



Massachusetts Bay
Transportation Authority

MBTA CHARLESTOWN CAMPUS MASTER PLAN

EXECUTIVE SUMMARY

September 2021

TABLE OF CONTENTS

Contents

INTRODUCTION1

EXISTING CONDITIONS: CAMPUS FUNCTIONS AND LAYOUT2

IDENTIFYING NEEDS AND CONSTRAINTS4

 Space Needs and Functional Requirements.....4

 Site Constraints and Planning Assumptions6

MASTER PLAN: A VISION FOR CHARLESTOWN CAMPUS8

 Proposed Phasing12

 Cost Estimate.....13

NEXT STEPS13

LIST OF FIGURES

Figure 1 – Charlestown Campus Location1

Figure 2 – Charlestown Campus – Existing Conditions Plan2

Figure 3 – Sullivan Square – City of Boston Redesign Project6

Figure 4 – Floodplain and Resilience Measures In and Around the Charlestown Campus.....7

Figure 5 – Rendering of Overall Site8

Figure 6 – Rendering from the New Main Street Intersection.....10

Figure 7 – Rendering from Alford Street Bridge.....10

Figure 8 – Rendering from Arlington Avenue Towards the Main Entrance and the E&M Facility10

Figure 9 – Rendering from Maffa Way Towards Dorrance Street10

Figure 10 – Charlestown Campus Master Plan – Preferred Alternative11

Figure 11 – Phase A of the Charlestown Campus Master Plan Build-Out.....12

LIST OF TABLES

Table 1 – Charlestown Campus – Building Areas and Uses.....2

Table 2 – Charlestown Campus – Existing Conditions Space Utilization – E&M – Engineering and Maintenance Summary ...3

Table 3 – Charlestown Campus – Existing Conditions Space Utilization – Department Summary.....3

Table 4 – Charlestown Campus – Existing Conditions Space Utilization – Allocated and Unallocated Space.....3

Table 5 – Charlestown Campus – Future Conditions Building A Space and Staffing Needs – Department Summary5

Table 6 – Charlestown Campus – Future Conditions Building B Space and Staffing Needs – Department Summary5

Table 7 – Charlestown Campus – Future Conditions Space and Staffing Needs – Building Summary5

Table 8 – Charlestown Campus – Future Conditions Site & Parking Space Needs – Department Summary 5

Table 9 – Cost Estimate Summary – Phase A..... 13

Table 10 – Cost Estimate Summary – Phase B..... 13

Table 11 – Construction Cost Phase Subtotals 13

INTRODUCTION

The Charlestown Master Plan presents a forward-thinking, comprehensive vision for the Massachusetts Bay Transportation Authority’s (MBTA) Charlestown Campus – a **36-acre complex housing the MBTA’s largest bus facility, its central headquarters for system maintenance, large warehouse and storage facilities, and several other ancillary functions including operations training, transit police, and fare machine maintenance** (Figure 1). The bus facility, which includes the storage and maintenance of up to 240 buses, is critical to the MBTA’s 1,150-bus fleet and, specifically, the operations of routes serving Boston, Cambridge, Somerville, Chelsea, Everett, Malden, and other Northside communities. Most of the rest of the campus is dedicated to the Engineering & Maintenance Department, who are responsible for ensuring reliable power, signal, and track operations on all five rapid transit lines and the proper functioning of all stations and facilities, as well as the maintenance and storage of the specialty equipment and vehicles needed for these activities. **Essentially, the campus provides space for the “back of house” support functions that, while often invisible, are vital to the daily operations of MBTA service, which typically served more than a million daily riders prior to Covid-19 pandemic.**

The need for the Charlestown Master Plan arises from a mismatch between current MBTA needs and the existing condition of the campus. **The existing buildings are in nearly universal poor condition;** the structures were built over decades, and many are in dilapidated condition. Most of the structures were built to obsolete design standards, with poor mechanical systems and inadequate accessibility. The existing structures do not provide adequate space for all the functional needs, so departments and work units are split up inefficiently among many different buildings; space shortages have also necessitated a reliance on roughly 100 storage containers for overflow space. The existing layout of the Charlestown Campus is like that of many large transit facilities: as the MBTA’s equipment, needs, and practices evolved over time, the staff adapted the spaces in a pragmatic, ad hoc manner, with whatever resources and budget were available. As a result, **the campus lacks the optimal organization and space needed for the efficient functioning of critical maintenance activities.**

With the broad goals of improving service reliability and customer experience, the MBTA is pursuing a multi-billion dollar, multi-decade effort to bring its system into a state of good repair, including modernization and expansion where feasible. Major recent efforts include the Green Line Extension project, which will expand rapid transit into Somerville and Medford, as well as dedicated “Transformation” initiatives to upgrade the Green, Red, and Orange Lines and introduce new vehicles. The MBTA’s Bus Transformation is a multi-faceted effort to redesign the overall bus system to match bus service to changing mobility needs, provide higher-quality experience with transit priority investments, and thoroughly upgrade its fleet and facilities, including the Charlestown bus facility. This integrated strategy will pave the way for the conversion of the entire bus fleet to zero emissions technology, and it will vastly improve bus system working conditions with all new, indoor bus facilities, which will enable staff to better support fleet reliability.

By setting a vision for a modern, efficient campus equipped to serve the needs of the growing system, the Charlestown Master Plan positions the MBTA to best realize the desired outcomes of these Bus Transformation efforts. Simply put, implementing this vision for improved operations, maintenance, and support space is necessary to fully leverage the investments made in our rider-facing vehicles and infrastructure efforts.

This document provides a long-range plan for the layout and function of the Charlestown Campus, based on a thorough analysis of the existing and projected future space allocation and functional needs. The plan assumes entirely new spaces and speaks at a high level to the potential opportunities for phasing these major investments.

Figure 1 – Charlestown Campus Location



EXISTING CONDITIONS: CAMPUS FUNCTIONS AND LAYOUT

The Charlestown Campus is the largest MBTA maintenance and operations campus, occupying roughly 36.5 acres. It is bordered by the Mystic River to the northeast, commuter rail lines to the northwest, Arlington Avenue and Dorrance Street to the west, Main Street to the south and Alford Street (Route 99) to the east. It is adjacent to the Orange Line’s Sullivan Square Station, which is directly south of the Charlestown Campus across Main Street and Maffa Way. Access to and from the Charlestown Campus is available from Main Street and Alford Street, and several public roadways provide access into the campus: Arlington Avenue and West Street provide access to and from Alford Street, while Beacham Street and Dorrance Street provide access to and from Main Street. These public roadways divide the campus into four separate blocks. The MBTA owns all of the property within these four blocks, except for two properties: 62-68 Alford Street (at the corner of Alford Street/Arlington Avenue) and 27 West Street (at the corner of West Street/Beacham Street).

