Draft Design Report

Main/Goodman Traffic Impact Study & Concept Design Project
City of Rochester

Monroe County, New York

August 2008

Clark Patterson Lee
DESIGN PROFESSIONALS

THIS PAGE INTENTIONALLY LEFT BLANK

EXECUTIVE SUMMARY

PROJECT DESCRIPTION/LOCATION

The East Main Street/Goodman Street intersection is located east of the downtown area in the City of Rochester, Monroe County. Its primary function is to serve as a connector for the northeastern portions of the city to the downtown area. The Main/Goodman intersection is located at the confluence of three distinct city neighborhoods; south of Main Street is the Neighborhood of the Arts, north of Main Street and east of Goodman Street is the Beechwood Neighborhood while the Marketview Neighborhood is located north of Main Street and west of Goodman Street. A local citizens group, Bridging Neighborhoods, has been involved and identified the need for improved pedestrian facilities. Improving the workability of this area is highly desirable to residents and businesses. Clark Patterson Lee, along with SRF Associates, has been retained by the City of Rochester to perform a traffic analysis and preliminary layout of different alternatives within the project corridor to help improve pedestrian safety.

The study area includes the portion of East Main Street from 200 feet west of Circle Street to 500 feet east of N. Goodman Street, N. Goodman Street from Webster Avenue to the dead end at the CSX Railroad tracks, Railroad Street for the first 200 feet north of E. Main Street and Circle Street for the first 200 feet south of E. Main Street. There is one additional intersection within the project study area; the intersection of Hayward Avenue with N. Goodman Street.

Numerous alternatives and options were evaluated to determine the potential impacts on the pedestrian facilities and traffic movement through the corridor. The alternatives placed a large emphasis on improving pedestrian safety while maintaining or improving current traffic movements.

The alternatives reviewed included various changes to the Main/Goodman Street intersection such as varying the number of overall turning lanes, installation of curbed medians, installation of a roundabout and realignment of the overall intersection. These alternatives were based on guidelines outlined by the City of Rochester and developed using Monroe County Department of Transportation and the New York State Department of Transportation Design Standards. Furthermore, a great deal of effort was exerted to reduce potential impacts to the adjacent property owners.

ALTERNATIVES CONSIDERED

Numerous alternatives were developed and reviewed with the goals of providing better pedestrian infrastructure, removal of the perceived barrier to social interaction between the neighborhoods and to restore the Main/Goodman Street intersection as an urban village center.

The first alternative developed includes various potential improvements such as channelization, restriping, pedestrian islands and intersection bumpouts to the Main/Goodman Street intersection. These improvements were designed without major modifications to the existing curb alignments or roadway profiles. Within alternative #1, four different options were modeled and analyzed. Alternative #1, Option A maintains the existing roadway alignment at the Main Street/North Goodman Street intersection. The proposed geometry includes eastbound: one exclusive left turn lane, one shared left/through lane, and one shared right/through lane; westbound: two through lanes with shared left and right turns; southbound: one exclusive right turn lane and one shared left/through/right turn lane; northbound: one shared left/through/right turn lane. Alternative 1 was also analyzed without the Goodman Street "leg" south of Main Street (Alternative #1, Option B) so that it could be compared directly to the re-alignment alternative (Alterative 3). Alternative 1, Option C, was also modeled with a slightly different geometry than what is proposed in Alternative 1, Option A. The change in geometry includes: eastbound two exclusive left turn lanes and one shared right/through lane; the other approaches are the same as detailed in the Option A geometry. Alternative 1, Option D includes the same geometry as detailed in Option C, except the Goodman Street "leg" south of Main Street is not included. A detailed review of the overall network performance associated with the intersection operations indicates that Option D provides better corridor performance than the other options associated with Alternative #1. To aid in the decision making process, a comparison matrix was developed using parking, accident reduction, pedestrian safety, landscaping, traffic calming and cost to evaluate each alternative. Using the comparison matrix developed, Alternative #1, Option D received a score of 27 out of a possible 36. The preliminary cost associated with Alternative #1, Option D is approximately $478,000.00.

The second alternative developed includes the reconfiguration of the intersection to a roundabout. This analysis was also performed without the Goodman Street "leg" south of Main Street. The concept design for the multi-lane roundabout proposes an inscribed circle diameter of 180 feet with a center island diameter of 110 feet. The results indicate that the alternative is feasible providing significantly reduced delays and queues for vehicular traffic. However, using the comparison matrix developed to evaluate the alternative based on the operation of the intersection and the goals of the City, Alternative #2 scored a 21 out of a possible 36. A closer analysis indicates that the pedestrian and parking components fail to meet the goals of the study while providing the least desirable pedestrian benefits. The preliminary cost associated with Alternative #2 is approximately $810,000.00.

The last alternative developed includes major reconstruction and realignment of the Main/Goodman Street intersection to create a favorable alignment of East Main Street to the west of the intersection with North Goodman Street to the north of the intersection. Within Alternative #3, three different options were modeled and analyzed. Alternative #3, Option A includes the re-alignment alternative developed by the Bridging Neighborhoods Group. Main Street eastbound (which becomes more of a northbound movement) has one through lane and one shared through and right turn lane, Main Street westbound has one left turn lane and one shared left and right turn lane, and North Goodman Street southbound has one through lane and one shared through and left turn lane. A median along Main Street between Circle Street and Railroad Street is not an option at these two intersections due to the high traffic volumes along Main Street, high left turn volume at Circle Street, limited sight distances and safety concerns for

turning motorists. It should be noted that this alternative requires the removal of the Goodman Street "leg" south of Main Street. Alternative #3, Option B adds an eastbound (northbound) exclusive right turn lane which allows the other two lanes to be used for only through traffic and a southbound exclusive left turn which likewise allows the other two lanes to be used for only through traffic. Alternative #3, Option C adds a northbound exclusive right turn lane which allows the other two lanes to be used exclusively for dual left turn movements. The remaining geometry is the same as shown in Option A. The results of the analysis indicate that all of the options yield similar results at the intersection. Of the three options analyzed, Option A provides a greater improvement in safety and compatibility for pedestrians while balancing the overall operating conditions at the intersection. Using the comparison matrix to evaluate the alternative based on the operation of the intersection and the goals of the City, Alternative #3, Option A scored a 24 out of a possible 36. The preliminary cost associated with Alternative #3, Option A is approximately $1,130,000.00.

THIS PAGE INTENTIONALLY LEFT BLANK

Table of Contents

List of Tables

List of Figures

Appendices

Abbreviations

AADT	Average Annual Daily Traffic
AASHTO	American Assoc. of State Highway Transportation Officials
ACC/MVKM	Accidents per Million Vehicle Kilometers
ADAAG	Americans with Disabilities Act Accessibility Guideline for Buildings & Facilities
BIN	Bridge Identification Number
BM	MIDST Bridge Manual
COE	Corps of Engineers
DHV	Design Hourly Volume (Two-Way)
DDHV	Directional Design Hourly Volume (One-Way)
DR	Design Report
EAP	Environmental Action Plan
EPA	Environmental Protection Agency
ETC	Estimated Time of Completion
FEMA	Federal Emergency Management Administration (U.S.)
FHWA	Federal Highway Administration
FIPS	Federal Information Processing Standard
HDM	New York State Department of Transportation Highway Design Manual
HSD	Headlight Sight Distance
LOS	Level of Service
NEPA	National Environmental Policy Act
NHS	National Highway System
NWI	National Wetlands Inventory
NYSDEC	New York State Department of Environmental Conservation
NYSDOT	New York State Department of Transportation
PE	Permanent Easement
PIN	Project Identification Number
PS&E	Plans, Specifications, and Estimate
RMM	Reference Mile Marker
ROW	Right-of-Way
SEQR	State Environmental Quality Review
SH	State Highway
SPDES	Stormwater Pollutant Discharge Elimination System
SR	State Route
SSD	Stopping Sight Distance
USCG	United States Coast Guard

I. INTRODUCTION

The East Main Street/Goodman Street intersection is located east of the downtown area in the City of Rochester, Monroe County. Its primary function is to serve as a connector for the north-eastern portions of the city to the downtown area. The Main/Goodman intersection is located at the confluence of three distinct city neighborhoods; South of Main Street is the Neighborhood of the Arts, North of Main Street and east of Goodman Street is the Beechwood Neighborhood while the Marketview Neighborhood is located north of Main Street and west of Goodman Street. A local citizens group, Bridging Neighborhoods, has been involved and identified the need for improved pedestrian facilities. Improving the workability of this area is highly desirable to residents and businesses.

The study area includes the portion of East Main Street from 200 feet west of Circle Street to 500 feet east of N. Goodman Street, N. Goodman Street from Webster Avenue to the dead end at the CSX Railroad tracks, Railroad Street for the first 200 feet north of E. Main Street and Circle Street for the first 200 feet south of E. Main Street. There is one additional intersection within the project study area; the intersection of Hayward Avenue with N. Goodman Street.

This report will assess existing conditions, identify the overall project objectives, analyze potential alternative solutions, and discuss any effects on the community resulting from the implementation of these potential alternatives.

This report may be circulated to Federal, State, and Local Agencies, as well as officials and other groups and individuals who have special interests, concerns of expertise, for review and comment. The information contained in this report, along with comments received as a result of the review process will be used to try and secure funding for the final design recommendation(s).

Further information regarding this project or the contents of this report may be obtained by contacting:

Attention: Paul Way, P.E., Manager
City of Rochester, A & Bureau
Street Design Division
City Hall, Room 300-B
30 Church Street
Rochester, New York 14604

Correspondence regarding this project should refer to E. Main Street/Goodman Street Traffic Impact & Concept Project

THIS PAGE INTENTIONALLY LEFT BLANK

II. PROJECT IDENTIFICATION, EVOLUTION, CONDITIONS AND NEEDS, AND OBJECTIVES

A. Project Identification:

The project includes a traffic analysis and preliminary layout of different roadway improvement alternatives within the project corridor along Main Street and Goodman Street needed to improve traffic and pedestrian safety.

Project Description/Location

Description

Route Name – E. Main Street and Goodman Street
BIN Number and Feature Crossed – East Main Street, B.I.N. 2211350 over CSX
Municipality – City of Rochester
County - Monroe
Length – Approximately 2200 ft
Termini – Main Street - 200 feet west of Circle Street to 500 feet east of N. Goodman Street
Goodman Street - Avenue to the dead end at the CSX Railroad tracks
Other Pertinent Description Information - None

Regional Map - Refer to the regional map (Figure II-1) following this page.

Project Map - Refer to the location map (Figure II-2) following this page.

B. Project Evolution

The Main Street/Goodman Street intersection was reconstructed in 1989. The reconstruction project included the realignment of Main Street at Goodman Street and the realignment of Circle Street between Main Street and Goodman Street. The replacement of the Main Street Bridge over the CSX railroad tracks was also included in the project scope.

This project is being administered by City of Rochester Street Design Division.

Public involvement officially began with a Public Input Meeting on November 1, 2007 with the Bridging Neighborhoods Group. However, the Bridging Neighborhoods Group was involved prior to this, holding numerous public meeting. The Bridging Neighborhoods Group and the general public will be involved throughout the planning and design process should a design concept/alternative be accepted and funding becomes available.

Figure II-1
REGIONAL MAP

Main Street/Goodman Street
City of Rochester, Monroe County
Scale 1:24,000

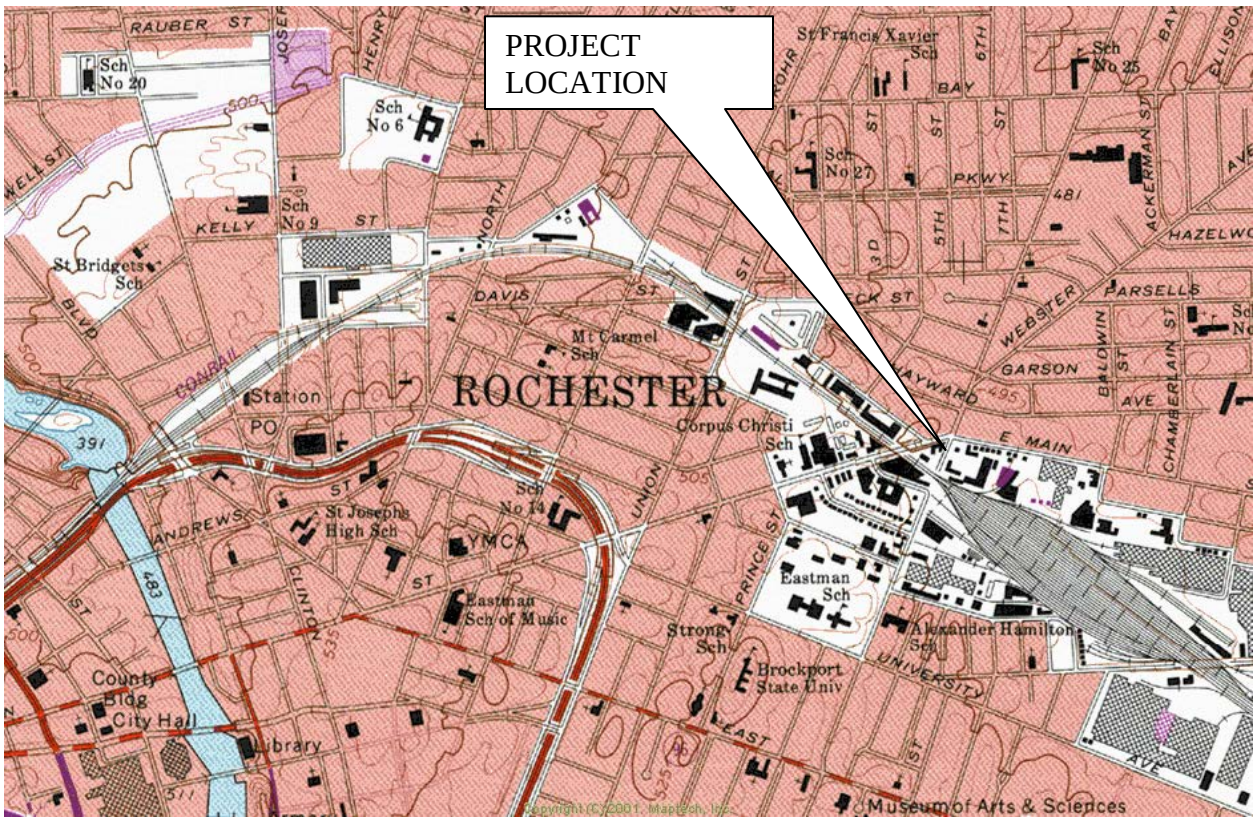


Figure II-2
Project Map

Main Street/Goodman Street
City of Rochester

C. Conditions and Needs

1. Transportation Conditions, Deficiencies and Engineering Considerations

a. Functional Classification and National Highway System

Main Street is functionally classified as a Local Urban Street. The street is not on the National Highway System (NHS) nor is it a Qualifying or Access Highway on the National Network of Designated Truck Access Highways. It is not on the Interstate System, and not part of the 4.9 m vertical clearance network.

Goodman Street is functionally classified as a Local Urban Street. The street is not on the National Highway System (NHS). It is not a Qualifying or Access Highway on the National Network of Designated Truck Access Highways. It is not on the Interstate System, and not part of the 4.9 m vertical clearance network.

b. Ownership and Maintenance Jurisdiction

The City of Rochester owns and maintains Main Street, Goodman Street and the surrounding side streets within the project limits.

c. Culture, Terrain, and Climatic Conditions

(1) Area Type: Urban. The primary land use along Main Street and Goodman Street is commercial with residential areas surrounding the main intersection.

(2) Terrain: The overall terrain in the project area is considered level.

(3) Unusual Weather Conditions: There are no unusual climatic conditions that would affect the design of the roadway.

d. Control of Access

Properties located within the project limits have limited access to Main Street and Goodman Street due to the building locations and lack of driveways. There are approximately 6 driveways located along Main Street and 4 driveways located along Goodman Street. In addition, there are six side street intersections along Main Street and Goodman Street.

e. Existing Highway Section

(1) Right of Way width - The existing right-of-way along Main Street within the project limits varies between approximately 90 ft. (27.4 m) near Circle Street to approximately 67 ft. (20.4 m) west of Goodman Street. Near the bridge over the railroad, the right-of-way varies significantly due to the bridge grading and intersection grades. The existing right-of-way along Goodman Street within the project limits varies between approximately 80 ft. (24.4 m) near Main Street to approximately 125 ft. (38.1 m) near Webster Avenue. The existing right-of-way along Circle Street and Railroad Street is approximately 60 ft. (18.3 m).

(2) Lanes and Shoulders – Main Street consists of two 11 ft. through lanes and 5 ft. shoulders in each direction. At the intersection of Main/Goodman, there are two 11 ft. left turn lanes from eastbound Main Street to northbound Goodman Street and one 11 ft. left turn lane from westbound Main Street to southbound Goodman Street. There is an 11 ft. left turn lane from Main Street to both Railroad Street and Circle Street. Goodman Street south of Main Street consists of a 20 ft. shared travel lane and shoulder in each direction. Goodman Street north of Main Street consists of two 11 ft. travel lanes and one 11 ft. travel/parking lane in the northbound direction. In the southbound direction, Goodman Street north of Main Street consists of one 11 ft. combination left/thru lane and two 11 ft. right turn lanes. On street parking is permitted along Goodman Street during certain times of the day. Goodman Street north of Hayward Street includes an 11 ft. thru lane, an 11 ft. combination thru/right turn lane and an 11 ft. right turn lane in the northbound direction. The southbound direction includes two 11 ft. thru lanes. On street parking is also permitted at certain times of the day within this section.

(3) Curb – Main Street and Goodman Street has 150 mm non-mountable curbs along both sides within the project limits. All of the existing curb along Main Street and Goodman Street and is in relatively good condition.

(4) Median – Main Street and Goodman Street do not have any curbed medians.

(5) Grades and curves - The maximum existing grade is approximately 6.00% for Main Street. The maximum existing grade is approximately 4.00% for Goodman Street south of

Main Street and 3.50% north of Main Street. The maximum existing grade along Railroad Street is 6.25% and 8% along Circle Street.

The Main Street horizontal alignment is generally composed of a series of tangents with a very long horizontal curve with a radius of approximately 1910 ft. The horizontal alignment along Circle Street consists of two curves with radii of approximately 385 feet and 150 feet.

(6) Intersection Geometry and Conditions – The intersection of Main Street and Goodman Street is a four-way signalized intersection. The intersection of Goodman Street, Webster Avenue and Garson Avenue is a five-way signalized intersection. The intersection of Main Street and Circle Street is a three-way signalized intersection while the intersection of Main Street and Railroad Street is controlled by a stop sign along the Railroad Street leg. The intersection of Goodman Street and Hayward Street is a four-way intersection with the Hayward Street legs controlled by stop signs.

There are many nearby roadside obstacles such as trees, hydrants, parking meters and utility poles within the intersection corridor that may restrict the visibility of motorists turning onto Main and Goodman Streets. It should be noted that in considering the existing intersection sight distances, a driver's eye location was placed at 14.4 ft (4.4 m) from the edge of traveled way, per AASHTO guidelines. When applying this theoretical sight distance, no significant sight distance issues were identified, although there are some incidental elements such as utility poles and trees located in the sight triangles. In reality, stopping the vehicle closer to the edge of traveled way generally alleviates the obstructed sight distance for side streets.

(7) Parking Regulations and Parking Related Conditions- There are several restrictions posted within the project limits. Parking is restricted along Main Street, Circle Street and Railroad Street within the project area. Along Goodman Street, parking is restricted in both directions from 7 am to 9 am and from 4 pm to 6 pm Monday thru Friday.

(8) Roadside Elements: The clear zone within the project limits is approximately 1-2 ft. from the edge of curb to a series of light poles, etc. along Main Street and Goodman Street.

There are sidewalks throughout the project and 10 driveways, mostly commercial, providing access to Main and Goodman Streets.

f. Abutting Highway Segments and Future Plans for Abutting Highway Segments

Main Street intersects Goodman Street at a four-way intersection. The easterly project limits continues Main Street and includes a 20 ft. travel lane and 5 ft. shoulder in each direction. The westerly project limits continues Main Street and includes two 11 ft. travel lanes with 5 ft. shoulder in each direction. Goodman Street south of the intersection with Main Street ends at the CSX Railroad R.O.W. North of the intersection with Garson Avenue, Goodman Street continues and includes one 11 ft travel lane and a 11 ft. travel/parking lane in each direction. Railroad Street continues to the west with a 14 ft. combined travel lane/shoulder in each direction while Circle Street ties into Goodman Street with a 13 ft. combined travel lane/shoulder in each direction. All roadway segments are owned and maintained by the City of Rochester.

There are no current plans to make any improvements to any highway segments immediately adjacent to the project.

g. Speeds and Delay

(1) Existing Speed Limit – The posted speed limit within the project limits is 30 MPH.

(2) Actual Operating Speed – A speed study will need to be conducted to determine the off-peak 85th percentile operating speed along Main Street and Goodman Street.

(3) Travel Speed and Delay Runs for Existing Conditions – Through field observations, it was determined that there are substantial delays to traffic traveling through the project limits. As a result, an overall intersection analysis was performed.

h. Traffic Volumes

The study area roadway system identified for investigation includes the portion of Main Street from Circle Street to just west of North Goodman Street and North Goodman Street between Main Street and Webster Avenue. All of these roadway sections are owned and maintained by the City of Rochester. The city speed limit of 30 mph applies to all roadways in the study area. Roadway

attributes, including Annual Average Daily Traffic (AADT), two-way peak hour volumes, one-way peak hour volumes, and cross section descriptions are listed in Table II-I. Daily and peak hour directional traffic volumes were obtained from the Monroe County Department of Transportation (MCDOT) database.

TABLE II-1
ROADWAY ATTRIBUTES

SEGMENT DESCRIPTION	AADT (Vehicles Per Day) / YEAR OF COUNT	TWO-WAY PEAK/ ONE-WAY PEAK (Vehicles Per Hour)	CROSS SECTION
Main Street east of N Goodman Street	15,948 vpd / 2005	1358 / 773	2 lanes eastbound, 2 lanes westbound
Main Street west of Alexander Street	22,360 vpd / 2005	1825 / 991	3 lanes eastbound, 3 lanes westbound
Goodman St north of Garson Ave	10,639 vpd / 1982	825 / 508	2 lanes northbound, 2 lanes southbound
Goodman St south of Garson Ave	17,542 vpd / 1985	1415 / 1030	2 lanes northbound, 2 lanes southbound
Goodman St north of Main Street	16,620 vpd / 2005	1353 / 732	2 lanes northbound, 3 lanes southbound
Webster Ave east of Goodman St.	6,636 vpd / 2006	575 / 357	1 lane northbound, 1 lane southbound
Webster Ave north of Garson Ave	7,405 vpd / 1985	637 / 487	1 lane northbound, 1 lane southbound
Garson Ave west of Baldwin Street	1,696 vpd / 1985	156 / 106	1 lane eastbound, 1 lane westbound
Circle St south of Main St	7,560 vpd / 2006	630 / 338	1 lane northbound, 1 lane southbound
Railroad St north of Main St	2,195 vpd / 2006	240 / 139	1 lane northbound, 1 lane southbound

Seven (7) existing intersections are studied and analyzed in detail for this report as follows:
Main Street/N Goodman Street (S)
Main Street/Circle Street (S)
Main Street/Railroad Street (U)
N Goodman Street/Hayward Avenue (U)
N Goodman Street/Garson Avenue (S)
Garson Avenue/Webster Avenue (S)
N Goodman Street/Webster Avenue (S)
(S) = Signalized, (U) = Unsignalized

EXISTING TRAFFIC CONDITIONS

Weekday AM (7:00-9:00am) and PM (4:00-6:00pm) peak commuter traffic counts were collected by SRF & Associates at the following intersections on November 13, 2007: N Goodman Street/Hayward Avenue, N Goodman Street/Garson Avenue, Garson Avenue /Webster Avenue and N Goodman Street /Webster

Avenue. Data collection included heavy vehicle counts as well as pedestrian counts. Recent counts (Oct 2006) at Main Street/N Goodman Street, Main Street/Circle Street and Main Street/Railroad Street intersections were obtained from MCDOT.

All traffic volumes were found to balance within the network within reasonable and expected variations. The peak hour traffic periods generally occurred between 7:30 to 8:30 AM and 4:30 to 5:30 PM. The existing peak hour volumes are depicted in Figure II-3**.**

All intersections included in the project area were observed during peak intervals to assess existing traffic operating conditions at each intersection. Signal timing information was collected to determine peak hour phasing plans and phase durations during each interval. This information was used to support and/or calibrate capacity analysis models.

A review of historical traffic volume data indicates that traffic has grown very little, if at all, over the last 20 years. To account for normal increases in background traffic growth, including any unforeseen developments in the project study area, a growth rate of 0.5% per year has been applied to the existing traffic volumes in the study area for the 23- year (2030) analysis period. The future 2030 peak hour volumes are depicted in Figure II-4.

i. Level of Service

Traffic Signal-Controlled Intersections:

There are three traffic signal-controlled intersections within the study area:

- Main Street and Circle Street
- Main Street and North Goodman Street
- North Goodman Street and Garson Street/Webster Avenue.

Capacity analysis is a technique used for determining a measure of effectiveness for a section of roadway and/or intersection based on the number of vehicles during a specific time period. The measure of effectiveness used for the capacity analysis is referred to as a Level of Service (LOS). Levels of Service are calculated to provide an indication of the amount of delay that a motorist experiences while traveling along a roadway or through an intersection. Both roadway section and intersection capacity analyses have been performed.

