Winchester Center Station Renovation Project

15% Preliminary Design Report

Presented to:

Massachusetts Bay Transportation Authority

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Executive Summary

The purpose of this Preliminary Design Report is to identify the deficiencies of the existing Winchester Center Commuter Rail Station and develop recommendations to address them.

The existing MBTA Winchester Center Station and rail line were reconstructed on elevated structures in the mid-1950's. The station is currently unsightly and in disrepair, and the structural integrity of the ramps and platforms have deteriorated to a point where concrete has spalled and fallen onto the ramps. The MBTA performed emergency repairs in 2010 to many of the deteriorated sections; however, these repairs were considered temporary until a full renovation could be performed.

The existing station consists of low-level asphalt platforms accessed by four concrete ramp structures, two of which connect directly to Main Street, and the remaining two connect to the Waterfield Road and Aberjona Parking Lots. In addition to its unsightliness and disrepair, the existing station does not meet any of the MBTA Commuter Rail Design Standards, nor does it meet any of the current ADA or MAAB requirements for accessibility.

In 2011 the Town of Winchester appointed a Working Group to assist the MBTA to identify issues for a renovated station, develop a list of design objectives and criteria, and generate recommendations for a preferred station design. As part of this process the Working Group and the MBTA reviewed over a dozen potential Alternatives for the renovated station design. After careful consideration a “preferred alternative” was chosen to be carried forward and in December 2011 Jacobs prepared a 15% Preliminary Design Report outlining the review process and a preferred alternative.

In the spring of 2012 the MBTA issued an RFP to select a consultant who would be tasked with advancing the Preliminary Design to 30% design and through the 100% design phases. In the summer of 2012 Jacobs Engineering was selected as the design consultant. However, due to funding concerns, the Notice to Proceed (NTP) with Jacobs was not signed until June 2013. A project kick-off meeting was held in August 2013 with the Town of Winchester officials and the MBTA.

During the 30% design/planning effort, Jacobs received notice from the MBTA System Wide Accessibility (SWA) and MBTA Operations personnel that low-level platforms with mini-highs were no longer acceptable on MBTA Commuter Rail projects and that fully accessible high level platforms were to be used. The project team reconfigured the preliminary station layout to include high level platforms and presented it to the Town. During a progress meeting in March of 2014 with Winchester’s Design Review Committee (DRC), the committee expressed concerns with the design and layout of the station as they felt it constituted a change from the agreed upon layout as presented in the December 2011 Preliminary Design Report. The committee stated that the Town’s vision of the station layout had changed since 2011. They had subsequently commissioned a Master Plan that included a desire to integrate lands north of the Quill Rotary into the renovated station design.

Towards the end of August 2014, a design charrette was held with the MBTA Project Team and the Town’s DRC. At this meeting that the MBTA expressed a willingness to work with the Town’s new master plan and to develop a new station layout and design, working closely with the Town’s DRC, that would be acceptable to all.

The MBTA directed the design team to develop five additional concepts that would be prepared and presented to the DRC. On October 21, 2014 these five concepts were introduced to the DRC. These concepts included various alternatives over the Quill Rotary to provide access to Main Street and Shore Road. After considering all the design objectives, comments, concerns and recommendations, Concept 5 was chosen to be carried forward. This design concept places the proposed station platforms in a similar location as the existing platform locations with some refinements. The proposed high-level platforms will begin near the southern end of the existing platform by the Chamber of Commerce building and extend 724 feet north towards, and partially over, the Main Street Bridge and Quill Rotary. Access points to the new platforms would be in close proximity to the existing station entrances at both Waterfield Road (near the existing parking lots) and Main Street.

Although this concept was agreed upon by all parties, private property was going to be needed to be acquired in order to construct one of the ramp systems along Main Street. After numerous meetings with the land owners, MBTA real estate staff and the Town of Winchester it was decided that a ramp reconfiguration was required for the concept. The main issues with the land acquisition were the condition of the property (it is a former gas station) and the cost of the land. A meeting was held with Town of Winchester Officials, MBTA Design and Construction (D&C) and the project team on August 13, 2015 and it was determined at this meeting that the neither the MBTA nor the Town of Winchester would purchase the property.

On September 9, 2015 the Town of Winchester requested that the project team change the location of the ramp in question to a new location. The plan was presented on October 2, 2015 and the DRC agreed with the revised concept and asked that the revised concept be developed to the 15% design level. The MBTA agreed with the request and asked that Jacobs prepare the 15% design report with the revised concept.

The proposed design included in this report satisfies the objectives, concerns and recommendations of all project stakeholders, specifically the Town of Winchester. During the next phases of design, the MBTA will continue coordination with the DRC to ensure that the proposed station design does not preclude the following items:

- The potential for a future vehicular tunnel that could provide access between the Waterfield and Aberjona parking areas.
- A connection from the end of the inbound passenger platform to a bridge/ramp system to access the north side of Quill Rotary and the parcels of land along Main Street.

Introduction

This 15% Preliminary Design Report describes the proposed development of a total renovation to the Winchester Center Commuter Rail Station in Winchester, Massachusetts.

Winchester Center Station is located on the MBTA's Lowell Line in downtown Winchester, approximately 7.8 miles from North Station in Boston. It is situated between Waterfield Road and Main Street, in a vibrant urban center with nearby residential neighborhoods.
See Figure 1: Locus Map on Page 7.

Up to the mid-1950's, the station and rail line ran generally on the same alignment, but at grade, and formed at-grade intersections with local roadways including Main Street and Waterfield Road. Due to traffic issues and safety concerns, the Railroad and Station were reconstructed on elevated structures, including new bridges over both Main Street and Waterfield Road. Through an agreement with the B&M Railroad, the MBTA and the Town of Winchester, the maintenance of the Station, including the adjacent parking lots, is the responsibility of the Town of Winchester.

Existing Conditions

The existing Station, built in the 1950's, consists of approximately 600-foot long, low-level asphalt platforms accessed by four concrete ramp structures.

Existing Low Level Platform - Outbound

Two of the ramp structures connect directly to Main Street (one to the inbound platform and one to the outbound platform). A second set of ramps connect the inbound and outbound platforms directly to both the Waterfield Road and Aberjona Parking Lots, respectively, located just south of Waterfield Road. See Figure 2: Aerial Map of Existing Station on Page 8.

Ashlar faced concrete retaining walls support the elevated sections of platform and track throughout most of the station. A portion of the passenger platforms and rail are supported on a 50-foot long, single span, steel bridge spanning over Waterfield Road. A two-story red brick clad building occupies the southwest corner of the station site, which is the current location of the Winchester Chamber of Commerce.

The concrete ramps and platforms vary in how they are constructed. At the south end of the station, the ramp construction consists of a framed system with 18-inch reinforced concrete edge beams supported by 14-inch square reinforced columns spaced at approximately 20 feet on center. The reinforced concrete ramp slab is approximately 6 to 7 inches thick and is covered with approximately 1½ inches of bituminous concrete pavement. The total lengths of the southeast and southwest ramps are approximately 260 feet and 270 feet long, respectively.

At the north end of the station, the ramps are constructed with reinforced concrete cantilever slabs. The cantilever sections of the platform are approximately 90 feet long and the ramps are approximately 240 feet long. The cantilever slabs are approximately 9 to 10 inches thick at the outer edge and increase in thickness toward the supporting retaining walls.

At the southerly end of the station, the inbound and outbound access ramps to the Waterfield and Aberjona Parking Lots are connected by a pedestrian tunnel passing under the railroad tracks and platforms, allowing relatively easy passage from one side of the tracks to the other.

