

Traffic Memo

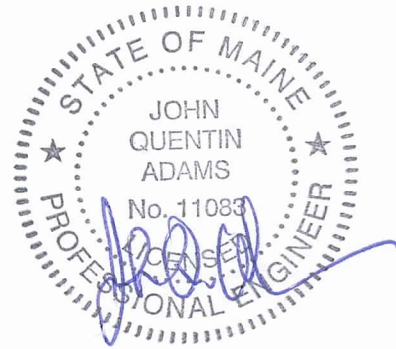
TO: Ms. Jean Fraser
Planner
City of Portland

FROM: John Q. Adams, P.E., PTOE
Senior Transportation Engineer
Milone & MacBroom, Inc.

DATE: May 30, 2012

RE: **Response to TMP Scoping Meeting**
Jordan's Meats Phase II Redevelopment
Fore St, Portland, ME

cc: Tom Errico, City Traffic Engineer
Fore Middle India, LLC
Derek Olson, Region Traffic Engineer, MDOT Scarborough



Introduction

The purpose of this memo is to respond to the requests for additional information and traffic analysis that was determined at the Scoping Meeting held at the City of Portland's Department of Planning on May xx, 2012. The following items were requested:

1. Verify the use of the trip assignment percentages to/from Franklin Arterial and to/from India Street and at the site entrances.
2. Show the distribution of the combined Phase 1 and Phase II site generated trips through the intersections of Franklin/Middle, Franklin/Fore, Fore /India, and Middle/India.
3. Perform weekday AM and PM peak hour traffic operations analysis at both site entrances (on Fore St and Middle St) and at the intersections of India St at Fore St and India St at Middle St.
4. Perform traffic signal warrant analysis at the intersection of Fore St at India St.
5. Analyze traffic operations at the intersection of Middle St at India under existing traffic control (stop signs on Middle Stand free on India St), and under all-way stop control.

1. Trip Assignment

We have reviewed the assignment of trips to and from the site via Franklin Arterial and India Street. Out trip assignments have been adjusted to better correspond better to existing traffic patterns on Fore Street and Middle Street. The distribution n of site generated trips for the Phase II development are shown in Figure 5, enclosed. In general the trips are more balanced between Franklin Arterial and India Street. This will provide for a more conservative analysis of the impacts to traffic operations at the intersection of India Street at Middle Street and India Street at Fore Street.

2. Distribution of Phase 1 & Phase 2 Site Generated Trips

As requested, we have shown the assignment of site generated trips from both the combined Phase 1 and Phase II Jordan's Meat site redevelopments. We have shown the distribution through four intersections including; Franklin at Middle Street, Franklin at Fore Street, Middle Street at India Street and Fore Street at India Street.

The Phase 1 portion of the development generated 105 AM peak hour trip-ends and 131 PM peak hour trip-ends. The Phase II portion of the development will generate 112 AM peak hour trip-ends and 162 PM peak hour trip-ends. In total both phases of the development will generate 217 AM peak hour trip-ends and 293 PM peak-hour trip-ends. Since the PM peak hour trips are higher than the AM peak hour trips we have only shown the combined PM peak hour trip distribution

These are shown in Figures 5A (Phase 1), 5B (Phase 2) and 5C (Combined). The results indicate that the appropriate intersections have been included in the traffic study area. To be consistent with the intent of the parking study the trip distribution was completed based on the following assumptions:

1. The phase 1 portion of the PM peak hour trips utilizing the Fore Street entrance was 95 trip-ends, 44 exiting and 51 entering.
2. Of the Phase II Trips only a portion of the total trips produced will park on-site. This is as follows:

Fore Street Entrance and Parking

- The 122 room hotel
- The 12 phase 1 residences
- A portion of the general office space users. Based on the parking study and a determination of available parking, there will be 45 spaces available of which due to the costs we have assumed that half (23) will be used by office space users.
- Retail employees

Middle Street Entrance and Parking

- 18 phase 2 residences
 - A portion of the general office space users. Based on the parking study and a determination of available parking, there will be 26 spaces available that will be used by general offices space users.
 - Retail employees
3. Based on our parking study and anticipated parking usage by general office space users, we have assumed that approximately 60% will utilize the site for parking. Of the remaining 40%, half (20%) will utilize the adjacent Ocean Gateway garage, and the remaining 20% will park elsewhere in the city based on pricing and proximity.
 4. We have assumed that only employees of the retail space will park on-site. Of the remaining users, 30% percent will park at the adjacent Ocean Gateway garage, and the remainder will park elsewhere in the city based on proximity and price.



A breakdown of these calculations is shown in Figure 8 at the end of this report. The traffic volumes utilized in this study are also enclosed at the end of this report in Figures 2 -7.

3. AM & PM Peak Hour Traffic Operations Analysis

We have performed traffic operations analysis at the four study intersections, including; Middle St at India St, Fore St at India St, site entrance on Fore St and the site entrance on Middle St. The analysis was completed for unsignalized intersections utilizing Synchro traffic modeling software. Table A, B, C, and D summarize the results under the 2013 AM & PM Peak Hour Build condition.

Table A
2013 Build Condition
Site entrance at Fore St
Traffic Operations

	Overall	Entrance SB	EB Fore St	WB Fore St
	LOS	LOS/95 th Q	LOS/95 th Q	LOS/95 th Q
Build AM Peak Hour	A 0.9s	B 10.2s / 3ft	A 0.8s / 1ft	A 0s / 0ft
Build PM Peak Hour	A 1.2s	B 10.8s / 6ft	A 0.6s / 1ft	A 0s / 0ft

Table B
2013 Build Condition
Site Entrance at Middle St
Traffic Operations

	Overall	Entrance SB	EB Middle St	WB Middle St
	LOS	LOS/95 th Q	LOS/95 th Q	LOS/95 th Q
Build AM Peak Hour	A 0.7s	A 9.9s / 1ft	A 0s / 0ft	A 0.9s / 1ft
Build PM Peak Hour	A 0.8s	B 10.7s / 4ft	A 0s / 0ft	A 0.2s / 0ft

Table C
2013 Build Condition
India St at Fore St
Traffic Operations

	Overall	NB India St	SB India St	EB Fore St	WB Fore St
	LOS	LOS	LOS	LOS	LOS
Build AM Peak Hour	B 12.6s	B 11.3s	B 14.1s	B 11.6s	B 12.3s
Build PM Peak Hour	C 17.0s	C 15.9s	C 16.7s	C 17.8s	C 17.6s

Table D
2013 Build Condition
India St at Middle St
Traffic Operations

	Overall	NB India St	SB India St	EB Middle St	WB Middle St
	LOS	LOS	LOS	LOS	LOS
Build AM Peak Hour	A 6.2s	A 1.3s	A 0.7s	C 21.5s	C 16.2s
Build PM Peak Hour	A 6.2s	A 1.0s	A 0.5s	E 48.7s	C 21.0s

The results of the analysis indicate that the intersections will function satisfactorily under the weekday AM and PM peak hour Build conditions. The only Area of concern is the eastbound approach on Middle St at India St. The Los for this approach is LOS E. This will be discussed further under Item 5 below which will analyze the intersection under existing traffic control and with a proposed All-Way stop control.

