

EXECUTIVE SUMMARY

BBS Development is proposing to construct a mixed-use development on a 20.7-acre site located north of Burr Street, between South Main Street and Raymond Road, in the center of West Hartford. The proposed development, *Blue Back Square*, consists of the following land uses:

- 158,000± square-feet of retail space;
- 30,000± square-feet of restaurant space;
- 60,000± square-feet of office space;
- 108,000± square-feet of medical office space;
- a 1,000-seat movie theater;
- a 30,000± square-foot health club; and
- up to 70 condominium units.

One of the keys to the success of *Blue Back Square* is the safe and efficient performance of the transportation system. Motorists must be able to travel to and from the development, as well as through the West Hartford Center area, easily and with few delays, even at the busiest of times. To that end, this report provides an analysis of the transportation-related impacts associated with full build-out of *Blue Back Square*, and recommends a comprehensive package of transportation system improvements that mitigates these impacts and accommodates traffic that may be generated by the development in a safe and efficient manner. The scope of the analyses documented in this report, as well as the recommended mitigation measures, were developed through close coordination with staff from the Town of West Hartford and the Connecticut State Department of Transportation (ConnDOT).

The recommended transportation improvements were developed with several goals and considerations in mind, as described below.

Provide a Comprehensive “Big-Picture” Analysis

The traffic analysis described in this report is comprehensive in nature with respect to both the scope and the range of transportation-related issues addressed. The study area encompasses 25 intersections, including critical intersections located on major arterial roadways and neighborhood streets from Route 44 to the north to I-84 Exits 41 and 43 to the south, as well as key intersections in and around West Hartford Center. In addition, the report addresses a range of multi-modal transportation considerations, including those related to vehicular traffic, shared trip-making, pedestrian movements, parking, and transit service.

Preservation of Quality of Life

One of the primary objectives of the traffic mitigation program is to preserve and enhance the integrity of the neighborhoods and the quality of life in and around West Hartford Center by reducing the propensity for cut-through traffic through neighborhoods. As such, the transportation system improvements are intended to encourage site-generated traffic to use arterial streets and to discourage this traffic from using neighborhood streets. These improvements aim to provide additional capacity and improve traffic operations at intersections

on arterial-level roadways such as South Main Street, Farmington Avenue, and Trout Brook Drive. In conjunction with improvements at these locations, traffic calming measures are recommended on the Boulevard and Raymond Road to alert motorists to the residential character of these streets and discourage their use by non-local traffic.

Utilize Local Data

The traffic study was based on actual local data. The evaluation of the existing and future performance of the transportation system in the study area was conducted using a combination of both manual traffic counters at each intersection, and automatic traffic recording devices at critical locations throughout the study area. The project team observed traffic conditions at each of the study intersections during three peak time periods when traffic was at its busiest, as well as throughout the day during “off-peak” time periods. Historical accident reports were reviewed as well as anecdotal evidence of traffic problems and congestion provided through conversations with neighbors and meetings with Town and State staff. Estimates of the numbers of trips generated by the various land uses proposed for *Blue Back Square* were based on empirical data collected at other similarly-sized developments. The project team, in conjunction with Town and ConnDOT staff, tested, evaluated, and refined the recommendations to arrive at the best plan to address “real-life” issues and the specific local needs of this particular community.

Focus on both Operations and Safety

The evaluation of the transportation system and recommended mitigation measures goes beyond the traditional “Level-of-Service” (LOS) report-card style rating of roadway operations, to consider safety for vehicular traffic and pedestrians. The proposed improvements are designed to enhance safety, reduce delays, calm traffic through neighborhood areas, maintain or improve the quality of service provided to motorists and pedestrians, preserve green space and parking, and offset the impacts of any new traffic volumes generated by the development.

