

Eng-Wong, Taub & Associates

Traffic and Transportation Consultants

To: Molly Macqueen – STV Incorporated
From: Eng-Wong, Taub & Associates
Re: Medgar Evers College (Brooklyn -Kings County)
Traffic Mitigation Re-Analysis Technical Memorandum
Date: June 2, 2009

This technical memorandum is being provided in response to the New York City Department of Transportation's (NYCDOT's) request for a re-analysis of the traffic mitigation measures needed at six locations analyzed as part of the *Medgar Evers College Master Plan Draft Generic Environmental Impact Statement (DGEIS)* issued on August 22, 2002, and the *Medgar Evers College Master Plan Final Generic Environmental Impact Statement (FGEIS)* issued on March 14, 2003, respectively. This re-analysis was needed to assess the validity of the mitigation measures because the signal timings and physical conditions at these intersections, where signal timing modifications were proposed several years ago as part of the *FGEIS*, may have changed. These six intersections, located in the Crown Heights section of Brooklyn, are:

- Nostrand Avenue at Eastern Parkway
- Bedford Avenue at Carroll Street
- Bedford Avenue at Crown Street
- Bedford Avenue at Montgomery Street
- Rogers Avenue at Empire Boulevard
- Franklin Avenue at Empire Boulevard

The newer version of the Highway Capacity Software (HCS+ version 5.3) and the No Build and Build traffic volumes from the *FGEIS* (without extrapolation or modification) were used for this re-analysis. A field-check of the physical inventory data (used in the traffic analysis in the *FGEIS* in 2001) and signal timings (provided by NYCDOT) was performed by Eng-Wong, Taub & Associates staff. The following changes were observed and were included as part of the re-analysis:

1. Physical Inventory –
 - a. Nostrand Avenue at Eastern Parkway – The eastbound service road was analyzed as part of the signalized intersection in the *FGEIS*. Since the street is STOP controlled, it was re-analyzed as an unsignalized intersection.
 - b. Bedford Avenue at Crown Street – The westbound receiving side of Crown Street (west of Bedford Avenue) is currently partially closed due to construction and allows for one receiving lane. Thus, in the No Build condition, it was assumed that Crown Street (west of Bedford Avenue) is open for traffic as one receiving lane. The two Build scenarios that were re-analyzed were with Crown Street *open* and *closed*, as was analyzed in the *FGEIS*.
 - c. Due to construction along southbound Bedford Avenue, the parking lane along the west curb between Crown Street and Carroll Street is currently converted to a

pedestrian walkway. Since this condition is temporary, it was assumed that the lane is available for parking in the No Build and Build analyses.

- d. Franklin Avenue at Empire Boulevard – The westbound receiving side of Empire Boulevard between Washington Avenue and Franklin Avenue has been restriped as three receiving lanes as compared to two receiving lanes in the *FGEIS*.
2. Signal Timing –
- a. Bedford Avenue at Carroll Street – The amber and all-red time at this intersection was observed to be 4.0 seconds. Since this is a temporary situation, due to construction, the official signal timing obtained from NYCDOT was used for analysis with 3.0 seconds of amber time and 2.0 seconds of all-red time.

Significant traffic impacts were then determined using *City Environmental Quality Review Technical Manual (CEQR Technical Manual)*¹ guidelines. Tables 1 and 2 present a comparison of the significant impacts identified in the *FGEIS* (2003) and the re-analysis (2009) for individual intersections. For the Build condition with Crown Street closed, four intersections during the a.m. peak hour and five intersections during the p.m. peak hour were previously identified as significantly impacted. The re-analysis shows that four intersections during the a.m. peak hour and two intersections during the p.m. peak hour would be significantly impacted as per the new delay thresholds. All significantly impacted locations, except one (Bedford Avenue at Crown Street) in the a.m. peak hour, were also significantly impacted in the *FGEIS*.

