Capital District Transportation Committee

Capital District Transportation Authority

NY5 Bus Rapid Transit Conceptual Design Study

Deliverable N
Conceptual Design of NY5 BRT Priority Measures

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with

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Logitrans

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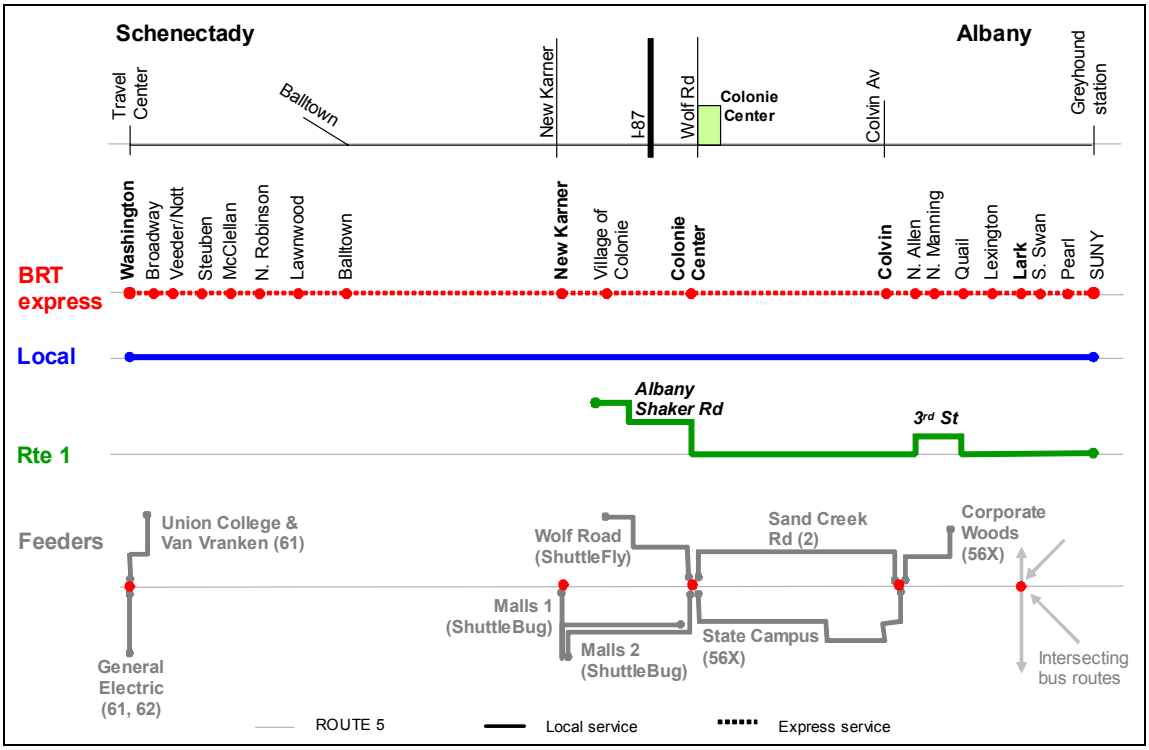
This document constitutes Deliverable N, the Conceptual Design of the NY5 BRT Priority Measures. Its purpose is to summarize the concept and key characteristics of the priority measures proposed for the operation of the BRT system on NY 5 between Albany and Schenectady. This document is a summary of the more extensive information presented in *Deliverable L/M - Traffic Impact Study: NYS Route 5 Bus Rapid Transit* and *Deliverable I/J - Capital Cost Estimate and Property and Land Use Issues*. While this document includes final recommendations of this conceptual design study, final implementation decisions will be made during preliminary engineering and will take into account the findings of the Transit Development Plan that is being conducted by CDTA.

1 Service concept

During the course of the study, various service concepts to improve transit operations in the ROUTE 5 corridor were analyzed. Finally, consensus was reached around one alternative that proposed a BRT treatment of the entire corridor with three mainline routes and a series of feeder routes. The three mainline routes are a BRT express service and a local service that run between Albany and Schenectady, and a shorter local service that runs between Albany and Colonie. These three mainline services on ROUTE 5 will be complemented by feeder routes. The feeder routes operate as cross-town services collecting passengers from neighborhoods adjacent to the corridor and bringing them to transfer stations where they can easily transfer to express or local buses. A schematic of this proposed service concept is presented in Figure 1.1.



Notes: 1) BRT express stations shown in bold font are transfer stations.
2) For the feeders, the name or number in parenthesis represents the existing route that is being replaced or renewed

Figure 1.1 Service concept schematic

The express service will be the main BRT route in the corridor. This service will run between the Travel Center in Schenectady (i.e. State Street and Washington Avenue) and the existing CDTA bus terminal in downtown Albany next to the Greyhound station. The service stops at 20 stations in this 16-mile long alignment, five of which—Washington, New Karner, Colonie Center, Colvin, and Lark—will be designed as transfer stations to ease transfers among BRT, local, feeder, and intersecting routes. The preliminary selection of the station locations for the BRT express service was based on ridership, future developments, and stop spacing. An effort was made to select those locations with current and potential high numbers of boardings and alighting and at the same time, maintain reasonable spacing between stations. This route is designed to serve long-haul trips with a fast and reliable service and to create an attractive alternative to the private automobile. Figure 1.2 shows a map of the ROUTE 5 corridor with the BRT express route and stations.

