

Interior Improvements at New Haven Union Station Building

9/28/2022



Prepared for: the New Haven Parking Authority and the New Haven Union
Station Partnership - Interior Improvements Subcommittee

By: Desman & team

Interior Improvements New Haven Union Station Building

Table of Contents

Evaluation Team



175 Capital Blvd.
Suite 402
Rocky Hill, CT 06067
860.563.1117

SVIGALS + PARTNERS

84 Orange Street
New Haven, CT 06510
203.786.5110

SILVER / PETRUCELLI + ASSOCIATES

3190 Whitney Avenue, Building #2
Hamden, CT 06518
203.230.9007

Executive Summary

Improvement Evaluation Areas

- General Opportunities
 - Site Improvements
 - MEP Evaluation
- Wayfinding / Signage
- Restrooms
- Food / Restaurant
 - Grab & Go / Fast Casual Food
 - Fine Dining / Bar
- Amenities Upgrades
 - Commuter / Passenger Lounge
 - Coworking / Meeting Space
- Retail Mix
 - Storefronts
 - Kiosks / Retail Mobile Units
- Vertical Conveyance

Proposed Interior Upgrades — Identified Opportunities *Including budget / cost information and MEP impacts*

West End Focus—Multimodal Pedestrian Connections

Executive Summary

Purpose & Structure of this Report

This evaluation is commissioned by the interior improvements subcommittee. The purpose is to evaluate all previous studies (listed on this page). Individual components were then organized into functional categories. For example, the portion of each study regarding restaurants are evaluated in the food and restaurant section of this report. In each section, the physical locations are noted and an analysis is provided using the Chart Key on this page. Finally, all recommended solutions which do not impede or negatively impact known future re-development or adjacent new development are compiled in the final section, Proposed Interior Upgrades (Phase I)

General Assumptions

- Project North has been maintained as the front of Union Station to match the existing drawings, wayfinding devices, fire panels etc.
- Ignore current market slump due to Covid-19. Assume market will rebound to relatively same as pre-covid levels.
- No residential use is recommended within the historic station as adjacent development is planned to provide adequate residential opportunities. (W-ZHA)
- No hospitality / hotel use is recommended within the historic station as market analysis has determined room count to be too low to be viable. Assume adjacent development may include a hotel at appropriate time based on growth and market conditions.
- Additional evaluations may be needed based on chosen improvement use categories. This may include but is not limited to; structural loading on the second floor, general code, egress, plumbing fixture counts, traffic study and market analysis.
- Design and cost estimating will need to be performed as required for each element once a path forward is chosen.

Reference Study List and Key

This evaluation has reviewed the following studies which will be referred to by the abbreviated names as follows:

- (100yr) - Union Station: 100 Years Forward, May 2017
- (JLL) - New Haven Union Station Transit Oriented Development Study, February 7, 2008. Jones Lang LaSalle
- (LIFT) - Desman New Material Lift Location, June 2005
- (MED) - Medina Consultants New Parking Garage Concept, May 2012
- (MERJE) - Interior Signage Wayfinding Analysis, April 17 2019, Merje design
- (SS) - Union Station Retail and Commercial Attraction Strategy, Streetsense 2019
- (Staff) - Ideas from staff discussions, various dates
- (Svigals) - Sketches / Concepts Provided through Desman, various dates
- (Turner 16') - Conceptual Estimate—Union Station, Turner 2016
- (USB-17) - Desman Restaurant Study, February 2017
- (USB-18) - Desman Family Restroom Study, June 2018
- (W-ZHA) - Union Station Transportation Center Transit-Oriented Development Plan, September 2013. W-ZHA

Chart Key

	Category / Area			
Item	Reccomended Solution	Possible Solution with some drawbacks	Possible Solution with many drawbacks	Not Reccomended
Determination	Determined to be the best solution based on complete analysis. Highly feasible and highly valuable.	Determined to be a desirable solution but has some feasibility or cost concerns.	Determined to be a possible solution but has significant feasibility concerns and / or may not add value.	Determined as not viable. High cost, low value compared to other options. Not a solution.

SUMMARY

Executive Summary

This report serves to compile many previously completed surveys and studies (*list provided on previous page*) regarding the redevelopment of New Haven Union Station. It assembles their varied and often conflicting suggestions into one easy to navigate platform for evaluation.

This evaluation considers each items overall strengths, weaknesses and opportunities, then weighs how the proposed improvement serves the users of the station and its appropriateness for the historic structure. Next, it considers cost implications, temporary interruptions, long term operations and maintenance impacts. The MEP report provides a current evaluation of the building services as they relate to these improvement options.

Union Station is a valuable historic resource and gateway to New Haven for many people. The proposed interior upgrades section compiles this reports many individual evaluations into a plan for improvements that may be freely and responsibly implemented without concern for negative impact on potential future station and broader site improvements.

Improvement Area Summaries

General Opportunities and Site

This reviews areas adjacent to the station on all sides and their impact on the building itself. Many items are related to wayfinding, branded signage, services, traffic flow, deliveries and waste removal. It includes portions of the adjacent parking garage, pedestrian access areas and their integration with public spaces leading to and from the station.

MEP evaluation

While the current MEP infrastructure appears to be sized to handle most of the proposed Station improvements, enhancements and replacements of MEP distribution should be considered in the early stages of the work. This may include providing the ability to separately meter energy use by tenants and improvement of the tenant HVAC systems as high priority base infrastructure work. The base infrastructure for these systems can be provided up front and extended to individual spaces as they are incorporated into the project.

Wayfinding / Signage

Options for wayfinding, information, direction and more are discussed here along with iconic signage options for the building exterior.

Restrooms

Identified as a critical need for improving the user experience, we have evaluated potential areas for expansion and addition of restroom areas, particularly family restrooms. This area also considers a lactation / mother's room which provides a sterile space for nursing and pumping away from toilets, and allows for the washing of pumping equipment. This can be used by both guests and station employees.

Food / Restaurant

To achieve a more unique experience it is suggested that local vendors be considered for both restaurants and retail tenants in addition to national chains. Generally it is proposed that the expanded restaurant options be provided on the ground floor to

include fast casual and café options as well as contemporary casual and fine dining as the market shifts. The concept of a commissary kitchen along with freight elevators is introduced to support greater flexibility in providing restaurant spaces within the historic structure.

Amenities Upgrades

These recommendations when reviewed collectively place the station in league with top transportation centers around the world, providing services and amenities which will satisfy travelers from the daily commuter to the international tourist. With minimal cost and planning, many items can be implemented for immediate benefit. Others may require significant investment or must be phased to occur with the adjacent development of the multimodal center. These include a passenger lounge and coworking / meeting spaces.

Retail Mix

Careful consideration of the retail mix and tenant location is required for success. This report suggests a phased approach to creating an active ground floor including new storefront designs along the existing retail face and kiosks which are low cost and can be used to try new ideas before heavy investment, or for seasonal merchants.

Vertical Conveyance

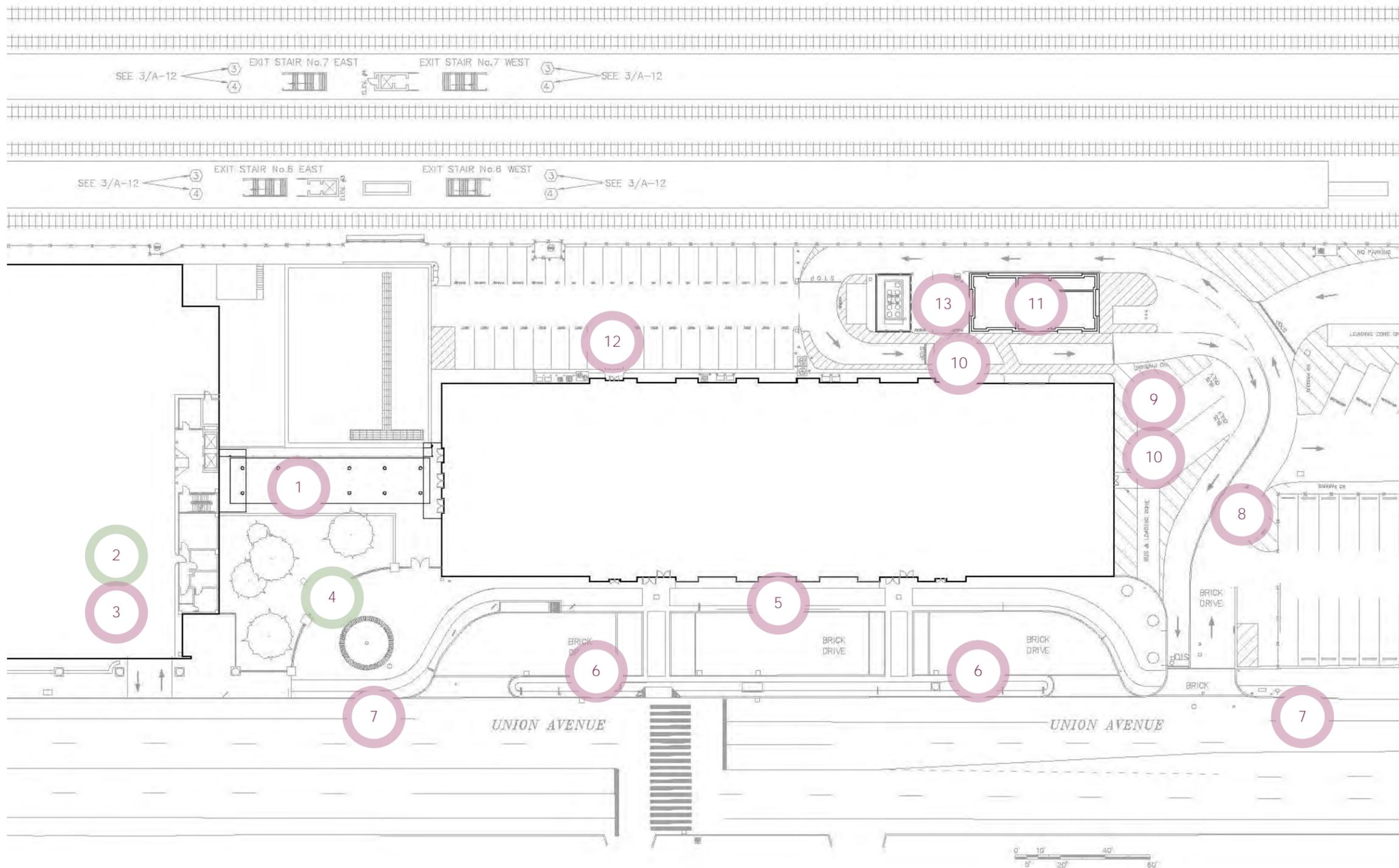
How guests, tenants and staff move through the building vertically are considered in this section. A freight elevator is required for any redevelopment option and is discussed. The idea of pedestrian transportation to reach the second level and future multimodal center is also reviewed.

Proposed Interior Upgrades—Identified Opportunities

This plan compiles only the most viable, immediately actionable, proposed improvements into one section. These improvements have been thoroughly evaluated and have been determined to best serve the stations users, reinforcing the station as an anchor for all future area redevelopment and facilitate its long term preservation without hindering potential future development such as a new multi-modal center to the west, garage expansion to the east, and more.

General Opportunities

Site & Infrastructure / MEP Evaluation



Ground Level

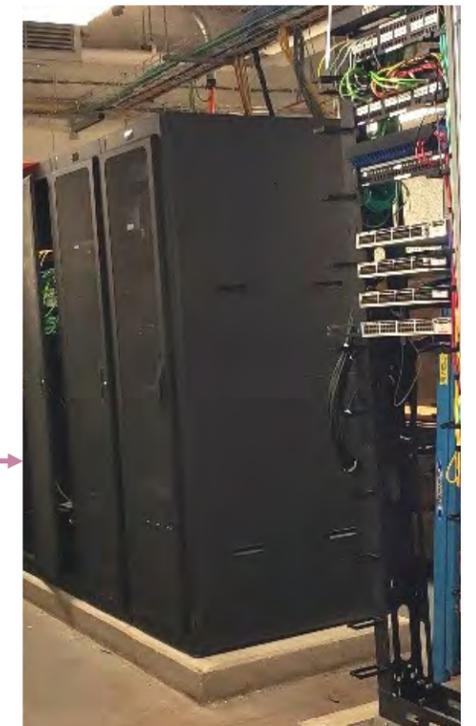
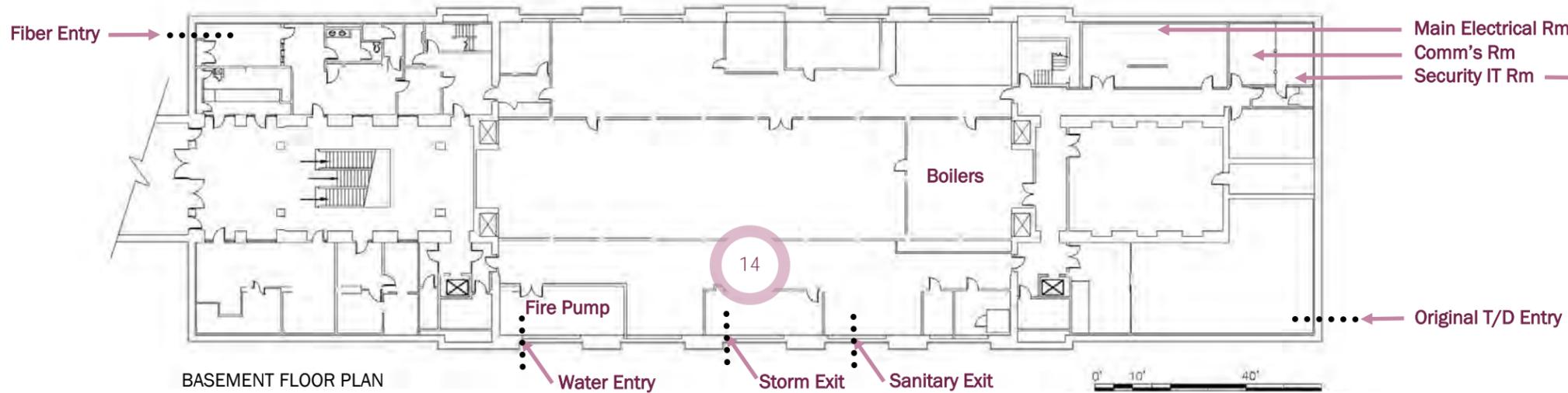
General Site Improvement Opportunities

1. Connection to existing East garage—it is generally suggested through this report to enclose the covered walkway. Design and scope TBD.
2. Bike repair shop and parking in the East garage.
3. Amazon lockers in the East garage.
4. Patio Area, flex seating & seasonal market
5. Exterior iconic signage
6. Improved exterior wayfinding signage
7. Designate area for Uber and Kiss & Ride
8. Connection to Future West Garage & Multimodal center
9. Canopy / waiting area for bus pick up
10. Freight Elevator
11. Evaluate existing infrastructure and include upgrades in master plan.
12. Connection to future south addition, improve back of house delivery and waste flow, opportunity for commissary kitchen and access to second floor balcony. Design and scope TBD.
13. New Cooling Tower Location Option. Should also be evaluated during west end development planning.

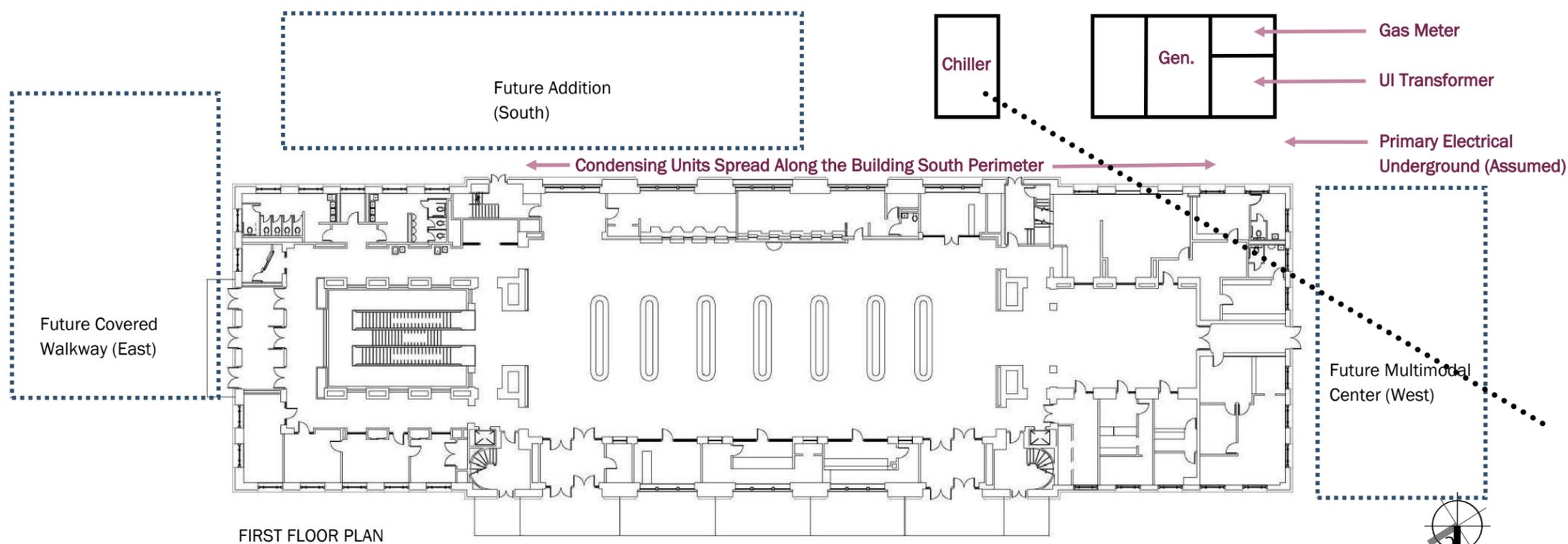
Basement Level

General Improvement Opportunities

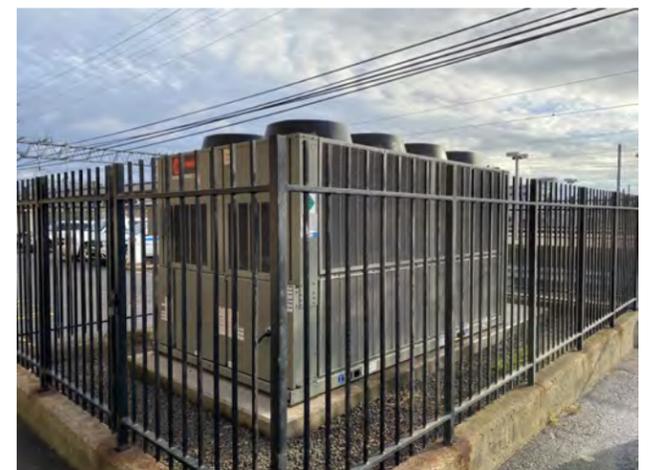
14. Improve hallway access. Possible public connection through to future multimodal center should be evaluated.



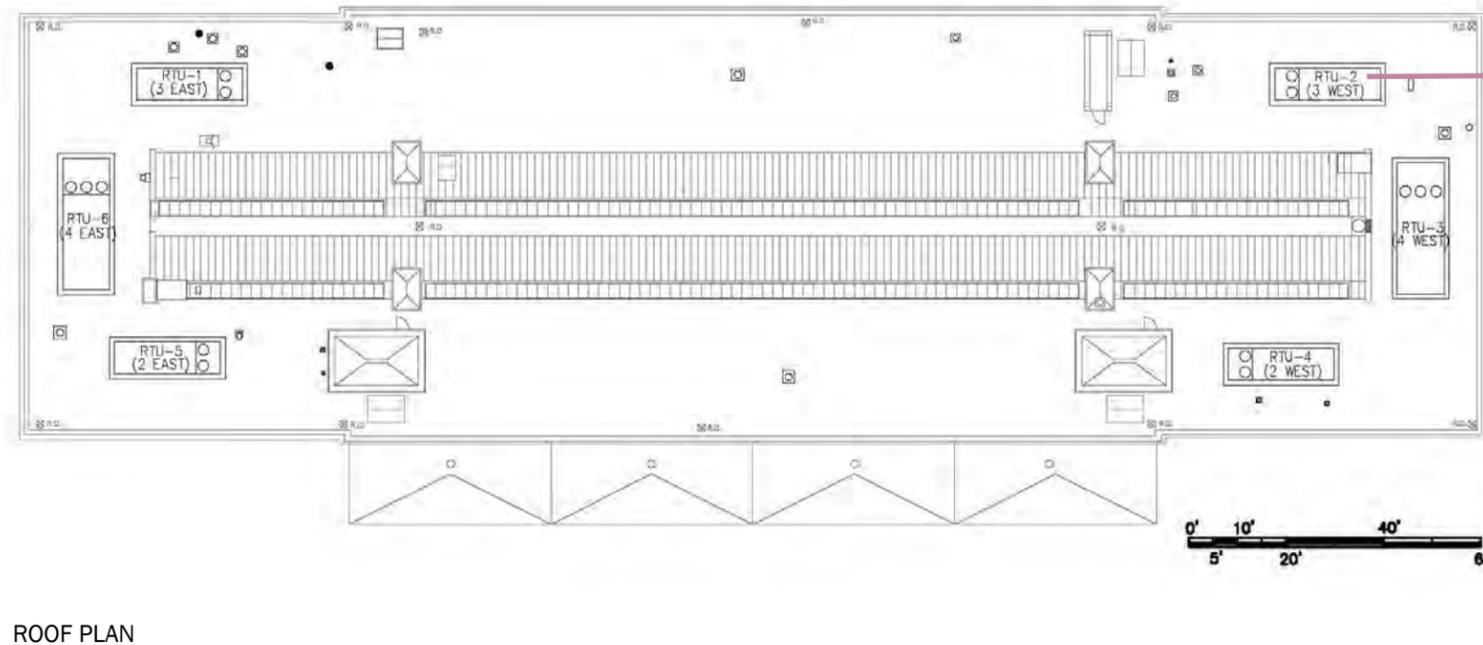
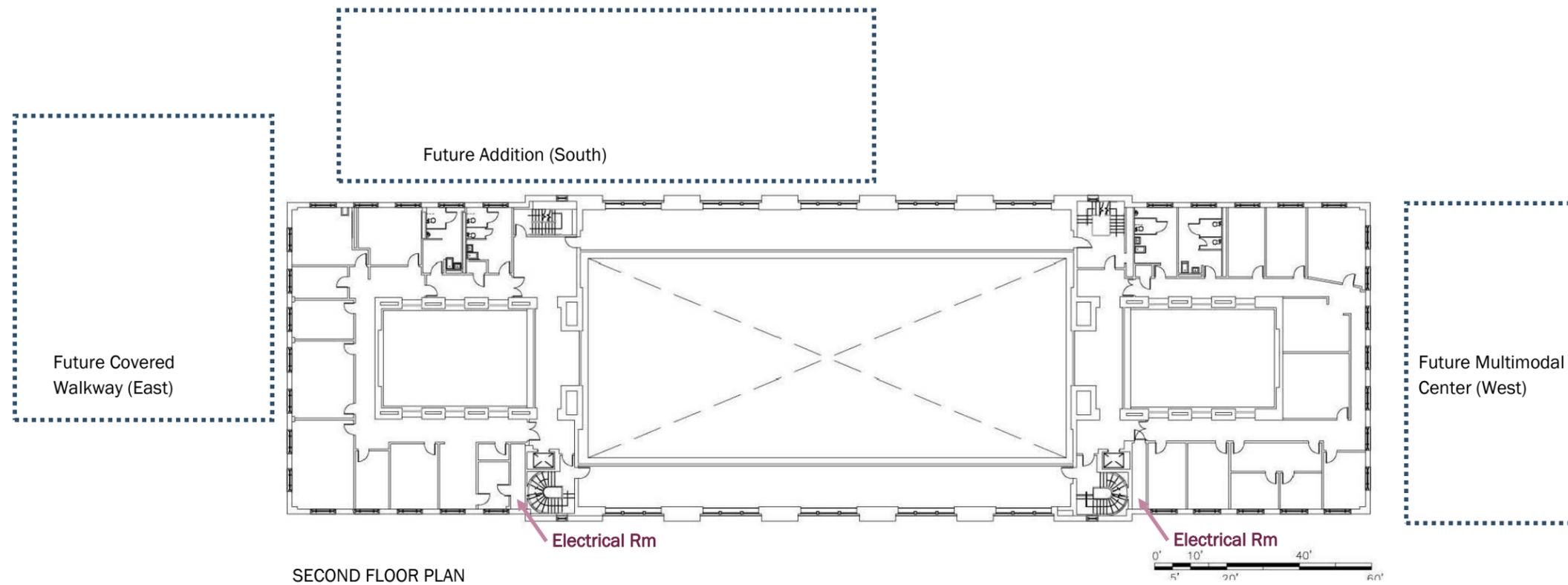
Security IT Room



Condensing Units along South Perimeter



Chiller



PROJECT NORTH

Evaluation of MEP Infrastructure and Metering Opportunities

SILVER / PETRUCELLI + ASSOCIATES

HVAC Existing Conditions

Through their process of annual inspections of the facility and planned capitol improvements, Park New Haven has kept the existing HVAC, plumbing, sprinkler and electrical systems in good working condition. While long-life components like piping, ductwork and wiring date to the 1982 renovation of the Station, most other equipment has been replaced or refurbished as part of its normal life cycle. The boiler plant, chiller, rooftop units and generator have all been replaced within the last 10 years. We understand that the purpose of this evaluation project is broader than review of the age and condition of specific equipment, but it is important to note that these major components are relatively modern and efficient.

HVAC Considerations

Given the current and conceived use of the facility, along with basic construction considerations, the current configuration with a boiler plant providing heating for the majority of the facility and a chiller providing cooling for core of the building is still appropriate. A water-based system is efficient and provides good temperature control for an application like this. Use of the chilled water system for cooling of additional areas could be considered but the current system has little available capacity. It is likely that the new chiller and pumps would need to be replaced or a second set of chiller and pumps would need to be installed, making this an unattractive option.

Two well-suited options for conditioning the areas of the building within the scope of this evaluation are water source heat pumps and variable refrigerant (VRF) systems. Both would provide individual air handling equipment within any given space and would allow for a reasonable means of metering the energy use by the space user. Both would also

result in the elimination of all or most of the existing condensing units located behind the Station. The water source heat pump option would require the installation of one large piece of outdoor equipment – a cooling tower. We would be concerned with locating the cooling tower on the roof because of its weight and water holding capacity so it would preferably be located behind the building. Its location could be coordinated with any potential new construction in that area. The VRF option would require the installation of several (likely 3 or 4) large outdoor heat pumps. These could be located either behind the building or on the roof.

Natural Gas Service

If the existing boiler plant continues to provide the majority of the building heating, there will be no impact on the existing building gas service. Similarly, new heat pumps or other electrical-based heating systems would have no impact on the gas load of the building. Kitchen uses would add new load to the gas service and would need to be evaluated but are still considered unlikely to result in the need for significant changes to the main gas distribution. If one of the proposed building additions is constructed, the best solution to natural gas service will likely involve bringing a completely new utility service to the addition.

Domestic Water, Fire Protection (Sprinkler) and Sanitary Services

We anticipate that the existing incoming 4” domestic water service, 8” fire protection water service and outgoing 8” sanitary service are almost certainly sufficient for any of the currently projected space use modifications within the current Station footprint. Similar to other services, if one of the proposed building additions is constructed, the best solutions will likely involve bringing new utility services directly to that space.

Electrical Distribution and Metering

The building is currently served by a 2000 amp, 480 volt, 3-phase electrical service. That rating leaves capacity for considerable new loads to be added to the building, but distribution and metering modifications would likely be required. The electricity usage of Union Station tenants is not currently metered. Given the consideration of some higher usage tenants, this arrangement may want to be reconsidered.

There is an existing 12-gang meter bank in the main electrical room. It is currently not used for metering, but has three feeds being served by output breakers. UI has reviewed this equipment and determined that it could be used for metering of tenant services. The meter bank is currently fed through the Stations main service and thus it is on that meter. The current distribution would need to be moderately impacted to correct that situation if the existing meter bank is to be utilized. This would provide the opportunity for separately metering up to twelve small to medium sized tenants.

The main distribution for the Station has several spare breaker spaces which could be utilized for unmetered tenants or non-tenant building improvements such as a new elevator. If one of the proposed building additions is constructed, the best electrical solution will likely include bringing a completely new UI electrical service to that building. That new distribution could be designed to accommodate whatever tenant metering arrangement is desired. As previously noted, any construction off the west end of the Station will most likely impact the existing underground primary electrical feed run from Union Ave to the pad mounted transformer behind the building. UI has verified that the existing transformer installation complies with their current requirements and could be utilized to serve enhancements and additions to the site. The physical layout of any additions would need to be evaluated in terms of their impact on this infrastructure.

Wayfinding & Signage

		Whole Building		
Index	Signage / Branding	Interior Wayfinding	Exterior Wayfinding	Iconic Signage
	Plan Key	W1	W2	W3
	Study Source(s)	MERJE	SS (p.30-31)	SS (p.32-33)
	Location	General Interior	General Exterior	Exterior Roof, Canopy and General

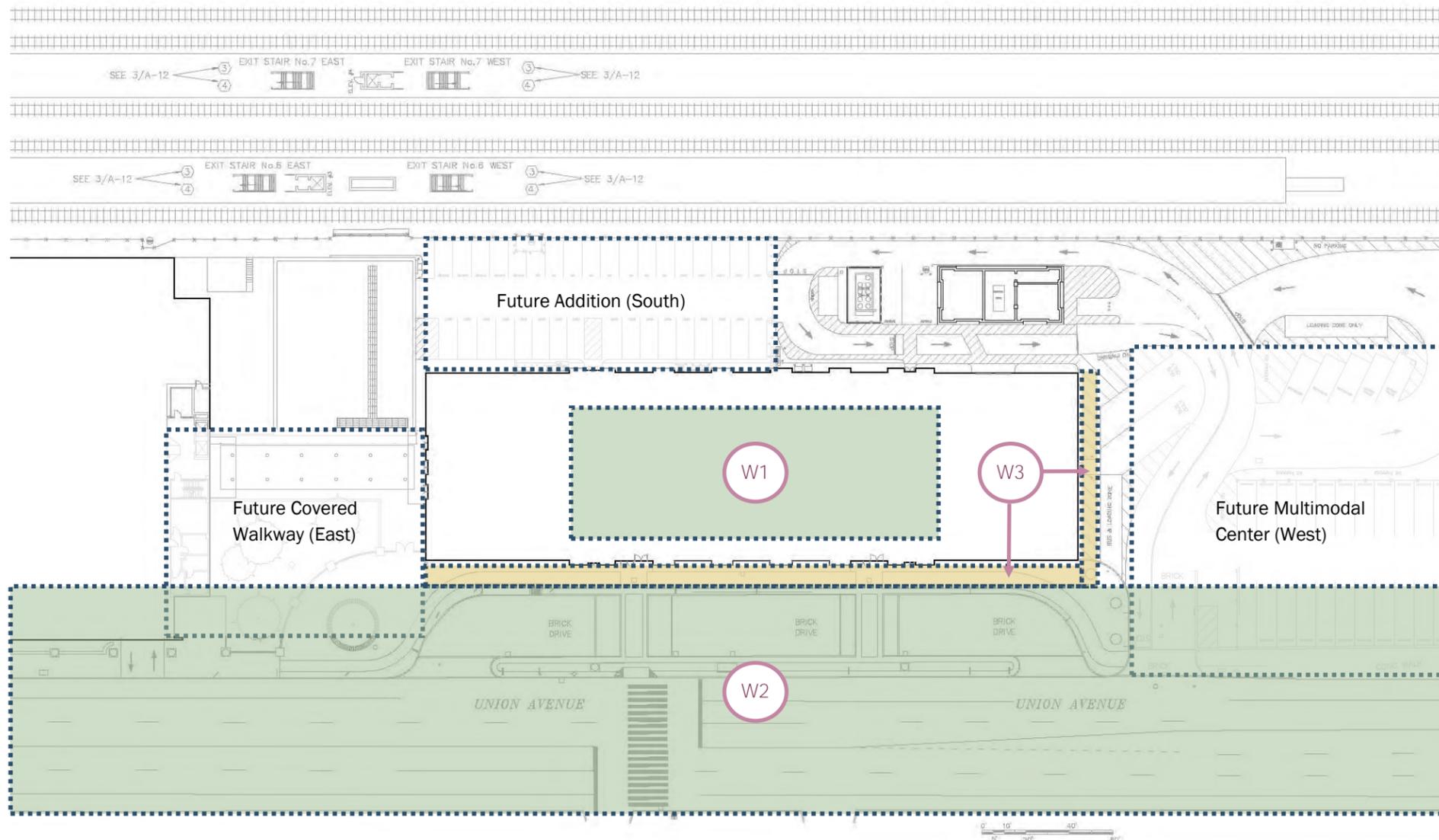
Wayfinding Options Summary

[W1] Per the MERJE proposal, various options have already been created. One should be selected to proceed.

