CITY OF GRAND HAVEN
GRAND HAVEN, MICHIGAN
PLANNING COMMISSION
MEETING AGENDA
June 9, 2026

Notice and agenda of the regular Planning Commission Meeting at 7:00 p.m. to be held at the Grand Haven City Council Chambers, 519 Washington Avenue. Planning Commissioners unable to attend the meeting are requested to contact the Planning Department at 616-935-3276 prior to the meeting.

1. **MEETING CALLED TO ORDER**

2. **ROLL CALL:** Amy Kozanecki, Dan Borchers, Vice Chair Joe Pierce, Chair Ryan Galligan, Tamera Owens, David Skelly, Magda Smolenska, Jennifer Smelker

3. **APPROVAL OF MINUTES –** May 12, 2026

4. **APPROVAL OF AGENDA**

5. **CALL TO AUDIENCE – ONE OF TWO OPPORTUNITIES**

6. **PUBLIC HEARINGS**
   - **A.** Case 26-19: Special land use request for a short-term rental at 301 Jackson Ave. (parcel #70-03-20-282-002)
   - **B.** Case 26-20: Special land use request for a short-term rental at 848 S. Harbor Dr. (parcel #70-03-29-101-009)

7. **NEW BUSINESS**
   - **A.** Case 26-21: Final development plan for South Village PD (parcel #70-03-33-100-073)
   - **B.** Case 26-22: Site Plan review for an office/storage building at 1350 Kooiman Dr. (parcel #70-03-28-301-014)

8. **OLD BUSINESS**
   - **A.** Continued discussion of housing text amendments – update on joint work session

9. **ELECTION OF OFFICERS**
   - **A.** Chair
   - **B.** Vice-Chair
   - **C.** Secretary

10. **ZONING BOARD OF APPEALS LIAISON REPORT**

11. **CITY PLANNER REPORT**

12. **CALL TO AUDIENCE – SECOND OPPORTUNITY**

13. **ADJOURNMENT**

CITY OF GRAND HAVEN
GRAND HAVEN, MICHIGAN
PLANNING COMMISSION MINUTES
TUESDAY, MAY 12, 2026

The regular meeting of the Grand Haven Planning Commission was called to order by Chair Ryan Galligan at 7:00 pm. Upon roll call, the following members were present:

Present: Amy Kozanecki, Vice Chair Joe Pierce, Dan Borchers, Chair Ryan Galligan, Tamera Owens, David Skelly, Jennifer Smelker, Magda Smolenska

Absent:

Also Present: City Planner Brian Urguhart, and members of the public.

Approval of Minutes
Motion by **Pierce**, seconded by **Skelly**, to approve the minutes of the March 23, 2026, meeting as amended.
All ayes. **Motion passes.**

Approval of Agenda
Motion by **Skelly**, seconded by **Smolenska**, to approve the agenda as amended.
All ayes. **Motion passes.**

Call to the Audience: First Opportunity

Margot Vandis, 1120 S Harbor Dr, spoke regarding the proposed short-term rental at 26 Edward Ave, emphasizing issues with parking and public safety concerns.

Brian Ruster, 9 Peterson Rdg, spoke regarding the proposed short-term rental at 26 Edward Ave, because of predicted issues with increased traffic, traffic congestion and increased noise.

Eloy Cantu, 16 Edwards Ave, spoke regarding the proposed short-term rental at 26 Edward Ave.

Marcia Cantu, 16 Edwards Ave, spoke regarding the proposed short-term rental at 26 Edward Ave.

Jeffery Miller, 1120 S Harbor Dr, spoke regarding the proposed short-term rental at 26 Edward Ave, emphasizing parking concerns.

Emily Kurtz, 26 Edwards Ave, spoke regarding her short-term rental application; specifying certain terms in her rental agreement and plans for the property in response to public concerns.

Public Hearings

A. Case 26-15: Special land use request for two-family dwelling at 514 N. 5th St. (parcel #70-0321-158-022)

Urquhart presented the case. An application for a Special Land Use Permit was submitted by Kelley Osterman for a two-family dwelling located at 514 N. 5th St. (parcel #70-03-21-158-022).

Two-family dwellings are permitted by special land use in the Old Town District per Sec. 40-410.02.B.

According to City records, this property previously served as a two-story dwelling prior to the ordinance that was created requiring two-family dwellings as Special Land Use in the OT District. This application serves as a formality to bring the property up to conformity with the ordinance and allows the property to remain a two-family dwelling.

As of the time of this hearing, there has not been any correspondence received regarding this application.

Chair Galligan opened the public hearing at 7:12 p.m.

Kelley Osterman, 514 N 5th St, spoke to board members regarding her application.

Motion by **Smolenska**, seconded by **Smelker**, to close the public hearing.
All ayes.
Public Hearing closed at 7:15 p.m.

None of the commissioners had any questions or comments.

Motion by **Smolenska**, seconded by **Smelker**, to approve case 26-15, a request for a Special Use Permit for a two-family dwelling located at 514 N. 5th St. (parcel #70-03-20-282-002) based on the information submitted for review.

Roll Call Vote.
Yeas: Kozanecki, Borchers, Owens, Skelly, Smolenska, Pierce, Smelker, Galligan
Nays: None
Motion passed

B. Case 26-16: Special land use request for a short-term rental at 26 Edward Ave. (parcel #7003-29-156-033)

Urquhart presented the case. An application was submitted by Patrick and Emily Kurtz for a Special Land Use Permit for Short-Term Rental located at 26 Edward Ave. (parcel #70-03-29-156-033). The Dune Residential District allows for short-term rentals as special land use.

The house is a single-family dwelling with six designated parking spaces and a parcel lot in conformity. The neighborhood surrounding the home is primarily single-family houses with a few short-term rentals nearby.

As of the date of this hearing, the city has received six emails regarding this case.

Chair Galligan opened the public hearing at 7:21 p.m.

Jeffery Miller, 1120 S Harbor Dr, spoke regarding the proposed short-term rental at 26 Edward Ave, emphasizing public safety and parking concerns.

DRAFT

Kelley Osterman, 514 N 5th St, spoke regarding short-term rentals.

Margot Vandis, 1120 S Harbor Dr, spoke in response.

Marcia Cantu, 16 Edwards Ave, spoke regarding past experiences and issues with renters.

Motion by **Skelly**, seconded by **Smolenska**, to close the public hearing.
All ayes.
Public Hearing closed at 7:27 p.m.

The board debated the proposed short-term rental and the ordinance(s) surrounding it. Members raised concerns about the amount and the size of the parking spaces as well as the area where the short-term rental is located. Discussion centered around the ordinance(s), concerns from residents, and lot conformity. Multiple members of the board brought up wanting to discuss possible changes to the ordinance(s) regarding short-term rentals in the future.

Motion by **Smolenska**, seconded by **Owens**, to approve case 26-16, a request for a Special Use Permit for a short-term rental located at 26 Edward Ave. (parcel #70-03-29-156-033) based on the information submitted for review with the following condition:

1. Sleeping occupancy shall be determined by the building official.

Roll Call Vote.
Yeas: Borchers, Owens, Smolenska, Smelker
Nays: Kozanecki, Skelly, Pierce, Galligan
Motion failed on a 4-4 vote.

New Business

A. Case 26-17: Site plan review for an office building at 845 Park Ave. (parcel #70-03-28-153011)

Urquhart presented the case. Mary Hames, on behalf of Carloyn Jett Properties LLC, has submitted a site plan review application to redevelop the property at 845 Park Avenue (parcel #70-03-28-153-011) into an office space, which is permitted per Sec. 40-419.01.A. The proposal maintains the existing home, resizes the front deck, converts the front and rear yards into parking, and installs landscape screening around the parking and along property lines.

Galligan asked a question regarding ADA compliance.

None of the other commissioners had questions or comments.

Motion by **Smelker**, seconded by **Borchers**, to approve case 26-17, a request for a Site Plan Review for an office building at 845 Park (parcel #70-03-28-153-011) based on the information submitted for review, subject to the following:

1. The front yard parking spaces are appropriately screened per Sec. 40-601.A.
2. The asphalt driveway is completed in 12 months.

DRAFT

Roll Call Vote.
Yeas: Skelly, Owens, Smolenska, Pierce, Smelker, Borchers, Kozanecki, Galligan
Nays: None
Motion passed

Old Business

Continued discussion of housing text amendments. Commissioners agreed to set up a joint meeting with City Council, at a future date, to discuss changes.

Zoning Board of Appeals Liaison Report

Kozanecki gave a short debrief on the three cases heard at the April 22, 2026, ZBA Meeting. Out of the three cases, two were approved and one was denied.

City Planner Report

Urquhart gave an update on ongoing projects.

Call to the Audience: Second Opportunity

None

Adjournment

Motion by **Skelly**, seconded by **Smelker**, to adjourn.
All Ayes. **Motion passes.**

The meeting was adjourned by **Chair Galligan** at 8:06 pm.

_____
Amy Vos, Deputy City Clerk

DRAFT

DATE:	June 5, 2026
TO:	City of Grand Haven Planning Commission
FROM:	Brian Urquhart, City Planner
RE:	**Case 26-19:** Special Land Use Permit – 301 Jackson Ave. Short-Term Rental

Current Zoning:	OT, Old Town District
Existing Use:	Vacant lot
Proposed Use:	Short-Term Rental

1.0 Request

Taylor Teachout has applied for a Special Land Use Permit for a Short-Term Rental located at 301 Jackson Ave. (parcel #70-03-20-282-002). In April, the property received special and use approval for a two-family dwelling. The Old Town Zoning District also allows short-term rentals if the property is located off a key street. During the April meeting, staff incorrected stated a short-term rental must take access off Jackson Ave. The property needs only to front a Key Street in Old Town. Therefore, the proposed driveway layout allows the site to eligible for a short-term rental.

2.0 Special Land Use Regulations & Conditions

Section 40-513 provides a list of ten (10) regulations and conditions for a Short-Term Rental. The review of the Special Land Use Permit application is also subject to the standard regulations and conditions of all Special Land Uses outlined in Section 40-116.03. The applicant has provided a narrative that responds to these review standards and a scaled drawing depicting the property and location of the home.

301 Jackson Ave. is a conforming lot in the Old Town district with a parcel size of 6,099 sq. ft. and lot width of 66 ft. The approved dwelling meets all the standards for lot coverage, building setbacks, building height, building form standards, and parking in the OT District. Sec. 40-604.03 requires 2 spaces per unit for a two-family. The applicant has provided enough parking spaces to satisfy the two-family dwelling and short-term rental.

Next door, 309 Jackson Ave. received a short-term rental special land use in 2024. There are also several short-term rentals within the Portside Condominium at the corner of 3rd and Jackson, and across the street at 314 Jackson Ave.

3.0 Correspondence

As of the date of this staff report no correspondence has been received.



STR nearby

4.0 Sample Motion

Motion to APPROVE Case 26-19, a request for a Special Use Permit for a short-term rental located at 301 Jackson Ave. (parcel #70-03-20-282-002) based on the information submitted for review, and subject to the following condition:

1. *Sleeping occupancy shall be determined by the building official.*

Attachments:

A. Special Land Use application
B. Sec. 40-513 response
C. Sec. 40-116.03 response
D. Elevation Drawing and Site Plan

SPECIAL LAND USE PERMIT APPLICATION

Community Development Department, City of Grand Haven
519 Washington Avenue, Grand Haven, MI 49417
Phone: (616) 935-3276 Website: www.grandhaven.org

1. Project Information

Address/location of property: 301 Jackson Street
Parcel #: 70-03-20-282-002
Current Use: Vacant
Area in Acres or Sq. Ft.: 5,942 sft
Zoning District: OT - Old Town
Proposed Use: Multi-family Residential
Zoning of adjacent properties: OT - Old Town

2. Applicant

Name: Same as Owner
Company:
Address:
Phone:
Email:

3. Property Owner

Name: JT Spartan Properties - Taylor Teachout
Address: 1758 S. Royston Rd
Eaton Rapids, MI 48827
Phone: 517-667-0098
Email: taylor@teachoutbuilders.com

4. Required Application Materials

- Application (PDF + 5 copies)
- Site Plan (PDF + 5 copies)
- Letter or signed narrative describing the proposed special land use and detailing why the location selected is appropriate. Narrative must include responses to the special land use review standards of Section 40-116.03 and the specific review standards of Article V of the Zoning Ordinance.
- Statement of expected effect of the special land use on emergency service requirements, schools, storm water systems, sanitary sewer facilities, automobile and truck circulation patterns and local traffic volumes
- Additional information which may be necessary (i.e. soil erosion, dune protection, view protection, shoreline protection, excessive noise or adverse impact on surrounding properties).
- Supporting statements, evidence, data, information and exhibits that address the standards and requirements for assessing a Special Use permit application as provided in Section 40-116.03.
- Required fee

1. Fees and Escrow Deposit

Application Fee: $350.00 (*any Site Plan Review is in addition to this review)*

A deposit of $1,500 shall be collected for all Planning Commission and Zoning Board of Appeals cases where it is expected that costs above staff time and one public hearing publication will be incurred. These expenses include additional public hearing notifications, attorney fees, engineering or surveying fees, or other special studies. Should expenses total more than the deposit, the applicant will be billed by the City for the additional costs, or additional escrow payment shall be required to complete the Planning Commission or Zoning Board of Appeals process. Should expenses total less than the deposit received, excess amounts shall be returned to the applicant.

2. Details of the Nature of Work Proposed

See attached narrative.

By signing below, permission is granted for city staff, including Planning Commissioners, to enter the subject property for purpose of gathering information to review this request. In addition, the applicant agrees to perform the described work in accordance with all applicable Sections of the City of Grand Haven Code of Ordinances. Signer will insure that all inspection requests are made a minimum of 24 hours prior to the requested time.

Signature of Applicant: _____ Date: 5-4-26

Print Name: Taylor Teachout

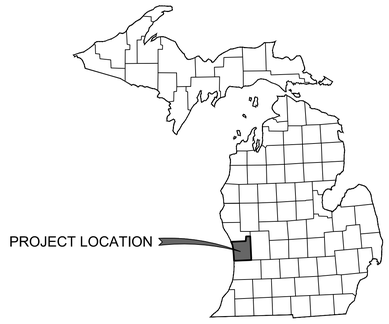
Signature of Owner: _____ Date: 5-4-26

Print Name: Taylor Teachout

Office Use Only

Case #: _____ Date Received: _____ Fee: _____

Date of Approval: _____ Date of Denial: _____ Approved by: _____



VICINITY MAP

INDEX OF SHEETS

CS	COVER SHEET
C1.0	EXISTING CONDITIONS & SITE PLAN
C2.0	GRADING, DRAINAGE, SESC PLAN & DETAILS

TEACHOUT BUILDERS

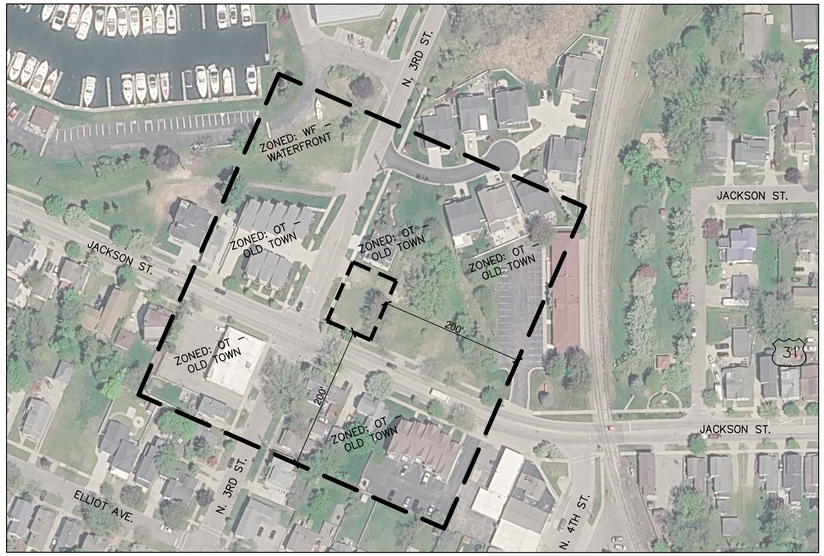
A NEW RESIDENTIAL DEVELOPMENT

301 JACKSON STREET

GRAND HAVEN, MICHIGAN 49417



ARTIST RENDERING OF SOUTH ELEVATION



VICINITY MAP



811

Know what's **below.**
Call before you dig.

For protection of underground utilities, the CONTRACTOR shall dial 1-800-482-7171 OR 811 a minimum of three working days, excluding Saturdays, Sundays and holidays, prior to excavation in the vicinity of utility lines. All "MISS DIG" participating members will thus be routinely notified. This does not relieve the CONTRACTOR of the responsibility of notifying the utility owners who may not be part of the "MISS DIG" alert system.

BENCH MARKS:

BM 1 S FLANGE UNDER "E" IN "EJIW" ON HYDRANT
ON NW CORNER OF THE PROPERTY
Elevation: 586.61 ft. (NAVD 88)

PROJECT LOCATION

SECTION 21, T8N, R16W,
CITY OF GRAND HAVEN,
OTTAWA COUNTY, MICHIGAN

OWNER

JT SPARTAN PROPERTIES
1758 S. ROYSTON ROAD
EATON RAPIDS, MICHIGAN 48827
PHONE: 517-667-0098

PRELIMINARY - NOT FOR CONSTRUCTION

Plan Prepared By:

Bruce A. Callen, PE
Callen Engineering, Inc.
108 E. Savidge St.
Spring Lake, Michigan 49456

Tel: 616-414-5260
email: bcallen@callenengineering.com

DATE OF PLAN: 05-05-26

ISSUANCES

SPECIAL LAND USE REVIEW 05-05-26

REVISIONS

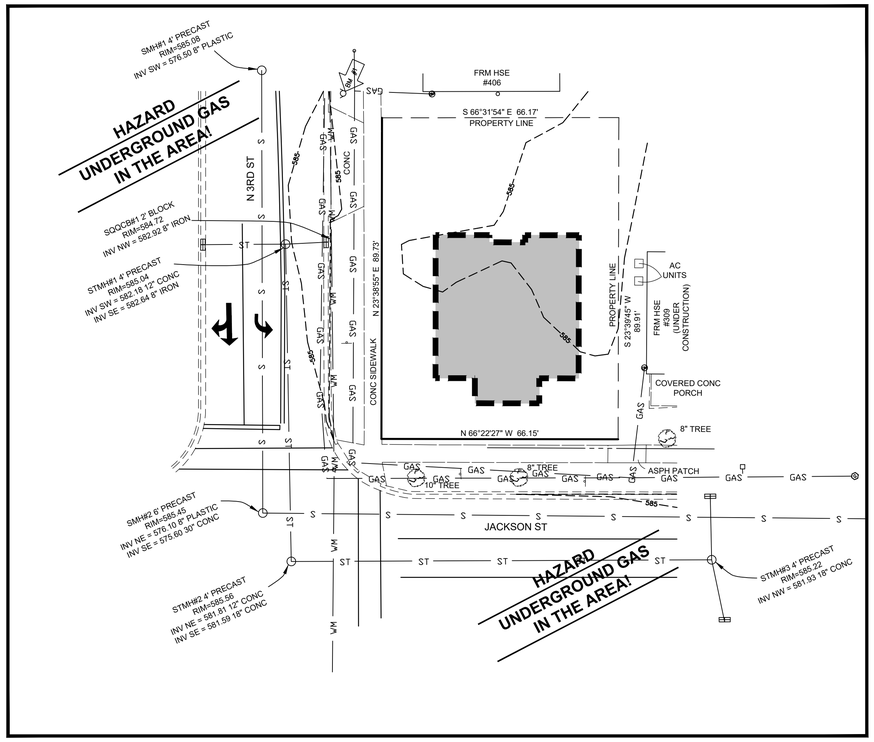
DESIGNED BY:

Callen Engineering, Inc.
108 East Savidge Street
Spring Lake, MI 49456
T.616.414.5260
www.callenengineering.com

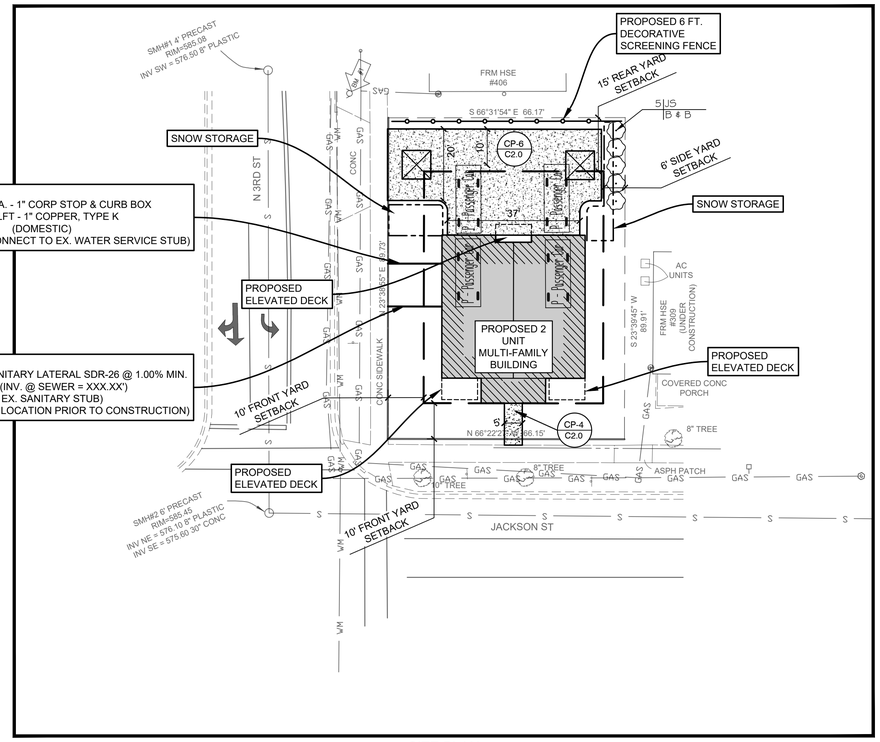
Drawn by J.W.C.
Engineer B.A.C. Check A.J.B.

Callen Engineering Project No.
026 - TEACHOUT

Sheet No.
CS



EXISTING CONDITIONS & REMOVALS PLAN



SITE PLAN

PROPOSED FEATURES LEGEND

- NEW LIGHT DUTY CONCRETE SIDEWALK AREA
- NEW HEAVY DUTY CONCRETE PAVEMENT AREA

NORTH

0 20 40
SCALE IN FEET

Property Address:
301 Jackson Avenue
Grand Haven, Michigan 49417

Parcel Number:
70-03-20-282-002

Property Description:

S 90 FT OF LOT 11 BLK 3 AKELEY'S ADD

Total Acreage:
0.14 Acres (5,942 sft.)

Property Zoning:
OT - Old Town District

Setbacks:

Front:	10 ft.
Side:	6 ft. min. one side, 16 ft. total
Rear:	15 ft.
Maximum Allowable Building Height:	*35 ft.*
Lot Coverage:	35%

REMOVALS LEGEND

- PROPOSED BUILDING FOOTPRINT
- PAVEMENT REMOVAL AREA
- CONCRETE REMOVAL AREA
- X REMOVAL ITEM

DEMOLITION NOTES

ALL MATERIAL THAT IS NOT SUITABLE AS BACKFILL AND MATERIALS THAT ARE EXCESS SHALL BE REMOVED FROM THE SITE AND DISPOSED OF IN ACCORDANCE WITH ALL. LOCAL, STATE, AND FEDERAL REGULATIONS.

ALL AREAS OF UNDERGROUND DEMOLITION; UTILITY LINE REMOVAL; AND UNDERGROUND TREE, STUMP, AND VEGETATION REMOVAL SHALL BE BACKFILLED.

BACKFILLING SHALL PROMPTLY FOLLOW UNDERGROUND DEMOLITION OR REMOVAL WORK AND SHALL CONTINUE AS THE DEMOLITION PROGRESSES.

CONTRACTOR SHALL BE RESPONSIBLE FOR APPLYING FOR AND OBTAINING ALL NECESSARY DEMOLITION PERMITS AND PAYING FOR ANY ASSOCIATED PERMIT FEES.

NOTIFY ARCHITECT/ENGINEER OF ANY OTHER UNDERGROUND MATERIALS OR EQUIPMENT ENCOUNTERED DURING EXCAVATION NOT SPECIFICALLY NOTED ON THE DRAWING(S).

PRIVATE UTILITY REMOVAL - CONTRACTOR TO COORDINATE PRIVATE UTILITY (GAS, ELECTRIC, PHONE, CABLE, ETC.) REMOVAL WITH APPROPRIATE AUTHORITY. ALTHOUGH ALL PRIVATE UTILITY SERVICES MAY NOT BE SHOWN ON THIS DRAWING, CONTRACTOR IS RESPONSIBLE FOR REMOVAL OF SERVICE AS NECESSARY.

PUBLIC UTILITY REMOVAL - CONTRACTOR TO COORDINATE PUBLIC UTILITY (WATER, SEWER, STORM) REMOVAL WITH APPROPRIATE UTILITY COMPANY. ALTHOUGH ALL PUBLIC UTILITY SERVICES MAY NOT BE SHOWN ON THIS DRAWING, CONTRACTOR IS RESPONSIBLE FOR REMOVAL OF SERVICE AS NECESSARY.

WHERE CURBING OR PAVEMENT IS INDICATED TO BE REMOVED, IT SHALL BE SAWCUT FULL DEPTH. REMOVE TO THE NEAREST JOINT, IF THE JOINT IS WITHIN 3 FEET OF THE REMOVAL LINE. VERIFY REMOVAL LIMITS WITH ENGINEER PRIOR TO BEGINNING WORK.

BENCH MARKS:

BM 1 S FLANGE UNDER "E" IN "EJIW" ON HYDRANT ON NW CORNER OF THE PROPERTY
Elevation: 586.61 ft. (NAVD 88)

DWELLING UNIT DENSITY

DWELLING UNITS / NET ACREAGE:
DWELLING UNITS = 2 UNITS
2 UNITS / 0.14 NET ACRES) = **14.3 UNITS PER ACRE**

LAND USE TABLE

TOTAL LAND AREA:	5,942	SFT	0.14	ACRES							
IMPERVIOUS AREA	3,185	SFT	53.6%								
PERVIOUS AREA	2,758	SFT	46.4%								
	IMPERVIOUS AREA						PERVIOUS AREA				
	BUILDINGS		PAVEMENTS		SIDEWALKS		LANDSCAPE / LAWN				
	1,472	SFT	1,553	SFT	160	SFT			2,758	SFT	
	24.8	%	26.1	%	2.7	%			46.4	%	

PLANT SCHEDULE

SYMBOL	CODE	BOTANICAL / COMMON NAME	CONT	CAL	QTY
TREES					
	JS	Juniperus scopulorum 'Blue Arrow' / Blue Arrow Juniper	B & B	2"Cal	5

LANDSCAPE NOTES

1. ALL PLANTING BEDS SHALL RECEIVE 4" OF EVENLY SPREAD SHREDDED HARDWOOD BARK MULCH OVER 4" OF TOPSOIL. MULCH BLANKET SHALL BE PLACED AT ALL LOCATIONS WITH SLOPES 1:3 OR STEEPER. NO MULCH SHALL BE PLACED IN DETENTION / RETENTION BASIN BOTTOM AREA.
2. CONTRACTOR SHALL NOTIFY "MISS DIG" TO LOCATE ANY UNDERGROUND UTILITY LINES OR STRUCTURES PRIOR TO STARTING CONSTRUCTION.
3. CONTRACTOR SHALL PROVIDE SPECIFIED SHRUBS, GROUNDCOVERS AND OTHER PLANT MATERIALS THAT COMPLY WITH ALL RECOMMENDATIONS AND REQUIREMENTS OF ANSI 280.1 "AMERICAN STANDARD FOR NURSERY STOCK". PLANT MATERIAL SHALL BE CERTIFIED TO BE HARDY TO OTTAWA COUNTY, FREE OF DISEASE AND INSECTS AND BE HEALTHY, VIGOROUS STOCK, GROWN WITH GOOD HORTICULTURAL PRACTICE AND INSTALLED IN ACCORDANCE WITH METHODS ESTABLISHED BY THE AMERICAN ASSOCIATION OF NURSERYMEN. ALL LANDSCAPING SHALL BE MAINTAINED IN A HEALTHY, NEAT AND ORDERLY STATE, FREE FROM REFUSE AND DEBRIS. ANY DEAD OR DISEASED PLANTS SHALL BE REPLACED.
4. ALL LANDSCAPE BEDS AND MULCH BORDERS ADJACENT TO LAWN AREAS SHALL HAVE A METAL EDGE UNLESS SPECIFIED OTHERWISE.
5. SEED SHALL BE PLACED OVER 4" OF TOPSOIL IN ALL PROPOSED LAWN AREAS AND ALL AREAS DISTURBED BY CONSTRUCTION WITH SLOPES LESS THAN 1:3.
SEED MIXES SHALL BE AS FOLLOWS:

10% TALL FESCUE
20% PERENNIAL RYE GRASS
30% CREEPING RED FESCUE
40% KENTUCKY BLUEGRASS
@ 6 LBS PER 1000 SFT

SEED MIXES SHALL BE DROUGHT TOLERANT @ 6 LBS PER 1,000 SFT.

6. ALL PLANTINGS AND LANDSCAPE IMPROVEMENTS SHALL BE CONSISTENT WITH LOCAL ZONING REQUIREMENTS.

GENERAL NOTES

1. PROJECT INCLUDES CONSTRUCTION OF A NEW 2 UNIT MULTI-FAMILY BUILDING. RELATED IMPROVEMENTS INCLUDE PROPOSED PARKING, STORM DRAINAGE, AND UTILITIES.
2. THE DEVELOPMENT SHALL BE SERVED BY PUBLIC WATER MAIN AND PUBLIC SANITARY SEWER.
3. ACCESS TO THE DEVELOPMENT SHALL BE VIA ONE (1) EXISTING CURBCUT ONTO N. 3RD ST.
4. PARKING AND DRIVE AREAS SHALL BE PAVED WITH CONCRETE PAVEMENTS. ALL SNOW WILL BE HAULED OFF SITE.
5. PARKING:
DWELLING, ONE AND TWO FAMILY:
REQUIRED: 2 SPACES PER UNIT (MAX. 6 PERSON OCCUPANCY)

DWELLING UNITS = 2 UNITS
(2* 2) = 4 SPACES
TOTAL = 4 SPACES

TOTAL REQUIRED = 4 SPACES

TOTAL PROVIDED = 4 SPACES

6. ALL PAVEMENT MARKINGS AND SIGNS SHALL CONFORM TO THE STANDARDS SET FORTH IN THE CURRENT EDITION OF THE MICHIGAN MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES.

PRELIMINARY - NOT FOR CONSTRUCTION

811 Know what's **Call** before you dig. **below.**

STATE OF MICHIGAN
BRUCE A. CALLEN
PROFESSIONAL ENGINEER
No. 47392

Plan Prepared By:
Bruce A. Callen, PE
Callen Engineering, Inc.
108 E. Savidge St.
Spring Lake, Michigan 49456
Tel: 616-414-5260
email: bcallen@callenengineering.com

For protection of underground utilities, the CONTRACTOR shall dial 1-800-482-7171 OR 811 a minimum of three working days, excluding Saturdays, Sundays and holidays, prior to excavation in the vicinity of utility lines. All "MISS DIG" participating members will thus be routinely notified. This does not relieve the CONTRACTOR of the responsibility of notifying the utility owners who may not be part of the "MISS DIG" alert system.

DATE OF PLAN: 05-05-26

Callen Engineering, Inc.
108 East Savidge Street
Spring Lake, MI 49456
T.616.414.5260
www.callenengineering.com

JT SPARTAN PROPERTIES
1758 S. ROYSTON ROAD
EATON RAPIDS, MI 48827
517-667-0098

NO.	ISSUANCE / REVISION	BY	DATE
1.	SPECIAL LAND USE REVIEW	B.A.C.	05-05-26
	REVISED IN ACCORDANCE WITH CONSTRUCTION RECORDS		

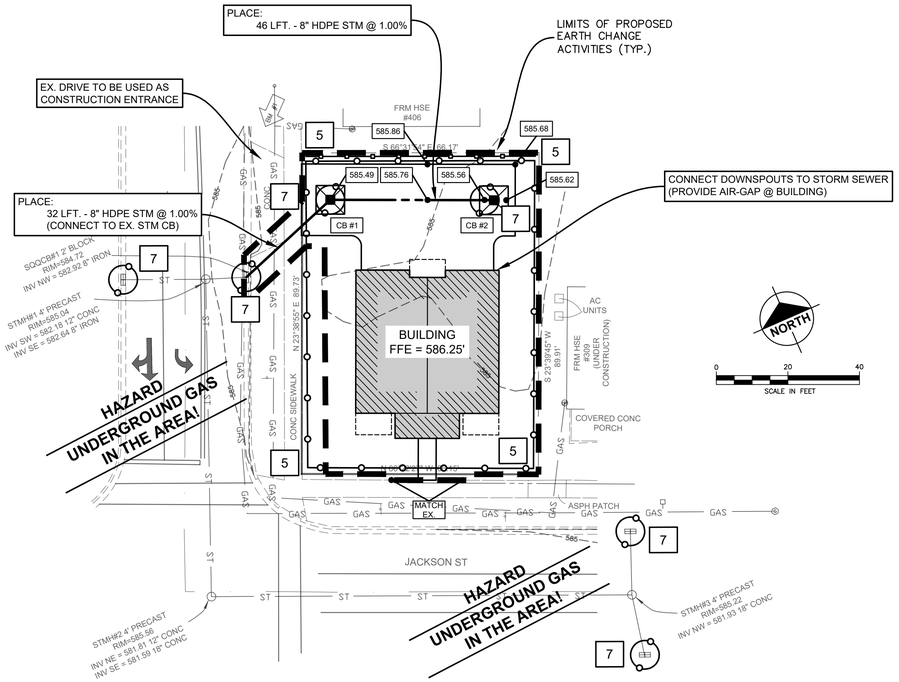
TEACHOUT BUILDERS
301 JACKSON STREET
GRAND HAVEN, MI 49417
OTTAWA COUNTY, MICHIGAN

EXISTING CONDITIONS & SITE PLAN

DRAWN BY	DATE
J.W.C.	APR '26
ENGINEER	DATE
B.A.C.	APR '26
EDIT	DATE
SCALE	
DRAWING	PLOT SCALE
AS NOTED	1:1

PROJECT 026 TEACHOUT

SHEET NO. C1.0



EROSION CONTROL MEASURES

KEY	SESC MEASURE	SYMBOL	WHERE USED
1	Seeding		When bare soil is exposed, temporarily or permanently, to erosive forces from wind and or water on flat areas, mild slopes, grassed waterways and spillways, diversion ditches and dikes, borrow and stockpile areas, and spoil piles.
2	Mulch		On flat areas, slopes, grassed waterways and spillways, diversion ditches and dikes, borrow and stockpile areas, and spoil piles when areas are subject to raindrop impact, and erosive forces from wind or water.
4	Trees, Shrubs, Vines and Ground Cover		When bare soil or recently vegetated slopes are exposed to erosive forces from wind and/or water.
5	Perimeter Sediment Control Measures (Silt Fence, Straw Wattles, etc.)		As a temporary measure used to capture sediment from sheet flow. May also divert small volumes of sheet flow to protected outlets.
7	Storm Drain Inlet Protection		Around the entrance to a catch basin or an inlet that will capture runoff from an earth change activity.
28	Stone Construction Access		At locations where construction equipment will enter and exit the drain easement and tracking of soil is anticipated.

*SESC MEASURES SHALL COMPLY WITH MICHIGAN ASSOCIATION OF COUNTY DRAIN COMMISSIONERS SESC MANUAL SPECIFICATIONS

SESC NOTES

TOTAL DISTURBED AREA: 5,790 SFT (0.13 ACRES)

ADDITIONAL EROSION CONTROL MEASURES NOT SHOWN ON THE SITE PLAN MAY BE NECESSARY AS SITE WORK PROGRESSES. PERMITTEE IS RESPONSIBLE FOR ALL MEASURES NECESSARY TO PREVENT OFFSITE SEDIMENTATION.

GEOTEXTILE SILT FENCE AND ALL CATCH BASIN PROTECTION MEASURES SHALL BE PROPERLY PLACED AS SHOWN ON PLANS AND AS NEEDED TO RETAIN SOILS ONSITE. PERIODIC MAINTENANCE AND INSPECTION OF SESC MEASURES IS REQUIRED FOR PROPER EFFECTIVENESS.

STABILIZE SITE AS SOON AS POSSIBLE.

CONSTRUCTION IS ANTICIPATED TO BEGIN JUL 2026 WITH SUBSTANTIAL SITEWORK COMPLETION NO LATER THAN NOV 2026.

SILT FENCE

PROPOSED SPOT ELEVATION (XXX.XX)

DRAINAGE FLOW DIRECTION

EX. SPOT ELEVATION (XXX.XX)

STORM STRUCTURE SCHEDULE
(THIS SHEET)

CB#1 (2' DIA) RIM = 585.49 FT
(COVER: EJIW 1045 W/ M1 GRATE OR A.E.)
8" INV (E) = 583.32 FT (HDPE STM @ 1.00%)
8" INV (SW) = 583.32 FT (HDPE STM @ 1.00%)

CB#2 (2' DIA) RIM = 585.56 FT
(COVER: EJIW 1045 W/ M1 GRATE OR A.E.)
8" INV (W) = 583.78 FT (HDPE STM @ 1.00%)

STORM STRUCTURE NOTES

STORM SEWER LENGTHS PROVIDED ARE MEASURED FROM CENTER OF STRUCTURE. RIM ELEVATIONS ARE MEASURED AT EDGE OF METAL.

STORM SEWER SHALL BE WATER-TIGHT, SOLID-WALL HDPE OR APPROVED EQUAL, UNLESS INDICATED ON THE PLANS.

MANHOLES AND CATCH BASINS SHALL BE IN ACCORDANCE WITH MDOT STANDARD SPECIFICATIONS. CATCH BASINS SHALL INCLUDE 2-FT SUMP.

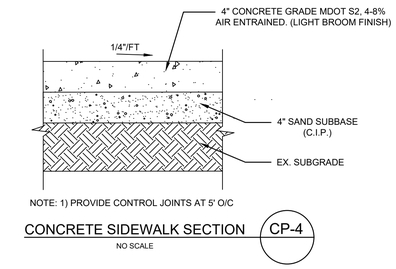
ALL EXISTING CATCH BASINS TO REMAIN SHALL BE CLEANED AND INSPECTED TO VERIFY OPERABILITY.

CONNECTIONS TO MANHOLES SHALL BE MADE WITH A RESILIENT CONNECTOR FOR PIPE DIAMETERS 24 INCHES OR LESS.

MANHOLE RIM ELEVATIONS SHALL BE SET 1/4" BELOW PLAN GRADE.
CATCH BASIN RIM ELEVATIONS SHALL BE SET 1 3/4" BELOW PLAN GRADE.

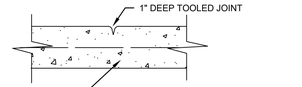
ALL CURB DIMENSIONS ARE MEASURED FROM EDGE OF METAL.

THE CONTRACTOR SHALL EXPOSE AND VERIFY LOCATION AND DEPTH OF EXISTING UNDERGROUND UTILITIES PRIOR TO CONSTRUCTION. CONFLICTS IN GRADES SHALL BE REPORTED TO ENGINEER AND ADJUSTMENTS SHALL BE MADE AT NO ADDITIONAL COST TO OWNER.

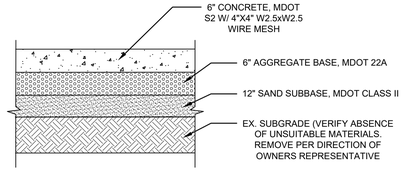


NOTE: 1) PROVIDE CONTROL JOINTS AT 5' O/C

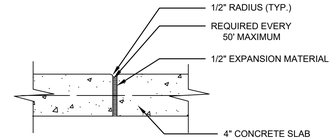
CONCRETE SIDEWALK SECTION CP-4
NO SCALE



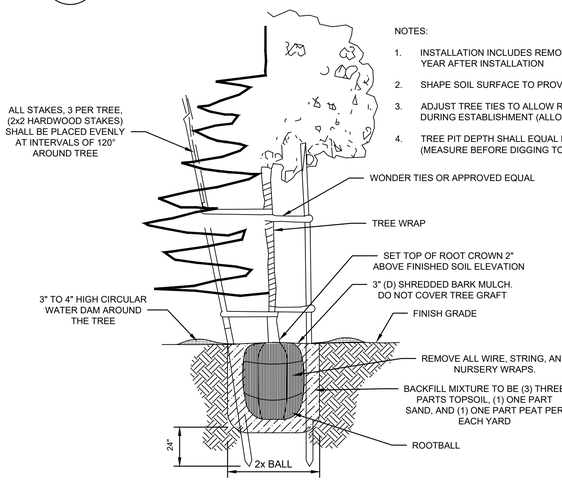
WALK CONTROL JOINT SW-CJ
NO SCALE



6" CONCRETE PAVEMENT SECTION CP-6
NO SCALE



WALK EXPANSION JOINT SW-EJ
NO SCALE



NOTES:
1. INSTALLATION INCLUDES REMOVAL OF STAKES ONE YEAR AFTER INSTALLATION
2. SHAPE SOIL SURFACE TO PROVIDE WATERING RING
3. ADJUST TREE TIES TO ALLOW ROOM FOR GROWTH DURING ESTABLISHMENT (ALLOW SLACK)
4. TREE PIT DEPTH SHALL EQUAL ROOTBALL DEPTH (MEASURE BEFORE DIGGING TO AVOID OVER EXCAVATION)

21 GRAM "AGRIFORM" PLANTING TABLETS AS FOLLOWS:
2 TABLETS PER 1 GAL. PLANT
3 TABLETS PER 5 GAL. PLANT
4 TABLETS PER 15 GAL. PLANT
LARGER PLANTS (2) TWO TABLETS PER 1/2" DIAM. OF TRUNK CALIPER

TYPICAL - TREE STAKING
NO SCALE

PRELIMINARY - NOT FOR CONSTRUCTION

BENCH MARKS:

BM 1 S FLANGE UNDER "E" IN "EJIW" ON HYDRANT ON NW CORNER OF THE PROPERTY
Elevation: 586.61 ft. (NAVD 88)

Know what's below. Call before you dig.

Plan Prepared By:
Bruce A. Callen, PE
Callen Engineering, Inc.
108 E. Savidge St.
Spring Lake, Michigan 49456
Tel: 616-414-5260
email: bcallen@callenengineering.com

For protection of underground utilities, the CONTRACTOR shall dial 1-800-482-7171 OR 811 a minimum of three working days, excluding Saturdays, Sundays and holidays, prior to excavation in the vicinity of utility lines. All "MISS DIG" participating members will thus be routinely notified. This does not relieve the CONTRACTOR of the responsibility of notifying the utility owners who may not be part of the "MISS DIG" alert system.

DATE OF PLAN: 05-05-26

Callen Engineering, Inc.
108 East Savidge Street
Spring Lake, MI 49456
T.616.414.5260
www.callenengineering.com

JT SPARTAN PROPERTIES
1758 S. ROYSTON ROAD
EATON RAPIDS, MI 48827
517-667-0098

NO.	BY	ISSUANCE / REVISION	DATE
1	B.A.C.	SPECIAL LAND USE REVIEW	05-05-26
		REVISED IN ACCORDANCE WITH CONSTRUCTION RECORDS	

TEACHOUT BUILDERS
301 JACKSON STREET
GRAND HAVEN, MI 49417
OTTAWA COUNTY, MICHIGAN

GRADING, DRAINAGE, SESC PLAN, AND DETAILS

DRAWN BY	DATE
J.W.C.	APR '26
ENGINEER	DATE
B.A.C.	APR '26
EDIT	DATE
SCALE	
DRAWING	PLOT SCALE
AS NOTED	1:1

PROJECT 026 TEACHOUT

SHEET NO.
C2.0

callen

MEMORANDUM

DATE: **MAY 5, 2026**

TO: **CITY OF GRAND HAVEN**
ATTN: COMMUNITY DEVELOPMENT DEPARTMENT
519 WASHINGTON AVENUE
GRAND HAVEN, MI 49417

FROM: **ANDREW J. BROOKS, EIT**
BRUCE A. CALLEN, PE

SUBJECT: **SPECIAL LAND USE APPLICATION FOR**
TEACHOUT BUILDERS – SHORT TERM RENTAL
301 JACKSON STREET
PPN: 70-03-20-282-002
CITY OF GRAND HAVEN, OTTAWA COUNTY, MI

On behalf of JT Spartan Properties (Taylor Teachout), applicant for the above subject project, we hereby submit this plan narrative related to proposed improvements to the property at 301 Jackson Street in the City of Grand Haven, Michigan. This narrative is intended to supplement the current site plan, dated May 5, 2026.

The applicant seeks special land use approval for two (2) short term rental units in one duplex residential building on the 0.14 acre property located at the northeast corner of Jackson Street and North 3rd Street. The property is currently vacant. The property received special land use approval for a two-family dwelling in April 2026.

The property is currently located within the OT (Old Town) zoning district. It is bordered by OT zoned properties on all sides. The property meets minimum lot standards in the OT zoning district

The project includes the construction of 1,706 sft, two-unit residential building for use as a short term rental. Related improvements include a new driveway, utility services, landscaping and screening, storm water drainage facilities, and all related improvements.

Site access shall be via an existing curbcut onto North 3rd Street, per the conditional special land use approval granted April 2026 for a two-family dwelling. The driveway is 20-ft wide at the right-of-way line.

civil engineers
108 East Savidge St.
Spring Lake MI 49456
616.414.5260
callenengineering.com

Four (4) parking spaces are proposed, including two (2) garage spaces and two (2) surface parking spaces. Each short-term rental unit will have a maximum occupancy of six (6) occupants, therefore only two (2) spaces per dwelling unit are required.

Site storm water runoff from the existing parking lot shall follow existing drainage patterns and will be captured via storm sewer and directed to the existing drainage ditch on the north side of the property. Stormwater for the redeveloped portion of the property will be managed in accordance with the City of Grand Haven Stormwater Standards Manual. Subsurface storage with infiltration is proposed with controlled rate discharge to the existing drainage ditch.

The development shall be served by existing watermain and existing sanitary sewer in North 3rd Street. An existing water service stub is located on North 3rd Street. The applicant would prefer to connect to sanitary sewer in North 3rd Street pending an investigation to determine if an existing sanitary lateral exists for the property.

No dumpster enclosure is proposed. Trash will be collected internally and hauled weekly to the curb.

No new signage is proposed.

Site lighting shall consist of wall-mounted fixtures directed downward, away from neighboring properties, and to not interfere with motorist vision.

Snow storage is proposed in the locations shown on the plans.

Landscaping and screening shall meet the intent of the zoning ordinance. While no screening is required per ordinance, the applicant proposes a 6-ft tall screening fence along the north property line and vegetative screening along the east property line.

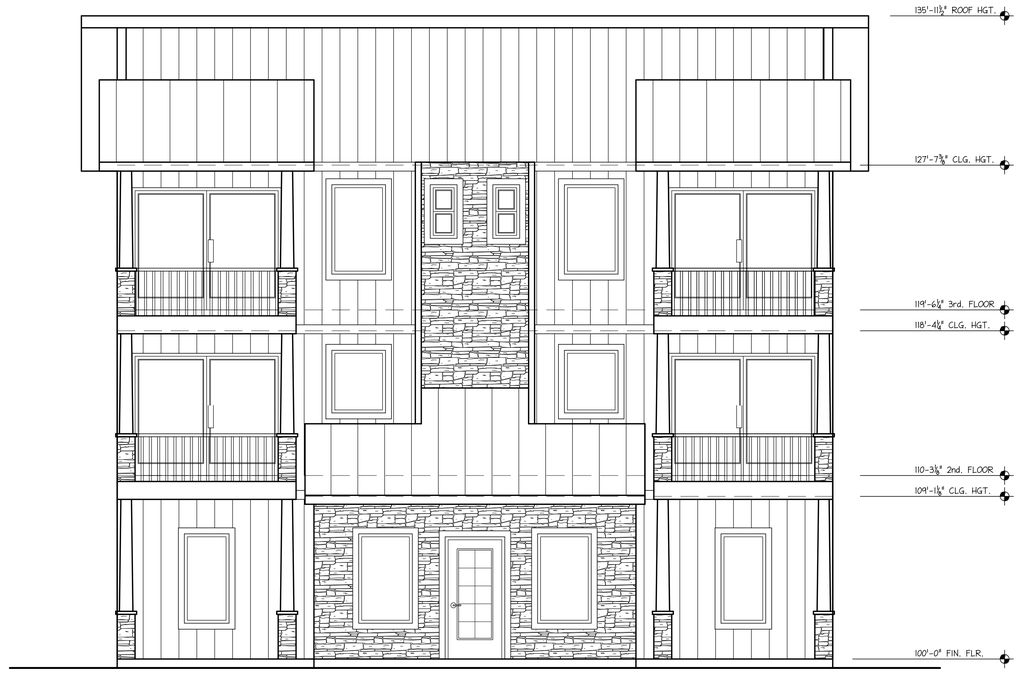
With regard to the special land use requirements for short term rentals:

- We do not anticipate an appreciable increase in emergency calls for service.
- We do not anticipate impacts to the school system.
- We do not anticipate negative effects to the storm water systems. A residential structure existed on this property until 2022 and this development is of similar scope.
- We are not aware of sanitary sewer capacity issues in this area, therefore we do not anticipate negative effects on the sanitary sewer system from this development.
- We do not anticipate negative effects on automobile and truck circulation patterns. The proposed driveway is sized to accommodate the intended vehicle uses and related turning movements.
- We do not anticipate negative effects on the local traffic volume. The existing road network adequately serves the surrounding residential uses.
- We believe that the use is consistent with the adopted City of Grand Haven Master Plan. The parcel is listed as an eligible short term rental property.
- We believe that the special use will be designed, constructed, operated, and maintained to be consistent with the existing or intended character of the general vicinity and such use will not change the essential character of the area in which it is proposed.

- The special use will not be hazardous or disturbing to existing or future uses in the same general vicinity and in the community. The property is surrounded by similar multi-family / short term rental uses.
- We believe the special use will be served adequately by essential public facilities.
- We do not believe the special use will create excessive additional requirements at public cost for facilities and services and the special use will not be detrimental to the economic welfare of the community.
- The special use will not involve uses, activities, processes, materials and equipment, or conditions of operation that will be detrimental to any person, property, or general welfare by reason of excessive production of traffic, noise, vibration, smoke, toxic emissions, fumes, glare, or odors.
- We believe the special use meets the intent and purpose of the zoning ordinance.
- The special use complies with the City of Grand Haven Code of Ordinances, as well as any applicable state and federal laws.

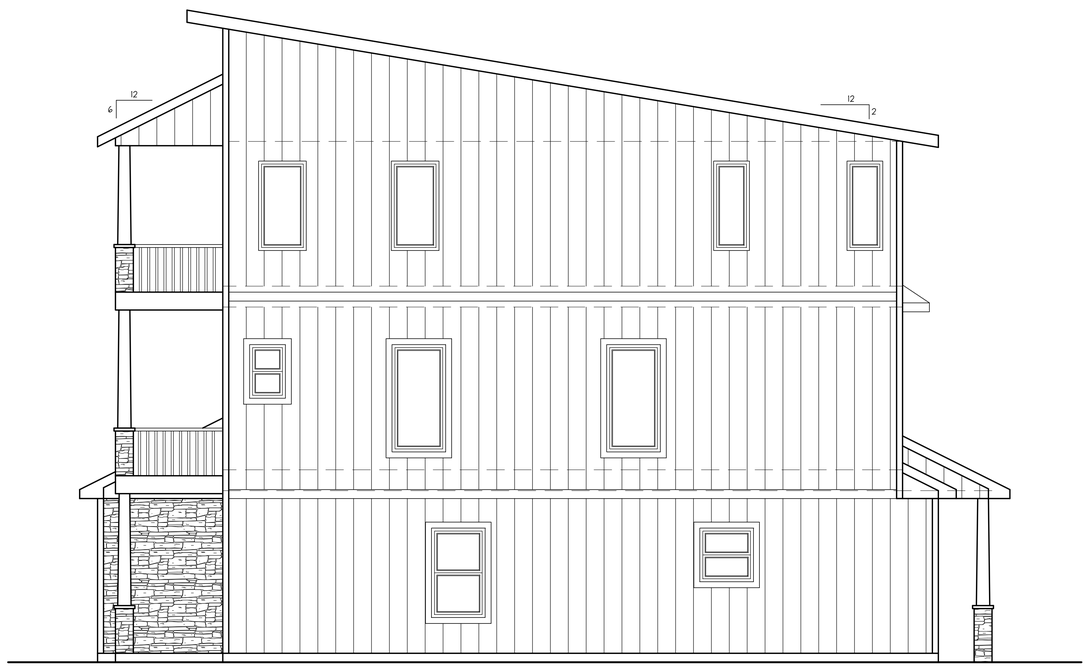
We believe all elements of the site plan are harmonious and efficiently organized in relation to zoning, topography, the size and type of the lot, the character of adjoining properties and the type and size of buildings. All site amenities meet the required setbacks and are illustrated on the plan drawings. Upon completion of construction activities, all surfaces shall be promptly and properly restored. Provisions for SESC measures are provided on the Grading, Drainage and SESC Plan (Sheet C2.0).

On behalf of JT Spartan Properties, we respectfully request site plan and special land use approval for parcel 70-03-20-282-002, 301 Jackson, City of Grand Haven, Ottawa County, Michigan.



FRONT ELEVATION

SCALE: ¼"=1'-0"



LEFT ELEVATION

SCALE: ¼"=1'-0"

DATE	DESCRIPTION
	REVISIONS

5227 WILCOX ROAD
EATON RAPIDS, MI. 48827
(517)281-8433
NEW DIMENSION DESIGN

PREPARED FOR:

JT SPARTAN PROPERTIES
(517) 667-0098

PRELIMINARY ELEVATIONS
FOR
JT SPARTAN PROPERTIES
301 JACKSON STREET
GRAND HAVEN, MICHIGAN 49417

DRAWN BY MWF

DATE MAY 3, 2026

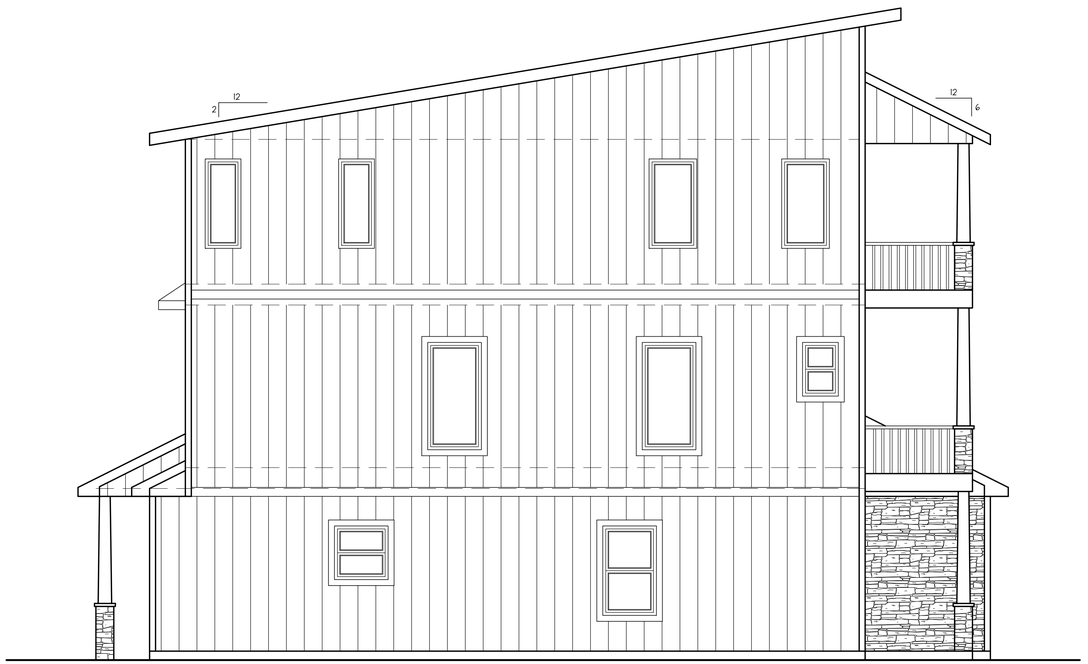
SHEET NO.

A1



REAR ELEVATION

SCALE: ¼"=1'-0"



RIGHT ELEVATION

SCALE: ¼"=1'-0"

DATE	DESCRIPTION
	REVISIONS

5227 WILCOX ROAD
EATON RAPIDS, MI. 48827
(517)281-8433
NEW DIMENSION DESIGN

PREPARED FOR:

JT SPARTAN PROPERTIES
(517) 667-0098

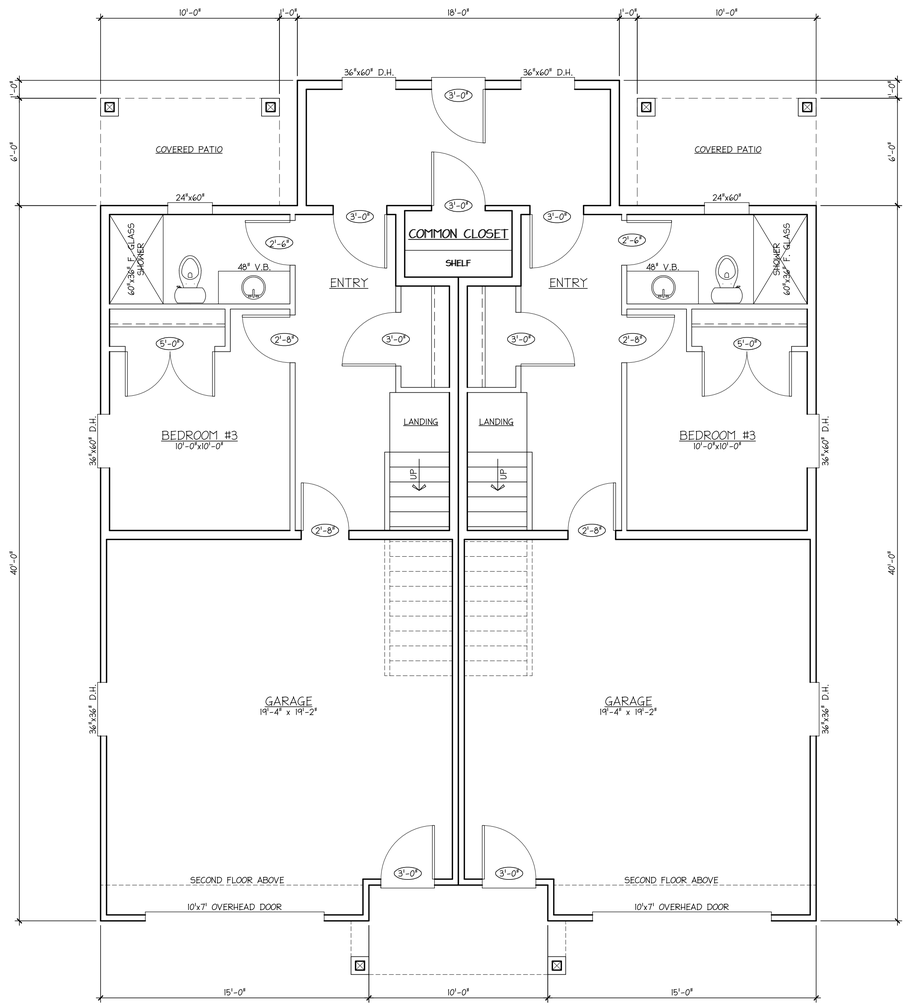
ELEVATIONS
FOR
JT SPARTAN PROPERTIES
301 JACKSON STREET
GRAND HAVEN, MICHIGAN 49417

DRAWN BY MWF

DATE MAY 3, 2026

SHEET NO.

A2



GROUND LEVEL FLOOR PLAN

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

9"-11/8" 2x6 WALLS
APPROX. 340 SQ. FT.

DATE	DESCRIPTION
	REVISIONS

5227 WILCOX ROAD
EATON RAPIDS, MI. 48827
(517)281-8433

NEW DIMENSION DESIGN

PREPARED FOR:

JT SPARTAN PROPERTIES
(517) 667-0098

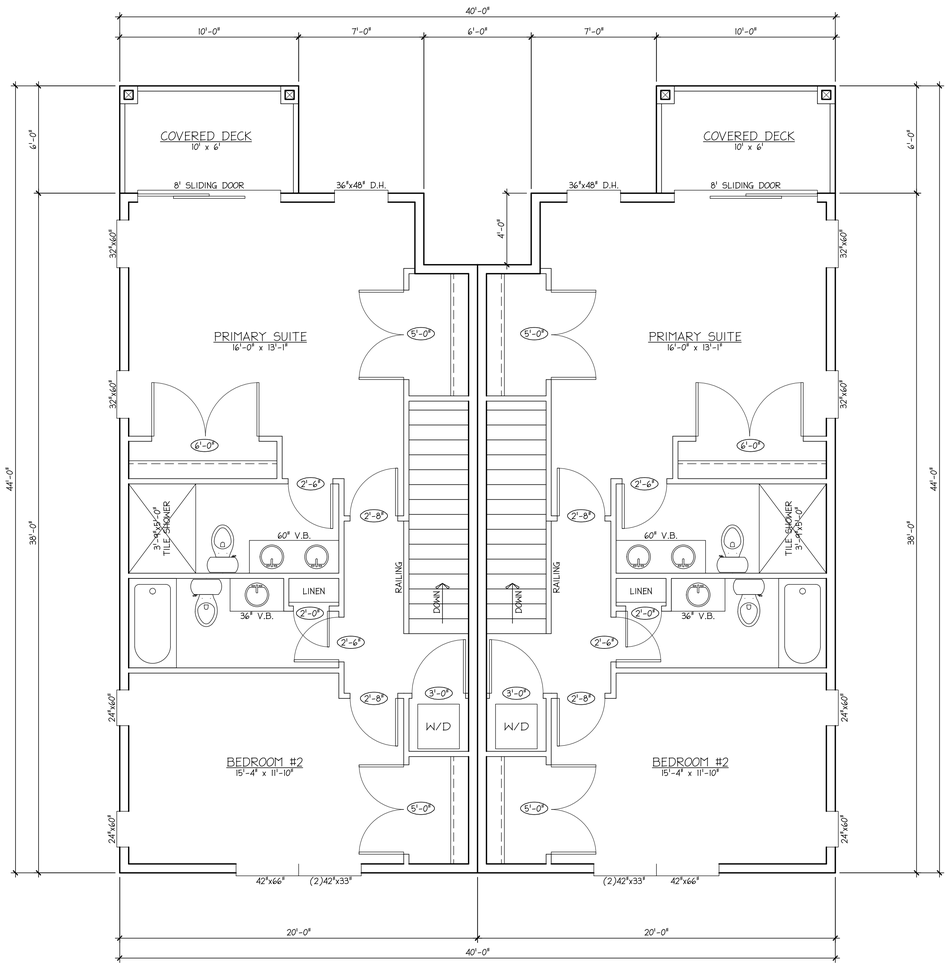
GROUND LEVEL FLOOR PLAN
FOR
JT SPARTAN PROPERTIES
301 JACKSON STREET
GRAND HAVEN, MICHIGAN 49417

DRAWN BY MWF

DATE MAY 3, 2026

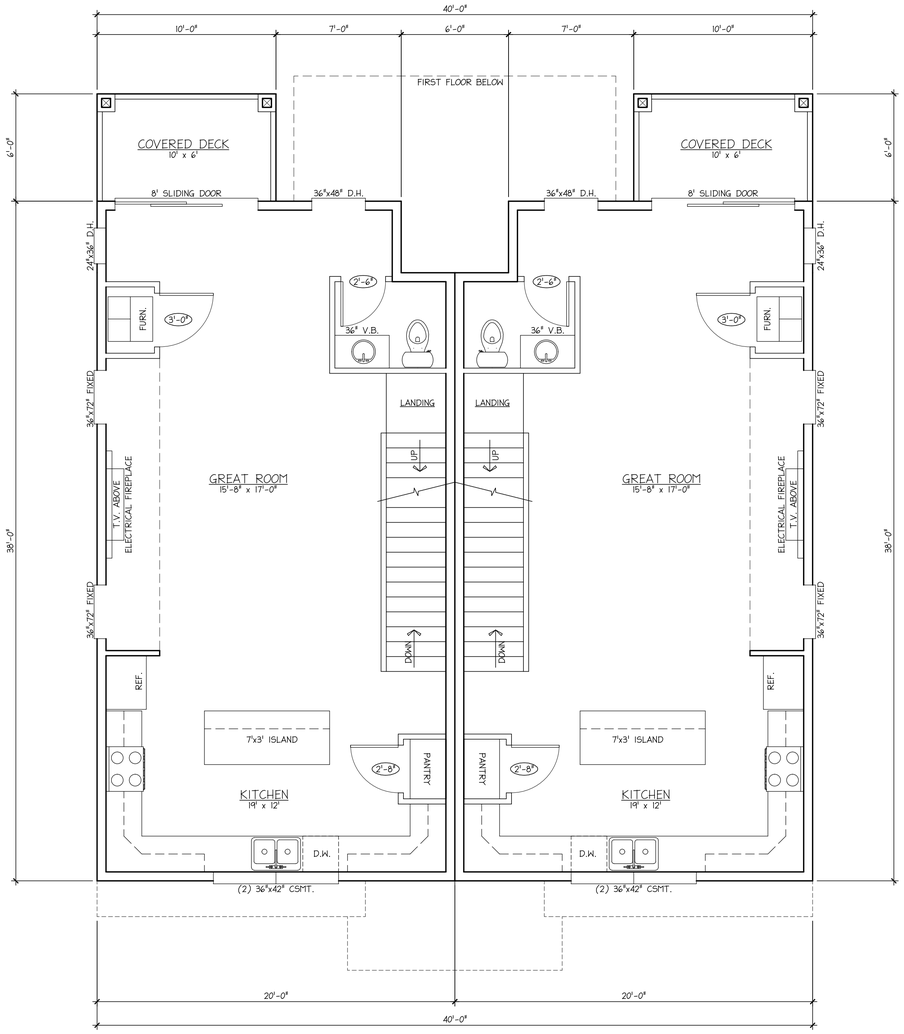
SHEET NO.

