

NW Corridor Transit Planning
Project
Part 2 – Union Station Planning
Final Report

Capitol Region Council of
Governments

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EXPERIENCE | Transportation



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1.0 EXECUTIVE SUMMARY

Union Station in Hartford is a historic center for intermodal transportation for the state capital. It promises to become more important as the New Britain Busway and the New Haven-Hartford-Springfield Commuter Rail are implemented in the near future. In view of these improvements and the potential for a transit center being located near Union Station, this study was undertaken to evaluate the existing conditions at the station, and ways the station could be improved in concert with its future role.

1.1 Existing Conditions

The evaluation of the existing conditions at the station determined that much is going well. While there were minor issues with station structure, it was in good shape. There were concerns about the Amtrak train platforms connected with the station, and some of these issues were corrected during the course of this study. Further improvements can be expected along with the implementation of the new commuter rail. Union Station is almost fully leased, which is an excellent situation in the current market conditions. One concern is the dated appearance of the Ground Transportation Center and the underutilization of the beautiful Great Hall. Analysis of circulation and parking near the station found that overall, the roadway and intersection performance was adequate and there was sufficient parking to meet current needs. Two intersections (Spruce and Asylum, High and Allyn) exhibited problems during the afternoon peak hour.

1.2 Future Scenarios and Alternatives

Future conditions for the station were assessed for two different scenarios: Scenario A which assumes that the New Britain Busway and the New Haven-Hartford-Springfield Commuter Rail are implemented, and Scenario B which also adds a Transit Center in the vicinity of Union Station.

Assuming that the proposed transportation services are implemented, there is new potential for development in the vicinity of Union Station. One of the goals of this study was to insure that its recommendations were compatible with and encouraged Transit Oriented Development, also called TOD. Thus, early in this study effort developments were suggested for the Spruce Street Lot and also for the site now occupied by the Capitol West Building. Options for either a residential mixed used development or office development were shown for the Spruce Street Lot site and for residential development at the Capitol West site.

An analysis of traffic circulation for Scenario A was done to assess this “no build” condition—“no-build” because only the most certain improvements are assumed to exist. This study found that while the roadways could continue to function satisfactorily overall, the level of service for the two problem intersections did deteriorate further from the current situation, with more movements affected, and the AM peak being a problem in addition to the PM peak hour. Also, there will be a need for additional parking to accommodate commuter rail passengers, even under demand conditions that are constrained by parking limitations.

Two alternative designs were suggested for Union Station, one contemplating an enlarged and more distinctive entrance to the Ground Transportation Center and rearrangement of the transportation functions outside, and another contemplating movement of Spruce Street to allow for a park-like space which would replace the Spruce Street parking facility. Of these designs, the clear winner was the alternative which added a more grand entrance to Union Station.

Several alternative locations and designs were suggested for a new local bus transfer center (the Transit Center) near Union Station. These included using nearby streets, two locations at Church and High Street, the Spruce Street Lot and the North Parking Lot where Hartford Insurance Group employees currently park. Based on conclusions from the Downtown Circulation portion of the NW Corridor Study, the Transit Center needs to house 20 buses during peak



periods. Based on information from CTTTRANSIT and assumptions about New Britain Busway buses, 8 of those 20 bus bays need to handle articulated buses.

The various options for location/design of a Transit Center were evaluated considering evaluation criteria including 1) safety of operations and passengers, 2) convenience, 3) operational functionality, 4) flexibility and expandability of design, 5) supporting Union Station and the area as a "great place", and 6) feasibility including cost and political acceptance of the option. Given these criteria, the on-street options were eliminated as not providing any advantages and having many disadvantages. There were issues with traffic and reducing on-street parking. Customer convenience would be compromised due to the spread out location of the buses. The bus traffic along the streets would not enhance Union Station as a "great place."

The alternative of a Transit Center at the Spruce Street Lot was also rejected. It had a number of disadvantages including lacking the space required to accommodate the 20 buses. Fewer than 16 spaces could be accommodated if some of these were articulated buses. Using the lot for a Transit Center would also eliminate the most promising space for TOD, since this location provides excellent views of Bushnell Park, and is very convenient to Union Station.

An alternative location on the southwest corner of Church and High Streets was found to have some advantages, but due to more constrained space and problem grades it was found to be inferior to the site on the southeast corner of Church and High Streets.

The site on the southeast corner of Church and High streets has the advantage of being closer to Main Street, thus requiring fewer detours to transit routes which are ultimately destined to Main Street where many passengers will alight. It also has the advantage of being in an active area which should increase passengers perception of personal safety. On the other hand, the site is constrained, so that fitting more than 16 buses in the center may be difficult. There is likely to be significant impact on adjacent roadways due to multiple driveways being required for bus entries and exits. Also there is likely to be more opposition to this site from local businesses.

The site at the North Parking Lot has the advantage of having lots of room, so could accommodate a larger transit center. It could fit nicely with joint development options which could increase liveliness in the area. It would cause fewer vehicle conflicts with local roadways, and opposition is likely to be less to a transit center located here. Its disadvantages, however, include being more isolated and being far from Main Street and the center of downtown, thus requiring more extensive and more costly re-routing of major north-south bus routes. Security for passengers here is likely to be more of an issue than for the Church and High location.

Since only one site was to be developed for this project, the North Parking Lot location was selected. Subsequent to the completion of the technical work for this study, the City of Hartford has concluded that the more desirable location for a transit center from the City's point of view would be on the southeast corner of Church and High Streets. As a further site selection process is undertaken, other possible sites that were not considered may also be identified and sites previously considered unavailable may become available as conditions change. There may be ways to develop the two sites at Church and High Street together to provide increased space.

1.3 Recommended Alternatives

Once a choice was made for a future design/operating plan for Union Station and a site was selected for a Transit Center, more detailed plans for these improvements were developed. The design for Union Station calls for increasing the Ground Transportation Center by around 10,750 square feet. This enlarged center would be designed with a grand entrance, and more passenger waiting space and table space for passengers purchasing food.

The intercity buses would be located to the north of the entrance, with ticketing and passenger waiting space with a view to the buses. There would be space for a rental car facility and two new retail stores. The recommendations also



include plans for increasing the use of the Great Hall, by including a bar/restaurant facility, a newsstand, and encouraging passengers to wait there with better information on train arrivals.

Improvements would be made to all facilities to bring them into full compliance with ADA. An elevator and escalator to the commuter rail tracks would be added. Figure 1-1 shows the operating plan for the Union Station improvements.

The concept of a Transit Center at the North Parking Lot was also developed in concert with a new Air Rights Garage to help provide additional parking for future commuter rail passengers as well as adjacent TOD. The Transit Center is designed to accommodate 20 buses, including 8 articulated vehicles. The center would include a small climate controlled facility for waiting passengers. The Air Rights Garage would hold up to 660 parking spaces (220 per floor for 3 floors). The garage should be sized to accommodate commuter rail parking needs as well as adjacent TOD. The Transit Center would be connected with Union Station with improved pedestrian walkways with enhanced lighting, paving, wayfinding and a partial canopy cover at the pedestrian level. Figure 1-2 shows the Master Plan for the Union Station campus including the Transit Center.

TOD recommendations include development of a residential high-rise building of 12-15 floors at the Spruce Street Lot, and other residential developments at the Capitol West site and on Myrtle Street with its back to the Air Rights Garage. Residential mixed use development is recommended for the Spruce Street Lot rather than office space since the view of Bushnell park would seem especially attractive for residential units and since the parking requirement for residential is less than for office. Commuter rail is expected to greatly increase the demand for parking in the vicinity, so development with a lower parking demand next to Union Station is preferred to a development with higher demand. Also, adding residential units would increase the liveliness of the station area in the evening.

Other recommendations focused on improving the pedestrian conditions near the station. Figure 1-3 illustrates how TOD would be integrated with the transportation plans at Union Station.

An analysis of the circulation implications of Scenario B (including the New Britain Busway, the New Haven-Hartford-Springfield Commuter Rail and the Transit Center) with all of the TOD options showed more deterioration in the level of service of intersections around Union Station. In addition to further deterioration in the level of service at Spruce and Asylum, there the Spruce, Myrtle and Church Street intersection shows very poor level of service in the afternoon peak hour. However, detailed planning for circulation improvements will need to await more definitive plans for the location of the Transit Center. If Scenario B is fully implemented with the TOD and parking plans described in the report, there should be adequate parking to meet the commuter rail demand as well as TOD.

1.4 Next Steps

In keeping with the growing importance of Union Station as a transportation center for the State Capital of Connecticut, it is only fitting that improvements be made in the physical facility to match the coming transportation improvements. The Ground Transportation Center is a somewhat dated facility that would benefit from modernization to increase space for waiting passengers and to meet current ADA requirements. The Great Hall is underutilized—so changes to make the Great Hall function better as a waiting area for passengers as well as other visitors would be a welcome improvement. The suggested plan for Union Station would modernize the Ground Transportation Center with better space meeting ADA requirements, add a very visible entrance to the station, add retail space, and provide for better use of the Great Hall. It would also provide capacity for increased passenger traffic to the train level by adding an elevator and escalator.

Because the improvements to the Ground Transportation Center are so connected with improvements that might be made in the railroad viaduct, it will be important that those plans be coordinated. Changes in the support structure for the viaduct or height of the viaduct will affect the design of the Ground Transportation Center—for example, fewer columns might allow for more flexibility and increased viaduct height would allow for a higher ceiling for the Center. Thus final design for the major improvements to the Ground Transportation Center suggested in this report should



happen once plans for the viaduct become more firm. Some suggested changes which would not be affected by changes in the viaduct—such as addition of a bar inside the Great Hall or certain accessibility improvements could be made immediately. If the viaduct is to remain as is, a plan such as suggested here could move forward to the design phase immediately.

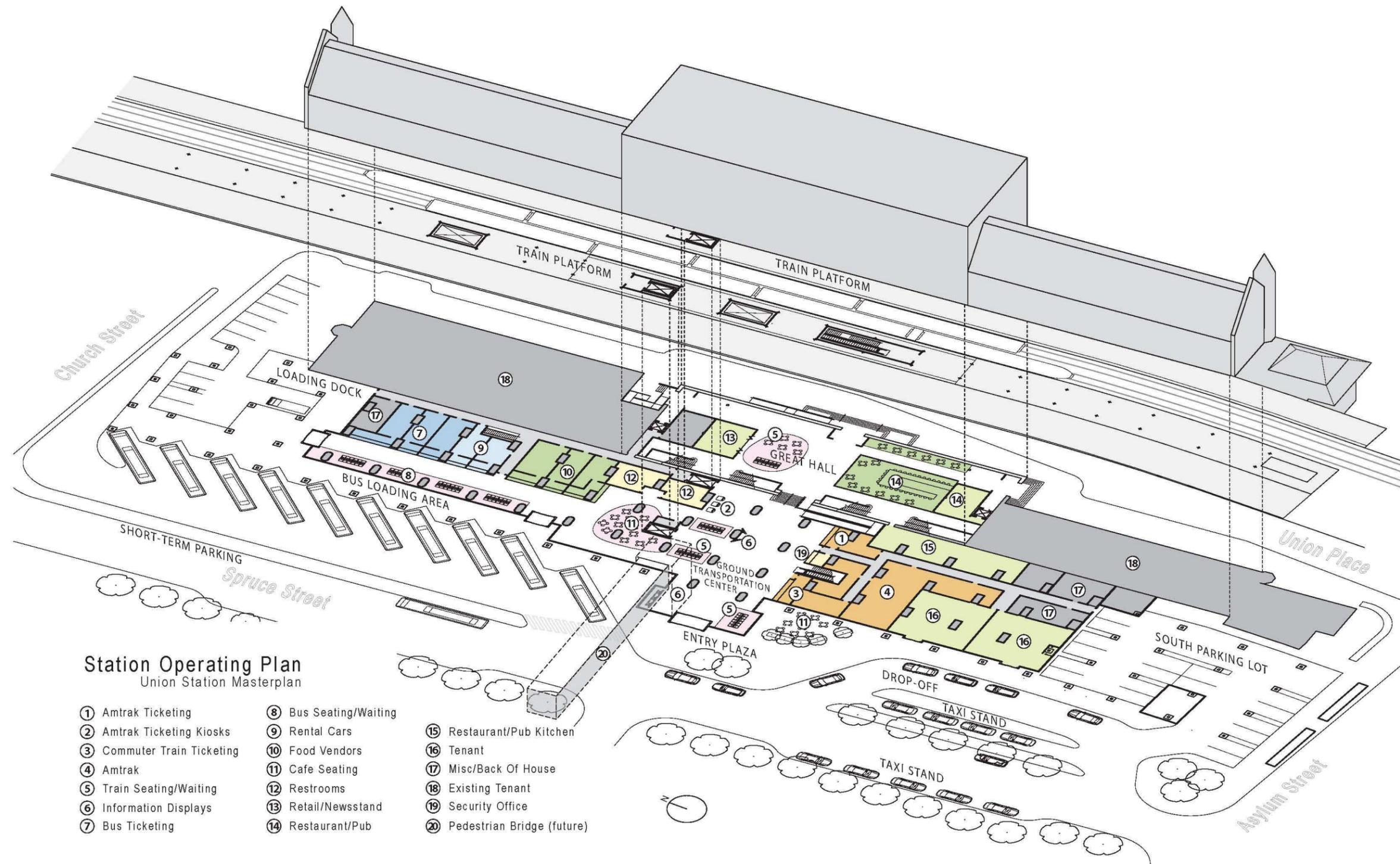
This report also carries forth a recommendation from the Downtown Circulation portion of the NW Corridor Study that there be a Transit Center in the vicinity of Union Station. While this report has selected a particular location for the transit center, the key recommendation is that the site be north of Asylum and south and west of Main Street. This portion of the recommendation requires more study because there were two sites judged about equal for placement of the Transit Center. Also and other sites that were not considered or unavailable at the time of this study may become available. Thus a follow-up effort from this current work is another more detailed study to determine the best location for the Transit Center.

This report recommends a number of TOD options to go along with the recommended master plan for Union Station and a Transit Center. While the current economic environment is not conducive to such types of development, the objective of this analysis was to show how such development could be paired with Union Station improvements, and to insure that the improvements did not inhibit such TOD. Since partnerships between the public and private entities could help to make such developments financially feasible, the City of Hartford and the Greater Hartford Transit District should remain alert to these opportunities as the economy improves. For example, there could be a shared investment in the parking facilities that are described as part of the TOD. Certainly Union Station will become a more important location for residential development once the New Britain BRT and the New Haven-Hartford-Springfield Commuter Rail have been implemented.

The circulation analysis for the various scenarios shows that there is room with the current roadways for many of these improvements, but that traffic at certain intersections will deteriorate. Even if only Scenario A takes place (implementation of the planned New Britain busway and the New Haven-Hartford-Springfield Commuter Rail), intersection level of service near Union Station in peak periods does deteriorate. A Transit Center at the North Parking Lot and implementation of all the TOD causes more deterioration in the level of service. However, detailed planning for circulation improvements will need to await more definitive plans for the location of the Transit Center. Parking for commuter rail will be an issue at Union Station, since available spaces in lots near Union Station are not sufficient to handle the forecast need for parking even when demand forecasts consider parking constraints. The “full-build” scenario (which includes an Air-Rights garage over the Transit Center) does anticipate development of new parking spaces for commuter rail which should be sufficient to allow for new transportation demand as well as parking associated with recommended TOD. If a future Transit Center is located close to Union Station—say either at the North Parking Lot or the corner of High and Church, increased parking for commuter rail should certainly be part of the plan. The sizing of a parking lot to accompany a new Transit Center will depend on the need for commuter rail parking as well as any adjacent TOD.

In summary, the future for Union Station is anticipated to be good as the planned transportation developments are implemented. Improvements to the station should be made to make it fit with its increased importance as a transportation center for Hartford.

Figure 1-1: Operating Plan for Union Station



Station Operating Plan
Union Station Masterplan

- | | | |
|----------------------------|-----------------------|------------------------------|
| ① Amtrak Ticketing | ⑧ Bus Seating/Waiting | ⑮ Restaurant/Pub Kitchen |
| ② Amtrak Ticketing Kiosks | ⑨ Rental Cars | ⑯ Tenant |
| ③ Commuter Train Ticketing | ⑩ Food Vendors | ⑰ Misc/Back Of House |
| ④ Amtrak | ⑪ Cafe Seating | ⑱ Existing Tenant |
| ⑤ Train Seating/Waiting | ⑫ Restrooms | ⑲ Security Office |
| ⑥ Information Displays | ⑬ Retail/Newsstand | ⑳ Pedestrian Bridge (future) |
| ⑦ Bus Ticketing | ⑭ Restaurant/Pub | |

Figure 1-2: Union Station Campus Including Union Station Improvements, a Transit Center and TOD

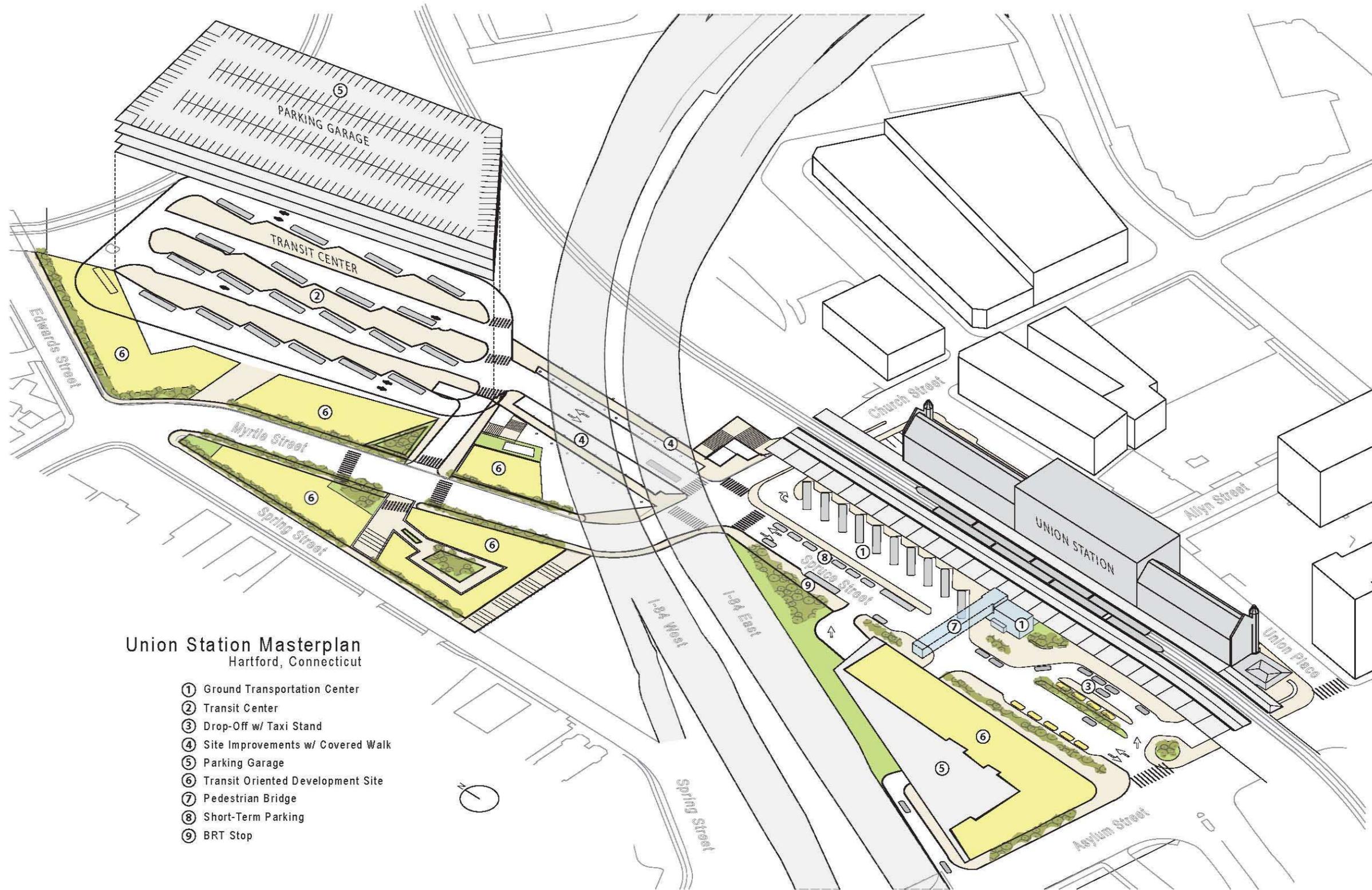
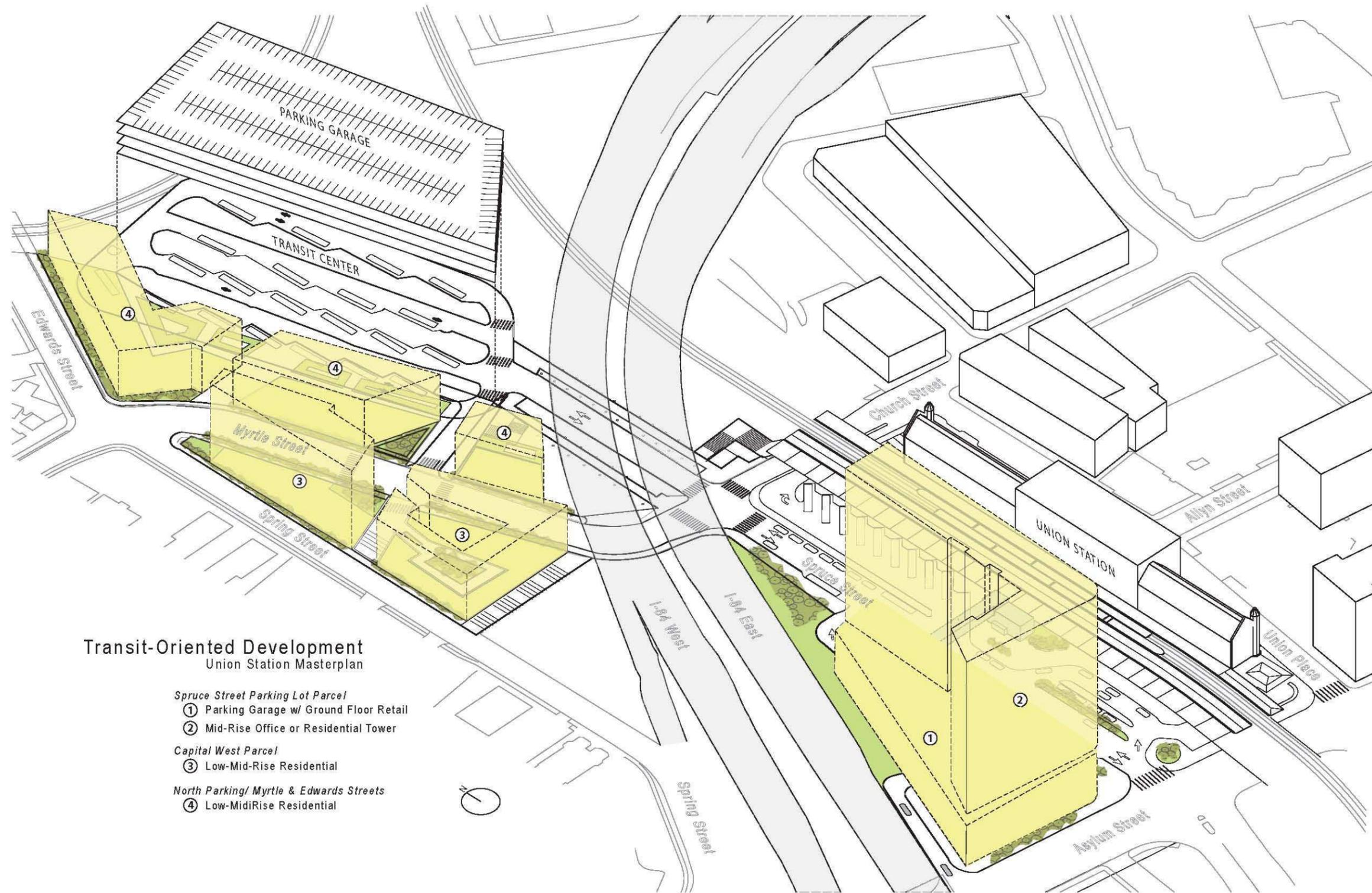


Figure 1-3: Transit Oriented Development



Transit-Oriented Development
Union Station Masterplan

- Spruce Street Parking Lot Parcel*
- ① Parking Garage w/ Ground Floor Retail
 - ② Mid-Rise Office or Residential Tower
- Capital West Parcel*
- ③ Low-Mid-Rise Residential
- North Parking/ Myrtle & Edwards Streets*
- ④ Low-Mid-Rise Residential



2.0 INTRODUCTION

This is the Final Report for Part 2 of the Northwest Corridor Study being conducted on behalf of the Capitol Region Council of Governments by TranSystems Corporation. Part 1 examined options for improving transit in the Northwest Corridor of greater Hartford, with particular focus on the Day Hill Road area (Final Report dated June 16, 2009). Part 2 focuses on improving Union Station—the southern point of the NW Corridor and transportation center for intercity bus services, Amtrak service, the New Britain Busway and future commuter rail service. Part 3 focused on downtown circulation improvements for bus service, and made recommendations which included developing a transit center in the vicinity of Union Station (Final Report dated August 31, 2009).