4. Traffic Signal Warrant Analysis – Fore St at Middle St

We have completed traffic signal warrant analysis at the intersection of Fore Street and India Street. We have utilized the MUTCD traffic signal warrants for both the 8-hour and 4-hour warrants in an urban condition. We have reviewed the warrants under the; 2012 existing traffic volume conditions (Table 2 in the Signal Warrants appendix), build condition with the background traffic volumes adjusted to the average condition (consistent with Maine DOT policy and shown in Table 3), and the build condition with the background traffic volumes adjusted to the peak time of year. The results indicate that based on the MUTCD 8-hour volume warrants (A- Minimum Volume & B – Interruption of Traffic) a traffic signal is not warranted at this time. We also reviewed the 4-hour urban warrant and plotted the highest four hours based on the build condition with the background volumes adjusted to the peak time of year. This also indicated that a traffic signal is not warranted.

5. Middle St at India St – Analyze as All-Way Stop Controlled Intersection

We have performed traffic operations analysis for the intersection of Middle Street at India Street utilizing All-Way stop control. Existing traffic control is provided by stop signs on the Middle Street approaches only. Table E, below, summarizes the results comparing the existing traffic control with the All-way stop control.

Table E
2013 Build Condition
India St at Middle St
LOS/Delay

	Overall	NB India St	SB India St	EB Middle St	WB Middle St
	LOS Exist/All-Way	LOS/95 th Q Exist/All-Way	LOS Exist/All-Way	LOS Exist/All-Way	LOS Exist/All-Way
Build AM Peak Hour	A 6.2s / B 12.2s	A 1.3s / B 10.1s	A 0.7s / B 14.2s	C 21.5s / B 10.6s	C 16.2s / A 9.4s
Build PM Peak Hour	A 6.2s / B 14.4	A 1.0s / C 16.9s	A 0.5s / B 13.1s	E 48.7s / B 14.0s	C 21.0s / B 12.1s

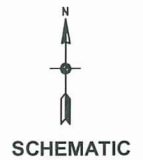
Table E
2013 Build Condition
India St at Middle St
95th Percentile Queues

	NB India St	SB India St	EB Middle St	WB Middle St
	95 th Q Exist/All-Way	95 th Q Exist/All-Way	95 th Q Exist/All-Way	95 th Q Exist/All-Way
Build AM Peak Hour	36 ft / 55ft	29 ft / 122 ft	88 ft / 69 ft	54 ft / 51 ft
Build PM Peak Hour	32 ft / 81 ft	22 ft / 78 ft	113 ft / 81 ft	65 ft / 58 ft

The analysis indicates that the intersection will function overall at a LOS of B with all-way stop control, which is an increase in delay from LOS A under existing conditions. However, all of the approaches function at LOS C or better with the All-way stop control, which helps the Middle Street eastbound approaches which improves from LOS E to B. In addition, the queuing analysis indicates that with All-way stop control the queues on Middle Street are reduced while not causing excessive queuing on India. The queuing analysis also indicates that the queue on the Middle Street eastbound approach will be a maximum of 113 ft during the PM peak hour under existing traffic control which will not block the proposed Middle Street entrance, located approximately 240 ft from the intersection.

Conclusions

We trust that the above analysis has addressed the concerns of the City of Portland. Please let us know if you need any further information.



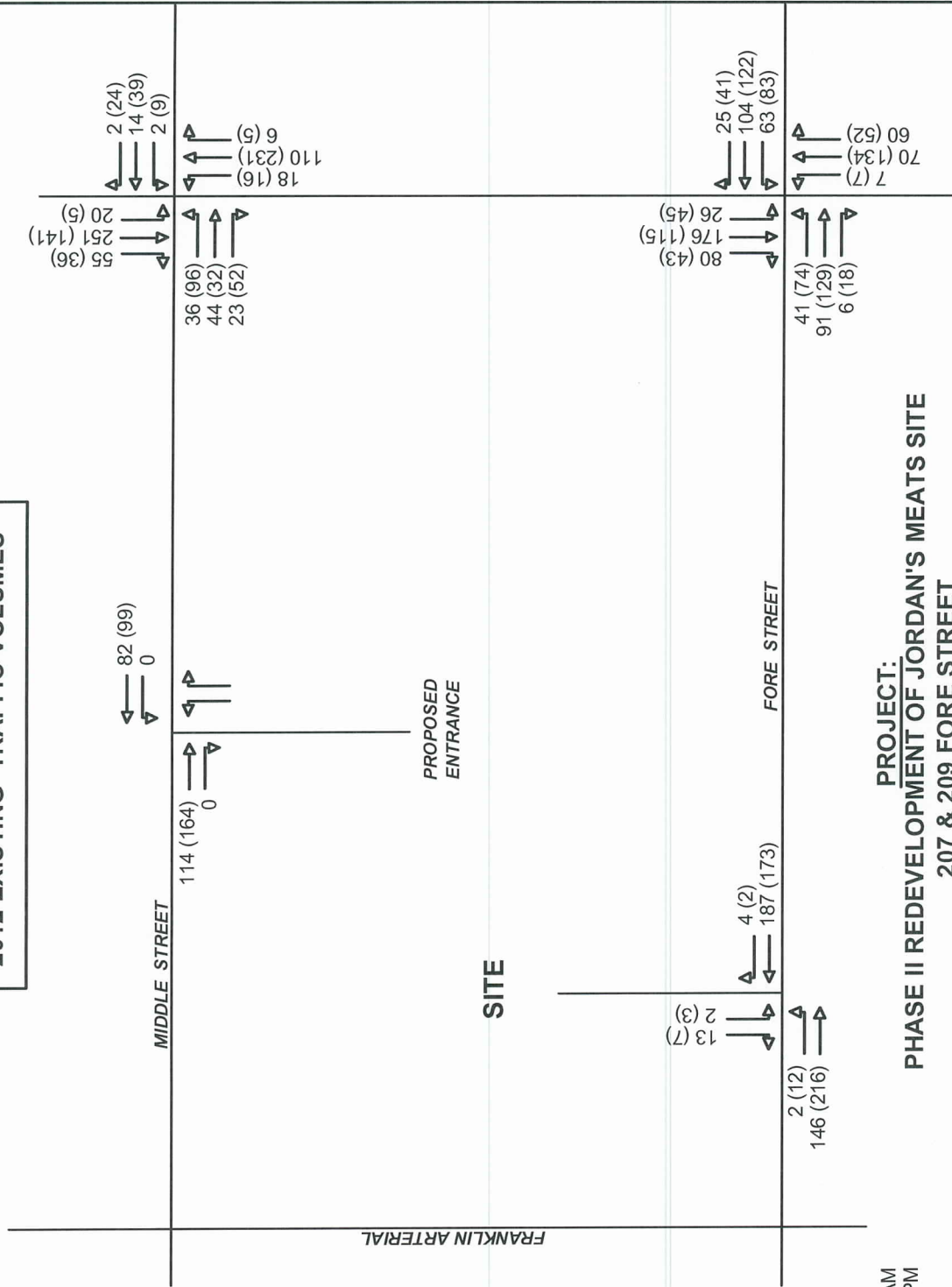
PROJECT:
PHASE II REDEVELOPMENT OF JORDAN'S MEATS SITE
207 & 209 FORE STREET
PORTLAND, MAINE