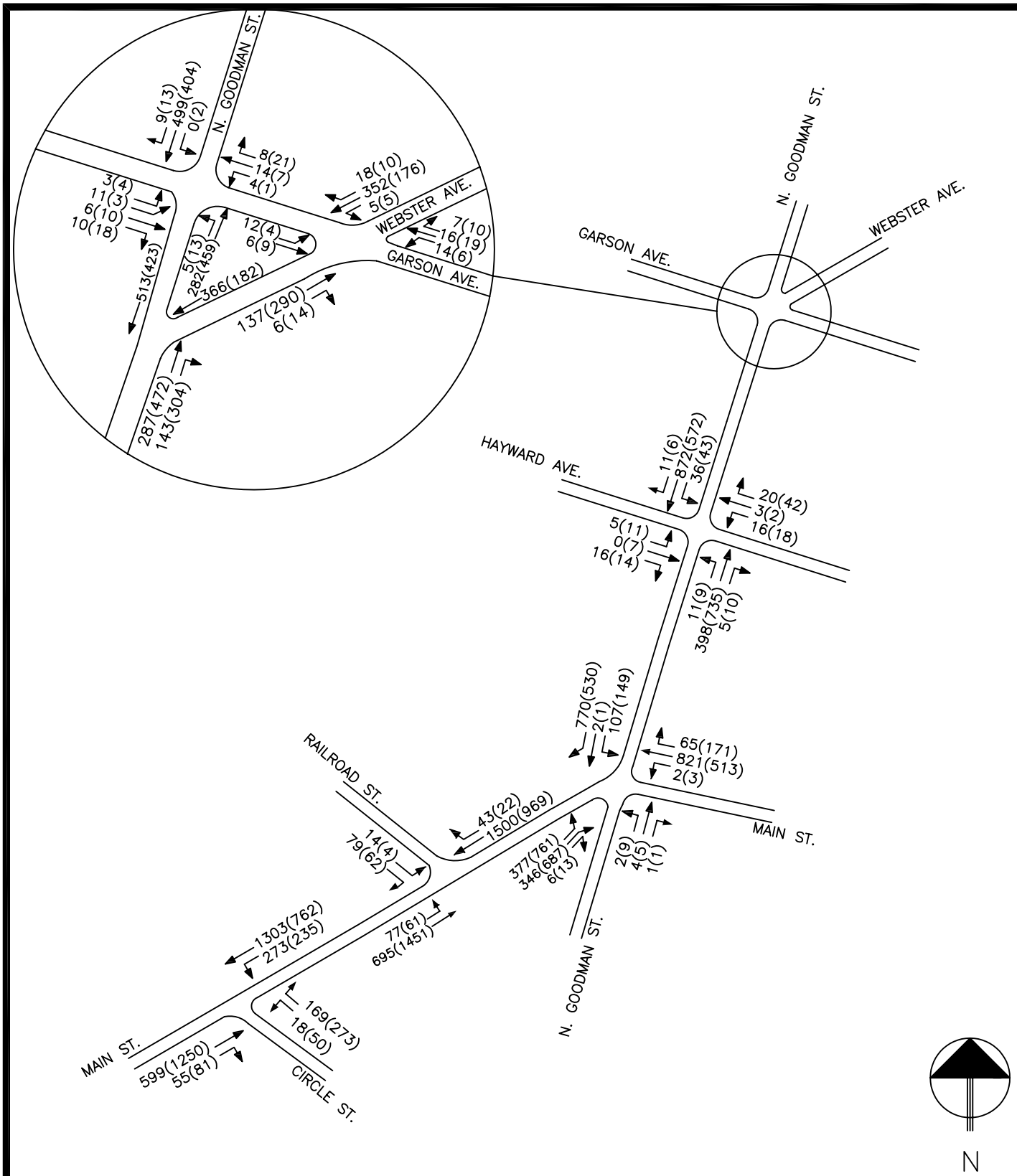


FIGURE II-3

MAIN & GOODMAN

PEAK HOUR VOLUMES
2007 EXISTING CONDITIONS

CITY OF ROCHESTER
MONROE COUNTY, NEW YORK

KEY

00(00) = AM(PM)

SRF ASSOCIATES
WWW.SRFA.NET
Traffic Engineering & Planning Consultants

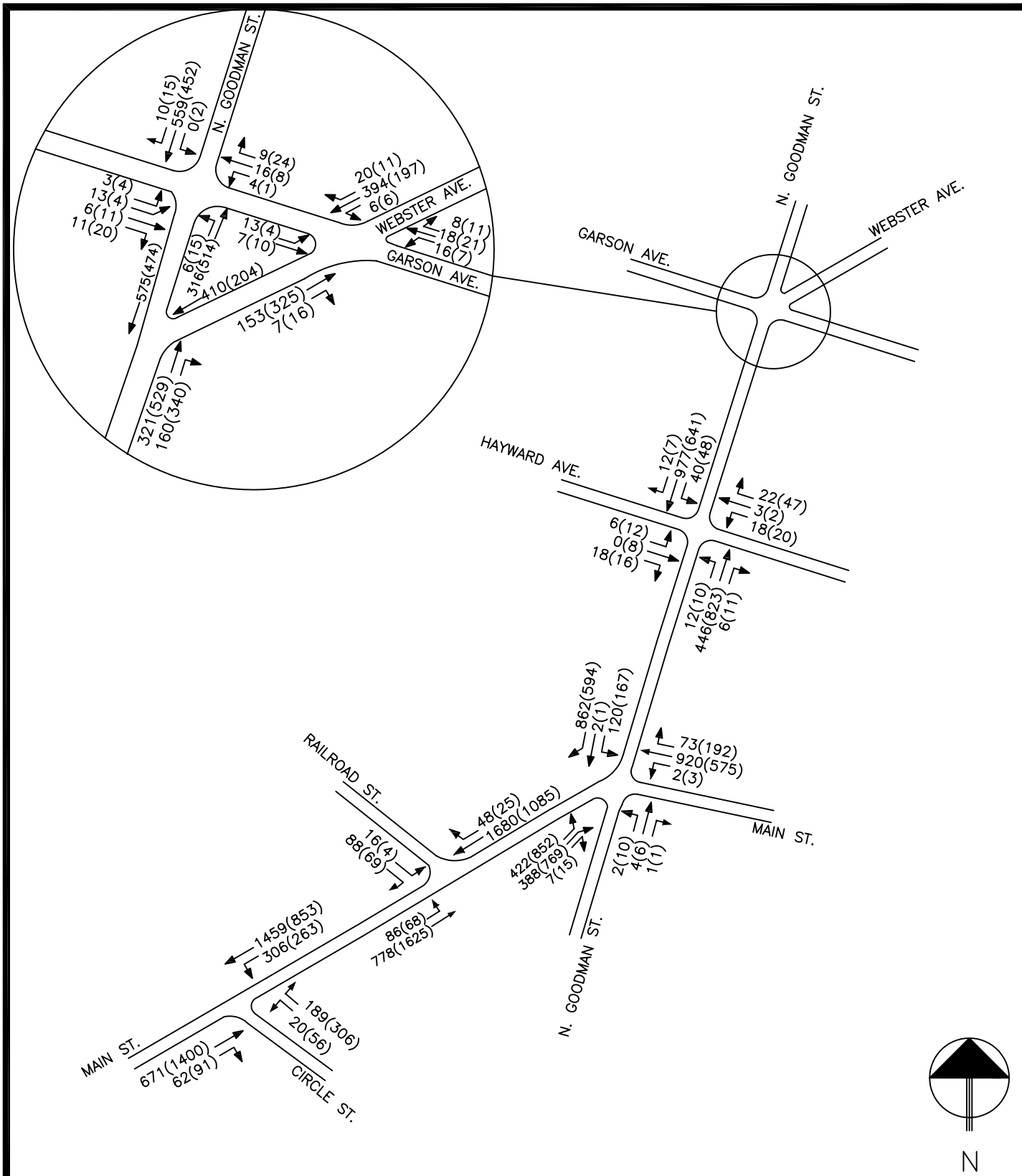


FIGURE II-4

MAIN & GOODMAN

PEAK HOUR VOLUMES
2030 FUTURE CONDITIONS

CITY OF ROCHESTER
MONROE COUNTY, NEW YORK

KEY

00(00) = AM(PM)

SRF ASSOCIATES
WWW.SRFA.NET
Traffic Engineering & Planning Consultants

Six Levels of Service are defined for analysis purposes. They are assigned letter designations, from "A" to "F", with LOS "A" representing operating conditions with the least time delay. LOS "F" is the least desirable operating condition where longer delays are experienced by motorists. Suggested ranges of service capacity and an explanation of Levels of Service are included in the Appendix.

The standard procedure for capacity analysis of signalized and unsignalized intersections is outlined in the 2000 Highway Capacity Manual (HCM 2000). Traffic analysis software, SYNCHRO (Build 761), which is based on procedures and methodologies contained in the HCM 2000, was used to analyze operating conditions at study area intersections. The base SYNCHRO files were provided by MCDOT and were updated accordingly with current and future traffic volumes. The procedure yields a Level of Service (LOS) based on the HCM 2000 as an indicator of how well intersections operate.

Existing operating conditions were documented in the field and modeled using traffic analysis software. The traffic analysis models were then calibrated based on the actual field observations (i.e. signal timings, peak hour factors, heavy vehicle percentages). All capacity analysis calculations are included in the Appendix**.**

All existing study intersections on Main Street (Circle Street, Railroad Street and N Goodman Street), North Goodman Street (Hayward Ave, Garson St and Webster Ave) and Webster Ave/Garson St. intersection are currently operating at LOS "D" or better on all movements during both peak periods with the exception of the southbound through movement on Webster Avenue at Garson Street which operates at LOS "E" during the AM peak. Significant queuing occurs on both Main Street and Goodman Street during the peak hours as follows:

- During the morning peak hour the westbound queues on Main Street exceed 350 feet (or 14 vehicles) at both Circle Street and North Goodman Street.
- Southbound queues on North Goodman Street exceed 225 feet (or 9 vehicles) in the right turn lanes.
- The southbound queue on Webster Avenue at Garson Street exceeds 375 feet (or 15 vehicles).
- During the PM peak hour, the most significant queuing occurs on Main Street in the eastbound direction at both Circle Street and North Goodman Street. At Circle Street the queuing exceeds 550 feet (or 22 vehicles) and 375 feet (or 15 vehicles) at North Goodman Street.
- Queuing on North Goodman St is not significant with the

greatest queuing (less than 200 ft) occurring on the southbound approach of Webster Ave at Garson St.

Stop-Controlled Intersections

Level of Service for stop-controlled intersections is defined in terms of delay. Stop-controlled approach and/or movement Level of Service below "e" is generally considered unacceptable. For a stop-controlled intersection with a movement and/or approach below "e" indicates that the average delay per vehicle will exceed 50 sections. The following is a complete break down for each Level of Service Threshold:

a – (</ - 10.0 sec)
b – (10.1 to 15.0 sec)
c – (15.1 to 25.0 sec)
d – (25.1 to 35.0 sec)
e – (35.1 to 50.0 sec)
f – (>/ 50.1 sec)

In accordance with Monroe County standards, an LOS "C" is desirable and an LOS "D" is acceptable.

By observation, it was determined that the Railroad/Main and Hayward/Main intersections currently operate at an acceptable level of service and will continue to do so in the future.

j. Non-Standard Features and Other Non-Conforming Features

The geometric roadway features within the study limits were evaluated in accordance with current design policies in Chapter 2 of the NYSDOT Highway Design Manual, AASHTO's "A Policy on Geometric Design of Highways and Streets, 2004. In order to assess the roadway features, an appropriate design speed must be established to determine whether the features meet current design standards.

The Design Speed for the project area is based on the maximum regulatory speed limit for the area. Based on this information, a design speed of 30 mph is recommended.

(1) The following is a list of non-standard features within the study area.

Stopping Sight Distance: The minimum stopping sight distance according to the NYSDOT Standards is approximately 215 ft. The vertical curve over the existing CSX Railroad

tracks has a stopping sight distance of Approximately 200 ft.

Horizontal Clearance: The minimum horizontal clearance to obstruction (measured from the face of curb) is 1.6 ft. There are no fixed objects located within this area but numerous light poles, signs and hydrants are located within this area.

(2) Other Non-Conforming Features – There are no existing non-conforming features within the project limits.

k. Safety Considerations, Accident History and Analysis

Accident reports for the intersections within the study area were investigated to assess the safety history. The accidents included in the current review collectively covered a three-year time period from September 2004 through August 2007. The data were provided by the City of Rochester Police Department. During this period, 109 total accidents were documented at the intersections along E. Main Street and N. Goodman Street included in the study area; of which 41 were reportable, 17 non-reportable and 51 unknown accidents.

The accident history was further investigated to identify high incident areas. Table II-2 summarizes accidents occurring at each study intersection along E. Main Street and N. Goodman Street. Based on the number of accidents at each intersection along E. Main Street and N. Goodman Street, accident rates were calculated and compared to the countywide average for similar facilities. The calculated rates and comparison to countywide averages are also summarized in Table II-2. Accident rate calculations are included in the Appendix. Intersection rates are listed as accidents per million entering vehicles (ACC/MEV).

TABLE II-2
SUMMARY OF ACCIDENTS AND COMPARISON OF RATES

Intersection	Total No. of Accidents	Actual Project Rate	County Wide Average Rate
1. E Main Street / Circle Street	3	0.10	0.46
2. E Main Street / Railroad Street	1	0.04	0.21
3. E Main Street / N Goodman Street	23	0.74	0.46
4. N Goodman Street / Hayward Avenue	4	0.25	0.21
5. N Goodman Street / Garson Avenue	7	0.44	0.32

There were two additional on-street parking related accidents along the N. Goodman Street segment between E. Main Street and Hayward Avenue and one pedestrian related accident along the E. Main Street segment between Circle Street and Railroad street that were not included in the accident rate calculation.

Accident (collision) diagrams have been produced for the intersections in the study area along E. Main Street and N. Goodman Street and are used to identify specific clusters or accident patterns. An assessment of the information illustrated in the diagrams and Table II-2 may indicate accident trends or specific causes for the identified accident clusters.

Intersections 1 and 2 (E. Main Street/Circle Street and E. Main Street/Railroad Street) had a relatively low frequency of accidents (3 or less over the three-year time period) and low accident rates compared to the countywide average. The remaining intersections exhibiting greater than 3 accidents with accident rates that exceed the countywide average rate over the assessment period are discussed in detail below:

E. Main Street /N. Goodman Street

A total of twenty three (23) accidents were documented during the investigation period (3 years). The calculated accident rate is 61% higher than the countywide average for other similar 4-legged intersections. The majority of accidents involved rear-end (11) collisions. The remaining accidents were categorized as bicycle (2), fixed object (4), overtaking (1), pedestrian (1), right turn (1), side

swipe (1), and left turn (1) collisions. Notable accident clusters at this location include:

11 rear end collisions (6 on eastbound approach, 3 on southbound approach, 1 on westbound approach and 1 on northbound approach)

These rear end collisions can be attributed to the high traffic volumes and queuing that primarily occurs on the eastbound and southbound approaches.

N. Goodman Street/Hayward Avenue

A total of four (4) accidents were documented during the investigation period (3 years). The calculated accident rate is 19% higher than the countywide average for other similar 4-legged unsignalized intersections. The accidents were categorized as right angle (1), rear-end (1), bicycle (1), and pedestrian (1) collisions.

N. Goodman Street/Garson Avenue

A total of seven (7) accidents were documented during the investigation period (3 years). The calculated accident rate is 38% higher than the countywide average for other similar 4-legged intersections. The majority of accidents involved rear-end (5) and pedestrian (2) collisions. Notable accident clusters at this location include:

5 rear end collisions (3 on southbound approach and 2 on northbound approach)

l. Pavement and Shoulder Conditions

The Main Street pavement structure within the project limits was reconstructed in 1989. The 1989 construction documents indicate that the pavement section from west of Circle Street to approximately 280 ft. east of Goodman Street included full depth reconstruction. The pavement section consists of a $10^{1/2}$ inch asphalt pavement section with 12 inches of subbase material. From the point where the reconstruction ended, the remaining portion of Main Street was resurfaced with a $2^{1/2}$ inch overlay. As part of the 1989 bridge/road project, Goodman Street was reconstructed from south of Main Street and resurfaced north of Main Street. The same pavement sections used on Main Street for reconstruction and resurfacing were also employed on Goodman Street. Portions of Circle Street and Railroad Street were also reconstructed using the above mention pavement thicknesses. At this time, no pavement cores have been performed do to the uncertainly of the fund-

ing for the project. Should funding become available, pavement cores will need to be performed immediately to verify the pavement section and subbase condition. This will provide a more analytical analysis to the pavement structure.

In general, the pavement rideability along Main Street is average to above average. Minor rutting is beginning to occur at the intersection of Main/Goodman in all legs except along Goodman Street south of Main Street. The pavement surface exhibits longitudinal cracking along a majority of the pavement joints with minor areas of alligator cracking beginning to develop. Areas of transverse cracking are also present with a few areas of raveling located at the intersection of Goodman Street and Garson Street. It should be noted that a majority of the cracks have been sealed under the City maintenance program. The asphalt pavement surface on the adjacent local streets is in generally fair to good condition. However, the pavements on these streets do show signs of unevenness and cracking. The pavement stripes in the project area vary from good to average with the cross walks in poor condition.

Based on the visual inspection of the asphalt pavement surfaces, it has been concluded that a majority of the existing pavement structure does not need to be reconstructed. Areas near the intersection of Main/Goodman Street will need to be reconstructed to remove the areas of rutting.

m. Guide Railing, Median Barriers and Impact Attenuators

Bridge railing and box beam railing exist along and adjacent to the Main Street Bridge over the CSX Railroad tracks. The box beam railing is in generally good condition with areas of rust beginning to form.

n. Traffic Control Devices

There are three signalized locations within the project limits. The Main Street/Goodman Street intersection and the Main Street/Circle Street intersection was updated under contract D500799. The intersection of Goodman Street and Webster St. /Garson Avenue is also signalized. All three signalized intersection are currently maintained by the Monroe County Department of Transportation.

Traffic on Railroad Street and Minges Alley are controlled by STOP signs as they intersect with Main Street. Traffic on Hayward Avenue is controlled by a STOP sign as it intersects with Good-

man Street. Traffic on Bragg Alley is controlled by STOP sign as it intersects with Railroad Street.

o. Structures

1) Description
Bridge:

Structure Type:	Single Span, Plate Girder, Multi Girder
Structure Length:	116 ft.
Spans:	Single
Curb to Curb Width:	65 ft.
Out to Out Width:	82.7 ft.
Travel Lanes:	4 @ 11 ft.
Curb Offset:	5 ft. each side
Sidewalks:	8 ft. each side
Skew:	37 degrees
Special Features Carried:	none

Approaches:

The travel approaches to the bridge consist of two 11 ft. travel lanes and one 5 ft. curb offset in each direction. Sidewalk is located on both sides of the roadway, with a width of 8 ft. There is a vertical crest curve located on the bridge with a grade of +6.0% to the west and -6.0% to the east. The existing stopping sight distance is approximately 200 ft.

2) Clearances: The clearances associated with the span over the CSX tracks are:

Vertical Clearance: 27.52 ft.

Horizontal Clearance: 26.5 ft.

3) History and Deficiencies: The Bridge was built in 1990. There are currently no issues with the bridge as of the last biennial bridge inspection dated 10/16/2006.

4) Inspection:

NYSDOT Condition Rating: 5.266 (10/16/2006)
Last Inspection Date: 10/16/2006
Posted Load: NA
NYSDOT General Recommendation: 6

New York State Condition Ratings are weighted averages of the individual bridge components. The ratings reflect the bridge's ability to function structurally. Rated on a scale of 1 through 7, structures rated 5 or less are considered deficient and should be programmed for either rehabilitation of replacement.

1 Totally deteriorated or in failed condition.

2 Used to shade between ratings of 1 and 3.

3 Serious deterioration or not functioning as originally designed.

4 Used to shade between ratings of 3 and 5.

5 Minor deterioration but functioning as originally designed.

6 Used to shade between ratings of 5 and 7.

7 New condition; no deterioration.

8 Not applicable.

9 Condition and/or existence unknown.

Abutments: They are in good shape with no known problems. They are rated a 6.

Wingwalls: Wingwalls are generally solid and are rated 6 and 7.

Approaches: The approach pavement is in fair condition and rated 5. The guide railing is rated 6 (good condition).

Deck Elements: The concrete sidewalk and fascias are in good shape. The sidewalk and fascia is rated 5.

Superstructure: The underside of the deck slab is in fair to good shape. The overall superstructure recommendation is a 6.

Utilities: The electric and telephone is in good condition and both rated 6.

5) Restrictions: There are no restrictions in place.

6) Future Conditions: NA

7) Waterway – The Bridge does not cross a waterway.

p. Hydraulics of Bridges and Culverts

There are no bridges or culverts that direct stormwater runoff in the project area.

q. Drainage Systems

Record plans indicate that stormwater runoff along Main Street west of the bridge over the CSX tracks is captured by catch basin inlets that ultimately flow to an existing 15" combined sanitary and storm sewer that flows west along Main Street. Stormwater runoff along Main Street east of the bridge over the CSX tracks is captured by catch basin inlets that ultimately discharge to an existing stone box tunnel combined sanitary and storm sewer that flows north along Goodman Street. Stormwater water runoff along Goodman Street is captured by catch basin inlets that discharge to the existing stone box tunnel combined sanitary and storm sewer that flows north along Goodman Street. Drainage inlets are generally in fair condition but many of them are filled with silt and debris.

r. Geotechnical Conditions

There are no unusual soil conditions.

The pavement boring program has not been completed as of this report. As the project development within the corridor progresses, pavement borings shall be conducted to determine the condition of the existing pavement section and whether any changes should be made.

s. Utilities

The following utilities are within the project limits:

Frontier | Citizens Com Monroe

City of Rochester – Water Bureau

Rochester Gas and Electric - Underground gas mains and electric throughout entire project area

Time Warner Cable | Rochester

Monroe County Pure Waters – Sanitary

Monroe County Department of Transportation – Traffic Signals

t. Railroads

There are four CSX Railroad Tracks that are located under the Main Street Bridge.

u. Visual Resources

The project corridor can be generally characterized as an environment that is urban with dense commercial development and several asphalt parking areas. A large green space is located in the southwest quadrant of the Main/Goodman Street intersection. The Main/Goodman and Main/Circle intersections were reconstruction in 1989 which included a new bridge and new pavement sections.

v. Provisions for Pedestrians and Bicyclists

Sidewalks in the project area extend on both sides of all streets within the project corridor. All of the sidewalk along Main Street, Circle Street and portions of Goodman Street were replaced during the reconstruction project in 1989.

Bicyclists are permitted to share the travel lanes/shoulders with vehicles on all streets within the project corridor.

Providing safe routes of travel for cars, bicycles, and pedestrians is a responsibility and priority for all communities. The safety of the Pedestrian Realm (the area between buildings and the edge of the travelway) is appraised based on factors such as sidewalk width

and quality, and the presence of a buffer zone, sometimes called the tree-lawn or the furnishings and edge zones. Pedestrian safety factors present in the travelway include crosswalk length and quality and presence (or absence) of medians as well as the type of median. Bicycle safety is judged on presence or absence of a dedicated bicycle facility, shared lane widths including the on-street parking lane, and the amount of space a cyclist needs to safely maneuver. Other considerations which affect bicycle safety are speed limit, average annual daily traffic (AADT) volumes, percent heavy traffic, number of driveways, and any obstructions to the public realm, including overgrown landscaping and road grates. Table III-4 provides an overview of these features for the Main/Goodman intersection study.

Highways can also be evaluated to determine their user friendliness as it relates to bicycle or pedestrian users as opposed to the traditional motor vehicle. The most common measure of effectiveness used for vehicular traffic, level of service (LOS), is based on capacity of the roadway and delay incurred by motorists. Levels of service can also be calculated for bicyclists and pedestrians using the same highway by considering the users' comfort level with the highway as it relates to buffer areas, sidewalk widths, vehicular volumes and speeds, landscaping, obstructions, conflicts, crossing opportunities, etc. These features are some of the factors that are used in evaluating the bicycle and pedestrian levels of service and compatibility levels. Levels of service for pedestrians and bicyclists can be compared to those used to describe intersection operating conditions where LOS A and B generally describe above average conditions, C and D describe acceptable roadway performance, and E and F describe deficient facilities. It is important to note that not all roadways in a community should be expected to operate at LOS A or B which indicates a performance level well above average. LOS A or B may be expected in locations such as college campuses, downtowns, tourist centers, and activity centers. LOS ratings of E and F describe degrees of unacceptable performance. Table II-3 summarizes the ranges for each level of service.

TABLE II-3
PEDESTRIAN & BICYCLE LEVEL OF SERVICE RANGES

Level-of-Service	Model Score
A	≤ 1.5
B	> 1.5 and ≤ 2.5
C	> 2.5 and ≤ 3.5
D	> 3.5 and ≤ 4.5
E	> 4.5 and ≤ 5.5
F	> 5.5

The Level of Service/Compatibility analyses, summarized in Table II-4, were developed using a calculator located on the League of Illinois Bicyclists webpage[1]. The results indicate that all roadways in the study area provide adequate pedestrian LOS except for Main and Circle which has an average LOS and moderate compatibility. The analytical results for bicycles show very low and extremely low levels of compatibility for bicyclists throughout the study area. This is due, in part, to the lack of paved shoulders or marked parking widths, relatively high average daily traffic (ADT) rates, and heavy vehicle volumes also factor heavily into the inadequate LOS for all intersections.

TABLE II-4
BICYCLE AND PEDESTRIAN LEVEL OF SERVICE

Bicycle & Pedestrian LOS Indicators	E. Side of Circle S. of Main	Railroad N. of Main	Main Between Circle & Railroad	Main S. of Goodman	Goodman N. of Hayward	Hayward W. of Goodman	Webster N. of Garson	Garson W. of Goodman
Lanes Per Direction	1	1	2	2	2	1	1	1
Outside Lane Width (ft)	10	15	17	8	8	20	8	12
Paved Shoulder/Marked Parking width (ft)	0	0	0	0	0	0	0	0
ADT	7560	1550	25210	16170	14090	8940	4950	8940
Posted Speed Limit (mph)	30	30	30	30	30	30	30	30
Heavy Vehicle Percentage	8	8	8	8	10	10	10	10
FHWA's pavement condition rating	3	3	3	3	3	3	3	3
% of segment w/occupied parking	0	91	0	0	100	80	0	86
% of segment w/sidewalks	100	91	100	100	100	80	100	86
Sidewalk width (ft)	10	8	5	8	8	8	8	8
Sidewalk buffer/parkway width (ft)	0	0	0	0	0	8	0	8
PLOS RESULTS	**C – 2.75**	**B - 1.68**	**C - 3.35**	**B - 2.85**	**B - 2.26**	**B - 2.5**	**C- 2.55**	**C- 2.59**
BLOS RESULTS	**F – 5.62**	**E - 5.15**	**E - 4.94**	**F- 5.66**	**F - 6.61**	**F- 6.03**	**F- 6.13**	**F- 6.69**

[1] http://www.bikelib.org/roads/blos/index.htm

The existing pedestrian levels of service are average to above average given the availability of sidewalks throughout the study area. The lack of adequate bicycle facilities results in low bicycle levels of service on the order of LOS "E" and "F" throughout the study area. Factors such as high volumes of traffic, narrow outside lanes with no provisions for bicycles, many heavy vehicles, and the lack of sidewalk buffers prevent bicyclists from using the roads comfortably.

w. Planned Development for Area

There is no known private or planned development plans in the area that this project would affect or that would affect the project at the present time.

x. System Elements and Conditions

This project should not have any effect on any other transportation projects. There are no known system deficiencies associated with this project.

y. Public Input

This study will include public input process including the formation of a Citizen's Advisory Group.

2. Needs

a. Project Level Needs

(1) Pavement Needs – As described in section II.C.1.l., the pavement exhibits several different types of distress. Travel lanes, at intersections, exhibit wheelpath rutting and cracking in several areas throughout the project length. Probable causes of these deficiencies could include inadequate asphalt thickness, inadequate subbase, or inadequate subsurface drainage and high traffic rates. Without proper attention, the road will continue to degrade, becoming unsafe for motorists, bicyclists, and pedestrians.

(2) Drainage Needs – Existing curb reveal is adequate throughout the project corridor and effectively directs stormwater runoff to the existing catch basins. However, many of the catch basins within the project corridor are "silted in" and can not discharge the stormwater runoff to the existing storm sewer systems. There have been no reported incidents of flooding within the project corridor and no documented structural deficiencies with the combined sewer systems.

b. Area or Corridor Level Needs

(1) System Needs – The Main Street and Goodman Street intersection is an important link between the downtown por-

tions of the City and the northern portions of the City for the traveling public. There are no system deficiencies in the area that will affect this project.

(2) Mobility Needs – Currently, BIN 2211350 does not have any postings associated with it. There is no additional needs for Intelligent Transportation Systems (ITS), or Transportation System Management (TDM) improvements within project limits.

(3) The Main Street/Goodman Street intersection is primarily a commercial area. No new development is expected, but periodic redevelopment may occur. It is important to provide for access for pedestrian and vehicular traffic volumes along the corridor while minimizing negative impacts that may occur to adjacent private properties.

c. Transportation Plans

This project is not included in any of the State funding mechanisms. The project is not part of an approved Congestion Management System or Major Investment Study.