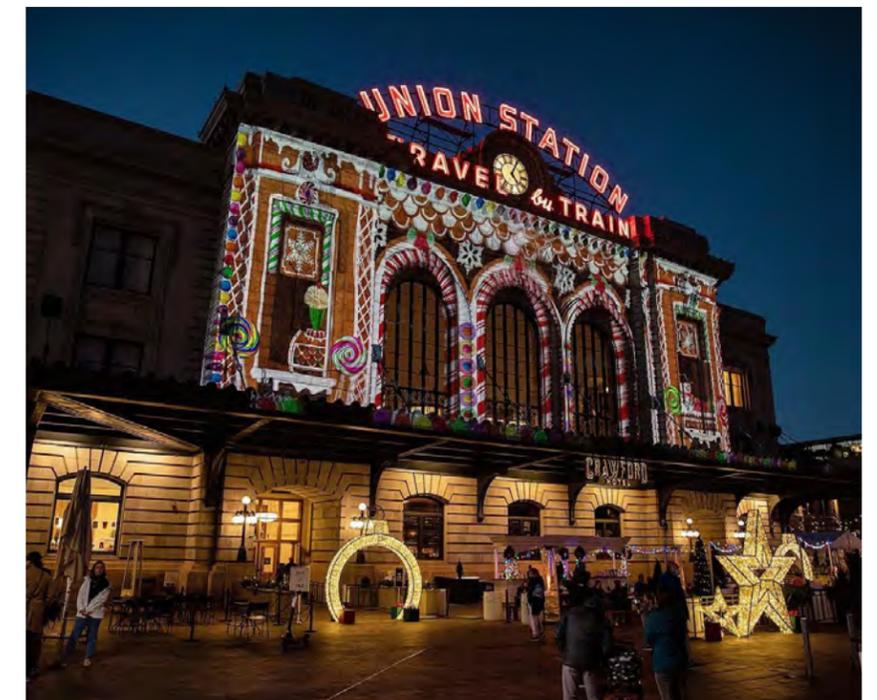
[W2] General exterior signage and re-work of traffic flow should be considered including uber / rideshare areas, kiss and ride, and taxi in addition to local and interstate bus pick up / drop off areas. Full street design should be considered including sidewalks and pedestrian crossing areas.

[W3] Iconic signage can be located along the historic façade, roof and canopies. Branded concept should be integrated with other signage efforts. Temporary signage or event lighting as shown below can provide dramatic night time effect without negative historic impact.

See study sources key in executive summary.



GROUND FLOOR SITE PLAN



303magazine.com – Denver Union Station

		Whole Building		
Index	Signage / Branding	Interior Wayfinding	Exterior Wayfinding	Iconic Signage
	Plan Key	W1	W2	W3
	Study Source(s)	MERJE	SS (p.30-31)	SS (p.32-33)
	Location	General Interior	General Exterior	Exterior Roof, Canopy and General
Summary	Strengths	Improve the user experience and update /re-brand station in one project which can easily be phased as required. Directional signage can be installed right away, tenant signage can be done on an individual basis.	Signage for traffic sequence and flow will be improved with this project along with updated branding. Wholistic approach to do all station branding at one time will strengthen project.	Opportunity for iconic and branded signage visible from street, garage and drop-off / arrival sequence integrated with the streetscape.
	Weaknesses	Requires slight disruption to user services to install upgrades. Project may need to be scheduled so that work occurs only during off peak hours or phased to reduce disruptions.	Proposed work was suggested by streetsense report but evaluation and design was never completed. Design should include full streetscape and follow city initiatives.	Requires sensitive design to be coordinated with SHPO and should be as reversible as possible. Projected signage can provide the largest non-historically damaging impact but is only effective from dusk to dawn hours.
	Opportunities	Bring station branding and signage up to modern standards and provide a fresh user interface for relatively low cost compared to other building renovations and updates.	Connect the station with adjacent proposed development and with the city. Provide fresh public interface between the city and the station. Improve traffic and both vehicle and station user experiences.	Create an iconic presence for Union Station. Improved first impressions, better brand recognition from the first point of local contact (the exterior arrival sequence), and increased safety with lighting and signage for traffic control.
User Impact	General	Easier to navigate around station. Branding and signage should continue through online presence and other branded material.	Clear directional signage and areas designated for uber, kiss and ride and more provide a safer experience with shorter wait times at pick up and drop off.	Pride of place improved and reinforcement of historic place. Iconic signage is useful in identifying the station for tourists and infrequent users.
	Temporary Interruption	Minor to moderate disruption depending on when work is scheduled to occur.	Moderate to severe disruption. Work will need to occur in phases and mostly after hours to limit disruption to regular peak hours street front use of the station.	Mild to moderate. Most work can occur without interruptions.
	Future Experience	Find tracks and services with ease. Better overall experience using existing station from online, to in person.	Better general experience and overall safety of vehicle, bike and train users as they navigate the station and its connection to the city.	Better navigation and ease of sharing location for pick up etc. Opportunity for tourist photos.

Wayfinding User Impacts

New wayfinding provides an overall safer, more pleasant experience for users of the station as well as an improved opinion of the station as a safe and enjoyable place.

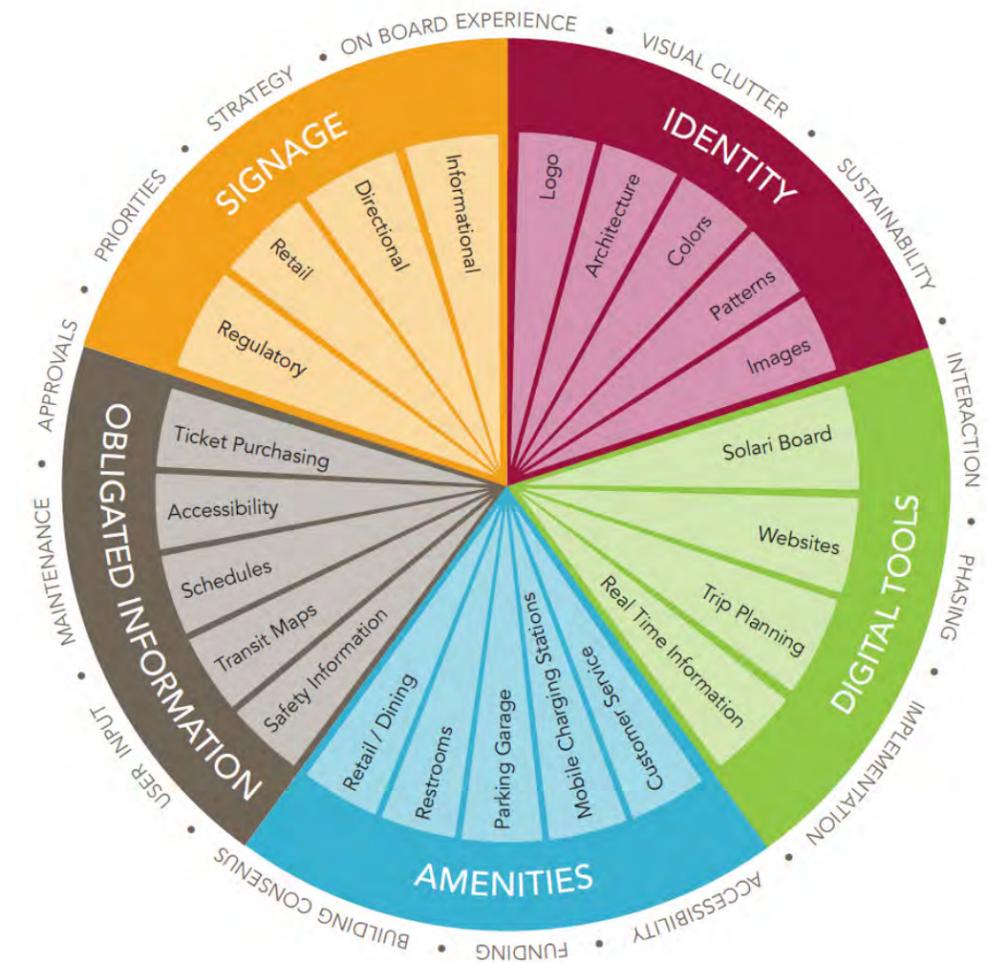


Chart from MERJE interior signage wayfinding analysis, page 4

		Whole Building		
Index	Signage / Branding	Interior Wayfinding	Exterior Wayfinding	Iconic Signage
	Plan Key	W1	W2	W3
	Study Source(s)	MERJE	SS (p.30-31)	SS (p.32-33)
	Location	General Interior	General Exterior	Exterior Roof, Canopy and General
Operations Impact	General	Planning for signage and branding overhaul will require coordination and scheduling but should be a generally light lift to execute.	Fewer accidents and incidents related to the pick up / drop off area.	More elements requiring maintenance including attachments and lighting. Opportunity to include cameras as needed.
	Project Cost	Moderately Low for physical and digital infrastructure.	Moderate depending on City requirements. May require easement evaluation.	Moderate to high depending on final design.
	Project Benefit	Better branding will make public relations and advertising easier and provide better user experiences, which will drive greater general satisfaction with less management effort.	First impressions of station will be improved and public safety will be increased.	Iconic branding and signage can be used in promotional materials and become part of station identity. Celebrate the station.
Building Impact	Historic	All signage should be minimally disruptive to historic fabric and removable / reversible as much as possible.	Improvements should not have impact on historic station but may need to be reviewed by SHPO.	Proposed Location is reversible and does not obstruct or obscure historic fabric.
	Mechanical	N/A	N/A	may impact roof footprint available for RTUs?
	Electrical	Possible new wiring or data for digital and internally or externally lit signage and monitors	Possible new wiring or data for digital and internally or externally lit signage and monitors	New exterior lighting should be incorporated with signage
	Plumbing	N/A	N/A	N/A
	Structural	N/A	N/A	Attachments will require review.
	Code	All signage should follow ANSI 117 ADA guidelines including text size, braille, mounting heights etc.	All signage should follow ANSI 117 ADA guidelines including text size, braille, mounting heights etc.	*explore ballasted options to minimize penetrations and historic impact.

Wayfinding Building Impacts

Generally improved branding and placemaking for better user interface from arrival through to departure. Better station experience for vehicle users as well as train riders.



From Streetsense Union Station Retail Study page 30



From Streetsense Union Station Retail Study page 33

Restrooms

		(Basement & First Floor)					
Index	Restrooms	New Family Bathroom	Men's / Women's Restrooms	Men's / Women's Restrooms	Men's / Women's Restrooms	Men's / Women's Restrooms	Men's / Women's Restrooms
	Plan Key	B1	B2	B3	B4	B5	B6
	Location	Webster Bank ATM Room	SW Side (Historic Location)	Future Covered Walkway (East)	Future Multimodal Center (West)	Future Addition South	Basement
	Study Source(s) **	USB-18	Staff	Turner 16'	Svigals	SS	Staff
	WC Count	1 or 2	8+ (estimated)	8+ (estimated)	As many as reqd.	10	4

Restroom Options Summary

(Basement + First Floor)

[B1] Family Restroom has no negative impacts on potential future developments, is low cost and highly feasible. It should be prioritized to occur ASAP.

[B2]* Historically, public restrooms were located in this area. Current feasible footprint is smaller as it is limited by the location of the electrical switch room and data room below. However, it would balance demand across the station and provide redundancy. Can the IT room be moved?

[B3] The covered walkway (East) should be prioritized for food vendors with connections to the patio area. However, this may be a good location to provide some unisex / family restrooms with a hand washing area.

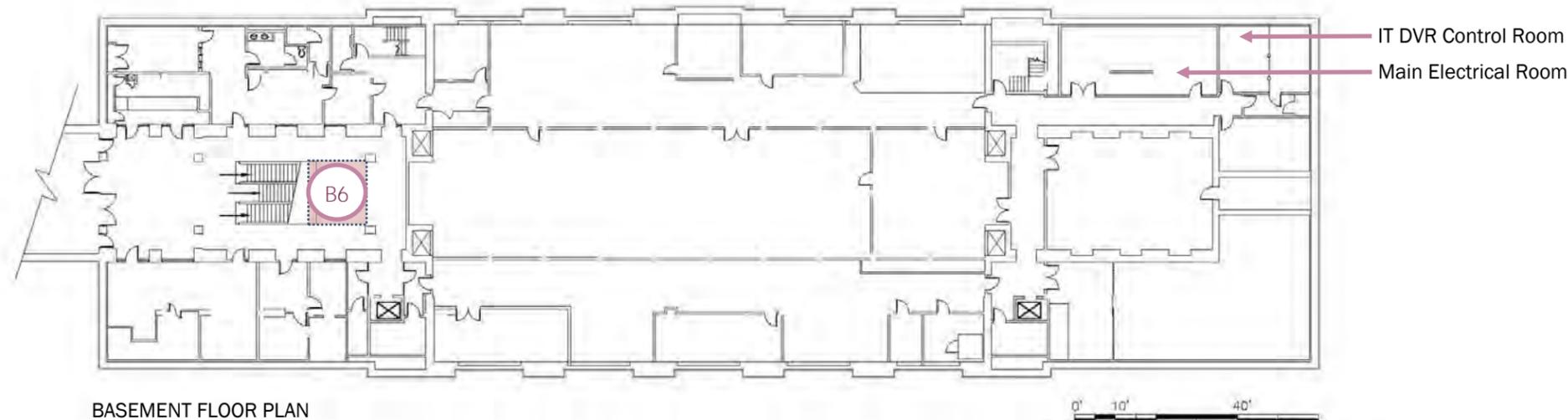
[B4] Opportunity to provide larger restrooms in the future multimodal transportation center (as close to the station as possible) is the best long term option to preserve valuable real-estate in the existing station for retail tenants. It is also the best option for historic preservation. It is unclear when this new facility will be built.

[B5] Expanding the existing restrooms as part of a track side addition which may also include retail or restaurant services would require extreme caution to preserve historic character. This option is likely the most expensive, least preservation minded, and would not allow for demand to be spread out. It is possible that fine dining / lounge would provide guest exclusive restrooms here, but they would not help the public fixture count.

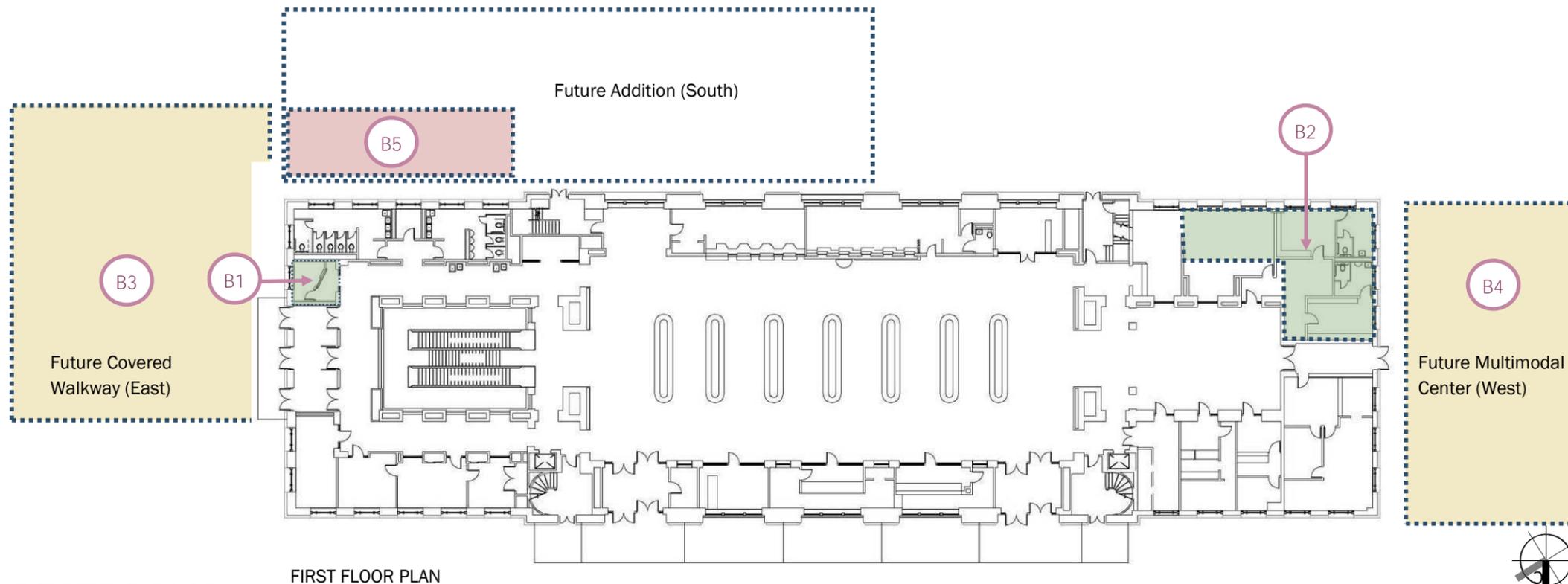
[B6] There is limited space for restrooms in the public area of basement and it is below the sewer connection level which requires a sanitary ejector system. This option would only make sense if basement connection to multi-modal center was provided along with more retail and food vendors at this level.

*See Compiled Recommendations for any displaced areas

** See study sources key in executive summary



BASEMENT FLOOR PLAN

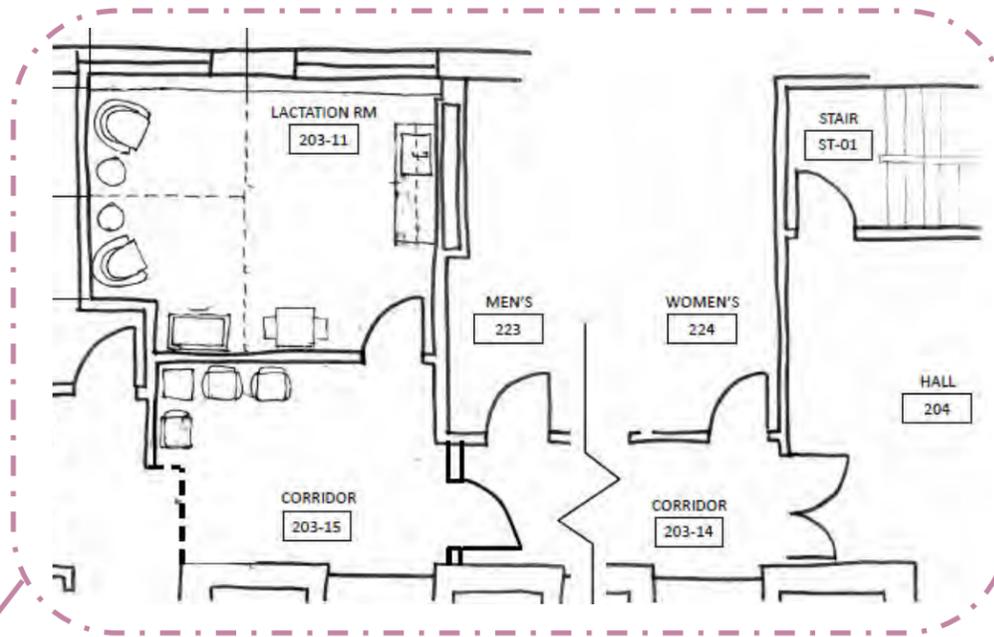


FIRST FLOOR PLAN

RESTROOMS



		(Second Floor)	
Index	Restrooms	(Expand Existing) Men's / Women's Restrooms	Wellness / Lactation Room
	Plan Key	B7	B8
	Location	Second Floor SE Side	Second Floor SE Side
	Study Source(s)	Svigals	Svigals
	WC Count	8 (estimated)	0



B8 – Svigals Wellness / Lactation Room Sketch (*not to scale*)

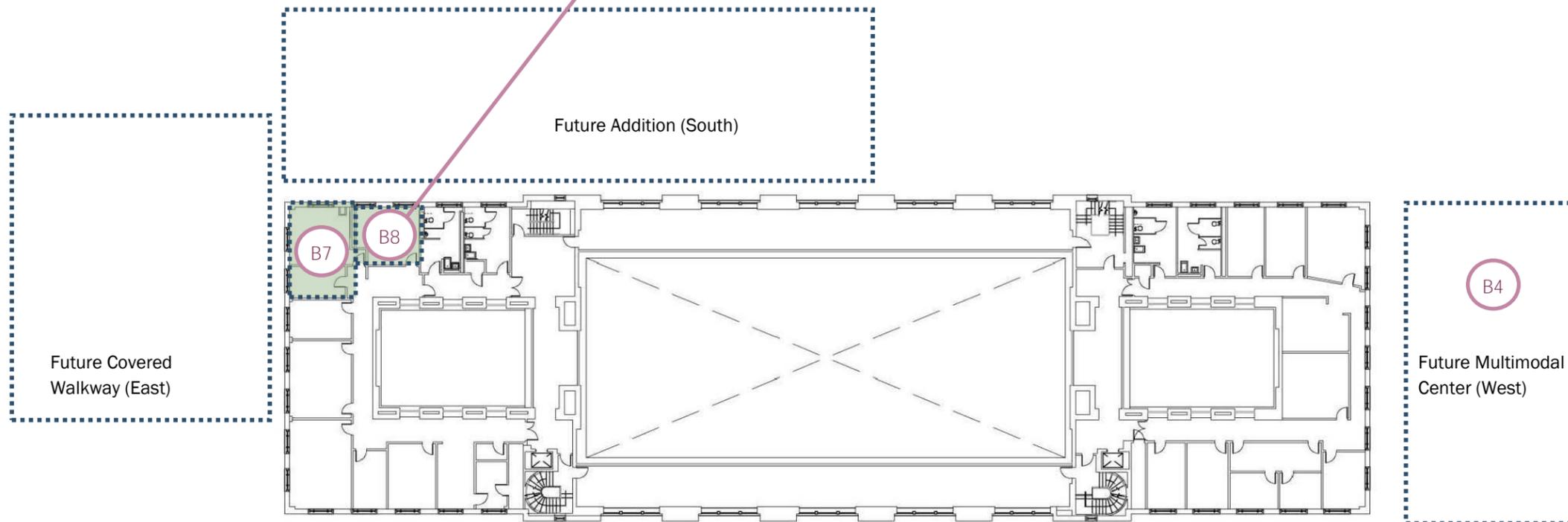
*Note this use is an amenity but is grouped with restroom facilities as it requires a sink and is often planned near restroom facilities.

Restroom Options Summary

(Second Floor)

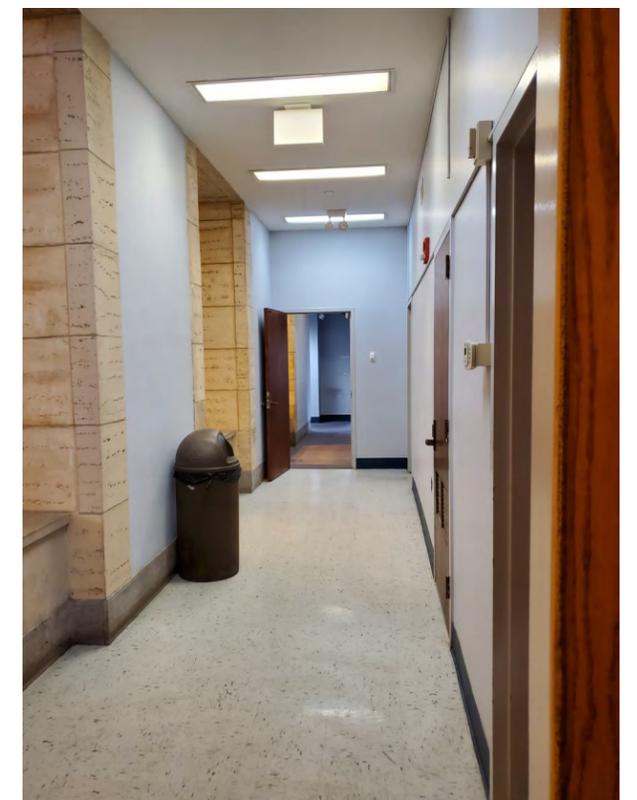
[B7] This expansion will support higher intensity uses on the second floor including the potential South / track side addition. Expanding the existing restrooms in this location has a low impact on the historic structure as well as simplifies the MEP requirements to provide additional restrooms on this level. Rather than just providing increased men's and women's rooms, adding one family restroom should be a priority to compliment the adjacent wellness / lactation room.

[B8] A Wellness Room is an inclusive amenity space that should be provided for use by both station employees and guests. It provides a quiet, private place with a sink and microwave for lactating mothers to nurse or pump, for a telehealth visit, to check blood sugar or take a few minutes to meditate or pray. This resource will be an extremely valuable addition for the low cost it will require to implement.



SECOND FLOOR PLAN

RESTROOMS



Existing Conditions—corridor near Proposed Lactation Room

		(Basement & First Floor)						(Second Floor)	
Index	Restrooms	New Family Bathroom	Men's / Women's Restrooms	Men's / Women's Restrooms	Men's / Women's Restrooms	Men's / Women's Restrooms	Men's / Women's Restrooms	(Expand Existing) Men's / Women's Restrooms	Wellness / Lactation Room
	Plan Key	B1	B2	B3	B4	B5	B6	B7	B8
	Location	Webster Bank ATM Room	SW Side (Historic Location)	Future Covered Walkway (East)	Future Multimodal Center (West)	Future Addition South	Basement	Second Floor SE Side	Second Floor SE Side
	Study Source(s) **	USB-18	Staff	Turner 16'	Svigals	SS	Staff	Svigals	Svigals
	WC Count	1 or 2	8+ (estimated)	8+ (estimated)	As many as reqd.	10	4	8 (estimated)	0
Summary	Strengths	Low cost, low interruption upgrade.	Low interruption to daily operations	Provides modern facilities in value added connection to garage.	Preserves historic structure and provides restrooms on west side of station	Less plumbing distance to coordinate below grade	Amenity at track level could be desirable	Stacked over existing first floor restrooms. Required for addition / increased occupancy of conference space.	Provides a much needed amenity. Low cost to implement. Can be moved to new location with relative ease.
	Weaknesses	Need to relocate ATM	Moderate cost, limited space due to existing building systems.	High cost build over tunnel and potentially sustained, direct impact to daily commuters path of travel during construction.	Long lead time. Requires waiting for future center to be built / or phased in.	Separate building would require new plumbing stack and would require dedicated corridor space	Below sewer tie in and limited available space.	Displaces some office functions	Prevents same restroom design M/W as first floor from being provided. Lactation room could move to the end of this hall if B7 moves forward.
	Opportunities	Improve facilities with minor impact to daily operations	Provide restrooms on West side of station.	Improve commuters walk from garage and increase RSF and amenities	Preserves valuable RSF within historic station.	Could be Acela Lounge premium restrooms. Keycard Access?	Would be the only public bathroom at this level.	Can be phased in before construction of addition. Increases fixture count.	B7 could include a family restroom, a good addition near lactation room
User Impact	General	Provides option currently unavailable	More Convenient Restrooms	Improve experience from garage to station. More food options and flex seating areas.	Improved connection to other modes of transport and modern amenities.	Access to high end amenities not currently available	Allows passengers transferring from track to track to have access to a restroom.	More restrooms available in times of high demand.	Provides a private and sanitary area for both travelers and staff for various wellness needs
	Temporary Interruption	Minor impact to guest experience	Minor impact to guest experience, occurs in low traffic area.	Potentially large impact during construction.	Minor impact to guest experience. Connect at end of work.	Minor impact to guest experience	Minor impact to guest experience	Significant interruption for tie in (ceiling work in existing restrooms). Temporary restrooms may be required for a few weeks. Minimal impact on remaining work.	Moderate to low interruption to tie in plumbing for sink.
	Future Experience	Improved experience for families	Reduces retail / restaurant options here but allows access to distributed restrooms.	Greatly Improved experience with increased amenities	Greatly Improved access to other modes of public transport and amenities	Bathrooms should go elsewhere if possible to preserve space for fine dining, lounge etc.	Passengers who just have a few minutes between trains could have access to a restroom.	Does require use of stairs or elevator but can also provide opportunity for more guest services to be located in this area.	Removed from the hustle and bustle of the first floor, a wellness room is a desirable amenity for staff and guests.

Restroom

Summary of User Impacts

The station has an existing public WC fixture count of **10**.

If all proposed “green” restrooms are created on the first level, the count would increase by 50% to **15**, including better accessibility and options for families.

If the second floor renovation is also completed, the count would increase about **150% to 25**.

A complete code analysis is recommended once a master plan has been selected. However, we believe that these new restroom facilities will provide much needed redundancy and improve current conditions dramatically.

The restrooms proposed for the future covered walkway area will be limited in size and location due to tunnel coordination and reserving a majority of space for food vendors.

Restrooms will be part of the new multi-modal transportation center, however increasing their count and evaluating their location(s) in early design phases will benefit the transportation center as a whole.

** See study sources key in executive summary

RESTROOMS

Restrooms

Operational and Building Impacts

All options have been considered holistically. Those in green have been selected as best able to provide the distributed restroom and amenities areas needed for current and future station use with the lowest negative historic impact.

Options B3 + B4 should be considered when those east and west connections are designed.

They are all reasonably feasible with one exception, B2, which requires either relocation or significant protection of the existing IT / Data room in the basement below. The merits of relocating the data room outweigh the added cost when the full master plan is considered. Option B2 is the only west side restroom proposed and will better spread out demand and provide redundancy within the station. Depending on the phasing of work, B2 may be required to achieve fixture counts necessary for expanded retail and food vendors on the first floor.

** See study sources key in executive summary

		(Basement & First Floor)						(Second Floor)	
Index	Restrooms	New Family Bathroom	Men's / Women's Restrooms	Men's / Women's Restrooms	Men's / Women's Restrooms	Men's / Women's Restrooms	Men's / Women's Restrooms	(Expand Existing) Men's / Women's Restrooms	Wellness / Lactation Room
	Plan Key	B1	B2	B3	B4	B5	B6	B7	B8
	Location	Webster Bank ATM Room	SW Side (Historic Location)	Future Covered Walkway (East)	Future Multimodal Center (West)	Future Addition South	Basement	Second Floor SE Side	Second Floor SE Side
	Study Source(s) **	USB-18	Staff	Turner 16'	Svigals	SS	Staff	Svigals	Svigals
	WC Count	1 or 2	8+ (estimated)	8+ (estimated)	As many as reqd.	10	4	8 (estimated)	0

Operations Impact	General	Near existing restrooms and custodian supplies	Expands existing restrooms here and makes available to public.	More RSF & Building Common Space, increased fixture counts	Helps to balance existing east wing bathrooms in station. Convenient for bus users.	Locating restrooms here may be a more expensive option but could easily double existing capacity.	May require more frequent cleanings as fewer fixtures can be provided.	Will help with both peak demand or future restaurant use of second floor or second floor addition.	Low impact, similar cleaning schedule as existing.
	Project Cost	Low	Medium	High	Part of Multi-modal center anticipated costs	High	Medium	Medium	Low / Medium
	Project Benefit	Reduced demand on existing restrooms	Reduced demand on existing restrooms	Better design to utilize patio and provide covered entrance from garage to station.	Provides adequate restrooms for west side of station	Could be a new high end amenity, Acela lounge access only?	Convenient location for guest use but difficult location for plumbing.	Significant increase in fixture count with minimal historic impact. Quicker phasing and lower cost than most other options.	Provides amenity space desired by both staff and guests in a location with lower rentable rates but still easily accessed by existing conveyance.

Building Impact	Historic	Minor - no partitions are removed. New door, flooring and MEP	Restores historic restroom locations from 1920's. Appropriate use.	Project can be designed independent of historic structure. Overall scale and materials will be important.	Project can be designed independent of historic structure. Overall scale and materials will be important.	Caution must be used in creating this addition. It could have significant historic impacts.	Low impact	Minor impact. One of the lowest impact locations within the historic station.	
	Mechanical	Minor - anticipate being able to utilize existing wall louver.	Existing 12x12 exhaust duct can serve a larger set of gang toilets.	New heating, cooling & ventilation can be incorporated into the addition.	New heating, cooling & ventilation can be incorporated into the addition.	New HVAC equipment is anticipated. Location will impact existing condensing units.	Routing of toilet exhaust duct from this area will be challenging.	Modification of heating and exhaust serving this area are likely to have minor impacts.	
	Electrical	Normal electrical impacts are anticipated with existing facilities used.	Reduced area available as electric switch room is below	Power could be run from the main building service or a dedicated service provided.	The existing UG primary electrical service angles across this space.	Need to verify separation requirements from the catenary system	No significant electrical impacts are anticipated.	No significant impacts anticipated.	
	Plumbing	Anticipate Tie-in to existing stacks for toilet, sink & floor drain.	Restrictions due to switch room location	A separate sewer line to Union Ave is most likely required.	A separate sewer line to Union Ave is most likely required.	A separate sewer line to Union Ave is most likely required.	A sanitary ejector system will be required.	Piping installation will temporarily impact the main toilet rooms below.	
	Structural	TBD assume no impact	TBD assume minor impact	Generally independent of historic structure. Must span tunnel.	Generally independent of historic structure. Design TBD with Multi-modal plan.	Should be independent of historic structure.	TBD assume no impact	Minor impact. Assume further structural code analysis if design moves forward.	
	Code	Improve fixture count and accessibility	Improve fixture count and accessibility	Improve fixture count and accessibility	Improve fixture count and accessibility	Provides more access to existing balcony to make it more useful.	Improve fixture count and accessibility	Improve fixture count and accessibility	May be required if staff count is over 50.

RESTROOMS

Restaurants / Food

Food / Restaurant (Basement & First Floor)								
Food / Restaurant	Remove storefronts + Make Local	Convenience Grab & Go: Coffee + Sandwiches * Existing	Casual / Semi-Self Service Restaurant	Café / Self service Restaurant	Pizza Kitchen	Tapas Bar / Lounge	Fine Dining	Commissary Kitchen
Plan Key	F1	F2	F3	F4	F5	F6	F7	F8
Location	Center North Bay	Basement (South)	First Floor NE Corner	First Floor NW Corner	First Floor S	Track Side Addition	Track Side Addition	Track Side Addition
Study Source(s)**	W-ZHA, SS, 100yr	SS p.20	SS, USB, JLL	SS p.21, USB-17	Staff Conversations	Svigals	W-ZHA, 100yr	Svigals
Size	676 sf	400 sf (286 sf * existing use)	1,800 sf	2,050 sf	1,200 sf	New 2,400 sf	New 2,400 sf	New 2,600 sf

Index

Restaurant / Food Options Summary

(Basement + First Floor)

[F1] Opening up the storefronts will create a more welcoming atmosphere and activate the lobby. Choosing local tenants will provide travelers with a taste of New Haven and create a unique, local experience.