FOR:
FORE MIDDLE INDIA, LLC
11 CORPORATE DRIVE
BELMONT, NH 03220

2012 EXISTING TRAFFIC VOLUMES



SCHMATIC



PROJECT:
PHASE II REDEVELOPMENT OF JORDAN'S MEATS SITE
207 & 209 FORE STREET
PORTLAND, MAINE

FOR:
FORE MIDDLE INDIA, LLC
11 CORPORATE DRIVE
BELMONT, NH 03220

AM = XX - 8:00-9:00 AM
 PM = (XX) - 4:30-5:30 PM

NOTE:
 DATE OF COUNTS
 4/17/12

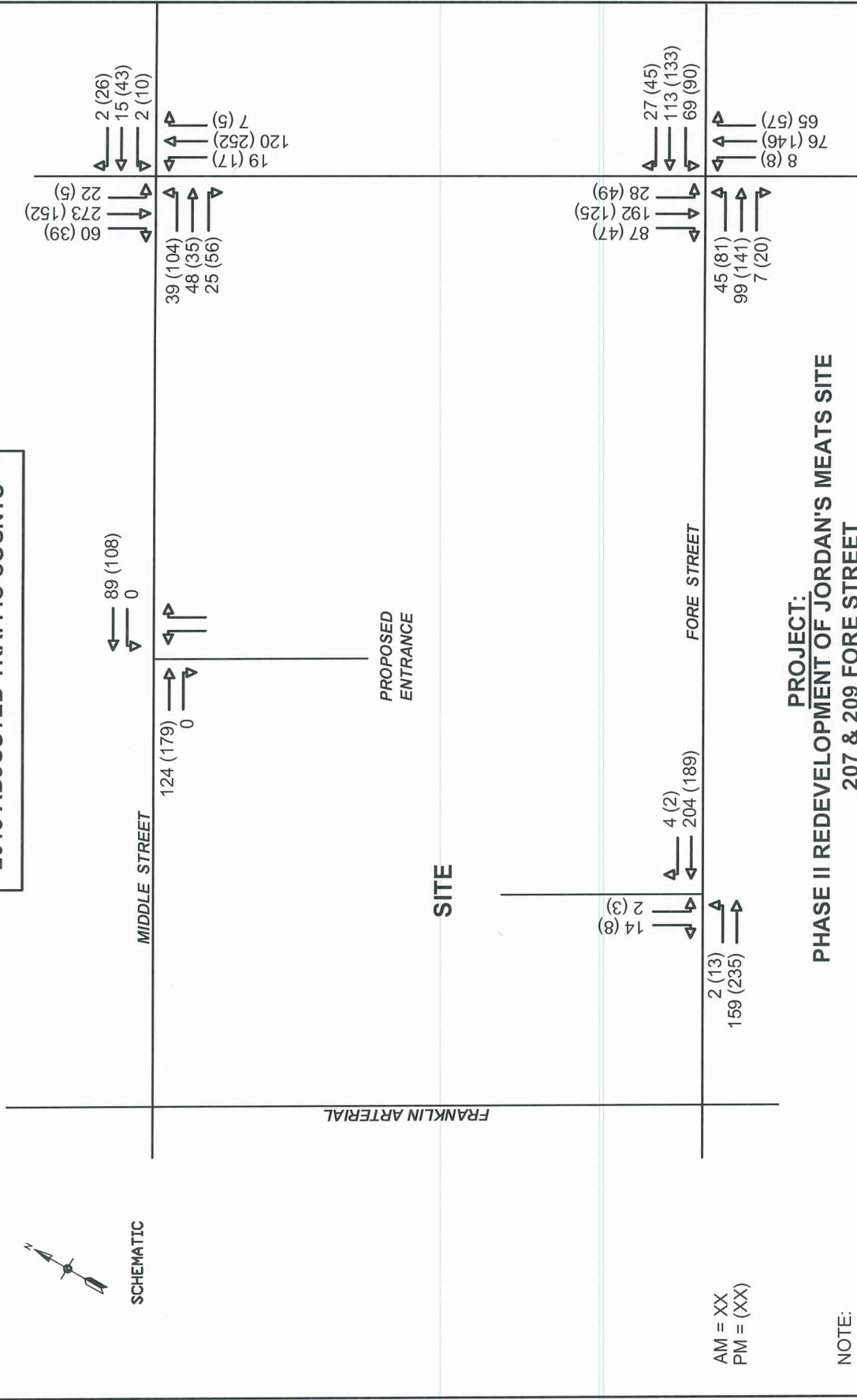


MILONE & MACBROOM, Inc.