D. Project Objectives

1. Provide design concepts that address the poor pedestrian infrastructure within the project corridor using cost effective treatments.

2. Provide alternatives that remove the perceived barrier to social interaction between the three neighborhoods located adjacent to the project corridor.

3. Restore the intersection as an urban village center to the extent possible, without changing the overall characteristics of the area.

4. Provide improvements that are consistent with the character of the neighborhoods.

III. ALTERNATIVES

A. Design Criteria

1. Design Standards - NYSDOT Highway Design Manual Chapter 2, City of Rochester Design Standards and Monroe County Highway Geometric Design Standards
2. Critical Design Elements

TABLE III-1
ROADWAY DESIGN CRITERIA

PIN:	NA	NHS (Y/N):	No
Route No. & Name:	Main Street and Goodman Street	Functional Class:	Local Urban Street
Project Type:	Planning	Design Classification (AASHTO Class)	Urban
% Trucks	2	Terrain:	Level
AADT:	22,360 VPD Main; 17,542 VPD Goodman	Truck Access Rte.:	Not a Qualifying Highway

	Element	Standard Criteria	HDM § Reference	Existing Conditions
1	Design Speed (See Note)	30-50 km/h	2.7.4.2 A	30 mph
2	Lane Width	3.0 m to 3.3 m	2.7.4.2 B	3.0 m to 3.6 m
3	Shoulder Width:	0.0 m to 1.5 m	2.7.4.2 C	Varies 0.0 m to 1.5 m
4	Bridge Roadway Width (total) = Lane = Left Shoulder = Right Shoulder =	NA	2.7.4.2 D	NA
5	Grade	8% max.	2.7.4.2 E	6%
6	Horizontal Curvature	86 m @ e=4.0%	2.7.4.2 F	582.09 m @ e= 4%
7	Superelevation Rate	4.0 % maximum	2.7.4.2 G	2.0% maximum*
8	Stopping Sight Distance (Horizontal & Vertical)	65 m minimum	2.7.4.2 H	65 m
9	Horizontal Clearance Without barrier With Barrier	 0.5 m 0 m	2.7.4.2 I	 0.5 m 3.0 m
10	Vertical Clearance	4.3 m minimum	2.7.4.2 J	NA
11	Pavement Cross Slope	2%	2.7.4.2 K	2.0%
12	Rollover – between lanes = at edge of traveled way =	 4.0 % max 8.0 % max	2.7.3.2 L	 4.0 % max 8.0 % max
13	Structural Capacity - Replace = Rehabilitation =	MS 23 MS 20	2.7.3. 2 M	MS 20
14	Control of Access	Full	2.7.1.1 O	Full
15	Pedestrian Accommodations	NA	NA	NA
16	Median Width	1.2 m	2.7.17	NA

B. Alternatives Considered

Project alternatives were developed to meet the project objectives. The alternatives were developed using the engineering design criteria in Section III.A of this report. All reasonable alternatives were considered.

The range of alternative solutions considered includes:

The "Null" Alternative: The Null Alternative provides for only the evaluation of traffic operation, accident patterns and pedestrian impacts for the intersections in their current configuration.

Alternative #1 – Minimal Modifications (Road Diet): This Alternative evaluates traffic operation, accident patterns and pedestrian impacts for a minimal set of intersection improvements. The improvements include channelization, restriping, Signal timing/Phase modifications, pedestrian islands and intersection bumpouts. These improvements shall be accomplished without major modifications to the existing curb alignments or roadway profiles.

Alternative #2 – Roundabout: This Alternative would also evaluate traffic operation, accident patterns and pedestrian impacts for reconfiguration of the intersection to a roundabout. This alternative will need to consider grades and cross slopes to determine whether a roundabout is feasible and safe within the grade changes that must occur through this intersection. The affects on Railroad Street will also need to be included.

Alternative #3 – Major Realignment: This Alternative would also evaluate traffic operation, accident patterns and pedestrian impacts for a major reconstruction and realignment of the intersection to create a favorable alignment of East Main Street to the west of the intersection with North Goodman Street to the north of the intersection.

C. Feasible Alternatives

1. Description of Feasible Alternatives

This project is still within the planning phase and as a result, all of the Alternatives listed above are still considered to be feasible should funding become available. The following section will provide a more detailed evaluation for each of the options associated with the alternatives listed above. Nine different options using 2030 future volumes were analyzed in detail for this study. They include the following:

The "Null" Alternative

2030 Future No Build (Figure III-1) – traffic volumes increase with no modifications to the existing roadways and/or traffic control devices.

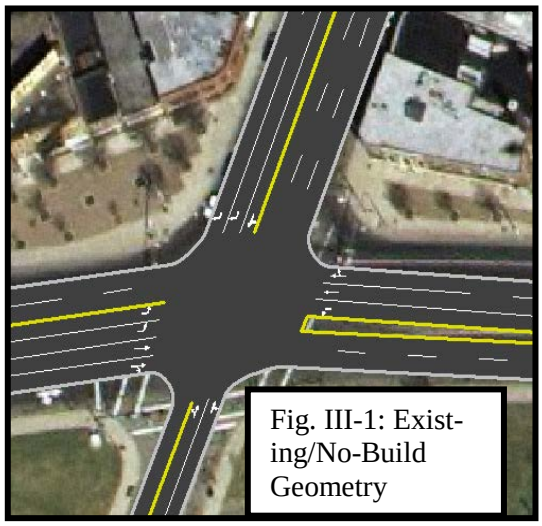


Fig. III-1: Existing/No-Build Geometry

Alternative #1 – Minimal Modifications (Road Diet)

All four of the options associated with Alternative #1 were modeled using the 2030 future traffic volumes. Alternative #1 – Option A (Figure III-2) maintains the existing roadway alignment at the Main Street/North Goodman Street intersection. The proposed geometry includes eastbound: one exclusive left turn lane, one shared left/through lane, and one shared right/through lane; westbound: two through lanes with shared left and right turns; southbound: one exclusive

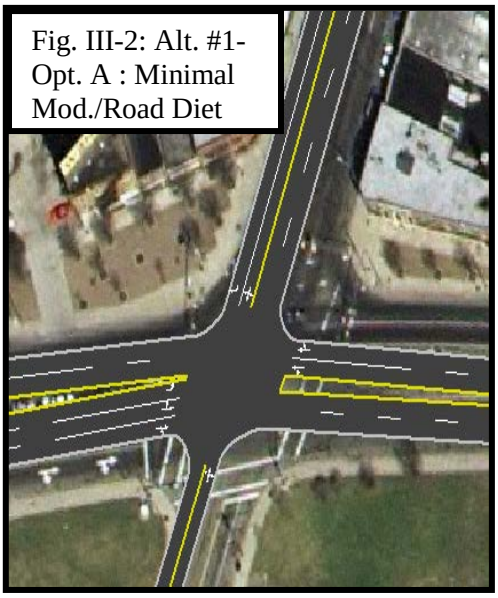


Fig. III-2: Alt. #1-Opt. A : Minimal Mod./Road Diet

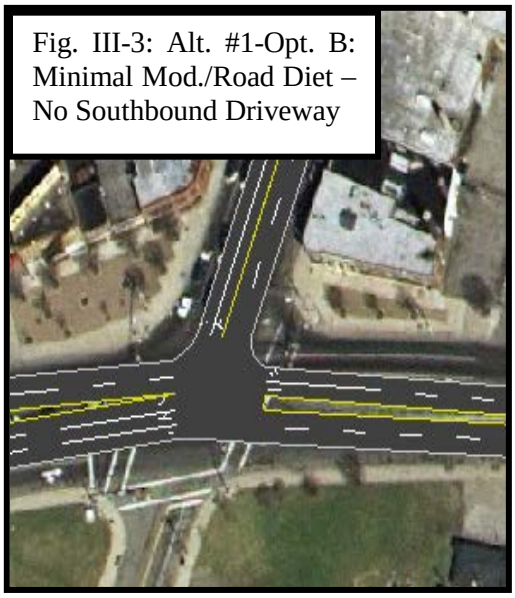


Fig. III-3: Alt. #1-Opt. B: Minimal Mod./Road Diet – No Southbound Driveway

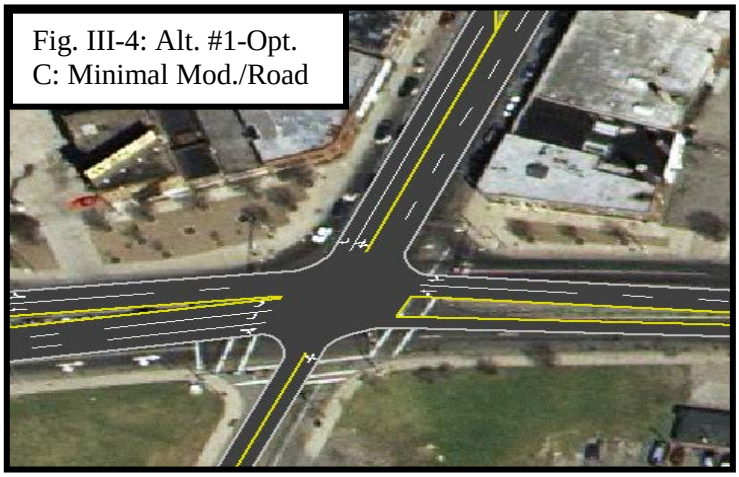


Fig. III-4: Alt. #1-Opt. C: Minimal Mod./Road

right turn lane and one shared left/through/right turn lane; northbound: one shared left/through/right turn lane. Alternative 1 was also analyzed without the southbound driveway leg (Alternative #1 – Option B; Figure III-3) so that it could be compared directly to the re-alignment alternatives (Alternative 3). Comparing this to the existing conditions, this alternative effectively eliminates one travel lane on every approach.

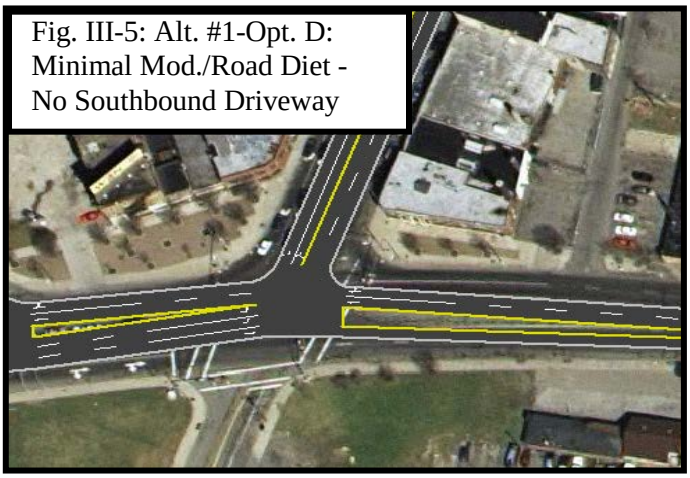


Fig. III-5: Alt. #1-Opt. D: Minimal Mod./Road Diet - No Southbound Driveway

Alternative 1 – Option C, (Figure III-4) was also modeled with a slightly different geometry than what is proposed in Alternative 1 - Option A. The change in geometry includes: eastbound two exclusive left turn lanes and one shared right/through lane; the other approaches are the same as shown in the Option A geometry. Option C was also analyzed without the southbound driveway leg: Alternative 1 – Option D (Figure III-5).

Alternative #2 - Roundabout

Alternative 2 (Figure III-6) evaluates the feasibility and capacity of a roundabout at the Main Street/North Goodman Street intersection using the 2030 future traffic volumes.

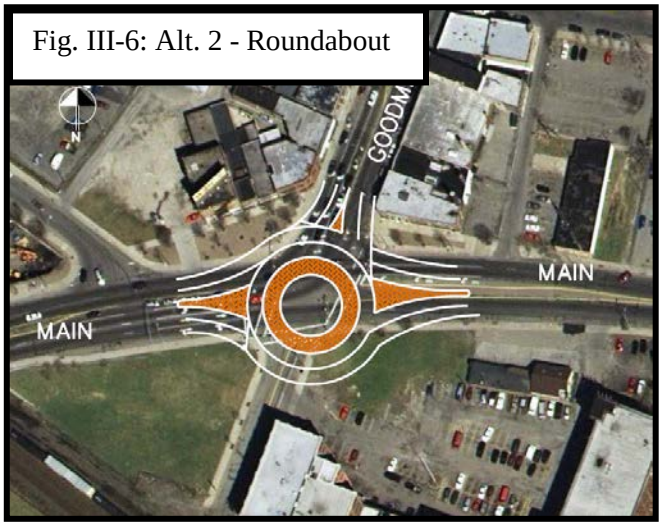


Fig. III-6: Alt. 2 - Roundabout

Alternative #3 - Major Realignment

All four of the options associated with Alternative #3 were also modeled using the 2030 future traffic volumes. Alternative #3 – Option A (Figure III-7) uses the re-alignment alternative developed by the Bridging Neighborhoods Group with the lane configuration as shown in the sketches. Main Street eastbound (which becomes more of a northbound movement) has one through lane and one shared through and right turn lane, Main Street westbound has one left turn lane and one shared left and right turn lane, and North Goodman Street southbound has

one through lane and one shared through and left turn lane. Although the sketches developed by the Bridging Neighborhoods Group show a median on Main Street instead of left turn lanes at both Railroad and Circles Streets, this is not an option at these two intersections due to the high traffic volumes on Main Street, high left turn volume at Circle Street, limited sight distances and safety concerns for turning motorists. It should be noted that this alternative requires the removal of the existing roadway/driveway on the south side of the Main/Goodman Street intersection.

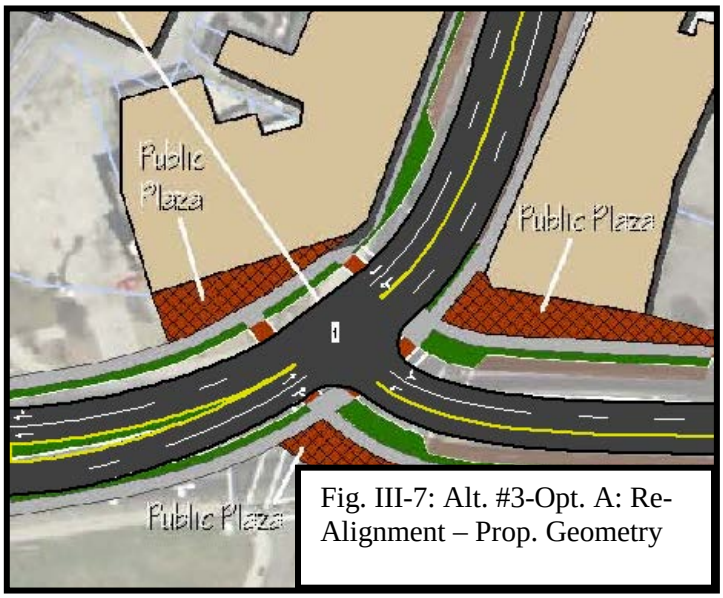


Fig. III-7: Alt. #3-Opt. A: Re-Alignment – Prop. Geometry

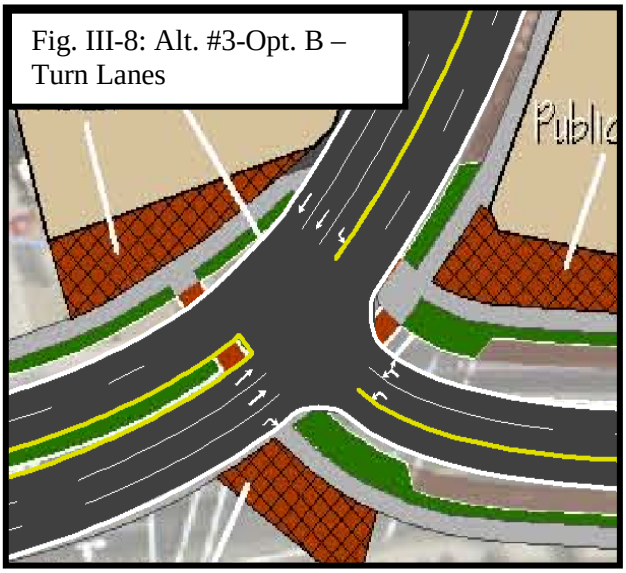


Fig. III-8: Alt. #3-Opt. B – Turn Lanes

Alternative #3 – Option B (Figure III-8) adds an eastbound (northbound) exclusive right turn lane which allows the other two lanes to be used for only through traffic and a southbound exclusive left turn which likewise allows the other two lanes to be used for only through traffic.

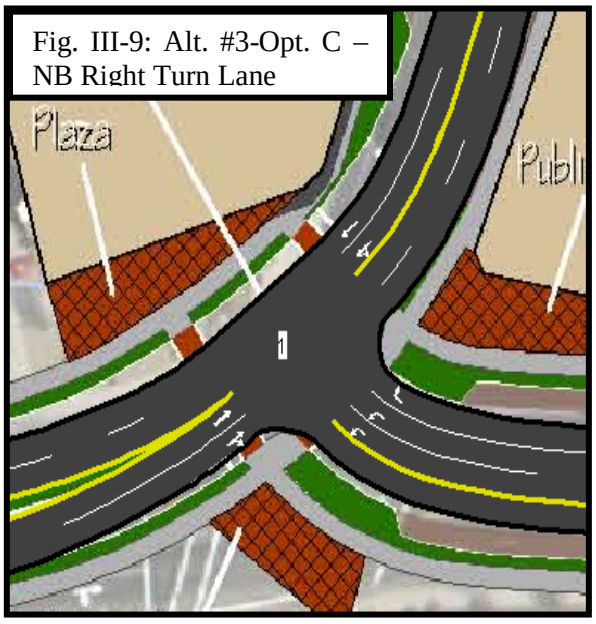


Fig. III-9: Alt. #3-Opt. C – NB Right Turn Lane

Alternative #3 – Option C (Figure III-9) adds a northbound exclusive right turn lane which allows the other two lanes to be used exclusively for dual left turn movements. The remaining geometry is the same as shown in Option A.

a. Geometric Features

None of the proposed feasible alternatives will eliminate the existing non-standard features within the study area. Each of the proposed alternatives maintains the current alignment and vertical curve over the existing railroad bridge. As a result, the stopping site distance associated with the vertical curve over the railroad will continue to be approximately 200 ft while the minimum according to NYSDOT standards is 215 feet. Additionally, the horizontal clearance for the minimal modifications (road diet) will not be modified. As a result, numerous light poles, hydrants and signs will continue to be located within this 1.6 ft zone. The other two alternatives may provide areas where the horizontal clearance can be modified.

b. Traffic Forecast Operations and Considerations

Under the future no-build conditions the delays and queues increase throughout the study area. LOS "E" or "F" is projected to occur on the following approaches during the AM peak hour: Railroad Street southbound, Webster Avenue southbound at North Goodman Street; and during the PM peak hour: Main Street eastbound at Circle Street, Hayward Avenue eastbound at North Goodman Street. In addition, queues are expected to exceed 200 feet in the following travel lanes:

- westbound through lane on Main Street at Circle Street (AM peak),
- eastbound left turn lane on Main Street at North Goodman Street (AM peak),
- westbound through/right turn lane on Main St at North Goodman St (AM peak),
- southbound right turn lane on North Goodman Street at Main Street (AM peak),
- southbound through on Webster Avenue at Garson Street (AM peak),
- eastbound on Main Street at Circle Street (PM peak),
- westbound left turn lane on Main Street at Circle Street (PM peak),
- eastbound left turn and through lanes on Main Street at North Goodman Street (PM peak),
- westbound shared through right turn lane on Main Street at North Goodman Street (PM peak), and
- southbound through lane on Webster Avenue at Garson Street (PM peak).

Alternative #1: Future Minimal Modifications (Road Diet) Options

The results of the traffic analysis for Alternative #1 - road diet options indicate very little change at the intersections other than Main Street/North Goodman Street. A review of the results of the four options analyzed indicates that the N. Goodman Street roadway/driveway south of Main Street, at the intersection, causes the intersection to operate less efficiently. The option that best meets the Study objectives is Option D (Figure III-5). The intersection is projected to operate at LOS "D" or better on all approaches during both peak hours with overall LOS "D" and "C" during the AM and PM peak hours respectively. The largest queuing length under this alternative occurs along the westbound and southbound approaches during the AM peak hour (greater than 475 feet in both cases) and along the southbound approach (375 feet) during the PM peak hour. Pedestrian crossing levels of service are similar for all four options of this alternative. A detailed review of the overall network performance measures (e.g. total delay, average travel speed, and fuel economy) associated with intersection operations indicates that Option D provides better corridor performance than the other options analyzed in conjunction with this alternative.

Alternative #2: Future Roundabout Alternatives

The roundabout alternative was analyzed in detail using Sidra Intersection Software, Version 3.2 to determine capacity analysis of a roundabout at the Main/Goodman Street intersection. The Sidra Intersection software is approved for analysis of roundabouts by New York State Department of Transportation. The concept design for the multi-lane roundabout proposes an inscribed circle diameter of 180 feet with a central island of 110' diameter. Each approach would provide two lanes entering and exiting. The analyses indicate that this proposal is feasible, even considering the nearby bridge and grades, and that the delays and queues are significantly reduced versus the other alternatives. However, the interaction of the roundabout with the adjacent intersections has not yet been modeled. This is the next step if this alternative is deemed feasible and should be pursued further.

Alternative #3: Future Major Re-Alignment Options

The analysis for the options associated with Alternative #3 (future re-alignment) yield similar results at all the intersections within the project limits except the Main Street/North Goodman Street intersection. Of the three options analyzed in association with Alternative #3, Option A (Figure III-7) provides the greatest improvement in safety and compatibility for pedestrians while balancing the need to maintain acceptable operating conditions at the intersection. All of the approaches to the Main Street/North Goodman Street intersection are projected to operate at LOS "E" or better

during both peak hours with the overall intersection operating at a LOS "C" during both peak hours. The largest queuing length is projected to be 464 (367) feet on the westbound approach during both the AM/PM peak hours respectively.

Detailed tables comparing intersection levels of service and overall network measures of effectiveness for every alternative and option are included in the appendices. Table III-2 (page III-9) summarizes the operational analysis results for the preferred options for each alternative as compared to the existing and future no-build conditions.

c. Pavement

The Main Street pavement structure within the project limits was reconstructed in 1989. The 1989 construction documents indicate that the pavement section from west of Circle Street to approximately 280 ft. east of Goodman Street included full depth reconstruction. The pavement section consists of a $10^{1/2}$ inch asphalt pavement section with 12 inches of subbase material. From the point where the reconstruction ended, the remaining portion of Main Street was resurfaced with a $2^{1/2}$ inch overlay. As part of the 1989 bridge/road project, Goodman Street was reconstructed from south of Main Street and resurfaced north of Main Street. The same pavement sections used on Main Street for reconstruction and resurfacing were also employed on Goodman Street. Portions of Circle Street and Railroad Street were also reconstructed using the above mention pavement thicknesses. At this time, no pavement cores have been performed do to the uncertainly of the funding for the project. Should funding become available, pavement cores should be performed immediately to verify the pavement section and subbase condition. This will provide a more analytical analysis to the pavement structure.

In general, the pavement rideability along Main Street is average to above average. Minor rutting is beginning to occur at the intersection of Main/Goodman in all legs except along Goodman Street south of Main Street. The pavement surface exhibits longitudinal cracking along a majority of the pavement joints with areas of alligator cracking being to develop. Areas of transverse cracking are also present with a few areas of raveling present at the intersection of Goodman Street and Garson Street. It should be noted that a majority of the cracks have been sealed under the City maintenance program. The asphalt pavement surface on the adjacent local streets is in generally fair to good condition. However, the pavements along these streets do show signs of unevenness and

Table III-2
Main Street/Goodman Street Capacity Analysis Summary

AM Peak Hour

INTERSECTION	MOVE-MENT	EXISTING CONDITIONS		FUTURE NO-BUILD CONDITIONS (2030)		ALTERNATIVE 1: ROAD DIET OPTION D		ALTERNATIVE 2: ROUNDABOUT		ALTERNATIVE 3: RE-ALIGNMENT OPTION A	
		Queue Length (ft)	LOS (delay in sec/veh)	Queue Length (ft)	LOS (delay in sec/veh)	Queue Length (ft)	LOS (delay in sec/veh)	Queue Length (ft)	LOS (delay in sec/veh)	Queue Length (ft)	LOS (delay in sec/veh)
Main Street / N Goodman Street (S)											
Eastbound - Main Street	Left	192	D (46.2)	214	D (47.2)	164	D (38.8)	82	A (8.9)		
	Thru Right	48	A (3.7)	61	A (4.3)	41	A (3.6)	80	A (2.3)	274	C (20.7)
Westbound - Main Street	Left	5	B (17.5)	1	B (18.0)						
	Thru Right	363	C (24.0)	#463	C (29.8)	#483	D (42.8)	151 151	A (5.8) A (6.9)	#464	D (43.0)
Northbound - Driveway	Left Thru Right	6	C (26.9)	6	C (26.0)			NA		NA	
Southbound - N Goodman Street	Left Thru	116	D (43.4)	126	D (43.2)	#476	D (54.8)	250	C (20.7)	292	C (24.3)
	Right	239	C (23.7)	292	C (25.1)	351	C (21.9)	258	B (14.9)		
Overall LOS / Delay in sec/veh			C (25.2)		C (28.0)		D (35.2)		A (10.1)		C (30.1)

INTERSECTION	MOVEMENT	EXISTING CONDITIONS		FUTURE NO-BUILD CONDITIONS (2030)		ALTERNATIVE 1: ROAD DIET OPTION D		ALTERNATIVE 2: ROUNDABOUT ROUNDABOUT		ALTERNATIVE 3: RE-ALIGNMENT OPTION A	
		Queue Length (ft)	LOS (delay in sec/veh)	Queue Length (ft)	LOS (delay in sec/veh)	Queue Length (ft)	LOS (delay in sec/veh)	Queue Length (ft)	LOS (delay in sec/veh)	Queue Length (ft)	LOS (delay in sec/veh)
Main Street / N Goodman Street (S)											
Eastbound - Main Street	Left	#382	C (25.6)	M#386	C (27.2)	M#311	D (44.7)	243	A (9.9)		
	Thru Right	206	A (8.0)	M202	A (8.1)	M126	A (8.9)	243	A (3.5)	473	C (22.7)
Westbound - Main Street	Left	9	C (25.7)	9	C (26.3)						
	Thru Right	282	D (35.0)	#326	D (47.7)	324	D (45.5)	338 338	C (24.7) C (24.5)	#367	E (65.5)
Northbound - Driveway	Left Thru Right	10	C (23.8)	10	C (23.2)	NA		NA		NA	
Southbound - N Goodman Street	Left Thru	155	D (38.4)	174	D (38.7)	#376	D (46.0)	113	B (12.0)	267	B (18.8)
	Right	87	A (9.4)	96	A (9.3)	169	A (10.0)	113	A (6.7)		
Overall LOS / Delay in sec/veh			C (21.4)		C (25.0)		C (32.4)		B (11.4)		C (32.6)
East Leg Croswalk LOS		C		C		C		NA		F	
Preliminary Cost Estimate						$478,000.00		$810,000.00		$1,130,000.00	

PM Peak Hour

cracking. The pavement stripes in the project area vary from good to average with the cross walks in poor condition.

