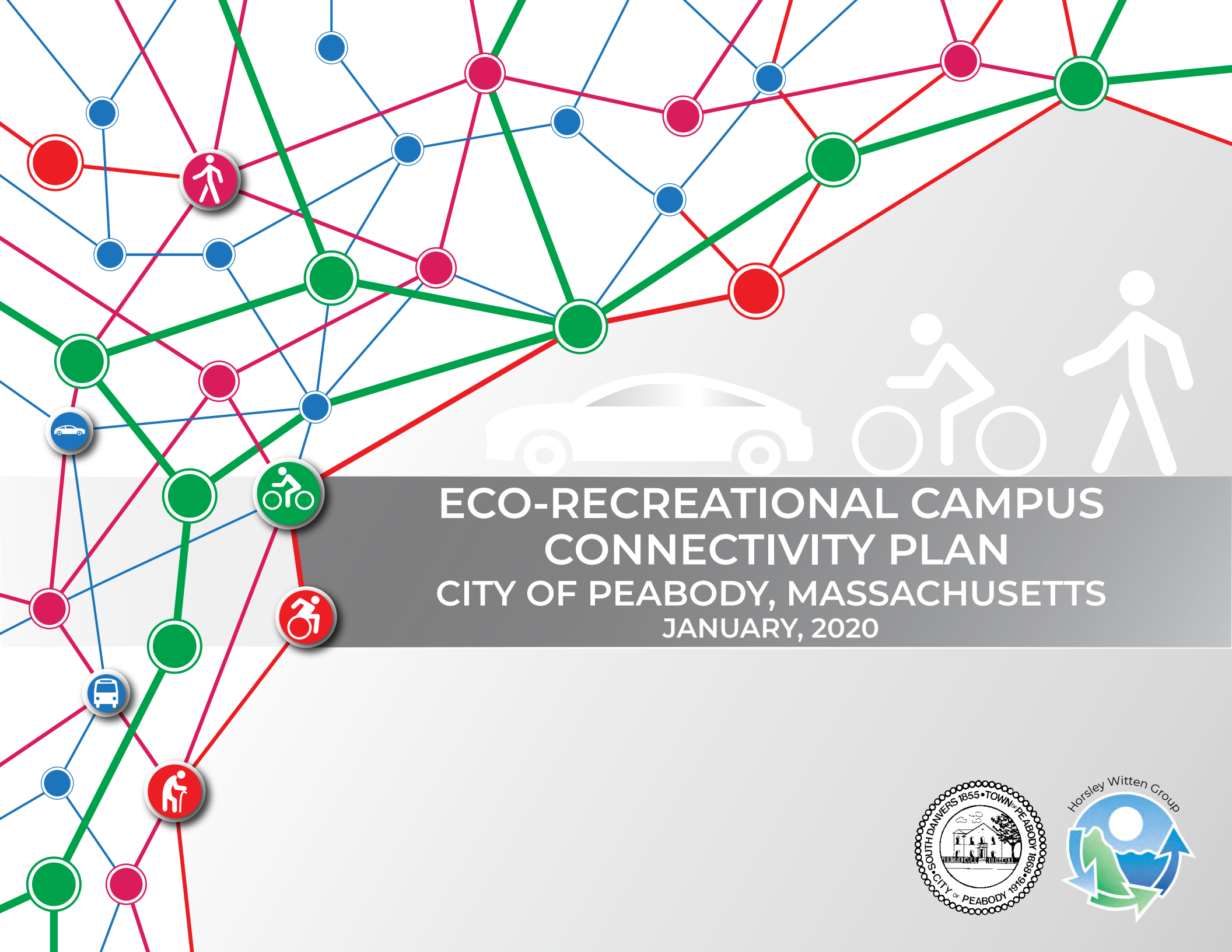

ECO-RECREATIONAL CAMPUS CONNECTIVITY PLAN

CITY OF PEABODY, MASSACHUSETTS

JANUARY, 2020

SOUTH DANVERS 1855 • TOWN of PEABODY 1868 • CITY of PEABODY 1916

Horsley Witten Group

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From all of us at the Horsley Witten Group, we want to thank the City of Peabody and all the participants that made this project possible and meaningful.

EXECUTIVE STATEMENT

The Eco-Campus is a safe and reliable network of pedestrian pathways connecting recreation and open spaces together for the enjoyment of the community, creating a large connected park between many parcels. The Perkins Street Eco-Campus Connectivity Plan outlines enhanced access, improved connections, and greater pedestrian safety in the Perkins Street area establishing a vision of a unified sense of place. Furthering goals identified in the 2015 Recreation and Open Space Plan the Connectivity Plan develops a safe pedestrian network and open space blueprint, solidifying this campus concept. The creation of the eco-campus will create safer routes to school, easier access to open space, and improved recreational facilities developing an outdoor destination. The Connectivity Plan identifies key connections, opportunities and projects the City can act upon to create this campus. The goal of the Perkins Street Eco-Campus Connectivity Plan is to provide a guiding document for the creation of a safe and interconnected campus to be utilized by residents of Peabody and community.

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EXISTING USES
CREDIT: HWG

PROJECT OVERVIEW

The Peabody Connectivity Plan is an initiative developed from the growing awareness that the project focus area can provide significant opportunities as well as presents challenges to the surrounding neighborhoods and City at large. There are several projects, both ongoing and planned, that will increase multi-modal circulation and programmatic opportunities that will expand the area to new users. By creating a comprehensive connectivity plan, the City can incorporate segmented projects into a broader context for a regional destination, an Eco-Recreational Campus.

The Connectivity Plan includes an evaluation of previous planning and design efforts, new data collection and stakeholder input integrated with recommended projects and programs. The existing transportation infrastructure within the campus is primarily car oriented, including: a wide right-of-way and unsafe speeds on Perkins Street; segmented parks with individual parking areas; and lack of consistent signage for safety and awareness to nearby destinations. Furthermore, the pedestrian infrastructure has connectivity gaps and uncomfortable and/or inaccessible crossings and sidewalks that discourage alternative transportation options. However, the connected low-volume neighborhood streets, the J. Henry Higgins (Higgins) Middle School, the numerous active and passive recreation areas and the location relative to the City's vibrant downtown center all provide a strong basis for a pedestrian and bicycle hub and solid linkage to the broader community.

The focus of this Connectivity Plan is to identify key alignments that will encourage an increased usage of the bikeways, walkways and trail networks as well as improving access to the recreational amenities.

HISTORICAL CONTEXT

Known in the early days as the Northfields or The Farms, Peabody was a natural oasis sought out during times of early English settlement by residents of Salem wanting to emigrate west into the rolling meadows and forested wetlands.

By the 18th century, Peabody had become a rich industrial center of commerce, renowned as the world's largest producer of leather. Referred to as "The Leather City," Peabody also has strong ties to textiles, glass and pottery which was produced from the iron-rich clay found in the local riverbanks. In the beginning, Earth dug kilns turned the gray clay into gorgeous redware. At the height of the industry, dozens of potteries and tanneries existed in the growing town of what was then called South Danvers. Between a decrease in demand and a rise in cheap imports, Peabody's pottery operations steadily declined into the 20th century until the last establishment was lost to fire in the 1950s.

COURTESY OF THE PEABODY HISTORICAL SOCIETY AND MUSEUM

LOCUS MAP

There are several prominent destinations in the surrounding area, including City Hall, the Boston Children's Hospital at Peabody, the George Peabody House Museum, and the Meadow at Peabody Golf Course. There are also nearby local trail connections including the South Peabody Trail and the Independence Greenway.

The fate for Peabody's leather-industry would see a similar decline. At the onset of the Great Depression, a worker-strike stunted the industry's growth and by the 1970's federal environmental regulations and overseas competition would disintegrate the last of the leather empire.

Today in Peabody, the Travel Leather Company is the only tannery still in operation and in 2009 the Peabody Leatherworkers Museum was established on Washington Street adjacent to the George Peabody Houses Museums within the project focus area.

Despite the rise and fall of major economic enterprises, time and time again the people of Peabody have adapted to other avenues of social and economic prosperity. Each year in September, the people come together in Peabody Square for an International Festival to celebrate the diverse heritage and cultural presence found throughout Peabody today. The City's economy remains vibrant as several high-end industrial headquarters remain in Peabody retaining centuries of our proud manufacturing legacy.

SITE DESCRIPTION

The campus is centered on Perkins Street, which connects two major roadways – Washington Street and Lowell Street – linking the City's downtown area. Summit Street, which provides a connection to Route 128, also provides a connection to Scouting Woods. The campus contains several active recreation parks, including Emerson Park, James Street Park, the Tanner City Skate Park, Coach Bob Driscoll's skating rink, and the Scouting Woods Disc Golf Course. The Higgins Middle School also has several active recreation areas, including a soccer field, a baseball field and a football field. In late 2018 the City developed the Peabody Dog Park, located next to the skate park. There are also informal passive recreation areas including the Public Safety Memorial Park and footpaths behind Emerson Park, in Scouting Woods, and in the nearby Rousselot properties. In addition to recreation, the Peabody Police Department is located at the corner of Perkins Street and Allens Lane and Rousselot, a private company present on both sides of Allens Lane. Rousselot owns approximately 80 acres within the focus area, most of which are woodlands, wetlands and waterways located between Scouting Woods and the Higgins Middle School.

Report Organization

The report is organized into five parts that mirror the planning process:

Part 2: Visions and Goals outlines the City's overall vision for the Connectivity Plan as well as the creation of an Eco-Recreational Campus. The goals for the Plan provides context for the evaluations and recommendations provided within the subsequent sections of this report.

Part 3: Background and Existing Conditions provides information on the planning approach, including the methodology for data collection, the stakeholder involvement and the overall development of the Connectivity Plan. This Part also provides an in-depth evaluation of the existing conditions within the campus using GIS data, existing and on-going planning efforts and projects, and field data. Community stakeholder and steering committee input on existing and future conditions are summarized. Finally, the collected data is evaluated to highlight opportunities and constraints for connectivity of pedestrians, bicyclists, and cars as the City strives to provide safe, accessible options for people of all abilities.

Part 4: Campus Connectivity provides the major themes for creating connections within the campus and beyond, including considering major and minor gateways, primary and secondary corridors, wayfinding and branding, accessibility, streetscape enhancements, stormwater systems, and ecology. Program recommendations are provided that identify opportunities to increase campus visibility and use, provide educational opportunities, and to develop new funding sources for site improvements.

Part 5: Implementation outlines the steps that the City can undertake to implement the major design components outlined in Part 4. This includes prioritization of projects, planning level costs, potential funding sources and opportunities for the community to get involved as the Plan moves forward.

PART 2. VISION & GOALS

GUIDING PRINCIPLES

Over the last several years, City of Peabody staff have been evaluating opportunities to improve usage of the Perkins Street parks and surrounding recreational spaces. As the City began to invest in improvements to the Perkins Street area, the idea of a comprehensive connectivity plan became more critical to ensuring that the area was a connected neighborhood resource. More information about this process is provided in Part 3.

In November 2018, City staff met with the Horsley Witten Group, Inc. (HWG) to discuss the overarching goals and vision for a Connectivity Plan. From that discussion and subsequent discussions with stakeholders and key community members, the City of Peabody has established an overall vision of a safe, accessible campus that connects pedestrians, bicyclists, and motorists of all ages and abilities to the unique spaces within the Eco-Recreational Campus. The Campus will be a community destination for passive and active recreation, education and enjoyment of natural resources during all seasons. The Connectivity Plan will help to provide solutions for establishing campus connections, prioritize projects that will improve both physical and experiential infrastructure and identify a process for putting this Plan into action.

Goals for this Plan include:

- Develop a network of sidewalks, bikeways and trails that are designed for all ages, abilities and users;
- Create a safe, comfortable space for multi-modal travel within the Campus;
- Capitalize on existing natural resources and recreational opportunities within the Campus and surrounding areas;
- Establish a campus brand, through signage and other park amenities that clearly identify the primary and secondary corridors, the trails and links to identifiable community destinations;
- Resolve barriers to connectivity, particularly between the Higgins Middle School and Scouting Woods; and
- Promote bicycle and pedestrian access to and within the Campus.

TYPICAL DAY AFTER SCHOOL
CREDIT: HWG

BIKE RACK IN USE AT HIGGINS
CREDIT: HWG

ACTIVE RECREATION
CREDIT: Spenser Hasak & The Daily Item

PART 3. DATA COLLECTION

ANALYSIS OVERVIEW

This Part is divided into two sections: plan background and existing conditions. The plan background provides a guide through the planning process, including the planning initiative, data collection, stakeholder involvement and the development of this report. The existing conditions analysis summarizes key findings from research of existing plans, field data collected, and information gathered through meetings and surveys. This Part concludes with an overview of opportunities and constraints of the existing environment for walking, bicycling, and driving within the Campus.

PLANNING APPROACH

Preparation of The Plan was initiated by the City's Community Development department. A Steering Committee was created from City representatives in the Community Development Department, Engineering Department, Parks and Forestry as well as the Higgins Middle School. The committee met on several occasions during the process and provided guidance on the overall vision, connectivity projects, program recommendations and during draft iterations of the Connectivity Plan.

A desktop analysis was first conducted using existing plans and geographic information systems (GIS) to develop maps of existing conditions. Future design plans and efforts were also reviewed. Additional data was collected in the field by HWG to supplement baseline information, which included photographs and data on existing pedestrian and bike pathways, right-of-way materials and dimensions, car and bicycle parking, accessibility, and natural resources. As a result of the analysis, constraints and opportunities for overall campus connectivity were identified.

HWG STAFF USING SURVEY123
CREDIT: HWG

A community stakeholder meeting was conducted to provide a progress update on the project and elicit feedback on both existing and future conditions. An online survey was also provided for stakeholders not able to attend.

The recommendations and implementation of the Connectivity Plan reflect all input collected, discussions with the Steering Committee, and ongoing or planned projects identified. HWG worked with the City to complete the Connectivity Plan in October 2019.

Desktop Analyses

The Horsley Witten Group project team gathered existing information about the Campus from two main sources: existing and proposed plans and existing Geographical Information Systems (GIS) data. Existing plans included the design plans for the Higgins Middle School, the Tanner City Skate Park and Emerson Park. Proposed plans obtained by the City include the Complete Streets path connection on the south side of Perkins Street between James Street and Fay Avenue and potential improvements to Emerson Park.

At the time of this report, HWG was also in the process of addressing landscape improvements at the Higgins Middle School. Other relevant City documents include the City of Peabody's Master Plan (2002) and the Open Space and Recreation Plan (2015).

A large portion of the existing GIS data was obtained from the City of Peabody (Table 1), while the remaining data was taken from MassGIS.