The Charlestown Campus accommodates many different MBTA departments and work functions:

- **The Engineering and Maintenance Department (E&M) accounts for the largest amount of space and personnel**, with its administrative headquarters, multiple shop spaces (steel, carpentry, paint and signage, electrical, etc.), rail tie fabrication and bending shops, storage for equipment and materials, and parking for 347 non-revenue vehicles needed to support their work. **E&M staff use the shops and support spaces to fabricate and prepare materials for installation across the system**, often leaving the campus for work in the field during the day. E&M also maintains part of its training spaces in Charlestown, with most of the remaining training space housed in a temporary facility on the other side of Sullivan Square in the Inner Belt district.
- Two other MBTA departments – Non-Revenue Vehicle Maintenance and Logistics & Warehouse – largely support E&M’s activities. Non-Revenue Vehicle Maintenance operates the maintenance garage for non-revenue vehicles, while Logistics & Warehouse operates a storage warehouse.
- **Bus Operations and Bus Maintenance operate the largest bus storage and maintenance facility (currently used by roughly 240 buses), in terms of capacity and personnel, in the bus system.** The Bus Operations personnel are organized into two administrative garages at this facility, meaning they require separate office and support spaces for each garage management staff.
- The Operations Training (OT), Automated Fare Collection (AFC), and Vendor Management – Revenue Collection (RC) groups share space in the only newly-renovated building on the site, which provides office/administrative spaces, classrooms, space for large bus and rail simulators, workshop space for fare machine repairs, and a loading and delivery dock.
- The Charlestown Campus accommodates the Northside headquarters for Transit Police (TP), which includes office/administrative space, locker and crew rooms, and parking spaces for their police vehicles.

These departments make use of 14 permanent structures, as well as several storage sheds and about 100 shipping containers scattered throughout the site for storage of mechanical/electrical equipment (Figure 2). The use of these containers for temporary “overflow” storage needs demonstrates the space constraints and the need for expansion and rehabilitation of the Charlestown Campus that are driving the development of this Master Plan. The northwest end of

the campus is used for outdoor rail and materials storage, winter materials storage silos, and storage of debris removed from MBTA property throughout the system.

Figure 2 – Charlestown Campus – Existing Conditions Plan



Table 1 – Charlestown Campus – Building Areas and Uses

Building Number	Building Uses
2&3	Administration Buildings
4	Maintenance Shop – Transit Facilities Management (TFM) & Power Systems Maintenance (PSM)
5	Maintenance Shop – TFM
6	Bus Storage Facility – Wash and Fueling
7	Bus Maintenance Facility
8	Storage Shed – TFM
11	Maintenance of Way (MOW) Rail Yard
12	Operations Training (OT), Vendor Management – Revenue Collection (RC), and Automated Fare Collection (AFC)
13	TFM Plumbers and Pipefitters
14	Non-Revenue Vehicle (NRV) Maintenance and MOW Storage
15	NRV Wash
29	Warehouse

Table 2, Table 3 and Table 4 provide a summary of the current space allocation (measured by building footprint and exterior space occupied) and employee headcount by department and work unit. For purposes of documenting existing conditions, assessing space needs, and developing the Master Plan, the Engineering and Maintenance Department is evaluated at functional level with five sub-groups (E&M Administration, Transit Facilities Maintenance, Maintenance of Way, Signals and Communications Maintenance, and Power Systems Maintenance), for a total of 16 distinct work

groups. **The largest allocation of space is for Maintenance of Way, which occupies nearly a half million square feet, or nearly 30 percent of the total 36.5-acre Charlestown Campus. Bus Operations and Bus Maintenance come next, occupying about 16.5 percent of the campus between them.** The remaining 36 percent of the campus footprint is occupied by site circulation, staff parking, and unallocated storage and debris areas.

Table 2 – Charlestown Campus – Existing Conditions Space Utilization – E&M – Engineering and Maintenance Summary

Department / Function	Buildings	Space Allocation – Footprint SF*	Space Allocation – %	Staffing – Employees	Staffing – %	Parking – Non-Revenue Vehicles	Parking – Space Allocation
E&M – Engineering and Maintenance Administration	2, 3	1,600	0.1%	27	1.9%	0	0
TFM – Transit Facilities Management	2, 3, 4, 5, 8, 11, 13	75,791	4.8%	208	15.0%	69	15,456
MOW – Maintenance of Way	2, 11, 14	478,191	30.1%	113	8.2%	158	42,272
SCM – Signals and Communications Maintenance	2	1,300	0.1%	3	0.2%	3	600
PSM – Power Systems Maintenance	2, 3, 4	57,440	3.6%	232	16.8%	81	24,480
E&M – Engineering and Maintenance Overall	2, 3, 4, 5, 8, 11, 13, 14	614,322	0	583	1	311	82,808

* Department footprint includes building, storage (internal and external), and non-revenue vehicle parking

Table 3 – Charlestown Campus – Existing Conditions Space Utilization – Department Summary

Department / Function	Buildings	Space Allocation – Footprint SF*	Space Allocation – %	Staffing – Employees	Staffing – %	Parking – Non-Revenue Vehicles	Parking – Space Allocation
E&M – Engineering and Maintenance Overall	2, 3, 4, 5, 8, 11, 13, 14	614,322	0	583	1	311	82,808
LW – Logistics Warehouse	29	58,550	3.7%	2	0.1%	1	200
BM – Bus Maintenance	6, 7, 20	100,818	6.4%	73	5.3%	4	1,168
NRV – Non-Revenue Vehicle Maintenance	14, 15	53,533	3.4%	17	1.2%	2	768
BUS – Bus Operations	6	160,935	10.1%	638	46.1%	6	1,200
OT – Operations Training	12	14,280	0.9%	25	1.8%	5	1,000
AFC – Automated Fare Collection	12	6,200	0.4%	9	0.6%	1	200
RC – Vendor Management – Revenue Collection	12	3,900	0.2%	5	0.4%	2	400
TP – Transit Police	2, 3	4,030	0.3%	33	2.4%	13	2,600
Sub-Total – Allocated to Departments	-	1,016,568	64.0%	1385	100.0%	345	89,144

