2021

Master Plan Element Section V

Circulation Plan Element

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Township of West Windsor | Mercer County, New Jersey


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Circulation Plan Element of the Master Plan

Township of West Windsor
Mercer County, New Jersey

Prepared for the Township of West Windsor
Planning Board

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Section 1: Introduction

The following section provides an introduction to the 2021 Township of West Windsor Circulation Plan Element of the Master Plan.


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1.1: Introduction to the Plan

Since its initial incorporation in 1797, the Township of West Windsor has continually experienced evolving land use and development patterns. This has been particularly true over the past several decades. The Township has continued to develop at a rapid pace since its last Circulation Plan, which was initially adopted in 2002 and subsequently revised in 2010. Traffic volumes have increased accordingly with that growth.

Today, the Township is faced with complex and potentially contradictory trends which impact traffic and circulation. On the one hand, transportation systems throughout the region have recently experienced less stress due to the ongoing COVID-19 pandemic. Specifically, the pandemic has led to an increase in both telecommuting from home as well as online shopping and delivery services. Additionally, future changes in automobile ownership trends as well as the rise of car share services may also impact traffic and parking demands.

On the other hand, the Township remains a bustling, robust, and diverse community with a population that is approaching thirty thousand residents. This is due, in part, due to the development of several sites throughout the Township for multifamily uses. Furthermore, the Township has adopted several zoning amendments to its land use regulations to permit additional commercial opportunities, particularly along the US Route 1 corridor.

Thus, the following Circulation Element of the Master Plan has been developed to take into account these larger, more regional trends while also focusing on the Township's more localized growth issues. A fundamental focus of this plan is the maintenance and safety of the community's roadway and transit system.

Accordingly, the following Circulation Element of the Master Plan is divided into the following sections:

- Section 1: Introduction

  The remainder of this introductory section discusses what a master plan is, as well as the statutory requirements for master plans and circulation elements in particular.

- Section 2: Critical Circulation and Growth Issues

  The following section identifies the critical circulation and growth issues faced by the Township.

- Section 3: Principles of the Circulation Plan

  Next, Section 3 establishes the principals of the 2021 Circulation Plan.

- Section 4: Goals and Policies

  Section 4 outlines the goals and policies of the Township of West Windsor as they relate to circulation.

- Section 5: Circulation Network

  The penultimate section of this plan provides a detailed circulation network. First, it offers a roadway classification of arterial, collector, and local roads. Based upon that roadway classification system, it offers recommendations regarding roadway and intersection improvements, new roadways and new alignments, sidewalk and bicycle paths, roadway access and curb cuts, and mass transit and travel demand management.

- Section 6: Means of Transportation Improvement Funding

  Finally, Section 6 offers a combination of public and private funding to advance an overall Capital Improvement Program.

1.2: Overview of a Master Plan

The Municipal Land Use Law (MLUL), which serves as the guiding legal document for planning and zoning throughout the State of New Jersey, identifies a master plan as:

> *"...a composite of one or more written or graphic proposals for the development of the municipality as set forth in and adopted pursuant to section 19 of P.L. 1975, c.291 (C.40:55D-28)."*

In other words, a master plan is a comprehensive, long-term strategic document which is intended to guide the growth and development of a community. It is essentially a roadmap which identifies where a municipality presently is and where it wishes to be in the future. A master plan develops the general parameters around which development is to occur and, specifically, where different types of development should occur. By doing so, a master plan ultimately links a municipality's land use vision to its existing and proposed zoning regulations.

Therefore, master plans ultimately provide municipalities with the legal basis to control development through the adoption of development ordinances which are designed to implement its goals, policies, and recommendations.

As established by NJSA 40:55D-28 of the MLUL, the planning board is the designated entity responsible for the preparation and adoption of a master plan. A master plan must be adopted at a public hearing after proper public notice, thus ensuring that the community has an opportunity to contribute, ask questions, and offer recommendations.

The MLUL further identifies the mandatory contents of a master plan, which include:

- A statement of objectives, principles, assumptions, policies, and standards upon which the constituent proposals for the physical, economic, and social development of the municipality are based;
- A land use plan;
- A recycling plan, and;
- A housing plan.

In addition, the MLUL identifies a number of other optional plan elements which may be incorporated into a comprehensive master plan. These optional elements include the following. As shown, a circulation element is optional.

Economic development	Circulation	Open space
Recreation	Community facilities	Historic preservation
Downtown development	Farmland preservation	

1.3: Circulation Element Requirements

Furthermore, the MLUL also identifies the requirements of a circulation element. Specifically, the MLUL notes that a circulation element must show:

> *"...the location and types of facilities for all modes of transportation required for the efficient movement of people and goods into, about, and through the municipality..."*

The MLUL further specifies that a circulation element must take into account the functional highway classification system of the Federal Highway Administration (FHA), as well as the types, locations, conditions, and availability of existing and proposed transportation facilities.

1.4: Background on Circulation

The MLUL provides the following definition of circulation:

> *"...systems, structures, and physical improvements for the movement of people, goods, water, air, sewage or power by such means as streets, highways, railways, waterways, towers, airways, pipes and conduits, and the handling of people and goods by such means as terminals, stations, warehouse, and other storage buildings or transshipment points."*

Put simply, circulation ultimately concerns how people and goods travel through transportation systems, including roadways, railways, and bicycle and pedestrian paths. Understanding transportation systems are vital to a municipality's well-being, as they are intimately connected to a community's quality of life. Circulation can help tie neighborhoods together, or they can form barriers preventing and even discouraging interaction.

Section 2: Critical Circulation & Growth Issues

The following section identifies the critical circulation and growth issues faced by the Township.


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Critical Circulation & Growth Issues

Transportation drives the plan.

The 2021 Circulation Plan Element of the Master Plan is intended to serve as a guide to residents, policy-makers, developers, and the community at-large by ascertaining the Township's vision for the movement of goods and people. This vision is more important than ever, as the Township continues to face a variety of evolving local and regional trends.

Due to an anticipated increase in infill development throughout the Township, wherein large tracts of vacant and underutilized land will be developed for residential and commercial purposes, understanding the scopes of West Windsor's roadway systems will become much more critical. The correct sizing and configuration of these large tracts' connections to the Township's existing circulation network is essential, especially as Princeton University's Lake Campus (near the intersection of US Route 1 and Washington Road), the SRI International tract (along US Route 1, to the west of the Millstone River), the Howard Hughes tract (near the intersection of US Route 1 Quakerbridge Road), and others become developed.

This Circulation Plan Element also acknowledges the potential for the development, redevelopment, and reutilization of lands throughout the community, particularly along the US Route 1 Corridor. Market forces have historically made the US Route 1 Corridor attractive to corporations and developers seeking new facilities and opportunities. Thus, several of the tracts along this corridor can support, or have already been approved to support, developments incorporating residential, commercial, and institutional uses. The resulting density, and subsequent localization of trips, could result in less demand on regional roadway systems which, in turn, may reduce stress on the Township's arterial roadways.

Moreover, after decades of defining and implementing transportation facilities through a variety of innovative planning initiatives and funding mechanisms, West Windsor presently has a high quality regional and local arterial system in place. The remaining local projects discussed throughout this plan are mainly intended to resolve local circulation needs. They are not intended to add large amounts of system capacity. While the previously contemplated Millstone Bypass will not be constructed, its demand may be replaced by a new grade-separated connection across US Route 1 that would offer the safety benefits of signal removal on US Route 1 and should remove some traffic from the Washington Road area of Penns Neck.

At the time of this plan, the widening of US Route 1 to four lanes in each direction is in the preliminary design stage by the New Jersey Department of Transportation (NJDOT). By way of background, the NJDOT had previously studied the US Route 1 Corridor in the early 1980s and, as a result of that study, ultimately came to several conclusions: office space construction along the corridor would be massive in scale; major improvements would be needed to both US Route 1 and the local roadway system; and even with those improvements in place, traffic demands would eventually overwhelm the available system capacity over the long term. The US Route 1 improvements which are either presently in

place or nearing completion emerged from that study. Nevertheless, it was recognized at the time that they would be insufficient for the long-term needs of the corridor.

In addition to the aforementioned, it may be appropriate for the Township to reexamine its parking standards. As new development becomes more oriented toward other modes of travel, or less travel in total, the amount of parking required for future development may be less than that required today. Existing parking lots may be repurposed for development or may otherwise be suitable as automobile storage areas for on-demand self-driving car services.

With potential future changes in traffic patterns on the horizon, it is appropriate to consider the viability of the Township's traffic model and resulting Capital Improvements Plan. Historically, the Capital Improvements Plan has been based on traffic demand. However, traffic capacity and demand may no longer be the sole determiner of which roadways or other improvements be constructed under the Capital Improvements Plan. As a result, the Township's future planning efforts should seek to establish a balanced transportation system with three distinct types of activity:

- Adjustments to the Township's Land Development Policies

  The Township should encourage development which produces fewer commuters during peak hours and allows trips to be made on foot or other modes of travel. These policies could include changes in Floor Area Ratio (FAR); transit-friendly design; and considering uses that generally produce little traffic.

- Encourage Bicycling and other Forms of Travel Apart from the Single-Occupant Vehicle

  The Township has a unique opportunity to reduce auto dependency. Existing areas of pavement which are otherwise too large for vehicles can be repurposed to support alternative forms of connectivity. The Township should focus on eliminating gaps in trail systems, and should continue to foster the planning and development of local trails.

  Historically, Transportation Demand Management (TDM) and transit programs have had little effect in suburban environments such as West Windsor. However, because of anticipated changes to future traffic volumes as well as the internet's ability to connect transit segments into a hassle-free trip, consolidating payment and offering choices, TDM and transit may now be more viable for the community. In fact, internet-based route and trip planning is a form of TDM. Optimization of the existing circulation system, using private-sector technology and the existing public right-of-way, should take precedence over large capital outlays. Construction of bus rapid transit or light rail systems should be done where there is an overwhelming, obvious demand, as these systems may not induce demand themselves.

- Roadway Planning and Construction

  Roadway planning and construction will be needed to complete the projects contained in this Circulation Plan as well as to define, fund, and implement other specific, limited short-term projects. Long-term efforts to build out of congestion may not be necessary, nor should they. Rather, the Township's focus should be on maintaining its existing circulation system, promoting safety, and most of all, making transportation elements fit into and complement their environments.

  Roadway planning efforts should concentrate on reducing automobile traffic from areas such as Penns Neck in order to focus on a pedestrian environment and promote a better "sense of place." This represents a marked shift from simply promoting increases in pavement area for capacity's sake. Finally, safety efforts should concentrate on resolving high crash areas, removing municipally maintained traffic signals where possible, and simplifying the task for roadway users by eliminating confusing directional signing and other clutter.

A former challenge in developing prior circulation plans was the competition between the need for new or widened roadways and the resulting impacts to abutting Township residents and business owners. Historically, there had been much debate as to whether the Township should provide needed transportation capacity improvements despite their impacts to adjacent property owners, or whether it would be preferable to limit roadway widening projects and attempt to absorb the added congestion.

No longer should the alternative to providing transportation capacity improvements on arterial roads be a major increase in congestion and the diversion of traffic to local and collector roadways. The Township should prioritize the preservation of the quality of life in local residential neighborhoods. Through this master planning process, the community has elected to limit the amount of roadway widening in residential areas, and to focus on providing safe pedestrian and bicycle movements in heavy traffic locations.


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Section 3: Principles of the Circulation Plan

The following section establishes the principles of the 2021 Circulation Plan Element of the Master Plan.


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Principles of the Circulation Plan

Additional information and definitions regarding arterial, collector, and local roadways can be found in Section 4 of this plan.

The Township has an established overall circulation strategy based upon a hierarchal road network. The purpose of such a strategy is to provide a circulation system that consists of arterial and collector roadways to transport regional and inter-township/county traffic, and collector and local roadways for more localized, internal traffic.

Arterial roadways are intended to direct traffic around, as opposed to through, the residential areas of the Township. These roadways tend to be under the jurisdiction of the State of New Jersey or Mercer County. Thus, improvements to arterial roadways typically require the approval of more outside governmental agencies than improvements to local roadways. As such, the Township has less control over the phasing of these projects, as they are prioritized on a regional basis.

For instance, the formerly proposed Millstone Bypass, needed to reduce congestion on US Route 1 and alleviate traffic on Washington Road, is under the jurisdiction of the State of New Jersey. The State had significant opposition by Princeton Township and Princeton Borough (since merged into Princeton Municipality), and as a result the project was ultimately abandoned. However, the need for an alternative link between the Princeton University Lake Campus and the SRI Site (both of which are located along the US Route 1 corridor, generally between Washington Road and Lower Harrison Street) is nevertheless still necessary to reduce east-west traffic in the Penns Neck community, assist NJDOT's long-term goal of signal removal on US Route 1, provide adequate access across US Route 1 to ensure adjacent land uses' viability, and to establish regional access across Route 1 using roadway networks incorporated into the Lake Campus and SRI site. Clearly, the planning of effective regional traffic circulation requires coordination with neighboring municipalities, Mercer County, and the State of New Jersey.

Planned roadway and intersection improvements are identified throughout this 2021 Circulation Plan. These improvements are based upon traffic and demographic changes within and around the Township, which are difficult to predict. Due to the on-going COVID-19 pandemic and its temporary and potential future reductions in traffic growth, the Township should take advantage of the opportunity to redefine decades of automobile-oriented land development.


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Section 4:
Goals and Policies

The following section outlines the goals and policies of the Township of West Windsor as they relate to circulation.


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The main purpose of this plan is to adequately plan for the optimization of the Township's transportation network. The following goals and policies are hereby established to accomplish that initiative.

Goal A:

Continue to pursue a coordinated road plan which enables the safe and efficient movement of people and goods and minimizes the negative impacts of regional traffic on local roads, particularly in residential areas.

Policy 1: As required by the Municipal Land Use Law (MLUL) and guided by the American Association of State Highway and Transportation Officials (AASHTO), establish a hierarchy of roads with appropriate geometric characteristics and capacity, thus avoiding channeling regional traffic onto local streets resulting in the degradation of residential areas and community centers.

Policy 2: Continue to support a system of existing arterial roadways for the purpose of carrying regional and inter-municipal traffic through West Windsor. Discourage regional traffic from using local and collector roadways to the greatest extent feasible through the implementation of traffic calming measures.

Policy 3: Support the completion and upgrading of connecting roadways to aid in improving local circulation, particularly those related to US Route 1.

Policy 4: Limit major new Township road construction to those linkages and improvements identified in this Circulation Plan Element as needed to insure an adequate distribution of local traffic.

Policy 5: Emphasize development of final major connections and local roadway improvements as part of development of major parcels (including the future Princeton University Lake Campus, the SRI Site, and the Howard Hughes Site) to aid in east-west traffic movement.

Policy 6: Plan for a transportation network compatible with those of neighboring municipalities, Mercer and Middlesex Counties, and the State of New Jersey. Coordinate with regional Metropolitan Planning Organizations, Transportation Management Association, and local bicycle and pedestrian advocacy groups.

Goal B:

Encourage alternate circulation modes and networks (e.g., pedestrian, bicycle, bus/mass transit) to be devised to minimize local auto traffic trips, and to increase opportunities for recreational bicycling and walking.

Policy 1: Provide and interconnect pedestrian and bicycle pathways throughout the Township, with particular emphasis on interconnections between recreational uses and schools. Create bicycle-compatible roadways to improve accessibility to parks and recreation areas, and develop a network of multi-use trails.

Policy 2: Improve pedestrian accessibility in areas of the Township where pedestrian traffic is encouraged (i.e., the Princeton Junction Train Station, community recreation areas, shopping areas, and the Township's municipal complex) and in areas where pedestrian activity is anticipated.

Policy 3: Plan various modes of transportation so that they interface cohesively to encourage intermodal travel. In particular, encourage the implementation of a transit-way system capable of supporting bus rapid or light rail transit to link major employment, retail, and residential areas with the Princeton Junction Train Station, park-and-rides, and other elements of the regional mass transportation system.

Policy 4: Encourage "Make Mobility as a Service – MaaS" (a/k/a device-based trip planning and ticketing) by providing Township-based service information to MaaS developers (app developers), and encouraging other transit providers in the Township (e.g. Tiger Transit, NJ Transit) to open their data to private sector computer-based or device-based applications.

Goal C:

Create a pedestrian and bikeway system that makes walking and cycling a viable alternative to driving, and which optimizes bicyclist and pedestrian safety.

Policy 1: Provide accessible and convenient pedestrian and bicycle compatible links to major generators and destinations, including: major shopping and commercial destinations; the Princeton Junction Train Station; employment centers; schools; and community and open space and recreation facilities.

Policy 2: Facilitate secure bicycle parking and storage at major bicycle destinations, including working with employers and retailers to provide facilities for commuters and patrons.

Policy 3: Identify locations and provide roadway and sidewalk lighting at those locations where pedestrian street crossings and movements occur. Appropriate levels and types of lighting should be determined. Pedestrian crosswalks, signage, bus stop locations and amenities, and other treatments should be reviewed to optimize safety.

Policy 4: Provide the public with information on bicycle and pedestrian facilities by including these facilities through various media including device-based (e.g. iPhone or Android) applications. Institute bicycle and pedestrian safety programs for school children and educational efforts directed at adult cyclists and drivers.

Policy 5: Maintain programs to track bicycle and pedestrian problem incidents to develop solutions for problem areas, to increase the public's awareness of bicycle and pedestrian safety, and to implement roadway features such as signage and traffic calming to improve pedestrian and bicycle safety. Consult with Mercer County and the State of New Jersey to regularly analyze this data for ease of implementation.

Policy 6: Identify missing links in the sidewalk network, prioritize bicycle and pedestrian improvements, recognize the possible need for easements, and assure that bicycle and pedestrian facilities are considered as an integral part of all street maintenance and reconstruction work. Work with Mercer County and the State of New Jersey to incorporate bicycle and pedestrian facilities into roadway reconstruction, resurfacing, and improvement projects.

Policy 7: Continuously improve and maintain bicycle and pedestrian facilities by incorporating them into new open space as acquired and as feasible. Coordinate with neighboring communities, Mercer and Middlesex County, and the Greater Mercer Transportation Management Association (TMA) to provide linkages to create a regional bicycle trail network.

