



DEPARTMENT OF PUBLIC WORKS
STREET MAINTENANCE DIVISION

SNOW AND ICE CONTROL PLAN

“Implement processes, procedures and activities that enable the City to efficiently maintain and preserve a multi-modal transportation network that meets the needs of all motorists, pedestrians, and bicyclists.”

OCTOBER 20, 2014

SNOW AND ICE CONTROL PLAN

PURPOSE AND NEED

The purpose of this plan is to define the operational procedures and best management practices for storing and utilizing snow and ice control materials, and for performing winter maintenance activities. It defines the levels of service the City of Flint Public Works Department, Street Maintenance Division will strive to provide at our facility and on our city streets. This plan allows for and encourages improvement in operational efficiency and providing the desired levels of service to the public.

Since storms vary dramatically and occur over a variety of paved surfaces and traffic conditions, the Snow and Ice Control Plan (SIC Plan) is intended to be a base, with changes allowed as necessary. This plan was made to fit average conditions, but is able to be adapted to a wide variety of conditions that are encountered by street maintenance crews while working to maintain safe roads.

LEVEL OF SERVICE

Department of Public Works, Street Maintenance Division's snow and ice control operations are limited by the resources (budget, personnel, equipment and materials) available for winter maintenance. Consequently, our plan calls for "safe roads, at safe speeds", not "bare roads." This means that roads are plowed, sanded, and/or salted to allow safe travel at safe speeds, but that drivers should still expect to see snow on the roadway during a storm. Most travel takes place during the day, so the majority of the Street Maintenance Division's resources are used between 4:00 a.m. to 12:00 p.m. Motorists should anticipate reduced coverage in the evenings, along with varying road conditions and should drive accordingly.

COMMUNICATION

All snow and ice calls can be directed to the Street Maintenance Division at (810) 766-7343. The Street Maintenance Division's hours of operation are first shift from 6:30 a.m. to 3:00 p.m. Monday through Friday, and a third shift from 10:00 p.m. to 6:30 a.m. Sunday through Thursday. In the event the call is placed after business hours, a voicemail can be left and the appropriate crew will be alerted. This number can be used for citizens with medical emergencies (i.e. dialysis appointments, chemotherapy appointments, etc.) that need access from their street to major roadways. Crews will do their best to address each situation.

The City of Flint Police and 911 Departments will have a Street Maintenance Stand-by List for the winter months beginning November 15, 2014 through April 30, 2015. This list will show weekly which foreman is on call (after normal working hours) and numbers to reach them. In the event the foreman is unreachable, either department may contact Betty Wideman, Transportation Operations Manager at (810) 577-8077 or at (810) 282-5852.

During snow events in which the total event accumulation is over 4 inches, City Council members will receive daily updates that will be forwarded via email through the City Clerk explaining where snow removal activities have occurred the previous day and where they plan to complete activities that day. The city also plans to issue no parking advisories during events of this size in order to clear neighborhood streets of parked cars, which inhibit the crew's ability to plow the street. A press release will also be communicated to the public through the Public Information Officer. The city intends to work with the legal department, traffic engineering, and police department to develop a no parking enforcement strategy.

PRIORITY LEVELS AND OBJECTIVES

The goal of the Street Maintenance Division during winter months is to provide a safe roadway system. Below is the priority which will be given to city streets during winter weather events. The city has been divided into 6 areas, with downtown as a separate 7th area. Crews will be deployed to all 6 areas during an event where over 4 inches of snow accumulates, so that all areas of the city will be treated at the same time. Downtown will be treated separately, with crews plowing overnight or during the early morning hours prior to parked cars and heavier traffic on the streets. The department has also set priority levels and time objectives for each type of event based on total event accumulation.

Priority 1 – Major Routes

Priority 2 – Dangerous Hills, Curves and Intersections, Schools and Hospitals

Priority 3 – Act 51 Major Roadways

Priority 4 – Local Roads

During a snow event with total accumulation of 0-2 inches, salting operations begin as streets cover with snow. This operation will consist of salting entire Priority 1-3 roadways. This is dependent upon temperatures (going up or down), time of day and/or weather conditions for the next 24 hours.

During a snow event with total accumulation of 2-4 inches, crews will begin using under-body blades to plow one lane in each direction on the Priority 1 roadways. Once this has been accomplished, crews will go back through the routes and complete the roadways. At the conclusion of the snow event, crews will deploy to Priority 2 and 3 roadways. This activity will take approximately 24 hours to complete.

