Metro Amherst-Buffalo Corridor

Tier I Evaluation: Long List of Alternatives

Prepared for:

Niagara Frontier Transportation Authority (NFTA)

Prepared by:

AECOM USA, Inc.

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1.0 LONG LIST OF ALTERNATIVES

Four specific corridors with several alternative routes have been identified during an iterative process that has included review of previous studies, discussion with the Project's Steering and Advisory Committees and input from the general public through two public workshops held in November 2013 and additional comments received from stakeholders. Stakeholders contributing input included:

- Town of Amherst
- University at Buffalo
- NYSDOT
- Citizens for Regional Transit
- Eggertsville Community Organization
- Western New York Environmental Alliance – Transportation Working Group
- Canisius College – Student Senate
- Town of Tonawanda
- Amherst Energy Conservation Citizens Advisory Committee (ECCAC)

The four corridors under study include:

1. Niagara Falls Boulevard with 8 route alternatives;
2. Bailey Avenue with 9 route alternatives, including the LRT 1995 alternative from Citizens for Regional Transit;
3. Millersport Highway with 2 route alternatives; and
4. Tonawanda Corridor

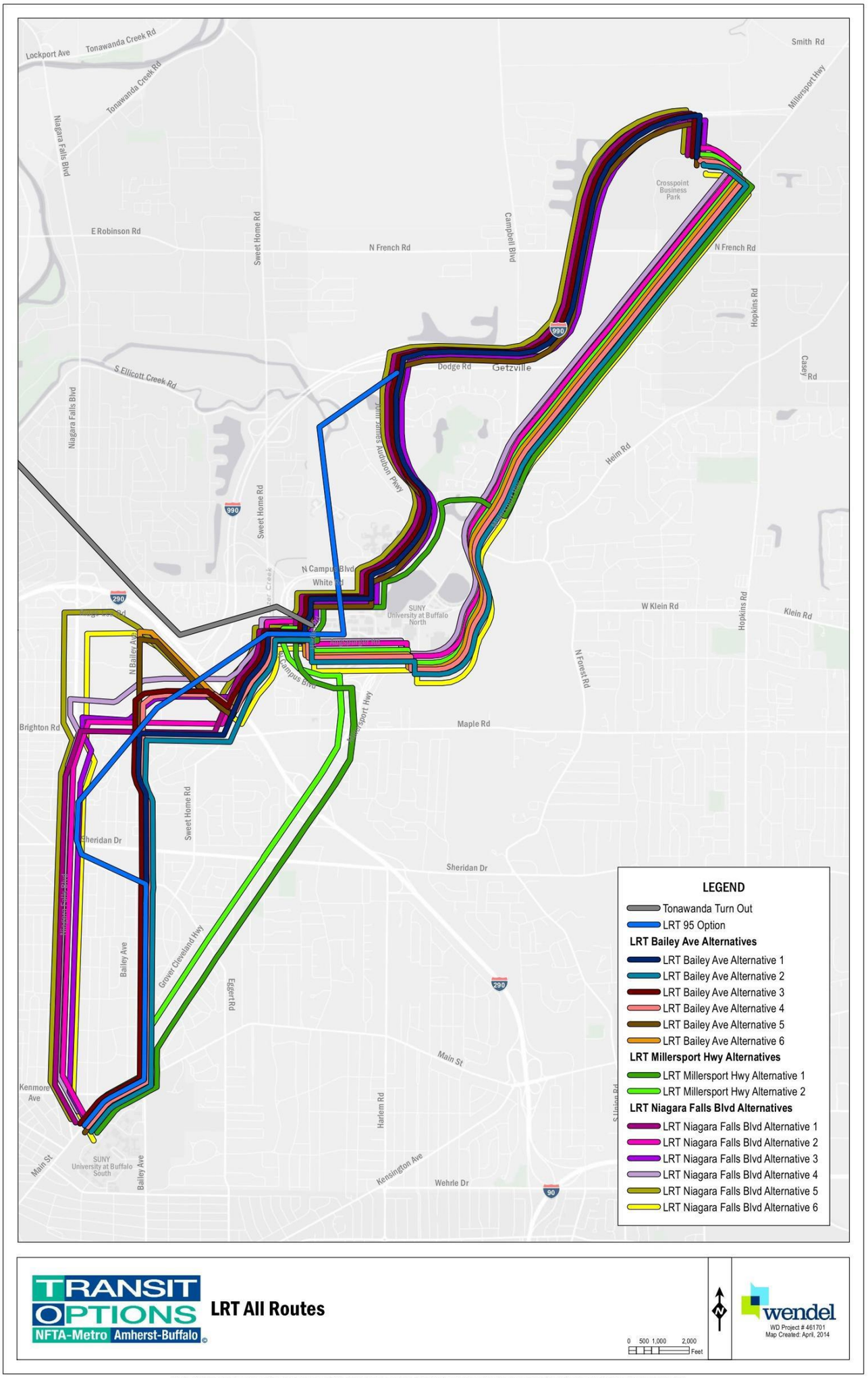
The following sections describe the current list of modal alternatives identified as the Long List of Alternatives for action. Modal alternatives consist of Bus Rapid Transit, Light Rail Transit, Modern Streetcar Transit, Bus Preferential Treatment, and Enhanced Bus.

1.1 Light Rail Transit (LRT) Options

LRT options will incorporate a combination of underground, surface and elevated segments for each route alternative. Narratives will define the location of the LRT guideway and identify activity centers served. All LRT route alternatives would utilize the existing South Campus Station as the southern terminus. Depending on the alternative, modifications or relocation of the South Campus Station may be required. The extent of modifications to that station will be evaluated during the Tier II Screening process.

Development of LRT route alternatives incorporated appropriate criteria associated with the existing system, the minimum horizontal turning radius and maximum vertical grade criteria. Alignments were developed maximizing the use of existing street rights-of-way (ROW). Figure 1 is a map of the long list of LRT alternative alignments. *Niagara Falls Boulevard Alternatives 7 and 8 and Bailey Avenue Alternatives 8 and 9 are currently under evaluation and are not yet shown in Figure 1.*

Figure 1: Long List of LRT Alternatives Map



1.1.1 Niagara Falls Boulevard LRT Alternatives

The eight Niagara Falls Boulevard LRT alternatives are presented in the following sections.

1.1.1.1 Niagara Falls Boulevard – LRT Alternative # 1

Route – Main Street - Niagara Falls Boulevard – Maple Road – Sweet Home Road – Putnam Way – John James Audubon Parkway – I-990 – Crosspoint Business Park

Alternative # 1 would begin at the South Campus Station and utilize the existing run out tunnel to Kenmore Avenue. The route will continue underground below Kenmore Avenue and Niagara Falls Boulevard to a portal in the vicinity of Paige Street. Once at the surface, the route would utilize dedicated rail lanes in the center of Niagara Falls Boulevard ROW to the Boulevard Mall. North of Sheridan Drive, the guideway would be constructed within the existing Niagara Falls Boulevard median and would continue in the center of Maple Road on dedicated rail lanes to Sweet Home Road. The guideway would utilize dedicated rail lines in the center of Sweet Home Road to a point near the Rensch Road Entrance to the UB North Campus. On the campus the route would utilize surface lanes and approximately follow Putnam Way. The route would exit the UB campus utilizing a surface guideway and travel in the median of John James Audubon Parkway to the I-990. The LRT alignment would be located in the median of I-990 on newly constructed guideway to Crosspoint Business Park. New or widened bridges would be utilized at existing grade crossings. The rail line would be elevated from I-990 into the Crosspoint Business Park.

1.1.1.2 Niagara Falls Boulevard – LRT Alternative # 2

Route – Main Street - Niagara Falls Boulevard – Maple Road – Sweet Home Road – Putnam Way – Millersport Highway - Crosspoint Business Park

Alternative # 2 would begin at the South Campus Station and utilize the existing run out tunnel to Kenmore Avenue. The route will continue underground below Kenmore Avenue and Niagara Falls Boulevard to a portal in the vicinity of Paige Street. Once at the surface, the route would utilize dedicated rail lanes in the center of Niagara Falls Boulevard ROW to the Boulevard Mall. North of Sheridan Drive, the guideway would be constructed within the existing Niagara Falls Boulevard median and would continue in the center of Maple Road on dedicated rail lanes to Sweet Home Road. The guideway would utilize dedicated rail lines in the center of Sweet Home Road to a point near the Rensch Road Entrance to the UB North Campus. On the campus the route would utilize surface lanes and approximately follow Putnam Way. From the UB campus rail lines would be elevated to Millersport Highway. The LRT would continue in the median of Millersport Highway to Crosspoint Business Park utilizing a dedicated surface guideway.

1.1.1.3 Niagara Falls Boulevard – LRT Alternative # 3

Route – Main Street – Niagara Falls Boulevard – Meyer Road – Sweet Home Road – Putnam Way – John James Audubon Parkway – I-990 – Crosspoint Business Park

Alternative # 3 would begin at the South Campus Station and utilize the existing run out tunnel to Kenmore Avenue. The route will continue underground below Kenmore Avenue and Niagara Falls Boulevard to a portal in the vicinity of Paige Street. Once at the surface, the route would utilize dedicated rail lanes in the center of Niagara Falls Boulevard ROW to the Boulevard Mall. North of Sheridan Drive, the guideway would be constructed within the existing Niagara Falls Boulevard median. From the Boulevard Mall the alignment would continue on the east side of Niagara Falls Boulevard to Meyer Road on an elevated guideway. On Meyer Road to I-290 the guideway would transition from elevated to underground and continue beneath the I-290 and surface through a portal on Sweet Home Road. The guideway would

utilize dedicated rail lines in the center of Sweet Home Road to a point near the Rensch Road Entrance to the UB North Campus. On the campus the route would utilize surface lanes and approximately follow Putnam Way. The route would exit the UB campus utilizing a surface guideway and travel in the median of John James Audubon Parkway to the I-990. The LRT alignment would be located in the median of I-990 on newly constructed guideway to Crosspoint Business Park. New or widened bridges would be utilized at existing grade crossings. The rail line would be elevated from I-990 into the Crosspoint Business Park.

1.1.1.4 Niagara Falls Boulevard – LRT Alternative # 4

Route – Main Street – Niagara Falls Boulevard – Meyer Road – Sweet Home Road – Putnam Way – Millersport Highway - Crosspoint Business Park

Alternative # 4 would begin at the South Campus Station and utilize the existing run out tunnel to Kenmore Avenue. The route will continue underground below Kenmore Avenue and Niagara Falls Boulevard to a portal in the vicinity of Paige Street. Once at the surface, the route would utilize dedicated rail lanes in the center of Niagara Falls Boulevard ROW to the Boulevard Mall. North of Sheridan Drive, the guideway would be constructed within the existing Niagara Falls Boulevard median. From the Boulevard Mall the alignment would continue on the east side of Niagara Falls Boulevard to Meyer Road on an elevated guideway. On Meyer Road to I-290 the guideway would transition from elevated to underground and continue beneath the I-290 and surface through a portal on Sweet Home Road. The guideway would utilize dedicated rail lines in the center of Sweet Home Road to a point near the Rensch Road Entrance to the UB North Campus. On the campus the route would utilize surface lanes and approximately follow Putnam Way. From the UB campus rail lines would be elevated to Millersport Highway. Within Millersport Highway, the guideway would transition from elevated to surface and would travel in dedicated guideway within the existing median to Crosspoint Business Park.

1.1.1.5 Niagara Falls Boulevard – LRT Alternative # 5

Route – Main Street – Niagara Falls Boulevard – Ridge Lea Road – Sweet Home Road – Putnam Way – John James Audubon Parkway – I-990 – Crosspoint Business Park

Alternative # 5 would begin at the South Campus Station and utilize the existing run out tunnel to Kenmore Avenue. The route will continue underground below Kenmore Avenue and Niagara Falls Boulevard to a portal in the vicinity of Paige Street. Once at the surface, the route would utilize dedicated rail lanes in the center of Niagara Falls Boulevard ROW to the Boulevard Mall. North of Sheridan Drive, the guideway would be constructed within the existing Niagara Falls Boulevard median. From the Boulevard Mall the alignment would continue on the east side of Niagara Falls Boulevard to Ridge Lea Road on an elevated guideway. On Ridge Lea Road to I-290 the guideway would transition from elevated to underground and continue beneath the I-290 and surface through a portal on Sweet Home Road. The guideway would utilize dedicated rail lines in the center of Sweet Home Road to a point near the Rensch Road Entrance to the UB North Campus. On the campus the route would utilize surface lanes and approximately follow Putnam Way. The route would exit the UB campus utilizing a surface guideway and travel in the median of John James Audubon Parkway to the I-990. The LRT alignment would be located in the median of I-990 on newly constructed guideway to Crosspoint Business Park. New or widened bridges would be utilized at existing grade crossings. The rail line would be elevated from I-990 into the Crosspoint Business Park.

1.1.1.6 Niagara Falls Boulevard – LRT Alternative # 6

Route – Main Street – Niagara Falls Boulevard – Ridge Lea Road – Sweet Home Road – Putnam Way – Millersport Highway - Crosspoint Business Park

Alternative # 6 would begin at the South Campus Station and utilize the existing run out tunnel to Kenmore Avenue. The route will continue underground below Kenmore Avenue and Niagara Falls Boulevard to a portal in the vicinity of Paige Street. Once at the surface, the route would utilize dedicated rail lanes in the center of Niagara Falls Boulevard ROW to the Boulevard Mall. North of Sheridan Drive, the guideway would be constructed within the existing Niagara Falls Boulevard median. From the Boulevard Mall the alignment would continue on the east side of Niagara Falls Boulevard to Ridge Lea Road on an elevated guideway. On Ridge Lea Road to I-290 the guideway would transition from elevated to underground and continue beneath the I-290 and surface through a portal on Sweet Home Road. The guideway would utilize dedicated rail lines in the center of Sweet Home Road to a point near the Rensch Road Entrance to the UB North Campus. On the campus the route would utilize surface lanes and approximately follow Putnam Way. From the UB campus rail lines would be elevated to Millersport Highway. Within Millersport Highway, the guideway would transition from elevated to surface and would travel in dedicated guideway within the existing median to Crosspoint Business Park.