2013 ADJUSTED TRAFFIC COUNTS



SCHMATIC



AM = XX
PM = (XX)

NOTE:

1. SEASONAL ADJUSTMENT OF 1.08% APPLIED
2. ANNUAL ADJUSTMENTS OF 1% APPLIED TO ACCOUNT 2013 BUILD YEAR.

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207 & 209 FORE STREET
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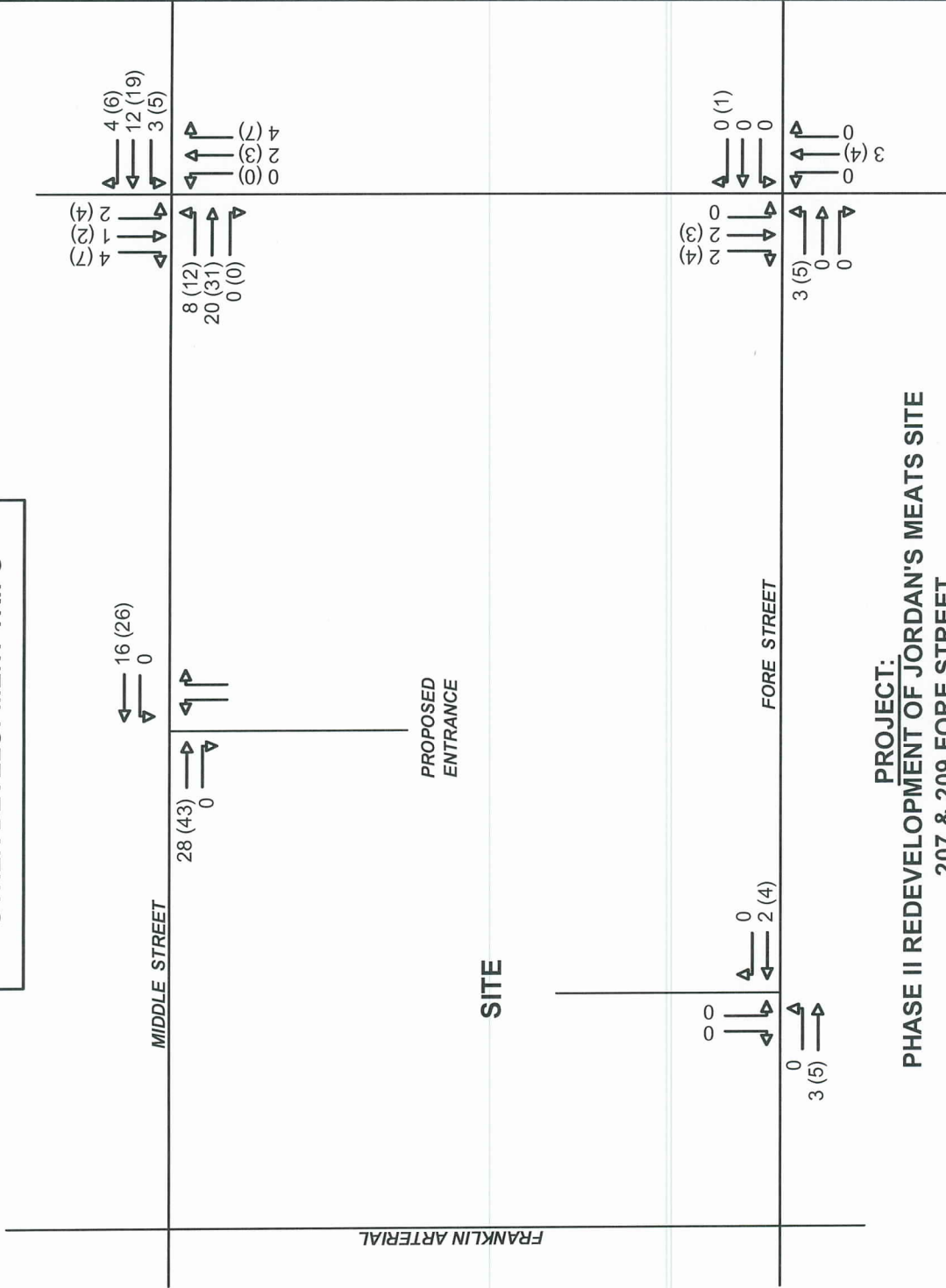
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OTHER DEVELOPMENT TRIPS



SCHMATIC



SITE

PROJECT:
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FORE MIDDLE INDIA, LLC
11 CORPORATE DRIVE
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AM = XX
 PM = (XX)

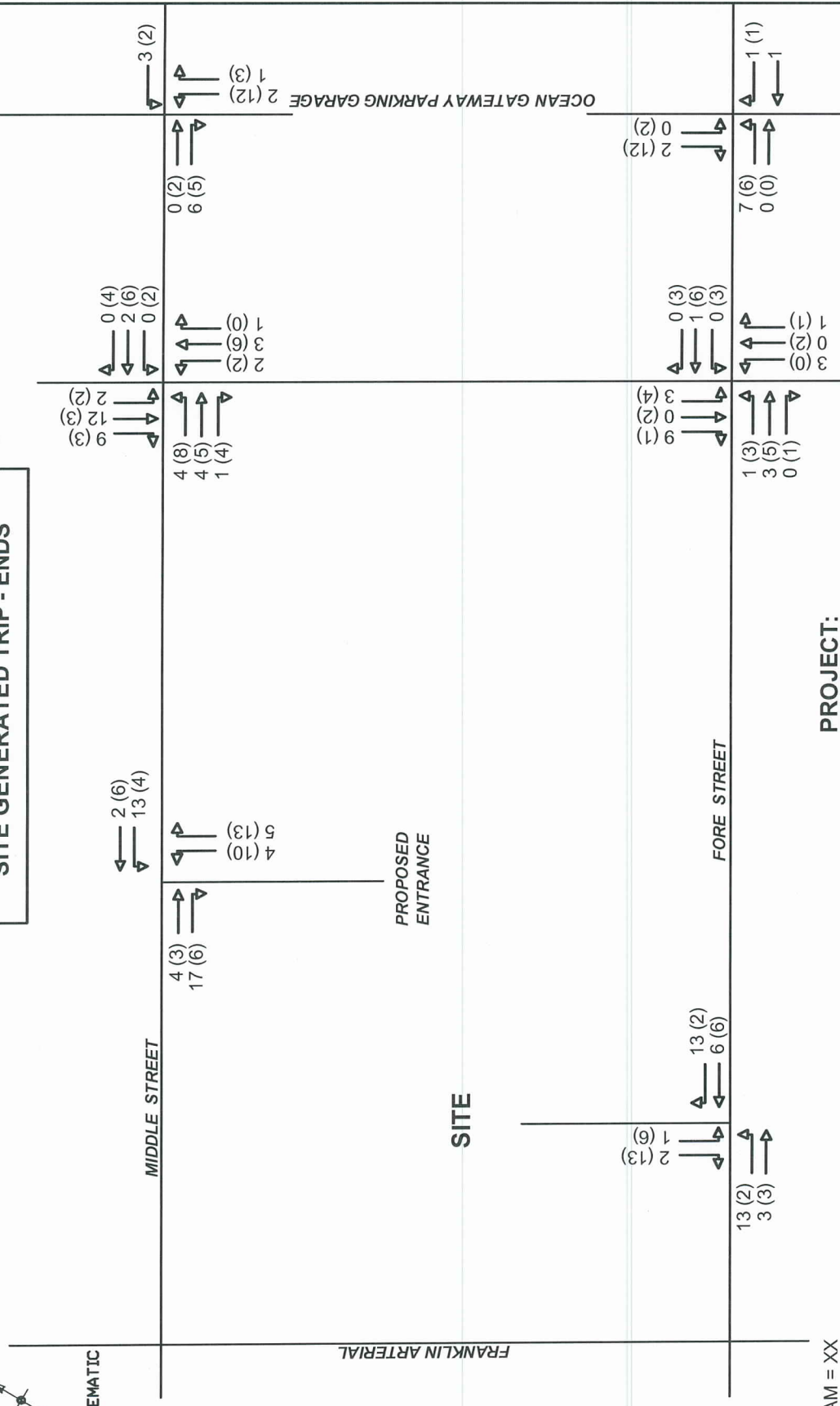
NOTE:
 OTHER DEVELOPMENT TRIPS INCLUDED,
 VILLAGE AT OCEAN GATE AND VILLAGE
 CAFE REDEVELOPMENT