* Department footprint includes building, storage (internal and external), and non-revenue vehicle parking

Table 4 – Charlestown Campus – Existing Conditions Space Utilization – Allocated and Unallocated Space

Department / Function	Space Allocation – Footprint SF*	Space Allocation – %	Parking – Non-Revenue Vehicles
Sub-Total – Allocated to Departments	1,016,568	64.0%	345
Unallocated Space – Employee Parking	199,398	-	997
Unallocated Space – Circulation	371,386	-	-
GRAND TOTAL	1,587,352	100%	-

* Department footprint includes building, storage (internal and external), and non-revenue vehicle parking

IDENTIFYING NEEDS AND CONSTRAINTS

The Charlestown Master Plan project team conducted a comprehensive process to engage MBTA internal stakeholders in identifying the space needs and functional requirements for each department and work unit. The project team also conducted a thorough assessment of the site constraints and planning context for the future campus.

Space Needs and Functional Requirements

The project team collected an extensive set of information about existing space allocation, which served as the basis for developing a comprehensive assessment of the future space needs and the functional requirements. The project collected detailed data via a written questionnaire; conducted on-site visits to observe operations and behavior; and engaged each department's staff in discussions about current deficiencies and future needs. The following is a summary of key takeaways and base assumptions for the Master Plan related to space needs and functional requirements for the various departments and work groups.

- **The new layout will require all new, consolidated buildings.** The existing buildings are under-sized, many are in poor condition, and their layout on the site is inefficient. Trying to preserve any of the buildings would constrain reconfiguration of the overall site.
- As noted above, the Charlestown Campus uses are currently distributed across 14 buildings. The preference in developing the Master Plan is to **minimize the number of different structures and consolidate the uses** in order to promote operational efficiency for departments that are currently spread across multiple worksites. However, this must be balanced against functional requirements of circulation, access, placement on the site, and specific priorities such as the need for ground floor space and/or exterior vehicle doors. Buildings that are too big would undermine efficiency of building layout and exterior access.
- **There is not enough space at Charlestown to meet the future needs in its current configuration.** A new campus configuration requires developing a more efficient layout of the available campus space.
- The Engineering and Maintenance Department and its work groups are currently spread across many different buildings, and they are severely space-constrained. **The demand for new safe, efficient, modern, consolidated space for Engineering and Maintenance is the highest priority element of the Charlestown Master Plan.**
- **Most of the departments and work groups to be accommodated at the Charlestown Campus require ground floor space** to enable vehicular access, storage, and/or maintenance for multiple large vehicles (e.g. buses, specialty non-revenue vehicles, non-revenue trucks) or large vehicle access for loading and/or operations (e.g. deliveries for the Logistics Warehouse, Engineering and Maintenance, and Bus Maintenance departments). In addition, Operations Training likely requires some ground floor space for operating simulators, which are large, heavy, and require high ceilings.
- Some uses could be housed on second floor space; these include administrative offices associated with each of the departments, some warehouse space, and the Automated Fare Collection and Revenue Collection spaces.
- Some elements of the current roadway network within the Charlestown Campus footprint subdivide the campus into several blocks. At the same time, the presence of privately-owned parcels at 62-68 Alford Street and 27 West Street break up the continuity of the MBTA's property holdings. Both conditions would constrain the

MBTA's ability to consolidate spaces and minimize the number of structures in the future Charlestown Campus layout. **The acquisition of these private parcels and the closure of certain minor roadway segments would facilitate a more efficient layout of the Charlestown Campus.**

- Parking for Charlestown Campus employees is currently provided in surface parking areas distributed around the campus, which results in **inefficient vehicular and pedestrian circulation around the campus**. The lack of clear separation among pedestrians, vehicular circulation, and maintenance operations could also contribute to hazards. The Master Plan entails construction of a central parking facility that provides parking for on-site employees. Building a central parking garage has several advantages: it consolidates space needs on a multi-floor facility, minimizes internal circulation by providing more direct access from surrounding roadways, and enables safer pedestrian connections to the work sites and facilities within the Charlestown Campus.

Table 5, Table 6, Table 7 and Table 8 provide summaries of space needs, individual departmental space, personnel counts (by shift) and vehicle counts.

Table 5 – Charlestown Campus – Future Conditions Building A Space and Staffing Needs – Department Summary

Building A Space Name	Area – Need (sf)	Area – Current	Area – Change	Area – % Change	Staffing – First	Staffing – Second	Staffing – Third	Staffing – Total Need	Staffing – Current	Staffing – Change	Staffing – % Change
Common/Shared building E&M Plus areas	20,445	-	-	-	2	2	2	6	0	6	-
E&M Administration	8,379	-	-	-	25	2	2	29	27	2	7%
E&M TFM Transit Facilities Management	79,997	60,335	19,662	33%	172	68	23	263	208	55	26%
E&M MOW – Maintenance of Way	185,220	98,300	86,920	88%	83	22	36	141	113	28	25%
E&M SCM – Signals and Communications	1,821	700	1,121	160%	18	0	0	18	3	15	500%
E&M PSM Power Systems Maintenance	63,198	14,960	48,238	322%	194	50	93	337	232	105	45%
LW Logistics Warehouse	54,390	45,000	9,390	21%	2	0	0	2	2	0	0%
NRV Non-Revenue Vehicle Maintenance (VM)	34,220	30,765	3,455	11%	17	0	4	21	17	4	24%
OT – Operations Training	16,608	13,280	3,328	25%	23	5	5	33	25	8	32%
AFC – Automated Fare Collection	6,061	6,000	61	1%	9	0	0	9	9	0	0%
RC Vendor Management – Revenue Collection	3,684	3,500	184	5%	2	2	1	5	5	0	0%
TP – Transit Police	3,278	1,430	1,848	129%	15	11	7	33	33	0	0%
Subtotal – Building A Requirements	477,300	274,270	174,207	64%	562	162	173	897	674	223	33%

Table 6 – Charlestown Campus – Future Conditions Building B Space and Staffing Needs – Department Summary