During a snow event with total accumulation of 4 -8 inches, crews will begin using front plow blades and teaming trucks up in the routes to get the Priority 1 roadways cleared first. Then they will continue onto Priority 2 and 3 roadways. This work will continue throughout the duration of the storm. Once Priority Levels 1-3 have been accomplished and at the conclusion of the snow event, the crews will continue onto the Priority 4 local roads. An event this size or larger shall indicate the need to run 24-hour operations with two 12-hour shifts. This activity will take approximate 72 hours to complete all routes.

During a snow event with total accumulation of 8-12 inches, crews will deploy as stated above for events over 4 inches. This activity will take approximately 96 hours to complete.

During a snow event with total accumulation over 12 inches, crews will deploy as stated above for events over 4 inches. This activity will take approximately 120 hours to complete.

For the completion time given for each situation above, this time reflects a single event. Should plowing operations not be finished prior to the beginning of a new event, the timeline for maintenance operations shall be reset. Also, these times are reflective of the anticipated man power and equipment available to the Street Maintenance Division. Should this change, these times will be adjusted.

PERFORMANCE MEASUREMENT AND PROGRAM EFFECTIVENESS ASSESSMENT

Performance during and immediately following individual storm events will be periodically monitored to ensure that Street Maintenance is providing safe roads at safe speeds and performing snow and ice removal in accordance with the established priorities as listed above. To monitor performance, the following information, will be reviewed by the Transportation Operations Manager and the Director of Transportation annually to gauge the effectiveness of the program:

- Material usage (salt or sand/salt)
- Condition of travel lanes during and after snow events
- Storm data (precipitations, air temperature, road surface temperature, wind speed, etc.)
- Plowing frequency
- Time required to complete snow event

Overall performance during and following the winter season will be measured by monitoring material usage, labor costs, and equipment costs with respect to the number of lane miles maintained and the number of storm events addressed. Assessments will be made based upon consideration of the resources used versus the winter severity encountered.

MATERIALS AND APPLICATION PROCEDURES

The materials in this section are those that are used by the Street Maintenance Division for snow and ice control on trunklines, majors and local streets within the City of Flint. This section describes the general purpose of each material, the typical use that is expected under normal conditions, and the application procedure. Choice of materials will depend on experienced consideration of the following variables: pavement temperature; nature of the particular snow and ice event; forecasted storm conditions; air temperature and wind velocity; traffic volume; time of day/year; and the availability of resources.

Salt (NaCl)

Salt is the primary material used on the roadways within the City of Flint. Salt is used to prevent the bonding of snow and ice onto the pavement surface, and to melt snow and ice that cannot be removed by plowing. Unless salt is pre-wetted with a liquid having a lower working temperature than sodium chloride, the lowest working temperature is approximately 15 degrees F (Fahrenheit). The city is evaluating the effectiveness of using pre-wetted salt. Pre-wetting helps the salt adhere to the surface and go to work faster at melting snow and ice.

Application rates shall normally be selected from the attached “MDOT Winter Maintenance Application Rates: (Solids)” (Appendix A) and shall be based upon the pavement temperature, snow-ice conditions encountered, and anticipated trends. Initial applications should be normally 25%

higher than the average rate indicated by the chart. Generally, salt will be used when the pavement temperatures are 15 degrees F or higher. When pavement temperatures are less than 15 degrees F and not rising, winter sand may be used when necessary for temporary traction. During cold storms, when the pavements are dry and the snow is blowing off the travel lanes, the application of salt or winter sand is to be avoided for as long as possible since it will hasten the formation of ice on the pavement.

Winter Sand

Winter sand shall consist of coarse, clean, sharp sand or other granular material. Sand is generally used to provide traction at intersections and corners during icy conditions. When conditions warrant, salt may be mixed with sand to break the bond between the ice pack and road surface.

