

**2019-2020
City of Newton, Massachusetts
Snow and Ice Control Plan
Department of Public Works**





City of Newton
Department of Public Works
1000 Commonwealth Avenue
Newton, MA 02459

December 2019

The Department of Public Works is committed to providing benchmark-setting snow and ice control services for our community this winter. The Department of Public Works developed this Snow and Ice Control Manual to facilitate continual refinement to the City's snow and ice control program.

The public depends upon the use and availability of streets and highways during all types of weather-related events. When the public transportation system (Public Streets, MBTA bus and train stops, etc.) is shut down or the capacity is reduced, there are typically severe impacts. Accidents due to snow and ice result in property damage, personal injury, and fatalities. The inconvenience of weather delays also contributes to driver attitudes and quality of life.

Included in the Manual are guidelines and instructions for carrying out the snow and ice control program for the City of Newton. For more detailed information concerning our snow and ice control program, please do not hesitate to contact us.

Sincerely,

Jim McGonagle
Commissioner of Public Works

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Section I: Introduction & Scope of Program

The City of Newton's snow and ice control plan is set forth as a guide for the Department of Public Works to provide efficient and timely snow and ice control services to the citizens and visitors of the City of Newton. The goals of the plan are to reduce life threatening and injury producing conditions, interruption to commerce, and damage to property. The plan is also committed to limiting the environmental impacts associated with snow and ice control. When there is snow, sleet, ice, or other winter weather events, the City of Newton's top priority is public safety. The Department of Public Works reviews and revises the snow and ice control plan annually as an ongoing effort to further improve the levels of service provided to the citizens and visitors of the City of Newton.

Purpose

The snow and ice control plan is provided as a guide for addressing city streets during snow and ice situations.

- Provide uniform snow and ice removal throughout the City.
- Coordinate efforts through established personnel and resource commitments.
- Deliver effective services, under adverse conditions, that increase safety and reduce interruptions to the personal and economic lives of residents, visitors and businesses.
- Supply information to the public to promote understanding and cooperation.

Section II: Legal

Officials in Charge

Commissioner of Public Works: Jim McGonagle

Chief of Staff: Shawna Sullivan

Director of Streets: Shane Mark

Highway Superintendent: Mike Arpino

Highway District Superintendent: Mike MacKay

Highway Assistant Superintendents: Norman Sementelli, Richard Cincotta, Tony Dethomasis, Perry Cacciola, Jason Pisano

City of Newton Snow Ordinances

The City of Newton's ordinances pertaining to snow and ice operations are intended to minimize safety hazards, reduce situations that impede operations associated with snow and ice control, and to provide for continued mobility for residents and visitors to traverse the City's streets and sidewalks. The following city ordinances are applicable to snow and ice operations and are enforced during the months of November through April.

Sec. 19-174. Parking of commercial vehicles and trailers

(b) Other vehicles: From December 1st through March 31st , it shall be unlawful for any vehicle, other than one acting in an emergency, to be parked on any street, way, highway, road parkway, or private way dedicated or open to the use of the public for a period of time longer than one hour between the hours of 2:00 a.m. and 6:00 a.m. (Rev. Ords. 1973, § 13-144; Ord. No. S-87, 2-4-85; Ord. No. T-186, 11-18-91; Ord. No. Y-3, 3-19-07; Ord. No. Z14, 11-5-07; ord. No. B-39, 09-03-19)

Sec. 19-174. Parking of Commercial Vehicles and Trailers.

First offenseWarning

Second offense\$25.00

Subsequent offenseVehicle towed

Sec. 26-8. Removal of snow and ice from sidewalks in certain districts.

Every owner or occupant of a building or lot of land abutting upon a sidewalk which is within a business, mixed use or manufacturing district, as defined by chapter 30, and every owner or occupant of a building or lot of land situated in any other district and which is used for a commercial or institutional purpose or contains more than four residential dwelling units, whether or not such uses are nonconforming uses under the provisions of such chapter, which building or lot of land abuts upon a sidewalk, shall cause any snow to be removed from the sidewalk and any ice on the sidewalk to be removed, sanded or salted within twelve (12) hours after such snow has ceased to fall or such ice has come to be formed. The preceding provision shall apply to snow and ice on accessible curb ramps in the sidewalk and shall apply to snow and ice which falls from buildings, other structures, trees or bushes as well as to that which falls from clouds. (Rev. Ords. 1973, § 19-8; Ord. No. T-127, 3-4-91; Ord. No. T-165, 8-12-91; Ord. No. U-3, 2-22-94; Ord. No. A-98, 12-19-16) State law references—Removal of snow from sidewalks, G.L. c. 85, § 5; G.L. c. 40, § 21(2), (3), (4)

Sec. 26-8. Removal of snow and ice from sidewalks in certain districts.

First offense in calendar year	\$100.00
Second offense in calendar year	\$200.00
Third and subsequent offenses in calendar year	\$300.00

Sec. 26-8A. City snow clearing—Clearing of sidewalks used as school routes.

The commissioner of public works shall clear snow from certain city sidewalks including portions of both school pedestrian routes and specific arterial and collector roadways, subject to appropriation and the availability of city personnel and equipment. The commissioner, after consultation with the superintendent of schools, chief of police and other appropriate city personnel, shall determine the total number of miles of city sidewalks to be cleared for the purposes of this ordinance based on the availability of personnel, vehicles and funding. Each year during the month of November, the commissioner shall publish a list of said sidewalk snow clearing routes. Said list shall include the street names and, where appropriate, the names of intersecting streets up to which the sidewalks will be cleared. The commissioner shall send a copy of said list to the chief of police and the superintendent of schools. (Ord. No. U-23, 7-11-94)

Sec. 26-8B. Same—Snow clearing assistance. § 26-8C NEWTON ORDINANCES — STREETS AND SIDEWALKS § 26-9 Newton Ordinances On-Line - Chapter 26 - page 3

The commissioner shall annually prepare lists of persons available to provide snow clearing assistance either for a fee or on a volunteer basis. The lists shall be prepared in consultation with appropriate school and senior services department personnel, interested neighborhood organizations, houses of worship, parent-teacher associations, and other similar groups that indicate a willingness to participate in snow clearing assistance. Said lists shall be made available during the month of November each year. The list of persons available to provide snow clearing assistance for a fee shall be available upon request

to any Newton resident. Low income elderly or low-income people with disabilities requesting volunteer snow clearing assistance shall be referred to the senior services department to be matched with available volunteers. For the purposes of this section, "elderly" shall be defined as a person sixty (60) years of age or older, "person with disability" shall be defined as a person with a physical condition which substantially limits the ability to engage in physical snow clearance activities and "low income" shall be defined in accordance with guidelines established by the United States Department of Housing and Urban Development for the Community Development Block Grant Program. (Ord. No. U-23, 7-11-94; Ord. No. 175, 05-26-05)

Sec. 26-8C. Same—Snow clearance standards.

The commissioner of public works shall endeavor to minimize the blocking of sidewalks and intersections with plowed snow so as not to hinder pedestrian passage. The commissioner shall remove plowed snow from sidewalks and intersections that block pedestrian access, to the extent that such removal is feasible, as determined by the commissioner, and subject to appropriation. (Ord. No. U-23, 7-11-94)

Sec. 26-8D. Removal of snow and ice from sidewalks.

In order to allow for safe pedestrian and wheelchair passage, every owner or occupant of a building or lot of land abutting upon a paved sidewalk or any person having charge of such property shall use reasonable efforts to remove snow and ice from the sidewalk and handicap access ramps, and shall use reasonable efforts to treat said sidewalk and ramps to allow for a safe passageway of approximately thirty-six (36) inches in width, provided that where such sidewalk is less than thirty-six (36) inches in width the passageway shall encompass its entire width and handicap access ramps. Snow and ice shall be removed, and sidewalks and ramps shall be treated, within twenty-four (24) hours after such snow has ceased to fall or such ice has formed. This section shall apply to snow and ice which falls from buildings, other structures, trees or bushes, as well as to that which falls from clouds. The Commissioner of Public Works may extend the 24- hour compliance timeframe when weather conditions necessitate. This section shall not apply to owners or occupants of a building or lot covered by Section 26-8. The mayor or his designee is authorized to coordinate volunteer snow clearing assistance or to grant an exemption, renewable annually, for citizens who upon written petition demonstrate hardship due to a combination of health and financial duress, or religious circumstances. (Ord. No. Z-83, 3-21-11, Ord. No. A-8, 01-22-13; Ord. No. A-49, 12-01-14; Ord. No. A-67, 11-16-15; Ord. No. A-88, 11-07-16; Ord. No. A-123, 12-04-17; Ord. No. A-124, 12-18-17; Ord. No. B-38, 09-03-19)

Sec. 26-8D. Removal of snow and ice from sidewalks. First offense per 365 day period..... Written warning
Second and subsequent offenses per 365 day period\$50.00

Sec. 26-9. Putting snow and ice upon streets, sidewalks and bridges.

(a) No person shall block, obstruct or otherwise hinder or impair pedestrian or vehicular traffic on the public ways of the city by placing snow or ice or permitting or causing snow or ice to be placed upon a street, sidewalk or bridge, except that snow or ice removed from a sidewalk may be piled in the adjoining gutter or on the loam border between the sidewalk and the street. This section shall not apply

to municipal snow removal operations. (b) Without limiting the applicability of the foregoing paragraph (a), the owner or occupant of property whose driveway or sidewalk is cleared of snow shall be responsible for promptly removing snow placed on the public way (street, sidewalk and/or bridge) adjoining the owner's property as a result of clearing snow from the driveway or sidewalk of the owner. For purposes of this paragraph, "clearing snow" shall include, but is not limited to, plowing, shoveling, sweeping and any other similar means of removing snow from the driveway or sidewalk. This § 26-10 NEWTON ORDINANCES — STREETS AND SIDEWALKS § 26-13 Newton Ordinances On-Line - Chapter 26 - page 4 section shall not apply to municipal snow removal operations. (Rev. Ords. 1973, § 19-9; Ord. No. T-166, 8-12-91; Ord. No. X-97, 07-12-04)

Sec. 26-9. Putting snow and ice upon streets, sidewalks and bridges

Placing snow or ice on a public way (street, sidewalk or bridge)

First offense in calendar year \$100.00

Second offense in calendar year \$200.00

Third offense and subsequent offenses in calendar year \$300.00

Causing or permitting snow or ice to be placed upon a public way (street, sidewalk or bridge)

First offense in calendar year \$100.00

Second offense in calendar year \$200.00

Third offense and subsequent offenses in calendar year \$300.00

Section III Street Jurisdiction and Responsibility:

Responsibility

The Department of Public Works has the primary responsibility for execution of the snow and ice control plan and is responsible for more than 320 miles of roadways, 80 plus miles of sidewalks, approximately 43 City owned buildings (including 21 school sites), 15 city-owned public parking lots, streets and sidewalks over 22 bridges, areas adjacent to 70 plus school bus stops, 35 plus MBTA bus stops, 10 T-Stops, and 3 Commuter rail stops. The City encompasses 18.3 square miles and is comprised of 13 distinct villages, eight separate wards, and has a population of 87,000 plus. Bordering communities include: Brookline, Brighton, Watertown, Waltham, Weston, Wellesley, Needham and West Roxbury. Newton also has east-west and north-south highway infrastructure with Routes 9, 90 and 128/95 running through the city.

Snow Routes

Street Routing

Snow routes for arterial streets, collector routes, and residential local-through routes are evaluated and assigned annually. Maps containing arterial, collector and residential local-through routes identify the priority of each street within the City. The snow route priorities are based on traffic patterns, traffic speeds, traffic volumes, transportation nodes, schools or other public institutions, village squares, and the steepness of the roadways. The city has established 10 snow zones with a total of 90 routes distributed within the zones. City staff performs snow and ice control in two of the snow zones, snow and ice control within the remaining eight zones is performed by private

contractors which are hired annually by the City of Newton. New annexations, street additions and changes in traffic patterns are considered when revisions are made. The Department of Public works factors in “hot spots” (areas prone to snow drifting, ice formulations, etc.) and other problem locations during the route assessment process.

Route Prioritization

The order of operation for snow and ice control is based on traffic volume and impact on public safety. Priority attention is given to the arterials, collectors, and streets with steep inclines, hills, and bridges. The level of service (LOS) for all City streets is based upon guidance provided by the National Cooperative Highway Research Report 526. The level of service is **Pavement Snow and Ice Condition 2, Clear & Wet**: Bare/wet pavement surface is the general condition. There may be occasional areas with snow or ice accumulations resulting from cold spots, frozen meltwater, etc. Prudent speed reduction and general minor delays are associated with traversing those areas. Prioritization for the City of Newton Streets follows:

Priority 1 Arterial and Collector Streets:

Arterials: High volume, high speed streets that provide for through traffic movement citywide and provide access to the freeway system, alternate nodes of transportation, etc. Also included in this category are steep inclines and roadways with bridges.

Collectors: Medium volume, lower speed streets that provide for traffic movement between arterials and residential local-through streets.

Priority II Residential Local-Through Streets:

Residential Local-Through: Provide access to the abutting property. Snow and Ice Control on the priority II streets may occur simultaneously with and after clearing of arterial and collector streets.

Priority III Additional Routes:

Additional Routes: Streets that do not fall within the priority I or II classifications for snow and ice control which are treated on an as-needed basis. These may include areas such as streets with bridges and overpasses that are prone to freezing or slick spots.

Section IV: Snow & Ice Control Operations

This Manual is in effect during winter operations and at times when weather conditions cause accumulation of frost, sleet, ice, snow or other occurrences on the streets and public parking lots of the City of Newton. Execution of the City of Newton’s snow and ice plan is the primary responsibility of the Commissioner of Public Works.

Snow and Ice Control Implementation

Every winter storm is unique, and the strategies used to perform snow and ice control are determined by several factors pertaining to the storm. The factors to consider when performing snow and ice control are: the time of day the storm begins, air temperatures, pavement temperatures, predicted rates per hour of snowfall amounts, predicted duration of the storm, projected temperatures following the storm, and predicted weather after the initial storm. The Commissioner of Public Works or his/her designee is responsible for implementing winter operations. Snow and ice control managers on duty will employ the National Weather Service, computerized weather monitoring systems, information from the City snow chasers and local weather forecasters to determine the level of response for implementation of winter operations.

Snow Chasers

Personnel from the Department of Public Works who are not routinely involved with operating snow equipment are utilized as snow chasers for winter operations. These individuals are responsible for monitoring and reporting roadway conditions to the Snow Control Center 24 hours a day during snow/ice events. Further information on the City's Snow Chasers can be found in Appendix A. (See Appendix A)

Dispatchers

Personnel from the Department of Public Works who are not routinely involved with operating snow equipment are utilized as dispatchers for winter operations. These individuals are responsible for the dispatching, monitoring, and communication of snow routes to the Snow Operations Control Center 24 hours a day during snow/ice events. Further information regarding dispatchers can be found in Appendix B. (See Appendix B)

Snow Control Center (SCC)

When snow operations are mobilized, the Snow Control Center (SCC) may be mobilized. This center is the hub of winter operations during snow events. The SCC operates from the Emergency Operations Center (EOC). All information regarding the winter operation is relayed to the SCC. This information is processed and released from the SCC at appropriate times. Once the SCC is mobilized, it remains in operation for the duration of the event as determined by personnel in charge. The primary purpose of the SCC is to perform the following core functions:

- Collect and maintain current information for ongoing snow and ice control operations
- Facilitate coordination and communication of the existing snow and ice control operation with internal and external stakeholders
- Resource needs identification, requesting, and tracking

Further information on the SCC can be found in Appendix C. (Appendix C)

Command and Control

The Commissioner of Public Works is responsible for the supervision of the snow and ice control operation. The Commissioner will control the resources pertaining to the operation including staff from other city departments such as Parks & Recreation. He or she will coordinate with the police department, school department, and the Mayor's office all initial activities regarding public safety and snow and ice control plan status. He or she will also determine:

- The number of personnel and equipment needed
- The time snow and ice control operations will commence
- Snow contractors: time and number needed based on severity of predicted storm

The Director of Streets is responsible for the overall planning, coordination, implementation, and communication of the snow and ice control operation citywide including:

- Making determinations on the salting, plowing, and hauling operations
- Recommending courses of action to the Commissioner of Public Works
- Ongoing coordination with other city departments such as Newton Police Department, Newton Fire Department, Newton Public Schools, Parks & Recreation, and the Mayor's Office
- Regular monitoring of the weather and roadway conditions throughout the City prior to, during, and after snow and ice storms
- Directing the supervision of the plowing, salting, and hauling operations
- Communicating with the Newton Police Department regarding roadway safety conditions, and making recommendations regarding the operation to the Director of Operations
- Coordinating with the Superintendent of Parks & Recreation regarding upcoming storms, needed resources, and courses of action for ongoing operations

Superintendents and Assistant Superintendents are responsible for:

- Supervising the resources and employees involved in the plowing, salting, and hauling operations
- Routine monitoring of plowed and salted streets for conformance to the snow plan and required levels of service through the utilization of the snow chasers and GPS system
- Communicating the status of the operation and recommended plans to the Director of Streets. Ensuring that all routes, roads, sidewalks, parking lots, municipal buildings, schools, modes of transportation, etc. are serviced in accord with the designated level of service called for within the snow plan

Snow Control Center Staff will:

- Regularly update the weather reports and communicate significant changes
- Monitor and update the snowplow tracking system
- Respond to and record all snow and ice control related inquiries
- Record the progress of the snow and ice control operation and communicate to the Director of Streets, Chief of Staff, and the Commissioner of Public Works

The Commissioner of Parks and Recreation will perform the following duties during snow and ice control:

- Coordinate and control emergency tree work
- Provide requested resources to the Department of Public Works
- Oversee the plowing and salting of Public Building stairs, walkways, sidewalks, and parking lots

Operational Readiness Condition Levels

There are five operational readiness levels used during the winter season. The readiness levels are based upon several dynamics but not limited to the following factors: equipment status, available employees, weather forecasts, predicted temperatures, day of the week, holidays, and special events. The levels of operation and manpower/equipment requirements for each are used as general guidelines for snow and ice control operations. The specific number of operators and equipment may be added to or phased down at the discretion of the Commissioner of Public Works or the Director of Streets contingent upon the weather conditions and the perceived need for public safety. The operational readiness condition levels are:

- **Readiness Condition I (One truck):** Established when there is no immediate need or anticipated need for plowing and/or salting operations within the following 12-24 hours (Outside of normal business hours). At this level the Department of Public Works will respond to emergency calls for snow and ice control such as ice dams, slick spots, etc. There will be one vehicle with salt spreading capabilities on standby to respond if needed. Additionally, there will be a minimum of four vehicles that are fueled, loaded with salt, stored in the garage, and ready for additional response.
- **Readiness Condition II (Two trucks):** Established when there is no immediate need for plowing and/or salting operations but there is an anticipated need for plowing and/or salting operations to occur on a limited basis over the next 12-24 hours (Outside of normal business hours). At this level the Department of Public Works will respond to emergency calls for snow and ice control such as ice dams, slick spots, etc. There will be two vehicles with salt spreading capabilities on standby to respond if needed. Additionally, there will be a minimum of four vehicles that are fueled, loaded with salt, stored in the garage, and ready for additional response.
- **Readiness Condition III (Four to Six trucks):** Established when there is a limited salting operation anticipated or when the forecasted weather may require a larger plowing/salting operation. There will be four to six vehicles with salt spreading capabilities on standby to respond if needed. Additionally, there will be a minimum of four vehicles that are fueled, loaded with salt, stored in the garage, and ready for additional response.
- **Readiness Condition IV (Eight to Twelve trucks):** Established when there is an immediate need for a salting operation on all arterials, hills, bridges, and collectors. The forecasted weather requires a larger plowing/salting operation. There will be four to six vehicles with salt spreading capabilities in each yard.

Additionally, there will be a minimum of four vehicles in each yard that are fueled, loaded with salt, stored in the garage, and ready for additional response.

- Readiness Condition V (All available trucks): Established when there is an immediate need for a plowing/salting operation on all city streets. The forecasted weather requires a large plowing/salting operation. All available vehicles for both yards with salt spreading capabilities.

Street Plowing Operations

The city is divided into 10 snow zones with a total of 90 routes distributed within the zones. City staff performs snow and ice control in two of the snow zones, snow and ice control within the remaining eight zones is performed by private contractors which are hired annually by the City of Newton. Upon the accumulation of approximately 3” of snow and dependent upon type, density, conditions, storm prediction, etc. plowing operations will commence. Contact will be made in advance of the storm when storm predictions require the use of private contractors.

The following guidelines are to be used during snow and ice control operations:

- Plow streets from the center out towards the berm, curb, or edge of pavement
- Snow and ice on city streets will be pushed back and widened as close to the berm, curb, or edge of pavement as possible
- Intersections will be plowed curb to curb and widened
- One-way streets shall be plowed according to the directives above. Plowing against traffic flow patterns is not authorized at any time unless authorized by emergency officials
- Snow and ice on dead end streets should not be deposited at the end of the street. The snow and ice shall be “pulled back” as far as necessary for a plow vehicle to turn around and push the snow away from the end of the street
- Snow and ice are not to be deposited into or adjacent to ADA curb cuts

The following guidelines are to be used immediately after snow and ice control operations:

- Continued clean up and push back on all streets and sidewalks focused primarily on the village centers, schools, transportation nodes, school bus stops, etc.
- Clearing of designated school bus stops
- Clearing of school crossing guard locations
- Clearing of designated transit bus stops
- Clearing of Village Centers and Squares
- Clearing of catch basins and fire hydrants
- Clearing of sidewalks adjacent to municipal lots
- Clearing of municipal lots

Sidewalk Plowing Operations

Sidewalk plowing runs in conjunction with street plowing. Operations on the designated City sidewalks will commence upon the snow and ice control’s plowing operation. The minimum width for sidewalk plow routes is 36”. The designated City sidewalk routes are divided into six separate routes distributed within the City snow zones. City staff performs snow and ice control on 80 plus miles of designated city sidewalk routes including 1,400 plus curb cuts contained within those routes. Private contractors may be used to supplement City forces. Further information on the designated sidewalk routes can be found in Appendix D. (See Appendix D)

Hauling Operations

Snow hauling occurs at key intersections, village centers, business centers, safe route to school areas, sidewalks abutting city owned property, and transportation nodes upon the Commissioner of Public Works’ determination that accumulated snow and ice impedes traffic and pedestrian access. There are many factors that determine when snow hauling is required. Factors include but are not limited to snow accumulation, snow depth from prior storms, predicted snowfall accumulation amounts, and temperatures following the storm.

