MANDEL GROUP

330 East Kilbourn Avenue
Suite 600 South
Milwaukee, Wisconsin 53202
414 . 347 . 3600
mandelgroup.com

December 21, 2020

Mr. Thomas Harrigan
Zoning and Planning Administrator
Village of Elm Grove
13600 Juneau Boulevard
Elm Grove, WI 53122

Re: School Sisters of Notre Dame Redevelopment Requests

Dear Tom:

I am pleased to submit materials to the Village of Elm Grove for the following requests related to the School Sisters of Notre Dame's property at 13105 Watertown Plank Road, (the "Property"):

1. Approval of a Certified Survey Map to divide the Property into four lots.
2. Amendment of the Comprehensive Plan
3. Rezoning a portion of the Property from I-1 to RM-1, RS-3, and RS-4 with a Planned Development Overlay;
4. Approval of Redevelopment Plans

Thank you for this opportunity to submit this request. Please contact me if you have any questions or need any additional information.

Sincerely,

MANDEL GROUP PROPERTIES LLC

Phillip Aiello

Chief Operating Officer

School Sisters of Notre Dame
Redevelopment Submission

December 21, 2020

Materials for Requests of:

Certified Survey Map Approval

Comprehensive Plan Amendment Approval

Rezoning a portion of the Property from I-1 to RM-1, RS-3, and RS-4 with a Planned Development Overlay;

Redevelopment Plans Approval

Submitted by: Mandel Group Properties LLC

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Introduction

Redevelopment Overview

Mandel Group Properties LLC ("Mandel") is proposing to redevelop the School Sisters of Notre Dame property located at 13105 Watertown Plank Road (the "Property") to a mixed-use development with a maximum of 240 market-rate, luxury apartments, a maximum of 26 single-family homes, and a cemetery. This redevelopment includes the preservation of two historic buildings known as Notre Dame Hall and Maria Hall.

Property Division and Zoning

Mandel submits this request to divide the property into four lots as depicted on the Certified Survey Map on Exhibit A. Mandel also requests the rezoning of the lots as indicated in the table below.

Parcel	Zoning Request
Lot 1	RS-3 with a Planned Development Overlay
Lot 2	RM-1 with a Planned Development Overlay
Lot 3	Remain as I-1
Lot 4	RS-4 with a Planned Development Overlay

A plan that indicates the zoning request in context with the surrounding zoning is included as Exhibit B. This zoning request will require an amendment to the Comprehensive Plan.

Redevelopment Program

The redevelopment of the Property will include multifamily apartments, single-family homes, and a cemetery. Please see the site plan attached as Exhibit C. The program for the redevelopment is indicated in the table below.

Parcel	Program
Lot 1	Maximum of 11 single-family homes
Lot 2	Maximum of 240 apartments with a maximum of 205 apartments in three, new-construction, three-story buildings and a maximum of 35 apartments in the historic buildings known as Notre Dame Hall and Maria Hall. Parking for the new-construction buildings and historic buildings will include 392 in an underground structure located beneath and outside the footprint of the new construction buildings.
Lot 3	Existing cemetery land with the School Sisters of Notre Dame retaining ownership
Lot 4	Maximum of 15 single-family homes

Comprehensive Plan Amendment

Required Materials

Pursuant to Section 335-77 of the Village of Elm Grove Municipal Code, petitions for the amendment of the Comprehensive Plan require the following items:

1. Plot plan, drawn to a scale of one inch equals 100 feet, showing the area proposed to be rezoned, its location, its dimensions, the location and classification of adjacent zoning districts and the location and existing use of all properties within 300 feet of the area proposed to be rezoned. (See Exhibits B and D) (Note: Exhibit B is not plotted as 1 inch equals 100 feet.)
2. Owners' names and addresses of all properties lying within 100 feet of the area proposed to be rezoned. (See Exhibit E)
3. Additional information required by the Plan Commission or Village Board.
4. Description of the premises to be rezoned or the regulations to be amended, list the reasons justifying the petition.

Rationale for Petition

The Comprehensive Plan adopted November 27, 2007 highlights strengths, challenges, goals, and objectives for Smart Growth development of the Village of Elm Grove. The redevelopment of the Property was not contemplated at the time of adoption as the School Sisters plans to leave the property were not known at that time. As such, an amendment to the Comprehensive Plan to address this pending change is warranted. Specifically, we are requesting that the Comprehensive Plan be modified to identify multifamily apartments and single-family homes as approved uses. Our plan to redevelop the Property is consistent with the goals and objectives of the Comprehensive Plan as outlined below.

Market Demand/Housing Supply

The Comprehensive Plan indicates that senior-aged persons desiring to downsize from their current homes may not find smaller-scale housing in the Village, precipitating them to move elsewhere. As such, the Comprehensive Plan establishes a goal of encouraging adequate housing selection and supply that meets existing and forecasted demand with a specific objective of ensuring high-quality residential environments are maintained throughout the Village.

The Comprehensive Plan specifically contemplates the inclusion of residential uses within the Downtown Overlay District. Although the Property is located outside this District per the Comprehensive Plan, the Downtown Master Plan considers the Property as part of the District. The combination of multifamily apartments and single-family homes in the redevelopment plan will meet the demands of empty nesters and larger families desiring to continue to live or move to the Village.

Economic Development

The Comprehensive Plan encourages "…the creation of upscale, high-quality, multifamily residential uses as a component of a mixed-use concept that increases the quantity and variety of living options available to Elm Grove residents who desire to live within easy walking distance of amenities offered in the Downtown Business District." This objective was identified to overcome the barrier that the lack of density throughout the Village poses to the economic viability of the commercial district.

Our development increases the number of residents in the Village and places affluent residents near the Downtown Business District, creating a synergy between the retailers and their patrons.

The Comprehensive Plan also highlighted that a portion of the buildings in the Downtown Business District need renovation. The reinvestment in these commercial real estate assets requires a strong consumer base. The inclusion of the multifamily apartments creates a deeper customer base within walking distance of the District upon which the retailers can draw, thereby creating a positive economic environment that promotes reinvestment by the commercial property owners.

Participants in the Comprehensive Plan also recognized that the Village is fully developed, with limited opportunities to expand the tax base. The nearly 30 acres associate with the Property represent the largest redevelopment opportunity in the Village. This development will create over $1,000,000 in annual tax revenue for the Village on a property that currently is not on the tax rolls.

Municipal Water Opportunity

The Comprehensive Plan identifies the concern that the Village's reliance on wells, "…may not represent a viable, long-term alternative for many residential, commercial and industrial properties." The shortage of water in Waukesha county has driven the need to drive deeper wells and driven the decrease in water quality. Municipal water in lieu of well water is identified as an important component to the attraction of new businesses and the support of existing ones. The Comprehensive Plan encourages the Village to continue to maintain the pursuit of a water service agreement with adjoining municipalities a priority.

The redevelopment of the Property provides an opportunity for the Village to burden this Property alone with the cost of a significant portion of the municipal water infrastructure. A portion of the incremental tax revenue would pay for this water infrastructure through the creation of a Tax Increment District.

Pursuit of a water service agreement with Wauwatosa or Milwaukee would be consistent with the development of intergovernmental relationships, another objective identified in the Comprehensive Plan.

Cultural and Natural Resource Retention

The redevelopment plan is also consistent with objectives within the Comprehensive Plan to preserve cultural and natural resources.

The plan preserves Notre Dame and Maria Halls, the two most identifiable and historically significant buildings on the Property. These buildings not only will maintain their iconic position in the Village but also will provide an opportunity for the community to interact and utilize them. The plan includes the redevelopment of the heritage room in Notre Dame Hall which will be repurposed to an event space which Village residents can use.

The plan also includes markers and plaques along the walking path that highlight the contributions of the School Sisters throughout their history in Elm Grove. This preservation provides a cultural connection for the residents of the Village.

The redevelopment plan also preserves and enhances the wildlife habitat. Bird species require habitat that provides for food, shelter, and the rearing of young. Currently the available habitat for bird species on the Property consists primarily of the existing, aging population of trees (good for nesting and shelter) and expansive areas turf grass (suitable mainly for the nuisance species Canada goose). The proposed landscape plan for the SSND campus proposes to increase the quality and quantity of habitat for desirable bird species through four strategies: 1) maintain and enhance the best existing bird habitat by keeping the most ecologically valuable trees with supplemental plantings of native trees and shrubs , 2) reduce turf grass, 3) install native plantings in formal areas throughout the campus, and 4) restore naturalized areas of the campus to native prairie to provide food and shelter opportunities supporting both a larger number of individual birds and a greater number of bird species.

A greater quantity and diversity of flowering plants, grasses, and fruit-bearing native trees and shrubs will provide food (seeds and berries for the birds as well as in increase in pollinating insects upon which birds feed) for multiple species of birds. Finally, increasing the number of birds on campus will also benefit birds at the top of the food chain, such as the existing owls and hawks in the area that currently use the campus for hunting birds and small mammals. In summary, the proposed landscape plan at the Property will protect and enhance the quality of habitat for bird species by utilizing native planting to the greatest degree possible.

Preservation of Village and Neighborhood Character

While meeting market demand, promoting economic development, defraying the costs for municipal water, and preserving cultural and natural resources are important objectives, they must be accomplished in a manner that preserves the character of the Village and the surrounding neighborhood.

The architecture of the apartment buildings has been modified per the comments received from the Building Board and elected officials during the concept review process and independent discussions. The buildings along Watertown Plank Road have been detailed in a manner that makes them readily identifiable as residential buildings. The critical mass of the apartments was placed in the center of the campus and towards Watertown Plank Road as the buildings along this corridor are of similar scale, particularly as compared to

the Watermark condominiums across the street and the buildings in the commercial district.

The layout of the site also provides a transition from multifamily to existing single-family homes by providing single-family lots along Red Barn Lane along the eastern edge of the property, a significant green buffer and berm near the single-family homes along Green Meadow Place, and single-family homes in the southern part of the campus. These transitions protect the existing single-family neighborhoods.

The apartment buildings will be built with high-quality materials consistent with the quality demonstrated throughout Elm Grove.

Residential uses are limited traffic generators. Making the change from the Property's industrial zoning designation to the underlying residential uses limits the impact on traffic counts in the area. The traffic impact analysis conducted for this development plan demonstrates the minimal change to traffic flow, thereby having minimal impact on the feel of the downtown area. The traffic impact analysis has been included as Exhibit F.

Planned Development Overlay Petition

Pursuant to Section 335-30(G)(2) of the Village of Elm Grove Municipal Code, petitions for a Planned Development Overlay ("PDO") require the following items:

1. A statement that describes the relationship of the proposed PDO District to the Village's Zoning Code, adopted Master Plan (or any adopted component thereof), and describes in detail the uses requested to be included in the proposed PDO District.
2. A general development plan

Petition Statement

The program for the redevelopment was set forth in the Introduction section above. The uses for the four lots on the Certified Survey Map are repeated in the table below.

Parcel	Program
Lot 1	Maximum of 11 single-family homes
Lot 2	Maximum of 240 apartments with a maximum of 205 apartments in three, new construction, three-story buildings and a maximum of 35 apartments in the historic buildings known as Notre Dame Hall and Maria Hall. Parking for the new-construction buildings and historic buildings will include 392 parking spaces in an underground structure located beneath and outside the footprint of the new construction buildings.
Lot 3	Existing cemetery land with the School Sisters of Notre Dame retaining ownership
Lot 4	Maximum of 15 single-family homes

Total Area and Area of Open Space

The area of each lot and total area with the PDO are shown below.

Parcel	Area (Acres)	Area (SF)	Open Space (SF)	Open Space (%)
Lot 1	4.32	188,325	151,849	81%
Lot 2	15.59	679,039	423,144	62%
Lot 3	Excluded	Excluded	Excluded	Excluded
Lot 4	5.77	251,169	175,417	70%
TOTAL	**25.68**	**1,118,533**	**750,410**	**67%**

Proposed Number of Dwelling Units and Density Calculations

The number of dwelling units and density calculations are shown below.

Parcel	Area (Acres)	Maximum Dwelling Units	Maximum Dwelling Units Per Acre
Lot 1	4.32	11	2.55
Lot 2	15.59	240	15.39
Lot 3	Excluded	Excluded	Excluded
Lot 4	5.77	15	2.60
TOTAL	**25.68**	**266**	**10.36**

Pursuant to Section 335-30(F)(1)(b), in a PDO District, "[t]he number of residential units allowed as a conditional use in the underlying zoning district, which can be less, but not more than, a maximum total density of 12 dwelling units per net acre". Per Section 335-20(C)(2), multifamily dwellings over 8 dwelling units per acre are considered a conditional use.

In addition, Section 335-30(F)(2), indicates that "…residential unit density in all PDO Districts shall be calculated by considering all land encompassed within the proposed project area." As such, we are not required to obtain the enhanced density designation because the density is below 12 dwelling units per acre.

Projected Population Analysis

The estimated number of residents for each lot is shown in the table below. We utilized a combination of census data and Mandel Group property data to estimate the number of residents per dwelling unit. The Mandel Group data were drawn from five representative suburban apartment communities with characteristics similar to this development.

Parcel	Maximum Dwelling Units	Estimated Residents Per Dwelling Unit	Estimated Residents
Lot 1	11	2.62[1]	29
Lot 2	240	1.44[2]	346
Lot 3	Excluded	Excluded	Excluded
Lot 4	15	2.621	39
TOTAL	**266**		**414**

[1]Source: census.gov, Village of Elm Grove Statistics
[2]Based on representative Mandel Group properties

School District Impact

The development of the Property should have a limited impact on the Elmbrook School District. We utilized a combination of census data and Mandel Group property data to estimate the number of residents per dwelling unit. The Mandel Group data were drawn from five representative suburban apartment communities with characteristics similar to this development.

The 74% figure for school age children reflects the assumption that children ages 0 through 4 years old are part of the total children estimate but have not reached school age. This assumption also implies that the number of children of each age between 0 through 18 will be the same.

The 70% number for percentage of children in public schools was an estimate of how many children would attend public schools in lieu of private schools.

Parcel	Lots 1 and 4 (Single Family)	Lot 2 (Multifamily)	Total
Number of Residents	68	346	414
% Children	23.4%[1]	8.1%[2]	
Total Children	16	28	44
% School Age Children	74%	74%	74%
School Age Children	12	21	33
% Public Schools	70%	70%	70%
School Age Children – Public Schools	**8**	**15**	**23**

Municipal Service Impact

We anticipate that some demand for municipal services will be generated by the multifamily and single-family homes. Considering the average age of residents in our developments will be lower than the average age of the nearly 100 School Sisters residing at the property and that we anticipate many of our residents to be living in the Village already, we do not anticipate a significant increase in emergency medical services. The homes that our residents will sell to move to our apartment community will likely be purchased by young families that do not tax the EMS system.

In discussions with the fire department, they indicated that the impact on their services should be minimal because the apartments will be sprinklered. Access for their fire trucks, including an additional, emergency-vehicle-only entrance along Watertown Plank Road, appropriate widths of streets, and a review of fire trucks turning radii, was confirmed during the development of the plan.

Estimated Cost of Construction

The estimated cost to construct the new apartment buildings and associated amenities, renovate the historic buildings, construct the single-family homes, and construct the associated infrastructure, including municipal water is approximately $120 million.

Development Agreement and Ownership Structure

Executives of Mandel Group Properties LLC will negotiate the development agreement with the Village. A development entity formed as a limited liability corporation and affiliated with Mandel Group will wholly own the development. An additional limited liability corporation affiliated with Mandel Group will act as the Managing Member of the development entity.

Mandel Property Services, Inc. will professionally manage the apartment community.

The single-family lots (Lots 1 and 4) will be sold to and developed by a single-family developer unrelated to Mandel Group. Lot 1 along Red Barn Lane will be subdivided into a maximum of 11 lots. These homes will be owner-occupied and will not require a homeowner's association. Lot 4 on the south portion of the campus will be subdivided into a maximum of 15 lots. These homes will be owner-occupied. At the single-family home developer's discretion, a homeowner's association may be created to manage the maintenance of common area space.

Departures from Zoning Ordinance and Statutes

The plan is in conformance with Village of Elm Grove Ordinances. Per Section 335.30 (D)(2), "PDO Districts may, however, deviate from the requirements of the underlying zoning district with respect to maximum building height, yard areas, lot dimensions, setbacks and parking requirements." As such, the plan conforms to the Village of Elm Grove's zoning code.

Please note that an approximately 12’ long bumpout on the eastern edge of building 1 is 9.3’ from the property line shared with the cemetery. A modification to the plan might be needed, depending on the interpretation of state statute for the definition of a public cemetery. Statue requires a 15’ setback from a public cemetery but offers more flexibility for a private cemetery.

Schedule

The anticipated approvals and construction schedule for the multifamily development is as follows.

Entitlements Approval Process	December 2020 - April 2021
Tax Increment Financing Approval Process	February 2021 - May 2021
Building Permit Approval	August 2021 - October 2021
Demolition	December 2021 - February 2022
Multifamily Construction	December 2021 - August 2023

Financial Resources

Mandel Group has a nearly 30-year track record financing multifamily developments throughout the greater Midwest, financing over $1 billion in developments and acquisitions since our inception. Mandel Group owns or manages approximately 5,600 apartments across 30 properties in five states.

We have strong relationships with BMO Harris, CIBC, and Associated Bank to name a few lenders active in southeastern Wisconsin. Commitments from lenders and equity investors will be put in place once entitlements are secured, municipal financing is negotiated, construction drawings are developed, and construction costs are determined. We are happy to provide lender references at the Village’s request.

Development Plans, Studies, and Exhibits

We respectfully submit the following development plans, studies, and exhibits for the Village's consideration of the CSM, Comprehensive Plan Amendment, Planned Development Overlay Petition, and Plan Review.