Based on the visual inspection of the asphalt pavement surfaces, it has been concluded that a majority of the existing pavement structure does not need to be reconstructed. Areas near the intersection of Main/Goodman Street may need to be resurfaced/reconstructed to remove the areas of rutting.

d. Structures

The current bridge located over the CSX railroad received an overall NYSDOT recommendations of 6 during the last biannual inspection conducted on 10/16/2006. The current structure is in good condition and does not require rehabilitation at this time.

e. Hydraulics of Bridges and Culverts

There are no bridges or culverts that direct stormwater runoff in the project area.

f. Drainage

The overall drainage patterns within the project limits will not be altered significantly. Drainage west of the bridge over the CSX railroad tracks along Main Street will continue to be captured by catch basins and directed to an existing 15" combined sanitary and storm sewer. Stormwater runoff east of the bridge over the CSX railroad tracks will continue to be captured by inlets that ultimately discharge to an existing stone box tunnel combined sanitary and storm sewer that flows north along Goodman Street. Stormwater runoff along Goodman Street will continue to be captured by catch basins that ultimately discharge into an existing combined sanitary and storm stone box tunnel. Any modifications to the curb locations will require additional drainage inlets to be installed.

g. Maintenance Responsibility

The following utilities are within the project limits:

Frontier | Citizens Com Monroe

City of Rochester – Water Bureau

Rochester Gas and Electric - Underground gas mains and electric throughout entire project area

Time Warner Cable | Rochester

Monroe County Pure Waters – Sanitary

Monroe County Department of Transportation – Traffic Signals

h. Maintenance and Protection of Traffic

Should funding become available, traffic will be required to be maintained for all of the alternatives. Construction sequencing measures will need to be coordinated with all governmental agencies and utilities. Any maintenance and protection of traffic plans will need to be designed in accordance with City, Monroe County, National MUTCD and the NYS Supplement to the National MUTCD.

i. Soils and Foundations

No special provisions to correct problems due to poor soil conditions are anticipated.

j. Utilities

A list of public and privately owned utilities is provided in Section II.C.1.s – Utilities. Impacts to existing utilities are anticipated to be minimal as a result of the proposed alternatives. Any proposed impacts will be coordinated with the respective utility company.

k. Railroads

None of the proposed alternatives include any work within the CSX Railroad right-of-way. However, there will need to be coordination with CSX to insure the safety of the traveling public.

l. Right-of-Way

Only minor right-of-way actions at the intersection of Main/Goodman would be required for the roundabout option. All other work associated with the other proposed alternatives are within the current right-of-way limits.

m. Landscape Development

It is expected that some impacts to the landscape environment will occur within the project limits. The primary landscape development goal is to protect the existing vegetation by minimizing grad-

ing and clearing operations with the project area. Landscape development activities for the project involve the following:

- Repair lawn disturbed by construction
- Protect existing vegetation within the project limits to the fullest extent possible,: and
- Plant new trees as determined to be necessary. Current guidelines provide for the selection of trees that are suitable for placement along the roadway and the local climate. The new plantings typically have a caliper trunk of between 2" and 3".

n. Provisions for Pedestrians

The project corridor traverses through a developed area that is primarily urban in characteristic. Therefore, future pedestrian traffic volumes are anticipated to be similar to the existing conditions with the potential for minor growth. The objective is to improve and enhance the safety and comfort for pedestrians using sidewalks throughout the study area and crossing at the Main/Goodman intersection. Pedestrian safety is improved the most in the road diet alternative due to the reduction in pedestrian/vehicle conflict points. The roundabout does not provide signalized crossings. The re-alignment alternative results in greater conflict points than the road diet alternative due to the presence or lack of protected left turn movements under each alternative. The road diet and re-alignment alternatives both provide reduced crosswalk widths at the Main/Goodman Street intersection. The roundabout crossing widths are not significantly improved over existing conditions. A detailed table comparing pedestrian crossing levels of service for each approach at the Main Street/Goodman Street intersection for every alternative and option is included in the Appendices. Table III-3 (Page III-13) summarizes the pedestrian crossing level of service results for the preferred options under each alternative as compared to the existing and future no-build conditions.

o. Provisions for Bicycles

Addition of a marked bicycle lane, or a widened outside lane, would provide safer and more appealing bicycle accommodations. This can be enhanced with traffic calming measures such as the implementation of raised medians, tree lined streets, and reduced building setbacks in the zoning ordinance. The implementation of any or all of these traffic calming measures would make the roads a more appealing option for bicyclists.

Table III-3

PEDESTRIAN LOS AT SIGNALIZED INTERSECTIONS - MAIN STREET AND GOODMAN STREET

PM PEAK HOUR		WEST LEG CROSSWALK				EAST LEG CROSSWALK				NORTH LEG CROSSWALK			
INPUT	UNITS	Existing	2030 Future No-Build	Alternative 1: Road Diet Option D	Alternative 3: Re-Alignment Option A	Existing	2030 Future No-Build	Alternative 1: Road Diet Option D	Alternative 3: Re-Alignment Option A	Existing	2030 Future No-Build	Alternative 1: Road Diet Option D	Alternative 3: Re-Alignment Option A
RTOR in a 15 minute period		3	3	0	0	15	20	20	20	30	50	50	0
Perm Lefts in a 15 minute period		2	2	0	130	40	45	45	43	0	0	0	0
Traffic in the outside through lane of the street being crossed		265	300	300	300	75	84	168	936	85	96	96	192
Midblock 85th percentile speed of traffic on the street being crossed in a 15 minute period	mph	35	35	35	35	35	35	35	35	35	35	35	35
No of Lanes being crossed by the pedestrian		6	6	5	4	5	5	3	3	6	6	4	4
Cycle Length	Seconds	100	100	100	100	100	100	100	100	100	100	100	100
Phase Green Time		30	30	27	28	30	30	27	62	27	27	27	28
Constant													
	PLOS	3.65	3.80	3.63	4.20	2.93	3.03	3.05	6.41	2.99	3.15	2.83	2.98
		D	D	D	D	C	C	C	F	C	C	C	C

p. Lighting

Lighting is currently provided throughout the project corridor. The lighting system includes luminaires and brackets mounted to standard poles. Lighting for all options will be maintain and re-stored to insure the safety of the traveling public.

D. Project Costs and Schedule

1. Project Costs

The following is a summary of the opinion of probable construction cost for each of the proposed alternatives:

Alternative 1 – Option D: Minimal Modifications	$478,000.00
Alternative 2 – Roundabout	$810,000.00
Alternative 3 – Option A: Major Realignment	$1,130,000.00

A breakdown of these project costs can be found in Appendix - Opinion of Probable Costs.

2. Schedule

The proposed project is still within the planning stages and does not have a dedicated funding source. As a result, the schedule for Design Approval and Construction has not been developed. Should funding become available, the proposed schedule will need to be updated accordingly to reflect the project needs and any requirements associated with the funding source.

IV. SOCIAL, ECONOMIC AND ENVIRONMENTAL CONSIDERATIONS

A. Introduction

This section discusses the anticipated environmental considerations of the proposed Main /Goodman Street project, in the City of Rochester, Monroe County, New York. Alternatives are being developed and evaluated to help prepare a final report that will ultimately be used to obtain funding for the intersection improvements.

1. SEQR Classification

This project will not be classified at this time. Depending on which alternative is ultimately decided upon, the classification may change. The City of Rochester Department of Environmental Services will act as the lead agency. In accordance with 6NYCRR Part 617.5(c) (2), this project and the final alternative ultimately chosen will be evaluated to determine if any significant effects on the environment exist.

2. NEPA Classification

This project will not be classified at this time. A NEPA checklist will not be prepared for the project at this time.

B. Environmental Screenings and Preliminary Investigations

1. General Ecology and Wildlife

a. The lands in the immediate vicinity of and adjacent to the project site generally consist of commercial properties, with residential properties located adjacent.

b. The NYSDEC Region 8 Division of Fish, Wildlife and Marine Resources office will need to be contacted regarding the presence of significant habitat areas and endangered and threatened species.

c. The New York State Department of Environmental Conservation (NYSDEC) Wildlife Resources Center Natural Heritage Program will need to be contacted regarding the presence of significant habitat areas and endangered and threatened species.

d. The United States Department of the Interior Fish and Wildlife Service (USFWS) will need to be contacted regarding the possible presence of threatened and endangered species and habitat areas.

e. The United States Department of Commerce National Oceanic and Atmospheric Administration (NOAA), National Marine Fisheries

Service will need to be contacted regarding the presence of significant habitat areas and endangered and threatened species.

2. Ground Water

   a. This project is not located within the limits of a designated U.S. Environmental Protection Agency Sole Source Aquifer

   b. Erosion, sedimentation, and water pollution controls will be employed throughout the duration of any potential project to minimize water quality impacts in groundwater recharge areas. Therefore, the overall quality of groundwater is not anticipated to be affected by this project.

3. Surface Water

   a. The project area is not in close proximity to any waterways.

   b. It is anticipated that design alternatives will not significantly increase overall pavement surface areas utilized for vehicle and pedestrian use. Thus, significant increases in the surface water runoff rates and volumes are not anticipated as a result of the proposed highway improvements and construction.

   c. During construction, sediment from exposed surfaces may flow into the combined sewer systems. These flows will be controlled by the use of sediment and erosion control techniques. These techniques will be part of a sediment and erosion control plan to be implemented during construction and will conform to the requirements of the NYS Standards and Specifications for Erosion and Sediment Control and the NYS Stormwater Design Manual. A SPDES General Construction Permit, a Notice of Intent (NOI) and a Stormwater Pollution Prevention and Control Plan (SWPPP) may need to be obtained depending on the area of disturbance. Erosion and Sediment Control Plans will need to be developed.

   d. State Wetlands: A review of the NYSDEC wetland maps indicates that no NYSDEC designated wetlands exist within or immediately adjacent to the project corridor. Therefore, construction activities in conjunction with the project corridor are not anticipated to impact NYSDEC regulated wetlands.

   e. Federal Wetlands: A copy of the National Wetland Inventory (NWI) maps prepared for the Rochester East, New York quadrangles by the U.S. Department of Fish and Wildlife Service were also reviewed. It was found that there are no mapped federally desig-

nated wetlands along the project corridor; and, therefore, this project is not expected to impact any federally designated wetlands.

f. Navigable Waterways: there are no navigable waterways within the project limits.

4. Coastal Zone Management

a. The site is not located within a NYS Coastal Zone. Therefore, a consistency review in accordance with the NYSDOS coastal policies is not needed.

5. Floodplains

a. A review of FEMA FIRM maps indicates that the project corridor does not lie within any designated Flood Zones.

6. Historical/Cultural Resources

a. A Phase I site investigation may need to be completed depending on the alternative chosen. At this time, no further work is recommended.

7. Parks

a. The project will not require acquisition of additional right-of-way (ROW) that is currently used as a public park, recreation area, wildlife or waterfowl refuge. Therefore, Section 4(f) evaluations are not required.

b. The improvement/construction project will not require acquisition of nor does it impact any recreational parks federally funded by the United States Department of the Interior. Therefore, Section 6(f) evaluations are not required.

8. Contaminated Materials Assessment

a. A Hazardous Waste/Contaminated Materials (HW/CM) Assessment will need to be completed for the project corridor. The primary objective of this assessment will be to render an opinion as to whether surficial or historical evidence indicates the presence of recognized environmental conditions that could result in the presence of hazardous materials in the environment. The assessment will need to be completed in general accordance with the Environmental Procedures Manual (EPM) guidelines prepared by the New York State Department of Transportation - Environmental Analysis Bureau.

b. Public information was obtained from various federal, state, and local agencies that maintain environmental regulatory databases. These databases provide information about the regulatory status of a property and incidents involving use, storage, spilling or transportation of oil or hazardous materials. The search distances for the federal, state, and local databases were established in ASTM E 1527-05 Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process, based on the extent and previous land use of the project corridor. Table 1 and Table 2 list, but are not limited to, the specific databases containing information for the project corridor. For reference, a Project Vicinity Map (Figure 1) and Project Location Map (Figure 2) are included in Appendix A.

TABLE IV-1
FEDERAL DATABASE SUMMARY

Database	Radius Searched
National Priorities List (NPL Database)	1.6 km (1 – mile)*
Comprehensive Environmental Response, Compensation, and Liability Information System (CERCLIS Database)	0.8 km (0.5 – mile)*
Resource Conservation and Recovery Act (RCRA) Corrective Action Sites (CORRACTS) TSD Facilities (CORRACTS Database)	1.6 km (1 – mile)*
RCRA Non-CORRACTS - TSD Facilities (RCRIS TSD Database)	0.8 km (0.5 – mile)*
RCRA Generators (RCRIS-LQG and SQG Database)	Property and adjoining properties only*
Emergency Response Notification System (ERNS)	Property Only*

TABLE IV-2
STATE DATABASE SUMMARY

Database	Radius Searched
SHWS Inactive Hazardous Waste Disposal Sites	1.6 km (1 – mile)*
SWF/LF Facility Register	0.8 km (0.5 – mile)*
UST Petroleum Bulk Storage	Property and adjoining properties only*
CBS UST Chemical Bulk Storage Database	0.4 km (0.25 – mile)*
MOSF UST Major Oil Storage Facilities Database	0.8 km (0.5 – mile)*
NY Spills	0.2 km (0.125 – mile)*

* Project Corridor Study performed at one-eight (1/8) mile radius

c. Based upon a review of available historic documentation, site observations, and topographic maps, the project site does not appear to have been used for the storage, treatment, or disposal of hazard-

ous waste or substances. The National Priorities List (NPL); Comprehensive Environmental Response, Compensation and Liability Information System (CERCLIS); Resource Conservation and Recovery Act (RCRA) - TSD (CORRACTS); Resource Conservation and Recovery Information System – Treatment, Storage and Disposal Facility (RCRIS-TSD); Emergency Response Notification System (ERNS); Inactive Hazardous Waste Disposal Sites (SHWS) and Solid Waste Facilities/Landfills (SWF/LF); CBS UST Chemical Bulk Storage; Major Oil Storage Facilities (MOSF UST) and Brownfield Cleanup Agreements (BCA) databases indicate that there are no sites within the ASTM search distances.

d. The database identified 29 sites within the search radius. The UST Petroleum Bulk Storage database indicated fourteen (14) sites; RCRA Generators (RCRIS-LQG and SQG) indicated four (4) Small Quantity Generator sites; and NY Spills indicated fifteen (11) incidents within the search radius.

e. A review of the UST Petroleum Bulk Storage database identified sites at Dimarco Constructors Corp., 1045 E. Main Street; Nohle Realty, 1144 E. Main Street; Railroad Street Associates, LLC, 55 Railroad Street; Auto Zone, 1154 E. Main Street; B G Costich & Sons, Inc., 271 Hayward Avenue; Staub Textile Services Inc., 951 E. Main Street, Pike Investment Company, 1 Circle Street; Laidlaw Transit Inc, 1185 E. Main Street, Rochester Drug Coop Inc, 320 N. Goodman Street; Industrial Incineration, 316 N. Goodman Street; City of Rochester; Quaker State Oil Ref Corp, 1221 E. Main Street; Fedder Industrial Park, 1237 E. Main Street; East Main Sunoco, 895 E. Main located within the search radius.

f. A review of the RCRA Generators (RCRIS-LQG and SQG) database indicated SQGs at The Pike Company Inc., 1 Circle Street; The Pike Company Inc., 1 Circle Street; Laidlaw Transit Inc., 1185 E. Main Street; Evolution Impressions Inc., 274 N. Goodman Street, located within the search radius.

g. A review of the NY Spills including Leaking Underground Storage Tanks database identified that the project site is not a listed NY Spills site. The database identified sites at Conrail, Goodman/Main; Rochester Yard, 400 N. Goodman; Conrail Yard, 400 N. Goodman; CSX Rail Yard, 400 N. Goodman; Duncan Tsay, 1115 E. Main Street; 1130 E. Main Street, 1130 E. Main Street; Conrail RR MVA, Goodman/Circle Street; Rochester Gas & Electric, 55 Railroad Street; Auto Zone, 1154 E. Main Street, 1157 E. Main Street, 1157 E. Main Street; Pike Company, 1 Circle Street, located within the search radius. It is not expected that a detailed investigation will be required.

h. It should be noted that when an assessment is completed without subsurface explorations and chemical screening of soil and groundwater beneath the site, no data can be generated regarding latent subsurface conditions, which may be the result of on-site or off-site sources.

i. It is also noted that should suspect materials be uncovered during construction, appropriate precautions should be taken, including subsurface explorations and analytical laboratory testing within the corridor to identify the potential presence and composition of on-site materials.

9. Asbestos Assessment

a. An asbestos assessment will need to be conducted for the project corridor once an alternative has been determined. The primary objective of the assessment will be to determine the potential for encountering Asbestos Containing Materials (ACMs) in areas that may be affected by the proposed construction. The asbestos assessment will need to be completed in general accordance with the New York State Department of Transportation Environmental Analysis Bureau EPM, Volume II, Chapter 1.3 and the project scope.

b. Visual observations made during the April 2, 2008 site reconnaissance did not reveal any potential ACMs on the project site that would be impacted by the proposed realignment project. Due to the scope of proposed construction activities, further investigation of ACM is not warranted at this time.

c. As with all construction, should materials be uncovered during construction that are suspected of containing asbestos, appropriate precautions should be taken and sampling and analysis of the materials for asbestos content should be immediately conducted by a New York State DOL Certified Asbestos Inspector.

10. Noise Screening

The project design will be advanced in accordance with New York Sate Department of Transportation (NYSDOT), Federal Highway Administration (FHWA) and American Association of State Highway and Transportation Officials (AASHTO) standards, including noise standards.

11. Air Quality Screening

An air quality analysis is not necessary since this project will not increase traffic volumes, reduce source-receptor distances, or change other exiting conditions to a degree that will impact the National Ambient Quality Standard. Therefore, no air quality studies are required for this project.

12. Energy Screening

It is anticipated that the project will not change travel patterns or alter vehicle-operating speeds in the project corridor and area. As such, energy consumption will not change as a result of the project. Therefore, an energy evaluation will not be required during design activities.

13. Farmland Screening

Based on information received from Monroe County Department of Planning, the project corridor is not situated in a Monroe County Agriculture District. Therefore, the project will not have to be advanced in compliance with the NYS Agriculture and Markets Law.

14. Visual Impact Screening

The project area is located within a commercial setting. Visual impacts are anticipated to be minimal, including limited changes to the areas located immediately adjacent to and within the project vicinity. Therefore, a view shed analysis is not anticipated.

15. Anticipated Permits and Approvals

a. Specific and/or general permits and approvals may be required for the each alternative.

b. The specific permitting and coordination activities are a function of the alternatives proposed. The anticipated permits identified above include activities/permits that may not be required, depending on the final design.

THIS PAGE INTENTIONALLY LEFT BLANK

V. Project Coordination

Project coordination that occurred during the preparation of this Draft Design Report (DDR) involved meetings with the Bridging Neighborhoods Group, Nead Neighborhood Group, City of Rochester, as well as other involved agencies and utilities. In addition to these coordination/information meetings, a project walk-through was held with the Neighbors Bridging Neighborhoods Group as part of the project development process to review the project concepts in the field.

A. Neighborhood and Neighborhood Advisory Group

The first Bridging Neighborhoods Advisory Group meeting was held on November 1, 2007 at Charlie Brown's Restaurant. The meeting was held to discuss the Alternatives with the Bridging Neighborhoods Group and solicit and receive feedback/comments on the content of the Alternatives.

A second group meeting will be held to discuss the Draft Design Report, which addresses project alternatives and traffic/pedestrian concerns.

B. Local Municipality

A coordination meeting with the City of Rochester was held on April 9, 2008 to review the design alternatives under consideration and provide a status update on the overall progress. The discussion included the following topics: Level of Service, number of lanes, accident investigation/rates, and grade of the roundabout. In general, the City supports all of the proposed alternatives, but would like NYSDOT to review the feasibility of the roundabout at the Main/Goodman intersection. In particular, the City is concerned with the 6% grade on Main Street to the west of the intersection.

C. Agencies/Utilities

There have been no meetings with any utilities. As the final design process proceeds, utility coordination will become necessary. At that time, meetings will be coordinated with all potentially affected utilities.

THIS PAGE INTENTIONALLY LEFT BLANK

VI. COMPARISON OF ALTERNATIVES

Each of the alternatives presented involves various trade-offs. Pedestrian improvements may come at the expense of vehicular movement for certain alternatives while the opposite may be true for other alternatives. To aid in the decision making process, a comparison matrix has been developed to evaluate each alternative based on the operation of the intersection and the goals of the City of Rochester. Figure IV-1 shows a relative comparison of scores for each alternative. The various objectives are described below and the important aspects related to the comparison of alternatives are briefly discussed.

On-Street Parking: The objective is to maintain and maximize the on-street parking in front of existing businesses within the project corridor. On-street parking is currently provided along North Goodman Street and Main Street east of North Goodman Street. The roundabout alternative uses a significant portion of the surrounding right-of-way for construction of the roundabout. As a result, a majority of the on-street parking will be removed. The road diet (Alt. 1 – Opt. D) and re-alignment (Alt. 3 – Opt. A) alternatives will maintain and in some instances, enhance the existing on-street parking.

Accident Reduction Potential: One of the goals of this project is to reduce the accident potential within the project corridor by reducing the potential conflicts at the intersection. The roundabout alternative significantly reduces the potential for right angle and left turn collisions. The re-alignment alternative (Alt. 3 – Opt. A) reduces accident potential more than the road diet alternative (Alt. 1 – Opt. D) due to the protected signal operations for left turn movements. Overall, the roundabout alternative provides the greatest reduction for accident potential.

Pedestrian Safety: Improving and enhancing the safety and comfort for pedestrians using sidewalks throughout the study area, particularity at the pedestrian crossings at the Main/Goodman intersection is one of the main objectives of the project. The road diet alternative (Alt. 1 – Opt. D) provides the greatest improvement to pedestrian safety by reducing the number of pedestrian/vehicle conflict points. The roundabout alternative does not provide signalized crossings but does reduce vehicle speed thru the intersection area. The re-alignment alternative (Alt. 3 – Opt. A) results in a greater number of conflict points than the road diet alternative. This is caused by the presence or lack of protected left turn movements under each alternative.

Pedestrian Crossing Width: By reducing the pedestrian crossing length, the safety and pedestrian comfort level associated with the intersection increases. The objective is to minimize the width of pedestrian crossings at the Main/Goodman Street intersection to the extent practical. The road

diet (Alt. 1 – Opt. D) and re-alignment (Alt. 3 – Opt. A) alternatives provide crosswalk bump outs and landscape islands throughout portions of the project corridor. The pedestrian crossing widths for Main Street and Goodman Street have been reduced as a result of the "bump outs and lane reconfigurations. The roundabout crossing widths have been reduced as a result of moving the crosswalk locations away from the roundabout. In some instances, the overall pedestrians' routes may increase which may lead to mid-block crossings.

Vehicular Movement: Another primary objective of this report was to provide alternatives that would help improve the vehicular levels of service and reduce/minimize vehicle queuing. The roundabout alternative provides the best levels of service for the Main/Goodman intersection while significantly reducing the queuing length. The re-alignment alternative (Alt. 3 – Opt. A) provides very good levels of services (LOS "C") while providing a Maximum queuing length of 473 feet. The road diet alternative (Alt. 1 – Opt. D) degrades the levels of service (LOS "D") and increases the maximum queuing length to approximately 483 feet.

Landscaped Median: One of the secondary objectives of this design report is to improve the aesthetic quality within the project corridor. One of the options available is the use of landscaped medians that may also provide locations for pedestrian refuge at intersections. The roundabout alternative provides relatively small segments of landscaped islands on the approaches that may not be used as pedestrian refuges. Both the road diet and re-alignment alternatives provide locations where landscaped medians can be installed on different approaches to the intersection. The road diet alterative (Alt. 1 – Opt. D) provides medians along Main Street on both approaches to Goodman Street while the realignment alternative (Alt. 3 – Opt. A) provides a median west of the Main/Goodman intersection.

Pedestrian Realm: Providing enhanced pedestrian access (e.g. wider sidewalks, pedestrian amenities, buffer zone width, etc.) is one of the aspects that were reviewed as part of this traffic/pedestrian analysis. Both the road diet and re-alignment alternatives provide additional sidewalks, pedestrian bump outs, and on-street parking areas. The roundabout alternative, however, focuses on the traffic enhancements and the land needed to accomplish this. The existing intersection and adjacent land is needed for the traffic roundabout which reduces the available land for pedestrian enhancements.

Traffic Calming: Traffic calming is a mechanism used to reduce traffic speed in urban areas whiling maintaining acceptable traffic flows. Roundabouts, medians, curb bump outs and delineated crosswalks with appropriate signage are all excellent examples that have proven results. The roundabout alternative provides the best results with respect to traffic calming while each of the other two alternatives provide similar

improvements throughout the intersection corridor with mechanisms such as medians, delineated cross walks and curb bump outs.

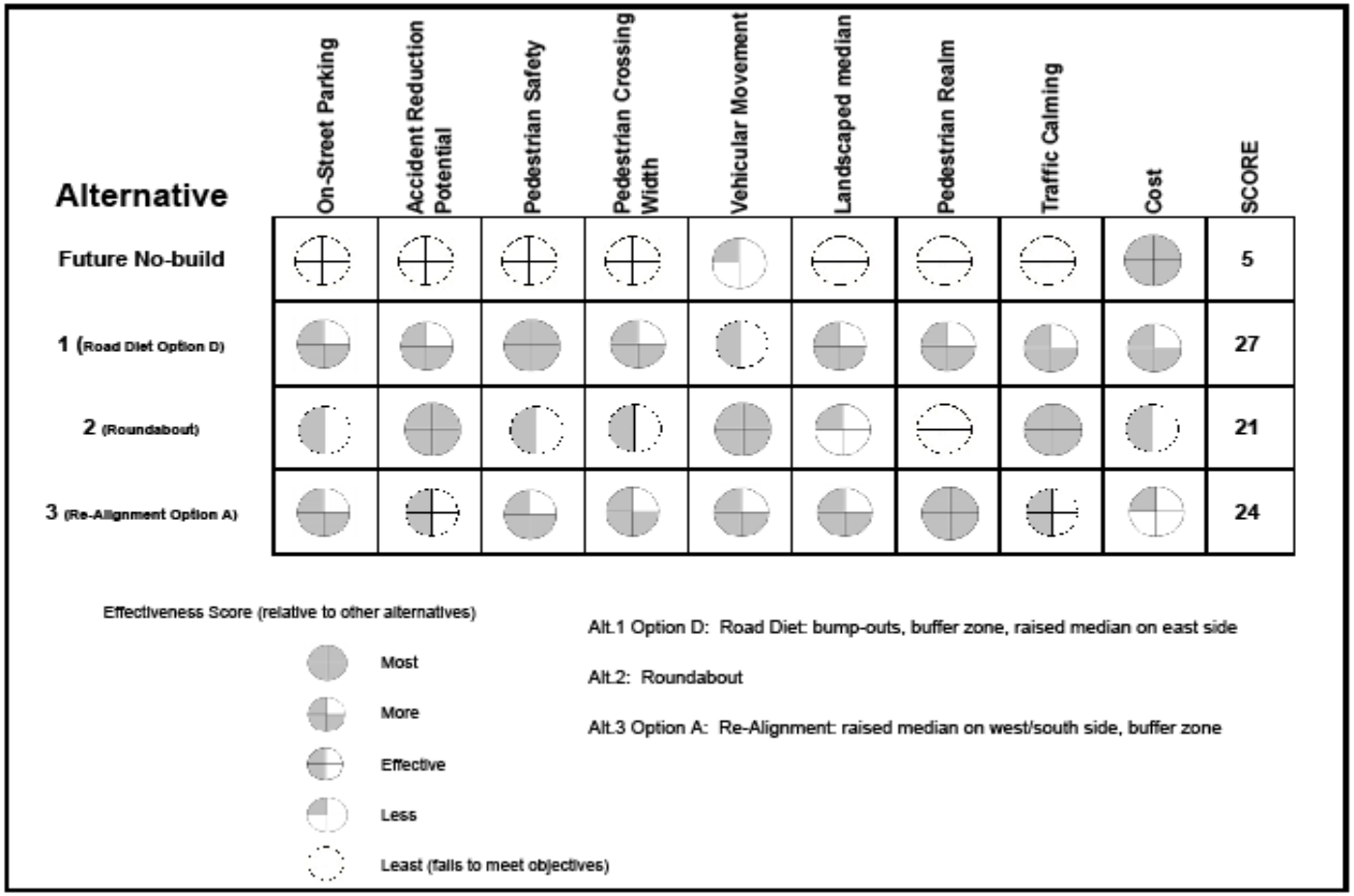
Using the comparison matrix discussed above, each component of the three alternatives that was effectively addressed by providing acceptable level of services throughout the corridor and/or meeting the goals of the City of Rochester could receive a maximum score of four. Components that failed or did not address the components received a score of zero. Scores that addressed parts of each component but that were less effective received scores ranging from three to one. Using the eight components listed in Figure VI-1, an overall score of thirty two would indicate that each component of an alternative was effectively met.