Table 1: Intersections Significantly Impacted in 2001 and 2009: Crown Street Closed

Intersection	Impacts Identified in AM Peak Hour (Yes/No)		Impacts Identified in PM Peak Hour (Yes/No)	
	2001 EIS	2009 Re-analysis	2001 EIS	2009 Re-analysis
Nostrand Avenue at Eastern Parkway	Yes	Yes	Yes	Yes
Bedford Avenue at Carroll Street	Yes	Yes	<i>Yes</i>	<i>No</i>
Bedford Avenue at Crown Street	<i>No</i>	<i>Yes</i>	No	No
Bedford Avenue at Montgomery Street	<i>Yes</i>	<i>No</i>	<i>Yes</i>	<i>No</i>
Rogers Avenue at Empire Boulevard	No	No	<i>Yes</i>	<i>No</i>
Franklin Avenue at Empire Boulevard	Yes	Yes	Yes	Yes

* *The change in impacts is italicized.*

¹ The City of New York, Mayor's Office of Environmental Coordination, *City Environmental Quality Review Technical Manual*, October 2001.

Table 2: Intersections Significantly Impacted in 2001 and 2009: Crown Street Open

Intersection	Impacts Identified in AM Peak Hour (Yes/No)		Impacts Identified in PM Peak Hour (Yes/No)	
	2001 EIS	2009 Re-analysis	2001 EIS	2009 Re-analysis
Nostrand Avenue at Eastern Parkway	Yes	Yes	Yes	Yes
Bedford Avenue at Carroll Street	No	No	<i>Yes</i>	<i>No</i>
Bedford Avenue at Crown Street	Yes	Yes	<i>Yes</i>	<i>No</i>
Bedford Avenue at Montgomery Street	<i>Yes</i>	<i>No</i>	<i>Yes</i>	<i>No</i>
Rogers Avenue at Empire Boulevard	<i>No</i>	<i>Yes</i>	<i>Yes</i>	<i>No</i>
Franklin Avenue at Empire Boulevard	No	No	No	No

* *The change in impacts is italicized.*

For the Build condition with Crown Street *open*, three intersections in the a.m. peak hour and five intersections in the p.m. peak hour were previously identified as significantly impacted. The re-analysis shows that three intersections during the a.m. peak hour and one intersection during the p.m. peak hour would be significantly impacted. All impacted locations, except one (Rogers Avenue at Empire Boulevard) in the a.m. peak hour, were also significantly impacted in the *FGEIS*.

The change in the intersections identified as significantly impacted was primarily due to the changes in the methodology of delay calculations and delay thresholds used in the newer version of the *Highway Capacity Manual (HCM)*. For example, the older version of the Highway Capacity Software (based on the older HCM) would fail to report delays for all movements with volume-to-capacity (v/c) ratios greater than 1.20 or 1/(Peak Hour Factor). However, the newer versions of the software provide delays in most cases and, thus, are more accurate.

For the intersections that were still deemed significantly impacted, the result of whether the mitigation measures proposed in the *FGEIS* were still appropriate, given current physical intersection field conditions and signal timings, is presented below. Signal timing changes were required at some intersections to synchronize the adjoining intersections even if the intersections were not significantly impacted. Those intersections are labeled as "*Not Impacted*" below.

Crown Street Closed:

1. Nostrand Avenue at Eastern Parkway – During the a.m. peak hour, the mitigation measures are consistent with those proposed in the *FGEIS*. During the p.m. peak hour, a shift of two seconds from the southbound Nostrand Avenue phase to the east/westbound Eastern Parkway phase was necessary instead of the 1.0 second shift proposed in the *FGEIS*. The parking along the west curb of the southbound approach would still need to be prohibited.

