

Winter Maintenance Program

Winter 2016-2017

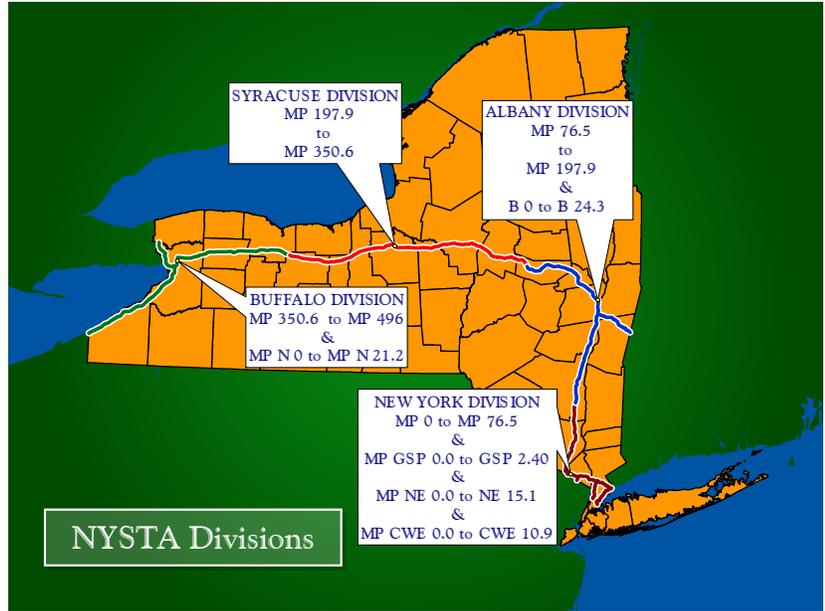


OVERVIEW

Each fall the New York State Thruway Authority (Authority) implements its aggressive winter maintenance program. This program is guided by the Authority's Winter Maintenance Manual, which outlines procedures, priorities and staff responsibilities. During periods of inclement winter weather the program's goal is to provide customers a roadway that is safely driveable at reasonable speeds, with the ultimate goal of returning to bare pavement as quickly as possible.

Winter preparations begin in the spring with the start of the Authority's annual preventive maintenance program on all plow trucks and winter maintenance equipment. Further preparations include renewing or establishing salt contracts, procuring needed equipment and supplies, and ensuring a trained and adequately staffed workforce.

The Authority's four Divisions: New York, Albany, Syracuse and Buffalo are tasked with the operational response to winter weather events. Each of the Authority's 21 maintenance locations is responsible for snow and ice operations over approximately 30 centerline miles of roadway, as well as the accompanying interchanges, service areas and related facilities. Attachments A through D illustrate the Authority's maintenance locations, salt shed locations and capacities, and plow truck distribution. Operations are set to achieve approximately one hour cycle times for plowing and spreading the roadway, although this can vary substantially due to traffic, weather and other factors.



STAFFING

In the fall the Authority issues a Maintenance Directive outlining operational guidelines and the staffing schedule for equipment operators and supervisors in the four Divisions. Typically starting in early November all maintenance locations are staffed 24 hours per day during the week with at least three equipment operators per shift. Staffing is gradually increased until the fully staffed portion of the winter begins in early December. At that point, each location has equipment operators scheduled 24/7, including holidays. A supervisor is scheduled on each shift during the week and the extent of weekend coverage is determined by the weather forecast.

When inclement weather is forecast or occurring, additional staff are scheduled, held over or called in to provide the necessary response. The decision making authority regarding overtime assignment is given to local supervision under the general direction of each division maintenance engineer. The 24/7 staffing of equipment operators allows the Authority to be proactive in responding to both predicted and unforeseen weather events.

In early March, scheduled staffing is scaled back to 5 days a week, 24 hours per day. From that point, staffing is gradually reduced until the end of winter maintenance around the beginning of April.



MATERIALS

The Authority's primary defense to fight roadway icing is rock salt. The average annual usage for the past ten years is approximately 166,262 tons. The Authority's 39 storage locations provide for the secure covered storage of 129,650 tons of salt. Sheds are filled prior to the start of winter and salt is reordered as usage occurs throughout the season. With Statewide salt contracts in place and timely ordering to replenish stockpiles, adequate salt supplies are guaranteed absent the most severe of winters.

