4
TP5F35W1, Co Rd 10, S666, 26.2
TP5F35W1, Co Rd 96, S665, 25.4
TP5F35W1, Round Lake Rd, S664, 24.8
TP5F35W1, I-694, S659, 24.3
TP5F35W1, Co Rd E, S657, 23.1
TP5F35W1, T.H.88, S656, 22.6
TP5F35W1, Co Rd D, S655, 22.3
TP5F35W1, Iona Ln, S654, 21.7
TP5F35W1, Co Rd C, S653, 21.3
TP5F35W1, Oakcrest Ave, S652, 20.8
TP5F35W1, T.H.280, S574, 20.1
Industrial Blvd, S573, 19.5
N of 28th St, S1708, 14.8
31st St, S60, 14.3
35th St, S59, 13.9
37th St, S1707, 13.6
38th St, S58, 13.5
42nd St, S57, 13.0
46th St, S56, 12.5
47th St, S55, 12.4
48th St, S1706, 12.2
53rd St, S54, 11.6
Diamond Lake Rd, S53, 11.3
N of 60th St, S1705, 10.8
60th St, S52, 10.8
70th St, S47, 9.1
S of 70th St, S1704, 8.9
73rd St, S46, 8.7
76th St, S45, 8.4
N of I-494, S34, 8.2
TP9P35W1, S of 94th St, S1603, 5.8
TP9P35W1, S of 98th St, S39, 5.3
TP9P35W1, S of 102nd St, S38, 5.1
TP9P35W1, S of 106th St, S37, 4.4
TP9P35W1, 113th St, S77, 3.7
TP9P35W1, S of 113th St, S1602, 3.1
TP9P35W1, McAndrews Rd, S1600, 0.5
TP9P35W1, Co Rd 42, S71, 0.0
100%
90%
80%
70%
60%
50%
0%
02-10 04:00
02-10 05:30
02-10 07:00
02-10 08:30
02-10 10:00
02-10 11:30
02-10 13:00
02-10 14:30
02-10 16:00
02-10 17:30
02-10 19:00
02-10 20:30
02-10 22:00
02-10 23:30
02-11 01:00
02-11 02:30
02-11 04:00
02-11 05:30
02-11 07:00
02-11 08:30
02-11 10:00
Snow start time
Final recovery start time
Recovery time to 80%
Recovery time to 90%
Recovery time to 100%
Reported
Snow end time


Speed Level(%) vs. Normal Condition at I-35W (SB)
TP9P35W1, 110th St, S31, 25.8
TP9P35W1, S of 106th St, S30, 25.7
TP9P35W1, 102nd St, S29, 25.0
TP9P35W1, S of 98th St, S28, 24.8
TP9P35W1, S of 94th St, S1606, 24.3
TP9P35W1, 92nd St, S27, 23.8
TP9P35W1, 90th St, S26, 23.2
TP9P35W1, 85th St, S25, 23.0
TP9P35W1, 82nd St, S24, 22.4
S of I-494, S13, 22.1
N of I-494, S23, 21.9
76th St, S22, 21.7
73rd St, S21, 21.4
70th St, S20, 21.0
66th St, S19, 20.6
Lyndale Ave, S17, 19.9
Nicollet Ave, S16, 19.4
58th St, S15, 19.0
57th St, S1712, 18.9
Diamond Lake Rd, S14, 18.5
53rd St, S12, 18.2
48th St, S1711, 17.6
47th St, S11, 17.3
46th St, S10, 17.3
42nd St, S9, 16.8
37th St, S8, 16.3
35th St, S7, 15.9
31st St, S6, 15.5
28th St, S5, 15.1
N of 28th St, S1709, 15.1
26th St, S4, 14.8
Franklin Ave, S3, 14.4
Park Ave, S586, 14.0
TP5H35W1, University Ave, S583, 12.5
TP5H35W1, Johnson St, S580, 11.0
TP5H35W1, Stinson Blvd, S579, 10.5
Industrial Blvd, S578, 10.0
TP5F35W1, Co Rd C, S696, 8.2
TP5F35W1, Co Rd D, S694, 7.4
TP5F35W1, Co Rd E, S692, 6.4
TP5F35W1, Co Rd E2, S691, 5.9
TP5F35W1, Co Rd 96, S684, 4.4
TP5F35W1, Co Rd 10, S683, 3.7
TP5F35W1, Co Rd H, S682, 3.1
TP5F35W1, T.H.10, S680, 1.8
TP5F35W1, Co Rd J, S679, 1.1
TP5F35W1, 95th Ave, S678, 0.0
02-10 04:00
02-10 05:30
02-10 07:00
02-10 08:30
02-10 10:00
02-10 11:30
02-10 13:00
02-10 14:30
02-10 16:00
02-10 17:30
02-10 19:00
02-10 20:30
02-10 22:00
02-10 23:30
02-11 01:00
02-11 02:30
02-11 04:00
02-11 05:30
02-11 07:00
02-11 08:30
02-11 10:00
100%
90%
80%
70%
60%
50%
0%
Snow start time
Final recovery start time
Recovery time to 80%
Recovery time to 90%
Recovery time to 100%
Reported
Snow end time


Speed Level(%) vs. Normal Condition at I-94 (EB)
TP9F0941, T.H.61, S1042, 38.9
TP9F0941, Mounds Blvd, S781, 37.5
TP9F0941, Kellogg Blvd, S780, 37.1
TP9F0941, Kittson St, S779, 36.8
Jackson St, S509, 36.2
John Ireland Blvd, S499, 35.6
Marion St, S491, 35.3
Dale St, S490, 34.7
Victoria St, S778, 34.0
Lexington Ave, S489, 33.7
Snelling Ave, S479, 32.8
Snelling Ave, S1815, 32.7
Prior Ave, S776, 31.8
Cretin Ave, S469, 31.4
Cretin Ave, S1814, 31.2
T.H.280, S468, 30.7
Seymour Ave, S775, 30.2
Huron St, S467, 29.6
Riverside Ave, S466, 29.2
25th Ave, S554, 28.7
Cedar Ave, S465, 28.4
TP5H0941, 47th Ave, S246, 22.9
TP5H0941, 49th Ave, S135, 22.6
TP5H0941, 53rd Ave, S244, 22.1
TP5H0941, 63rd Ave, S240, 21.2
TP5E0941, Dupont Ave, S235, 20.7
TP5E0941, Brooklyn Blvd, S130, 18.8
TP5E0941, Perry Ave, S231, 18.2
TP5E0941, Zane Ave, S229, 17.6
TP5B0941, Winnetka Ave, S225, 16.5
TP5B0941, Boone Ave, S223, 16.0
TP5B0941, U.S.169, S219, 15.1
TP5B0941, I-494, S211, 13.1
TP5B0941, 80th Ave, S207, 12.3
TP5B0941, Weaver Lake Rd, S205, 12.0
TP5B0941, Elm Creek, S1122, 10.8
TP5B0941, Brockton Ln, S1118, 7.1
TP5B0941, W Jct Co Rd 81, S1117, 6.1
TP5B0941, E of T.H.101, S1116, 5.2
TP5B0941, E of T.H.241, S1741, 2.3
W of T.H.241 1 Mile, S1740, 0.0
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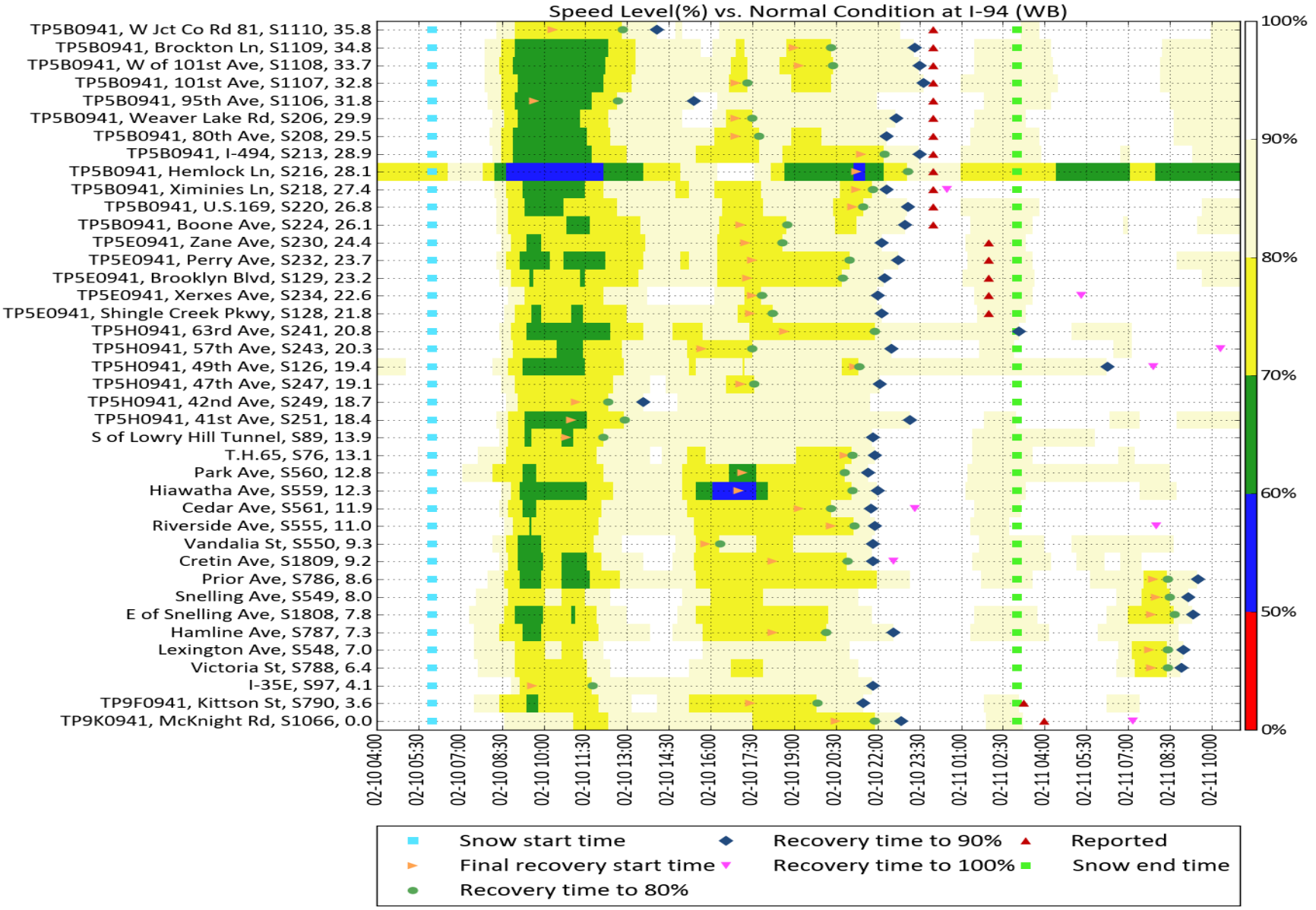
Snow start time
Recovery time to 90%
Reported
Final recovery start time
Recovery time to 100%
Snow end time
Recovery time to 80%


Speed Level(%) vs. Normal Condition at I-94 (WB)
TP5B0941, W Jct Co Rd 81, S1110, 35.8
TP5B0941, Brockton Ln, S1109, 34.8
TP5B0941, W of 101st Ave, S1108, 33.7
TP5B0941, 101st Ave, S1107, 32.8
TP5B0941, 95th Ave, S1106, 31.8
TP5B0941, Weaver Lake Rd, S206, 29.9
TP5B0941, 80th Ave, S208, 29.5
TP5B0941, I-494, S213, 28.9
TP5B0941, Hemlock Ln, S216, 28.1
TP5B0941, Ximinies Ln, S218, 27.4
TP5B0941, U.S.169, S220, 26.8
TP5B0941, Boone Ave, S224, 26.1
TP5E0941, Zane Ave, S230, 24.4
TP5E0941, Perry Ave, S232, 23.7
TP5E0941, Brooklyn Blvd, S129, 23.2
TP5E0941, Xerxes Ave, S234, 22.6
TP5E0941, Shingle Creek Pkwy, S128, 21.8
TP5H0941, 63rd Ave, S241, 20.8
TP5H0941, 57th Ave, S243, 20.3
TP5H0941, 49th Ave, S126, 19.4
TP5H0941, 47th Ave, S247, 19.1
TP5H0941, 42nd Ave, S249, 18.7
TP5H0941, 41st Ave, S251, 18.4
S of Lowry Hill Tunnel, S89, 13.9
T.H.65, S76, 13.1
Park Ave, S560, 12.8
Hiawatha Ave, S559, 12.3
Cedar Ave, S561, 11.9
Riverside Ave, S555, 11.0
Vandalia St, S550, 9.3
Cretin Ave, S1809, 9.2
Prior Ave, S786, 8.6
Snelling Ave, S549, 8.0
E of Snelling Ave, S1808, 7.8
Hamline Ave, S787, 7.3
Lexington Ave, S548, 7.0
Victoria St, S788, 6.4
I-35E, S97, 4.1
TP9F0941, Kittson St, S790, 3.6
TP9K0941, McKnight Rd, S1066, 0.0
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Snow start time
Recovery time to 90%
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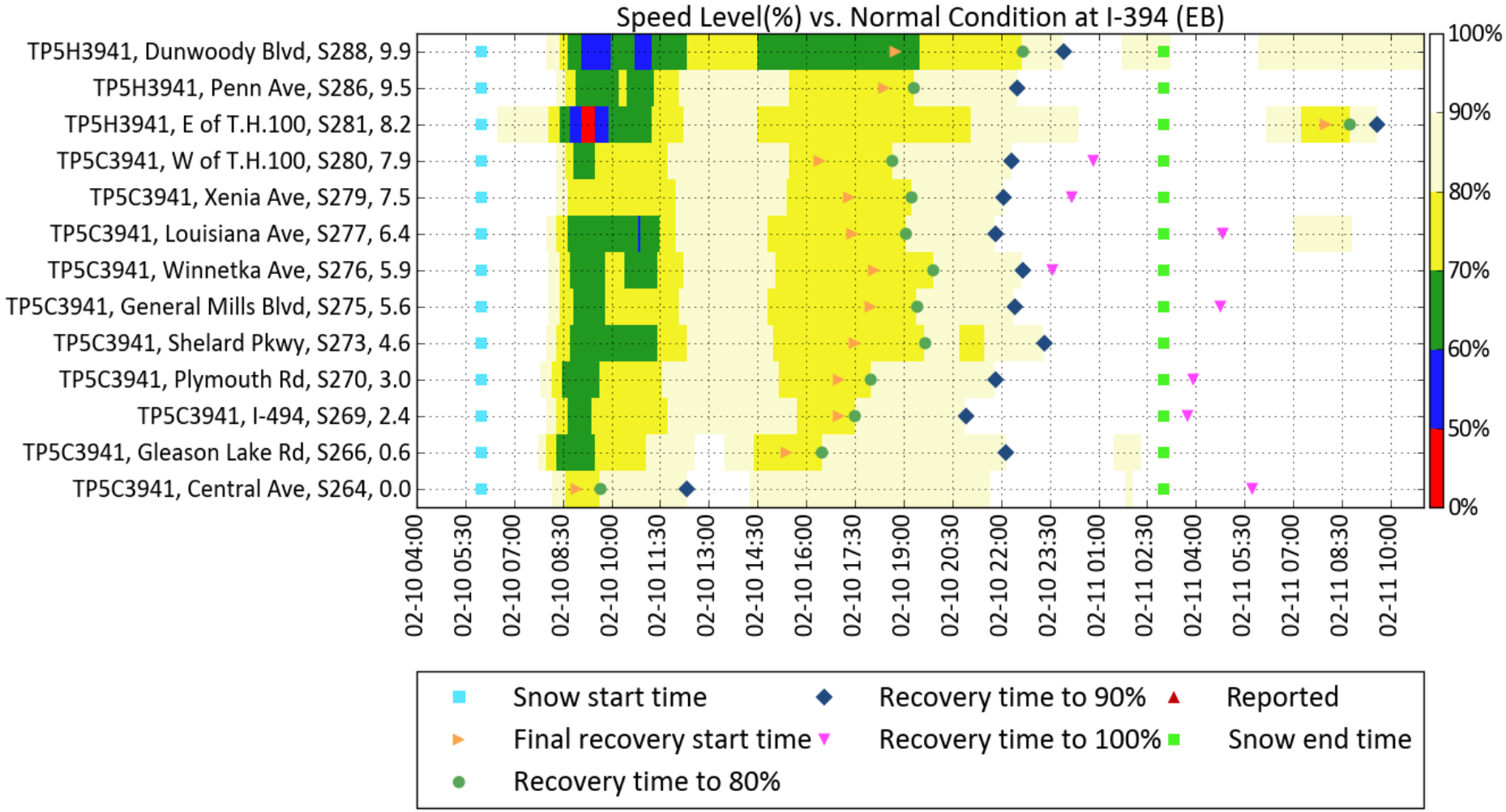
Final recovery start time
Recovery time to 100%
Snow end time
Recovery time to 80%


Speed Level(%) vs. Normal Condition at I-394 (EB)
TP5H3941, Dunwoody Blvd, S288, 9.9
TP5H3941, Penn Ave, S286, 9.5
TP5H3941, E of T.H.100, S281, 8.2
TP5C3941, W of T.H.100, S280, 7.9
TP5C3941, Xenia Ave, S279, 7.5
TP5C3941, Louisiana Ave, S277, 6.4
TP5C3941, Winnetka Ave, S276, 5.9
TP5C3941, General Mills Blvd, S275, 5.6
TP5C3941, Shelard Pkwy, S273, 4.6
TP5C3941, Plymouth Rd, S270, 3.0
TP5C3941, I-494, S269, 2.4
TP5C3941, Gleason Lake Rd, S266, 0.6
TP5C3941, Central Ave, S264, 0.0
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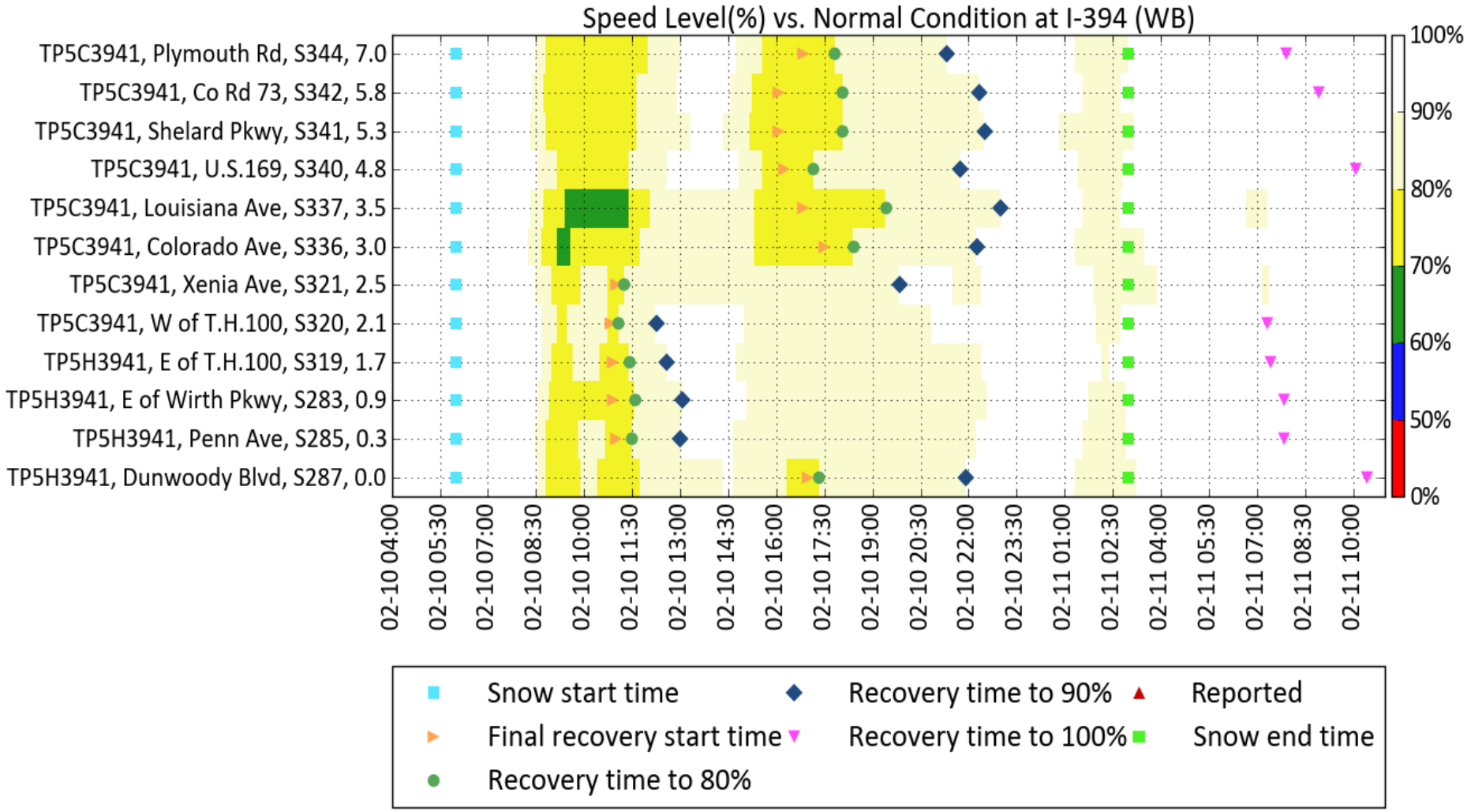
Snow start time
Recovery time to 90%
Reported
Final recovery start time
Recovery time to 100%
Snow end time
Recovery time to 80%


