Notice
City Commission Special Meeting

7:00 p.m.
Monday, November 28, 2016
Commission Chambers, Second Floor, Governmental Center
400 Boardman Avenue, Traverse City, Michigan 49684
Posted and Published: 11-23-2016

Meeting informational packet is available for public inspection at the Traverse Area District Library, City Police Station, City Manager's Office and City Clerk's Office.

The City of Traverse City does not discriminate on the basis of disability in the admission or access to, or treatment or employment in, its programs or activities. Penny Hill, Assistant City Manager, 400 Boardman Avenue, Traverse City, Michigan, 49684, 922-4440, TDD: 922-4412, has been designated to coordinate compliance with the non-discrimination requirements contained in Section 35.107 of the Department of Justice regulations. Information concerning the provisions of the Americans with Disabilities Act and the rights provided thereunder are available from the ADA Coordinator. If you are planning to attend and you have a disability requiring any special assistance at the meeting and/or if you have any concerns, please immediately notify the ADA Coordinator.

At the request of City Manager Marty Colburn, City Clerk Benjamin Marentette has called this Special Meeting.

City Commission:
c/o Benjamin C. Marentette, MMC, City Clerk
(231) 922-4480
Email: tcclerk@traversecitymi.gov
Web: www.traversecitymi.gov
400 Boardman Avenue
Traverse City, MI 49684

Welcome to the Traverse City Commission meeting!

Any interested person or group may address the City Commission on any agenda item when recognized by the presiding officer or upon request of any Commissioner. Also, any interested person or group may address the City Commission on any matter of City concern not on the Agenda during the agenda item designated Public Comment. The comment of any member of the public or any special interest group may be limited in time. Such limitation shall not be less than five minutes unless otherwise explained by the presiding officer, subject to appeal by the Commission.

Agenda

Pledge of Allegiance

Roll Call.

1. Consideration suspending the City Commission Rules to Items 2 through 8 as a Special Consent Calendar. (Marty Colburn, Benjamin Marentette) (5 affirmative votes required)

2. Consideration of authorizing a consultant agreement for topographic surveying and mapping services in connection with Fiscal Year 2016-2017 public improvement projects. (Approval recommended) (Marty Colburn, Timothy Lodge) (5 affirmative votes required)

3. Consideration of authorizing a contract for storm water modeling independent technical review services and calibrating the model with existing infrastructure and prior modeling reports, in connection with the SAW Grant and to be reimbursed by the grant. (Approval recommended) (Marty Colburn, Timothy Lodge) (5 affirmative votes required)

4. Consideration of adopting a resolution recommending approval of a request for a new Micro Brewer License from Cherry Republic, Inc., and authorizing the City Clerk to issue a registration for operation of the license at 154 E. Front Street. (Adopted and approval recommended) (Marty Colburn, Benjamin Marentette)

5. Consideration of introducing an amendment to the Traverse City Code of Ordinances which would amend the taxicab ordinance to require such vehicles for hire to offer flat rate fares, which ensures that they remain regulated by the Michigan Department of Transportation's Limousine License rather than requiring a license to be issued also from the City. (Introduction and schedule for possible enactment on December 19, 2016 recommended) (Marty Colburn, Benjamin Marentette)

6. Consideration of scheduling a public hearing regarding a request from Grand Traverse Area Catholic Schools for a Special Land Use permit which would allow for the construction of a school at 218 Vine Street (also known as 215 North Division Street), as recommended by the Planning Commission. (Schedule public hearing for December 19, 2016, recommended) (Marty Colburn, Russell Soyring)

7. Consideration of authorizing a collective bargaining agreement with the Police Patrol Unit. (Approval recommended) (Marty Colburn) (5 affirmative votes required)

8. Consideration of authorizing a confirming purchase order for diesel fuel for City operational use. (Approval recommended) (Marty Colburn, Dave Green) (5 affirmative votes required)

9. Consideration of scheduling a public hearing regarding the new vision for Old Town for December 19, 2016, as recommended by the Downtown Development Authority Board of Trustees. (Marty Colburn, Rob Bacigalupi)

10. Consideration of adopting a resolution authorizing Downtown Development Refunding Bonds, Series 2017 (Limited Tax General Obligation) relating to the refinancing of the Series 2007 Bonds, which refinanced the original issuance of bonds for the construction of the Larry C. Hardy Parking Garage and related improvements. (Marty Colburn, William Twietmeyer, Rob Bacigalupi)

11. Announcements from the City Clerk. (Benjamin Marentette)

12. Public Comment.

13 . Adjournment.

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The City of Traverse City

Communication to the City Commission

FOR THE CITY COMMISSION MEETING OF NOVEMBER 28, 2016

DATE: NOVEMBER 23, 2016

FROM: MARTY COLBURN, CITY MANAGER

SUBJECT: SPECIAL CONSENT CALENDAR

I recommend that agenda items 2 through 8 be considered a "Special Consent Calendar" by approving a motion to suspend the City Commission Rules. Those items would then be handled as if they were on a Consent Calendar at a Regular Meeting; meaning, unless an item is removed from the Special Consent Calendar, all items remaining on the Special Consent Calendar will be approved by one motion.

Two separate motions must be adopted. I recommend the following motion to create a Special Consent Calendar (5 affirmative votes required):

that the City Commission Rules be suspended to allow consideration of items 2 through 8 as a Special Consent Calendar to be approved by a single Commission action adopting the Special Consent Calendar;

And further, if any member of the Commission, staff or public requests that an item be removed from the Special Consent Calendar that such item shall be removed and considered individually at a place on the agenda as determined by the presiding officer.

If the above motion is adopted, then the same protocol as at a Regular Meeting should be followed – the Mayor should instruct the City Clerk to read these items. After the reading, and an opportunity is given for items to be removed, then the following motion is recommended (5 affirmative votes required):

That the Special Consent Calendar consisting of agenda items 2 through __(8)___ be adopted.

MC/bcm K:\tcclerk\marentette\commission\communication\consentcalendar_20161128

The City of Traverse City

Communication to the City Commission

FOR THE CITY COMMISSION MEETING OF NOVEMBER 28, 2016

DATE: NOVEMBER 23, 2016

FROM: MARTY COLBURN, CITY MANAGER

SUBJECT: TOPOGRAPHIC SURVEYING AND MAPPING – 2016-17 PUBLIC IMPROVEMENT PROJECTS

Attached is a memo from City Engineer Timothy Lodge recommending the Commission authorize a contract for topographic surveying and mapping services associated with Fiscal Year 2016-2017 public improvement projects.

I recommend the following motion (5 affirmative votes required):

that the Mayor and City Clerk execute a contract with Gosling Czubak Engineering Sciences, Inc., in the amount of $78,985 for topographic mapping and surveying associated with Fiscal Year 2016-2017 public improvement projects, such contract subject to approval as to its substance by the City Manager and its form by the City Attorney, with funds available in the Capital Projects Fund.

MC/bcm
k:\tcclerk\city commission\agreements\topographic surveying and mapping 2016 2017
Copy: Timothy Lodge, City Engineer

Memorandum

The City of Traverse City
Engineering Department

TO: Marty Colburn, City Manager

FROM: Timothy J. Lodge, City Engineer

DATE: Friday, November 11, 2016

SUBJECT: Request for Proposals- 2016-17 Public Improvement Projects
Topographic Surveying and Mapping

We have solicited proposals from surveying consultants for topographic surveying and mapping for the various projects included in the Capital Improvements Plan. This work is required to complete the designs for the improvements work planned for the following locations:

1) **Mid-Town Transmission Main (CIP #115)**
   a) Lake Avenue from Wadsworth to 8th- integrate existing topographic survey Cass to 8th
   b) Boardman Avenue 8th Street to State Street
   c) Washington Street, Cass Street, Alley to Cass
   d) State Street from Boardman Avenue to Park Street
   e) Franklin Street from 8th Street to Webster Street
   f) Railroad Avenue from 8th Street to Webster Street
   g) Webster Street from Franklin to Garfield
   h) Garfield Avenue from Webster Street to Washington Street.
2) **8th Street Reconstruction- Cass to Barlow (CIP #882)**
3) **Clancy Park (CIP # 538)**
4) **Huron Hills Abandoned Pump Station Site (CIP # 799)**
5) **Union Dam Site (CIP # 168 and Selective Fish Passage Project)**

Several projects are in the early stages of development and the survey will help refine the project budget. The RFP was issued on October 25, 2016 with two firms responding to our request on November 10, 2016 as follows:

Consultant	Location	Cost
Gosling Czubak	Traverse City	$ 78,985.00
Gourdie Fraser	Traverse City	$ 99,794.00

After reviewing the submittals, we recommend that the Mayor and City Clerk be authorized to execute a consultant agreement with Gosling Czubak Engineering Sciences, Inc. in the amount of $ 78,985.00 with funds available in the Public Improvements Fund subject to approval as to substance by the City Manager and as to form by the City Attorney. We have requested to be reimbursed for the work at the Union Dam Site as part of the Bi-Directional Selective Fish Passage Project that was recently discussed.

The City of Traverse City

Communication to the City Commission

FOR THE CITY COMMISSION MEETING OF NOVEMBER 28, 2016

DATE: NOVEMBER 23, 2016

FROM: MARTY COLBURN, CITY MANAGER

SUBJECT: SAW GRANT STORM WATER MODELING – INDEPENDENT TECHNICAL REVIEW

Attached is a memo from City Engineer Timothy Lodge recommending a contract be authorized to conduct an independent technical review of the current and prior modeling of the storm sewers. This will ultimately provide for a more complete and accurate model for enhancing our storm water quality through better management of the storm sewer.

I recommend the following motion (5 affirmative votes required):

that the Mayor and City Clerk execute a contract with Prince-Lund in the not-to-exceed amount of $35,180 for storm sewer modeling independent technical review in connection with the SAW Grant, with the cost to be reimbursed by the SAW Grant, such contract subject to approval as to its substance by the City Manager and its form by the City Attorney.

MC/bcm
k:\tcclerk\city commission\agreements\SAW storm water modeling independent technical review
copy: Timothy Lodge, City Engineer

Memorandum

The City of Traverse City
Engineering Department

TO: Marty Colburn, City Manager

FROM: Timothy J. Lodge, City Engineer

DATE: November 11, 2016

SUBJECT: MDEQ SAW Grant Storm Water Modeling Independent Technical Review and Model Calibration with Existing Infrastructure and Prior Modeling Reports

As part of the MDEQ's SAW Grant Asset Management Plan for the City's storm water system our consultant OHM will be updating our City Wide hydrologic and hydraulic model for storm sewers. Their work includes modeling using XPSWMM software for systems with 18" and larger pipe or 39 of the 100 systems we have previously identified in our 2007 Stormwater Management Report. This work leaves much of our system without the benefit of the updated modeling and we will defer to the modeling prepared in our 2007 Stormwater Management Report for guidance.

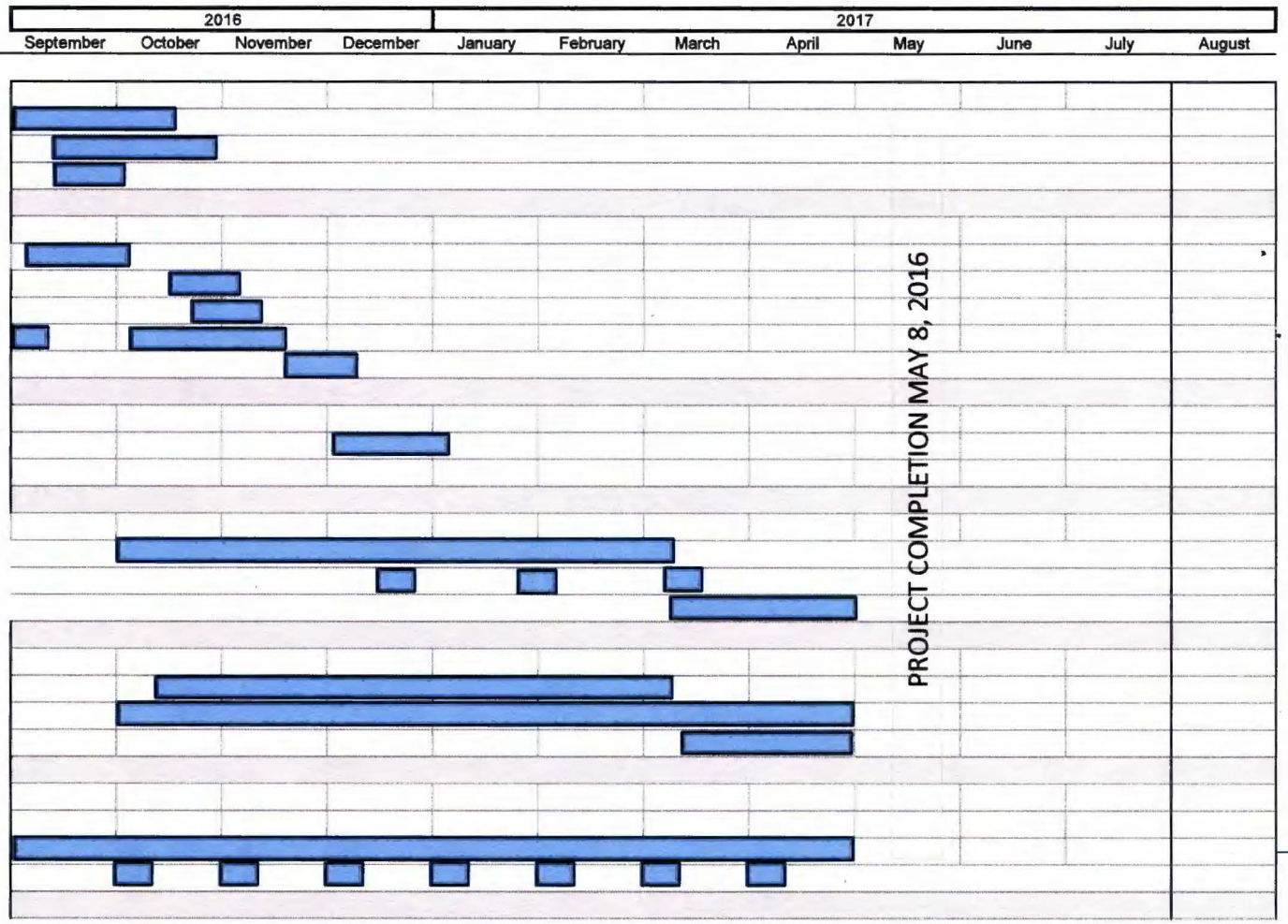
In processing the work by OHM we realized that with the maternity leave of one of our staff we were not adequately staffed to conduct an independent technical review (ITR) of the modelling. Therefore we employed Prince-Lund Engineering, PLC, a local independent consulting firm, to assist us with the ITR. As a result, we have been able to learn a lot about the sensitivity about the input variables in the XPSWMM software and how this software and output compares to our modeling completed in 2007. In general, it produces larger stormwater quantities than previously calculated.

This leaves a gap between the current modeling and prior modeling of the storm system because of the different results and that the modeling is limited to 39 of the 100 systems. While preparing to write the Stormwater Management Plan we have realized that creating a calibration link between the current modeling and prior modeling for the entire system is necessary and essential to address storm water quality. Therefore, we asked Prince-Lund to continue with the modeling ITR and to create a method to calibrate between the current modeling and prior modeling. They have proposed to complete this work for a cost not to exceed of $35,180. Thus, we recommend that the Mayor and City Clerk be authorized to execute a consultant agreement with Prince-Lund Engineering, PLC in the amount of $ 35,180 with the cost to be reimbursed by the SAW Grant.

Finally, we have attached an updated schedule for the Stormwater Management Plan for the SAW Grant. This revised schedule reflects the change to have all work completed by May 8, 2017 from the planned June 30, 2017 completion. This change reduces the time available for the work and factors into the decision to seek outside assistance on this project.

OHM Advancing Communities

Proposed SAW Grant Schedule: Stormwater Management Plan
City of Traverse City
Revised October 5, 2016



SAW Grant Phase

1 BASELINE CONDITIONS
- 1.1 Review Baseline Plans
- 1.2 Review 2007 Stormwater Management Report
- 1.3 Coordinate SMP Kickoff meeting

2 OPEN CHANNEL &SHORELINE EVAL
- 2.1 Identify Key Drainage courses
- 2.2 Streambank Inventory
- 2.3 Open Channel Survey
- 2.4 Shoreline Inspection
- 2.5 Data Incorporation into GIS

3 CAPACITY ANALYSIS
- 3.1 Capacity Analysis

4 WATER QUALITY
- 4.1 Water Quality Issues
- 4.2 Stakeholder Meeting (with AMP 6.1)
- 4.3 Propose Capital Improvements

5 SMP DOCUMENTATION/CIP COORDINATION
- 5.1 Update GTBWPP (By City Vendor)
- 5.2 Prepare SMP Document (By City Vendor)
- 5.3 Coordinate with CIP (By City Vendor)

6 GRANT ADMINISTRATION
- 6.1 Grant Administration
- Milestone Meetings (Monthly)

The City of Traverse City

Communication to the City Commission

FOR THE CITY COMMISSION MEETING OF NOVEMBER 28, 2016

DATE: NOVEMBER 23, 2016

FROM: MARTY COLBURN, CITY MANAGER

SUBJECT: LIQUOR LICENSE REGISTRATION REQUEST – CHERRY REPUBLIC, INC.

Attached is a memo from City Clerk Benjamin Marentette, recommending approval of a request from Cherry Republic, Inc. (Robert Sutherland and Todd Ciolek) for a new Micro Brewer License for operation at 154 East Front Street, the current Cherry Republic store and cafe. It is also recommended to approve the registration of this license with the City.

I recommend the following motion:

that the resolution recommending approval of the request for a new Micro Brewer license from Cherry Republic, Inc. be adopted and that the City Clerk be authorized to issue a Liquor License Registration to Cherry Republic, Inc., to operate such license at 154 East Front Street.

MC/kez
K:\TCCLERK\City Commission\Liquor License_Regular\New Micro Brewer_Cherry Republic_20161121.doc

copy: Robert Sutherland, bob@cherryrepublic.com
Todd Ciolek, todd@cherryrepublic.com

Memorandum

The City of Traverse City

TO: Marty Colburn, City Manager

FROM: Benjamin C. Marentette, City Clerk

DATE: Thursday, November 17, 2016

SUBJECT: Liquor License Registration Request – Cherry Republic, Inc.

Robert Sutherland and Todd Ciolek of Cherry Republic, Inc. has requested a new Micro Brewer license to be operated at 154 East Front Street which is the current location of their store and café. They would also like to register this license with the City as required under Chapter 834 of the Code of Ordinances.

A Micro-Brewer license allows a business to sell beer produced on the premises to consumers for consumption on the premises or for take-out (MCL 436.1109(2).

The applicant has paid the appropriate application fee and this request has been reviewed by the appropriate city departments, including the Police Department, and meets all ordinance/law requirements. The supporting documentation is on file with this office.

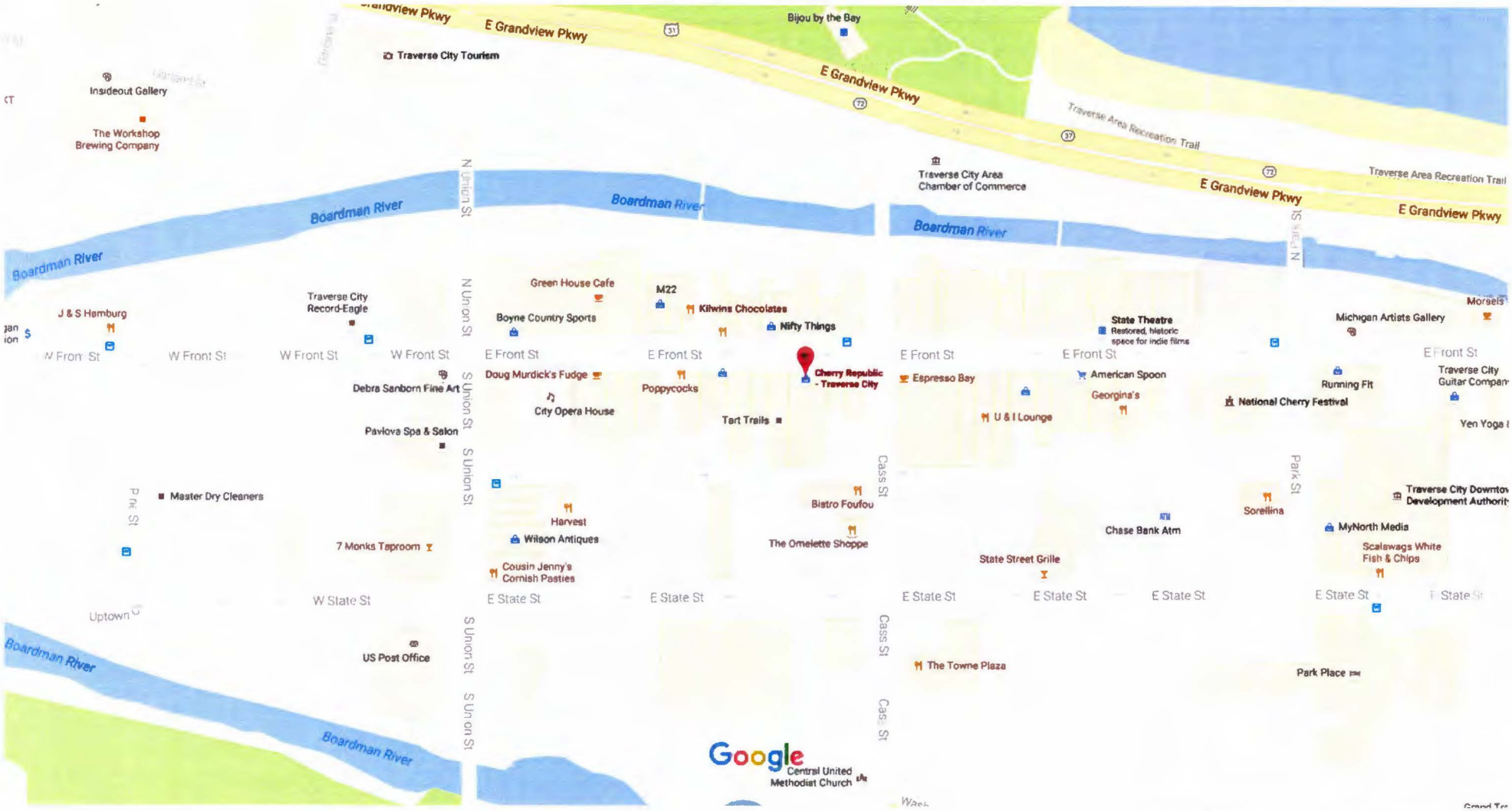
I recommend the Commission adopt a resolution recommending approval of this request. This license cannot be operated unless the City Commission authorizes the City Clerk to issue a registration to Cherry Republic, Inc. I respectfully recommend that the City Commission authorize the City Clerk to issue the registration.

As always, please let me know if you have any questions or if I may be of further assistance.

Google Maps

Cherry Republic - Traverse City

154 East Front Street



Michigan Department of Licensing and Regulatory Affairs
Liquor Control Commission (MLCC)
Toll Free: 866-813-0011 • www.michigan.gov/lcc

Business ID: _____

Request ID: _____
(For MLCC use only)

Local Government Approval
(Authorized by MCL 436.1501)

Instructions for Applicants:

- You must obtain a recommendation from the local legislative body for a new on-premises license application, certain types of license classification transfers, and/or a new banquet facility permit.

Instructions for Local Legislative Body:

- Complete this resolution or provide a resolution, along with certification from the clerk or adopted minutes from the meeting at which this request was considered.

At a Regular (regular or special) meeting of the Traverse City (township, city, village) council/board called to order by Mayor Jim Carruthers on Nov 21, 2016 (date) at 7:00 PM (time) the following resolution was offered:

Moved by _____ and supported by _____

that the application from Cherry Republic, Inc. (name of applicant)

for the following license(s): Micro Brewer License (list specific licenses requested)

to be located at: 154 East Front Street, Traverse City, MI 49684

and the following permit, if applied for:

☐ Banquet Facility Permit Address of Banquet Facility: _____

It is the consensus of this body that it RECOMMENDS (recommends/does not recommend) this application be considered for approval by the Michigan Liquor Control Commission.

If disapproved, the reasons for disapproval are APPROVAL

Vote

Yeas: _____

Nays: _____

Absent: _____

I hereby certify that the foregoing is true and is a complete copy of the resolution offered and adopted by the Traverse City (township, city, village) council/board at a Regular (regular or special) meeting held on Nov 21, 2016 (date)

Benjamin Marentette, MMC, City Clerk — Print Name of Clerk

_____ — Signature of Clerk

November 22, 2016 — Date

Under Article IV, Section 40, of the Constitution of Michigan (1963), the Commission shall exercise complete control of the alcoholic beverage traffic within this state, including the retail sales thereof, subject to statutory limitations. Further, the Commission shall have the sole right, power, and duty to control the alcoholic beverage traffic and traffic in other alcoholic liquor within this state, including the licensure of businesses and individuals.

Please return this completed form along with any corresponding documents to:
Michigan Liquor Control Commission
Mailing address: P.O. Box 30005, Lansing, MI 48909
Hand deliveries or overnight packages: Constitution Hall - 525 W. Allegan, Lansing, MI 48933
Fax to: 517-763-0059

The City of Traverse City

Communication to the City Commission

FOR THE CITY COMMISSION MEETING OF NOVEMBER 28, 2016

DATE: NOVEMBER 23, 2016

FROM: MARTY COLBURN, CITY MANAGER

SUBJECT: ORDINANCE AMENDMENT – LOCAL TAXICAB REQUIREMENTS– INTRODUCTION

Attached is an ordinance amendment regarding local requirements for taxicabs. To ensure that local taxicabs are subject to licensing requirements by the Michigan Department of Transportation Limousine Transportation Act, City Clerk Benjamin Marentette recommends requiring that all local operating taxicabs offer a flat fare.

The following motion would introduce an amendment to the Code of Ordinances:

that an amendment to the Traverse City Code of Ordinances, Chapter 866, Local Taxicab Requirements, which would require local operating taxicabs to offer a flat fare, be introduced and scheduled for possible enactment on December 19, 2016.

MC/kez
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TRAVERSE CITY CODE OF ORDINANCES

ORDINANCE AMENDMENT NO. _____
Effective date: _____

TITLE: LOCAL TAXICAB REQUIREMENTS

THE CITY OF TRAVERSE CITY ORDAINS:

That Chapter 866, Taxicabs, of the Traverse City Code of Ordinances, be enacted/amended to read in its entirety as follows:

866.01. DEFINITIONS

As used in this Chapter:

"Taxicab" means a motor vehicle with a taximeter and offering a flat fare, engaged in the business of carrying passengers for hire, and not operated on a fixed route.

"Michigan Limousine License" means the license issued under the Michigan Limousine Transportation ACT (MCL 257.1901 et al)
(Ord. 944, Passed 5/21/12)

866.02. LIMOUSINE LICENSE REQUIRED

No business or person shall engage in the business of operating a taxicab or other vehicles for hire without possessing a valid Michigan Limousine License.
(Ord. 944, Passed 5/21/12)

The effective date of this Ordinance is the _____ day of _____, 2016.

I hereby certify the above ordinance amendment was introduced on November 21, 2016 at a regular meeting of the City Commission and was enacted on _____, at a regular meeting of the City Commission by a vote of Yes: ____ No: ____ at the Commission Chambers, Governmental Center, 400 Boardman Avenue, Traverse City, Michigan.

_____
Jim Carruthers, Mayor

_____
Benjamin C. Marentette, City Clerk

I hereby certify that a notice of adoption of the above

ordinance was published in the Traverse City Record Eagle, a daily newspaper published in Traverse City, Michigan, on _____.

_____
Benjamin C. Marentette, City Clerk

The City of Traverse City

Communication to the City Commission

FOR THE CITY COMMISSION MEETING OF NOVEMBER 28, 2016

DATE: NOVEMBER 23, 2016

FROM: MARTY COLBURN, CITY MANAGER

SUBJECT: REQUEST FOR SPECIAL LAND USE PERMIT – GRAND TRAVERSE AREA CATHOLIC SCHOOLS (16-SLUP-02)

Attached is a memo from City Planning Director Russell Soyring, regarding the above matter.

Also attached is an application and accompanying information submitted by Mike Buell on behalf of Grand Traverse Area Catholic Schools. This Special Land Use Permit would allow for the construction of a school at 218 Vine Street. This school will partially be located on the recently vacated portion of Vine Street on the condition that the school is built.

I recommend the following motion:

that the request from Grand Traverse Area Catholic Schools for Special Land Use Permit 16-SLUP-02, to allow for the construction of a school at 218 Vine Street, as presented, as recommended by the Planning Commission, be scheduled for public hearing on December 19, 2016.

MC/kez
K:\tcclerk\city commission\special land use permit\
slup_phschedule_16_SLUP_02_GTACS_20161121.doc

copy: Russell Soyring, City Planning Director
Mike Buell, mrbuell@gtacs.org

City Planning Department

TO: MARTY COLBURN, CITY MANAGER

THROUGH: RUSS SOYRING, PLANNING DIRECTOR

SUBJECT: IMMACULATE CONCEPTION SCHOOL SPECIAL LAND USE PERMIT RECOMMENDATION

DATE: November 14, 2016

The Planning Department received a request from, Mike Buell, Superintendent of Grand Traverse Area Catholic Schools for a Special Land Use Permit to construct a School at 218 Vine Street. (The property is currently addressed at 215 N. Division, but the applicant is currently in the process of assigning the school address to be 218 Vine Street.)

The school is proposed to be located partly on the portion of Vine Street that was recently approved for a vacation by the City on the condition that the school is built. Most of the new school building would be positioned on land that is currently occupied by a parking lot.

The proposed building would replace an existing 2-story school building. The new 2-story school will have 32 classrooms in the 44,410 square feet building. The main entrance faces south. The east side of the school would front Division Street. Current parking locations and circulation routes would be altered. Access to the existing church and school would be from Third, Cedar and Vine Streets. No direct vehicular access to Division Street is proposed.

The property is zoned R-1b (Single Family Dwelling District) which allows Schools by Special Land Use Permit.

The Master Plan designates this area as a TC-3 Traditional Neighborhood where it states these neighborhood types will focus on historic patterns. Neighborhood level services, schools, parks and places of worship are envisioned to be part of this neighborhood type.

The attached Staff Report 16-SLUP-02 finds the submission to be in conformance with the requirements as provided.

After holding a public hearing, the Planning Commission took the following action:

Motion by Commissioner Howe, second by Vice-Chairperson Koebert, that the request by Mike Buell, Superintendent for Grand Traverse Area Catholic Schools for a Special Land Use Permit (16-SLUP-02) for a School at 218 Vine Street (currently known as 215 N. Division Street) be recommended for approval as presented and as outlined in Staff Report 16-SLUP-02 to the City Commission.

Motion carried 7-1 (Commissioner Grant opposed, Commissioner Richardson absent.)

Please forward the Planning Commission's recommendation to the City Commission.

RAS/mll

Attachments: Staff Report 16-SLUP-02
Special Land Use Permit Application
Letter summarizing the request provided by Applicant
Statement of Conformance to SLUP general and specific standards provided by Applicant
Traffic Impact Study provided by Applicant
Plan Set provided by Applicant

STAFF REPORT
16-SLUP-02
DATE: October 28, 2016

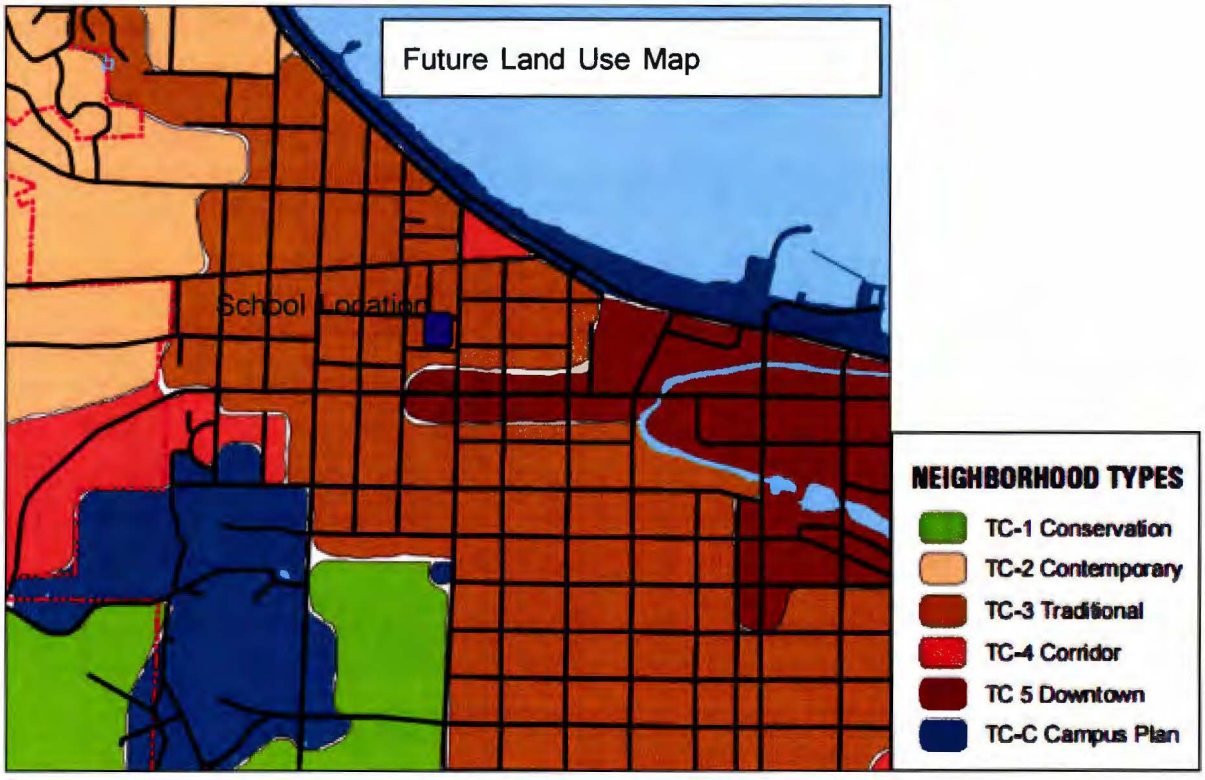
APPLICANT:	Grand Traverse Area Catholic Schools (Diocese of Gaylord) 123 E. Eleventh Street Traverse City, MI 49684
PROPERTY OWNERS:	Grand Traverse Area Catholic Schools (Diocese of Gaylord) 123 E. Eleventh Street Traverse City, MI 49684
STATUS OF APPLICANT:	Property Owner
PROPERTY ADDRESS:	215 North Division Street Tax I.D. # 28-51-626-001-00
REQUESTED ACTION:	
DESCRIPTION:	LOTS 5 THRU 12 INCL BLK 1 LOTS 1 THRU 4 INCL BLK 5. ALL OF BLK 6 LOTS 5-6-7 BLK 2 HANNAH LAY & CO'S 3RD ADD. ALSO N 50 FT OF LOT 5 BLK 5 HANNAH LAY & CO'S 1ST SUB. ALSO VAC VINE ST COM AT NE COR BLK 6 HANNAH LAY & CO'S 3RD ADD TH S 250 FT TH E 33 FT TH N 50 FT TH E 33 FT TH N 200 FT TH W TO POB ALSO VACATED 2NDST BETWEEN LOTS 11-12 BLK 1 & LOTS 1-2-3-4 BLK 5 HANNAH LAY & CO'S 3RD ADD. Subject to the vacation of a portion of Vine Street and Second Street.
EXISTING CONDITIONS	
SITE SIZE:	4.8 acres. Subject to the vacation of a portion of Vine Street and Second Street.
TOPOGRAPHY:	Flat.
VEGETATION:	Grass, shrubs and trees.
SOILS:	RrA sandy loam, 0-2% Slope
EXISTING ZONING:	R-1b (Single Family Dwelling District).
SURROUNDING ZONING/LAND USE	
NORTH:	R-1b (Single Family Dwelling District) and C-2 (Neighborhood Center District). Residential, retail, restaurant and office.

SOUTH:	R-1b (Single Family Dwelling District)
EAST:	R-1b (Single Family Dwelling District)
WEST:	C-1 (Office Service District) and C-2 (neighborhood Center District). Offices.

ZONING HISTORY:
From 1958 to 1999 the property was zoned C-1 (Office Service District). In 1999, the property was rezoned to R-1b (Single Family Dwelling District).

RELEVANT SECTIONS OF THE ZONING ORDINANCE:
Chapter 1332 R-1a and R-1b Single Family Dwelling Districts
Section 1366.08 Master Site and Facilities Plans
Section 1364.01 Types of Special Land Use Permit Review
Section 1364.02 General Standards for SLUP Approval
Section 1364.08 (11) Specific Requirements for schools in an R-1b District

RELATIONSHIP TO THE CITY PLAN:
The Future Land Use Map designates this neighborhood as a TC-3 Neighborhood. Neighborhood level services, **schools,** parks and places of worship should be conveniently located. The Parks and Recreation Element, Goal #9, states "Work with schools to make recreation facilities and programs part of the education system."



PUBLIC UTILITIES:

There are adequate utilities to serve the proposed school. An existing 6-inch water main located on the west side of Division Street will service the school with a 2-inch domestic water service and a 6 inch fire suppression service. An additional 6-inch water main and a 21-inch sanitary sewer run along the north side of the building from Cedar Street to Division Street in a 66-foot wide utility easement. Storm water control shall meet the requirements of Chapter 1068. The proposed project will utilize an underground storm water infiltration system to retain stormwater on site for a 25 year storm. Dave, please check on the capacity. T.C.L.P will service the new school with an existing 3-phase primary. It has been determined that existing electrical capacity is adequate to serve the proposed school.

TRAFFIC

The applicant has prepared a Traffic Impact and Site Circulation Study for the proposed school. The new school will combine the operations of the Holy Angels Elementary (HA) and Preschool located at 130 East Tenth Street and Immaculate Conception Elementary School (IC). The number of AM and PM peak hour trips that would be generated by the proposed school consolidation was based on the existing and projected future enrollment. The existing 2015 enrollment of the two schools is 498 students. The potential max enrollment with the new consolidated school will be 560 students. Based on information provided by the applicant, approximately 25% of the existing students at both Holy Angels and Immaculate Conception either ride the bus, or are enrolled in the before/after school program and do not contribute to the peak hour vehicle trips.

With the combination of the two schools (IC and HA) at one campus the total population will increase from 264 student to a maximum of 560 students, which is more than double the current population. However, many of the families have students that attend both HA and IC. Therefore, by consolidating the campuses, the overall trips will be reduced since drop-off will only occur at one central location. The existing school generates 361 AM peak hour trips (185 inbound and 178 outbound) and 351 PM peak hour trips (180 inbound and 171 outbound). According to the Traffic Impact Study the proposed consolidated school will generate 155 AM additional peak hour trips (78 inbound and 77 outbound) and 165 PM additional peak hour trips (83 inbound and 82 outbound).

ACCESS:

The proposed school location requires the vacation of a portion of Vine Street and a vacation and rededication of a portion of Second Street. These vacations and rededication were approved by the Planning Commission and subsequently approved by the City Commission on February 16, 2016. The construction cost for this change will be paid for by GTACS. Access to the school will be from Division Street to the east, Randolph Street to the north, Cedar Street to the west, Third Street to the south and Vine Street and new Second Street to the northwest A new curb and gutter is proposed along the east side of Cedar Street from Third Street north to the New Second Street. The City Engineer will be working with the applicant to take a complete street approach for Cedar Street from Randolph to Front Street.

Sidewalks internal to the campus are proposed and connect to existing and proposed public sidewalks in the general vicinity. A new public sidewalk is proposed on the east side of Cedar

Street from Second Street to Third Street. Second Street will have a new public sidewalk on the south side adjacent to the curb and tie into the existing sidewalk along Vine Street. A new public sidewalk will also be added to the north side of Third Street from Division street west to the entrance on Third Street. All new public sidewalks and the curbing along Cedar Street will be paid for by GTACS.

PARKING:
The proposed new school is part of a campus that is includes the church and a food pantry and parking is shared between all three entities. The new school will be located where the existing parking lot is located north of the existing school. A new 75 space parking lot west of the new school and south of the church is proposed and there are 64 parking existing spaces adjacent to the church. A new curb and gutter is proposed along the east side of Cedar Street from Third Street north to Second Street with on-street parking for 12 vehicles and 11 on-street parking spaces are planned for on Second Street. The City Engineer will be working with the applicant to take a complete street approach for Cedar Street from Randolph to Front Street. The total onsite parking is 139 spaces with 23 on- street parking spaces for a total of 162 parking spaces available to the Campus.

General Standards 1364.02:

1) **The use shall be designed, constructed, operated and maintained so as to be harmonious and compatible in appearance with the intended character of the vicinity.**

Analysis:

The building is designed to integrate with the commercial character of Division Street, while also providing a transition to the predominantly residential Slabtown Neighborhood to the north and west. The collegiate gothic style of the building exterior features a historical/institutional character consistent with the Division Street corridor while also harmonizing with the residential context in which it is located (much as the Central Grade School does in the Central neighborhood).

Finding – Met.

2) **The use shall not be hazardous nor disturbing to existing or planned uses in the vicinity.**

Analysis

The proposed school will not be hazardous nor disturbing the existing or planned uses in the general vicinity. Schools and churches are allowed in the R-1b Zoning District through a Special Land Use Permit process. Traffic and parking are the factors that place the most burdens to the vicinity. The redevelopment plan eases the pressure of traffic during pick-up times by providing ample stacking within the campus. The

proposed plan creates a campus atmosphere thereby shielding nearby properties from activities occurring on the premises.

The proposed new school is part of a campus that includes the church and a food pantry and parking is shared between all three entities. The new school will be located where the existing parking lot is located north of the existing school. A new 75-space parking lot west of the new school and south of the church is proposed and there are 64 existing parking spaces adjacent to the church. New curb and gutter is proposed along the east side of Cedar Street from Third Street north to Second Street with on-street parking for 12 vehicles and 11 on-street parking spaces are planned for the newly constructed Second Street. The City Engineer will be working with the applicant to take a complete street approach for Cedar Street from Randolph to Front Street. The total onsite parking is 139 spaces with 23 on-street parking spaces for a total of 162 parking spaces available to the Campus.

The minimum parking required by the Zoning Code is 1 parking space per 4 seats for the church and 1.5 parking spaces per classroom. The church currently has 520 seats and the proposed school will have 32 classrooms. A minimum of 178 parking spaces are required. Two buses service the school and the maneuvering lane of the parking lot around the church will be utilized for drop-off/pick-up and will accommodate up to 40 stacked vehicles.

The Diocese has had, and continues to have agreements for cross-sharing parking with Sleders in the event that either Sleders or the church needs additional capacity. The Planning Director is willing to grant an exception pursuant to Section 1374.03(e) for the 16 parking space deficiency since the church peak parking demands typically would not occur when school is in full session. The redevelopment plan eases the pressure of traffic during pick-up times by providing ample stacking within the campus. Further, this proposed plan creates a campus atmosphere thereby shielding nearby properties from activities occurring on the premises.

The applicant has prepared a Traffic Impact and Site Circulation Study for the proposed school. The new school will combine the operations of the Holy Angels Elementary (HA) and Preschool located on 10th Street and Immaculate Conception Elementary School (IC). The number of AM and PM peak hour trips that would be generated by the proposed school consolidation was based on the existing and projected future enrollment. The existing 2015 enrollment of the two schools is 498 students. The potential max enrollment with the new consolidated school will be 560 students. Based on information provided by the applicant, approximately 25% of the existing students at both Holy Angels and

Immaculate Conception either ride the bus, or are enrolled in the before/after school program and do not generate peak hour vehicle trips.
With the combination of the two schools (IC and HA) at one campus the total population will increase from 264 student to a maximum of 560 students, which is more than double the population. However, many of the families have students that attend both HA and IC. Therefore, by consolidating the campuses, the overall trips will be reduced since drop-off will only occur at one central location. The existing school generates 361 AM peak hour trips (185 inbound and 178 outbound) and 351PM peak our trips (180 inbound and 171 outbound). According to the Traffic Impact Study the proposed consolidated school will generate an additional 155 AM peak hour trips (78 inbound and 77 outbound) and 165 PM peak hour trips (83 inbound and 82 outbound).

Finding – Met.

3) **The use shall be served adequately by existing or proposed public infrastructure and services, including but not limited to, street and highways, police and fire protection, refuse disposal; water, waste water and stormwater facilities; electrical service and schools.**

Analysis:

The redevelopment of this campus allows us the opportunity to reduce the burden on public infrastructure and services. As part of this redevelopment, the city services will be less impacted.

Streets: An existing curb cut to Division will be eliminated. The proposed school requires the vacation of a portion of Vine Street and a vacation and rededication of a portion of Second Street. These vacations and rededication were approved by the Planning Commission and subsequently approved by the City Commission on February 16, 2016. The construction cost for this change will be paid for by GTACS. Access to the school will be from Division Street to the east, Randolph Street to the north, Cedar Street to the west, Third Street to the south and Vine Street and new Second Street to the northwest. A new 75 space parking lot is proposed on the south side of the school and will be accessed both from Cedar Street and Third Street. A new curb and gutter is proposed along the east side of Cedar Street from Third Street north to the New Second Street with on Street parking for 12 vehicles. The City Engineer will be working with the applicant to take a complete street approach for Cedar Street from Randolph to Front Street.

Sidewalks internal to the campus are proposed and connect to existing and proposed public sidewalks in the general vicinity. A new public sidewalk is proposed on the west side of Cedar Street from Second Street to Third Street. Second Street will have a new public sidewalk on the south side adjacent to the

curb and tie into the existing sidewalk along Vine Street. A new public sidewalk will also be added to the north side of Third Street from Division street west to the entrance on Third Street. All new public sidewalks and the curbing along Cedar Street will be paid for by GTACS.

Police: The new school will combine the operations of the Holy Angels Elementary and Preschool located on 10th Street and Immaculate Conception Elementary School located on the subject parcel. Having all of the elementary children in one location will decrease police response times and not require any additional police services.

Fire: The applicant has met with the Fire Marshal several times to discuss the proposed project and he believes the new school, built to current codes, creates a much safer building than the existing school which dates back 100 years. A new fire suppression, alarms and improved accessibility are items that will reduce the potential for a dangerous environment should fire services be called to the property. The proposed fire suppression system will be served by a 6 inch water main.

Refuse: Additional students will create additional trash. There are several commercial businesses in the surrounding area as well as an elementary school which is served adequately by the existing commercial waste hauler. There are two dumpsters proposed for the school which will be fully enclosed.

Water/Sewer: The new school will require similar water and sewer requirements to that of the existing school. The project Architect has confirmed that low flow plumbing fixtures will be used in the new school. An existing 6-inch water main located on the west side of Division Street will service the school with a 2-inch domestic water service and a 6-inch fire suppression service. An additional 6-inch water main and a 21-inch sanitary sewer run along the north side of the building from Cedar Street to Division Street in a 66-foot wide utility easement.

Storm sewer: Storm water control shall meet all the requirements of Chapter 1068. City Engineering will require the entire site be brought up to compliance with this Chapter. The existing site has many direct connections to the City's storm sewer system which will need to be addressed. The proposed redevelopment will utilize an infiltration system located under the proposed parking lot. Implementing this system will almost completely remove reliance on the City's storm sewer system.

Electrical service: The new school will require similar electrical needs to that of the existing school. The school is larger, however, new lighting and mechanical equipment will require less energy consumption. T.C.L.P will service the new school utilizing an existing 3-phase primary that adequate to serve the proposed development.

Finding - Met

4) **The use shall not create excessive additional requirements for infrastructure, facilities and services provided at public expense.**

Analysis
The proposed school requires the vacation of a portion of Vine Street and a vacation and rededication of a portion of Second Street. These vacations and rededication were approved by the Planning Commission and subsequently approved by the City Commission on February 16, 2016. The construction cost for this change will be paid for by GTACS.

New curb and gutter is proposed along the east side of Cedar Street from Third Street north to the new Second Street with on-street parking for 12 vehicles. A new public sidewalk is proposed on the east side of Cedar Street from Third Street to Second Street and will also be paid for by GTACS.

The new school will require similar water and sewer requirements to that of the existing school. The project Architect has confirmed that low flow plumbing fixtures will be used in the new school. An existing 6-inch water main located on the west side of Division Street will service the school with a 2-inch domestic water service and a 6-inch fire suppression service. An additional 6-inch water main and a 21-inch sanitary sewer run along the north side of the building from Cedar Street to Division Street in a 66-foot wide utility easement.

The proposed redevelopment will utilize an infiltration system located under the proposed parking lot. Implementing this system will almost completely remove reliance on the City's storm sewer system.

The new school will require similar electrical needs to that of the existing school. The school is larger, however, new lighting and mechanical equipment requires less energy consumption.

Finding - Met

5) **The use shall not involve any activities, processes, materials, equipment or conditions of operation that will be detrimental to any person or property or to the general welfare by reason of excessive production of traffic, noise, smoke, fumes, glare, odors or water runoff.**

Analysis
The proposed school is consistent with the existing use and will not involve any excessive production of traffic, noise, fumes, glare, or odors that would be detrimental to any person, property, or general public.

The applicant has prepared a Traffic Impact and Site Circulation Study for the proposed school. The new school will combine the operations of the Holy Angels Elementary (HA) and Preschool (located on 10th Street) and Immaculate Conception Elementary School (IC). The number of AM and PM peak hour trips that would be generated by the proposed school consolidation was based on the existing and projected future enrollment. The existing 2015 enrollment of the two schools is 498 students. The potential max enrollment with the new consolidated school will be 560 students. Based on information provided by the applicant, approximately 25% of the existing students at both Holy Angels and Immaculate Conception either ride the bus, or are enrolled in the before/after school program and do not generate peak hour vehicle trips.
With the combination of the two schools (IC and HA) at one campus the total population will increase from 264 student to a maximum of 560 students, which is more than double the population. However, many of the families have students that attend both HA and IC. Therefore, by consolidating the campuses, the overall trips will be reduced since drop-off will only occur at one central location. The existing school generates 361 AM peak hour trips (185 inbound and 178 outbound) and 351PM peak our trips (180 inbound and 171 outbound). According to the Traffic Impact Study the proposed consolidated school will generate an additional 155 AM peak hour trips (78 inbound and 77 outbound) and 165 PM peak hour trips (83 inbound and 82 outbound).

The new campus plan will allow for 40 vehicles to stack within the campus before needing to extend into city right of way.

Water runoff is addressed with the inclusion of a storm water management system that utilizes collection and infiltration versus discharge into the city storm sewer which is the primary method of storm water management currently.

Finding - Met

6) **Where possible, the use shall preserve, renovate and restore historic buildings or landmarks affected by the development. If the historic structure must be moved from the site, the relocation shall be subject to the standards of this section.**

Analysis

The existing Immaculate Conception School building consists of the original brick school building (1900's) and a 1960's addition. Although historic in age, the property is not within a local Historic District and the school is not designated as Local, State or Federal Landmark. There is no mention of the school in the Historic Resource Element of the Master Plan. The project Architect has stated that the existing buildings are functionally substandard due to their age and

deteriorating construction. The US-31/M-37 (Division Street) Planning and Environmental Linkages Process Final Report referenced that the Immaculate Conception Church and School Complex as an eligible National Register historic district. For purposes of right-of-way improvements on Division Street, the report indicates there are historic potential concerns that will involve both formal State Historic Preservation Office consultation and likely Section 4(f) impacts. Such reference has implications for the use of federal funds to modify the highway if historic properties are impacted negatively. No federal funds will be used for this project.

Finding - Met

7) **Elements shall relate to the design characteristics of an individual structure or development to existing or planned developments in a harmonious manner, resulting in a coherent overall development pattern and streetscape.**

Analysis

The building is designed to integrate with the commercial character of Division Street, while also providing a transition to the predominantly residential Slabtown Neighborhood to the north and west. The use of red face brick with natural cast stone trim in a one and two story façade is consistent with the nearest neighboring building to the north, as well as several existing buildings along Division Street (e.g., physician's office, bank, drug/convenience store).

Finding - Met

8) **The use shall be consistent with the intent and purposes of the zoning district in which it is proposed.**

Analysis

Immaculate Conception School is currently operating at this site and has been for over 100 years. This redevelopment project will not change the character of the neighborhood and is an allowed as a special use in this district. The City Master Plan states that schools are should be located in the TC-3 Neighborhood type which is where this school is proposed to be located.

Finding - Met

Specific Requirements 1364.08 (11)

a. **The use is located in an R-1a, R-1b, R-2, R-9, R-15, R-29, C-1, C-2,C-3 or GP District.**

Analysis

The existing and proposed school is located in an R-1b District

Finding - Met

b. A Master Site and Facilities Plan is submitted to and approved by the Planning Commission showing:

1. **Existing Facilities and Planned facilities for the ensuing 5 years.**
2. **Adequate street crossing facilities, pedestrian routes and projected number of pedestrians.**
3. **Sufficient areas for motor vehicle and bus circulation routes, together with areas for pick-up and drop-off of students**
4. **If child care is provided, the facilities for such use shall be designated in the plan, together with child care hours of operation.**
5. **The building and parking areas shall not exceed 70 percent of the lot area.**

Analysis

The existing church, new pantry and school are the only planned facilities for the ensuing 5 years.

The potential maximum enrollment with the new consolidated school will be 560 students. There are four marked pedestrian crossings internal to the parking lot, two new marked pedestrian crossings on the reconstructed Second Street and existing marked pedestrian crossings exist at intersections on Randolph from Division Street west to Elmwood Avenue. Sidewalks internal to the campus are proposed and connect to existing and proposed public sidewalks in the general vicinity. A new public sidewalk is proposed on the east side of Cedar Street from Second to Third Streets. The new Second Street will have a public sidewalk on the south side adjacent to the curb and tie into the existing sidewalk along Vine Street. A new public sidewalk will also be added to the north side of Third Street from Division street west to the entrance on Third Street.

Two shuttle school buses service the school and will pick-up and drop-off students in front of the main entry of the church. One bus provides transportation of students to the St. Elizabeth Ann Seton Campus in East Bay Township and the other bus provides transportation of students to and from Central High School for students requiring bus service to their home. The maneuvering lane of the parking lot around the church will be utilized for drop-off/pick-up and will accommodate up to 40 vehicles.

No child care is being offer at the school, only before and after school programs will be provided.

The building and parking areas cover 58.4% of the site which is below the 70% limit.

Finding - Met

c. **A traffic study must be submitted to the Planning Commission.**

The applicant has prepared a Traffic Impact and Site Circulation Study for the proposed school.

Finding - Met

RECOMMENDATION:

Staff recommends the request 16-SLUP-02 be approved as presented.

City of Traverse City

SPECIAL LAND USE PERMIT APPLICATION

Planning Department, 400 Boardman, Traverse City, MI 49684 (231) 922-4778 Telefax (231) 922-4457

NOTE: BEFORE SUBMITTING AN APPLICATION, AN APPLICANT SHALL MEET WITH THE PLANNING DIRECTOR TO REVIEW THE PROPOSED PROJECT, THE TRAVERSE CITY CODE OF ORDINANCES AND THE CITY PLAN. Traverse City Code, Sec. 1364.04(a)

APPLICATION FEE:	$830.00	DATE:	
CHECK NO.	1069	HEARING DATE:	
RECEIPT NO.	12187	PARCEL NUMBER:	

Property address: 218 Vine St, Traverse City

Legal description: Lots 1-5 of Block 5 of Hannah Lay & Co's 3rd Addition, Lots 1-5 of Block 6 of Hannah Lay & Co's 3rd Addition, Lots 5-7 Block 2 of Hannah Lay & Co's 3rd Addition, Lots 5-12 of Block 1, Hannah Lay & Co's 3rd Addition and a portion fo land located in Section 4, Town 27 North, Range 11 West,, City of Traverse City, Grand Traverse County, Michigan, the entire parcel more fully described as follows:
BEGINNING at the Southeast corner of Lot 5, Block 5, Hannah Lay & Co's 3rd Addition; thence N 87°55'03" W, 422.95 feet; thence N 02°06'16" E, 465.46 feet; thence S 87°41'46" E, 148.56 feet; thence along a 66.00 foot radius curve to the left for a distance of 103.86 feet (central angle =90°09'37", chord bearing =N 47°13'25" E, chord distance = 93.47 feet); thence S 87°46'52" E, 199.61 feet; thence S 01°10'52" W, 530.41 feet to the POINT OF BEGINNING..
Containing 4.80 acres, more or less.