[F2] Keep existing tenant type here.

[F3] Provide quick service restaurant space with dedicated seats on east side. Activate north east side of station. Coordination with MEP or commissary kitchen required.

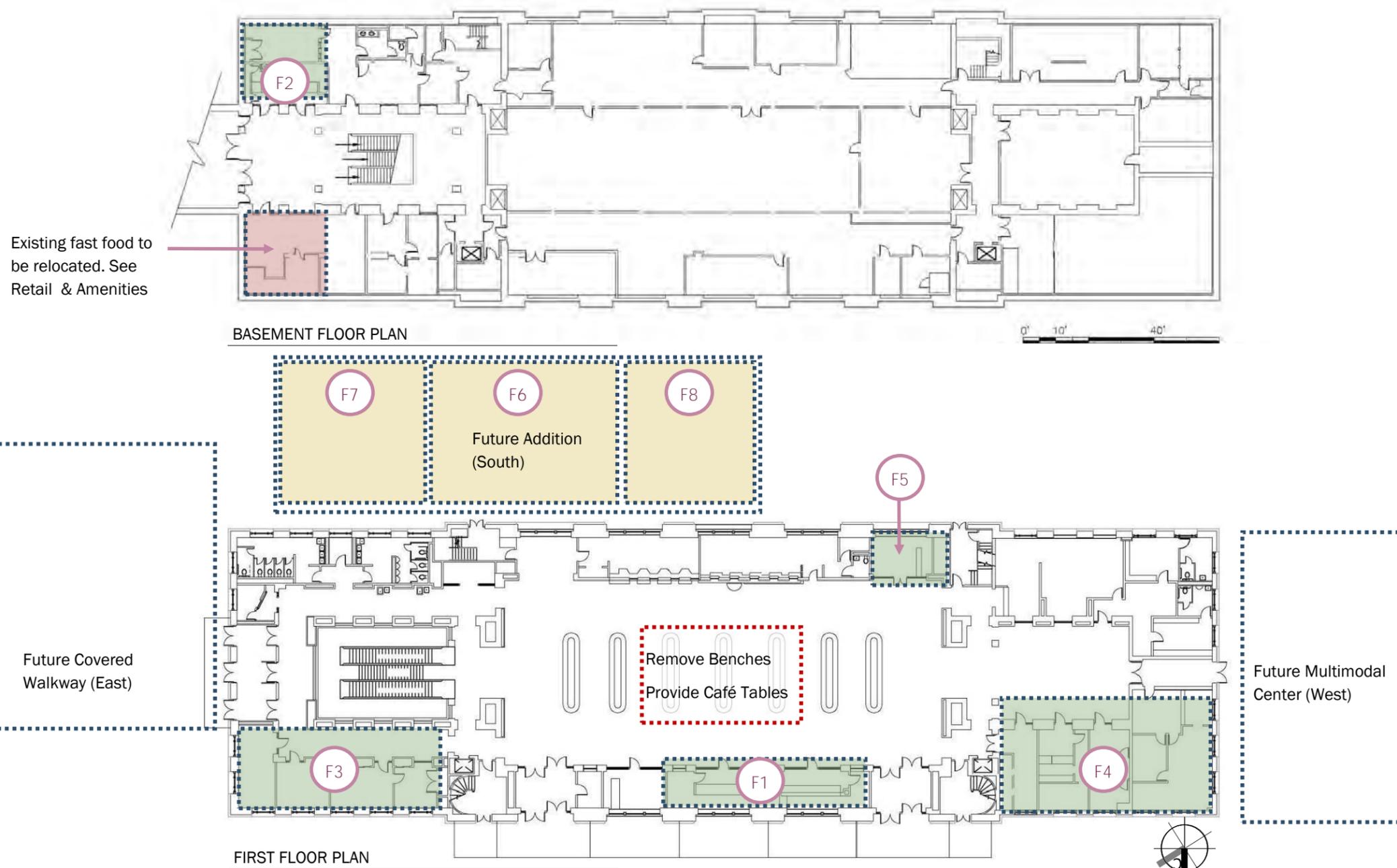
[F4] Provide self service restaurant with dedicated seats. Activate north west side of station. Coordination with MEP or commissary kitchen required.

[F5] Local Vendor—Pizza Oven / Convenience Grab and Go Counter to activate the lobby and bring an authentic local experience.

[F6] Tapas bar provides a sophisticated dining atmosphere with gourmet small plates perfect for both quick, small bites or longer social events. Variety of seating options, lounge feel.

[F7] Traditional fine dining restaurant with table service. Suitable for events.

[F8] Commissary Kitchen—the key to unlocking the potential for so many restaurants in the historic station. Handles bulk deliveries, waste, cold storage, prep and cooking spaces for most restaurants on site, resolving both MEP and size concerns, allowing much smaller, lighter kitchens on the north side of station.



SUMMARY

		Food / Restaurant (Second Floor)		
Index	Food / Restaurant	Catered Event Space / Buffet	Bar / Tapas	Restaurant - Sit Down
	Plan Key	F9	F10	F11
	Location	Track Side Addition - tied into balcony	Track Side Addition - tied into balcony	Second Floor NE Wng
	Study Source(s)**	100yr	SS, W-ZHA	USB-17
	Size	New 6,000 sf	New 2,400 + Balcony 1,500 = 3,900 sf	2,500 sf

**Restaurant / Food Options Summary
(Second Floor)**

[F9] Could be an expansion of the fine dining restaurant below or a separately managed group. Large space suitable for banquets, conferences etc. Requires bathroom expansion on second level. Could partner with local culinary school.

[F10] Expansion of the tapas bar below, could cater to Acela lounge customers. Activates the balcony, providing access and use. Note: the North balcony may be part of this use but will require lower occupancy due to access / egress concerns. May be used as a gallery / exhibit space.

[F11] If the south side addition is not completed, this may be a good location for a restaurant. Structural loading and historic impact would need to be evaluated. If the south addition is completed, this space should be used as coworking space or to relocate displaced services from other levels.

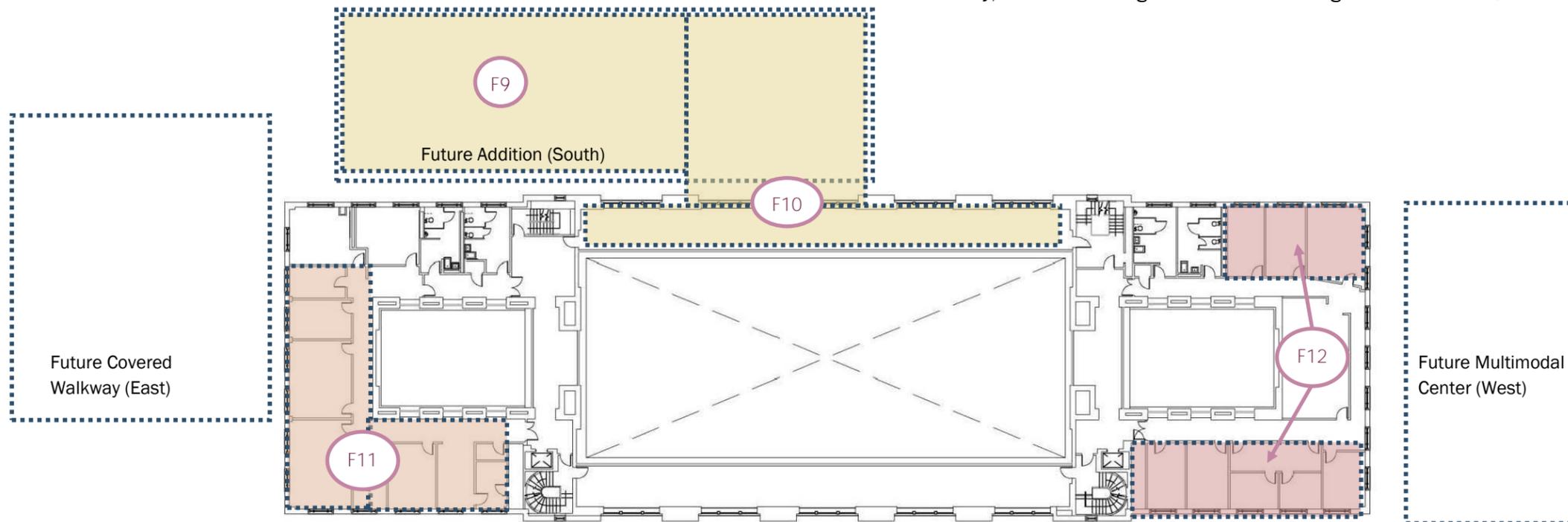
[F12] This area requires structural loading evaluation and should only become food service or retail where it best supports the future connection to the proposed multimodal center. These areas may be required for conveyance or restrooms.



The Gilbert Scott, London. Image credit: Travel + Leisure



Crawford Hotel Balcony, Denver Co. Image credit: MODwedding



Maxwell Luciano's at Union Station, Worcester MA

Food / Restaurant (Basement & First Floor)									
Index	Food / Restaurant	Remove storefronts + Make Local	Convenience Grab & Go: Coffee + Sandwiches * Existing	Casual / Semi-Self Service Restaurant	Café / Self service Restaurant	Pizza Kitchen	Tapas Bar / Lounge	Fine Dining	Commissary Kitchen
	Plan Key	F1	F2	F3	F4	F5	F6	F7	F8
	Location	Center North Bay	Basement (South)	First Floor NE Corner	First Floor NW Corner	First Floor S	Track Side Addition	Track Side Addition	Track Side Addition
	Study Source(s)**	W-ZHA, SS, 100yr	SS p.20	SS, USB, JLL	SS p.21, USB-17	Staff Conversations	Svigals	W-ZHA, 100yr	Svigals
	Size	676 sf	400 sf (286 sf * existing use)	1,800 sf	2,050 sf	1,200 sf	New 2,400 sf	New 2,400 sf	New 2,600 sf
Summary	Strengths	Better user experience and more amenity space with same footprint	Quick service, high rent, low historic impact.	Connection to flex seating outside	Good visibility and activity for this area of the building	Brings New Haven Pizza to the Station	Quick bite fine dining option for travelers	Destination Restaurant	Provides new kitchen facilities concentrated in new structure for use by all food vendors in station
	Weaknesses	Security needs to be addressed. New retractable gate system needed for after hours security.	None / keep existing footprint	Possible MEP concerns unless commissary style kitchen is available elsewhere. No Type 1 Hood allowed. Type 2 will require investigation for feasibility.	blocks corridor / path so non restaurant guests must walk past bathrooms to exit building at grade	Requires specialty oven to be ventilated up the back side of the building.	Requires addition - potentially high cost with high end finishes. Must be done with caution to protect historic structure.	Requires addition - potentially high cost with high end finishes. Must be done with caution to protect historic structure.	High cost. Footprint must keep driving path clear along tracks for service. Must balance historic impact with proper access points for delivery and waste functions.
	Opportunities	Remove Partitions and open spaces to main lobby + provide café flex seating	Convenient services for transit customers	Most active corner of the building - excellent visibility and traffic to support restaurant use.	More rentable sf. Activate corner of building with high street visibility.	Activate the station and provide a true local experience for passengers. Could rotate between various vendors "Pizza of the Month"	Capture existing market and potentially draw new.	Provides high end experience for travelers and increases rentable footprint of station.	Allows more flexible food service options in station with low MEP impact. Valuable rentable space for offsite restaurants too.
User Impact	General	More variety of food and seating options on par with other popular transportation centers.	Can be accessed by riders with short layovers. (expanded market) or those with little time spent in the station.	Good place to meet with travelers - high visibility, provides more food options than currently available.	Provides destination and alternative "lounge" for Amtrak / Acela customers	Local flavor with convenient grab and go slices or full pies at a price point that suits most passengers.	Lounge area to wait between trains. Tapas options for a fine dining quick bite.	New Destination Restaurant	Allows multi point food service locations for guest convenience including carts and mobile vendors.
	Temporary Interruption	Moderate impact. Work will need to be scheduled and phased to reduce interruptions.	Little to no impact / minor improvements required to existing space.	Moderate impact. Area can be isolated but is adjacent to the busiest areas.	Minor	Moderate impact as this work can be contained to the corner but will be in the main lobby.	New building will be independent. Light touch connection at end of construction.	New building will be independent. Light touch connection at end of construction.	New building will be independent. Light touch connection at end of construction.
	Future Experience	Local flare and flavors highlighted. Travelers enjoy New Haven fare at the station.	Keep convenience options close to tracks.	Provides casual sit down food option not currently available.	Improved food service options	Improved local grab and go food options. Social media sharing opportunities.	New casual / high end waiting area with small bites	New casual / high end waiting area with small bites	Guests may not realize this building support area exists, but it allows multi-point, flexible food service to occur

		Food / Restaurant (Second Floor)			
		Food / Restaurant	Catered Event Space / Buffet	Bar / Tapas	Restaurant - Sit Down
Index	Plan Key		F9	F10	F11
	Location		Track Side Addition - tied into balcony	Track Side Addition - tied into balcony	Second Floor NE Wing
	Study Source(s)**		100yr	SS, W-ZHA	USB-17
	Size		New 6,000 sf	New 2,400 + Balcony 1,500 = 3,900 sf	2,500 sf
Summary	Strengths	Flexible space for events and rentable to private organizations and community groups. Great train views.	Engages and activates the balcony area and allows use of this existing space. Great train views.	Uses future vacant space, potential views of trains.	
	Weaknesses	Requires program and events manager, potentially catering staff. Tenant or building service?	Demand should be evaluated to determine if first and second level bars are supported. Could be another unique menu or reserved as Acela lounge	Would rely on signage at first level. This location is least desirable and may not be needed to meet demand. Use for travel services now, possible restaurant use in future.	
	Opportunities	Provide high value space which draws people to the station. Flexible furniture could be used as coworking space too. Second floor footprint could cantilever out over access drive below.	Activate balcony space, new monumental stair and elevator between first and second levels shared by conference space.	Activates the space looking over the access to the train tunnels and provides public use of more station space.	
User Impact	General	State of the art conference and coworking center	New access to historic balcony of station. New high end services.	Must use stairs or escalator to access.	
	Temporary Interruption	Minor - light connection to existing station at end of construction.	Minor - light connection to existing station at end of construction.	Minor - phase work to occur at end of current lease.	
	Future Experience	Access to first class rentable space with train views and catering.	Access to great space with train views and connection to historic balcony and station.	Possible train and streetscape views within historic structure. Could be buffet style restaurant.	

Food / Restaurant

Summary of User Impacts

The Streetsense report suggests removing the first, middle and last benches to accommodate dedicated seating areas for restaurant use and to allow more space for kiosks. We believe grouping the seating in the center will allow more flexibility in use of the main lobby and could more easily accommodate special events. This type of seating could be a shared expense by all grab & go and self service restaurants who would benefit. There can also be a centralized waste station to keep the space clean and easily maintained.

Food options on the first floor should be concentrated along the North face and in the proposed south addition, reserving the south side of the station for restrooms, ticket and other passenger services and security. This activates the street facing façade and distributes food options along the full station footprint rather than condensing options on the east or the west.

It is critical to keep one existing convenience food option at the basement. Supplemental mobile cart beverage and snack vendors (kiosks) could be provided at the end of the tunnel near escalators during peak demand times. Remaining basement area should be reserved for critical support functions required to be in proximity to the tracks.

The future south addition will provide much needed connections to the existing South balcony, alleviating egress concerns of the existing space and providing public use with excellent visual connection to the lobby below. These options are yellow only due to the fact that they will require an addition.

The second floor of the addition, utilized as a bar and events space available for hourly rent will be in high demand as the center point along the Amtrak Northeast Corridor. With the use of flexible partitions and furniture, this space can also be used as a co-working, staff training or community meeting spaces depending on the size and frequency of scheduled events.

Locating a restaurant within the existing historic building on the second floor is a potentially good use of space, provided structural loading is improved and the commissary kitchen is operational to reduce the MEP demands on the historic space. However, this space may be better suited for coworking space or to relocate passenger services and functions which will be required to move from the basement and first levels.



Drake & Morgan at King's Cross, London. Photo credit: Headbox



SOM / Daroff Design 30th Street Station, Philadelphia PA

FOOD VENDORS

Food / Restaurant (Basement & First Floor)									
	Food / Restaurant	Remove storefronts + Make Local	Convenience Grab & Go: Coffee + Sandwiches * Existing	Casual / Semi-Self Service Restaurant	Café / Self service Restaurant	Pizza Kitchen	Tapas Bar / Lounge	Fine Dining	Commissary Kitchen
Index	Plan Key	F1	F2	F3	F4	F5	F6	F7	F8
	Location	Center North Bay	Basement (South)	First Floor NE Corner	First Floor NW Corner	First Floor S	Track Side Addition	Track Side Addition	Track Side Addition
	Study Source(s)**	W-ZHA, SS, 100yr	SS p.20	SS, USB, JLL	SS p.21, USB-17	Staff Conversations	Svigals	W-ZHA, 100yr	Svigals
	Size	676 sf	400 sf (286 sf * existing use)	1,800 sf	2,050 sf	1,200 sf	New 2,400 sf	New 2,400 sf	New 2,600 sf
Operations Impact	General	Similar rents can be obtained. More desirable spaces.	Low / None	Higher rent possible for this space than current use.	More rents	New kitchen hood will need to be installed the full height of the building. Deliveries, waste and possible crowds / lines will need to be managed.	More spaces to rent with low historic impact and easier MEP	New high rent space	High value component which can draw tenants and generate significant income. Dedicated staff / restaurant services manager
	Project Cost	Low / Medium	Low	Medium / Shared with Tenant	Medium / Shared with Tenant	Medium	High	High	High
	Project Benefit	Creates the illusion of larger spaces and modernizes station.	Collect premium rents for these spaces. Continue existing use with same or new tenant.	Front face of historic building becomes active with restaurant use	Front face of historic building becomes active with restaurant use	Front face of historic building becomes active with restaurant use. With proper signage - it could bring more people to use this side of the station even before multi-modal center is built.	Balances historic preservation of the building with the ability to bring in a pizza kitchen.	Long-term improvement of station. Access to balcony and generally better use of both first and second floors.	Generally high value addition for users and tenants.
Building Impact	Historic	Low impact. No structural changes proposed. Removal of non-historic storefronts only.	Low	Low impact, keep as much historic fabric as possible.	Low impact, keep as much historic fabric as possible.	Moderate impact. Path of exhaust for pizza oven will need to be considered carefully.	South addition may have moderate impact to views. Structure should be independent and have minimal connection to station.	moderate to low historic impact	Moderate to low historic impact. Commissary in this location reduces historic impact from the alternative, which is multiple smaller kitchens within historic structure.
	Mechanical	Use in this area should avoid the need for a grease exhaust hood.	Use in this area should avoid the need for a grease exhaust hood.	Increased ventilation and exhaust needs for this area will have moderate impact. May require new chase.	Increased ventilation and exhaust needs for this area will have moderate impact.	Exhaust for the pizza oven would ideally exit the south wall. If historic concerns prevent this, a route to the roof would need to be determined.	New HVAC equipment can be incorporated into the addition - including grease exhaust.	New HVAC equipment can be incorporated into the addition - including grease exhaust.	Use of a commissary Kitchen could eliminate the need for grease impactful grease exhaust equipment in the historic building.
	Electrical	Minimal impact via reuse of existing electrical in this area or provision of new through the basement.	Minimal impact via reuse of existing electrical in this area or provision of new through accessible ceilings.	Additional electrical infrastructure will be required but impacts can be limited by routing the services through the basement.	Additional electrical infrastructure will be required but impacts can be limited by routing thee services through the basement.	Additional electrical infrastructure will be required but impacts can be limited by routing thee services through the basement.	Power could be run from the main building service or a dedicated service provided.	Power could be run from the main building service or a dedicated service provided.	Power could be run from the main building service or a dedicated service provided.
	Plumbing	Plumbing impacts are expected to be minor. If a grease trap is required, it would be best located within the tenant space.	Efforts to keep new plumbing fixtures in the area of existing infrastructure would help limit the plumbing impacts. Pumped sanitary will likely be required.	Additional plumbing infrastructure will be required. If a grease trap is required, it would be best located within the tenant space.	Additional plumbing infrastructure will be required. If a grease trap is required, it would be best located within the tenant space.	Additional plumbing infrastructure will be required. If a grease trap is required, it would be best located within the tenant space.	A separate sewer line to Union Ave is most likely required. An underground grease trap could be incorporated into that run.	A separate sewer line to Union Ave is most likely required. An underground grease trap could be included in that run.	A separate sewer line to Union Ave is most likely required. An underground grease trap could be incorporated into that run.
	Structural	Minor impact anticipated	No impact anticipated	Minor impact anticipated	Minor impact anticipated	Minor impact anticipated	Significant structural coordination required	Significant structural coordination required	Significant structural coordination required
	Code							*reduces code / egress concerns at balcony	

		Food / Restaurant (Second Floor)			
		Food / Restaurant	Catered Event Space / Buffet	Bar / Tapas	Restaurant - Sit Down
Index	Plan Key	F9	F10	F11	
	Location	Track Side Addition - tied into balcony	Track Side Addition - tied into balcony	Second Floor NE Wing	
	Study Source(s)**	100yr	SS, W-ZHA	USB-17	
	Size	New 6,000 sf	New 2,400 + Balcony 1,500 = 3,900 sf	2,500 sf	
Operations Impact	General	Dedicated staff or tenant required to run conference center.	Allow access to historic balcony (South) New elevators to second level.	Potential good use of future vacant space, but better use includes expanding bathrooms and relocating services from basement and first level here.	
	Project Cost	High	High	Medium	
	Project Benefit	Brings New Haven and Union Station into spotlight as a first class conference center at the midpoint of the Northeast Corridor.	Resolves code issues around use of South Balcony.	Provides public access to new area of historic station. Could be a lower cost fit out than other restaurant options once commissary kitchen is available.	
Building Impact	Historic	Careful design should preserve historic structure, be independently structured, and make light connections through existing fenestration only as required.	Same as F8	Low Impact. Consider historic partition layout (if any) and only selectively remove as required for design.	
	Mechanical	New HVAC equipment can be incorporated into the addition.	New HVAC equipment would be in the addition and may be able to improve conditions on the existing balcony.	Increased ventilation and exhaust needs for this area will have moderate impact.	
	Electrical	Power could be run from the main building service or a dedicated service provided. Electrical services are assumed to be shared with F5/F6.	Electrical services are assumed to be shared with Option F7.	Additional electrical infrastructure will be required but impacts can be limited by routing these services through accessible ceilings.	
	Plumbing	Plumbing services are assumed to be shared with Options F5/F6.	Plumbing services are assumed to be shared with Option F7.	Additional plumbing will be required. If a grease trap is required, it would be best located within the space or in F3. Plumbing should be avoided over the entry vestibule below.	
	Structural	New independent structure. Caution at adjacent foundations significant coordination required.	New independent structure. Caution at adjacent foundations. Significant coordination required.	Inadequate structure for proposed use. Existing capacity appears to be 60 PSF, where 100 PSF is required for restaurant use. Evaluation required.	
	Code		*reduces code / egress concerns at balcony		

Food / Restaurant

Summary of Operations and Building Impacts

Creating a commissary kitchen in the proposed south addition will relieve the pressure of many MEP concerns and infrastructure requirements mentioned further in the summary. A commissary kitchen consolidates multiple restaurant kitchens for efficiency and reduced historic impact on the station. They can be modular and flexible to suit restaurants of different scales. This will improve back of house deliveries, waste removal, heat production, noise, cold storage and much more.

There are two significant impacts if a new restaurant kitchen is located within the historic station. The first is the need for a grease trap. We are uncertain if any existing tenant has a grease trap, but if they do it would almost certainly be undersized for this new use. The new grease trap could be located in an available basement space – preferably in line between the Kitchen and the existing sanitary exit. This equipment would be fairly large (perhaps 1000 gallons) and would likely need to be supported above the floor to make the slope to the sanitary exit work. One complication with the interior approach is that the tank will need to be periodically pumped out. Some accommodation for this maintenance work would need to be made.

Some kitchen spaces with limited grease production could utilize a small AGRU style unit within the kitchen. Alternately, a grease trap could be buried outside the building. This would want to be located near the existing or new sanitary exit.

The second significant MEP impact is the need for a grease exhaust hood and tempered makeup air. Due to requirements for separation from combustible materials, we would recommend a zero-clearance double walled grease duct in lieu of black iron. We suspect that the preferred routing for this duct will be to the roof despite the difficulties in finding a vertical path for it. Ducting out the building façade would likely meet with resistance from SHPO. These grease fans are generally loud, unattractive and have the likelihood for staining adjacent surfaces. We do not think that any commercial cooking arrangement would be allowed to proceed with a ventless hood. Whatever air volume is exhausted by the hood would need to be made up to the space.

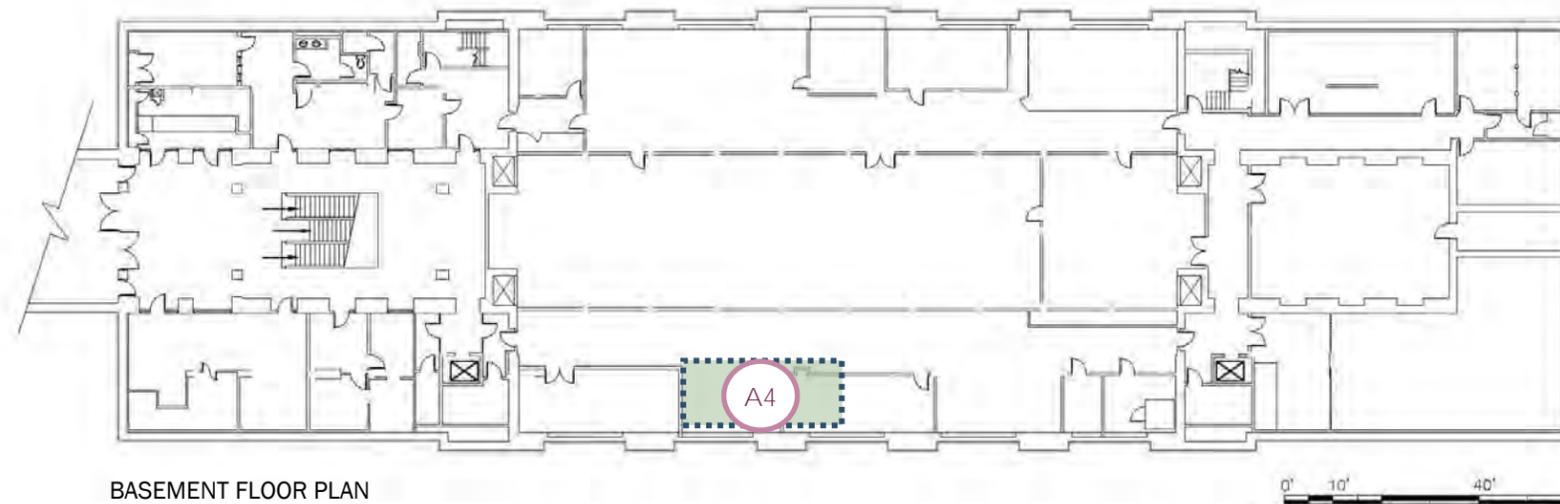


Example of a commissary kitchen. Photo Credit: The Cauble Group

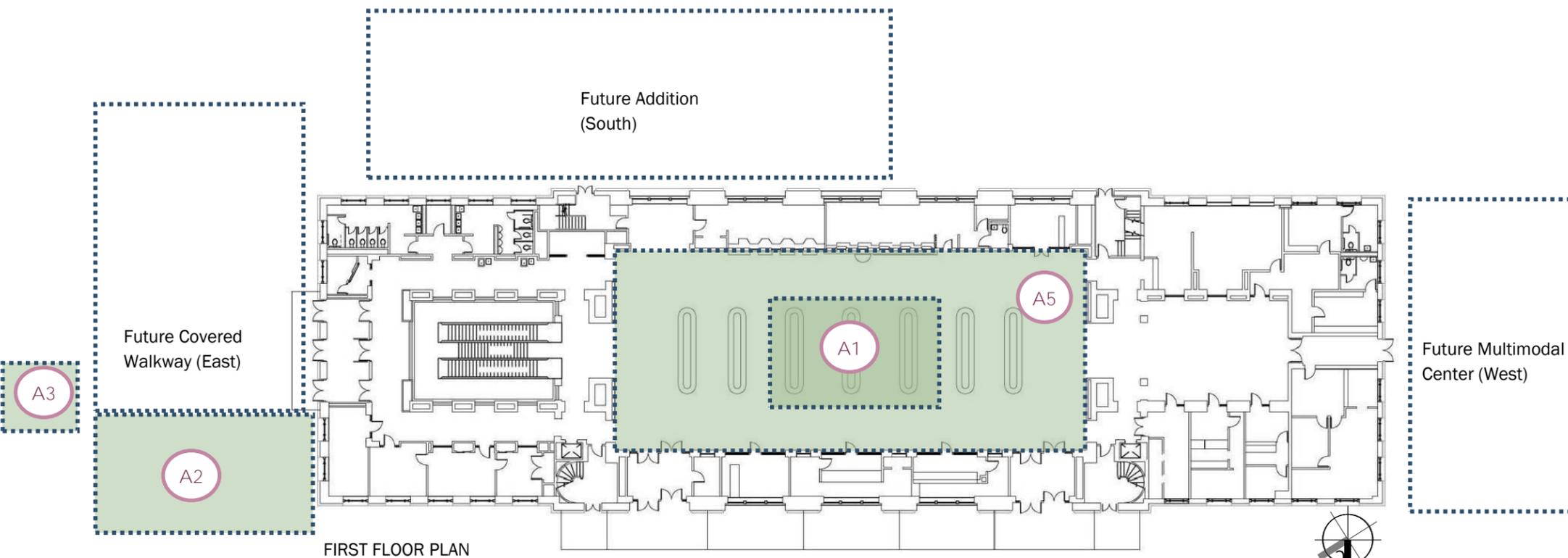
This typically requires a makeup air unit to temper the outside air though we feel there is some potential for simply allowing air from the Main Waiting Room to transfer into the space.

Amenities

		Amenities (Basement and First Floor)				
Index	Amenities	Restaurant Seating in Main Lobby	Outdoor Flexible Seating	Bike Station	Luggage / Self Service	Decorative + seasonal overhead ornaments
	Plan Key	A1	A2	A3	A4	A5
	Location	Main Lobby	Future Covered Walkway (East) + Patio	Existing Garage (East)	Basement (North) OR 2nd Fl.	Main Lobby + Storage
	Study Source(s)	SS,	SS, 100yrs, USB RR	SS, 100yrs	Svigals	SS,



BASEMENT FLOOR PLAN



FIRST FLOOR PLAN

Amenities Options Summary

(Basement + First Floor)

[A1] Providing flexible seating in the center of the lobby will improve the user experience, provide a place to eat and will activate the space.

[A2] Activate the streetscape and provide flexible seating for users outside the station near proposed seasonal market and future enclosed walkway.

[A3] Bike station will improve services available to bike commuters and strengthen the biking community, encouraging and supporting bike use.

[A4] Self service luggage lockers improves convenience for users and reduces demand on staff and area required for this amenity. Location near the tracks reduces luggage on conveyance and throughout the station. Requires upgrading current back of house space for this use. This may also work well on the second floor once conveyance has been evaluated for this use.

[A5] Decorative and seasonal overhead ornaments can be provided in the main lobby to bring life and activity to the space. Users will look forward to seasonal change and local artists can be featured in rotating exhibits along with permanent collection décor.

		Amenities (Second Floor)			
Index	Amenities	Gallery / Bar Extension	Coworking Space	Passenger Lounge	Coworking Space
	Plan Key	A6	A7	A8	A9
	Location	North & South Balconies	Second Floor Offices East & West	Track Side Addition - tied into balcony	Track Side Addition - tied into balcony
	Study Source(s)	Svigals	Staff Conversation	SS, 100yr	Svigals

**Amenities Options Summary
(Second Floor)**

[A4] Optional Luggage Lockers Location

[A6] Keeping occupancy low is key here due to egress issues. Rotating exhibit or gallery space could be provided for use by various tenants and guests.

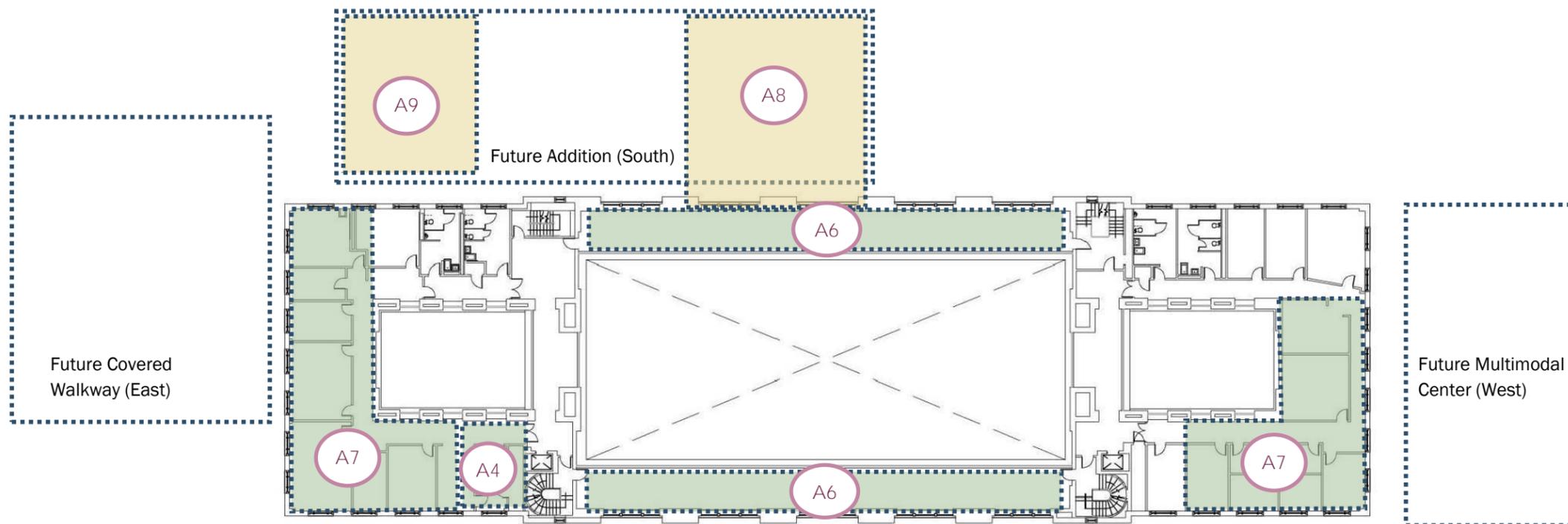
[A7] Dedicated coworking space is a good, rentable use of this space with low historic impact. It is one of the few uses that would not prompt significant floor loading concerns.