1.1.1.7 Niagara Falls Boulevard – LRT Alternative # 7 – Segment Alternative (currently under evaluation)

Route – Main Street – Niagara Falls Boulevard – Meyer Road – Rensch Entrance

Alternative # 7 is an alternate alignment to Niagara Falls Boulevard LRT Alternatives 3 and 4 for the segment between Maple Road and UB North. Alternative 7 would use the same alignment as Alternatives 3 and 4 from South Campus Station to Maple Road, and then the alignment would be elevated north of Maple Road on Niagara Falls Boulevard. The alignment would remain elevated and curve to generally follow Meyers Road then cross I-290 and the I-990 ramps as well as the transmission line east of I-290 and the I-990 ramp. The alignment would remain elevated straight across to the Rensch Entrance to UB North. Alternative 7 could use the alignment from either Alternative 3 or 4 between UB North and Crosspoint Business Park.

1.1.1.8 Niagara Falls Boulevard – LRT Alternative # 8 – Segment Alternative (currently under evaluation)

Route – Main Street – Niagara Falls Boulevard – Ridge Lea Road – Rensch Road - Rensch Entrance

Alternative # 8 is an alternate alignment to Niagara Falls Boulevard LRT Alternatives 5 and 6 for the segment between Maple Road and UB North. Alternative 8 would use the same alignment as Alternatives 5 and 6 from South Campus Station to Maple Road, and then the alignment would be elevated north of Maple Road on Niagara Falls Boulevard. The alignment would remain elevated along Niagara Falls Boulevard, then curve and generally follow Ridge Lea Road. The alignment would be elevated to cross I-290 as well as the transmission line that bisects the highway ramps and would need to go underground beneath the I-990 ramps. The alignment would come to grade across Rensch Road to the Rensch Entrance to UB North. Alternative 8 could use the alignment from either Alternative 5 or 6 between UB North and Crosspoint Business Park.

1.1.1.9 Niagara Falls Boulevard Alternative Corridor – Subset

This Alternative Corridor LRT Option would utilize Main Street, Bailey Avenue and Eggert Road from the South Campus Station to Niagara Falls Boulevard. The alternative alignment would combine the Niagara Falls Boulevard and Bailey Avenue LRT corridor alternatives. The alternative would begin at the South Campus Station and utilize the existing run out tunnel and continue underground on Bailey Avenue to Eggert Road. The alignment would continue underground on Eggert Road to Niagara Falls Boulevard and transition to the surface in the median north of Sheridan Drive. This corridor option would be considered a subset for transitioning from South Station to Niagara Falls Boulevard corridor alternatives.

1.1.2 Bailey Avenue LRT Alternatives

The nine Bailey Avenue LRT alternatives are described in the following sections.

1.1.2.1 Bailey Avenue – LRT Alternative # 1

Route – Main Street – Bailey Avenue – Maple Road – Sweet Home Road – Putnam Way – John James Audubon Parkway – I-990 – Crosspoint Business Park

Alternative # 1 would begin at the South Campus Station and utilize the existing run out tunnel continuing underground to Bailey Avenue then surfacing through a portal on Maple Road. Once at the surface, dedicated lanes in the center of Maple Road would be utilized to Sweet Home Road. The guideway would utilize dedicated rail lines in the center of Sweet Home Road to a point near the Rensch Road Entrance to the UB North Campus. On the campus the route would utilize surface lanes and approximately follow Putnam Way. The route would exit the UB campus utilizing a surface guideway and travel in the median of John James Audubon Parkway to the I-990. The LRT alignment would be located in the median of I-990 on newly constructed guideway to Crosspoint Business Park. New or widened bridges would be utilized at existing grade crossings. The rail line would be elevated from I-990 into the Crosspoint Business Park.

1.1.2.2 Bailey Avenue –LRT Alternative # 2

Route – Main Street – Bailey Avenue – Maple Road – Sweet Home Road – Putnam Way – Millersport Highway - Crosspoint Business Park

Alternative # 2 would begin at the South Campus Station and utilize the existing run out tunnel continuing underground to Bailey Avenue then surfacing through a portal on Maple Road. Once at the surface, dedicated lanes in the center of Maple Road would be utilized to Sweet Home Road. The guideway would utilize dedicated rail lines in the center of Sweet Home Road to a point near the Rensch Road Entrance to the UB North Campus. On the campus the route would utilize surface lanes and approximately follow Putnam Way. From the UB campus rail lines would be elevated to Millersport Highway. Within Millersport Highway, the guideway would transition from elevated to surface and would travel in dedicated guideway within the existing median to Crosspoint Business Park.

1.1.2.3 Bailey Avenue – LRT Alternative # 3

Route – Main Street – Bailey Avenue – Meyer Road – Sweet Home Road – Putnam Way – John James Audubon Parkway – I-990 – Crosspoint Business Park

Alternative # 3 would begin at the South Campus Station and utilize the existing run out tunnel and continue underground to Bailey Avenue and surface through a portal on Meyer Road adjacent to the I-290. The LRT would transition underground below I-290 to surface through a portal on Sweet Home Road north of I-290. The guideway would utilize dedicated rail lines in the center of Sweet Home Road to a point near the Rensch Road Entrance to the UB North Campus. On the campus the route would utilize surface lanes and approximately follow Putnam Way. The route would exit the UB campus utilizing a surface guideway and travel in the median of John James Audubon Parkway to the I-990. The LRT alignment would be located in the median of I-990 on newly constructed guideway to Crosspoint Business Park. New or widened bridges would be utilized at existing grade crossings. The rail line would be elevated from I-990 into the Crosspoint Business Park.

1.1.2.4 Bailey Avenue – LRT Alternative # 4

Route – Main Street – Bailey Avenue – Meyer Road – Sweet Home Road – Putnam Way – Millersport Highway - Crosspoint Business Park

Alternative # 4 would begin at the South Campus Station and utilize the existing run out tunnel and continue underground to Bailey Avenue and surface through a portal on Meyer Road adjacent to the I-290. The LRT would transition underground below I-290 to surface through a portal on Sweet Home Road north of I-290. The guideway would utilize dedicated rail lines in the center of Sweet Home Road to a point near the Rensch Road Entrance to the UB North Campus. On the campus the route would utilize surface lanes and approximately follow Putnam Way. From the UB campus rail lines would be elevated to Millersport Highway. Within Millersport Highway, the guideway would transition from elevated to surface and would travel in dedicated guideway within the existing median to Crosspoint Business Park.

1.1.2.5 Bailey Avenue – LRT Alternative # 5

Route – Main Street – Bailey Avenue – Ridge Lea Road – Sweet Home Road – Putnam Way – John James Audubon Parkway – I-990 – Crosspoint Business Park

Alternative # 5 would begin at the South Campus Station and utilize the existing run out tunnel and continue underground on Bailey Avenue and surface through a portal on Ridge Lea Road. The LRT would transition underground below I-290 to surface through a portal on Sweet Home Road north of I-290. The guideway would utilize dedicated rail lines in the center of Sweet Home Road to a point near the Rensch Road Entrance to the UB North Campus. On the campus the route would utilize surface lanes and approximately follow Putnam Way. The route would exit the UB campus utilizing a surface guideway and travel in the median of John James Audubon Parkway to the I-990. The LRT alignment would be located in the median of I-990 on newly constructed guideway to Crosspoint Business Park. New or widened bridges would be utilized at existing grade crossings. The rail line would be elevated from I-990 into the Crosspoint Business Park.

1.1.2.6 Bailey Avenue – LRT Alternative # 6

Route – Main Street – Bailey Avenue – Ridge Lea Road – Sweet Home Road – Putnam Way – Millersport Highway - Crosspoint Business Park

Alternative # 6 would begin at the South Campus Station and utilize the existing run out tunnel and continue underground to Bailey Avenue and surface through a portal on Ridge Lea Road. The LRT would transition underground below I-290 to surface through a portal on Sweet Home Road north of I-290. The guideway would utilize dedicated rail lines in the center of Sweet Home Road to a point near the Rensch Road Entrance to the UB North Campus. On the campus the route would utilize surface lanes and approximately follow Putnam Way. From the UB campus rail lines would be elevated to Millersport Highway. Within Millersport Highway, the guideway would transition from elevated to surface and would travel in dedicated guideway within the existing median to Crosspoint Business Park.

1.1.2.7 Bailey Avenue – LRT Alternative #7 (from the Citizens for Regional Transit newsletter)

Route – Main Street – Bailey Avenue – Eggert Road – under Marion Road – over Sheridan Drive – over Bailey Avenue – over the Youngmann Highway – over the Lockport Expressway – parallel to and on the south side of UB academic buildings – parallel to the Lockwood Memorial Library – Audubon Parkway – Dodge Road

Alternative # 7 would begin at the South Campus Station and utilize the existing run out tunnel and continue underground to Bailey Avenue. The alignment would continue under Bailey Avenue in tunnel to Ruth Avenue where the alignment transitions from tunnel to aerial structure at Betina Avenue. The aerial structure curves to an alignment along the north side of Eggert Road and curves again north in Marion Road over Sheridan Drive, then descends to grade for a short distance. From Alameda Avenue the alignment transitions to an aerial structure and proceeds diagonally over the parking lots crossing over Bailey Avenue north of Maple Road where it descends to grade. After crossing Meyer Road, the alignment goes over the Youngmann Highway as well as the ramps of the Lockport Expressway. The aerial structure curves east parallel to the south side of the UB campus spine and continues east until curving north between the Lockwood Memorial Library and Clements Hall. The alignment continues on structure across the campus parking lots and over Audubon Parkway where it descends to grade. The alignment continues and passes to the northwest side of the Ellicott Complex and crosses Ellicott Creek to the west side of Audubon Parkway to a point south of Towne Center initially and eventually to Dodge Road. This alignment represents the recommended alignment that came out of the 1995 Citizens Rapid Transit Committee Planning newsletter and comments received in November 2013 from the Citizens for Regional Transit.

1.1.2.8 Bailey Avenue – LRT Alternative #8 – Segment Alternative (currently under evaluation)

Route – Main Street – Bailey Avenue – North Bailey Avenue – Meyer Road – Rensch Entrance

Alternative # 8 is an alternate alignment to Bailey Avenue LRT Alternatives 3 and 4 for the segment between Maple Road and UB North. Alternative 8 would use the same alignment as Alternatives 3 and 4 from South Campus Station to Maple Road, and then the alignment would be elevated north of Maple Road on North Bailey Avenue. The alignment would remain elevated and curve to generally follow Meyers Road then cross I-290 and the I-990 ramps as well as the transmission line east of I-290 and the I-990 ramp. The alignment would remain elevated straight across to the Rensch Entrance to UB North. Alternative 8 could use the alignment from either Alternative 3 or 4 between UB North and Crosspoint Business Park.

1.1.2.9 Bailey Avenue – LRT Alternative #9 – Segment Alternative (currently under evaluation)

Route – Main Street – Bailey Avenue – North Bailey Avenue – Ridge Lea Road – Rensch Road – Rensch Entrance

Alternative # 9 is an alternate alignment to Bailey Avenue LRT Alternatives 5 and 6 between Maple Road and UB North. Alternative 9 would use the same alignment as Alternatives 5 and 6 from South Campus Station to Maple Road, and then the alignment would be elevated north of Maple Road on North Bailey Avenue. The alignment would remain elevated along North Bailey Avenue, then curve and generally follow Ridge Lea Road. The alignment would be elevated to cross I-290 as well as the transmission line that bisects the highway ramps and would need to go underground beneath the I- 990 ramps. The alignment would come to grade across Rensch Road to the Rensch Entrance to UB North. Alternative 9 could use the alignment from either Alternative 5 or 6 between UB North and Crosspoint Business Park.

1.1.3 Millersport Highway LRT Alternatives

The two Millersport Highway LRT alternatives are described in the following sections.

1.1.3.1 Millersport Avenue – LRT Alternative # 1

Route – Main Street – Bailey Avenue – Millersport Road – Hadley Road – Putnam Way – John James Audubon Parkway – Sylvan Parkway – Millersport Highway - Crosspoint Business Park

Alternative # 1 would begin at the South Campus Station and utilize the existing run out tunnel and continue underground to Bailey Avenue and surface through a portal on Millersport Highway. On Millersport Highway surface rail lines would be constructed in the median to the North UB campus. Along Millersport Highway at the I-290 overpass additional lanes will be added beneath the I-290 bridges by excavating the slopes adjacent to the abutments. Another option at the I-290 overpass would be to elevate the rail lines from Sheridan Drive above I-290 to the North UB campus. On the campus the route would utilize surface lanes and approximately follow Putnam Way. From the UB campus the rail line would travel in the median of John James Audubon Parkway to Sylvan Parkway. On Sylvan Parkway the rail line would travel in the center of the road to Millersport Highway and continue in the median of Millersport to Crosspoint Business Park.

1.1.3.2 Millersport Avenue – LRT Alternative # 2

Route – Main Street – Bailey Avenue – Millersport Road –Hadley Road – Putnam Way – Millersport Highway - Crosspoint Business Park

Alternative # 2 would begin at the South Campus Station and utilize the existing run out tunnel and continue underground to Bailey Avenue and surface through a portal on Millersport Highway. On Millersport Highway surface rail lines would be constructed in the median to the North UB campus. Along Millersport Highway at the I-290 overpass additional lanes will be added beneath the I-290 bridges by excavating the slopes adjacent to the abutments. Another option at the I-290 overpass would be to elevate the rail lines from Sheridan Drive above I-290 to the North UB campus. On the campus the route would utilize surface lanes and approximately follow Putnam Way. From the UB campus rail lines would be elevated to Millersport Highway and continue in the median of Millersport to Crosspoint Business Park.