The structural integrity of the concrete ramps and platforms had originally come into question in 2009 when sections of concrete fell onto the ramps. The MBTA performed emergency repairs to many of the sections of the station in 2010, but these repairs were temporary in nature, until a full renovation could be performed. Further deterioration has taken place since those repairs were made. Earlier this year a hole opened up on the platform above Waterfield Road.

The station is currently unsightly and in disrepair. The station does not meet any of the MBTA Commuter Rail Design Standards for Commuter Rail Stations, nor does it meet any of the current ADA or MAAB requirements for accessibility.

Pedestrian Structure

A 10-foot wide by 8-foot high pedestrian tunnel (Br. No. W-40-020, BIN 8E1) used for access between Waterfield and Aberjona Parking Lots supports the railroad tracks and platforms. The cement concrete pedestrian tunnel built in 1955 is in generally satisfactory condition with some minor deficiencies as reported in a January, 2015 MBTA Inspection Report.

Existing Pedestrian Tunnel between Aberjona and Waterfield Parking Areas

Bridge Structures

The Winchester Center Station area encompasses two railroad bridges which carry the rail line over Waterfield Road and Main Street. These bridges were constructed in 1956 as part of the overall grade separation project for the rail line.

The railroad bridge over Waterfield Road (Bridge No. W-40-035, BIN A9V) is a simple span, built-up riveted steel plate through girder bridge with floorbeams. In addition to the railroad tracks, the bridge substructure supports the existing low level station platforms. The bridge superstructure does not support the pedestrian platform. The bridge is 59'-6" long with an out to out width of 50'-9" (including the platforms). The bridge is in satisfactory condition with some minor deficiencies as reported in an April, 2015 MBTA Inspection Report.

The railroad bridge over Main Street (Bridge No. W-40-036. BIN A9W) is a four-span, built-up riveted steel plate through girder bridge with floorbeams. The four simple spans range in length from 35'-3" to 60'-0" and has a total length of 231'-5¼". The existing low level station platforms do not extend over the Main Street Bridge, but the bridge does support the existing maintenance walkways in addition to the rail line. The bridge has an out to out width of 37'-0¾". The bridge is in satisfactory condition with some minor deficiencies as reported in an April, 2015 MBTA Inspection Report.

Right-of-Way

The existing railroad right-of-way within the project area ranges from 60 feet wide to 80 feet wide. The MBTA currently owns all of the land within the right-of-way. However, all of the properties outside of the Right-of-Way are owned by the Town of Winchester and a variety of private parties.

Figure 3: Existing Conditions Plan on Page 9 represents the existing conditions survey of the station, with the abutting property owners.

Historic Properties

A review of Massachusetts Historical Commission (MHC) files indicates that the existing Winchester Center Station, including the Waterfield Road and Main Street bridges, are located within and adjacent to the Winchester Center Historic District, which is listed in the State and National Registers of Historic Places. The historic district nomination form and district date sheet specifically list the MBTA (station and overpasses) as "noncontributing" to the significance of the district.

The Winchester Center Historic District is characterized as a mid-nineteenth to mid-twentieth century suburban town center graced by fine commercial and residential structures, and imposing civic and ecclesiastical buildings on large lots, all complemented by several town parks. The nomination notes that the elevation of the Boston and Lowell (now Boston and Maine) Railroad tracks around 1950 visually bisected the district, but did not obscure the district's architectural and historical significance. The district was listed on the State and National Registers in 1986 and encompasses 82 properties.

It is noted that the existing Winchester Chamber of Commerce Building is outside the boundaries of the Historic District and is not included in the Inventory of Historic and Archaeological Assets of the Commonwealth.

Commuter Rail Operations

The MBTA currently runs 31 inbound and 27 outbound (to and from North Station, respectively) commuter rail trains on the Line on a typical weekday. Of these, 26 inbound and 23 outbound trains serve Winchester Center Station. On weekends and holidays, a total of 8 inbound and 8 outbound commuter rail trains operate on the Line, all of which serve the station.

The Line also serves Amtrak intercity trains with approximately 5 northbound and 5 southbound trains on a typical weekday as well as on weekends and holidays. This train service is generally referred to as the "Amtrak Down-easter" which runs between North Station in Boston and Portland Maine. However, none of the Amtrak trains stop at the Winchester Center Station.

In addition to MBTA Commuter Rail and Amtrak Down-Easter, Pan AM Railways (formerly known as Guilford Rail System) operates freight trains on the Line. The freight trains are generally unscheduled moves that vary day to day.

Ridership

Based on a 2014 MBTA Report entitled: "Ridership and Service Statistics – Fourteenth Edition", ridership at the Winchester Center Station was measured at 789 inbound boardings (on a typical weekday). The report also indicated a slow but steady increase in ridership over the past several years. It is expected that the Station Renovation Project, which will significantly improve access and visibility, will result in an increase in ridership.