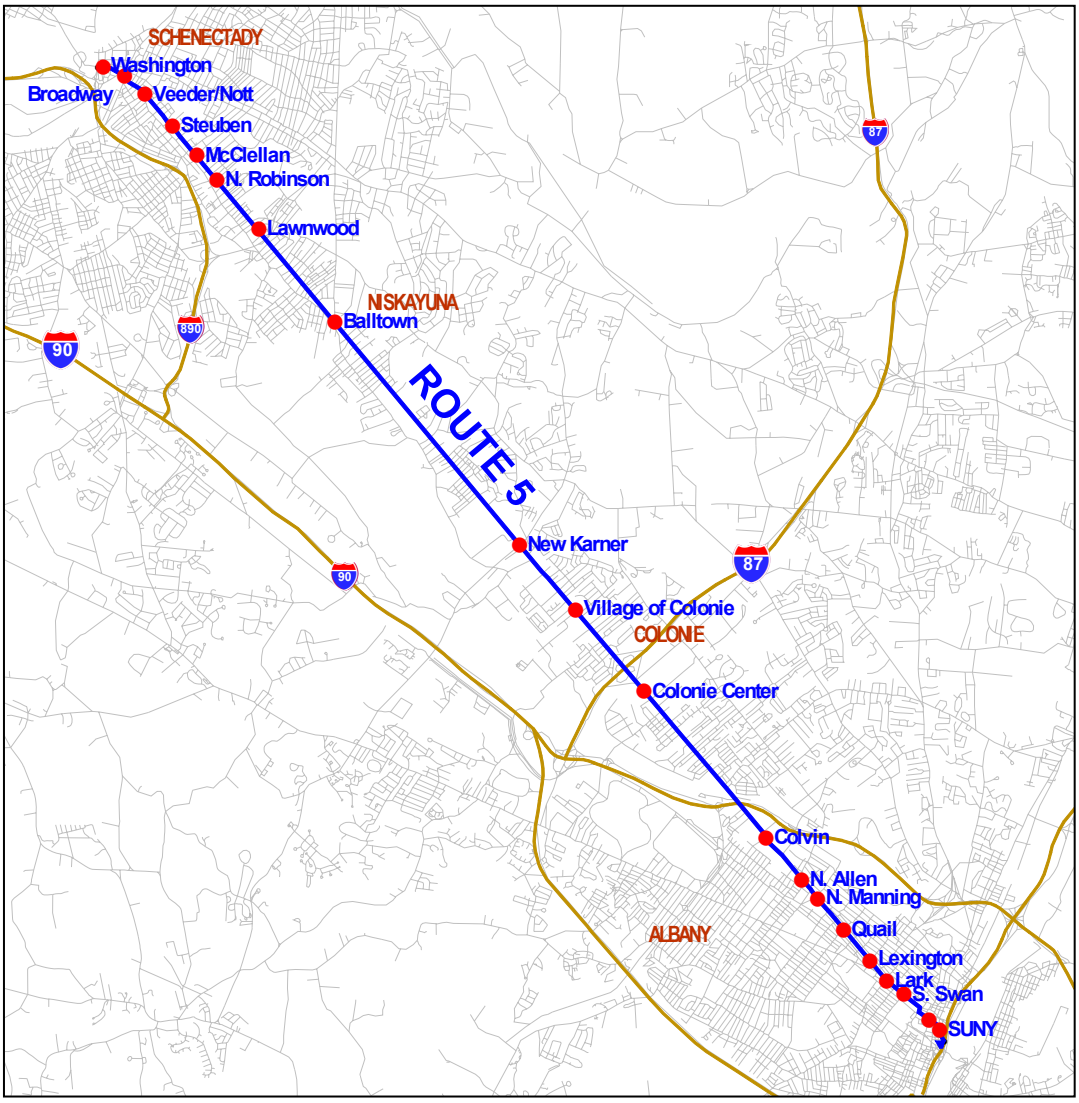


Figure 1.2 Preliminary location of BRT stations

Two other mainline routes will complement the BRT express service on ROUTE 5:

- The local service between downtown Albany and downtown Schenectady will stop frequently (i.e. approximately every 1/7 of a mile) to provide greater accessibility in the entire corridor but at a lower average speed.
- A modified version of Route 1, which operates primarily between downtown Albany and Colonie Center and has a few trips going up Wolf Road and Albany Shaker Road to serve the airport and the nursing homes. This route, as the existing Route 1, provides service from Albany to the Transit Center in Colonie Center, responding to the higher demand observed in the eastern part of the corridor. The route deviates from ROUTE 5 between Ontario Street and Everett Road onto 3rd Street to serve the current Route 2 passengers on that segment of the route[1].

2 Conceptual design of main roadway treatments and priority elements

Based on field visits, discussions with the Study Advisory Committee and team research, five main roadway treatments and/or transit priority concepts were identified for detailed study: a transfer station at Colonie Center, queue jumpers, exclusive lanes, Transit Signal Priority, and bulbouts. These concepts are described in the following sections. Additional roadway treatments and priority elements were considered during the process, those are described briefly in the next chapter.

2.1 Transfer station at Colonie Center

2.1.1 Concept

Colonie Center was recognized in the service design process as a key point for operations and that should be reflected in the type of infrastructure provided. The station will most likely be a transfer point between feeder routes and mainline routes. Three main concepts for the operations of this station were evaluated:

Alt No. 1: Bi-directional Transfer Station - north side of ROUTE 5. This alternative (See figure in Appendix A) proposes to combine the eastbound and westbound transit stops into a central transfer station, with improved amenities, located on the north side of ROUTE 5 at the existing westbound stop location. The westbound buses would operate with little change from existing operations, while the eastbound buses would turn left at the west Colonie Center/Northway mall signal and pull to the north side of the station. Patrons could then transfer to other buses from the same station. Feeder services would also be provided from this station.