[A8] As part of tapas bar or separate—this area could be the Acela Lounge, currently missing from this station.

[A9] Portion of proposed event / catering space could be dedicated or flexible coworking space in addition to dedicated rentable conference rooms and open office areas.



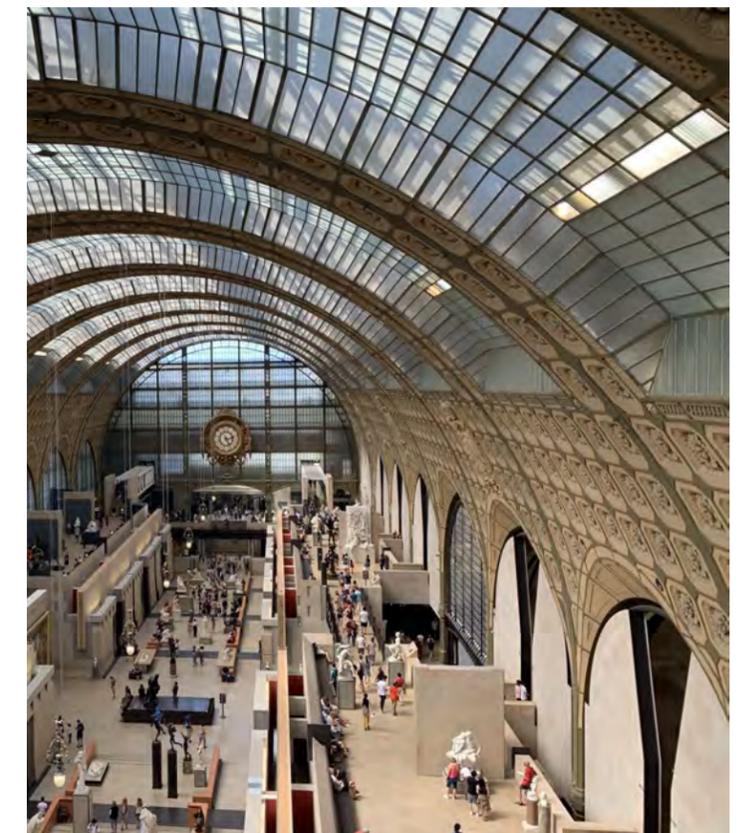
Acela Lounge Penn Station New York. Image credit: upgradedpoints.com Central Station Coworking space Berlin. Image credit: officeinspiration.com



SECOND FLOOR PLAN



PROJECT NORTH



Musee D'Orsay, Paris. Image credit: K. Scanlon

Amenities (Basement and First Floor)						
Index	Amenities	Restaurant Seating in Main Lobby	Outdoor Flexible Seating	Bike Station	Luggage / Self Service	Decorative + seasonal overhead ornaments
	Plan Key	A1	A2	A3	A4	A5
	Location	Main Lobby	Future Covered Walkway (East) + Patio	Existing Garage (East)	Basement (North) OR 2nd Fl.	Main Lobby + Storage
	Study Source(s)	SS,	SS, 100yrs, USB RR	SS, 100yrs	Svigals	SS,
Summary	Strengths	This seating arrangement provides flexible options for users and preserves the historic integrity of the station	More inviting area and better use of the existing patio space.	Provides a service that encourages and supports bike commuters, reducing parking demands.	Self service luggage area will reduce the demand on staff and storage areas for existing luggage service and will be available at all hours.	Improves placemaking and seasonal appeal. Can be a combination of rotating public art and permanent collection.
	Weaknesses	Requires the removal of three benches. These may be reused in other areas or should be retained in storage.	Requires maintenance for outdoor furniture and may require new fencing configuration.	Requires staff and dedicated area within existing garage area.	Requires removal of Saboro pizza. Proposed to be replaced with smaller kiosk style options in the same area during peak demand.	Requires staff or contractor to install and de-install quarterly.
	Opportunities	Bring the lobby area into the modern era with a variety of seating options and flexibility for events	Placemaking opportunity to engage and activate the streetscape adjacent to the station and to use it as amenity space.	Increase bike traffic at the station and improve experience for current bike commuters.	Provide services closer to the tracks to have less luggage moving through the station and on conveyance.	Provide seasonal appeal and improve user and staff experience of the building.
User Impact	General	Quick casual food can be consumed at a table rather than in your lap at a bench.	Provides outdoor area for waiting and eating when station is busy or when weather is enjoyable.	Convenient repair shop service can be performed while at work. Loaner bikes could also be provided.	Convenient self service lockers of various sizes available for hourly rental, encouraging those with long layovers to explore New Haven.	Creates interesting opportunities for users to enjoy the station and to take photographs to share.
	Temporary Interruption	Area can be isolated for work but will block off the heart of the lobby until complete.	Minor. Upgrades to area can be achieved without direct impact to walk through from garage.	Minimal / minor interruption as required to build out shop in the garage.	Moderate interruption as work will be near the highest traffic portion of the station but can be isolated.	Minor. Install and de-install can be scheduled for off peak hours. Anticipation of change and install can be enjoyed by users.
	Future Experience	Having access to café tables and lounge furniture will improve the experience of using the lobby and station.	Activates the streetscape and exterior of station with like users. More seating options for meeting people, eating or working while waiting for transit.	Encourage greater numbers of bike commuters and provide valuable service to them. Support local biking community.	Better convenient options for storing luggage. Maybe be used by more passengers than current system.	Fresh, seasonal change with local inspired installations will provide interest and make the station more of a destination.

Amenities

Summary of User Impacts

All amenities are recommended to improve the user experience at the station. Flexible indoor and outdoor seating, bike parking and repair, and self-service luggage storage are all highly desirable amenities for travelers.

The proposed overhead seasonal decorations and art installations will further create an active and unique atmosphere within the station, reinforcing a sense of place.



Covent Garden, London. Image credit: Wiki Commons

		Amenities (Second Floor)			
Index	Amenities	Gallery / Bar Extension	Coworking Space	Passenger Lounge	Coworking Space
	Plan Key	A6	A7	A8	A9
	Location	North & South Balconies	Second Floor Offices East & West	Track Side Addition - tied into balcony	Track Side Addition - tied into balcony
	Study Source(s)	Svigals	Staff Conversation	SS, 100yr	Svigals
Summary	Strengths	Good use of small space, improve local and community connections by providing rotating exhibit space.	Easy conversion from existing private office use to rentable amenity space.	Provides much needed amenity for existing ridership. Long layovers become easier.	Valuable, rentable amenity available for use by local groups and travelers. Become a destination for meetings, convenient point between NYC and Boston.
	Weaknesses	Limited occupancy. Signage required to guide guests to space - does not have visibility or connection.	Requires moving existing office spaces up to 3rd Floor. Possible increased demand on elevators.	Requires investment and staffing. Occupies a desirable location in station available to a limited group.	Requires dedicated space, fit out and maintenance costs. Market analysis may be required.
	Opportunities	Improve local connections. Good, low impact use on space which can remain circulation.	Provides boutique coworking experience in historic station that can be rented hourly for individual or collaborative work.	Improves station amenities and provides service for existing and future ridership.	Start with a small space and let it expand based on demand. Use flexible furniture.
User Impact	General	Rotating exhibits provide interest and give travelers a stronger connection / experience of New Haven even if they don't regularly explore the city.	Business travelers can plan efficient layovers to use touchdown space for virtual or in person meetings as needed.	Lounge space available for longer layovers. Casual / club area for socializing and relaxing.	Business travelers can plan efficient layovers to use touchdown space for virtual or in person meetings as needed. Some crossover with lounge space.
	Temporary Interruption	Minor. Portions of balcony can be closed to update exhibits as required. New free standing signs in lobby can easily be updated.	Minor. Very few public spaces are used on second floor. Work can occur without disruption to most people.	Minor. New building is independent of existing station. Moderate interruption for last phase when connecting buildings.	Minor. New building is independent of existing station. Moderate interruption for last phase when connecting buildings.
	Future Experience	Improve connection to New Haven through arts and educational exhibits. Encourage more tourism. Free entertainment.	Hourly rentable office and meeting space available in historic station. Convenient place to work	State of the art modern lounge available for use between scheduled travel. Could be used as a meeting place to connect with other travelers.	Class A hourly rentable office and meeting space available for use without intermediate transportation requirements.

Amenities

Summary of User Impacts

The Union Station Retail and Commercial Attraction Strategy report by Streetsense in 2019 is anchored on the idea of improving the user experience. Many of the items in this section are covered in that report, expanding on the 100 yrs Forward Report from 2017.

Each of these amenities are able to be pursued independently and phased at the appropriate time based on the master plan renovations schedule and individual leasing agreements. For example, the seasonal décor and art installation could occur immediately, providing visible change and excitement while long term arrangements and retail upgrades are in negotiations.

Outdoor flexible seating can also be a low cost, immediate solution along with kiosk vendors to activate the street front and patio area to the east. As they are flexible, they can be temporarily moved to the garage front when work occurs to the east. The bike service station and parking area should also be a quick solution, bringing immediate utility and function for commuters.



The Porch at 30th Street Station, Philadelphia Pa, Image credit: University City District

AMENITIES

Amenities (Basement and First Floor)						
Index	Amenities	Restaurant Seating in Main Lobby	Outdoor Flexible Seating	Bike Station	Luggage / Self Service	Decorative + seasonal overhead ornaments
	Plan Key	A1	A2	A3	A4	A5
	Location	Main Lobby	Future Covered Walkway (East) + Patio	Existing Garage (East)	Basement (North) OR 2nd Fl.	Main Lobby + Storage
	Study Source(s)	SS,	SS, 100yrs, USB RR	SS, 100yrs	Svigals	SS,

Operations Impact	General	New seating will require new cleaning and waste area protocol	New seating will require new cleaning and waste area protocol as well as after hours plan for security	New staff or vendor and fit out of space required to provide services.	Reduced staffing and storage area requirements for luggage services. Evaluate agreements to determine feasibility.	Requires coordination with artists and staff for quarterly install.
	Project Cost	Low / Moderate	Low / Moderate	Low / Moderate	Moderate upfront investment of lockers and payment system.	Minor costs anticipated. Potentially grant funded.
	Project Benefit	Modern seating area with flexible layout	Modern seating area with flexible layout and street front engagement.	This service is desirable for existing and future users, also having a staff person on site near bike parking will discourage vandalism and theft.	Desirable service for existing and future users. Reduces staff and increases amenities for guests.	Improve placemaking and unique experience of guests and employees at the station.

Building Impact	Historic	Minor impact. Benches to be removed for	No anticipated historic impact.	No anticipated historic impact.	No anticipated historic impact.	No anticipated historic impact all to be 100% removable and reversible.
	Mechanical	No anticipated mechanical impact.	No anticipated mechanical impact.	Minor impact based on the scope of the vendor fit out.	Moderate impact to modify existing mechanical systems.	Art should be secured from any airflow through lobby
	Electrical	Minimal electrical impact. Convenience power or decorative lighting could be incorporated.	Minimal electrical impact. Convenience power or decorative lighting could be incorporated.	Minor impact based on the scope of the vendor fit out and repair needs.	Moderate impact to modify existing electrical systems.	May need to provide dedicated power and switching controls for use by artists.
	Plumbing	No anticipated plumbing impact.	No anticipated plumbing impact.	Minor impact based on the scope of the vendor fit out.	Minor impact primarily for removal of existing plumbing systems.	No anticipated plumbing impact.
	Structural					Pick points to be reviewed by structural engineer as req'd
	Code	Assembly with loose furniture occupant loads				

AMENITIES

		Amenities (Second Floor)			
Index	Amenities	Gallery / Bar Extension	Coworking Space	Passenger Lounge	Coworking Space
	Plan Key	A6	A7	A8	A9
	Location	North & South Balconies	Second Floor Offices East & West	Track Side Addition - tied into balcony	Track Side Addition - tied into balcony
	Study Source(s)	Svigals	Staff Conversation	SS, 100yr	Svigals
Operations Impact	General	Minor change. Balcony remains circulation space. May require security staff to regulate occupancy and protect exhibit / loans.	Existing offices in these spaces need to relocate to the 3rd floor.	Concierge and cleaning staff required. Develop additional services as demand increases.	Receptionist facilities and cleaning staff required. Mobile furniture will need to be set up based on rental requirements.
	Project Cost	Low.	Low / can be TI fit out.	High	High
	Project Benefit	Low impact use of existing space. Easy to implement. Exhibits can be as long or as short as desired to partner with various large and small organizations.	Brings more daily users to the 2nd floor of the station. Allows use of the station as professional meeting location.	Increase Acela ridership use of station and encourage layovers where guests spend money.	Draw more business users to the station, encourage Amtrak / Acela use on off peak hours, higher occupant load to improve restaurant and retail business.
Building Impact	Historic	None anticipated. No modification to historic structure required. Addition of lighting should not negatively impact the building.	None anticipated. No historic modifications required for this use.	Moderate. View impacts of station from tracks. Care must be taken in design for appropriateness.	Moderate. View impacts of station from tracks. Care must be taken in design for appropriateness.
	Mechanical	Temperature in the space is difficult to control and new equipment options are limited.		New HVAC equipment can be incorporated into the addition.	New HVAC equipment can be incorporated into the addition.
	Electrical	Electrical impacts are anticipated to be minimal.		Power could be run from the main building service or a dedicated service provided.	Power could be run from the main building service or a dedicated service provided.
	Plumbing	No anticipated plumbing impact.		Plumbing impacts would depend on the services in this space.	Plumbing impacts would depend on the services in this space.
	Structural	No anticipated Structural Impact			
	Code				

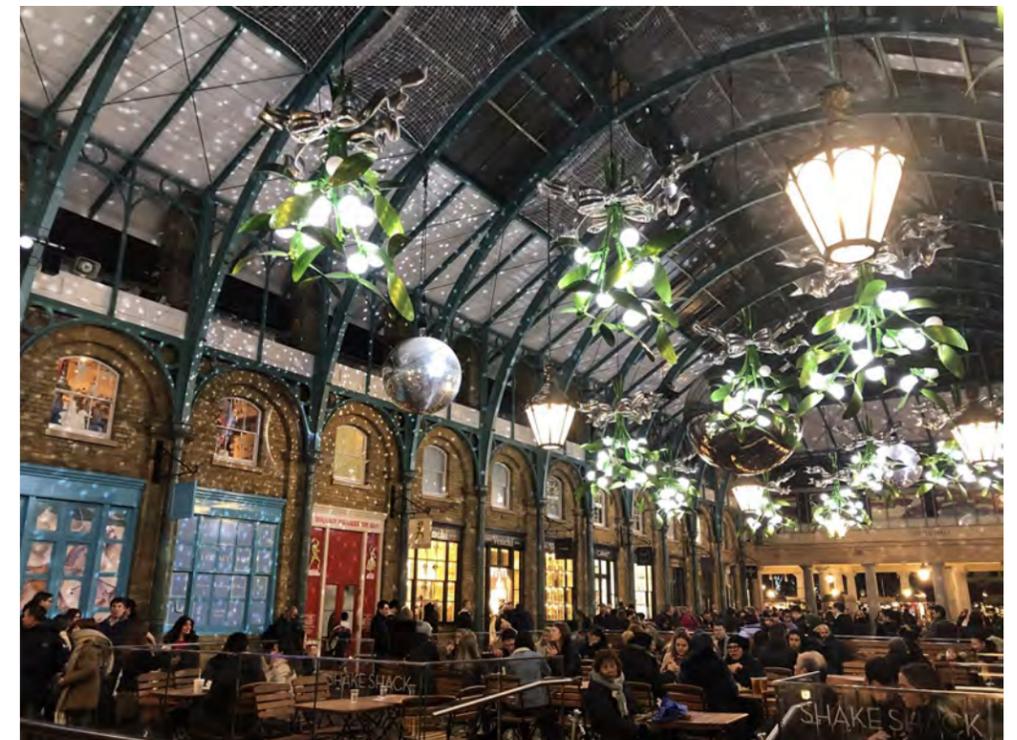
Amenities

Summary of Building and Operations Impacts

These amenities will require some additional daily and seasonal work, but will bring the station on par with other world class facilities.



Streetsense Union Station Retail Study, page 40



Covent Garden Seasonal Décor. Image Credit: K. Scanlon

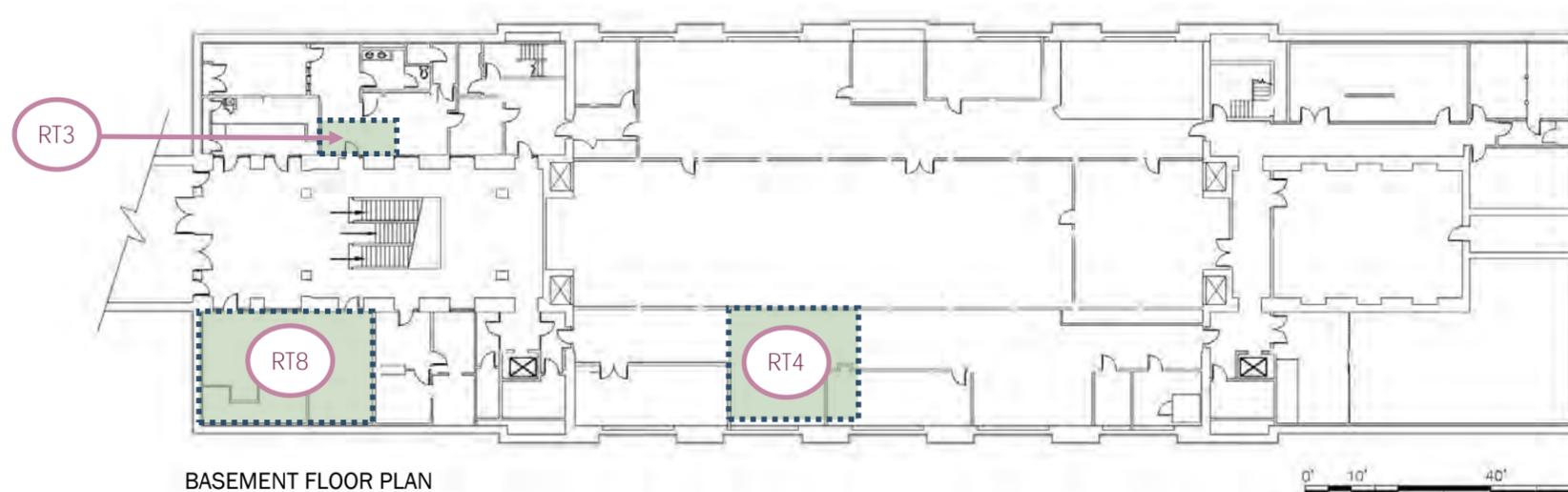
AMENITIES

Retail

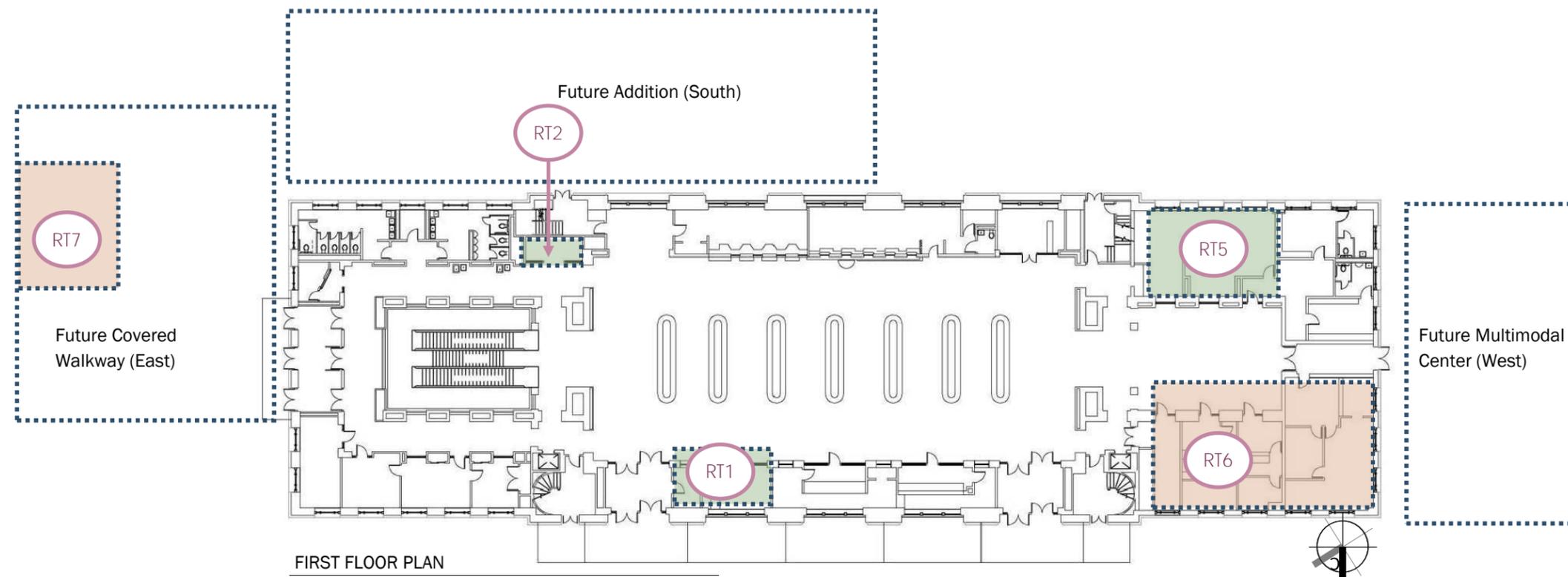
Storefronts & Kiosks

*kiosks are also RMU (Retail Mobile Units)

		Retail							
Index	Retail	Remove Storefronts + Make Local	Relocation of Newsstand	New Micro Retail	Self Service Luggage	New Retail / Vanilla Box	New Retail / Vanilla Box	New Retail / Vanilla Box	New Retail / Vanilla Box
	Plan Key	RT1	RT2	RT3	RT4	RT5	RT6	RT7	RT8
	Location	Center North Bay	Main Lobby (South)	Basement (South)	Basement (North)	First Floor SW Corner	First Floor NW Corner	Future Covered Walkway (East) + Patio	Basement (North)
	Study Source(s)	W-ZHA, SS, 100yr	SS	JLL	Svigals, JLL	JLL* (flipped NW)	W-ZHA, SS, JLL	?	JLL
	Category + Size	Souvenirs, 280 sf	Media, Sundries, 125 sf	Convenience, 125 sf	Luggage Self Storage, 800 sf	TBD, 920 sf	TBD, 2,050 sf	TBD	TBD



BASEMENT FLOOR PLAN



FIRST FLOOR PLAN

PROJECT NORTH

Retail Options Summary

Phasing should be coordinated with upgrades to food and amenity options.

[RT1] Part of the same project to open up food vendor storefronts here.

[RT2] While this space is small, we are breaking out the souvenirs to RT1 and also providing RT3 for newsstand products / functions.

[RT 3] Similar size as first floor newsstand geared more toward last minute convenience items such as power banks, chargers, packaged snacks etc. This might just be vending machines.

[RT 4] This retail use has not had a specific market study, but it was suggested in the 100yr plan and is a valuable service for travelers, commonly available at other multi-modal transportation centers, which can also generate income for the station. Size should be determined by market demand. Also noted in Amenities section.

[RT 5] Final size of retail space here determined by design of bathrooms. Note: relocate existing luggage services to RT4 / RT8 location.

[RT 6] This location should be saved for a restaurant / food vendor.

[RT 7] This location should be saved for a restaurant / food vendor. See kiosks for retail here.

[RT 8] New “Vanilla” or “White Box” Retail should be located here. This is prime real estate for shopping. It may be one or two storefronts. Existing restaurant use to be relocated to first floor prior to retail use.

Retail									
Index	Retail	Remove Storefronts + Make Local	Relocation of Newsstand	New Micro Retail	Self Service Luggage	New Retail / Vanilla Box	New Retail / Vanilla Box	New Retail / Vanilla Box	New Retail / Vanilla Box
	Plan Key	RT1	RT2	RT3	RT4	RT5	RT6	RT7	RT8
	Location	Center North Bay	Main Lobby (South)	Basement (South)	Basement (North)	First Floor SW Corner	First Floor NW Corner	Future Covered Walkway (East) + Patio	Basement (North)
	Study Source(s)	W-ZHA, SS, 100yr	SS	JLL	Svigals, JLL	JLL*(flipped NW)	W-ZHA, SS, JLL	?	JLL
	Category + Size	Souvenirs, 280 sf	Media, Sundries, 125 sf	Convenience, 125 sf	Luggage Self Storage, 800 sf	TBD, 920 sf	TBD, 2,050 sf	TBD	TBD
Summary	Strengths	Modernize space and increase merchandise visualization and footprint. Making this a local vendor is also important for community and placemaking connection.	Low Cost renovation, High Impact for guest convenience and high rent to collect for small area. Stock areas in basement to remain.	Storefront with a small service counter can provide convenient sundries in a very small footprint close to additional basement storage for restocking.	Self service lockers are convenient for travelers of all kinds. Reduces demand on baggage services and collects hourly fees with fewer staff.	Larger footprint allows for a more substantial retail tenant and the expansion of restrooms here. Could also be two smaller retail tenants.	Entire West wing should be used for expanded restrooms, retail and restaurant use. Further MEP study required to best determine location for each component.	Could be easily provided but space should be prioritized for food vendors.	Prime real estate close proximity to tunnels. Could be 1,2, or 3 tenants opposite quick service convenience food and newsstand retail.
	Weaknesses	requires new security gate for after hours.	Smaller area than current location with less visibility.	Requires taking some space from the support functions in the basement but it would be minimal.	Requires relocation of grab and go food and metro police. Recommend kiosks for food and move police to South side adjacent to their existing locker room.	Requires relocation of existing services to other levels. See summary for proposed relocation info.	North side is preferable for restaurant use as it is the largest SF available. It is possible that retail and restrooms may be located here.	Kiosk vendors should be able to provide all retail needs in this location. Space should be reserved for food vendors + seating.	Sales will be geared toward quick service items, not browsing. Small footprint may require additional back of house storage areas.
	Opportunities	refresh and modernize retail space with large visual impact in the busiest location at the station.	Small footprint near restrooms receives significant foot traffic and high visibility from train boards. Reduces mess of open newsstand.	Auxiliary location for news stand to increase their presence and provide more sf or a second vendor.	Provide a modern amenity typical at other metro/transit stations. Could start with a small footprint and expand based on demand.	Activates western side of station, collect tenant rents rather than use for operations space.	Easier to accommodate retail MEP than a restaurant tenant, but if commissary is available, restaurant use will be easily feasible.	Becomes part of station experience. Seasonal market with fresh food and take home meal options.	Could be a combination of retail and vending.
User Impact	General	Displays of local products and souvenirs easy to see and purchase even if just passing through. Split newsstand component to two other convenience locations.	Same products available as before, just in a more compact footprint. More hygienic, only the sales person touches items until point of sale.	Convenience items available for purchase near tracks. Small footprint.	Move baggage handling to adjacent space. Consolidate services at level of train tunnels. Reserve first floor space for food and retail. Still easy for bus users to access.	Helps to activate all areas of the first floor, encouraging full use of the station.	Location would be good for retail if restaurant use is not possible. Vanilla box retail could be provided on a short term lease phase before restaurant use.	Retail in this location should be kiosk or farmers market style, not permanent as rentable space should be reserved for food vendors.	Ideal location for vanilla box retail with opportunity for major improvement facing public spaces.
	Temporary Interruption	Removal of storefronts and refresh can be contained but will be highly visible and may require safety fencing.	Moderate interruption for short time. Construction may need to be timed in off peak hours for clear restroom access.	Minor as whole hallway can be fenced off for work without blocking typical paths of travel.	Moderate, requires full rehab and re-partitioning of Northeast basement.	Low, easy to isolate renovation work from main pedestrian traffic.	Minor, low traffic side of building.	Major impact to current pedestrian traffic from parking garage to station.	Moderate to large impact as work will occur adjacent to escalators / tunnel egress to/from station
	Future Experience	Modern shopping experience with access to local specialties and souvenirs	Access to souvenirs, magazines, postcards etc. with shorter lines in convenient locations.	Grab and go items available in convenient location.	Baggage services available 24/7. Security cameras suggested. Metro Police already near by.	Better shopping options and more opportunity to experience historic station.	Either retail or restaurant use would be appropriate in this location. Retail recommended if restaurant not possible.	High value improvement of experience walking from garage to station with local vendors and more food options.	Fresh design will encourage shopping and provide more options for travelers.

Retail Summary of User Impacts

Providing these suggested retail options will improve convenience for daily commuters and tourists passing through the station. Smaller spaces suit many modern retail business models. With improved freight elevator access to storage areas, even the micro retail spaces could be valuable and viable locations.

A large portion of the Streetsense report focuses on the need to expand retail and provides the market research to support such expansion. The luggage self-storage idea will require an evaluation of existing agreements to determine exactly how to proceed.

		Retail							
Index	Retail	Remove Storefronts + Make Local	Relocation of Newsstand	New Micro Retail	Self Service Luggage	New Retail / Vanilla Box	New Retail / Vanilla Box	New Retail / Vanilla Box	New Retail / Vanilla Box
	Plan Key	RT1	RT2	RT3	RT4	RT5	RT6	RT7	RT8
	Location	Center North Bay	Main Lobby (South)	Basement (South)	Basement (North)	First Floor SW Corner	First Floor NW Corner	Future Covered Walkway (East) + Patio	Basement (North)
	Study Source(s)	W-ZHA, SS, 100yr	SS	JLL	Svigals, JLL	JLL*(flipped NW)	W-ZHA, SS, JLL	?	JLL
	Category + Size	Souvenirs, 280 sf	Media, Sundries, 125 sf	Convenience, 125 sf	Luggage Self Storage, 800 sf	TBD, 920 sf	TBD, 2,050 sf	TBD	TBD

Operations Impact	General	Prioritizes souvenirs and local products to contribute to placemaking. Relocate print media to other newsstand locations.	Newsstand is still in a highly convenient location but with a much smaller footprint, reserving North side retail for local souvenirs and grab-and-go food.	Excellent location for convenience goods in a very small footprint. Minor impact to service areas with large positive impact for travelers.	Provides a beneficial service for travelers with very little staffing requirements. Market analysis required to determine quantity / demand etc.	More RSF and more experiences for travelers within the station.	Would be a good use of space but better saved for a restaurant tenant if possible.	Would be a good use of space but better saved for a restaurant tenant if possible.	Reduces SF available for luggage, food vendors and other services. Will need to occur after food options are improved on the first floor.
	Project Cost	Moderate / Low	Low	Low	Moderate	Moderate / Low	Moderate / Low	High	Moderate
	Project Benefit	Changes the look of retail in the main lobby. Opens up storefront and features local goods.	Activates an underutilized location on the first floor and spreads out the newsstand presence. Could have spinner racks for additional product display space.	Excellent convenience for travelers in a small space for high rent.	Self service luggage storage is a common amenity at many transit stations. This will be a welcome addition serving guests.	Activates western wing of station and provides commercial opportunities ahead of future multi-modal project.	Activates western wing of station and provides commercial opportunities ahead of future multi-modal project.	Activates western wing of station and provides commercial opportunities ahead of future multi-modal project. However, this SF should be prioritized for restaurant use.	High traffic location, ideal for retail sales, however SF should be prioritized for food vendors. Mobile and kiosk options here are best.

Building Impact	Historic	Low impact. Opens up retail spaces to better integrate with lobby area.	Low impact. Existing vending area with minor remodeling.	Low impact. Small area will require renovations.	Minor. Removal of existing convenience food restaurant has opportunity to expose original historic material for user experience.	Minor. Better use of space exposes more original historic material for user experience.	Design is possible to have low historic impact. Care will be required to preserve finishes where possible.	Design can be low historic impact. Independent structure, appropriate setbacks and materials required.	Low impact. Will require renovations but existing finishes may not be historic.
	Mechanical	Existing infrastructure is likely capable of handling this modified use.	No mechanical in this area now and new use is unlikely to require it.	No mechanical in this area now and new use is unlikely to require it.	Existing infrastructure is likely capable of handling this modified use.	Minor modification of mechanical services is anticipated.	Existing systems would need to be evaluated for the new use.	No mechanical needs are anticipated.	Existing systems would need to be evaluated for the new use.
	Electrical	Minimal impact.	Reuse existing power infrastructure.	Minor impact for small added power needs.	Minor impact for modification and addition of power.	Minor impact for modification and addition of power.	Moderate impact for full rework and possible addition to electrical services.	New power would need to be routed to this area.	Moderate impact for full rework and possible addition to electrical services.
	Plumbing	No plumbing needs are anticipated.	No plumbing needs are anticipated.	No plumbing needs are anticipated.	Possible plumbing demo but no new needs are anticipated.	No plumbing needs are anticipated.	Some plumbing impact is anticipated.	No plumbing needs are anticipated.	No plumbing impact is anticipated.
	Structural	Minor to moderate structural modifications required.	No structural modifications anticipated.	No structural modifications anticipated, partitions only.	Minor to moderate structural modifications may be required.	Minor to moderate structural modifications may be required.	Minor to moderate structural modifications may be required.	Once structure is built, vanilla box will have little to no structural impact.	Minor structural modifications anticipated.