1.2 Bus Rapid Transit (BRT) Options

This modal option will develop at-grade routes for each BRT alternative, define location of dedicated lanes, and identify activity centers served. Figure 2 is a map of the long list of BRT alternative alignments.

1.2.1 Niagara Falls Boulevard BRT Alternatives

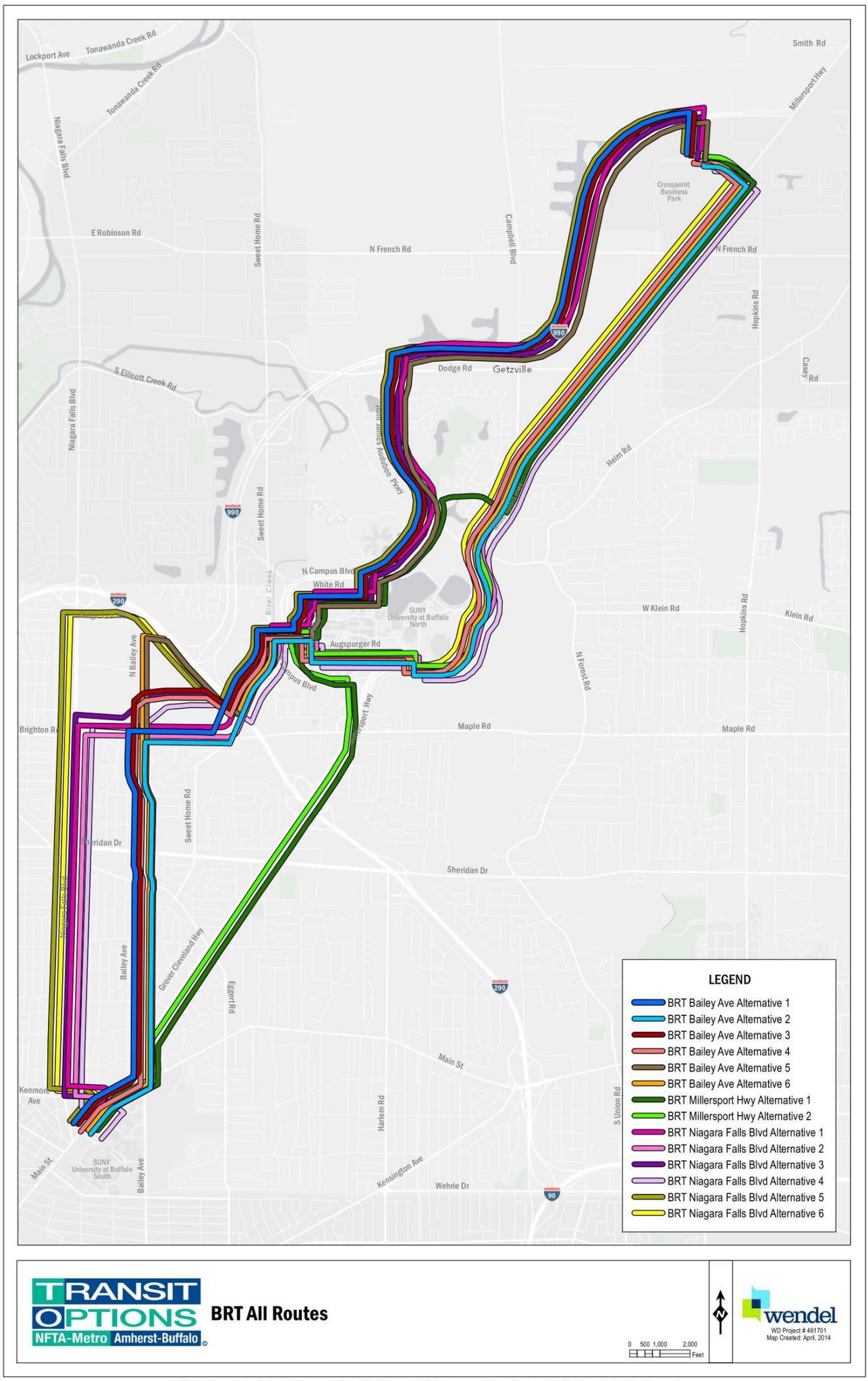
The six Niagara Falls Boulevard BRT alternatives are presented in the following sections.

1.2.1.1 Niagara Falls Boulevard – BRT Alternative # 1

Route – Main Street – Kenmore Avenue - Niagara Falls Boulevard – Maple Road – Sweet Home Road – Putnam Way – John James Audubon Parkway – I-990 – Crosspoint Business Park

BRT vehicles would depart from the existing South Campus Station bus loop and run along the south side of Main Street to Kenmore Avenue on newly constructed dedicated bus lanes separated from the existing Main Street travel lanes. From there buses would turn left onto Kenmore Avenue and share the road to Niagara Falls Blvd. Buses then would travel north on Niagara Falls Boulevard in dedicated bus lanes to the Boulevard Mall. From the Boulevard Mall buses would travel east on Maple Road on dedicated bus lanes to Sweet Home Road. Buses would travel down Sweet Home Road on dedicated bus lanes to the Rensch Road Entrance on the UB North Campus. On the campus buses would utilize Putnam Way. From the UB campus buses would share the road along the John James Audubon Parkway to the I-990. Buses would travel down the median of I-990 on newly constructed bus lanes to Crosspoint Business Park. A new interchange would be constructed from I-990 to and from the Crosspoint Business Park.

Figure 2: Long List of BRT Alternatives Map



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1.2.1.2 Niagara Falls Boulevard – BRT Alternative # 2

Route – Main Street – Kenmore Avenue - Niagara Falls Boulevard – Maple Road – Sweet Home Road – Putnam Way – Millersport Highway - Crosspoint Business Park

Buses would depart from the South Campus Station bus loop and run along the south side of Main Street to Kenmore Avenue in newly constructed dedicated bus lanes separated from the existing Main Street travel lanes. From there buses would travel west on Kenmore Avenue and share the road to Niagara Falls Blvd. Buses then would travel north on Niagara Falls Boulevard in dedicated bus lanes to the Boulevard Mall. From the Boulevard Mall buses would travel east on Maple Road on dedicated bus lanes to Sweet Home Road. Buses would travel north on Sweet Home Road in dedicated bus lanes to the Rensch Road Entrance on the UB North Campus. On the campus buses would operate on Putnam Way. Buses would travel down the median of Millersport Highway on newly constructed bus lanes to Crosspoint Business Park.

1.2.1.3 Niagara Falls Boulevard – BRT Alternative # 3

Route – Main Street – Kenmore Avenue - Niagara Falls Boulevard – Meyer Road – Sweet Home Road – Putnam Way – John James Audubon Parkway – I-990 – Crosspoint Business Park

Buses would depart from the South Campus Station bus loop and run along the south side of Main Street to Kenmore Avenue in newly constructed dedicated bus lanes separated from the existing Main Street travel lanes. From there buses would travel west on Kenmore Avenue and share the road to Niagara Falls Blvd. Buses then would travel down Niagara Falls Boulevard in dedicated bus lanes to the Boulevard Mall. From the Boulevard Mall buses would travel down the east side of Niagara Falls Boulevard to Meyer Road on dedicated bus lanes. Buses would share travel lanes to the end of Meyer Road. Buses would then travel adjacent to I-290 on newly constructed dedicated lanes from Meyer Road to Sweet Home Road. Buses would travel down Sweet Home Road on dedicated bus lanes to UB North Campus. On the campus buses would operate on Putnam Way. From the UB campus buses would share the road along the John James Audubon Parkway to the I-990. Buses would travel down the median of I-990 on newly constructed bus lanes to Crosspoint Business Park. A new interchange would be constructed from I-990 to and from the Crosspoint Business Park.

1.2.1.4 Niagara Falls Boulevard – BRT Alternative # 4

Route – Main Street – Kenmore Avenue - Niagara Falls Boulevard – Meyer Road – Sweet Home Road – Putnam Way – Millersport Highway - Crosspoint Business Park

Buses would depart from the UB south campus and run along the south side of Main Street to Kenmore Avenue on newly constructed dedicated bus lanes separated from the existing travel lanes. From there buses would turn left onto Kenmore Avenue and share the road to Niagara Falls Blvd. Buses then would travel down Niagara Falls Boulevard on dedicated bus lanes to the Boulevard Mall. From the Boulevard Mall buses would utilize new dedicated bus lanes in new ROW located to the east of Niagara Falls Boulevard to Meyer Road. Buses would share travel lanes to the end of Meyer Road. Buses would then travel east adjacent to I-290 ROW in newly constructed dedicated lanes from Meyer Road to a new signalized intersection with Sweet Home Road. Buses would travel north on Sweet Home Road in dedicated bus lanes to the Rensch Road entrance to the UB North Campus. On the campus buses would operate on Putnam Way. Buses would travel down the median of Millersport Highway in newly constructed bus lanes to Crosspoint Business Park. A new interchange would be constructed from I-990 to and from the Crosspoint Business Park.

1.2.1.5 Niagara Falls Boulevard – BRT Alternative # 5

Route – Main Street – Kenmore Avenue - Niagara Falls Boulevard – Ridge Lea Road – Sweet Home Road – Putnam Way – John James Audubon Parkway – I-990 – Crosspoint Business Park

Buses would depart from the South Campus Station bus loop and run along the south side of Main Street to Kenmore Avenue in newly constructed dedicated bus lanes separated from the existing Main Street travel lanes. From there buses would travel west onto Kenmore Avenue and share the road to Niagara Falls Blvd. Buses then would travel down Niagara Falls Boulevard in dedicated bus lanes to the Boulevard Mall. From the Boulevard Mall buses would share travel lanes on Niagara Falls Boulevard to Ridge Lea Road. Buses would share travel lanes to the end of Ridge Lea Road. Buses would then utilize newly constructed dedicated lanes within the I-290 ROW from Ridge Lea Road to Sweet Home Road. Buses would utilize Sweet Home Road in dedicated bus lanes to the Rensch Road Entrance on the UB North Campus. On the campus buses would operate on Putnam Way. From the UB campus buses would share the road along the John James Audubon Parkway to the I-990. Buses would travel down the median of I-990 on newly constructed bus lanes to Crosspoint Business Park. A new bus only interchange would be constructed from I-990 to and from the Crosspoint Business Park.

1.2.1.6 Niagara Falls Boulevard – BRT Alternative # 6

Route – Main Street – Kenmore Avenue - Niagara Falls Boulevard – Ridge Lea Road – Sweet Home Road – Putnam Way – Millersport Highway - Crosspoint Business Park

Buses would depart from the South Campus Station bus loop and run along the south side of Main Street to Kenmore Avenue in newly constructed dedicated bus lanes separated from the existing Main Street travel lanes. From there buses would utilize Kenmore Avenue and share the road to Niagara Falls Blvd. Buses then would travel north/south on Niagara Falls Boulevard in dedicated bus lanes to the Boulevard Mall. From the Boulevard Mall buses would travel north/south on Niagara Falls Boulevard to Ridge Lea Road sharing existing travel lanes. Buses would share travel lanes to the end of Ridge Lea Road. Buses would utilize newly constructed dedicated lanes within the I-290 ROW from Ridge Lea Road to a new signalized intersection on Sweet Home Road. Buses would travel on Sweet Home Road in dedicated bus lanes to the Rensch Road entrance to the UB North Campus. On the campus buses would operate on Putnam Way. Buses would travel on the median of Millersport Highway in newly constructed bus lanes to Crosspoint Business Park.

1.2.2 Bailey Avenue BRT Alternatives

The six Bailey Avenue BRT alternatives are described in the following sections.

1.2.2.1 Bailey Avenue – BRT Alternative # 1

Route – Main Street – Bailey Avenue – Maple Road – Sweet Home Road – Putnam Way – John James Audubon Parkway – I-990 – Crosspoint Business Park

Buses would depart from the South Campus Station bus loop and run along the south side of Main Street to Bailey Avenue in newly constructed dedicated bus lanes separated from the existing Main Street travel lanes. From there buses would utilize the existing jug handle to turn left onto Bailey Avenue and share the road to the Boulevard Mall. From there buses would reenter onto Bailey Avenue and share the road to Maple Road. Buses would travel down Maple Road in dedicated bus lanes to Sweet Home Road. Buses would utilize Sweet Home Road in dedicated bus lanes to the Rensch Road entrance to the UB North Campus. On the campus buses would operate on Putnam Way. From the UB campus buses would share the road along the John James Audubon Parkway to the I-990. Buses would utilize the median of I-

990 in newly constructed bus lanes to Crosspoint Business Park. A new bus only interchange would be constructed from I-990 to and from the Crosspoint Business Park.

1.2.2.2 Bailey Avenue – BRT Alternative # 2

Route – Main Street – Bailey Avenue – Maple Road – Sweet Home Road – Putnam Way – Millersport Highway - Crosspoint Business Park

Buses would depart from the South Campus Station bus loop and run along the south side of Main Street to Bailey Avenue on newly constructed dedicated bus lanes separated from the existing Main Street travel lanes. From there buses would turn left onto Bailey Avenue and share the road to the Boulevard Mall. From there buses would reenter onto Bailey Avenue and share the road to Maple Road. Buses would utilize Maple Road in dedicated bus lanes to Sweet Home Road. Buses would utilize Sweet Home Road in dedicated bus lanes to the Rensch Road entrance to the UB North Campus. On the campus buses would operate on Putnam Way. Buses would travel down the median of Millersport Highway in newly constructed bus lanes to Crosspoint Business Park.