A3



UPPER LEVEL FLOOR PLAN

SCALE: ¼"=1'-0" 9"-1⅞" 2x6 WALLS
APPROX. 748 SQ. FT.



MAIN LEVEL FLOOR PLAN

SCALE: ¼"=1'-0" 9"-1⅞" 2x6 WALLS
APPROX. 736 SQ. FT.

DATE	DESCRIPTION
	REVISIONS

5227 WILCOX ROAD
EATON RAPIDS, MI. 48827
(517)281-8433
NEW DIMENSION DESIGN

PREPARED FOR:

JT SPARTAN PROPERTIES
(517) 667-0098

MAIN LEVEL & UPPER LEVE FLOOR PLANS
FOR
JT SPARTAN PROPERTIES
301 JACKSON STREET
GRAND HAVEN, MICHIGAN 49417

DRAWN BY MWF
DATE MAY 3, 2026
SHEET NO.
A4

DATE: June 5, 2026

TO: City of Grand Haven Planning Commission

FROM: Brian Urquhart, City Planner

RE: **Case 26-20:** Special Land Use Permit – 848 S. Harbor Short-Term Rental

---

Current Zoning: DR, Dune Residential District

Existing Use: Single-family dwelling

Proposed Use: Short-Term Rental

1.0 Request

Chris Gillistedt has applied for a Special Land Use Permit for a Short-Term Rental located at 848 S. Harbor Dr. (parcel #70-03-29-101-009). The Dune Residential District allows short-term rentals as a special land use per Sec. 40-406.02.B.

2.0 Special Land Use Regulations & Conditions

Section 40-513 provides a list of ten (10) regulations and conditions for a Short-Term Rental. The review of the Special Land Use Permit application is also subject to the standard regulations and conditions of all Special Land Uses outlined in Section 40-116.03. The applicant has provided a narrative that responds to these review standards and a scaled drawing depicting the property and location of the home.

848 S. Harbor Dr. is a nonconforming lot in the Dune Residential district with a parcel size of 8,712 sq. ft. and lot width of 54 ft. This parcel is very similar in size, shape and width with all other properties in the vicinity, some of which received short term rental certificates prior to the ordinance change in 2017. The driveway layout will allow for a minimum of 3 vehicles on site The applicant has provided enough parking spaces to satisfy the short-term rental.

Adjacent uses

Address	Use	Short Term Rental?
858 S. Harbor	Single-family	No
856 S. Harbor	Single-family	Yes
854 S. Harbor	Single-family	No
852 S. Harbor	Two-family	Yes
846 S. Harbor	Single-family	No
844 S. Harbor	Single-family	No
840 S. Harbor	Single-family	Yes
838 S. Harbor	Single-family	Yes
834 S. Harbor	Single-family	Yes
830 S. Harbor	Single-family	No

3.0 Correspondence

As of the date of this staff report no correspondence has been received.



STR nearby

4.0 Sample Motion

Motion to APPROVE Case 26-20, a request for a Special Use Permit for a short-term rental located at 848 S. Harbor Dr. (parcel #70-03-29-101-009) based on the information submitted for review, and subject to the following condition:

1. *Sleeping occupancy shall be determined by the building official.*

Motion to DENY Case 26-20, a request for a Special Use Permit for a short-term rental located at 848 S. Harbor Dr. (parcel #70-03-29-101-009) subject to the following reasons:

1. *Insert reason for denial.*

Attachments:

A. Special Land Use application
B. Sec. 40-513 response
C. Floor Plan and Site Plan

RECEIVED
MAY - 5 2026
GRAND HAVEN PLANNING
BUILDING AND ZONING

SPECIAL LAND USE PERMIT APPLICATION

Community Development Department, City of Grand Haven
519 Washington Avenue, Grand Haven, MI 49417
Phone: (616) 935-3276 Website: www.grandhaven.org

1. Project Information

Address/location of property: 848 S Harbor DR, Grand Haven, MI 49417
Parcel #: 700329101009
Current Use: Personal
Area in Acres or Sq. Ft.: 1,970
Zoning District: Dune District
Proposed Use: Short-term rentals
Zoning of adjacent properties: Residential

2. Applicant

Name: Chris Gillstedt
Company:
Address: 7025 Rosewood Ct, Hudsonville, MI 49426
Phone: 407-468-2858
Email: Chrisg@maplehillgolf.com

3. Property Owner

Name: Chris Gillstedt
Address: 7025 Rosewood Ct, Hudsonville, MI 49426
Phone: 407-468-2858
Email: Chrisg@maplehillgolf.com

4. Required Application Materials

- Application (PDF + 5 copies)
- Site Plan (PDF + 5 copies)
- Letter or signed narrative describing the proposed special land use and detailing why the location selected is appropriate. Narrative must include responses to the special land use review standards of Section 40-116.03 and the specific review standards of Article V of the Zoning Ordinance.
- Statement of expected effect of the special land use on emergency service requirements, schools, storm water systems, sanitary sewer facilities, automobile and truck circulation patterns and local traffic volumes
- Additional information which may be necessary (i.e. soil erosion, dune protection, view protection, shoreline protection, excessive noise or adverse impact on surrounding properties).
- Supporting statements, evidence, data, information and exhibits that address the standards and requirements for assessing a Special Use permit application as provided in Section 40-116.03.
- Required fee

1. Fees and Escrow Deposit

Application Fee: $350.00 (*any Site Plan Review is in addition to this review)*

A deposit of $1,500 shall be collected for all Planning Commission and Zoning Board of Appeals cases where it is expected that costs above staff time and one public hearing publication will be incurred. These expenses include additional public hearing notifications, attorney fees, engineering or surveying fees, or other special studies. Should expenses total more than the deposit, the applicant will be billed by the City for the additional costs, or additional escrow payment shall be required to complete the Planning Commission or Zoning Board of Appeals process. Should expenses total less than the deposit received, excess amounts shall be returned to the applicant.

2. Details of the Nature of Work Proposed

No work proposed. We are applying to get approval of short term rentals.

By signing below, permission is granted for city staff, including Planning Commissioners, to enter the subject property for purpose of gathering information to review this request. In addition, the applicant agrees to perform the described work in accordance with all applicable Sections of the City of Grand Haven Code of Ordinances. Signer will insure that all inspection requests are made a minimum of 24 hours prior to the requested time.

Signature of Applicant: _____ Date: 5/2/26

Print Name: Chris Gillstedt

Signature of Owner: _____ Date: 5/2/26

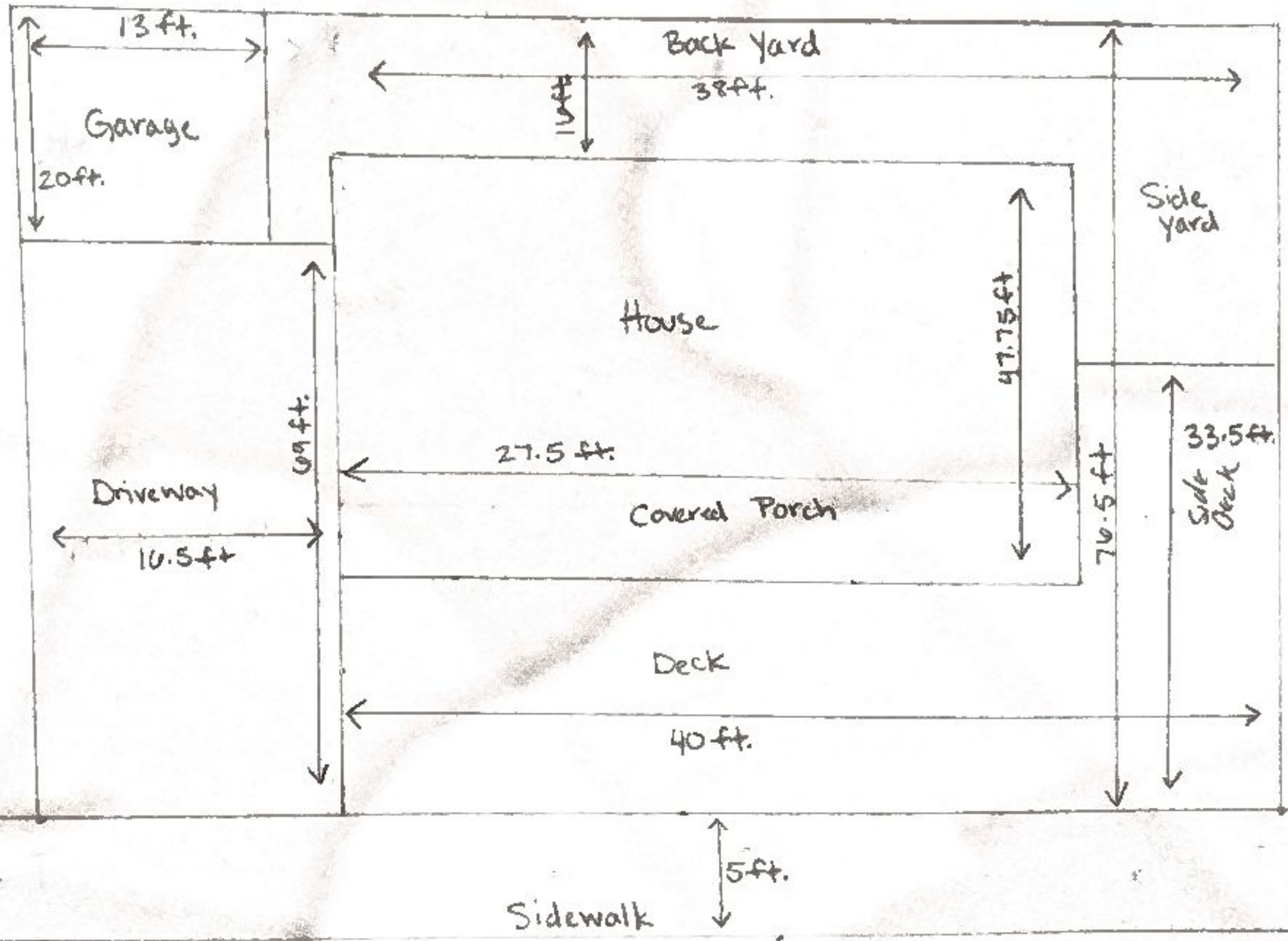
Print Name: Chris Gillstdt

Office Use Only

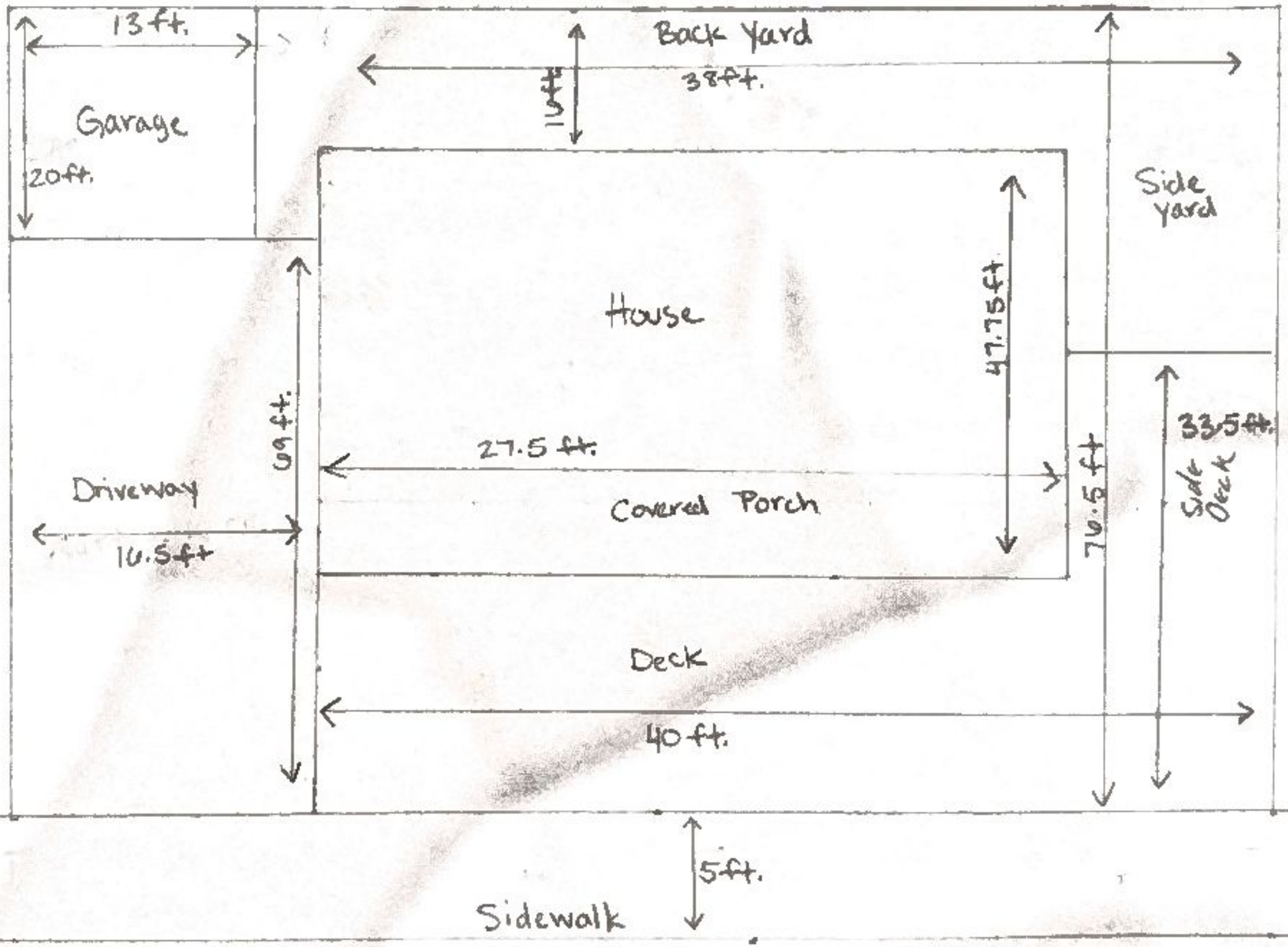
Case #: _____ Date Received: _____ Fee: _____

Date of Approval: _____ Date of Denial: _____ Approved by: _____

848 South Harbor Dr.
Parcel # 70-03-29-101
Lot Size 5,028.5 Sq Ft



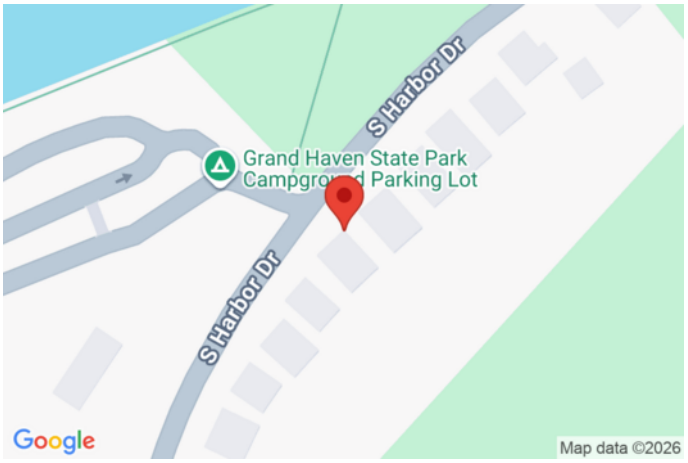
848 South Harbor Dr.
Parcel # 70-03-29-101
Lot Size 5,028.5 Sq Ft



My New Project

CREATED ON
May 25, 2026

LOCATION
848 South Harbor Drive
49417 Grand Haven
Michigan
US



Total area	Floors	Rooms	Bathrooms
1781.52 sq ft	3	15	2

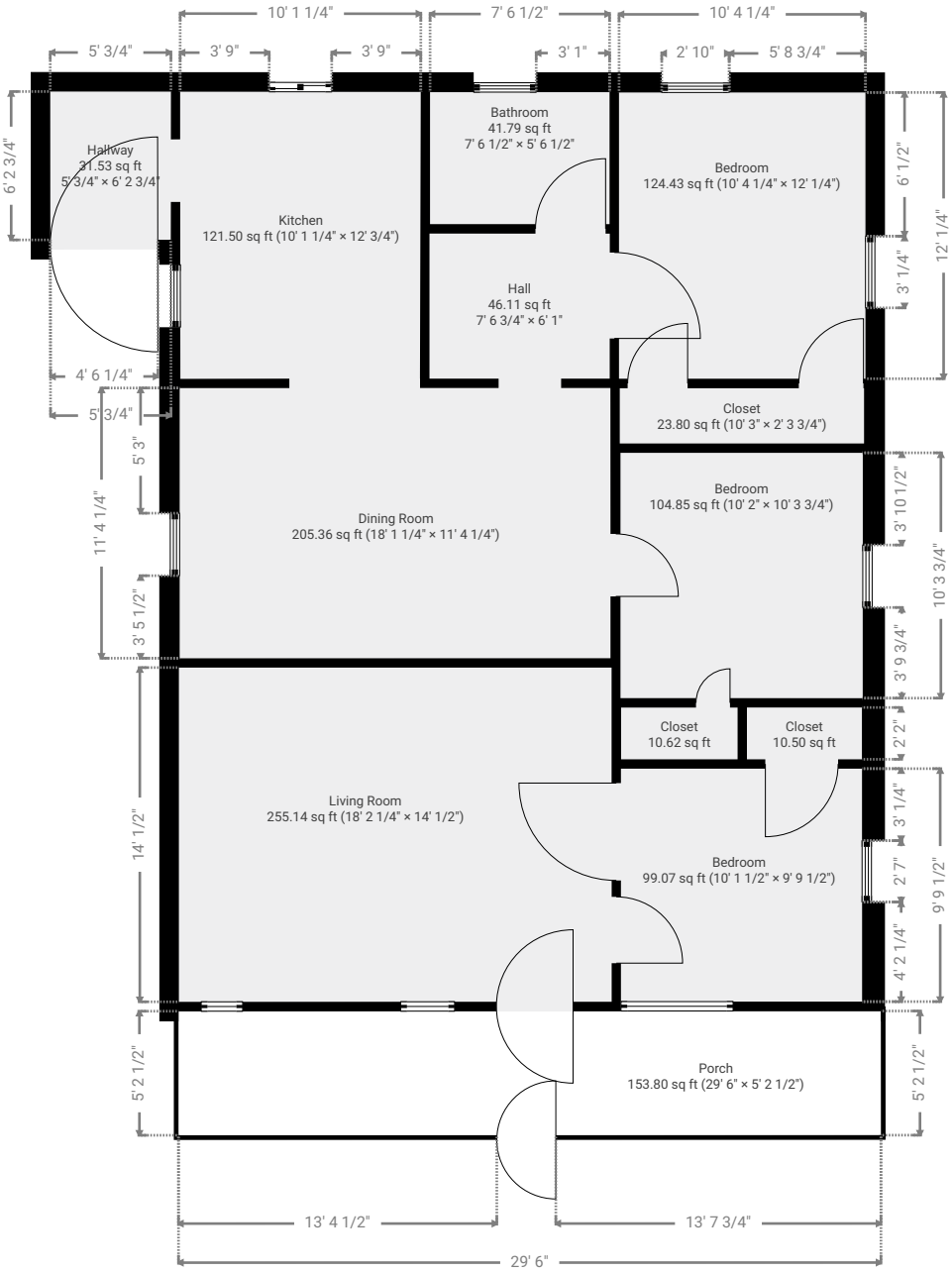
My New Project

848 South Harbor Drive, 49417 Grand Haven, Michigan, US
TOTAL AREA: 1781.52 sq ft • **LIVING AREA:** 917.63 sq ft • **FLOORS:** 3 • **ROOMS:** 15

magicplan

▼ Ground Floor

TOTAL AREA: 1393.95 sq ft • **LIVING AREA:** 913.81 sq ft • **ROOMS:** 12



THIS FLOOR PLAN IS PROVIDED WITHOUT WARRANTY OF ANY KIND. SENSOPIA DISCLAIMS ANY WARRANTY INCLUDING, WITHOUT LIMITATION, SATISFACTORY QUALITY OR ACCURACY OF DIMENSIONS.

0' 2' 4' 6' 8' 10'
1:96 (1/8" = 1')

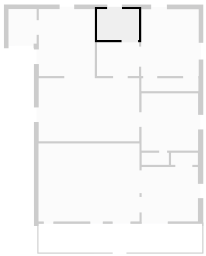
My New Project

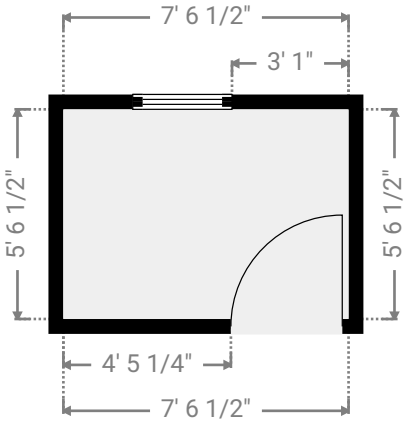
848 South Harbor Drive, 49417 Grand Haven, Michigan, US
TOTAL AREA: 1781.52 sq ft • **LIVING AREA:** 917.63 sq ft • **FLOORS:** 3 • **ROOMS:** 15

magicplan

▼ Bathroom
Ground Floor

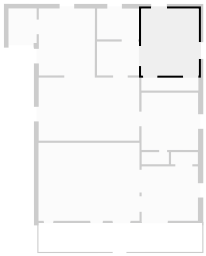
WIDTH: 7' 6 1/2" • **LENGTH:** 5' 6 1/2" • **CEILING HEIGHT:** 7' 5"
AREA: 41.79 sq ft • **PERIMETER:** 26' 2"

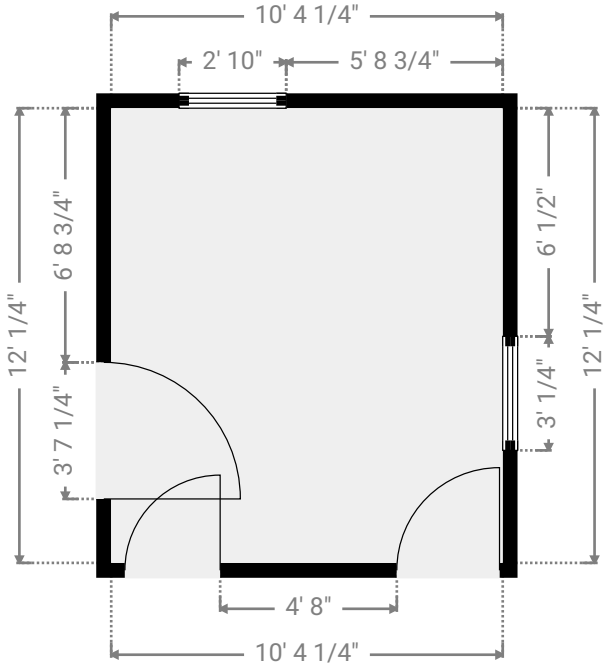




▼ Bedroom
Ground Floor

WIDTH: 10' 4 1/4" • **LENGTH:** 12' 1/4" • **CEILING HEIGHT:** 8' 4 1/4"
AREA: 124.43 sq ft • **PERIMETER:** 44' 9"





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0' 2' 4' 6' 8'
1:61

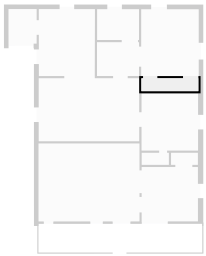
My New Project

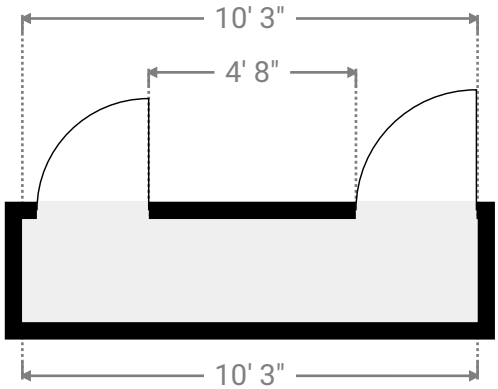
848 South Harbor Drive, 49417 Grand Haven, Michigan, US
TOTAL AREA: 1781.52 sq ft • **LIVING AREA:** 917.63 sq ft • **FLOORS:** 3 • **ROOMS:** 15

magicplan

▼ Closet
Ground Floor

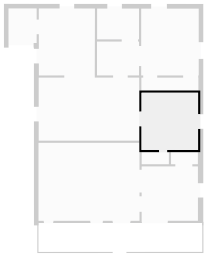
WIDTH: 10' 3" • **LENGTH:** 2' 3 3/4" • **CEILING HEIGHT:** 2' 7 1/2"
AREA: 23.80 sq ft • **PERIMETER:** 25' 2"

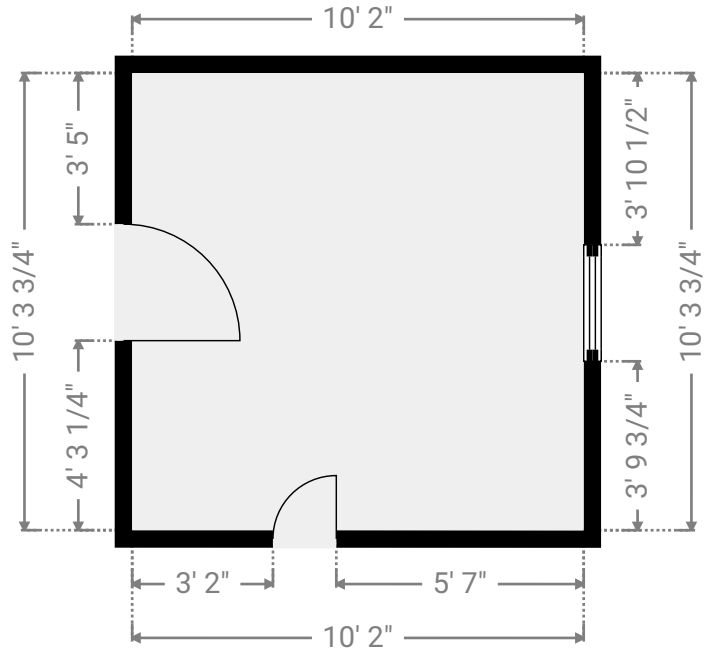




▼ Bedroom
Ground Floor

WIDTH: 10' 2" • **LENGTH:** 10' 3 3/4" • **CEILING HEIGHT:** 3' 11 1/4"
AREA: 104.85 sq ft • **PERIMETER:** 40' 11 1/2"





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0' 2' 4' 6' 8'
1:52

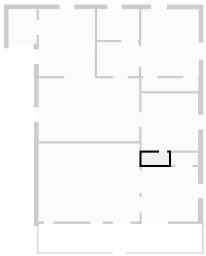
My New Project

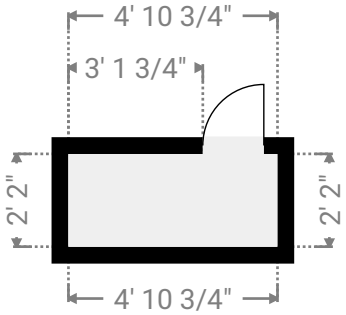
848 South Harbor Drive, 49417 Grand Haven, Michigan, US
TOTAL AREA: 1781.52 sq ft • **LIVING AREA:** 917.63 sq ft • **FLOORS:** 3 • **ROOMS:** 15

magicplan

▼ Closet
Ground Floor

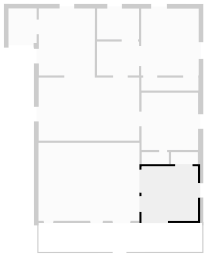
WIDTH: 4' 10 3/4" • **LENGTH:** 2' 2" • **CEILING HEIGHT:** 2' 7 1/2"
AREA: 10.62 sq ft • **PERIMETER:** 14' 1 1/2"

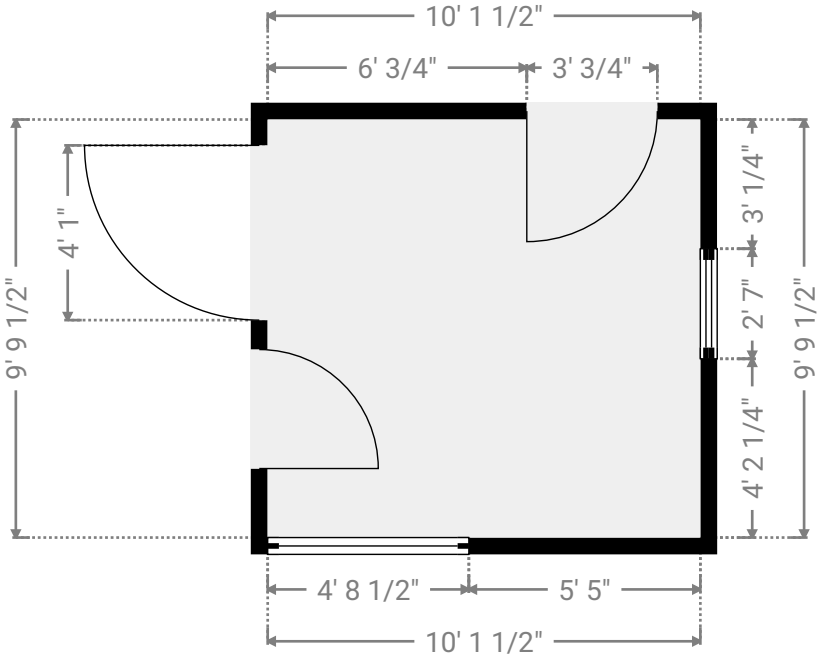




▼ Bedroom
Ground Floor

WIDTH: 10' 1 1/2" • **LENGTH:** 9' 9 1/2" • **CEILING HEIGHT:** 8' 3/4"
AREA: 99.07 sq ft • **PERIMETER:** 39' 9 3/4"





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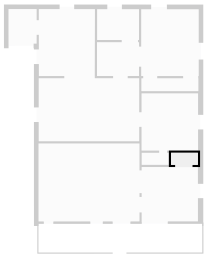
0' 2' 4' 6' 8'
1:54

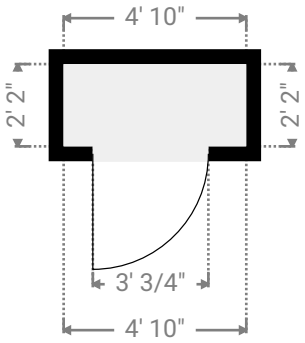
My New Project

848 South Harbor Drive, 49417 Grand Haven, Michigan, US
TOTAL AREA: 1781.52 sq ft • **LIVING AREA:** 917.63 sq ft • **FLOORS:** 3 • **ROOMS:** 15

▼ Closet
Ground Floor

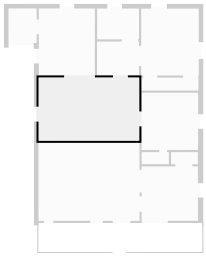
WIDTH: 4' 10" • **LENGTH:** 2' 2" • **CEILING HEIGHT:** 2' 7 1/2"
AREA: 10.50 sq ft • **PERIMETER:** 14'

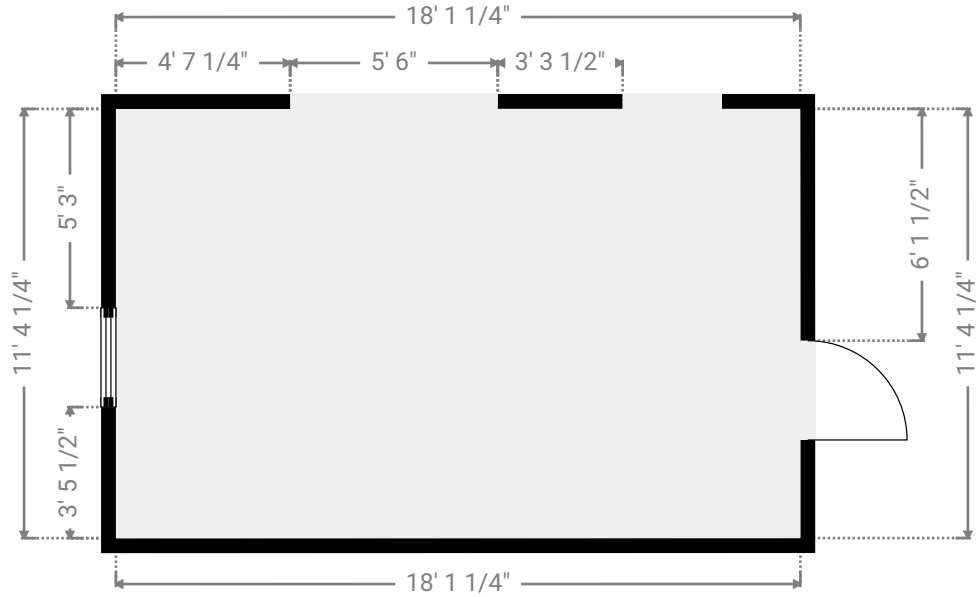




▼ Dining Room
Ground Floor

WIDTH: 18' 1 1/4" • **LENGTH:** 11' 4 1/4" • **CEILING HEIGHT:** 8' 4"
AREA: 205.36 sq ft • **PERIMETER:** 58' 10 3/4"





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0' 2' 4' 6' 8'
1:61

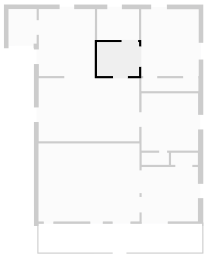
My New Project

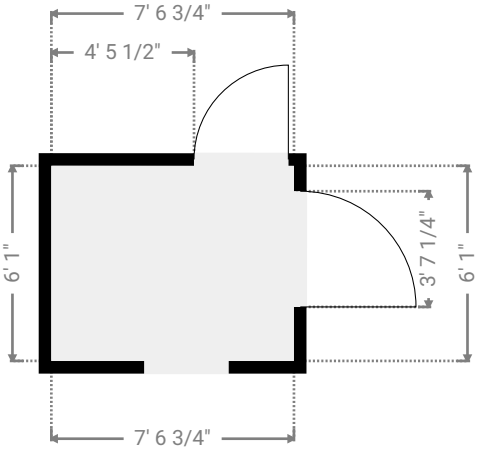
848 South Harbor Drive, 49417 Grand Haven, Michigan, US
TOTAL AREA: 1781.52 sq ft • **LIVING AREA:** 917.63 sq ft • **FLOORS:** 3 • **ROOMS:** 15

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▼ Hall
Ground Floor

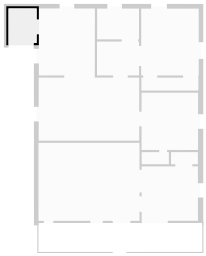
WIDTH: 7' 6 3/4" • **LENGTH:** 6' 1" • **CEILING HEIGHT:** 2' 7 1/2"
AREA: 46.11 sq ft • **PERIMETER:** 27' 3 3/4"

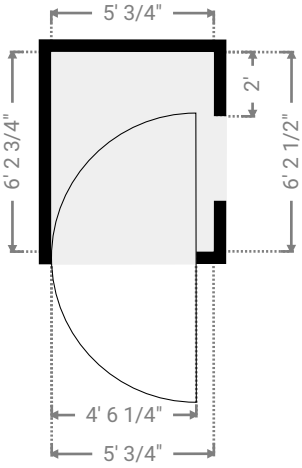




▼ Hallway
Ground Floor

WIDTH: 5' 3/4" • **LENGTH:** 6' 2 3/4" • **CEILING HEIGHT:** 7' 4 1/2"
AREA: 31.53 sq ft • **PERIMETER:** 22' 7"





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0' 2' 4' 6' 8' 10'
1:72

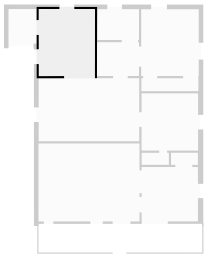
My New Project

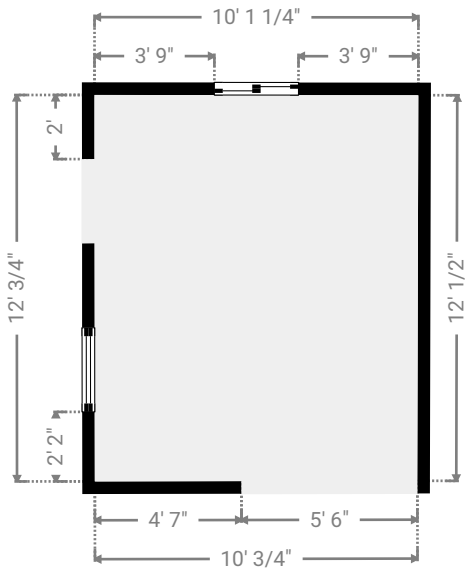
848 South Harbor Drive, 49417 Grand Haven, Michigan, US
TOTAL AREA: 1781.52 sq ft • **LIVING AREA:** 917.63 sq ft • **FLOORS:** 3 • **ROOMS:** 15

magicplan

▼ Kitchen
Ground Floor

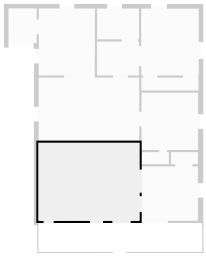
WIDTH: 10' 1 1/4" • **LENGTH:** 12' 3/4" • **CEILING HEIGHT:** 2' 7 1/2"
AREA: 121.50 sq ft • **PERIMETER:** 44' 3 1/4"

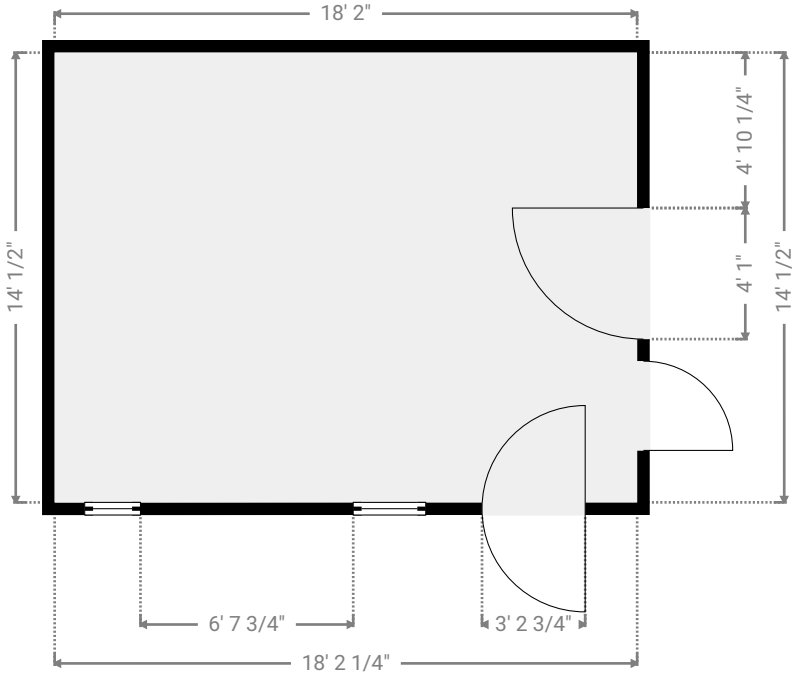




▼ Living Room
Ground Floor

WIDTH: 18' 2 1/4" • **LENGTH:** 14' 1/2" • **CEILING HEIGHT:** 8' 7 1/4"
AREA: 255.14 sq ft • **PERIMETER:** 64' 5 1/4"





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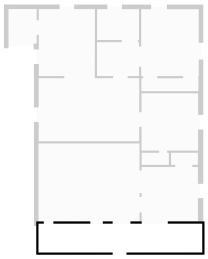
0' 2' 4' 6' 8' 10'
1:72

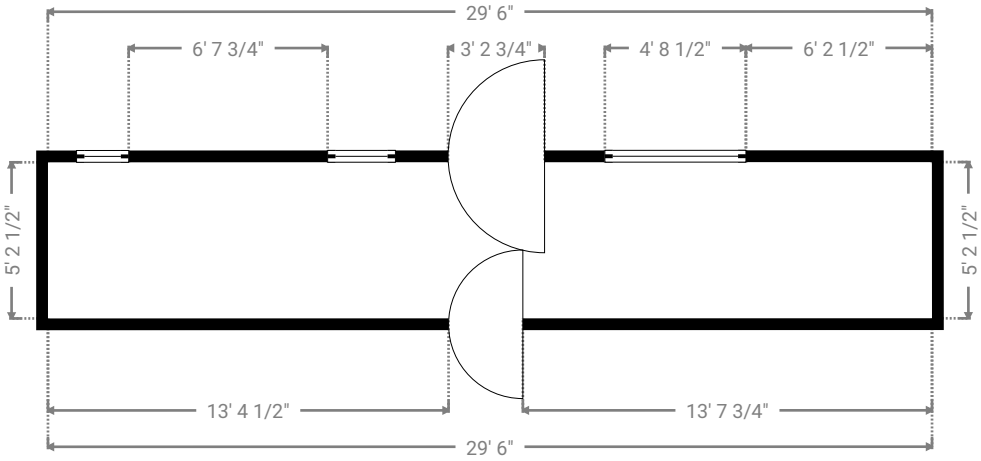
My New Project

848 South Harbor Drive, 49417 Grand Haven, Michigan, US
TOTAL AREA: 1781.52 sq ft • **LIVING AREA:** 917.63 sq ft • **FLOORS:** 3 • **ROOMS:** 15

▼ Porch
Ground Floor

WIDTH: 29' 6" • **LENGTH:** 5' 2 1/2" • **CEILING HEIGHT:** 7' 4"
AREA: 153.80 sq ft • **PERIMETER:** 69' 5 1/4"





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0' 4' 8' 12'
1:77

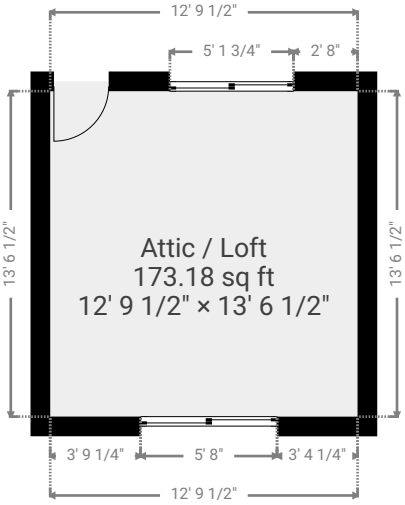
My New Project

848 South Harbor Drive, 49417 Grand Haven, Michigan, US
TOTAL AREA: 1781.52 sq ft • **LIVING AREA:** 917.63 sq ft • **FLOORS:** 3 • **ROOMS:** 15

magicplan

▼ 2nd Floor

TOTAL AREA: 218.97 sq ft • **LIVING AREA:** 0.00 sq ft • **ROOMS:** 1



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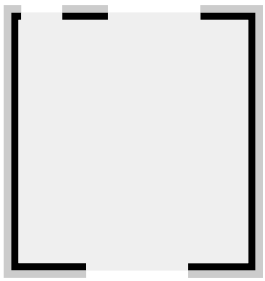
0' 2' 4' 6' 8' 10'
1:96 (1/8" = 1')

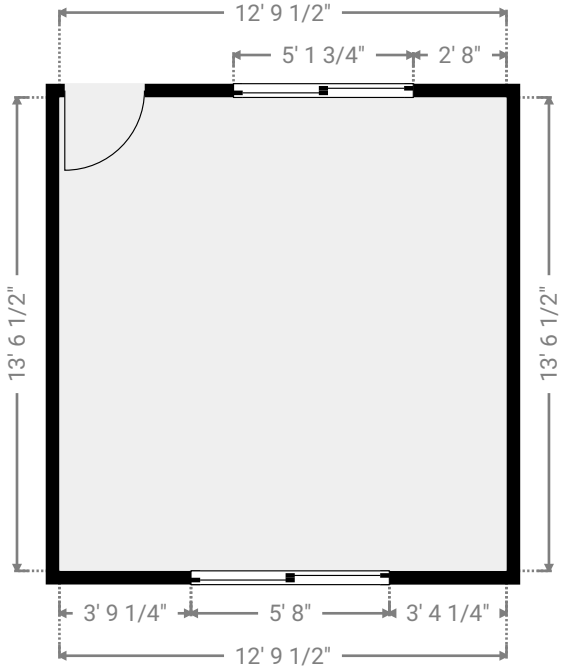
My New Project

848 South Harbor Drive, 49417 Grand Haven, Michigan, US
TOTAL AREA: 1781.52 sq ft • **LIVING AREA:** 917.63 sq ft • **FLOORS:** 3 • **ROOMS:** 15

▼ Attic / Loft
2nd Floor

WIDTH: 12' 9 1/2" • **LENGTH:** 13' 6 1/2" • **CEILING HEIGHT:** 5' 9 1/2"
AREA: 173.18 sq ft • **PERIMETER:** 52' 8"





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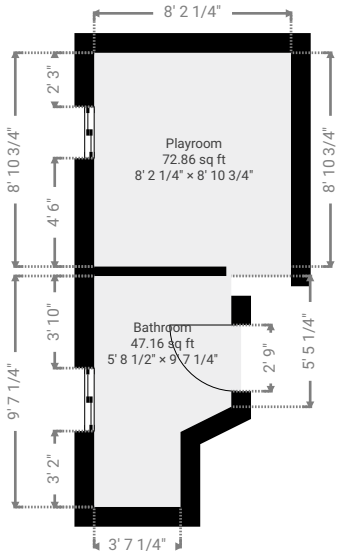
0' 2' 4' 6' 8' 10'
1:66

My New Project

848 South Harbor Drive, 49417 Grand Haven, Michigan, US
TOTAL AREA: 1781.52 sq ft • **LIVING AREA:** 917.63 sq ft • **FLOORS:** 3 • **ROOMS:** 15

▼ Basement • Level 3

TOTAL AREA: 168.60 sq ft • **LIVING AREA:** 3.82 sq ft • **ROOMS:** 2



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0' 2' 4' 6' 8' 10'
1:96 (1/8" = 1')

My New Project

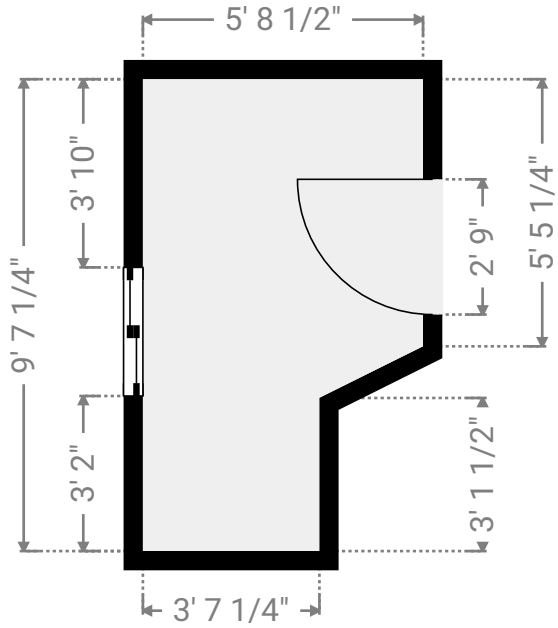
848 South Harbor Drive, 49417 Grand Haven, Michigan, US
TOTAL AREA: 1781.52 sq ft • **LIVING AREA:** 917.63 sq ft • **FLOORS:** 3 • **ROOMS:** 15

magicplan

▼ Bathroom
Basement • Level 3

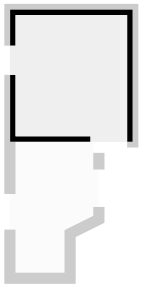
WIDTH: 5' 8 1/2" • **LENGTH:** 9' 7 1/4" • **CEILING HEIGHT:** 6' 9"
AREA: 47.16 sq ft • **PERIMETER:** 29' 10"

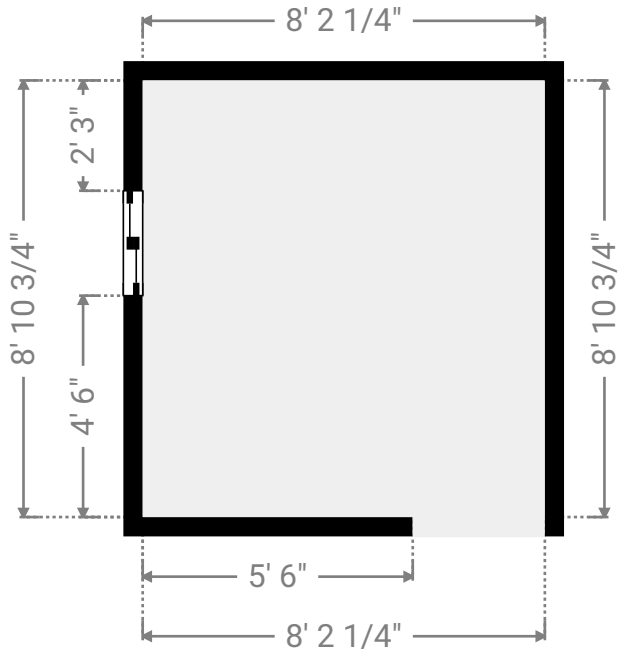




▼ Playroom
Basement • Level 3

WIDTH: 8' 2 1/4" • **LENGTH:** 8' 10 3/4" • **CEILING HEIGHT:** 6'
AREA: 72.86 sq ft • **PERIMETER:** 34' 2"





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0' 2' 4' 6'
1:47

DATE: June 5, 2026

TO: City of Grand Haven Planning Commission

FROM: Brian Urquhart, City Planner

RE: **Case 26-21:** South Village Final PD

1.0 Background

City Council approved the preliminary development plan and Planned Development rezoning of 700 and 724 Robbins Rd. (parcels #70-03-33-100-073 and #70-03-33-100-072) at the June 2, 2025 meeting. The Planning Commission approved the amended preliminary development plan as a minor amendment at the March 23, 2026 meeting. Attached is the final development plan, which includes responses from the developer, demolition plan, elevation plans, floor plans, phasing plan, landscape plan, and public benefit plan. Final development plan comments are shown in blue.

2.0 Final Development Plan review

1. South Village will comply with all applicable federal, state, county, and City laws and ordinances.
2. A departure from the building separation standard of 20 feet is approved to allow for building separations of 14 feet, two inches between units 4 and 5 in building area D; 16 feet, five inches between units 4 and 5 in building area E; and 16 feet, six inches between units 17 and 18 in building area G, all as shown on the preliminary development plan. Comment: Should now read: Allow for building separation of 14.9 ft. between units 21 and 20, 19 ft. between units 27 and 28, 17.5 ft. between units 36 and 35 in building area D, 18.5 ft. between units 25 and 26, and 19.7 ft. between units 12 and 13 in building area E. – This remains in effect.
3. A lot split application shall be submitted by the developer for the lot split of Parcel Number 70-03-33-100-072 and subsequent combination with Parcel Number 07-03-100-073 as a condition of preliminary development plan approval. Comment: This is met. Lot split application approved May 2025. – Upon receiving final development plan approval, the property transaction will occur.
4. The street trees in the South Village along Robbins Road will be replanted by the developer per specifications of and approval by the City's Public Works Department. Comment: This will carry over to final development plan. – Sheet LP1-0 appropriately shows street trees planted every 25 ft. along Robbins Rd.
5. Landscaping around the perimeter of the South Village should be preserved by the developer to the greatest extent possible, to the satisfaction of the City, to soften and screen the site and to provide the greatest buffer from the residential properties to the south and west and the railroad tracks to the east. Comment: Final development plan will clearly provide landscape screening details. The landscape plan depicts appropriate screening adjacent to the railroad along the east lot line, along the west lot line and the adjacent residential uses along the common lot line with 700 Robbins Rd. and around the perimeter of the stormwater retention basin at the southeast corner of the site.
6. A sensitive area overlay application acceptable to the City shall be submitted by the developer with the final development plan for South Village. Comment: Will be submitted with final development plan. – Sensitive Area Overlay application was submitted. Sheet C-300, S.E.S.C and Grading Plan depicts the limits of disturbance. The existing wetland and woodland areas will not be impacted, remaining in compliance with the approved EGLE permit. The plans call for site restoration and clean up to occur summer/fall 2027.
7. A sanitary sewer agreement shall be negotiated with and approved by Grand Haven Charter Township and the City for South Village. Comment: GHCT has been made aware, but no sanitary sewer agreement has been drafted at this time. – City Council approved the Water and Sewer Extension Agreement which included the sewer agreement for South Village, at the May 18, 2026 meeting,
8. Signage for South Village shall conform to the Multiple-Family Residential District standards in the Zoning Ordinance. Comment: Final development plan will detail signage. – A 32 sq. ft. sign is shown

just east of the primary entrance.

9. Exterior cladding materials for all buildings in the South Village shall meet the standards of the Multiple-Family Residential District in the Zoning Ordinance. Comment: Renderings are included in the amended plan, but full architectural details are not specified. Final development plan shall confirm cladding details. – Sheets A4 through A9 depict the elevation views of the townhomes. See summary below:

Building Type	Siding Type	Color	Height	Roof Pitch
A	Horizontal Lap, vertical nickel gap, straight edge shake, asphalt shingle	Linen, Ironstone, Golden Tek,	28' 6"	12:12
C	Horizontal Lap, vertical nickel gap, straight edge shake, asphalt shingle	Linen, Ironstone, Golden Tek,	30' 2"	12:12
D	Vertical nickel gap, straight edge shake, asphalt shingle	Linen, Ironstone, Golden Tek, Ebony Pine, Iron Ashe	29" 10"	7:12
E	Vertical nickel gap, straight edge shake, asphalt shingle	Linen, Ironstone, Golden Tek, Ebony Pine, Iron Ashe	31' 6"	12:12
F	Vertical nickel gap, straight edge shake, asphalt shingle	Linen, Ironstone, Golden Tek, Ebony Pine, Iron Ashe	29" 6"	12:12

10. A traffic impact study shall be submitted by the developer prior to final development plan approval for South Village. The traffic impact study shall identify any solutions to any adverse impacts on public roadways resulting from the development, and who shall be responsible for implementing and paying for such solutions. Comment: A traffic impact study was submitted in November 2025. The findings revealed there would be no adverse impacts on public roadways because of the proposed development.- As a result of the traffic study, Sheet A2 depicts a left turn lane that will be incorporated on Robbins Rd. near the two entrance drives. Unnecessary street parking will be removed due to the left turn lane. The traffic modeling will improve traffic flow on Robbins Rd. A few public comments have expressed that the South Village development will negatively impact the intersection of Robbins Rd./Sheldon Lakeshore Dr. The traffic study revealed there is no direct impact or excessive burden placed on this intersection as a result of the development.
11. A utility plan prepared by the developer and acceptable to the City shall be included in the final development plan for South Village. Comment: Carry over to final development plan. – Sheet C-400 provides the utility plan. The Fire Marshal and Dept. of Public Works have reviewed and found the plans acceptable. Reports are attached.
12. An EGLE permit shall be obtained by the developer for any portion of the South Village development located within any identified wetland area. Comment: EGLE Permit issued on February 12, 2026. – Remains in valid until 2031.

b

3.0 Request

South Village preliminary PD was approved with a reduction of total housing units from 189 to 118. The amendment removed the stacked flats entirely and replaced with townhouse units. Total figures:

Type	# units (original)	# units (proposed)
Row house	8	16
Stacked Flats	108	0
Townhouse	44	102

Single-family attached	29	0
Total	189	118
Gross Density	8.1 units/acre	5.1 units/acre
Affordable	24 (80% AMI)	0
Attainable	0	24 (120% AMI)

Housing Type

Of the 118 total units, 20% of the units are proposed to be affordable, set at 80% of the AMI. This equates to 24 total units, an increase from 11 units of the original development plan. This has recently been updated to include 24 units at an attainable level of 120% AMI. At the June meeting, the EDC/BRA has made the recommendation to City Council for approval. The floor plan depicts various sizes of the units.

Site Amenities

The original PD included a clubhouse, pickleball court, and concept landscape area. The proposed PD removed the clubhouse, relocated the pickleball court and dog park, and added a playground and pavilion/bathroom building and social commons. The amended plan also depicts sidewalk installed along Robbins Rd. and entry walks to Rowhouse A, units 9-12. Also added a pathway towards the wetland viewing platform located west and south of units 22-25, townhouse E. Due to the wetland location, grading and compliance with EGLE permit, the sidewalk north of the main drive serving single-family homes G in the original plan has been removed.- The final plan depicts a playground, dog park, pickleball court, pavilion, fire pit area, and natural overlook walkout.

Access Drive

The amended plan still depicts two curb cuts off Robbins Rd., but the primary drive has been amended to remove the boulevard design and traffic circle, in favor of a 24 ft. wide drive, with full crosswalk markings at the primary intersections. These changes were made on requests from the Fire Marshal. – It may be beneficial for the development team to confirm traffic control at the intersections, such as the placement of stop signs. In order to reduce the speed of traffic and maintain a sense of walkability and pedestrian connectivity, speed bumps maybe needed.

Open Space

With less units, the open spaces have increased from 9.3 acres (40%) to 10.5. acres (45%).

Dumpster Enclosure

The site plan calls for 3 dumpster enclosures, with a decorative concrete masonry material and corrugated steel doors.

Phasing

Sheet C-205 calls for 3 phases. Phase 1 will include the primary access road, Units E, and portions of A, and C and D. Phase 2 will include Units A, portion of C and D, and the site amenities. Phase 3 will conclude the development with the remainder of Units D, and F.

Parking

The total parking spaces has been reduced from 533 spaces to 300 spaces. Driveway parking spaces are not included in the 300-space count. – The plan calls for a total of 93 on street/surface spaces. There is a total of 207 garage spaces, not including driveway spaces for Building Units C, D, E, and F. Building Units A will have surface parking spaces located in front. It is presumed the two 8-stall garages will be used by

residents in Units A. The garage units will include horizontal lap siding. The roof will include straight edge shake siding. The colors depict a linen, ironstone and ebony pine pattern.

Public Benefit

The applicant cites the preservation of woodlands, wetlands, open space, and increase of affordable housing and increase in housing stock, and innovation of building design and configuration, provides a direct and indirect public benefit, complying with Sec. 40-421.02 – Sheet A2 provides a graphic illustration of the public benefit from the project. These include bicycle racks, overlook deck, preservation of natural area, activation of a brownfield site, school bus drop off and pick up site, paved sidewalk and pathways, shared pathways, sidewalk network expansion, and 24 attainable housing units.

4.0 Final Step

The final development plan is the final step, serving as site plan review. South Village represents a sound project that was achieved through planning of a vacant brownfield site with an aging, obsolete industrial structure, into a transformative housing project providing needed housing units in the City. The development team has taken all comments from the public, staff, and other officials into account and prepared a plan that should have a positive lasting impact on the community for decades.

5.0 Sample Motion

Motion to approve CASE 26-21, the final development plan and sensitive area overlay for South Village PD at 724 Robbins Rd. (parcels #70-03-33-100-073 and #70-03-33-100-072), with the following conditions:

1. *All conditions of the BLP, DPW, and Fire Marshal shall be met.*
2. *The sidewalk along Robbins Rd. and future crosswalk across Robbins Road shall be completed prior to the issuance of a certificate of occupancy of Phase 1.*

Attachments:

A. Site Plan application
B. Sensitive Area Overlay application
C. Project narrative
D. Final Development Plan
E. Project renderings
F. Wetland Delineation Report
G. Traffic Study
H. EGLE Permit

NEDERVELD

June 2, 2026

Mr. Brian Urquhart, Planner
City of Grand Haven
519 Washington Avenue
Grand Haven, Michigan 49417

RE: South Village – Final Planned Development resubmittal
City of Grand Haven, Ottawa County, Michigan

Dear Mr. Urquhart:

Thank you for the comments included in your May 19, 2026 email correspondence. Below, please see brief responses to each of the items mentioned. Additionally, please find enclosed five (5) copies of the following updated items being resubmitted for Final Planned Development (PD) review.

- Site plan set
- Landscape plan
- Demolition plan
- Architectural plan set, which includes
  - Public Benefit Overview plan
  - Architectural renderings
  - Floor plans
  - Exterior material details
  - Amenity details

Other materials from the May 6 submittal remain unchanged. A link will be emailed to you providing access to digital files of all the items.

These items are submitted for the June 9, 2026 Planning Commission meeting.

If you have any questions or require additional information, please contact me at (616) 575-5190 or via email at edeyoung@nederveld.com.

Sincerely,



Eric DeYoung,
Project Manager

Enclosures

NEDERVELD

Please see the comments quoted below followed by a brief response in italics.

1. Phasing. At the EDC/BRA meeting on 5/18/26, the development team mentioned the project would be completed in 2 Phases. However, the project narrative calls for 3 Phases, which is also shown on Sheet C-205. What is correct?

   Three phases are proposed as depicted on the site plan, sheet C-205.

2. Demolition and removals plan. I do not see a specific demolition and removals plan. Please show the limits of construction and which trees and wetland areas will be undisturbed per the EGLE and SAO permits.

   A demolition plan is provided. Proposed limits of disturbance have been added to site plan sheet C-205.

3. EGLE Permit. Speaking on EGLE permit, it has come to our attention the EGLE permit is being challenged. Has the development team been made aware of this?

   The applicants are aware.

4. Floor plan. Please include a floor plan of each townhome unit type, with sq. ft. calculations.

   Please see the updated architectural plan set.

5. Landscape plan. Landscape plan needs to be amended to provide a continuous screening along the east lot line along the railroad, adjacent to the TI district (Condition of Preliminary PD approval #5). This can be a fence, additional evergreen or deciduous trees, berms, or combination thereof.

   Please see the updated landscape plan.

6. Street Tree. Additional street tree must be shown on the landscape plan west of the secondary drive off Robbins (Preliminary PD condition #4)

   Please see the updated landscape plan.

7. Lighting plan. I strongly recommend including more pedestrian bollards along sidewalks and pathways.

   Please see the updated lighting plan included in the architectural set.

217 Grandville Ave. SW I STE. 302 I Grand Rapids, MI 49503
P: 616.575.5190 I nederveld.com I F: 616.575.6644

8. Non-motorized plan: The project narrative calls for a robust network and paths. Please elaborate. The sidewalk along the drive to units E has been removed. There is also no internal connectivity shown between Townhome Units F, Townhome Units E, and Townhome units C. I do not see any pathways shown on the plan as well. Where are they proposed and how will they be maintained?

    Please see the Public Benefit Overview Plan included in the architectural set. Walks internal to the project will be maintained by the condominium association.

9. Also, does the pavilion area have any bicycle racks? Transit stop with Harbor Transit along Robbins Rd.? What about school bus pick up and drop off?

    Please see the updated architectural set, especially sheets A2 and A10

10. Enhanced crosswalk. I would prefer the plan to be amended to show a traditional crosswalk connecting the sidewalk network to the north along Robbins Rd. This may include signage, and possible flashing beacons for users to activate.

    This item was discussed at the May 20 meeting. Please see callout on sheet C-205 noting "potential future crosswalk to be coordinated by the City of Grand Haven through a Safe Streets grant".

11. Public benefit. It's referenced and described throughout the submittal, but I would prefer a separate full-size site plan. This sheet represents a visualization of the public benefit. This includes approximately which townhome units will be targeted for 80% to 120% AMI, public sidewalk along Robbins Rd., internal network of wayfinding signs to the public viewing platforms and pathways, connectivity to adjacent developments.

    Please see architectural plan set sheet A2.

12. Snow storage. Please include a note on the site plan where snow storage will be placed.

    Please see updated sheet C-300 indicating proposed snow storage locations.

13. Hydrant locations. Perhaps I have not been able to locate them, but please show hydrants on the utility plan.

    The legend has been updated to more clearly indicate the hydrant symbol. One hydrant has been added per guidance from the Fire Marshal.

14. Dog Park. Will the Dog park be open to all dogs, no matter the size? Many residential developments have small dog and larger dog areas. Also, please confirm if the park will be open to the public, or just the residents and guests.

    The community will not be gated, but the dog park and other site amenities are elements of the private condominium association which will be responsible for the organization, rules, care, and maintenance of the amenities.

15. Sign. Is the sign style selected, or is the sign just for placement until an application is submitted?

    The final sign design is yet to be determined. The illustration depicts a sign compliant with the dimensional standards.

16. Overlook Platform. Will there be an elevation view or profile view with dimensions of the overlook?

    Please see architectural set sheet A12

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P: 616.575.5190 I nederveld.com I F: 616.575.6644

SITE PLAN REVIEW PERMIT APPLICATION

Community Development Department, City of Grand Haven
519 Washington Avenue, Grand Haven, MI 49417
Phone: (616) 935-3276 Website: www.grandhaven.org

1. Project Information

Address/location of property: 724 Robbins Road
Parcel #: 70-03-33-100-073 and 70-03-33-100-091
Zoning District: PD
Current Use: Industrial
Proposed Use: PD - Residential
Area in Acres: 23.3 acres
Zoning of adjacent properties: See attached

2. Applicant

Name: Chad Koster
Company: IMD Capital
Address #: 940 Floral Ave. SE
Grand Rapids, MI 49506
Phone #: 616.437.7202
Email: chad.koster@paramountrp.com

3. Property Owner

Name: Dave Richardson - JSJ Corporation and Dake Corporation
Address: 724 Robbins Road
Grand Haven, MI 49417
Phone #: 248.881.2432
Email: david.richardson@jsjcorp.com

4. Required Attachments

- PDF + 5 copies of the application
- PDF + 5 copies of site plan
- PDF + 5 copies of the building elevations
- PDF + 5 copies of the landscape plan
- Project phasing plan (if applicable)
- Signage plan and details
- Proposed topographic map
- Existing topographic map

5. Fees and Escrow Deposit

Up to $100,000:	$200.00
$100,001 to $500,000:	$300.00
$500,001 to $1,000,000:	$400.00
$1,000,001 & Up:	$500.00
Estimate Project Cost:	$ >1,000,001

A deposit of $1,500 shall be collected for all Planning Commission and Zoning Board of Appeals cases where it is expected that costs above staff time and one public hearing publication will be incurred. These expenses include additional public hearing notifications, attorney fees, engineering or surveying fees, or other special studies. Should expenses total more than the deposit, the applicant will be billed by the City for the additional costs, or additional escrow payment shall be required to complete the Planning Commission or Zoning Board of Appeals process. Should expenses total less than the deposit received, excess amounts shall be returned to the applicant.