2. Bedford Avenue at Carroll Street – During the a.m. peak hour, 2.0 seconds of green time would be shifted from the north/southbound Bedford Avenue phase to the eastbound Carroll Street phase. Previously, it was proposed that the shift would occur from the eastbound phase to the north/southbound phase. Parking along the northbound approach would still need to be prohibited. The intersection is no longer significantly impacted during the p.m. peak hour and, therefore, no mitigation would be required. In addition to the signal timing changes, the *FGEIS* proposed parking prohibitions during the p.m. peak hour along the southbound approach, which would be unnecessary under the re-analysis.
3. Bedford Avenue at Crown Street – During the a.m. peak hour, 2.0 seconds of green time would be shifted from the north/southbound Bedford Avenue phase to the westbound Crown Street phase. This intersection was not impacted in the original *FGEIS* but the shift of 2.0 seconds from the westbound phase to the north/southbound phase has been suggested as part of the re-analysis to match the signal timings at the adjoining intersections. This intersection would not be impacted during the p.m. peak hours and, thus, no mitigation would be required.
4. Bedford Avenue at Montgomery Street (Not Impacted) – During the a.m. peak hour, 2.0 seconds of green time would be shifted from the north/southbound Bedford Avenue phase to the eastbound Montgomery Street phase to match the signal timing at adjoining intersections. This intersection would not be impacted during the p.m. peak hours and, hence, no mitigation would be required. In addition to the signal timing changes, the *FGEIS* proposed parking prohibitions along the northbound and southbound approaches which would be unnecessary under the re-analysis.
5. Franklin Avenue at Empire Boulevard – During the a.m. peak hour, the mitigation measures remained consistent with those proposed in the *FGEIS*. During the p.m. peak hour, a shift of 1.0 second from the southbound Franklin Avenue phase to the east/westbound Empire Boulevard phase is needed instead of the 2.0 seconds shift proposed in the *FGEIS*.

Crown Street Open:

1. Nostrand Avenue at Eastern Parkway – During the a.m. and p.m. peak hours, the mitigation measures are consistent with those proposed in the *FGEIS*.
2. Bedford Avenue at Carroll Street (Not Impacted) – During the a.m. peak hour, 2.0 seconds of green time would be shifted from the eastbound Carroll Street phase to the north/southbound Bedford Avenue phase instead of 3.0 seconds identified in the *FGEIS*. This was required to match the signal timing changes at the adjoining intersections. This intersection would not be impacted during the p.m. peak hour and, hence, no mitigation would be required.
3. Bedford Avenue at Crown Street – During the a.m. peak hour, 2.0 seconds of green time would be shifted from the westbound Crown Street phase to the north/southbound Bedford Avenue phase instead of 3.0 seconds identified in the *FGEIS*. This intersection would not be impacted during the p.m. peak hour and, consequently, no mitigation would be required. In addition to the signal timing changes, the *FGEIS* proposed parking prohibitions during the p.m. peak hour along the northbound approach, which would be unnecessary under the re-analysis.
4. Bedford Avenue at Montgomery Street (Not Impacted) – During the a.m. peak hour, 2.0 seconds of green time would be shifted from the eastbound Montgomery Street phase to

the north/southbound Bedford Avenue phase to match the signal timing at the adjoining intersections. This intersection would not be impacted during the p.m. peak hour and, therefore, no mitigation would be required. In addition to the signal timing changes, the FGEIS proposed parking prohibitions along the northbound and southbound approaches, which would be unnecessary under the re-analysis.

5. Rogers Avenue at Empire Boulevard – During the a.m. peak hour, 1.0 second of green time would be shifted from the east/westbound Empire Boulevard phase to the northbound Rogers Avenue phase. Mitigation would not be required during the p.m. peak hour.

Conclusion

This technical memorandum re-analyzed the traffic impacts and mitigation proposed related to traffic conditions due to the closure of Crown Street. As a result of this re-analysis of the six intersections originally analyzed as part of the FGEIS, it has been concluded that fewer intersections would be significantly impacted than originally presented in the FGEIS. Along with minor adjustments in the signal timings originally proposed, it has also been determined that parking would no longer need to be prohibited along Bedford Avenue at its intersection with Carroll Street, Crown Street, and Montgomery Street during specific peak hours. For the intersections that would still be significantly impacted, the mitigation measures are comparable to those proposed in the FGEIS. Two intersections that were not significantly impacted in the FGEIS, would now be significantly impacted and could be mitigated with minor signal timing changes. (Note: The detailed mitigation measures and the level of service (LOS) tables are provided at the end of this memo.)