This report describes the use and condition of Union Station and its environs. It examines options for improving the operations of the facility, and makes recommendations for future investment. Such investment will become even more desirable with the initiation of future New Haven to Springfield commuter rail service and the New Britain Busway. Given the recommendation from Part 3 of the study for a future inner city transit center near Union Station, this report examines potential sites for that transit center and proposes development options for one of the locations. To increase the activity and livability of the area around Union Station, this report makes recommendations for future additional development adjacent to the facility. This report also examines the potential future traffic conditions and parking situation with the planned improvements and development.

2.1 *Goals and Objectives of the Union Station Plan*

The overarching goal for Part 2 is to provide a plan to maximize the potential of Union Station as a key transportation terminal and architectural/social resource for the City of Hartford. To do this there are several goals:

- Determine the current state of Union Station as a physical building and as an intermodal transportation terminal.
- Develop operating and development scenarios for Union Station to serve planned new services (New Britain Busway and commuter rail) and to also serve as a Downtown Transit Center for bus services.
- Develop a comprehensive plan for Union Station including an operating plan, transportation circulation plan, capital plan, and TOD recommendations.

Aligned with these goals, Part 2 has a number of specific objectives:

- Goal 1: Determine the current state of Union Station as a physical building and as an intermodal transportation terminal.
 - Assess the physical condition of Union Station to insure it is being maintained in good condition.
 - Assess Union Station layout in connecting people and transportation modes.
 - Determine current and future (year 2017) parking limitations to see if both present and future needs are being met.
 - Assess the adequacy of vehicular and pedestrian access to Union Station.
- Goal 2: Develop operating and development scenarios for Union Station to serve planned new services (New Britain Busway and commuter rail) and to also serve as a Downtown Transit Center for bus services.
 - Develop sketch plans for two potential operating/ development scenarios for Union Station—one to serve anticipated new transit services (i.e., the New Britain Busway and New Haven/Hartford/Springfield Commuter Rail) and the other to serve as a Downtown Transit Center for local bus service.

- Develop a method to evaluate the viability of the two scenarios for Union Station.
 - Develop alternative operating plans and circulation plans for Union station.
 - Recommend a preferred operating/development scenario, operating plan, and circulation alternative.
- Goal 3: Develop a comprehensive plan for Union Station including an operating plan, transportation circulation plan, capital plan, and TOD recommendations.
- Develop a conceptual plan for Union Station which includes pedestrian and vehicular circulation as well as capital improvements.
 - Explore elements that encourage Transit Orientated Development (TOD) in the plan.

2.2 Report Contents

This report is organized in three parts: 1) a discussion of existing conditions at Union Station, 2) a discussion of alternative future scenarios, and 3) a recommended plan for the station and the surrounding area. The first part includes Chapters 3 through 6. Chapter 3 describes the existing conditions at Union Station, including the building condition and function and its leasing situation. Chapter 4 describes and assesses the current transportation functions of the building. Chapter 5 describes the current leasing situation and compares it with national averages. Chapter 6 describes existing traffic and pedestrian conditions, and Chapter 7 describes the existing parking situation around Union Station.

Part 2 of the report starts with a discussion of demographics expected in the near future for the Union Station area in Chapter 8. Then Chapter 8 describes the future scenarios. These include the implementation of currently planned transportation improvements for Hartford (Scenario A), and a second Scenario B which adds a transit center to the Union Station area. Chapter 8 also describes the expected traffic conditions in Scenario A (the “no-build” situation). Finally, Chapter 8 suggests certain Transit Oriented Developments (TOD) for the nearby area. Chapter 9 describes a number of different plans for Union Station and also for a nearby Transit Center. Chapter 9 also contains an evaluation of these alternatives and recommendation for an alternative for Union Station and for a transit center location to be developed in Part 3 of the report.

Part 3 of the report includes a description of a detailed improvement plan for Union Station with a transit center in Chapter 10, with very preliminary capital cost estimates in Chapter 11. Chapter 12 describes TOD opportunities near the station. Chapter 13 analyzes the parking situation under the “full-build” situation. Chapter 14 provides an analysis of circulation issues given the implementation of the Union Station improvements and the transit center (Scenario B), along with all of the suggested TOD (the “full-build” situation). Finally, Chapter 15 closes the report with a discussion of implementation staging and next steps for the Union Station area.



Phase 1: Existing Conditions at and around Union Station



3.0 HISTORY AND EXISTING CONDITIONS

As part of this project, a detailed report was prepared of the existing conditions of Union Station. Findings from that report are summarized here.

3.1 *Brief History*

The original Hartford Union Station building was constructed in 1889. There is a discrepancy between the information provided in the National Register and the Connecticut Trust as to the architect. The National Register lists the architect, builder, or engineer as George Keller, an influential architect from Hartford. The Bushnell Park website notes that George Keller was the impetus for the grade-separated design for the station, unique at its conception. The Connecticut Trust for Historic Preservation cites Shepley, Rutan, and Coolidge – the firm formed out of the practice of H.H. Richardson – as the architect. In design and style, the building harkens to both architects and in either manner is a significant building based on the architect and style.¹

In 1914, a fire destroyed the interior structure of the building. From historical photographs, it appears that the building was rebuilt immediately after the fire, although the original front gables were eliminated. It appears from photographs and visual inspections that the exterior Brownstone walls of the building were salvaged and used again in the rebuild.

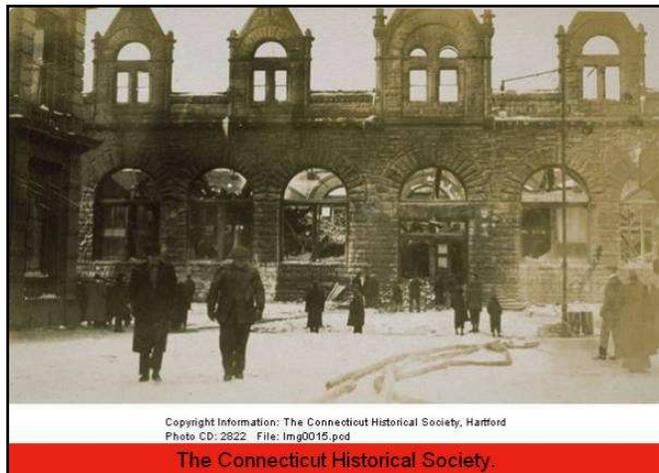


Figure 3-1: Historic Photo of Union Station after 1914 Fire.

Union Station is on the National Register of Historic Places. As such, significant modifications to the exterior appearance and Great Hall should be avoided. The Ground Transportation Center and any storefront additions are not historic and can be modified as required.

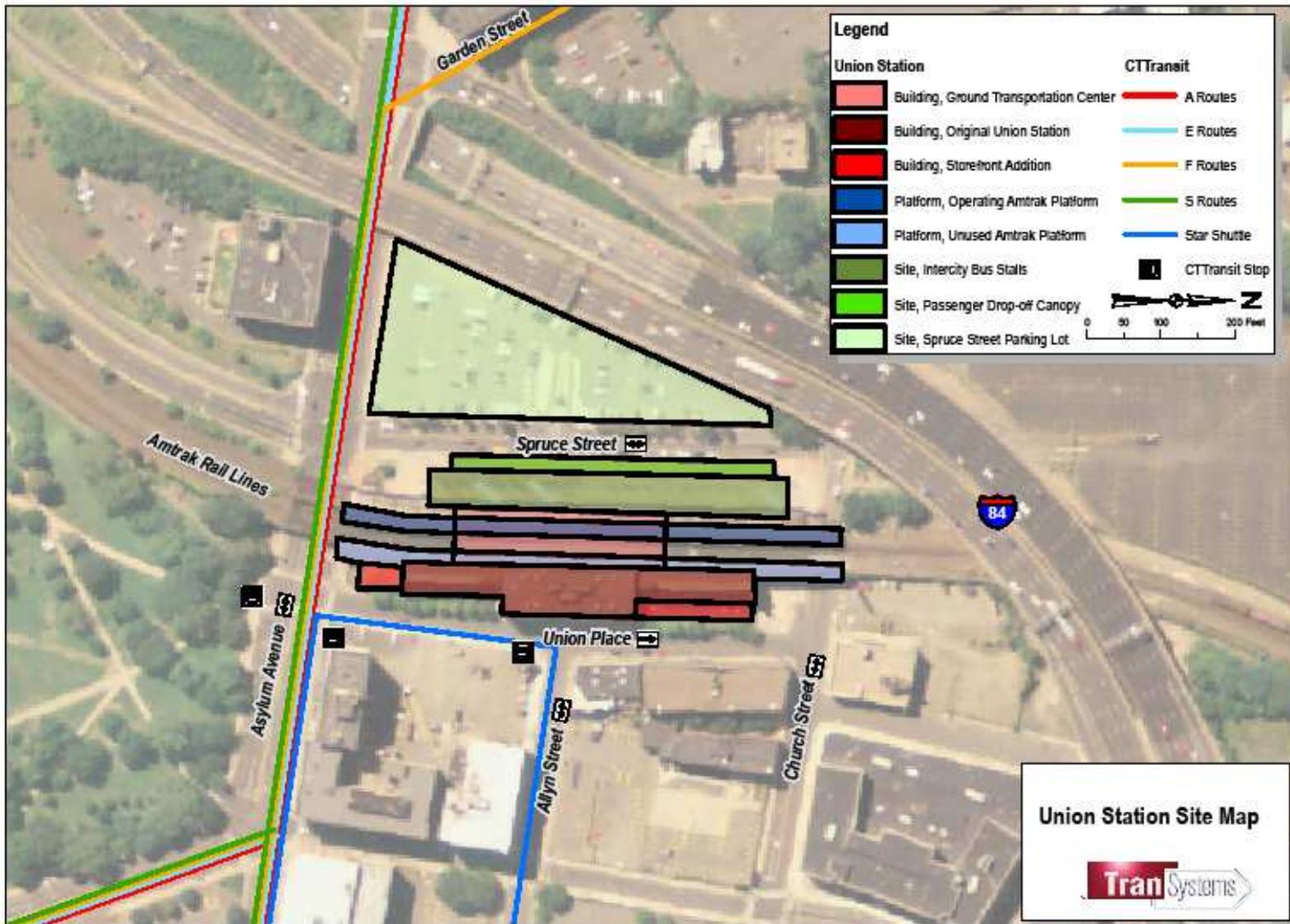
3.2 *Existing Site Environment*

The current 300 foot long station is owned by the Greater Hartford Transit District (GHTD) and oriented longitudinally in the north/south direction. It is bounded by Union Place on the east, Spruce Street on the west, Church Street on the north and Asylum Street on the south. The primary façade for the original Union Station is facing Union Place at the intersection of Allyn Street (see Figure 3.2 – Existing Site Map).

The station features intercity bus service on the west side of the building, immediately adjacent to and west of the Ground Transportation Center, a 1987 addition to the western portion of the building to facilitate train and intercity bus service. There are currently 15 diagonal bus bays along the west side of the building. The intercity bus coaches enter from Spruce Street and exit onto Church Street. A canopy covered passenger drop-off area separates the bus bays from Spruce Street. Taxis also queue on Spruce Street at the southern end of the canopy. Located across Spruce Street to the west is a surface parking lot of 215 spaces leased (from the State of Connecticut) by the GHTD. Auto traffic patterns are bi-directional around the facility with the exception of Union Place, which has north-bound traffic only.

¹ National Register of Historic Places, Building #75001932; www.bushnellpark.org/content/george_keller.asp; Connecticut Trust for Historic Preservation, Union Station Project Detail.

Figure 3-2: Union Station Existing Site Map



The original station was served by four railroad tracks located on the west side of the building. There is currently one active track (second line west of the station) which is used primarily by Amtrak and occasionally by Class 1 freight railroads. The rail lines are elevated approximately 25 feet above street level to avoid at-grade crossings at adjacent streets.

Currently, CTTTRANSIT buses do not directly serve the facility through the Ground Transportation Center. Four routes pass along Asylum Street with bus stops at the intersection of Asylum and Union Place. The Star Shuttle currently turns north down Union Place from westbound Asylum Street and stops at the intersection of Union Place and Allyn Street.

Figures 3.3 through 3.8 provide views of Union Station.



Figure 3-3: Front Elevation Union Station (facing west)



Figure 3-4: Intercity Bus Bays (facing south)



Figure 3-5: Intercity Bus Bays & Passenger Drop-off Along Spruce Street (facing north)

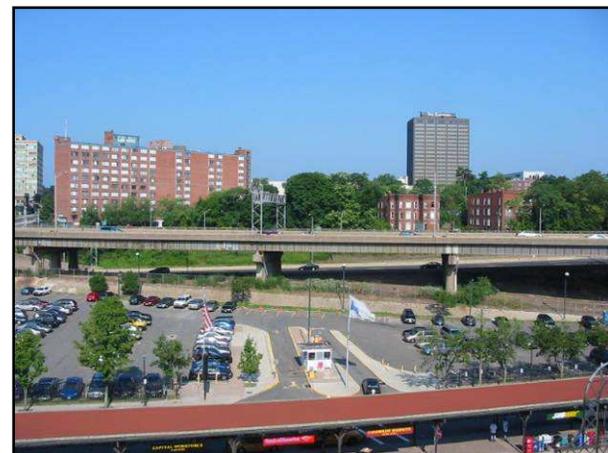


Figure 3-6: Spruce Street Parking Lot (facing west)



Figure 3-7: Amtrak Train Entering Station (facing south)



Figure 3-8: Amtrak Passenger Platform & View of Elevator Vestibule (facing south)

3.3 General Building Composition

The original Union Station structure is comprised of four elements: a central three-story, flat-roofed portion containing a two-story lobby area known as the Great Hall; and two narrower three-story wings on the north and south featuring steeply sloping roofs clad in roof tiles. Trains and bus transit services are primarily accessed through the Ground Transportation Center on the west side of the Station.

All rail lines are supported by a steel-framed platform or “trestle” structure. In addition to supporting the rails, the framing supports the wood-framed passenger platform adjacent to the station and a wood-framed/concrete central platform. The framing extends to the north and south for the length of the station and terminates at the stone piers of bridges crossing Asylum and Church streets. Amtrak owns and maintains the steel trestle structure and has air rights above this structure. The GHTD has ownership rights below the trestle structure.

There have been several additions and modifications made to the station since it was reconstructed in the early 1900’s. Some of the major additions or modifications are listed below:

- Construction of a 16,000 square foot building addition, the Ground Transportation Center, under the rail line. This building was constructed on grade and is located approximately 5 feet below the elevation of the main level of the station. The steel columns of the rail trestle structure penetrate the roof of the addition. This addition was constructed and is maintained by the GHTD.
- Construction of a new steel-framed platform canopy structure on the central platform. This structure, which extends the entire length of the station, provides a cover for the access stairs to the Amtrak area below and the main station building. This canopy was constructed in 1985 and is owned and maintained by Amtrak.
- A general interior renovation in 1965 after the building changed ownership. The renovation included non-structural items such as cleaning and painting.
- Construction of a steel-framed storefront extension, located on the south end of the building.
- Construction of a steel-framed storefront expansion along the north wing on the east side of the building. Originally retail space, it is now occupied by the GHTD.



- Construction of new glass-walled office space on the north and south ends of the Great Hall. The new space is at both the first and second floor levels. The steel-framed space is free-standing with limited connections to the original station structure.
- Installation of a steel-framed corrugated roof system north and south of the Ground Transportation Center to allow for protected parking, passenger access to buses, and certain service operations under the trestle.

3.4 Existing Occupation/Leasing Arrangements

The following Figure 3.9 – Existing Usage Plan schematically diagrams the existing leaseholders within Union Station, including the Ground Transportation Center.

3.4.1. First Floor – Union Station

The first floor of Union Station has two main tenants as well as the Great Hall public space. Hot Tomatos, an established and popular local restaurant occupies the entire south wing, steel-framed south extension, and both first floor levels of the office space constructed within the Great Hall. In addition, they host large functions within the Great Hall. Hot Tomatos has been a long-time occupant and have made significant tenant improvements and renovations to their space.

GHTD, the building owner, occupies the entire north wing including the steel-framed storefront extension towards Union Place. The space is typical for most interior tenant improvements with drywall partitions and drop ceilings. There are some grade differentials within the tenant space which have accessible ramps within the corridors. A conference / board room is located in the storefront addition and is used for public events as well as GHTD functions.

Between the two tenants is located the Great Hall, which was the original lobby and ticketing area for Union Station. As indicated previously, past renovations included the installation of a two-story glass-walled office structure at either end. Functionally, the space serves as general circulation for all tenants and the primary passage way between Union Place and the Ground Transportation Center. On occasion, the area is blocked off to general public access for special events or benefits.

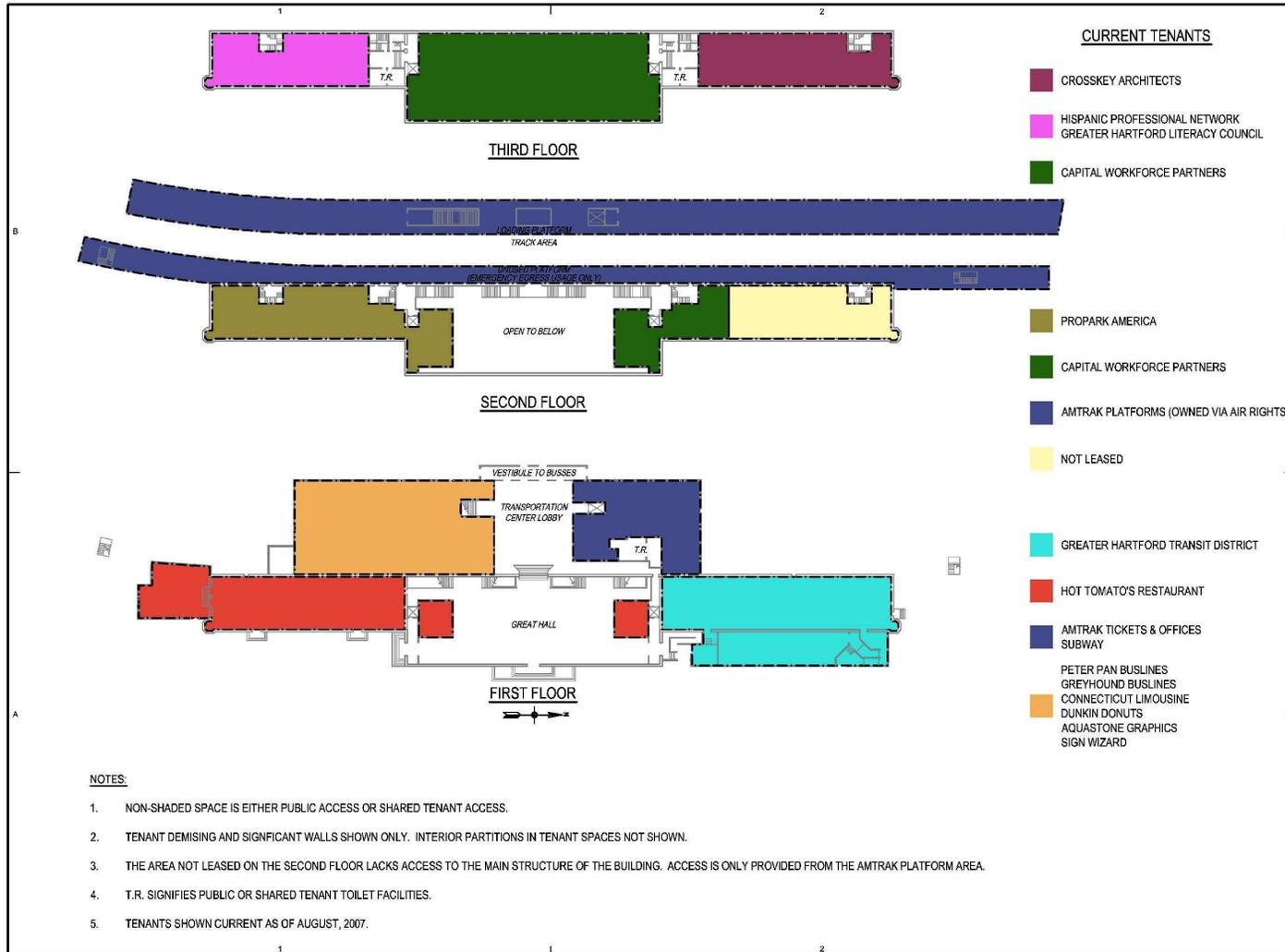
3.4.2. First Floor – Ground Transportation Center

The first floor of the Ground Transportation Center is centered on the main waiting lobby for intercity bus and Amtrak passengers. This public area includes ticketing counters, food and newspaper vendors, security, an ATM machine, and access to the bathrooms and pay phones. The space includes benches for waiting and stairs / elevator to the train platform level.

On the south side of the public area, several tenants are incorporated. Both Peter Pan, which handles all intercity bus ticketing, and Dunkin Donuts have open counter access to the lobby. Additional space is provided within the area for Sign Wizard, Greyhound office, Great American Donut office and storage.

On the north side of the public area, the primary leaseholder is Amtrak. They have an open ticket window to the lobby. In addition, they have several storage and employee welfare areas located in non-public spaces. Subway Restaurant also has space on the north side and a counter area to the public lobby.

Figure 3-9: Usage Plan for Union Station (August 2007)



3.4.3. Second Floor – Union Station

The second floor of Union Station is comprised of two wing areas as the Great Hall is open through this level. The entire south wing, including the mezzanine level storefronts in the Great Hall, is leased by Propark America, a provider of parking lot management services.

The north wing is divided into two spaces. Adjacent to the Great Hall and with access from the Great Hall is Capital Workforce Partners, a private, non-profit organization that coordinates programs to develop a skilled and vital workforce within the area. The second floor space is primarily executive offices with a small conference room.

At the extreme northern portion of the second floor is an area that is not leased. Up until recently, portions of it were part of Amtrak's lease as storage. Access to this area is only from the exterior platform level, restricting its ability to be leased for general business or other commerce.

3.4.4. Platform Level – Ground Transportation Center

As discussed previously, the platform level of the Ground Transportation Center is owned by Amtrak via air rights. It is accessed either via a stairwell or elevator from the first floor lobby of the Ground Transportation Center. Loading is performed on the east side of the center platform. The platform adjacent to Union Station is unused except for emergency egress from Union Station.

3.4.5. Third Floor – Union Station

The third floor of Union Station includes both wings and the center area over the Great Hall. Both third floor wing areas have exposed structure and skylights.

Capital Workforce Partners has their main area in the center of the third floor. On the south side are two non-profit agencies, the Hispanic Professional Network and the Greater Hartford Literacy Council. All of these tenants use the south elevator as primary access.

Crosskey Architects has offices on the north side of the third floor. They use the north elevator for access.



Figure 3-10: Great Hall with Storefront Offices (facing north)



Figure 3-11: Great Hall with Entrance Vestibule (facing east)



Figure 3-12: Stairs between Great Hall & Ground Transportation Center Lobby (facing east)



Figure 3-13: Ground Transportation Center Lobby (facing east)



4.0 OPERATIONS ASSESSMENT

The current operation of Union Station was evaluated including its physical arrangement and limitations, current usage, operational capacity, safety and security, and historical preservation requirements.