6. Details of the Nature of Work Proposed *(please identify materials and colors to be used)*

See attached submittal

7. Buildings and Structures

Number of buildings on site: 36
Use of buildings: Residential
Height of buildings & # of stories: 29' 10", 2-story
Height of rooftop mechanical equipment: N/A

8. Floor Use and Area (in square feet)

Commercial Structures

Total floor area:
Open space (area & %):
Office space (area):
Retail space (area):
Industrial space (area):
Assembly space (area):
Seating capacity:
Maximum occupancy load:

Not applicable

Residential Structures

Total floor area: 243,090 GSF
Total # of units: 118
# of 1 bedroom units: 0
# of 2 bedroom units: 42
# of 3 bedroom units: 76
Open space (area and %): 10.5 acres, 45%
Rental or condominium?: Mixed
Maximum occupancy load: 956 (based on 1 Occ. / 200 GSF per IBC Chapter 10 Table 1004.5 — Maximum Floor Area per Occupant in areas without fixed seating)

9. Setbacks *(see Article Four: District Regulations, Table 40-402.02, for setback requirei*

Required front yard: 25'
Proposed front yard: 25'
Required rear yard: 25'
Proposed rear yard: 25'
Required total side yard: 20'
Proposed total side yard: 20'

10. Parking *(see Article Six: Parking, for zoning requirements)*

Required # of spaces: 236
Proposed # of spaces: 300
Typical angle of spaces: 90 degree and parallel
Size of spaces: 9' x 19'
Location of parking on site: see attached site plan
Number of handicap spaces: 6
Shared parking agreement?: No
Location and # of off-street spaces: see attached site plan
Number of employees: not applicable
Explanation of screening (including location and materials): see attached landscape plan

11. Loading *(see Section 40.605.04 for loading space requirements)*

Required # of spaces: 0
Proposed # of spaces: 0
Typical angle of space(s):
Size of space(s):
Location of loading space(s) on site:
Explanation of screening (including location and materials):

12. Site Lighting *(see Section 40-317 for lighting requirements)*

Building Lighting

# of fixtures proposed:
Type of lighting proposed:
Height of fixtures:
Location of fixtures:

See attached lighting plan

Parking Area Lighting

# of fixtures proposed:
Type of lighting proposed:
Height of fixtures:
Location of fixtures:
Foot-candles at property line:

See attached lighting plan

13. Landscaping *(see Article Eight: Landscaping, for zoning requirements)*

Location of landscape areas:

See attached landscape plan

Proposed landscape material:

See attached landscape plan

14. Exterior Trash Receptacles *(see Section 40-301.03 for Dumpster Enclosure requirements)*

Location of receptacle: See attached site plan
Size of receptacle: 18' x 12'
Enclosure material: Decorative Concrete Masonry Units
Height of Enclosure: 6'

15. Mechanical Equipment *(see Sections 40-306.08(C) & 40-322 for zoning requirements)*

Ground Mounted Mechanical Equipment

# of units:
Size of units (LxWxH):
Location of units:
Screening:

Not applicable

Rooftop Mechanical Equipment

# of units:
Type of rooftop units:
Size of units (LxWxH):
Location of units:
Screening:

Not applicable

16. Accessory Buildings *(see Section 40-301 for standards for accessory buildings)*

# of accessory building(s): 2 garages
Size of accessory building(s) (LxWxH): 96'x22'x14'6"
Location of accessory building(s): See attached site plan

17. Emergency Access Features *(contact City of Grand Haven Fire Marshal with questions)*

Emergency Access Roads: N/A
Location of hydrants and fire department connection (FDC):

18. Historic District information *(contact City of Grand Haven Historic Conservation District Commission)*

Is this location within a Historic Conservation District? Yes/No/Unsure
Name of District, if applicable:

By signing below, permission is granted for city staff, including Planning Commissioners, to enter the subject property for purpose of gathering information to review this request. In addition, the applicant agrees to perform the described work in accordance with all applicable Sections of the City of Grand Haven Code of Ordinances. Signer will insure that all inspection requests are made a minimum of 24 hours prior to the requested time.

Signature of Applicant: Date: 5/11/26

Print Name: CHAD KOSTER

Signature of Owner: Date:

Print Name: David

Office Use Only

Case #: Date Received: Fee:

Date of Approval: Date of Denial: Approved by:

SENSITIVE AREAS OVERLAY PERMIT APPLICATION

Planning Department, City of Grand Haven
519 Washington Avenue, Grand Haven, MI 49417
Phone: (616) 935-3276 Website: www.grandhaven.org

1. Project Information

Address/location of property: 724 Robbins Road
Name of Development: South Village
Parcel #: 70-03-33-100-073 and 70-03-33-100-091
Current Use: Industrial - Vacant
Proposed Use: PD - Residential
Area in Acres: 23.3 acres
Zoning District: PD
Zoning of adjacent properties:

2. Applicant

Name: Chad Koster
Company: IMD Capital
Address #: 940 Floral Ave. SE
Grand Rapids, MI 49506
Phone #: 616.437.7202
Email: chad.koster@paramountrp.com

3. Property Owner

Name: Dave Richardson - JSJ Corporation and Dake Corporation
Address: 724 Robbins Road
Grand Haven, MI 49417
Phone #: 248.881.2432
Email: david.richardson@jsjcorp.com

4. Single-Family Dwelling Projects: Administrative Review

- 1 copies of site plan
- 1 copy of the application (pg. 1 & 2 only)
- 1 copy of narrative (see page 3)
- Building elevations
- Landscape plan
- Existing topographic map
- Proposed topographic map
- Project phasing plan (if applicable)
- Required fee ($50)

5. All Other Projects: Planning Commission Review *(see additional info on page 4)*

- 5 copies of site plan
- 5 copies of the application (pg. 1 & 2 only)
- 5 copies of narrative (see page 3)
- Existing topographic map
- Proposed topographic map
- Building Elevations
- Landscape plan
- Project phasing plan (if applicable)
- Signage plan and details
- Required fees ($50 + escrow deposit, if required)

A deposit of $1,500 shall be collected for all Planning Commission and Zoning Board of Appeals cases where it is expected that costs above staff time and one public hearing publication will be incurred. These expenses include additional public hearing notifications, attorney fees, engineering or surveying fees, or other special studies. Should expenses total more than the deposit, the applicant will be billed by the City for the additional costs, or additional escrow payment shall be required to complete the Planning Commission or Zoning Board of Appeals process. Should expenses total less than the deposit received, excess amounts shall be returned to the applicant.

6. Details of the Nature of Work Proposed *(please identify materials and colors to be used)*

See accompanying submittal

By signing below, permission is granted for city staff, including Planning Commissioners, to enter the subject property for purpose of gathering information to review this request. In addition, the applicant agrees to perform the described work in accordance with all applicable Sections of the City of Grand Haven Code of Ordinances. Signer will insure that all inspection requests are made a minimum of 24 hours prior to the requested time.

Signature of Applicant: _____ Date: 5/5/26

Print Name: CHAD KOSTER

Signature of Owner: _____ Date: 5/4/2026

Print Name: David Richardson

Office Use Only

Administrative Review:____ Planning Commission Review: ____

Permit #:_____ Date Received:_____ Fee:_____

Date of Approval:_____ Date of Denial:_____ Approved by:_____

SENSITIVE AREAS OVERLAY DISTRICT NARRATIVE

See Section 40-422 of the Zoning Ordinance for a complete set of regulations.

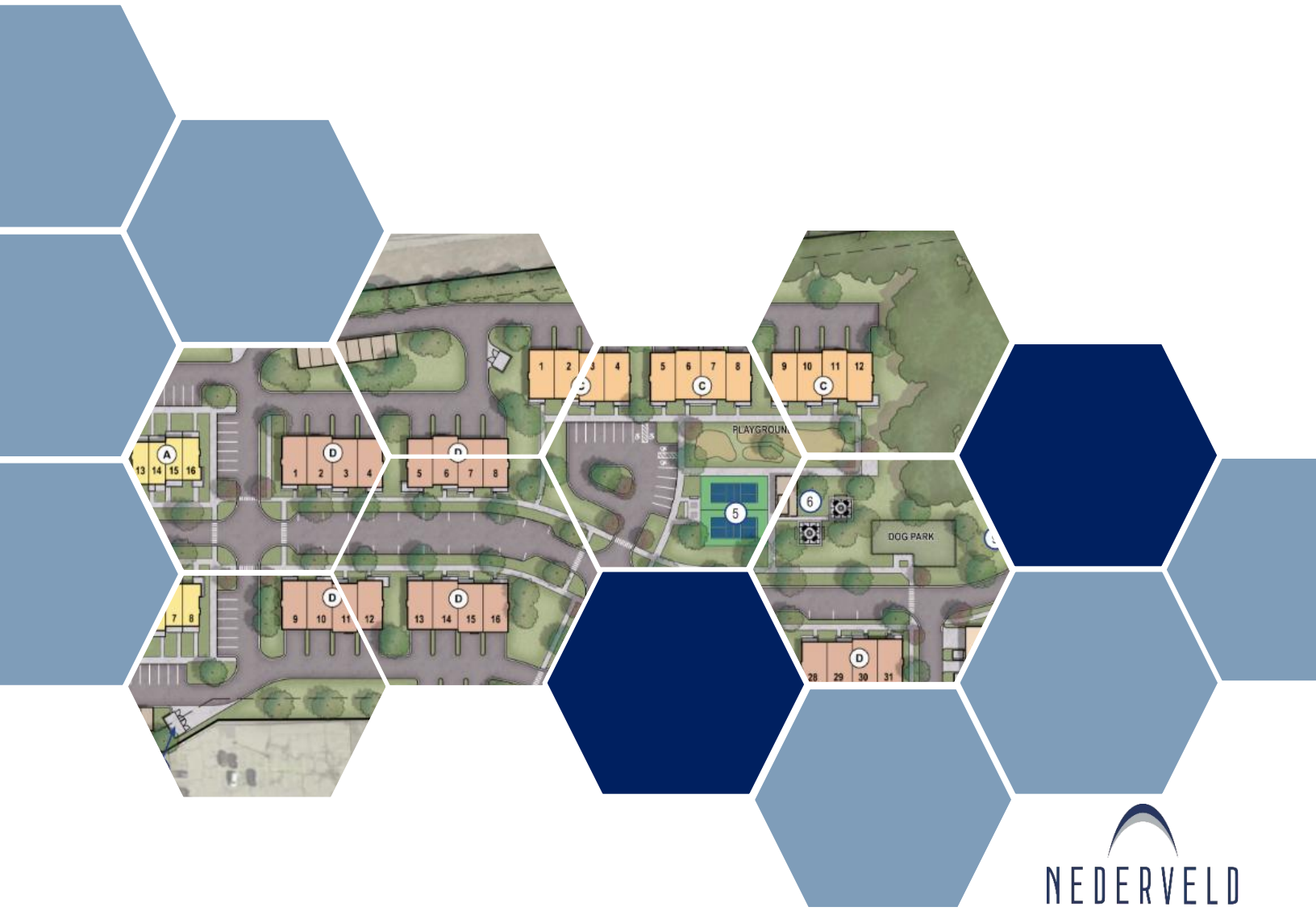
M. The proposed use, expansion or improvement will not unacceptably impact the Sensitive Area or surrounding property or uses. In determining such issues, staff (if subject to staff review) or the Planning Commission (if subject to planning commission review) shall, at a minimum and not by limitation, consider at least the following factors:

1. Traffic generation and traffic flows, including any hazardous conditions:
   See attached narrative
2. Noise generation:
   See attached narrative
3. The effects of vehicles and paved driveways on the premises including, without limitation, the effects of exhaust, run-off, snow removal, noise, etc. resulting from the presence and use of vehicles and paved driveways as they relate to the Sensitive Area and the vegetation or animal life thereon:
   See attached narrative
4. Lot coverage: See attached site plan
5. Impacts upon wildlife and native plant species habitat:
   See attached narrative
6. Landscaping:
   See attached narrative and site plan
7. Compatibility with other uses and zoning in the vicinity:
   See attached narrative
8. Compatibility with neighboring properties:
   See attached narrative
9. The use of any herbicides, insecticides, other pesticides or hazardous substances on the site, including, without limitation, the effects of any run-off:
   See attached narrative
10. Native vegetation removal:
    See attached narrative
11. Any mitigation of any effects upon the sensitive area:
    See attached narrative
12. Long-term shoreline erosion estimates:
    See attached narrative
13. Other factors deemed by the Planning Commission to be important in the protection of the Sensitive Area.

SOUTH VILLAGE

City of Grand Haven

Final Planned Development



NEDERVELD

PROJECT NARRATIVE

Updated May 5, 2026

OVERVIEW

IMD Capital in cooperation with T. Bosgraaf Homes, LLC proposes a new residential community at the former Dake Corporation site on Robbins Road just west of US-31. South Village will offer rowhouses and townhomes with mix of rental and "for sale" owner-occupied housing. The site is carefully designed to achieve the goals and vision articulated in the Master Plan of the City of Grand Haven, offering a mix of residential housing types and providing a sensible transition from the neighboring single-family homes to the west and the commercial areas to the east. The project will be an environmental asset to the community, eliminating a lifeless industrial facility and preserving wetland resources in perpetuity.

In conformance with Chapter 40 of the City of Grand Haven Zoning Ordinance, the applicant received a rezone to the Planned Development (PD) district on May 19, 2025. Planned Developments allow for site design, layout flexibility, and innovation that cannot be achieved within conventionally structured zoning districts.

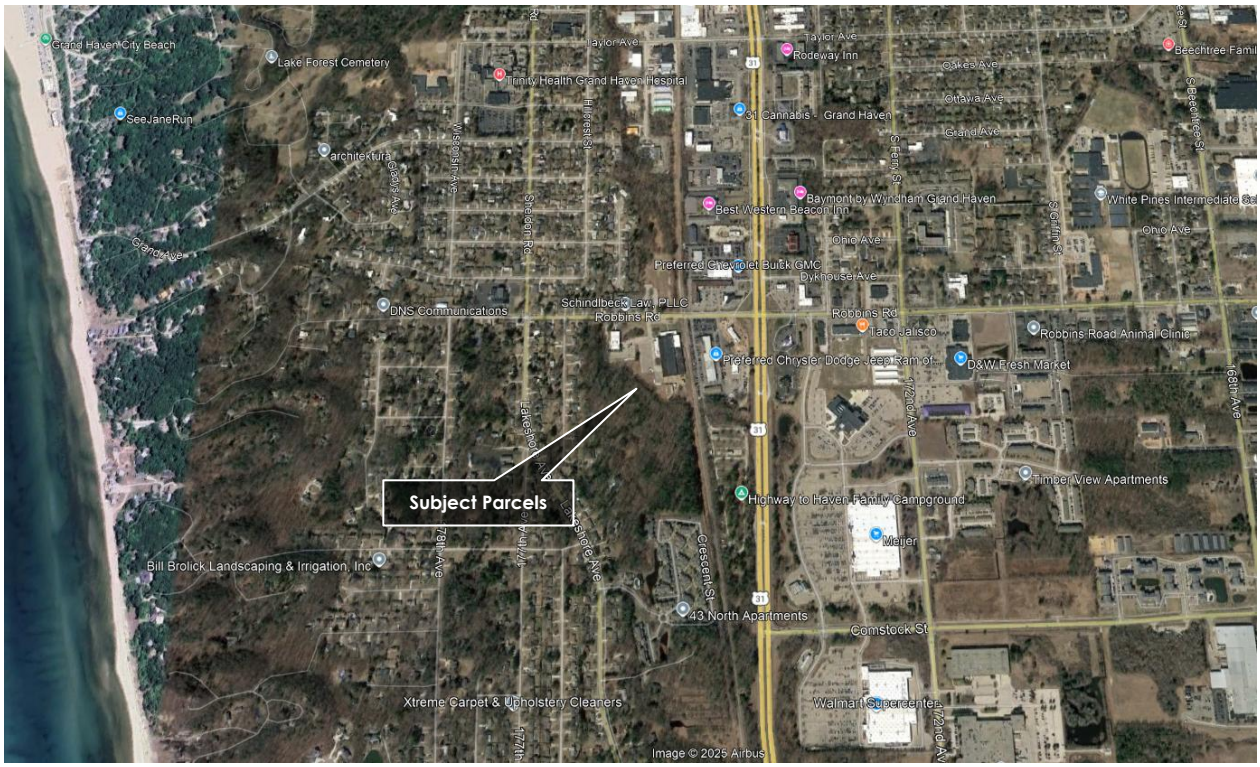
On March 23, 2026 the City of Grand Haven Planning Commission approved an updated Preliminary Development Plan for the PD as a minor amendment. This Final PD submittal adheres to this approved plan.

South Village proposes 16 rowhouse units and 102 townhouse units of various sizes and configurations. With 118 units on 23.3 acres, the density is 5.1 units per acre. Proposed amenities include a dog park, pickleball courts, playground, pavilion with restrooms, social commons and a robust network of sidewalks and paths.

In summary, the South Village Planned Development provides a vibrant community with an emphasis on desirable quality of life characteristics including walkability, activities, amenities, quality living units, and a strong sense of community.

PARCEL INFORMATION

The subject properties are located at 724 Robbins Road.



The property currently hosts a defunct manufacturing facility with several accessory buildings. These structures will all be demolished and the ground cleaned up according to a Brownfield Work Plan with the State.

In 2025 the land to the northwest with the office building (700 Robbins Road) was split from the subject property by way of land division. This parcel is now home to Esox Engineering and is no longer part of the subject property. It is not proposed as part of the PD, and upon construction of South Village, the drive connecting the parcels will be removed.

The subject property includes two existing parcels as indicated below:

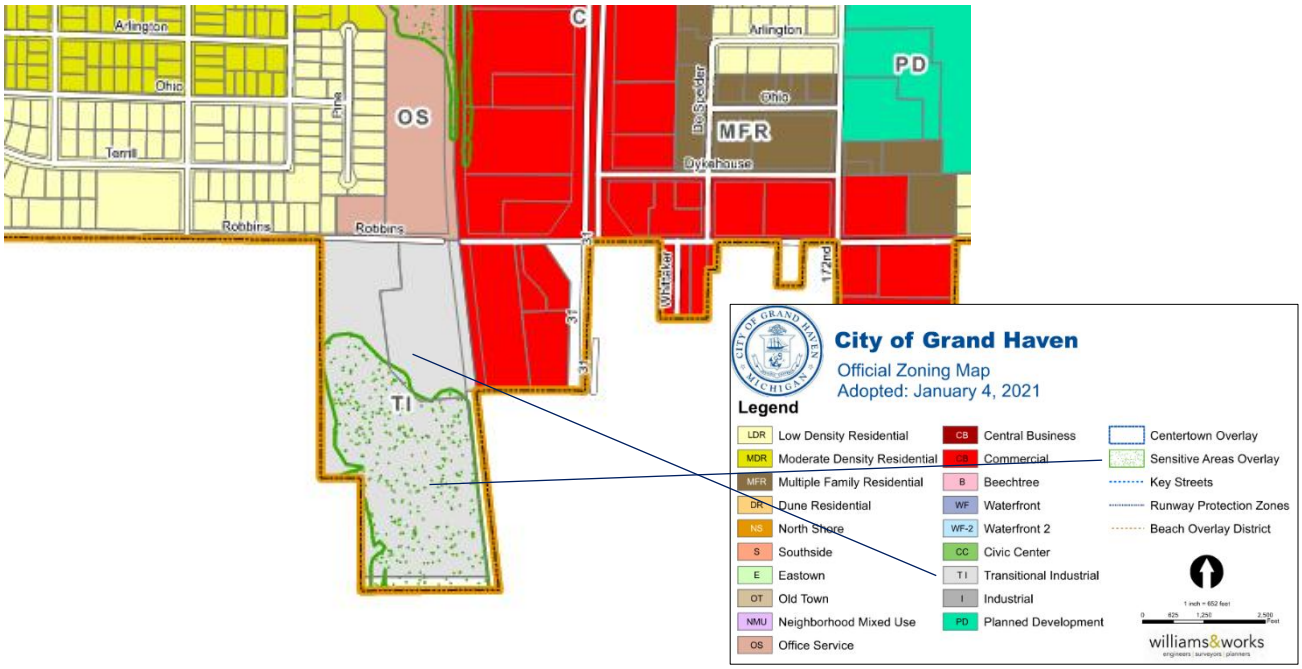
Address	Parcel number:	Size (acres)	Current Zoning:	Current Owner
Unaddressed Robbins Road	70-03-33-100-091	17.73 (GIS)	PD	JSJ Corporation
724 Robbins Road	70-03-33-100-073	5.81 (GIS	PD	Dake Corporation
	Total:	23.3 (survey)		



Please see site plan sheet C-201 for legal descriptions and other parcel details.

CURRENT ZONING

According to the City of Grand Haven Official Zoning Map adopted 1/4/2021, the subject parcels were previously zoned TI, Transitional Industrial. A portion of the southern area of the property falls within the Sensitive Areas Overlay district.



After receiving the Planning Commission's recommendation and conducting a public hearing, the City Council on May 19, 2025 acted unanimously to approve an introductory resolution granting a zoning change of the subject properties to PD.

25-094 Mayor Pro-tem **McLaughlin** moved, seconded by Council Member **Lowe,** to approve an introductory resolution to approve a zoning change request from TI, Transitional Industrial District to PD, Planned Development District, and associated Preliminary Development Plan for South Village PD located on what is commonly referred to as the Dake property at 700 & 724 Robbins Road (parcels #700-03-33-100-072 and #70-03-33-100-073.

Roll Call Vote:
This motion carried unanimously.

At the June 2, 2025 meeting City Council unanimously approved the Preliminary Development Plan and Planned Development rezoning.

25-109 Council Member **McLaughlin** moved, seconded by Council Member **Fritz,** to approve a final resolution for a zoning change request from TI, Transitional Industrial District to PD, Planned Development District, and associated Preliminary Development Plan for South Village PD located on what is commonly referred to as the Dake property at 700 & 724 Robbins Road (parcels #700-03-33-100-072 and #70-03-33-100-073.

Roll Call Vote:
This motion carried unanimously.

On March 23, 2026 the City of Grand Haven Planning Commission approved an updated Preliminary Development Plan for the PD as a minor amendment. This Final PD submittal is in alignment with this approved plan.

The Preliminary Development Plan was approved with the conditions noted below. A brief response note is included in italics.

1. South Village will comply with all applicable federal, state, county, and City laws and ordinances.

2. A departure from the building separation standard of 20 feet is approved to allow for building separations of 14 feet, two inches between units 4 and 5 in building area D; 16 feet, five inches between units 4 and 5 in building area E; and 16 feet, six inches between units 17 and 18 in building area G, all as shown on the preliminary development plan.

   As modified by the minor amendment, the plan now allows for building separation of 14.9 ft. between units 21 and 20, 19 ft. between units 27 and 28, 17.5 ft. between units 36 and 35 in building area D, 18.5 ft. between units 25 and 26, and 19.7 ft. between units 12 and 13 in building area E.

3. A lot split application shall be submitted by the developer for the lot split of Parcel Number 70-03-33-100-072 and subsequent combination with Parcel Number 07-03-100-073 as a condition of preliminary development plan approval.

   This land division was completed in May 2025.

4. The street trees in the South Village along Robbins Road will be replanted by the developer per specifications of and approval by the City's Public Works Department.

   See the attached landscape plan.

5. Landscaping around the perimeter of the South Village should be preserved by the developer to the greatest extent possible, to the satisfaction of the City, to soften and screen the site and to provide the greatest buffer from the residential properties to the south and west and the railroad tracks to the east.

   See the attached landscape plan.

6. A sensitive area overlay application acceptable to the City shall be submitted by the developer with the final development plan for South Village.

   Please see attached and below.

7. A sanitary sewer agreement shall be negotiated with and approved by Grand Haven Charter Township and the City for South Village.

   Noted. Grand Haven Township has been made aware of the forthcoming request, and a formal application and agreement will be pursued upon Final PD approval.

8. Signage for South Village shall conform to the Multiple-Family Residential District standards in the Zoning Ordinance.

   Please see attached details.

9. Exterior cladding materials for all buildings in the South Village shall meet the standards of the Multiple-Family Residential District in the Zoning Ordinance.

   Please see attached details.

10. A traffic impact study shall be submitted by the developer prior to final development plan approval for South Village. The traffic impact study shall identify any solutions to any adverse impacts on public roadways resulting from the development, and who shall be responsible for implementing and paying for such solutions.

    A traffic study has been conducted, and the report is included in this submittal. The report recommends a re-striping of the parking lane on Robbins Road in order to accommodate a westbound left turn lane. This recommendation is proposed and depicted on the site plan. It should be noted that this study was based on the original Development Plan which featured significantly more dwelling units than the current plan, a reduction of total housing units from 189 to 118.

9 RECOMMENDATIONS

The recommendations of this TIS are as follows:

- **Robbins Road & Site Drive**
  - Re-stripe the parking lane, in order to accommodate a westbound left-turn lane along Robbins Road, at the proposed E. Site Drive, as shown in the attached **Figure 7**.

11. A utility plan prepared by the developer and acceptable to the City shall be included in the final development plan for South Village.

    Please see attached plan.

12. An EGLE permit shall be obtained by the developer for any portion of the South Village development located within any identified wetland area.

    Please see the attached EGLE Permit issued on February 12, 2026.

FUTURE LAND USE

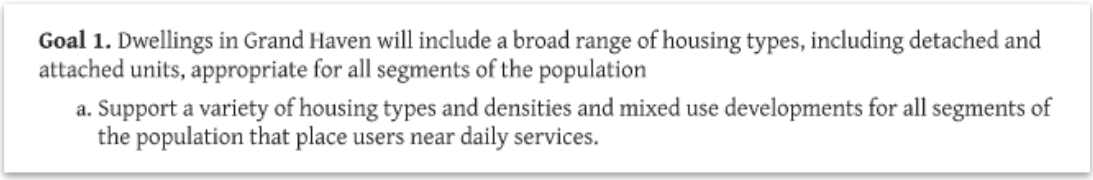
The Future Land Use map included in the City of Grand Haven Master Plan Update adopted May 15, 2023 designates the subject parcels as Mixed Use Redevelopment. The property does not fall within any of the Sub Areas articulated in the Master Plan



MASTER PLAN

The South Village PD has been designed to further the goals included in the 2023 Master Plan update. While the *Mixed Use Redevelopment* portion of the Master Plan (Chapter 13) speaks mostly to unrelated subareas, South Village does advance the goals for Housing and Neighborhoods articulated in Chapter 12.

Goal One of this section envisions communities with "a broad range of housing types, including detached and attached units, appropriate for all segments of the population."



Goal 1. Dwellings in Grand Haven will include a broad range of housing types, including detached and attached units, appropriate for all segments of the population

a. Support a variety of housing types and densities and mixed use developments for all segments of the population that place users near daily services.

South Village proposes a variety of housing types and densities that places users near daily services.

The need for housing in the area is a growing concern. A Housing Needs Assessment was completed by Bowen National Research dated 2025 for Ottawa County. According to this housing report, in order to meet housing demand over the next 5-years between 2024-2029, the County requires 16,464 new housing units including 12,526 owner-occupied units and 3,938 renter-occupied units. The renter demand includes 997 units needed for households with income between 51% to 80% AMI and 400 units needed for households with income between 81% to 120% AMI. In Ottawa County, the share of renter-households that were cost burdened as of 2022 was 45.3%, including 32.2% of renter-households that were severely cost burdened.

Additionally, in this report, the Grand Haven area was included in the Northwest submarket analysis. In the Northwest market, the total number of households grew by 14.6% between 2010 to 2020, and is expected to grow by 4.2% between 2024-2029. This compares to State growth of 4.4% and 1.4%, respectively, over the same period. There is significant acute housing demand not only in Ottawa County, but in the Grand Haven submarket as well. This project will provide a unique array of housing options, including for-sale and for-rent options with affordable for-rent options, meeting many market segments identified with demand in this housing study.

Lakeshore Advantage, the regional economic development agency serving Allegan and Ottawa Counties, noted in its 2024 annual industry trends report that housing scarcity was a significant barrier to business growth and is a key decision gate for employers in their region as they evaluate expansion opportunities. Despite this, employment in Lakeshore Advantage's region is projected to grow by 8,771 jobs over the next 5-years. In 2022, Gentex announced a $200 million expansion that would create 500 new jobs in Zeeland. The creation of additional housing supply in the area is critical to supporting the expected job demand projected in the area.

Goal Two of this section seeks residential neighborhoods that are attractive, well maintained, safe, and inviting with convenient connections to recreation, employment, transportation, shops, services, and natural areas. South Village is ideally positioned geographically to accomplish these goals. While being close to the US-31 commercial corridor, it also is a short bike ride to the best recreation and natural areas Michigan has to offer. The nature of the housing proposed is an ideal transition from the commercial areas to the east to the residential areas to the west.

Goal 2. Residential neighborhoods will be attractive, well maintained, safe and inviting places with convenient connections to recreation facilities, employment, transportation, shops, services and natural areas.

Also included in Goal Two is the desire to activate brownfield sites for high quality mixed used redevelopment. This is precisely the type of redevelopment South Village proposes.

e. Continue to proactively use brownfield incentives to spur high quality redevelopment in mixed use areas.

Generally, Goals One and Two identify the Planned Development model as the pathway to foster these types of mixed use developments.

SUMMARY OF INTENT

The amended Preliminary Development Plan meets the **intent** of the Planned Development district described in Section 40-421.01

1. South Village proposes to use the land in accordance with its character and adaptability. The portions that are proposed to be redeveloped on the former industrial land will feature the higher densities, while the more natural areas to the south are proposed for lower density housing.
2. South Village promotes the conservation of natural features, fragile lands and the preservation of important and historic community resources. By providing housing stock in a brownfield area, more notable historic and greenfield areas can remain unaffected. The wetland areas to the south would be minimally impacted and the open spaces would be preserved as undisturbed condominium greenspace in perpetuity.
3. The proposed site plan features innovation in land use and design for the purpose of protecting the character of the community and enhancing the quality of life in the city. The arrangement of buildings with central amenities creates a harmonious, walkable community.
4. The South Village PD makes efficient use of land to facilitate a more economic arrangement of buildings, circulation systems, land uses and utilities. Lot lines and setbacks required under traditional zoning would make it difficult to provide a neighborhood that features efficient use of parking, sidewalks, and community amenities.
5. South Village will enhance the housing diversity and recreational opportunities for the people of the city. Multiple housing types at different price points will be available. The community will offer both passive and active recreational amenities to residents.
6. By proceeding with South Village as a Planned Development, it will ensure greater compatibility of design and use among the buildings in this area.

South Village also meets the PD **qualifying conditions** noted in Section 40-421.02 of the zoning ordinance.

The community will provide a host of recognizable and substantial benefits to the ultimate residents of the project and to the wider community, benefits unlikely under traditional zoning constraints.

The rationale for pursuing the PD zoning path was to utilize this zoning district's ability to work creatively to develop a plan that provides great benefit to the community and respects the site's unique characteristics.

The design of South Village provides significant public/community benefit in the following ways:

1. South Village takes a site that has a vacant, obsolete manufacturing/storage facility requiring some environmental remediation and transforms the site into a community-contributing neighborhood, bringing housing opportunities, including affordable housing (20% of the total units), to the Grand Haven community.
2. A significant portion of the site, over 30%, is an existing wooded wetland area. By utilizing the tools that the City has made available (i.e., flexible setbacks, building spacing, site utilization), we are able to essentially preserve these existing natural features with minimal impact.
3. South Village will offer a new neighborhood into the Grand Haven community, open for walking, socializing, exploring and enjoyment by both the South Village residents and the community at large.

4. Introduction of a walkable path network including sidewalks and pathways both along Robbins Road, but internal to the neighborhood. Our design introduces over 6,000 linear feet of walkable sidewalk.
5. Modification, by way of information and analysis from a Traffic Impact Study, to address the Robbins Road intersection with the introduction of a left-turn capability for improved traffic flow.
6. The project addresses a number of the City's objectives within its incentive policy:
    a. The ownership of the development team resides within MEDC's Prosperity Region
    b. The project will significantly impact the environment and natural resources through the cleanup and redevelopment of a contaminated site
    c. Density is consistent with City Land Use regulations, zoning and planning policies
    d. The project will demonstrate a financial need through a 3rd party proforma review.

South Village has also been designed to satisfy the **development requirements** listed in section 40-421.03 of the zoning ordinance.

A. The amended Preliminary Development Plan is in accord with the general standards.

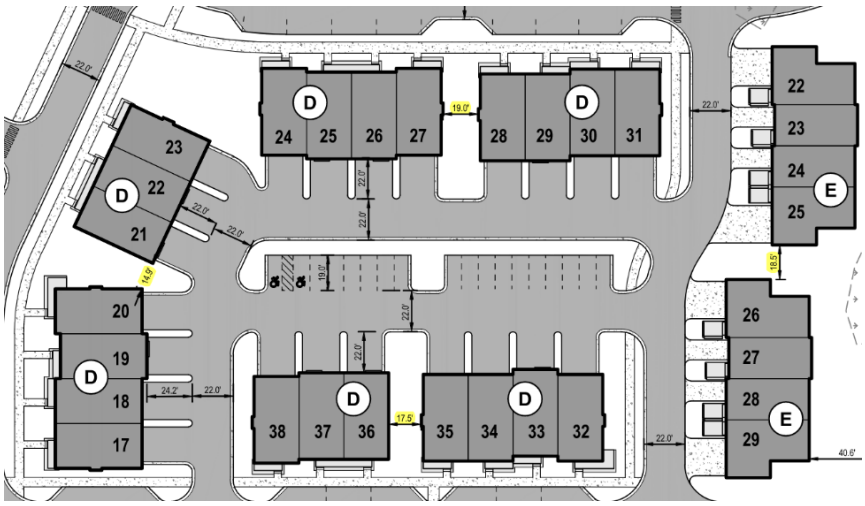
1. The project will be designed, constructed, and maintained to be an integrated and harmonious development, appropriate in appearance with the character of the general vicinity. As a Planned Development with one development group, the project will have strong continuity of construction and design.
2. South Village will be served adequately by essential public facilities and services, such as highways, streets, pedestrian ways, police and fire protection, drainage structures, refuse disposal, water and sewer, and telecommunications.
3. South Village will be compatible with the capacities of public services and facilities it may affect.
4. As articulated above, the project will be developed in accordance with the intent for a planned development
5. South Village will conform to the Sensitive Area Overlay requirements per section 40-422 for portions of the project that fall within that area. A Sensitive Area Overlay application is included with this application. A Part 303 permit from the State of Michigan department of Environment, Great Lakes, and Energy (EGLE) has been issued.

B. All proposed uses and features of South Village will be compatible and harmonious within the development and with the surrounding community. As noted above, housing types are positioned to be most harmonious with the community context.

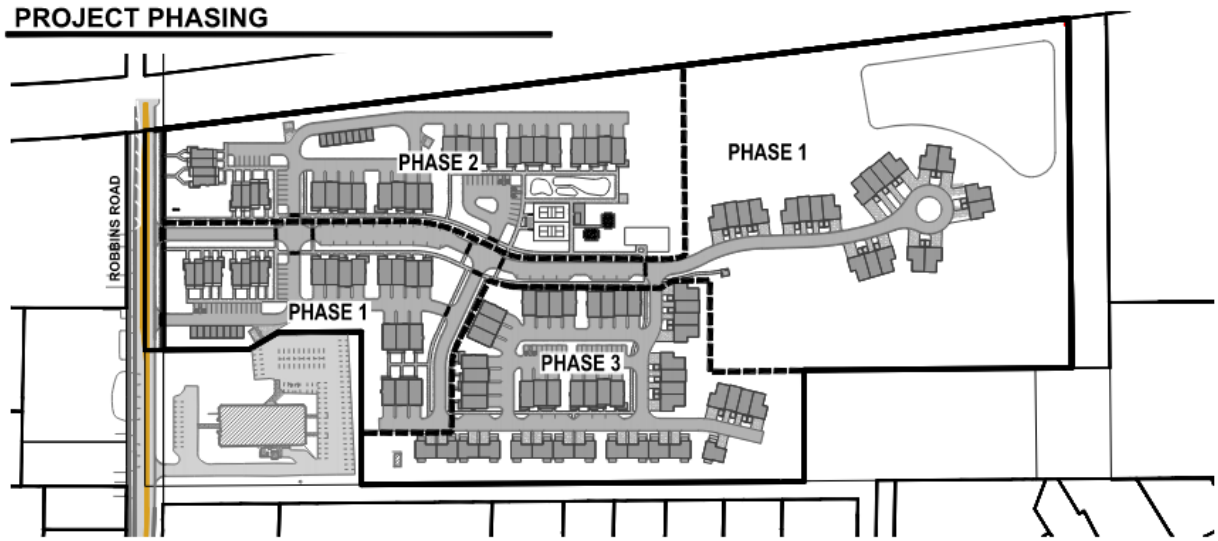
C. The proposed development conforms to all the guidance standards noted in Section 40-421.03(c) with one requested exemption.

Ordinance	Current Requirement	Proposed Requirement	Requested Departure
Sec. 40-421.03(c) – Guidance Standards			
Building Separation	0 or not less than 20 ft..	0 or not less than 14 ft.	6 ft.

D. The proposed modification satisfies the intent of section 40-421.03(c) to allow flexibility. This departure will allow the building configuration to create sense of neighborhood in the subject area.



E. A project phasing inset is provided on sheet C-205. The phases of the PD are planned so that if later phases are not implemented, the initial phase shall be consistent with the provisions of this article and will not detract from the feasibility of developing the remaining portion of the subject PD area in an appropriate and desirable manner.



F. The private roads proposed within the PD will conform to the minimum road construction standards established by the city. All necessary agreements pertaining to private road construction and maintenance shall be reviewed, approved by the city, and be executed and recorded prior to the commencement of construction.

UTILITY NOTES

The project will be served by municipal water. Watermain will be extended southward from the existing main in Robbins Road.

The project is proposed to be serviced by sanitary sewer in coordination with Grand Haven Township. The sanitary sewer main would be extended northward from a stub just north of the existing 43 North Apartment community.

Stormwater will be collected via a network of storm pipes and detained in compliance with the standards set by the City Engineer. A detention basin is proposed on the southeast corner of the property, an area of natural drainage. A low flow outlet to the adjacent Vincent Extension Drain is proposed. Stormwater management calculations are included with this submittal.

Electric, gas, and telecommunications are readily available to be extended into the project.

A utility plan is included with this submittal.

SENSITIVE AREA OVERLAY

As depicted on the attached site plan set, portions of the subject property fall within the Sensitive Area Overlay (SAO) district. Section 40-422 of the Zoning Ordinance addresses this district.

In alignment with Section 40-422.03B3, the applicant is proposing only the principal use permitted within the applicable PD district and approved Development Plan (residential units).

In alignment with Section 40-422.04 an application for SAO review is included with this submittal. The conditions of this section are quoted below, followed by a short response in italics.

A. No person shall undertake any activity such as grading, clearing, cutting and filling, excavating, or tree removal in preparation for a use subject to special conditions in the Sensitive Area Overlay unless approved by the planning commission and any other review agency such as the department of environmental quality.

    Noted

B. The construction, expansion of or change in a permitted use of land shall meet all building height, bulk, and setback requirements applicable to the use district in which it is located and where applicable to the use district in which it is located and, where applicable, shall meet the numerical off-street parking and off-street parking layout standards of this chapter.

    The proposed land use and parking is consistent with the approved PD site regulating standards.

C. One single-family detached dwelling erected on a single lot of record shall comply with the building height and building setback requirements of the residential district in which the lot is located.

    Not applicable, Planned Development

D. No existing or new use of land permitted in the SA Overlay district shall be allowed unless it complies with the high-risk erosion area setback requirements of part 323 entitled "Shorelands Protection and Management" of the Natural Resources Environmental Protection Act, Act No. 451 of the Public Acts of Michigan of 1994, as amended, and the shoreline protection measure requirements stated in section 40-423.03 of the Beach Overlay district, if applicable.

    Not applicable

E. The disposal of sanitary sewage from any expanded use or new use of land within the SA Overlay district shall be by means of the city's public sanitary sewer system, or, if not available, shall be by approval of the Ottawa County Health Department.

Public sanitary sewer is proposed

F. All land within the SA Overlay district affected during development, shall be stabilized during construction to minimize soil erosion conditions. Upon completion of development, said land shall be:
   a. Restored so as to establish permanent drainage patterns with no greater adverse effect on adjacent properties;
   b. Replanted to prevent soil erosion; and
   c. Restored to the natural appearance and contours of the land to the extent possible, in compliance with part 91, entitled "Soil Erosion and Sedimentation Control" of the Natural Resources Environmental Protection Act, Act No 451, of the Public Acts of Michigan of 1994, as amended.

   Noted. A Soil Erosion and Sedimentation Control plan and landscaping plan have been included with the submittal. No work shall commence until a county Soil Erosion and Sedimentation Control permit has been secured.

G. All development and redevelopment located within 250 feet of a critical dune area which is designated on the Michigan Department of Natural Resources "Atlas of Critical Dune Area" dated February 1989 or any amendments thereto with the SA Overlay district shall comply with requirements of Part 353 entitled "Sand Dunes protection and Management" of the Natural Resources Environmental Protection Act, Act No. 451, of the Public Acts of Michigan of 1994, as amended.

Not applicable

H. Any use of a wetland located within a SA Overlay district shall comply with the requirements of Part 303, entitled "Wetland Protection" of the Natural resources Environmental Protection Act, Act No. 451, of the Public Acts of Michigan of 194, as amended.

Noted. A Part 303 permit has been issued by the State of Michigan Department of Department of Environment, Great Lakes & Energy (EGLE) and is attached to this submittal.

I. Any use of an area designated as a floodplain by the Michigan Department of Natural Resources or the National Flood Insurance Program Flood Insurance Rate Map dated February 15, 1978, shall comply with requirements of Part 31, entitled "Water Resources Protection," Part 301 entitled "Inland Lakes and Streams," Part 303 entitled "Wetland Protection," Part 323 entitled "Shorelands Protection and Management," and Part 325 entitled "Great Lakes Submerged Lands" of the Natural Resources Environmental Protection act, Act No. 451 of the public Acts of Michigan of 1994, as amended.

Not applicable, subject area not designated as floodplain. See General Notes.

J. Reasonable efforts shall be made to protect and preserve natural and native vegetation within the SA Overlay district. Significant trees (six (6) inches and larger in diameter) measured at four (4) feet from grade shall be preserved, wherever possible. Reasonable pruning and trimming of existing vegetation is allowed. Vegetative cover that is removed outside of the building envelope shall be cut flush with the ground and the stumps and roots shall not be removed. Pruning of dead and native cover is permitted, however, the stumps and roots shall not be removed.

Existing vegetation will be preserved wherever site grading is not required. The Planned Development proposes 10.5 acres, or 45% of the subject property to be maintained as open space.

The compact design of the proposed community allows for significant preservation of the existing woodlands on the site; and the Planned Development process helps achieve both the housing goals expressed in the City's Master Plan and the natural features preservation goals of the SAO District.

K. Improvements located within the SA Overlay district, including parking lots, driveways, and storm water management structures, shall be designed to minimize negative impacts on sensitive natural features. Examples include use of pervious pavers, depressed parking lot islands, native plantings, and bioswales.

Improvements in the SAO district have been designed to minimize the required impact, especially to areas containing regulated wetland. Retaining walls are proposed to reduce impact to wetlands and wooded areas.

The stormwater management basin has been designed to be efficient as possible, and employs extensive use of infiltration in the stormwater management area, which is the preferred practice of the Water Resources Commissioner.

L. For construction or expansion of any use subject to special conditions on any parcel in the SA Overlay district, a site plan shall be prepared and submitted for review and approval by the planning commission and, where applicable, the Michigan Department of Environment, Great Lakes & Energy (EGLE). All site plans shall be prepared in accordance with Section 40-115 and with applicable standards of Part 323 entitled "Shorelands Protection and Management" and Part 353 entitled "Sand Dunes Protection and Management" of Natural Resources Environmental Protection Act, Act No. 451, of the Public Acts of Michigan of 1994, as amended.

A site plan is included with this submittal.

M. The proposed use, expansion or improvement will not unacceptably impact the Sensitive Area or surrounding property or uses. In determining such issues, staff (if subject to staff review) or the planning commission (if subject to planning commission review) shall, at a minimum and not by limitation, consider at least the following factors:

1. Traffic generation and traffic flows, including any hazardous conditions

   A Traffic Impact Analysis is included with this submittal. The applicant proposes and depicts on the site plan the recommendation noted in the report.

2. Noise generation;

   No significant noise generating use is proposed

3. The effects of vehicles and paved driveways on the premises including, without limitation, run-off, snow removal, noise, etc. resulting from the presence and use of vehicles and paved driveways as they relate to the Sensitive Area and the vegetation or animal life thereon

   Stormwater management infrastructure is proposed to provide flood control, channel protection, and water quality in accordance with the standards of the Lower Grand River Organization of Watersheds. Large areas of open space are proposed and will be protected in perpetuity by the provisions of a recorded Master Deed.

4. Lot coverage

   The proposed lot coverage and open space meet the requirements of the ordinance. With the compact design of the project, significant woodlands are preserved and ample open provided.

5. Impacts upon wildlife and native plant species habitat

   Large areas of existing vegetation will be preserved in perpetuity, helping provide and protect areas of native habitat.

6. Landscaping

   See attached landscape plan and notes

7. Compatibility with other uses and zoning in the vicinity

   The proposed residential use is compatible with neighboring properties; and the Master Plan envisioned the proposed uses in the proposed community.

8. Compatibility with neighboring properties;

   The proposed plan helps achieve the goals of the Master Plan as expressed by the Grand Haven community, and meeting the objectives of the Master Plan helps ensure the compatibility with neighboring parcels.

9. The use of any herbicides, insecticides, other pesticides or hazardous substances on the site, including, without limitation, the effects of any run-off;

   The use of hazardous substances on the site is not proposed. Stormwater will be managed by new proposed infrastructure as noted above. The existing industrial building and grounds on the property will be cleaned up via the approved Brownfield Work Plan.

10. Native vegetation removal

    Vegetation removal will be limited to only areas of required site grading.

11. Any mitigation of any effects upon the sensitive area

    The limited impact proposed is offset by the maintenance and preservation of large natural areas in perpetuity, the clean-up of a problematic industrial site, and the opportunity for City residents to access and enjoy the natural areas for passive recreation.

12. Long-term shoreline erosion estimates

    Not applicable

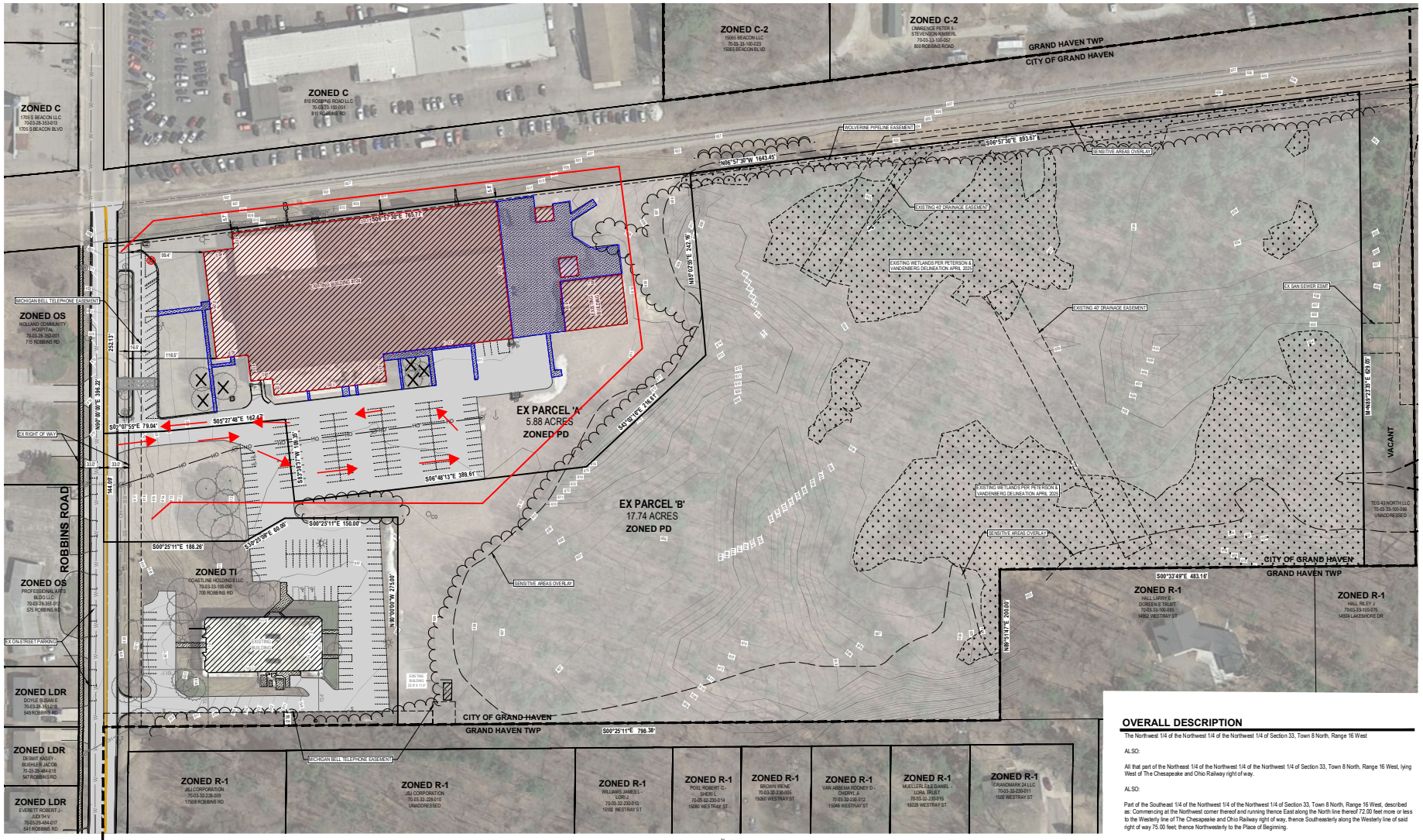
13. Other factors deemed by the planning commission to be important in the protection of the Sensitive Area.

N. For the purposes of this district, uses of land not specifically allowed in section 40-422.03 shall be prohibited in the SA Overlay district.

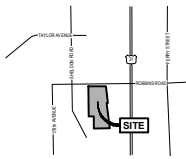
   No such use is proposed

SUMMARY

The South Village Final PD plan will help the City realize the goals and objectives the community has articulated it its Master Plan, providing needed housing stock and an excellent transition from commercial areas to the lower density residential uses in the area. South Village provides an attractive, connected, high-quality housing opportunity for many types of home buyers, replacing a defunct industrial site with a vibrant new neighborhood in the City of Grand Haven.



REMOVALS PLAN & SESC



LOCATION MAP
NOT TO SCALE

- Concrete to be removed
- Trucking traffic
- Building to be demolished
- Silt fence
- Inlet protection where needed
- Trees to be removed

LEGEND

- Catch Basin - Square
- Deciduous Tree
- Evergreen Tree
- Fire Department Connection
- Guy Anchor
- Hydrant
- Light Pole
- Manhole
- Post
- Utility Pole
- Sign
- Stop Sign
- Sanitary Manhole
- Fence
- Overhead Utility
- Sanitary
- Watermain
- Tree Line
- Asphalt
- Existing Building
- Concrete

BENCHMARKS

BENCHMARK #224 ELEV. = 620.02 (NAVD88)
Top of flange bolt under "E" on hydrant, located 28'± North of the Centerline of Robbins Road and 516'± West of the centerline of the railroad tracks

BENCHMARK #226 ELEV. = 611.86 (NAVD88)
Railroad tie on south side of power pole located 170'± South of the centerline of Robbins Road and 122'± West of the northeasterly corner of existing building #724

PARCEL 'B' DESCRIPTION

Parcel "B"
Part of the Northwest 1/4 of Section 33, Town 8 North, Range 16 West, City of Grand Haven, Ottawa County, Michigan, described as: Commencing at the Northwest corner of said Section; thence S90°00'00"E 245.00 feet along the North line of said Section to the Point of Beginning; thence continuing S90°00'00"E 144.09 feet along said North line; thence S02°07'55"E 79.04 feet; thence S05°27'48"E 162.47 feet; thence S83°38'37"W 109.35 feet; thence S06°48'13"E 389.61 feet; thence S43°02'16"E 216.81 feet; thence N85°02'55"E 242.16 feet; thence S06°57'30"E 893.67 feet along the West line of the Chesapeake and Ohio Railway Right of Way; thence S89°23'35"W 629.05 feet; thence N00°33'49"W 483.16 feet; thence S89°5'147"W 200.00 feet; thence N00°25'11"W 798.38 feet along the West line of said Section; thence N90°00'00"E 275.00 feet; thence N00°25'11"W 150.00 feet; thence N00°25'08"W 60.00 feet; thence N00°25'11"W 188.26 feet to the Point of Beginning. Contains 17.74 acres. Subject to easements, restrictions and rights-of-way of record. Also subject to highway right-of-way for Robbins Road over the most Northerly 33.00 feet thereof.

OVERALL DESCRIPTION

The Northwest 1/4 of the Northwest 1/4 of the Northwest 1/4 of Section 33, Town 8 North, Range 16 West

ALSO:

All that part of the Northeast 1/4 of the Northwest 1/4 of the Northwest 1/4 of Section 33, Town 8 North, Range 16 West, lying West of The Chesapeake and Ohio Railway right of way.

ALSO:

Part of the Southeast 1/4 of the Northwest 1/4 of the Northwest 1/4 of Section 33, Town 8 North, Range 16 West, described as: Commencing at the Northwest corner thereof and running thence East along the North line thereof 72.00 feet more or less to the Westerly line of The Chesapeake and Ohio Railway right of way, thence Southeasterly along the Westerly line of said right of way 75.00 feet; thence Northwesterly to the Place of Beginning.

ALSO:

That part of the West 1/2 of the Northwest 1/4 of Section 33, Town 8 North, Range 16 West, described Commencing at the Northwest corner of the South 1/2 of the Northwest 1/4 of the Northwest 1/4 of said Section 33 and running thence South along the West line of said Section 33 a distance of 527.25 feet; thence East 200.00 feet; thence South to a point 900.00 feet North of the East and West 1/4 line and 200.00 feet East of the West line of said Section 33; thence East to The Chesapeake and Ohio Railway Company right of way; thence Northerly along the Westerly line of said right of way to the North line of the South 1/2 of the Northwest 1/4 of the Northwest 1/4 of said Section 33; thence West along the North line of the South 1/2 of the Northwest 1/4 of the Northwest 1/4 of said Section 33 to the Place of Beginning. EXCEPT, part of the Southeast 1/4 of the Northwest 1/4 of the Northwest 1/4 of Section 33, Town 8 North, Range 16 West, described as: Commencing at the Northwest corner thereof and running thence East along the North line thereof 72.00 feet more or less to the Westerly line of The Chesapeake and Ohio Railway right of way, thence Southeasterly along the Westerly line of said right of way 75.00 feet thence Northwesterly to the Place of Beginning.

ALSO EXCEPT,

part of the Northwest 1/4 of Section 33, Town 8 North, Range 16 West, Grand Haven City, Ottawa County, Michigan, described as: Commencing at the West 1/4 corner of said Section; thence North 01 degree 00 minutes 48 seconds East 900.00 feet along the West line of said Section; thence South 89 degrees 10 minutes 26 seconds East 200.00 feet along the North line of the South 900.00 feet of the Northwest 1/4 of said Section to the Point of Beginning; thence South 89 degrees 10 minutes 26 seconds East 638.16 feet along said North line; thence North 05 degrees 30 minutes 59 seconds West 69.10 feet along the Westerly right of way line of the C&O Railroad; thence North 89 degrees 10 minutes 26 seconds West 630.30 feet; thence South 01 degree 00 minutes 48 seconds West 68.68 feet to the Point of Beginning.

NEDERVELD
www.nederveld.com
800.222.1868
HOLLAND
730 Chicago Dr.
Holland, MI 49423
Phone: 616.393.0449
GRAND RAPIDS
217 Grandville Ave., Suite 302
Grand Rapids, MI 49503
Phone: 616.575.5190
ANN ARBOR
3037 Miller Rd.
Ann Arbor, MI 48103
Phone: 734.929.6963

PREPARED FOR:
Paramount Realty Partners
Chad Koster

940 Floral Avenue SE
Grand Rapids, MI 49506

REVISIONS:

Title: Preliminary PD Submittal		
Drawn: JM	Checked: ED	Date: 2.17.26
Title: Preliminary PD Resubmittal		
Drawn: JM	Checked: ED	Date: 2.18.26
Title: Preliminary PD Resubmittal		
Drawn: JM	Checked: ED	Date: 3.4.26
Title: Final PD Submittal		
Drawn: JM	Checked: ED	Date: 5.6.26

SOUTH VILLAGE

Existing Site Conditions Plan

724 Robbins Road
PART OF THE NORTHWEST 1/4 OF SECTION 33, T8N, R16W, CITY OF GRAND HAVEN, OTTAWA COUNTY, MICHIGAN

STAMP:

PROJECT NO:
24201135

SHEET NO:
C-201

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LEGEND

1. SITE ENTRANCE
2. NEIGHBORHOOD IDENTIFICATION SIGN
3. RIGHT OF WAY
4. BUILDING SETBACK
5. PICKLEBALL COURTS
6. PAVILION & BATHROOMS / SOCIAL COMMONS
7. STORMWATER MANAGEMENT
8. TRASH & RECYCLING
9. CONCEPT LANDSCAPE
   (SEE INTEGRATED ARCHITECTURE LANDSCAPE PLANS FOR DETAILED PLANTING DESIGN)
10. EXISTING WOODLANDS TO REMAIN

NOTES

Site Location:		724 Robbins Road Grand Haven, MI 49417
PD Parcel Acreage	=	23.3 ac. (excluding R.O.W.)
Existing Zoning	=	PD Planned Development
PD Zoning Requirements		
Minimum Lot Area	=	1,000 sq.ft. per unit (Multi-Family)
Minimum Lot Width	=	N/A
Maximum Building Height	=	52 ft.
Maximum Lot Coverage	=	50%
Setbacks		
Front Yard	=	25 ft.
Side Yard	=	20 ft.
Rear Yard	=	25 ft.
Building Separation	=	14 ft.(measured to foundation)
Unit Summary		
'A' Rowhouses	=	16 units
'C' Townhomes	=	18 units
'D' Townhomes	=	38 units
'E' Townhomes	=	33 units
'F' Townhomes	=	13 units
Unit Total	=	118 units
Total Parking Spaces Required (Based on City Requirements of 2/Unit)	=	236 spaces
Total Proposed Parking Spaces	=	300 spaces (2.5/unit)
On-Street /Surface Spaces	=	93 spaces
Garage Spaces*	=	207 spaces*

**Does not include driveway parking spaces in count.*

May 05, 2026 North 0' 30' 60' 120' scale: 1"=60'

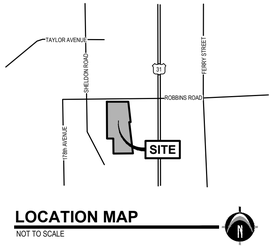
SOUTH VILLAGE

ILLUSTRATIVE SITE PLAN

Project number: 24201135

NEDERVELD





LOCATION MAP

NOT TO SCALE

LEGEND

- Catch Basin - Square
- Deciduous Tree
- Evergreen Tree
- Fire Department Connection
- Guy Anchor
- Hydrant
- Light Pole
- Manhole
- Post
- Utility Pole
- Sign
- Stop Sign
- Sanitary Manhole
- Fence
- Overhead Utility
- Sanitary
- Watermain
- Tree Line
- Asphalt
- Existing Building
- Concrete

0' 30' 60' 120'

SCALE: 1" = 60'

BENCHMARKS

BENCHMARK #224 ELEV. = 620.02 (NAVD88)
Top of flange bolt under "E" on hydrant, located 28'± North of the Centerline of Robbins Road and 516'± West of the centerline of the railroad tracks

BENCHMARK #226 ELEV. = 611.86 (NAVD88)
Railroad tie on south side of power pole located 170'± South of the centerline of Robbins Road and 122'± West of the northeasterly corner of existing building #724

PARCEL 'B' DESCRIPTION

Parcel "B"
Part of the Northwest 1/4 of Section 33, Town 8 North, Range 16 West, City of Grand Haven, Ottawa County, Michigan, described as: Commencing at the Northwest corner of said Section; thence S90°00'00"E 245.00 feet along the North line of said Section to the Point of Beginning; thence continuing S90°00'00"E 144.09 feet along said North line; thence S02°07'55"E 79.04 feet; thence S05°27'48"E 162.47 feet; thence S83°38'37"W 109.35 feet; thence S06°48'13"E 389.61 feet; thence S43°02'16"E 216.81 feet; thence N85°02'55"E 242.16 feet; thence S06°57'30"E 893.67 feet along the West line of the Chesapeake and Ohio Railway Right of Way; thence S89°23'35"W 629.05 feet; thence N00°33'49"W 483.16 feet; thence S89°51'47"W 200.00 feet; thence N00°25'11"W 798.38 feet along the West line of said Section; thence N90°00'00"E 275.00 feet; thence N00°25'11"W 150.00 feet; thence N30°25'08"W 60.00 feet; thence N00°25'11"W 188.26 feet to the Point of Beginning. Contains 17.74 acres. Subject to easements, restrictions and rights-of-way of record. Also subject to highway right-of-way for Robbins Road over the most Northerly 33.00 feet thereof.

OVERALL DESCRIPTION

The Northwest 1/4 of the Northwest 1/4 of the Northwest 1/4 of Section 33, Town 8 North, Range 16 West

ALSO:

All that part of the Northeast 1/4 of the Northwest 1/4 of the Northwest 1/4 of Section 33, Town 8 North, Range 16 West, lying West of The Chesapeake and Ohio Railway right of way.

ALSO:

Part of the Southeast 1/4 of the Northwest 1/4 of the Northwest 1/4 of Section 33, Town 8 North, Range 16 West, described as: Commencing at the Northwest corner thereof and running thence East along the North line thereof 72.00 feet more or less to the Westerly line of The Chesapeake and Ohio Railway right of way, thence Southeasterly along the Westerly line of said right of way 75.00 feet; thence Northwesterly to the Place of Beginning.

ALSO:

That part of the West 1/2 of the Northwest 1/4 of Section 33, Town 8 North, Range 16 West, described Commencing at the Northwest corner of the South 1/2 of the Northwest 1/4 of the Northwest 1/4 of said Section 33 and running thence South along the West line of said Section 33 a distance of 527.25 feet; thence East 200.00 feet; thence South to a point 900.00 feet North of the East and West 1/4 line and 200.00 feet East of the West line of said Section 33; thence East to The Chesapeake and Ohio Railway Company right of way; thence Northerly along the Westerly line of said right of way to the North line of the South 1/2 of the Northwest 1/4 of the Northwest 1/4 of said Section 33; thence West along the North line of the South 1/2 of the Northwest 1/4 of the Northwest 1/4 of said Section 33 to the Place of Beginning. EXCEPT, part of the Southeast 1/4 of the Northwest 1/4 of the Northwest 1/4 of Section 33, Town 8 North, Range 16 West, described as: Commencing at the Northwest corner thereof and running thence East along the North line thereof 72.00 feet more or less to the Westerly line of The Chesapeake and Ohio Railway right of way, thence Southeasterly along the Westerly line of said right of way 75.00 feet thence Northwesterly to the Place of Beginning.

ALSO EXCEPT,

part of the Northwest 1/4 of Section 33, Town 8 North, Range 16 West, Grand Haven City, Ottawa County, Michigan, described as: Commencing at the West 1/4 corner of said Section; thence North 01 degree 00 minutes 48 seconds East 900.00 feet along the West line of said Section; thence South 89 degrees 10 minutes 26 seconds East 200.00 feet along the North line of the South 900.00 feet of the Northwest 1/4 of said Section to the Point of Beginning; thence South 89 degrees 10 minutes 26 seconds East 638.16 feet along said North line; thence North 05 degrees 30 minutes 59 seconds West 69.10 feet along the Westerly right of way line of the C&O Railroad; thence North 89 degrees 10 minutes 26 seconds West 630.30 feet; thence South 01 degree 00 minutes 48 seconds West 68.68 feet to the Point of Beginning.