Speed Level(%) vs. Normal Condition at I-394 (WB)
TP5C3941, Plymouth Rd, S344, 7.0
TP5C3941, Co Rd 73, S342, 5.8
TP5C3941, Shelard Pkwy, S341, 5.3
TP5C3941, U.S.169, S340, 4.8
TP5C3941, Louisiana Ave, S337, 3.5
TP5C3941, Colorado Ave, S336, 3.0
TP5C3941, Xenia Ave, S321, 2.5
TP5C3941, W of T.H.100, S320, 2.1
TP5H3941, E of T.H.100, S319, 1.7
TP5H3941, E of Wirth Pkwy, S283, 0.9
TP5H3941, Penn Ave, S285, 0.3
TP5H3941, Dunwoody Blvd, S287, 0.0
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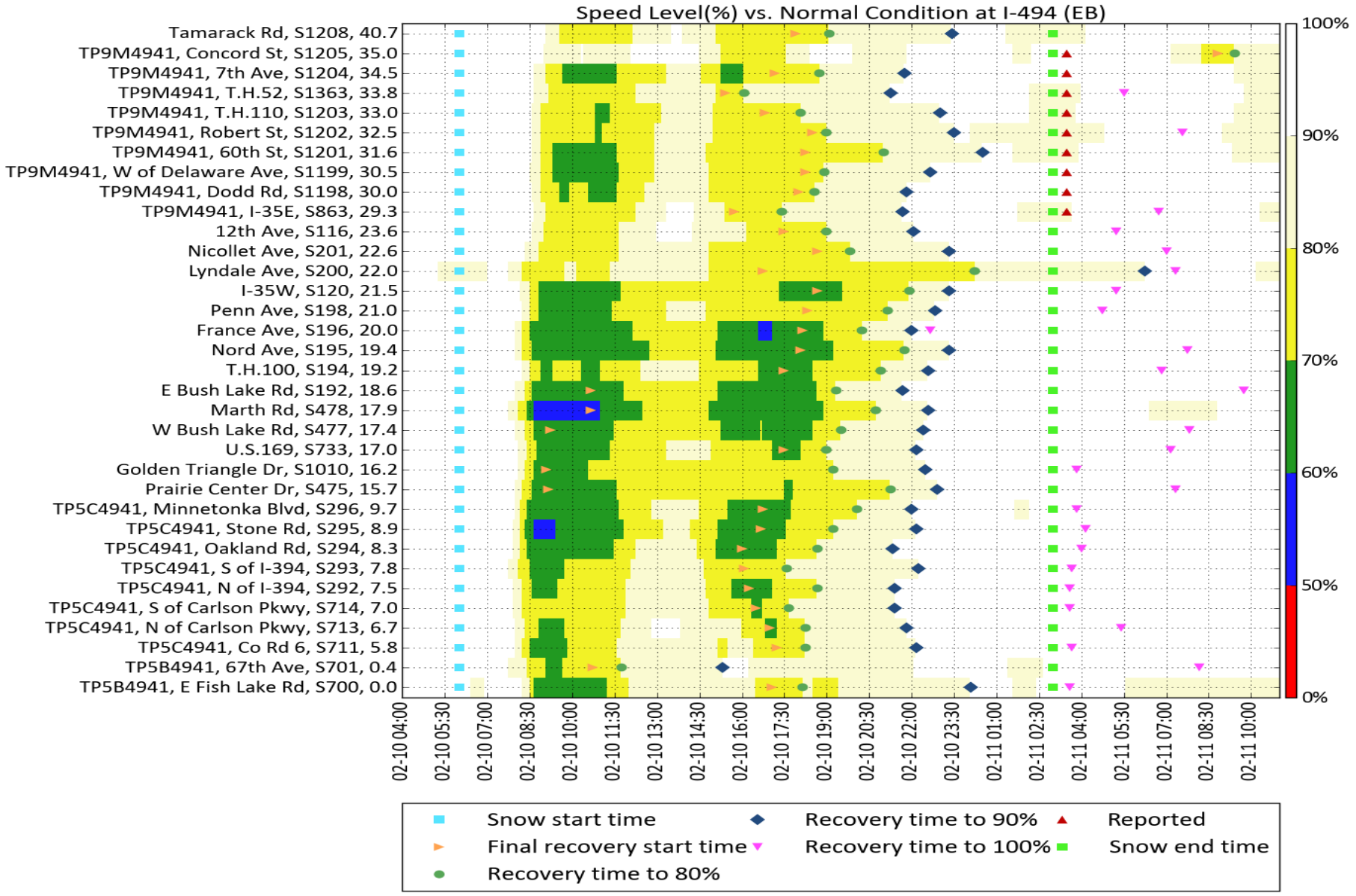
Snow start time
Recovery time to 90%
Reported
Final recovery start time
Recovery time to 100%
Snow end time
Recovery time to 80%


Speed Level(%) vs. Normal Condition at I-494 (EB)
Tamarack Rd, S1208, 40.7
TP9M4941, Concord St, S1205, 35.0
TP9M4941, 7th Ave, S1204, 34.5
TP9M4941, T.H.52, S1363, 33.8
TP9M4941, T.H.110, S1203, 33.0
TP9M4941, Robert St, S1202, 32.5
TP9M4941, 60th St, S1201, 31.6
TP9M4941, W of Delaware Ave, S1199, 30.5
TP9M4941, Dodd Rd, S1198, 30.0
TP9M4941, I-35E, S863, 29.3
12th Ave, S116, 23.6
Nicollet Ave, S201, 22.6
Lyndale Ave, S200, 22.0
I-35W, S120, 21.5
Penn Ave, S198, 21.0
France Ave, S196, 20.0
Nord Ave, S195, 19.4
T.H.100, S194, 19.2
E Bush Lake Rd, S192, 18.6
Marth Rd, S478, 17.9
W Bush Lake Rd, S477, 17.4
U.S.169, S733, 17.0
Golden Triangle Dr, S1010, 16.2
Prairie Center Dr, S475, 15.7
TP5C4941, Minnetonka Blvd, S296, 9.7
TP5C4941, Stone Rd, S295, 8.9
TP5C4941, Oakland Rd, S294, 8.3
TP5C4941, S of I-394, S293, 7.8
TP5C4941, N of I-394, S292, 7.5
TP5C4941, S of Carlson Pkwy, S714, 7.0
TP5C4941, N of Carlson Pkwy, S713, 6.7
TP5C4941, Co Rd 6, S711, 5.8
TP5B4941, 67th Ave, S701, 0.4
TP5B4941, E Fish Lake Rd, S700, 0.0
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Snow start time
Recovery time to 90%
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Final recovery start time
Recovery time to 100%
Snow end time
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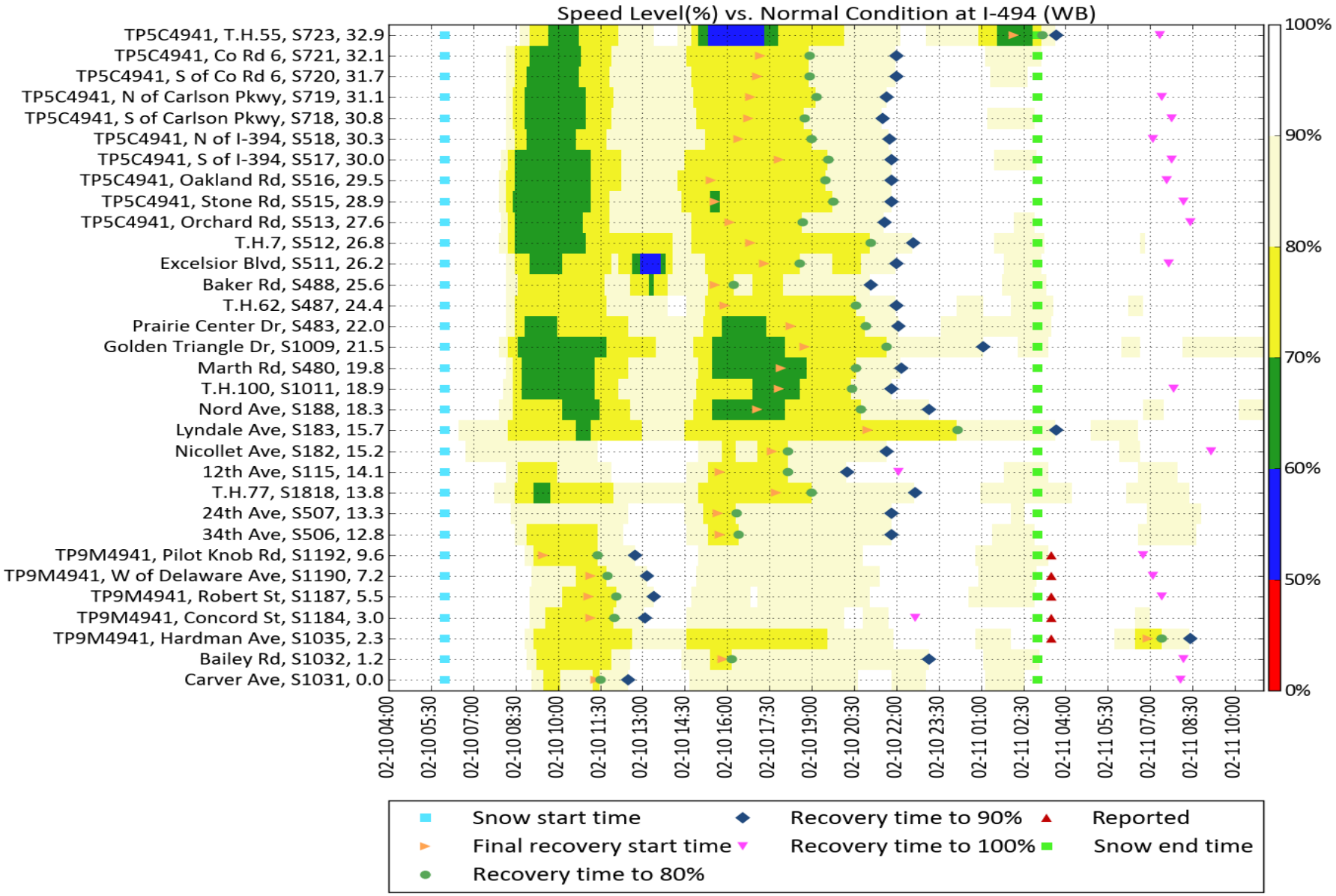
Speed Level(%) vs. Normal Condition at I-494 (WB)
TP5C4941, T.H.55, S723, 32.9
TP5C4941, Co Rd 6, S721, 32.1
TP5C4941, S of Co Rd 6, S720, 31.7
TP5C4941, N of Carlson Pkwy, S719, 31.1
TP5C4941, S of Carlson Pkwy, S718, 30.8
TP5C4941, N of I-394, S518, 30.3
TP5C4941, S of I-394, S517, 30.0
TP5C4941, Oakland Rd, S516, 29.5
TP5C4941, Stone Rd, S515, 28.9
TP5C4941, Orchard Rd, S513, 27.6
T.H.7, S512, 26.8
Excelsior Blvd, S511, 26.2
Baker Rd, S488, 25.6
T.H.62, S487, 24.4
Prairie Center Dr, S483, 22.0
Golden Triangle Dr, S1009, 21.5
Marth Rd, S480, 19.8
T.H.100, S1011, 18.9
Nord Ave, S188, 18.3
Lyndale Ave, S183, 15.7
Nicollet Ave, S182, 15.2
12th Ave, S115, 14.1
T.H.77, S1818, 13.8
24th Ave, S507, 13.3
34th Ave, S506, 12.8
TP9M4941, Pilot Knob Rd, S1192, 9.6
TP9M4941, W of Delaware Ave, S1190, 7.2
TP9M4941, Robert St, S1187, 5.5
TP9M4941, Concord St, S1184, 3.0
TP9M4941, Hardman Ave, S1035, 2.3
Bailey Rd, S1032, 1.2
Carver Ave, S1031, 0.0
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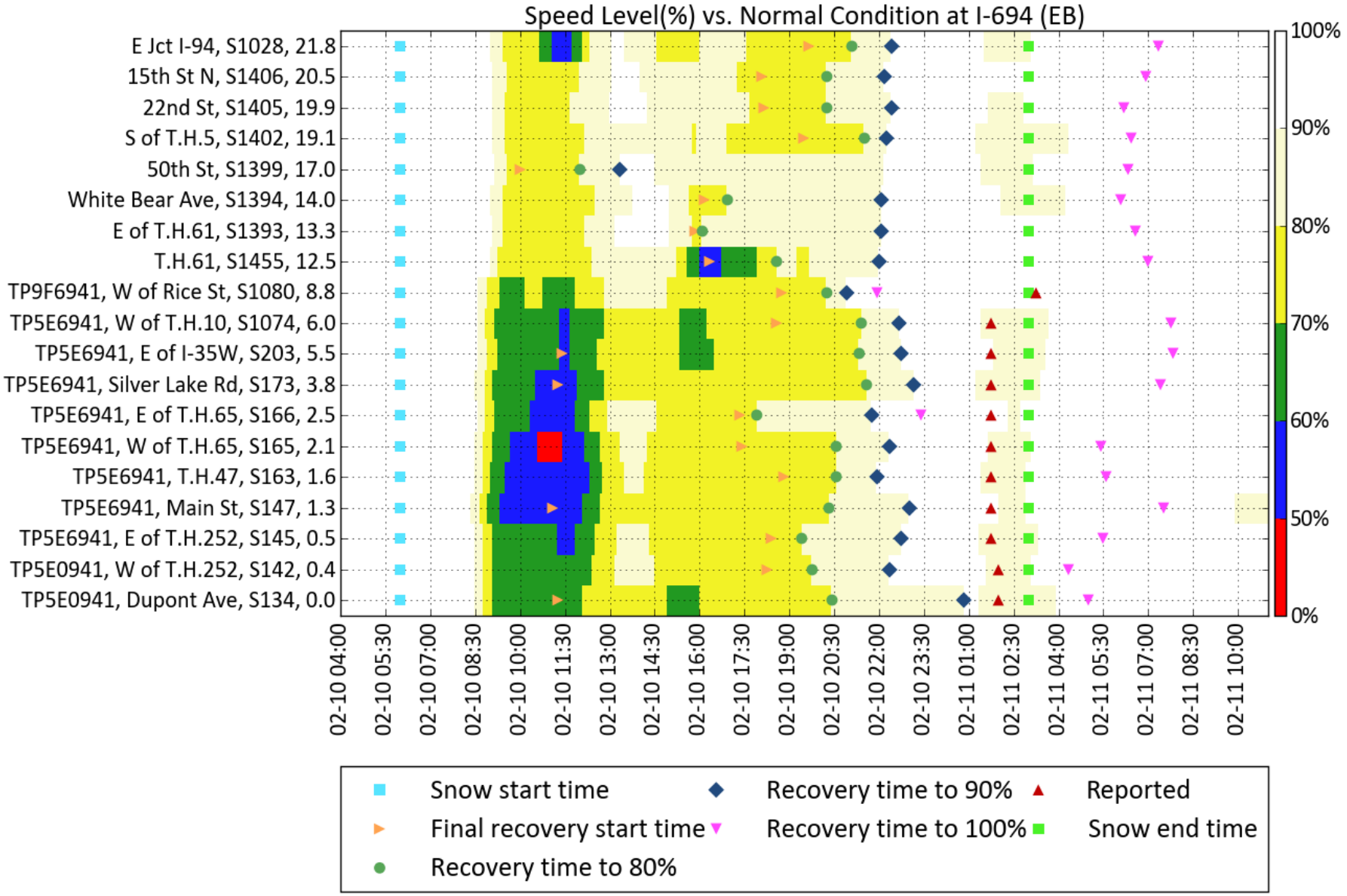
Snow start time
Recovery time to 90%
Reported
Final recovery start time
Recovery time to 100%
Snow end time
Recovery time to 80%


Speed Level(%) vs. Normal Condition at I-694 (EB)
E Jct I-94, S1028, 21.8
15th St N, S1406, 20.5
22nd St, S1405, 19.9
S of T.H.5, S1402, 19.1
50th St, S1399, 17.0
White Bear Ave, S1394, 14.0
E of T.H.61, S1393, 13.3
T.H.61, S1455, 12.5
TP9F6941, W of Rice St, S1080, 8.8
TP5E6941, W of T.H.10, S1074, 6.0
TP5E6941, E of I-35W, S203, 5.5
TP5E6941, Silver Lake Rd, S173, 3.8
TP5E6941, E of T.H.65, S166, 2.5
TP5E6941, W of T.H.65, S165, 2.1
TP5E6941, T.H.47, S163, 1.6
TP5E6941, Main St, S147, 1.3
TP5E6941, E of T.H.252, S145, 0.5
TP5E0941, W of T.H.252, S142, 0.4
TP5E0941, Dupont Ave, S134, 0.0
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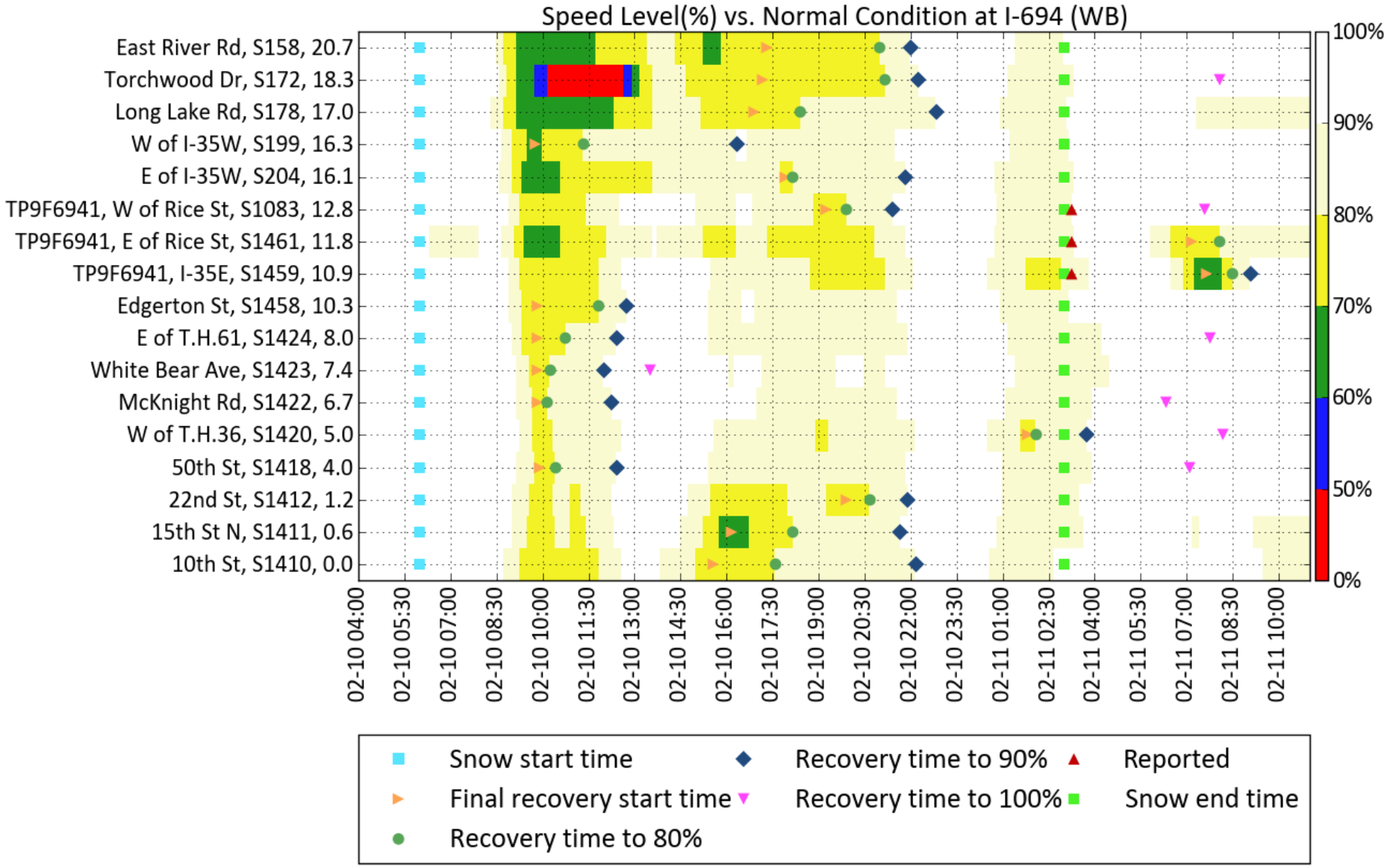
Snow start time
Recovery time to 90%
Reported
Final recovery start time
Recovery time to 100%
Snow end time
Recovery time to 80%


