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Executive Summary

Howard Stein Hudson (HSH) has prepared this Master Plan for the Route 20 corridor in Shrewsbury to provide Massachusetts Department of Transportation (MassDOT) – District 3 and the Town with a preferred roadway improvement concept that will meet future demands. The plan was born out of community concerns related to safety and congestion along the corridor and the potential increase in traffic generated by new development projects in the study area as properties transition to a more vibrant, mixed-use environment. Built on a detailed evaluation of existing conditions and anticipated future travel demands, the goal of this Master Plan is to develop preferred corridor cross sections (Preferred Concept) and other recommended transportation improvements that will allow the community and MassDOT to be better informed related to potential development mitigation commitments and allow future development projects to provide sufficient setbacks from the roadway. The Master Plan will also be used by the Town and MassDOT to focus efforts on resolving some of the existing issues that face residents, businesses, and commuters.



Route 20 approaching Edgemere Boulevard.

Safety

The study area is comprised of a 5.1-mile stretch of Route 20 with 25 intersections. The roadway does not have a consistent number of lanes and the width varies from 38 feet to 75 feet. At the wider segments, there are two lanes in each direction; at the narrower points, there is only one lane in each direction. The posted speed limit along the corridor varies from 40 miles per hour (mph) to 50 mph. Many elements of the existing roadway, when combined with the high travel speeds, create safety issues for vehicles trying to enter from the numerous, unsignalized side streets and driveways.

Addressing safety issues in the Route 20 corridor is one of the primary goals of this Master Plan and a concern jointly identified by MassDOT and the community. The Route 20/Grafton Street intersection is one of the top 200 high crash locations in the Commonwealth identified by MassDOT, and several of the other intersections exceed the average crash rate for the area. During the public outreach for this study, area residents expressed the apprehension they experience whenever they need to turn from a side road or driveway onto Route 20 due to the high travel speeds. Many also described encounters with one of the many large trucks traveling along the corridor where extra caution was necessary.

SIGNALIZED INTERSECTIONS

Crashes were most prevalent at the Grafton Street and Lake Street intersections in the western segment of the study corridor and less prevalent at the intersections in the eastern segment. Crash records show that angle and rear-end crashes have been the most common type of crashes at the signalized intersections in the study area. Rear-end crashes often result from vehicles operating at high speeds unexpectedly encountering queued vehicles at the intersections. Field observations showed that drivers at signalized intersections in the study corridor would routinely speed up to go through the yellow, and sometimes the red interval to avoid waiting at an intersection. This can result in dangerous angle crashes. Design of improvements to address the safety issues at the Grafton Street and Lake Street intersections are currently well underway.

UNSIGNALIZED INTERSECTIONS

Field observations showed that vehicles entering from unsignalized side streets and driveways off Route 20 cannot find gaps in the Route 20 mainline traffic to enter Route 20 safely. Three unsignalized intersections within the eastern section of the study area experienced more crashes than others in the corridor; Route 20 at South Street (South), Route 20 at Walnut Street, and Route 20 at Old Shrewsbury Village Driveway/Valente Drive. Angle crashes were predominant at all three intersections, comprising 38%, 67%, and 73%, respectively. Crash records also indicate that a common reported cause for the rear-end crashes is due to slowing traffic on Route 20 to turn into these side streets and driveways.



Route 20 in the vicinity of Grafton Street and the Route 140 Interchange.

Land Use and Development

The development along the Route 20 corridor consists mainly of industrial, manufacturing, and warehousing. Other uses include shopping centers, research and development offices, schools, motels, residential, and community centers. Although the Town of Shrewsbury has adopted two mixed-use overlay districts along the corridor, most existing building types conform to the original underlying zoning which permits only single-use low density building types. In these areas of the corridor, the land uses are isolated from one another and often only accessible via driveways directly from Route 20. What results is a network of streets and signs have been designed to accommodate only motorists, creating a cluttered environment lacking a distinct sense of place with no accommodation for bicyclists and only intermittent pedestrian connections.