The road diet alternative (Alt. 1 – Opt. D) received a scored of 27 (out of 36) compared to the re-alignment alternative (Alt. 3 – Opt. A) which scored a 24 (out of 36). However, the capacity analysis results indicate that the Alternative 1 – Option D (road diet) has a much lower level of service from a vehicular operational standpoint. A closer review of the comparison matrix indicates that the road diet alternative and the re-alignment alternative each provide approximately the same benefits to the pedestrian but significantly different results to vehicular traffic.

A review of the roundabout alternative (Alt. 2) indicates it received a score of 21 (out of 36). A closer analysis indicates that the pedestrian enhances and on-street parking components failed to provide or meet the goals of the study. The overall geometry of the roundabout significantly limits the available options to increase pedestrian movement through the intersection or provide areas of parking. The capacity analysis indicates that the roundabout provides that best level of service but the comparison matrix indicates that the roundabout has the least desirable pedestrian benefits.

FIGURE VI-1: ALTERNATIVE COMPARISON MATRIX

Main Goodman Alternative Evaluation



Appendices

THIS PAGE INTENTIONALLY LEFT BLANK

Appendix A

Plans

Minimal Modifications (Road Diet) Alternative
Roundabout Alternative
Re-alignment Alternative

THIS PAGE INTENTIONALLY LEFT BLANK

REVISIONS				
NO.	DATE	BY	CHKED	DESCRIPTION

CLARK PATTERSON LEE
DESIGN PROFESSIONALS
186 NORTH WATER STREET
ROCHESTER, NEW YORK 14604
TEL (800) 274-9000
FAX (585) 232-5836
www.clarkpatterson.com

MAIN/GOODMAN TRAFFIC STUDY

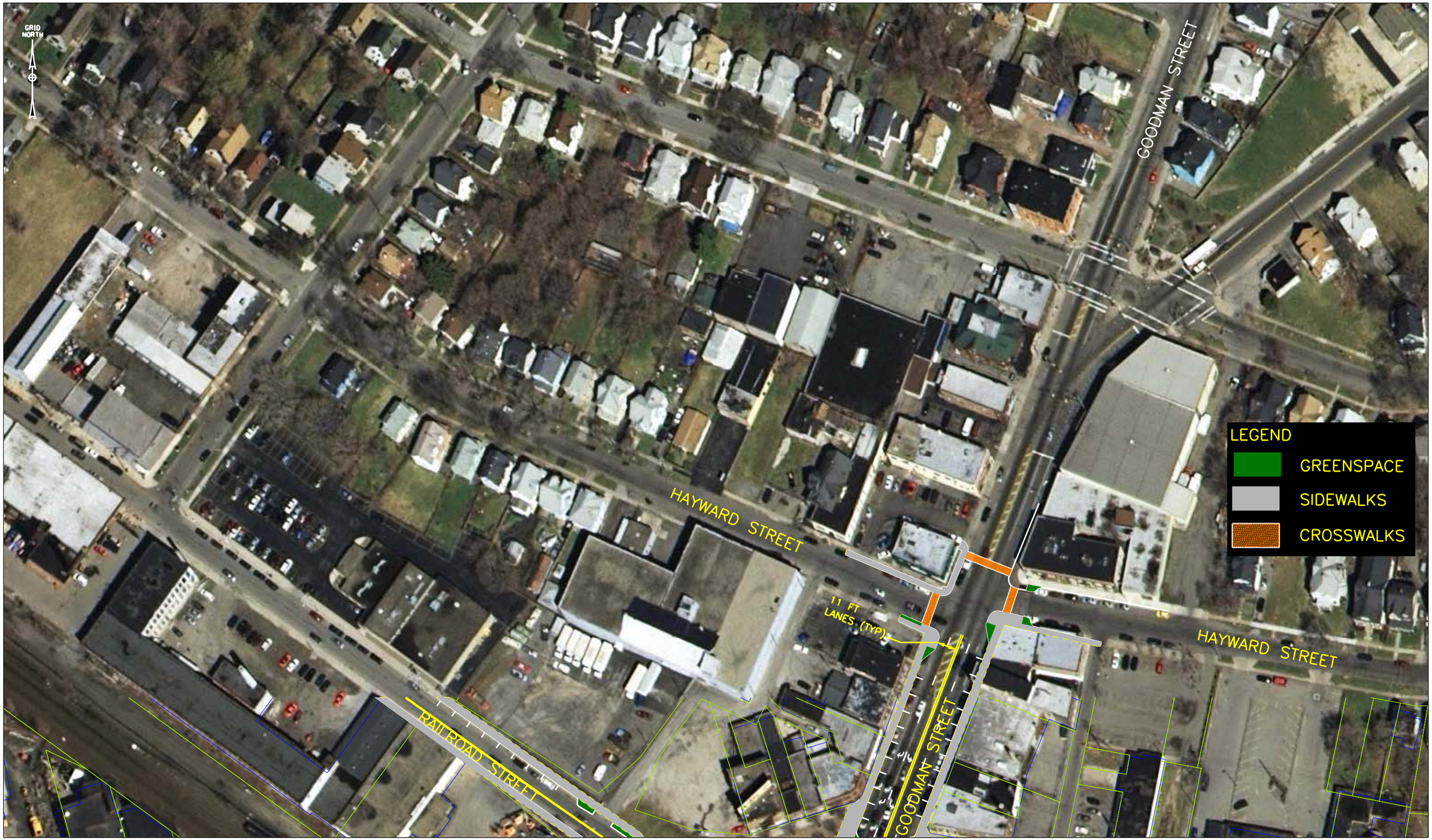
CITY OF ROCHESTER MONROE COUNTY STATE OF NEW YORK

DATE: 4/01/08
DRAWN: ND
DESIGNED: RGR
CHECKED: RGR
SCALE: 1'=100'

MINOR MODIFICATIONS ALTERNATIVE 1

PROJECT NUMBER 1136.00

DRAWING NUMBER 1



REVISIONS				
NO.	DATE	BY	CHKED	DESCRIPTION

CLARK PATTERSON LEE
DESIGN PROFESSIONALS
186 NORTH WATER STREET
ROCHESTER, NEW YORK 14604
TEL (800) 274-9000
FAX (585) 232-5836
www.clarkpatterson.com

MAIN/GOODMAN TRAFFIC STUDY

CITY OF ROCHESTER MONROE COUNTY STATE OF NEW YORK

DATE: 4/01/08
DRAWN: ND
DESIGNED: RGR
CHECKED: RGR
SCALE: 1"=100'

MINOR MODIFICATIONS
ALTERNATIVE 1
OPTION D

PROJECT NUMBER
1136.00

DRAWING NUMBER
2

REVISIONS				
NO.	DATE	BY	CHKED	DESCRIPTION

CLARK PATTERSON LEE
DESIGN PROFESSIONALS
186 NORTH WATER STREET
ROCHESTER, NEW YORK 14604
TEL (800) 274-9000
FAX (585) 232-5836
www.clarkpatterson.com

MAIN/GOODMAN TRAFFIC STUDY

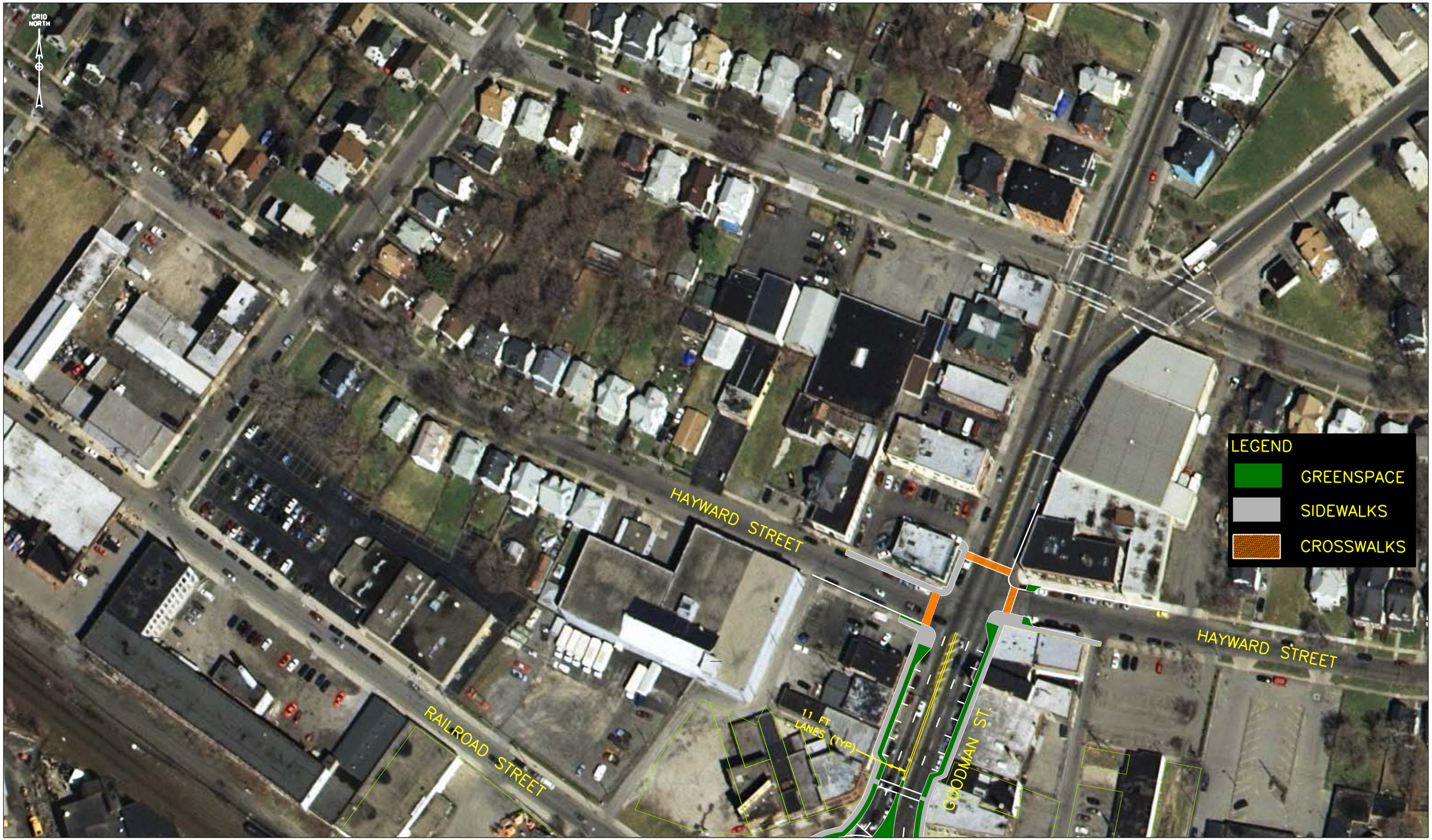
CITY OF ROCHESTER MONROE COUNTY STATE OF NEW YORK

DATE: 4/01/08
DRAWN: ND
DESIGNED: RGR
CHECKED: RGR
SCALE: 1"=100'

ROUNDABOUT ALTERNATIVE 2

PROJECT NUMBER 1136.00

DRAWING NUMBER 1



REVISIONS

NO.	DATE	BY	CHKED	DESCRIPTION

CLARK PATTERSON LEE
DESIGN PROFESSIONALS
186 NORTH WATER STREET
ROCHESTER, NEW YORK 14604
TEL (800) 274-9000
FAX (585) 232-5836
www.clarkpatterson.com

MAIN/GOODMAN TRAFFIC STUDY

CITY OF ROCHESTER MONROE COUNTY STATE OF NEW YORK

DATE: 4/01/08
DRAWN: ND
DESIGNED: RGR
CHECKED: RGR
SCALE: 1"=100'

ROUNDABOUT ALTERNATIVE 2

PROJECT NUMBER
1136.00

DRAWING NUMBER
2

REVISIONS				
NO.	DATE	BY	CHKED	DESCRIPTION

CLARK PATTERSON LEE
DESIGN PROFESSIONALS
186 NORTH WATER STREET
ROCHESTER, NEW YORK 14604
TEL (800) 274-9000
FAX (585) 232-5836
www.clarkpatterson.com

MAIN/GOODMAN TRAFFIC STUDY

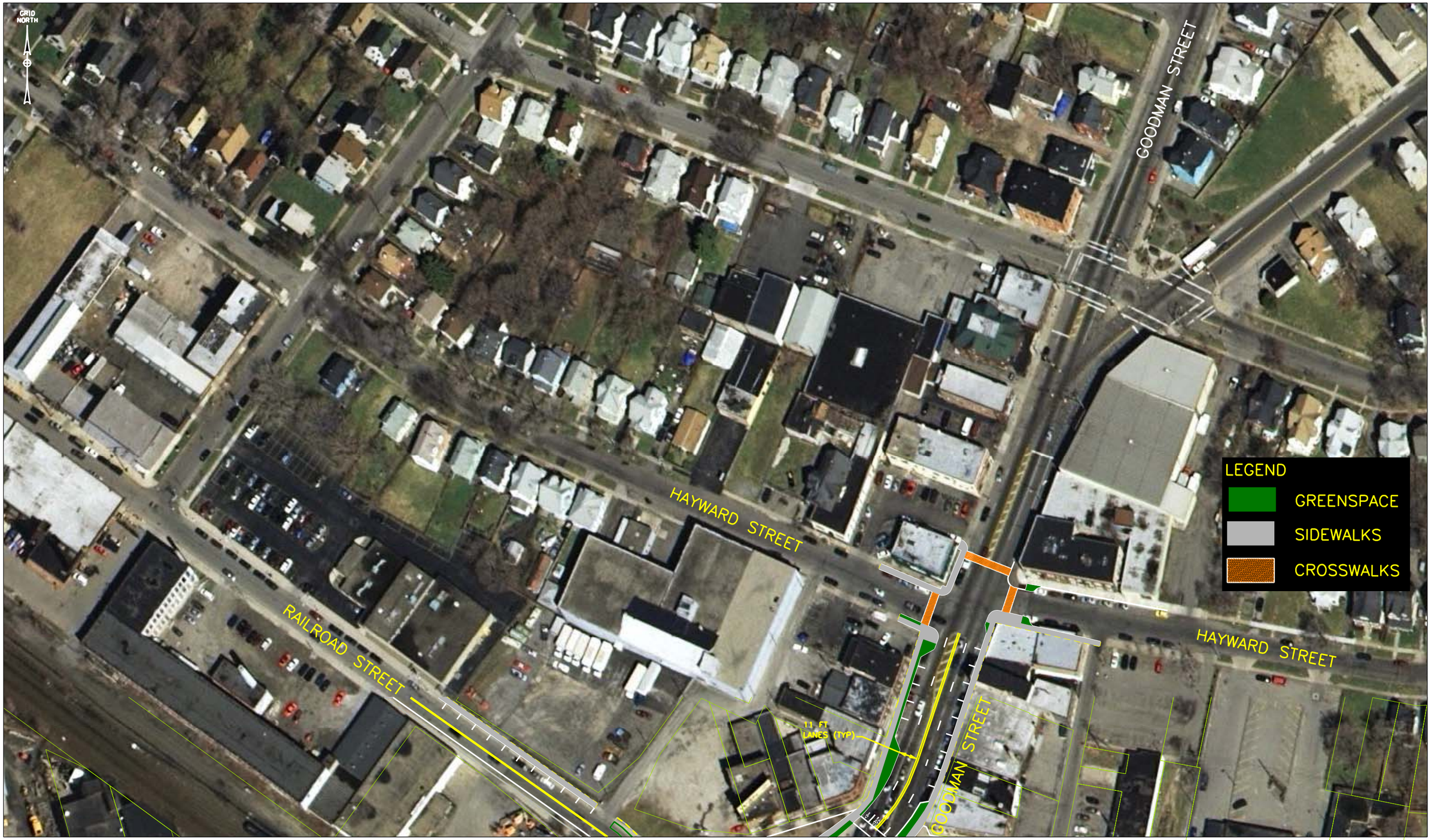
CITY OF ROCHESTER MONROE COUNTY STATE OF NEW YORK

DATE: 4/01/08
DRAWN: ND
DESIGNED: RGR
CHECKED: RGR
SCALE: 1"=100'

MAJOR REALIGNMENT ALTERNATIVE 3 OPTION D

PROJECT NUMBER 1136.00

DRAWING NUMBER 1



REVISIONS				
NO.	DATE	BY	CHKED	DESCRIPTION

CLARK PATTERSON LEE
DESIGN PROFESSIONALS
186 NORTH WATER STREET
ROCHESTER, NEW YORK 14604
TEL (800) 274-9000
FAX (585) 232-5836
www.clarkpatterson.com

MAIN/GOODMAN TRAFFIC STUDY

CITY OF ROCHESTER MONROE COUNTY STATE OF NEW YORK

DATE: 4/01/08
DRAWN: ND
DESIGNED: RGR
CHECKED: RGR
SCALE: 1"=100'

MAJOR REALIGNMENT ALTERNATIVE 3 OPTION A

PROJECT NUMBER 1136.00

DRAWING NUMBER 2

Appendix B

Accident History, Traffic Volumes, and LOS Calculations

THIS PAGE INTENTIONALLY LEFT BLANK

INTERSECTION ACCIDENT RATE CALCULATIONS

Rate per MEV = $\frac{\text{\# of Accidents x 1,000,000}}{\text{Total No. of Entering Vehicles}}$ =

Rate = $\frac{\text{\# of Accidents x 1,000,000}}{\text{Veh./Day x Duration of Study}}$ =

Accidents per million entering vehicles (Acc / MEV)

---

1. E Main Street /Circle Street

ADT = Peak hour entering volume / k factor

ADT = 2651 VPH / 0.10 = 26510 VPD

Rate = $\frac{3 \text{ Acc.} \times 1{,}000{,}000}{26510 \text{ VPD} \times 365 \text{ Days} \times 3.000 \text{ Yrs.}}$ = 0.10 Acc / MEV

2. E Main Street /RailRoad Street

ADT = Peak hour entering volume / k factor

ADT = 2569 VPH / 0.10 = 25690 VPD

Rate = $\frac{1 \text{ Acc.} \times 1{,}000{,}000}{25690 \text{ VPD} \times 365 \text{ Days} \times 3.000 \text{ Yrs.}}$ = 0.04 Acc / MEV

3. E Main Street /N Goodman Street

ADT = Peak hour entering volume / k factor

ADT = 2843 VPH / 0.10 = 28430 VPD

Rate = $\frac{23 \text{ Acc.} \times 1{,}000{,}000}{28430 \text{ VPD} \times 365 \text{ Days} \times 3.000 \text{ Yrs.}}$ = 0.74 Acc / MEV

4. N Goodman Street / Hayward Avenue

ADT = Peak hour entering volume / k factor

ADT = 1469 VPH / 0.10 = 14690 VPD

Rate = $\frac{4 \text{ Acc.} \times 1{,}000{,}000}{14690 \text{ VPD} \times 365 \text{ Days} \times 3.000 \text{ Yrs.}}$ = 0.25 Acc / MEV

5. N Goodman Street / Webster Ave/ Garson Ave

ADT = Peak hour entering volume / k factor

ADT = 1456 VPH / 0.10 = 14560 VPD

Rate = $\frac{7 \text{ Acc.} \times 1{,}000{,}000}{14560 \text{ VPD} \times 365 \text{ Days} \times 3.000 \text{ Yrs.}}$ = 0.44 Acc / MEV

Main Street/Goodman Street Capacity Analysis Summary
AM Peak Hour

INTERSECTION	MOVE-MENT	EXISTING CONDITIONS		FUTURE NO-BUILD CONDITIONS (2030)		2030 FUTURE RE-ALIGNMENT ALTERNATIVES					
						PROPOSED GEO		ALT 1		ALT 2	
		Queue Length (ft)	LOS (delay in sec/veh)	Queue Length (ft)	LOS (delay in sec/veh)	Queue Length (ft)	LOS (delay in sec/veh)	Queue Length (ft)	LOS (delay in sec/veh)	Queue Length (ft)	LOS (delay in sec/veh)
N Goodman Street / Garson Street (S)											
Eastbound - Garson Street	Left										
	Thru	31	C (25.3)	34	C (25.8)	34	C (26.4)	34	C (26.4)	34	C (26.4)
	Right										
Westbound - Garson Street	Left										
	Thru	1	A (3.5)	0	A (2.8)	0	A (2.8)	0	A (2.8)	0	A (2.8)
	Right										
Northbound - N Goodman Street	Left										
	Thru	2	A (1.4)	2	A (1.3)	1	A (1.2)	1	A (1.2)	1	A (1.2)
	Right										
Southbound - N Goodman Street	Left										
	Thru	136	B (16.6)	154	B (17.1)	401	C (27.3)	401	C (27.3)	401	C (27.3)
	Right										
Overall LOS / Delay in sec/veh			B (11.3)		B (11.5)		B (17.3)		B (17.3)		B (17.3)
Webster Avenue / Garson Street (S)											
Eastbound - Garson Street	Left										
	Thru	8	B (19.8)	9	C (20.4)	9	C (20.4)	9	C (20.4)	9	C (20.4)
	Right										
Westbound - Garson Street	Left										
	Thru	47	C (33.7)	50	C (34.3)	50	C (34.5)	50	C (34.5)	50	C (34.5)
	Right										
Northbound - Webster Avenue	Left										
	Thru	10	A (2.9)	11	A (2.9)	12	A (2.9)	12	A (2.9)	12	A (2.9)
	Right										
Southbound - Webster Avenue	Thru	#387	E (65.7)	#450	F (88.8)	#450	F (92.8)	#450	F (92.8)	#450	F (92.8)
	Right	20	B (16.6)	23	B (17.4)	23	B (17.4)	23	B (17.4)	23	B (17.4)
Overall LOS / Delay in sec/veh			D (44.3)		E (58.4)		E (60.9)		E (60.9)		E (60.9)
N Goodman Street / Webster Avenue (S)											
Westbound - Webster Avenue	Left										
	Thru	m 0	A (1.7)	m 0	A (1.7)	m2	A (7.5)	m2	A (7.5)	m2	A (7.5)
	Right										
Northbound - N Goodman Street	Thru	96	B (17.1)	107	B (17.4)	252	C (22.9)	252	C (22.9)	252	C (22.9)
	Right	13	A (1.0)	13	A (1.0)	12	A (1.0)	12	A (1.0)	12	A (1.0)
Southbound - N Goodman Street	Left										
	Thru	23	A (5.1)	25	A (5.2)	#99	B (13.1)	#99	B (13.1)	#99	B (13.1)
	Right										
Overall LOS / Delay in sec/veh			A (6.6)		A (6.7)		B (12.6)		B (12.6)		B (12.6)

Main Street/Goodman Street Capacity Analysis Summary
AM Peak Hour

INTERSECTION	MOVE-MENT	EXISTING CONDITIONS		FUTURE NO-BUILD CONDITIONS (2030)		2030 FUTURE RE-ALIGNMENT ALTERNATIVES					
						PROPOSED GEO		ALT 1		ALT 2	
		Queue Length (ft)	LOS (delay in sec/veh)	Queue Length (ft)	LOS (delay in sec/veh)	Queue Length (ft)	LOS (delay in sec/veh)	Queue Length (ft)	LOS (delay in sec/veh)	Queue Length (ft)	LOS (delay in sec/veh)
Main Street / Circle Street (S)											
Eastbound - Main Street	Thru	121	B (14.1)	134	B (14.7)	133	B (14.7)	133	B (14.7)	133	B (14.7)
	Right										
Westbound - Main Street	Left	M 125	B (13.0)	M 135	C (20.0)	M #91	B (15.8)	M #129	B (19.3)	M 78	B (17.1)
	Thru	345	B (11.4)	395	B (13.0)	M415	B (13.0)	314	A (9.5)	M359	B (11.5)
Northbound - Circle Street	Left	26	C (26.4)	28	C (26.5)	28	C (26.5)	28	C (26.5)	28	C (26.5)
	Right	31	A (5.8)	32	A (5.8)	32	A (5.8)	32	A (5.8)	32	A (5.8)
Overall LOS / Delay in sec/veh			B (12.0)		B (13.8)		B (13.3)		B (11.9)		B (12.7)
Main Street / Railroad Street (U)											
Eastbound - Main Street	Left	21	B (10.0)	32	A (7.6)	22	C (17.0)	33	C (23.5)	33	C (23.4)
	Thru										
Southbound - Railroad Street	Left	44	D (31.9)	126	F (65.3)	23	C (22.7)	68	E (43.1)	68	E (42.9)
	Right										
Main Street / N Goodman Street (S)											
Eastbound - Main Street	Left	192	D (46.2)	214	D (47.2)						
	Thru	48	A (3.7)	61	A (4.3)	274	C (20.7)	50	A (7.7)	5	A (1.7)
	Right							0	A (0.5)		
Westbound - Main Street	Left	5	B (17.5)	1	B (18.0)	#464	D (43.0)	372	C (28.5)	385	D (37.7)
	Thru	363	C (24.0)	#463	C (29.8)						
	Right									29	A (5.7)
Northbound - Driveway	Left	6	C (26.9)	6	C (26.0)	NA		NA		NA	
	Thru										
	Right										
Southbound - N Goodman Street	Left	116	D (43.4)	126	D (43.2)	292	C (24.3)	102	C (20.6)	#472	C (34.5)
	Thru										
	Right	239	C (23.7)	292	C (25.1)			290	C (21.1)		
Overall LOS / Delay in sec/veh			C (25.2)		C (28.0)		C (30.1)		B (18.9)		C (25.3)
N Goodman Ave / Hayward Ave (U)											
Eastbound - Hayward Avenue	Left	6	C (16.1)	9	C (18.7)	26	E (49.2)	18	D (34.5)	26	E (49.2)
	Thru										
	Right										
Westbound - Hayward Avenue	Left	12	C (18.7)	18	C (22.7)	94	F (>80)	49	F (62.4)	94	F (>80)
	Thru										
	Right										
Northbound - N Goodman Street	Left	1	A (1.2)	2	A (0.3)	2	A (0.5)	2	A (0.5)	2	A (0.5)
	Thru										
	Right										
Southbound - N Goodman Street	Left	3	A (1.1)	4	A (0.6)	4	A (1.4)	3	A (1.2)	4	A (1.4)
	Thru										
	Right										