Alt. No. 2: Two uni-directional transfer stations – both sides of ROUTE 5. This alternative (see figure in Appendix A) includes maintaining separate eastbound and westbound stations with improved amenities, shelters, and moderate roadwork. The feeders would maneuver inside the malls parking lots, as the ShuttleFly currently does. Although the infrastructure would not be as large as the previous concept, the stations would still include new amenities.

[1] Route 2 will be converted into a feeder route between Colvin and Colonie stations.

Alt. No. 3: Two uni-directional transfer stations – Alternative Layout. This alternative (see inset figure in Appendix A) is very similar to Alt No. 2, but it requires minimal roadwork because the existing roadway configuration is maintained, and the new pedestrian crosswalk at midblock is not applicable (as it would be for Alt. 2 with the offset stations). Yet another variant of this scheme is possible which would involve reconfiguration of the driveways on the parking lot side of each transfer station. This reconfiguration could improve the circulation of the feeder buses through the transfer station area.

2.1.2 Land Issues and Costs

Alt. No. 1: Bi-directional Transfer Station - north side of ROUTE 5

- ***Land Owners and Land Issues*** – This concept includes increasing the size and services at the existing north transit station. It appears that part of this land is currently owned by Sears and part may be owned by Colonie Center. Previous improvements in this area were built by DOT on two permanent easements, each approximately 500 to 600 SF (0.014 acres each). Issues with regard to acquiring a portion of this property may be minimal if the proposed action includes its purchase and does not in impede on Sears or the malls use of the parking lot for overflow parking or snow storage. However, if the remaining area of this parking lot is to be used as an unofficial park-and-ride lot, the owner is expected to have concerns regarding liability for personal vehicles on site, maintenance, trash removal, and security.
- ***Capital costs*** – The capital costs to construct the bi-directional station roadway configuration includes the associated roadway, drainage, curb and sidewalk costs, median breaks in the two islands at each of the adjacent mall entrances, and the concrete transfer station pad. This cost is estimated at $265,000.
- ***Property costs*** – Based on a review of record plans, it is estimated that approximately 15,600 SF (0.36 acres) of land will be required from outside the existing ROW. Based on an estimated property value, the cost to acquire this property is estimated as $150,000. This cost may be reduced if an agreement regarding a permanent easement can be negotiated.

Alt. No. 2: Two uni-directional transfer stations – both sides of ROUTE 5

- ***Land Owners and Land Issues*** – This concept includes increasing the size and services at each of the two existing transit shelters. The north shelter is adjacent to property currently owned by Sears and Colonie Center. Issues with regard to acquiring a portion of this property are similar to those noted for the bi-directional station. The south shelter is adjacent to Northway Mall property. They are likely to have similar concerns as Sears and Colonie Center regarding property purchase and park-and-ride use.
- ***Capital costs*** – The capital costs to construct the uni-directional station roadway configuration includes the associated roadway, drainage, curb and sidewalk costs, and the concrete transfer station pads. This cost is estimated at $166,000

- ***Property costs*** – Based on a review of record plans, it is estimated that approximately 5,500 SF (0.13 acres) of land will be required for the north station and 5,200 SF (0.12 acres) of land for the south station from outside the existing right-of-way (ROW). Based on an estimated property value, the cost to acquire these properties is estimated as $102,000. This cost may be reduced if an agreement regarding a permanent easement can be negotiated.

Alt. No. 3: Two uni-directional transfer stations – Alternative Layout

- ***Land Owners and Land Issues*** **–** This concept has similar issues as the previous uni-directional station concept.
- ***Capital costs*** – The capital costs to construct this station configuration includes the associated roadway, drainage, curb and sidewalk costs, and the concrete transfer station pads. This cost is estimated at $27,000.
- ***Property costs*** **–** Based on a review of record plans, it is estimated that approximately 3,850 SF (0.088 acres) of land will be required for the north station and 3,640 SF (0.084 acres) of land for the south station from outside the existing right-of-way (ROW). Based on an estimated property value, the cost to acquire these properties is estimated as $71,000. This cost may be reduced if an agreement regarding a permanent easement can be negotiated.

2.2 Queue jumpers

2.2.1 Concept

A preliminary evaluation of the Route 5 corridor was made to determine which intersections would be considered good candidates for the implementation of queue jumpers—short exclusive bus lanes leading up to intersections combined with transit signal priority. The criteria used to review potential queue jump locations included 1) presence of delay at the intersection; 2) presence of queues; 3) potential to construct an effective queue jumper; 4) the impact on bus operations as it relates to BRT station locations; and 5) the impact on pedestrian access through the intersection. The evaluation concluded that the Wolf Road and New Karner Road intersections, in the westbound direction, are strong candidates for queue jump consideration because of the delays and queues experienced at these locations, and the ability for a queue-jump lane to be constructed and complement the proposed BRT stations. These two locations will have some pedestrian impacts but this impact may be mitigated. Other locations, such as in downtown Albany, were considered for queue jumps as part of an integrated bus lane concept, which is discussed in the following section.

Wolf Road Queue Jumper

Two options were studied for the Wolf Road queue jumper, one includes a shared right turn lane with the queue jumper and the other considers a separate lane for the queue jumper from the right turn lane. Given the high volume of right turns (i.e. 350 veh/hr in

the peak), the second option was recommended as the preferred alternative[2]. A signal head would be accompanied by signs and pavement markings to advise of lane use and signal applicability.