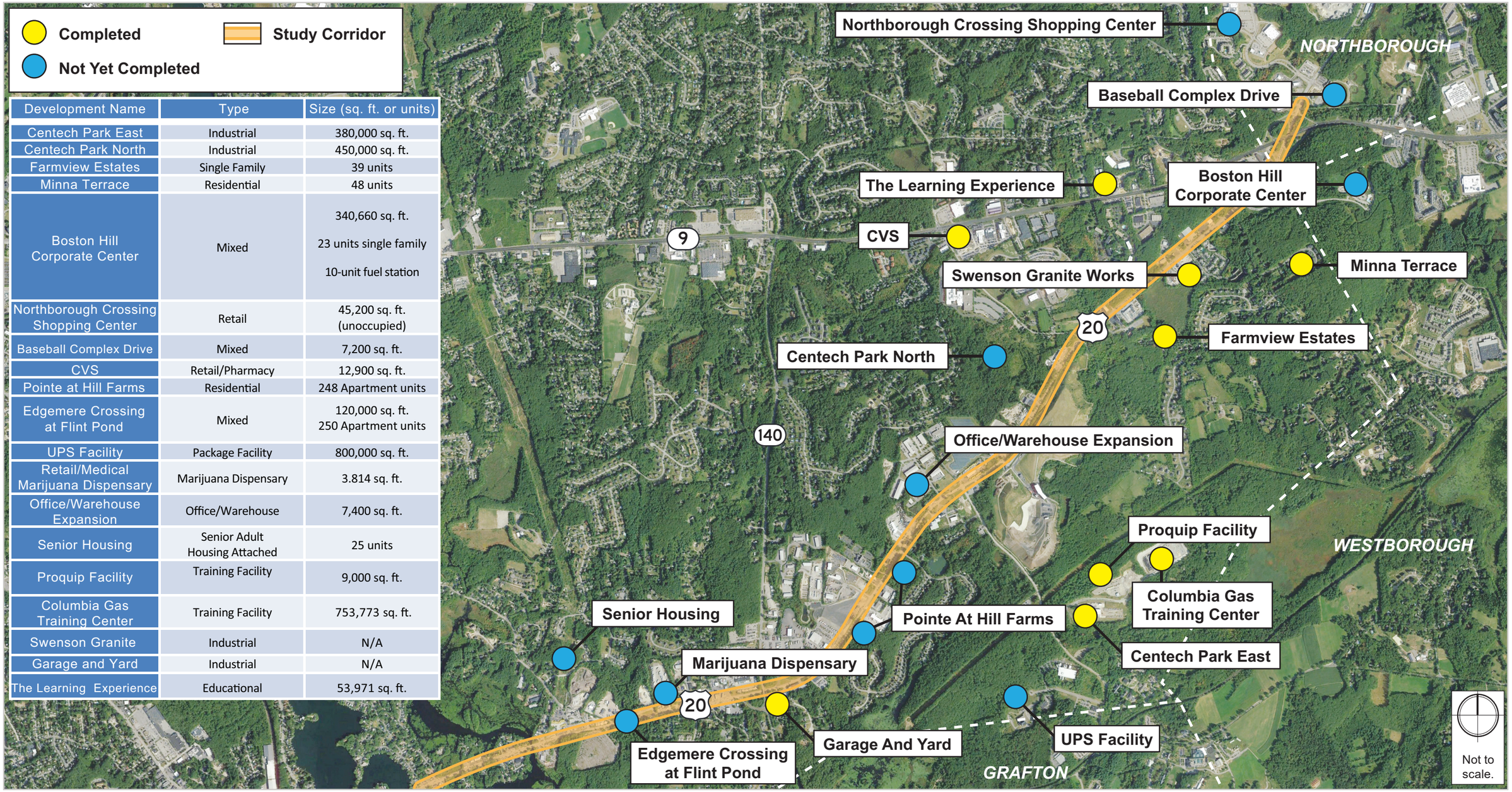
Due to its convenient access to regional highways, the Route 20 corridor hosts a significant cluster of freight-related businesses ranging from local and regional distribution centers, to corporate offices, truck parking facilities, repair shops, and truck sales centers. In November 2018, UPS finalized the purchase of several land parcels, totaling 200 acres off Centech Boulevard that span the Town line between Shrewsbury and Grafton, and is planning to construct a new 800,000-square foot (sf) distribution facility. **Figure 1** shows the location of the planned development projects in the study area.

The Town envisions the Route 20 corridor as having the potential to become an economic driver for the community that could attract new light industrial, research and development, and office development uses. The Town's overlay zoning district gives flexibility in mixing uses and creating high-quality site design that can be attractive for all users. New developments are encouraged to include commercial uses that support the employees of their businesses, such as banks, restaurants, and retail shops. New development in the corridor has long been limited by the lack of adequate sewer capacity. That hurdle has recently been overcome, as the Town has finalized an agreement with the City Worcester to allow up to 1.5 million gallons of wastewater per day to the Upper Blackstone Water Pollution Abatement District facility in Millbury via newly installed sewer lines along Route 20 in Worcester and proposed sewer in Shrewsbury.



