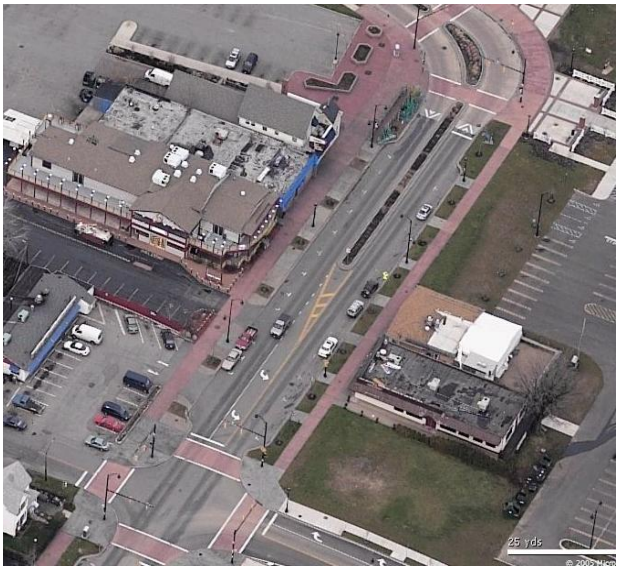
Transportation Evaluation and Support Study

FINAL REPORT - June 2009

Port of Rochester

prepared for:

City of Rochester
Bureau of Architecture & Engineering



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PORT OF ROCHESTER

TRANSPORTATION EVALUATION AND SUPPORT STUDY

PORT AREA TRANSPORTATION INVENTORY

FINAL REPORT

PREFACE

This report outlines various transportation studies conducted for the Transportation Evaluation and Support Study for the Port of Rochester Area Transportation Inventory project. The studies were initiated to understand current transportation operation issues within and immediately surrounding the Port Area. This information will provide a base to evaluate transportation operations at a later date of proposed redevelopment of the Port.

This report consists of nine chapters. Following an overview, counts of transportation elements including vehicles, pedestrians and other forms of transport of persons are presented. This is followed by a description of the present parking occupancy at the Port Area during peak Port activities. Traffic operations are then described and followed by a discussion of alternative access options for Lot E, which is a free parking-public lot adjacent to the beach. Alternative off-site parking areas to provide spaces needed for port activities subsequent to proposed redevelopment plans are then described. This is followed by a discussion of the proposed North River Street Extension in the redevelopment plan for the Port. A brief discussion of potential Intelligent Transportation System initiatives applicable to the Port Area are described next, followed by a summary chapter of project studies and discussions.

CHAPTER I - OVERVIEW

Development activities within the Charlotte Community and Port of Rochester have brought a resurgence of activity to the lakefront area. Ongoing activities include Wednesday night Concerts by the Shore and the annual 3-day summer Harbor and Carousel. A fast ferry service was initiated during the summer of 2004 between the Port of Rochester and Toronto. It contributed additional activity during the summer season of 2004 and 2005. Commercial and retail development along Lake Avenue in the vicinity of the port also produces vehicle and pedestrian activity.

The fast ferry service was not initiated during the summer of 2006. Therefore ferry activity is not reflected in the 2006 traffic data. Intersection turns within the port area were developed to reflect the absence of the ferry service.

The City of Rochester will face new and varied challenges as it poises to continue development at the Port. Daily activities at the port introduce traffic impacts to the south in the City of Rochester, west into the Town of Greece and east across the Genesee River into the Town of Irondequoit. Daily events, coupled with special events, such as festivals, Wednesday Concerts by the Shore, the Harbor and Carousel Festival and beach days create capacity issues in parking facilities and on the roadway system. The increased traffic has also been the genesis of other issues such as vehicles cutting through residential neighborhoods, a lack of neighborhood parking, and pedestrian safety.

A Transportation Evaluation and Support Study was initiated to understand existing transportation issues in the area of the Port of Rochester. The study area is shown in Figure 1.

The scope of the study comprised the following tasks:

- Collect peak hour turning movements at key intersections and daily traffic volumes on major streets within a two-mile radius of the port and identify peak period pedestrian activity at the Port.
- Conduct an inventory phase of existing parking facilities in the Port area
- Analyze and identify traffic operation conditions at key intersections in the Port area.
- Identify transportation problems occurring at parking Lot E during beach and summer concert events.
- Identify potential off-site parking lots and associated costs.
- Identify the pros and cons of extending North River Street within the Port of Rochester to its existing terminus south of the Port site.
- Identify potential ITS considerations.

This report documents the collection of parking and traffic data and identifies existing transportation operational conditions and issues.

Port of Rochester
Transportation Evaluation and Support Study
City of Rochester, NY

Study Area and Port Area Map

FIGURE NO.	SCALE	DATE	
1	No Scale	12 / 05	BERGMANN associates Engineers / Architects / Surveyors

CHAPTER II - TRAFFIC COUNTS

Traffic data was collected in August 2005 during peak activities. Peak activities included Wednesday night Concerts by the Shore, Saturday beach activities and the arrival and departure of the fast ferry as it coincided with these peak activities.

Specific traffic data collected included intersection turning movement counts and continuous mid-block counts. Pedestrian volumes and vehicle queuing were documented along with volumes of taxis, limousines, buses and rental cars stopping at the ferry terminal building. Origin – Destination data was also collected and is included in this report.

A. Intersection Turning Movement Counts

During the summer of 2005 when this Transportation Evaluation Study was performed, the fast ferry was functioning and providing service between Rochester and Toronto. This service was not reinstated at the onset of the summer season of 2006. Two sets of intersection volumes are provided in this report as follows:

- Those during the summer of 2005 with fast ferry service and
- Those determined to occur without fast ferry service.

VOLUMES WITH FAST FERRY SERVICE

The intersections and time periods when turning counts were conducted in the Port Area on Saturday August 6th are shown in Table 1.

Table 1 - Intersection Count Locations Saturday August 6, 2005

INTERSECTION #	INTERSECTION	HOURS COUNTED	
1	Lake Avenue @ Portside Drive	7:00 - 8:00 AM	1:30 -3:30 PM
2	Lake Avenue @ Corrigan Street	7:00 - 8:00 AM	1:30 -3:30 PM
3	Corrigan Street @ North River Street	7:00 - 8:00 AM	1:30 -3:30 PM

T

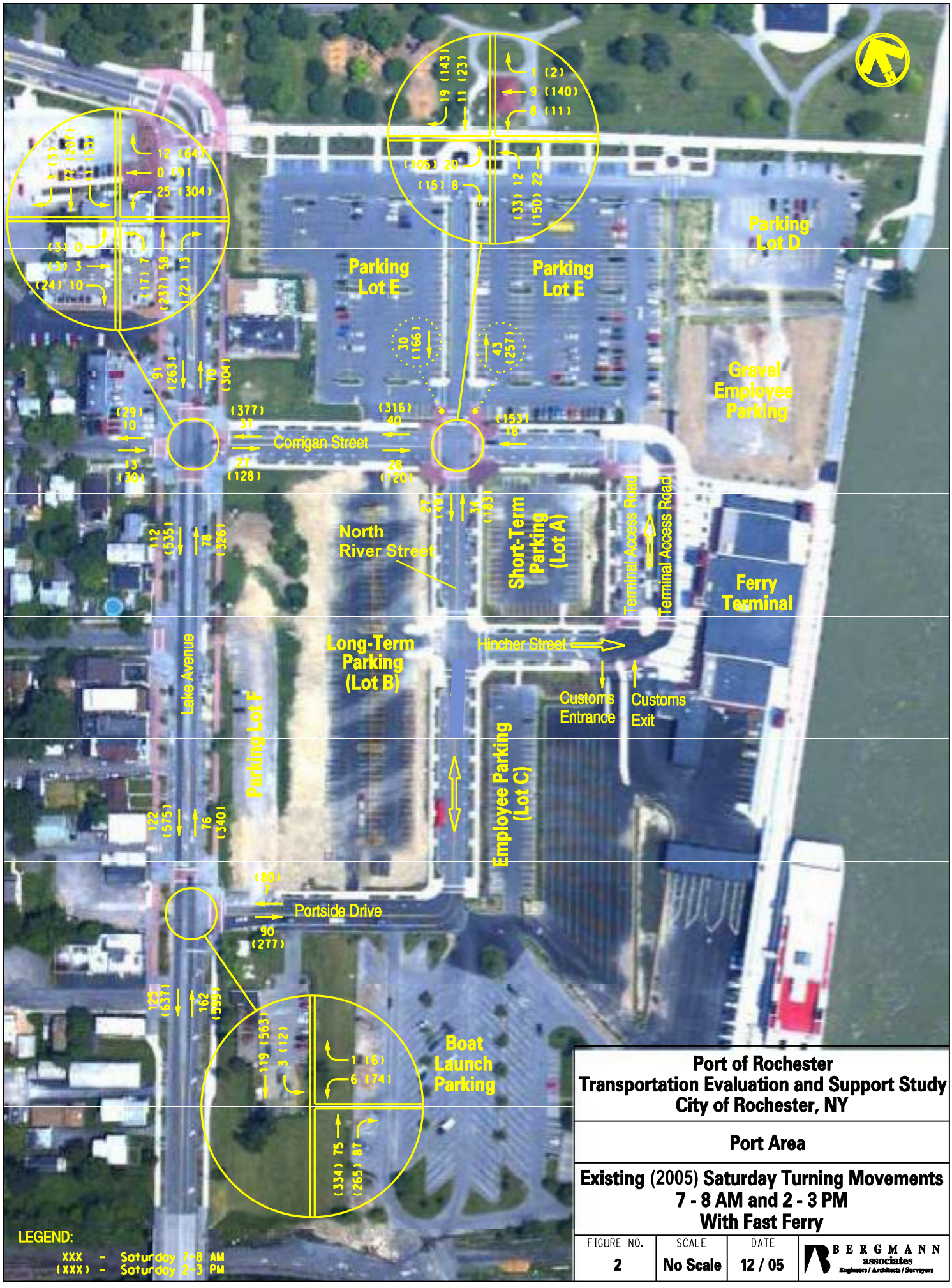
The hour of 7:00 to 8:00 AM coincided with departure of the fast ferry and the two hour period between 1:30 and 3:30 PM involved beach activity along with an arrival and departure of the fast ferry. Fast ferry tickets were sold out for the 8:00 AM departure,

predominantly due to a Toronto Blue Jays home baseball game against the New York Yankees scheduled for 3:15 PM later that day. The Saturday afternoon peak hour was determined to occur from 2:00 to 3:00 PM. Saturday peak hour turning movement volumes are shown in Figure 2.

The intersections and time periods when vehicle turning movement and pedestrian crossing counts were collected on Wednesday August 10th are shown in Table 2. The two-hour period between 5:00 and 7:00 PM coincided with peak beach departure activity and arrivals for a concert. The 1.5 hour period from 8:45 to 10:15 PM coincided with departures from the concert and an arrival of the fast ferry. During this time period intersections 1 - 3 are critical for analysis of concert events and therefore are the only intersections counted during the late evening hour. Detailed intersection vehicle turning movement data is contained in Appendix A.

Table 2 - Intersection Count Locations Wednesday August 10, 2005

INTERSECTION #	INTERSECTION	HOURS COUNTED	
1	Lake Avenue @ Portside Drive	5:00 – 7:00 PM	8:45 – 10:15 PM
2	Lake Avenue @ Corrigan Street	5:00 – 7:00 PM	8:45 – 10:15 PM
3	Corrigan Street @ North River Street	5:00 – 7:00 PM	8:45 – 10:15 PM
4	Lake Avenue @ Latta Road	5:00 – 7:00 PM	-
5	Lake Avenue @ Lake Ontario State Parkway	5:00 – 7:00 PM	-
6	Latta Road @ Greenleaf Road / Hampton Boulevard	5:00 – 7:00 PM	-
7	Pattonwood Drive @ Thomas Avenue	5:00 – 7:00 PM	-
8	Pattonwood Drive @ St. Paul Boulevard	5:00 – 7:00 PM	-
9	St. Paul Boulevard @ Lake Shore Boulevard	5:00 – 7:00 PM	-
10	Thomas Avenue @ St. Paul Boulevard	5:00 – 7:00 PM	-



Port of Rochester
Transportation Evaluation and Support Study
City of Rochester, NY

Port Area

Existing (2005) Saturday Turning Movements
7 - 8 AM and 2 - 3 PM
With Fast Ferry

FIGURE NO.	SCALE	DATE	
2	No Scale	12 / 05	BERGMANN associates Engineers / Architects / Surveyors

Wednesday peak hour volumes during special events are shown in Figure 3 at all ten intersections. The peak hour of traffic at these intersections varied during the 5:00 PM to 7:00 PM time period. The peak hour started at 5:00 PM at intersections # 6 and 8 -10, at 5:15 PM at intersections # 5 and 7, and at 5:30 or later at intersections # 1 - 4. The later peak occurred between 8:45 and 9:45 PM and coincided with the conclusion of the concert event and arrival of the fast ferry.

Pedestrian traffic was also counted at the 10 intersections. During the 6:00 to 7:00 PM peak hour of traffic on Wednesday at the intersection of Lake Ave. and Corrigan St., 78 pedestrians crossed the south leg of Lake Avenue and 49 pedestrians crossed the north leg. The 78 pedestrians crossing the south leg were in conflict with 716 vehicles. The 49 pedestrians crossing the north leg were in conflict with 413 vehicles.

Conflict between pedestrians and vehicles at the intersection of Lake Avenue and Corrigan Street was an issue during the 8:45 to 9:45 PM hour and contributed to vehicle delays experienced by motorists passing through. There were 22 pedestrians who crossed the south leg of Lake Avenue and 93 pedestrians who crossed the north leg. The 22 pedestrians crossing the south leg were in conflict with 998 vehicles during the peak hour. The 93 pedestrians crossing the north leg were in conflict with 377 vehicles.

VOLUMES WITHOUT FAST FERRY SERVICE

The fast ferry service was not initiated during the summer of 2006. Intersection turns within the port area were developed to reflect the absence of it. The detailed methodology of developing the turns from those collected during the summer of 2005 is provided in Appendix A.