Snow Hauling Operations Storage Sites

Upon commencement of snow hauling the snow and ice will be taken to several snow storage sites throughout the city. Snow Hauling will utilize the following locations in numerical sequence as snow storage sites:

1. Elliot Street Maintenance Yard (90 Elliot Street)
2. Rumford Avenue DPW Yard (115 Rumford Avenue)
3. Forte Park Vehicle Lot (233 California Street) ***Parks and Recreation site***
4. Auburndale Park Vehicle Lot (West Pine Street)
5. Upper Falls Playground Vehicle Lot (Chestnut Street)
6. Cold Spring Park Vehicle Lot (Dunklee Street)

Further information on the City's snow hauling can be found in Appendix E. (See Appendix E)

Snow and Ice Control Equipment

All snow and ice control equipment are inspected annually. Each piece of equipment undergoes a comprehensive assessment for safety, operating condition, cleanliness, overall appearance and communication capabilities. Various vendors complete mechanical checks on City equipment, under the supervision of Fleet Management. An updated list of equipment available from other City departments is compiled and maintained annually. This equipment may be used during conditions of a severe and extended snow and ice event. Further information on the City's snow and ice control equipment can be found in Appendix F. (See Appendix F)

Training

Extensive training is conducted each fall for personnel engaged in the snow and ice control program. Training provides hands-on experience and an overview of systems, policies and procedures. The program provides employees the opportunity to re-acquaint themselves with the vehicles and equipment used in snow and ice removal operations. Annual training topics include:

- Snow training – classroom and hands-on training
- Dry runs of all routes by regular personnel at assigned locations
- Snow chaser training
- Dispatcher training
- Contractor training
- Inspection training peer-to-peer training – hands-on for non-experienced personnel, division and non-division.
- Sensible salting plan
- Weather Forecasting

Facilities and Materials

The hub of winter operations is located at 74 Elliot Street known as the Elliot Street Garage. There is one additional facility located at 90 Crafts Street which is known as the Crafts Street Garage. Both locations are supplied with salt and liquid salt brine. The salt barns are restocked at the beginning of the snow season in anticipation for the beginning of snow/ice events. Contracts are in place for additional materials as needed, and the materials are replenished after each winter storm. Further information on the City's snow and ice facilities and storage capacities can be found in Appendix G. (See Appendix G)

Material Applications

The type of material used to provide chemical melting of snow or ice depends on the type of treatment being performed. The factors to consider when determining the types and amounts of materials applied are air temperatures, pavement temperatures, rate per hour of snowfall, projected temperatures following the storm, and predicted weather after the initial storm. Salt and liquid salt brine are available at all field operation facilities. These

materials are used for the initial clearing of public roadways. Rock salt or rock salt pre-wetted with liquid salt brine are the primary chemicals used during snow and ice control operations. Further information on material types and application rates can be found in Appendix H. (See Appendix H)

Sensible Salting

Effective winter storm maintenance has a direct impact on safety of the roadway users and on the personnel performing the maintenance. Since the use of salt in high concentrations can have a negative impact to the environment and to the streams, lakes, and rivers within Newton the development of Best Management Practices that minimize the use of road salt, will be adhered to during winter operations. Adherence to these guidelines helps reduce the environmental impacts associated with snow and ice control. The following proactive measures will be used as part of the sensible salting plan:

- winter materials will be stored inside salt barns
- pre-determined snow storage sites for hauling operations
- controlled maximum salt application rates at 400 pounds per lane mile
- salt spreader calibration
- pre-wetting solid salt as it is applied to the roadways
- staff training conducted annually and post storm
- continued monitoring of applied salt during and after snowstorms

Further information on sensible salting can be found in Appendix I. (See Appendix I)

Section V: Inclement Weather and Emergency Information

During the course of the winter, a variety of inclement weather conditions occur which can impact the safe and orderly flow of traffic. The following is a general description from the National Oceanic Atmospheric Administration (NOAA) of four categories of inclement winter weather. Information on snow and winter terminology is below:

- **Light Inclement Winter Weather:** Pavement temperature is at 32 degrees or above with light rain or snow creating icy bridge decks or light ice on roadways. Accumulation of 2" or less.
- **Medium Winter Storm:** Snowfall with temperatures near or just below freezing with no anticipated drop in temperature; little to no drifting of snow. Accumulation between 2" – 4".
- **Heavy Winter Storm:** Snowfall with temperatures at freezing and dropping; moderate drifting of snow. Accumulation between 4" to 6"
- **Major Winter Storm:** Significant freezing rain or snow with temperatures falling and winds creating major drifts resulting in blocked roadways. Accumulation of 6" or more.

Winter Weather Terminology

- **Freezing Rain Advisory:** Freezing rain/drizzle is light and ice accumulations are less than 1/4 inch.
- **Winter Weather Advisory:** This is an all-encompassing term that replaces the old snow advisories, sleet advisories, blowing/drifting snow advisories, and freezing rain/drizzle advisories. It is used when a mixture of precipitation is expected such as snow, sleet and freezing rain or freezing drizzle, but will not reach warning criteria. Used when sleet or snowfall amounts are expected to be less than 3 inches in a 12-hour period, or freezing rain/drizzle is light and ice accumulations are less than 1/4 inch.
- **Special Weather Statement:** Used to highlight weather events that can have a high impact but fall below advisory or warning criteria. Used when wind-driven snow intermittently reduces visibility to 1/4 mile or less. Travel may be hampered. Strong winds create blowing snow by picking up old or new snow.
- **Winter Storm Watch:** Issued when conditions are favorable for the development of hazardous weather elements, such as heavy snow or sleet, blizzard conditions, significant accumulations of freezing rain or drizzle, or any combination thereof which meet or exceed local Winter Storm Warning Criteria. Watches are usually issued 12 to 48 hours in advance of a Winter Storm event.

- **Winter Storm Warning:** Issued when hazardous winter weather conditions are imminent or very likely, including any occurrence or combination of heavy snow, wind-driven snow, sleet, and/or freezing rain/drizzle. Winter Storm Warnings are issued for expected sleet and snowfall amounts of 4 or 6 inches or more in 12 hours, or 6 inches or 8 inches or more in 24 hours. It is also used when damaging ice accumulations are expected during freezing rain situations; walking and driving becomes extremely dangerous, and ice accumulations are usually 1/4 inch or greater. Finally, it is also issued with sustained winds or frequent gusts of 35 miles per hour or greater and considerable falling and/or blowing snow reducing visibility to less than 1/4 mile. These conditions are expected to last at least three hours. Usually issued 12 to 24 hours before the event is expected to begin.
- **Blizzard Warning:** Issued for sustained or gusty winds of 35 mph or more and falling or blowing snow creating visibilities at or below 1/4 mile; these conditions should persist for at least three hours.
- **Snow Flurries:** Light snow falling for short durations. No accumulation or light dusting is all that is expected.
- **Snow Showers:** Snow falling at varying intensities for brief periods of time. Some accumulation is possible.
- **Snow Squalls:** Brief, intense snow showers accompanied by strong, gusty winds. Accumulation may be significant. Snow squalls are best known in the Great Lakes region and may persist for many hours and produce six inches or more of snow in 12 hours or less.
- **Blowing Snow:** Wind-driven snow that reduces visibility and causes significant drifting. Blowing snow may be snow that is falling and/or loose snow on the ground picked up by the wind in quantities that horizontal visibilities are reduced to less than seven miles.
- **Sleet:** Rain drops that freeze into ice pellets before reaching the ground. Sleet usually bounces when hitting a surface and does not stick to objects. However, it can accumulate like snow and cause a hazard to motorists.
- **Freezing Rain:** Rain that falls onto a surface with a temperature below freezing. This causes it to freeze to surfaces, such as trees, cars, and roads, forming a coating or glaze of ice. Even small accumulations of ice can cause a significant hazard.
- **Wind Chill Warning:** Issued when wind chill temperatures are expected to be hazardous to life within several minutes of exposure. Issued when wind chill temperatures are expected to be minus 25 degrees Fahrenheit.
- **Wind Chill Advisory:** Issued when wind chill temperatures are expected to be a significant inconvenience to life with prolonged exposure, and, if caution is not exercised, could lead to hazardous exposure. Wind Chill temperatures are expected to be in the range of minus 10 degrees Fahrenheit to less than or equal to minus 24 degrees Fahrenheit.

Radar Information

National Weather Service radar imaging as well as weather forecasting and radar imaging from The Weather Channel and NOAA is available to operations staff. Additionally, all DPW locations have access to the Precision Weather website which can be accessed at <http://www.snowandice.com/> and Schneider Electric weather website at dtn.weather.com

Snow Emergencies

A snow emergency may be declared by the City of Newton Chief of Police. The decision to institute a snow emergency will be determined based upon several factors such as: the time of day the storm ends, air temperatures, pavement temperatures, actual snowfall amounts, projected temperatures following the storm, and predicted weather after the initial storm. A snow emergency prompts special parking restrictions to be in effect to allow for thorough clearing of arterial, collector, and local-through streets to ease traffic flow. Due to the difficulties encountered plowing streets where vehicles are parked alongside the curb, a parking ban will be put into effect and local law-enforcement officials will enforce these parking restrictions.

Section VI: Public Information

The Department of Public Works and the City's Director of Community Engagement will coordinate the response to all media requests for on-site audio or video footage and will work together to answer any inquiries received by media outlets related to snow response. In addition, the Director of Community Engagement will work with the Department of Public Works to continuously and proactively update residents via the media, City website, social media, and other outlets. The Director of Community Engagement works in conjunction with the Director of Streets to obtain the most current and concise information available for disbursement to the media and City of Newton Administration. The Department of Public Works will also ensure that timely information is provided to staff working at the 311 Customer Service Center, so that they may properly address any questions or concerns of residents who contact the city.

Disclaimer

The plan set forth in this manual may be affected by at least one or more of the following events which could delay or alter snow and ice control by the City:

- Weather so severe as to cause work to be stopped for the safety of all personnel
- Unforeseen conditions and emergencies
- Significant medical related emergencies
- Vehicles disabled in deep snow
- Equipment breakdown

Appendix A: Snow Chaser Roles

Role of the Snow Chasers

Snow Chasers are employees of the City of Newton for its snow and ice control program. Snow Chasers are responsible for monitoring and reporting roadway conditions to the Snow Control Center, management and the area maintenance facilities during a weather event.

Operations

The Snow Chasers meet at specified locations and times with management and/or private contractors during snow and ice control events. Notes and information are exchanged and relayed to the Snow Control Center.

Duties

- Check in contractors and/or city equipment utilizing city hardware and software program.
- The Snow Chaser's duty is to report weather and pavement conditions; make recommendations on material selection and equipment; assist crews in proper procedures and investigate complaints.
- To be constantly aware of the changing conditions of the snow event and layout of the City.
- To monitor assigned snow routes and take corrective actions to ensure snow plowing operations are conducted properly.
- To manage and direct plow operators and contractors within their assigned area of responsibility.
- To monitor the City's GPS program on a mobile tablet and perform data entry into the Snow Ops program for contractors.
- To perform minor plow, touch up and clean up in areas of concern such as intersections, bump outs, etc.
- During the snow and ice control event, the snow chasers inspect the snow street/sidewalk routes and address items such as piling snow onto curb cuts, curb to curb plowing, etc.
- Upon completion of all plowing operations the snow chasers inspect all roadways in their assigned areas, verify route completion, and make recommendations to management for the release of all plow operators and contractors and the documentation of these activities in the Snow Ops program.

Assignment

Snow Chasers are dispatched under the authority of the Director of Streets or his/her designee (Superintendent of Utilities for zone operations) at a specific time based on the forecast of a storm. Chasers report to their assigned geographical area and begin reporting updates of road conditions to the Snow Control Center and management.

Snow Chasers have become very instrumental in the storm fighting by allowing the City to have first-hand monitoring and instant feedback on tactics being employed. Snow Chasers are individuals utilized as an important tool in City's arsenal in the control of snow and ice in the city of Newton.

Appendix B: Dispatcher Roles

Role of the Dispatcher

Dispatchers are a unique group of individuals utilized by the city of Newton in its snow and ice control program. The Dispatcher is responsible for dispatching, monitoring, tracking and reporting the status of the plowing operations to the snowplow operators and to the Snow Control Center.

Duties

- Ensure the correct shift dispatch sheets are being used.
- Record the correct information and assigning the routes in the proper order.
- Re-check the dispatcher sheets to be sure that the work program for the shift is being followed.
- Record the correct information on auger and spinner settings, and the materials to be used by the drivers.
- Complete the information needed for the Winter Storm Report by the timing deadline.
- Ensure that all work program data is accurate and is passed on and communicated to the Director of Streets, including materials on hand, vehicle availability, work plan and where the shift left off.
- The Dispatcher's duty is to report, with confidence, the current plowing operational status, dispatch routes, monitor truck locations, and routes completed.

- To be constantly aware of the changing conditions of the snow event, current plowing conditions and overall event status.

Dispatchers have become very instrumental in the storm fighting by allowing the City to have first-hand monitoring, tracking, and current operational status. Dispatchers are individuals utilized as an important tool in the City's arsenal in the control of snow and ice in the City of Newton.

Appendix C: Snow Control Center

Purpose

The Storm Control Center is the hub of winter operations during winter events. The SCC operates from the Emergency Operations Center (EOC). All information regarding the winter operation is relayed to the SCC. This information is processed and released from the SCC at appropriate times. Once the SCC is mobilized, it remains in operation for the duration of the event as determined by personnel in charge. The primary purpose of the SCC is to perform three core functions:

1. Collect and maintain current up-to-date information for ongoing snow and ice control operations
2. Facilitate coordination and communication of the existing snow and ice control operation with internal and external stakeholders.
3. Resource needs identification, requesting, and tracking

Concept of Operations

The Commissioner of Public Works initiates the SCC activation when significant winter events that have potential to cause major damage to public and private property, significantly hinder public accessibility, and require a broad response by City forces are occurring or are imminent. Upon activation, the Department of Public Works, and the Fire Department work together in providing the needed resources and staffing for the SCC.

Personnel manning the SCC establish communication with the Snow Chasers and Public Works management staff during the storm in order to have the most up-to-date information possible regarding winter operations. Information such as the GPS plow tracking system, route progression, equipment status, and additional items of interest is collected and maintained by the SCC.

Staffing

The SCC Center will be staffed 24/7 during winter events and usually requires the following:

- 1 Supervisor
- 2 Customer support representatives
- 1 Administrative assistant
- 1 Information technology specialist (if needed)

Appendix D: Sidewalk Plowing

Sidewalk Plowing

Sidewalk plowing operations run in conjunction with the street vehicle plowing operation. Snow and ice control operations on the designated City's sidewalks will commence upon the snow and ice control's plowing operation. The minimal acceptable width for sidewalk plow routes is 36". The designated City's sidewalk routes are divided into six separate routes distributed within the City's snow zones. City staff performs snow and ice control on 80 plus miles of City designated sidewalk routes including 1,400 plus curb cuts contained within those routes. Private contractors which are hired annually by the City of Newton may be used to supplement City forces. Included in the sidewalk plowing routes is the clearing of snow from sidewalks along twenty two (22) bridges including corners; snow from sidewalks adjacent to approximately (44) MBTA bus stops; snow from sidewalks at approximately (42) public school bus stops; snow from approximately (29) midblock crosswalks; and snow from (20) miscellaneous areas including but not limited to traffic islands, pathways, curb extensions, parking kiosks, etc.

Appendix E: Snow Hauling

Snow Hauling

Snow hauling will occur at key intersections, village centers, business centers, safe route to school areas, sidewalks abutting city owned property, and transportation nodes upon the Commissioner of Public Works' determination that accumulated snow and ice impedes traffic and pedestrian access. There are many factors that determine whether snow hauling operations are needed. These factors include but are not limited to snow accumulation from current storm, snow depth from prior storms, predicted snowfall accumulation amounts, and temperatures following the storm. Snow hauling for the City of Newton is accomplished using private contractors. This operation can, under normal condition (12" - 15" snowfall amount) be accomplished using nine pieces of equipment for each village crew. Attention will be given to times in which snow hauling operations occur on a storm by storm basis.

Snow Hauling Locations

1. Newton Centre
2. Washington Street (parking meter area)
3. Newtonville
4. West Newton
5. Nonantum
6. Newton Corner
7. Newton Highlands
8. Auburndale
9. Pettee Square
10. Waban Square
11. Key Intersections (Determined on a storm by storm basis)

Hauling Operations

Snow Hauling operations will be performed overnight at the key locations throughout the City. Typically, the snow hauling process is conducted over the period of two to three nights. Factors that may affect efficient operations include location of snow dumps, availability of police details, and equipment failures. Snow removal after a significant storm (16" or greater snowfall amount) extends the time needed to perform hauling in an efficient and effective manner. Parking lot snow removal may require additional nights.

Snow Storage Sites

1. Elliot Street Maintenance Yard (90 Elliot Street)
 2. Rumford Avenue DPW Yard (115 Rumford Avenue)
 3. Forte Park Vehicle Lot (233 California Street) ***Parks and Recreation site***
 4. Auburndale Park Vehicle Lot (West Pine Street)
 5. Upper Falls Playground Vehicle Lot (Chestnut Street)
 6. Cold Spring Park Vehicle Lot (Dunklee Street)
- Used only after the first three are at full capacity

Please Note:

Every effort will be made to minimize noise and disruption to City residents during hauling operations

Appendix F: Available Snow Equipment

Department	6 Wheeler	10 Wheeler	1 Ton/Pickup	Sidewalk Machines	Total
Highway	30	6	20	17	73
Utilities	6	1	11	0	18
Private Contractors	49	6	32	2	89
Total	85	13	63	19	180

Appendix G: Facilities and Materials

Location	Salt Capacity	Liquid Sodium Chloride (Brine)	Liquid Beet Juice (Organics)
Elliot Street Yard	5,000 tons	20,000 gallons	5,000 gallons
Crafts Street Yard	3,000 tons	5,000 gallons	0 gallons
Totals	8,000 tons	25,000 gallons	5,000 gallons

Appendix H: Salt Application Guidelines

The following is the guideline for salt usage. The application rates are based on several factors such as: weather conditions, intensity of the snowfall, materials on hand, and extended forecast. Each event will vary which necessitates each response to vary. These weights represent the amount of salt to be discharged per mile. The settings will allow for a maximum of 400 pounds per lane mile. The “blast” button will override the current setting and deliver a larger amount of salt per mile. However, it will deliver no more than the maximum of 400 pounds per lane mile.

Conditions			Light Snowfall			Heavy Snowfall			Freezing Rain		
Pavement Temp Range and Trend	Pavement surface at time of operation	Recommended Maintenance Action	Solid pounds per lane mile	Pre-wet solid pounds per lane mile	Comment	Solid Pounds per lane mile	Pre-wet Pounds per lane mile	Comment	Solid Pounds per lane mile	Pre-wet Pounds per lane mile	Comment
Above 32°F Steady or rising	Dry, wet, slush or light snow cover	Monitor Road Weather Conditions			1,2			1,2			1,2
Above 32°F Below is Imminent	Dry	Apply Liquid or Pre-wetted solid		50-100			50-100	3			
	Wet, slush or light snow cover	Apply Liquid or Pre-wetted solid	50-100	50-100		200-300	100-200	3	300-400	200-300	
25°F to 32°F Steady	Dry	Apply Liquid or Pre-wetted solid		50-100			100-200	3			
	Wet, slush or light snow cover	Apply Liquid or Pre-wetted solid	100 to 200	50-100	5	300-400	300-400	3,5	300-400	300-400	
20°F to 25°F Steady	Dry	Apply Liquid or Pre-wetted solid		100-200							
	Wet, slush or light snow cover	Apply Liquid or Pre-wetted solid	200-300	100-200	5,6	Max 500	Max 500	5,6	Max 500	Max 500	5,6
15°F to 20°F Steady	Dry	Monitor Road Weather Conditions			4			4			4
	Wet, slush or light snow cover	Apply solid materials	300-400	300-400	5,6	Max 500	Max 500	5,6	Max 500	Max 500	5,6
Below 15°F Steady or Falling	Dry	Monitor Road Weather Conditions			4			4			4
	Wet, slush or light snow cover	Plow as needed apply salt with liquid magnesium Chloride		200-300	5		Max 500	5	Max 500	Max 500	5

Comments:

1. Monitor temperatures and road pavement conditions for cold or icy spots. Treat problems as necessary.
2. Treat icy spots at 100 pounds per lane mile for solids or 20 gallons per lane mile for liquids, plow as needed.
3. Do not apply liquids to heavy snow accumulation or packed snow.
4. Do not apply chemicals and maintain dry pavement during windy conditions.
5. A mixture of salt and abrasives such as limestone sand may be necessary.
6. Liquid Magnesium Chloride may be used in temperatures less than 25°F.

Appendix I: Sensible Salting Plan

Effective winter storm maintenance has a direct impact on safety of the roadway users and on the personnel performing the maintenance. Since the use of salt in high concentrations can have a negative impact to the environment and to the streams, lakes, and rivers within Newton the development of Best Management Practices that minimize the use of road salt, will be adhered to during winter operations. Adherence to these guidelines helps reduce the environmental impacts associated with snow and ice control. The following proactive measures will be used as part of the sensible salting plan:

- winter materials will be stored inside salt barns
- pre-determined snow storage sites for hauling operations
- controlled maximum salt application rates at 400 pounds per lane mile
- salt spreader calibration
- pre-wetting solid salt as it is applied to the roadways
- staff training conducted annually and post storm
- continued monitoring of applied salt during and after snow storms

The Sensible Salting Plan contributes to the City's sustainability by reducing the environmental impact caused by snow and ice control. It also resolves the growing need for but decreasing availability and affordability of rock salt. The plan was developed based on research and benchmarking. The Sensible Salting Plan is divided into three areas:

1. Salt Application
2. Other methods of snow & ice removal
3. Mixing of Salt

Salt Application

Action: Snow and ice control vehicles will be *calibrated* to apply salt at the rate of 400 lbs. per lane mile at maximum. Salt application rates will be set at the lowest pounds per lane mile setting and adjusted as necessary based upon the roadway conditions.

Action: Salt will be *pre-wetted* with liquid chemical agents such as liquid salt brine or magnesium chloride. This allows more salt crystals to remain in the driving lanes and reduces bounce and scatter into the medians and berms.

Action: Identify low salt usage areas adjacent to the waterways throughout the City. The maximum application rate in the low salt areas will be 200lbs per lane mile.

Expected Outcome: Reduction of salt application rates applied to the roadways combined with pre-wetting salt at the spinner should reduce overall salt consumption and lessen the environmental impact from salt usage. This is now an industry standard practice which leads to cost-savings and reduces the environmental impacts of winter operations.

Other Methods

Action: Investing in and testing an *anti-icing* (brining program) to be more aggressive in application may decrease the amount of salt needed to break the icy bonds that form between the moisture on the road and the freshly fallen snow/ice. Brining will also be added to problem areas such as hills and shaded areas that create special concern for salting after an event has begun. Brining can also be used as a deicer under the proper conditions.

Expected Outcome: Anti-icing delays the bond of moisture to the pavement and reduces the salt application necessary.

Action: The *Compu-spread* program and GPS application will be in use and allow managers to closely monitor the application rates and locations of snow trucks.

Expected Outcome: Knowledge of exactly where trucks have passed, and the amount of salt applied will help prevent plowing off salt that needs more time to work or over-applying in areas where salt has already been applied. This program has the potential to save both salt and manpower/equipment costs.

These salt-saving ideas will be incorporated into the current Snow Plan for active use.

Mixing of Salt

Action: *Salt can be mixed with sand in some specific cases* at a ratio of 3:2 (salt to sand). While adding abrasives does not add to salt's ability to melt ice and snow, it can offer traction in situations where the amount of salt that would be applied alone would not be beneficial. The addition of abrasives would not be appropriate for all de-icing situations. A salt/sand mix application would be at the discretion of management. Areas or situations when/where de-icing with the abrasive mix might be beneficial include:

1. During particularly icy periods – salt will melt ice and the sand will add traction.
2. In residential areas – salt will melt ice/snow; the sand will give a visual cue and add traction.
3. In parking lots – salt will melt ice/snow and the sand will add traction.
4. When roadway temperature is well below freezing and rising.

Salt/Sand Mix Usage

Under Management's discretion, the option to mix salt/sand to utilize during snow and ice removal efforts under the following conditions/situation:

1. Used for general de-icing when salt supplies are at or less than 50% of storage capacity. Used for internal customers for de-icing parking lots and sidewalks. When the trigger amount of less than 50% is reached, then the salt/sand mix can be applied to local-through streets post-plowing.

When half the trigger amount (25% capacity) is reached, then the salt/sand mix can be applied to both collector and local-through routes, post-plowing.

Under these rules, a salt/sand mix would not be used until existing storage reaches the specific levels as outlined above.

The use of salt/sand mix will be fully documented, including where it was applied, and what quantities. While there is a great deal of data on appropriate salt/sand mix ratios, the appropriate mix ratio is somewhat trial and error, and will/can be altered as necessary.

Mixed salt can be used both on the roadways and by internal customers who desire to de-ice roads/sidewalks. The type of sand used will be limestone sand, which has larger aggregates, and pulverizes to powder, instead of masonry sand, which is gritty, but tends to wash away easier.