1.2.2.3 Bailey Avenue –BRT Alternative # 3

Route – Main Street – Bailey Avenue – Meyer Road – Sweet Home Road – Putnam Way – John James Audubon Parkway – I-990 – Crosspoint Business Park

Buses would depart from the UB south campus and run along the south side of Main Street to Bailey Avenue on newly constructed dedicated bus lanes separated from the existing travel lanes. From there buses would turn left onto Bailey Avenue and share the road to the Boulevard Mall. From there buses would reenter onto Bailey Avenue and share the road to Meyer Road. Buses would share travel lanes to the end of Meyer Road. Buses would then travel adjacent to I- 290 on newly constructed dedicated lanes from Meyer Road to Sweet Home Road. Buses would travel down Sweet Home Road on dedicated bus lanes to UB North Campus. On the campus buses would operate on Putnam Way. From the UB campus buses would share the road along the John James Audubon Parkway to the I-990. A park and ride facility could be constructed to service developed land around Walton Wood Park. Buses would travel down the median of I- 990 on newly constructed bus lanes to Crosspoint Business Park. A new interchange would be constructed from I-990 to and from the Crosspoint Business Park.

1.2.2.4 Bailey Avenue – BRT Alternative # 4

Route – Main Street – Bailey Avenue – Meyer Road – Sweet Home Road – Putnam Way – Millersport Highway - Crosspoint Business Park

Buses would depart from the South Campus Station bus loop and run along the south side of Main Street to Bailey Avenue on newly constructed dedicated bus lanes separated from the existing travel lanes. From there buses would turn left onto Bailey Avenue and share the road to the Boulevard Mall. From there buses would reenter onto Bailey Avenue and share the road to Meyer Road. Buses would share travel lanes to the end of Meyer Road. Buses would then travel in newly constructed dedicated lanes within the I-290 ROW from Meyer Road to Sweet Home Road. Buses would travel down Sweet Home Road on dedicated bus lanes to the Rensch Road Entrance to the UB North Campus. On the campus buses would operate on Putnam Way. Buses would travel down the median of Millersport Highway in newly constructed bus lanes to Crosspoint Business Park.

1.2.2.5 Bailey Avenue –BRT Alternative # 5

Route – Main Street – Bailey Avenue – Ridge Lea Road – Sweet Home Road – Putnam Way – John James Audubon Parkway – I-990 – Crosspoint Business Park

Buses would depart from the South Campus Station bus loop and run along the south side of Main Street to Bailey Avenue on newly constructed dedicated bus lanes separated from the existing travel lanes. From there buses would turn left onto Bailey Avenue and share the road to the Boulevard Mall. From there buses would reenter onto Bailey Avenue and share the road to Ridge Lea Road. Buses would share travel lanes to the end of Ridge Lea Road. Buses would then travel in newly constructed dedicated lanes within the I-290 ROW from Ridge Lea Road to a new signalized intersection at Sweet Home Road. Buses would travel down Sweet Home Road in dedicated bus lanes to the Rensch Road Entrance to the UB North Campus. On the campus buses would operate on Putnam Way. From the UB campus buses would share the road along the John James Audubon Parkway to the I-990. Buses would utilize the median of I-990 on newly constructed bus lanes to Crosspoint Business Park. A new interchange would be constructed from I-990 to and from the Crosspoint Business Park.

1.2.2.6 Bailey Avenue – BRT Alternative # 6

Route – Main Street – Bailey Avenue – Ridge Lea Road – Sweet Home Road – Putnam Way – Millersport Highway - Crosspoint Business Park

Buses would depart from the South Campus Station bus loop and run along the south side of Main Street to Bailey Avenue in newly constructed dedicated bus lanes separated from the existing travel lanes. From there buses would turn left onto Bailey Avenue and share the road to the Boulevard Mall. From there buses would reenter onto Bailey Avenue and share the road to Ridge Lea Road. Buses would share travel lanes to the end of Ridge Lea Road. Buses would then travel in newly constructed dedicated lanes from Ridge Lea Road to a new signalized intersection at Sweet Home Road. Buses would travel down Sweet Home Road in dedicated bus lanes to the Rensch Road Entrance at UB North Campus. On the campus buses would operate on Putnam Way. Buses would travel down the median of Millersport Highway on newly constructed bus lanes to Crosspoint Business Park.

1.2.3 Millersport Highway BRT Alternatives

The two Millersport Highway BRT alternatives are described in the following sections.

1.2.3.1 Millersport Avenue – BRT Alternative # 1

Route – Main Street – Bailey Avenue – Millersport Road – Hadley Road – Putnam Way – John James Audubon Parkway – Sylvan Parkway – Millersport Highway - Crosspoint Business Park

Buses would depart from the South Campus Station bus loop and run along the south side of Main Street to Bailey Avenue in newly constructed dedicated bus lanes separated from the existing travel lanes. From there buses would turn left onto Bailey Avenue and share the road to the Millersport Highway. On Millersport buses would utilize Millersport Highway in dedicated bus lanes to Maple Road. Buses would utilize the North Campus Boulevard ramp to access the North Campus and travel in dedicated bus lanes in the North Campus Boulevard median to Hadley Road. Continuing through the campus buses would share the road on Hadley Road and utilize Putnam Way. From the UB campus buses would share the road along the John James Audubon Parkway to Sylvan Parkway. On Sylvan Parkway, buses would share the travel lanes to Millersport Highway. Buses would utilize the median of Millersport Highway on newly constructed bus lanes to Crosspoint Business Park.

1.2.3.2 Millersport Avenue – BRT Alternative # 2

Route – Main Street – Bailey Avenue – Millersport Road – UB Campus Boulevard – Putnam Way – Millersport Highway - Crosspoint Business Park

Buses would depart from the South Campus Station bus loop and run along the south side of Main Street to Bailey Avenue on newly constructed dedicated bus lanes separated from the existing Main Street travel lanes. From there buses would turn left onto Bailey Avenue and share the road to the Millersport Highway. On Millersport buses would travel down Millersport Highway on dedicated bus lanes and enter the campus on Flint Road. On campus the buses would operate on Putnam Way. Buses would travel down the median of Millersport Highway on newly constructed bus lanes to Crosspoint Business Park.

1.2.4 Tonawanda Turnout LRT Alternative

Route – Existing LaSalle Station turnout – Tonawanda rail right-of-way – I-290 – High Tension Electrical Utility Rights-of-Ways – I-290/I-990 Interchange – New Aerial Structure over I-990 to Sweet Home Road – New Aerial Structure to University North Campus Academic Buildings.

This alternative would begin at the existing LaSalle Station using the existing underground track turnout previously built. A new underground transition to at-grade section would be constructed into the abandoned rail right-of-way. The new double track alignment would use the abandoned Tonawanda rail right-of-way at-grade to I-290. The alignment would parallel the I-290 heading to the east to reach a series of existing High Tension Power Utility rights-of-way (ROW) adjacent the Brighton Park Golf Course to the north east and follow the that utility ROW as it turns east at Ellicott Creek Road and then turns southeast still within the utility ROW until it reaches the I-290/I-990 Interchange. The at-grade alignment transitions to an elevated structure to cross-over I-990 and stays elevated as it passes over Sweet Home Road heading in an easterly direction. The line then comes to grade and ends at the academic buildings of the UB North Campus.

1.3 Bailey Avenue Modern Streetcar Option

Route – Main Street – Bailey Avenue – Grover Cleveland – Millersport Highway – UB North Campus Stadium – Sweet Home Road – Maple Road – Boulevard Mall.

This alternative would consist of an entirely at-grade alignment operating in mixed traffic along its entire alignment with frequent stops similar to a local bus.

1.4 Bus Preferential Treatment Alternatives

Bus preferential treatments consist of a limited number of the elements of the BRT alternatives and would be developed based upon the BRT alternatives initially considered as appropriate. Maps identifying the potential alternatives were prepared and shown to the Project Committees in October 2013. A map of the preferential bus alternatives is provided as Figure 3.

1.5 Enhanced Bus Service

These alternatives typically consist of improving existing bus routes by increasing frequencies, adjusting bus stop locations and providing route extensions. These alternatives are typically developed as part of the Transit Systems

Management (TSM) alternative when it is developed. Maps identifying the potential alternatives were prepared and shown to the Project Committees in October 2013. A map of the enhanced bus alternatives is provided as Figure 4.

Figure 3: Preferential Bus Alternatives Map

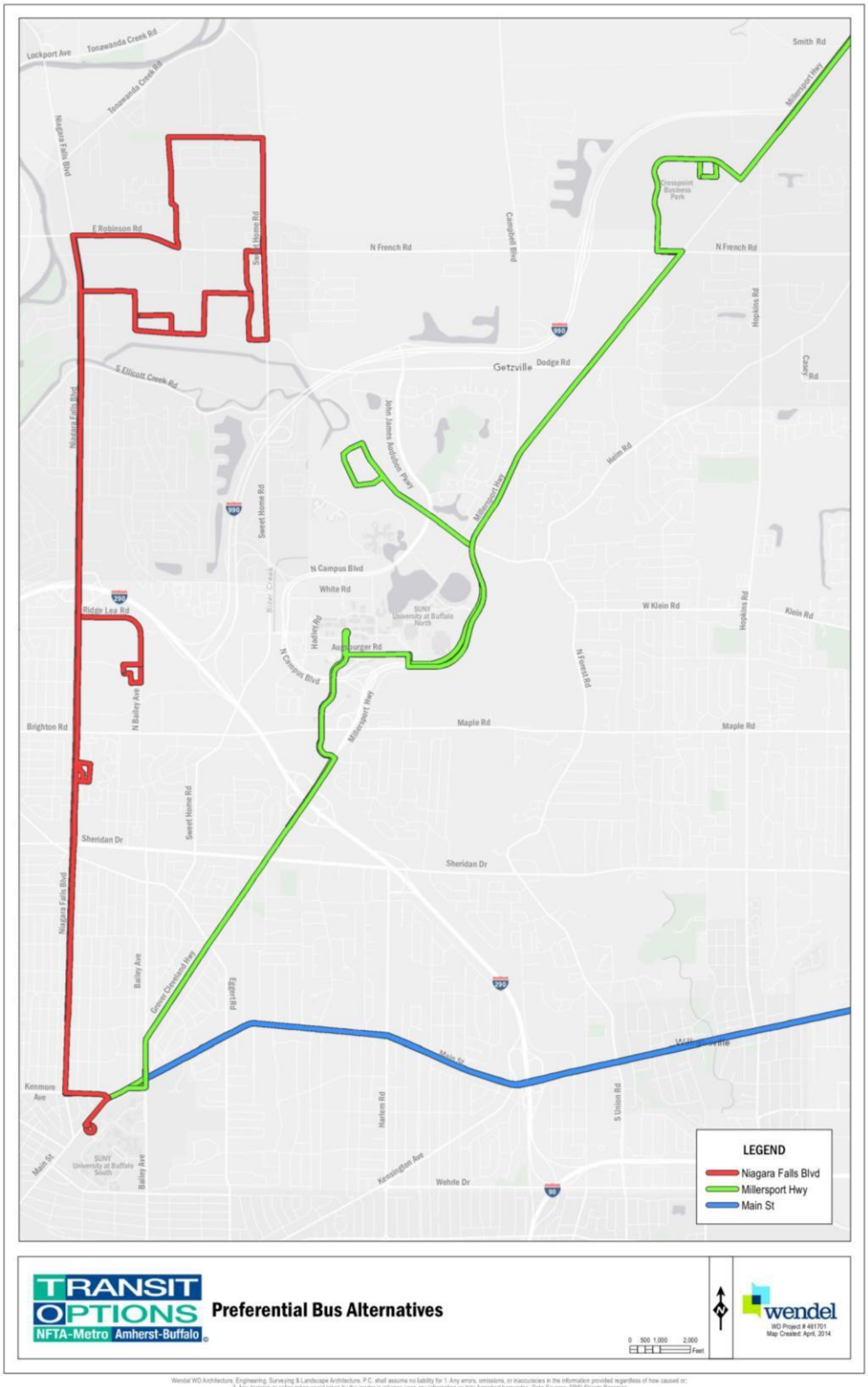
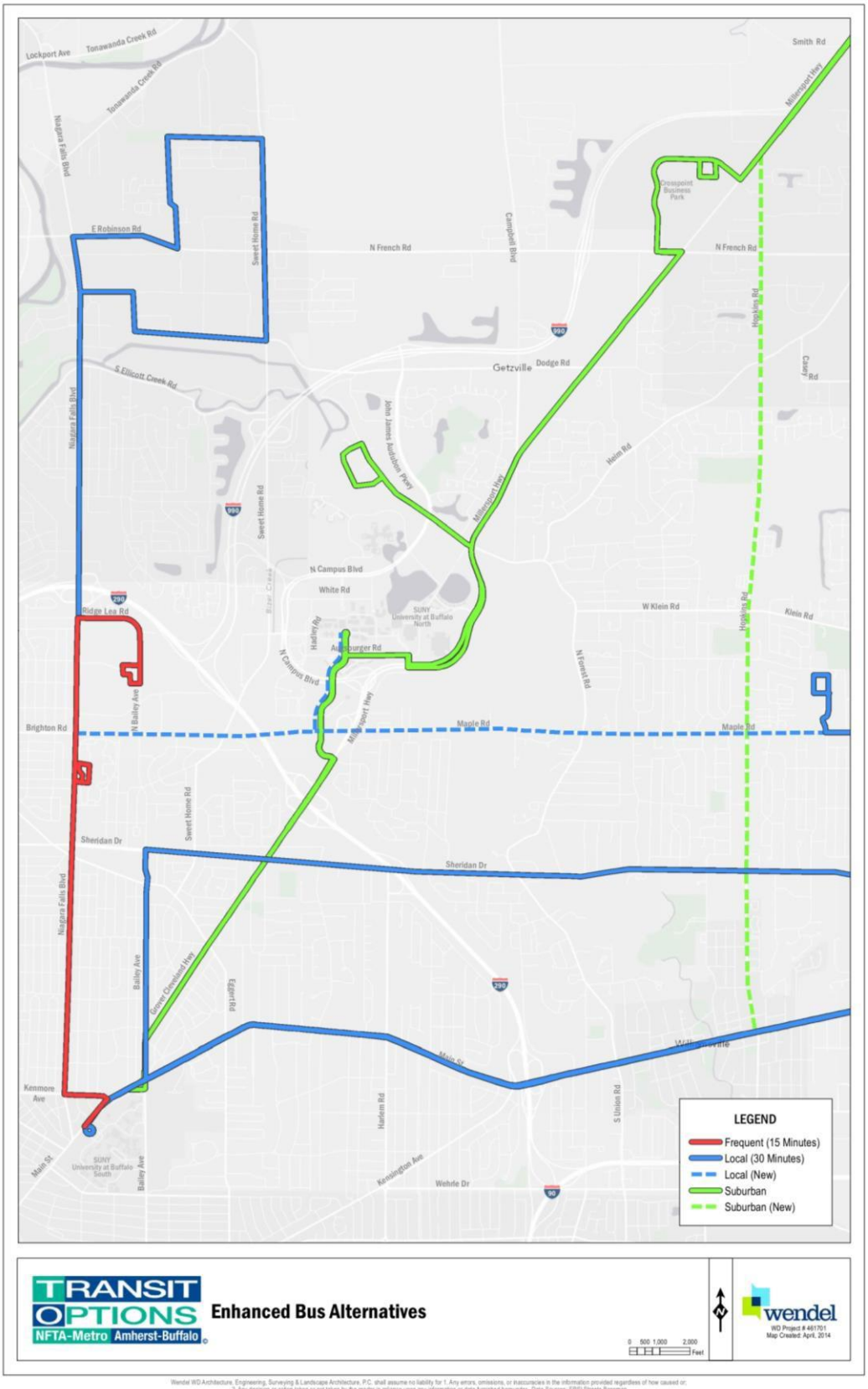