Evaluate a “Reasonable Worst-Case” Scenario

The assumptions documented in this report ensure a conservative analysis by accounting for reasonable “worst-case” traffic conditions. The improvements described in this report were designed to accommodate future traffic volumes projected to occur during critical periods of peak traffic activity; specifically, during the peak 15-minute period occurring during each of the three peak hours analyzed. As a result, the capacity of the transportation system is expected to exceed the travel demand occurring throughout much of the day during off-peak times such as late morning, mid-afternoon, and evenings on weekdays, and mornings and evenings on weekends.

Consider the Mix of Uses

The mix of land uses proposed at *Blue Back Square*—including residential, retail, office, restaurant, and entertainment—has benefits with respect to the number of trips generated for three reasons:

- 1) Different uses mean different “peak” travel times. Residents, shoppers, office workers, and doctors’ patients typically come and go throughout the day. “9-to-5” office workers generally will have left the area before the peak hours for the restaurants and the movies, in the evening.
- 2) The proposed mix of uses, in close proximity to each other, encourages shared trip-making. The location of the parking facilities and the pedestrian-friendly aspects of the design allows visitors to park once and walk to the shops, restaurants, movie theater, library, health club, or a doctor’s appointment.
- 3) Not all trips to and from Blue Back Square will be new. A portion of the trips to and from the retail and restaurant uses will be from motorists who are already on the roads today, currently passing by the site on Main Street or Raymond Road.

Overall, the improvements described in this report will achieve several important goals:

- Improving safety;
- Accommodating pedestrians;
- Maintaining or improving performance at the study intersections;
- Discouraging traffic on local neighborhood streets; and
- Encouraging motorists to use arterial roads as a means of traveling to and from *Blue Back Square*.

It should be noted that there are selected intersections within the study area that currently operate over-capacity and experience poor levels-of-service during peak hours. These intersections were generally found to be operating as efficiently as possible given the prevailing traffic conditions, and the existing geometric, operational, and policy constraints. Roadway widening and operational improvements to provide additional vehicular capacity were found to be prohibitive at these locations due to limited rights-of-way or other similar physical constraints, and/or the competing needs associated with provisions and requirements for other modal facilities (such as maintaining on-street parking, preserving green space, and providing all-pedestrian phases at signalized intersections).

These issues, and the trade-offs associated with a range of potential improvements at each location, were discussed at length with staff. The result is a package of improvements that was determined to be best-suited to balance the various, and competing, transportation needs of the Town. Because some of the existing issues extend beyond the direct and reasonable control of the developer of this project, the Town of West Hartford may wish to consider larger, long-term improvements at these selected locations.

It is to be expected that as traffic volumes continue to increase over time—regardless of the presence of *Blue Back Square*—these existing deficiencies will be exacerbated. Although all of the incremental traffic impacts associated with *Blue Back Square* can be mitigated with the improvements described below (including intersections under ConnDOT’s jurisdiction), pre-existing deficiencies at selected critical intersections are expected to remain. However, there are opportunities to provide significantly improved operations at other intersections where similar constraints do not exist. Consequently, the improvements recommended as part of this project are intended to significantly improve traffic operations at these less-constrained locations, going beyond merely mitigating the traffic impacts of the *Blue Back Square* development and improving operations for both motorists and pedestrians traveling through these areas.

Based on the analyses described in this report, the site can be fully built-out as proposed without significantly impacting traffic operations at any of the study area intersections. The following is a description of the findings and recommendations resulting from the analyses:

Findings

Table 1 provides a comparison of the overall weekday AM, weekday PM, and Saturday mid-day peak hour levels-of-service at each study intersection under existing, No-Build, Build, and Mitigated Build conditions.

Year 2003 Existing Conditions

- The peak hours for traffic volumes on the roadway network within the project study area were determined to be the following:
 - Weekday AM Peak Hour = 7:45 to 8:45 a.m.
 - Weekday PM Peak Hour = 4:45 to 5:45 p.m.
 - Saturday Mid-day Peak Hour = 11:45 a.m. to 12:45 p.m.