Description of Request:
Complete redesign of school campus. See Cover letter for more information.

THE COMPLETED APPLICATION, FOURTEEN (14)* COPIES OF THE SITE PLAN, AND ONE (1) ELECTRONIC COPY OF THE APPLICATION AND SITE PLAN SHALL BE SUBMITTED TO THE PLANNING DEPARTMENT PRIOR TO THE MEETING AT WHICH THE REQUEST WILL BE CONSIDERED FOR INTRODUCTION. THE SITE PLAN SHALL MEET ALL THE REQUIREMENTS OF TRAVERSE CITY CODE, CHAPTER 1366, *SITE PLANS AND SITE DEVELOPMENT STANDARDS.*

Names of all property owners: Grand Traverse Area Catholic Schools (Diocese of Gaylord)

Applicant's name: Grand Traverse Area Catholic Schools (Diocese of Gaylord)

Address: 123 E. Eleventh St., Traverse City, MI 49684

Telephone: 231-946-8100 Telefax:

The undersigned acknowledges that in the event that it is determined by the Planning Director or the Planning Commission pursuant to Sections 1322.01 or 1322.05 of the Zoning Ordinance that the Application Fee will not cover the actual costs of processing this Application, including, but not limited to, costs for per diem expenses of staff, staff review and preparation time, professional reviews, attorney fees and other related expenses, outside professional planners, engineers, surveyors, architects or landscape architects, the undersigned shall be responsible for such additional fees in an amount determined by the Planning Director or the Planning Commission as provided by the Zoning Ordinance

Signature of owner(s):

Signature of applicant (if different than owner):

Relationship of applicant to owner:

*Note: After the Planning Commission has acted upon the request, ten (10) additional copies of the site plan shall be submitted to the City Clerk.

The applicant acknowledges that the City may be required from time to time to release records in its possession. The applicant hereby gives permission to the City to release any records or materials received by the City as it may be requested to do so as permitted by the Freedom of Information Act, MCL 15.231 et seq.

Revised 9/11/14

jozwiak consulting po box 5342 | traverse city, mi 49696 | (231) 218-1201 | www.jozwiakconsulting.com

October 26, 2016

Russ Soyring
Planning Director
City of Traverse City

RE: Special Land Use Application
Immaculate Conception Campus Reconstruction Project

Dear Russ:

Grand Traverse Area Catholic Schools (GTACS) has continued to work on the project that we started laying the ground work for over a year ago and is now in the final stages of fund raising which appears to put the project on track for a Spring 2017 start. Revamping the campus of Immaculate Conception is first on the list of improvements both at this and the St. Francis campus on 11th St. As demonstrated to you previously, evaluations of the existing school have deemed it to be beyond the useful life and too costly to renovate in order to meet current codes and needs. The most feasible solution is to construct a new school.

Last year, we introduced this project to the planning commission as we sought to increase the impervious restriction and to vacate a portion of Second Street and Vine Street. Both requests were accepted. Since those applications, the building and the site plan were carefully reviewed and some minor tweaks were made. The changes made, though minimal, include a slight reduction in the school footprint and an increase to the landscape island areas. The plans have been further scrutinized to minimize impervious surfaces including sidewalk areas around the existing church. Overall, the project currently sits at 58 percent impervious lot coverage and parking counts that put us right on track with the ordinance and with the church's needs.

We are now looking to finalize our approval project by submitting our plans and application for the Special Land Use process. We look forward to showing other aspects of the project that are now incorporated that follow the comments we heard through the prior reviews. Stormwater, green space (including tree canopy coverage), along with pedestrian interconnectivity were some of the more prominent comments that we heard.

<u>Stormwater Management</u>
We have reviewed the existing drainage system for the Immaculate Conception Campus and found that almost all of the campus plus the soon to be removed Second and Vine Streets directly flows into the city storm. This does not include the existing parking lot that is along Division Street which currently is served by infiltration basins. Our initial thoughts on stormwater were to provide an infiltration system for the parking lot and church and develop another means that would allow the school runoff to drain to the city storm. Our plans changed and now provide capacity for the school runoff as well. We have not finalized our design of the system since we are working with various manufacturers to determine the product that will best serve our needs. We will continue to develop the underground system and will do so with staff input. Our office has successfully used underground infiltration systems within the city on other projects and are confident that this type of system will best serve this project. To reiterate, we are receiving the stormwater from the site and reintroducing it into the ground. For storms that exceed our 25-year design, we will request a connection to the city storm system where we will introduce an overflow device. In other words, all stormwater will enter our system. When a higher intensity storm is experienced, the water will flow through the overflow once our system tops out.

Green Space

We have reviewed our site plan and have now developed it such that we have 58% lot coverage by asphalt and buildings. This does not include sidewalks which accounts for another 10%. Therefore, over 30% of the property will be vegetated. Trees are proposed throughout as it is our desire to develop a plan the nearly replicates the existing tree canopy.

Landscaping

We have secured a contract with Anita Silverman who is a locally know landscape architect who lives in the city limits to review our project and to provide us with a landscaping plan. Her initial review of the project resulted in a few ideas which we incorporated. One idea was to increase the green area in front of the church by removing a portion of the sidewalk near the entry. This provided ample space to include a few more trees which increases the canopy cover that was discussed during a previous planning commission meeting. The plans we are submitting today do depict the landscaping plan ideas that Anita preliminarily for us. In the coming week, she will update her concept plan and we will share it with you on September 20th. She will further develop the plan into a complete landscape plan upon a favorable review of our project.

Pedestrian Interconnectivity

Pedestrian routes and sidewalks are paramount in using the campus to its fullest. Perimeter sidewalks have always been a part of the plan and we are open to discussions on where additional sidewalks may be introduced. We reviewed some of the sidewalks that we had in our previous plan and revamped our thoughts based on actual conditions in the field and based on a thought of not increasing impervious surfaces where not specifically warranted. We did omit the sidewalk along the north side of the new Second Street. Our thought on this was that we would maintain a maximum amount of privacy for the adjacent homeowner and we can keep three additional trees that would be impacted if we were to add the sidewalk. The sidewalk along the south side of the new Second Street remains.

The sidewalk along Cedar between Third and "old Second" has been added to the plan. A meeting with city staff and our landscape architect developed a method by which both landscaping and the sidewalk can coexist. We have added a connection through the campus that connects with the sidewalk on the west side of Division Street. This connection will be gated while school is in session and opened at all other times. As always, we allow the community to use the playgrounds at all of our campuses when school is not in session.

We look forward to discussing these items and other components of our project at the November 1st planning commission meeting. Should you have any questions or require additional information, please do not hesitate to contact me.

Sincerely,
Jozwiak Consulting, Inc.

Scott M. Jozwiak, P.E.
Principal

jozwiak consulting po box 5342 | traverse city, mi 49696 | (231) 218-1201 | www.jozwiakconsulting.com

October 10, 2016

RE: General Standards for Approval
Special Land Use Permit
Immaculate Conception Campus Reconstruction Project

1364.02 General standards for approval

a) The use shall be designed, constructed, operated and maintained so as to be harmonious and compatible in appearance with the intended character of vicinity.

The building has been designed to integrate with the commercial character of Division Street, while also providing a transition to the predominantly residential Slabtown neighborhood to the north and west. The collegiate gothic style of the building exterior features a historical/institutional character consistent with the Division Street corridor while also harmonizing with the residential context in which it is located (much as the Central Grade School does in the Central neighborhood).

b) The use shall not be hazardous nor disturbing to existing or planned uses in the vicinity.

The proposed campus redevelopment plan will not change the overall character of the vicinity. Schools and churches are allowed in the zoning district. Traffic is the single factor that places the most burden to the vicinity. The redevelopment plan eases the pressure of traffic during pick-up times by providing ample stacking within the campus. This is demonstrated on sheet C1.0. Further, this proposed plan creates a campus atmosphere thereby shielding nearby properties from activities occurring on the premises.

c) The use shall be served adequately by existing or proposed public infrastructure and services, including but not limited to, streets and highways, police and fire protection, refuse disposal; water, waste water, and storm sewer facilities; electrical service, and schools.

The redevelopment of this campus allows us the opportunity to reduce the burden on public infrastructure and services. As part of this redevelopment, the city services will be less impacted as follows:
Streets: The existing curb cut to Division will be eliminated. A street vacation request granted by the city allows for a more concise campus development plan which addresses vehicle stacking and allows it to mostly occur on our property.
Fire: The new school building will meet current fire regulations thereby providing a safer environment over the existing school which dates back 100 years. Fire suppression, alarms and accessibility are items that reduce the potential for a dangerous environment should fire services be called to the property.
Refuse: Screened dumpster pads are provided
Water: The new school will require similar water requirements to that of the existing school. Water will also be needed for fire suppression.
Sewer: The new school will require similar sewer needs to that of the existing school.
Storm sewer: The proposed redevelopment consists of an infiltration system located under the proposed parking lot. By implementing this system, we are almost completely removing reliance on the city storm sewer system.
Electrical service: The new school will require similar electrical needs to that of the existing school. The school is larger, however, new lighting and mechanical equipment affords less energy consumption.
Schools: This is a school

d) The use shall not create excessive additional requirements for infrastructure, facilities, and services provided at public expense.

From our perspective, the net requirements for public infrastructure, facilities and services will be reduced from that which it is reliant on today. This is due to the reduction on the impact to the city storm sewer system and the use of the latest energy saving fixtures and building materials.

e) The use shall not involve any activities, processes, materials, equipment or conditions of operation that would be detrimental to any person or property or to the general welfare by reason of excessive production of traffic, noise, smoke, fumes, glare, odors or water runoff.

The proposed campus redevelopment project will increase efficiencies associated with traffic and the pick-up process which currently results in cars exclusively utilizing city right of way for stacking. The new campus plan will allow for 40 vehicles to stack within the campus before needing to extend into city right of way. Noise, smoke, fumes, glare and odors are not nuisances commonly associated with schools. Water runoff is addressed with the inclusion of a stormwater management system that utilizes collection and infiltration versus discharge into the city storm sewer which is the primary method of stormwater management currently.

f) Where possible, the use shall preserve, renovate and restore historic buildings or landmarks affected by the development. If the historic structure must be moved from the site, the relocation shall be subject to the standards of this section.

The existing Immaculate Conception School building consists of the original brick school building (190?) and a 196? Addition. Although historic in terms of their age, neither of these buildings possess architectural merit that warrants their preservation. Whereas the existing buildings are functionally substandard due to their age and deteriorating construction, the proposed building features state-of-the-art K-12 school design and modern construction principles which will meet the needs of the GTACS community and become a new landmark for many generations to come.

g) Elements shall relate the design characteristics of an individual structure or development to existing or planned developments in a harmonious manner, resulting in a coherent overall development pattern and streetscape.

The use of red face brick with natural cast stone trim in a one and two story façade is consistent with the nearest neighboring building to the north, as well as several existing buildings along Division Street (e.g., physician's office, bank, drug/convenience store).

h) The use shall be consistent with the intent and purposes of the zoning district in which it is proposed.

Immaculate Conception School is currently operating at this site and has been for over 100 years. This redevelopment project does not change the character of the neighborhood and is an allowed use in this district.

1364.08 Special Land Use Permits Granted by the City Commission

Schools subject to the following:

1) The use is located in an R-1a, R-1b, R-2, R-9, R-15, R-29, C-1, C-2 C-3 or GP district.

The campus is located in the R-1b zoning district.

2) A master site and facilities plan is submitted to and approved by the Planning Commission showing:
   a. Existing facilities and planned facilities for the ensuing five years.

The plan presented is inclusive of any planned expansion for the ensuing five years.

   b. Adequate street crossing facilities, pedestrian routes and projected number of pedestrians.

Plans have been prepared that maximize pedestrian circulation to the extent possible considering this is a school and safety of the children is paramount. Sidewalks are proposed where appropriate and illustrations in the submittal depict the circulation patterns.

   c. Sufficient areas for motor vehicle and bus circulation routes, together with areas for pick up and drop off of students.

The proposed campus plan allows for stacking within the confines of the property. Only during brief periods do we anticipate cars stacking within the public right of way. An illustration of this stacking can be found in the submittal plan set. Bus circulation is minimal since only a few shuttle buses arrive at the site daily.

   d. If child care use is provided, the facilities for such use shall be designated in the plan, together with the child care hours of operation.

Child care is not provided at this campus.

   e. The building and parking area shall not exceed 70 percent of the lot area.

The building and parking area consumes less than 60% of the property thereby complying with this requirement.

3) A traffic study must be submitted to the Planning Commission.

Fleis and Vandenbrink is our consultant providing traffic engineering/study services. A traffic study is included.

jozwiak consulting po box 5342 | traverse city, mi 49696 | (231) 218-1201 | www.jozwiakconsulting.com

October 10, 2016

RE: General Standards for Approval
Special Land Use Permit
Immaculate Conception Campus Reconstruction Project

1364.02 General standards for approval

a) The use shall be designed, constructed, operated and maintained so as to be harmonious and compatible in appearance with the intended character of vicinity.

The building has been designed to integrate with the commercial character of Division Street, while also providing a transition to the predominantly residential Slabtown neighborhood to the north and west. The collegiate gothic style of the building exterior features a historical/institutional character consistent with the Division Street corridor while also harmonizing with the residential context in which it is located (much as the Central Grade School does in the Central neighborhood).

b) The use shall not be hazardous nor disturbing to existing or planned uses in the vicinity.

The proposed campus redevelopment plan will not change the overall character of the vicinity. Schools and churches are allowed in the zoning district. Traffic is the single factor that places the most burden to the vicinity. The redevelopment plan eases the pressure of traffic during pick-up times by providing ample stacking within the campus. This is demonstrated on sheet C1.0. Further, this proposed plan creates a campus atmosphere thereby shielding nearby properties from activities occurring on the premises.

c) The use shall be served adequately by existing or proposed public infrastructure and services, including but not limited to, streets and highways, police and fire protection, refuse disposal; water, waste water, and storm sewer facilities; electrical service, and schools.

The redevelopment of this campus allows us the opportunity to reduce the burden on public infrastructure and services. As part of this redevelopment, the city services will be less impacted as follows:
Streets: The existing curb cut to Division will be eliminated. A street vacation request granted by the city allows for a more concise campus development plan which addresses vehicle stacking and allows it to mostly occur on our property.
Fire: The new school building will meet current fire regulations thereby providing a safer environment over the existing school which dates back 100 years. Fire suppression, alarms and accessibility are items that reduce the potential for a dangerous environment should fire services be called to the property.
Refuse: Screened dumpster pads are provided
Water: The new school will require similar water requirements to that of the existing school. Water will also be needed for fire suppression.
Sewer: The new school will require similar sewer needs to that of the existing school.
Storm sewer: The proposed redevelopment consists of an infiltration system located under the proposed parking lot. By implementing this system, we are almost completely removing reliance on the city storm sewer system.
Electrical service: The new school will require similar electrical needs to that of the existing school. The school is larger, however, new lighting and mechanical equipment affords less energy consumption.
Schools: This is a school

d) The use shall not create excessive additional requirements for infrastructure, facilities, and services provided at public expense.

From our perspective, the net requirements for public infrastructure, facilities and services will be reduced from that which it is reliant on today. This is due to the reduction on the impact to the city storm sewer system and the use of the latest energy saving fixtures and building materials.

e) The use shall not involve any activities, processes, materials, equipment or conditions of operation that would be detrimental to any person or property or to the general welfare by reason of excessive production of traffic, noise, smoke, fumes, glare, odors or water runoff.

The proposed campus redevelopment project will increase efficiencies associated with traffic and the pick-up process which currently results in cars exclusively utilizing city right of way for stacking. The new campus plan will allow for 40 vehicles to stack within the campus before needing to extend into city right of way. Noise, smoke, fumes, glare and odors are not nuisances commonly associated with schools. Water runoff is addressed with the inclusion of a stormwater management system that utilizes collection and infiltration versus discharge into the city storm sewer which is the primary method of stormwater management currently.

f) Where possible, the use shall preserve, renovate and restore historic buildings or landmarks affected by the development. If the historic structure must be moved from the site, the relocation shall be subject to the standards of this section.

The existing Immaculate Conception School building consists of the original brick school building (190?) and a 196? Addition. Although historic in terms of their age, neither of these buildings possess architectural merit that warrants their preservation. Whereas the existing buildings are functionally substandard due to their age and deteriorating construction, the proposed building features state-of-the-art K-12 school design and modern construction principles which will meet the needs of the GTACS community and become a new landmark for many generations to come.

g) Elements shall relate the design characteristics of an individual structure or development to existing or planned developments in a harmonious manner, resulting in a coherent overall development pattern and streetscape.

The use of red face brick with natural cast stone trim in a one and two story façade is consistent with the nearest neighboring building to the north, as well as several existing buildings along Division Street (e.g., physician's office, bank, drug/convenience store).

h) The use shall be consistent with the intent and purposes of the zoning district in which it is proposed.

Immaculate Conception School is currently operating at this site and has been for over 100 years. This redevelopment project does not change the character of the neighborhood and is an allowed use in this district.

1364.08 Special Land Use Permits Granted by the City Commission

Schools subject to the following:

1) The use is located in an R-1a, R-1b, R-2, R-9, R-15, R-29, C-1, C-2 C-3 or GP district.

The campus is located in the R-1b zoning district.

2) A master site and facilities plan is submitted to and approved by the Planning Commission showing:
    a. Existing facilities and planned facilities for the ensuing five years.

The plan presented is inclusive of any planned expansion for the ensuing five years.

    b. Adequate street crossing facilities, pedestrian routes and projected number of pedestrians.

Plans have been prepared that maximize pedestrian circulation to the extent possible considering this is a school and safety of the children is paramount. Sidewalks are proposed where appropriate and illustrations in the submittal depict the circulation patterns.

    c. Sufficient areas for motor vehicle and bus circulation routes, together with areas for pick up and drop off of students.

The proposed campus plan allows for stacking within the confines of the property. Only during brief periods do we anticipate cars stacking within the public right of way. An illustration of this stacking can be found in the submittal plan set. Bus circulation is minimal since only a few shuttle buses arrive at the site daily.

    d. If child care use is provided, the facilities for such use shall be designated in the plan, together with the child care hours of operation.

Child care is not provided at this campus.

    e. The building and parking area shall not exceed 70 percent of the lot area.

The building and parking area consumes less than 60% of the property thereby complying with this requirement.

3) A traffic study must be submitted to the Planning Commission.

Fleis and Vandenbrink is our consultant providing traffic engineering/study services. A traffic study is included.

FLEIS&VANDENBRINK
DESIGN. BUILD. OPERATE.

Memo

VIA EMAIL

To:	**Mr. Michael R. Buell, Superintendent** **Grand Traverse Area Catholic Schools**
From:	**Michael J. Labadie, P.E.** **Julie M. Kroll, P.E., PTOE** **Steven J. Russo, E.I.T.** **Fleis & VandenBrink Engineering**
Date:	**October 18, 2016**
Re:	**Immaculate Conception Campus** **Traverse City, Michigan** **Traffic Impact and Site Circulation Study**

Introduction

The Grand Traverse Area Catholic Schools (GTACS) is currently developing plans to combine the operations of the Holy Angels Elementary and Preschool and Immaculate Conception Elementary School on a central campus to be located on the existing Immaculate Conception site. Fleis & VandenBrink (F&V) was retained to complete a Traffic Impact Study (TIS) and site circulation evaluation for the proposed school consolidation.

The scope of this study was developed to address the traffic related impacts of the consolidation and provide recommendations for any road improvements and/or traffic management plans that would be required to mitigate any traffic impacts. Additionally, F&V provided analysis and recommendations for on-site traffic circulation to adequately accommodate parent pick-up / drop-off activities.

This study was conducted in accordance with accepted traffic engineering practice to provide information and recommendations to GTACS and address concerns of the Michigan Department of Transportation (MDOT) and City of Traverse City. The evaluation includes the following study intersections:

- US-31 / M-37 (Division Street) & Front Street,
- US-31 / M-37 (Division Street) & Randolph Street,
- US-31 / M-37 (Division Street) & Second Street,
- US-31 / M-37 (Division Street) Third Street,
- Randolph Street & Vine Street,
- Cedar Street & Second Street / Vine Street,
- Third Street & Existing Site Driveway, and
- The proposed site driveways

Data Collection

The Immaculate Conception school start time is 7:30 AM and the dismissal time is 2:40 PM. The analysis study focuses on the AM student arrival hour (7:00 AM to 8:00 AM) and the PM student dismissal hour (2:00 PM to 3:00 PM), when traffic volumes generated by the school are at their peaks. On October 20th-22nd, 2015 F&V collected AM and PM peak hour traffic volume data at the study intersections.

In addition, the adjacent Immaculate Conception Church has the following: Mass 8:15 AM Tuesday-Friday and 12:15 PM on Friday only, and Food Pantry Tuesday and Thursday from 7:00 to 8:00 PM. Although some

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of these activities are concurrent with the school hours, they are not conflicting with the pick-up/drop-off time periods and therefore would not be impacted by the school operations.

A review of the PM count data at the existing site driveways indicates traffic volumes were highest during the last 15-minute interval counted and therefore may not reflect the peak hour for school traffic; therefore, in order to validate the PM count data the site-generated trips during the AM and PM peak hours were compared. The results of this comparison indicate that the site-generated trips during the PM peak hour were approximately 30% less than the AM peak hour. Based on this information, the PM peak hour traffic volumes were adjusted upward and distributed to the study road network based on existing traffic patterns.

Existing Conditions

Existing peak hour vehicle delays and Levels of Service (LOS) were calculated at the study intersections using Synchro, Version 9 traffic analysis software. The results of the analysis of existing conditions were based on the existing lane usage and traffic control shown on the attached Figure 1, the existing traffic volumes shown on the attached Figure 2, and the methodologies presented in the Highway Capacity Manual, 2010 (HCM). Descriptions of LOS "A" through "F" as defined in the HCM are attached for unsignalized and signalized intersections. Typically, LOS D is considered acceptable, with LOS A representing minimal delay, and LOS F represent failing conditions. The results of the analysis of existing conditions are attached and summarized in Table 1.

Table 1
Existing Intersection Operations

			AM Peak		PM Peak	
			Delay		Delay	
Intersection	Control	Approach	(s/veh)	LOS	(s/veh)	LOS
1. US-31 / M-37 (Division Street) & Front Street	Signalized	EB	53.7	D	59.7	E
		WB	39.1	D	61.0	E
		NB	58.0	E	39.0	D
		SB	47.0	D	38.0	D
		Overall	**51.2**	**D**	**46.7**	**D**
2. US-31 / M-37 (Division Street) & Third Street	STOP (Minor)	EB	20.7	C	20.5	C
		WB	11.8	B	27.1	D
		NB LT	10.1	B	10.2	B
		SB LT	10.1	B	10.4	B
3. US-31 / M-37 (Division Street) & Second Street	STOP (Minor)	WB	34.8	D	21.2	C
		NB	Free		Free	
		SB LT	10.0	B	10.4	B
4. US-31 / M-37 (Division Street) & Randolph Street	STOP (Minor)	EB	114.6	F	125.0	F
		WB	55.6	F	46.3	E
		NB LT	9.7	A	10.1	B
		SB LT	9.8	A	10.4	B
5. Randolph Street & Vine Street	STOP (Minor)	EB	Free		Free	
		WB LT	7.4	A	7.5	A
		NB	10.4	B	11.0	B
6. Cedar Street & Second Street	STOP (Minor)	EB LT	7.2	A	7.3	A
		WB LT	7.3	A	7.3	A
		NB	9.3	A	9.8	A
		SB	10.8	B	10.3	B
7. Third Street & Site Drive	STOP (Minor)	EB LT	0.0 [1]	A	7.4	A
		WB	Free		Free	
		SB	9.0	A	9.2	A

The results of the existing conditions analysis indicate that the signalized intersection of US-31 / M-37 & Front Street currently operates at an overall LOS D during both peak periods; however, the northbound approach

during the AM peak hour and eastbound and westbound approaches during the PM peak hour currently operate at a LOS E. At the unsignalized study intersections and driveways all approaches currently operate acceptably at a LOS D or better during both peak periods except the eastbound and westbound approaches at the intersection US-31 / M-37 & Randolph Street which currently operate at a LOS E or F during the peak periods.

The study network operations and vehicle queues were evaluated using the SimTraffic simulation. The network was calibrated based on the actual and simulated number of entering vehicles based on MDOT standards. Review of the network simulations indicates acceptable traffic operations during the AM peak hour. Brief periods of long vehicle queues are observed during the PM peak hour for the eastbound and westbound approaches on Front Street at the intersection of US-31 / M-37; however, the queues dissipate and are not present throughout the duration of the peak period.

Trip Generation

The number of AM and PM peak hour trips that would be generated by the proposed school consolidation was forecast based on the existing and projected future enrollment information provided by GTACS. The existing 2015 enrollment of the two schools is 498 students. The potential max enrollment with the new consolidated building is 560 students. Based on information provided by GTACS, approximately 25% of existing students at both Holy Angels and Immaculate Conception either ride the bus, or are enrolled in the before/after school program (St. Joseph Club) and therefore do not generate peak hour vehicle trips. The peak hour trip generation for the remaining students was forecast based on the current ratio of 1.6 students per family and existing trip distribution percentages during the peak hours. The existing peak hour trips were then removed from the future trip generation forecast in order to determine the number of site generated trips that would be new to the road network. The trip generation forecast is summarized in Table 2.

Table 2
Site Trip Generation

Land Use	Amount	Units	AM Peak Hour In	AM Peak Hour Out	AM Peak Hour Total	PM Peak Hour In	PM Peak Hour Out	PM Peak Hour Total
Existing Trips			*185*	*176*	*361*	*180*	*171*	*351*
Trip Distribution			*51%*	*49%*		*51%*	*49%*	
Bus / After School Program	140	Students	0	0	0	0	0	0
Elementary School	420	Students	263	253	516	263	253	516
NEW TRIPS	**560**		**78**	**77**	**155**	**83**	**82**	**165**

Note: Not all students from the Holy Angels School will result in new trips to the road network. Based on information provided by the GTACS, approximately 81 parents currently pick-up and drop-off students at both the Immaculate Conception and Holy Angles schools.

Traffic Assignment

The peak hour site trips shown in Table 2 were assigned to the adjacent road network based on existing peak hour traffic patterns. Further, existing peak hour trips for the school were reassigned to the study road network where appropriate based on the proposed site circulation plan which requires all vehicles wishing to pick-up / drop-off must enter the site via the site driveway to Cedar Street aligned with Second Street from the south. This reassignment involved the following steps:

1. Determine the existing traffic patterns for the trips currently generated by the school.
2. Remove the existing trips for the school from the existing traffic volumes within the study road network.
3. Determine the future traffic patterns for the existing trips based on the proposed site circulation plan and available routes for school traffic.
4. Reassign the school trips to the adjacent road network to and from the school site.

The trip distribution model for the trip assignments is shown in Table 3 and the traffic assignments are shown on the attached Figure 3. The site-generated trips and reassignments were added to the existing traffic

volumes shown on the attached Figure 2 in order to determine the future traffic volumes shown on the attached Figure 4.

Table 3
Site Trip Distribution

		AM		*PM*	
From	via	IN	OUT	IN	OUT
North	M-37 / US-31 (Division)	30%	16%	34%	11%
South	M-37 / US-31 (Division)	14%	43%	14%	35%
East	Front Street	8%	9%	9%	11%
West	Front Street	48%	32%	43%	43%
		100%	100%	100%	100%

Future Conditions

Future peak hour vehicle delays and LOS ***with the proposed school campus*** were calculated based on the existing lane use and traffic control, the proposed site access and circulation plan, the future traffic volumes, and the methodologies presented in the HCM. Additionally, SimTraffic simulations were utilized to evaluate network operations and vehicle queues. The results of the analysis of total future conditions are attached and are summarized in Table 4.

Table 4
Future Intersection Operations

			AM Peak		PM Peak	
Intersection	Control	Approach	Delay (s/veh)	LOS	Delay (s/veh)	LOS
1. US-31 / M-37 (Division Street) & Front Street	Signalized	EB	60.3	E	61.4	E
		WB	39.9	D	63.2	E
		NB	59.4	E	39.5	D
		SB	46.7	D	38.1	D
		Overall	**53.3**	**D**	**47.6**	**D**
2. US-31 / M-37 (Division Street) & Third Street	STOP (Minor)	EB	21.7	C	21.9	C
		WB	11.8	B	42.0	E
		NB LT	10.3	B	10.9	B
		SB LT	10.1	B	10.4	B
3. US-31 / M-37 (Division Street) & Second Street	STOP (Minor)	WB	33.3	D	21.0	C
		NB	Free		Free	
		SB LT	10.0	B	10.4	B
4. US-31 / M-37 (Division Street) & Randolph Street	STOP (Minor)	EB	155.1	F	224.0	F
		WB	47.8	E	39.3	E
		NB LT	9.8	A	10.2	B
		SB LT	9.8	A	10.4	B
6. Cedar Street & Second Street	STOP (Minor)	EB LT	7.4	A	7.3	A
		WB LT	8.1	A	8.1	A
		NB	14.3	B	29.0	D
		SB	25.8	D	27.4	D

The future conditions results indicate that the proposed school consolidation would not have a significant impact on the signalized intersection of US-31 / M-37 & Front Street. Future vehicle delays and LOS as shown in Table 4 will be similar to existing conditions and minor increases in vehicle delay will not be discernable. Additionally, future traffic volumes at the intersection will increase by 2% or less during the peak periods, which is not significant.

At the unsignalized study intersections all study intersection approaches will continue to operate in a manner similar to existing conditions except the westbound approach on Third Street at the intersection of US-31 / M-37 which will be reduced to a LOS E during the PM peak period. However, HCM calculated 95th percentile queue lengths for this approach are calculated to be one vehicle, which is not significant. Review of network simulations also indicates future traffic operations will be similar to existing conditions.

The eastbound and westbound approaches on Randolph Street at US-31 / M-37 will continue to operate at a LOS E or F during the peak hours, with increased vehicle delays. Therefore, improvements to help improve traffic operations at the intersection were investigated. The results of this analysis indicate that the City should consider prohibiting parking on Randolph Street between Vine Street and US-31 / M-37 and restriping the approach to provide a shared left turn/through lane and exclusive right turn lane. With the addition of this improvement, future traffic operations at the intersection will be similar to existing conditions as shown in Table 5.

The City has indicated they do not typically stripe left turn lanes on primarily residential streets such as Randolph Street. As such, F&V recommends the City monitors future traffic operations at the intersection including vehicle queuing, and crashes to determine if restriping the approach or prohibition of left turns is necessary.

Table 5
Future Intersection Operations With Improvements

			AM Peak		PM Peak	
Intersection	Control	Approach	Delay (s/veh)	LOS	Delay (s/veh)	LOS
4. US-31 / M-37 (Division Street) & Randolph Street	STOP (Minor)	EB	95.2	F	156.1	F
		WB	47.8	E	39.3	E
		NB LT	9.8	A	10.2	B
		SB LT	9.8	A	10.4	B

On-Site Facilities

In order to accommodate school traffic volumes on-site, proper vehicle facilities must be provided for pick-up / drop-off activities. Providing the necessary on-site operations minimizes the impact to adjacent off-site traffic operations. The recommended site access for pick-up / drop-off facilities are summarized below.

Pick-Up / Drop-Off Area

Data collected by F&V staff for previous school studies indicate that 80% of AM peak hour traffic typically arrives in a peak 20 minute period and 70% of PM peak hour traffic typically arrives in a peak 30 minute period. During the AM peak period a minimum of 150 feet of on-site loading space should be provided, based on an average drop-off rate of 45 seconds per vehicle. During the PM peak period, a minimum of 675 feet of on-site loading space should be provided, based on an average pick-up rate of 5.5 minutes per vehicle.

In order to accommodate pick-up and drop-off activities, 675 feet of on-site sidewalk loading space should be provided. Based on the most recent site plan, the pick-up / drop-off zone should be provided along the sidewalk along the east side of the parking lot and in front of the school. In order to accommodate this, parking will need to be prohibited in the parking spaces along the sidewalk during pick-up / drop-off times.

The pick-up / drop-off loading area should be designed with a one-way counterclockwise circulation with a width of 24 feet. This design will provide for student loading on the passenger side of the vehicle and allow for vehicle passing in the loading zone with minimal vehicle-pedestrian conflicts. Parents should be instructed to pull into the next available space in the pick-up / drop-off area and park along the curb while the child enters / exits the vehicle. Once loading is complete the parent can then pull away from the curb and use the drive lane to exit the site.

It is important that parents do not wait in line to pick-up / drop-off their child at the front door. This will result in poor traffic operations and long vehicle queues which will spill out of the site onto adjacent streets.

Pedestrian Activity

F&V also completed a review of existing pedestrian and bicycle activity in the area. Based on the count data collected, school pedestrian activity in the area is minimal and school crossing guards are not required.

Conclusions

1. The signalized intersection of US-31 / M-37 & Front Street currently operates at an overall LOS D during both peak periods; however, the northbound approach during the AM peak hour and eastbound and westbound approaches during the PM peak hour currently operate at a LOS E.
2. All unsignalized study intersections and driveway approaches currently operate acceptably at a LOS D or better during both peak periods except the eastbound and westbound approaches at the intersection US-31 / M-37 & Randolph Street which currently operate at a LOS E of F during the peak periods.
3. The proposed school consolidation will generate 155 AM peak hour trips (78 inbound and 77 outbound) and 165 PM peak hour trips (83 inbound and 82 outbound).
4. Existing vehicle trips were reassigned to the study road network based on the proposed site access and circulation plan.
5. Future traffic operations at the study intersections included existing traffic volumes collected, the redistributed existing trips generated the Immaculate Conception school and the projected traffic volumes from the school expansion.
6. Future traffic operations at the signalized intersection of US-31 / M-37 & Front Street will be similar to existing conditions and minor increases in vehicle delay will not be discernable.
7. At the unsignalized study intersections all study intersection approaches will continue to operate in a manner similar to existing conditions except the westbound approach at the intersection of US-31 / M-37 & Third Street which will be reduced to a LOS E during the PM peak period. However, HCM calculated 95th percentile queue lengths for this approach are calculated to be 1 vehicle, which is not significant.
8. Pedestrian and bicycle activity is minimal and school crossing guards are not required at any study intersections
9. Parking in the vehicle circulation loop may be permitted only during non-loading times (currently 8:00 AM-3:00 PM) and during non-school hours.

Recommendations

1. Create a one-way counter-clockwise vehicle circulation loop for student drop-off / pick-up activities, utilizing the entire sidewalk adjacent to the north and east sides of the proposed parking lot. A minimum of 675 feet of on-site loading space should be provided for the pick-up / drop-off area.
2. Access to the main parking lot via the driveways at Third Street and Cedar Street should prohibited by the use of cones or other delineation during the pick-up / drop-off times (currently 7:00 AM-8:00 AM and 2:00 PM-3:00 PM).
3. In order to improve traffic operations at the intersection of US-31 / M-37 & Randolph Street the City should consider prohibiting parking on Randolph Street between Vine Street and US-31 / M-37 and restriping the approach to provide a shared left turn/through lane and exclusive right turn lane.
4. If a parent wishes to park in a parking space and escort their child to/from school that is acceptable. The parent should only use the designated parking area adjacent to Vine Street to park and walk their child on the sidewalk to the main entrance. Parking should not be permitted in the main parking lot, or in the proposed on-street parking area on Cedar Street.

Additionally, the following should be encouraged improved use of the student loading facilities:

5. Site circulation instructions should be distributed to the parents prior to the start of school each year and/or when changes are made in the operation.
6. Allocate staff to direct drivers in the loading zones and encourage efficient entrance/exiting procedures.

7. An informational meeting should be considered to distribute a pamphlet and discuss with parents and staff outlining the curb loading zones, circulation pattern, proposed traffic operations and parking restrictions.
8. Students should enter/exit their parent's vehicles only on the passenger side.

Any questions related to this memorandum, study, analyses, and results should be addressed to Fleis & VandenBrink.

Attached: Traffic Volume Data
Figures 1 – 4
Synchro Results

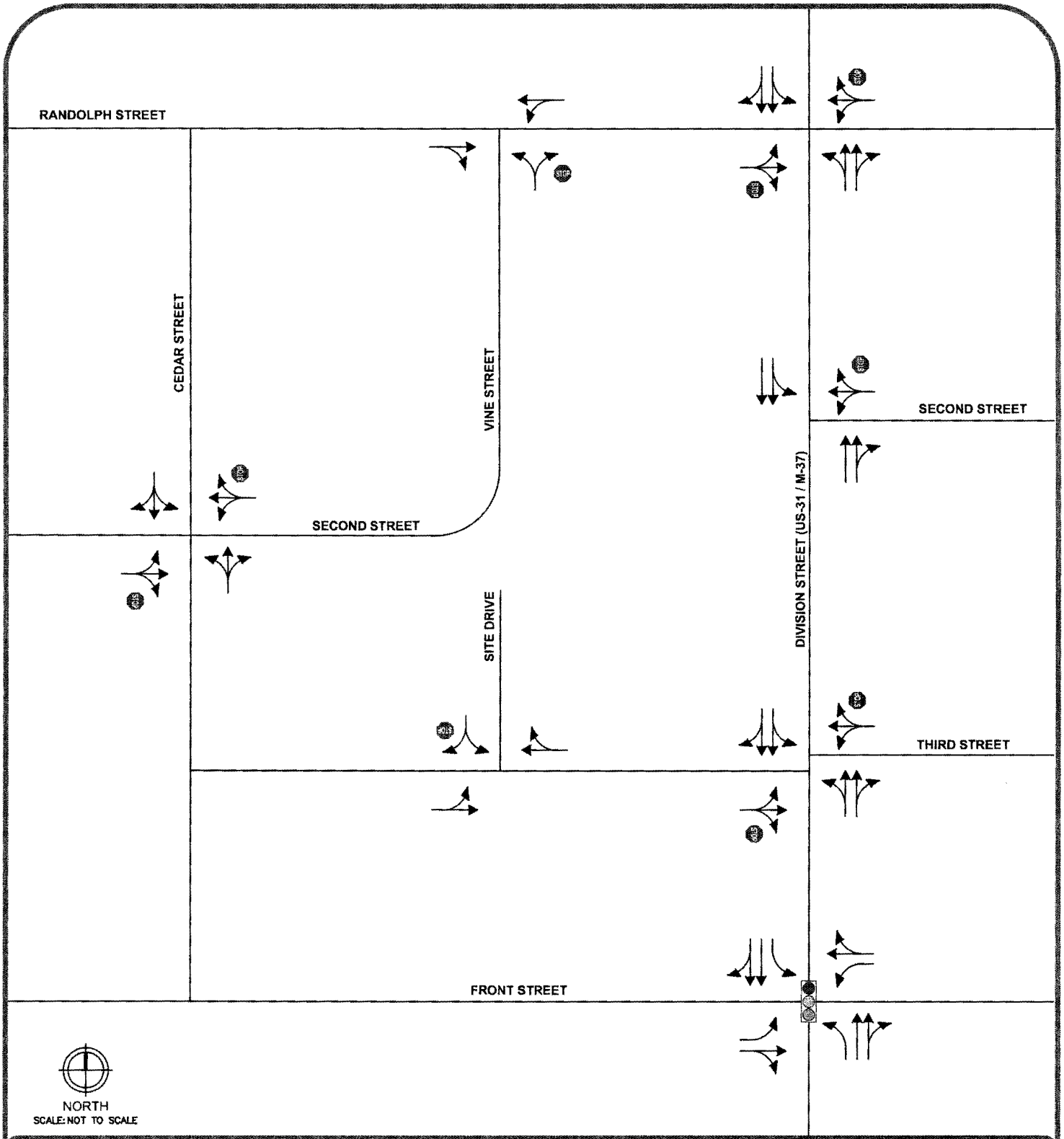


FIGURE 1
LANE USE AND TRAFFIC CONTROL

IMMACULATE CONCEPTION - TRAVERSE CITY, MI

LEGEND

- ROADS
- LANE USE
- SIGNALIZED INTERSECTION
- UNSIGNALIZED INTERSECTION

2016

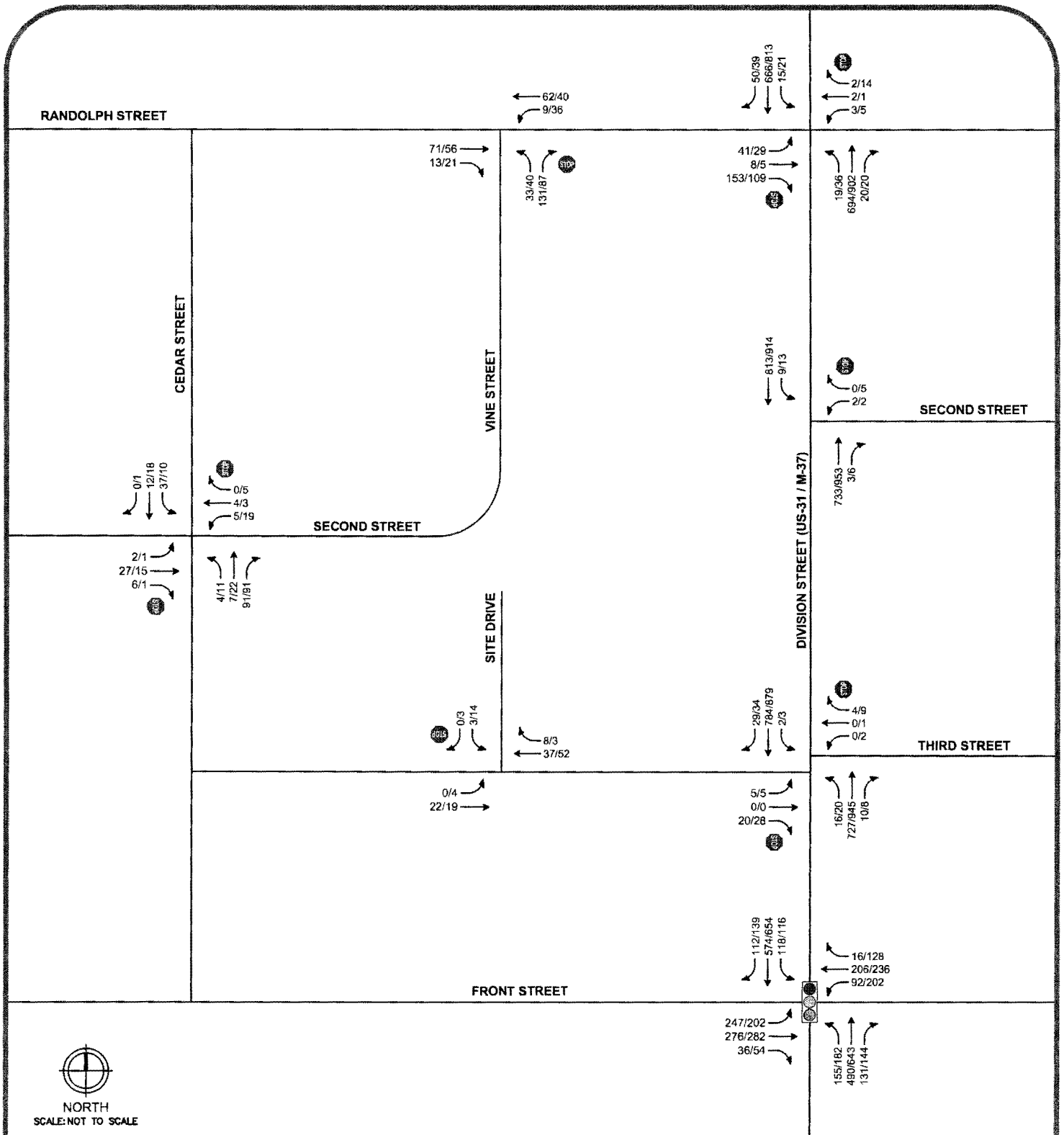


FIGURE 2
EXISTING TRAFFIC VOLUMES

IMMACULATE CONCEPTION - TRAVERSE CITY, MI

LEGEND

- ROADS
- TRAFFIC VOLUMES (AM/PM)
- SIGNALIZED INTERSECTION
- UNSIGNALIZED INTERSECTION

2016

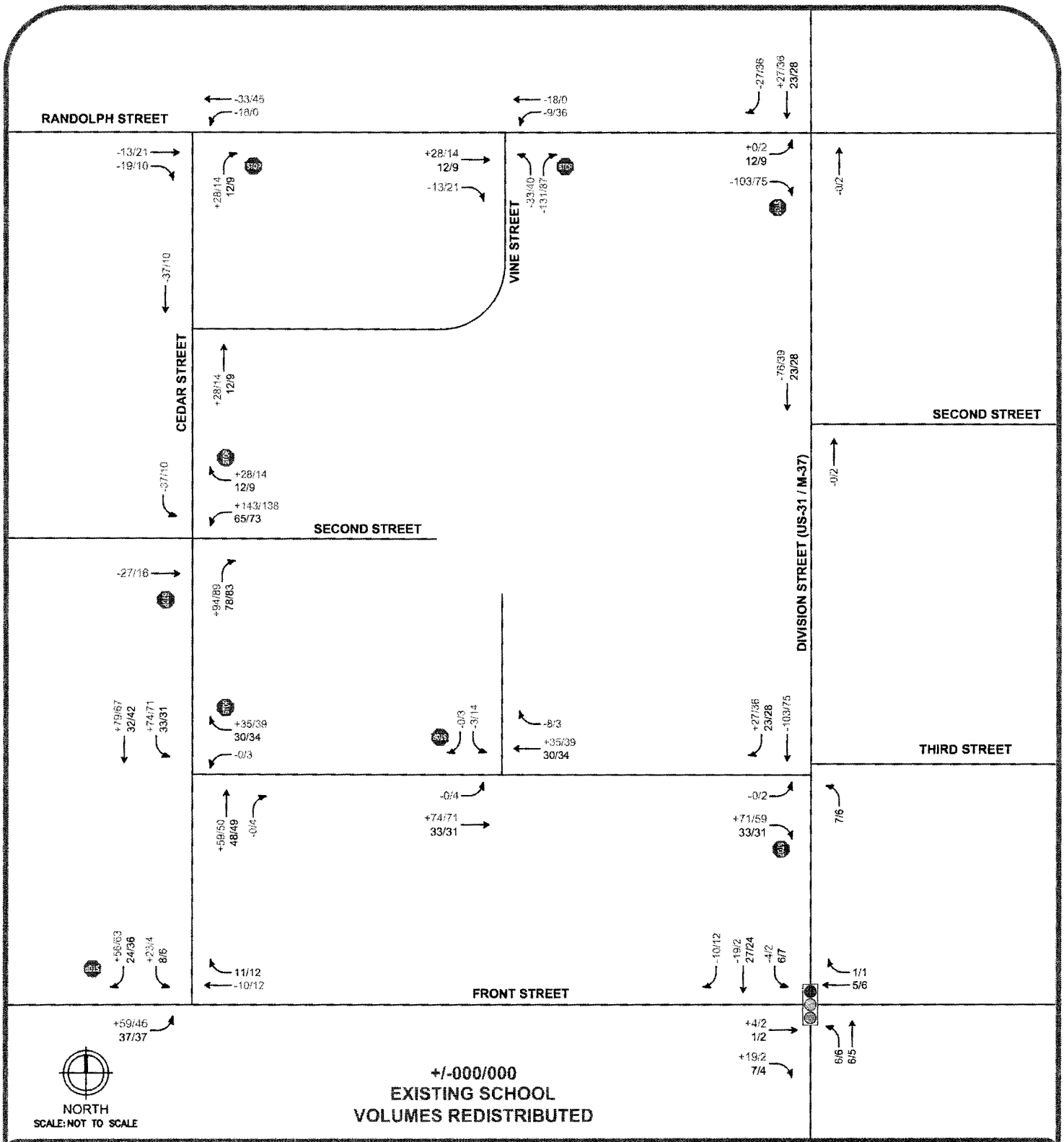


FIGURE 3
SITE-GENERATED TRAFFIC VOLUMES

IMMACULATE CONCEPTION - TRAVERSE CITY, MI

LEGEND

- ROADS
- TRAFFIC VOLUMES (AM/PM)
- SIGNALIZED INTERSECTION
- UNSIGNALIZED INTERSECTION

2016

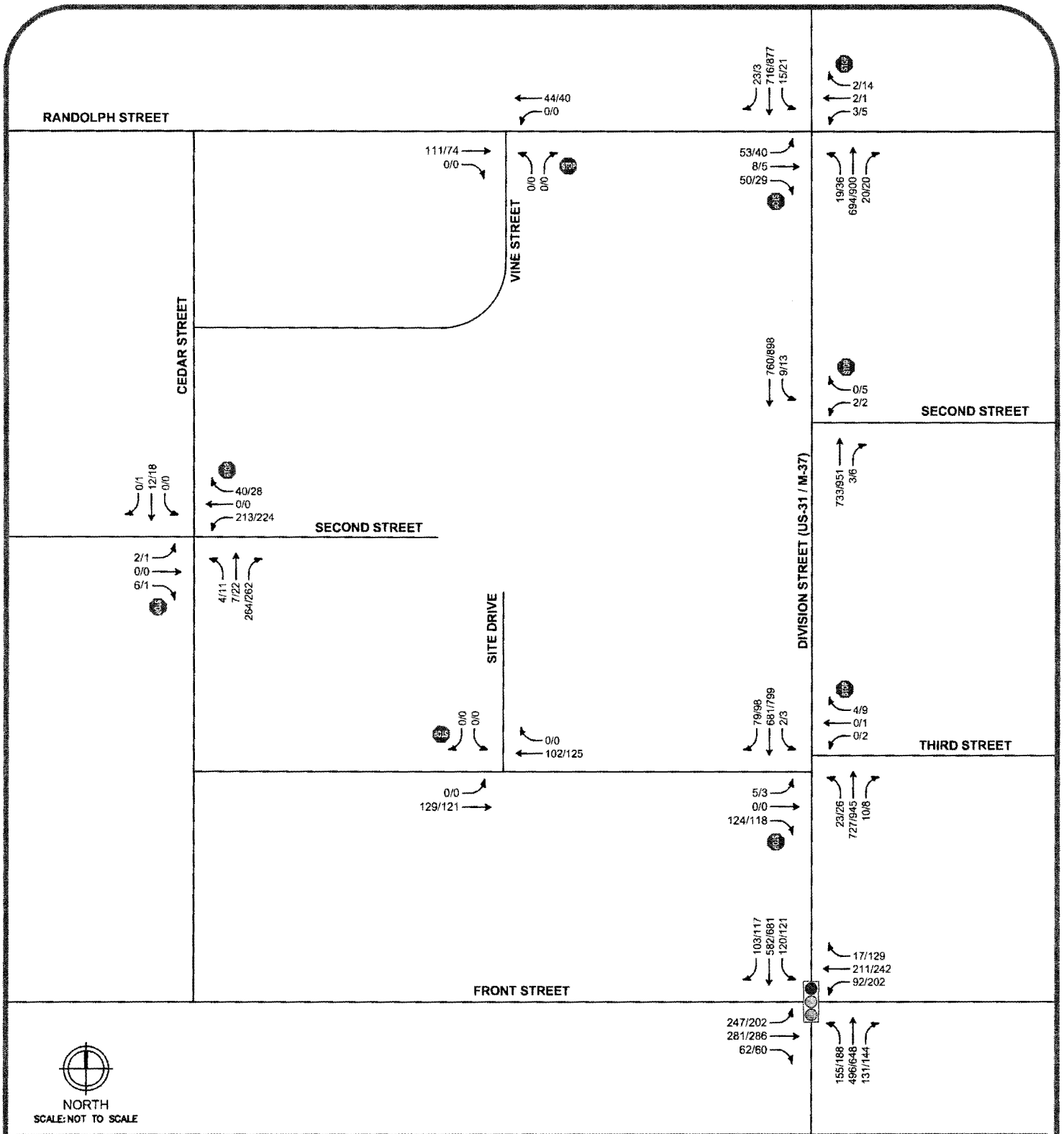


FIGURE 4
FUTURE TRAFFIC VOLUMES

IMMACULATE CONCEPTION - TRAVERSE CITY, MI

LEGEND

- ROADS
- TRAFFIC VOLUMES (AM/PM)
- SIGNALIZED INTERSECTION
- UNSIGNALIZED INTERSECTION

2016

Fleis & VandenBrink Engineering, Inc.