Speed Level(%) vs. Normal Condition at I-694 (WB)
East River Rd, S158, 20.7
Torchwood Dr, S172, 18.3
Long Lake Rd, S178, 17.0
W of I-35W, S199, 16.3
E of I-35W, S204, 16.1
TP9F6941, W of Rice St, S1083, 12.8
TP9F6941, E of Rice St, S1461, 11.8
TP9F6941, I-35E, S1459, 10.9
Edgerton St, S1458, 10.3
E of T.H.61, S1424, 8.0
White Bear Ave, S1423, 7.4
McKnight Rd, S1422, 6.7
W of T.H.36, S1420, 5.0
50th St, S1418, 4.0
22nd St, S1412, 1.2
15th St N, S1411, 0.6
10th St, S1410, 0.0
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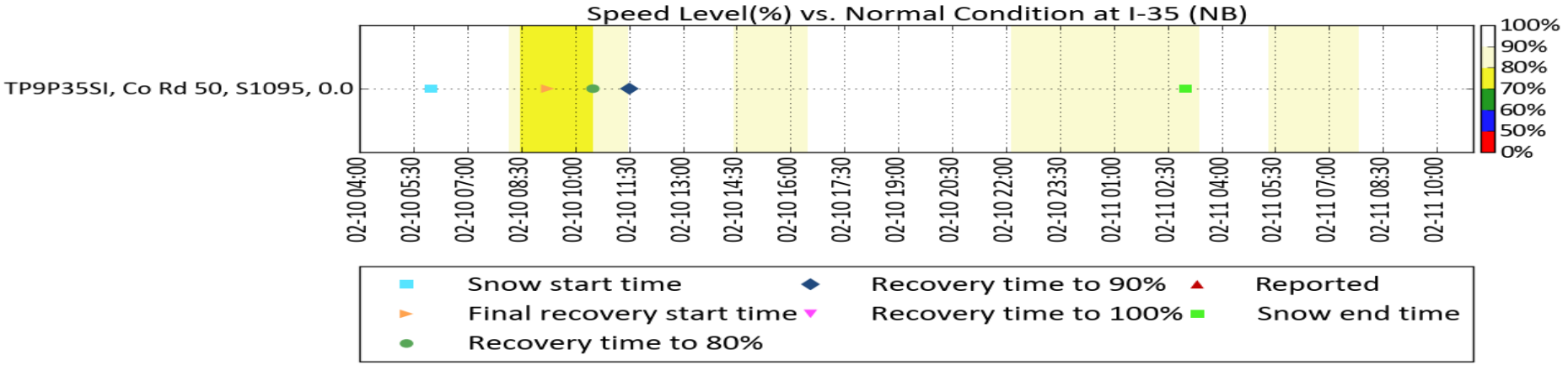
Snow start time
Recovery time to 90%
Reported
Final recovery start time
Recovery time to 100%
Snow end time
Recovery time to 80%


Speed Level(%) vs. Normal Condition at I-35 (NB)
TP9P35SI, Co Rd 50, S1095, 0.0
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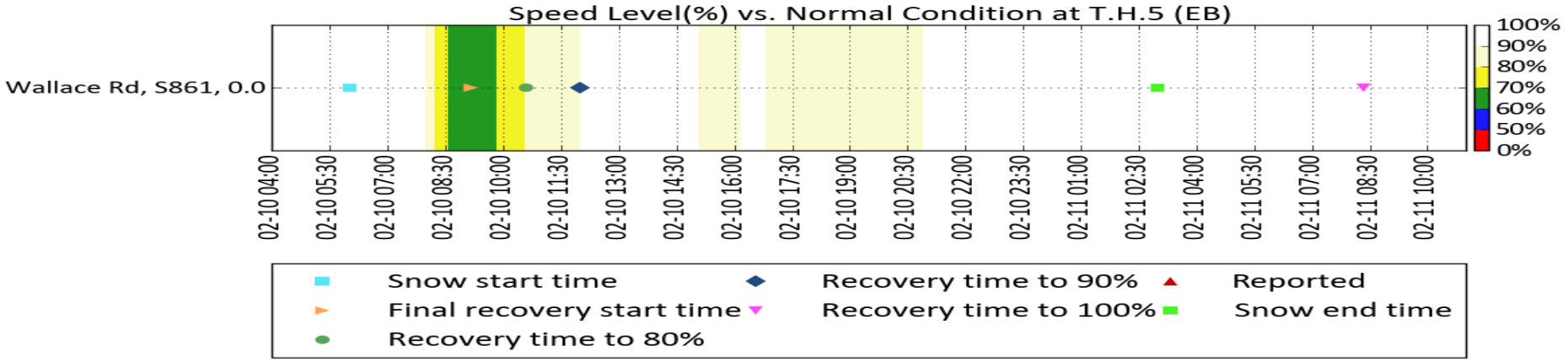
Snow start time
Recovery time to 90%
Reported
Final recovery start time
Recovery time to 100%
Snow end time
Recovery time to 80%


Speed Level(%) vs. Normal Condition at T.H.5 (EB)
Wallace Rd, S861, 0.0
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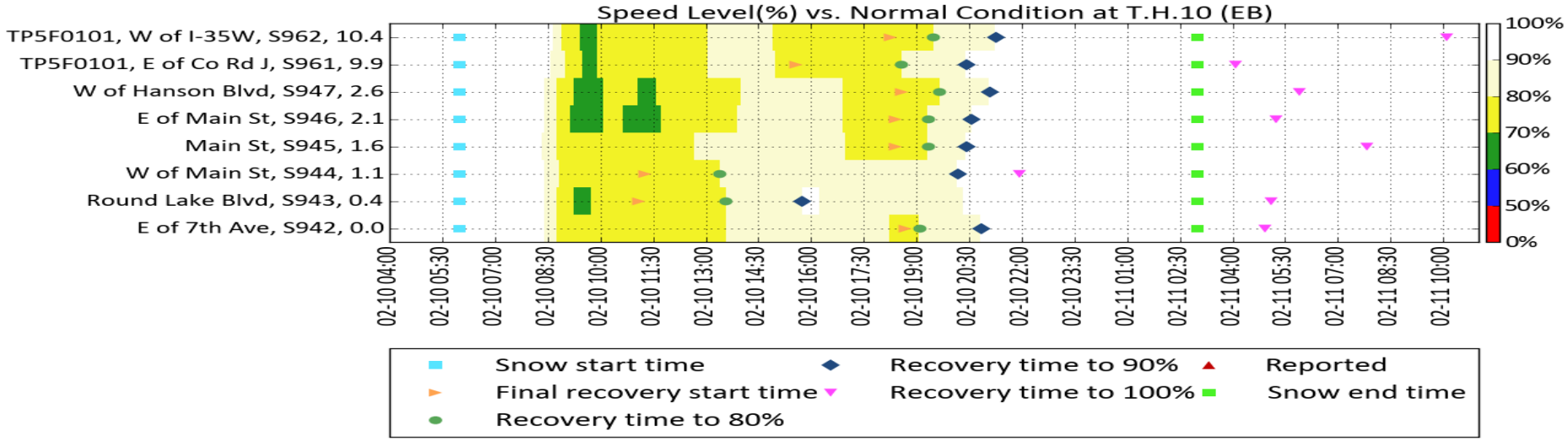
Snow start time
Recovery time to 90%
Reported
Final recovery start time
Recovery time to 100%
Snow end time
Recovery time to 80%


Speed Level(%) vs. Normal Condition at T.H.10 (EB)
TP5F0101, W of I-35W, S962, 10.4
TP5F0101, E of Co Rd J, S961, 9.9
W of Hanson Blvd, S947, 2.6
E of Main St, S946, 2.1
Main St, S945, 1.6
W of Main St, S944, 1.1
Round Lake Blvd, S943, 0.4
E of 7th Ave, S942, 0.0
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Snow start time
Recovery time to 90%
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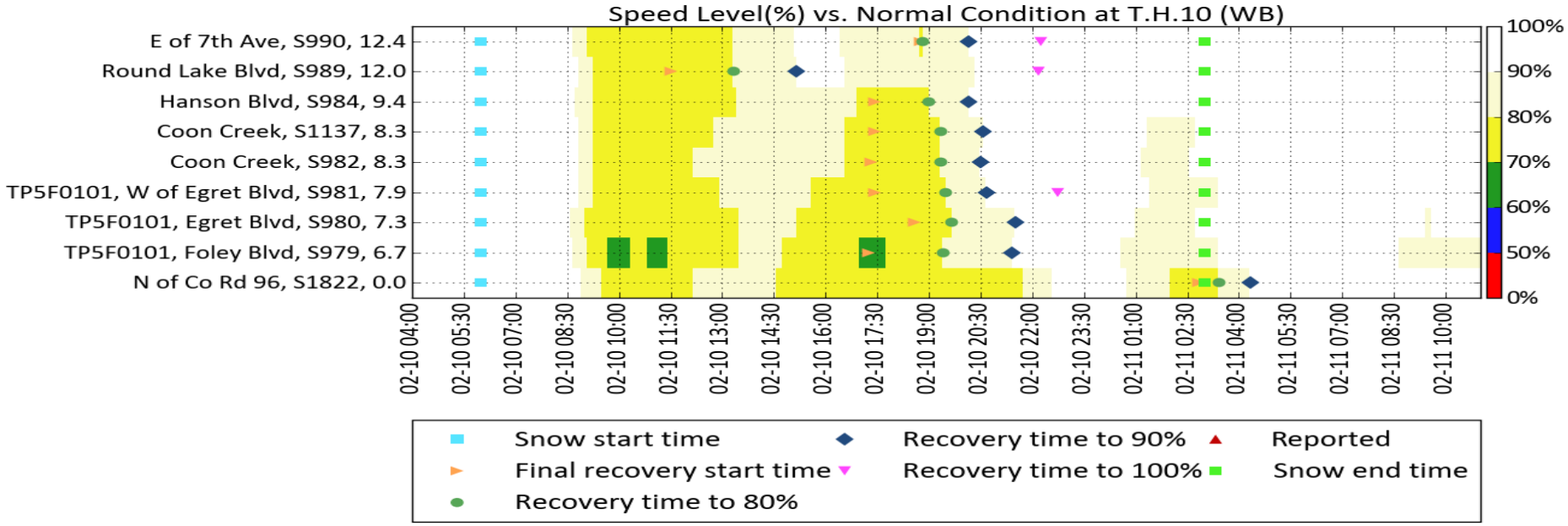
Recovery time to 80%


Speed Level(%) vs. Normal Condition at T.H.10 (WB)
E of 7th Ave, S990, 12.4
Round Lake Blvd, S989, 12.0
Hanson Blvd, S984, 9.4
Coon Creek, S1137, 8.3
Coon Creek, S982, 8.3
TP5F0101, W of Egret Blvd, S981, 7.9
TP5F0101, Egret Blvd, S980, 7.3
TP5F0101, Foley Blvd, S979, 6.7
N of Co Rd 96, S1822, 0.0
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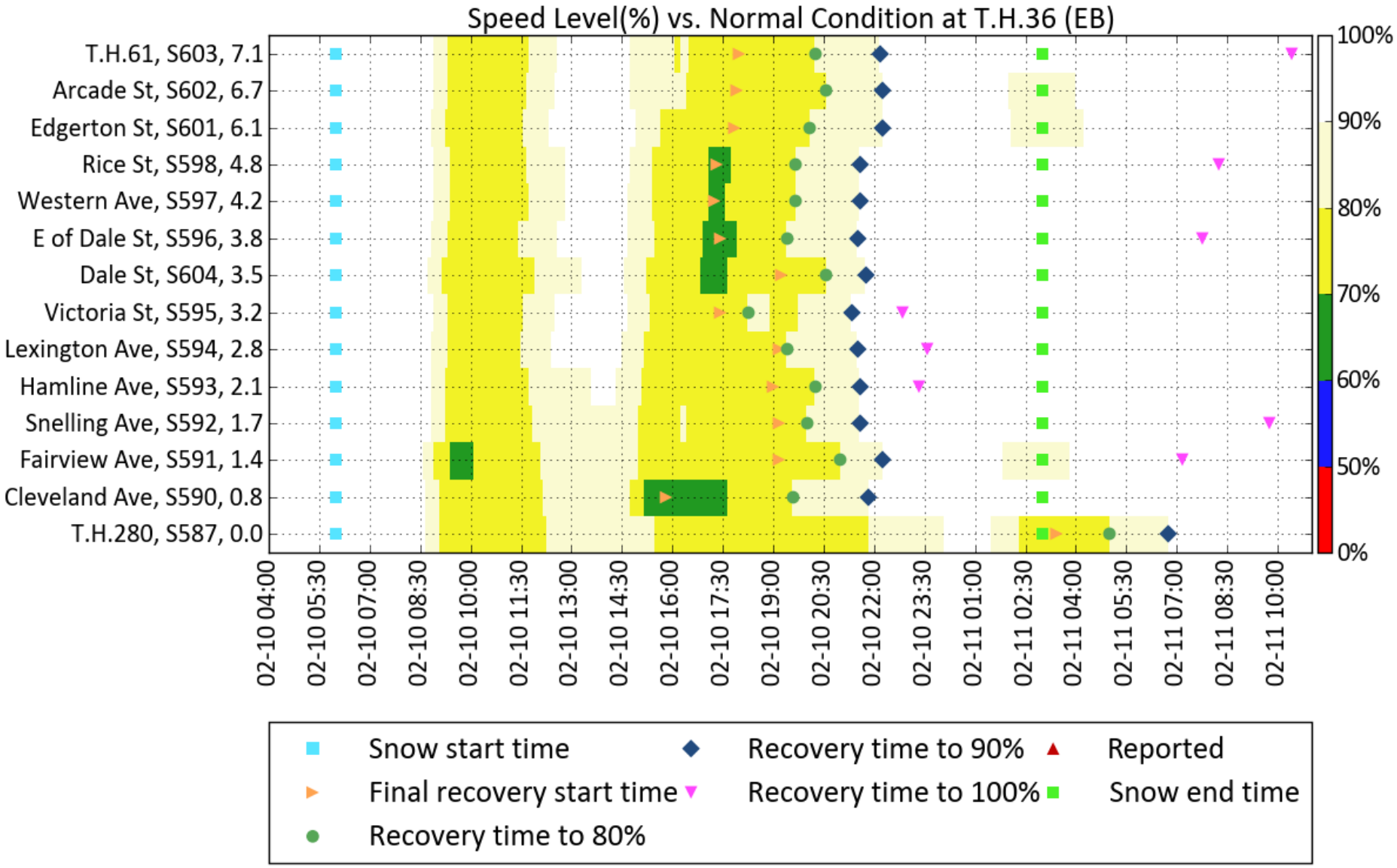
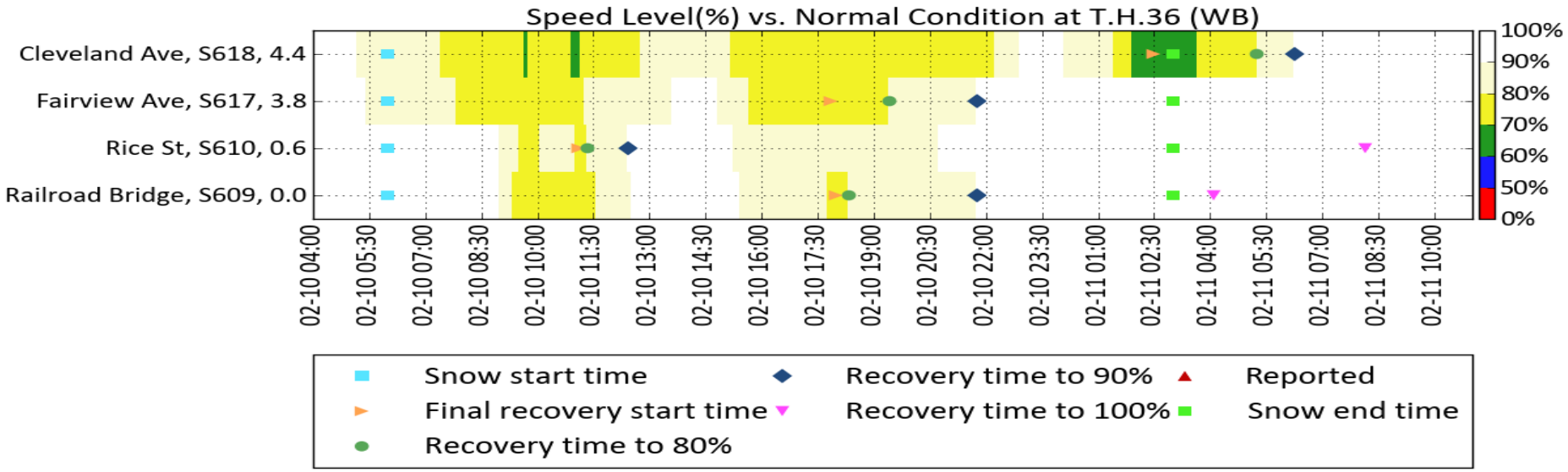
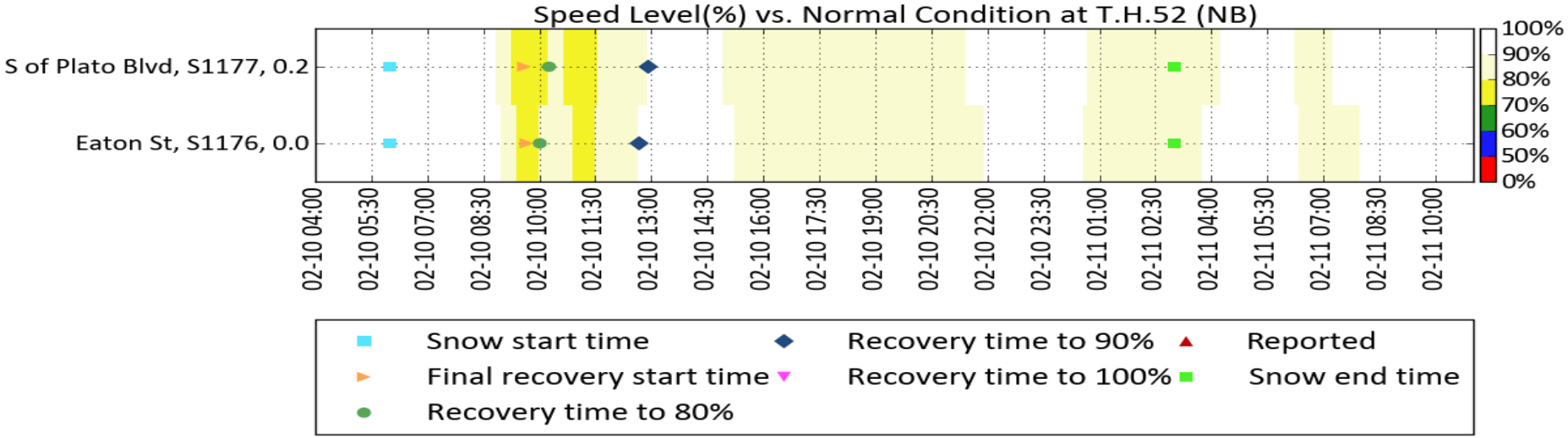
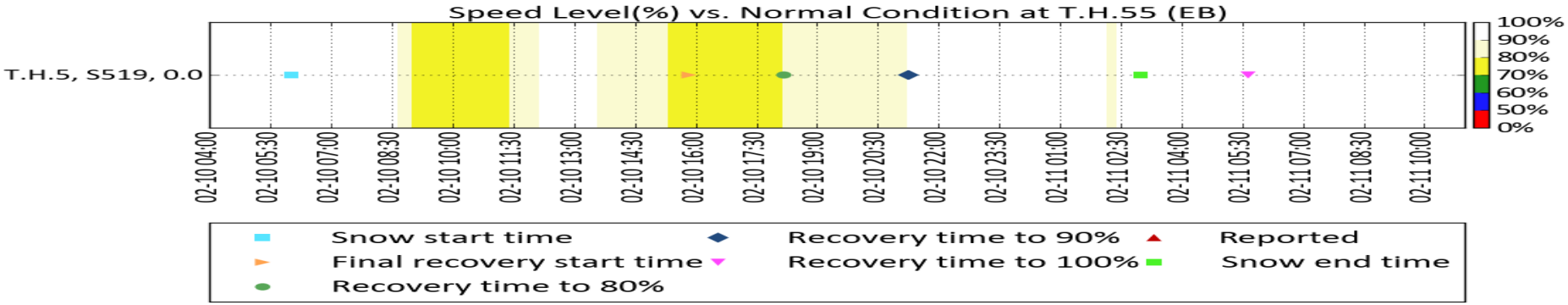
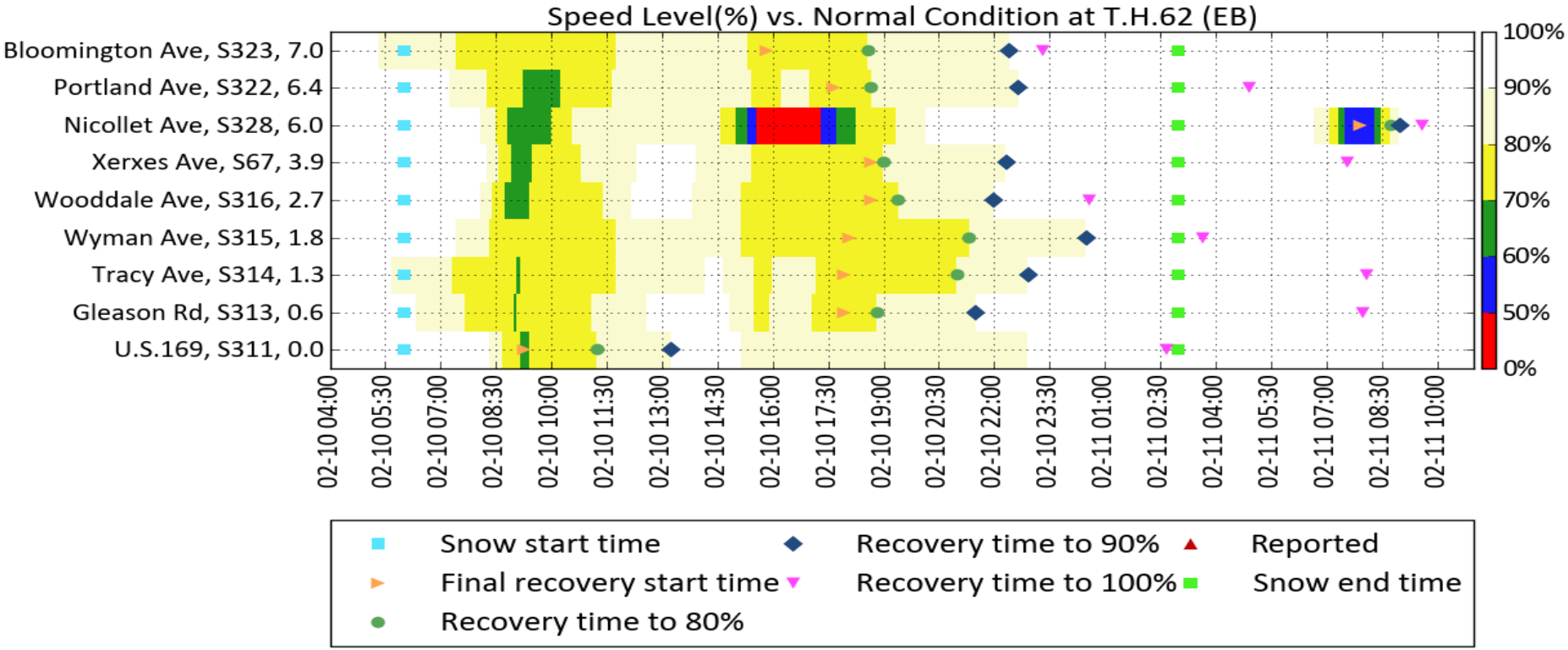
02-11 05:30
02-11 07:00
02-11 08:30
02-11 10:00
Snow start time
Recovery time to 90%
Reported
Final recovery start time
Recovery time to 100%
Snow end time
Recovery time to 80%