Following are the time periods when the fast ferry either arrived or departed the Port and intersection volume counts were collected:

a) Saturday August 6th, 7:00 to 8:00 AM - departure of the fast ferry.
b) Saturday August 6th, two hour period between 1:30 and 3:30 PM - arrival and departure of the fast ferry.
c) Wednesday August 10th, 8:45 to 10:15 PM - arrival of the fast ferry

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Study Area

Existing (2005)
Weekday Peak Hour Turning Movements & Average Daily Volumes With Fast Ferry

FIGURE NO.	SCALE	DATE	
3	No Scale	12 / 06	BERGMANN associates

Volume counts affected by the presence of the fast ferry service for three Intersections were revised to reflect the absence of the service when it was discontinued in the summer of 2006. Counts were conducted only at three intersections when the fast ferry either arrived or departed. They are:

a) Lake Avenue at Portside Drive
b) Lake Avenue at Corrigan Street
c) Corrigan Street at North River Street

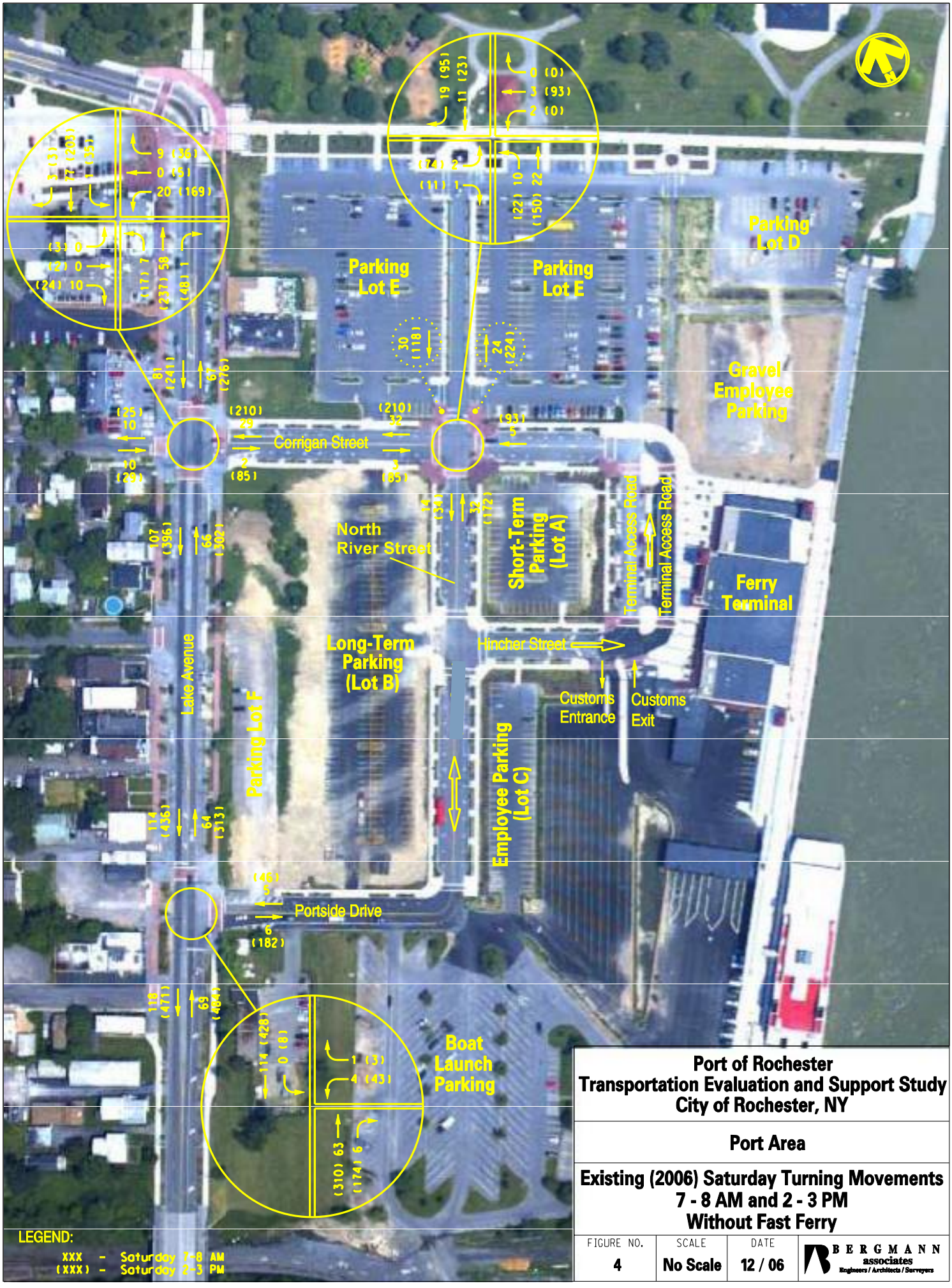
The discontinuance of the fast ferry service in 2006 was considered to off set any nominal annual growth of traffic from 2005 to 2006. Removal of 2005 fast ferry volumes from intersection turns therefore was considered to provide reasonable estimates of 2006 peak period intersection turns.

Peak hour Saturday intersection turns in the Port area are shown in Figure 4, representing conditions without fast ferry service. Peak hour weekday intersection turns within the study area are shown in Figure 5. Again these are considered to represent reasonable estimates of 2006 volumes without fast ferry service.

B. Continuous Mid-Block Volume Counts

Continuous mid-block volume counts (ADT machine counts) were conducted at 8 locations over a one week period in August during the special event season. The counts were collected August 3rd through August 10th at the locations shown in Table 3.

Average Daily volumes during a typical week in August are shown on Figure 5. The daily volumes are stratified by weekday (WK), Saturday (ST) and Sunday (SU). Each is shown in Figure 5 and associated detailed continuous count data is contained in Appendix B.



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Port Area

Existing (2006) Saturday Turning Movements
7 - 8 AM and 2 - 3 PM
Without Fast Ferry

FIGURE NO.	SCALE	DATE	
4	No Scale	12 / 06	BERGMANN associates Engineers / Architects / Surveyors

LEGEND:

XXX - Weekday Peak Hour (Varies) Within 2 Hour Period of 5-7 PM
(XXX) - Weekday Peak Hour of 8:45-9:45 PM
<--> - Two-Way Volume
SU - Sunday Daily Volume
ST - Saturday Daily Volume
WK - Average Weekday Daily Volume
▮ - Location of 1 Week Continuous Traffic Count

Port of Rochester
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Study Area

Existing (2006)
Weekday Peak Hour Turning Movements & Average Daily Volumes Without Fast Ferry

FIGURE NO.	SCALE	DATE
5	No Scale	12 / 06

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Table 3 – Mid-Block Count Locations August 3rd – August 10th

LOCATION #	ROAD	BETWEEN
1	Beach Avenue	Greenleaf Road and Lake Avenue
2	Lake Avenue	Beach Avenue and Lake Ontario State Parkway
3	Lake Avenue	Lake Ontario State Parkway and Denise Road
4	Lake Avenue	Denise Road and Stonewood Avenue
5	Latta Road	Greenleaf Road / Hampton Boulevard and Lake Ontario State Parkway
6	Lake Ontario State Parkway	Lake Avenue and Thomas Avenue
7	Thomas Avenue	Pattonwood Drive and St. Paul Boulevard
8	Pattonwood Drive	Thomas Avenue and St. Paul Boulevard

In general, daily volumes on Saturday and Sunday are greater than the average weekday volumes on streets in the immediate vicinity of the port. Examples occur on Lake Avenue and Beach Avenue. This is in contrast to daily volumes that are larger on weekdays when compared with Saturdays and Sundays at street locations removed from the immediate port area. Examples occur on Pattonwood Drive, Thomas Avenue, Latta Road and Lake Avenue south of Pattonwood Drive.

C. Pedestrian Counts (Flow To and From Parking Areas)

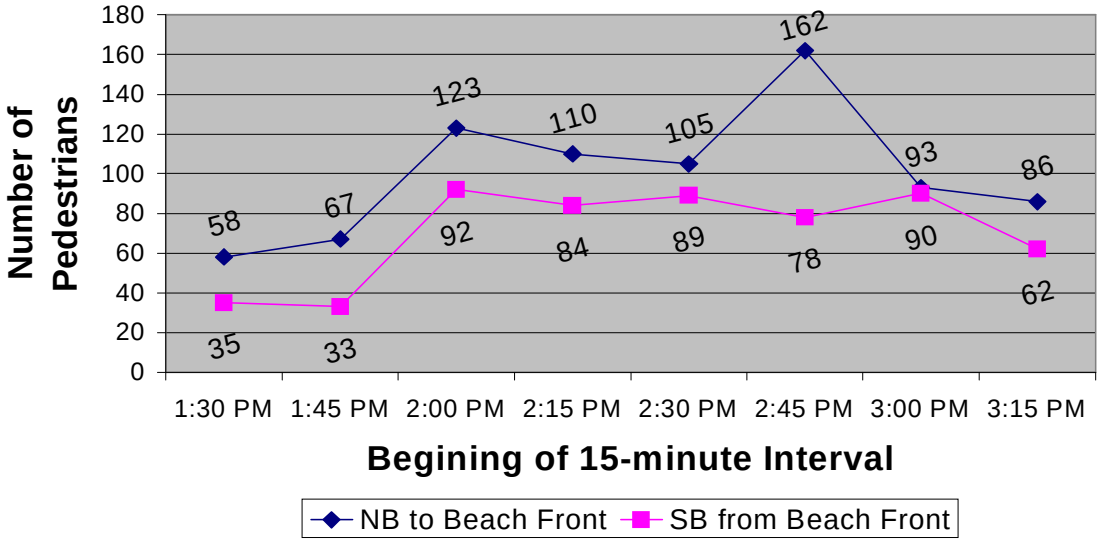
Pedestrians were counted in the Port Area during peak activities. Pedestrians were counted as they specifically passed between the Port Area parking lots and two distinct areas: 1) the Ontario Beach area, and 2) the ferry terminal building. Time periods when counts were conducted in each area are summarized in Table 4.

Table 4 – Pedestrian Count Time Periods

DATE	PEDESTRIAN DEPARTURE / ARRIVAL AREA	HOURS COUNTED
Saturday August 6th	Beach Area	1:30 - 3:30 PM
	Ferry Terminal Building	7:00 - 8:00 AM
		1:30 - 3:30 PM
Wednesday August 10th	Beach Area	5:00 - 7:00 PM
		8:45 - 10:15 PM
	Ferry Terminal Building	5:00 - 7:00 PM
		8:45 - 10:30 PM

Detailed count data is contained in Appendix A. The number of pedestrians leaving and approaching the beach area by hour from 1:30 PM to 3:30 PM on Saturday is shown in Figure 6.

Figure 6
Saturday Beach Front - Parking Area Pedestrian Trips
1:30 - 3:30 PM



As expected on a Saturday afternoon in August, the beach front generates a significant amount of pedestrian traffic, as shown in Figure 6. The peak hour of pedestrian traffic occurred between 2:00 and 3:00 PM with 500 pedestrians northbound (approaching the beach front area) and 343 southbound (leaving the beach front area).

The number of pedestrians leaving and approaching the beach area during the Wednesday time periods is shown in Figures 7 and 8. Figure 7 depicts the number of pedestrian trips to and from the beach front area on a Wednesday evening in August during the two hour time period (5 to 7 PM) before a "Concerts by the Shore" performance at the Ontario Beach Park. Concerts are scheduled from 7:00 PM to 9:00 PM on Wednesday nights in June, July and August. Pedestrians were headed northbound to the beach front area at rates varying from 583 people per hour to 731 people per hour during the two hour time period from 5:00 to 7:00 PM. Pedestrians headed southbound from the beach front area at rates varying from 142 people per hour to 169 people per hour. In general the northbound pedestrian traffic was greater during this time period than the Saturday afternoon studied.

Figure 7
Wednesday Beach Front - Parking Area Pedestrian Trips
5:00 - 7:00 PM

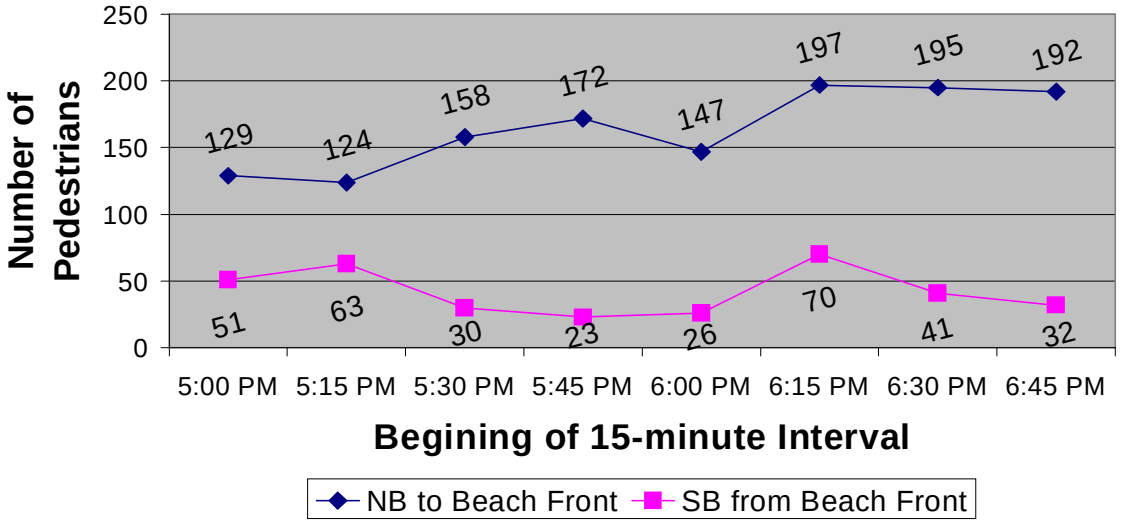


Figure 8
Wednesday Beach Front - Parking Area Pedestrian Trips
8:45 - 10:15 PM

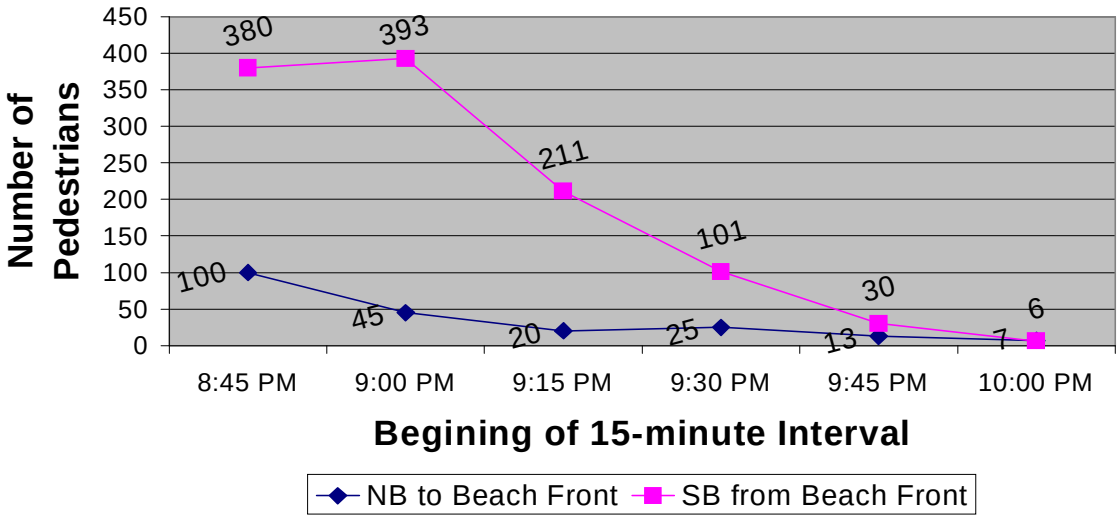


Figure 8 contains the number of pedestrian trips to and from the beach front area during a 1.5 hour time period beginning 15 minutes before the end of the Concert by the Shore (8:45 PM). Southbound pedestrians departed the beach front area at a rate of 1,085 people per hour during the peak hour, which occurred during the first hour of this 1.5 hour study period. In general, the rate of pedestrians traveling between the beach front area and the port area lots decreased during the time period, coinciding with the end of the concert. Pedestrians headed northbound to the beach front area at a rate of 190 people per hour during the peak hour, also occurring during the first hour.

The number of pedestrians leaving and approaching the ferry terminal building on Saturday and Wednesday are shown in Figures 9 and 10, respectively. During the Saturday hour from 7:00 to 8:00 AM pedestrian traffic peaked during the first 15 minutes and was comprised predominantly of people heading to the ferry terminal. There were 125 pedestrians approached the ferry terminal from areas south of Corrigan Street during the one hour time period and 48 pedestrians came from areas to the north of Corrigan Street. The peak hour of Saturday afternoon pedestrian traffic occurred between 2:00 and 3:00 PM and coincided with the 2:00 PM arrival and 3:25 PM departure of the fast ferry on that day. As shown in Figures 9 and 10, peaking occurs during the ferry departure and arrival times. Otherwise pedestrian volumes are much lower, which are the conditions without the fast ferry.