SCHEMATIC

SITE GENERATED TRIP - ENDS



SITE

PROJECT:
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AM = XX
 PM = (XX)

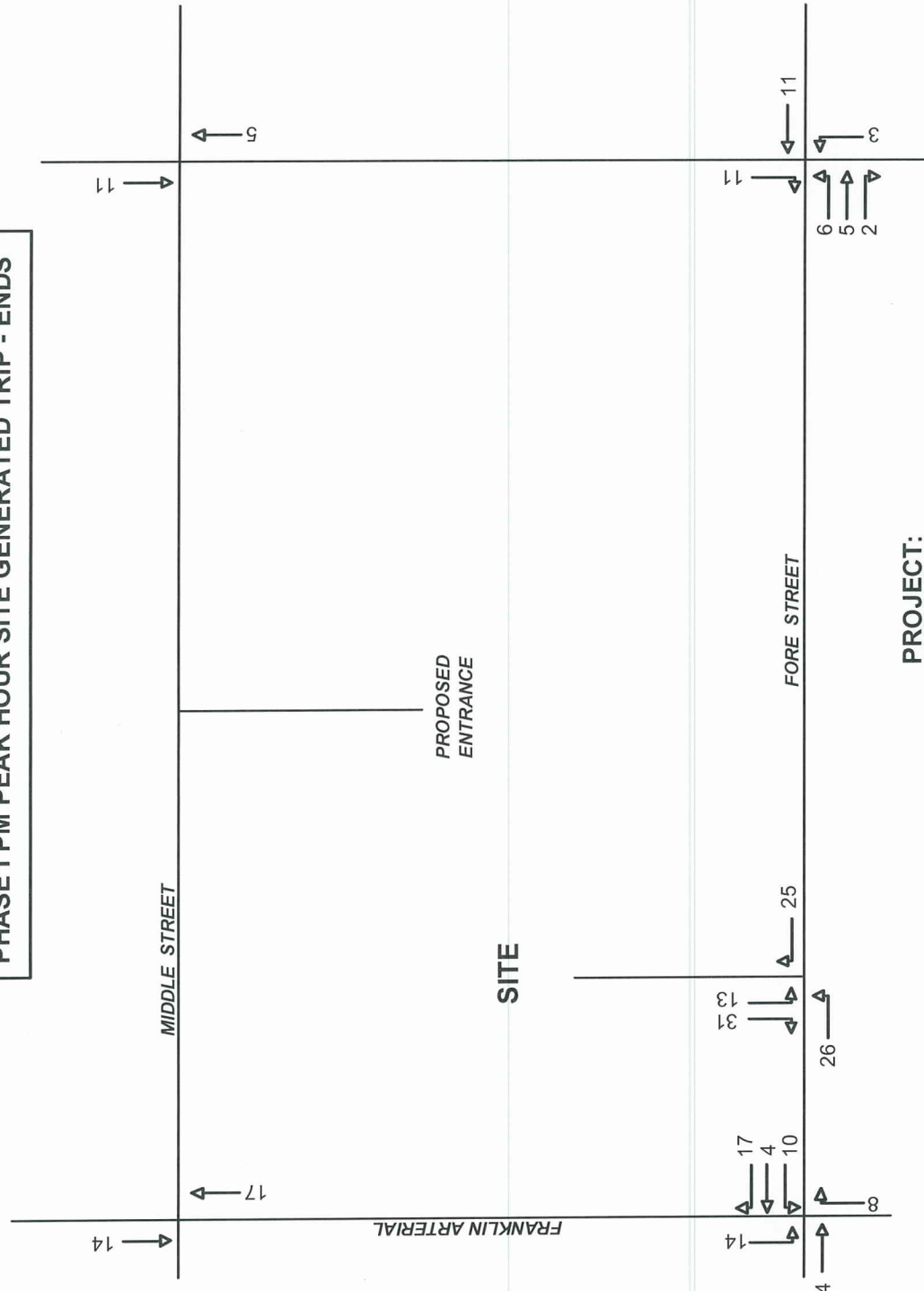
NOTE:
 20% OF GENERAL OFFICE TRIP - ENDS
 HAVE BEEN ALLOCATED TO THE OCEAN
 GATEWAY PARKING GARAGE.