Architectural Materials – Drawings List

Underground Parking Plan
Overall First Floor Plan
Overall 2nd/3rd Floor Plan
Watertown Plank Elevation
Building 1 Elevations
Building 2 Elevations
Building 3 Elevations
Architectural Renderings

Civil Engineering Materials – Drawings List

C100 – Site Plan
C110 – Erosion Control Plan
C111 – Erosion Control Details
C112 – Erosion Control Details
C300 – Grading Plan
Setbacks Exhibit
Supplemental Site Exhibit
Stormwater Management Report

Landscaping Materials – Drawings List

L-1 – Existing Trees
L-2 – Trees to Remove
L-3 – Trees to Remain
Tree Survey Preservation Schedule
L-4 – Landscape Plan

L-5 – Landscape Planting Schedule

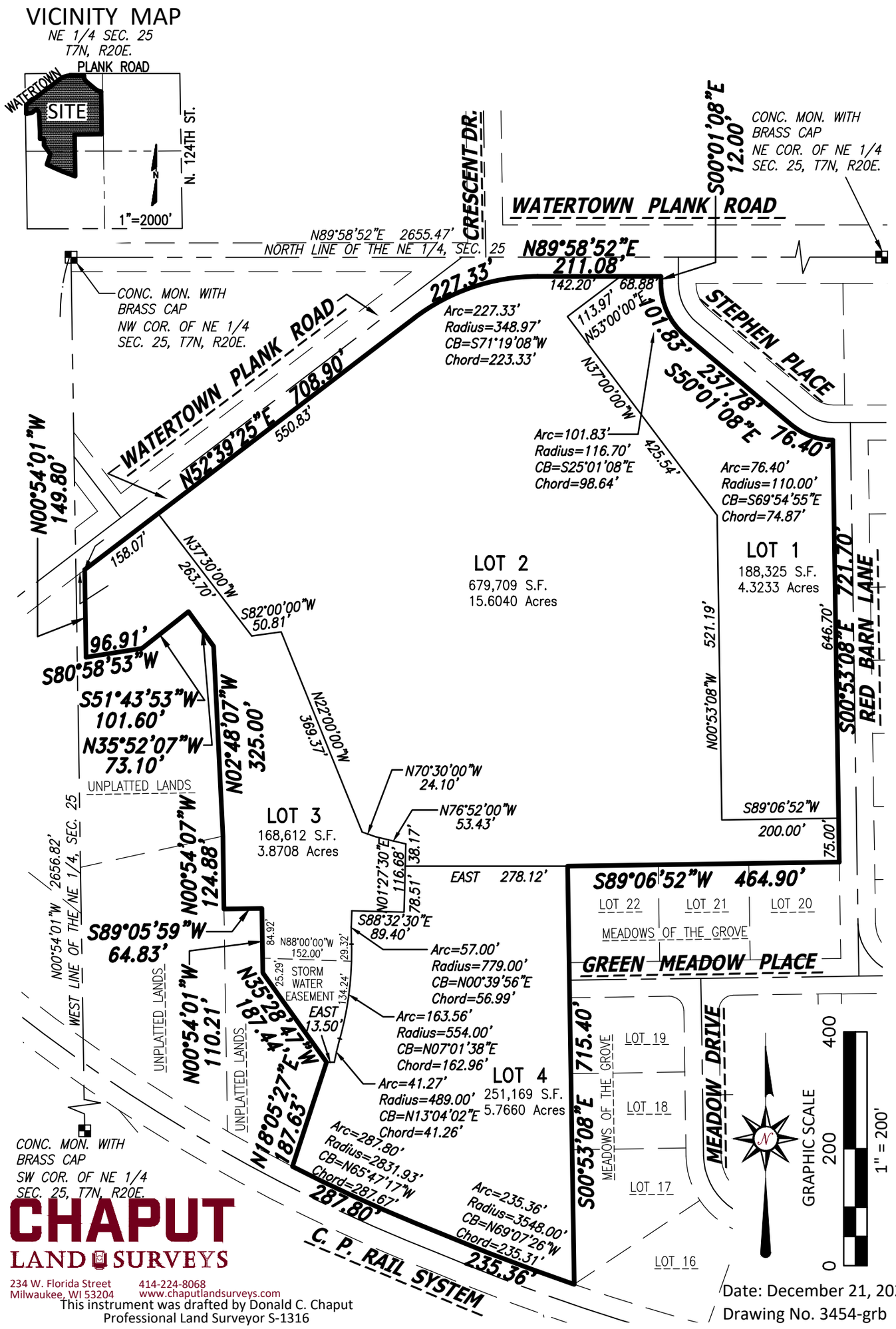
Survey Materials

Certified Survey Map dated December 21, 2020

EXHIBIT A

CERTIFIED SURVEY MAP NO._____

Part of the Northwest 1/4 and Southwest 1/4 of the Northeast 1/4 of Section 25,
Town 7 North, Range 20 East, in the Village of Elm Grove, Waukesha County, Wisconsin.



CHAPUT
LAND SURVEYS
234 W. Florida Street
Milwaukee, WI 53204
414-224-8068
www.chaputlandsurveys.com

This instrument was drafted by Donald C. Chaput
Professional Land Surveyor S-1316

Date: December 21, 2020
Drawing No. 3454-grb

EXHIBIT B

PROPOSED

EXISTING

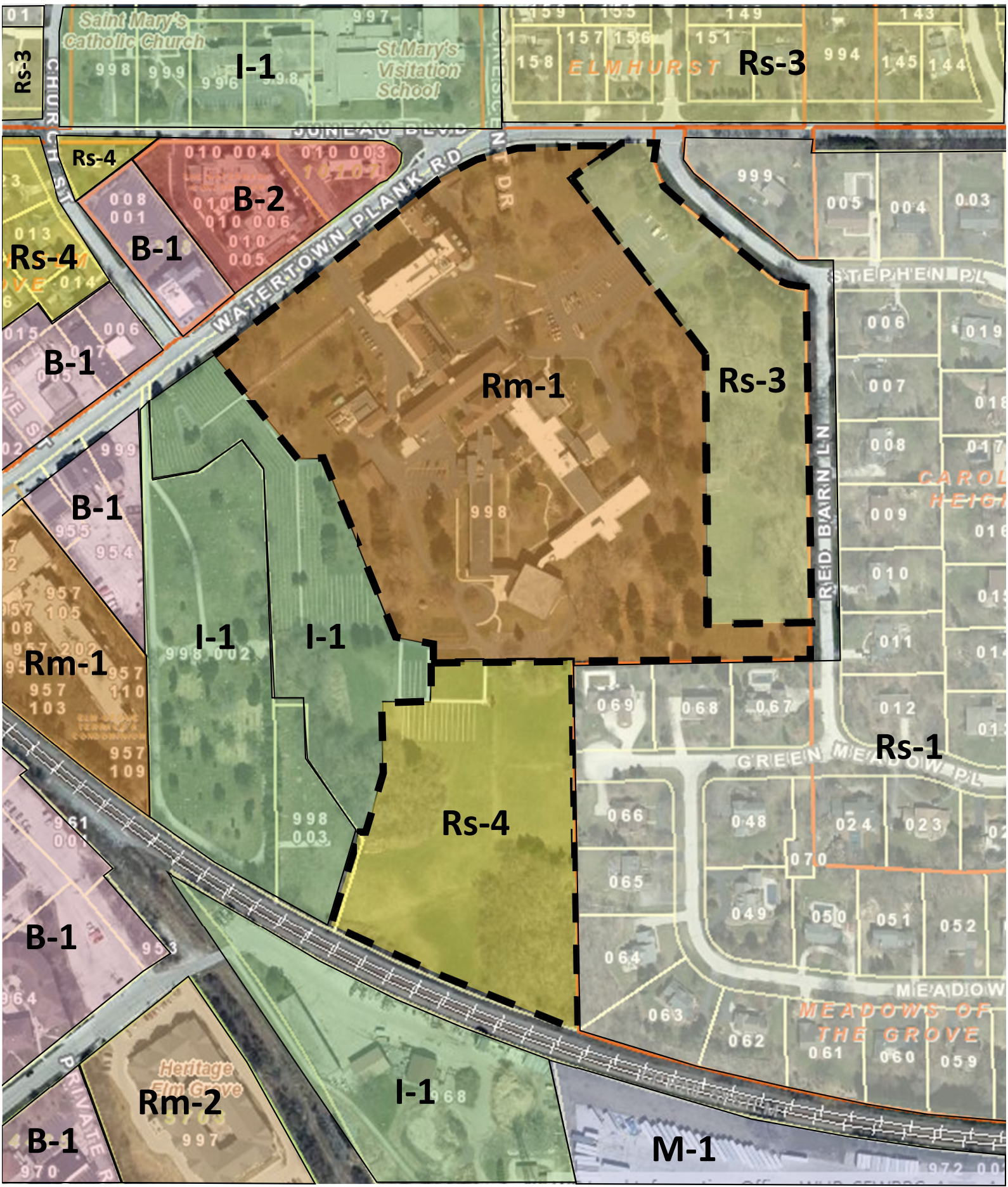
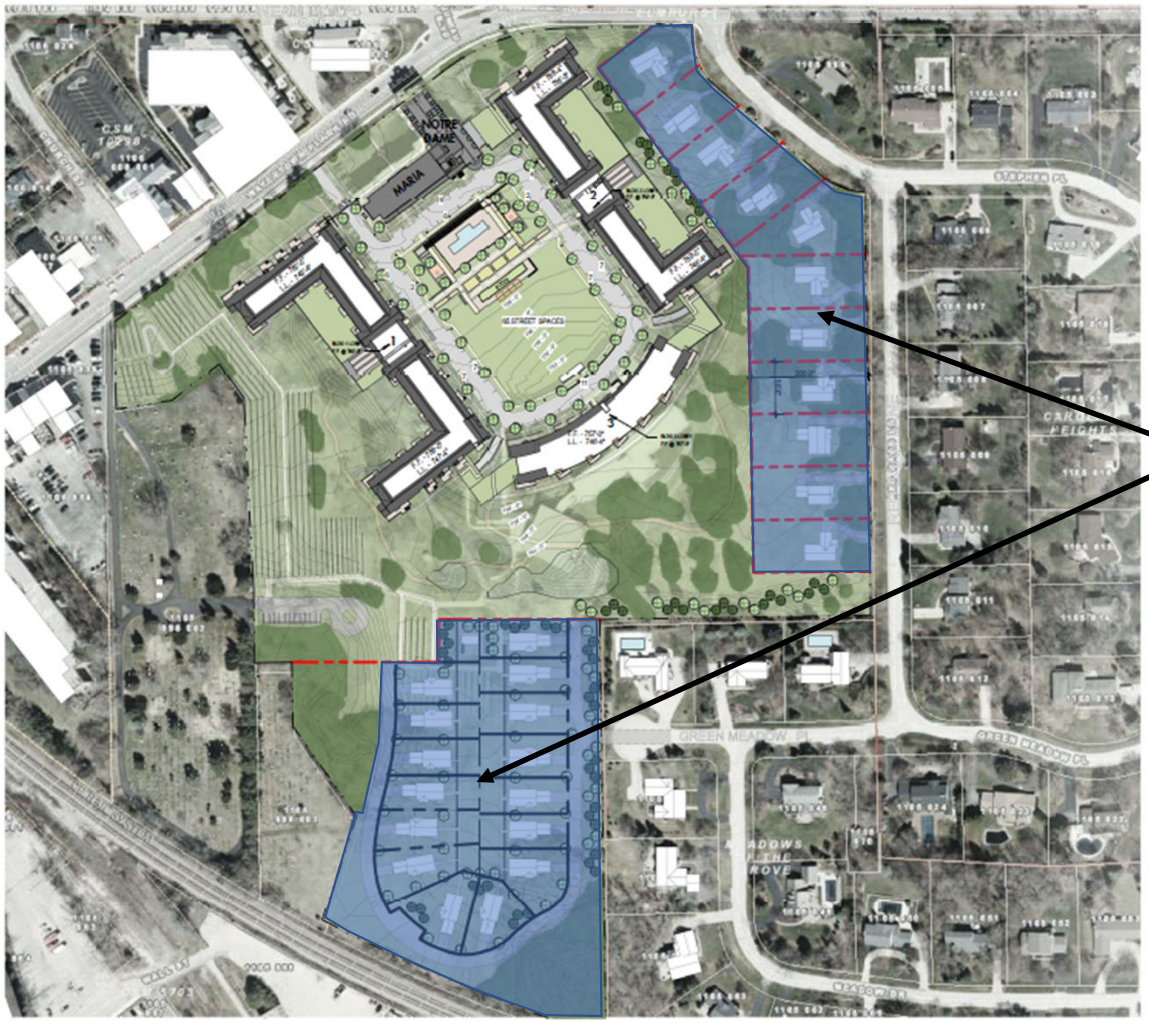


EXHIBIT C



Single-family homes shown for illustrative purposes only. The layouts of the homes are subject to change by the single-family home developer.

True North

SCALE: 1" = 100'-0"

0' 50' 100' 200' 400'

Engberg Anderson ARCHITECTS

MILWAUKEE | MADISON | TUCSON | CHICAGO

School Sisters of Notre Dame Development

SITE PLAN WITH RESIDENTIAL HOMES

Engberg Anderson Project No. 172795

GENERAL NOTES

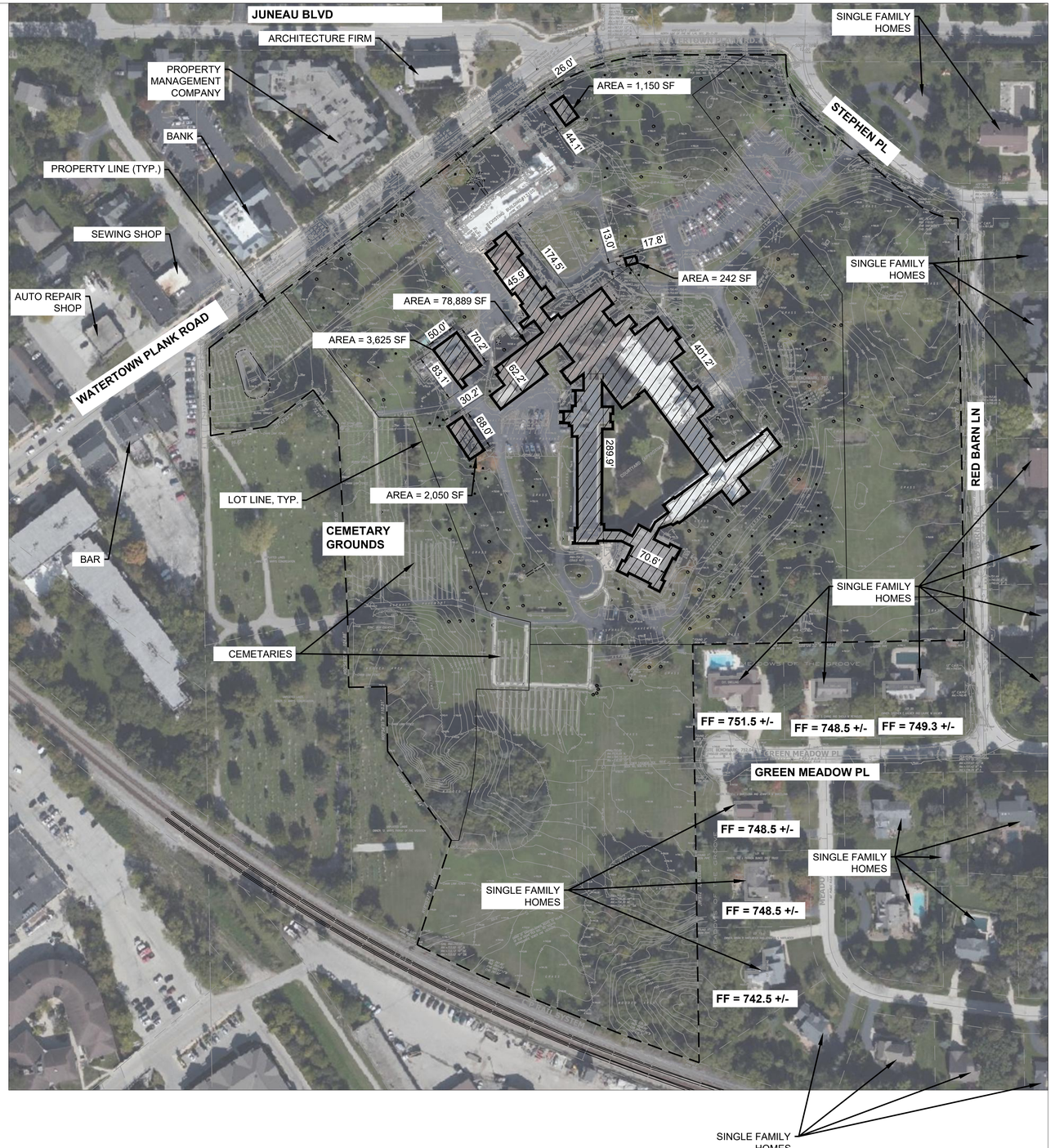
1. SITE LOCATION: 13105 WATERTOWN PLANK ROAD ELM GROVE, WISCONSIN 53122. SEE PLAT OF SURVEY FOR EASEMENT/RESTRICTIONS. REFER TO PLAT OF SURVEY BY CHAPUT LAND SURVEYS, DATED 11/09/2020 FOR INFORMATION ON COORDINATES AND SURVEY CONTROL.
2. THE UNDERGROUND UTILITY INFORMATION AS SHOWN HEREON IS BASED, IN PART, UPON INFORMATION FURNISHED BY UTILITY COMPANIES, LOCAL MUNICIPALITIES, AND CHAPUT LAND SURVEYS. WHILE THIS INFORMATION IS BELIEVED TO BE RELIABLE, ITS ACCURACY AND COMPLETENESS CANNOT BE GUARANTEED NOR CERTIFIED TO.
3. ANY WORK OUTSIDE OF PROPERTY LINE AND IN RIGHT OF WAY SHALL CONFORM TO THE VILLAGE OF ELM GROVE STANDARD SPECIFICATIONS, PERMIT CONDITIONS AND ORDINANCES.
4. SEE LIGHTING PLAN FOR LIGHT FIXTURE DETAILS.
5. SEE LANDSCAPING PLANS FOR LANDSCAPING DETAILS.

0 100 200
SCALE IS IN FEET

LEGEND

EXISTING STRUCTURE TO BE RAZED

PROPERTY BOUNDARY



NOT FOR CONSTRUCTION

KSingh Engineers Scientists Consultants
3636 North 124th Street
Wauwatosa, WI 53222
262-821-1171
CONSULTANT

PROJECT TITLE: SCHOOL SISTERS OF NOTRE DAME DEVELOPMENT
PRELIMINARY DESIGN, NOT FOR CONSTRUCTION

CLIENT: MANDEL GROUP, INC.