Figure 9
Saturday Ferry Terminal – Parking Area Pedestrian Trips
7:00 – 8:00 AM and 1:30 – 3:30 PM

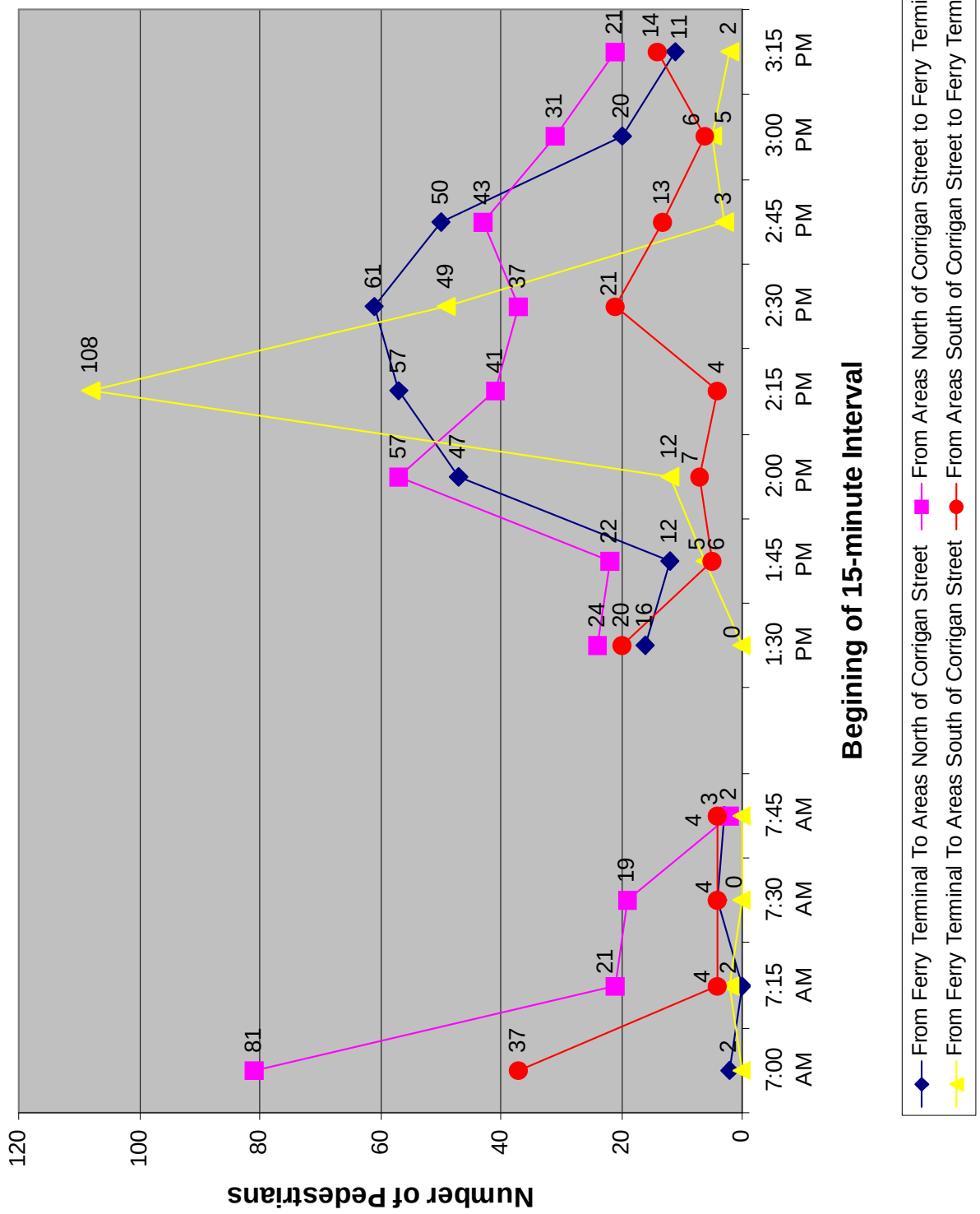


Figure 10
Wednesday Ferry Terminal – Parking Area Pedestrian Trips
5:00 – 7:00 PM and 8:45 – 10:30 PM

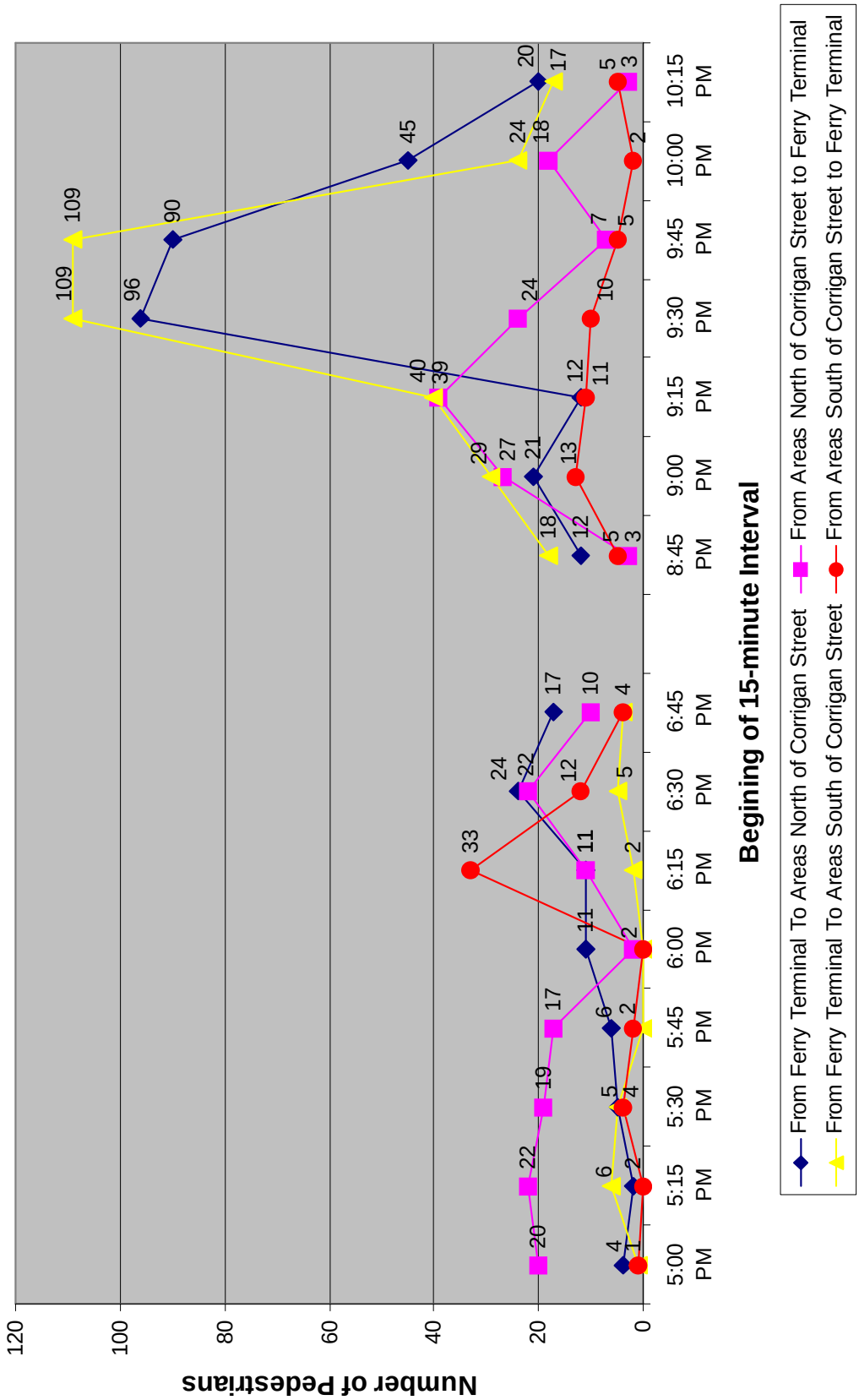


Figure 10 depicts the peak 30 minutes of pedestrian traffic to and from the ferry terminal, occurring between 9:30 and 10:00 PM. This coincided with the arrival of the fast ferry at 9:25 PM. Conflicts between these pedestrians and vehicle traffic on the terminal access roads were observed at this time. The majority of pedestrians used the designated crosswalks at Corrigan Street and Hincher Street, but many did not. The pedestrian count data shown in Figures 9 and 10 included both pedestrians using crosswalks and those that did not. As shown in Figure 10, 218 pedestrians left the ferry terminal and crossed the terminal access roads between 9:30 and 10:00 PM. Fifteen (15) pedestrians made the reverse trip. This equates to 466 pedestrian crossings per hour. The combined vehicular volume on the terminal access roads is approximately 160 vehicles per hour during this 30 minute surge of pedestrian traffic.

D. Additional Data

Additional transportation data was collected during the inventory phase of the study. The length of vehicle queues at select locations was recorded and the number of taxis, limousines, buses and rental cars stopping at the ferry terminal building were counted.

1. Queuing
2. Taxis
3. Limousines
4. Buses
5. Rental Cars

Extensive and detailed observations regarding the additional transportation data are provided in Appendix C. Significant observations are provided here, concluding with a summary of significant queuing.

Saturday, August 6TH

Traffic was queued to Lake Avenue from approximately 6:55 to 7:10 AM while parking attendants processed parking motorists. At first this queuing occurred beginning at the intersection of Portside Drive and North River Street where the parking attendants were processing vehicles, then the attendants moved to the intersection of North River Street and Hincher Street. Queuing continued to extend to Lake Avenue. When the attendants moved to the north end of the west terminal access road to process vehicles the queuing began to subside. Refer to Figure 2 for an overview of the port area.

The maximum vehicle queue observed on the terminal access roads was 3 vehicles during the 7:00 AM to 8:00 AM time period. There is a transit bus stop located at the north end of the west terminal access road. One transit bus was observed to stop during the 1 hour time period at 7:40 AM. No persons were dropped off or picked up during this stop. The fast ferry was observed to depart a few minutes before 8:00 AM. Two tour buses were observed to stop during the 1 hour time period at 7:03 AM and 7:07 AM. The first bus dropped off 39 persons and the second dropped off 53. A convention center van dropped off one person at 7:17 AM.

No significant queuing of parking motorists was observed from 1:30 PM to 2:40 PM. There was a short lived surge of traffic between 2:40 and 2:42 PM when 8 vehicles were observed queued northbound on North River Street at Hincher Street where parking attendants were processing parking vehicles.

There are two stop signs that control southbound motorists approaching the intersection of North River Street with Corrigan Street. The stop sign at Corrigan Street is preceded by a stop sign located approximately 50 feet away at the access driveways to the east and west for LOT E. Driver confusion, poor driving behavior and the proximity of these stop controlled intersections contributed to several “near miss” vehicle collisions. Failure to yield right of way was also a contributing factor. The issue is a high number of vehicle conflict points in a small area due to closely spaced intersections. Some motorists are confused about who has the right-of-way because of the complexity of the traffic flow. Greater separation between intersections is needed.

The maximum vehicle queue observed to occur on the terminal access roads was 5 vehicles during the 1:30 PM to 3:30 PM time period. Three (3) stops of the transit bus were observed during the 2 hour afternoon time period at 1:38 PM, 2:22 PM and 3:26 PM. Four (4) persons were dropped off at 1:38 PM. Two (2) persons were picked up and four (4) persons were dropped off at 2:22 PM, and four (4) persons were picked up at 3:26 PM. The fast ferry arrived a few minutes before 2:00 PM and departed a few minutes before 3:30 PM. One tour bus was observed to stop at 2:14 PM, pick up 28 persons and depart at approximately 2:40 PM.

Wednesday, August 10TH

Vehicle queuing was also observed at select port area intersections between 5:00 PM and 7:00 PM on Wednesday, August 10, 2005. No significant vehicle queuing was observed within the port area

from 5:00 PM to 5:50 PM. The southbound approach to the intersection of Corrigan Street with North River Street was closed by beach parking attendants at 5:20 PM. A police officer controlled traffic at the intersection of Corrigan Street with Lake Avenue beginning at 5:30 PM. The officer was overriding the traffic signal. Therefore phasing and timings used in the traffic analysis for this time period are based on traffic operations observed to occur while the police officer was controlling traffic.

The entrance to Lot E and the gravel employee lot was closed by beach parking attendants at 5:55 PM. The beach parking attendants directed parking motorists to the soccer field located west of Lake Avenue. Fast ferry parking attendants were offering parking in the long term parking lot for $3.00. Beach parking attendants allowed buses transporting senior citizens into Lot E and allowed one vehicle into Lot E for every vehicle that left Lot E. A beach parking attendant stated that the shuttle lot located near the intersection of Dewey Avenue with Ling Road was the only shuttle lot operating. At 6:05 PM the eastbound lane of Corrigan Street was blocked by the police officer using a barrier. The barrier was located in the eastbound lane of Corrigan Street immediately east of Lake Avenue. The O'Rorke Bridge opened at 6:50 PM and caused significant vehicle queues on either side of the bridge on Pattonwood Drive and along Lake Avenue.

Vehicle queuing was also observed at select port area intersections between 8:45 PM and approximately 10:15 PM on Wednesday, August 10, 2005. A police officer controlled traffic at the intersection of Corrigan Street with Lake Avenue until 9:25 PM. Traffic caused by persons leaving the concert generally subsided at approximately 9:25 PM, which coincided with the arrival of the fast ferry. Pedestrian traffic leaving the ferry terminal began to increase at approximately 9:30 PM. Traffic caused by persons leaving the ferry terminal generally subsided by 10:00 PM.

The maximum queue observed on the terminal access roads was 2 vehicles during the 5:00 PM to 7:00 PM period and the 8:45 PM to 10:15 PM time period. Five transit buses were observed to stop during the 5:00 PM to 7:00 PM time period with a total of 16 persons picked up and 3 persons dropped off. Three transit buses were observed to stop during the 8:45 PM to 10:15 PM time period with a total of 8 persons picked up and 2 persons dropped off. No taxis or limousines were observed to drop off or pick up persons on the west terminal access roadway.

No taxis or limousines were observed to drop off or pick up persons on the east terminal access roadway between 5:00 PM and 7:00

PM. Four taxis were observed to stop in the designated area on the east terminal access road between 8:45 PM and 10:15 PM. One taxi picked up two passengers at 8:52 PM. The other three taxis did not pick up or drop off persons.

Summary of Significant Queuing

Designated areas for loading and unloading passengers along the terminal access roads accommodated demand during the two time periods on Wednesday and the two time periods on Saturday.

Vehicle queues backed up to upstream intersections during the Saturday time periods as follows:

- Northbound traffic on North River Street and eastbound traffic on Portside Drive for approximately 20 minutes when parking attendants were processing vehicles on North River Street before the 8:00 AM departure of the fast ferry.

- Westbound traffic on Corrigan Street at Lake Avenue backed up to North River Street intermittently for 20 minutes after the 2:00 PM arrival of the fast ferry. This was short lived, intermittent congestion where some cycles failed and some did not. It was not observed to be a significant issue given the short cycle length of the signal at Lake Avenue and the alternative route via North River Street.

Vehicle queuing reached upstream intersections during the Wednesday evening concert time periods as follows:

- Northbound traffic on North River Street at Corrigan Street backed up to Hincher Street for approximately 30 minutes beginning a few minutes before 6:00 PM. There were 3 more times when queuing at this location was observed to reach Hincher Street before 7:00 PM. The queuing did not last as long during these occurrences.

- Northbound traffic on Lake Avenue at Corrigan Street was observed to back up to Hincher Street once before and once after the concert.

- Westbound traffic on Corrigan Street approaching Lake Avenue backed up to North River Street several times before and after the concert and also after the fast ferry arrived at 9:25 PM. This was short lived and not observed to be a significant issue given

the short cycle length of the signal at Lake Avenue and the alternative route via North River Street.

- Eastbound traffic on Corrigan Street approaching Lake Avenue backed up to Estes Street several times after the concert.

- Southbound traffic on Lake Avenue approaching Portside Drive backed up past Hincher Street to Corrigan Street several times after the concert.

E. Origin – Destination Data

An origin - destination survey was performed on Wednesday August 10, 2005 and Saturday August 13, 2005 between the hours of 11:00 AM and 5:00 PM. The study was limited to four (4) predetermined "areas" within the port area. The areas studied are listed below.