TABLE A
MEDGAR EVERS COLLEGE EIS - EVALUATION OF MITIGATION MEASURES
MITIGATION TRAFFIC LEVELS OF SERVICE - CROWN STREET CLOSED - AM PEAK HOUR

INTERSECTION & APPROACH	No Build			Build			Mitigation			Mitigation Measures (2001)				
	Mvt.	V/C	LOS	Mvt.	V/C	LOS	Mvt.	V/C	LOS					
NOSTRAND AVENUE at EASTERN PARKWAY Norstrand Avenue	L	0.55	37.0	D	L	0.55	37.0	D	L	0.57	38.6	D	-	
	TR	0.81	41.9	D	TR	0.82	42.2	D	TR	0.84	44.2	D	-	
	EB	0.97	39.6	D	TR	0.97	40.3	D	TR	0.96	37.3	D	-	
	WB	0.62	45.5	D	L	0.63	45.7	D	L	0.63	45.5	D	-	
Eastern Parkway (Mainline)	L	1.14	32.3	F	T	1.16	39.1	F	T	1.14	30.8	F	-	
	TR	1.14	32.3	F	T	1.16	39.1	F	T	1.14	30.8	F	-	
	EB	0.82	32.4	C	L	0.82	32.4	C	L	0.80	30.6	C	-	
	WB	0.82	32.4	C	L	0.82	32.4	C	L	0.80	30.6	C	-	
Eastern Parkway (Service Road) Eastern Parkway (Service Road) Unsignalized	EB	TR	40.2	E	TR	40.9	E	TR	TR	40.9	E	TR	-	
	Overall Intersection	-	1.02	56.1	E	-	1.03	59.2	E	-	1.03	55.1	E	-
BEDFORD AVENUE at CARROLL STREET Bedford Avenue	NB	TR	1.09	54.2	D	TR	1.19	101.8	E	TR	1.07	44.6	D	-
	SB	LT	0.61	14.5	B	LT	0.61	14.5	B	LT	0.63	15.9	B	-
	EB	LTR	0.40	40.3	D	LTR	0.40	40.3	D	LTR	0.38	38.0	D	-
	Overall Intersection	-	0.90	41.2	D	-	0.97	72.6	E	-	0.96	36.0	D	-
BEDFORD AVENUE at CROWN STREET Bedford Avenue	NB	LT	1.14	81.4	F	T	0.97	19.6	B	T	1.00	26.8	C	-
	SB	TR	0.54	12.7	B	L	0.53	12.5	B	T	0.55	13.7	B	-
	WB	LTR	0.33	43.4	D	L	0.37	29.3	D	L	0.34	37.1	D	-
	Overall Intersection	-	1.00	55.4	E	-	0.89	21.9	C	-	0.89	25.6	C	-
BEDFORD AVENUE at MONTGOMERY STREET Bedford Avenue	NB	LTR	1.01	25.1	C	LTR	0.98	20.2	C	LTR	1.01	27.9	C	-
	SB	LTR	0.65	15.7	B	LTR	0.74	19.0	B	LTR	0.76	21.0	C	-
	EB	LTR	0.71	45.7	D	LTR	0.72	45.9	D	LTR	0.67	42.7	D	-
	Overall Intersection	-	0.92	27.0	C	-	0.91	25.4	C	-	0.91	29.0	C	-
ROGERS AVENUE at EMPIRE BOULEVARD Rogers Avenue	NB	L	0.47	19.4	B	L	0.49	19.7	B	-	-	-	-	-
	TR	1.14	93.2	F	TR	1.15	95.8	F	-	-	-	-	-	
	EB	LT	0.69	25.8	C	LT	0.69	25.8	C	-	-	-	-	
	WB	TR	0.68	24.2	C	TR	0.68	24.4	C	-	-	-	-	
Overall Intersection	-	0.92	56.2	E	-	0.92	57.3	E	-	-	-	-		
FRANKLIN AVENUE at EMPIRE BOULEVARD Franklin Avenue	NB	L	0.19	36.2	D	L	0.19	36.2	D	L	0.22	38.8	D	-
	TR	0.22	8.9	A	T	0.22	8.9	A	T	0.21	7.7	A	-	
	EB	T	1.09	88.2	F	T	1.19	130.1	F	T	1.08	81.9	F	-
	Overall Intersection	-	0.21	57.4	E	-	0.21	83.8	F	-	0.22	54.9	D	-