Retail –Operational and Building Impacts

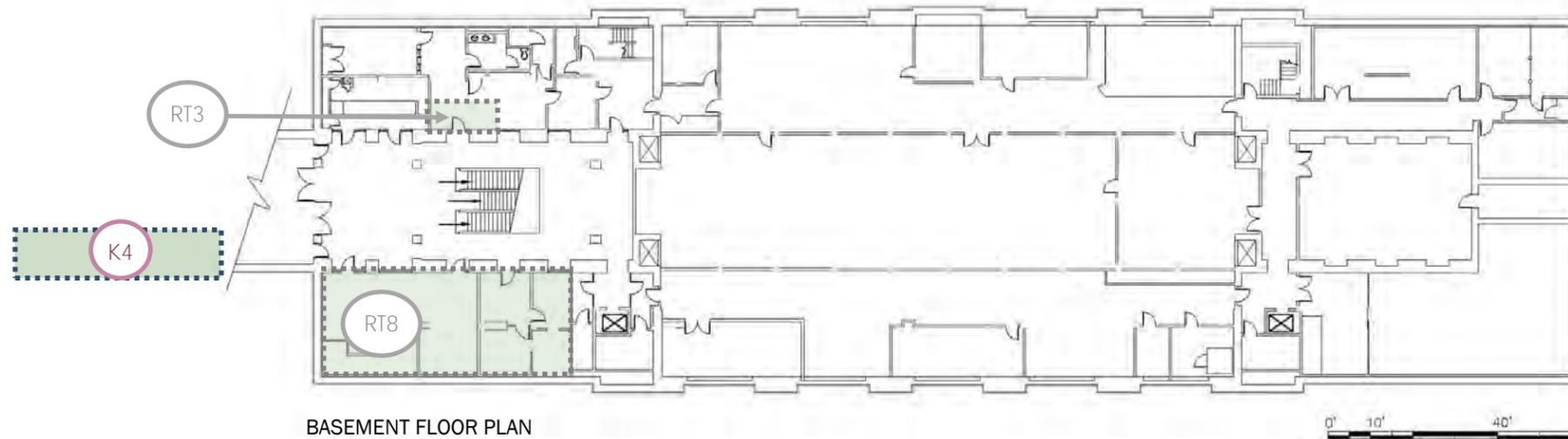
Proposed locations of retail options will require the relocation of various existing station offices and services. It is suggested that some ticketing operations should be condensed when adequate automated machines are installed and that staff areas should generally be moved to the second level with the exception of police who should remain in the basement. These relocations will need to be considered in further detail as part of a master plan.

		Kiosks				
Index	Kiosks / RMU's	Retail Kiosks / Ticket Machines	Retail Kiosks / Seasonal Market	Info Kiosk / Desk	Retail + Food Kiosks / RMU's	Retail + Food Kiosks / RMU's
	Plan Key	K1	K2	K3	K4	K5
	Location	Main Lobby	Future Covered Walkway (East) + Patio	Main Lobby	Basement Track Corridor	Ticket Window
	Study Source(s)	SS,	SS, 100yr, Svigals	100yr, Svigals	Svigals	Staff
	Kiosk Products	Automatic Ticket Machines, Vending, ATM	Farm Market, Local Craft, Food Truck, Hotdog Cart	Brochures, Tours, Staffed Counter	Gifts & Cards, Packaged Snacks, Electronics, etc.	Ice Cream, Coffee or other quick / window service style

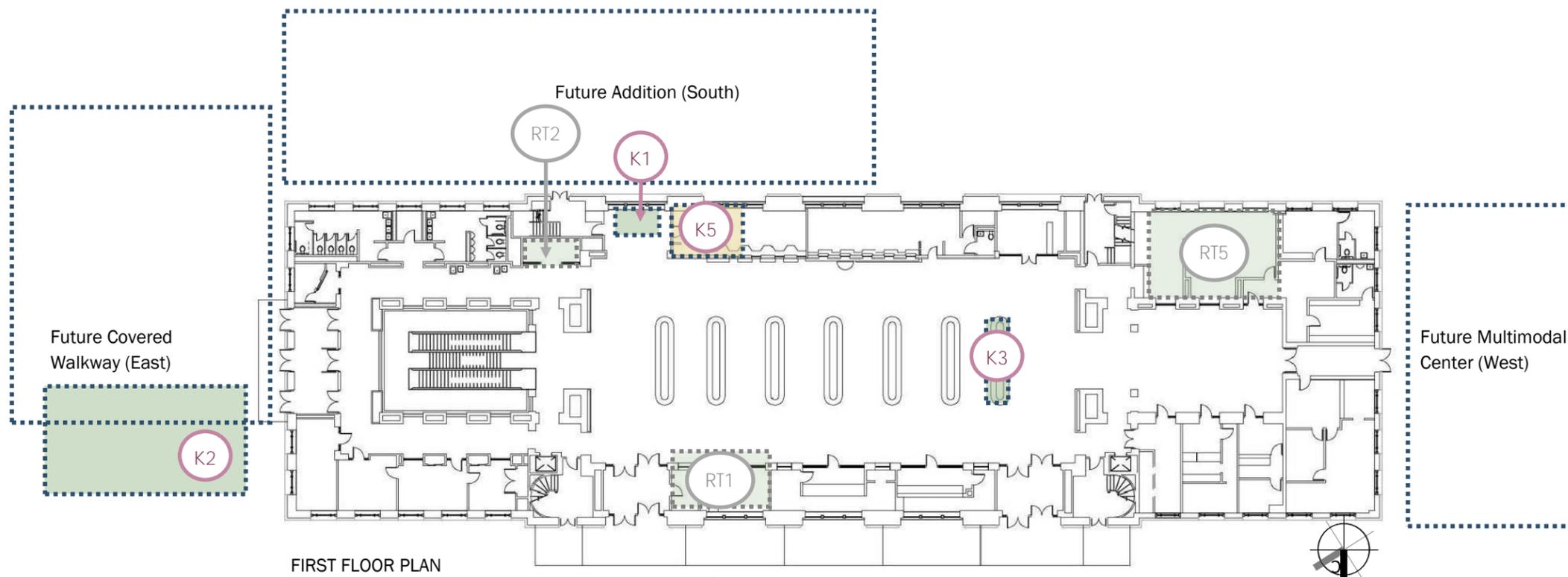
Kiosks Options Summary



Info Kiosk Idea for New Haven Union Station. Credit: Svigals + Partners



BASEMENT FLOOR PLAN



FIRST FLOOR PLAN

RETAIL KIOSKS

Note, all items labeled "RT" reference proposed retail locations for understanding of kiosk adjacencies.

[K1] Automatic ticket machines, vending and ATMs adjacent to both staffed ticket counters and time boards is convenient for guests and staff. Could locate with K3 to save this space for other use.

[K2] Opportunity for placemaking and seasonal market as well as year round food trucks and other smaller cart vendors to provide both prepared and cook at home kits. This can occur with or without covered walkway project.

[K3] Info desk adjacent to ticket booths and self service machines. This could be floating staff for both info and machine help. Opportunity to coordinate with local non-profits and tourism agencies here too.

[K4] Satisfy peak demand needs of travelers with mobile kiosks / cart vendors. Scale must be small to work with existing elevators and power restrictions. May require adding limited power and or lighting.

[K5] Appropriate adaptation of historic ticket window into ice cream, coffee or other quick food service window.

		Kiosks				
Index	Kiosks / RMU's	Retail Kiosks / Ticket Machines	Retail Kiosks / Seasonal Market	Info Kiosk / Desk	Retail + Food Kiosks / RMU's	Retail + Food Kiosks / RMU's
	Plan Key	K1	K2	K3	K4	K5
	Location	Main Lobby	Future Covered Walkway (East) + Patio	Main Lobby	Basement Track Corridor	Ticket Window
	Study Source(s)	SS,	SS,100yr, Svigals	100yr, Svigals	Svigals	Staff
	Kiosk Products	Automatic Ticket Machines, Vending, ATM	Farm Market, Local Craft, Food Truck, Hotdog Cart	Brochures, Tours, Staffed Counter	Gifts & Cards, Packaged Snacks, Electronics, etc.	Ice Cream, Coffee or other quick / window service style
Summary	Strengths	Low Cost, High Impact. Expand existing machines.	Low Cost, High Impact. Flexible. Can happen with or without walkway build out.	Low Cost, High Impact	Low Cost, High Impact. Provides services just at peak demand. Flexible, easy to rotate vendors or shift based on what works.	Low to Medium Cost, High Impact. Fit-out portion of existing historic ticket window with kiosk style service.
	Weaknesses	May require electrical rework? Maintenance required to keep them functioning well.	May need an entity to control program schedule and advertisement of scheduled events?	Requires staff or good signage. Could look messy / require frequent organizing	May require freight elevator to move carts between levels. Limit to number of vendors to keep traffic moving.	May require alteration of interior details at ticket windows. Requires Amtrak and MTA security and agreement.
	Opportunities	Machines are adjacent to staffed ticket counter. Help to spread out demand at peak times and reduce staffing.	Community connections and placemaking opportunity. Can operate immediately. Independent of covered walkway structure.	Could include Historic / Walking Tour Staff / Future City Pass etc.	Improve security with "more eyes" in the tunnels without paying security staff.	Reuse existing historic ticket windows with quick service counter style options which preserve the historic design of the ticket windows.
User Impact	General	Improved convenience of 24/7 ticketing and vending.	Low cost, high impact, quick implementation option to improve placemaking and local connections as well as customer convenience.	Better way to connect tourists to vendors and local experience opportunities.	More options and unique experiences possible to improve connection to place. Improved convenience for travelers.	More options and unique experiences possible to improve connection to place. Improved convenience for travelers.
	Temporary Interruption	Moderate. Work may need to be scheduled in off peak hours.	Minor. Some patio reconfiguration and signage may be required. Smaller vendors could operate immediately.	Moderate. Reconfiguration of existing police station is required.	None. Mobile carts will be small (must fit in existing elevators) and can be operated immediately.	Moderate. Reconfiguration of existing ticket booth is required.
	Future Experience	Easier to see and use ticketing machines adjacent to staffed area for quick help when needed.	Local farm and food vendors with packaged - cook at home meals in addition to fresh food options.	Easy to find local info adjacent to staffed ticket counter. More opportunities to engage in tourism.	Convenient items available last minute. More options with shorter lines.	Quick service snacks, fun and unique user experience.

Kiosk Retail Summary of User Impacts

Kiosks are a low cost, high impact, quickly implemented retail solution allowing for everything from pop-up, short term shops to more long term displays such as information booths providing convenience and improving user experience.

They generally have no negative historic impact as they are completely removable and reversible, allowing the station to flex and be responsive to market demands.



Espresso Bar Kiosk, Image credit: routebus537.veryold.net



Pop-Up Valentine's Day Shop. Image credit: Palmer's Darien

RETAIL KIOSKS

		Kiosks				
Index	Kiosks / RMU's	Retail Kiosks / Ticket Machines	Retail Kiosks / Seasonal Market	Info Kiosk / Desk	Retail + Food Kiosks / RMU's	Retail + Food Kiosks / RMU's
	Plan Key	K1	K2	K3	K4	K5
	Location	Main Lobby	Future Covered Walkway (East) + Patio	Main Lobby	Basement Track Corridor	Ticket Window
	Study Source(s)	SS,	SS,100yr, Svigals	100yr, Svigals	Svigals	Staff
	Kiosk Products	Automatic Ticket Machines, Vending, ATM	Farm Market, Local Craft, Food Truck, Hotdog Cart	Brochures, Tours, Staffed Counter	Gifts & Cards, Packaged Snacks, Electronics, etc.	Ice Cream, Coffee or other quick / window service style

Kiosk Retail —Operational and Building Impacts

Ticket machines should be grouped together close to the ticket windows for ease of maintenance, assistance to users and to control traffic during peak operation.

Smaller carts can be used near the escalators and between the station and the east garage.

Operations Impact	General	Ticket machines may need to be staffed during peak hours. Otherwise low impact.	Schedule coordination required for market including parking areas for vendors who may change seasonally / periodically.	Staff may be needed only at peak hours. Brochures / touch screen info 24/7.	Licensing and scheduling coordination required.	If Amtrak and MTA no longer require use of the entire counter space, this is an appropriate option for re-use if we can accommodate security concerns.
	Project Cost	Moderate / Low	Moderate / Low	Moderate / Low	None / Low	Moderate / Low
	Project Benefit	Highly visible area for self service options adjacent to staffed areas and time boards.	Community outreach, placemaking and improved passenger experience (at least seasonally) with very low cost.	Improve tourism opportunities and consolidate info in one location which can operate both staffed and un-staffed.	Increased rents with minor space requirements and coordination. Can happen immediately. Improves traveler experience and convenience.	Increased rents with minor space requirements. Improves experience and convenience.



Ticket Machines. Image credit: BBC

Building Impact	Historic	Low / none	Low / none	Low / none	Low / none	Low / moderate
	Mechanical	Possible need for exhaust of machine generated heat.	No mechanical needs are anticipated.	Modification of existing HVAC is anticipated.	No mechanical needs are anticipated.	Minor mechanical needs are anticipated.
	Electrical	Minor modifications or additions to power anticipated.	New power and data will need to be run to this area.	Minor modifications or additions to power anticipated.	Routing of new power to this area will be challenging but not impossible.	Minor modifications anticipated.
	Plumbing	No plumbing needs are anticipated.	No plumbing needs are anticipated.	No plumbing needs are anticipated.	No plumbing needs are anticipated.	Hand sink may be required.
	Structural	No structural needs are anticipated.	No structural needs are anticipated.	No structural needs are anticipated.	No structural needs are anticipated.	No structural needs are anticipated.
	Code	Particular care should be followed to provide accessible designed area	Requires compliance with appropriate temporary food vending regulations	Particular care should be followed to provide accessible designed area	Requires compliance with appropriate temporary food vending regulations	Requires compliance with appropriate food vending regulations.



Hotdog Cart. Image Credit:

Mobile-Cuisine.com



Ice Cream Cart. Image Credit:

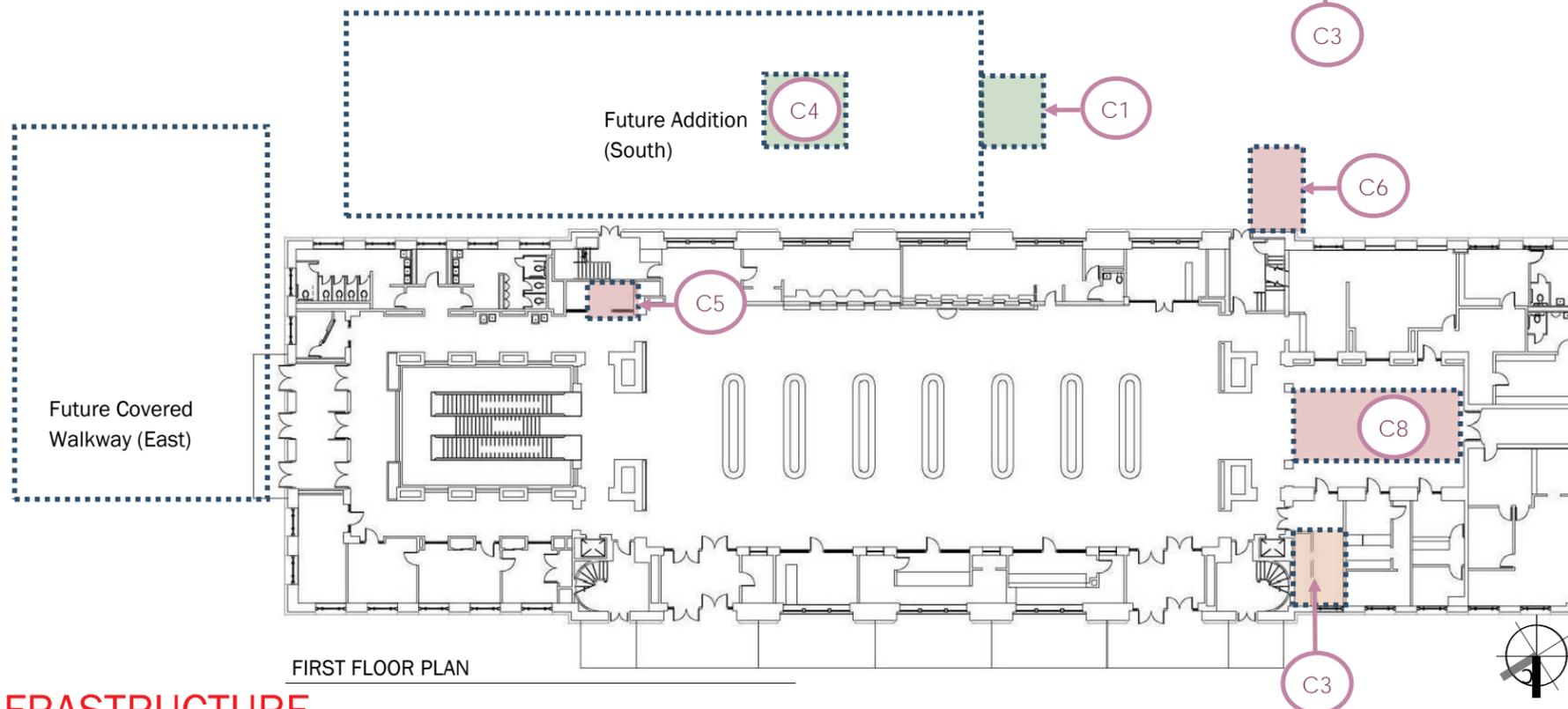
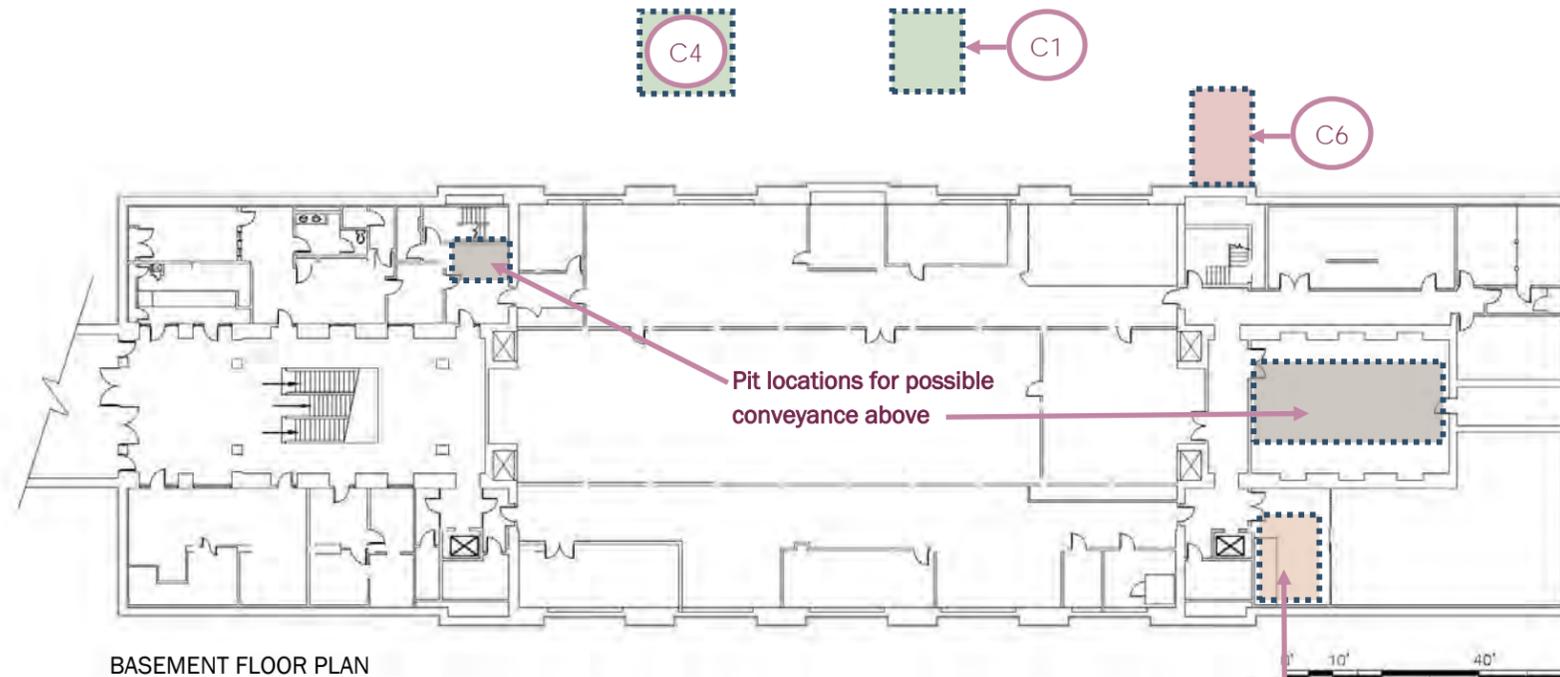
David Gelateria

RETAIL KIOSKS

Vertical Conveyance

*Elevators and Escalators

Index	Elevators and Lifts				Other Vertical Circulation			
	Conveyance	Freight Elevator	Freight & Passenger Elevators	Freight Elevator	Freight and Passenger Elevators	Passenger Elevators	Passenger Elevators	New Vertical Pedestrian Circulation
Plan Key	C1	C2	C3	C4	C5	C6	C7	C8
Location	(Exterior) West	(Interior) Future West Structure	(Interior) Existing Bld. Col. S-T,8-9	(Interior) Future South Structure	(Interior) Existing Bld. SE	(Exterior) South of Existing Bld.	IN future West structure	(Interior) Existing Building West Side
Study Source(s)	Capital Planning		LIFT, SS				Svigals	JLL, MED



Vertical Conveyance

[C1] May require a covered structure at grade. Allows transfer of equipment and deliveries from grade to basement level and vice versa. Location to be determined and coordinated with current bus use and future multi-modal center design.

[C2] Expand C1 / convert C1 to interior freight and passenger elevators when multimodal center is designed

[C3] This option requires structural rework and may be historically damaging. Study was only done for material lift (no attendance). It would need to be even larger and more expensive to include freight, but it might be the best interior option.

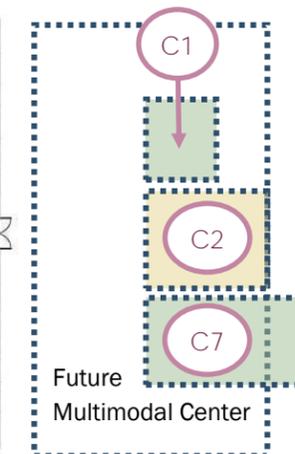
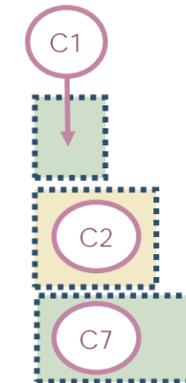
[C4] New Construction location allows for additional passenger elevators and freight in convenient location for increased restaurant and retail use as well as moving building users. Basement access may be for staff only.

[C5] Provide access within existing historic structure to reach second floor on southeast side of balcony.

[C6] While the precise location is to be determined, it interferes with current access loop and has a relatively high negative historic impact. Option C4 is preferred to include additional passenger elevators.

[C7] Inside the new multi-modal structure is the appropriate location for new physical connection to reach the second story of the multimodal center if required at that time.

[C8] Escalators in this location will block the street level entrance and will likely not be used by passengers walking out to grade level to meet busses. If second level access is required for the new multi-modal center, it should be provided via C1, C2 or C7.



		Elevators and Lifts					Other Vertical Circulation		
Index	Conveyance	Freight Elevator	Freight & Passenger Elevators	Freight Elevator	Freight and Passenger Elevators	Passenger Elevators	Passenger Elevators	New Vertical Pedestrian Circulation	New Stair / Escalators + Second Floor Restaurants
	Plan Key	C1	C2	C3	C4	C5	C6	C7	C8
	Location	(Exterior) West	(Interior) Future West Structure	(Interior) Existing Bld. Col. S-T,8-9	(Interior) Future South Structure	(Interior) Existing Bld. SE	(Exterior) South of Existing Bld.	IN future West structure	(Interior) Existing Building West Side
	Study Source(s)	Capital Planning		LIFT, SS				Svigals	JLL, MED
Summary	Strengths	Expand station functionality and reduce demand on passenger elevators. Minor to no historic impact.	will already be required for new construction. Location and size should be chosen for use by both buildings.	Improve station functionality and reduce demand and damage on existing passenger elevators.	Will be required for new construction. Will increase the access to the whole second floor.	Keeps services within existing building footprint.	New footprint allows size to suit modern requirements.	Provides access to second level within new structure. Prevents negative historic impact on station and allows street level entry to remain open.	Allows pedestrian connection to second story of future bus terminal and access to the second floor station balcony.
	Weaknesses	Moderately expensive. Exact location will need to be coordinated with future multi-modal building design.	Relies on future development with unknown timeline.	Expensive and potentially historically disruptive. Study is for a material lift only, not freight. Location potentially disruptive-path of travel is the same as pedestrians.	Expensive and potentially historically disruptive. Relies on future development with unknown timeline.	Likely high negative historic impact and use of space which could be prioritized for front of house.	Negative historic impact and high cost of construction without gaining RSF.	May require re-evaluation of ground level use of this area including bus parking and travel	Major impact on historic structure & high cost. Reduces retail capture opportunities on first floor and requires guests to go up to go down. Most are likely to go outside for "shortcut" across bus lanes. Obscures ground level entrance with back side of escalator.
	Opportunities	Could be provided ahead of future multi-modal building development. Could be expanded to include passenger elevator as well for quick connection between train and bus services.	Provides function without complicated structural work and negative historic impacts.	Required for expanded retail and restaurant services. Will allow expanded services and storage access to lower level.	Provide both freight and passenger elevators on the South side of building. Spread out demand and provide redundancy.	Provide redundancy for existing passenger elevators and better access to southeast side of balcony on second floor.	Easily access multiple levels of the building connecting to existing stair landings.	Cost will likely be lower when included in new structure rather than historic retrofit.	Keeps new South Garage separate from historic building. Provides above grade connection via skybridge. Better solution would be to explore a below grade connection from train tunnels to multimodal station.
User Impact	General	Passenger elevators will not be occupied with deliveries and services are less disruptive.	Passenger elevators will not be occupied with deliveries and services are less seen	Passenger elevators will not be occupied with deliveries and services are less seen	Expanded access areas. New services and amenities possible.	More elevators to use.	More elevators to use.	Second level access to new multi modal center.	Obscured view of multimodal center from station lobby. Inconvenience of being required to go up to second floor and back down to grade to access busses.
	Temporary Interruption	Minor disruption to bus service passengers, but likely not to train passengers.	Minor.	Moderate as it requires disruption on all floors.	Minor to moderate. Separate building attached at last stage.	Likely moderate to high depending on exact location and timing.	Likely moderate to high as it impacts the stair tower.	Minor. Easy to separate work from existing building.	West side is less used. Impact will be sustained but minor.
	Future Experience	Ability to enjoy restaurant and retail services and access the second level of the station without back of house services interrupting flow.	Integrated with new multi-modal design.	Service elevator keeps passenger elevator free but is very visible and in a location that would be better suited for front of house.	Excellent views of wharf and train platforms. Modern amenities and hidden back of house.	Ability to access upper floors with ease.	Ability to access upper floors with ease.	New state of the art transportation center with easy to access services on the second level.	Connection to other modes of transport satisfies a basic need of most travelers. Better connections should be explored.

Vertical Conveyance

Summary of User Impacts

The lack of adequate conveyance has a negative user impact throughout the station. Most solutions have a negative historic impact and are large cost items which cannot be implemented without additional studies and planning. The largest negative impact required to be mitigated is the over-use of passenger elevators for back of house functions, as no adequate freight elevator exists.

Future development provides the best opportunities for long term solutions, however a more short term solution should be considered in item C3.

		Elevators and Lifts						Other Vertical Circulation	
Index	Conveyance	Freight Elevator	Freight & Passenger Elevators	Freight Elevator	Freight and Passenger Elevators	Passenger Elevators	Passenger Elevators	New Vertical Pedestrian Circulation	New Stair / Escalators + Second Floor Restaurants
	Plan Key	C1	C2	C3	C4	C5	C6	C7	C8
	Location	(Exterior) West	(Interior) Future West Structure	(Interior) Existing Bld. Col. S-T,8-9	(Interior) Future South Structure	(Interior) Existing Bld. SE	(Exterior) South of Existing Bld.	IN future West structure	(Interior) Existing Building West Side
	Study Source(s)	Capital Planning		LIFT, SS				Svigals	JLL, MED

Operations Impact	General	Better flow for deliveries to storage areas and to allow expansion of food and retail services.	Provides redundancy for station without using space within existing footprint.	Next step is to increase study to include freight use not just material lift. Also look to see if it can include basement, first & second floor. Possibly track style.	Simplify delivery and maintenance work. Ability to shut down existing elevators for repairs without concern.	Maintenance on a new elevator without adding RSF.	Maintenance on a new elevator without adding RSF.	New facility with new conveyance. Benefits passengers and new services.	Increases maintenance budget. Allows food court on 2nd level for higher rents. HVAC Exhaust Concerns
	Project Cost	Moderate	High. Included with new building.	Moderate.	High. Included with new building.	Moderate to High.	Moderate to High.	High. Included with new building.	Extremely high.
	Project Benefit	Equipment service / replacement and regular deliveries are easier and can occur at all hours of day.	Equipment service / replacement and regular deliveries are easier and can occur at all hours of day.	Provides basement access without using passenger elevators.	More RSF, better services, amenities and ability to maintain existing facility.	Little benefit gained from current elevator layout.	Little benefit gained from current elevator layout.	Ability to move passengers efficiently without negatively impacting historic station.	Improve multi-modal connections

Building Impact	Historic	Low to moderately low impact. Below grade connection required via passenger tunnel.	Low impact, separate structure.	High to moderate. Further evaluation required to create freight elevator not just material lift.	Low to moderate. New building should be sensitive to historic fabric.	High impact.	High impact.	Low. New facility will need to have sensitive design.	Significantly high negative impact to historic fabric and character of station.
	Mechanical	All new services can be coordinated with this conveyance option.	All new services can be coordinated with this conveyance option.	Moderate mechanical impacts on existing services in the area.	All new services can be coordinated with this conveyance option.	Moderate impact on existing services and for provision of new.	Minor impact on existing services and moderate for provision of new.	All new services can be coordinated with this conveyance option.	Likely to have minimal impact.
	Electrical	All new services can be coordinated with this conveyance option.	All new services can be coordinated with this conveyance option.	Moderate electrical impacts on existing services in the area.	All new services can be coordinated with this conveyance option.	Moderate impact on existing services and for provision of new.	Minor impact on existing services and moderate for provision of new.	All new services can be coordinated with this conveyance option.	Moderate impact for new services and maintenance impact on west end lighting.
	Plumbing	All new services can be coordinated with this conveyance option.	All new services can be coordinated with this conveyance option.	Moderate plumbing and fire protection impacts on existing services in the area.	All new services can be coordinated with this conveyance option.	Moderate impact on existing services and for provision of new.	Minor impact on existing services and moderate for provision of new.	All new services can be coordinated with this conveyance option.	Likely to have minimal impact.
	Structural	All new.							Major structural re-work of two floor plates and some vertical partitions will be required. Effort to minimize exterior connection will be required.
	Code	Flood proof materials required.							