- Area 1 = Parking lots #1 and #13
- Area 2 = Parking lot #2
- Area 3 = Parking lot #3
- Area 4 = Parking lots #4 and #5

Each port area parking lot was designated with a specific number for data recording purposes. The specific number and alpha designations for each lot are shown in Figure 11.

Patrons in the lots were surveyed just after parking their vehicles, prior to walking to their destination within the port area. A copy of the survey form is included in Appendix D.

The study was not detailed enough to determine actual routes that patrons utilized while traveling to the port area. The primary purpose of the study was to determine what percentage of patrons utilized the beach/park area as compared to other attractions at the port area. The beach was closed to swimming during the weekend data collection day even though weather was favorable (sunny, 80-90º temperatures).

The study results show 71% of the people were destined to the beach / park area during a typical weekday. On a typical weekend, the percentage increases slightly to 74%. A majority (80% ±) of the people surveyed were either a resident of the City of Rochester or outside of the city but still within Monroe County.

CHAPTER III - PARKING DATA

The parking study determined usage, occupancy and duration of parking. Each of these elements of the study is described next.

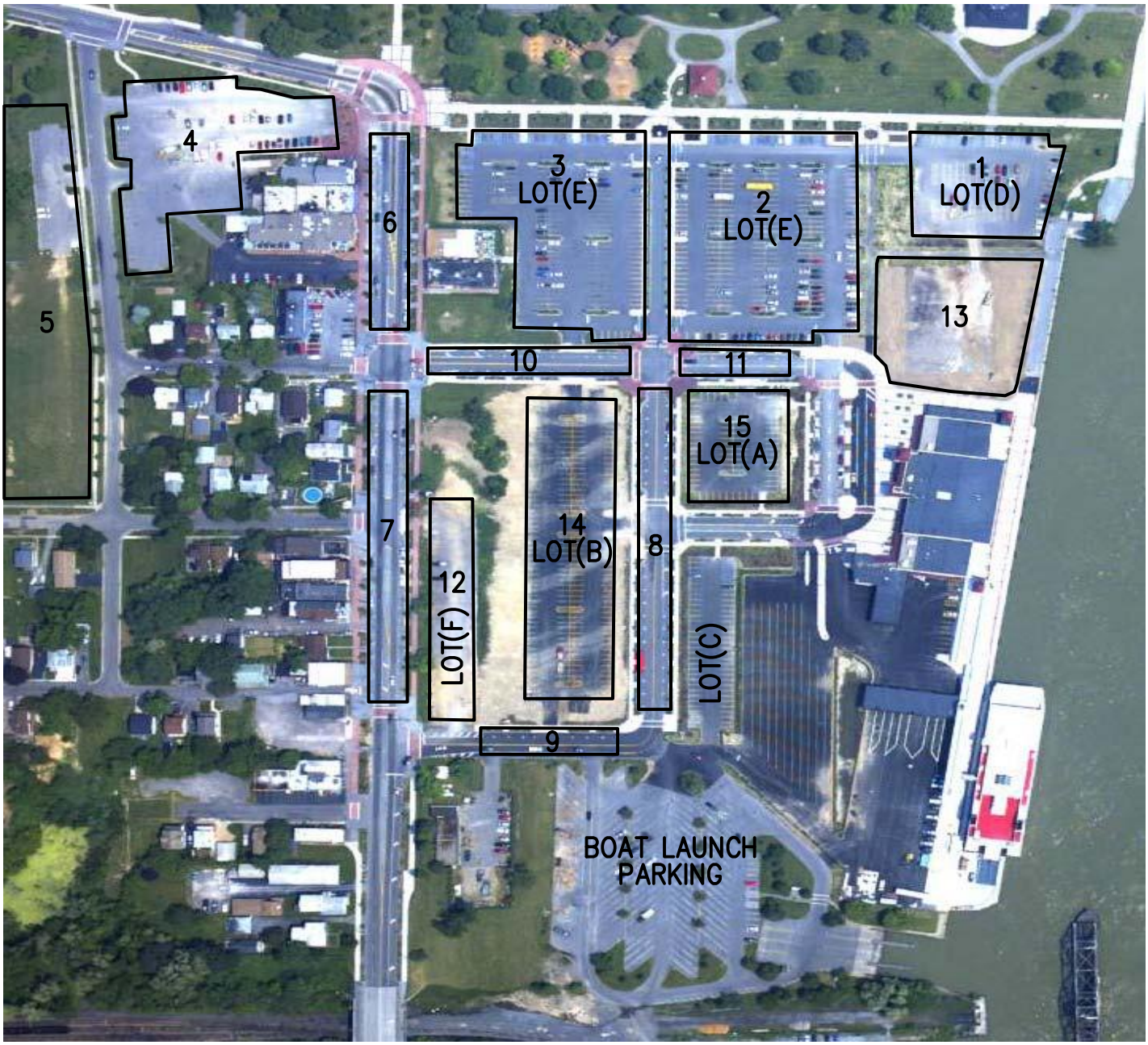
A. Study Overview

The purpose of the parking study was to determine the extent of demand on the existing parking facilities in the port area during peak activities. The designated identification number and letter for each lot is shown in Figure 11. It should be noted that the letter designations in some parking lots do not pertain to the parking occupancy study.

In order to determine the normal daily peak times at the port area, Average Daily Traffic (ADT) counts were performed by Monroe County Department of Transportation (MCDOT) from Wednesday July 20 to Monday July 25, 2005. The ADT counts show a consistent peak in traffic counts around the port area between the hours of 11:00 AM and 5:00 PM. Therefore, the time period selected to collect parking lot occupancy data was also between the hours of 11:00 AM and 5:00 PM. Parking lot occupancy data was collected for a six hour period on the following six days:

- Thursday July 28, 2005
- Saturday July 30, 2005
- Sunday July 31, 2005
- Wednesday August 3, 2005
- Saturday August 6, 2005
- Sunday August 7, 2005

The weather was favorable (sunny, 80-90º temperatures) on each of the six days. There were a few days when the beach area was “closed” for swimming.



NOTES:

Parking lot numbers pertain to Port Area Parking Study.
Parking lot letters pertain to Port Area Overall Study.

Port of Rochester
Transportation Evaluation and Support Study
City of Rochester, NY

Port Area

Parking Area Number / Letter Designations

FIGURE NO.	SCALE	DATE
11	No Scale	12 / 05

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The actual number of parked vehicles was documented at each numbered parking lot once every hour for the six hour study period for each of the 15 parking areas. Prior to the start of the parking lot occupancy study, the actual capacity (marked or striped parking spaces) of each numbered parking lot was documented. In some instances vehicles were not parked in an actual striped parking space. Parking lots numbered 5, 12, and 13 are not completely striped with designated parking spaces. Therefore, the actual number of parking spaces was estimated based on the size of the lot, access location, and actual observed number of parked vehicles.

B. Parking Usage

The raw parking data collected for each lot by hour is contained in Appendix E. Parking information was collected for Handicapped designated spaces and non-handicapped designated spaces.

Actual marked spaces are identified in the raw data. However, in subsequent occupancy analyses, the number of spaces utilized for selected lots were utilized, as noted in section “A Study Overview” above.

C. Parking Occupancy

Hour by hour parking lot occupancy rates were calculated for each of the six days based on the observed demand and documented lot capacity. Generally, the results indicate the overall parking demand is less than the actual overall parking capacity in the port area during the two weekdays studied. The on-street segment of Corrigan Street between North River Street and terminal Access Road (Lot #11) had the highest sustained rates of percent occupancy.

Parking lots #1, 2, 3 and 4 had higher occupancy percentages during the weekend study periods as compared to the weekday periods. The calculated occupancy percentages for each lot by hour are included in Appendix F.

The parking lot occupancy counts were summarized by:

- Average Weekday Percent Occupancy
- Average Weekend Percent Occupancy
- Maximum Weekday Percent Occupancy

- Maximum Weekend Percent Occupancy

The percent occupancy was stratified by three categories:

1) Under Capacity - Less than 85% occupied
2) Near Capacity - Between 85% and 99% occupied, and
3) Over Capacity - Equal to or greater than 100%

The summary of Average and Maximum Occupancy by Weekday and Weekend is shown in Table 5. The data is also summarized in Table 5 by these three groups:

1) Beach area
2) Port area, and
3) Street parking

The Maximum occupancy occurs on weekends. The location of Maximum occupancy on weekends is Beach Area – Free Lots and On-Street Parking spaces.

Graphics showing the percent occupancy by the three categories of occupancy for Average and Maximum Weekdays and Weekends are shown in Figures 12 through 15 respectively. The entire lot is shown in green if the occupancy is less than 85%, yellow indicates occupancy between 85% and 99% occupied, and red indicates occupancy equal to or greater than 100%.

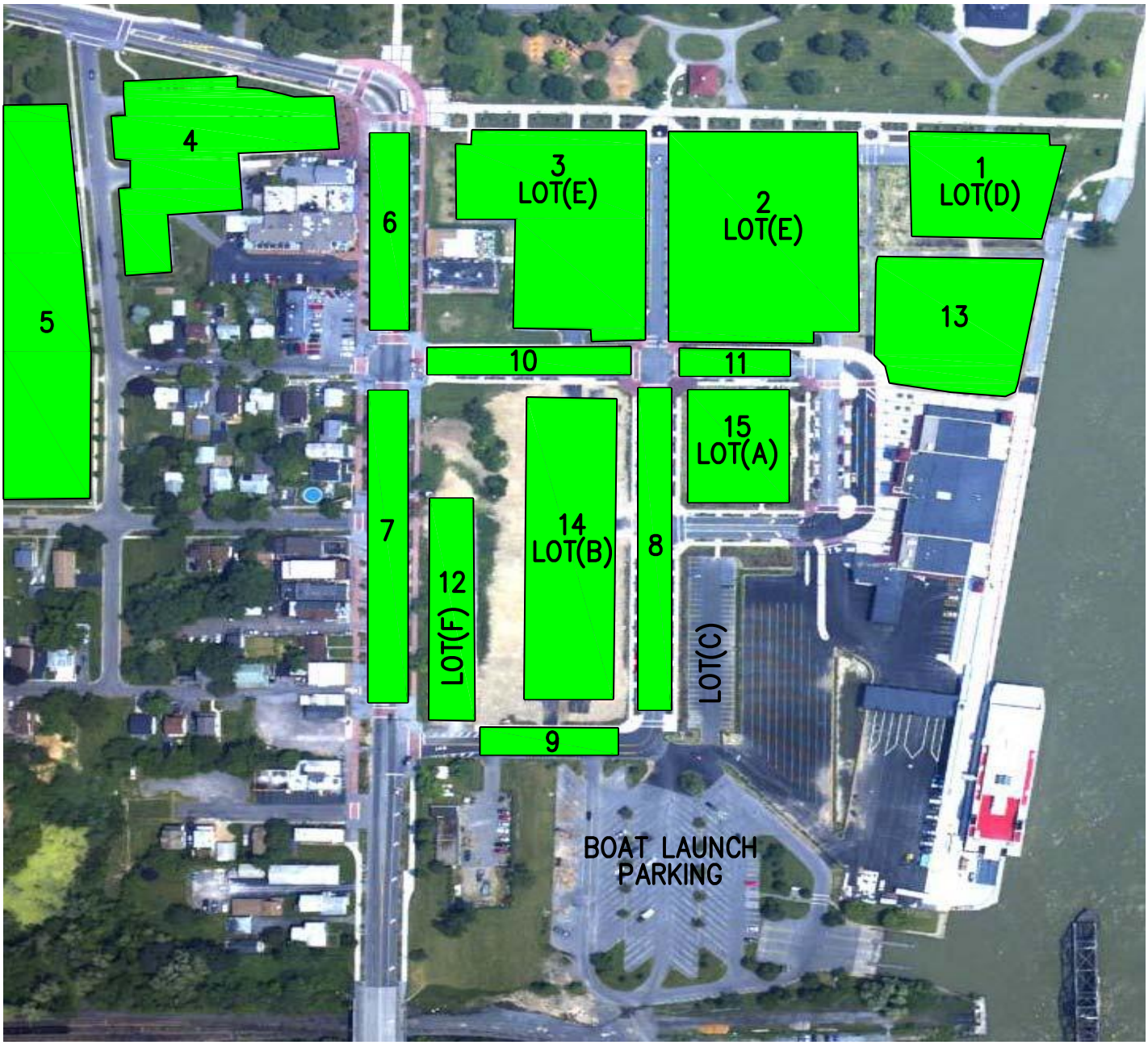
All lots during the Average Weekday indicate occupancies below 85%. The Average Weekend results indicate lots #1 and 14 are between 85% and 99% occupied, while lot #11 is above 100% occupied. The Maximum Weekday occupancies indicate lot #4 is 85% to 99% occupied and lot #11 is above 100% occupied. The Maximum Weekend observed occupancies for a majority of the lots is above 100% occupied; with the exception of lots #5, 7, 9, 12, and 15. These lots are under 100% occupancy rates. Lot 12 (F) is in a convenient location, but is underutilized because it is reserved for local businesses on Lake Avenue.

TABLE 5
PARKING OCCUPANCY SUMMARY

Lot #	Lot Capacity	Weekday Average		Weekend Average		Weekday Maximum		Weekend Maximum	
		Vehicles Parked	% Occupancy	Vehicles Parked	% Occupancy	Vehicles Parked	% Occupancy	Vehicles Parked	% Occupancy
1	76	32.8	43%	64.3	85%	53.0	70%	92.0	121%
2	192	98.8	51%	159.0	83%	136.0	71%	192.0	100%
3	177	57.8	33%	119.0	67%	91.0	51%	185.0	105%
4	129	63.2	49%	96.0	74%	120.0	93%	139.0	108%
5	190	7.6	4%	27.3	14%	42.0	22%	107.0	56%
Beach Area - Free Lots	764	260.2	34%	465.6	61%	442	58%	715	94%
6	23	11.0	48%	11.9	52%	16.0	70%	23.0	100%
7	33	15.8	48%	16.9	51%	25.0	76%	32.0	97%
8	30	6.4	21%	18.3	61%	12.0	40%	31.0	103%
9	7	0.1	1%	0.9	13%	1.0	14%	6.0	86%
10	14	0.6	4%	4.4	31%	2.0	14%	14.0	100%
11	8	6.7	83%	8.1	101%	10.0	125%	10.0	125%
Street Parking	115	40.6	35%	60.5	53%	66	57%	116	101%
12 - Fee	65	9.2	14%	7.4	11%	14.0	22%	26.0	40%
13 - Free	84	16.8	20%	43.3	51%	21.0	25%	84.0	100%
14 - Fee	192	54.9	29%	170.9	89%	76.0	40%	192.0	100%
15 - Fee	63	0.3	1%	29.3	46%	1.0	2%	61.0	97%
Port Area	404	81.2	20%	250.9	62%	112	28%	363	90%
All Parking Facilities	1283	382.0	30%	777	61%	620.0	48%	1194.0	93%

For hours between 11:00 AM and 4:00 PM, does not include concert event.

green = < 85% yellow = 85% - 100% red = > 100%



LEGEND:

- Less than 85% occupied
- Between 85% and 99% occupied
- Equal to or greater than 100% occupied

NOTES:

Data was collected during two(2) weekdays from 11am–4pm and two weekends (Saturday and Sunday) from 11am–4pm