Main Street/Goodman Street Capacity Analysis Summary
AM Peak Hour

INTERSECTION	MOVE-MENT	2030 FUTURE ROAD DIET ALTERNATIVES								2030 FUTURE	
		PROPOSED GEO		ALT 1		PROPOSED GEO - NO DRIVEWAY		NO DRIVEWAY - ALT 1		ROUNDABOUT ALTERNATIVE	
		Queue Length (ft)	LOS (delay in sec/veh)	Queue Length (ft)	LOS (delay in sec/veh)	Queue Length (ft)	LOS (delay in sec/veh)	Queue Length (ft)	LOS (delay in sec/veh)	Queue Length (ft)	LOS (delay in sec/veh)
Main Street / Circle Street (S)											
Eastbound - Main Street	Thru	134	B (14.7)	134	B (14.7)	134	B (14.7)	134	B (14.7)		
	Right										
Westbound - Main Street	Left	M 111	B (17.6)	#145	C (22.4)	M 106	B (17.6)	M 115	B (18.9)		
	Thru	M 434	B (16.4)	381	B (13.7)	M 427	B (15.5)	M 457	B (16.6)		
Northbound - Circle Street	Left	28	C (26.5)	28	C (26.5)	28	C (26.5)	28	C (26.5)		
	Right	32	A (5.8)	32	A (5.8)	32	A (5.8)	32	A (5.8)		
Overall LOS / Delay in sec/veh			B (15.2)		B (14.4)		B (14.8)		B (15.5)		
Main Street / Railroad Street (U)											
Eastbound - Main Street	Left	31	C (22.3)	32	C (22.4)	31	C (22.3)	32	C (22.5)		
	Thru										
Southbound - Railroad Street	Left	65	E (36.8)	65	E (37.2)	64	E (36.7)	66	E (37.5)		
	Right										
Main Street / N Goodman Street (S)											
Eastbound - Main Street	Left	#376	E (60.3)	209	D (41.1)	#371	D (53.7)	164	D (38.8)	82	A (8.9)
	Thru	#306	D (43.2)	189	A (9.8)	#290	D (38.9)	41	A (3.6)	80	A (2.3)
	Right										
Westbound - Main Street	Left	#518	E (60.0)	#570	D (55.0)	#505	D (52.6)	#483	D (42.8)		
	Thru										
	Right									151	A (5.8)
Northbound - Driveway	Left	18	E (57.5)	14	C (27.2)					151	A (6.9)
	Thru									NA	
	Right										
Southbound - N Goodman Street	Left	#482	F (87.0)	#649	F (129.8)	#486	E (61.3)	#476	D (54.8)	250	C (20.7)
	Thru										
	Right	328	C (21.0)		C (22.6)	335	B (19.9)	351	C (21.9)	258	B (14.9)
Overall LOS / Delay in sec/veh			D (54.8)		D (54.0)		D (46.0)		D (35.2)		A (10.1)
N Goodman Ave / Hayward Ave (U)											
Eastbound - Hayward Avenue	Left	26	E (49.1)	26	E (49.1)	26	E (49.1)	26	E (49.1)		
	Thru										
	Right										
Westbound - Hayward Avenue	Left	94	F (>80)	94	F (>80)	94	F (>80)	94	F (>80)		
	Thru										
	Right										
Northbound - N Goodman Street	Left	2	A (0.5)	2	A (0.5)	2	A (0.5)	2	A (0.5)		
	Thru										
	Right										
Southbound - N Goodman Street	Left	4	A (1.4)	4	A (1.4)	4	A (1.4)	4	A (1.4)		
	Thru										
	Right										

Main Street/Goodman Street Capacity Analysis Summary
AM Peak Hour

INTERSECTION	MOVE-MENT	2030 FUTURE ROAD DIET ALTERNATIVES								2030 FUTURE	
		PROPOSED GEO		ALT 1		PROPOSED GEO - NO DRIVEWAY		NO DRIVEWAY - ALT 1		ROUNDABOUT ALTERNATIVE	
		Queue Length (ft)	LOS (delay in sec/veh)	Queue Length (ft)	LOS (delay in sec/veh)	Queue Length (ft)	LOS (delay in sec/veh)	Queue Length (ft)	LOS (delay in sec/veh)	Queue Length (ft)	LOS (delay in sec/veh)
N Goodman Street / Garson Street (S)											
Eastbound - Garson Street	Left										
	Thru	34	C (26.4)	34	C (26.4)	34	C (26.4)	34	C (26.4)		
	Right										
Westbound - Garson Street	Left										
	Thru	0	A (2.8)	0	A (2.8)	0	A (2.8)	0	A (2.8)		
	Right										
Northbound - N Goodman Street	Left										
	Thru	1	A (1.2)	1	A (1.2)	1	A (1.2)	1	A (1.2)		
	Right										
Southbound - N Goodman Street	Left										
	Thru	401	C (27.3)	401	C (27.3)	401	C (27.3)	401	C (27.3)		
	Right										
Overall LOS / Delay in sec/veh			B (17.3)		B (17.3)		B (17.3)		B (17.3)		
Webster Avenue / Garson Street (S)											
Eastbound - Garson Street	Left										
	Thru	9	C (20.4)	9	C (20.4)	9	C (20.4)	9	C (20.4)		
	Right										
Westbound - Garson Street	Left										
	Thru	50	C (34.5)	50	C (34.5)	50	C (34.5)	50	C (34.5)		
	Right										
Northbound - Webster Avenue	Left										
	Thru	12	A (2.9)	12	A (2.9)	12	A (2.9)	12	A (2.9)		
	Right										
Southbound - Webster Avenue	Thru	#450	F (92.8)	#450	F (92.8)	#450	F (92.8)	#450	F (92.8)		
	Right	23	B (17.4)	23	B (17.4)	23	B (17.4)	23	B (17.4)		
Overall LOS / Delay in sec/veh			E (60.9)		E (60.9)		E (60.9)		E (60.9)		
N Goodman Street / Webster Avenue (S)											
Westbound - Webster Avenue	Left										
	Thru	m2	A (7.5)	m2	A (7.5)	m2	A (7.5)	m2	A (7.5)		
	Right										
Northbound - N Goodman Street	Thru	252	C (22.9)	252	C (22.9)	252	C (22.9)	252	C (22.9)		
	Right	12	A (1.0)	12	A (1.0)	12	A (1.0)	12	A (1.0)		
Southbound - N Goodman Street	Left										
	Thru	#99	B (13.1)	#99	B (13.1)	#99	B (13.1)	#99	B (13.1)		
	Right										
Overall LOS / Delay in sec/veh			B (12.6)		B (12.6)		B (12.6)		B (12.6)		

Main Street/Goodmand Street Capacity Analysis Summary
PM Peak Hour

INTERSECTION	MOVEMENT	EXISTING CONDITIONS		FUTURE NO-BUILD CONDITIONS (2030)		2030 FUTURE RE-ALIGNMENT ALTERNATIVES					
						PROPOSED GEO		ALT 1		ALT 2	
		Queue Length (ft)	LOS (delay in sec/veh)	Queue Length (ft)	LOS (delay in sec/veh)	Queue Length (ft)	LOS (delay in sec/veh)	Queue Length (ft)	LOS (delay in sec/veh)	Queue Length (ft)	LOS (delay in sec/veh)
Main Street / Circle Street (S)											
Eastbound - Main Street	Thru	#561	C (24.8)	#722	E (56.8)	385	C (29.9)	385	C (28.6)	385	C (29.9)
	Right										
Westbound - Main Street	Left	m#241	D (48.3)	M#241	D (52.5)	M #215	F (82.5)	M#252	F (82.5)	M#250	F (85.5)
	Thru	41	A (1.9)	M44	A (2.3)	M113	A (7.0)	105	A (5.9)	120	A (6.8)
Northbound - Circle Street	Left	53	C (30.3)	58	C (28.9)	53	C (27.1)	53	C (27.1)	53	C (27.1)
	Right	139	C (28.2)	175	C (32.5)	150	C (23.0)	150	C (22.6)	150	C (23.0)
Overall LOS / Delay in sec/veh			C (21.2)		D (38.6)		C (27.3)		C (26.3)		C (27.5)
Main Street / Railroad Street (U)											
Eastbound - Main Street	Left	8	A (1.1)	9	A (1.4)	31	C 922.2)	34	C (23.7)	34	C (23.7)
	Thru										
Southbound - Railroad Street	Left	7	B (11.3)	8	B (12.4)	212	F (>80)	217	F (>80)	217	F (>80)
	Right										
Main Street / N Goodman Street (S)											
Eastbound - Main Street	Left	#382	C (25.6)	M#386	C (27.2)	473	C (22.7)	M247	B (19.0)	473	C (21.0)
	Thru	206	A (8.0)	M202	A (8.1)			M24	A (5.8)		
	Right									244	D (40.0)
Westbound - Main Street	Left	9	C (25.7)	9	C (26.3)	#367	E (65.5)	295	C (34.2)		
	Thru	282	D (35.0)	#326	D (47.7)					101	B (16.5)
	Right										
Northbound - Driveway	Left	10	C (23.8)	10	C (23.2)	NA		NA		NA	
	Thru										
	Right										
Southbound - N Goodman Street	Left	155	D (38.4)	174	D (38.7)	267	B (18.8)	#101	C (26.0)	267	B (18.4)
	Thru							142	B (12.1)		
	Right	87	A (9.4)	96	A (9.3)				B (18.7)		C (23.8)
Overall LOS / Delay in sec/veh			C (21.4)		C (25.0)		C (32.6)				
N Goodman Ave / Hayward Ave (U)											
Eastbound - Hayward Avenue	Left	16	D (27.0)	25	E (36.2)	26	E (41.9)	14	C (24.3)	26	E (41.9)
	Thru										
	Right										
Westbound - Hayward Avenue	Left	27	C (22.5)	42	D (31.1)	69	F (60.6)	31	D (26.0)	69	F (60.6)
	Thru										
	Right										
Northbound - N Goodman Street	Left	1	A (0.1)	1	A (0.1)	1	A (0.2)	1	A (0.2)	1	A (0.2)
	Thru										
	Right										
Southbound - N Goodman Street	Left	5	A (1.1)	6	A (1.1)	5	A (1.5)	4	A (1.4)	5	A (1.5)
	Thru										
	Right										

Main Street/Goodmand Street Capacity Analysis Summary
PM Peak Hour

INTERSECTION	MOVEMENT	EXISTING CONDITIONS		FUTURE NO-BUILD CONDITIONS (2030)		2030 FUTURE RE-ALIGNMENT ALTERNATIVES					
						PROPOSED GEO		ALT 1		ALT 2	
		Queue Length (ft)	LOS (delay in sec/veh)	Queue Length (ft)	LOS (delay in sec/veh)	Queue Length (ft)	LOS (delay in sec/veh)	Queue Length (ft)	LOS (delay in sec/veh)	Queue Length (ft)	LOS (delay in sec/veh)
N Goodman Street / Garson Street (S)											
Eastbound - Garson Street	Left										
	Thru	42	C (25.8)	45	C (25.7)	37	C (20.2)	37	C (20.2)	37	C (20.2)
	Right										
Westbound - Garson Street	Left										
	Thru	0	A (3.1)	0	A (2.7)	0	A (7.3)	0	A (7.3)	0	A (7.3)
	Right										
Northbound - N Goodman Street	Left										
	Thru	3	A (1.0)	3	A (1.0)	3	A (1.5)	3	A (1.5)	3	A (1.5)
	Right										
Southbound - N Goodman Street	Left										
	Thru	99	B (11.0)	112	B (11.3)	283	C (20.2)	283	C (20.2)	283	C (20.2)
	Right										
Overall LOS / Delay in sec/veh			A (6.3)		A (6.4)		B (10.5)		B (10.5)		B (10.5)
Webster Avenue / Garson Street (S)											
Eastbound - Garson Street	Left										
	Thru	10	C (22.5)	10	C (23.0)	8	B (19.2)	8	B (19.2)	8	B (19.2)
	Right										
Westbound - Garson Street	Left										
	Thru	41	D (35.4)	46	D (37.2)	37	C (27.3)	37	C (27.3)	37	C (27.3)
	Right										
Northbound - Webster Avenue	Left										
	Thru	1	A (0.8)	1	A (0.8)	M21	A (3.7)	M21	A (3.7)	M21	A (3.7)
	Right										
Southbound - Webster Avenue	Thru	180	D (50.3)	201	D (51.8)	152	D (39.7)	152	D (39.7)	152	D (39.7)
	Right	14	B (17.9)	15	B (17.1)	13	B (14.6)	13	B (14.6)	13	B (14.6)
Overall LOS / Delay in sec/veh			C (20.3)		C (21.0)		B (17.7)		B (17.7)		B (17.7)
N Goodman Street / Webster Avenue (S)											
Westbound - Webster Avenue	Left										
	Thru	1	A (1.6)	2	A (1.6)	2	A (2.6)	2	A (2.6)	2	A (2.6)
	Right										
Northbound - N Goodman Street	Thru	M15	A (5.1)	M15	A (4.6)	408	C (27.6)	408	C (27.6)	408	C (27.6)
	Right	0	A (0)	0	A (0)	18	A (1.1)	18	A (1.1)	18	A (1.1)
Southbound - N Goodman Street	Left										
	Thru	M0	A (1.7)	M0	A (1.2)	42	A (7.0)	42	A (7.0)	42	A (7.0)
	Right										
Overall LOS / Delay in sec/veh			A (3.8)		A (3.5)		B (13.0)		B (13.0)		B (13.0)

Main Street/Goodmand Street Capacity Analysis Summary
PM Peak Hour

INTERSECTION	MOVEMENT	2030 FUTURE ROAD DIET ALTERNATIVES								2030 FUTURE ROUNDABOUT ALTERNATIVE	
		PROPOSED GEO		ALT 1		PROPOSED GEO -		NO DRIVEWAY - ALT 1			
		Queue Length (ft)	LOS (delay in sec/veh)	Queue Length (ft)	LOS (delay in sec/veh)	Queue Length (ft)	LOS (delay in sec/veh)	Queue Length (ft)	LOS (delay in sec/veh)	Queue Length (ft)	LOS (delay in sec/veh)
Main Street / Circle Street (S)											
Eastbound - Main Street	Thru	#689	D (53.4)	#689	D (53.4)	#689	D (53.4)	#689	D (53.4)		
	Right										
Westbound - Main Street	Left	m#202	F (>80)	M#226	F (>80)	M#218	F (>80)	M#246	F (>80)		
	Thru	m141	A (6.5)	M181	A (8.2)	M130	A (5.9)	M204	A (8.5)		
Northbound - Circle Street	Left	58	C (27.0)	58	C (27.0)	58	C (27.0)	58	C (27.0)		
	Right	188	C (27.6)	188	C (27.6)	188	C (27.6)	188	C (27.6)		
Overall LOS / Delay in sec/veh			D (42.0)		D (42.7)		D (42.1)		D (42.8)		
Main Street / Railroad Street (U)											
Eastbound - Main Street	Left	9	B (10.9)	9	B (10.9)	9	B (10.8)	9	B (10.9)		
	Thru										
Southbound - Railroad Street	Left	8	B (10.1)	8	B (10.1)	8	B (10.1)	8	B (10.1)		
	Right										
Main Street / N Goodman Street (S)											
Eastbound - Main Street	Left	M#524	F (85.9)	M#313	E (55.3)	M#494	E (68.1)	M#311	D (44.7)	243	A (9.9)
	Thru	M#501	E (69.1)	M148	B (10.8)	M#481	D (54.4)	M126	A (8.9)	243	A (3.5)
	Right										
Westbound - Main Street	Left	#388	E (77.4)	#358	D (53.2)	#362	E (56.9)	324	D (45.5)		
	Thru									338	C (24.7)
	Right									338	C (24.5)
Northbound - Driveway	Left	30	E (67.5)	22	C (24.6)	NA		NA		NA	
	Thru										
	Right										
Southbound - N Goodman Street	Left	#407	F (>80)	#448	E (67.7)	#440	E (78.9)	#376	D (46.0)	113	B (12.0)
	Thru										
	Right	156	A (8.8)	173	A (9.7)	162	A (9.2)	169	A (10.0)	113	A (6.7)
Overall LOS / Delay in sec/veh			E (70.4)		D (39.8)		E (55.3)		C (32.4)		B (11.4)
N Goodman Ave / Hayward Ave (U)											
Eastbound - Hayward Avenue	Left	47	F (74.3)	47	F (74.3)	47	F (74.3)	47	F (74.3)		
	Thru										
	Right										
Westbound - Hayward Avenue	Left	146	F (>80)	146	F (>80)	146	F (>80)	146	F (>80)		
	Thru										
	Right										
Northbound - N Goodman Street	Left	1	A (0.2)	1	A (0.2)	1	A (0.2)	1	A (0.2)		
	Thru										
	Right										
Southbound - N Goodman Street	Left	6	A (1.8)	6	A (1.8)	6	A (1.8)	6	A (1.8)		
	Thru										
	Right										

Main Street/Goodmand Street Capacity Analysis Summary
PM Peak Hour

INTERSECTION	MOVEMENT	2030 FUTURE ROAD DIET ALTERNATIVES								2030 FUTURE ROUNDABOUT ALTERNATIVE	
		PROPOSED GEO		ALT 1		PROPOSED GEO -		NO DRIVEWAY - ALT 1			
		Queue Length (ft)	LOS (delay in sec/veh)	Queue Length (ft)	LOS (delay in sec/veh)	Queue Length (ft)	LOS (delay in sec/veh)	Queue Length (ft)	LOS (delay in sec/veh)	Queue Length (ft)	LOS (delay in sec/veh)
N Goodman Street / Garson Street (S)											
Eastbound - Garson Street	Left	39	C (20.1)	39	C (20.1)	39	C (20.1)	39	C (20.1)		
	Thru										
	Right										
Westbound - Garson Street	Left	0	A (4.4)	0	A (4.4)	0	A (4.4)	0	A (4.4)		
	Thru										
	Right										
Northbound - N Goodman Street	Left	M 3	A (1.8)	M 3	A (1.8)	M 3	A (1.8)	M 3	A (1.8)		
	Thru										
	Right										
Southbound - N Goodman Street	Left	328	C (22.3)	328	C (22.3)	328	C (22.3)	328	C (22.3)		
	Thru										
	Right										
Overall LOS / Delay in sec/veh			B (11.4)		B (11.4)		B (11.4)		B (11.4)		
Webster Avenue / Garson Street (S)											
Eastbound - Garson Street	Left	9	B (19.9)	9	B (19.9)	9	B (19.9)	9	B (19.9)		
	Thru										
	Right										
Westbound - Garson Street	Left	40	C (28.1)	40	C (28.1)	40	C (28.1)	40	C (28.1)		
	Thru										
	Right										
Northbound - Webster Avenue	Left	M 23	A (3.7)	M 23	A (3.7)	M 23	A (3.7)	M 23	A (3.7)		
	Thru										
	Right										
Southbound - Webster Avenue	Thru	170	D (39.8)	170	D (39.8)	170	D (39.8)	170	D (39.8)		
	Right	14	B (13.9)	14	B (13.9)	14	B (13.9)	14	B (13.9)		
Overall LOS / Delay in sec/veh			B (17.8)		B (17.8)		B (17.8)		B (17.8)		
N Goodman Street / Webster Avenue (S)											
Westbound - Webster Avenue	Left	2	A (2.4)	2	A (2.4)	2	A (2.4)	2	A (2.4)		
	Thru										
	Right										
Northbound - N Goodman Street	Thru	#531	C (33.5)	#531	C (33.5)	#531	C (33.5)	#531	C (33.5)		
	Right	20	A (1.1)	20	A (1.1)	20	A (1.1)	20	A (1.1)		
Southbound - N Goodman Street	Left	47	A (8.1)	47	A (8.1)	47	A (8.1)	47	A (8.1)		
	Thru										
	Right										
Overall LOS / Delay in sec/veh			B (15.5)		B (15.5)		B (15.5)		B (15.5)		

Pedestrian & Bicycle Levels of Service for Existing Conditions

MAIN/GOODMAN

	Main/Circle	Main/Railroad	Main/Goodman	Hayward/Goodman	Webster/Garson	Garson/Goodman
Lanes Per Direction	1	1	2	1	1	1
Outside Lane Width	10	15	8	20	8	12
Paved Shoulder/Marked Parking width	0	0	0	0	0	0
ADT	25210	1550	16170	8940	4950	8940
Posted Speed Limit	30	30	30	30	30	30
Heavy Vehicle Percentage	8	8	8	10	10	10
FHWA's pavement condition rating	3	3	3	3	3	3
% of segment w/occupied parking	0	91	0	80	0	86
% of segment w/sidewalks	100	91	100	80	100	86
Sidewalk width	10	8	8	8	8	8
Sidewalk buffer/parkway width	0	0	0	8	0	8
PLOS RESULTS	E -4.8	B - 1.68	B - 2.85	B - 2.5	C- 2.55	C- 2.59
BLOS RESULTS	F - 6.24)	E - 5.15	F- 5.66	F- 6.03	F- 6.13	F- 6.69

PM PEAK HOUR

WEST LEG CROSSWALK

INPUT	UNITS	Existing	2030 Future No-Build	Alternative 3: Re-Alignment			Alternative 1: Road Diet			
				Option A	Option B	Option C	Option A	Option B	Option C	Option D
RTOR in a 15 minute period		3	3	0	0	0	3	3	0	0
Perm Lefts in a 15 minute period		2	2	130	130	130	2	2	0	0
Traffic in the outside through lane of the street being crossed		265	300	300	300	300	300	300	300	300
Midblock 85th percentile speed of traffic on the street being crossed in a 15 minute period	mph	35	35	35	35	35	35	35	35	35
No of Lanes being crossed by the pedestrian		6	6	4	5	4	5	5	5	5
Cycle Length	Seconds	100	100	100	100	100	100	100	100	100
Phase Green Time		30	30	26	35	28	5	27	21	27
Constant										
PLOS		3.65	3.80	4.20	4.36	4.20	3.68	3.65	3.63	3.63
		D	D	D	D	D	D	D	D	D
HCM (Average pedestrian delay d_p) =		$(C-g)^2$	$(C-g)^2$	$(C-g)^2$	$(C-g)^2$	$(C-g)^2$	$(C-g)^2$	$(C-g)^2$	$(C-g)^2$	$(C-g)^2$
		2C	2C	2C	2C	2C	2C	2C	2C	2C
	=	24.5	24.5	25.92	21.125	25.92	45.125	26.645	31.205	26.645

PM PEAK HOUR

EAST LEG CROSSWALK

INPUT	UNITS	Existing	2030 Future No-Build	Alternative 3: Re-Alignment			Alternative 1: Road Diet			
				Option A	Option B	Option C	Option A	Option B	Option C	Option D
RTOR in a 15 minute period		15	20	20	20	20	20	20	20	20
Perm Lefts in a 15 minute period		40	45	43	18	43	6	45	45	45
Traffic in the outside through lane of the street being crossed		75	84	936	936	936	84	168	84	168
Midblock 85th percentile speed of traffic on the street being crossed in a 15 minute period	mph	35	35	35	35	35	35	35	35	35
No of Lanes being crossed by the pedestrian		5	5	3	3	4	4	3	4	3
Cycle Length	Seconds	100	100	100	100	100	100	100	100	100
Phase Green Time		30	30	62	45	62	5	27	21	27
Constant										
PLOS		2.93	3.03	6.41	6.30	6.60	2.66	3.05	2.87	3.05
		C	C	F	F	F	C	C	C	C
HCM (Average pedestrian delay d_p) =		$(C-g)^2$	$(C-g)^2$	$(C-g)^2$	$(C-g)^2$	$(C-g)^2$	$(C-g)^2$	$(C-g)^2$	$(C-g)^2$	$(C-g)^2$
		2C	2C	2C	2C	2C	2C	2C	2C	2C
	=	24.5	24.5	7.22	15.125	7.22	45.125	26.645	31.205	26.645

PM PEAK HOUR

NORTH LEG CROSSWALK

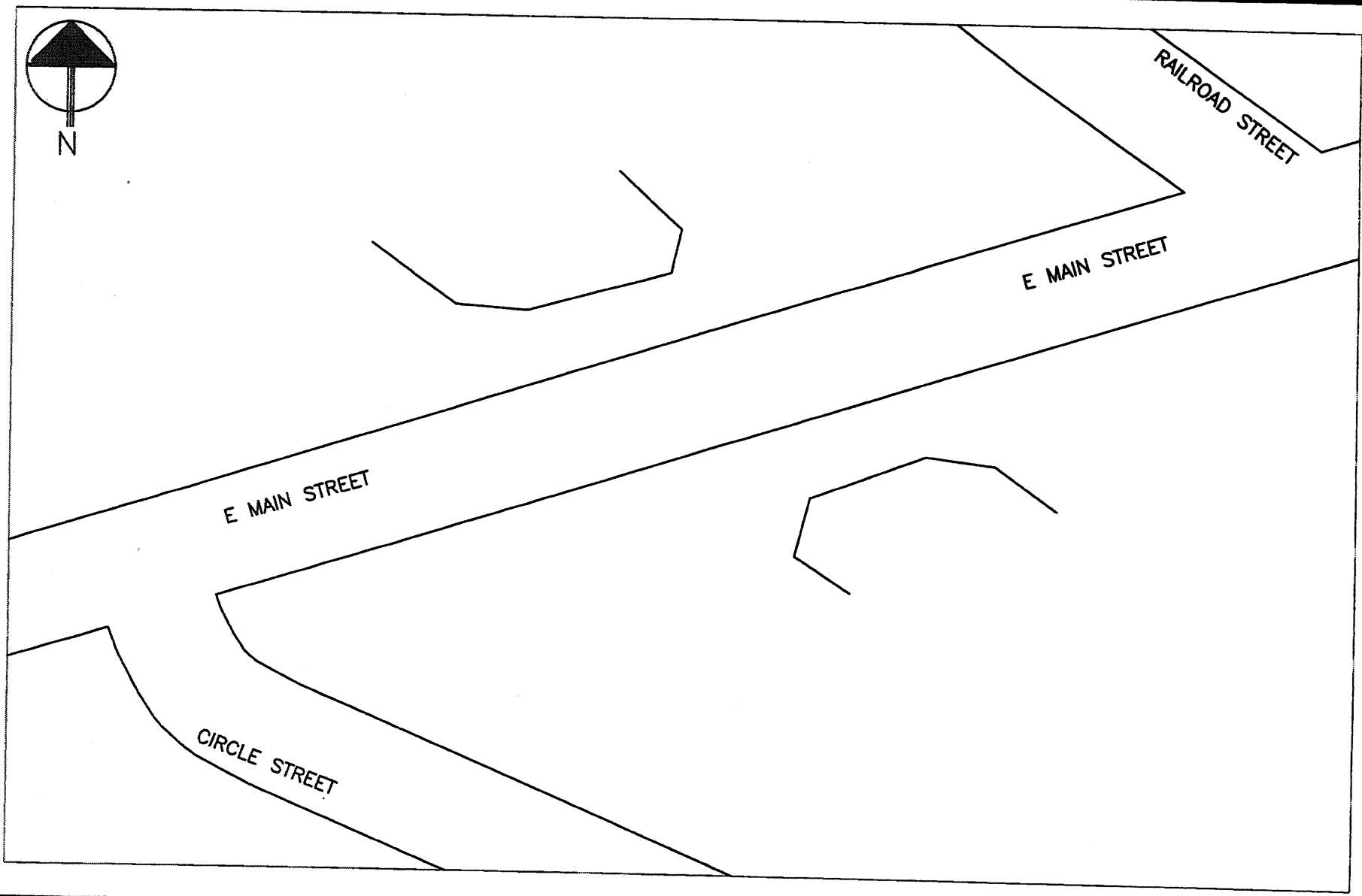
INPUT	UNITS	Existing	2030 Future No-Build	Alternative 3: Re-Alignment			Alternative 1: Road Diet			
				Option A	Option B	Option C	Option A	Option B	Option C	Option D
RTOR in a 15 minute period		30	50	0	0	0	50	50	50	50
Perm Lefts in a 15 minute period		0	0	0	0	0	0	0	0	0
Traffic in the outside through lane of the street being crossed		85	96	192	192	192	96	96	96	96
Midblock 85th percentile speed of traffic on the street being crossed in a 15 minute period	mph	35	35	35	35	35	35	35	35	35
No of Lanes being crossed by the pedestrian		6	6	4	5	4	4	4	4	4
Cycle Length	Seconds	100	100	100	100	100	100	100	100	100
Phase Green Time		27	27	28	34	28	24	27	26	27
Constant										
PLOS		2.99	3.15	2.98	3.14	2.98	2.84	2.83	2.83	2.83
		C	C	C	C	C	C	C	C	C
HCM (Average pedestrian delay d_p) =		$(C-g)^2$ / 2C	$(C-g)^2$ / 2C	$(C-g)^2$ / 2C	$(C-g)^2$ / 2C	$(C-g)^2$ / 2C	$(C-g)^2$ / 2C	$(C-g)^2$ / 2C	$(C-g)^2$ / 2C	$(C-g)^2$ / 2C
=		26.645	26.645	25.92	21.78	25.92	28.88	26.645	27.38	26.645