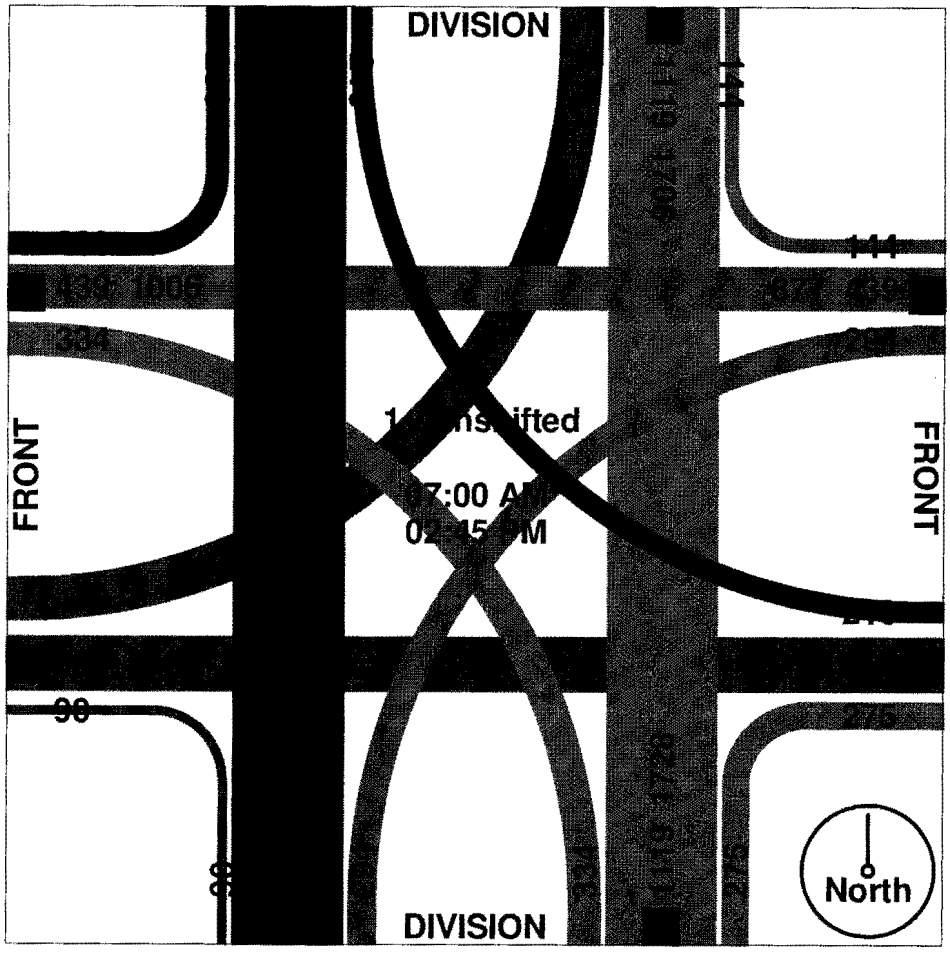
27725 Stansbury Boulevard, Suite 150
Farmington Hills, MI 48334

Project: TC Immaculate Conception
Weather: Dry, 60's
Location: M-37 (Division) & Front

File Name : DZ0LP5~S
Site Code : 00000000
Start Date : 10/22/2015
Page No : 1

Groups Printed- Unshifted

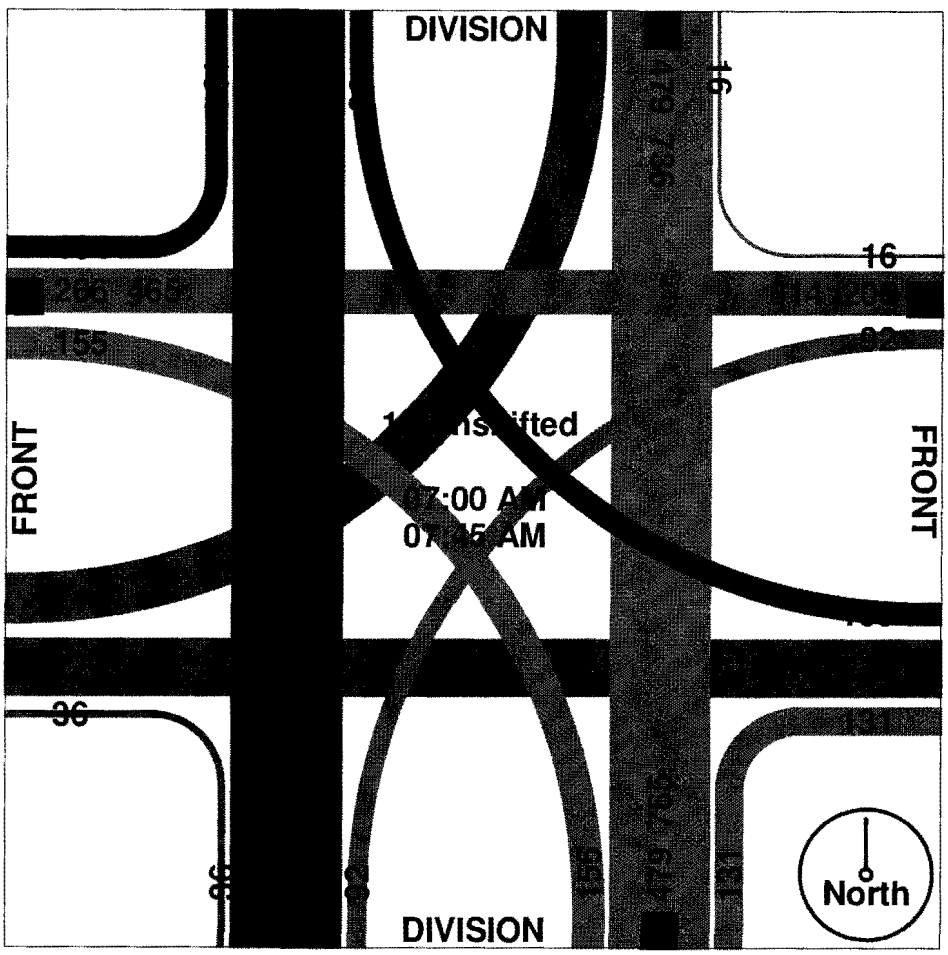
	DIVISION Southbound				FRONT Westbound				DIVISION Northbound				FRONT Eastbound				
Start Time	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Int. Total
07:00 AM	13	116	9	0	2	28	13	0	24	71	20	0	6	35	43	0	380
07:15 AM	22	129	36	0	1	47	23	1	25	99	34	0	6	65	56	1	545
07:30 AM	33	137	36	1	6	57	27	0	29	141	49	0	11	89	80	1	697
07:45 AM	36	149	28	0	7	74	29	4	53	168	52	0	13	87	62	2	764
Total	104	531	109	1	16	206	92	5	131	479	155	0	36	276	241	4	2386
****BREAK****																	
02:00 PM	29	146	27	1	27	45	46	4	27	154	46	0	13	52	49	2	668
02:15 PM	32	139	20	0	38	61	56	3	40	148	50	0	17	65	50	0	719
02:30 PM	35	151	28	1	33	59	49	2	41	152	42	0	10	84	57	3	747
02:45 PM	33	161	32	0	30	68	51	4	36	186	41	0	14	81	46	4	787
Total	129	597	107	2	128	233	202	13	144	640	179	0	54	282	202	9	2921
Grand Total	233	1128	216	3	144	439	294	18	275	1119	334	0	90	558	443	13	5307
Apprch %	14.7	71.4	13.7	0.2	16.1	49.1	32.8	2.0	15.9	64.8	19.3	0.0	8.2	50.5	40.1	1.2	
Total %	4.4	21.3	4.1	0.1	2.7	8.3	5.5	0.3	5.2	21.1	6.3	0.0	1.7	10.5	8.3	0.2	



Fleis & VandenBrink Engineering, Inc.
27725 Stansbury Boulevard, Suite 150
Farmington Hills, MI 48334

File Name : DZ0LP5~S
Site Code : 00000000
Start Date : 10/22/2015

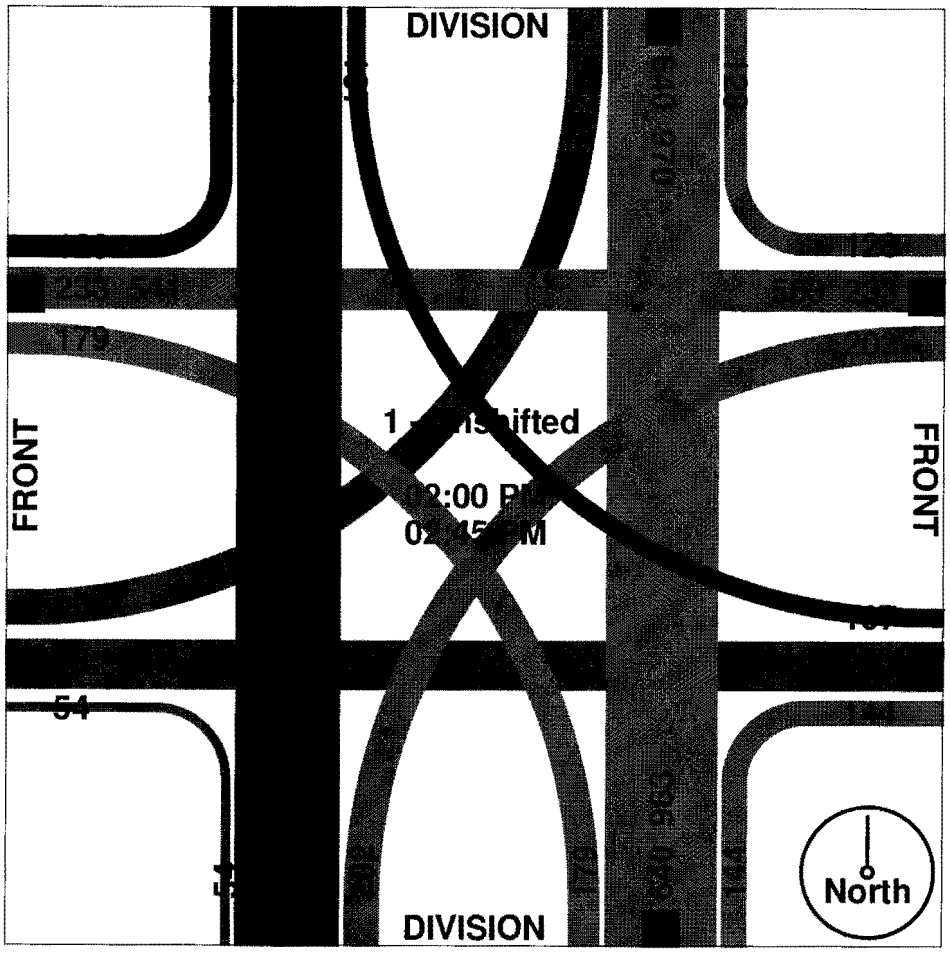
	DIVISION Southbound					FRONT Westbound					DIVISION Northbound					FRONT Eastbound					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
Peak Hour From 07:00 AM to 11:45 AM - Peak 1 of 1																					
Intersection	07:00 AM																				
Volume	104	531	109	1	745	16	206	92	5	319	131	479	155	0	765	36	276	241	4	557	2386
Percent	14.0	71.3	14.6	0.1		5.0	64.6	28.8	1.6		17.1	62.6	20.3	0.0		6.5	49.6	43.3	0.7		
07:45 Volume	36	149	28	0	213	7	74	29	4	114	53	168	52	0	273	13	87	62	2	164	764
Peak Factor																					0.781
High Int.	07:45 AM					07:45 AM					07:45 AM					07:30 AM					
Volume	36	149	28	0	213	7	74	29	4	114	53	168	52	0	273	11	89	80	1	181	
Peak Factor					0.874					0.700					0.701					0.769	



Fleis & VandenBrink Engineering, Inc.
27725 Stansbury Boulevard, Suite 150
Farmington Hills, MI 48334

File Name : DZ0LP5~S
Site Code : 00000000
Start Date : 10/22/2015
Page No : 3

	DIVISION Southbound					FRONT Westbound					DIVISION Northbound					FRONT Eastbound					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
Peak Hour From 12:00 PM to 02:45 PM - Peak 1 of 1																					
Intersection	02:00 PM																				
Volume	129	597	107	2	835	128	233	202	13	576	144	640	179	0	963	54	282	202	9	547	2921
Percent	15.4	71.5	12.8	0.2		22.2	40.5	35.1	2.3		15.0	66.5	18.6	0.0		9.9	51.6	36.9	1.6		
02:45 Volume	33	161	32	0	226	30	68	51	4	153	36	186	41	0	263	14	81	46	4	145	787
Peak Factor																					0.928
High Int.	02:45 PM					02:15 PM					02:45 PM					02:30 PM					
Volume	33	161	32	0	226	38	61	56	3	158	36	186	41	0	263	10	84	57	3	154	
Peak Factor					0.924					0.911					0.915					0.888	



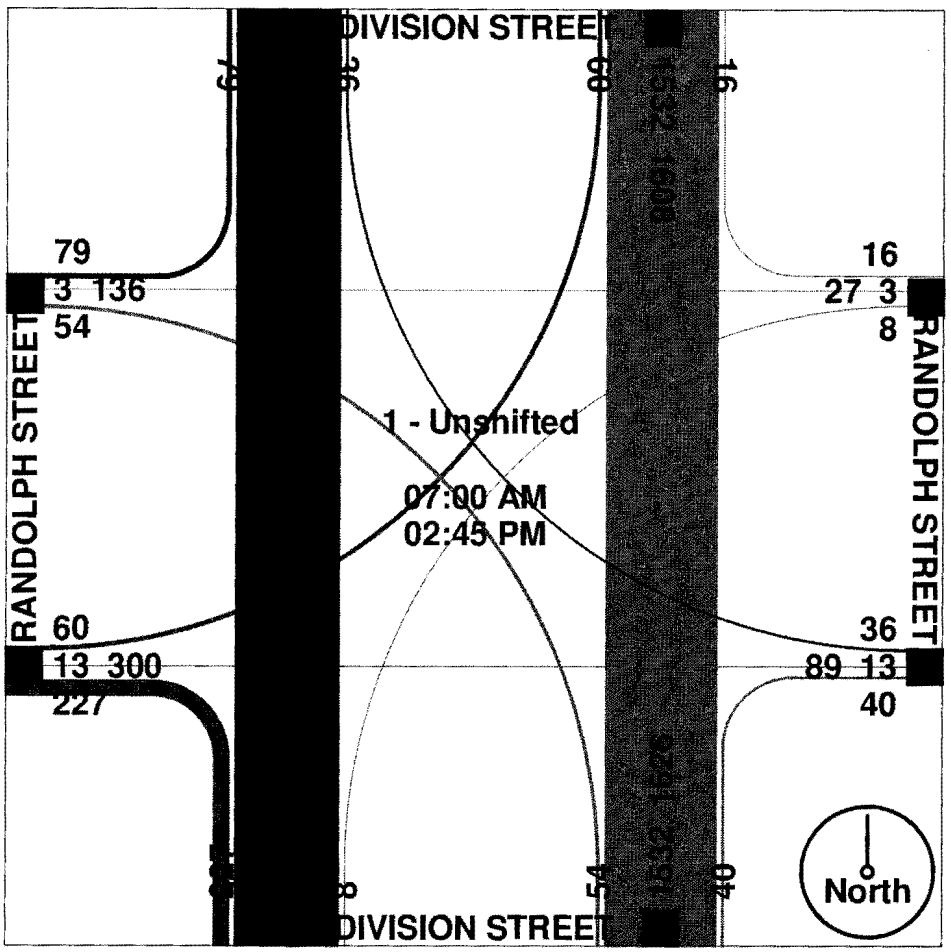
Fleis & VandenBrink Engineering, Inc.
27725 Stansbury Boulevard, Suite 150
Farmington Hills, MI 48334

Project: TC Immaculate Conception
Weather: Dry
Location: M-37 (Division) & Randolph

File Name : D4E8R6~N
Site Code : 00000000
Start Date : 10/21/2015
Page No : 1

Groups Printed- Unshifted

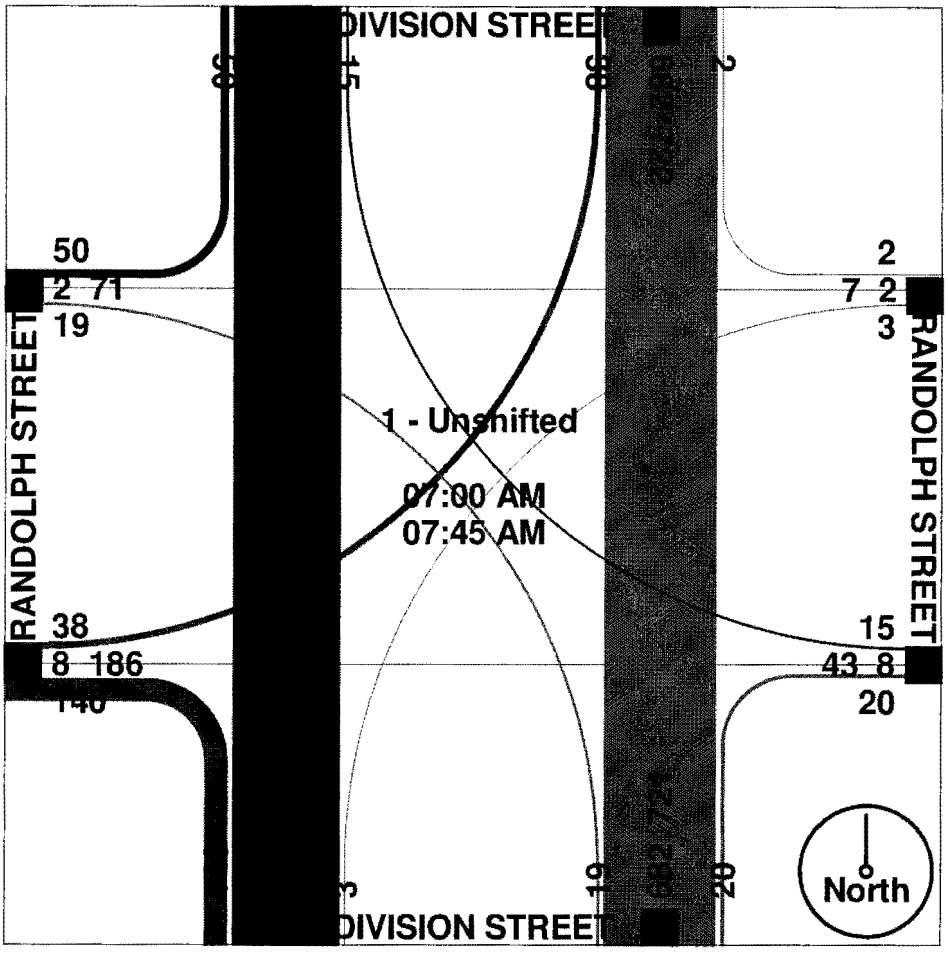
	DIVISION STREET Southbound				RANDOLPH STREET Westbound				DIVISION STREET Northbound				RANDOLPH STREET Eastbound				
Start Time	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Int. Total
07:00 AM	11	127	1	0	0	0	0	0	6	113	1	0	26	1	3	0	289
07:15 AM	16	171	1	0	0	1	1	0	4	162	2	0	42	0	7	0	407
07:30 AM	16	161	4	0	1	1	0	0	4	203	5	0	44	4	17	0	460
07:45 AM	7	193	9	0	1	0	2	0	6	204	11	1	28	3	11	3	479
Total	50	652	15	0	2	2	3	0	20	682	19	1	140	8	38	3	1635
****BREAK****																	
02:00 PM	7	180	4	0	2	0	0	0	7	199	6	0	5	1	6	0	417
02:15 PM	8	199	9	1	6	0	3	0	5	204	7	0	16	2	3	0	463
02:30 PM	9	206	2	0	2	1	2	0	3	223	7	1	31	1	8	2	498
02:45 PM	5	196	6	0	4	0	0	0	5	224	15	0	35	1	5	0	496
Total	29	781	21	1	14	1	5	0	20	850	35	1	87	5	22	2	1874
Grand Total	79	1433	36	1	16	3	8	0	40	1532	54	2	227	13	60	5	3509
Apprch %	5.1	92.5	2.3	0.1	59.3	11.1	29.6	0.0	2.5	94.1	3.3	0.1	74.4	4.3	19.7	1.6	
Total %	2.3	40.8	1.0	0.0	0.5	0.1	0.2	0.0	1.1	43.7	1.5	0.1	6.5	0.4	1.7	0.1	



Fleis & VandenBrink Engineering, Inc.
27725 Stansbury Boulevard, Suite 150
Farmington Hills, MI 48334

File Name : D4E8R6~N
Site Code : 00000000
Start Date : 10/21/2015

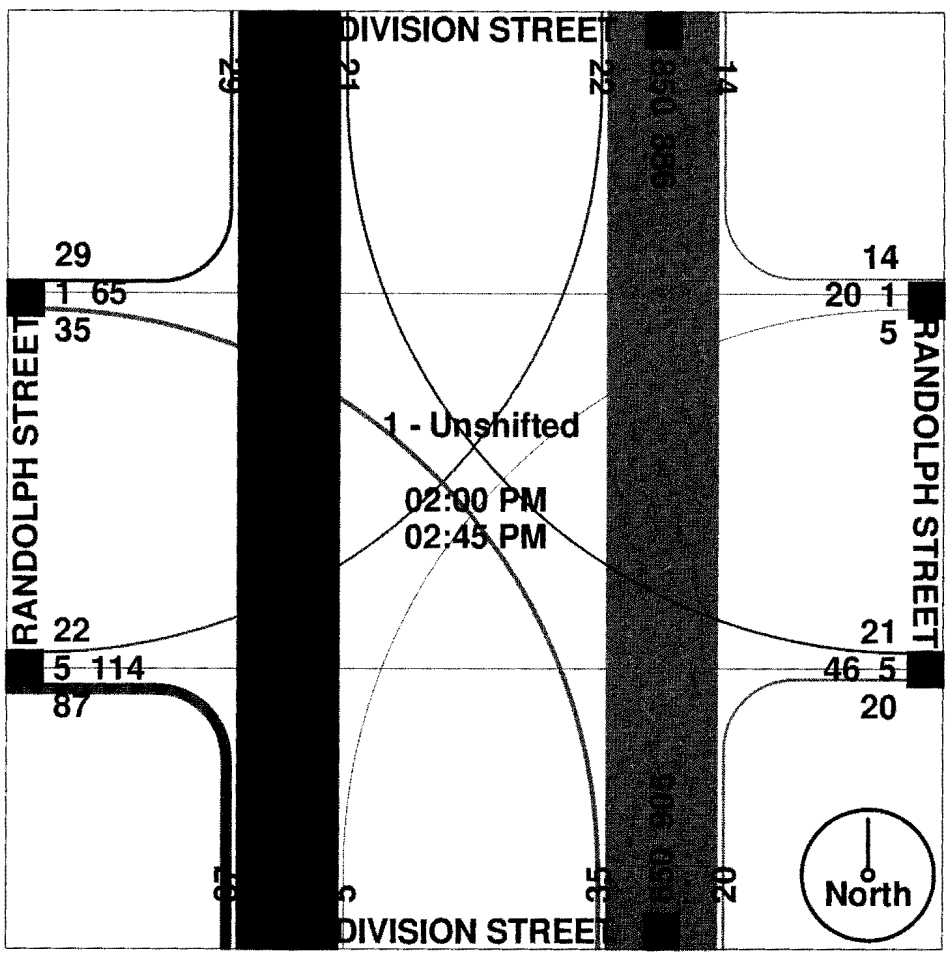
	DIVISION STREET Southbound					RANDOLPH STREET Westbound					DIVISION STREET Northbound					RANDOLPH STREET Eastbound					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
Peak Hour From 07:00 AM to 11:45 AM - Peak 1 of 1																					
Intersection	07:00 AM																				
Volume	50	652	15	0	717	2	2	3	0	7	20	682	19	1	722	140	8	38	3	189	1635
Percent	7.0	90.9	2.1	0.0		28.6	28.6	42.9	0.0		2.8	94.5	2.6	0.1		74.1	4.2	20.1	1.6		
07:45 Volume	7	193	9	0	209	1	0	2	0	3	6	204	11	1	222	28	3	11	3	45	479
Peak Factor																					0.853
High Int.	07:45 AM					07:45 AM					07:45 AM					07:30 AM					
Volume	7	193	9	0	209	1	0	2	0	3	6	204	11	1	222	44	4	17	0	65	
Peak Factor					0.858					0.583					0.813					0.727	



Fleis & VandenBrink Engineering, Inc.
27725 Stansbury Boulevard, Suite 150
Farmington Hills, MI 48334

File Name : D4E8R6~N
Site Code : 00000000
Start Date : 10/21/2015
Page No : 3

	DIVISION STREET Southbound					RANDOLPH STREET Westbound					DIVISION STREET Northbound					RANDOLPH STREET Eastbound					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
Peak Hour From 12:00 PM to 02:45 PM - Peak 1 of 1																					
Intersection	02:00 PM																				
Volume	29	781	21	1	832	14	1	5	0	20	20	850	35	1	906	87	5	22	2	116	1874
Percent	3.5	93.9	2.5	0.1		70.0	5.0	25.0	0.0		2.2	93.8	3.9	0.1		75.0	4.3	19.0	1.7		
02:30 Volume	9	206	2	0	217	2	1	2	0	5	3	223	7	1	234	31	1	8	2	42	498
Peak Factor																					0.941
High Int.	02:15 PM					02:15 PM					02:45 PM					02:30 PM					
Volume	8	199	9	1	217	6	0	3	0	9	5	224	15	0	244	31	1	8	2	42	
Peak Factor					0.959					0.556					0.928					0.690	



Fleis & VandenBrink Engineering, Inc.

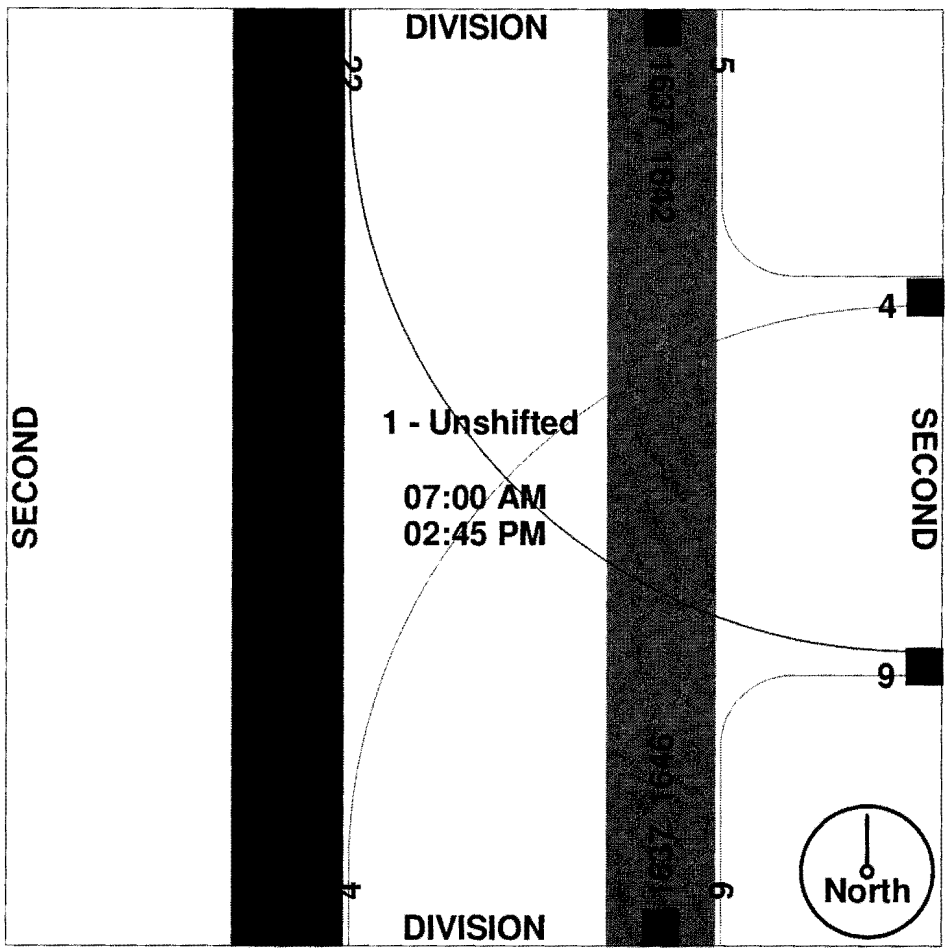
27725 Stansbury Boulevard, Suite 150
Farmington Hills, MI 48334

Project: TC Immaculate Conception
Weather: Dry
Location: M-37 (Division) & Second

File Name : DTUWD3~R
Site Code : 00000000
Start Date : 10/21/2015
Page No : 1

Groups Printed- Unshifted

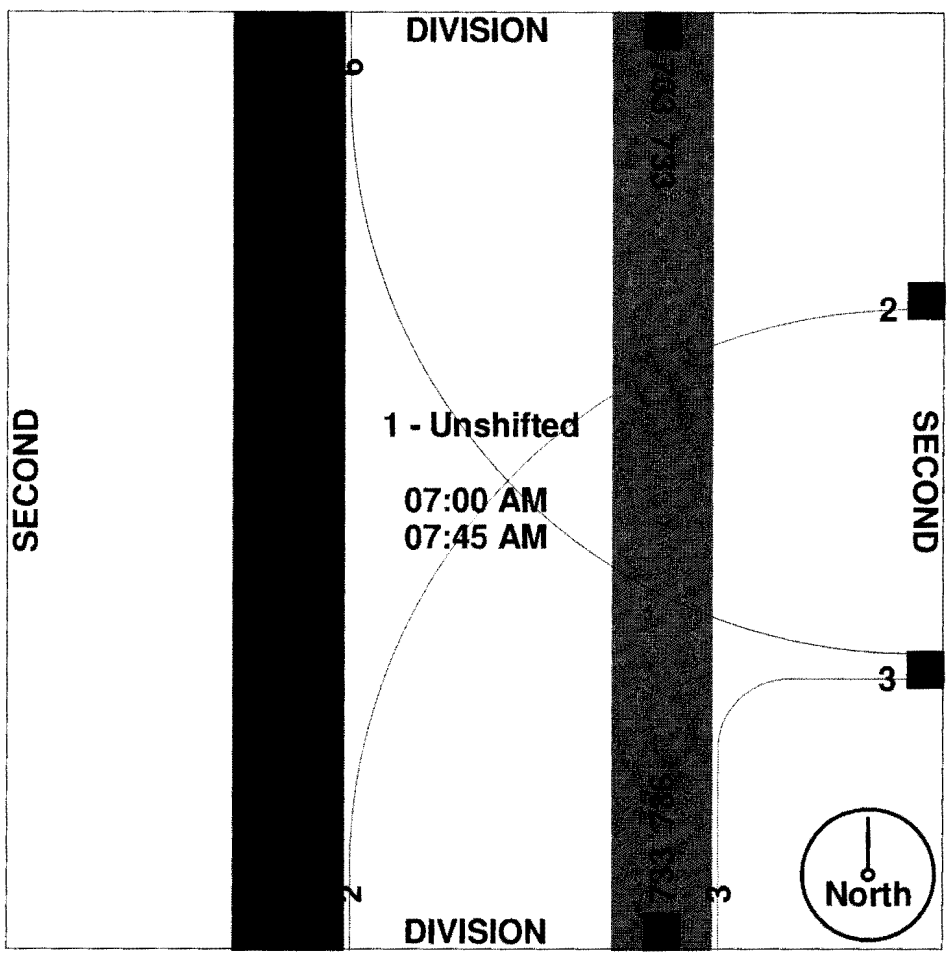
	DIVISION Southbound				SECOND Westbound				DIVISION Northbound				SECOND Eastbound				
Start Time	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Int. Total
07:00 AM	0	156	2	0	0	0	0	0	0	122	0	0	0	0	0	0	280
07:15 AM	0	224	0	0	0	0	0	0	1	172	0	0	0	0	0	0	397
07:30 AM	0	204	2	0	0	0	1	0	1	208	0	0	0	0	0	0	416
07:45 AM	0	229	5	0	0	0	1	0	1	231	0	0	0	0	0	0	467
Total	0	813	9	0	0	0	2	0	3	733	0	0	0	0	0	0	1560
****BREAK****																	
02:00 PM	0	194	1	0	3	0	1	1	1	218	0	1	0	0	0	0	420
02:15 PM	0	217	2	0	2	0	1	0	1	223	0	1	0	0	0	0	447
02:30 PM	0	233	5	0	0	0	0	0	1	232	0	0	0	0	0	0	471
02:45 PM	0	229	5	0	0	0	0	0	3	231	0	0	0	0	0	0	468
Total	0	873	13	0	5	0	2	1	6	904	0	2	0	0	0	0	1806
Grand Total	0	1686	22	0	5	0	4	1	9	1637	0	2	0	0	0	0	3366
Apprch %	0.0	98.7	1.3	0.0	50.0	0.0	40.0	10.0	0.5	99.3	0.0	0.1	0.0	0.0	0.0	0.0	
Total %	0.0	50.1	0.7	0.0	0.1	0.0	0.1	0.0	0.3	48.6	0.0	0.1	0.0	0.0	0.0	0.0	



Fleis & VandenBrink Engineering, Inc.
27725 Stansbury Boulevard, Suite 150
Farmington Hills, MI 48334

File Name : DTUWD3~R
Site Code : 00000000
Start Date : 10/21/2015
Page No : 2

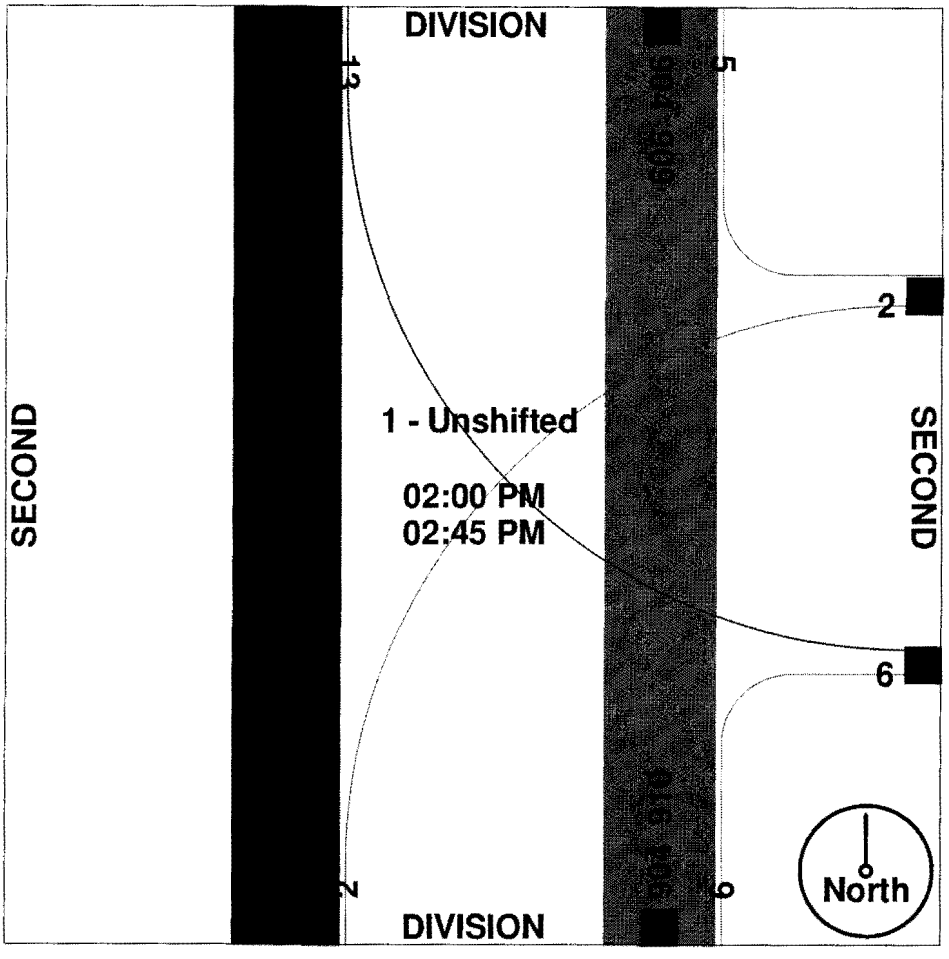
	DIVISION Southbound					SECOND Westbound					DIVISION Northbound					SECOND Eastbound					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
Peak Hour From 07:00 AM to 11:45 AM - Peak 1 of 1																					
Intersection 07:00 AM																					
Volume	0	813	9	0	822	0	0	2	0	2	3	733	0	0	736	0	0	0	0	0	1560
Percent	0.0	98.9	1.1	0.0		0.0	0.0	100.0	0.0		0.4	99.6	0.0	0.0		0.0	0.0	0.0	0.0		
07:45 Volume	0	229	5	0	234	0	0	1	0	1	1	231	0	0	232	0	0	0	0	0	467
Peak Factor																					0.835
High Int. 07:45 AM						07:30 AM					07:45 AM					6:45:00 AM					
Volume	0	229	5	0	234	0	0	1	0	1	1	231	0	0	232						
Peak Factor					0.878					0.500					0.793						



Fleis & VandenBrink Engineering, Inc.
27725 Stansbury Boulevard, Suite 150
Farmington Hills, MI 48334

File Name : DTUWD3~R
Site Code : 00000000
Start Date : 10/21/2015
Page No : 3

	DIVISION Southbound					SECOND Westbound					DIVISION Northbound					SECOND Eastbound					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
Peak Hour From 12:00 PM to 02:45 PM - Peak 1 of 1																					
Intersection 02:00 PM																					
Volume	0	873	13	0	886	5	0	2	1	8	6	904	0	2	912	0	0	0	0	0	1806
Percent	0.0	98.5	1.5	0.0		62.5	0.0	25.0	12.5		0.7	99.1	0.0	0.2		0.0	0.0	0.0	0.0		
02:30 Volume	0	233	5	0	238	0	0	0	0	0	1	232	0	0	233	0	0	0	0	0	471
Peak Factor																					0.959
High Int. 02:30 PM						02:00 PM					02:45 PM										
Volume	0	233	5	0	238	3	0	1	1	5	3	231	0	0	234						
Peak Factor					0.931					0.400					0.974						



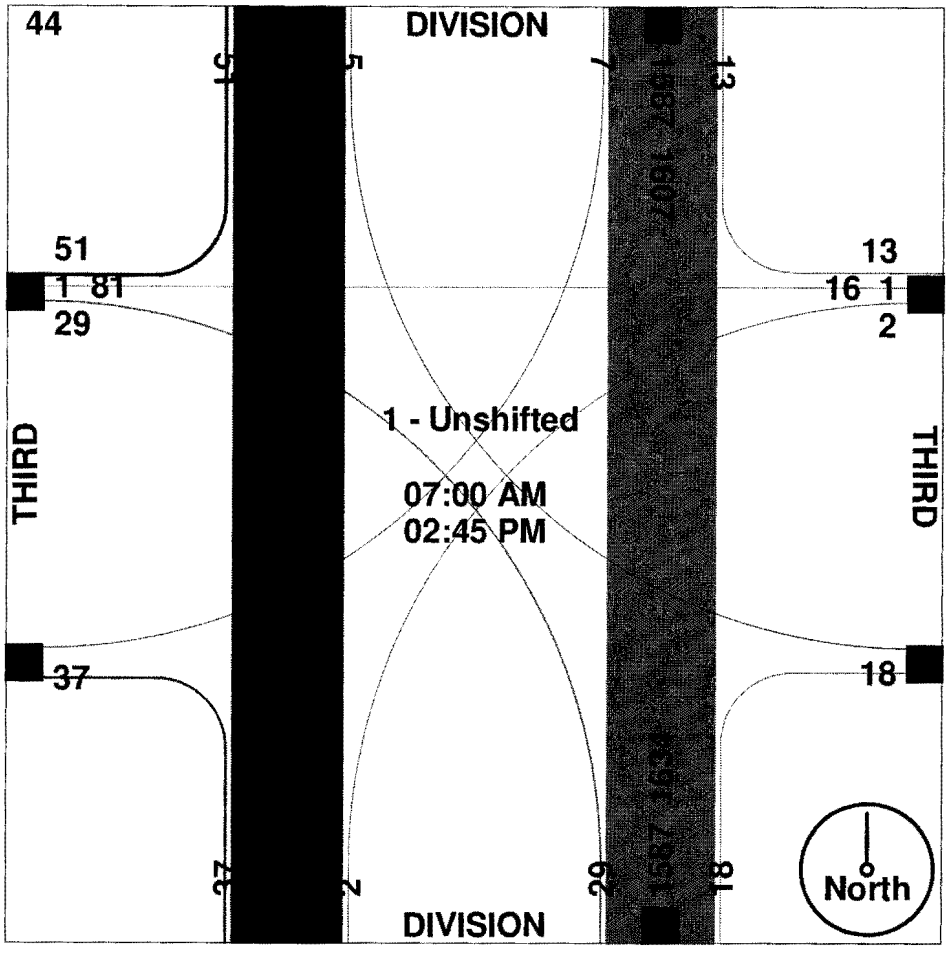
Fleis & VandenBrink Engineering, Inc.
27725 Stansbury Boulevard, Suite 150
Farmington Hills, MI 48334

Project: TC Immaculate Conception
Weather: Dry
Location: M-37 (Division) & Third

File Name : DUSAZ6~Q
Site Code : 00000000
Start Date : 10/21/2015
Page No : 1

Groups Printed- Unshifted

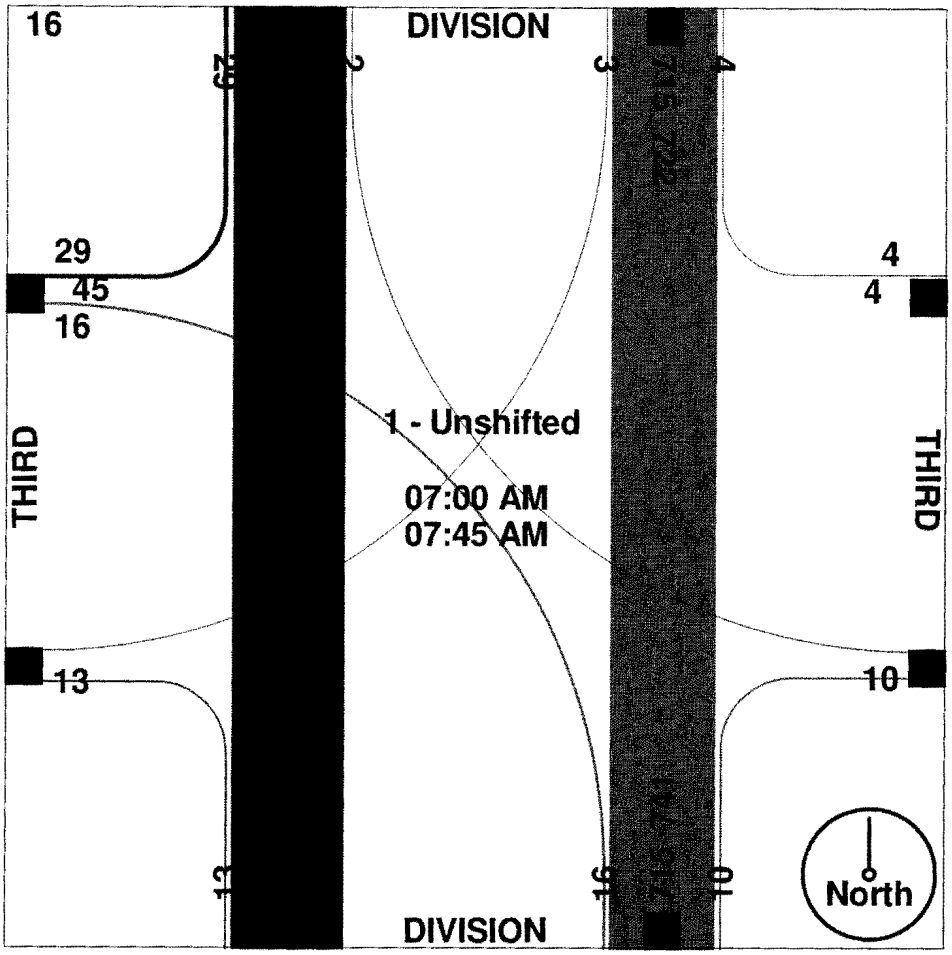
	DIVISION Southbound				THIRD Westbound				DIVISION Northbound				THIRD Eastbound				
Start Time	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Int. Total
07:00 AM	5	149	0	0	1	0	0	0	0	116	2	0	2	0	1	0	276
07:15 AM	10	195	2	0	1	0	0	0	4	166	3	0	2	0	0	0	383
07:30 AM	5	201	0	0	1	0	0	0	1	204	5	0	5	0	1	0	423
07:45 AM	9	219	0	0	1	0	0	0	5	229	6	0	4	0	1	0	474
Total	29	764	2	0	4	0	0	0	10	715	16	0	13	0	3	0	1556
****BREAK****																	
02:00 PM	2	202	0	0	2	0	0	0	4	207	1	1	4	0	0	0	423
02:15 PM	6	208	0	1	3	0	0	0	0	207	2	1	6	0	2	1	437
02:30 PM	5	227	1	0	3	0	1	0	3	224	2	0	7	0	0	0	473
02:45 PM	9	220	2	1	1	1	1	0	1	234	8	0	7	0	2	0	487
Total	22	857	3	2	9	1	2	0	8	872	13	2	24	0	4	1	1820
Grand Total	51	1621	5	2	13	1	2	0	18	1587	29	2	37	0	7	1	3376
Apprch %	3.0	96.5	0.3	0.1	81.3	6.3	12.5	0.0	1.1	97.0	1.8	0.1	82.2	0.0	15.6	2.2	
Total %	1.5	48.0	0.1	0.1	0.4	0.0	0.1	0.0	0.5	47.0	0.9	0.1	1.1	0.0	0.2	0.0	



Fleis & VandenBrink Engineering, Inc.
27725 Stansbury Boulevard, Suite 150
Farmington Hills, MI 48334

File Name : DUSAZ6~Q
Site Code : 00000000
Start Date : 10/21/2015
Page No : 2

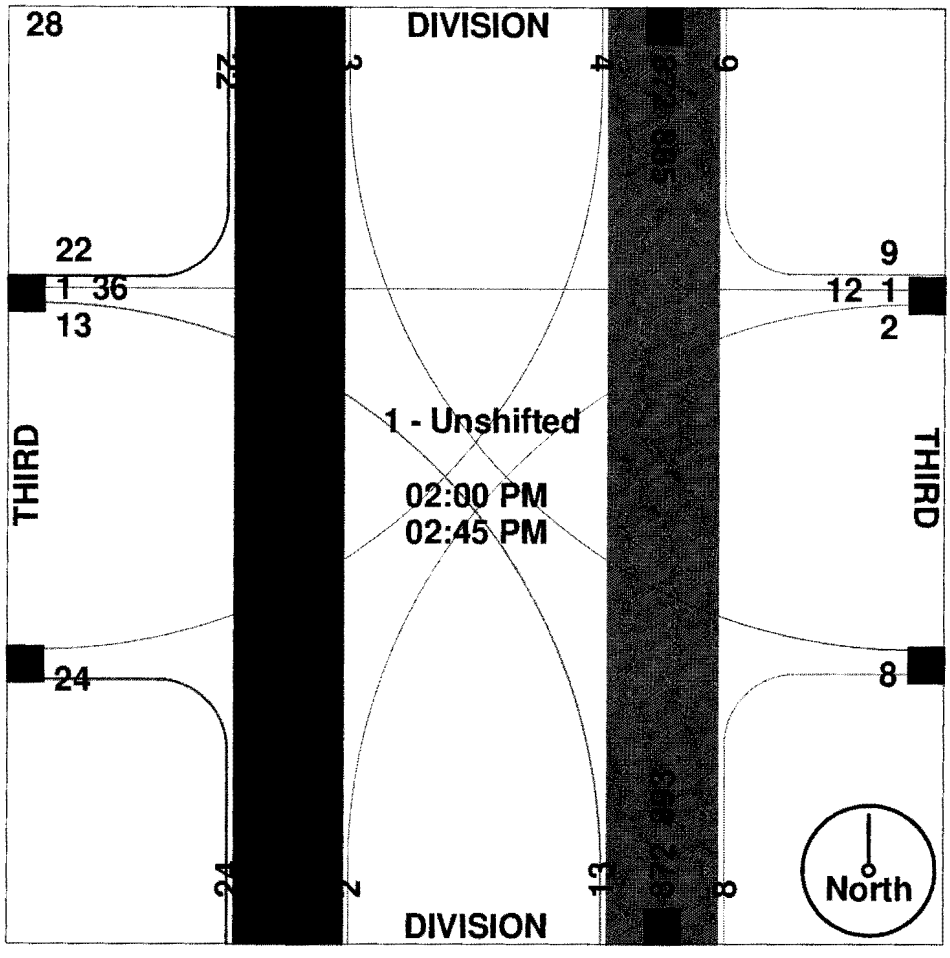
	DIVISION Southbound					THIRD Westbound					DIVISION Northbound					THIRD Eastbound					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
Peak Hour From 07:00 AM to 11:45 AM - Peak 1 of 1																					
Intersection 07:00 AM																					
Volume	29	764	2	0	795	4	0	0	0	4	10	715	16	0	741	13	0	3	0	16	1556
Percent	3.6	96.1	0.3	0.0		100.0	0.0	0.0	0.0		1.3	96.5	2.2	0.0		81.3	0.0	18.8	0.0		
07:45 Volume	9	219	0	0	228	1	0	0	0	1	5	229	6	0	240	4	0	1	0	5	474
Peak Factor																					0.821
High Int. 07:45 AM						07:00 AM					07:45 AM					07:30 AM					
Volume	9	219	0	0	228	1	0	0	0	1	5	229	6	0	240	5	0	1	0	6	
Peak Factor					0.872					1.000					0.772					0.667	



Fleis & VandenBrink Engineering, Inc.
27725 Stansbury Boulevard, Suite 150
Farmington Hills, MI 48334

File Name : DUSAZ6~Q
Site Code : 00000000
Start Date : 10/21/2015
Page No : 3

	DIVISION Southbound					THIRD Westbound					DIVISION Northbound					THIRD Eastbound					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
Peak Hour From 12:00 PM to 02:45 PM - Peak 1 of 1																					
Intersection	02:00 PM																				
Volume	22	857	3	2	884	9	1	2	0	12	8	872	13	2	895	24	0	4	1	29	1820
Percent	2.5	96.9	0.3	0.2		75.0	8.3	16.7	0.0		0.9	97.4	1.5	0.2		82.8	0.0	13.8	3.4		
02:45 Volume	9	220	2	1	232	1	1	1	0	3	1	234	8	0	243	7	0	2	0	9	487
Peak Factor																					0.934
High Int.	02:30 PM					02:30 PM					02:45 PM					02:15 PM					
Volume	5	227	1	0	233	3	0	1	0	4	1	234	8	0	243	6	0	2	1	9	
Peak Factor					0.948					0.750					0.921					0.806	



Fleis & VandenBrink Engineering, Inc.

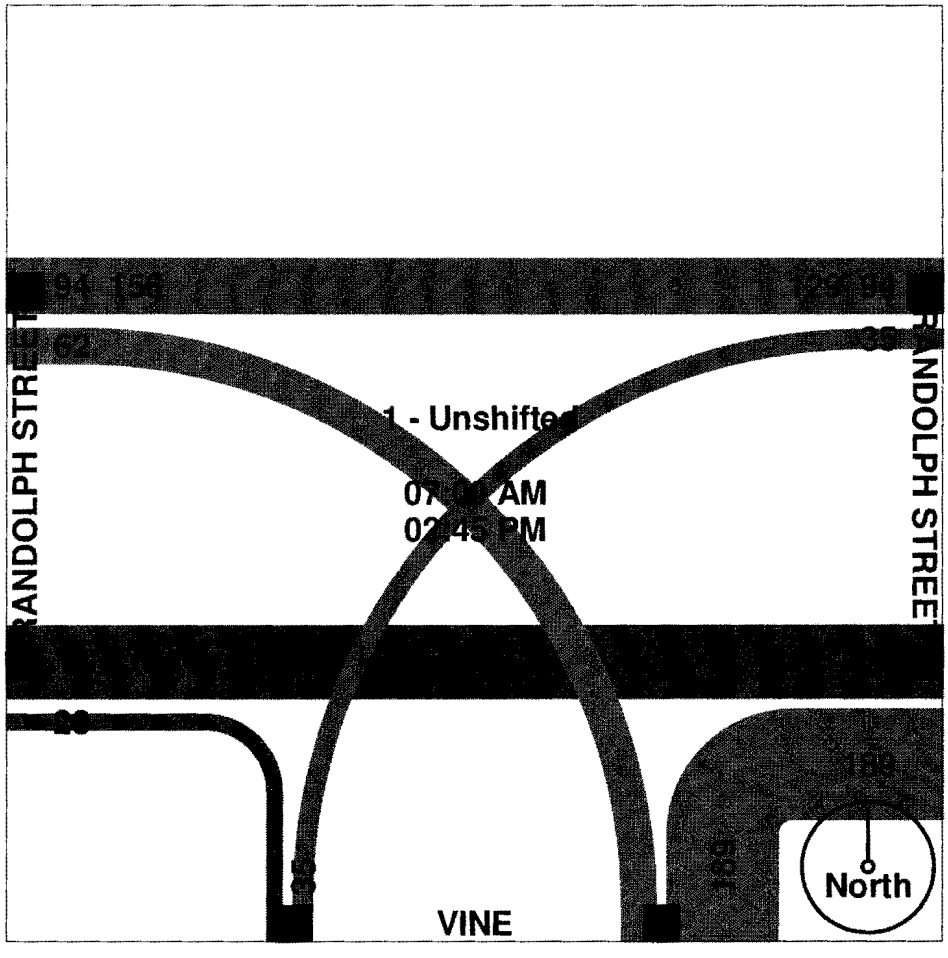
27725 Stansbury Boulevard, Suite 150
Farmington Hills, MI 48334

Project: TC Immaculate Conception
Weather: Dry
Location: Randolph & Vine

File Name : V6H63C~Q
Site Code : 00000000
Start Date : 10/20/2015
Page No : 1

Groups Printed- Unshifted

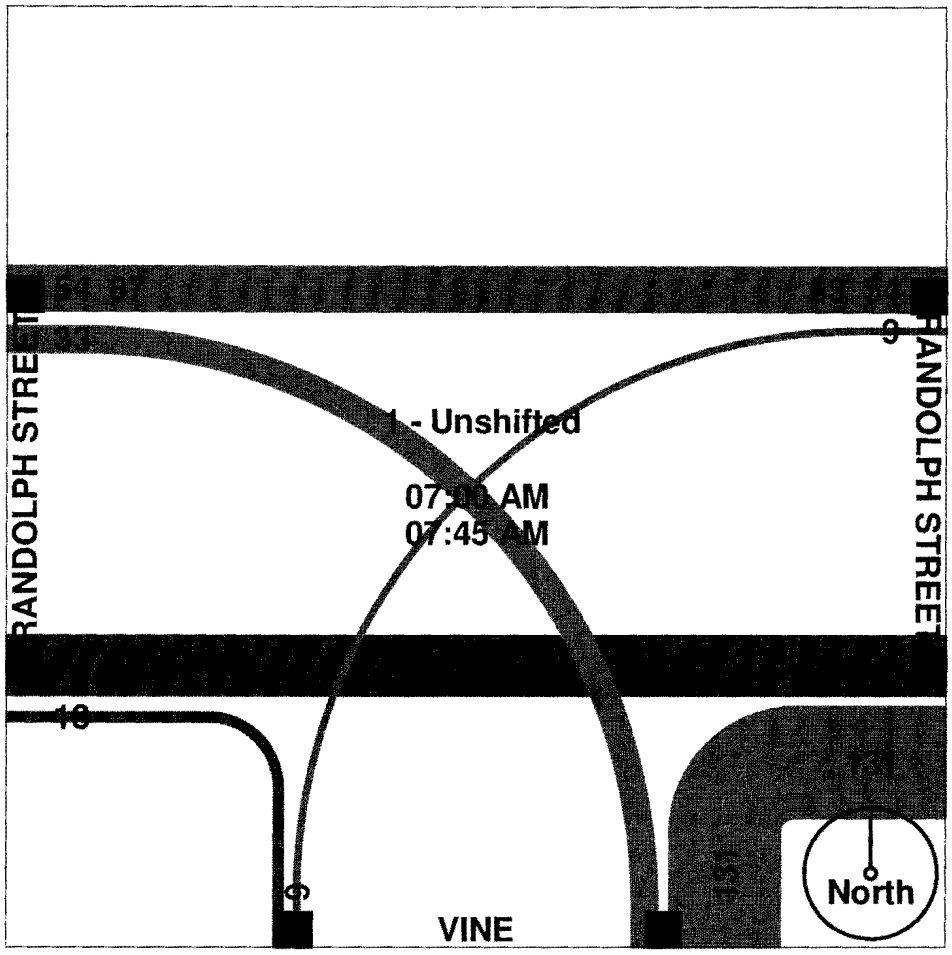
	Southbound				RANDOLPH STREET Westbound				VINE Northbound				RANDOLPH STREET Eastbound				
Start Time	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Int. Total
07:00 AM	0	0	0	0	0	7	2	1	17	0	8	0	5	13	0	0	53
07:15 AM	0	0	0	0	0	11	3	0	48	0	14	0	6	14	0	0	96
07:30 AM	0	0	0	0	0	19	2	0	56	0	8	0	1	20	0	0	106
07:45 AM	0	0	0	0	0	17	2	0	10	0	3	0	1	24	0	0	57
Total	0	0	0	0	0	54	9	1	131	0	33	0	13	71	0	0	312
****BREAK****																	
02:00 PM	0	0	0	0	0	10	5	2	1	0	2	0	3	11	0	0	34
02:15 PM	0	0	0	0	0	6	6	0	1	0	3	0	2	10	0	0	28
02:30 PM	0	0	0	0	0	7	7	0	30	0	6	0	7	20	0	0	77
02:45 PM	0	0	0	0	0	17	8	0	26	0	18	0	3	13	0	1	86
Total	0	0	0	0	0	40	26	2	58	0	29	0	15	54	0	1	225
Grand Total	0	0	0	0	0	94	35	3	189	0	62	0	28	125	0	1	537
Apprch %	0.0	0.0	0.0	0.0	0.0	71.2	26.5	2.3	75.3	0.0	24.7	0.0	18.2	81.2	0.0	0.6	
Total %	0.0	0.0	0.0	0.0	0.0	17.5	6.5	0.6	35.2	0.0	11.5	0.0	5.2	23.3	0.0	0.2	



Fleis & VandenBrink Engineering, Inc.
27725 Stansbury Boulevard, Suite 150
Farmington Hills, MI 48334

File Name : V6H63C~Q
Site Code : 00000000
Start Date : 10/20/2015
Page No : 2

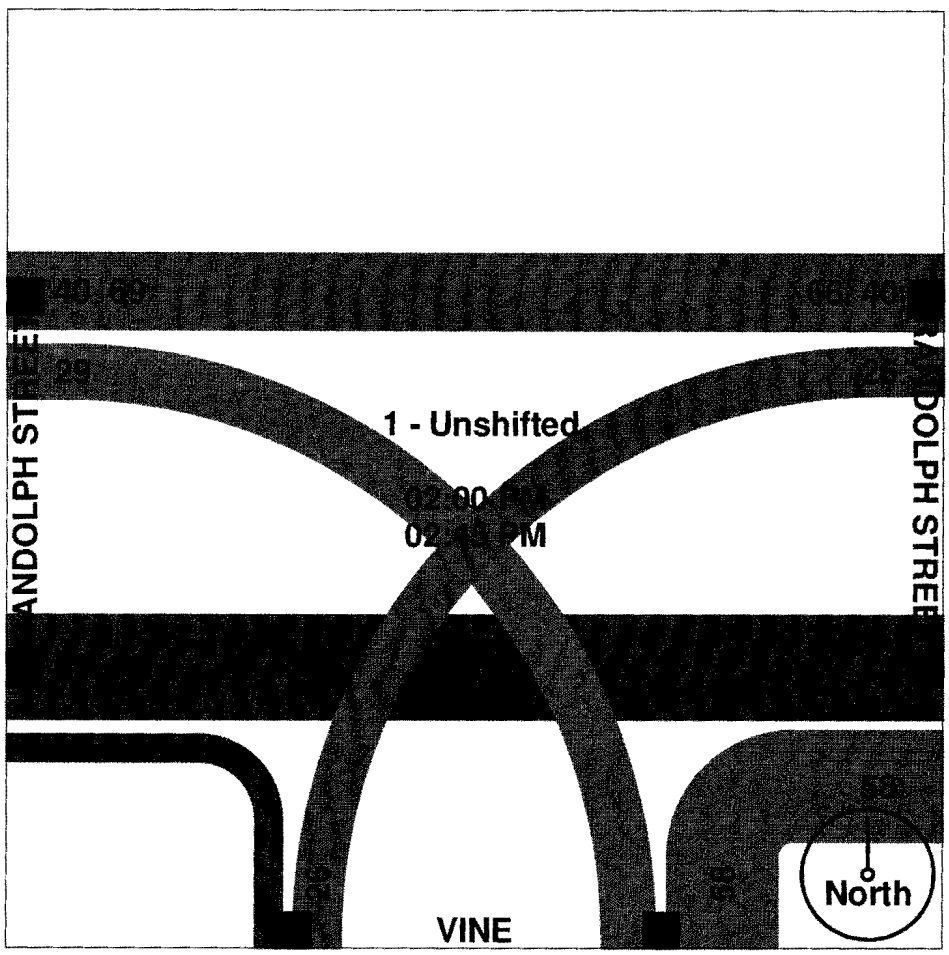
	Southbound					RANDOLPH STREET Westbound					VINE Northbound					RANDOLPH STREET Eastbound					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
Peak Hour From 07:00 AM to 11:45 AM - Peak 1 of 1																					
Intersection	07:00 AM																				
Volume	0	0	0	0	0	0	54	9	1	64	131	0	33	0	164	13	71	0	0	84	312
Percent	0.0	0.0	0.0	0.0		0.0	84.4	14.1	1.6		79.9	0.0	20.1	0.0		15.5	84.5	0.0	0.0		
07:30 Volume	0	0	0	0	0	0	19	2	0	21	56	0	8	0	64	1	20	0	0	21	106
Peak Factor																					0.736
High Int.	6:45:00 AM					07:30 AM					07:30 AM					07:45 AM					
Volume	0	0	0	0	0	0	19	2	0	21	56	0	8	0	64	1	24	0	0	25	
Peak Factor										0.762					0.641					0.840	



Fleis & VandenBrink Engineering, Inc.
27725 Stansbury Boulevard, Suite 150
Farmington Hills, MI 48334

File Name : V6H63C~Q
Site Code : 00000000
Start Date : 10/20/2015
Page No : 3

	Southbound					RANDOLPH STREET Westbound					VINE Northbound					RANDOLPH STREET Eastbound					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
Peak Hour From 12:00 PM to 02:45 PM - Peak 1 of 1																					
Intersection	02:00 PM																				
Volume	0	0	0	0	0	0	40	26	2	68	58	0	29	0	87	15	54	0	1	70	225
Percent	0.0	0.0	0.0	0.0		0.0	58.8	38.2	2.9		66.7	0.0	33.3	0.0		21.4	77.1	0.0	1.4		
02:45 Volume	0	0	0	0	0	0	17	8	0	25	26	0	18	0	44	3	13	0	1	17	86
Peak Factor																					0.654
High Int.						02:45 PM					02:45 PM					02:30 PM					
Volume	0	0	0	0	0	0	17	8	0	25	26	0	18	0	44	7	20	0	0	27	
Peak Factor										0.680					0.494					0.648	



Fleis & VandenBrink Engineering, Inc.