Figure 4: Enhanced Bus Alternatives Map



2.0 TIER I SCREENING PROCESS

The consultant teams from AECOM and Wendel met on February 25, 2014 in the Buffalo offices of Wendel to screen the long list of alternatives based on Tier I screening criteria. The team met via web conference again on March 18, 2014 to discuss the alternative routing through the university and north to the Crosspoint Business Park and on May 12, 2014 to discuss additional LRT alternatives that utilize North Bailey and Niagara Falls Boulevard north of Maple Road to access UB North. The purpose of the screening was to evaluate each alternative alone and in comparison to the others in order to get to a list of the most reasonable alternatives to move forward into more detailed analysis. The evaluation criteria used for Tier I screening were as follows:

- Does the alternative meet Purpose and Need? (if no, alternative fails)
- Reasonableness Test #1: Can existing right-of-way/corridor land area accommodate cross-section needed? (if no, alternative fails)
- Reasonableness Test #2: Engineering feasibility: Is the alternative reasonable to build, operate, and maintain? (as compared to other alternatives)
    - Does it have extraordinarily long or extraordinarily high and complex engineered structures relative to other alternatives? (if yes, alternative fails)
    - Does it exceed the maximum grades that the transit vehicle type can negotiate? (if yes, alternative fails)
    - Does it exceed maximum curve radii for the transit vehicle type? (if yes, alternative fails)

Each alternative was discussed and evaluated segment by segment during the screening process. Segments were color-coded to signify feasibility during discussion and analysis. Red was assigned to segments failing the reasonableness tests described above. Yellow was assigned to segments that are technically feasible, but with complications, and green was assigned to segments that pass the reasonableness tests. The results are detailed in the following section.

Enhanced bus options, which improve upon existing transit services (using Transportation Systems Management (TSM) improvement strategies to improve existing infrastructure) and Bus Preferential Treatment (based on BRT alignments moved along to Tier II) alternatives are not subject to the Tier I screening criteria. All of these alternatives will move onto the next round of analysis.

3.0 DETAILED FIXED GUIDEWAY SCREENING RESULTS

The light rail transit options and bus rapid transit options (the fixed guideway alternatives) were screened using the process described in Section 2.0. As noted, all enhanced bus and bus preferential treatment alternatives will move onto the next round of analysis. The Tonawanda Turnout alternative is located outside the study area for the project, so it will not advance to Tier II analysis. The Bailey Avenue Modern Streetcar alternative does not meet the Purpose and Need statement because it operates at low speeds with short distances between stops and would function as a circulator service. The Modern Streetcar alternative will not advance to Tier II analysis.

Alternatives are discussed by segment in the following sections as there is overlap between several alignments. The alternatives in question are listed out below each segment heading.

3.1 South Campus Station to Maple Road

Between South Campus Station and Maple Road, there are three alignments utilizing three different roadways: Niagara Falls Boulevard, Bailey Avenue and Millersport Highway. Current Metro service terminates at the underground South Campus Station on Main Street. The Metro meets buses that operate at ground level. This is the starting point for all alternatives. The Niagara Falls Boulevard alternatives exit South Campus Station and use Main Street and Kenmore Avenue to access the primary alternative roadway. The Bailey Avenue and Millersport Highway alternatives exit South Campus Station and use Main Street and Bailey Avenue to access the primary alternative roadway.

3.1.1 Niagara Falls Boulevard

Niagara Falls Boulevard LRT and BRT Alternatives 1-6

The Niagara Falls Boulevard alternatives exit South Campus Station on Main Street, then turn left onto Kenmore Avenue and right onto Niagara Falls Boulevard. Neither curve needed to make these two turns could be accomplished at-grade or on an elevated structure because the ROW is too narrow and there are too many structures immediately adjacent to the ROW. There is also not enough room to make the curves underground without acquiring a substantial number of properties. For these reasons this segment of the alignment is eliminated from further consideration for LRT service. For the BRT alternatives, there is no room for a dedicated lane in this segment so the bus would operate in traffic.

As an alternative to using Kenmore Avenue to access Niagara Falls Boulevard, there is a subset alternative in this segment that would utilize Main Street, Bailey Avenue and Eggert Road to access Niagara Falls Boulevard (as described in Section 1.1.1.9). All Niagara Falls Boulevard alternatives would use this subset alignment to access Niagara Falls Boulevard from Eggert Road. The alignment would need to be underground until the vicinity of the intersection with Sheridan Drive because of the narrow ROW on Bailey Avenue and the curves required to make the turns onto Eggert Road and Niagara Falls Boulevard.

For the BRT alternatives north of Kenmore Avenue on Niagara Falls Boulevard, a peak-period dedicated BRT lane may be possible in this segment; otherwise the bus would operate in traffic.

North of Sheridan Drive on Niagara Falls Boulevard, the ROW widens and the alignment could be brought to grade with potential median operation. Some property may need to be required (currently a parking lot) at the Niagara Falls Boulevard and Maple Road intersection in order to make the curve, but there is enough space to accommodate the curve. It would also be possible to keep the alignment elevated in this segment, through the curve at Maple Road and bring the alignment down to grade on Maple Road. Dedicated BRT lanes are possible in this segment.

3.1.2 Bailey Avenue

Bailey Avenue LRT Alternatives 1-7 and BRT Alternatives 1-6

The Bailey Avenue alternatives exit South Campus Station on Main Street and turn left onto Bailey Avenue. There is not enough room to come to grade and operate at-grade on Main Street or to make the curve to turn onto Bailey Avenue, so all Bailey Avenue alignments would need to be underground in this segment. After the turn onto Bailey Avenue, the ROW narrows so that neither elevated nor at-grade operations are possible on Bailey Avenue between Main Street and Eggert Road either. The alignment could come to grade at Eggert Road because the Bailey Avenue ROW widens, but the alignment would need to go back underground when the ROW again narrows north of Sheridan Drive.

Between Sheridan Drive and Maple Road, the Bailey Avenue ROW is narrow and curves near Emerson Road, so the alignment would need to be underground in this segment also. A complete underground alignment north to Maple Road, even with a short stretch of at-grade between Eggert Road and Sheridan Drive, requires complex engineering and would be extremely expensive. There is no room for a dedicated BRT lane either, so the rapid transit bus would operate in traffic throughout this segment, again except possibly for the small stretch between Eggert Road and Sheridan Drive.

3.1.3 Millersport Highway

Millersport Highway LRT and BRT Alternatives 1-2

The Millersport Highway alternatives exit South Campus Station on Main Street, turn left onto Bailey Avenue and turn right onto Millersport Highway (which begins as Grover Cleveland Highway). Both the turns onto Bailey Avenue and Millersport Highway would need to be underground to allow room for the necessary curve radii. Once on Millersport Highway the ROW is wide enough for at-grade operation, especially north of the Eggert Road intersection. The alignment could be operated at-grade under the I-290 bridge, though some widening may be necessary. As the alignment approaches the UB North Campus, it would follow the Audubon Parkway to Hadley Road to enter the University and follow one of the two University alignments. Elevated structures entering the university will probably be necessary. Dedicated BRT lanes are also possible in this segment, but entering the university the rapid transit bus would operate in traffic.

3.2 Maple Road to UB North

From Maple Road to the UB North campus, the Niagara Falls Boulevard and Bailey Avenue Alternatives either use Maple Road, Meyer Road, or Ridge Lea Road, then cross the I-290 and use Sweet Home Road to reach the UB North campus. The Niagara Falls Boulevard and Bailey Alternatives enter the university through the Rensch Entrance. The Millersport Highway Alternatives remain on Millersport Highway and approach the campus from the south on the Audubon Parkway and Hadley Road.

3.2.1 Maple Road to Rensch Entrance

Niagara Falls Boulevard and Bailey Avenue LRT and BRT Alternatives 1-2

The Maple Road segment between Niagara Falls Boulevard or Bailey Avenue and Sweet Home Road is wide enough to accommodate at-grade operation. As noted, the intersection of Niagara Falls Boulevard and Maple Road is wide enough for a curve, but the intersection of Bailey Avenue and Maple Road is quite narrow and the Bailey Avenue alignment would need to make the curve underground and come to grade along Maple Road.

The ROW at the intersection between Maple Road and Sweet Home Road is wide enough for an at-grade curve, though an elevated structure could also be utilized. Along Sweet Home Road, ROW is also wide enough for at-grade operation. The alignment would also need to pass under the I-290 bridge on Sweet Home Road at-grade. The alignment cannot be elevated over the I-290 without complex engineering because there is a transmission line immediately adjacent to the I-290 in this segment.

Between the I-290 and the UB North campus on Sweet Home Road, the ROW is wide enough for an at-grade alignment, though some of the sidewalks may need to be modified to accommodate it. The use of an elevated structure is also possible in this segment, though with more complex engineering and higher associated costs, at-grade operation makes more sense. The ROW is approximately 150 feet wide in this segment.

3.2.2 Meyer Road to Sweet Home Road

Niagara Falls Boulevard and Bailey Avenue LRT and BRT Alternatives 3-4, Bailey Avenue LRT Alternative 7

As an alternative to the Maple Road alignment, both the Niagara Falls Boulevard and Bailey Avenue alignments have alternatives that extend past Maple Road instead turning right down Meyer Road and across the I-290 to Sweet Home Road. Meyer Road has a narrow ROW and curves that could not be accomplished within the existing ROW. The only way the Meyer Road alternatives would work is through underground operation. The Citizens for Regional Transit alternative (Bailey Avenue LRT Alternative 7) is described as operating on an elevated structure in this segment, but as noted above, there is not enough room in the existing ROW for an elevated structure.

The Meyer Road alternatives are further complicated by the need to cross the I-290 and its ramps with no existing ROW and by the need to traverse the transmission lines adjacent to I-290 before coming into Sweet Home Road. Due to the complexity of engineering relative to other alternatives, none of the Meyer Road alternatives will progress to Tier II analysis.

3.2.3 Ridge Lea Road to Sweet Home Road

Niagara Falls Boulevard and Bailey Avenue LRT and BRT Alternatives 5-6

As an additional alternative to the Maple Road alignment, both the Niagara Falls Boulevard and Bailey Avenue alignments have alternatives that extend past Maple Road respectively and turn right down Ridge Lea Road and across the I-290 to Sweet Home Road. Ridge Lea Road has a narrow ROW and curves that could not be accomplished within the existing ROW. The Ridge Lea alignment would also need to cross the I-290 and its ramps as well as the transmissions lines like the Meyer Road alignments, but would also need to extend south to avoid the I-990/I-290 ramps located in this area. The only way the Ridge Lea Road alternatives would work is through underground operation. Due to the complexity of engineering as compared to other alternatives that would utilize existing ROW and avoid both the ramps and the transmissions lines, none of the Ridge Lea Road alternatives will progress to Tier II analysis.

3.2.4 Rensch Entrance

Niagara Falls Boulevard and Bailey Avenue LRT and BRT Alternatives 1-6, Bailey Avenue LRT Alternative 7

After crossing the I-290, all the Niagara Falls Boulevard and Bailey Avenue Alternatives follow the same alignment up Sweet Home Road. On approach to the UB North campus, the intersection of Sweet Home Road into the Rensch Entrance does not include enough space in the ROW to make the curve at-grade without losing existing turning lanes. There is, however, enough space to make the curve with an elevated structure keeping the support beams within the existing ROW as much as possible. There is open space between Sweet Home Road and the Audubon Parkway; though it is unlikely that it would be needed as the ROW on Sweet Home Road is 150 feet wide near the intersection.

3.2.5 Millersport Highway to Hadley Road

Millersport Highway LRT and BRT Alternatives 1-2

The Millersport Highway alignment would enter the university from the south, probably along the Audubon Parkway to Hadley Road where it would follow one of the two University alignments. Elevated structures entering the university would probably be necessary given varied ROW widths and the necessary curve radii requirements. Entering the university the BRT alternatives would operate in traffic.

3.3 UB North

Within the UB North campus, there are two alterative alignments that either connect to Audubon Parkway to the north/east or Millersport Highway to the south/east. While the exact alignment within the university is up for discussion, there need to be two alternative alignments to access the two possible alignments north of the UB campus. The alignments discussed below were developed based on NFTA discussion with the University during the Fall 2013 outreach effort.