THIS PAGE INTENTIONALLY LEFT BLANK

Appendix C

Accident Diagrams

THIS PAGE INTENTIONALLY LEFT BLANK



ACCIDENT DETAIL

TYPE OF ACCIDENT

NUMBER OF VEHICLES

KEY NUMBER

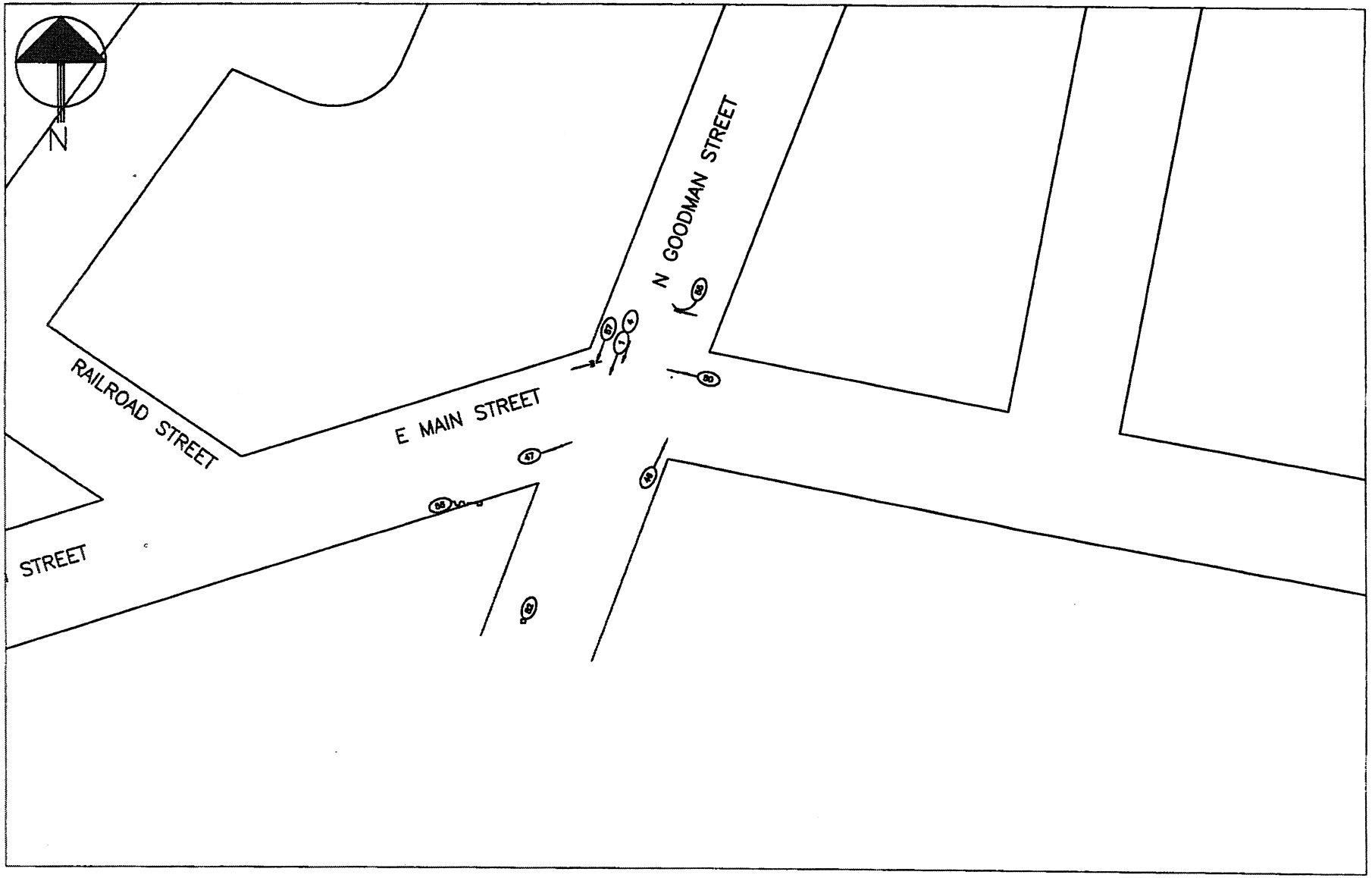
SYMBOLS

- MOVING VEHICLE
- BACKING VEHICLE
- STOPPED VEHICLE
- PARKED VEHICLE
- FIXED OBJECT
- STOPPED VEHICLE
- SIDE SWIPE
- P- PEDESTRIAN
- B- BICYCLE
- M- MOTORCYCLE
- D- DEER

ACCIDENT DIAGRAM (SEP 2004 - AUG 2005)

MAIN & GOODMAN
CITY OF ROCHESTER, NY

SRF ASSOCIATES
WWW.SRFA.NET
Traffic Engineering & Planning Consultants

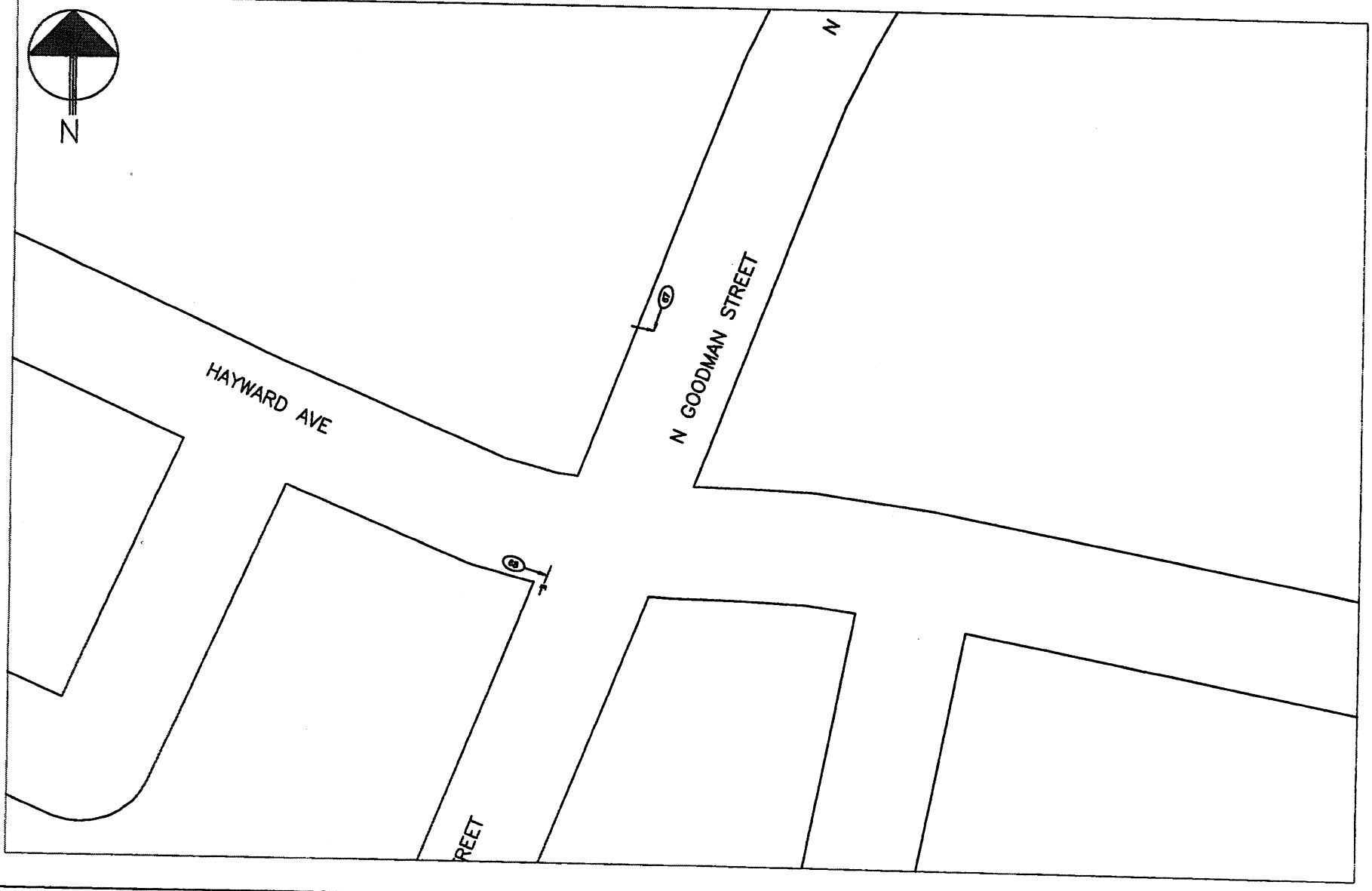


ACCIDENT DETAIL	SYMBOLS			
TYPE OF ACCIDENT NUMBER OF VEHICLES KEY NUMBER	MOVING VEHICLE	SIDE SWIPE		
	BACKING VEHICLE			
	STOPPED VEHICLE	P	PEDESTRIAN	
	PARKED VEHICLE	B	BICYCLE	
	FIXED OBJECT	M	MOTORCYCLE	
	STOPPED VEHICLE	D	DEER	

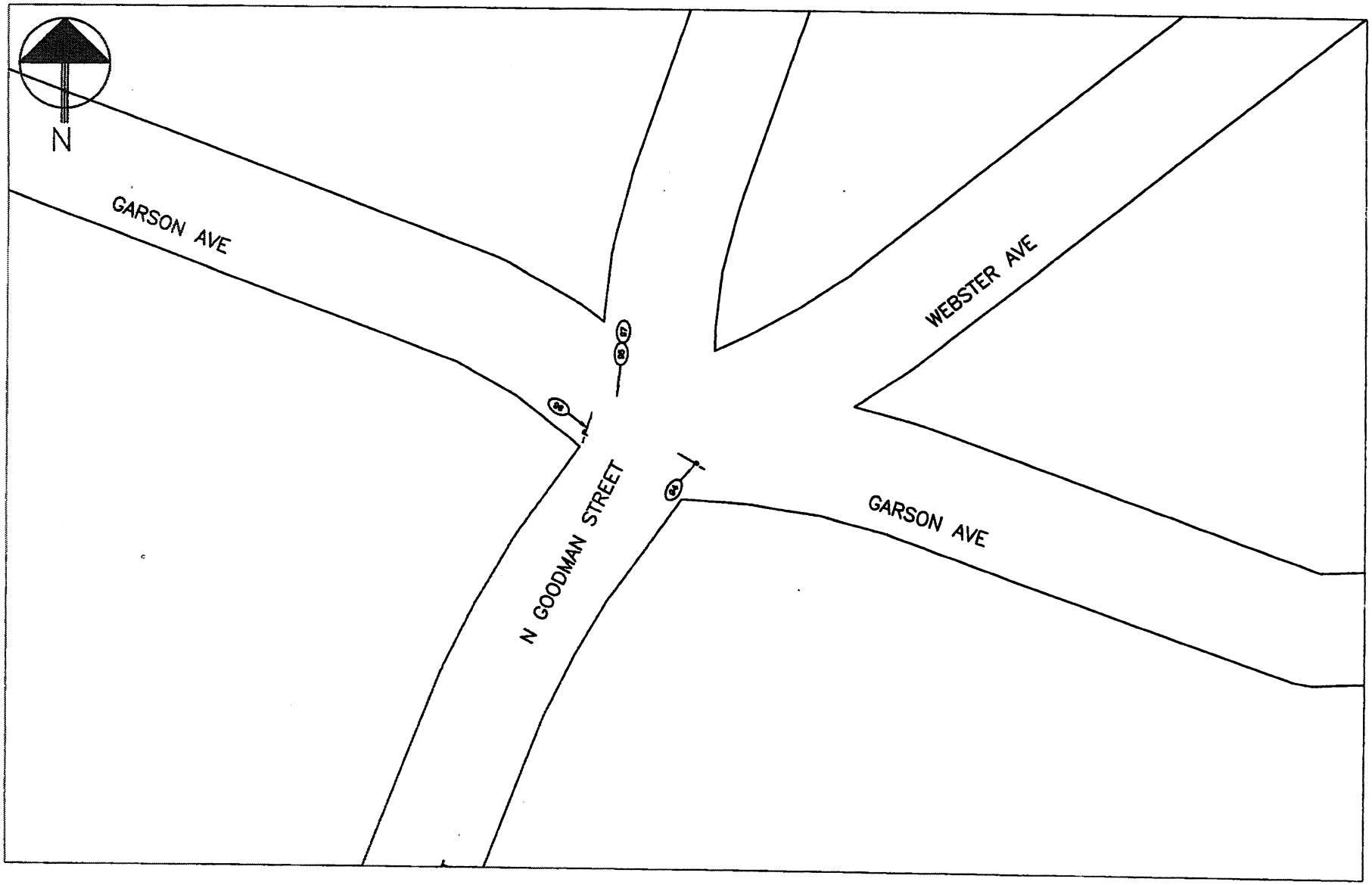
ACCIDENT DIAGRAM
(SEP 2004 - AUG 2005)

MAIN & GOODMAN
CITY OF ROCHESTER, NY

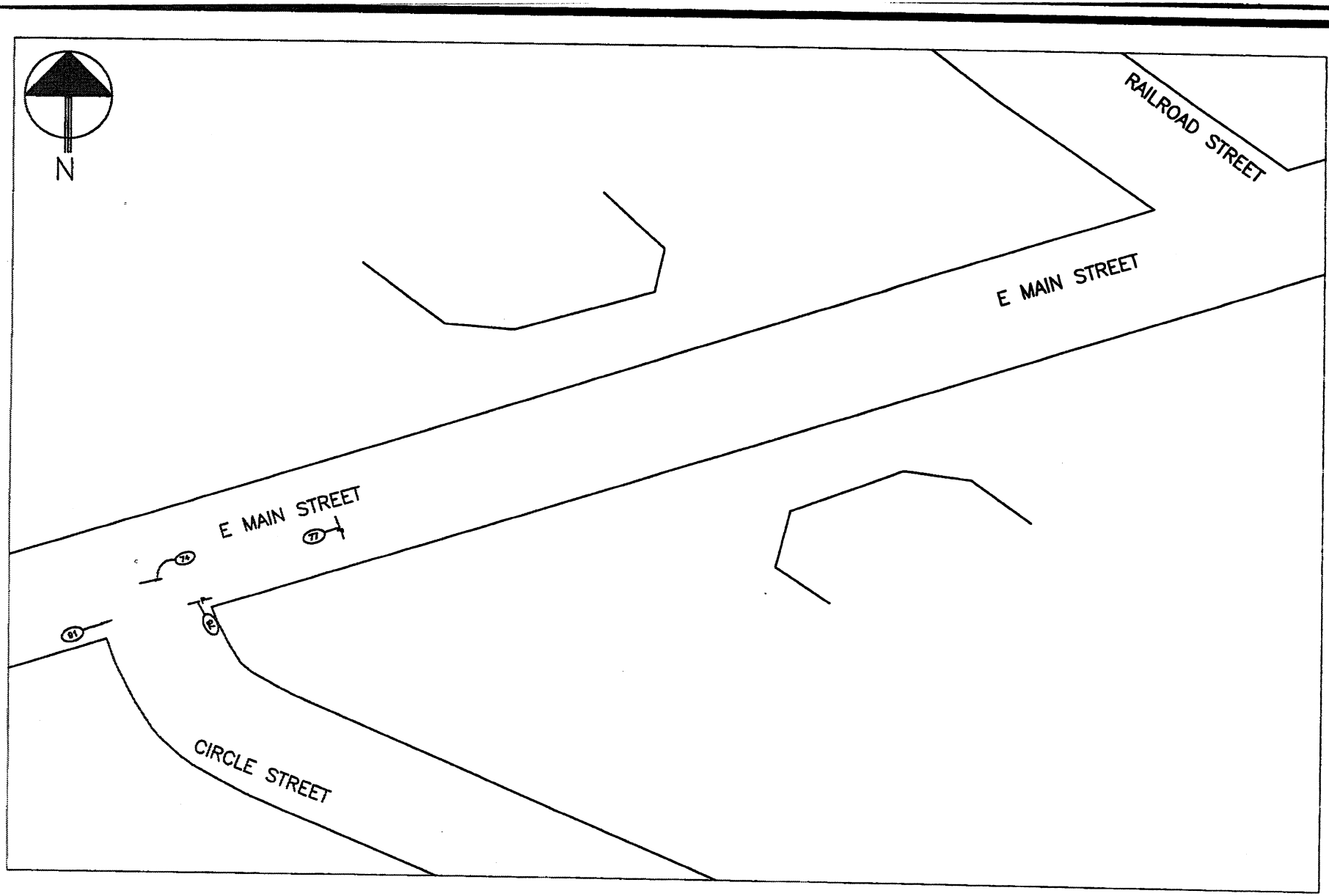
SRF ASSOCIATES
WWW.SRFA.NET
Traffic Engineering & Planning Consultants



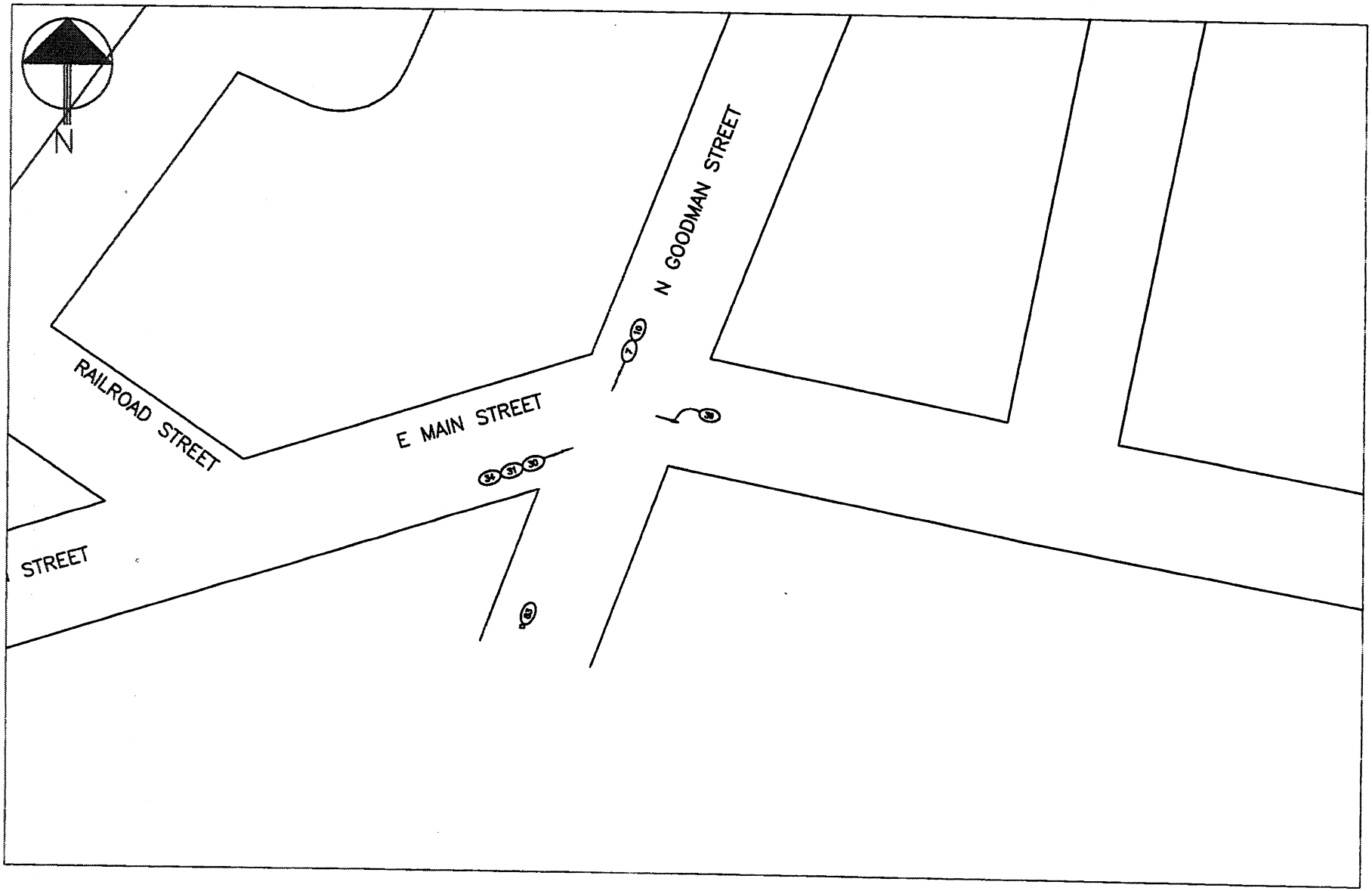
ACCIDENT DETAIL	SYMBOLS	ACCIDENT DIAGRAM (SEP 2004 - AUG 2005)	SRF ASSOCIATES
TYPE OF ACCIDENT NUMBER OF VEHICLES KEY NUMBER	MOVING VEHICLE BACKING VEHICLE STOPPED VEHICLE PARKED VEHICLE FIXED OBJECT STOPPED VEHICLE SIDE SWIPE PEDESTRIAN BICYCLE MOTORCYCLE DEER	MAIN & GOODMAN CITY OF ROCHESTER, NY	WWW.SRFA.NET *Traffic Engineering & Planning Consultants*



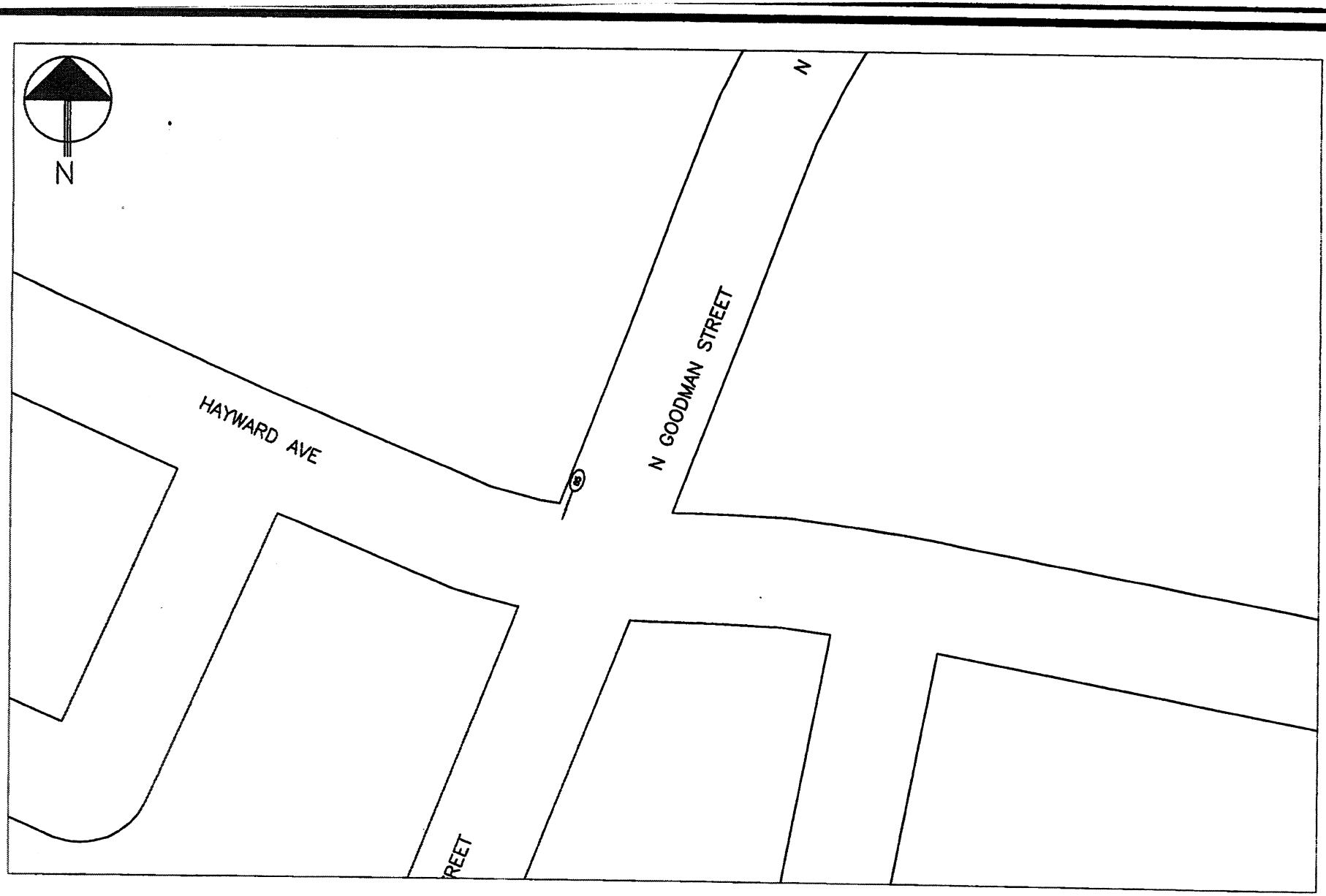
ACCIDENT DETAIL	SYMBOLS	ACCIDENT DIAGRAM (SEP 2004 - AUG 2005)	SRF ASSOCIATES
TYPE OF ACCIDENT NUMBER OF VEHICLES KEY NUMBER	MOVING VEHICLE BACKING VEHICLE STOPPED VEHICLE PARKED VEHICLE FIXED OBJECT STOPPED VEHICLE SIDE SWIPE P- PEDESTRIAN B- BICYCLE M- MOTORCYCLE D- DEER	MAIN & GOODMAN CITY OF ROCHESTER, NY	WWW.SRFA.NET Traffic Engineering & Planning Consultants