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800.222.1868
HOLLAND
730 Chicago Dr.
Holland, MI 49423
Phone: 616.393.0449
GRAND RAPIDS
217 Grandville Ave., Suite 302
Grand Rapids, MI 49503
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PREPARED FOR:
Paramount Realty Partners
Chad Koster

940 Floral Avenue SE
Grand Rapids, MI 49506

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SOUTH VILLAGE

Existing Site Conditions Plan

724 Robbins Road

PART OF THE NORTHWEST 1/4 OF SECTION 33, T8N, R16W, CITY OF GRAND HAVEN, OTTAWA COUNTY, MICHIGAN

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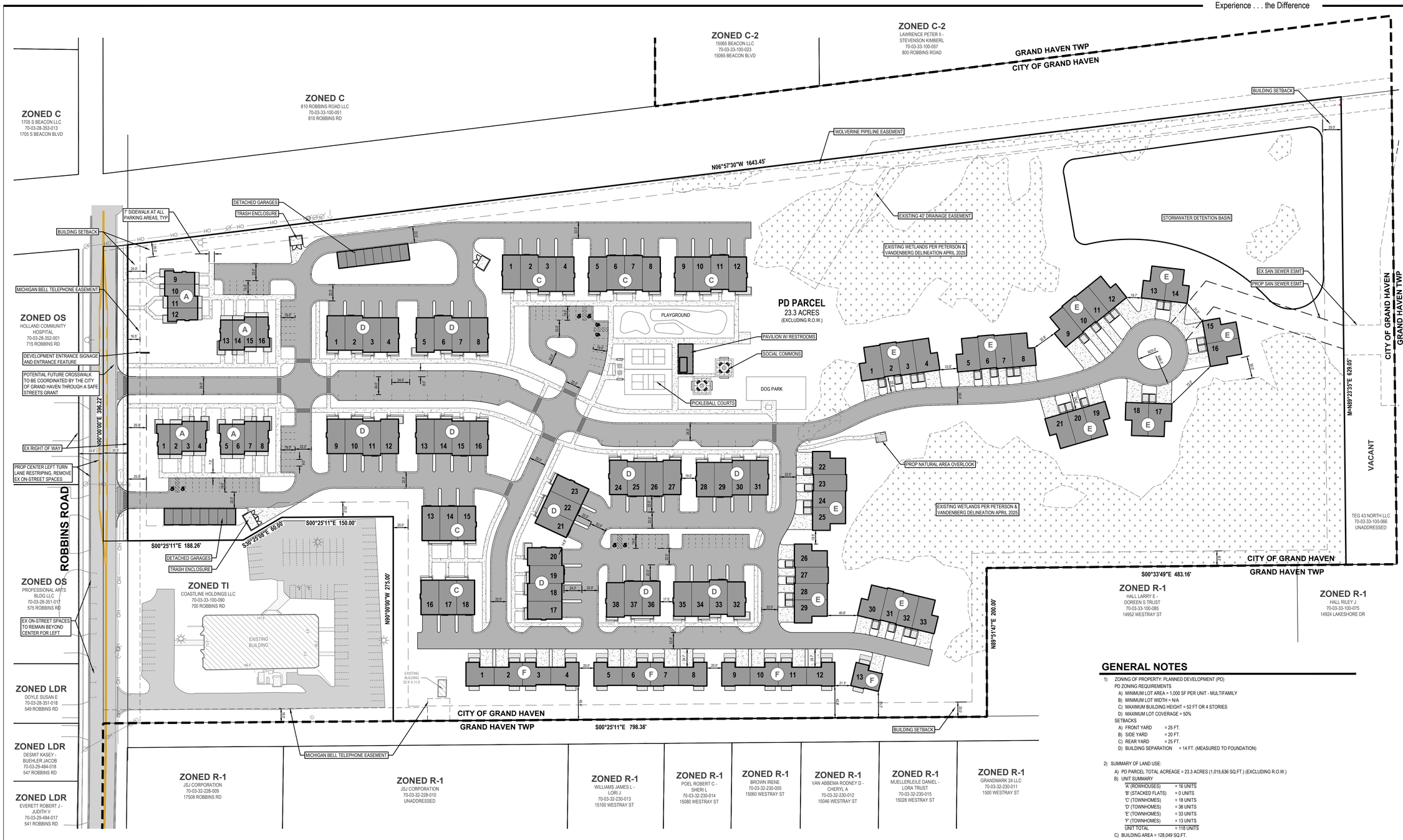
STATE OF MICHIGAN
JOSHUA H. MOLNAR
LANDSCAPE ARCHITECT
No. 3901001745
PROFESSIONAL LANDSCAPE ARCHITECT

PROJECT NO:
24201135

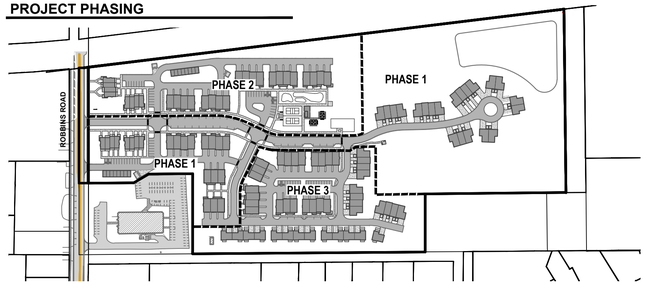
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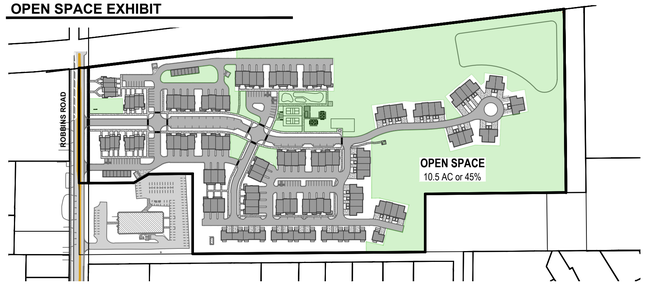
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PROJECT PHASING



OPEN SPACE EXHIBIT





SCALE: 1" = 60'

LEGEND

- EXISTING BITUMINOUS
- EXISTING CONCRETE
- PROPOSED BITUMINOUS (STANDARD DUTY)
- PROPOSED CONCRETE (STANDARD DUTY)

GENERAL NOTES

1) ZONING OF PROPERTY: PLANNED DEVELOPMENT (PD)
   PD ZONING REQUIREMENTS
   A) MINIMUM LOT AREA = 1,000 SF PER UNIT - MULTIFAMILY
   B) MINIMUM LOT WIDTH = N/A
   C) MAXIMUM BUILDING HEIGHT = 52 FT OR 4 STORIES
   D) MAXIMUM LOT COVERAGE = 50%
   SETBACKS
   A) FRONT YARD = 25 FT.
   B) SIDE YARD = 20 FT.
   C) REAR YARD = 25 FT.
   D) BUILDING SEPARATION = 14 FT. (MEASURED TO FOUNDATION)

2) SUMMARY OF LAND USE:
   A) PD PARCEL TOTAL ACREAGE = 23.3 ACRES (1,015,636 SQ.FT.) (EXCLUDING R.O.W.)
   B) UNIT SUMMARY

'A' (ROWHOUSES)	= 16 UNITS
'B' (STACKED FLATS)	= 0 UNITS
'C' (TOWNHOMES)	= 16 UNITS
'D' (TOWNHOMES)	= 38 UNITS
'E' (TOWNHOMES)	= 33 UNITS
'F' (TOWNHOMES)	= 13 UNITS
UNIT TOTAL	= 116 UNITS

   C) BUILDING AREA = 128,049 SQ.FT.
   D) LOT COVERAGE = 13%
   E) GROSS PAVEMENT AREA = APPROX. 161,985 SQ.FT.
   F) GROSS CONCRETE AREA = APPROX. 67,600 SQ.FT.
3) PARKING REQUIREMENTS:
   A) MINIMUM REQUIRED SPACE PER TOWNSHIP = 9'x19' (22' AISLE)
   B) TYPICAL PARKING SPACE PROVIDED = 9'x19' (22' AISLE)
   C) TYPICAL VAN ACCESSIBLE PARKING SPACE = 11'x19' WITH 5' AISLE
   D) TYPICAL CAR ACCESSIBLE PARKING SPACE = 8'x19' WITH 5' AISLE
   E) NUMBER OF SPACES REQUIRED = 236 (BASED ON CITY REQUIREMENTS OF 2/UNIT)
   F) NUMBER OF SPACES PROVIDED TOTAL = 300 SPACES (2.5 / UNIT)
   - ON-STREET / SURFACE SPACES = 93 SPACES (INCLUDING 6 ADA SPACES)
   - GARAGE SPACES = 207 SPACES *
   *DOES NOT INCLUDE DRIVEWAY PARKING SPACES IN COUNT.
4) THIS PROJECT IS NOT LOCATED IN THE 100 YEAR FLOOD PLAIN, BASED ON THE NATIONAL FLOOD INSURANCE PROGRAM RATE MAPS.
5) BEST MANAGEMENT PRACTICES WILL BE UTILIZED DURING AND AFTER CONSTRUCTION OF THE PROJECT. MEASURES WILL INCLUDE THE USE OF SEEDING AND MULCHING, SEDIMENT INLET FILTERS, COMPACTION AND PAVING. THE OWNER OF THE SUBJECT PARCEL SHALL HAVE THE RESPONSIBILITY TO MAINTAIN THE PERMANENT SOIL EROSION PROTECTION MEASURES.
6) ALL LIGHTING SHALL BE SHIELDED FROM ALL ADJACENT PROPERTIES. PROPOSED LIGHTING SHALL CONSIST OF WALL-MOUNTED LIGHTS AND LIGHT POLES, BOTH FITTED WITH DOWN CAST TYPE FIXTURES TO BE SPECIFIED BY LIGHTING CONSULTANT.

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800.222.1868
HOLLAND
730 Chicago Dr.
Holland, MI 49423
Phone: 616.393.0449
GRAND RAPIDS
217 Grandville Ave., Suite 302
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SOUTH VILLAGE

Site Layout Plan

724 Robbins Road

PART OF THE NORTHWEST 1/4 OF SECTION 33, T8N, R16W, CITY OF GRAND HAVEN, OTTAWA COUNTY, MICHIGAN

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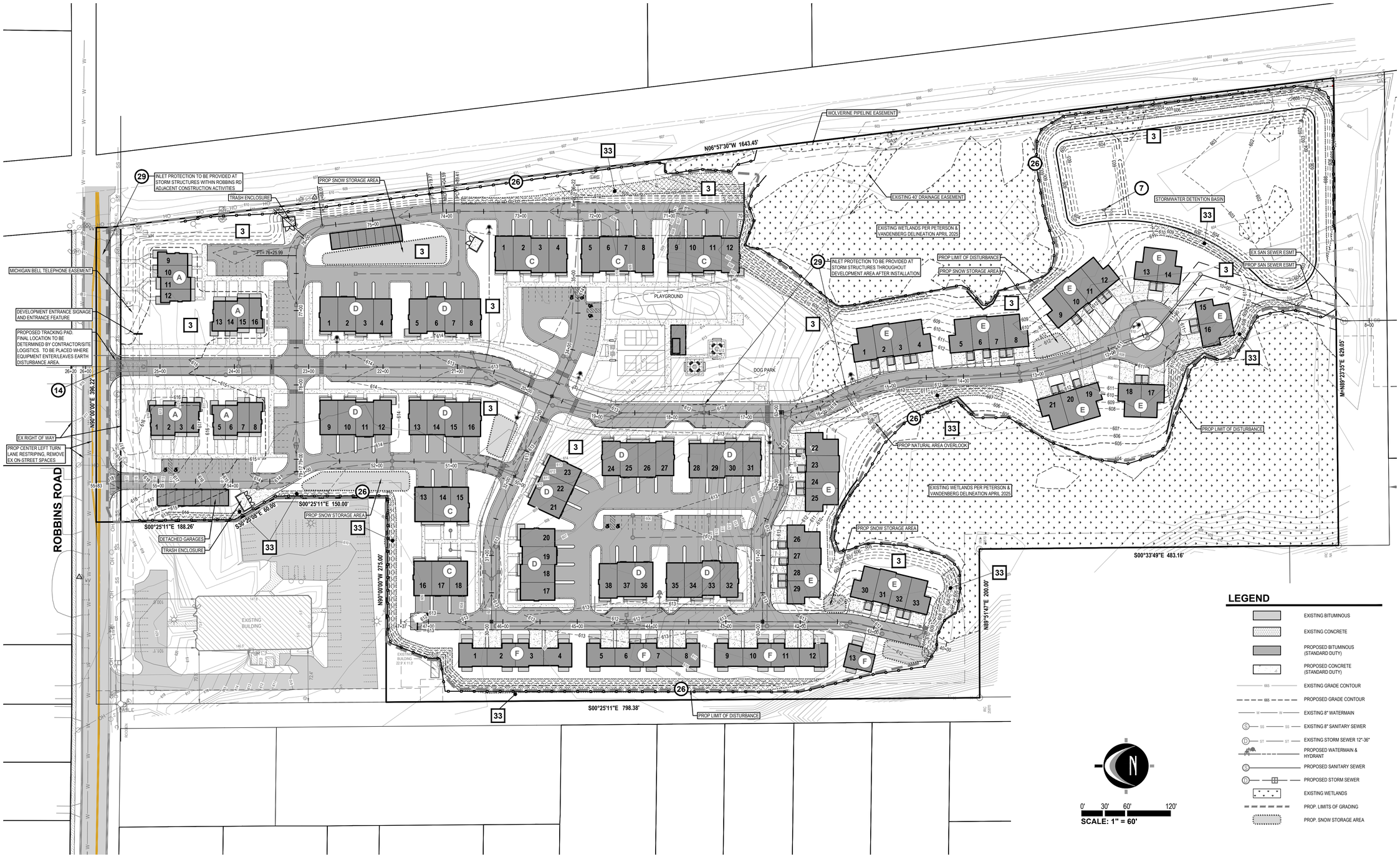
STATE OF MICHIGAN
JOSHUA H. MOLNAR
LANDSCAPE ARCHITECT
No. 3901001745
PROFESSIONAL LANDSCAPE ARCHITECT

PROJECT NO:
24201135

SHEET NO:
C-205

24201135-PREL1.dwg JM 5/28/2026 15:53

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LEGEND

- EXISTING BITUMINOUS
- EXISTING CONCRETE
- PROPOSED BITUMINOUS (STANDARD DUTY)
- PROPOSED CONCRETE (STANDARD DUTY)
- 665 EXISTING GRADE CONTOUR
- 665 PROPOSED GRADE CONTOUR
- EXISTING 8" WATERMAIN
- EXISTING 8" SANITARY SEWER
- EXISTING STORM SEWER 12"-36"
- PROPOSED WATERMAIN & HYDRANT
- PROPOSED SANITARY SEWER
- PROPOSED STORM SEWER
- EXISTING WETLANDS
- PROP. LIMITS OF GRADING
- PROP. SNOW STORAGE AREA

0' 30' 60' 120'

SCALE: 1" = 60'

SITE DISTURBANCE

18.0 ACRES OF SITE DISTURBANCE

SOIL MATTING LEGEND

= PLACE: 3,855 S.Y. (TOTAL) EROSION CONTROL REVEGETATION MAT (NORTH AMERICAN GREEN SC-150 OR APPROVED EQUAL) OVER 4" TOPSOIL ACROSS BOTH SIDES OF BANK, OVERLAP ROLL ENDS MIN. 3", PLACE & STAKE MATTING PER MFG. RECOMMENDATIONS

PH1 SOIL EROSION CONTROL SCHEDULE

	2026 OCT	NOV	DEC	2027 JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
PLACE SILT FENCE												
STRIP & STOCKPILE TOPSOIL												
CONSTRUCT CONNECTION TO STORM SEWER												
ROUGH GRADE SITE												
CONSTRUCT BUILDING FOUNDATION AND BUILDING												
CONSTRUCT IMPROVEMENTS AROUND BUILDING												
CONSTRUCT UTILITY LINES TO BUILDING												
FINISH GRADE SITE												
PAVE SITE												
RESPREAD TOPSOIL/COMPACTION												
SEED DISTURBED AREAS												
SITE RESTORATION/CLEAN UP												

SOIL EROSION AND SEDIMENTATION CONTROL NOTES

1) CONTRACTOR SHALL POSSESS THE SOIL EROSION AND SEDIMENTATION CONTROL PERMIT PRIOR TO START OF ANY EARTH WORK.
2) CONTRACTOR SHALL MODIFY THIS SOIL EROSION AND SEDIMENTATION CONTROL PLAN TO SHOW THE ADDITIONAL CONTROL MEASURES INTENDED TO BE USED DURING CONSTRUCTION. SUBMIT MODIFICATIONS TO THE CONTROLLING AGENCY, THE OWNER, AND THE ENGINEER.
3) EROSION PROTECTION SHALL BE PROVIDED AT ALL STORM SEWER INLETS AND OUTLETS. ALL BARE EARTH SHALL BE STABILIZED WITH SEEDING.
4) REFER TO THE M.D.O.T. "SOIL EROSION AND SEDIMENTATION CONTROL MANUAL" (MARCH 2021) FOR ADDITIONAL INFORMATION
5) THE ENTIRE STORM SEWER SYSTEM SHALL BE CLEANED AND FLUSHED FOLLOWING CONSTRUCTION AND PAID RECEIPT THEREOF PROVIDED TO THE ENGINEER AND COUNTY SESC AGENT PRIOR TO FINAL PAYMENT TO THE CONTRACTOR OR FINAL ACCEPTANCE OF THE CONSTRUCTION BY THE OWNER.
6) THE CONTRACTOR SHALL BE RESPONSIBLE TO INSPECT, TAKE CORRECTIVE ACTION AND MAINTAIN ALL TEMPORARY SESC MEASURES DAILY AND AFTER EACH RAIN EVENT UNIT FINAL COMPLETION AND ACCEPTANCE OF THE PROJECT.

3 PERMANENT/TEMPORARY SEEDING
7 RIPRAP
14 GRAVEL ACCESS APPROACH
26 SILT FENCE
29 INLET PROTECTION FABRIC DROP
33 MULCH BLANKET W/ HIGH VELOCITY REACH NETS

○ = TEMPORARY MEASURE
□ = PERMANENT MEASURE
REFER TO MDOT STANDARD PLAN R-96-D

811 Know what's below. CALL before you dig.

UTILITY LOCATIONS ARE DERIVED FROM ACTUAL MEASUREMENTS OR AVAILABLE RECORDS. THEY SHOULD NOT BE INTERPRETED TO BE EXACT LOCATIONS NOR SHOULD IT BE ASSUMED THAT THEY ARE THE ONLY UTILITIES IN THIS AREA.

NOTE:
EXISTING UTILITIES AND SERVICE LINES IDENTIFIED AS "PLAN" WERE OBTAINED FROM AVAILABLE AS-BUILT RECORD DRAWINGS. THE CONTRACTOR SHALL VERIFY THE LOCATION, DEPTH AND STATUS OF ALL UTILITIES AND SERVICE LINES PRIOR TO NEW CONNECTIONS.

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HOLLAND
739 Chicago Dr.
Holland, MI 49423
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SOUTH VILLAGE

S.E.S.C. & Grading Plan

724 Robbins Road

PART OF THE NORTHWEST 1/4 OF SECTION 33, T8N, R16W, CITY OF GRAND HAVEN, OTTAWA COUNTY, MICHIGAN

STAMP:

STATE OF MICHIGAN
JOSHUA H. MOLNAR
LANDSCAPE ARCHITECT
No. 3901001745
PROFESSIONAL LANDSCAPE ARCHITECT

PROJECT NO:
24201135

SHEET NO:
C-300

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LEGEND

- EXISTING BITUMINOUS
- EXISTING CONCRETE
- PROPOSED BITUMINOUS (STANDARD DUTY)
- PROPOSED CONCRETE (STANDARD DUTY)
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- PROPOSED WATERMAIN & HYDRANT
- PROPOSED SANITARY SEWER
- PROPOSED STORM SEWER
- EXISTING WETLANDS

N

0' 30' 60' 120'

SCALE: 1" = 60'

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SOUTH VILLAGE

Utility Plan

724 Robbins Road
PART OF THE NORTHWEST 1/4 OF SECTION 33, T8N, R16W,
CITY OF GRAND HAVEN, OTTAWA COUNTY, MICHIGAN

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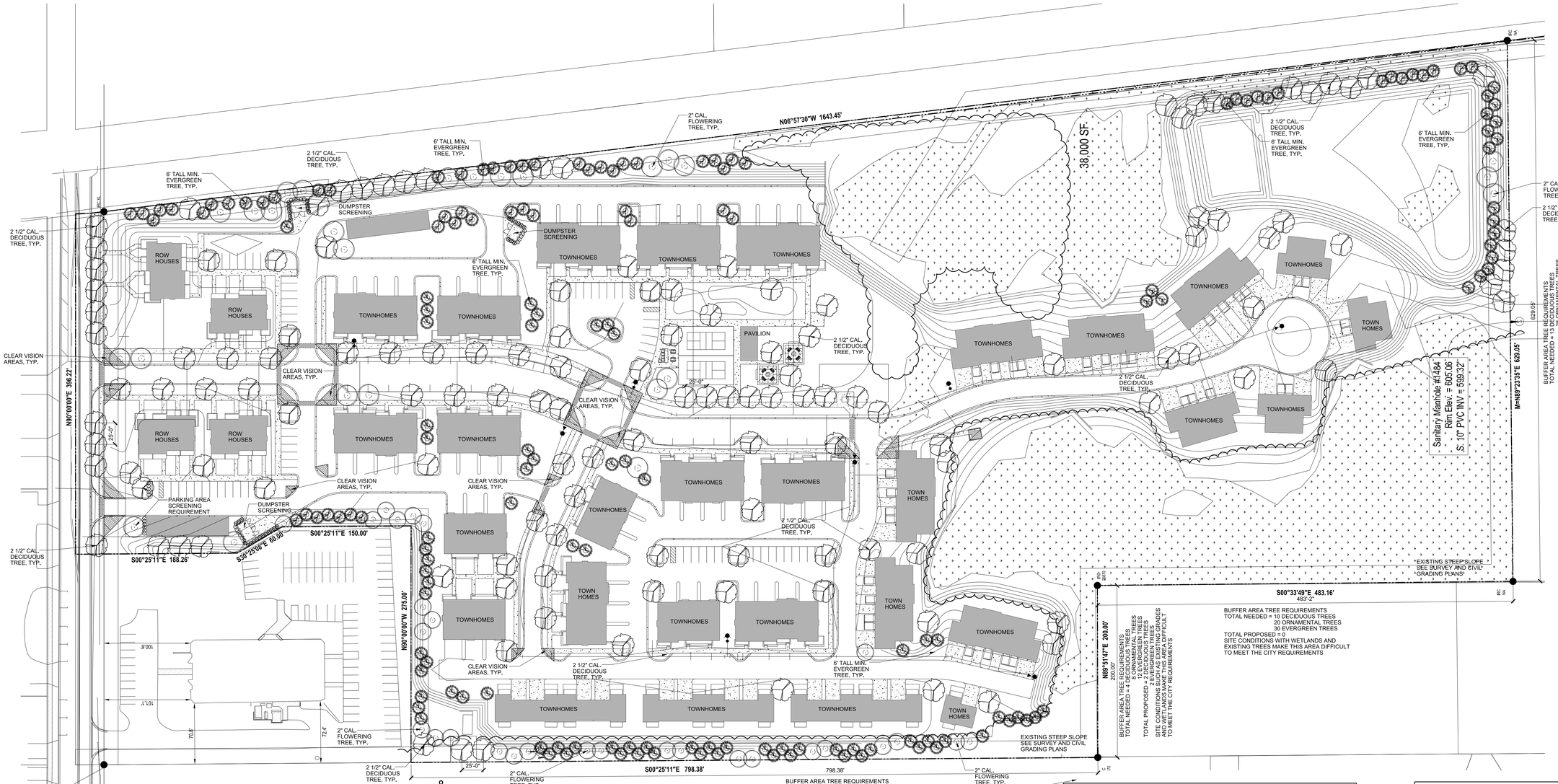
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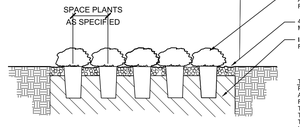
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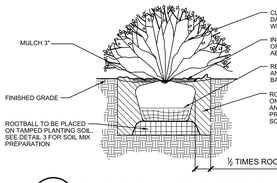
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1 PERENNIAL / ANNUAL PLANTING DETAIL
LP1.1 NOT TO SCALE:

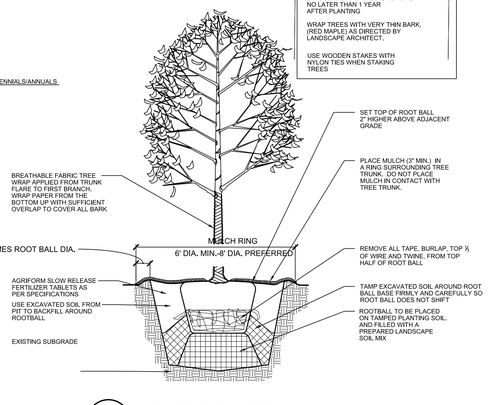


2 SHRUB PLANTING DETAIL
LP1.1 NOT TO SCALE:

NOTE:
INSTALL TREE WRAP AT TIME OF PLANTING, AS DIRECTED BY LANDSCAPE ARCHITECT. REMOVE NO LATER THAN 1 YEAR AFTER PLANTING

WRAP TREES WITH VERY THIN BARK, (RED MAPLE) AS DIRECTED BY LANDSCAPE ARCHITECT.

USE WOODEN STAKES WITH NYLON TIES WHEN STAKING TREES



3 TREE PLANTING DETAIL
LP1.1 NOT TO SCALE:

CONTRACTOR NOTE:

ALL PROPOSED LANDSCAPE AREAS AND BEDS TO BE IRRIGATED.

ALL PLANTING BEDS - ANNUAL, PERENNIAL AND SHRUB BEDS TO RECEIVE 12 INCHES OF HIGH GRADE PLANTING SOIL MIX.

STEEL EDGING TO BE INSTALLED BETWEEN PLANTING BEDS AND LAWN

ALL DECIDUOUS TREES WILL COMPLY WITH THE ZONING REQUIREMENTS AND BE CHOSEN FROM THE CITY OF GRAND HAVEN'S APPROVED STREET TREE SPECIES

ALL DECIDUOUS TREES TO BE 2.5" CAL. MEASURED AT 4 FEET FROM GRADE OF AT TIME OF PLANTING AND SHALL BE SPACED NO MORE THAN 25 FEET APART

ALL ORNAMENTAL TREES TO BE 2.0" CAL. MEASURED AT 4 FEET FROM GRADE OF AT TIME OF PLANTING.

ALL EVERGREEN TREES TO BE 6' IN HEIGHT MINIMUM AT TIME OF PLANTING AND SPACED NO LESS THAN 10 FEET ON CENTER.

ALL DECIDUOUS SHRUBS SHALL BE AT LEAST 30 INCHES IN HEIGHT AND HAVE A 24" SPREAD AT TIME OF PLANTING

ALL EVERGREEN SHRUBS SHALL HAVE A SPREAD OF 30 INCHES AND A HEIGHT OF 24" AT TIME OF PLANTING UNLESS OTHERWISE REQUIRED.

ALL PERENNIALS/ORNAMENTAL GRASS TO BE FROM #1 POT SIZE AT TIME OF PLANTING UNLESS OTHERWISE STATED

ALL LANDSCAPE PLANTINGS SHALL BE SPACED A MINIMUM OF 15 FEET FROM ANY HYDRANT

CITY OF GRAND HAVEN ZONING REQUIREMENTS:

SECTION 40-801 - GENERAL REQUIREMENTS

A. WHERE A PARKWAY EXISTS, STREET TREES SHALL BE PLANTED WITHIN THE PARKWAY ALONG MAJOR STREETS AND ALONG LOCAL AND PRIVATE STREETS IN ALL DEVELOPMENTS REQUIRING SITE PLAN APPROVAL. TREES SHALL BE DECIDUOUS TREES CAPABLE OF ACHIEVING A MATURE CANOPY DIAMETER OF AT LEAST 25 FEET AND SHALL COMPLY WITH THE APPROVED STREET TREE SPECIES AND CALIPER LIST AS WELL AS 25' MAX. SPACING.

SECTION 40-802.01 - BUFFER AREAS IN ALL DISTRICTS EXCEPT THE "B" DISTRICT

A. WHERE A PROPOSED NONRESIDENTIAL USE, MIXED USE DEVELOPMENT, OR MULTI-FAMILY DWELLING WILL ABUT A ONE-FAMILY DWELLING OR TWO-UNIT DWELLING; AND WHERE A PROPOSED NONRESIDENTIAL USE WILL ABUT A MULTIPLE FAMILY DWELLING, A BUFFER ARE IS REQUIRED.
   1. A BUFFER AREA SHALL BE A MIN. OF FIVE (5) FEET IN WIDTH AND SHALL BE PROVIDED ALONG THE COMMON PROPERTY LINE.
   2. A MINIMUM OF ONE (1) DECIDUOUS TREE, TWO (2) FLOWERING ORNAMENTAL TREE, AND THREE (3) EVERGREEN TREES SHALL BE PROVIDED FOR EVERY FIFTY (50) LINEAR FEET.
   3. THE BUFFER AREA SHALL BE DEDICATED SOLELY TO LANDSCAPING AND NO BUILDINGS, PAVEMENT, PARKING, OR OUTSIDE STORAGE IS PERMITTED WITHIN THE AREA.
      1. SEE SHEET LP1.0 FOR REQUIRED AND PROPOSED TREES WITHIN BUFFER AREAS.

SECTION 40-803-01 - PARKING AREAS
A. TREES ARE REQUIRED WITHIN OFF-STREET PARKING AREAS TO PROVIDE SHADE AND RELIEVE ADVERSE VISUAL IMPACT OF LARGE EXPANSES OF PAVEMENT AND PARKED CARS.
   1. A MINIMUM OF ONE (1) TREE IS REQUIRED PER EACH FIFTEEN (15) SPACES, OR A FRACTION THEREOF.
   2. NO PARKING SHALL BE MORE THAN 100 FEET FROM A TREE
   3. A MINIMUM SIZE OF TREE PLANTERS OR ISLANDS WITHIN OFF-STREET PARKING AREAS SHALL BE 36 SQUARE FEET PER TREE.
      a. TOTAL PARKING SPACES = 102
      b. TOTAL TREES REQUIRED = 6.8 OR 7 TREES
      c. TOTAL TREES PROVIDED = 14 TREES

SECTION40-803.02 - REQUIRED PARKING AREA SCREENING

A. A SCREENING AREA NOT LESS THAN FIVE (5) FEET IN WIDTH SHALL BE REQUIRED AROUND THE PERIMETER OF AN OFF-STREET PARKING LOT TO BUFFER OFF-STREET PARKING AREAS AND MANEVVERING LANES FROM FRONT, SIDE AND REAR PROPERTY LINES.
   1. TOTAL TREES AND SHRUBS REQUIRED ALONG NORTHERN BORDER OF PROPERTY - 63' L.F. = 2.52 TREES AND 7.56 SHRUBS
      a. TOTAL PROVIDED = 3 TREES AND11 SHRUBS

EXISTING TREES:

THE AREA BELOW THE DRIP LINE OF AN EXISTING TREE TO BE SAVED SHALL REMAIN UNDISTURBED, NO IMPERVIOUS MATERIAL SHALL BE PLACED UNDER THE DRIP LINE. PROVIDE TREE PROTECTION FENCING AND INSTALL AROUND TREES DESIGNATED TO BE SAVED AND/OR LINE OF DISTURBANCE.

NO VEHICLE OR CONSTRUCTION EQUIPMENT SHALL BE PARKED OR STORED WITHIN THE DRIP LINE OF ANY PLANT MATERIAL DESIGNATED TO BE SAVED.

IN THE EVENT THAT HEALTHY EXISTING TREES DESIGNATED TO BE SAVED ARE DESTROYED, THEY SHALL BE REPLACED WITH TREES WHICH COMPLY WITH THE TOWNSHIP REQUIREMENTS.

LEGEND

DECIDUOUS TREE
EVERGREEN TREES
ORNAMENTAL TREES
EXISTING TREELINE EDGE TO REMAIN
DECIDUOUS SHRUBS - LARGE, MED. SMALL
ORNAMENTAL GRASSES - LARGE AND SMALL
EVERGREEN SHRUBS - LARGE, MED. SMALL

N

SITE LANDSCAPE PLAN
SCALE: 1" = 60'-0"

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Integrated Architecture
840 Ottawa Avenue NW
Grand Rapids, MI 49503
616.574.0220 P
www.intarch.com

South Village
724 Robbins Road
Grand Haven, MI

Staff Review Comment Revisions	19 May 2026
Final PD Submittal	06 May 2026
Design	KAB
PM / PA	MC/AT
Drawn	KAB
IA Project Number	20221116

SITE LANDSCAPE PLAN

LP1-0

EXTERIOR LIGHTING SCHEDULE

TYPE	DESCRIPTION	MAKE: MODEL	VOLTAGE (V)	LIGHT SOURCE	MINIMUM LUMENS	FINISH	MOUNTING	LOAD (W)	NOTES
SA1	POST TOP MOUNTED AREA LIGHT	LUMINIS: CT102-L2L55-40K-MVOLT-PT4-ZT-SP-DGT	120-277V	LED 4000K CCT 70 CRI	5,604	GUN METAL	MOUNTED TO 14 FT STRAIGHT 4" POLE.	65	1,2
SB1	39" BOLLARD	LLUMINIS: LN601B-L1L10-LD3-H39-40K-MVOLT-SP-DGT	120-277V	LED 4000K CCT 70 CRI	1,116	GUN METAL	GRADE	11	1,2
SC1	OUTDOOR WALL MOUNT	LUMINIS: SR136-L1L25-LD3-30K-MVOLT-WM-DGT	120-277V	LED 3000K CCT 70 CRI	2,665	GUN METAL	CENTERED ON WALL ABOVE GARAGE DOORS	18.5	1,2
SC2	OUTDOOR WALL MOUNT	LUMINIS: SN805-L1L5-30K-MVOLT-DGT	120-277V	LED 3000K CCT 70 CRI	553	GUN METAL	WALL SURFACE @ 5'-0"	12.2	1,2

GENERAL NOTES:

A. FIXTURE TAGS WITH "*E" ARE POWERED BY AN EMERGENCY POWER SOURCE AND TYPES WITH "*E" INCLUDE INTERGRAL EMERGENCY BATTERIES.
B. MINIMUM 5-YEAR STANDARD WARRANTY.
C. MAXIMUM 7-STEP MACADAM ELLIPSE/SDCM (DLC PREMIUM OR LUNA QUALIFIED).
D. WET LOCATION LISTED, UNLESS OTHERWISE INDICATED.
E. MINIMUM LED LUMEN MAINTENANCE OF L70 AT 50,000 HOURS PER IES LM-80 AND IES TM-21.
F. MINIMUM 0.9 POWER FACTOR AT FULL LOAD PER ANSI C82.77 (TITLE 24 JA8, DLC QUALIFIED).
G. VERIFY ALL FINISH AND COLOR TEMPERAUTRE (CCT) SELECTIONS WITH ARCHITECT/INTERIORS.
H. INCLUDE ALL NECESSARY HARDWARE AND ACCESSORIES FOR A COMPLETE AND OPERABLE FIXTURE.

NOTES:

1.OR EQUAL BY LITHONIA, LUMINIS, BEGA, HYDREL, LUMINIS, KENALL, LUMENPULSE, MCGRAW-EDISON, LUMARK, INVUE, LIGMAN, LSI, HE WILLIAMS, NLS, PERFORMANCE IN LIGHTING, TARGETTI, EXO, BEACON, KIM, GARDCO, STONCO APPROVED BY ARCHITECT AND ENGINEER
2. ZERO UPLIGHT (U0 RATED) PER IESNA TM-15.

SITE PHOTOMETRIC STATISTICS

AREA	AVG. (fc)	MAX. (fc)	MIN. (fc)	MAX:MIN	AVG:MIN
DRIVE	1.07	10.90	0.00	N/A	N/A
PROPERTY LINE	0.00	0.60	0.00	N/A	N/A
SIDEWALK	0.60	26.70	0.00	N/A	N/A



1 ES201 SITE PHOTOMETRIC PLAN
1" = 70'-0"

3 ES201 BOLLARD LIGHTING BASE
NOT TO SCALE

POLE AND BASE DIMENSIONS				
FIXTURE TYPE	A	B	C	D
SA1	2'-0"	6'-0"	0'-6"	14'-0"

2 ES201 SITE LIGHTING POLE BASE
NOT TO SCALE

LIGHTING GENERAL NOTES:

A. FURNISH AND INSTALL MINIMUM #18 AWG WIRE (VIOLET & PINK) FOR 0-10V DIMMING LIGHT FIXTURES. DO NOT EXCEED THE SINK CAPACITY OF THE DIMMING CONTROLLER. DO NOT EXCEED 0.3V VOLTAGE DROP, UNLESS OTHERWISE RECOMMENDED BY THE MANUFACTURER.

B. CIRCUIT BATTERY POWERED EXIT SIGNS TO THE NEAREST NON-SWITCHED NORMAL UTILITY POWER LIGHTING CIRCUIT. CIRCUIT AC-ONLY EXIT SIGNS TO THE NEAREST NON-SWITCHED EMERGENCY POWER LIGHTING CIRCUIT.

C. CONCEAL LOAD CONTROLLERS AND POWER PACKS ABOVE ACCESSIBLE CEILINGS WHERE POSSIBLE. FURNISH AND INSTALL ACCESS PANELS FOR LOAD CONTROLLERS AND POWER PACKS INSTALLED BEHIND INACCESSIBLE WALLS OR CEILINGS.

D. FURNISH AND INSTALL LIGHTING CONTROLS IN ACCORDANCE WITH ASHRAE 90.1 AND IECC AS AMENDED AND ADOPTED BY THE AHJ.

E. REPLACE BURNT OUT LAMPS, DEFECTIVE BALLASTS, AND BROKEN LENSES FOR EXISTING-TO-REMAIN LIGHT FIXTURES IN PROJECT AREA. FIELD VERIFY CONDITION OF EXISTING LIGHT FIXTURES.

F. INSTALL NON-CLOSET RATED LUMINAIRES IN CLOTHES CLOSETS WITH MINIMUM 12-INCH CLEARANCE FROM CLOTHES STORAGE SPACE AS DEFINED IN NFPA 70.

G. FURNISH AND INSTALL REMOTE TEST SWITCHES FOR EMERGENCY LIGHTING INVERTERS, BATTERIES, AND LOAD CONTROL RELAYS INSTALLED IN INACCESSIBLE LOCATIONS.

H. VERIFICATION AND FUNCTION PERFORMANCE TESTING:
   a. CODE COMPLIANCE: TEST AND VERIFY LIGHTING CONTROLS IN ACCORDANCE WITH ASHRAE 90.1 SECTIONS 4.2.5.1 AND 9.9.1.
   b. CRITERIA: TEST AND VERIFY CONTROL HARDWARE AND SOFTWARE ARE CALIBRATED, ADJUSTED, PROGRAMMED, AND IN PROPER WORKING CONDITION IN ACCORDANCE WITH THE CONSTRUCTION DOCUMENTS AND MANUFACTURERS' INSTRUCTIONS.
   c. PROCEDURES: PERFORM MINIMUM TEST AND VERIFICATION PROCEDURES FOR LIGHTING CONTROLS IN ASHRAE 90.1 SECTION 9.9.1.
   d. V&T PROVIDER: REFER TO ARCHITECTURAL CONSTRUCTION DOCUMENTS.

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616.574.0220 P.
www.intarch.com
E3M SOLUTIONS

PRELIMINARY NOT FOR CONSTRUCTION

SOUTH VILLAGE
GRAND HAVEN, MI

SITE PLAN APPROVAL	6 May 2026
Design	B. THELEN
PM/PA	K. VAN DYKE
Drawn	B. THELEN
IA Project Number	20221116

SITE PHOTOMETRIC PLAN

ES201

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- A ROWHOUSES
- B GARAGES
- C TOWNHOMES
- D TOWNHOMES
- E TOWNHOMES
- F TOWNHOMES
- G PAVILION

PHASE 01	
A3	5,215 GSF
A4	5,215 GSF
B1	2,150 GSF
C1	6,750 GSF
C2	6,750 GSF
D3	9,000 GSF
D4	9,000 GSF
E4	7,880 GSF
E5	7,880 GSF
E6	7,880 GSF
E7	4,160 GSF
E8	4,160 GSF
E9	4,160 GSF
E10	6,020 GSF
TOTAL	92,820 GSF

PHASE 02	
A1	5,215 GSF
A2	5,215 GSF
B2	2,150 GSF
C3	9,000 GSF
C4	9,000 GSF
C5	9,000 GSF
D1	9,000 GSF
D2	9,000 GSF
G	250 GSF
TOTAL	57,830 GSF

PHASE 03	
D5	6,750 GSF
D6	9,000 GSF
D7	9,000 GSF
D8	9,000 GSF
D9	6,750 GSF
D10	9,000 GSF
E1	7,880 GSF
E2	7,880 GSF
E3	7,880 GSF
F1	6,600 GSF
F2	6,600 GSF
F3	6,600 GSF
F4	1,650 GSF
TOTAL	100,710 GSF

INTEGRATED ARCHITECTURE
840 OTTAWA AVE NW
GRAND RAPIDS, MI 49503

724 Robbins Road
Grand Haven, MI 49417

0' 30' 60' 120'

OVERALL SITE PLAN | A1

SITE PLAN REVIEW | 09 JUNE, 2026

APPLICANT: Chad Koster

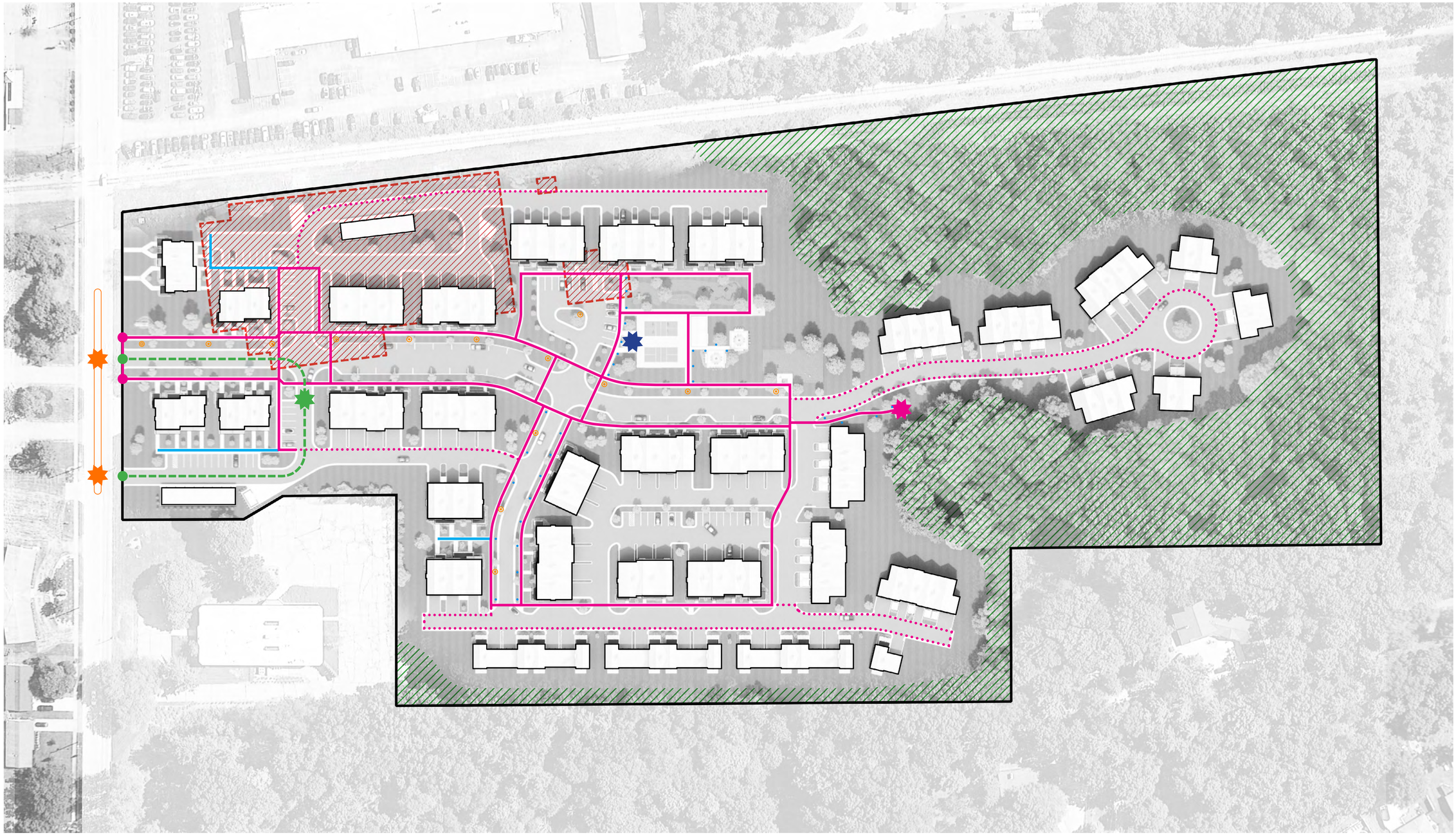
OWNER: Paramount Realty Partners

PREPARED BY: Integrated Architecture

PROJECT NO: 20221106

SOUTH VILLAGE

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INTEGRATED ARCHITECTURE
840 OTTAWA AVE NW
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724 Robbins Road
Grand Haven, MI 49417

A WALKABLE NEIGHBORHOOD

Introduction of a walkable path network including sidewalks and pathways both along Robbins Road, but internal to the neighborhood. Our design introduces over 6,000 linear feet of walkable sidewalk.

- PAVED WALKWAY
- SHARED WALKWAY
- PRIVATE WALKWAY

A CONNECTED COMMUNITY

- SCHOOL BUS LOOP
  The development vehicular circulation has been designed to accommodate bus traffic and there are strategies in place to address pick-up locations.
- SCHOOL BUS PICK-UP
- OVERLOOK DECK
- BIKE RACKS

AN ENVIRONMENTAL ASSET

PRESERVED NATURAL AREA
A significant portion of the site, over 30%, is an existing wooded wetland area. By utilizing the tools that the City has made available (i.e., flexible setbacks, building spacing, site utilization), the development will essentially preserve these existing natural features with minimal impact.

ACTIVATED BROWNFIELD SITE
South Village takes a site that has a vacant, obsolete manufacturing/storage facility requiring environmental remediation and transforms the site into a community-contributing neighborhood.

A HOUSING OPPORTUNITY

The development addresses a renter demand by introducing 118 units including affordable housing (20% of the total units) to the Grand Haven area.

A SAFE NEIGHBORHOOD

LEFT TURN LANE
Informed by a Traffic Impact Study, the parking lane on Robbins Road is restriped in order to introduce a westbound left turn lane into the development, improving traffic flow on Robbins Road.

ILLUMINATED PATHS
A combination of area lights and illuminated bollards distributed throughout the site promotes a safe, well-lit, and walkable environment.

N
0' 30' 60' 120'

PUBLIC BENEFIT OVERVIEW PLAN | A2

SITE PLAN REVIEW | 09 JUNE, 2026

APPLICANT: Chad Koster
OWNER: Paramount Realty Partners
PREPARED BY: Integrated Architecture

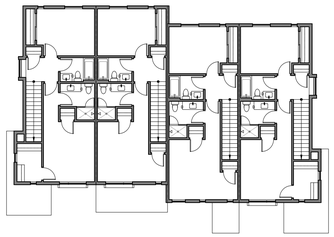
PROJECT NO: 20221106

SOUTH VILLAGE

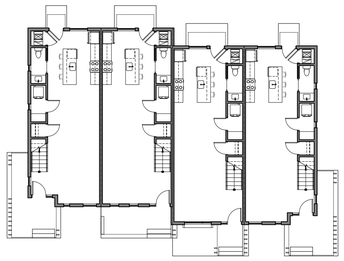
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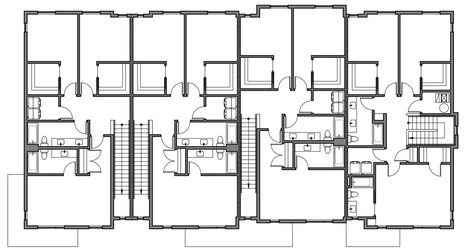


FLR 02

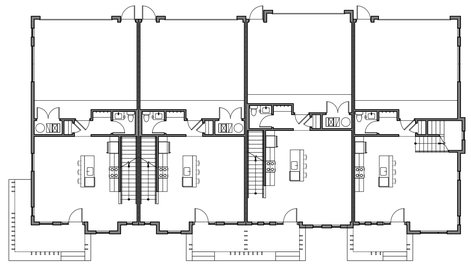


FLR 01

BLDG 'A' *(TYPICAL PLAN BLOCK)*



FLR 02

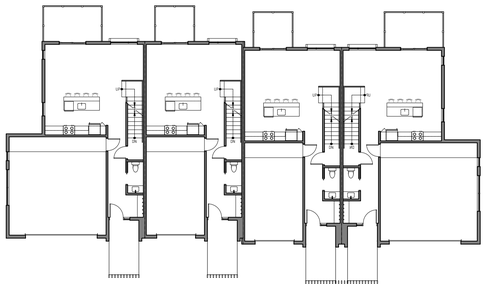


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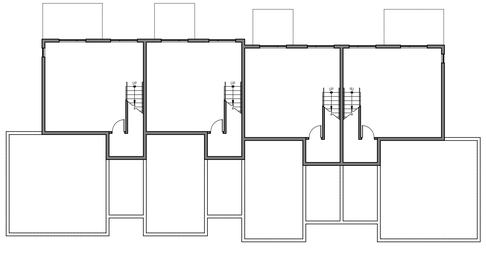
BLDG 'C' *(TYPICAL PLAN BLOCK)*



FLR 02

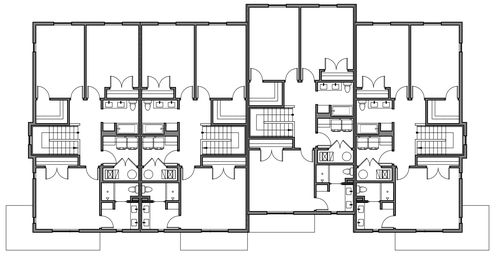


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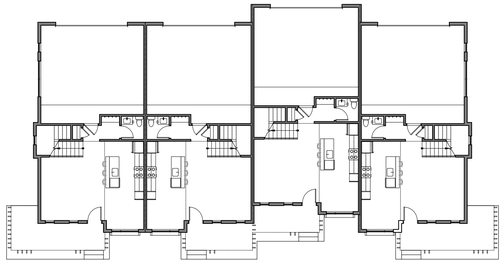


FLR 00

BLDG 'E' *(TYPICAL PLAN BLOCK)*

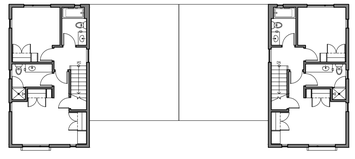


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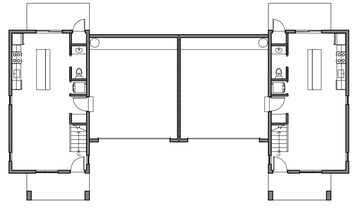


FLR 01

BLDG 'D' *(TYPICAL PLAN BLOCK)*



FLR 02



FLR 01

BLDG 'F' *(TYPICAL PLAN BLOCK)*

0' 8' 16' 32'

CONCEPT UNIT PLANS | **A3**

SITE PLAN REVIEW | 09 JUNE, 2026

APPLICANT: Chad Koster

OWNER: Paramount Realty Partners

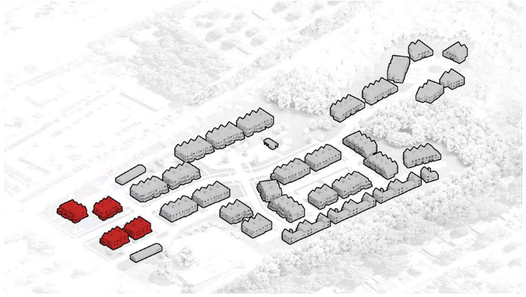
PREPARED BY: Integrated Architecture

PROJECT NO: 20221106

SOUTH VILLAGE

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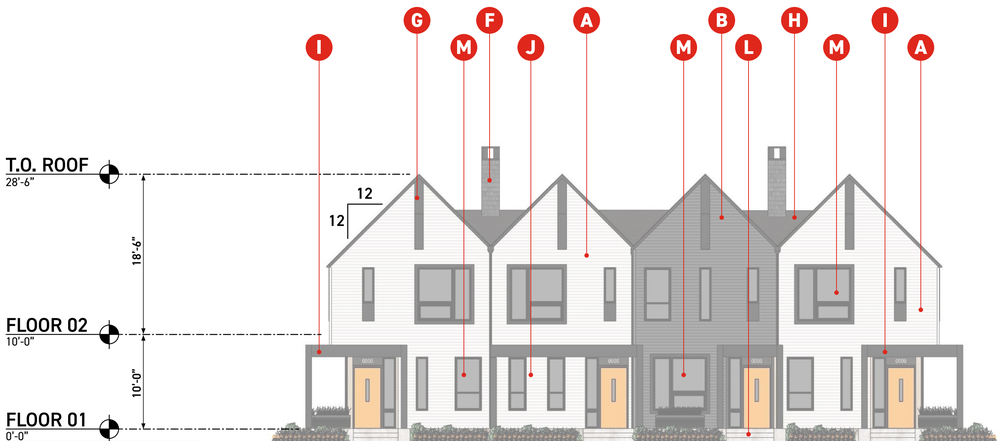
BLDG — **A**

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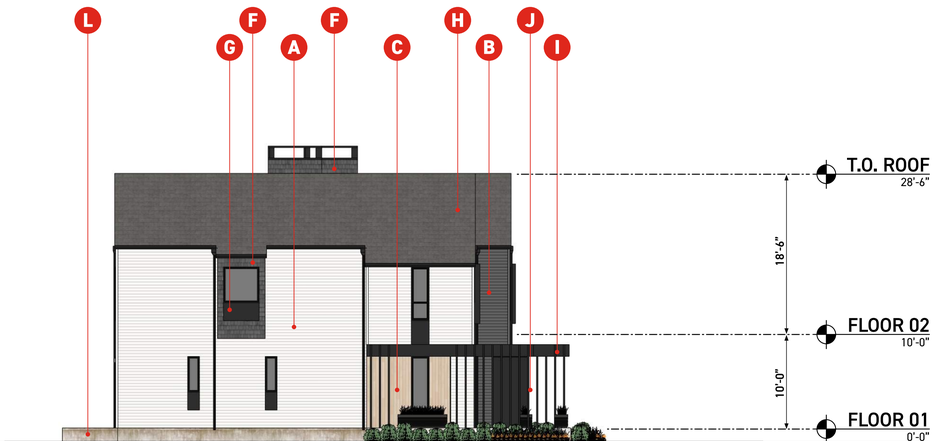
724 Robbins Road
Grand Haven, MI 49417

MATERIAL LEGEND

- **A** HORIZONTAL LAP SIDING — *B.O.D. ROYAL SIDING — LINEN*
- **B** HORIZONTAL LAP SIDING — *B.O.D. ROYAL SIDING — IRONSTONE*
- **C** VERTICAL NICKEL GAP SIDING — *B.O.D. DIAMONDKOTE — GOLDEN TEAK*
- **D** VERTICAL NICKEL GAP SIDING — *B.O.D. DIAMONDKOTE — IRON ASH*
- **E** VERTICAL NICKEL GAP SIDING — *B.O.D. DIAMONDKOTE — EBONY PINE*
- **F** STRAIGHT EDGE SHAKE SIDING — *B.O.D. DIAMONDKOTE — EBONY PINE*
- **G** PRE-FINISHED FIBER CEMENT PANEL — *B.O.D. HARDI — SMOOTH MIDNIGHT BLACK*
- **H** ARCHITECTURAL ASPHALT SHINGLE
- **I** PRE-FINISHED METAL CANOPY
- **J** PRE-FINISHED ALUMINUM SLAT — *B.O.D. LONGBOARD — MOONSTONE*
- **K** PRE-FINISHED METAL RAILING
- **L** CONCRETE STAIR / PATIO
- **M** FIBERGLASS WINDOW
- **N** PRE-FINISHED GARAGE DOOR
- **O** EXTERIOR WALL SCONCE — *B.O.D. LUMINIS SCIROCCO SR136*
- **P** PRE-FINISHED LOUVER



BLDG — **A** | *PROTOTYPE FRONT ELEVATIONS*



BLDG — **A** | *PROTOTYPE SIDE ELEVATIONS*

0' 4' 8' 16'

CONCEPT ELEVATIONS | **A4**

SITE PLAN REVIEW | 09 JUNE, 2026

APPLICANT: Chad Koster

OWNER: Paramount Realty Partners

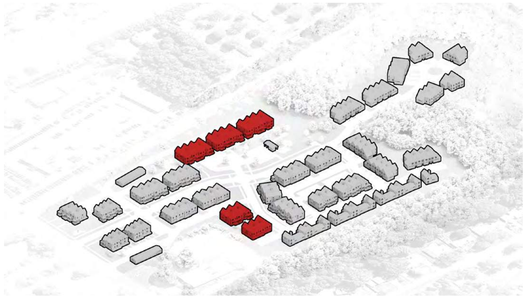
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SOUTH VILLAGE

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BLDG — **C**

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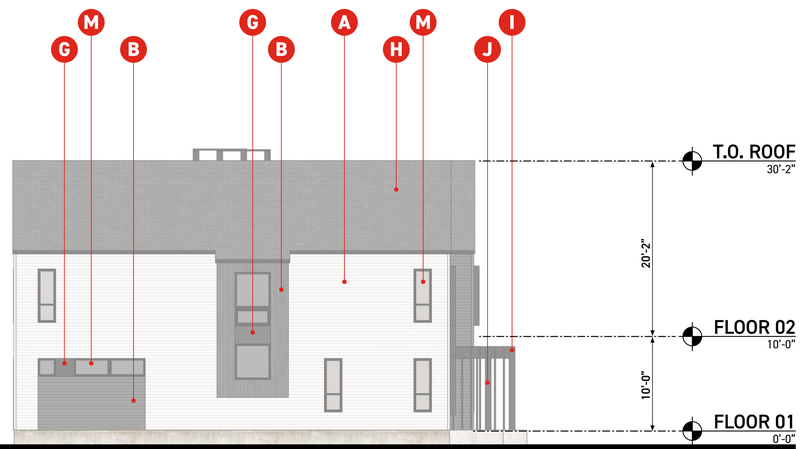
724 Robbins Road
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MATERIAL LEGEND

- **A** HORIZONTAL LAP SIDING — *B.O.D. ROYAL SIDING — LINEN*
- **B** HORIZONTAL LAP SIDING — *B.O.D. ROYAL SIDING — IRONSTONE*
- **C** VERTICAL NICKEL GAP SIDING — *B.O.D. DIAMONDKOTE — GOLDEN TEAK*
- **D** VERTICAL NICKEL GAP SIDING — *B.O.D. DIAMONDKOTE — IRON ASH*
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- **L** CONCRETE STAIR / PATIO
- **M** FIBERGLASS WINDOW
- **N** PRE-FINISHED GARAGE DOOR
- **O** EXTERIOR WALL SCONCE — *B.O.D. LUMINIS SCIROCCO SR136*
- **P** PRE-FINISHED LOUVER



BLDG — C | *PROTOTYPE FRONT ELEVATIONS*



BLDG — C | *PROTOTYPE SIDE ELEVATIONS*

0' 4' 8' 16'

CONCEPT ELEVATIONS | **A5**

SITE PLAN REVIEW | 09 JUNE, 2026

APPLICANT: Chad Koster

OWNER: Paramount Realty Partners

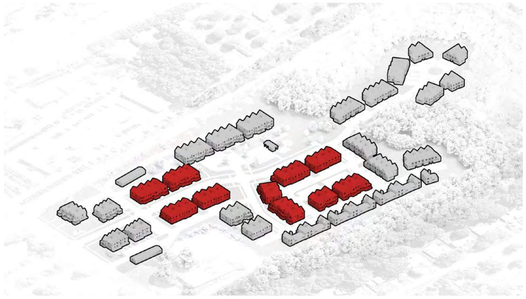
PREPARED BY: Integrated Architecture

PROJECT NO: 20221106

SOUTH VILLAGE

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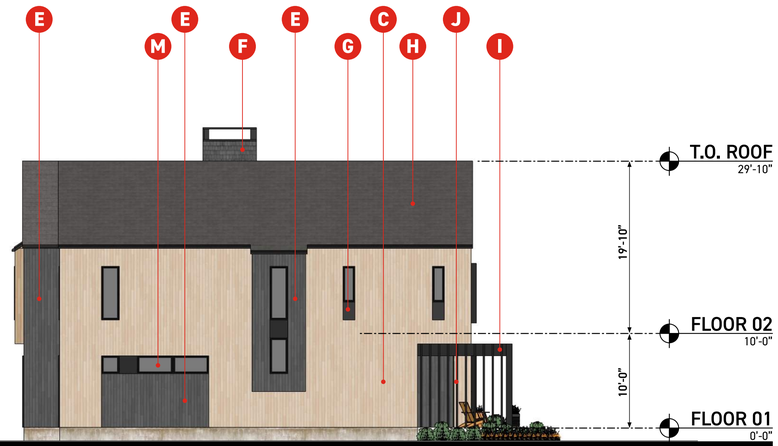
BLDG — **D**

MATERIAL LEGEND

- **A** HORIZONTAL LAP SIDING
  B.O.D. ROYAL SIDING — LINEN
- **B** HORIZONTAL LAP SIDING
  B.O.D. ROYAL SIDING — IRONSTONE
- **C** VERTICAL NICKEL GAP SIDING
  B.O.D. DIAMONDKOTE — GOLDEN TEAK
- **D** VERTICAL NICKEL GAP SIDING
  B.O.D. DIAMONDKOTE — IRON ASH
- **E** VERTICAL NICKEL GAP SIDING
  B.O.D. DIAMONDKOTE — EBONY PINE
- **F** STRAIGHT EDGE SHAKE SIDING
  B.O.D. DIAMONDKOTE — EBONY PINE
- **G** PRE-FINISHED FIBER CEMENT PANEL
  B.O.D. HARDI — SMOOTH MIDNIGHT BLACK
- **H** ARCHITECTURAL ASPHALT SHINGLE
- **I** PRE-FINISHED METAL CANOPY
- **J** PRE-FINISHED ALUMINUM SLAT
  B.O.D. LONGBOARD — MOONSTONE
- **K** PRE-FINISHED METAL RAILING
- **L** CONCRETE STAIR / PATIO
- **M** FIBERGLASS WINDOW
- **N** PRE-FINISHED GARAGE DOOR
- **O** EXTERIOR WALL SCONCE
  B.O.D. LUMINIS SCIROCCO SR136
- **P** PRE-FINISHED LOUVER



BLDG — **D** | *PROTOTYPE FRONT ELEVATIONS*



BLDG — **D** | *PROTOTYPE SIDE ELEVATIONS*

INTEGRATED ARCHITECTURE
840 OTTAWA AVE NW
GRAND RAPIDS, MI 49503

724 Robbins Road
Grand Haven, MI 49417

0' 4' 8' 16'

CONCEPT ELEVATIONS | **A6**

SITE PLAN REVIEW | 09 JUNE, 2026

APPLICANT: Chad Koster

OWNER: Paramount Realty Partners

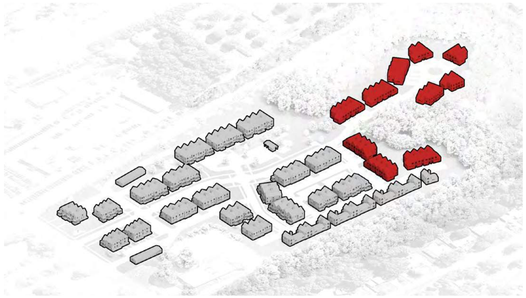
PREPARED BY: Integrated Architecture

PROJECT NO: 20221106

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BLDG — **E**

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GRAND RAPIDS, MI 49503

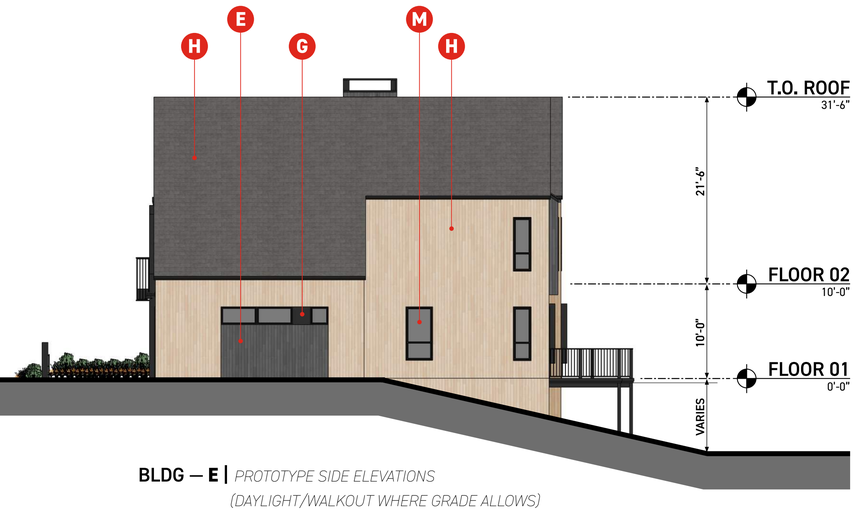
724 Robbins Road
Grand Haven, MI 49417

MATERIAL LEGEND

- **A** HORIZONTAL LAP SIDING — *B.O.D. ROYAL SIDING — LINEN*
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- **C** VERTICAL NICKEL GAP SIDING — *B.O.D. DIAMONDKOTE — GOLDEN TEAK*
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- **O** EXTERIOR WALL SCONCE — *B.O.D. LUMINIS SCIROCCO SR136*
- **P** PRE-FINISHED LOUVER



BLDG — **E** | *PROTOTYPE FRONT ELEVATIONS*



BLDG — **E** | *PROTOTYPE SIDE ELEVATIONS*
(DAYLIGHT/WALKOUT WHERE GRADE ALLOWS)

0' 4' 8' 16'

CONCEPT ELEVATIONS | **A7**

SITE PLAN REVIEW | 09 JUNE, 2026

APPLICANT: Chad Koster

OWNER: Paramount Realty Partners

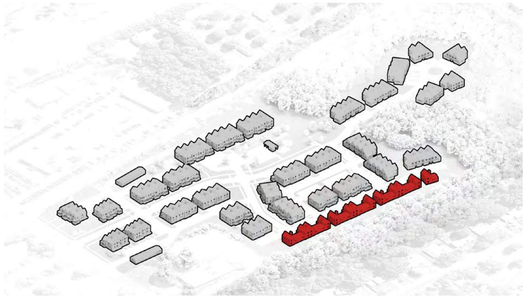
PREPARED BY: Integrated Architecture

PROJECT NO: 20221106

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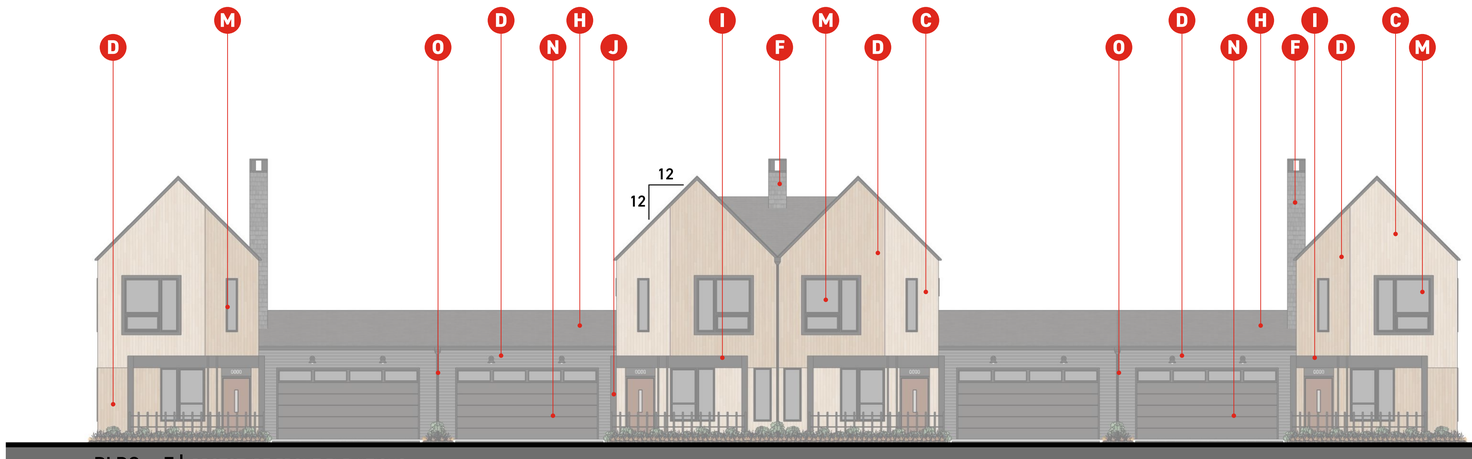