Appendix J: Street Plow Routes

Street Responsibility Chart

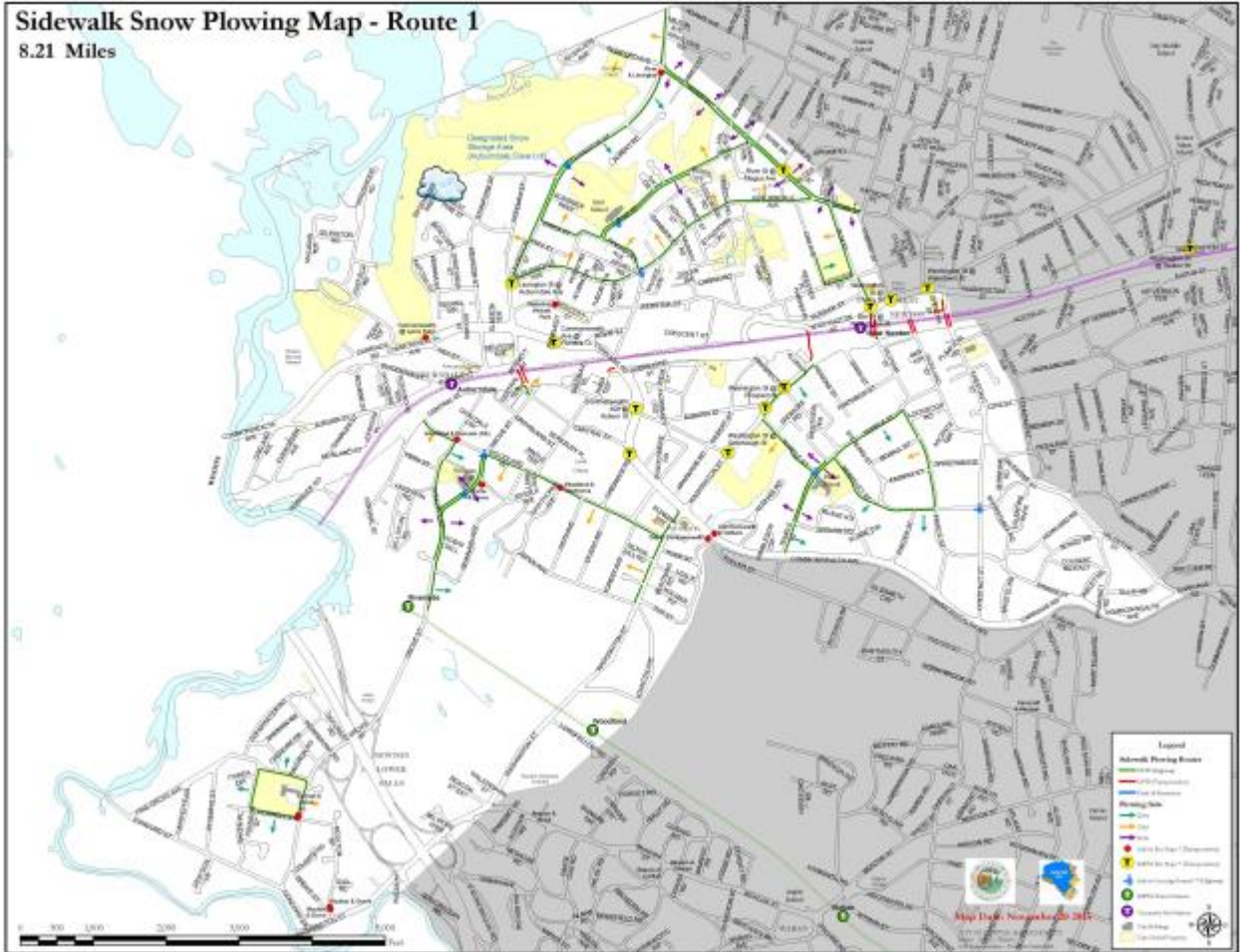
Newton Street Name:	From	To	Street Name Surrounding Community	Name of Surrounding Community
Nonantum Road	#1 Nonantum Road, Newton	Softball Field by 20 Nonantum Road	Nonantum Road	Brighton
Hunnewell Avenue	Ends at 9 Hunnewell Avenue (End of Road--Dead End)	Road of same name restarts at Burton Street	Hunnewell Avenue	Brighton
Washington Street	11 Washington Street, Newton	17 Washington Street, Brighton	Washington Street	Brighton
Tremont Street	147 Tremont Street, Newton	141 Tremont Street, Boston	Tremont Street	Boston
Ricker Terrace	19-21 Ricker Terrace, Newton	20 Ricker Terrace, Boston	Ricker Terrace	Brighton
Nonantum Street	2 Nonantum Street, Newton	4-28 Nonantum Road, Brighton	Nonantum Road	Brighton
Rogers Street	21 Rogers Street, Newton	164 Brayton Road, Brighton	Brayton Road	Brighton
Kenrick Street	225 Kendrick Street, Newton	199 Kendrick Street, Brighton	Kenrick Street	Brighton
Commonwealth Avenue	7 Commonwealth Avenue Newton	2193 Commonwealth Ave., Boston	Commonwealth Avenue	Boston
Beacon Street	McGuinn Hall, 140 Beacon Street Newton	Campion Hall, 140 Beacon Street	Beacon Street	Boston
Acacia Avenue	194 Acacia Avenue, Newton	Beacon Street	Acacia Avenue	Boston
Reservoir Avenue	7 Reservoir Avenue, Newton	Beacon Street	Reservoir Avenue	Boston
Gatehouse Road	96 Gatehouse Road, Newton	Beacon Street	Chestnut Hill Driveway	Boston
Malia Terrace	21 Malia Terrace, Newton	Beacon Street	Reservoir Drive	Boston
Middlesex Road	174 Middlesex Road, Newton	180 Middlesex Road, Brighton	Middlesex Road	Brighton/Brookline Border
Devon Street	51 Middlesex, Road Newton	40 Devon Road, Brookline	Devon Street	Brookline
Dunster Road	41 Middlesex Road, Newton	23-59 Dunster Road	Dunster Road	Brookline
Hammond Street	542 Hammond Street, Newton	543 Hammond Street	Hammond Street	Brookline
Boylston Street	25 Boylston Street, Newton	1195 Boylston Street, Brookline	Boylston Street	Brookline
Hammond Pond Parkway	2 Hammond Pond Parkway	320 Hammond Pond Parkway	Hammond Pond Parkway	Brookline
Florence Street	188 Florence Street	809 Heath Street	Heath Street	Brookline
Craftsland Road	101-103 Craftsland Road, Newton	95 Craftsland Road, Brookline	Craftsland Road	Brookline
Newbrook Circle	1 Newbrook Circle, Newton	End of Road	Newbrook Circle	Brookline

Newton Street Name:	From	To	Street Name Surrounding Community	Name of Surrounding Community
Brookline Street	7 Brookline Street, Newton	849 Newton Street	Newton Street	Brookline
Lagrange Street	188 Lagrange Street, Newton	149 Rangeley Road	Rangeley Road/ Vine Street	Brookline
Nahanton Street	Wells Avenue Intersection	Charles River	Kendrick Street	Needham
Needham Street	320-322 Needham Street, Newton	33 Highland Avenue, Needham	Highland Avenue	Needham
Elliot Street	404-406 Elliot Street, Newton	16 Central Avenue	Central Avenue	Needham
Buttrick Street	37 Buttrick Road, Newton	194 Riverview Avenue	Buttrick Street	Waltham
Rumford Avenue	88 Rumford Avenue, Newton	26 Rumford Avenue	Riverview Avenue	Waltham
Lexington Street	5 Lexington St, Newton	1225-1609 Moody Street, Waltham	Moody Street	Waltham
Adams Avenue	14 Adams Avenue, Newton	Moody Street, Waltham	Adams Avenue	Waltham
Underwood Ave	31-33 Underwood Avenue, Newton	Moody Street, Waltham	Underwood Avenue	Waltham
Derby Street	316-318 Derby Street, Newton	Moody Street, Waltham	Crescent Street	Waltham
Laurel Avenue	17-19 Laurel Avenue, Newton	262 Lowell Street, Waltham	Laurel Avenue	Waltham
Tolman Street	60 Tolman Street, Newton	58 Tolman Street, Waltham	Tolman Street	Waltham
Milo Street	12 Milo Street, Newton	119 Washington Ave	Milo Street	Waltham
Washington Avenue	141-149 Washington Avenue, Newton	119 Washington Avenue	Washington Avenue	Waltham
Dana Road	89-91 Dana Road, Newton	99 Parameter Road	Fuller Street	Waltham
Cambria Road	30-31 Cambria Road, Newton	33 Cambria Road, Waltham	Robbins Street	Waltham
Arbor Road	16 Arbor Road, Newton	24 Arlington Road	Arlington Road	Waltham
Cherry Street	16 Cherry Street, Newton	3 Joyce Road, Waltham	Joyce Road	Waltham
Waltham Street	70 Waltham Street, Newton	1-21 Hamblin Road	High Street	Waltham
Decatur Street	9 Decatur Street, Newton	7 Decatur Street	Decatur Street	Waltham
Boyd Street	102 Boyd Street, Newton	Opposite Side of Street	Boyd Street	Newton/Watertown Border
North Street	206 North Street, Newton	291-299 Calvary Street, Waltham	Farwell Street	Watertown
Bridge Street	3 Bridge Street, Newton	Charles River	Bridge Street	Watertown
California Street	137-139 California Street, Newton	108 California Street, Watertown	California Street	Watertown
Watertown Street	232 Watertown Street, Newton	4 Pond Street, Watertown	Watertown Street	Watertown
Jackson Road	45-47 Jackson Road, Newton	21 Pond Street, Watertown	Jackson Road	Watertown

Newton Street Name:	From	To	Street Name Surrounding Community	Name of Surrounding Community
Jewett Street	108 Jewett Street, Newton	Opposite side of Boyd Street	Jewett Street	Watertown
Fayette Street	3-7 Fayette Street, Newton	To Opposite Side of Boyd Road	Fayette Street	Watertown
Arundel Terrace	48 Arundel Terrace, Newton	To Boyd Street, Watertown	Arundel Terrace	Watertown
Bigelow Terrace	9 Bigelow Terrace, Newton	30 Boyd Street, Watertown	Bigelow Terrace	Watertown
Centre Street	249 Centre Street, Newton	161 Galen Street, Watertown	Galen Street	Watertown
Boylston Street	744 Boylston Street, Newton	Charles River	Worcester Street	Wellesley
Washington Street	2 Washington Street, Newton	722-750 Washington Street	Washington Street	Wellesley
Broadlawn Park	34-36 Broadlawn Park, Newton	9-29 Broadlawn Park	Broadlawn Park	West Roxbury
Bryon Road	45-47 Bryon Road, Newton	Opposite Side of Street	Bryon Road	West Roxbury
Vine Street	308-310 Vine Street, Newton	570 Corey Street	Corey Street	West Roxbury
Dedham Street	1005 Dedham Street, Newton	792-798 Baker Street	Baker Street	West Roxbury
Concord Street	From Pine Grove Avenue, Newton	Charles River	Park Road	Weston
Commonwealth Avenue	2401 Commonwealth Avenue, Newton	Charles River	Commonwealth Avenue	Weston

Sidewalk Snow Plowing Map - Route 1

8.21 Miles



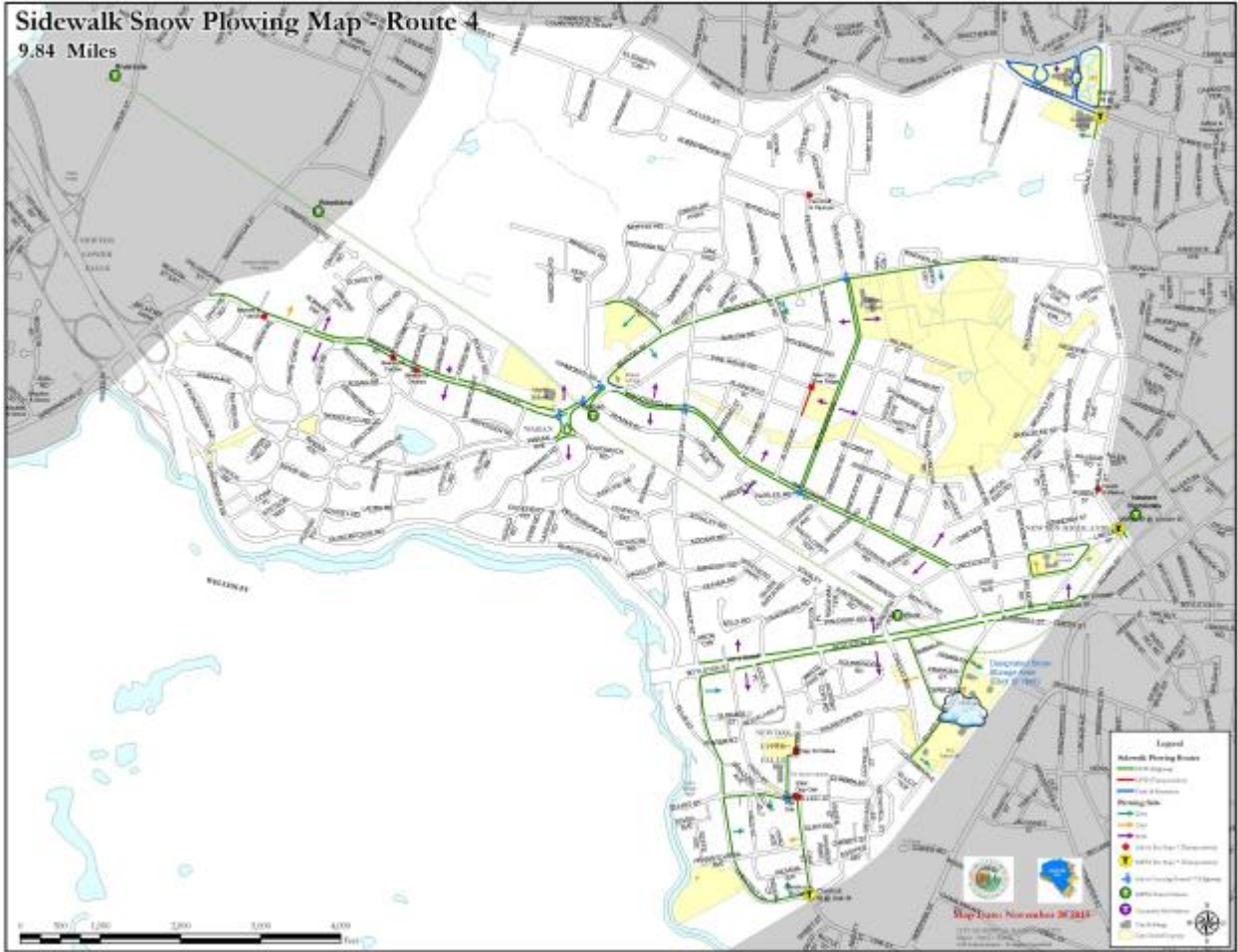
Sidewalk Snow Plowing Map - Route 2
9.6 Miles