Field Data Collection

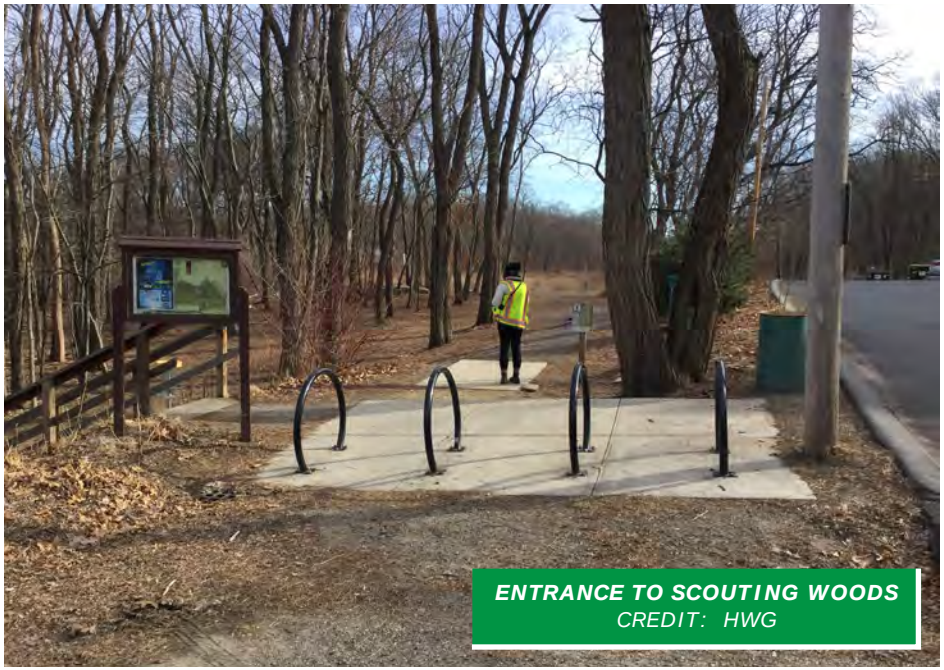
HWG conducted a site visit of the entire campus on January 15, 2019 to evaluate the conditions of the following:

- Pedestrian, bicycle and vehicular connectivity;
- Active recreation areas;
- Parking;
- Signage;
- Accessibility;
- Vegetation, wildlife and environment.

A survey was conducted at various locations using Survey123 for ArcGIS on a tablet, which is software that allows for the rapid collection of data and photographs through standardized forms that can be geographically linked.

TABLE 1. GIS DATA

DATA CATEGORY	DATA TYPE
Infrastructure	Buildings, Municipals Buildings, Streets, Sidewalks, Crosswalks, ADA Ramps, Bridges
Utilities	Utility Poles, Fire Hydrants, Sewer Pump Stations, Drainage Infrastructure
Natural Resources	Lakes, Streams, Wetlands
Boundaries	Parcels, Parks, Golf Course



ENTRANCE TO SCOUTING WOODS
CREDIT: HWG

Pedestrian Connectivity

Pedestrians are primarily encouraged to connect to the campus via sidewalks on Perkins Street and the adjacent local streets: Allens Lane, Ellsworth Road, Palmer Avenue, Ethel Avenue and Fay Avenue. James Street does not have sidewalks. Perkins Street is the primary route for pedestrians within the campus in both directions along the northern sidewalk. The sidewalks vary in width with an average width at approximately 7 feet; the surface materials also vary between concrete and bituminous asphalt.

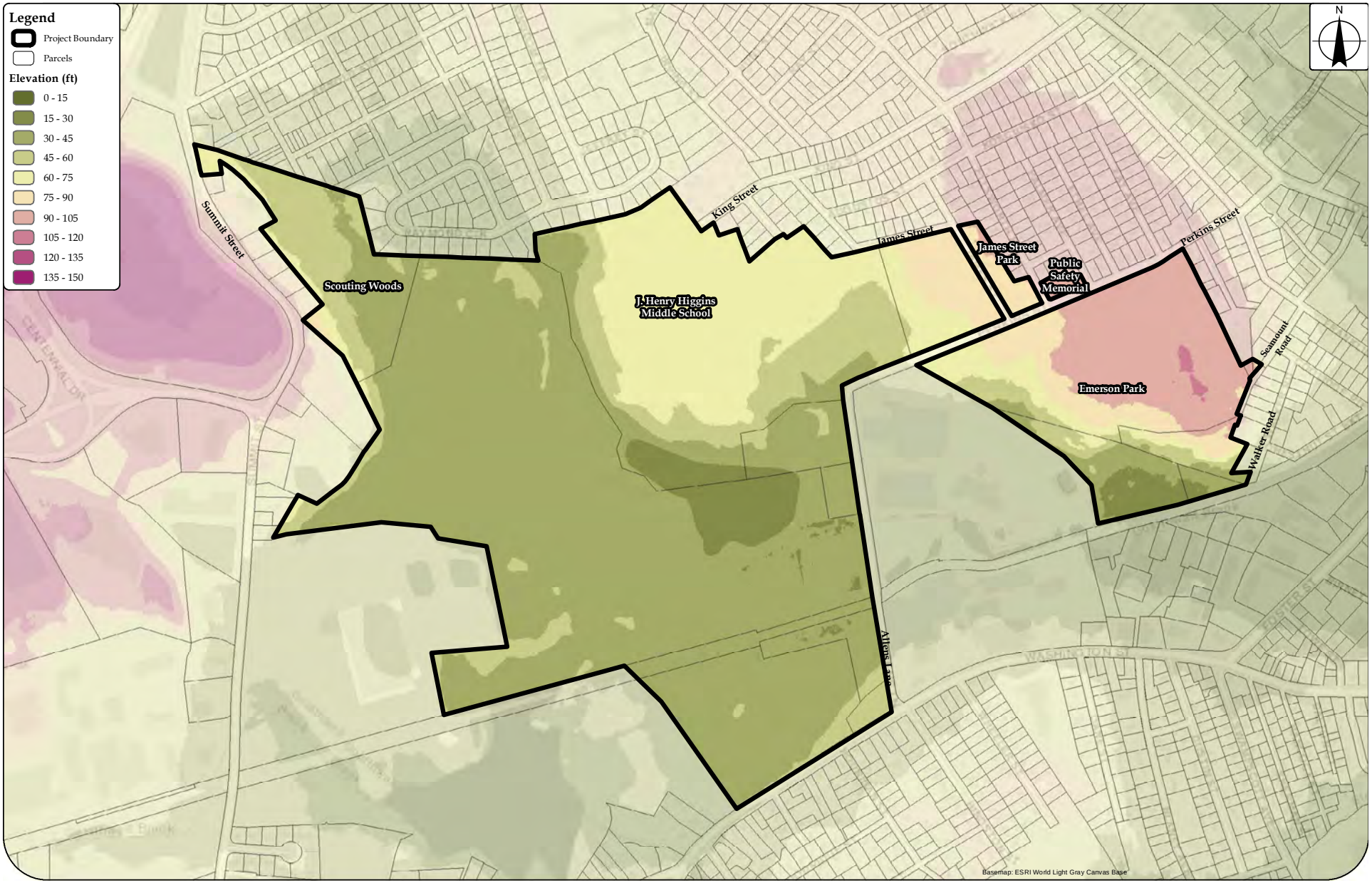
Additional sidewalks are present throughout the Higgins Middle School for pedestrian access between Perkins Street and the School as well as between the parking lots and active recreation areas. The sidewalk widths are typically 8 feet wide and are mostly concrete. Other formalized pathways of a stone-dust material help to connect pedestrians to and around existing landscaped features. Neighborhood connections to Higgins Middle School via King Street are through sidewalks as well.

EXISTING CONDITIONS BASE MAP

Documenting and depicting the existing conditions sets a foundation for evaluating opportunities and constraints within the focus area.

An inventory of existing elements include: roads, sidewalks, crosswalks, off-street trails, on-street parking, centralized parking lots, and major land uses.

TOPOGRAPHIC RELIEF MAP



The focus area contains numerous grade change challenges that will impact the feasibility of universal access.

In certain locations, like roadways, existing slopes may be too steep to comply with ADA standards. Design recommendations in Part 4 address alternative access.

Crosswalks, indicated by markings, signage or both are present across Perkins Street at Lowell Street (outside of campus), Ethel Avenue, Ellsworth Road and James Street. Crosswalks are present across all local streets in the area, except Franklin Street.

There are several informal pathways within the campus that provide secondary connections to the campus and throughout the campus. Informal pathways are present on the southeastern side of Emerson Park at Seamount Road and Walker Road, which connect to informal footpaths in the woodland areas behind Emerson Park that extend to the existing railroad tracks. Footpaths are also present throughout the Rousselot property, including informal connections between adjacent residential properties, Scouting Woods and the railroad tracks. The Scouting Woods Disc Golf Course contains a mulched path that connects the various holes.

Pedestrian usage is busiest during the start and end of the school day and during sports events, primarily baseball games. Pedestrian traffic is westbound between the hours of 7:30 to 8:00 am, prior to the start of school, and eastbound between the hours of 3:00pm to 3:30pm.

Bicycle Connectivity

There are currently no designated bicycle lanes on any roads within the campus. There are also no pavement markings or signage to indicate a shared roadway for bicycles and vehicles (shared lane markings or sharrows). The existing right-of-way on Perkins Street is wide (approximately 50 feet) and may be used by bicyclists without being directly in the travel lane. Sidewalks may also be used by students.

There are currently no immediate connections between this campus and designated bike lanes, greenways or trails. However, the campus could become a connection to the South Peabody Trail as well as the on-road portion of the East Coast Greenway.

Vehicular Connectivity

Vehicular traffic is primarily on Perkins Street, which is a two-lane collector road in the area. Traffic flows both westbound (towards Allens Lane to Washington Street) and eastbound (towards Lowell Street). James Street and Ellsworth Road are thruways to the adjacent neighborhood to the north; Palmer Avenue, Ethel Avenue and Fay Avenue are dead ends. There is a traffic light and large, painted crosswalks at Allens Lane and Washington Street. At Lowell Street there is a stop sign and a large, painted crosswalk across Lowell Street. Vehicular transit is the primary method of access to the Scouting Woods Disc Golf Course from Summit Street.

Bus Connectivity

There are two bus routes on Washington Street (434, 435), two on Lowell Street (435, 465) and one on Summit Avenue (436) that connect to various areas within the City of Peabody.

LOOKING SOUTHWEST ON PERKINS
CREDIT: HWG

Active Recreation Areas

The active recreation areas include:

- Emerson Park: ballfield and open space;
- James Street Park: playgrounds (2), basketball court and ballfield;
- Tanner City Skate Park;
- Perkins Street Basketball Court;
- Bob Driscoll's Ice Skating Rink;
- Higgins Middle School: soccer field, ballfield and football field; and
- Scouting Woods Disc Golf Course.

Detailed data on the conditions of each recreational area was not collected during the field investigation. However, field staff noted that there were repeated observations of trash and debris (e.g. sand, grass clippings, leaf piles) noted within the woodland areas (Emerson Park, James Street, Higgins Middle School). Also, significant erosion was present along the slopes at the Scouting Woods Disc Golf Course due to a nearby construction project.

Parking

Bicycle parking (i.e. bike racks) are available at Higgins Middle School, the Peabody Dog Park and the Scouting Woods Disc Golf Course.

Vehicular parking is available on Perkins Street for the majority of the length of the street from Lowell Street to James Street (total of approximately 100 spaces). Parking is available on local streets as well. There are several formal small parking lots within the campus: near the playgrounds on James Street (16 spaces), adjacent to the Peabody Dog Park (14 spaces), and Scouting Woods (7 spaces). Larger parking lots (4 total lots) are present at Higgins Middle School. A grassed overflow lot is present at James Street Park on the east side of the road and adjacent to the smaller, formal parking lot.

Vehicular parking on Perkins Street is used for both recreational activities and for local residents, particularly between Ellsworth Road and Fay Avenue on the northside. During local sporting events, City staff and community stakeholders have noted that parking is primarily on either James Street or Perkins Street, but local roads and the maintenance access drive for Emerson Park are used.

Signage

Signage in the campus is primarily on or facing Perkins Street. Traffic signs of varying designs are posted for drivers to be aware of pedestrians and dangerous intersections. Park identification signs were present at the Tanner City Skate Park, the Ice Skating Rink, the Public Safety Memorial Park and the Peabody Dog Park. There were two identification signs for the Higgins Middle School; one sign located at the entrance to the school and a digital sign located within a stormwater management area facing Allens Lane. Both the park and middle school identification signs are blue and white, matching the branding colors of the City of Peabody. In contrast, Scouting Woods has a small, brown and white identification sign, posted approximately 10' within the entrance of Scouting Woods.

There are currently no wayfinding signs to provide orientation for either pedestrians, bicyclists, or drivers. One sign for the police station was located on Perkins Street at Lowell Street on a utility pole.

LOOKING NORTHEAST ON PERKINS
CREDIT: HWG

Accessibility

Pedestrian accessibility was evaluated within the campus by assessing sidewalks, walkways, curb ramps, and crosswalks. The minimum required sidewalk width is 3 feet, though if sidewalks are less than 5 feet, passing spaces must be allowed every 200 feet. Sidewalks and walkways must be firm, stable and slip-resistant. Within the campus the sidewalk widths vary between 4 feet and 8.5 feet, with the majority being 5 feet in the R.O.W. and 8 feet within the Higgins Middle School property. Major gaps in accessibility include the sidewalk on Perkins Street between Fay Avenue and Franklin Street where the sidewalk is approximately 3-4 feet in passable width; James Street where no sidewalk or walkways currently exist; and on Allens Lane where obstacles (utility poles, signs, railroad track, etc.) obstruct accessible travel paths from Washington Street to Perkins Street.

CONDITIONS ON ALLENS LANE
CREDIT: HWG

Sidewalk material is predominantly asphalt or concrete, both which are ADA compliant. Stone-dust is used for the formal walkways around the stormwater management practices at the Higgins Middle School, while mulch is used for the pathways at the Scouting Woods Disc Golf Course. The walkway surfaces within Scouting Woods are not ADA compliant.

ADA compliant curb ramps are present on Perkins Street and in the Higgins Middle School. The major identified gaps are along Perkins Street at Palmer Avenue, Ethel Avenue and Franklin Street.

There are several existing crosswalks in the campus as noted in the discussion on pedestrian connectivity. On Perkins Street, there are three existing marked crosswalks at Fay Avenue, Ellsworth Road, and James Street. All three of them end at the curb on the south side of Perkins Street at the edge of Emerson Park and are currently not ADA accessible. Although crosswalks exist at Palmer Avenue and Ethel Avenue, the lack of curb ramps also make those not accessible. Additional pedestrian crossings along areas on Allens Lane are also not accessible due to obstructions. All crosswalk pavement markings were standard (white, solid lines) except at the Higgins Middle School where the markings are continental (high visibility, striped/zebra markings).

Vegetation, Wildlife and the Natural Environment

Nearly 100 acres of the focus area is open space composed of woodlands, wetlands and waterways, including Goldthwait Brook. A large portion of that (70%), is located within the Rousselot property, including 5 potential vernal pools. The area also has some significant rock outcrop areas, particularly behind Emerson Park and on the Rousselot property between the Higgins Middle School and Scouting Woods. This combination of ecosystems offers immense biodiversity of wildlife from turtles to birds to frogs and beyond.

The topography in the campus has a similar diversity, ranging from 106 feet above seal level at Emerson Park down to 45 feet at the wetlands feeding Goldthwait Brook and at Lowell Street. The varying topography provides expansive viewsheds from the south side of Emerson Park towards Washington Street as well as from the Higgins Middle School and the Rousselot property towards the wetlands and waterways that contribute to Goldthwait Brook.

There are 3 existing stormwater management features on Perkins Street: a gravel wetland located at the west end of Emerson Park, a dry swale located on the north side between James Street and the Higgins Middle School Entrance and a large stormwater basin at Allens Lane. Additional stormwater areas

are present within the Higgins Middle School property primarily composed of sediment forebays and five bioretention areas. Scouting Woods includes a constructed wetland.

There are several areas where invasive species have been identified. The woodland area between Higgins Middle School and James Street Park has a well-established presence of Japanese Knotweed. The woodland area behind Emerson Park contains Bittersweet and Japanese Knotweed. Bittersweet and Common Reed (Phragmites) are present within the Rousselot parcel.