3.3.1 Putnam North

Niagara Falls Boulevard and Bailey Avenue LRT and BRT Alternatives 1, 3, 5; Bailey Avenue LRT Alternative 7; Millersport Highway LRT and BRT Alternative 1

For the northern alternative within the university, alternatives would either enter the university through the Rensch entrance (Niagara Falls Boulevard and Bailey Avenue Alternatives) or via Hadley Road (Millersport Highway Alternatives). The alignment would serve the central campus buildings along the northern loop of Putnam Way and exit onto the Audubon Parkway via the Lee Entrance.

On campus, the roadways are generally not utilized regularly by the general public so the traffic volumes are less than public roadways. Putnam Way has both vehicle and pedestrian pathways. The ROW for the roadway and sidewalk along Putnam Way is wide enough for at-grade operation, though some sidewalk area and street parking may need to be utilized for LRT ROW or a BRT dedicated lane. The alignment would offer transit service to the heart of the campus.

3.3.2 Putnam South

Niagara Falls Boulevard and Bailey Avenue LRT and BRT Alternatives 2, 4, 6; Millersport Highway LRT and BRT Alternative 2

As with the northern campus alternative, the alternatives would either enter the university through the Rensch entrance (Niagara Falls Boulevard and Bailey Avenue Alternatives) or via Hadley Road (Millersport Highway Alternatives). Once on campus, the alignment would serve the central campus buildings and operate along the southern loop of Putnam Way, exiting onto Millersport Highway via Coventry Road.

As with the northern campus alternative, the roadways are generally not utilized by the general public on campus, so traffic volumes are reduced. Putnam Way has both vehicle and pedestrian pathways. The ROW for the roadway and sidewalk along Putnam Way is wide enough for at-grade operation, though some sidewalk area and street parking may need to be utilized for LRT ROW or a BRT dedicated lane. This alignment would also offer transit service to the heart of the campus.

3.4 UB North to Crosspoint Business Park

From the UB North campus to the Crosspoint Business Park, there are two alternative alignments that use the Audubon Parkway to the Lockport Expressway or Millersport Highway. In this segment, the surroundings are far less urban than along the southern end of the alignments so there is more space available and the ROWs are wider. All underground and elevated alignments north of the UB north campus are deemed unnecessary along this segment as enough space exists to operate at-grade and there is no need for complicated engineering.

3.4.1 Audubon Parkway to Lockport Expressway

Niagara Falls Boulevard and Bailey Avenue LRT and BRT Alternatives 1, 3, 5; Bailey Avenue LRT Alternative 7; Millersport Highway LRT and BRT Alternative 1

Along the Audubon Parkway and the Lockport Expressway, there is a wide grass median and the ROW is sufficiently wide to accommodate any alternative alignment. There are few signalized intersections and the necessary space for curves. Access between the campus and the Audubon Parkway and the Audubon Parkway and the Lockport Expressway could possibly involve the use of elevated structures, but there is ample space in the ROW to accommodate at-grade or elevated structures. The ROW does narrow in the vicinity of Dodge Road to the I-990 ramps and there is no grass median, but the ROW is still wide enough to accommodate the alignments. Access to the Crosspoint Business Park from the Lockport Expressway would require new construction unless the North French Road access point is utilized. The BRT alternative could also operate in traffic in this segment.

3.4.2 Millersport Highway

Niagara Falls Boulevard and Bailey Avenue LRT and BRT Alternatives 2, 4, 6; Millersport Highway LRT and BRT Alternative 2

Exiting the UB North campus, the alignments bound for Millersport Highway would exit through the southern end of campus, probably via Coventry Road. Coventry Road had a wide grass median and wide ROW, so at-grade operation would be possible. The Coventry Road intersection with Millersport Highway is also wide and has a grass median. Once the curve is made onto Millersport Highway, the median is also wide through to the bridge over Ellicott Creek, where the roadway narrows to cross the bridge. The ROW in this area is still 185 feet, so there is space to potentially widen the bridge. After the Ellicott Creek Bridge, the ROW again widens and is at least 100 feet all the way to the Crosspoint Business Park. The alignment could be operated at-grade in the median for this section. After the intersection with Stahl Road, the roadway no longer has a median, but has a wide shoulder in each direction, so the alignment could operate at- grade. In this segment, there is room for a dedicated BRT lane or the rapid transit vehicles could operate in traffic.

Entering the Crosspoint Business Park along the Crosspoint Parkway, some land at the corner may need to be utilized to make the curve, but there is space available. Once on the Crosspoint Parkway, the ROW is only about 65 feet, so there would need to be some modifications to the roadway in order to operate within the business park. There are sidewalks and grass areas between the roadway and the parking lots for the businesses along most of the Crosspoint Parkway.

4.0 SUMMARY SCREENING RESULTS

Overall screening results are presented in Table 1 and Table 2. Figure 5 through Figure 10 are maps of the alternatives advancing to Tier II analysis. They include:

- Niagara Falls Boulevard LRT and BRT Alternatives 1 and 2, including bus preferential treatment;
- Bailey Avenue LRT and BRT Alternatives 1 and 2, including bus preferential treatment;
- Millersport Highway LRT and BRT Alternatives 1 and 2, including bus preferential treatment; and
- Enhanced Bus Service Alternatives (mapped in Figure 4).

Details regarding the evaluation of each alternative are presented in Table 3 through Table 8 following the maps. All of the alternatives advancing to Tier II analysis utilize existing ROW wherever possible given the urban high density development of the study area. Use of the existing ROW minimizes the complexity of engineering and cost as compared to the acquisition of land outside the existing ROW and the construction of additional infrastructure where existing

infrastructure already exists and minimizes the direct impacts to homes, businesses, and other adjacent land uses. While alternatives that would operate outside the existing ROW were explored and evaluated, utilizing the existing transportation network base has the benefit of directly connecting activity centers and incorporating the patterns of existing and future development.

Table 1: Summary of Long List Screening by Evaluation Criteria for LRT Alternatives

Long List Alternative	Does the Alternative Meet Purpose & Need	Sufficiency of ROW/Land Area Assessed (Reasonableness Test 1)	Complex Structures, Exceeds Vehicle Maximum Grades, Curve Radii, Operational Flaws (Reasonableness Test 2)
LRT Alternatives			
Niagara Falls Boulevard			
1	yes	sufficient; but narrow ROW on Bailey Avenue	no for subset alignment; Kenmore Road curve radii fail
2	yes	sufficient; but narrow ROW on Bailey Avenue	no for subset alignment; Kenmore Road curve radii fail
3	yes	sufficient; but narrow ROW on Bailey Avenue	complex structure 1-290 interchange & utility corridor
4	yes	sufficient; but narrow ROW on Bailey Avenue	complex structure 1-290 interchange & utility corridor
5	yes	sufficient; but narrow ROW on Bailey Avenue	complex structure 1-290 interchange & utility corridor
6	yes	sufficient; but narrow ROW on Bailey Avenue	complex structure 1-290 interchange & utility corridor
7		*Alternative currently under evaluation*	
8		*Alternative currently under evaluation*	
Bailey Avenue			
1	yes	sufficient; but narrow ROW on Bailey Avenue	no
2	yes	sufficient; but narrow ROW on Bailey Avenue	no
3	yes	sufficient; but narrow ROW on Bailey Avenue	complex structure 1-290 interchange & utility corridor
4	yes	sufficient; but narrow ROW on Bailey Avenue	complex structure 1-290 interchange & utility corridor
5	yes	sufficient; but narrow ROW on Bailey Avenue	complex structure 1-290 interchange & utility corridor
6	yes	sufficient; but narrow ROW on Bailey Avenue	complex structure 1-290 interchange & utility corridor
7 (from Citizens for Regional Transit)	yes	narrow ROW on Bailey Avenue and utilizes extensive land outside ROW	multiple complex structures
8		*Alternative currently under evaluation*	
9		*Alternative currently under evaluation*	
Millersport Highway			
1	yes	sufficient	no
2	yes	sufficient	no
Tonawanda Turnout			
1	no, outside study area	N/A	N/A

Table 2: Summary of Long List Screening by Evaluation Criteria for BRT Alternatives

Long List Alternative	Does the Alternative Meet Purpose & Need	Sufficiency of ROW/Land Area Assessed (Reasonableness Test 1)	Complex Structures, Exceeds Vehicle Maximum Grades, Curve Radii, Operational Flaws (Reasonableness Test 2)
BRT Alternatives			
Niagara Falls Boulevard			
1	yes	sufficient	no
2	yes	sufficient	no
3	yes	sufficient	complex structure 1-290 interchange & utility corridor
4	yes	sufficient	complex structure 1-290 interchange & utility corridor
5	yes	sufficient	complex structure 1-290 interchange & utility corridor
6	yes	sufficient	complex structure 1-290 interchange & utility corridor
Bailey Avenue			
1	yes	sufficient	no
2	yes	sufficient	no
3	yes	sufficient	complex structure 1-290 interchange & utility corridor
4	yes	sufficient	complex structure 1-290 interchange & utility corridor
5	yes	sufficient	complex structure 1-290 interchange & utility corridor
6	yes	sufficient	complex structure 1-290 interchange & utility corridor
Millersport Highway			
1	yes	sufficient	no
2	yes	sufficient	no
Bailey Avenue Modern Streetcar			
1	no; circulator service with low speeds and short distances between stops	N/A	N/A

The transit service alternatives remaining following the Tier I screening will be subjected to more detailed analysis in Tier II.

Figure 5: Map of Niagara Falls Boulevard LRT Alternatives Advancing to Tier II Analysis

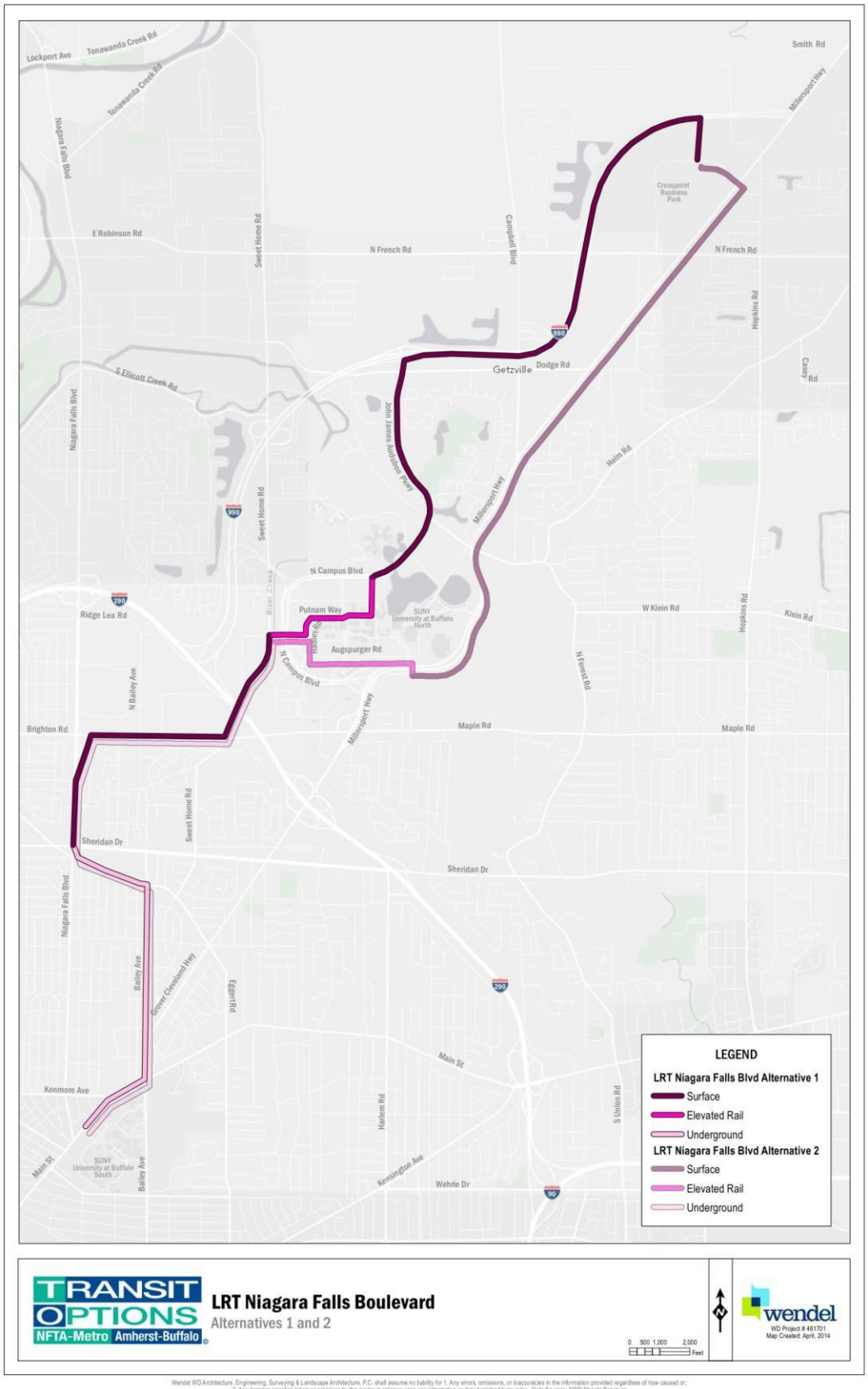


Figure 6: Map of Niagara Falls Boulevard BRT Alternatives Advancing to Tier II Analysis