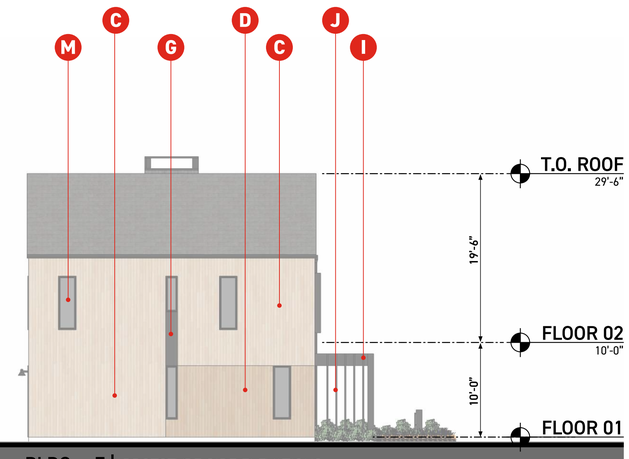
BLDG — **F**

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- **N** PRE-FINISHED GARAGE DOOR
- **O** EXTERIOR WALL SCONCE — *B.O.D. LUMINIS SCIROCCO SR136*
- **P** PRE-FINISHED LOUVER



BLDG — **F** | *PROTOTYPE FRONT ELEVATIONS*



BLDG — **F** | *PROTOTYPE SIDE ELEVATIONS*

INTEGRATED ARCHITECTURE
840 OTTAWA AVE NW
GRAND RAPIDS, MI 49503

724 Robbins Road
Grand Haven, MI 49417

0' 4' 8' 16'

CONCEPT ELEVATIONS | **A8**

SITE PLAN REVIEW | 09 JUNE, 2026

APPLICANT: Chad Koster

OWNER: Paramount Realty Partners

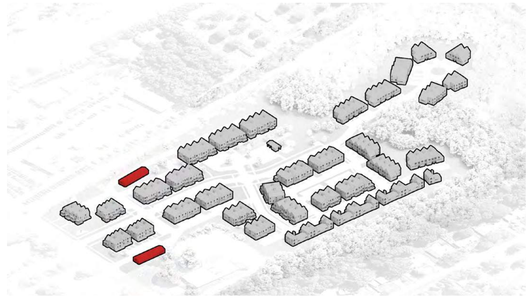
PREPARED BY: Integrated Architecture

PROJECT NO: 20221106

SOUTH VILLAGE

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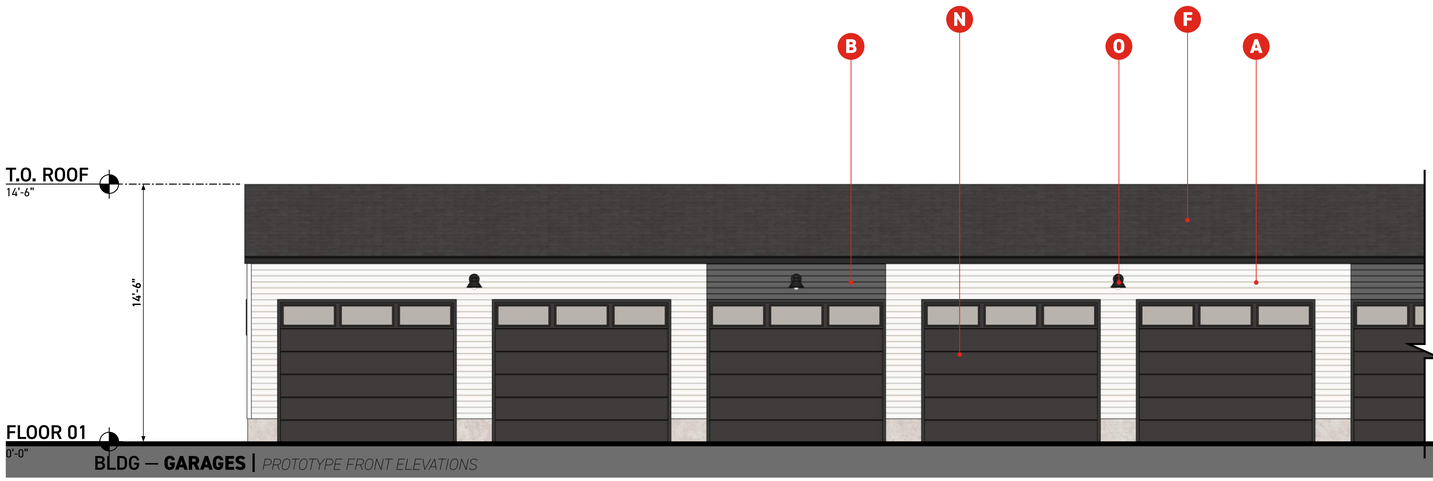
BLDG — **GARAGES**

INTEGRATED ARCHITECTURE
840 OTTAWA AVE NW
GRAND RAPIDS, MI 49503

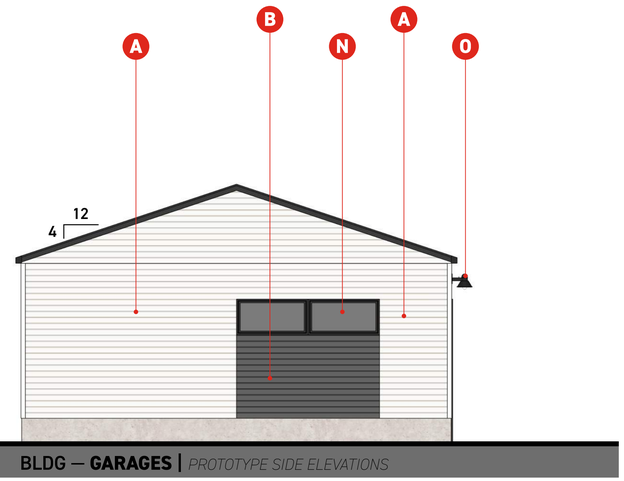
724 Robbins Road
Grand Haven, MI 49417

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  B.O.D. LUMINIS SCIROCCO SR136
- P — PRE-FINISHED LOUVER



BLDG — **GARAGES** | *PROTOTYPE FRONT ELEVATIONS*



BLDG — **GARAGES** | *PROTOTYPE SIDE ELEVATIONS*

0' 2' 4' 8'

CONCEPT ELEVATIONS — A9

SITE PLAN REVIEW — 09 JUNE, 2026

APPLICANT: Chad Koster

OWNER: Paramount Realty Partners

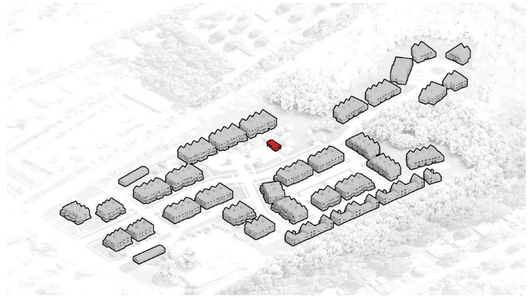
PREPARED BY: Integrated Architecture

PROJECT NO: 20221106

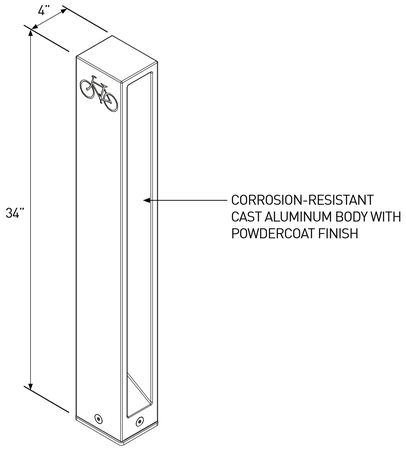
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BLDG — **PAVILION**



FORMS+SURFACES
CAPITOL BIKE RACK

BIKE RACK DETAIL



PLAYGROUND AREA *(EQUIPMENT AND DESIGN TBD)*



DOG PARK



PICKLEBALL COURTS

INTEGRATED ARCHITECTURE
840 OTTAWA AVE NW
GRAND RAPIDS, MI 49503

724 Robbins Road
Grand Haven, MI 49417

0' 10' 20' 40'

COMMUNITY SITE PLAN | **A**10

SITE PLAN REVIEW | 09 JUNE, 2026

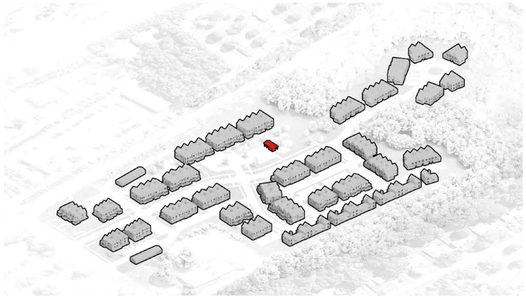
APPLICANT: Chad Koster
OWNER: Paramount Realty Partners
PREPARED BY: Integrated Architecture

PROJECT NO: 20221106

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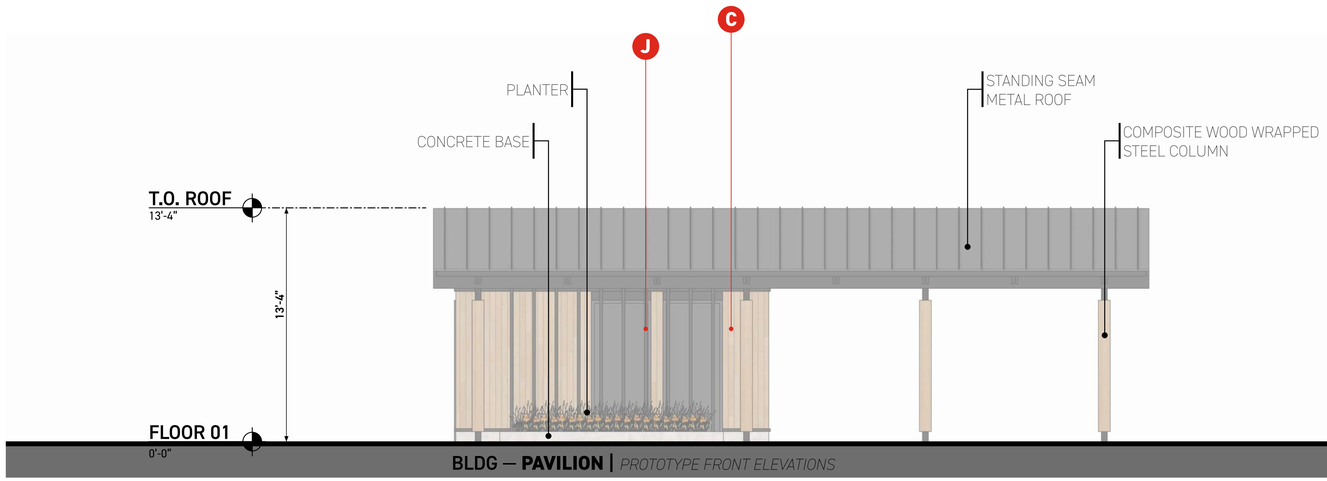
BLDG — **PAVILION**

INTEGRATED ARCHITECTURE
840 OTTAWA AVE NW
GRAND RAPIDS, MI 49503

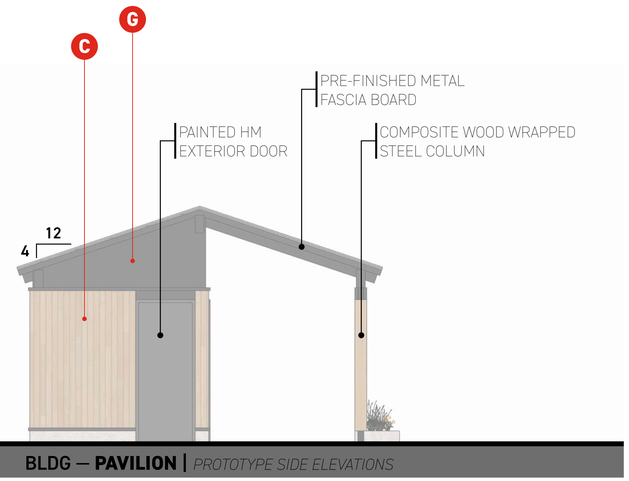
724 Robbins Road
Grand Haven, MI 49417

MATERIAL LEGEND

- **A** HORIZONTAL LAP SIDING — *B.O.D. ROYAL SIDING — LINEN*
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- **P** PRE-FINISHED LOUVER



BLDG — **PAVILION** | *PROTOTYPE FRONT ELEVATIONS*



BLDG — **PAVILION** | *PROTOTYPE SIDE ELEVATIONS*

0' 10' 20' 40'

CONCEPT EXTERIORS | **A11**

SITE PLAN REVIEW | 09 JUNE, 2026

APPLICANT: Chad Koster

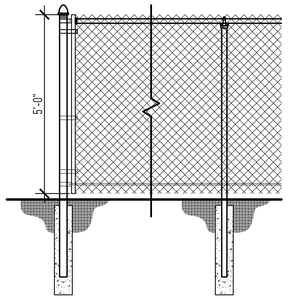
OWNER: Paramount Realty Partners

PREPARED BY: Integrated Architecture

PROJECT NO: 20221106

SOUTH VILLAGE

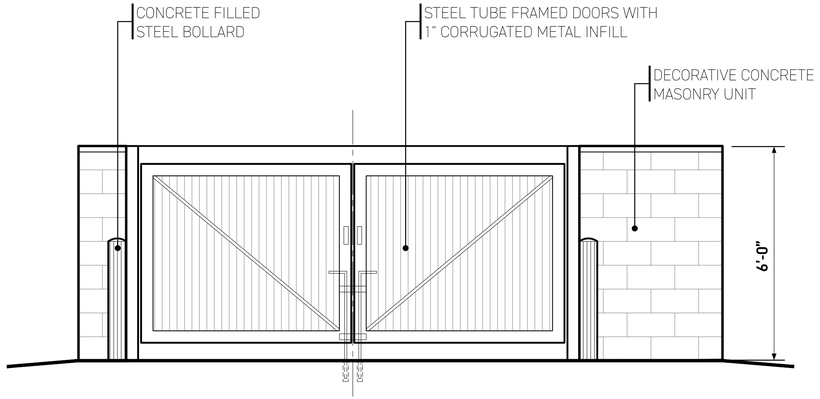
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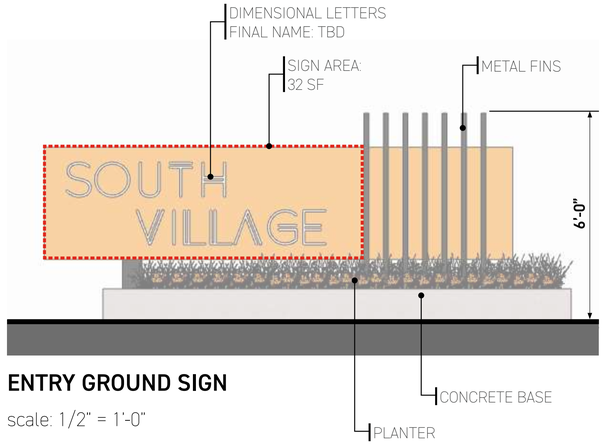


DOG PARK FENCE SECTION

BLACK, CHAIN LINK FENCE

scale: 1/2" = 1'-0"

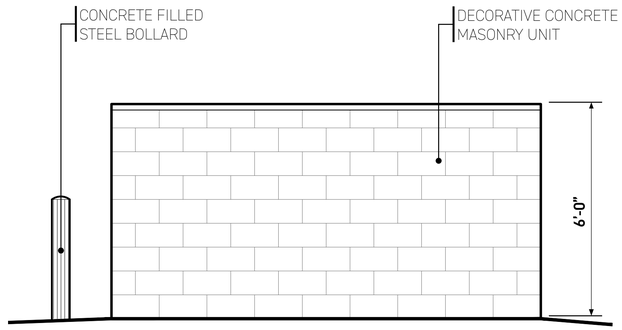




ENTRY GROUND SIGN

scale: 1/2" = 1'-0"





TRASH ENCLOSURE ELEVATIONS

scale: 1/2" = 1'-0"

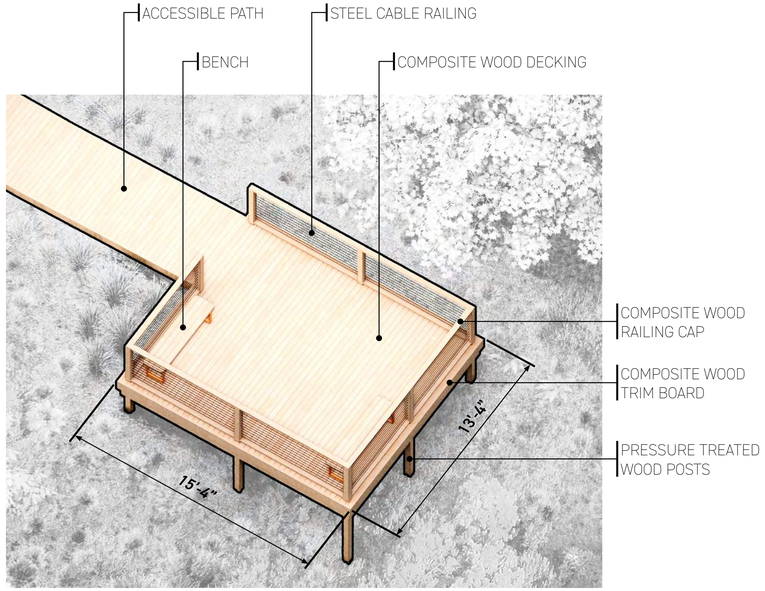
**WASTE DISPOSAL SYSTEM*
(6 YARD TRASH CONTAINERS AND SMALLER BINS)



ENTRY GROUND SIGN *(FINAL DESIGN TBD)*



DOG PARK FENCE REFERENCES



OVERLOOK AXONOMETRIC

scale: N.T.S.



OVERLOOK IMAGE

INTEGRATED ARCHITECTURE
840 OTTAWA AVE NW
GRAND RAPIDS, MI 49503

724 Robbins Road
Grand Haven, MI 49417

SITE DETAILS	A12
SITE PLAN REVIEW	09 JUNE, 2026

APPLICANT: Chad Koster

OWNER: Paramount Realty Partners

PREPARED BY: Integrated Architecture

PROJECT NO: 20221106

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INTEGRATED ARCHITECTURE
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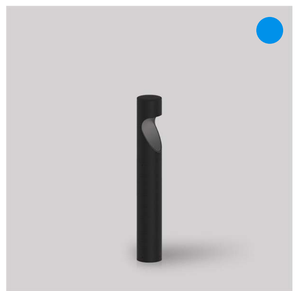
724 Robbins Road
Grand Haven, MI 49417





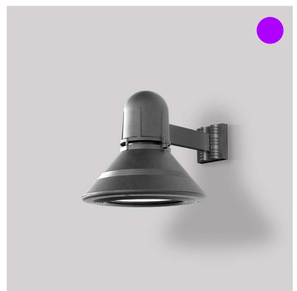
AREA POLE
LUMINIS CLERMONT CT102-PT4

FINISH	GUNMETAL GRAY
HEIGHT	14'-0"
COLOR	4000 K



BOLLARD
LUMINIS INLINE LN601B

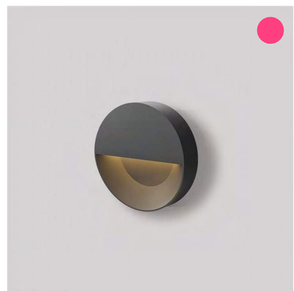
FINISH	GUNMETAL GRAY
HEIGHT	39"
COLOR	4000 K



GARAGE ACCENT
LUMINIS SCIROCCO SR136-WM

FINISH	GUNMETAL GRAY
HEIGHT	*VARIES
COLOR	3000 K

**MOUNTING CENTERED ON WALL ABOVE GRARGE DOORS -SEE ELEVATIONS*



DECORATIVE WALL SCONCE
LUMINIS SCENA SN805

FINISH	GUNMETAL GRAY
HEIGHT	5'-0"
COLOR	3000 K

N
0' 30' 60' 120'

SITE LIGHTING | A13

SITE PLAN REVIEW | 09 JUNE, 2026

APPLICANT: Chad Koster
OWNER: Paramount Realty Partners
PREPARED BY: Integrated Architecture

PROJECT NO: 20221106

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INTEGRATED ARCHITECTURE
840 OTTAWA AVE NW
GRAND RAPIDS, MI 49503

724 Robbins Road
Grand Haven, MI 49417











SUPPLEMENTAL IMAGES	A14
SITE PLAN REVIEW	09 JUNE, 2026

APPLICANT: Chad Koster
OWNER: Paramount Realty Partners
PREPARED BY: Integrated Architecture

PROJECT NO: 20221106

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STORMWATER MANAGEMENT CALCULATIONS

for

SOUTH VILLAGE
700 & 724 Robbins Road

City of Grand Haven

Ottawa County, Michigan

May 5, 2026

Prepared By:

NEDERVELD

217 Grandville Ave. SW, Suite 302
Grand Rapids, MI 49503
P. 616.575.5190
F. 616.575.6644

TABLE OF CONTENTS

Narrative Summary

Stormwater Management Calculations

- LGROW Spreadsheets
- Basin, Weir, Orifice & Pretreatment Calculations

NARRATIVE SUMMARY

General Information

- *Location*: South Village is located at 700 & 724 Robbins Road, in Section 33, City of Grand Haven, Ottawa County, Michigan. A mix of single-family homes, stacked flats and townhomes are proposed on this property; roughly 189 units in total. Access to the site will be from Robbins Road.

- *Terrain*: Elevations on this project vary from an existing high point of 621 feet at the northwest part of the parcel to an existing low elevation of 603.73 feet near the existing wetlands along the southeast side of the site. The existing site has an office building to remain and warehouse to be demolished. The south half of the property is undeveloped.

- *Area*: The overall parcel contains 25.45 acres; the existing building to remain on Parcel B contains 2.1 acres.

- *Soils*: Per the Geotech report, soils on site consist of mainly Silty Sand with pockets of fill from previous construction. This soil type is described as well drained with high-rate run-off class.

- *Current Drainage*: Currently stormwater is not collected and dispersed via sheetflow through grassy areas in the north half of the site.

- *Proposed Drainage*: Stormwater runoff will be collected from phase 1 and 2 directed to a proposed detention basin located on the southeast side of the site. The detention basin has been sized to meet the required flood control volume of 205,071 C.F.

- *Minimum Openings*: The plans provide proposed slab elevations. These were set to provide adequate separation between proposed high-water elevations with the detention basin as well as to provide adequate sanitary sewer service.

Detention Provisions

Channel Protection: The required volume, 26,500 C.F., to be met via infiltration within the detention basin beneath the low flow orifice in the outlet control structure.

Water Quality: Pretreatment to be provided via a series of catch basins, sediment forebay and detention basin.

Low Flow Release: The discharge rate is 2.58 cfs and will release to the existing county drain as it has historically. The outlet control structure has a 7" orifice with a discharge elevation at 603.25' and 18" outlet pipe to convey the 10-yr storm event.

STORMWATER MANAGEMENT CALCULATIONS

217 Grandville Ave. SW I STE. 302 I Grand Rapids, MI 49503
P: 616.575.5190 I www.nederveld.com I F: 616.575.6644

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Project Description

Development Name	South Village	**Design Firm**	Nederveld
Address/Location	700 & 724 Robbins Road / City of Grand Haven	**Engineer**	LeeTal L
Developer/Owner	Bosgraaf Homes	**Date**	8-Apr
Run		**Watershed**	

Subcatchment Connectivity and Area Summary

Number of Subcatchments 3

Subcatchment			Existing			Developed		
Name	**D/S**	**Description**	**Area [ac]**	**% Impervious**	**Average CN**	**Area [ac]**	**% Impervious**	**Average CN**
Sub1	Sub3	Phase 1	11.06	35%	57	11.06	50%	68
Sub2	Sub3	Phase 2	7.53	18%	44	7.53	58%	73
Sub3	none	Detention Basin	1.28	0%	30	1.28	0%	100
		Total	**19.86**	**26%**	**50**	**19.86**	**50%**	**72**

Notes:

Subcatchment Discharge Summary - Developed

Rainfall

Source and Distribution	NOAA Atlas 14 at West Olive, MI				
Rainfall Frequency	**1-year**	**2-year**	**10-year**	**25-year**	**100-year**
Rainfall Depth [in]	2.25	2.59	3.91	4.95	6.90

Runoff

Sub	Area [ac]	Tc [hr]	Weighted CN	Peak Discharge [cfs]				
				1-year	**2-year**	**10-year**	**25-year**	**100-year**
1	11.06	0.10	68	1.65	3.80	15.15	27.45	48.79
2	7.53	0.10	73	2.82	4.15	15.57	24.11	39.57
3	1.28	0.10	100	3.16	3.63	5.49	6.95	9.68

Notes:

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Channel Protection Volume Summary

Development Name South Village

Pre-development Definition Existing
BMP Volume Credited to Detention None ← Normally set to "Vol. Retained"

Retention | **Extended Detention**

Subcatchment		2-year Runoff Volume [cft]		Credited BMP Volume [cft]	Excess CPV [cft]	Release Rate [cfs]	ED Volume Provided [cft]
Name	Description	Pre-dev.	Developed				
Sub1	Phase 1	33,473	47,315	0	-13,841		
Sub2	Phase 2	11,349	37,694	0	-26,345		
Sub3	Detention Basin	0	12,012	52,323	40,311		
	Total	44,822	97,020	**52,323**	**125**		**0**
	Required Channel Protection Volume [cft]			**52,198**	Required Volume [cft]		**0**
	Percent met by Retention			**100**	Required Volume met by ED?		**N/A**

Notes:

Water Quality Volume and TSS Removal Summary

Subcatchment		Water Quality Volume [cft]	TSS			
Name	Description		Generated	Upstream	Total	Removed
Sub1	Phase 1	19,847	19,847	0	19,847	4,366
Sub2	Phase 2	15,718	15,718	0	15,718	3,458
Sub3	Detention Basin	0	0	27,741	27,741	24,919
Total		**35,566**	**35,566**			**32,743**
					TSS Removal Efficiency [%]	**92**
					80% TSS removal met?	**Yes**

Notes:

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South Village — **Sub1: Phase 1**

Runoff

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Existing Land Use	HSG	Area	Units	CN | CN_{PRE}	Notes
Impervious (paved parking lot, roof, driveway, etc.)	A	170,187	sqft	98 | 30	
Woods - good	A	164,700	sqft	30 | 30	
Open spaces (grass cover) - good	A	146,925	sqft	39 | 30	
		11.06	acre	57 | 30	

Developed Land Use	HSG	Area	Units	Curve Number	Notes
DIST: Impervious (paved parking lot, roof, driveway, etc.)	A	69,481	sqft	98	Buildings
DIST: Impervious (paved parking lot, roof, driveway, etc.)	A	118,842	sqft	98	Road
DIST: Impervious (paved parking lot, roof, driveway, etc.)	A	42,026	sqft	98	Sidewalk/Patio
DIST: Impervious (paved parking lot, roof, driveway, etc.)	A	10,211	sqft	98	Driveway
DIST: Open spaces (grass cover) - good	A	241,252	sqft	39	
		11.06	acre	68	

Notes:

Subcatchment Runoff Volume

Rainfall Frequency	1-year	2-year	10-year	25-year	100-year
Developed [cft]	40,542	47,315	74,426	98,306	148,264

Channel Protection Volume

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Developed		Pre-developed	
2-year Runoff Volume [cft]	47,315	2-year Runoff Volume [cft]	33,473
2-year Runoff Volume from Upstream Subcatchments [cft]	0	Pre-development Definition	Existing
2-year Runoff available for Retention [cft]	47,315	Channel Protection required?	Yes
Required Channel Protection Volume for this Subcatchment [cft]	**13,841**		

Structural BMPs used to meet Channel Protection Volume

Structural BMP	A Infiltration Area [sqft]	V_s Storage Volume [cft]	i Design Infilt. Rate [in/hr]	t_d Drain Time [hr]	Volume Provided [cft]
				N.A.	
				N.A.	
				N.A.	
				N.A.	
Totals					
				Credited BMP Volume [cft]	**0**
				Volume Released [cft]	47,315

Notes:

Water Quality Volume

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		Pitched Roofs/Paved [ac]	Flat Roofs [ac]	Unpaved [ac]
Sum of Directly Connected Disturbed Impervious Area [ac]	5.52	5.52	0.00	0.00
Sum of Directly Connected Disturbed Pervious Area [ac]	5.54			
Required Volume this Subcatchment [cft]	**19,847**			
Volume from Upstream Subcatchments [cft]	**0**			
Water Quality Volume to be Treated [cft]	**19,847**			

TSS this Subcatchment	19,847
TSS Upstream Subcatchments	0
TSS to be Treated	**19,847**

TSS Accounting

BMPs Used in Treatment Train	Treated Water Volume [cft]	TSS Removal Efficiency			TSS Removed
		Tabulated	Third-Party	Effective	
PASS: Catchbasin	19,847	22		22	4,366
					0
					0
					0
Released Water Volume [cft]	19,847			**Total TSS Removed**	**4,366**
				TSS Remaining	**15,481**
				TSS Removal Efficiency [%]	**22**

Notes:

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South Village — **Sub2: Phase 2**

Runoff

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Existing Land Use	HSG	Area	Units	CN | CN_{PRE}	Notes
Impervious (paved parking lot, roof, driveway, etc.)	A	57,700	sqft	98 | 30	
Woods - good	A	210,000	sqft	30 | 30	
Open spaces (grass cover) - good	A	60,096	sqft	39 | 30	
		7.53	acre	44 | 30	

Developed Land Use	HSG	Area	Units	Curve Number	Notes
DIST: Impervious (paved parking lot, roof, driveway, etc.)	A	57,137	sqft	98	Existing
DIST: Impervious (paved parking lot, roof, driveway, etc.)	A	57,969	sqft	98	Building
DIST: Impervious (paved parking lot, roof, driveway, etc.)	A	54,656	sqft	98	Road
DIST: Impervious (paved parking lot, roof, driveway, etc.)	A	12,121	sqft	98	Sidewalk/Patio
DIST: Impervious (paved parking lot, roof, driveway, etc.)	A	9,762	sqft	98	Driveway
DIST: Open spaces (grass cover) - good	A	136,151	sqft	39	
		7.53	acre	73	

Notes:

Subcatchment Runoff Volume

Rainfall Frequency	1-year	2-year	10-year	25-year	100-year
Developed [cft]	32,298	37,694	59,119	77,429	114,694

Channel Protection Volume

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Developed		Pre-developed	
2-year Runoff Volume [cft]	37,694	2-year Runoff Volume [cft]	11,349
2-year Runoff Volume from Upstream Subcatchments [cft]	0	Pre-development Definition	Existing
2-year Runoff available for Retention [cft]	37,694	Channel Protection required?	Yes
Required Channel Protection Volume for this Subcatchment [cft]	**26,345**		

Structural BMPs used to meet Channel Protection Volume

Structural BMP	A Infiltration Area [sqft]	V_s Storage Volume [cft]	i Design Infilt. Rate [in/hr]	t_d Drain Time [hr]	Volume Provided [cft]
				N.A.	
				N.A.	
				N.A.	
				N.A.	
Totals					
				Credited BMP Volume [cft]	**0**
				Volume Released [cft]	37,694

Notes:

Water Quality Volume

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		Pitched Roofs/Paved [ac]	Flat Roofs [ac]	Unpaved [ac]
Sum of Directly Connected Disturbed Impervious Area [ac]	4.40	4.40	0.00	0.00
Sum of Directly Connected Disturbed Pervious Area [ac]	3.13			
Required Volume this Subcatchment [cft]	**15,718**	TSS this Subcatchment		15,718
Volume from Upstream Subcatchments [cft]	**0**	TSS Upstream Subcatchments		0
Water Quality Volume to be Treated [cft]	**15,718**	**TSS to be Treated**		**15,718**

TSS Accounting

BMPs Used in Treatment Train	Treated Water Volume [cft]	TSS Removal Efficiency			TSS Removed
		Tabulated	Third-Party	Effective	
PASS: Catchbasin	15,718	22		22	3,458
					0
					0
					0
Released Water Volume [cft]	15,718			**Total TSS Removed**	**3,458**
				TSS Remaining	**12,260**
				TSS Removal Efficiency [%]	**22**

Notes:

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South Village — **Sub3: Detention Basin**

Runoff

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Existing Land Use	HSG	Area	Units	CN | CN_{PRE}	Notes
Woods - good	A	55,652	sqft	30 | 30	
		1.28	acre	30 | 30	

Developed Land Use	HSG	Area	Units	Curve Number	Notes
S-BMP: Water	A	55,652	sqft	100	
		1.28	acre		

Notes:

Subcatchment Runoff Volume

Rainfall Frequency	1-year	2-year	10-year	25-year	100-year
Developed [cft]	10,435	12,012	18,133	22,956	32,000

Channel Protection Volume

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Developed		Pre-developed	
2-year Runoff Volume [cft]	12,012	2-year Runoff Volume [cft]	0
2-year Runoff Volume from Upstream Subcatchments [cft]	85,009	Pre-development Definition	Existing
2-year Runoff available for Retention [cft]	97,020	Channel Protection required?	Yes
Required Channel Protection Volume for this Subcatchment [cft]	**12,012**		

Structural BMPs used to meet Channel Protection Volume

Structural BMP	A Infiltration Area [sqft]	V_s Storage Volume [cft]	i Design Infilt. Rate [in/hr]	t_d Drain Time [hr]	Volume Provided [cft]
Retention Basin	10,480	26,500	3.60	8.43	52,323
				N.A.	
				N.A.	
				N.A.	
Totals		**26,500**			**52,323**
				Credited BMP Volume [cft]	**52,323**
				Volume Released [cft]	44,697

Notes:

-125

Water Quality Volume

Click here for documentation

		Pitched Roofs/Paved [ac]	Flat Roofs [ac]	Unpaved [ac]
Sum of Directly Connected Disturbed Impervious Area [ac]	0.00	0.00	0.00	0.00
Sum of Directly Connected Disturbed Pervious Area [ac]	0.00			
Required Volume this Subcatchment [cft]	**0**	TSS this Subcatchment		0
Volume from Upstream Subcatchments [cft]	**35,566**	TSS Upstream Subcatchments		27,741
Water Quality Volume to be Treated [cft]	**35,566**	**TSS to be Treated**		**27,741**

TSS Accounting

BMPs Used in Treatment Train	Treated Water Volume [cft]	TSS Removal Efficiency			TSS Removed
		Tabulated	Third-Party	Effective	
PASS: Sediment Forebay	5,335	50		8	2,081
RET: Retention Basin	52,323	89		89	22,838
					0
					0
Released Water Volume [cft]	0			**Total TSS Removed**	**24,919**
				TSS Remaining	**2,823**
				TSS Removal Efficiency [%]	**90**

Notes:

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Flood Control Volume

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Development Name South Village
Location 1

Subcatchment Sub3

Detention - Routing Method

Time-of-Concentration

Existing [hr]	0.25
Developed [hr]	0.1

Design Storm	**100-year**
Contributing Area [ac]	19.86
Developed Peak Discharge [cfs]	101.16

Allowable Discharge Worksheet

		Select
Standard Discharge [cfs] - 0.13 [cfs/ac]	2.58	◉
Alternate Discharge [cfs]		○

Detention Required?	**Yes**
Allowable Discharge [cfs]	**2.58**
Required Storage Volume [cft]	**205,071**
Time to Drain [hrs]	44.1

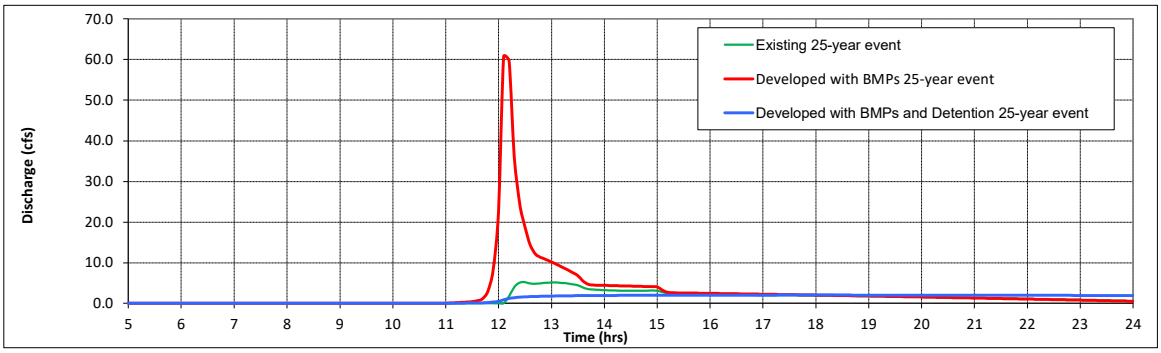
Notes: Calculated

Retention - Summary of Volumes

Design Storm	**25-year**
Runoff Volume [cft]	198,691
BMP Storage Volume [cft]	26,500
BMP Infiltrating Volume [cft]	25,823
Volume Provided by BMPs [cft]	52,323
Runoff Volume Retained by BMPs [cft]	52,323
Unretained Runoff Volume [cft]	146,369
Required Storage Volume [cft]	

BMP Storage Volume when Volume Provided equals Runoff Volume

Hydrograph



Plot Event: 25-year

Flood Control Summary

		1-year	2-year	10-year	25-year	100-year
Rainfall	Source and Distribution	24-hour, NOAA Atlas 14 at West Olive, MI, NRCS MSE4				
	Rainfall Depth [in]	2.25	2.59	3.91	4.95	6.90
Existing Land Use	Peak Discharge [cfs]	1.36	1.59	2.49	5.22	17.65
	Runoff Volume [cft]	38,406	44,822	70,439	92,908	146,135
Developed Land Use	Peak Discharge [cfs]	6.59	9.27	37.82	60.68	101.16
	Runoff Volume [cft]	83,274	97,020	151,678	198,691	294,958
	Runoff Volume Retained by BMPs [cft]	52,323	52,323	52,323	52,323	52,323
	BMP Volume Credited to Detention [cft]	0	0	0	0	0
	Volume Released [cft]	83,274	97,020	151,678	198,691	294,958
	Peak Discharge Released [cfs]	6.59	9.27	37.82	60.68	101.16
Developed with BMPs and Detention						
	Peak Discharge Released [cfs]	1.17	1.29	1.73	2.04	2.58
	Maximum Volume Detained [cft]	42,295	51,268	91,536	128,599	205,071

Nederveld

Project:	South Village
Project #:	24201135
Date:	04/14/26

Detention Storage Calculations

Detention Basin Contour Areas and Volumes

	Elev.	Area (s.f.)	Vol. (c.f.)	Vol. (ac-ft)	Cum. Vol.
Min. Elev.	602.00	10,400	0	0.00	0.00
	603.00	25,800	17,527	0.40	0.40
	604.00	43,300	34,175	0.78	1.19
	605.00	47,570	45,418	1.04	2.23
	606.00	51,560	49,552	1.14	3.37
	607.00	55,650	53,592	1.23	4.60
	608.00	59,840	57,732	1.33	5.92

Flood Control Elevation Interpolation

	Elev.	Vol. (ac-ft)	Area (s.f.)
	607.00	4.597	55,650
>	607.08	4.708	55,999
	608.00	5.923	59,840

Elev. Interpolation for Volume Provided

	Elev.	Vol. (ac-ft)	Area (s.f.)
	607.00	4.597	55,650
>	607.19	4.849	56,445
	608.00	5.923	59,840

205,071 c.f. = 4.708 ac-ft
(From Flood Control tab of LGROW spreadsheet)

Channel Protection Elevation Interpolation

	Elev.	Vol. (ac-ft)	Area (s.f.)
	603.00	0.402	25,800
>	603.26	0.608	30,395
	604.00	1.187	43,300

26,500 c.f. = 0.608 ac-ft
(From LGROW spreadsheet)

Secondary Emergency Overflow Spillway Design:

Q(100-yr) = 101.16 CFS (from flood control tab of LGROW spreadsheet)

Weir Equation: $Q = 0.75CmH^{2.5} + CLH^{1.5}$ Trapezoidal Broadcrested Weir

C (weir coef.) =	3.00	
H (height over wier) =	1.50	Ft.
m (weir side slope) =	3.00	1V:mH

Minimum Spillway Dimensions

Weir Base=	14.98	Ft.
Top width=	23.98	Ft.

Spillway Design Dimensions

Weir Base=	15.00	Ft.
Top width=	24.00	Ft.

Spillway Design Flow = 101.27 cfs

Size Outlet of Det. Basin: (using design release rate of 2.58 cfs) (0.13 cfs/acre)

Orifice Equation: $Q = 5AH^{0.5}$

Outlet Pipe Diameter:	0.58	ft
	6.9	in
Use Orifice Diameter	7.0	in

Actual Orifice Capacity

Diameter	7.0	in.
Head	3.65	ft.
Flow, Q=	2.58	cfs

outlet invert	603.25	ft
spillway elev.	607.19	ft
centerline of outlet	603.26	ft
head	3.93	ft

Water Quality: (using total contributing area of 19.86 acres)

Sediment Forebay

Pretreatment Equation: Vpt=0.15*Vwq Vwq = 35,556 cf

Req. Pretreatment Volume = 5,333 cf Req. Surface Area = 1,333 sf

Sediment Forebay Contributing Area 19.86 ac

% of site= 100.00 %

Sediment Forebay

Prop. Volume= 5,700 cf Prop. Surface Area= 6,005 sf

MEMO

FLEIS&VANDENBRINK
DESIGN. BUILD. OPERATE.

VIA EMAIL chad.koster@paramountrp.com

To:	**Chad Koster** **CCIM | Paramount Realty Partners**
From:	**Jacob Swanson, PE, PTOE** **Aaron Wildrick, EIT** **Fleis & VandenBrink**
Date:	**November 10, 2025**
Re:	**Proposed South Village Residential Development** **Grand Haven, Michigan** **Traffic Impact Study**

1 INTRODUCTION

This memorandum presents the results of the Traffic Impact Study (TIS) for the proposed residential development in Grand Haven, Michigan. The project site is located adjacent to the south side of Robbins Road, generally between Lakeshore Avenue / Sheldon Road and Beacon Boulevard (US-31), as shown in the attached **Figure 1**. The proposed development includes the construction of multi-family residential units, with site access provided via two (2) full access driveways on Robbins Road, which is under the jurisdiction of the City of Grand Haven. The City has requested a TIS for this project, as part of the site plan approval process.

This TIS has been completed to evaluate the impact of the proposed development on the adjacent roadway network. The scope of work for this study was developed based on Fleis & VandenBrink's (F&V) knowledge of the study area, understanding of the development program, accepted traffic engineering practice, city requirements, professional experience, and the methodologies published by ITE. The study analyses were completed using Synchro/SimTraffic (Version 12) traffic analysis software. Sources of data for this study include F&V subconsultant Quality Counts, LLC (QC), the Michigan Department of Transportation (MDOT), and ITE.

2 BACKGROUND DATA

2.1 EXISTING ROAD NETWORK

The lane use and traffic control at the study intersections is shown in the attached **Figure 2**; additional roadway information is described below. For the purposes of this study, minor streets and driveways were assumed to have an operating speed of 25 miles per hour (mph), unless otherwise noted.

Robbins Road runs in the east / west direction, adjacent to the north side of the project site. The study section of roadway is classified as a *Minor Arterial*, is under the jurisdiction of the City of Grand Haven, has an Annual Average Daily Traffic (AADT) volume of approximately 8,133 (MDOT 2024) vehicles per day (vpd), and has a posted speed limit of 35-mph. The study section of Robbins Road provides a typical two-lane cross-section, with one (1) lane of travel in each direction. At the all-way stop-controlled study intersection with Sheldon Road / Lakeshore Avenue, Robbins Road widens in order to provide an exclusive westbound left-turn lane; additionally, at the signalized study intersection with Beacon Boulevard (US-31), Robbins Road widens in order to provide exclusive right-turn lanes in both the eastbound and westbound directions.

Beacon Boulevard (US-31) runs in the north / south direction, east of the project site. The study section of roadway has a posted speed limit of 40-mph north of Robbins Road and 55-mph south of Robbins Road, is classified as an *Other Principal Arterial*, is under the jurisdiction of MDOT, and has an AADT volume of approximately 32,237 vpd (MDOT 2025). Beacon Boulevard (US-31) is a four-lane, median divided roadway, with two (2) lanes of travel in each direction. At the signalized intersection with Robbins Road, Beacon Boulevard (US-31) widens to provide exclusive right-turn lanes in both directions.

2960 Lucerne Drive SE
Grand Rapids, MI 49546
P: 616.977.1000
F: 616.977.1005
www.fveng.com

Lakeshore Avenue / Sheldon Road runs in the north / south direction, west of the project site. The study section of roadway provides a typical two-lane cross-section, with one (1) lane of travel in each direction.

- North of Robbins Road – Sheldon Road is classified as a *Minor Arterial*, is under the jurisdiction of the City of Grand Haven, has an AADT volume of approximately 8,714 vpd (MDOT 2024), and has a posted speed limit of 25-mph. Additionally, at the all-way stop-controlled study intersection with Robbins Road, Sheldon Road widens to provide an exclusive southbound left-turn lane.
- South of Robbins Road – Lakeshore Avenue is classified as a *Minor Arterial*, is under the jurisdiction the jurisdiction of the Ottawa County Road Commission (OCRC), has an AADT volume of approximately 7,219 vpd (MDOT 2024), and has a posted speed limit of 35-mph. The study section of roadway provides a typical two-lane cross section, with one (1) lane of travel in each direction.

2.2 Existing Road Network

F&V subconsultant QC collected existing weekday Turning Movement Count (TMC) data at the following study intersections, during the AM (7:00 AM to 9:00 AM) and PM (4:00 PM to 6:00 PM) peak periods:

- Beacon Boulevard (US-31) & Robbins Road (September 9, 2025)
- Robbins Road & Lakeshore Avenue / Sheldon Road (September 18, 2025)

During the collection of the TMC data, Peak Hour Factors (PHFs), pedestrian and bicycle volumes, and commercial truck percentages were recorded and used in the traffic analysis. The peak hours for each of the study intersections were utilized and the through volumes were balanced upwards through the roadway network and at the proposed site driveways. Therefore, the traffic volumes utilized in the analysis and shown in the attached traffic volume figures may not match the raw traffic volumes shown in the attached data collection.

Additionally, a discrepancy was identified within the traffic volumes between the study intersections. Therefore, the traffic volumes at the Robbins Road & Lakeshore Avenue / Sheldon Road intersection were significantly increased and balanced upwards, in order to provide a conservative analysis and match the TMC data collection at the Beacon Boulevard (US-31) intersection; however, this may result in artificially higher delays at the study intersection, as compared to what motorists are currently experiencing.

The weekday AM and PM peak hours for the adjacent study roadway network were observed to generally occur between 7:00 AM to 8:00 AM and 5:00 PM to 6:00 PM, respectively. The existing 2025 peak hour traffic volumes utilized in this TIS analysis are shown in the attached **Figure 3**. All applicable background data referenced in this memorandum are attached.

3 Existing Conditions (2025)

The existing peak hour vehicle delays and Levels of Service (LOS) were calculated at the study intersections using Synchro/SimTraffic (Version 12) traffic analysis software. This analysis was based on the existing lane use and traffic control shown in the attached **Figure 2**, the existing peak hour traffic volumes shown in the attached **Figure 3**, and the methodologies presented in the *Highway Capacity Manual 7th Edition (HCM7)*.

Descriptions of LOS “A” through “F”, as defined in the HCM, are attached. Typically, LOS D is considered acceptable, with LOS A representing minimal delay, and LOS F indicating failing conditions. Additionally, SimTraffic network simulations were reviewed to evaluate network operations and vehicle queues. The results of the existing conditions analysis are attached and summarized in **Table 1**.

The results of the existing conditions analysis indicates that all study intersection approaches and movements are currently operating acceptably, at LOS D or better, during both the AM and PM peak hours, with the exception of the following:

Robbins Road & Lakeshore Avenue / Sheldon Road:

- During the PM peak hour: The northbound approach and southbound left-turn movement are both currently operating at LOS F.

  Review of SimTraffic network simulations indicates that periods of long vehicle queues were present along the northbound approach and for the southbound left-turn movement, during the PM peak hour; however, these vehicle queues were observed to dissipate and were not present throughout the entire peak period.

Overall, review of the SimTraffic microsimulations at the remaining study intersections indicates acceptable operations throughout the study roadway network, during both the AM and PM peak hours.

Table 1: Existing Intersection Operations

Intersection		Control	Approach	Existing Conditions			
				AM Peak		PM Peak	
				Delay (s/veh)	LOS	Delay (s/veh)	LOS
10	Robbins Road & Lakeshore Avenue / Sheldon Road	Stop (All-Way)	EB	13.2	B	15.9	C
			WBL	11.7	B	15.3	C
			WBTR	14.0	B	23.7	C
			NB	25.2	D	52.8	F
			SBL	16.0	C	52.1	F
			SBTR	14.5	B	27.0	D
			Overall	**17.9**	**C**	**37.5**	**E**
20	Beacon Boulevard (US-31) & Robbins Road	Signalized	EBT	21.0	C	23.3	C
			EBR	21.0	C	22.1	C
			WBT	21.8	C	21.8	C
			WBR	24.2	C	23.5	C
			NBT	15.9	B	17.9	B
			NBR	9.0	A	9.4	A
			SBTR	30.8	C	24.6	C
			SBR	8.5	A	8.8	A
			Overall	**25.8**	**C**	**21.2**	**C**

4 Background Conditions (2028 No Build)

4.1 Background Growth

Historical traffic volume data was obtained from the MDOT's Traffic Count Database System (TCDS) website, in order to calculate a background growth rate to project the collected 2025 peak hour traffic volumes to the site buildout year of 2028. A review of the traffic volumes in the area indicates an annual average growth rate of approximately 0.19% per year.

In addition to the background traffic growth, it is important to account for traffic that will be generated by approved developments within the vicinity of the study area that are currently under construction or will be constructed prior to the site buildout year of 2028. At the time of this study, no background developments were identified within the vicinity of the project site.

Therefore, a conservative background growth rate of **0.5%** per year was applied to the existing 2025 peak hour traffic volumes, in order to forecast the background 2028 peak hour traffic volumes ***without the proposed development***, as shown in the attached **Figure 4**.

4.2 Background Conditions Analysis

Background peak hour vehicle delays and LOS ***without the proposed development*** were calculated at the study intersections based on the existing lane use and traffic control shown in the attached **Figure 2**, the background peak hour traffic volumes shown in the attached **Figure 4**, and methodologies presented in the HCM7. The results of the background conditions analysis are attached and summarized in **Table 2**.

The results of the background conditions analysis indicates that all approaches and movements at the study intersections are expected to continue operating in a manner similar to the existing conditions analysis. Review of SimTraffic microsimulations also indicates generally acceptable operations throughout the study roadway network, similar to existing conditions.

Table 2: Background Intersection Operations

Intersection		Control	Approach	Existing Conditions				Background Conditions				Difference			
				AM Peak		PM Peak		AM Peak		PM Peak		AM Peak		PM Peak	
				Delay (s/veh)	LOS	Delay (s/veh)	LOS	Delay (s/veh)	LOS	Delay (s/veh)	LOS	Delay (s/veh)	LOS	Delay (s/veh)	LOS
10	Robbins Rd. & Lakeshore Ave. / Sheldon Rd.	Stop (All-Way)	EB	13.2	B	15.9	C	13.3	B	16.3	C	0.1	-	0.4	-
			WBL	11.7	B	15.3	C	11.8	B	15.5	C	0.1	-	0.2	-
			WBTR	14.0	B	23.7	C	14.2	B	24.7	C	0.2	-	1.0	-
			NB	25.2	D	52.8	F	26.4	D	57.7	F	1.2	-	4.9	-
			SBL	16.0	C	52.1	F	16.3	C	56.9	F	0.3	-	4.8	-
			SBTR	14.5	B	27.0	D	14.8	B	28.6	D	0.3	-	1.6	-
			Overall	**17.9**	**C**	**37.5**	**E**	**18.4**	**C**	**40.4**	**E**	**0.5**	**-**	**2.9**	**-**
20	Beacon Blvd. (US-31) & Robbins Rd.	Signal	EBT	21.0	C	23.3	C	21.0	C	23.5	C	0.0	-	0.2	-
			EBR	21.0	C	22.1	C	21.1	C	22.2	C	0.1	-	0.1	-
			WBT	21.8	C	21.8	C	21.8	C	21.8	C	0.0	-	0.0	-
			WBR	24.2	C	23.5	C	24.5	C	23.8	C	0.3	-	0.3	-
			NBT	15.9	B	17.9	B	16.2	B	18.3	B	0.3	-	0.4	-
			NBR	9.0	A	9.4	A	9.0	A	9.4	A	0.0	-	0.0	-
			SBTR	30.8	C	24.6	C	33.6	C	26.1	C	2.8	-	1.5	-
			SBR	8.5	A	8.8	A	8.6	A	8.8	A	0.1	-	0.0	-
			Overall	**25.8**	**C**	**21.2**	**C**	**27.9**	**C**	**22.2**	**C**	**2.1**	**-**	**1.0**	**-**

5 SITE TRIP DISTRIBUTION

The number of peak hour (AM and PM) and daily vehicle trips that would be generated by the proposed development were calculated based on information published by the ITE in the *Trip Generation Manual, 12th Edition*. The proposed development includes the construction of a multi-family residential development on property that was previously occupied by a manufacturing facility. The site trip generation forecast utilized for this study is summarized in **Table 3**.

Table 3: Site Trip Generation Summary

Land Use	ITE Code	Amount	Units	Average Daily Traffic (vpd)	AM Peak Hour (vph)			PM Peak Hour (vph)		
					In	Out	Total	In	Out	Total
Single-Family Attached Housing	215	81	DU	532	8	25	33	22	16	38
Multi-Family Housing (Low-Rise)	220	110	DU	740	12	39	51	37	23	60
Total New Trips				**1,272**	**20**	**64**	**84**	**59**	**39**	**98**

6 SITE TRIP DISTRIBUTION

The vehicular trips that would be generated by the proposed development were assigned to the study roadway network based on the proposed site access plan and driveway configurations, the existing peak hour traffic patterns along Robbins Road, and the methodologies published by ITE. To determine the residential distribution, the vehicles were assumed to be home-to-work trips during the AM peak hour and work-to-home trips during the PM peak hour. The ITE trip distribution methodology assumes that new trips will enter the network and access the development, then leave the development and return to their direction of origin. The site trip distributions utilized in this analysis are summarized in **Table 4**.

The vehicular traffic volumes shown in **Table 3** were distributed to the study roadway network according to the distribution shown in **Table 4**. The site-generated peak hour trips shown in the attached **Figure 5** were added to the background peak hour traffic volumes shown in the attached **Figure 4**, in order to calculate the future peak hour traffic volumes, ***with the addition of the proposed development***. Future peak hour traffic volumes are shown in the attached **Figure 6**.

Table 4: Site Trip Distribution Summary

To/From	Via	AM	PM
East	Robbins Road	8%	9%
West	Robbins Road	1%	2%
North	Beacon Blvd (US-31)	33%	35%
South	Beacon Blvd (US-31)	41%	34%
North	Sheldon Road	12%	12%
South	Lakeshore Avenue	5%	8%
Total		**100%**	**100%**

7 FUTURE CONDITIONS (2028)

7.1 FUTURE OPERATIONAL ANALYSIS

Future peak hour vehicle delays and LOS, ***with the addition of the proposed development***, were calculated based on the proposed lane use and traffic control shown in the attached **Figure 2**, the future peak hour traffic volumes shown in the attached **Figure 6**, and methodologies presented in the HCM7. The results of the future conditions analysis are attached and summarized in **Table 5.**

Table 5: Future Intersection Operations

Intersection		Control	Approach	Background Conditions				Future Conditions				Difference			
				AM Peak		PM Peak		AM Peak		PM Peak		AM Peak		PM Peak	
				Delay (s/veh)	LOS	Delay (s/veh)	LOS	Delay (s/veh)	LOS	Delay (s/veh)	LOS	Delay (s/veh)	LOS	Delay (s/veh)	LOS
10	Robbins Rd. & Lakeshore Ave. / Sheldon Rd.	Stop (All-Way)	EB	13.3	B	16.3	C	13.5	B	16.6	C	0.2	-	0.3	-
			WBL	11.8	B	15.5	C	11.9	B	15.8	C	0.1	-	0.3	-
			WBTR	14.2	B	24.7	C	14.6	B	26.0	D	0.4	-	1.3	C→D
			NB	26.4	D	57.7	F	27.0	D	62.4	F	0.6	-	4.7	-
			SBL	16.3	C	56.9	F	16.7	C	63.5	F	0.4	-	6.6	-
			SBTR	14.8	B	28.6	D	15.0	B	29.5	D	0.2	-	0.9	-
			Overall	**18.4**	**C**	**40.4**	**E**	**18.8**	**C**	**43.6**	**E**	**0.4**	**-**	**3.2**	**-**
20	Beacon Blvd. (US-31) & Robbins Rd.	Signal	EBT	21.0	C	23.5	C	21.1	C	23.6	C	0.1	-	0.1	-
			EBR	21.1	C	22.2	C	22.3	C	23.0	C	1.2	-	0.8	-
			WBT	21.8	C	21.8	C	21.8	C	21.9	C	0.0	-	0.1	-
			WBR	24.5	C	23.8	C	24.5	C	23.8	C	0.0	-	0.0	-
			NBT	16.2	B	18.3	B	16.7	B	19.1	B	0.5	-	0.8	-
			NBR	9.0	A	9.4	A	9.0	A	9.4	A	0.0	-	0.0	-
			SBTR	33.6	C	26.1	C	33.6	C	26.1	C	0.0	-	0.0	-
			SBR	8.6	A	8.8	A	8.6	A	9.1	A	0.0	-	0.3	-
			Overall	**27.9**	**C**	**22.2**	**C**	**27.7**	**C**	**22.0**	**C**	**-0.2**	**-**	**-0.2**	**-**
30	Robbins Rd. & W. Site Dr.	Stop (Minor)	EB	N/A				Free				N/A			
			WBL					8.0	A	8.5	A				
			NB					11.1	B	13.8	B				
40	Robbins Rd. & E. Site Dr.	Stop (Minor)	EB	N/A				Free				N/A			
			WBL					8.0	A	8.5	A				
			NB					11.1	B	13.6	B				

Note: Decreased delays are the result from improved progression and/or HCM weighting methodologies.

The results of the future conditions analysis indicates that all approaches and movements at the study intersections are expected to operate in a manner similar to the background conditions analysis, with only minor increases in delay. Additionally, the proposed site driveway intersections are expected to operate acceptably, at LOS D or better, during both the AM and PM peak hours.

Review of SimTraffic network simulations also indicates generally acceptable operations throughout the study roadway network, similar to the observations made during the background conditions analysis. Periods of long vehicle queues were still observed along the northbound Lakeshore Avenue approach and for the southbound Sheldon Road left-turn movement, during the PM peak hour; however, these vehicle queues were observed to dissipate and were not present throughout the entire peak period. Additionally, vehicles at the stop-controlled site driveway intersections were able to find adequate gaps within the through traffic along Robbins Road, without experiencing significant delays or excessive vehicle queueing.

7.2 Auxiliary Turn Lane Evaluation

Site access is proposed via two (2) full access driveways on Robbins Road, which is under the jurisdiction of the City of Grand Haven. Therefore, the MDOT auxiliary turn lane charts were utilized, in order to determine the need for auxiliary turn lanes at the proposed site driveways on Robbins Road. The analysis was based on the future traffic volumes shown in the attached **Figure 6**; the results are attached and summarized in **Table 6**.

Table 6: Auxiliary Lane Analysis Summary

Robbins Rd. Intersection	Evaluation	AM Peak Hour	PM Peak Hour	Recommendation
E. Site Drive	Right-Turn Treatment	No Treatment	No Treatment	**No Treatment**
	Left-Turn Treatment	No Treatment	Left-Turn Lane	**Left-Turn Lane**
W. Site Drive	Right-Turn Treatment	No Treatment	No Treatment	**No Treatment**
	Left-Turn Treatment	No Treatment	No Treatment	**No Treatment**

The results of the auxiliary turn lane evaluation indicates that a left-turn lane is warranted along westbound Robbins Road, at the proposed E. Site Drive. The study section of roadway, adjacent to the project site, currently provides on-street parking along the north side of Robbins Road; however, the parking lane does not appear to be frequently utilized.

- Therefore, it is recommended to re-stripe the parking lane, as shown in the attached **Figure 7**, in order to accommodate a westbound left-turn lane along Robbins Road, at the proposed E. Site Drive.

7.3 Future Mitigation Measures

Mitigation measures were investigated at the Robbins Road & Lakeshore Avenue / Sheldon Road intersection, in order to improve the future traffic operations to LOS D or better, during both peak periods. The investigated improvements and their impact on the intersection operations are discussed below:

Geometric improvements were investigated at the Robbins Road & Lakeshore Avenue / Sheldon Road intersection, in an effort to address the poor/failing LOS observed along the northbound approach and southbound left-turn movement. However, an exclusive southbound left-turn lane is currently provided at this study intersection and there is a lack of right-of-way available to widen the northbound approach; therefore, it is not feasible to make geometric modifications to increase the capacity of this intersection. Additionally, signalization of this intersection was also considered as a possible mitigation measure; however, the inflated traffic volumes at this study intersection are still well below the thresholds to warrant a traffic signal.

- Furthermore, the site-generated traffic from the proposed development is only expected to increase the vehicular delay by approximately 6.6 seconds or less, during both peak periods, which is not significant.
- Therefore, it is recommended for the City of Grand Haven to continue to monitor the operations at the all-way stop-controlled study intersection of Robbins Road & Lakeshore Avenue / Sheldon Road, as traffic volumes increase, in order to determine if/when a traffic signal or other mitigation measures are warranted and would be recommended to mitigate delays.

8 CONCLUSIONS

The conclusions of this TIS are as follows:

1. **Existing Conditions (2025)**

   - The results of the existing conditions analysis indicates that all approaches and movements at the study intersections are currently operating acceptably, at LOS D or better, during both the AM and PM peak hours, with the exception of the following:
     - **Robbins Road & Lakeshore Avenue / Sheldon Road:** The NB approach and the SB left-turn movement are both currently operating at LOS F, during the PM peak hour.

       Review of SimTraffic indicates that periods of long vehicle queues were present along the northbound approach and for the southbound left-turn movement; however, these vehicle queues were observed to dissipate and were not present throughout the entire peak period.

2. **Background Conditions (2028)**

   - An annual background growth rate of **0.5%** per year was utilized to project the existing 2025 peak hour traffic volumes to the site buildout year of 2028. No background developments were identified.
   - The results of the background conditions analysis indicates that all approaches and movements at the study intersections are expected to continue operating in a manner similar to the existing conditions analysis. Review of SimTraffic microsimulations also indicates generally acceptable operations throughout the study roadway network, in a manner similar to existing conditions.

3. **Future Conditions (2028)**

   - The results of the future conditions analysis indicates that all approaches and movements at the study intersections are expected to operate in a manner similar to the background conditions analysis, with only minor increase in delay. Additionally, the proposed site driveway intersections are expected to operate acceptably, at LOS D or better during the AM and PM peak hours.
   - Review of SimTraffic also indicates generally acceptable operations throughout the study roadway network, similar to the observations made during the background conditions analysis. Periods of long vehicle queues were still observed along the northbound Lakeshore Avenue approach and for the southbound Sheldon Road left-turn movement, during the PM peak hour; however, these vehicle queues were observed to dissipate and were not present throughout the entire peak period.
   - The results of the auxiliary turn lane evaluation indicates that a left-turn lane is warranted along westbound Robbins Road, at the proposed E. Site Drive. The study section of Robbins Road, adjacent to the project site, currently provides on-street parking along the north side of the roadway; however, the parking lane does not appear to be frequently utilized.
     - Therefore, it is recommended to re-stripe the parking lane to accommodate the recommended westbound left-turn lane along Robbins Road, at the proposed E. Site Drive.
   - Mitigation measures were investigated, in order to improve the poor/failing LOS observed at the all-way stop-controlled study intersection of Robbins Road & Lakeshore Avenue / Sheldon Road; however, an exclusive southbound left-turn lane is currently provided and there is a lack of right-of-way available to widen the northbound approach. Therefore, it is not feasible to make geometric modifications to increase the capacity of this intersection. Additionally, signalization was also considered as a possible mitigation measure; however, the inflated traffic volumes at this study intersection are still well below the thresholds to warrant a traffic signal. Therefore, the following recommendations are provided:
     - Furthermore, the site-generated traffic from the proposed development is only expected to increase the vehicular delay by approximately 6.6 seconds or less, during both peak periods, which is not significant.
     - The City of Grand Haven should continue to monitor the traffic operations at the all-way stop-controlled study intersection of Robbins Road & Lakeshore Avenue / Sheldon Road, in order to determine if/when a traffic signal or other mitigation measures are warranted and would be recommended to mitigate the delays.

9 RECOMMENDATIONS

The recommendations of this TIS are as follows:

- **Robbins Road & Site Drive**
  - Re-stripe the parking lane, in order to accommodate a westbound left-turn lane along Robbins Road, at the proposed E. Site Drive, as shown in the attached **Figure 7**.