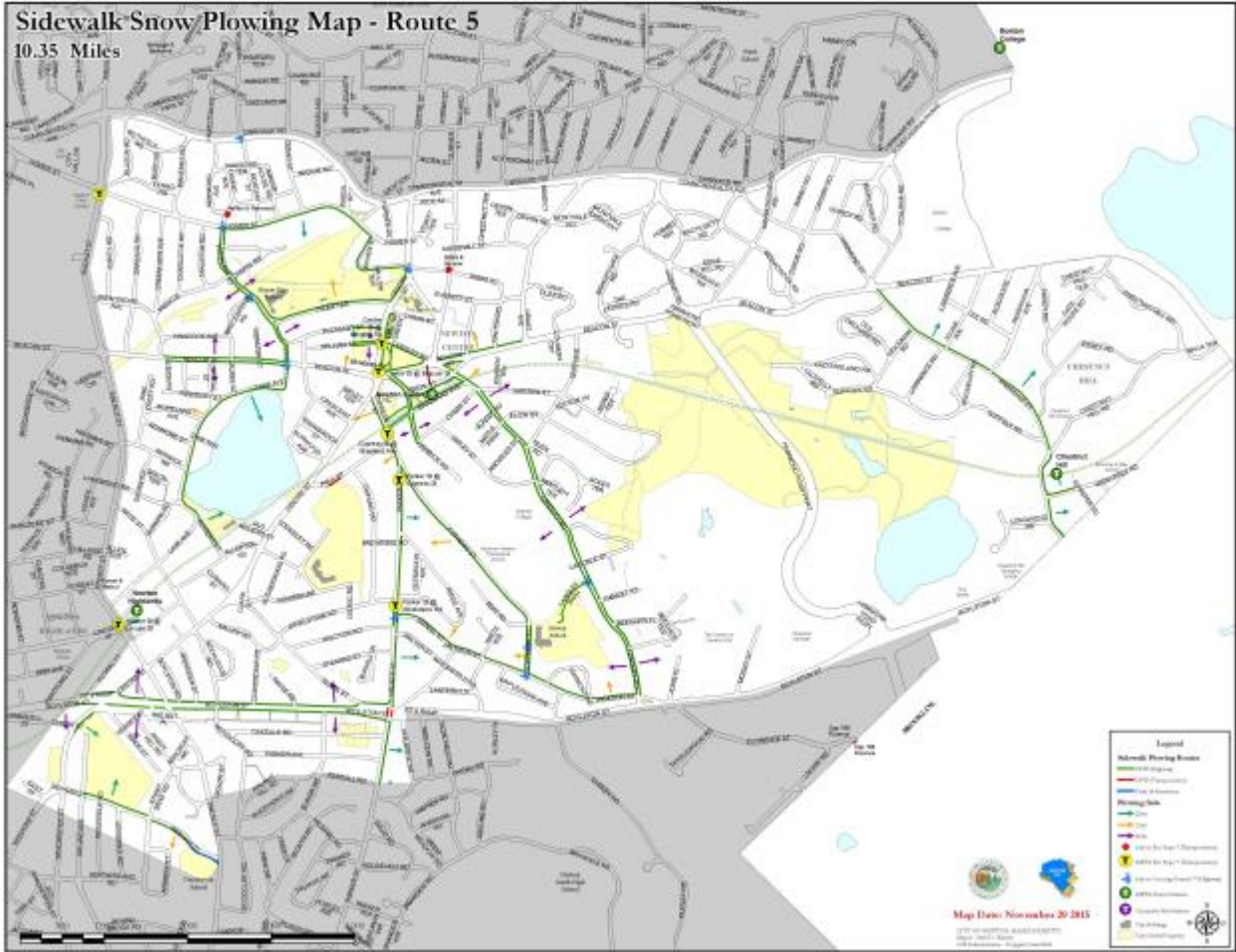


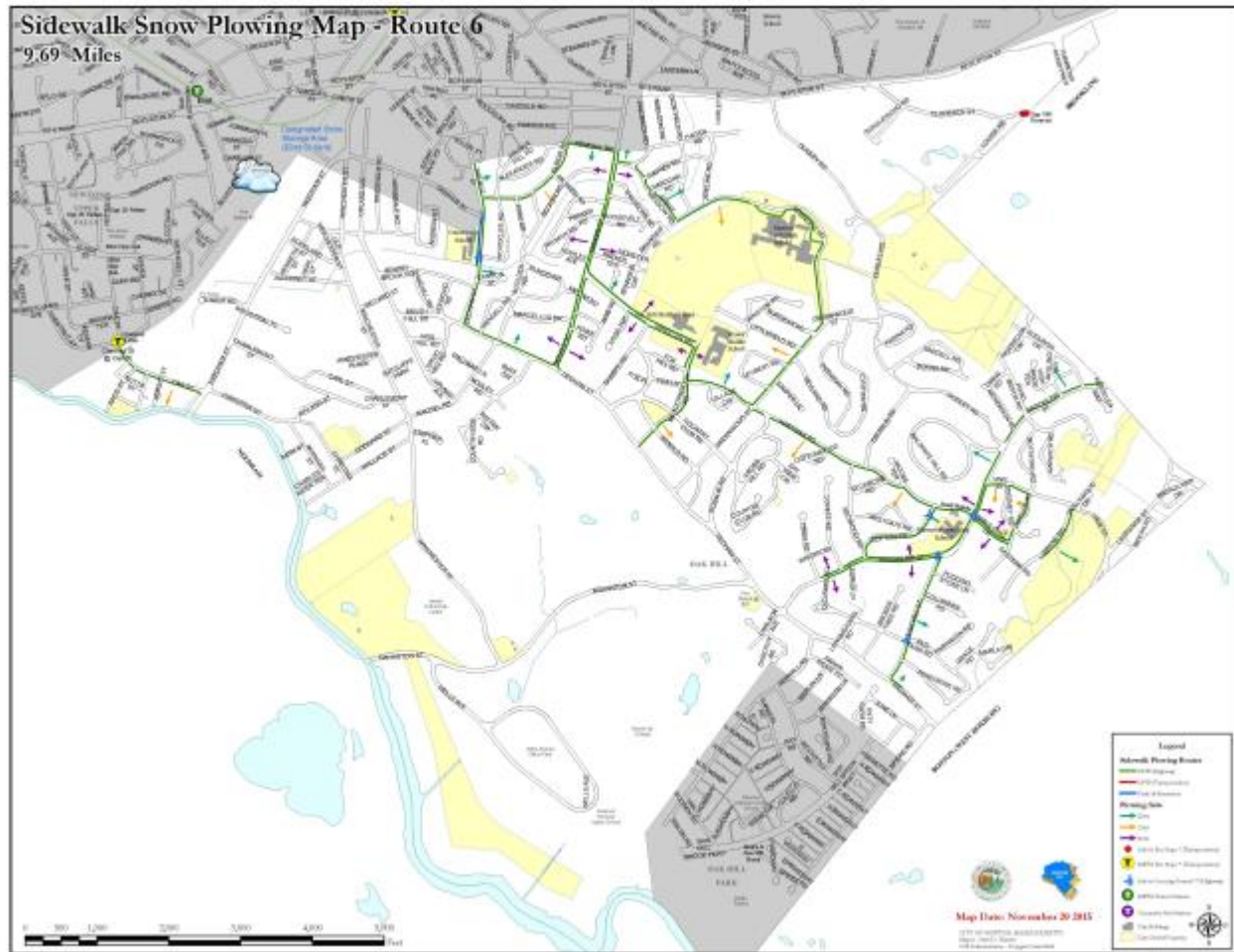
Sidewalk Snow Plowing Map - Route 3

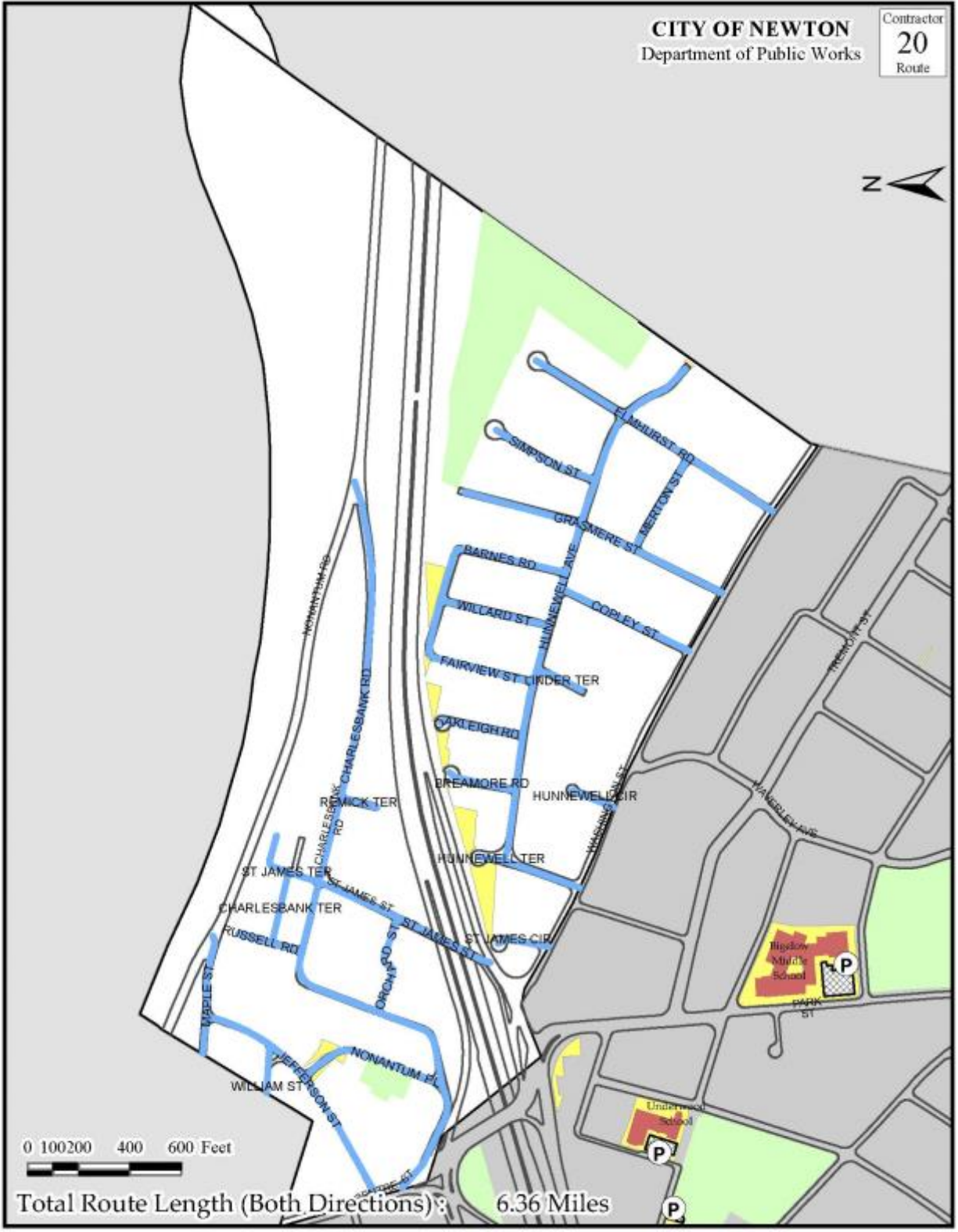
6.44 Miles





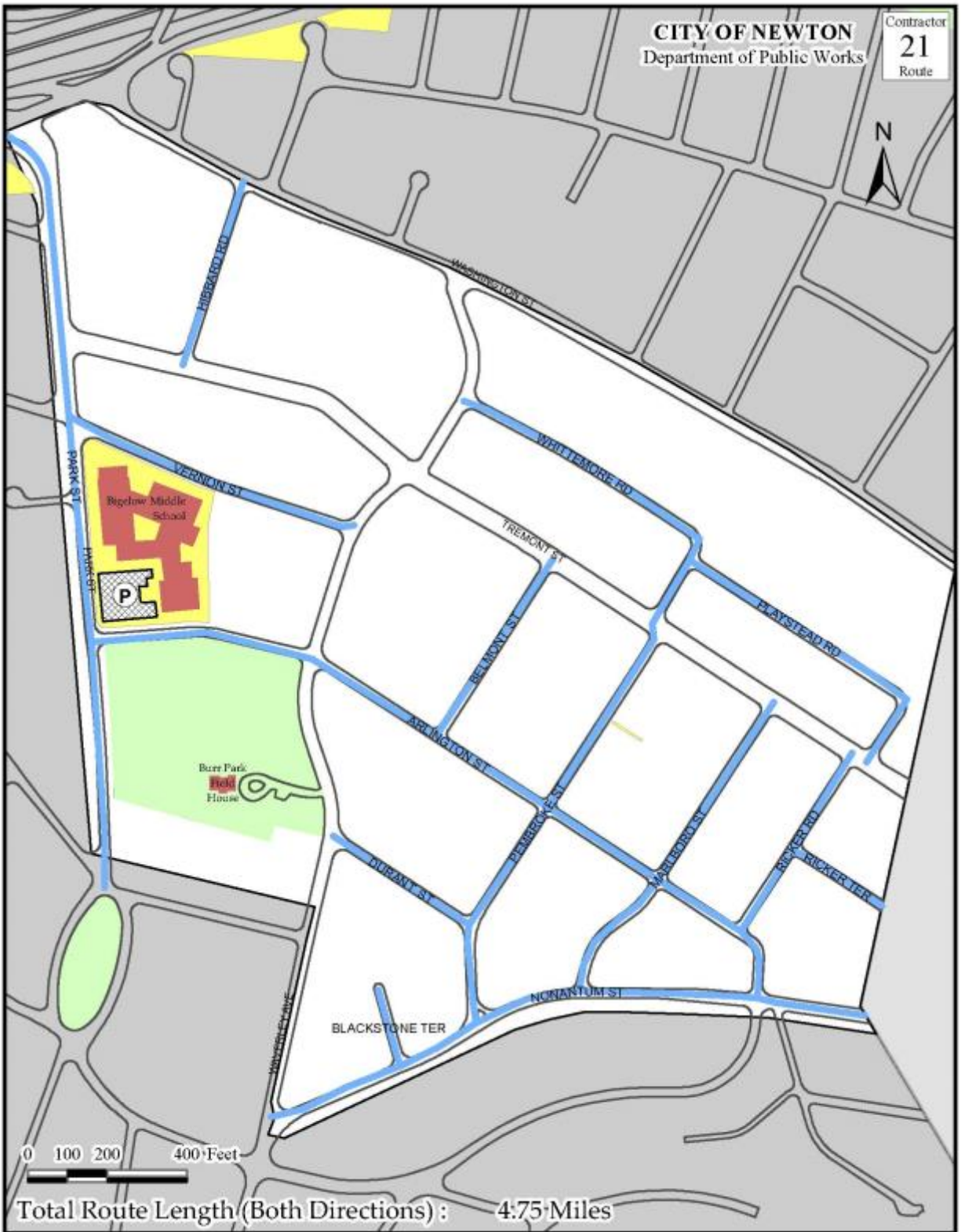


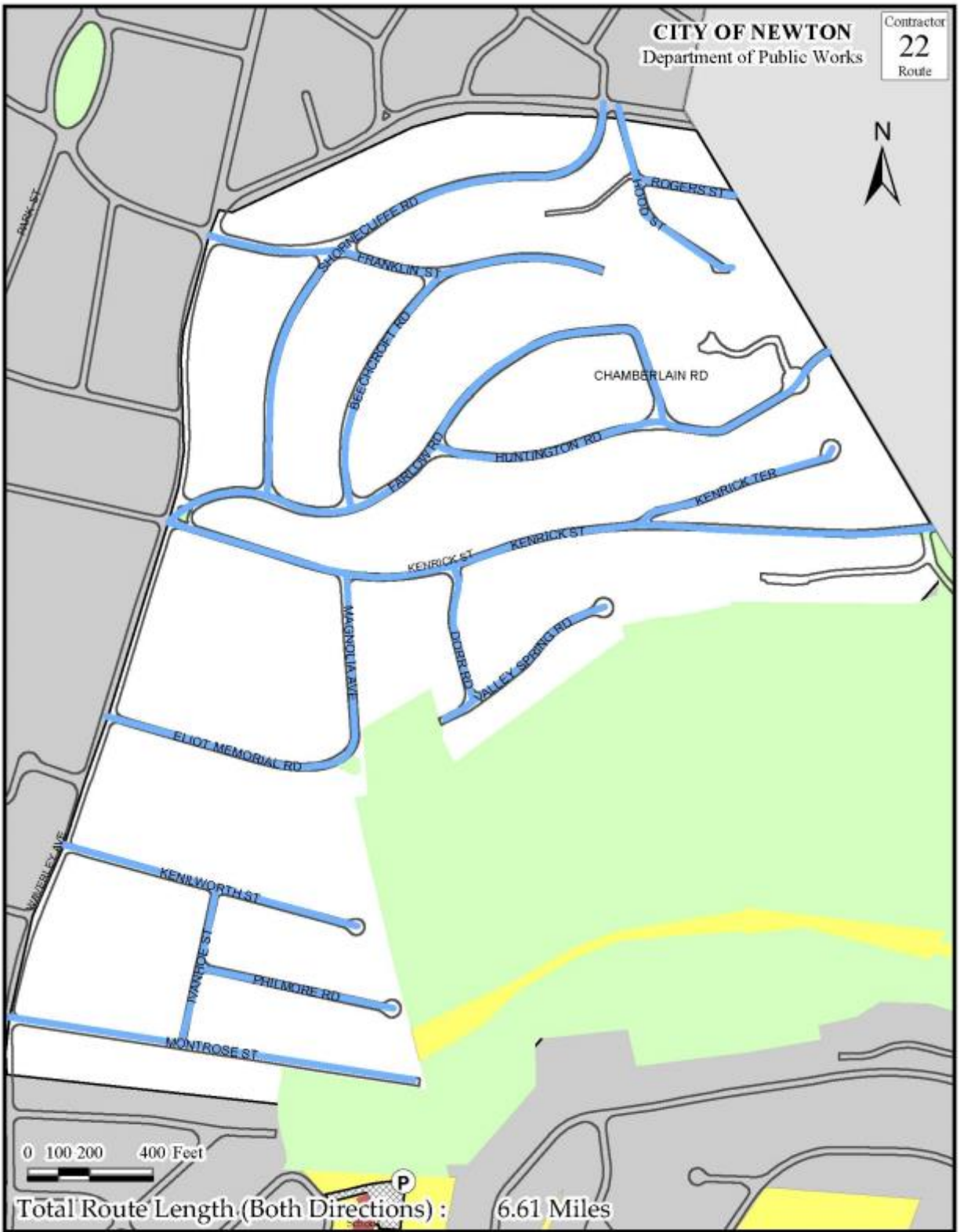


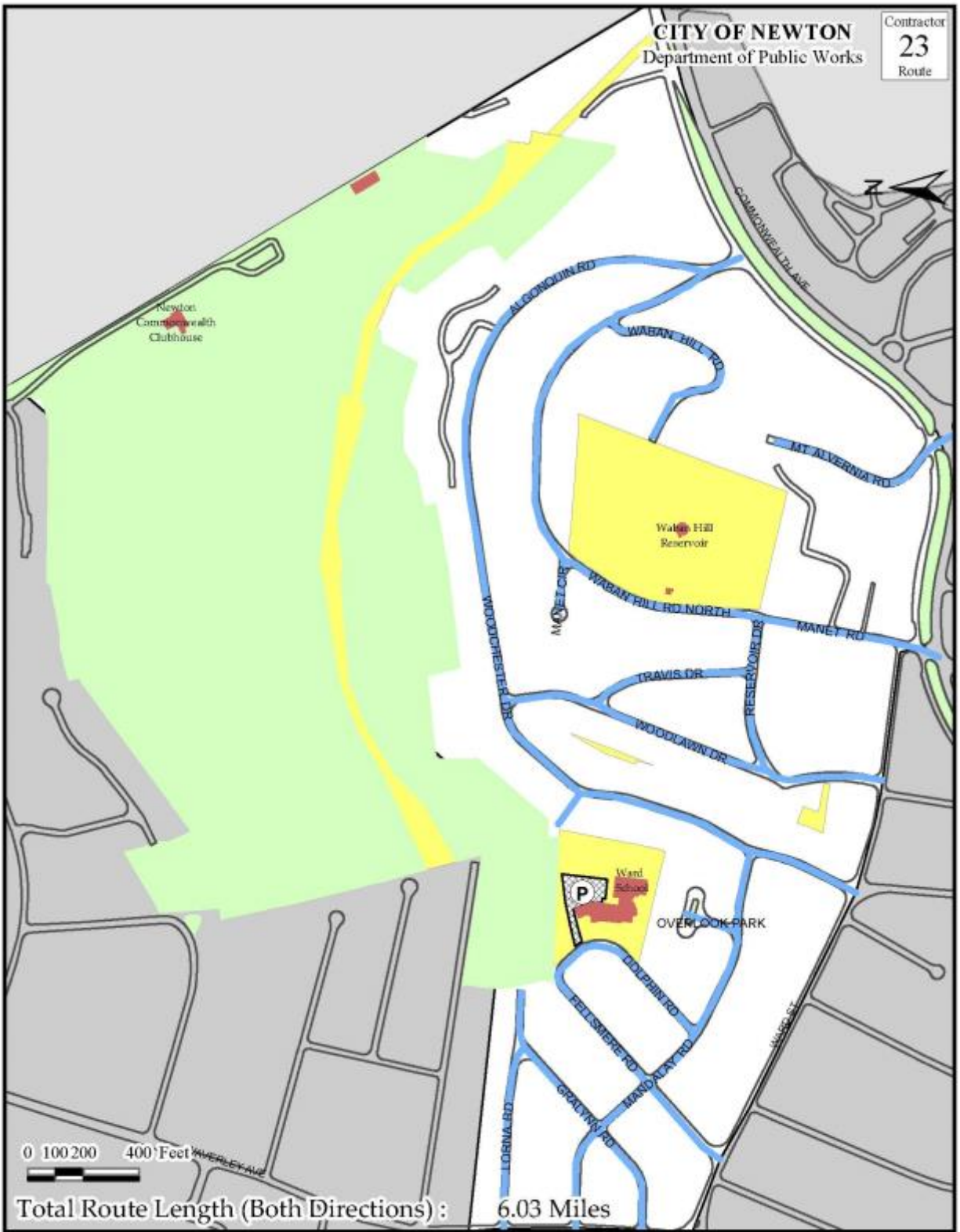


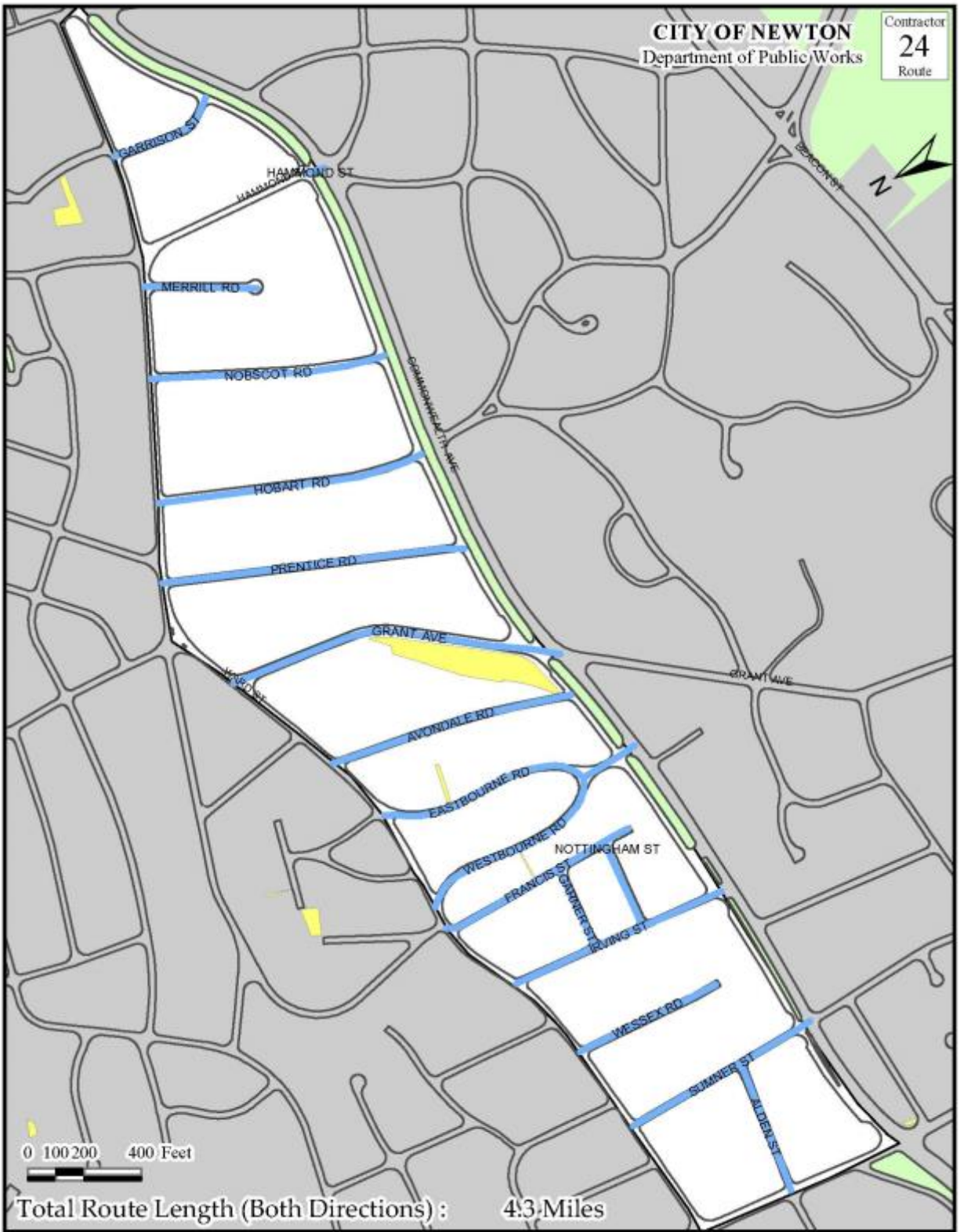
0 100 200 400 600 Feet

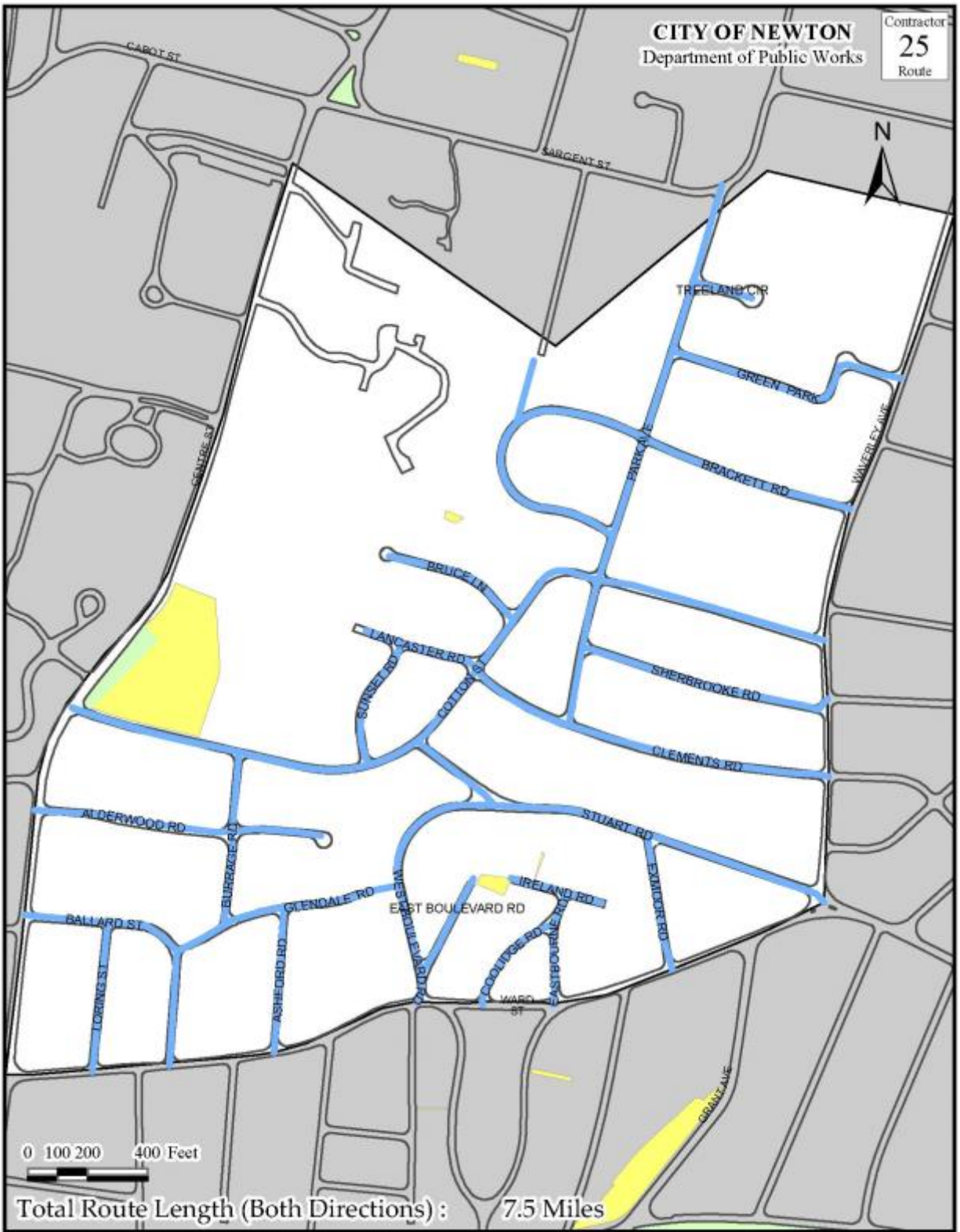
Total Route Length (Both Directions): 6.36 Miles