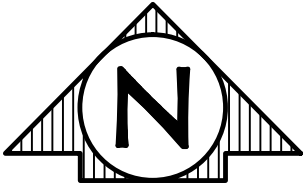
Sand should be generally used in the following situations:

- On hills, curves and intersections where the supervisor determines that temporary traction is necessary.
- In situations where salt cannot work fast enough (i.e. accident scenes involving excessive ice)
- When pavement temperatures are too low for salt to work properly
- When wet pavements exist on lower-volume streets and night-time temperatures may cause glazing

UPDATES FOR THIS WINTER SEASON

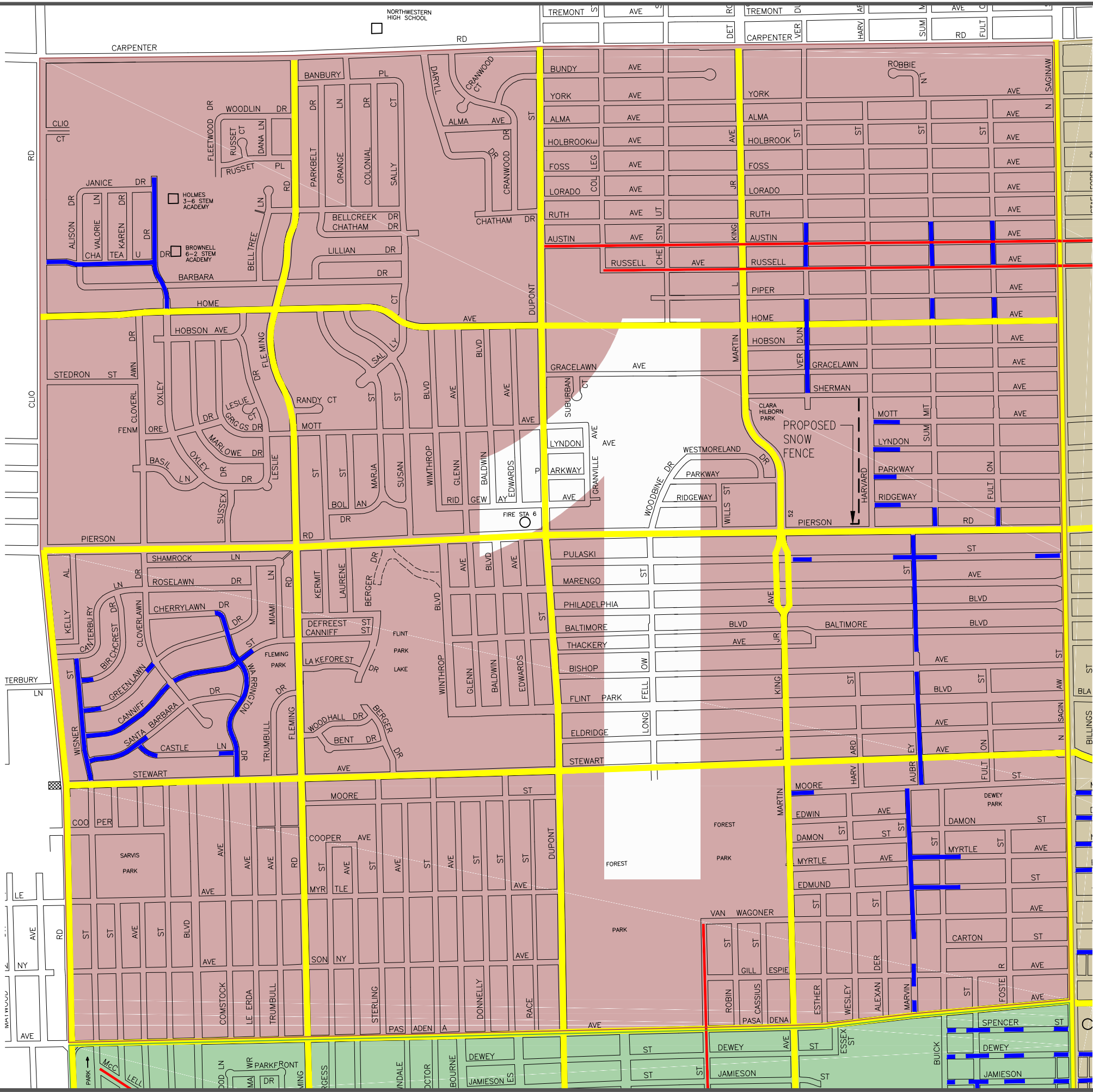
The Department of Public Works, Street Maintenance Division plans to implement new technology and procedures this coming winter. The maps used to deploy crews have been combined to create 6 areas, with downtown as a separate 7th area. The Primary and Secondary Major roads have been redefined based on bus routes, school locations, and traffic volumes. To better evaluate the effectiveness of the new maps, the city will employ GPS receivers in each vehicle which will gather data that can be reviewed after each event or at the end of the season to determine efficiencies lost or gained. Temperature gages are being purchased this season to make available the ambient air temperature, which affects the use of salt. Snow fence will be placed in three known problematic snow drift areas, and if found effective, additional areas may be considered next season. This plan is intended for review each season and updates made to continue to provide the citizens of the City of Flint with the best winter maintenance services possible.