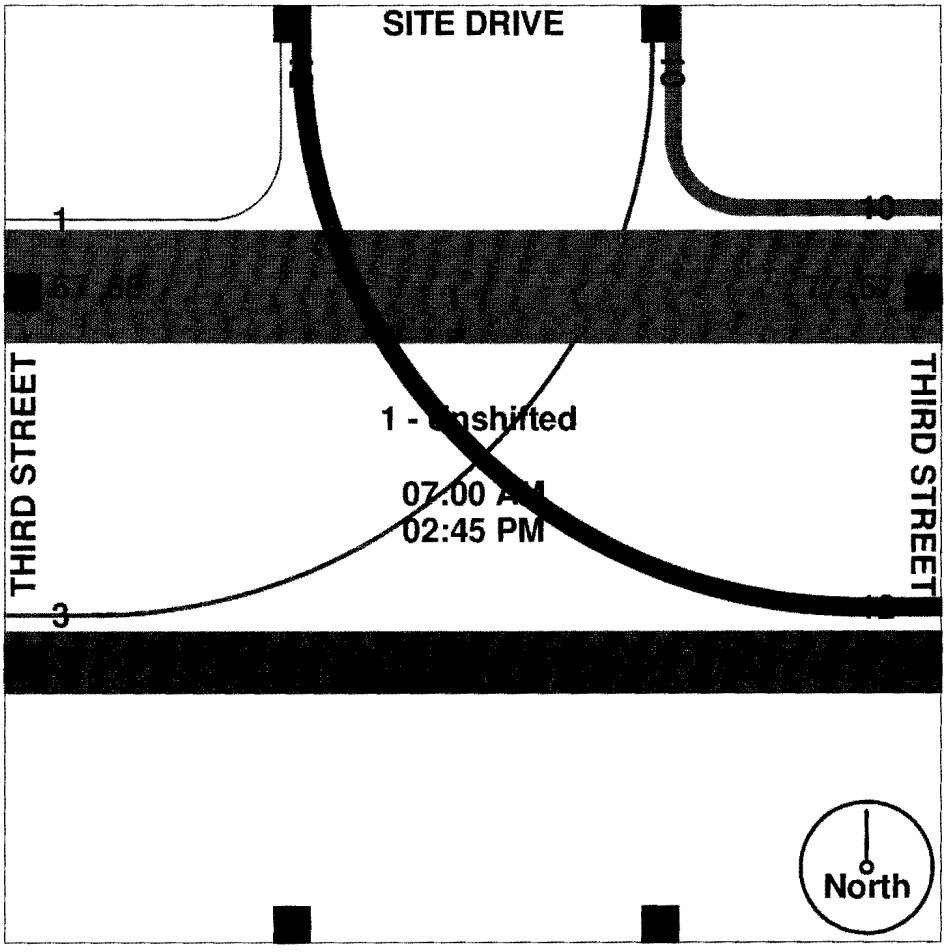
27725 Stansbury Boulevard, Suite 150
Farmington Hills, MI 48334

Project: TC Immaculate Conception
Weather: Dry
Location: Third & Site Drive

File Name : TEYOLQ~5
Site Code : 00000000
Start Date : 10/20/2015
Page No : 1

Groups Printed- Unshifted

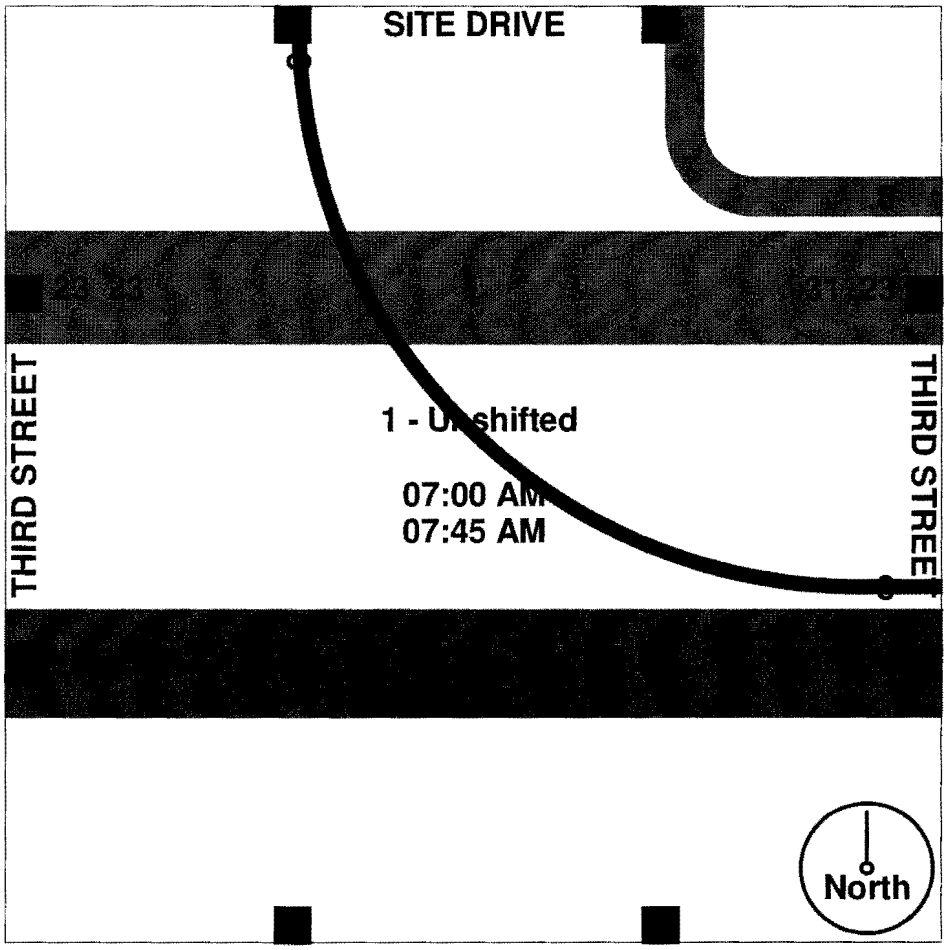
	SITE DRIVE Southbound				THIRD STREET Westbound				Northbound				THIRD STREET Eastbound				
Start Time	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Int. Total
07:00 AM	0	0	0	0	2	5	0	1	0	0	0	0	0	0	0	2	10
07:15 AM	0	0	1	0	3	9	0	0	0	0	0	0	0	2	0	1	16
07:30 AM	0	0	0	1	3	4	0	2	0	0	0	1	0	9	0	0	20
07:45 AM	0	0	2	0	0	5	0	0	0	0	0	0	0	11	0	0	18
Total	0	0	3	1	8	23	0	3	0	0	0	1	0	22	0	3	64
****BREAK****																	
02:00 PM	0	0	0	0	0	4	0	0	0	0	0	0	0	4	2	0	10
02:15 PM	1	0	1	0	1	9	0	0	0	0	0	0	0	4	0	0	16
02:30 PM	0	0	5	0	1	12	0	1	0	0	0	0	0	5	1	0	25
02:45 PM	0	0	3	0	0	19	0	0	0	0	0	0	0	2	0	0	24
Total	1	0	9	0	2	44	0	1	0	0	0	0	0	15	3	0	75
Grand Total	1	0	12	1	10	67	0	4	0	0	0	1	0	37	3	3	139
Apprch %	7.1	0.0	85.7	7.1	12.3	82.7	0.0	4.9	0.0	0.0	0.0	100.0	0.0	86.0	7.0	7.0	
Total %	0.7	0.0	8.6	0.7	7.2	48.2	0.0	2.9	0.0	0.0	0.0	0.7	0.0	26.6	2.2	2.2	



Fleis & VandenBrink Engineering, Inc.
27725 Stansbury Boulevard, Suite 150
Farmington Hills, MI 48334

File Name : TEYOLQ~5
Site Code : 00000000
Start Date : 10/20/2015

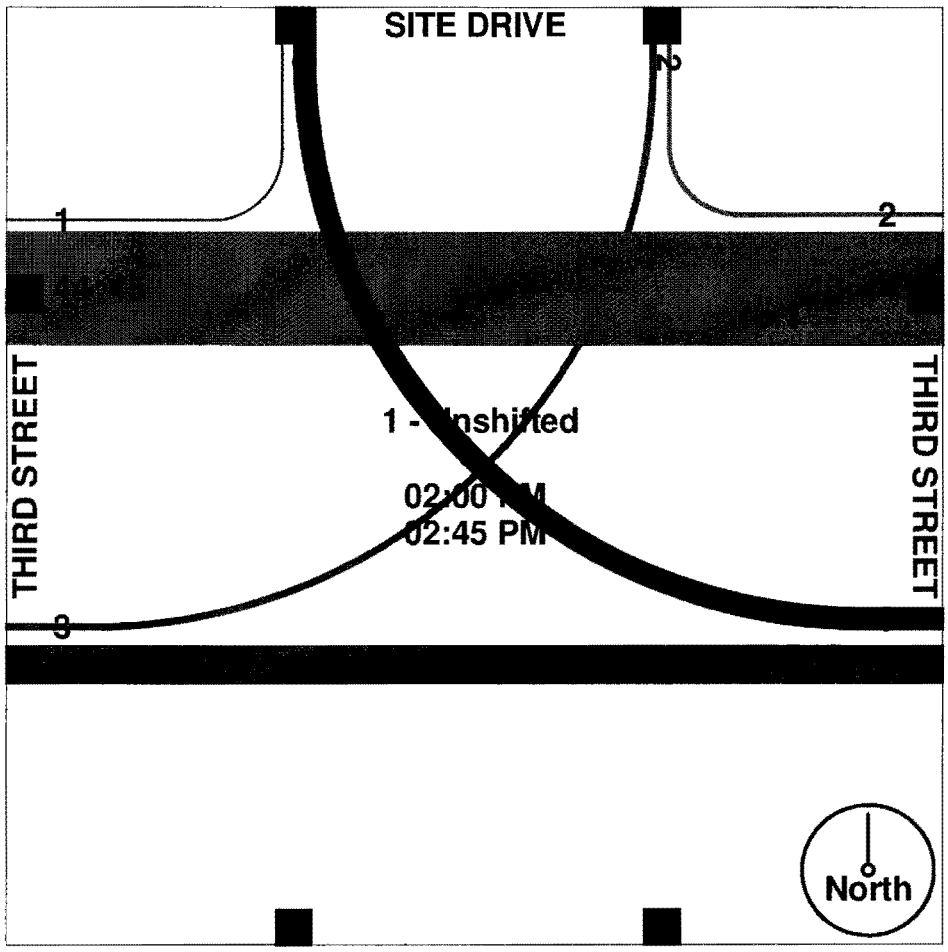
	SITE DRIVE Southbound					THIRD STREET Westbound					Northbound					THIRD STREET Eastbound					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
Peak Hour From 07:00 AM to 11:45 AM - Peak 1 of 1																					
Intersection 07:00 AM																					
Volume	0	0	3	1	4	8	23	0	3	34	0	0	0	1	1	0	22	0	3	25	64
Percent	0.0	0.0	75.0	25.0		23.5	67.6	0.0	8.8		0.0	0.0	0.0	100.0		0.0	88.0	0.0	12.0		
07:30 Volume	0	0	0	1	1	3	4	0	2	9	0	0	0	1	1	0	9	0	0	9	20
Peak Factor																					0.800
High Int.	07:45 AM					07:15 AM					07:30 AM					07:45 AM					
Volume	0	0	2	0	2	3	9	0	0	12	0	0	0	1	1	0	11	0	0	11	
Peak Factor					0.500					0.708					0.250					0.568	



Fleis & VandenBrink Engineering, Inc.
27725 Stansbury Boulevard, Suite 150
Farmington Hills, MI 48334

File Name : TEYOLQ~5
Site Code : 00000000
Start Date : 10/20/2015
Page No : 3

	SITE DRIVE Southbound					THIRD STREET Westbound					Northbound					THIRD STREET Eastbound					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
Peak Hour From 12:00 PM to 02:45 PM - Peak 1 of 1																					
Intersection	02:00 PM																				
Volume	1	0	9	0	10	2	44	0	1	47	0	0	0	0	0	0	15	3	0	18	75
Percent	10.0	0.0	90.0	0.0		4.3	93.6	0.0	2.1		0.0	0.0	0.0	0.0		0.0	83.3	16.7	0.0		
02:30 Volume	0	0	5	0	5	1	12	0	1	14	0	0	0	0	0	0	5	1	0	6	25
Peak Factor																					0.750
High Int.	02:30 PM					02:45 PM										02:00 PM					
Volume	0	0	5	0	5	0	19	0	0	19	0	0	0	0	0	0	4	2	0	6	
Peak Factor					0.500					0.618										0.750	



Fleis & VandenBrink Engineering, Inc.

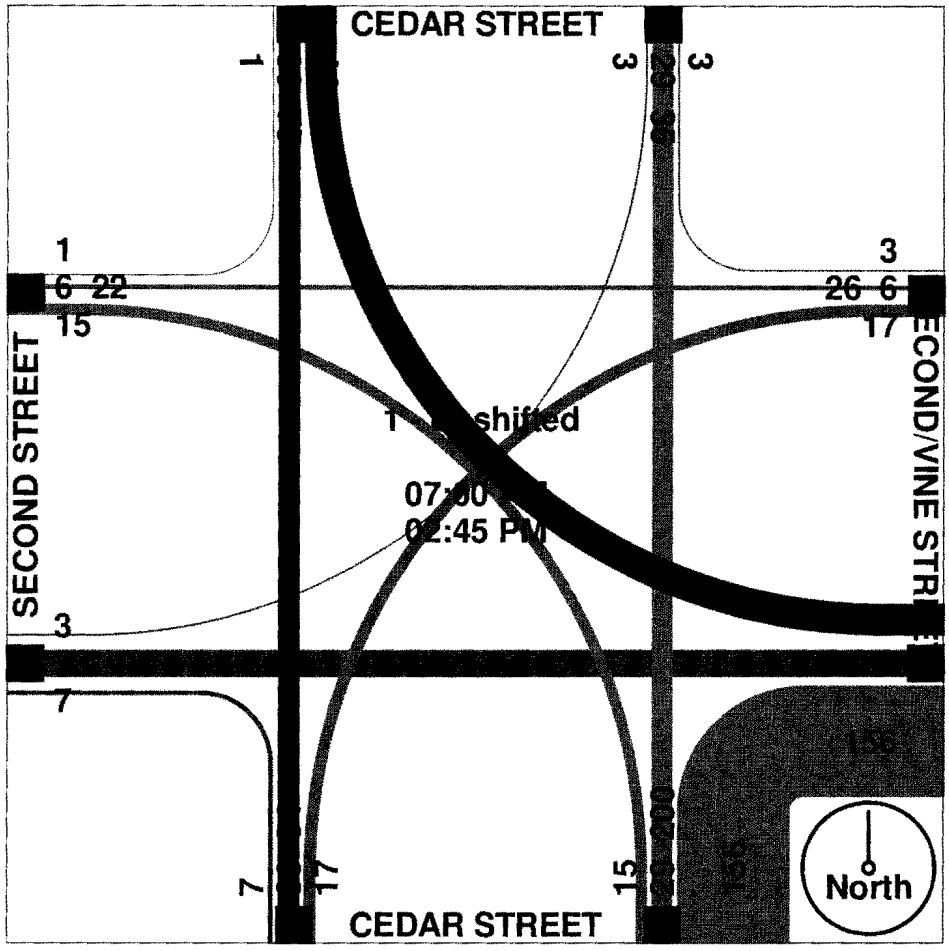
27725 Stansbury Boulevard, Suite 150
Farmington Hills, MI 48334

Project: TC Immaculate Conception
Weather: Dry
Location: Cedar & Second / Vine

File Name : CDENLF~X
Site Code : 00000000
Start Date : 10/20/2015
Page No : 1

Groups Printed- Unshifted

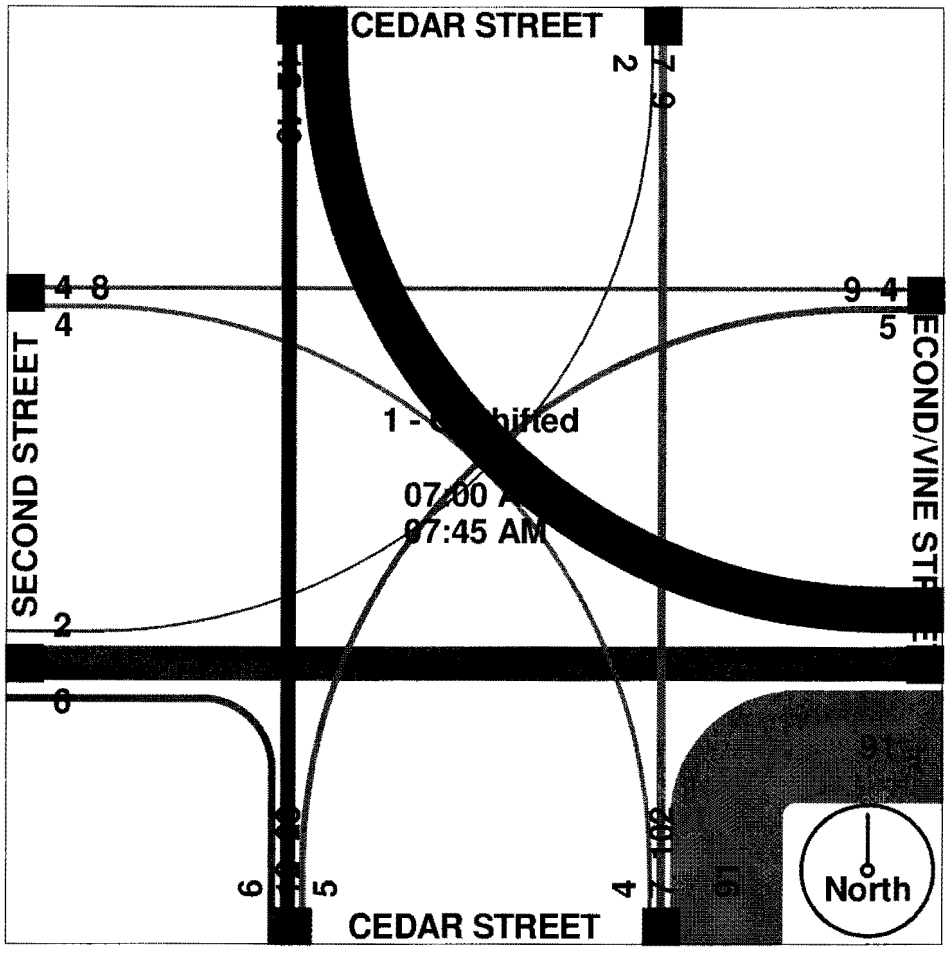
	CEDAR STREET Southbound				SECOND/VINE STREET Westbound				CEDAR STREET Northbound				SECOND STREET Eastbound				
Start Time	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Int. Total
07:00 AM	0	0	5	0	0	2	2	0	23	0	1	0	0	9	0	0	42
07:15 AM	0	3	15	0	0	2	1	0	24	3	1	1	0	11	0	0	61
07:30 AM	0	6	14	3	0	0	1	0	38	0	1	0	5	6	0	3	77
07:45 AM	0	3	3	1	0	0	1	0	6	4	1	0	1	1	2	0	23
Total	0	12	37	4	0	4	5	0	91	7	4	1	6	27	2	3	203
****BREAK****																	
02:00 PM	0	5	0	0	1	0	4	0	2	7	4	0	1	1	0	0	25
02:15 PM	0	4	2	0	0	1	2	0	4	3	1	0	0	1	0	0	18
02:30 PM	1	3	1	4	1	0	4	1	28	6	2	1	0	2	1	3	58
02:45 PM	0	6	4	0	1	1	2	0	31	6	4	0	0	7	0	0	62
Total	1	18	7	4	3	2	12	1	65	22	11	1	1	11	1	3	163
Grand Total	1	30	44	8	3	6	17	1	156	29	15	2	7	38	3	6	366
Apprch %	1.2	36.1	53.0	9.6	11.1	22.2	63.0	3.7	77.2	14.4	7.4	1.0	13.0	70.4	5.6	11.1	
Total %	0.3	8.2	12.0	2.2	0.8	1.6	4.6	0.3	42.6	7.9	4.1	0.5	1.9	10.4	0.8	1.6	



Fleis & VandenBrink Engineering, Inc.
27725 Stansbury Boulevard, Suite 150
Farmington Hills, MI 48334

File Name : CDENLF~X
Site Code : 00000000
Start Date : 10/20/2015
Page No : 2

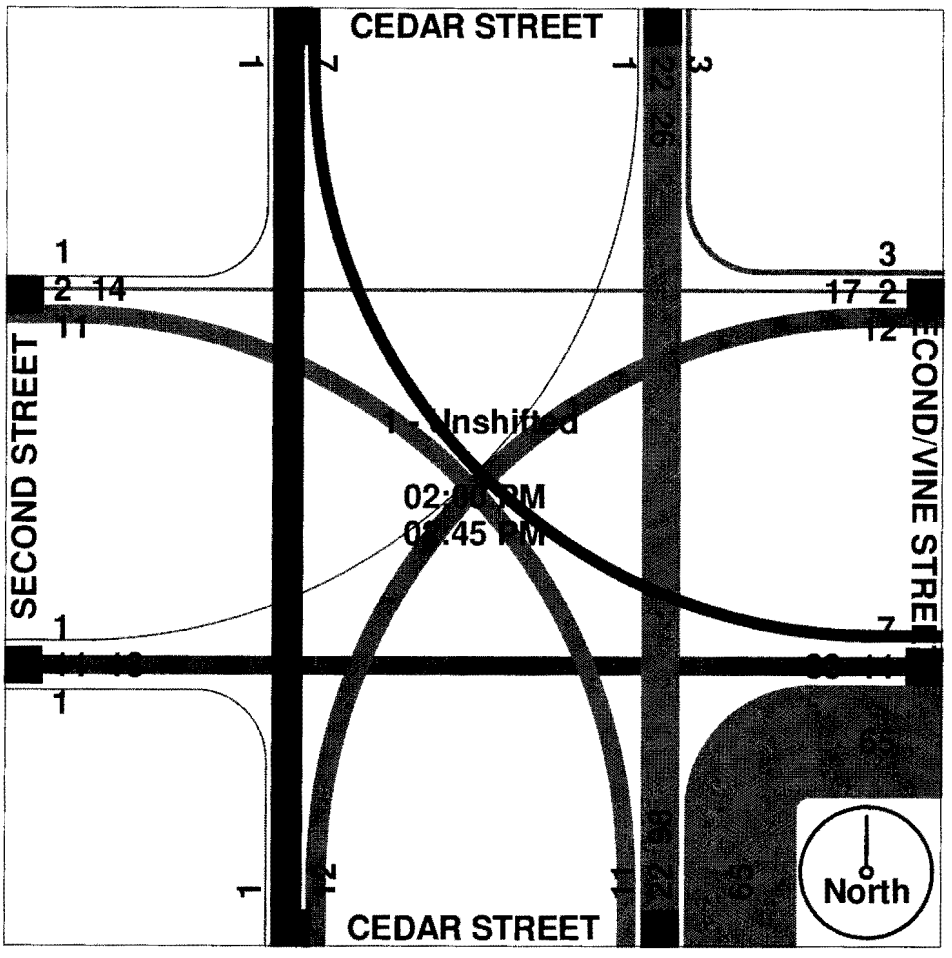
	CEDAR STREET Southbound					SECOND/VINE STREET Westbound					CEDAR STREET Northbound					SECOND STREET Eastbound					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
Peak Hour From 07:00 AM to 11:45 AM - Peak 1 of 1																					
Intersection 07:00 AM																					
Volume	0	12	37	4	53	0	4	5	0	9	91	7	4	1	103	6	27	2	3	38	203
Percent	0.0	22.6	69.8	7.5		0.0	44.4	55.6	0.0		88.3	6.8	3.9	1.0		15.8	71.1	5.3	7.9		
07:30 Volume	0	6	14	3	23	0	0	1	0	1	38	0	1	0	39	5	6	0	3	14	77
Peak Factor																					0.659
High Int.	07:30 AM					07:00 AM					07:30 AM					07:30 AM					
Volume	0	6	14	3	23	0	2	2	0	4	38	0	1	0	39	5	6	0	3	14	
Peak Factor					0.576					0.563					0.660					0.679	



Fleis & VandenBrink Engineering, Inc.
27725 Stansbury Boulevard, Suite 150
Farmington Hills, MI 48334

File Name : CDENLF~X
Site Code : 00000000
Start Date : 10/20/2015
Page No : 3

Start Time	CEDAR STREET Southbound Right	Thru	Left	Peds	App. Total	SECOND/VINE STREET Westbound Right	Thru	Left	Peds	App. Total	CEDAR STREET Northbound Right	Thru	Left	Peds	App. Total	SECOND STREET Eastbound Right	Thru	Left	Peds	App. Total	Int. Total
Peak Hour From 12:00 PM to 02:45 PM - Peak 1 of 1																					
Intersection 02:00 PM																					
Volume	1	18	7	4	30	3	2	12	1	18	65	22	11	1	99	1	11	1	3	16	163
Percent	3.3	60.0	23.3	13.3		16.7	11.1	66.7	5.6		65.7	22.2	11.1	1.0		6.3	68.8	6.3	18.8		
02:45 Volume	0	6	4	0	10	1	1	2	0	4	31	6	4	0	41	0	7	0	0	7	62
Peak Factor																					0.657
High Int.	02:45 PM					02:30 PM					02:45 PM					02:45 PM					
Volume	0	6	4	0	10	1	0	4	1	6	31	6	4	0	41	0	7	0	0	7	
Peak Factor					0.750					0.750					0.604					0.571	



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	247	276	36	92	206	16	155	490	131	118	574	112
Future Volume (veh/h)	247	276	36	92	206	16	155	490	131	118	574	112
Number	7	4	14	3	8	18	1	6	16	5	2	12
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.99	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	321	358	47	131	294	23	221	700	187	136	660	129
Adj No. of Lanes	1	1	0	1	1	0	1	2	0	1	2	0
Peak Hour Factor	0.77	0.77	0.77	0.70	0.70	0.70	0.70	0.70	0.70	0.87	0.87	0.87
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	358	435	57	293	460	36	350	754	201	323	806	157
Arrive On Green	0.09	0.27	0.27	0.09	0.27	0.27	0.13	0.27	0.27	0.13	0.27	0.27
Sat Flow, veh/h	1774	1612	212	1774	1705	133	1774	2763	738	1774	2953	576
Grp Volume(v), veh/h	321	0	405	131	0	317	221	448	439	136	395	394
Grp Sat Flow(s),veh/h/ln	1774	0	1824	1774	0	1838	1774	1770	1731	1774	1770	1760
Q Serve(g_s), s	6.6	0.0	20.8	0.0	0.0	15.2	4.9	24.7	24.7	1.8	20.9	21.0
Cycle Q Clear(g_c), s	6.6	0.0	20.8	0.0	0.0	15.2	4.9	24.7	24.7	1.8	20.9	21.0
Prop In Lane	1.00		0.12	1.00		0.07	1.00		0.43	1.00		0.33
Lane Grp Cap(c), veh/h	358	0	492	293	0	496	350	483	473	323	483	480
V/C Ratio(X)	0.90	0.00	0.82	0.45	0.00	0.64	0.63	0.93	0.93	0.42	0.82	0.82
Avail Cap(c_a), veh/h	409	0	492	345	0	496	350	483	473	323	483	480
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	40.0	0.0	34.2	39.9	0.0	32.2	37.9	35.4	35.4	37.7	34.0	34.0
Incr Delay (d2), s/veh	20.2	0.0	14.3	1.1	0.0	6.2	3.7	26.4	26.9	0.9	14.3	14.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	10.7	0.0	12.4	3.4	0.0	8.6	5.9	15.6	15.4	3.4	12.1	12.1
LnGrp Delay(d),s/veh	60.2	0.0	48.6	41.0	0.0	38.4	41.5	61.8	62.3	38.6	48.3	48.5
LnGrp LOS	E		D	D		D	D	E	E	D	D	D
Approach Vol, veh/h		726			448			1108			925	
Approach Delay, s/veh		53.7			39.1			58.0			47.0	
Approach LOS		D			D			E			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	18.9	33.0	15.1	33.0	18.9	33.0	15.1	33.0
Change Period (Y+Rc), s	* 5.7	* 5.7	6.0	6.0	* 5.7	* 5.7	6.0	6.0
Max Green Setting (Gmax), s	* 10	* 27	12.0	27.0	* 10	* 27	12.0	27.0
Max Q Clear Time (g_c+I1), s	6.9	23.0	2.0	22.8	3.8	26.7	8.6	17.2
Green Ext Time (p_c), s	0.4	1.9	1.1	1.0	0.6	0.4	0.5	1.3

Intersection Summary	
HCM 2010 Ctrl Delay	51.2
HCM 2010 LOS	D

Notes

Intersection	
Int Delay, s/veh	0.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Traffic Vol, veh/h	5	0	20	0	0	4	16	727	10	2	784	29
Future Vol, veh/h	5	0	20	0	0	4	16	727	10	2	784	29
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	67	67	67	95	95	95	77	77	77	87	87	87
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	7	0	30	0	0	4	21	944	13	2	901	33

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1436	1921	467	1447	1931	479	934	0	0	957	0	0
Stage 1	922	922	-	992	992	-	-	-	-	-	-	-
Stage 2	514	999	-	455	939	-	-	-	-	-	-	-
Critical Hdwy	7.54	6.54	6.94	7.54	6.54	6.94	4.14	-	-	4.14	-	-
Critical Hdwy Stg 1	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Follow-up Hdwy	3.52	4.02	3.32	3.52	4.02	3.32	2.22	-	-	2.22	-	-
Pot Cap-1 Maneuver	94	66	542	92	65	533	729	-	-	714	-	-
Stage 1	291	347	-	264	322	-	-	-	-	-	-	-
Stage 2	511	319	-	554	341	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	88	62	542	82	61	533	729	-	-	714	-	-
Mov Cap-2 Maneuver	88	62	-	82	61	-	-	-	-	-	-	-
Stage 1	273	345	-	248	302	-	-	-	-	-	-	-
Stage 2	476	299	-	520	339	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	20.7	11.8	0.5	0
HCM LOS	C	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	729	-	-	267	533	714	-	-
HCM Lane V/C Ratio	0.029	-	-	0.14	0.008	0.003	-	-
HCM Control Delay (s)	10.1	0.3	-	20.7	11.8	10.1	0	-
HCM Lane LOS	B	A	-	C	B	B	A	-
HCM 95th %tile Q(veh)	0.1	-	-	0.5	0	0	-	-

Intersection	
Int Delay, s/veh	0.2

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Traffic Vol, veh/h	2	0	733	3	9	813
Future Vol, veh/h	2	0	733	3	9	813
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	50	50	79	79	88	88
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	4	0	928	4	10	924

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1412	466	0	0	932	0
Stage 1	930	-	-	-	-	-
Stage 2	482	-	-	-	-	-
Critical Hdwy	6.84	6.94	-	-	4.14	-
Critical Hdwy Stg 1	5.84	-	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-	-
Follow-up Hdwy	3.52	3.32	-	-	2.22	-
Pot Cap-1 Maneuver	129	543	-	-	730	-
Stage 1	344	-	-	-	-	-
Stage 2	587	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	125	543	-	-	730	-
Mov Cap-2 Maneuver	125	-	-	-	-	-
Stage 1	344	-	-	-	-	-
Stage 2	571	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	34.8	0	0.2
HCM LOS	D		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	125	730	-
HCM Lane V/C Ratio	-	-	0.032	0.014	-
HCM Control Delay (s)	-	-	34.8	10	0.1
HCM Lane LOS	-	-	D	B	A
HCM 95th %tile Q(veh)	-	-	0.1	0	-

Intersection	
Int Delay, s/veh	16.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Traffic Vol, veh/h	41	8	153	3	2	2	19	694	20	15	666	50
Future Vol, veh/h	41	8	153	3	2	2	19	694	20	15	666	50
Conflicting Peds, #/hr	0	0	3	3	0	0	0	0	1	1	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	73	73	73	58	58	58	81	81	81	86	86	86
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	56	11	210	5	3	3	23	857	25	17	774	58

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1321	1772	420	1350	1789	445	836	0	0	884	0	0
Stage 1	841	841	-	919	919	-	-	-	-	-	-	-
Stage 2	480	931	-	431	870	-	-	-	-	-	-	-
Critical Hdwy	7.54	6.54	6.94	7.54	6.54	6.94	4.14	-	-	4.14	-	-
Critical Hdwy Stg 1	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Follow-up Hdwy	3.52	4.02	3.32	3.52	4.02	3.32	2.22	-	-	2.22	-	-
Pot Cap-1 Maneuver	115	82	582	109	80	561	794	-	-	761	-	-
Stage 1	326	379	-	292	348	-	-	-	-	-	-	-
Stage 2	536	344	-	573	367	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	102	74	580	57	72	559	793	-	-	760	-	-
Mov Cap-2 Maneuver	102	74	-	57	72	-	-	-	-	-	-	-
Stage 1	307	362	-	275	327	-	-	-	-	-	-	-
Stage 2	497	323	-	340	351	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	114.6	55.6	0.5	0.4
HCM LOS	F	F		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	793	-	-	261	83	760	-	-
HCM Lane V/C Ratio	0.03	-	-	1.06	0.145	0.023	-	-
HCM Control Delay (s)	9.7	0.3	-	114.6	55.6	9.8	0.2	-
HCM Lane LOS	A	A	-	F	F	A	A	-
HCM 95th %tile Q(veh)	0.1	-	-	11.2	0.5	0.1	-	-

Intersection	
Int Delay, s/veh	6.1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Traffic Vol, veh/h	71	13	9	62	33	131
Future Vol, veh/h	71	13	9	62	33	131
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	84	84	76	76	64	64
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	85	15	12	82	52	205

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	100	0	197	92
Stage 1	-	-	-	-	92	-
Stage 2	-	-	-	-	105	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1493	-	792	965
Stage 1	-	-	-	-	932	-
Stage 2	-	-	-	-	919	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1493	-	786	965
Mov Cap-2 Maneuver	-	-	-	-	786	-
Stage 1	-	-	-	-	932	-
Stage 2	-	-	-	-	912	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.9	10.4
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	923	-	-	1493	-
HCM Lane V/C Ratio	0.278	-	-	0.008	-
HCM Control Delay (s)	10.4	-	-	7.4	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q(veh)	1.1	-	-	0	-

Intersection	
Int Delay, s/veh	7.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Traffic Vol, veh/h	2	27	6	5	4	0	4	7	91	37	12	0
Future Vol, veh/h	2	27	6	5	4	0	4	7	91	37	12	0
Conflicting Peds, #/hr	0	0	3	3	0	0	4	0	1	1	0	4
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	68	68	68	56	56	56	66	66	66	58	58	58
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	3	40	9	9	7	0	6	11	138	64	21	0

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	11	0	0	53	0	0	93	83	51	157	87	14
Stage 1	-	-	-	-	-	-	54	54	-	29	29	-
Stage 2	-	-	-	-	-	-	39	29	-	128	58	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1608	-	-	1553	-	-	891	807	1017	809	803	1066
Stage 1	-	-	-	-	-	-	958	850	-	988	871	-
Stage 2	-	-	-	-	-	-	976	871	-	876	847	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1603	-	-	1549	-	-	862	794	1010	683	791	1059
Mov Cap-2 Maneuver	-	-	-	-	-	-	862	794	-	683	791	-
Stage 1	-	-	-	-	-	-	952	845	-	982	862	-
Stage 2	-	-	-	-	-	-	944	862	-	743	842	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.4	4.1	9.3	10.8
HCM LOS			A	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	985	1603	-	-	1549	-	-	707
HCM Lane V/C Ratio	0.157	0.002	-	-	0.006	-	-	0.119
HCM Control Delay (s)	9.3	7.2	0	-	7.3	0	-	10.8
HCM Lane LOS	A	A	A	-	A	A	-	B
HCM 95th %tile Q(veh)	0.6	0	-	-	0	-	-	0.4

Intersection	
Int Delay, s/veh	0.5

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Traffic Vol, veh/h	0	22	37	8	3	0
Future Vol, veh/h	0	22	37	8	3	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	57	57	71	71	50	50
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	39	52	11	6	0

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	63	0	-	0	97	58
Stage 1	-	-	-	-	58	-
Stage 2	-	-	-	-	39	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1540	-	-	-	902	1008
Stage 1	-	-	-	-	965	-
Stage 2	-	-	-	-	983	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1540	-	-	-	902	1008
Mov Cap-2 Maneuver	-	-	-	-	902	-
Stage 1	-	-	-	-	965	-
Stage 2	-	-	-	-	983	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	9
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1540	-	-	-	902
HCM Lane V/C Ratio	-	-	-	-	0.007
HCM Control Delay (s)	0	-	-	-	9
HCM Lane LOS	A	-	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	0

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	202	282	54	202	236	128	182	643	144	116	654	139
Future Volume (veh/h)	202	282	54	202	236	128	182	643	144	116	654	139
Number	7	4	14	3	8	18	1	6	16	5	2	12
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.98	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	227	317	61	222	259	141	198	699	157	126	711	151
Adj No. of Lanes	1	1	0	1	1	0	1	2	0	1	2	0
Peak Hour Factor	0.89	0.89	0.89	0.91	0.91	0.91	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	260	386	74	286	287	156	317	1000	224	319	1011	215
Arrive On Green	0.09	0.25	0.25	0.09	0.25	0.25	0.09	0.35	0.35	0.09	0.35	0.35
Sat Flow, veh/h	1774	1515	291	1774	1129	614	1774	2872	645	1774	2905	617
Grp Volume(v), veh/h	227	0	378	222	0	400	198	431	425	126	433	429
Grp Sat Flow(s),veh/h/ln	1774	0	1806	1774	0	1743	1774	1770	1747	1774	1770	1752
Q Serve(g_s), s	7.7	0.0	21.7	5.6	0.0	24.4	1.9	23.1	23.1	0.0	23.2	23.3
Cycle Q Clear(g_c), s	7.7	0.0	21.7	5.6	0.0	24.4	1.9	23.1	23.1	0.0	23.2	23.3
Prop In Lane	1.00		0.16	1.00		0.35	1.00		0.37	1.00		0.35
Lane Grp Cap(c), veh/h	260	0	460	286	0	444	317	616	608	319	616	610
V/C Ratio(X)	0.87	0.00	0.82	0.78	0.00	0.90	0.62	0.70	0.70	0.40	0.70	0.70
Avail Cap(c_a), veh/h	291	0	460	316	0	444	317	616	608	319	616	610
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	47.0	0.0	38.7	45.5	0.0	39.7	42.1	30.9	30.9	39.9	30.9	30.9
Incr Delay (d2), s/veh	22.3	0.0	15.2	10.6	0.0	24.1	3.8	6.5	6.6	0.8	6.6	6.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	8.4	0.0	12.8	7.3	0.0	14.7	5.9	12.4	12.2	3.5	12.4	12.3
LnGrp Delay(d),s/veh	69.3	0.0	53.9	56.2	0.0	63.7	45.9	37.4	37.5	40.7	37.5	37.6
LnGrp LOS	E		D	E		E	D	D	D	D	D	D
Approach Vol, veh/h		605			622			1054			988	
Approach Delay, s/veh		59.7			61.0			39.0			38.0	
Approach LOS		E			E			D			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	15.9	44.0	16.1	34.0	15.9	44.0	16.1	34.0
Change Period (Y+Rc), s	* 5.7	* 5.7	6.0	6.0	* 5.7	* 5.7	6.0	6.0
Max Green Setting (Gmax), s	* 8.3	* 38	12.0	28.0	* 8.3	* 38	12.0	28.0
Max Q Clear Time (g_c+I1), s	3.9	25.3	7.6	23.7	2.0	25.1	9.7	26.4
Green Ext Time (p_c), s	0.4	4.6	0.6	0.9	0.5	4.6	0.4	0.4

Intersection Summary	
HCM 2010 Ctrl Delay	46.7
HCM 2010 LOS	D

Notes

Intersection	
Int Delay, s/veh	1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Traffic Vol, veh/h	5	0	28	2	1	9	20	945	8	3	879	34
Future Vol, veh/h	5	0	28	2	1	9	20	945	8	3	879	34
Conflicting Peds, #/hr	0	0	1	1	0	0	2	0	2	2	0	2
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	81	81	81	75	75	75	92	92	92	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	6	0	35	3	1	12	22	1027	9	3	925	36

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1509	2030	484	1546	2044	521	962	0	0	1037	0	0
Stage 1	950	950	-	1076	1076	-	-	-	-	-	-	-
Stage 2	559	1080	-	470	968	-	-	-	-	-	-	-
Critical Hdwy	7.54	6.54	6.94	7.54	6.54	6.94	4.14	-	-	4.14	-	-
Critical Hdwy Stg 1	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Follow-up Hdwy	3.52	4.02	3.32	3.52	4.02	3.32	2.22	-	-	2.22	-	-
Pot Cap-1 Maneuver	83	57	529	78	56	500	711	-	-	666	-	-
Stage 1	280	337	-	234	294	-	-	-	-	-	-	-
Stage 2	481	293	-	543	330	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	74	52	527	68	51	499	710	-	-	665	-	-
Mov Cap-2 Maneuver	74	52	-	68	51	-	-	-	-	-	-	-
Stage 1	259	333	-	217	272	-	-	-	-	-	-	-
Stage 2	432	271	-	501	326	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	20.5	27.1	0.6	0.1
HCM LOS	C	D		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	710	-	-	273	179	665	-	-
HCM Lane V/C Ratio	0.031	-	-	0.149	0.089	0.005	-	-
HCM Control Delay (s)	10.2	0.4	-	20.5	27.1	10.4	0.1	-
HCM Lane LOS	B	A	-	C	D	B	A	-
HCM 95th %tile Q(veh)	0.1	-	-	0.5	0.3	0	-	-

Intersection	
Int Delay, s/veh	0.3

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Traffic Vol, veh/h	2	5	953	6	13	914
Future Vol, veh/h	2	5	953	6	13	914
Conflicting Peds, #/hr	0	1	0	2	2	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	40	40	95	95	93	93
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	5	13	1003	6	14	983

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1526	508	0	0	1010	0
Stage 1	1007	-	-	-	-	-
Stage 2	519	-	-	-	-	-
Critical Hdwy	6.84	6.94	-	-	4.14	-
Critical Hdwy Stg 1	5.84	-	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-	-
Follow-up Hdwy	3.52	3.32	-	-	2.22	-
Pot Cap-1 Maneuver	108	510	-	-	682	-
Stage 1	314	-	-	-	-	-
Stage 2	562	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	103	509	-	-	681	-
Mov Cap-2 Maneuver	103	-	-	-	-	-
Stage 1	314	-	-	-	-	-
Stage 2	536	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	21.2	0	0.3
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	239	681	-
HCM Lane V/C Ratio	-	-	0.073	0.021	-
HCM Control Delay (s)	-	-	21.2	10.4	0.2
HCM Lane LOS	-	-	C	B	A
HCM 95th %tile Q(veh)	-	-	0.2	0.1	-

Intersection	
Int Delay, s/veh	13.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Traffic Vol, veh/h	29	5	109	5	1	14	36	902	20	21	813	39
Future Vol, veh/h	29	5	109	5	1	14	36	902	20	21	813	39
Conflicting Peds, #/hr	0	0	2	2	0	0	1	0	1	1	0	1
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	69	69	69	56	56	56	93	93	93	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	42	7	158	9	2	25	39	970	22	22	856	41

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1488	1994	451	1538	2003	499	899	0	0	993	0	0
Stage 1	923	923	-	1060	1060	-	-	-	-	-	-	-
Stage 2	565	1071	-	478	943	-	-	-	-	-	-	-
Critical Hdwy	7.54	6.54	6.94	7.54	6.54	6.94	4.14	-	-	4.14	-	-
Critical Hdwy Stg 1	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Follow-up Hdwy	3.52	4.02	3.32	3.52	4.02	3.32	2.22	-	-	2.22	-	-
Pot Cap-1 Maneuver	86	60	556	79	59	517	751	-	-	692	-	-
Stage 1	290	347	-	239	299	-	-	-	-	-	-	-
Stage 2	477	295	-	537	339	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	69	49	554	43	49	516	750	-	-	691	-	-
Mov Cap-2 Maneuver	69	49	-	43	49	-	-	-	-	-	-	-
Stage 1	256	324	-	211	264	-	-	-	-	-	-	-
Stage 2	398	260	-	351	317	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	125	46.3	0.8	0.5
HCM LOS	F	E		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	750	-	-	199	122	691	-	-
HCM Lane V/C Ratio	0.052	-	-	1.041	0.293	0.032	-	-
HCM Control Delay (s)	10.1	0.5	-	125	46.3	10.4	0.3	-
HCM Lane LOS	B	A	-	F	E	B	A	-
HCM 95th %tile Q(veh)	0.2	-	-	9.3	1.1	0.1	-	-

Intersection	
Int Delay, s/veh	6.6

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Traffic Vol, veh/h	56	21	36	40	40	87
Future Vol, veh/h	56	21	36	40	40	87
Conflicting Peds, #/hr	0	1	1	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	65	65	68	68	50	50
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	86	32	53	59	80	174

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	118	0	267	103
Stage 1	-	-	-	-	102	-
Stage 2	-	-	-	-	165	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1470	-	722	952
Stage 1	-	-	-	-	922	-
Stage 2	-	-	-	-	864	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1469	-	695	951
Mov Cap-2 Maneuver	-	-	-	-	695	-
Stage 1	-	-	-	-	922	-
Stage 2	-	-	-	-	831	-

Approach	EB	WB	NB
HCM Control Delay, s	0	3.6	11
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	852	-	-	1469	-
HCM Lane V/C Ratio	0.298	-	-	0.036	-
HCM Control Delay (s)	11	-	-	7.5	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q(veh)	1.3	-	-	0.1	-

Intersection	
Int Delay, s/veh	8.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Traffic Vol, veh/h	1	15	1	19	3	5	11	22	91	10	18	1
Future Vol, veh/h	1	15	1	19	3	5	11	22	91	10	18	1
Conflicting Peds, #/hr	1	0	3	3	0	1	4	0	1	1	0	4
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	57	57	57	75	75	75	60	60	60	75	75	75
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	2	26	2	25	4	7	18	37	152	13	24	1

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	15	0	0	32	0	0	110	100	34	191	98	14
Stage 1	-	-	-	-	-	-	35	35	-	62	62	-
Stage 2	-	-	-	-	-	-	75	65	-	129	36	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1603	-	-	1580	-	-	868	790	1039	769	792	1066
Stage 1	-	-	-	-	-	-	981	866	-	949	843	-
Stage 2	-	-	-	-	-	-	934	841	-	875	865	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1598	-	-	1575	-	-	830	771	1032	620	773	1059
Mov Cap-2 Maneuver	-	-	-	-	-	-	830	771	-	620	773	-
Stage 1	-	-	-	-	-	-	976	862	-	944	826	-
Stage 2	-	-	-	-	-	-	889	824	-	712	861	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.4	5.2	9.8	10.3
HCM LOS			A	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	954	1598	-	-	1575	-	-	719
HCM Lane V/C Ratio	0.217	0.001	-	-	0.016	-	-	0.054
HCM Control Delay (s)	9.8	7.3	0	-	7.3	0	-	10.3
HCM Lane LOS	A	A	A	-	A	A	-	B
HCM 95th %tile Q(veh)	0.8	0	-	-	0	-	-	0.2

Intersection	
Int Delay, s/veh	2.3

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Traffic Vol, veh/h	4	19	52	3	14	3
Future Vol, veh/h	4	19	52	3	14	3
Conflicting Peds, #/hr	1	0	0	1	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	75	75	62	62	50	50
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	5	25	84	5	28	6

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	89	0	-	0	122	87
Stage 1	-	-	-	-	86	-
Stage 2	-	-	-	-	36	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1506	-	-	-	873	971
Stage 1	-	-	-	-	937	-
Stage 2	-	-	-	-	986	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1505	-	-	-	870	970
Mov Cap-2 Maneuver	-	-	-	-	870	-
Stage 1	-	-	-	-	937	-
Stage 2	-	-	-	-	983	-

Approach	EB	WB	SB
HCM Control Delay, s	1.3	0	9.2
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1505	-	-	-	886
HCM Lane V/C Ratio	0.004	-	-	-	0.038
HCM Control Delay (s)	7.4	0	-	-	9.2
HCM Lane LOS	A	A	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	0.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	247	281	62	92	211	17	155	496	131	120	582	103
Future Volume (veh/h)	247	281	62	92	211	17	155	496	131	120	582	103
Number	7	4	14	3	8	18	1	6	16	5	2	12
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.99	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	321	365	81	131	301	24	221	709	187	138	669	118
Adj No. of Lanes	1	1	0	1	1	0	1	2	0	1	2	0
Peak Hour Factor	0.77	0.77	0.77	0.70	0.70	0.70	0.70	0.70	0.70	0.87	0.87	0.87
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	357	398	88	267	460	37	345	757	199	315	821	145
Arrive On Green	0.09	0.27	0.27	0.09	0.27	0.27	0.13	0.27	0.27	0.13	0.27	0.27
Sat Flow, veh/h	1774	1475	327	1774	1702	136	1774	2771	731	1774	3008	530
Grp Volume(v), veh/h	321	0	446	131	0	325	221	453	443	138	393	394
Grp Sat Flow(s),veh/h/ln	1774	0	1803	1774	0	1838	1774	1770	1732	1774	1770	1768
Q Serve(g_s), s	6.9	0.0	24.0	1.1	0.0	15.7	4.9	25.0	25.0	2.1	20.8	20.8
Cycle Q Clear(g_c), s	6.9	0.0	24.0	1.1	0.0	15.7	4.9	25.0	25.0	2.1	20.8	20.8
Prop In Lane	1.00		0.18	1.00		0.07	1.00		0.42	1.00		0.30
Lane Grp Cap(c), veh/h	357	0	487	267	0	496	345	483	473	315	483	483
V/C Ratio(X)	0.90	0.00	0.92	0.49	0.00	0.65	0.64	0.94	0.94	0.44	0.81	0.82
Avail Cap(c_a), veh/h	404	0	487	313	0	496	345	483	473	315	483	483
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	40.0	0.0	35.4	40.8	0.0	32.4	38.1	35.5	35.5	38.1	34.0	34.0
Incr Delay (d2), s/veh	20.8	0.0	24.5	1.4	0.0	6.6	3.9	27.9	28.4	1.0	14.0	14.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	10.7	0.0	15.2	3.4	0.0	8.9	6.0	15.9	15.7	3.5	12.0	12.1
LnGrp Delay(d),s/veh	60.9	0.0	59.9	42.2	0.0	39.0	42.0	63.4	63.9	39.0	48.0	48.1
LnGrp LOS	E		E	D		D	D	E	E	D	D	D
Approach Vol, veh/h		767			456			1117			925	
Approach Delay, s/veh		60.3			39.9			59.4			46.7	
Approach LOS		E			D			E			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	18.6	33.0	15.4	33.0	18.6	33.0	15.4	33.0
Change Period (Y+Rc), s	*5.7	*5.7	6.0	6.0	*5.7	*5.7	6.0	6.0
Max Green Setting (Gmax), s	*10	*27	12.0	27.0	*10	*27	12.0	27.0
Max Q Clear Time (g_c+I1), s	6.9	22.8	3.1	26.0	4.1	27.0	8.9	17.7
Green Ext Time (p_c), s	0.4	2.0	1.0	0.3	0.6	0.2	0.5	1.3