Stormwater Management

Stormwater management and flood protection is a topic of concern in the city of Peabody. There are 7 existing stormwater features within the focus area. The menu of stormwater practices vary from rain gardens, detention basins, constructed wetlands, conveyance swales, and a closed pipe system along the major roadways.

STORMWATER SYSTEM AT HIGGINS
CREDIT: HWG

VIEW SOUTH DOWN ALLENS LANE
CREDIT: HWG

Stakeholder and Community Input

The Steering Committee obtained input from community stakeholders during a meeting held at City Hall on May 15, 2019. Stakeholders included City councilors, members of the Commission on Disability, the Peabody Lions and the Peabody Little League. During that meeting, the Horsley Witten Group presented the results from the desktop analyses and field assessments. Subsequent breakout sessions with stakeholders included discussions on two main topics:

- "A Day in the Life": How stakeholders use the areas in the campus (e.g., where they park, how often they visit the campus, what activities they typically come to the park for); what parts of the campus the stakeholders like or work well; and what parts of the campus are cause for concern or need improvement.

- "Back to the Future": The stakeholders' vision for the campus and what proposed future improvements would help to encourage use of the area.

A follow up survey was sent to all stakeholders to capture feedback from those who could not attend as well as get additional input from those not able to attend. Overall 13 stakeholders responded, 11 attending the meeting and 2 responding to the survey. The key findings included:

Existing Conditions

- Parks are a great amenity to the neighborhood: Emerson Field, James Street Park and Tanner Skate Park are well used areas for neighbors, students and outside visitors.

- The campus has hidden gems: The woods behind Emerson Park, Scouting Woods Disc Golf Course, the Ice Skating Rink and the woods in the Rousselot property are all areas that are assets to the campus, but most people do not know that they exist.

- Pedestrian safety is a top concern: Perkins Street and Allens Lane are fast roads that lack amenities for pedestrians that would provide a safer experience. Sidewalks are too narrow and are not present everywhere; crosswalks are not highly visible to vehicles; limited signage exists to indicate crossings; and vehicles speeds are too high.

PUBLIC SAFETY MEMORIAL
CREDIT: HWG

- Heavy traffic: During the school year, students often hang out on Perkins Street before and after school, sometimes walking in the road or crossing the road outside of crosswalks. Cars picking up and dropping off are present along Perkins Street and James Street as well as behind the Higgins Middle School in the morning and afternoon hours. During nighttime and weekend activities, parking on Emerson Park and at James Street is heavily used with spillover onto local streets.

- Accessibility: Several areas are not fully accessible, including Perkins Street, James Street Park and the Scouting Woods Disc Golf Course.

Future Improvements

- Focus on improvements that prioritize pedestrians: Recommendations included wider sidewalks, a larger buffer between the sidewalk or parks, highly visible or raised crosswalks, traffic calming techniques (e.g., narrowing road widths), better lighting and traffic signage. Create new connections that keep people off the road; for example, a connection between the Higgins Middle School and James Street Park or a sidewalk/ walkway on the south side of Perkins Street.

- Increase visibility of the campus: Add signage near Emerson Park to let visitors know that it is a campus. Incorporate wayfinding signs throughout the campus, including a larger format campus map that could increase awareness to underutilized parks and amenities. Wayfinding signage should be accessible (e.g., use of braille).

- Formalize access to open spaces: Informal trails in and behind Emerson Park, on the Rousselot Property and in Scouting Woods should be formalized to encourage use of the open spaces, including educational opportunities for students.

- Identify connections to and from nearby amenities: There are several opportunities to provide connections beyond the campus, including South Peabody Trail; Main Street and downtown Peabody; and other neighborhoods off of Washington Street, Lowell Street and Summit Street.

Wayfinding signage and visible gateways on the main roads would help to improve awareness for pedestrians and bicyclists.

Opportunities and Constraints

As noted above, the City has begun to address some of the needed pedestrian improvements already by putting forth a Complete Streets plan for a path on the south side of Perkins Street, installing ADA curb ramps, and installing a flashing traffic sign near Higgins Middle School. Overall however, there are significant connectivity gaps within the existing sidewalks/walkways, roads and parks that need to be addressed. Key opportunities and constraints are shown in the map.

ACCESSIBLE WALKING PATHS
CREDIT: HWG

Opportunities

- Open space: The large amount of varied open space provides an opportunity to experience nature that is unparalleled in the City of Peabody, both for passive and active recreation.
- Roadway/lane widths: Perkins Street is wide enough to offer bicycle lanes, if desired. Alternatively, the roads could be narrowed significantly, or a pedestrian refuge could be added to provide traffic calming for vehicles and safe areas for pedestrians as they move between areas within the campus.
- Recreational facilities: The existing parks provide significant destinations within the campus. By improving pedestrian connections on Perkins Street, Allens Lane and Summit Street, such as adding or widening sidewalks, incorporating traffic calming techniques and including wayfinding signage, more residents and visitors will be able to experience the campus. In addition, formalizing informal paths can create an even broader network.
- Educational/Cultural experiences: The presence of the Higgins Middle School as a centerpiece in the campus and the overall proximity of the campus to both green spaces and historical references, such as the George Peabody Museum provides a unique opportunity for outdoor classrooms or field trips for students and residents alike.

NATURALISTIC LANDSCAPES
CREDIT: HWG

Constraints

- Narrow and unbuffered sidewalks: The majority of existing sidewalks meet only minimum width requirements, with the exception of those within the Higgins Middle School property. In addition, many of these sidewalks are unbuffered against the road, leaving pedestrians exposed to fast cars, large trucks entering/exiting the Rousselot property and police vehicles entering/exiting the police station.

- Connectivity gaps: There are several gaps that exist within the campus for pedestrians; the most notable are the gaps between the Scouting Woods Disc Golf Course and the Higgins Middle School and the connection on the south side of Perkins Street between Franklin Street and Allens Lane.

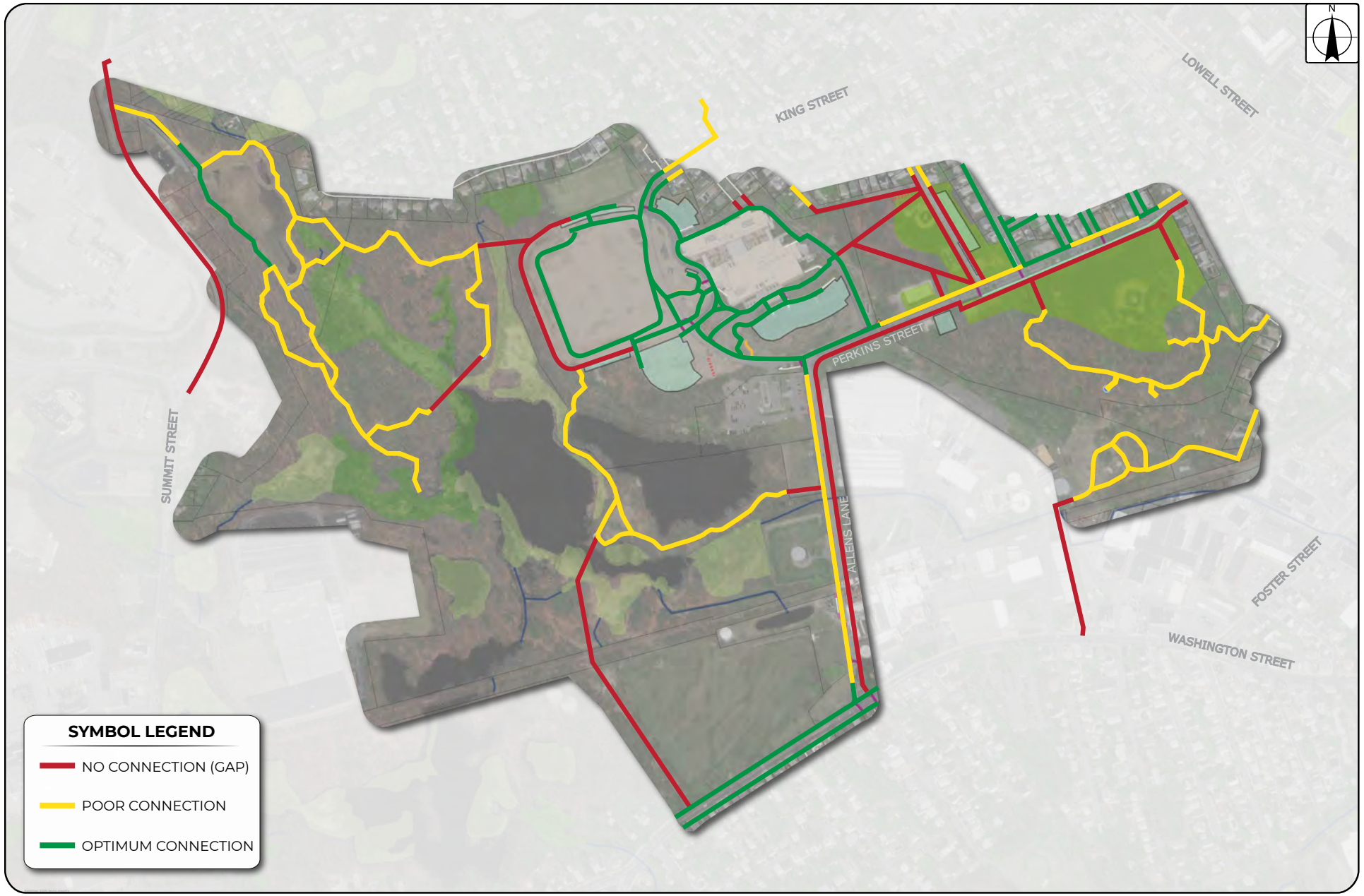
- Lack of crossing facilities: Incomplete crossing facilities are notable on Perkins Street and Allens Lane, including lack of high-visibility crosswalks, traffic signage, adequate ADA curb ramps, or pedestrian refuge areas (e.g., medians or curb bumpouts).

- Sightlines: The varying topography within the campus creates limited visibility for all modes of transportation, but is most notable on Perkins Street between Franklin Street and James Street.

ICE AND WINTER MAINTENANCE
CREDIT: HWG

LIMITED SPACE WITHIN R.O.W
CREDIT: HWG

HWG FIELD STAFF COLLECTING DATA
CREDIT: HWG



Using the collected data, an opportunities and gaps map identifies linkages and areas within the focus area for potential improvements. Prioritizing identified gaps determines which actions are most feasible and effective to improve the overall connectivity of the focus area.

PART 4. CAMPUS CONNECTIVITY

INTRODUCTION

Building upon the vision, goals, and data collection, this part of the Plan makes design recommendations to enhance the existing network and presents new design proposals to improve the overall connectivity within the Eco-Campus.

What is an Eco-Campus?

The City has a strong commitment to open space, recreation and education. All three of these land uses are present within the focus area, but the diversity and magnitude of open spaces including active and passive parks, nature trails, stormwater systems, wetlands and water resources, such as Goldthwait Brook make this a unique opportunity. Henceforth, the term 'Eco-Campus' is the guiding design principle which combines two main ideas:

1. Promote environmentally sensitive design solutions by integrating the natural world into our built community; and
2. Unify the entire focus area into one harmonious campus by using branded site elements and consistent materials.

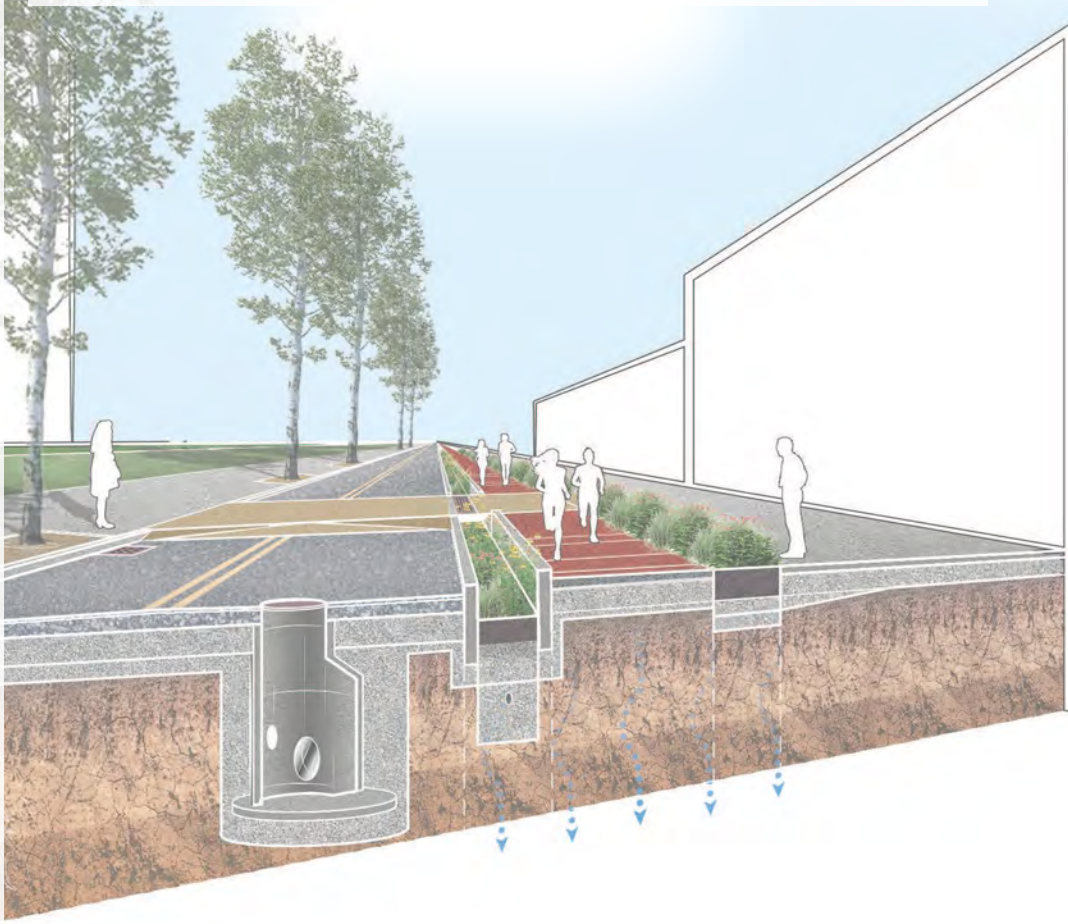
Eco-Campus Brands

Emerson Heights is the centerpiece to the Eco-Campus. Including Perkins Street, Emerson Park and James Street Park, Emerson Heights contains the most active and passive uses within the Eco-Campus.

School Loop is the educational hub located directly in the center of the Eco-Campus surrounding the Higgins Middle School. The School Loop provides centralized, public parking which allows patrons to park and adventure outward from the Eco-Campus center.

Scouting Woods is the most natural area within the Eco-Campus. Nature trails traverse the native woodlands within close proximity to the School Loop.

Heritage Trail is the most challenging corridor of the Eco-Campus. Active industrial uses make public safety along Allens Lane a top-priority. The Heritage Trail aims to embrace the industrial character by celebrating the history of Peabody. Refer to Part 1 for historical context.