Building B Space Name	Area – Need (sf)	Area – Current	Area – Change	Area – % Change	Staffing – First	Staffing – Second	Staffing – Third	Staffing – Total Need	Staffing – Current	Staffing – Change	Staffing – % Change
Common/Shared building BUS areas	9,045	-	-	-	0	0	0	0	-	0	-
BM – Bus Maintenance	182,182	95,650	86,532	90%	34	24	31	89	73	16	22%
BUS – Bus Operations	325,588	113,735	211,853	186%	280	276	209	765	638	127	20%
Subtotal – Building B Requirements	516,816	209,385	298,385	143%	314	300	240	854	711	143	20%

Table 7 – Charlestown Campus – Future Conditions Space and Staffing Needs – Building Summary

Building	Area – Need (sf)	Area – Current	Area – Change	Area – % Change	Staffing – First	Staffing – Second	Staffing – Third	Staffing – Total Need	Staffing – Current	Staffing – Change	Staffing – % Change
Building A Requirements	477,300	274,270	174,207	64%	562	162	173	897	674	223	33%
Building B Requirements	516,816	209,385	298,385	143%	314	300	240	854	711	143	20%
Total – Building A+B Requirements	994,116	483,655	472,592	98%	876	462	413	1,751	1,385	366	26%

Table 8 – Charlestown Campus – Future Conditions Site & Parking Space Needs – Department Summary

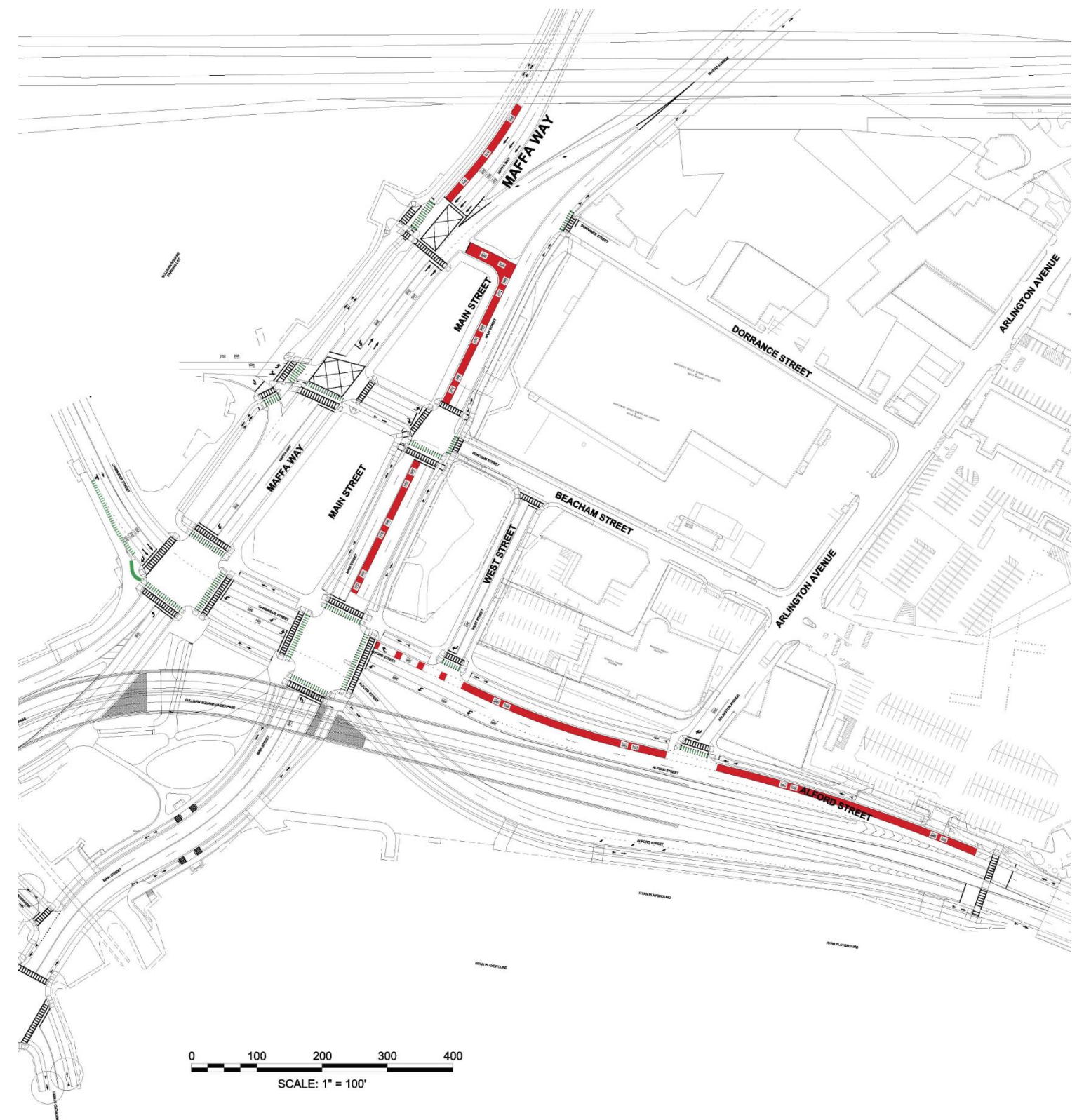
Space Name	Area – Need (sf)	Area – Current	Area – Change	Area – % Change	Note
MOW	121,600	181,264	-59,664	-33%	Reduced yard space versus current yard (due to layout)
PSM	26,600	18,000	8,600	48%	Expanded training yard area
NRV Vehicle Parking	160,344	-	-	-	NRV accounts for 266 spaces across all departments (pick-up trucks, TP vehicles, etc.)
Employee/Visitor Parking	289,782	-	-	-	Peak demand during E&M shift changes/overlap totals 1,100 spaces
Other Site Areas	4,758	-	-	-	Miscellaneous areas

Site Constraints and Planning Assumptions

In addition to the existing and future needs of the MBTA departments that will operate within the Charlestown Campus, there are several other priorities and constraints for the Master Plan that arise from external conditions and other planning initiatives.