A series of level of service (LOS) calculations were conducted at the Central/Wolf intersection for the "null" and "Queue Jump cycle" conditions for "existing" traffic volume conditions. This analysis concluded that the queue jumps (when activated) would have modest adverse impacts (4 to 13-second increases) on average delays for most movements. Factoring in the number of queue jump actuations per hour, the weighted average delays indicate no significant changes in levels of service. Average delay reductions for eastbound through traffic and westbound right turn movement are due to compatibility of these movements with the queue jump phase (that is, there can also be a green indication for eastbound through movements during the queue jump phase). The overall intersection LOS does not change for existing conditions under the average queue jump operations.

Transit vehicles are expected to realize modest benefits to on-time performance. In addition, the long right turn lane approaching the intersection would provide transit vehicles with an opportunity to bypass some amount of westbound queue. With the proposed Colonie Center transfer station, there may be the possibility to redesign the area to enable westbound buses to travel directly from the transfer station to the queue jump lane.

New Karner Queue Jumper

For the New Karner queue jumper a new turn lane beginning to the west of the Fermac Street intersection (approximately 700-foot long lane) would be constructed, to accommodate both right-turning general traffic and westbound buses. Depending on the final location of the westbound station, Central Avenue could be widened on the northwest corner to accommodate a far-side station location. An alternative to the 700-foot lane is to construct a shorter lane, of approximately 350 feet. Similar to the Wolf Road queue jump, active unconditional TSP logic is recommended at this location. This will provide benefit to all transit vehicles in the westbound direction.

The analysis of the traffic impact concluded that the construction of the westbound queue jump/right turn lane is expected to result in improvements to the intersection performance due to three reasons: 1) The new lane would add overall intersection capacity during non-queue jump cycles; 2) It would reduce the amount of time required to process westbound traffic, allowing a reallocation of green time to the other approaches; 3) The eastbound through and right turn movements would also be able to progress through the intersection during the westbound queue jump phase[3].

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[2] The *New York State Highway Design Manual* (Section 24.3.6.7 dated 5/4/98) states that when right turn volumes exceed 400 vehicles per hour, an exclusive bus lane should be considered.

[3] This analysis assumes that a transit stop is located on the northeast corner adjacent to HSBC. If the stop is located on the northwest corner adjacent to Rite Aide, a transit priority signal and phase would not be needed, as a bus would simply jump the queue and travel straight through the intersection into the widened bus lane immediately downstream of the intersection. Under these conditions, the intersection would

Transit vehicles would benefit from the opportunity to bypass approximately 600 feet of queued traffic via the queue jump/right turn lane. West of New Karner Road, Central Avenue is less densely developed. Thus, westbound transit vehicles could make up a modest amount of time by running at the front of the westbound platoon.

It is important to note that NYSDOT has expressed concerned about this potential queue jumper, specifically with respect to its potential to impact safety. They are also concerned that the concept of a raised median may have other negative economic impacts. NYSDOT further believes the pedestrian paths and the use of the other bus stops surrounding the New Karner location should be further investigated. All of these issues will be considered in detail in the preliminary engineering and design phase of the study.

2.2.2 Land Issues and Costs

Wolf Road Queue Jumper

- ***Land Owners and Land Issues*** – This concept includes widening on the north side of Route 5 and increasing the length of the right turn lane. This improvement is adjacent to property currently owned by Sears of Colonie Center. Purchase issues for this property may be minimal as the area currently has no access to Route 5, and is simply a buffer between the Sears Automotive Center and Route 5. This corner of the Route 5/Wolf Road intersection was once a gas station. When the existing westbound right turn lane was constructed, contaminated soil was discovered and subsequently removed from the site of construction. This may also be an issue with regard to this concept.
- ***Capital costs*** – The capital costs to construct the westbound Wolf Road queue jump includes the associated roadway, drainage, curb, and sidewalk costs and a new traffic signal. This cost is estimated at **$430,000**. This estimate does not include the potential for additional environmental costs.
- ***Property costs*** – Based on a review of record plans, it is estimated that approximately 2,750 SF (0.063 acres) of land will be required for this concept outside the existing right-of-way (ROW). Based on an estimated property value, the cost to acquire this property is estimated as **$25,000**.

New Karner Queue Jumper

- ***Land Owners and Land Issues*** – This concept includes widening on the north side of Route 5 to construct a shared queue jump/right turn lane. This improvement is adjacent to several properties including Dexter Shoes, Super Video Plaza, Northeast Industrial Services, Signs Now, former HSBC parcel, and Rite Aid. Additional properties include Mobil and Walgreens depending on the location of transfer stations. Approximately 4-8 feet of additional ROW is needed for this concept. This additional ROW will have more impact on the adjacent properties of Northeast

benefit from the additional capacity on the westbound approach, and any reallocated green time, without the added delay resulting from the special transit phase.

Industrial Services and Signs Now. A large planter separates the parking for the Jackson Hewitt and UPS Store offices (store fronts to Northeast Industrial). The additional ROW needed may cut off the ability to circulate around the Route 5 side of these businesses. However, access around the back of the building is provided. The Signs Now parcel is particularly small, at just 6,750 SF (0.155 acres) with an approximately 2,200 SF office. Parking will be reduced by the concept, and the need to purchase the whole property may be an issue.

- ***Capital costs*** – The capital costs to construct the westbound New Karner Road queue jump/right turn lane includes the associated roadway, drainage, curb, and sidewalk costs. This cost is estimated at **$230,000 for the short lane alternative** and **$360,000 for the long lane alternative**.
- ***Property costs*** – Based on a review of record plans, it is estimated that approximately 4,600 SF (0.106 acres) of land will be required for the **short queue jump lane** concept, which includes the far side stop and two transfer stations, at an estimated cost of **$45,000.** For the **long queue jump lane** concept, an additional 1,200 SF (0.028 acres) is needed for a total cost of approximately **$60,000**.