Specifically, the Township should work with Plainsboro Township and the Board of Education to provide a high-quality pedestrian and bicycle connection to the High School property in Plainsboro.

The Township should also seek to implement stable funding mechanisms, such as funding bicycle facility, sidewalk, and crosswalk maintenance as a regular part of the street maintenance budget and exploring the possibility of funding multi-use trails through the Township's open space tax.

Policy 8: Establish an attractive and effective wayfinding system to better direct both Township residents and visitors of the community to major generators and destinations.

Goal D:

Develop an implementation plan for necessary transportation improvements, which outlines the schedule for improvements and funding mechanisms, utilizing the off-tract transportation improvement program.

Policy 1: Continue application of off-tract road improvements and pro-rata share obligations for roadway improvements generated by new development in accordance with the Township Circulation Plan Element and Capital Improvement Program.

Policy 2: Evaluate the impact that changes in the Circulation Plan Element and Capital Improvement Program will have on the Township's roadway assessment program and, if needed, seek appropriate modifications to the inter-local services agreement with Mercer County, as well as with State and Federal agencies.


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Section 5: West Windsor Circulation Network

The following section provides a detailed circulation network for the Township of West Windsor. It sorts the Township's roads into principal arterial roads, secondary arterial roads, collector roads, and local roads.


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5.1: Introduction

This Circulation Plan Element of the Master Plan provides a planned circulation network and a corresponding Capital Improvement Program (CIP) developed to systematically achieve the goals of the Township's transportation network. The overall intent of this Plan is to utilize the existing roadways in the Township with planned improvements, to the fullest extent possible, and then plan new roadways to complete the network. The steps used in developing the circulation network for this Circulation Plan Element are as follows:

Step 1

Develop a hierarchical classification of roads to provide a logical network of local roads leading to collector roads and collector roads leading to arterials.

Step 2

Determine the standard characteristics of each roadway classification.

Step 3

Determine the individual roadway improvements needed to comply with the classification standards.

Step 4

Evaluate future network traffic volumes versus roadway capacity to identify the sequence of construction.

5.2: Roadway Classification

The Township's Circulation Plan Element is formulated using a roadway classification system based on a hierarchy of intended traffic-carrying capacity and roadway function. This system classifies roadways as arterials, collectors, or local streets. The classification given to each roadway relates to the function for which that roadway serves within the transportation system.

This process was guided by the definitions established by the American Association of State Highway and Transportation Officials (AASHTO), with some adjustments made for local conditions. In addition, the State's mandated standards for residential roadways are published in the Residential Site Improvement Standards (RSIS). The Township is required to comply with RSIS standards, although a municipal land use board may grant de minimus exceptions from the RSIS and, in more substantial matters, request a waiver of a standard from the Site Improvement Advisory Board. These standards specify the design criteria for residential roadway infrastructure for roadway classifications from major collector and lower, which include minor collectors and local roads. Local roads can fall into many RSIS classifications (i.e. alleys, loop roads, cul-de-sacs).

In this fashion, a hierarchical system of roadways was established which, in descending order, accommodates lesser volumes of traffic. The highest traffic volumes are accommodated on the principal arterial (US Route 1). The next level would be the arterial system, followed by the collector system (principal, major and minor), and with the local street system carrying the lowest traffic volumes.

Arterial roads, which carry the highest volumes of traffic, are the most difficult to designate. Those that are already built with arterial design standards can simply be redesignated. But those that must be selected to complete the network are most difficult to designate.

The roadway classifications for arterials are not regulated by the RSIS. The differentiation between principal collector and arterial roads is related both to the type of traffic intended to travel on the road, as defined herein, as well as their projected design traffic volumes. Roadway traffic for collector roads is defined per the RSIS as not exceeding an average daily traffic (ADT) of 7,500 vehicles. However, some arterials may have ADTs of less than 7,500 vehicles per day as well.

The roadway and right-of-way widths identified for the classifications discussed herein are similar to the Township's prior Circulation Plan Element, except for roads regulated by RSIS. The collector and local road standards shown herein are consistent with the RSIS to the extent that they are not already built or designed, provide additional width for bicycle compatibility, and offer additional width for purposes of intersection and driveway turning lanes. During the review of development applications, the Planning Board should seek to achieve an optimal level of service through the design of features such as intersections, islands, shoulders, bike paths, and driveways. The current RSIS standards result in a narrower roadway and right-of-way, where turn lanes are not present, than previously planned by the Township. This could cause a discrepancy for drivers between those collectors that have already been constructed to a wider section and those that are newly constructed to the RSIS standards. One additional change in this Circulation Plan Element caused by the RSIS is the reclassification of four lane major collectors to the principal collector classification, as the RSIS does not provide for a four-lane collector.

Another area of the RSIS which requires further attention is its standard establishing that two lane residential roads are not required to contain both shoulders and curbing. Rather, the RSIS only requires either shoulders or curbing, as opposed to both. However, there are locations throughout the Township where both curbing is needed for drainage and safety, as well as shoulders for safety and bicycles. The Township should advocate for a revision of the RSIS to permit the use of both curbing and shoulders for these roads without the need for a special waiver.

The road classifications used in West Windsor Township to advance a peripheral arterial road network and its supporting collector/local street system are described in the following subsections. The Circulation Plan Map illustrates these classifications.

5.2.1: Principal Arterial Roads

Principal arterial roads are the highest order of road classification in the Township. A principal arterial road provides limited vehicular access to properties and generally carries high volumes of inter-municipal and regional traffic.

Principal arterial roads have a typical right-of-way of one hundred and fifty (150) feet, although the New Jersey Department of Transportation (NJDOT) is seeking up to one hundred and seventy (170) feet in certain instances on future improvement plans for US Route 1. US Route 1, which is the only principal arterial road in West Windsor, now has six (6) travel lanes, with a median traffic divider. NJDOT plans for US Route 1 call for the elimination of all traffic signals in the Township in order to increase traffic capacity and reduce delays. Grade separated interchanges have been and will continue to be constructed at key intersections to replace signalized intersections as a means of crossing and accessing US Route 1. Construction is also underway to construct a collector-distributor divided roadway configuration between Meadow Road and Carnegie Center Boulevard along northbound US Route 1.

PRINCIPAL ARTERIAL ROADS:

- US Route 1

5.2.2: Secondary Arterial Roads

Secondary arterial roadways are intended to link the collector road network with other arterial roads. These roadways are designed to carry high volumes of traffic from one community to another and direct vehicular traffic away from the residential core of the municipality onto a higher volume road network. Secondary arterial roads are designed for four (4) travel lanes with a right-of-way (ROW) of eight (80) feet. Route 571 should have a sixty (60) foot roadway width between Clarksville Road and Cranbury Road/Wallace Road to accommodate one through lane in each direction, a center turn lane, and shoulders for bicycles and turning movements.

SECONDARY ARTERIAL ROADS:

- Quakerbridge/Province Line Roads
- Old Trenton Road
- Princeton-Hightstown Road (Route 571)
- US Route 1 Crossing (Route 571)
- Clarksville Road (from Quakerbridge Road to Meadow Road
- Meadow Road
- Alexander Road (from Route 1 to North Post Road)

3.2.3: Collector Roads

Collector roads are designed to carry moderate volumes of traffic from other collector roads and local roads to the arterial road network. Generally, collector roads carry traffic originating in one location within a municipal boundary, destined for another location within the municipality.

Major and minor collector road classifications are used in West Windsor, with the former being a newly added classification. Major collectors are designed to support greater traffic volumes than minor collectors since they collect traffic from a series of residential neighborhoods or minor collectors and extend to an arterial roadway. The major collector classification is also used for roadways in and around commercial developments that contain local residential traffic, such as Canal Pointe Boulevard and Nassau Park Boulevard.

For minor collectors, the RSIS requires up to a thirty-six (36) foot-wide road with parking lanes, with travel lanes from ten (10) to twelve (12) feet and a ROW of fifty (50) to sixty (60) feet. The roadway widths and ROW widths are dependent on the provision of shoulders and parking lanes. Typically, in the Township, collector roads have historically had a ROW of sixty (60) to seventy (70) feet and consisted of two (2) to four (4) travel lanes, as traffic capacity and acceptable levels of traffic service warrant. Principal collectors typically have a seventy (70) foot ROW with fifty (50) foot roadway widths supporting either four (4) lanes or two (2) lanes plus shoulders, widened for turn lanes as needed.

MAJOR COLLECTOR ROADS: THREE (3) TO FOUR (4) LANES WIDE

- Roszel Road
- Nassau Park Boulevard
- Canal Pointe Boulevard (3-lane)
- Carnegie Center Drive Connector to Meadow Road
- Carnegie Center Drive loop road (3-lane)
- Carnegie Center Boulevard
- Alexander Road (West of Route 1 to Princeton)

MAJOR COLLECTOR ROADS: TWO (2) LANES WIDE

- South Mill Road
- New Edinburg Road
- New Village Road
- Village Road West
- Edinburg Road
- Clarksville Road (Meadow Road to North Post Road)
- Clarksville Road (North Post Road to Route 571)
- North Post Road
- Bear Brook Road
- Washington Road (west of US Route 1 to Princeton)

The major collectors intended for a center median and/or center turn lane include, but are not limited to: New Village Road; Village Road; New Edinburg Road; Nassau Park Boulevard; Carnegie Center Boulevard; and Bear Brook Road. Mountable curbed and landscaped median islands would be provided at roadway intersections, along with turn lanes to enhance pedestrian safety and traffic turning movements.

MINOR COLLECTOR ROADS (2 LANES WIDE)

- Route 1 Crossing extension roads (to Harrison Street, Washington Road and Sarnoff)
- Southfield Road
- South Post Road
- Rabbit Hill Road
- Cranbury Road
- Millstone Road
- Clarksville Road (Route 571 to Cranbury Road)
- Village Road East
- Conover Road
- Robbinsville Road
- North Mill Road
- Bennington Drive
- Dorchester Drive
- Line Road
- Windsor Road
- Wallace Road
- Washington Road (Station Drive to Millstone Bypass)
- Lanwin Boulevard
- Meadowbrook Road
- Woodmere Way
- Cubberly Road
- Grovers Mill Road
- South Lane (between Village Road East and Windsor Road)
- Wheeler Way (Emmons Drive to Farber Road)
- Emmons Drive (Wheeler Way to Route 1)
- Penn Lyle Road
- Proposed Vaughn Drive Extension (described in the New Roadways and New Alignments section)

3.2.4: Local Roads

Any road within the Township not designated as a principal arterial, secondary arterial road, or collector road is considered a local road. Local roads are the lowest classification of roadway in the Township and are designed to carry low volumes of municipal traffic from residential subdivisions and planned developments to collector roads.

Ward Road has been designated as a local road connecting North Post Road to Penn Lyle Road. No exact alignment has been delineated, but the primary objective is to accommodate the needs of emergency service vehicles and to incorporate bicycle/pedestrian friendly pathways. The alignment should minimize any adverse impacts to the environment and to any natural features. There should be no connection between Ward Road and the Birchwood Street neighborhoods.

LOCAL ROADS

- Ward Road

5.3: New Roadways and Alignments

As previously noted, US Route 1, Route 571, Quakerbridge Road, Hughes Drive, and Old Trenton Road are all identified as arterial roadways. Currently, there are "bottlenecks" along many of these roadways that require improvement in order to avoid the diversion of traffic onto lower hierarchy roads which are mainly intended to serve residential traffic. These historic bottleneck areas include, but are not limited to: US Route 1 at various signalized intersections; Old Trenton Road at Edinburg Road and Robbinsville Road; and Route 571 in Princeton Junction and at US Route 1. Additional capacity of these roadways is needed to accommodate their existing traffic demand. Traffic congestion and diversion to residential roads will worsen until these improvements or alternate improvements are completed.

In an effort to further the Township's circulation policy to direct large traffic volumes along an arterial road network, these new roadway realignments and/or new roadways continue to be needed to alleviate existing congestion. The current list of such improvement projects includes the Vaughn Drive Extension from Alexander Road to Route 571; a connection across US Route 1 between the Lake Campus and SRI Site; and the widening of Route 571 to provide turning lanes and shoulders through Princeton Junction.

These proposed improvements are indicated on the Circulation Map. It should be emphasized that these alignments are not fully engineered, and variations could occur prior to final designs being prepared.

5.3.1: Vaughn Drive Extension

Vaughn Drive is presently identified as a local roadway which provides access to the Princeton Junction Train Station. The thoroughfare from Alexander Road to Washington Road via Vaughn Drive starts at Alexander Road, continues via access aisles through the Princeton Junction Train Station, and then connects with Station Drive to Washington Road/Route 571. It is not a direct link and not a through roadway in its current condition. The realignment and extension of Vaughn Road as a Township-owned throughway would provide another connection between Alexander Road and Route 571. Vaughn Drive should be constructed to a thirty-six (36) foot cartway, with (2) two lanes plus turn lanes. This improvement will accommodate some of the traffic volumes destined for Route 571 from Alexander Road that would otherwise travel via the Alexander Road Bridge.

Pedestrian and bicycle paths should be provided along the improved Vaughn Drive to facilitate non-motorized access to the train station.

5.3.2: US Route 1 Crossing

Instead of the previously contemplated Millstone Bypass, a new grade-separated connection across US Route 1 is proposed in order to provide more local east-west circulation. Such a connection would ultimately provide a bypass of the Penns Neck area of the Township, thus directing traffic on Route 571 traveling toward Princeton to a new two lane roadway starting at the railroad bridge at the base of Washington Road. This proposed connection would then travel to the north side of the SRI Site, cross US Route 1 just south of Harrison Street, and continue to a point in the future Princeton Lake Campus. The connection could also potentially connect to an extension of Canal Pointe Boulevard. It is anticipated that Washington Road will have right turn-only access to US Route 1.

The alternative currently preferred by the Township includes a connector to Harrison Street and a connector to the SRI Site, as well as a grade separated interchange at US Route 1 with the northbound US Route 1 ramps signalized. Due to the project's overall proximity to the D&R canal, there are remaining environmental impacts in need of investigation.

5.3.3: US Route 1 Mainline

When coupled with ongoing regional growth, the future development of the remaining major non-residential tracts in West Windsor – namely, the Howard Hughes Site, the SRI Site, the remainder of Carnegie Center, and the Princeton University Lake Campus – will continue to stress the US Route 1 Corridor, even when its improvements are completed by the NJDOT.

Thus, several long-term actions will be needed to ensure that the US Route 1 Corridor can continue to absorb and serve the high volume of regional traffic which intends to use it. Failure to provide these necessary improvements will inevitably result in traffic diverting to the local street system, thereby impacting the quality of life of the Township's residential areas.

Further projects along US Route 1 may include the following:

- US Route 1/Nassau Park Boulevard

  The traffic signal was removed at this intersection. Construction of additional ramp modifications within the Quakerbridge Road interchange and of additional lanes in the Quakerbridge Road / Province Line Road intersection will be needed to mitigate possible impacts. As the development of the Howard Hughes Site proceeds in the future, this intersection is an obvious location at which a grade separated interchange could be constructed, providing access to both the Howard Hughes Site and to Nassau Park. Funding of such a major project will need to be determined.

- US Route 1/Carnegie Center Boulevard

  This intersection is presently signalized. However, once the US Route 1 Crossing is completed and the existing traffic signal is removed from Penns Neck, this intersection will be the only one that contains a signal between I-295 and South Brunswick. Therefore, it is a priority that this signal also be removed.

  In the past, it has been suggested that a grade-separated interchange could be constructed at this location; however, no funding source has been established, and several Carnegie Center buildings block the interchange footprint. Therefore, it is preferable to simply remove the signal, make the movements into and out of Carnegie Center Boulevard right-in/right-out only, and absorb the diverted traffic at the Alexander Road and Meadow Road interchanges. Detailed studies will be necessary to establish the effects of such a closure, investigate alternatives, and define any needed mitigation measures.

It is recognized that projects relating to US Route 1 are within the jurisdiction of the New Jersey Department of Transportation. Thus, the Township will need to maintain its good working relationship with the Department so that these critical improvements can be planned, programmed, funded, and ultimately constructed.

5.3.4: Princeton Junction

The Princeton Junction area includes several of the special roadway alignments discussed in this section, including: the Alexander Road Bridge; Vaughn Drive; and portions of the access to the SRI Site and its connectors. Other crucial roadways in this area include: Wallace Road; Route 571; portions of Clarksville and North Post Roads; Alexander Road; and Bear Brook Road. Several improvements to these roadways and corresponding intersections will be needed to provide mobility in the peripheral roadway system:

- The Vaughn Drive Extension should be constructed, thereby connecting Alexander Road and Route 571;
- The intersections of Route 571 with Wallace Road, Alexander Road, and Clarksville Road should be improved to include turn lanes on all approaches as well as optimum signal timing, phasing, and coordination; and
- Adequate pedestrian and bicycle safety amenities, including bike lanes, sidewalks, improved crosswalks, and pedestrian signals, should be integrated into the improvement plan for Route 571 and nearby streets, including within the vicinity of the Princeton Junction Train Station.

These improvements are closely related in shaping a traffic circulation network within Princeton Junction that is compatible with the land use initiatives in this area. Specifically, there have been recent redevelopment efforts to establish a Princeton Junction village center. As this initiative continues to be pursued, the Township must reassess the long-term transportation circulation network in this area.

It should be noted that the development of the SRI Site will impact traffic flow through Princeton Junction. An assessment of an early development proposal indicates that traffic generated by the SRI Site and traveling through Princeton Junction could be equivalent to one full lane in each direction. This impact would be in addition to future traffic demands which would exceed the capacity of the proposed three-lane improved roadway after approximately ten (10) years.

5.4: Sidewalks and Bicycle Pathways

The Planning Board previously adopted a comprehensive sidewalk master plan in December of 1983. That master plan, which was developed by the Township's Pedestrian and Bicycle Access Advisory Committee, included an inventory of existing walkways and a priority listing of extensions. Since that time, many of the missing links identified in that plan have been completed, and the Township's inventory subsequently updated.

In 2004, the Township participated in a joint bicycle/pedestrian planning process funded by the NJDOT. As a result of that process, the NJDOT ultimately provided several recommendations for improvements to facilitate pedestrian and bicycle movement through the Township. The recommendations of that study are reflected in this Circulation Plan Element.