The following analysis is based on observations of the area and previously documented capacity information.²

4.1 Intercity Bus Traffic

Currently 15 bus bays are provided on the west side of the building for the private carriers that lease space in the facility. Lessees are Peter Pan and Greyhound. Connecticut Limousine ceased operations from Union Station on August 16, 2009. The bus bays were designed for smaller vehicles than standard 45 foot over-the-road coaches used today. The bays are pull-in / back-out style. An analysis of the bus schedules at Union Station indicates that the peak period appears to be between 5:00 PM and 7:00 PM, on Friday and Sunday, requiring a maximum of 6 bays during that period. More than 6 bays may be required at the busiest times of the year.

4.2 Local Bus Traffic

Currently, CTTRANSIT buses do not directly serve the facility through the Ground Transportation Center. Four routes pass along Asylum Street with bus stops at the intersection of Asylum and Union Place. There appear to be few transfers from local buses to Union Station. CTTRANSIT counts in 2007 showed 38 passengers getting on buses from the stop at Asylum and Union Place in the eastbound direction and 192 getting off. In the westbound direction there were 182 boarding at Asylum and Union Place and 48 getting off.

The Star Shuttle serves Union Station. It turns north on Union Place from westbound Asylum Street and stops at the intersection of Union Place and Allyn Street.

4.3 Amtrak Service

Amtrak rail service currently serves Union Station with 6 southbound trips and 6 northbound trips per day. Four of these trips in each direction are shuttle service between Springfield MA and New Haven. One trip in each direction is the Vermonter service running between Washington DC and St. Albans, VT, and one trip is the NE Regional Service from Washington DC (branch to Springfield, MA via Hartford). Annual boardings are 75,000, or roughly 250 per weekday.

4.4 Taxi and Private Auto Traffic

At the time of the observational field visit, taxi service was provided along the Spruce Street canopy, south of the crosswalk between parking and the Transportation Center lobby. This area appears capable of accommodating around 7 taxis. There is also a taxi queuing area which is part of a small parking lot at the southwest corner of Union Station located under the train tracks. While no capacity problems were observed with the taxis, peak period situations were not observed and may be more congested. With increased traffic at Union Station alternative methods of allocating space to taxis may be warranted.

For drop-off from private autos, a short-term waiting zone is provided along the north end of the Spruce Street canopy. There is a charge for parking through a city provided parking station which is located near the canopy. There is room for 10 autos, providing that they park efficiently. During the site visit, it was observed to be at capacity some of the time. The GHDT reports that there is double parking by automobiles awaiting passengers during busy times.

² Occupancy levels were based on the Building Code information shown on Sheet A-1 of the Phase Three Union Station Transportation Center plans dated 10/25/1985. General areas and occupancy assumptions were confirmed by visual inspection and review of the current Connecticut Building Code.



There is also a parking station on Union Place. This is another location where passenger pick up and drop off could occur.

4.5 Bicycle Accommodations

Bike racks are available at Union Station. There are two racks along the building at Union Place and another one on the west side of the building.

4.6 Pedestrian Accommodations and Accessible Paths of Travel

The existing Ground Transportation Center lobby has a permitted capacity of 400 persons assuming a standing arrangement. Practical capacity is approximately one-half of that number to avoid an overcrowded situation. While no direct observations were made during the peak times, it is expected that area does have some minor congestion during the heaviest times of usage, but not enough to cause an overcapacity problem.

The Great Hall is under-utilized and thus could provide greatly expanded capacity for the transportation function if properly designed. With a total maximum occupancy of approximately 950 persons in a standing arrangement, it could easily accommodate another 400 – 500 waiting passengers without congestion. To utilize this space better for passenger waiting, it would be necessary to connect the announcement and other notification systems. Furthermore, improvements could be made to the current accessible path between the Ground Transportation Center and the Great Hall. More discussion of accessible paths is covered next.

Union Station was re-constructed in 1914 and the Ground Transportation Center built in 1985. Both areas were completed prior to the passage of the Americans with Disabilities Act in 1990. The Ground Transportation Center would have been required to be compliant with the 1968 Architectural Barriers Act and therefore had elements in the original construction that are mostly, if not completely, compliant with the more extensive ADA requirements. Accessibility elements, such as push-to-open devices, have been provided with sensitivity to the historic nature of the structure. Figure 4-1 following shows pathways through the facility which are ADA accessible.

Access to the existing structure may be considered in three ways:

- public access to transportation areas
- public access to tenant spaces
- Emergency egress and non-accessible routes

4.6.1. Accessible Public Access to Transportation Areas

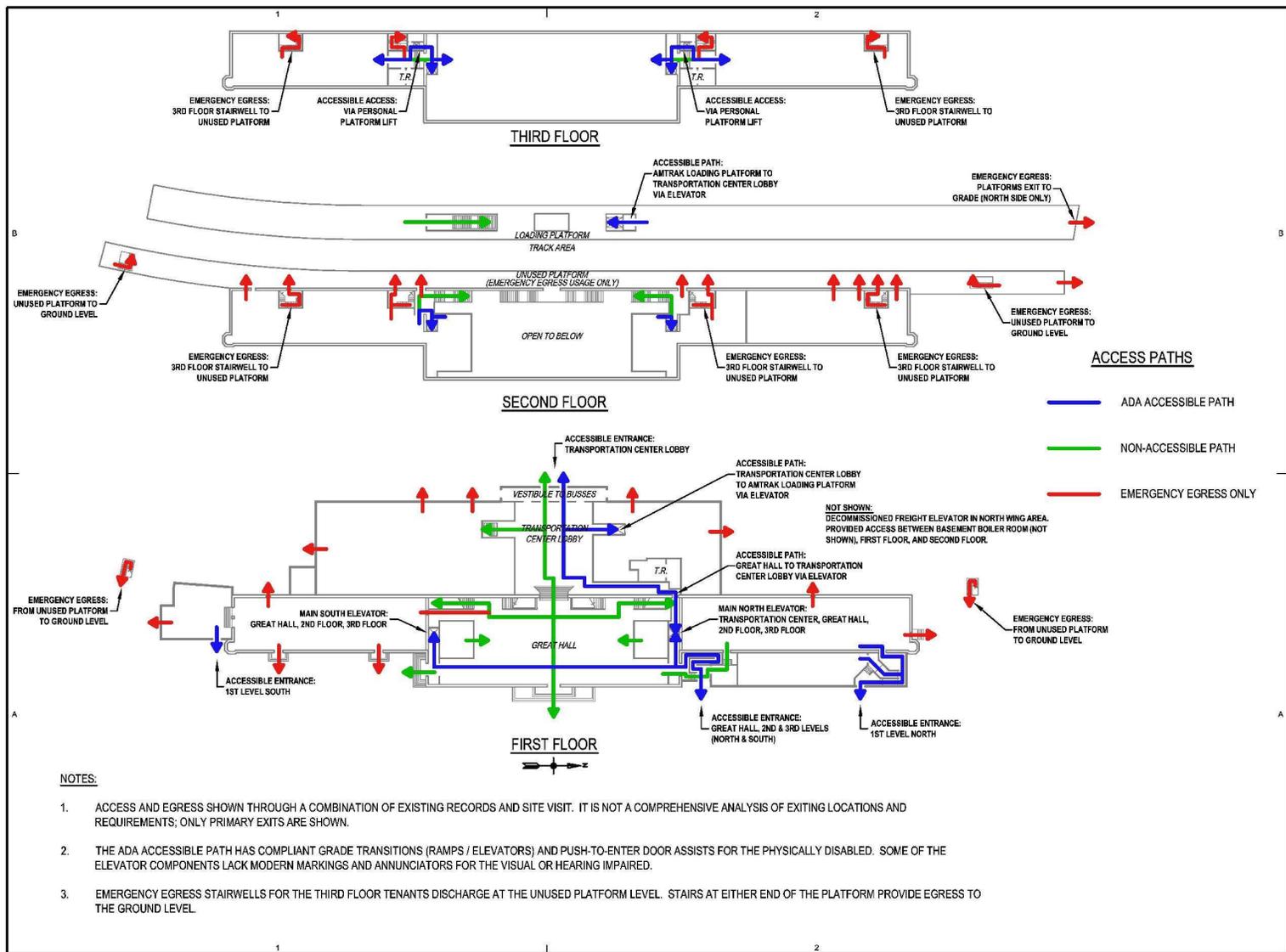
The following sections describe the primary accessible routes to and through the facility.

Ingress / Egress from Private Transportation (Taxi, Auto, Pedestrian)

Pedestrian access to Union Station can be made from either via the Spruce Street side or the Union Place side. Predominantly taxi and auto access is from the Spruce Street side. Some auto parking is available in the Spruce Street Lot. A passenger drop-off area is located along the northern side of the Spruce Street canopy. There is an accessible path from the Spruce Street canopy to the main transportation center entrance.

Parking is also available at lots on the Union Place side of Union Station. Along Union Place, an accessible pathway is available from the street to the Ground Transportation Center. The route is quite indirect requiring passengers to enter the building from a side entrance. . The entrance, with ramps to the Great Hall level, is at the north wing of the building. From the Great Hall there is an elevator to the Ground Transportation Center lobby. An recommended improvement would be to develop a more direct accessible passageway between the Ground Transportation Center lobby and the Great Hall.

Figure 4-1: Access Plan for Union Station





Ingress / Egress from Public Transportation (CTTRANSIT / Private Bus, Train)

CTTRANSIT bus routes currently service the facility through a stop at the intersection of Union Place and Asylum Street. Additionally, the Star Shuttle has a stop directly across from the main entrance to the Great Hall at the intersection of Union Place and Allyn Street. For these services, the primary access to the building would be from the east, or Union Place, side of the building. From that point, access is the same as for pedestrians from Union Place as described previously. Both stop areas connect to the building via public sidewalks with curb ramps. The GHTD has completed a sidewalk improvement project on Union Place and a small portion of Church and Asylum Streets to enhance access.

Private bus services (Peter Pan / Bonanza, Greyhound) utilize the bus bays along the west side of the building between the Ground Transportation Center and Spruce Street. The pathway from the bus bays to the Ground Transportation Center is accessible.

Train loading / unloading is performed at the second level platform area. An elevator is provided from the Ground Transportation Center lobby to the platform level. A tactile warning strip is provided along a portion of the platform that was renovated. A portable platform lift is located nearby to facilitate wheelchair access to the trains.

Overall, ADA compliant access is provided throughout the public transportation areas with the exception of some elevator components. However, more signage could be provided, especially in the Ground Transportation Center, to indicate the accessible path between the Ground Transportation Center level and Great Hall level.

4.6.2. Accessible Public Access to Tenant Spaces

With the exception of the first floor north and south tenants (GHTD and Hot Tomato's Restaurant), public accessible access is provided to all the tenant spaces either through the Great Hall or the Ground Transportation Center lobby. The unleased portion of the 2nd floor (north end) does not have accessible access.

Hot Tomato's Restaurant, the 1st floor south tenant, has accessible access to their facility via a street entrance into the southern storefront addition that is a portion of their restaurant. The GHTD provides accessible access at the northernmost entrance to the storefront addition on the north wing of the building. Inside the building, an accessible ramp connects up to the main level of the building.

For the 2nd floor tenants, accessible access is provided through either the main south or north elevators off of the Great Hall. Once on the 2nd floor, the area is level between the wings and glass enclosed office additions within the Great Hall. Non-accessible access is provided by the main stairs on the west side of the Great Hall.

For the 3rd floor tenants, the only access is by the main south or north elevator. Upon reaching the 3rd floor, the portion above the Great Hall is at grade. The tenant areas in the north and south wing are located down a small flight of stairs. Accessible access has been accommodated by the installation of personal platform lifts in a former utility closet area. Third floor tenants can also access their space by using the stairs from the Great Hall to the platform, and then they can unlock a door on the platform level that connects with stairs to the third floor.

The tenant spaces on either side of the Ground Transportation Center lobby are primarily at grade with the lobby and access is primarily from the lobby. The extreme northern portion of the tenant area does have a grade differential with an internal ramp; however the public is not allowed access to this area.

Overall, the entire structure has been adequately retrofitted for ADA accessible access to all areas with the exception of the portion not leased on the 2nd floor. All main access points have push-to-open buttons. With any major



renovations, there would need to be retrofits to the elevator cabs and vestibules to ensure all visual and auditory annunciators are compliant to current codes.

Train loading / unloading is performed at the second level platform area. An elevator is provided from the Ground Transportation Center lobby to the platform level. A tactile warning strip is provided along a portion of the platform that was renovated. A portable platform lift is located nearby to facilitate wheelchair access to the trains.

Overall, ADA compliant access is provided throughout the public transportation areas with the exception of some elevator components. However, more signage could be provided, especially in the Ground Transportation Center, to indicate the accessible path between the Ground Transportation Center level and Great Hall level.

4.6.3. Emergency Egress and Non-Accessible Routes

Figure 4-1 also provides information relative to the non-accessible access into and thru the structure for both emergency and general purposes.

Overall, access is excellent to the first and second floors. Both can be reached either via the main stairs in the Great Hall along the western wall or the north / south main elevator. Emergency egress can be directly out to the Amtrak platform, if required.

For the third floor, public access is only provided by either the north or south elevator. Emergency egress from the third floor is through main stairwells on the east side of the building, which exit onto the Amtrak platform. At either end of the platform are a set of stairs down to ground level.

4.7 Other Americans with Disabilities Act (ADA) Issues

In general, many areas of Union Station are compliant with the ADA. All toilet rooms inspected are accessible. The ticketing counters are not compliant; however it is possible for a wheelchair customer to receive services. The waiting area does not provide specific handicapped seating. There are a bank of public phones, with one mounted at accessible height. The bank of phones lacks the required accessible shelf and outlet for portable text telephone device.³ Some of the required distances from door jamb to adjacent wall were insufficient, but this is common in all structures completed before the more comprehensive ADA act of 1990. One area of concern is the loading platform for Amtrak. While a tactile warning strip is present for a portion of the platform, loading and unloading operations were observed to occur in an area without the tactile strip. The platform edge with tactile warning strip should be enlarged to cover the full platform length used for loading and unloading of passengers.

4.8 Safety and Security

The GHTD has installed a modern security camera system that provides coverage throughout all public areas and their tenant space.⁴ The entire space is protected by a sprinkler system and fire detection system.

There are safety concerns connected with the central platform used by Amtrak. Amtrak has recently repaired the steel-framed stairs on the north and south ends of the central platform that are used for emergency egress from the second and third floors of Union Station. However, there are still areas of deterioration where better fencing is needed to prevent public access .

³ Connecticut State Building Code, Section 1109.16

⁴ GHTD also monitors cameras installed by Capital Workforce Partners as a specific side arrangement. No other monitoring of interior tenant spaces is provided.

4.9 Historical Preservation Requirements

Union Station was placed on the National Register of Historic Places in 1975 as Building #75001932. The Connecticut Trust for Historic Preservation (CT Trust), which is the state historic preservation office (SHPO), provided information on the building's significance. According to CT Trust, no nomination file is available for this structure.⁵ While not definitively documented, it would be safe to assume that the exterior architectural façade of the original Union Station, principal public interior space of the Great Hall, and functionality of the elevated train platforms all contribute to the historical significance of the structure. This is confirmed in general by the National Register noting that the two areas of significance are architecture and transportation.

4.9.1. General National Standards

All rehabilitation, restoration, preservation, or reconstruction activities are governed by the local SHPO agency in accordance with the Secretary of the Interior's Standards for the Treatment of Historic Properties. The GHTD has been interacting with CT Trust for general building improvements, such as the planned boiler replacement. In general, most activities that would be required for enhancement of the transportation functions within Union Station would be considered "rehabilitation" which is defined as the act or process of making possible a compatible use for a property through repair, alterations, and additions while preserving those portions or features which convey its historical, cultural, or architectural values.⁶ The following bullets summarize the basic precepts with commentary in brackets [] on how it may apply to Union Station:

- *A property will be used as it was historically or be given a new use that requires minimal change to its distinctive materials, features, spaces, and spatial relationships.* [Further utilization of the space as a transportation terminal is the historic use.]
- *The historic character of the property will be retained and preserved. The removal of distinctive materials or alternation of features, spaces, and spatial relationships that characterize the property will be avoided.* [This requires the maintenance of the overall exterior façades and the form and function of the Great Hall.]
- *Each property will be recognized as a physical record of its time, place, and use. Changes that create a false sense of historical development, such as adding conjectural features or elements from other historic properties, will not be undertaken.* [This is not foreseen as an issue.]
- *Changes to a property that have acquired historic significance in their own right will be retained and preserved.* [It is not perceived that either the Union Place storefront additions or the Ground Transportation Center would be considered to have acquired any historic significance. Therefore, while it is not anticipated, the storefront additions could be removed. The Ground Transportation Center may be reconstructed in any manner befitting the needs of the terminal as long as the platforms above are maintained within their function and historic context.]
- *Distinctive materials, features, finishes and construction techniques or examples of craftsmanship that characterize a property will be preserved.* [This would primarily relate to any efforts to clean or repair the exterior brownstone masonry, which is currently in good condition. Any future repairs must not alter the material appearance nor affect the hand-carved cornice and other detailed moldings. This would apply to a lesser degree for the Great Hall.]
- *Deteriorated historic features will be repaired rather than replaced. Where the severity of deterioration requires replacement of a distinctive feature, the new feature will match the old in design, color, texture, and, where possible, materials. Replacement of missing features will be substantiated by documentary and*

⁵ Primary contact for Union Station at CT Trust is David Poirier: d.poirier@ct.gov or 860-566-3005

⁶ From the Secretary of the Interior's Standards for the Treatment of Historic Properties

physical evidence. [No major historic features were found to be deteriorated to the need of repair or replacement with the exception of the train trestles and Amtrak platforms. The stairs from the platform to the ground level at the north and south ends were identified as needing repair. Old photos showed that the original stairs had been removed and replaced with the existing ones. Replacement of the original stairs would impact the south storefront addition, thus it was suggested that these stairs be replaced in kind to their current configuration to correct the unsafe situation in the most expedient manner. The needed repairs were made to the existing stairways during the course of this study.]

- *Chemical or physical treatments, if appropriate, will be undertaken using the gentlest means possible. Treatments that cause damage to historic materials will not be used.* [Care would need to be exercised in the cleaning of the exterior masonry or interior granite.]
- *Archeological resources will be protected and preserved in place. If such resources must be disturbed, mitigation measures will be undertaken.* [Not applicable.]
- *New additions, exterior alterations, or related new construction will not destroy historic materials, features, and spatial relationships that characterize the property. The new work shall be differentiated from the old and will be compatible with the historic materials, features, size, scale and proportion, and massing to protect the integrity of the property and its environment.* [An illustrative example would be if it was determined to be necessary to add another handicap accessible egress point to the Great Hall at the southern entrance. Rather than something similar to the storefront addition on the north end, which would not be allowable under current regulations and designations, the installation of an exterior ramp with a brownstone screening wall may be acceptable.]
- *New additions and adjacent or related new construction will be undertaken in such a manner that, if removed in the future, the essential form and integrity of the historic property and its environment would be unimpaired.* [Following the example of a new southern Great Hall ADA entrance, the ramp and wall must be installed to not impact the existing construction. Preference would be to isolate the new construction from the existing structure and leave the steps remaining under the ramp structure.]

4.9.2. National Accessibility Guidelines

The Department of the Interior recognizes one of the most difficult situations with historic properties is to make them fully accessible for people with disabilities. The National Park Service's *Technical Preservation Brief 32: Making Historic Properties Accessible* provides an excellent overview of the general requirements for accessibility. In summary:

- *Modifications can usually be made to non-significant spaces, secondary pathways, later additions, previously altered areas, utilitarian spaces, and service areas.*
- *If possible, access should be through a primary public entrance. If that cannot be achieved, at least one entrance shall be accessible.*
- *Historic steps should be buried, and not removed, when making a path accessible.*
- *Wheelchair platform lifts, if acceptable by state building code, may be used; however they do have limited capacity and require frequent maintenance.*
- *Historic doors should not be replaced nor should door frames be widened.*

In reviewing the access modifications to date, it is seen that they have been compliant with the above recommendations. The ramp was placed in a later addition and the accessible path was developed using secondary pathways. While not at the main central entrance to the Great Hall, the accessible entrance is at the northern end and along the front main Union Place façade. Wheelchair platform lifts were only utilized on the third floor where no other solution would have been feasible and in an area of more limited public usage. The historic doors on the



accessible path were modified using push-to-open and other unobtrusive mechanical devices, rather than replacement.

4.9.3. State Building Code

Section 3407 and 3409 of the Connecticut State Building Code refers to historic buildings.

Section 3407.1: Historic Buildings. The provisions of this code relating to the construction, repair, alteration, addition, restoration and movement of structures, and change of occupancy shall not be mandatory for historic buildings where such buildings are judged by the building official to not constitute a distinct life safety hazard.

Section 3409.8: Historic Buildings. These provisions shall apply to buildings and facilities designated as historic structures that undergo alterations or a change of occupancy, unless technically infeasible. Where compliance with the requirements for accessible routes, ramps, entrances, or toilet facilities would threaten or destroy the historic significance of the building or facility, as determined by the authority having jurisdiction, the alternative requirements of Sections 3409.8.1 through 3409.8.5 for that element shall be permitted.

Section 3409.8.1: Site arrival points. At least one accessible route from a site arrival point to an accessible entrance shall be provided.

Section 3409.8.2: Multilevel buildings and facilities. An accessible route from an accessible entrance to public spaces on the level of the accessible entrance shall be provided.

Section 3409.8.3: Entrances. At least one main entrance shall be accessible.

Section 3409.8.4: Toilet and bathing facilities. Where toilet rooms are provided, at least one accessible toilet room... shall be provided.

Section 3409.8.5: Ramps. The slope of a ramp run of 24 inches maximum shall not be steeper than one unit vertical in eight units horizontal.

As discussed previously, the current building is compliant based on the historic regulations above by providing an accessible route to each accessible entrance both on the exterior and interior. Each main area has one accessible entrance.

The above regulations, in particular Section 3407.1, are reinforced in Chapter 541, Section 29-259 of the General Statutes of Connecticut.

4.9.4. Historical Summary

Some general thoughts and considerations are given below based on a review of the historical regulations.

- Significant modifications should be avoided to the main Union Station, in particular the exterior appearance and the Great Hall.
- If the opportunity arises, it would be desirable to increase accessible access between the Great Hall and Ground Transportation Center lobby particularly as commuter rail service is implemented. This may be

accomplished within the Ground Transportation Center footprint to minimize impacts to the Union Station and Great Hall.

- Any planned improvements should be discussed at the conceptual level with the CT Trust to confirm that they would be acceptable.

4.10 Summary of Operational Analysis

Union Station has the capacity to handle increased flows of passengers, but some re-arrangement and updating of the facility would enhance the passenger experience and make operations easier. This assessment found that:

- Intercity bus bays could be reduced from the 15 currently available. More room to allow angled parking would be desirable.
- Additional space for short-term parking and taxi waiting would be desirable.
- Updating and modernization of the Ground Transportation Center could make that area more attractive. Functions could be rearranged to provide more space for customers and tenants.
- The Great Hall could be better utilized—and might be a pleasant waiting area for passengers if connected with electronic boards providing current schedule information.
- Facilities should be updated to meet ADA requirements during a renovation. This would include providing better signage to show accessible paths of travel and improving the accessible path between the Ground Transportation Center and the Great Hall.
- It would be desirable to make the second floor tenant space accessible—and thus enable it to be leased.
- Care will need to be taken to insure that any renovation meets requirements for historical preservation.





5.0 ECONOMIC CONDITIONS FOR UNION STATION

5.1 Economic Background

Hartford, the capitol city of Connecticut, is located nearly midway between Boston and New York City. Once home to most of the nation's large insurance companies, the city has experienced a downward population trend beginning with the middle-class flight of the 1960s and ending with the insurance company consolidations in the 1990s; since 1950, Hartford's population decreased from approximately 177,000 to 125,000.

Union Station, a graceful brownstone in the center of downtown, was built in 1889, and as the transit hub for the area was the lifeblood of the city. But, by 1980, only a single train stopped at the station daily. In 1985, a group of investors arranged for \$17.3 million in financing to rehabilitate the Station and transform it into a transit hub incorporating retail and office space. One of the first successful rehabilitations of an historic train station, the train service quadrupled, and was soon supplemented by bus, taxi, and limousine service, as well as two restaurants.