- **Sullivan Square Redesign.** The City of Boston is nearing the end of a comprehensive planning and redesign effort for Sullivan Square, immediately adjacent to the Charlestown Campus. **The primary goal of the City of Boston's redesign of Sullivan Square is to change it from an open, uninviting space with a highway-oriented feel to a more urban neighborhood, with human-scaled development.** The project entails reconfiguring Sullivan Square's large, irregular ovoid rotary into a more regular street grid. This redesign would reduce the amount of paved area; eliminate the large, unusable infield within the rotary; and convert the space saved into usable blocks for increased green space and development. The conceptual design of the Sullivan Square project is shown in Figure 3. While the proposed Sullivan Square Redesign would have significant benefits for the Charlestown neighborhood, it could present challenges for the MBTA and its Charlestown Campus operations. The MBTA is currently coordinating with the City of Boston on a range of issues that include the following:
 - In order to be consistent with the City of Boston's design goals, the Charlestown Master Plan will provide more urban, street-oriented façades near the southeast corner of the Charlestown Campus at Main Street and Alford Street.
 - In order to create parcels wide enough for development (parcels B and C), the Sullivan Square Redesign would shift Main Street to the north. This would reduce the size of the MBTA's parcels.
 - The Sullivan Square Redesign assumes that West Street and Beacham Street would be retained, though West Street would be realigned. Retaining these roadways within the Charlestown Campus would constrain development of a large new consolidated Engineering and Maintenance facility at the southeast corner of the campus.
 - Arlington Avenue and the Alford Street Gate would connect to Alford Street adjacent to the underpass boat section, so they would have only right-in/right-out access to and from Alford Street southbound.
 - The connector road at the western end of parcel C does not connect with the current Dorrance Street alignment. The MBTA proposes to reconfigure Dorrance Street in order to provide direct access to Sullivan Square Station.
 - The City of Boston's roadway plan currently includes some segments of dedicated bus lane; the MBTA would like to investigate the potential for additional dedicated bus lanes.

Figure 3 – Sullivan Square – City of Boston Redesign Project

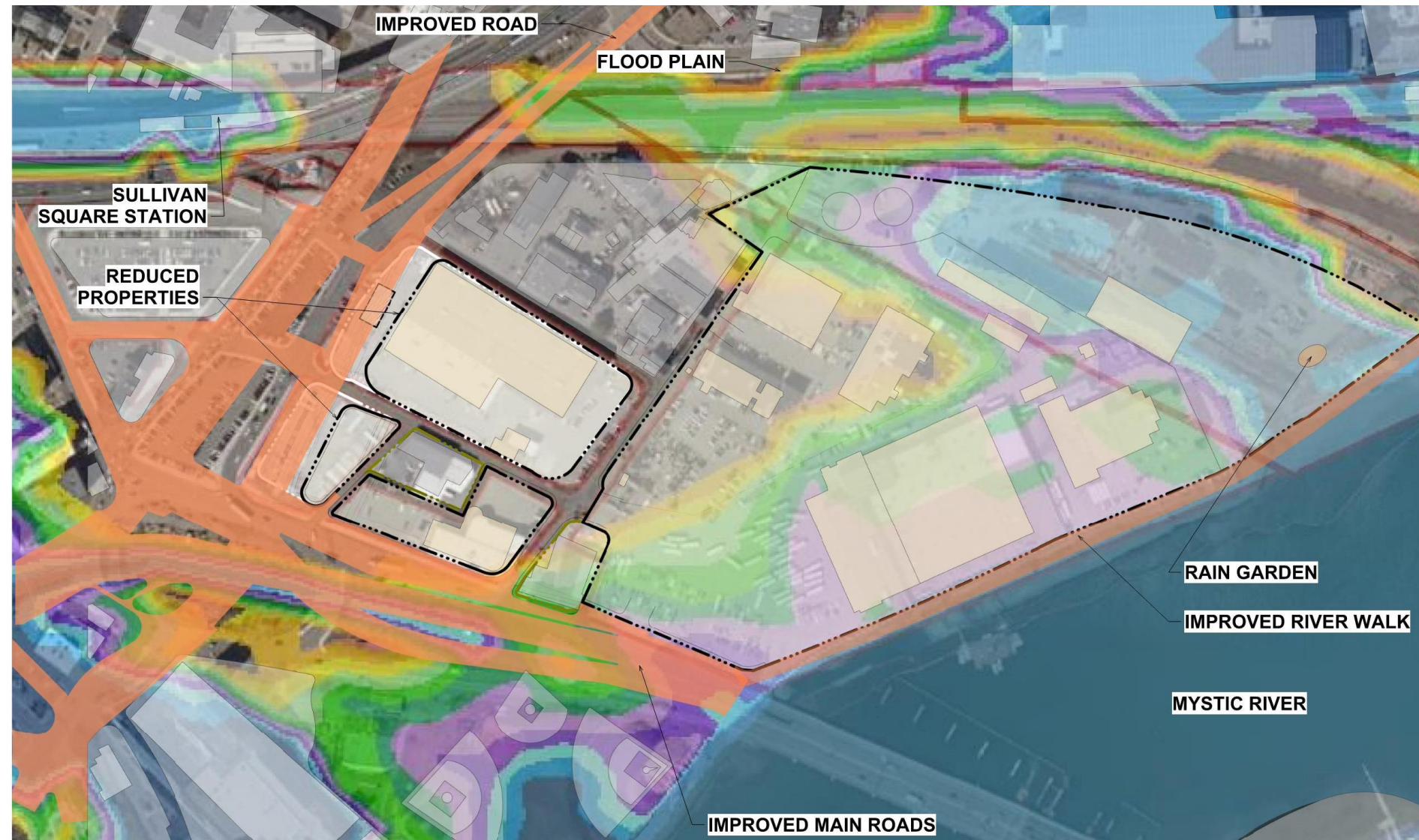


MBTA Zero-Emission Bus Initiative. In keeping with the Commonwealth of Massachusetts’ greenhouse gas emission reduction commitments under the Global Warming Solutions Act, the MBTA has undertaken an initiative to convert its bus fleet to 100 percent zero-emission vehicles. The MBTA’s current assumption is that the bus fleet will be converted to battery-electric buses. This will entail converting not only the bus fleet, but also converting the MBTA’s bus maintenance facilities to enable storage, charging, and maintenance of the new buses with battery-electric technology. The Charlestown Bus Maintenance Facility is expected to be the final bus maintenance facility in the system that is rehabilitated and converted to all battery-electric buses.