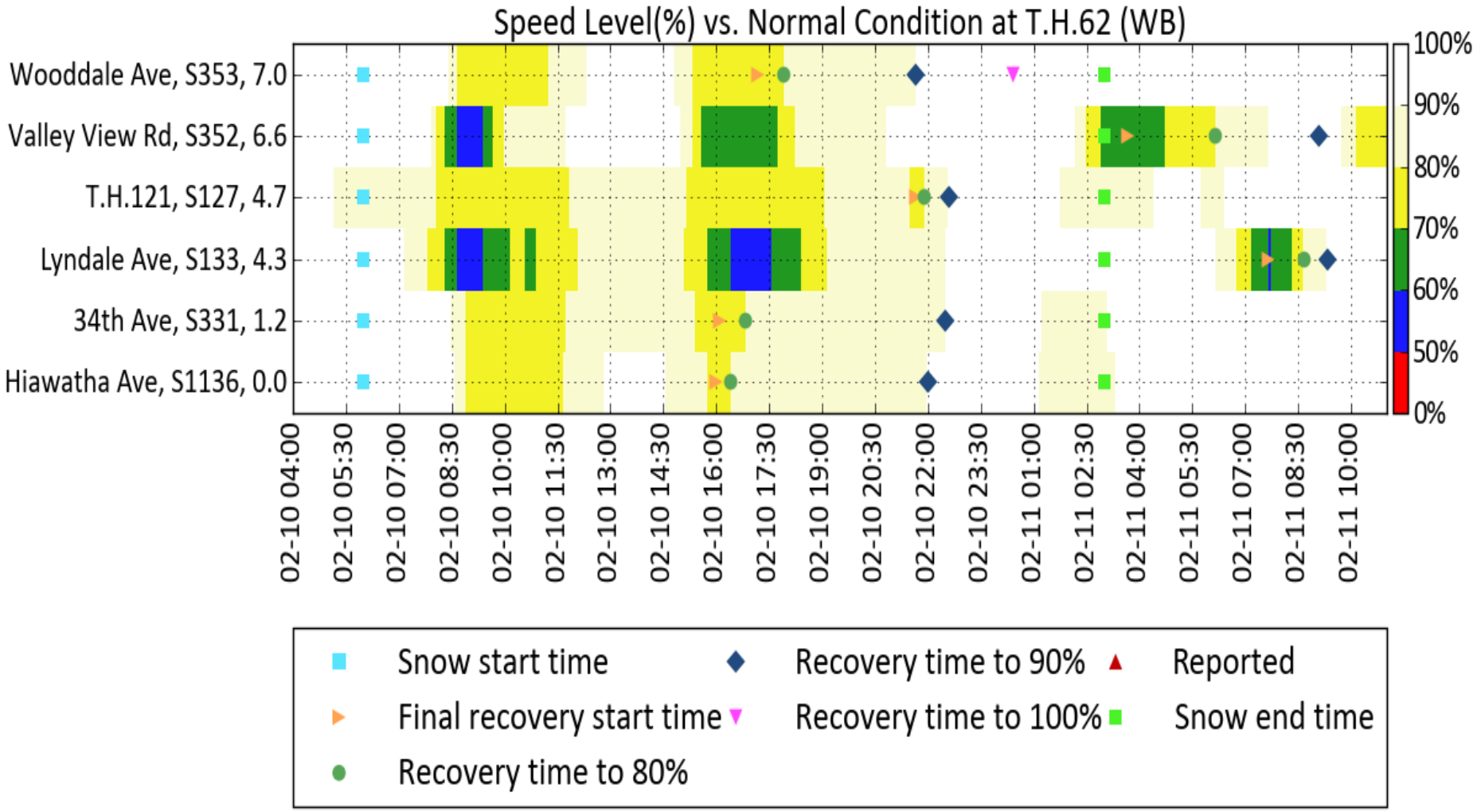

Speed Level(%) vs. Normal Condition at T.H.36 (EB)
T.H.61, S603, 7.1
Arcade St, S602, 6.7
Edgerton St, S601, 6.1
Rice St, S598, 4.8
Western Ave, S597, 4.2
E of Dale St, S596, 3.8
Dale St, S604, 3.5
Victoria St, S595, 3.2
Lexington Ave, S594, 2.8
Hamline Ave, S593, 2.1
Snelling Ave, S592, 1.7
Fairview Ave, S591, 1.4
Cleveland Ave, S590, 0.8
T.H.280, S587, 0.0
100%
90%
80%
70%
60%
50%
0%
02-10 04:00
02-10 05:30
02-10 07:00
02-10 08:30
02-10 10:00
02-10 11:30
02-10 13:00
02-10 14:30
02-10 16:00
02-10 17:30
02-10 19:00
02-10 20:30
02-10 22:00
02-10 23:30
02-11 01:00
02-11 02:30
02-11 04:00
02-11 05:30
02-11 07:00
02-11 08:30
02-11 10:00
Snow start time
Recovery time to 90%
Reported
Final recovery start time
Recovery time to 100%
Snow end time
Recovery time to 80%

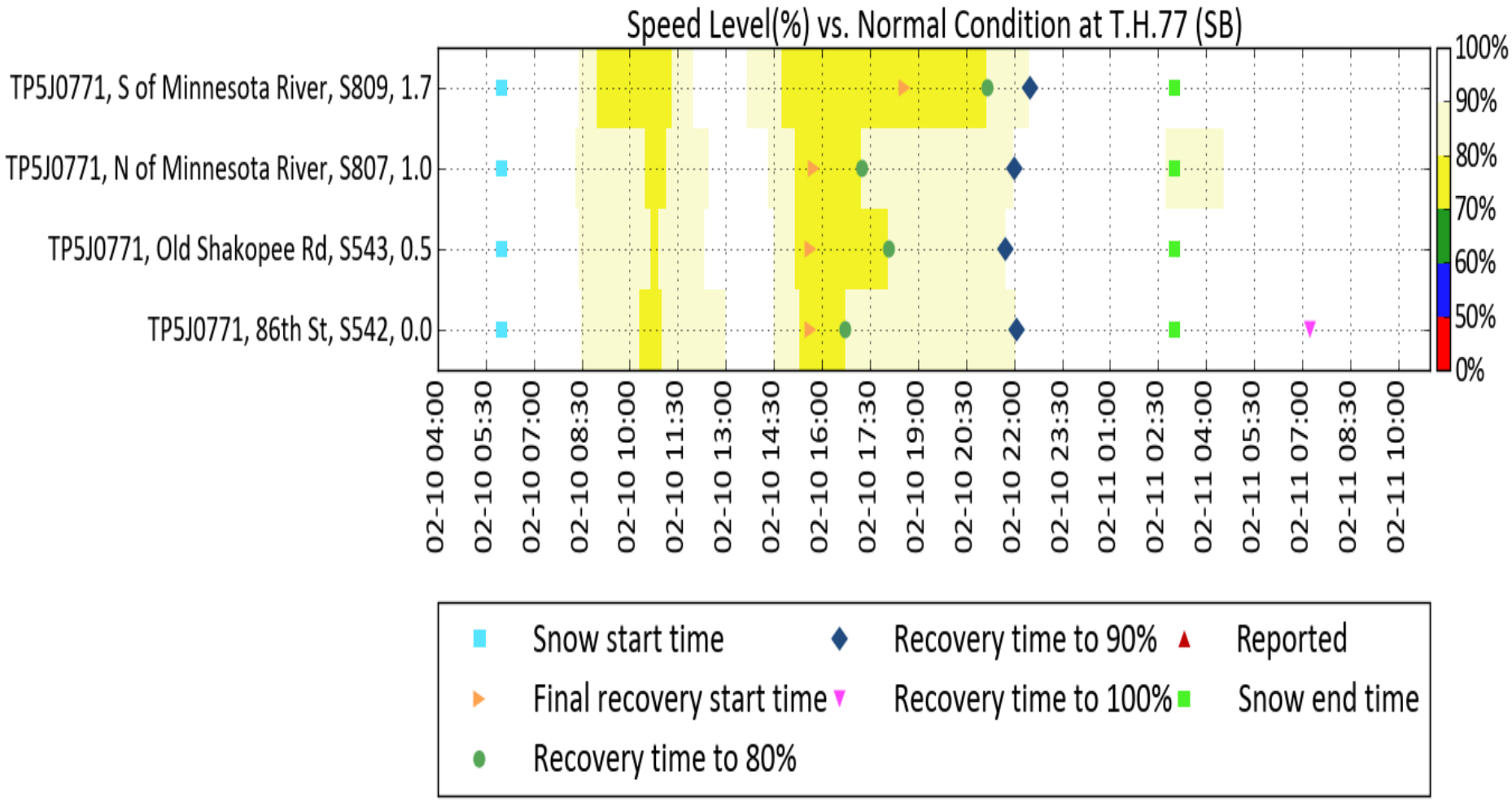

Speed Level(%) vs. Normal Condition at T.H.36 (WB)
Cleveland Ave, S618, 4.4
Fairview Ave, S617, 3.8
Rice St, S610, 0.6
Railroad Bridge, S609, 0.0
100%
90%
80%
70%
60%
50%
0%
02-10 04:00
02-10 05:30
02-10 07:00
02-10 08:30
02-10 10:00
02-10 11:30
02-10 13:00
02-10 14:30
02-10 16:00
02-10 17:30
02-10 19:00
02-10 20:30
02-10 22:00
02-10 23:30
02-11 01:00
02-11 02:30
02-11 04:00
02-11 05:30
02-11 07:00
02-11 08:30
02-11 10:00
Snow start time
Recovery time to 90%
Reported
Final recovery start time
Recovery time to 100%
Snow end time
Recovery time to 80%

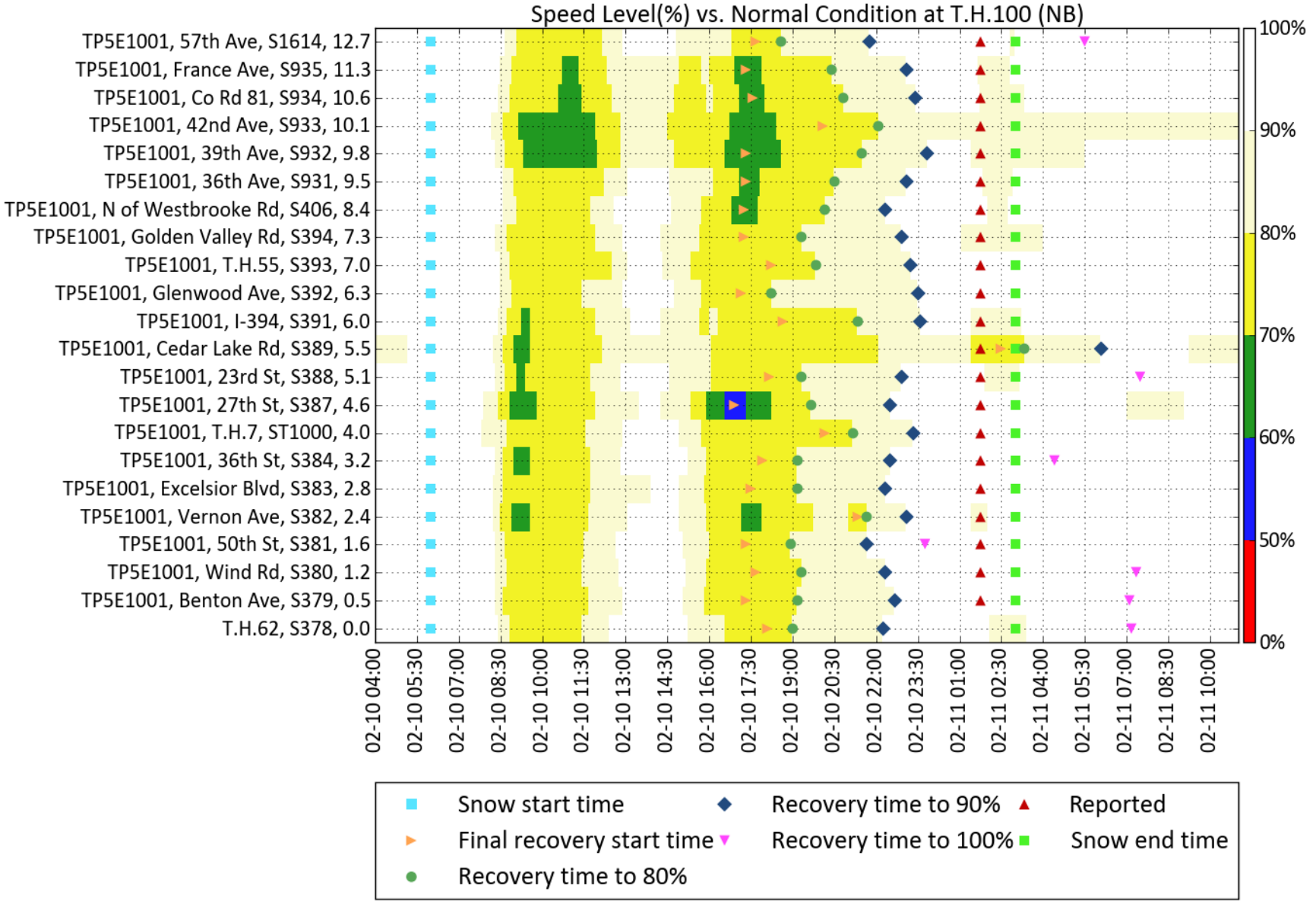

Speed Level(%) vs. Normal Condition at T.H.52 (NB)
S of Plato Blvd, S1177, 0.2
Eaton St, S1176, 0.0
100%
90%
80%
70%
60%
50%
0%
02-10 04:00
02-10 05:30
02-10 07:00
02-10 08:30
02-10 10:00
02-10 11:30
02-10 13:00
02-10 14:30
02-10 16:00
02-10 17:30
02-10 19:00
02-10 20:30
02-10 22:00
02-10 23:30
02-11 01:00
02-11 02:30
02-11 04:00
02-11 05:30
02-11 07:00
02-11 08:30
02-11 10:00
Snow start time
Recovery time to 90%
Reported
Final recovery start time
Recovery time to 100%
Snow end time
Recovery time to 80%

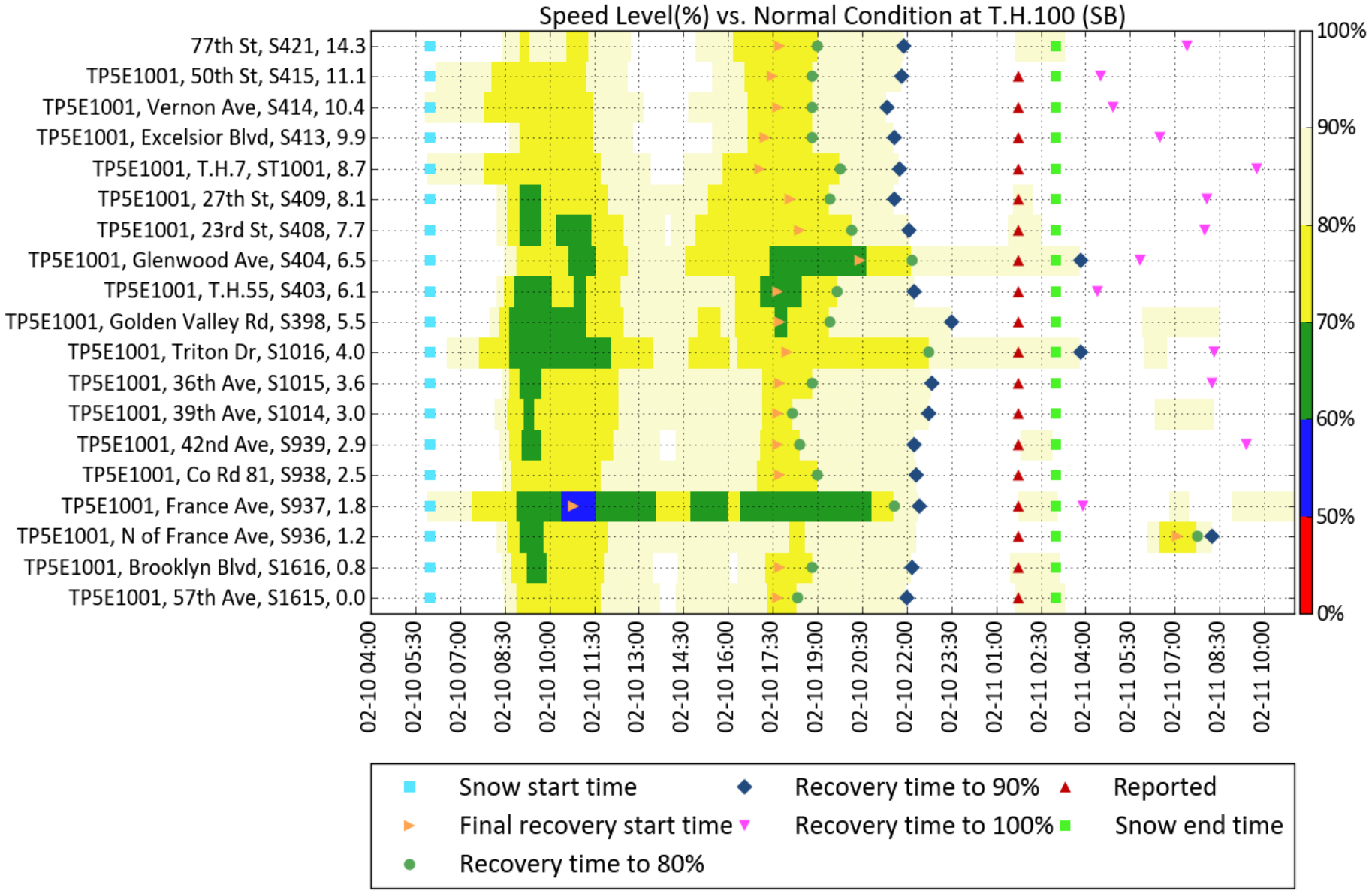

Speed Level(%) vs. Normal Condition at T.H.55 (EB)
T.H.5, S519, 0.0
100%
90%
80%
70%
60%
50%
0%
02-10 04:00
02-10 05:30
02-10 07:00
02-10 08:30
02-10 10:00
02-10 11:30
02-10 13:00
02-10 14:30
02-10 16:00
02-10 17:30
02-10 19:00
02-10 20:30
02-10 22:00
02-10 23:30
02-11 01:00
02-11 02:30
02-11 04:00
02-11 05:30
02-11 07:00
02-11 08:30
02-11 10:00
Snow start time
Recovery time to 90%
Reported
Final recovery start time
Recovery time to 100%
Snow end time
Recovery time to 80%