Roadside sign for the former Edgemere Drive In along Route 20.

Figure 1. Development Projects in the Corridor

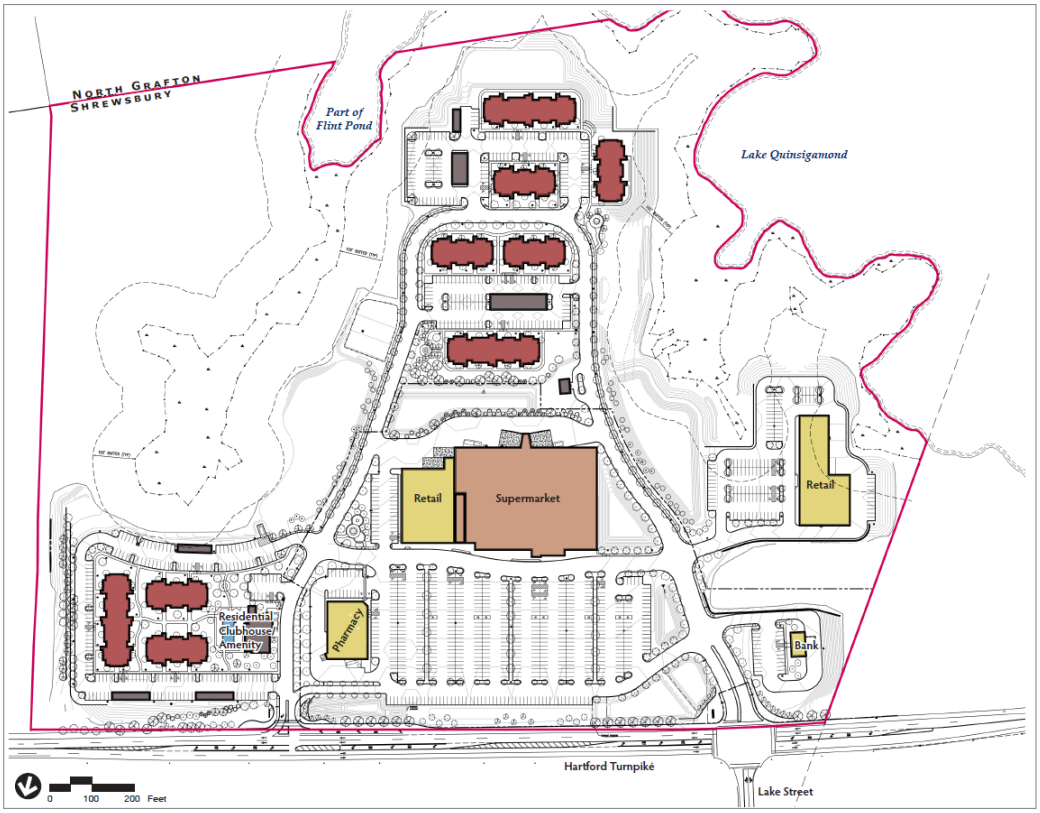


Development Name	Type	Size (sq. ft. or units)
Centech Park East	Industrial	380,000 sq. ft.
Centech Park North	Industrial	450,000 sq. ft.
Farmview Estates	Single Family	39 units
Minna Terrace	Residential	48 units
Boston Hill Corporate Center	Mixed	340,660 sq. ft. 23 units single family 10-unit fuel station
Northborough Crossing Shopping Center	Retail	45,200 sq. ft. (unoccupied)
Baseball Complex Drive	Mixed	7,200 sq. ft.
CVS	Retail/Pharmacy	12,900 sq. ft.
Pointe at Hill Farms	Residential	248 Apartment units
Edgemere Crossing at Flint Pond	Mixed	120,000 sq. ft. 250 Apartment units
UPS Facility	Package Facility	800,000 sq. ft.
Retail/Medical Marijuana Dispensary	Marijuana Dispensary	3.814 sq. ft.
Office/Warehouse Expansion	Office/Warehouse	7,400 sq. ft.
Senior Housing	Senior Adult Housing Attached	25 units
Proquip Facility	Training Facility	9,000 sq. ft.
Columbia Gas Training Center	Training Facility	753,773 sq. ft.
Swenson Granite	Industrial	N/A
Garage and Yard	Industrial	N/A
The Learning Experience	Educational	53,971 sq. ft.