PROJECT LOCATION: 13105 WATERTOWN PLANK RD.
ELM GROVE, WI 53122

REVISIONS	DATE	DESCRIPTION

DRAWN BY JLA	DATE 12/14/2020
CHECKED BY APS	DATE 12/14/2020

SITE TITLE

SUPPLEMENTAL SITE EXHIBIT

EXHIBIT D

of SHEET XX

EXHIBIT E

TAXKEY	SITEADDRESS	OWNERNAMEFULL	POSTAL_ADDRESS	POSTAL_CITYSTATEZIP
EGV 1104151	1200 BLUE RIDGE BLVD	WENDY CHAN BAUTCH TRUST	1200 BLUE RIDGE BLVD	ELM GROVE WI 53122
EGV 1104156	1205 BLUE RIDGE BLVD	LAURIE A WESTGATE REVOCABLE TRUST	1500 HIGHLAND DR	ELM GROVE WI 53122-1526
EGV 1104157	12940 WATERTOWN PLANK RD	GMD HOMES LLC	3070 N 77TH ST	MILWAUKEE WI 53222-5018
EGV 1104158	1200 CRESCENT DR	CRAIG A ROBINS AND ALLISON M GLISCH	1200 CRESCENT DR	ELM GROVE WI 53122-1736
EGV 1104997	1260 CHURCH ST	ST MARYS PARISH	1260 CHURCH ST	ELM GROVE WI 53122
EGV 1105005	12750 STEPHEN PL	PATRICIA J PARKS REVOCABLE TRUST	12750 STEPHEN PL	ELM GROVE WI 53122-1964
EGV 1105006	12755 STEPHEN PL	MATTHEW R KILPS	12755 STEPHEN PL	ELM GROVE WI 53122-1965
EGV 1105007	1150 RED BARN LN	GLENN SCHRUBBE AND KATHERINE SCHRUBBE	1150 RED BARN LN	ELM GROVE WI 53122
EGV 1105008	1100 RED BARN LN	JEFFREY M BEHRING AND KATHERINE A BEHRING	1100 RED BARN LN	ELM GROVE WI 53122
EGV 1105009	1090 RED BARN LN	ADAM HENRY ROMEISER III AND JULIA FISCHER ROMEISER	1090 RED BARN LN	ELM GROVE WI 53122-1957
EGV 1105010	1070 RED BARN LN	GREGORY LEAS AND JODI LEAS	1070 RED BARN LN	ELM GROVE WI 53122
EGV 1105011	1030 RED BARN LN	SEAN M SCULLEN AND SARA PURTELL SCULLEN	1030 RED BARN LN	ELM GROVE WI 53122
EGV 1105012	12750 GREEN MEADOW PL	ROBERT E KLINGBEIL AND GERDA E KLINGBEIL	12750 GREEN MEADOW PL	ELM GROVE WI 53122
EGV 1105063	12855 MEADOW DR	LARISSA E AUGER	12855 MEADOW DR	ELM GROVE WI 53122-2627
EGV 1105064	12915 MEADOW DR	BRIAN R HARTLMEIER AND JENNIFER S HARTLMEIER	12915 MEADOW DR	ELM GROVE WI 53122
EGV 1105065	12925 MEADOW DR	THE J PATRICIA BUNCE 2007 TRUST	12925 MEADOW DR	ELM GROVE WI 53122
EGV 1105066	12955 MEADOW DR	RUSSELL J BARCELONA AND JENNIFER M BARCELONA	12955 MEADOW DR	ELM GROVE WI 53122
EGV 1105067	12800 GREEN MEADOW PL	STEPHEN E KALMER AND LAURIE M KALMER	12800 GREEN MEADOW PL	ELM GROVE WI 53122
EGV 1105068	12850 GREEN MEADOW PL	ROBERT S CHANG AND SHEILA M REYNOLDS	12850 GREEN MEADOW PL	ELM GROVE WI 53122-1939
EGV 1105069	12900 GREEN MEADOW PL	THOMAS POWERS AND KATHRYN POWERS	12900 GREEN MEADOW PL	ELM GROVE WI 53122
EGV 1105968	900 WALL ST	VILLAGE OF ELM GROVE	13600 JUNEAU BLVD	ELM GROVE WI 53122
EGV 1105972002	12400 BLUEMOUND RD	OSHCON CORPORATION	55 GLENLAKE PKWY NE	ATLANTA GA 30328-3474
EGV 1105998	13105 WATERTOWN PLANK RD	SCHOOL SISTERS OF NOTRE DAME	13105 WATERTOWN PLANK RD	ELM GROVE WI 53122
EGV 1105998002	WATERTOWN PLANK RD	ST MARYS CONGREGATION	1260 CHURCH ST	ELM GROVE WI 53122-1767
EGV 1105998003	NOT ASSIGNED	ST MARYS PARISH OF THE VISITATION	1260 CHURCH ST	ELM GROVE WI 53122-1767
EGV 1105999	12800 STEPHEN PL	LEONARDO MARTINS SALADO	12800 STEPHEN PL	ELM GROVE WI 53122-1966
EGV 1106005	13230 WATERTOWN PLANK RD	13230 LLC	13230 WATERTOWN PLANK RD	ELM GROVE WI 53122-2214
EGV 1106006	13180 WATERTOWN PLANK RD	BONG K MIN AND SOON A E MIN	1801 NOURS LANDING WAY	DULUTH GA 30097
EGV 1106007	13200 WATERTOWN PLANK RD	BONG K MIN AND SOON A E MIN	1801 NOURS LANDING WAY	DULUTH GA 30097
EGV 1106008001	13150 WATERTOWN PLANK RD	TOWN BANK	10 W MIFFLIN ST	MADISON WI 53703
EGV 1106010003	13100 WATERTOWN PLANK RD	CP2 PARTNERSHIP LLC	13100 WATERTOWN PLANK RD	ELM GROVE WI 53122-2244
EGV 1106010004	13130 WATERTOWN PLANK RD UNIT 101	JEAN CRITTENDEN KAUFFMAN	3006 W MARTINS GRANT CIR	RICHMOND VA 23235-2100
EGV 1106010005	13130 WATERTOWN PLANK RD UNIT 102	JOHN D & KAREN A FINERTY REVOCABLE TRUST	13130 WATERTOWN PLANK RD UNIT 102	ELM GROVE WI 53122
EGV 1106010006	13130 WATERTOWN PLANK RD UNIT 103	RACHEL J STEPHENS	13130 WATERTOWN PLANK RD UNIT 103	ELM GROVE WI 53122
EGV 1106010007	13130 WATERTOWN PLANK RD UNIT 104	ELEANOR M SCHROEDER 1998 REVOCABLE TRUST	13130 WATERTOWN PLANK RD UNIT 104	ELM GROVE WI 53122
EGV 1106010008	13130 WATERTOWN PLANK RD UNIT 105	JUDITH A BULTMAN	13130 WATERTOWN PLANK RD # 105	ELM GROVE WI 53122
EGV 1106010009	13130 WATERTOWN PLANK RD UNIT 106	CORDEN JOINT REVOCABLE TRUST	923 COLUMBIA RD	MADISON WI 53705-2103
EGV 1106010010	13130 WATERTOWN PLANK RD UNIT 107	RALPH VAN BECK AND MARY ANN VAN BECK	13130 WATERTOWN PLANK RD UNIT #107	ELM GROVE WI 53122
EGV 1106010011	13130 WATERTOWN PLANK RD UNIT 108	BURKERT FAMILY TRUST	1645 LONGWOOD AVE	ELM GROVE WI 53122-1845
EGV 1106010012	13130 WATERTOWN PLANK RD UNIT 109	BARBARA CHRISTON	13130 WATERTOWN PLANK RD UNIT 109	ELM GROVE WI 53122-2237
EGV 1106010013	13130 WATERTOWN PLANK RD UNIT 110	MARY ANN MATTER	13130 WATERTOWN PLANK RD UNIT 110	ELM GROVE WI 53122
EGV 1106010014	13130 WATERTOWN PLANK RD UNIT 111	MICHAEL H KEELAN AND ROBERTA KEELAN	13130 WATERTOWN PLANK RD UNIT 111	ELM GROVE WI 53122
EGV 1106010015	13130 WATERTOWN PLANK RD UNIT 112	JEFFREY A MERKT	13130 WATERTOWN PLANK RD UNIT 112	ELM GROVE WI 53122-2237
EGV 1106010016	13130 WATERTOWN PLANK RD UNIT 201	VIJAY JOHNSON AND ALIA L FOX	13130 WATERTOWN PLANK RD UNIT 201	ELM GROVE WI 53122-2240
EGV 1106010017	13130 WATERTOWN PLANK RD UNIT 202	MAURICE CONDO LLC	2545 N 86TH ST	WAUWATOSA WI 53226-1921
EGV 1106010018	13130 WATERTOWN PLANK RD UNIT 203	KATHLEEN A MATHISON	13130 WATERTOWN PLANK RD UNIT 203	ELM GROVE WI 53122
EGV 1106010019	13130 WATERTOWN PLANK RD UNIT 204	OLSON DESCENDANTS TRUST	13130 WATERTOWN PLANK RD UNIT 204	ELM GROVE WI 53122
EGV 1106010020	13130 WATERTOWN PLANK RD UNIT 205	JAMES & NANCY SMESSAERT LIVING TRUST	13130 WATERTOWN PLANK RD UNIT 205	ELM GROVE WI 53122
EGV 1106010021	13130 WATERTOWN PLANK RD UNIT 206	WILLIAM C & SHEILA A GAGLIANO REVOCABLE TRUST	13130 WATERTOWN PLANK RD UNIT 206	ELM GROVE WI 53122
EGV 1106010022	13130 WATERTOWN PLANK RD UNIT 207	BARBARA ANNE WIROSTKO	13130 WATERTOWN PLANK RD UNIT 207	ELM GROVE WI 53122-2240
EGV 1106010023	13130 WATERTOWN PLANK RD UNIT 208	SCOTT P STANEK AND MARY ELLEN STANEK	13130 WATERTOWN PLANK RD UNIT 208	ELM GROVE WI 53122-2240
EGV 1106010024	13130 WATERTOWN PLANK RD UNIT 209	JAMES FRIAR AND CHRISTINE BARTHOLOW	13130 WATERTOWN PLANK RD UNIT 209	ELM GROVE WI 53122-2240
EGV 1106010025	13130 WATERTOWN PLANK RD UNIT 210	GORDON A YOUNG AND AMY M YOUNG	13130 WATERTOWN PLANK RD UNIT 210	ELM GROVE WI 53122

EXHIBIT E

TAXKEY	SITEADRESS	OWNERNAMEFULL	POSTAL_ADDRESS	POSTAL_CITYSTATEZIP
EGV 1106010026	13130 WATERTOWN PLANK RD UNIT 211	MING YOU AND YIAN WANG	13130 WATERTOWN PLANK RD UNIT 211	ELM GROVE WI 53122-2240
EGV 1106010027	13130 WATERTOWN PLANK RD UNIT 212	FRANKLIN C BUSCHER JR AND MARNA E BUSCHER LIVING	13130 WATERTOWN PLANK RD UNIT 212	ELM GROVE WI 53122
EGV 1106010028	13130 WATERTOWN PLANK RD UNIT 301	DAVID P & MARJORIE L HAMACHER LIVING TRUST	13130 WATERTOWN PLANK RD UNIT 301	ELM GROVE WI 53122-2242
EGV 1106010029	13130 WATERTOWN PLANK RD UNIT 302	LARRY J WATERS & ADRIENNE D WATERS REVOCABLE TRUST	13130 WATERTOWN PLANK RD UNIT 302	ELM GROVE WI 53122-2242
EGV 1106010030	13130 WATERTOWN PLANK RD UNIT 303	STEPHEN N GRAFF 2007 REVOCABLE TRUST DTD 2-6-07	13130 E WATERTOWN PLANK RD #303	ELM GROVE WI 53122
EGV 1106010031	13130 WATERTOWN PLANK RD UNIT 304	THOMAS M FINK AND CATHERINE A FINK	13130 WATERTOWN PLANK RD UNIT 304	ELM GROVE WI 53122
EGV 1106010032	13130 WATERTOWN PLANK RD UNIT 305	FRESCH SURVIVOR'S TRUST	815 N WATER ST	MILWAUKEE WI 53202-3526
EGV 1106010033	13130 WATERTOWN PLANK RD UNIT 306	CAROLYN F MEGAL SURVIVOR'S TRUST	13130 WATERTOWN PLANK RD UNIT 306	ELM GROVE WI 53122-2242
EGV 1106010034	13130 WATERTOWN PLANK RD UNIT 307	KENNETH M BAITINGER AND PATRICIA K ACKERMAN	13130 WATERTOWN PLANK RD UNIT 307	ELM GROVE WI 53122-2242
EGV 1106010035	13130 WATERTOWN PLANK RD UNIT 308	MARK L DENU AND SHIRLEY A DENU	13130 WATERTOWN PLANK RD UNIT 308	ELM GROVE WI 53122
EGV 1106010036	13130 WATERTOWN PLANK RD UNIT 309	HEMMY FAMILY TRUST	13130 WATERTOWN PLANK RD UNIT 310	ELM GROVE WI 53122
EGV 1106010037	13130 WATERTOWN PLANK RD UNIT 310	HEMMY FAMILY TRUST	13130 WATERTOWN PLANK RD UNIT 310	ELM GROVE WI 53122
EGV 1106010038	13130 WATERTOWN PLANK RD UNIT 311	LEONOR H HAMILTON TRUST	PO BOX 5247	ELM GROVE WI 53122
EGV 1106010039	13130 WATERTOWN PLANK RD UNIT 312	JOHN F BOSBOUS REVOCABLE LIVING TRUST	13130 WATERTOWN PLANK RD UNIT 312	ELM GROVE WI 53122-2242
EGV 1106954	13275 WATERTOWN PLANK RD	FOOD FAITH LLC	W326S7144 TOWER HILL CT	MUKWONAGO WI 53149-9355
EGV 1106999	13225 WATERTOWN PLANK RD	O'DONOGHUES IRISH PUB LLC	13225 WATERTOWN PLANK RD	ELM GROVE WI 53122

EXHIBIT F

School Sisters of Notre Dame
Development Traffic Impact Study Supplement
Elm Grove, Wisconsin

Prepared For: Mandel Group
Prepared By: Kenneth H. Voigt, P.E.
Ayres Associates
October 16, 2020

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Executive Summary

Study Purpose

This supplemental report has been prepared as a companion to the September 23, 2020 traffic study on traffic impacts related to the Mandel Group planned residential development comprised of 266 luxury apartments, 17 side-by-side duplexes, and 100 senior housing units at the School Sisters of Notre Dame (SSND) property. Through an extensive public involvement process, the Mandel Group received several comments requesting them to reduce their development access to a single access road connection on Watertown Plank Road and eliminate the existing SSND access road connection to Stephen Place. This report also analyzes an additional request to consider installing traffic signals at the SSND single access road connection on Watertown Plank Road.

This supplemental report will: 1) describe existing year 2019, year 2023 and year 2028 background traffic operating conditions without any new development on the School Sisters of Notre Dame property; 2) year 2023 traffic operating conditions with trips generated by the Mandel planned residential development; and year 2028 traffic operating conditions with trips generated by the Mandel planned residential development plus trips also generated by residential development identified in the Village Downtown Corridor Master Plan; and 3) traffic signal installation feasibility at the Mandel residential development single access road connection to Watertown Plank Road.

Summary of Findings

Based on data published in the *ITE Trip Generation Manual, 10th edition,* a total of 145 morning and 180 evening peak hour residential trips are projected to be generated by the Mandel residential development plan. It is noted that the existing SSND property generates a total of 25 morning and 35 evening peak hour trips. This means the true overall impact on Watertown Plank Road is reduced to 120 new morning and 145 new evening peak hour trips from the SSND property.

Year 2023 Operation: A comparison between the following two year 2023 traffic condition scenarios: 1) without any redevelopment of the SSND property; and 2) with a Mandel residential development single access road connection to Watertown Plank Road, at the existing SSND western entrance roadway, indicates traffic generated by the Mandel residential development does not affect study intersection morning peak hour Level of Service (LOS) operation except for: the northwestbound approach of the SSND single access road approach to Watertown Plank Road which changes from LOS 'B' to LOS 'C' due to an average vehicle delay change of 5.4 seconds from 10.2 seconds to 15.6 seconds, and the southwestbound left turn on Watertown Plank Road at its intersection with Elm Grove Road which changes from LOS 'A' to LOS 'B' due to an average vehicle delay change of 0.9 seconds from 9.8 seconds to 10.7 seconds.

In comparison, during the evening peak hour, the only traffic movement that changes LOS is the northbound approach of Stephen Place which changes from LOS 'C' to LOS 'D' operation due to an average vehicle delay increase of 2.7 seconds from 22.6 seconds to 25.3 seconds.

Year 2023 operation of Watertown Plank Road at the single access road connection to the Mandel residential development is projected to maintain LOS 'A' operation on Watertown Plank Road with maximum 95th percentile queuing projected at 25 feet during both the morning and evening peak hours.

It is noted that year 2023 operation of the northeastbound left turn on Watertown Plank Road at its intersection with Legion Drive operates at LOS 'E' during the morning peak hour and LOS 'F' during the evening peak hour with or without traffic generated by the Mandel residential development. An improvement analysis of this intersection indicates it can be upgraded to LOS 'D' operation with minor traffic signal timing changes.

Year 2028 Operation: A comparison between the following year 2028 traffic condition scenarios: 1) without any redevelopment of the SSND property; and 2) with a Mandel residential development single access road connection to Watertown Plank Road, at the existing SSND western entrance roadway, indicates traffic generated by the Mandel residential development does not affect study intersection morning peak hour Level of Service (LOS) operation except for: the eastbound approach of Watertown Plank Road at North 124th Street which changes from LOS 'A' to LOS 'B' due to an average vehicle delay change of 0.3 seconds from 9.8 seconds to 10.1 seconds, the southbound approach of Blue Ridge Boulevard which changes from LOS 'B' to LOS 'C' due to an average vehicle delay change of 1.3 seconds from 14.5 seconds to 15.8 seconds, the northwestbound approach of the SSND western access road which changes from LOS 'B' to LOS 'C' due to an average vehicle delay change of 6.5 seconds from 10.3 seconds to 16.8 seconds, and the southwestbound left turn on Watertown Plank Road at its intersection with Elm Grove Road which changes from LOS 'A' to LOS 'B' due to an average vehicle delay change of 1.6 seconds from 10.0 seconds to 11.6 seconds.

In comparison, during the evening peak hour, the only traffic movements that changes LOS is the northbound approach of Stephen Place which changes from LOS 'C' to LOS 'D' operation due to an average vehicle delay change of 4.5 seconds from 23.7 seconds to 28.2 seconds, and the northwestbound approach of the SSND western access road which changes from LOS 'C' to LOS 'D due to an average vehicle delay change of 11.8 seconds from 16.1 seconds to 27.9 seconds.

Year 2028 operation of Watertown Plank Road at the single access road connection to the Mandel residential development maintains LOS 'A' operation on Watertown Plank Road with maximum 95th percentile queuing projected at 25 feet during both the morning and evening peak hours.

It is noted that year 2028 operation of the northeastbound left turn on Watertown Plank Road at its intersection with Legion Drive operates at LOS 'E' during the morning peak hour and LOS

'F' during the evening peak hour with or without traffic generated by the Mandel residential development. An improvement analysis of this intersection indicates it can be upgraded to LOS 'D' operation with minor traffic signal timing changes.

Traffic Signals: An analysis was also conducted to determine if future traffic signals may be warranted at the Watertown Plank Road intersection with a single access road connection to the Mandel residential development. In order to install traffic signals, communities evaluate if hourly traffic volumes at an intersection will satisfy warrants published in the Manual on Uniform Traffic Control Devices. Traffic signals that are installed without satisfying a signal warrant typically result in traffic safety issues. Using future traffic volumes projected to the year 2028 combined with trips generated by the Mandel and Village Downtown Corridor Master Plan residential developments indicates that none of the nine traffic signal warrants are satisfied at the single Mandel development access road intersection with Watertown Plank Road.

Conclusions

Based on the technical analysis findings of this study, it is concluded that a single access road connection to the Mandel residential development should not create any peak hour traffic operation problems along Watertown Plank Road.

It is also concluded that the installation of new traffic signals on Watertown Plank do not satisfy national warrants in the Manual on Uniform Traffic Control Devices.

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School Sisters of Notre Dame
Development Traffic Impact Study Supplement
Elm Grove, Wisconsin

Study Purpose

This supplemental report has been prepared as a companion to the September 23, 2020 traffic study on traffic impacts related to the Mandel Group planned residential development comprised of 266 luxury apartments, 17 side-by-side duplexes, and 100 senior housing units at the School Sisters of Notre Dame (SSND) property. Through an extensive public involvement process, the Mandel Group received several comments requesting them to reduce their development access to a single access road connection on Watertown Plank Road and eliminate the existing SSND access road connection to Stephen Place. This report also analyzes a request to consider the installation of traffic signals at a single access road SSND property connection on Watertown Plank Road.

This supplemental report will: 1) describe existing year 2019, year 2023 and year 2028 background traffic operating conditions without any new development on the School Sisters of Notre Dame property; 2) year 2023 traffic operating conditions with trips generated by the Mandel planned residential development; and year 2028 traffic operating conditions with trips generated by the Mandel planned residential development plus trips also generated by residential development identified in the Village Downtown Corridor Master Plan; and 3) traffic signal installation feasibility at the Mandel residential development single access road connection to Watertown Plank Road.