Year 2006 No-Build Conditions

- Other future developments planned for construction within the study area were identified with the assistance of Town of West Hartford and ConnDOT staff. The only significant development identified was a 40,000 square-foot grocery store (Whole Foods), proposed to be located on the east side of Raymond Road between Farmington Avenue and Memorial Road (east of the *Blue Back Square* site).
- An average growth factor of 1.6-percent per year was calculated based on an analysis of historical traffic volume growth trends in West Hartford and applied globally over three years (approximately 4.8-percent total growth) to the existing traffic volumes. In addition, the peak hour traffic volumes projected to be generated by the planned future grocery store identified above was added to these adjusted volumes to arrive at the forecast year 2006 No-Build traffic volumes.

Year 2006 Build Conditions

- *Blue Back Square* is projected to generate approximately 655 trips (460 in, 195 out) during the weekday AM peak hour, 1,425 trips (610 in, 815 out) during the weekday PM peak hour, and 2,035 trips (1,120 in, 915 out) during the Saturday mid-day peak hour.

Table 1 – Level-of-Service Comparison: Existing, No-Build, Build and Mitigated Build Traffic Conditions

Recommendations

The following is a summary of the transportation system improvements recommended for implementation as part of the *Blue Back Square* development. Conceptual sketches of the geometric improvements have been superimposed over an aerial photograph and are provided in a subsequent section of this report.

Main Street/Farmington Avenue

- Provide east-west lane striping (skip-lines) within the intersection for motorists traveling eastbound and westbound through the intersection. Install associated lane usage signing and directional arrows in the eastbound and westbound directions. These improvements provide additional visual cues to help motorists negotiate the intersection.
- Re-time the traffic signal during the weekday AM and PM peak periods to re-allocate additional green time to the east-west phase and the north-south left-turn phase.
- Reduce the all-red clearance time following the east-west phase from 6 seconds to 2 seconds.

Benefit: Improves safety by delineating travel paths for vehicles through the intersection and maintains operational performance by re-allocating green time among turning movements.

Raymond Road/Farmington Avenue

- Re-time the traffic signal during the weekday AM and PM peak periods to re-allocate green time from the east-west phase to the north-south phase.
- In conjunction with this improvement, the Town of West Hartford may want to investigate the possibility of reconfiguring access to the Subway sandwich property on the north side of Farmington Avenue, opposite Raymond Road, by closing one of the two existing access-driveways serving this property.

Benefit: Maintains operational performance by re-allocating green time among vehicle turning movements.

Trout Brook Drive/Farmington Avenue

- Eliminate the westbound lagging phase on Farmington Avenue, and re-time the signal during the weekday AM and PM peak periods.

Benefit: Maintains operational performance by re-allocating green time among vehicle turning movements.

South Main Street from north of Memorial Road to Ellsworth Road

- Widen and re-stripe South Main Street from north of Memorial Road to south of Ellsworth Road to accommodate an exclusive center left-turn lane throughout this section.
- Stripe an at-grade, signalized pedestrian crossing across South Main Street, approximately 400-feet north of the intersection with Memorial Road. In addition to advance signing, a textured pavement treatment (brick pavers or similar) should be implemented within the pedestrian crossing to help identify this area for both motorists and pedestrians. Approximately two (2) existing on-street parking spaces on the west side of South Main Street and approximately three (3) existing on-street parking spaces on the east side of South Main Street, north of Memorial Road, will be re-located into the proposed development to accommodate the pedestrian crossing. The pedestrian signal should be included as part of the coordinated signal system on Main Street. Northbound and southbound queues on South Main Street resulting from pedestrians using this crossing during the weekday AM and PM peak hours will not adversely impact traffic operations at the adjacent signalized intersections (Main Street/Farmington Avenue and South Main Street/Memorial Road).
- The widening of South Main Street in this section will require modifications to the traffic signal hardware at the signalized South Main Street/Memorial Road and South Main Street/Ellsworth Road intersections, as well as re-timing of the traffic signals at both intersections.
- At the South Main Street/Memorial Road intersection, protected-permitted phasing for northbound and southbound left-turns should be implemented. At the South Main Street/Ellsworth Road intersection, an exclusive all-pedestrian phase should be included in the signal cycle, and a right-turn “overlap” signal-head should be provided on the eastbound approach to allow eastbound right-turns to move concurrently with protected northbound left-turning traffic.
- The exclusive center left-turn lane recommended on South Main Street between Memorial Road and Ellsworth Road will provide storage capacity for left-turns to and from the unsignalized access driveways along this section of South Main Street, and improve operations for these movements.