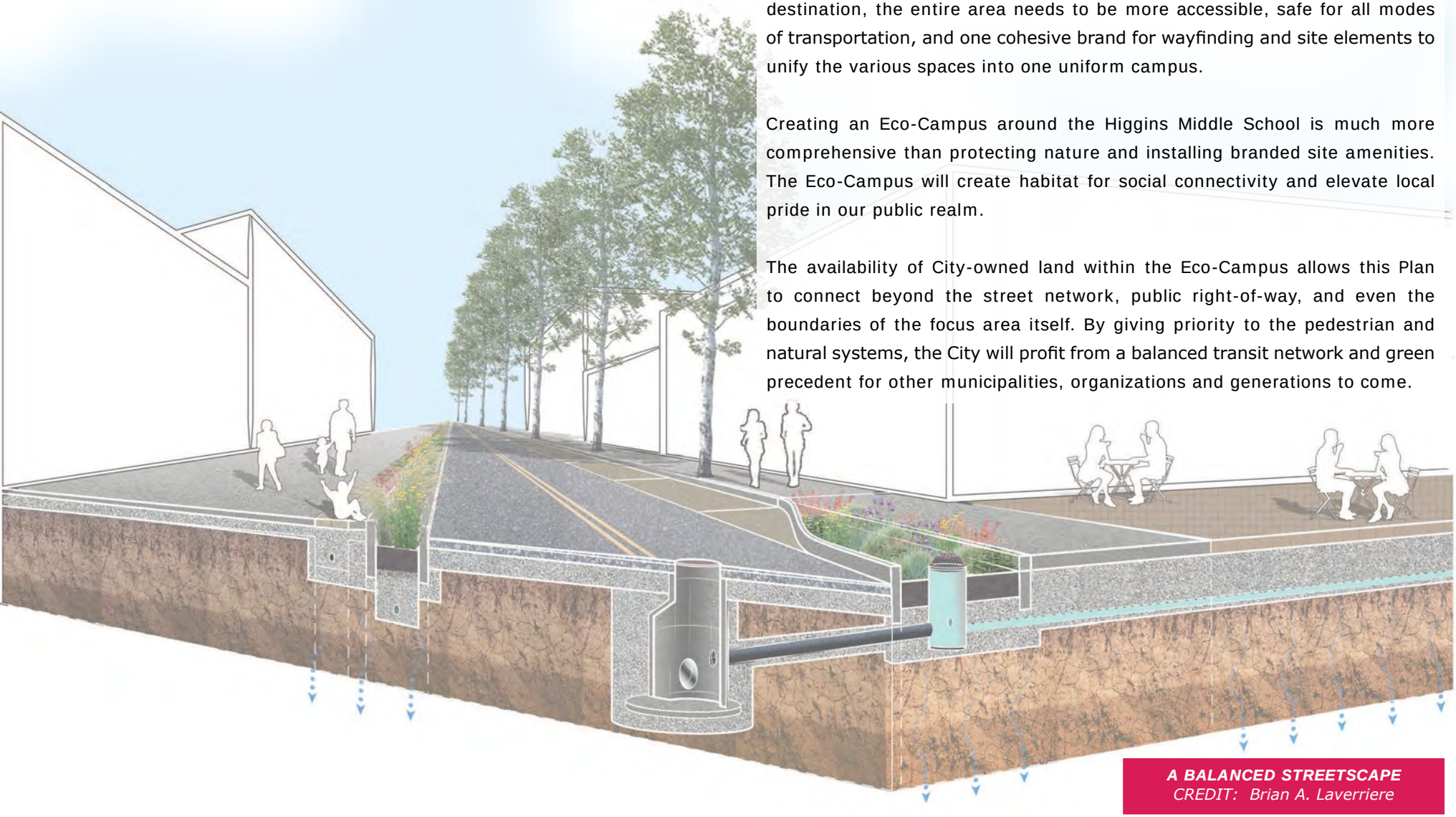


Placemaking

Nowhere else in the City has the same density and diversity of outdoor spaces. The City has a unique opportunity to create a more walkable, lovable, and connected neighborhood. However, to achieve the Eco-Campus as a regional destination, the entire area needs to be more accessible, safe for all modes of transportation, and one cohesive brand for wayfinding and site elements to unify the various spaces into one uniform campus.

Creating an Eco-Campus around the Higgins Middle School is much more comprehensive than protecting nature and installing branded site amenities. The Eco-Campus will create habitat for social connectivity and elevate local pride in our public realm.

The availability of City-owned land within the Eco-Campus allows this Plan to connect beyond the street network, public right-of-way, and even the boundaries of the focus area itself. By giving priority to the pedestrian and natural systems, the City will profit from a balanced transit network and green precedent for other municipalities, organizations and generations to come.



A BALANCED STREETSCAPE
CREDIT: Brian A. Laverriere

CONNECTIVITY OF NATURAL ECOSYSTEMS

Protecting natural resources is the essence of an Eco-Campus. Eliminating invasive plants will improve visibility and safety on nature trails, tree lined streets offer shade during hot summer days, and stormwater systems ensure our local freshwater resources remain clean for generations to come.

NATURAL RESOURCES

Preservation and Restoration of natural ecosystems plays a fundamental role in establishing the focus area as an Eco-Campus. Based upon field observations, an immense opportunity exists to not only connect people, but to also connect nature, wildlife, water and plant communities.

Health and Safety of all natural resources within the focus area are at risk. Similar to most American cities, Peabody lacks continuous threads of native ecology. Considering the wide-variety of parks, open spaces and the central presence of the Higgins Middle School, the City has an opportunity to exemplify nature education and stewardship for residents, students and the next generation.

FOREST RESTORATION (INVASIVE PLANTS)
CREDIT: HWG

MATURE STREET TREES ALONG PERKINS
CREDIT: HWG

WETLANDS AT SCOUTING WOODS
CREDIT: HWG

ROADSIDE STORMWATER SYSTEM
CREDIT: HWG

FRESHWATER RESOURCE
CREDIT: HWG

WALKABILITY DIAGRAM

Making external connections to the Eco-Campus is as important as improving connectivity within the Eco-Campus.

A walkability diagram identifies accessible routes which may already exist, need improvement or require new construction.

A WALK IN THE PARK

Public Safety for pedestrians and cyclists is a top priority. Improving walkability within the Eco-Campus builds neighborhood trust and ownership for users within or nearby the Eco-Campus.

5-Minute Walk radius surrounding the Eco-Campus was analyzed to identify short and long-term projects to help enhance connectivity. A list of priority projects can be found in Part 5.

Reasonable Proximity to the Eco-Campus helps identify priority projects for short-term capitol improvement projects. By providing safe alternatives, the need for additional parking and wide travel lanes within the Eco-Campus is reduced.

SUMMIT STREET - LOOKING NORTHWEST
CREDIT: Google Maps

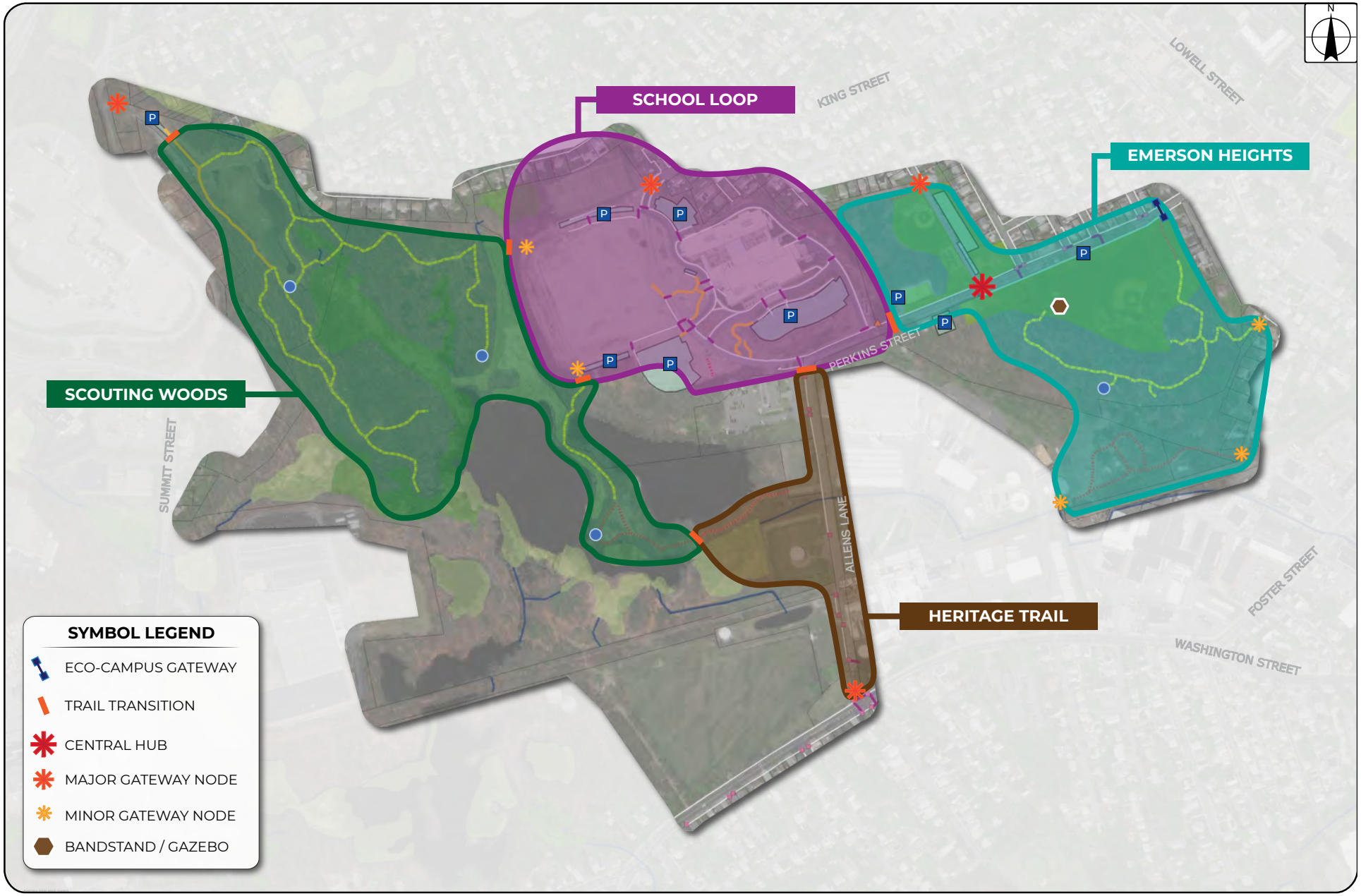
EXISTING EASEMENT - IRVING TO KING
CREDIT: HWG

ALLENS LANE - LOOKING NORTH
CREDIT: HWG

POTENTIAL EASEMENT AT G. PEABODY MUSEUMS
CREDIT: HWG

INTERSECTION - CHESTNUT & FRANKLIN
CREDIT: HWG

ECO-CAMPUS BRANDING



The Campus is segmented into four distinct brands. Each segment is selected primarily for its sense of place and surrounding land uses.

Where a branded segment engages another, a trail transition will demarcate one branded trail from another.

SENSE OF ARRIVAL

Eco-Campus Gateway is positioned at the primary access point along Perkins Street. The Eco-Campus gateway is meant to emphasize the primary point of arrival and departure.

Trail Transitions demarcate the four distinct brands. Materials and accessories may vary from one brand to another, but a uniform style of trail transitions is critical to establish campus unity.

Major & Minor Gateway Nodes physically and visually set the campus boundary. Illustrated on the Eco-Campus Branding Plan, a hierarchy of context-driven gateways are proposed at all dominant access points to the Eco-Campus.

ECO-CAMPUS GATEWAY
CREDIT: HWG

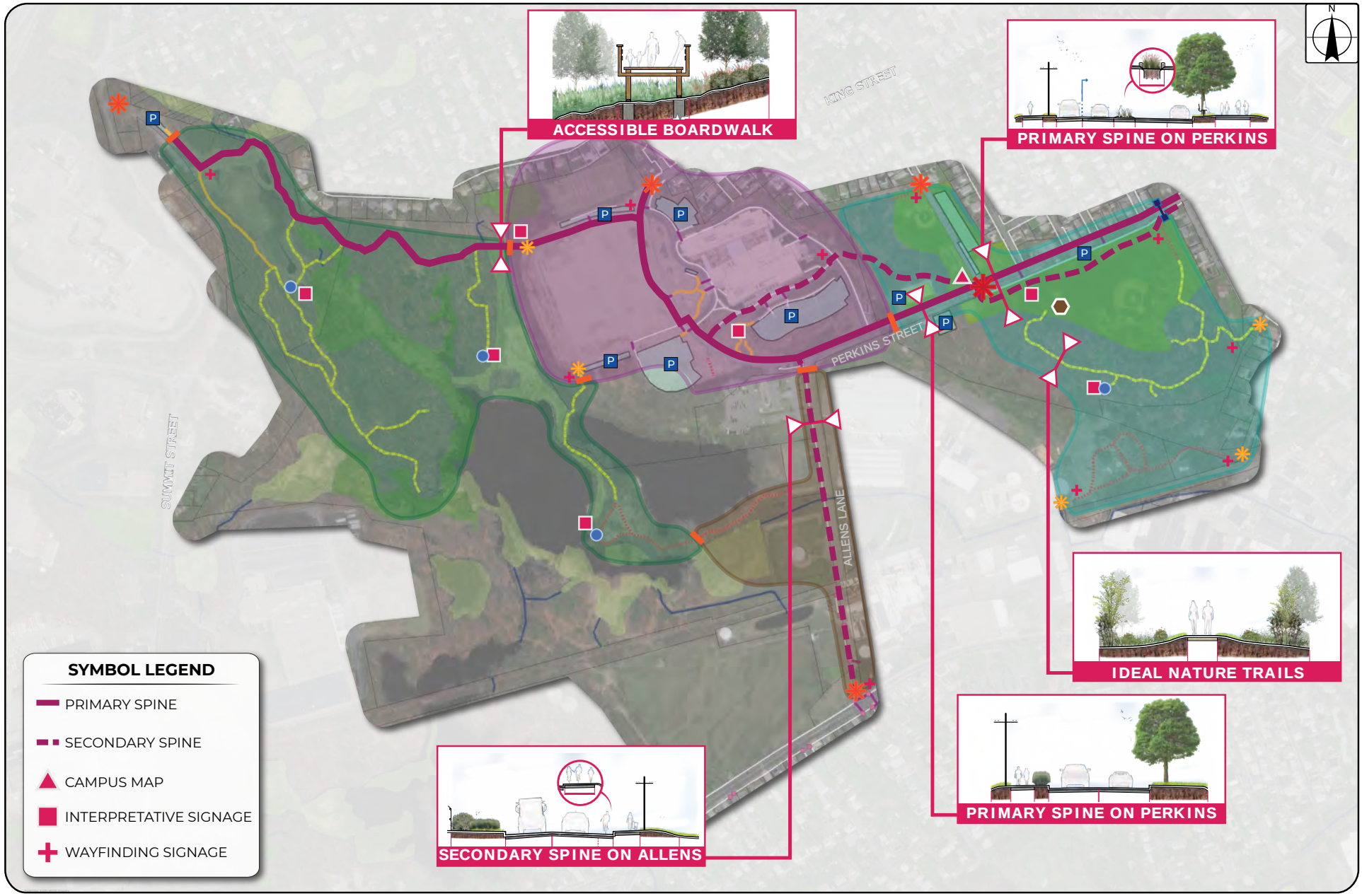
TRAIL TRANSITION
CREDIT: HWG

CENTRAL HUB
CREDIT: Elk Ridge Park, Design Concepts

MAJOR GATEWAY NODE
CREDIT: HWG

MINOR GATEWAY NODE
CREDIT: ASG Architects, College of Charleston

SPINE NETWORK



A spine path is a distinguishable thread linking the furthest points of interest within the focus area.

SPINE NETWORK

Primary Spine should be visually distinct from all other pathways within the Eco-Campus. Material selection will be authentic to the City's character and visually unify the Eco-Campus across all brands. Typical sections are shown on pages 32 through 39.