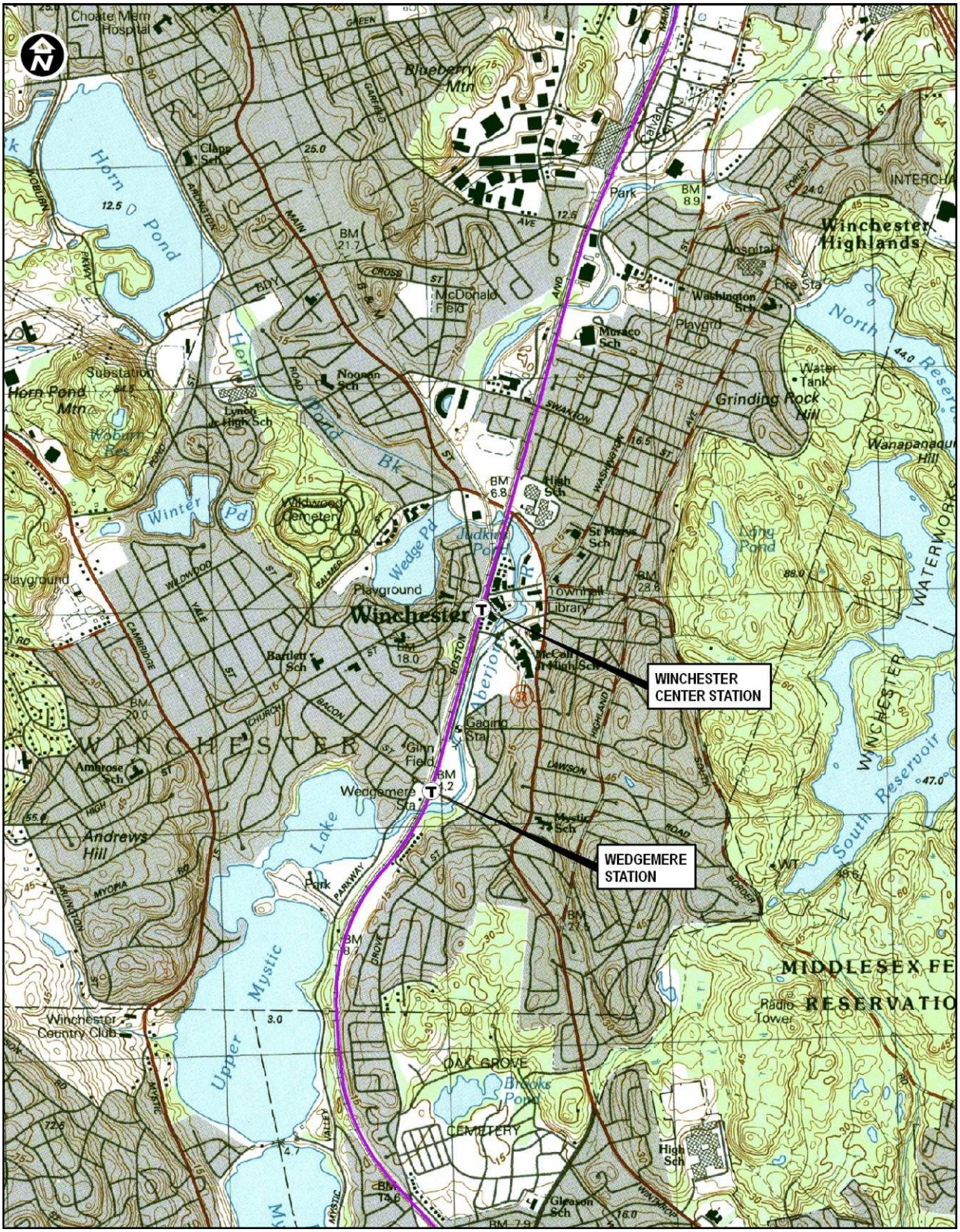


Figure 1: LOCUS MAP

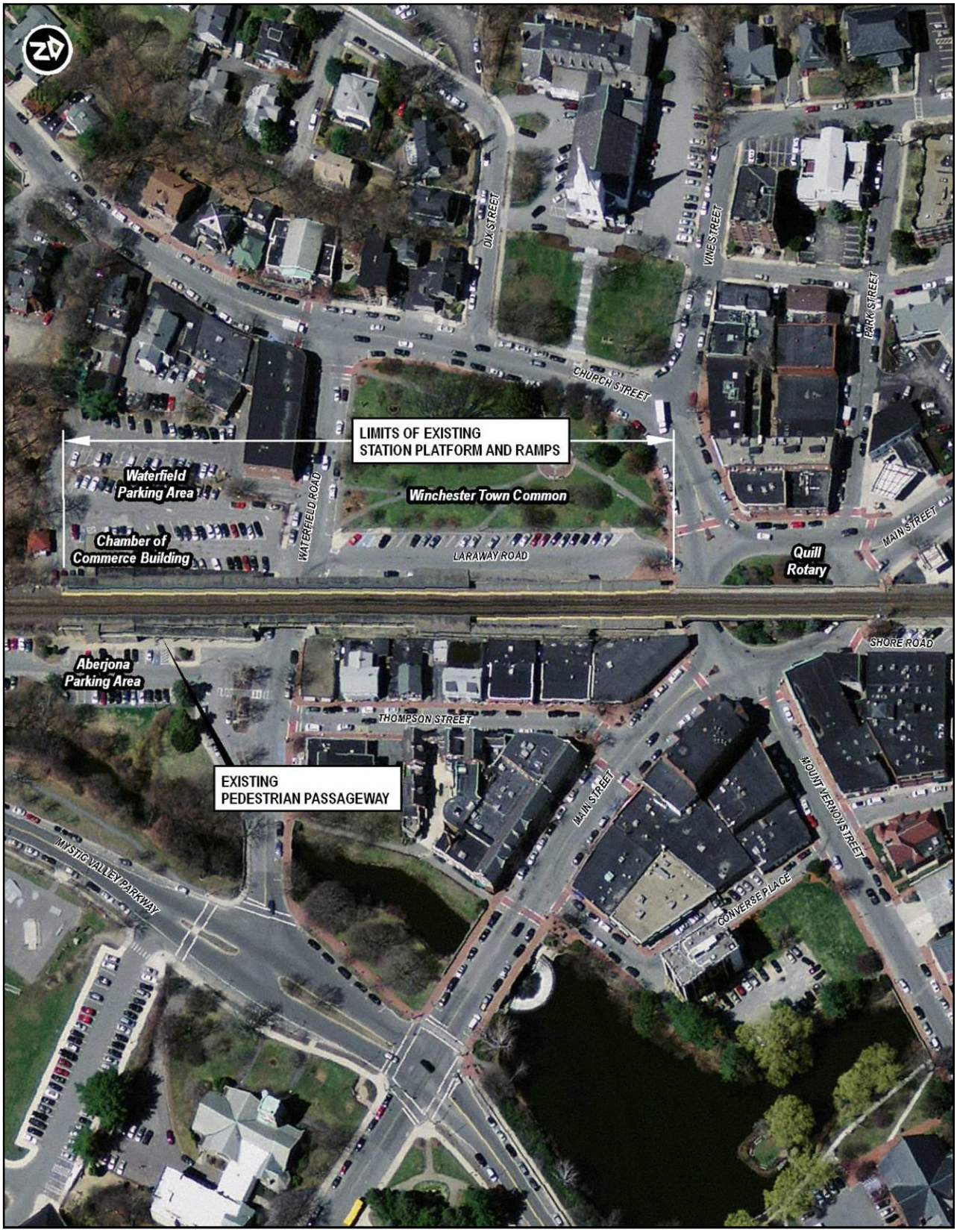


Figure 2: AERIAL MAP OF EXISTING STATION

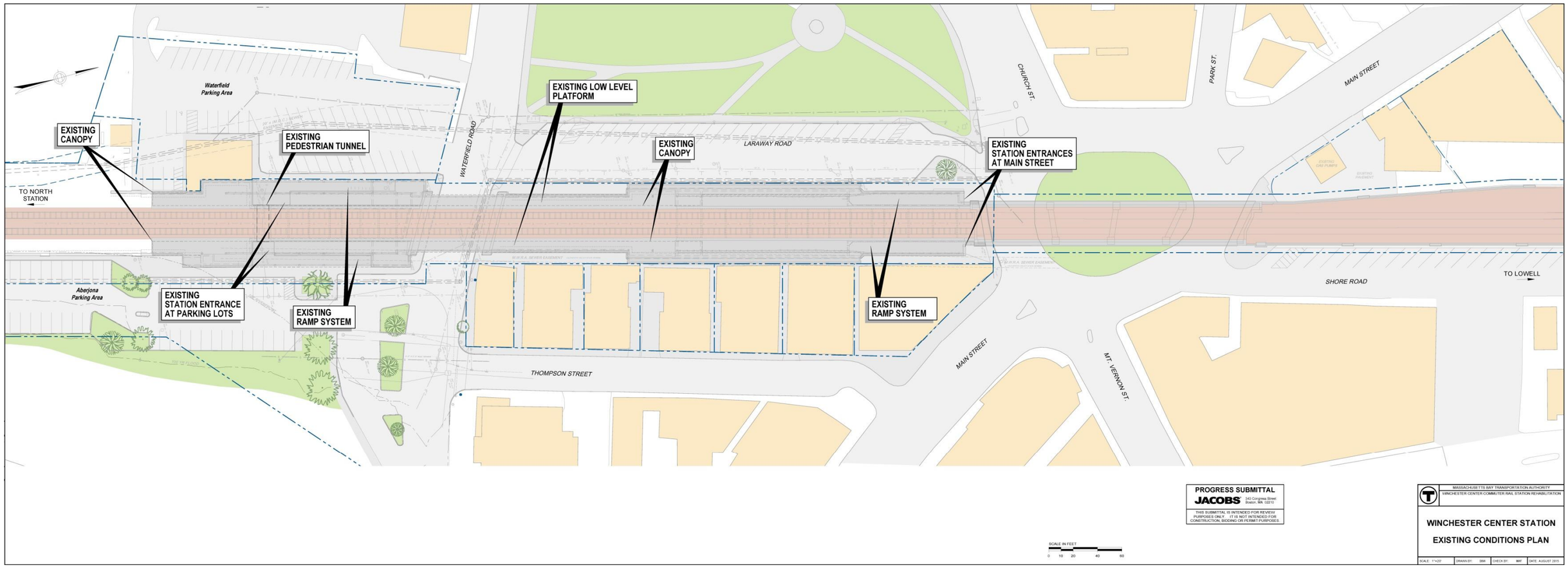


Figure 3: EXISTING CONDITIONS PLAN

Environmental Design and Permitting

The MBTA Winchester Center Station Renovation Project is potentially subject to compliance with the National Environmental Policy Act (NEPA), Section 106 of the National Historic Preservation Act, the Massachusetts Environmental Policy Act (MEPA), Chapter 91, and Chapter 254. Activities proposed in or within the buffer zone to wetland resource areas may also be subject to jurisdiction under the U.S. Clean Water Act, the Massachusetts Wetlands Protection Act, and Winchester Wetlands Bylaw.