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



I hereby certify that this engineering document was prepared by me or under my direct personal supervision and that I am a duly licensed Professional Engineer under the laws of the State of Michigan.

Attachments: Figures 1 – 7
Proposed Site Plan
Traffic Volume Data
Signal Timing Permits
Synchro / SimTraffic Results
Auxiliary Turn Lane Warrants

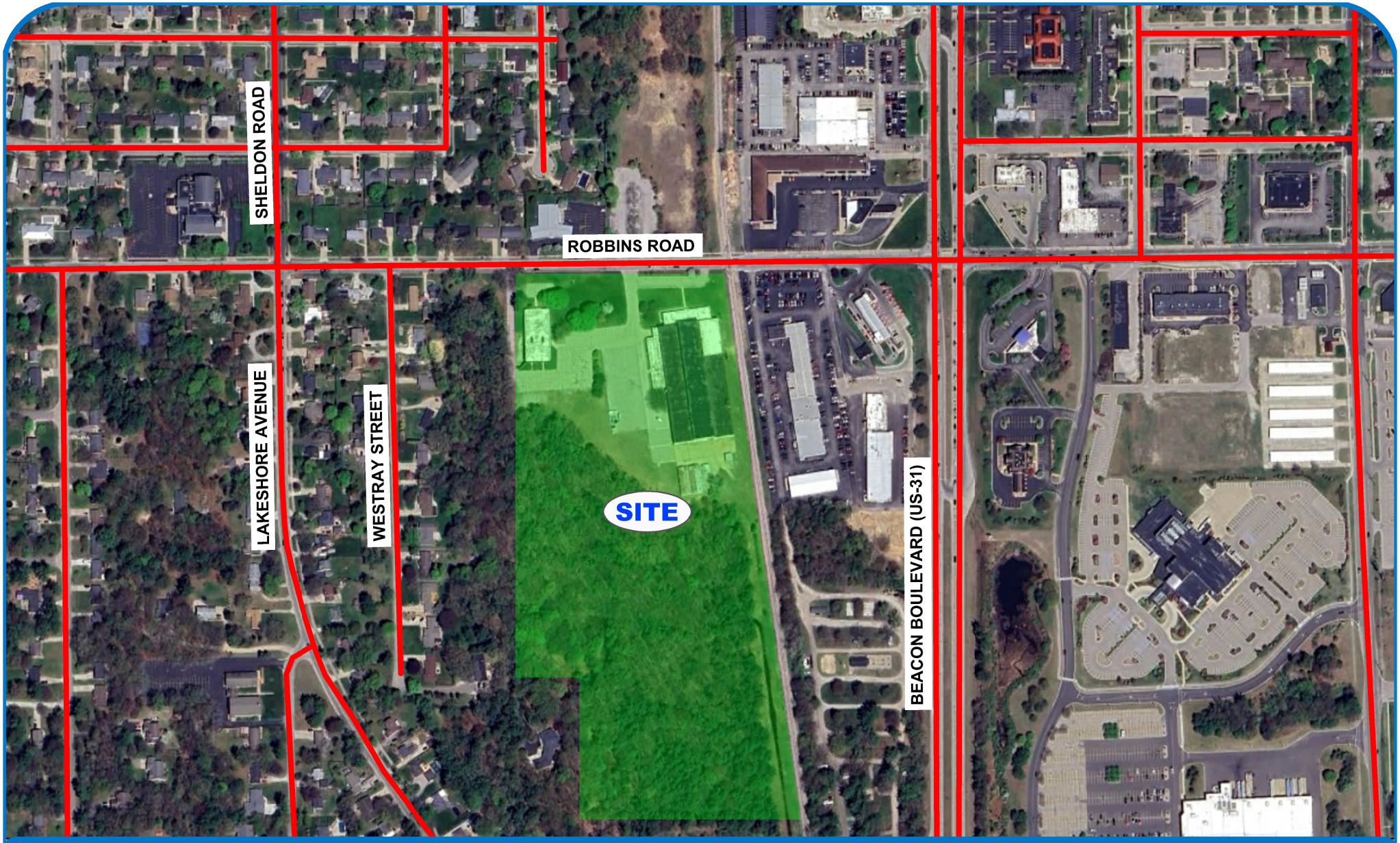


FIGURE 1

SITE LOCATION

SOUTH VILLAGE TIS - GRAND HAVEN, MI

LEGEND

SITE — SITE LOCATION

NORTH

SCALE: NOT TO SCALE

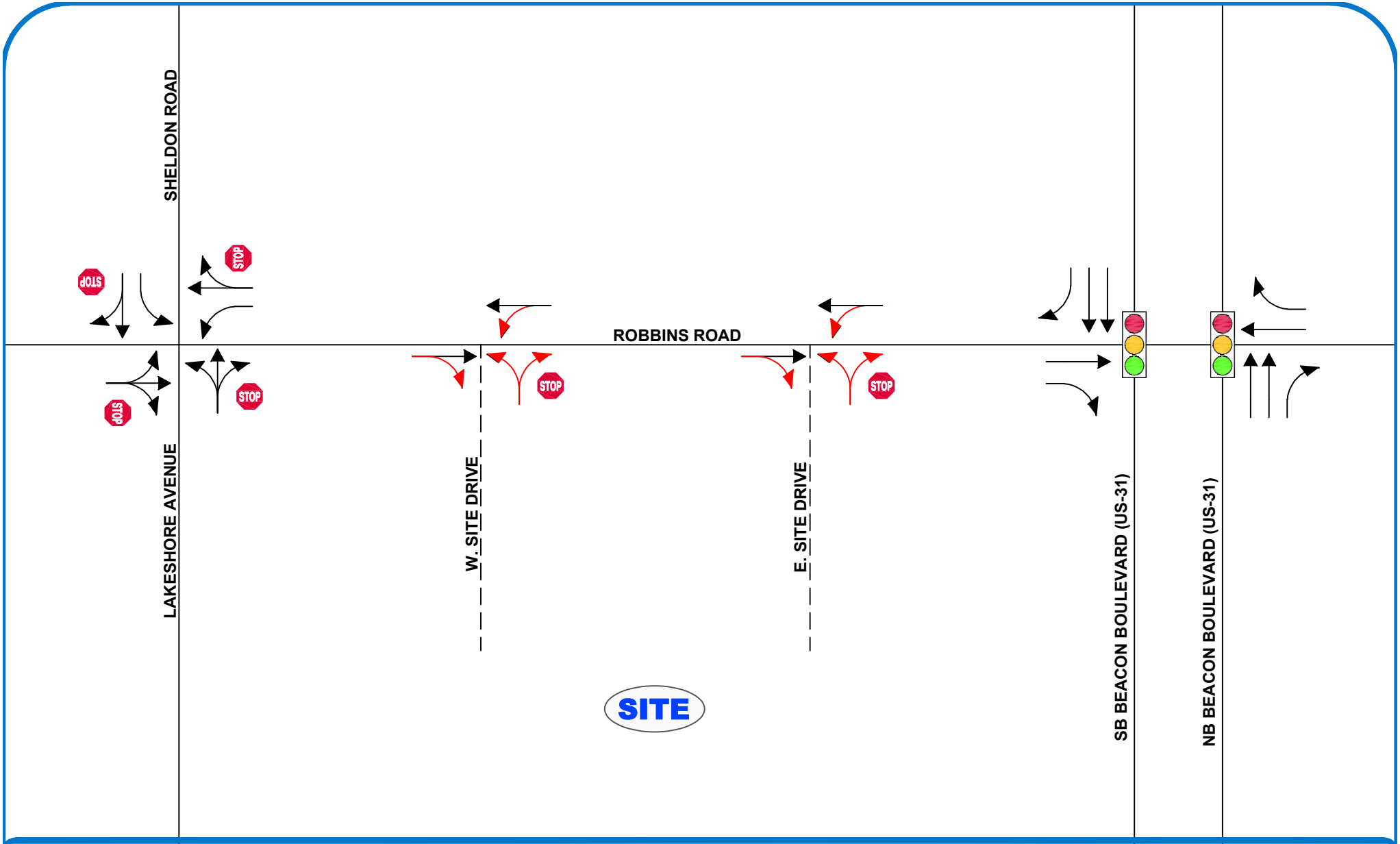


FIGURE 2

LANE USE AND TRAFFIC CONTROL

SOUTH VILLAGE TIS - GRAND HAVEN, MI

LEGEND

ROADS — PROPOSED ROADS

LANE USE — PROPOSED LANE USE

SIGNALIZED INTERSECTION

UNSIGNALIZED INTERSECTION

NORTH

SCALE: NOT TO SCALE

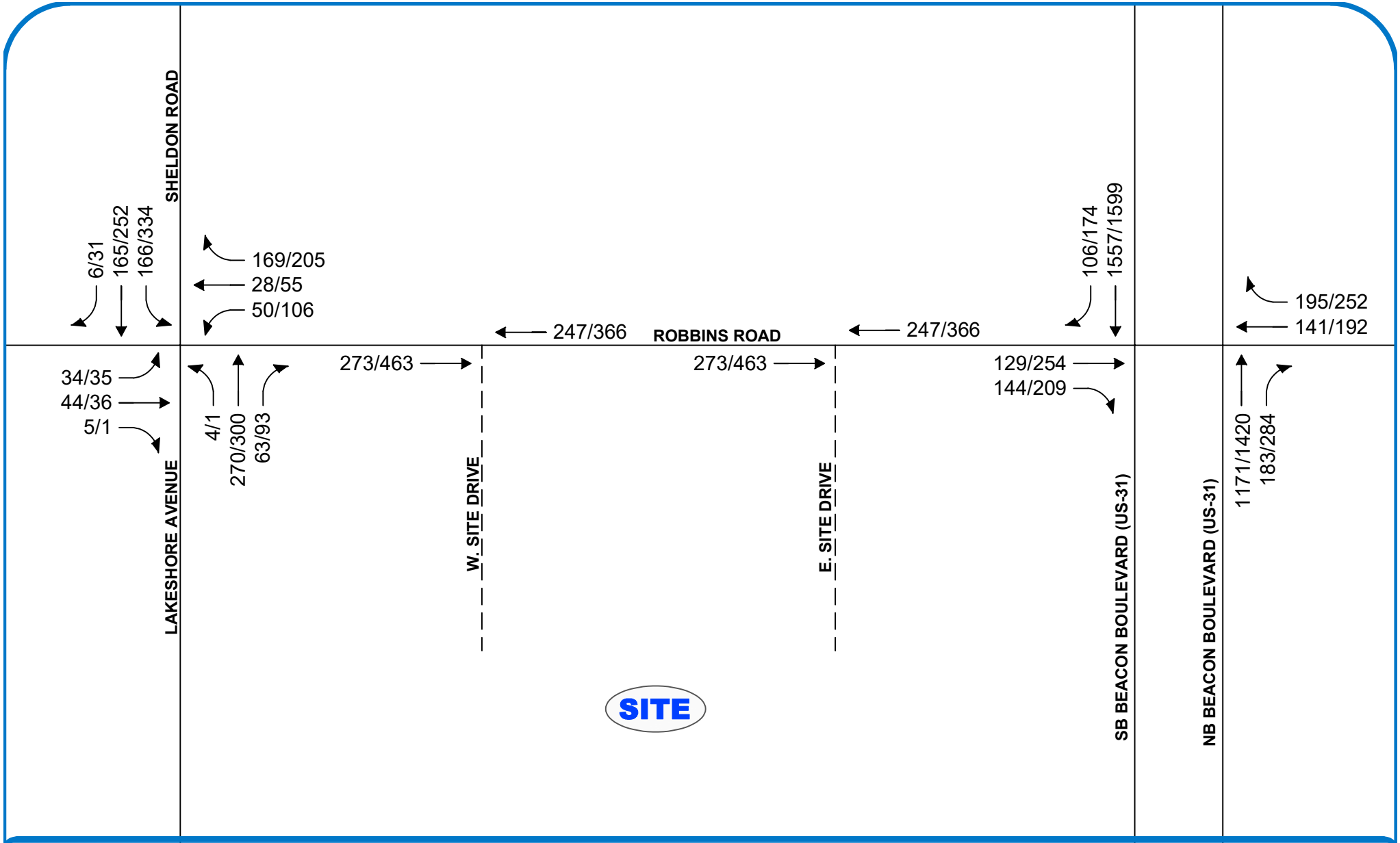


FIGURE 3

EXISTING (2025) TRAFFIC VOLUMES

SOUTH VILLAGE TIS - GRAND HAVEN, MI

LEGEND

ROADS

PROPOSED ROADS

TRAFFIC VOLUMES (AM/PM)

NORTH

SCALE: NOT TO SCALE

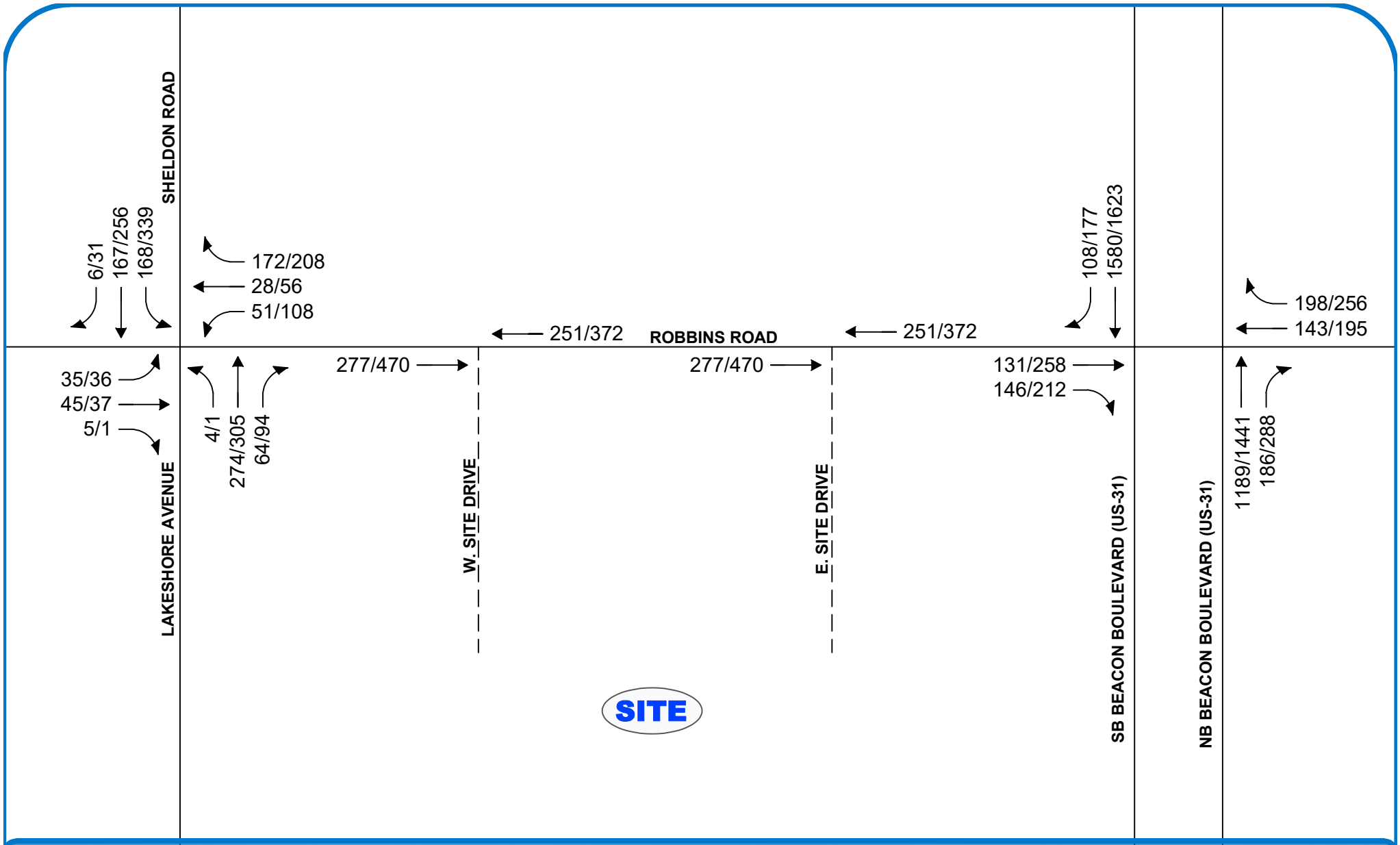


FIGURE 4
BACKGROUND (2028) TRAFFIC VOLUMES

SOUTH VILLAGE TIS - GRAND HAVEN, MI

LEGEND

ROADS

PROPOSED ROADS

TRAFFIC VOLUMES (AM/PM)

NORTH

SCALE: NOT TO SCALE

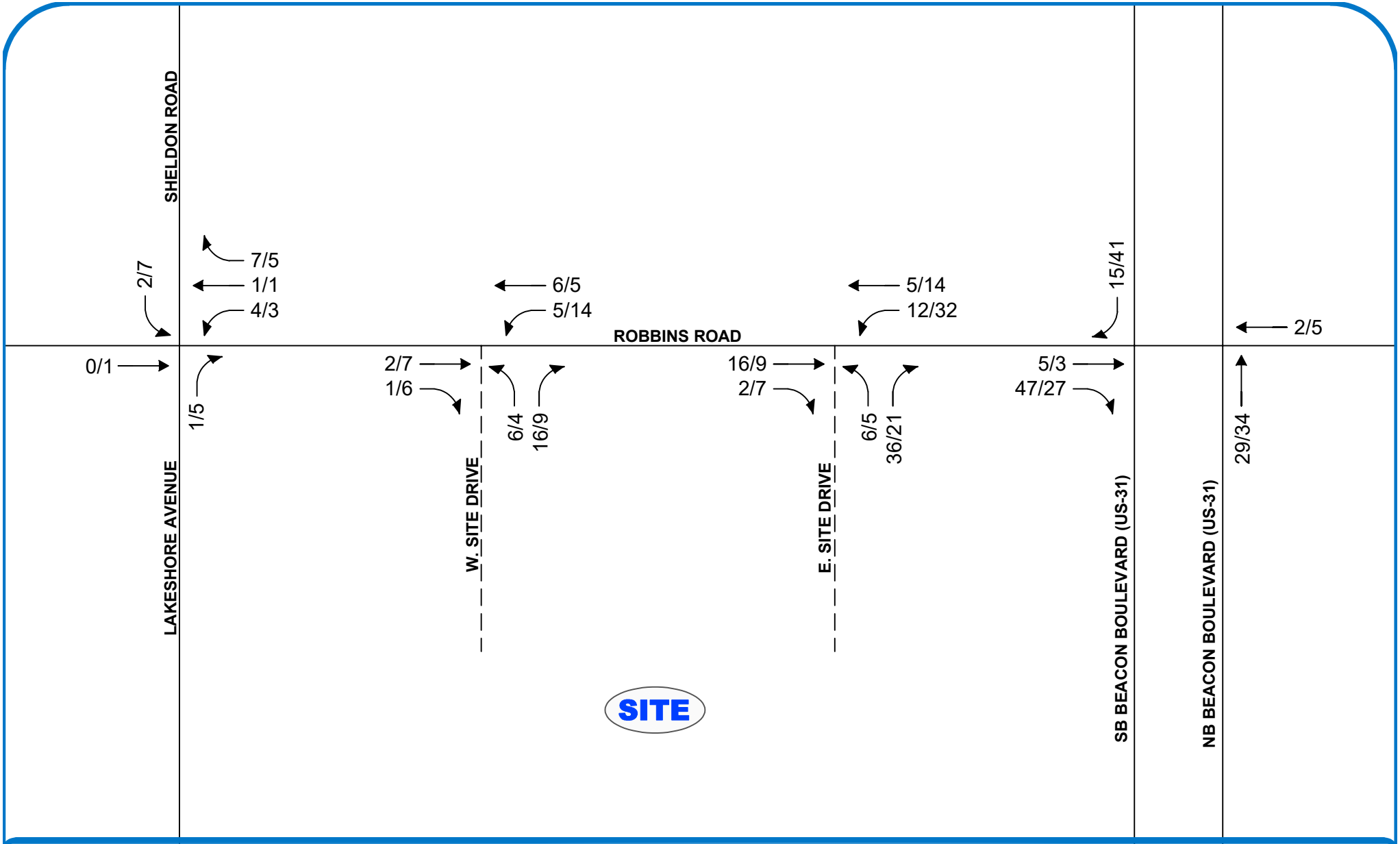


FIGURE 5

SITE-GENERATED TRAFFIC VOLUMES

SOUTH VILLAGE TIS - GRAND HAVEN, MI

LEGEND

ROADS

PROPOSED ROADS

TRAFFIC VOLUMES (AM/PM)

NORTH

SCALE: NOT TO SCALE

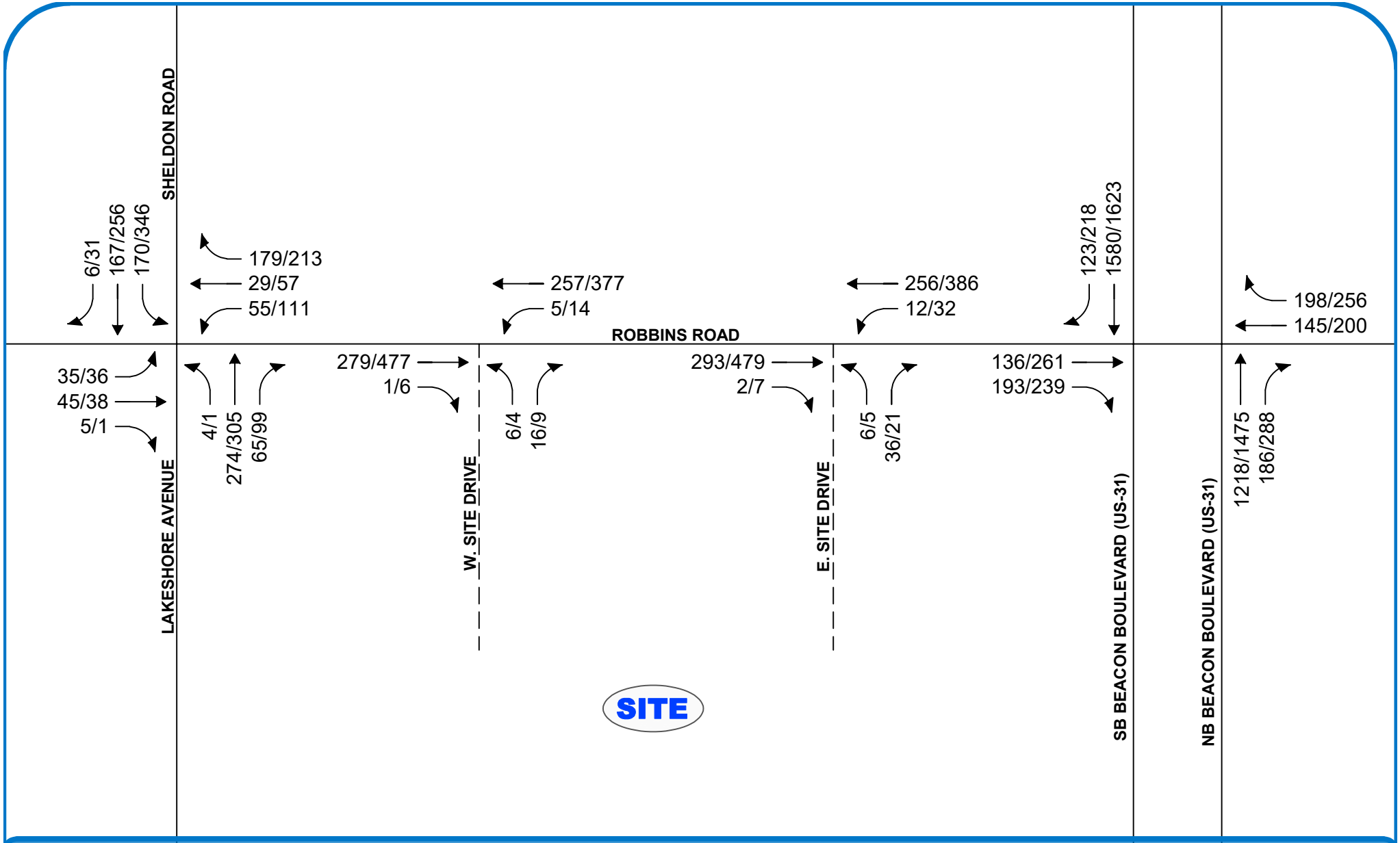


FIGURE 6

FUTURE (2028) TRAFFIC VOLUMES

SOUTH VILLAGE TIS - GRAND HAVEN, MI

LEGEND

ROADS

PROPOSED ROADS

TRAFFIC VOLUMES (AM/PM)

NORTH

SCALE: NOT TO SCALE

Figure 7 - Recommendations





May 20, 2025 north 0' 30' 60' 120' scale 1"=60'

SOUTH VILLAGE

SITE LAYOUT

project number: 24201135

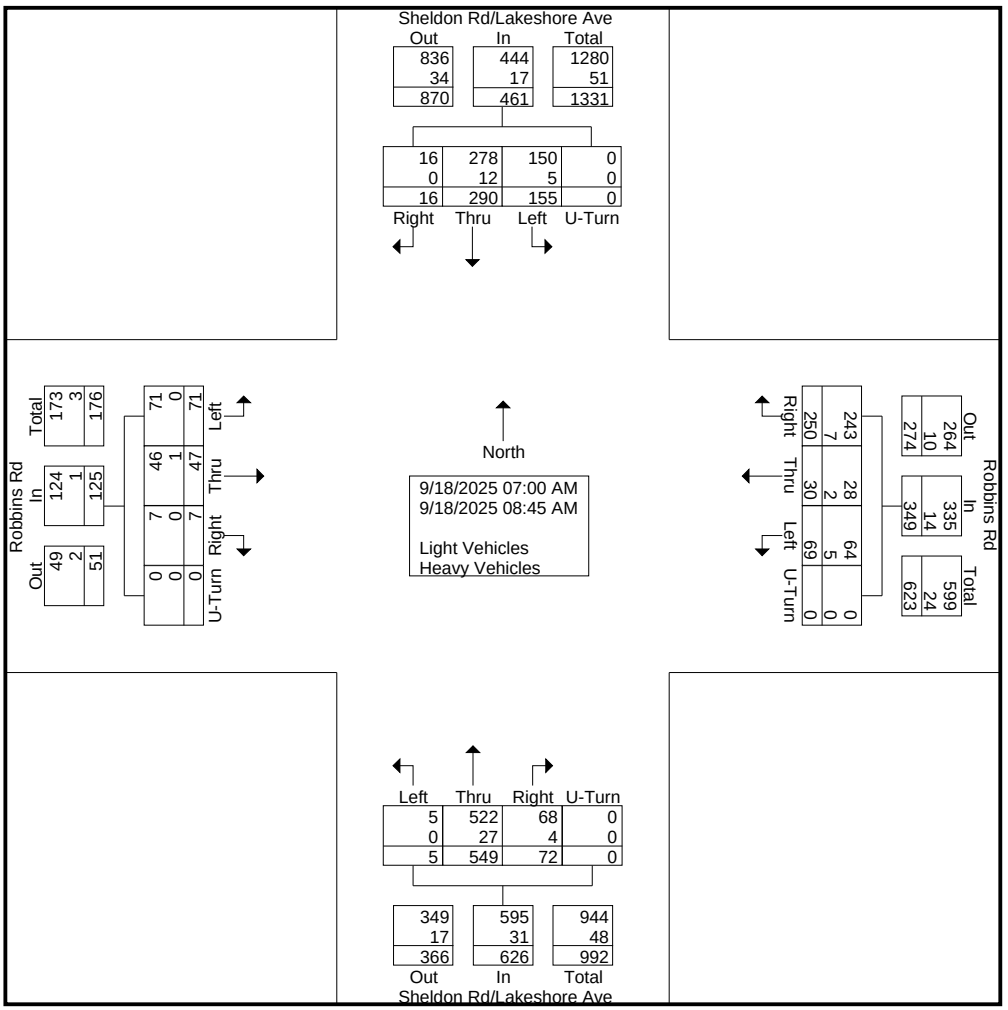
NEDERVELD

TRUE DATA TO IMPROVE MOBILITY

File Name : 17227101 - Sheldon Rd_Lakeshore Ave -- Robbins Rd
Site Code : 17227101
Start Date : 9/18/2025
Page No : 1

Groups Printed- Light Vehicles - Heavy Vehicles

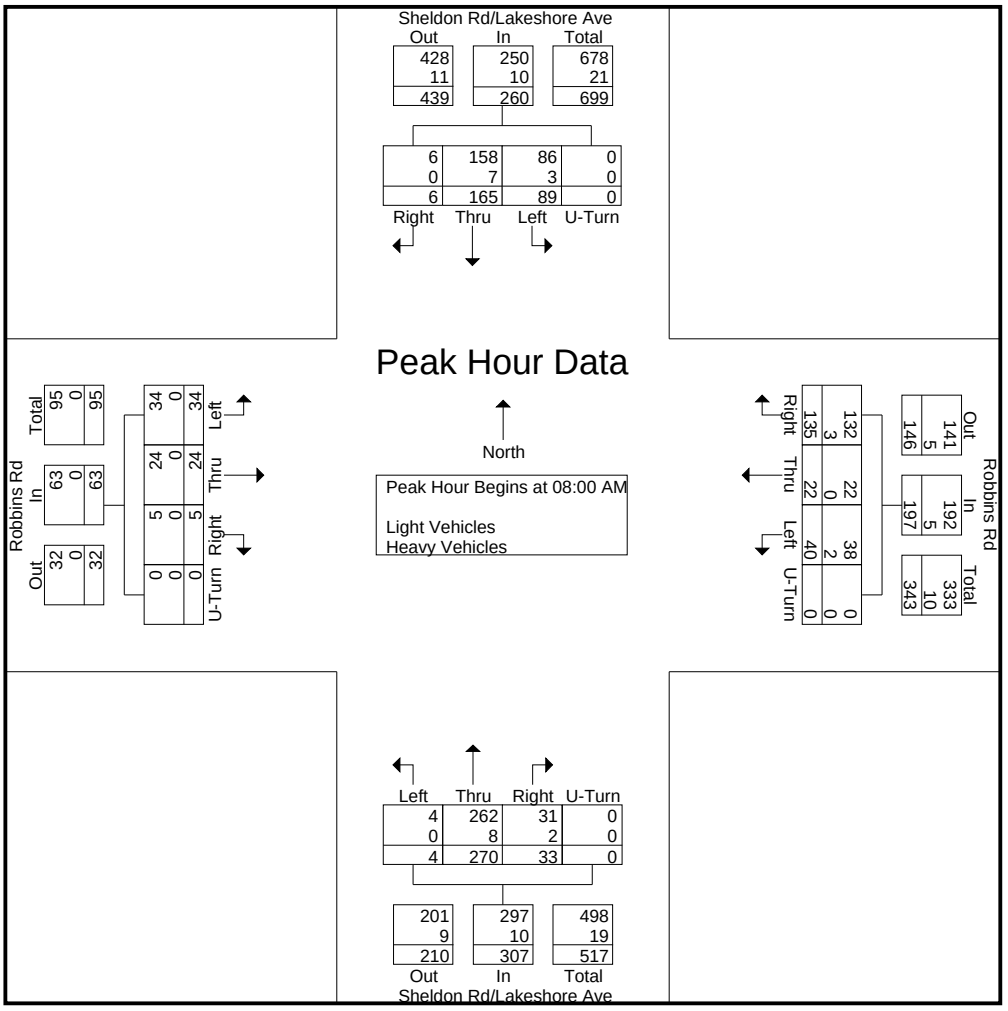
	Robbins Rd Eastbound					Robbins Rd Westbound					Sheldon Rd/Lakeshore Ave Northbound					Sheldon Rd/Lakeshore Ave Southbound					
Start Time	Left	Thru	Right	U-Turn	App. Total	Left	Thru	Right	U-Turn	App. Total	Left	Thru	Right	U-Turn	App. Total	Left	Thru	Right	U-Turn	App. Total	Int. Total
07:00 AM	8	8	0	0	16	6	3	22	0	31	0	51	5	0	56	18	30	0	0	48	151
07:15 AM	9	2	1	0	12	3	0	32	0	35	1	104	12	0	117	16	49	2	0	67	231
07:30 AM	10	7	0	0	17	7	3	31	0	41	0	68	15	0	83	21	25	3	0	49	190
07:45 AM	10	6	1	0	17	13	2	30	0	45	0	56	7	0	63	11	21	5	0	37	162
Total	37	23	2	0	62	29	8	115	0	152	1	279	39	0	319	66	125	10	0	201	734
08:00 AM	11	7	0	0	18	7	3	43	0	53	0	57	7	0	64	12	33	0	0	45	180
08:15 AM	10	8	1	0	19	15	3	33	0	51	0	79	11	0	90	42	50	1	0	93	253
08:30 AM	3	8	1	0	12	9	7	30	0	46	3	67	12	0	82	22	45	5	0	72	212
08:45 AM	10	1	3	0	14	9	9	29	0	47	1	67	3	0	71	13	37	0	0	50	182
Total	34	24	5	0	63	40	22	135	0	197	4	270	33	0	307	89	165	6	0	260	827
Grand Total	71	47	7	0	125	69	30	250	0	349	5	549	72	0	626	155	290	16	0	461	1561
Apprch %	56.8	37.6	5.6	0		19.8	8.6	71.6	0		0.8	87.7	11.5	0		33.6	62.9	3.5	0		
Total %	4.5	3	0.4	0	8	4.4	1.9	16	0	22.4	0.3	35.2	4.6	0	40.1	9.9	18.6	1	0	29.5	
Light Vehicles	71	46	7	0	124	64	28	243	0	335	5	522	68	0	595	150	278	16	0	444	1498
% Light Vehicles	100	97.9	100	0	99.2	92.8	93.3	97.2	0	96	100	95.1	94.4	0	95	96.8	95.9	100	0	96.3	96
Heavy Vehicles	0	1	0	0	1	5	2	7	0	14	0	27	4	0	31	5	12	0	0	17	63
% Heavy Vehicles	0	2.1	0	0	0.8	7.2	6.7	2.8	0	4	0	4.9	5.6	0	5	3.2	4.1	0	0	3.7	4



TRUE DATA TO IMPROVE MOBILITY

File Name : 17227101 - Sheldon Rd_Lakeshore Ave -- Robbins Rd
Site Code : 17227101
Start Date : 9/18/2025
Page No : 2

	Robbins Rd Eastbound					Robbins Rd Westbound					Sheldon Rd/Lakeshore Ave Northbound					Sheldon Rd/Lakeshore Ave Southbound					
Start Time	Left	Thru	Right	U-Turn	App. Total	Left	Thru	Right	U-Turn	App. Total	Left	Thru	Right	U-Turn	App. Total	Left	Thru	Right	U-Turn	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 08:00 AM																					
08:00 AM	**11**	7	0	0	18	7	3	**43**	0	**53**	0	57	7	0	64	12	33	0	0	45	180
08:15 AM	10	**8**	1	0	**19**	**15**	3	33	0	51	0	**79**	11	0	**90**	**42**	**50**	1	0	**93**	**253**
08:30 AM	3	8	1	0	12	9	7	30	0	46	**3**	67	**12**	0	82	22	45	**5**	0	72	212
08:45 AM	10	1	**3**	0	14	9	**9**	29	0	47	1	67	3	0	71	13	37	0	0	50	182
Total Volume	34	24	5	0	63	40	22	135	0	197	4	270	33	0	307	89	165	6	0	260	827
% App. Total	54	38.1	7.9	0		20.3	11.2	68.5	0		1.3	87.9	10.7	0		34.2	63.5	2.3	0		
PHF	.773	.750	.417	.000	.829	.667	.611	.785	.000	.929	.333	.854	.688	.000	.853	.530	.825	.300	.000	.699	.817
Light Vehicles	34	24	5	0	63	38	22	132	0	192	4	262	31	0	297	86	158	6	0	250	802
% Light Vehicles	100	100	100	0	100	95.0	100	97.8	0	97.5	100	97.0	93.9	0	96.7	96.6	95.8	100	0	96.2	97.0
Heavy Vehicles	0	0	0	0	0	2	0	3	0	5	0	8	2	0	10	3	7	0	0	10	25
% Heavy Vehicles	0	0	0	0	0	5.0	0	2.2	0	2.5	0	3.0	6.1	0	3.3	3.4	4.2	0	0	3.8	3.0

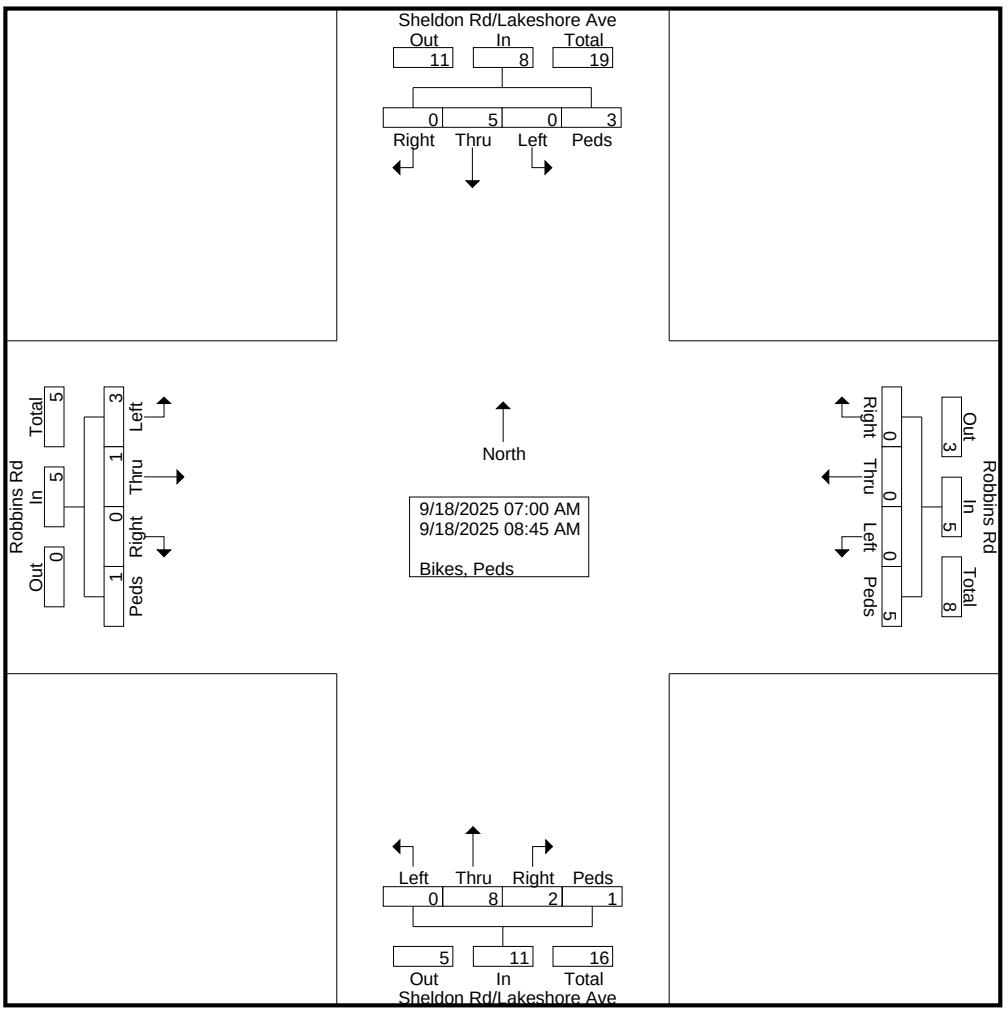


TRUE DATA TO IMPROVE MOBILITY

File Name : 17227101 - Sheldon Rd_Lakeshore Ave -- Robbins Rd
Site Code : 17227101
Start Date : 9/18/2025
Page No : 1

Groups Printed- Bikes, Peds

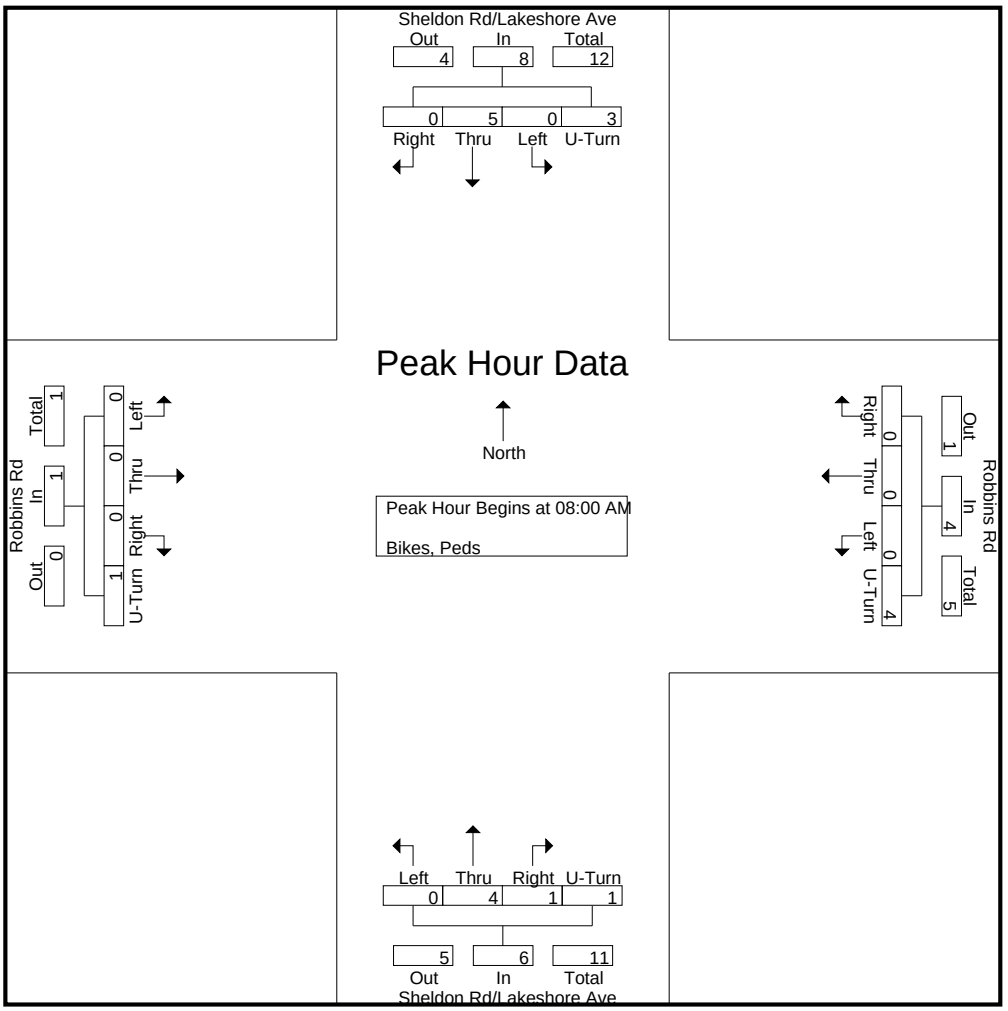
	Robbins Rd Eastbound					Robbins Rd Westbound					Sheldon Rd/Lakeshore Ave Northbound					Sheldon Rd/Lakeshore Ave Southbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
07:00 AM	2	0	0	0	2	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	3
07:15 AM	0	0	0	0	0	0	0	0	0	0	0	2	1	0	3	0	0	0	0	0	3
07:30 AM	1	1	0	0	2	0	0	0	1	1	0	1	0	0	1	0	0	0	0	0	4
07:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	3	1	0	0	4	0	0	0	1	1	0	4	1	0	5	0	0	0	0	0	10
08:00 AM	0	0	0	0	0	0	0	0	1	1	0	0	1	0	1	0	0	0	0	0	2
08:15 AM	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	3	0	2	5	6
08:30 AM	0	0	0	0	0	0	0	0	2	2	0	1	0	0	1	0	1	0	0	1	4
08:45 AM	0	0	0	1	1	0	0	0	1	1	0	2	0	1	3	0	1	0	1	2	7
Total	0	0	0	1	1	0	0	0	4	4	0	4	1	1	6	0	5	0	3	8	19
Grand Total	3	1	0	1	5	0	0	0	5	5	0	8	2	1	11	0	5	0	3	8	29
Apprch %	60	20	0	20		0	0	0	100		0	72.7	18.2	9.1		0	62.5	0	37.5		
Total %	10.3	3.4	0	3.4	17.2	0	0	0	17.2	17.2	0	27.6	6.9	3.4	37.9	0	17.2	0	10.3	27.6	



TRUE DATA TO IMPROVE MOBILITY

File Name : 17227101 - Sheldon Rd_Lakeshore Ave -- Robbins Rd
Site Code : 17227101
Start Date : 9/18/2025
Page No : 2

	Robbins Rd Eastbound					Robbins Rd Westbound					Sheldon Rd/Lakeshore Ave Northbound					Sheldon Rd/Lakeshore Ave Southbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 08:00 AM																					
08:00 AM	0	0	0	0	0	0	0	0	1	1	0	0	**1**	0	1	0	0	0	0	0	2
08:15 AM	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	**3**	0	**2**	**5**	6
08:30 AM	0	0	0	0	0	0	0	0	**2**	**2**	0	1	0	0	1	0	1	0	0	1	4
08:45 AM	0	0	0	**1**	**1**	0	0	0	1	1	0	**2**	0	**1**	**3**	0	1	0	1	2	**7**
Total Volume	0	0	0	1	1	0	0	0	4	4	0	4	1	1	6	0	5	0	3	8	19
% App. Total	0	0	0	100		0	0	0	100		0	66.7	16.7	16.7		0	62.5	0	37.5		
PHF	.000	.000	.000	.250	.250	.000	.000	.000	.500	.500	.000	.500	.250	.250	.500	.000	.417	.000	.375	.400	.679

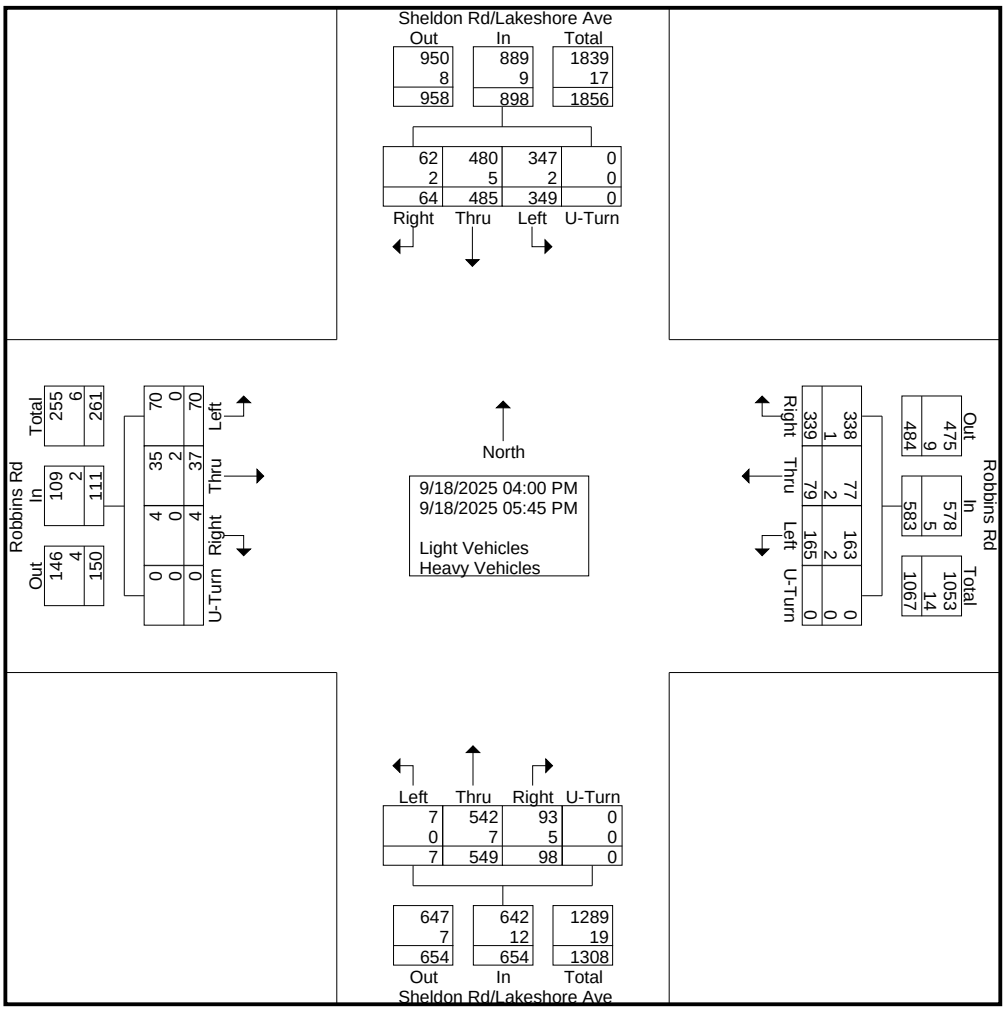


TRUE DATA TO IMPROVE MOBILITY

File Name : 17227102 - Sheldon Rd_Lakeshore Ave -- Robbins Rd
Site Code : 17227102
Start Date : 9/18/2025
Page No : 1

Groups Printed- Light Vehicles - Heavy Vehicles

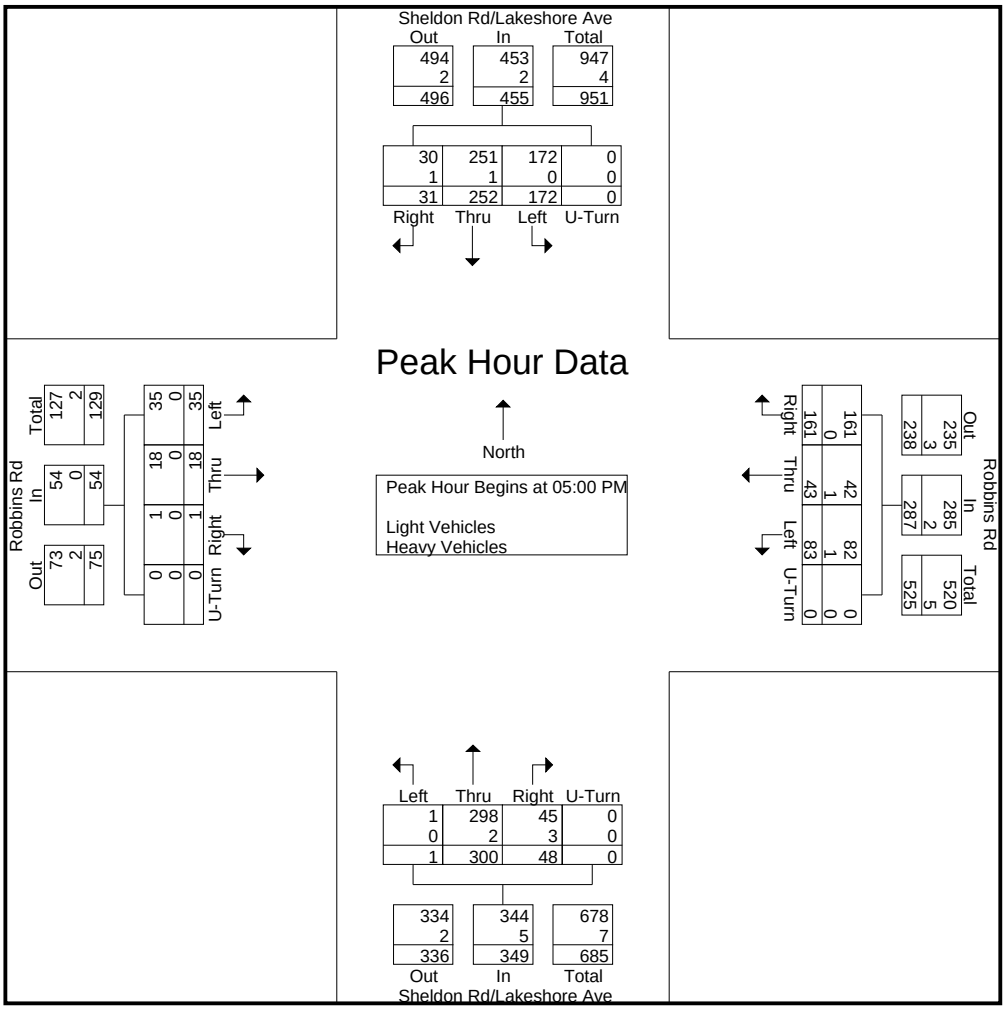
	Robbins Rd Eastbound					Robbins Rd Westbound					Sheldon Rd/Lakeshore Ave Northbound					Sheldon Rd/Lakeshore Ave Southbound					
Start Time	Left	Thru	Right	U-Turn	App. Total	Left	Thru	Right	U-Turn	App. Total	Left	Thru	Right	U-Turn	App. Total	Left	Thru	Right	U-Turn	App. Total	Int. Total
04:00 PM	11	4	1	0	16	30	16	54	0	100	2	41	14	0	57	48	54	8	0	110	283
04:15 PM	11	3	0	0	14	12	6	46	0	64	1	79	7	0	87	43	55	11	0	109	274
04:30 PM	6	1	1	0	8	20	8	42	0	70	3	65	12	0	80	44	58	8	0	110	268
04:45 PM	7	11	1	0	19	20	6	36	0	62	0	64	17	0	81	42	66	6	0	114	276
Total	35	19	3	0	57	82	36	178	0	296	6	249	50	0	305	177	233	33	0	443	1101
05:00 PM	10	8	0	0	18	24	12	48	0	84	0	62	10	0	72	56	74	9	0	139	313
05:15 PM	6	2	0	0	8	21	8	42	0	71	1	84	11	0	96	33	55	11	0	99	274
05:30 PM	9	4	1	0	14	20	14	32	0	66	0	70	14	0	84	45	66	5	0	116	280
05:45 PM	10	4	0	0	14	18	9	39	0	66	0	84	13	0	97	38	57	6	0	101	278
Total	35	18	1	0	54	83	43	161	0	287	1	300	48	0	349	172	252	31	0	455	1145
Grand Total	70	37	4	0	111	165	79	339	0	583	7	549	98	0	654	349	485	64	0	898	2246
Apprch %	63.1	33.3	3.6	0		28.3	13.6	58.1	0		1.1	83.9	15	0		38.9	54	7.1	0		
Total %	3.1	1.6	0.2	0	4.9	7.3	3.5	15.1	0	26	0.3	24.4	4.4	0	29.1	15.5	21.6	2.8	0	40	
Light Vehicles	70	35	4	0	109	163	77	338	0	578	7	542	93	0	642	347	480	62	0	889	2218
% Light Vehicles	100	94.6	100	0	98.2	98.8	97.5	99.7	0	99.1	100	98.7	94.9	0	98.2	99.4	99	96.9	0	99	98.8
Heavy Vehicles	0	2	0	0	2	2	2	1	0	5	0	7	5	0	12	2	5	2	0	9	28
% Heavy Vehicles	0	5.4	0	0	1.8	1.2	2.5	0.3	0	0.9	0	1.3	5.1	0	1.8	0.6	1	3.1	0	1	1.2



TRUE DATA TO IMPROVE MOBILITY

File Name : 17227102 - Sheldon Rd_Lakeshore Ave -- Robbins Rd
Site Code : 17227102
Start Date : 9/18/2025
Page No : 2

	Robbins Rd Eastbound					Robbins Rd Westbound					Sheldon Rd/Lakeshore Ave Northbound					Sheldon Rd/Lakeshore Ave Southbound					
Start Time	Left	Thru	Right	U-Turn	App. Total	Left	Thru	Right	U-Turn	App. Total	Left	Thru	Right	U-Turn	App. Total	Left	Thru	Right	U-Turn	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 05:00 PM																					
05:00 PM	**10**	**8**	0	0	**18**	**24**	12	**48**	0	**84**	0	62	10	0	72	**56**	**74**	9	0	**139**	**313**
05:15 PM	6	2	0	0	8	21	8	42	0	71	**1**	**84**	11	0	96	33	55	**11**	0	99	274
05:30 PM	9	4	**1**	0	14	20	**14**	32	0	66	0	70	**14**	0	84	45	66	5	0	116	280
05:45 PM	10	4	0	0	14	18	9	39	0	66	0	84	13	0	**97**	38	57	6	0	101	278
Total Volume	35	18	1	0	54	83	43	161	0	287	1	300	48	0	349	172	252	31	0	455	1145
% App. Total	64.8	33.3	1.9	0		28.9	15	56.1	0		0.3	86	13.8	0		37.8	55.4	6.8	0		
PHF	.875	.563	.250	.000	.750	.865	.768	.839	.000	.854	.250	.893	.857	.000	.899	.768	.851	.705	.000	.818	.915
Light Vehicles	35	18	1	0	54	82	42	161	0	285	1	298	45	0	344	172	251	30	0	453	1136
% Light Vehicles	100	100	100	0	100	98.8	97.7	100	0	99.3	100	99.3	93.8	0	98.6	100	99.6	96.8	0	99.6	99.2
Heavy Vehicles	0	0	0	0	0	1	1	0	0	2	0	2	3	0	5	0	1	1	0	2	9
% Heavy Vehicles	0	0	0	0	0	1.2	2.3	0	0	0.7	0	0.7	6.3	0	1.4	0	0.4	3.2	0	0.4	0.8

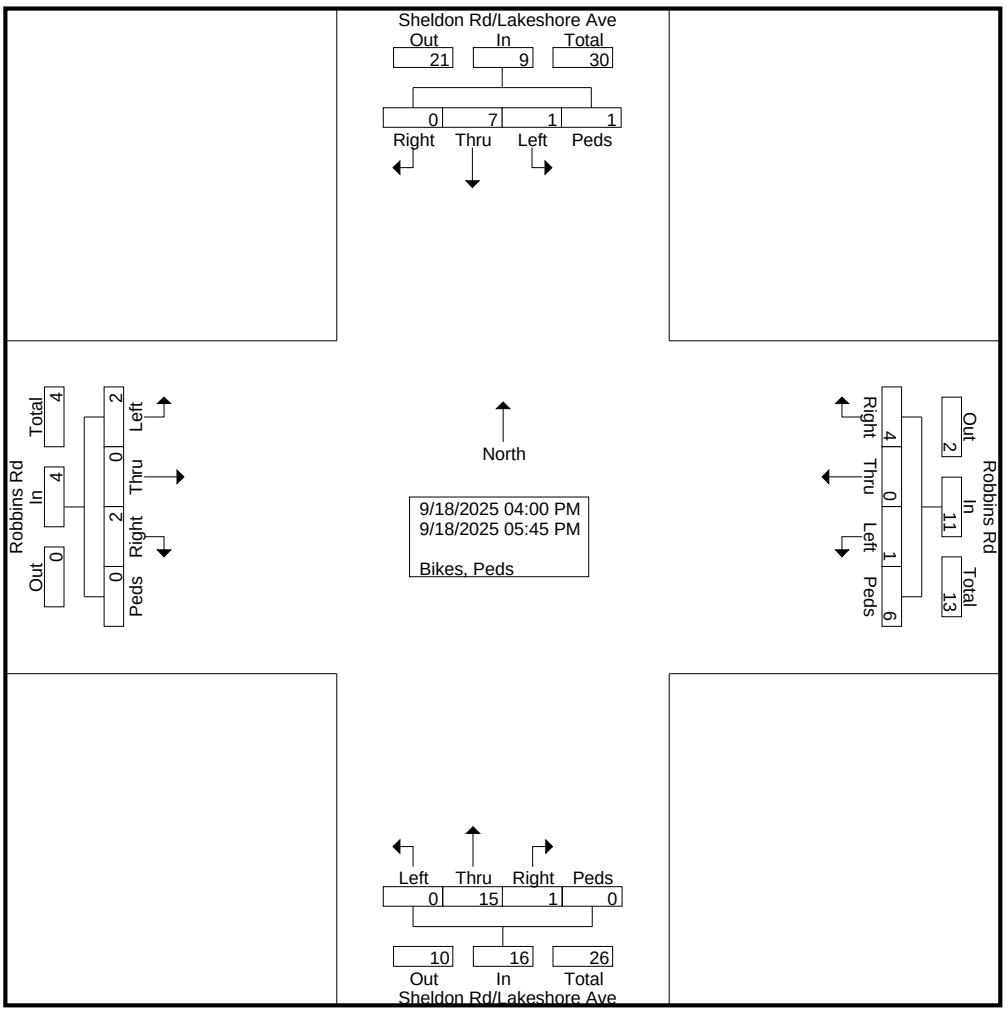


TRUE DATA TO IMPROVE MOBILITY

File Name : 17227102 - Sheldon Rd_Lakeshore Ave -- Robbins Rd
Site Code : 17227102
Start Date : 9/18/2025
Page No : 1

Groups Printed- Bikes, Peds

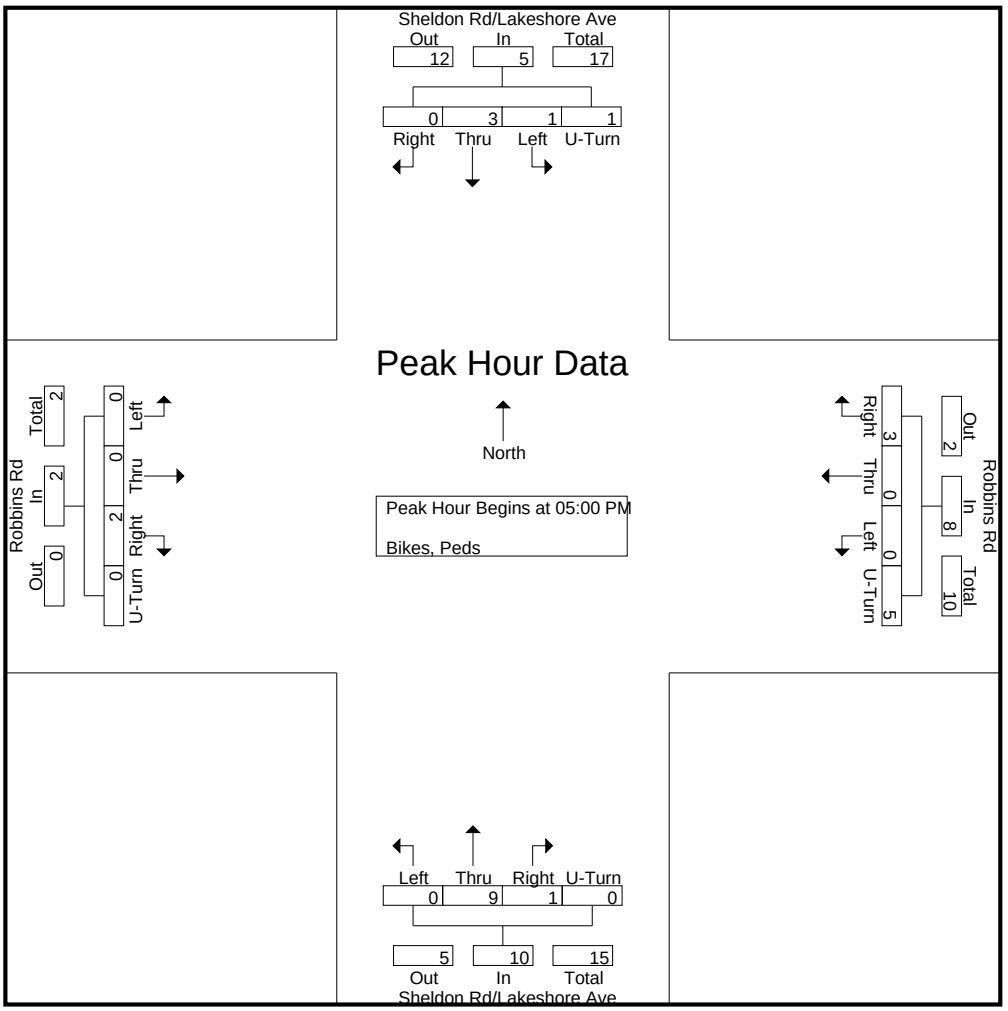
	Robbins Rd Eastbound					Robbins Rd Westbound					Sheldon Rd/Lakeshore Ave Northbound					Sheldon Rd/Lakeshore Ave Southbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
04:00 PM	2	0	0	0	2	1	0	0	1	2	0	1	0	0	1	0	2	0	0	2	7
04:15 PM	0	0	0	0	0	0	0	1	0	1	0	3	0	0	3	0	1	0	0	1	5
04:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:45 PM	0	0	0	0	0	0	0	0	0	0	0	2	0	0	2	0	1	0	0	1	3
Total	2	0	0	0	2	1	0	1	1	3	0	6	0	0	6	0	4	0	0	4	15
05:00 PM	0	0	0	0	0	0	0	0	0	0	0	1	1	0	2	0	0	0	0	0	2
05:15 PM	0	0	0	0	0	0	0	3	0	3	0	7	0	0	7	0	0	0	0	0	10
05:30 PM	0	0	0	0	0	0	0	0	3	3	0	1	0	0	1	1	0	0	0	1	5
05:45 PM	0	0	2	0	2	0	0	0	2	2	0	0	0	0	0	0	3	0	1	4	8
Total	0	0	2	0	2	0	0	3	5	8	0	9	1	0	10	1	3	0	1	5	25
Grand Total	2	0	2	0	4	1	0	4	6	11	0	15	1	0	16	1	7	0	1	9	40
Apprch %	50	0	50	0		9.1	0	36.4	54.5		0	93.8	6.2	0		11.1	77.8	0	11.1		
Total %	5	0	5	0	10	2.5	0	10	15	27.5	0	37.5	2.5	0	40	2.5	17.5	0	2.5	22.5	



TRUE DATA TO IMPROVE MOBILITY

File Name : 17227102 - Sheldon Rd_Lakeshore Ave -- Robbins Rd
Site Code : 17227102
Start Date : 9/18/2025
Page No : 2

	Robbins Rd Eastbound					Robbins Rd Westbound					Sheldon Rd/Lakeshore Ave Northbound					Sheldon Rd/Lakeshore Ave Southbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 05:00 PM																					
05:00 PM	0	0	0	0	0	0	0	0	0	0	0	1	**1**	0	2	0	0	0	0	0	2
05:15 PM	0	0	0	0	0	0	0	**3**	0	**3**	0	**7**	0	0	**7**	0	0	0	0	0	**10**
05:30 PM	0	0	0	0	0	0	0	0	**3**	3	0	1	0	0	1	**1**	0	0	0	1	5
05:45 PM	0	0	**2**	0	**2**	0	0	0	2	2	0	0	0	0	0	0	**3**	0	**1**	**4**	8
Total Volume	0	0	2	0	2	0	0	3	5	8	0	9	1	0	10	1	3	0	1	5	25
% App. Total	0	0	100	0		0	0	37.5	62.5		0	90	10	0		20	60	0	20		
PHF	.000	.000	.250	.000	.250	.000	.000	.250	.417	.667	.000	.321	.250	.000	.357	.250	.250	.000	.250	.313	.625