Indeed, this Circulation Plan Element reaffirms the need for annual updates to the Township's inventory and sidewalk extension program. An inventory of the Township's sidewalks is maintained by the Delaware Valley Regional Planning Commission (https://walk.dvrpc.org/). All projects in the Township must conform to the Americans with Disabilities Act. Barrier-free ramps are to be provided at curb-sidewalk intersections. During roadway and site design projects, existing deficiencies are identified and corrected.

5.4.1: Principles of Bicycle/Pedestrian Safety

It is recommended that sidewalks be added along new site development frontages unless there are exceptional reasons not to provide them. Sidewalk linkages are crucial for completing the Township's sidewalk network. In residential neighborhoods and centers of pedestrian activity (i.e. the Princeton Junction Train Station, recreation areas, schools, Princeton Junction), sidewalks should be provided on both sides of roadways to the fullest extent possible, within the guidelines of the RSIS. Sidewalks should specifically be provided along Wallace Road, Cranbury Road, and throughout Berrien City while still maintaining the scenic integrity of those communities. Enhancements to roadway lighting should be considered through these areas as well, since much of this pedestrian activity occurs during dark conditions. The Township should also develop plans for additional sidewalks to provide access to Community Park, including along Route 571.

With the continued development of the US Route 1 Corridor, it is recommended that the Township's sidewalk plan be re-examined to ensure that opportunities for creating appropriate linkages between housing, jobs, and supportive community facilities are implemented. As grade separated interchanges are designed for intersections along US Route 1, pedestrian and bicycle accessways should be incorporated as part of those

structures or in a separate location where such traffic demand would logically be expected to cross US Route 1. On the west side of US Route 1, pedestrian/bicycle pathways from residential development have been tied into the D&R Canal system. This concept should be extended to include future office developments as well as the longer-term development of Princeton University lands. Similarly, on the east side of US Route 1, pathways within Carnegie Center are being connected into similar systems from other developments, such as the Princeton Executive Park mixed-use development, which is generally located near the intersections of US Route 1, Meadow Road, and Old Meadow Road.

The Township also endorses the concept of providing multiple bicycle/pedestrian-friendly crossing opportunities along US Route 1, such as at the existing Dinky rail line as well as other locations with significant potential for bicycle/pedestrian activity. Similarly, a continuous sidewalk system should be provided along Meadow Road and Clarksville Road to US Route 1, as well as along Alexander Road from Princeton Junction to US Route 1.

An important element of the Township's overall circulation system involves bikeways. Since the 1970s, bicycling for commuting, recreation, and other travel purposes has become increasingly popular in Mercer County and in West Windsor. Adequate bicycle circulation, which links people with major activity centers, is achievable in the Township. There are several circulation components that make up the Township's bicycle network plan: bicycle lanes, roadways with compatible shoulders, shared roadways, and multi-use trails. Multi-use bicycle pathways or trails also provide pathways for pedestrians. The bicycle circulation system should be achieved, utilizing utility ROW and possibly parallel easements along the Greenbelt, consistent with the Township Open Space and Recreation Plan and Greenbelt Plan. Bicycle facilities should be designed in conformance with the NJDOT's Bicycle Compatible Roadway and Bikeways Planning and Design Guidelines.

This plan does not preclude bicyclists from using other bikeways to travel within the Township. In fact, as this plan is developed, additional bikeways should be incorporated. In addition, while this bikeway plan is intended to provide linkage with Township activity centers, linkages with facilities or activity centers outside of municipal boundaries is also encouraged.

5.4.2: Design Considerations

Bicycle lanes are portions of roadways that have been designated by striping, signing, and pavement markings for preferential use by bicyclists. These lanes may be located on: low volume roadways; roadways with moderate traffic volumes and speeds and having fifteen (15) foot wide vehicular travel lane widths in each direction; or roadways with somewhat higher traffic volumes and speeds and having paved shoulders. Bicycle compatible inlet grates need to be used for new roadway construction.

Bike lanes follow the direction of traffic. Ideally, bike lanes should have a minimum lane width of four (4) feet. However, additional width may be necessary depending on an individual roadway's truck and car traffic volume and speed limit.

The designation of a bike lane on an existing roadway with two (2) travel lanes allows for the preservation of a wider shoulder area for bicycle travel. It also strengthens the ability of the Township to seek from the NJDOT a reduced speed limit for the roadway.

Bicycle lanes are generally recommended for collector or arterial roadways that provide direct connections in the bikeway network. Bike lanes also provide links between major employment centers, schools, shopping centers, and higher density residential areas. The majority of roads for which bike lanes are recommended are typically found in the northern section of the Township where the population and commercial centers are at a higher density than the more rural, lower density areas in the southern part of the Township.

Within the category of proposed bike lanes, it is useful to further categorize roadways into those needing minor or major improvements. Bike lanes designed with minor improvements can typically be created through spot widening or restriping of shoulders and travel lanes. Bike lanes that require more significant improvements typically are incorporated into larger roadway improvement or construction efforts. For example, the Township could coordinate with Mercer County to install bike lanes on County roads as part of planned capital improvements, such as milling or repaving.

The majority of the Township's bikeway circulation plan consists of bicycle lanes along roadways as depicted on the Bikeway Circulation Map. Typically, bike lanes do not require much public funding since the roadways on which they are to be installed have sufficient roadway width to accommodate vehicular and bicycle traffic. Some signage and striping will be required at a minimal cost. General guidelines for signage and striping are provided in the Manual on Uniform Traffic Control Devices.

Roadways recommended for compatible shoulders are typically lower volume roads or streets where the posted speed limit is no higher than thirty (30) mph. All shoulder segments should be designed with appropriate widths according to NJDOT guidelines. Segments of roadways that currently meet these shoulder width standards should be maintained as such or upgraded to bike lanes if located within more developed parts of the Township. Compatible shoulders should be installed when future roadway construction and/or drainage improvements are planned for roads.

With respect to shared roadways, several have been suggested for the bike network even though they cannot easily accommodate bike lanes or compatible shoulders. Most of these streets are in residential areas and have low enough volumes to accommodate shared use. These roadways provide important connections to generators such as the train station, schools, parks, and other community facilities. Consequently, many of these roads are appropriate for bike route signage and could be designated as shared roadways.

In addition, multi-use trails and bicycle pathways are portions of a bikeway that are physically separated from motorized vehicular traffic by an open space or barrier, usually within an independent right-of-way or along a property line. Bike pathways are typically located along railroad tracks, in parks, along river or stream banks, and in similar areas. There are already a number of existing multi-use trails or pedestrian paths throughout the

Township. The majority of these facilities have been installed by developers (the central pathway system within Carnegie Center serves as an example of such a pathway).

Multi-use trails in greenbelt and environmentally sensitive areas must be designed in consultation with the Township Environmental Commission and other stakeholders, to ensure that such facilities properly account for and relate to the surrounding physical environment.

While they provide an attractive pedestrian facility or a path for young or inexperienced bicyclists, Multi-Use Trails are often too narrow to safely accommodate a wide range of users. Studies also indicate a greater degree of risk in those locations where multi-use trails or side paths intersect roadways or driveways. In the future, multi-use paths should be limited to locations with relatively few driveway and roadway intersections, since motorists can be taken by surprise at those locations. Where they follow parallel roads, these paths should not be considered a substitute for on-road facilities, but rather should be used in conjunction with shoulders or bike lanes.

For a two-directional bicycle path, a paved width of eight (8) to twelve (12) feet is necessary depending on expected bicycle traffic, anticipated pedestrian traffic, and pathway alignment. One direction pathways should have a minimum width of five (5) feet and a minimum two (2) to three (3) foot wide-graded area on both sides of the pathway pavement.

5.4.3: Bicycle Facility Locations and Linkages

This Circulation Plan Element identifies the recommended locations where bicycle facilities should be developed.

In general, bike lanes should be constructed within the roadway on two-lane roads, while off-road bike paths should be constructed along roads with more than two travel lanes. The design and layout of such facilities should be subject to the specific conditions of the street and abutting properties and development.

Mercer County Park presently has an extensive bike pathway system, which extends along the sides of Lake Mercer. This County system is beneficial to West Windsor bicyclists. The Township Bikeway Plan identifies a pathway to connect to the County system, thereby making it more accessible to bicyclists. This proposed conceptual extension is shown on the Township Bikeway Circulation Map.

The Township bikeway plan is comprehensive and designed to provide bikeway linkages throughout the community. Because of the cost of providing such a comprehensive plan as well as the fact that additional or more appropriate bikeway routes are likely to be recommended by Township bicyclists, a phasing schedule is established in order to implement the bikeway plan.

The phasing schedule targets a first phase basic bicycle network that provides designated bikeway routes where the greatest numbers of bicyclists are envisioned to travel. The basic network is designed to establish the framework for a comprehensive bikeway system. Access to schools, recreation centers, employment centers, the Princeton Junction Train Station,

and the county park from established residential neighborhoods was considered vital to the basic bicycle system framework. Many of the bike lanes are existing or will be provided during the construction of planned roadway improvements. The bikeways, however, will require specific projects for their completion. It is recommended that the Township dedicate resources to study and design these pathways.

An additional specific improvement which should be considered is a pedestrian/bicycle bridge or connection to link Fisher Place and the Princeton University property, which should be coordinated with redevelopment of the property along the northbound side of US Route 1 in Penns Neck. Such a connection need not necessarily be grade separated.

A project to use the PSE&G utility easement for a multi-use path is moving forward. The Township is in the process of preparing plans and obtaining easements adjacent to the ROW, which will provide a direct linkage with the Mercer County Park.

The second phase of the Township's bicycle network plan consists of providing additional linkages from emerging residential and commercial areas to the existing system. No time frames are established for either implementation phase. However, it is anticipated that both phases can be implemented in a timely fashion and coordinated with the capital road improvement plans, as they are prepared.

5.4.4: Ancillary Bicycle Facilities

To improve the quality of the proposed bikeway system, it is important to provide supplemental or accessory facilities. These facilities will make the bikeways more enjoyable, thus encouraging their greater use.

Bike parking facilities should be provided at various stopping points along the bikeway system for security and weather protection. For example, shopping centers, commuter parking at the Princeton Junction Train Station, the municipal complex, and employment centers should have adequate parking facilities that are conveniently located near building entrances or other highly visible areas which are self-policing. As noted by the American Association of State Highway and Transportation Officials, bicycle parking that is not properly designed will encourage bicyclists to use trees, railings, and other inappropriate appurtenances for bicycle parking.

The Township should also seek ways to encourage employers to provide bicycle-friendly accommodations for employees. These could include such things as bicycle lockers and racks, as well as shower and changing facilities.

This plan envisions adequate Township capital budgeting to provide for continued connections of missing minor links of sidewalk and bikeways or bike paths. Funding should also be pursued from the New Jersey Department of Transportation (NJDOT). Dedicated funding for pedestrian and bicycle accessibility projects is allocated by the NJDOT and the Delaware Valley Regional Planning Commission (DVRPC).

5.5: Roadway Access and Curbcuts

This plan seeks to reinforce established local policy to continue sound highway access management procedures with respect to driveway spacing along US Route 1 and the Township's major arterial and collector road system. Its intention is to preserve the traffic-carrying capacity of such roadways and to preclude multiple access points on all roadway classifications above local or minor collector streets. Depending upon a parcel's specific location, direct access to principal arterials, where other access alternatives are practically available, will be discouraged.

The NJ State Highway Access Management Code controls US Route 1 access design. This Code defines the spacing of driveways, driveway widths and number, developer fair share contributions for State highway improvements, and allowable traffic operation degradation permitted by developers. The Code heavily supports the use of reasonable alternative access, such as utilizing side streets in lieu of driveways onto the already-heavily congested US Route 1. The Code also supports the use of shared accesses and cross accesses to minimize the number of access points along the highway and encourage internal traffic movements rather than external movements to move between sites. Examples of this within the Township include the shared and cross accesses between Princeton MarketFair, Carnegie Center West and other adjacent restaurant and hotel development, and the future shared access for Princeton Overlook and Carnegie Center West.

The Township should continue to support shared and cross accesses for all site plan applications to which such a configuration is reasonable, particularly along arterial roadways. Like missing sidewalk links, individual cross accesses will lead to a comprehensive program, alleviating traffic congestion on these heavily traveled roads. Shared accesses have historically been of concern to some property owners due to potential competition for parking spaces and the overall desire for separate and recognizable driveways. Site planning in the Township has consistently supported the goal of reducing intensity of development parcels to preserve adequate parking facilities. In the interest of maintaining diminishing roadway capacity, standards to require shared and cross accesses for parcels fronting arterials and collector roadways should be developed. The County's future access management plan, discussed herein, will potentially offer such standards for County roads. The Township should consider using the County and State access management plans to develop Township standards.

5.6: Mass Transit and Travel Demand Management

Use of mass transit and travel demand management are often closely related to one another. Travel demand management techniques include use of transit, ridesharing, telecommuting, and other forms of reducing single occupancy vehicular travel. Use of mass transit is dependent on the cost of single occupancy vehicular travel, including the cost of fuel and cost of travel time. When roadway congestion increases, use of mass transit becomes more attractive to commuters. Travel demand management is used to then decrease roadway congestion. Use of mass transit is also dependent on a convenient, cost effective transit system. The Central Jersey Transportation Forum is evaluating bus route enhancements for West Windsor; specifically, the Forum is evaluating a potential route between Twin Rivers in East Windsor to the Princeton Shopping Center in Princeton Municipality, and is also studying the potential conversion of the Dinky rail line into a single lane bus rapid transit (BRT) line with an adjoining recreational trail.

The Township also has the benefit of convenient rail service that saves travel time for residents and regional travelers commuting to Newark, New York and Philadelphia employment centers on the Northeast Corridor Amtrak and New Jersey Transit rail line. The Princeton Junction Train Station has been one of the attractions for new residents of the Township.

The future development of large commercial properties such as SRI Site and the Howard Hughes Site, coupled with the completion of already approved developments including Carnegie Center, will create a very large employment and retail complex in the Township. The travel activities that these complexes (and others in adjoining communities) will generate may be large enough to justify a major public transit investment to link residential, office, and retail areas to each other and to the Princeton Junction train station. It has been suggested that the Dinky rail line could be expanded and extended in the form of bus rapid transit (BRT). This plan illustrates a possible concept: to the north, the line could be extended through the Sarnoff property and further into Plainsboro. To the south, the line could branch to provide a loop through Carnegie Center and the Canal Pointe area, and/or it could be further extended to the south through Nassau Park, the Howard Hughes Site, and terminating in the vicinity of Quakerbridge Mall.

Clearly such a facility would require a substantial commitment by NJ Transit, the State of New Jersey, and others to provide both capital and operating funds. It does appear, however, that the needed activity thresholds are met to ensure that a reasonable ridership level will result and that mobility in the Township will be significantly improved by the project. The Township should initiate discussions with responsible transportation agencies to begin planning for a facility of this type.

The Township is also served by several New Jersey Transit bus routes (Routes 600, 603, 609 and 612). Additional route expansions are being evaluated by NJ Transit. The routes primarily service regional shopping areas, hospitals, large office complexes, and major

employers. These 600 series routes are regional routes, and all have bus stops at Quakerbridge Mall in Lawrence Township. Route 600 travels from the City of Trenton to Plainsboro Township along the US Route 1 corridor, servicing Princeton MarketFair, Carnegie Center, and the Princeton Junction train. Route 603 runs from Lawrence Township to the City of Trenton and to Hamilton Township, with stops at Nassau Park. Route 609 travels from Ewing Township to Lawrence Township via Trenton, with bus stops at Mercer County Community College and Mercer County Votechnical School in West Windsor. Route 612 is a Wheels route, specifically geared toward bringing people from high density housing to the train station to support an alternate means of public transportation.

Mass transit currently serves to bring people into the Township to shop and work, and also serves to bring residents to work in other cities. There is little transit service for the remainder of Township residents' traveling needs, except to Princeton on the Dinky service.

The Township should periodically evaluate the need for additional service to employment and retail areas to better serve its residents and workers. The Township should review site plans for the need for bus stops, particularly along the US Route 1 and Route 571 corridors, and discuss requiring site plan applicants to coordinate with New Jersey Transit for such service.

5.6.1: Princeton Junction Train Station

Parking and access to the Princeton Junction Train Station remains important to the overall circulation scheme for the Township. New Jersey Transit and the West Windsor Parking Authority provide daily and monthly permit parking. Prior to the COVID-19 pandemic, the New Jersey Transit and West Windsor Parking Authority parking lots operated at capacity during the weekdays.

The Princeton Junction Train Station serves much of Mercer County's and part of Middlesex County's rail transit needs. In the 1990s, the closest rail stations were in New Brunswick and Trenton; thus, many commuters had traveled to Princeton Junction from Ewing Township, Hamilton Township, Lawrence Township, Princeton Township and Borough, Washington Township, Hightstown Borough, Cranbury Township, Plainsboro Township, South and North Brunswick Townships. In addition, Pennsylvania commuters may have chosen Princeton Junction Train Station over Trenton station.

Bicycle and pedestrian access to the Princeton Junction Train Station is an important component of the Township's Circulation Plan in general, and of the Princeton Junction Redevelopment Plan specifically. Improvements to bicycle and pedestrian facilities serving the station should receive priority in the Township's consideration.

Section 6: Means of Transportation Improvement Funding

The following section offers a combination of public and private funding to advance an overall Capital Improvement Program.


DRAFT

6.1: Introduction

A combination of public and private funding is required to implement an overall capital transportation improvement program. The various sources and mechanisms to attain such funding are described below.

6.2: Capital Improvement Program

While previous sections of the Circulation Plan Element address the planning rationale and concepts behind its recommendations, the costs for the various identified capital road improvements must also be addressed in order to allow for the successful implementation of the plan. The Capital Improvement Program (CIP) is a companion document to this plan, which outlines the schedule and budget for implementing the improvements described herein.

The Capital Improvement Program provides the basis for establishing private and public entities' (Township, Mercer County, and the State of New Jersey) financial obligations for various improvements. The program also serves as the basis for computing developers' pro rata contributions to transportation improvements.

To achieve the anticipated private share of the identified capital road improvement costs, the Township should continue to update its established off-tract transportation road assessment program as the collection mechanism for the Capital Improvement Program. The off-tract road assessment program serves the entire Township and is currently operational. The transportation model used for calculating the private off-tract assessment fee must be updated to reflect completed projects and actual or revised construction costs on an annual basis. The model also needs to be updated periodically to reflect changes to industry planning standards, such as trip generation rates.