30% OF RETAIL TRIP-ENDS HAVE BEEN ALLOCATED
 TO THE OCEAN GATEWAY PARKING GARAGE



SCHEMATIC

PHASE I PM PEAK HOUR SITE GENERATED TRIP - ENDS



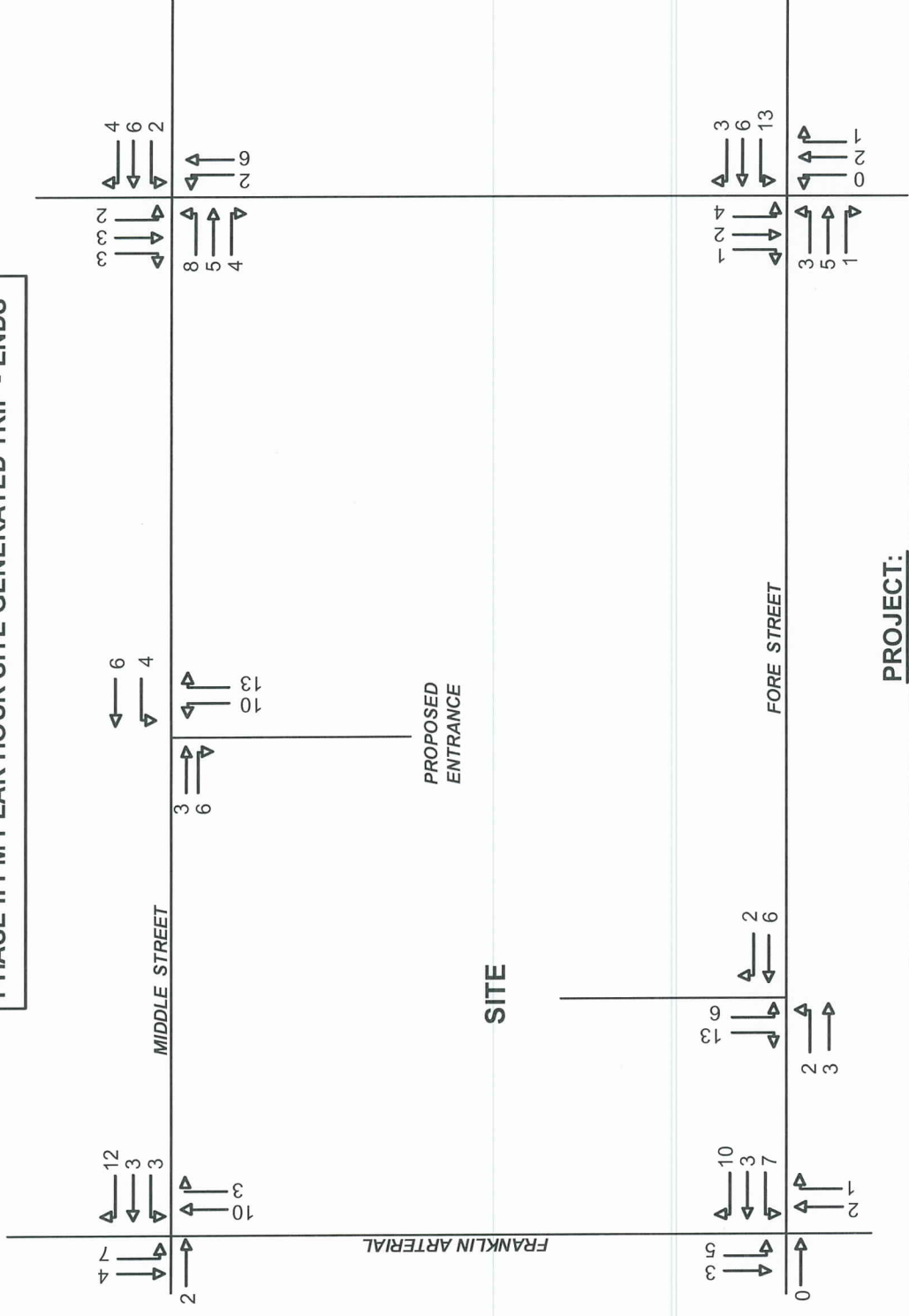
PROJECT:
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SCHEMATIC

PHASE II PM PEAK HOUR SITE GENERATED TRIP - ENDS



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NOTE:
 20% OF GENERAL OFFICE TRIP - ENDS
 HAVE BEEN ALLOCATED TO THE OCEAN
 GATEWAY PARKING GARAGE.

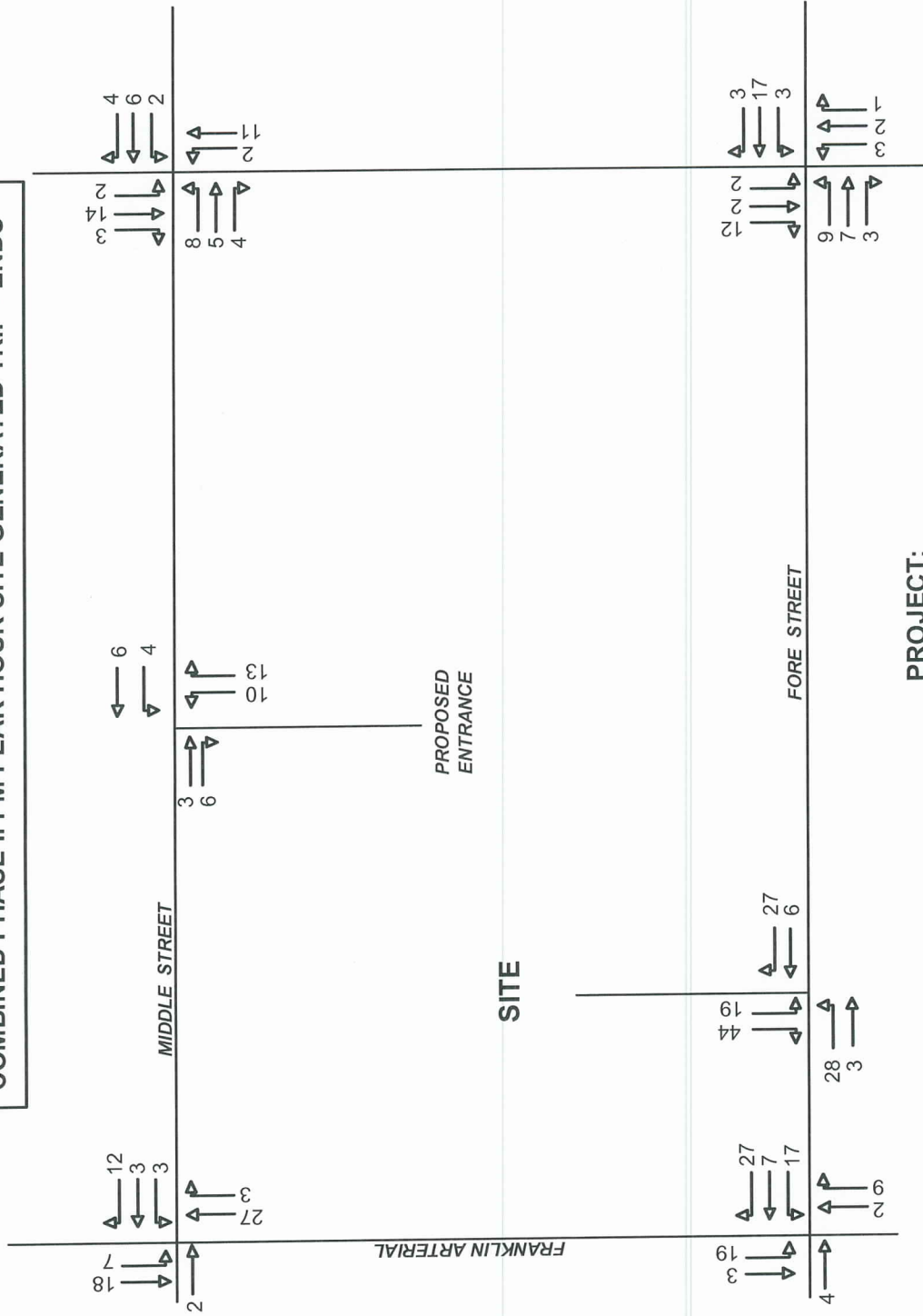
30% OF RETAIL TRIP-ENDS HAVE BEEN ALLOCATED
 TO THE OCEAN GATEWAY PARKING GARAGE

MILONE & MACBROOM, Inc.