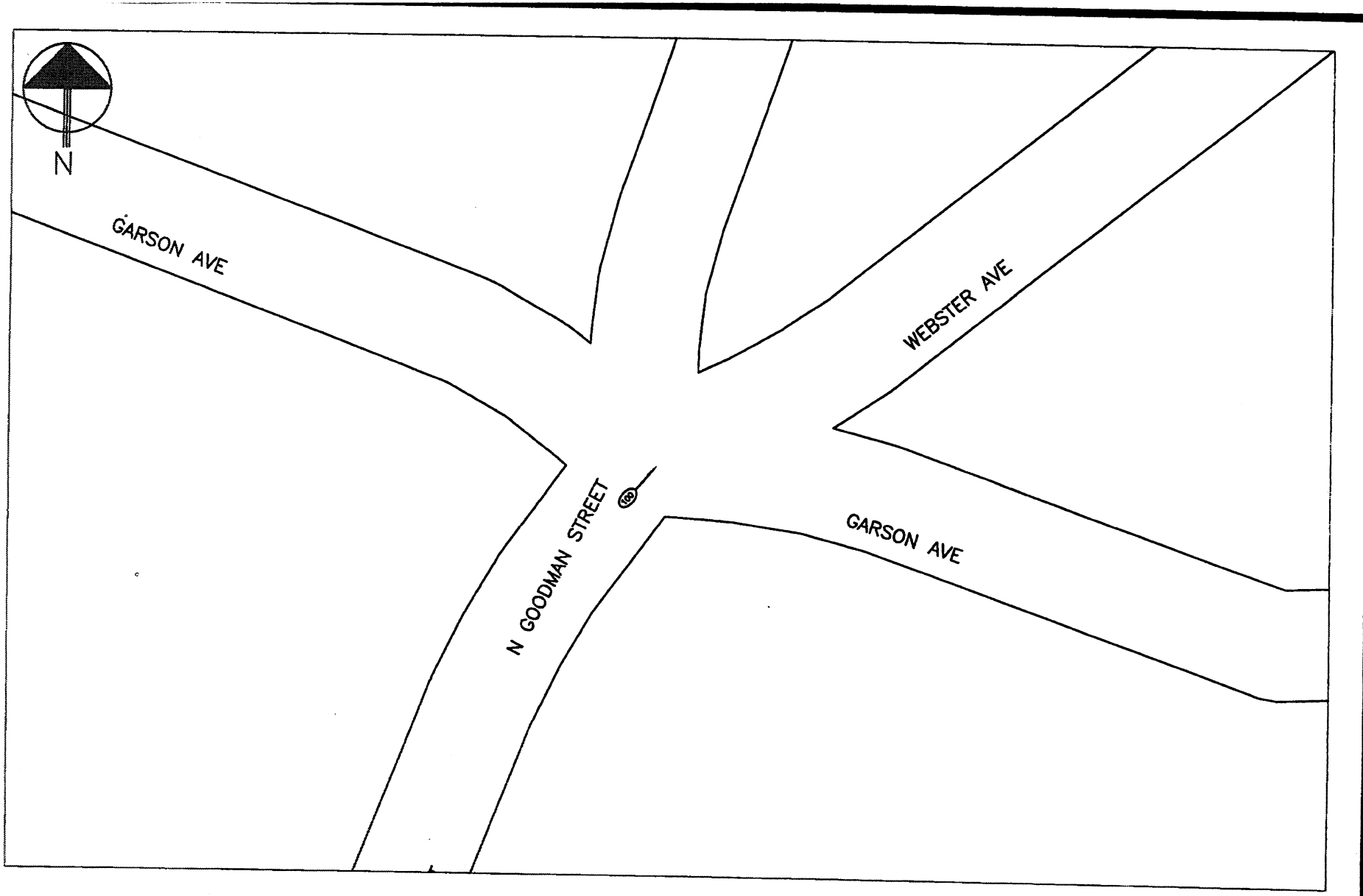
ACCIDENT DETAIL	SYMBOLS	ACCIDENT DIAGRAM (SEP 2005 - AUG 2006)	
TYPE OF ACCIDENT NUMBER OF VEHICLES KEY NUMBER	MOVING VEHICLE BACKING VEHICLE STOPPED VEHICLE PARKED VEHICLE FIXED OBJECT STOPPED VEHICLE SIDE SWIPE PEDESTRIAN BICYCLE MOTORCYCLE DEER	MAIN & GOODMAN CITY OF ROCHESTER, NY	SRF ASSOCIATES WWW.SRFA.NET Traffic Engineering & Planning Consultants



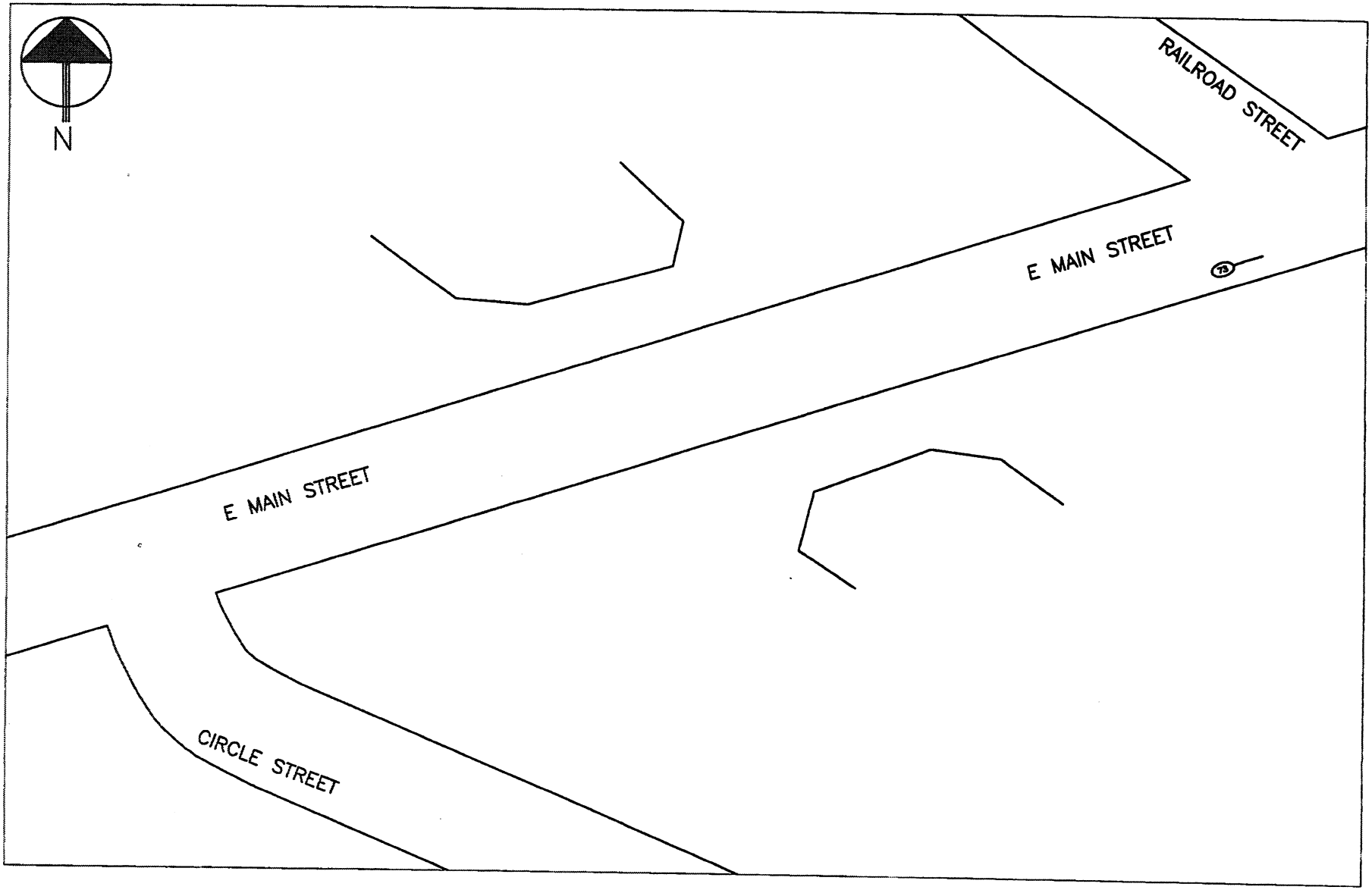
ACCIDENT DETAIL	SYMBOLS	ACCIDENT DIAGRAM (SEP 2005 - AUG 2006)	SRF ASSOCIATES
TYPE OF ACCIDENT NUMBER OF VEHICLES KEY NUMBER	MOVING VEHICLE BACKING VEHICLE STOPPED VEHICLE PARKED VEHICLE FIXED OBJECT STOPPED VEHICLE SIDE SWIPE PEDESTRIAN BICYCLE MOTORCYCLE DEER	MAIN & GOODMAN CITY OF ROCHESTER, NY	WWW.SRFA.NET Traffic Engineering & Planning Consultants



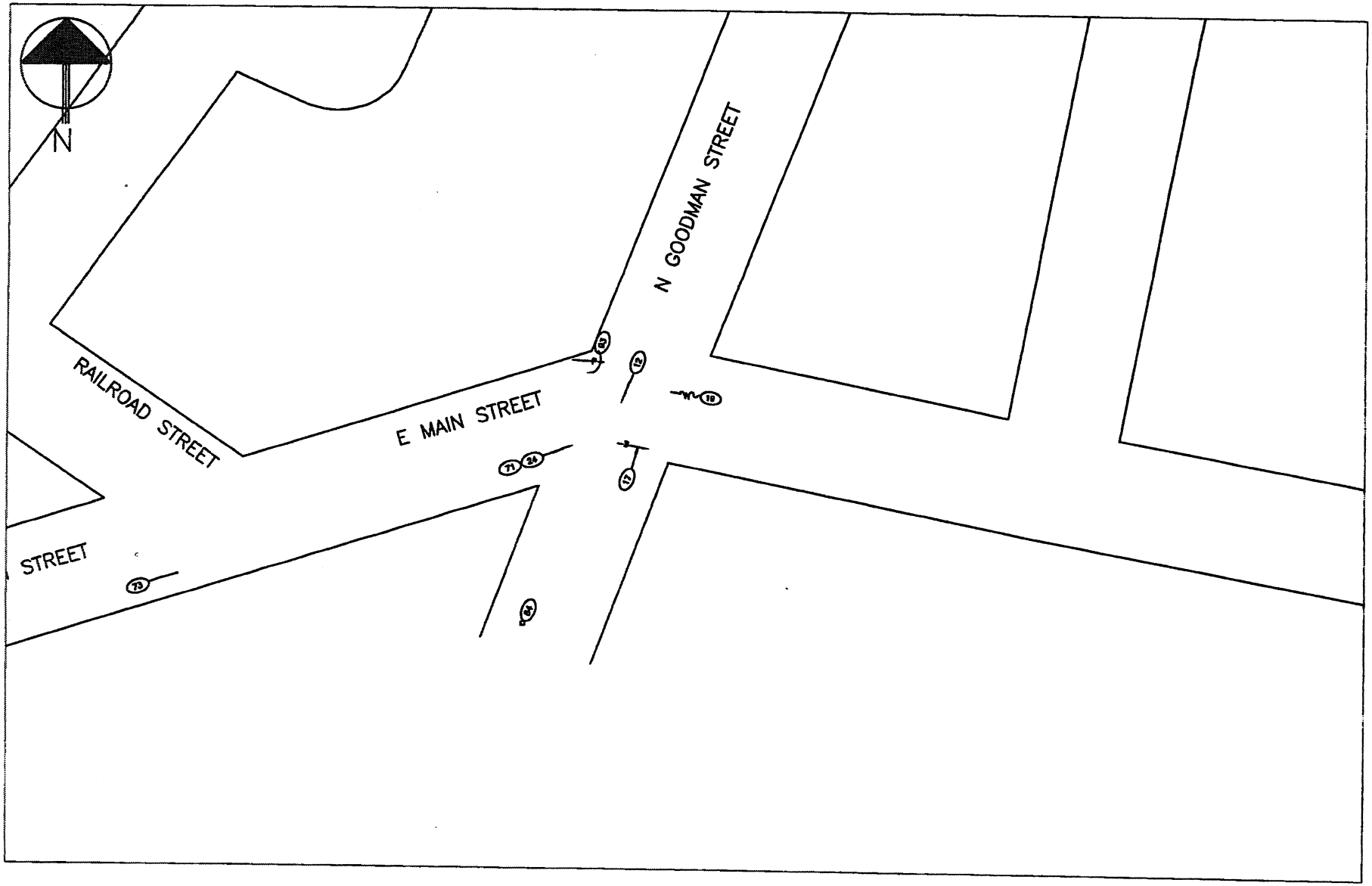
ACCIDENT DETAIL	SYMBOLS	ACCIDENT DIAGRAM (SEP 2005 - AUG 2006)	SRF ASSOCIATES
TYPE OF ACCIDENT NUMBER OF VEHICLES KEY NUMBER	MOVING VEHICLE BACKING VEHICLE STOPPED VEHICLE PARKED VEHICLE FIXED OBJECT STOPPED VEHICLE SIDE SWIPE PEDESTRIAN BICYCLE MOTORCYCLE DEER	MAIN & GOODMAN CITY OF ROCHESTER, NY	WWW.SRFA.NET *Traffic Engineering & Planning Consultants*



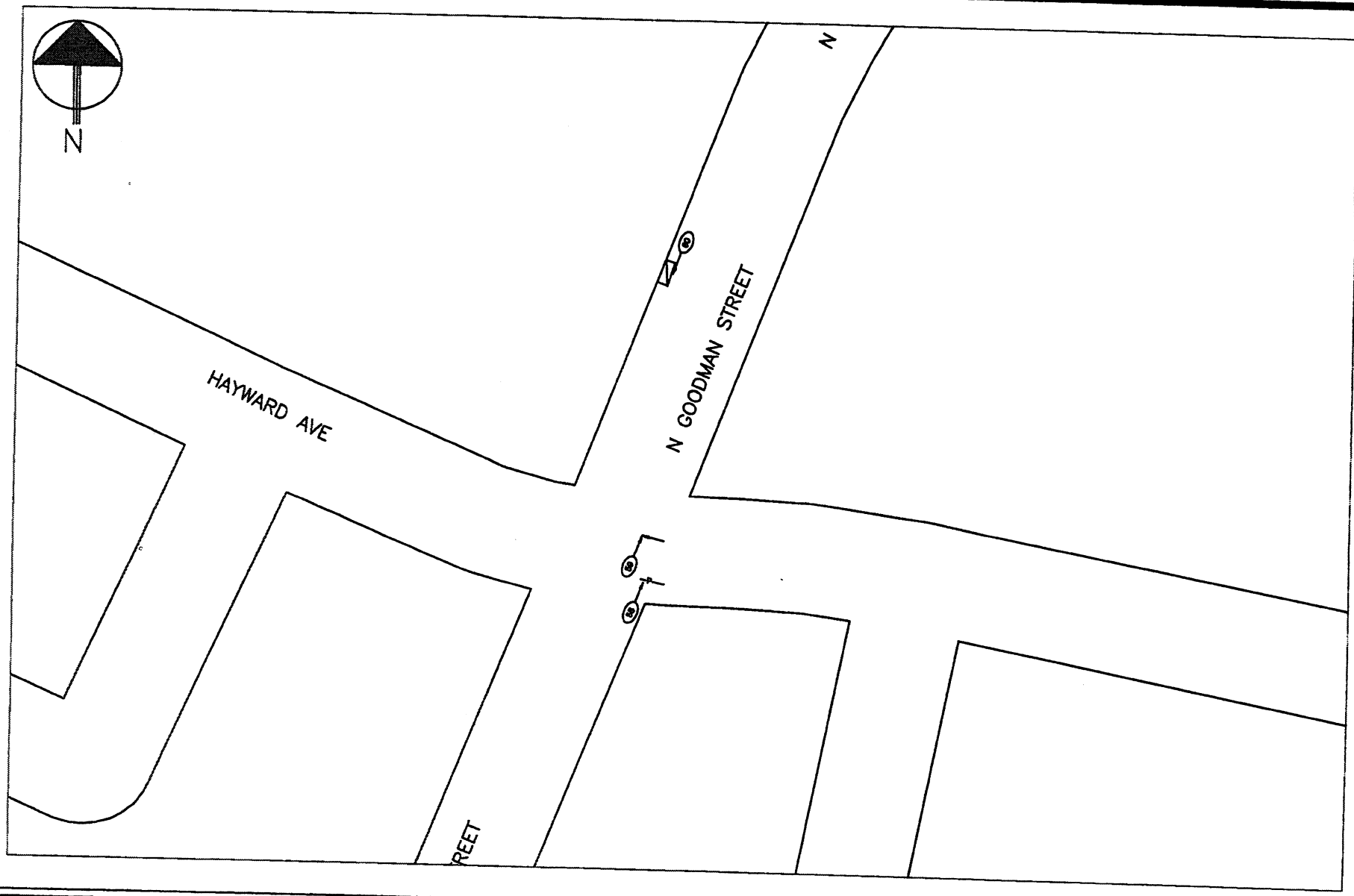
ACCIDENT DETAIL	SYMBOLS	ACCIDENT DIAGRAM (SEP 2005 - AUG 2006)	SRF ASSOCIATES
TYPE OF ACCIDENT NUMBER OF VEHICLES KEY NUMBER	MOVING VEHICLE BACKING VEHICLE STOPPED VEHICLE PARKED VEHICLE FIXED OBJECT STOPPED VEHICLE SIDE SWIPE PEDESTRIAN BICYCLE MOTORCYCLE DEER	MAIN & GOODMAN CITY OF ROCHESTER, NY	WWW.SRFA.NET Traffic Engineering & Planning Consultants



ACCIDENT DETAIL	SYMBOLS	ACCIDENT DIAGRAM (SEP 2006 - AUG 2007)	SRF ASSOCIATES
TYPE OF ACCIDENT NUMBER OF VEHICLES KEY NUMBER	MOVING VEHICLE BACKING VEHICLE STOPPED VEHICLE PARKED VEHICLE FIXED OBJECT STOPPED VEHICLE SIDE SWIPE P- PEDESTRIAN B- BICYCLE M- MOTORCYCLE D- DEER	MAIN & GOODMAN CITY OF ROCHESTER, NY	WWW.SRFA.NET Traffic Engineering & Planning Consultants



ACCIDENT DETAIL	SYMBOLS	ACCIDENT DIAGRAM (SEP 2006 - AUG 2007)	SRF ASSOCIATES
TYPE OF ACCIDENT NUMBER OF VEHICLES KEY NUMBER	MOVING VEHICLE BACKING VEHICLE STOPPED VEHICLE PARKED VEHICLE FIXED OBJECT STOPPED VEHICLE SIDE SWIPE PEDESTRIAN BICYCLE MOTORCYCLE DEER	MAIN & GOODMAN CITY OF ROCHESTER, NY	WWW.SRFA.NET Traffic Engineering & Planning Consultants



ACCIDENT DETAIL	SYMBOLS	ACCIDENT DIAGRAM (SEP 2006 - AUG 2007)	SRF ASSOCIATES
TYPE OF ACCIDENT NUMBER OF VEHICLES KEY NUMBER	MOVING VEHICLE BACKING VEHICLE STOPPED VEHICLE PARKED VEHICLE FIXED OBJECT STOPPED VEHICLE SIDE SWIPE -P- PEDESTRIAN -B- BICYCLE -M- MOTORCYCLE -D- DEER	MAIN & GOODMAN CITY OF ROCHESTER, NY	WWW.SRFA.NET *Traffic Engineering & Planning Consultants*

THIS PAGE INTENTIONALLY LEFT BLANK

Appendix D

Opinion of Probable Cost

THIS PAGE INTENTIONALLY LEFT BLANK

Preliminary Opinion of Probable Cost - Minor Modifications

Project: **Main Goodman**

Date: **July 1, 2008**

Clark Patterson Lee
DESIGN PROFESSIONALS

Item #	Description	Quantity	Pay Unit	Unit Price	Cost
203.02	Unclassified Excavation and Disposal	2302	CY	$9.75	$22,444.50
206.02	Trench and Culvert Excavation	775	CY	$22.95	$17,786.25
304.12	Subbase Course, Type 2	610	CY	$31.50	$19,215.00
402.096201	9.5mm F2 Superpave HMA, 60 Series Compaction	74	T	$100.00	$7,400.00
402.096211	Plant Production Quality Adjustment to 402.096201	4	QU	$45.00	$180.00
402.196901	19.0mm F9 Superpave HMA, 60 Series Compaction	123	T	$95.00	$11,685.00
402.196911	Plant Production Quality Adjustment to 402.196901	6	QU	$45.00	$270.00
402.376901	37.5mm F9 Superpave HMA, 60 Series Compaction	282	T	$90.00	$25,380.00
402.976911	Plant Production Quality Adjustment to 402.376901	14	QU	$45.00	$630.00
407.01	Tack Coat	32	G	$9.50	$304.00
490.30	Miscellaneous Cold Milling of Bituminous Concrete	111	SY	$19.50	$2,164.50
605.0901	Underdrain Filter, Type 1	265	CY	$42.00	$11,130.00
605.1501	Perforated, Corrugated, Polyethylene Underdrain Tubing	3580	LF	$3.50	$12,530.00
608.0101	Concrete Sidewalk	150	CY	$315.00	$47,250.00
609.0101	Stone Curb, Granite (Type A)	3580	LF	$23.00	$82,340.00
610.0203	Establish Turf	1711	SY	$1.20	$2,053.20
613.0101	Topsoil	188	CY	$80.00	$15,040.00
	Allowance for Signal Work	1	LS	$80,000.00	$80,000.00

Preliminary Opinion of Probable Cost - Minor Modifications

Project: **Main Goodman**

Date: **July 1, 2008**

Clark Patterson Lee
DESIGN PROFESSIONALS

Item #	Description	Quantity	Pay Unit	Unit Price	Cost
				SUBTOTAL	**$357,802.45**
	Survey and Stakeout (3%)	1	LS	$10,734.07	$10,734.07
	Maintenance and Protection of Traffic (4%)	1	LS	$14,312.10	$14,312.10
				SUBTOTAL	**$382,848.62**
	Mobilization (4%)	1	LS	$15,313.94	$15,313.94
				SUBTOTAL	**$398,162.57**
	Contingency (20%)				$79,632.51
				TOTAL	**$477,795.08**

Preliminary Opinion of Probable Cost - Roundabout

Project: **Main Goodman**

Date: **July 1, 2008**

Clark Patterson Lee
DESIGN PROFESSIONALS

Item #	Description	Quantity	Pay Unit	Unit Price	Cost
203.02	Unclassified Excavation and Disposal	4884	CY	$9.75	$47,619.00
203.03	Embankment in Place	1529	CY	$7.75	$11,849.75
206.02	Trench and Culvert Excavation	588	CY	$22.95	$13,494.60
304.12	Subbase Course, Type 2	1581	CY	$31.50	$49,801.50
402.096201	9.5mm F2 Superpave HMA, 60 Series Compaction	344	T	$100.00	$34,400.00
402.096211	Plant Production Quality Adjustment to 402.096201	17	QU	$45.00	$765.00
402.196901	19.0mm F9 Superpave HMA, 60 Series Compaction	573	T	$95.00	$54,435.00
402.196911	Plant Production Quality Adjustment to 402.196901	28	QU	$45.00	$1,260.00
402.376901	37.5mm F9 Superpave HMA, 60 Series Compaction	1313	T	$90.00	$118,170.00
402.976911	Plant Production Quality Adjustment to 402.376901	65	QU	$45.00	$2,925.00
407.01	Tack Coat	256	G	$9.50	$2,432.00
490.30	Miscellaneous Cold Milling of Bituminous Concrete	140	SY	$19.50	$2,730.00
605.0901	Underdrain Filter, Type 1	151	CY	$42.00	$6,342.00
605.1501	Perforated, Corrugated, Polyethylene Underdrain Tubing	2035	LF	$3.50	$7,122.50
608.0101	Concrete Sidewalk	155	CY	$315.00	$48,825.00
609.0101	Stone Curb, Granite (Type A)	1575	LF	$23.00	$36,225.00
610.0203	Establish Turf	7344	SY	$1.20	$8,812.80
613.0101	Topsoil	808	CY	$80.00	$64,640.00
	Allowance for Removal of Signal Work	1	LS	$20,000.00	$20,000.00
	Miscellaneous Work	1	LS	$75,000.00	$75,000.00

Preliminary Opinion of Probable Cost - Roundabout

Project: **Main Goodman**

Date: **July 1, 2008**

Clark Patterson Lee
DESIGN PROFESSIONALS

Item #	Description	Quantity	Pay Unit	Unit Price	Cost
				SUBTOTAL	**$606,849.15**
	Survey and Stakeout (3%)	1	LS	$18,205.47	$18,205.47
	Maintenance and Protection of Traffic (4%)	1	LS	$24,273.97	$24,273.97
				SUBTOTAL	**$649,328.59**
	Mobilization (4%)	1	LS	$25,973.14	$25,973.14
				SUBTOTAL	**$675,301.73**
	Contingency (20%)				$135,060.35
				TOTAL	**$810,362.08**

Preliminary Opinion of Probable Cost - Re-Alignment

Project: **Main Goodman**

Date: **July 1, 2008**

Clark Patterson Lee
DESIGN PROFESSIONALS

Item #	Description	Quantity	Pay Unit	Unit Price	Cost
203.02	Unclassified Excavation and Disposal	5101	CY	$9.75	$49,734.75
203.03	Embankment in Place	250	CY	$7.75	$1,937.50
206.02	Trench and Culvert Excavation	600	CY	$22.95	$13,770.00
304.12	Subbase Course, Type 2	2059	CY	$31.50	$64,858.50
402.096201	9.5mm F2 Superpave HMA, 60 Series Compaction	537	T	$100.00	$53,700.00
402.096211	Plant Production Quality Adjustment to 402.096201	27	QU	$45.00	$1,215.00
402.196901	19.0mm F9 Superpave HMA, 60 Series Compaction	895	T	$95.00	$85,025.00
402.196911	Plant Production Quality Adjustment to 402.196901	44	QU	$45.00	$1,980.00
402.376901	37.5mm F9 Superpave HMA, 60 Series Compaction	2050	T	$90.00	$184,500.00
402.976911	Plant Production Quality Adjustment to 402.376901	101	QU	$45.00	$4,545.00
407.01	Tack Coat	357	G	$9.50	$3,391.50
490.30	Miscellaneous Cold Milling of Bituminous Concrete	160	SY	$19.50	$3,120.00
605.0901	Underdrain Filter, Type 1	119	CY	$42.00	$4,998.00
605.1501	Perforated, Corrugated, Polyethylene Underdrain Tubing	1600	LF	$3.50	$5,600.00
608.0101	Concrete Sidewalk	250	CY	$315.00	$78,750.00
609.0101	Stone Curb, Granite (Type A)	2000	LF	$23.00	$46,000.00
610.0203	Establish Turf	4326	SY	$1.20	$5,191.20
613.0101	Topsoil	476	CY	$80.00	$38,080.00
	Allowance for New Signal Work	1	LS	$125,000.00	$125,000.00
	Miscellaneous Work	1	LS	$75,000.00	$75,000.00

Preliminary Opinion of Probable Cost - Re-Alignment

Project: **Main Goodman**

Date: **July 1, 2008**

Clark Patterson Lee
DESIGN PROFESSIONALS

Item #	Description	Quantity	Pay Unit	Unit Price	Cost
				SUBTOTAL	**$846,396.45**
	Survey and Stakeout (3%)	1	LS	$25,391.89	$25,391.89
	Maintenance and Protection of Traffic (4%)	1	LS	$33,855.86	$33,855.86
				SUBTOTAL	**$905,644.20**
	Mobilization (4%)	1	LS	$36,225.77	$36,225.77
				SUBTOTAL	**$941,869.97**
	Contingency (20%)				$188,373.99
				TOTAL	**$1,130,243.96**