Before the economic downturn in 2008, Hartford experienced a real estate construction boom, spurred on by a \$2 billion dollar investment from both the public and private sectors resulting in complexes such as Adriaen's Landing that incorporates the new 550,000 square foot Connecticut Convention Center; a \$77 million, 22 story, 409 room Marriott Hotel; and several luxury apartment and condominium developments downtown. A key goal of the city's redevelopment plan is to reconnect the downtown to the rest of the city and to the Waterfront, which are separated by Interstates 84 and 91.

5.2 Union Station Leasing

In addition to the rail facilities, the building has 40,067 square feet available for lease. Its tenant list includes transit service providers, workforce development, and service companies and restaurants. The "Great Hall" is available for rent for events, and seats up to 500 people. There is on-site parking available.

Overall building utilization was very good in the fall of 2007 with a few exceptions. The only tenant space not leased out was the inaccessible portion of the 2nd floor. With some reorganization of the Capital Workforce Partners lease, a corridor could be provided from the Great Hall / elevator area to allow for this space to be leased.

In addition, the original build-out for the Ground Transportation Center is obsolete based on the current functions. On the south side, a majority of the area is utilized; however operational efficiencies and some additional capacity could be found through restructuring the area. For example, the office for Dunkin Donuts is located distant from their vending and operational area. On the north side, which is primarily Amtrak with the exception of the recent lease to Subway, even more space can be potentially gained for another tenant or increased passenger area and amenities. Amtrak's area includes a significant amount of underutilized area; however it would require a restructuring of their lease and construction improvements to access the area.

5.3 Optimal Tenant Mix

A desirable tenant is one that meets project objectives, generates reasonable lease income, and pays rent on time. A good tenant *mix*, however, is a collection of tenants that together, maximize the center's aggregate sales and thus have the ability to pay higher rents.

Leasing for transit centers within urban areas are analogous to leasing for urban shopping centers in that there is a collection of goods and services that serve varying market sectors: area residents, businesses, visitors, with a



specialized focus on transit users. The center's overall investment potential is critical to a successful leasing plan, which should incorporate⁷:

- Macroeconomic overview;
- Market segment definition and analysis;
- Strengths and weaknesses of the subject property;
- Characteristics of transit riders utilization
- Competitive outlook;
- Tenant mix strategy;
- Site issues and expansion potential;
- Space-by-space analysis; and
- Overall goals and strategy

The most desirable tenant mix for Union Station is determined by a variety of factors, including⁸:

- Needs of transit users
- Revenue requirements of transit operators
- Compatibility of overall transit generated demand with sub area generalized tenants and use
- Transit user services in the urban context, including residential and employment walkshed and the competitive environment
- The development concept;
- Internal constraints (size and type of center);
- External factors (competition in the area, target market and demographics, and consumer trends); and
- The ability of management to attract and negotiate with desired prospective tenants.

Imagine, for example, Store A, which sells women's clothing, and is patronized by women. Then suppose next door someone opens White Tablecloth Restaurant. Based on the patrons of Store A, the Restaurant will likely not do much business, as women generally don't eat alone at restaurants. However, then imagine that next to Store A, an electronics store, Store B, opens, which pays a slightly lower rent than Store A. Now, the husband or boyfriend of the Store A patron has a reason to shop at this location as well, and both will eat at the restaurant after a long day shopping. Together, Store A, Store B, and Restaurant do more business as a whole, rather than the sum of each store as separate entities. This is the rationale behind comparable and complementary retail uses, and the empirically proven law of "Retail Compatibility." In Union Station, planning for "Retail Compatibility" must also take into account the likely demand of transit riders (e.g., readily accessible food, convenience items, dry cleaners, etc.) and the adjacent pedestrian flow from the residential and employers in the area.

⁷ Peiser, Richard B. and Anne B. Frej. *Professional Real Estate Development: The ULI Guide to the Business*, 2nd ed. Washington, DC: ULI-the Urban Land Institute, 2005. p. 337.

⁸ Ibid.

5.4 Development Concept

Every retail center needs an identity. Transit facilities in urban areas have the *potential* to serve multiple markets—the transit riders, and the residents/employees in the vicinity. At present, in terms of size, Union Station is best represented as a neighborhood center, which ranges from 30,000 to 100,000 square feet and built around convenience services. Union Station, with relatively limited ridership, could serve not only the transit riders and other station tenants, but a segment of the area walkshed, as well.⁹ In order to become a more effective retail center that services the surrounding residential and businesses, Union Station should be identified as a neighborhood center, and the leasing program should be designed to meet the needs of the community.

5.5 Market Factors (External)

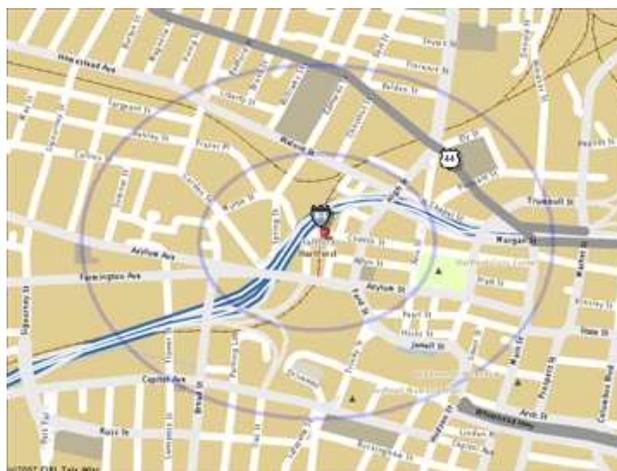
An understanding of the demographics and target market(s) in the geographical area is essential to a successful tenant mix. Generally, there are three markets associated with center-city intermodal transit centers:

Primary— The primary market for Union Station consists of the commuters who travel through the station on a daily basis, and the service firms and their clients who lease space in the station.

Secondary—The secondary market is defined as the residents and employers located with a ¼ to ½ mile (walking) radius (see Figure 5-1). Walking customers are limited by distance and geographical barriers (in this case, the two highways that pass by Union Station to the west and south, and the presence (or not) of adequate sidewalks, as well as the location of competitive facilities.

Tertiary— The tertiary market is the people who come to Downtown Hartford as tourists or conventioners. The ability of Union Station to capture this population as a market depends upon the attractiveness as a station and its vision and development as a destination.

Figure 5-1: Walksheds of ¼ and ½ Mile around Union Station



Since transit users spend minimal time in the station (particularly bus users), there is a limited opportunity to capture retail spending from this sector. Therefore, many other transit stations have branched out and supplemented their

⁹ *Dollars & Cents of Shopping Centers/The SCORE*. Washington, DC: ULI-the Urban Land Institute and the International Council of Shopping Centers, 2006. p. 5.



primary market with those residents and employers within a walkshed (e.g., Union Station in Washington, DC and Grand Central Station in New York City).

An optimized tenant mix depends heavily on understanding the above markets. Some questions to consider are:

- How many people pass through Union Station daily? On the weekends?
- How many employees and customers are served by the service companies?
- What sort of goods or services would the above groups prefer, and would they pay (and how much) to use them? Dry-cleaning? Gym? Concierge to make hotel and restaurant reservations? A tax preparation service?
- What are the employment and residential characteristics of the secondary market area?
- What are the expenditures and competitive retail opportunities in the secondary market?
- What is the level of tourism activity in the area, and is Union Station positioned to meet this demand?
- Can the Station capitalize on the shuttle that connects the station to the waterfront and convention center to attract additional visitors?
- What goods or services does the primary and secondary market demand or prefer? Is there a shortage of necessities?

Prior work by BBPC¹⁰ for an intermodal transit center in Massachusetts found that commuters primarily patronize the following services associated with the station: Dry cleaner

- Fast foods
- Convenience goods (candy, newspapers, soft drinks, etc.)
- Car maintenance shop
- Postal office
- Gym
- Masseuse/Beauty Parlor/Barber Shop
- A table-cloth restaurant
- Concierge service—maps, taxi stand, Downtown events, etc.
- Drugstore
- Pet/day/elder care
- Grocery store
- Business center

There have been requests by customers of Union Station for a car rental facility. If there is an increase in residential development within walking distance of the station, there may be sufficient demand (together with future tourist or business travelers arriving at the station) to justify a car rental facility.

¹⁰ BBPC is Basille Baumann Prost Cole and Associates, the author of Chapter 5.

In short, the majority of commuters would welcome services that would make their commutes easier, either by attending to the necessities of life, or by dropping off services that could be attended to while at work. It may also be worthwhile to consider bringing complimentary wi-fi to Union Station.

5.6 Secondary/Tertiary Market Factors

Other external factors include the overall real estate market in the area which was healthy prior to the economic recession starting in 2008. These include the resurgence of residential occupancy in the downtown, as well as the recent \$2 billion investment in convention and tourism infrastructure along Adriaen's Landing. Within the last few years, Hartford has added over 1,600 hotel rooms, 1,200 housing units, a 140,000 square foot Connecticut Science Center and 550,000 square foot convention center, and over 1 million square feet of office and retail space. All these factors could contribute to additional development opportunities when the economy recovers from the recession that began in 2008.

Walksheds can be defined as a ¼ to ½ mile radius around the site (see Figure 5-1). Within this area are the following as shown in Table 5-1.

Table 5-1: Demographics within Walksheds

	2007	
	1/4 mile	1/2 mile
Population	625	3,509
Households	479	1,453
Median Age	35	32
HH Earning > \$35,000	304	589
Median HH Income	\$42,095	\$42,095
Total Businesses	121	1,049
Total Employees	5,745	31,159

Source: ESRI Business Systems, 2007

5.7 Internal Constraints

Union Station is hindered by the physical layout of the building, and the lack of access/egress from the far ends of the building. As discussed previously, there is a portion of unleased space on the second floor of the building with no accessible access. This space could be rented to any one of the tenants that surround it. A decision to make the space more accessible could be made after considering the gross rent lost by not renting out the space, the amount of money needed to construct access/egress for a new tenant, and the advantage of leasing the space to one of the surrounding tenants after fit-out modifications.

In the case of Union Station, the second and third floor wings would probably not be ideal for a business that depends upon commuters, but perfect for service firms. One possibility would be to relocate a portion of the GHTD to the vacant space on the second floor to make more space available for commuter-reliant goods and services on the first floor (such as a concierge).

The space that overlooks the Great Hall might be ideal for a tablecloth restaurant, to capitalize on the views. In addition, the Great Hall would benefit from finding businesses or other means to attract rail or bus passengers to the area.

5.8 Tenants and Leasing

The leases in Union Station were compared to industry averages for local conditions on a macro level to account for the fact that in many ways, the tenants compete with the other retail establishments located on the fringe of downtown. The average rent in Union Station is \$24.60 per square foot,¹¹ which compares favorably to U.S. Neighborhood Shopping Centers in the East's average and mean, which is \$12.04 and \$11.19, respectively. Average commercial lease rates for the fringe area of Downtown Hartford are \$20.09 per square foot.¹² Based on this analysis, Union Station is doing a good job with its leasing program.

On a national level, the transit and system related retail lease rates range from \$9 to \$264 per square foot¹³. The highest lease rates occur from the businesses located right at the platform (such as a newspaper and coffee stand). Rates at the higher end are dependent on high levels of demand, and are not currently relevant for Union Station with its limited rail service. Higher rates can be expected with the planned commuter rail improvements, however.

Based on a review of tenants in other transit stations (Grand Central in New York City, 30th Street Station in Philadelphia, Union Station in Denver and Washington, DC), there is a precedence of "standard" services offered, predominately dry cleaners, coffee stands, and gift shops. Dunkin Donuts is now part of Union Station, providing the coffee stand. There may be opportunity for a dry cleaners and gift shop particularly after the start of commuter rail service.

Based on experience elsewhere, a gift shop using a seasonally-operated kiosk could have high sales and support higher occupancy costs. The diminutive size of the kiosk allows the operators to respond to micro-economic demands, such as candy and flowers in February, wedding and graduation cards in June, gift cards in December, and so forth.

Other suggestions for improving the leases at Union Station include:

- In addition to currently required insurance, the intercity bus companies should provide a supplement for maintenance costs as incurred by the movement of their vehicles.
- Leases could require the payment of a percentage of transactions. This is the case at other rail stations in the state of Connecticut which are owned by the State. The Bank of America ATM is currently the only tenant that pays a percentage of their transactions (performance rent).
- Leases should allow for rate increases in a timely manner. For example, the 10 year lease of Union Station News & Gift prevents Union Station from capitalizing on higher rents as the market improves.

5.9 Revenues

5.9.1 Rents

The amount of rent for a given space depends on the tenant's size, classification, location in the project, and the structure of the development's cost recovery (CAM). In addition to fixed rents, many retailers employ a form of percentage leases, where the tenant agrees to pay a specified minimum rent plus a percentage of gross sales over a certain amount.

¹¹ The average rent and vacancy rate for Union Station is estimated from the leases provided by GHTD which covered most, but not all tenants. No lease was provided for Hot Tomatoes or for the space leased by The New Connecticut Limo.

¹² 2006 CB Richard Ellis

¹³ 2004. Transit Retail Concessions. Parsons Corporation: Atlanta, GA.



Percentage leases balance the tenants' and landlord's interests. This permits the landlord to offer low base rents to tenants in order to give them sufficient time to build their customer base and sales revenue. Tenants are benefited by the knowledge that the landlord has an added incentive to market the center to generate sales, as well as provide maintenance, management, and security to keep the center fully leased, operating, and attractive to customers.

Percentage leases, however, are not always possible. National chains do not always negotiate lease terms, and small businesses do not always fully report sales. The landlord needs to determine whether percentage rates will be acceptable to tenants and whether they will be a useful tool in negotiating lease terms. Nevertheless, percentage leases can be quite powerful if used appropriately, particularly in the case in acquiring first-time tenants who provide a needed special character, such as would be found in a train station or marketplace¹⁴.

In addition, the primary market—the commuter transit riders—is greatly affected by “lightening rods.” Lightening rods are outside, unplanned and unanticipated events that can dramatically affect the volume of ridership, such as the addition of a new rail line. In Maryland, for example, when MARC (Maryland Rail Commuter) doubled the number of cars from Baltimore to Washington, DC a few years ago, ridership also doubled nearly instantaneously. In order for stations to benefit from the increase in ridership, they need to be able to capture a proportionate share of increased business generated by the tenants.

A standard benchmark for rents is the Dollars and Cents of Shopping Centers, published by the Urban Land Institute, was used as a comparison source, as no such studies exist for transit centers. For U.S. Neighborhood Shopping Centers, performance rents range from 2% and 7% for food services, while dollar/novelty stores average 3%¹⁵.

5.9.2. Other Revenue

Opportunities for additional revenue streams include:

- Advertising revenue (billboards, etc.);
- Corporate sponsorship/naming rights;
- External lease income (such as a hot dog vendor outside the station); and
- FTA Grants—The FTA has several grant programs available to modernize transit systems, make capital improvements, or offset operating expenses. Sections 5307 and 5309 make funds available for preventive maintenance, security, and operational support.¹⁶

5.10 **Expenses**

Controlling, or managing, the expenses associate with operating the station is critical to its economic viability. In addition to being responsible for the overall condition of the building, GHTD needs to hire staff and security personnel; pay for janitorial supplies, tools, and equipment; the maintenance of the outdoor parking, asphalt, and loading docks; a reserve fund; and care of the common areas, also known as CAM (common area maintenance). Some landlords break the CAM out separately and charge it to the tenant as additional rent, while others include the

¹⁴ Peiser, Richard B. and Anne B. Frej. *Professional Real Estate Development: The ULI Guide to the Business*, 2nd ed. Washington, DC: ULI-the Urban Land Institute, 2005. p. 341-343.

¹⁵ Peiser, Richard B. and Anne B. Frej. *Professional Real Estate Development: The ULI Guide to the Business*, 2nd ed. Washington, DC: ULI-the Urban Land Institute, 2005. p. 256-261.

¹⁶ See <http://www.fta.dot.gov/funding/grants>. Note that Joint development opportunities with the FTA are available to develop additional land or air rights; but are not used for tenant fit-outs or improvements. For example, the City of McAllen in Texas currently receives reimbursement of up to 50 percent of the cost of operating and maintaining the McAllen Central Station terminal, as long as Section 5307 formula funds are available.



charges in the base rent. Whichever method Union Station elects to use, GHTD should have a clear understanding of the actual costs in order to determine whether or not the tenants are paying their fair share (percentage of square footage occupied multiplied by the local share capital cost.)

Because maintenance of the outdoor areas can be high as transit represents considerable wear and tear on the pavement, GHTD may want to consider charging tenants a percentage of their sales as additional rent to pay for increased maintenance associated with additional car/truck/bus movement on the facilities. GHTD will have to balance the pros and cons of having the transit companies alone pay additional rent, as they are the primary cause of maintenance, or having it distributed among all the tenants who benefit from transit ridership.

5.11 Summary Economic Conditions for Union Station

Real estate development and urban revitalization provides opportunities for all residents and businesses in an area. More residential and retail options, additional employment, and the movement of real estate prices to state averages are all positive effects of the recent \$2 billion investment in Downtown Hartford. While the current downturn has slowed real estate investment in Hartford, it is hoped that progress will resume in the near future.

In order to capture a portion the overall improvement of Downtown Hartford, Union Station should have a rental structure that provides the opportunity to collect additional monies as transit ridership increases. A form of performance-base rent, such as the Bank of America ATM pays, would permit Union Station to share in the Downtown's success. (Bank of America pays both a base rent plus a percentage of transactions; hence, the more people who use their services, the more rent they pay.) In addition, the establishment of a maintenance fund for all the transportation tenants would offset the cost of capital improvements or wear-and-tear on the surface docking stations, without burdening the retail tenants the maintenance costs that they didn't incur.

6.0 CIRCULATION CONDITIONS NEAR UNION STATION

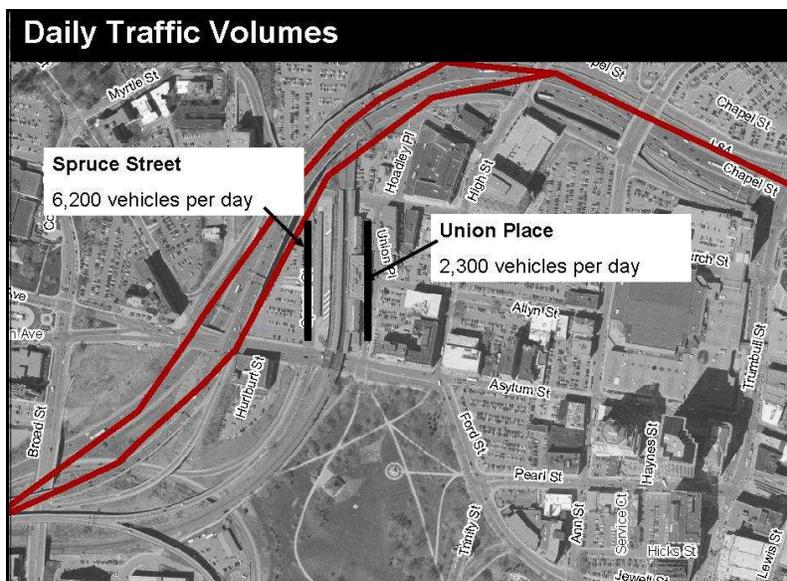
This chapter presents information about traffic conditions at and around Union Station. It summarizes findings from traffic counts and analysis of that data.

6.1 Traffic Conditions

6.1.1. Traffic Counts

Automated traffic recorder (ATR) and turning movement count data were collected during the period from Tuesday, September 18th through Thursday, September 20th 2007 to better understand current traffic flow and operations within the area surrounding Union Station.

Figure 6-1: Daily Traffic Volumes, September 2007



Source: Fitzgerald & Halliday, Inc.

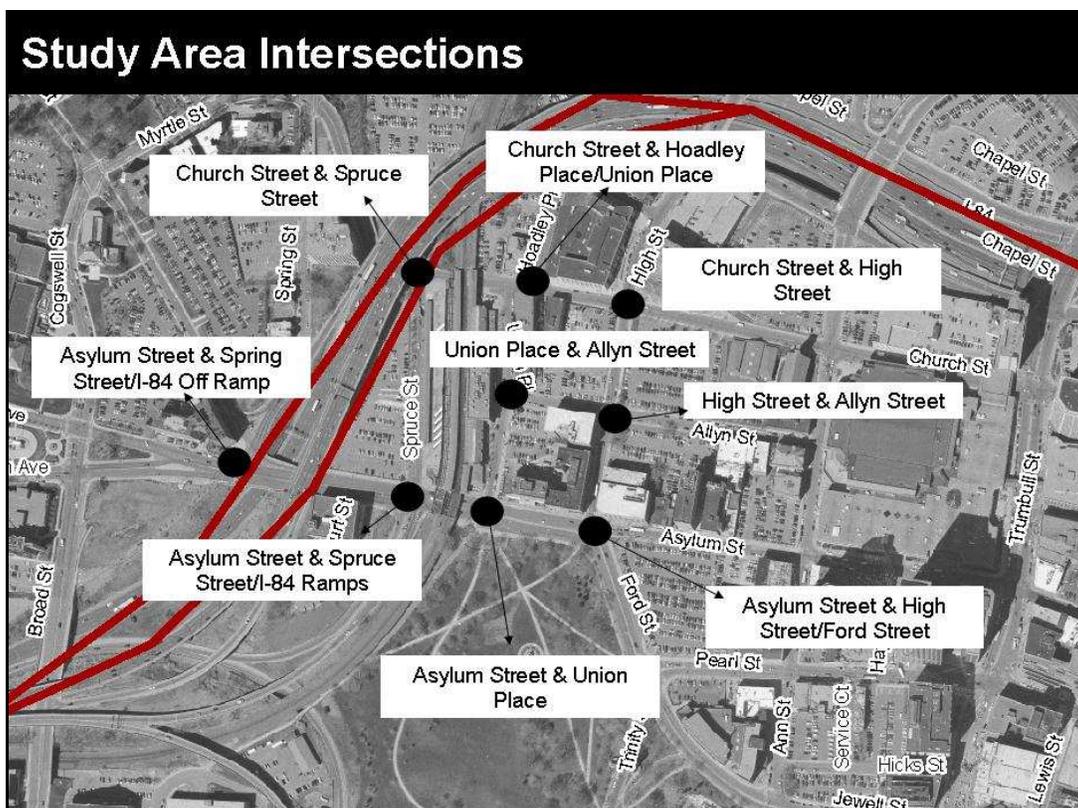
The ATR count data were collected at the following two locations; results, as shown in Figure 6-1, indicate the following:

- **Spruce Street** (north of Asylum Street): 6,200 vehicles per day (vpd)
- **Union Place** (south of Allyn Street): 2,300 vpd

Turning movement count data were collected for the weekday morning (7:00 AM - 9:00 AM), mid day (11:00 AM - 1:00 PM), and afternoon (4:00 PM - 6:00 PM) peak travel periods at nine (9) study area intersections listed below, also shown in Figure 6-2.