- **MBTA Headquarters Relocation Option.** The Master Plan also evaluates the potential for relocating roughly 800 office-based employees from MBTA headquarters at 10 Park Plaza in downtown Boston to the Charlestown campus. This option would require providing an additional 125,000 square feet of office space on the Charlestown campus. The Master Plan would site this space in two additional floors above the Main Engineering and Maintenance Building in the southeast corner of the campus.

- **Flood Risk and Flooding Resilience.** Much of the Charlestown Campus lies within the floodplain for a 100-year storm (i.e. storm with one percent chance of incidence within one year) for 2070 conditions (assuming a 4.2-foot sea level rise). The MBTA is planning to construct a seawall along the Mystic River site frontage and a raingarden for stormwater detention. These measures are intended to improve the Charlestown Campus’s resilience and facilitate its recovery in case of a severe weather event. The Charlestown Campus and its bus fleet are also a critical component of regional resilience, so the Charlestown Bus Maintenance Facility must keep buses protected from impacts during a severe weather event, and to dispatch those buses in the aftermath of such an event. Therefore, the Charlestown Master Plan must provide for a Bus Maintenance Facility and bus circulation throughout the campus that is raised above the level of the floodplain.
- **Riverwalk Improvements.** The City of Boston has proposed extending the Riverwalk along the Mystic River in front of MBTA’s property, along the seawall. This would extend the Riverwalk, improve its connectivity to more of Boston and Somerville, and enhance the shared use path network along the Mystic River.

Figure 4 – Floodplain and Resilience Measures In and Around the Charlestown Campus



MASTER PLAN: A VISION FOR CHARLESTOWN CAMPUS

Figure 5 – Rendering of Overall Site



Building upon the existing conditions assessment, space needs evaluation, and review of external constraints and requirements, the project team undertook an alternatives development and analysis process:

- Development of many Charlestown Campus Master Plan alternatives that encompassed a range of approaches to the campus layout, from a “maximum footprint” approach (with most or all uses on the ground floor, and maximum 300-bus storage and maintenance capacity) to a “minimum footprint” approach (with smaller building footprints, more second-floor space, and a lower 240-bus storage and maintenance capacity). The initial alternatives also included an option that reflected a rearrangement of major campus components and work groups between the Charlestown Campus and Everett Yard, but this alternative was rejected.
- Initial round of presentations to the MBTA work groups to be housed at the Charlestown Campus to gather feedback on the proposed alternatives.
- Selection of a preferred alternative and refinement of a single Master Plan design that reflects input from the MBTA Charlestown Campus stakeholders.
- Second round of presentations to the MBTA Charlestown Campus stakeholders to gather further feedback on the Master Plan preferred alternative and refine the Master Plan design concept.
- Development of a final Master Plan Preferred Alternative.

Figure 5 shows the Charlestown Master Plan Preferred Alternative, in the full-build condition. This alternative includes the following key design elements and layout features:

- Layout of Buildings
 - The number of separate buildings was increased, with the Engineering and Maintenance work groups and other non-bus departments separated into two buildings. This provides greater flexibility in layout, greater exterior vehicle access, and improved access for different work groups to other campus components that are important for their work.
 - Maintenance of Way requires access to the material storage yard, which will remain in the northwestern corner of the campus.
 - Non-Revenue Vehicle Maintenance is in the same building as Maintenance of Way, with separate but adjacent spaces.
 - The remainder of the departments and work groups are in the large Main Engineering and Maintenance Building near the corner of Main Street and Alford Street.
 - Bus Operations and Bus Maintenance are in a consolidated Bus Maintenance Facility building, located in roughly the same portion of the campus as the existing bus storage and maintenance buildings. Siting the new Bus Maintenance Facility in the same area as the existing Bus Operations and Bus Maintenance is essential to the phasing of the Master Plan.
 - If the MBTA headquarters were relocated from 10 Park Plaza to the Charlestown Campus, it would be located above the second floor of the Main Engineering and Maintenance Building along Main Street.

- Building Design
 - The footprint of the buildings has been reduced, with more second-floor space provided for administrative offices and other spaces that do not require direct vehicular access. This provides more exterior circulation area and greater flexibility in building layout and design.
 - The uses that do not require direct exterior vehicular access – including Power Systems Maintenance, Transit Police, Signal and Communications Maintenance, and administrative offices – are located along the Main Street frontage to provide a “street wall” at or near the back-of-sidewalk, with no exterior parking or vehicular circulation.
 - The Bus Maintenance Facility building includes second-floor bus storage in order to reduce the building footprint and provide more exterior circulation and staging space.
- Circulation
 - Beacham Street and West Street are closed in order to enable larger building footprints.
 - Arlington Avenue and Dorrance Street are preserved as public roadways to enable access to and around the campus, as well as the non-MBTA-owned parcel at the southwestern corner of the site.
 - Bus-only access is provided at the Alford Street Gate, which provides right-in/right-out access to and from Alford Street southbound.
 - The closure of Beacham Street and West Street, coupled with the fact that Arlington Avenue and the Alford Street Gate only have access to and from Alford Street southbound, necessitates a very heavy reliance on Dorrance Street for bus operations.
 - Dorrance Street is realigned to enable bus connections directly across Main Street and Maffa Way to Sullivan Square Station.
 - The parking garage is located along Arlington Street between Alford Street and Dorrance Street, with vehicular access from both.
 - The parking garage provides pedestrian bridge access at the second-floor level to the other three buildings on the campus: the Main Engineering and Maintenance building, the Maintenance of Way/ Non-Revenue Vehicle Maintenance building, and the Bus Maintenance Facility. This provides more direct connections between the parking garage and the work sites, and also reduces pedestrian conflicts with MBTA vehicles, especially within the gated bus yard.
 - The bus storage and maintenance area occupy the area of the campus west of Alford Street and south of the Mystic River, in the vicinity of the existing bus buildings. Bus access is provided via two gated entry points: Alford Street and Arlington Avenue, aligned with the end of Dorrance Street.

