Wayne Avenue At-Grade Operations

Purple Line Functional

Master Plan Advisory Group

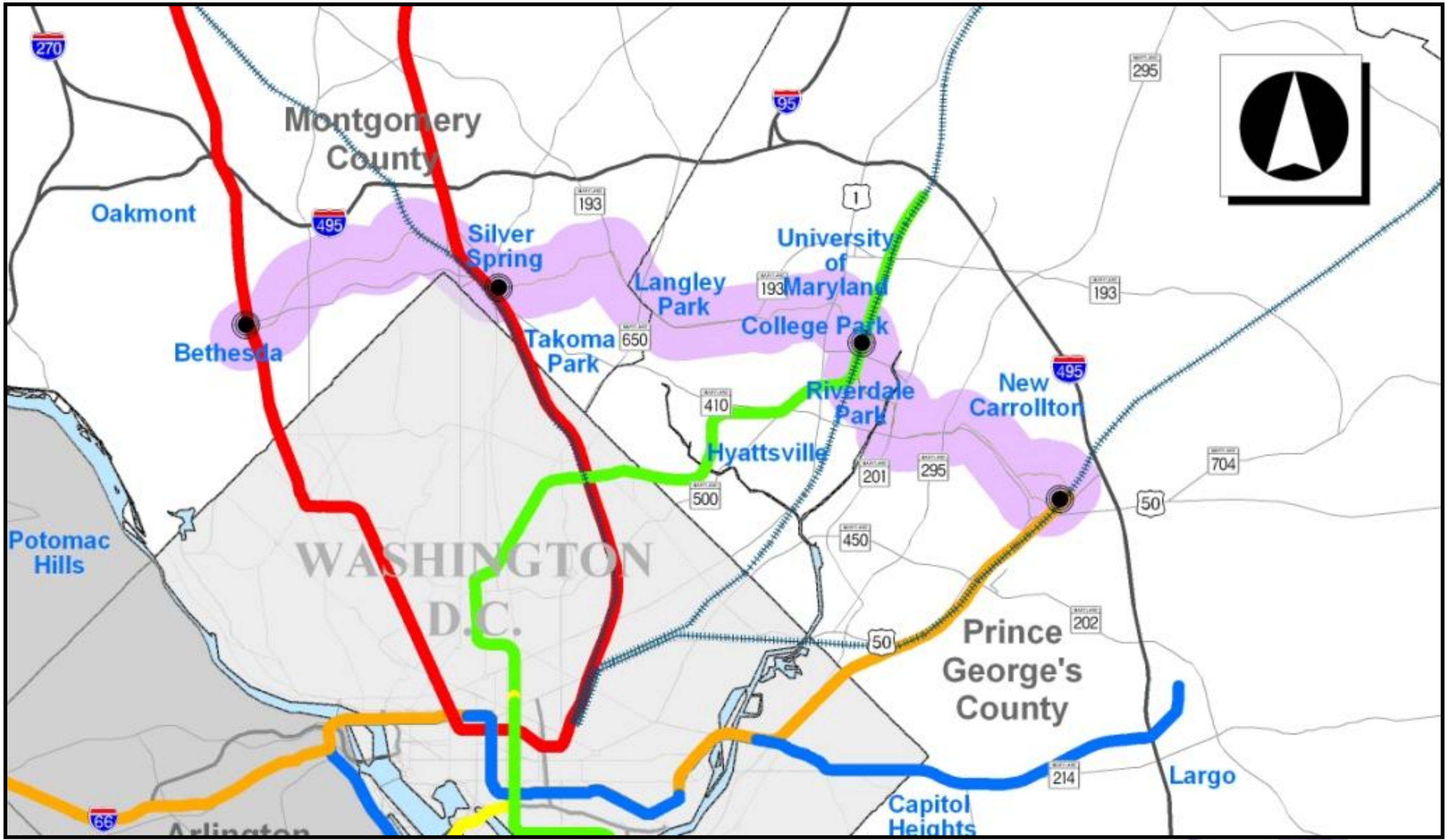
August 2008

Project Overview

- A 16-mile east-west rapid transit line extending from Bethesda in Montgomery County to New Carrollton in Prince George's County.
- The Purple Line will be either light rail or bus rapid transit and will operate largely at street level.
- A hiker biker trail is included along the Georgetown Branch and CSX/WMATA corridor as part of the Capital Crescent Trail, and connects with the Metropolitan Branch Trail at the SSTC.
- Provides direct connections to Metrorail at Bethesda, Silver Spring, College Park, and New Carrollton; linking the two branches of the Red Line, the Green Line and the Orange Line.
- 22 potential stations

Purple Line

Project Area Map



Silver Spring - Benefits

- The Purple Line may present the only viable improvement to east-west travel
- The Silver Spring Central Business District continues to grow
- Silver Spring is a major employment and activity center
- There are transit dependent populations within the corridor
- A Purple Line would reduce the reliance on and need for autos

Silver Spring - Objectives

- Develop alternatives that better serve transit connections, pedestrians, and traffic
- Minimize impacts to adjacent properties and the surrounding community
- Minimize impacts to traffic and improve flows where possible