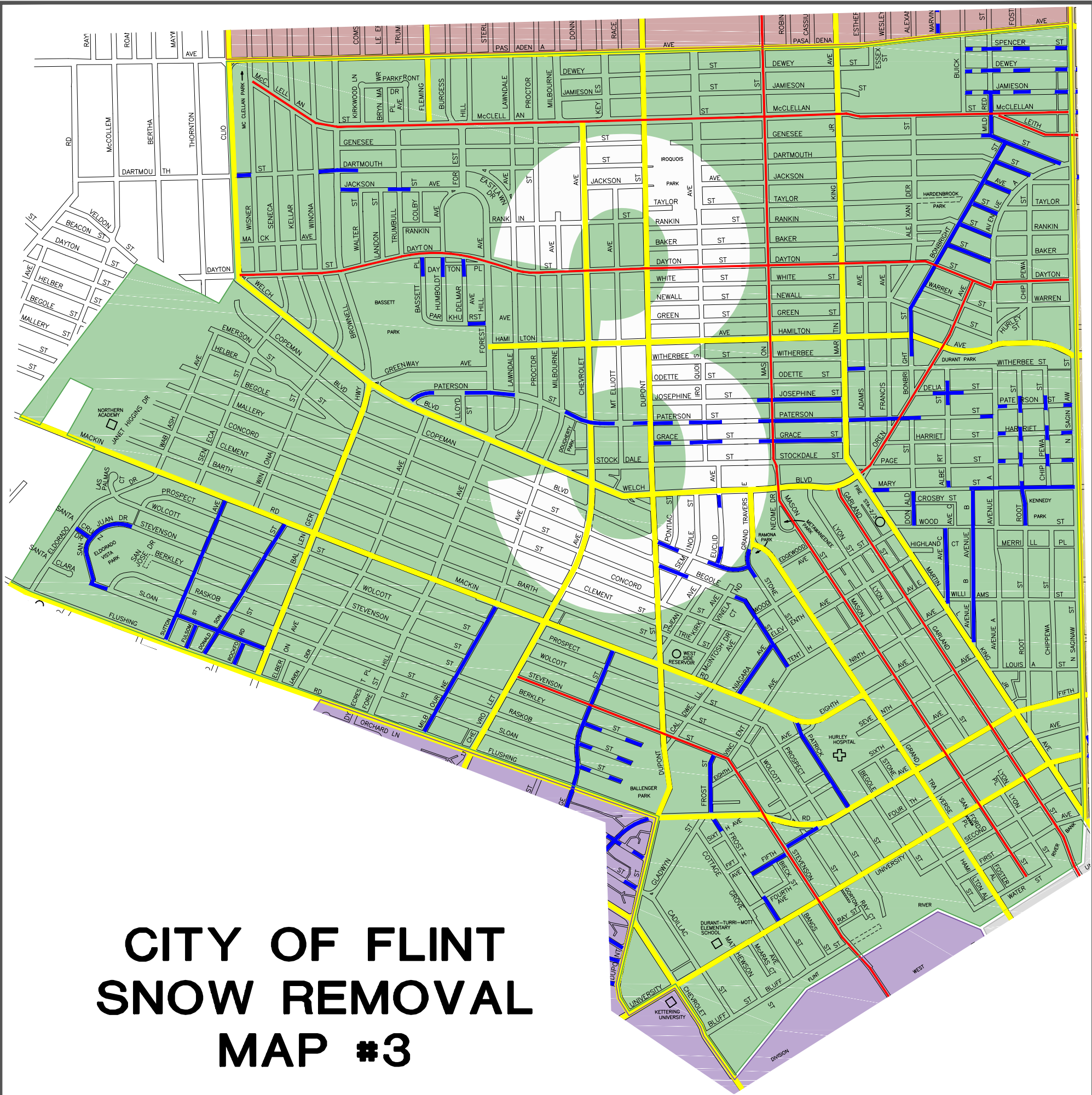
CITY OF FLINT SNOW REMOVAL MAP #1



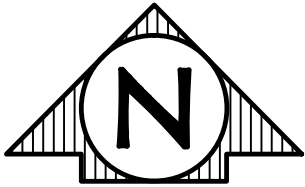
LEGEND