2.3 Transit Signal Priority

The current activities in the corridor related to Transit Signal Priority (TSP) were documented and analyzed, the potential for additional signal priority were identified, and a preliminary estimate of the transit travel time savings and cost that could be expected from an expanded system were estimated.

2.3.1 Concept

A transit signal priority (TSP) system is technology that can extend the green phase of a traffic signal or can turn the signal green earlier than scheduled so that a bus may pass through an intersection more quickly. By giving signal priority to transit buses, transit travel times and delay times are shortened, translating into more convenience to the passengers and cost savings for the agency. It has also been shown that transit signal priority can allow the agency to reduce the number of trips on a route without affecting its level of service. Furthermore, signal priority can reduce or eliminate “bunching,” a situation in which one or more buses closely follow another on the same route as a result of the first bus running late (especially when headways are short).

Three types of logic exist to implement the use of this technology.

- Passive priority typically involves adjustment of area wide signal timing plans to give preference to streets with high transit use.
- Active unconditional priority provides priority to transit vehicles whenever they arrive at the TSP-capable signal location.
- Active conditional involves a determination either by the TSP equipment on the transit vehicle or in the signal controller on whether to grant priority based on factors such as the on-time/late status of the vehicle, whether its door is open, and/or the position of the signal phasing plan at the time the vehicle arrives

Previous to this BRT project, the Route 5 corridor had been studied for the implementation of TSP. Thirty-five intersections were selected, based on criteria related to side street delay and intersection geometry, for providing conditional priority where buses running late would activate the signal priority. INIT, which is providing the AVL system for CDTA fleet, is also providing the signal priority system that was determined in such study, called LISA.

For this BRT study, expansion of TSP to additional signalized intersections in the corridor was considered to further improve BRT operations and increase the competitiveness of transit service versus passenger vehicle auto travel. A field review of the intersections in the corridor was conducted to determine which additional intersections would be candidates for TSP operation. The corridor intersections were reviewed based on the relative volume of side street traffic observed, the typical length of the signal cycle, and the complexity of the signal phasing. Information from the speed and delay runs was considered as well. This review concluded that implementation of unconditional TSP at most of the signalized intersections in the Route 5 corridor should have little or no impact on side street traffic. Four intersections classified as complex are included in the Route 5 TSP project, leaving 15 of the more complex intersections with a required further analysis prior to unconditional TSP implementation. However, because of the relatively low number of calls per hour expected as a result of BRT operations, it was concluded that all intersections in the corridor should be included as part of the TSP system.

2.3.2 Costs

It is expected that after the TSP program is constructed and its post-construction effects are studied, additional intersection locations would be considered for TSP. Based on cost estimates provided by CDTA, adding TSP to other intersections would cost approximately $6,500 per intersection for the TSP hardware. For cost estimating purposes, it is assumed that other related costs, such as software, traffic management, and engineering/design, would double this hardware cost. Therefore, if TSP was expanded to the remaining 40 intersections through the corridor, an estimated $520,000 would be needed.

2.3.3 Impacts

Based on a review of the various data regarding TSP[4], the implementation of conditional TSP is expected to improve bus service by reducing the overall travel time along the corridor. The estimated PM peak hour travel time savings is presented in Table 2.1. The implementation of conditional TSP is expected to reduce the overall travel time by approximately 2.75 minutes. Expanding the TSP to a more aggressive unconditional TSP may decrease travel times by 5.4 to 7 minutes depending on the estimation method. With

[4] 1) VISSIM microsimulation of a segment of the Central Avenue corridor prepared by Innovative Transportation Concepts (ITC), discussed in a report titled *Central Avenue Microsimulation – Technical Report*, October 2003.
2) CORSIM model of the Route 5 corridor to evaluate TSP improvements by Dunn Engineering, in association with other engineering firms, discussed in *Route 5 Corridor Project – Task 2 Technical Memorandum.*
3) Probability model run by consultant based on delay runs completed by CDTA on April 2004.

the implementation of BRT transit service stopping only at select stations, and unconditional TSP, travel times may be reduced by a total of approximately 17 minutes. Therefore, a passenger leaving downtown Albany and traveling to downtown Schenectady may decrease the overall travel time from 1 hour 7 minutes to approximately 50 minutes with the implementation of unconditional (Open) TSP and BRT service. Implementation of conditional (Base) TSP plus BRT service may reduce travel times by approximately 13 minutes.

Table 2.1 Preliminary PM Peak Hour Travel Time Savings Estimate

TSP Condition	Base	Conditional TSP (35 intersections)	Unconditional TSP (all intersections)	Unconditional TSP + BRT Service	Conditional TSP + BRT Service
Time Savings	---	2.75 min.	5-7 min.	17 min.	13 min.
Corridor Travel Time	67 min.	64 min.	60 min.	50 min.	54 min.

In summary, the negative impacts on cross-street traffic appear to be minimal based on the traffic analysis, while broad application of TSP to the corridor results in substantial travel time benefits for the BRT and local transit services. The conclusion of this study is that an aggressive pursuit of TSP throughout the corridor is warranted.

2.4 Bulbouts and Bus Stop Configuration

Bulbouts from sidewalks can help improve the operations of the BRT by allowing the bus to stay in a travel lane, and thus obviate the need to reenter the traffic stream after making a stop to discharge and pick up passengers. At the same time, they make boarding the bus easier for passengers, as the bus can pull up directly adjacent to the sidewalk. If the bulbout is linked to a crosswalk, it can also improve the environment for pedestrians by reducing the crossing distance to the opposite side of the street. Several bulbouts were constructed on State Street in Schenectady near North Robinson as part of the streetscape project completed in 2004.