Intersection Summary	
HCM 2010 Ctrl Delay	53.3
HCM 2010 LOS	D

Notes

Intersection	
Int Delay, s/veh	3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Traffic Vol, veh/h	5	0	124	0	0	4	23	727	10	2	681	79
Future Vol, veh/h	5	0	124	0	0	4	23	727	10	2	681	79
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	67	67	50	95	95	95	50	77	77	87	87	50
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	7	0	248	0	0	4	46	944	13	2	783	158

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1430	1915	470	1439	1988	479	941	0	0	957	0	0
Stage 1	866	866	-	1043	1043	-	-	-	-	-	-	-
Stage 2	564	1049	-	396	945	-	-	-	-	-	-	-
Critical Hdwy	7.54	6.54	6.94	7.54	6.54	6.94	4.14	-	-	4.14	-	-
Critical Hdwy Stg 1	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Follow-up Hdwy	3.52	4.02	3.32	3.52	4.02	3.32	2.22	-	-	2.22	-	-
Pot Cap-1 Maneuver	95	67	540	94	60	533	724	-	-	714	-	-
Stage 1	314	369	-	245	305	-	-	-	-	-	-	-
Stage 2	478	303	-	601	339	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	84	58	540	45	52	533	724	-	-	714	-	-
Mov Cap-2 Maneuver	84	58	-	45	52	-	-	-	-	-	-	-
Stage 1	271	367	-	212	264	-	-	-	-	-	-	-
Stage 2	410	262	-	323	337	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	21.7	11.8	1	0
HCM LOS	C	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	724	-	-	466	533	714	-	-
HCM Lane V/C Ratio	0.064	-	-	0.548	0.008	0.003	-	-
HCM Control Delay (s)	10.3	0.6	-	21.7	11.8	10.1	0	-
HCM Lane LOS	B	A	-	C	B	B	A	-
HCM 95th %tile Q(veh)	0.2	-	-	3.2	0	0	-	-

Intersection	
Int Delay, s/veh	0.2

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Traffic Vol, veh/h	2	0	733	3	9	760
Future Vol, veh/h	2	0	733	3	9	760
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	50	50	79	79	88	88
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	4	0	928	4	10	864

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1382	466	0	0	932	0
Stage 1	930	-	-	-	-	-
Stage 2	452	-	-	-	-	-
Critical Hdwy	6.84	6.94	-	-	4.14	-
Critical Hdwy Stg 1	5.84	-	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-	-
Follow-up Hdwy	3.52	3.32	-	-	2.22	-
Pot Cap-1 Maneuver	135	543	-	-	730	-
Stage 1	344	-	-	-	-	-
Stage 2	608	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	131	543	-	-	730	-
Mov Cap-2 Maneuver	131	-	-	-	-	-
Stage 1	344	-	-	-	-	-
Stage 2	592	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	33.3	0	0.2
HCM LOS	D		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	131	730	-
HCM Lane V/C Ratio	-	-	0.031	0.014	-
HCM Control Delay (s)	-	-	33.3	10	0.1
HCM Lane LOS	-	-	D	B	A
HCM 95th %tile Q(veh)	-	-	0.1	0	-

Intersection	
Int Delay, s/veh	12.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Traffic Vol, veh/h	53	8	50	3	2	2	19	694	20	15	716	23
Future Vol, veh/h	53	8	50	3	2	2	19	694	20	15	716	23
Conflicting Peds, #/hr	0	0	3	3	0	0	0	0	1	1	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	73	73	73	58	58	58	81	81	81	86	86	86
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	73	11	68	5	3	3	23	857	25	17	833	27

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1364	1815	434	1379	1816	445	862	0	0	884	0	0
Stage 1	884	884	-	919	919	-	-	-	-	-	-	-
Stage 2	480	931	-	460	897	-	-	-	-	-	-	-
Critical Hdwy	7.54	6.54	6.94	7.54	6.54	6.94	4.14	-	-	4.14	-	-
Critical Hdwy Stg 1	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Follow-up Hdwy	3.52	4.02	3.32	3.52	4.02	3.32	2.22	-	-	2.22	-	-
Pot Cap-1 Maneuver	106	77	570	104	77	561	776	-	-	761	-	-
Stage 1	307	362	-	292	348	-	-	-	-	-	-	-
Stage 2	536	344	-	551	357	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	93	69	568	74	69	559	775	-	-	760	-	-
Mov Cap-2 Maneuver	93	69	-	74	69	-	-	-	-	-	-	-
Stage 1	288	345	-	274	327	-	-	-	-	-	-	-
Stage 2	496	323	-	449	341	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	155.1	47.8	0.5	0.4
HCM LOS	F	E		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	775	-	-	143	96	760	-	-
HCM Lane V/C Ratio	0.03	-	-	1.063	0.126	0.023	-	-
HCM Control Delay (s)	9.8	0.3	-	155.1	47.8	9.8	0.2	-
HCM Lane LOS	A	A	-	F	E	A	A	-
HCM 95th %tile Q(veh)	0.1	-	-	8.1	0.4	0.1	-	-

Intersection	
Int Delay, s/veh	10.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Traffic Vol, veh/h	2	0	6	213	0	40	4	7	264	0	12	0
Future Vol, veh/h	2	0	6	213	0	40	4	7	264	0	12	0
Conflicting Peds, #/hr	0	0	3	3	0	0	4	0	1	1	0	4
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	68	68	68	50	50	50	66	66	50	58	58	58
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	3	0	9	426	0	80	6	11	528	0	21	0

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	84	0	0	13	0	0	920	950	11	1180	915	47
Stage 1	-	-	-	-	-	-	14	14	-	896	896	-
Stage 2	-	-	-	-	-	-	906	936	-	284	19	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1513	-	-	1606	-	-	251	260	1070	167	273	1022
Stage 1	-	-	-	-	-	-	1006	884	-	335	359	-
Stage 2	-	-	-	-	-	-	331	344	-	723	880	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1509	-	-	1601	-	-	180	185	1063	63	194	1015
Mov Cap-2 Maneuver	-	-	-	-	-	-	180	185	-	63	194	-
Stage 1	-	-	-	-	-	-	1000	879	-	333	257	-
Stage 2	-	-	-	-	-	-	218	246	-	358	875	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	1.8	6.8	14.3	25.8
HCM LOS			B	D

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	927	1509	-	-	1601	-	-	194
HCM Lane V/C Ratio	0.588	0.002	-	-	0.266	-	-	0.107
HCM Control Delay (s)	14.3	7.4	0	-	8.1	0	-	25.8
HCM Lane LOS	B	A	A	-	A	A	-	D
HCM 95th %tile Q(veh)	3.9	0	-	-	1.1	-	-	0.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	202	286	60	202	242	129	188	648	144	121	681	117
Future Volume (veh/h)	202	286	60	202	242	129	188	648	144	121	681	117
Number	7	4	14	3	8	18	1	6	16	5	2	12
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.98	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	227	321	67	222	266	142	204	704	157	132	740	127
Adj No. of Lanes	1	1	0	1	1	0	1	2	0	1	2	0
Peak Hour Factor	0.89	0.89	0.89	0.91	0.91	0.91	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	259	380	79	283	290	155	312	1001	223	313	1052	180
Arrive On Green	0.09	0.25	0.25	0.09	0.25	0.25	0.09	0.35	0.35	0.09	0.35	0.35
Sat Flow, veh/h	1774	1491	311	1774	1137	607	1774	2876	641	1774	3021	518
Grp Volume(v), veh/h	227	0	388	222	0	408	204	433	428	132	433	434
Grp Sat Flow(s),veh/h/ln	1774	0	1802	1774	0	1744	1774	1770	1747	1774	1770	1770
Q Serve(g_s), s	8.1	0.0	22.5	6.1	0.0	25.0	2.3	23.2	23.3	0.0	23.3	23.3
Cycle Q Clear(g_c), s	8.1	0.0	22.5	6.1	0.0	25.0	2.3	23.2	23.3	0.0	23.3	23.3
Prop In Lane	1.00		0.17	1.00		0.35	1.00		0.37	1.00		0.29
Lane Grp Cap(c), veh/h	259	0	459	283	0	444	312	616	608	313	616	616
V/C Ratio(X)	0.87	0.00	0.85	0.78	0.00	0.92	0.65	0.70	0.70	0.42	0.70	0.70
Avail Cap(c_a), veh/h	285	0	459	309	0	444	312	616	608	313	616	616
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	46.9	0.0	38.9	45.7	0.0	39.9	42.5	30.9	30.9	40.6	30.9	31.0
Incr Delay (d2), s/veh	23.3	0.0	17.2	11.6	0.0	26.6	4.8	6.6	6.7	0.9	6.6	6.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	8.4	0.0	13.4	7.4	0.0	15.3	6.2	12.4	12.3	3.7	12.4	12.5
LnGrp Delay(d),s/veh	70.2	0.0	56.2	57.3	0.0	66.5	47.4	37.5	37.6	41.5	37.5	37.6
LnGrp LOS	E		E	E		E	D	D	D	D	D	D
Approach Vol, veh/h		615			630			1065			999	
Approach Delay, s/veh		61.4			63.2			39.5			38.1	
Approach LOS		E			E			D			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	15.6	44.0	16.4	34.0	15.6	44.0	16.4	34.0
Change Period (Y+Rc), s	*5.7	*5.7	6.0	6.0	*5.7	*5.7	6.0	6.0
Max Green Setting (Gmax), s	*8.3	*38	12.0	28.0	*8.3	*38	12.0	28.0
Max Q Clear Time (g_c+I1), s	4.3	25.3	8.1	24.5	2.0	25.3	10.1	27.0
Green Ext Time (p_c), s	0.4	4.6	0.6	0.8	0.6	4.6	0.3	0.3

Intersection Summary	
HCM 2010 Ctrl Delay	47.6
HCM 2010 LOS	D

Notes

Intersection	
Int Delay, s/veh	3.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Traffic Vol, veh/h	3	0	118	2	1	9	26	945	8	3	799	98
Future Vol, veh/h	3	0	118	2	1	9	26	945	8	3	799	98
Conflicting Peds, #/hr	0	0	1	1	0	0	2	0	2	0	0	2
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	81	81	50	75	75	75	50	92	92	95	95	50
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	4	0	236	3	1	12	52	1027	9	3	841	196

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1565	2087	522	1565	2181	521	1038	0	0	1037	0	0
Stage 1	946	946	-	1137	1137	-	-	-	-	-	-	-
Stage 2	619	1141	-	428	1044	-	-	-	-	-	-	-
Critical Hdwy	7.54	6.54	6.94	7.54	6.54	6.94	4.14	-	-	4.14	-	-
Critical Hdwy Stg 1	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Follow-up Hdwy	3.52	4.02	3.32	3.52	4.02	3.32	2.22	-	-	2.22	-	-
Pot Cap-1 Maneuver	75	52	499	75	45	500	665	-	-	666	-	-
Stage 1	281	338	-	215	275	-	-	-	-	-	-	-
Stage 2	443	274	-	575	304	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	60	42	498	33	36	499	664	-	-	665	-	-
Mov Cap-2 Maneuver	60	42	-	33	36	-	-	-	-	-	-	-
Stage 1	229	334	-	175	224	-	-	-	-	-	-	-
Stage 2	350	223	-	299	300	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	21.9	42	1.4	0.1
HCM LOS	C	E		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	664	-	-	448	113	665	-	-
HCM Lane V/C Ratio	0.078	-	-	0.535	0.142	0.005	-	-
HCM Control Delay (s)	10.9	0.9	-	21.9	42	10.4	0.1	-
HCM Lane LOS	B	A	-	C	E	B	A	-
HCM 95th %tile Q(veh)	0.3	-	-	3.1	0.5	0	-	-

Intersection	
Int Delay, s/veh	0.3

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Traffic Vol, veh/h	2	5	951	6	13	898
Future Vol, veh/h	2	5	951	6	13	898
Conflicting Peds, #/hr	0	1	0	2	2	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	40	40	95	95	93	93
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	5	13	1001	6	14	966

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1516	507	0	0	1008	0
Stage 1	1005	-	-	-	-	-
Stage 2	511	-	-	-	-	-
Critical Hdwy	6.84	6.94	-	-	4.14	-
Critical Hdwy Stg 1	5.84	-	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-	-
Follow-up Hdwy	3.52	3.32	-	-	2.22	-
Pot Cap-1 Maneuver	110	511	-	-	683	-
Stage 1	315	-	-	-	-	-
Stage 2	567	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	105	510	-	-	682	-
Mov Cap-2 Maneuver	105	-	-	-	-	-
Stage 1	315	-	-	-	-	-
Stage 2	541	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	21	0	0.3
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	243	682	-
HCM Lane V/C Ratio	-	-	0.072	0.02	-
HCM Control Delay (s)	-	-	21	10.4	0.2
HCM Lane LOS	-	-	C	B	A
HCM 95th %tile Q(veh)	-	-	0.2	0.1	-

Intersection	
Int Delay, s/veh	12.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Traffic Vol, veh/h	40	5	29	5	1	14	36	900	20	21	877	3
Future Vol, veh/h	40	5	29	5	1	14	36	900	20	21	877	3
Conflicting Peds, #/hr	0	0	2	2	0	0	1	0	1	1	0	1
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	69	69	69	56	56	56	93	93	93	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	58	7	42	9	2	25	39	968	22	22	923	3

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1535	2040	466	1569	2031	498	928	0	0	991	0	0
Stage 1	971	971	-	1058	1058	-	-	-	-	-	-	-
Stage 2	564	1069	-	511	973	-	-	-	-	-	-	-
Critical Hdwy	7.54	6.54	6.94	7.54	6.54	6.94	4.14	-	-	4.14	-	-
Critical Hdwy Stg 1	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Follow-up Hdwy	3.52	4.02	3.32	3.52	4.02	3.32	2.22	-	-	2.22	-	-
Pot Cap-1 Maneuver	79	56	543	75	57	518	733	-	-	693	-	-
Stage 1	271	329	-	240	300	-	-	-	-	-	-	-
Stage 2	478	296	-	514	329	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	63	46	541	53	47	517	732	-	-	692	-	-
Mov Cap-2 Maneuver	63	46	-	53	47	-	-	-	-	-	-	-
Stage 1	238	307	-	211	264	-	-	-	-	-	-	-
Stage 2	398	260	-	432	307	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	224	39.3	0.9	0.5
HCM LOS	F	E		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	732	-	-	93	140	692	-	-
HCM Lane V/C Ratio	0.053	-	-	1.153	0.255	0.032	-	-
HCM Control Delay (s)	10.2	0.6	-	224	39.3	10.4	0.3	-
HCM Lane LOS	B	A	-	F	E	B	A	-
HCM 95th %tile Q(veh)	0.2	-	-	7.3	1	0.1	-	-

Intersection	
Int Delay, s/veh	18.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Traffic Vol, veh/h	1	0	1	230	0	28	11	22	262	0	18	1
Future Vol, veh/h	1	0	1	230	0	28	11	22	262	0	18	1
Conflicting Peds, #/hr	1	0	3	3	0	1	4	0	1	1	0	4
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	57	57	57	50	50	50	60	60	50	75	75	75
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	2	0	2	460	0	56	18	37	524	0	24	1

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	60	0	0	6	0	0	973	988	8	1241	961	35
Stage 1	-	-	-	-	-	-	8	8	-	952	952	-
Stage 2	-	-	-	-	-	-	965	980	-	289	9	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1544	-	-	1615	-	-	231	247	1074	152	256	1038
Stage 1	-	-	-	-	-	-	1013	889	-	312	338	-
Stage 2	-	-	-	-	-	-	306	328	-	719	888	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1540	-	-	1610	-	-	159	172	1067	50	178	1031
Mov Cap-2 Maneuver	-	-	-	-	-	-	159	172	-	50	178	-
Stage 1	-	-	-	-	-	-	1008	885	-	311	237	-
Stage 2	-	-	-	-	-	-	193	230	-	349	884	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	3.7	7.2	29	27.4
HCM LOS			D	D

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	706	1540	-	-	1610	-	-	186
HCM Lane V/C Ratio	0.82	0.001	-	-	0.286	-	-	0.136
HCM Control Delay (s)	29	7.3	0	-	8.1	0	-	27.4
HCM Lane LOS	D	A	A	-	A	A	-	D
HCM 95th %tile Q(veh)	8.8	0	-	-	1.2	-	-	0.5

Intersection	
Int Delay, s/veh	8.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Traffic Vol, veh/h	53	8	50	3	2	2	19	694	20	15	716	23
Future Vol, veh/h	53	8	50	3	2	2	19	694	20	15	716	23
Conflicting Peds, #/hr	0	0	3	3	0	0	0	0	1	1	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	0	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	73	73	73	58	58	58	81	81	81	86	86	86
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	73	11	68	5	3	3	23	857	25	17	833	27

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1364	1815	434	1379	1816	445	862	0	0	884	0	0
Stage 1	884	884	-	919	919	-	-	-	-	-	-	-
Stage 2	480	931	-	460	897	-	-	-	-	-	-	-
Critical Hdwy	7.54	6.54	6.94	7.54	6.54	6.94	4.14	-	-	4.14	-	-
Critical Hdwy Stg 1	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Follow-up Hdwy	3.52	4.02	3.32	3.52	4.02	3.32	2.22	-	-	2.22	-	-
Pot Cap-1 Maneuver	106	77	570	104	77	561	776	-	-	761	-	-
Stage 1	307	362	-	292	348	-	-	-	-	-	-	-
Stage 2	536	344	-	551	357	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	93	69	568	74	69	559	775	-	-	760	-	-
Mov Cap-2 Maneuver	93	69	-	74	69	-	-	-	-	-	-	-
Stage 1	288	345	-	274	327	-	-	-	-	-	-	-
Stage 2	496	323	-	449	341	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	95.2	47.8	0.5	0.4
HCM LOS	F	E		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	775	-	-	89	568	96	760	-	-
HCM Lane V/C Ratio	0.03	-	-	0.939	0.121	0.126	0.023	-	-
HCM Control Delay (s)	9.8	0.3	-	163.2	12.2	47.8	9.8	0.2	-
HCM Lane LOS	A	A	-	F	B	E	A	A	-
HCM 95th %tile Q(veh)	0.1	-	-	5.3	0.4	0.4	0.1	-	-

Intersection	
Int Delay, s/veh	9.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Traffic Vol, veh/h	40	5	29	5	1	14	36	900	20	21	877	3
Future Vol, veh/h	40	5	29	5	1	14	36	900	20	21	877	3
Conflicting Peds, #/hr	0	0	2	2	0	0	1	0	1	1	0	1
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	0	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	69	69	69	56	56	56	93	93	93	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	58	7	42	9	2	25	39	968	22	22	923	3

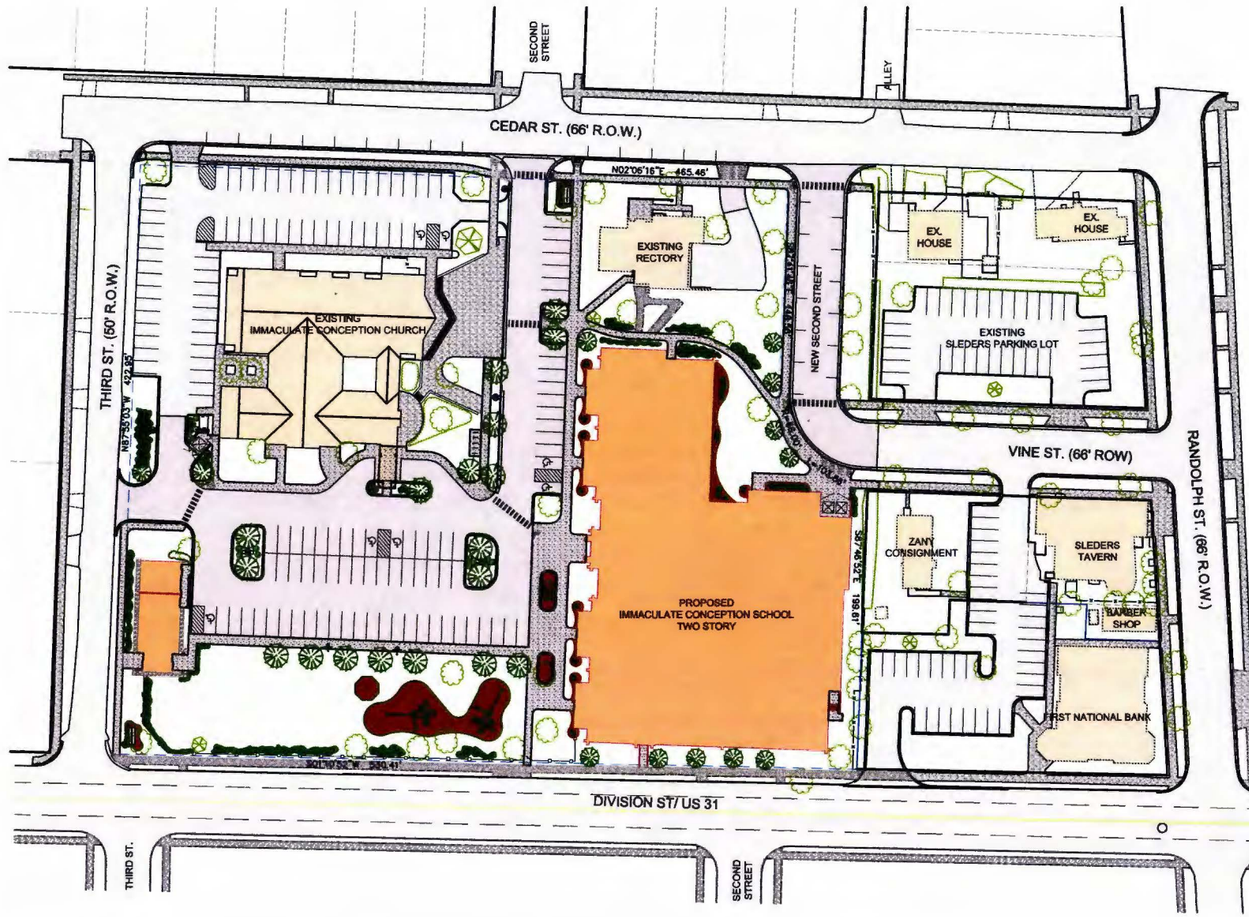
Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1535	2040	466	1569	2031	498	928	0	0	991	0	0
Stage 1	971	971	-	1058	1058	-	-	-	-	-	-	-
Stage 2	564	1069	-	511	973	-	-	-	-	-	-	-
Critical Hdwy	7.54	6.54	6.94	7.54	6.54	6.94	4.14	-	-	4.14	-	-
Critical Hdwy Stg 1	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Follow-up Hdwy	3.52	4.02	3.32	3.52	4.02	3.32	2.22	-	-	2.22	-	-
Pot Cap-1 Maneuver	79	56	543	75	57	518	733	-	-	693	-	-
Stage 1	271	329	-	240	300	-	-	-	-	-	-	-
Stage 2	478	296	-	514	329	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	63	46	541	53	47	517	732	-	-	692	-	-
Mov Cap-2 Maneuver	63	46	-	53	47	-	-	-	-	-	-	-
Stage 1	238	307	-	211	264	-	-	-	-	-	-	-
Stage 2	398	260	-	432	307	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	156.1	39.3	0.9	0.5
HCM LOS	F	E		

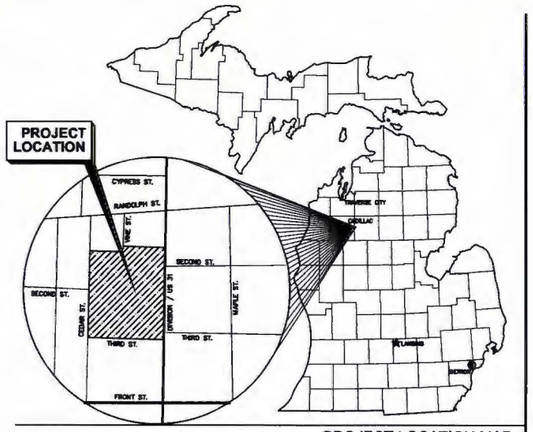
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	732	-	-	61	541	140	692	-	-
HCM Lane V/C Ratio	0.053	-	-	1.069	0.078	0.255	0.032	-	-
HCM Control Delay (s)	10.2	0.6	-	248.8	12.2	39.3	10.4	0.3	-
HCM Lane LOS	B	A	-	F	B	E	B	A	-
HCM 95th %tile Q(veh)	0.2	-	-	5.2	0.3	1	0.1	-	-

IMMACULATE CONCEPTION CAMPUS REDEVELOPMENT PLAN

GRAND TRAVERSE AREA CATHOLIC SCHOOLS AND THE DIOCESE OF GAYLORD



OVERALL DEVELOPMENT MAP



PROJECT LOCATION MAP

Lots 1–5 of Block 5 of Hannah Lay & Co's 3rd Addition, Lots 1–5 of Block 6 of Hannah Lay & Co's 3rd Addition, Lots 5–7 Block 2 of Hannah Lay & Co's 3rd Addition, Lots 5–12 of Block 1, Hannah Lay & Co's 3rd Addition and a portion to land located in Section 4, Town 27 North, Range 11 West, City of Traverse City, Grand Traverse County, Michigan, the entire parcel more fully described as follows:

BEGINNING at the Southeast corner of Lot 5, Block 5, Hannah Lay & Co's 3rd Addition; thence N 87°05'03" W, 422.95 feet; thence N 02°06'16" E, 465.46 feet; thence S 87°41'46" E, 148.56 feet; thence along a 56.00 foot radius curve to the left for a distance of 103.86 feet (central angle =90°06'37", chord bearing =N 47°13'25" E, chord distance = 93.47 feet); thence S 87°46'52" E, 190.81 feet; thence S 01°10'52" W, 530.41 feet to the POINT OF BEGINNING.

Containing 4.80 acres, more or less.

Subject to and together with agreements, covenants, easements, and restrictions of record.

LEGAL DESCRIPTION

SHEET	SHEET TITLE
C0	GENERAL PLAN INFORMATION
C1.0	ZONING SUMMARY AND MASTER FACILITY PLAN
C1.1	SITE DEMOLITION PLAN
C1.2	UTILITY DEMOLITION PLAN
C1.3	SITE PLAN
C1.4	GRADING AND DRAINAGE PLAN
C1.5	UTILITY PLAN
C3.1	ENLARGED VIEW: PANTRY SITE PLAN
C3.2	ENLARGED VIEW: SCHOOL SITE PLAN
C3.3	ENLARGED VIEW: PARKING LOT SITE PLAN
C3.4	ENLARGED VIEW: NEW SECOND STREET

SHEET INDEX

SITE ENGINEER:
jozwiak consulting
p.o. box 5342 | traverse city, mi 49696 | 231-218-1261
www.jozwiakconsulting.com

PLAN DATE HISTORY:
9-15-16 SUBMITTAL SET
10-26-16 PC PUBLIC HEARING

PROJECT:
CAMPUS REDEVELOPMENT PLAN
NEW IMMACULATE CONCEPTION ELEMENTARY SCHOOL

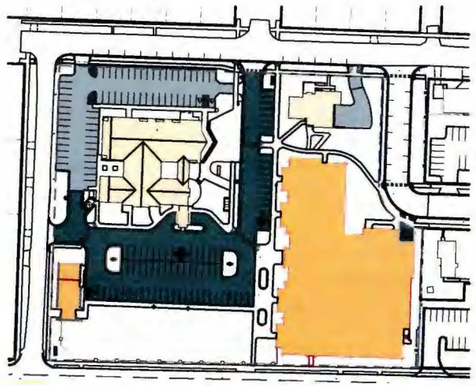
LOCATION:
218 VINE ST.
TRAVERSE CITY, MI

CLIENT:
GRAND TRAVERSE AREA CATHOLIC SCHOOLS
123 E. ELEVENTH ST
TRAVERSE CITY, MI 49684

PROJECT NO.:
2014-107

GENERAL PLAN INFORMATION

C0



MAXIMUM LOT COVERAGE ALLOWED = 70%

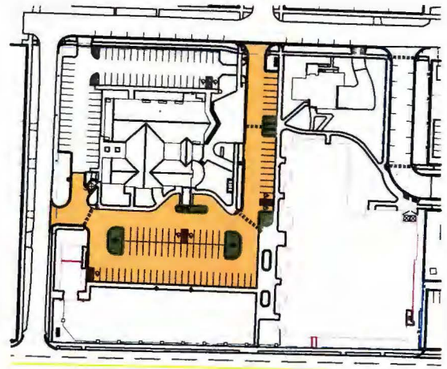
IMPERVIOUS SURFACES			
	EXISTING STRUCTURES	16,662 SF	
	EXISTING DRIVE SURFACES	21,719 SF	
	PROPOSED DRIVE SURFACES	37,325 SF	122,116 SF
	PROPOSED STRUCTURES	44,410 SF	
	TOTAL PARCEL SIZE	209,029 SF	
	PERCENT LOT COVERAGE PROVIDED	58.4%	

LOT COVERAGE CALCULATION

LIGHTING PLAN:
A LIGHTING PLAN WILL BE DEVELOPED PRIOR TO LAND USE APPLICATION.

LIGHTING PLAN WILL BE FULLY COMPLIANT WITH THE CITY ORDINANCE.

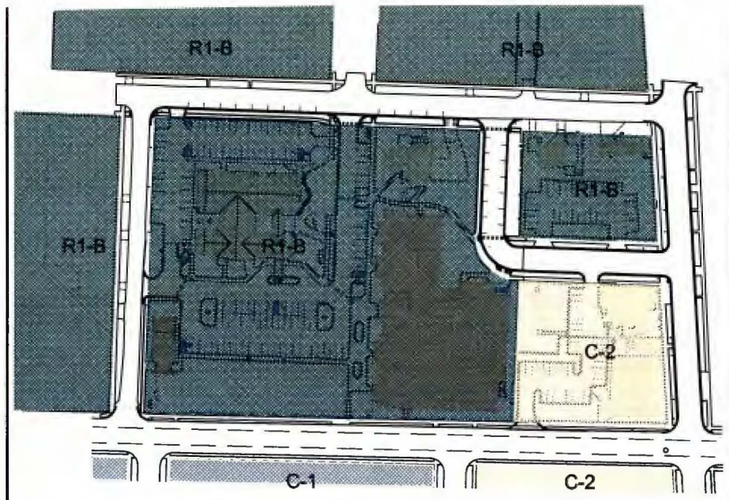
LIGHTING PLAN NOTE



INTERNAL LANDSCAPED ISLANDS TO BE PROVIDED EQUIVALENT TO 6% OF THE IMPROVED PARKING AREA

IMPROVED PARKING AREA	38,500 SF	REQUIRED INTERNAL ISLAND AREA: 38,500 SF X 6% = 2,920 SF
INTERNAL ISLAND AREAS (PROVIDED)	3,300 SF	3,300 SF (PROVIDED) > 2,920 SF (REQUIRED)

PARKING LOT INTERIOR LANDSCAPING CALCULATION



ZONING MAP

EXISTING OFF-STREET PARKING = 138

POST-DEVELOPMENT OFF-STREET PARKING = 139

CAMPUS INCLUDES A CHURCH, PANTRY AND AN ELEMENTARY SCHOOL.

CHURCH	1 PARKING SPACE PER 4 SEATS	520 SEATS	130 PARKING SPACES
SCHOOL	1.5 PARKING SPACES PER CLASSROOM	32 CLASSROOMS	48 PARKING SPACES
		OFF-STREET PARKING PROVIDED	139 PARKING SPACES

SCHOOL AND CHURCH WILL CONTINUE TO SHARE PARKING.

SINCE SIGNIFICANT EVENTS AT THE CHURCH DO NOT OCCUR WHILE SCHOOL IS IN SESSION, PARKING CALCULATION STUDY ONLY INCLUDES THE CHURCH SINCE IT IS GREATER THAN THE REQUIRED NUMBER OF PARKING SPACES FOR THE SCHOOL.

THE DIOCESE ALSO HAS HAD (AND CONTINUES TO HAVE) AGREEMENTS FOR CROSS-SHARING PARKING WITH SLEDERS IN THE EVENT THAT EITHER SLEDERS OR THE CHURCH NEEDS ADDITIONAL CAPACITY. (I.E. SLEDERS BLOCK PARTY OR IC HOLIDAY MASS)

ON-STREET PARKING IS AVAILABLE

PARKING EVALUATION

OVERVIEW
THE PROPOSED TRAFFIC PATTERN DEPICTED ON THIS PLAN IS INTENDED TO PROVIDE AN INITIAL FRAMEWORK FOR THE OPERATION. LIKE MANY THINGS, THIS PATTERN WILL BE AMENDED AS REAL-LIFE CIRCUMSTANCES DICTATE.

STUDENT DROP-OFF/PICK-UP
THE PROPOSED DROP-OFF/PICK-UP PATTERN FOR THE NEW SCHOOL WILL RESULT IN STACKING OF AT LEAST 40 VEHICLES ALL WITHIN THE CAMPUS PROPERTY.

IF DEEMED NECESSARY, A DOUBLE STACKING PATTERN CAN ALSO BE CREATED.

CURRENTLY, STACKING DURING THE DROP-OFF/PICK-UP PERIOD IS UTILIZING 100% RIGHT-OF-WAY THAT INCLUDES SECOND STREET AND CEDAR STREET.

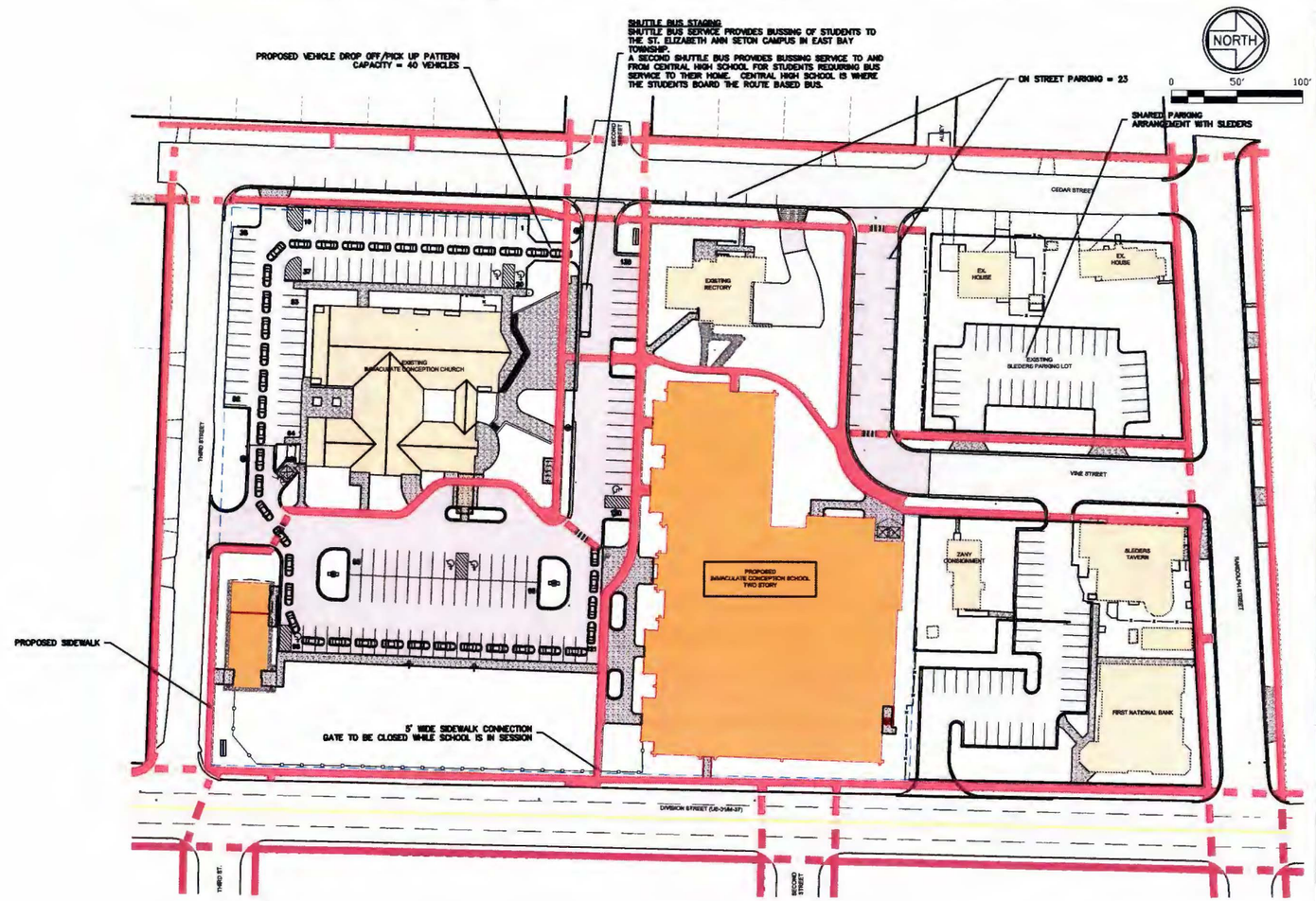
BUSSING SERVICE:
TWO TO THREE TCAPS OPERATED SHUTTLE BUSES WILL BE AT THE SITE AT THE BEGINNING AND END OF THE DAY.

TWO TYPES OF SHUTTLE BUS SERVICE IS PROVIDED.

SHUTTLE BUS SERVICE IS AVAILABLE FOR MIDDLE SCHOOL STUDENTS WHO LIVE ON THE WEST SIDE TO GET TO THE ST. ELIZABETH ANN SETON MIDDLE SCHOOL LOCATED IN EAST BAY TOWNSHIP.

ELEMENTARY STUDENTS WHO UTILIZE TCAPS BUSSING SERVICE ARE TRANSPORTED TO AND FROM CENTRAL HIGH SCHOOL WHERE THE STUDENTS HOME ROUTE BUS IS LOCATED. ROUTE BUSSING DOES NOT ORIGINATE FROM THE IMMACULATE CONCEPTION CAMPUS.

STUDENT DROP-OFF AND PICK-UP EVALUATION



PEDESTRIAN, PARKING AND CIRCULATION PLAN

SITE ENGINEER:
jozwiak consulting
p.o. box 5342 | traverse city, mi 49696 | 231-218-1291
www.jozwiakconsulting.com

PLAN DATE HISTORY:
9-12-16 SUBMITTAL SET
10-26-16 PC PUBLIC HEARING

PROJECT:
CAMPUS REDEVELOPMENT PLAN
NEW IMMACULATE CONCEPTION ELEMENTARY SCHOOL

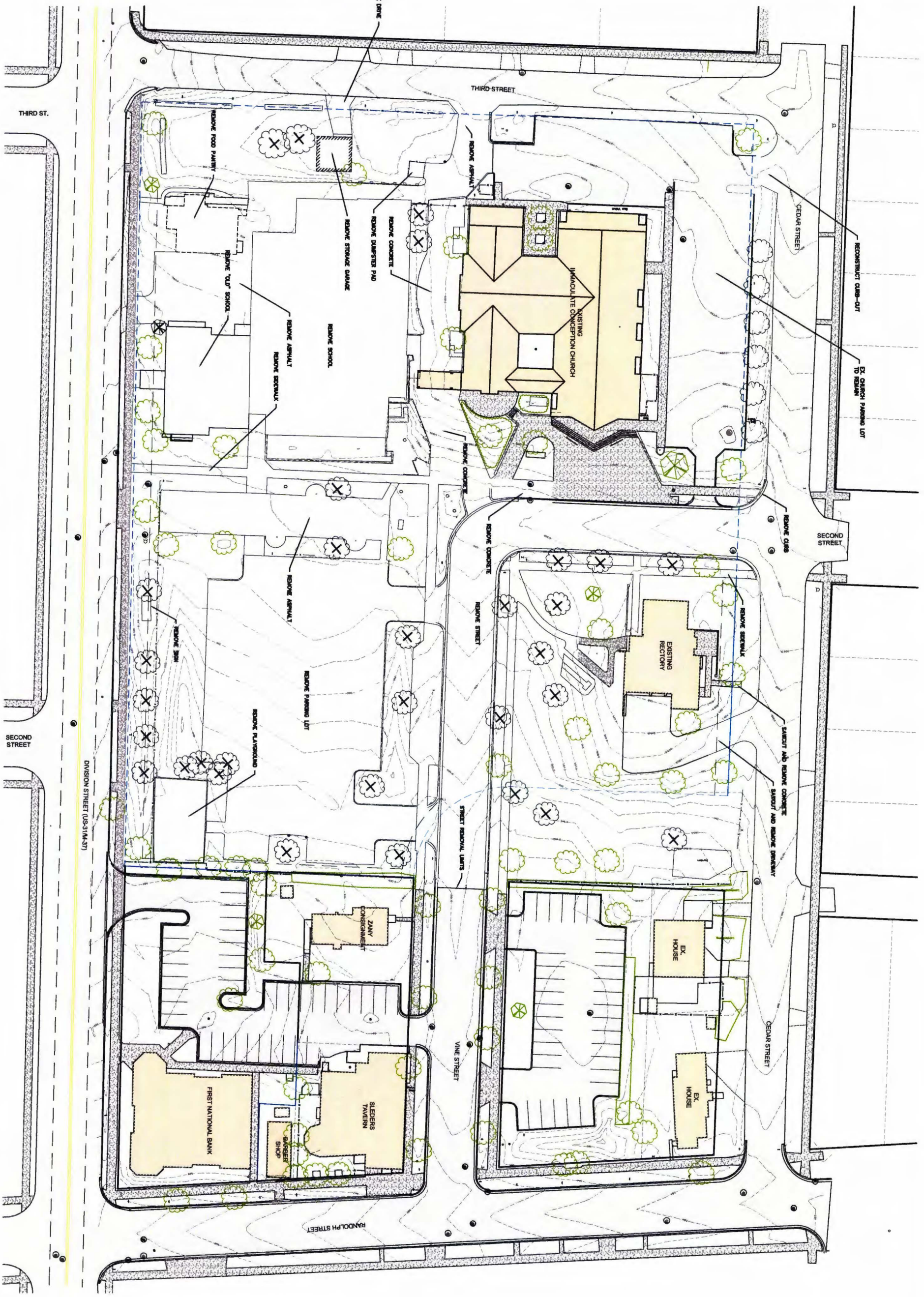
CLIENT:
GRAND TRAVERSE AREA CATHOLIC SCHOOLS
123 E. ELEVENTH ST
TRAVERSE CITY, MI 49684

LOCATION:
218 VINE ST.
TRAVERSE CITY, MI

PROJECT NO.:
2014-107

ZONING SUMMARY & MASTER FACILITY PLAN

C1.0



EXISTING CONDITIONS AND DEMOLITION PLAN

C1.1

PROJECT NO: 2014-107

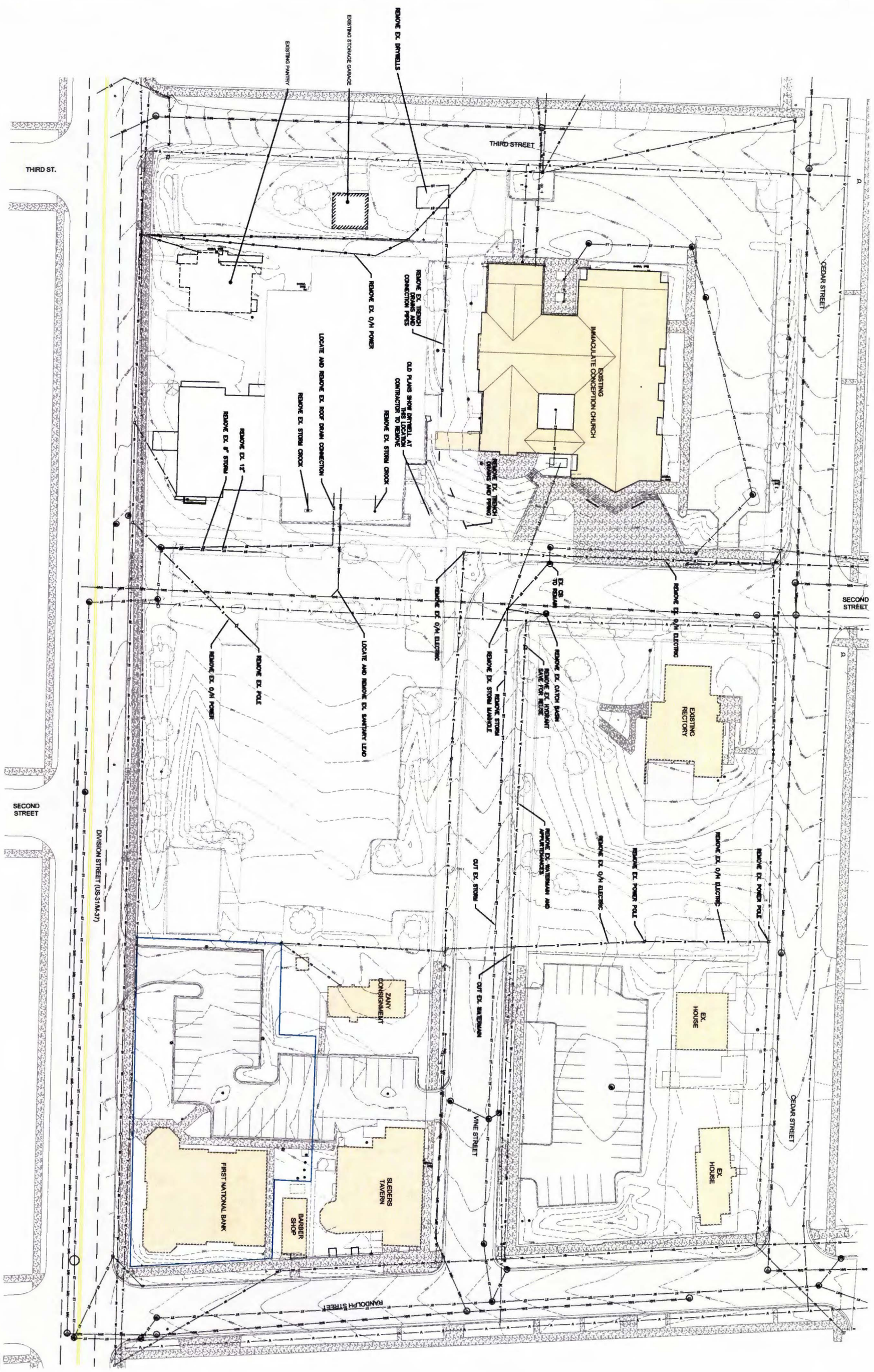
PROJECT:
CAMPUS REDEVELOPMENT PLAN
NEW IMMACULATE CONCEPTION ELEMENTARY SCHOOL

CLIENT:
GRAND TRAVERSE AREA CATHOLIC SCHOOLS
123 E. ELEVENTH ST
TRAVERSE CITY, MI 49684

LOCATION:
218 VINE ST.
TRAVERSE CITY, MI

PLAN DATE HISTORY:
9-12-18 SUBMITTAL SET.
10-26-18 PC PUBLIC HEARING

SITE ENGINEER:
jozwiak consulting
p.o. box 5342 | traverse city, mi 49696 | 231-218-1201
www.jozwiakconsulting.com



C1.2

UTILITY DEMOLITION PLAN

PROJECT NO.: 2014-107

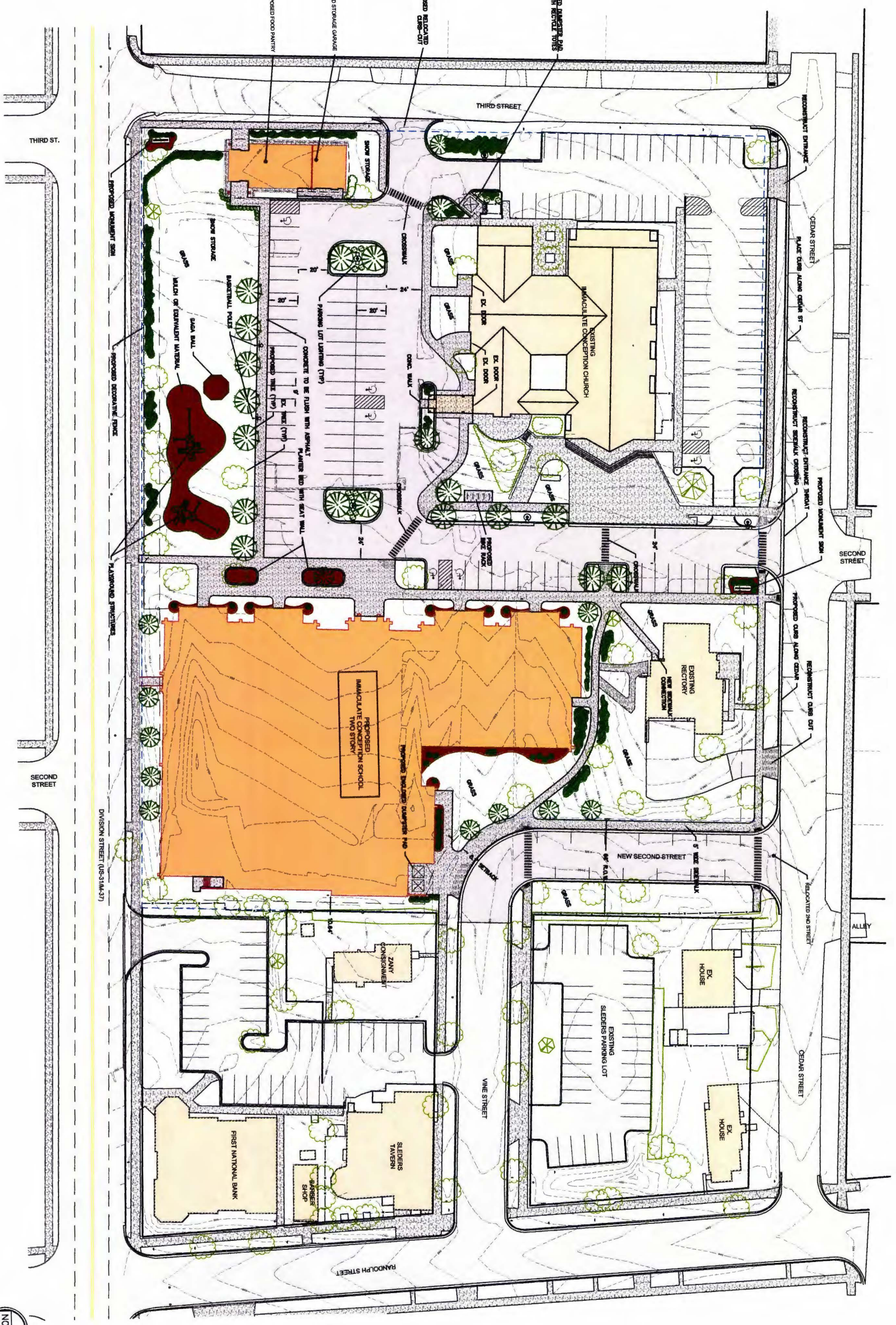
PROJECT:
CAMPUS REDEVELOPMENT PLAN
NEW IMMACULATE CONCEPTION ELEMENTARY SCHOOL

CLIENT:
GRAND TRAVERSE AREA CATHOLIC SCHOOLS
123 E. ELEVENTH ST
TRAVERSE CITY, MI 49684

LOCATION:
218 VINE ST.
TRAVERSE CITY, MI

PLAN DATE HISTORY:
9-12-16 SUBMITTAL SET.
10-26-16 PC PUBLIC HEARING

SITE ENGINEER:
jozwiak consulting
p.o. box 5342 | traverse city, mi 49696 | 231-218-1201
www.jozwiakconsulting.com



C1.3

SITE PLAN

PROJECT NO: 2014-107

PROJECT:
CAMPUS REDEVELOPMENT PLAN
NEW IMMACULATE CONCEPTION ELEMENTARY SCHOOL

CLIENT:
GRAND TRAVERSE AREA CATHOLIC SCHOOLS
123 E. ELEVENTH ST
TRAVERSE CITY, MI 49684

LOCATION:
218 VINE ST.
TRAVERSE CITY, MI

PLAN DATE HISTORY:
9-12-16 SUBMITTAL SET.
10-26-16 PC PUBLIC HEARING

SITE ENGINEER:
jozwiak consulting
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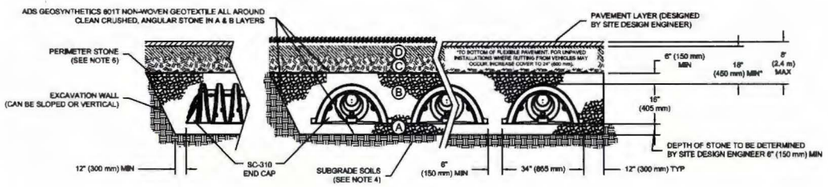
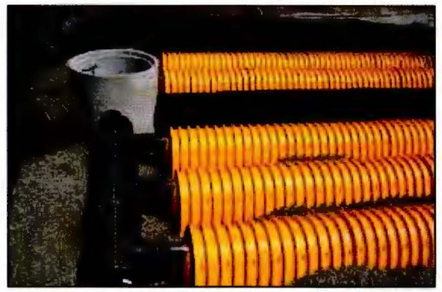




DETAILS AND IMAGE ABOVE REPRESENTS ONE POSSIBILITY FOR THE UNDERGROUND STORMWATER INFILTRATION SYSTEM AND PROVIDES A VISUAL AID FOR THE PROPOSED SYSTEM.

UPON COMPLETION, NO VISIBLE EVIDENCE OF THE UNDERGROUND SYSTEM WILL EXIST WITH THE EXCEPTION OF THE CATCH BASIN INLET GRATES AND INSPECTION PORTS THAT ARE FLUSH WITH THE ASPHALT.

STORMTECH SC310 IS DEPICTED. OTHER MODELS PROVIDED BY STORMTECH WILL BE CONSIDERED.

CONSIDERATIONS INCLUDE:
STORMTECH CHAMBERS
ADS PERFORATED PIPE
CONTECH CHAMBERMAXX
TRITON

THE PROPOSED STORM SYSTEM WILL CENTER ON A LARGE UNDERGROUND STORMWATER INFILTRATION SYSTEM THAT IS DESIGNED TO BE LOCATED UNDER THE NEW PARKING LOT.

SOIL BORINGS IN PROXIMITY OF THE PROPOSED SYSTEM CONSIST OF SAND/FINE SAND WITH A HIGH INFILTRATION CAPACITY. FURTHER TESTING OF THE SOILS WILL IDENTIFY THE EXACT INFILTRATION CAPACITY THAT WILL BE USED IN THE DESIGN. FOR OUR INITIAL DESIGN, AN INFILTRATION RATE OF 10 IN/HR IS ASSUMED.

THE EXISTING CAMPUS WITH THE EXCEPTION OF THE MAIN PARKING LOT AND THE CONCRETE BETWEEN THE EXISTING SCHOOL AND CHURCH IS CONNECTED EITHER DIRECTLY OR INDIRECTLY TO THE CITY STORM SEWER SYSTEM.

THE PROPOSED DEVELOPMENT WHICH INCLUDES BOTH THE REMAINING EXISTING STRUCTURES AS WELL AS THE NEW SCHOOL AND THE OLD SECOND STREET WILL BE MANAGED BY THE UNDERGROUND STORMWATER MANAGEMENT SYSTEM. THE AREA DRAINING TO THE UNDERGROUND SYSTEM IS DEPICTED IN THE PLAN.

THE BASIS OF DESIGN FOR THE STORMWATER SYSTEM IS FOR THE 25 YEAR FREQUENCY STORM EVENT. TYPICALLY THIS BASIS OF DESIGN WOULD DISCOUNT FROM THE DESIGN A PORTION OF THE PREVIOUS FLOWS INTO THE STORM SYSTEM. THIS DESIGN DOES NOT TAKE THAT INTO ACCOUNT AND THEREFORE PROVIDES A HIGHER LEVEL OF CAPACITY. THIS CAPACITY TAKES INTO CONSIDERATION ALL IMPERVIOUS AREAS WITHIN THE DRAINAGE DISTRICT AND INCLUDES BUILDING, ASPHALT, CONCRETE AND CONCRETE SIDEWALKS.