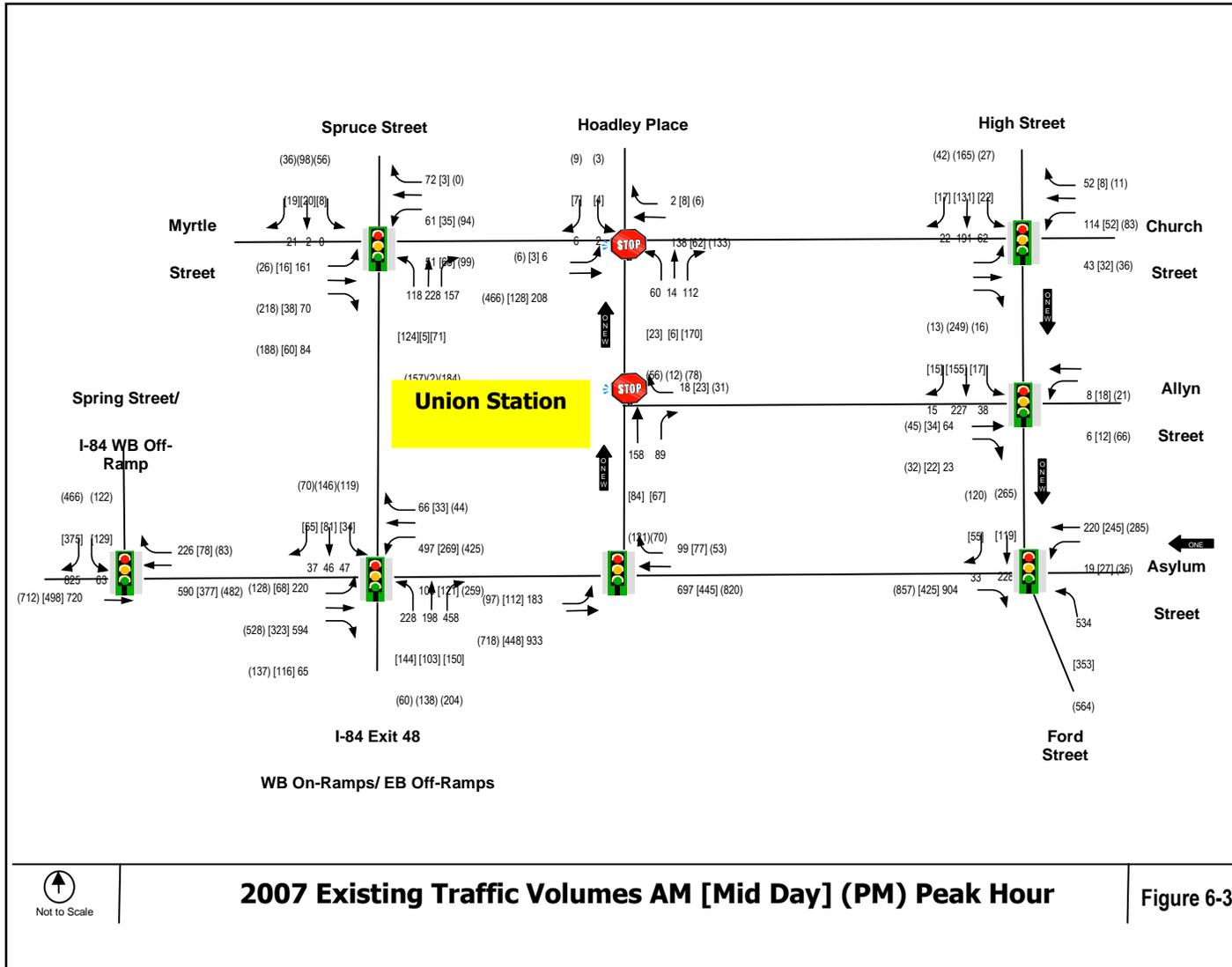
- Asylum Street & Spring Street (signalized)
- Asylum Street & Spruce Street (signalized)
- Asylum Street & Union Place (signalized)
- Asylum Street & High Street (signalized)
- Church Street/Myrtle Street & Spruce Street (signalized)
- Church Street & High Street (signalized)
- Allyn Street & High Street (signalized)
- Allyn Street & Union Place (stop-controlled)
- Church Street & Union Place/Hoadley Place (stop-controlled)

Figure 6-2: Study Area Intersections



Source: Fitzgerald & Halliday, Inc.

Peak hour traffic volumes are provided in Figure 6-3 and illustrate that Asylum Street carries the highest traffic volumes in the study area ranging from 1,000 to 2,000 vehicles per hour. Asylum Street is one of the City's major east-west principal arterials and it interconnects with Interstate 84 (I-84). It is a major thoroughfare that merges with another principal arterial, Farmington Avenue, just west of the I-84 interchange, such that traffic from both arterials is combined by the time Asylum Street reaches Union Station. The lowest traffic volumes are on Union Place which carries approximately 200 vehicles per hour.



6.1.2. Level-of-Service Analysis

A level-of-service (LOS) analysis was conducted for all of the intersections using procedures presented in the Highway Capacity Manual 2000, Transportation Research Board. Synchro 6.0, a computer-based intersection operations model, which implements these procedures, was used to perform the analyses. LOS is a qualitative measure of intersection operational quality and takes into effect a number of factors such as intersection geometry, travel speed, travel delay, freedom to maneuver, and safety. Six levels of service are defined with letter designations from A to F with LOS A representing the best operating conditions and LOS F representing the worst. LOS C describes a condition of stable traffic flow and is generally considered the minimum desirable level for peak traffic flow in rural and suburban areas. LOS D, with greater vehicle queues and delay, is generally considered acceptable for urban areas because of the increasing cost and difficulty in making improvements necessary to provide LOS C in areas with dense development. In other words, LOS D is considered an acceptable fact of life in an urban situation.

Level-of-service designation is reported differently for signalized and unsignalized intersections. For signalized intersections, LOS is defined in terms of delay, which is a measure of driver discomfort and frustration, fuel consumption, and lost travel time. Specifically, LOS criteria are stated in terms of average stopped delay per vehicle for the peak 15-minute period of the peak hour for the entire intersection and by approach. For unsignalized intersections, the analysis assumes that the traffic on the mainline is not affected by traffic on the side street. The LOS for each movement is calculated by determining the number of gaps that are available in the conflicting traffic stream. Based on the number of gaps, the capacity of the movement can be calculated. The demand of the movement is then compared to the capacity and utilized to determine the average delay for the movement. For unsignalized intersections, LOS by approach is determined, but an overall intersection LOS is not determined.

Signal timing plans were obtained from the City of Hartford and were used to evaluate traffic operations. Field observations of traffic flow and results from the level-of-service analysis, as shown in Table 6-1, indicate the following:

- All study area intersections operate with an acceptable overall intersection LOS C or better during the weekday AM, mid day, and PM peak periods.
- Two critical movements operate at a failing LOS (LOS E or F). These movements are:
 - Asylum Street & Spruce Street: The southbound (Spruce Street) left-turn movement operates at LOS E during the PM peak hour.
 - Allyn Street & High Street: The westbound (Allyn Street) left-through movement operates at LOS E during the PM peak hour.
- Queue spillback (stacking of cars) is anticipated to exceed beyond the available storage at only one location within the study area. The southbound (Spring Street) right-turn movement at the intersection of Asylum Street and Spring Street will exceed the available storage by five vehicles during the AM peak hour.
- Traffic operations will slightly decline from what is indicated in Table 6-1 if an exclusive pedestrian phase is activated. (NOTE: *All of the signalized intersections except for the intersection of Asylum Street with High Street/Ford Street have exclusive pedestrian phases. For an intersection with high pedestrian activity, it is anticipated that an exclusive pedestrian phase will not be called more than 23 times per hour (1 pedestrian call every other cycle). Standard methodology evaluates pedestrian activity at intersections where there is*



consistent heavy activity of pedestrians. While we recognize that the City of Hartford has a vibrant activity of pedestrians, it is not enough to trigger significant effects to the overall intersection LOS.)¹⁷

6.1.3. Conclusions from Circulation Analysis

In general, the traffic flow in the study area is good. There is capacity in the network to accommodate economic growth. Field observations confirm the findings from the analysis. Generally speaking, traffic flow in the vicinity of Union Station is good, with the few exceptions noted in the analysis. The one-way patterns help reduce traffic conflicts and the coordinated signal system benefits the progression of traffic.

¹⁷ Note that the City of Hartford might also consider the use of concurrent walk signals to eliminate some traffic as well as pedestrian delay, in keeping with current practice in major cities such as New York City, Chicago, and most other cities around the country. Concurrent signals allow both traffic and pedestrians to advance on green, and turning vehicles must give the right of way to pedestrians in the crosswalk. Such signals reduce pedestrian delays at intersections but pedestrians have to be alert to vehicles which can be turning through the crosswalk.



Table 6-1: Level-of-Service Summary Existing Conditions (2007)

			AM Peak Hour		Mid day Peak Hour		PM Peak Hour	
			Delay	LOS	Delay	LOS	Delay	LOS
<i>Signalized Intersections</i>								
Asylum Street & Spring Street								
	Eastbound	Thru	11.9	B	5.3	A	5.9	A
	Westbound	Thru	8.6	A	1.6	A	4.7	A
	Westbound	Right	2.6	A	0.1	A	2.2	A
	Southbound	Left	31.3	C	28.0	C	35.0	D
	Southbound	Right	27.0	C	6.7	A	15.3	B
	Intersection		16.6	B	8.2	A	11.6	B
Asylum Street & Spruce Street								
	Eastbound	Left	30.2	C	17.4	B	27.0	C
	Eastbound	Thru-right	13.8	B	14.4	B	19.6	B
	Westbound	Left-thru-right	5.5	A	8.7	A	20.5	C
	Northbound	Left	53.5	D	48.8	D	46.6	D
	Northbound	Thru-right	32.9	C	30.3	C	41.4	D
	Northbound	Righth	8.3	A	8.1	A	7.6	A
	Southbound	Left	28.3	C	27.5	C	57.1	E
	Southbound	Thru-right	16.4	B	23.5	C	48.7	D
	Intersection		17.4	B	17.8	B	26.0	C
Asylum Street & Union Place								
	Eastbound	Thru-left	0.7	A	0.3	A	0.5	A
	Westbound	Thru-right	1.1	A	15.2	B	14.8	B
	Intersection		0.9	A	7.5	A	7.9	A
Asylum Street & High Street								
	Eastbound	Right	0.6	A	0.1	A	1.4	A
	Westbound	Left	35.4	D	33.2	C	39.1	D
	Westbound	Thru	43.1	D	40.7	D	48.7	D
	Northbound	Left	9.3	A	6.7	A	10.7	B
	Southbound	Thru-right	28.2	C	32.5	D	41.6	D
	Intersection		11.9	B	15.8	B	18.1	B
Church Street/Myrtle Street & Spruce Street								
	Eastbound	Left-thru-right	10.7	B	2.5	A	7.2	A
	Westbound	Left-thru-right	7.1	A	4.2	A	7.4	A
	Northbound	Thru-left	35.2	D	30.9	C	46.4	D
	Northbound	Right	4.5	A	6.7	A	6.1	A
	Southbound	Left-thru-right	7.8	A	13.4	B	30.4	C
	Intersection		17.3	B	12.5	B	16.3	B



Table 6-1: Level-of-Service Summary (continued)

		AM Peak Hour		Mid day Peak Hour		PM Peak Hour		
		Delay	LOS	Delay	LOS	Delay	LOS	
<i>Signalized Intersections</i>								
Church Street & High Street								
	Eastbound	Left-thru	41.8	D	29.5	C	48.3	D
	Westbound	Left-thru	17.8	B	20.7	C	19.2	B
	Southbound	Left-thru-right	7.6	A	6.1	A	10.0	B
	Intersection		23.5	C	19.7	B	34.3	C
Allyn Street & High Street								
	Eastbound	Thru-right	28.6	C	19.4	B	24.4	C
	Westbound	Left-thru	36.7	D	37.3	D	59.6	E
	Southbound	Thru	4.5	A	1.0	A	1.4	A
	Intersection		11.2	B	8.8	A	16.9	B
<i>Stop-Controlled Intersections</i>								
Church Street & Union Place/Hoadley Place								
	Eastbound	Thru-left	0.3	A	0.2	A	0.1	A
	Northbound	Left-thru-right	12.4	B	10.5	B	17.4	C
	Southbound	Left-thru-right	14.4	B	13.3	B	18.8	C
Allyn Street & Union Place								
	Westbound	Right	9.5	A	9.0	A	9.3	A

Source: Fitzgerald & Halliday, Inc.

Highlighted Text: Unacceptable LOS (LOS E or F)

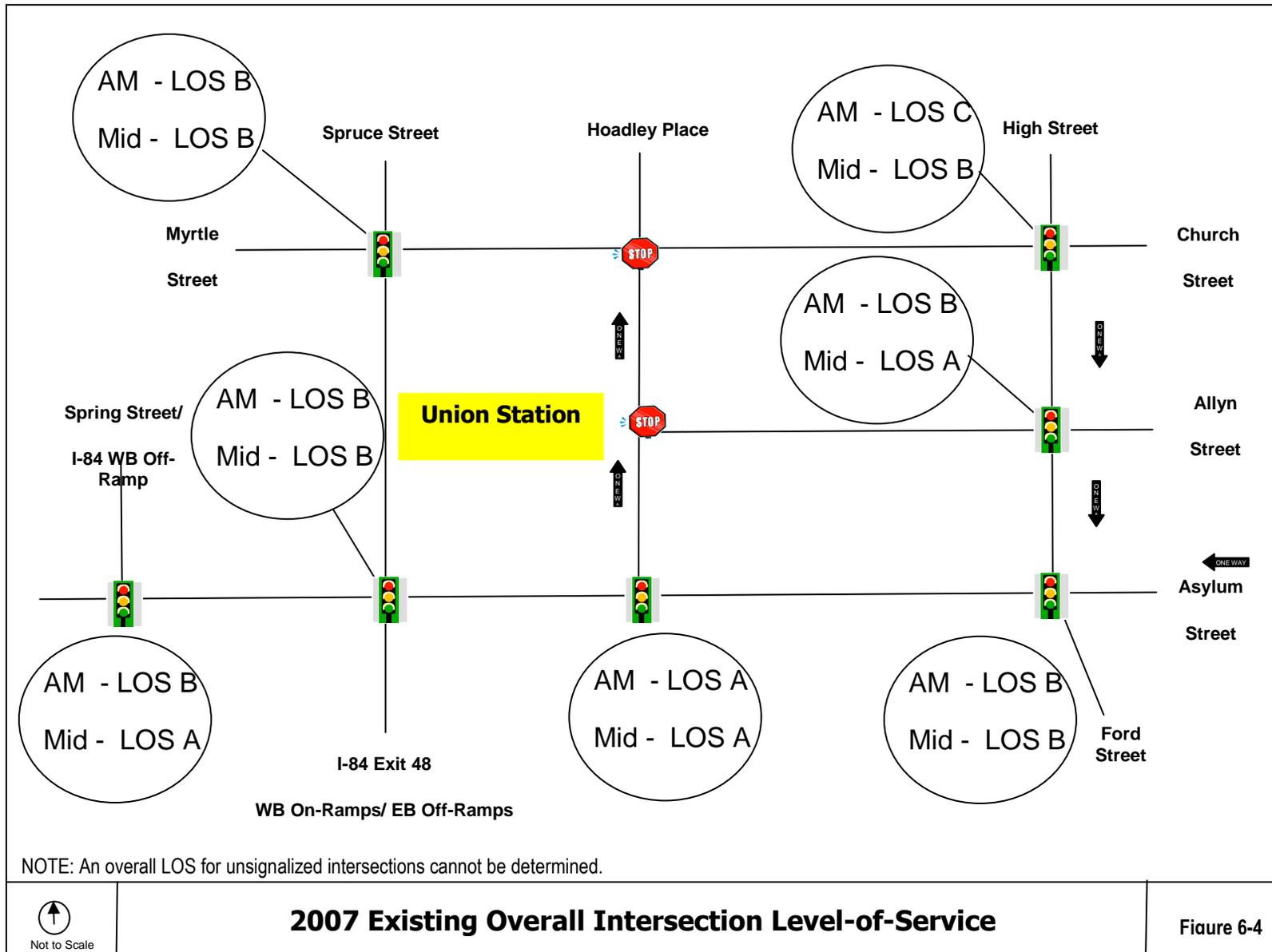


Figure 6-4

6.2 Pedestrian Assessment

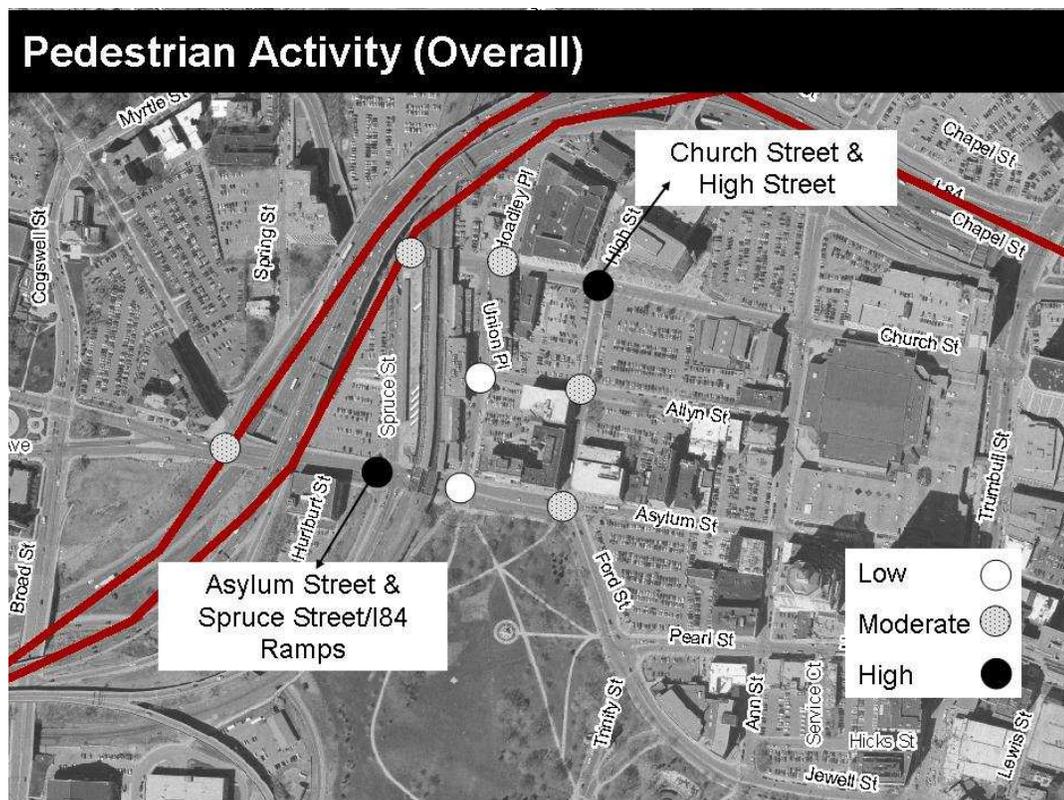
Pedestrian activity was observed and counts were also collected at the study area intersections during the weekday morning (7:00 AM - 9:00 AM), mid day (11:00 AM – 1:00 PM), and afternoon (4:00 PM – 6:00 PM) peak travel periods in September 2007. Results, as shown in Table 6-2, indicate the following:

- Pedestrian activity was observed to be generally moderate to high at intersections adjacent to parking facilities in the Downtown area, as shown in Figure 6-5.
- The intersection of Asylum Street with Spruce Street generates moderate pedestrian activity during the mid day peak hour as it provides connectivity to Bushnell Park.

The highest observed pedestrian activity occurred at the intersection of Asylum Street with High Street during the AM peak hour, at the intersection of Asylum Street with Spruce Street during the mid day peak hour, and at the intersection of Asylum Street and Spring Street during the PM peak hour, as shown in Figure 6-6.

The lowest pedestrian activity occurred at the intersection of Union Place with Allyn Street and Union Place with Asylum Street.

Figure 6-5: Pedestrian Activity (Overall)



Source: Fitzgerald & Halliday, Inc.

Figure 6-6: Pedestrian Activity (Highest Hourly)

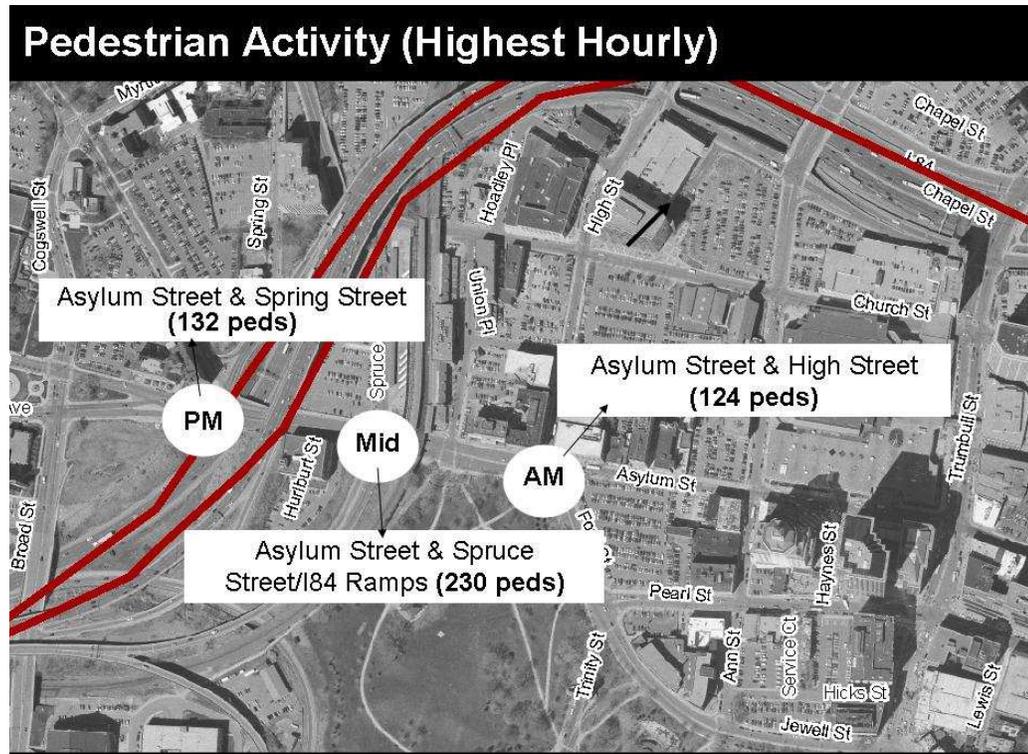


Table 6-2: Pedestrian Activity Summary Existing Conditions (2007)

	Number of Pedestrians		
	AM Peak Hour	Mid Day Peak Hour	PM Peak Hour
Asylum Street & Spring Street	71	29	132
Asylum Street & Spruce Street	103	230	101
Asylum Street & Union Place	0	12	17
Asylum Street & High Street	124	67	70
Church Street/Myrtle Street & Spruce Street	35	48	52
Church Street & High Street	105	177	122
Allyn Street & High Street	70	228	93
Allyn Street & Union Place	0	12	17
Church Street & Union Place/Hoadley Place	71	150	76

Source: Fitzgerald & Halliday, Inc.

7.0 PARKING CONDITIONS AT AND NEAR UNION STATION

A parking survey and analysis was carried out as part of the Union Station study. The purpose of this analysis was to assess the current parking capacity as well as the future parking needs near Union Station for the various development scenarios for a 10-year horizon. This chapter covers current parking conditions.

Figure 7-1 identifies all of the parking facilities within 1/3-mile radius of Union Station. To gain an understanding of the availability of parking spaces near Union Station under existing conditions, a survey was conducted at the eight parking facilities and on-street spaces listed below and also shown in Figure 7-1. These facilities were selected in coordination with the Capitol Regional Council of Governments and were selected for the survey because they are closest to Union Station and are parking facilities used by the general public, not by a particular employer, except for the North Transportation Lot.

- Spruce Street Lot (Transportation Lot, Union Station)
- North Transportation Lot
- Church Street and High Street
- Union Place and Allyn Street
- Saints Lot (corner of Church Street and Ann Street)
- Allyn Street
- Parkview Hilton (Asylum Street and Ford Street)
- Union Place South

As the figure shows, there are eight lots, with a total of 1,484 spaces and 137 on-street spaces that are most likely to be used by patrons of Union Station. Of these eight lots, all are privately owned and are available to the general public for parking with the exception of the North Transportation Lot which is used for private parking by employees of the Hartford Insurance Group.

The survey was conducted at each facility on either November 1st or 12th of 2007 between 9:00 a.m. and 11:00 a.m. to capture the weekday morning peak parking demand and from 2:00 p.m. and 4:00 p.m. to capture the weekday midday peak parking demand. The survey was also conducted on November 8, 2007 between 4:00 p.m. and 6:00 p.m. to capture the weekday afternoon peak parking demand. The survey and subsequent analysis was conducted with the following typically accepted parking assumptions:

- People prefer to walk no more than 500 feet from parking to their destination, but will walk up to 1,000 feet under ideal conditions. Those conditions include safe, comfortable sidewalks and paths with amenities such as trash cans, benches, and shelter from inclement weather. However, people may be encouraged to walk more than 1000 feet if parking is provided by their employer at no cost (this occurs in the project area, with employees of the Hartford Insurance Group walking more than 1000 feet from their paid parking location—however the Hartford employees have employer provided shuttles available).
- A parking facility is generally considered to be at capacity when it is 90% full (as some space use is lost to turnover activity, snow, obstructions, handicap spaces, special use parking, and poorly parked or oversized vehicles).