National Environmental Policy Act

The primary law governing federal environmental protection process is the National Environmental Policy Act (NEPA) of 1969. The process for complying with NEPA and related federal surface transportation statutes is defined in the joint Federal Highway Administration/Federal Transit Administration Environmental Impact and Related Procedures (23 CFR 771). The regulation sets forth the agencies' policy of combining all environmental analyses and reviews into a single process.

For the Winchester Center Station project, the federal agency in consultation with the applicant will advise which of the following levels of action the proposed undertaking would require:

1. Categorical Exclusion (CE): may be granted for actions that do not individually or cumulatively involve significant social, economic, or environmental impacts.
2. Environmental Assessment (EA): may be required when the significance of the environmental impact is not clearly established. An EA can result in either a “Finding of No Significant Impact” requiring no further environmental evaluation, or identify potentially significant impacts requiring an EIS.
3. Environmental Impact Statement (EIS): Depending on the outcome of an EA, the federal agency may require applicants to develop an EIS.

The proposed Winchester Center Station Renovation project may require the preparation of an EA, though consultation with the federal agency could result in a determination that the proposed project meets specific conditions or criteria that qualify it for the preparation of a CE. Consultation with the federal agency would be initiated following completion of the preliminary design.

Massachusetts Environmental Policy Act (MEPA)

MEPA review is required of projects that require state agency action, (such as funding or permits), and that exceed review thresholds. The project, as currently proposed, does not appear to meet or exceed MEPA review thresholds. When the project proceeds to the 30% design level, MEPA requirements should be revisited to confirm that they do not meet or exceed established thresholds.

Massachusetts Wetland Protection Act

Based on initial assessments, the adjacent Aberjona River is comprised of the following state-jurisdictional wetland resource areas: Inland Bank, Land Under Water Ways and Waterbodies, Bordering Vegetated Wetlands, Bordering Land Subject to Flooding and 200-ft Riverfront Area. A 100-foot Buffer Zone extends from Inland Bank, Land Under Water Ways and Waterbodies and Bordering Vegetated Wetlands.

Project activities that are located within any of these wetland resource areas or the 100-foot buffer zone thereto may be subject to jurisdiction under the Massachusetts Wetlands Protection Act and Regulations. Activities resulting in a discharge of fill material below the ordinary high water mark of certain waters of the U.S. (e.g., Aberjona River and adjacent vegetated wetlands) are also potentially subject to jurisdiction under Section 404 of the U.S. Clean Water Act.

At the 30% design level, wetland resource areas associated with the River would be delineated by a qualified wetland scientist. Activities located within these areas or the 100-foot buffer zone will require a filing with the Winchester Conservation Commission. Proposed activities within these areas will need to be designed to comply with the applicable general performance standards. With regard to activities proposed in the 200-foot Riverfront Area, said work would likely need to comply with the performance standards for previously developed and degraded areas, and comply with the Massachusetts Department of Environmental Protection (DEP) Stormwater Management Standards.

Natural Heritage and Endangered Species

According to the current Natural Heritage and Endangered Species Atlas (NHESP, 2008), the project site is not located within mapped Estimated or Priority Habitat or within proximity to certified or potential vernal pools.

Section 106 of the National Historic Preservation Act

Section 106 of the National Historic Preservation Act (generally referred to as “Section 106”) requires that federal agencies consider what effects their actions may have on historic properties. If a project utilizes federal funding, it would be subject to review by the MHC under Section 106 in its federal role as the Massachusetts State Historic Preservation Office (SHPO). In this case, the MHC would consider project impacts to the Winchester Center Historic District and may require the project proponent to consider alternatives that would eliminate, minimize, or mitigate any potential adverse project impacts to affected historic resources.

The MHC could also require an archaeological survey to determine if any significant prehistoric or historic archaeological resources are within the project’s area of potential effect. However, the project area appears to be previously developed suburban parcels. A review of the Inventory indicates there are no previously identified archaeological resources within the project area. Therefore, due to previous development activities and disturbance, it is anticipated that the project area is unlikely to contain significant archaeological remains.

MHC State Register Review, Chapter 254

Under M.G.L. Chapter 9, sections 26-27c, as amended by Chapter 254 of the Acts of 1988, the Massachusetts Historical Commission (MHC) has review authority of certain projects to determine whether such project would have any adverse effect on properties listed in the State Register of Historic Places. The review process mirrors the Section 106 process (see above) with the exception that projects that involve only inventoried properties and in the absence of any State Register properties, are not subject to Chapter 254 review. The Winchester Center Station is located within a historic district that is listed in the State Register of Historic Places and therefore, the proposed improvements are subject to review by the MHC in compliance with Chapter 254.

Environmental Permitting Summary

Based on the analysis above, it appears that the project's permitting process may entail review under NEPA (either a Categorical Exclusion or Environmental Assessment), Section 106, Chapter 254, and the Massachusetts Wetland Protection Act. Because the project area is previously developed suburban locations, NEPA review is not expected to be onerous, and archaeological impacts are not anticipated. Any impacts to historic resources will require both federal and state review. Activities proposed in wetland resource areas will require an Order of Conditions or Determination of Applicability from the Winchester Conservation Commission.

Design Criteria and Station Elements

Due to the disrepair of the station, and its lack of meeting current ADA and MAAB requirements for accessibility, the MBTA is proposing a total renovation of the existing station. The station will be designed and constructed to meet current versions of the MBTA Commuter Rail Design Standards, ADA Accessibility Guidelines (ADAAG), Building Code as well as the National Fire Protection Association (NFPA) standards. In addition, the MBTA is partnering with the Town of Winchester to address various objectives and recommendations for the renovated station.

The Proposed Station Renovation Project will be designed to include the following elements:

Platforms

New MBTA commuter rail station passenger platforms are typically 800-foot long high level platforms consisting of 10-foot wide precast concrete panels with 24-inch tactile warning strips and a 3" x 8" timber edge. The edge of the MBTA's standard high level platform is set 4-feet above the top of railroad tracks and a distance of 5'-7" from the centerline of tracks. This standard provides level boarding from the platforms to the train coaches.

Due to various code issues, including accessibility and fire codes, the proposed passenger platform length is to be shortened from 800 feet to approximately 724 feet. This would be typical on both the inbound and outbound sides of the station. The typical 800 foot MBTA standard platform is designed to accommodate a 9 car train set with some overrun distance. The proposed platform length of 724 feet will still accommodate a 9-car train set with only the passenger coach door closest to the locomotive unavailable for egress directly to the platform (See Figure 4).

The passenger platforms are typically constructed of cement concrete which when subjected to large applications of deicing salts, have shown some durability problems. The platform panels proposed for Winchester Station will consist of a precast High Performance Concrete (HPC), which includes additives to the cement concrete to make the panels more resistance to deicing salts. An alternative to the typical cement platform construction materials would be the use of fiberglass platform panels. The fiberglass panels would be more resistant to deicing salts therefore would be more durable and require less maintenance. The entire platform panel would be constructed of fiberglass including the panel walk surface. This construction method has been used in other states with similar climates to Massachusetts where high levels of deicing salts would be used for pedestrian safety. Before this material can be used in MBTA commuter rail stations it must conform to the Massachusetts Building Code and the National Fire Protection Association (NFPA) Code and also require the approval of the Massachusetts Department of Public Safety. An added benefit to the use of fiberglass platform panels for this project is that it would improve constructability of the station. The fiberglass panels are much lighter and would be easier to manipulate during construction than precast concrete panels.