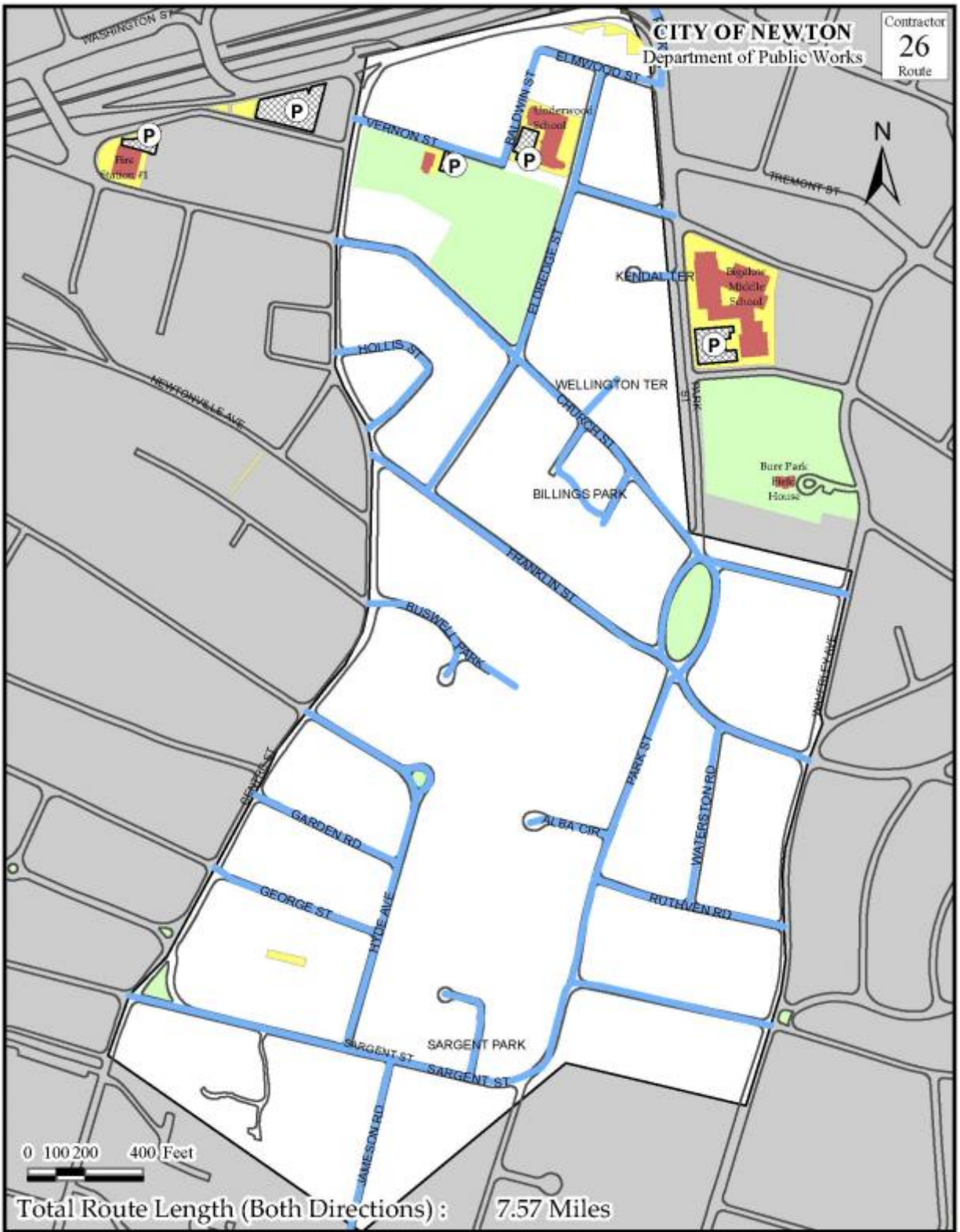


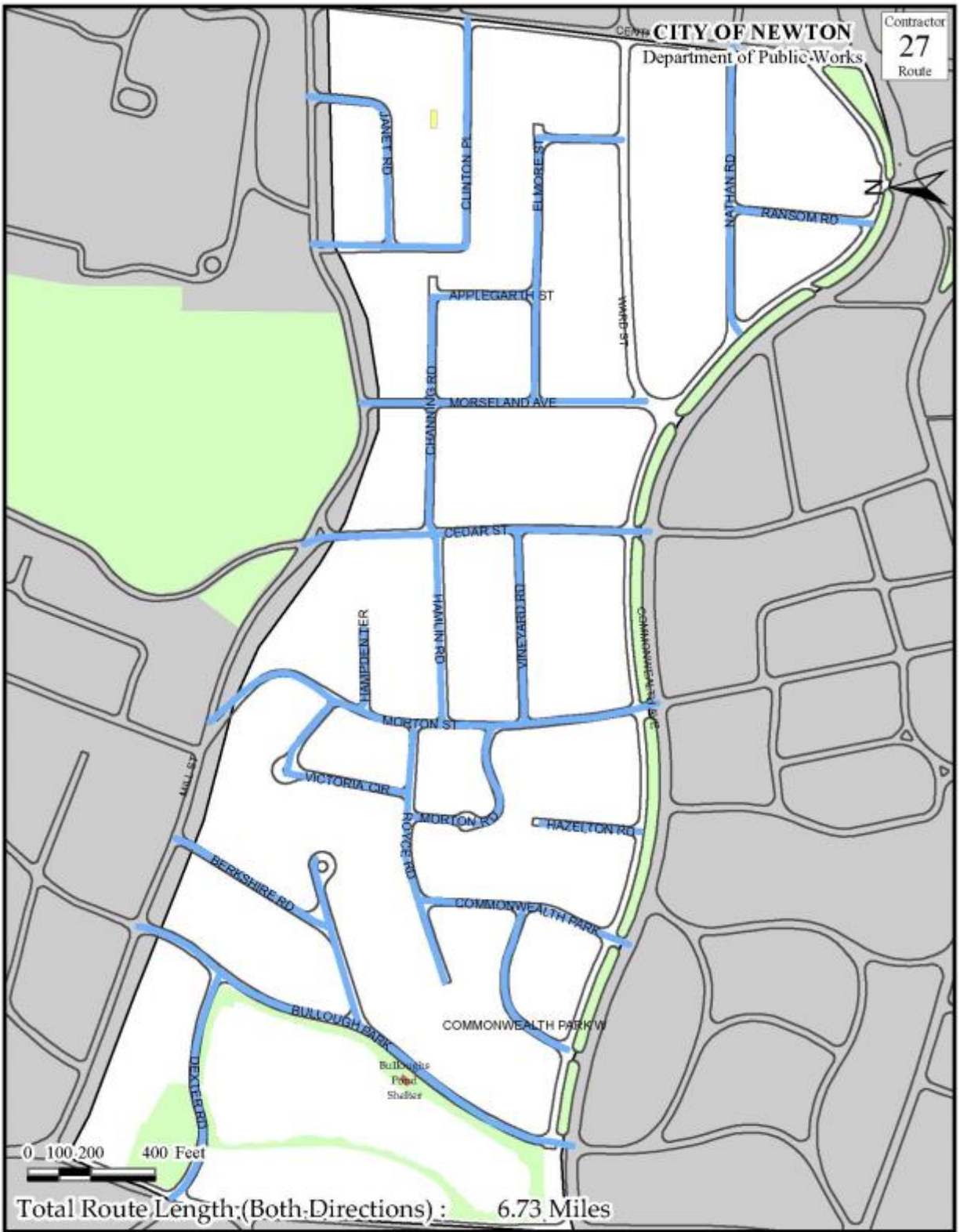


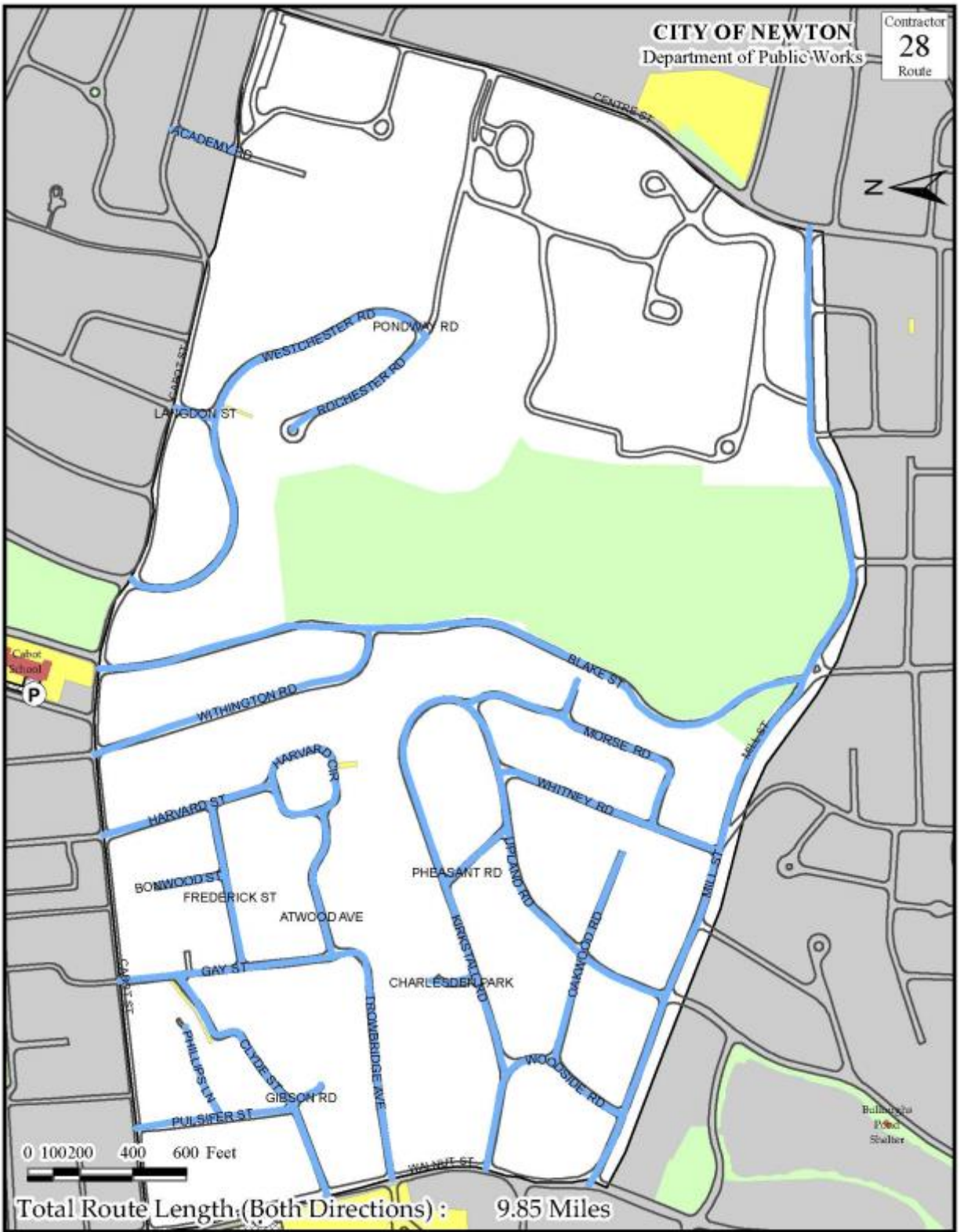


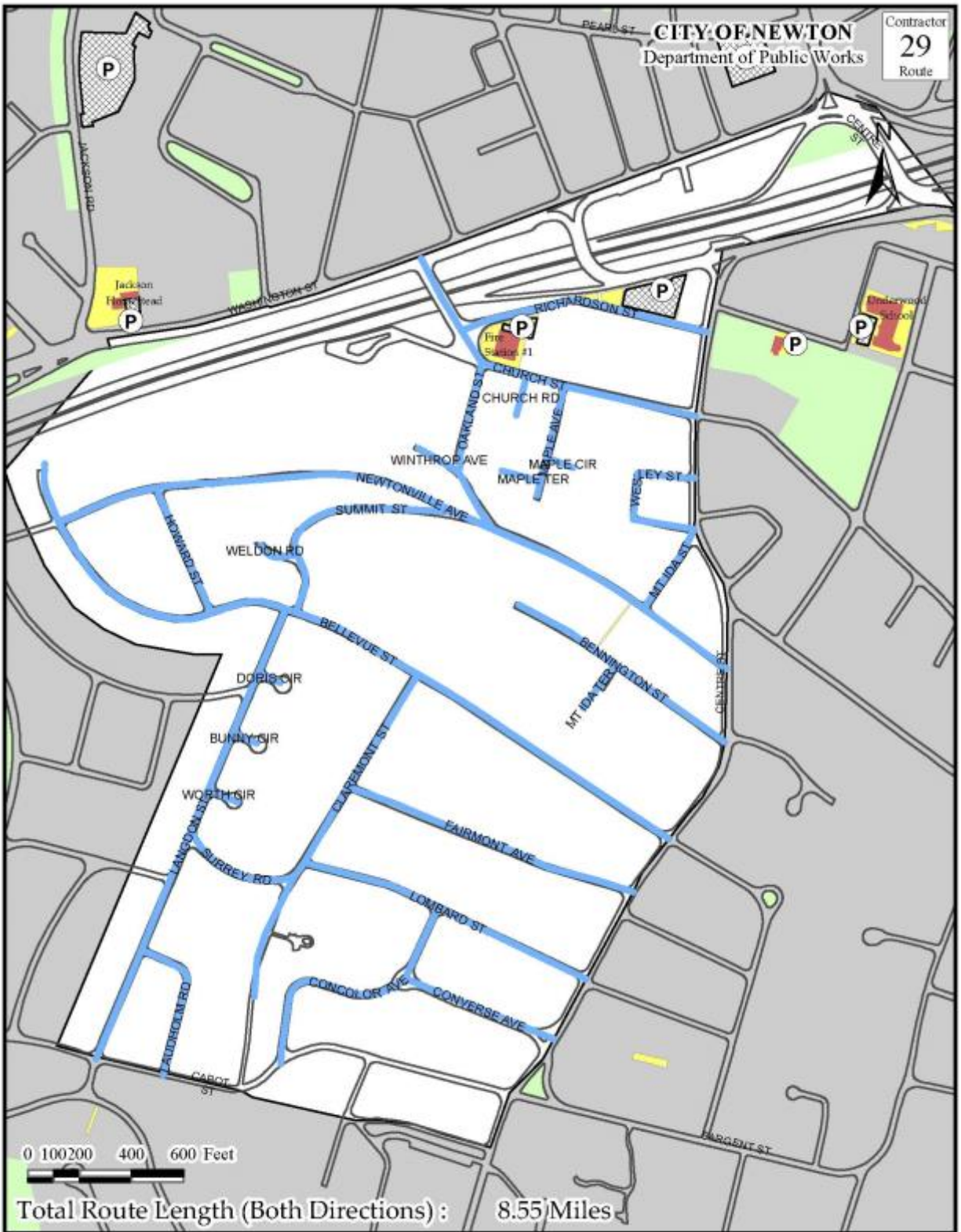


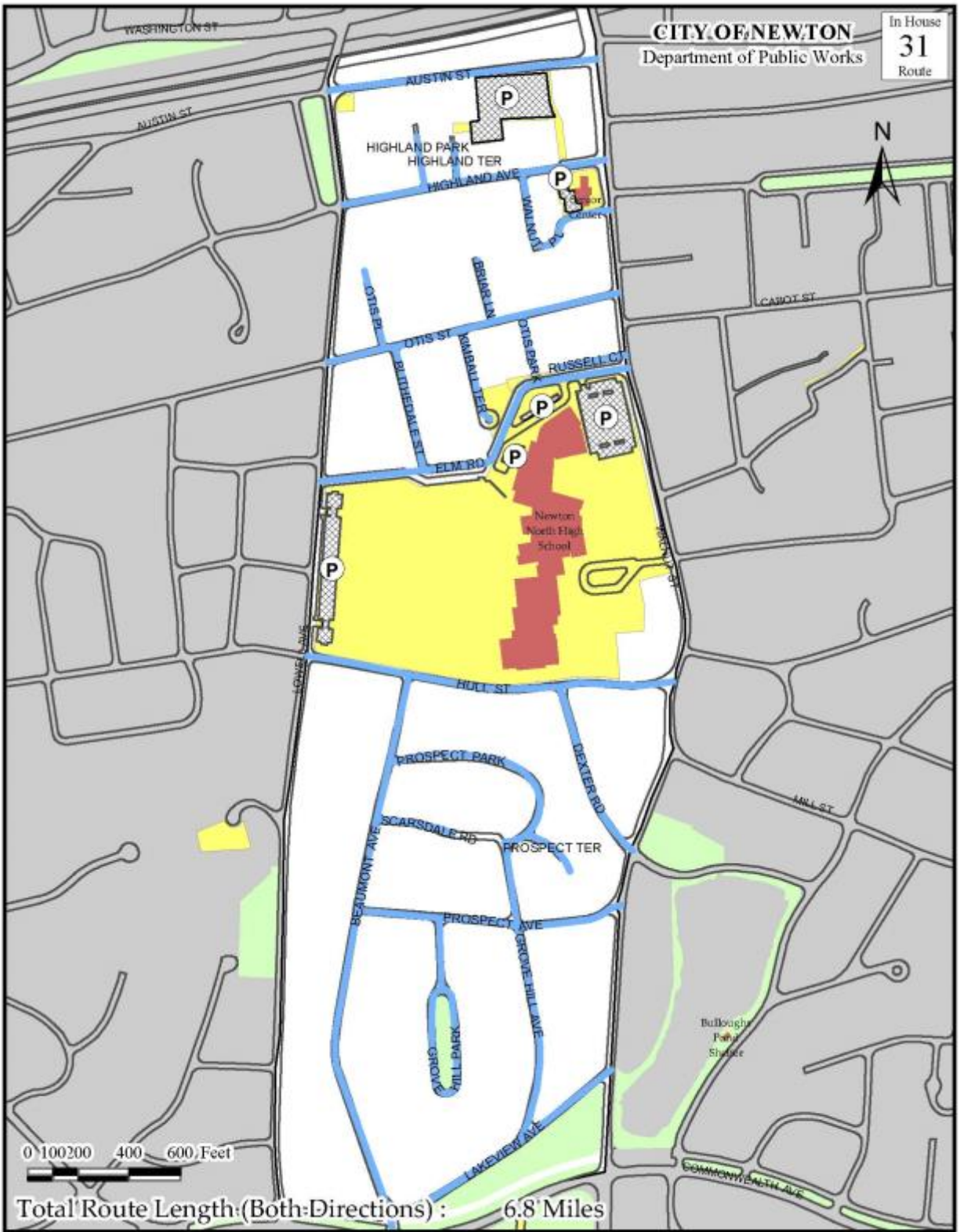


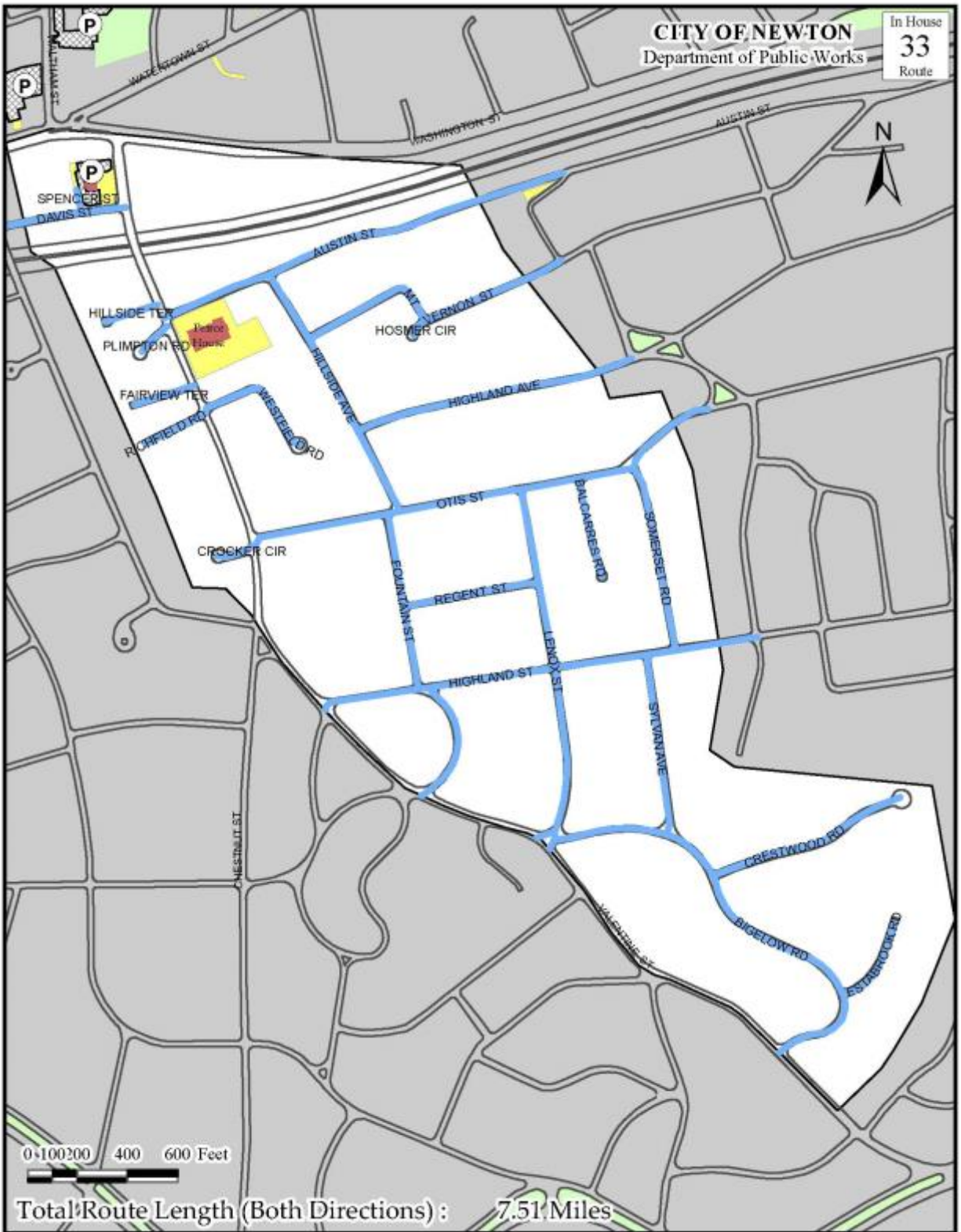


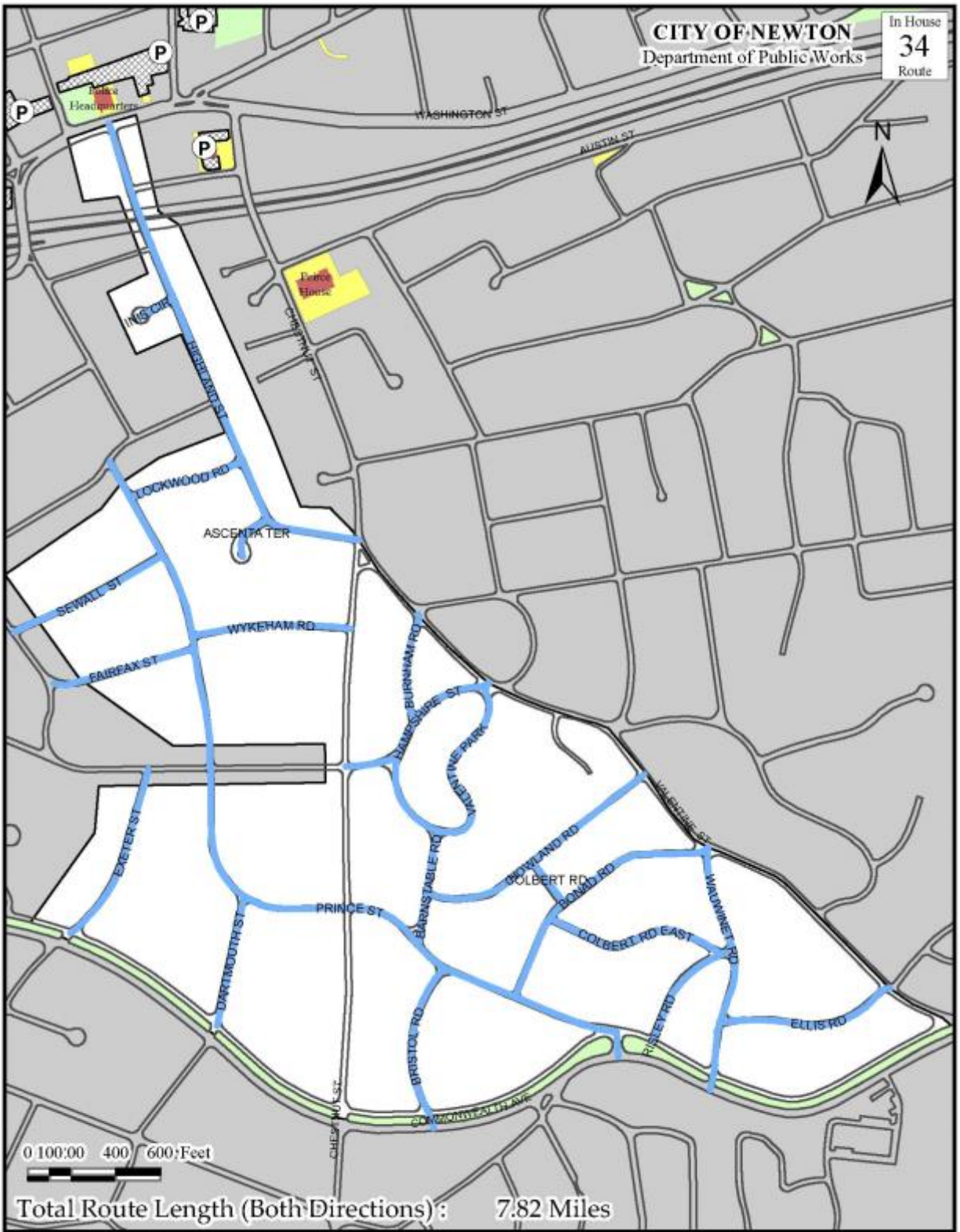


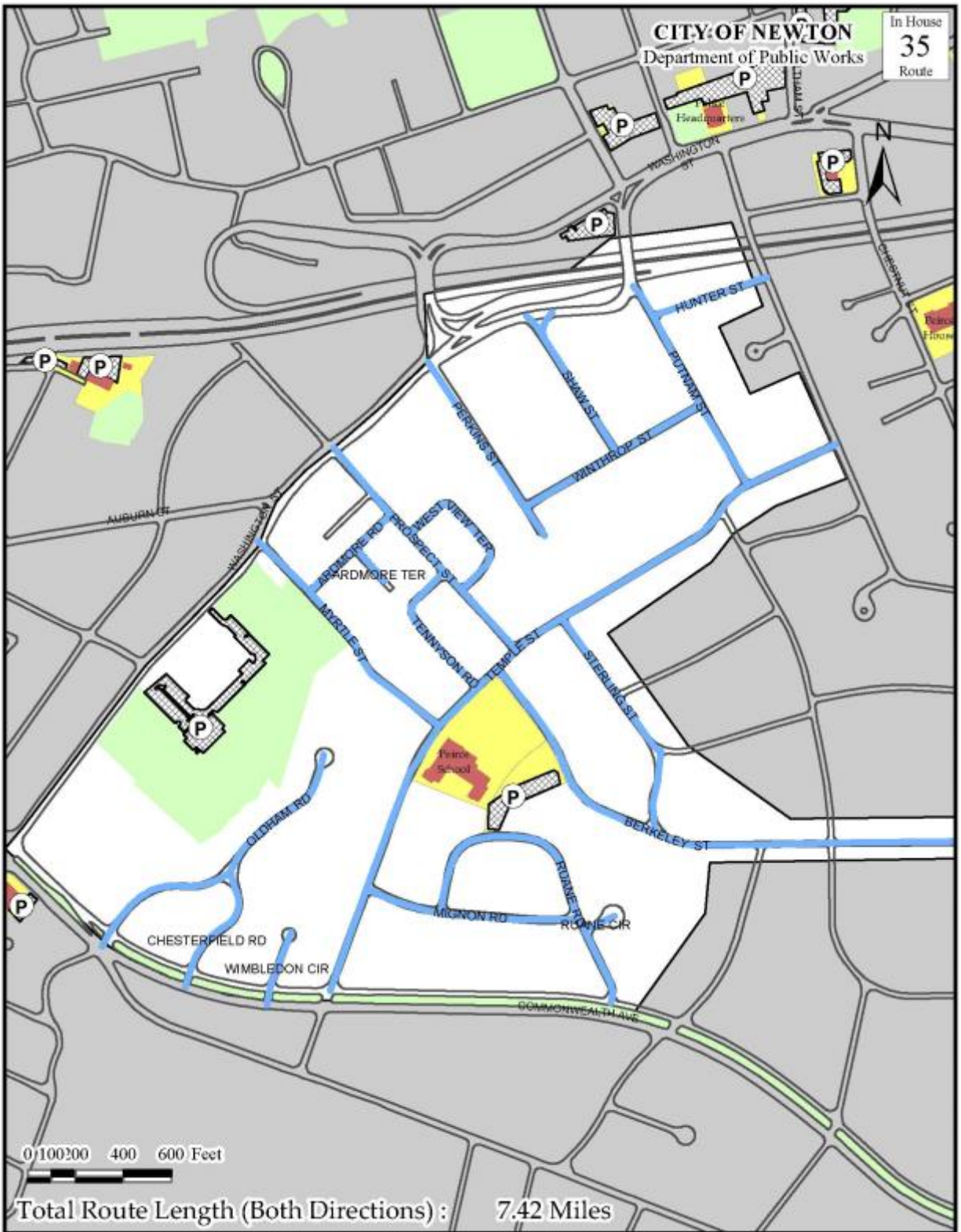


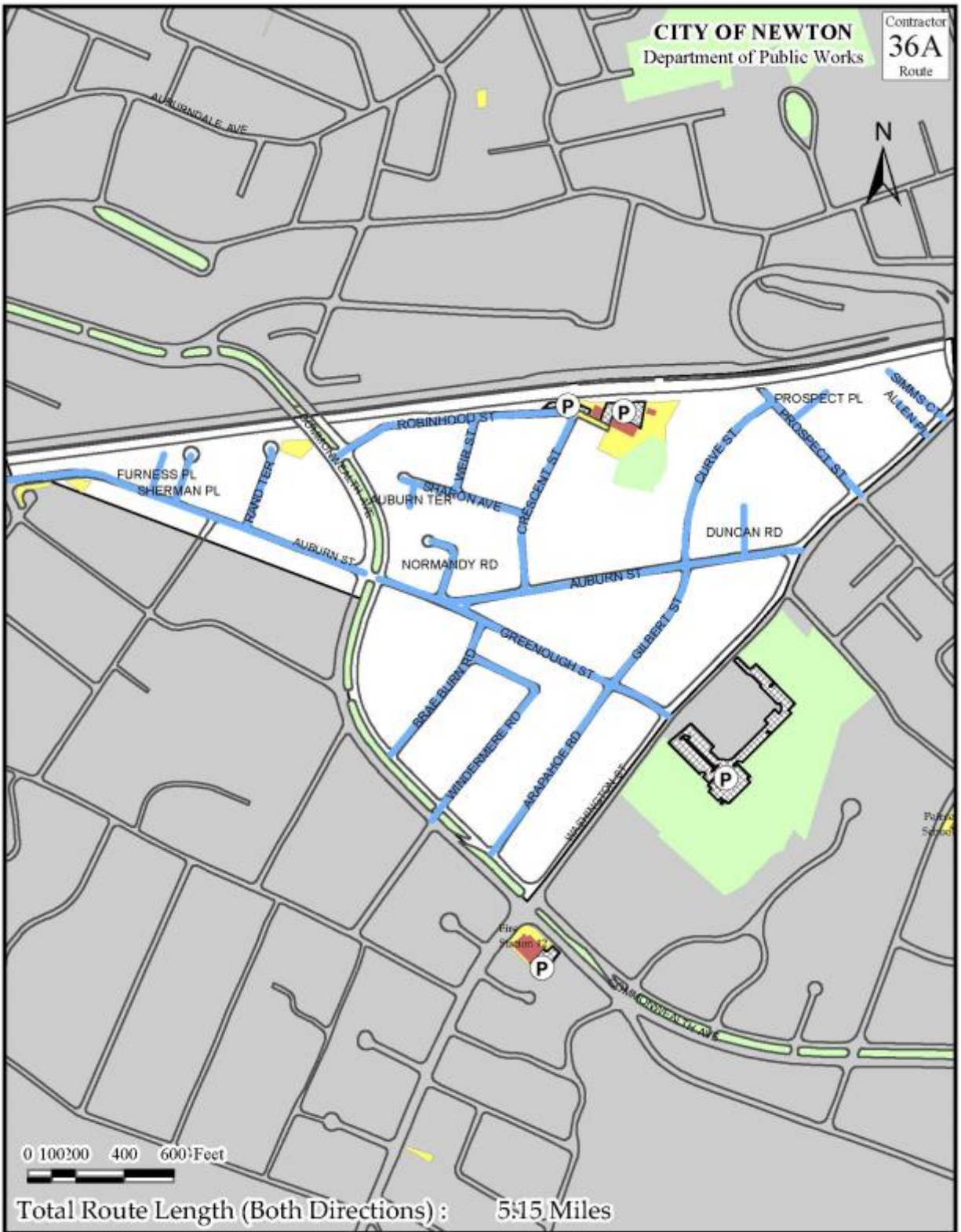