It is noted that there is some redundancy in traffic volume figures and intersection operation tables from the analysis materials in the September 23, 2020 Traffic Impact Study to provide the reader of this document a complete picture of the single access road traffic impact analysis.

Existing Traffic Conditions

For reference purposes, Figures 1 through 4 on the following pages, from the September 23, 2020 Traffic Impact Study identifies existing 2019 and year 2023 peak hour background traffic volumes at the Watertown Plank Road study intersections. The year 2023 peak hour volumes represent a 0.5% per year annual traffic growth rate since 2019. It is noted that historic traffic patterns on the study segment of Watertown Plank Road actually demonstrate a declining or flat growth rate.

Figure 1: 2019 Watertown Plank Road Morning Peak Hour Intersection Background Traffic Movements

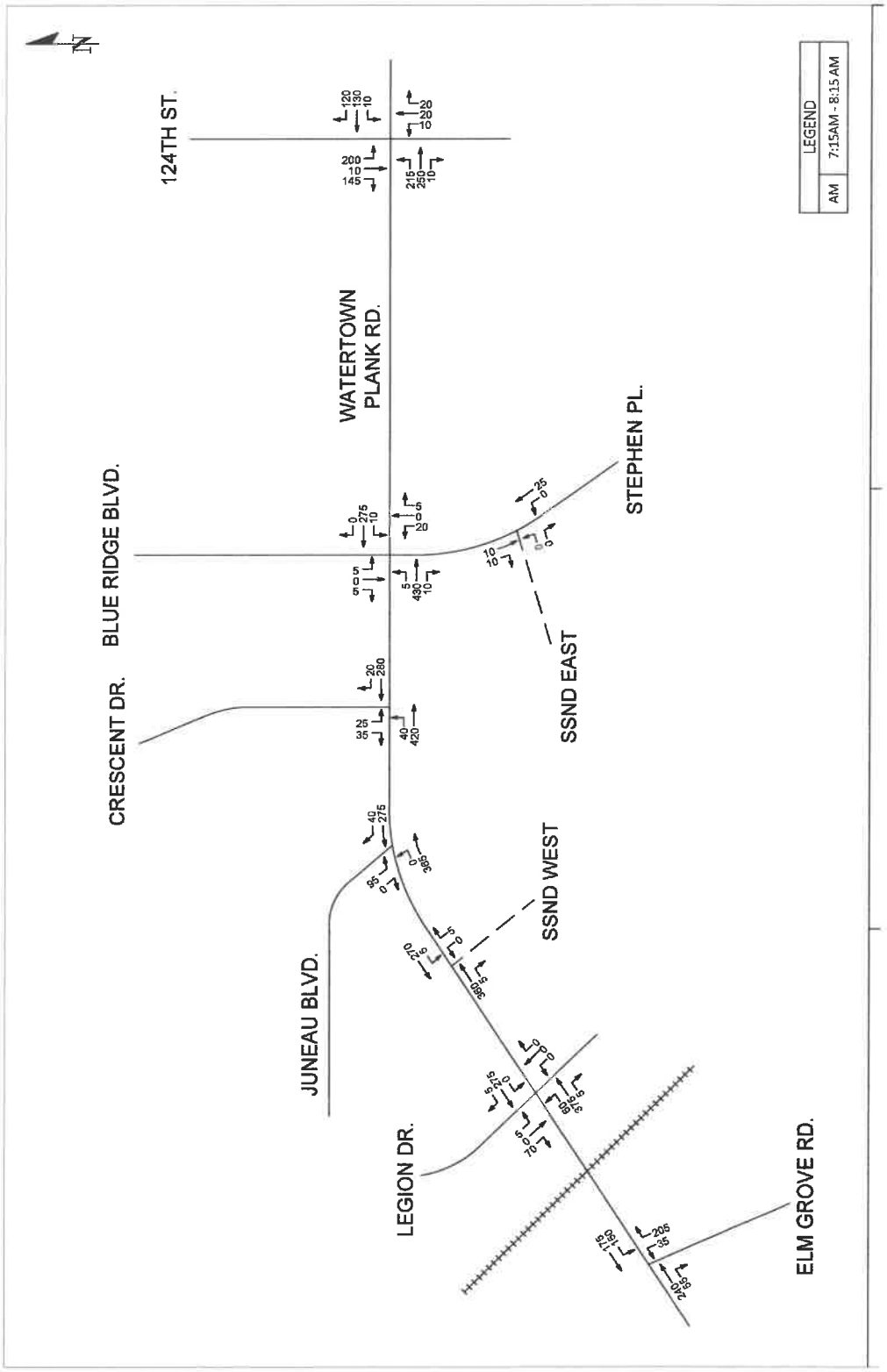


Figure 2: 2019 Watertown Plank Road Evening Peak Hour Intersection Background Traffic Movements

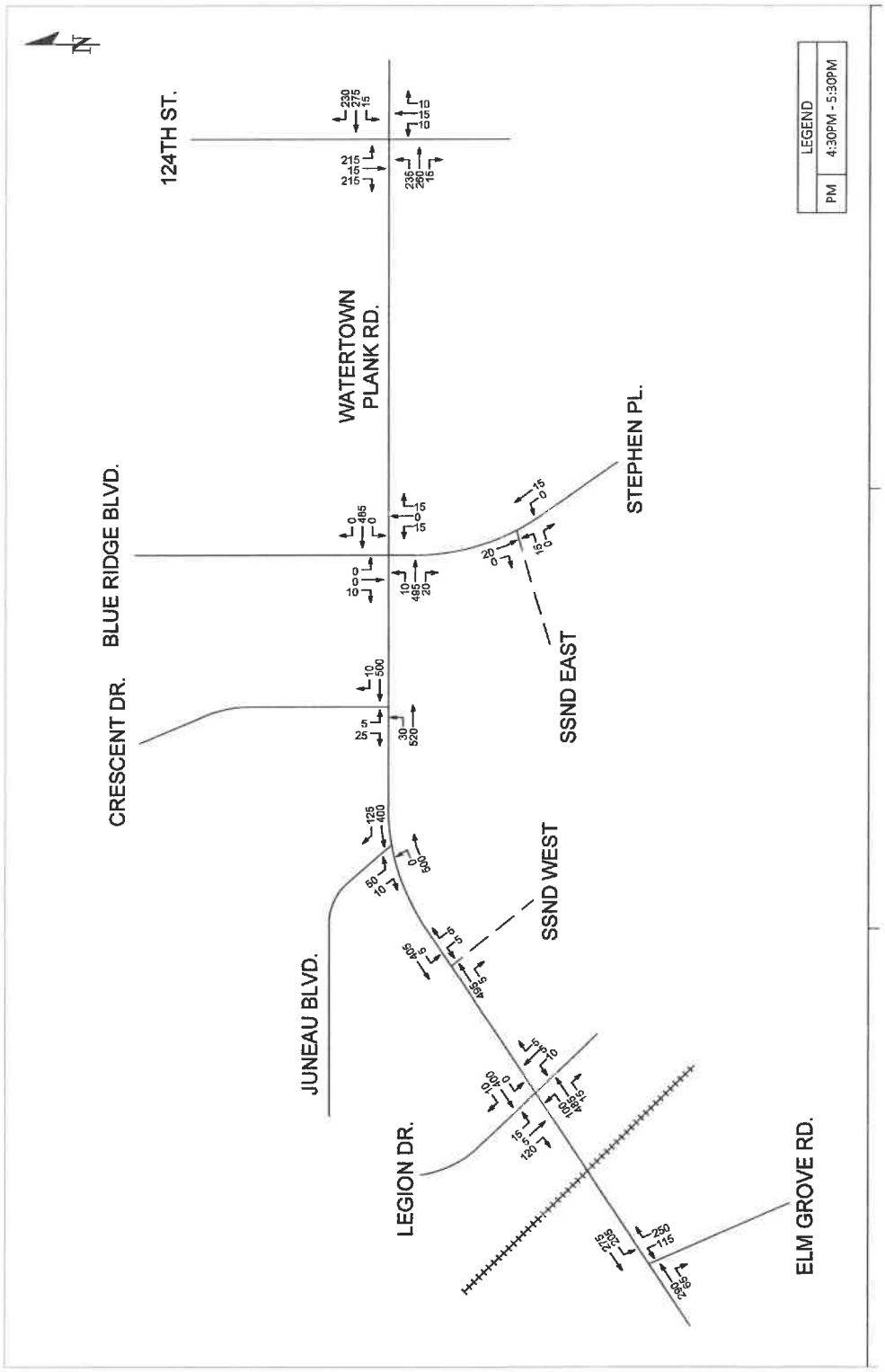


Figure 3: 2023 Watertown Plank Road Morning Peak Hour Intersection Background Traffic Movements

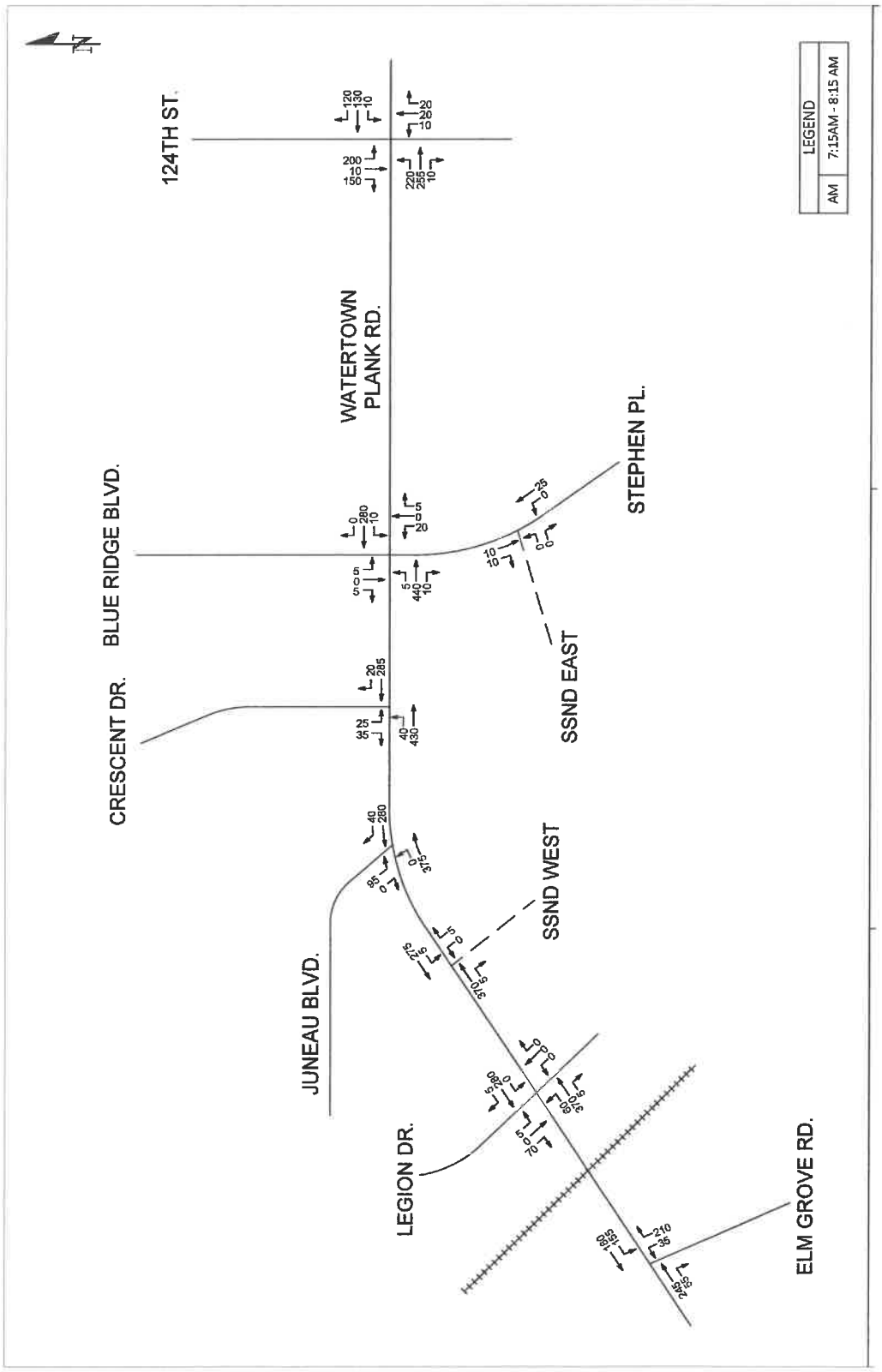
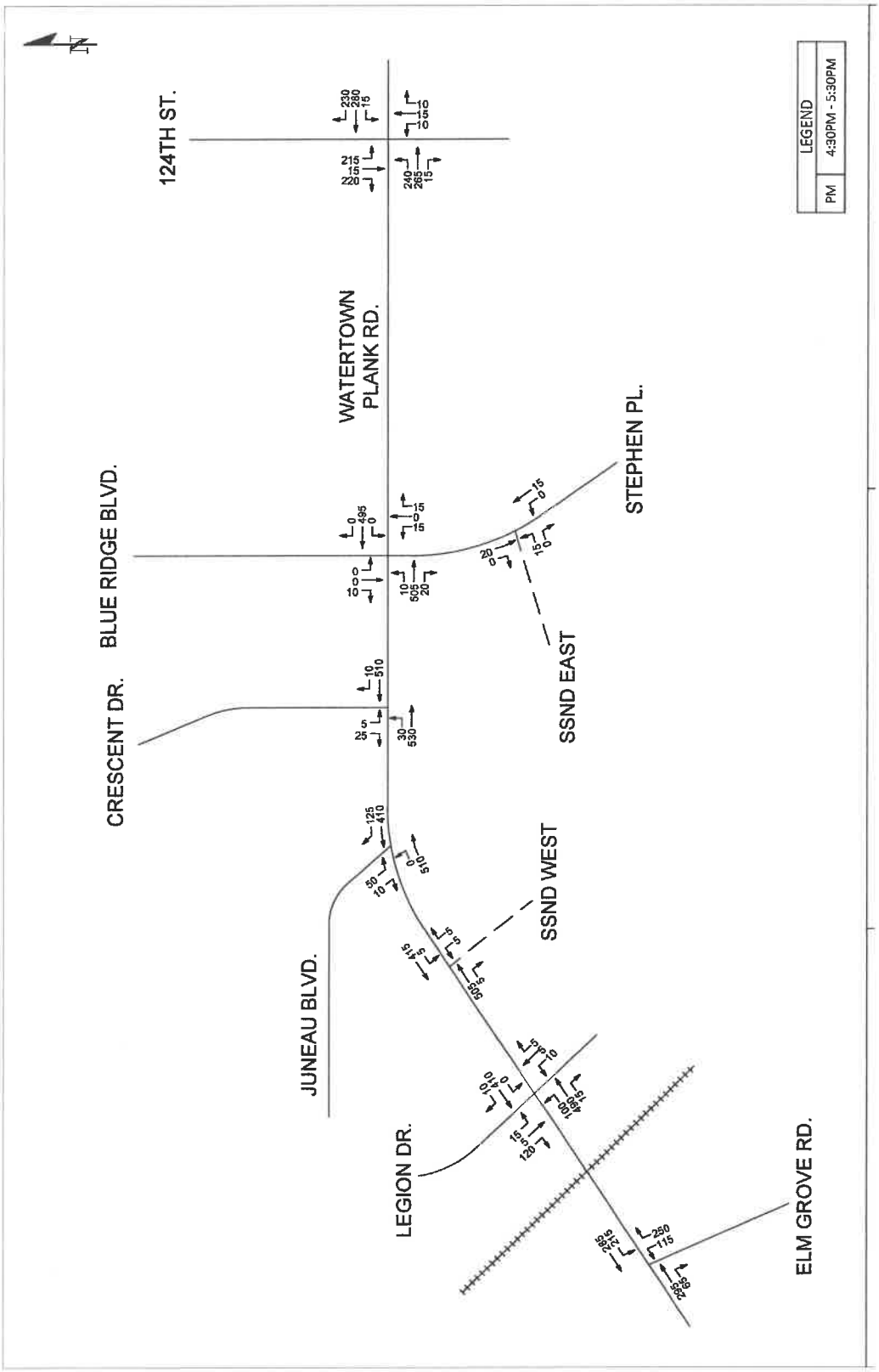


Figure 4: 2023 Watertown Plank Road Evening Peak Hour Intersection Background Traffic Movements



Intersection operation is nationally defined by Level of Service (LOS) categories. These LOS categories have been established by the National Academy of Sciences Transportation Research Board and have been adopted by Federal, state and local municipalities to analyze intersection operation. LOS is determined based on the average amount of delay experienced by each vehicle entering an intersection during a 1-hour study period and is categorized by grades of 'A' through 'F'. Level of Service (LOS) 'D', as defined in the *Highway Capacity Manual 6th Edition* (HCM), is normally used as the threshold for acceptable peak hour intersection operation in urban areas. Table 1 summarizes the different intersection LOS parameters.

Table 1: Intersection Level of Service Description

Alpha LOS	Signalized (sec/veh)	Unsignalized Delay (sec/veh)	Description
A	≤ 10	≤ 10	No Congestion: Very few vehicles experience delay.
B	> 10 - 20	> 10 – 15	Minimal Congestion: Some vehicles experience delay but many pass through intersection without stopping.
C	> 20 - 35	> 15 – 25	Minor Congestion: Many vehicles experience delay but some travel through intersection without stopping.
D	> 35 - 55	> 25 – 35	Moderate Congestion: Most vehicles experience delay.
E	> 55 - 80	> 35 – 50	Severe Congestion: Most vehicles experience significant delay. Volumes nearing capacity.
F	> 80 Or V/C >1.0	> 50 Or V/C >1.0	Extreme Congestion: Nearly all vehicles experience significant delay. Volume may be higher than capacity. Potential gridlock.

Source: Transportation Research Board Highway Capacity Manual

The 95th percentile queue is also included in the following intersection operation summaries as an additional performance measure. The 95th percentile queue (sometimes referred to as the "maximum probable queue") represents the distance away from the stop bar of an intersection at which 95% of all vehicle backups for a given traffic movement are expected to extend.

Table 2 summarizes peak hour study intersection operating Level of Service for 'background' traffic conditions without any new development in the years 2019 and 2023.