Canopies

New steel canopies will be constructed along both platforms. Although the canopy lengths are generally a function of the ridership, the renovated station will include a minimum of 200 linear feet of canopies on both the inbound and outbound platforms. Commuter Rail station canopies typically consist of galvanized steel members with wide-flange sections and roof systems consisting of inverted gable form with metal standing seam roofing. These design features are intended to minimize maintenance issues as well as bird roosting. Roof colors will be chosen to be compatible with the station elements and the surrounding neighborhood. The final

determination of canopy lengths and design features would be closely coordinated with Town of Winchester/DRC members during the next phase of design.

Safety Railings

In areas where the back of the platform will be more than 30 inches above grade, 42-inch high guardrails will be required. Where the platforms extend or bridge over Waterfield Road or Main Street/Quill Rotary, missile barrier will be installed in addition to the guardrails. Safety railings will also be installed along applicable portions of the reconstructed ramps.

Lighting

The proposed project will included a total renovation of the station lighting elements. The emphasis will be on improving lighting at the station, including providing security, visual comfort and visibility. Lighting along the platforms will be designed to minimize glare, and will include "cut-off" type fixtures to minimize spill over of lighting onto adjacent properties.

Signing

The station will include all new porcelain enamel signing along the platforms and walkway/ramps. In addition to the station signs, the MBTA will work with the Winchester Historical Commission regarding the feasibility of incorporating interpretive signs into the station.

Amenities

The station will include the following amenities: benches, schedule cases, trash receptacles, bicycle racks, maintenance shed, variable message signs, a public address system, emergency police call back system, and landscaping. The station will also include provisions for future fare vending machines and closed circuit television cameras.

Access Ramps and Elevators

The existing access ramps provide direct access to the station from both Main Street and the Waterfield and Aberjona parking areas. However, the ramps do not meet current ADA Accessibility Guidelines. The renovated station will include total reconstruction of the ramp systems at the north end of the station, which will be designed and constructed to meet current ADA Accessibility Guidelines. In addition, at the south end of the station adjacent to the Waterfield and Aberjona Parking Areas, elevators and stairways will be constructed. The elevator system will include two sets of elevators on both inbound and outbound platforms to provide redundancy in case of malfunction of one of the elevators.

Civil / Site Improvements

There will be site improvements on the lower (easterly) portion of the Waterfield parking area, the northernmost portion of the Aberjona parking area and Laraway Road. Included in these improvements will be; resetting granite curbing, milling and overlay of the bituminous pavement parking areas, reconstruction of concrete sidewalks, bicycle racks, benches and other site amenities. Portions of the newly constructed elevators, the Laraway Road ramp structure and the Shore Road ramp structure will be outside of the MBTA's right-of-way. The Town has indicated that it will provide the necessary land to the MBTA in order to construct these new structures.

Structural Design

The existing station includes an extensive wall system to support the railroad tracks and platforms. The walls consist of both concrete gravity and cantilever walls with spread footings. Through much of the station, the easterly and westerly walls are connected by counterfort walls providing additional support. Initial review of the wall system indicates that they are in relatively good condition, and should be used as an integral part of the station renovations. Use of the existing walls will facilitate construction staging of the renovated station, and allow the station to remain operational during construction.

Due to the limitations of right-of-way and site access, additional retaining wall systems at the station could also be constructed of soldier piles and lagging. These walls will consist of steel H-piles, drilled in place. Timber lagging would be installed between the webs of the steel piles as earth is removed. Once the pile and lagging wall is complete, and all materials excavated, a cast-in-place concrete face would be cast along the face of the walls.

Track Design

The Lowell line also serves freight rail operator Pan Am Railways, and coordination will be required to ensure that freight trains can safely pass through the station. Specifically, a high and wide freight car (including any car with wide cargo) may encroach upon the limited five foot seven inch (5'-7") horizontal clearance envelope, measured from track centerline to the front edge of a high level platform. Passage of a high and wide freight train poses serious safety concerns, including the potential to cause significant damage to the platform and other station amenities and to the freight cars, with derailment of the train possible resulting in serious injury or loss of life. Even though these wide freights are infrequent and typically are scheduled to pass through the station site during off peak hours concessions need to be made to accommodate these wide freights.

Several options exist to safely run these wide trains through a restricted width high level platform area. A common solution is to install a section of "gauntlet" track. The proposed gauntlet track would replace a typical track section with a track constructed with longer cross ties supporting two sets of parallel running rails typically spaced about one foot apart. Switches at each end would allow a train to bypass or 'runaround' the clearance obstruction at the station. This scenario avoids any potential contact with station structures or its patrons and permits the freight train service to run its normal schedule. The gauntlet track switches at each end of the station would be hand thrown with electric locks.

Further consideration will be made in upcoming design phases to consider the installation of a switch/interlocking south of the station to help with phased construction of the station platform and to eventually retire an aging interlocking just north of the proposed station.

Sustainability

As part of the new initiative on sustainability, the proposed Winchester Center Station Renovation project will consider a number of "green" design elements. These will include, but not limited to, providing solar panels for lighting the station canopies, charging stations for electric or hybrid automobiles, use of recycled materials, etc.

Winchester Center Station – Alternatives/Concepts

As noted earlier in the Executive Summary, numerous alternatives for locating the station were generated, reviewed and selected by the Town of Winchester Working Group in 2011. Due to changes in the Town of Winchester's proposed Master Plan, accessibility requirements and code changes, the 15% Design from 2011 was scrapped and new concepts were generated. The town was presented five concepts and the DRC accepted what was known as Concept 5. This concept has since been slightly modified to reflect changes to the configuration of the access ramp on the northwest corner of the proposed station. This latest configuration has been accepted by the DRC.

The normal procedure for a 15% Design Report would be to compare station alternatives, their pro's/con's and the cost estimate of each. This 15% design report addresses only Concept 5 because it was the only concept that is acceptable with the DRC. The DRC has fully discussed Concept 5 internally and has met with the MBTA project team several times to work out the details. The following is a description of the proposed station layout.

Proposed Station Layout

As shown on Figure 4 – Site Plan, the proposed station platforms are placed near the existing platform locations beginning at a point extending approximately 60 feet onto the Main Street Bridge and then extending 724 feet south. Access to these platforms will be generally near the existing station entrances at Waterfield Road (near the existing parking lots) and Main Street near Laraway Road. The south entrance/access to the passenger platform will be via two banks of elevators, one bank located on the east side of the station (inbound) and another bank of elevators on the west side (outbound). Both the east and west sides of the platform will also be able to be accessed by stairways. The north end of the station will be accessible by a ramp on the west side of the station that is situated in the same general area as the existing ramp alongside Laraway Road. The northeast access has been completely moved from its existing location behind the Thompson Street shops to a location along Shore Road on the north side of the Quill Rotary. This ramp system along Shore Road is accessed by a pedestrian bridge from the northernmost end of the outbound platform. This pedestrian bridge spans the Quill Rotary to a spot above the existing sidewalk on the north side of the rotary where a proposed ramp system brings passengers down to the sidewalk level at Shore Road.

Throughout the station length, most of the existing stone faced retaining walls currently supporting the railroad track structures would remain. However, all of the existing ramp supporting structures and canopies would be removed and be reconstructed in their proposed locations to meet ADA Accessibility Guidelines. The new platform and ramp structures will require removal of the existing elevator structures, and the demolition of the present day Chamber of Commerce Building.

