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Transportation Analysis
Results and Mitigation



MEMORANDUM

TO: Joseph Taylor Moody Nolan

CC: Howard Blaisdell Moody Nolan

FROM: Nicole White, P.E., PTOE Symmetra Design
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DATE: November 18, 2024

RE: MLS Next Stadium Transportation Analysis Results and Mitigation

1 INTRODUCTION

The transportation assessment assumes the traffic and trip generation associated with a stadium with 7,500 seats. Analysis was conducted for existing, future background, and future conditions. The future background conditions include traffic conditions for the year 2030 along with the future development in the area but does not include the MLS project. Future background conditions serve as a baseline to assess the impacts associated with the MLS project. Future conditions include the MLS stadium traffic. The summary results for each scenario and mitigation measures are included under each site. Detailed analysis results are shown in the appendix.

2 CAPACITY ANALYSIS

Intersection capacity analyses for the study intersections were conducted using SYNCHRO 11 software based on the Highway Capacity Manual 6th Edition, to determine the Level of Service (LOS) under each study scenario. LOS is a measure of the average control (i.e., signal or stop sign) delay experienced per vehicle and is designated using letters “A” through “F” with LOS “A” representing the best operating conditions and LOS “F” representing the worst. The thresholds for the intersection levels of service are shown in **Table 1**. Baltimore City considers intersections performing at LOS D or better as acceptable.

Table 1: Intersection Level of Service Threshold for Delay

LOS	Unsignalized	Signalized
A	0-10 sec	0-10 sec
B	> 10-15 sec	> 10-20 sec
C	> 15-25 sec	> 20-35 sec
D	> 25-35 sec	> 35-55 sec
E	> 35-50 sec	> 55-80 sec
F	> 50 sec	> 80 sec

2.1 CARROLL PARK

Existing conditions –

- The intersection of Washington Blvd @ Monroe St operates at LOS E during the PM peak hour.
- All study area intersections operate at level of service LOS D or better for both PM and Saturday peak hours

Future Background conditions –

- The intersection of Washington Blvd @ Monroe St will operate at LOS F during the PM peak hour and LOS E during the Saturday peak hour.
- All of the other intersections will operate at LOS D or better.

Future conditions –

- The intersection of Washington Blvd @ Monroe St will operate at LOS F during both the PM and Saturday peak hours.
- The intersection of Washington Blvd @ I-95 Off-ramp will operate at LOS E during the PM peak hour and LOS F during the Saturday peak hour.
- The intersection of Washington Blvd @ Stadium Entrance will operate at LOS F during both the PM and Saturday peak hours.
- All of the other intersections will operate at LOS D or better.

Mitigation Measures

- Site
 - A five-lane driveway at Washington Blvd will be needed to support site access. Reversible lanes, on-site, to support access/egress (i.e. four inbound and one outbound before events and four outbound and one inbound after events).
 - Use traffic control devices, i.e. traffic cones, to create two left turn lanes beginning at the I-95 on-ramp intersection on EB Washington Blvd to the site.
 - A traffic signal will be needed at the site driveway¹.
 - Improves to LOS E during the PM peak hour and LOS D during the Saturday Peak hour
- Other Intersections
 - Washington Blvd @ I-95 Off-ramp – Adjust traffic signal timings
 - Continues at LOS E but delay improves from 77.2 seconds to 66.7 seconds per vehicle during the PM peak hour
 - Improves to LOS D during the Saturday peak hour and the delay improves from 122.6 seconds to 45.8 seconds per vehicle
 - Washington Blvd @ Monroe St – Adjust signal timings
 - Continues at LOS F but delay improves from 259.9 seconds to 127.0 seconds per vehicle during the PM peak hour
 - Improves to LOS E during the Saturday peak hour and the delay improves from 404.6 seconds to 78.5 seconds per vehicle

2.2 BALTIMORE PENINSULA

Existing conditions –

- All study area intersections operate at LOS D or better for both PM and Saturday peak hours

¹ A traffic signal warrant study will be required.