Seven bulbouts are proposed along the ROUTE 5 corridor; all of them are located in Albany between North Allen Street and Lark Street. These bulbouts were proposed because the narrow sidewalks do not provide sufficient space to hold the BRT shelters. In all cases, there are existing parking lanes that protect the bulbout and an extra traffic lane in the same direction to avoid a complete blockage of the street while the bus is at the station. The proposed locations are:

- North Allen, eastbound
- North Manning, eastbound
- Quail, eastbound and westbound
- Lexington, eastbound and westbound
- Lark, westbound

Given the existence of a second travel lane at all of these locations, the impact on traffic flow would be minimal. There will be minor transitory delays in one lane when a bus is at a stop picking up and discharging passengers, but these are outweighed by the travel time benefits experienced by the bus and its passengers.

In the design and engineering phase, detailed discussions with abutters and the city of Albany will be necessary to address concerns about installation and maintenance. The estimated cost per bulbout is in the range of $10,000, including design and a 20% contingency.

A related issue to bus bulbouts are the existing cut-outs for bus stops that are common in the middle segment of the corridor (in Colonie and suburban Schenectady). Referred to as "bus traps" by CDTA operations personnel, these cut-outs lead to significant delays for the buses as the time needed to reenter the stream of traffic often exceeds the amount of dwell time at the stop to allow passengers to get on and off the bus. Many of these cut-outs span driveways to local businesses lining NY 5, so that they are not even safe locations for passengers to wait. In theory, the cut-outs are there to improve safety and traffic flow so that a stopped bus is not impeding traffic in a travel lane.

It is recommended that the bus cut-outs be evaluated further to determine if some or most of them can be eliminated without compromising safety. Most of the benefit of these eliminations would accrue to the local service in the corridor, since the BRT vehicles would not be stopping at these locations.

3 Additional concepts considered

In the course of the project additional concepts for roadway treatments and to provide priority to the bus service on ROUTE 5 were considered, including a downtown Albany bus lane. These concepts are described briefly below.

3.1 Downtown Albany Bus Lanes

The concept of a bus lane is to provide an exclusive lane for transit use. Several different types of bus lanes exist including curbside lanes, interior lanes, and median lanes, each with its own advantages and disadvantages. The basic concept for downtown Albany involves provision of an exclusive bus lane in both directions on State Street from Broadway to Eagle Street, and on Washington Avenue from Eagle Street to Lark Street.

Five (5) potential bus lane concepts were identified as follows:

- Alt No. 1 – The curbside travel lane would be converted from a general use lane to a "buses only" lane in both directions from Broadway to Lark Street.
- Alt No. 2 – Curbside parking would be removed to provide exclusive bus lanes in each direction from Broadway to Lark Street.
- Alt No. 3 – Widen the street to provide two (2) travel lanes, bus lanes, and parking lanes in both directions from Broadway to Lark Street. The segment from Broadway to Eagle Street, is wider and more capable of accommodating this improvement.
- Alt No. 4 – Construction of an exclusive busway in the center of the road between Broadway and Eagle Street. Bus shelters would also be provided in this median area.
- Alt No. 5 – This alternative involves a combination of bus lanes and queue jump lanes at spot locations during peak hours only for maximum benefit and to minimize peripheral impacts.

Each alternative presented different potential impacts and benefits. A qualitative evaluation that considered five criteria was conducted to analyze the trade-offs of the alternatives under consideration. The five criteria selected for the evaluation were: 1) impact to traffic; 2) impact to parking; 3) transit improvement; 4) impact to pedestrian environment; and 5) complexity or constructability. The assessment suggests that Alternatives 1, 2 and 3 should be eliminated and that Alternatives 4 and 5 should be explored further. The most significant benefit of the downtown bus lane concepts is the visual presence of BRT and the region's commitment to providing transit services. Travel time benefits to BRT vehicles are less clear, given overall traffic volumes and the high volumes of local buses from other routes. Impacts on general purpose traffic and parking could be significant. Based on these results it was suggested that bus lanes be considered only as a future phase or long term BRT design element.

3.2 Bus Lanes between Fuller Road and Route 155

Concept - Provide bus lanes in both directions along this section either by repositioning the curbs or by removing the flush median.

Key Issue/Concern/Consideration - If compared to those for the Broadway-Lark section, bus volumes are not very high along this section (and would not be substantially higher with any of the service options developed in Study Task 2). It is unlikely that the number of buses would meet the thresholds suggested in the TCRP report. There would also be a perception that a significant investment and commitment of right of way was made to provide bus lanes that do not appear to carry many buses.

3.3 HOV Lanes

Concept - Creation of new lanes in the downtowns and the Fuller-Route 155 section for use by vehicles carrying two or more passengers.

Key Issues/Concerns/Considerations - The benefit of this action, which would require either conversion of an existing general-use travel lane (a rarely-used approach to HOV lane development) or developing additional lanes in each direction (at considerable cost), would be a function of the extent to which the existing traffic stream contains enough 2+ occupant vehicles during peak travel periods. The more qualifying vehicles there are at present, the less the marginal benefit to traffic operations, as there would not be as many shifts from driving alone to carpooling as might be desired. On-street HOV lanes tend not to provide as significant of a time benefit as do on-expressway HOV lanes.