Figure 6 – Rendering from the New Main Street Intersection



Figure 8 – Rendering from Arlington Avenue Towards the Main Entrance and the E&M Facility



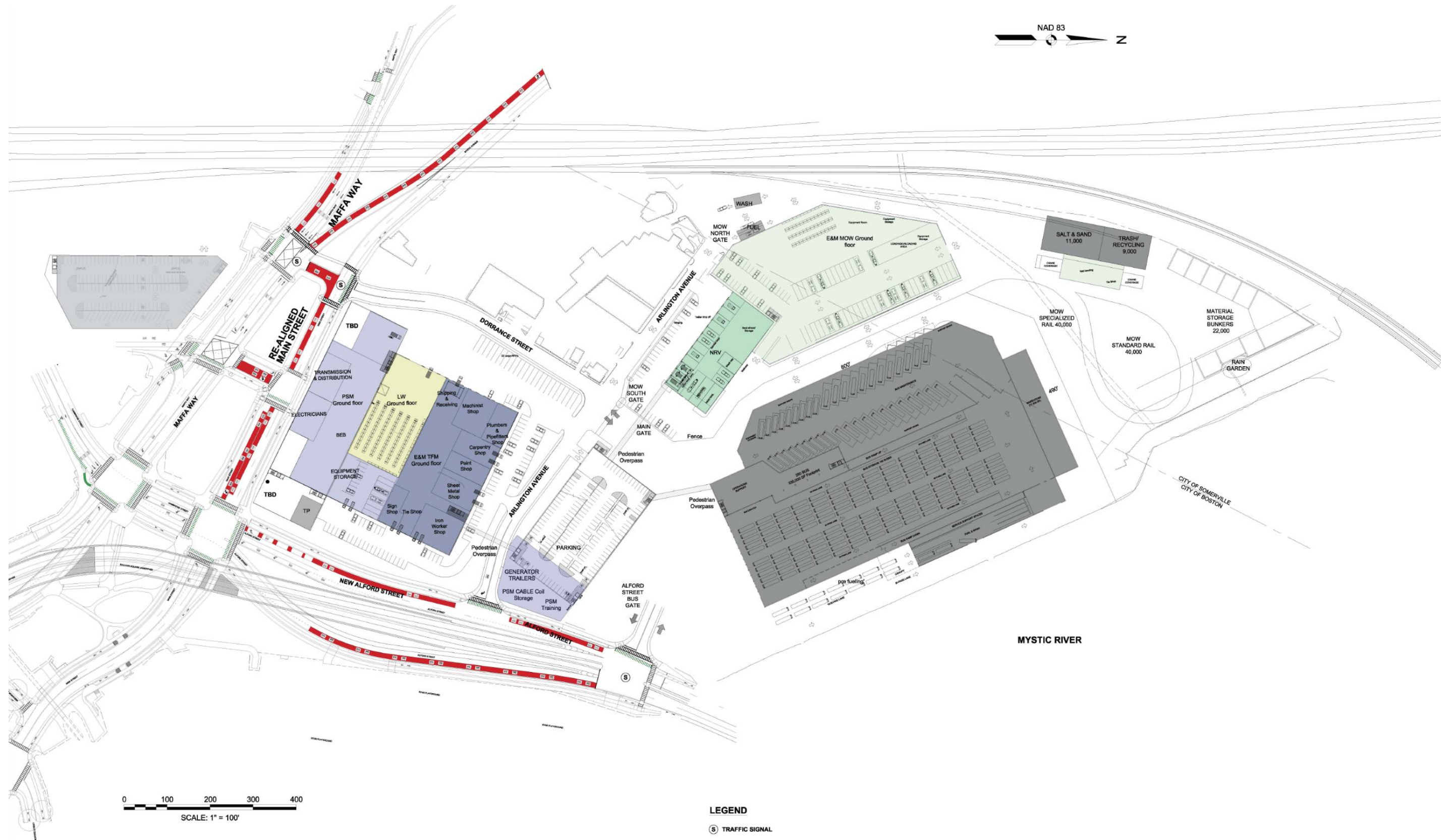
Figure 7 – Rendering from Alford Street Bridge