In addition to rock salt, the Authority utilizes straight salt brine and a magnesium chloride-brine mixture in both an anti-icing application and as a pre-treatment for the rock salt. Magnesium chloride is utilized to improve effectiveness at lower temperatures.

EQUIPMENT

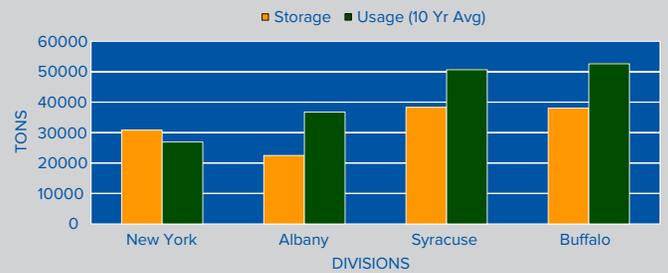
In addition to the 206 large plow trucks listed in Attachment D, each location also has a complement of smaller plow trucks, and other ancillary equipment such as front-end loaders and skid steer mounted snowblowers. Every piece of equipment undergoes a thorough preventive maintenance service between each winter season. These efforts are generally completed by late October. By the start of the winter schedule all material spreaders are mounted on trucks and calibration for proper salt application rates is complete.



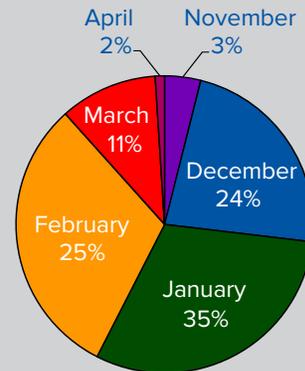
The Authority owns three large truck mounted snowblowers and three high capacity loader mounted snowblowers. These units are stationed strategically across the system and relocated as forecasts and conditions dictate. In addition, there are 22 smaller skid steer/tractor mounted snowblowers that are used for more routine snow removal needs.



Average Annual Authority Salt Usage vs. Storage Capacity



Average Annual Salt Usage by Month (10 Yr Avg)



Thruway Winter Facts

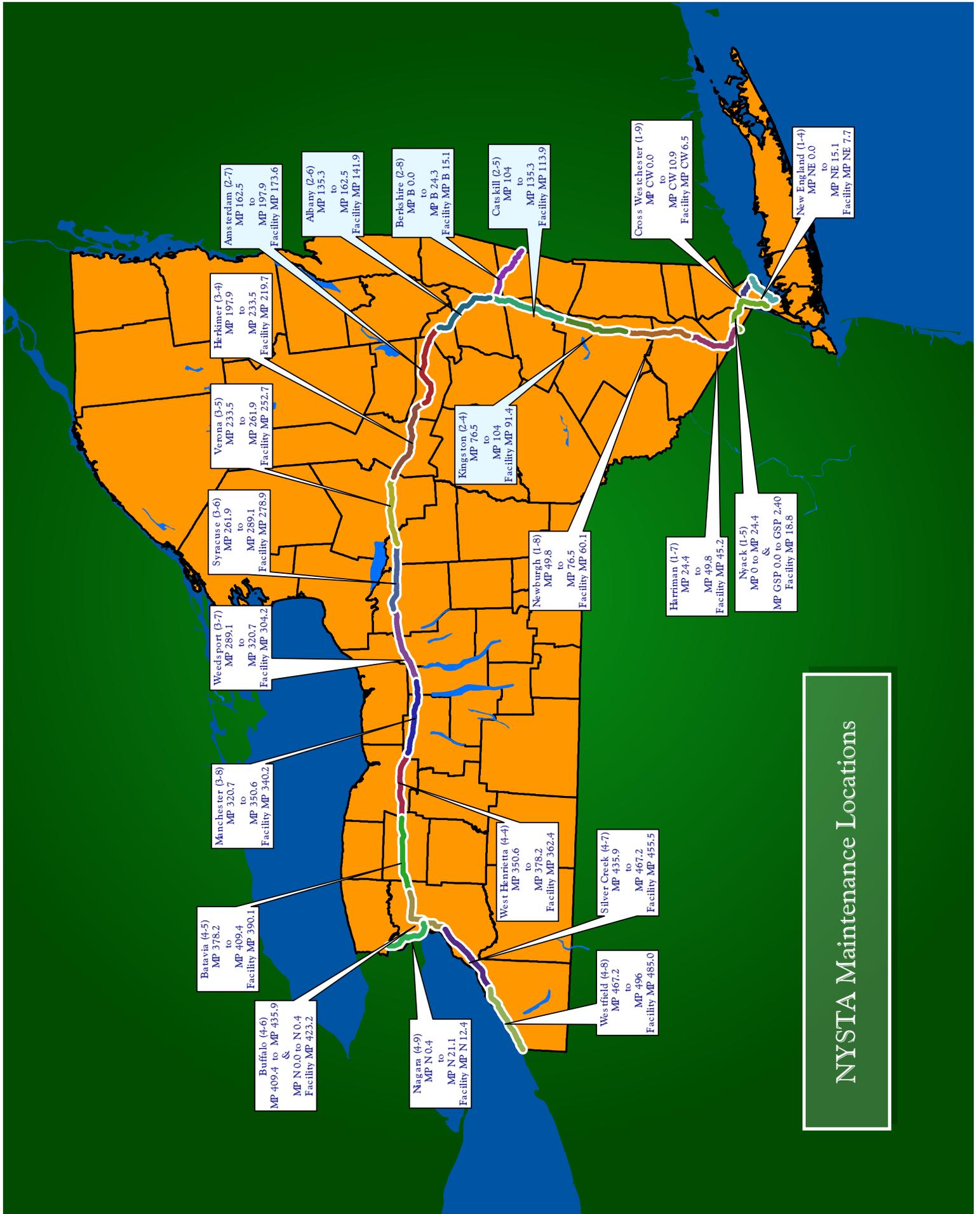
2,834 Lane Miles of Pavement
 132 Interchanges
 27 Service Areas
 206 Plow Trucks
 54 Front-end Loaders
 24/7 Staffing December - February