Township improvements are to be supplied through subsequent adoption by the Township Council of a long range Capital Improvement Program and the initiation of specific ten-year capital plans for road improvements. These funding programs should be derived from a prioritization of the projects identified within this Circulation Plan.

Bicycle and pedestrian facilities are considered to be an integral part of the roadway structure, and as such are an important part of the Capital Improvement Program. Costs of such facilities should be included in the Off-Tract Road Assessment Program.

6.3: Off-Tract Road Assessment Program

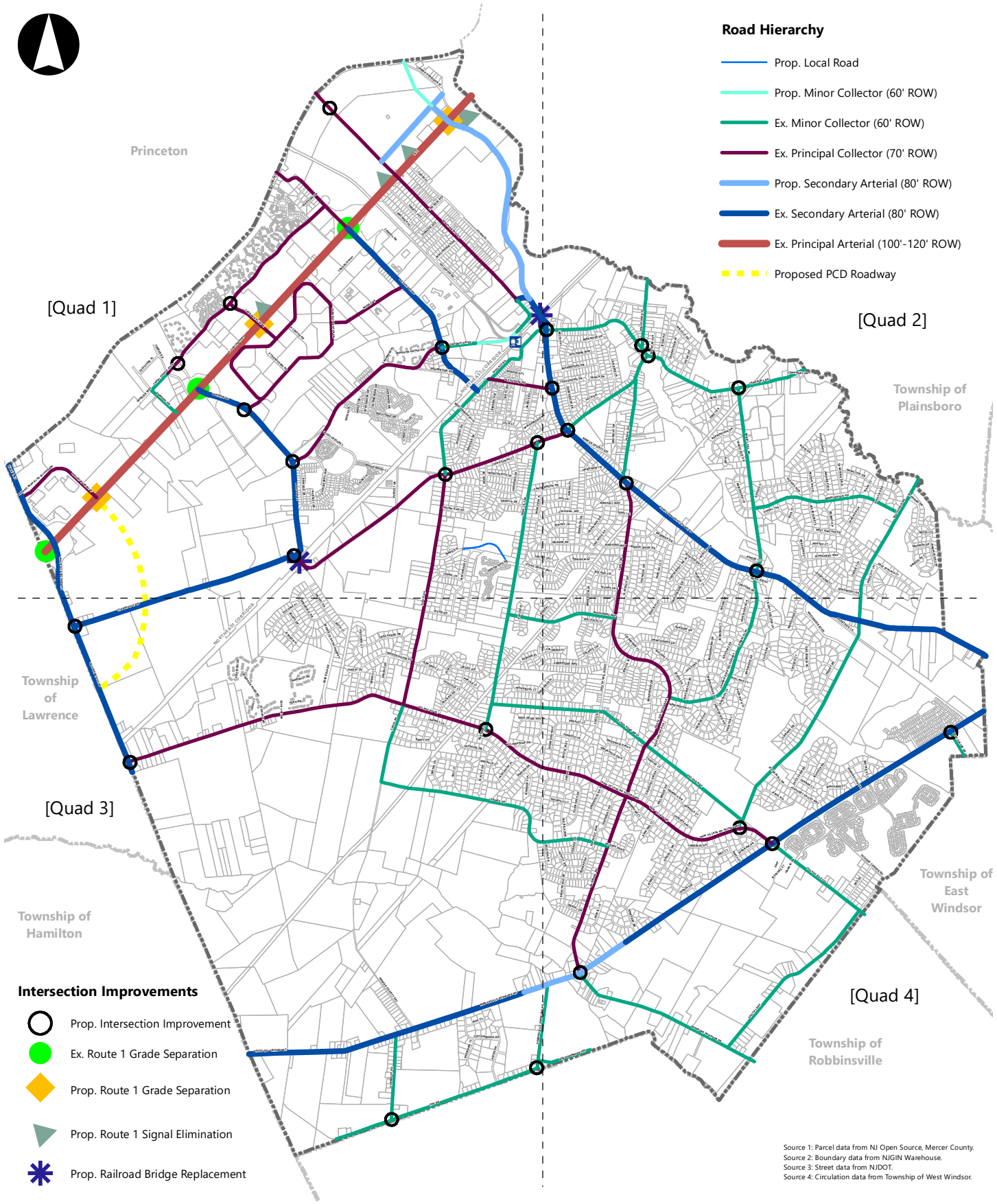
An off-tract road assessment program, which superseded prior Township improvement district programs, provides for private participation of roadway improvements needed to support on-going site development. This program provides for the calculation and payment of fair share contributions by private developers for roadway improvements that are the financial responsibility of the Township and Mercer County. The primary tools used to facilitate this program are the Capital Improvement Program and the West Windsor travel demand model. This model is a series of computer programs that estimates the travel patterns of existing and expected development in West Windsor and translates that development into traffic volumes on the roadway network of West Windsor Township. These traffic volumes have been used to define areas of forecasted congestion and have helped shape the Township's capital improvement plan.

The Township should continue to allow for and encourage developers to construct roadway improvements for a credit towards their pro-rata off-tract improvement fee. This may reduce administrative costs associated with designing and constructing road improvements and eliminate some risks inherent to roadway construction.

6.4: County and State Improvements

An interlocal service agreement was approved between the Township and the County which provides the necessary framework for financial resources to fund County road improvements in the Township. For a project to get a strong commitment from the County, it is suggested that the Township seek appropriate project priority on the County's Transportation Improvement Program (TIP) as well as to obtain annually, as necessary, project funding for those improvements in which a county obligation is required.

Maps



Dwg. Title

Map 01: Circulation Map

Project No.	Date	Drawn By
3442.22	05.06.21	DN

BURGIS ASSOCIATES, INC.
COMMUNITY PLANNING | LAND DEVELOPMENT AND DESIGN | LANDSCAPE ARCHITECTURE
25 Westwood Avenue
Westwood, New Jersey 07675
p: 201.666.1811
f: 201.666.2599

Project Title:

2021 Circulation Plan Element

Township of West Windsor | Mercer County, New Jersey

Scale	Dwg. No.
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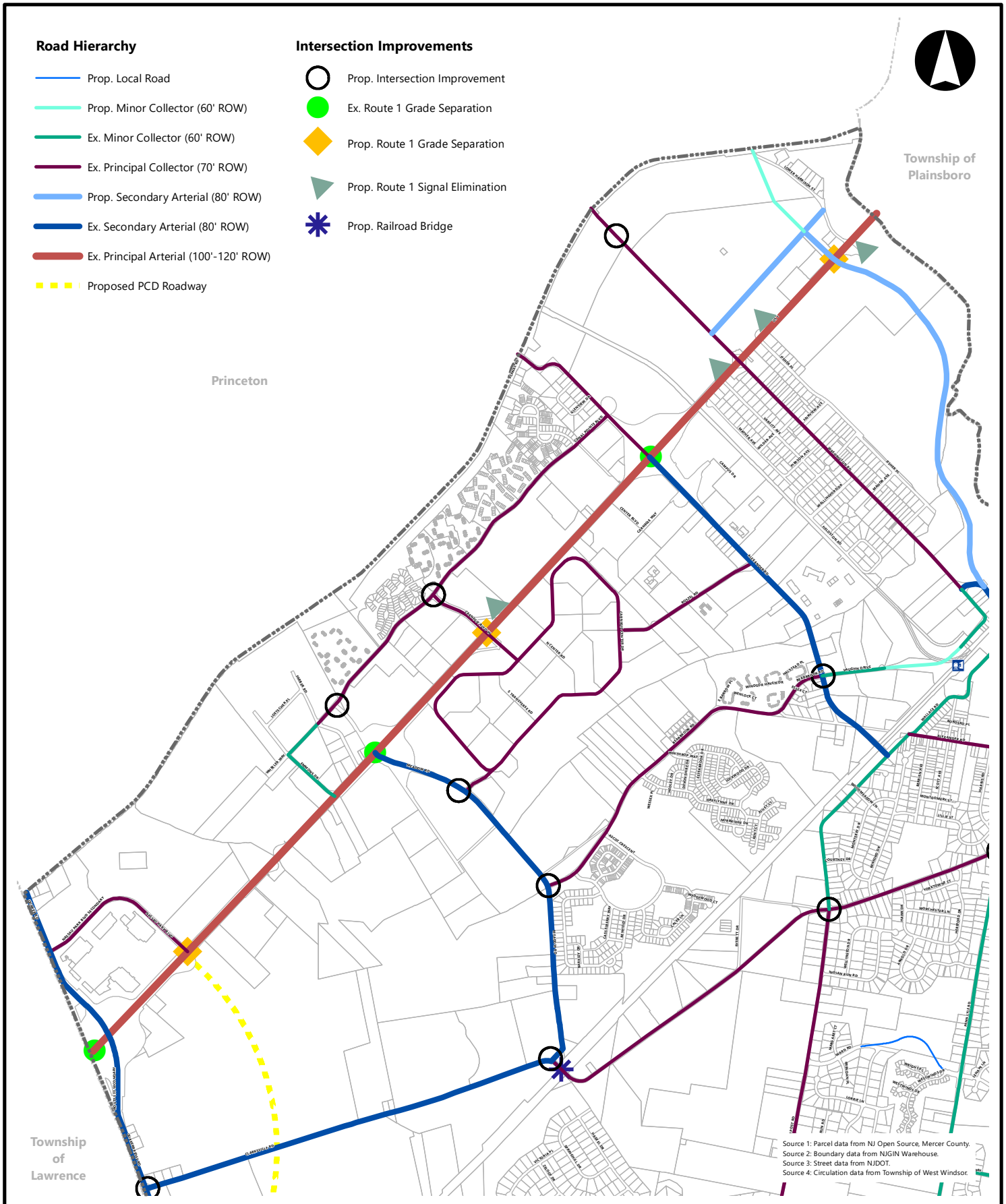

Dwg. Title

Map 01: Circulation Map - Quad 01

Project No.	Date	Drawn By
3442.22	05.06.21	DN

BURGIS ASSOCIATES, INC.
COMMUNITY PLANNING | LAND DEVELOPMENT AND DESIGN | LANDSCAPE ARCHITECTURE
25 Westwood Avenue
Westwood, New Jersey 07675
p: 201.666.1811
f: 201.666.2599

Project Title:

2021 Circulation Plan Element

Township of West Windsor | Mercer County, New Jersey

Scale	Dwg. No.
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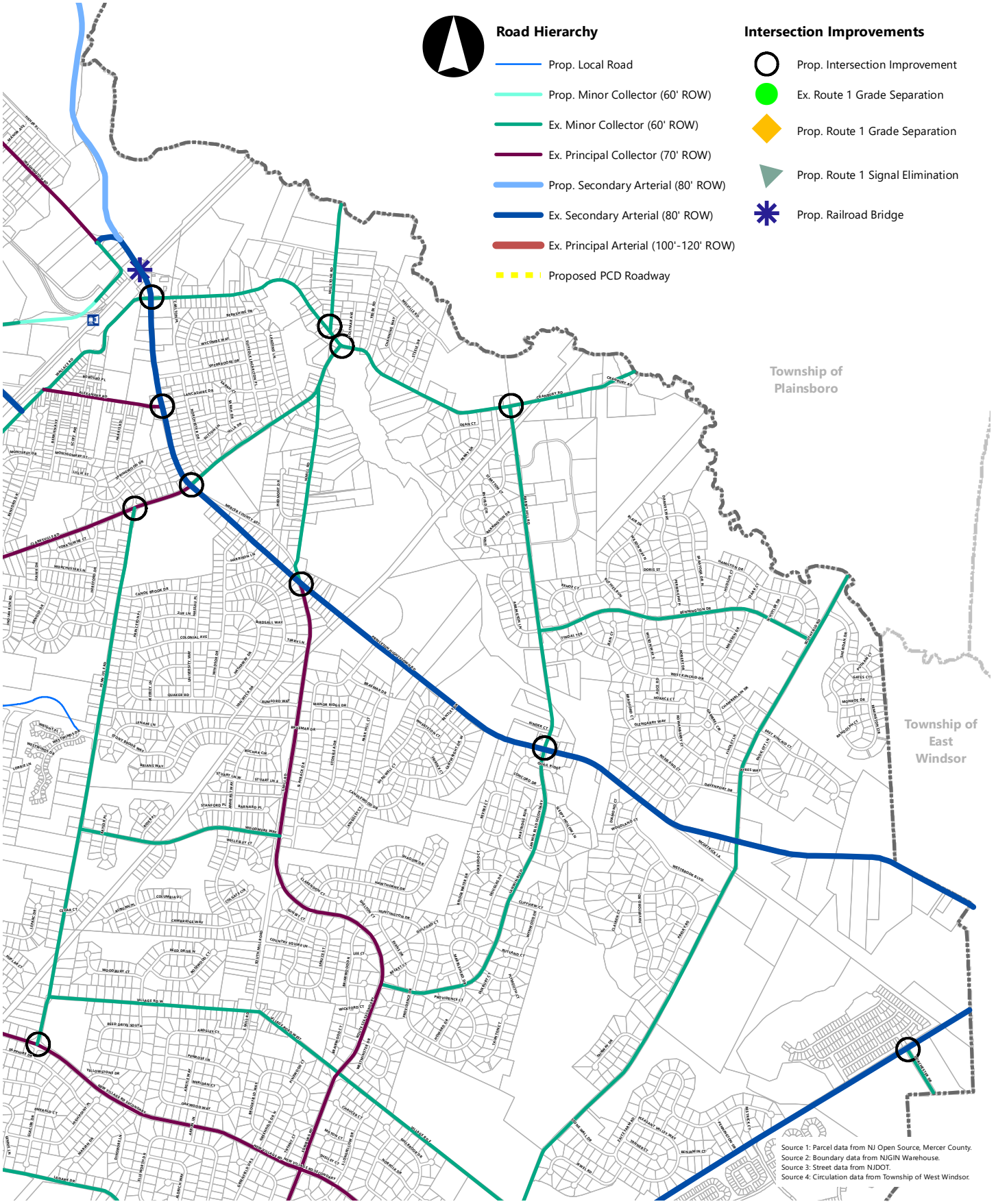


Dwg. Title

Map 01: Circulation Map - Quad 02

Project No.	Date	Drawn By
3442.22	05.06.21	DN

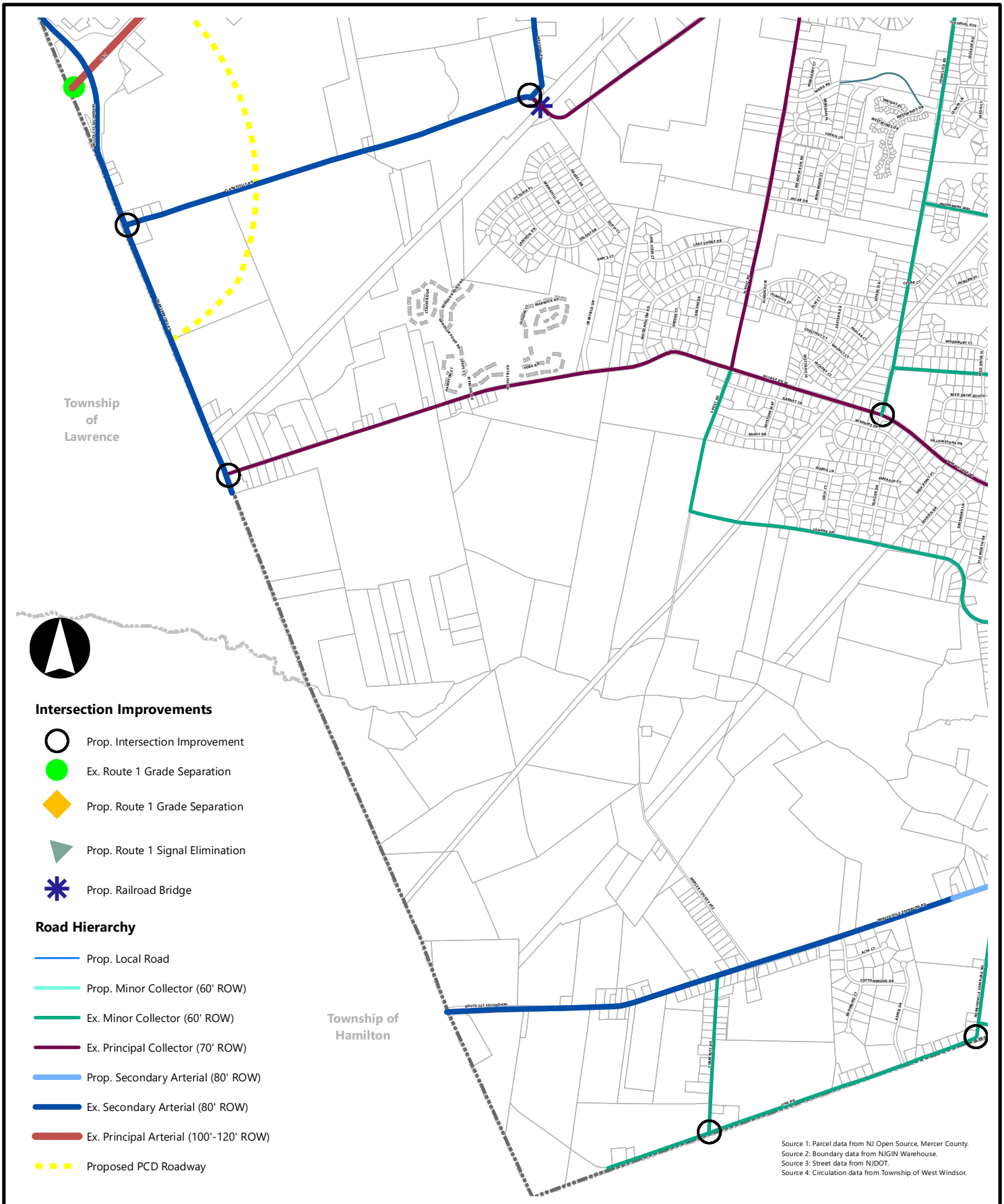
BURGIS ASSOCIATES, INC.
COMMUNITY PLANNING | LAND DEVELOPMENT AND DESIGN | LANDSCAPE ARCHITECTURE
25 Westwood Avenue
Westwood, New Jersey 07675
p: 201.666.1811
f: 201.666.2599