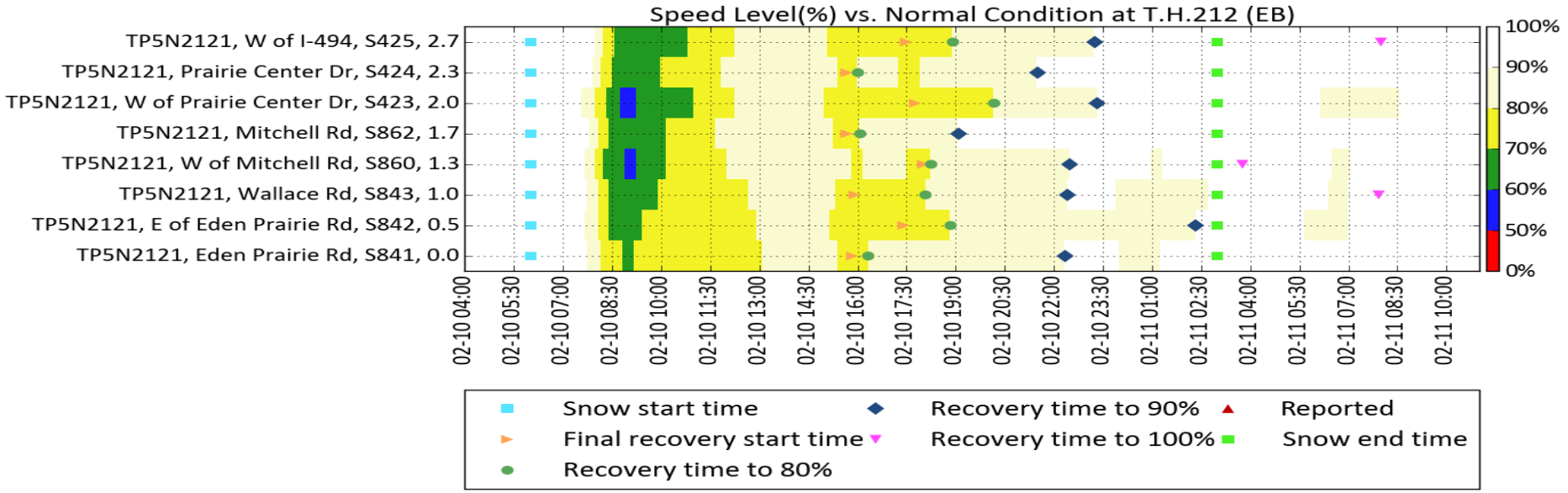

Speed Level(%) vs. Normal Condition at T.H.62 (EB)
Bloomington Ave, S323, 7.0
Portland Ave, S322, 6.4
Nicollet Ave, S328, 6.0
Xerxes Ave, S67, 3.9
Wooddale Ave, S316, 2.7
Wyman Ave, S315, 1.8
Tracy Ave, S314, 1.3
Gleason Rd, S313, 0.6
U.S.169, S311, 0.0
100%
90%
80%
70%
60%
50%
0%
02-10 04:00
02-10 05:30
02-10 07:00
02-10 08:30
02-10 10:00
02-10 11:30
02-10 13:00
02-10 14:30
02-10 16:00
02-10 17:30
02-10 19:00
02-10 20:30
02-10 22:00
02-10 23:30
02-11 01:00
02-11 02:30
02-11 04:00
02-11 05:30
02-11 07:00
02-11 08:30
02-11 10:00
Snow start time
Recovery time to 90%
Reported
Final recovery start time
Recovery time to 100%
Snow end time
Recovery time to 80%

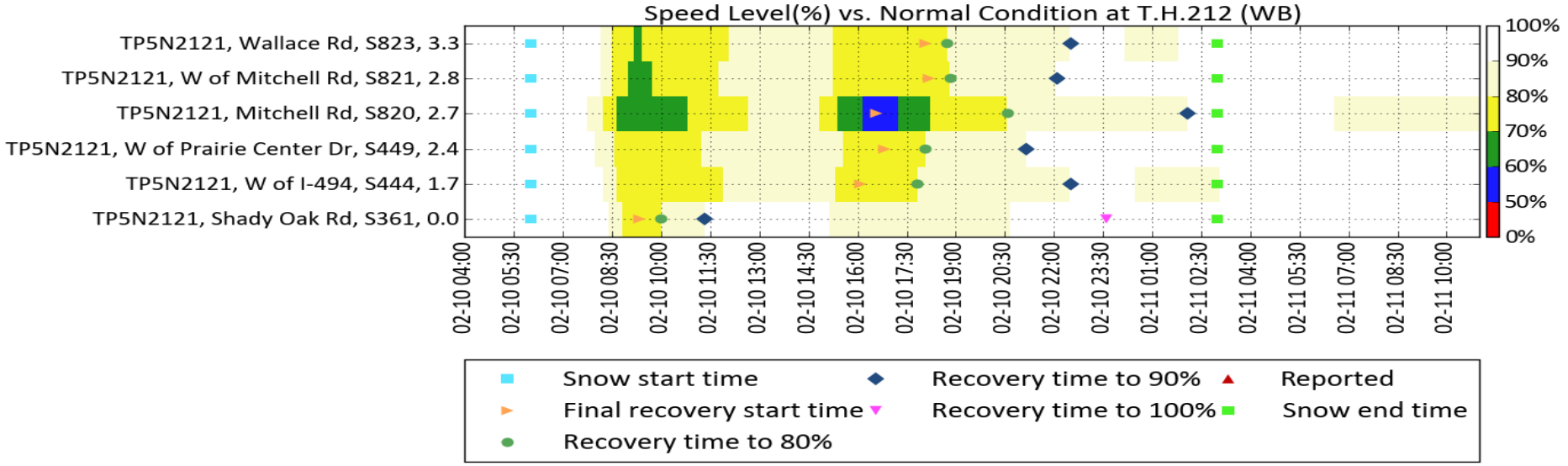

Speed Level(%) vs. Normal Condition at T.H.62 (WB)
Wooddale Ave, S353, 7.0
Valley View Rd, S352, 6.6
T.H.121, S127, 4.7
Lyndale Ave, S133, 4.3
34th Ave, S331, 1.2
Hiawatha Ave, S1136, 0.0
100%
90%
80%
70%
60%
50%
0%
02-10 04:00
02-10 05:30
02-10 07:00
02-10 08:30
02-10 10:00
02-10 11:30
02-10 13:00
02-10 14:30
02-10 16:00
02-10 17:30
02-10 19:00
02-10 20:30
02-10 22:00
02-10 23:30
02-11 01:00
02-11 02:30
02-11 04:00
02-11 05:30
02-11 07:00
02-11 08:30
02-11 10:00
Snow start time
Recovery time to 90%
Reported
Final recovery start time
Recovery time to 100%
Snow end time
Recovery time to 80%

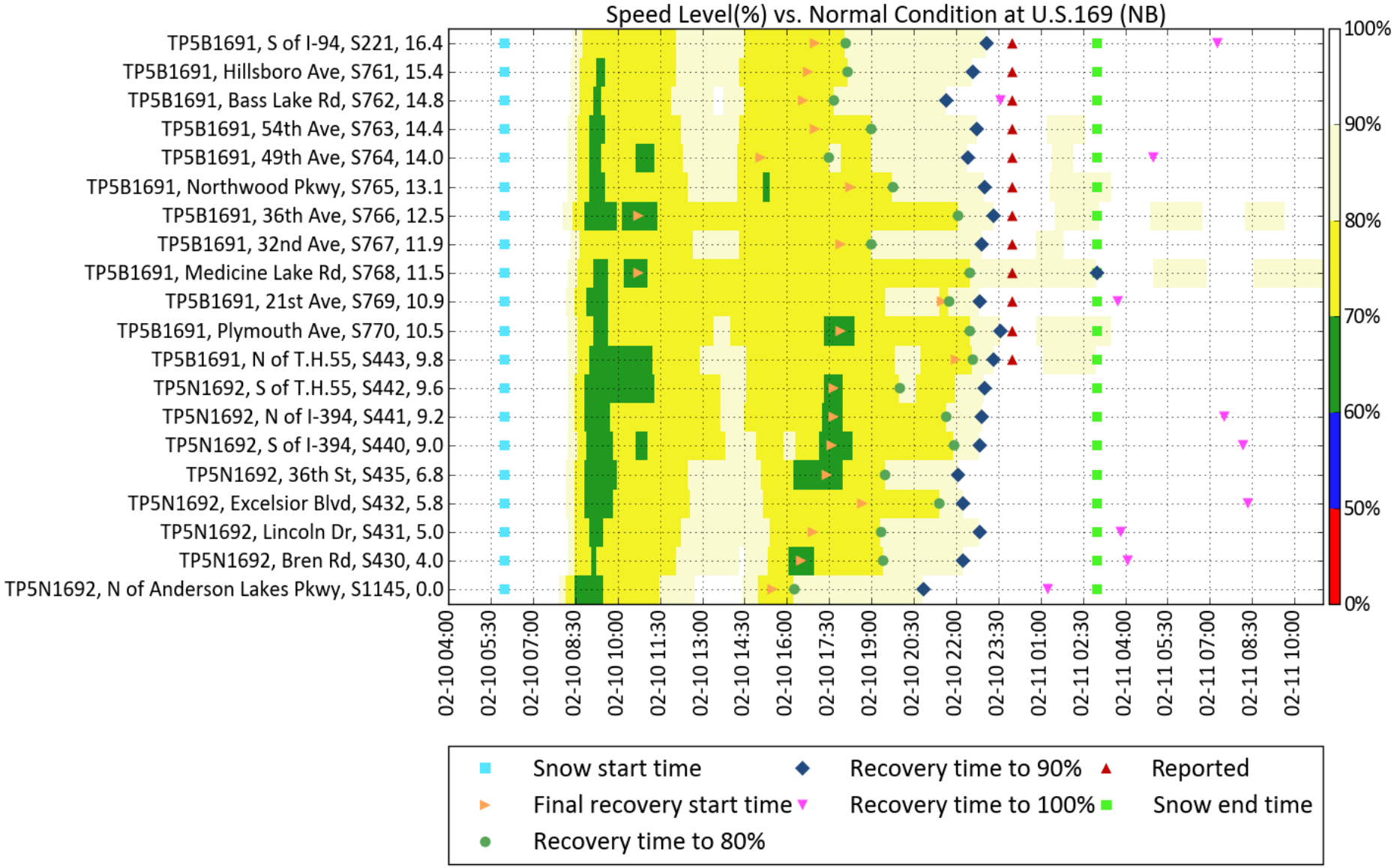

Speed Level(%) vs. Normal Condition at T.H.77 (SB)
TP5J0771, S of Minnesota River, S809, 1.7
TP5J0771, N of Minnesota River, S807, 1.0
TP5J0771, Old Shakopee Rd, S543, 0.5
TP5J0771, 86th St, S542, 0.0
100%
90%
80%
70%
60%
50%
0%
02-10 04:00
02-10 05:30
02-10 07:00
02-10 08:30
02-10 10:00
02-10 11:30
02-10 13:00
02-10 14:30
02-10 16:00
02-10 17:30
02-10 19:00
02-10 20:30
02-10 22:00
02-10 23:30
02-11 01:00
02-11 02:30
02-11 04:00
02-11 05:30
02-11 07:00
02-11 08:30
02-11 10:00
Snow start time
Recovery time to 90%
Reported
Final recovery start time
Recovery time to 100%
Snow end time
Recovery time to 80%


Speed Level(%) vs. Normal Condition at T.H.100 (NB)
TP5E1001, 57th Ave, S1614, 12.7
TP5E1001, France Ave, S935, 11.3
TP5E1001, Co Rd 81, S934, 10.6
TP5E1001, 42nd Ave, S933, 10.1
TP5E1001, 39th Ave, S932, 9.8
TP5E1001, 36th Ave, S931, 9.5
TP5E1001, N of Westbrooke Rd, S406, 8.4
TP5E1001, Golden Valley Rd, S394, 7.3
TP5E1001, T.H.55, S393, 7.0
TP5E1001, Glenwood Ave, S392, 6.3
TP5E1001, I-394, S391, 6.0
TP5E1001, Cedar Lake Rd, S389, 5.5
TP5E1001, 23rd St, S388, 5.1
TP5E1001, 27th St, S387, 4.6
TP5E1001, T.H.7, ST1000, 4.0
TP5E1001, 36th St, S384, 3.2
TP5E1001, Excelsior Blvd, S383, 2.8
TP5E1001, Vernon Ave, S382, 2.4
TP5E1001, 50th St, S381, 1.6
TP5E1001, Wind Rd, S380, 1.2
TP5E1001, Benton Ave, S379, 0.5
T.H.62, S378, 0.0
100%
90%
80%
70%
60%
50%
0%
02-10 04:00
02-10 05:30
02-10 07:00
02-10 08:30
02-10 10:00
02-10 11:30
02-10 13:00
02-10 14:30
02-10 16:00
02-10 17:30
02-10 19:00
02-10 20:30
02-10 22:00
02-10 23:30
02-11 01:00
02-11 02:30
02-11 04:00
02-11 05:30
02-11 07:00
02-11 08:30
02-11 10:00
Snow start time
Recovery time to 90%
Reported
Final recovery start time
Recovery time to 100%
Snow end time
Recovery time to 80%


Speed Level(%) vs. Normal Condition at T.H.100 (SB)
77th St, S421, 14.3
TP5E1001, 50th St, S415, 11.1
TP5E1001, Vernon Ave, S414, 10.4
TP5E1001, Excelsior Blvd, S413, 9.9
TP5E1001, T.H.7, ST1001, 8.7
TP5E1001, 27th St, S409, 8.1
TP5E1001, 23rd St, S408, 7.7
TP5E1001, Glenwood Ave, S404, 6.5
TP5E1001, T.H.55, S403, 6.1
TP5E1001, Golden Valley Rd, S398, 5.5
TP5E1001, Triton Dr, S1016, 4.0
TP5E1001, 36th Ave, S1015, 3.6
TP5E1001, 39th Ave, S1014, 3.0
TP5E1001, 42nd Ave, S939, 2.9
TP5E1001, Co Rd 81, S938, 2.5
TP5E1001, France Ave, S937, 1.8
TP5E1001, N of France Ave, S936, 1.2
TP5E1001, Brooklyn Blvd, S1616, 0.8
TP5E1001, 57th Ave, S1615, 0.0
100%
90%
80%
70%
60%
50%
0%
02-10 04:00
02-10 05:30
02-10 07:00
02-10 08:30
02-10 10:00
02-10 11:30
02-10 13:00
02-10 14:30
02-10 16:00
02-10 17:30
02-10 19:00
02-10 20:30
02-10 22:00
02-10 23:30
02-11 01:00
02-11 02:30
02-11 04:00
02-11 05:30
02-11 07:00
02-11 08:30
02-11 10:00
Snow start time
Recovery time to 90%
Reported
Final recovery start time
Recovery time to 100%
Snow end time
Recovery time to 80%


Speed Level(%) vs. Normal Condition at T.H.212 (EB)
TP5N2121, W of I-494, S425, 2.7
TP5N2121, Prairie Center Dr, S424, 2.3
TP5N2121, W of Prairie Center Dr, S423, 2.0
TP5N2121, Mitchell Rd, S862, 1.7
TP5N2121, W of Mitchell Rd, S860, 1.3
TP5N2121, Wallace Rd, S843, 1.0
TP5N2121, E of Eden Prairie Rd, S842, 0.5
TP5N2121, Eden Prairie Rd, S841, 0.0
100%
90%
80%
70%
60%
50%
0%
02-10 04:00
02-10 05:30
02-10 07:00
02-10 08:30
02-10 10:00
02-10 11:30
02-10 13:00
02-10 14:30
02-10 16:00
02-10 17:30
02-10 19:00
02-10 20:30
02-10 22:00
02-10 23:30
02-11 01:00
02-11 02:30
02-11 04:00
02-11 05:30
02-11 07:00
02-11 08:30
02-11 10:00
Snow start time
Recovery time to 90%
Reported
Final recovery start time
Recovery time to 100%
Snow end time
Recovery time to 80%


Speed Level(%) vs. Normal Condition at T.H.212 (WB)
TP5N2121, Wallace Rd, S823, 3.3
TP5N2121, W of Mitchell Rd, S821, 2.8
TP5N2121, Mitchell Rd, S820, 2.7
TP5N2121, W of Prairie Center Dr, S449, 2.4
TP5N2121, W of I-494, S444, 1.7
TP5N2121, Shady Oak Rd, S361, 0.0
100%
90%
80%
70%
60%
50%
0%
02-10 04:00
02-10 05:30
02-10 07:00
02-10 08:30
02-10 10:00
02-10 11:30
02-10 13:00
02-10 14:30
02-10 16:00
02-10 17:30
02-10 19:00
02-10 20:30
02-10 22:00
02-10 23:30
02-11 01:00
02-11 02:30
02-11 04:00
02-11 05:30
02-11 07:00
02-11 08:30
02-11 10:00
Snow start time
Recovery time to 90%
Reported
Final recovery start time
Recovery time to 100%
Snow end time
Recovery time to 80%


Speed Level(%) vs. Normal Condition at U.S.169 (NB)
TP5B1691, S of I-94, S221, 16.4
TP5B1691, Hillsboro Ave, S761, 15.4
TP5B1691, Bass Lake Rd, S762, 14.8
TP5B1691, 54th Ave, S763, 14.4
TP5B1691, 49th Ave, S764, 14.0
TP5B1691, Northwood Pkwy, S765, 13.1
TP5B1691, 36th Ave, S766, 12.5
TP5B1691, 32nd Ave, S767, 11.9
TP5B1691, Medicine Lake Rd, S768, 11.5
TP5B1691, 21st Ave, S769, 10.9
TP5B1691, Plymouth Ave, S770, 10.5
TP5B1691, N of T.H.55, S443, 9.8
TP5N1692, S of T.H.55, S442, 9.6
TP5N1692, N of I-394, S441, 9.2
TP5N1692, S of I-394, S440, 9.0
TP5N1692, 36th St, S435, 6.8
TP5N1692, Excelsior Blvd, S432, 5.8
TP5N1692, Lincoln Dr, S431, 5.0
TP5N1692, Bren Rd, S430, 4.0
TP5N1692, N of Anderson Lakes Pkwy, S1145, 0.0
100%
90%
80%
70%
60%
50%
0%
02-10 04:00
02-10 05:30
02-10 07:00
02-10 08:30
02-10 10:00
02-10 11:30
02-10 13:00
02-10 14:30
02-10 16:00
02-10 17:30
02-10 19:00
02-10 20:30
02-10 22:00
02-10 23:30
02-11 01:00
02-11 02:30
02-11 04:00
02-11 05:30
02-11 07:00
02-11 08:30
02-11 10:00
Snow start time
Recovery time to 90%
Reported
Final recovery start time
Recovery time to 100%
Snow end time
Recovery time to 80%

