MEMORANDUM

TO: Stephen Schneider, Arnold Arboretum  
FROM: Jennifer Relstab, P.E. and Hannah Carlson, RLA  
RE: Roslindale Gateway Path 25% Conceptual Plan  
CC: Draft Brian Kucharski, RLA, P.E.

The Horsley Witten Group, Inc. (HW) is providing this memorandum to summarize the design elements of the draft 25% conceptual plan for the Roslindale Gateway Path in Roslindale, MA. The draft 25% conceptual plan incorporates revisions to the 10% design concept based on the following:

- Detailed review of surveyed topography and proposed grading;
- Recommendations suggested by project partners and stakeholders at the project kickoff meeting;
- Information provided by the City of Boston regarding the South Street and Bussey Street intersection; and
- Input from the Arnold Arboretum regarding potential impacts to vegetation and trees.

The draft 25% conceptual plan as well as additional relevant information is provided as attachments to this memorandum as noted herein.

Background

This project is a continuation of design work completed by HW for the Arboretum Park Conservancy and WalkUP Roslindale for a multi-use path that connects residents and commuters from the Forest Hills Massachusetts Bay Transportation Authority (MBTA) station to the Roslindale Village MBTA commuter rail station (HW, 2016; HW, 2017). The purpose of this project is to: merge the two previous path designs into one continuous path; advance design and alignment of the path; and examine connectivity and wayfinding for both cyclists and pedestrians. Also included in this project is a limited survey of a portion of the Arnold Arboretum (an approximately 30-ft wide segment along the proposed path) which was completed on November 9, 2017. The survey work included site topography, existing pathways, drainage infrastructure, utilities, walls and other key natural and man-made features.

Summary of Existing Conditions

A locus map showing the overall project area is provided in Attachment A, Figure A.1. There are three major sections within the Roslindale Gateway Path that have been defined through previous projects:
• **Section 1: MBTA** – This section extends from the northeastern edge of the existing platform at the Roslindale Village MBTA commuter rail station to the existing stone wall that abuts the Arnold Arboretum property. This parcel is currently owned by the MBTA.

• **Section 2: Peters Hill** – This section is within the Arnold Arboretum Peters Hill area, located east of the MBTA property and west of South Street. This section ends at the Poplar Gate.

• **Section 3: Blackwell Path Extension** – This section is between Poplar Gate and the Blackwell Footpath at Bussey Brook Meadow Gate. A portion of this path is adjacent to the Bussey Brook Meadow.

Each section abuts the MBTA railroad bed to the South and is defined by unique physical characteristics which are summarized briefly below. A more detailed description will be provided in the final report.

**Section 1: MBTA**
The MBTA parcel is wooded with flat topography (<5% slope) near the tracks and a steep hillside (>20% slope) to the north and east. Based on National Resource Conservation Service (NRCS) data, soils in this area are primarily in hydrologic soil group (HSG) B and have a moderate infiltration capacity. During the survey, depressed wet areas were identified, along with several large diameter trees (> 24") of various species. A stone wall, which extends to Arborough Road, defines the eastern boundary of this parcel.

**Section 2: Peters Hill**
The western portion of this section of Peters Hill is characterized by open, grassed areas with flat topography, which transitions to a moderate slope (5 to 10%) in the wooded area. In the eastern portion, closer to South Street and Bussey Street, the terrain is varied with a steep hillside approaching the South Street underpass. The NRCS soils in this area are generally HSG A, indicating a high infiltration capacity, though it is understood that soil conditions were disturbed during the construction of the railroad bed. This section contains several collections of trees belonging to the Arnold Arboretum, including redwoods (*Metasequoia*), poplars, crabapples, oaks, pines and others. An existing drainage swale drains a portion of the area to two 30" diameter culverts that cross under South Street to the south.