MMI# 4883-01
 FIGURE 5B

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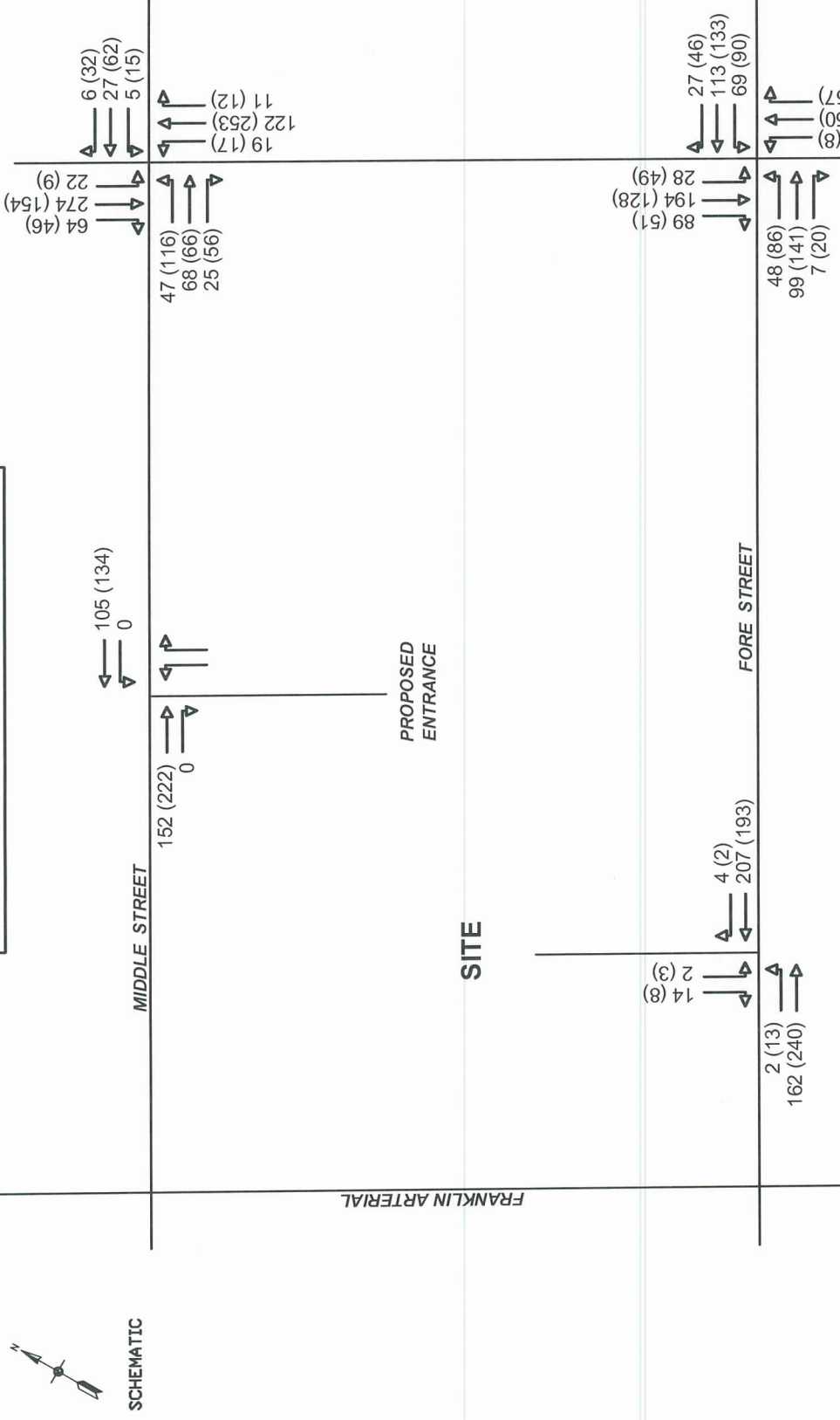
COMBINED PHASE II PM PEAK HOUR SITE GENERATED TRIP - ENDS



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2013 BACKGROUND TRAFFIC



AM = XX
PM = (XXX)