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Port Area

Parking Lot Occupancy
Average Weekday

FIGURE NO.	SCALE	DATE
12	No Scale	12 / 05

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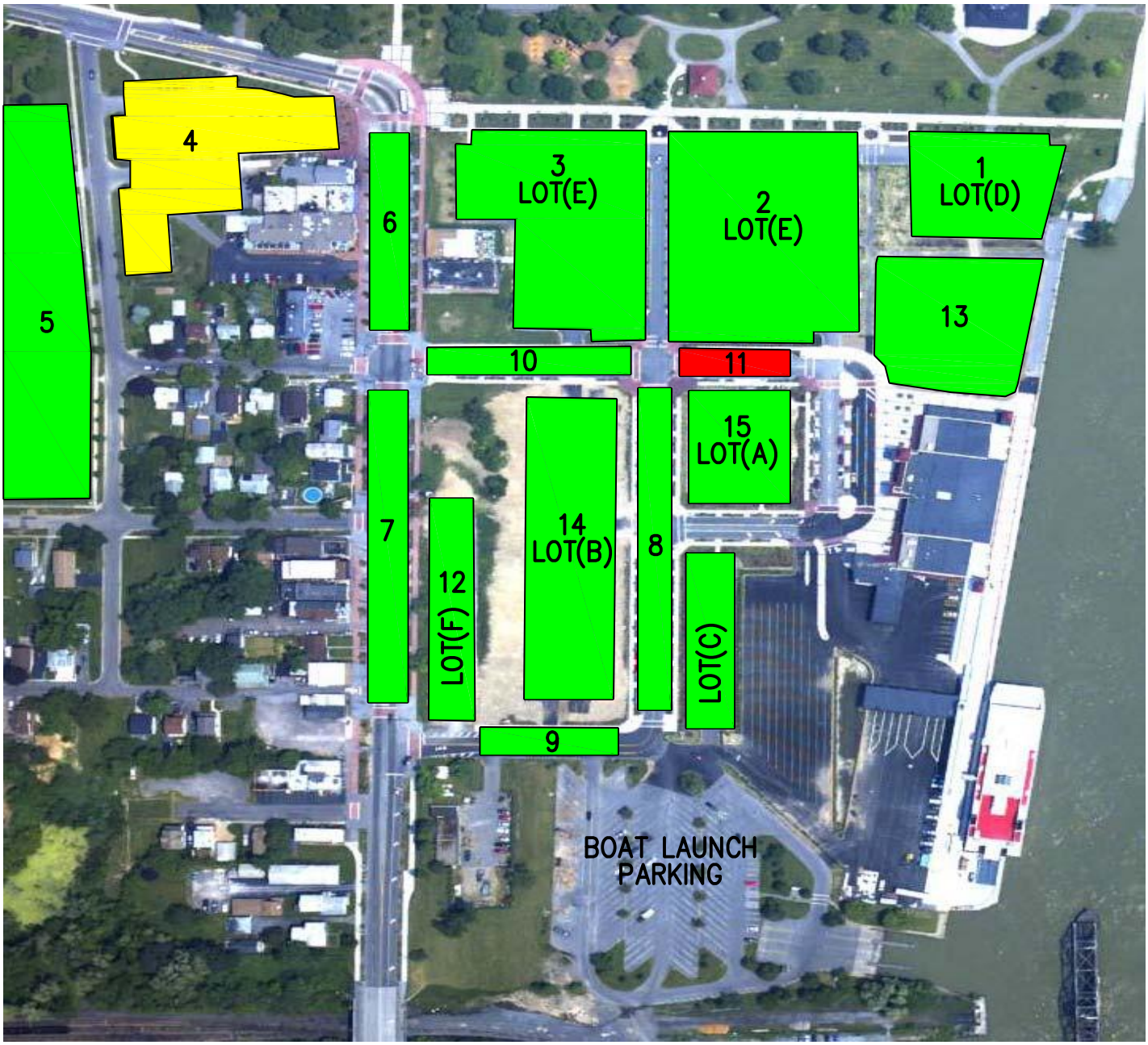

LEGEND:

- Less than 85% occupied
- Between 85% and 99% occupied
- Equal to or greater than 100% occupied

NOTES:

Data was collected during two(2) weekdays from 11am–4pm and two weekends (Saturday and Sunday) from 11am–4pm

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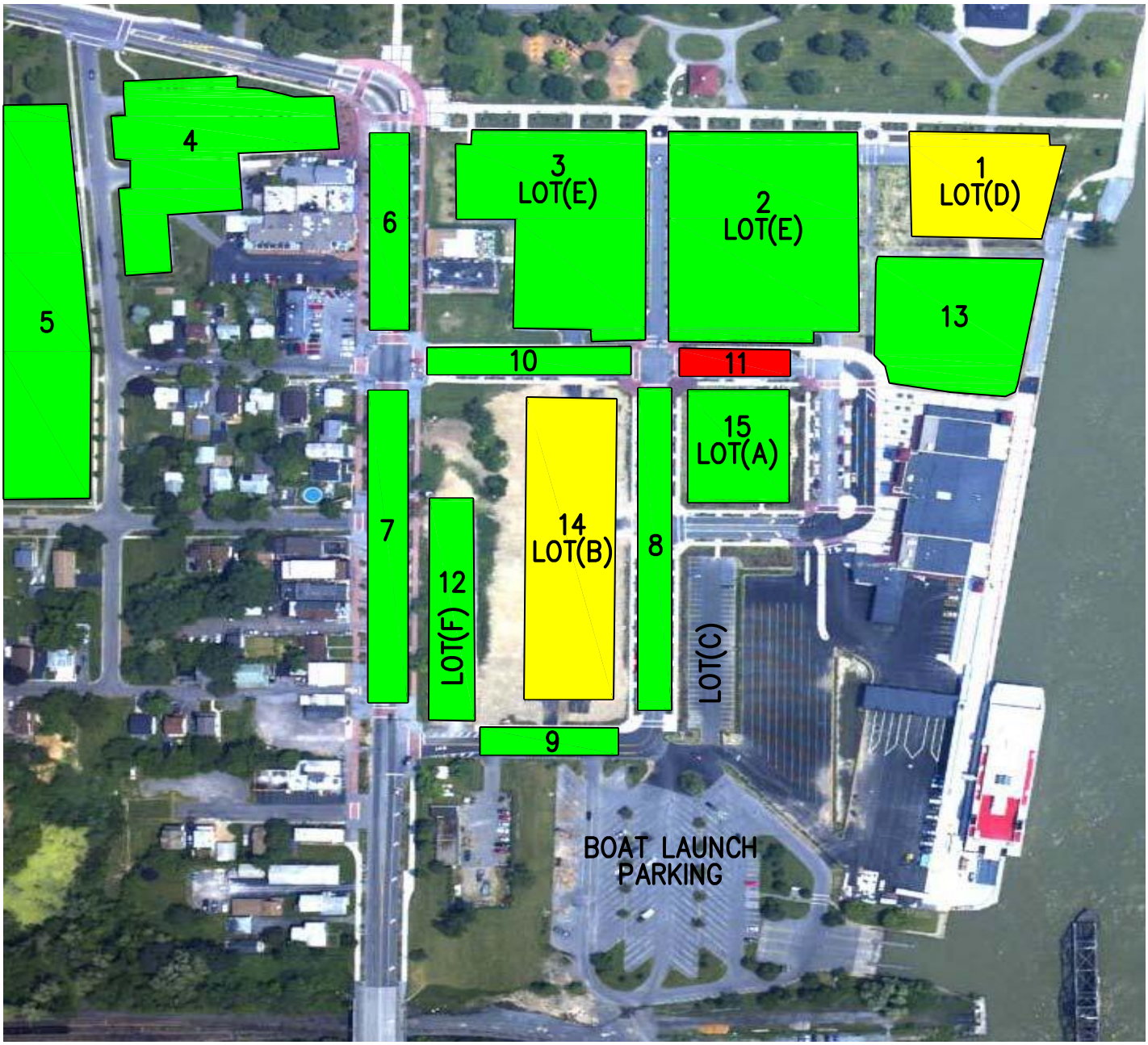
Port Area

Parking Lot Occupancy
Maximum Weekday

FIGURE NO.	SCALE	DATE
13	No Scale	12 / 05

SRF ASSOCIATES
WWW.SRFA.NET



LEGEND:

- Less than 85% occupied
- Between 85% and 99% occupied
- Equal to or greater than 100% occupied

NOTES:

Data was collected during two(2) weekdays from 11am–4pm and two weekends (Saturday and Sunday) from 11am–4pm

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Port Area

Parking Lot Occupancy
Average Weekend

FIGURE NO.	SCALE	DATE
14	No Scale	12 / 05

SRF ASSOCIATES
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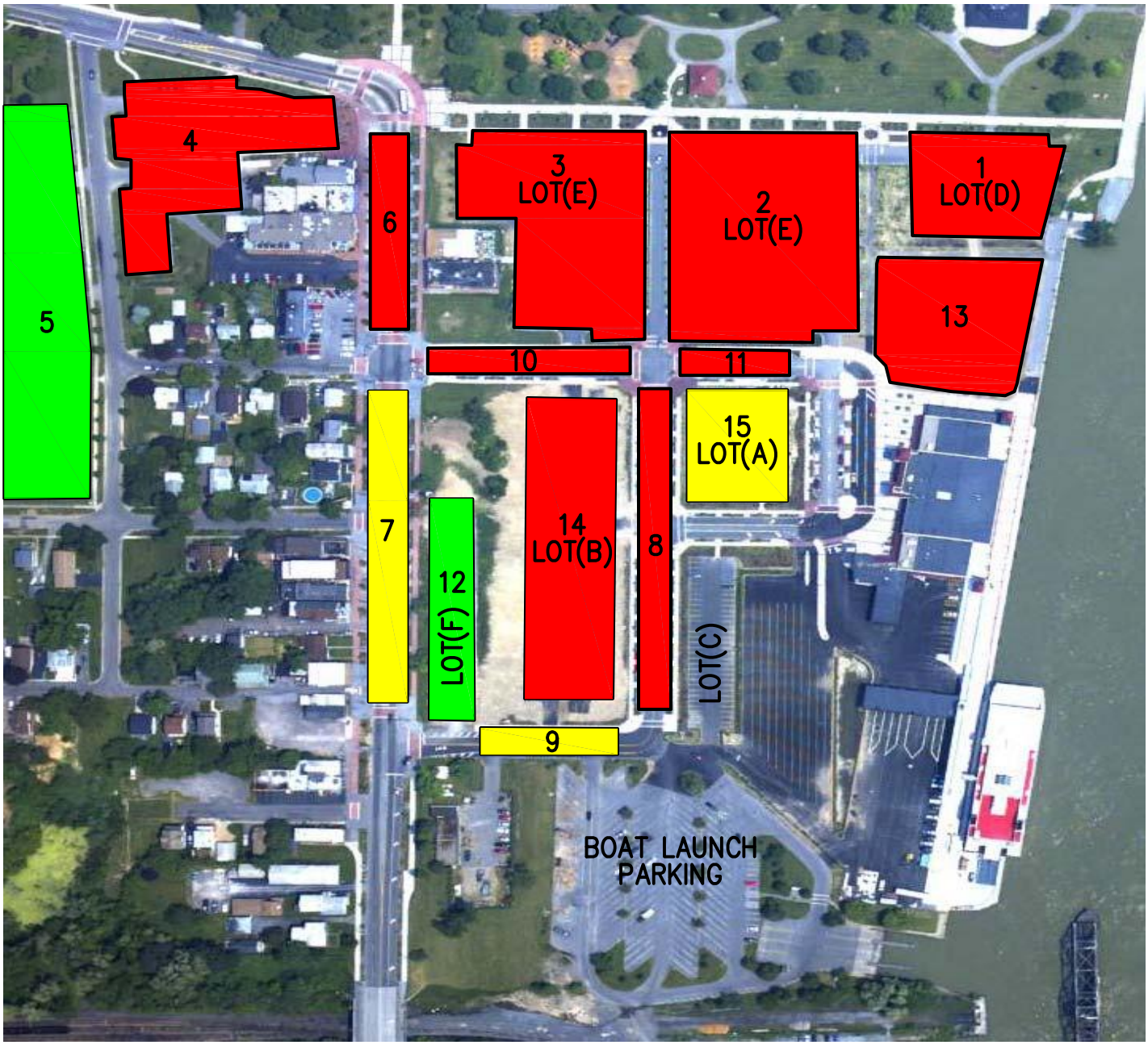

LEGEND:

- Less than 85% occupied
- Between 85% and 99% occupied
- Equal to or greater than 100% occupied

NOTES:

Data was collected during two(2) weekdays from 11am–4pm and two weekends (Saturday and Sunday) from 11am–4pm

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Port Area

Parking Lot Occupancy
Maximum Weekend

FIGURE NO.	SCALE	DATE
15	No Scale	12 / 05

SRF ASSOCIATES
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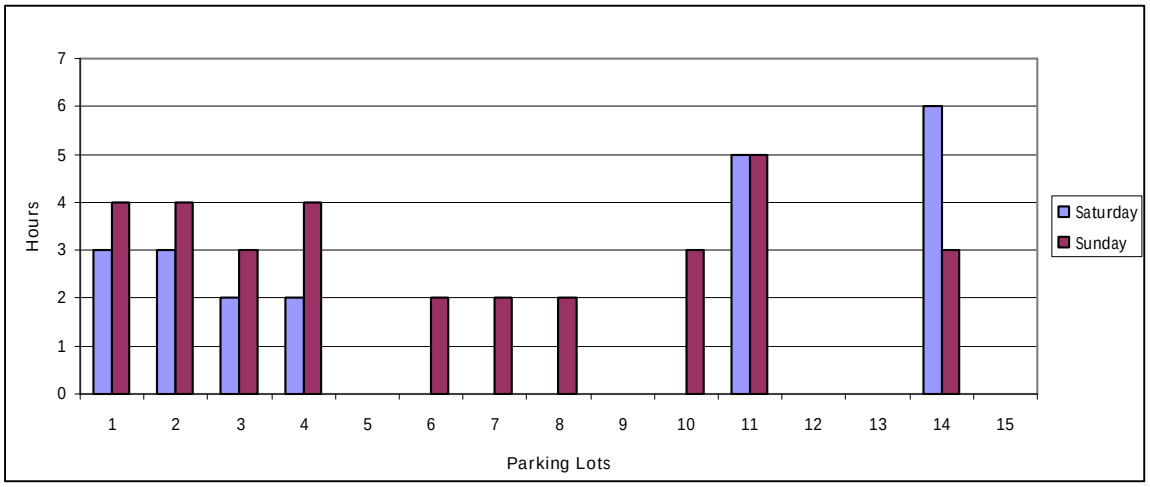
D. Parking Duration

The following figure is presented to further define the duration of parking lot occupancies at or above 85 percent. The number of hours each lot was occupied above 85 % is shown in Figure 16. The data indicates the average number of hours the occupancy exceeded 85% for both Saturday and Sunday periods studied.

Figure 16 – Number of hours at or above 85% Occupancy



Lots #1, 2, 3, and 4 are typically at or above 85% occupied during the weekend, as these lots are the closest to the beach / park area. Parking lots #6, 7, 8, and 11 are on-street parking lots adjacent to businesses on Lake Avenue and the ferry terminal. Lot #14 is designated as parking for the fast ferry.

The actual hours during the day that the lots are at or above 85% occupied are included in Appendix G. Only lots that had 85% occupancy at any hour are contained in the appendix.

A total of 10 lots (1 - 4, 6 - 8, 10 -11, 14) had an average occupancy of 85% or greater for at least one hour during the six hour period of the parking inventory. Five lots (1 – 4, 11) had an average occupancy of 100% or greater for at least one hour.

Average parking occupancy exceeded capacity during the weekday for only one lot, #11. Average parking occupancy exceeded capacity on Saturday for five lots (1 – 3, 11, 14) and on Sunday for five lots (1 – 4, 11).

Collectively for all lots, parking occupancy of 100% or greater occurred as follows:

a) weekdays – 1 hour
b) Saturdays – 13 hours
c) Sundays – 18 hours

Parking predominately exceeded lot capacity between 2 PM and 4 PM. On Sunday, the time was between 2 PM and 5 PM.

CHAPTER IV - TRAFFIC OPERATIONS

Traffic operations at the 10 intersections where turning movement counts were conducted in year 2005 were analyzed in terms of delay and characterized by Level of Service (LOS) for year 2006 without the fast ferry service. Average delay per vehicle is measured in seconds. SYNCHRO was used to determine LOS and delay. Detailed results are shown in Appendix H.