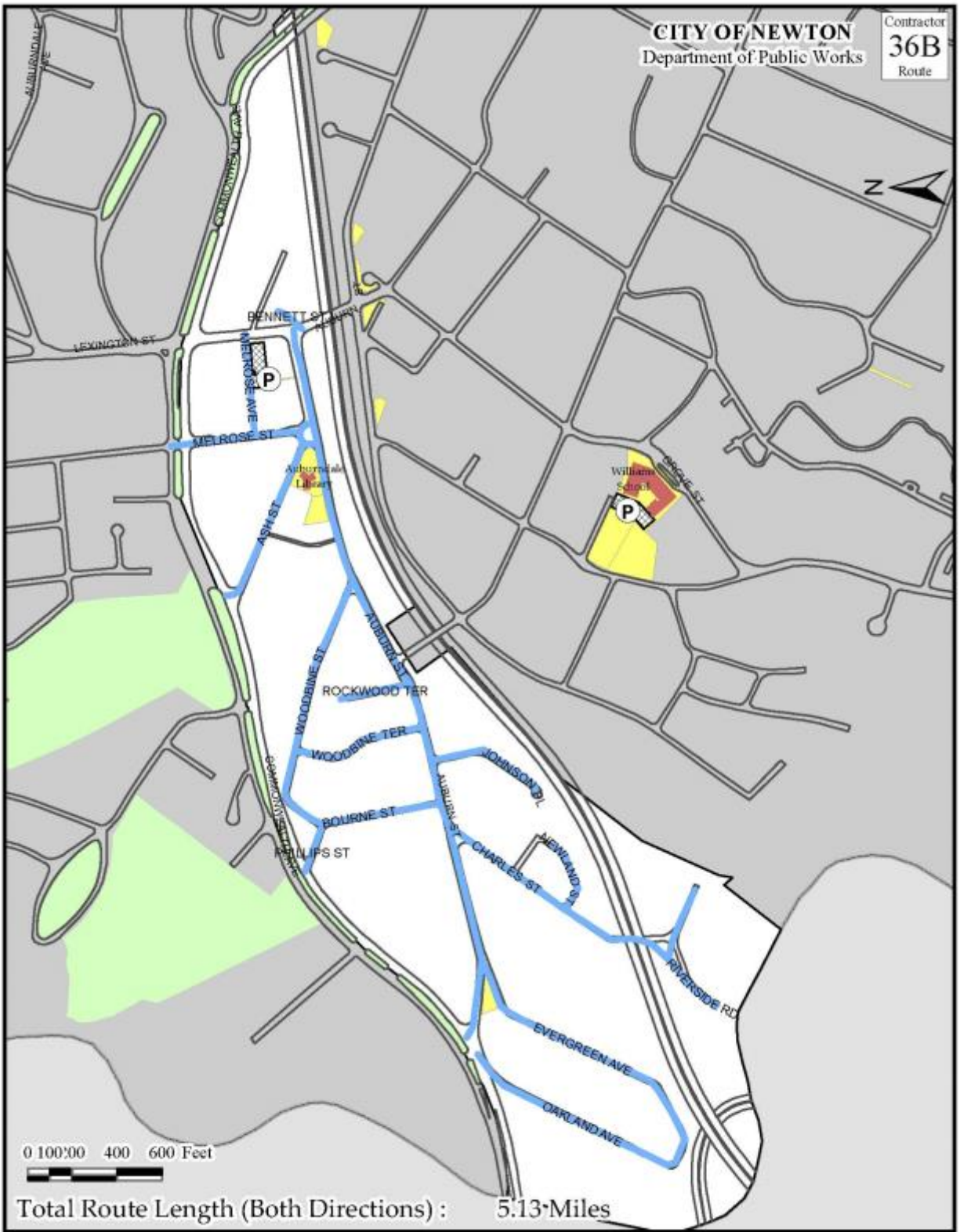


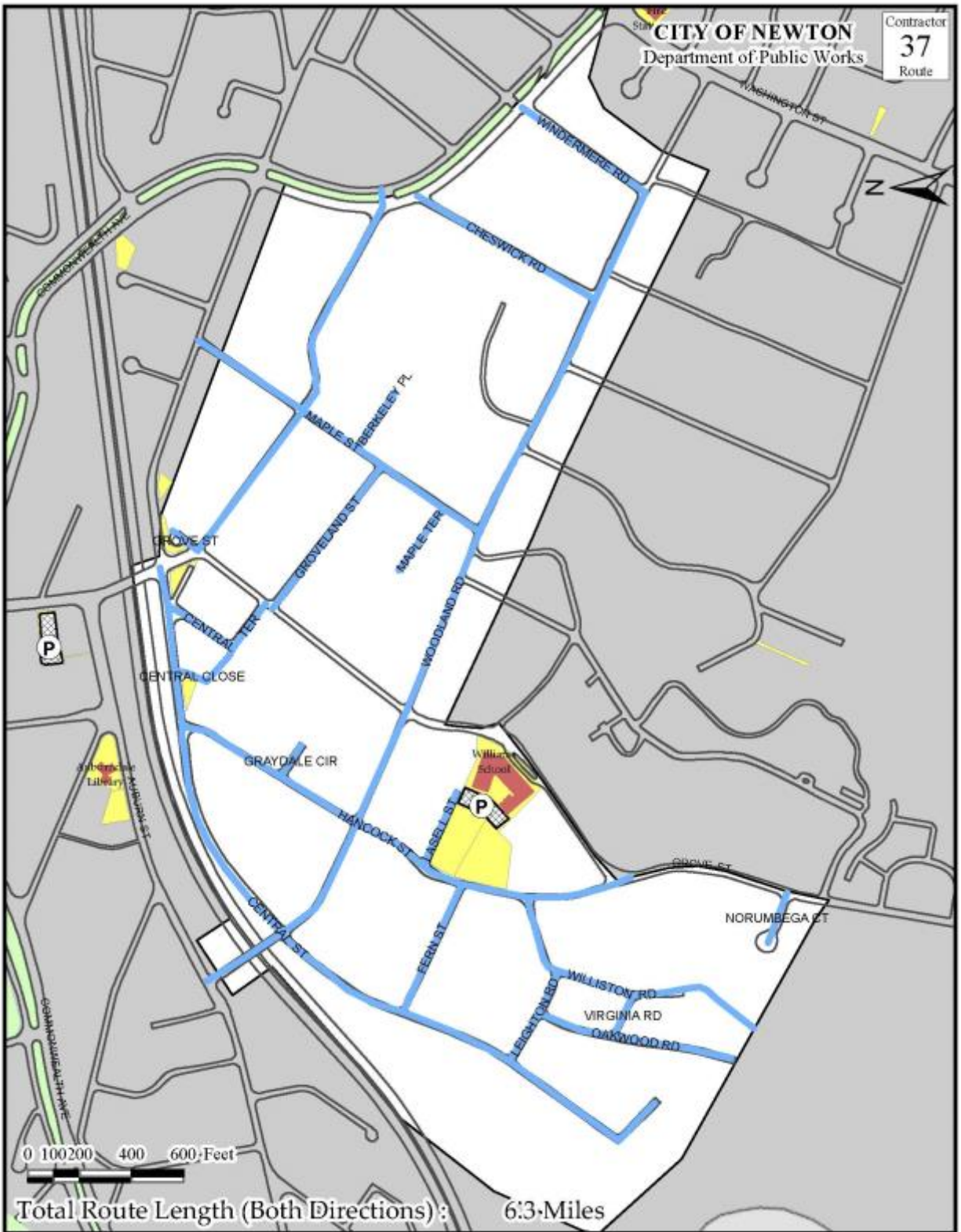


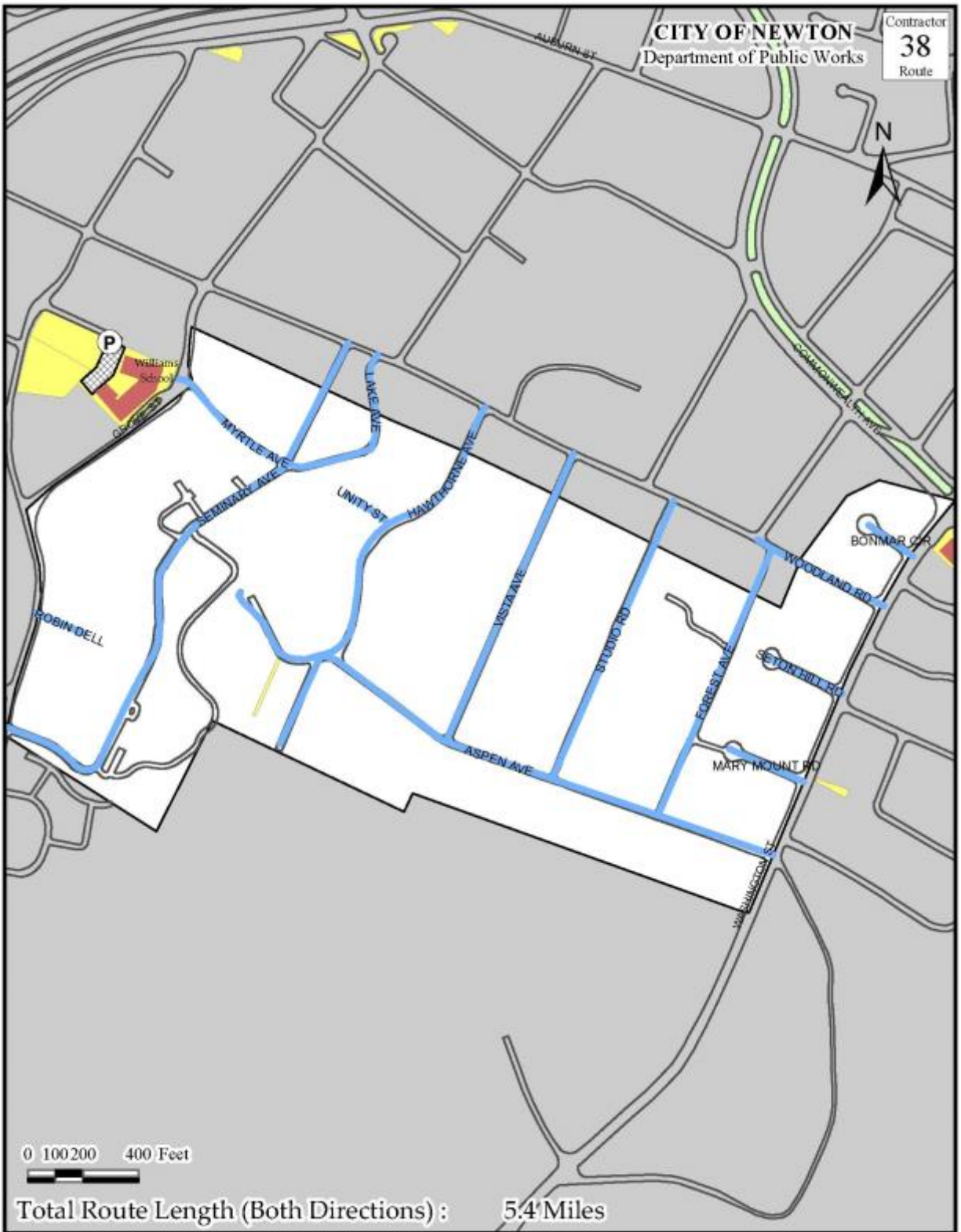


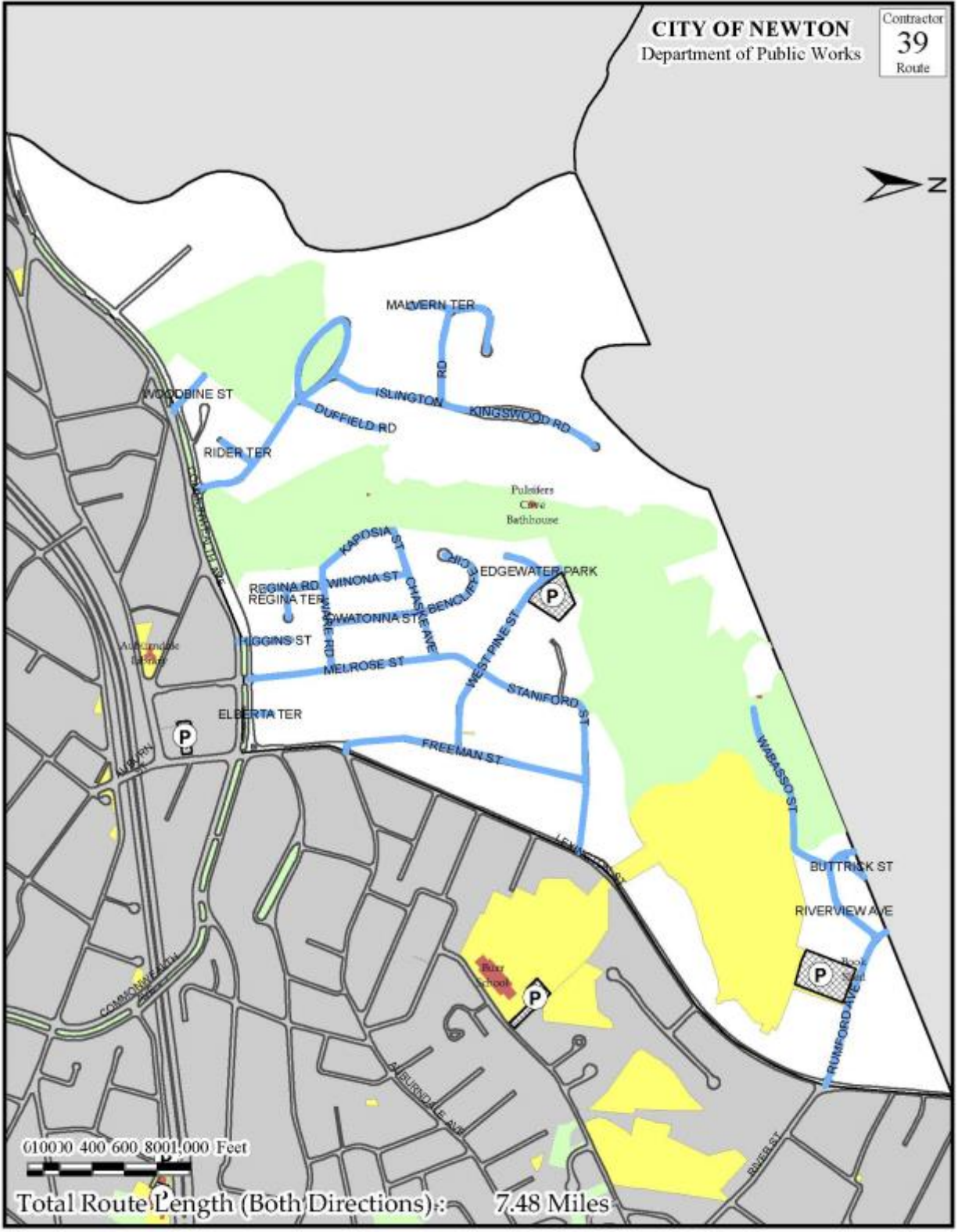






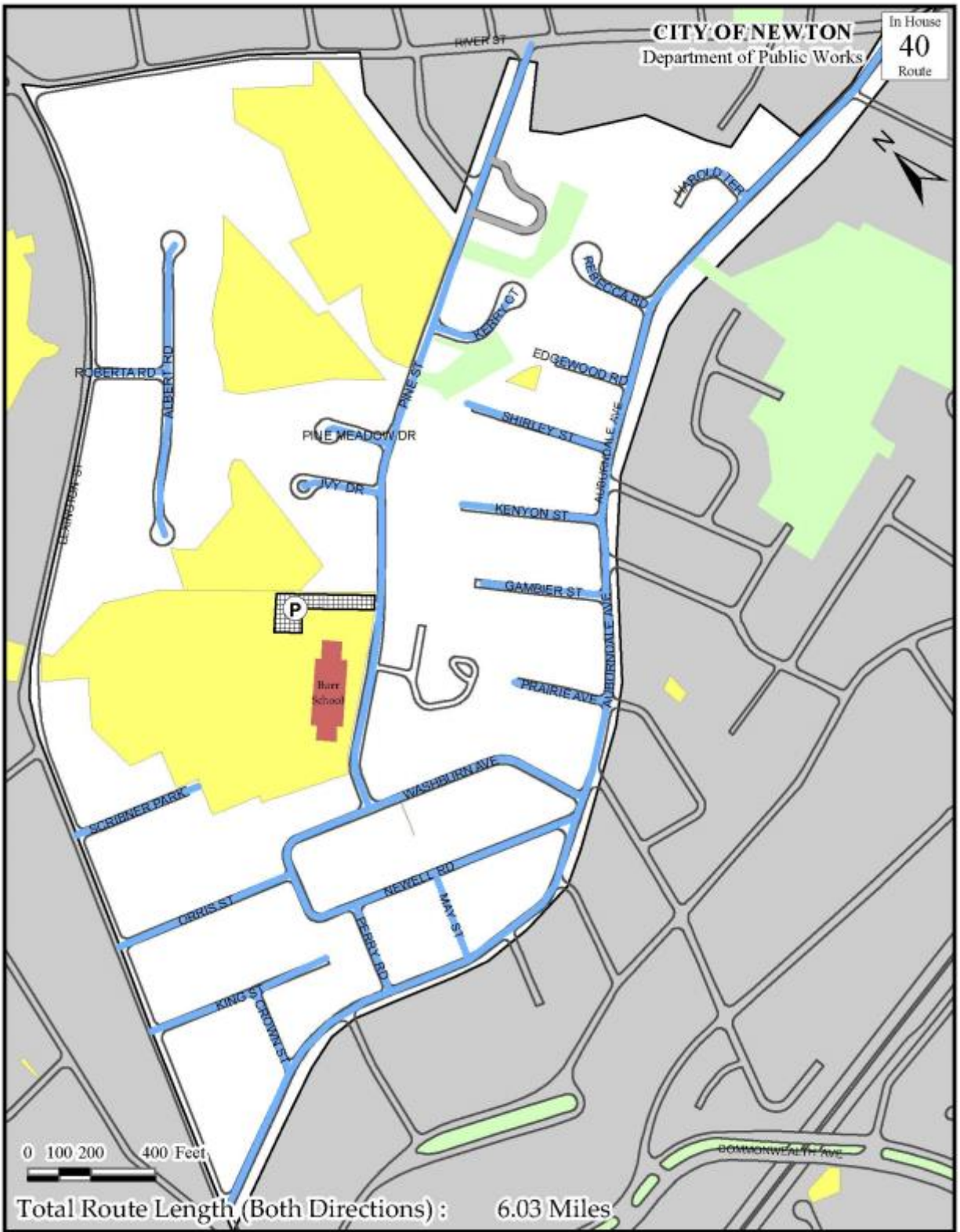


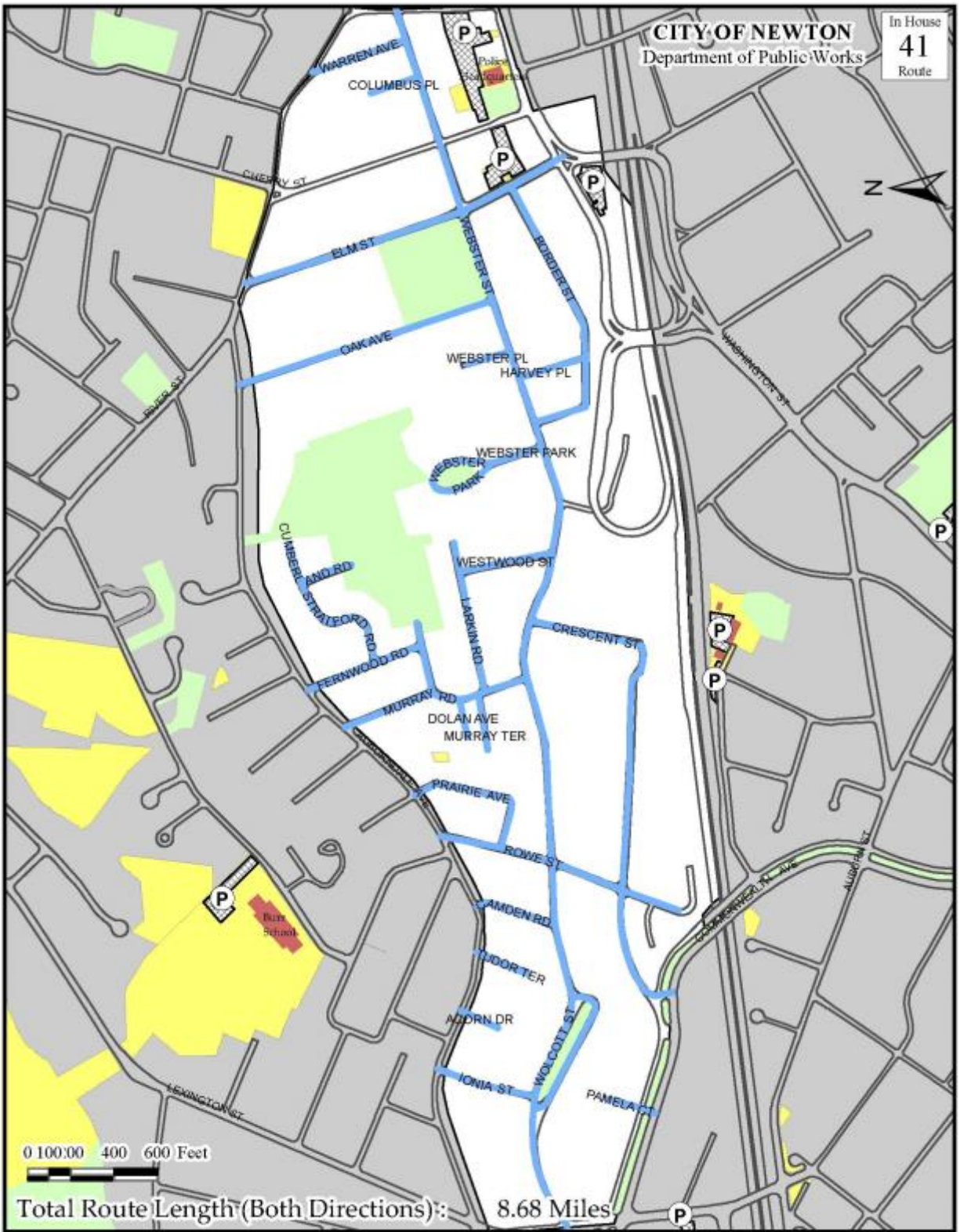


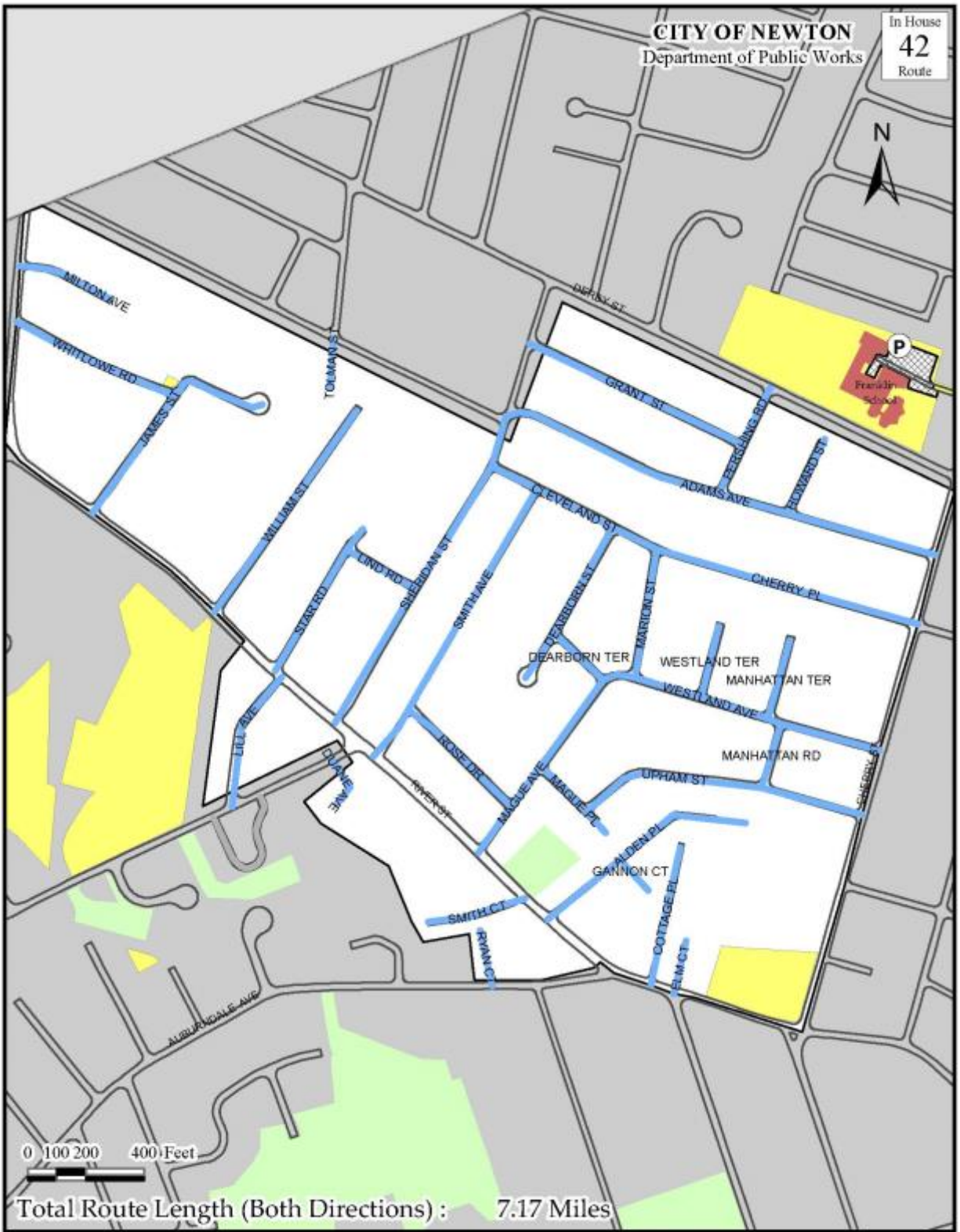


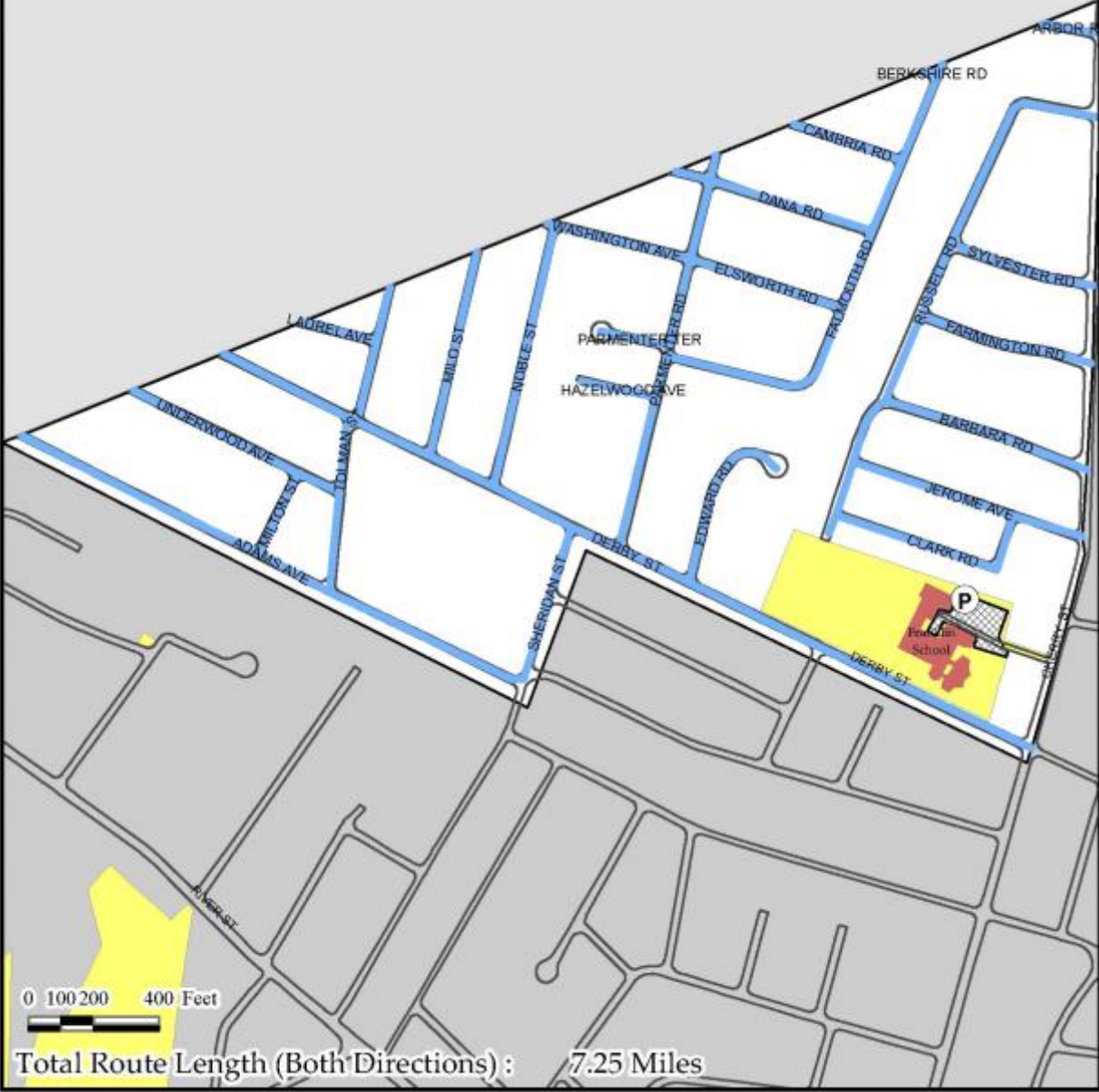
0 100 200 400 600 800 1000 Feet