Project Title:

2021 Circulation Plan Element

Township of West Windsor | Mercer County, New Jersey

Scale	Dwg. No.
1 " = 2,350 '	map 01



Dwg. Title

Map 01: Circulation Map - Quad 03

Project No.	Date	Drawn By
3442.22	05.06.21	DN

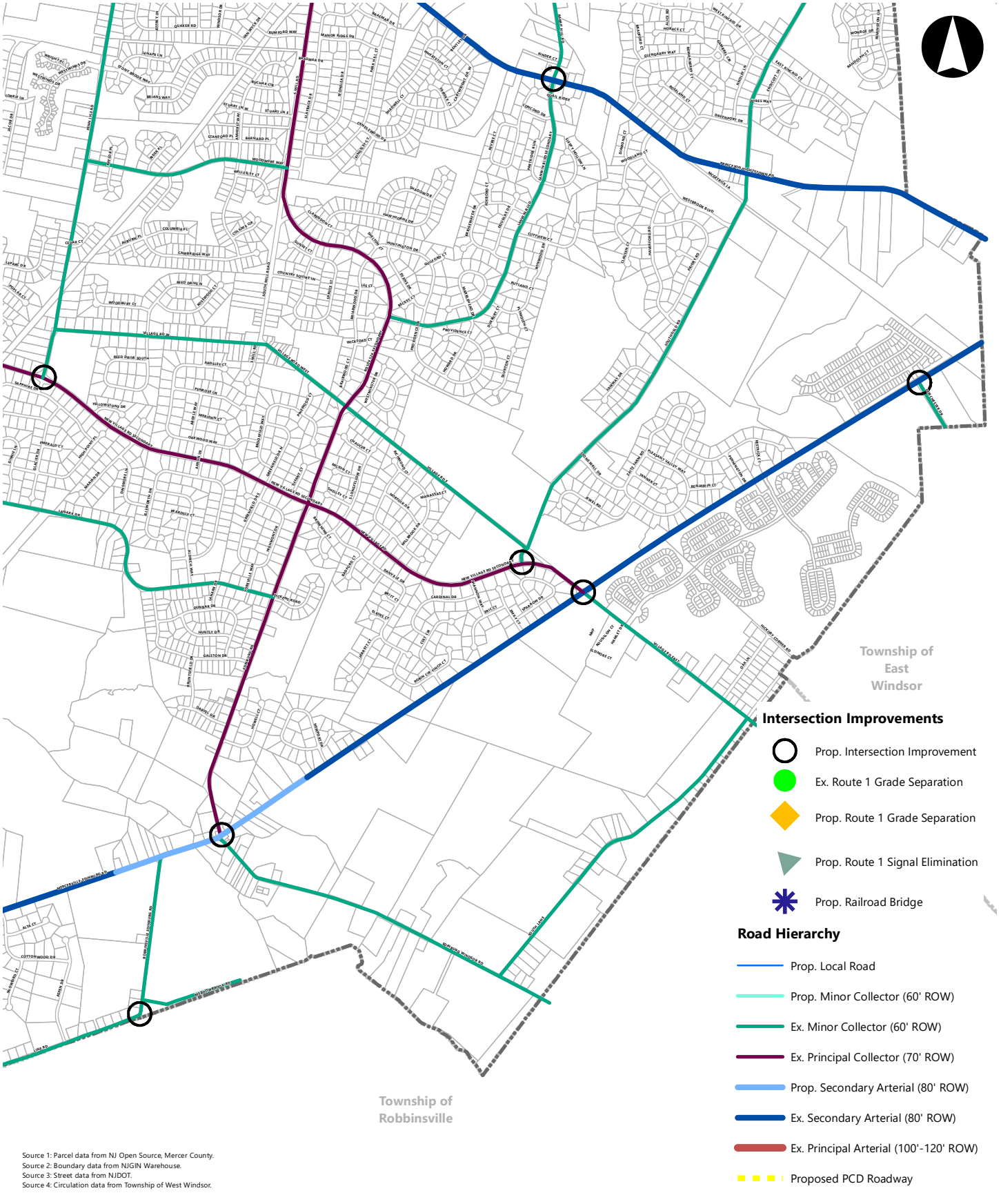
Burgis Associates, Inc.
Community Planning | Land Development and Design | Landscape Architecture
25 Westwood Avenue
Westwood, New Jersey 07675
p: 201.666.1811
f: 201.666.2599

Project Title:

2021 Circulation Plan Element

Township of West Windsor | Mercer County, New Jersey

Scale	Dwg. No.
1 " = 2,350 '	map 01



Source 1: Parcel data from NJ Open Source, Mercer County.
Source 2: Boundary data from NJGIN Warehouse.
Source 3: Street data from NJDOT.
Source 4: Circulation data from Township of West Windsor.

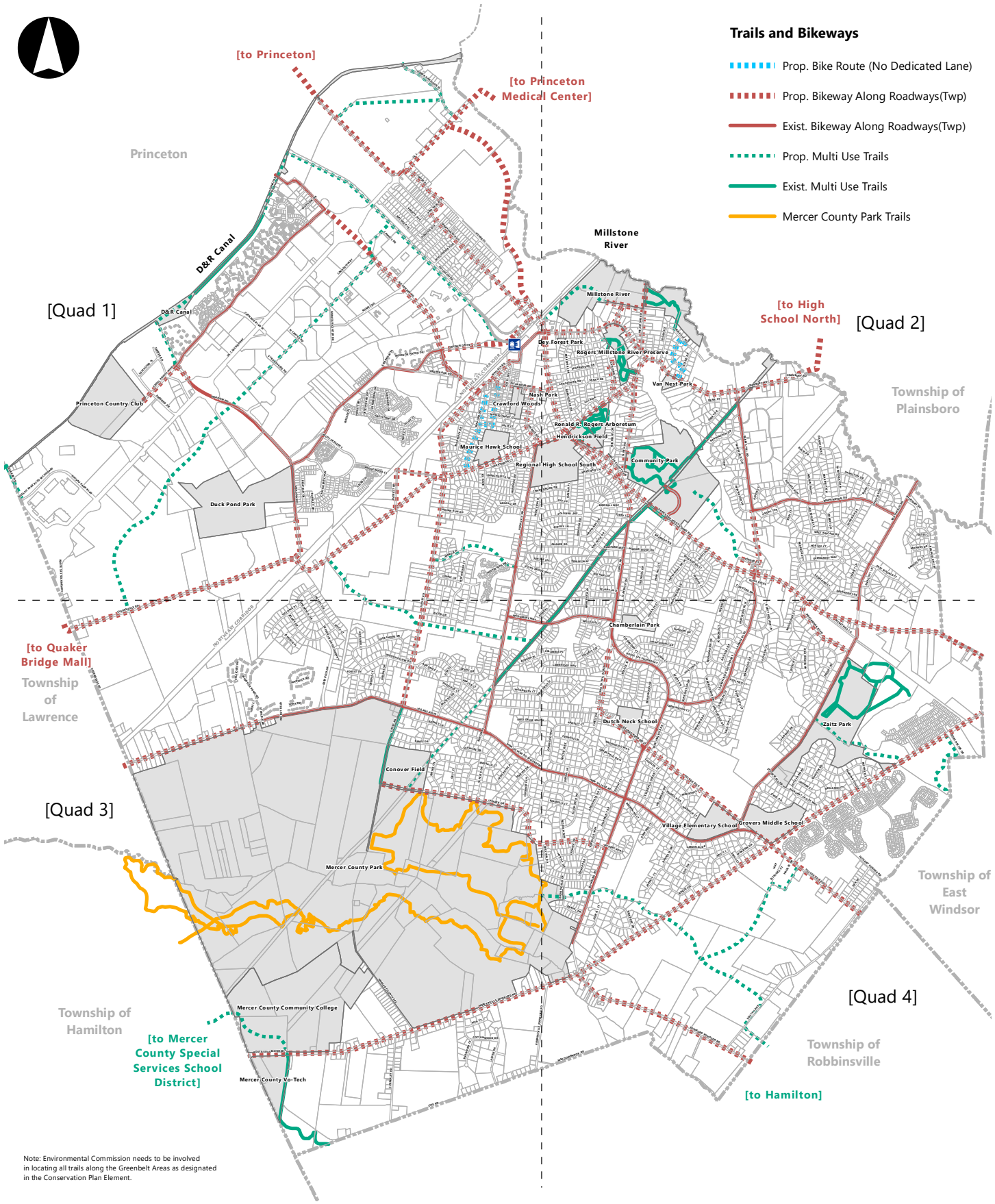
Dwg. Title
Map 01: Circulation Map - Quad 04

Project No.	Date	Drawn By
3442.22	05.06.21	DN

BURGIS ASSOCIATES, INC.
COMMUNITY PLANNING | LAND DEVELOPMENT AND DESIGN | LANDSCAPE ARCHITECTURE
25 Westwood Avenue
Westwood, New Jersey 07675
p: 201.666.1811
f: 201.666.2599

Project Title:
2021 Circulation Plan Element
Township of West Windsor | Mercer County, New Jersey

Scale: 1 " = 2,350 '
Dwg. No.: map 01



Dwg. Title

Map 02: Bikeway and Multiuse Trail Facility Map

Project No.	Date	Drawn By
3442.22	05.06.21	DN

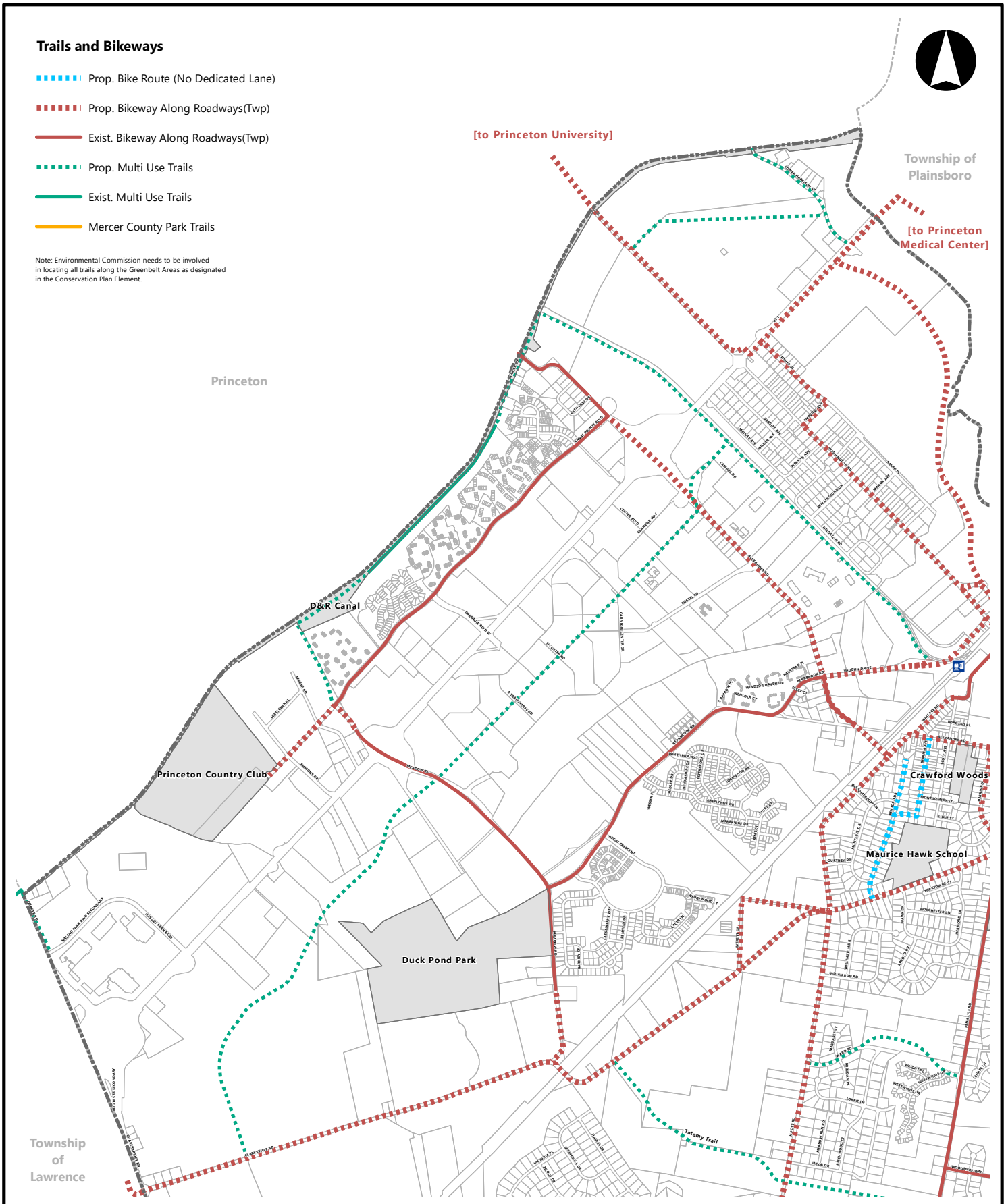
BURGIS ASSOCIATES, INC.
COMMUNITY PLANNING | LAND DEVELOPMENT AND DESIGN | LANDSCAPE ARCHITECTURE
25 Westwood Avenue
Westwood, New Jersey 07675
p: 201.666.1811
f: 201.666.2599

Project Title:

2021 Circulation Plan Element

Township of West Windsor | Mercer County, New Jersey

Scale	Dwg. No.
1 " = 4,400 '	map 02



Dwg. Title

Map 02: Bikeway and Multiuse Trail Facility Map - Quad 01

Project No.	Date	Drawn By
3442.22	05.06.21	DN

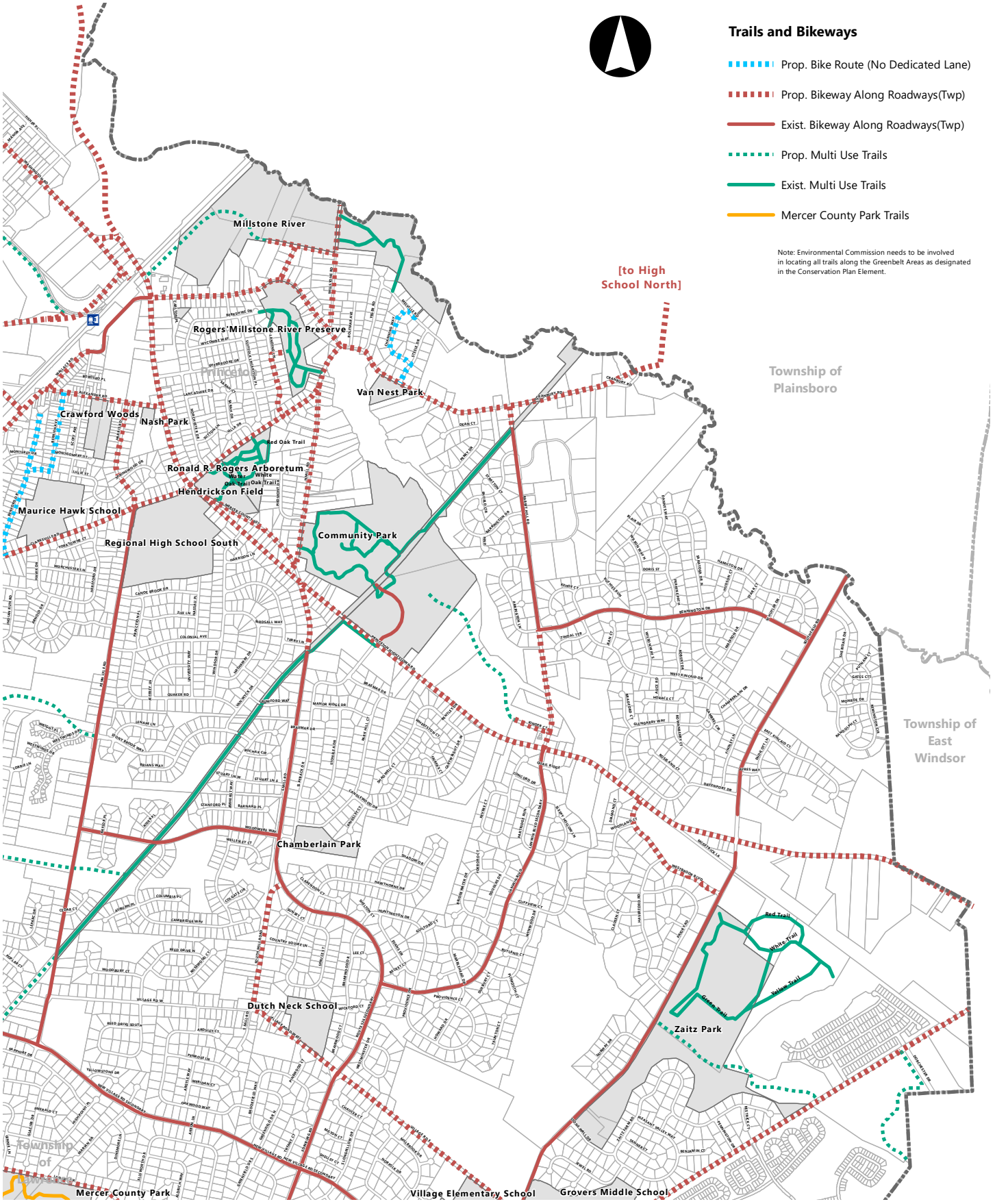
BURGIS ASSOCIATES, INC.
COMMUNITY PLANNING | LAND DEVELOPMENT AND DESIGN | LANDSCAPE ARCHITECTURE
25 Westwood Avenue
Westwood, New Jersey 07675
p: 201.666.1811
f: 201.666.2599

Project Title:

2021 Circulation Plan Element

Township of West Windsor | Mercer County, New Jersey

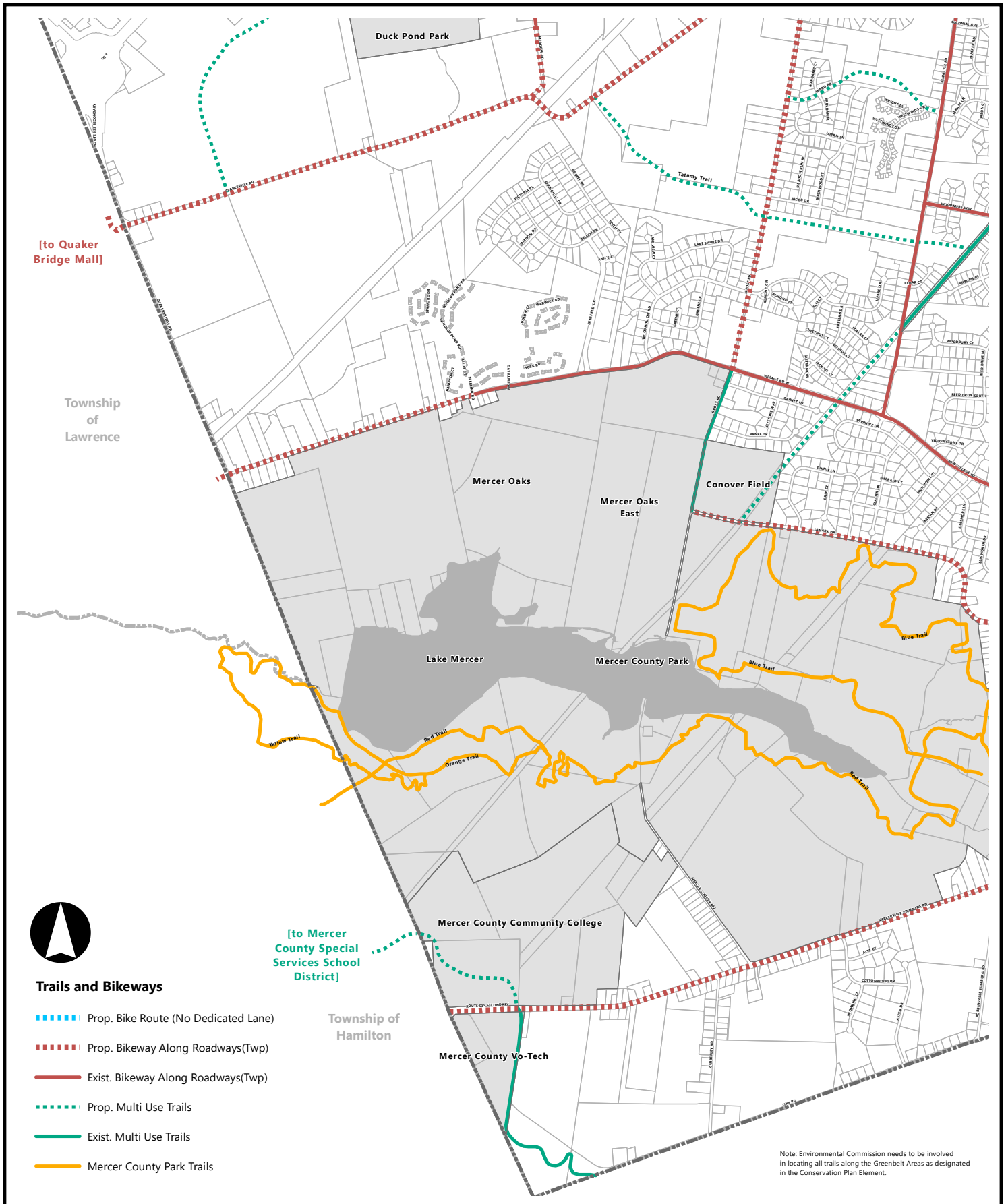
Scale	Dwg. No.
1 " = 2,350 '	map 02



Dwg. Title	Project No.	Date	Drawn By
Map 02: Bikeway and Multiuse Trail Facility Map - Quad 02	3442.22	04.09.21	DN

BURGIS ASSOCIATES, INC.
COMMUNITY PLANNING | LAND DEVELOPMENT AND DESIGN | LANDSCAPE ARCHITECTURE
25 Westwood Avenue
Westwood, New Jersey 07675
p: 201.666.1811
f: 201.666.2599

Project Title:	Scale	Dwg. No.
2021 Circulation Plan Element Township of West Windsor | Mercer County, New Jersey	1 " = 2,350 '	map 02



Dwg. Title

Map 02: Bikeway and Multiuse Trail Facility Map - Quad 03

Project No.	Date	Drawn By
3442.22	05.06.21	DN

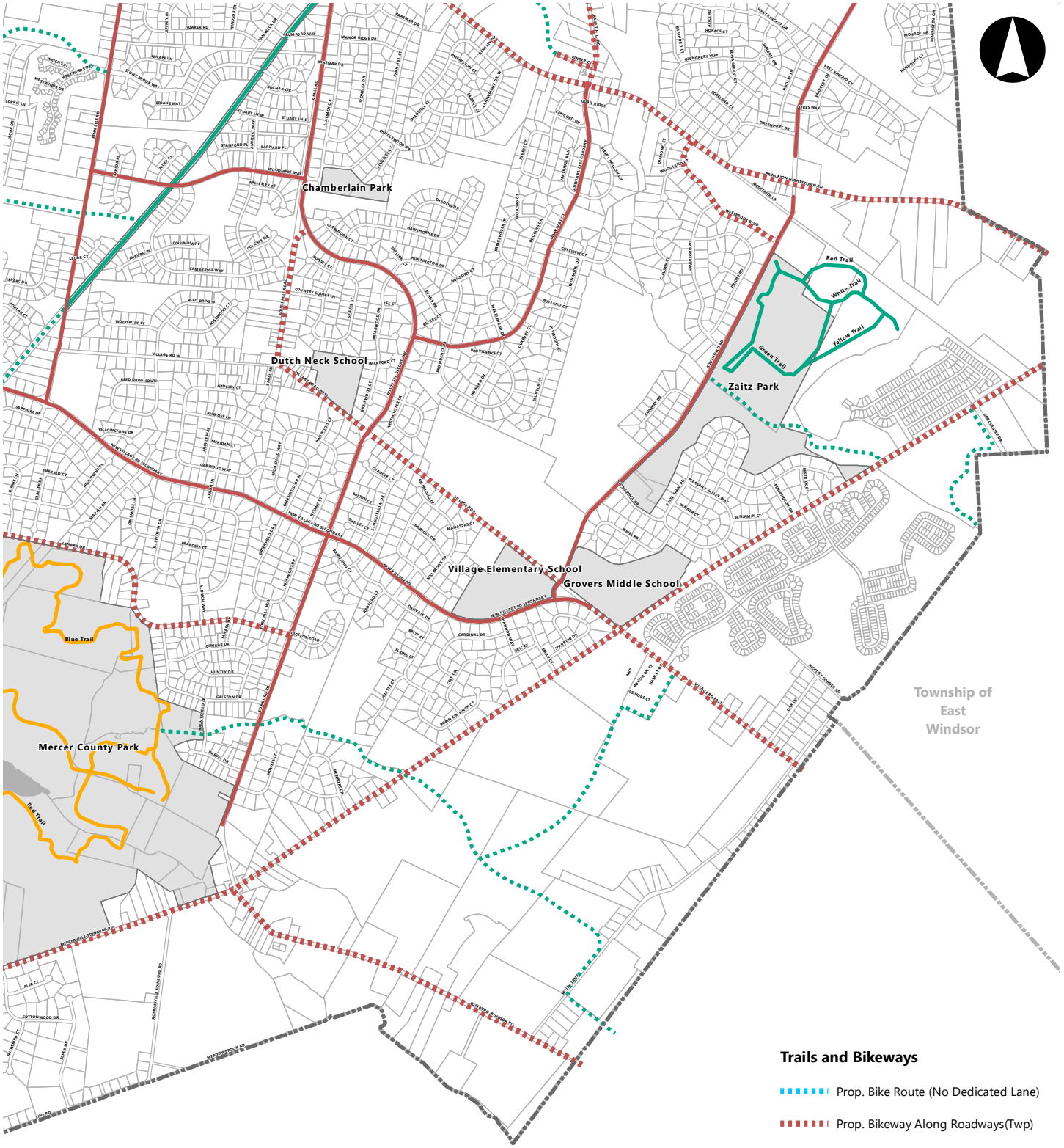
BURGIS ASSOCIATES, INC.
COMMUNITY PLANNING | LAND DEVELOPMENT AND DESIGN | LANDSCAPE ARCHITECTURE
25 Westwood Avenue
Westwood, New Jersey 07675
p: 201.666.1811
f: 201.666.2599

Project Title:

2021 Circulation Plan Element

Township of West Windsor | Mercer County, New Jersey

Scale	Dwg. No.
1 " = 2,350 '	map 02



Trails and Bikeways

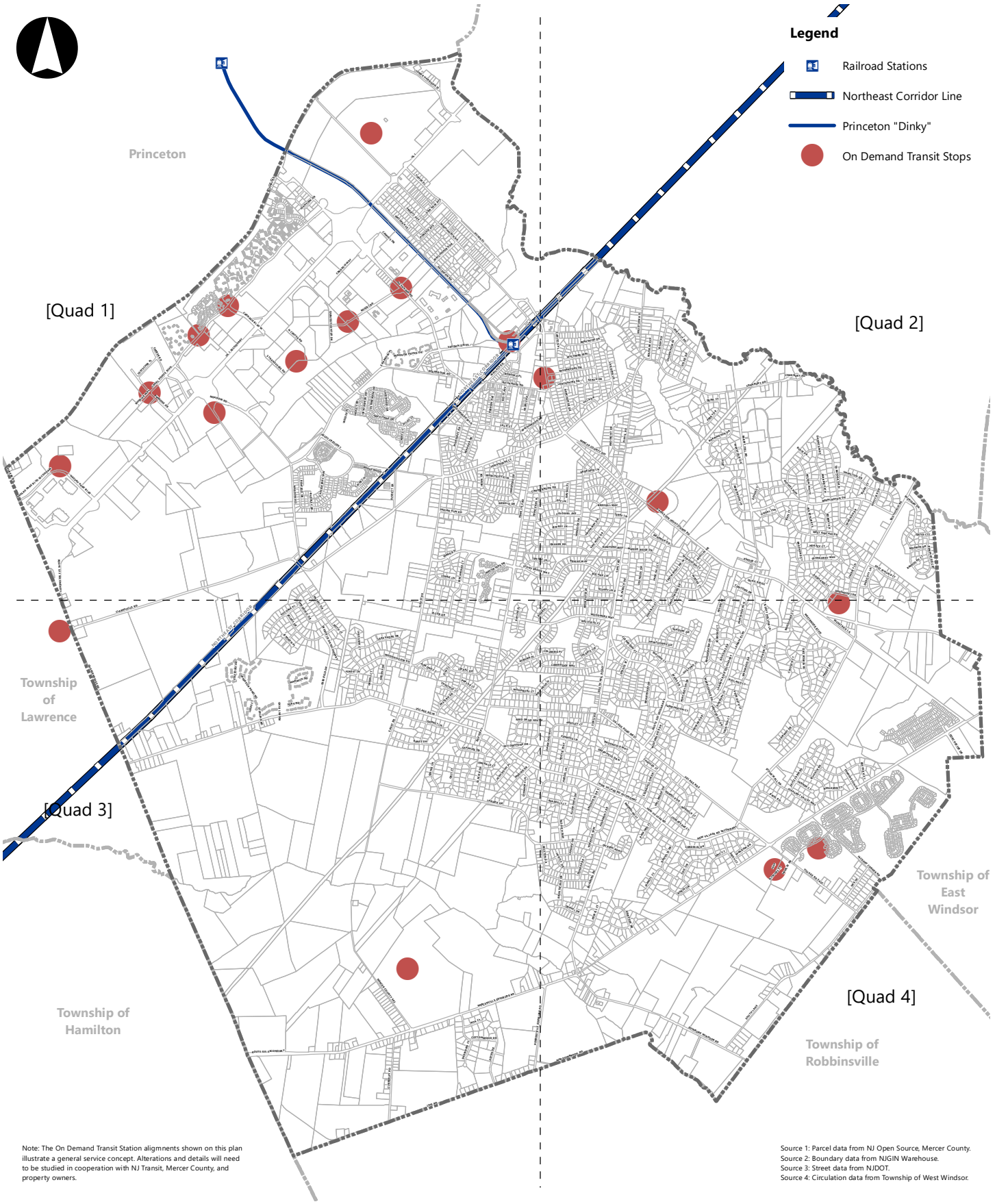
- Prop. Bike Route (No Dedicated Lane)
- Prop. Bikeway Along Roadways(Twp)
- Exist. Bikeway Along Roadways(Twp)
- Prop. Multi Use Trails
- Exist. Multi Use Trails
- Mercer County Park Trails

Note: Environmental Commission needs to be involved in locating all trails along the Greenbelt Areas as designated in the Conservation Plan Element.

Dwg. Title	Project No.	Date	Drawn By
Map 02: Bikeway and Multiuse Trail Facility Map - Quad 04	3442.22	05.06.21	DN

BURGIS ASSOCIATES, INC.
COMMUNITY PLANNING | LAND DEVELOPMENT AND DESIGN | LANDSCAPE ARCHITECTURE
25 Westwood Avenue
Westwood, New Jersey 07675
p: 201.666.1811
f: 201.666.2599

Project Title:	Scale	Dwg. No.
2021 Circulation Plan Element Township of West Windsor | Mercer County, New Jersey	1 " = 2,350 '	map 02



Note: The On Demand Transit Station alignments shown on this plan illustrate a general service concept. Alterations and details will need to be studied in cooperation with NJ Transit, Mercer County, and property owners.

Source 1: Parcel data from NJ Open Source, Mercer County.
Source 2: Boundary data from NJGIN Warehouse.
Source 3: Street data from NJDOT.
Source 4: Circulation data from Township of West Windsor.

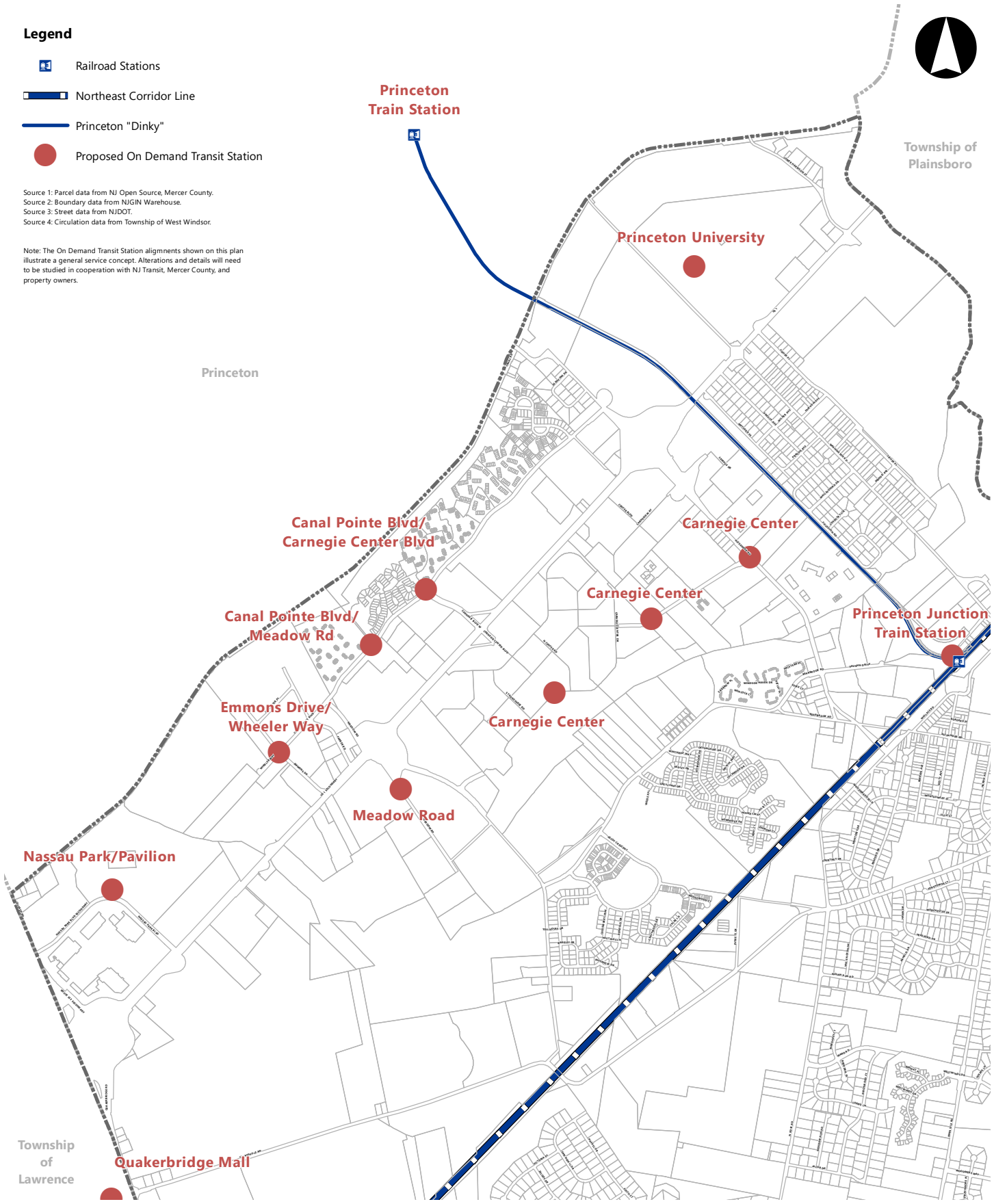
Dwg. Title
Map 03: On Demand Transit

Project No.	Date	Drawn By
3442.22	05.06.21	DN

BURGIS ASSOCIATES, INC.
COMMUNITY PLANNING | LAND DEVELOPMENT AND DESIGN | LANDSCAPE ARCHITECTURE
25 Westwood Avenue
Westwood, New Jersey 07675
p: 201.666.1811
f: 201.666.2599