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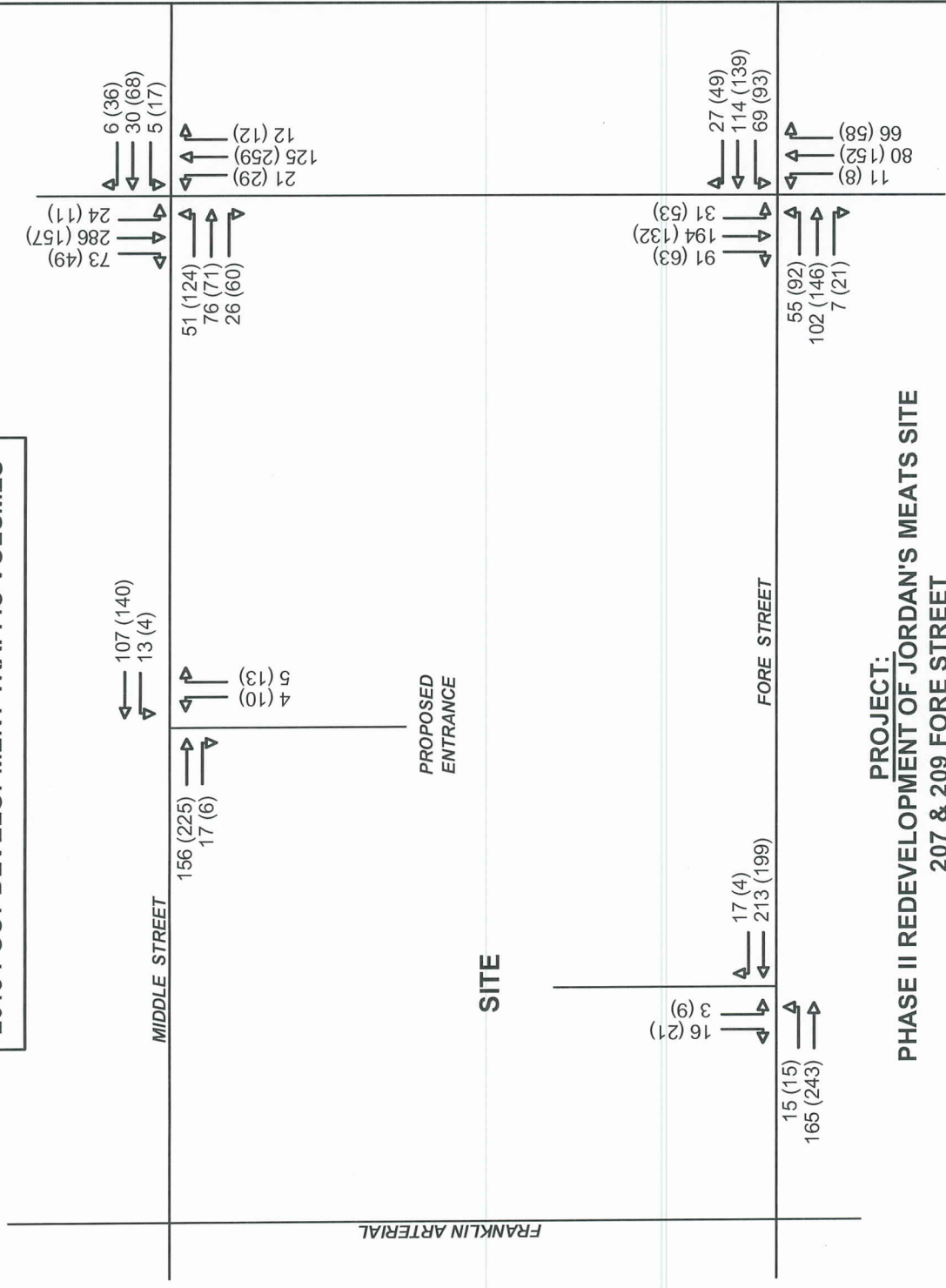
FOR:
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11 CORPORATE DRIVE
BELMONT, NH 03220



2013 POST DEVELOPMENT TRAFFIC VOLUMES



SCHMATIC



AM = XX
PM = (XX)

PROJECT:
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FIGURE 8
Phase II Trip Generation and Distribution Calculations

Fore Middle India, LLC
207 & 209 Fore St, Portland

Phase 2 Trip Generation w/ Entrance Distribution

LUC 820 Retail Shopping Plaza			
Time Period	Size (sf)	Rate (trips/1000sf)	Trip-Ends
Weekday AM Peak Hour Roadway 7-9 AM	22,463	1.00	22.5
Weekday PM Peak Hour Roadway 4-6 PM	22,463	3.73	83.8
Weekday AM Peak Hour Generator	22,463	1.00	22.5
Weekday PM Peak Hour Generator	22,463	3.73	83.8
LUC 710 General Office			
Time Period	Size (sf)	Rate (trips/1000sf)	Trip-Ends
Weekday AM Peak Hour Roadway 7-9 AM	65,712	1.55	101.9
Weekday PM Peak Hour Roadway 4-6 PM	65,712	1.49	97.9
Weekday AM Peak Hour Generator	65,712	1.55	101.9
Weekday PM Peak Hour Generator	65,712	1.49	97.9
LUC 230 Residential Townhouse/Condo			
Time Period	Units	Rate (trips/Unit)	Trip-Ends
Weekday AM Peak Hour Roadway 7-9 AM	18	0.44	7.92
Weekday PM Peak Hour Roadway 4-6 PM	18	0.52	9.36
Weekday AM Peak Hour Generator	18	0.44	7.92
Weekday PM Peak Hour Generator	18	0.52	9.36

With Reduction Factors	
Enter	Exit
11.6	7.4
34.9	36.3
11.6	7.4
34.9	36.3

Enter		Exit	
76.2	10.4	14.1	69.1
14.1	69.1	76.2	10.4
14.1	69.1	14.1	69.1

Enter		Exit	
1.1	5.6	5.3	2.6
5.3	2.6	1.3	5.5
6.7	6.7	5.1	2.9
8.0	8.0	5.1	2.9

Check	Fore St Entrance		Middle St Entrance		Ocean Gateway		Garage		Remaining Retail
	Enter	Exit	Enter	Exit	Enter	Exit	Enter	Exit	
19.1	19.1	3.0	1.0	3.0	1.0	3.0	2	2	2.2
71.2	71.2	1.0	3.0	1.0	3.0	10	11	11	22.4
19.1	19.1	3.0	1.0	3.0	1.0	3.0	2	2	2.2
71.2	71.2	1.0	3.0	1.0	3.0	10	11	11	22.4
86.6	86.6	23.0	2.3	26.0	2.7	13.6	2.7	2.7	13.6
83.2	83.2	3.2	15.6	3.6	17.6	3.7	17.9	3.7	17.9
86.6	86.6	23.0	2.3	26.0	2.7	13.6	2.7	2.7	13.6
83.2	83.2	3.2	15.6	3.6	17.6	3.7	17.9	3.7	17.9
6.7	6.7			1.1	5.6				
8.0	8.0			5.3	2.6				
6.7	6.7			1.3	5.5				
8.0	8.0			5.1	2.9				
112	112	26	3	30	9	17	5	5	
162	162	4	19	10	23	14	29	29	
112	112	26	3	30	9	17	5	5	
162	162	4	19	10	23	14	29	29	

Total Trip-Ends	Total	Enter	Exit	Composite Enter/Exit %
Weekday AM Peak Hour Roadway 7-9 AM	132.2	89	23	79%
Weekday PM Peak Hour Roadway 4-6 PM	191.1	54	108	33%
Weekday AM Peak Hour Generator	132.2	89	23	79%
Weekday PM Peak Hour Generator	191.1	54	108	33%
Total	656.6	386	270.6	59%

*TDM Reduction based on ITE studies published in ITE Trip Generation Handbook, 2nd Edition, Appendix B, June 2004. Average Reduction Rate of 15% utilized, based on 8% to 24% reductions reported in Studies of TDM measures including: transportation services & economic incentives.

APPENDIX

- Synchro Traffic Operations Printouts
- Traffic Signal Warrant Evaluations
- SimTraffic Printouts