Results of the survey are shown in Table 7-1 and Figure 7-2. Field observations and the results from the survey in Table 7-1 indicate the following:

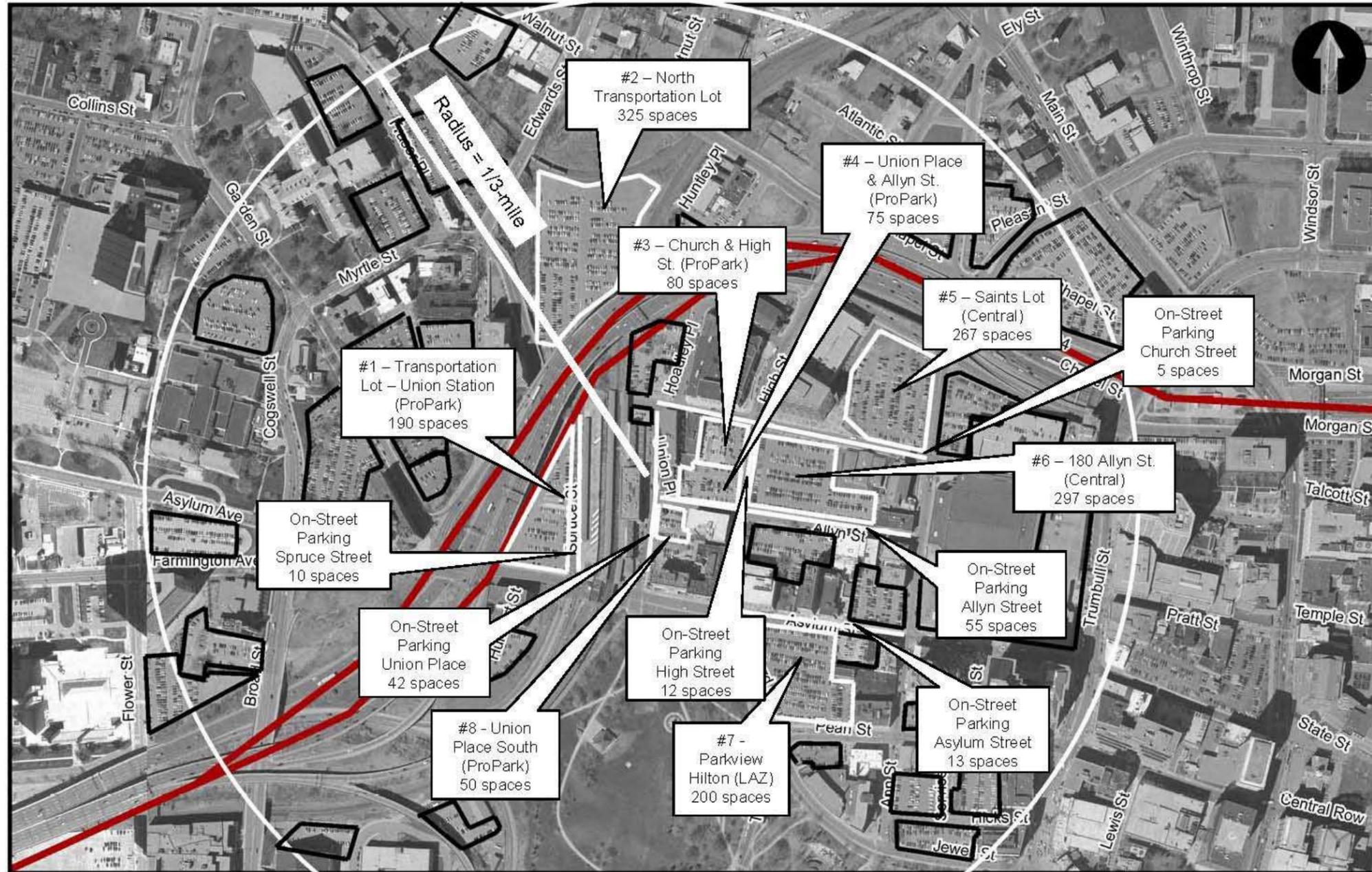
- In general, the parking facilities near Union Station are moderately utilized between 9:00 a.m. and 4:00 p.m. with approximately 72% utilization of the total facilities inventoried during the morning peak period and 71%



utilization during the mid day peak period. During the afternoon peak period from 4:00 p.m. to 6:00 p.m., the parking utilization reduces significantly to 50%.

- The most utilized facility during the morning and mid-day period is the North Transportation Lot. This facility is leased by The Hartford Insurance Group and used for its employees only.
- The Spruce Street Lot immediately adjacent to Union Station (indicated as Transportation Lot, Union Station in Figures 7-1 and 7-2) is the most underutilized surface lot during the morning and mid day peak periods. Note that at the time of the survey, the capacity of the lot was 190 spaces. Late in 2009 the lot was restriped to provide 215 spaces.
- On-street parking spaces are provided only on the east side of Spruce Street. However, it is noted that illegal parking and frequent kiss-n-ride drop-offs occur on the west side of Spruce Street. On-street spaces between Asylum Avenue and the pedestrian crossing are designated for the taxi cab services. The remaining on-street spaces are metered and available to the public for short-term parking.
- Asylum Street from Ann Street to Ford Street has the most utilized on-street parking spaces during the morning, mid day, and afternoon peak periods.
- Church Street from Union Place to Ann Street has the least utilized on-street spaces during the morning peak period; while High Street from Church Street to Allyn Street has the least utilized on-street spaces during the mid day peak period.
- Evening activity is significantly reduced from daytime levels in downtown Hartford during the week. Surface parking lots have a significant number of spaces available during the evening hours. However, patrons of the downtown restaurants and bars in the vicinity of Union Station typically utilize the on-street parking spaces during the weekday evening hours as well as during the weekend evenings. This is particularly noted on Union Place and Allyn Street, where the on-street spaces are heavily utilized in the evenings by patrons of the restaurants in the area.

Figure 7-1: Surveyed Parking Facilities Near Union Station



Surveyed Parking Lots and On-Street spaces within 1/3 mile of Union Station
 Other Parking facilities within 1/3 mile of Union Station

0 125 250 500 750 1,000 Feet

Figure 7-1
Surveyed Parking Facilities
Northwest Corridor
Transit Study
Hartford, CT

Figure created: July 2007 by Fitzgerald & Halliday Inc. - Original in color

Figure 7-2: Utilization of Parking Lots Near Union Station

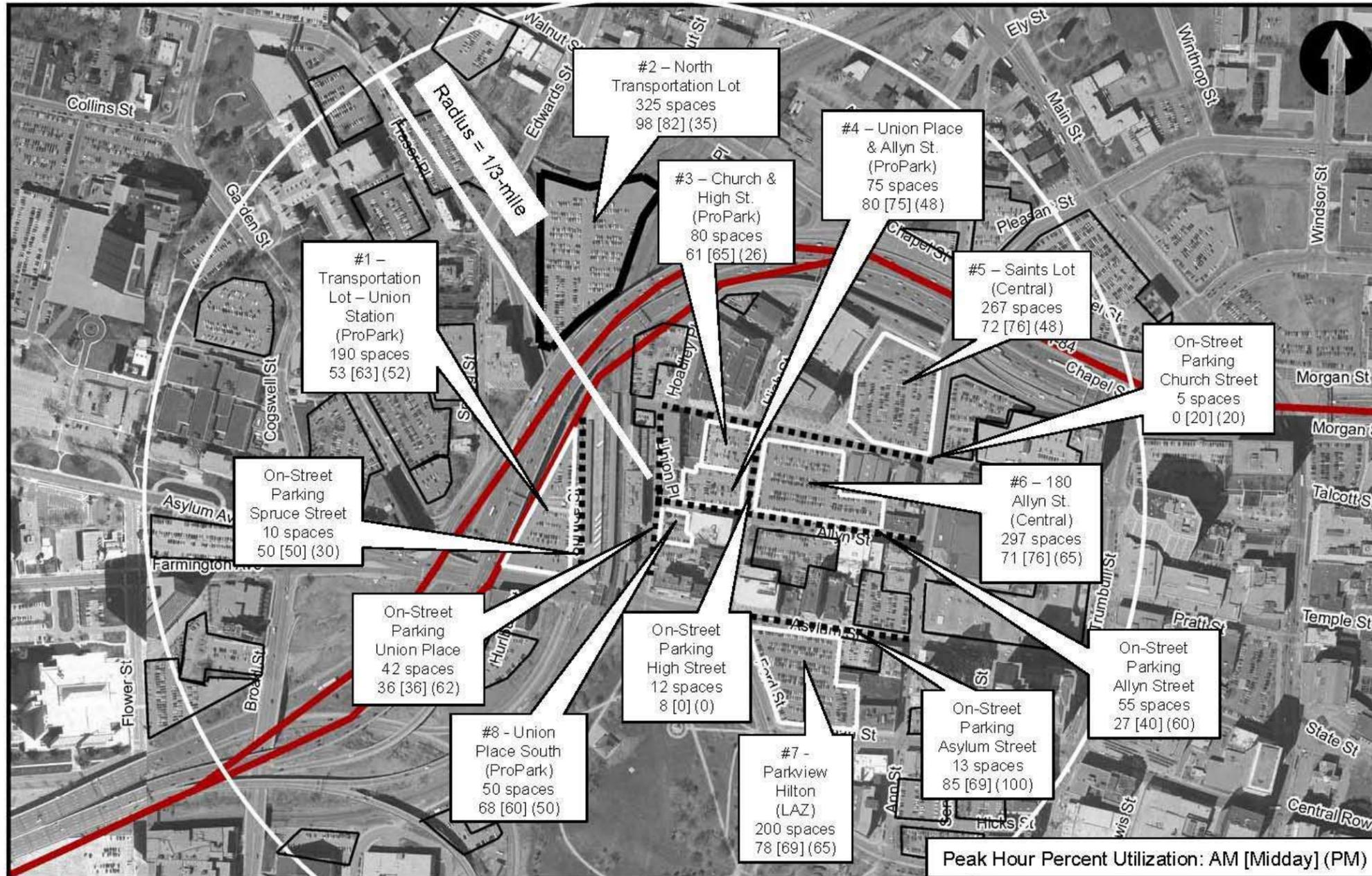


Figure 7-2
Parking Facility Study Area
Northwest Corridor
Transit Study
Hartford, CT

Legend:
 - Privately Owned: General public parking
 - Privately Owned: Private parking
 - Surveyed On-Street Parking
 - Other Parking Areas within 1/3-mile of station

Scale: 0 125 250 500 750 1,000 Feet

Figure created: July 2007 by Fitzgerald & Halliday, Inc. Original in color.



Table 7-1: Observed Parking Occupancy

Parking Location	Total Spaces	AM Peak Hour		Mid Day Peak Hour		PM Peak Hour	
		Spaces Occupied	Utilization Percent (%)	Spaces Occupied	Utilization Percent (%)	Spaces Occupied	Utilization Percent (%)
Surface Parking Lots							
1- Transportation Lot - Union Station	190	101	53%	120	63%	99	52%
2- North Parking Lot	325	319	98%	268	82%	113	35%
3- Church Street and High Street	80	49	61%	52	65%	21	26%
4- Union Place and Allyn St	75	60	80%	56	75%	36	48%
5- Saints Lot	267	192	72%	202	76%	128	48%
6- 180 Allyn Street	297	212	71%	225	76%	193	65%
7- Parkview Hilton	200	155	78%	138	69%	129	65%
8- Union Place South	50	34	68%	30	60%	25	50%
On-Street Parking							
Union Place (Asylum Street to Church Street)	42	15	36%	15	36%	26	62%
Spruce Street (Church Street to Asylum Street)	10	5	50%	5	50%	3	30%
Church Street (Union Place to Ann Street)	5	0	0%	1	20%	1	20%
High Street (Church Street to Allyn Street)	12	1	8%	0	0%	0	0%
Allyn Street (Union Place to Ann Street)	55	15	27%	22	40%	33	60%
Asylum Street (Ann Street to Ford Street)	13	11	85%	9	69%	13	100%
TOTAL	1,621	1,169	72%	1,143	71%	820	51%

Source: Fitzgerald & Halliday, Inc.

Bold: Indicates a facility with more than 90% utilization





Phase 2: Future Scenarios and Alternatives





8.0 FUTURE SCENARIOS

This project considered two different future scenarios for Union Station. In Scenario A, Union Station is the center of new commuter rail service, and is at the termination point for the New Britain Busway. In Scenario B, Union Station also becomes the location for a transit center serving local buses in Hartford. Before discussing these scenarios, however, a brief description of demographic forecasts for the area is in order.

8.1 *Future Population, Employment, Development, Traffic and Parking Near Union Station*

In both Scenario A (Union Station plus commuter rail and New Britain Busway) and Scenario B (Union Station plus commuter rail, New Britain Busway and a local bus transit center), there will be impacts on traffic, pedestrian use and parking. In addition, development scenarios to be discussed in this report will also affect these things. But before looking at these impacts, it is important to assess what is projected for the area without considering Scenarios A and B for Union Station. As will be seen, the growth of population and employment is expected to be very slow. However, the City of Hartford has redevelopment plans which could improve the environment near Union Station.

8.1.1. Population

Overall, the downtown area of Hartford has a very low population, especially as compared to the surrounding area. According to the 2000 census, ninety-six of 188 downtown blocks have no residents, including the areas surrounding the Convention Center, Old State House, Traveler's Towers, and the State Capitol. Another ten census blocks had ten or fewer total residents, and none of the census blocks within the downtown study area had greater than 1,000 total residents.¹⁸ Along Asylum Avenue, Summer Streets, along Fraser Street, and between Cogswell to the western side of I-84 were pockets of population. There was a pocket of population between Union Station and Ann Street.

As shown previously the population within ½ mile of Union Station was 3,509 in 2007 according to ESRI data. Figure 8-1 which shows population density in 2000 helps to show how the population is situated near Union Station, located in the middle of the figure.

Population projections used as inputs to the CROCOG Regional Travel Demand Model were examined. CROCOG assembles data at the Traffic Analysis Zone or "TAZ" level, which can be significantly larger, geographically, than a census block. Figure 8-2 depicts the population projections in the downtown area geographically. In the year 2000, total population for the eleven populated TAZs all or partially within the downtown area ranged from 37 people in the TAZ surrounding the XL Center, to 2,322 individuals residing in the TAZ along Asylum Hill. Projections are that by the year 2010 the population of each of the eleven downtown study area TAZs will grow by less than one percent.

CROCOG projections, which are based on information on planned residential developments within the study area, show a varied growth rate among the TAZs from 2010 to 2030. It should be noted that these reflect planned developments at the time the projections were made. The planned projects may or may not be completed in this time frame and additional projects not included in the projections have since been proposed and some have even been completed. According to the projections, some of the TAZs are expected to grow by as much as 275 percent, while others are expected to grow only by about 7 percent of their population. The three TAZs where population is expected to grow up to 275 percent between 2010 and 2030 are clustered together around Union Station and the XL Center, bordered by I-84 on the north and west, Main Street in the east, and parts of Ford, Jewell, and Elm streets in the south.

¹⁸ The study area for Part 3 of this project consists of downtown Hartford plus the commercial portion of the Asylum Hill neighborhood. It is bounded by the Connecticut River on the east, I-84 and Walnut Street to the north, Garden and Collins Streets in the northwest, Sigourney Street on the west, and Capitol Avenue on the south. See *NW Corridor Transit Planning Project Part 3 – Downtown Hartford Transit Circulation Study Final Report*, August 2009.

Achieving the population growth shown near Union Station will be challenging given the current economic environment. The new transportation services coming to Union Station can help provide the catalyst for this growth.

Figure 8-1: Downtown Population Density



Source: US Census 2000

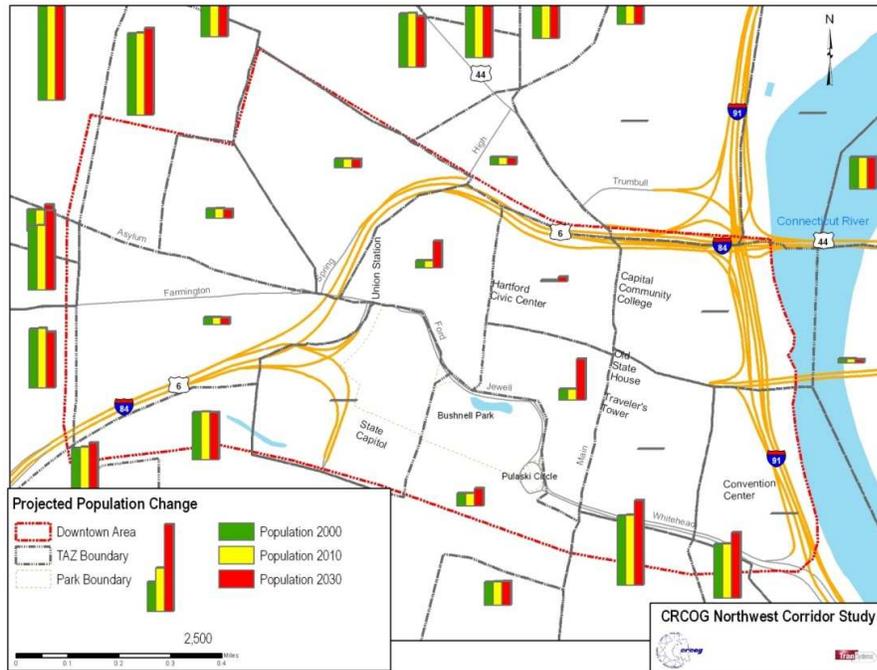
Four additional TAZs are expected to see an increase in population, though the growth is projected to be significantly less than those areas discussed above. The population in three TAZs along the southern edge of the downtown area (as shown in Figure 8-2) is projected to grow by between 20 and 45 percent and the current most populated TAZ, in the northwest corner of the figure, is expected to grow by about six percent between 2010 and 2030.

The remaining four TAZs, those projected by model data to lose population between 2010 and 2030, are grouped together in the Asylum Hill portion of the study area, around I-84 and the intersection of Asylum and Farmington Avenues. None of those TAZs are expected to lose more than seven percent of their population, although overall population will remain low, with no single TAZ having more than 1,350 inhabitants.

8.1.2. Employment

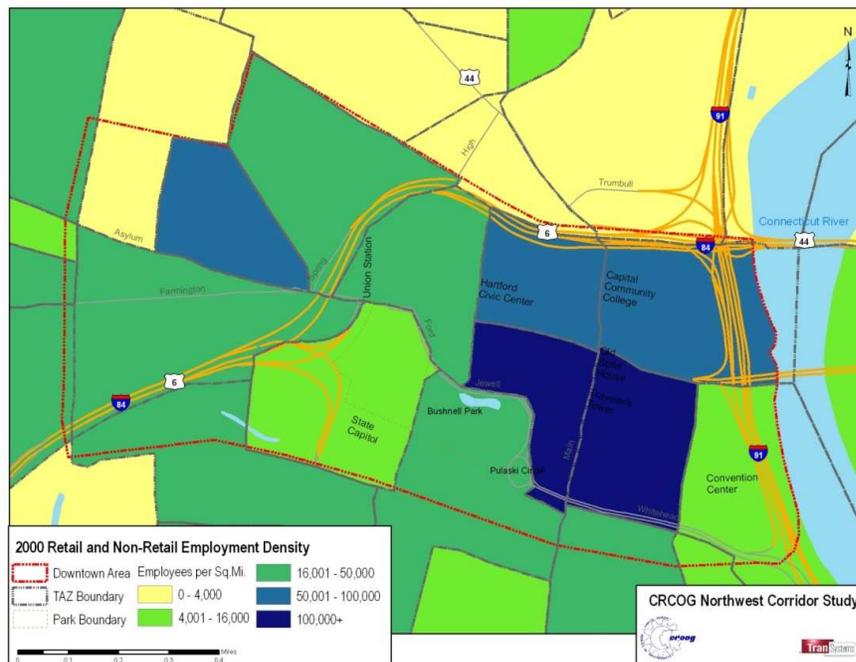
Employees per square mile, as of the year 2000, were mapped using TAZ data from the CRCOG Regional Travel Demand Model, and are shown in Figure 8-3. The heavy concentration of employment is along Main Street with densities equivalent to over 100,000 employees per square mile. Employment near Union Station is more moderate, or between 16,000 and 50,000 per square mile. To the west of Union Station, the area between Asylum and Farmingham has between 50,000 and 100,000 employees per square mile due to the presence of the insurance companies. Referring back to Table 5-1 employment within ½ mile of Union Station in 2007 was 31,159.

Figure 8-2: Downtown Hartford Population Projections



Source: CRCOG Travel Demand Model

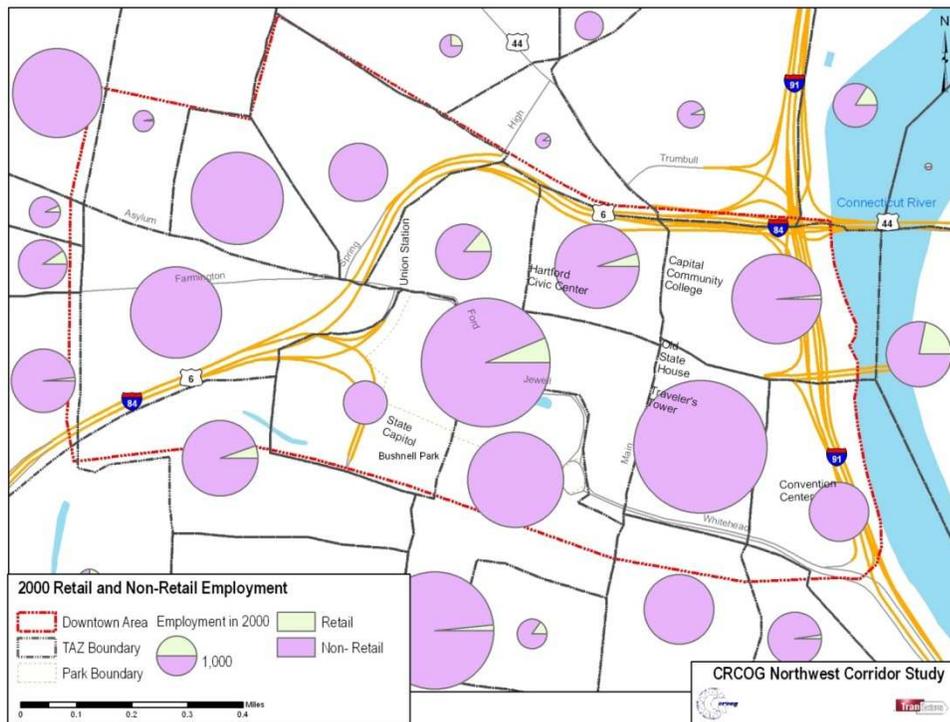
Figure 8-3: Downtown Employment Density



Source: CRCOG Travel Demand Model

Figure 8-4 demonstrates the share of retail and non-retail employment in the downtown study area for the year 2000. Non-retail employment makes up most of the industry within the downtown study area. In eight of 15 TAZs, retail employment made up less than one percent of total employment in 2000. This includes the areas around the Convention Center, Pulaski Circle, the State Capitol, and Farmington Avenue. In addition, another six TAZs, those within the vicinity of the XL Center, Capital Community College, and the southern corners of the downtown study area showed no more than six percent of all employment as retail. The TAZ including Union Station shows a higher percentage of retail than most of the surrounding TAZs.

Figure 8-4: Downtown Employment Makeup



Source: CRCOG Travel Demand Model

Future employment projections used in the CRCOG Regional Travel Demand Model assume that the downtown area will maintain a constant share of regional employment. Projections for non-retail and retail growth are shown in Figures 8-5 and 8-6, respectively. These projections indicate that no significant growth in employment is projected by 2010. The non-retail sector is projected to experience growth after 2010. Between 2010 and 2030, non-retail employment is projected to rise by a minimum of four percent in the southwest corner of the study area, to a maximum of 55 percent in the northwest corner of the study area, below I-84. Other areas of high non-retail employment growth, those expected to gain by more than 25 percent, lie within the center of the study area, in those TAZs surrounding Union Station, the XL Center, and close to Traveler's Towers.