Secondary Spine represents an accessible route with a theme through common materials.

Uniform materials and dimensional standards are design principles for strategic implementation as phases of the Eco-Campus are created over time.

Context should always be considered to integrate built forms with the natural surroundings.

PRIMARY SPINE
CREDIT: Charles Sternaimolo

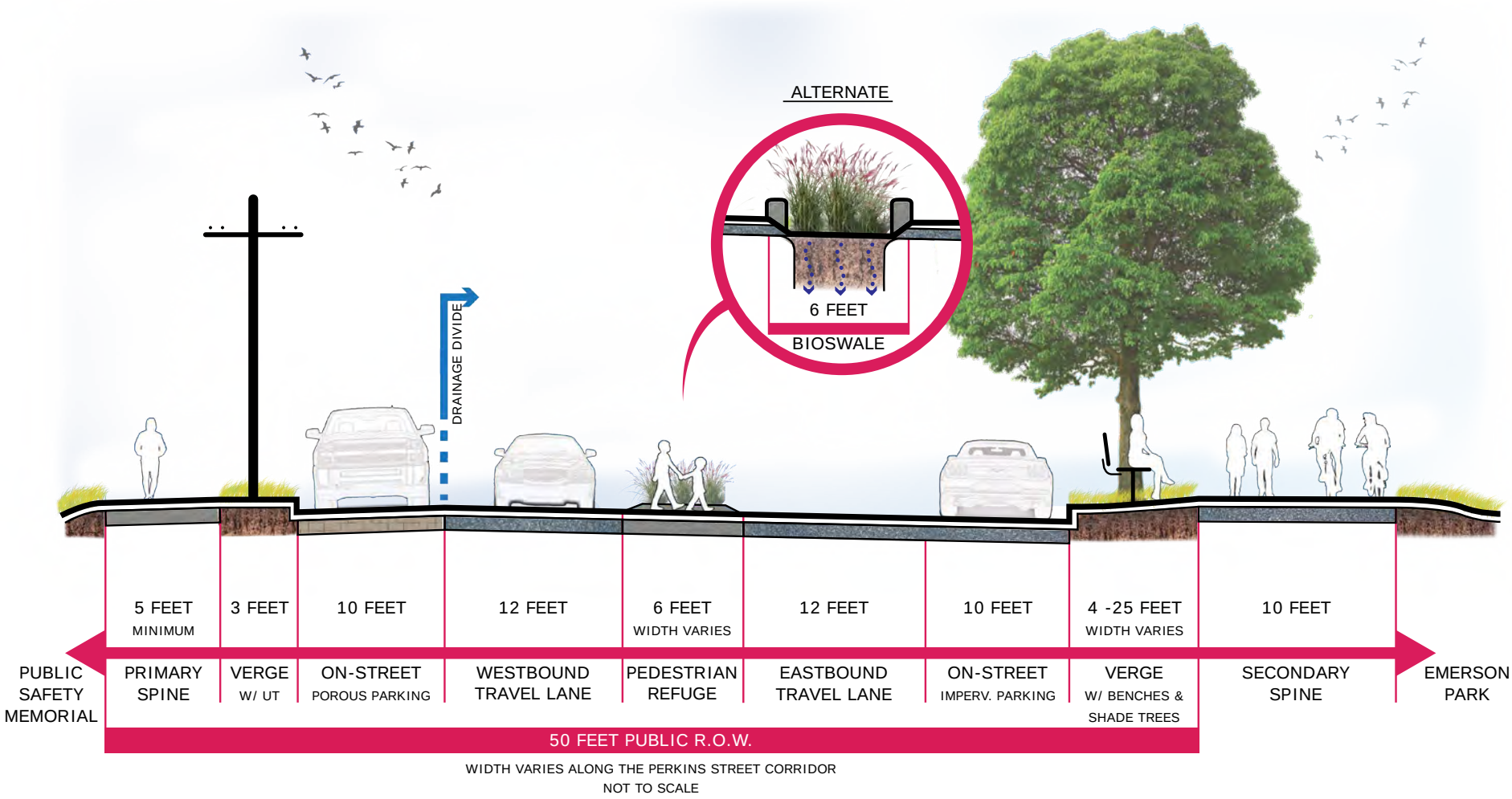
PRIMARY SPINE
CREDIT: Rose Hill Gardens

PRIMARY SPINE
CREDIT: ASLA 2010 Awards, Nueva School

PRIMARY SPINE
CREDIT: HWG

SECONDARY SPINE
CREDIT: Van Zelst Inc.

PRIMARY SPINE ON PERKINS STREET AT EMERSON PARK



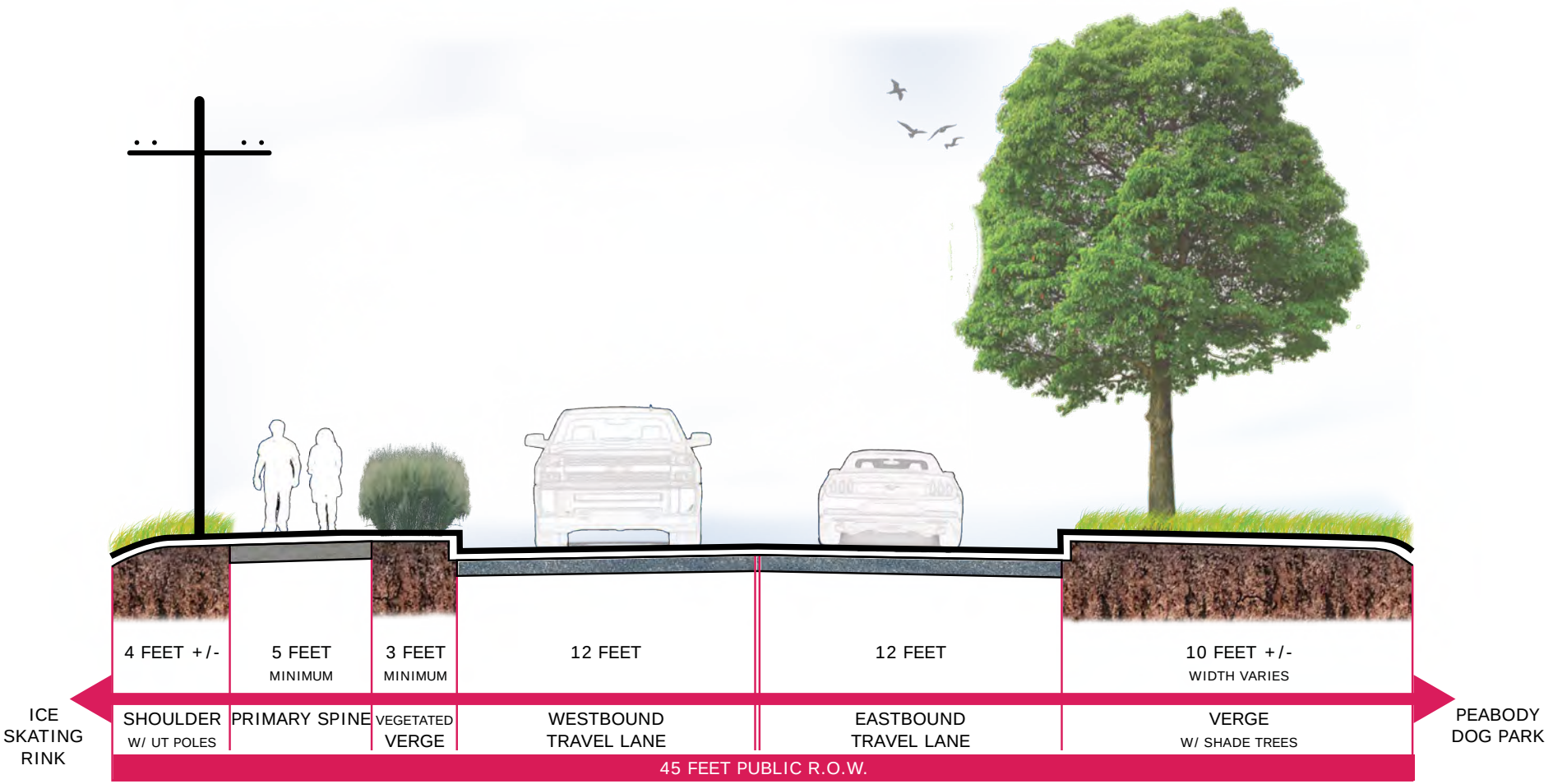
WIDTH VARIES ALONG THE PERKINS STREET CORRIDOR
NOT TO SCALE

The proposed design maintains both curb-lines in their current locations to minimize cost and disturbance during construction.

- A **road diet,** which reduces the width of both travel lanes encourages public safety by reducing travel speeds.
- 6-foot **pedestrian refuge** is provided to separate the travel lanes and to offer space for people to pause half-way across the street.
- Streetscape **amenities** may be included, such as street lights, plantings and signage to connect Emerson Park to Allens Lane.

The potential connectivity improvements on Perkins Street are shown on Page 46 in Part 5.

PRIMARY SPINE ON PERKINS STREET AT THE DOG PARK



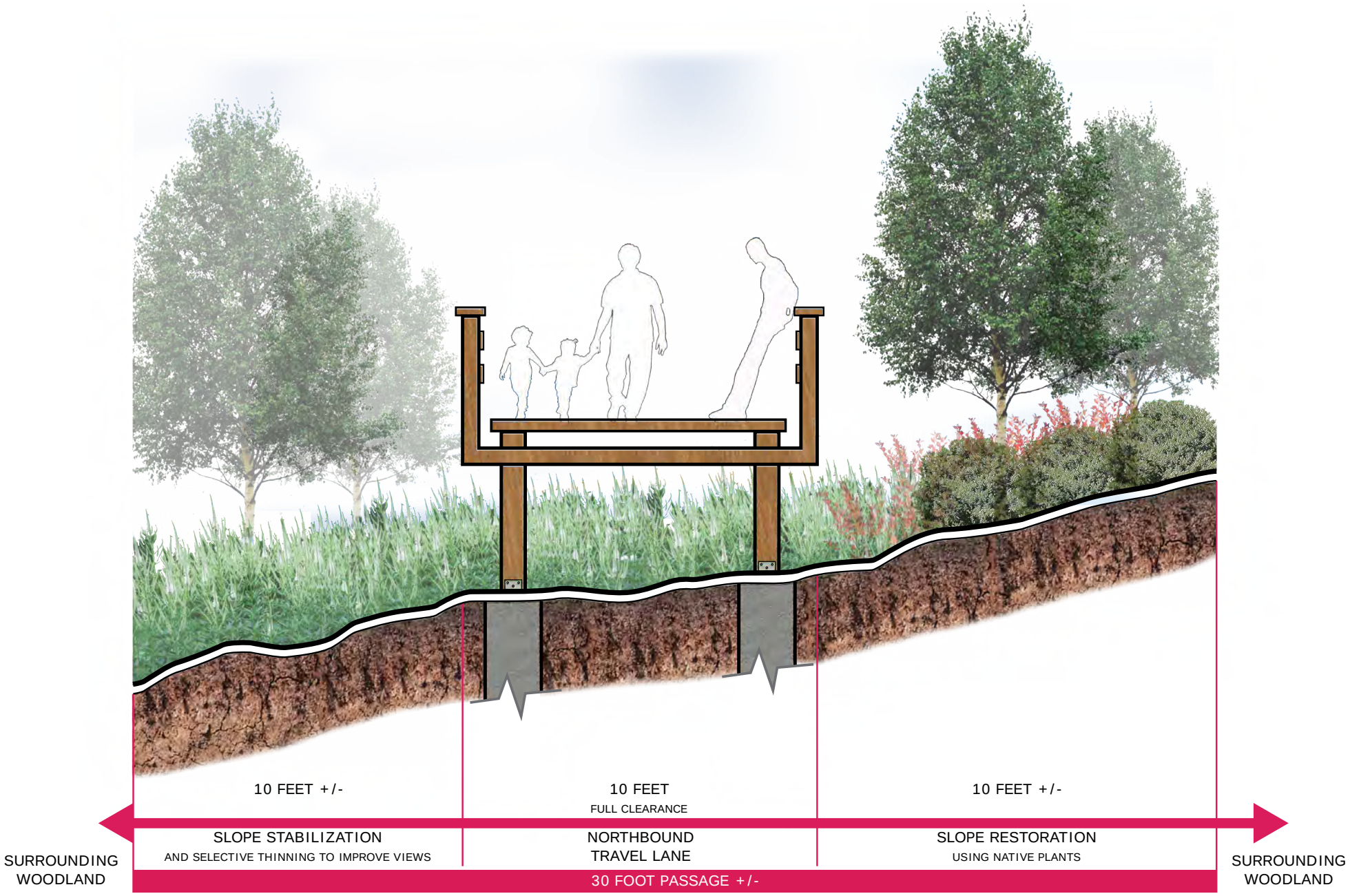
WIDTH VARIES ALONG THE PERKINS STREET CORRIDOR
NOT TO SCALE

The proposed design maintains the southern curb-line adjacent to the Peabody Dog Park and relocates the northern curb-line.

- Adding a **vegetated verge** reduces the width of both travel lanes to decrease vehicular speeds and increase pedestrian safety.
- New **street trees** are proposed along the southern curb-line. The absence of overhead wires along the southern curb-line from James Street Park to Allens Lane creates the ideal conditions for additional street trees and low maintenance, native vegetation.

The potential connectivity improvements on Perkins Street are shown on Page 48 in Part 5.

BOARDWALK FROM SCOUTING WOODS TO HIGGINS



HEIGHT VARIES ALONG THE CORRIDOR
NOT TO SCALE

UNIVERSAL ACCESS

The Americans with Disabilities Act (ADA) is a driving force for improving connectivity within the Eco-Campus. As projects within the Plan are implemented, several requirements will need to be met for the City to be in ADA compliance.

James Street Park is the central hub for the Eco-Campus. The current connection from James Street Park to Higgins School is a sidewalk along Perkins Street. The existing road grade exceeds the maximum running slope requirement, this challenge demands a solution to create an accessible walkway linking Higgins School to Emerson Heights.

Allens Lane presents several challenges as utilities and working operations must remain a priority. Incorporating Allens Lane as a secondary spine to the Eco-Campus is meant to embrace the City's unique industrial heritage. The Heritage Trail is an important connection to the Eco-Campus and the history of Peabody.

Scouting Woods is an amazing asset to the City that is currently underutilized. Sensitive wetlands and vernal pools separate the athletic fields at Higgins School from the nature trails circulating Scouting Woods. An accessible boardwalk crossing is proposed to preserve the natural hydrology.

Perkins Street is the primary thoroughfare with on-going improvements for sidewalks, ramps and crosswalks. A complete street schematic design is included in Part 5 to compliment the on-going work.