Table 2: 2019 and 2023 Morning and Evening Peak Hour Background Traffic Intersection Operation

North 124th Street

Scenario	Control	MOE	Movement												OVERALL
			EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
2019 AM Existing	Signal	LOS	A			C			C			C		C	B
		Delay (sec)	9.7			24.2			34.4			28.3		22.5	19.0
		Queue (ft)	125'			100'			75'			175'		100'	--
2019 PM Existing	Signal	LOS	A			C			C			C		C	C
		Delay (sec)	9.4			28.5			33.4			32.1		25.4	22.1
		Queue (ft)	125'			200'			50'			200'		125'	--
			Movement												OVERALL
			EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
2023 AM Background	Signal	LOS	A			C			C			C		C	B
		Delay (sec)	9.7			24.2			34.4			28.3		22.5	18.9
		Queue (ft)	125'			100'			75'			175'		100'	--
2023 PM Background	Signal	LOS	A			C			C			C		C	C
		Delay (sec)	9.5			28.7			33.5			32.2		25.6	22.2
		Queue (ft)	125'			200'			50'			200'		125'	--

Stephen Place/Blue Ridge Boulevard

Scenario	Control	MOE	Movement												OVERALL
			EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
2019 AM Existing	Stop	LOS	A			A			C			B			A
		Delay (sec)	0.1			0.4			17.6			13.9			1.0
		Queue (ft)	25'			25'			25'			25'			--
2019 PM Existing	Stop	LOS	A			A			C			B			A
		Delay (sec)	0.3			0.0			22.0			12.0			0.9
		Queue (ft)	25'			25'			25'			25'			--
			Movement												OVERALL
			EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
2023 AM Background	Stop	LOS	A			A			C			B			A
		Delay (sec)	0.1			0.4			17.9			14.1			1.0
		Queue (ft)	25'			25'			25'			25'			--
2023 PM Background	Stop	LOS	A			A			C			B			A
		Delay (sec)	0.3			0.0			22.6			12.1			0.9
		Queue (ft)	25'			25'			25'			25'			--

Crescent Drive

Scenario	Control	MOE	Movement						OVERALL
			EBL	EBT	WBT	WBR	SBL	SBR	
2019 AM Existing	Stop	LOS	A		A		C		A
		Delay (sec)	1.2		0.0		15.9		1.8
		Queue (ft)	25'		0'		25'		--
2019 PM Existing	Stop	LOS	A		A		C		A
		Delay (sec)	1.0		0.0		15.4		0.9
		Queue (ft)	25'		0'		25'		--
			Movement						OVERALL
			EBL	EBT	WBT	WBR	SBL	SBR	
2023 AM Background	Stop	LOS	A		A		C		A
		Delay (sec)	1.2		0.0		16.1		1.8
		Queue (ft)	25'		0'		25'		--
2023 PM Background	Stop	LOS	A		A		C		A
		Delay (sec)	1.0		0.0		15.6		0.9
		Queue (ft)	25'		0'		25'		--

Table 2: 2019 and 2023 Morning and Evening Peak Hour Background Traffic Intersection Operation (cont.)

Juneau Boulevard

Scenario	Control	MOE	Movement						OVERALL
			WBL	WBR	SBL	SBR	NEL	NER	
2019 AM Existing	Stop	LOS	A		C		A		A
		Delay (sec)	0.0		18.8'		0.0		2.3
		Queue (ft)	0'		50'		25'		--
2019 PM Existing	Stop	LOS	A		C		A		A
		Delay (sec)	0.0		24.5'		0.0		1.4
		Queue (ft)	0'		50'		25'		--
			Movement						OVERALL
			WBL	WBR	SBL	SBR	NEL	NER	
2023 AM Background	Stop	LOS	A		C		A		A
		Delay (sec)	0.0		19.3'		0.0		2.3
		Queue (ft)	0'		50'		25'		--
2023 PM Background	Stop	LOS	A		D		A		A
		Delay (sec)	0.0		25.3'		0.0		1.4
		Queue (ft)	0'		50'		25'		--

Western SSND Access Road

Scenario	Control	MOE	Movement						OVERALL
			NWBL	NWBR	NEBT	NEBR	SWBL	SWBT	
2019 AM Existing	Stop	LOS	B		A		A		A
		Delay (sec)	10.2		0.0		0.2		0.1
		Queue (ft)	25'		0'		25'		--
2019 PM Existing	Stop	LOS	C		A		A		A
		Delay (sec)	15.3		0.0		0.2		0.2
		Queue (ft)	25'		0'		25'		--
			Movement						OVERALL
			NWBL	NWBR	NEBT	NEBR	SWBL	SWBT	
2023 AM Background	Stop	LOS	B		A		A		A
		Delay (sec)	10.3		0.0		0.2		0.1
		Queue (ft)	25'		0'		25'		--
2023 PM Background	Stop	LOS	C		A		A		A
		Delay (sec)	15.6		0.0		0.2		0.2
		Queue (ft)	25'		0'		25'		--

Table 2: 2019 and 2023 Morning and Evening Peak Hour Background Traffic Intersection Operation (cont.)

Legion Drive

Scenario	Control	MOE	Movement												OVERALL
			SEBL	SEBT	SEBR	NWBL	NWBT	NWBR	NEBL	NEBT	NEBR	SWBL	SWBT	SWBR	
2019 AM Existing	Signal	LOS	D	C		No Vehicles - Exited Driveway			E	B		C		B	C
		Delay (sec)	38.2	20.3					76.4	15.1		20.4		15.5	22.2
		Queue (ft)	25'	75'					100'	225'		200'		25'	–
2019 PM Existing	Signal	LOS	D	C		C			F	B		C		B	C
		Delay (sec)	39.0	21.2		29.7			135.4	16.2		22.4		15.5	29.6
		Queue (ft)	50'	100'		50'			175'	300'		275'		25'	–
			Movement												OVERALL
			SEBL	SEBT	SEBR	NWBL	NWBT	NWBR	NEBL	NEBT	NEBR	SWBL	SWBT	SWBR	
2023 AM Background	Signal	LOS	D	C		No Vehicles - Exited Driveway			E	B		C		B	C
		Delay (sec)	38.2	20.3					76.4	15.0		20.6		15.5	22.2
		Queue (ft)	25'	75'					100'	225'		200'		25'	–
2023 PM Background	Signal	LOS	D	C		C			F	B		C		B	C
		Delay (sec)	39.0	21.2		29.7			135.4	16.3		22.7		15.5	29.6
		Queue (ft)	50'	100'		50'			175'	300'		300'		25'	–

Elm Grove Road

Scenario	Control	MOE	Movement						OVERALL
			NBL	NBR	NEBT	NEBR	SWBL	SWBT	
2019 AM Existing	Signal	LOS	C	C	A	A	A	A	B
		Delay (sec)	20.0	23.1	8.9	7.3	9.7	8.3	11.7
		Queue (ft)	50'	100'	100'	25'	75'	75'	–
2019 PM Existing	Signal	LOS	C	C	A	A	B	A	B
		Delay (sec)	21.6	23.2	9.0	7.3	10.7	8.9	12.6
		Queue (ft)	100'	125'	125'	25'	100'	125'	–
			Movement						OVERALL
			NBL	NBR	NEBT	NEBR	SWBL	SWBT	
2023 AM Background	Signal	LOS	C	C	A	A	A	A	B
		Delay (sec)	20.0	23.1	8.9	7.3	9.8	8.3	11.8
		Queue (ft)	50'	125'	100'	25'	75'	75'	–
2023 PM Background	Signal	LOS	C	C	A	A	B	A	B
		Delay (sec)	21.6	23.2	9.1	7.3	11.0	9.0	12.6
		Queue (ft)	100'	125'	125'	25'	125'	125'	–

2019: The analysis summarized in Table 2 indicate that all 2019 traffic movements are operating at or better than LOS 'D' except for the northeastbound left turn at the Watertown Plank Road/ Legion Drive intersection which is operating at LOS 'E' during the morning and LOS 'F' during the evening peak traffic periods. Maximum 95th percentile queues for the northeastbound left turn are projected at 100 feet during the morning peak hour and 175 feet during the evening peak hour. In 2019, the southeastbound left turn on Legion Drive is operating at LOS 'D' during the morning and evening peak hour with maximum 95th percentile queues of 25 feet during the morning and 50 feet during the evening peak hour. All other study intersections are operating at LOS 'C or better in 2019.

2023: The Table 2 analysis also indicates that all study intersection traffic movements in 2023 are also expected to operate at or better than LOS 'D' except for the Watertown Plank Road/Legion Drive northeastbound left turn which continues to operate at LOS 'E' during the morning and LOS 'F' during the evening peak traffic periods. Maximum 95th percentile queues continue to be projected at 100 feet during the morning and 175 feet during the evening peak

hours. The southeastbound left turn from Legion Drive to Watertown Plank Road is projected to operate at LOS 'D', which is acceptable operation, during both the morning and evening peak hours. The southbound approach of the Juneau Boulevard intersection during the evening peak hour is expected to change from LOS 'C' operation in 2019 to LOS 'D' operation in the year 2023 due to background traffic growth. Maximum 95th percentile queues of 50 feet are projected for the Juneau Boulevard southeastbound left turn during both peak hour periods All other study intersections are projected to continue operating at LOS 'C' or better in 2023.

Single SSND Access Road Analysis

Figure 5 shows the original Mandel residential development plan with two access roads, one access connection to Watertown Plank Road and one access connection to Stephen Place. In the analysis for this supplemental report, the Stephen Place SSND road connection is eliminated with all development trips using the single access road connection with Watertown Plank Road which is located at the existing SSND roadway along the west side of Notre Dame and Maria Halls.

Figure 5: Mandel Group Residential Development Site Plan

Development Plan Trip Distribution

A single access road scenario does not affect the number of trips generated by the Mandel residential development plan. Table 3, from the September 23, 2020 SSND Development Traffic Impact Study indicates a total of 145 morning and 180 evening peak hour residential trips are projected to be generated by the Mandel residential development. It is noted that the existing SSND property generates a total of 25 morning and 35 evening peak hour trips. This means the true overall impact on Watertown Plank Road is reduced to 120 new morning and 145 new evening peak hour trips from the SSND property.

Table 3: Mandel Residential Development Peak Hour Trip Generation

	No. of	ITE	Morning Peak Hour			Evening Peak Hour		
Land Use Component	Units	Code	Enter	Exit	Total	Enter	Exit	Total
• Apartments								
○ Mid-rise	200	221	20	55	75	55	35	90
○ Historic Bldg	66	221	5	20	25	20	10	30
• Side-by-Side Duplexes	17	220	5	15	20	15	10	25
• Senior Housing	100	252	10	15	25	20	15	35
Total	400		40	105	145	110	70	180

Source: Institute of Transportation Engineers Trip Generation Manual, 10th edition

The trips shown on Table 3 have been distributed to the study intersections under a single access road residential development scenario based on existing peak hour traffic patterns on Watertown Plank Road. Figures 6 and 7 illustrate the distribution of Mandel residential development trips on the study intersections.

Figure 6: Distribution of Morning Peak Hour Trips Generated by Mandel Residential Development with One Access Road Connection to Watertown Plank Road

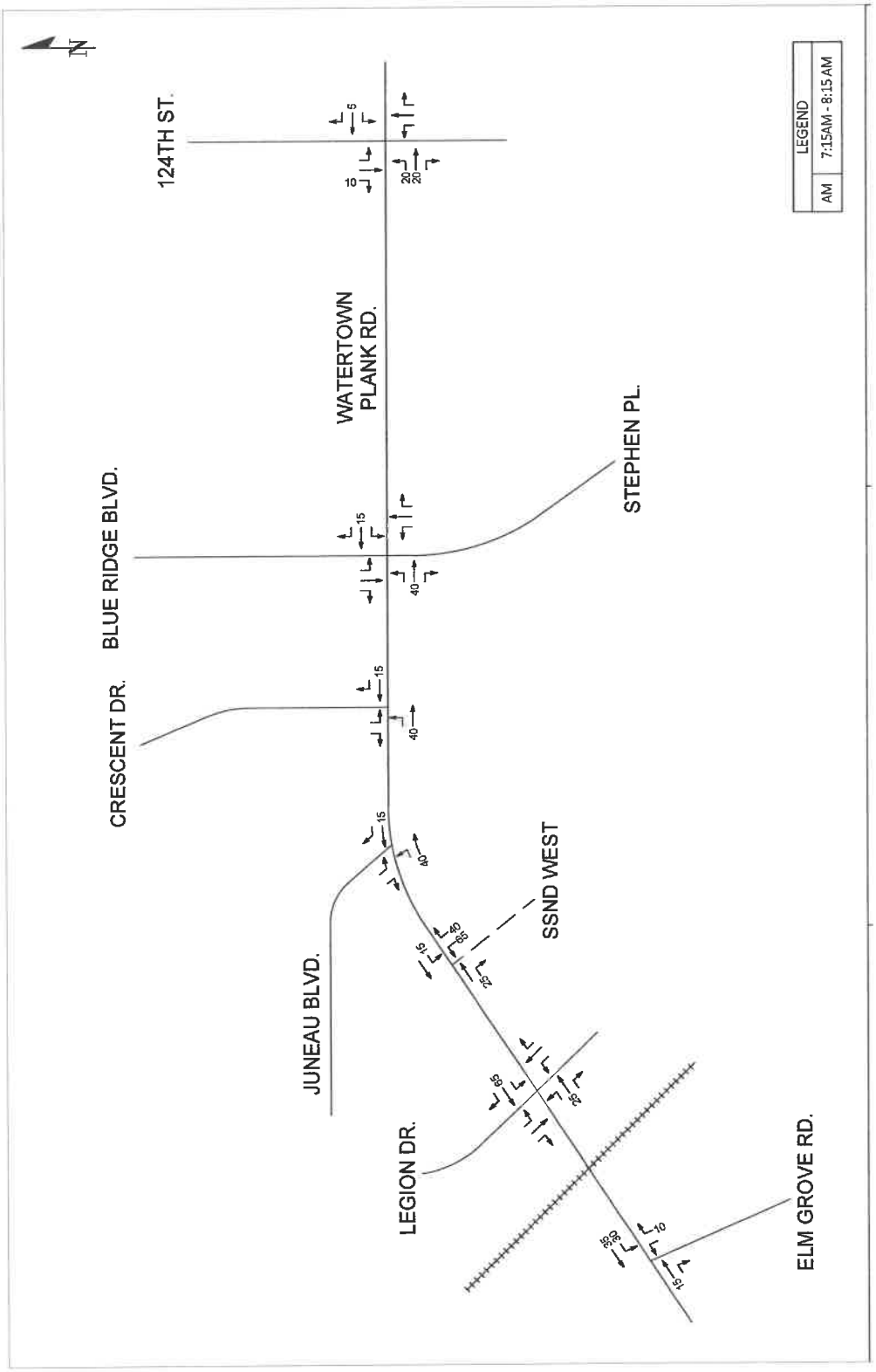
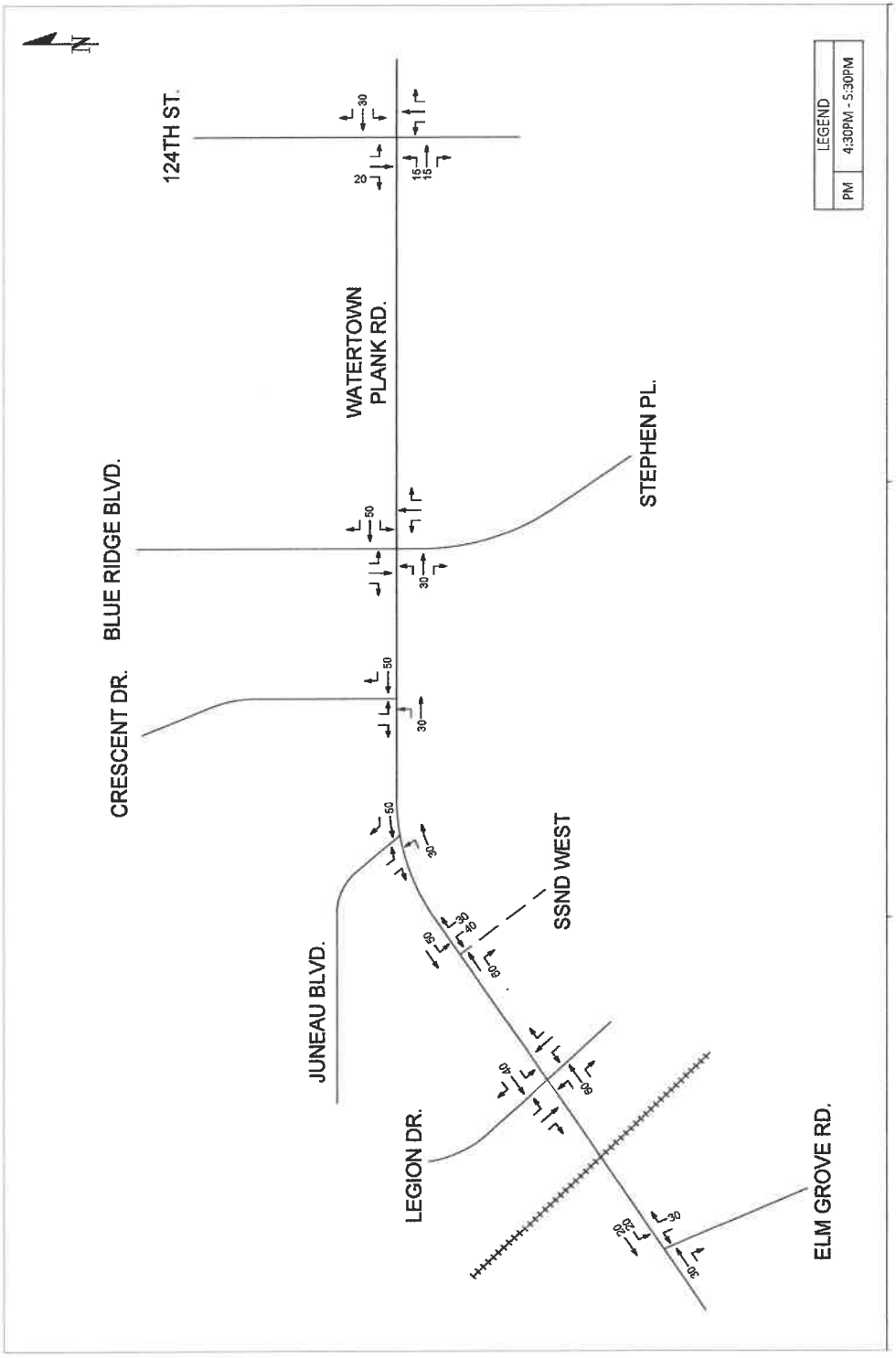


Figure 7: Distribution of Evening Peak Hour Trips Generated by Mandel Residential Development with One Access Road Connection to Watertown Plank Road



Relocation of Mandel residential development plan trips from Stephen Place to the single SSND access connection with Watertown Plank Road due elimination of the second development

access road connection to Stephen Place only impacts trip distribution changes in traffic movement volumes at the Stephen Place, Crescent Drive, Juneau Avenue, and SSND Western Access Road intersections along Watertown Plank Road.

2023 Operation with Mandel Development Trips

Figures 8 and 9 show the year 2023 peak hour traffic volumes from combining the 2023 background traffic growth volumes from Figures 3 and 4 with the single access road distributed residential development trip volumes shown in Figures 6 and 7.