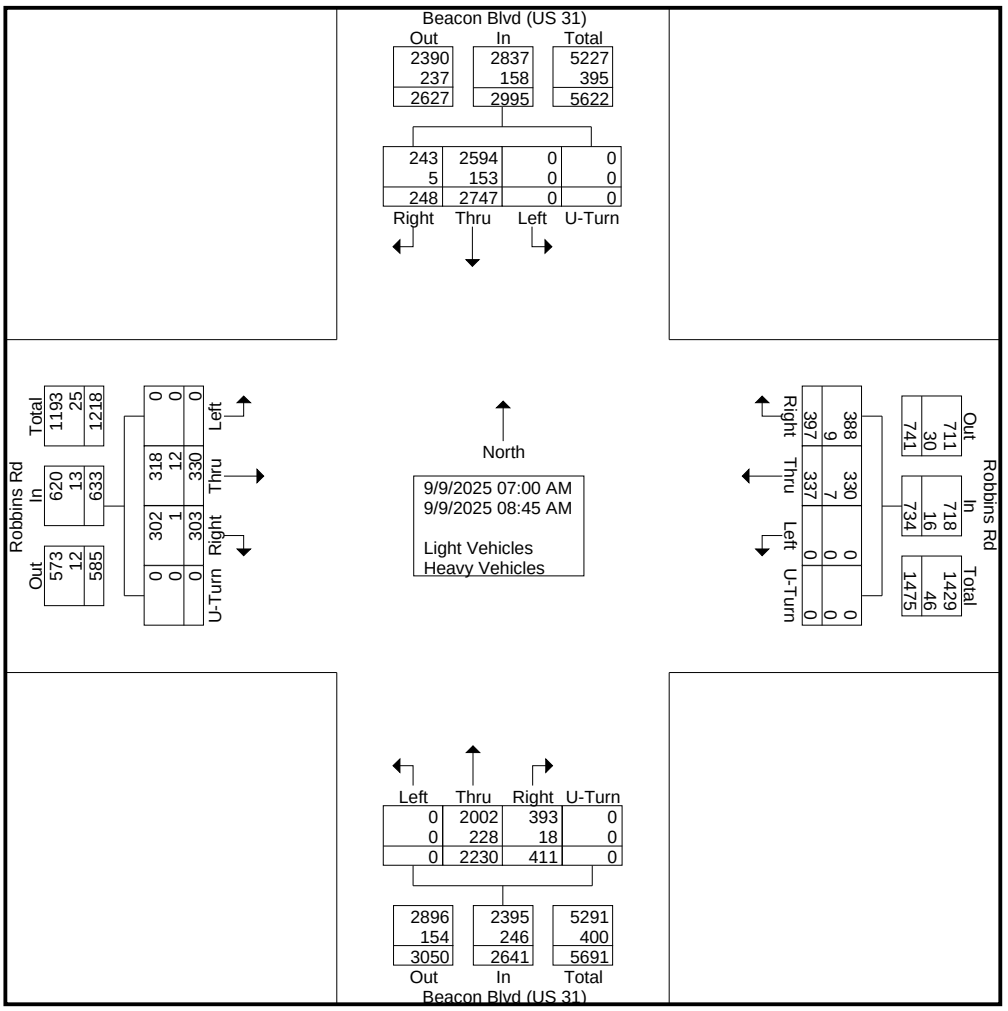


TRUE DATA TO IMPROVE MOBILITY

File Name : 17227103 - Beacon Blvd (US 31) -- Robbins Rd
Site Code : 17227103
Start Date : 9/9/2025
Page No : 1

Groups Printed- Light Vehicles - Heavy Vehicles

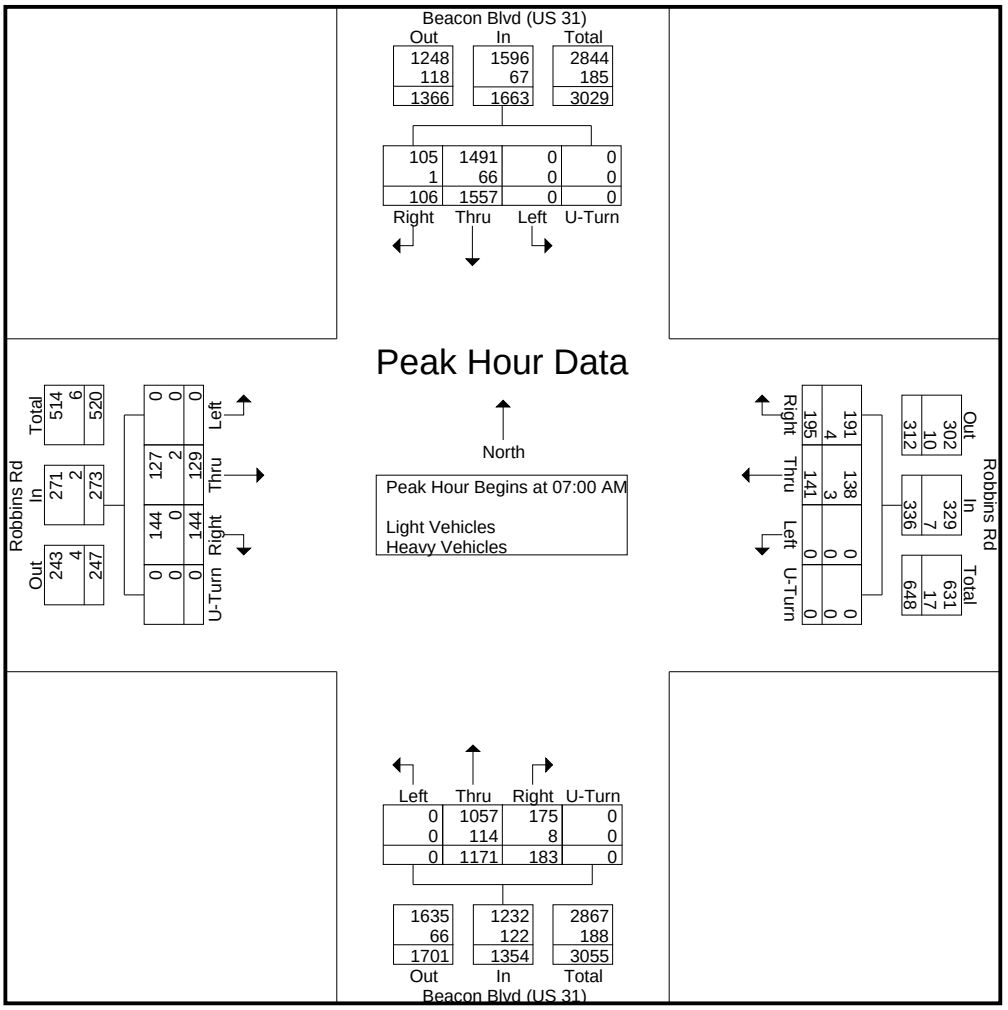
	Robbins Rd Eastbound					Robbins Rd Westbound					Beacon Blvd (US 31) Northbound					Beacon Blvd (US 31) Southbound					
Start Time	Left	Thru	Right	U-Turn	App. Total	Left	Thru	Right	U-Turn	App. Total	Left	Thru	Right	U-Turn	App. Total	Left	Thru	Right	U-Turn	App. Total	Int. Total
07:00 AM	0	27	28	0	55	0	23	48	0	71	0	249	38	0	287	0	374	18	0	392	805
07:15 AM	0	30	35	0	65	0	30	46	0	76	0	318	38	0	356	0	441	24	0	465	962
07:30 AM	0	37	43	0	80	0	29	42	0	71	0	291	53	0	344	0	377	26	0	403	898
07:45 AM	0	35	38	0	73	0	59	59	0	118	0	313	54	0	367	0	365	38	0	403	961
Total	0	129	144	0	273	0	141	195	0	336	0	1171	183	0	1354	0	1557	106	0	1663	3626
08:00 AM	0	53	39	0	92	0	44	39	0	83	0	235	43	0	278	0	290	31	0	321	774
08:15 AM	0	49	35	0	84	0	65	54	0	119	0	303	66	0	369	0	303	29	0	332	904
08:30 AM	0	53	46	0	99	0	51	52	0	103	0	275	59	0	334	0	320	36	0	356	892
08:45 AM	0	46	39	0	85	0	36	57	0	93	0	246	60	0	306	0	277	46	0	323	807
Total	0	201	159	0	360	0	196	202	0	398	0	1059	228	0	1287	0	1190	142	0	1332	3377
Grand Total	0	330	303	0	633	0	337	397	0	734	0	2230	411	0	2641	0	2747	248	0	2995	7003
Apprch %	0	52.1	47.9	0		0	45.9	54.1	0		0	84.4	15.6	0		0	91.7	8.3	0		
Total %	0	4.7	4.3	0	9	0	4.8	5.7	0	10.5	0	31.8	5.9	0	37.7	0	39.2	3.5	0	42.8	
Light Vehicles	0	318	302	0	620	0	330	388	0	718	0	2002	393	0	2395	0	2594	243	0	2837	6570
% Light Vehicles	0	96.4	99.7	0	97.9	0	97.9	97.7	0	97.8	0	89.8	95.6	0	90.7	0	94.4	98	0	94.7	93.8
Heavy Vehicles	0	12	1	0	13	0	7	9	0	16	0	228	18	0	246	0	153	5	0	158	433
% Heavy Vehicles	0	3.6	0.3	0	2.1	0	2.1	2.3	0	2.2	0	10.2	4.4	0	9.3	0	5.6	2	0	5.3	6.2



TRUE DATA TO IMPROVE MOBILITY

File Name : 17227103 - Beacon Blvd (US 31) -- Robbins Rd
Site Code : 17227103
Start Date : 9/9/2025
Page No : 2

	Robbins Rd Eastbound					Robbins Rd Westbound					Beacon Blvd (US 31) Northbound					Beacon Blvd (US 31) Southbound					
Start Time	Left	Thru	Right	U-Turn	App. Total	Left	Thru	Right	U-Turn	App. Total	Left	Thru	Right	U-Turn	App. Total	Left	Thru	Right	U-Turn	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:00 AM																					
07:00 AM	0	27	28	0	55	0	23	48	0	71	0	249	38	0	287	0	374	18	0	392	805
07:15 AM	0	30	35	0	65	0	30	46	0	76	0	**318**	38	0	356	0	**441**	24	0	**465**	**962**
07:30 AM	0	**37**	**43**	0	**80**	0	29	42	0	71	0	291	53	0	344	0	377	26	0	403	898
07:45 AM	0	35	38	0	73	0	**59**	**59**	0	**118**	0	313	**54**	0	**367**	0	365	**38**	0	403	961
Total Volume	0	129	144	0	273	0	141	195	0	336	0	1171	183	0	1354	0	1557	106	0	1663	3626
% App. Total	0	47.3	52.7	0		0	42	58	0		0	86.5	13.5	0		0	93.6	6.4	0		
PHF	.000	.872	.837	.000	.853	.000	.597	.826	.000	.712	.000	.921	.847	.000	.922	.000	.883	.697	.000	.894	.942
Light Vehicles	0	127	144	0	271	0	138	191	0	329	0	1057	175	0	1232	0	1491	105	0	1596	3428
% Light Vehicles	0	98.4	100	0	99.3	0	97.9	97.9	0	97.9	0	90.3	95.6	0	91.0	0	95.8	99.1	0	96.0	94.5
Heavy Vehicles	0	2	0	0	2	0	3	4	0	7	0	114	8	0	122	0	66	1	0	67	198
% Heavy Vehicles	0	1.6	0	0	0.7	0	2.1	2.1	0	2.1	0	9.7	4.4	0	9.0	0	4.2	0.9	0	4.0	5.5

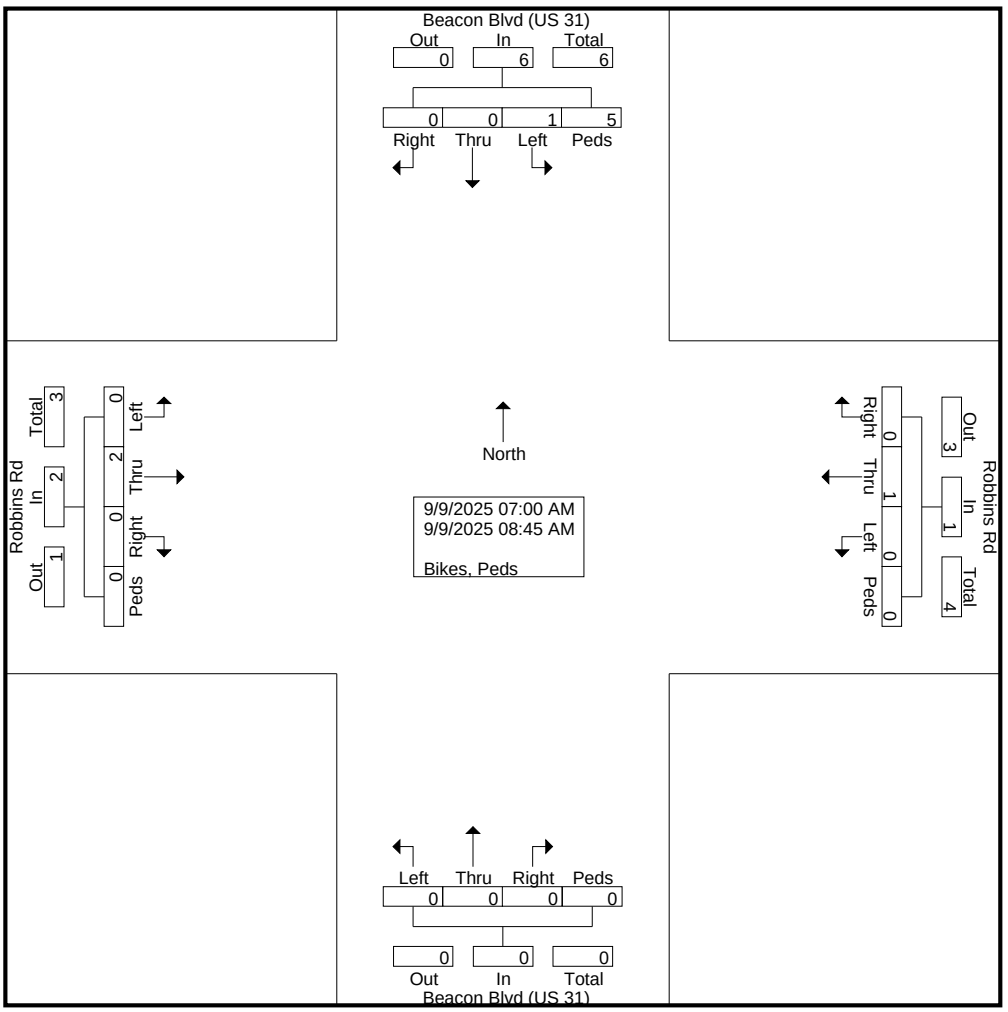


TRUE DATA TO IMPROVE MOBILITY

File Name : 17227103 - Beacon Blvd (US 31) -- Robbins Rd
Site Code : 17227103
Start Date : 9/9/2025
Page No : 1

Groups Printed- Bikes, Peds

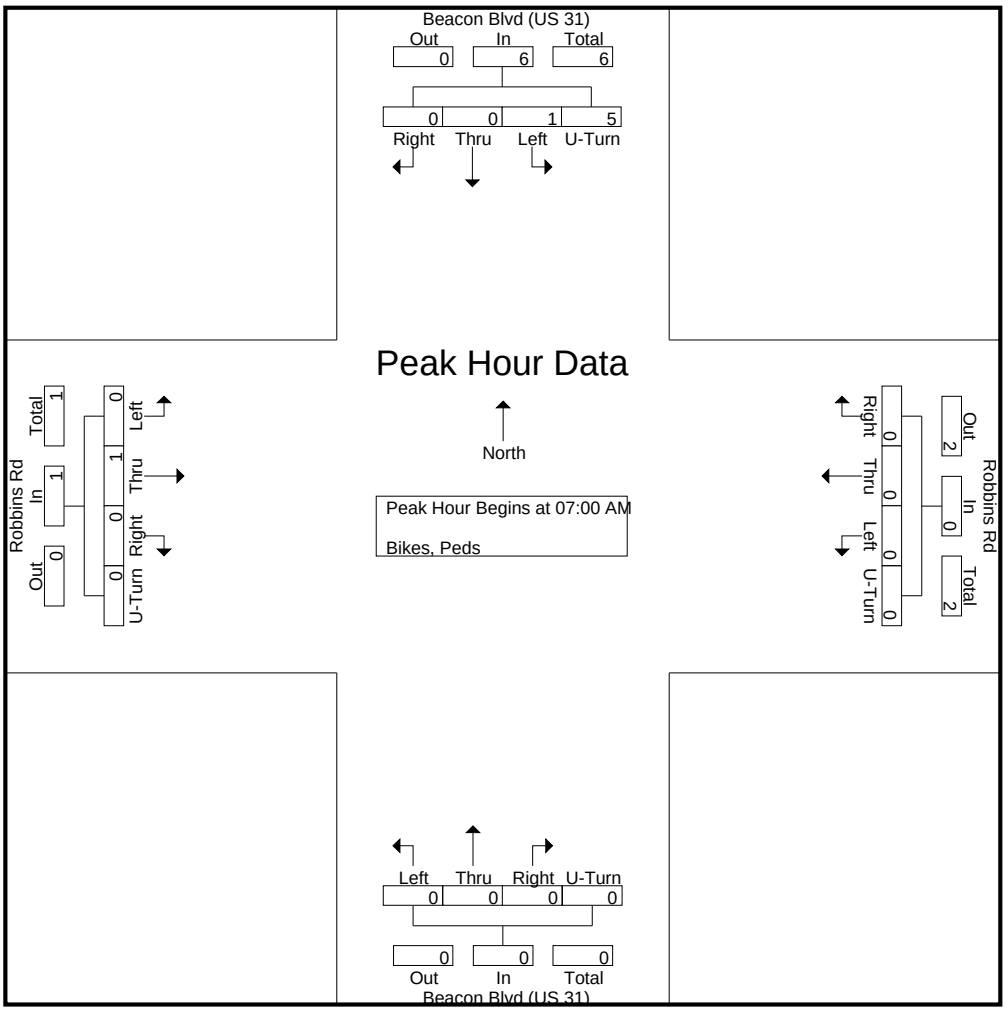
	Robbins Rd Eastbound					Robbins Rd Westbound					Beacon Blvd (US 31) Northbound					Beacon Blvd (US 31) Southbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
07:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	3	3
07:15 AM	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
07:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	2	2
07:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1
Total	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	1	0	0	5	6	7
08:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:45 AM	0	1	0	0	1	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	2
Total	0	1	0	0	1	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	2
Grand Total	0	2	0	0	2	0	1	0	0	1	0	0	0	0	0	1	0	0	5	6	9
Apprch %	0	100	0	0		0	100	0	0		0	0	0	0		16.7	0	0	83.3		
Total %	0	22.2	0	0	22.2	0	11.1	0	0	11.1	0	0	0	0	0	11.1	0	0	55.6	66.7	



TRUE DATA TO IMPROVE MOBILITY

File Name : 17227103 - Beacon Blvd (US 31) -- Robbins Rd
Site Code : 17227103
Start Date : 9/9/2025
Page No : 2

	Robbins Rd Eastbound					Robbins Rd Westbound					Beacon Blvd (US 31) Northbound					Beacon Blvd (US 31) Southbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:00 AM																					
07:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**3**	**3**	**3**
07:15 AM	0	**1**	0	0	**1**	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
07:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**1**	0	0	1	2	2
07:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1
Total Volume	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	1	0	0	5	6	7
% App. Total	0	100	0	0		0	0	0	0		0	0	0	0		16.7	0	0	83.3		
PHF	.000	.250	.000	.000	.250	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.250	.000	.000	.417	.500	.583

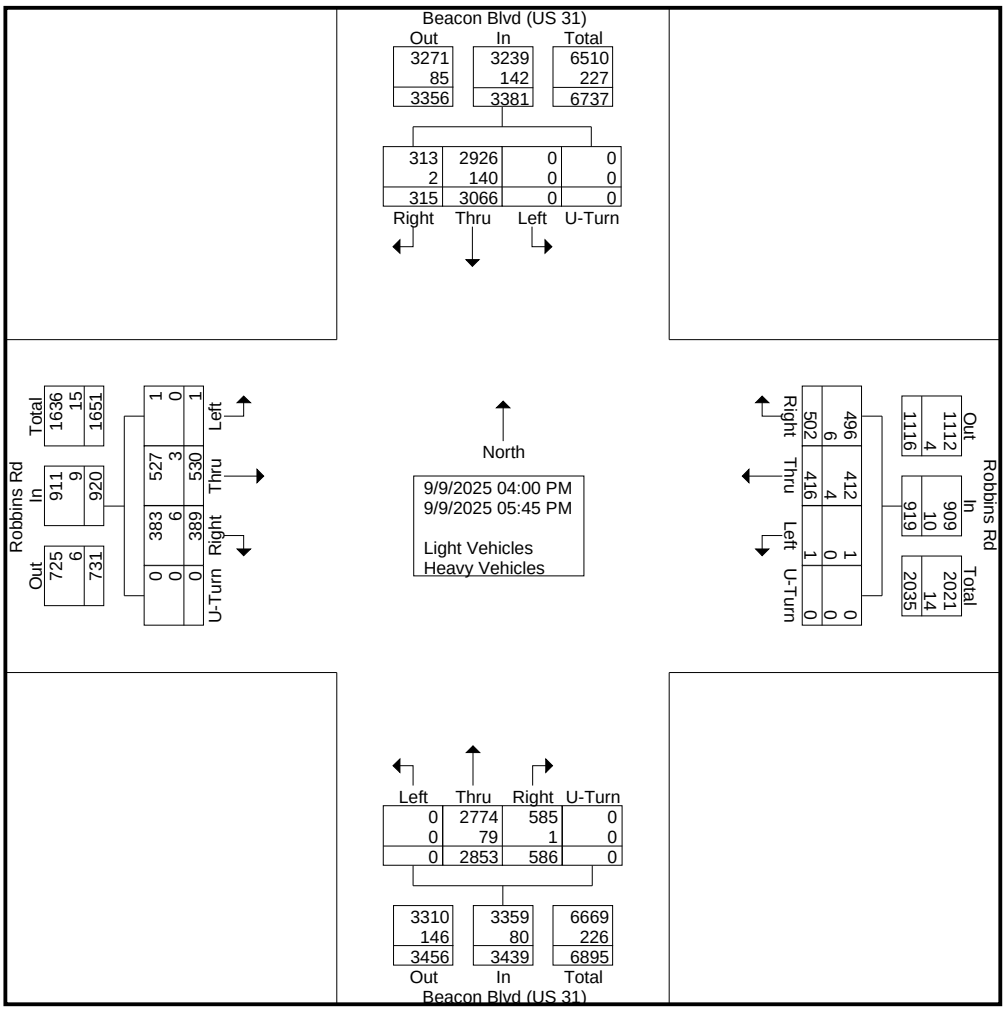


TRUE DATA TO IMPROVE MOBILITY

File Name : 17227104 - Beacon Blvd (US 31) -- Robbins Rd
Site Code : 17227104
Start Date : 9/9/2025
Page No : 1

Groups Printed- Light Vehicles - Heavy Vehicles

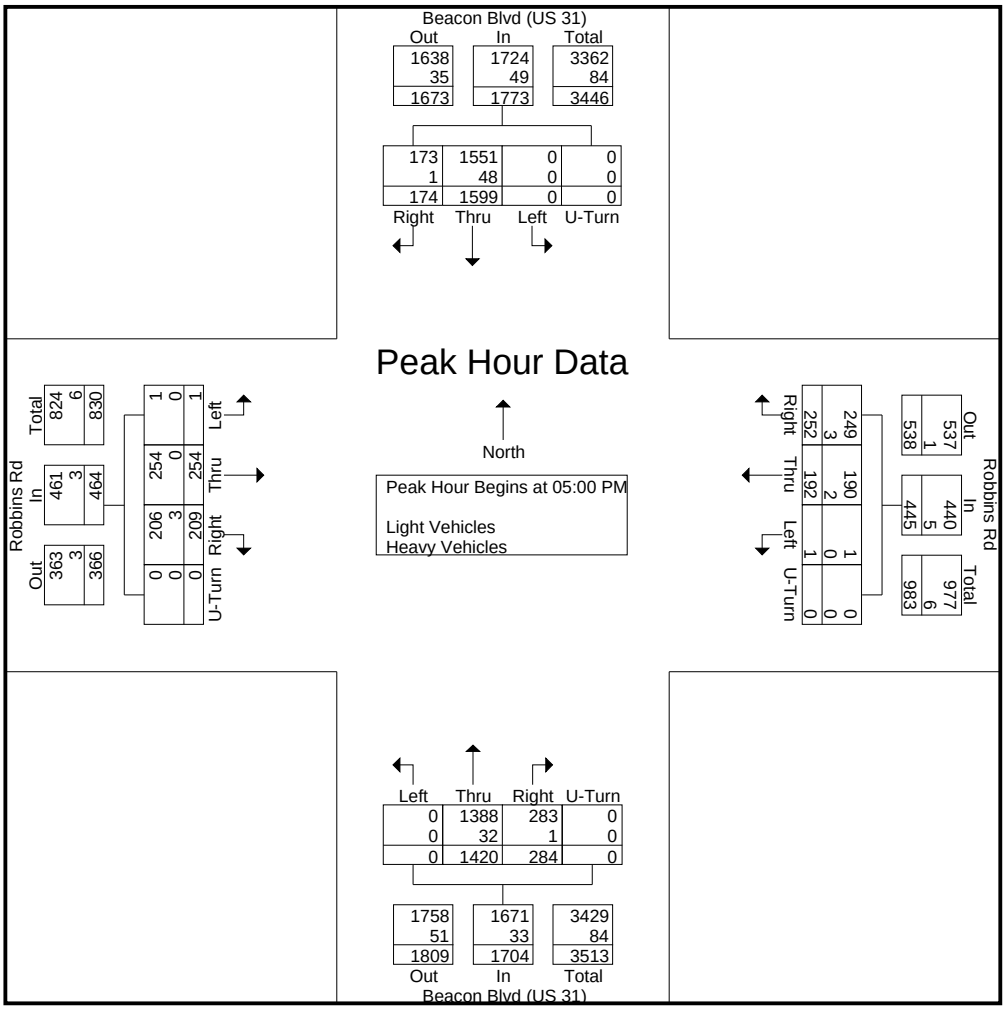
	Robbins Rd Eastbound					Robbins Rd Westbound					Beacon Blvd (US 31) Northbound					Beacon Blvd (US 31) Southbound					
Start Time	Left	Thru	Right	U-Turn	App. Total	Left	Thru	Right	U-Turn	App. Total	Left	Thru	Right	U-Turn	App. Total	Left	Thru	Right	U-Turn	App. Total	Int. Total
04:00 PM	0	70	40	0	110	0	58	76	0	134	0	400	83	0	483	0	368	33	0	401	1128
04:15 PM	0	75	41	0	116	0	72	66	0	138	0	372	95	0	467	0	342	35	0	377	1098
04:30 PM	0	64	59	0	123	0	48	57	0	105	0	329	70	0	399	0	359	39	0	398	1025
04:45 PM	0	67	40	0	107	0	46	51	0	97	0	332	54	0	386	0	398	34	0	432	1022
Total	0	276	180	0	456	0	224	250	0	474	0	1433	302	0	1735	0	1467	141	0	1608	4273
05:00 PM	0	67	56	0	123	1	48	56	0	105	0	367	67	0	434	0	423	31	0	454	1116
05:15 PM	0	71	41	0	112	0	53	63	0	116	0	358	91	0	449	0	417	44	0	461	1138
05:30 PM	0	61	57	0	118	0	46	68	0	114	0	384	58	0	442	0	367	57	0	424	1098
05:45 PM	1	55	55	0	111	0	45	65	0	110	0	311	68	0	379	0	392	42	0	434	1034
Total	1	254	209	0	464	1	192	252	0	445	0	1420	284	0	1704	0	1599	174	0	1773	4386
Grand Total	1	530	389	0	920	1	416	502	0	919	0	2853	586	0	3439	0	3066	315	0	3381	8659
Apprch %	0.1	57.6	42.3	0		0.1	45.3	54.6	0		0	83	17	0		0	90.7	9.3	0		
Total %	0	6.1	4.5	0	10.6	0	4.8	5.8	0	10.6	0	32.9	6.8	0	39.7	0	35.4	3.6	0	39	
Light Vehicles	1	527	383	0	911	1	412	496	0	909	0	2774	585	0	3359	0	2926	313	0	3239	8418
% Light Vehicles	100	99.4	98.5	0	99	100	99	98.8	0	98.9	0	97.2	99.8	0	97.7	0	95.4	99.4	0	95.8	97.2
Heavy Vehicles	0	3	6	0	9	0	4	6	0	10	0	79	1	0	80	0	140	2	0	142	241
% Heavy Vehicles	0	0.6	1.5	0	1	0	1	1.2	0	1.1	0	2.8	0.2	0	2.3	0	4.6	0.6	0	4.2	2.8



TRUE DATA TO IMPROVE MOBILITY

File Name : 17227104 - Beacon Blvd (US 31) -- Robbins Rd
Site Code : 17227104
Start Date : 9/9/2025
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	Robbins Rd Eastbound					Robbins Rd Westbound					Beacon Blvd (US 31) Northbound					Beacon Blvd (US 31) Southbound					
Start Time	Left	Thru	Right	U-Turn	App. Total	Left	Thru	Right	U-Turn	App. Total	Left	Thru	Right	U-Turn	App. Total	Left	Thru	Right	U-Turn	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 05:00 PM																					
05:00 PM	0	67	56	0	**123**	**1**	48	56	0	105	0	367	67	0	434	0	**423**	31	0	454	1116
05:15 PM	0	**71**	41	0	112	0	**53**	63	0	**116**	0	358	**91**	0	**449**	0	417	44	0	**461**	**1138**
05:30 PM	0	61	**57**	0	118	0	46	**68**	0	114	0	**384**	58	0	442	0	367	**57**	0	424	1098
05:45 PM	**1**	55	55	0	111	0	45	65	0	110	0	311	68	0	379	0	392	42	0	434	1034
Total Volume	1	254	209	0	464	1	192	252	0	445	0	1420	284	0	1704	0	1599	174	0	1773	4386
% App. Total	0.2	54.7	45	0		0.2	43.1	56.6	0		0	83.3	16.7	0		0	90.2	9.8	0		
PHF	.250	.894	.917	.000	.943	.250	.906	.926	.000	.959	.000	.924	.780	.000	.949	.000	.945	.763	.000	.961	.964
Light Vehicles	1	254	206	0	461	1	190	249	0	440	0	1388	283	0	1671	0	1551	173	0	1724	4296
% Light Vehicles	100	100	98.6	0	99.4	100	99.0	98.8	0	98.9	0	97.7	99.6	0	98.1	0	97.0	99.4	0	97.2	97.9
Heavy Vehicles	0	0	3	0	3	0	2	3	0	5	0	32	1	0	33	0	48	1	0	49	90
% Heavy Vehicles	0	0	1.4	0	0.6	0	1.0	1.2	0	1.1	0	2.3	0.4	0	1.9	0	3.0	0.6	0	2.8	2.1

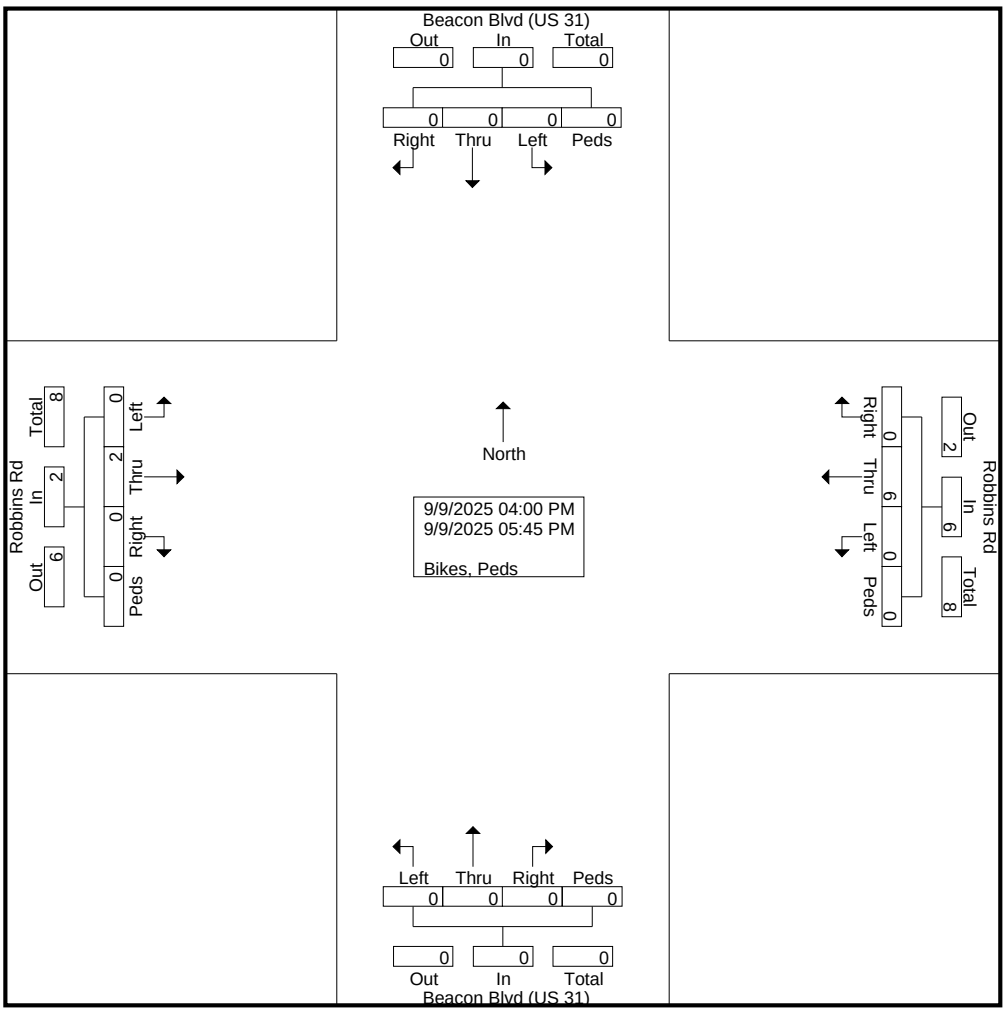


TRUE DATA TO IMPROVE MOBILITY

File Name : 17227104 - Beacon Blvd (US 31) -- Robbins Rd
Site Code : 17227104
Start Date : 9/9/2025
Page No : 1

Groups Printed- Bikes, Peds

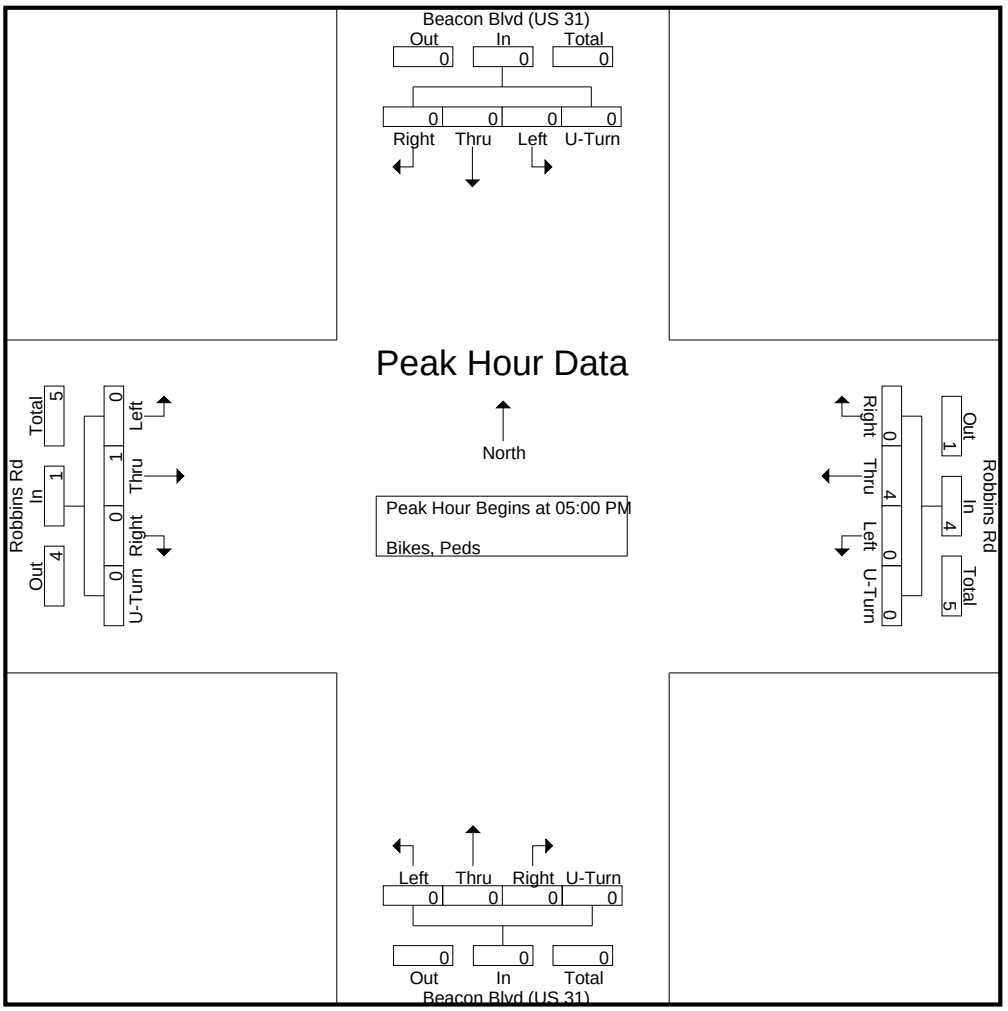
	Robbins Rd Eastbound					Robbins Rd Westbound					Beacon Blvd (US 31) Northbound					Beacon Blvd (US 31) Southbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
04:00 PM	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
04:15 PM	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	1
04:30 PM	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	1
04:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	1	0	0	1	0	2	0	0	2	0	0	0	0	0	0	0	0	0	0	3
05:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:15 PM	0	0	0	0	0	0	3	0	0	3	0	0	0	0	0	0	0	0	0	0	3
05:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:45 PM	0	1	0	0	1	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	2
Total	0	1	0	0	1	0	4	0	0	4	0	0	0	0	0	0	0	0	0	0	5
Grand Total	0	2	0	0	2	0	6	0	0	6	0	0	0	0	0	0	0	0	0	0	8
Apprch %	0	100	0	0		0	100	0	0		0	0	0	0		0	0	0	0		
Total %	0	25	0	0	25	0	75	0	0	75	0	0	0	0	0	0	0	0	0	0	



TRUE DATA TO IMPROVE MOBILITY

File Name : 17227104 - Beacon Blvd (US 31) -- Robbins Rd
Site Code : 17227104
Start Date : 9/9/2025
Page No : 2

	Robbins Rd Eastbound					Robbins Rd Westbound					Beacon Blvd (US 31) Northbound					Beacon Blvd (US 31) Southbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 05:00 PM																					
05:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:15 PM	0	0	0	0	0	0	**3**	0	0	**3**	0	0	0	0	0	0	0	0	0	0	**3**
05:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:45 PM	0	**1**	0	0	**1**	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	2
Total Volume	0	1	0	0	1	0	4	0	0	4	0	0	0	0	0	0	0	0	0	0	5
% App. Total	0	100	0	0		0	100	0	0		0	0	0	0		0	0	0	0		
PHF	.000	.250	.000	.000	.250	.000	.333	.000	.000	.333	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.417



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List View | All DIRs | Report Center

Record 1 of 1 Goto Record go

Location ID	70-0756	**MPO ID**	
Type	SPOT	**HPMS ID**	
On NHS	No	**On HPMS**	No
LRS ID	0732104	**LRS Loc Pt.**	0.6807043
SF Group	Urban Non State (2025)	**Route Type**	
AF Group	NoFactor (2025)	**Route**	
GF Group	Urban Non State (2025)	**Active**	Yes
Class Dist Grp	NTL_4 (2025)	**Category**	
Seas Clss Grp			
WIM Group			
QC Group	Default		
Fnct'l Class	(4) Minor Arterial	**Milepost**	
Located On	Lakeshore Ave		
Loc On Alias			
SOUTH OF	Robbins Rd		

More Detail

STATION DATA

Directions: 2-WAY NB SB

AADT

Year	AADT	DHV-30	K %	D %	PA	BC	Src
2024	7,219				7,017 (97%)	202 (3%)	

VOLUME COUNT

	Date	Int	Total
	Thu 6/6/2024	-	7,336

VOLUME TREND

Year	Annual Growth

CLASSIFICATION

	Date	Int	Total
No Data			

NOTES/FILES

	Note	Date	

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List View | All DIRs | Report Center

Record 1 of 1 Goto Record go

Location ID	70-3628	**MPO ID**	101
Type	SPOT	**HPMS ID**	
On NHS	No	**On HPMS**	No
LRS ID	0732305	**LRS Loc Pt.**	0.707
SF Group	Urban Non State (2025)	**Route Type**	
AF Group	NoFactor (2025)	**Route**	
GF Group	Urban Non State (2025)	**Active**	Yes
Class Dist Grp	NTL_4 (2025)	**Category**	
Seas Clss Grp			
WIM Group			
QC Group	Default		
Fnct'l Class	(4) Minor Arterial	**Milepost**	
Located On	ROBBINS RD		
Loc On Alias			
	100 FT W OF US31-BEACON BLVD-GRAND HAVEN		
More Detail			

STATION DATA

Directions: 2-WAY | EB | WB

AADT

Year	AADT	DHV-30	K %	D %	PA	BC	Src
2024	8,133[3]		10	57	7,906 (97%)	227 (3%)	Grown from 2023
2023	8,093	780	10	57	7,875 (97%)	218 (3%)	

VOLUME COUNT

	Date	Int	Total
	Tue 6/6/2023	15	8,317
	Mon 6/5/2023	15	8,115

VOLUME TREND

Year	Annual Growth
2024	0%

CLASSIFICATION

	Date	Int	Total
No Data			

NOTES/FILES

	Note	Date	
	City of Grand Haven has a road de-icing system in place for seemingly most roads in downtown. The City would prefer hoses not be set on any of the roads for fear of damaging the system. While it may be possible to set hoses at this location, it has been marked as Non-Intrusive to appease the City of Grand Haven.	3/8/2023 kirchmeierk	

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List View | All DIRs | Report Center

Record 1 of 1 Goto Record go

Location ID	70-5308	**MPO ID**	152
Type	SPOT	**HPMS ID**	
On NHS	No	**On HPMS**	No
LRS ID	0732305	**LRS Loc Pt.**	1.01
SF Group	Urban Non State (2025)	**Route Type**	
AF Group	NoFactor (2025)	**Route**	
GF Group	Urban Non State (2025)	**Active**	Yes
Class Dist Grp	NTL_4 (2025)	**Category**	Primary
Seas Clss Grp			
WIM Group			
QC Group	Default		
Fnct'l Class	(4) Minor Arterial	**Milepost**	
Located On	ROBBINS RD		
Loc On Alias			
EAST OF	S Ferry St		

More Detail

STATION DATA

Directions: 2-WAY EB WB

AADT

Year	AADT	DHV-30	K %	D %	PA	BC	Src
2024	8,893	883	10	52	8,668 (97%)	225 (3%)	
2023	9,134	795	9	54	8,888 (97%)	246 (3%)	
2022	9,902[3]				9,615 (97%)	287 (3%)	Grown from 2021
2021	9,892[3]				9,427 (95%)	465 (5%)	Grown from 2020
2020	8,682[3]				8,265 (95%)	417 (5%)	Grown from 2019

|<< < > >>| 1-5 of 9

VOLUME COUNT

	Date	Int	Total
	Wed 2/28/2024	15	8,801
	Tue 2/27/2024	15	8,984
	Tue 6/6/2023	15	9,491
	Mon 6/5/2023	15	9,056

VOLUME TREND

Year	Annual Growth
2024	-3%
2023	-8%
2022	0%
2021	14%
2020	-15%
2019	0%
2018	1%
2017	4%

CLASSIFICATION

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List View | All DIRs | Report Center

Record 1 of 1 Goto Record go

Location ID	70-0068	**MPO ID**	
Type	SPOT	**HPMS ID**	8_1_139_010
On NHS	Yes	**On HPMS**	Yes
LRS ID	0742605	**LRS Loc Pt.**	20.36439
SF Group	Rural (2025)	**Route Type**	US Rte
AF Group	Snow Belt (2025)	**Route**	031
GF Group	Rural (2025)	**Active**	Yes
Class Dist Grp	1_031_009 (2025)	**Category**	Primary
Seas Clss Grp			
WIM Group			
QC Group	Default		
Fnct'l Class	(3) Other Principal Arterial	**Milepost**	
Located On	US-31		
Loc On Alias	US Highway 31		
SOUTH OF	Robbins Rd		

More Detail

STATION DATA

Directions: 2-WAY | NB 1 2 | SB 1 2

AADT

Year	AADT	DHV-30	K %	D %	PA	BC	Src
2025	32,237						
2024	31,677	2,204	7	56	28,953 (91%)	2,724 (9%)	
2023	31,685[3]		9	55	28,960 (91%)	2,725 (9%)	Grown from 2022
2022	30,643[3]		9	55	28,007 (91%)	2,636 (9%)	Grown from 2021
2021	31,300[3]		9	55	28,514 (91%)	2,786 (9%)	Grown from 2020

|<< < > >>| 1-5 of 18

VOLUME COUNT

	Date	Int	Total
	Wed 5/7/2025	15	38,842
	Tue 5/6/2025	15	38,469
	Tue 2/13/2024	15	32,810
	Mon 2/12/2024	15	30,943
	Wed 10/2/2019	15	36,529
	Tue 10/1/2019	15	35,104
	Tue 8/23/2016	60	39,336
	Mon 8/22/2016	60	39,631
	Wed 11/18/2015	60	37,232

VOLUME TREND

Year	Annual Growth
2025	2%
2024	0%
2023	3%
2022	-2%
2021	13%
2020	-12%
2019	-7%
2018	1%
2017	4%

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Disclaimer: The Michigan Department of Transportation (MDOT) works with individual agencies (cities/villages, counties, metropolitan planning organizations (MPOs), regional planning organizations (RPOs), and other areas of MDOT) to identify existing traffic count programs and/or traffic data. ... more

List View | All DIRs | Report Center

Record 1 of 1 Goto Record go

Location ID	70-0101	**MPO ID**	407
Type	SPOT	**HPMS ID**	
On NHS	No	**On HPMS**	No
LRS ID	0732104	**LRS Loc Pt.**	0.971
SF Group	Urban Non State (2025)	**Route Type**	
AF Group	NoFactor (2025)	**Route**	
GF Group	Urban Non State (2025)	**Active**	Yes
Class Dist Grp	NTL_4 (2025)	**Category**	
Seas Clss Grp			
WIM Group			
QC Group	Default		
Fnct'l Class	(4) Minor Arterial	**Milepost**	
Located On	Sheldon Rd		
Loc On Alias			
BETWEEN	Orchard Ave AND Arlington Ave		
More Detail			

STATION DATA

Directions: 2-WAY | NB 1 | SB 1

AADT

Year	AADT	DHV-30	K %	D %	PA	BC	Src
2024	8,714[3]		10	59	8,470 (97%)	244 (3%)	Grown from 2023
2023	8,671[3]		10	59	8,436 (97%)	235 (3%)	Grown from 2022
2022	8,484[3]		10	59	8,241 (97%)	243 (3%)	Grown from 2021
2021	8,719[3]		10	59	8,308 (95%)	411 (5%)	Grown from 2020
2020	7,886[3]		10	59	7,507 (95%)	379 (5%)	Grown from 2019

|<< < > >>| 1-5 of 6

VOLUME COUNT

	Date	Int	Total
	Wed 5/1/2019	15	9,333
	Tue 4/30/2019	15	9,577
	Mon 4/29/2019	15	8,862

VOLUME TREND

Year	Annual Growth
2024	0%
2023	2%
2022	-3%
2021	11%
2020	-13%

CLASSIFICATION

	Date	Int	Total

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NTCIP TRAFFIC SIGNAL TIMING PERMIT

PHASE	1	2	3	4	5	6	7	8
APPROACH		NB/SB		EB/WB				
MINIMUM GREEN		10		10				
PASSAGE				4.0				
MAXIMUM GREEN NO. 1		50		24				
MAXIMUM GREEN NO. 2								
YELLOW CLEARANCE		5.0		3.6				
ALL RED CLEARANCE		1.5		4.9				
WALK				8				
FLASHING DON'T WALK (FDW) CLEARANCE				15				
EXT PED CLR (EOG, EOY, 3.0s)				EOG				
START UP PHASE(S)	☐	☒	☐	☐	☐	☐	☐	☐
VEHICLE RECALL (NONE, MIN, MAX, SOFT)		MAX		NONE				
PEDESTRIAN RECALL (NONE, RECL, OTHR)				NONE				
DUAL ENTRY (Y, N)								
MODE (CRD, MIN, MAX, D-CRD, NOCRD)		CRD		NOCRD				
DAILY FLASH (Y, R, DK, NA)								
CONFLICT FLASH (Y, R, DK)		R		R				
EVNT/ACTN PLN 1 OFFSET 33 CYCLE 70		43		27				
EVNT/ACTN PLN 2 OFFSET 33 CYCLE 70		43		27				
EVNT/ACTN PLN 3 OFFSET 33 CYCLE 70		43		27				
EVNT/ACTN PLN OFFSET CYCLE								
EVNT/ACTN PLN OFFSET CYCLE								
EVNT/ACTN PLN OFFSET CYCLE								

TIMING INSTALLED

PRE-EMPT ☐
COUNTDOWN PEDS ☒

REMARKS

6-18-24 Conflict flash revised to red-red. Revised schedule.

Installed wireless detection for all approaches with JN 205227. Installed advanced detection on NB and SB US-31.

LESS FREQUENTLY USED FEATURES

WALK REST MODIFIER (Y, N) (Cycle Ped in Free)								
LEAD PEDESTRIAN INTERVAL								
RED MAX EXTENSION (Dilemma Zone Mitigation)								



FLASH HOURS: ____ to ____ DAILY ☐ NONE ☒

PHASE
1
2 US-31
3
4 Robbins Road
5
6
7
8

VEHICLE OVERLAPS

Overlap Phase	Load Bay	Phases Overlapped	T.G. (s)	Y (s)	R (s)	FYA Phases Perm	FYA Phases Prot	Flash Daily	Flash Confl
D = EB/WB Robbins Rd Fars		4	3.0	3.6	1.9				
=									
=									
=									
=									
=									
=									
=									

CONTROLLER and FIRMWARE#
☐ Siemens (SEPAC)
☒ ECONOLITE (EOS)
☐ Other:

PREPARED BY: JAM
DATE: 06/18/24

LOCATION: US-31 @ Robbins Road
CITY/TWP: Grand Haven
COUNTY : Ottawa

MILE POINT	CONTROL SECTION-SPOT #
5.42	70014-01-009

Job # (If Applicable):

CLEAR ALL

Page 4 included only if Pre-Empt Checked

ADVANCED TIMING PARAMETERS FORM

SYSTEM INFORMATION

System Type:

- [x] Central
  Group ID 70-1
- [ ] TBC
- [ ] None
- [ ] Other:

Controller Location ID:

Interconnect:

- [ ] HARDWIRE
- [ ] FIBER-OPTIC
- [ ] RADIO
- [ ] SERIAL RADIO
  Hop Pattern:
- [ ] IP RADIO
- [ ] TBC
- [ ] GPS CLOCK
- [x] CELL MODEM
- [ ] NONE
- [ ] Other:

REMARKS

LEFT-TURN PHASING

Phase # / Description	Permissive-Protected		Protected-Only		
	Lead	Lag	Split	Lead	Lag
	☐	☐	☐	☐	☐
	☐	☐	☐	☐	☐
	☐	☐	☐	☐	☐
	☐	☐	☐	☐	☐

RING AND BARRIER STRUCTURE

	B1	B2	B3	B4
R1	2	4		
R2				
R3				
R4				

VEHICULAR AND PEDESTRIAN DETECTION

Approach	Vehicle Detection: Movements and Call Delay (s) Left	Thru	Right	Locking Left	Thru	Right	Pedestrian Detection: Phase #	Crossing	Load Switch #
EB Robbins	☐	☒	☒	☐	☐	☐	4	US-31	
WB Robbins	☐	☒	☒	☐	☐	☐			
NB US-31	☐	☒	☒	☐	☐	☐			
SB US-31	☐	☒	☒	☐	☐	☐			
	☐	☐	☐	☐	☐	☐			
	☐	☐	☐	☐	☐	☐			

COORDINATION/OPERATION SETTINGS

CHANGE (ADD ONLY, ADD/SUBT, OTHR)	Smooth
REST IN WALK FOR COORD PHASE (Y/N)	
PUSHBUTTONS FOR COORD PHASE (Y/N)	N

ADDITIONAL EVENT/ACTION PLAN DATA

		PHASE	1	2	3	4	5	6	7	8
EVNT/ACTN PLN	OFFSET	CYCLE								
EVNT/ACTN PLN	OFFSET	CYCLE								
EVNT/ACTN PLN	OFFSET	CYCLE								
EVNT/ACTN PLN	OFFSET	CYCLE								
EVNT/ACTN PLN	OFFSET	CYCLE								
EVNT/ACTN PLN	OFFSET	CYCLE								
EVNT/ACTN PLN	OFFSET	CYCLE								
EVNT/ACTN PLN	OFFSET	CYCLE								
EVNT/ACTN PLN	OFFSET	CYCLE								
EVNT/ACTN PLN	OFFSET	CYCLE								

DISAPPEARING CASE SIGN

PREPARED BY: JAM DATE: 06/18/24

☒ MDOT ☐ County ☐ City ☐ Consultant

LOCATION:
US-31 @ Robbins Road

CONTROL SECTION-SPOT #
70014-01-009

SCHEDULING INFORMATION

Typical Schedule

Schedule #	Days of Week	Start Date	End Date	Day Plan #	Events
1	Saturday & Sunday	January 1st	December 31st	1	Free - 00:01-06:00 #1 - 06:00-24:00
2	Monday-Friday	January 1st	December 31st	2	Free - 00:01-06:00 #2 - 6:00-09:00 #1 - 09:00-14:00 #3 - 14:00-18:00 #1 - 18:00-24:00
3				3	
4				4	

Special Schedules — Schedule remarks including floating holiday schedules

Day Plan #	Events	Day Plan #	Events	Day Plan #	Events	Day Plan #	Events
5		6		7		8	

Schedule	Day Plan #	MONTH OF YEAR												DAY OF WEEK							DAY OF MONTH																										REMARKS :
		J	F	M	A	M	J	J	A	S	O	N	D	S	M	T	W	T	F	S	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	
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PREPARED BY: JAM	DATE: 06/18/24	LOCATION: US-31 @ Robbins Road	CONTROL SECTION-SPOT # 70014-01-009

PREEMPTION INFORMATION FORM

Preemption Description:

Preempt # =	Seconds	PhsTm?		Load Switch	1	2	3	4	5	6	7	8	9	10	11	12	--	--	--	--	Locking	Y
Entry Ped Cl		N	Vehicle	Phas/Ovl																	Delay (s)	
Entry Yellow		Y																			Extend (s)	
Entry Red Cl		Y		Track																	Duration (s)	
Track Green				Dwell																	Max Call (s)	
Track Ped Cl		N		Cycle																	Link PreEmpt #	
Track Yellow		Y		Exit																	Exit Free or Crd	
Track Red Cl		Y	Ped	Phase #																	**Display Case Sign?**	
Dwell Green																					No Turn on Red	N
Exit Ped Cl		Y		Track																	No Right Turn	N
Exit Yellow		Y		Dwell																	No Left Turn	N
Exit Red Cl		Y		Cycle																	Other Case Sign	N

Preemption Description:

Preempt # =	Seconds	PhsTm?		Load Switch	1	2	3	4	5	6	7	8	9	10	11	12	--	--	--	--	Locking	Y
Entry Ped Cl		N	Vehicle	Phas/Ovl																	Delay (s)	
Entry Yellow		Y																			Extend (s)	
Entry Red Cl		Y		Track																	Duration (s)	
Track Green				Dwell																	Max Call (s)	
Track Ped Cl		N		Cycle																	Link PreEmpt #	
Track Yellow		Y		Exit																	Exit Free or Crd	
Track Red Cl		Y	Ped	Phase #																	**Display Case Sign?**	
Dwell Green																					No Turn on Red	N
Exit Ped Cl		Y		Track																	No Right Turn	N
Exit Yellow		Y		Dwell																	No Left Turn	N
Exit Red Cl		Y		Cycle																	Other Case Sign	N

Preemption Description:

Preempt # =	Seconds	PhsTm?		Load Switch	1	2	3	4	5	6	7	8	9	10	11	12	--	--	--	--	Locking	Y
Entry Ped Cl		N	Vehicle	Phas/Ovl																	Delay (s)	
Entry Yellow		Y																			Extend (s)	
Entry Red Cl		Y		Track																	Duration (s)	
Track Green				Dwell																	Max Call (s)	
Track Ped Cl		N		Cycle																	Link PreEmpt #	
Track Yellow		Y		Exit																	Exit Free or Crd	
Track Red Cl		Y	Ped	Phase #																	**Display Case Sign?**	
Dwell Green																					No Turn on Red	N
Exit Ped Cl		Y		Track																	No Right Turn	N
Exit Yellow		Y		Dwell																	No Left Turn	N
Exit Red Cl		Y		Cycle																	Other Case Sign	N

Preemption Description:

Preempt # =	Seconds	PhsTm?		Load Switch	1	2	3	4	5	6	7	8	9	10	11	12	--	--	--	--	Locking	Y
Entry Ped Cl		N	Vehicle	Phas/Ovl																	Delay (s)	
Entry Yellow		Y																			Extend (s)	
Entry Red Cl		Y		Track																	Duration (s)	
Track Green				Dwell																	Max Call (s)	
Track Ped Cl		N		Cycle																	Link PreEmpt #	
Track Yellow		Y		Exit																	Exit Free or Crd	
Track Red Cl		Y	Ped	Phase #																	**Display Case Sign?**	
Dwell Green																					No Turn on Red	N
Exit Ped Cl		Y		Track																	No Right Turn	N
Exit Yellow		Y		Dwell																	No Left Turn	N
Exit Red Cl		Y		Cycle																	Other Case Sign	N

Preempt System Data

Ring	1	2	3	4	Preempt Overrides Flash ☐
MIN GRN/WLK (s)					

Order of Priority	PE1	PE2	PE3	PE4	PE5	PE6
	1	2	3	4	5	6

PE Status Pos in Pedestrian LSs	Ped Y1	Ped Y2	Ped Y3	Ped Y4	Ped Y5	Ped Y6	Ped Y7	Ped Y8
PE# Represented		1		2		3		4

REMARKS :

PREPARED BY: JAM DATE: 06/18/24

LOCATION:

US-31 @ Robbins Road

CONTROL SECTION-SPOT #

70014-01-009

Level of Service Criteria for Stop Sign Controlled Intersections

The level of service criteria are given in Exhibit 20-2. As used here, control delay is defined as the total elapsed time from the time a vehicle stops at the end of the queue until the vehicle departs from the stop line; this time includes the time required for the vehicle to travel from the last-in-queue position to the first-in-queue position, including deceleration of vehicles from free-flow speed to the speed of vehicles in queue.

The average total delay for any particular controlled movement is a function three (capacity) factors: distribution of gaps in the major-street traffic stream, driver judgment in selecting gaps through which to execute the desired maneuvers, and the follow-up headways required by each driver in a queue.

The basic capacity model assumes gaps in the conflicting movements are randomly distributed. When traffic signals are present on the major street, upstream of the subject intersection, flows may not be random but will likely have some platoon structure. Although the procedures in this chapter provide a method for approximating the operations of a TWSC intersection with an upstream signal, the operations of such an intersection is arguably best handled by including it in a complete simulation

Exhibit 20-2. Level of Service Criteria for Stop-Controlled Intersections (Motor Vehciles)

LEVEL OF SERVICE	AVERAGE CONTROL DELAY (sec/veh)
A	$\leq$ 10
B	> 10 and $\leq$ 15
C	> 15 and $\leq$ 25
D	> 25 and $\leq$ 35
E	> 35 and $\leq$ 50
F	> 50

Average total delay less than 10 sec/veh is defined as Level of Service (LOS) A. Follow-up times of less than 5 sec have been measured when there is no conflicting traffic for a minor street movement, so control delays of less than 10 sec/veh are appropriate for low flow conditions. A total delay of 50 sec/veh is assumed as the break point between LOS E and F.

The LOS criteria for TWSC intersections differ somewhat from the criteria used in Chapter 19 for signalized intersections, primarily because user perceptions differ among transportation facility types. The expectation is that a signalized intersection is designed to carry higher traffic volumes and will present greater delay than an unsignalized intersection. Additionally, several driver behavior considerations combine to make delays at signalized intersections less onerous than at unsignalized intersections. For example, drivers at signalized intersections are able to relax during the red interval, where drivers on the minor approaches to unsignalized intersections must remain attentive to the task of identifying acceptable gaps and vehicle conflicts. Also, there is often much more variability in the amount of delay experienced by individual drivers at unsignalized than signalized intersections. For these reasons, it is considered that the total delay threshold for any given level of service is less for an unsignalized intersection than for a signalized intersection.

LOS F exists when there are insufficient gaps of suitable size to allow a side street demand to cross safely through a major street traffic stream. This level of service is generally evident from extremely long total delays experienced by side street traffic and by queueing on the minor approaches. The method, however, is based on a constant critical gap size - that is, the critical gap remains constant, no matter how long the side street motorist waits. LOS F may also appear in the form of side street vehicles' selecting smaller-than-usual gaps. In such cases, safety may be a problem and some disruption to the major traffic stream may result. It is important to note that LOS F may not always result in long queues but may result in adjustments to normal gap acceptance behavior. The latter is more difficult to observe on the field than queueing, which is more obvious.

Source: Highway Capacity Manual, 6th Edition. Transportation Research Board, National Research Council

Level of Service for Signalized Intersections

Level of service for signalized intersections is defined in terms of delay, which is a measure of driver discomfort and frustration, fuel consumption, and lost travel time. LOS can be characterized for the entire intersection, each intersection approach, and each lane group. Specifically, level-of-service (LOS) criteria are stated in terms of the average stopped delay per vehicle. The criteria are given in Exhibit 19-8. Delay may be measured in the field or estimated using procedures presented later in this chapter. Delay is a complex measure and is dependent on a number of variables, including the quality of progression, the cycle length, the green ratio, and the v/c ratio for the lane group in question.

LOS A describes operations with a control delay of 10 s/veh or less. This level is typically assigned when the volume-to-capacity ratio is low and either progression is extremely favorable or the cycle length is very short. If LOS A is the result of favorable progression, most vehicles arrive during a green indication and travel through the intersection without stopping.

LOS B describes operations with control delay between 10 and 20 s/veh. This level is typically assigned when the volume-to-capacity ratio is low and either progression is highly favorable or the cycle length is short. More vehicles stop than with LOS A.

Exhibit 19.8. Level-of-Service Criteria for Signalized Intersections (Motorized Vehicles)

LEVEL OF SERVICE	STOPPED DELAY PER VEHICLE (SEC)
A	≤10.0
B	> 10.0 and ≤20.0
C	> 20.0 and ≤ 35.0
D	> 35.0 and ≤ 55.0
E	> 55.0 and ≤ 80.0
F	>80.0

1. If the v/c ratio for a lane group exceeds 1.0, a LOS F is assigned to the individual lane group. LOS for approach-based and intersection-wide assessments are determined solely by the control delay.

LOS C describes operations with control delay between 20 and 35 s/veh. This level is typically assigned when progression is favorable or the cycle length is moderate. Individual *cycle failures* (i.e. one or more queued vehicles are not able to depart as a result of insufficient capacity during the cycle) may begin to appear at this level. The number if vehicle stopping is significant, although many vehicles still pass through the intersection without stopping.

LOS D describes operations with control delay between 35 and 55 s/veh. This level is typically assigned when when the volume-to-capacity ratio is high and either progression is ineffective or the cycle length is long. Many vehicles stop and individual cycle failures are noticeable.

LOS E describes operations with control delay between 55 and 80 s/veh. This level is typically assigned when when the volume-to-capacity ratio is high, progression is unfavorable, and the cycle length is long. Individual cycle failures are frequent.

LOS F describes operations with control delay exceeding 80 s/veh or a volume-to-capacity ratio greater than 1.0. This level, considered to be unacceptable to most drivers, often occurs with over-saturation, that is, when arrival flow rates exceed the capacity of the intersection. This level is typically assigned when the volume-to-capacity ratio is high, progression is very poor, and the cycle length is long. Most cycles fail to clear the queue.