Benefit: Improves pedestrian and vehicular safety and improves operational performance by minimizing queuing at signals, increasing vehicular capacity, and providing for protected pedestrian movements.

Raymond Road/Memorial Road

- Due to the significant volume of traffic projected to be generated through this intersection as a result of the proposed development, this intersection is recommended to be signalized.
- A planning-level traffic signal warrant analysis was conducted for this intersection under year 2006 Build conditions and is described in a subsequent section of this report. In summary, the intersection is projected to meet three traffic signal warrants with build-out of *Blue Back Square* in 2006: Warrants #1 (Eight-Hour Vehicular Volume), #2 (Four-Hour Vehicular Volume), and #3 (Peak Hour).

Benefit: Improves safety and operations at the intersection for both pedestrians and vehicles. Provides a signal-controlled pedestrian crossing.

Trout Brook Drive/Memorial Road

- Re-time the signal during the weekday PM peak period.

Benefit: Maintains operational performance by providing additional green time to traffic on Memorial Road.

South Main Street/Boulevard

- Re-stripe the eastbound and westbound approaches to accommodate one exclusive left-turn lane, one exclusive through lane, and one exclusive right-turn lane on each approach. Extend the curb return on the southeast corner of the intersection to reduce the pedestrian crossing distance and provide added protection for vehicles parked on the south side of the Boulevard.
- Re-time the signal during the weekday AM and PM peak periods.

Benefit: Maintains operational performance by increasing east-west capacity.

Raymond Road/Boulevard

- Re-time the traffic signal during the weekday PM peak period.

Benefit: Maintains operational performance by re-allocating green time among vehicle turning movements.

Trout Brook Drive/Boulevard

- Re-time the traffic signal during the weekday PM peak period.

Benefit: Improves operational performance by re-allocating green time among vehicle turning movements.

South Main Street/Park Road

- Eliminate the westbound leading phase, and re-time the signal during the weekday AM and PM peak periods.

Benefit: Maintains operational performance after advent of Blue Back Square traffic. Future Town-funded improvements will help to correct existing deficiencies even further.

Raymond Road from Burr Street to Park Road

- Implement traffic calming measures along this section to discourage the use of Raymond Road as a through street for non-local traffic traveling to and from the site. On-street parking should be removed along both sides of Raymond Road for short segments north and south of the intersections with Burr Street, Boulevard, and Park Road to accommodate textured paver islands within the roadway cross-section. By narrowing the pavement cross-section available to serve vehicular traffic, these improvements provide drivers with visual cues that the roadway is intended to accommodate slower speed vehicular traffic, and that it is not intended to serve as a through street.

Benefit: Discourages the use of Raymond Road by non-local traffic traveling to and from Blue Back Square. Improves safety by slowing traffic.

Boulevard from South Main Street to Raymond Road

- Re-stripe the Boulevard between South Main Street and Raymond Road to designate one travel lane in each direction, with on-street parallel parking. This improvement is proposed to discourage the increased use of the Boulevard by vehicular traffic.

Benefit: Discourages the use of Boulevard as a through street, preserving its existing residential character.

Mountain Road/Route 44

- Re-time the traffic signal during the Saturday mid-day peak period.

Benefit: Maintains intersection performance by re-allocating green time among vehicle turning movements.