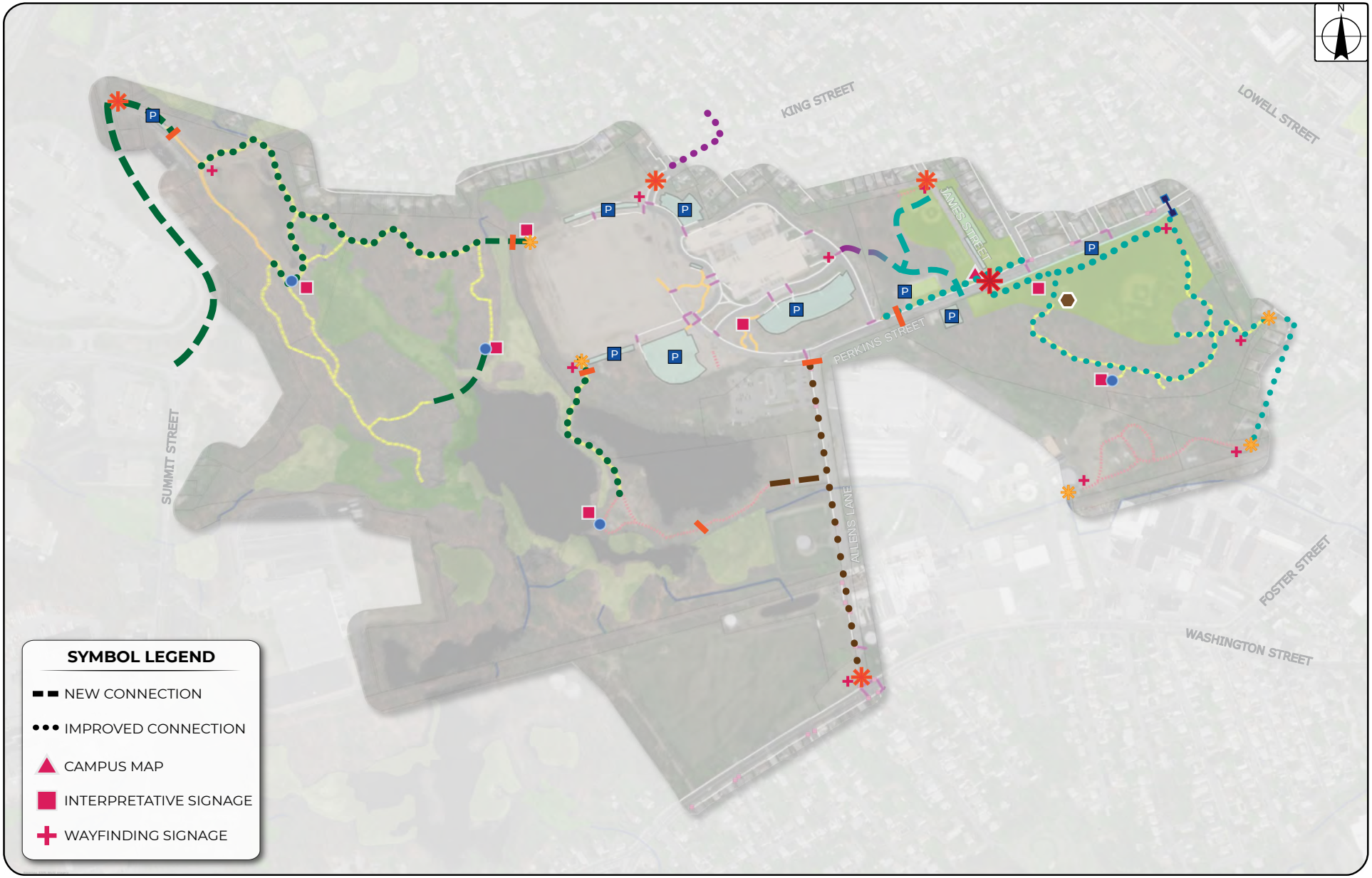
AN INACCESSIBLE CROSSWALK
CREDIT: HWG

SIDEWALK OBSTACLES (Minimum 36" Width)
CREDIT: HWG

AN ACCESSIBLE SIDEWALK
CREDIT: HWG

OBSTACLE-FREE SIDEWALK
CREDIT: HWG

COMMUNITY CONNECTIVITY



To improve the overall connectivity of the focus area, both existing connections must be improved and new connections must be made.

For more information on priority projects, refer to Part 5: Implementation.

HOW DO WE GET THERE?

Campus Map is proposed at the central hub within James Street Park to raise awareness for the multitude of spaces, destinations and connections.

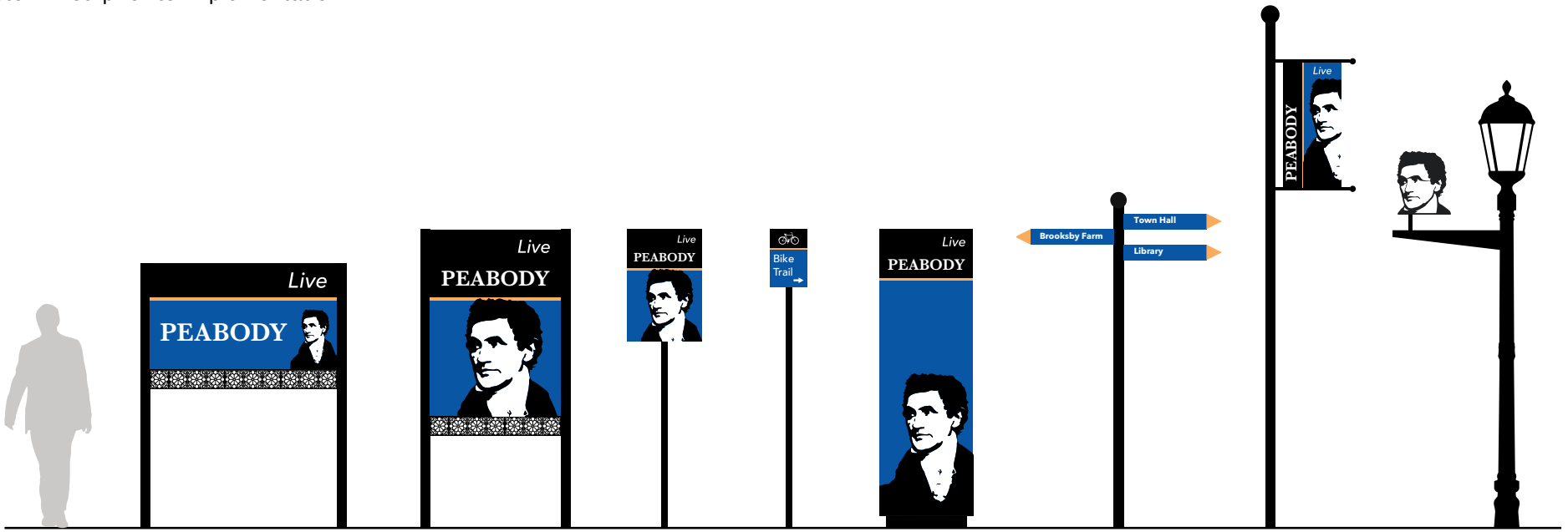
Interpretative Signage strengthens the educational component and nature appreciation within the Eco-Campus. Signage is proposed at prominent vistas and highly-visible locations.

Wayfinding Signage guides users into and improves navigation throughout the Eco-Campus.

Site amenities play a fundamental role in tying the sum of all components into one intentional collection. Eco-Campus brand standards will be determined prior to implementation.

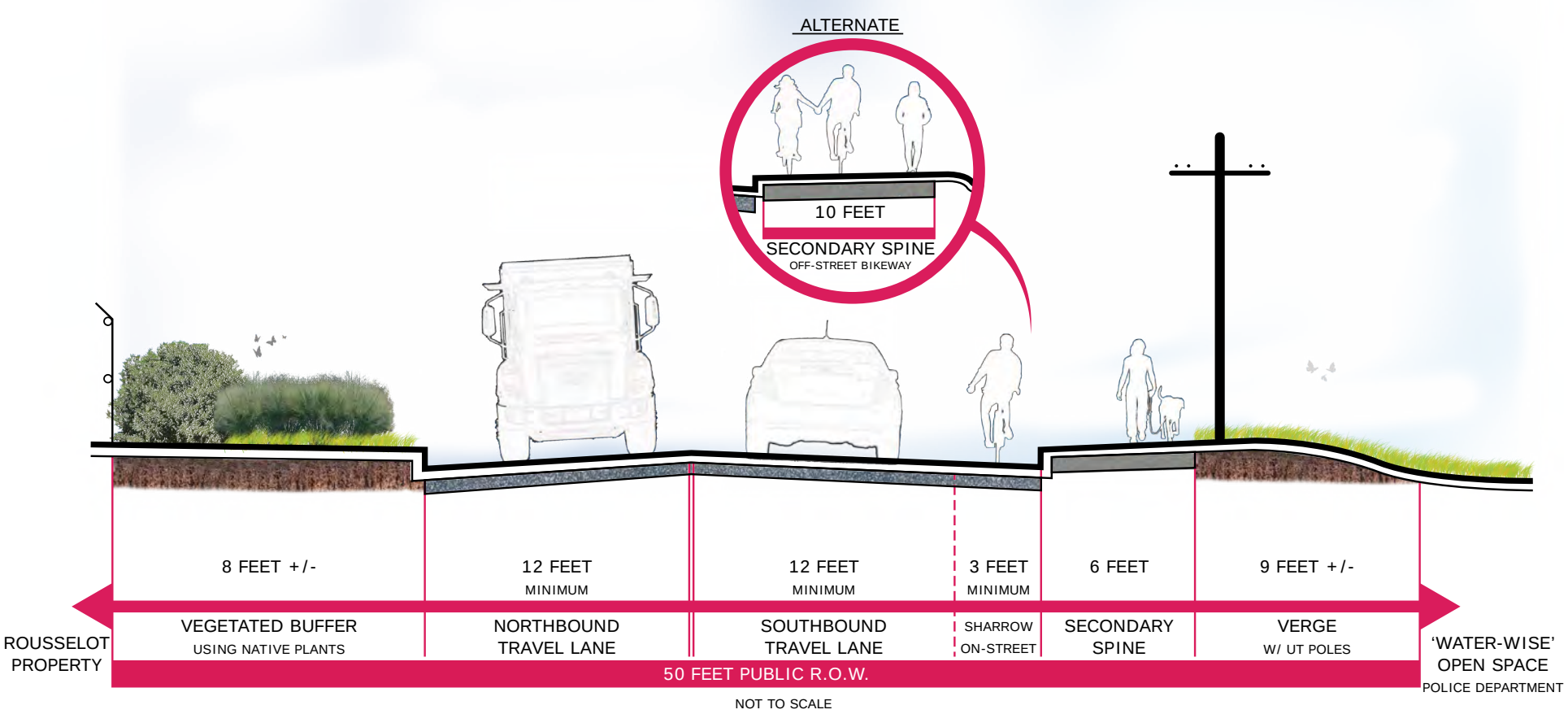
CAMPUS MAP
CREDIT: HWG

INTERPRETATIVE SIGNAGE
CREDIT: HWG



BRANDED SIGN FAMILY
CREDIT: Favermann Design

ALLENS LANE AT THE PEABODY POLICE DEPARTMENT

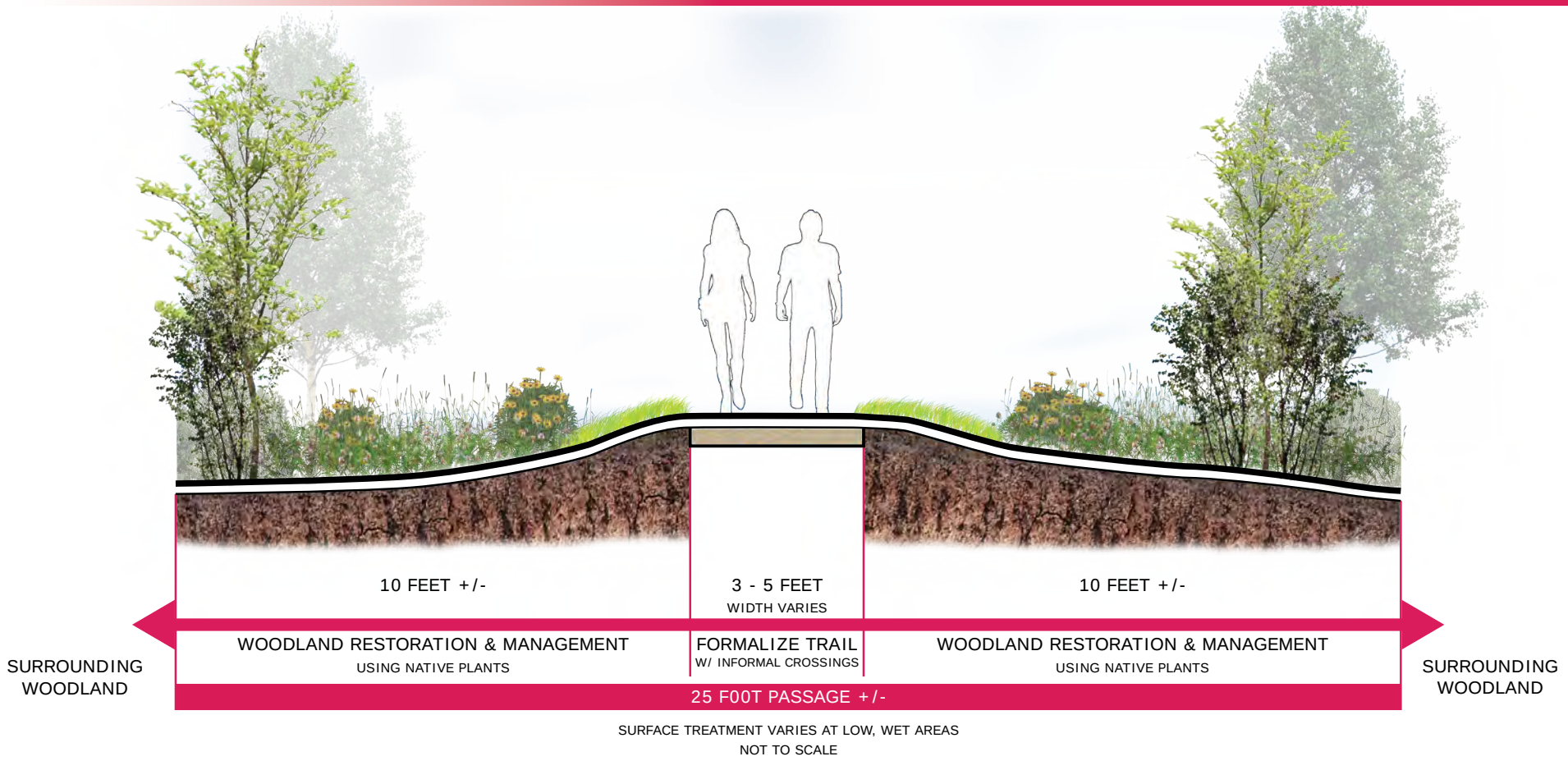


The proposed design illustrates two alternatives. Consistent with both is the relocation of the eastern curb-line adjacent to the Rousselot Property.

- A **road diet** is proposed to decrease the width of both travel lanes for traffic calming benefits.
- A low-maintenance vegetated buffer will soften the nearby industrial uses and increase **biodiversity** within the Eco-Campus.
- One alternative presents an **on-street bike sharrow** to reduce project costs by maintaining the western curb-line in its present location.
- The second alternative relocates the western curb-line to provide a 10 foot wide, **off-street bikeway** which will connect to Emerson Park.
- A **water-wise park** is proposed adjacent to the police station at an existing low-point to expand floodplain storage and wildlife habitat.

With respect to existing utilities, overhead wires exist on both sides of Allens Lane. Fire hydrants are present along the eastern curb-line and drainage infrastructure exists along the corridor. The impacts, cost and proper relocation of all utilities will need to be further investigated prior to implementation.

NATURE TRAIL NETWORK



The proposed design illustrates the ideal conditions for the network of nature trails.

- Maintain a consistent, firm and slip-resistant surface material for **accessibility**, uniform aesthetics and transferable maintenance routines.
- Slightly elevating the trail promotes **positive drainage** and will avoid frequent repairs/erosion.
- The management of natural ecosystems **improves wildlife habitat** and reduces the spread of invasive plants.