- PRIORITY 1
- PRIORITY 2
- PRIORITY 3



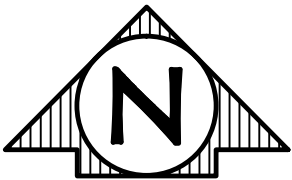
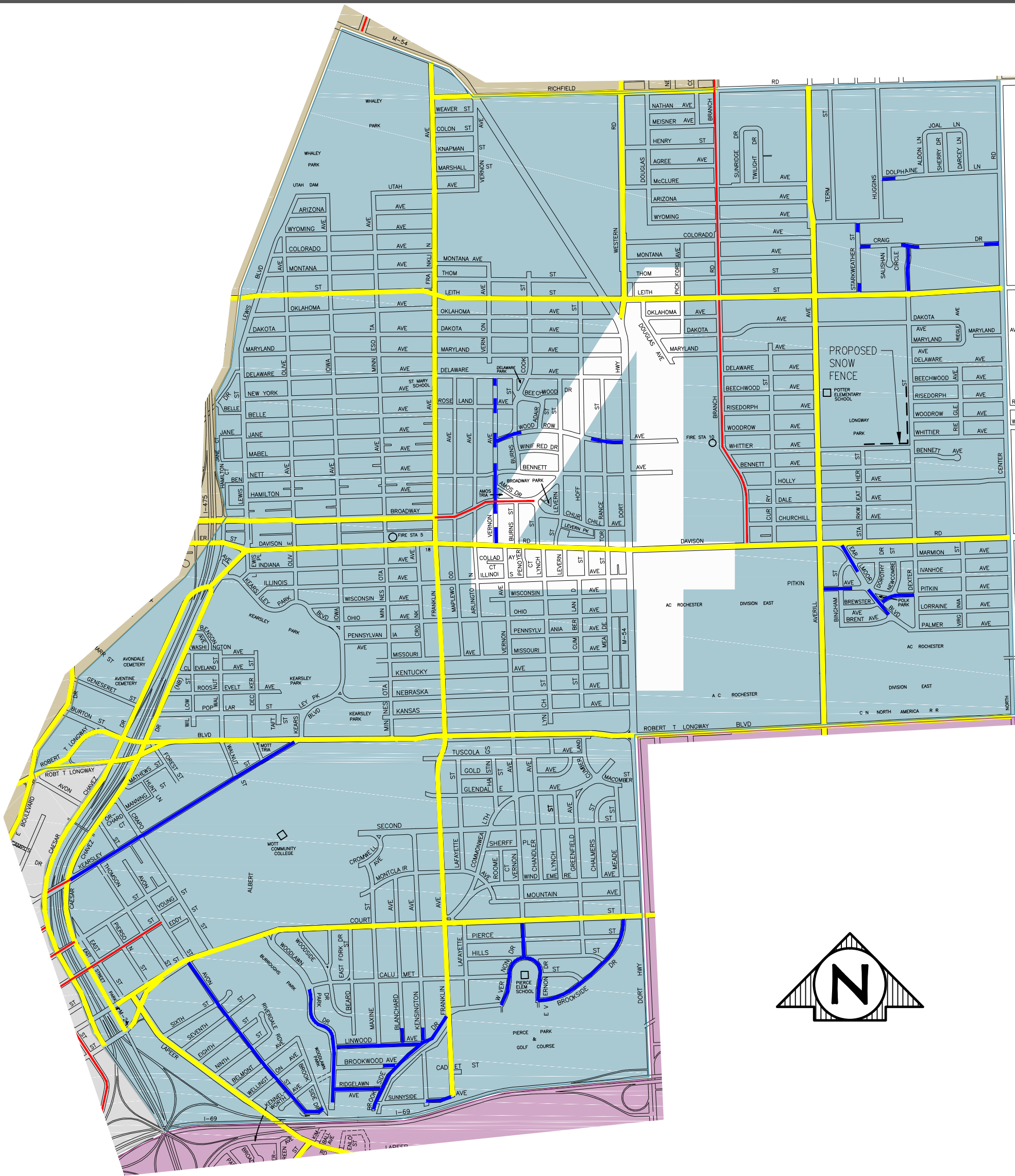