3.4 Karner Rd Accommodation of WB Left Turns Destined for Route 155 South

Concept - To reduce the demand for green time for westbound left turns at the New Karner Road (Route 155) intersection, require westbound vehicles destined for Route 155 south to turn left at Karner (Old Karner) Road, right onto Albany Street, and then left onto Route 155.

Key Issues/Concerns/Considerations - This could introduce a new operational issue at the unsignalized Karner Road intersection, with left-turning vehicles waiting for gaps in oncoming traffic. In addition, Old Karner Road and Albany Street are local streets which are in poor condition and accommodate existing truck traffic destined to the Postal Service's General Mail Facility as well as other nearby industrial uses. There are also a small number of residences along this alternative route. Thus, the negatives of directing the left turners to this alternative may outweigh the benefits to the Central/New Karner intersection.

3.5 Post-Interchange 3 Revisit of Operations and Timing/Capacity Needs

Concept - When I-87 Interchange 3 is constructed and opened (currently projected to occur in the year 2010), it will be helpful to analyze operations at the Central/Wolf/Exit 2E intersection to determine what changes to signal operation and intersection capacity will be in order. This could open up new opportunities for managing traffic using the intersection. At a minimum, it would stand to reduce the likelihood that transit priority in the form of a queue jump would have significant adverse effects on general traffic levels of service. Optimistically, cross-street volumes could be reduced for the critical lane groups so that general transit signal priority would be a possibility.

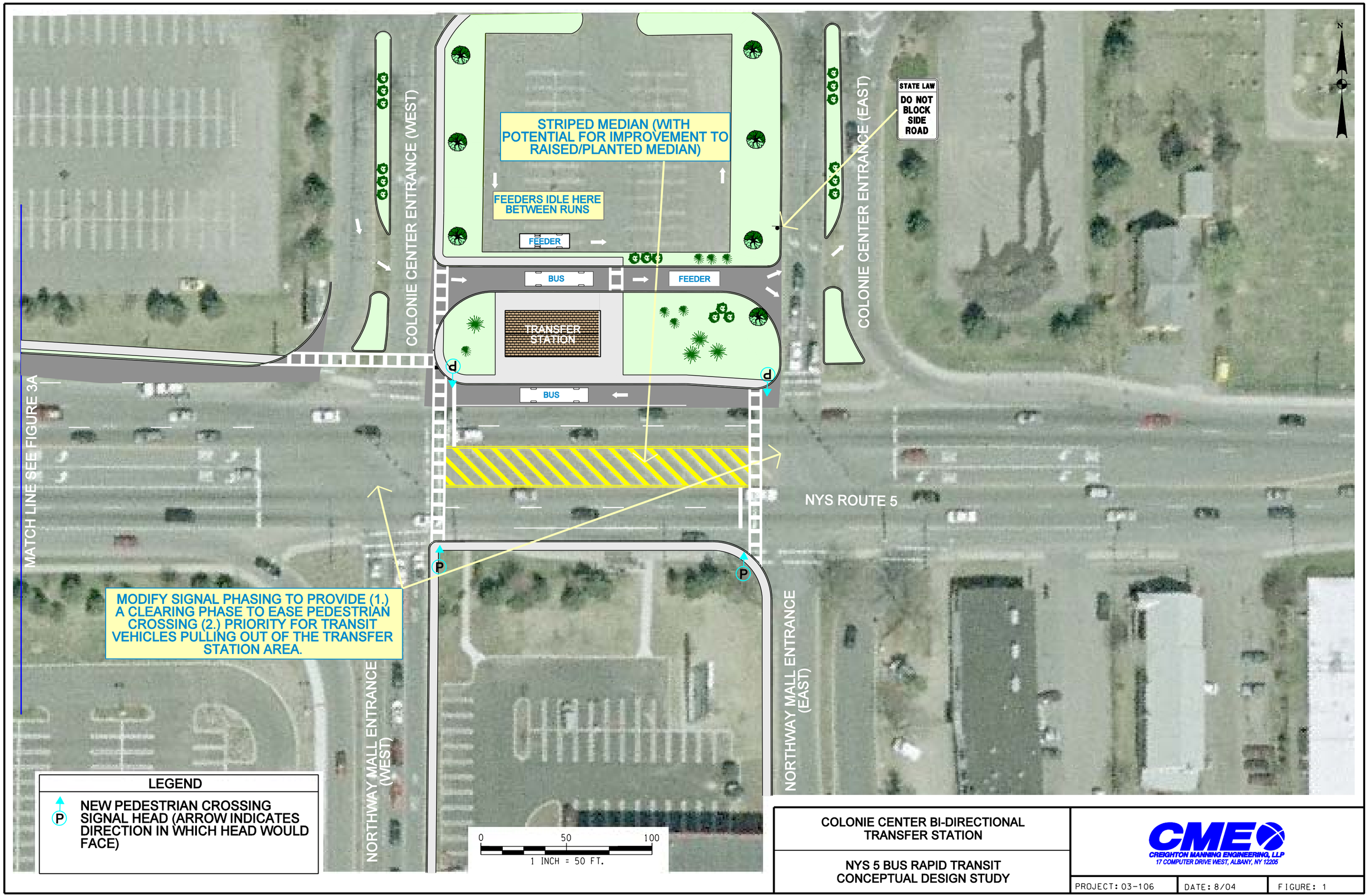
Key Issues/Concerns/Considerations – None; this examination is expected to take place after Interchange 3 is opened, both for this intersection and for Albany Shaker Road's intersections with Wolf Road and Old Wolf Road, near Interchange 4.