Represents Significantly Impacted Movements

(1) Control delay is measured in seconds per vehicle.
(2) Level of service (LOS) for signalized intersections is based upon average control delay per vehicle (sec/veh) for each lane group as listed in the 2000 Highway Capacity Manual - TRB.
(3) Level of service (LOS) for unsignalized intersections is based upon control delay per vehicle (sec/veh) for each minimum approach as listed in the 2000 Highway Capacity Manual - TRB.
(4) Overall intersection V/C ratio is the critical lane group's V/C ratio, not the weighted average of all the movements.
(5) Overall delay cannot be calculated since the delay for some of the movements is beyond the threshold delay of TRB methodology.

**TABLE B
MEDGAR EVERS COLLEGE EIS - EVALUATION OF MITIGATION MEASURES
MITIGATION TRAFFIC LEVELS OF SERVICE - CROWN STREET CLOSED - PM PEAK HOUR**

INTERSECTION & APPROACH	PM (4:45 - 5:45 PM)			PM (4:45 - 5:45 PM)			PM (4:45 - 5:45 PM)			Mitigation Measures (2001)			
	Mvt.	V/C	Delay	Mvt.	V/C	Delay	Mvt.	V/C	Delay	Mvt.	V/C	Delay	LOS
NOSTRAND AVENUE at EASTERN PARKWAY Nstrand Avenue	SB	L	0.65	38.9	D	L	0.65	38.9	D	L	0.70	42.6	D
	TR	TR	0.95	50.4	D	TR	0.96	52.0	D	TR	0.95	51.9	D
	WB	TR	1.15	96.4	F	TR	1.16	99.7	F	TR	1.12	79.4	E
	WB	L	0.71	52.6	D	L	0.73	53.2	D	L	0.73	53.2	D
Eastern Parkway (Service Road)	WB	T	1.02	42.8	D	T	1.05	54.9	D	T	1.02	42.7	D
	WB	LT	0.43	25.3	C	LT	0.43	25.3	C	LT	0.41	23.7	C
Eastern Parkway (Service Road) Unsignalized	EB	TR	-	62.9	F	TR	-	64.5	F	TR	-	64.5	F
Overall Intersection	-	-	1.01	66.8	E	-	1.02	72.1	E	-	1.02	59.6	E
BEDFORD AVENUE at CARROLL STREET Bedford Avenue	NB	TR	0.74	16.7	B	TR	0.78	18.4	B	-	-	-	-
	SB	LT	0.95	17.2	B	LT	0.95	20.2	C	-	-	-	-
	EB	LTR	0.47	41.5	D	LTR	0.47	41.5	D	-	-	-	-
	Overall Intersection	-	-	0.80	19.4	B	-	0.82	21.4	C	-	-	-
BEDFORD AVENUE at CROWN STREET Bedford Avenue	NB	LT	0.81	20.7	C	T	0.73	17.0	B	-	-	-	-
	SB	TR	0.75	8.3	A	T	0.75	8.3	A	-	-	-	-
	WB	LTR	0.35	37.8	D	L	0.41	40.8	D	-	-	-	-
	Crown Street	-	-	-	-	R	0.23	36.9	D	-	-	-	-
Overall Intersection	-	-	0.68	17.5	B	-	0.65	15.6	B	-	-	-	
BEDFORD AVENUE at MONTGOMERY STREET Bedford Avenue	NB	LTR	0.70	16.1	B	LTR	0.76	18.2	B	-	-	-	-
	SB	LTR	0.91	19.6	B	LTR	1.02	41.0	D	-	-	-	-
	EB	LTR	0.61	43.0	D	LTR	0.63	43.4	D	-	-	-	-
	Montgomery Street	-	-	-	-	-	-	-	-	-	-	-	-
Overall Intersection	-	-	0.83	23.0	C	-	0.91	33.3	C	-	-	-	
ROGERS AVENUE at EMPIRE BOULEVARD Rogers Avenue	NB	L	0.31	18.5	B	L	0.34	18.9	B	-	-	-	-
	TR	TR	0.70	24.5	C	TR	0.71	24.7	C	-	-	-	-
	EB	LT	1.03	53.8	D	LT	1.04	57.1	E	-	-	-	-
	Empire Boulevard	WB	TR	0.68	24.1	C	TR	0.69	24.5	C	-	-	-
Overall Intersection	-	-	0.86	33.3	C	-	0.87	34.3	C	-	-	-	
FRANKLIN AVENUE at EMPIRE BOULEVARD Franklin Avenue	NB	L	0.25	37.0	D	L	0.25	37.0	D	L	0.26	38.0	D
	SB	T	0.27	9.3	A	T	0.27	9.3	A	T	0.27	8.9	A
	WB	T	1.00	63.6	E	T	1.05	78.5	E	T	1.02	66.9	E
	Empire Boulevard	WB	TR	-	-	-	-	-	-	-	-	-	-
Overall Intersection	-	-	0.27	39.3	D	-	0.27	47.5	D	-	0.27	41.5	D