Shrewsbury – Route 20 Corridor Improvements

With that hurdle to additional development recently bypassed, the Town is seeing the first large-scale, mixed-use development proposed in the Route 20 corridor at the former Edgemere Drive In property located just south of the Lake Street intersection. The 68-acre site is being developed with a mix of uses that will include a supermarket, retail space, restaurants, townhouses, and apartment buildings. In total, over 427,500 sf of commercial space and 250 rental residential units will be completed on site[1].

The residential components of the site will be connected to the commercial areas by sidewalks helping encourage walking trips for residents. The mix of uses mean that a percentage of trips will be internal to the site and not result in added trips on the surrounding roadway network. This development plan takes advantage of the mixed use zoning provided by the Route 20 Overlay District and will serve as an example of how properties in the study corridor, like the Centech Park North site located off of South Street just north of Route 20, can be redeveloped successfully to both improve the economic vitality of the Town and improve transportation in the corridor. As important as this additional economic development is for the vitality of the Town, it must be planned carefully. Redevelopment in the area has the potential to significantly increase trips in the corridor, if the 390 acres identified by the Town as developable and potentially developable land were occupied with mixed use developments generating the same rate of trips as the new Edgemere Crossing at Flint Pond development, that would lead to between 2,200 and 3,800 new peak hour trips.



Site plan for the Edgemere Crossing at Flint Pond mixed-use development.

[1] Environmental Notification Form, Edgemere Crossing at Flint Pond – June 17, 2019

TOWN OF SHREWSBURY PLANS

In the 2016 Master Plan, the Town of Shrewsbury recognized that the community's historic development patterns have been auto-centric and that has limited the development of infrastructure that could encourage the use of other modes of transportation, such as public transit, walking, and biking. There is currently no transit service, no bicycle infrastructure, and only limited pedestrian accommodation along Route 20. Even most roads that are within a one-mile distance from Route 20 do not have an existing sidewalk network. Town, regional, and state agency's increased demand to encourage the promotion of alternative modes has influenced the recommendations of this Master Plan.

The Town of Shrewsbury submitted a Complete Streets Policy to MassDOT and has created a Prioritization Plan that can be used to apply for funding. Shrewsbury's Complete Streets projects in their Prioritization Plan include various locations throughout the Town. One project, a five-foot bicycle lane along Centech Boulevard to connect to Route 20 from the Grafton Town Line, was completed in 2019. This bicycle lane project will provide a regional connection to the Grafton Massachusetts Bay Transportation Authority (MBTA) station as envisioned in the 2018 Central Massachusetts Metropolitan Planning Organization (CMMPO) Regional Bicycle Plan. Other projects that are proposed along or adjacent to Route 20 include:

- A separated bicycle facility along Route 20, from Lake Street to Northborough Town Line. This bicycle project is separated into three phases and will provide a regional connection envisioned in the 2018 CMMPO Regional Bicycle Plan.
- Five-foot bicycle lanes in both directions of South Quinsigamond Avenue/Lake Street, between Route 9 and Route 20. This project will provide connections between the White City commercial area and residential development to the south, as well as a regional connection envisioned in the 2018 CMMPO Regional Bicycle Plan.
- A new sidewalk on both sides of Route 20, to connect with planned redevelopment at the former Edgemere Drive-In.
- A new sidewalk on one side of Lake Street, from Nelson Point Road to Route 20.

PUBLIC OUTREACH

In addition to the analytical support provided by this document to help define the existing and potential future transportation issues impacting the Route 20 corridor, the public was consulted as part of this study at two informational meetings held on March 5, 2019, and June 24, 2019. Most of the questions and comments from the public related to proposed improvements at specific intersections and information on other safety issues along the corridor and on adjacent roads.

MASTER PLAN SHARED GOALS

Based on this input, the following shared goals were established for the Route 20 Master Plan:

- Improve intersection and corridor safety;
- Address existing congestion issues;
- Provide capacity needed to support future traffic growth fueled by private development; and
- Address the lack of travel options.

Developing Alternatives

HSH considered two design concepts to address the identified issues.

Concept 1 looked into the following improvements:

- Widening Route 20 to provide two lanes in each direction;
- Left-turn pockets at specific sections of Route 20 to provide access to businesses and existing residential developments;
- A four-foot painted median where no left turn pocket was required;
- Converting Walnut Street South to a right-in/right-out street and diverting left-turns to South Street;
- Reconfiguring the Route 20 intersections with Purinton Street and Clews Street to be traditional T-Intersections (Purinton and Clews Streets intersecting Route 20 at a 90-degree angle);
- Adding turning lanes at existing signalized intersections to accommodate the additional turning volume using those intersections;
- Signal timing and offset updates at other signalized intersections within the study corridor; and
- A shared-use path on the south side of Route 20 and a five-foot shoulder and sidewalk on the north side.