Future Background conditions –

- The intersection of S. Hanover St @ McComas St will operate at LOS F during the PM and Saturday peak hours.
- All of the other intersections will operate at LOS D or better.

Future conditions –

- The intersection of S. Hanover St @ Cromwell St will operate at LOS F during both the PM and Saturday peak hours.
- The intersection of S. Hanover St @ McComas St will operate at LOS F during the Saturday peak hour.
- The intersection of Key Highway @ McComas St will operate at LOS E during the PM peak hour.
- All of the other intersections will operate at LOS D or better.

Mitigation Measures

- Site
 - A new traffic signal at the parking lot entrance from Cromwell Street.
- Off-site
 - Additional lot access would be from Mission Blvd. (a public road that would be needed to provide access to the parking lot)
 - Distillery Street would be extended to provide access to the parking lot. (a public road that would be needed to provide access to the parking lot)
- Other Intersections
 - S. Hanover St @ Cromwell St – Adjust traffic signal timings
 - Improves to LOS E during the PM peak hour
 - Improves to LOS D during the Saturday peak hour
 - S. Hanover St @ McComas St – Adjust signal timings
 - Improves to LOS C during the PM peak hour
 - Improves to LOS D during the Saturday peak hour

A Traffic Operations and Parking Plan may be recommended to explain the measures that need to be implemented to accommodate vehicular traffic associated with the MLS Stadium development. This plan may include planned locations of Traffic Control Officers, temporary road closures, revised signal timing plans, and temporary signage, among other things.

APPENDIX

Table 2: Intersection Level of Service – Carroll Park

Intersection	Direction	Existing Conditions		Background Conditions		Future Conditions		Future Conditions w mit.	
		PM Peak	Saturday Peak	PM Peak	Saturday Peak	PM Peak	Saturday Peak	PM Peak	Saturday Peak
Washington Blvd @ I-95 Off Ramp	Overall	A/9.6	A/7.4	B/10.8	A/8.3	E/77.2	F/122.6	E/66.7	D/45.8
	Eastbound	A/7.8	A/4.2	B/10.1	A/5.2	C/22.0	A/9.3	E/75.6	D/54.9
	Westbound	A/7.3	A/4.6	A/6.8	A/4.8	A/6.5	A/4.9	A/9.1	A/9.2
	Southbound	C/23.0	C/21.3	C/24.4	C/23.2	F/233.2	F/350.1	F/92.1	D/54.5
Washington Blvd @ I-95 On Ramp	Overall	A/6.7	A/3.9	A/8.1	A/4.3	A/6.4	A/2.9	B/10.9	A/6.4
	Eastbound	A/0.2	A/0.1	A/0.2	A/0.1	A/0.1	A/0.1	A/0.1	A/0.1
	Westbound	B/13.0	A/8.2	B/15.7	A/8.8	B/17.2	A/9.3	C/29.2	C/20.6
Washington Blvd @ Monroe Street	Overall	E/69.8	D/37.6	F/197.3	E/76.3	F/259.9	F/404.6	F/127.0	E/78.5
	Eastbound	D/37.9	C/22.2	D/50.7	C/27.0	D/52.2	C/30.2	F/110.0	E/66.8
	Westbound	E/60.2	D/37.2	F/86.4	D/39.3	F/90.5	F/935.1	F/138.5	E/77.2
	Northbound	C/32.6	B/19.3	D/50.2	C/24.6	F/246.8	F/259.0	F/123.9	F/84.6
	Southbound	F/126.8	E/58.5	F/476.6	F/154.9	F/530.5	F/198.5	F/138.8	F/82.7
Monroe Street @ Wilkins Avenue	Overall	B/15.8	C/25.3	B/16.8	C/23.7	B/17.1	C/23.1	B/17.1	C/23.1
	Eastbound	A/8.6	C/29.9	B/15.6	C/29.7	B/16.6	C/29.7	B/16.6	C/29.7
	Westbound	A/1.1	C/27.5	A/5.7	C/26.3	A/6.2	C/26.3	A/6.2	C/26.3
	Northbound	A/9.9	C/21.7	B/10.6	B/19.3	B/10.0	B/18.1	B/10.0	B/18.1
	Southbound	C/25.3	C/25.4	C/21.8	C/23.8	C/21.8	C/23.2	C/21.8	C/23.2
Washington Blvd @ Stadium Entrance	Overall							E/62.9	D/41.8
	Eastbound	B/10.4	A/8.7	B/12.0	A/9.3	F/707.5	F/361.4	E/55.1	C/23.1
	Westbound	A/0.0	A/0.0	A/0.0	A/0.0	A/0.0	A/0.0	E/55.9	E/69.2
	Southbound	C/24.5	B/12.0	E/48.8	B/14.0	F/>999	F/>999	F/228.5	E/56.9