CITY OF FLINT SNOW REMOVAL MAP #3





LEGEND

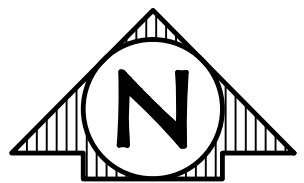
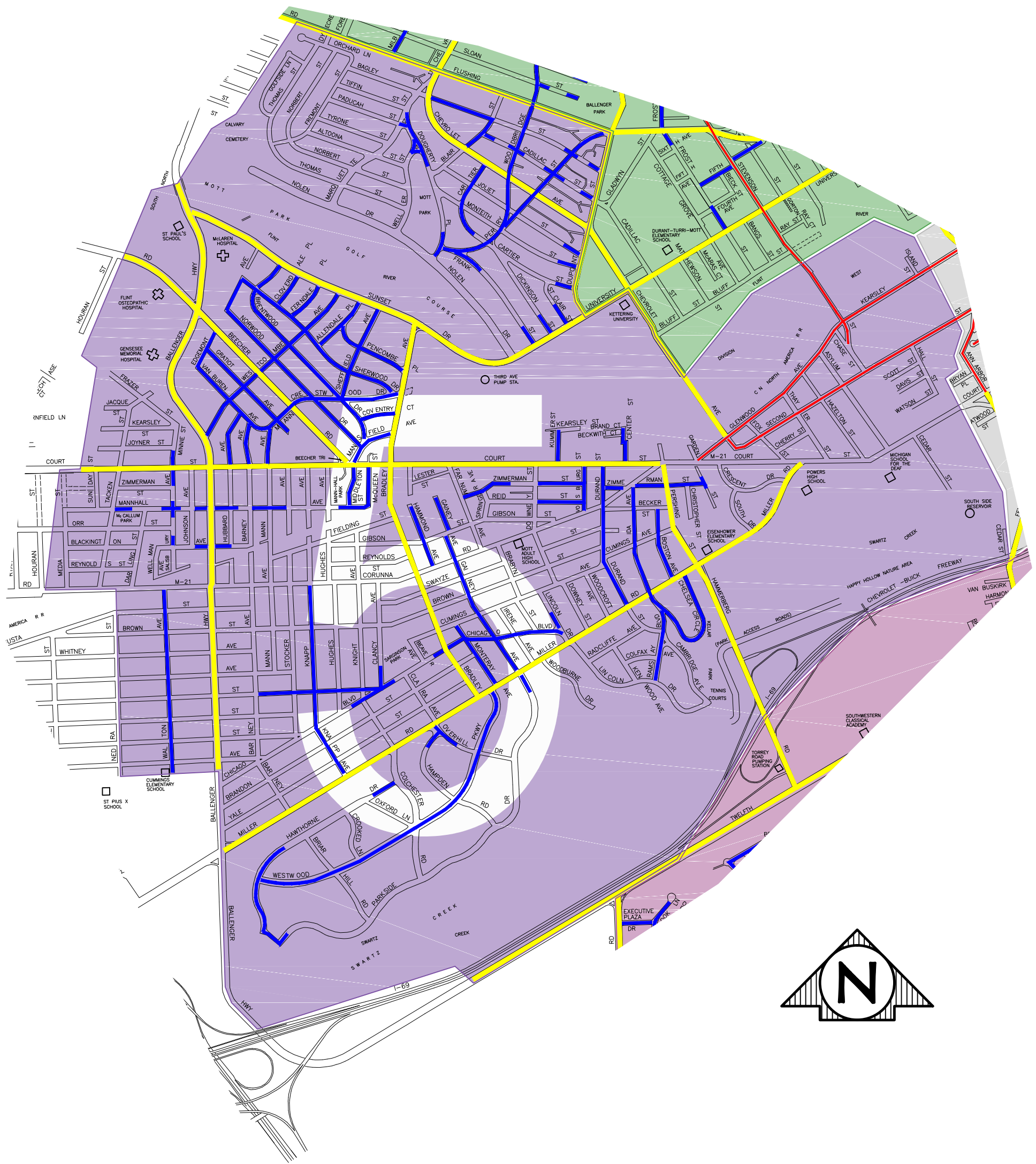
- PRIORITY 1 
- PRIORITY 2 
- PRIORITY 3 