Concept 2 looked into the following improvements:

- Widening Route 20 to provide two lanes in each direction;
- A Two-Way-Left-Turn-Lane (TWLTL) at specific sections of Route 20 to provide access to businesses and existing residential developments;
- A four-foot painted median where no TWLTL was required;
- Removing the Walnut Street South connection to Route 20 and moving it to Valente Drive, south of the Valente Drive intersection with Route 20;
- Reconfiguring the Route 20 intersections with Purinton Street and Clews Street to be traditional T-Intersections (Purinton and Clews Streets intersecting Route 20 at a 90-degree angle);
- Adding turning lanes at existing signalized intersections to accommodate the additional turning volume using those intersections;
- Signal timing and offset updates at other signalized intersections within the study corridor; and
- A shared-use path on the both sides of Route 20.

The Master Plan

The Preferred Concept includes elements from each alternative. The evaluation of this hybrid concept shows that a uniform, four-lane cross section is required on Route 20. These improvements are expected to improve safety and mitigate the impacts from these developments when compared to the No-Build condition. In addition, the Preferred Concept will provide continuous and connected bicycle and pedestrian accommodations with the study area. A continuous sidewalk will be provided along the north side and a shared-use path along the south side of Route 20, as well as crosswalks at all signalized intersections within the study area. The corridor roadway improvements should be partnered with measures and policy actions to promote added transportation demand management (TDM) to help reduce reliance on vehicles for travel in the corridor. A comprehensive set of TDM measures is recommended that incorporates strategies to encourage ride sharing, bicycling and walking, use of electric vehicles.

Over time, as a culture takes root that encourages employees and residents to travel via non automobile travel modes, MassDOT and the Town should explore strategies for linking people to the nearby public transportation routes. A robust system can be created step by step. As a potential first step to add better public transit access, the Town could explore the introduction of a new bike share system paired with improved bicycle accommodations on roads that connect the MBTA Commuter Rail stations with employers in the study corridor. If shown to be successful, this could be followed by employers in the corridor organizing a shuttle van that transports employees and visitors between their worksites and the MBTA Commuter Rail stations. Incremental improvements can also be made to add fixed route WRTA service in the corridor as development occurs at greater densities. As a potential early example, the Edgemere Crossing at Flint Pond development is proposed to include a Market Basket Supermarket. As resources allow, extending WRTA Route 5 to serve this supermarket may be desirable, especially when paired with potential added development on Route 20 in the City of Worcester. The Preferred Concept is shown in **Figure 2**, **Figure 3**, and **Figure 4**.