FOR STORMS IN EXCESS OF THE 25 YEAR EVENT, AN OVERFLOW CONNECTION WILL BE MADE WITH THE EXISTING STORM SEWER SYSTEM. THIS STRUCTURE WILL BE CONSTRUCTED TO REGULATE THE ELEVATION AT WHICH STORMWATER WILL EXIT THE SITE AND WILL ALSO BE MADE ADJUSTABLE SUCH THAT EXITING FLOW RATES CAN BE REGULATED.

CALCULATIONS HAVE BEEN COMPLETED THAT DEMONSTRATE THE PROPOSED SYSTEM IS VALID. A FINAL DESIGN AND DETAILING OF THE UNDERGROUND SYSTEM IS BEING PREPARED. WE ARE CONDUCTING A COST/BENEFIT ANALYSIS OF THE VARIOUS MANUFACTURERS AND WILL WORK TO FINALIZE THAT DESIGN PRIOR TO THE PUBLIC HEARING.

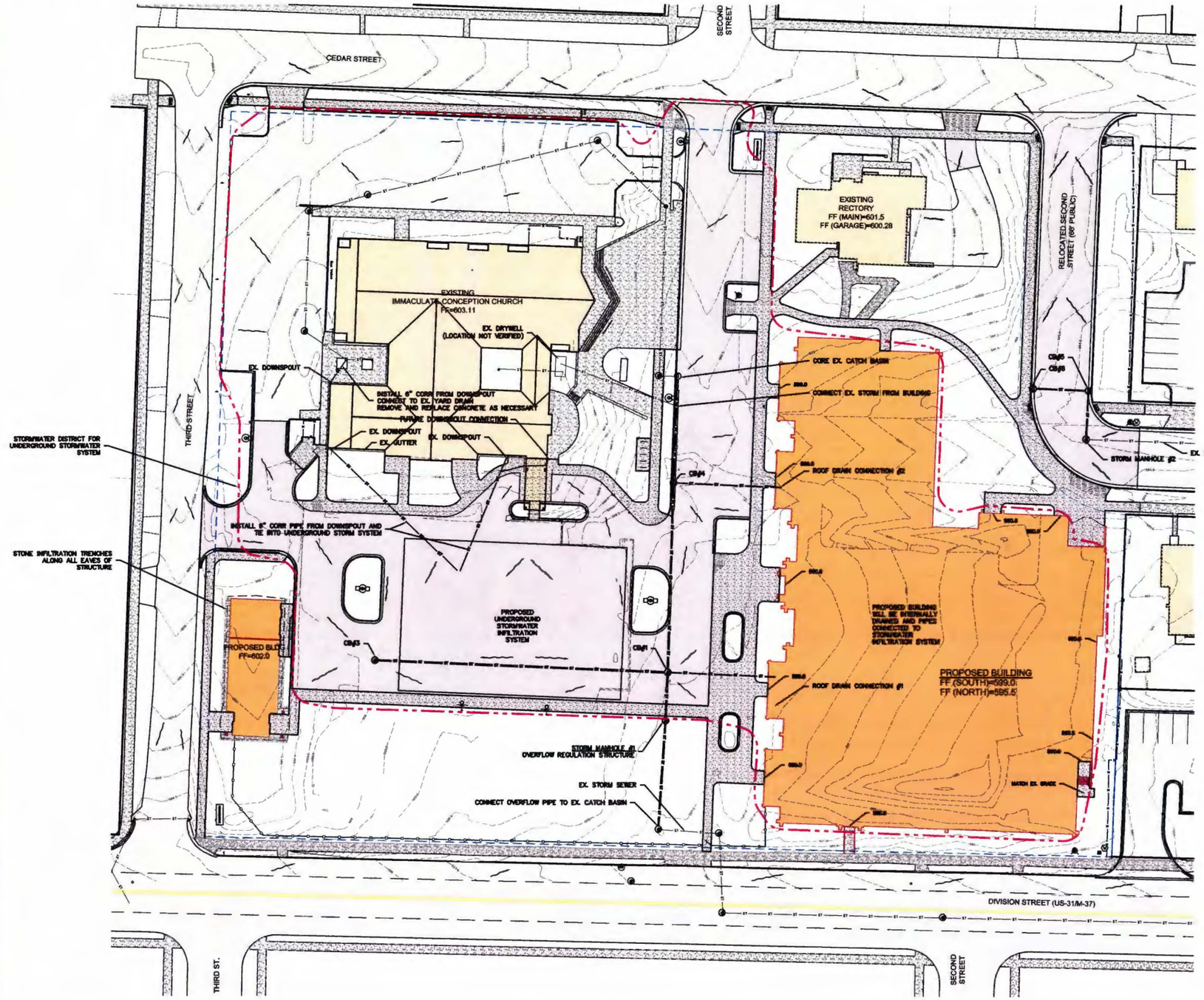
STORMWATER MANAGEMENT FOR THE NEW SECOND STREET WILL INCLUDE A NEW SERIES OF CATCH BASINS CONNECTED TO THE CITY STORM SEWER.

WATER TABLE AT THE LOCATION OF THE PROPOSED UNDERGROUND SYSTEM IS 590.5 AS MEASURED SEPTEMBER 10, 2015.

BOTTOM OF STONE WILL BE SET AT 591.5.

FINISH GRADE OVER SYSTEM WILL BE 601.1 (APPROX)

STORMWATER MANAGEMENT PLAN



SITE ENGINEER:
jozwiak consulting
p.o. box 5342 | traverse city, mi 49696 | 231-316-1201
www.jozwiakconsulting.com

PLAN DATE HISTORY:
9-12-16 SUBMITTAL SET
10-26-16 PC PUBLIC HEARING

PROJECT:
CAMPUS REDEVELOPMENT PLAN
NEW IMMACULATE CONCEPTION ELEMENTARY SCHOOL

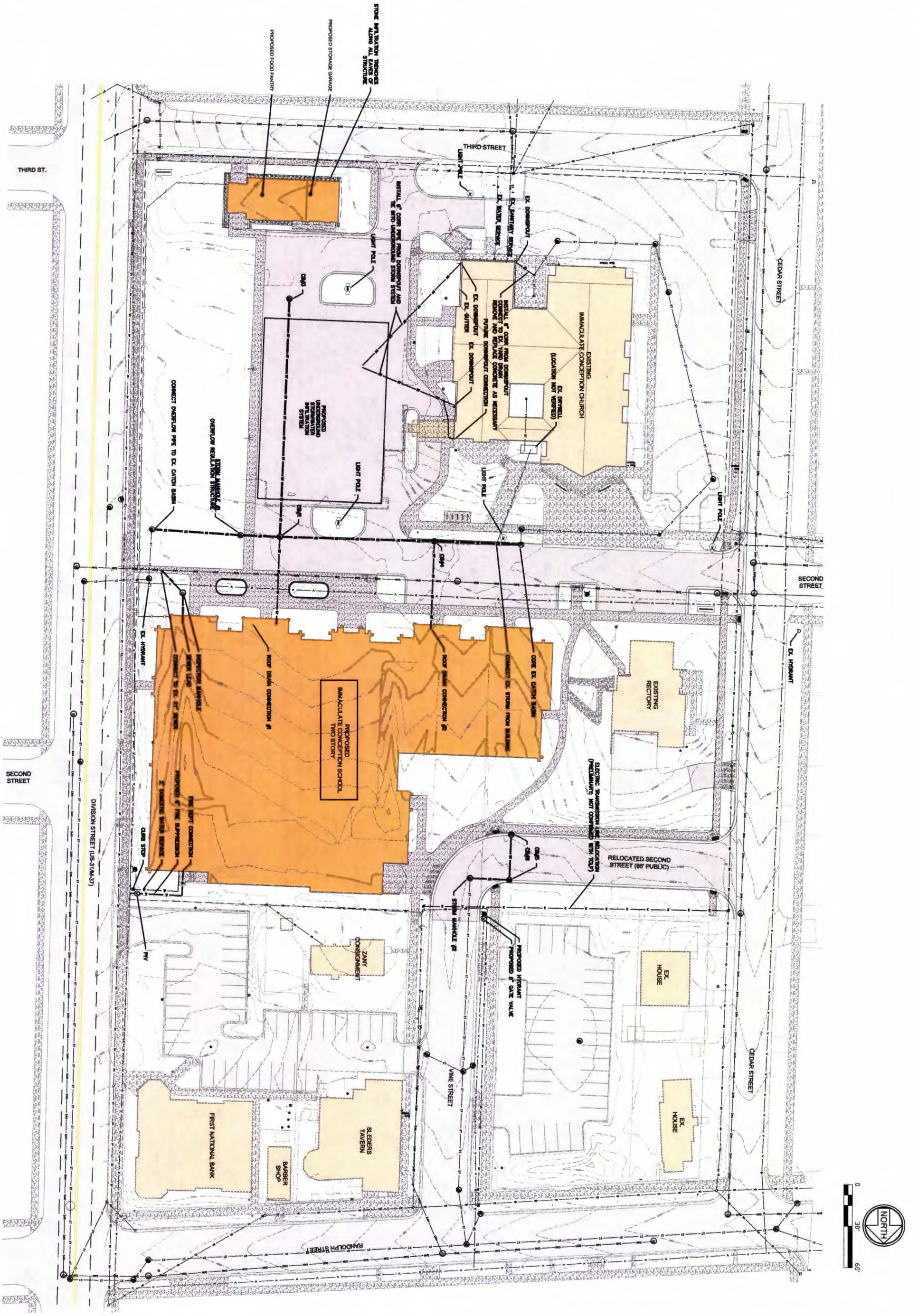
LOCATION:
218 VINE ST.
TRAVERSE CITY, MI

CLIENT:
GRAND TRAVERSE AREA CATHOLIC SCHOOLS
123 E. ELEVENTH ST
TRAVERSE CITY, MI 49684

PROJECT NO.:
2014-107

GRADING AND DRAINAGE PLAN

C1.4



C1.5

UTILITY PLAN

PROJECT NO: 2014-107

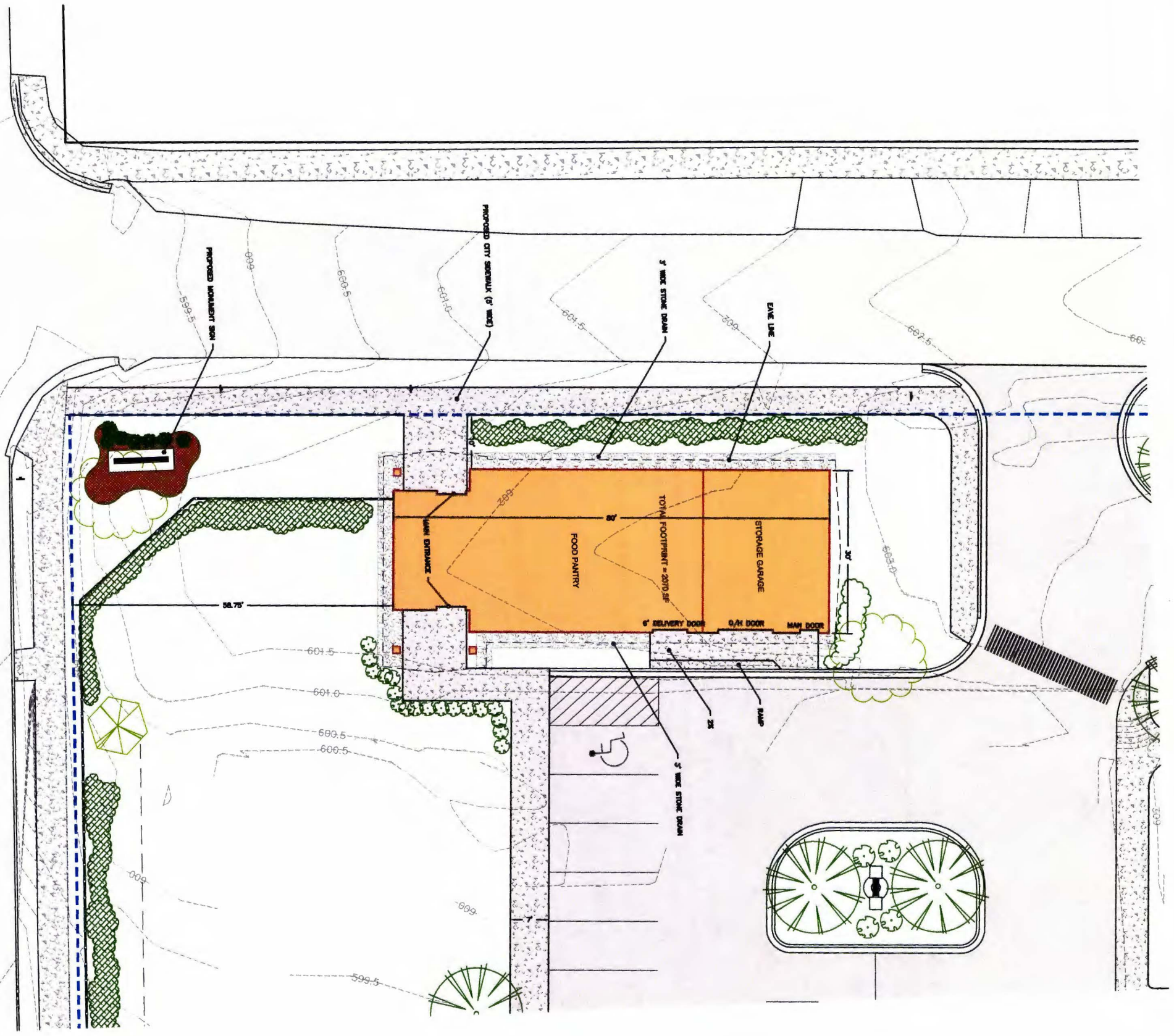
PROJECT:
CAMPUS REDEVELOPMENT PLAN
NEW IMMACULATE CONCEPTION ELEMENTARY SCHOOL

CLIENT:
GRAND TRAVERSE AREA CATHOLIC SCHOOLS
123 E. ELEVENTH ST
TRAVERSE CITY, MI 49684

LOCATION:
218 VINE ST.
TRAVERSE CITY, MI

PLAN DATE HISTORY:
9-12-16 SUBMITTAL SET.
10-26-16 PC PUBLIC HEARING

SITE ENGINEER:
jozwiak consulting
p.o. box 5342 | traverse city, mi 49696 | 231-218-1201
www.jozwiakconsulting.com



C3.1

PANTRY SITE PLAN

PROJECT NO: 2014-107

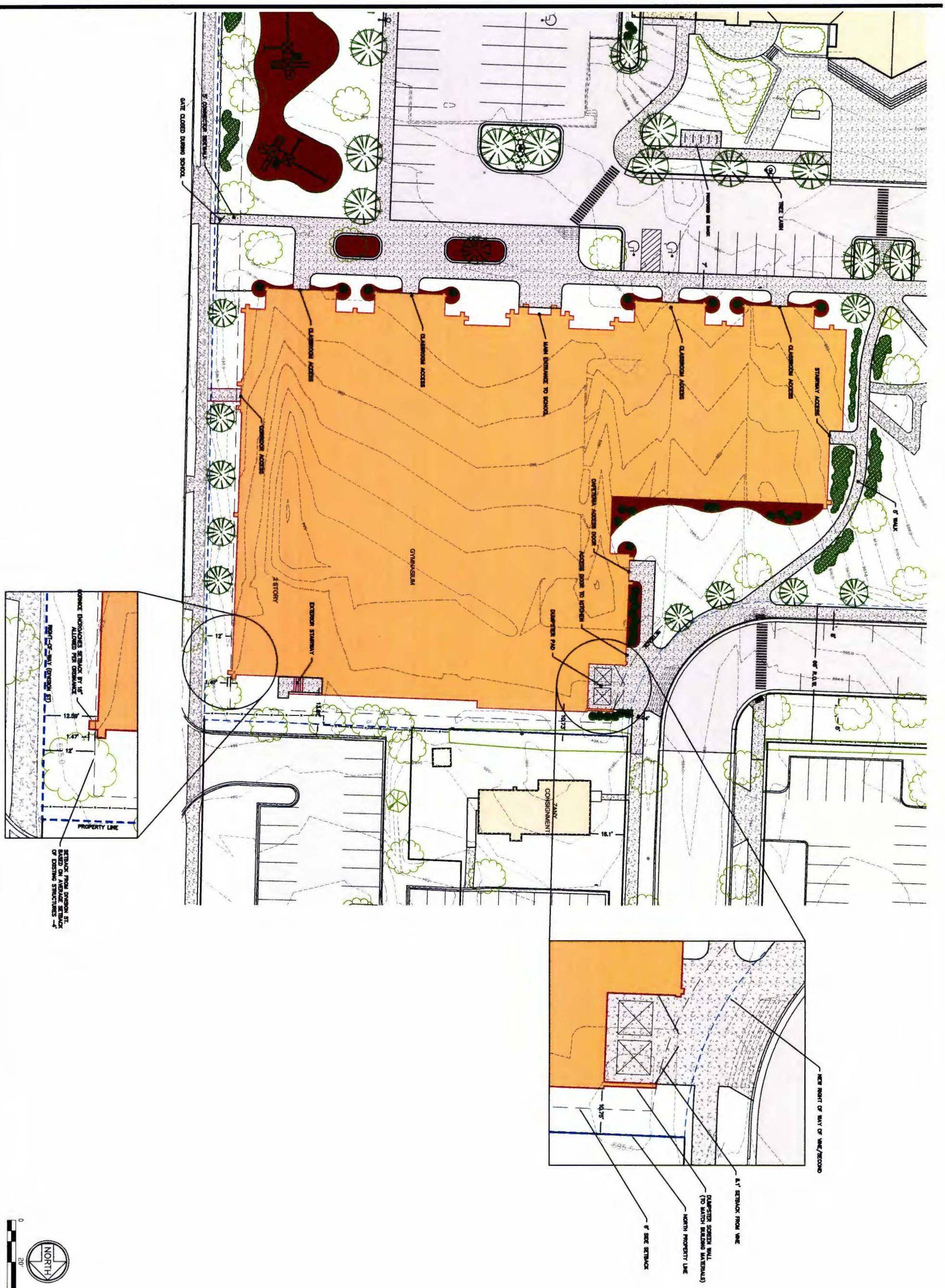
PROJECT:
CAMPUS REDEVELOPMENT PLAN
NEW IMMACULATE CONCEPTION ELEMENTARY SCHOOL

CLIENT:
GRAND TRAVERSE AREA CATHOLIC SCHOOLS
123 E. ELEVENTH ST
TRAVERSE CITY, MI 49684

LOCATION:
218 VINE ST.
TRAVERSE CITY, MI

PLAN DATE HISTORY:
9-12-16 SUBMITTAL SET.
10-26-16 PC PUBLIC HEARING

SITE ENGINEER:
jozwiak consulting
p.o. box 5342 | traverse city, mi 49696 | 231-218-1201
www.jozwiakconsulting.com



C3.2

SCHOOL SITE PLAN

PROJECT NO.: 2014-107

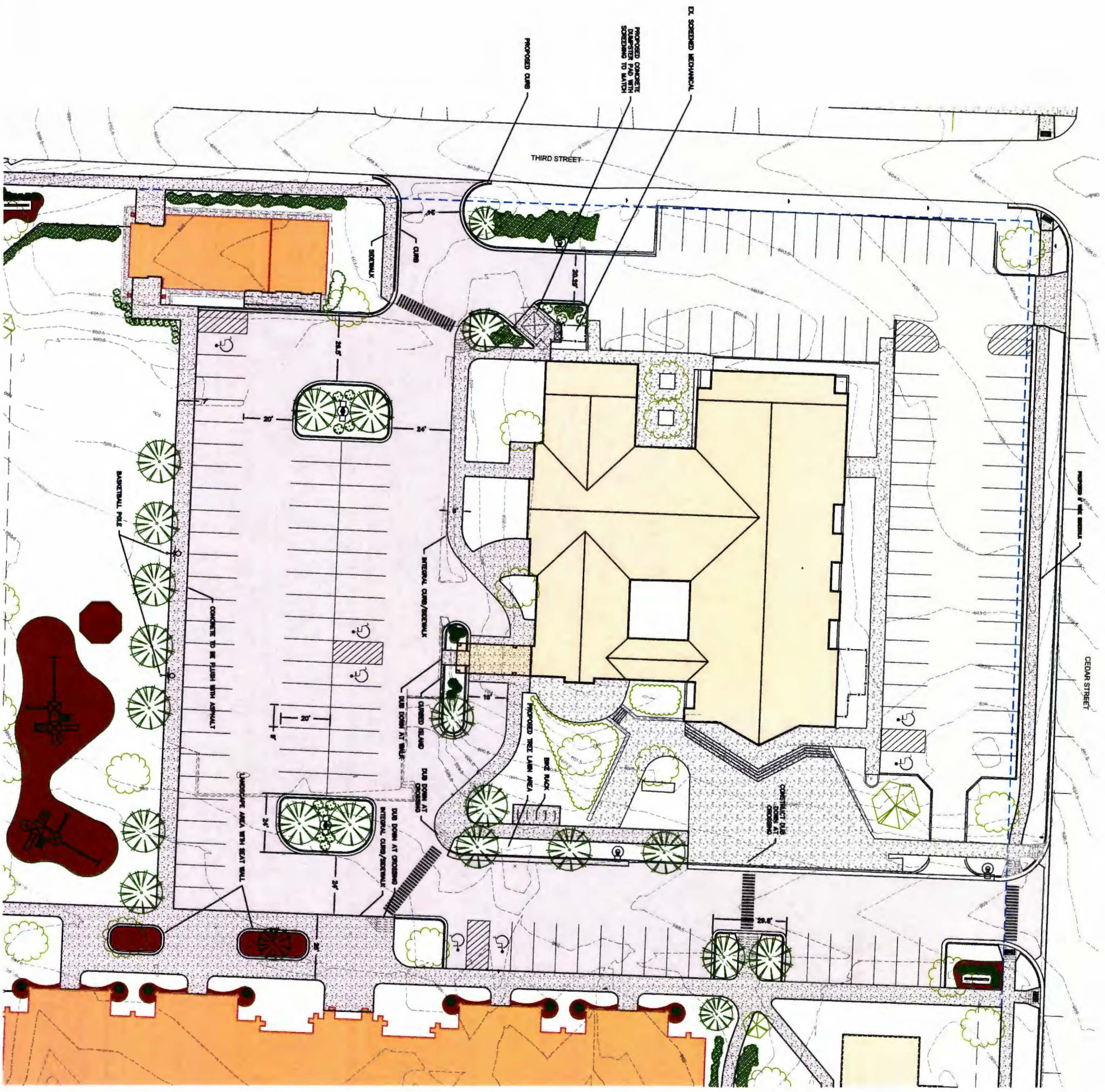
PROJECT:
CAMPUS REDEVELOPMENT PLAN
NEW IMMACULATE CONCEPTION ELEMENTARY SCHOOL

CLIENT:
GRAND TRAVERSE AREA CATHOLIC SCHOOLS
123 E. ELEVENTH ST
TRAVERSE CITY, MI 49684

LOCATION:
218 VINE ST.
TRAVERSE CITY, MI

PLAN DATE HISTORY:
9-12-16 SUBMITTAL SET.
10-26-16 PC PUBLIC HEARING

SITE ENGINEER:
jozwiak consulting
p.o. box 5342 | traverse city, mi 49696 | 231-218-1201
www.jozwiakconsulting.com



C3.3

PARKING LOT SITE PLAN

PROJECT NO: 2014-107

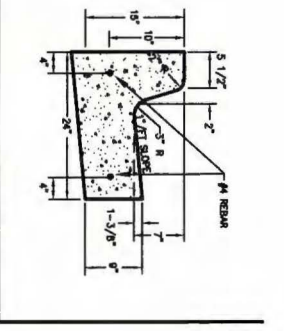
PROJECT:
CAMPUS REDEVELOPMENT PLAN
NEW IMMACULATE CONCEPTION ELEMENTARY SCHOOL

CLIENT:
GRAND TRAVERSE AREA CATHOLIC SCHOOLS
123 E. ELEVENTH ST
TRAVERSE CITY, MI 49684

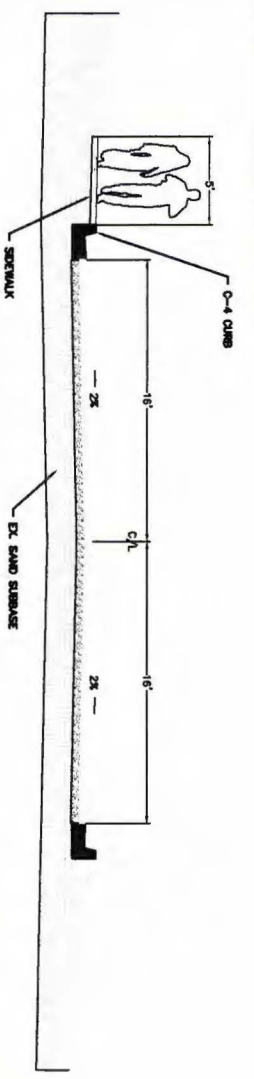
LOCATION:
218 VINE ST.
TRAVERSE CITY, MI

PLAN DATE HISTORY:
9-12-18 SUBMITTAL SET.
10-26-18 PC PUBLIC HEARING

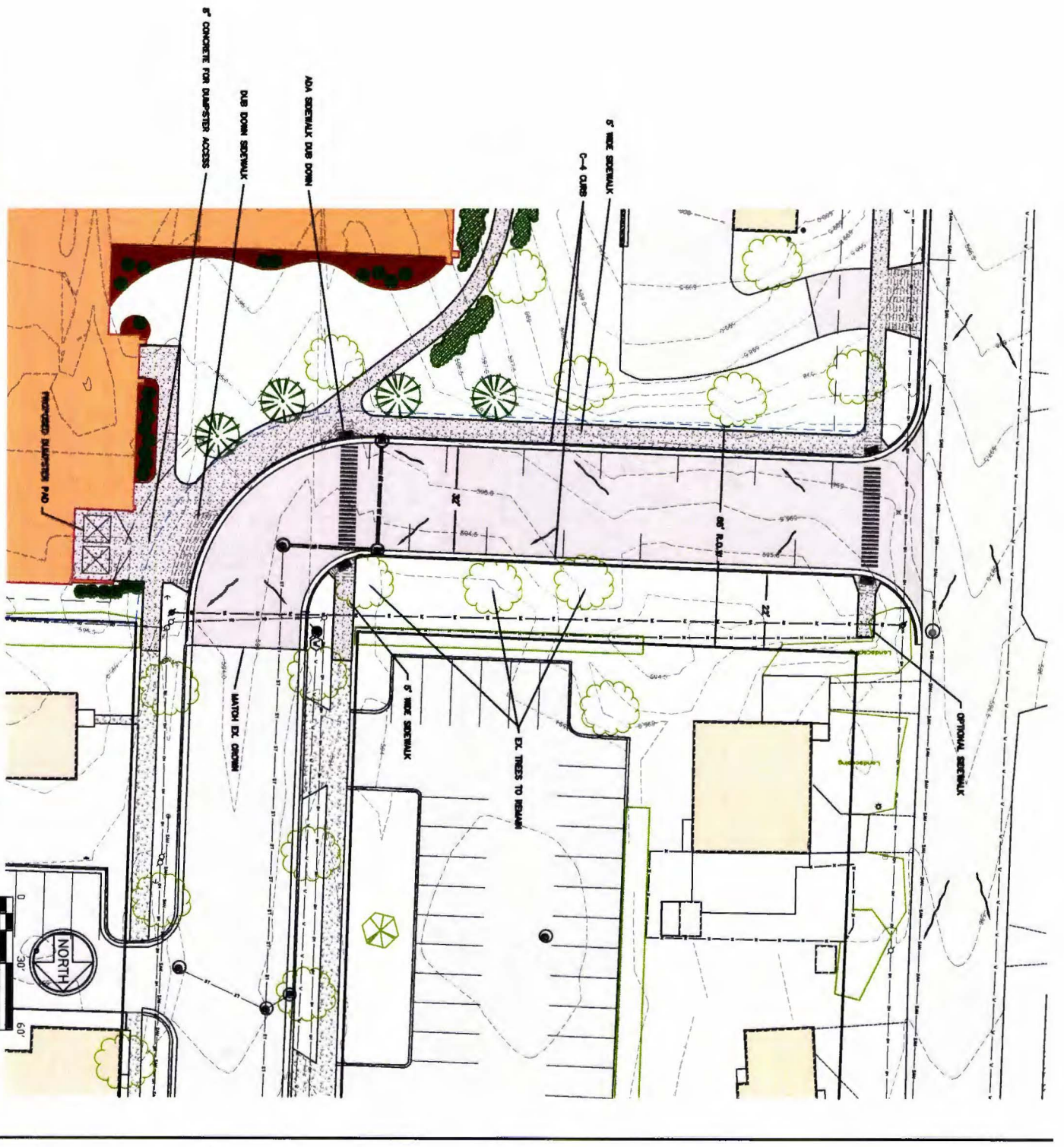
SITE ENGINEER:
jozwiak consulting
p.o. box 5342 | traverse city, mi 49696 | 231-218-1201
www.jozwiakconsulting.com



C-4 CURB DETAIL



SECOND STREET CROSS-SECTION



SECOND STREET CROSS-SECTION

C3.4

SECOND STREET PLAN

PROJECT NO: 2014-107

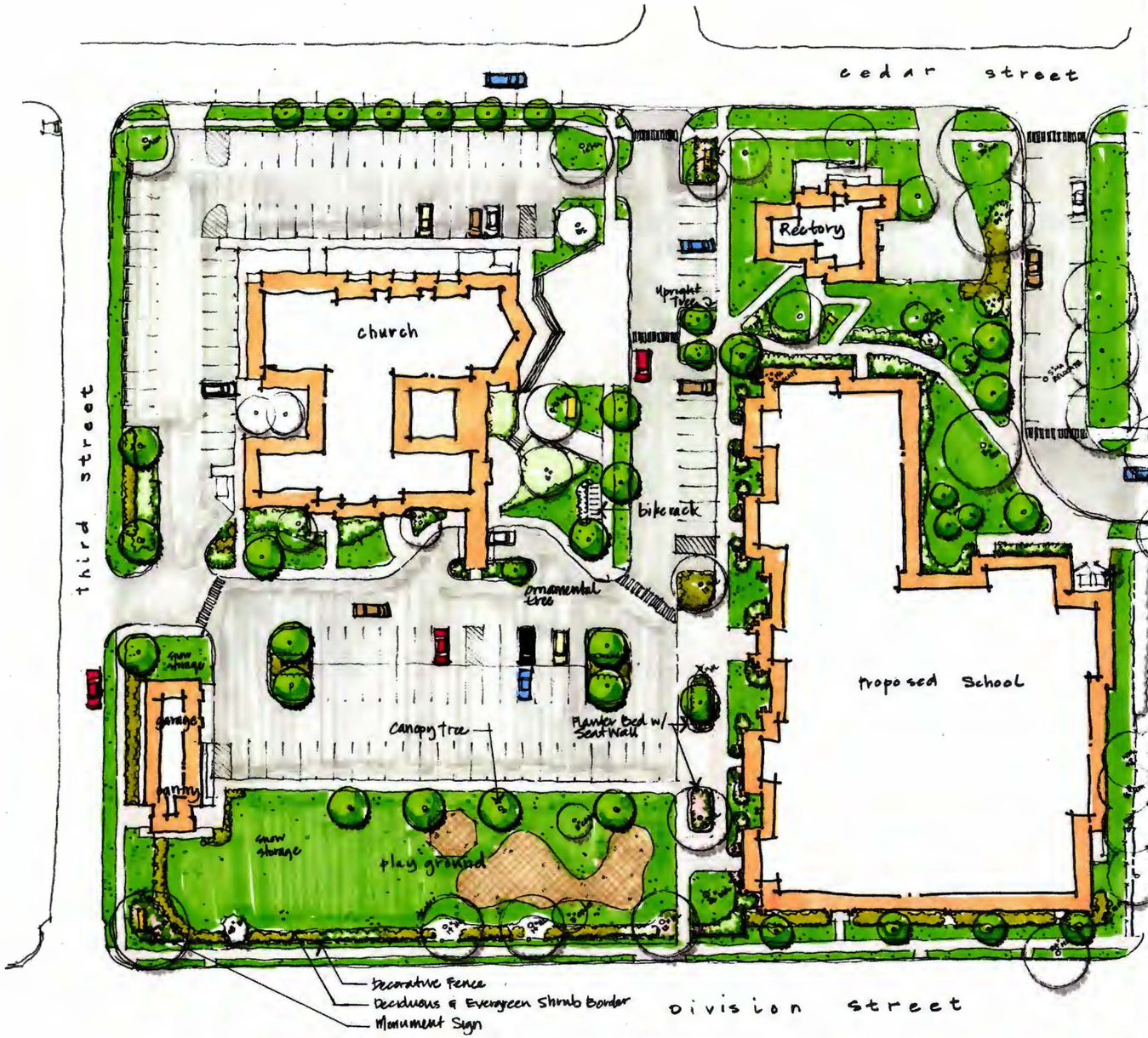
PROJECT:
CAMPUS REDEVELOPMENT PLAN
NEW IMMACULATE CONCEPTION ELEMENTARY SCHOOL

CLIENT:
GRAND TRAVERSE AREA CATHOLIC SCHOOLS
123 E. ELEVENTH ST
TRAVERSE CITY, MI 49684

LOCATION:
218 VINE ST.
TRAVERSE CITY, MI

PLAN DATE HISTORY:
9-12-16 SUBMITTAL SET.
10-26-16 PC PUBLIC HEARING

SITE ENGINEER:
jozwiak consulting
p.o. box 5342 | traverse city, mi 49696 | 231-218-1201
www.jozwiakconsulting.com



CANOPY TREES:


SUGAR MAPLE


RED OAK


HONEYLOCUST

ORNAMENTAL TREES:

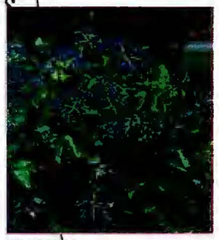

SERVICEBERRY


CRABAPPLE

DECIDUOUS & EVERGREEN SHRUBS:


LIMELIGHT HYDRANGEA


BROADMOOR JUNIPER


VIBURNUM


ANTHONY WATERER SPIREA


DENSE YEW

PERENNIALS:


ROZANNE GERANIUM


ELEGANS HOSTA


CAREX 'ICE DANCE'


PRAIRIE DROPSEED


BLACKEYED STELLA DAYLILY

SCALE: 1"=30'-0"

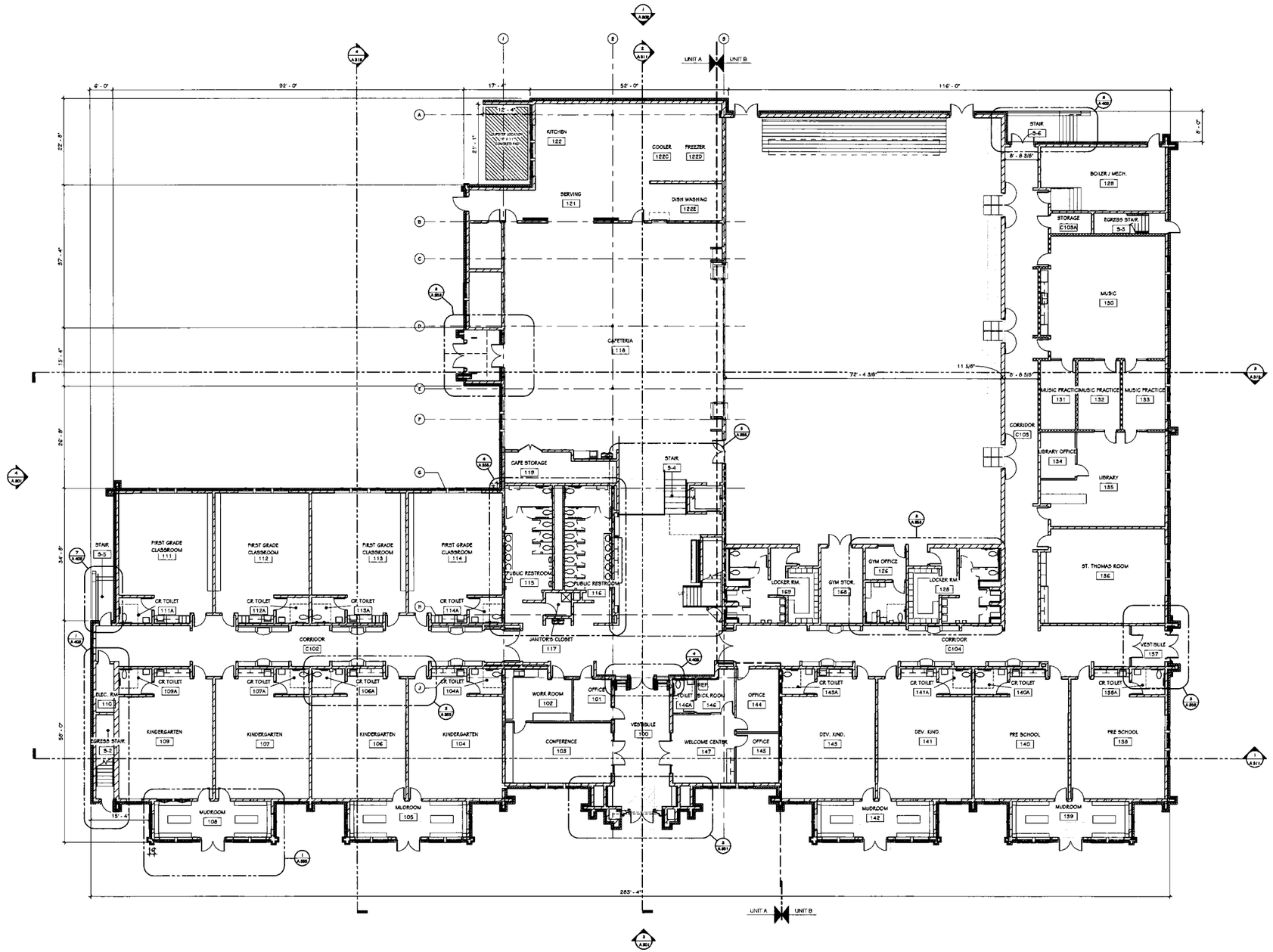
0 15 30 60 90

ANITA SILVERMAN
LANDSCAPE ARCHITECT
231.932.1923
330 W. 7th Street
Traverse City, MI 49684
asilvermanla@charter.net
silvermanlandscapes.com

LANDSCAPE DEVELOPMENT PLAN
IMMACULATE CONCEPTION CAMPUS
CITY OF TRAVERSE CITY, MICHIGAN

REVISIONS:
7.15.16
10.23.16 sidewalk

DSGN. BY: ACS
DRN. BY: ACS
DATE: 7.25.16
TITLE: conceptual landscape plan
JOB NO.: 1616
SHEET: L1



TowerPinkster
ARCHITECTS | ENGINEERS

Tower Pinkster Titus Associates Inc.

242 East Kalamazoo Avenue, Suite 200
Kalamazoo, Michigan 49007-5828
269.343.6133 PHONE 269.343.6633 FAX

4 East Fulton Street, Suite 200
Grand Rapids, Michigan 49503
616.456.9944 PHONE 616.456.5836 FAX

TOWERPINKSTER.COM

DATE

MAY 13, 2016

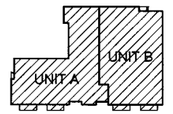
CONSTRUCTION DOCUMENTS 100%

PROJECT TITLE

NEW IMMACULATE CONCEPTION ELEMENTARY SCHOOL

GRAND TRAVERSE AREA CATHOLIC SCHOOLS
TRAVERSE CITY, MI

IMMACULATE CONCEPTION



KEY PLAN
SCALE: NO SCALE

0' 10'
5' 15' 25'
1/8" = 1'-0" GRAPHIC SCALE

ISSUED FOR DATE

SHEET TITLE

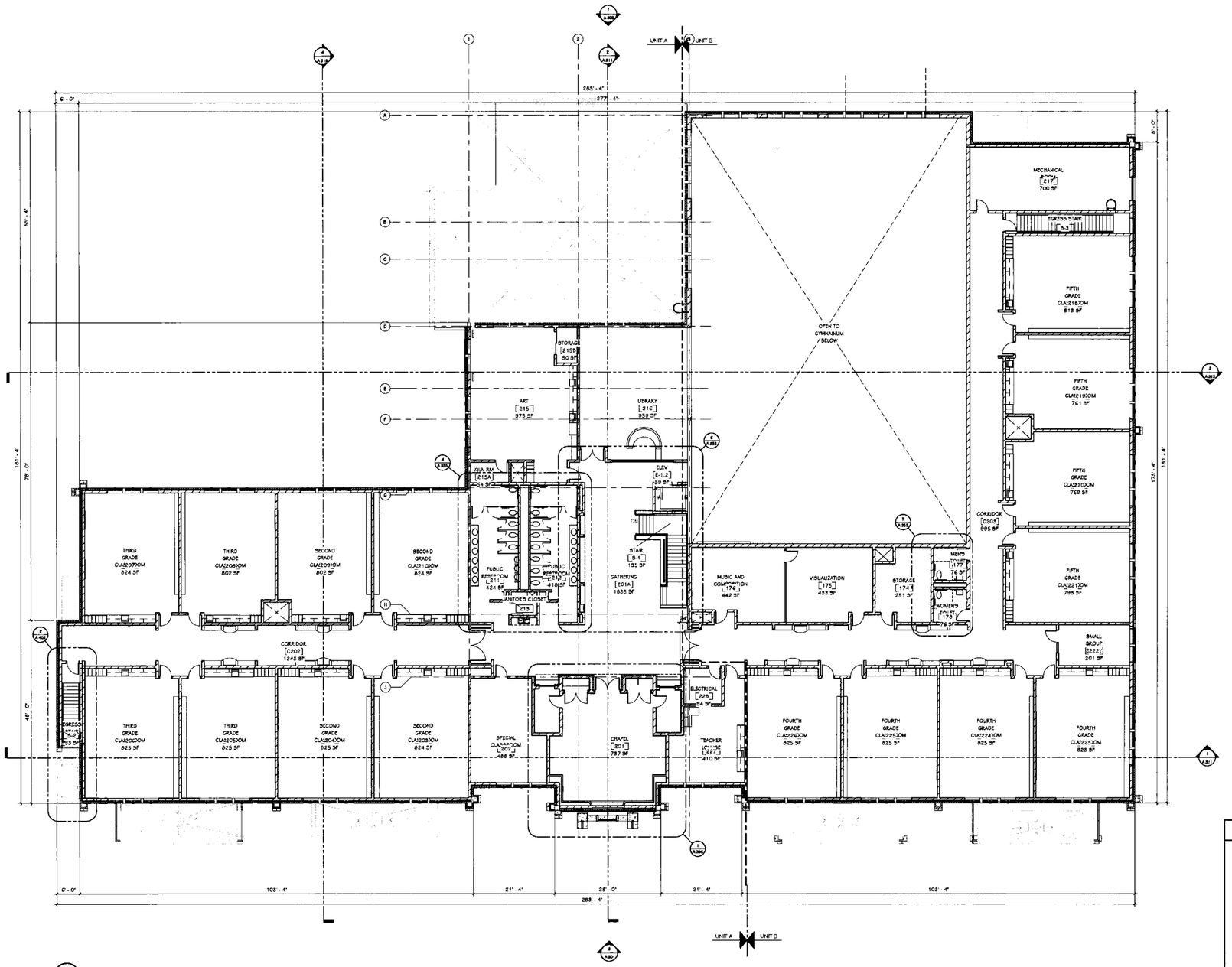
OVERALL FIRST FLOOR PLAN

PRELIMINARY
NOT FOR CONSTRUCTION

SHEET NUMBER

A 101

14188.10



OVERALL SECOND FLOOR PLAN

3/32" = 1'-0"

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4 East Fulton Street Suite 200
Grand Rapids, Michigan 49503
616.456.5644 PHONE 616.456.5936 FAX

TOWERPINKSTER.COM

DATE

MAY 13, 2016

CONSTRUCTION DOCUMENTS 100%

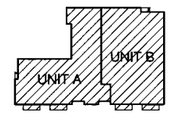
PROJECT TITLE

NEW IMMACULATE CONCEPTION ELEMENTARY SCHOOL

GRAND TRAVERSE AREA CATHOLIC SCHOOLS

TRAVERSE CITY, MI

IMMACULATE CONCEPTION



KEY PLAN

SCALE: NO SCALE

0' 5' 10' 15' 25'

1/8" = 1'-0" GRAPHIC SCALE

ISSUED FOR DATE

SHEET TITLE

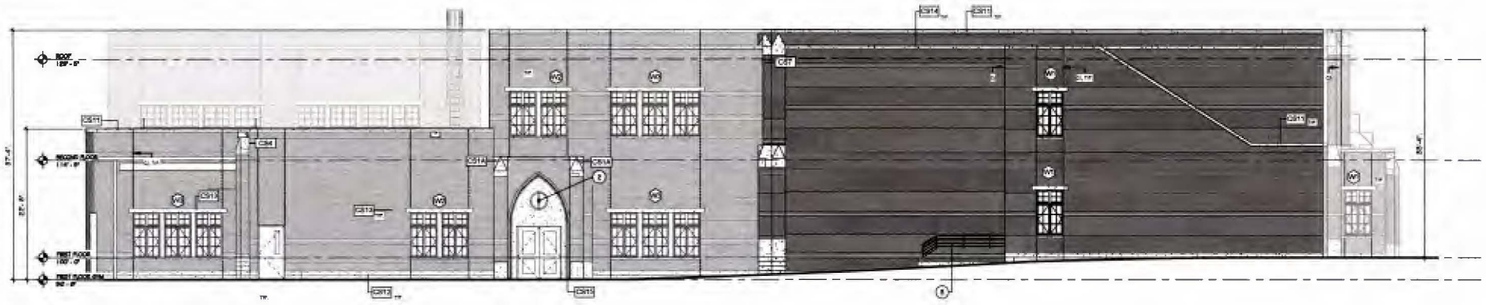
OVERALL SECOND FLOOR PLAN

PRELIMINARY NOT FOR CONSTRUCTION

SHEET NUMBER

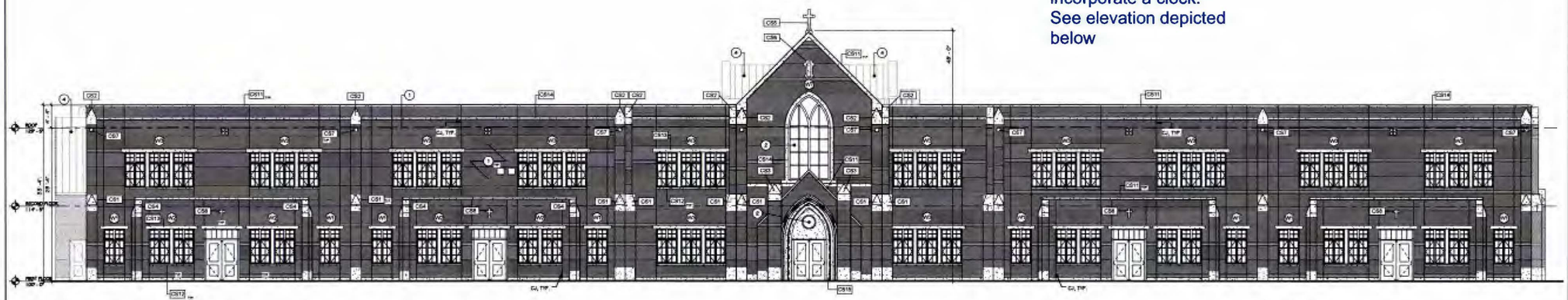
A 102

14188.10



4 A301 WEST ELEVATION
1/8" = 1'-0"

Note:
Front elevation has changed slightly to incorporate a clock. See elevation depicted below



5 A301 SOUTH ELEVATION
1/8" = 1'-0"

EXTERIOR ELEVATION KEY NOTES

1	FACE BRICK
2	STAINED GLASS
3	METAL RAILING
4	STANDING SEAM METAL ROOF

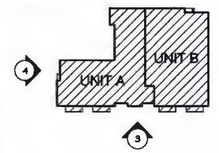
EXTERIOR ELEVATION KEY

	BRICK 1
	CAST STONE
CS-#	CAST STONE SPECIALTY PIECE
EJ	EXPANSION JOINT
CJ	CONTROL JOINT

EXTERIOR ELEVATION GENERAL NOTES

1. REFER TO SHEET A-303 AND A-304 FOR CS1 - CS14, CAST STONE SPECIALTY PIECES.
2. REFER TO SHEET A-502 FOR WINDOW SCHEDULE AND DETAILS.
3. REFER TO SHEET A-551, A-552, A-553, AND A-554 FOR ADDITIONAL ELEVATION NOTES.

IMMACULATE CONCEPTION



KEY PLAN
SCALE: NO SCALE

TowerPinkster
ARCHITECTS | ENGINEERS

Tower Pinkster Titus Associates Inc.

242 East Kalamazoo Avenue, Suite 200
Kalamazoo, Michigan 49007-3828
269.343.6133 PHONE 269.343.5633 FAX

4 East Fulton Street, Suite 200
Grand Rapids, Michigan 49503
616.456.5944 PHONE 616.456.5936 FAX

TOWERPINKSTER.COM

DATE
MAY 13, 2016
CONSTRUCTION DOCUMENTS 100%

PROJECT TITLE
NEW IMMACULATE CONCEPTION ELEMENTARY SCHOOL

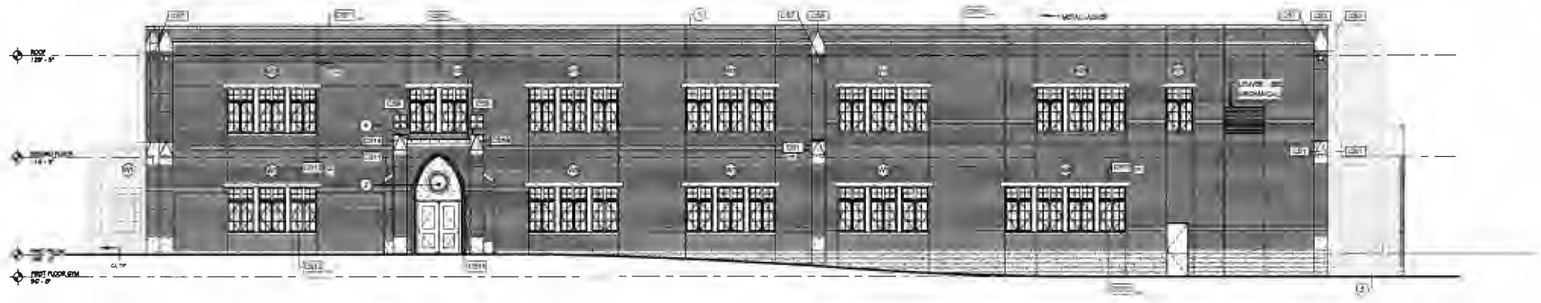
GRAND TRAVERSE AREA CATHOLIC SCHOOLS
TRAVERSE CITY, MI

ISSUED FOR DATE

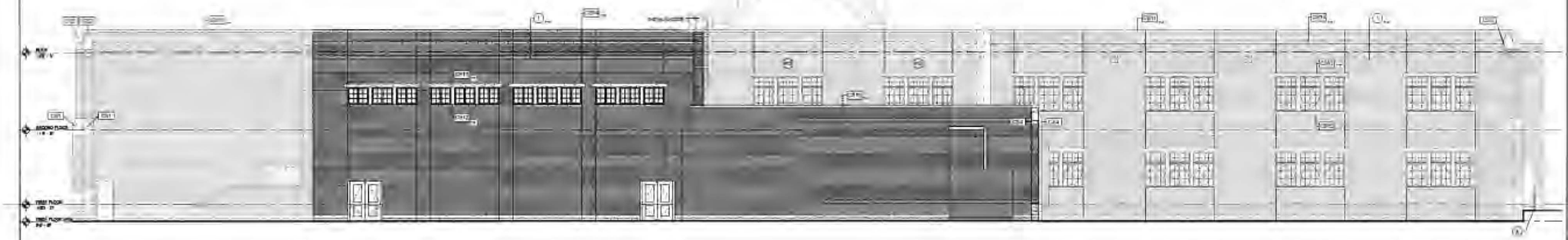
SHEET TITLE
EXTERIOR ELEVATIONS

PRELIMINARY
NOT FOR CONSTRUCTION

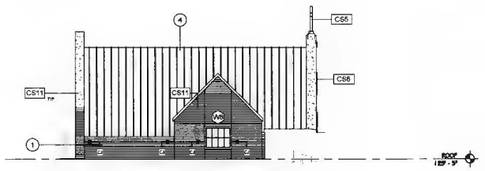
SHEET NUMBER
A 301
14188.10



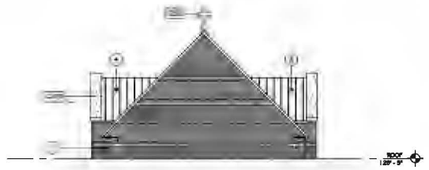
1 A 302 EAST ELEVATION 1/8" = 1'-0"



2 A 302 NORTH ELEVATION 1/8" = 1'-0"



3 A 302 CHAPEL ENLARGED ELEVATION 1/8" = 1'-0"



4 A 302 CHAPEL ENLARGED NORTH ELEVATION 1/8" = 1'-0"

EXTERIOR ELEVATION KEY NOTES

1	FACE BRICK
2	STAINED GLASS
3	METAL RAILING
4	STANDING SEAM METAL ROOF

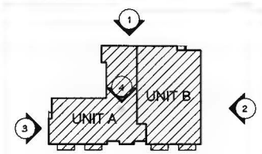
EXTERIOR ELEVATION KEY

	BRICK 1
	CAST STONE
CS-#	CAST STONE SPECIALTY PIECE
EJ	EXPANSION JOINT
CJ	CONTROL JOINT

EXTERIOR ELEVATION GENERAL NOTES

1. REFER TO SHEET A-305 AND A-304 FOR CS1 - CS14, CAST STONE SPECIALTY PIECES
2. REFER TO SHEET A-502 FOR WINDOW SCHEDULE AND DETAILS.
3. REFER TO SHEET A-351, A-352, A-358, AND A-354 FOR ADDITIONAL ELEVATION NOTES.

IMMACULATE CONCEPTION



KEY PLAN
SCALE: NO SCALE

TowerPinkster
ARCHITECTS | ENGINEERS

Tower Pinkster Titus Associates Inc.