Figure 9 – Rendering from Maffa Way Towards Dorrance Street



Figure 10 – Charlestown Campus Master Plan – Preferred Alternative

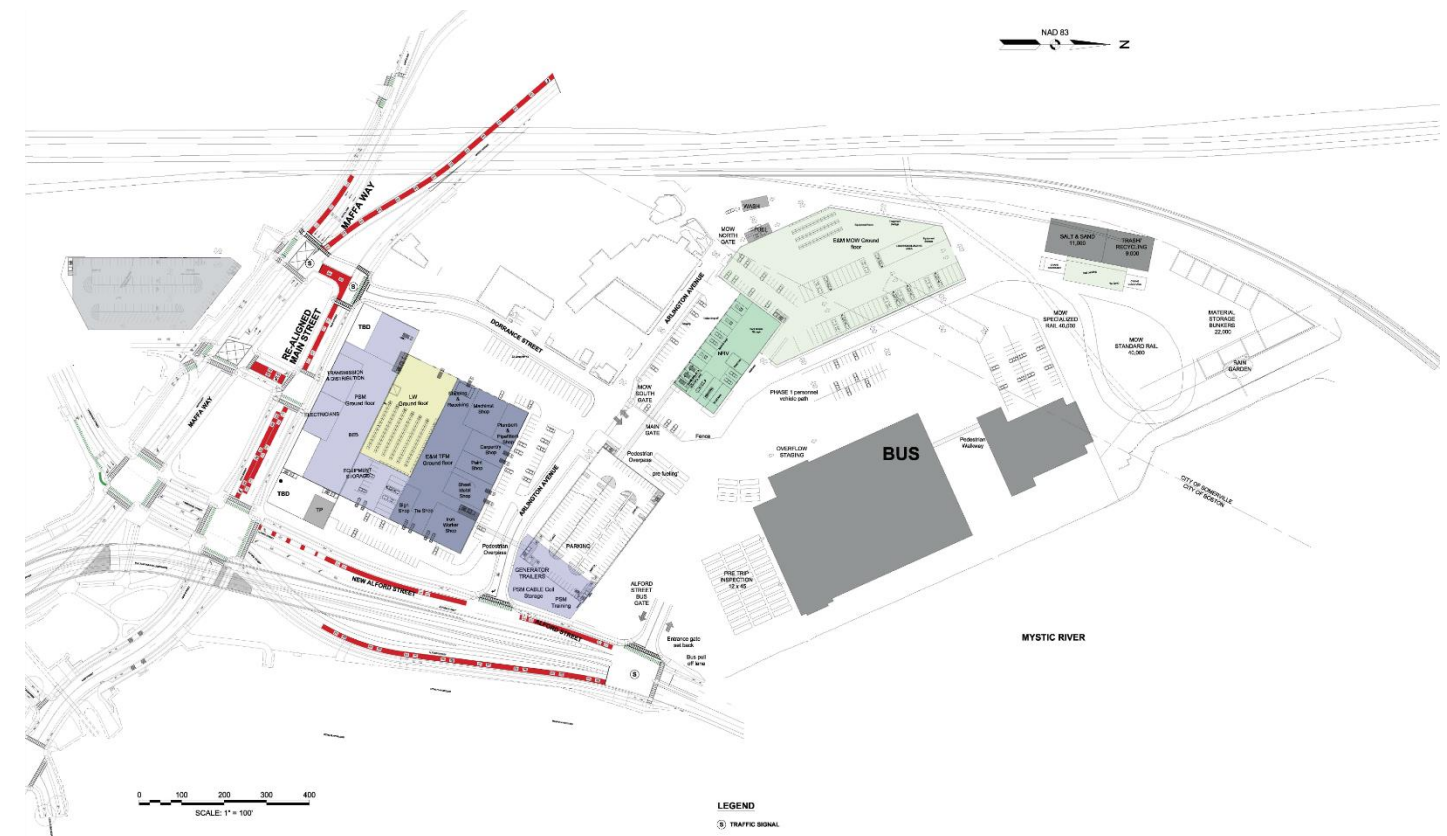


Proposed Phasing

The project will need to be phased over time in order to allocate funding, develop the designs, and integrate the Charlestown Bus Maintenance Facility with the full MBTA Bus Transformation program.

- Phase A. Engineering and Maintenance: The rehabilitation and provision of expanded, modern work facilities for Engineering and Maintenance are a high priority. Phase A will entail the following;
 - Relocation of the plumbers and pipefitters (this is primarily due to the Sullivan Square Redesign project and the re-alignment of Main Street, which would remove their current building).
 - Securing temporary off-site facilities for Non-Revenue Vehicle Maintenance, Fare Collection and Operations Training.
 - Acquisition of the privately-owned parcels at 62-68 Alford Street and 27 West Street.
 - Closure of Beacham Street and West Street.
 - Segregating and fencing off the existing Bus Operations and Bus Maintenance functions in the northeastern portion of the site.
 - Maintaining existing bus operations during construction of the balance of the campus.
 - Identifying appropriate space and circulation patterns for the buses to queue ahead of fueling
 - Potentially temporarily relocating the fuel alley
 - Hiring additional staff to support operations and fueling
 - Phase A construction is expected to take roughly three years, to be implemented 2026 – 2028.
 - The final Phase A condition is shown in Figure 11.
- Phase B. Phase B is the full build of the site, as shown in Figure 10, with the demolition of the old Bus Operations and Bus Maintenance buildings, and construction of a new, consolidated Bus Maintenance Facility building.
 - Charlestown is the largest bus storage and maintenance facility in the system.
 - Charlestown is expected to be the last bus maintenance facility in the system to be reconstructed. This will enable it to take maximum advantage of advances in battery-electric bus technologies.
 - Implementation of battery-electric bus charging for Charlestown will require electric utility upgrades to provide adequate electric charging capacity.
 - Phase B construction is expected to take roughly three years, to be implemented 2036 – 2038. Bus operations, storage, and maintenance will need to be relocated during this time. It is expected that these operations will be distributed among other bus facilities throughout the system in such a way as to maximize the efficiency of serving the Charlestown bus routes and minimize the amount of deadheading required.

Figure 11 – Phase A of the Charlestown Campus Master Plan Build-Out



Cost Estimate

The Charlestown Master Plan cost estimate is roughly \$916.3 million for construction of both phases of the project. The cost estimate is based on the following information and assumptions:

- The cost estimates are based on quantities derived from the Master Plan (site plan and building architectural plans) and unit costs applied to those quantities.
 - Unit costs are derived from actual bids from three or more projects, including:
 - Recent bus maintenance facility projects by the Washington Metropolitan Area Transit Authority (WMATA).
 - Recent pre-cast parking garage construction at Logan Airport.
 - Recent roadway, utility, and environmental remediation work from the Union Square project in Somerville.
- Unit costs are based on unit prices in 2021 US dollars; overall construction costs are in year-of-expenditure US dollars assuming 3 percent annual escalation:
 - Phase A: 2026 – 2028
 - Phase B: 2036 – 2038
- A 25 percent design contingency is included.
- The following items are excluded from the cost:
 - MBTA Force Accounts
 - Interest expense
 - Professional services, including owner's project administration, architects' and engineers' fees, and testing and inspections
 - Construction of temporary facilities
 - Relocation expenses
 - Electrical utility service upgrades
 - Construction contingency
 - Risk allowance

The following is a high-level breakdown of major cost components:

Table 9 – Cost Estimate Summary – Phase A

Construction Phase	Items	Program	Construction Cost
Phase A – 2026 – 2028	Site Work	24.25 Acres	\$ 48,000,000
Phase A – 2026 – 2028	790-Space Parking Garage	294,400 Square Feet	\$ 38,000,000
Phase A – 2026 – 2028	Engineering & Maintenance Main Building	251,696 Square Feet	\$ 171,000,000
Phase A – 2026 – 2028	Maintenance of Way and Non-Revenue Vehicle Building	219,420 Square Feet	\$ 168,000,000
Phase A Subtotal	-	-	\$ 425,000,000

Table 10 – Cost Estimate Summary – Phase B

Construction Phase	Items	Program	Construction Cost
Phase B – 2036 – 2038	Site Work	14.5 Acres	\$ 40,000,000
Phase B – 2036 – 2038	Bus Storage and Maintenance Facility	523,000 Square Feet	\$ 531,000,000
Phase B Subtotal	-	-	\$ 571,000,000

Table 11 – Construction Cost Phase Subtotals

Construction Phase	Construction Cost
Phase A Subtotal	\$ 425,000,000
Phase B Subtotal	\$ 571,000,000
Grand Total	\$ 1,000,000,000

NEXT STEPS

Upon completion of the Charlestown Master Plan, the MBTA will investigate funding opportunities and work to integrate the two phases of the Master Plan implementation into the MBTA Capital Investment Plan (CIP). The MBTA will also identify specific actions required to pursue acquisition of the privately-owned properties within the Charlestown campus footprint; environmental assessment and remediation of the Charlestown Campus; and procurement of design services for Phase A of Master Plan implementation.