Discussion Points on the Proposed Station Layout:

- Maintains general current access points from Main Street, Waterfield Road and parking lots but adds a new north point of entrance per Town of Winchester request.
- Adds two banks of elevators (four elevators in all).
- Accessible paths to the new platforms will be longer than the existing ramps. This is due to the requirement to meet Accessibility standards as well as the high level platforms.
- The ramp from Main Street to the outbound platform immediately adjacent to (and in some cases within 3 feet of) the backs of existing buildings along Thompson Street will be removed.
- Requires constructing portions of the new platform over the Quill Rotary (next to bridge)
- Little to no additional impervious surfaces created. Existing hydrology maintained.
- Requires constructing portions of the platforms over the Main Street bridge.
- Requires construction of piers and abutments for pedestrian bridge.
- Requires construction of pedestrian bridge over Quill Rotary.
- Requires modifications (narrowing) to Shore Road.
- Proposed Northeast Ramp would eliminate 25 to 30 parking spaces along Shore Road.
- Does not preclude the Town of Winchester from developing areas around Station.
- Does not preclude the Town of Winchester from constructing a tunnel beneath the RR ROW per the Town Master Plan.

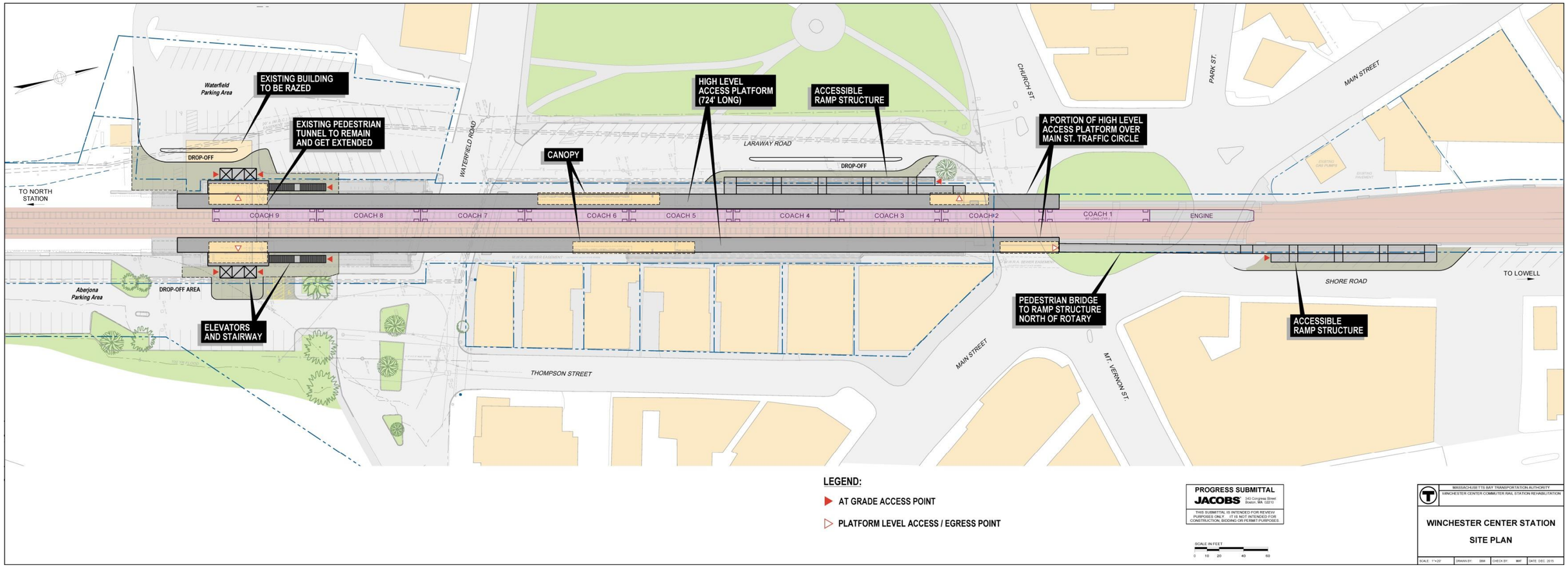


Figure 4: SITE PLAN

**Figure 5: ARCHITECTURAL RENDERING
OVERALL STATION**

Figure 6: ARCHITECTURAL RENDERING ELEVATOR SHAFTS

Figure 7: ARCHITECTURAL RENDERING PEDESTRIAN BRIDGE

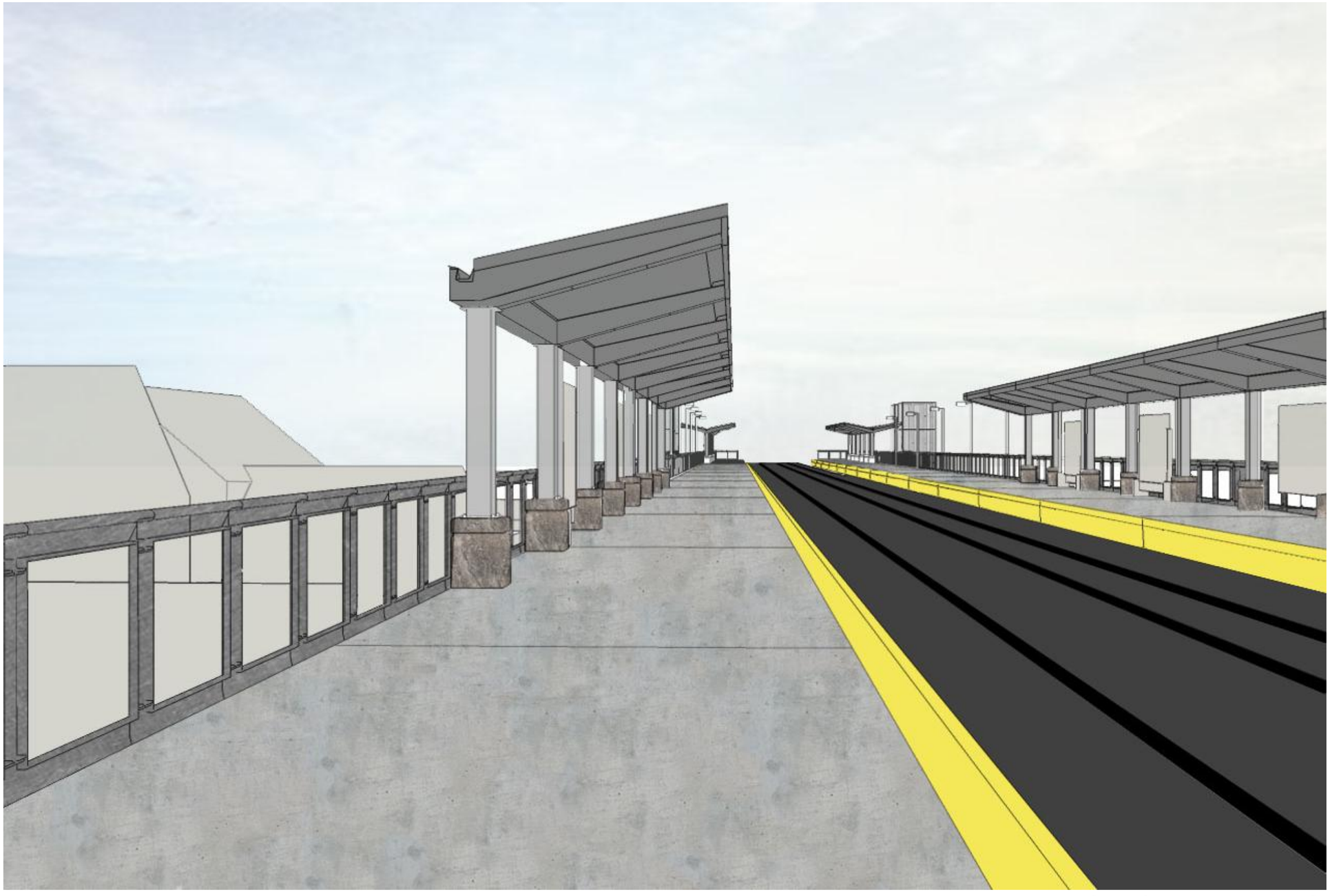


Figure 8: ARCHITECTURAL RENDERING PLATFORM

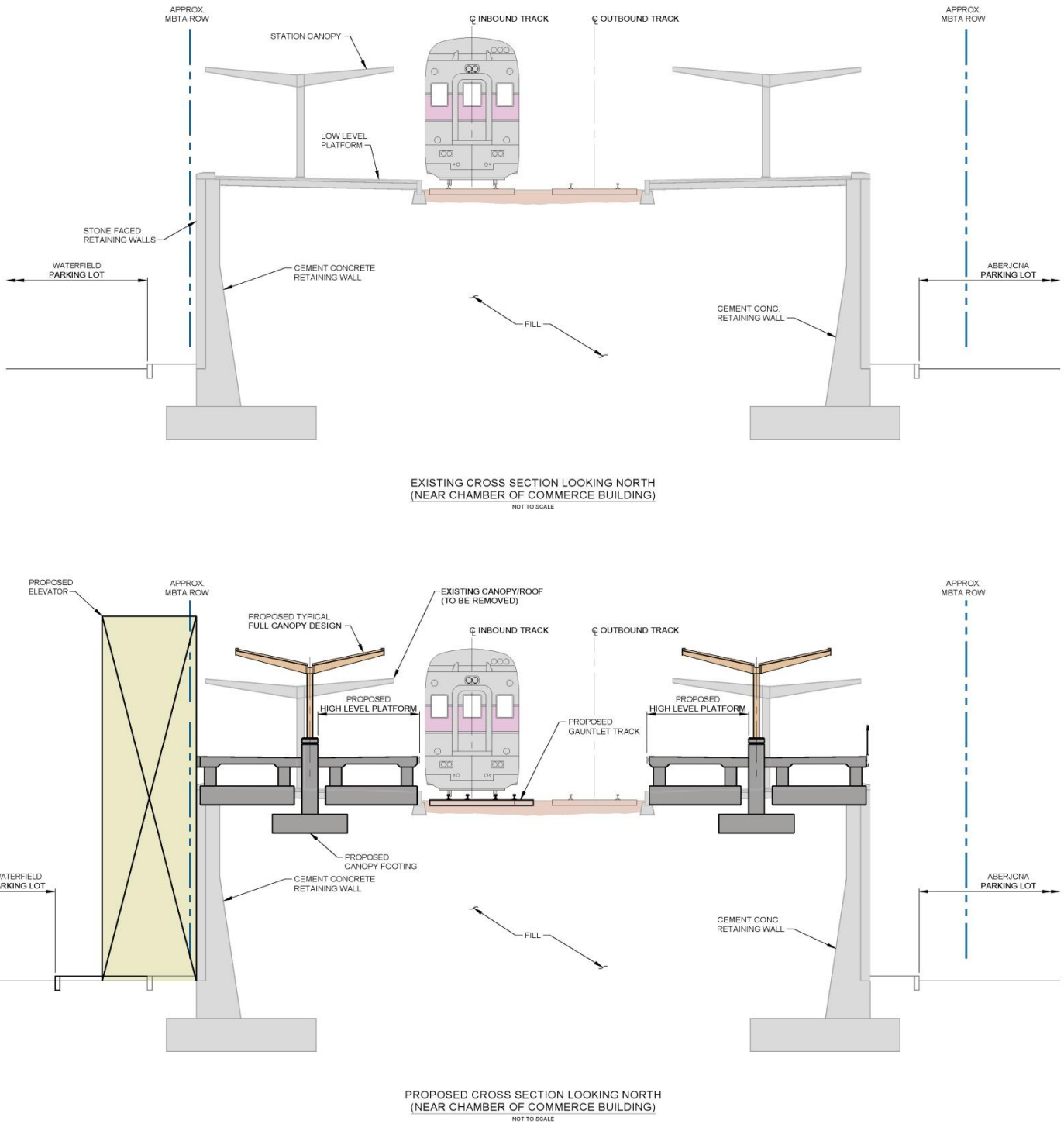
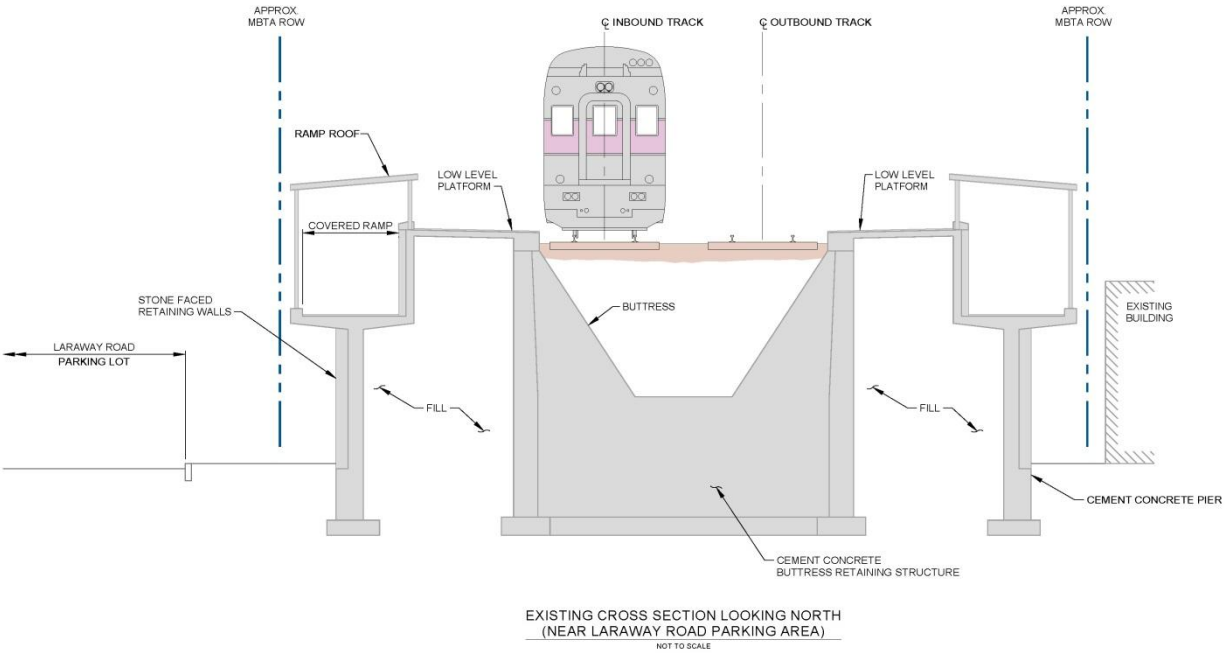
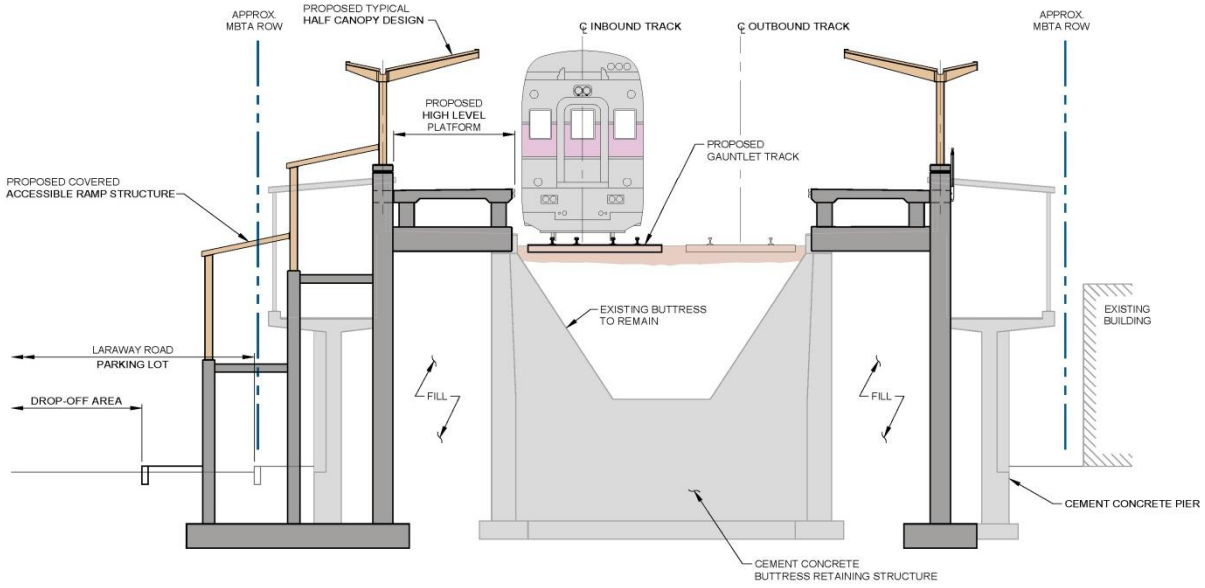