LEGEND

- PRIORITY 1 
- PRIORITY 2 
- PRIORITY 3 

**CITY OF FLINT
SNOW REMOVAL
MAP #4**

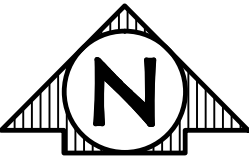


LEGEND

- PRIORITY 1 —
- PRIORITY 2 —
- PRIORITY 3 —

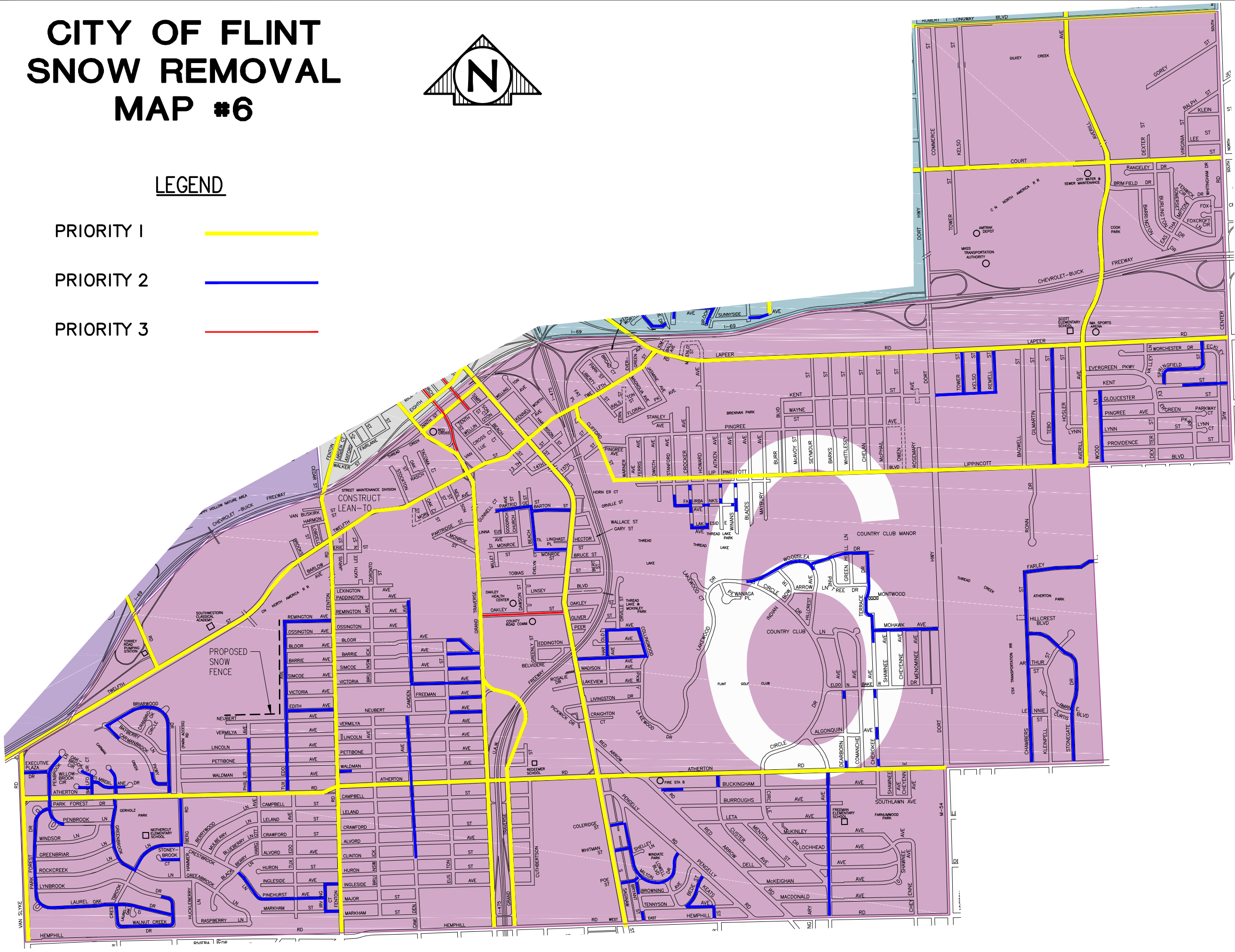
CITY OF FLINT SNOW REMOVAL MAP #5