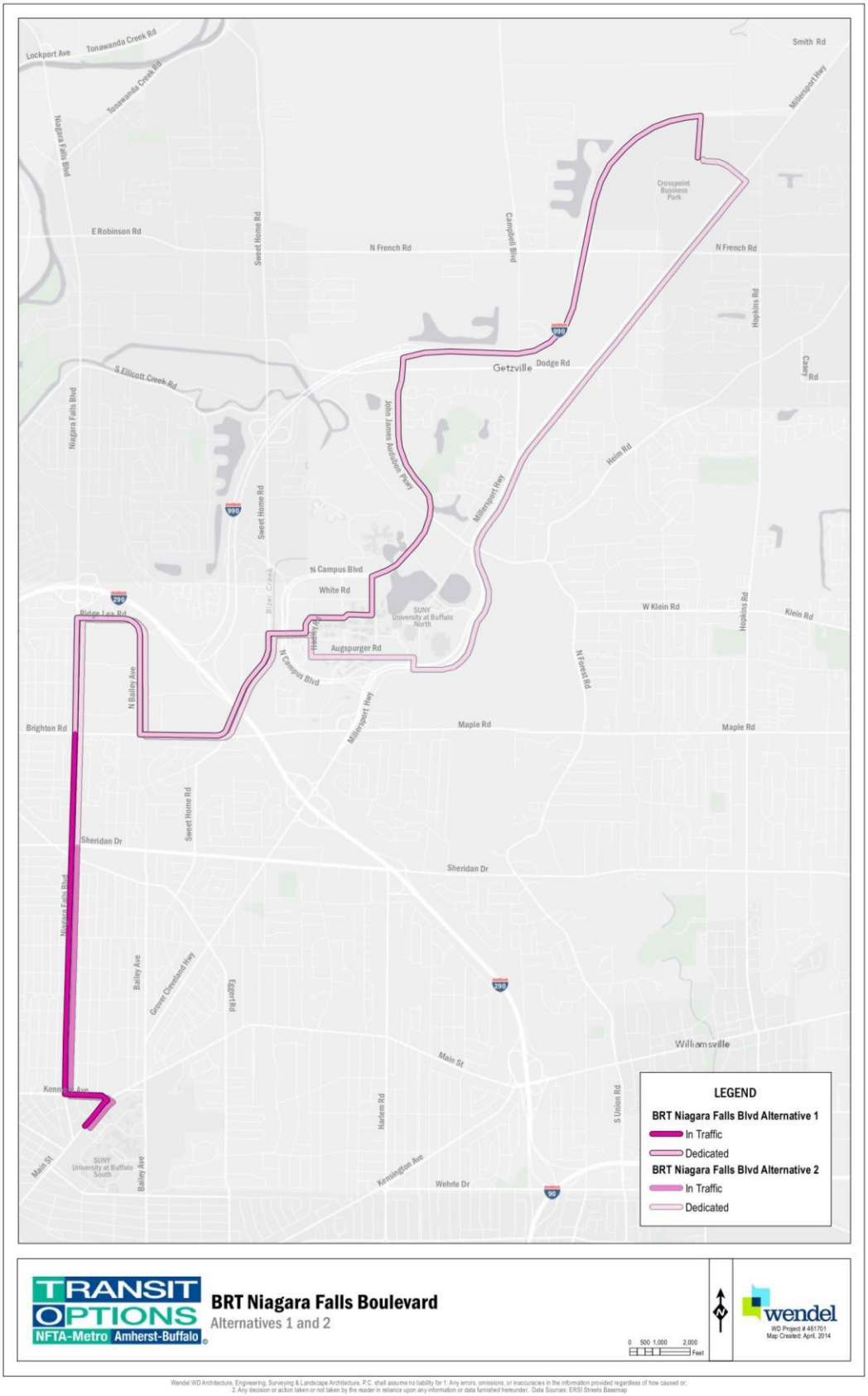


Figure 7: Map of Bailey Avenue LRT Alternatives Advancing to Tier II Analysis

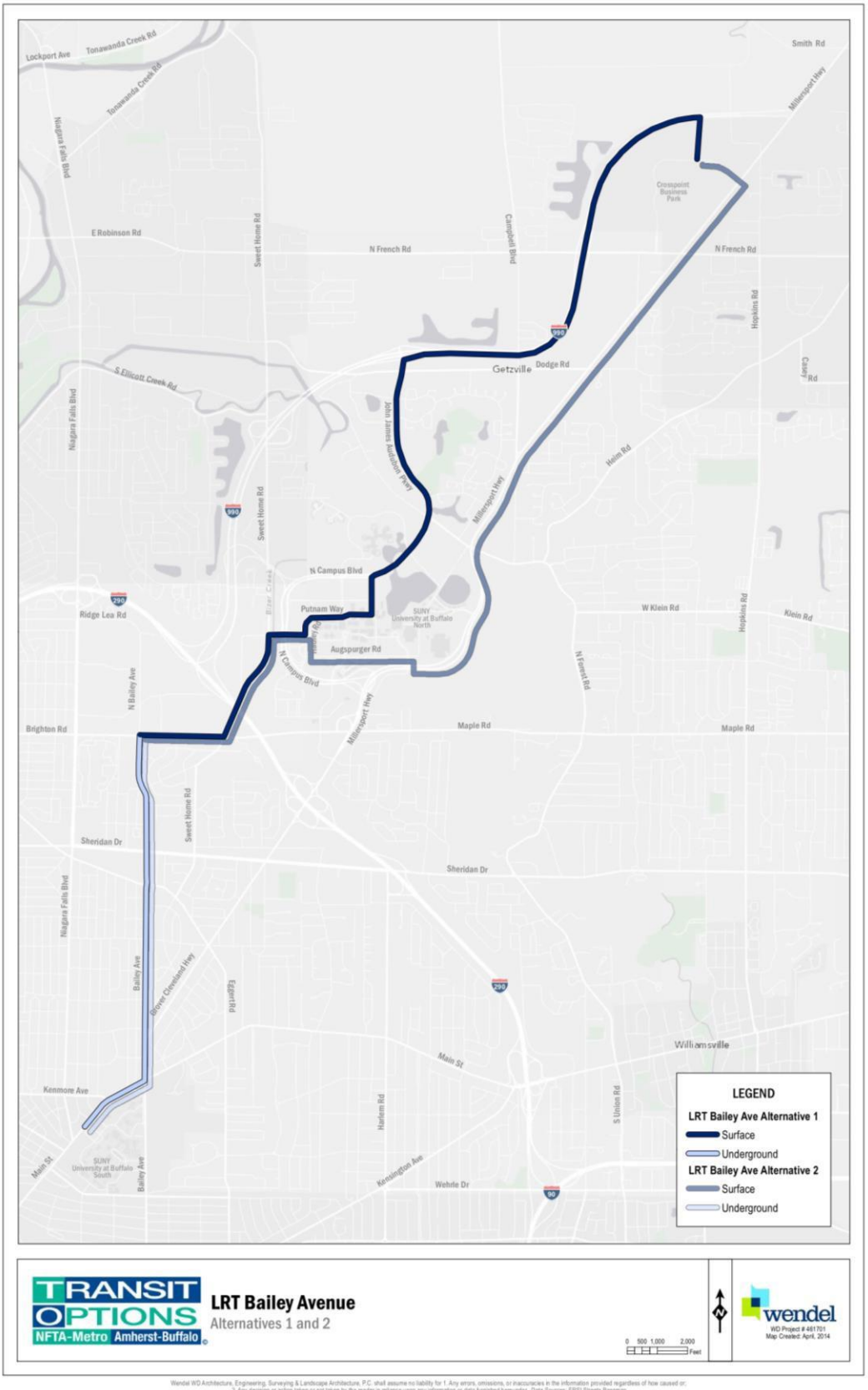


Figure 8: Map of Bailey Avenue BRT Alternatives Advancing to Tier II Analysis

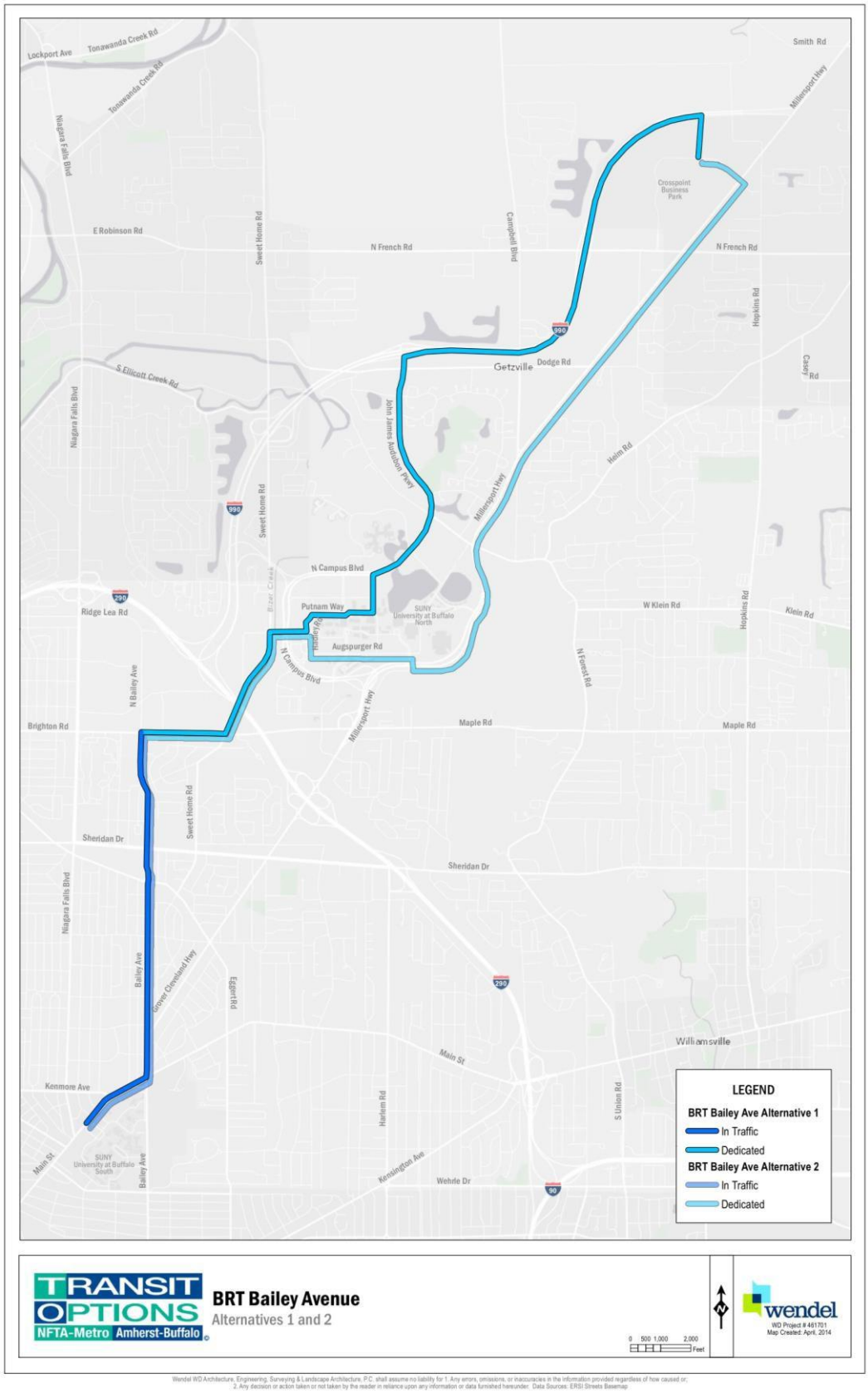


Figure 9: Map of Millersport Highway LRT Alternatives Advancing to Tier II Analysis

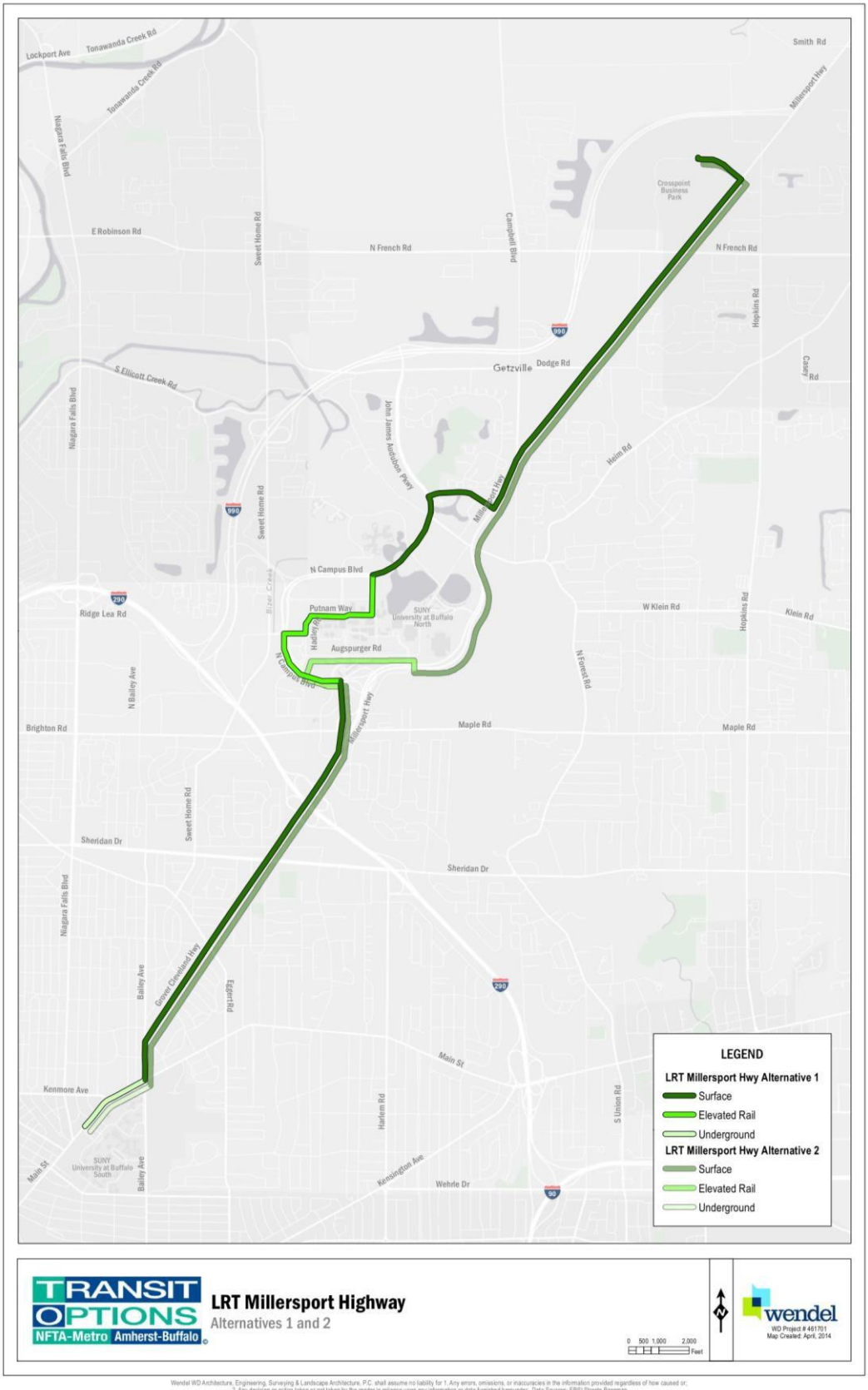


Figure 10: Map of Millersport Highway BRT Alternatives Advancing to Tier II Analysis