TECHNOLOGY AND INNOVATION

The Authority implements the following to improve snow and ice operations:

- Equip all large plow trucks with a computerized salt application controller that enables consistent material application rates regardless of vehicle speed
- Install GPS "route tracking" system in all snow and ice control vehicles to provide greater situational awareness
- Pre-treat rock salt with liquid de-icers to enhance performance
- Pre-treat roadways (anti-icing) to get ahead of winter weather
- Equip all plow trucks and supervisor vehicles with on-board pavement temperature sensors that enable smarter treatment decisions
- Deploy tow plow which enables single plow trucks to plow and treat two lanes at a time
- Provide supervisors and managers desktop and mobile access to remote weather stations that provide pavement and air temperature along the Thruway system
- Use of CCTV cameras at interchanges and other key locations providing real-time operational assessments
- Use of rubber encapsulated carbide plow blades that better conform to road surfaces increasing snow removal efficiency, reducing vibration and noise which lessens driver fatigue as well as wear & tear on the equipment

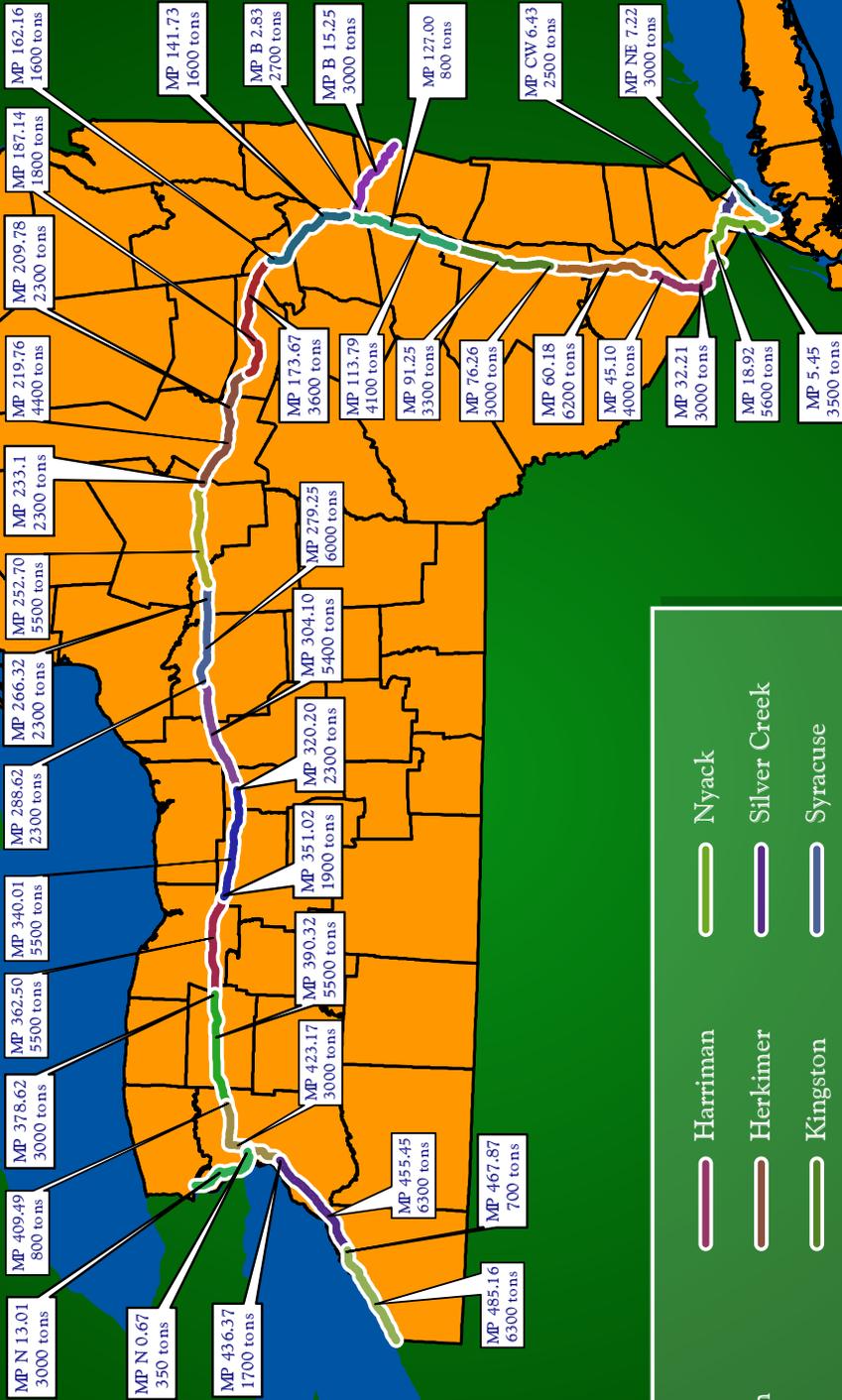
ATTACHMENT A



NYSTA Maintenance Locations

ATTACHMENT B

NYSTA Salt Storage Locations
129,650 Tons Total Capacity



Legend

Albany	Harriman	Nyack
Amsterdam	Herkimer	Silver Creek
Batavia	Kingston	Syracuse
Berkshire	Manchester	Verona
Buffalo	New England	Weedsport
Catskill	Newburgh	West Henrietta
Cross Westchester	Niagara	Westfield