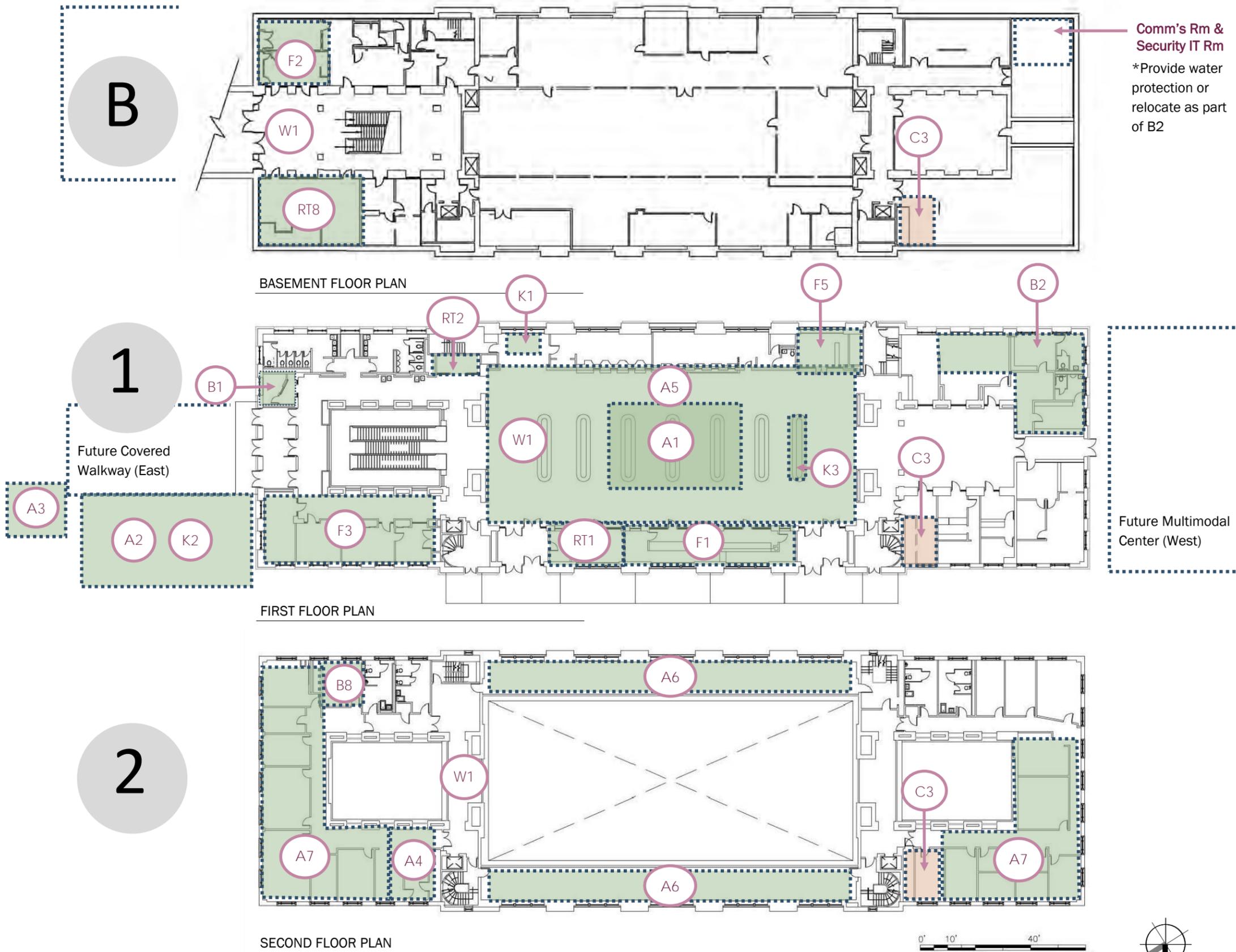
Vertical Conveyance

Summary of Operations and Building Impacts

A lack of adequate freight elevator negatively impacts all building operations and functions including tenant uses. Adding a freight elevator is a challenge in this historic building, however a location C3 has been identified as the likely best location.

Proposed Interior Upgrades

Identified Opportunities

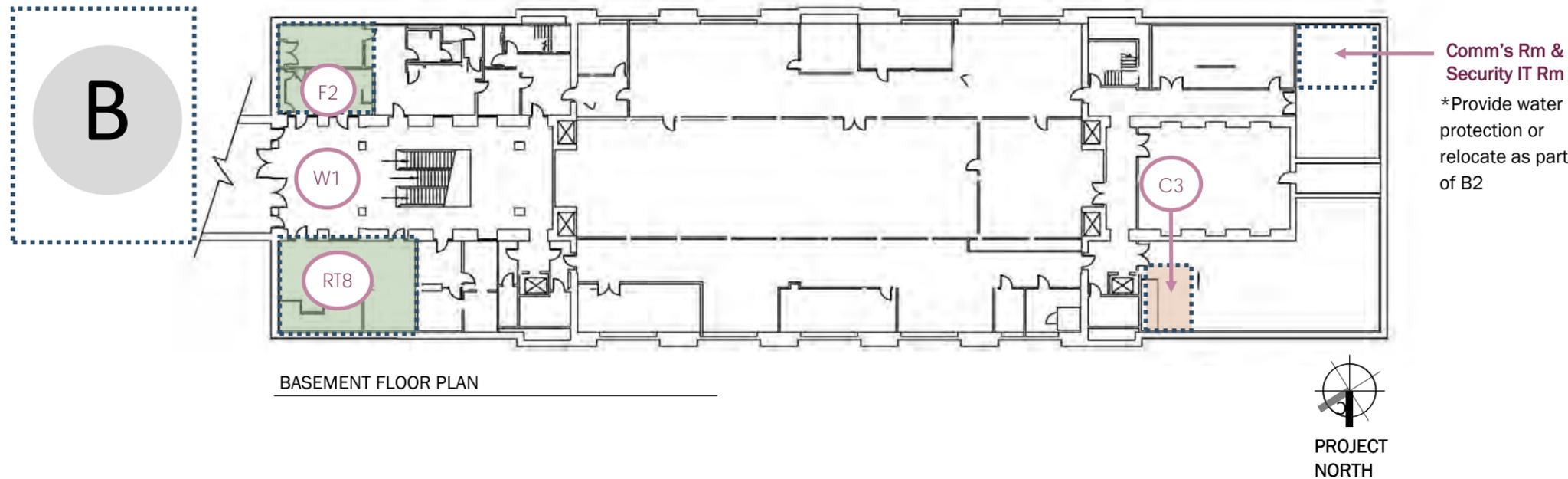


**Proposed Interior Upgrades
Identified Opportunities – Summary
(Basement, First + Second Floor)**

The items listed on this page represent all recommended options for improvements and are focused mostly on the first floor. Most are able to be accomplished independently, however adjacent areas should be considered together for efficiency in cost, sequencing and reducing disruptions. For example, F3 must be completed before RT8 can begin.

All options are “green” indicating they have a relatively high benefit for both users and operations with the exception of the “orange” option C3, the material lift. This lift is recommended for better function and flow of all existing and proposed retail, restaurant and amenity functions. While it may have significant historic, cost and structural implications, this location is the most feasible and least disruptive to other development ideas within the historic building. Further study is required. Conveyance in future additions and adjacent developments will be required to further improve access.

All improvements require wayfinding signage and therefore W1 must be considered for all upgrades.



BASEMENT FLOOR PLAN



Basement

Functional implications of proposed upgrades:

F2— This existing use can remain and expand back to the south wall, with a goal of soliciting a local tenant to provide similar coffee and pastry products. Upgrades to finishes and public facing storefront including lighting should be designed as part of new tenant fit out and signage / wayfinding work. Temporary services may be provided by kiosk during construction if desired to minimize disruption for users.

RT8— This area, currently a food use, may become a retail use in Phase II, once more food options are provided on the first floor. This area could be a self-service luggage area such as RT4 (not included in phase I) or other “white box” retail. Market analysis required to determine best use.

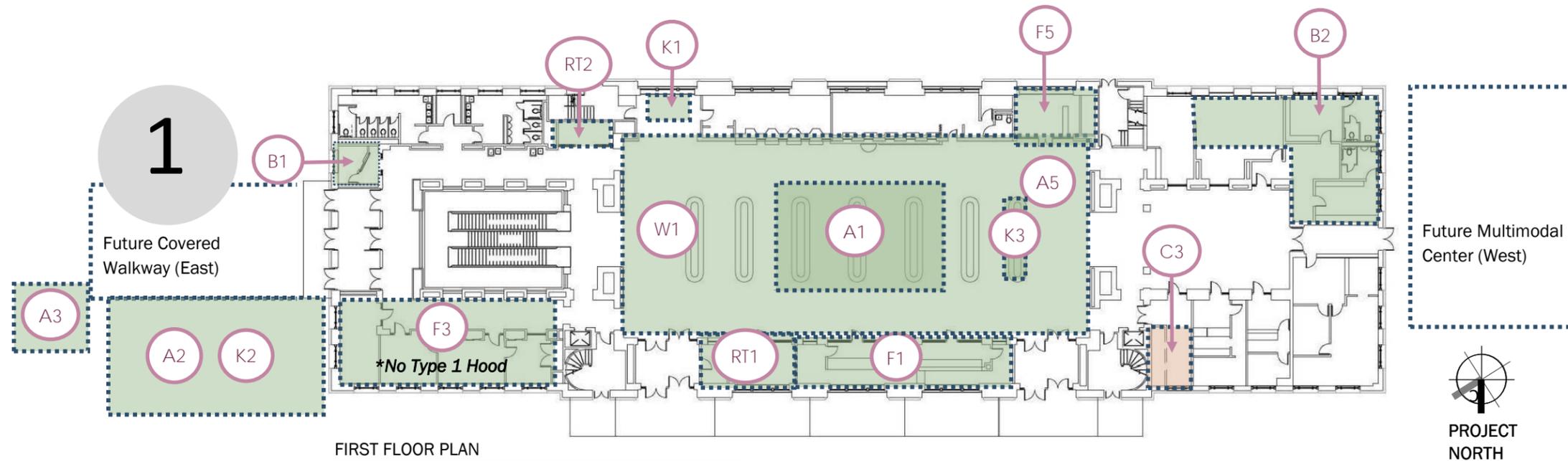
C3—The material lift study has been completed for this location. A freight lift study is recommended to improve support functionality (allowing a person to use the lift as well as materials). This will have some impact on the structure and will likely be a higher cost than just the material lift. This recommendation is based on the knowledge that this will be the only freight elevator to service the building until any one of the adjacent developments or additions can move forward.

General basement infrastructure impacts include install of a waterproof pan under new plumbing penetrations with leak detection alarms, or relocation of comm room and security / IT room as part of work to expand restrooms on the first floor in B2.

Index	Food / Restaurant	Convenience Grab & Go: Coffee + Sandwiches * Existing
	Plan Key	F2
	Location	Basement (South)
	Study Source(s)**	SS p.20
	Size	400 sf (286 sf * existing use)

Index	Retail	New Retail / Vanilla Box
	Plan Key	RT8
	Location	Basement (North)
	Study Source(s)	JLL
	Category + Size	TBD

Index	Conveyance	Freight Elevator
	Plan Key	C3
	Location	(Interior) Existing Bld. Col. S-T,8-9
	Study Source(s)	LIFT, SS



First Floor

Functional implications of proposed upgrades:

A1 & K3—Benches must be removed. (Retained and stored off site?)

A2— Proceed with design of new patio area

A3— Proceed with design and obtain operator or contractor to provide bike repair services.

A5—Coordination with artists and storage areas for seasonal décor required.

B1—Relocate or eliminate ATM.

B2—Coordinate with Data Center in Basement. Relocate Amtrak police to basement.

C3—*see basement level

F1 & RT1 —Proceed with design of open storefronts. Solicitation of local tenants and new fit-out agreements required. Coordinate with wayfinding and signage / branding work.

F3—Offices located here must be moved up to 3rd or 4th floor. Design of appropriate restaurant type and fit out required. Kitchen cannot have a Type I hood.

F5—Pizza Kitchen—takeout / convenience counter. MEP coordination required. Historic impact TBD.

K1—Automated Ticket Machines (expand existing)

K2—Permitting and scheduling of vendors required. Coordination with farmers market required.

RT2—Relocate vending machines to adjacent South window area with K1. Newsstand vendor fit out and agreement required.

Index	Amenities	Restaurant Seating in Main Lobby	Outdoor Flexible Seating	Bike Station	Decorative + seasonal overhead ornaments
Plan Key		A1	A2	A3	A5
Location		Main Lobby	Future Covered Walkway (East) + Patio	Existing Garage (East)	Main Lobby + Storage
Study Source(s)		SS,	SS, 100yrs, USB RR	SS, 100yrs	SS,

Index	Food / Restaurant	Remove storefronts + Make Local	Casual / Semi-Self Service Restaurant	Pizza Kitchen
Plan Key		F1	F3	F5
Location		Center North Bay	First Floor NE Corner	First Floor S
Study Source(s)**		W-ZHA, SS, 100yr	SS, USB, JLL	Staff Conversations
Size		676 sf	1,800 sf	1,200 sf

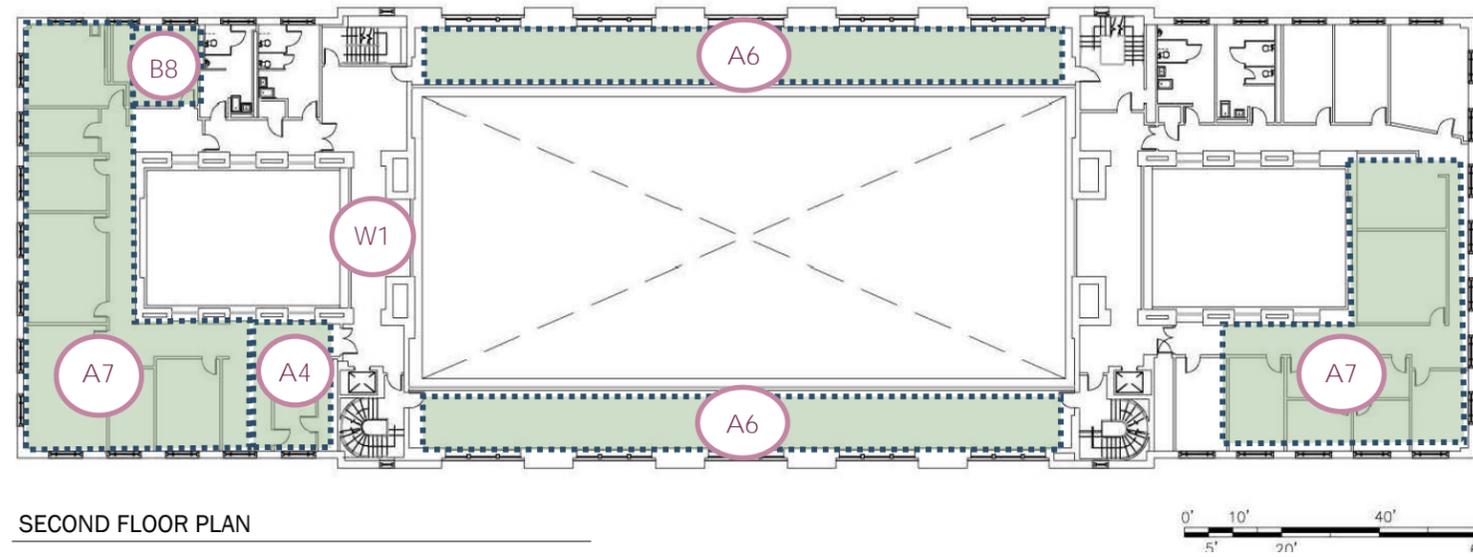
Index	Restrooms	New Family Bathroom	Men's / Women's Restrooms
Plan Key		B1	B2
Location		Webster Bank ATM Room	SW Side (Historic Location)
Study Source(s) **		USB-18	Staff
WC Count		1 or 2	8+ (estimated)

Index	Kiosks / RMU's	Retail Kiosks / Ticket Machines	Retail Kiosks / Seasonal Market	Info Kiosk / Desk
Plan Key		K1	K2	K3
Location		Main Lobby	Future Covered Walkway (East) + Patio	Main Lobby
Study Source(s)		SS,	SS,100yr, Svigals	100yr, Svigals
Kiosk Products		Automatic Ticket Machines, Vending, ATM	Farm Market, Local Craft, Food Truck, Hotdog Cart	Brochures, Tours, Staffed Counter

Index	Retail	Remove Storefronts + Make Local	Relocation of Newsstand
Plan Key		RT1	RT2
Location		Center North Bay	Main Lobby (South)
Study Source(s)		W-ZHA, SS, 100yr	SS
Category + Size		Souvenirs, 280 sf	Media, Sundries, 125 sf

PROPOSED INTERIOR UPGRADES—IDENTIFIED OPPORTUNITIES

2



SECOND FLOOR PLAN



Second Floor

Functional implications of proposed upgrades:

A4—Lease locker service or purchase for in-house management

A6—Proceed with design of gallery and exhibits management.

A7—Will displace existing office users here but will also bring in rent and more professional business users to the station.

B8— Much needed wellness space for both staff and travelers. Uses to include: Lactation, telehealth appointments, blood sugar check, meditation, prayer etc.

Generally, most office spaces and displaced functions from all levels should be moved up to the third & fourth level. Coordination with existing uses and planning is required.

		Amenities (Second Floor)		
Index	Amenities	Gallery / Bar Extension	Coworking Space	Luggage / Self Service
	Plan Key	A6	A7	A4
	Location	North & South Balconies	Second Floor Offices East & West	Basement (North) OR 2nd Fl.
	Study Source(s)	Svigals	Staff Conversation	Svigals

Index	Restrooms	Wellness / Lactation Room
	Plan Key	B8
	Location	Second Floor SE Side
	Study Source(s) **	Svigals
	WC Count	0

Item Key	Description	Reference Study	Study Date	First Opportunities Opinion of Const. Cost Including Escalation to 2023 Start	Next Opportunities Opinion of Const. Cost Including Escalation to 2024 Start	Notes
A1	Restaurant Seating In Main Lobby	Street Sense	2019		\$ 337,500	Furniture Only. New proposed area may be slightly larger than originally proposed in 2019 study.
A2	Outdoor Flex Seating	Street Sense	2019		\$ 127,373	Furniture Only
A2	Outdoor Patio				\$ 212,288	Patio upgrades including resurfacing, new fencing, accessibility upgrades, power, lighting and plantings
A3	Bike Station	100yr Plan	2017	\$ 284,000		We assume full build out of space and bike racks are required. Does not include operations, equipment or staff expense.
A4	Luggage Lockers / Self Service	Svigals	2019	\$ 62,976		Cost for retail shell only. Lockers cost by tenant, rental or mfg. TBD
A5	Decorative & Seasonal Overhead Ornaments	Street Sense	2019	\$ -		This needs to be programmed to determine costs including fabrication, seasonal storage, installs, payments to artists for commissioned work etc.
A6	Gallery / Bar Extension	Svigals	2021		\$ 190,650	Mezzanine Upgrades for gallery use. Refinish existing space. Exhibit design and displays not included.
A7	Coworking Space	Staff	2019		\$ 843,480	Cost for second floor office space shell. FF&E not included.
B1	New Family Restroom	USB - 18	2018	\$ 101,250		Cost to relocate ATM not included.
B2	New Men's & Women's Restrooms	Staff	2018	\$ 1,417,500		*does not include cost for waterproofing or relocation of IT/Comm below
B8	Wellness / Lactation Room	Svigals		\$ 3,500		Already underway in-house. (Budget for finish upgrades only.)
C3	Freight Elevator	Street Sense	2019		\$ 1,890,000	Cost listed in Streetsense report is for a 4+ stop passenger elevator. We will require a 3 stop freight elevator. Expected cost to be similar or less than this.
F1	Remove Storefronts	Street Sense	2019		\$ 1,350,000	Design required to determine actual costs. Range 500K-2M.
F2	Convenience Grab & Go: Coffee + Sandwiches * Existing	Street Sense	2019	\$ 349,440		Expand existing use - seek local tenant? Upgrade storefront (F1). Plus tenant fit out costs
F3	Casual / Semi-Self Service Restaurant	USB	2017	\$ 2,556,000		Station cost before tenant fit-out. Extrapolated from original 1,000 sf range 300K-1M.
F5	Pizza Kitchen	Staff	2019		\$ 193,489	Cost for ground floor restaurant shell. Does not include required MEP upgrades.
K1	Retail Kiosks / Ticket Machines	Street Sense	2019	\$ 12,800		Cost for machines only. Range 8k-30k.
K2	Retail Kiosks / Seasonal Market	Street Sense	2019	\$ 12,800		Cost per kiosk. Rent to tenants who bring their own? Or does the station wish to purchase and lease?
K3	Info Kiosk / Desk	100 yr.	2019		\$ 67,500	Design required to determine actual costs.
RT1	Remove Storefronts + Make Local	Street Sense	2019		\$ -	same work as F1 for retail spaces included in above cost
RT2	Relocation of Newsstand	Street Sense	2019	\$ 128,000		Minor rework of power, lighting and tenant fit out needs.
RT8	New Retail / Vanilla Box	Street Sense	2019		\$ 291,600	Extrapolated from PSF for "Basement Retail Shell Space" in Street Sense Report
MEP	MEP Upgrade Allowance	General Requirement		\$ 1,140,000		Electrical equipment for individual tenant metering and new central cooling plant to meet current / existing loads. Does not include any new infrastructure for restaurant uses.
W1	Wayfinding	Merje	Draft	\$ -	\$ -	ROW work will impact exterior wayfinding program. Development of East and West lots will impact both interior and exterior wayfinding program.
TI	Tenant Relocation & Enabling Projects	General Requirement		\$ -	\$ -	Existing tenants will need to be relocated to other areas of the station. Enabling projects and associated costs TBD.
	Professionally Clean Platform Stairs	General Requirement		\$ -		Interior Improvement. Cost TBD by contractor estimate.
	Subtotal			\$ 6,068,266	\$ 5,503,879	
	Contingency	25%		\$ 1,517,067	\$ 1,375,970	25% Contingency
	CM Project Mgmt & Engineering Fees	25%		\$ 1,896,333	\$ 1,719,962	25% CM Project Management & Engineering Fees
	Architectural / Design Fees	10%		\$ 758,533	\$ 687,985	10% Architectural Design Fees
	Total			\$ 10,240,199	\$ 9,287,795	Total Estimated Costs *excluding tenant fit out

Cost Summary

Costs are projected opinions only and no warranties or guarantees are made. They are approximate for planning purposes only. Further design, planning and estimating will be required for each identified opportunity at the appropriate time before work can commence.

Escalations are based upon assumptions, similar projects and general experience.

The next step to implementing these identified opportunities is to evaluate what specific enabling projects are necessary including tenant relocations, infrastructure upgrades, code evaluations, market analysis, design etc.

PROPOSED INTERIOR UPGRADES—IDENTIFIED OPPORTUNITIES

West End Focus

Multimodal Pedestrian Connections



West End Focus

These diagrams highlight the most desirable uses in the west end on each level to support the connection to the new multimodal center and anticipated pedestrian flow into the station.

Basement may have a pedestrian connection lined with retail where possible along path to tunnel or may be reserved for deliveries and back of house required access (TBD)

First Floor should have restrooms, food and retail spaces with clear visibility or wayfinding to info booth and ticketing.

Second floor should have additional restrooms (proposed to stacked over those on first floor) to support expanded future retail and food uses of second floor. Retail locations cannot be determined until pedestrian connection is designed. Floor loading will need evaluation. Co-working space can be created for interim or long-term rental use.

New Haven Union Station Campus

Enabling Projects & Tenant Relocations

9/28/22

Evaluation Team



175 Capital Blvd.
Suite 402
Rocky Hill, CT 06067
860.563.1117



84 Orange Street
New Haven, CT 06510
203.786.5110

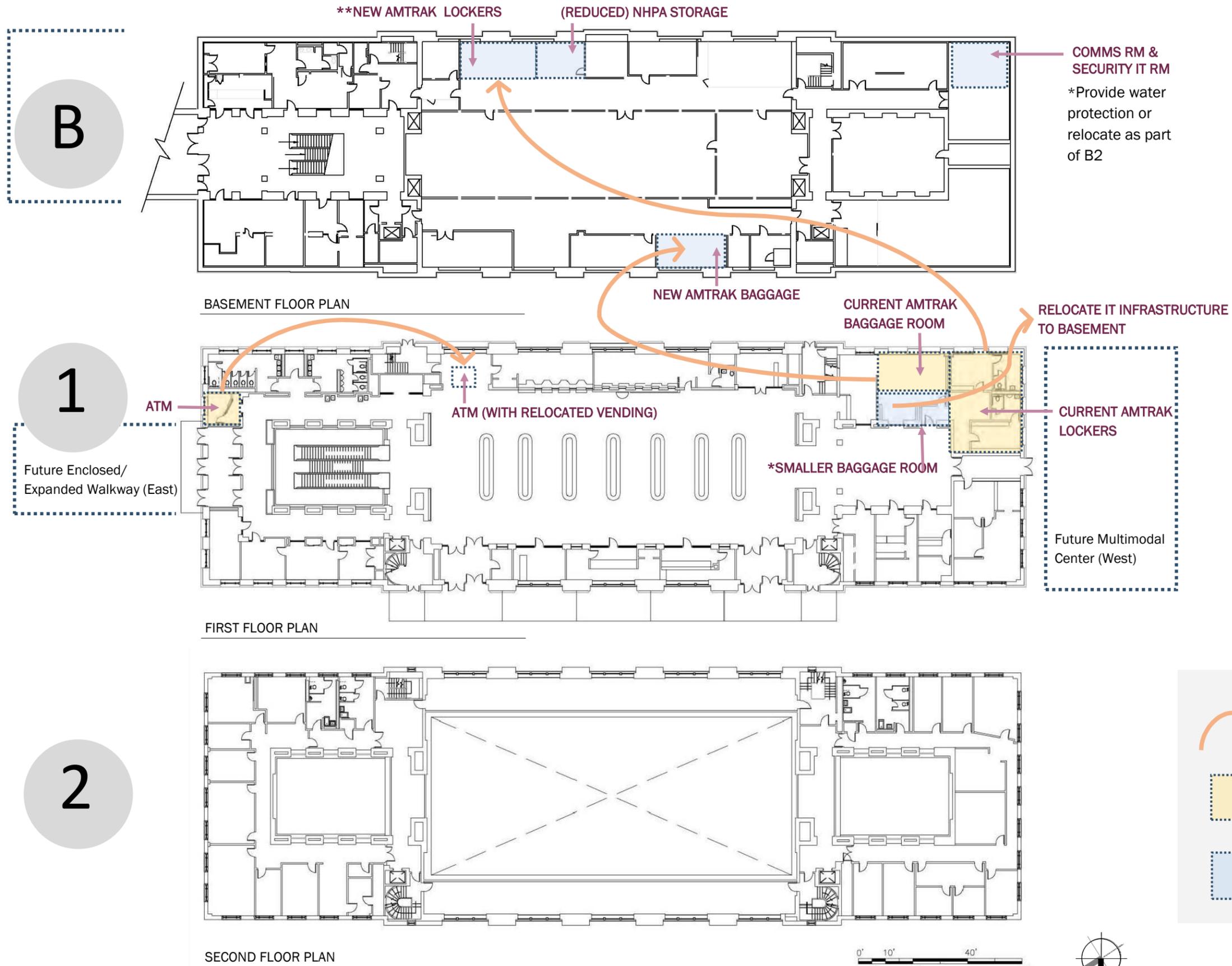
SILVER / PETRUCELLI **+ ASSOCIATES**

3190 Whitney Avenue, Building #2
Hamden, CT 06518
203.230.9007

- + Restrooms & Wellness Projects
- + Amenities & Conveyance Projects
- + Restaurant & Retail Projects
- + State Of Good Repair, Infrastructure, Right Of Way, & Campus Wayfinding Projects
- + Summary & Opinion of Probable Cost
 - + Phase 1 Additional Square Footage
 - + Restrooms & Wellness: 1,665 sf (more than doubles existing restrooms, adds family restroom, & wellness/lactation room)
 - + Amenities & Conveyance: 5,927 sf (includes coworking facility)
 - + Retail & Restaurants: 3,540 sf (includes 1,200 sf patio)

Restrooms & Wellness Room

Enabling Projects and Tenant Relocations



****Prelim. Feasibility Inspection Required for all functions proposed to be relocated to basement.**

Min 80" clear head height needed—currently MEP equipment is much lower.

If basement locations are not viable, functions will need to be moved to the 3rd or 4th floor.

B

1

2

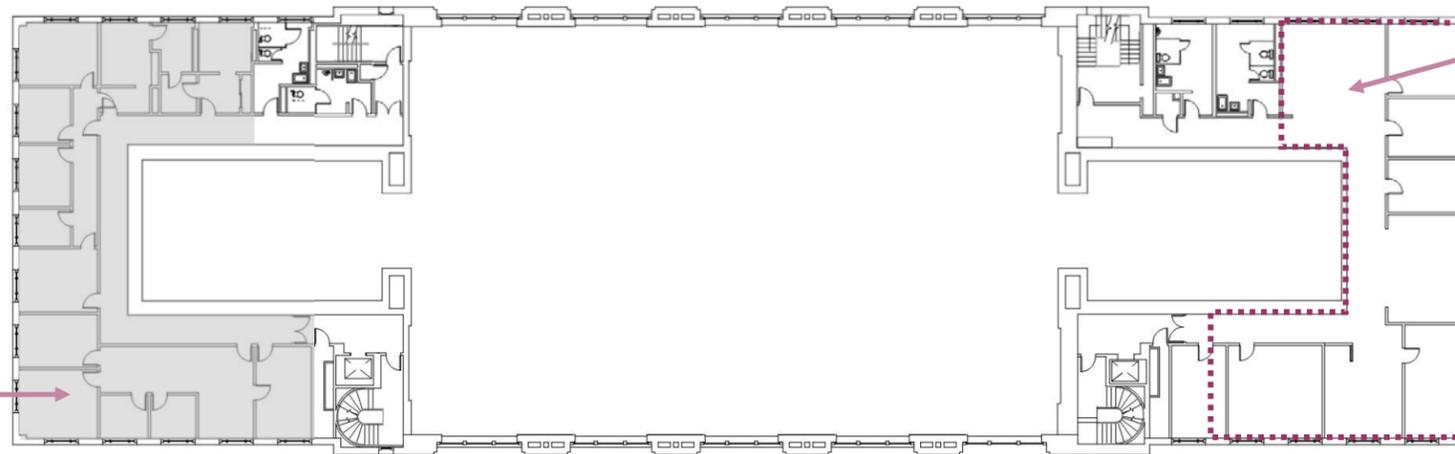
BASEMENT FLOOR PLAN

FIRST FLOOR PLAN

SECOND FLOOR PLAN

3

OCCUPIED BY TASI



THIRD FLOOR PLAN

**POTENTIAL LOCKER ROOM "WING" FOR ALL RELOCATED LOCKER ROOMS REQUIRED INCLUDING THOSE CURRENTLY IN THE BASEMENT AND ON THE FIRST FLOOR

4

OCCUPIED BY AMTRAK



FOURTH FLOOR PLAN

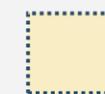
METRO NORTH

AMTRAK

Tenant Relocation Key



Move



Current Location



New Tenant Location or Enabling Task Area

RESTROOM & WELLNESS

UNION STATION—CAMPUS ENABLING PROJECTS & TENANT RELOCATION



Tenant Relocations									
Tenant	Use	Current Location			Proposed Location			Net	Notes
		Floor	Room(s)	Exg. USF	Floor	Room(s)	New USF		
NHPA	Storage	0	005	615	0	005	250	-365	Shrink existing
Amtrak	Employee Lockers	1	120 - 124	992	0	005	490	-502	Can they use the existing unisex restroom in adjacent break room? (no new bathrooms)
Amtrak	Baggage Room	1	119	540	0+1	119 + 015-2.5	560	20	TBD with final Restroom Design
Webster Bank	ATM	1	152	123	1	107	Open		No enclosed room

Enabling Projects						
Area	Use	Floor	Rooms	Exg. USF	Task	Notes
Base Building	IT / Data Room	0	025	400	Waterproofing @ ceiling	protect equipment from new plumbing above

Restroom & Wellness Projects

To achieve all identified opportunities, the following tenant relocations and enabling projects are required.