- Serve the community with accessible stations
- Provide attractive streetscape design, stations, safe crossings, etc.
- Support revitalization and economic development of Long Branch Enterprise Zone

Wayne Avenue Alignments

Wayne Avenue – BRT Alternatives

- **Low BRT:** At-Grade on Wayne Avenue in *mixed traffic* with signal priority; no roadway widening
- **Med BRT:** At-Grade in dedicated lanes along Bonifant Street; at-grade on Wayne Avenue in *mixed traffic*, new left-turn lanes at key intersections
- **High BRT:** Tunnel from SSTC to east of Cedar Street; at-grade on Wayne Avenue in *dedicated lanes*; new left-turn lanes at key intersections

Wayne Avenue – LRT Alternatives

- **Low LRT:** At-Grade in dedicated lanes along Bonifant Street; at-grade on Wayne Avenue in *mixed traffic*; widening at intersections with Fenton Street and Sligo Creek Parkway
- **Med LRT:** At-Grade in dedicated lanes along Bonifant Street; at-grade on Wayne Avenue in *mixed traffic*; widening at intersections with Fenton, Cedar, Dale & Sligo Creek
- **High LRT:** Tunnel from SSTC to east of Cedar Street; at-grade on Wayne Avenue in *dedicated lanes*; new left-turn lanes at key intersections

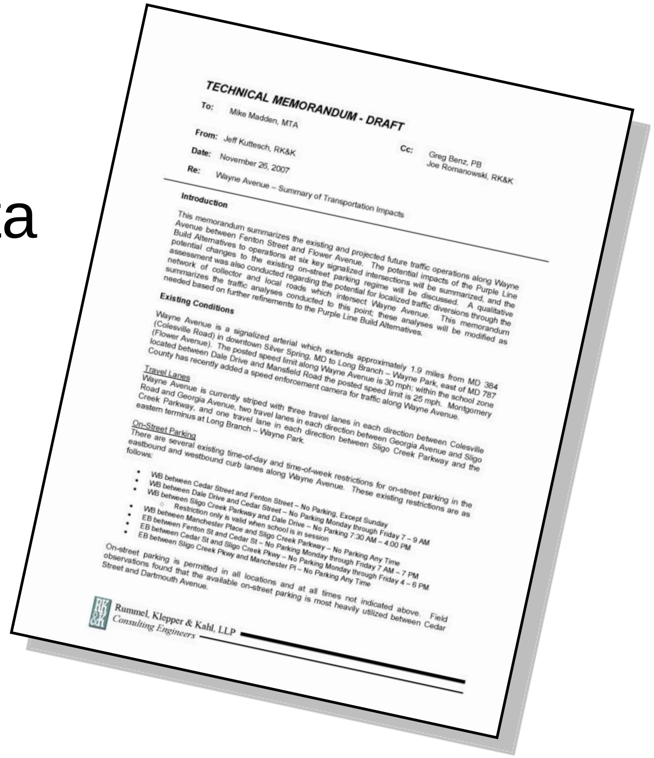
Considerations

- Traffic operations
  - Wayne Avenue
  - Local Streets
- Transit operations
  - Travel times
  - Reliability
- Parking
- Community impacts / concerns