242 East Kalamazoo Avenue, Suite 200
Kalamazoo, Michigan 49007-5826
269.343.6133 PHONE 269.343.6633 FAX

4 East Fulton Street, Suite 200
Grand Rapids, Michigan 49503
616.456.5944 PHONE 616.456.5936 FAX

TOWERPINKSTER.COM

DATE
MAY 13, 2016
CONSTRUCTION DOCUMENTS 100%

PROJECT TITLE
NEW IMMACULATE CONCEPTION ELEMENTARY SCHOOL

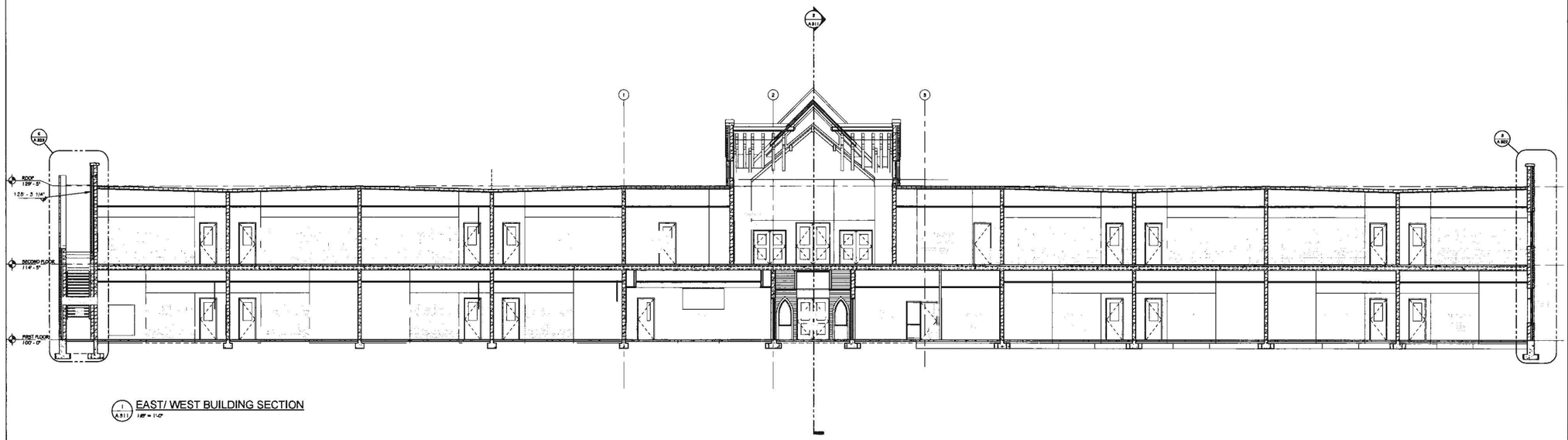
GRAND TRAVERSE AREA CATHOLIC SCHOOLS
TRAVERSE CITY, MI

ISSUED FOR DATE

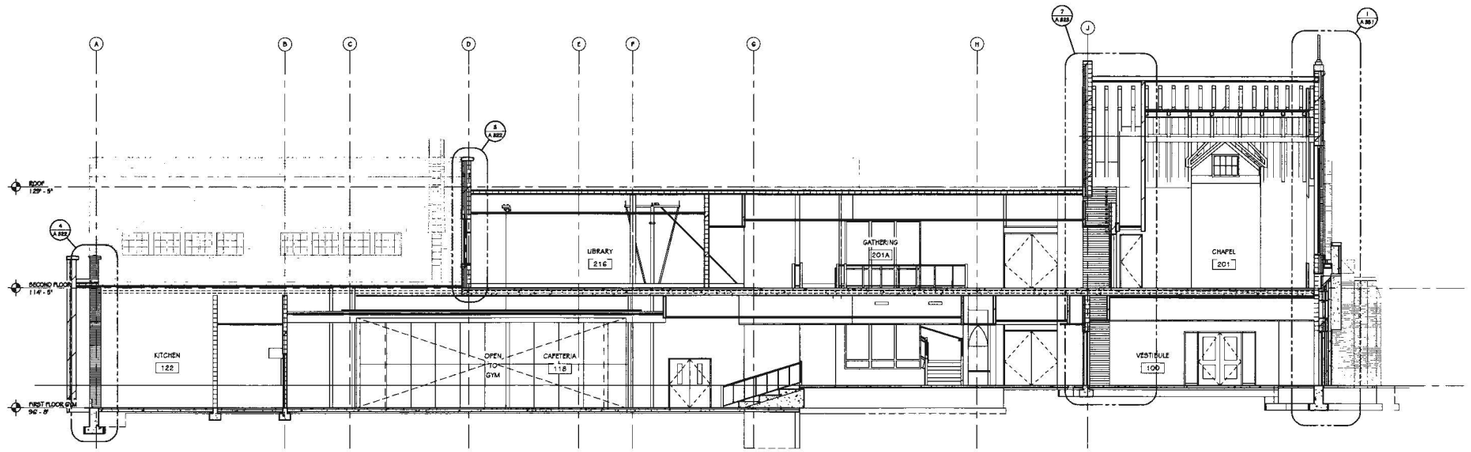
SHEET TITLE
EXTERIOR ELEVATIONS

PRELIMINARY NOT FOR CONSTRUCTION

SHEET NUMBER
A 302
14188.10



1 A311 EAST/ WEST BUILDING SECTION
1/8" = 1'-0"



2 A311 BUILDING SECTION THROUGH CAFETERIA
1/8" = 1'-0"

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ARCHITECTS | ENGINEERS

Tower Pinkster Titas Associates Inc.

242 East Kalamazoo Avenue, Suite 200
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4 East Fulton Street, Suite 200
Grand Rapids, Michigan 49503
616.456.9944 PHONE 616.456.5696 FAX

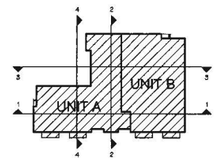
TOWERPINKSTER.COM

DATE
MAY 13, 2016
CONSTRUCTION DOCUMENTS 100%

PROJECT TITLE
NEW IMMACULATE CONCEPTION ELEMENTARY SCHOOL

GRAND TRAVERSE AREA CATHOLIC SCHOOLS
TRAVERSE CITY, MI

IMMACULATE CONCEPTION



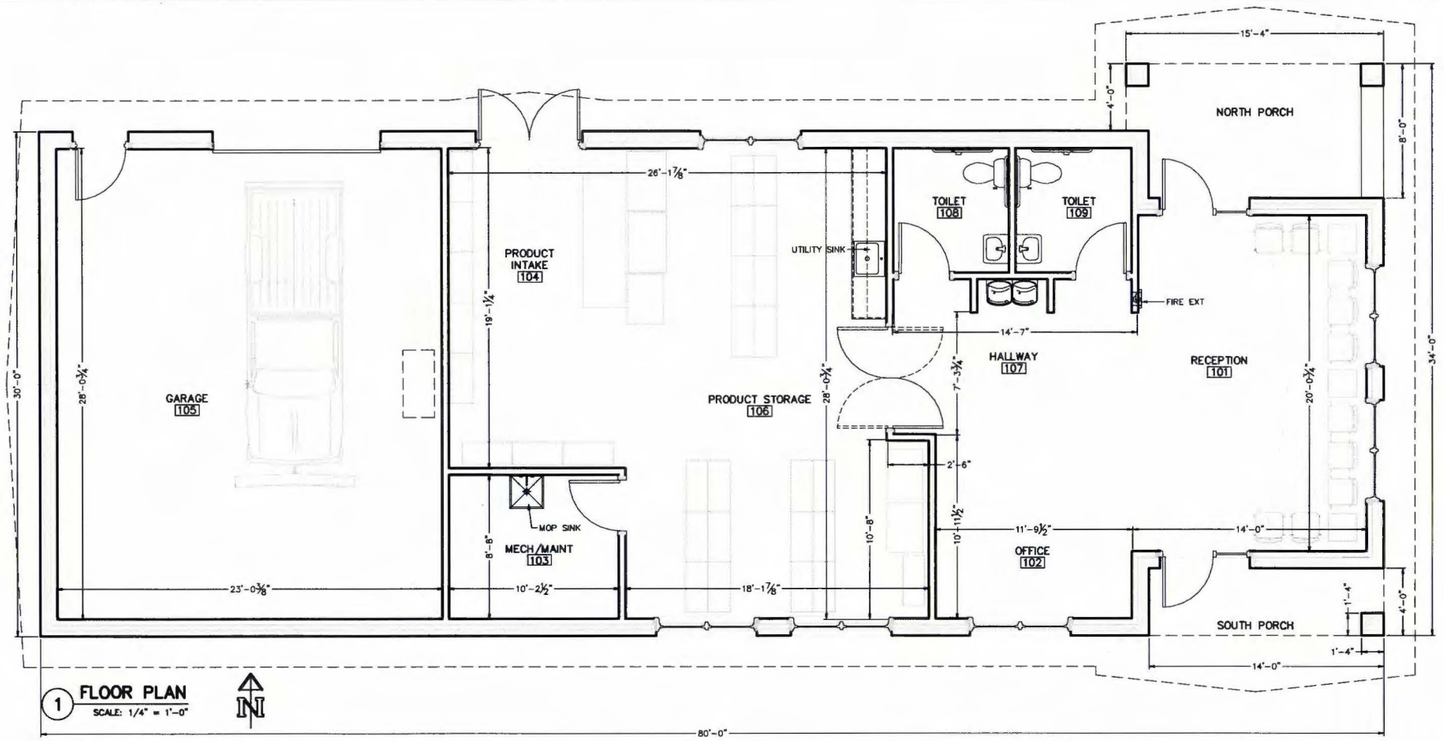
KEY PLAN
SCALE: NO SCALE

ISSUED FOR DATE

SHEET TITLE
BUILDING SECTIONS

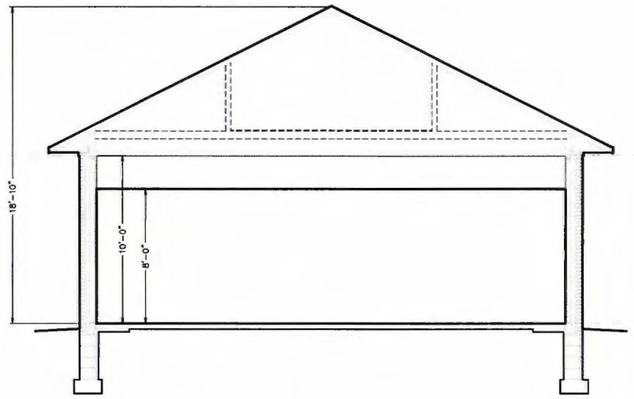
PRELIMINARY
NOT FOR CONSTRUCTION

SHEET NUMBER
A 311
14188.10

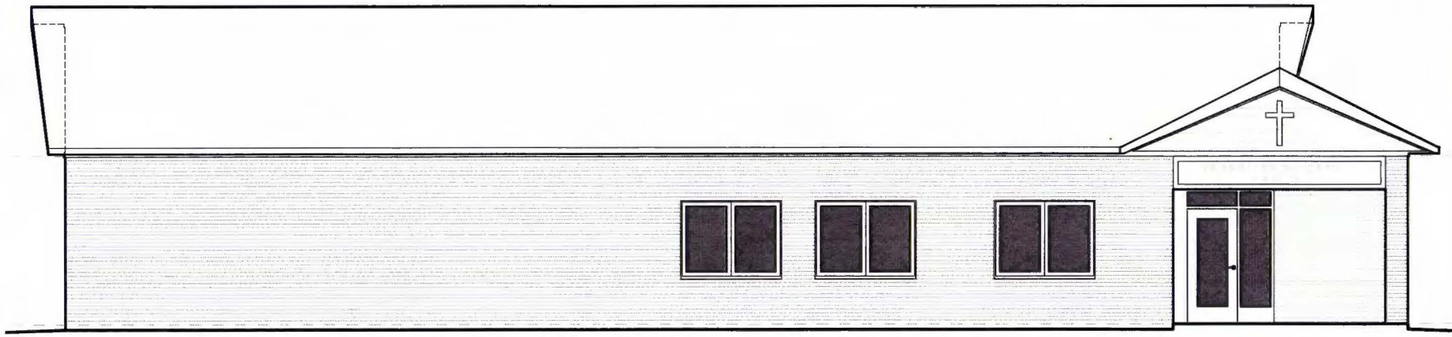


1 FLOOR PLAN
SCALE: 1/4" = 1'-0"

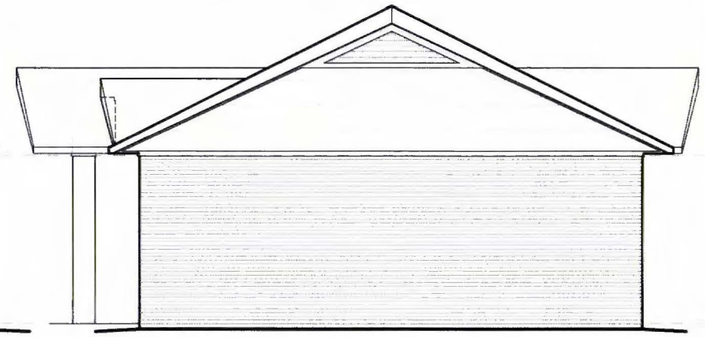
PRELIMINARY
NOT FOR CONSTRUCTION



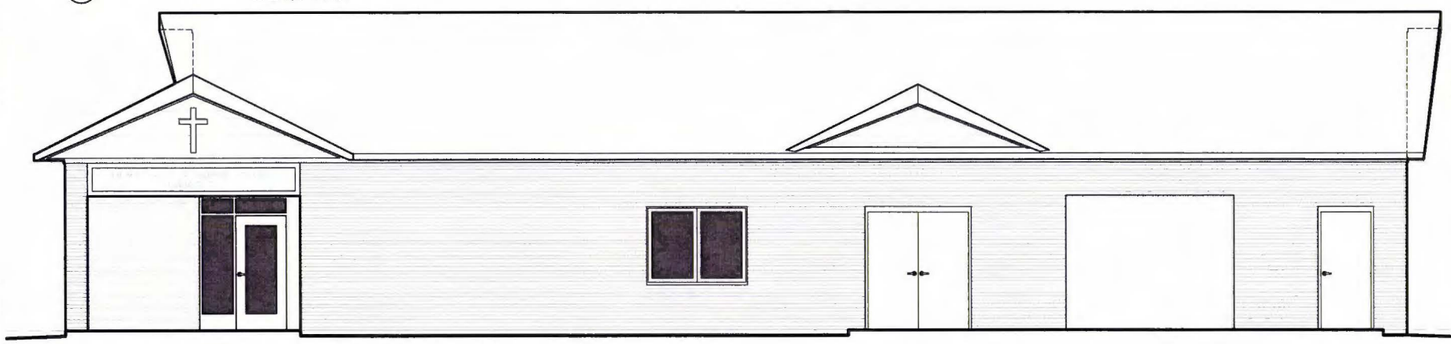
2 BUILDING SECTION
SCALE: 1/4" = 1'-0"



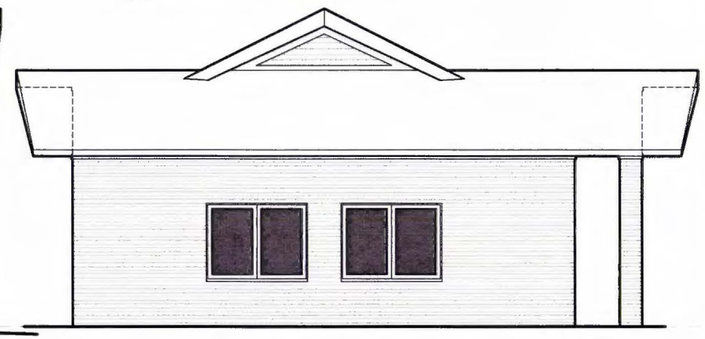
3 NORTH EXTERIOR ELEVATION
SCALE: 1/4" = 1'-0"



4 WEST EXTERIOR ELEVATION
SCALE: 1/4" = 1'-0"



5 SOUTH EXTERIOR ELEVATION
SCALE: 1/4" = 1'-0"



6 EAST EXTERIOR ELEVATION
SCALE: 1/4" = 1'-0"

ARCHITECT:
ARCHITECTURE TECHNOLOGY, P.C.
1304 BUSINESS PARK DRIVE
TRAVERSE CITY, MI 49686
(231) 933-4489

OWNER:
GRAND TRAVERSE AREA CATHOLIC SCHOOLS
123 EAST ELEVENTH STREET
TRAVERSE CITY, MI 49684

PROJECT:
IMMACULATE CONCEPTION PANTRY
205 NORTH DIVISION STREET
TRAVERSE CITY, MI 49684

SHEET CONTENTS:
PRELIMINARY DESIGN
ICF_PLAN

ISSUED	
10-16-15	
REV.	04-07-16
REV.	05-06-16
REV.	06-02-16
REV.	
REV.	

A1

The City of Traverse City

Communication to the City Commission

FOR THE CITY COMMISSION MEETING OF NOVEMBER 28, 2016

DATE: NOVEMBER 23, 2016

FROM: MARTY COLBURN, CITY MANAGER

SUBJECT: POLICE PATROL COLLECTIVE BARGAINING AGREEMENT

The City and the Police Patrol Unit have reached a tentative agreement for a five-year collective bargaining agreement. I believe this agreement serves the City's interests well; and the following are the key terms/changes:

- 5-year agreement, with a term of July 1, 2016, through June 30, 2021
- Use of an Assessment Center for promotions – assessing several competencies through various methods such as traditional interviews and simulations; this will provide a more comprehensive assessment of candidates on which to base promotional decisions
- The payment to employees who opt-out of medical insurance will increase from $2,400 per year to $3,600 per year. (The City's costs for single-person coverage are $5,130.12 per year; $11,960.40 for two-person coverage; and $12,991.92 per year for family coverage)
- Longevity payment will be changed to a pro-rated payment added to the employees hourly pay rate, with no overall increase
- Equipment allowance of $450, paid the beginning of the fourth year of the contract
- Overtime pay will be calculated for all hours worked in excess of 80 hours in one pay period, rather than 84 hours per pay period
- Salary Schedule will increase by 2% each July 1 for 2016, 2017 and 2018. For 2019 and 2020, the salary schedule will be based on CPI, for a minimum increase of 1.5% and a maximum increase of 3%. The 2% wage increase for 2016 will be paid out retroactively to July 1, 2016

I recommend the following motion (5 affirmative votes required):

that the Mayor and City Clerk execute a collective bargaining agreement with Police Officers Association of Michigan (Police Patrol Unit) for the period July 1, 2016, through June 30, 2021, such agreement subject to approval as to its substance by the City Manager.

MC/bcm
k:\tcclerk\city commission\agreements\collective bargaining agreement police patrol 2016 2021

The City of Traverse City

Communication to the City Commission

FOR THE CITY COMMISSION MEETING OF NOVEMBER 28, 2016

DATE: NOVEMBER 23, 2016

FROM: MARTY COLBURN, CITY MANAGER

SUBJECT: #2 DIESEL FUEL PURCHASE

Telephone / fax bids were received for dyed #2 ultra-low sulfur diesel fuel for use by various city departments.

The following is a summary of these bids.

Vendor	City	Price/gallon
Lemmen Oil	Coopersville	$1.434
Scotland Oil	Alma	$1.4744
Crystal Flash	Traverse City	$1.4754
Fick & Sons	Grayling	Did not bid
Schmuckal Oil	Traverse City	Did not bid
Blarney Castle	Traverse City	Did not bid
Brenner Oil	Mount Pleasant	Did not bid
Gilberts Service Oil	Traverse City	Did not bid

I recommend the following motion (5 affirmative votes required):

that the City Manager be authorized to issue a confirming purchase/service order in the amount of $14,342.87 to Lemmen Oil Company for 10,002 gallons of dyed #2 ultra-low sulfur diesel fuel priced at $1.434 per gallon with funds available in the Garage Fund.

MC/km
K:\TCCLERK\City Commission\Fuel Purchase\diesel fuel purchase_20161121

The previous purchase price on 6/6/16 was $1.6781 per gallon.

The City of Traverse City

Communication to the City Commission

FOR THE CITY COMMISSION MEETING OF NOVEMBER 28, 2016

DATE: NOVEMBER 23, 2016

FROM: MARTY COLBURN, CITY MANAGER

SUBJECT: A NEW PLAN FOR OLD TOWN – 2016 DEVELOPMENT AND TAX INCREMENT FINANCING PLAN FOR THE OLD TOWN AREA

Attached is a memo from Downtown Development Authority Executive Director Rob Bacigalupi, indicating the DDA Board's recommendation to establish a new plan for Old Town, which would replace TIF2.

If an ordinance approving the plan is ultimately enacted, it does not authorize any funding – what it does is make funding an option for projects and endeavors. Contracts to actually accomplish the work would need to be approved by the appropriate entity.

I recommend the following motion:

That An Amendment to the Traverse City Code of Ordinances, *Ordinance Approving Tax Increment Financing and Development Plan for the Old Town Area,* which would provide a tax increment financing plan for the area and make funding possible for the endeavors and projects as outlined in the plan, as recommended by the Downtown Development Authority Board, be introduced and scheduled for public hearing and possible enactment on December 19, 2016.

MC/bcm
k:\tcclerk\city commission\ordinance amendments\tif new vision for old town ph schedule
copy: Rob Bacigalupi, Downtown Development Authority Executive Director

A NEW PLAN FOR OLD TOWN

2016 Development and Tax Increment Financing Plan for the Old Town Area

DDA APPROVED DRAFT

November 23, 2016

ACKNOWLEDGEMENTS

Traverse City City Commission

Jim Carruthers, Mayor
Gary Howe, Mayor Pro Tem
Brian Haas
Richard Lewis
Amy Shamroe
Tim Werner

Traverse City Downtown Development Authority Board of Directors

Bill Golden, Chairperson
Leah Bagdon-McCallum, Vice Chairperson
Steve Constantin, Secretary
Gabe Schneider, Tresurer
Jim Carruthers, Mayor
Allison Beers
Harry Burkholder
Scott Hardy
Debbie Hershey
T. Michael Jackson
Jeff Joubran
Chuck Judson

Downtown Development Authority Development Area Citizens Council

Steve Constantin
Sarah Lucas
John Serratelli
Maureen Smyth

TABLE OF CONTENTS

INTRODUCTION

History of Change

Downtown Traverse City grew in the late 1800's as the center of a thriving lumber mill town. Traverse City and its downtown survived a number of economic evolutions. Lumber ran out and and industry took over in the early 1900's. Industrial production has gone through dramatic changes that ultimately presented challenges to cities like Traverse City that are far from large markets where most goods are consumed. Meanwhile, agriculture in the surrounding countryside became a significant sector of the economy. More recently, tourism has grown to become the largest driver of our economic activity in our region. Economic transformation has defined Traverse City's economy and surely will continue to do so.

Downtown has survived these transformations though not without some more challenging years. In the 1970's, the decline of industry took a toll on downtown. In the late 1970's, the Downtown Traverse City Association, who had promoted and put on events since the 1950's, lobbied the City to take advantage of the new Downtown Development Authority tool made available through the State, to help invigorate downtown. The City created the Traverse City Downtown

Development Authority in 1979 with a mission of promoting economic development and increasing property values downtown.

The Old Town area, and particularly the Ironworks site, was one of the first areas of focus for the newly created organization. The Traverse City Ironworks in Old Town was a prime example of a large manufacturing employer that closed, resulting in a loss of approximately 100 jobs and a large derelict site. This site became the focus of the first tax increment financing and development plan, called TIF 2.

A Successful Plan

The TIF 2 Plan was approved in late 1985 and expired in 2015. This plan envisioned the redevelopment of the Ironworks site and its environs with mixed-use development. It called for street and streetscape improvements, utility upgrades, and public parking, paid for with TIF, to spur private development and realize the vision. Over the course of 30 years, we have seen the former ironworks site bloom into restaurants, residences, and the offices housing hundreds of workers.

All of this private development increased the value of the district nearly 13 times over the life of the plan, approximately double that of the rest of the City. This tremendous taxable value pays more than its fair share for the public services and infrastructure we rely on. Thanks to this focussed effort, the TIF 2 District now generates over *four times* as much tax revenue per acre than the City as a whole, and about *40 times* that of the whole of Grand Traverse County!

DEVELOPMENT PLAN

The Development Area

The development area carries over the boundaries used in the previous TIF 2 plan. It encompasses 52.45 acres and includes the Old Town business district, River's Edge, Midtown, Riverine Apartments, as well as Hannah and Lay Parks. **Exhibit 1** contains a map showing the development area including streets and public facilities. **Exhibit 2** details the development area in a legal description.

Though the district has been substantially developed, there remains great potential for further private investment. Within the district's 52.45 acres, there are 4.5 acres of surface parking, two vacant parcels, and a number of underutilized developed parcels. Beyond this, there are 11.7 acres of streets, alleys and sidewalks, and 4 acres of parkland. The balance of acreage in the development area is comprised of the Old Town Parking Garage and private land uses including retail stores, restaurants, offices and housing. **Exhibit 3** contains a map generally showing public and private land uses.

Goals and Objectives

The development area is a vibrant, walkable, district. The DDA wants to maintain and improve this environment for business, residents, and visitors alike. The 2016 Development and Tax Increment Financing Plan for the Old Town Area seeks to position the Old Town area for continued growth while respecting the needs and the character of the surrounding neighborhoods. The growth of the Old Town area must enhance not diminish the long-term economic health and quality of life of the City of Traverse City.

This plan is founded on the following four goals:

1. Improve Mobility:
    a. Close gaps in pedestrian infrastructure
    b. Offer more alternatives to the single-occupancy vehicle
    c. Provide additional car and bike parking
    d. Replace and improve streets, sidewalks, alleys, and boardwalks as needed
2. Improve housing choices in and around the Development Area:
    a. Partner with Grand Traverse County and its Land Bank Authority
    b. Work with City Manager's Office on a loft rehabilitation program
3. Create a signature park at the Union Street Dam
    a. Protect the Upper Boardman River from invasive species
    b. Improve small craft passage through the dam area
    c. Provide additional opportunities to enjoy the river while respecting nearby residences and businesses
4. Other Park Improvements
    a. Improve access and amenities at Hannah and Lay Parks
    b. Add a public plaza east of Oryana

Approach

A successful plan requires an intelligent, collaborative approach that fosters sustainability. No organization can achieve an ambitious plan such as this on their own. Success requires leveraging partners, private and public, who share a vision of sustainable growth for the district and the City as a whole.

Collaboration/Partnerships

The Downtown Development Authority provides the vision and leadership for the future of the district. The DDA, however, will work with partners whose resources and expertise are critical in executing this plan. The DDA has a long track record of collaboration including, just to name a few, the many partners we work with at the Sara Hardy Farmers Market, our recent relationship with Grand Traverse County Planning & Economic Development, and our long standing alliance with the Downtown Traverse City Association.

This plan includes projects, such as the Lay Park improvements, where we will work with the active volunteer members of the Traverse City Arts Commission, private donors, and possibly other partners to raise the funds necessary to complete the project. For other projects, we will collaborate with those capable of getting projects done. The Union Street Dam is an example, where we will work with the US Fisheries Trust, and US Army Corps of Engineers, and local partners whose expertise as well as resources are critical for success.

Economic resiliency

The DDA's mission is to promote economic development in the DDA district. Therefore it goes without saying that economic growth would be a focus of this plan. Growth at any cost, however, is not desired. Rather, long term, sustainable growth for the downtown businesses as well as the public sector, such as the City of Traverse City, and Grand Traverse County, is the goal.

The success of business in downtown is supported by thoughtful, planned infrastructure improvements that accommodate mobility, efficiency and quality of life. Downtown must remain a great place to conduct business in order for businesses to continue to choose downtown as a place to locate. Quality of life and place making are a large part of this as businesses want to locate where employees want to be, and also goes hand in hand with making downtown complimentary to the adjacent neighborhoods.

Tax increment financing, by its nature, limits revenue to the City's general fund. Establishing a tax increment financing district should only be done knowing that the focussed investment made with captured taxes benefits the whole of the community. The City and the DDA now have a proven track record of planned public investment leading to extraordinary private investment creating new tax dollars that would otherwise not have materialized. We also know that because of this success, what was the TIF 2 District now contributes four times as much per acre to the general fund than the City as a whole. This plan seeks to continue the trend of growth and adding value to the City as a whole.

TAX INCREMENT FINANCING PLAN

Introduction

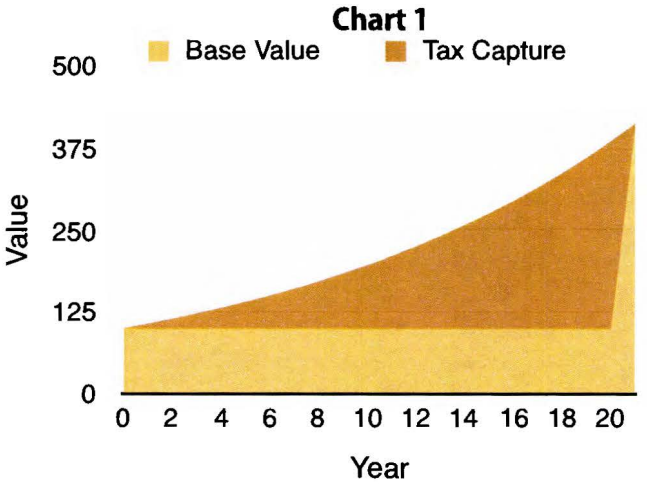
Purpose of the Tax increment Financing Plan. The purpose of this Tax Increment Financing Plan, including the development plan for the development area, is to provide the legal authority and procedures for public financial participation necessary to assist quality downtown development.

Purpose of the Downtown Development Authority Act. Act 197, Public Acts of Michigan, 1975, as amended, commonly referred to as the Downtown Development Authority Act, was created in part to correct and prevent deterioration in business districts; to authorize the acquisition and disposal of interest in real and personal property, to authorize the creation and implementation of development plans in the district, to promote the economic growth of the district; to encourage historic preservation; to authorize the issuance of bonds and other evidences of indebtedness; and to authorize the use of tax increment financing.

Creation of the Traverse City Downtown Development Authority and Traverse City Downtown Development Authority District. On September 15, 1978, the Traverse City Downtown Development Authority was created by ordinance of the City of Traverse City. The Authority was given all of the powers and duties described for a Downtown Development Authority pursuant to Act 1997.

Explanation of Tax Capture Process

Tax increment financing is the main tool for downtown development authorities. TIF works when the DDA makes a commitment to invest in an area thereby spurring private development that drives up tax revenue which in turn is captured to pay for the public investment. **Chart 1** on the right shows how a TIF district created in Year 0 starts to capture taxes in Year 1 on through its expiration in Year 20. In Year 21, all of the taxing authorities reap the benefit of increased taxes created by the extraordinary value resulting from the commitment at the outset by the DDA to invest in the area.



The tax increment financing procedure as outlined in the DDA Act requires the adoption by the City, by Ordinance, of a development and tax increment financing plan. Following adoption of that ordinance, the municipal and county treasurers are required by law to transmit to the Downtown Development Authority the tax increment revenues as defined in Act 197. The "captured assessed value" is defined as the amount in any year by which the current taxable value of all real and personal property in the

development area (including the taxable value that appears in the tax rolls under Act 198 of Public Acts, 1974 or Act 255 of the Public Acts of 1978) exceeds the initial taxable value of the real and personal property in the development area. The definition of initial taxable value is as defined in Act 197. **Exhibit 4** is a schedule of the current taxable values of all real property in the Development Area. **Exhibit 5** is a schedule of the current taxable values of all personal property in the Development Area, which are projected to be zero. Finally, **Exhibit 6** is a projection of tax capture over the 25 year life of the plan.

Description of Planned Improvements

Description of existing improvements to be demolished, repaired or altered, including an estimate of time.

Table 1[1] below shows the location, extent, character, estimated cost and estimated timing of projected development projects in the development area. This table corresponds to **Exhibit 7**, which is a map showing the location of each project. The projects, their nature, and timing are merely projections and are subject to market conditions and other factors.

Table 1 - Projected Private Development

Project	Address	Description	Year	Future Value
1	135 E EIGHTH ST	4 story residential	2017	$1,448,764
2	131 E EIGHTH ST	3 story residential	2027	$1,515,671
3	126 LAKE AVE	4 story mixed use	2022	$1,480,157
4	130 LAKE AVE	3 story residential	2025	$585,276
5	141 LAKE AVE	2 story residential	2024	$734,913
6	142 LAKE AVE	3 story residential	2025	$456,973
7	400 CASS ST	3 story mixed use	2027	$918,589
8	205 LAKE AVE	4 story mixed use	2018	$4,673,674
9	223 LAKE AVE	4 story mixed use	2021	$5,549,672
10	231 E EIGHTH ST	3 story mixed use	2021	$4,886,124
11	207 E EIGHTH ST	2 story residential	2019	$779,716
12	130 RIVERS EDGE DR	3 story mixed use	2025	$2,649,562
13	418 S UNION ST	4 story mixed use	2020	$1,514,369
14	420 S UNION ST	4 story mixed use	2020	$1,514,369
15	430 S UNION ST	3 story mixed use	2020	$1,998,968
	TOTAL			$30,706,797

Table 2[1], on the next page, indicates the extent, character and estimated cost of projected infrastructure projects planned for the benefit of the development area.

Exhibit 8 contains a map showing the location of these improvements. Staging for each project will be done in accordance with the Engineering Department policy and be designed to minimize impact on nearby businesses and residents.

As noted previously, the development area contains two parks: Hannah and Lay. These parks provide open space to those living and working in and around the development area. There is no plan to reduce the

[1] Future value and cost projections are based on the average CPI since 1995, or 2.24%

Table 2 - Projected Infrastructure Projects

Project	Project Name and Description	Year	Future Cost
1	Lay Park improvements	2017	$102,239
2	Eighth Street street and streetscape improvements	2018	$1,428,757
3	Rivers Edge riverwalk decking and replacement	2019	$106,869
4	Union Street Dam, park improvements and riverbank stabilization	2019	$14,747,912
5	Boardman Lake Avenue street, streetscape and plaza improvements	2020	$5,717,127
6	Union Street and streetscape reconstruction - Ninth Street to bridge	2021	$996,059
7	South Union Street Bridge	2022	$2,289,904
8	Hannah Park improvements	2022	$799,468
9	Parking Garage in Lot G (123 East State Street)	2023	$7,589,853
10	Midtown riverwalk decking replacement	2024	$656,598
11	Cass Street street and streetscape reconstruction - Eight Street to bridge	2029	$646,045
12	Lake Street street and streetscape reconstruction - Locust Street to Eighth Street	2036	$1,620,759
	TOTAL		**$36,701,590**

footprint of these parks.

Leases and Conveyances

At this time, there are no plans to lease or convey city property to others. The City has a procedure for licensing right-of-way for outdoor cafes, and also has a permit process to temporarily use City parks and other City property for various events and purposes.

The City has a parking system that the Downtown Development Authority operates through a management agreement. From time to time, the City leases private land for the purpose of parking, and the DDA leases land on behalf of the City for the purpose of parking. Any leasing or conveyance of property would be subject to the authority with jurisdiction for said leasing or conveying.

Description of desired zoning changes and changes to streets or utilities

This plan does not anticipate changing existing zoning regulations. No changes to street or alley alignments are proposed however street and streetscape improvements are planned. Utility changes and upgrades will be identified as project designs are prepared.

Expenditures of Tax Increment Revenues

The tax increment revenues paid to the Authority by the municipal and county treasurers are to be disbursed to the authority from time to time in such manner as the Authority may deem

necessary and appropriate in order to carry out the purposes of the development plan, including the following purposes:

1. Payments for public improvements including parking and land acquisition.
2. The necessary and appropriate demolition expenses as defined by the Authority.
3. The reasonable, necessary and appropriate administrative, legal, professional and personnel expenses, including District police services, of the Authority related specifically to the development area.
4. Maintenance and development of parking areas.
5. Utility improvements.
6. Alley relocation.
7. Bridges repair and replacement.
8. Riverwalk/boardwalk improvements and repairs.
9. Public improvements as shown in the development plan.
10. Marketing initiatives.
11. Contracts for broadband service and wireless technology service and an ongoing maintenance of such service in the District.
12. Ongoing maintenance of public restrooms and public art.
13. Mobility services such as shuttles, enhanced transit, car sharing, and bike sharing.
14. Contributions made to qualified non-profits, public agencies, or third party administrators for the purpose of constructing workforce housing within one half mile of the development area boundary, as shown in **Exhibit 9**.
15. Brownfield-eligible expenses reimbursed to the Grand Traverse County Redevelopment Authority.
16. Capital expenses related to the city-owned Carnegie Building at 322 Sixth Street.
17. Expenses related to Americans with Disabilities Act compliance for public facilities located within the development area.

Financing of Improvements/Maximum Bonded Indebtedness

Project costs are estimated in **Table 2** of this section. Downtown Development Authority enabling legislation (P.A. 197 of 1975) permits downtown development authorities to use tax increment financing and other revenues to fund improvements. DDA's can issue bonds and can pledge tax increment dollars to other entities who would issue bonds on behalf of the DDA.

The maximum amount of bonded indebtedness over the life of the tax increment financing plan will not exceed $25,292,119.

Duration of the Plan

This tax increment financing plan shall last not more than 25 years except as may be modified from time to time by the City Commission of the City of Traverse City upon notice and upon Public hearings as required by the Act. The last date of capture is December 31, 2041.

Residents and Businesses of the Development Area

There are an estimated 282 residents in the development area and hundreds of businesses. It is possible that some of these residents and/or businesses might be displaced by a private development project. There are no plans to displace residents or businesses as part of DDA or City-initiated projects. If such a project were to displace any resident or business, such displacement will be in compliance with the Relocation Assistance Act (P.A. 227 of 1972).

Exhibits

- Exhibit 1 - Map of the Development Area
- Exhibit 2 - Development Area Legal Description
- Exhibit 3 - Map showing Public and Private Land Uses
- Exhibit 4 - Real Property Parcel List for the Development Area
- Exhibit 5 - Personal Property Parcel List for the Development Area
- Exhibit 6 - Projection of Tax Capture Over the Life of the Plan
- Exhibit 7 - Map Showing Location of Anticipated Development Projects
- Exhibit 8 - Map Showing Location of Planned Infrastructure Projects
- Exhibit 9 - Map Showing Location of Planned Housing Incentive Area

Exhibit 1 - Map of the Development Area w/Public Improvements

Boardwalk -------- TART Trail and connector •••••• 2016 Old Town Development Area

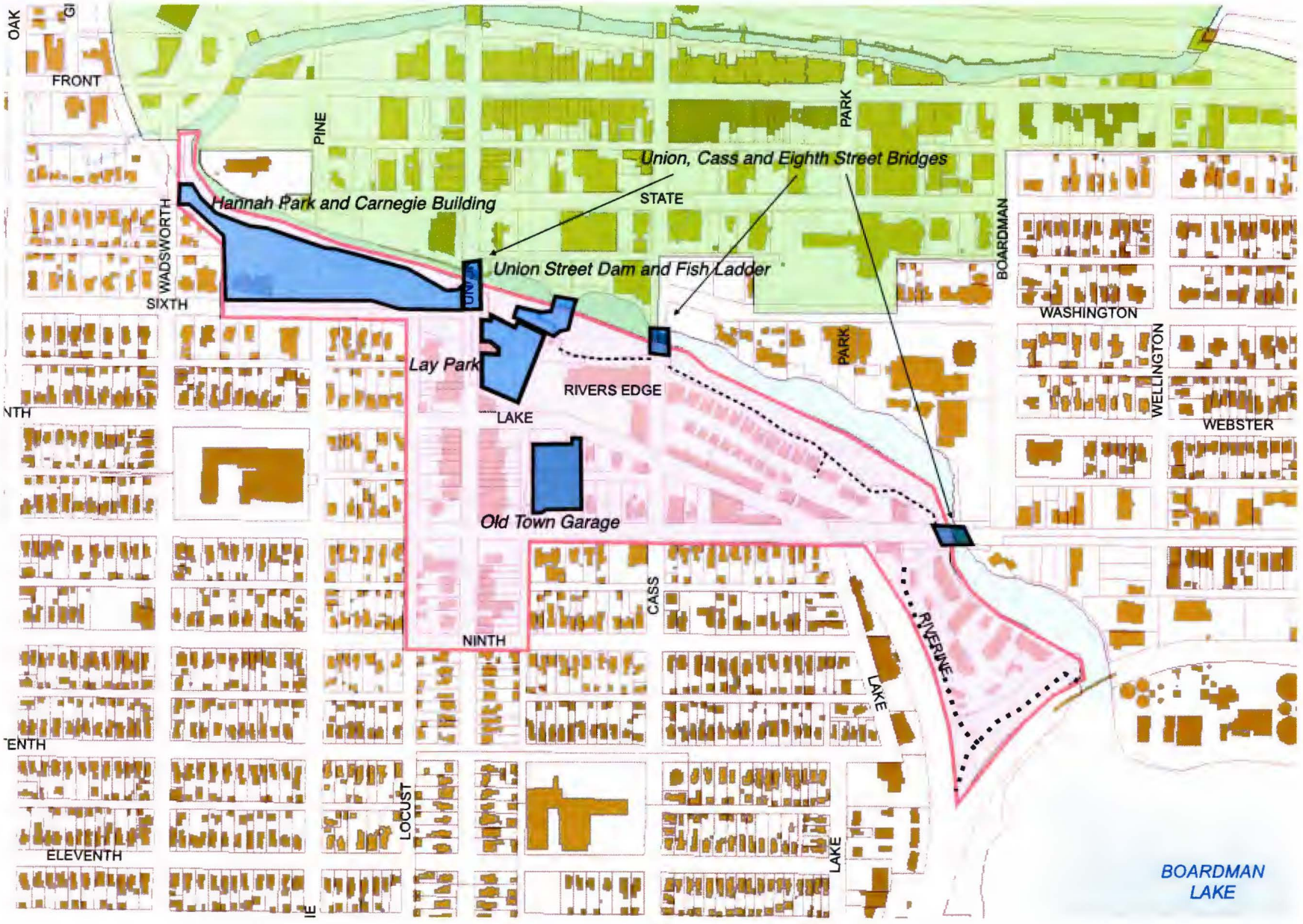


Exhibit 2 - Development Area Legal Description

The Development Area is described as follows:

Commencing at the Northwest corner of Lot 8 of the Hannah and Lay Company first addition as recorded by the Grand Traverse County Register of Deeds, Liber 3 of Plats on Page 25: thence Southeasterly along the Northeast boundary of Lot 8 to the Northeast corner of Lot 8 thence Southerly along the East line of said Plat to the South right-of-way of Sixth Street (66' wide); thence Easterly along the South right-of-way of Sixth Street to the West right-of-way of Locust Street (53' wide); thence Southerly along the West right-of-way line of Locust Street to the South right-of-way line of Ninth Street (66' wide); thence Easterly along the South right-of-way line of Ninth Street to the East right-of-way line of the North-South Alley (33' wide) East of Union Street, Block 6, as found in Hanna, Lay and Company's First Addition, recorded in Book One, Page 10; thence Northerly along the East right-of-way line of the said Alley to the South right-of-way line of 8th Street (66' wide); thence Easterly along the South right-of-way of 8th Street to the thread of the Boardman River; thence Northwesterly along the thread of the Boardman River to the thread of Kid's Creek; thence Westerly along the thread of Kid's Creek to the East right-of-way line of Wadsworth Street (66' wide); thence Southerly along the East right-of-way line of Wadsworth to the point of beginning; also including Lot 3 of Hannah, Lay and Company's 16th Addition, Liber 3, of Plat, Page 6 and 7.

Exhibit 3 - Map Showing Public and Private Land Uses

Public uses shown, all other parcels are private

Public Land Uses

2016 Old Town Development Area

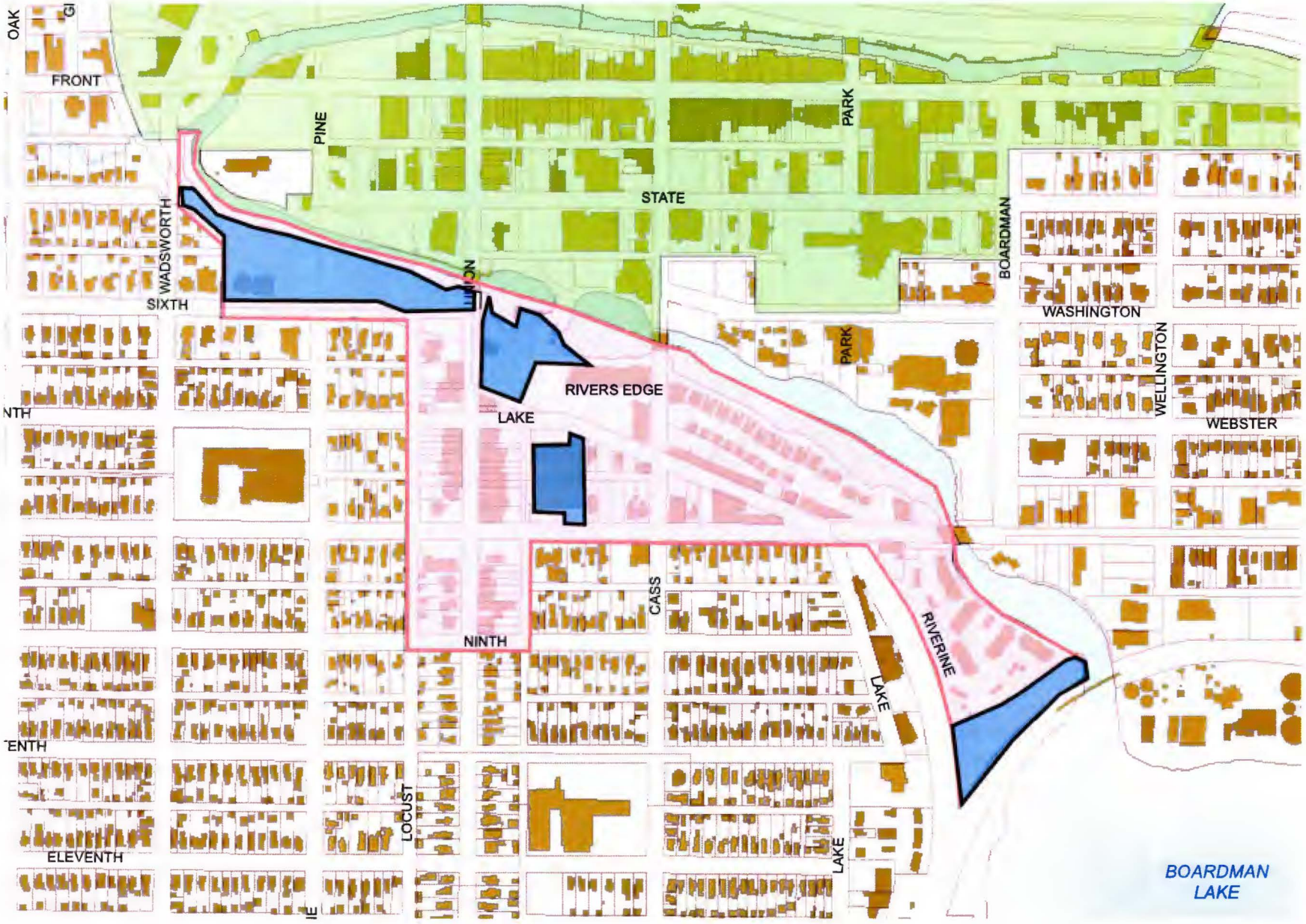


Exhibit 4 - Real Parcels in the Development Area

Parcel Number	Owner Name	Property Address	2016 Taxable Value
28-51-618-018-00	FRONT STREET PROPERTIES LLC	101 SEVENTH ST	119,863
28-51-618-001-00	NIZZI MICHAEL A & MADION MEGAN A	109 SIXTH ST	567,201
28-51-837-005-00	LAKE STREET PROPERTIES LLC	111 RIVERS EDGE DR	234,500
28-51-618-006-00	T/D ASSOCIATES LLC	114 SEVENTH ST	64,697
28-51-703-010-00	NIEDERSTADT JUDITH E TRUST	115 E EIGHTH ST 10	104,400
28-51-703-011-00	ANGERS-WAGNER PROPERTIES LLC	115 E EIGHTH ST 11	100,701
28-51-703-012-00	TUOMI SHAUN P	115 E EIGHTH ST 12	104,011
28-51-703-013-00	KAMERLING STEVEN G & CONNIE D	115 E EIGHTH ST 13	103,409
28-51-703-014-00	HOFMANN LUCILLE	115 E EIGHTH ST 14	104,211
28-51-703-015-00	BOEVE LAYTON	115 E EIGHTH ST 15	103,008
28-51-703-016-00	HOEKSTRA THOMAS E & PATRICIA B	115 E EIGHTH ST 16	107,822
28-51-703-009-00	GOODELL EMILY	115 E EIGHTH ST 9	104,713
28-51-703-001-00	HENDERSON DAVID	119 E EIGHTH ST 1	100,701
28-51-703-002-00	KENNY PATRICIA A	119 E EIGHTH ST 2	101,904
28-51-703-003-00	GRASSNIG NANCY E	119 E EIGHTH ST 3	101,904
28-51-703-004-00	GILMOUR JOSHUA T	119 E EIGHTH ST 4	101,904
28-51-703-005-00	DROUILLARD JADE A TRUST	119 E EIGHTH ST 5	104,913
28-51-703-006-00	WENDELL JOINT TRUST	119 E EIGHTH ST 6	101,904
28-51-703-007-00	CASCIANO KAYLA R	119 E EIGHTH ST 7	101,904
28-51-703-008-00	GILMOUR KYLE R	119 E EIGHTH ST 8	101,904
28-51-837-631-00	FOUR S'S INC	121 RIVERS EDGE DR 3100	423,939
28-51-837-632-00	MILLER & MILLER INC	121 RIVERS EDGE DR 3200	499,494
28-51-837-633-00	MILLER & MILLER INC	121 RIVERS EDGE DR 3300	497,700
28-51-837-634-00	SWEET MARGUERITE M	121 RIVERS EDGE DR 3400	176,880
28-51-837-635-00	HARTY KEVIN S & NOREEN R	121 RIVERS EDGE DR 3500	282,960

28-51-837-635-10	SPRINGSTEAD PATTY TRUST	121 RIVERS EDGE DR 3501	316,045
28-51-618-094-01	TRAVERSE CITY CITY OF	125 E EIGHTH ST	0
28-51-618-107-02	LAKE STREET PROPERTIES LLC	126 LAKE AVE	61,142
28-51-618-110-00	NIXON JEFFREY P	130 LAKE AVE	43,694
28-51-837-007-01	CEGM TRAVERSE CITY LLC	130 RIVERS EDGE DR	3,679,706
28-51-618-090-00	MCDONALD DONNA	131 E EIGHTH ST	83,012
28-51-618-089-00	DAVISON ROGERS & T&M OF TC INC	135 E EIGHTH ST	21,015
28-51-618-088-00	DAVISON ROGERS & T&M OF TC INC	139 E EIGHTH ST	21,015
Future Parcel	RIVERS EDGE CONDO ASSOCIATION	141 LAKE AVE	
28-51-837-008-00	CEGM TRAVERSE CITY LLC	140 RIVERS EDGE DR	1,960,560
28-51-837-110-00	CEGM TRAVERSE CITY LLC	141 RIVERS EDGE DR 110	87,555
28-51-837-111-00	CEGM TRAVERSE CITY LLC	141 RIVERS EDGE DR 111	171,813
28-51-837-112-00	CEGM TRAVERSE CITY LLC	141 RIVERS EDGE DR 112	149,044
28-51-837-150-00	ROBERT ALFLEN ENTERPRISES INC	141 RIVERS EDGE DR 150	312,902
28-51-837-200-00	CEGM TRAVERSE CITY LLC	141 RIVERS EDGE DR 200	182,768
28-51-837-201-00	CEGM TRAVERSE CITY LLC	141 RIVERS EDGE DR 201	213,226
28-51-837-202-00	CEGM TRAVERSE CITY LLC	141 RIVERS EDGE DR 202	264,287
28-51-837-203-00	CEGM TRAVERSE CITY LLC	141 RIVERS EDGE DR 203	217,920
28-51-837-204-00	CEGM TRAVERSE CITY LLC	141 RIVERS EDGE DR 204	239,416
28-51-837-205-00	CEGM TRAVERSE CITY LLC	141 RIVERS EDGE DR 205	215,866
28-51-837-300-00	RIVERS EDGE BUILDINGS 1 & 2 LLC	141 RIVERS EDGE DR 300	156,544
28-51-837-301-00	MCCONVILLE GENE W & FRANCINE M	141 RIVERS EDGE DR 301	156,831
28-51-837-302-00	OFFENHAUSER JEFFERY T	141 RIVERS EDGE DR 302	198,393
28-51-837-303-00	WINN SCOTT F & MELISA J	141 RIVERS EDGE DR 303	175,625
28-51-837-304-00	TUCKERMAN KATHY M	141 RIVERS EDGE DR 304	163,377
28-51-837-305-00	LEE LESLIE A TRUST	141 RIVERS EDGE DR 305	171,452
28-51-837-306-00	MELI PAULINE TRUST	141 RIVERS EDGE DR 306	152,563
28-51-837-307-00	HERKELMANN KATHRYN L	141 RIVERS EDGE DR 307	120,100

28-51-837-308-00	HAMILTON TIMOTHY L & DIANNE L	141 RIVERS EDGE DR 308	178,132
28-51-837-309-00	KANITZ HUGO E TRUST	141 RIVERS EDGE DR 309	113,457
28-51-837-310-00	RIVERS EDGE BUILDINGS 1 & 2 LLC	141 RIVERS EDGE DR 310	161,514
28-51-837-400-00	RODGE JOHN TRUST	141 RIVERS EDGE DR 400	195,785
28-51-837-401-00	BURKS SUSAN L TRUST	141 RIVERS EDGE DR 401	289,714
28-51-837-402-00	BIELSKI SUSAN TRUST	141 RIVERS EDGE DR 402	265,359
28-51-837-403-00	CHEVALIER BICE JOANNE TRUST	141 RIVERS EDGE DR 403	244,652
28-51-837-404-00	EDGLEY ALEXANDER & KAREN L	141 RIVERS EDGE DR 404	287,560
28-51-837-405-00	THEODORE DONALD & KAREN M	141 RIVERS EDGE DR 405	83,000
28-51-837-406-00	MACDONALD HEDGES JR TRUST	141 RIVERS EDGE DR 406	214,317
28-51-837-407-00	WILSON BERNADETTE L	141 RIVERS EDGE DR 407	146,000
28-51-837-500-00	PICKERING KENNETH A TRUST	141 RIVERS EDGE DR 500	299,803
28-51-837-501-00	FRENCH DOROTHY W TRUST	141 RIVERS EDGE DR 501	164,330
28-51-837-502-00	LEE LESLIE	141 RIVERS EDGE DR 502	314,800
28-51-618-113-00	NIXON JEFFREY P	142 LAKE AVE	40,937
28-51-618-087-01	GAVIN GUNNAR S	143 E EIGHTH ST 101	56,900
28-51-618-087-03	J & DC VENTURES LLC	143 E EIGHTH ST 103	57,600
28-51-618-087-05	INTEGRITY PROPERTY LLC	143 E EIGHTH ST 105	57,700
28-51-618-087-02	RAPSON DAVID M & LISA A	143 E EIGHTH ST 202	59,900
28-51-618-087-04	DRIER NATHAN & CARRIE	143 E EIGHTH ST 204	62,700
28-51-618-087-06	DENNIS AARON & CHELSEA	143 E EIGHTH ST 206	61,900
28-51-618-087-07	GW VENTURES LLC	145 E EIGHTH ST 107	45,882
28-51-618-087-09	DOTSON ROBERT N & MARY L TRUST	145 E EIGHTH ST 109	44,582
28-51-618-087-08	RAPSON DAVID M & LINDA A	145 E EIGHTH ST 208	47,082
28-51-618-087-10	INTEGRITY PROPERTY HOLDINGS LLC	145 E EIGHTH ST 210	44,882
28-51-767-022-01	SHRIER JAMES L JR	200 MIDTOWN DR 1-A	106,819
28-51-767-022-04	HINZ PETER TRUST #1	200 MIDTOWN DR 4-D	158,200
28-51-767-022-02	JULIEN ELISA	200 MIDTOWN ST 2-B	121,663