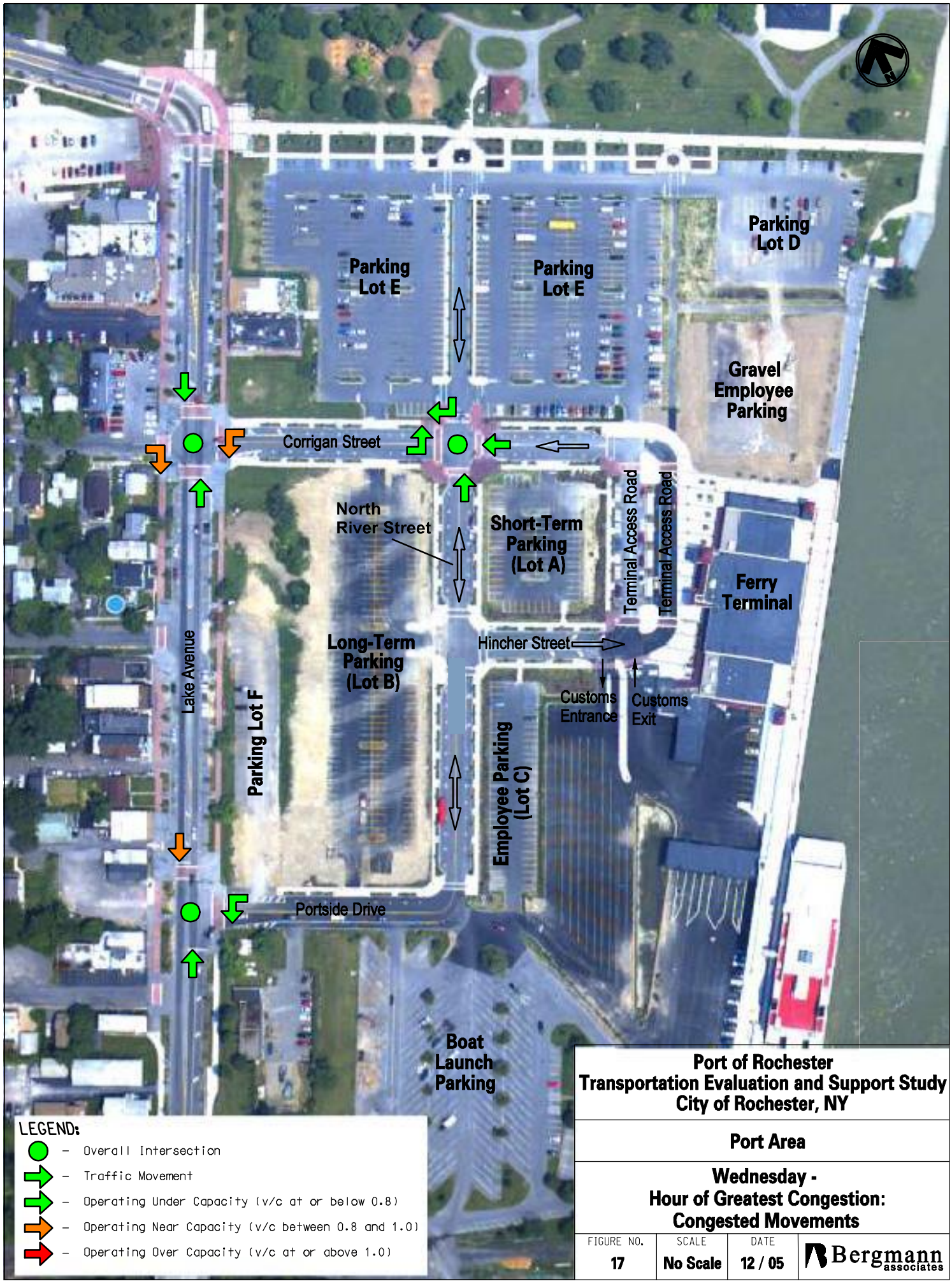
Existing geometry and signal operations at each intersection were provided by the Monroe County Department of Transportation. That information and the count data collected for this study were input to the SYNCHRO model to determine delay and LOS.

LOS for the peak special event periods were summarized based on the volume to capacity (v/c) ratio. LOS for the critical peak hour during Wednesday and Saturday for three intersections in the Port Area are shown graphically in Figure 17 and listed in Table 6. The vehicle movement exhibiting the most congestion on each intersection approach is shown in Figure 17 and Table 6. The LOS for each movement and overall intersection was stratified by three categories:

- Under Capacity (v/c at or below 0.8)
- Near Capacity (v/c between 0.8 and 1.0), and
- Over Capacity (v/c at or above 1.0)

Two movements operate near capacity, exhibiting the highest Port Area v/c ratios during the most critical period. The movements are westbound Corrigan Street left turns to Lake Avenue and eastbound Corrigan Street right turns to Lake Avenue. The most critical period occurs between 8:45 and 9:45 PM when the Concerts by the Shore conclude and the fast ferry arrives in Port on Wednesday. When traffic volumes are heavy, motorists use Portside Drive as an alternate route. As North River Street is extended to River Street, traffic will proceed to Latta Road.

No intersection traffic movement was determined to operate for an hour at a level exceeding capacity.



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City of Rochester, NY

Port Area

Wednesday -
Hour of Greatest Congestion:
Congested Movements

FIGURE NO.	SCALE	DATE	
17	No Scale	12 / 05	Bergmann associates

PORT AREA
INTERSECTION OPERATION SUMMARY

INTERSECTION	APPROACH	WEDNESDAY		SATURDAY	
		Varies Between 5:00 - 7:00 PM	8:45 - 9:45 PM	7:00 - 8:00 AM	2:00 - 3:00 PM
LAKE @ CORRIGAN (Signalized)	WEST BOUND		0.98*		
	EAST BOUND		0.89*		
	SOUTH BOUND				
	NORTH BOUND				
	TOTAL				
LAKE @ PORTSIDE (Signalized)	WEST BOUND				
	SOUTH BOUND		0.81*		
	NORTH BOUND				
	TOTAL				
CORRIGAN @ N. RIVER (Stop Sign Controlled)	WEST BOUND				
	EAST BOUND				
	SOUTH BOUND				
	NORTH BOUND				
	TOTAL				

LEGEND:

- – Overall Intersection
- – Traffic Movement
- – Operating Under Capacity (v/c at or below 0.8)
- – Operating Near Capacity (v/c between 0.8 and 1.0)
- – Operating Over Capacity (v/c at or above 1.0)
- * – Actual v/c Value

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City of Rochester, NY

Port Area

Movements With Greatest Congestion

TABLE NO.	SCALE	DATE	
6	No Scale	12 / 05	BERGMANN associates Engineers / Architects / Surveyors

LOS for the critical traffic movements during a Wednesday evening between 5:00 and 7:00 at all 10 study area intersections is summarized in Table 7. Table 7 shows the vehicle movement exhibiting the most congestion on each approach to each intersection.

The vehicle movements operating over capacity occur at two intersections: a) Thomas Avenue @ St. Paul Boulevard, and b) Lake Avenue @ Lake Ontario State Parkway. The critical movements are the westbound through and the eastbound left turns at the intersection of Lake Avenue with Lake Ontario State Parkway and the northbound St. Paul Boulevard left turns to Thomas Avenue. Table 7 also shows all intersections operate overall with v/c ratios of 0.8 or less, indicating they are operating overall under capacity.

STUDY AREA
INTERSECTION OPERATION SUMMARY

INTERSECTION	TRAFFIC MOVEMENT				
	WESTBOUND	EASTBOUND	SOUTHBOUND	NORTHBOUND	TOTAL
LAKE @ PORTSIDE (Signalized)		NA			
LAKE @ CORRIGAN (Signalized)					
CORRIGAN @ N. RIVER (Stop Sign Controlled)					
LAKE @ LATTA (Signalized)					
LAKE @ LAKE ONTARIO STATE PARKWAY (Signalized)	1.00* 5:15-6:15	1.02* 5:15-6:15			
LATTA @ GREENLEAF AND HAMPTON (Signalized)					
PATTONWOOD @ THOMAS (Signalized)			NA	0.88* 5:15-6:15	
PATTONWOOD @ ST. PAUL (Signalized)	NA				
ST. PAUL @ LAKE SHORE (Signalized)					
THOMAS @ ST. PAUL (Signalized)				1.08* 5:00-6:00	

LEGEND:
- ● – Overall Intersection
- → – Traffic Movement
- → – Operating Under Capacity (v/c at or below 0.8)
- → – Operating Near Capacity (v/c between 0.8 and 1.0)
- → – Operating Over Capacity (v/c at or above 1.0)
- * – Actual v/c Value
- NA – Not Applicable

Port of Rochester
Transportation Evaluation and Support Study
City of Rochester, NY

Study Area

Movements With Greatest Congestion
Peak Hour of Intersection Traffic
Wednesday Between 5:00 and 7:00 PM

TABLE NO.	SCALE	DATE	
7	No Scale	12 / 05	BERGMANN associates Engineers / Architects / Surveyors

CHAPTER V – LOT E ACCESS OPTIONS

Existing issues of traffic accessing and departing Lot E are described in this chapter. Alternative driveway ingress/egress configurations are provided with the purpose to minimize existing vehicle conflicts associated with the proximity of the existing driveways with North River Street and the intersection of Corrigan and North River Street.

A. Existing Ingress/Egress Issues

Two driveways of Lot E are located immediately north of Corrigan on North River Street, intersecting North River approximately 25 feet north of Corrigan. The driveways provide access to and egress from Lot E east and west of North River respectively. Each driveway is controlled by a STOP sign and each approach to the intersection of North River and Corrigan are controlled by a STOP sign.

The following traffic operations were observed at the intersection of Corrigan Street and North River Street and at the driveways of Lot E with North River Street during August 2005 when the data collection phase of the study was conducted. Vehicle queues occurred on the southbound approach of North River Street at Corrigan Street and frequently blocked the driveway exits. This condition was prevalent during the hours of Saturday during beach activities between 1:30 – 3:30 PM and the arrival and departure of ferry services. Queuing occurred during Wednesday between two time periods when traffic operations were observed: 5:00 to 7:00 PM and 8:45 – 10:45 PM.

The type of issues observed were near miss collisions on the southbound approach of North River Street at the Lot E driveways, and use of vehicle horns during periods when queues occurred for southbound drivers.

The relative proximity of the intersections of the driveways and Corrigan Street with North River Street limits the storage capacity on southbound North River Street approach between Corrigan and the driveways. The storage capacity is limited to a single vehicle between the driveways and Corrigan Street. It is difficult for drivers to access southbound North River Street from the subject driveways during periods when extensive exiting of vehicles occurs from parking lot E.

Vehicles exiting Lot E from the two driveways experience delay and perform maneuvers that subject them to potential collisions. Drivers attempt to merge into existing queues of vehicles on North River Street when minimal clearance or space between vehicles exists.

Traffic flow was observed also on August 23, 2006 during a Wednesday evening concert from 6:00 PM to 9:30 PM. This was

performed to observe traffic and parking operations when the fast ferry was not in service.

The same egress issues at the conclusion of the concert were observed at the driveways with North River Street as the previous summer. Lot E was full at the onset of the concert and the same vehicle conflicts occurred when vehicles exited the Lot after the concert.

B. Alternative Ingress/Egress Options

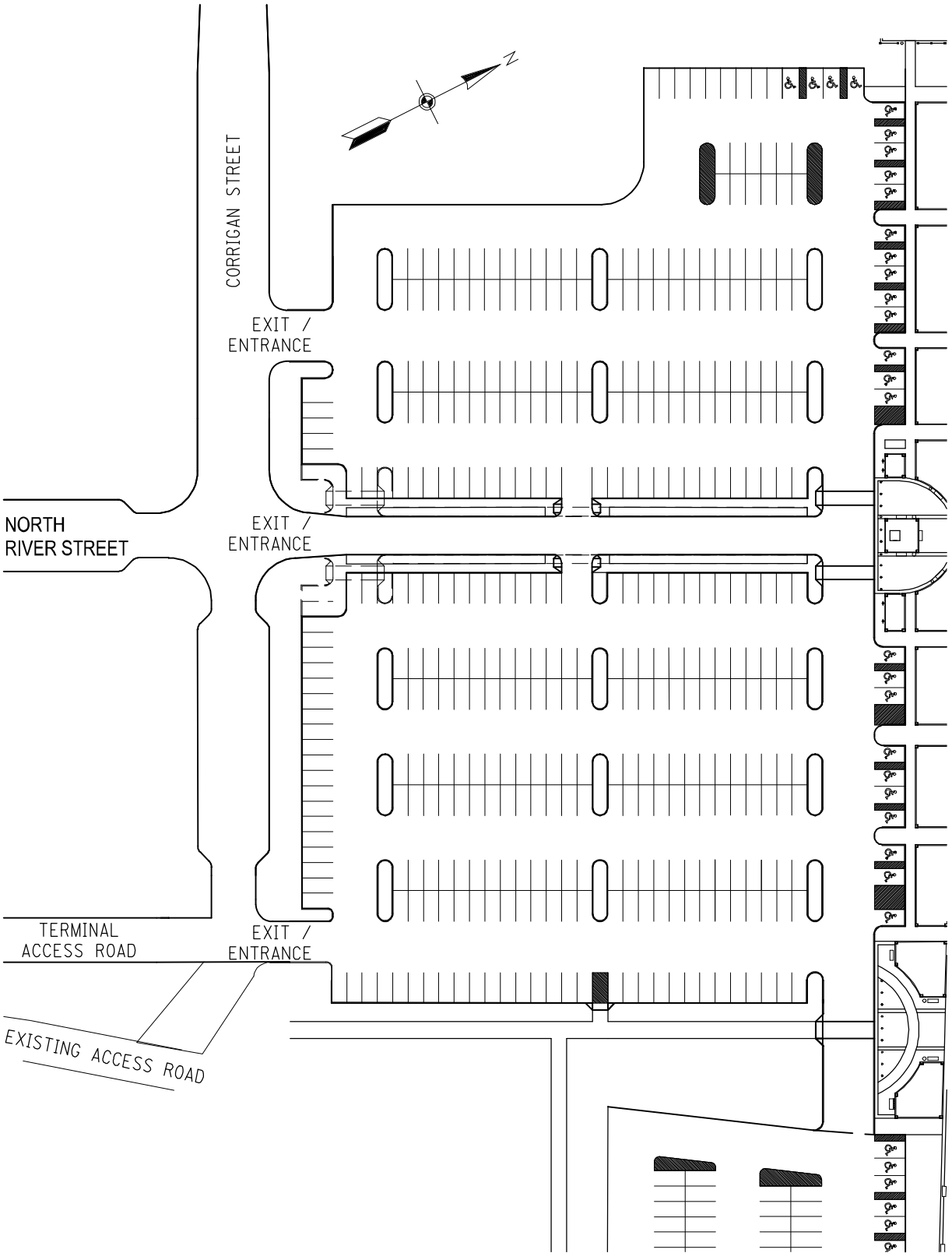
A means to alleviate the present potential for collisions is to relocate both Lot E driveways where they intersect North River Street. The optimum relocation is halfway between the north and south limits of the parking lot. This location would provide adequate queuing on North River Street during peak periods when vehicles exit Lot E, and minimize the interaction of queued vehicles on North River Street with vehicles attempting to exit the parking lot from either the east or west side.

Two alternatives of the relocated driveways are shown in Figures 18 and 19 respectively. Each alternative provides options for islands within the parking Lot to channelize traffic upon entering and exiting. Relocating the driveways will require some reconfiguration of parking spaces in Lot E. Some loss of parking spaces is expected, but would not be significant. Approximately 21 and 9 spaces are anticipated to be removed for Option 1 and 2 respectively.