Figure 2. Preferred Concept at Green Street/South Street and South Street

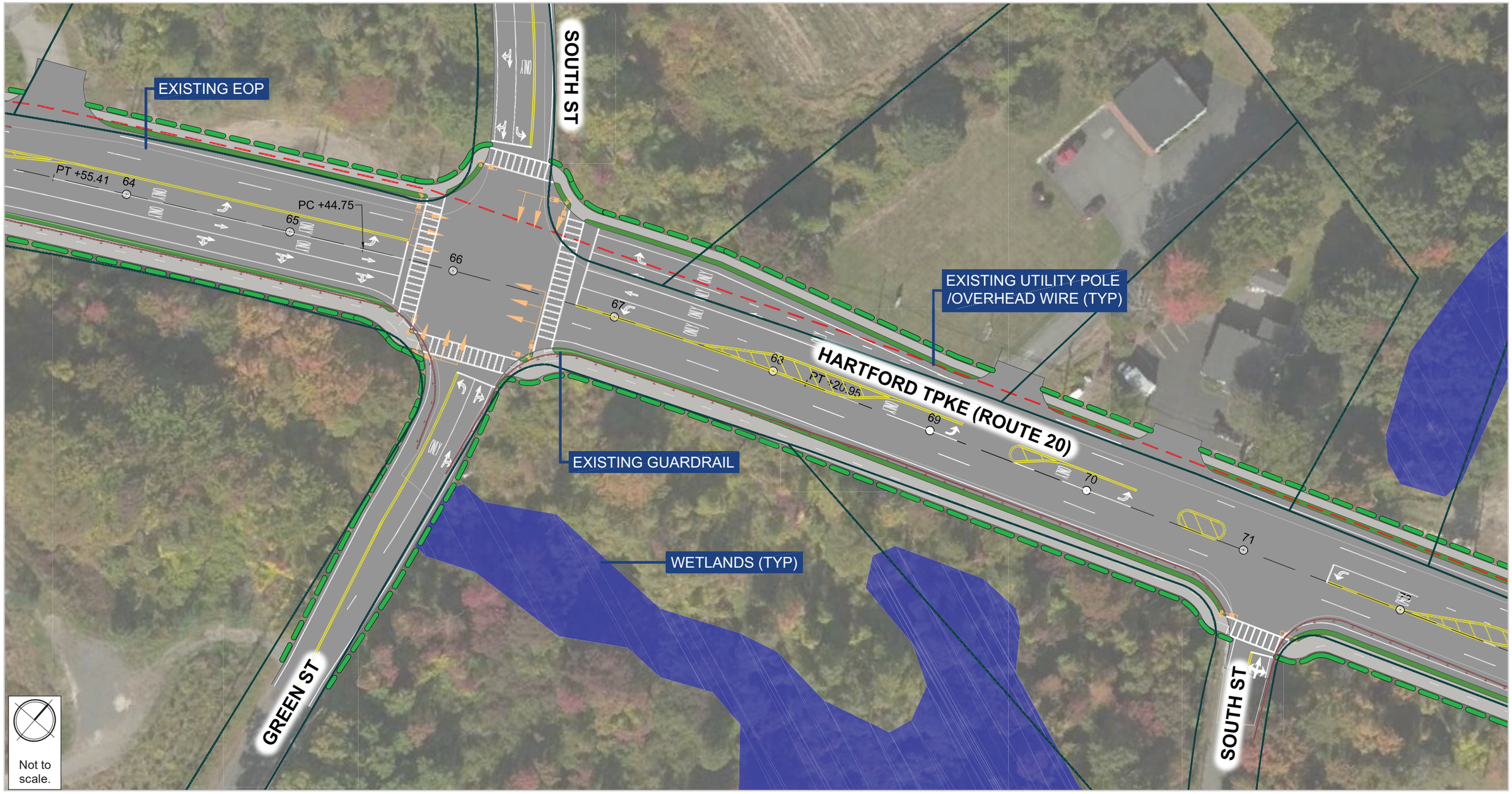