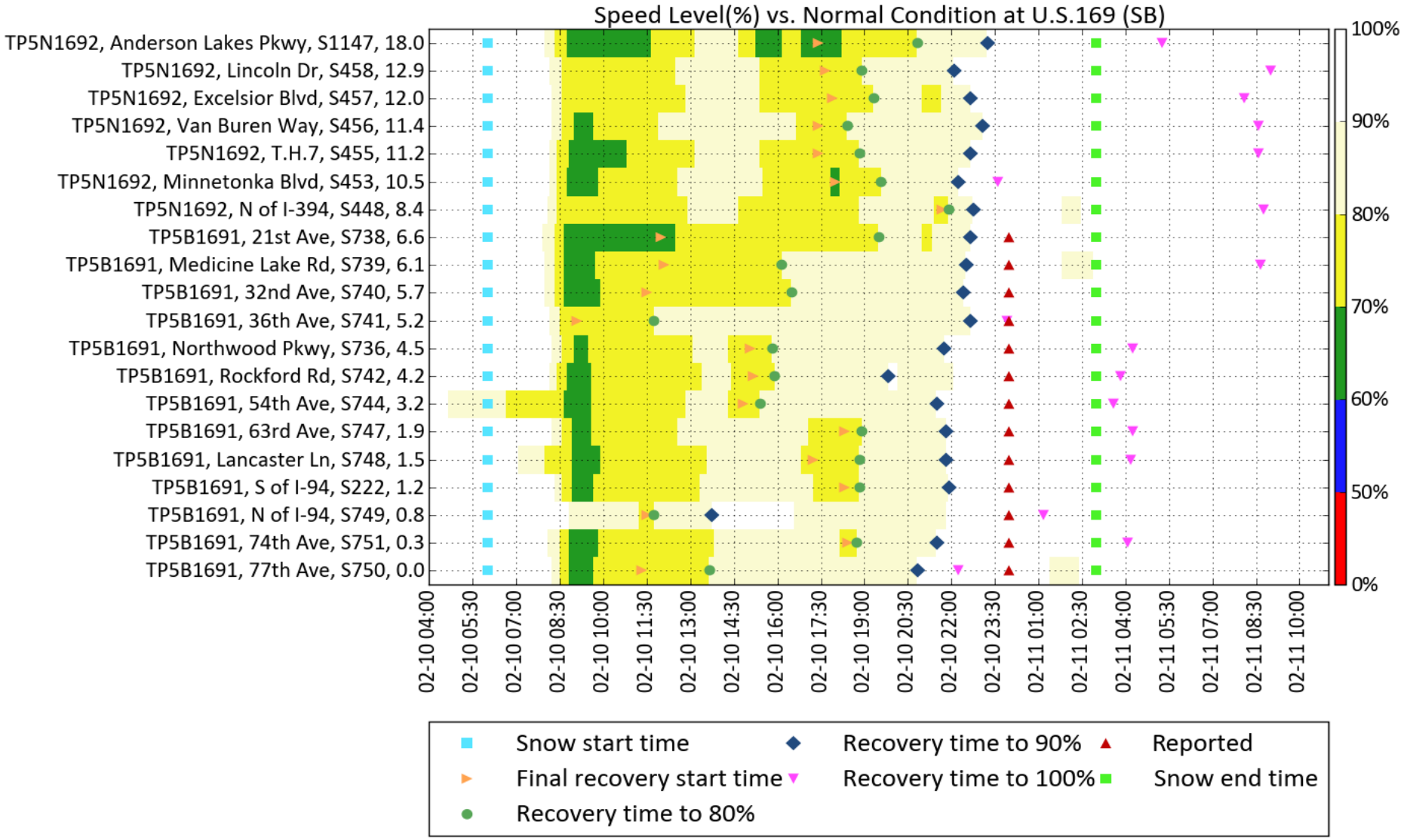


Figure x.x Speed Level Graphs to Normal Condition for All Corridors

Table II-1. Normal Recovery Time and Speed for All Corridors

Snow Start Time	2015- 02-10 06:00
Snow End Time	2015- 02-11 03:00

Corridor/RouteID	Station	Time					Speed				
		Recovery Start	N80	N90	N100	Reported	Recovery Start	N80	N90	N100	Reported
I-35W (NB)/TP9P35W1	S71	02-11 02:15	02-11 02:45	02-11 03:15		02-10 21:00	50	51.5	67.1		73.2
	S1600	02-11 02:20	02-11 03:00	02-11 03:35	02-11 09:00	02-10 21:00	49.8	55.8	64.6	71	70.4
	S1602	02-10 15:35	02-10 15:50	02-10 19:20		02-10 21:00	56.4	61.8	72.4		72.2
	S77	02-10 15:35	02-10 16:00	02-10 19:00		02-10 21:00	53.6	60.7	67.3		71.5
	S37	02-11 06:50	02-11 07:00	02-11 09:25		02-10 21:00	51.7	44.7	73.7		69.9
	S38	02-10 15:45	02-10 16:15	02-10 19:15		02-10 21:00	51.4	59.6	64.2		69.6
	S39	02-10 15:45	02-10 16:25	02-10 19:15		02-10 21:00	51.9	61	65.8		70.6
	S1603	02-10 16:00	02-10 16:40	02-10 19:20		02-10 21:00	53.9	60	63.4		67.7
I-35W (NB)	S34	02-10 10:45	02-10 11:00	02-10 13:05	02-11 04:20		49.6	52.7	58.5	63.8	
	S45	02-10 17:10	02-10 18:20	02-10 21:25	02-11 04:50		46.3	53.5	60.2	63.6	
	S46	02-10 17:30	02-10 18:40	02-10 21:10	02-11 04:35		48.7	55.6	62.8	64.2	
	S1704	02-10 17:35	02-10 18:45	02-10 21:35	02-11 09:35		46	49.6	54	62.1	
	S47	02-10 15:55	02-10 18:15	02-10 20:55			27.5	52.2	60		
	S52	02-10 17:40	02-10 19:20	02-10 22:00			44.9	50.3	56.9		
	S1705	02-10 17:40	02-10 21:15	02-10 22:35			44.1	50.9	56.3		
	S53	02-10 16:15	02-10 18:55	02-10 21:45	02-11 08:30		38.4	48.9	54	54.9	
	S54	02-10 18:00	02-10 19:25	02-10 22:00			44.4	50.7	57		
	S1706	02-10 18:10	02-10 21:20	02-10 22:25			44.6	49.7	56.7		
	S55	02-10 16:25	02-10 19:05	02-10 21:55			43.5	53.5	56.4		
	S56	02-10 16:25	02-10 18:55	02-10 21:40			43.7	50.9	56.4		
	S57	02-10 16:25	02-10 19:10	02-10 21:55	02-10 22:40		43.6	51.5	56.9	65.2	
	S58	02-10 16:30	02-10 19:20	02-10 21:45			44.4	51.5	57		
	S1707	02-10 18:25	02-10 20:20	02-10 22:05	02-11 04:05		42.1	45.7	53.4	58.2	
	S59	02-10 16:30	02-10 19:00	02-10 21:40	02-10 22:45		46.4	50.6	57	65.4	
	S60	02-10 16:30	02-10 18:40	02-10 21:30	02-10 22:30		44.5	53.2	59.5	65.5	
	S1708	02-10 18:30	02-10 21:25	02-10 22:15	02-11 10:20		41.6	46.9	54	58.7	
	S573	02-10 16:40	02-10 22:10	02-11 00:05			24.2	52.2	56.6		
I-35W (NB)/TP5F35W1	S574	02-10 19:10	02-10 20:00	02-10 22:35		02-11 03:30	49.9	54.2	60.2		55.4
	S652	02-11 02:20	02-11 02:45			02-11 03:30	51	52.1			56

Corridor/RouteID	Station	Time					Speed				
		Recovery Start	N80	N90	N100	Reported	Recovery Start	N80	N90	N100	Reported
	S653	02-10 20:40	02-10 21:05	02-10 21:55		02-11 03:30	46.1	54.3	62.8		57.4
	S654	02-10 17:25	02-10 19:00	02-10 21:40	02-10 23:20	02-11 03:30	45.3	58.6	68.1	72.8	63.2
	S655	02-10 15:35	02-10 16:00	02-10 21:45		02-11 03:30	33.5	23.6	63.8		57.1
	S656	02-10 15:20	02-10 16:50	02-10 21:40		02-11 03:30	32.7	17.7	63.8		59.1
	S657	02-10 15:30	02-10 16:05	02-10 21:35	02-10 23:25	02-11 03:30	34.6	17.1	63	67.4	58.4
	S659	02-10 09:55	02-10 12:00	02-10 13:20		02-11 03:30	49.6	53.5	61		64.1
	S664	02-10 15:50	02-10 16:55	02-10 22:00		02-11 03:30	27.7	27.4	67.9		65.5
	S665	02-10 15:25	02-10 17:10	02-10 22:00		02-11 03:30	45.5	26.6	71.6		68.1
	S666	02-10 15:30	02-10 17:50	02-10 22:05		02-11 03:30	36.2	38.5	71		67.5
	S667	02-10 15:30	02-10 21:20	02-10 23:00		02-11 03:30	36.5	61.5	66.9		62.6
	S668	02-10 16:45	02-10 19:45	02-10 21:45		02-11 03:30	42.2	59.5	65.5		63.8
	S669	02-10 19:05	02-10 21:15	02-10 23:05		02-11 03:30	54.6	60.1	69		60.1
	S670	02-10 17:20	02-10 18:10	02-10 21:40		02-11 03:30	41.5	62.7	72.3		67
I-35W (SB)/TP5F35W1	S678	02-10 09:50	02-10 13:05	02-10 13:40	02-10 22:10	02-11 03:30	57.4	41.3	70.3	76.2	74.8
	S679	02-10 09:40	02-10 12:55	02-10 13:40	02-10 21:45	02-11 03:30	54.6	57.7	67	74.5	74.2
	S680	02-10 11:10	02-10 12:45	02-10 13:45	02-10 22:30	02-11 03:30	53.8	58.1	69.1	75.4	72
	S682	02-10 15:35	02-10 16:25	02-10 21:40	02-11 06:45	02-11 03:30	54.5	62.7	70.6	56.3	72.5
	S683	02-10 15:25	02-10 15:35	02-10 21:15	02-11 03:50	02-11 03:30	61.3	58.5	66.3	72.7	72.6
	S684	02-10 15:40	02-10 16:05	02-10 21:30	02-11 08:20	02-11 03:30	52.7	59.1	66.3	58.9	69.6
	S691	02-10 15:40	02-10 16:05	02-10 20:40	02-11 03:40	02-11 03:30	56.9	58.4	64.8	72.6	71.2
	S692	02-10 09:35	02-10 11:45	02-10 13:05	02-11 03:40	02-11 03:30	47.4	53.3	62.8	71.7	70.7
	S694	02-10 15:35	02-10 16:00	02-10 20:50	02-11 03:25	02-11 03:30	56.4	55.4	61.1	67.9	68.3
	S696	02-10 15:40	02-10 16:20	02-10 21:25	02-11 04:35	02-11 03:30	54.5	55.6	60.1	72.1	65.2
I-35W (SB)	S578	02-10 09:30	02-10 11:50	02-10 13:15	02-10 22:40		39.6	45.2	54.9	61.7	
I-35W (SB)/TP5H35W1	S579	02-10 09:30	02-10 11:45	02-10 12:45			38.7	46.1	52.9		
	S580	02-10 17:40	02-10 19:35	02-10 21:35			44.9	47.8	52		
	S583	02-10 09:35	02-10 10:15	02-10 12:30	02-11 04:20		39.5	45.5	51.2	59.1	
I-35W (SB)	S586	02-10 16:40	02-10 18:10	02-10 20:30	02-11 09:35		24.2	42.7	48.8	51	
	S3	02-10 10:50	02-10 11:50	02-10 14:05			38.5	47.6	50		
	S4	02-10 16:55	02-10 17:30	02-10 21:25	02-11 04:25		21	23.4	59.6	68.4	
	S1709	02-10 17:00	02-10 18:15	02-10 22:05	02-11 06:45		21.5	44.3	55.5	57.4	
	S5	02-10 15:55	02-10 17:30	02-10 22:00			27.8	22.5	62.1		
	S6	02-10 16:55	02-10 17:50	02-10 21:50			24.2	28.7	64.3		
	S7	02-10 17:10	02-10 19:10	02-10 22:00	02-11 07:40		27.9	56.4	66	66.5	
	S8	02-10 15:35	02-10 16:50	02-10 22:20			34.5	24.7	65.6		
	S9	02-10 16:50	02-10 18:00	02-10 23:25			39.7	39.3	65.7		

Corridor/RouteID	Station	Time					Speed				
		Recovery Start	N80	N90	N100	Reported	Recovery Start	N80	N90	N100	Reported
	S10	02-10 17:20	02-10 18:20	02-10 22:10			40.5	51.9	58.2		
	S11	02-10 19:05	02-10 21:40	02-10 22:30			52.3	55.7	63.2		
	S1711	02-10 10:35	02-10 11:35	02-10 14:20	02-11 06:50		43.5	49.7	54.6	59.4	
	S12	02-10 09:35	02-10 19:15	02-10 22:40	02-11 03:55		41.4	51.9	62.4	62.5	
	S14	02-10 17:25	02-10 18:10	02-10 20:05	02-10 22:45		46.5	51.2	61.4	68.6	
	S1712	02-10 18:40	02-10 20:45	02-10 23:40	02-11 06:45		50	52.5	58.4	60.5	
	S15	02-10 17:25	02-10 18:20	02-10 22:35			44.8	52.7	58.1		
	S16	02-10 17:25	02-10 22:15	02-11 02:50			38.5	49.2	50.8		
	S17	02-10 17:40	02-10 22:35	02-11 04:35			38.6	51.2	51.2		
	S19	02-10 17:20	02-10 19:35	02-11 00:00			39.3	49.2	54.7		
	S20	02-10 17:30	02-10 19:00	02-10 22:15			44.9	53.6	60.6		
	S21	02-10 17:20	02-10 19:05	02-10 22:10			40.3	53.9	59.1		
	S22	02-10 17:45	02-10 19:15	02-10 22:55	02-11 04:30		33.2	53.9	61.9	64.1	
	S23	02-10 18:20	02-10 18:40	02-10 22:40	02-11 05:20		56	58.4	68	75.2	
	S13	02-10 16:05	02-10 18:35	02-10 22:25			53	59.8	69.8		
I-35W (SB)/TP9P35W1	S24	02-10 18:20	02-10 19:25	02-10 22:20	02-11 04:15	02-10 21:00	54.3	60.9	69.8	70.2	65.1
	S25	02-10 18:30	02-10 19:50	02-10 22:35	02-11 04:25	02-10 21:00	53.9	60.1	67	67.2	64.3
	S26	02-10 18:30	02-10 19:20	02-10 22:25		02-10 21:00	56.6	58.8	68.7		64.8
	S27	02-10 18:35	02-10 19:35	02-10 22:10	02-11 03:50	02-10 21:00	54.9	61.9	68.9	68.7	63.8
	S1606	02-10 18:40	02-10 19:20	02-10 22:10	02-11 04:30	02-10 21:00	60.4	60.9	72.6	67.7	69.4
	S28	02-10 18:10	02-10 19:05	02-10 22:10	02-11 05:05	02-10 21:00	40.3	61.8	69.5	69.5	67.2
	S29	02-10 17:30	02-10 19:10	02-10 22:10	02-11 03:55	02-10 21:00	41	62.1	71.2	67.5	68.1
	S30	02-10 15:30	02-10 16:15	02-10 21:40	02-11 04:10	02-10 21:00	43	33.2	67.3	67.5	66.3
	S31	02-10 15:35	02-10 16:25	02-10 19:55	02-11 04:40	02-10 21:00	49.7	40.3	71.3	68.6	71.2
U.S.169 (NB)/TP5N1692	S1145	02-10 15:30	02-10 16:15	02-10 20:50	02-11 01:15		31.2	57.9	65.3	72	
	S430	02-10 16:30	02-10 19:25	02-10 22:15	02-11 04:05		25	55.1	62.3	64.8	
	S431	02-10 16:55	02-10 19:20	02-10 22:50	02-11 03:50		39.5	52	60.8	64.5	
	S432	02-10 18:40	02-10 21:25	02-10 22:15	02-11 08:20		43.3	47.1	58.8	51.2	
	S435	02-10 17:25	02-10 19:30	02-10 22:05			44.2	52.1	59.8		
	S440	02-10 17:35	02-10 21:55	02-10 22:50	02-11 08:10		41.4	53.8	61	54.5	
	S441	02-10 17:40	02-10 21:40	02-10 22:55	02-11 07:30		41	54.1	61.2	56.4	
	S442	02-10 17:40	02-10 20:00	02-10 23:00			38.7	54.8	60		
U.S.169 (NB)/TP5B1691	S443	02-10 22:00	02-10 22:35	02-10 23:20		02-11 00:00	36.2	53.3	57.7		57.7
	S770	02-10 17:55	02-10 22:30	02-10 23:35		02-11 00:00	39.2	55	61.9		63.4
	S769	02-10 21:30	02-10 21:45	02-10 22:50	02-11 03:45	02-11 00:00	61.2	64.9	72.3	68.4	72.1
	S768	02-10 10:45	02-10 22:30	02-11 03:00		02-11 00:00	42.3	54.3	55.3		56.6

Corridor/RouteID	Station	Time					Speed				
		Recovery Start	N80	N90	N100	Reported	Recovery Start	N80	N90	N100	Reported
	S767	02-10 17:55	02-10 19:00	02-10 22:55		02-11 00:00	45.6	48.7	54		57.2
	S766	02-10 10:45	02-10 22:05	02-10 23:20		02-11 00:00	42.1	56.2	62.6		63.3
	S765	02-10 18:15	02-10 19:45	02-10 23:00		02-11 00:00	44.4	51.3	58.1		61.8
	S764	02-10 15:05	02-10 17:30	02-10 22:25	02-11 05:00	02-11 00:00	33	27.7	65.9	68.6	69.4
	S763	02-10 17:00	02-10 19:00	02-10 22:45		02-11 00:00	17.4	51.4	60.6		61.5
	S762	02-10 16:35	02-10 17:40	02-10 21:40	02-10 23:35	02-11 00:00	25.3	47.2	69.9	78.6	79.1
	S761	02-10 16:45	02-10 18:10	02-10 22:35		02-11 00:00	32.2	51.1	60.9		62.5
	S221	02-10 17:00	02-10 18:05	02-10 23:05	02-11 07:15	02-11 00:00	40.6	49.9	58	63.6	59.2
T.H.100 (NB)	S378	02-10 18:05	02-10 19:00	02-10 22:15	02-11 07:10		45.7	50.7	57.2	61	
T.H.100 (NB)/TP5E1001	S379	02-10 17:20	02-10 19:10	02-10 22:40	02-11 07:05	02-11 01:45	40.1	51.5	58	60.9	57
	S380	02-10 17:40	02-10 19:20	02-10 22:20	02-11 07:20	02-11 01:45	43	51	58.1	58.5	57.1
	S381	02-10 17:20	02-10 18:55	02-10 21:40	02-10 23:45	02-11 01:45	41	49.9	56.8	63.2	60.5
	S382	02-10 21:20	02-10 21:40	02-10 23:05		02-11 01:45	43.5	50.8	57.6		54.8
	S383	02-10 17:30	02-10 19:10	02-10 22:20		02-11 01:45	45.3	54.4	60.8		61.4
	S384	02-10 17:55	02-10 19:10	02-10 22:30	02-11 04:25	02-11 01:45	44.2	52.6	58.6	64.1	62.5
	ST1000	02-10 20:10	02-10 21:10	02-10 23:20		02-11 01:45	35.2	47.6	52.7		54.6
	S387	02-10 16:55	02-10 19:40	02-10 22:30		02-11 01:45	27.9	53.7	58.9		60.7
	S388	02-10 18:10	02-10 19:20	02-10 22:55	02-11 07:30	02-11 01:45	44.2	52.1	59.2	54.1	57.9
	S389	02-11 02:30	02-11 03:20	02-11 06:05		02-11 01:45	55.5	57.6	63.8		57.6
	S391	02-10 18:40	02-10 21:20	02-10 23:35		02-11 01:45	40.9	48.4	55.5		51.7
	S392	02-10 17:10	02-10 18:15	02-10 23:30		02-11 01:45	38.5	47.1	60.9		57.4
	S393	02-10 18:15	02-10 19:50	02-10 23:15		02-11 01:45	42.7	54.2	59.3		59.2
	S394	02-10 17:15	02-10 19:20	02-10 22:55		02-11 01:45	35.8	55.5	61		61.1
	S406	02-10 17:15	02-10 20:10	02-10 22:20		02-11 01:45	47.9	65.2	73.3		71.1
	S931	02-10 17:20	02-10 20:30	02-10 23:05		02-11 01:45	41.2	53.8	61.2		60.3
	S932	02-10 17:20	02-10 21:30	02-10 23:50		02-11 01:45	40.8	51.6	63.1		58.5
	S933	02-10 20:05	02-10 22:05			02-11 01:45	50.7	58.9			57.1
	S934	02-10 17:35	02-10 20:50	02-10 23:25		02-11 01:45	37.8	55.9	61.5		59.2
	S935	02-10 17:20	02-10 20:25	02-10 23:05		02-11 01:45	40.1	56	61.2		58.4
	S1614	02-10 17:40	02-10 18:35	02-10 21:45	02-11 05:30	02-11 01:45	49.7	54.9	62.8	70.2	63.3
U.S.169 (SB)/TP5B1691	S750	02-10 11:20	02-10 13:40	02-10 20:50	02-10 22:15	02-11 00:00	47.5	52.3	54.1	66.6	64.7
	S751	02-10 18:25	02-10 18:45	02-10 21:30	02-11 04:05	02-11 00:00	46.1	48.6	55	59.9	56.7
	S749	02-10 11:30	02-10 11:45	02-10 13:45	02-11 01:10	02-11 00:00	67.6	70.1	72.7	92.4	89.4
	S222	02-10 18:20	02-10 18:50	02-10 21:55		02-11 00:00	46	48.7	54.8		57.1
	S748	02-10 17:15	02-10 18:50	02-10 21:50	02-11 04:10	02-11 00:00	48.4	51.6	56	64.1	63
	S747	02-10 18:20	02-10 18:55	02-10 21:50	02-11 04:15	02-11 00:00	45.7	46.5	52.1	58.5	57.3

Corridor/RouteID	Station	Time					Speed				
		Recovery Start	N80	N90	N100	Reported	Recovery Start	N80	N90	N100	Reported
	S744	02-10 14:50	02-10 15:25	02-10 21:30	02-11 03:35	02-11 00:00	45.7	48.7	56.7	61.1	61.2
	S742	02-10 15:10	02-10 15:55	02-10 19:50	02-11 03:50	02-11 00:00	47.2	50.6	59.6	64.8	62.6
	S736	02-10 15:05	02-10 15:50	02-10 21:45	02-11 04:15	02-11 00:00	43.8	44.9	56.3	58.8	57.9
	S741	02-10 09:05	02-10 11:45	02-10 22:40	02-10 23:55	02-11 00:00	35.5	54.7	62	62.7	62.5
	S740	02-10 11:30	02-10 16:30	02-10 22:25		02-11 00:00	42.1	49.8	53.5		57.4
	S739	02-10 12:05	02-10 16:10	02-10 22:30	02-11 08:40	02-11 00:00	43.5	52	56.2	50.2	56.7
	S738	02-10 12:00	02-10 19:30	02-10 22:40		02-11 00:00	45.2	56.5	61.8		62.6
U.S.169 (SB)/TP5N1692	S448	02-10 21:40	02-10 21:55	02-10 22:45	02-11 08:45		50.4	50.5	62.1	54.4	
	S453	02-10 18:00	02-10 19:35	02-10 22:15	02-10 23:35		39.9	53	57.7	64.6	
	S455	02-10 17:25	02-10 18:50	02-10 22:40	02-11 08:35		43.7	51	57.9	51.7	
	S456	02-10 17:25	02-10 18:25	02-10 23:05	02-11 08:35		44.7	51.3	60.1	49.1	
	S457	02-10 17:55	02-10 19:20	02-10 22:40	02-11 08:05		45	54.1	59.9	55.7	
	S458	02-10 17:40	02-10 18:55	02-10 22:05	02-11 09:00		44.5	53.3	61.1	52.8	
	S1147	02-10 17:25	02-10 20:50	02-10 23:15	02-11 05:15		10.3	60.5	69	70.9	
T.H.77 (SB)/TP5J0771	S542	02-10 15:40	02-10 16:45	02-10 22:05	02-11 07:15		44.2	17	60.2	66	
	S543	02-10 15:40	02-10 18:05	02-10 21:45			38.4	47.8	61.2		
	S807	02-10 15:45	02-10 17:15	02-10 22:00			32.4	21.9	61		
	S809	02-10 18:35	02-10 21:10	02-10 22:30			48.4	54.2	58.7		
I-35E (NB)	S884	02-10 15:45	02-10 16:05	02-10 21:15	02-11 06:40		49.8	55.4	65.5	64.1	
	S885	02-10 15:40	02-10 16:20	02-10 21:05			57.4	62.8	68.2		
	S886	02-10 15:45	02-10 18:55	02-11 00:15			56.6	64.5	66.4		
	S827	02-10 10:45	02-10 11:35	02-10 14:15	02-10 23:20		50.8	62.6	64.7	71.8	
	S828	02-11 07:05	02-11 07:30	02-11 08:50	02-11 09:50		33.5	31	59.9	80.1	
	S829	02-11 02:05	02-11 02:50	02-11 09:00			47.7	50.7	56.6		
	S830	02-10 17:20	02-10 19:05	02-10 22:55			39.9	49.6	56.7		
	S831	02-10 16:50	02-10 18:20	02-10 22:10	02-11 09:35		43.7	52.3	61.1	68.1	
	S832	02-11 08:10	02-11 08:20	02-11 09:00	02-11 10:00		46.4	37.3	60.7	68	
	S833	02-10 17:15	02-10 18:30	02-10 22:20	02-11 03:30		36.1	44.5	52.8	58	
I-35E (NB)/TP9F35E1	S620	02-10 09:40	02-10 10:05	02-10 12:15		02-11 03:15	42.5	49.1	57		53.4
	ST3513	02-10 16:45	02-10 17:25	02-10 21:20	02-11 09:00	02-11 03:15	39.9	28.3	55	60.8	54.4
	ST3512	02-10 17:25	02-10 18:15	02-10 21:45		02-11 03:15	30.7	47.1	55.8		54.1
	ST3510	02-10 17:30	02-10 17:50	02-10 21:20	02-11 08:40	02-11 03:15	42.4	49.2	56.7	63	56.4
	S1448	02-10 19:55	02-10 20:20	02-10 22:00		02-11 03:15	53.6	52.4	62.4		57
I-35E (NB)/TP9B35E1	S1485	02-10 17:25	02-10 18:15	02-10 21:30		02-11 04:00	49.1	61.9	69.1		67.4
T.H.62 (WB)	S1136	02-10 16:00	02-10 16:25	02-10 22:00			41.7	43.7	54.2		
	S331	02-10 16:05	02-10 16:50	02-10 22:30			37.2	25.6	56.2		