Due to existing slope gradients, geomorphic landforms and the on-going maintenance costs associated with an extensive trail network, including the formalization of all nature trail segments for universal access will not be feasible. As improvements to the nature trail network are considered, a hierarchy of priority and feasibility should be determined up-front. Universal access will need to be further assessed for disturbance and cost-efficiencies.

PROGRAM RECOMMENDATIONS

OPPORTUNITIES	BRAND LOCATION	BRIEF DESCRIPTION
COMMUNITY GATHERING		
Sporting Event / Tournament	Emerson Heights & Scouting Woods	Improving connectivity within the Eco-Campus to existing amenities, such as Baseball, Basketball, and Frisbee Golf among others
Arts & Music Festival	Emerson Heights	A bandstand is proposed within Emerson Park as a stage for music, dance and good-ol' family fun.
Weekly Summer Food Trucks	Emerson Heights	Permits for local food truck vendors near the central hub proposed within James Street Park.
James Street Block Party	Emerson Heights	Closing off James Street to car traffic once in a while allows James Street to become part of the park.
Community Garden	School Loop	Aligned with the Eco-Campus theme, a community garden initiative could be sited near Higgins School.
COMMUNITY EDUCATION		
Nature Walks / Eco-Tour	Campus-Wide	Start or join a community guided group to tour the Eco-Campus as it evolves over time.
Outdoor Classrooms	School Loop	Students love to learn outdoors about the great outdoors.
Interpretive Signage	Campus-Wide	Raise awareness on-site with graphics and thought-provoking narratives.
Historical Timeline	Heritage Trail	A sequential timeline of Peabody's History formed into the Heritage Trail on Allens Lane.
COMMUNITY ENGAGEMENT		
Donor Recognition	Campus-Wide/ Scouting Woods	Get your family name etched into the future spine network or Scouting Woods Boardwalk!
Adopt-a-Spot	Campus-Wide	Native plantings would love to be cared for by local residents. Peabody Parks and Recreation Department would love it too!
Public Art	Campus-Wide	High-visibility locations are always better with public art.

PASSIVE OPEN SPACE
CREDIT: Dan Cutrona

PART 5. IMPLEMENTATION

INTRODUCTION

This section outlines the implementation process through design development, funding and construction. A Plan Manager will need to be identified by the City.

Before construction, the connectivity plan will need to be adopted by the city. Furthermore, the City must establish an Eco-Campus brand. Certain elements, such as signage can be implemented more quickly, while more sensitive components like the James Street Park Schematic Design will require design development and value engineering to meet project budget and goals.

Incremental capitol improvements, independent fundraising, donations, and community buzz are critical throughout the implementation process. The City might consider an overlay district to regulate the Eco-Campus brand through prescribed sign styles, color coordination, and native landscape requirements.

As the Plan moves forward, sustainable maintenance costs and care practices need to be established to prepare for future additions to the Eco-Campus. Securing funding sources, setting budgetary targets and responsible parties for maintenance and repairs should be well defined prior to implementation. Care costs and commitments should be per-coordinated to reduce resource inputs and strive for low-to-know maintenance landscapes.

Know-Maintenance

Understanding what is proposed prior to implementation is critical to properly forecast potential upkeep needs which will either be handled internally or externally by an outside sub-contractor. The City of Peabody should establish expectations for what types of maintenance can be tackled in-house and which forms of care are only feasible through sub-contracting. Designing with maintenance in mind can eliminate unforeseen burdens.

The City of Peabody should set measurable goals, such as:

- Cap sub-contracted maintenance work within the Eco-Campus to _**%**.
- Document in-house maintenance within the Eco-Campus __ times.
- Reduce irrigation by using __**%** of drought tolerant, native plants.
- Incorporate porous pavement for __**%** of all new hardscapes.
- Plant __ new street trees by **20**__**.**

Setting measurable goals is an important step before, during and after implementation. Measurable goals are imperative as a reference to preserve the initial vision while also assessing the changing reality of construction.

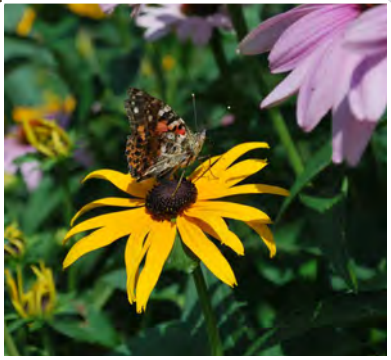
Measurable goals also help to evaluate success. Goals should be adaptable and periodically updated throughout implementation of the Eco-Campus to prioritize project elements, expectations and fiscal limits.












IMPLEMENTATION PROCESS
CREDIT: HWG

PRIORITY PROJECTS

LOCATION	BRIEF DESCRIPTION
INTERNAL IMPROVEMENTS	
James Street Park	Incorporates a table-top crosswalk, artful painted pavement, central hub, a network of walking trails and a new splash garden.
Perkins Complete Street	Proposes a road diet, pedestrian refuge islands, sidewalk bumpouts, additional street trees and the Eco-Campus gateway.
Spine Network	Proposes a distinguishable and continuous thread linking the furthest points of interest within the Eco-Campus.
Scouting Woods Boardwalk	Shown in section on Page 24, an accessible boardwalk crossing is proposed to connect Scouting Woods to the Higgins School.
'Water-Wise' Open Space	Alluded to in section on Page 22, a multi-service landscape space could improve habitat value and stormwater management.
Land Management & Restoration	Includes invasive species removal, native plant re-establishment and on-going monitoring/management.
EXTERNAL IMPROVEMENTS	
Sidewalk on Summit Street	Proposes a new, continuous sidewalk along Summit Street connecting Scouting Woods north/south.
Irving Street to King Street	General cleanup is recommended to create a more inviting, visible and safe connection.
Chestnut Street to Franklin Street	Enhance and formalize the most desirable pedestrian connection from downtown Peabody to the Eco-Campus.
POTENTIAL EASEMENTS	
George Peabody House Museums	To provide access from Washington Street, along Goldthwait Brook to the down-gradient portion of Emerson Park.
Rousselot Property	To provide access west off Allens Lane to the nature trails connecting up to Higgins School.

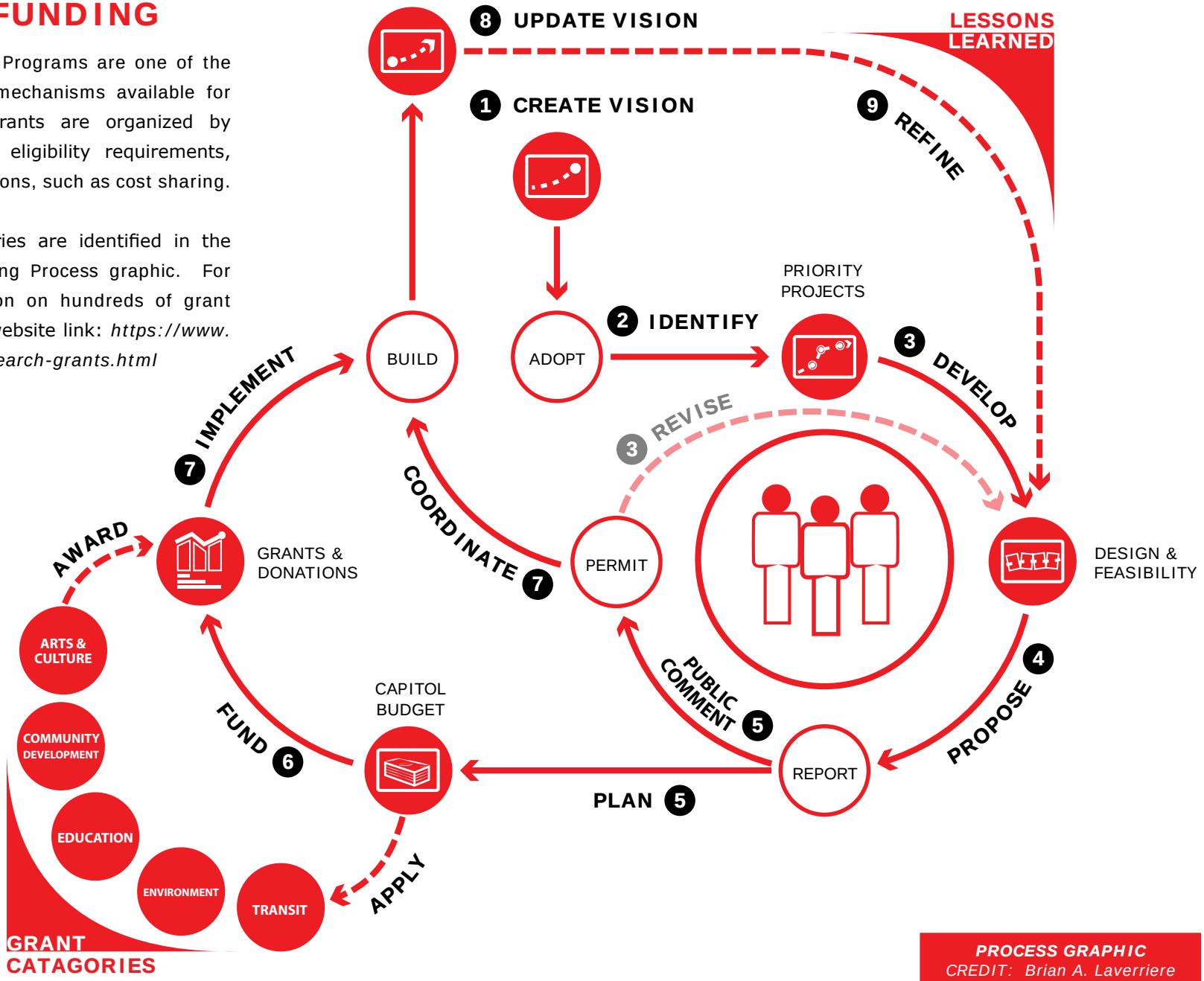
Listed above are potential improvement opportunities.

With the support of private property owners, the Eco-Campus can become much more than a connected pass-thru.

GRANT FUNDING

Federal and State Grant Programs are one of the most common funding mechanisms available for public municipalities. Grants are organized by category which identify eligibility requirements, timing and special conditions, such as cost sharing.

Applicable grant categories are identified in the Implementation & Funding Process graphic. For more detailed information on hundreds of grant opportunities, visit this website link: *https://www.grants.gov/web/grants/search-grants.html*



PROCESS GRAPHIC
CREDIT: Brian A. Laverriere

PERKINS COMPLETE STREET | Schematic Design

Perkins Street is the perfect candidate to implement the complete street concept. An additional 1,000 linear feet of accessible pathways are proposed throughout Emerson Park. An off-street wide-walk better accommodates pedestrian circulation, ensures public safety and vibrant placemaking at Emerson park.

STREET IMPROVEMENTS

Sense of Place on Perkins Street is an extension of its park-like surroundings. The central location and surrounding neighborhoods make driving and walking down Perkins Street a delightful experience. Completing Perkins Street will be a tremendous asset to the Eco-Campus and the City at large.

Pedestrian Priority on Perkins Street is currently shadowed by the automobile. At the expense of public safety, excessively wide travel lanes encourage freeway-like speeds. The Perkins Complete Street, Schematic Design introduces a road diet, pedestrian refuge islands and bump-out islands to further define areas for on-street parking. The design will improve access and public safety.

CENTER MEDIAN WITH STREET LIGHTS
CREDIT: RJ Grondin & Sons

POROUS ON-STREET PARKING
CREDIT: Mutual Materials - Westmoreland

RAISED CROSSWALK
CREDIT: HWG

PEDESTRIAN REFUGE
CREDIT: WalkFirst

SIDEWALK BUMPOUT
CREDIT: The Mankato Free Press

JAMES STREET PARK | Schematic Design

James Street Park is situated at the center of the Eco-Campus and has been identified as the optimum location for a Central Hub.

The location also offers the potential to enhance off-street connectivity and increase active and passive park uses.

PARK IMPROVEMENTS

Central Hub is proposed at James Street Park which represents one of the best placemaking opportunities at the intersection of James Street and Perkins Street. As illustrated in the Schematic Design and precedent photos, the intent is to create a campus center. A painted, raised "table-top" crosswalk is proposed which gives priority to the pedestrian. The proposal includes a splash garden and changes James Street to one-way traffic.

Accessible nature trails are proposed to improve pedestrian connectivity from the Higgins Middle School to the Central Hub. The goal is to redirect foot traffic off-street and construct an accessible walkway connecting the central hub to the school.

PAINTED PAVEMENT (CROSSWALK)
CREDIT: Rafael Perez Martinez

ACCESSIBLE FOOT PATH
CREDIT: HWG

CENTRAL HUB (POROUS PLAZA)
CREDIT: HWG

STORMWATER AREA (BIORETENTION)
CREDIT: HWG

POLLINATOR MEADOWS
CREDIT: HWG

PERKINS COMPLETE STREET | 10% Opinion of Cost

CATEGORY	TOTAL COST
SITE CLEARING & PREPARATION	
	$30,000
SITE IMPROVEMENTS	
	$800,000
LANDSCAPE IMPROVEMENTS	
	$50,000
3-YEAR MAINTENANCE & MANAGEMENT	
	$25,000

ESTIMATED CONSTRUCTION COST	
Design Development & Permitting @ 10%	$91,000
Contingency @ 30%	$272,000
Total Construction & Maintenance Costs	**$1,268,000**

List of Assumptions:

Unit Prices Listed are in 2019 Dollars. Quantities are Approximate only and based on the 10% Schematic Design. 10% Opinion of Probable Cost is included for Planning Purposes only. All Total Cost Numbers are Rounded Up for Simplicity.

Costs for Design Elements included within the Bid Package Titled: Perkins Street Complete Street, Produced by: WorldTech Engineering, Dated: April 2019 are not included. Minor Costs Duplication may be included as a result of Project Overlap. Costs for Police Detail, Utility Coordination, Relocation and Replacement are not included.

JAMES STREET PARK | 10% Opinion of Cost

ITEM	TOTAL COST
SITE CLEARING & PREPARATION	
	$235,500
SITE IMPROVEMENTS	
	$690,000
LANDSCAPE IMPROVEMENTS	
	$120,000
LONG-TERM MAINTENANCE & MANAGEMENT	
	$57,000

TOTAL CONSTRUCTION COST	
Design Development & Permitting @ 10%	$110,500
Contingency @ 30%	$330,500
Total Construction & Maintenance Costs	**$1,550,000**

List of Assumptions:

Unit Prices Listed are in 2019 Dollars. Quantities are Approximate only and based on the 10% Schematic Design. 10% Opinion of Probable Cost is included for Planning Purposes only. All Total Cost Numbers are Rounded Up for Simplicity.

ITEM	UNIT	UNIT COST
ELEMENT		
6 Foot Typical Park Bench	EACH	$2,200
Typical Bike Rack	EACH	$1,250
Wayfinding Signage	EACH	$1,500
Interpretive Signage	EACH	$2,000
Eco-Campus Gateway	ALLOWANCE	$5,000
Major Gateway Node	ALLOWANCE	$1,000
Minor Gateway Node	ALLOWANCE	$500
Trail Transition	EACH	$2,500
Accessible Boardwalk	LINEAR FOOT	$750
Accessible Ramp	EACH	$1,500
Asphalt Walkway	SQUARE FOOT	$5
Concrete Walkway	SQUARE FOOT	$9
Stabilized Stonedust	SQUARE FOOT	$11
Polymerized Porous Pavement	SQUARE FOOT	$14
Invasive Species Management	SQUARE FOOT	$2 - $4
Street Tree Planting (3” Caliper)	EACH	$1,800
Typical Shrub Planting (3 - 4 Feet)	EACH	$75
Typical Perennial (#1 Gallon Container)	EACH	$20

Unit Prices Listed are in 2019 Dollars and generated from the Weighted Average Book distributed annually by MADOT where information is available.