Signal System Improvements

In order to ensure the efficient progression of vehicles along key arterial corridors within central West Hartford under future conditions, traffic signals on the following segments should be re-timed to operate as coordinated systems:

- Main Street – from Brace Road to Park Road
- Trout Brook Drive – from Farmington Avenue to Park Road
- Farmington Avenue – from LaSalle Road to Trout Brook Drive

Benefit: Reduces vehicle delays by improving the progression of traffic through successive signals along arterial roadways.

The following improvements are not necessary to mitigate the traffic impacts of the *Blue Back Square* development. Even without the improvements set forth below, the traffic impacts of *Blue Back Square* could be fully mitigated. Nonetheless, BBS Development is proposing to voluntarily undertake the following upgrades to achieve the goal of encouraging vehicles to use major highways and arterials to get to and from *Blue Back Square*.

Raymond Road/Park Road and I-84 on-ramp/Park Road

- Re-time the signal at Raymond Road/Park Road during the weekday AM and PM peak periods. In addition, reduce the green time allocation for eastbound movements to provide an extended gap in eastbound through traffic at least once per cycle. This will provide an opportunity for westbound left-turning traffic at the unsignalized I-84 on-ramp/Park Road intersection to turn onto the on-ramp unopposed, effectively increasing capacity and reducing delays for these movements without the need to directly signalize the intersection itself.

Benefit: Reduces delays for turning movements onto the I-84 on-ramp and reduces queuing and congestion along Park Road.

I-84 off-ramp/Park Road (Exit 43)

- Widen the off-ramp to accommodate a second exclusive northbound right-turn lane.
- Reduce the cycle length during the weekday PM peak hour from 120 seconds to 90 seconds to enable coordination with the existing traffic signal at the Raymond Road/Park Road intersection. Re-time the traffic signal during the weekday AM peak period to re-allocate green time from the east-west (Park Road) phase to the northbound (off-ramp) phase.

Benefit: Reduces delays to vehicles exiting the off-ramp onto Park Road as well as queuing on the off-ramp.

Trout Brook Drive/Park Road

- Widen Park Road between the I-84 ramps and Trout Brook Drive to accommodate a five-lane section including two westbound travel lanes, two exclusive eastbound left-turn lanes, and one eastbound shared through/right-turn lane. Minor widening on Park Road east of Trout Brook Drive would also be required to allow for an appropriate transition to the five-lane section.
- Reduce the cycle length during the weekday PM peak hour from 120 seconds to 90 seconds to enable coordination with the existing traffic signals at the Raymond Road/Park Road and I-84 off-ramp/Park Road intersections.
- Eliminate the eastbound lagging phase, and re-allocate the green time to the other phases during the weekday AM and PM peak periods.
- The existing traffic signal should be modified to provide a southbound right-turn “overlap” phase to enable these movements to occur concurrently with protected eastbound left-turn movements. This improvement will require modification of the existing traffic signal hardware.

Benefit: Improves operational performance and encourages ease of access to Trout Brook Drive from the I-84 off-ramp.

The mitigation measures described above were analyzed in detail and found to be sufficient to mitigate the projected traffic impacts associated with *Blue Back Square*. Further, at several locations, the recommended roadway improvements are projected to improve intersection LOS to levels better than those projected to occur without the proposed development.

As noted previously, at a few intersections, pre-existing operational deficiencies will continue to exist during peak hours irrespective of the *Blue Back Square* project. Although the incremental peak hour impacts associated with *Blue Back Square* can be mitigated at these locations, major geometric modifications (including the taking of private property to acquire right-of-way) or other undesirable measures (such as the elimination of on-street parking or the removal of all-pedestrian phases at signalized intersections) would be required in order to significantly improve peak hour traffic operations relative to existing conditions. Because these existing deficiencies are not associated with the proposed development, and because the scope and cost associated with mitigating these deficiencies generally extends beyond the control and capabilities of the developer, the Town of West Hartford should pursue long-term improvements at these locations. Nevertheless, with the recommended improvements described above in place, the transportation system in West Hartford is capable of accommodating the projected travel demands associated with *Blue Back Square* throughout the day, including during both peak and off-peak time periods.