Total Route Length (Both Directions): 7.48 Miles



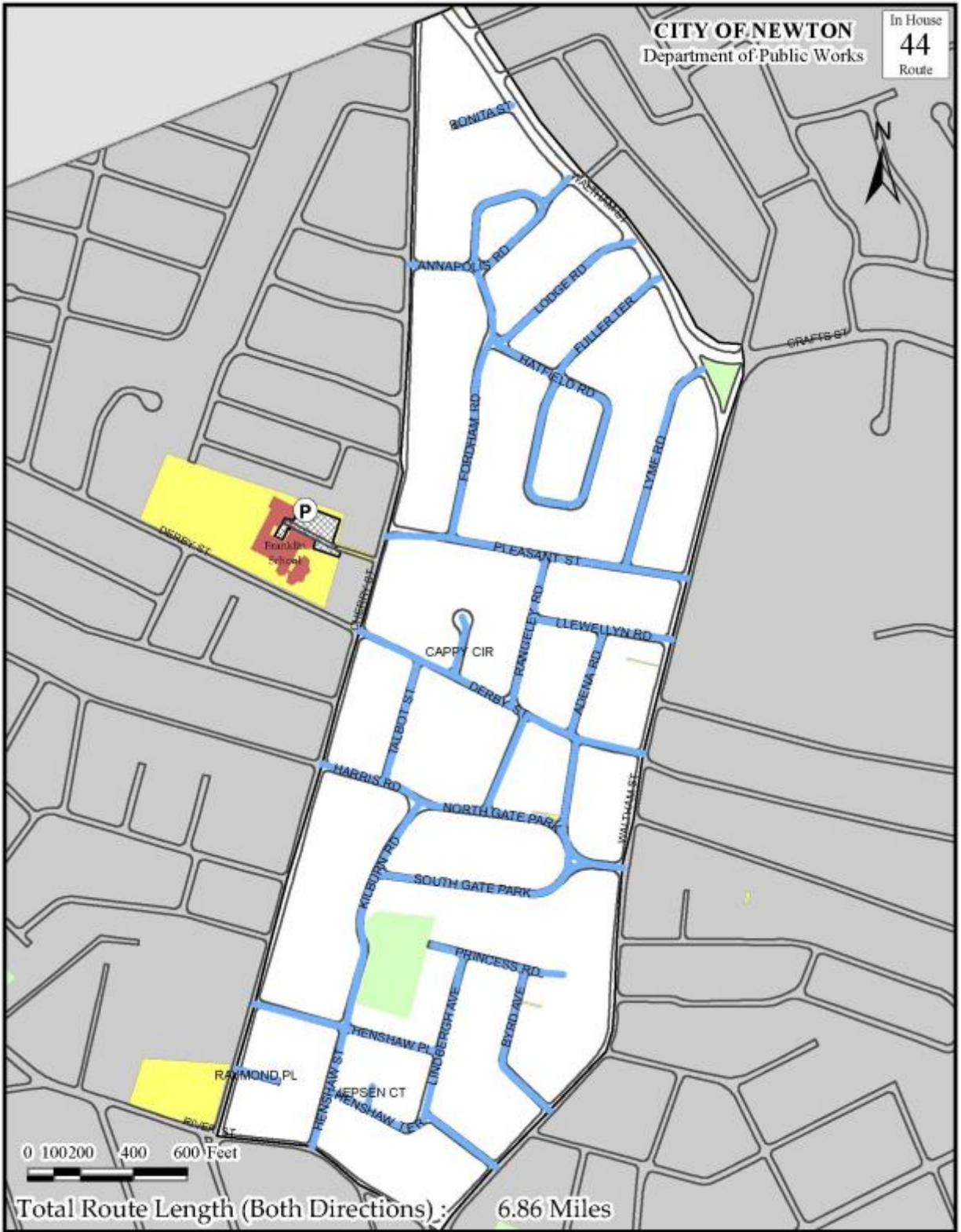


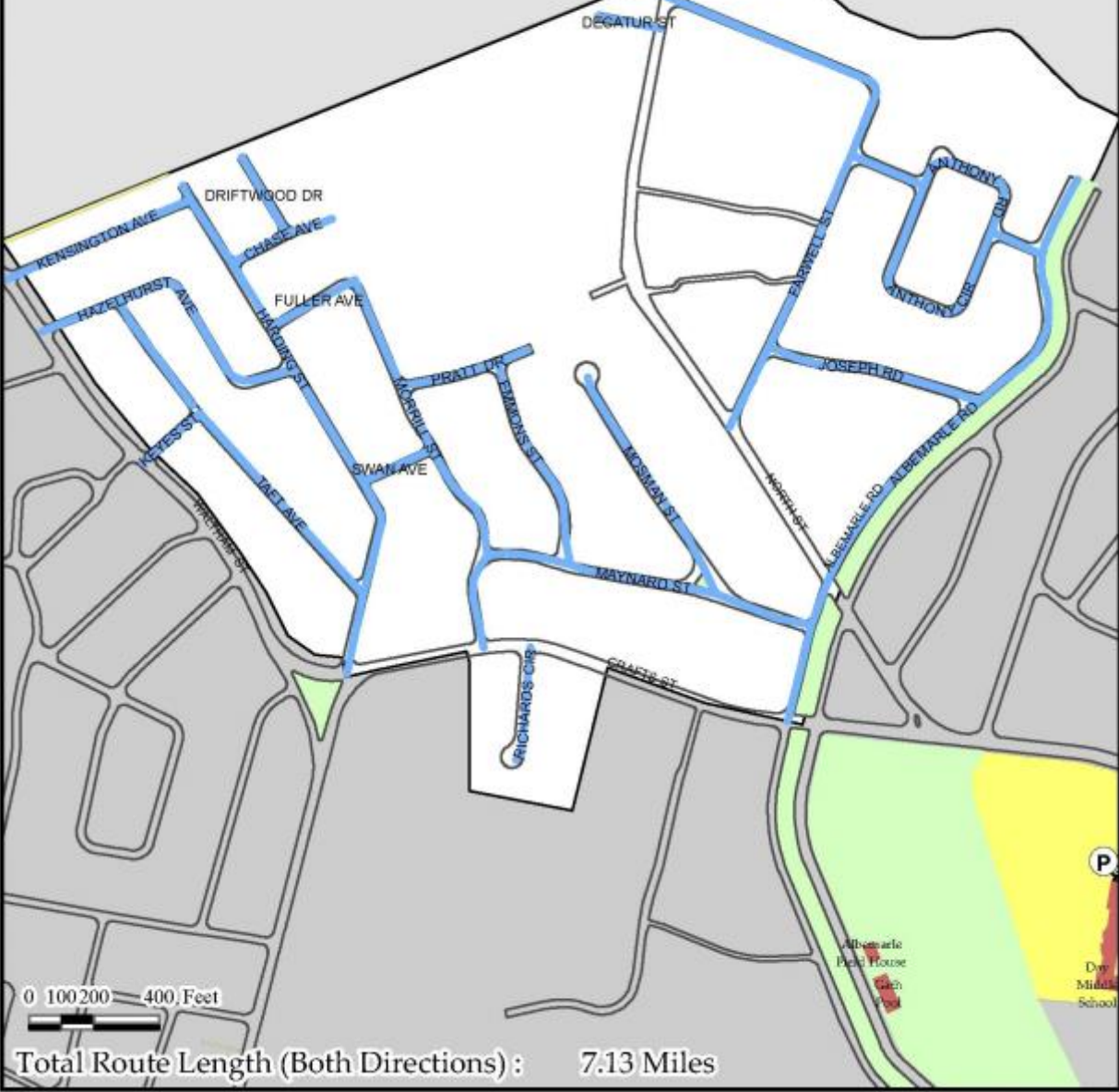




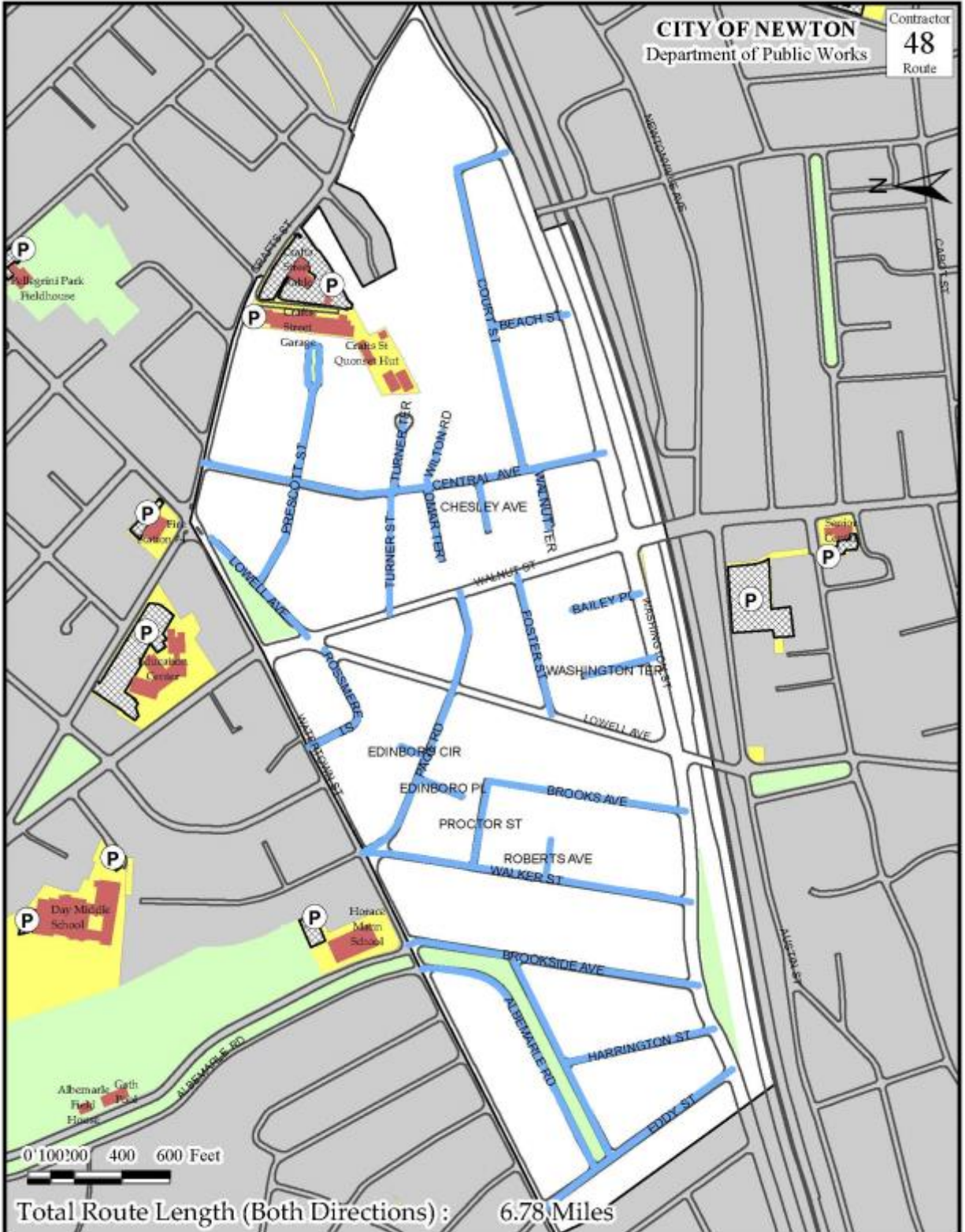
0 100 200 400 Feet

Total Route Length (Both Directions) : 7.25 Miles

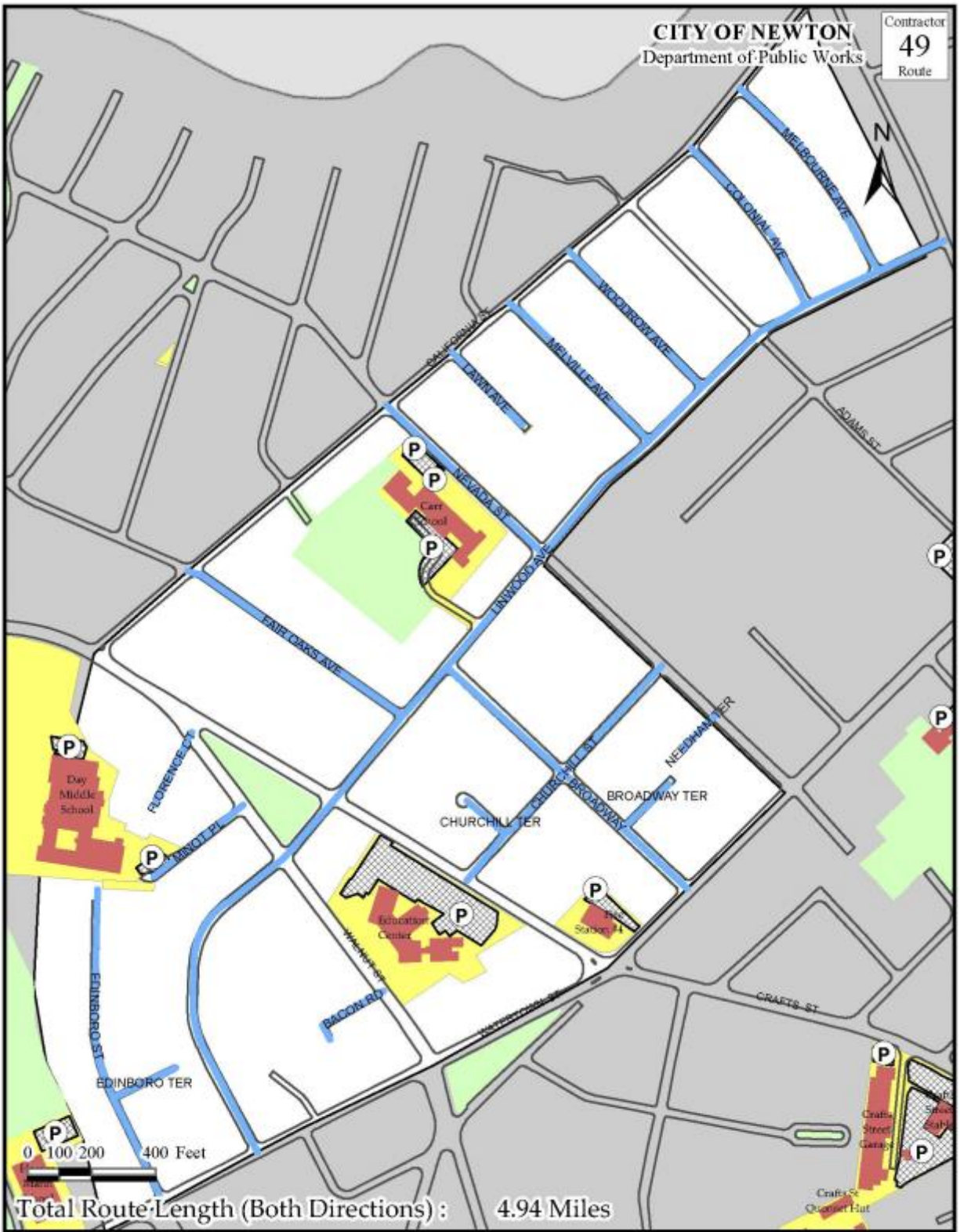


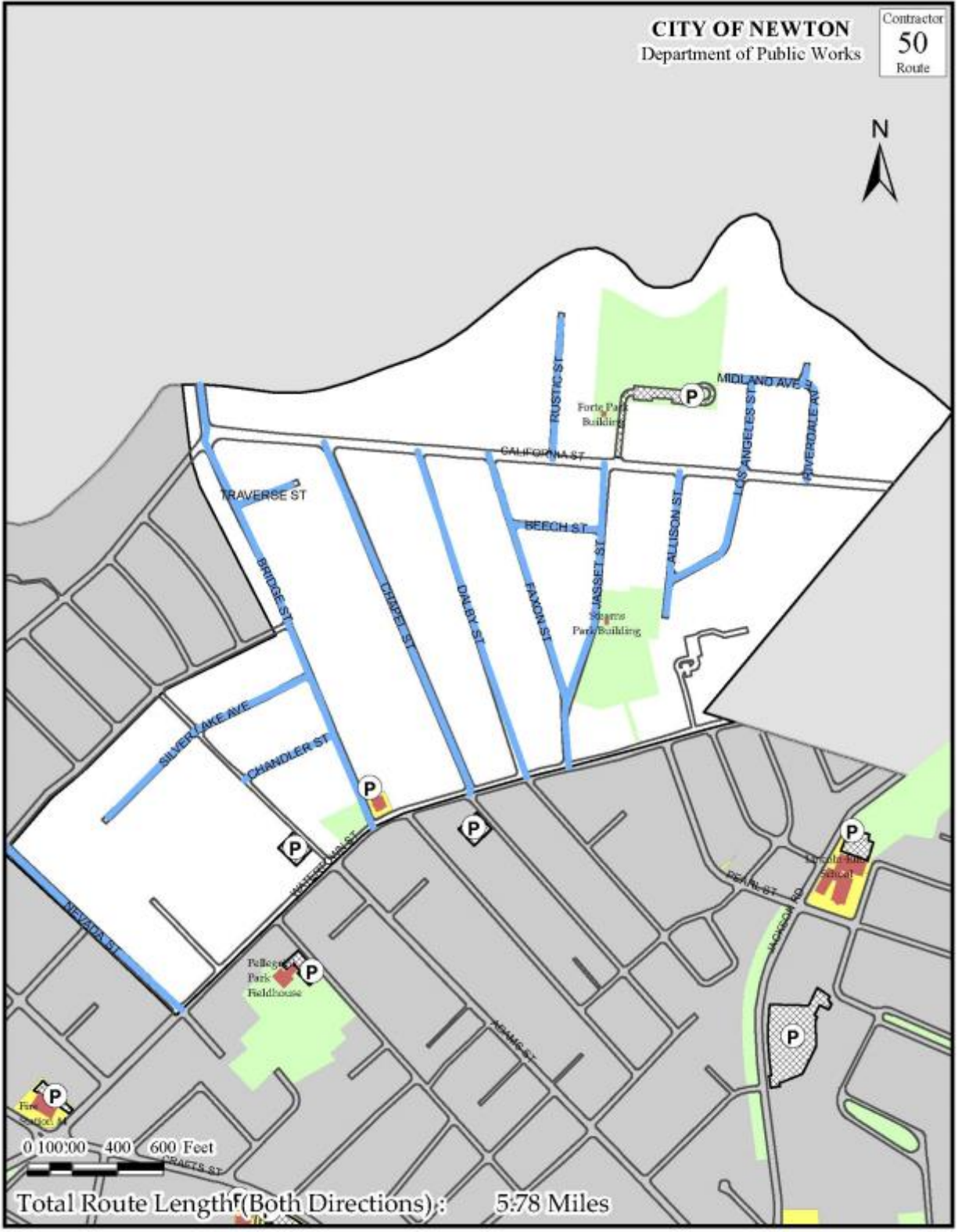


Total Route Length (Both Directions) : 7.13 Miles