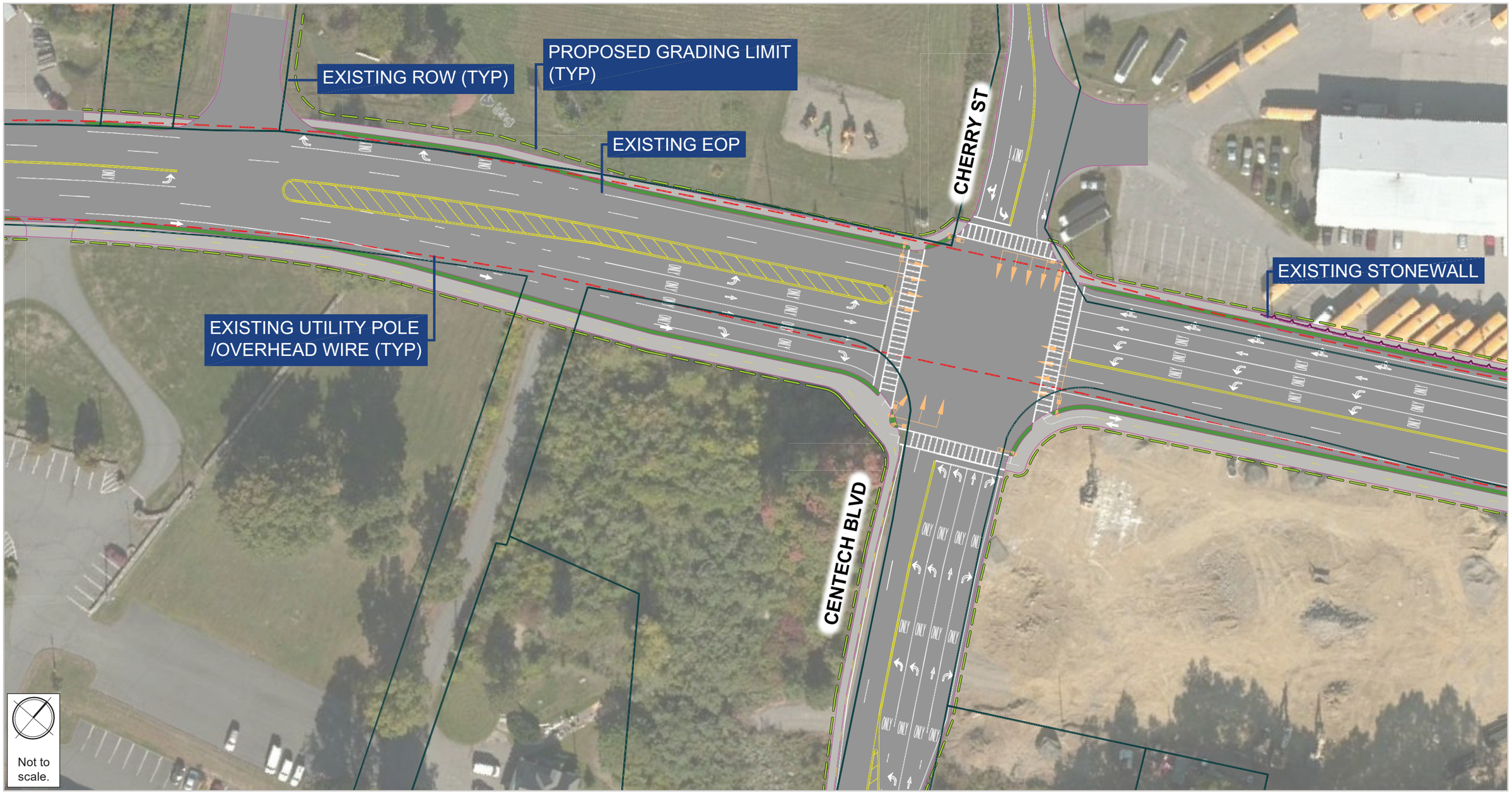
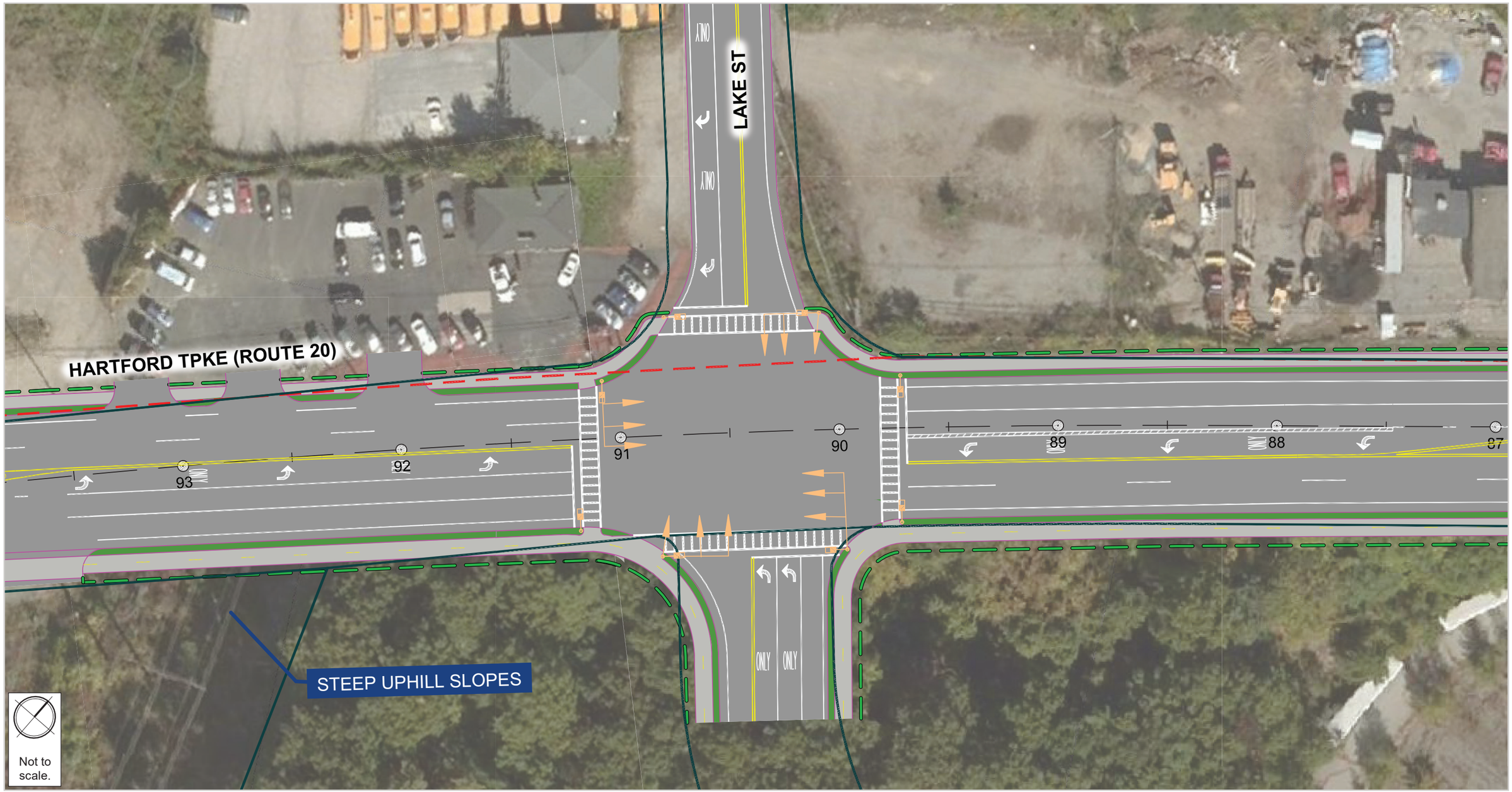