ATTACHMENT C

NEW YORK STATE THRUWAY AUTHORITY SALT SHEDS

Section	Milepost	Location	Approx. SHED Capacity
NEW YORK DIVISION			
1-4	I-95 7.22	New England (Larchmont)	3,000
1-5	18.92	Nyack	5,600
1-5	5.45	Yonkers	3,500
1-9	I-287 6.43	Cross Westchester	2,500
1-7	45.10	Harriman	4,000
1-7	32.21	Sloatsburg	3,000
1-8	60.18	Newburgh	6,200
1-8	76.26	New Paltz	3,000
NEW YORK DIVISION TOTAL			30,800
ALBANY DIVISION			
2-4	91.25	Kingston	3,300
2-5	113.79	Catskill	4,100
2-5	127.0	Catskill	800
2-6	141.73	Albany	1,600
2-6	162.16	Rotterdam	1,600
2-7	173.67	Amsterdam	3,600
2-7	187.14	Randall	1,800
2-8	B 15.25	Berkshire (Old Chatham)	3,000
2-8	B 2.83	Berkshire (Schodack)	2,700
ALBANY DIVISION TOTAL			22,500
SYRACUSE DIVISION			
3-4	209.78	Little Falls	2,300
3-4	219.76	Herkimer	4,400
3-5	233.10	Utica	2,300
3-5	252.70	Verona	5,500
3-6	266.32	Chittenango	2,300
3-6	279.25	Syracuse	5,400
3-6	288.62	State Fair	2,300
3-7	304.10	Weedsport	5,400
3-7	320.20	Waterloo Interchange	2,300
3-8	340.01	Manchester	5,500
SYRACUSE DIVISION TOTAL			38,300
BUFFALO DIVISION			
4-4	351.02	Victor	1,900
4-4	362.50	West Henrietta	5,500
4-5	378.62	Leroy	3,000
4-5	390.32	Batavia	5,500
4-6	409.49	Newstead	800
4-6	423.17	Buffalo (Cheektowaga)	3,000
4-7	436.37	Hamburg	1,700
4-7	455.45	Silver Creek	6,300
4-8	467.87	Dunkirk	700
4-8	485.17	Westfield	6,300
4-9	I-190 0.67	Buffalo (City Line)	350
4-9	I-190 13.01	Niagara (Tonawanda)	3,000
BUFFALO DIVISION TOTAL			38,050
THRUWAY-WIDE TOTAL			129,650

ATTACHMENT D

MAINLINE PLOW TRUCKS BY MAINTENANCE LOCATION							
Location	Milepost Limits	Lane Miles	Interchange Miles	Total Section Miles	Number of Interchanges	Service Areas	7-Ton Plow Trucks
NEW YORK DIVISION SUPPORT							2
Cross Westchester	I-287 MP 0.0 - 10.9	64.44	26.30	90.74	13	0	7
Larchmont	I-95 MP 0.0 - 15.1	90.60	14.80	105.40	16	0	7
Nyack	MP 0.0 - 24.4 & MP GSP 0.0 - 2.4	163.89	27.10	190.99	18	1	13
Harriman	MP 24.4 - 49.8	143.23	23.90	167.13	4	2	11
Newburgh	MP 49.8 - 76.5	106.80	9.00	115.80	2	2	7
New York Totals		568.96	101.10	670.06	53	5	47
ALBANY DIVISION SUPPORT							1
Kingston	MP 76.5 - 104	110.00	5.30	115.30	2	2	8
Catskill	MP 104 - 135.3	125.20	5.90	131.10	4	1	7
Albany	MP 135.3 - 162.5	142.68	28.50	171.18	5	1	14
Amsterdam	MP 162.5 - 197.9	141.60	8.90	150.50	3	2	9
Berkshire	B MP 0.0 - 24.3	97.02	14.90	111.92	3	0	7
Albany Totals		616.50	63.50	680.00	17	6	46
SYRACUSE DIVISION SUPPORT							2
Herkimer	MP 197.9 - 233.5	142.40	10.00	152.40	3	3	10
Verona	MP 233.5 - 261.9	113.60	10.80	124.40	3	1	10
Syracuse	MP 261.9 - 289.1	108.80	18.10	126.90	5	2	10
Weedsport	MP 289.1 - 320.7	126.40	9.65	136.05	3	2	10
Manchester	MP 320.7 - 350.6	127.74	10.10	137.84	3	3	10
Syracuse Totals		618.94	58.65	677.59	17	11	52
BUFFALO DIVISION SUPPORT							2
Henrietta	MP 350.6 - 378.2	111.45	7.90	119.35	2	2	8
Batavia	MP 378.2 - 409.4	124.80	10.20	135.00	3	1	8
Buffalo	MP 409.4 - 435.9 & N MP 0.0 - 0.4	129.04	34.90	163.94	10	1	16
Silver Creek	MP 435.9 - 467.2	125.20	15.90	141.10	3	1	9
Westfield	MP 467.2 - 496	115.20	8.50	123.70	3	0	8
Niagara	N MP 0.4 - 21.1	96.54	26.50	123.04	24	0	10
Buffalo Totals		702.23	103.90	806.13	45	5	61
Thruway Totals		2,506.63	327.15	2,833.78	132	27	206