Cost for Signage reflects fabrication and installation. Graphic Design/Brand Identity for Site Amenities is not included.

Quantities are not included pending Design Development for individual spaces.

ACCESSIBLE CONNECTIONS
CREDIT: Dan Cutrona

APPENDIX A

RECOMMENDED PLANT PALETTE
(AS OF JANUARY 2020)

RECOMMENDED PLANT PALETTE

Below are reliable, long-lived perennials to be used in concert throughout the eco-recreational campus.

MATRIX PLANTS

Definition: when one or a limited number of plants are used in mass to a degree with which individual species are lost amongst the visual dominance of the entire group.

Feather Reed Grass (Matrix)

Prairie Dropseed (Matrix)

Purple Lovegrass (Matrix)

INTENTIONAL EDGE PLANTS

Definition: bunch forming perennials selected for strong structure and predictable regeneration in size and space year after year.

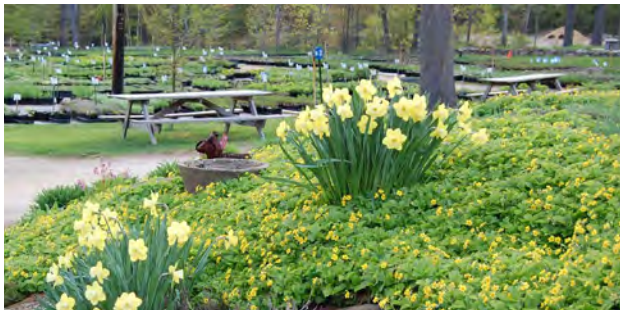
Catmint (Edge)

Stonecrop (Edge)

Lady's Mantle (Edge)

GROUNDCOVER PLANTS

Definition: used as a living mulch, groundcover plants are meant to be spaced at a specific density as such that the group will form a carpet within 3 years.



Barren Strawberry (Groundcover)

Lily Turf (Groundcover)

Bloody Cranesbill (Groundcover)

LOW-MOW MEADOW

General Maintenance Guidelines

MEADOW MAINTENANCE		
TASK	**FREQUENCY**	**TIME OF YEAR**
YEARS 1 - 3 (AFTER INSTALL)		
Seeding. Loam and seed/reseed all areas within the prescribed landscape style. See Figure 1 and specified seed mixes.	During install and as needed to restore bare spots.	May or September
Fertilizing. Not required.	N/A	N/A
Monitoring. Walk all areas without the intent to conduct maintenance, but to observe and identify problems, such as: invasive plants, bare spots, potential pests/disease. Document and report all problems.	Once per month throughout the growing season.	May - October
Weeding. Remove all plants not listed within the specified seed mix. When in doubt, remove plants that are exceeding a mature height of 4 feet to ensure the desired plants are not overwhelmed. Non-chemical methods (hand-pulling and hoeing) are preferable; remove and dispose biomass properly.	Once per month throughout the growing season.	May - October
Watering. During drought conditions and throughout seed germination and establishment. Seeded areas are to be watered a minimum of twice per week.	As Required.	May - October
Mowing. Set blade height to a minimum length of 3 inches. Shear meadow prior to mowing as needed. Do not bag grass clippings, instead mulch clippings in place to reduce waste disposal.	Twice per year.	June and October
Debris / Trash Removal. Remove trash and debris from the focus area.	Once per month and after significant storm events.	March - November

Typical Low-Mow Meadow

Harmony Seed Mix

Meadow Sage (Edge)

Purple Coneflower (Edge)

Barren Strawberry (Groundcover)

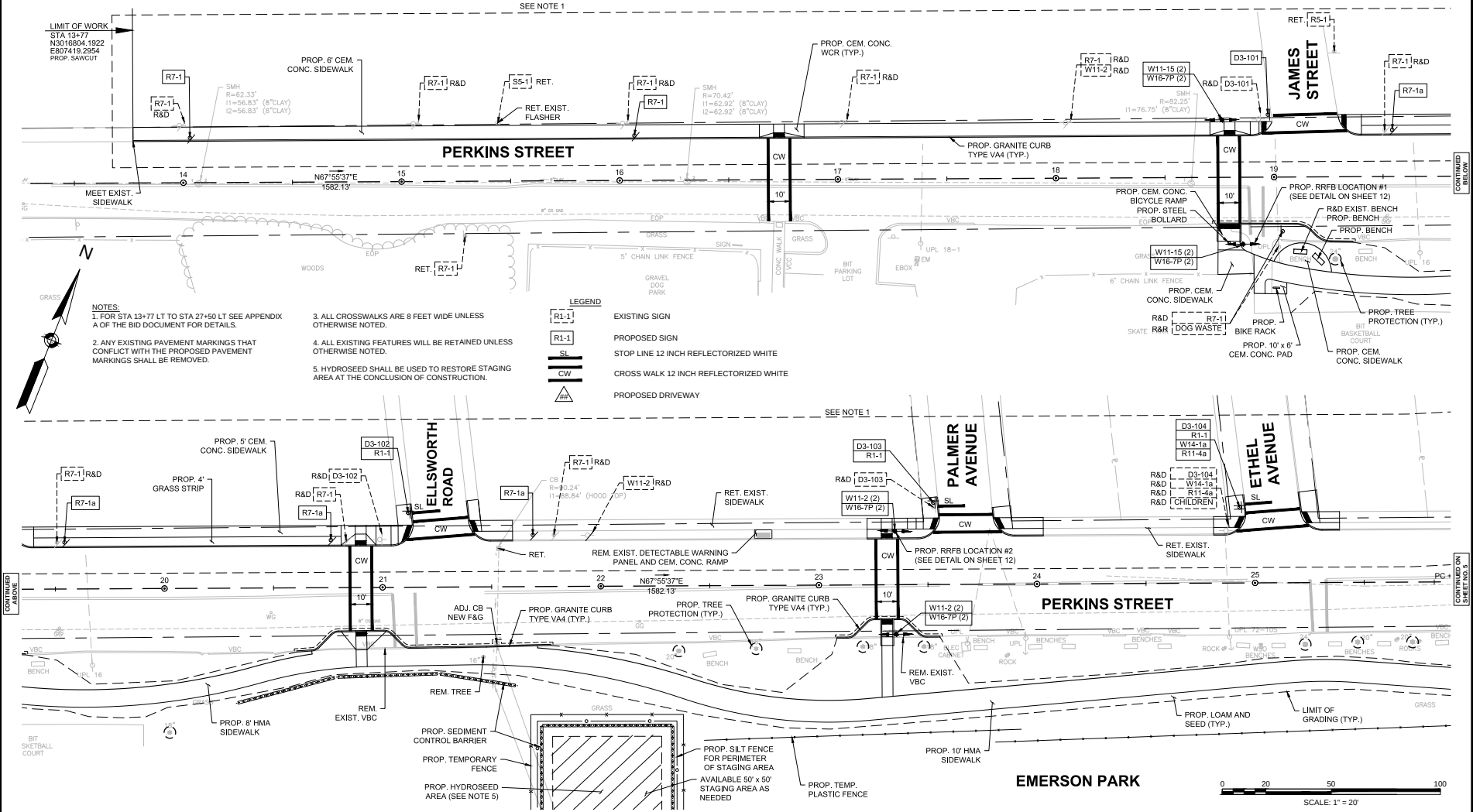
BLOCK PLANTINGS

General Maintenance Guidelines

PLANT MAINTENANCE		
TASK	**FREQUENCY**	**TIME OF YEAR**
YEARS 1 - 3 (AFTER INSTALL)		
Mulching. Apply non-dyed, hardwood bark mulch at a consistent depth of 3".	Once per year, until plants fill out and mulch is no longer required.	April or May
Fertilizing. Not required.	N/A	N/A
Monitoring. Walk all areas without the intent to conduct maintenance, but to observe and identify problems, such as: invasive plants, bare spots, potential pests/disease.	Once per month throughout the growing season.	May - October
Weeding. Remove all plants not listed within the plant palette section. When in doubt, shear/thin plants to ensure the desired plants are not overwhelmed. Non-chemical methods (hand-pulling and hoeing) are preferable; remove and dispose biomass properly.	Twice per month throughout the growing season.	May - October
Watering. Planted areas are to be watered a minimum of twice per week during drought conditions and throughout establishment.	As Required.	May - October
Plant Replacement. Plants in decline or deceased are to be replaced in a timely manner at the same size and species as the original planting. Coordinate with owner.	As Required.	May or September
Plant Cutting / Thinning. Block Planting areas are not to be mowed. Shear biomass down to a height of 3". Remove and dispose of all biomass in a pre-approved location.	Once per year.	November
Debris / Trash Removal. Remove trash and debris from the focus area.	Once per month and after significant storm events.	March - November

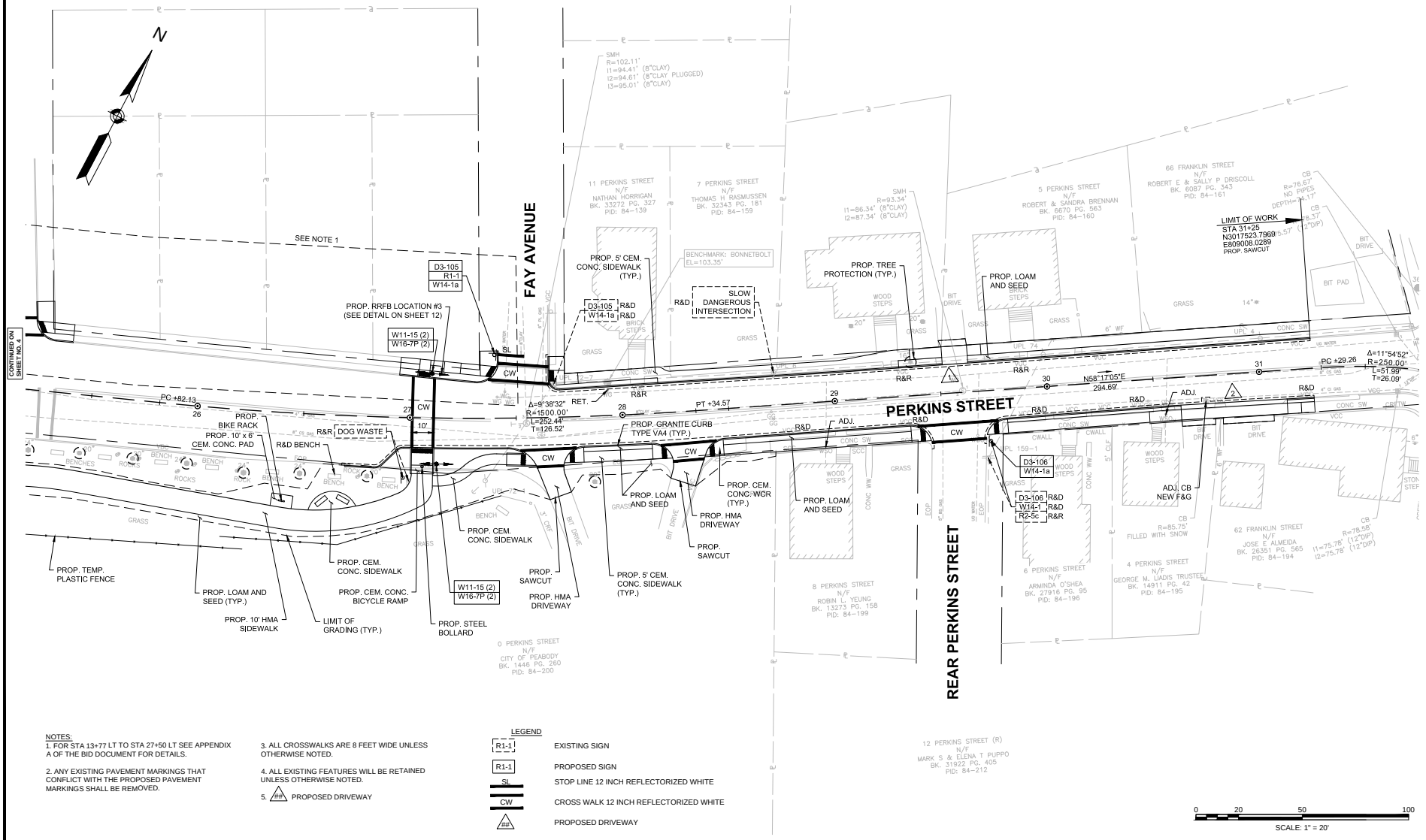
APPENDIX B

PERKINS COMPLETE STREET (AS OF JANUARY 2020)



CLIENT: CITY OF PEABODY DEPARTMENT OF PUBLIC SERVICES, 24 LOWELL STREET, PEABODY, MA 01960, PHONE: 978-536-7126	PROJECT: PERKINS STREET COMPLETE STREETS PROJECT, PEABODY, MA	PREPARED BY: WORLDTECH ENGINEERING, 300 TRADECENTER, SUITE 5580, WOBURN, MA 01801, T: 781-933-4800, F: 781-933-4801	PROFESSIONAL CIVIL ENGINEER FOR WORLDTECH ENGINEERING, LLC	NO. / DATE / REVISION	SCALE: 1" = 20'; DATE: JANUARY 2020; WTE PROJ. NO: 18-011.04; DESIGNED BY: KMC; CHECKED BY: TFQ	DRAWING TITLE: GENERAL PLANS SHEET 1 OF 2 / SHEET NO. 4 OF 13

PLANS BY WORLDTECH, NOT TO SCALE



NOTES:
1. FOR STA 13+77 LT TO STA 27+50 LT SEE APPENDIX A OF THE BID DOCUMENT FOR DETAILS.
2. ANY EXISTING PAVEMENT MARKINGS THAT CONFLICT WITH THE PROPOSED PAVEMENT MARKINGS SHALL BE REMOVED.
3. ALL CROSSWALKS ARE 8 FEET WIDE UNLESS OTHERWISE NOTED.
4. ALL EXISTING FEATURES WILL BE RETAINED UNLESS OTHERWISE NOTED.
5. ## PROPOSED DRIVEWAY

LEGEND
- R1-1 — EXISTING SIGN
- R1-1 — PROPOSED SIGN
- SL — STOP LINE 12 INCH REFLECTORIZED WHITE
- CW — CROSS WALK 12 INCH REFLECTORIZED WHITE
- ## — PROPOSED DRIVEWAY

0 20 50 100
SCALE: 1" = 20'

CLIENT:
CITY OF PEABODY
DEPARTMENT OF PUBLIC SERVICES
24 LOWELL STREET
PEABODY, MA 01960
PHONE: 978-536-7126

PROJECT:
PERKINS STREET
COMPLETE STREETS PROJECT
PEABODY, MA

PREPARED BY:
WORLDTECH ENGINEERING
300 TRADECENTER, SUITE 5580
WOBURN, MA 01801
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F: 781-933-4801

PROFESSIONAL CIVIL ENGINEER FOR WORLDTECH ENGINEERING, LLC

NO.	DATE	REVISION

SCALE:	1" = 20'
DATE:	JANUARY 2020
WTE PROJ. NO:	18-011.04
DESIGNED BY:	KMC
CHECKED BY:	TFQ

DRAWING TITLE:
GENERAL PLANS
SHEET 2 OF 2

SHEET NO.
5 OF 13

PLANS BY WORLDTECH, NOT TO SCALE