**Section 3: Blackwell Path Extension**
The final section has two distinct subsections in either direction of Arboretum Road. Between the South Street underpass and Arboretum Road, the area is largely wooded with wetland species (primarily purple loosestrife) in the valley. There is a large low area situated between the steeply sloping embankment along South Street and the MBTA railroad bed, which is identified on existing plans as a detention basin. An existing footpath traverses the low area. The 30" diameter culverts from the Peters Hill section and a smaller pipe connected to catch basins on South Street discharge into the detention basin. The outlet is a 36" diameter reinforced concrete pipe, which discharges to the Bussey Brook Meadow. Between Arboretum Road and the Bussey Brook Meadow Gate, the area is grassed and open and the topography generally follows road grade and the existing stone wall. The NRCS soils in this area are HSGs A and C.
Summary of Concept

The draft 25% conceptual plan for the Roslindale Gateway Path provides a new 10-foot wide accessible pathway with 2-foot wide shoulders on either side, connecting the Roslindale Village Commuter Rail Station to the Blackwell Footpath. This path design includes the use of the existing Peters Hill Road and connection to Poplar Gate and crosses the road at the intersection of Bussey Street and South Street. There are three new primary gateways onto the path. Secondary gateways and paths provide additional connections for residents in adjacent neighborhoods and visitors to the Arnold Arboretum. The draft plan is provided in Attachment B and is summarized below. The path alignments and profiles are provided in Attachment C. A zoom-in of the section of the alignment where the multi-use path meets Peters Hill Road is provided in Attachment D to highlight the impacts to poplar trees (*Populus*). Additional information on materials is provided in the last section of this memorandum with supplemental precedent images provided in Attachment E.

Section 1: MBTA

*Gateways and Path Alignment*
A proposed primary gateway entrance to the Roslindale Gateway Path is located where the existing platform abuts the MBTA parcel and the commuter rail right-of-way. The path alignment follows the shallow slope of the existing grade and gently meanders around existing large diameter trees, helping to reduce speed. From the commuter rail platform, the path is relatively straight to allow users to maintain sight lines. The path follows grade, except where slopes are greater than 20% at the connection to the Arnold Arboretum property. In this portion, a boardwalk is recommended to maintain accessibility and continue the gently curving path without disturbing a large area with earthwork and tree removal. Stormwater management features, such as bioretention areas, are recommended to manage runoff from the surrounding area as well as the path.

A secondary gateway is proposed at the stone wall along the MBTA and Arnold Arboretum property line. This gateway reuses the existing stone wall by creating a gap for the pathway to cut through the wall, similar to the entrance into Arnold Arboretum at Arborough Road. This gateway marks the entrance into Arnold Arboretum and the change of the landscape from wooded to open meadow.

*Potential Impacts to Landscape*
This alignment reduces disturbance to existing vegetation and habitat and is in keeping with the goals of the Urban Wilds Initiative, a potential opportunity suggested by the stakeholders. It also encourages management of overgrown understory and cleanup of debris and trash that has accumulated in the area. As shown, the alignment will impact most trees in the vicinity with calipers below 12” in diameter, but several of the larger diameter trees (> 18”) should not be impacted.

*Site Amenities*
Wayfinding signage is recommended at the gateway to orient path users and to identify the entrance into Arnold Arboretum. Path lighting is not recommended in this section, which corresponds with the Arnold Arboretum’s policy on lighting within their property. However, in-grade textured surface materials or reflective materials (on or along the path or on the boardwalk) can be used as indicators to key path changes (e.g., approaching the boardwalk).
Materials
The recommended path material in this section is stabilized soil, which provides a more natural appearance in this heavily wooded area. The boardwalk decking material and railings are recommended to be of ipe wood with helical piles providing support. This gateway is recommended to have two “shoulder-height” stone columns flanking the entrance with signage naming the entrance, similar in appearance and height to the Bussey Street and Peters Hill gates. These would visually indicate that it is an entrance to Arnold Arboretum while maintaining sight lines from the MBTA commuter rail station down the path and vice versa.