3.6 Flyover from I-87 to Wolf Road

Concept - In order to improve traffic operations at the Route 5/Wolf Road intersection, a flyover could be constructed from the I-87 Exit 2E off-ramp over Route 5, touching down before the southern mall signal on Wolf Road. This flyover would remove an estimated 700 to 800 vehicles per hour from the intersection and allow for the elimination of one signal phase from the cycle allowing for significantly more green time for the other traffic movements.

Key Issues/Concerns/Considerations - There would be a substantial construction cost associated with this flyover, as well as potential right-of-way issues. Such a project would require extensive study and could only be implemented in the long-term period.

APPENDIX A
COLONIE CENTER STATION DESIGNS



LEGEND

P NEW PEDESTRIAN CROSSING SIGNAL HEAD (ARROW INDICATES DIRECTION IN WHICH HEAD WOULD FACE)

COLONIE CENTER BI-DIRECTIONAL TRANSFER STATION

NYS 5 BUS RAPID TRANSIT CONCEPTUAL DESIGN STUDY

CME
CREIGHTON MANNING ENGINEERING, LLP
17 COMPUTER DRIVE WEST, ALBANY, NY 12205

PROJECT: 03-106 | DATE: 8/04 | FIGURE: 1

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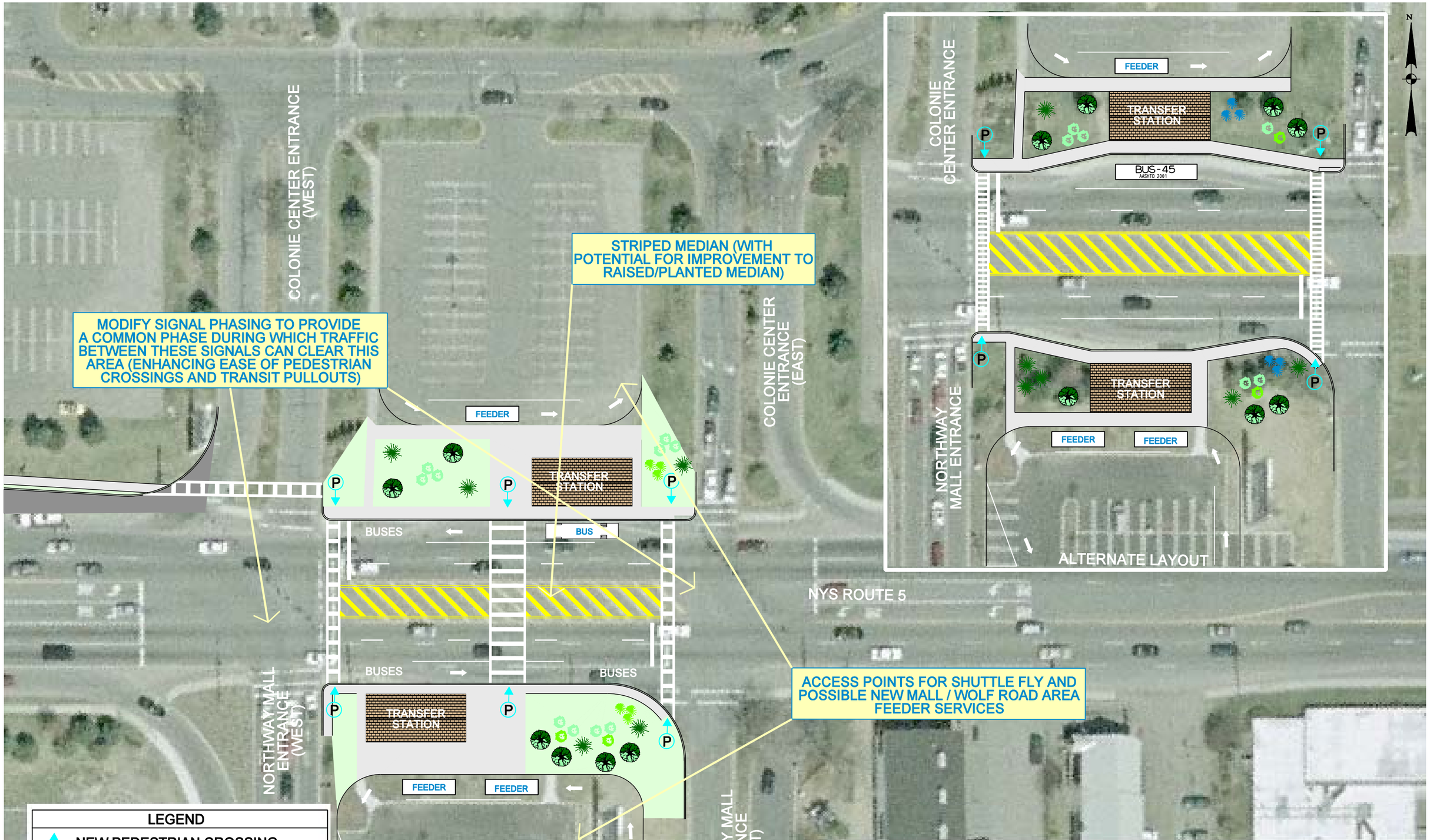
USER = $NTUSER$



COLONIE CENTER/NORTHWAY MALL
UNI-DIRECTIONAL TRANSFER STATIONS

NYS 5 BUS RAPID TRANSIT
CONCEPTUAL DESIGN STUDY

CME
CREIGHTON MANNING ENGINEERING, LLP
17 COMPUTER DRIVE WEST, ALBANY, NY 12205

PROJECT: 03-106 | DATE: 8/04 | FIGURE: 2

FILE NAME = $FILE$
DATE/TIME = $DATE$
USER = $NTUSER$