Figure 8-5: Downtown Non-Retail Employment



Source: CRCOG Travel Demand Model

Figure 8-6: Downtown Retail Employment



Source: CRCOG Travel Demand Model

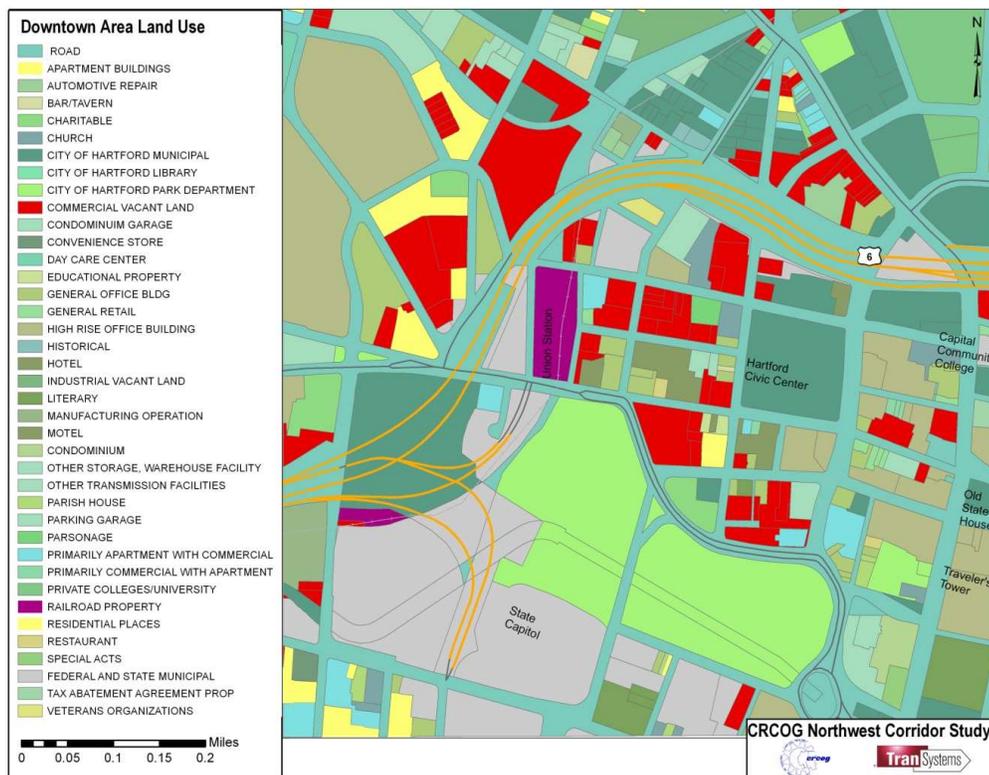
8.1.3. Land Use

Figure 8-7 shows current land use in the downtown area. The areas in red are vacant commercial land—primarily being used as parking areas. As can be seen, there are many such areas around Union Station (which is shown in purple in Figure 8-7). On one hand these large areas of vacant commercial land detract from the activity level of pedestrians around Union Station—on the other hand, they do provide opportunity areas for development given the right circumstances.

Over the past decade the City of Hartford has had a number of development initiatives. These have primarily been near the waterfront and in the center of downtown. These include the Hartford Convention Center, the Marriott Hotel, the Science Center, Mortensen Riverfront Plaza, and the Northland downtown housing projects, including the new tower at the XL Center (Hartford 21). Recently, there have been a series of initiatives that shift some of the focus toward the west and the Union Station neighborhood: Hartford 2010 (2007), The Urban Land Institute Advisory Services Report (2007) and Redevelopment Plan for The Downtown West Section 1 Project (2006). These studies have identified key development sites, "target sites" and proposed public improvements for the Asylum/Farmington and Downtown West sections and recommended mixed use development on vacant and underutilized parcels. The area between the XL Center and Union Station is targeted for an expansion and reinforcement of the existing entertainment uses.

The Union Station area is on the edge of Bushnell Park; it is an entertainment area with many of the city's nightspots, restaurants and the existing XL Center, and it is near many of the City's cultural attractions; it has an inviting historic character; there are many available parcels for development; and, the availability of transit and proximity of Union Station (as well as access to I-84) make it one of the most accessible areas of the city.

Figure 8-7: Union Station Area Land Use (July 2007)



8.2 Scenario A: New Britain Busway and Commuter Rail

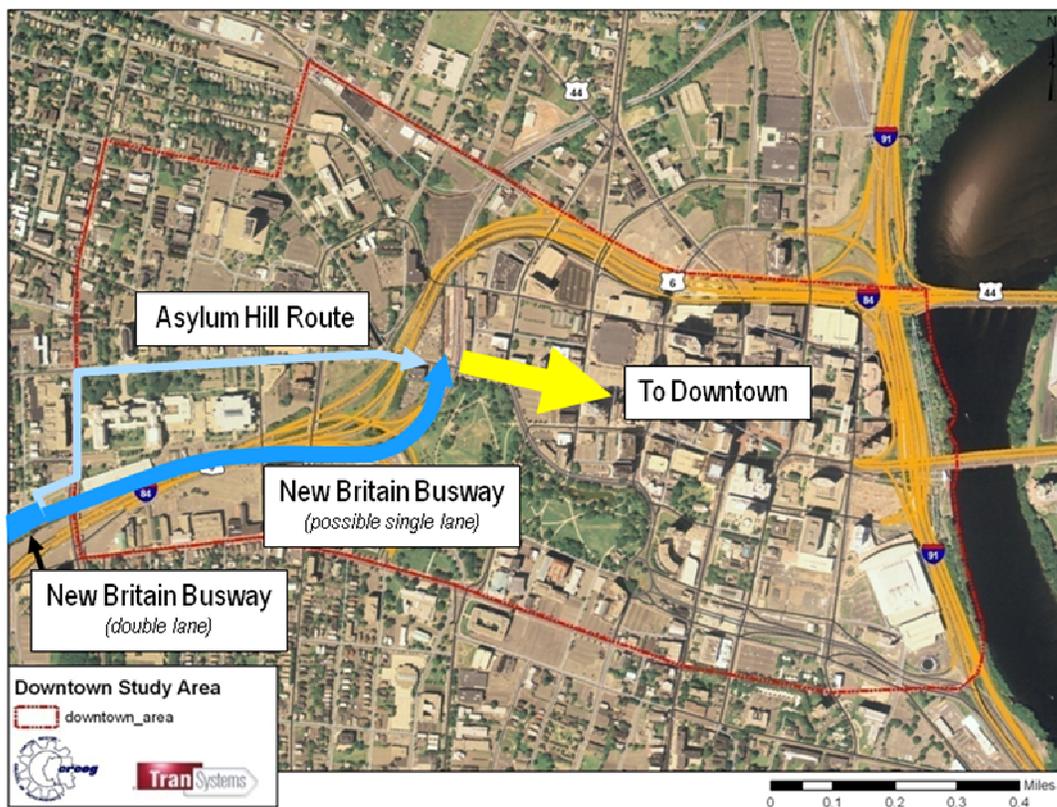
Planned new transportation services that will be arriving at Union Station include the New Britain Busway and the New Haven Hartford Springfield commuter rail. The Scenario A future for Union Station considers what should happen when these services are implemented. Scenario A is the “no build” alternative for Union Station.

8.2.1. New Britain Busway

The New Britain Busway is currently being designed as a bi-directional grade-separated busway from New Britain to Hartford. There will be ten on-line stations with at least three mid-line entry points. Most stations are located in areas where park-and-ride will be an important mode of access. In Hartford, the busway will terminate adjacent to the I-84 ramps at the south side of Asylum Avenue opposite Spruce Street at Union Station. In addition to the Asylum Avenue terminus, a station and busway exit is planned at Sigourney Street in the Asylum Hill neighborhood.

All busway services will circulate in downtown Hartford. CTDOT expects that some percentage of them would exit at Sigourney and use Sigourney and Farmington Avenue to reach Union Station where they would re-join buses that remain on the busway until the Asylum Avenue terminus. This is shown in Figure 8-8.

Figure 8-8: New Britain Busway Terminus



CTDOT has not yet developed a final service plan for the busway. However, a preliminary service plan developed in 2007 indicated that busway service would consist of twelve different routes. These routes can be divided into three categories:



- **Busway “Shuttle”** – One route would provide regular frequent service only to busway stations and the two downtowns. This would most likely be CTTRANSIT operated route.
- **Local Bus Routes** – Four routes would provide local service in New Britain and continue to Hartford along the busway making all busway station stops. Three additional routes would provide local service and enter the busway way at one of the intermediate entry points before continuing to Hartford along the busway making all busway station stops. Six of these seven routes would originate in New Britain. The seventh would originate along the outer end of Route Q in West Hartford. These routes would most likely be operated by a combination of the CTTRANSIT Hartford and New Britain Divisions.
- **Express Service** – Four routes would begin at more distant locations (from Bristol, Cheshire, Meriden and Waterbury), enter the busway in New Britain, and operate non-stop on the busway to Sigourney Street. Three of the four routes would be existing contracted commuter routes (Routes 19, 23, and 24) that would be operated using the busway with enhanced frequency.

Development of a final service plan is ongoing for this initial phase of busway implementation in the Hartford area. Additional busways have also been proposed as well as expansion of busway-like services into other corridors. The development of a downtown circulation pattern for New Britain busway services will need to consider the possibility of future busway service through-routed to points east of the river, or possibly even north of downtown.

The four express routes can be expected to carry long distance commuters to downtown Hartford. These routes are expected to carry an estimated 1,800 riders in the near term in both directions to and from downtown. In developing the downtown circulation alternatives, these routes were treated as commuter routes and were assumed to be the services that would use the Sigourney entrance/exit of the busway. Few express riders are expected to transfer to other routes in downtown Hartford.

The shuttle and seven local routes are expected to carry approximately 7,300 daily riders in the near term in both directions into downtown Hartford through the point at which the busway ends at Union Station. These riders are expected to make 3,981 transfers (1,990 in each direction in the near term) in downtown Hartford. With this large number of transfers to and from these routes, these routes will need to make convenient transfer connections in the downtown much like what is needed for the local bus routes.

Currently, Union Station is not a major stop for either CTTRANSIT or express routes. CTTRANSIT counts in 2007 showed 38 passengers getting on buses from the stop at Asylum and Union Place in the eastbound direction and 192 getting off. In the westbound direction there were 182 boarding at Asylum and Union Place and 48 getting off. Although bus passengers boarding near Union Station can be expected to increase proportionately as the New Britain Busway increases bus passengers into Hartford, Union Station will remain a much smaller stop for CTTRANSIT bus passengers than the stops along Main Street.

8.2.2. New Haven - Hartford - Springfield Commuter Rail Project

The Implementation Study for the New Haven-Hartford-Springfield Commuter Rail was completed in June 2005¹⁹. The study assessed alternative scenarios, ridership, capital and operating costs, environmental resources, financing needs and next steps. It recommended a start-up service with bi-directional service (oriented toward both New Haven and Springfield) with weekday peak period service every 30 minutes. The study also recommended supplementing existing Amtrak service with eight new round trips. A total of twelve start-up stations were proposed, including Hartford Union Station. This initial study projected system-wide ridership of 2,428 new weekday boardings in 2025, including 515 weekday boardings in Hartford. The Connecticut Department of Transportation is currently conducting an environmental assessment of the project which has not yet been published. Updated weekday ridership projections from the new study indicate that system-wide ridership is now projected to reach 3,844 by 2015 and 5,426 by 2030. Hartford Union Station daily ridership is projected at 699 in 2015 and 1,144 in 2030²⁰.

The new study indicates potential parking and access issues for Union Station. The main requirement for accommodation of the future New Haven/Hartford/Springfield commuter rail service would be to accommodate parking needs. Current forecasts indicate a 200 (parking constrained) to 343 (parking unconstrained) auto arrivals at Union Station during the AM peak and midday for the commuter rail, resulting in a need for 180 to 309 parking spaces.²¹ Counts of the Spruce Street lot at midday found that there were 120 spaces taken which would leave a capacity of 95 spaces.²²

As presented in Chapter 7, additional parking is presently available near Union Station. Table 7-1 together with Figure 7-1 showed that in addition to the Spruce Street Lot there are four other surface parking lots within two blocks from Union Station.²³ Table 8-1 shows these other lots have a total of 502 spaces, so together with the Spruce Street Lot there are 717 parking spaces in lots located close to Union Station. However, as pointed out in Chapter 7, full utilization of these lots would be at 90 percent capacity which would occur when there are 645 parkers. Adding the 120 parkers currently using the Spruce Street Lot to the 363 parkers at the other lots gives a 2007 demand of 483 parkers. Allowing for growth in demand of 1 percent per year yields 523 parkers by 2015. Then adding a range of 180 to 309 parkers from commuter rail yields a need for 703 to 832 spaces in the midday period. Thus even with existing capacity at nearby lots, between 58 and 187 additional parking spaces (the difference between demand and capacity of 645) would be required to serve commuter rail patrons at Union Station.

Parking will be discussed more in Chapter 13, but the bottom line from this analysis is that there will be a need for additional parking near Union Station when commuter rail is implemented.

¹⁹ Wilbur Smith Associates, New Haven – Hartford – Springfield Commuter Rail Implementation Study, Final Report, June 2005.

²⁰ Presentation to New Haven Hartford, Springfield Commuter Rail Environmental Assessment Steering Committee, April 16, 2009

²¹ Wilbur Smith, White Paper for Task 6E Parking and 9J – Station Parking Improvements, June 5, 2009. Page 1 notes a forecast for 344 auto arrivals at Hartford Union Station with unconstrained demand, 200 when constrained due to limited parking. Of the auto arrivals, 90 percent require parking and 10 percent are kiss and ride.

²² The Spruce Street lot was restriped in late 2009, providing 215 spaces. This has increased the capacity by 25 spaces.

²³ According to typical industry norms, transit patrons will walk two to four blocks to access service. Two blocks is used here to be conservative. As the blocks are relatively short near Union Station, the distances to commuter rail would likely perceive to be shorter than two blocks.

Table 8-1: Status of Surface Parking Spaces within Two Blocks of Union Station (2007)

Surface Parking Lot (numbers refer to numbers in Figure 7- 1)	Total Spaces	Spaces Occupied During			Spaces Unoccupied During		
		AM Peak	Midday	PM Peak	AM Peak	Midday	PM Peak
3-Church Street and High Street	80	49	52	21	31	28	59
4-Union Place and Allyn Street	75	60	56	36	15	19	39
6-180 Allyn Street	297	212	225	193	85	72	104
8-Union Place South	50	34	30	24	16	20	25
Totals	502	355	363	274	147	139	227

Derived from Table 7-1 from data compiled by Fitzgerald & Halliday, Inc.

The commuter rail service would generate 20 to 34 drop off auto trips during the morning and midday period. Additional short-term parking might be needed at Union Station for automobiles waiting to pick up commuter rail passengers alighting in the afternoon, particularly if there are any service delays.

The Wilbur Smith White paper also forecasts that with the 2015 start-up there would be 119 commuter rail passengers would arrive by bus at Hartford Union Station, with 110 arriving in the AM peak period.²⁴ CTTRANSIT counts in 2007 showed 38 passengers getting on buses from the stop at Asylum and Union Place in the eastbound direction and 192 getting off. In the westbound direction there were 182 boarding at Asylum and Union Place and 48 getting off. The Wilbur Smith White Paper forecast would indicate that these numbers would increase, but the stop at Asylum and Union Place would still accommodate many fewer passengers than the large downtown stops which accommodate over a thousand passengers a day. The current transit capacity at Union Station including the Farmington Route, the Asylum Avenue Routes, the commuter routes and the Star Shuttle should be able to accommodate the increase in bus traffic due to the commuter rail.

8.3 Circulation for Scenario A (No Build)

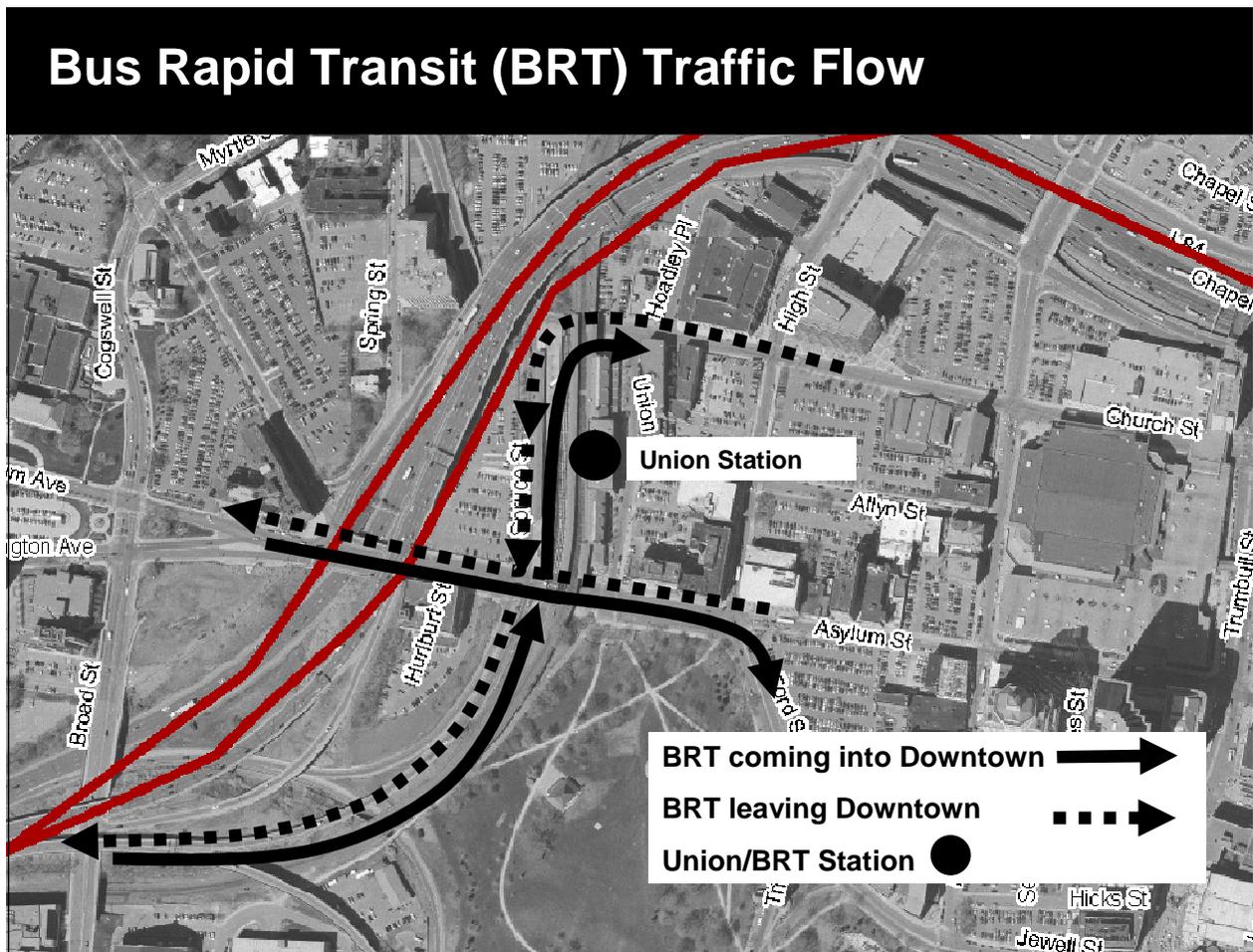
In order to understand the traffic impacts of changes to Union Station, a traffic analysis was conducted for the year 2017. An analysis was done for Scenario A, assuming the implementation of the two planned projects underway by the Connecticut Department of Transportation: the New Britain-Hartford Bus Rapid Transit (BRT) project and the New Haven-Hartford-Springfield Commuter Rail project. Using available information from those on-going studies and reasonable assumptions, site generated traffic was estimated for the planned projects. No allowance was made for TOD or joint development—thus this is the “No-Build” analysis.

²⁴ Wilbur Smith, White Paper for Task 6E Parking and 9J – Station Parking Improvements, June 5, 2009, Appendix A.

Background growth, planned and programmed developments, and roadway improvements were considered when determining future traffic volumes for the year 2017. Though the trend in traffic volumes in downtown Hartford has not shown a steady increase over the past few years, a conservative (i.e. worst case) analysis was used and a one percent (1%) growth rate per year was assumed to account for background traffic growth which is typical for most urban environments similar to Hartford.

Estimates for the number of New Britain busway buses and their route patterns were developed as part of the Downtown Circulation task of the Northwest Corridor Study. Forty-two (42) buses will use the busway during the morning peak hour, with 29 going in the peak direction. During the mid day peak there will be 13 buses using the busway and 40 buses during the afternoon peak hour. During the morning and afternoon peak hours 19 buses (and 13 buses during the mid day peak hour) will exit the busway at the I-84 eastbound off-ramp to Asylum Street and will travel downtown via Spruce Street and Church Street. Buses will return via Church Street to Spruce Street to the busway at the I-84 eastbound off-ramp. The remaining buses will approach downtown on Farmington Avenue eastbound to Asylum Street turning right onto Ford Street to access downtown. These buses will return via Asylum Street then to Farmington Avenue back to the Sigourney BRT Station. Figure 8-9 illustrates the BRT busway routing patterns during the morning, afternoon, and mid day peak hours.

Figure 8-9: BRT Traffic Flow



Intersection improvements (lane use changes) associated with the BRT design at the intersection of Asylum Street with Spruce Street were obtained from CTDOT and utilized in this traffic analysis.



The New Haven – Hartford – Springfield Commuter Rail project will serve commuters traveling between the towns and cities along the corridor and will provide multiple connections to Amtrak Intercity service and a direct link to the existing Metro North and Shore Line East Commuter Rail services in New Haven.

Based on information obtained from the *White Paper for Parking and Station Parking Improvements, CTDOT New Haven-Hartford-Springfield Commuter Rail Service, Environmental Assessment and Environmental Impact Evaluation, June 5, 2009*, Union Station is projected to have 463 boardings on the new commuter rail service by the year 2015 (312 boardings during the morning peak and 151 boardings during the mid day peak). Of the total projected boardings, 343 passengers will arrive by automobile (202 passengers during the morning peak and 141 passengers during the mid day peak).

CTDOT's white paper assumed auto parking at Union Station would be constrained by the existing parking capacity. No new parking was proposed. Excess demand which might have used Union Station was assigned to the Newington station. To estimate the number of vehicles generated by the new commuter rail service for this study, the following assumptions were made:

- A factor of 0.58 (constrained arrivals by automobile divided by unconstrained arrivals by automobile) was applied to estimate the constrained demand of passengers arriving by automobile.
- Ninety percent (90%) arrive at the station and park their vehicle; ten percent (10%) will be dropped off.
- All passengers that arrive at the station and park their vehicle arrive alone. In other words, the auto occupancy of arriving passengers is 1.0.
- Morning boarders disembark during the afternoon peak hour in their reverse trip.
- Mid day boarders disembark after the afternoon peak hour.
- 2017 projections will be the same as the 2015 scenario (i.e. no new increase was assumed for that 2-year period).

Therefore, 106 passengers are projected to drive to the station and park their vehicle while 12 passengers will be dropped-off during the morning peak hour. During the mid day peak hour, 74 passengers will drive to the station and park their vehicle and 8 passengers will be dropped-off.

An arrival/departure trip distribution pattern was developed for traffic expected to be generated by the commuter rail project based on census journey-to-work data. Figure 8-10 shows the site-generated trips estimated for the commuter rail project.

The site-generated volumes for the busway and the commuter rail projects were added to the increased background volumes to determine the future 2017 No-Build condition. The resulting total 2017 No-Build traffic volumes are provided in Figure 8-11.