(1) Control delay is measured in seconds per vehicle.
 (2) Level of service (LOS) for signalized intersections is based upon average control delay per vehicle (sec/veh) for each lane group as listed in the 2000 Highway Capacity Manual - TRB.
 (3) Level of service (LOS) for unsignalized intersections is based upon control delay per vehicle (sec/veh) for each minor approach as listed in the 2000 Highway Capacity Manual - TRB.
 (4) Overall intersection V/C ratio is the critical lane groups' V/C ratio, not the weighted average of all the movements.
 (5) Overall delay cannot be calculated since the delay for some of the movements is beyond the threshold delay of HCS methodology.
 Represents Significantly Impacted Movements

TABLE C
 MEDGAR EYERS COLLEGE EIS - EVALUATION OF MITIGATION MEASURES
 MITIGATION TRAFFIC LEVELS OF SERVICE - CROWN STREET OPEN - AM PEAK HOUR

INTERSECTION & APPROACH	AM (7:45 - 9:30 AM)						AM (7:45 - 9:30 AM)									
	No Build			Build			Mitigation			Mitigation						
	Mvt.	V/C	Delay	LOS	Mvt.	V/C	Delay	LOS	Mvt.	V/C	Delay	LOS	Mvt.	V/C	Delay	LOS
NOSTRAND AVENUE at EASTERN PARKWAY																
SB	L	0.55	37.0	D	L	0.55	37.0	D	L	0.57	38.6	D	L	0.57	38.6	D
SB	TR	0.81	41.9	D	TR	0.82	42.2	D	TR	0.84	44.2	D	TR	0.84	44.2	D
EB	TR	0.97	39.6	D	TR	0.97	40.5	D	TR	0.96	37.3	D	TR	0.96	37.3	D
WB	L	0.62	45.5	D	L	0.63	45.7	D	L	0.63	45.5	D	L	0.63	45.5	D
WB	T	1.14	82.3	F	T	1.16	89.1	F	T	1.14	80.8	F	T	1.14	80.8	F
WB	LT	0.82	32.4	C	LT	0.82	32.4	C	LT	0.80	30.6	C	LT	0.80	30.6	C
EB	TR	-	40.2	E	TR	-	40.9	E	TR	-	40.9	E	TR	-	40.9	E
Overall Intersection	-	1.02	56.1	E	-	1.03	59.2	E	-	1.03	55.1	E	-	1.03	55.1	E
BEDFORD AVENUE at CARROLL STREET																
SB	TR	1.09	54.2	D	TR	1.10	55.2	E	TR	1.07	42.0	D	TR	1.07	42.0	D
SB	LT	0.61	14.5	B	LT	0.64	15.1	B	LT	0.62	13.7	B	LT	0.62	13.7	B
EB	LTR	0.40	40.3	D	LTR	0.40	40.3	D	LTR	0.44	42.8	D	LTR	0.44	42.8	D
Overall Intersection	-	0.90	41.2	D	-	0.90	41.7	D	-	0.90	33.3	C	-	0.90	33.3	C
BEDFORD AVENUE at CROWN STREET																