CITY OF FLINT SNOW REMOVAL MAP #6

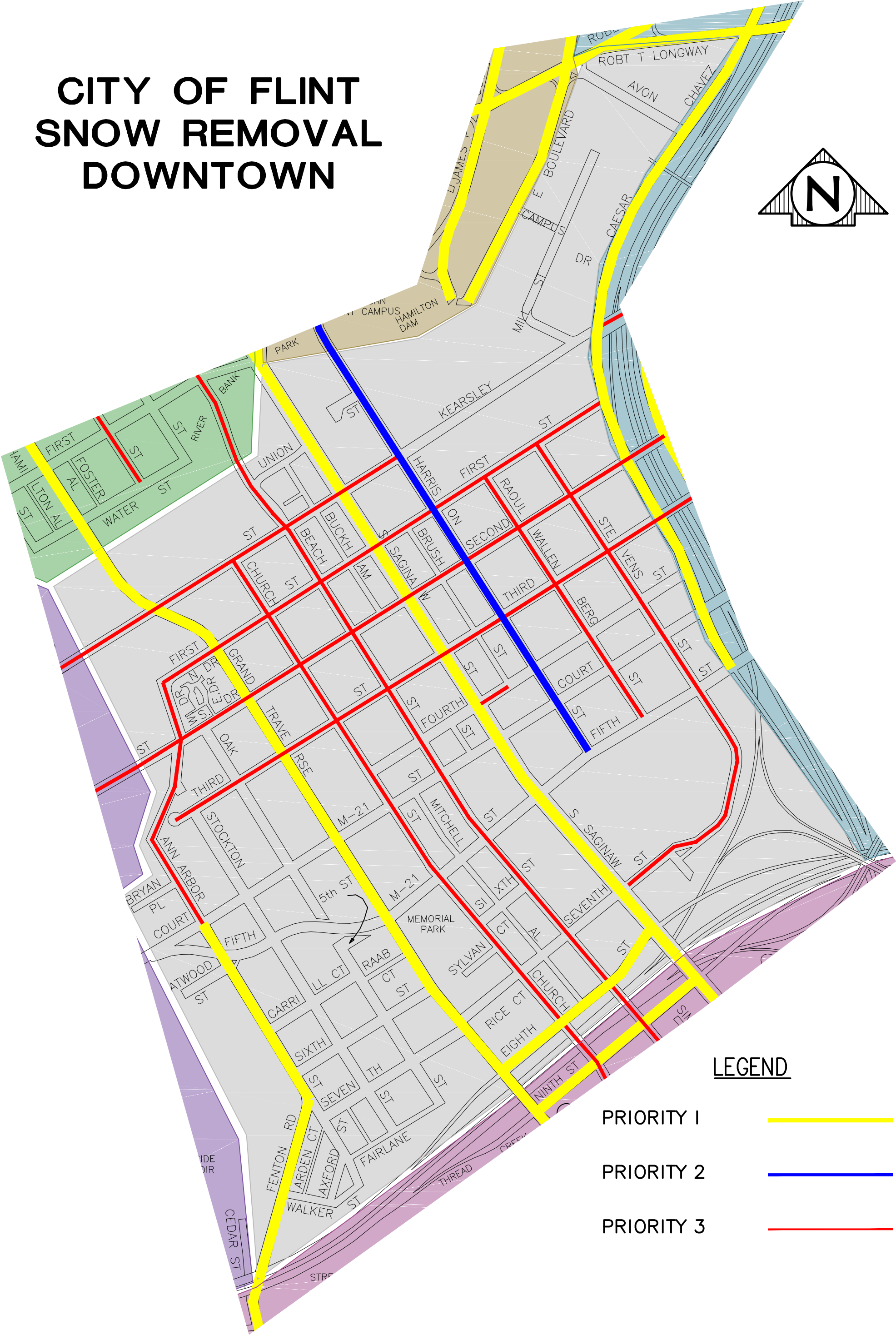
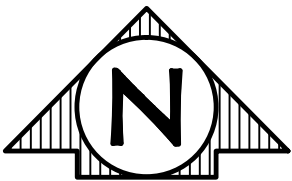


LEGEND



- PRIORITY 1 —
- PRIORITY 2 —
- PRIORITY 3 —



CITY OF FLINT SNOW REMOVAL DOWNTOWN



LEGEND

- PRIORITY 1 
- PRIORITY 2 
- PRIORITY 3 