Basement

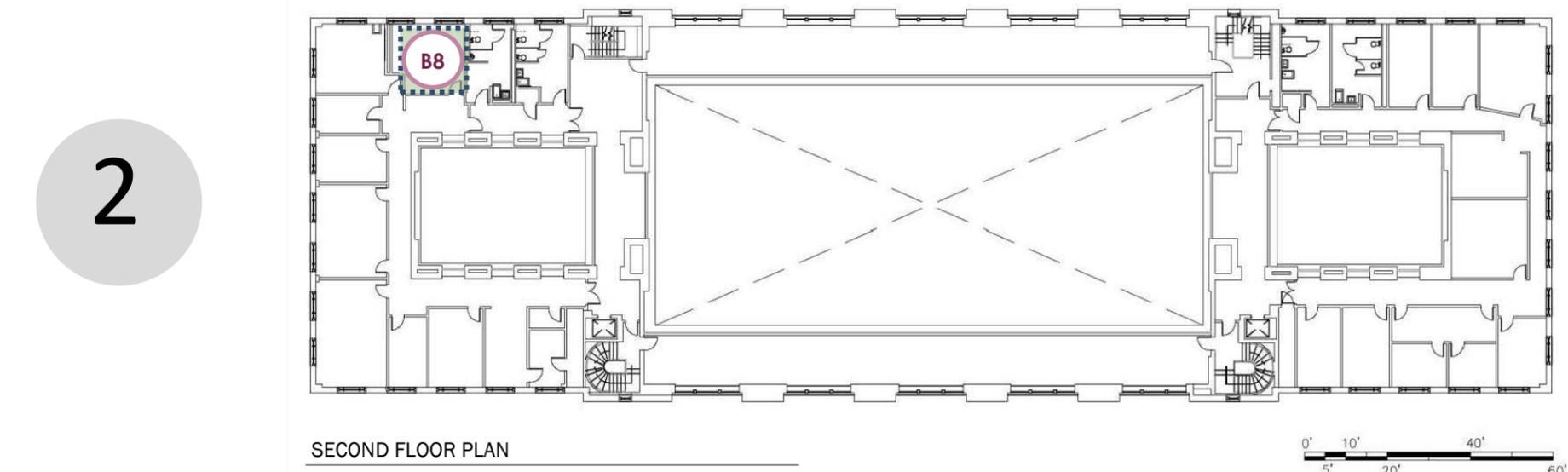
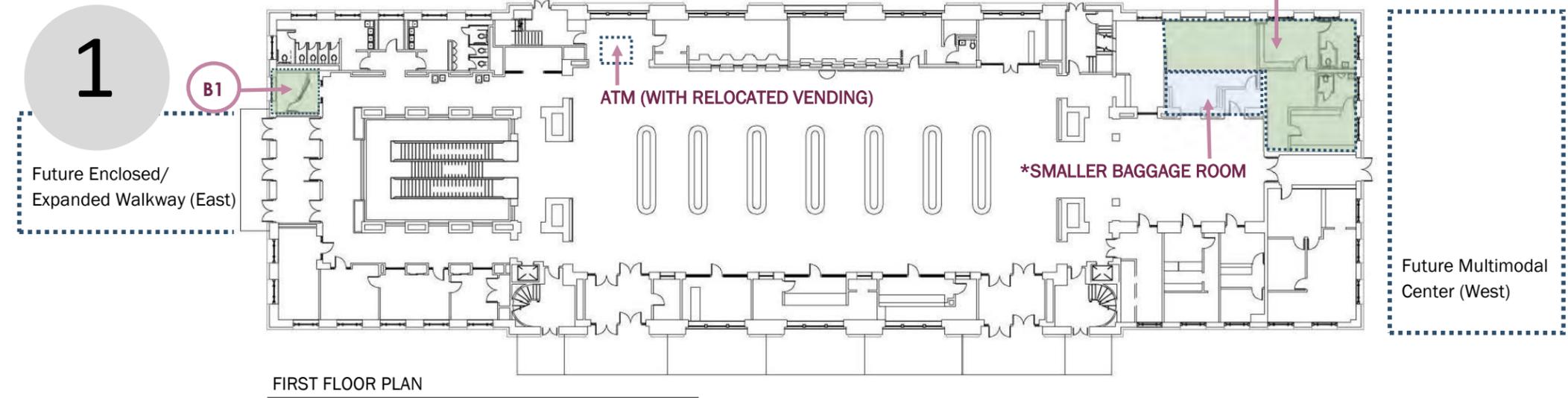
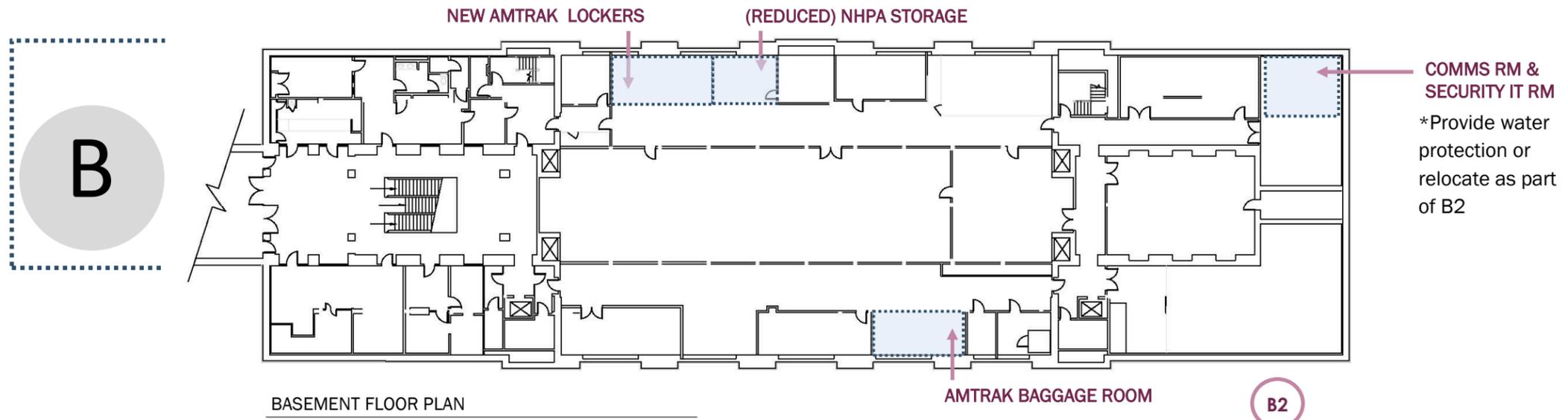
- Waterproofing / Protection of Comm / IT room or relocation of equipment.
- Reduce existing NHPA storage
- Fit Out new Amtrak Locker Rooms (adjacent to existing Amtrak Police Lockers)
- Amtrak baggage storage area (use existing elevator or new freight elevator when available)

First Floor

- Relocation of Webster ATM to future vending area
- Relocation of Amtrak employee Lockers to basement as shown. **No new restrooms, use existing in nearby lunch room.*
- Reconfigure smaller baggage room. *(*Dependent on final restroom design. It may be removed entirely with baggage storage in basement only. Final fixture counts TBD with design.)*

Second, Third Floor & Fourth Floors

- None.



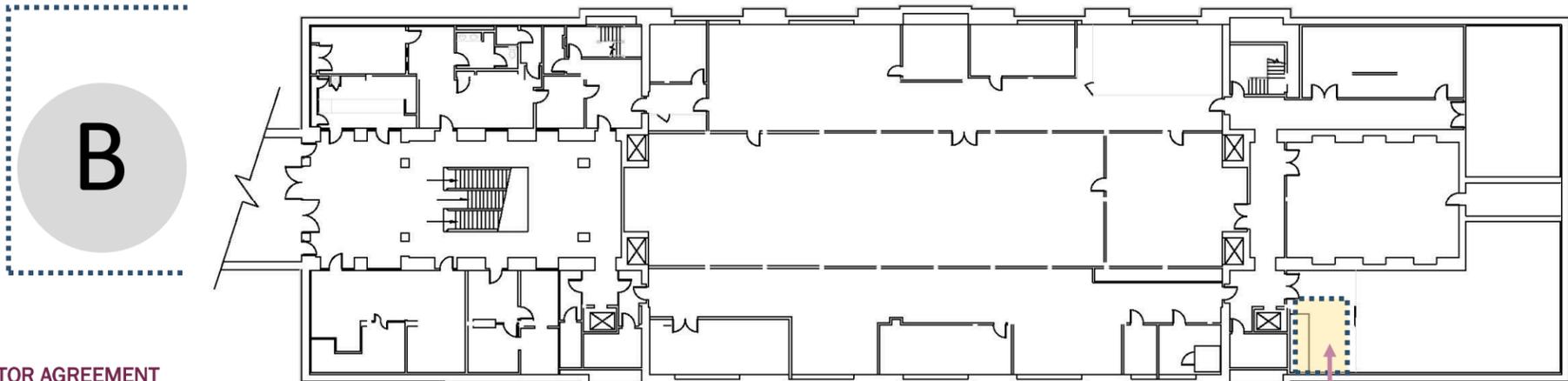
Opportunities Key
(Refer to Interior Improvements Document)

- New Tenant Location or Enabling Task Area
- Opportunity Area from Interior Improvement Study
- B1 Family Restroom
- B2 Men's & Women's Restrooms
- B8 Wellness & Lactation Room



Amenities & Conveyance

Enabling Projects and Tenant Relocations



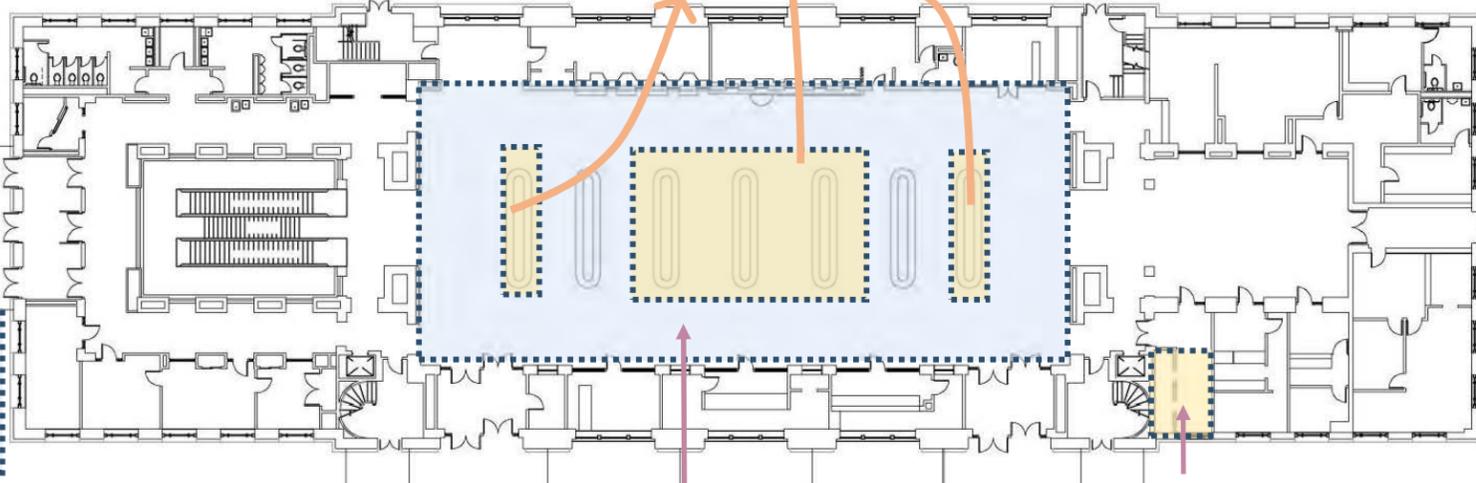
BASEMENT FLOOR PLAN

PREP. ELEVATOR PIT AREA / RELOCATE ELECTRICAL

OPERATOR AGREEMENT & DESIGN NEEDED FOR BIKE REPAIR AND PARKING (280 SPOTS)

1

Future Enclosed/ Expanded Walkway (East)



FIRST FLOOR PLAN

AGREEMENT WITH ARTS GROUP OR MUSEUM

RELOCATE JANITORIAL (INTEGRATE WITH RESTROOM DESIGN)

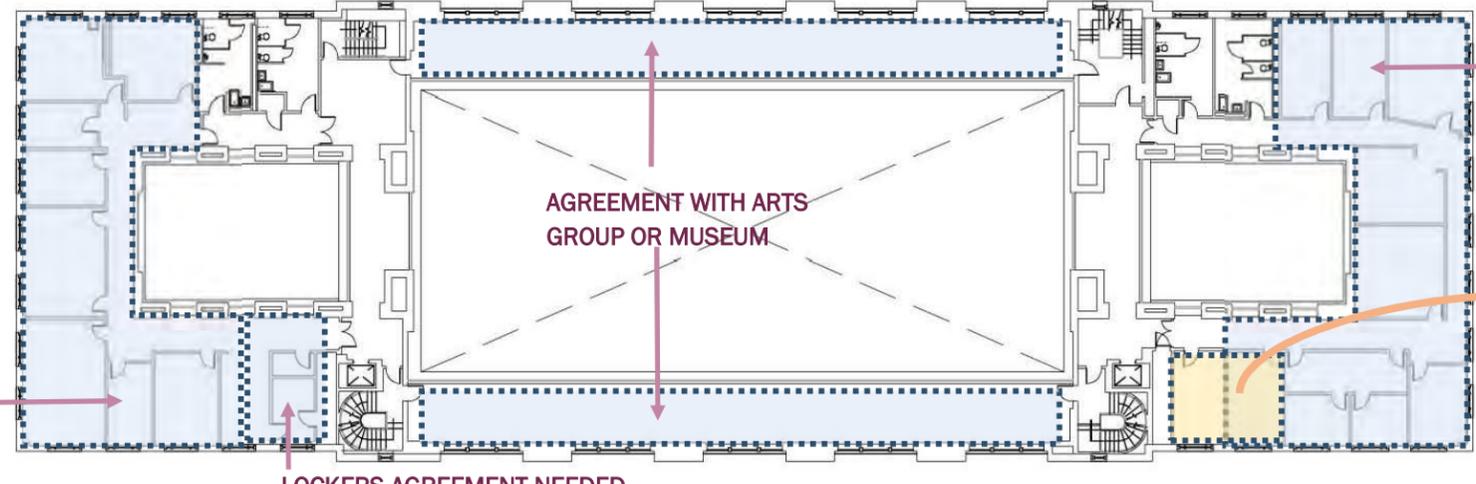
Future Multimodal Center (West)

PATIO DESIGN NEEDED

FLAGPOLE @ STATE & CHAPEL

2

COWORKING TENANT AGREEMENT NEEDED



SECOND FLOOR PLAN

LOCKERS AGREEMENT NEEDED

AGREEMENT WITH ARTS GROUP OR MUSEUM

COWORKING TENANT AGREEMENT NEEDED

MOVE AMTRAK PD LOCKERS TO VACANT 3RD FL WEST*

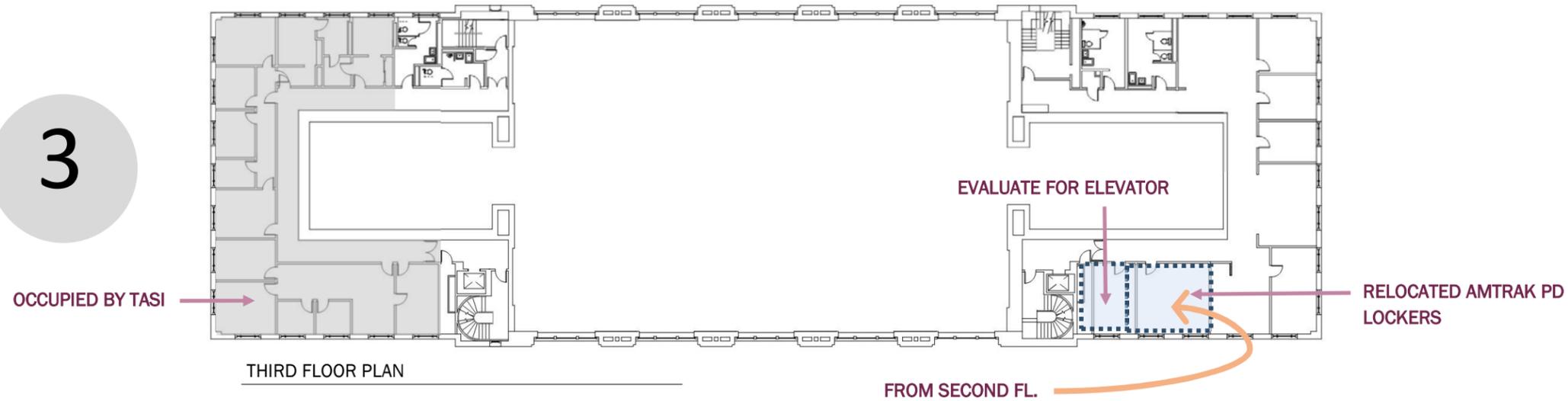
Tenant Relocation Key

- Move
- Current Location
- New Tenant Location or Enabling Task Area

*Conceptual design of South Hall & West Lot Garage required; assumption freight elevator is incorporated into design



3



4



Tenant Relocation Key

-  Move
-  Current Location
-  New Tenant Location or Enabling Task Area



Tenant Relocations									
Tenant	Use	Current Location			Proposed Location			Net	Notes
		Floor	Room(s)	Exg. USF	Floor	Room(s)	New IISF		
Amtrak	Police	2	209-10, 11	412	3	TBD	412	0	Lockers
Metro North	Office	4	413-16, 17	190	n/a	Remove	0	-190	Reduce leased area as needed for lift

Enabling Projects						
Area	Use	Floor	Rooms	Exg. USF	Task	Notes
NW Elevator	New Freight Elevator	0-4	011	270	Feasibility evaluation for freight elevator	Relocation functions on each floor in this zone
Lobby	Café Tables	1	136		Remove center 3 benches	Storage?
Lobby	Info / Help	1	136		Remove end benches (2) total.	Storage?
Lobby	Seasonal Art Install	1	136	7464	Agreement with arts group or contractor	Storage?
Flagpole		Outside	n/a		Design location & landscape	Provide?
Site (East)	Exterior Patio Flex Area	Outside	n/a	TBD	Design of exterior patio for flex use	Landscaping, hardscaping, lighting & power
Garage (East)	Bike Repair	Garage	n/a	TBD	Establish agreement for operator & design	280 Bike Parking Spaces Needed
Exg. Offices	Coworking	2	All Offices	5768	Establish agreement for tenant & design	West portion may need flexible lease
Exg. Offices	Luggage Lockers	2	203-1&3, 222	233	Establish agreement for vendor or product	Self-service
Balconies	Gallery / Exhibit	2	206, 217	2936	Agreement w/ arts & culture org. or museum	Rotating Displays & Local History
Interiors	Wayfinding	0-4	n/a		Design signage & locations	Cost opinion?

Amenity & Infrastructure Projects

To achieve all identified opportunities to provide improved amenities, the following tenant relocations and enabling projects are required.

General

- Freight lift study (expand existing material lift study).

Basement

- Investigate Pit Location and confirm utility requirements

First Floor & Exterior Site

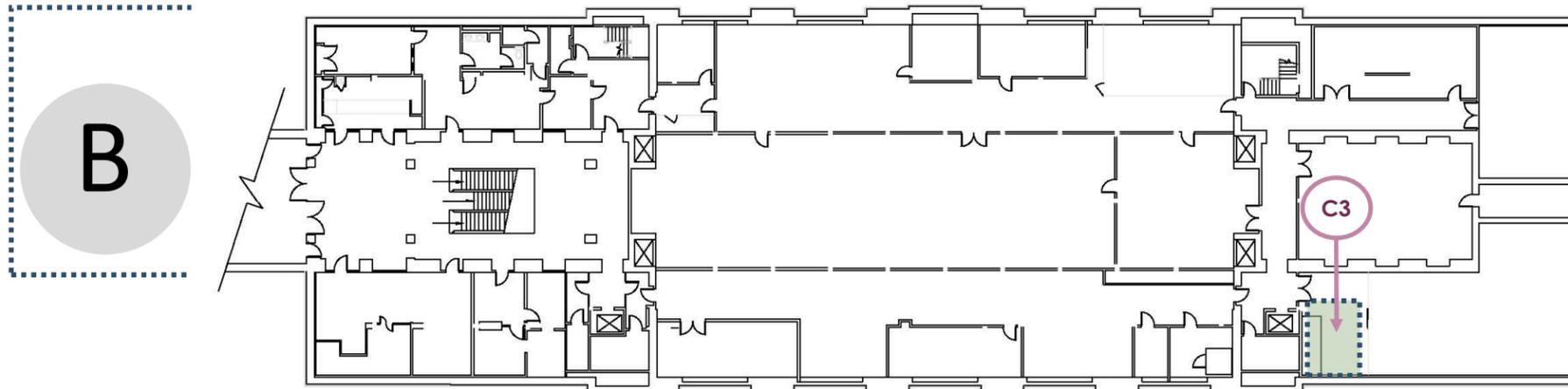
- Removal of three center benches and end benches
- Design of patio and evaluation of site impacts
- Determine who runs the bike service—tenant or NHPA? Design repair shop in garage. Designate bike parking. Establish agreement and public campaign? (To raise awareness of project for users).
- Agreement with an arts group or committee that will manage schedule, competitions, storage as necessary etc. Contract with art handling company for seasonal install / deinstall.

Second Floor

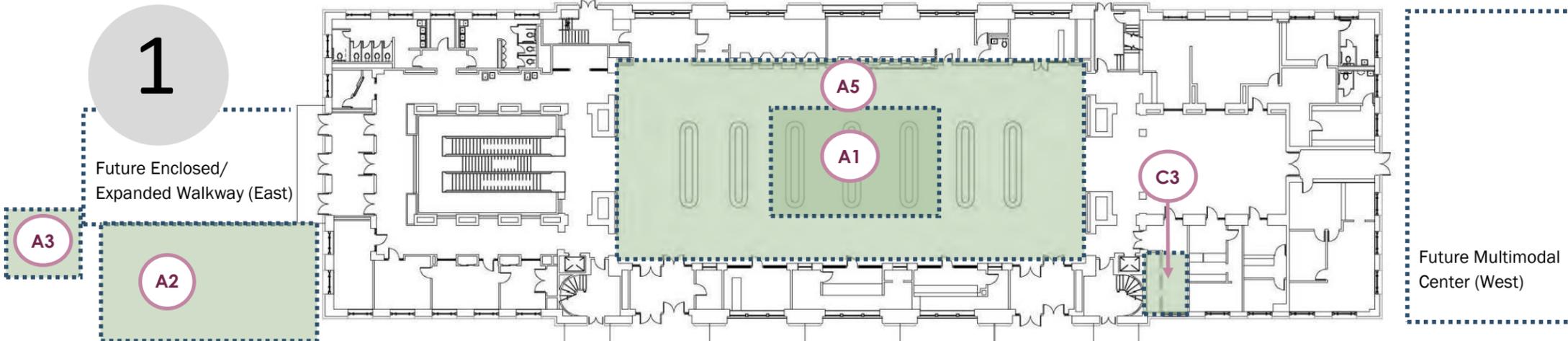
- Agreement with luggage locker vendor or purchase equipment
- Agreement with arts & culture group or museum & art handling company to manage displays.
- Relocate Amtrak PD to Third Floor

Third Floor & Fourth Floor

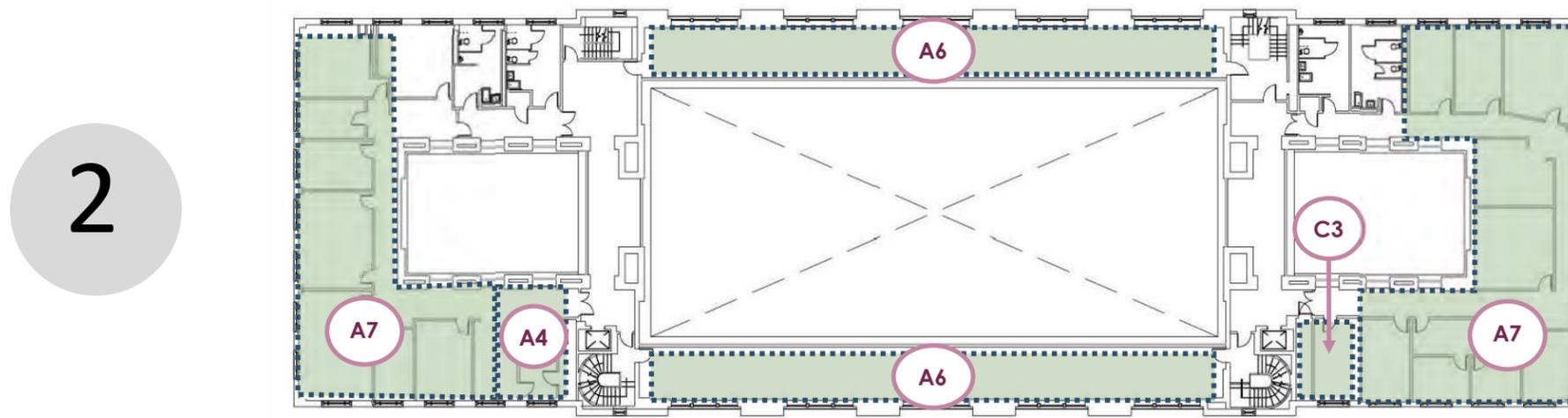
- Space for Amtrak PD (2 offices)
- Reduce Metro North Leased space for lift.



BASEMENT FLOOR PLAN

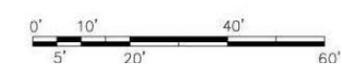


FIRST FLOOR PLAN



SECOND FLOOR PLAN

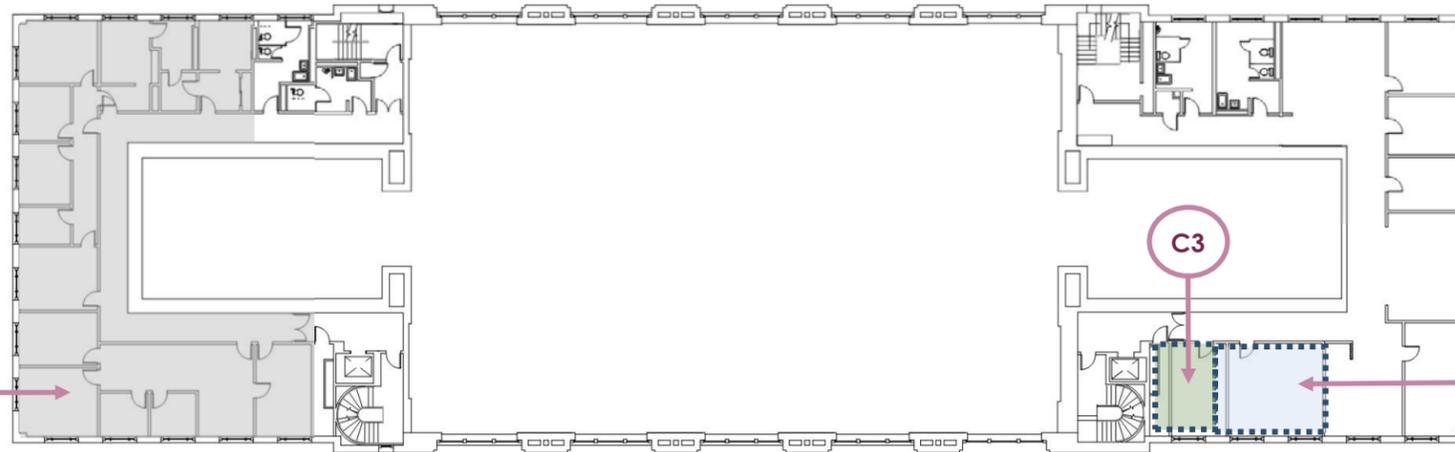
- Opportunities Key**
-  New Tenant Location or Enabling Task Area
 -  Opportunity Area from Interior Improvement Study
 -  Café tables
 -  Outdoor flexible patio
 -  Bike Station
 -  Luggage Lockers
 -  Seasonal Overhead Arts Display
 -  Gallery / Exhibits
 -  Co-working Space
 -  Freight Elevator



PROJECT NORTH

3

OCCUPIED BY TASI



THIRD FLOOR PLAN

NEW AMTRAK PD LOCKERS

4

OCCUPIED BY AMTRAK



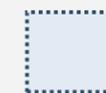
FOURTH FLOOR PLAN

METRO NORTH

AMTRAK

Opportunities Key

(Refer to Interior Improvements Document)



New Tenant Location or Enabling Task Area

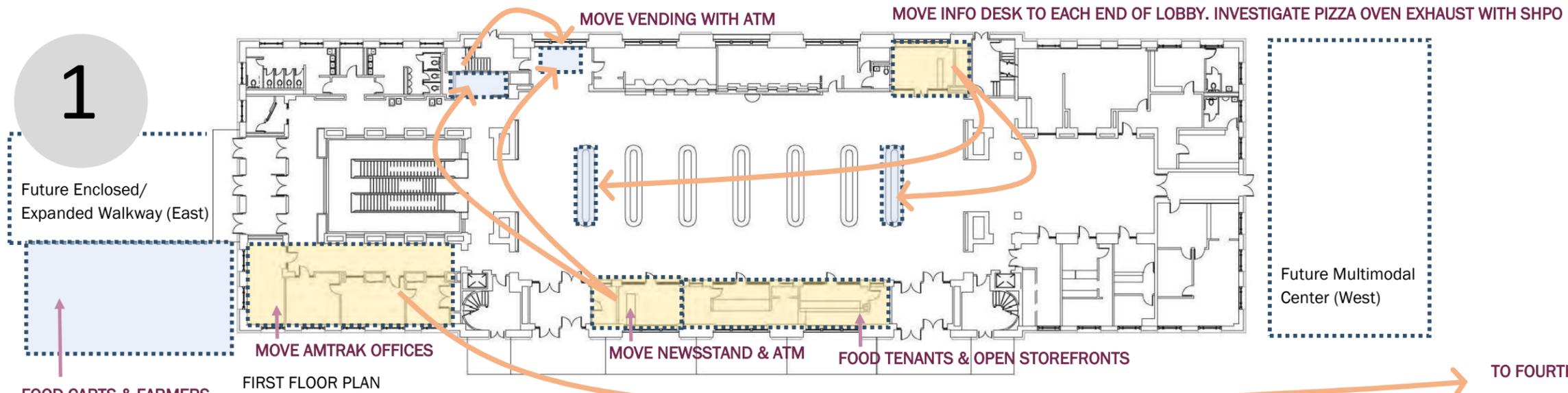
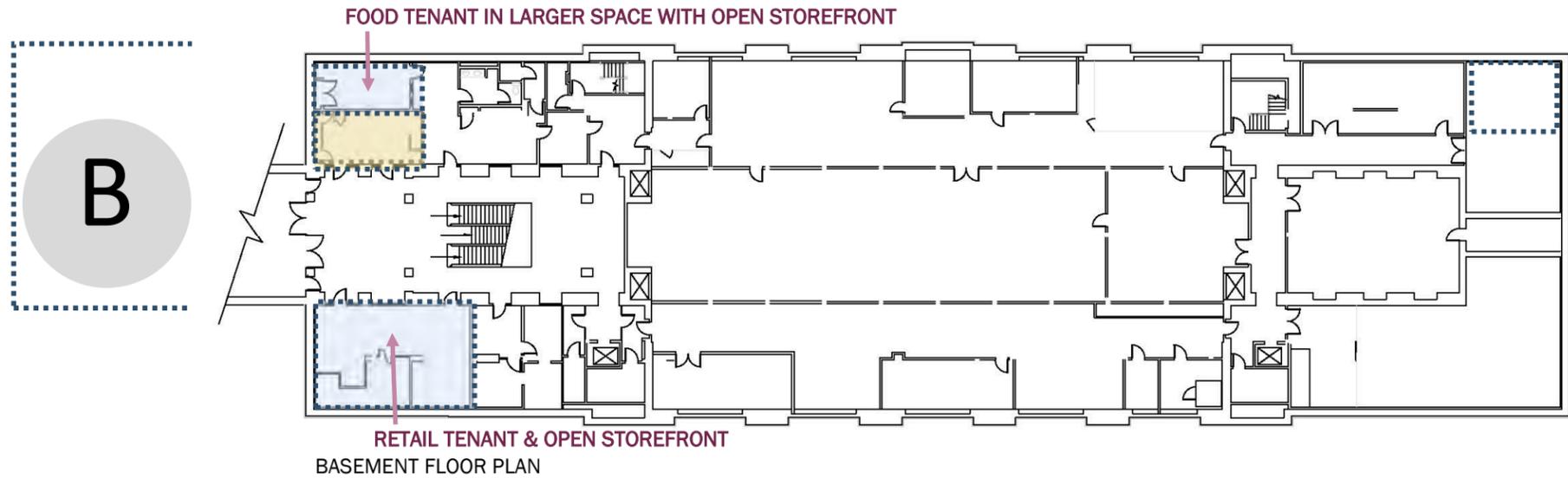