SB	LT	1.14	81.4	F	LT	1.18	97.8	F	LT	1.13	76.0	E	LT	1.13	76.0	E
SB	TR	0.54	12.7	B	TR	0.57	13.2	B	TR	0.55	12.0	B	TR	0.55	12.0	B
WB	LTR	0.63	43.4	D	LTR	0.63	43.6	D	LTR	0.68	46.9	D	LTR	0.68	46.9	D
Overall Intersection	-	1.00	55.4	E	-	1.02	63.8	E	-	1.01	52.5	D	-	1.01	52.5	D
BEDFORD AVENUE at MONTGOMERY STREET																
SB	LTR	1.01	25.1	C	LTR	1.04	34.7	C	LTR	1.01	23.1	C	LTR	1.01	23.1	C
SB	LTR	0.65	15.7	B	LTR	0.67	16.4	B	LTR	0.66	14.9	B	LTR	0.66	14.9	B
EB	LTR	0.71	45.7	D	LTR	0.73	46.5	D	LTR	0.79	50.7	D	LTR	0.79	50.7	D
Overall Intersection	-	0.92	27.0	C	-	0.95	32.3	C	-	0.95	27.9	C	-	0.95	27.9	C
ROGERS AVENUE at EMPIRE BOULEVARD																
SB	L	0.47	19.4	B	L	0.48	19.6	B	L	0.47	18.9	B	L	0.47	18.9	B
SB	TR	1.14	55.2	F	TR	1.15	56.9	F	TR	1.13	64.9	F	TR	1.13	64.9	F
EB	LT	0.69	25.8	C	LT	0.69	25.9	C	LT	0.71	27.3	C	LT	0.71	27.3	C
WB	TR	0.68	24.2	C	TR	0.68	24.4	C	TR	0.70	25.4	C	TR	0.70	25.4	C
Overall Intersection	-	0.92	56.2	E	-	0.92	57.9	E	-	0.92	52.8	D	-	0.92	52.8	D
FRANKLIN AVENUE at EMPIRE BOULEVARD																
SB	L	0.19	36.2	D	L	0.20	36.2	D	L	0.19	36.2	D	L	0.19	36.2	D
EB	T	0.22	8.9	A	T	0.22	8.9	A	T	0.22	8.9	A	T	0.22	8.9	A
WB	T	1.09	88.2	F	T	1.09	88.2	F	T	1.09	88.2	F	T	1.09	88.2	F
Overall Intersection	-	0.21	57.4	E	-	0.22	57.2	E	-	0.22	57.2	E	-	0.22	57.2	E

Represents Significantly Impacted Movements

(1) Control delay is measured in seconds per vehicle.
 (2) Level of service (LOS) for signalized intersections is based upon average control delay per vehicle (sec/veh) for each lane group as listed in the 2000 Highway Capacity Manual - TRB.
 (3) Level of service (LOS) for unsignalized intersections is based upon control delay per vehicle (sec/veh) for each minor approach as listed in the 2000 Highway Capacity Manual - TRB.
 (4) Overall intersection V/C ratio is the critical lane group's V/C ratio, not the weighted average of all the movements.
 (5) Overall delay cannot be calculated since the delay for some of the movements is beyond the threshold delay of MCS methodology.