Figure 8-10: Commuter Rail Site Generated Trips

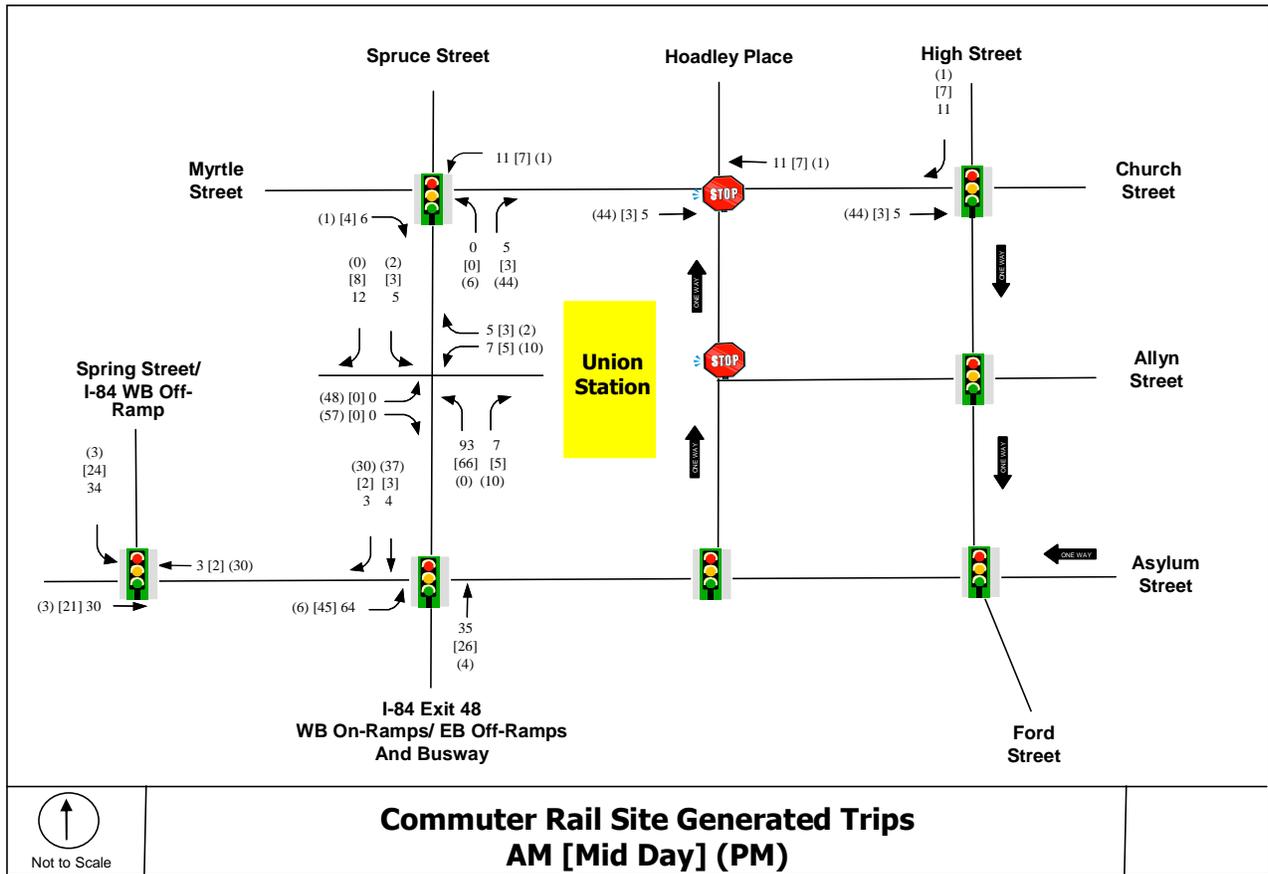
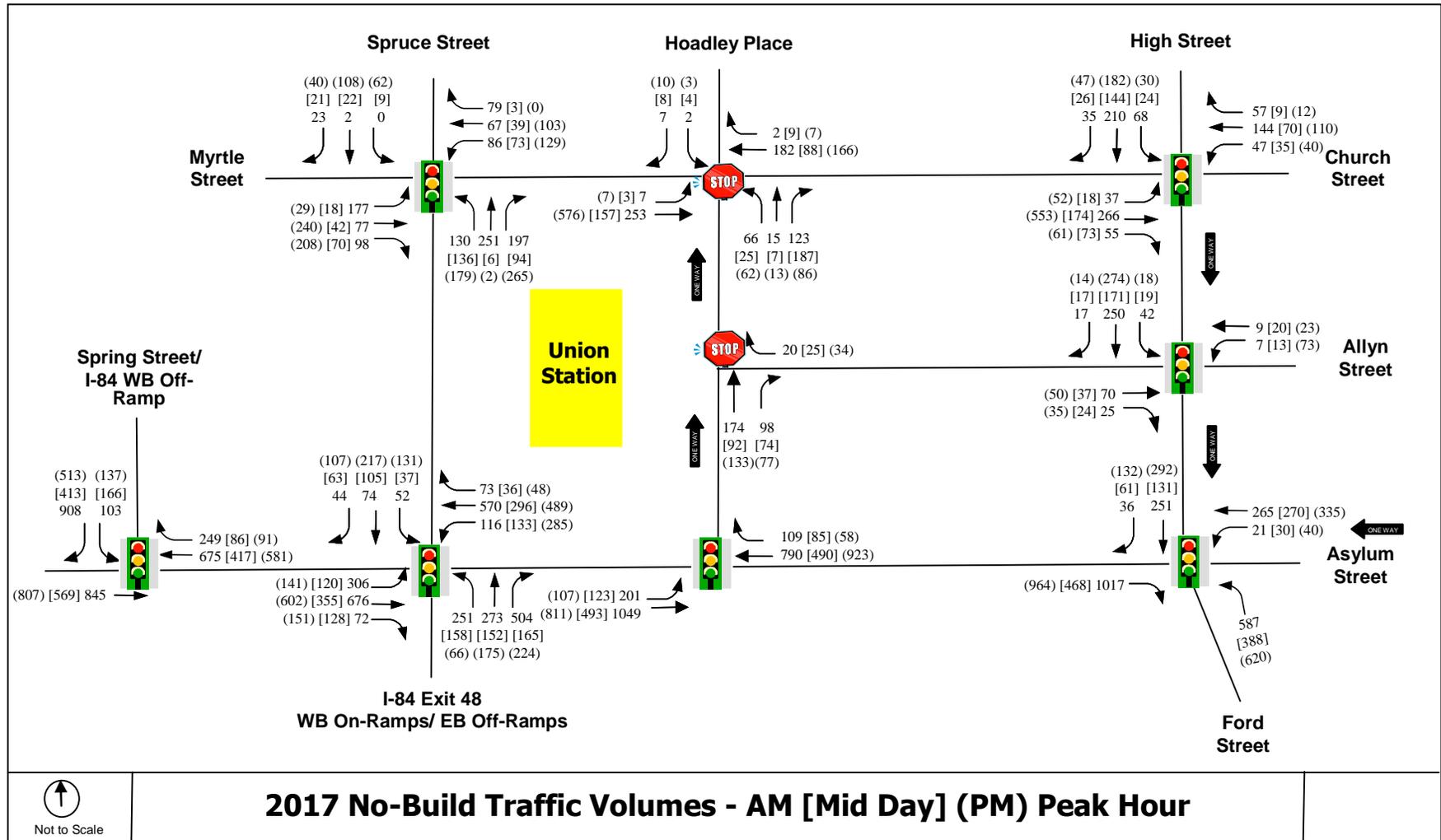


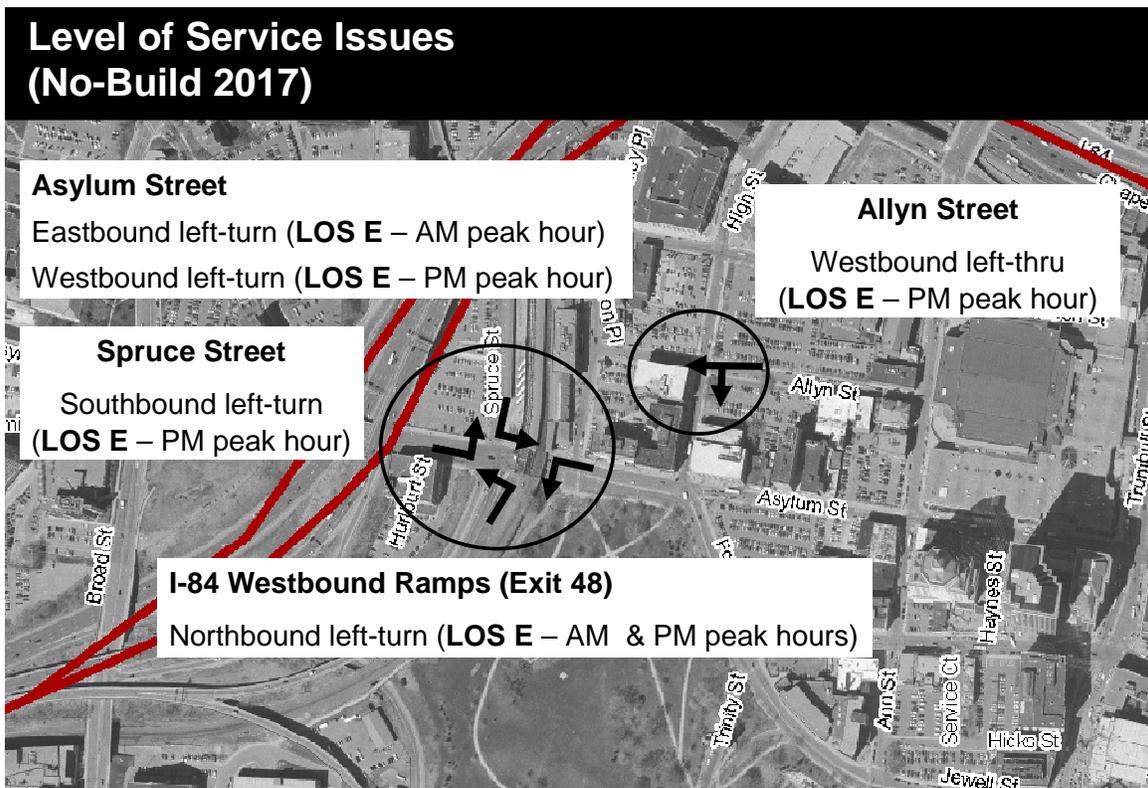
Figure 8-11: 2017 No-Build Traffic Volumes



In general, an intersection having a poor level-of-service under existing conditions will continue to function poorly or an intersection will deteriorate further if additional demand is added and no improvements are made to the roadway. Results from the No-Build analysis, as shown in Table 8-2, indicate that overall traffic operations will be similar to existing conditions at most intersections in the study area near Union Station while operations will decline slightly at critical movements at the intersection of Asylum Street and Spruce Street. With the increased demand of the busway and commuter rail trips at this intersection, the eastbound left-turn, westbound left-turn, the northbound left-turn, and the southbound left-turn movements will operate at LOS E during the AM and/or PM peak hours. Additionally, the westbound left-thru movement at the intersection of Allyn Street with High Street will operate at LOS E during the PM peak hour. Figure 8-12 shows the failing critical movements under the No-Build 2017 condition. However, all intersections will operate with an acceptable overall intersection LOS (LOS D or better), as shown in Figure 8-13.

Though a detailed generation and distribution of pedestrian trips was not undertaken as part of this analysis, it is safe to anticipate that pedestrian activity in the vicinity of Union Station will increase above current levels. Pedestrian crossings on Spruce Street will undoubtedly increase as a result of the initiation of commuter rail service. Additionally, pedestrian crossings from new BRT stops on Asylum across from Union Station will create new pedestrian trips, many of which may need to cross Asylum either at that location or at the end of the block.

Figure 8-12: Level of Service Issues (No-Build 2017)





**Table 8-2: Level of Service Summary
Existing (2007) and No-Build Conditions (2017)**

			Existing		Existing		Existing		No-Build		No-Build		No-Build	
			AM Peak Hour		Mid day Peak Hour		PM Peak Hour		AM Peak Hour		Mid day Peak Hour		PM Peak Hour	
			Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS
Signalized Intersections														
Asylum Street & Spring Street														
	Eastbound	Thru	14.0	B	5.4	A	6.7	A	18.8	B	6.6	A	9.0	A
	Westbound	Thru	10.6	B	1.3	A	3.3	A	15.7	B	1.9	A	7.9	A
	Westbound	Right	11.2	B	1.3	A	3.8	A	15.6	B	2.1	A	8.8	A
	Southbound	Left	15.1	B	29.3	C	32.1	C	12.6	B	28.8	C	29.0	C
	Southbound	Right	30.1	C	34.3	C	43.1	D	26.8	C	33.6	C	40.3	D
	Intersection		18.4	B	13.7	B	16.4	B	20.2	C	14.7	B	17.8	B
Asylum Street & Spruce Street														
	Eastbound	Left-thru	31.4	C	18.7	B	21.5	C	78.0	E	23.9	C	28.0	C
	Eastbound	Right	0.7	A	7.0	A	8.0	A	11.0	B	15.5	B	17.0	B
	Westbound	Left	7.6	A	13.5	B	54.3	D	10.2	B	18.6	B	63.4	E
	Westbound	Thru-right	5.4	A	7.9	A	16.6	B	7.8	A	10.2	B	21.5	C
	Northbound	Left	53.5	D	48.8	D	46.6	D	63.1	E	54.4	D	75.8	E
	Northbound	Thru	32.9	C	30.3	C	41.4	D	32.7	C	30.6	C	37.8	D
	Northbound	Right	7.9	A	8.1	A	7.6	A	14.4	B	8.0	A	7.6	A
	Southbound	Left	28.3	C	27.5	C	57.1	E	29.3	C	26.3	C	61.2	E
	Southbound	Thru-right	16.4	B	23.5	C	48.7	D	18.6	B	24.6	C	54.1	D
	Intersection		21.3	C	18.5	B	28.5	C	24.4	C	20.7	C	32.3	C
Asylum Street & Union Place														
	Eastbound	Thru-left	1.2	A	0.3	A	0.5	A	2.1	A	0.4	A	0.7	A
	Westbound	Thru-right	1.1	A	15.1	B	14.7	B	1.2	A	15.1	B	14.6	B
	Intersection		1.1	A	7.4	A	7.8	A	1.7	A	7.7	A	8.2	A
Asylum Street & High Street														
	Eastbound	Right	2.1	A	0.2	A	1.8	A	1.5	A	0.2	A	3.5	A
	Westbound	Left	35.4	D	33.2	C	39.1	D	33.5	C	32.2	C	36.4	D
	Westbound	Thru	43.1	D	40.7	D	48.7	D	43.1	D	40.6	D	47.5	D
	Northbound	Left	9.5	A	7.0	A	11.0	B	11.7	B	8.0	A	14.9	B
	Southbound	Thru-right	26.9	C	34.0	C	38.3	D	27.7	C	34.7	C	39.3	D
	Intersection		12.5	B	15.8	B	17.7	B	13.6	B	16.7	B	20.2	C
Church Street/Myrtle Street & Spruce Street														
	Eastbound	Left-thru-right	10.7	B	2.5	A	7.2	A	16.9	B	2.9	A	10.4	B
	Westbound	Left-thru-right	7.1	A	4.2	A	7.4	A	11.1	B	5.1	A	11.7	B
	Northbound	Thru-left	35.2	D	30.9	C	46.4	D	36.4	D	32.5	C	49.3	D
	Northbound	Right	4.5	A	6.7	A	6.1	A	3.8	A	6.0	A	5.4	A
	Southbound	Left-thru-right	7.8	A	13.4	B	30.4	C	6.6	A	13.0	B	30.6	C
	Intersection		17.3	B	12.5	B	16.3	B	19.7	B	12.9	B	17.8	B

* The eastbound approach on Asylum Street becomes an exclusive left-turn lane, two through lanes, and one shared thru-right turn lane under future conditions based on the BRT design.



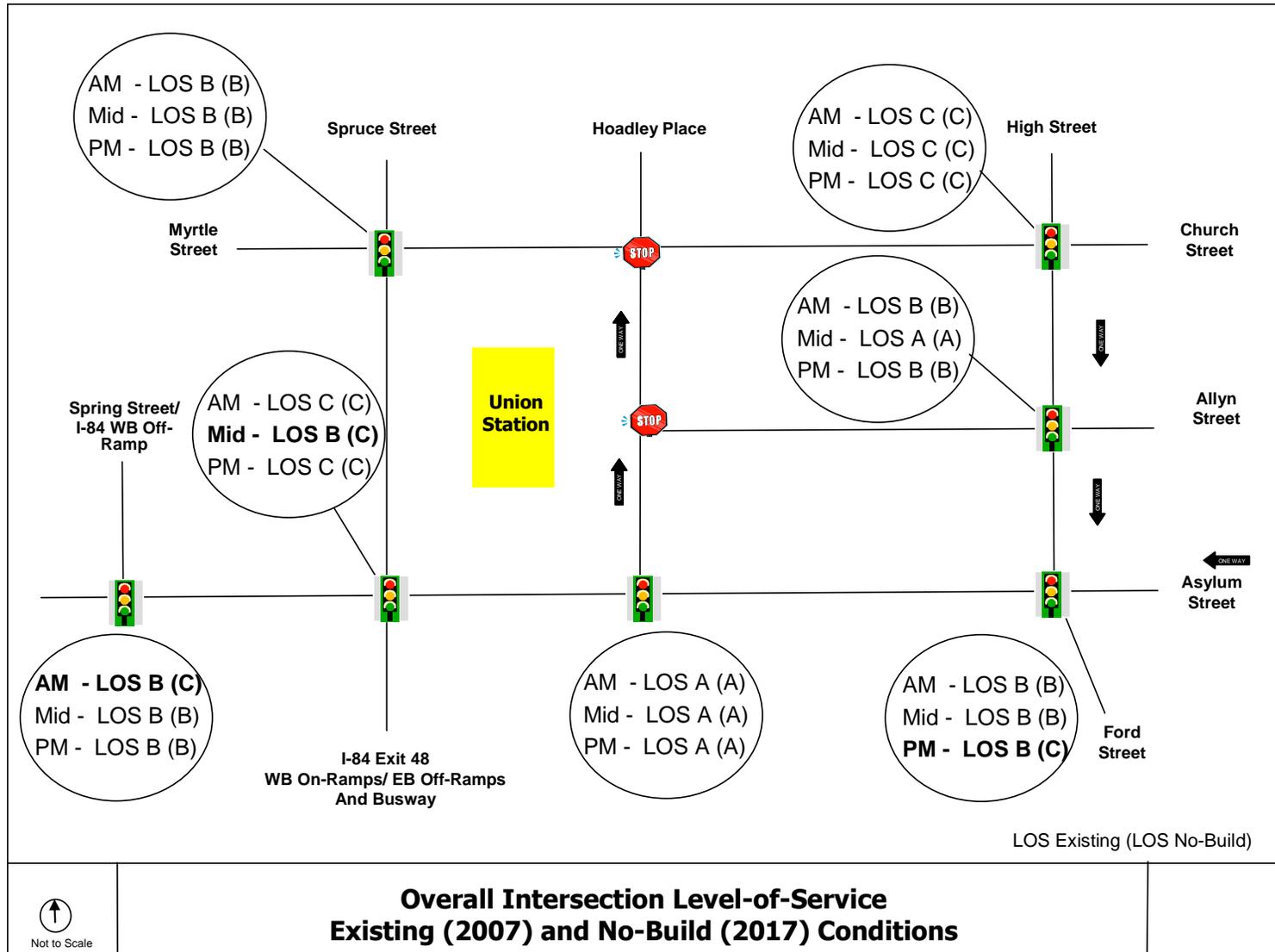
**Table 8-2: Level of Service Summary (continued)
Existing (2007) and No-Build Conditions (2017)**

			Existing		Existing		Existing		No-Build		No-Build		No-Build	
			AM Peak Hour		Mid day Peak Hour		PM Peak Hour		AM Peak Hour		Mid day Peak Hour		PM Peak Hour	
			Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS
<i>Signalized Intersections</i>														
Church Street & High Street														
	Eastbound	Left	28.9	C	28.3	C	20.4	C	24.6	C	25.6	C	14.0	B
	Eastbound	Thru-right	47.7	D	41.8	D	46.4	D	44.8	D	43.4	D	31.9	C
	Westbound	Left	18.5	B	18.6	B	12.6	B	15.5	B	16.6	B	8.6	A
	Westbound	Thru-right	15.4	B	16.9	B	11.5	B	14.3	B	14.9	B	7.5	A
	Southbound	Left-thru-right	10.3	B	8.3	A	17.0	B	13.4	B	9.8	A	24.8	C
	Intersection		25.4	C	25.1	C	32.6	C	25.3	C	26.0	C	25.6	C
Allyn Street & High Street														
	Eastbound	Thru-right	34.0	C	19.3	B	26.9	C	32.0	C	19.6	B	22.7	C
	Westbound	Left-thru	36.7	D	37.3	D	59.6	E	36.2	D	38.0	D	64.1	E
	Southbound	Thru	3.3	A	0.9	A	1.3	A	2.3	A	1.1	A	1.4	A
	Intersection		11.6	B	8.8	A	17.3	B	10.3	B	9.0	A	17.5	B
<i>Stop-Controlled Intersections</i>														
Church Street & Union Place/Hoadley Place														
	Eastbound	Thru-left	0.3	A	0.2	A	0.1	A	0.3	A	0.2	A	0.2	A
	Northbound	Left-thru-right	12.4	B	10.5	B	17.3	C	15.4	C	11.5	B	25.5	D
	Southbound	Left-thru-right	14.4	B	13.3	B	18.7	C	18.0	C	15.8	C	25.0	C
	Southbound	Right	9.0	A	8.7	A	9.0	A	9.3	A	8.8	A	9.3	A
Allyn Street & Union Place														
	Westbound	Right	9.5	A	9.0	A	9.3	A	9.8	A	9.2	A	9.5	A

Source: Fitzgerald & Halliday, Inc.

Highlighted Text: Unacceptable LOS (LOS E or F)

Figure 8-13: Overall Intersection Level of Service Existing (2007) and No Build (2017)





8.4 Scenario B: Local Bus Transfer Facility at Union Station

The second scenario to be developed includes the implementation of the New Britain Busway services as described above, the New Haven-Hartford-Springfield Commuter Rail, and in addition, the development of a local bus transfer center near Union Station. Following work done as part of this project on downtown circulation, a transit center was found to be a good option for serving Hartford transit passengers. In addition, a conclusion from the downtown circulation task was that the area near Union Station would be a good location for a transit center. Following is a discussion of that finding.

The Downtown Circulation portion of the Northwest Corridor Study (see Part 3—Downtown Circulation Study Final Report) examined the transfer rate of bus passengers in downtown Hartford and determined that an estimated 69% of local bus boardings at the nine major stops along Main Street and Market Street are transfer boardings. This led to an effort to identify a downtown circulation pattern that included a new off-street downtown transit center that would better serve transferring riders while maintaining service to Main Street for the 31% of riders with downtown destinations.

A preliminary search for possible transit center sites led to a conclusion that a feasible available site of adequate size does not exist adjacent to the existing transfer point at the primary downtown bus stops on Main Street. A new transit center would have to be located several blocks from the current transfer point and a bus circulation pattern would have to be identified that would allow all routes to serve the new transit center while continuing to serve the major stops on Main Street. A review of ridership and transfer patterns led to the development of a proposed circulation pattern that continues the current through-routing of north-south routes and establishes a new pattern connecting routes from the west of downtown with routes from east of the Connecticut River to form a new east-west through-routing pattern. North-south routes and east-west routes would then meet at the transit center and also serve stops on or near Main Street.

A review of existing transfer patterns and an estimate of new downtown transfers that could result from the New Britain Busway local bus routes indicated that a transit center located north and west of the center of downtown would maximize the number of riders who would choose to transfer at the new transit center, minimize the travel time for transferring riders, and minimize delays to non-transferring riders destined for Main Street. Routes from the north and west would meet at the transit center before continuing downtown and on to the south and east. A transit center in this location would also allow easy connections between the busway and other routes and would allow the new east-west through-routes to create an enhanced east-west bus service across the downtown. It was found that a transit center located south and west of the center of downtown, with routes from the south and west meeting at the transit center before continuing north and east, would not attract as many transfer riders. It would also require extensive rerouting of service around Bushnell Park creating a longer trip for many riders. A transit center east of Main Street would also attract fewer transfers.

The sector of the downtown where a transit center is recommended is essentially the area west and southwest of Main Street and north of Asylum Avenue. The area is crisscrossed by several streets providing multiple opportunities for bus routings and facility locations. There are numerous surface parking, vacant and underutilized parcels that could house a new transit center. The area also includes Union Station, an intercity transit hub and future commuter rail station that could possibly be connected to a new local bus transit center. The optimal location to balance the convenience of both transferring and downtown riders would be a site in this sector equidistant from Main Street and Asylum Avenue. Some transferring riders would benefit from a site further from the center of downtown, while increases in bus operating costs would be minimized by a site closer to the center.