Figure 8: 2023 Morning Peak Hour Volumes with Mandel Residential Development Trips Under a Single Watertown Plank Road Access Connection

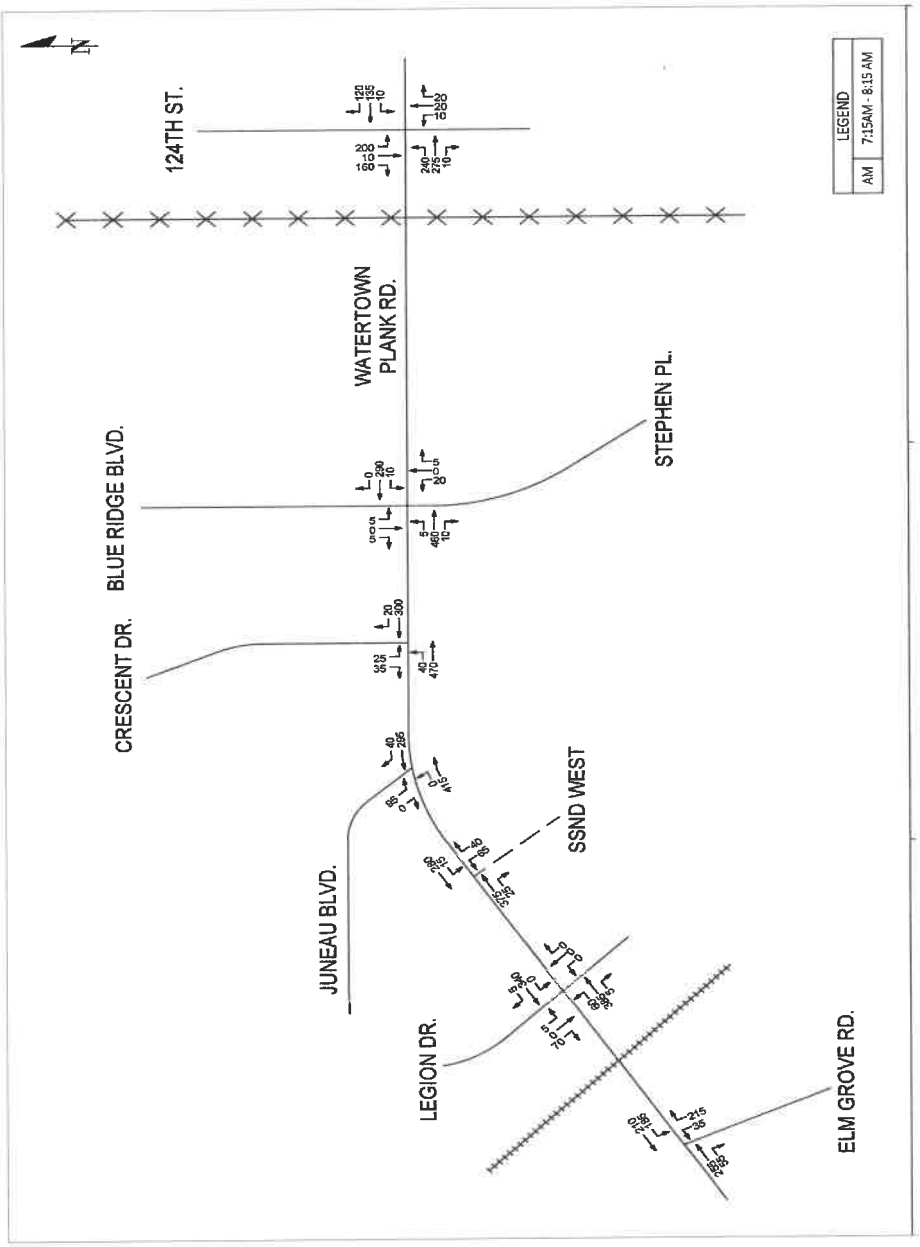


Figure 9: 2023 Evening Peak Hour Volumes with Mandel Residential Development Trips Under a Single Watertown Plank Road Access Connection

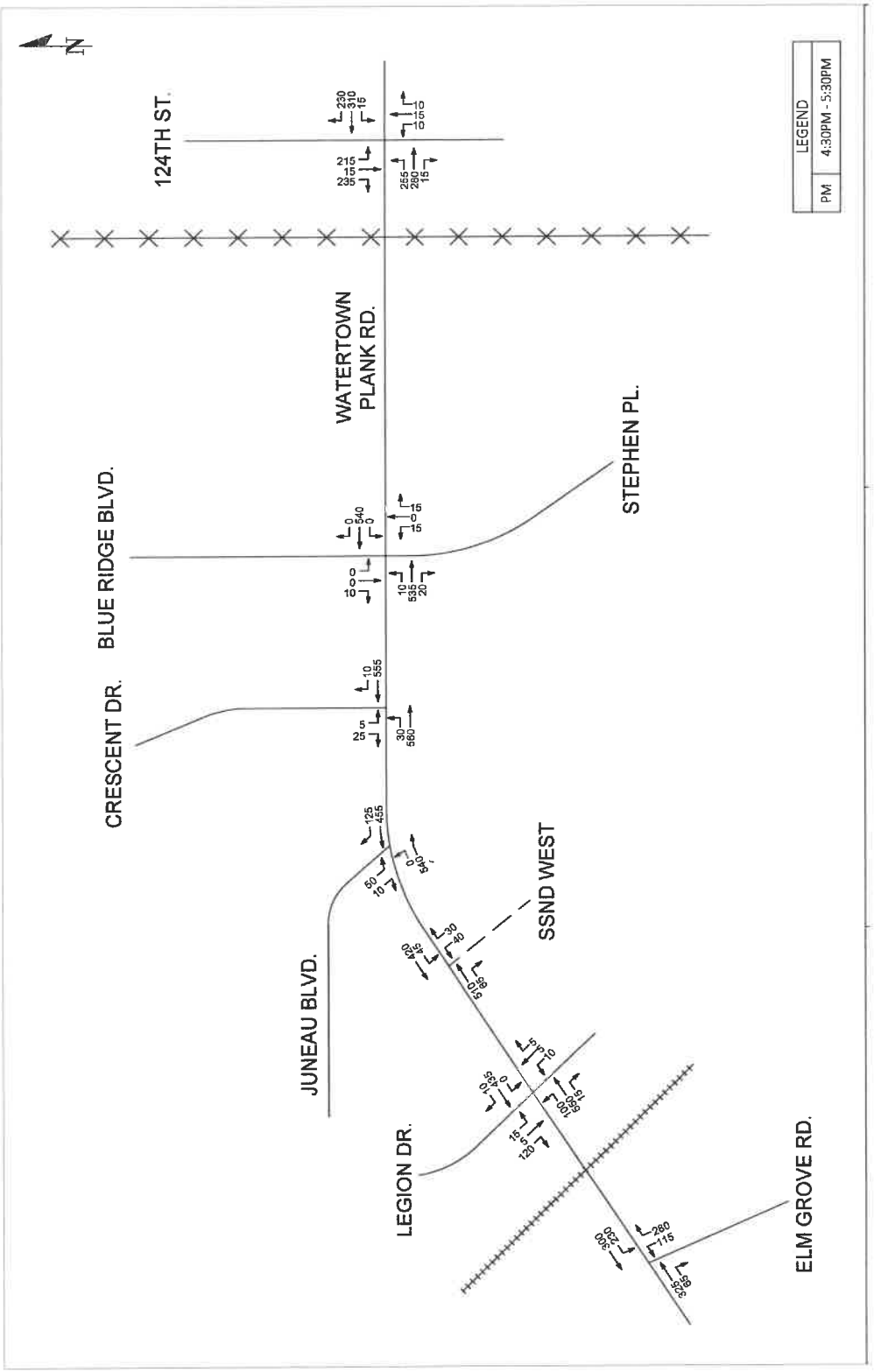


Table 4 summarizes year 2023 peak hour operating conditions at the Watertown Plank Road study intersections under a single Mandel residential development access road scenario.

Table 4: 2023 Peak Hour Operation with Mandel Residential Development Single Access Road Connection to Watertown Plank Road

North 124th Street

			Movement												OVERALL
			EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
2023 AM with SSND Development	Signal	LOS	A			C			C			C		C	B
		Delay (sec)	9.9			24.3			34.4			28.3		22.6	18.7
		Queue (ft)	125'			100'			75'			175'		100'	--
2023 PM with SSND Development	Signal	LOS	A			C			C			C		C	C
		Delay (sec)	9.6			29.0			33.8			32.6		26.4	22.4
		Queue (ft)	125'			200'			50'			200'		125'	--

Stephen Place/Blue Ridge Boulevard

Scenario	Control	MOE	Movement												OVERALL
			EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
2023 AM with SSND Development	Stop	LOS	A			A			C			B			A
		Delay (sec)	0.1			0.4			19.3			14.9			1.0
		Queue (ft)	25'			25'			25'			25'			--
2023 PM with SSND Development	Stop	LOS	A			A			D			B			A
		Delay (sec)	0.3			0.0			25.3			12.6			0.9
		Queue (ft)	25'			25'			25'			25'			--

Crescent Drive

Scenario	Control	MOE	Movement						OVERALL
			EBL	EBT	WBT	WBR	SBL	SBR	
2023 AM with SSND Development	Stop	LOS	A		A		C		A
		Delay (sec)	1.2		0.0		17.2		1.8
		Queue (ft)	25'		0'		25'		--
2023 PM with SSND Development	Stop	LOS	A		A		C		A
		Delay (sec)	1.0		0.0		16.8		0.9
		Queue (ft)	25'		0'		25'		--

Table 4: 2023 Peak Hour Operation with Mandel Residential Development Single Access Road Connection to Watertown Plank Road (cont.)

Juneau Boulevard

Scenario	Control	MOE	Movement						OVERALL
			WBL	WBR	SBL	SBR	NEL	NER	
2023 AM with SSND Development	Stop	LOS	A		C		A		A
		Delay (sec)	0.0		21.2		0.0		2.4
		Queue (ft)	0'		50'		0'		--
2023 PM with SSND Development	Stop	LOS	A		D		A		A
		Delay (sec)	0.0		29.0'		0.0		1.5
		Queue (ft)	0'		50'		0'		--

SSND West Driveway Single Access Connection for Mandel Residential Development

Scenario	Control	MOE	Movement						OVERALL
			NWBL	NWBR	NEBT	NEBR	SWBL	SWBT	
2023 AM with SSND Development	Stop	LOS	C		A		A		A
		Delay (sec)	15.6		0.0		0.5		2.3
		Queue (ft)	25'		0'		25'		--
2023 PM with SSND Development	Stop	LOS	C		A		A		A
		Delay (sec)	24.1		0.0		1.5		2.1
		Queue (ft)	50'		0'		25'		--

Legion Drive

			Movement												OVERALL
			SEBL	SEBT	SEBR	NWBL	NWBT	NWBR	NEBL	NEBT	NEBR	SWBL	SWBT	SWBR	
2023 AM with SSND Development	Signal	LOS	D	C		No Vehicles - Exited Driveway			E	B		C		B	C
		Delay (sec)	38.2	20.3					76.4	15.3		22.3		15.5	22.8
		Queue (ft)	25'	75'					100'	225'		250'		25'	--
2023 PM with SSND Development	Signal	LOS	D	C		C			F	B		C		B	C
		Delay (sec)	39.0	21.2		29.7			135.4	17.6		23.5		15.5	29.7
		Queue (ft)	50'	100'		50'			175'	350'		325'		25'	--

Elm Grove Road

			Movement						OVERALL
			NBL	NBR	NEBT	NEBR	SWBL	SWBT	
2023 AM with SSND Development	Signal	LOS	C	C	A	A	B	A	B
		Delay (sec)	20.0	23.3	9.0	7.3	10.7	8.6	11.9
		Queue (ft)	50'	125'	125'	25'	100'	100'	--
2023 PM with SSND Development	Signal	LOS	C	C	A	A	B	A	B
		Delay (sec)	21.6	23.8	9.3	7.3	11.8	9.1	13.0
		Queue (ft)	100'	150'	150'	25'	125'	125'	--

The traffic operation analysis summarized on Table 4 indicates that the only intersection approaches that change LOS in year 2023 with trips generated by the Mandel development plan compared to year 2023 background traffic growth only conditions during the morning peak hour is the northwestbound approach of the single access road connection to Watertown Plank

Road which changes from LOS 'B' to LOS 'C' due to a change of 5.4 seconds in average vehicle delay from 10.2 seconds to 15.6 seconds, and the Watertown Plank Road/Elm Grove Road southwestbound approach left turn which changes from LOS 'A' to LOS 'B' due to a change of 0.9 seconds from 9.8 seconds to 10.7 seconds.

In comparison, during the evening peak hour the northbound approach of Stephen Place at Watertown Plank Road is expected to change from LOS 'C' to LOS 'D' operation due to an average vehicle delay change of 2.7 seconds from 22.6 seconds to 25.3 seconds per vehicle (25.0 seconds represents the threshold between LOS 'C' and LOS 'D') . The maximum 95th percentile queue on northbound Stephen Place remains at 25 feet. It is noted that the LOS 'E' morning peak hour and LOS 'F' operation of the northeastbound left turn on Watertown Plank Road at Legion Drive is projected to continue to operate the same as reported under 2023 background traffic volume conditions. This is also true for the LOS 'D' operation at the Legion Drive southeastbound left turn during both the morning and evening peak hour operation at Watertown Plank Road and the Juneau Boulevard southeastbound movement during the evening peak hour. All other intersections continue to operate at the same LOS in the year 2023 with and without Mandel development traffic.

2028 Traffic Operation: The year 2028 traffic analysis compares the following two traffic scenarios for the Watertown Plank Road single SSND property access road development condition:

1. 2028 Traffic Growth Without Any New Development Operation
2. 2028 Traffic Growth plus Mandel and Village Downtown Corridor Master Plan Residential Trips Operation

1. 2028 Background Traffic Growth Without Any New Development Operation:
Figures 10 and 11 show the year 2028 peak hour background traffic intersection volumes without any Mandel development trips. Year 2028 volumes represent an annual growth rate of 0.5% per year since 2019.

Figure 10: 2028 Morning Peak Hour Background Traffic Volumes Without Any New Development

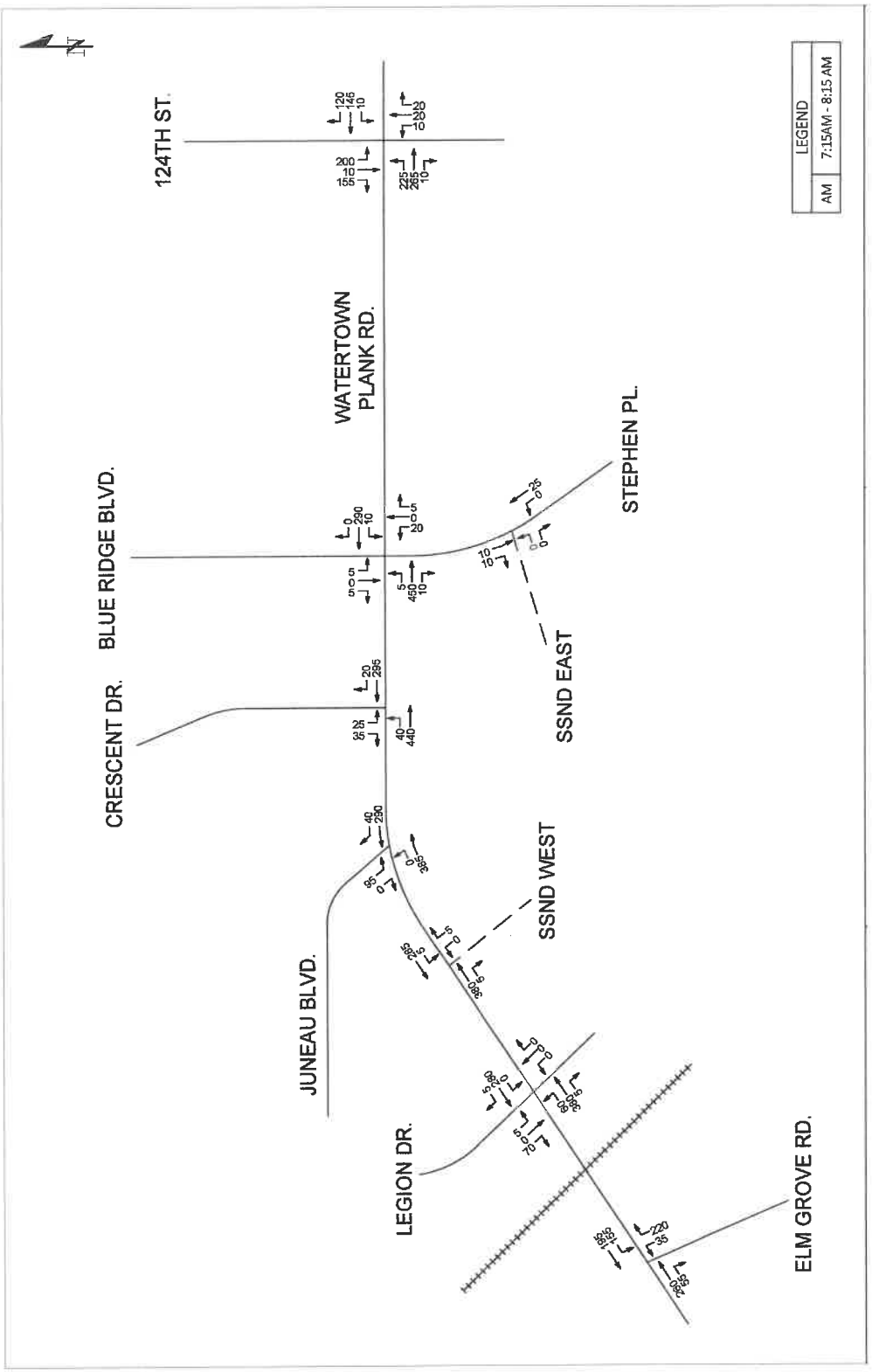


Figure 11: 2028 Evening Peak Hour Background Traffic Volumes Without Any New Development

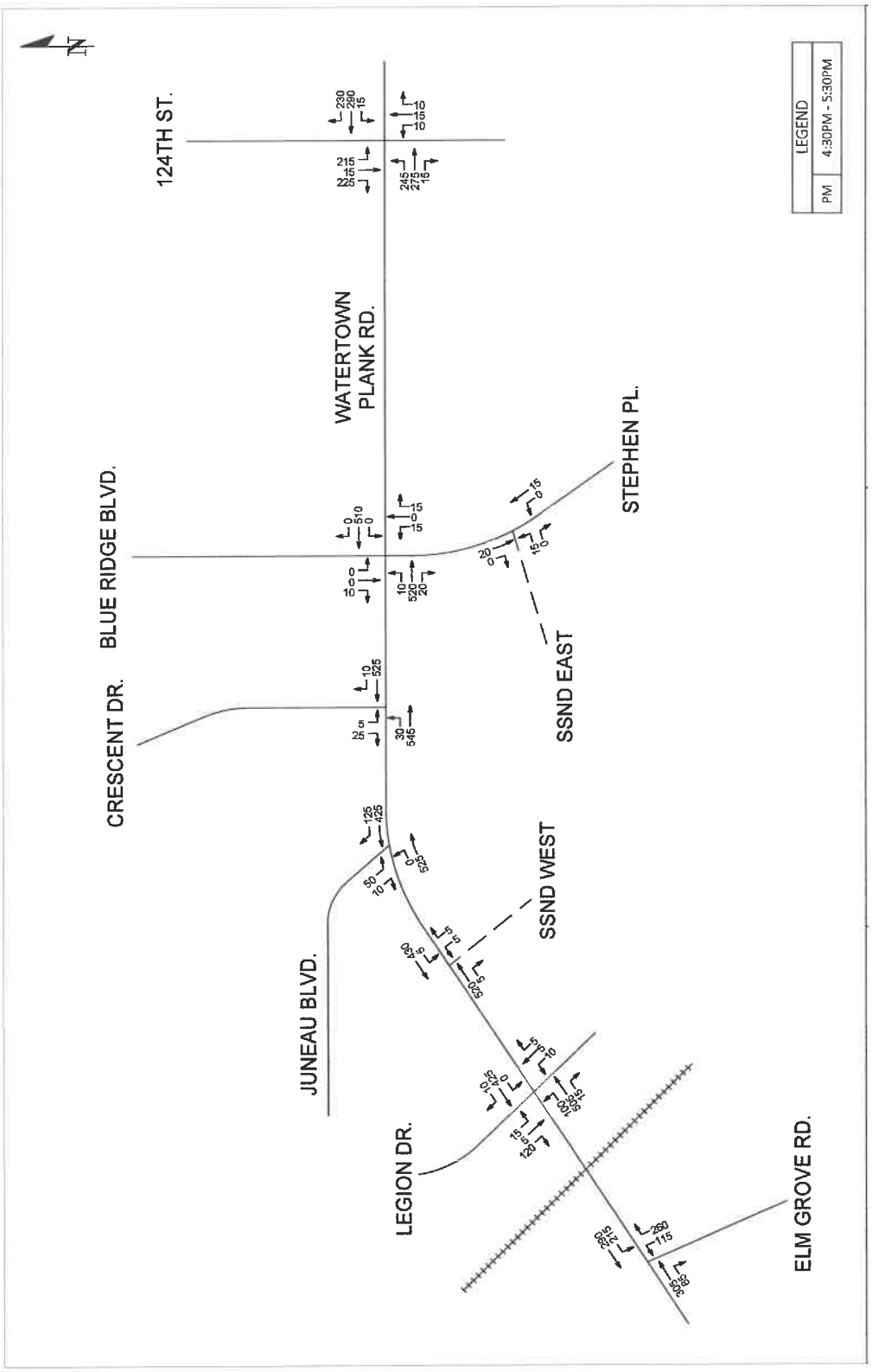


Table 5 summarizes study intersection operation under the assumed 0.5% percent annual growth of background through traffic on Watertown Plank Road without any new development.