Table 3: Intersection Level of Service – Baltimore Peninsula

Intersection	Direction	Existing Conditions		Background Conditions		Future Conditions		Future Conditions w mit.	
		PM Peak	Saturday Peak	PM Peak	Saturday Peak	PM Peak	Saturday Peak	PM Peak	Saturday Peak
S.Hanover Street @ Cromwell Street	Overall	C/23.2	C/25.3	D/40.6	D/53.7	F/207.7	F/389.2	E/58.4	D/49.0
	Eastbound	D/42.2	D/44.0	F/90.3	F/148.0	F/655.7	F/990.1	E/58.4	F/86.7
	Westbound	A/9.2	C/20.2	B/12.5	C/20.4	B/11.8	C/21.3	E/57.9	C/32.2
	Northbound	C/24.8	C/20.1	C/32.8	C/20.6	D/40.5	C/21.6	C/32.1	C/21.6
	Southbound	B/16.8	C/20.6	C/29.0	C/22.3	C/29.0	C/22.3	C/27.6	C/28.7
S. Hanover Street @ McComas Street	Overall	C/20.4	B/17.5	F/84.9	F/92.7	F/91.2	F/112.6	C/28.3	D/53.4
	Eastbound	D/39.6	C/20.6	E/72.8	C/29.0	E/72.8	C/29.0	E/72.8	C/26.8
	Westbound	D/49.0	C/20.4	D/51.6	C/24.9	D/51.6	C/25.2	D/51.6	C/23.9
	Northbound	B/14.3	B/16.7	F/114.9	D/47.9	F/129.3	F/102.7	A/7.8	B/15.8
	Southbound	A/7.8	B/16.5	D/44.7	F/237.9	D/44.3	F/199.9	D/44.3	F/133.4
McComas Street @ Key Highway	Overall	C/26.1	D/35.2	D/50.6	D/35.4	E/57.5	D/35.5	D/43.9	D/35.5
	Eastbound	C/33.4	D/35.4	E/61.0	D/35.4	E/69.3	D/35.5	D/52.2	D/35.5
	Southbound	A/3.9	C/34.4	A/7.2	D/35.4	A/7.2	D/35.4	A/8.6	D/35.4
Mission Blvd @ Tidewater Street	Eastbound	A/0.0	A/0.0	A/0.0	A/0.0	A/0.0	A/0.0	A/0.0	A/0.0
	Northbound	A/9.1	A/8.7	B/14.2	B/10.9	B/14.9	B/11.3	B/14.9	B/11.3
	Southbound	A/0.6	A/1.8	A/0.7	A/1.4	A/0.2	A/0.2	A/0.2	A/0.2
Cromwell Street @ Stadium Entrance	Eastbound					B/12.9	B/10.9	B/11.6	B/10.9
	Westbound					A/0.0	A/0.0	A/0.0	A/0.0
	Southbound					A/0.0	A/0.0	A/0.0	A/0.0