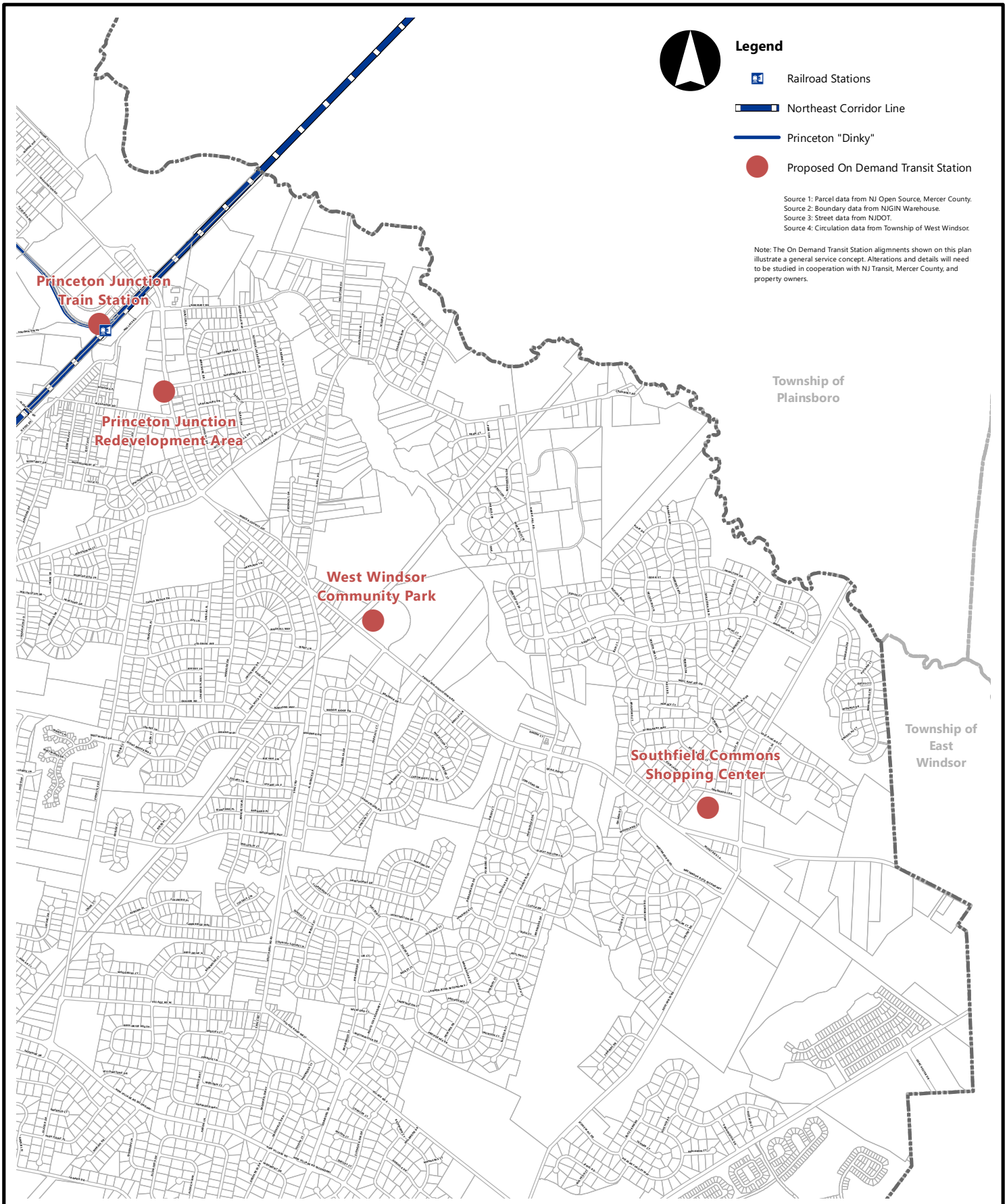
Project Title:
2021 Circulation Plan Element
Township of West Windsor | Mercer County, New Jersey

Scale	Dwg. No.
1 " = 4,400 '	map 03



Dwg. Title: Map 03: On Demand Transit - Quad 01	Project No.: 3442.22	Date: 05.06.21	Drawn By: DN
Project Title: 2021 Circulation Plan Element Township of West Windsor | Mercer County, New Jersey	Scale: 1 " = 2,350 '		Dwg. No.: map 03

BURGIS ASSOCIATES, INC.
COMMUNITY PLANNING | LAND DEVELOPMENT AND DESIGN | LANDSCAPE ARCHITECTURE
25 Westwood Avenue
Westwood, New Jersey 07675
p: 201.666.1811
f: 201.666.2599



Dwg. Title

Map 03: On Demand Transit - Quad 02

Project No.	Date	Drawn By
3442.22	05.06.21	DN

BURGIS ASSOCIATES, INC.
COMMUNITY PLANNING | LAND DEVELOPMENT AND DESIGN | LANDSCAPE ARCHITECTURE
25 Westwood Avenue
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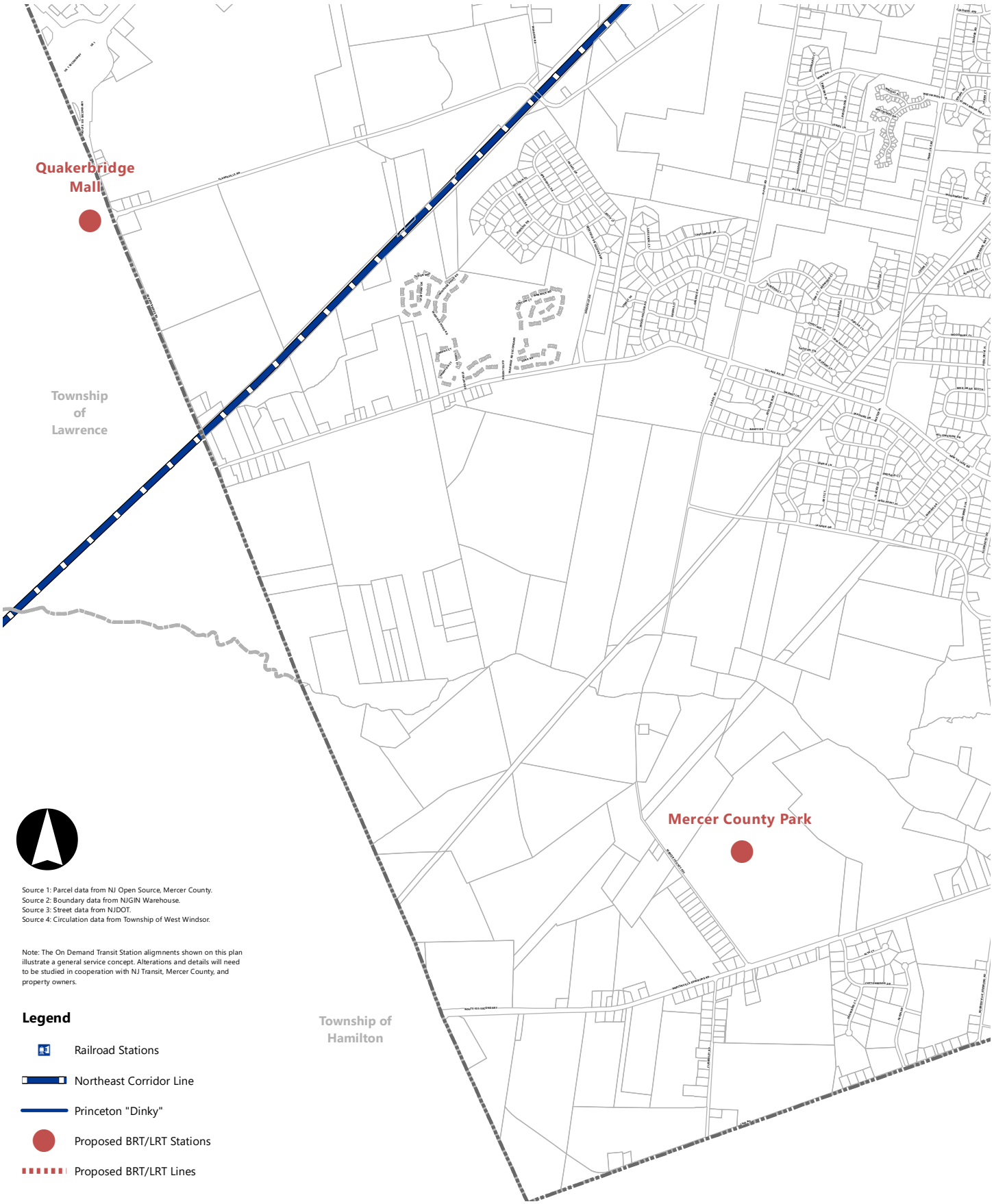
p: 201.666.1811
f: 201.666.2599

Project Title:

2021 Circulation Plan Element

Township of West Windsor | Mercer County, New Jersey

Scale	Dwg. No.
1 " = 2,350 '	map 03



Source 1: Parcel data from NJ Open Source, Mercer County.
Source 2: Boundary data from NJGIN Warehouse.
Source 3: Street data from NJDOT.
Source 4: Circulation data from Township of West Windsor.

Note: The On Demand Transit Station alignments shown on this plan illustrate a general service concept. Alterations and details will need to be studied in cooperation with NJ Transit, Mercer County, and property owners.

Legend

- Railroad Stations
- Northeast Corridor Line
- Princeton "Dinky"
- Proposed BRT/LRT Stations
- Proposed BRT/LRT Lines

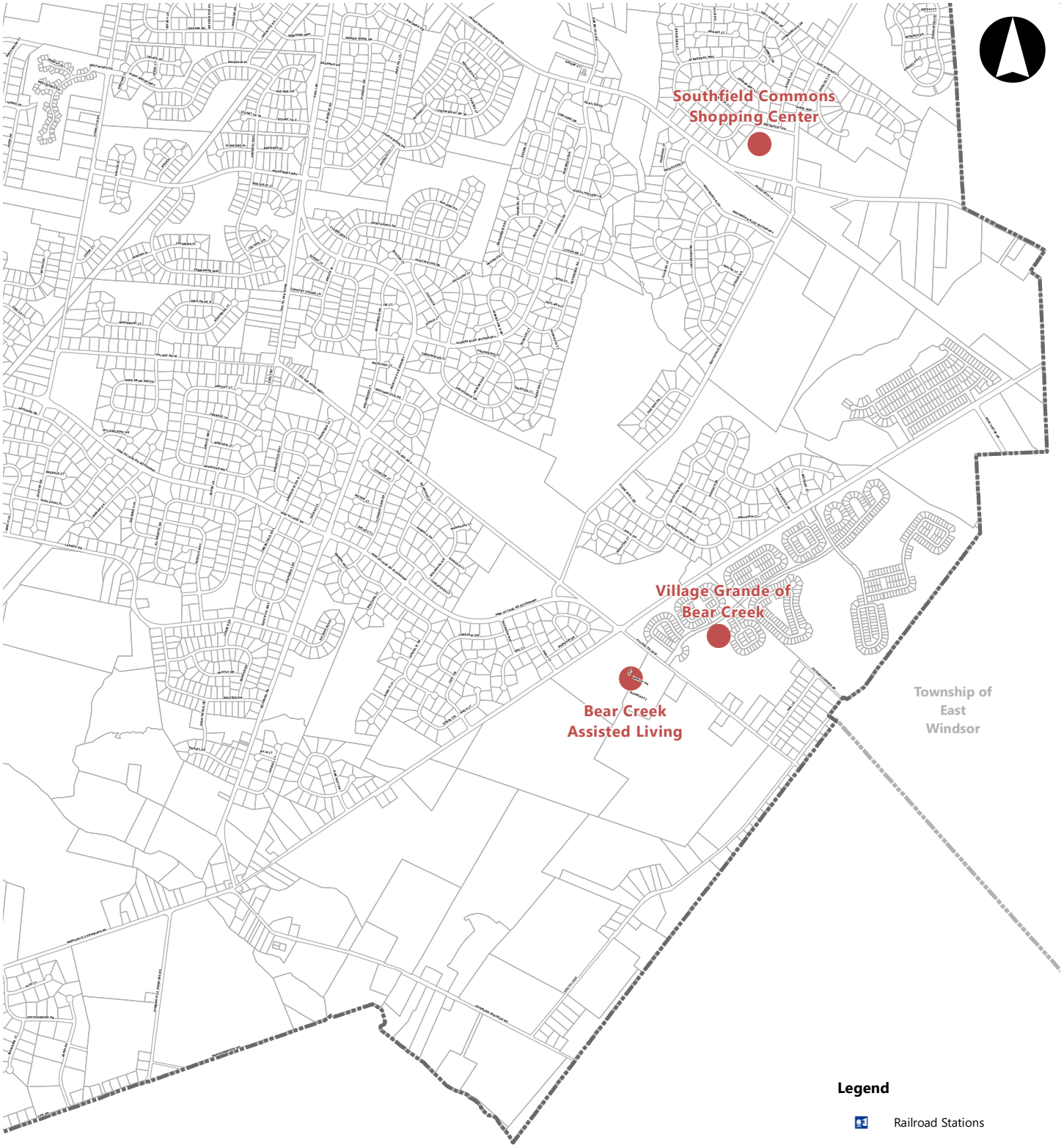
Dwg. Title
Map 03: On Demand Transit - Quad 03

Project No.	Date	Drawn By
3442.22	05.06.21	DN

BURGIS ASSOCIATES, INC.
COMMUNITY PLANNING | LAND DEVELOPMENT AND DESIGN | LANDSCAPE ARCHITECTURE
25 Westwood Avenue
Westwood, New Jersey 07675
p: 201.666.1811
f: 201.666.2599

Project Title:
2021 Circulation Plan Element
Township of West Windsor | Mercer County, New Jersey

Scale	Dwg. No.
1 " = 2,350 '	map 03



Source 1: Parcel data from NJ Open Source, Mercer County.
Source 2: Boundary data from NJGIN Warehouse.
Source 3: Street data from NJDOT.
Source 4: Circulation data from Township of West Windsor.

Note: The On Demand Transit Station alignments shown on this plan illustrate a general service concept. Alterations and details will need to be studied in cooperation with NJ Transit, Mercer County, and property owners.

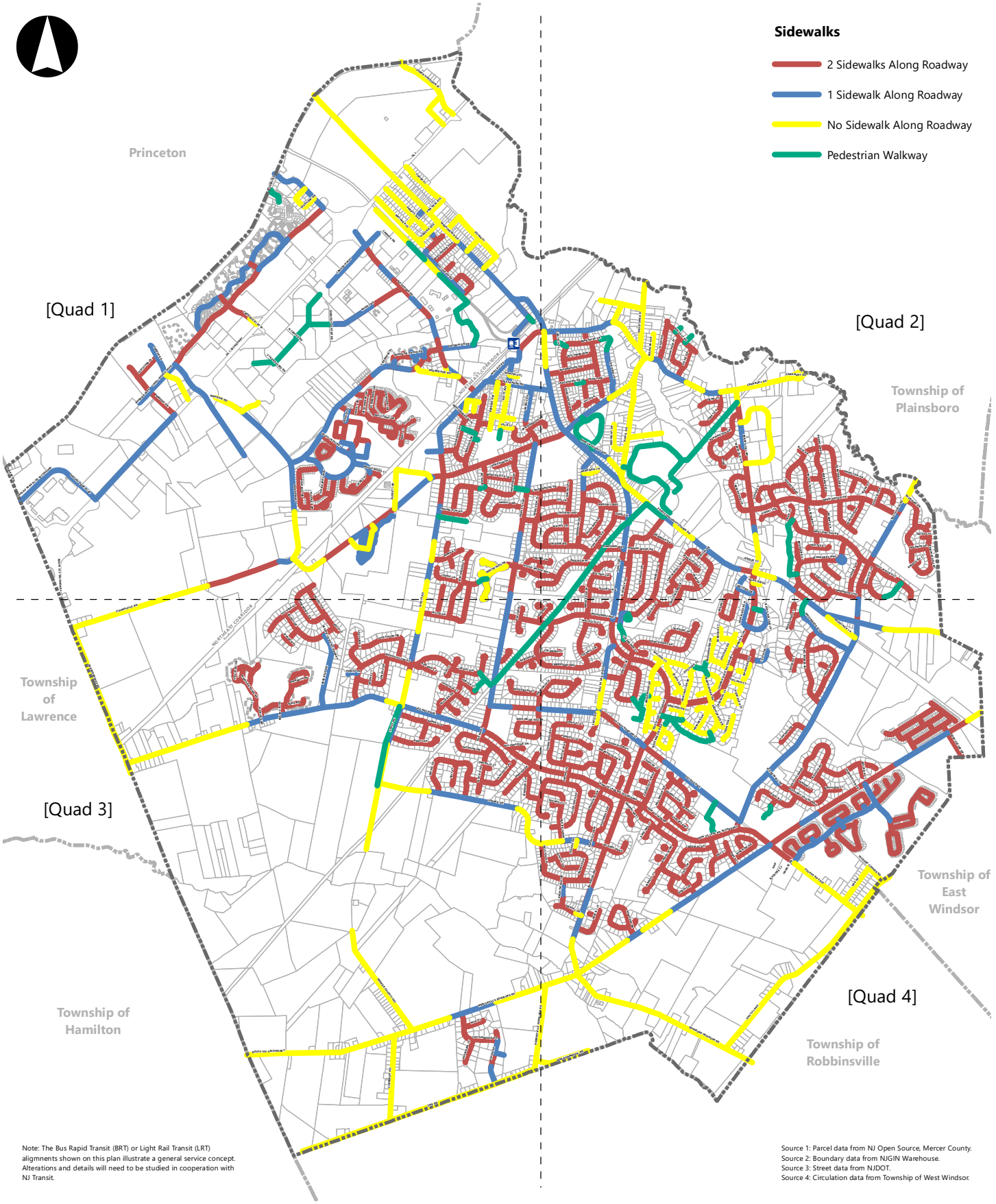
Dwg. Title
Map 03: On Demand Transit - Quad 04

Project No.	Date	Drawn By
3442.22	05.06.21	DN

BURGIS ASSOCIATES, INC.
COMMUNITY PLANNING | LAND DEVELOPMENT AND DESIGN | LANDSCAPE ARCHITECTURE
25 Westwood Avenue
Westwood, New Jersey 07675
p: 201.666.1811
f: 201.666.2599

Project Title:
2021 Circulation Plan Element
Township of West Windsor | Mercer County, New Jersey

Scale: 1 " = 2,350 '
Dwg. No.: map 03



Note: The Bus Rapid Transit (BRT) or Light Rail Transit (LRT) aligmnents shown on this plan illustrate a general service concept. Alterations and details will need to be studied in cooperation with NJ Transit.