Wayne Avenue - Traffic Study

Study Components

- Collected Field Data / Observations
  - Traffic Counts & Travel Time Data
- Evaluated existing traffic operations
- Evaluated future (2030) No-Build traffic
- Evaluated future (2030) Build alternatives, including:
  - Shared lanes, shared lanes with left turn lanes, dedicated lanes with left turn lanes



TECHNICAL MEMORANDUM - DRAFT

To: Mike Madden, MTA

From: Jeff Kuttesch, RK&K

Cc: Greg Benz, PB; Joe Romanowski, RK&K

Date: November 26, 2007

Re: Wayne Avenue – Summary of Transportation Impacts

Introduction

This memorandum summarizes the existing and projected future traffic operations along Wayne Avenue between Fenton Street and Flower Avenue. The potential impacts of the Purple Line Build Alternatives to operations at six key signalized intersections will be summarized, and the potential changes to the existing on-street parking regime will be discussed. A qualitative assessment was also conducted regarding the potential for localized traffic diversions through the network of collector and local roads which intersect Wayne Avenue. This memorandum summarizes the traffic analyses conducted to this point; these analyses will be modified as needed based on further refinements to the Purple Line Build Alternatives.

Existing Conditions

Wayne Avenue is a signalized arterial which extends approximately 1.9 miles from MD 384 (Colesville Road) in downtown Silver Spring, MD to Long Branch – Wayne Park, east of MD 787 (Flower Avenue). The posted speed limit along Wayne Avenue is 30 mph; within the school zone located between Dale Drive and Mansfield Road the posted speed limit is 25 mph. Montgomery County has recently added a speed enforcement camera for traffic along Wayne Avenue.

Travel Lanes

Wayne Avenue is currently striped with three travel lanes in each direction between Colesville Road and Georgia Avenue, two travel lanes in each direction between Georgia Avenue and Sligo Creek Parkway, and one travel lane in each direction between Sligo Creek Parkway and the eastern terminus at Long Branch – Wayne Park.

On-Street Parking

There are several existing time-of-day and time-of-week restrictions for on-street parking in the eastbound and westbound curb lanes along Wayne Avenue. These existing restrictions are as follows:

- WB between Cedar Street and Fenton Street – No Parking, Except Sunday
- WB between Dale Drive and Cedar Street – No Parking Monday through Friday 7 – 9 AM
- WB between Sligo Creek Parkway and Dale Drive – No Parking 7:30 AM – 4:00 PM
  - Restriction only is valid when school is in session
- WB between Manchester Place and Sligo Creek Parkway – No Parking Any Time
- EB between Fenton St and Cedar St – No Parking Monday through Friday 7 AM – 7 PM
- EB between Cedar St and Sligo Creek Pkwy – No Parking Monday through Friday 4 – 6 PM
- EB between Sligo Creek Pkwy and Manchester Pl – No Parking Any Time

On-street parking is permitted in all locations and at all times not indicated above. Field observations found that the available on-street parking is most heavily utilized between Cedar Street and Dartmouth Avenue.

Rummel, Klepper & Kahl, LLP
Consulting Engineers

Wayne Avenue - Traffic Study

- Existing Conditions
  - Peak volumes: 1,100 vehicles per hour in heaviest direction
  - On-street parking restricted by time-of-day and day-of-week
  - Today, six signalized intersections operate at LOS D or better during peak periods

Traffic Study Conclusions

- Transit in shared lanes does not increase congestion
- Adding left turn lanes at signalized intersections improves traffic conditions
- Dedicated lanes would increase congestion compared to No-Build levels of service without the addition of turn lanes at certain intersections
- Average travel times between SSTC and Manchester:

At-grade Option	Average Time	Best Case Trip	Worst Case Trip
Shared	10 minutes	8.6 minutes	11.4 minutes
Shared with left turns	9 minutes	8.1 minutes	9.3 minutes
Dedicated Lanes	6 minutes	5.2 minutes	7 minutes

Travel Times

Estimated 2030 Travel Times (in minutes) between Stations by Alternative							
Station-to-Station	TSM	Low BRT	Med BRT	High BRT	Low LRT	Med LRT	High LRT
Bethesda - Silver Spring	33	25	19	19	12	9	9
Bethesda-New Carrollton	108	96	73	60	62	59	50
Silver Spring- Takoma/Langley	29	26	19	14	18	17	14
Silver Spring- Riverdale Park	62	59	43	33	39	38	32
Silver Spring - UM Campus Center	44	41	30	22	26	25	21
Silver Spring- College Park Metro	53	52	36	28	32	31	27
Silver Spring - New Carrollton	73	72	55	43	51	50	42

Estimated Reduction in Vehicle Trips

Alternative	Estimated Reduction in Vehicle Trips in Silver Spring Area
TSM	500
Low BRT	2,800
Medium BRT	4,300
High BRT	5,000
Low LRT	5,200
Medium LRT	5,600
High LRT	5,900

Total reduction in vehicle trips represented is to and from the Silver Spring district. The district covers the area between the CSX corridor and the University Boulevard to the east and west, and the Capital Beltway and the DC City line to the north and south.

Wayne Avenue At-Grade

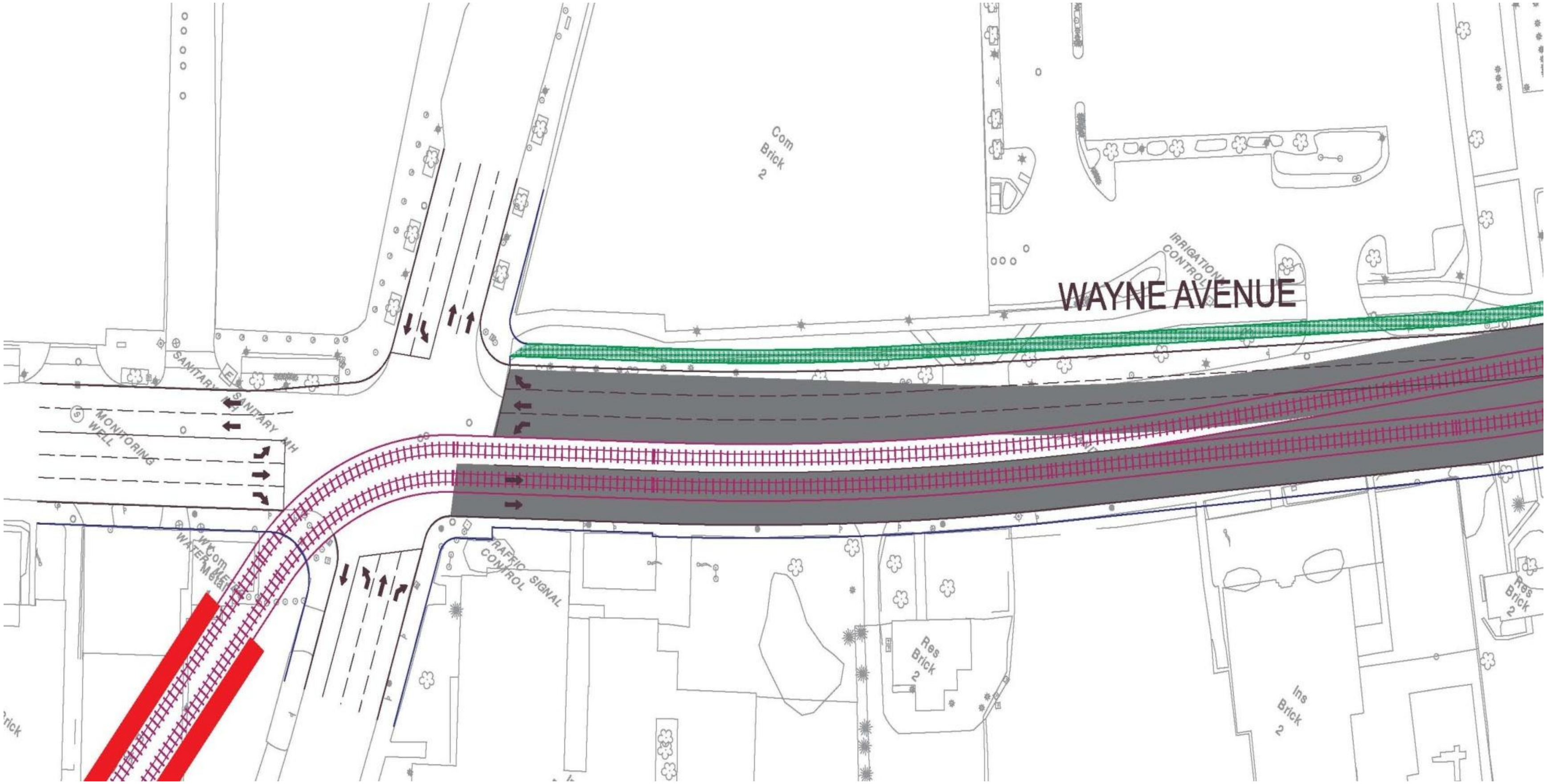
Current Finding:

- For surface alternatives, transitway would operate in shared traffic lanes with added turn lanes at key intersections.

Why?

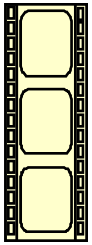
- Shared lanes would allow on-street parking in most areas during off-peak periods (similar to the situation today).
- Shared lanes would not significantly increase cut-through traffic on adjacent streets.
- The addition of turn lanes would improve traffic operations over the No-Build alternative.
- Best balance of community concerns and transportation operations.

Wayne Avenue at Fenton Street

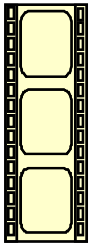


Wayne Avenue at Fenton Street

- **Intersection Traffic Operations**
  - New signal phase for the LRT vehicles.
  - Westbound through and right turn traffic, as well as eastbound left turn traffic on Wayne Avenue could also move during this new phase.
  - The average delay per vehicle at the intersection would increase by approximately 15 seconds during the PM peak hour.
  - Coordinating with Whole Foods on improved parking lot access.

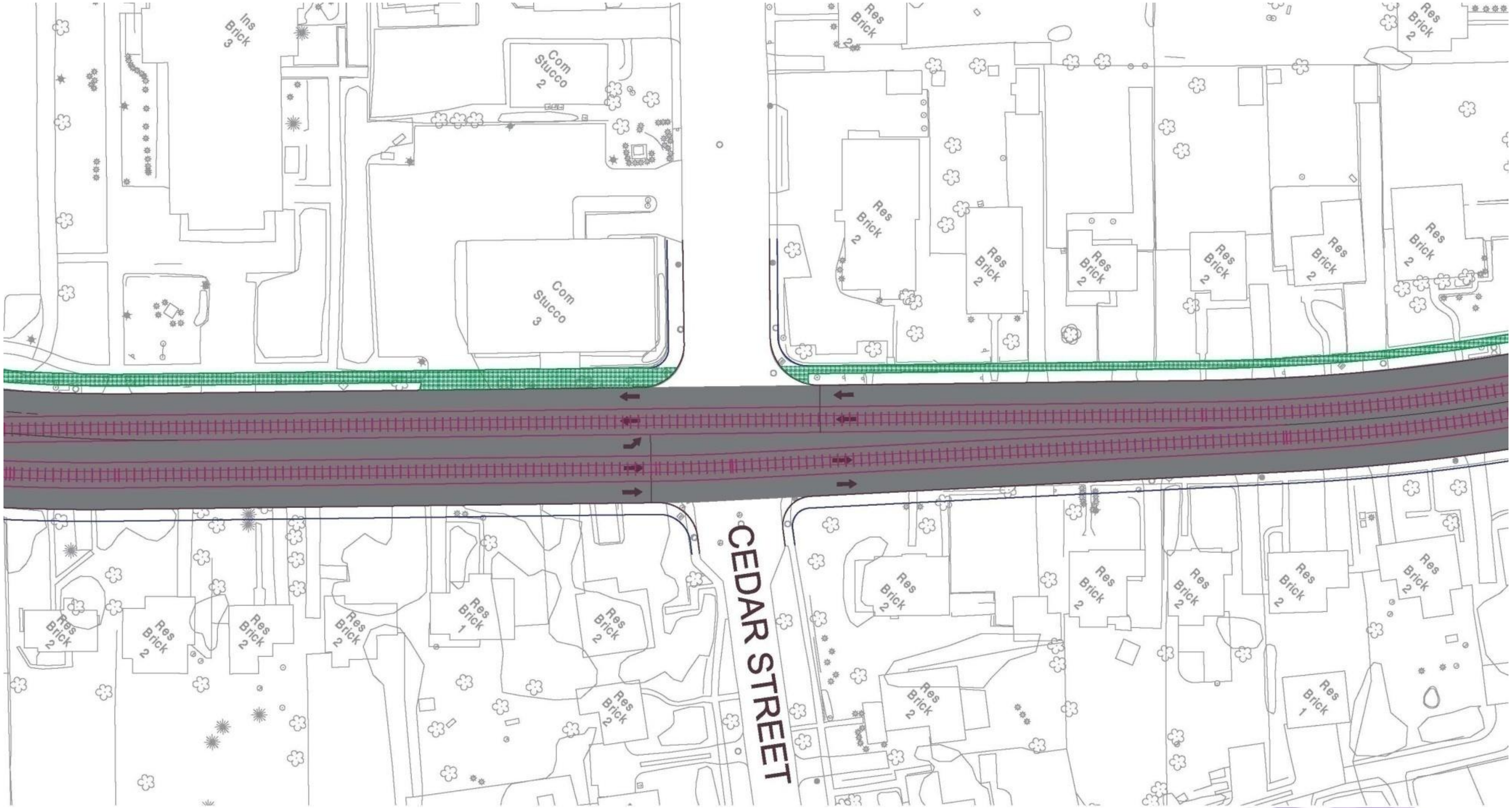


No Build



Build

Wayne Avenue at Cedar Street



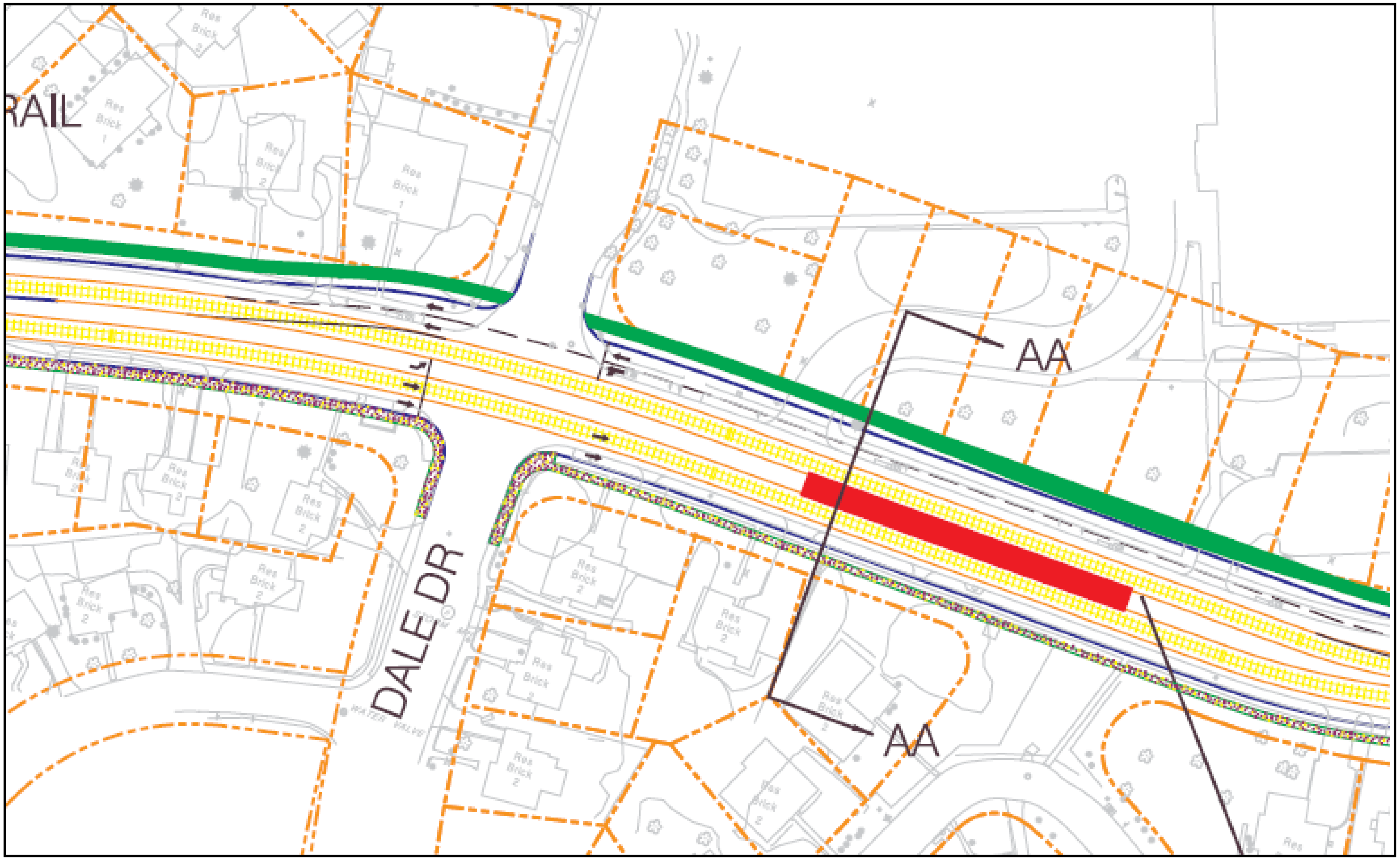
Tunnel Portal

Wayne Avenue at Cedar Street

- **Intersection Traffic Operations**
  - The signal phasing would not be modified at this location.
  - The average delay per vehicle is projected to decrease slightly at this intersection (by 5 – 10 seconds) during the PM peak hour.
  - Tunnel portal area
    - Restrict traffic to one lane in each direction
    - Eliminate parking
    - Allow only right-in/right-out movements

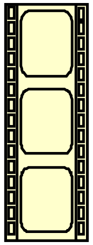
Wayne Avenue at Cedar Street

Wayne Avenue at Dale Drive

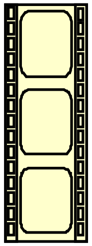


Wayne Avenue at Dale Drive

- **Intersection Traffic Operations**
  - Add a new signal phase serving westbound LRT vehicles which cannot operate concurrently with westbound Wayne Avenue traffic.
  - Eastbound traffic on Wayne Avenue could operate at the same time as the westbound LRT vehicles.
  - The average delay per vehicle is projected to decrease slightly at this intersection during the PM peak hour.
  - Station provided east of Dale Drive in median.



No Build



Build

Wayne Avenue at Dale Drive

Wayne Avenue at Sligo Creek Parkway

Wayne Avenue at Sligo Creek Parkway

- **Intersection Traffic Operations**
  - The signal phasing at this intersection would not need to be modified.
  - The average delay at this intersection during the PM peak hour is expected to decrease by approximately 5 seconds.
  - LRT would transition into dedicated lanes east of Sligo Creek Parkway approaching the tunnel.

Wayne Avenue at Sligo Creek Parkway

Purple Line

Questions?