Section 2: Peters Hill

Gateways and Path Alignment
On the northeast side of the proposed secondary gateway, where the wooded MBTA section opens up into Arnold Arboretum, a secondary pathway connects from the primary path up the hill to Arborough Road and the Mendum Street gateway. The primary path alignment continues into Arnold Arboretum from the stone wall and sweeps through the existing meadow towards the stand of oaks and then curves towards the stand of dawn redwoods (Metasequoia), offering closer views and interactions with the botanical landscape. The meander also encourages reduced speeds for bicyclists as they travel to and from the boardwalk on the MBTA property. To discourage visitors from continuing to use the existing desire line, a small berm with additional meadow plantings would be added.

The path turns uphill through existing collections of mainly crabapples (Malus) to meet with Peters Hill Road. Similar to Section 1, the path generally follows existing grade except in the area of an existing shallow swale and at Peters Hill Road (where grades are greater than 5%). To discourage visitors from using the existing swale without adding fill and without extensive grading or walls, a low profile bridge or boardwalk is shown on the plans. This crossing allows water to pass under it and creates a simple, attractive feature in the landscape. For safety, the crossing requires a toe curb.

The path meets Peters Hill Road south of the intersection and continues onto the access road leading to Poplar Gate. This junction avoids the disturbance of the majority of the poplar collection on the hill leading towards Poplar Gate. However, at least one poplar, as well as approximately 20 other trees and shrubs in the vicinity, will need to be removed to make this accommodation. The alignment ties into the road at an angle that allows for open sight lines and safe turning radii for bicyclists. The use of the existing road reduces the amount of “hardscaping” and allows room for other types of uses. The section of the path at the intersection with Peters Hill Road is steep; therefore, the path is graded out to create a more level “landing” off of the loop road.

From Peters Hill Road, the path follows the existing asphalt path to Poplar Gate at the intersection of Bussey and South Streets. Pathway markings are recommended on the existing road either with paint or in-grade materials such as granite cobbles.

A bump-out is currently proposed at the entrance to Poplar Gate based on plans provided by City of Boston’s Public Works Department (City of Boston, 2017) which would be hardscaped with concrete similar to sidewalks in the area.

A secondary path connection mostly follows existing footpaths and connects the South Street underpass to the existing access road near Poplar Gate. The existing entrance into Arnold Arboretum from the South Street underpass is recommended to be formalized with a small accessible ramp to create a safer and more visible access point to Peters Hill. In the future, a
new pedestrian crossing is recommended along the curve of South Street in a location to be vetted to meet safety and traffic requirements.

**Potential Impacts to Landscape**
The existing footpath which runs parallel to the railroad tracks will likely be impacted through added grading and/or landscaping to encourage pedestrians to use the proposed path. The path and grading appears to impact existing trees as it connects to Peters Hill Road, including:

- 1 poplar (*Populus*)
- 8 crabtrees (*Malus*)
- 3 fir (*Abies*)
- 2 spruce (*Picea*)
- Others: mountain ash (*Sorbus*), lilac (*Syringa*), hawthorns (*Crataegus*), and honeysuckle (*Lonicera*).

It should also be noted that other footpaths may be interrupted with this alignment.

**Site Amenities**
Wayfinding signage is recommended by the stone wall at the MBTA/Arnold Arboretum property line to orient users coming from Arborough Road and Peters Hill and entering/exiting the MBTA property. Pavement markings or in-grade materials provide direction and show visitors where to continue on the path from the existing road at the junction. Wayfinding signage at the enhanced secondary entrance by the South Street underpass directs visitors to various places within Arnold Arboretum as well as to the primary path and transportation hubs. Interpretive signage is recommended at the location of the dawn redwoods (*Metasequoias*) for an education and outreach opportunity for Arnold Arboretum.

No visible lighting is recommended in this section, which corresponds with Arnold Arboretum’s policy on lighting within their property. However, reflective materials (on or along the path) and/or in-grade materials can be used as indicators to key path changes.

**Materials**
The recommended path material in this section is stabilized soil, which provides a more natural appearance, as preferred by Arnold Arboretum. The swale crossing material and toe curb would be made of ipe wood. The enhanced secondary gateway would use granite blocks to formalize steps into Arnold Arboretum and a tilted or cut granite block is recommended to provide a ramp. Alternatively, a small bike ramp could also be attached.