Lot F is reserved for local businesses and is therefore unavailable for mitigating parking loss.

A third Option (3) is shown in Figure 20. This alternative relocates the driveways to the north end of the parking Lot. This provides for maximum queue storage on North River Street when vehicles exit the Lot. Approximately 3 parking spaces are anticipated to be gained for this alternative. A drawback to Option 3 is that all the traffic must use the northernmost “T” intersection, creating more conflicts with pedestrians.

An optional feature to Lot E in conjunction with the relocated driveways shown in Figures 18 and 19 is to include a center isle oriented in an east-west direction. This isle would provide improved circulation and ability to access empty parking spaces. It would also improve the ease of exiting the parking lot. The center isle feature would reduce circulating traffic when drivers are attempting to park and exit. However, additional parking spaces would need to be removed for this feature.



NET LOSS:
21 SPACES

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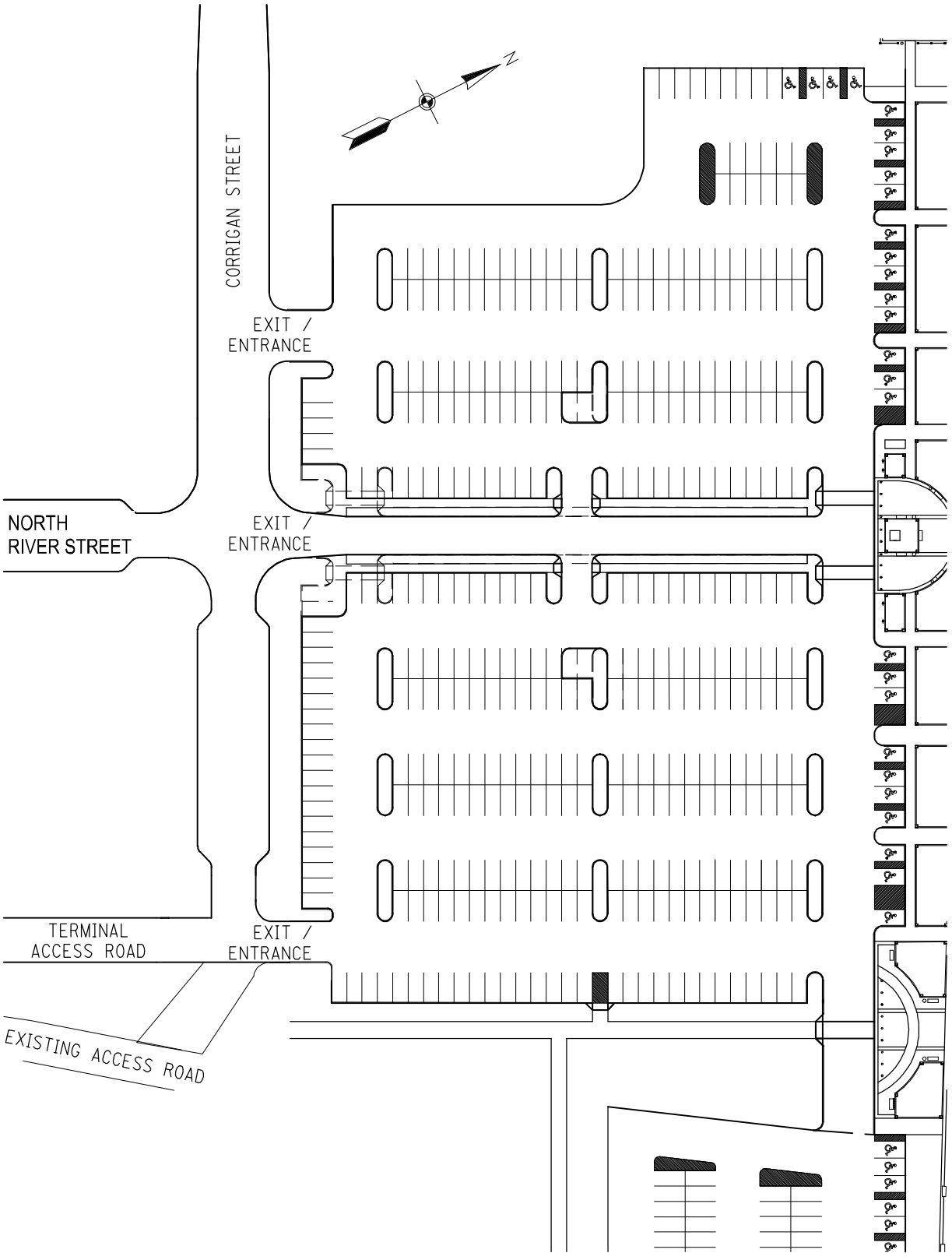
City of Rochester, NY

LOT E

INGRESS / EGRESS
OPTION 1

FIGURE NO.	SCALE	DATE
18	No Scale	12 / 06

Bergmann associates



NET LOSS:
9 SPACES

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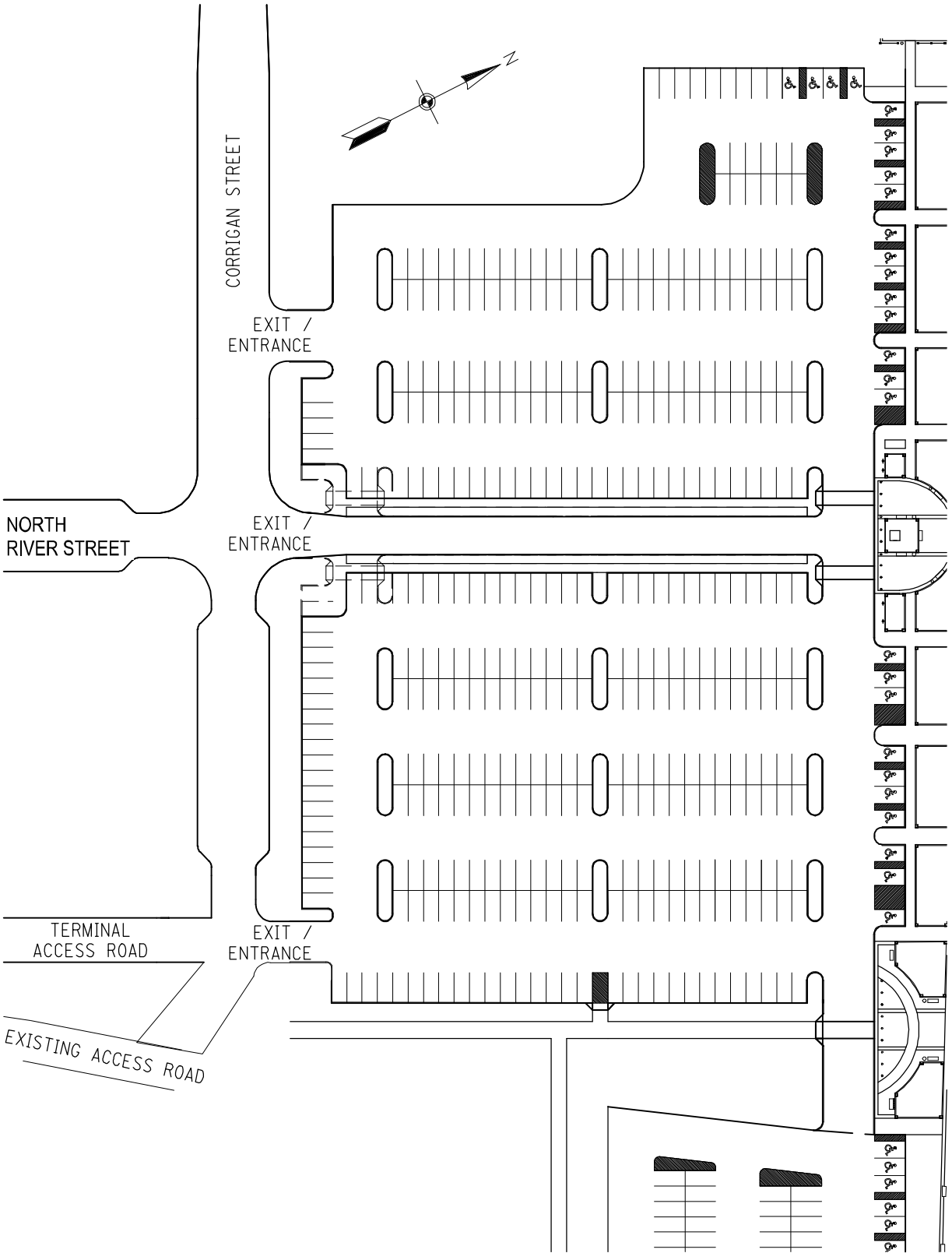
LOT E

INGRESS / EGRESS
OPTION 2

FIGURE NO.	SCALE	DATE	
19	No Scale	12 / 06	Bergmann associates



NET GAIN:
3 SPACES

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LOT E

INGRESS / EGRESS
OPTION 3

FIGURE NO.	SCALE	DATE	
20	No Scale	12 / 06	Bergmann associates

CHAPTER VI – OFF-SITE PARKING LOT ALTERNATIVES

The proposed Port redevelopment plan (Sasaki Plan) for the Port Area includes layout of a street pattern and proposed land use development. The development includes dense accommodations for housing, retail shops, hotel, marina and some open space for a promenade/pavilion.

One aspect of the Sasaki Plan is limited provision of parking for current beach activities that occur during the summer season. Some provision of parking is identified in the plan at an off-site location adjacent to Beach Avenue near the intersection of Lake Avenue. The number of spaces is limited to approximately 400 vehicles, inclusive of surface and structure facilities.

Peak parking demand for Wednesday concert activities was determined to be approximately 1,300 spaces. During weekend activities, the peak demand was approximately 1,000 spaces.

These peak demands for parking compared to spaces provided for beach activities in the Sasaki Plan reveals a short-fall. The ***deficit of spaces*** between the Sasaki Plan and current peak usage ***is as follows***:

Wednesday = approximately 900 spaces
Weekend Day = approximately 600 spaces.

Alternative port off-site locations are described next as potential locations to provide spaces to meet the parking demand. As requested by the Engineering Department of Rochester, the off-site parking locations are identified to be within close proximity of the soon to be abandoned railroad corridor and the existing site near Dewey Avenue and Ling Road.

Three locations were identified as potential off-site parking sites. Aspects of each Site are described next that include pros and cons. The estimated number of spaces each can provide, distance to the port area, and associated costs are provided. Cost of providing each alternative parking site is estimated based on generic unit costs for the Rochester area and assumed level of construction for each site. Items considered in estimating cost included:

- Clearing and grubbing
- Unclassified excavation
- Stone base course
- Asphalt concrete surface
- Fencing

A. Site A

Site A, shown in Figure 21, is the existing remote off-site parking area located on Dewey Avenue. Grass areas north and south of the existing driveway access are assumed to provide parking accommodations.

Approximately 350 spaces collectively could be accommodated on both grass-areas adjacent to Dewey Avenue.

The distance between this Site and the Port is approximately 3.0 miles. The distance is based on using Dewey Avenue, Lake Ontario State Parkway, and Lake Avenue.

PROS

Direct access to and from both lots for this Site is provided at Dewey Avenue. An interchange exists with this street and the Lake Ontario State Parkway. Access to and from the Site by users of the lot is readily available by the Parkway and Dewey Avenue and other roadways connecting to each of them.

Access between this Site and the Port is readily available using Dewey Avenue, Lake Ontario State Parkway and Lake Avenue. This is the route utilized by the current shuttle service from the Site to the Port. However, the return route from the Port to the Site currently used by the shuttle service is by Beach Avenue and Dewey Avenue.

Cost to implement this Site is estimated to be minimal if the grass surface is utilized for parking. Parking could be accommodated at this Site with the least investment of all Sites considered. A nominal cost for some remedial base course is estimated to be approximately $20,000.

CONS

Estimated parking spaces for this Site are 350. If 400 spaces are provided at the Port as described previously, parking at this Site is approximately 550 less than needed to accommodate peak Wednesday concert demands or 250 less than needed to accommodate peak weekend day activities. Should the 400 spaces not be provided as part of the Port development plan, demand on Wednesday for spaces will exceed availability by 950 and on weekend days by 650.

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City of Rochester, NY

SITE A

OFF-SITE PARKING

FIGURE NO.	SCALE	DATE	
21	No Scale	12 / 06	Bergmann associates

Distance between this Site and the Port is the greatest of all three parking sites. It is approximately 3.0 miles. If the average travel speed between the parking site and the Port is approximately 30 mph, the time to travel between the two locations is approximately 6 minutes.

B. Site B

Site B, shown in Figure 22, is adjacent to Ling Road near Greenleaf Road. The site was a former drive-in theater, presently abandoned. A driveway from the site to Ling Road provides access to the highway system.

Approximately 1,200 spaces could be provided at this site.

The distance between this Site and the Port is approximately 1.8 miles using the corridor of Ling Road, Greenleaf Road, Beach Avenue and Lake Avenue. The distance is greater using Ling Road, Greenleaf Road, Lake Ontario State Parkway, and Lake Avenue. It is approximately 2.5 miles.

PROS

Access to this parking Site is available using Ling Road. Distance between the Site and Lake Ontario State Parkway using Greenleaf Road and Ling Road is approximately 0.9 miles. Access to the parking Site is readily available by the existing road system.

Access between this Site and the Port is readily available using Ling Road, Greenleaf Road and either Beach Avenue or Lake Ontario State Parkway. Either route provides direct access to Lake Avenue and the Port of Rochester.

Estimated maximum parking spaces for this Site are 1,200. If 400 spaces are provided at the Port, parking at this Site is sufficient to meet the remaining peak demand for Wednesday and weekend days.

Distance between the Site and Port is slightly less than for Site A, being approximately 2.5 miles using Lake Ontario State Parkway and 1.8 miles using Beach Avenue. This compares to 3.0 miles for Site A.

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SITE B

OFF-SITE PARKING

FIGURE NO.	SCALE	DATE	
22	No Scale	12 / 06	Bergmann associates

CONS

If 400 spaces are not provided at the Port as part of the redevelopment plan, available spaces at this Site are estimated to be less than demand by approximately 100.

Cost to implement this Site is estimated to be $600,000. It includes grading the Site and assumes some additional base material to provide a firm parking surface. No asphalt surface is included in the cost. An asphalt surface is estimated to add an additional $1,400,000 to the overall cost for a total of $2,000,000.

Security of the Site may be an additional cost element. Visibility of the parking area is limited from adjacent roads due to the trees and vegetation adjacent to it. Fencing may be an option to enhance security of the Site. It is estimated to cost $160,000, bringing the total cost to $2,160,000.

C. Site C

Site C is adjacent to the abandoned railroad, approximately 0.4 miles west of Lake Avenue as shown in Figure 23. The site is adjacent to the south side of the railroad and there is substantial growth of vegetation and trees on it. Access to and from this site would need to be provided along the railroad corridor.

Spaces – 1,200 spaces at a minimum could be provided at this site.

Distance – The distance between this Site and the Port is approximately 0.8 miles using the corridor of the abandoned railroad and North River Street.

PROS

Distance between this Site and the Port is quite short using a newly constructed road along the railroad to North River Street, approximately 0.8 mile.

Parking spaces for this Site can be achieved to meet any peak period demand of Port activities. Spaces of 1,200 or more could be constructed with out incurring space limitations.

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SITE C

OFF-SITE PARKING

FIGURE NO.	SCALE	DATE	
23	No Scale	12 / 06	Bergmann associates

CONS

Access to this Site is not available by any existing road or street. The Site is “land locked” and any access to it will require construction of a road/street.

Access between this Site and the Lake Ontario State Parkway by means of Latta Road probably would not be accomplished. The potential access point to Latta Road would be adjacent to an interchange ramp of the Parkway. Access management constraints on Latta Road near the interchange ramps would likely preclude additional access points in the vicinity. Also, gaining access to Latta Road near the interchange ramps by acquisition of right-of-way may be problematic. Available right-of-way for access appears limited, if not unavailable.