Corridor/RouteID	Station	Time					Speed				
		Recovery Start	N80	N90	N100	Reported	Recovery Start	N80	N90	N100	Reported
	S133	02-11 07:40	02-11 08:40	02-11 09:20			11.1	52	55		
	S127	02-10 21:40	02-10 21:55	02-10 22:35			34.6	44.4	53.6		
	S352	02-11 03:40	02-11 06:10	02-11 09:05			55.4	68.2	44.8		
	S353	02-10 17:10	02-10 17:55	02-10 21:40	02-11 00:25		22.1	47.2	57.1	64.9	
T.H.212 (EB)/TP5N2121	S841	02-10 15:50	02-10 16:20	02-10 22:20			58.5	55.6	62.6		
	S842	02-10 17:25	02-10 18:50	02-11 02:20			53.7	56.9	66.4		
	S843	02-10 15:55	02-10 18:05	02-10 22:25	02-11 07:55		58.1	60.6	69.2	56.7	
	S860	02-10 18:00	02-10 18:15	02-10 22:30	02-11 03:45		56.7	60.1	65.6	73.9	
	S862	02-10 15:40	02-10 16:05	02-10 19:05			53.4	56.7	63.8		
	S423	02-10 17:45	02-10 20:10	02-10 23:20			53.3	58.5	64.7		
	S424	02-10 15:40	02-10 16:00	02-10 21:30			51.2	54.8	61.1		
	S425	02-10 17:30	02-10 18:55	02-10 23:15	02-11 08:00		46.1	55.2	61.3	53.5	
T.H.62 (EB)	S311	02-10 09:15	02-10 11:15	02-10 13:15	02-11 02:40		27.8	44.7	53.7	57.7	
	S313	02-10 17:55	02-10 18:50	02-10 21:30	02-11 08:00		40.4	45	55.5	54.6	
	S314	02-10 17:55	02-10 21:00	02-10 22:55	02-11 08:05		41.8	47.1	53.2	53.1	
	S315	02-10 18:05	02-10 21:20	02-11 00:30	02-11 03:40		39.7	49.5	56.2	59.5	
	S316	02-10 18:40	02-10 19:25	02-10 22:00	02-11 00:35		42.3	48.1	54.7	60	
	S67	02-10 18:40	02-10 19:00	02-10 22:20	02-11 07:35		44.9	50.6	59	53.6	
	S328	02-11 07:55	02-11 08:45	02-11 09:00	02-11 09:35		21.7	57.4	54.1	59.1	
	S322	02-10 17:40	02-10 18:40	02-10 22:40	02-11 04:55		33.4	43.7	50.1	59.3	
	S323	02-10 15:50	02-10 18:35	02-10 22:25	02-10 23:20		36.1	43.5	55.1	60.1	
T.H.10 (WB)	S1822	02-11 02:50	02-11 03:25	02-11 04:20			40.5	43.3	49.4		
T.H.10 (WB)/TP5F0101	S979	02-10 17:15	02-10 19:25	02-10 21:25			39.6	60.7	71.1		
	S980	02-10 18:35	02-10 19:40	02-10 21:30			49.4	62.8	70.3		
	S981	02-10 17:25	02-10 19:30	02-10 20:40	02-10 22:45		40.3	59.9	66.1	72	
T.H.10 (WB)	S982	02-10 17:20	02-10 19:20	02-10 20:30			44.8	61.7	69.4		
	S1137	02-10 17:25	02-10 19:20	02-10 20:35			40.7	57.2	63.8		
	S984	02-10 17:25	02-10 19:00	02-10 20:10			57.5	66.6	74.5		
	S989	02-10 11:30	02-10 13:20	02-10 15:10	02-10 22:10		50.9	54.5	57.9	73.5	
	S990	02-10 18:45	02-10 18:50	02-10 20:10	02-10 22:15		59	57.9	72	79.9	
T.H.212 (WB)/TP5N2121	S361	02-10 09:20	02-10 10:00	02-10 11:20	02-10 23:35		50	54.9	59.9	70.2	
	S444	02-10 16:05	02-10 17:50	02-10 22:30			46.6	43	59.5		
	S449	02-10 16:50	02-10 18:05	02-10 21:10			26.6	51.1	65.5		
	S820	02-10 16:35	02-10 20:35	02-11 02:05			25.9	56.9	57		
	S821	02-10 18:10	02-10 18:50	02-10 22:05			47.5	56.5	63		
	S823	02-10 18:05	02-10 18:45	02-10 22:30			51.1	57.4	65.1		

Corridor/RouteID	Station	Time					Speed				
		Recovery Start	N80	N90	N100	Reported	Recovery Start	N80	N90	N100	Reported
T.H.36 (WB)	S609	02-10 18:00	02-10 18:20	02-10 21:45	02-11 04:05		53.4	52.7	60.9	61	
	S610	02-10 11:05	02-10 11:20	02-10 12:25	02-11 08:10		49.1	53.4	63.6	49.6	
	S617	02-10 17:50	02-10 19:25	02-10 21:45			44.2	50.7	56.7		
	S618	02-11 02:30	02-11 05:15	02-11 06:15			50.2	55.7	51.1		
T.H.10 (EB)	S942	02-10 18:40	02-10 19:05	02-10 20:50	02-11 04:55		54.6	55.8	68.5	74.2	
	S943	02-10 11:05	02-10 13:35	02-10 15:45	02-11 05:05		52.3	59.5	67.2	78.6	
	S944	02-10 11:15	02-10 13:25	02-10 20:10	02-10 21:55		54.7	58.2	66.1	73.7	
	S945	02-10 18:25	02-10 19:20	02-10 20:25	02-11 07:50		56.8	59	66.3	59.3	
	S946	02-10 18:25	02-10 19:20	02-10 20:35	02-11 05:15		55.7	58.3	65	74.1	
	S947	02-10 18:35	02-10 19:40	02-10 21:05	02-11 05:55		54.9	64	66.7	71.6	
T.H.10 (EB)/TP5F0101	S961	02-10 15:35	02-10 18:35	02-10 20:25	02-11 04:05		48.2	54.5	63.9	69.8	
	S962	02-10 18:15	02-10 19:30	02-10 21:15	02-11 10:05		45.9	56.1	59.6	66.2	
T.H.100 (SB)/TP5E1001	S1615	02-10 17:40	02-10 18:20	02-10 22:00		02-11 01:45	50.4	53.4	60.2		58.9
	S1616	02-10 17:45	02-10 18:50	02-10 22:10		02-11 01:45	47.7	51.7	61		59
	S936	02-11 07:05	02-11 07:45	02-11 08:15		02-11 01:45	26.7	27.2	60.8		58.8
	S937	02-10 10:50	02-10 21:35	02-10 22:25	02-11 03:55	02-11 01:45	41	66.6	66.4	64.7	55.9
	S938	02-10 17:45	02-10 19:00	02-10 22:20		02-11 01:45	46.8	52	59		60.8
	S939	02-10 17:40	02-10 18:25	02-10 22:15	02-11 09:25	02-11 01:45	48.6	50.6	57.4	62.3	56.9
	S1014	02-10 17:40	02-10 18:10	02-10 22:45		02-11 01:45	49.6	50.6	58.3		58.9
	S1015	02-10 17:45	02-10 18:50	02-10 22:50	02-11 08:15	02-11 01:45	49.4	53.1	60.3	56.3	59.5
	S1016	02-10 18:00	02-10 22:45	02-11 03:50	02-11 08:20	02-11 01:45	52.3	61.6	63.1	57.7	59.9
	S398	02-10 17:45	02-10 19:25	02-10 23:30		02-11 01:45	47.2	56.2	62.5		62.4
	S403	02-10 17:40	02-10 19:40	02-10 22:15	02-11 04:25	02-11 01:45	41.6	55.4	61.8	68.5	64.2
	S404	02-10 20:25	02-10 22:10	02-11 03:50	02-11 05:50	02-11 01:45	50.8	60.9	61.2	72.9	53.8
	S408	02-10 18:25	02-10 20:10	02-10 22:05	02-11 08:00	02-11 01:45	41.4	51.7	57.1	53.9	55.3
	S409	02-10 18:05	02-10 19:25	02-10 21:35	02-11 08:05	02-11 01:45	42	53	59	55.6	56.9
	ST1001	02-10 17:05	02-10 19:45	02-10 21:45	02-11 09:45	02-11 01:45	35.3	48.8	54.7	59	56.5
	S413	02-10 17:15	02-10 18:50	02-10 21:35	02-11 06:30	02-11 01:45	31.6	53.2	59	61.6	58
	S414	02-10 17:40	02-10 18:50	02-10 21:20	02-11 04:55	02-11 01:45	36.9	49.2	52.8	60.2	53.5
	S415	02-10 17:30	02-10 18:50	02-10 21:50	02-11 04:30	02-11 01:45	37.7	50.7	55.3	60.5	54.7
T.H.100 (SB)	S421	02-10 17:45	02-10 19:00	02-10 21:55	02-11 07:25		42.1	56.3	62.5	60.6	
T.H.36 (EB)	S587	02-11 03:25	02-11 05:00	02-11 06:45			47.4	52.7	55.1		
	S590	02-10 15:50	02-10 19:35	02-10 21:50			14.6	49.9	55.8		
	S591	02-10 19:10	02-10 21:00	02-10 22:15	02-11 07:10		44.9	53.8	60.7	65.3	
	S592	02-10 19:10	02-10 20:00	02-10 21:35	02-11 09:45		46.8	54.1	58.5	65.4	
	S593	02-10 19:00	02-10 20:15	02-10 21:35	02-10 23:20		46.7	53	61	65	

Corridor/RouteID	Station	Time					Speed				
		Recovery Start	N80	N90	N100	Reported	Recovery Start	N80	N90	N100	Reported
	S594	02-10 19:10	02-10 19:25	02-10 21:30	02-10 23:35		50.2	53	59.1	65.1	
	S595	02-10 17:25	02-10 18:15	02-10 21:20	02-10 22:50		25	31.3	58.5	66	
	S604	02-10 19:15	02-10 20:35	02-10 21:45			47.9	53.2	60.7		
	S596	02-10 17:25	02-10 19:25	02-10 21:30	02-11 07:45		30.7	51	59.1	63.1	
	S597	02-10 17:15	02-10 19:40	02-10 21:35			33.3	52.3	61.6		
	S598	02-10 17:20	02-10 19:40	02-10 21:35	02-11 08:15		30.6	54.3	61.7	66.9	
	S601	02-10 17:50	02-10 20:05	02-10 22:15			31.8	49	56.4		
	S602	02-10 17:55	02-10 20:35	02-10 22:15			33.9	47.9	54.4		
	S603	02-10 18:00	02-10 20:15	02-10 22:10	02-11 10:25		32.2	49.6	57.3	60	
I-35 (NB)/TP9P35SI	S1095	02-10 09:15	02-10 10:30	02-10 11:30			43.3	60	68.4		
I-394 (EB)/TP5C3941	S264	02-10 08:55	02-10 09:40	02-10 12:20	02-11 05:45		50.4	57.4	63.8	71.5	
	S266	02-10 15:25	02-10 16:30	02-10 22:10			47.8	58	64.6		
	S269	02-10 17:00	02-10 17:30	02-10 20:55	02-11 03:45		52.9	53.1	59.8	63.8	
	S270	02-10 17:00	02-10 18:00	02-10 21:50	02-11 03:55		52.6	54.2	60.8	63.6	
	S273	02-10 17:30	02-10 19:40	02-10 23:20			47.6	53.8	61.2		
	S275	02-10 18:00	02-10 19:25	02-10 22:25	02-11 04:45		50.6	55.2	62.4	66.9	
	S276	02-10 18:05	02-10 19:55	02-10 22:40	02-10 23:35		47.5	53	58	62.9	
	S277	02-10 17:25	02-10 19:05	02-10 21:50	02-11 04:50		41.8	50.7	57.1	60.1	
	S279	02-10 17:20	02-10 19:15	02-10 22:05	02-11 00:10		43.4	50.8	59.4	65.8	
	S280	02-10 16:25	02-10 18:40	02-10 22:20	02-11 00:50		49.8	53	60.9	68.4	
I-394 (EB)/TP5H3941	S281	02-11 08:00	02-11 08:45	02-11 09:35			19.2	21	60.6		
	S286	02-10 18:25	02-10 19:20	02-10 22:30			46.9	50.5	56.5		
	S288	02-10 18:45	02-10 22:40	02-10 23:55			46.8	57.2	58.1		
I-694 (WB)	S1410	02-10 15:35	02-10 17:35	02-10 22:10			37.3	28.6	69.5		
	S1411	02-10 16:10	02-10 18:10	02-10 21:40			40.7	59.2	68.9		
	S1412	02-10 19:55	02-10 20:40	02-10 21:55			15.6	63.5	71.5		
	S1418	02-10 09:55	02-10 10:25	02-10 12:25	02-11 07:05		64.8	59	72.9	75	
	S1420	02-11 01:50	02-11 02:05	02-11 03:45	02-11 08:10		46.2	46.8	55.3	64	
	S1422	02-10 09:50	02-10 10:10	02-10 12:15	02-11 06:20		48.2	54.5	62.6	68.3	
	S1423	02-10 09:50	02-10 10:15	02-10 12:00	02-10 13:30		54.8	62.6	69	78.7	
	S1424	02-10 09:50	02-10 10:45	02-10 12:25	02-11 07:45		45.6	58.1	62.9	60.7	
	S1458	02-10 09:50	02-10 11:50	02-10 12:45			46.8	52.9	60.3		
I-694 (WB)/TP9F6941	S1459	02-11 07:40	02-11 08:30	02-11 09:05		02-11 03:15	16.6	57.1	59.2		47.5
	S1461	02-11 07:10	02-11 08:05			02-11 03:15	30.2	29.1			56.7
	S1083	02-10 19:15	02-10 19:55	02-10 21:25	02-11 07:35	02-11 03:15	51	57.8	65.7	53.9	56.3
I-694 (WB)	S204	02-10 17:55	02-10 18:10	02-10 21:50			53.1	56.4	63.2		

Corridor/RouteID	Station	Time					Speed				
		Recovery Start	N80	N90	N100	Reported	Recovery Start	N80	N90	N100	Reported
	S199	02-10 09:45	02-10 11:20	02-10 16:20			45.8	57	63.8		
	S178	02-10 16:55	02-10 18:25	02-10 22:50			23.8	53.6	59.1		
	S172	02-10 17:10	02-10 21:10	02-10 22:15	02-11 08:05		16.4	57.2	63.5	55.9	
	S158	02-10 17:20	02-10 21:00	02-10 22:00			30.7	52.3	62.1		
I-494 (EB)/TP5B4941	S700	02-10 17:05	02-10 18:10	02-11 00:05	02-11 03:35		47.8	54.2	56.5	62.7	
	S701	02-10 10:45	02-10 11:45	02-10 15:20	02-11 08:10		46.2	60.1	66.3	50	
I-494 (EB)/TP5C4941	S711	02-10 17:15	02-10 18:15	02-10 22:10	02-11 03:40		39	56.7	63.2	63.8	
	S713	02-10 17:00	02-10 18:15	02-10 21:50	02-11 05:25		14.9	60.6	69.1	75.9	
	S714	02-10 16:30	02-10 17:40	02-10 21:25	02-11 03:35		33.4	10.4	66.5	65.2	
	S292	02-10 16:15	02-10 18:40	02-10 21:25	02-11 03:35		26.4	58.5	68.1	70.7	
	S293	02-10 16:05	02-10 17:35	02-10 22:15	02-11 03:40		30.5	16.1	65.1	68	
	S294	02-10 16:00	02-10 18:40	02-10 21:20	02-11 04:00		32	56.8	61.6	69.7	
	S295	02-10 16:40	02-10 19:15	02-10 22:10	02-11 04:10		39.6	58.9	67	70.5	
	S296	02-10 16:45	02-10 20:05	02-10 22:00	02-11 03:50		43.3	59.4	65.6	67.1	
I-494 (EB)	S475	02-10 09:10	02-10 21:15	02-10 22:55	02-11 07:20		43.8	58.4	64.2	67.4	
	S1010	02-10 09:05	02-10 19:15	02-10 22:30	02-11 03:50		35.4	54	61	63	
	S733	02-10 17:30	02-10 19:00	02-10 22:10	02-11 07:10		44.3	63.4	67.5	70	
	S477	02-10 09:15	02-10 19:30	02-10 22:25	02-11 07:50		41.2	53.5	60.8	66.8	
	S478	02-10 10:40	02-10 20:45	02-10 22:35			39.9	57.4	65.7		
	S192	02-10 10:40	02-10 19:20	02-10 21:40	02-11 09:45		38.5	57.4	63.8	68.2	
	S194	02-10 17:30	02-10 20:55	02-10 22:35	02-11 06:50		29	59.9	66.6	64.5	
	S195	02-10 18:05	02-10 21:45	02-10 23:20	02-11 07:45		45	60.6	67.8	53.8	
	S196	02-10 18:10	02-10 20:15	02-10 22:00	02-10 22:40		40.3	50	60.2	62.7	
	S198	02-10 18:20	02-10 21:10	02-10 22:50	02-11 04:45		36.7	55.2	60.6	69.2	
	S120	02-10 18:40	02-10 21:55	02-10 23:20	02-11 05:15		32.9	52.1	59.1	62.6	
	S200	02-10 16:45	02-11 00:15	02-11 06:15	02-11 07:20		19.3	60.6	61.9	57.7	
	S201	02-10 18:40	02-10 19:50	02-10 23:20	02-11 07:00		45.8	54.8	60.4	65.3	
	S116	02-10 17:30	02-10 19:00	02-10 22:05	02-11 05:15		38.6	51.4	62.2	67.6	
I-494 (EB)/TP9M4941	S863	02-10 15:45	02-10 17:25	02-10 21:40	02-11 06:45	02-11 03:30	62.8	58	72.5	79.8	61.7
	S1198	02-10 18:00	02-10 18:35	02-10 21:50		02-11 03:30	60.3	67	76.1		65
	S1199	02-10 18:15	02-10 18:55	02-10 22:40		02-11 03:30	56.3	64.4	67		56.5
	S1201	02-10 18:15	02-10 21:00	02-11 00:30		02-11 03:30	49.7	58.5	64.6		52.8
	S1202	02-10 18:30	02-10 19:00	02-10 23:30	02-11 07:35	02-11 03:30	50.7	64.6	71	74.5	56.4
	S1203	02-10 16:50	02-10 18:05	02-10 23:00		02-11 03:30	10.5	57.8	69		58.8
	S1363	02-10 15:25	02-10 16:05	02-10 21:15	02-11 05:30	02-11 03:30	42.8	13.1	65	65.5	49.8
	S1204	02-10 17:10	02-10 18:45	02-10 21:45		02-11 03:30	24.5	63.7	72.1		64.5