**Section 3: Blackwell Path Extension**

**Gateways and Path Alignment**
A bump-out is currently being proposed at the intersection opposite Poplar Gate by the City of Boston’s Public Works Department (City of Boston, 2017). The bump-out is shown in this concept as well, which promotes traffic calming and creates a safer crosswalk to Poplar Gate. A primary gateway would be added across South Street from Poplar Gate which would lead users onto the new section of pathway and tie together the old entrance and the new one. The existing stone wall would be extended into the bump out and connect to the new gateway, creating a similar appearance to other Arnold Arboretum gateways. A hardscaped area in the bump out is proposed to ensure open sight lines at the intersection; to create a safe place for users to wait before they cross the street; and to enhance the aesthetics and view of the new gateway. The new gateway would be similar in appearance to the Bussey Brook Meadow gate with an opening for pedestrians and another for maintenance vehicles. Stormwater
management features (bioretention areas) would be included to capture and treat stormwater runoff and enhance aesthetics at the gateway.

There are two paths proposed: 1) a path to the South Street underpass and 2) a path to the existing Blackwell Path. The path to the underpass would follow grade close to the existing stone wall. The path leads users to the location of the future pedestrian crossing to Peters Hill and extends to a break in the existing wall to the proposed sidewalk extension, connecting users to Archdale Road. The path connecting to the Blackwell path would follow along the grade of South Street with a boardwalk, meeting existing grades near the Arboretum Road underpass. A lookout platform off of the boardwalk provides a place to rest as well as views into the detention basin below. Interpretive signage is recommended at the lookout for an education and outreach opportunity for Arnold Arboretum. The path continues at grade until it meets with the existing Blackwell Path at the Bussey Brook Meadow Gate.

A primary gateway at the Arboretum Road underpass is proposed to provide an accessible connection for residents to Arnold Arboretum. The gateway would include signage on the wall on the sides of the underpass entrances. Due to the steep slopes (> 10%) between the underpass and the primary path, a stairway with a bike ramp may be necessary.

**Potential Impacts to Landscape**
This path will impact several trees in the wooded area between the primary gate at the intersection of Bussey and South Streets and the South Street underpass. However, the path will open up sight lines for both pedestrians and vehicles, which will improve safety. Limited impacts to the existing landscape are likely for the path to Bussey Brook Meadow Gate as that canopy is relatively open and the path is proposed to follow grade.

Stabilization is currently needed at two outfall points on the slope going down into the detention basin. It is recommended that the slope be restored with an erosion control blanket and vegetation (erosion control mix and plant plugs). If needed, a meandering outfall swale along the hillside could be implemented to further manage and treat stormwater runoff.

**Site Amenities**
Wayfinding signage is recommended at the bump-out to orient users as they approach Poplar Gate and as they continue towards Bussey Brook Meadow. Wayfinding signage is also recommended at the Arboretum Road underpass to orient users to the location of the gateway connections. A look-out platform along the boardwalk is proposed with interpretive signage to educate users about stormwater and/or Bussey Brook Meadow.

No visible lighting is recommended in this section, which corresponds with Arnold Arboretum’s policy on lighting within their property. However, reflective materials (on or along the path) and/or in-grade materials can be used as indicators to key path changes.

**Materials**
The recommended path material to the South Street underpass is stabilized soil, which would allow a more natural appearance in the wooded area and would be more resistant to erosion. The hardscaped landing at the bumpout would be concrete to match typical sidewalk materials in the area. The boardwalk and railings material would be Ipe wood boardwalk. The remaining path between the boardwalk and the Blackwell Path would be a dense grade stone to match the material used along the existing Blackwell Path. It is recommended that the new primary gateway have three “shoulder-height” stone columns with signage naming the entrance, similar in appearance and height to the Bussey Brook Meadow Gate. The existing stone wall would be extended using the same materials.
Review of Materials

**Stabilized Soil**
Stabilized soil with an organic binder is the preferred material for the majority of the path segments. Stabilized soil is recommended for the following characteristics:

- has a natural appearance;
- has smaller aggregate sizes;
- is more firm than dense graded stone;
- uses an organic binder that allows the soil to perform similar to an asphalt path without the use of chemicals; and
- can be installed on slopes up to 8%.