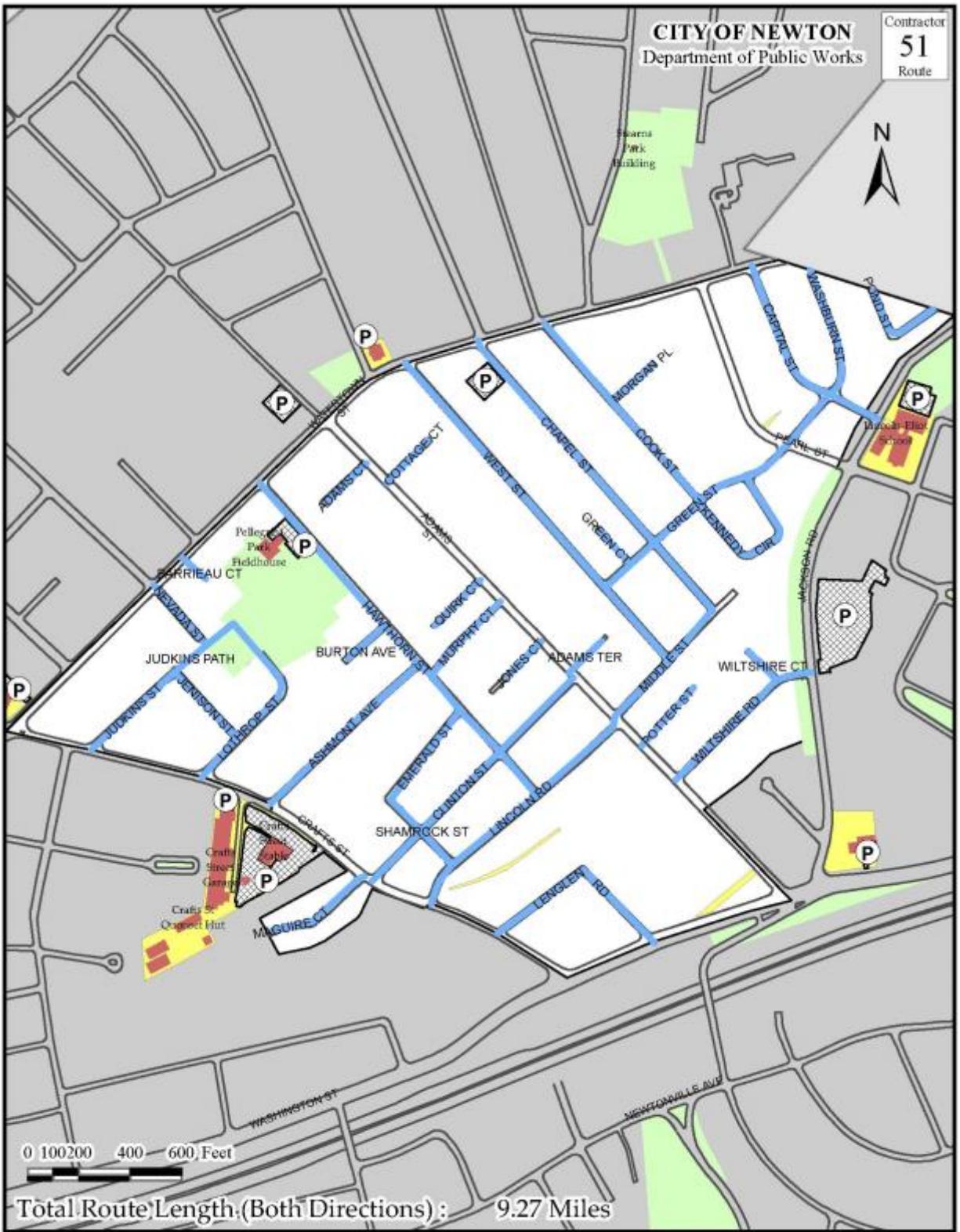


Total Route Length (Both Directions) : 6.78 Miles



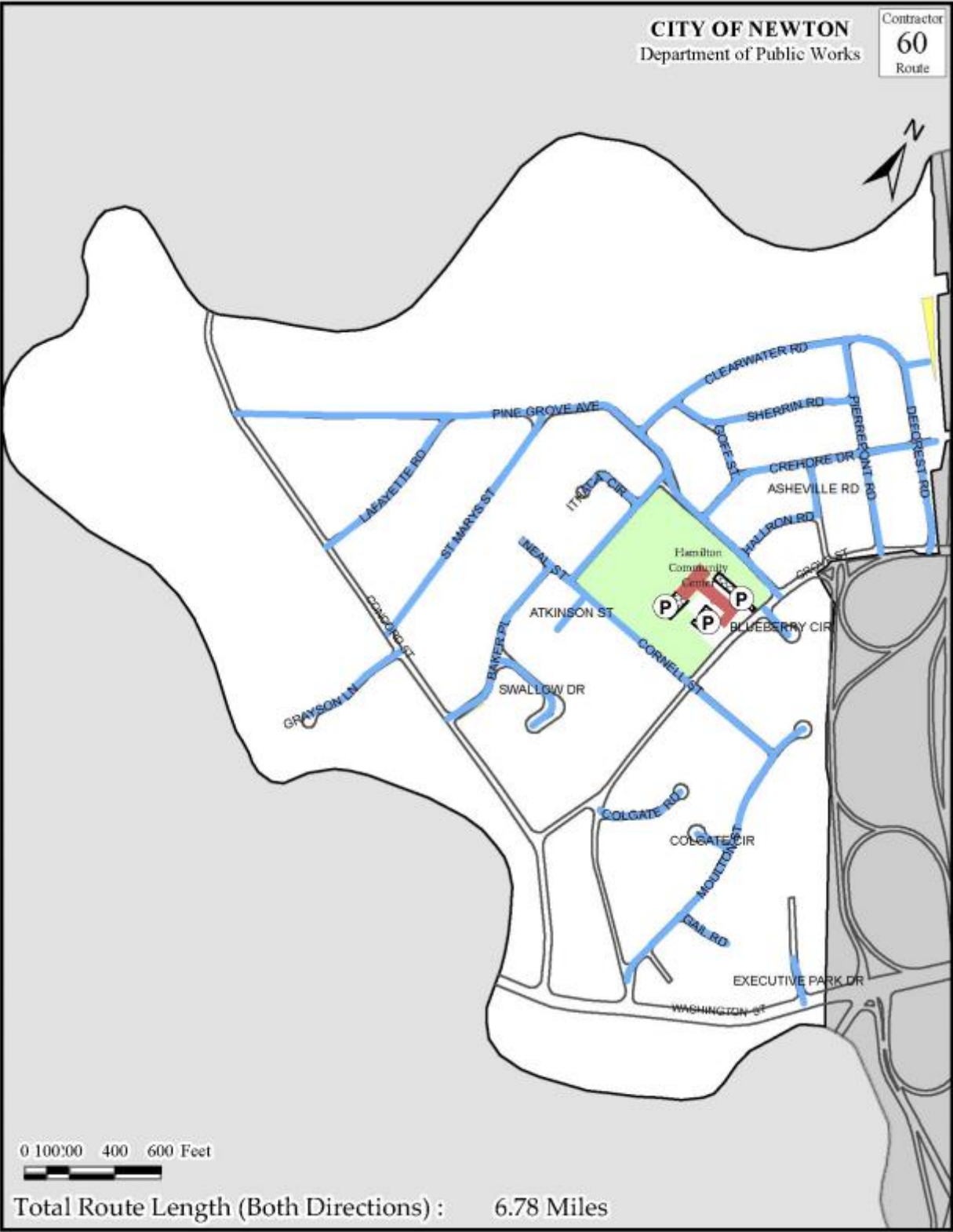


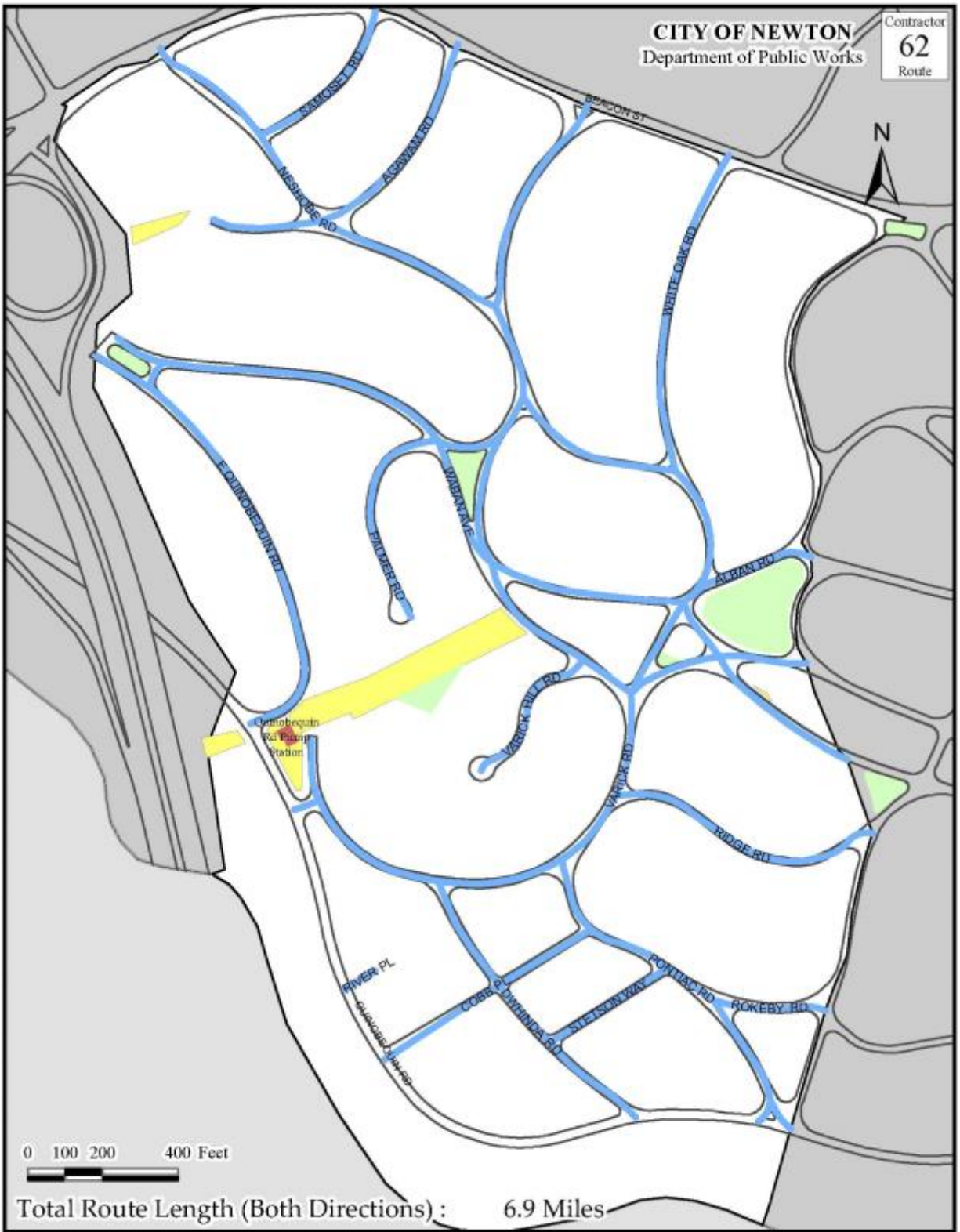
Total Route Length (Both Directions): 5.78 Miles

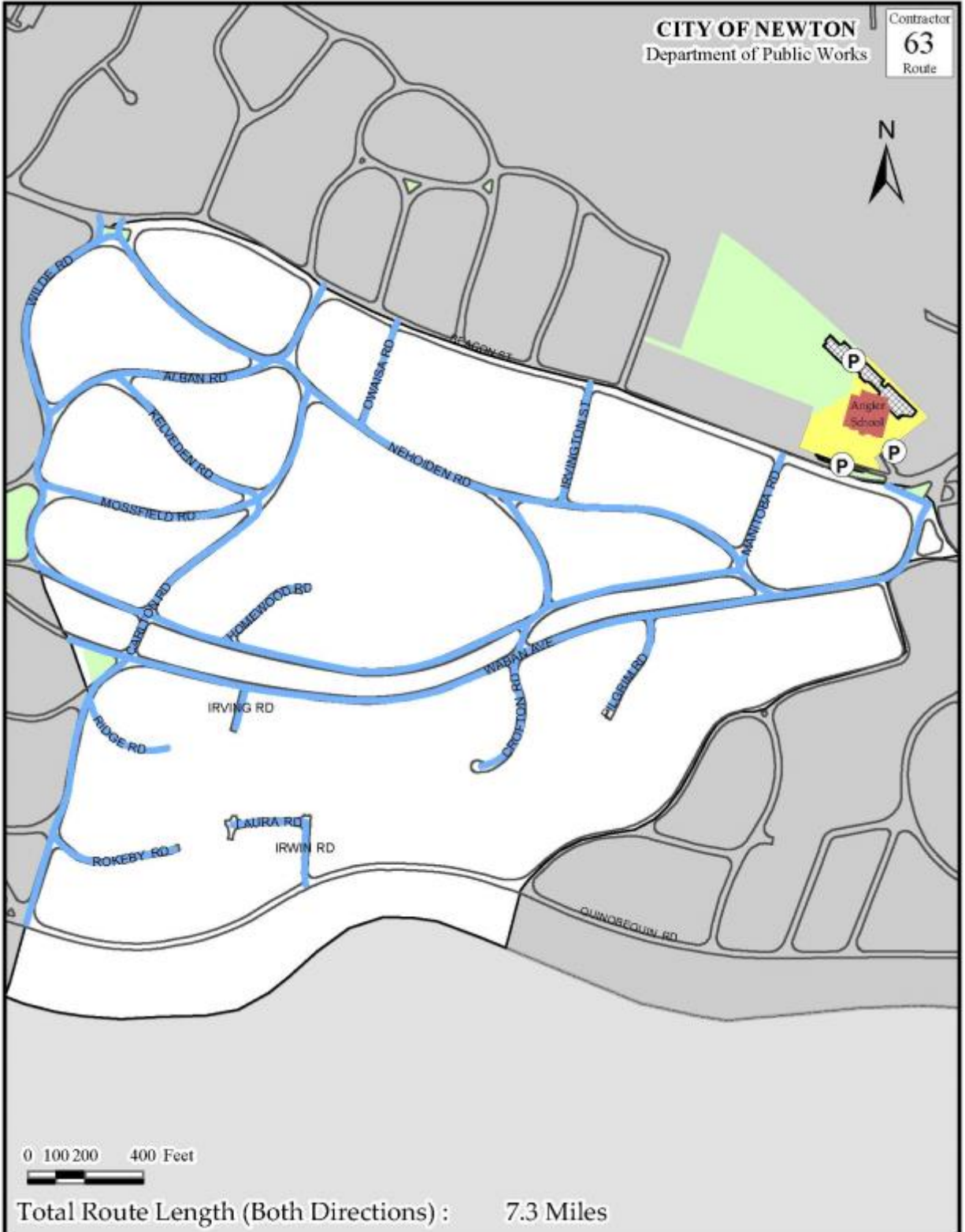


CITY OF NEWTON
Department of Public Works

Contractor
60
Route







0 100 200 400 Feet

Total Route Length (Both Directions) : 7.3 Miles