Figure 3. *Preferred Concept at Centech Boulevard*



Shrewsbury – Route 20 Corridor Improvements

Figure 4. Preferred Concept in the Edgemere Village Area or at Lake Street



PLAN FOR IMPLEMENTATION

MassDOT has requested that HSH assist with planning the implementation of the proposed improvements throughout the Route 20 study corridor in Shrewsbury and adjacent improvements in Northborough and Worcester. Implementation of the preferred corridor design would occur in pieces, with some constructed as mitigation for development projects and some constructed using public funds. The safety issues identified for vehicles turning left from South Street onto Route 20 require immediate attention. The Town should work with MassDOT to install signage and markings to prohibit left turns from South Street onto Route 20.

Improvements at two intersections in the study area have already started design as independent but related efforts to this Master Plan. Due to its classification as one of the top 200 high-crash locations in the Commonwealth, MassDOT is working with another consultant to design improvements at the Route 20/ Grafton Street intersection. The improvements to address the safety issues will be eligible for funding through the federal Highway Safety Improvement Program (HSIP). Separately, the Route 20/Lake Street intersection will also be reconstructed to accommodate the new Edgemere development, with improvements partially funded with the help of a MassWorks grant and partially as mitigation from the private developer. This report, the capacity analyses included in it, and the preferred master plan for this intersection will guide the improvements that will be implemented by MassDOT.

The Route 20/Walnut Street (South) intersection Preferred Concept improvements combined with the signalization of the Old Shrewsbury Village Driveway/Valente Drive intersection should be the first component of this plan to happen next. Walnut Street (South) is an area of concern due to the growth in cut-through traffic coming from the MBTA Westborough Station, delays and crashes that have been experienced at the intersection with Route 20 in the past, and the potential for economic development tied to the Boston Hill Corporate Center development



Signalized intersection at Route 20 and Edgemere Street.

on Valente Drive. The realignment of Walnut Street to create a connection to Valente Drive will require an agreement between the property owners and MassDOT. Fortunately, this can happen concurrently with the design and funding identification process which likely will take four to six years. As this project will likely require federal funding, the next steps needed to implement this project are: (1) the completion of a road safety audit at both intersections, and (2) developing a preliminary cost estimate for construction of the improvements. Depending on the outcome of these two initial steps, MassDOT may consider advancing additional elements of the Preferred Concept design stretching to the adjacent corridor intersection of South Street to the west.

A project area intersection expected to see large traffic impacts due to the planned developments is Route 20 at Centech Boulevard and Cherry Street. Centech Boulevard provides access to Route 20 from the large Centech Park East development that is nearly complete and would also be the primary access to the planned UPS facility. The proposed intersection widening shown in the Preferred Concept should be included as part of the developments' traffic mitigation.

Finally, to provide continuous multi-modal accommodations throughout the study corridor, the shared-use path should be constructed either after the work at the above-mentioned major intersections, or simultaneously with the intersection improvements. The widening of Route 20 eastbound to two lanes, installation of the TWLTL median, and intersection modifications (Route 20 and side street widening, lane usage changes) at Cherry Street/Centech Boulevard and South Street/Green Street intersections can take place at the same time as the construction of the shared-use path.



Existing conditions on Clews Street at Route 20.