28-51-767-022-03	SCOTT TISCH A TRUST	200 MIDTOWN ST 3-C	137,778
28-51-103-015-06	TRAVERSE CITY CITY OF	200 SIXTH ST	0
28-51-767-023-00	ROWLEY ROBERT H & KATHLEEN M	202 MIDTOWN DR	99,698
28-51-767-002-00	SILVERMAN CAROL C TRUST	203 MIDTOWN DR	192,743
28-51-767-024-00	HALEY MICHAEL J TRUST	204 MIDTOWN DR	95,886
28-51-103-003-10	MACMANUS THEODORE F & JOYCE	205 LAKE AVE	151,355
28-51-767-003-00	TMMJ LLC	205 MIDTOWN DR	192,743
28-51-767-025-01	HARRIS JENNIFER A	206 MIDTOWN DR	71,682
28-51-618-176-00	SOBO LLC	207 E EIGHTH ST	113,339
28-51-767-004-00	APPLEGATE SANDRA J TTEE	207 MIDTOWN DR	168,464
28-51-767-026-01	WEICHMAN MEG	208 MIDTOWN DR	97,190
28-51-767-005-00	LANSDALE METTA T JR TRUST	209 MIDTOWN DR	168,252
28-51-767-027-01	JANUSZ JAN J	210 MIDTOWN DR	57,596
28-51-767-006-00	COE FAMILY TRUST	211 MIDTOWN DR	203,768
28-51-767-028-00	HOMESTRETCH	212 MIDTOWN DR	4,028
28-51-767-007-00	JONES MARIA H TRUST	213 MIDTOWN DR	193,273
28-51-767-029-00	KILBOURN MELISSA ANN	214 MIDTOWN DR	95,786
28-51-767-008-00	COOPER MARY E	215 MIDTOWN DR	195,370
28-51-767-030-00	TERZANO JOSEPH A & DANETTE A	216 MIDTOWN DR	104,312
28-51-767-009-00	WARSZAWSKI RICHARD S & NANCY D	217 MIDTOWN DR	201,976
28-51-767-031-00	BRAIM WILLIAM W	218 MIDTOWN DR	79,404
28-51-767-010-00	KALAT ANN E TRUST	219 MIDTOWN DR	195,872
28-51-767-032-00	GUY JEFFREY D	220 MIDTOWN DR	94,159
28-51-767-011-00	GERHARD ROBERT A	221 MIDTOWN DR	213,281
28-51-767-033-01	LUCAS SARAH J	222 MIDTOWN DR	57,596
28-51-103-005-00	RSF HOLDINGS LLC	223 LAKE AVE	385,770
28-51-767-012-00	CONSTANTIN SHERI C TRUST	223 MIDTOWN DR	142,926
28-51-767-034-01	STACHOWIAK PAUL A & SUSAN M	224 MIDTOWN DR	98,400

28-51-767-013-00	DEIGH BONNIE	225 MIDTOWN DR	140,171
28-51-767-035-00	WICK ROBERT A & JODIE L	226 MIDTOWN DR	94,159
28-51-767-014-00	CASSENS GLENN A & JOYCE F	227 MIDTOWN DR	169,524
28-51-767-036-00	CRYING MOOSE DOG LLC	228 MIDTOWN DR	102,800
28-51-767-015-00	COOPER JAMES H & ANN E	229 MIDTOWN DR	187,654
28-51-767-037-01	PETERSON DARLENE J	230 MIDTOWN DR	57,596
28-51-618-175-00	THIRLBY EDWIN & BEVERLY TRUST	231 E EIGHTH ST	155,110
28-51-767-016-00	ROHE FREDERICK P TRUST	231 MIDTOWN DR	202,513
28-51-767-038-01	NELSON DIANA	232 MIDTOWN DR	88,657
28-51-767-017-00	SMYTH PAUL R & MAUREEN H	233 MIDTOWN DR	198,683
28-51-769-001-00	WAHLSTROM MICHAEL B	234 MIDTOWN DR 1-A	52,657
28-51-769-002-00	CUNNINGTON LOREN & LIN XUE	234 MIDTOWN DR 2-B	75,409
28-51-769-003-00	CRYING MOOSE DOG LLC	234 MIDTOWN DR 3-C	75,409
28-51-767-018-00	CASSENS GLENN A & JOYCE F	235 MIDTOWN DR	229,336
28-51-768-001-00	NIXON MARK H	237 LAKE AVE	156,279
28-51-768-002-00	SANDIN HOWARD & PEGGY	237 LAKE AVE A	96,728
28-51-768-003-00	PIERSON SCOTT J & ERICA J	237 LAKE AVE B	115,000
28-51-768-004-00	SCHNEIDER ZACHARY	237 LAKE AVE C	99,339
28-51-767-019-00	SERRATELLI JOHN F & KAY TRUST	237 MIDTOWN DR	194,970
28-51-767-020-00	COOPER THOMAS R & BARBARA L	239 MIDTOWN DR	191,487
28-51-767-021-00	DITTA BEN N & PATRICIA	241 MIDTOWN DR	216,283
28-51-767-040-01	BURIAN ROBERT C	243 MIDTOWN DR	132,311
28-51-767-054-01	ANVIL ENTERPRISES LLC	245 LAKE AVE A	92,401
28-51-767-054-02	BAIRD TRAVIS & MIKOWSKI ROBIN	245 LAKE AVE B	99,254
28-51-767-054-03	SILVERMAN JANENE F	245 LAKE AVE C	113,138
28-51-767-054-04	KANE DIXON D & ELIZABETH H	245 LAKE AVE D	93,508
28-51-767-054-05	OSWELL DONALD J & BETTE S	245 LAKE AVE E	92,766
28-51-767-054-06	MOUAT JOHN H & SNAPP LISA MOUAT	245 LAKE AVE F	107,608

28-51-767-041-00	MOORE ALEXANDER W JR	245 MIDTOWN DR	126,234
28-51-767-042-00	SERVIS FAMILY TRUST	247 MIDTOWN DR	144,030
28-51-767-043-00	RINCK LESLIE P & NICOLYN R	249 MIDTOWN DR	142,463
28-51-767-044-00	OBERSCHULTE DIANA D	251 MIDTOWN DR	144,833
28-51-767-045-00	GEORGE DANIEL & FERRAN DAWN	253 MIDTOWN DR	141,122
28-51-767-046-00	ZELENOCK GERALD B JR	255 MIDTOWN DR	148,945
28-51-767-047-00	ZEIGER B LYNN & JOHN T	257 MIDTOWN DR	136,562
28-51-767-048-00	FINELLI THOMAS A & HELEN B	259 MIDTOWN DR	147,500
28-51-767-049-00	ULLMAN MICHAEL D	261 MIDTOWN DR	153,459
28-51-767-050-00	QUERY MASON	263 MIDTOWN DR	153,459
28-51-767-051-01	KERNDT SUZANNE M TRUST	283 MIDTOWN DR A	238,358
28-51-767-051-02	ANDRINGA SHARON T TRUST	285 MIDTOWN DR	249,666
28-51-767-055-01	WATTS MARTHA TRUST	301 E EIGHTH ST	94,872
28-51-103-006-01	TRAVERSE CITY CITY OF	301 S UNION ST	0
28-51-767-052-01	WATTS JEFFREY	303 MIDTOWN DR A	117,205
28-51-859-002-00	ANDERSON WILLIAM C & VICKI A	303 S UNION ST	251,093
28-51-859-003-00	ROBINSON MADELINE S TRUST	303 S UNION ST	263,423
28-51-859-001-00	KCR INVESTMENTS LLC	303 S UNION ST Unit #1	157,390
28-51-767-056-00	HERSHEY DEBRA S TRUST	305 E EIGHTH ST	100,900
28-51-767-057-00	KENNIS WILLIAM D & DONNA M	307 E EIGHTH ST	106,100
28-51-682-004-30	TRAVERSE CITY CITY OF	308 E EIGHTH ST	0
28-51-767-001-01	309 DEVELOPMENT LLC	309 CASS ST 1-100	267,703
28-51-767-001-02	DONAHUE PATRICIA K TRUST	309 CASS ST 2	174,663
28-51-767-001-03	CADY SUSAN T TRUST	309 CASS ST 3	172,592
28-51-767-001-04	WILLIAMS JOAN F TRUST	309 CASS ST 4 (STE 101)	164,309
28-51-767-001-05	GURNEY JACK D & DEBRA LYNN	309 CASS ST 5	186,154
28-51-767-052-02	GRADY TERRENCE P & SALLY M	309 MIDTOWN DR B	150,123
28-51-837-100-00	FIREFLY PROPERTIES LLC	310 CASS ST 100	335,890

28-51-767-052-03	BURDEN TIMOTHY K & DIANE G	311 E EIGHTH ST C	177,562
28-51-618-002-00	UNION HOLDING LLC	312 S UNION ST	290,268
28-51-682-005-00	SBK PROPERTIES LLC	314 E EIGHTH ST	216,300
28-51-682-004-40	TRAVERSE CITY CITY OF	316 E EIGHTH ST	0
28-51-103-003-40	TRAVERSE CITY CITY OF	317 E EIGHTH ST	0
28-51-682-004-50	TRAVERSE CITY CITY OF	318 E EIGHTH ST	0
28-51-618-004-00	BAESCH STEPHEN E	322 S UNION ST	86,535
28-51-103-015-10	TRAVERSE CITY CITY OF	322 SIXTH ST	0
28-51-618-005-00	T/D ASSOCIATES LLC	324 S UNION ST	221,260
28-51-103-010-00	GRAY JOHN K & KATHRYN A	325 S UNION ST	162,103
28-51-103-012-00	ELHART CRAIG W & MICHELE L	329 S UNION ST	112,872
28-51-618-115-00	L LEE ENTERPRISES INC	400 CASS ST	161,783
28-51-618-105-00	COLE PATRICK J TRUST	401 S UNION ST	163,522
28-51-618-018-10	LEWIS MICHAEL D	402 S UNION ST	94,212
28-51-618-104-00	SMART JULIE L & FRIESEN KARL E	405 S UNION ST	64,200
28-51-618-019-00	WALLS ULYSSES C	406 S UNION ST APTS A & B	226,738
28-51-618-103-00	DEERING JAMES B TRUST	407 S UNION ST	199,141
28-51-618-021-00	408 SOUTH UNION LLC	408 S UNION ST	102,907
28-51-618-020-00	17001 NINETEEN MILE RD LLC	410 S UNION ST	151,700
28-51-618-102-00	DEERING JAMES B TRUST	411 S UNION ST	67,291
28-51-618-022-00	UNION STREET PARTNERS LLC	412 S UNION ST	493,562
28-51-618-101-00	SAP ENTERPRISES LLC	413 S UNION ST	151,453
28-51-618-178-01	REGATTA DEVELOPMENT LLC	415 CASS ST	624,127
28-51-415-001-00	SAP ENTERPRISES LLC	415 S UNION ST	62,042
28-51-415-002-00	TC DEVELOPMENT LLC	415 S UNION ST	84,606
28-51-415-003-00	TC DEVELOPMENT LLC	415 S UNION ST	72,645
28-51-618-099-04	DILORENZO JOHN F & MICHAEL A	417 S UNION ST	166,598
28-51-618-024-00	THREE SPARTANS LLC	418 S UNION ST	145,033

28-51-618-025-00	THREE SPARTANS LLC	420 S UNION ST	147,741
28-51-618-098-21	MISSION PARTNERS PROPERTY LLC	423 S UNION ST	648,539
28-51-618-095-01	OLD TOWN PROPERTIES LLC	427 S UNION ST	409,524
28-51-618-026-00	TRAVERSE CITY DEVELOPMENT LLC	430 S UNION ST	182,746
28-51-618-086-01	C SHACK DEVELOPMENT LLC	444 CASS ST 101	49,949
28-51-618-086-02	C SHACK DEVELOPMENT LLC	444 CASS ST 103	129,988
28-51-618-086-03	OLD TOWNE COMMERCIAL HOLDINGS LLC	444 CASS ST 203	248,300
28-51-618-086-04	HAGERTY REBECCA	444 CASS ST 204	174,900
28-51-618-086-05	PELLETIER SUZAN A	444 CASS ST 205	178,700
28-51-618-086-06	FELDMAN MARK & SUSAN	444 CASS ST 306	179,300
28-51-618-086-07	COBB ROBERT L & SUSAN C	444 CASS ST 307	191,600
28-51-618-086-08	WIDMER ROBERT & BARBARA	444 CASS ST 308	186,200
28-51-618-086-09	NAVARRE CAROL L	444 CASS ST 309	193,900
28-51-788-001-00	BRICK FAMILY LLC	500 S UNION ST 1	86,759
28-51-788-002-00	BRICK FAMILY LLC	500 S UNION ST 2	112,596
28-51-788-003-00	BRICK FAMILY LLC	500 S UNION ST 3	84,452
28-51-788-004-00	SANOK RICHARD L & MARYELLEN S	500 S UNION ST 4	49,984
28-51-788-005-00	BRICK FAMILY LLC	500 S UNION ST 5	124,071
28-51-618-135-00	SCHMERHEIM RANDY	501 S UNION ST	124,608
28-51-747-006-00	RIVERINE APARTMENTS LLC	505 RIVERINE DR	100,044
28-51-618-134-00	HAIRQUARTERS LLC	509 S UNION ST	67,731
28-51-618-132-00	DEKUIPER DALE E & DEBORAH J	511 S UNION ST	100,736
28-51-618-042-00	HAYES FAMILY TRUST	512 S UNION ST	83,529
28-51-618-133-00	OLD TOWN FINANCIAL PROPERTIES LLC	513 S UNION ST	90,115
28-51-618-131-00	MCCLATCHEY RONALD T & KAREN V TRUST	515 S UNION ST	104,307
28-51-618-043-00	HUGHERS JEFFERY L & DESSIE J	516 S UNION ST	99,600
28-51-618-130-00	BARR WILLIAM C & BETTY A TRUST	517 S UNION ST	35,244

28-51-618-044-00	PARSONS PAULETTE G TRUST	520 S UNION ST	102,483
28-51-618-129-00	UNITED WAY OF NORTHWEST MICHIGAN	521 S UNION ST	0
28-51-747-001-00	RIVERINE APARTMENTS LLC	525 RIVERINE DR	380,162
28-51-618-128-00	PROVANCO LTD	525 S UNION ST	71,235
28-51-618-045-00	ZEEZ PROPERTIES LLC	530 S UNION ST	112,613
28-51-618-127-00	MILLS CLAUD	531 S UNION ST	160,279
28-51-747-002-01	FIDLER RICHARD A	545 RIVERINE DR 101	54,200
28-51-747-002-02	RIVERINE DEVELOPMENT LLC	545 RIVERINE DR 102	24,786
28-51-747-002-03	RIVERINE DEVELOPMENT LLC	545 RIVERINE DR 103	26,459
28-51-747-002-04	SOUDEN WESLEY L	545 RIVERINE DR 104	26,307
28-51-747-002-05	MURRAY MARY B	545 RIVERINE DR 105	24,862
28-51-747-002-06	FISHER CHARLES T	545 RIVERINE DR 106	45,800
28-51-747-002-07	NELSON MATTHEW J	545 RIVERINE DR 201	45,600
28-51-747-002-08	FADOIR CINDY	545 RIVERINE DR 202	24,786
28-51-747-002-09	OSTER JENNILYN R	545 RIVERINE DR 203	67,500
28-51-747-002-10	ARENDS PAUL J & RACHEL A	545 RIVERINE DR 204	26,307
28-51-747-002-11	VON DREHLE JAMES B & CHERYL J	545 RIVERINE DR 205	24,862
28-51-747-002-12	MOYER PAUL F & PAULA B	545 RIVERINE DR 206	18,285
28-51-747-002-13	TURNBULL JAMES D	545 RIVERINE DR 301	24,786
28-51-747-002-14	RIVERINE DEVELOPMENT LLC	545 RIVERINE DR 302	26,459
28-51-747-002-15	HILDEN KAYLA M	545 RIVERINE DR 303	26,307
28-51-747-002-16	HILDEN SHERLYN R	545 RIVERINE DR 304	24,862
28-51-747-003-00	RIVERINE APARTMENTS LLC	601 RIVERINE DR	380,162
28-51-747-004-00	RIVERINE APARTMENTS LLC	621 RIVERINE DR	380,162
28-51-682-004-00	TRAVERSE CITY CITY OF	629 LAKE AVE (REAR)	0
28-51-747-005-00	RIVERINE APARTMENTS LLC	641 RIVERINE DR	380,162

Exhibit 5 - Personal Property Parcel List for the Development Area

Parcel Number	Owner Name	Property Address	2016 Taxable Value
28-51-900-011-26	BAY PSYCHOLOGICAL SVCS	245 LAKE AVE F	500
28-51-900-900-72	CUPPA JOE @ HORIZON BOOKS 4 2016	243 E FRONT ST	900
28-51-900-001-21	SOCKS CONST 309 DEVELOPMENT	309 CASS ST	0
28-51-900-001-56	L LEE ENTERPRISES INC	400 CASS ST	0
28-51-900-002-63	BULLDOGS BARBERSHOP	444 CASS ST	0
28-51-900-002-64	WOLVERINE CABINETS	444 CASS ST	0
28-51-900-003-10	CIT TECHNOLOGY FINANCING SVCS INC		0
28-51-900-010-30	RIVERINE APTS LLC	505 RIVERINE DR	30,200
28-51-900-013-13	CIMA ENERGY INC	125 S PARK STE 450 ST	0
28-51-900-044-50	BAY BRIDAL BOUTIQUE	131 E EIGHTH ST	700
28-51-900-053-45	M-22	125 E FRONT ST	0
28-51-900-080-00	BRAUER PRODUCTIONS	530 S UNION ST	0
28-51-900-103-52	CANON FINANCIAL SERVICES INC	141 RIVERS EDGE DR #150	42,700
28-51-900-107-51	TRAVERSE CITY DEVELOPMENT LLC	415 S UNION ST #2	0
28-51-900-107-52	TEAMCO INC	415 S UNION ST #1	0
28-51-900-107-53	HAYSTACKS CLOTHING	415 S UNION ST #A	5,000
28-51-900-107-54	OIL EX, INC.	415 S UNION ST #3B	0
28-51-900-112-21	NEXTEL WEST CORP MI 1784	141 RIVERS EDGE DR	11,900
28-51-900-117-00	CITY BIKE SHOP	322 S UNION ST	0
28-51-900-124-12	EDWARD D JONES & CO #17671	513 S UNION ST	0
28-51-900-139-20	COMPLIANCE INC	223 LAKE AVE #C	0
28-51-900-237-10	COPY CENTRAL	314 E EIGHTH ST	0
28-51-900-309-01	M BANK	309 CASS ST	10,000
28-51-900-312-50	HAGERTY INSURANCE AGENCY INC	141 RIVERS EDGE DR 200	3,706,900

Parcel Number	Owner Name	Property Address	2016 Taxable Value
28-51-900-350-02	PARLOR THE	205 LAKE AVE	0
28-51-900-422-21	BREWERY FERMENT	511 S UNION ST	12,600
28-51-900-425-00	MAPLE CLINIC	525 S UNION ST	1,200
28-51-900-433-00	WILSONS MEAT LLS	407 S UNION ST	52,500
28-51-900-435-10	EDWARD JONES INVESTMENTS	515 S UNION ST 2	0
28-51-900-435-15	OLD TOWNE OPTICAL	515 S UNION ST	0
28-51-900-435-23	BIG BEAUTIFUL LIFE CHIRO & WELLNESS	515 S UNION ST 1/2	0
28-51-900-448-10	HAIR QUARTERS	509 S UNION ST	2,100
28-51-900-458-32	KELLY OIL & GAS LLC	303 S UNION ST 1	0
28-51-900-470-35	NORTHERN LEASING SYSTEMS INC	VARIOUS	0
28-51-900-491-15	BLUE TRACTOR COOKSHOP	423 S UNION ST #A	93,200
28-51-900-502-51	CROSSROADS TITLE	413 S UNION ST	0
28-51-900-510-60	ZIPSER MICHEAL ATTY CPA	420 S UNION ST A	0
28-51-900-510-62	ZEEZ MANAGEMENT SVC	420 S UNION ST	0
28-51-900-513-00	OLDE TOWNE HAIR	418 S UNION ST	1,000
28-51-900-517-29	VERIZON WIRELESS NEW PAR	141 RIVERS EDGE DR	1,100
28-51-900-525-60	PARSONS LAW FIRM PLC	520 S UNION ST	0
28-51-900-525-70	GRANVILLE MANAGEMENT INC.	310 W FRONT ST 305	0
28-51-900-530-50	PASADENA OIL & GAS CORP	500 S UNION ST #5	600
28-51-900-531-10	GREAT LAKES BATH & BODY INC	110 E FRONT ST	5,000
28-51-900-531-39	NORTHERN TITLE AGENCY INC	312 S UNION ST A	0
28-51-900-540-72	RARE BIRD BREWERY & TAP ROOM THE	229 LAKE AVE	184,300
28-51-900-557-00	ELHART CRAIG W ATTORNEY	329 S UNION ST	0

Parcel Number	Owner Name	Property Address	2016 Taxable Value
28-51-900-571-00	RANDY'S OLDE TOWN SERVICE	501 S UNION ST	0
28-51-900-579-50	RE-MAX BAYSHORE PROPERTIES	500 S UNION ST #1/2/3	0
28-51-900-581-65	OLD TOWN PSYCHOLOGICAL SVCS PC	512 S UNION ST	0
28-51-900-586-53	PATISSERIE AMIE	237 LAKE AVE 200	0
28-51-900-586-55	TENANT- OCCUPANT	237 LAKE AVE 200	0
28-51-900-618-02	BLUE HERON 2	408 S UNION ST	0
28-51-900-618-18	SERENITY WELLNESS ACUPUNCTURE &	121 S GARFIELD AVE	0
28-51-900-618-26	URBAN DIVERSIONS	430 S UNION ST	0
28-51-900-618-99	MICHIGAN PLANNERS	417 S UNION ST	83,800
28-51-900-619-19	BROOKE'S HAIR DESIGN	406 S UNION ST	10,000
28-51-900-650-01	ZIMMERMAN KUHN DARLING BOYD	412 S UNION ST #A	0
28-51-900-650-59	PICKLE PRESS PRINTING	223 LAKE AVE #B	10,000
28-51-900-651-30	STYLES INN	411 S UNION ST	0
28-51-900-652-80	SULLIVAN MICHAEL & ASSOC	402 S UNION ST STE B	0
28-51-900-652-81	LOLAS ANTIQUES	402 S UNION ST	0
28-51-900-676-00	THIRLBY AUTOMOTIVE	231 E EIGHTH ST	40,200
28-51-900-682-09	MEDELA INC		0
28-51-900-682-10	THOMPSON PHARMACY	324 S UNION ST	51,500
28-51-900-702-05	AT&T MOBILITY LLC	427 S UNION ST	4,300
28-51-900-724-51	SMART JULIE	405 S UNION ST	10,000
28-51-900-733-15	NORTH COUNTRY VENDING, LLC	401 S UNION ST	400
28-51-900-739-00	BRADYS BAR	401 S UNION ST	0
28-51-900-758-24	CORT FURNITURE RENTAL	413 S UNION ST	0
28-51-900-758-26	EVERYWHERE U GO	413 S UNION ST	0

	Real Property	Personal Property	Total Capture
2017	$23,784	$0	$23,784
2018	$205,829	$0	$205,829
2019	$250,928	$0	$250,928
2020	$403,099	$0	$403,099
2021	$689,674	$0	$689,674
2022	$767,345	$0	$767,345
2023	$808,310	$0	$808,310
2024	$869,300	$0	$869,300
2025	$820,733	$0	$820,733
2026	$862,894	$0	$862,894
2027	$956,705	$0	$956,705
2028	$1,001,910	$0	$1,001,910
2029	$1,048,128	$0	$1,048,128
2030	$1,095,381	$0	$1,095,381
2031	$1,143,691	$0	$1,143,691
2032	$1,193,084	$0	$1,193,084
2033	$1,243,582	$0	$1,243,582
2034	$1,295,211	$0	$1,295,211
2035	$1,347,996	$0	$1,347,996
2036	$1,401,963	$0	$1,401,963
2037	$1,457,138	$0	$1,457,138
2038	$1,513,549	$0	$1,513,549
2039	$1,571,223	$0	$1,571,223
2040	$1,630,188	$0	$1,630,188
2041	$1,690,474	$0	$1,690,474
TOTAL			**$25,292,119**

Parcel Number	Owner Name	Property Address	2016 Taxable Value
28-51-900-767-04	CARDTRONICS USA INC	VARIOUS	0
28-51-900-772-00	GRAY FORD & SEAMAN ATTORNEY	325 S UNION ST	0
28-51-900-779-00	PREZIO HEALTH INC	1105 SIXTH ST	5,600
28-51-900-837-00	FIREFLY	310 CASS ST A	49,200
28-51-900-837-13	IRONWORKS FITNESS	137 LAKE AVE 108	42,600
28-51-900-900-69	SUGAR KISSED	127 E FRONT ST	20,000
28-51-900-900-71	TRAVERSE VISION	336 W FRONT ST	76,300
28-51-900-900-73	MORSELS ESPRESSO + EDIBLES	321 E FRONT ST	0
28-51-901-000-68	BIEHL JUDY	418 S UNION ST	5,000
28-51-901-000-69	MR MUSIC DISC JOCKEY SERVICES, LLC	530 S UNION ST	0
28-51-901-001-77	RECTANGLES LLC	517 S UNION ST	0
28-51-901-001-92	ELEVATED ARTS, STUDIO S FITNESS	444 CASS ST 101	0
28-51-901-001-93	BYTE PRODUCTIONS, LLC	444 CASS ST 203 A	0
28-51-901-002-66	SHED BEER GARDEN	423 S UNION ST	0

Exhibit 6 - Projection of Tax Capture Over the Life of the Plan

	Real Property	Personal Property	Total Capture
2017	$23,784	$0	$23,784
2018	$205,829	$0	$205,829
2019	$250,928	$0	$250,928
2020	$403,099	$0	$403,099
2021	$689,674	$0	$689,674
2022	$767,345	$0	$767,345
2023	$808,310	$0	$808,310
2024	$869,300	$0	$869,300
2025	$820,733	$0	$820,733
2026	$862,894	$0	$862,894
2027	$956,705	$0	$956,705
2028	$1,001,910	$0	$1,001,910
2029	$1,048,128	$0	$1,048,128
2030	$1,095,381	$0	$1,095,381
2031	$1,143,691	$0	$1,143,691
2032	$1,193,084	$0	$1,193,084
2033	$1,243,582	$0	$1,243,582
2034	$1,295,211	$0	$1,295,211
2035	$1,347,996	$0	$1,347,996
2036	$1,401,963	$0	$1,401,963
2037	$1,457,138	$0	$1,457,138
2038	$1,513,549	$0	$1,513,549
2039	$1,571,223	$0	$1,571,223
2040	$1,630,188	$0	$1,630,188
2041	$1,690,474	$0	$1,690,474
TOTAL			**$25,292,119**

Exhibit 7 - Map Showing Location of Anticipated Development Projects

This map corresponds to Table 1 on Page 7

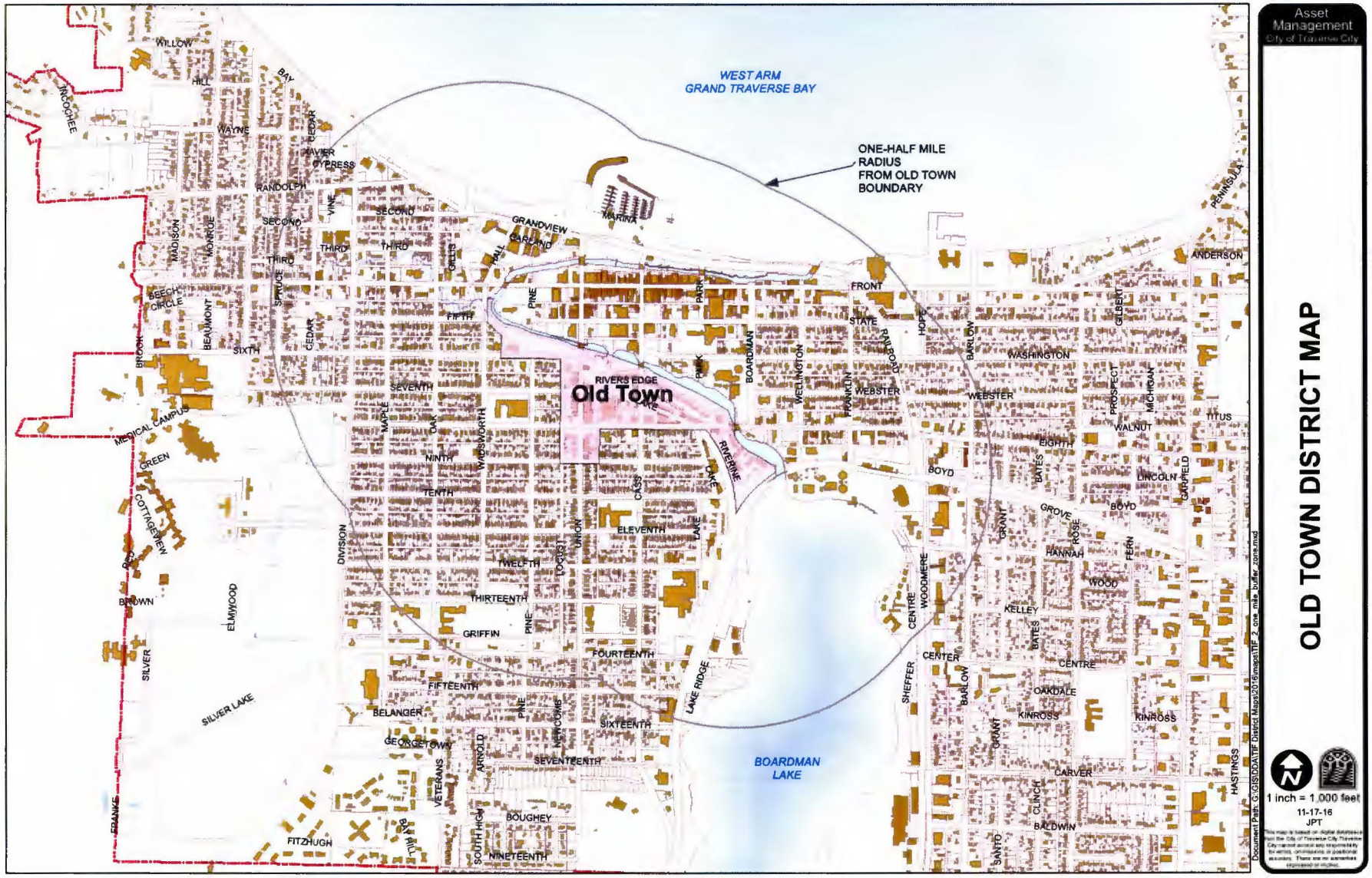
2016 Old Town Development Area

Exhibit 8 - Map Showing Location of Planned Infrastructure Projects

This map corresponds to Table 2 on Page 8

2016 Old Town Development Area

Exhibit 9- Map Showing Location of Planned Housing Incentive Area



The City of Traverse City

Communication to the City Commission

FOR THE CITY COMMISSION MEETING OF NOVEMBER 28, 2016

DATE: NOVEMBER 23, 2016

FROM: MARTY COLBURN, CITY MANAGER

SUBJECT: BOND REFINANCING OF 2007 BONDS – FOR LARRY C. HARDY PARKING DECK

Attached is a letter from Patrick McGow, Bond Counsel, submitting the appropriate resolution to issue bonds for the refinancing of the 2007 Limited Tax General Obligation Bonds for the Larry C. Hardy Parking Deck. (Bonds were originally issued in 2002 for the construction of the deck; and in 2007, market conditions warranted the refinancing of the bonds, which is where we are at again today.) We anticipate the refinancing providing us with approximately $500,000 in savings.

The Downtown Development Authority Board of Directors took action on November 18 adopting a resolution pledging TIF 97 revenues as full faith and credit.

The resolution authorizes Mayor Jim Carruthers and City Clerk Benjamin Marentette to execute the bonds. Additionally, it authorizes myself, Mr. Marentette and City Treasurer/Finance Director William Twietmeyer to take the required actions to issue, sell and deliver the bonds, including finalizing the terms of the Bonds upon sale and sign the Sale Order. All of these actions will be performed with the advice of specialized bond counsel.

I recommend the following motion (5 affirmative votes required):

that the Resolution Authorizing 2017 Downtown Development Refunding Bonds (Limited Tax General Obligation) be adopted relating to the refunding of all or a portion of the City's Outstanding Downtown Development Bonds, Series 2007, Limited Tax General Obligation.

MC/bcm
k:\tcclerk\city commission\resolutions\bond refunding larry hardy parking garage
copy: William Twietmeyer, City Treasurer/Finance Director
Rob Bacigalupi, Downtown Development Authority Executive Director

To: Marty Colburn, City Manager

From: Rob Bacigalupi, Executive Director

Re: Consideration of Resolution Requesting Issuance of 2017 Downtown Development Refunding Bonds (Limited Tax General Obligation) and pledging Tax Increment Revenues

Date: Tuesday, November 22, 2016

The City has an opportunity to refinance the bond issuance for the Hardy Garage (and associated improvements) that would save hundreds of thousands of dollars of debt service for the TIF 97 fund, which is paying off those bonds. Attached is a memorandum from Pat McGow of Miller, Canfield explaining that we are proposing to refinance these bonds that were last refinanced in 2007, during the recession. The original bond issuance was in 2002. You may have seen that the election of Donald Trump for President resulted in some volatility in the bond market. Warren Creamer of Baird said last week that it looks like the bond market has calmed down a bit, giving him a chance to provide the attached refinancing estimate, which pegs our savings at around half a million dollars.

At their November 18, 2016 meeting, DDA Board adopted the attached resolution re-pledging tax increment revenues for the bond issuance and supporting this refinancing. The last attachment is a resolution the City Commission would adopt authorizing this refinancing.

Founded in 1852
by Sidney Davy Miller

MILLER CANFIELD

MICHIGAN: Ann Arbor
Detroit • Grand Rapids
Kalamazoo • Lansing • Troy
FLORIDA: Tampa
ILLINOIS: Chicago
NEW YORK: New York
OHIO: Cincinnati
CANADA: Windsor
CHINA: Shanghai
MEXICO: Monterrey
POLAND: Gdynia
Warsaw • Wrocław

PATRICK F. MCGOW
TEL (313) 496-7684
FAX (313) 496-8450
E-MAIL mcgow@millercanfield.com

Miller, Canfield, Paddock and Stone, P.L.C.
150 West Jefferson, Suite 2500
Detroit, Michigan 48226
TEL (313) 963-6420
FAX (313) 496-7500
www.millercanfield.com

November 11, 2016

Via Email

Mr. Martin Colburn
City Manager
City of Traverse City
400 Boardman Avenue
Traverse City, MI 49684-2542

Re: $8,700,000 City of Traverse City 2017 Downtown Development Refunding Bonds (Limited Tax General Obligation)

Dear Marty:

I have enclosed a Resolution Authorizing 2017 Downtown Development Refunding Bonds (Limited Tax General Obligation) to be considered for approval by the City Commission at its meeting on Monday, November 21st.

The Resolution authorizes the issuance of the Bonds in the amount of $8,700,000 to refund a portion of the City's Downtown Development Refunding Bonds, Series 2007 (Limited Tax General Obligation) (the "2007 Bonds") which were issued to refinance the City's Downtown Development Bonds, Series 2002A, which were originally issued for the purpose of financing the Larry C. Hardy Parking Deck and related streetscape improvements. The City has the ability to achieve interest cost savings by issuing Refunding Bonds (the "Bonds") to take advantage of lower interest rates in today's bond market.

The DDA Board is expected to consider the approval of a Resolution Requesting Issuance of the Bonds and pledging tax increment revenues for repayment of the Bonds at its November 18th meeting. As is the case with the 2007 Bonds, the Bonds would be payable from tax increment revenues of the DDA received from the TIF 97 Plan, but are also secured by the City's pledge of its limited tax full faith and credit.

The Resolution authorizes the issuance of the Bonds in an amount not to exceed $8,700,000. This Resolution sets forth the terms of the Bonds, the form of the Bonds, and provides for a private placement sale of the Bonds, or in the alternative, a negotiated sale public

offering of the Bonds. The Resolution also authorizes various City officials (City Manager, City Treasurer and/or the City Clerk) to take the necessary actions to issue, sell and deliver the Bonds. The Resolution authorizes the solicitation of bids from financial institutions and other prospective purchasers and authorizes the City Manager, City Treasurer or City Clerk to select the purchaser and finalize the terms of the Bonds upon sale and sign the Sale Order.

There are some blanks in the Resolution in the form of the Bond that do not need to be completed at or prior to adoption, but will instead be completed in the final Bond form once the final terms been determined. This Resolution is the only action item required by the City Commission relating to the Refunding Bonds.

If approved by the City Commission and upon receipt of approval from the Michigan Department of Treasury, the Bonds can be sold and delivered between January 1 and March 1 in order to allow the Bonds to be called for redemption on April 1, 2017, which is the first available redemption date.

I would appreciate it if you could have the City Clerk send me three certified copies of the enclosed Resolution upon its approval.

If you have any questions, please let me know.

Very truly yours,

Miller, Canfield, Paddock and Stone, P.L.C.

By: _____
Patrick F. McGow

Enclosure
cc: (w/ Encl.)
William Twietmeyer, City Treasurer
Rob Bacigalupi, DDA Director
Warren M. Creamer, III
Dorothy J. Heebner, Esq.

27858144.2\088888-04425

CITY OF TRAVERSE CITY
COUNTIES OF GRAND TRAVERSE AND LEELANAU, STATE OF MICHIGAN

RESOLUTION AUTHORIZING
2017 DOWNTOWN DEVELOPMENT REFUNDING BONDS
(LIMITED TAX GENERAL OBLIGATION)

Minutes of a regular meeting of the City Commission of the City of Traverse City, Counties of Grand Traverse and Leelanau, Michigan, held in the Governmental Center, 400 Boardman Avenue, Traverse City, Michigan, on the 21st day of November, 2016 at 7:00 o'clock p.m., prevailing Eastern Time.

PRESENT: Members: _____

_____

ABSENT: Members: _____

The following preamble and resolution were offered by Member _____ and supported by Member _____.

WHEREAS, the City of Traverse City, Counties of Grand Traverse and Leelanau, State of Michigan (the "City"), pursuant to the provisions of Act 197, Public Acts of Michigan, 1975, as amended ("Act 197"), has previously issued its Downtown Development Refunding Bonds, Series 2007 (Limited Tax General Obligation) (the "Prior Bonds"); and

WHEREAS, the Prior Bonds were issued in anticipation of the collection of certain tax increment revenues (the "Tax Increment Revenues") from the Traverse City Downtown Development Authority (the "DDA") for the purpose of refunding a portion of the City's Downtown Development Bonds, Series 2002A, which were issued for the purpose of financing certain public improvements in the DDA's Downtown Development Area, as described in the Authority's Tax Increment Financing and Development Plan #97 (the "TIF 97 Plan"), including construction of the Larry C. Hardy Parking Deck and related streetscape improvements; and

WHEREAS, the City and DDA have been advised that it may be able to accomplish a net savings of debt service costs by refunding all or a portion of the outstanding Prior Bonds through the issuance of the City's 2017 Downtown Development Refunding Bonds (Limited Tax General Obligation); and

WHEREAS, the DDA has requested the City to issue the Bonds to achieve debt service savings and the DDA has pledged its Tax Increment Revenues for payment of the Bonds; and

WHEREAS, the City desires to solicit proposals from financial institutions and other prospective purchasers and negotiate the sale of the Bonds to a purchaser within the parameters established by this resolution.

NOW, THEREFORE, BE IT RESOLVED THAT:

1. Authorization of Bonds; Bond Details. Bonds of the City shall be issued in the aggregate principal amount of not to exceed Eight Million Seven Hundred Thousand Dollars ($8,700,000), as finally determined upon sale thereof, to be designated 2017 DOWNTOWN DEVELOPMENT REFUNDING BONDS (LIMITED TAX GENERAL OBLIGATION) (the "Bonds"), for the purpose of paying the cost of refunding all or a portion of the Prior Bonds and issuance costs of the Bonds.

The issue shall consist of bonds fully-registered as to principal and interest of the denomination of $100,000 or integral multiples of $5,000 in excess thereof not exceeding for each maturity the maximum principal amount of that maturity, or alternatively, may consist of a single-instrument, non-convertible bond, as determined at the time of sale. The Bonds shall be dated as of the date of delivery, or such other date as determined by the City Manager, City Treasurer or City Clerk (each, an "Authorized Officer"), numbered as determined by the Transfer Agent (hereinafter defined), and maturing or subject to mandatory redemption on such dates as shall be determined at the time of sale and in the amounts as determined by an Authorized Officer.

The Bonds shall bear interest at a rate or rates to be determined at the time of sale thereof, but in any event not exceeding five percent (5.00%) per annum, payable on such interest payment dates as determined by an Authorized Officer at the time of sale. Interest on the Bonds shall be payable at a bank or trust company located in Michigan and qualified to act as bond registrar, paying agent and transfer agent or by the Treasurer of the City who may be appointed to act as transfer agent for the bonds (the "Transfer Agent"), mailed to the registered owner of record at the registered address, as shown on the registration books of the City maintained by the Transfer Agent as of the fifteenth day of the month prior to the payment date for each interest payment. The date of determination of registered owner for purposes of payment of interest as provided in this paragraph may be changed by the City to conform to market practice in the future. The principal of the Bonds shall be payable at the Transfer Agent upon presentation and surrender of the appropriate Bond. The Authorized Officers are each authorized to select and appoint the Transfer Agent. In the event of the public offering of the Bonds, the Bonds shall be sold at a price not less than 98.00% of the principal amount of the Bonds. The Bonds may be issued as serial or term bonds or both and may be subject to optional or mandatory redemption prior to maturity as determined at the time of sale.

The Bonds may be issued in book entry only form through the Depository Trust Company in New York, New York ("DTC") and the Authorized Officers are authorized to execute such custodial or other agreements with DTC as may be necessary to accomplish the issuance of the Bonds in book entry only form and to make such change in the Bond Form within the parameters of this Resolution as may be required to accomplish the foregoing.

2. Execution of Bonds. The Bonds shall be signed by the manual or facsimile signatures of the Mayor and the City Clerk and shall have the facsimile seal of the City printed on the Bonds. No Bond executed by facsimile signatures shall be valid until authenticated by an authorized representative of the Transfer Agent. The Bonds shall be delivered to the Transfer Agent for authentication and be delivered by it to the purchaser in accordance with instructions from the City Treasurer upon payment of the purchase price for the Bonds in accordance with the offer therefor when accepted. Executed blank certificates for registration and issuance to transferees shall simultaneously, and from time to time thereafter as necessary, be delivered to the Transfer Agent for safekeeping.

3. Security for Bonds; Defeasance. The Bonds shall be issued in anticipation of and payable in the first instance from payments required to be made by the DDA of Tax Increment Revenues pursuant to the TIF 97 Plan ("Tax Increment Revenue Payments"), which Tax Increment Revenue Payments are anticipated to be in amounts sufficient to pay principal of and interest on the Bonds and which are hereby pledged to the payment of the Bonds. In addition, the City hereby pledges its full faith and credit for the prompt payment of the Bonds. Should the Tax Increment Revenue Payments at any time be insufficient to pay principal of and interest on the Bonds as the same become due, then the City shall advance as a first budget obligation from any funds legally available therefor, or, if necessary, levy taxes upon all taxable property in the City subject to applicable constitutional, statutory, and charter tax rate limitations, such sums as may be necessary to pay said principal and interest. The City shall be reimbursed for any such advance by the DDA from Tax Increment Revenues. The City Treasurer is authorized and directed to open a separate fund with a bank or trust company designated by the City Commission to be known as the 2017 DOWNTOWN DEVELOPMENT REFUNDING BONDS DEBT RETIREMENT FUND (the "Debt Retirement Fund"), the moneys to be deposited into the Debt Retirement Fund to be specifically earmarked and used solely for the purpose of paying principal of and interest on the Bonds as they mature. Into said fund there shall be placed the accrued interest, if any, received at the time of delivery of the Bonds. In addition, there shall be paid into said fund the Tax Increment Revenue Payments as received from the DDA each year until the amount on hand in the Debt Retirement Fund, together with any amounts on hand in the Debt Retirement Fund available for payment of current principal and interest on the Bonds, is equal to all payments of principal and interest coming due on the Bonds prior to the next collection of taxes.

The City reserves the right to issue additional bonds of equal standing and priority of lien with the Bonds as to the Tax Increment Revenues, subject to the limitations of Act 197.

In the event cash or direct obligations of the United States or obligations the principal of and interest on which are guaranteed by the United States, or a combination thereof, the principal of and interest on which, without reinvestment, come due at times and in amounts sufficient to pay the principal of and interest on the Bonds when due, shall be deposited in trust, this Resolution shall be defeased and the owners of the Bonds shall have no further rights under this Resolution except to receive payment of the principal of and interest on the Bonds from the cash or securities deposited in trust and the interest and gains thereon and to transfer and exchange Bonds as provided herein.

4. Escrow Account; Escrow Agreement. There is hereby established with the Escrow Agent (hereinafter defined) a fund to be designated as CITY OF TRAVERSE CITY 2017 ESCROW ACCOUNT (the "Escrow Account"). The Escrow Account shall be held in trust by a Michigan bank or trust company eligible to act as escrow agent (the "Escrow Agent"). Certain of the proceeds of the Bonds and, if deemed necessary or advisable by the City, moneys on hand in the Debt Retirement Fund for the Prior Bonds, as set forth in the order awarding sale of bonds (the "Sale Order"), shall be deposited in the Escrow Account consisting of cash and investments in direct obligations of or obligations of the principal of and interest on which are unconditionally guaranteed by the United States of America or other obligations the principal of and interest on which are fully secured by the foregoing not redeemable at the option of the City in amounts fully sufficient to pay the principal of and interest on the Prior Bonds to be refunded as set forth in the Sale Order (the "Refunded Bonds"). The Escrow Account shall be held by the Escrow Agent pursuant to an escrow agreement (the "Escrow Agreement") which shall irrevocably direct the Escrow Agent to take all necessary steps to pay the principal of and interest on the Refunded Bonds when due and upon call for redemption. The amounts held in the

Escrow Account shall be such that the cash and investments and income received thereon will be sufficient without reinvestment to pay the principal of and interest on the Refunded Bonds when due and upon redemption as required by the Sale Order. Any proceeds of the Bonds in excess of the proceeds deposited in the Escrow Account or required to pay costs of issuance shall be used for any lawful purpose as specified in the Sale Order.

The Authorized Officers are authorized negotiate the terms of and execute and deliver the Escrow Agreement on behalf of the City.

5. Bond Form. The Bonds shall be in substantially the following form with such changes as may be required to conform to the final terms of the Bonds established by the Sale Order:

UNITED STATES OF AMERICA
STATE OF MICHIGAN
COUNTIES OF GRAND TRAVERSE AND LEELANAU

CITY OF TRAVERSE CITY

2017 DOWNTOWN DEVELOPMENT REFUNDING BOND
(LIMITED TAX GENERAL OBLIGATION)

Interest Rate	Maturity Date	Date of Original Issue	CUSIP
	_____ 1, 20__	_____, 2017	

Registered Owner:

Principal Amount: Dollars

The City of Traverse City, Counties of Grand Traverse and Leelanau, State of Michigan (the "City"), acknowledges itself to owe and for value received hereby promises to pay to the Registered Owner specified above, or registered assigns, the Principal Amount specified above, in lawful money of the United States of America, on the Maturity Date specified above, unless prepaid prior thereto as hereinafter provided, with interest thereon (computed on the basis of a 360 day year consisting of twelve 30-day months) from the Date of Original Issue specified above or such later date to which interest has been paid, at the Interest Rate per annum specified above, payable on _____ 1, 2017 and semiannually thereafter. Principal of this bond is payable [at the _____ office of _____, _____, Michigan,] [by the Treasurer of the City] or such other paying agent as the City may hereafter designate by notice mailed to the registered owner not less than sixty (60) days prior to any interest payment date (the "Transfer Agent"). Interest on this bond is payable to the person or entity which is the registered owner of record as of the 15th day of the month preceding the interest payment date as shown on the registration books of the City kept by the Transfer Agent, by check or draft mailed by the Transfer Agent to the registered owner of record at the registered address.

Principal of and interest on this bond are payable in the first instance from Tax Increment Revenues (as defined by law) to be received by the City from the Traverse City Downtown Development Authority (the "Authority"). In addition, for prompt payment of this bond, both principal and interest, the full faith, credit and resources of the City are hereby irrevocably pledged. In case of insufficiency of the Tax Increment Revenues received by the Authority for the payment of the principal of and interest on this bond, the City is obligated to pay the same as a first budget obligation from its general funds or from any taxes which it may levy, subject to applicable constitutional, statutory, and charter tax rate limitations.

This bond is one of a series of bonds aggregating the principal sum of $_____, issued pursuant to Act 197, Public Acts of Michigan, 1975, as amended, Act 34, Public Acts of Michigan, 2001, as amended, and a resolution duly adopted by the City Commission of the City for the purpose of paying all or part of the cost of refunding a prior bond issue of the City. The City and the Authority have reserved the right to issue additional bonds payable from Tax Increment Revenues to the extent permitted by law.

Bonds maturing in the years 20__ to 20__, inclusive, shall not be subject to redemption prior to maturity.

Bonds or portions of bonds in multiples of $5,000 maturing in the year 20__ and thereafter shall be subject to redemption prior to maturity, at the option of the City, in any order of maturity and by lot within any maturity, on any date on or after _____ 1, 20__, at par and accrued interest to the date fixed for redemption.

In case less than the full amount of an outstanding bond is called for redemption, the Transfer Agent, upon presentation of the bond called for redemption, shall register, authenticate and deliver to the registered owner of record a new bond in the principal amount of the portion of the original bond not called for redemption.

Notice of redemption shall be given to the registered owner of any bond or portion thereof called for redemption by mailing of such notice not less than thirty (30) days prior to the date fixed for redemption to the registered address of the registered owner of record. A bond or portion thereof so called for redemption shall not bear interest after the date fixed for redemption provided funds are on hand with the Transfer Agent to redeem said bond or portion thereof.

This bond is transferable only upon the registration books of the City kept by the Transfer Agent by the registered owner of record in person, or by the registered owner's attorney duly authorized in writing. Upon the surrender of this bond together with a written instrument of transfer satisfactory to the Transfer Agent duly executed by the registered owner or the registered owner's attorney duly authorized in writing and upon the payment of the charges, if any, prescribed in the resolution authorizing this bond, a new registered bond or bonds in the same aggregate principal amount and of the same maturity shall be issued to the transferee in exchange therefor as provided in the resolution authorizing this bond. Neither the City nor the Transfer Agent shall be required to transfer or exchange this bond or portion of this bond either during the period of fifteen (15) days immediately preceding the date of the mailing of any notice of redemption or (except as to the unredeemed portion, if any, of this bond) after this bond or any portion of this bond has been selected for redemption.

It is hereby certified and recited that all acts, conditions and things required by law to be done, precedent to and in the issuance of this bond and the series of bonds of which this is one, exist and have been done and performed in regular and due form and time as required by law, and that the total indebtedness of the City, including this bond and the series of bonds of which this is one, does not exceed any constitutional, statutory, or charter debt limitation.

This bond is not valid or obligatory for any purpose until the Transfer Agent's Certificate of Authentication on this bond has been executed by the Transfer Agent.

IN WITNESS WHEREOF, the City of Traverse City, Counties of Grand Traverse and Leelanau, State of Michigan, by its City Commission, has caused this bond to be signed in the name of the City by the facsimile signatures of its Mayor and Clerk and a facsimile of its corporate seal to be printed hereon, all as of the Date of Original Issue.

City of Traverse City
Counties of Grand Traverse and Leelanau
State of Michigan

By: _____
Its Mayor

(SEAL)

By: _____
Its Clerk

[FORM OF TRANSFER AGENT'S CERTIFICATE OF AUTHENTICATION]

Date of Registration:

Certificate of Authentication

This bond is one of the bonds described in the within-mentioned resolution.

_____,
_____, Michigan

Transfer Agent

By: _____

Authorized Signature

6. Negotiated Sale. The City Commission has considered the option of selling the Bonds through a competitive sale and a negotiated sale, and, pursuant to the requirements of Act 34 has determined to proceed with the sale of the Bonds by means of a negotiated sale because of the flexibility and efficiency provided by a negotiated sale to select and adjust the terms for the Bonds to best achieve the most advantageous interest rates and obtain the lowest issuance costs and interest costs for the City. The Bonds may be sold through a private placement or, in the alternative, as a public offering as determined by an Authorized Officer.

7. Delegation to Authorized Officers; Sale Order; Treasury Approval. Each Authorized Officer is hereby authorized to solicit proposals from and select a purchaser for the Bonds and to place the Bonds with the purchaser, subject to the parameters set forth in this Resolution. Each Authorized Officer is authorized to award the sale of the Bonds to the purchaser pursuant to a bond purchase agreement and/or a sale order, subject to the parameters set forth in this Resolution. Each Authorized Officer is authorized and directed to take all other actions necessary or advisable, and to make such other filings with the Michigan Department of Treasury or other parties, to seek long-form application for prior approval and necessary waivers to enable the sale and delivery of the Bonds as contemplated herein. The City's Bond Counsel and Placement Agent (as designated below) are hereby designated responsibility on behalf of the City to make such filings with the Michigan Department of Treasury or other parties, to seek long-form application for prior approval and necessary waivers to enable the sale and delivery of the Bonds as contemplated herein.

8. Adjustment of Bond Terms. The Authorized Officers are each hereby authorized to adjust the final bond details as set forth herein to the extent necessary or convenient to complete the sale of the Bonds and in pursuance of the forgoing is each authorized to exercise the authority and make the determinations pursuant to Sections 315(1)(d) of Act 34, including but not limited to determinations regarding interest rates, prices, discounts, maturities, principal amounts, denominations, date of issuance, interest payment dates, redemption rights and other matters within the parameters established by this resolution *provided* that the principal amount of Bonds issued shall not exceed the principal amount authorized in this resolution, the interest rate per annum on the Bonds shall not exceed five percent (5.00%) per annum. In the event of a public offering, the purchase price shall not be less than 98% of the principal amount of the Bonds. The refunding of the Prior Bonds shall result in a net present value savings to the City.

9. Tax Covenant; Qualified Tax Exempt Obligations. The City shall, to the extent permitted by law, take all actions within its control necessary to maintain the exclusion of the interest on each issue of the Bonds from gross income for federal income tax purposes under the Internal Revenue Code of 1986, as amended (the "Code"), including, but not limited to, actions relating to any required rebate of arbitrage earnings and the expenditures and investment of Bond proceeds and moneys deemed to be Bond proceeds. The City hereby designates the Bonds as "qualified tax exempt obligations" for purposes of deduction of interest expense by financial institutions pursuant to the Code.

10. Authorization of Other Actions. In the event of a sale of the Bonds through a public offering, the Authorized Officers are each authorized and directed to (a) approve the circulation of a preliminary official statement describing the Bonds and to deem the preliminary official statement "final" for purposes of Rule 15c2-12 of the SEC; (b) approve the circulation of a final official statement describing the Bonds and to execute the same on behalf of the City; (c) solicit bids for and approve the purchase of a municipal bond insurance policy for the Bonds; and (d) do all other acts and take all other

necessary procedures required to effectuate the sale, issuance and delivery of the Bonds.

11. Appointment of Bond Counsel. The appointment of the law firm of Miller, Canfield, Paddock and Stone, P.L.C. of Detroit, Michigan, as Bond Counsel for the Bonds is hereby confirmed, notwithstanding the periodic representation by Miller, Canfield, Paddock and Stone, P.L.C., in unrelated matters of potential parties to the issuance of the Bonds.

12. Placement Agent. Robert W. Baird & Co. is hereby retained as the placement agent to the City in connection with the issuance of the Bonds.

13. Conflict. All resolutions and parts of resolutions insofar as they conflict with the provisions of this Resolution be and the same hereby are rescinded.

RESOLUTION DECLARED ADOPTED.

YEAS: _____

_____

NAYS: _____

ABSTAIN: _____

_____
Benjamin Marentette
City Clerk

I hereby certify that the foregoing constitutes a true and complete copy of a resolution adopted by the City Commission of the City of Traverse City, Counties of Grand Traverse and Leelanau, State of Michigan, at a regular meeting held on November 21, 2016, and that said meeting was conducted and public notice of said meeting was given pursuant to and in full compliance with the Open Meetings Act, being Act 267, Public Acts of 1976, and that the minutes of said meeting were kept and will be or have been made available as required by said Act.

_____
Benjamin Marentette
City Clerk

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