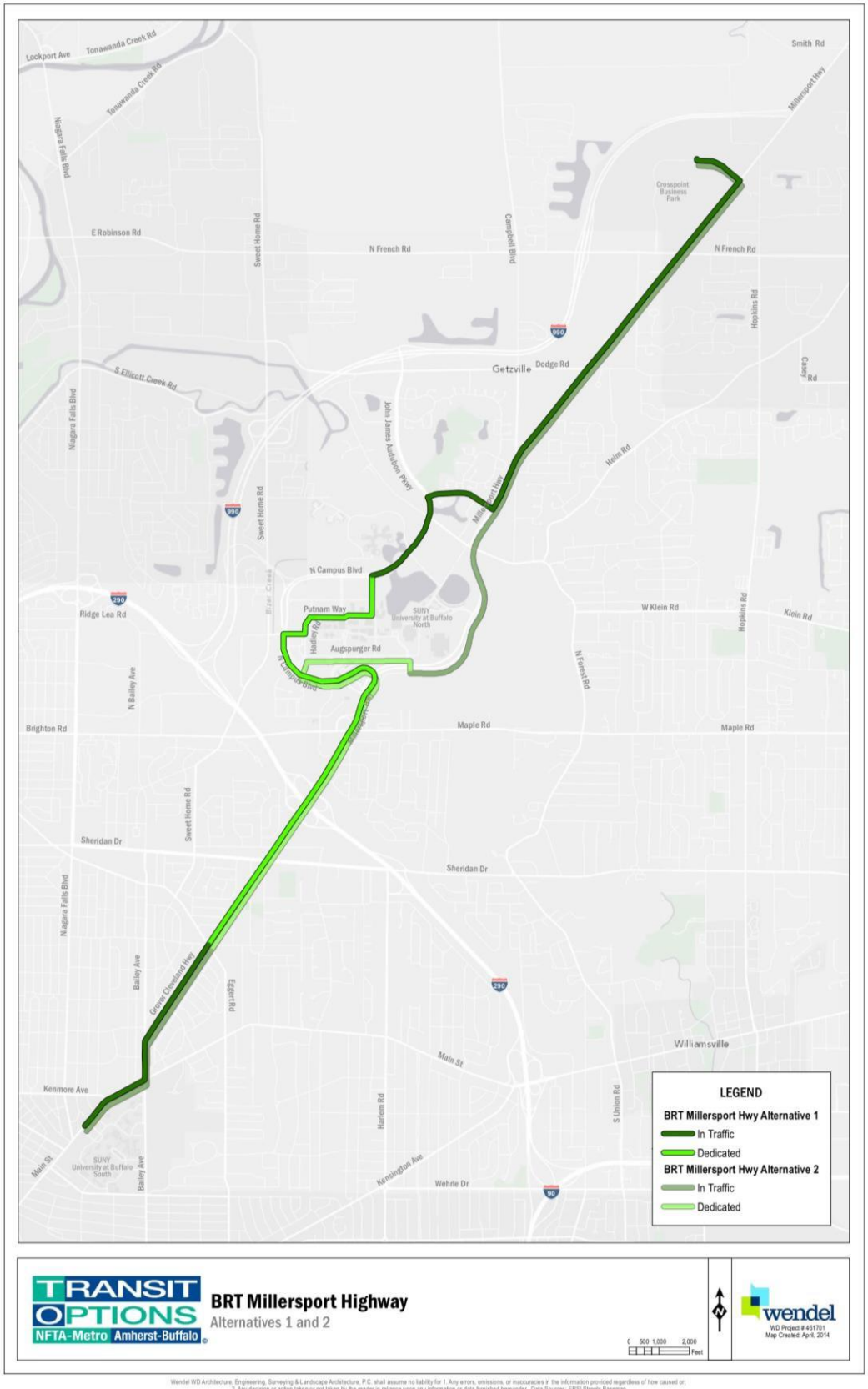


Table 3: Niagara Falls Boulevard LRT Alternatives Evaluation

#	Construction Type	Description of Alternative	Alignment Type/Issues	Move onto Tier II Analysis?	Primary Operation
Niagara Falls Boulevard LRT Alternatives					
1	at-grade	Maple Road, Putnam North, Audubon Parkway	Sheridan Drive to Crosspoint	**Yes**	underground to Sheridan, at-grade beyond
	elevated		UB North		
	underground		South Campus Station, Bailey Avenue, Eggert Road, Niagara Falls Boulevard to Sheridan Drive		
2	at-grade	Maple Road, Putnam South, Millersport Highway	Sheridan Drive to Crosspoint	**Yes**	underground to Sheridan, at-grade beyond
	elevated		UB North		
	underground		South Campus Station, Bailey Avenue, Eggert Road, Niagara Falls Boulevard to Sheridan Drive		
3	at-grade	Meyer Road, Putnam North, Audubon Parkway	complex engineering at I-290 intersection including utility corridor, elevated Ford Avenue to Sheridan Drive	No	N/A
	elevated				
	underground		South Campus Station to Sheridan Drive		
4	at-grade	Meyer Road, Putnam South, Millersport Highway	complex engineering at I-290 intersection including utility corridor, elevated Ford Avenue to Sheridan Drive	No	N/A
	elevated				
	underground		South Campus Station to Sheridan Drive		
5	at-grade	Ridge Lea Road, Putnam North, Audubon Parkway	complex engineering at I-290 intersection including utility corridor, elevated Ford Avenue to Sheridan Drive	No	N/A
	elevated				
	underground		South Campus Station to Sheridan Drive		
6	at-grade	Ridge Lea Road, Putnam South, Millersport Highway	complex engineering at I-290 intersection including utility corridor, elevated Ford Avenue to Sheridan Drive	No	N/A
	elevated				
	underground		South Campus Station to Sheridan Drive		
7	at-grade	*Alternative currently under evaluation*			
	elevated				
	underground				
8	at-grade	*Alternative currently under evaluation*			
	elevated				
	underground				

Table 4: Bailey Avenue LRT Alternatives Evaluation

#	Construction Type	Description of Alternative	Alignment Type/Issues	Move onto Tier II Analysis?	Primary Operation
Bailey Avenue LRT Alternatives					
1	at-grade	Maple Road, Putnam North, Audubon Parkway	ROW too narrow Bailey Avenue to Maple Road except for small sections	**Yes**	underground to Maple Road, at-grade beyond
	elevated				
	underground		South Campus Station to Maple Road		
2	at-grade	Maple Road, Putnam South, Millersport Highway	ROW too narrow Bailey Avenue to Maple Road except for small sections	**Yes**	underground to Maple Road, at-grade beyond
	elevated				
	underground		South Campus Station to Maple Road		
3	at-grade	Meyer Road, Putnam North, Audubon Parkway	ROW too narrow Bailey Avenue to Maple Road except for small sections, complex engineering at I-290 intersection including utility corridor	No	N/A
	elevated				
	underground		South Campus Station to Maple Road		
4	at-grade	Meyer Road, Putnam South, Millersport Highway	ROW too narrow Bailey Avenue to Maple Road except for small sections, complex engineering at I-290 intersection including utility corridor	No	N/A
	elevated				
	underground		South Campus Station to Maple Road		
5	at-grade	Ridge Lea Road, Putnam North, Audubon Parkway	ROW too narrow Bailey Avenue to Maple Road except for small sections, complex engineering at I-290 intersection including utility corridor	No	N/A
	elevated				
	underground		South Campus Station to Maple Road		
6	at-grade	Ridge Lea Road, Putnam South, Millersport Highway	ROW too narrow Bailey Avenue to Maple Road except for small sections, complex engineering at I-290 intersection including utility corridor	No	N/A
	elevated				
	underground		South Campus Station to Maple Road		
7 *(from the Citizens for Regional Transit)*	at-grade	Meyer Road, south side UB, Audubon Parkway, Ellicott Complex, Dodge Road	complex engineering at I-290 intersection including utility corridor, numerous aerial structures	No	N/A
	elevated				
	underground		South Campus Station to Ruth Avenue		
8	at-grade	*Alternative currently under evaluation*			
	elevated				
	underground				
9	at-grade	*Alternative currently under evaluation*			
	elevated				
	underground				

Table 5: Millersport Highway LRT, Tonawanda Turnout, and Bailey Avenue Modern Streetcar Alternatives Evaluation

#	Construction Type	Description of Alternative	Alignment Type/Issues	Move onto Tier II Analysis?	Primary Operation
Millersport Highway LRT Alternatives					
1	at-grade	Millersport Highway, Putnam North, Audubon Parkway	primarily median operation	**Yes**	at-grade
	elevated		UB North		
	underground		South Campus Station run out		
2	at-grade	Millersport Highway, Putnam South, Millersport Highway	primarily median operation	**Yes**	at-grade
	elevated		UB North		
	underground		South Campus Station run out		
Tonawanda Turnout LRT Alternative					
1	at-grade	use of abandoned rail ROW and utility ROWs	outside of study area	No	N/A
	elevated				
	underground				
Bailey Avenue Modern Streetcar Alternative					
1	at-grade	circulator service	low speed, short distance between stops	No	N/A

Table 6: Millersport Highway BRT Alternatives Evaluation

#	Construction Type	Description of Alternative	Alignment Type/Issues	Move onto Tier II Analysis?	Primary Operation
Millersport Highway BRT Alternatives					
1	in traffic	Millersport Highway, Putnam North, Audubon Parkway	South Campus Station to Eggert, north of UB North Campus	**Yes**	mix in traffic and dedicated lanes
	dedicated lane		Eggert to UB North Campus, UB North Campus		
2	in traffic	Millersport Highway, Putnam South, Millersport Highway	South Campus Station to Eggert, north of UB North Campus	**Yes**	mix in traffic and dedicated lanes
	dedicated lane		Eggert to UB North Campus, UB North Campus		

Table 7: Niagara Falls Boulevard BRT Alternatives Evaluation

#	Construction Type	Description of Alternative	Alignment Type/Issues	Move onto Tier II Analysis?	Primary Operation
Niagara Falls Boulevard BRT Alternatives					
1	in traffic	Maple Road, Putnam North, Audubon Parkway	South Campus Station to Sheridan Drive	**Yes**	mix in traffic and dedicated lanes
	dedicated lane		North of Sheridan Drive		
2	in traffic	Maple Road, Putnam South, Millersport Highway	South Campus Station to Sheridan Drive	**Yes**	mix in traffic and dedicated lanes
	dedicated lane		North of Sheridan Drive		
3	in traffic	Meyer Road, Putnam North, Audubon Parkway	South Campus Station to Sheridan Drive	No	N/A
	dedicated lane		North of Sheridan Drive, would need new construction to cross the 290 and utility corridor when Maple has existing ROW across		
4	in traffic	Meyer Road, Putnam South, Millersport Highway	South Campus Station to Sheridan Drive	No	N/A
	dedicated lane		North of Sheridan Drive, would need new construction to cross the 290 and utility corridor when Maple has existing ROW across		
5	in traffic	Ridge Lea Road, Putnam North, Audubon Parkway	South Campus Station to Sheridan Drive	No	N/A
	dedicated lane		North of Sheridan Drive, would need new construction to cross the 290 and utility corridor when Maple has existing ROW across		
6	in traffic	Ridge Lea Road, Putnam South, Millersport Highway	South Campus Station to Sheridan Drive	No	N/A
	dedicated lane		North of Sheridan Drive, would need new construction to cross the 290 and utility corridor when Maple has existing ROW across		

Table 8: Bailey Avenue BRT Alternatives Evaluation

#	Construction Type	Description of Alternative	Alignment Type/Issues	Move onto Tier II Analysis?	Primary Operation
Bailey Avenue BRT Alternatives					
1	in traffic	Maple Road, Putnam North, Audubon Parkway	South Campus Station to Maple Road	**Yes**	mix in traffic and dedicated lanes
	dedicated lane		North of Maple Road		
2	in traffic	Maple Road, Putnam South, Millersport Highway	South Campus Station to Maple Road	**Yes**	mix in traffic and dedicated lanes
	dedicated lane		North of Maple Road		
3	in traffic	Meyer Road, Putnam North, Audubon Parkway	South Campus Station to Maple Road	No	N/A
	dedicated lane		North of Maple Road, would need new construction to cross the 290 and utility corridor when Maple has existing ROW across		
4	in traffic	Meyer Road, Putnam South, Millersport Highway	South Campus Station to Maple Road	No	N/A
	dedicated lane		North of Maple Road, would need new construction to cross the 290 and utility corridor when Maple has existing ROW across		
5	in traffic	Ridge Lea Road, Putnam North, Audubon Parkway	South Campus Station to Maple Road	No	N/A
	dedicated lane		North of Maple Road, would need new construction to cross the 290 and utility corridor when Maple has existing ROW across		
6	in traffic	Ridge Lea Road, Putnam South, Millersport Highway	South Campus Station to Maple Road	No	N/A
	dedicated lane		North of Maple Road, would need new construction to cross the 290 and utility corridor when Maple has existing ROW across		