An initial cost to implement this Site is estimated to be $1,900,000, which is the greatest of all sites considered. This includes: clearing and grubbing, unclassified excavation, grading, and a minimum depth of base material for a parking surface and an asphalt concrete roadway along the railroad corridor between the Site and North River Street.

Asphalt concrete surface for the parking area would add $1,300,000 for a total of $3,200,000.

Security of the Site may be an additional cost element. Visibility of the parking area is not possible from adjacent roads due to trees and vegetation adjacent to the Site. Fencing may be an option to enhance security. It is estimated to cost $160,000. A total cost estimate of $3,360,000 is inclusive of the access road, asphalt concrete parking lot and security fencing.

D. Summary

A summary of the PROS and CONS of each Site is contained in the Table 8.

Table 8
OFF-SITE PARKING LOCATION PROS & CONS SUMMARY

SITE	PROS	CONS
A	a) Good connectivity and access to existing roads.	a) Greatest distance to Port of all Sites: approximately 3.0 miles
	b) Minimal cost to implement: approximately $20,000.	b) Does not provide all parking demand. Provides approximately either 39% with 400 spaces at the Port or 27% without 400 spaces at the Port.
B	a) Good connectivity and access to existing roads	a) Cost without asphalt concrete parking surface and security fencing is estimated to be $600,000
	b) Provides all parking demands if 400 spaces are provided at Port. If not, approximately 92% of parking demand can be achieved.	b) Cost with asphalt concrete parking surface and without security fencing is estimated to be $2,000,000.
	c) Distance between Site and Port is less than for Site A: approximately 1.8 miles.	c) Cost with asphalt concrete parking surface and security fencing is estimated to be $2,160,000.
	d) The location has potential access to the railroad corridor.	
C	a) Distance between Site and Port is least for all Sites: 0.8 miles	a) No connectivity to existing streets is available.
	b) Parking demand for peak Port activities can be accommodated: in excess of 1,200 – 1,300 spaces.	b) Connectivity to existing streets does not exist. Construction of a new road is required for access.
		c) Cost without asphalt concrete parking surface and security fencing is estimated to be $1,900,000 (includes new access road).
		d) Cost with asphalt concrete parking surface and without security fencing is estimated to be $3,200,000 (includes new access road).
		e) Cost with asphalt concrete parking surface and security fencing is estimated to be $3,360,000 (includes new access road).
		f) Traffic may have to pass through the congested beach area to access this location.

CHAPTER VII – NORTH RIVER STREET EXTENSION

The Final Master Plan for the Port of Rochester entails proposed redevelopment of the Port area as described in previous chapters. The Plan identifies direct access to the Port area via Lake Avenue at three locations: Corrigan Street, Hincher Street, and Portside Drive.

Additional access to the Port area is proposed by an enhanced extension of North River Street within the Port. The extension would continue south to connect with existing River Street as shown in Figure 24. Currently, an informal connection from North River Street to River Street exists. Although it is not obvious to motorists, some traffic may already be using this route.

Currently, River Street emanates from its southern limits at the intersection of Stutson Street and continues north past Latta Road toward the Port before ending near the CSX Railroad corridor immediately south of the Port.

The proposed extension of North River Street from the Port south to connect with the existing section entails a slight change in alignment at the south edge of the Port from a northerly / southerly alignment in the Port a to northeasterly / southwesterly alignment near the CSX Railroad. The pros and cons of North River Street extended south from the Port to its present terminus near the CSX railroad are provided next.

PROS & CONS

The pros and cons of North River Street extended south from its present terminus to intersect a new street are discussed in the following paragraphs. The proposed North River Street Extension contained in the redevelopment plan connects to a new street at the south limits of the Port and continues through the Port Area to the beach area.

PROS

a) Extensions of North River Street provides flexibility of access to the Port Area in general. It provides direct access to the proposed commercial properties adjacent to the river.
b) Extension of North River Street southerly from the Port provides alternative access to/from the south for residents of the Port without the need to travel on Lake Avenue in the vicinity of the Port when it is congested during peak periods of Park/Beach and Port activity. This will offer additional capacity for Concert traffic exiting the Port.
c) The extension of North River Street provides alternative access for emergency vehicles such as medical and fire to the Port Area.

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PORT AREA

NORTH RIVER STREET EXTENSION

FIGURE NO.	SCALE	DATE	
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d) In the future, should a new road be constructed along the soon to be abandoned CSX Railroad corridor, it would likely intersect Greenleaf Road. The new road would provide an alternative route to the Port from a select geographical area west of it and potentially reduce the volume of traffic on Lake Avenue during peak periods of activity at the Park/Beach.

CONS

a) Extension of North River Street as proposed requires traffic destined for the beach area to make several internal turns in the Port area. This could increase traffic through the residential area of the Port. The order of increase of volume is not anticipated to be significant, but should be monitored if North River Street is extended to determine the magnitude and order of impact.

RECOMMENDATION

The extension of North River Street from the Port to the south to connect with existing River Street at the CSX Railroad affords the opportunity to provide flexibility to the street system serving the Port redevelopment plan. This will offer additional capacity for Concert traffic exiting the Port. In summary, it appears to provide more overall benefit in terms of service and flexibility than detrimental impacts. It is therefore considered a positive aspect of the plan to be recommended for implementation.

CHAPTER VIII – ITS CONSIDERATIONS

The Port of Rochester and the surrounding street network can benefit from the installation of additional Intelligent Transportation System (ITS) Tools and Technologies. Currently the Monroe County Department of Transportation operates and maintains a coordinated signal system on Lake Avenue in the Charlotte area. Also, the County operates and maintains closed circuit TV (CCTV) cameras at the intersections of 1) Lake Avenue and the Lake Ontario State Parkway/ Pattonwood Drive and 2) Pattonwood Drive and Thomas Avenue. These cameras are used to monitor traffic flow in the corridor and the O'Rorke lift bridge. The cameras are monitored both at the Regional Traffic Operations Center (RTOC) located on Scottsville Road and at the O'Rorke bridge during times that the bridge is staffed.

Developments in the Port Area along with the special events that take place often attract many visitors to the Port Area. When parking in the area reaches capacity, traffic congestion occurs and visitors are diverted to remote parking areas. As development in the Port Area continues, the need for more remote parking will increase.

In order to facilitate the flow of traffic and give notice to approaching visitors that the Port Area may be congested, it is recommended that the use of additional ITS tools be implemented. Tools such as both fixed and portable Dynamic Message Signs (DMS), plus additional CCTV systems will help to manage traffic flow and provide the advance notice to make the trip easier for visitors.

Fixed or portable DMS can also be utilized to improve traffic flow for traffic exiting the Port after summer beach concerts.

The CCTV systems can be easily installed in the Port Area. The installation of advance DMS signs on Lake Ontario State Parkway, Lake Avenue and Pattonwood Drive will provide the information necessary to guide visitors to the remote parking areas and to manage the Port Area traffic flow.

CHAPTER IX – SUMMARY OF OPERATION ISSUES

This initial phase of the transportation evaluation and support study has inventoried transportation conditions during special events at the Port and in the surrounding study area. The inventory data has been documented and the analyses of the information have identified some operational issues. The issues pertain to conflicts between pedestrians and vehicles, temporary extensive queuing conditions, sufficiency of parking accommodations and intersection operations. Each issue is described next.

A. Pedestrian Conflicts

Principle conflicts between pedestrians and vehicles occurred at two locations:

a) The intersection of Lake Avenue @ Corrigan Street, and
b) The Terminal Access Roads between Corrigan Street and Hincher Street near the ferry terminal building.

The conflict between pedestrians and vehicles at Lake Avenue and Corrigan Street occurs primarily before and after Concerts by the Shore. Pedestrians cross Lake Avenue at Corrigan Street after parking west of Lake Avenue before Concerts by the Shore. The reverse trip is made after Concerts end. This pattern focuses pedestrians through the intersection of Lake Avenue @ Corrigan Street at the same time as peak traffic is passing through the intersection prior to and after concerts. The vehicle-pedestrian conflicts also reduce through vehicle capacity. Limiting the pedestrians to only the north leg crossing may provide additional capacity while providing fewer conflicts for pedestrians.

The second location of prominent conflict between pedestrians and vehicles is found along the Terminal Access Roads. The conflict occurs typically over a short period of time (approximately 30 to 45 minutes) after the fast ferry arrives. Now that fast ferry is no longer in service, pedestrian conflicts along the Terminal Access Roads are not an issue.

B. Queuing

Wednesdays:

The most extensive queuing in the Port Area occurs on Wednesdays in the hour between 6:00 and 7:00 PM, prior to Concerts by the Shore

and typically for an hour after the conclusion of a concert when that period overlaps a fast ferry arrival.

During the 1.5 hour period (8:45 – 10:15 PM) after conclusion of a Concert by the Shore and with an arrival of the fast ferry, the most queuing occurs at two intersections: a) Lake Avenue @ Corrigan Street and b) Lake Avenue @ Portside Drive. Maximum queues of 8-16 vehicles occurred on westbound Corrigan Street at Lake Avenue and 13 vehicles on eastbound Corrigan Street. This was short lived and not observed to be a significant issue given the short cycle length of the signal at Lake Avenue and the alternative route via North River Street.

Vehicle queuing reached upstream intersections during Wednesday time periods as follows:

1. Northbound traffic on North River Street at Corrigan Street backed up to Hincher Street for approximately 30 minutes beginning a few minutes before 6:00 PM. There were 3 more times when queuing at this location was observed to reach Hincher Street before 7:00 PM. The queuing did not last as long during these occurrences.

2. Northbound traffic on Lake Avenue at Corrigan Street was observed to back to Hincher Street once before and once after the Concert.

3. Westbound traffic on Corrigan Street approaching Lake Avenue backed up to North River Street several times before and after the concert and also after the fast ferry arrived at 9:25 PM. This was short lived and not observed to be a significant issue given the short cycle length of the signal at Lake Avenue and the alternative route via North River Street.

4. Eastbound traffic on Corrigan Street approaching Lake Avenue backed up to Estes Street several times after the Concert.

5. Southbound traffic on Lake Avenue approaching Portside Drive backed up past Hincher Street to Corrigan Street several times after the Concert.

Saturdays:

The most significant queuing occurred at the following locations:

- along North River Street and Portside Drive when parking attendants were processing vehicles prior to an early morning fast ferry departure,

- along Corrigan Street approaching Lake Avenue after an afternoon fast ferry arrival (not observed to be a significant issue given the short cycle length of the signal at Lake Avenue and the alternative route via North River Street), and
- on Hincher Street at the port entrance gate before early morning and afternoon fast ferry departures.

Specifics of queuing were as follows:

a. Traffic was queued to Lake Avenue from approximately 6:55 to 7:10 AM while parking attendants processed parking motorists.

b. When the attendants moved to the north end of the west Terminal Access Road at 7:10 AM to process vehicles, the queuing began to subside.

c. Vehicle queues westbound on Corrigan Street at Lake Avenue ranged from 8 vehicles to 12 vehicles between 2:25 PM and 2:47 PM. The average number of vehicles able to clear the intersection during one cycle of the traffic signal was between 11 and 12 vehicles.

d. Maximum queues at the entrance gate for eastbound Hincher Street of 18 vehicles (total of two lanes) during the one hour before 7:18 AM nearly extended to North River Street.

e. Northbound traffic on North River Street and eastbound traffic on Portside Drive backed up for approximately 20 minutes when parking attendants were processing vehicles on North River Street before the 8:00 AM departure of the fast ferry

f. Westbound traffic on Corrigan Street at Lake Avenue backed up to North River Street intermittently for 20 minutes after the 2:00 PM arrival of the fast ferry.

C. Parking Occupancy

The Average Parking Occupancy is consistently greater on weekends (61% overall) than during weekdays (30% overall) when parking was recorded, as shown in Table 5. Similarly, Maximum Parking Occupancy occurred on weekends (93%overall) compared to weekdays (48% overall).

The Maximum Parking Occupancy occurred at “on-street” parking with an overall occupancy of 101% on weekends. A slightly lower

Maximum occupancy of 94% occurred at beach area lots with free parking on weekends.

Average Parking Occupancy varied between 20 and 35 percent on weekdays and 53 and 62 percent on weekends depending on the type of parking facility. Types of parking facilities defined here are beach area, on-street and port area, as shown in Table 5.

Collectively for all lots, average parking occupancy of 100% or greater occurred as follows:

a) weekdays – 1 hour
b) Saturdays – 13 hours
c) Sundays – 18 hours

The predominate hours on Saturday when parking exceeded capacity of lots was between 2 PM and 4 PM. On Sunday, the predominate hours were between 2 PM and 5 PM.

D. Traffic Operations

During the hours when counts were conducted, the *most critical operating condition* occurs where volume exceeds capacity. *Volume exceeds capacity* (v/c equal to or greater than 1.0) at two intersections:

- **Thomas Ave. @ St. Paul Blvd.** – Northbound movement of St. Paul Blvd. to Thomas Ave. – v/c = 1.08 during 5-6 PM Wednesday.

- **Lake Ave. @ Lake Ontario State Parkway** – Westbound through movement – v/c = 1.0 during 5:15 - 6:15 PM, and Eastbound left turn from State Parkway to Lake Ave. – v/c = 1.02 during 5:15 - 6:15 PM Wednesday.

The *next most critical level of congestion* occurs where the volume is near capacity, or the *volume to capacity ratio is between 0.8 and 1.0*. This condition occurs at three intersections where counts were conducted:

- Pattonwood Dr. @ St. Paul Blvd. – Northbound St. Paul Blvd. left turn to Pattonwood Dr. – v/c = 0.88 during 5:15 – 6:15 PM Wednesday.

- Lake Ave. @ Corrigan St. – Westbound Corrigan St. left turn to Lake Ave. – v/c = 0.98 during 8:46 – 9:45 PM Wednesday and

Eastbound Corrigan St. right turn to Lake Ave. – v/c = 0.89 during 8:45 – 9:45 Wednesday.

- Lake Ave. @ Portside Dr. – Southbound Lake Ave. through movement – v/c = 0.81 during 8:45 – 9:45 PM Wednesday.

Post Fast Ferry Observations and Recommendations

Parking and traffic flow operations during Wednesday evening "Concerts By the Shore" were observed and evaluated during August 2006

The results of this evaluation and recommendations are as follows:

- Between 6:15 p.m. and 6:30 p.m. Lot E fills to capacity and Lot B was approximately 50% full
- Around 6:30 p.m. the Abbott's lot fills to capacity.
- By 7:00 p.m. all lots are filled and visitors start parking in the Boat Launch parking lot
- By 7:15 p.m. all lots including the Boat Launch lot are completely full and visitors are circulating looking for parking lots
- Observations at the Estes Street remote lot around 7:30 p.m. showed that approximately 170 vehicles were parked in the lot with capacity for approximately 100 more vehicles
- It should be noted that the Ferry Customs lot and the Security Lot C were empty and present an opportunity for additional parking
- Signing on the east side of Marina Drive south of Hincher Street is currently signed for No Parking. Revising the signing in this area and other areas around the terminal area can result in additional parking
- During the field observations it was noted that the parking monitors remained at the entrances to Lot E. It would be helpful to traffic flow if when Lot E fills the parking monitors move south to the entrance to Lot B and direct traffic into this lot. As lot B fills the monitors could move south and then when full direct visitors to the Estes Street remote lot. This would help to eliminate the circulating of traffic through lot B and the roadway system.
- Observations at the Dewey Avenue shuttle lot indicated that about 60 vehicles used this lot.

Observations during the exiting of traffic after the concert event showed that vehicles started exiting around 8:00p.m. with the heaviest exiting occurring around 8:45 p.m. and continuing to 9:20p.m.
During that time period there were some backups on Corrigan Street however, no vehicles waited more than two traffic Signal changes before exiting.