**TABLE D
MIDGARD EVERS COLLEGE EIS - EVALUATION OF MITIGATION MEASURES
MITIGATION TRAFFIC LEVELS OF SERVICE - CROWN STREET OPEN - PM PEAK HOUR**

INTERSECTION & APPROACH	PM (4:45 - 5:45 PM)				PM (4:45 - 5:45 PM)				PM (4:45 - 5:45 PM)			
	No Build		Build		No Build		Build		No Build		Build	
	Mvt.	V/C	Delay	LOS	Mvt.	V/C	Delay	LOS	Mvt.	V/C	Delay	LOS
NOSTRAND AVENUE at EASTERN PARKWAY												
Nstrand Avenue	SB	L	0.65	38.9	D	L	0.65	38.9	D	L	0.70	42.6
		TR	0.95	50.4	D	TR	0.96	53.0	D	TR	0.95	51.9
Eastern Parkway (Mainline)	EB	L	1.15	56.4	F	TR	1.16	59.7	F	TR	1.12	79.4
		WB	L	0.71	52.6	L	0.73	53.2	D	L	0.73	52.2
Eastern Parkway (Service Road)	WB	T	1.02	42.8	C	T	1.05	54.9	D	T	1.02	42.7
Eastern Parkway (Service Road) Unsignalized	EB	TR	-	62.9	F	TR	-	64.5	F	TR	-	64.5
Overall Intersection			1.01	66.8	E		1.02	72.1	E		1.02	59.6
BEDFORD AVENUE at CARROLL STREET												
Bedford Avenue	NB	TR	0.74	16.7	B	TR	0.75	17.0	B			
		SB	LT	0.55	17.2	B	LT	0.97	23.0	C		
Carroll Street	EB	LTR	0.47	41.5	D	LTR	0.47	41.5	D			
Overall Intersection			0.80	19.4	B		0.83	22.2	C			
BEDFORD AVENUE at CROWN STREET												
Bedford Avenue	NB	LT	0.81	20.7	C	LT	0.81	20.7	C			
		SB	TR	0.75	8.3	A	TR	0.75	8.3	A		
Crown Street	WB	LTR	0.35	37.8	D	LTR	0.35	37.8	D			
Overall Intersection			0.68	17.5	B		0.68	17.5	B			
BEDFORD AVENUE at MONTGOMERY STREET												
Bedford Avenue	NB	LTR	0.70	16.1	B	LTR	0.78	19.3	B			
		SB	LTR	0.91	19.6	B	LTR	0.96	26.4	C		
Montgomery Street	EB	LTR	0.61	43.0	D	LTR	0.66	44.2	D			
Overall Intersection			0.83	23.0	C		0.88	27.4	C			
ROGERS AVENUE at EMPIRE BOULEVARD												
Rogers Avenue	NB	L	0.31	18.5	B	L	0.33	18.9	B			
		TR	0.70	24.5	C	TR	0.71	24.8	C			
Empire Boulevard	EB	LT	1.03	53.8	D	LT	1.04	57.5	E			
		WB	TR	0.68	24.1	C	TR	0.69	24.4	C		
Overall Intersection			0.86	33.3	C		0.88	34.5	C			
FRANKLIN AVENUE at EMPIRE BOULEVARD												
Franklin Avenue	SB	L	0.25	37.0	D	L	0.25	37.1	D			
		EB	T	0.27	9.3	A	T	0.27	9.3	A		
Empire Boulevard	WB	T	1.00	63.6	E	T	1.00	63.6	E			
Overall Intersection			0.27	39.3	D		0.27	39.3	D			

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