Opportunity Area from Interior Improvement Study



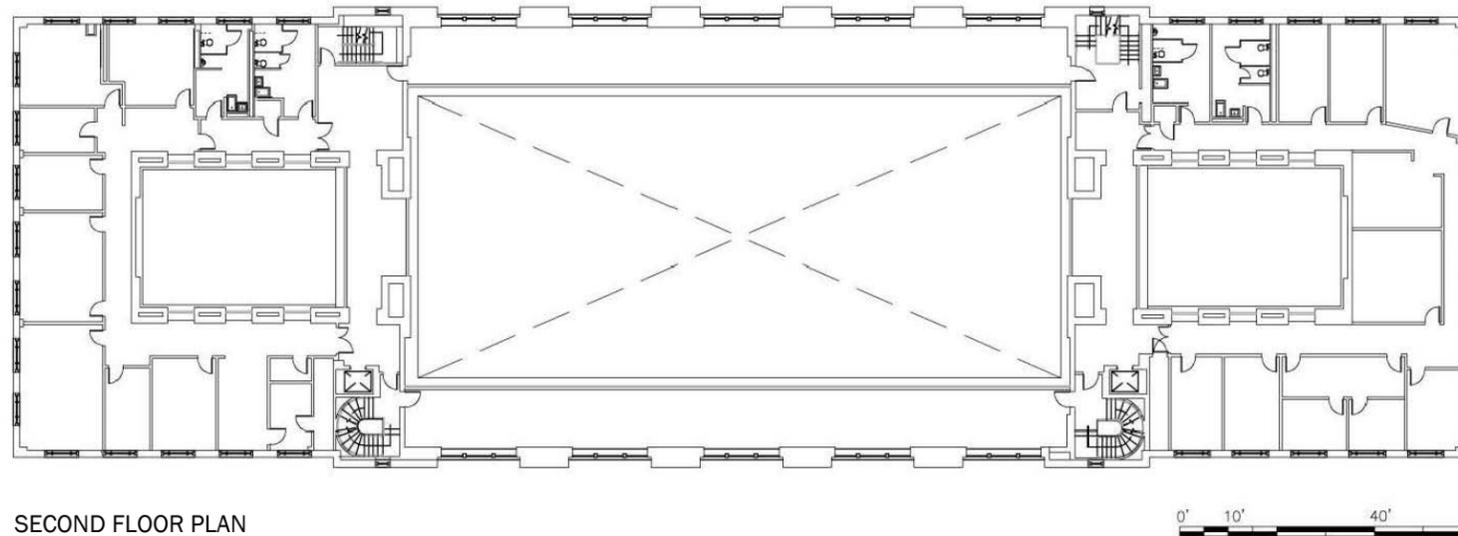
Restaurant & Retail

Enabling Projects and Tenant Relocations



FOOD CARTS & FARMERS MARKET AGREEMENTS NEEDED

2



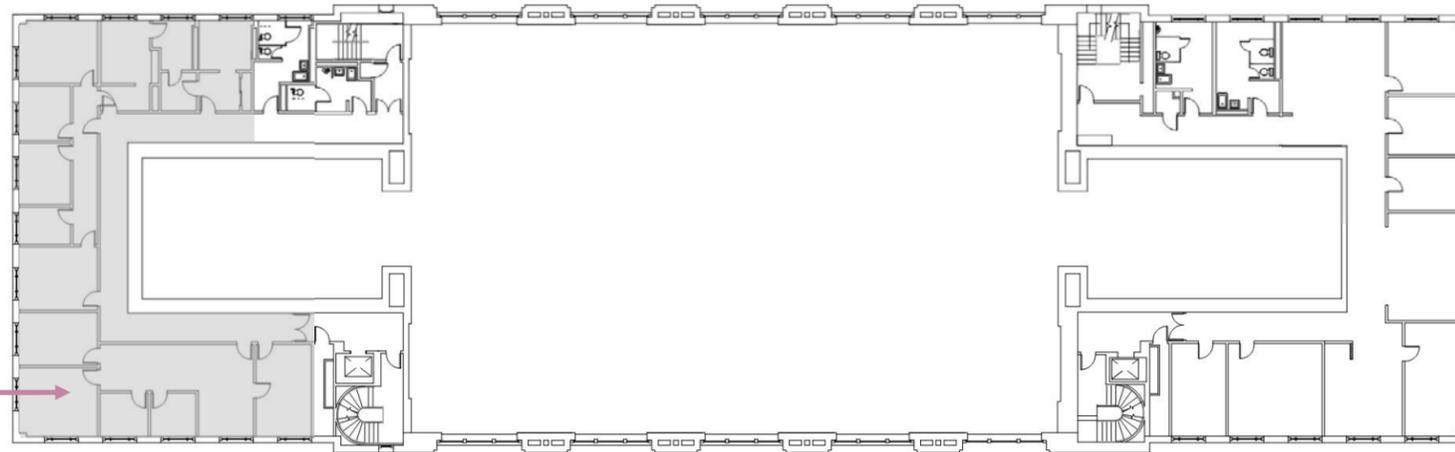
Tenant Relocation Key

- Move
- Current Location
- New Tenant Location or Enabling Task Area



PROJECT NORTH

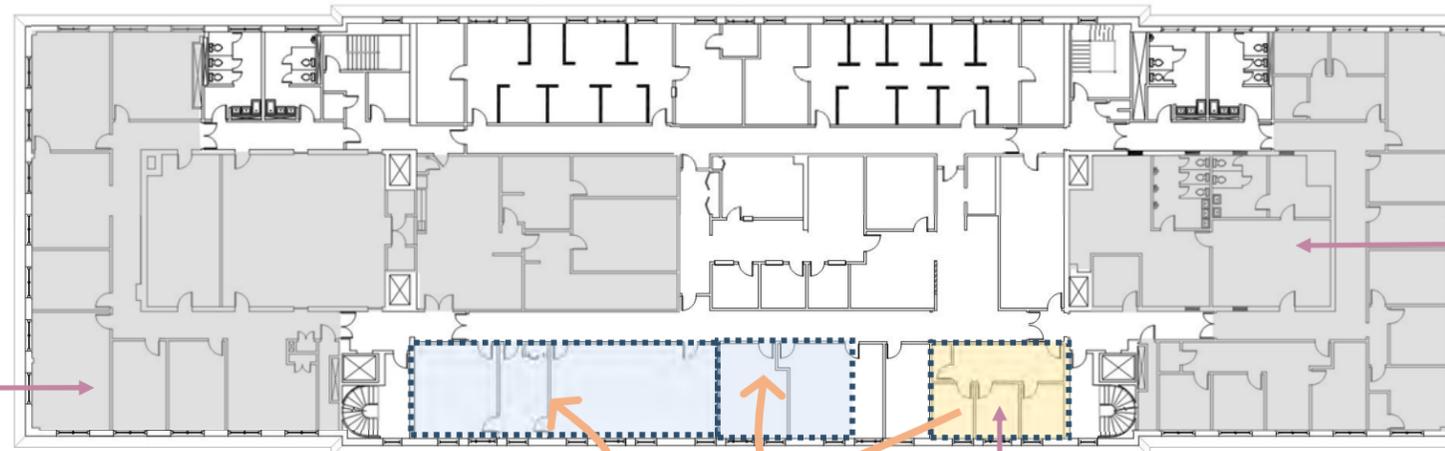
3



OCCUPIED BY TASI
*Feedback needed from rail operation for space needs

THIRD FLOOR PLAN

4



OCCUPIED BY AMTRAK

METRO NORTH

AMTRAK

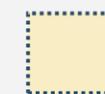
FOURTH FLOOR PLAN

MOVE AMTRAK OFFICES UP FROM FIRST FLOOR

Tenant Relocation Key



Move



Current Location



New Tenant Location or Enabling Task Area



Tenant Relocations									
Tenant	Current Use	Current Location			Proposed Location			Net	Notes
		Floor	Room(s)	Exg. USF	Floor	Room(s)	New USF		
Dunkin	Coffee Shop	0	001B	284	0	001B + 001A-3	567	283	New retail / restaurant lease
Sbarro	Pizza	0	022A, B	880	n/a		0	-880	Remove. New retail use.
Amtrak & Tasi	Info Desks	1	115	225	1	136	TBD		Design Required
?	Vending	1	105	100	1	136	TBD		
?	Not Webst.	1	156	80	1	136	TBD		
Newsstand		1	134	220	1	105	100	-120	Staffed Counter
Dunkin		1	133	390	n/a		390		New retail / restaurant lease
Subway		1	155	300	n/a		300		New retail / restaurant lease
Amtrak	Offices	1	140-143, 149	1537	4	411-14	1177	-360	*includes corridors

Enabling Projects						
Area	Future Use	Floor	Rooms	Exg. USF	Task	Notes
Patio	Carts and Market	Outside	n/a		Agreements with vendors	Seasonal
Old Info Desk	New Retail / Resaturant	1	115	225	Investigate options for pizza oven exhaust	Coordinate with SHPO

Restaurant & Retail Projects

To achieve all identified opportunities to provide restaurant & retail spaces, the following tenant relocations and enabling projects are required.

General

- tbd

Basement

- Expand existing coffee shop tenant space and new storefront design. New agreement with local tenant.

First Floor & Exterior Site

- Move info desk out to lobby floor east and west at old end bench locations.
- Investigate pizza oven exhaust
- Move vending to ATM new location K1
- Move newsstand to old vending location
- Open storefronts and get new local tenant agreements for food and retail along south
- Move Amtrak offices up to fourth floor.
- Agreement with food cart and farmers market vendors.

Second Floor

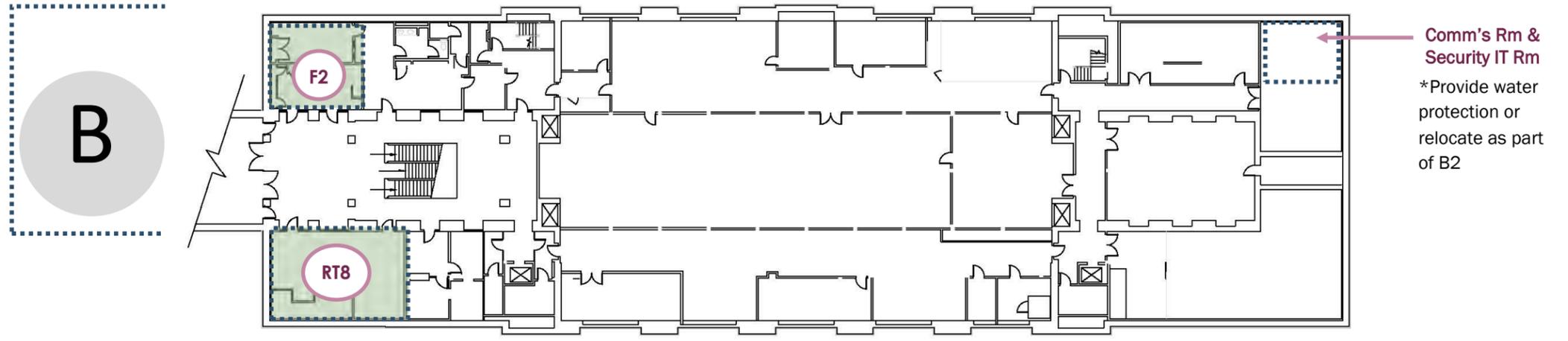
- N.A.

Third Floor

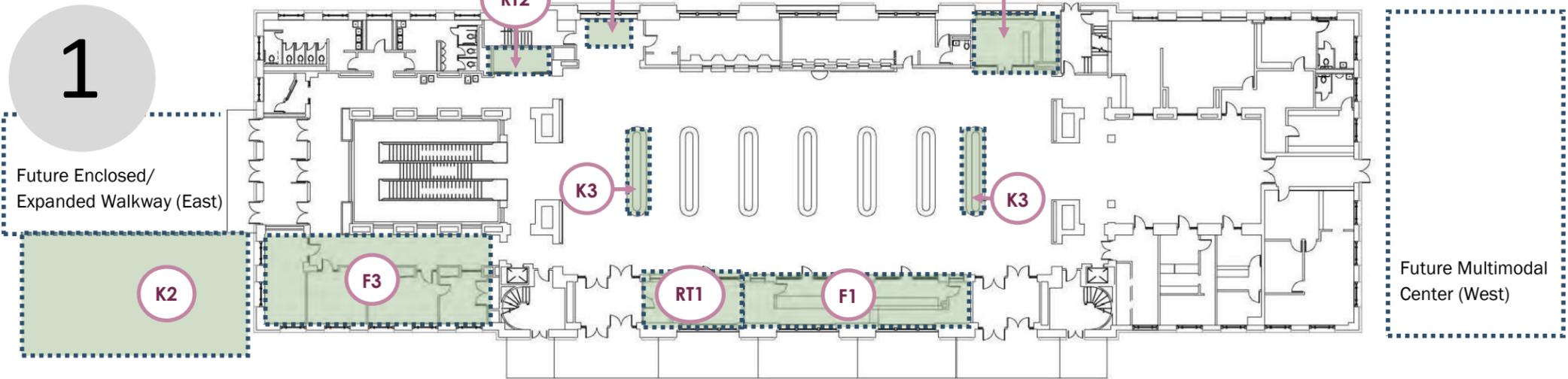
- N.A.

Fourth Floor

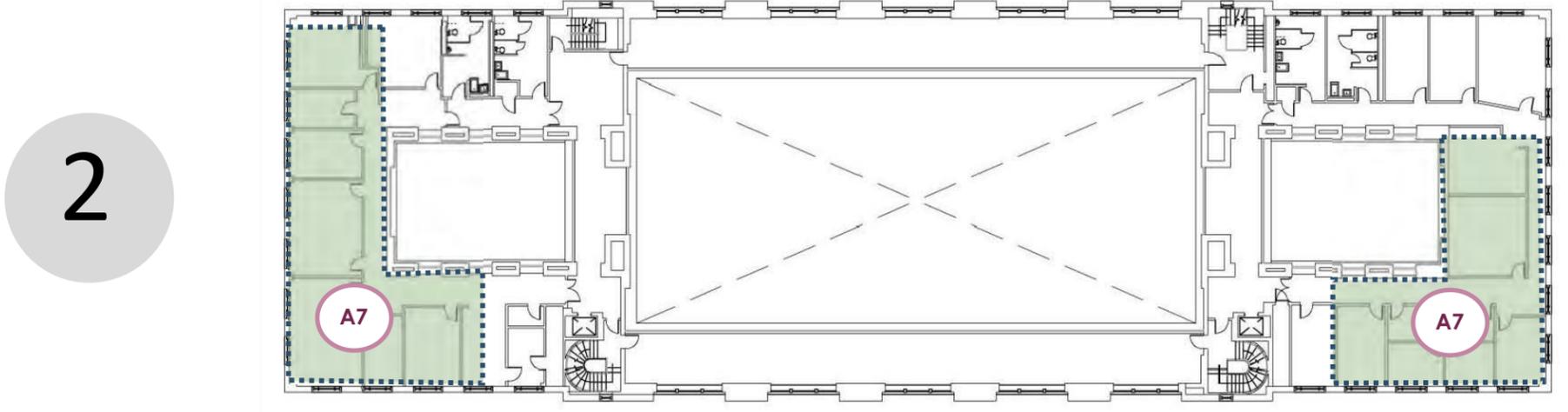
- Fit out New Amtrak offices



BASEMENT FLOOR PLAN



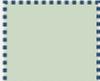
FIRST FLOOR PLAN



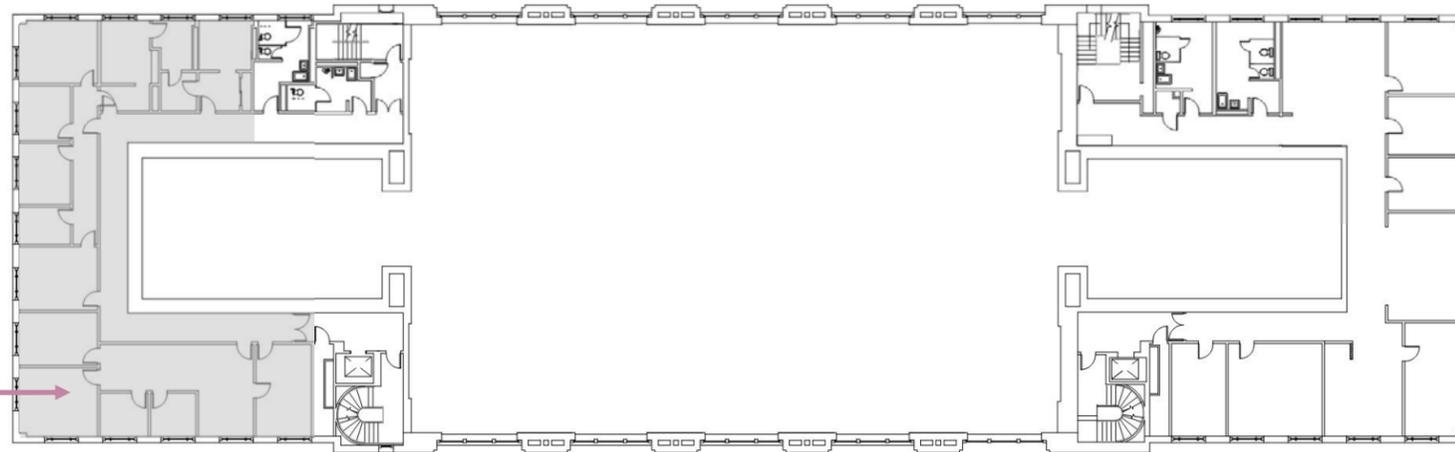
SECOND FLOOR PLAN



Opportunities Key

-  New Tenant Location or Enabling Task Area
-  Opportunity Area from Interior Improvement Study
-  F1 New Storefronts / Food
-  F2 New Storefront / Coffee
-  F3 Semi-self service Restaurant
-  F5 Pizza
-  RT1 New Storefront / Retail
-  RT2 Relocated Newsstand
-  RT8 New Storefront / Retail
-  K1 Automatic Tickets Vending / ATM
-  K2 Seasonal Vendors / Food Cart and Farmers Market
-  K3 Info / Help Desk Options
-  A7 New Coworking Tenant

3



OCCUPIED BY TASI

THIRD FLOOR PLAN

4



OCCUPIED BY AMTRAK

METRO NORTH

NEW AMTRAK OFFICES

FOURTH FLOOR PLAN

Opportunities Key

(Refer to Interior Improvements Document)



New Tenant Location or Enabling Task Area



Opportunity Area from Interior Improvement Study



*State of Good Repair, Infrastructure, Right
of Way, & Campus Wayfinding*

Enabling Projects and Tenant Relocations

State of Good Repair Capital Items – August 2022

Union Station Building:

Architectural Repairs and Improvements

Approximate, pre-design/pre-bid cost = **\$2,300,000** (including design, project management, testing, construction and contingencies).

Exterior Terracotta Cornice Repair/Restoration

Approximate, pre-design/pre-bid cost = **\$500,000** (including design, project management, testing, construction and contingencies). Cost estimate to be refined during design.

Ventilation System Study

Budget = **\$37,000**

Union Station Garage:

Structural Repairs

Approximate, pre-design/pre-bid cost = **\$3,350,000** (including design, project management, testing, construction and contingencies).

Precast Façade Repair Work

Approximate, pre-design/pre-bid cost = **\$2,000,000** (including design, project management, testing, construction and contingencies).

Exterior Architectural Coating

Approximate, pre-design/pre-bid cost = **\$700,000** (including design, project management, testing, construction and contingencies).

TOTAL BUILDING AND GARAGE= \$8,887,000

Conceptual Plan Advancement Activities – August 2022

Union Avenue Roadway and Streetscape Improvements:

- Advance conceptual design of road diet, bicycle track, shuttle bus pick-up/drop off, taxi staging, streetscape improvements, traffic signal installation and improvements, and exterior wayfinding signage. Approximately \$20 Million cost, which includes work considered public improvements for development.

Interior Building Wayfinding Signage:

- Need to select Union Station Partnership branded logo.
- Consultant to present draft wayfinding signage study report to OC at September meeting.
- Finalize interior wayfinding signage study and select design scheme from available options.
- Advance design to bid documents.

Convert Front Bay of Parking Garage to Commercial Use and Bicycle Storage:

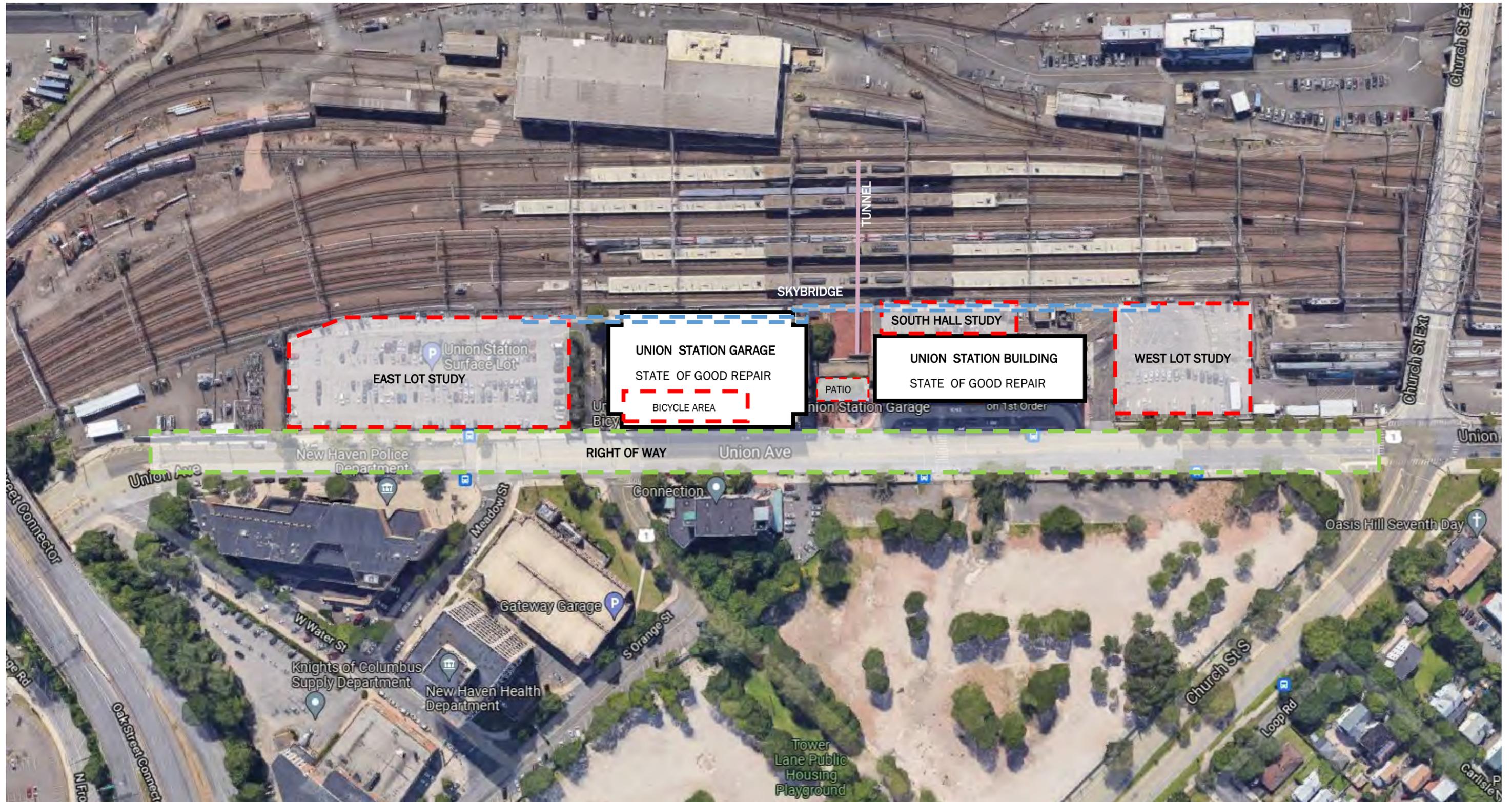
- Eliminate parking in front bay, street level of Garage.
- Create commercial space towards street, and bicycle storage area in back row.
- Involves modifications to precast façade panels and brick wall to facilitate access.

East Lot:

- PDD Zoning Application - In process with City preparation of PDD application. Needs supporting traffic study and land survey of parcel by NHPA.
- Complete review of draft scope of services for Brokerage Services.
- Issue RFP for Brokerage Services.
- Stakeholder Interviews – Report is complete. Next step is to issue results for additional public comments on website and by placing legal ad in local newspapers.
- Request for Interest/Request for Proposals for private development – to be prepared for release in winter 2022/2023 after zoning is in place.

West and South Lot:

- Recommendation to isolate development of this lot for public development as multi-modal transportation hub, with above-grade parking of approximately 450 spaces, in keeping with SHPO recommendation for maximum height in relation to Station Building (the balance of 150+/- spaces to be accommodated on privately developed East Lot); public restrooms; enhance pedestrian access to Station; accommodate truck loading and trash removal services for Building; accommodate access to rear of Building and adjacent properties; some street frontage commercial activity for vibrancy – perhaps Greyhound or Avis, for example.
- Needs traffic study.
- Needs advancement of conceptual design.
- Community engagement.



Comprehensive Campus Map

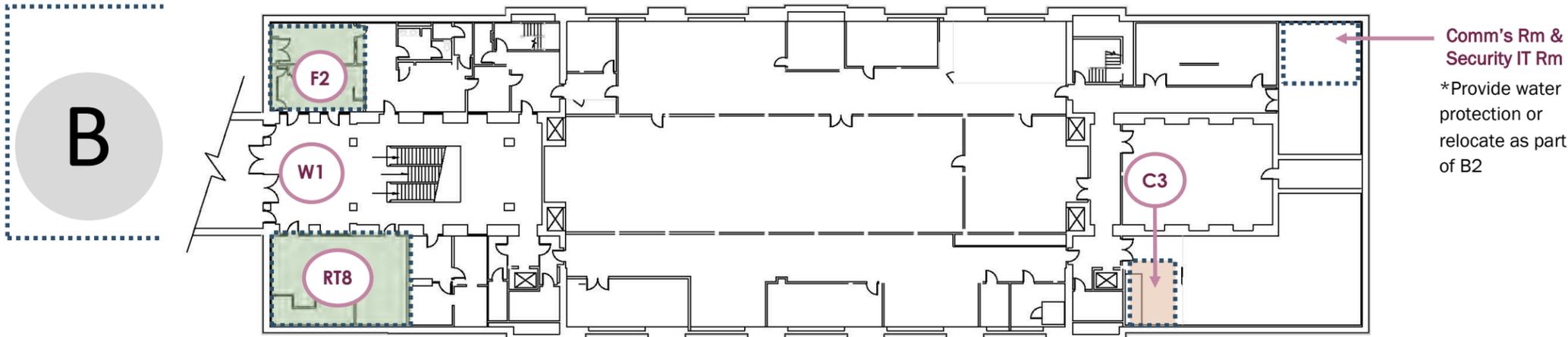
STATE OF GOOD REPAIR INFRASTRUCTURE, RIGHT OF WAY & CAMPUS WAYFINDING

Summary & Opinion of Probable Cost

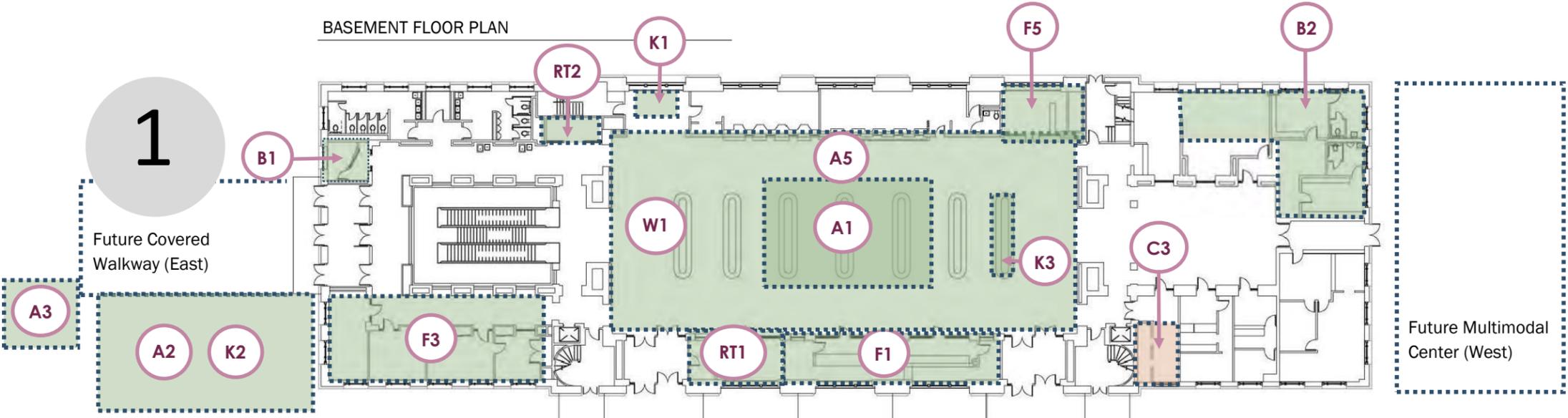
Enabling Projects and Tenant Relocations

Item Key	Description	Reference Study	Study Date	First Opportunities Opinion of Const. Cost Including Escalation to 2023 Start	Next Opportunities Opinion of Const. Cost Including Escalation to 2024 Start	Notes
A1	Restaurant Seating In Main Lobby	Street Sense	2019		\$ 337,500	Furniture Only. New proposed area may be slightly larger than originally proposed in 2019 study.
A2	Outdoor Flex Seating	Street Sense	2019		\$ 127,373	Furniture Only
A2	Outdoor Patio				\$ 212,288	Patio upgrades including resurfacing, new fencing, accessibility upgrades, power, lighting and plantings
A3	Bike Station	100yr Plan	2017	\$ 284,000		We assume full build out of space and bike racks are required. Does not include operations, equipment or staff expense.
A4	Luggage Lockers / Self Service	Svigals	2019	\$ 62,976		Cost for retail shell only. Lockers cost by tenant, rental or mfg. TBD
A5	Decorative & Seasonal Overhead Ornaments	Street Sense	2019	\$ -		This needs to be programmed to determine costs including fabrication, seasonal storage, installs, payments to artists for commissioned work etc.
A6	Gallery / Bar Extension	Svigals	2021		\$ 190,650	Mezzanine Upgrades for gallery use. Refinish existing space. Exhibit design and displays not included.
A7	Coworking Space	Staff	2019		\$ 843,480	Cost for second floor office space shell. FF&E not included.
B1	New Family Restroom	USB - 18	2018	\$ 101,250		Cost to relocate ATM not included.
B2	New Men's & Women's Restrooms	Staff	2018	\$ 1,417,500		*does not include cost for waterproofing or relocation of IT/Comm below
B8	Wellness / Lactation Room	Svigals		\$ 3,500		Already underway in-house. (Budget for finish upgrades only.)
C3	Freight Elevator	Street Sense	2019		\$ 2,362,500	Cost listed in Streetsense report is for a 4+ stop passenger elevator. We will require a 5 stop freight elevator. Expected cost to be similar or slightly more than this.
F1	Remove Storefronts	Street Sense	2019		\$ 1,350,000	Design required to determine actual costs. Range 500K-2M.
F2	Convenience Grab & Go: Coffee + Sandwiches * Existing	Street Sense	2019	\$ 349,440		Expand existing use - seek local tenant? Upgrade storefront (F1). Plus tenant fit out costs
F3	Casual / Semi-Self Service Restaurant	USB	2017	\$ 2,556,000		Station cost before tenant fit-out. Extrapolated from original 1,000 sf range 300K-1M.
F5	Pizza Kitchen	Staff	2019		\$ 193,489	Cost for ground floor restraint shell. Does not include required MEP upgrades.
K1	Retail Kiosks / Ticket Machines	Street Sense	2019	\$ 12,800		Cost for machines only. Range 8k-30k.
K2	Retail Kiosks / Seasonal Market	Street Sense	2019	\$ 12,800		Cost per kiosk. Rent to tenants who bring their own? Or does the station wish to purchase and lease?
K3	Info Kiosk / Desk	100 yr.	2019		\$ 67,500	Design required to determine actual costs.
RT1	Remove Storefronts + Make Local	Street Sense	2019		\$ -	same work as F1 for retail spaces included in above cost
RT2	Relocation of Newsstand	Street Sense	2019	\$ 128,000		Minor rework of power, lighting and tenant fit out needs.
RT8	New Retail / Vanilla Box	Street Sense	2019		\$ 291,600	Extrapolated from PSF for "Basement Retail Shell Space" in Street Sense Report
MEP	MEP Upgrade Allowance	General Requirement		\$ 1,140,000		Electrical equipment for individual tenant metering and new central cooling plant to meet current / existing loads. Does not include any new infrastructure for restaurant uses.
W1	Wayfinding	Merje	Draft	\$ -	\$ 1,000,000	ROW work will impact exterior wayfinding program. Development of East and West lots will impact both interior and exterior wayfinding program.
TI	Tenant Relocation & Enabling Projects	General Requirement		\$ 719,750	\$ -	Existing tenants will need to be relocated to other areas of the station. Enabling projects and associated costs TBD. Estimate of \$125/sf of roughly 5,758sf of enabling projects.
	Professionally Clean Platform Stairs	General Requirement		\$ 8,602		Interior Improvement. Cost TBD by contractor estimate.
	Subtotal			\$ 6,796,618	\$ 5,976,379	
	Contingency	25%		\$ 1,699,155	\$ 1,494,095	25% Contingency
	CM Project Mgmt & Engineering Fees	25%		\$ 2,123,943	\$ 1,867,618	25% CM Project Management & Engineering Fees
	Architectural / Design Fees	10%		\$ 849,577	\$ 747,047	10% Architectural Design Fees
	Total			\$ 11,469,293	\$ 10,085,139	Total Estimated Costs *excluding tenant fit out

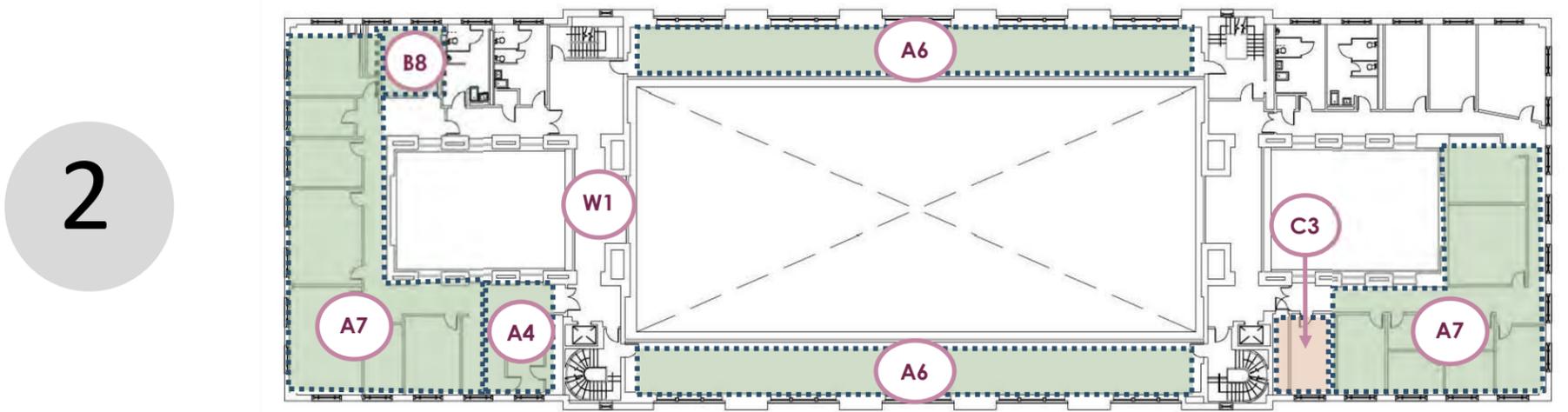
Phase 1 Additional Square Footage
Restrooms & Wellness: 1,665 sf (more than doubles existing restrooms, adds family restroom, & wellness/lactation room)
Amenities & Conveyance: 5,927 sf (includes coworking facility)
Retail & Restaurants: 3,540 sf (includes 1,200 sf patio)



BASEMENT FLOOR PLAN



FIRST FLOOR PLAN



SECOND FLOOR PLAN



**Proposed Interior Upgrades
Identified Opportunities — Summary
(Basement, First + Second Floor)**

The items listed on this page represent all recommended options for improvements and are focused mostly on the first floor. Most are able to be accomplished independently, however adjacent areas should be considered together for efficiency in cost, sequencing and reducing disruptions. For example, F3 must be completed before RT8 can begin.

All options are “green” indicating they have a relatively high benefit for both users and operations with the exception of the “orange” option C3, the material lift. This lift is recommended for better function and flow of all existing and proposed retail, restaurant and amenity functions. While it may have significant historic, cost and structural implications, this location is the most feasible and least disruptive to other development ideas within the historic building. Further study is required. Conveyance in future additions and adjacent developments will be required to further improve access.

All improvements require wayfinding signage and therefore W1 must be considered for all upgrades.

REFERENCE—ALL OPPORTUNITIES