Corridor/RouteID	Station	Time					Speed				
		Recovery Start	N80	N90	N100	Reported	Recovery Start	N80	N90	N100	Reported
	S1205	02-11 08:50	02-11 09:25			02-11 03:30	53.4	60.7			65.6
I-494 (EB)	S1208	02-10 17:55	02-10 19:05	02-10 23:25			56.7	62.2	70		
I-694 (EB)/TP5E0941	S134	02-10 11:15	02-10 20:25	02-11 00:50	02-11 05:00	02-11 02:00	42.4	53.8	62.8	70.8	59.9
	S142	02-10 18:15	02-10 19:45	02-10 22:20	02-11 04:20	02-11 02:00	47.1	54.4	61.9	66.2	52.8
I-694 (EB)/TP5E6941	S145	02-10 18:25	02-10 19:25	02-10 22:45	02-11 05:30	02-11 01:45	48.4	56.6	58.6	67.6	54
	S147	02-10 11:05	02-10 20:20	02-10 23:00	02-11 07:30	02-11 01:45	18.1	55.3	60.5	61.5	58.4
	S163	02-10 18:50	02-10 20:35	02-10 21:55	02-11 05:35	02-11 01:45	49	59.3	66.9	72.8	61.1
	S165	02-10 17:25	02-10 20:35	02-10 22:20	02-11 05:25	02-11 01:45	40.4	60.4	64.6	71.5	60.9
	S166	02-10 17:20	02-10 17:55	02-10 21:45	02-10 23:25	02-11 01:45	46.2	55.7	69	73.9	68.8
	S173	02-10 11:15	02-10 21:35	02-10 23:10	02-11 07:25	02-11 01:45	33.8	59.4	65.8	64.4	60
	S203	02-10 11:25	02-10 21:20	02-10 22:45	02-11 07:50	02-11 01:45	33.1	53.6	61.6	56.5	60.7
	S1074	02-10 18:35	02-10 21:25	02-10 22:40	02-11 07:45	02-11 01:45	51.8	55.2	62.4	57.5	57.6
I-694 (EB)/TP9F6941	S1080	02-10 18:45	02-10 20:15	02-10 20:55	02-10 21:55	02-11 03:15	51	57.4	70.5	74.6	65.4
I-694 (EB)	S1455	02-10 16:20	02-10 18:35	02-10 22:00	02-11 07:00		28	62.9	68.9	74.5	
	S1393	02-10 15:50	02-10 16:05	02-10 22:05	02-11 06:35		42.9	34.2	73.2	73.2	
	S1394	02-10 16:10	02-10 16:55	02-10 22:05	02-11 06:05		44.6	32	68.8	75	
	S1399	02-10 10:00	02-10 12:00	02-10 13:20	02-11 06:20		50.8	56	64	71.8	
	S1402	02-10 19:30	02-10 21:30	02-10 22:15	02-11 06:25		52.2	57.8	65.7	68	
	S1405	02-10 18:10	02-10 20:15	02-10 22:25	02-11 06:10		42.4	55.4	67	71.1	
	S1406	02-10 18:05	02-10 20:15	02-10 22:10	02-11 06:55		54.7	62.6	74.7	74	
	S1028	02-10 19:40	02-10 21:05	02-10 22:25	02-11 07:20		52.5	61.4	70.5	57.5	
T.H.5 (EB)	S861	02-10 09:10	02-10 10:35	02-10 12:00	02-11 08:20		40.8	56.3	62.8	65.9	
I-494 (WB)	S1031	02-10 11:20	02-10 11:30	02-10 12:30	02-11 08:05		55.1	56.7	66.9	70	
	S1032	02-10 15:50	02-10 16:10	02-10 23:10	02-11 08:10		54.7	52.7	66	61.4	
I-494 (WB)/TP9M4941	S1035	02-11 06:55	02-11 07:25	02-11 08:25		02-11 03:30	30.6	29.2	56		65.9
	S1184	02-10 11:10	02-10 12:00	02-10 13:05	02-10 22:40	02-11 03:30	49.6	54.7	60.6	63.5	68.7
	S1187	02-10 11:05	02-10 12:05	02-10 13:25	02-11 07:25	02-11 03:30	49.8	54	60.6	60.1	62.7
	S1190	02-10 11:10	02-10 11:45	02-10 13:10	02-11 07:05	02-11 03:30	54.2	56.1	66.3	65.7	63
	S1192	02-10 09:30	02-10 11:25	02-10 12:45	02-11 06:45	02-11 03:30	52.4	56.5	65.3	60.7	62.6
I-494 (WB)	S506	02-10 15:45	02-10 16:25	02-10 21:50			42.5	54.3	64.9		
	S507	02-10 15:40	02-10 16:20	02-10 21:50			46.4	42.1	60.5		
	S1818	02-10 17:45	02-10 19:00	02-10 22:40			45.3	53.1	60.7		
	S115	02-10 15:45	02-10 18:10	02-10 20:15	02-10 22:05		48.9	51.7	59	66.7	
	S182	02-10 17:35	02-10 18:10	02-10 21:40	02-11 09:10		49.1	50.8	56.8	57.7	
	S183	02-10 21:00	02-11 00:10	02-11 03:40			53.7	59.8	57.9		
	S188	02-10 17:05	02-10 20:45	02-10 23:10			23.4	61.1	65.2		

Corridor/RouteID	Station	Time					Speed				
		Recovery Start	N80	N90	N100	Reported	Recovery Start	N80	N90	N100	Reported
	S1011	02-10 17:50	02-10 20:25	02-10 21:50	02-11 07:50		34.2	60.9	71.1	58.1	
	S480	02-10 17:55	02-10 20:35	02-10 22:10			43.2	58.1	62.4		
	S1009	02-10 18:45	02-10 21:40	02-11 01:05			49.3	58.7	61.7		
	S483	02-10 18:15	02-10 20:55	02-10 22:05			51.5	59.1	66.4		
	S487	02-10 15:55	02-10 20:35	02-10 22:00			44.7	55.7	65.4		
	S488	02-10 15:35	02-10 16:15	02-10 21:05			49.2	52.9	69		
	S511	02-10 17:20	02-10 18:35	02-10 22:00	02-11 07:40		50.3	60.8	70.4	74.8	
	S512	02-10 16:50	02-10 21:05	02-10 22:35			36.7	61.7	69.2		
I-494 (WB)/TP5C4941	S513	02-10 16:05	02-10 18:40	02-10 21:35	02-11 08:25		22.5	59.4	66.8	60.1	
	S515	02-10 15:35	02-10 19:45	02-10 21:50	02-11 08:10		39.5	59.6	68.2	58	
	S516	02-10 15:25	02-10 19:30	02-10 21:50	02-11 07:35		42.6	60	68.6	55	
	S517	02-10 17:50	02-10 19:35	02-10 21:50	02-11 07:45		50.6	57.3	67.8	66.2	
	S518	02-10 16:25	02-10 19:00	02-10 21:45	02-11 07:05		51.7	56	65.8	69.2	
	S718	02-10 16:45	02-10 18:45	02-10 21:30	02-11 07:45		48	56	62.1	67.5	
	S719	02-10 16:50	02-10 19:10	02-10 21:40	02-11 07:25		44.3	57.1	62.2	65.2	
	S720	02-10 17:05	02-10 18:55	02-10 22:00			44.9	54.2	61.2		
	S721	02-10 17:10	02-10 18:55	02-10 22:00			42.1	53	60.7		
	S723	02-11 02:10	02-11 03:10	02-11 03:40	02-11 07:20		29	57.8	62	70.1	
I-394 (WB)/TP5H3941	S287	02-10 17:00	02-10 17:20	02-10 21:55	02-11 10:25		38.2	43.1	54.4	65	
	S285	02-10 11:00	02-10 11:30	02-10 13:00	02-11 07:50		46.5	49.5	56.8	52.9	
	S283	02-10 10:55	02-10 11:35	02-10 13:05	02-11 07:50		44.9	50.2	57.7	56.7	
	S319	02-10 10:55	02-10 11:25	02-10 12:35	02-11 07:25		46.5	52	57.2	52.4	
I-394 (WB)/TP5C3941	S320	02-10 10:50	02-10 11:05	02-10 12:15	02-11 07:20		48.2	52.8	61.5	54.7	
	S321	02-10 11:00	02-10 11:15	02-10 19:50			47	50.8	57.7		
	S336	02-10 17:30	02-10 18:25	02-10 22:15			41.4	51.2	60		
	S337	02-10 16:50	02-10 19:25	02-10 23:00			34	52.6	58.7		
	S340	02-10 16:15	02-10 17:10	02-10 21:45	02-11 10:05		33.5	44.9	55.6	61.9	
	S341	02-10 16:05	02-10 18:05	02-10 22:30			35.3	52.1	59.5		
	S342	02-10 16:05	02-10 18:05	02-10 22:20	02-11 08:55		38.1	53.4	59	66.2	
	S344	02-10 16:50	02-10 17:50	02-10 21:20	02-11 07:55		34.8	48.2	55.4	61	
T.H.52 (NB)	S1176	02-10 09:40	02-10 10:00	02-10 12:40			48.4	54.3	64.4		
	S1177	02-10 09:35	02-10 10:15	02-10 12:55			46.3	58.1	58.1		
T.H.55 (EB)	S519	02-10 15:50	02-10 18:10	02-10 21:15	02-11 05:40		41.2	46.2	60.7	67.9	
I-35E (SB)/TP9B35E1	S1541	02-10 09:55	02-10 10:30	02-10 14:05	02-11 07:50	02-11 04:00	57.8	60.7	69.8	69.7	73.1
	S1542	02-10 09:55	02-10 10:25	02-10 13:50	02-11 07:20	02-11 04:00	59.7	60.4	68.3	67.6	75.6
	S1543	02-10 18:35	02-10 19:15	02-10 20:40	02-11 07:15	02-11 04:00	62	66	75.3	71.8	79.9

Corridor/RouteID	Station	Time					Speed				
		Recovery Start	N80	N90	N100	Reported	Recovery Start	N80	N90	N100	Reported
	S1544	02-10 09:40	02-10 10:25	02-10 13:55	02-11 07:10	02-11 04:00	50.8	60.7	69.8	52.9	74.4
	S1545	02-10 09:45	02-10 12:55	02-10 14:15	02-11 07:10	02-11 04:00	55	59.6	68.9	56.1	73
	S1546	02-10 09:45	02-10 10:20	02-10 13:40	02-11 07:10	02-11 04:00	55.4	61.9	70.6	47.7	74.3
	S1548	02-11 06:35	02-11 07:05	02-11 07:30	02-11 09:00	02-11 04:00	42.5	62.6	70.2	76.9	75.4
I-35E (SB)/TP9F35E1	S1464	02-10 11:15	02-10 12:05	02-10 13:25	02-11 06:00	02-11 03:15	45.2	52.4	58.3	61.3	60.3
	ST3502	02-10 17:55	02-10 18:35	02-10 22:30	02-11 08:00	02-11 03:15	49.1	50.5	55.4	42.9	58.2
	ST3505	02-10 09:45	02-10 10:20	02-10 12:25	02-11 09:00	02-11 03:15	39.9	50.2	55.7	58.1	56.9
	ST3506	02-11 07:05	02-11 07:30	02-11 09:00		02-11 03:15	33.9	22.7	53.5		59.9
I-35E (SB)	S850	02-10 16:15	02-10 17:40	02-10 22:25			23.9	58.2	67.2		
	S852	02-10 16:00	02-10 17:50	02-10 21:40	02-11 04:05		36.3	52	60.9	71.8	
	S853	02-10 20:35	02-10 21:00	02-10 22:00			51.2	56.2	62.4		
	S855	02-10 10:40	02-10 11:00	02-10 11:45	02-10 22:55		53.1	50.3	63.2	68.2	
	S890	02-10 15:20	02-10 15:40	02-10 21:45			52.9	54.9	67.9		
I-35E (SB)/TP9P35E1	S899	02-10 15:20	02-10 16:10	02-10 21:55		02-10 16:30	55.4	29.8	67.6		53.2
	S900	02-10 15:25	02-10 16:10	02-10 21:45		02-10 16:30	52.9	43.4	66.1		55
	S905	02-10 18:25	02-10 19:20	02-11 05:50		02-10 16:30	62.3	60.5	65.6		16.9
I-94 (EB)	S1740	02-10 18:30	02-10 19:10	02-10 22:55			54.1	59.1	64.8		
I-94 (EB)/TP5B0941	S1741	02-10 18:30	02-10 19:00	02-10 21:25		02-11 00:00	54.5	60.3	66.6		65.3
	S1116	02-10 09:25	02-10 12:50	02-10 15:40	02-11 03:10	02-11 00:00	49.6	59	66.4	72.8	66.3
	S1117	02-10 09:15	02-10 12:20	02-10 15:25	02-11 03:15	02-11 00:00	51.6	62.7	70.1	74.2	66.5
	S1118	02-10 10:30	02-10 12:00	02-10 13:15	02-11 02:30	02-11 00:00	50.1	61.9	72.7	72.6	68
	S1122	02-10 19:05	02-10 19:35	02-10 21:55	02-11 04:20	02-11 00:00	62.9	62.8	73.4	78.2	65.7
	S205	02-10 19:00	02-10 19:15	02-10 21:55	02-11 02:40	02-11 00:00	65.6	67.1	74.7	72.8	69.2
	S207	02-10 18:50	02-10 19:15	02-10 22:40	02-11 04:20	02-11 00:00	64.5	64.5	73.6	81.7	74.3
	S211	02-10 18:40	02-10 19:20	02-10 22:30	02-11 06:45	02-11 00:00	53.1	62	66.4	65.7	68.2
	S219	02-10 17:00	02-10 19:50	02-10 22:55	02-11 04:15	02-11 00:00	54.4	65.8	70.8	75.9	75.8
	S223	02-10 21:45	02-10 22:30	02-10 23:10	02-11 04:10	02-11 00:00	55	66.2	75.6	77.6	78.2
	S225	02-10 17:05	02-10 17:30	02-10 23:00	02-11 04:45	02-11 00:00	51.8	59.6	71	76.5	74.7
I-94 (EB)/TP5E0941	S229	02-10 17:15	02-10 18:20	02-10 23:00	02-11 03:55	02-11 02:00	51.8	64.5	72.5	72.1	65.4
	S231	02-10 18:35	02-10 20:00	02-10 23:25	02-11 06:10	02-11 02:00	60.2	65.5	72.5	83	62.5
	S130	02-10 17:15	02-10 19:10	02-10 22:55	02-11 04:15	02-11 02:00	56.6	62.1	72.9	75.9	64.3
	S235	02-10 17:45	02-10 19:25	02-11 00:45		02-11 02:00	50.4	54	59.4		54.5
I-94 (EB)/TP5H0941	S240	02-10 18:45	02-10 19:15	02-10 22:30	02-11 07:00		52	52.2	60.2	54.1	
	S244	02-10 18:55	02-10 19:05	02-10 22:30	02-11 06:40		49.8	50.7	58.7	60.3	
	S135	02-10 18:50	02-10 20:45	02-10 23:00	02-11 07:05		50.9	56	61.8	60.5	
	S246	02-10 11:05	02-10 12:40	02-10 22:05	02-11 07:10		46.4	53	58	56.5	

Corridor/RouteID	Station	Time					Speed				
		Recovery Start	N80	N90	N100	Reported	Recovery Start	N80	N90	N100	Reported
I-94 (EB)	S465	02-10 16:15	02-10 19:50	02-10 22:15			37.3	46.9	52.1		
	S554	02-10 15:45	02-10 17:20	02-10 22:20	02-11 06:40		39.2	37.8	50.7	58.7	
	S466	02-10 17:10	02-10 20:45	02-10 23:00			34	56.5	64		
	S467	02-10 15:30	02-10 18:00	02-10 22:10	02-11 07:00		39.7	54.2	62	64.8	
	S775	02-10 11:05	02-10 12:10	02-10 14:10	02-10 23:35		45.5	53.2	58.4	65	
	S468	02-10 20:20	02-10 21:15	02-10 22:50			53.4	55.7	63.6		
	S1814	02-10 17:15	02-10 21:45	02-10 22:55			27.4	44.5	51.9		
	S469	02-10 17:15	02-10 19:55	02-10 22:20			35.3	51.3	57.5		
	S776	02-10 17:15	02-10 21:10	02-10 23:00	02-11 04:20		36.8	51	58.7	57.3	
	S1815	02-10 16:15	02-10 19:10	02-10 21:45	02-10 22:55		27.7	43	49.9	54	
	S479	02-10 16:15	02-10 19:40	02-10 22:05	02-11 04:25		34	51.3	56.7	59	
	S489	02-10 16:45	02-10 19:15	02-10 21:40	02-11 04:40		11.7	50.5	57.3	61.6	
	S778	02-10 16:45	02-10 19:30	02-10 22:05			16.4	53.2	58.5		
	S490	02-10 16:00	02-10 20:55	02-10 22:15	02-11 08:30		14.8	52.4	60.9	64.5	
	S491	02-10 20:20	02-10 21:05	02-11 01:10			46.3	49.1	54		
	S499	02-10 20:20	02-10 21:20	02-11 03:40			46.4	50.1	54.3		
	S509	02-10 19:50	02-10 20:45	02-10 22:05			45.1	47.5	56.2		
I-94 (EB)/TP9F0941	S779	02-10 16:05	02-10 17:40	02-10 21:30	02-10 23:50	02-11 03:15	25.9	24.6	54.2	60.5	51.5
	S780	02-10 17:35	02-10 19:40	02-10 22:00		02-11 03:15	34.4	44.7	50.8		46.1
	S781	02-10 15:55	02-10 16:45	02-10 22:00	02-11 04:45	02-11 03:15	40.2	36.5	58.7	58.6	54.1
	S1042	02-10 18:10	02-10 19:30	02-10 21:55	02-11 04:30	02-11 03:15	46.6	55.4	62.2	65.5	58.7
I-94 (WB)/TP9K0941	S1066	02-10 20:30	02-10 21:55	02-10 22:50	02-11 07:10	02-11 04:00	58.8	61.2	62.4	60.1	61.4
I-94 (WB)/TP9F0941	S790	02-10 17:25	02-10 19:50	02-10 21:30		02-11 03:15	38.1	46.5	52.3		55.1
I-94 (WB)	S97	02-10 09:35	02-10 11:45	02-10 21:50			38	46.3	52.5		
	S788	02-11 07:50	02-11 08:25	02-11 08:55			21.2	24.5	56.5		
	S548	02-11 07:45	02-11 08:25	02-11 09:00			22.2	22.2	60.8		
	S787	02-10 18:15	02-10 20:10	02-10 22:35			52.2	58.1	65.6		
	S1808	02-11 07:50	02-11 08:40	02-11 09:20			29.1	29.5	51.1		
	S549	02-11 08:00	02-11 08:30	02-11 09:10			47	44.5	61		
	S786	02-11 07:55	02-11 08:25	02-11 09:30			30.2	46.7	61.6		
	S1809	02-10 18:15	02-10 20:55	02-10 21:50	02-10 22:35		41.8	48.2	52.4	56.9	
	S550	02-10 15:50	02-10 16:20	02-10 21:50			42.5	52.5	59.4		
	S555	02-10 20:20	02-10 21:10	02-10 21:55	02-11 08:00		45.9	48.6	54.9	51.9	
	S561	02-10 19:10	02-10 20:20	02-10 21:45	02-10 23:20		42.9	47.7	55.4	59.7	
	S559	02-10 17:00	02-10 21:05	02-10 22:00			18.7	45.3	51.7		
	S560	02-10 17:10	02-10 20:50	02-10 21:40			15.4	39.8	51.4		

Corridor/RouteID	Station	Time					Speed				
		Recovery Start	N80	N90	N100	Reported	Recovery Start	N80	N90	N100	Reported
	S76	02-10 20:50	02-10 21:05	02-10 21:55			37.1	42.6	52.6		
	S89	02-10 10:50	02-10 12:10	02-10 21:50			35.9	42.9	51.2		
I-94 (WB)/TP5H0941	S251	02-10 11:00	02-10 12:55	02-10 23:10			47.5	53.5	66.2		
	S249	02-10 11:10	02-10 12:20	02-10 13:35			48.1	56	62.4		
	S247	02-10 17:05	02-10 17:35	02-10 22:05			41.3	49.5	61.1		
	S126	02-10 21:10	02-10 21:20	02-11 06:15	02-11 07:55		54.2	58.1	69.4	74.8	
	S243	02-10 15:40	02-10 17:30	02-10 22:30	02-11 10:20		50.1	50.1	64.6	73.1	
	S241	02-10 18:40	02-10 21:55	02-11 03:05			48.2	58.2	59		
I-94 (WB)/TP5E0941	S128	02-10 17:25	02-10 18:15	02-10 22:10		02-11 02:00	47.3	59.7	66.9		59
	S234	02-10 17:30	02-10 17:50	02-10 22:00	02-11 05:20	02-11 02:00	63.9	65.5	77.9	80.8	64.7
	S129	02-10 17:20	02-10 20:45	02-10 22:15		02-11 02:00	42.7	63.2	72.6		57
	S232	02-10 17:30	02-10 21:00	02-10 22:45		02-11 02:00	49.2	65.4	72.9		58.3
	S230	02-10 17:15	02-10 18:35	02-10 22:10		02-11 02:00	45.1	64.1	74.1		57.9
I-94 (WB)/TP5B0941	S224	02-10 17:05	02-10 18:45	02-10 23:00		02-11 00:00	53.5	68.3	76		78
	S220	02-10 21:05	02-10 21:30	02-10 23:05		02-11 00:00	53.9	65.9	71.1		71.1
	S218	02-10 21:15	02-10 21:50	02-10 22:20	02-11 00:30	02-11 00:00	50.6	55.9	65.5	66.9	66.5
	S216	02-10 21:15	02-10 23:05			02-11 00:00	35.5	64.3			68.3
	S213	02-10 21:25	02-10 22:15	02-10 23:30		02-11 00:00	66	71.4	74.7		74.9
	S208	02-10 16:55	02-10 17:45	02-10 22:20		02-11 00:00	46.9	58.1	75		72.5
	S206	02-10 16:55	02-10 17:30	02-10 22:40		02-11 00:00	50.9	57.7	72.4		73.8
	S1106	02-10 09:40	02-10 12:40	02-10 15:25		02-11 00:00	54.3	67.4	67.9		78.9
	S1107	02-10 16:55	02-10 17:20	02-10 23:40		02-11 00:00	56.4	62	73.3		74.2
	S1108	02-10 19:10	02-10 20:25	02-10 23:30		02-11 00:00	65.9	68.2	72.6		73.9
	S1109	02-10 19:00	02-10 20:20	02-10 23:20		02-11 00:00	67.2	68.4	76.9		76.5
	S1110	02-10 10:20	02-10 12:50	02-10 14:05		02-11 00:00	57.8	65.6	74.3		75.5