Table 5: Year 2028 Peak Hour Background Traffic Operation Without Any New Development

North 124th Street

			Movement												OVERALL
			EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
2028 AM Background	Signal	LOS	A			C			C			C		C	B
		Delay (sec)	9.8			24.4			34.8			28.6		22.8	19.0
		Queue (ft)	125'			100'			75'			175'		100'	--
2028 PM Background	Signal	LOS	A			C			C			C		C	C
		Delay (sec)	9.5			28.3			33.7			32.4		25.9	22.0
		Queue (ft)	125'			200'			50'			200'		125'	--

Stephen Place/Blue Ridge Boulevard

			Movement												OVERALL
			EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
2028 AM Background	Stop	LOS	A			A			C			B			A
		Delay (sec)	0.1			0.4			18.5			14.5			1.0
		Queue (ft)	25'			25'			25'			25'			--
2028 PM Background	Stop	LOS	A			A			C			B			A
		Delay (sec)	0.3			0.0			23.7			12.2			0.9
		Queue (ft)	25'			25'			25'			25'			--

Crescent Drive

			Movement						OVERALL
			EBL	EBT	WBT	WBR	SBL	SBR	
2028 AM Background	Stop	LOS	A		A		C		A
		Delay (sec)	1.2		0.0		16.5		1.8
		Queue (ft)	25'		0'		25'		--
2028 PM Background	Stop	LOS	A		A		C		A
		Delay (sec)	1.0		0.0		16.0		0.9
		Queue (ft)	25'		0'		25'		--

Juneau Boulevard

			Movement						OVERALL
			WBL	WBR	SBL	SBR	NEL	NER	
2028 AM Background	Stop	LOS	A		C		A		A
		Delay (sec)	0.0		19.9'		0.0		2.3
		Queue (ft)	0'		50'		25'		--
2028 PM Background	Stop	LOS	A		D		A		A
		Delay (sec)	0.0		26.6'		0.0		1.4
		Queue (ft)	0'		50'		25'		--

Western SSND Access Road

			Movement						OVERALL
			NWBL	NWBR	NEBT	NEBR	SWBL	SWBT	
2028 AM Background	Stop	LOS	B		A		A		A
		Delay (sec)	10.3		0.0		0.2		0.1
		Queue (ft)	25'		0'		25'		--
2028 PM Background	Stop	LOS	C		A		A		A
		Delay (sec)	16.1		0.0		0.2		0.2
		Queue (ft)	25'		0'		25'		--

Table 5: 2028 Peak Hour Background Traffic Operation Without Any New Development (cont.)

Legion Drive

			Movement												OVERALL
			SEBL	SEBT	SEBR	NWBL	NWBT	NWBR	NEBL	NEBT	NEBR	SWBL	SWBT	SWBR	
2028 AM Background	Signal	LOS	D	C		No Vehicles - Exited Driveway			E	B		C		B	C
		Delay (sec)	38.2	20.3					76.4	15.2		20.6		15.5	22.2
		Queue (ft)	25'	75'					100'	225'		200'		25'	–
2028 PM Background	Signal	LOS	D	C		C			F	B		C		B	C
		Delay (sec)	39.0	21.2		29.7			135.4	16.6		23.1		15.5	29.7
		Queue (ft)	50'	100'		50'			175'	300'		300'		25'	–

Elm Grove Road

			Movement						OVERALL
			NBL	NBR	NEBT	NEBR	SWBL	SWBT	
2028 AM Background	Signal	LOS	C	C	A	A	A	A	B
		Delay (sec)	20.0	23.4	9.0	7.3	10.0	8.5	11.9
		Queue (ft)	50'	125'	125'	25'	75'	100'	–
2028 PM Background	Signal	LOS	C	C	A	A	B	A	B
		Delay (sec)	21.6	23.4	9.1	7.3	11.1	9.0	12.7
		Queue (ft)	100'	125'	125'	25'	125'	125'	–

As shown on Table 5, all of the study intersection peak hour traffic operations in 2028 without any new residential development continue to operate at the same LOS they experienced with 2023 background traffic conditions.

2. Year 2028 Traffic Growth with Mandel and Village Downtown Corridor Master Plan Residential Development Trip Operation: In order to analyze year 2028 traffic impacts with the Mandel residential development, it is necessary to quantify the number of trips that may be generated by future residential development identified in the Village Downtown Corridor Master Plan. On page 97 of the Village Downtown Corridor Master Plan a total of 243 new residential multi-family dwelling units may be constructed. The Village Downtown Corridor Master Plan does not include the SSND property. Table 6 provides a summary of the Master Plan number of new residential trips generated between the Legion Drive and Elm Grove Road intersections according to data published in the *ITE Trip Generation Manual, 10th edition*.

Table 6: Village Downtown Corridor Master Plan Residential Trip Generation

Land Use	No. of Units	ITE Code	Morning Peak Hour Enter	Exit	Total	Evening Peak Hour Enter	Exit	Total
• Mid-Rise Apartments	243	221	20	65	85	65	40	105

Source: Institute of Transportation Engineers Trip Generation Manual, 10th edition

Figures 12 and 13 show the distribution of Village Downtown Corridor Master Plan residential trips.

Figure 12: Distribution of Morning Peak Hour Trips Generated by Village Downtown Corridor Master Plan Residential Development

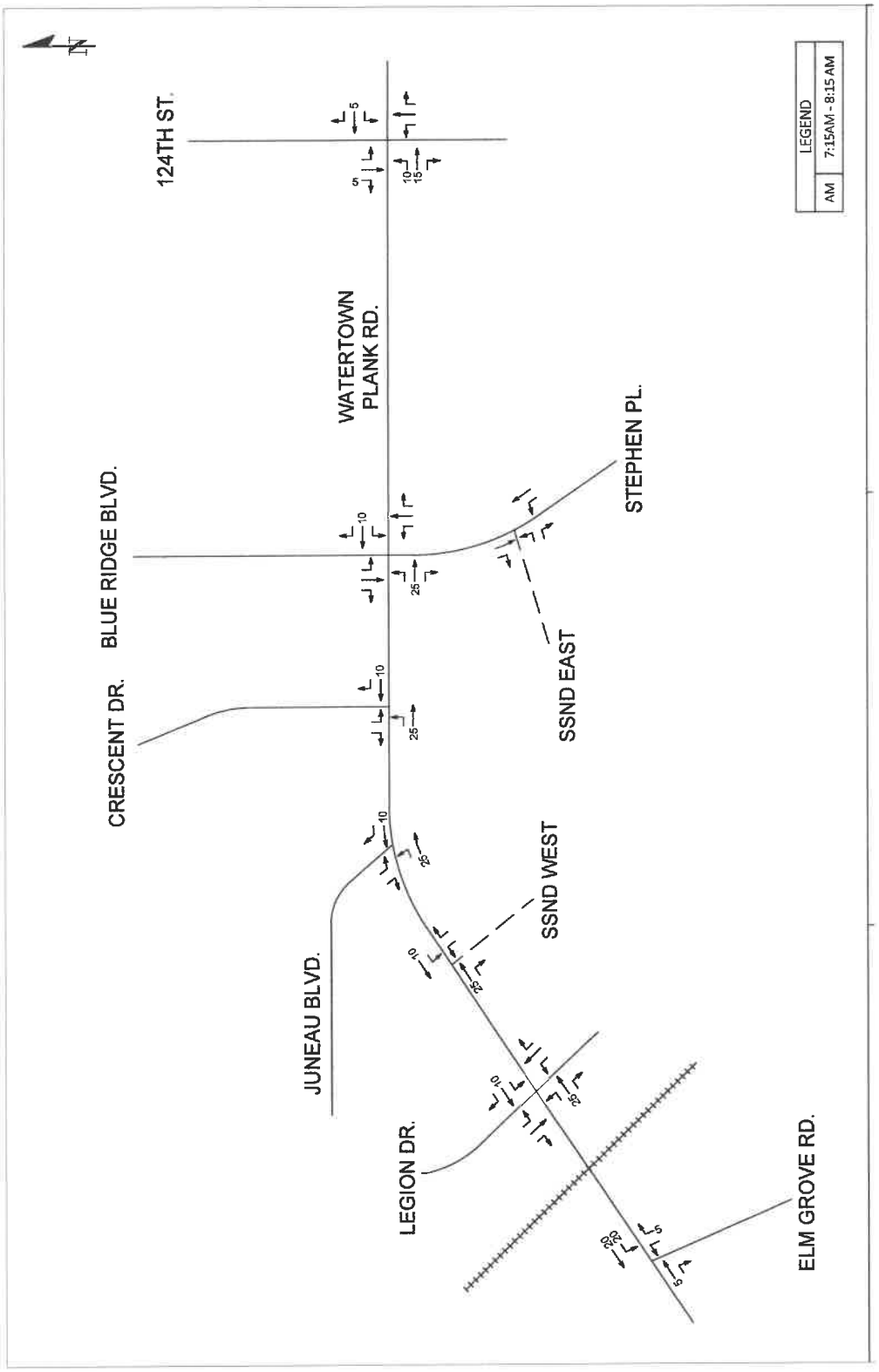
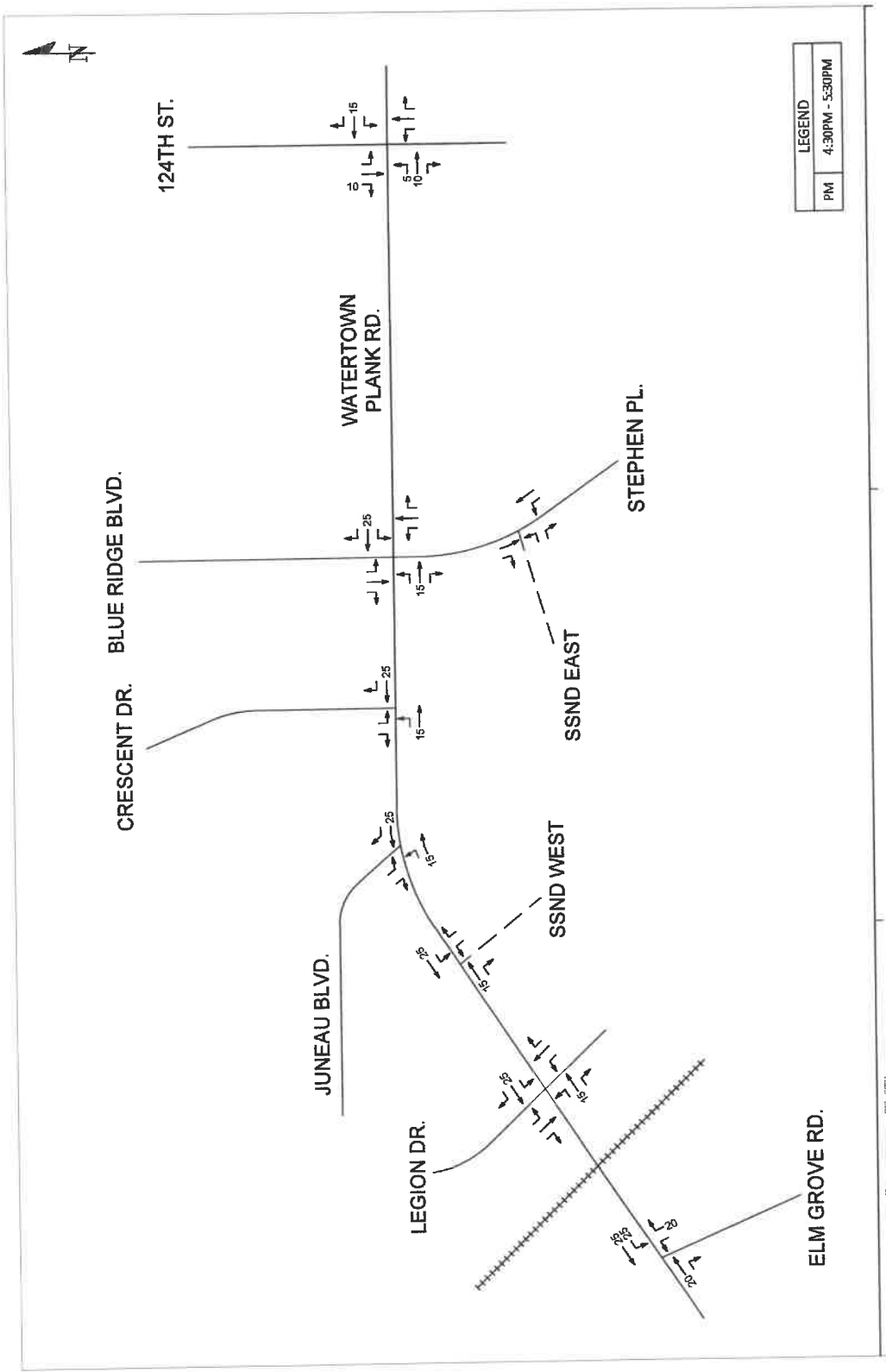


Figure 13: Distribution of Evening Peak Hour Trips Generated by Village Downtown Corridor Master Plan Residential Development



Figures 14 and 15 show the year 2028 peak hour background traffic intersection volumes with the addition of Mandel development and Village Downtown Corridor Master Plan residential trips.

Figure 14: 2028 Morning Peak Hour Background Traffic Volumes with Mandel and Village Downtown Corridor Master Plan Residential Development Trips Under a Single Access Road Scenario

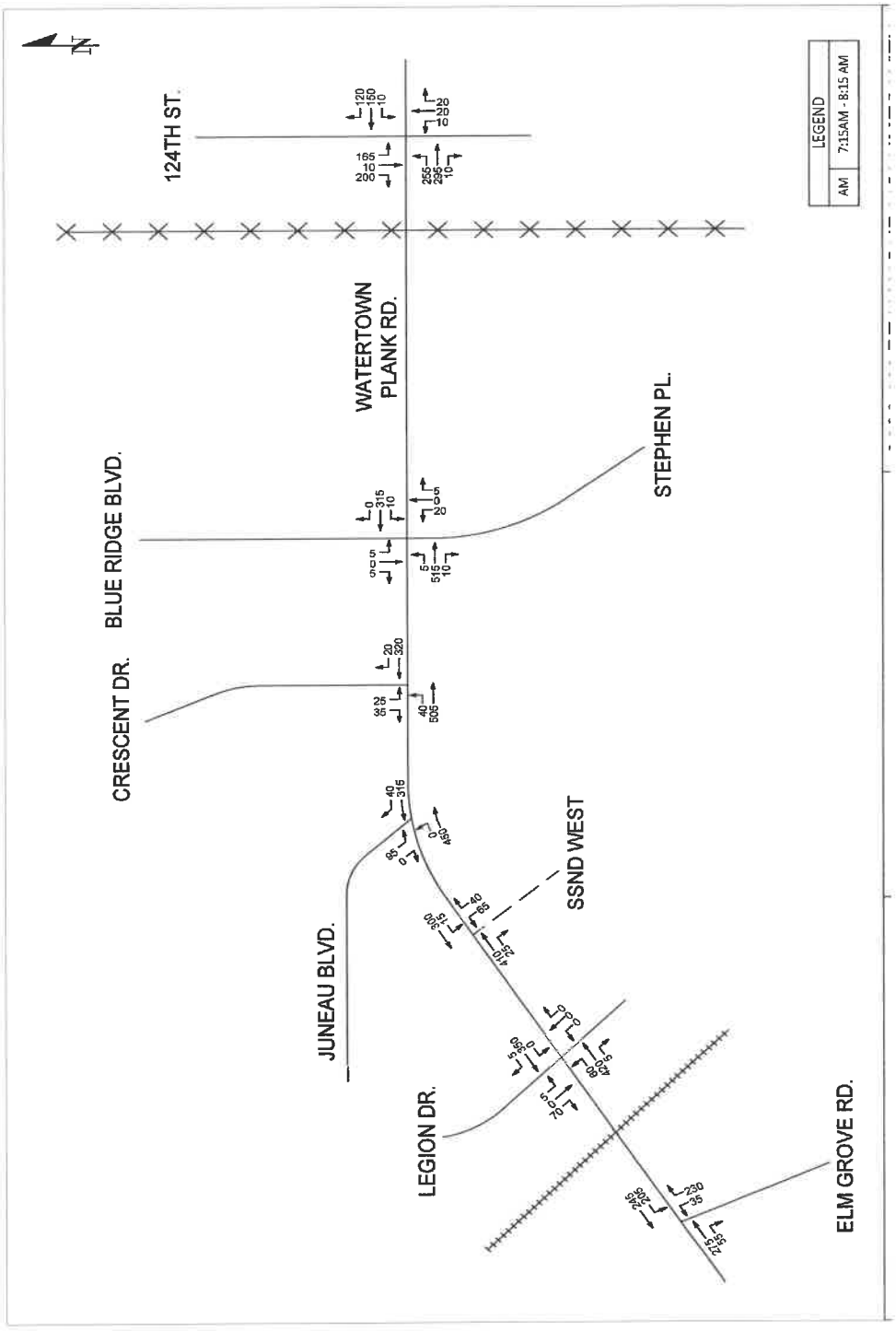


Figure 15: 2028 Evening Peak Hour Background Traffic Volumes with Mandel and Village Downtown Corridor Master Plan Residential Development Trips Under a Single Access Road Scenario