Figure 9: CROSS SECTIONS



EXISTING CROSS SECTION LOOKING NORTH
(NEAR LARAWAY ROAD PARKING AREA)
NOT TO SCALE



PROPOSED CROSS SECTION LOOKING NORTH
(NEAR LARAWAY ROAD PARKING AREA)
NOT TO SCALE

Figure 10: CROSS SECTIONS

Cost Estimates

Included with this Preliminary Design Report is a 15% Engineer's Estimate.

Because of the narrow right-of-way, limited access, site topography and active rail traffic, construction costs for the Winchester Center Station will be significantly higher than for a conventional commuter rail station.

The Estimate Cost for the Winchester Center Station Renovation is **$25,800,000.00**. This estimate was performed using pricing relevant to 2015 dollars, no escalation pricing was used. Costs of any land takings/ROW are not included in the estimate. Preliminary discussions with Winchester Town officials suggested that town land required for construction of the station would be transferred to the Authority. Also no costs were included to repair/upgrade the bridge structures at Waterfield Road and at Main Street. A summary of the individual station construction items, quantities and unit costs are indicated on the following page.

Constructability Elements Affecting Costs

There are several elements associated with the constructability of the Station Renovation project that will have a significant impact on the construction costs. Most notably will be the requirement to construct the station under active rail operations. It is assumed that the line must remain operational during construction. This will limit the amount of time the contractor has to perform work.

It is also assumed that the existing station must remain open during most of the construction. However, the work may be staged such that half of the station could be closed and passengers directed to access the open portions (e.g. close the southerly portions of the station and direct passengers to enter/exit the station from the Main Street access ramps).

As indicated, the existing station is comprised of concrete retaining wall systems that support the railroad tracks. It is the intention to maintain these wall systems and construct supplemental support systems for the renovated station. This is best shown on the existing and proposed Cross Sections of the station indicated on Pages 23 and 24.

One of the other major elements constricting work on the renovated station is the portion of the station situated on the east side of the Line, between Waterfield Road and Main Street. In this area, existing 2-story brick buildings are in some cases within 3 feet of the retaining wall systems supporting the station platforms and access ramps. In this extremely tight area, the contractor will need to remove the existing ramp system and construct the new ramp systems, roof structures, platforms, canopies and other station elements without impacting the existing buildings.

15% Engineers Estimate

ITEM NO.	QTY.	DESCRIPTION	UNIT	UNIT PRICE	AMOUNT
110.002	1	CPM Scheduling	FP	$120,000.00	$120,000.00
120.459	1	Building Condition Survey	LS	$50,000.00	$50,000.00
130.100	1	Field Office - Trailer	LS	$120,000.00	$120,000.00
130.250	1	Maint. and Protection of RR Traffic	AL	$1,250,000.00	$1,250,000.00
130.430	1	Traffic Officers Services	AL	$300,000.00	$300,000.00
210.201	1	Demolition of Existing Building	LS	$200,000.00	$200,000.00
210.211	1	Demolition of Existing Station	LS	$900,000.00	$900,000.00
211.491	1	Site Utilities	AL	$200,000.00	$200,000.00
211.612	1	Pedestrian Bridge	LS	$700,000.00	$700,000.00
220.098	1	Site Preparation	LS	$500,000.00	$500,000.00
221.345	3400	Disposal of Contaminated Soils	TN	$125.00	$425,000.00
221.418	1	Support of Excavation	LS	$750,000.00	$750,000.00
222.003	2900	Unclassified Excavation	CY	$35.00	$101,500.00
222.104	225	Rock Excavation - Class B	CY	$100.00	$22,500.00
222.124	5,300	Bituminous Concrete Excavation	SY	$15.00	$79,500.00
222.504	1,900	Gravel Borrow	CY	$35.00	$66,500.00
222.522	1	Site Drainage (CB, DMH, RCP, etc.)	LS	$125,000.00	$125,000.00
222.628	700	Crushed Stone	CY	$50.00	$35,000.00
230.120	280	Drilled Piles	EA	$4,000.00	$1,120,000.00
242.131	1	Ramp Structure - Laraway Rd	LS	$975,000.00	$975,000.00
242.132	1	Ramp Structure - Shore Road	LS	$750,000.00	$750,000.00
261.151	1,350	Bituminous Concrete Pavement	TN	$200.00	$270,000.00
262.200	1,400	Granite Curbing	LF	$35.00	$49,000.00
262.702	1,400	Curbing - Remove and Stack	LF	$15.00	$21,000.00
263.150	2,050	Concrete Sidewalks	SY	$55.00	$112,750.00
270.000	1	Site Improvements	LS	$100,000.00	$100,000.00
271.000	1	Fences	LS	$100,000.00	$100,000.00
276.000	1	Landscaping	LS	$150,000.00	$150,000.00
291.000	1	Gauntlet Track	LS	$825,000.00	$825,000.00
329.950	1	Concrete - Platform Foundations	LS	$725,000.00	$725,000.00
330.040	1	Concrete - Stairways	LS	$140,000.00	$140,000.00
450.105	18,500	Masonry Restoration	SF	$75.00	$1,387,500.00
547.060	800	Steel Handrail	LF	$175.00	$140,000.00
548.248	1,900	Railings	LF	$350.00	$665,000.00
613.019	1	Access Platform	LS	$875,000.00	$875,000.00
613.033	1	Access Platform Canopy	LS	$600,000.00	$600,000.00
746.005	1	Roofing System - Type A	LS	$475,000.00	$475,000.00
1041.550	1	Station Sign	LS	$420,000.00	$420,000.00
1365.000	1	Prefabricated Structures	LS	$100,000.00	$100,000.00
1420.000	4	Elevator	EA	$1,000,000.00	$4,000,000.00
1643.000	1	Lighting System	LS	$725,000.00	$725,000.00
1650.000	1	Communication System	LS	$405,000.00	$405,000.00
1659.001	1	Closed Circuit Television System	LS	$375,000.00	$375,000.00
				Subtotal	$21,450,250.00
				Add 20% Contingencies	$4,290,050.00
				Total Cost	$25,740,300.00
				SAY	**$25,800,000.00**