Maintenance of stabilized soil pathways is comparable to other pathway surfaces and generally less than with dense graded stone. Typical maintenance would be small repairs that involve re-wetting and re-compacting of the stabilized soil, or adding small amounts of new material. These repairs are typically less intensive than repairs to asphalt surfacing.

**Dense Graded Stone**
Dense graded stone is preferred for the Blackwell Path Extension up to the Bussey Brook Meadow Gate Path to provide continuity to the existing Blackwell Path. Also, the proposed shallow slopes will discourage rutting and erosion, so a more stabilized material is not needed. Further, there is proven functionality of the Blackwell Path as a natural-looking multi-use path in this area.

**Boardwalk**
Sections of boardwalk will be built from Ipe wood planking which is a very strong, high density hardwood. The wood is rot-resistant and long-lasting, aging to a silver grey color.

**Ramps**
A ramp for accessibility is proposed to enhance access at the formalized existing gateway by the South Street underpass. A tilted or cut rough thermal finish granite stone to match the existing stone wall is proposed. An additional set of stairs and ramp may be required at the Arboretum Road underpass, which could be of a concrete or granite material.

**Surface Markings**
In-grade textured surfacing, pavement markings and reflectors are speed reducing measures and wayfinding options that can help orient both multi-use path users and other visitors to the Arnold Arboretum. Subtle, visual measures as well as textured surfacing highlight the route and areas where the path intersects with others.

**Gateways**
Primary gateways would use the same materials and design of existing gateways into the Arnold Arboretum. Secondary gateways would either be openings in stone walls or steps and ramps up over existing walls. Primary gateways would clearly be entrances into the Arnold Arboretum with the same aesthetic as the existing gateways while secondary gateways would provide clear access through or over walls as the visual boundary of the Arnold Arboretum.

Examples of these materials are shown in *Attachment E*. 
References


Figure A.1
Roslindale Gateway Path

Legend

- Project Area
- MBTA Property (Approx.)
- MBTA Commuter Rail Line
- MBTA Commuter Rail Station
- Proposed Primary Path
- Proposed Primary Gateway
- Future Secondary Path
- Proposed Secondary Gateway
- Existing Mulch Path
- Existing Primary Gateway
- Parcels
- Bussey Brook

Document Path: H:\Projects\2016\16073 Livable Streets_Arboretum Gateway Path, Roslindale\16073A 25% Concept Design\GIS\Maps\Roslindale_ReportFig1_122017.mxd

Date: 12/20/2017
Attachment C
Path Alignments and Profiles
MBTA SECTION ALIGNMENT

GRAPHIC SCALE

1 INCH = 60 FEET

MBTA SECTION PROFILE
HORIZONTAL SCALE: 1" = 80'
VERTICAL SCALE: 1" = 5'

[Diagram of MBTA Section Profile and Alignment]
Roslindale Gateway Path 25% Conceptual Plan Draft: Attachment D
Junction of Multi-Use Path and Peters Hill Road: Populus Trees Affected by Path Alignment
Roslindale, MA
Attachment E: Material Examples

Figure E.1: Stabilized soil driveway at historic house

Figure E.2: Dense grade stone at Blackwell Path

Figure E.3: Alewife Wetland Ipe Boardwalk

Figure E.4: Example of Bike Ramp. This photo shows typical stair profile, not the granite material. (Pinterest photo, Russell Baxley, Swamp Rabbit Trail)
Figure E.5: In-grade textured surfacing, in this case cobble rumble strips

Figure E.6: Bike/Ped lane pavement markings

Figure E.7: Bussey Brook Meadow Gate, precedent for new primary gateways

Figure E.8: Arborough Road opening in stone wall, precedent for new secondary gateways