Source 1: Parcel data from NJ Open Source, Mercer County.
Source 2: Boundary data from NJGIN Warehouse.
Source 3: Street data from NJDOT.
Source 4: Circulation data from Township of West Windsor.

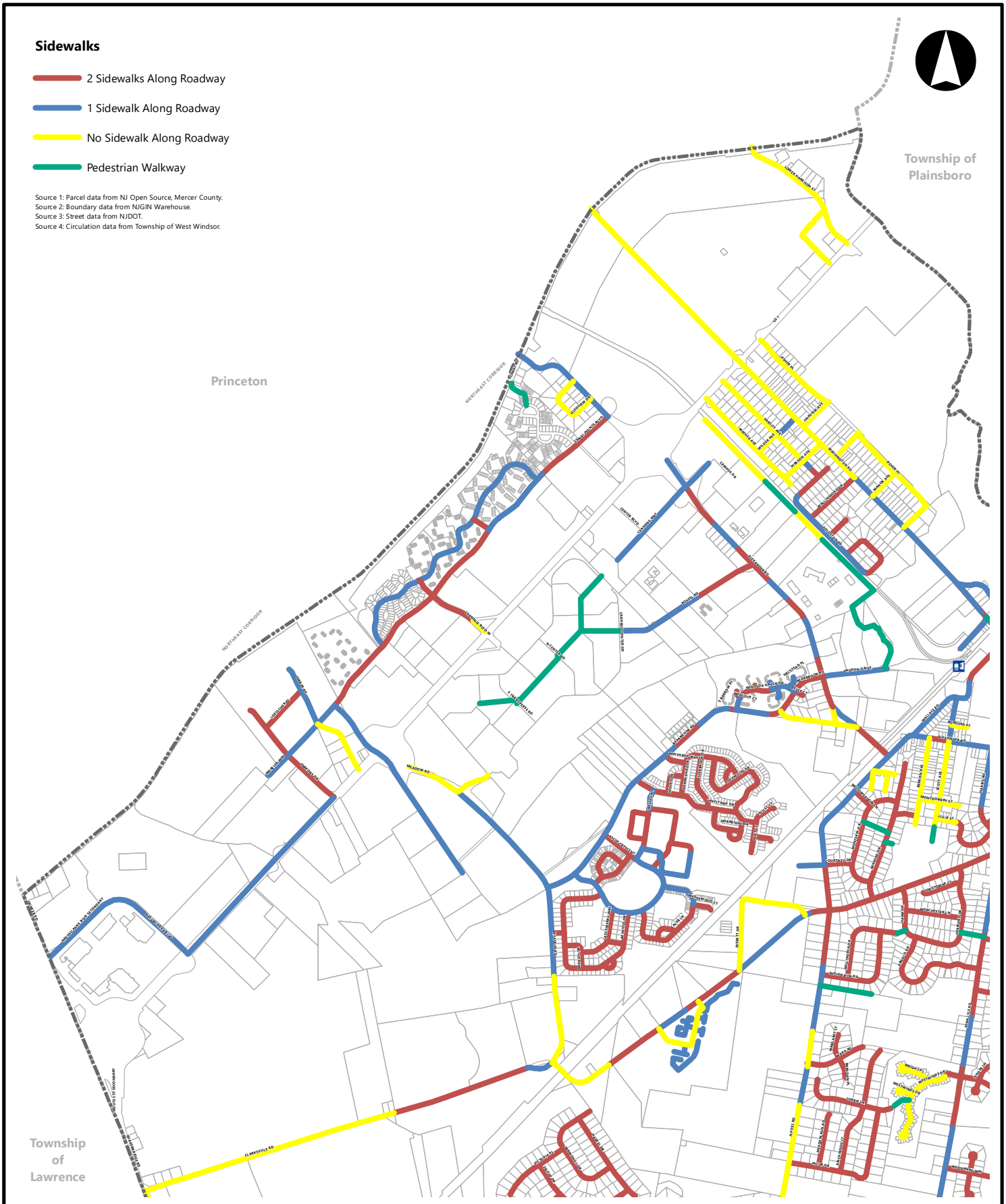
Dwg. Title
Map 04: Sidewalk Inventory Map

Project No.	Date	Drawn By
3442.22	05.06.21	DN

BURGIS ASSOCIATES, INC.
COMMUNITY PLANNING | LAND DEVELOPMENT AND DESIGN | LANDSCAPE ARCHITECTURE
25 Westwood Avenue
Westwood, New Jersey 07675
p: 201.666.1811
f: 201.666.2599

Project Title:
2021 Circulation Plan Element
Township of West Windsor | Mercer County, New Jersey

Scale: 1 " = 4,400 '
Dwg. No.: map 04



Dwg. Title

Map 04: Sidewalk Inventory Map - Quad 01

Project No.	Date	Drawn By
3442.22	05.06.21	DN

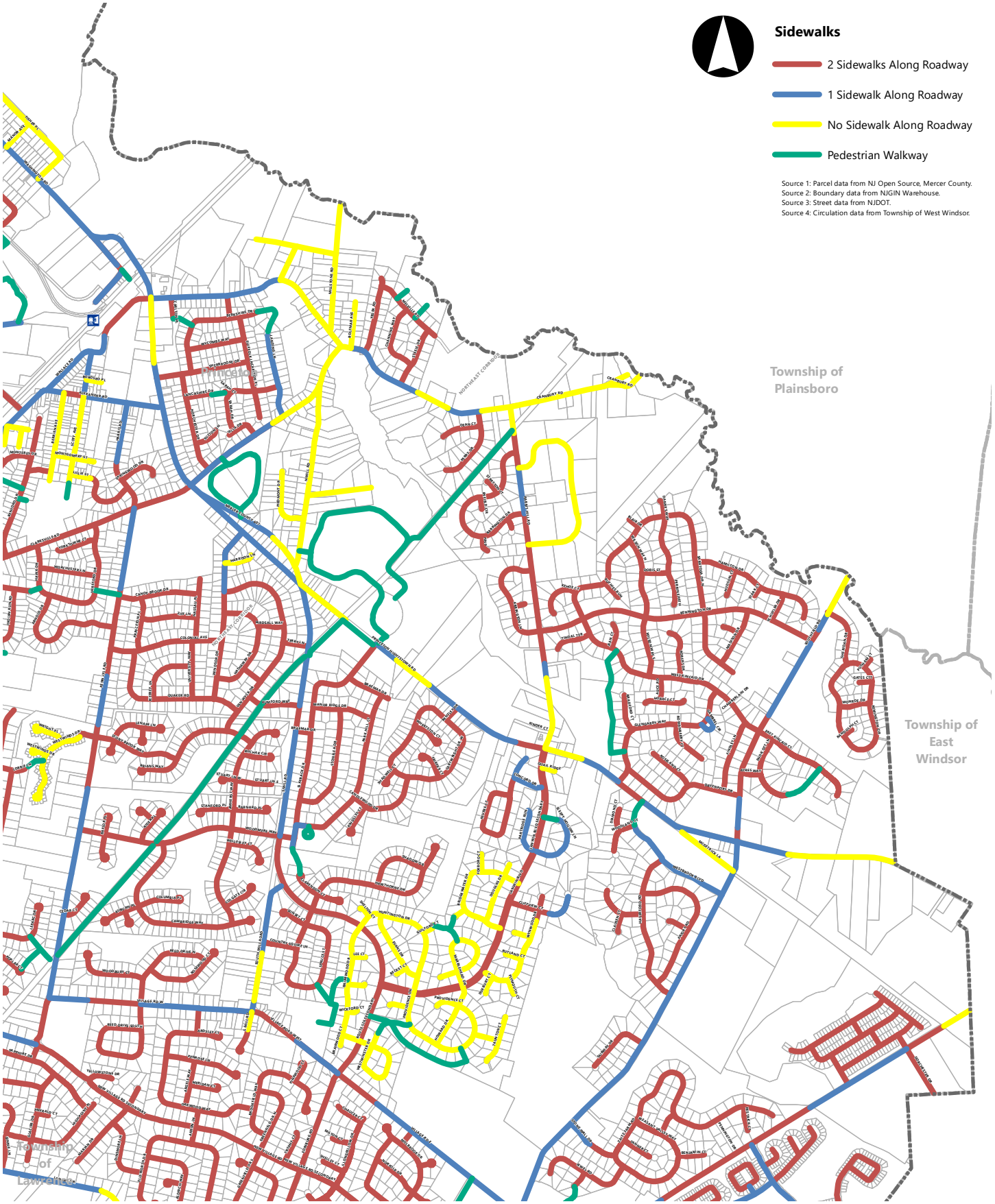
BURGIS ASSOCIATES, INC.
COMMUNITY PLANNING | LAND DEVELOPMENT AND DESIGN | LANDSCAPE ARCHITECTURE
25 Westwood Avenue
Westwood, New Jersey 07675
p: 201.666.1811
f: 201.666.2599

Project Title:

2021 Circulation Plan Element

Township of West Windsor | Mercer County, New Jersey

Scale	Dwg. No.
1 " = 2,350 '	map 04



Dwg. Title

Map 04: Sidewalk Inventory Map - Quad 02

Project No.	Date	Drawn By
3442.22	05.06.21	DN

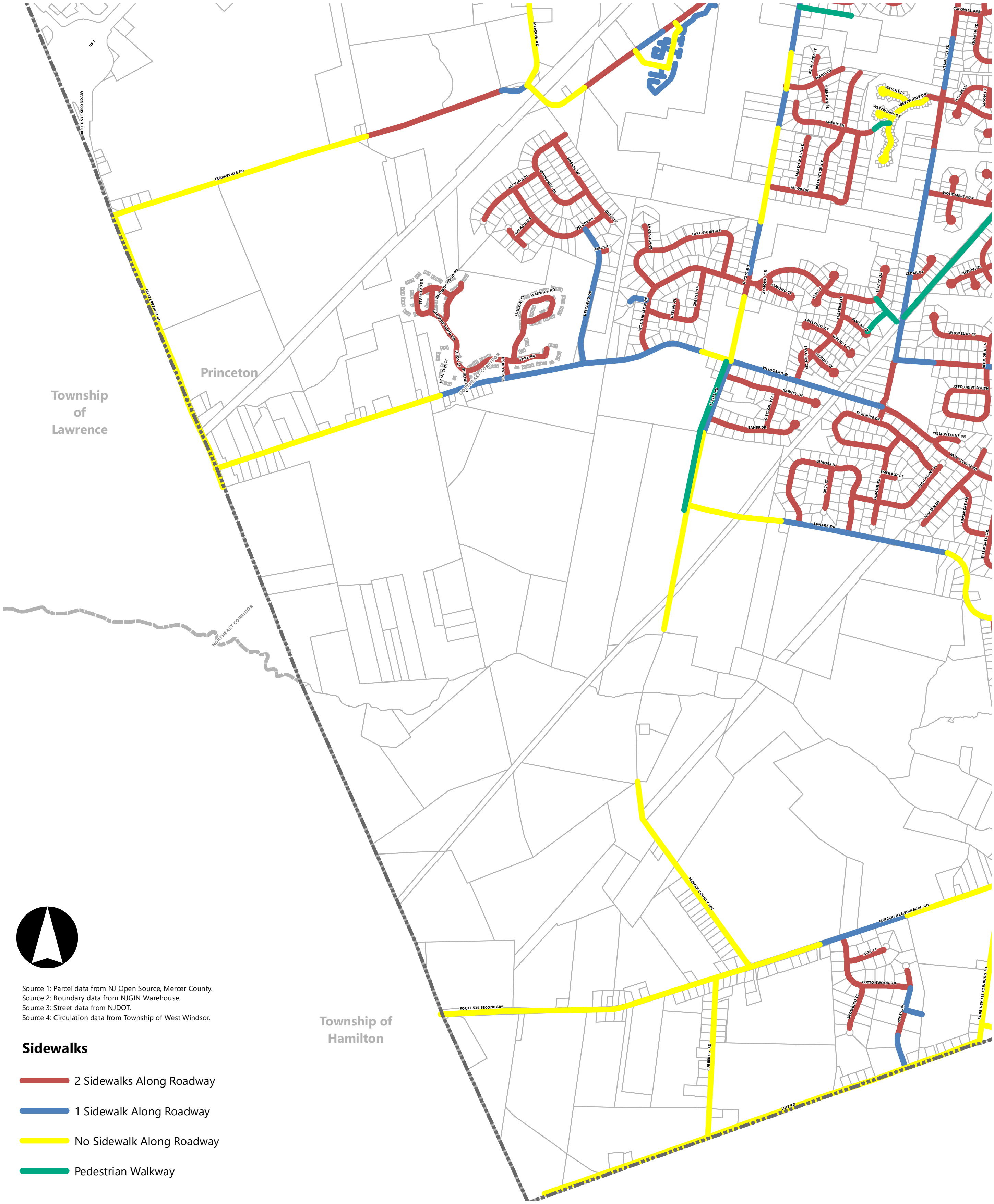
BURGIS ASSOCIATES, INC.
COMMUNITY PLANNING | LAND DEVELOPMENT AND DESIGN | LANDSCAPE ARCHITECTURE
25 Westwood Avenue
Westwood, New Jersey 07675
p: 201.666.1811
f: 201.666.2599

Project Title:

2021 Circulation Plan Element

Township of West Windsor | Mercer County, New Jersey

Scale	Dwg. No.
1 " = 2,350 '	map 04



Dwg. Title

Map 04: Sidewalk Inventory Map - Quad 03

Project No.	Date	Drawn By
3442.22	05.06.21	DN

BURGIS ASSOCIATES, INC.
COMMUNITY PLANNING | LAND DEVELOPMENT AND DESIGN | LANDSCAPE ARCHITECTURE
25 Westwood Avenue
Westwood, New Jersey 07675
p: 201.666.1811
f: 201.666.2599

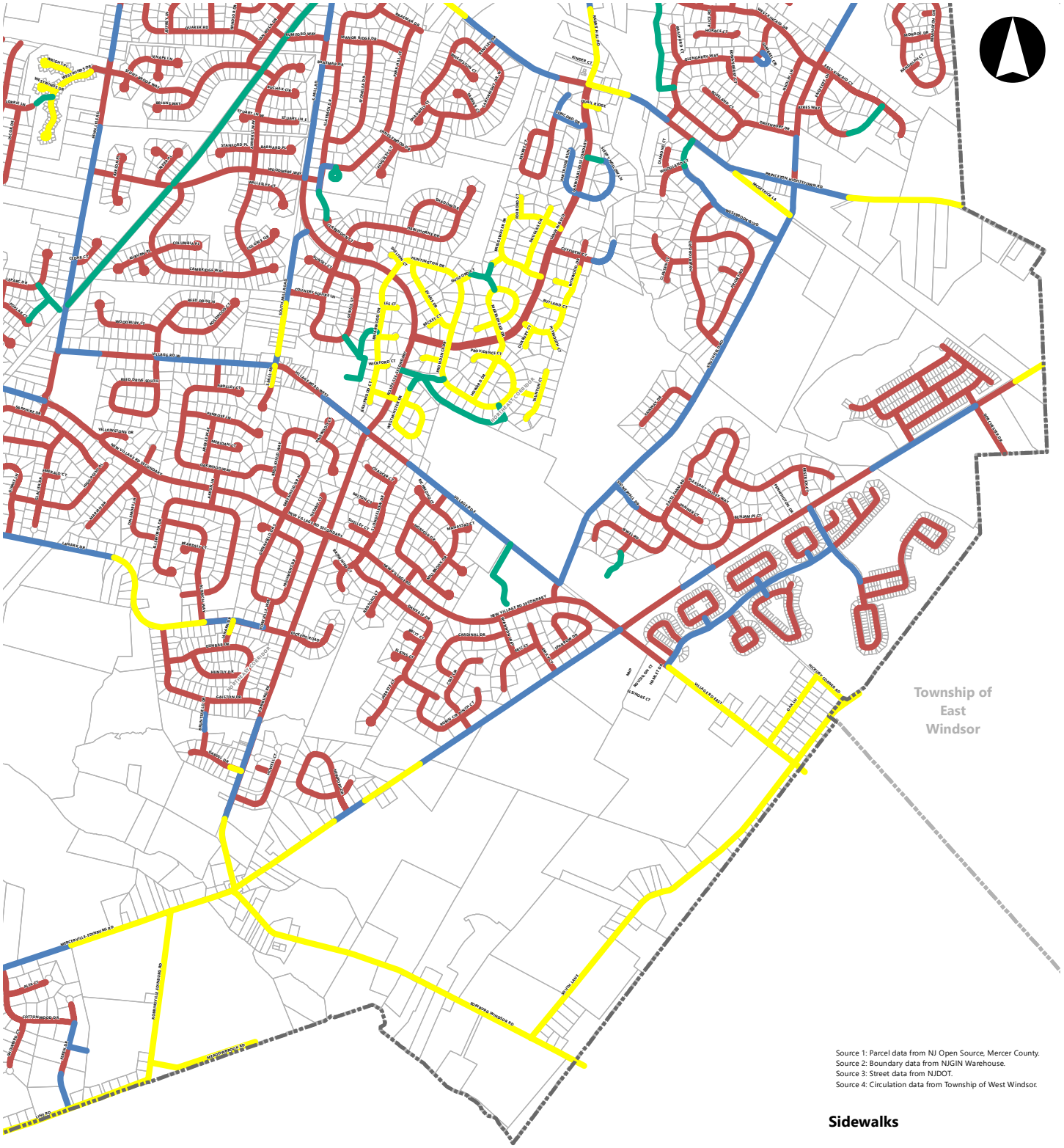
Project Title:

2021 Circulation Plan Element

Township of West Windsor | Mercer County, New Jersey

Scale: 1 " = 2,350 '

Dwg. No.: map 04



Dwg. Title

Map 04: Sidewalk Inventory Map - Quad 04

Project No.	Date	Drawn By
3442.22	05.06.21	DN

BURGIS ASSOCIATES, INC.
COMMUNITY PLANNING | LAND DEVELOPMENT AND DESIGN | LANDSCAPE ARCHITECTURE
25 Westwood Avenue
Westwood, New Jersey 07675
p: 201.666.1811
f: 201.666.2599

Project Title:

2021 Circulation Plan Element

Township of West Windsor | Mercer County, New Jersey

Scale	Dwg. No.
1 " = 2,350 '	map 04