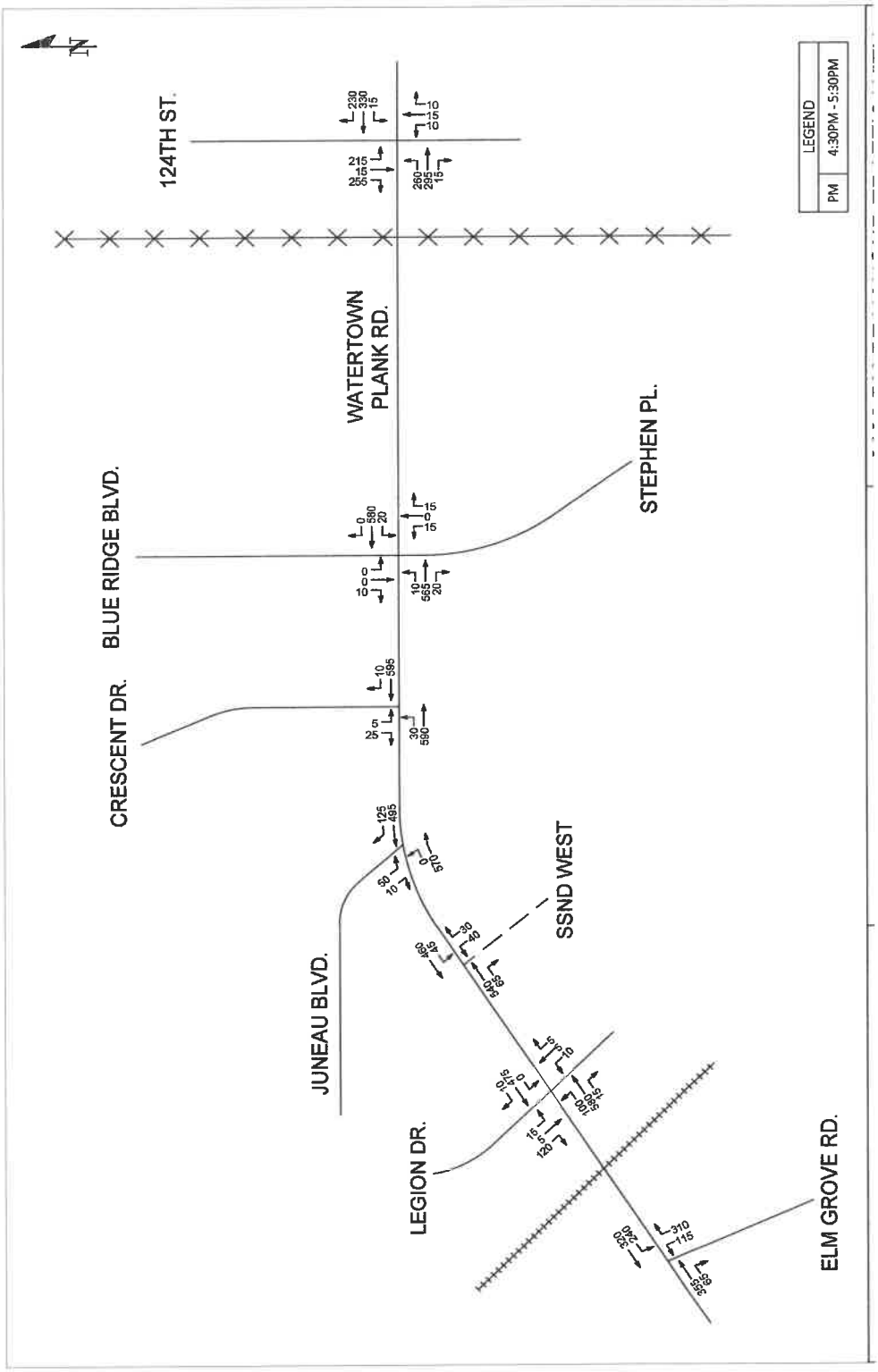


Table 7 summarizes the year 2028 peak our traffic operation with trips generated by both the Mandel Residential Development Plan and the Village Downtown Corridor Master Plan residential development.

Table 7: 2028 Peak Hour Operation with Mandel Residential Development Single Access Road Connection to Watertown Plank Road and Village Downtown Corridor Master Plan Residential Trips

North 124th Street

			Movement												OVERALL
			EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
2028 AM with SSND & Village Development	Signal	LOS	B			C			C			C		C	B
		Delay (sec)	10.1			24.5			34.8			28.6		23.0	18.8
		Queue (ft)	125'			125'			75'			175'		100'	--
2028 PM with SSND & Village Development	Signal	LOS	A			C			C			C		C	C
		Delay (sec)	9.7			29.7			33.9			33.0		27.4	22.8
		Queue (ft)	125'			225'			50'			200'		150'	--

Stephen Place/Blue Ridge Boulevard

Scenario	Control	MOE	Movement												OVERALL
			EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
2028 AM with SSND & Village Development	Stop	LOS	A			A			C			C			A
		Delay (sec)	0.1			0.4			21.0			15.8			1.0
		Queue (ft)	25'			25'			25'			25'			--
2028 PM with SSND & Village Development	Stop	LOS	A			A			D			B			A
		Delay (sec)	0.3			0.0			28.2			13.1			1.0
		Queue (ft)	25'			25'			25'			25'			--

Crescent Drive

Scenario	Control	MOE	Movement						OVERALL
			EBL	EBT	WBT	WBR	SBL	SBR	
2028 AM with SSND & Village Development	Stop	LOS	A		A		C		A
		Delay (sec)	1.2		0.0		18.4		1.8
		Queue (ft)	25'		0'		25'		--
2028 PM with SSND & Village Development	Stop	LOS	A		A		C		A
		Delay (sec)	1.1		0.0		17.9		1.0
		Queue (ft)	25'		0'		25'		--

Table 7: 2028 Peak Hour Operation with Mandel Residential Development Single Access Road Connection to Watertown Plank Road and Village Downtown Corridor Master Plan Residential Trips (cont.)

Juneau Boulevard

Scenario	Control	MOE	Movement						OVERALL
			WBL	WBR	SBL	SBR	NEL	NER	
2028 AM with SSND & Village Development	Stop	LOS	A		C		A		A
		Delay (sec)	0.0		23.4'		0.0		2.5
		Queue (ft)	0'		50'		0'		--
2028 PM with SSND & Village Development	Stop	LOS	A		D		A		A
		Delay (sec)	0.0		33.2'		0.0		1.6
		Queue (ft)	0'		50'		0'		--

SSND Western Driveway Single Access Road Connection to Mandel Residential Development

Scenario	Control	MOE	Movement						OVERALL
			NWBL	NWBR	NEBT	NEBR	SWBL	SWBT	
2028 AM with SSND & Village Development	Stop	LOS	C		A		A		A
		Delay (sec)	16.8		0.0		0.5		2.3
		Queue (ft)	50'		0'		25'		--
2028 PM with SSND & Village Development	Stop	LOS	D		A		A		A
		Delay (sec)	27.9		0.0		1.5		2.3
		Queue (ft)	50'		0'		25'		--

Legion Drive

			Movement												OVERALL
			SEBL	SEBT	SEBR	NWBL	NWBT	NWBR	NEBL	NEBT	NEBR	SWBL	SWBT	SWBR	
2028 AM with SSND & Village Development	Signal	LOS	D	C		No Vehicles - Exited Driveway			E	B		C		B	C
		Delay (sec)	38.2	20.3					76.4	16.1		22.6		15.5	23.0
		Queue (ft)	25'	75'					100'	250'		250'		50'	--
2028 PM with SSND & Village Development	Signal	LOS	D	C		C			F	B		C		B	C
		Delay (sec)	39.0	21.2		29.7			135.4	18.4		24.8		15.5	30.0
		Queue (ft)	50'	100'		50'			175'	375'		350'		25'	--

Elm Grove Road

			Movement						OVERALL
			NBL	NBR	NEBT	NEBR	SWBL	SWBT	
2028 AM with SSND & Village Development	Signal	LOS	C	C	A	A	B	A	B
		Delay (sec)	20.0	23.6	9.2	7.3	11.6	8.9	12.2
		Queue (ft)	50'	125'	125'	25'	125'	100'	--
2028 PM with SSND & Village Development	Signal	LOS	C	C	A	A	B	A	B
		Delay (sec)	21.6	24.5	9.6	7.3	12.8	9.3	13.4
		Queue (ft)	100'	150'	150'	25'	150'	150'	--

As shown on Table 7, the only intersection Level of Service traffic movements impacted in 2028 due to trips generated by the Mandel and Village Downtown Corridor Master Plan residential developments during the morning peak hour are the eastbound approach of Watertown Plank Road at North 124th street which changes from LOS 'A' to LOS 'B' due to an average vehicle delay change of 0.3 seconds from 9.8 seconds to 10.1 seconds, the southbound approach of Blue Ridge Boulevard which changes from LOS 'B' to LOS 'C' due to an average vehicle delay change of 1.3 seconds from 14.5 seconds to 15.8 seconds, the northwestbound approach of the SSND single access road approach to Watertown Plank Road which changes from LOS 'B' to LOS 'C' due to an average vehicle delay change of 6.5 seconds from 10.3 seconds to 16.8 seconds, and the southwestbound left turn on Watertown Plank Road at Elm Grove Road which changes from LOS 'A' to LOS 'B' due to a change in average vehicle delay of 1.6 seconds from 10.0 seconds to 11.6 seconds.

In comparison, during the evening peak hour the northbound approach of Stephen Place changes from LOS 'C' to LOS 'D' operation due to a change in average vehicle delay of 4.5 seconds per vehicle from 23.7 seconds to 28.2 seconds, and the northwestbound approach of the SSND single access road approach to Watertown Plank Road which changes from LOS 'C' to LOS 'D' due to an average vehicle delay change of 11.8 seconds from 16.1 seconds to 27.9 seconds.

It is noted that the Watertown Plank Road approaches to the single access road connection are projected to operate at LOS 'A' with minimal average vehicle delays of 0.5 seconds during the morning peak hour and 1.5 seconds per vehicle during the evening peak hour. During both peak hour periods maximum 95th percentile queuing on Watertown Plank Road at the single access SSND property intersection is projected at 25 feet.

Operation of both the Juneau Boulevard southbound approach, and the southeastbound left turn on Legion Drive remain at LOS 'D' during the evening peak hour with the Watertown Plank Road northeastbound left turn at Legion Drive projected to continue to operate at LOS E' with a maximum 95th percentile queue of 100 feet during the morning and at LOS 'F' with a maximum 95th percentile queue of 175 feet during the evening peak hour. The Juneau Boulevard and the Legion Drive operations in 2028 are not impacted by the Mandel or Village Downtown Corridor Master Plan residential developments.

Traffic Signal Warrants

It was requested through the Mandel public involvement process to consider installing traffic signals at the Watertown Plank Road intersection with the single access connection to the Mandel residential development. It is noted that the above analyses indicate the SSND single development access connection in 2028 is projected to operate with all traffic movements on its Watertown Plank Road approaches at LOS 'A' with 95th percentile maximum queues 50 feet during the evening peak hour. The Mandel residential development roadway connection is projected to operate at LOS 'C' with a 95th percentile maximum queue of 50 feet during the evening peak hour. By the year 2028, with Mandel and Village Downtown Corridor Master Plan residential trips, Watertown Plank Road is projected to continue to operate at LOS 'A' with 95th

percentile maximum queues of 25 feet with the Mandel residential development access road operating at LOS 'C' during the morning peak hour and at LOS 'D' during the evening peak hour with 95th percentile queues remaining at 50 feet.

In order to install traffic signals at an arterial street intersection, traffic volumes must satisfy national warrant criteria published in the Manual on Uniform Traffic Control Devices (MUTCD). At least one of the nine warrants need to be satisfied to consider the installation of new traffic signals. Research indicates, if signals are installed without satisfying one of the nine warrants it can create a traffic safety problem when compared to not installing signals. Table 8 provides a simplified summary of the traffic signal warrant criteria.

Table 8: Traffic Signal Control Warrant Criteria

Warrant	Major Street Both Approaches	Minor Street Highest Approach
1. Eight-Hour Volume		
A. **Minimum Volume**	500 vph	150 vph
B. **Interruption of Continuous Traffic**	750 vph	75 vph
C. **Combination 80% of A and B**	A. 400 vph	120 vph
	B. 600 vph	60 vph
2. 4-hour Volume (sliding graph threshold curve)		
3. Peak-Volume (sliding graph threshold curve)		
4. Pedestrian Volume		
A. **Criteria A: Four-Hour** (minimum 100 pedestrians/hour)		
B. **Criteria B: Peak-Hour** (minimum 120 pedestrians)		
5. **School Crossing** (the number of adequate gaps in traffic at an established school crossing when children are crossing is less than the number of minutes in the same period and there are a minimum of 20 children during the highest crossing hour)		
6. **Coordinated Signal System** (total of 1,000 vph entering intersection during peak hour)		
7. **Crash Experience** (5 or more crashes over 12-month period correctible by signal)		
8. **Roadway Network** (total of 1,000 entering peak hour vehicles)		
9. **Intersection Near a Railroad Crossing** (cross street within 660 feet of railroad tracks)		

Source: FHWA Manual on Uniform Traffic Control Devices

Table 9 summarizes year 2028 estimated 6:00 A.M. to 8:00 P.M. two-way houly traffic volume on Watertown Plank Road (Major Street) at the SSND western driveway (Minor Street Approach) with trips exiting the single Mandel residential development roadway connection to Watertown Plank Road.

Table 9: 2028 Hourly Traffic Estimate at the Watertown Plank Road/Mandel Residential Development Roadway Intersection

Time Period	Watertown Plank Road Two-Way Total*	SSND Roadway Exiting
6:00 – 7:00 A.M.	260	35
7:00 – 8:00	800	105
8:00 – 9:00	630	100
9:00 – 10:00	530	60
10:00 – 11:00	600	65
11:00 – Noon	730	75
Noon – 1:00 P.M.	740	80
1:00 – 2:00	730	75
2:00 – 3:00	710	75
3:00 – 4:00	810	70
4:00 – 5:00	1,110	70
5:00 – 6:00	950	70
6:00 – 7:00	600	60
7:00 – 8:00	390	40

Note: Estimated from 2015 WisDOT traffic count with 0.5% annual growth through 2028

The 2028 hourly traffic volumes shown in Table 9 are based on WisDOT hourly count data collected on Watertown Plank Road between Juneau Boulevard and Church Street in 2015 expanded at an annual growth rate of 0.5% per year plus trip generation estimates for the Mandel and Village Downtown Corridor Master Plan residential developments from the *ITE Trip Generation Manual, 10th edition.*

A review of the 2028 estimated hourly traffic volumes with Mandel and Village Downtown Corridor Master Plan residential development trips under a single Watertown Plank Road development access connection indicates none of the nine warrants are satisfied for the installation of future traffic signals on Watertown Plank Road .

Summary of Findings

Based on data published in the *ITE Trip Generation Manual, 10th edition,* a total of 145 morning and 180 evening peak hour residential trips are projected to be generated by the Mandel residential development plan. It is noted that the existing SSND property generates a total of 25 morning and 35 evening peak hour trips. This means the true overall impact on Watertown Plank Road is reduced to 120 new morning and 145 new evening peak hour trips from the SSND property.

Year 2023 Operation: A comparison between the following year 2023 traffic condition scenarios: 1) without any redevelopment of the SSND property; and 2) with a Mandel residential development single access road connection to Watertown Plank Road, at the

existing SSND western entrance roadway, indicates traffic generated by the Mandel residential development does not affect study intersection morning peak hour Level of Service (LOS) operation except for: the northwestbound approach of the SSND single access road approach to Watertown Plank Road which changes from LOS 'B' to LOS 'C' due to an average vehicle delay change of 5.4 seconds from 10.2 seconds to 15.6 seconds, and the southwestbound left turn on Watertown Plank Road at its intersection with Elm Grove Road which changes from LOS 'A' to LOS 'B' due to an average vehicle delay change of 0.9 seconds from 9.8 seconds to10.7 seconds.

In comparison, during the evening peak hour, the only traffic movement that changes LOS is the northbound approach of Stephen Place which changes from LOS 'C' to LOS 'D' operation due to an average vehicle delay increase of 2.7 seconds from 22.6 seconds to 25.3 seconds.

Year 2023 operation of Watertown Plank Road at the single access road connection to the Mandel residential development is projected to maintain LOS 'A' operation on Watertown Plank Road with maximum 95th percentile queuing projected at 25 feet during both the morning and evening peak hours.

It is noted that year 2023 operation of the northeastbound left turn on Watertown Plank Road at its intersection with Legion Drive operates at LOS 'E' during the morning peak hour and LOS 'F' during the evening peak hour with or without traffic generated by the Mandel residential development. An improvement analysis of this intersection indicates it can be upgraded to LOS 'D' operation with minor traffic signal timing changes.

Year 2028 Operation: A comparison between the following two year 2028 traffic condition scenarios: 1) without any redevelopment of the SSND property; and 2) with a Mandel residential development single access road connection to Watertown Plank Road, at the existing SSND western entrance roadway, indicates traffic generated by the Mandel residential development does not affect study intersection morning peak hour Level of Service (LOS) operation except for: the eastbound approach of Watertown Plank Road at North 124th Street which changes from LOS 'A' to LOS 'B' due to an average vehicle delay change of 0.3 seconds from 9.8 seconds to 10.1 seconds, the southbound approach of Blue Ridge Boulevard which changes from LOS 'B' to LOS 'C' due to an average vehicle delay change of 1.3 seconds from 14.5 seconds to 15.8 seconds, the northwestbound approach of the SSND western access road which changes from LOS 'B' to LOS 'C' due to an average vehicle delay change of 6.5 seconds from 10.3 seconds to 16.8 seconds, and the southwestbound left turn on Watertown Plank Road at its intersection with Elm Grove Road which changes from LOS 'A' to LOS 'B' due to an average vehicle delay change of 1.6 seconds from 10.0 seconds to 11.6 seconds.

In comparison, during the evening peak hour, the only traffic movements that changes LOS is the northbound approach of Stephen Place which changes from LOS 'C' to LOS 'D' operation due to an average vehicle delay change of 4.5 seconds from 23.7 seconds to 28.2 seconds, and the northwestbound approach of the SSND western access road which changes from LOS 'C' to

LOS 'D due to an average vehicle delay change of 11.8 seconds from 16.1 seconds to 27.9 seconds.

Year 2028 operation of Watertown Plank Road at the single access road connection to the Mandel residential development maintains LOS 'A' operation on Watertown Plank Road with maximum 95th percentile queuing projected at 25 feet during both the morning and evening peak hours.

It is noted that year 2028 operation of the northeastbound left turn on Watertown Plank Road at its intersection with Legion Drive operates at LOS 'E' during the morning peak hour and LOS 'F' during the evening peak hour with or without traffic generated by the Mandel residential development. An improvement analysis of this intersection indicates it can be upgraded to LOS 'D' operation with minor traffic signal timing changes.

Traffic Signals: An analysis was also conducted to determine if future traffic signals may be warranted at the Watertown Plank Road intersection with a single access road connection to the Mandel residential development. In order to install traffic signals, communities evaluate if hourly traffic volumes at an intersection will satisfy warrants published in the Manual on Uniform Traffic Control Devices. Traffic signals that are installed without satisfying a signal warrant typically result in traffic safety issues. Using future traffic volumes projected to the year 2028 combined with trips generated by the Mandel and Village Downtown Corridor Master Plan residential developments indicates that none of the nine traffic signal warrants are satisfied at the single Mandel development access road intersection with Watertown Plank Road.

Conclusions

Based on the technical analysis findings of this study, it is concluded that a single access road connection to the Mandel residential development should not create any peak hour traffic operation problems along Watertown Plank Road. It is also concluded that the installation of new traffic signals on Watertown Plank do not satisfy national warrants in the Manual on Uniform Traffic Control Devices.