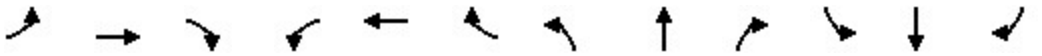
Source: Highway Capacity Manual, 6th Edition. Transportation Research Board, National Research Council

Intersection	
Intersection Delay, s/veh	17.9
Intersection LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	34	44	5	50	28	169	4	270	63	166	165	6
Future Vol, veh/h	34	44	5	50	28	169	4	270	63	166	165	6
Peak Hour Factor	0.83	0.83	0.83	0.93	0.93	0.93	0.85	0.85	0.85	0.70	0.70	0.70
Heavy Vehicles, %	0	0	0	3	3	3	3	3	3	4	4	4
Mvmt Flow	41	53	6	54	30	182	5	318	74	237	236	9
Number of Lanes	0	1	0	1	1	0	0	1	0	1	1	0

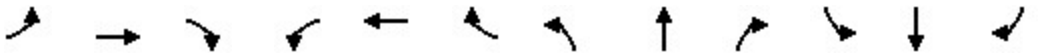
Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	2	1	2	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	2	1	1	2
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	2	2	1
HCM Control Delay, s/veh	13.2	13.5	25.2	15.2
HCM LOS	B	B	D	C

Lane	NBLn1	EBLn1	WBLn1	WBLn2	SBLn1	SBLn2
Vol Left, %	1%	41%	100%	0%	100%	0%
Vol Thru, %	80%	53%	0%	14%	0%	96%
Vol Right, %	19%	6%	0%	86%	0%	4%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	337	83	50	197	166	171
LT Vol	4	34	50	0	166	0
Through Vol	270	44	0	28	0	165
RT Vol	63	5	0	169	0	6
Lane Flow Rate	396	100	54	212	237	244
Geometry Grp	4b	4b	5	5	5	5
Degree of Util (X)	0.727	0.219	0.118	0.399	0.468	0.446
Departure Headway (Hd)	6.599	7.888	7.91	6.782	7.11	6.574
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes
Cap	551	455	454	532	507	547
Service Time	4.599	5.944	5.652	4.523	4.849	4.314
HCM Lane V/C Ratio	0.719	0.22	0.119	0.398	0.467	0.446
HCM Control Delay, s/veh	25.2	13.2	11.7	14	16	14.5
HCM Lane LOS	D	B	B	B	C	B
HCM 95th-tile Q	6	0.8	0.4	1.9	2.5	2.3



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑	↱		↑						↑↑	↱
Traffic Volume (vph)	0	129	144	0	141	0	0	0	0	0	1557	106
Future Volume (vph)	0	129	144	0	141	0	0	0	0	0	1557	106
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		8.5	8.5		5.5						6.5	6.5
Lane Util. Factor		1.00	1.00		1.00						0.95	1.00
Frpb, ped/bikes		1.00	0.99		1.00						1.00	0.99
Flpb, ped/bikes		1.00	1.00		1.00						1.00	1.00
Frt		1.00	0.85		1.00						1.00	0.85
Flt Protected		1.00	1.00		1.00						1.00	1.00
Satd. Flow (prot)		1881	1578		1863						3471	1534
Flt Permitted		1.00	1.00		1.00						1.00	1.00
Satd. Flow (perm)		1881	1578		1863						3471	1534
Peak-hour factor, PHF	0.85	0.85	0.85	0.71	0.71	0.71	0.92	0.92	0.92	0.89	0.89	0.89
Adj. Flow (vph)	0	152	169	0	199	0	0	0	0	0	1749	119
RTOR Reduction (vph)	0	0	40	0	0	0	0	0	0	0	0	57
Lane Group Flow (vph)	0	152	129	0	199	0	0	0	0	0	1749	62
Confl. Peds. (#/hr)	5					5						
Confl. Bikes (#/hr)			1									1
Heavy Vehicles (%)	1%	1%	1%	2%	2%	2%	2%	2%	2%	4%	4%	4%
Turn Type		NA	Perm		NA						NA	Perm
Protected Phases		8			4						6	
Permitted Phases			8									6
Actuated Green, G (s)		18.5	18.5		21.5						36.5	36.5
Effective Green, g (s)		18.5	18.5		21.5						36.5	36.5
Actuated g/C Ratio		0.26	0.26		0.31						0.52	0.52
Clearance Time (s)		8.5	8.5		5.5						6.5	6.5
Vehicle Extension (s)		3.0	3.0		3.0						3.0	3.0
Lane Grp Cap (vph)		497	417		572						1809	799
v/s Ratio Prot		0.08			c0.11						c0.50	
v/s Ratio Perm			0.08									0.04
v/c Ratio		0.31	0.31		0.35						0.97	0.08
Uniform Delay, d1		20.6	20.6		18.8						16.2	8.4
Progression Factor		1.00	1.00		0.00						1.00	1.00
Incremental Delay, d2		0.4	0.4		0.3						14.6	0.2
Delay (s)		21.0	21.0		0.4						30.8	8.5
Level of Service		C	C		A						C	A
Approach Delay (s/veh)		21.0			0.4			0.0			29.4	
Approach LOS		C			A			A			C	

Intersection Summary			
HCM 2000 Control Delay (s/veh)	25.8	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.78		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	64.5%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑			↑	↱		↑↑	↱			
Traffic Volume (vph)	0	129	0	0	141	195	0	1171	183	0	0	0
Future Volume (vph)	0	129	0	0	141	195	0	1171	183	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.5			8.5	8.5		6.5	6.5			
Lane Util. Factor		1.00			1.00	1.00		0.95	1.00			
Frpb, ped/bikes		1.00			1.00	0.98		1.00	1.00			
Flpb, ped/bikes		1.00			1.00	1.00		1.00	1.00			
Frt		1.00			1.00	0.85		1.00	0.85			
Flt Protected		1.00			1.00	1.00		1.00	1.00			
Satd. Flow (prot)		1881			1863	1556		3312	1482			
Flt Permitted		1.00			1.00	1.00		1.00	1.00			
Satd. Flow (perm)		1881			1863	1556		3312	1482			
Peak-hour factor, PHF	0.85	0.85	0.85	0.71	0.71	0.71	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	152	0	0	199	275	0	1273	199	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	40	0	0	95	0	0	0
Lane Group Flow (vph)	0	152	0	0	199	235	0	1273	104	0	0	0
Confl. Peds. (#/hr)	5					5						
Confl. Bikes (#/hr)			1									1
Heavy Vehicles (%)	1%	1%	1%	2%	2%	2%	9%	9%	9%	2%	2%	2%
Turn Type		NA			NA	Perm		NA	Perm			
Protected Phases		4			8			2				
Permitted Phases						8			2			
Actuated Green, G (s)		21.5			18.5	18.5		36.5	36.5			
Effective Green, g (s)		21.5			18.5	18.5		36.5	36.5			
Actuated g/C Ratio		0.31			0.26	0.26		0.52	0.52			
Clearance Time (s)		5.5			8.5	8.5		6.5	6.5			
Vehicle Extension (s)		3.0			3.0	3.0		3.0	3.0			
Lane Grp Cap (vph)		577			492	411		1726	772			
v/s Ratio Prot		0.08			0.11			c0.38				
v/s Ratio Perm						c0.15			0.07			
v/c Ratio		0.26			0.40	0.57		0.74	0.13			
Uniform Delay, d1		18.3			21.2	22.3		13.0	8.6			
Progression Factor		0.00			1.00	1.00		1.00	1.00			
Incremental Delay, d2		0.2			0.5	1.9		2.9	0.4			
Delay (s)		0.3			21.8	24.2		15.9	9.0			
Level of Service		A			C	C		B	A			
Approach Delay (s/veh)		0.3			23.2			15.0			0.0	
Approach LOS		A			C			B			A	

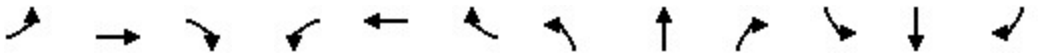
Intersection Summary			
HCM 2000 Control Delay (s/veh)	15.7	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.68		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	64.5%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Intersection	
Intersection Delay, s/veh	37.5
Intersection LOS	E

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	35	36	1	106	55	205	1	300	93	334	252	31
Future Vol, veh/h	35	36	1	106	55	205	1	300	93	334	252	31
Peak Hour Factor	0.75	0.75	0.75	0.85	0.85	0.85	0.90	0.90	0.90	0.82	0.82	0.82
Heavy Vehicles, %	0	0	0	1	1	1	1	1	1	0	0	0
Mvmt Flow	47	48	1	125	65	241	1	333	103	407	307	38
Number of Lanes	0	1	0	1	1	0	0	1	0	1	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	2	1	2	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	2	1	1	2
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	2	2	1
HCM Control Delay, s/veh	15.9	21.3	52.8	40.6
HCM LOS	C	C	F	E

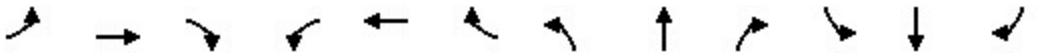
Lane	NBLn1	EBLn1	WBLn1	WBLn2	SBLn1	SBLn2
Vol Left, %	0%	49%	100%	0%	100%	0%
Vol Thru, %	76%	50%	0%	21%	0%	89%
Vol Right, %	24%	1%	0%	79%	0%	11%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	394	72	106	260	334	283
LT Vol	1	35	106	0	334	0
Through Vol	300	36	0	55	0	252
RT Vol	93	1	0	205	0	31
Lane Flow Rate	438	96	125	306	407	345
Geometry Grp	4b	4b	5	5	5	5
Degree of Util (X)	0.925	0.255	0.303	0.651	0.912	0.716
Departure Headway (Hd)	7.61	9.565	8.749	7.661	8.057	7.464
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes
Cap	477	374	410	471	448	483
Service Time	5.67	7.662	6.507	5.418	5.829	5.235
HCM Lane V/C Ratio	0.918	0.257	0.305	0.65	0.908	0.714
HCM Control Delay, s/veh	52.8	15.9	15.3	23.7	52.1	27
HCM Lane LOS	F	C	C	C	F	D
HCM 95th-tile Q	10.7	1	1.3	4.6	10.1	5.7



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑	↱		↑						↑↑	↱
Traffic Volume (vph)	0	254	209	0	192	0	0	0	0	0	1599	174
Future Volume (vph)	0	254	209	0	192	0	0	0	0	0	1599	174
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		8.5	8.5		5.5						6.5	6.5
Lane Util. Factor		1.00	1.00		1.00						0.95	1.00
Frpb, ped/bikes		1.00	0.99		1.00						1.00	1.00
Flpb, ped/bikes		1.00	1.00		1.00						1.00	1.00
Frt		1.00	0.85		1.00						1.00	0.85
Flt Protected		1.00	1.00		1.00						1.00	1.00
Satd. Flow (prot)		1881	1578		1881						3505	1568
Flt Permitted		1.00	1.00		1.00						1.00	1.00
Satd. Flow (perm)		1881	1578		1881						3505	1568
Peak-hour factor, PHF	0.94	0.94	0.94	0.95	0.95	0.95	0.92	0.92	0.92	0.95	0.95	0.95
Adj. Flow (vph)	0	270	222	0	202	0	0	0	0	0	1683	183
RTOR Reduction (vph)	0	0	40	0	0	0	0	0	0	0	0	88
Lane Group Flow (vph)	0	270	182	0	202	0	0	0	0	0	1683	95
Confl. Bikes (#/hr)			1			4						
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	2%	2%	2%	3%	3%	3%
Turn Type		NA	Perm		NA						NA	Perm
Protected Phases		8			4						6	
Permitted Phases			8									6
Actuated Green, G (s)		18.5	18.5		21.5						36.5	36.5
Effective Green, g (s)		18.5	18.5		21.5						36.5	36.5
Actuated g/C Ratio		0.26	0.26		0.31						0.52	0.52
Clearance Time (s)		8.5	8.5		5.5						6.5	6.5
Vehicle Extension (s)		3.0	3.0		3.0						3.0	3.0
Lane Grp Cap (vph)		497	417		577						1827	817
v/s Ratio Prot		c0.14			0.11						c0.48	
v/s Ratio Perm			0.12									0.06
v/c Ratio		0.54	0.44		0.35						0.92	0.12
Uniform Delay, d1		22.1	21.4		18.8						15.4	8.5
Progression Factor		1.00	1.00		0.00						1.00	1.00
Incremental Delay, d2		1.2	0.7		0.3						9.2	0.3
Delay (s)		23.3	22.1		0.4						24.6	8.8
Level of Service		C	C		A						C	A
Approach Delay (s/veh)		22.8			0.4			0.0			23.0	
Approach LOS		C			A			A			C	

Intersection Summary			
HCM 2000 Control Delay (s/veh)	21.2	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.79		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	70.1%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	254	0	0	192	252	0	1420	284	0	0	0
Future Volume (vph)	0	254	0	0	192	252	0	1420	284	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.5			8.5	8.5		6.5	6.5			
Lane Util. Factor		1.00			1.00	1.00		0.95	1.00			
Frpb, ped/bikes		1.00			1.00	0.98		1.00	1.00			
Flpb, ped/bikes		1.00			1.00	1.00		1.00	1.00			
Frt		1.00			1.00	0.85		1.00	0.85			
Flt Protected		1.00			1.00	1.00		1.00	1.00			
Satd. Flow (prot)		1881			1881	1574		3539	1583			
Flt Permitted		1.00			1.00	1.00		1.00	1.00			
Satd. Flow (perm)		1881			1881	1574		3539	1583			
Peak-hour factor, PHF	0.94	0.94	0.94	0.95	0.95	0.95	0.95	0.95	0.95	0.92	0.92	0.92
Adj. Flow (vph)	0	270	0	0	202	265	0	1495	299	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	40	0	0	143	0	0	0
Lane Group Flow (vph)	0	270	0	0	202	225	0	1495	156	0	0	0
Confl. Bikes (#/hr)			1			4						
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	2%	2%	2%	2%	2%	2%
Turn Type		NA			NA	Perm		NA	Perm			
Protected Phases		4			8			2				
Permitted Phases						8			2			
Actuated Green, G (s)		21.5			18.5	18.5		36.5	36.5			
Effective Green, g (s)		21.5			18.5	18.5		36.5	36.5			
Actuated g/C Ratio		0.31			0.26	0.26		0.52	0.52			
Clearance Time (s)		5.5			8.5	8.5		6.5	6.5			
Vehicle Extension (s)		3.0			3.0	3.0		3.0	3.0			
Lane Grp Cap (vph)		577			497	415		1845	825			
v/s Ratio Prot		c0.14			0.11			c0.42				
v/s Ratio Perm						0.14			0.10			
v/c Ratio		0.47			0.41	0.54		0.81	0.19			
Uniform Delay, d1		19.6			21.2	22.1		13.9	8.9			
Progression Factor		0.00			1.00	1.00		1.00	1.00			
Incremental Delay, d2		0.5			0.5	1.4		4.0	0.5			
Delay (s)		0.5			21.8	23.5		17.9	9.4			
Level of Service		A			C	C		B	A			
Approach Delay (s/veh)		0.5			22.8			16.5			0.0	
Approach LOS		A			C			B			A	

Intersection Summary			
HCM 2000 Control Delay (s/veh)	15.9	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.72		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	70.1%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Intersection: 10: Lakeshore Avenue/Sheldon Road & Robbins Road

Movement	EB	WB	WB	NB	SB	SB
Directions Served	LTR	L	TR	LTR	L	TR
Maximum Queue (ft)	63	51	112	186	126	94
Average Queue (ft)	30	24	54	70	44	43
95th Queue (ft)	51	47	87	135	82	78
Link Distance (ft)	762	892		766		645
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)			300		300	
Storage Blk Time (%)						
Queuing Penalty (veh)						

Intersection: 20: SB Beacon Blvd (US-31) & Robbins Road

Movement	EB	EB	WB	SB	SB	SB
Directions Served	T	R	T	T	T	R
Maximum Queue (ft)	124	104	18	351	330	103
Average Queue (ft)	52	44	1	197	162	26
95th Queue (ft)	99	85	9	306	279	70
Link Distance (ft)	490	490	32	602	602	602
Upstream Blk Time (%)			1			
Queuing Penalty (veh)			2			
Storage Bay Dist (ft)						
Storage Blk Time (%)						
Queuing Penalty (veh)						

Intersection: 21: NB Beacon Blvd (US-31) & Robbins Road

Movement	EB	WB	WB	NB	NB	NB
Directions Served	T	T	R	T	T	R
Maximum Queue (ft)	16	152	129	239	204	86
Average Queue (ft)	1	53	52	134	89	30
95th Queue (ft)	11	112	102	209	170	64
Link Distance (ft)	32	526	526	725	725	725
Upstream Blk Time (%)	1					
Queuing Penalty (veh)	1					
Storage Bay Dist (ft)						
Storage Blk Time (%)						
Queuing Penalty (veh)						

Intersection: 30: W. Site Drive & Robbins Road

Movement
Directions Served
Maximum Queue (ft)
Average Queue (ft)
95th Queue (ft)
Link Distance (ft)
Upstream Blk Time (%)
Queuing Penalty (veh)
Storage Bay Dist (ft)
Storage Blk Time (%)
Queuing Penalty (veh)

Intersection: 40: E. Site Drive & Robbins Road

Movement
Directions Served
Maximum Queue (ft)
Average Queue (ft)
95th Queue (ft)
Link Distance (ft)
Upstream Blk Time (%)
Queuing Penalty (veh)
Storage Bay Dist (ft)
Storage Blk Time (%)
Queuing Penalty (veh)

Zone Summary

Zone wide Queuing Penalty: 3

Intersection: 10: Lakeshore Avenue/Sheldon Road & Robbins Road

Movement	EB	WB	WB	NB	SB	SB
Directions Served	LTR	L	TR	LTR	L	TR
Maximum Queue (ft)	61	79	151	304	204	130
Average Queue (ft)	29	37	77	128	87	58
95th Queue (ft)	52	63	130	254	170	99
Link Distance (ft)	762	892		766		645
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)			300		300	
Storage Blk Time (%)					0	
Queuing Penalty (veh)					0	

Intersection: 20: SB Beacon Blvd (US-31) & Robbins Road

Movement	EB	EB	WB	SB	SB	SB
Directions Served	T	R	T	T	T	R
Maximum Queue (ft)	166	156	14	413	389	188
Average Queue (ft)	92	66	1	244	201	37
95th Queue (ft)	147	122	14	374	336	99
Link Distance (ft)	491	491	32	602	602	602
Upstream Blk Time (%)			0			
Queuing Penalty (veh)			1			
Storage Bay Dist (ft)						
Storage Blk Time (%)						
Queuing Penalty (veh)						

Intersection: 21: NB Beacon Blvd (US-31) & Robbins Road

Movement	EB	WB	WB	NB	NB	NB
Directions Served	T	T	R	T	T	R
Maximum Queue (ft)	14	158	172	302	285	86
Average Queue (ft)	1	76	77	177	142	36
95th Queue (ft)	14	135	140	265	245	65
Link Distance (ft)	32	526	526	725	725	725
Upstream Blk Time (%)	0					
Queuing Penalty (veh)	1					
Storage Bay Dist (ft)						
Storage Blk Time (%)						
Queuing Penalty (veh)						

Intersection: 30: W. Site Drive & Robbins Road

Movement
Directions Served
Maximum Queue (ft)
Average Queue (ft)
95th Queue (ft)
Link Distance (ft)
Upstream Blk Time (%)
Queuing Penalty (veh)
Storage Bay Dist (ft)
Storage Blk Time (%)
Queuing Penalty (veh)

Intersection: 40: E. Site Drive & Robbins Road

Movement
Directions Served
Maximum Queue (ft)
Average Queue (ft)
95th Queue (ft)
Link Distance (ft)
Upstream Blk Time (%)
Queuing Penalty (veh)
Storage Bay Dist (ft)
Storage Blk Time (%)
Queuing Penalty (veh)

Zone Summary

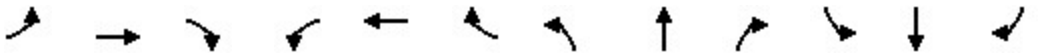
Zone wide Queuing Penalty: 2

Intersection	
Intersection Delay, s/veh	18.4
Intersection LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	35	45	5	51	28	172	4	274	64	168	167	6
Future Vol, veh/h	35	45	5	51	28	172	4	274	64	168	167	6
Peak Hour Factor	0.83	0.83	0.83	0.93	0.93	0.93	0.85	0.85	0.85	0.70	0.70	0.70
Heavy Vehicles, %	0	0	0	3	3	3	3	3	3	4	4	4
Mvmt Flow	42	54	6	55	30	185	5	322	75	240	239	9
Number of Lanes	0	1	0	1	1	0	0	1	0	1	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	2	1	2	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	2	1	1	2
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	2	2	1
HCM Control Delay, s/veh	13.3	13.7	26.4	15.5
HCM LOS	B	B	D	C

Lane	NBLn1	EBLn1	WBLn1	WBLn2	SBLn1	SBLn2
Vol Left, %	1%	41%	100%	0%	100%	0%
Vol Thru, %	80%	53%	0%	14%	0%	97%
Vol Right, %	19%	6%	0%	86%	0%	3%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	342	85	51	200	168	173
LT Vol	4	35	51	0	168	0
Through Vol	274	45	0	28	0	167
RT Vol	64	5	0	172	0	6
Lane Flow Rate	402	102	55	215	240	247
Geometry Grp	4b	4b	5	5	5	5
Degree of Util (X)	0.743	0.226	0.121	0.408	0.478	0.455
Departure Headway (Hd)	6.65	7.958	7.964	6.834	7.164	6.629
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes
Cap	547	451	450	527	504	544
Service Time	4.65	6.018	5.709	4.578	4.906	4.371
HCM Lane V/C Ratio	0.735	0.226	0.122	0.408	0.476	0.454
HCM Control Delay, s/veh	26.4	13.3	11.8	14.2	16.3	14.8
HCM Lane LOS	D	B	B	B	C	B
HCM 95th-tile Q	6.4	0.9	0.4	2	2.5	2.4



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑	↱		↑						↑↑	↱
Traffic Volume (vph)	0	131	146	0	143	0	0	0	0	0	1580	108
Future Volume (vph)	0	131	146	0	143	0	0	0	0	0	1580	108
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		8.5	8.5		5.5						6.5	6.5
Lane Util. Factor		1.00	1.00		1.00						0.95	1.00
Frpb, ped/bikes		1.00	0.99		1.00						1.00	0.99
Flpb, ped/bikes		1.00	1.00		1.00						1.00	1.00
Frt		1.00	0.85		1.00						1.00	0.85
Flt Protected		1.00	1.00		1.00						1.00	1.00
Satd. Flow (prot)		1881	1578		1863						3471	1534
Flt Permitted		1.00	1.00		1.00						1.00	1.00
Satd. Flow (perm)		1881	1578		1863						3471	1534
Peak-hour factor, PHF	0.85	0.85	0.85	0.71	0.71	0.71	0.92	0.92	0.92	0.89	0.89	0.89
Adj. Flow (vph)	0	154	172	0	201	0	0	0	0	0	1775	121
RTOR Reduction (vph)	0	0	40	0	0	0	0	0	0	0	0	58
Lane Group Flow (vph)	0	154	132	0	201	0	0	0	0	0	1775	63
Confl. Peds. (#/hr)	5					5						
Confl. Bikes (#/hr)			1									1
Heavy Vehicles (%)	1%	1%	1%	2%	2%	2%	2%	2%	2%	4%	4%	4%
Turn Type		NA	Perm		NA						NA	Perm
Protected Phases		8			4						6	
Permitted Phases			8									6
Actuated Green, G (s)		18.5	18.5		21.5						36.5	36.5
Effective Green, g (s)		18.5	18.5		21.5						36.5	36.5
Actuated g/C Ratio		0.26	0.26		0.31						0.52	0.52
Clearance Time (s)		8.5	8.5		5.5						6.5	6.5
Vehicle Extension (s)		3.0	3.0		3.0						3.0	3.0
Lane Grp Cap (vph)		497	417		572						1809	799
v/s Ratio Prot		0.08			c0.11						c0.51	
v/s Ratio Perm			0.08									0.04
v/c Ratio		0.31	0.32		0.35						0.98	0.08
Uniform Delay, d1		20.6	20.7		18.8						16.4	8.4
Progression Factor		1.00	1.00		0.00						1.00	1.00
Incremental Delay, d2		0.4	0.4		0.3						17.2	0.2
Delay (s)		21.0	21.1		0.4						33.6	8.6
Level of Service		C	C		A						C	A
Approach Delay (s/veh)		21.1			0.4			0.0			32.0	
Approach LOS		C			A			A			C	

Intersection Summary			
HCM 2000 Control Delay (s/veh)	27.9	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.79		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	65.2%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑			↑	↱		↑↑	↱			
Traffic Volume (vph)	0	131	0	0	143	198	0	1189	186	0	0	0
Future Volume (vph)	0	131	0	0	143	198	0	1189	186	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.5			8.5	8.5		6.5	6.5			
Lane Util. Factor		1.00			1.00	1.00		0.95	1.00			
Frpb, ped/bikes		1.00			1.00	0.98		1.00	1.00			
Flpb, ped/bikes		1.00			1.00	1.00		1.00	1.00			
Frt		1.00			1.00	0.85		1.00	0.85			
Flt Protected		1.00			1.00	1.00		1.00	1.00			
Satd. Flow (prot)		1881			1863	1556		3312	1482			
Flt Permitted		1.00			1.00	1.00		1.00	1.00			
Satd. Flow (perm)		1881			1863	1556		3312	1482			
Peak-hour factor, PHF	0.85	0.85	0.85	0.71	0.71	0.71	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	154	0	0	201	279	0	1292	202	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	40	0	0	97	0	0	0
Lane Group Flow (vph)	0	154	0	0	201	239	0	1292	105	0	0	0
Confl. Peds. (#/hr)	5					5						
Confl. Bikes (#/hr)			1									1
Heavy Vehicles (%)	1%	1%	1%	2%	2%	2%	9%	9%	9%	2%	2%	2%
Turn Type		NA			NA	Perm		NA	Perm			
Protected Phases		4			8			2				
Permitted Phases						8			2			
Actuated Green, G (s)		21.5			18.5	18.5		36.5	36.5			
Effective Green, g (s)		21.5			18.5	18.5		36.5	36.5			
Actuated g/C Ratio		0.31			0.26	0.26		0.52	0.52			
Clearance Time (s)		5.5			8.5	8.5		6.5	6.5			
Vehicle Extension (s)		3.0			3.0	3.0		3.0	3.0			
Lane Grp Cap (vph)		577			492	411		1726	772			
v/s Ratio Prot		0.08			0.11			c0.39				
v/s Ratio Perm						c0.15			0.07			
v/c Ratio		0.27			0.41	0.58		0.75	0.14			
Uniform Delay, d1		18.3			21.2	22.4		13.1	8.6			
Progression Factor		0.00			1.00	1.00		1.00	1.00			
Incremental Delay, d2		0.2			0.6	2.1		3.0	0.4			
Delay (s)		0.3			21.8	24.5		16.2	9.0			
Level of Service		A			C	C		B	A			
Approach Delay (s/veh)		0.3			23.3			15.2			0.0	
Approach LOS		A			C			B			A	

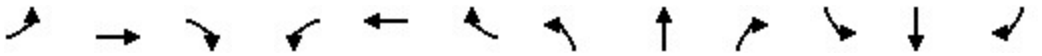
Intersection Summary			
HCM 2000 Control Delay (s/veh)	16.0	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.69		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	65.2%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Intersection	
Intersection Delay, s/veh	40.4
Intersection LOS	E

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	36	37	1	108	56	208	1	305	94	339	256	31
Future Vol, veh/h	36	37	1	108	56	208	1	305	94	339	256	31
Peak Hour Factor	0.75	0.75	0.75	0.85	0.85	0.85	0.90	0.90	0.90	0.82	0.82	0.82
Heavy Vehicles, %	0	0	0	1	1	1	1	1	1	0	0	0
Mvmt Flow	48	49	1	127	66	245	1	339	104	413	312	38
Number of Lanes	0	1	0	1	1	0	0	1	0	1	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	2	1	2	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	2	1	1	2
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	2	2	1
HCM Control Delay, s/veh	16.3	22	57.7	43.9
HCM LOS	C	C	F	E

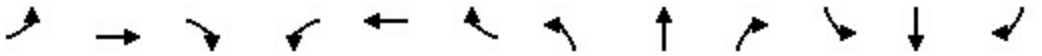
Lane	NBLn1	EBLn1	WBLn1	WBLn2	SBLn1	SBLn2
Vol Left, %	0%	49%	100%	0%	100%	0%
Vol Thru, %	76%	50%	0%	21%	0%	89%
Vol Right, %	24%	1%	0%	79%	0%	11%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	400	74	108	264	339	287
LT Vol	1	36	108	0	339	0
Through Vol	305	37	0	56	0	256
RT Vol	94	1	0	208	0	31
Lane Flow Rate	444	99	127	311	413	350
Geometry Grp	4b	4b	5	5	5	5
Degree of Util (X)	0.948	0.265	0.311	0.666	0.935	0.734
Departure Headway (Hd)	7.679	9.67	8.812	7.723	8.14	7.547
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes
Cap	471	370	408	466	446	476
Service Time	5.741	7.77	6.573	5.484	5.915	5.322
HCM Lane V/C Ratio	0.943	0.268	0.311	0.667	0.926	0.735
HCM Control Delay, s/veh	57.7	16.3	15.5	24.7	56.9	28.6
HCM Lane LOS	F	C	C	C	F	D
HCM 95th-tile Q	11.4	1	1.3	4.8	10.7	6



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑	↱		↑						↑↑	↱
Traffic Volume (vph)	0	258	212	0	195	0	0	0	0	0	1623	177
Future Volume (vph)	0	258	212	0	195	0	0	0	0	0	1623	177
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		8.5	8.5		5.5						6.5	6.5
Lane Util. Factor		1.00	1.00		1.00						0.95	1.00
Frpb, ped/bikes		1.00	0.99		1.00						1.00	1.00
Flpb, ped/bikes		1.00	1.00		1.00						1.00	1.00
Frt		1.00	0.85		1.00						1.00	0.85
Flt Protected		1.00	1.00		1.00						1.00	1.00
Satd. Flow (prot)		1881	1578		1881						3505	1568
Flt Permitted		1.00	1.00		1.00						1.00	1.00
Satd. Flow (perm)		1881	1578		1881						3505	1568
Peak-hour factor, PHF	0.94	0.94	0.94	0.95	0.95	0.95	0.92	0.92	0.92	0.95	0.95	0.95
Adj. Flow (vph)	0	274	226	0	205	0	0	0	0	0	1708	186
RTOR Reduction (vph)	0	0	40	0	0	0	0	0	0	0	0	89
Lane Group Flow (vph)	0	274	186	0	205	0	0	0	0	0	1708	97
Confl. Bikes (#/hr)			1			4						
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	2%	2%	2%	3%	3%	3%
Turn Type		NA	Perm		NA						NA	Perm
Protected Phases		8			4						6	
Permitted Phases			8									6
Actuated Green, G (s)		18.5	18.5		21.5						36.5	36.5
Effective Green, g (s)		18.5	18.5		21.5						36.5	36.5
Actuated g/C Ratio		0.26	0.26		0.31						0.52	0.52
Clearance Time (s)		8.5	8.5		5.5						6.5	6.5
Vehicle Extension (s)		3.0	3.0		3.0						3.0	3.0
Lane Grp Cap (vph)		497	417		577						1827	817
v/s Ratio Prot		c0.15			0.11						c0.49	
v/s Ratio Perm			0.12									0.06
v/c Ratio		0.55	0.44		0.36						0.93	0.12
Uniform Delay, d1		22.2	21.5		18.9						15.6	8.5
Progression Factor		1.00	1.00		0.00						1.00	1.00
Incremental Delay, d2		1.3	0.8		0.4						10.4	0.3
Delay (s)		23.5	22.2		0.4						26.1	8.8
Level of Service		C	C		A						C	A
Approach Delay (s/veh)		22.9			0.4			0.0			24.4	
Approach LOS		C			A			A			C	

Intersection Summary			
HCM 2000 Control Delay (s/veh)	22.2	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.81		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	70.9%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑			↑	↱		↑↑	↱			
Traffic Volume (vph)	0	258	0	0	195	256	0	1441	288	0	0	0
Future Volume (vph)	0	258	0	0	195	256	0	1441	288	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.5			8.5	8.5		6.5	6.5			
Lane Util. Factor		1.00			1.00	1.00		0.95	1.00			
Frpb, ped/bikes		1.00			1.00	0.98		1.00	1.00			
Flpb, ped/bikes		1.00			1.00	1.00		1.00	1.00			
Frt		1.00			1.00	0.85		1.00	0.85			
Flt Protected		1.00			1.00	1.00		1.00	1.00			
Satd. Flow (prot)		1881			1881	1574		3539	1583			
Flt Permitted		1.00			1.00	1.00		1.00	1.00			
Satd. Flow (perm)		1881			1881	1574		3539	1583			
Peak-hour factor, PHF	0.94	0.94	0.94	0.95	0.95	0.95	0.95	0.95	0.95	0.92	0.92	0.92
Adj. Flow (vph)	0	274	0	0	205	269	0	1517	303	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	40	0	0	145	0	0	0
Lane Group Flow (vph)	0	274	0	0	205	229	0	1517	158	0	0	0
Confl. Bikes (#/hr)			1			4						
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	2%	2%	2%	2%	2%	2%
Turn Type		NA			NA	Perm		NA	Perm			
Protected Phases		4			8			2				
Permitted Phases						8			2			
Actuated Green, G (s)		21.5			18.5	18.5		36.5	36.5			
Effective Green, g (s)		21.5			18.5	18.5		36.5	36.5			
Actuated g/C Ratio		0.31			0.26	0.26		0.52	0.52			
Clearance Time (s)		5.5			8.5	8.5		6.5	6.5			
Vehicle Extension (s)		3.0			3.0	3.0		3.0	3.0			
Lane Grp Cap (vph)		577			497	415		1845	825			
v/s Ratio Prot		c0.15			0.11			c0.43				
v/s Ratio Perm						0.15			0.10			
v/c Ratio		0.47			0.41	0.55		0.82	0.19			
Uniform Delay, d1		19.7			21.3	22.2		14.0	8.9			
Progression Factor		0.00			1.00	1.00		1.00	1.00			
Incremental Delay, d2		0.5			0.6	1.6		4.3	0.5			
Delay (s)		0.5			21.8	23.8		18.3	9.4			
Level of Service		A			C	C		B	A			
Approach Delay (s/veh)		0.5			22.9			16.8			0.0	
Approach LOS		A			C			B			A	

Intersection Summary			
HCM 2000 Control Delay (s/veh)	16.2	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.73		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	70.9%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Intersection: 10: Lakeshore Avenue/Sheldon Road & Robbins Road

Movement	EB	WB	WB	NB	SB	SB
Directions Served	LTR	L	TR	LTR	L	TR
Maximum Queue (ft)	51	54	116	184	107	100
Average Queue (ft)	29	25	59	79	47	44
95th Queue (ft)	45	49	94	139	83	78
Link Distance (ft)	762	892		766		645
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)			300		300	
Storage Blk Time (%)						
Queuing Penalty (veh)						

Intersection: 20: SB Beacon Blvd (US-31) & Robbins Road

Movement	EB	EB	WB	SB	SB	SB
Directions Served	T	R	T	T	T	R
Maximum Queue (ft)	114	128	26	374	362	79
Average Queue (ft)	54	48	2	221	186	23
95th Queue (ft)	96	93	15	326	306	57
Link Distance (ft)	490	490	32	602	602	602
Upstream Blk Time (%)			2			
Queuing Penalty (veh)			2			
Storage Bay Dist (ft)						
Storage Blk Time (%)						
Queuing Penalty (veh)						

Intersection: 21: NB Beacon Blvd (US-31) & Robbins Road

Movement	EB	WB	WB	NB	NB	NB
Directions Served	T	T	R	T	T	R
Maximum Queue (ft)	18	131	148	248	212	88
Average Queue (ft)	1	57	55	138	100	32
95th Queue (ft)	10	111	109	219	187	64
Link Distance (ft)	32	526	526	725	725	725
Upstream Blk Time (%)	1					
Queuing Penalty (veh)	2					
Storage Bay Dist (ft)						
Storage Blk Time (%)						
Queuing Penalty (veh)						

Intersection: 30: W. Site Drive & Robbins Road

Movement
Directions Served
Maximum Queue (ft)
Average Queue (ft)
95th Queue (ft)
Link Distance (ft)
Upstream Blk Time (%)
Queuing Penalty (veh)
Storage Bay Dist (ft)
Storage Blk Time (%)
Queuing Penalty (veh)

Intersection: 40: E. Site Drive & Robbins Road

Movement
Directions Served
Maximum Queue (ft)
Average Queue (ft)
95th Queue (ft)
Link Distance (ft)
Upstream Blk Time (%)
Queuing Penalty (veh)
Storage Bay Dist (ft)
Storage Blk Time (%)
Queuing Penalty (veh)

Zone Summary

Zone wide Queuing Penalty: 4

Intersection: 10: Lakeshore Avenue/Sheldon Road & Robbins Road

Movement	EB	WB	WB	NB	SB	SB
Directions Served	LTR	L	TR	LTR	L	TR
Maximum Queue (ft)	65	91	180	406	245	240
Average Queue (ft)	30	40	87	169	109	89
95th Queue (ft)	57	70	151	362	225	301
Link Distance (ft)	762	892		766		645
Upstream Blk Time (%)						3
Queuing Penalty (veh)						0
Storage Bay Dist (ft)			300		300	
Storage Blk Time (%)					4	1
Queuing Penalty (veh)					12	3

Intersection: 20: SB Beacon Blvd (US-31) & Robbins Road

Movement	EB	EB	WB	SB	SB	SB
Directions Served	T	R	T	T	T	R
Maximum Queue (ft)	166	138	28	393	358	122
Average Queue (ft)	96	67	2	239	199	36
95th Queue (ft)	151	117	22	347	322	79
Link Distance (ft)	491	491	32	602	602	602
Upstream Blk Time (%)			1			
Queuing Penalty (veh)			1			
Storage Bay Dist (ft)						
Storage Blk Time (%)						
Queuing Penalty (veh)						

Intersection: 21: NB Beacon Blvd (US-31) & Robbins Road

Movement	EB	WB	WB	NB	NB	NB
Directions Served	T	T	R	T	T	R
Maximum Queue (ft)	6	180	141	342	308	200
Average Queue (ft)	0	78	73	184	152	46
95th Queue (ft)	5	143	125	283	262	117
Link Distance (ft)	32	526	526	725	725	725
Upstream Blk Time (%)	0					
Queuing Penalty (veh)	1					
Storage Bay Dist (ft)						
Storage Blk Time (%)						
Queuing Penalty (veh)						

Intersection: 30: W. Site Drive & Robbins Road

Movement
Directions Served
Maximum Queue (ft)
Average Queue (ft)
95th Queue (ft)
Link Distance (ft)
Upstream Blk Time (%)
Queuing Penalty (veh)
Storage Bay Dist (ft)
Storage Blk Time (%)
Queuing Penalty (veh)

Intersection: 40: E. Site Drive & Robbins Road

Movement
Directions Served
Maximum Queue (ft)
Average Queue (ft)
95th Queue (ft)
Link Distance (ft)
Upstream Blk Time (%)
Queuing Penalty (veh)
Storage Bay Dist (ft)
Storage Blk Time (%)
Queuing Penalty (veh)

Zone Summary

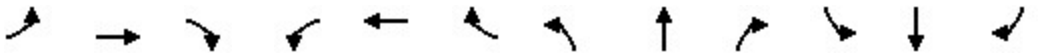
Zone wide Queuing Penalty: 17

Intersection	
Intersection Delay, s/veh	18.8
Intersection LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	35	45	5	55	29	179	4	274	65	170	167	6
Future Vol, veh/h	35	45	5	55	29	179	4	274	65	170	167	6
Peak Hour Factor	0.83	0.83	0.83	0.93	0.93	0.93	0.85	0.85	0.85	0.70	0.70	0.70
Heavy Vehicles, %	0	0	0	3	3	3	3	3	3	4	4	4
Mvmt Flow	42	54	6	59	31	192	5	322	76	243	239	9
Number of Lanes	0	1	0	1	1	0	0	1	0	1	1	0

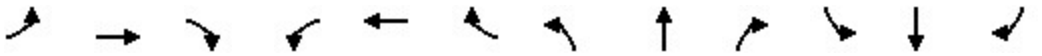
Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	2	1	2	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	2	1	1	2
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	2	2	1
HCM Control Delay, s/veh	13.5	14	27	15.8
HCM LOS	B	B	D	C

Lane	NBLn1	EBLn1	WBLn1	WBLn2	SBLn1	SBLn2
Vol Left, %	1%	41%	100%	0%	100%	0%
Vol Thru, %	80%	53%	0%	14%	0%	97%
Vol Right, %	19%	6%	0%	86%	0%	3%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	343	85	55	208	170	173
LT Vol	4	35	55	0	170	0
Through Vol	274	45	0	29	0	167
RT Vol	65	5	0	179	0	6
Lane Flow Rate	404	102	59	224	243	247
Geometry Grp	4b	4b	5	5	5	5
Degree of Util (X)	0.748	0.229	0.131	0.426	0.488	0.46
Departure Headway (Hd)	6.676	8.033	7.995	6.864	7.231	6.695
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes
Cap	541	447	449	526	498	539
Service Time	4.715	6.088	5.737	4.605	4.972	4.436
HCM Lane V/C Ratio	0.747	0.228	0.131	0.426	0.488	0.458
HCM Control Delay, s/veh	27	13.5	11.9	14.6	16.7	15
HCM Lane LOS	D	B	B	B	C	B
HCM 95th-tile Q	6.4	0.9	0.4	2.1	2.6	2.4



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑	↱		↑						↑↑	↱
Traffic Volume (vph)	0	136	193	0	145	0	0	0	0	0	1580	123
Future Volume (vph)	0	136	193	0	145	0	0	0	0	0	1580	123
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		8.5	8.5		5.5						6.5	6.5
Lane Util. Factor		1.00	1.00		1.00						0.95	1.00
Frpb, ped/bikes		1.00	0.99		1.00						1.00	0.99
Flpb, ped/bikes		1.00	1.00		1.00						1.00	1.00
Frt		1.00	0.85		1.00						1.00	0.85
Flt Protected		1.00	1.00		1.00						1.00	1.00
Satd. Flow (prot)		1881	1578		1863						3471	1534
Flt Permitted		1.00	1.00		1.00						1.00	1.00
Satd. Flow (perm)		1881	1578		1863						3471	1534
Peak-hour factor, PHF	0.85	0.85	0.85	0.71	0.71	0.71	0.92	0.92	0.92	0.89	0.89	0.89
Adj. Flow (vph)	0	160	227	0	204	0	0	0	0	0	1775	138
RTOR Reduction (vph)	0	0	40	0	0	0	0	0	0	0	0	66
Lane Group Flow (vph)	0	160	187	0	204	0	0	0	0	0	1775	72
Confl. Peds. (#/hr)	5					5						
Confl. Bikes (#/hr)			1									1
Heavy Vehicles (%)	1%	1%	1%	2%	2%	2%	2%	2%	2%	4%	4%	4%
Turn Type		NA	Perm		NA						NA	Perm
Protected Phases		8			4						6	
Permitted Phases			8									6
Actuated Green, G (s)		18.5	18.5		21.5						36.5	36.5
Effective Green, g (s)		18.5	18.5		21.5						36.5	36.5
Actuated g/C Ratio		0.26	0.26		0.31						0.52	0.52
Clearance Time (s)		8.5	8.5		5.5						6.5	6.5
Vehicle Extension (s)		3.0	3.0		3.0						3.0	3.0
Lane Grp Cap (vph)		497	417		572						1809	799
v/s Ratio Prot		0.09			0.11						c0.51	
v/s Ratio Perm			c0.12									0.05
v/c Ratio		0.32	0.45		0.36						0.98	0.09
Uniform Delay, d1		20.7	21.5		18.9						16.4	8.4
Progression Factor		1.00	1.00		0.00						1.00	1.00
Incremental Delay, d2		0.4	0.8		0.4						17.2	0.2
Delay (s)		21.1	22.3		0.4						33.6	8.6
Level of Service		C	C		A						C	A
Approach Delay (s/veh)		21.8			0.4			0.0			31.8	
Approach LOS		C			A			A			C	

Intersection Summary			
HCM 2000 Control Delay (s/veh)	27.7	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.80		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	68.1%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑			↑	↱		↑↑	↱			
Traffic Volume (vph)	0	136	0	0	145	198	0	1218	186	0	0	0
Future Volume (vph)	0	136	0	0	145	198	0	1218	186	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.5			8.5	8.5		6.5	6.5			
Lane Util. Factor		1.00			1.00	1.00		0.95	1.00			
Frpb, ped/bikes		1.00			1.00	0.98		1.00	1.00			
Flpb, ped/bikes		1.00			1.00	1.00		1.00	1.00			
Frt		1.00			1.00	0.85		1.00	0.85			
Flt Protected		1.00			1.00	1.00		1.00	1.00			
Satd. Flow (prot)		1881			1863	1556		3312	1482			
Flt Permitted		1.00			1.00	1.00		1.00	1.00			
Satd. Flow (perm)		1881			1863	1556		3312	1482			
Peak-hour factor, PHF	0.85	0.85	0.85	0.71	0.71	0.71	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	160	0	0	204	279	0	1324	202	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	40	0	0	97	0	0	0
Lane Group Flow (vph)	0	160	0	0	204	239	0	1324	105	0	0	0
Confl. Peds. (#/hr)	5					5						
Confl. Bikes (#/hr)			1									1
Heavy Vehicles (%)	1%	1%	1%	2%	2%	2%	9%	9%	9%	2%	2%	2%
Turn Type		NA			NA	Perm		NA	Perm			
Protected Phases		4			8			2				
Permitted Phases						8			2			
Actuated Green, G (s)		21.5			18.5	18.5		36.5	36.5			
Effective Green, g (s)		21.5			18.5	18.5		36.5	36.5			
Actuated g/C Ratio		0.31			0.26	0.26		0.52	0.52			
Clearance Time (s)		5.5			8.5	8.5		6.5	6.5			
Vehicle Extension (s)		3.0			3.0	3.0		3.0	3.0			
Lane Grp Cap (vph)		577			492	411		1726	772			
v/s Ratio Prot		0.09			0.11			c0.40				
v/s Ratio Perm						c0.15			0.07			
v/c Ratio		0.28			0.41	0.58		0.77	0.14			
Uniform Delay, d1		18.4			21.3	22.4		13.4	8.6			
Progression Factor		0.00			1.00	1.00		1.00	1.00			
Incremental Delay, d2		0.3			0.6	2.1		3.3	0.4			
Delay (s)		0.3			21.8	24.5		16.7	9.0			
Level of Service		A			C	C		B	A			
Approach Delay (s/veh)		0.3			23.4			15.7			0.0	
Approach LOS		A			C			B			A	

Intersection Summary			
HCM 2000 Control Delay (s/veh)	16.2	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.70		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	68.1%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Intersection	
Int Delay, s/veh	0.5

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	279	1	5	257	6	16
Future Vol, veh/h	279	1	5	257	6	16
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	85	85	93	93	92	92
Heavy Vehicles, %	1	1	3	3	2	2
Mvmt Flow	328	1	5	276	7	17

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	329	0	616	329
Stage 1	-	-	-	-	329	-
Stage 2	-	-	-	-	287	-
Critical Hdwy	-	-	4.13	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.227	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1224	-	454	713
Stage 1	-	-	-	-	729	-
Stage 2	-	-	-	-	762	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1224	-	452	713
Mov Cap-2 Maneuver	-	-	-	-	452	-
Stage 1	-	-	-	-	729	-
Stage 2	-	-	-	-	758	-

Approach	EB	WB	NB
HCM Control Delay, s/v	0	0.15	11.08
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	616	-	-	34	-
HCM Lane V/C Ratio	0.039	-	-	0.004	-
HCM Control Delay (s/veh)	11.1	-	-	8	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q(veh)	0.1	-	-	0	-

Intersection	
Int Delay, s/veh	0.9

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	293	2	12	256	6	36
Future Vol, veh/h	293	2	12	256	6	36
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	85	85	93	93	92	92
Heavy Vehicles, %	1	1	3	3	2	2
Mvmt Flow	345	2	13	275	7	39

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	347	0	647	346
Stage 1	-	-	-	-	346	-
Stage 2	-	-	-	-	301	-
Critical Hdwy	-	-	4.13	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.227	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1206	-	436	697
Stage 1	-	-	-	-	716	-
Stage 2	-	-	-	-	751	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1206	-	430	697
Mov Cap-2 Maneuver	-	-	-	-	430	-
Stage 1	-	-	-	-	716	-
Stage 2	-	-	-	-	741	-

Approach	EB	WB	NB
HCM Control Delay, s/v	0	0.36	11.05
HCM LOS			B

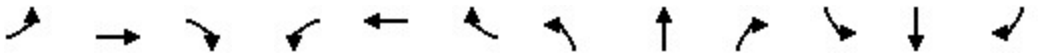
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	640	-	-	81	-
HCM Lane V/C Ratio	0.071	-	-	0.011	-
HCM Control Delay (s/veh)	11.1	-	-	8	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q(veh)	0.2	-	-	0	-

Intersection	
Intersection Delay, s/veh	43.6
Intersection LOS	E

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	36	38	1	111	57	213	1	305	99	346	256	31
Future Vol, veh/h	36	38	1	111	57	213	1	305	99	346	256	31
Peak Hour Factor	0.75	0.75	0.75	0.85	0.85	0.85	0.90	0.90	0.90	0.82	0.82	0.82
Heavy Vehicles, %	0	0	0	1	1	1	1	1	1	0	0	0
Mvmt Flow	48	51	1	131	67	251	1	339	110	422	312	38
Number of Lanes	0	1	0	1	1	0	0	1	0	1	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	2	1	2	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	2	1	1	2
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	2	2	1
HCM Control Delay, s/veh	16.6	23	62.4	48.1
HCM LOS	C	C	F	E

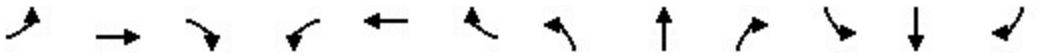
Lane	NBLn1	EBLn1	WBLn1	WBLn2	SBLn1	SBLn2
Vol Left, %	0%	48%	100%	0%	100%	0%
Vol Thru, %	75%	51%	0%	21%	0%	89%
Vol Right, %	24%	1%	0%	79%	0%	11%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	405	75	111	270	346	287
LT Vol	1	36	111	0	346	0
Through Vol	305	38	0	57	0	256
RT Vol	99	1	0	213	0	31
Lane Flow Rate	450	100	131	318	422	350
Geometry Grp	4b	4b	5	5	5	5
Degree of Util (X)	0.968	0.274	0.322	0.686	0.964	0.742
Departure Headway (Hd)	7.742	9.881	8.865	7.775	8.221	7.628
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes
Cap	468	366	405	464	439	473
Service Time	5.814	7.881	6.633	5.542	6.007	5.413
HCM Lane V/C Ratio	0.962	0.273	0.323	0.685	0.961	0.74
HCM Control Delay, s/veh	62.4	16.6	15.8	26	63.5	29.5
HCM Lane LOS	F	C	C	D	F	D
HCM 95th-tile Q	12	1.1	1.4	5.1	11.6	6.1



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑	↱		↑						↑↑	↱
Traffic Volume (vph)	0	261	239	0	200	0	0	0	0	0	1623	218
Future Volume (vph)	0	261	239	0	200	0	0	0	0	0	1623	218
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		8.5	8.5		5.5						6.5	6.5
Lane Util. Factor		1.00	1.00		1.00						0.95	1.00
Frpb, ped/bikes		1.00	0.99		1.00						1.00	1.00
Flpb, ped/bikes		1.00	1.00		1.00						1.00	1.00
Frt		1.00	0.85		1.00						1.00	0.85
Flt Protected		1.00	1.00		1.00						1.00	1.00
Satd. Flow (prot)		1881	1578		1881						3505	1568
Flt Permitted		1.00	1.00		1.00						1.00	1.00
Satd. Flow (perm)		1881	1578		1881						3505	1568
Peak-hour factor, PHF	0.94	0.94	0.94	0.95	0.95	0.95	0.92	0.92	0.92	0.95	0.95	0.95
Adj. Flow (vph)	0	278	254	0	211	0	0	0	0	0	1708	229
RTOR Reduction (vph)	0	0	40	0	0	0	0	0	0	0	0	110
Lane Group Flow (vph)	0	278	214	0	211	0	0	0	0	0	1708	119
Confl. Bikes (#/hr)			1			4						
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	2%	2%	2%	3%	3%	3%
Turn Type		NA	Perm		NA						NA	Perm
Protected Phases		8			4						6	
Permitted Phases			8									6
Actuated Green, G (s)		18.5	18.5		21.5						36.5	36.5
Effective Green, g (s)		18.5	18.5		21.5						36.5	36.5
Actuated g/C Ratio		0.26	0.26		0.31						0.52	0.52
Clearance Time (s)		8.5	8.5		5.5						6.5	6.5
Vehicle Extension (s)		3.0	3.0		3.0						3.0	3.0
Lane Grp Cap (vph)		497	417		577						1827	817
v/s Ratio Prot		c0.15			0.11						c0.49	
v/s Ratio Perm			0.14									0.08
v/c Ratio		0.56	0.51		0.37						0.93	0.15
Uniform Delay, d1		22.2	21.9		18.9						15.6	8.7
Progression Factor		1.00	1.00		0.00						1.00	1.00
Incremental Delay, d2		1.4	1.1		0.4						10.4	0.4
Delay (s)		23.6	23.0		0.4						26.1	9.1
Level of Service		C	C		A						C	A
Approach Delay (s/veh)		23.3			0.4			0.0			24.1	
Approach LOS		C			A			A			C	

Intersection Summary			
HCM 2000 Control Delay (s/veh)	22.0	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.81		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	72.2%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	261	0	0	200	256	0	1475	288	0	0	0
Future Volume (vph)	0	261	0	0	200	256	0	1475	288	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.5			8.5	8.5		6.5	6.5			
Lane Util. Factor		1.00			1.00	1.00		0.95	1.00			
Frpb, ped/bikes		1.00			1.00	0.98		1.00	1.00			
Flpb, ped/bikes		1.00			1.00	1.00		1.00	1.00			
Frt		1.00			1.00	0.85		1.00	0.85			
Flt Protected		1.00			1.00	1.00		1.00	1.00			
Satd. Flow (prot)		1881			1881	1574		3539	1583			
Flt Permitted		1.00			1.00	1.00		1.00	1.00			
Satd. Flow (perm)		1881			1881	1574		3539	1583			
Peak-hour factor, PHF	0.94	0.94	0.94	0.95	0.95	0.95	0.95	0.95	0.95	0.92	0.92	0.92
Adj. Flow (vph)	0	278	0	0	211	269	0	1553	303	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	40	0	0	145	0	0	0
Lane Group Flow (vph)	0	278	0	0	211	229	0	1553	158	0	0	0
Confl. Bikes (#/hr)			1			4						
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	2%	2%	2%	2%	2%	2%
Turn Type		NA			NA	Perm		NA	Perm			
Protected Phases		4			8			2				
Permitted Phases						8			2			
Actuated Green, G (s)		21.5			18.5	18.5		36.5	36.5			
Effective Green, g (s)		21.5			18.5	18.5		36.5	36.5			
Actuated g/C Ratio		0.31			0.26	0.26		0.52	0.52			
Clearance Time (s)		5.5			8.5	8.5		6.5	6.5			
Vehicle Extension (s)		3.0			3.0	3.0		3.0	3.0			
Lane Grp Cap (vph)		577			497	415		1845	825			
v/s Ratio Prot		c0.15			0.11			c0.44				
v/s Ratio Perm						0.15			0.10			
v/c Ratio		0.48			0.42	0.55		0.84	0.19			
Uniform Delay, d1		19.7			21.3	22.2		14.3	8.9			
Progression Factor		0.00			1.00	1.00		1.00	1.00			
Incremental Delay, d2		0.5			0.6	1.6		4.9	0.5			
Delay (s)		0.6			21.9	23.8		19.1	9.4			
Level of Service		A			C	C		B	A			
Approach Delay (s/veh)		0.6			23.0			17.6			0.0	
Approach LOS		A			C			B			A	

Intersection Summary			
HCM 2000 Control Delay (s/veh)	16.7	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.75		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	72.2%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Intersection	
Int Delay, s/veh	0.3

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	477	6	14	377	4	9
Future Vol, veh/h	477	6	14	377	4	9
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	94	94	85	85	92	92
Heavy Vehicles, %	1	1	1	1	2	2
Mvmt Flow	507	6	16	444	4	10

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	514	0	987	511
Stage 1	-	-	-	-	511	-
Stage 2	-	-	-	-	476	-
Critical Hdwy	-	-	4.11	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.209	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1057	-	274	563
Stage 1	-	-	-	-	603	-
Stage 2	-	-	-	-	625	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1057	-	269	563
Mov Cap-2 Maneuver	-	-	-	-	269	-
Stage 1	-	-	-	-	603	-
Stage 2	-	-	-	-	612	-

Approach	EB	WB	NB
HCM Control Delay, s/v	0	0.3	13.85
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	421	-	-	64	-
HCM Lane V/C Ratio	0.034	-	-	0.016	-
HCM Control Delay (s/veh)	13.8	-	-	8.5	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q(veh)	0.1	-	-	0	-

Intersection	
Int Delay, s/veh	0.7

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	479	7	32	386	5	21
Future Vol, veh/h	479	7	32	386	5	21
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	94	94	85	85	92	92
Heavy Vehicles, %	1	1	1	1	2	2
Mvmt Flow	510	7	38	454	5	23

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	517	0	1043	513
Stage 1	-	-	-	-	513	-
Stage 2	-	-	-	-	529	-
Critical Hdwy	-	-	4.11	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.209	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1054	-	254	561
Stage 1	-	-	-	-	601	-
Stage 2	-	-	-	-	591	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1054	-	242	561
Mov Cap-2 Maneuver	-	-	-	-	242	-
Stage 1	-	-	-	-	601	-
Stage 2	-	-	-	-	562	-

Approach	EB	WB	NB
HCM Control Delay, s/v	0	0.65	13.59
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	448	-	-	138	-
HCM Lane V/C Ratio	0.063	-	-	0.036	-
HCM Control Delay (s/veh)	13.6	-	-	8.5	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q(veh)	0.2	-	-	0.1	-

Intersection: 10: Lakeshore Avenue/Sheldon Road & Robbins Road

Movement	EB	WB	WB	NB	SB	SB
Directions Served	LTR	L	TR	LTR	L	TR
Maximum Queue (ft)	56	67	125	204	127	99
Average Queue (ft)	30	25	59	79	48	45
95th Queue (ft)	51	51	101	145	88	79
Link Distance (ft)	762	892		766		645
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)			300		300	
Storage Blk Time (%)						
Queuing Penalty (veh)						

Intersection: 20: SB Beacon Blvd (US-31) & Robbins Road

Movement	EB	EB	WB	SB	SB	SB
Directions Served	T	R	T	T	T	R
Maximum Queue (ft)	141	137	9	413	431	153
Average Queue (ft)	60	64	1	222	185	27
95th Queue (ft)	115	117	8	347	330	79
Link Distance (ft)	490	490	32	602	602	602
Upstream Blk Time (%)			1			
Queuing Penalty (veh)			1			
Storage Bay Dist (ft)						
Storage Blk Time (%)						
Queuing Penalty (veh)						

Intersection: 21: NB Beacon Blvd (US-31) & Robbins Road

Movement	EB	WB	WB	NB	NB	NB
Directions Served	T	T	R	T	T	R
Maximum Queue (ft)	16	162	156	252	227	72
Average Queue (ft)	1	62	54	144	105	31
95th Queue (ft)	7	123	109	225	193	59
Link Distance (ft)	32	526	526	725	725	725
Upstream Blk Time (%)	1					
Queuing Penalty (veh)	1					
Storage Bay Dist (ft)						
Storage Blk Time (%)						
Queuing Penalty (veh)						

Intersection: 30: W. Site Drive & Robbins Road

Movement	WB	NB
Directions Served	LT	LR
Maximum Queue (ft)	34	40
Average Queue (ft)	2	17
95th Queue (ft)	18	43
Link Distance (ft)	117	576
Upstream Blk Time (%)	0	
Queuing Penalty (veh)	0	
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 40: E. Site Drive & Robbins Road

Movement	WB	NB
Directions Served	LT	LR
Maximum Queue (ft)	30	53
Average Queue (ft)	4	25
95th Queue (ft)	22	50
Link Distance (ft)	242	1010
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Zone Summary

Zone wide Queuing Penalty: 2

Intersection: 10: Lakeshore Avenue/Sheldon Road & Robbins Road

Movement	EB	WB	WB	NB	SB	SB
Directions Served	LTR	L	TR	LTR	L	TR
Maximum Queue (ft)	54	97	184	516	278	346
Average Queue (ft)	31	42	81	198	119	94
95th Queue (ft)	52	75	145	488	258	301
Link Distance (ft)	762	892		766		645
Upstream Blk Time (%)				2		1
Queuing Penalty (veh)				0		0
Storage Bay Dist (ft)			300		300	
Storage Blk Time (%)					6	0
Queuing Penalty (veh)					21	0

Intersection: 20: SB Beacon Blvd (US-31) & Robbins Road

Movement	EB	EB	WB	SB	SB	SB
Directions Served	T	R	T	T	T	R
Maximum Queue (ft)	183	170	10	511	483	390
Average Queue (ft)	97	78	0	294	265	97
95th Queue (ft)	161	139	5	518	493	360
Link Distance (ft)	491	491	32	602	602	602
Upstream Blk Time (%)			1	3	4	4
Queuing Penalty (veh)			1	0	0	0
Storage Bay Dist (ft)						
Storage Blk Time (%)						
Queuing Penalty (veh)						

Intersection: 21: NB Beacon Blvd (US-31) & Robbins Road

Movement	EB	WB	WB	NB	NB	NB
Directions Served	T	T	R	T	T	R
Maximum Queue (ft)	5	168	212	306	305	157
Average Queue (ft)	0	77	81	182	145	42
95th Queue (ft)	4	137	154	272	248	99
Link Distance (ft)	32	526	526	725	725	725
Upstream Blk Time (%)	0					
Queuing Penalty (veh)	1					
Storage Bay Dist (ft)						
Storage Blk Time (%)						
Queuing Penalty (veh)						

Intersection: 30: W. Site Drive & Robbins Road

Movement	WB	NB
Directions Served	LT	LR
Maximum Queue (ft)	45	36
Average Queue (ft)	6	11
95th Queue (ft)	29	36
Link Distance (ft)	117	576
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

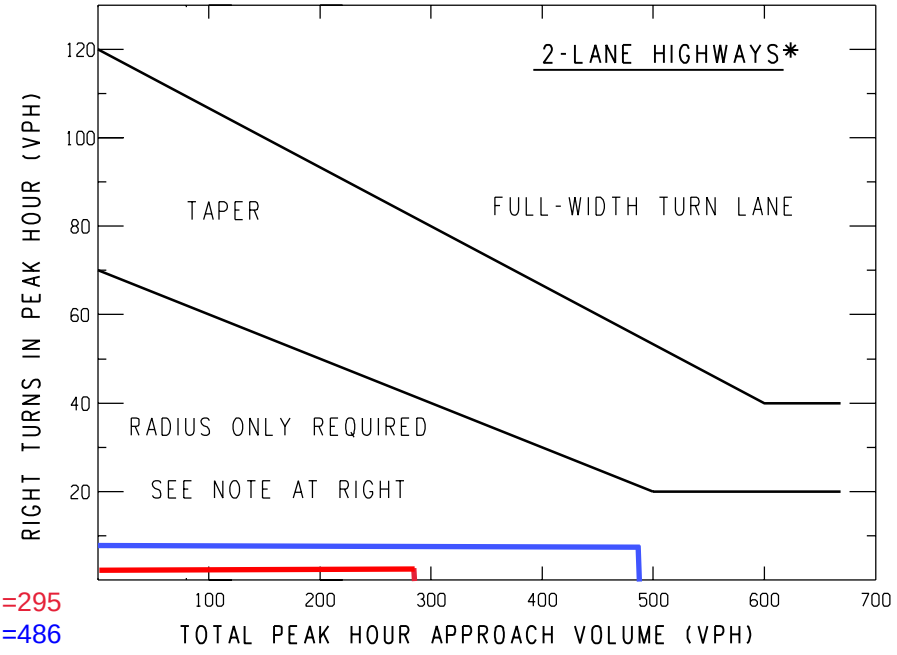
Intersection: 40: E. Site Drive & Robbins Road

Movement	WB	NB
Directions Served	LT	LR
Maximum Queue (ft)	112	49
Average Queue (ft)	15	17
95th Queue (ft)	60	44
Link Distance (ft)	242	1010
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Zone Summary

Zone wide Queuing Penalty: 23

ROBBINS ROAD & E. SITE DRIVE - RT LANE WARRANT



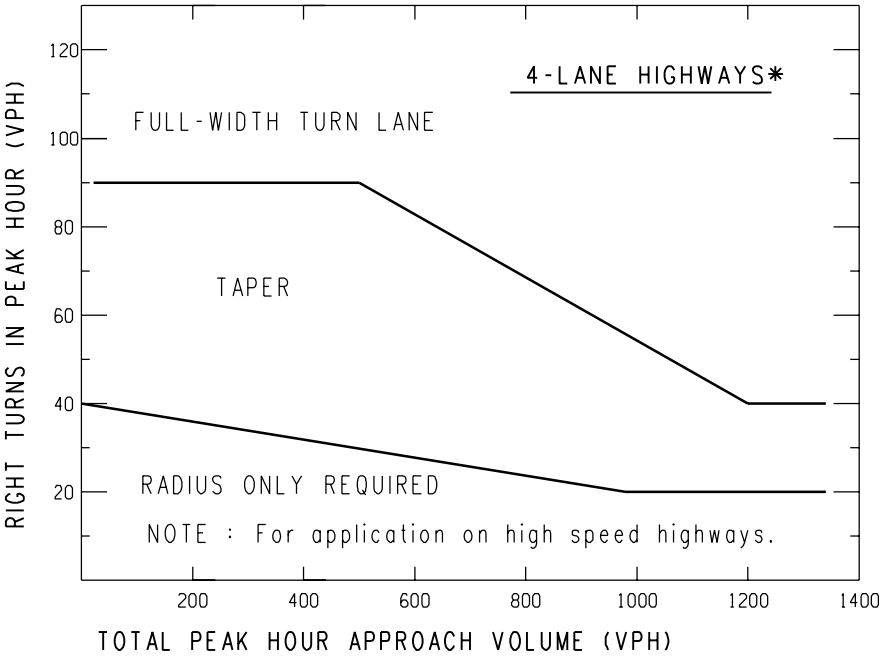
NOTE:
For posted speeds at or under 45 mph, peak hour right turns greater than 40 vph, and total peak hour approach less than 300 vph, adjust right turn volumes.

Adjust peak hour right turns = Peak hour right turns - 20

PM=7
AM=2

AM=295
PM=486

NO RT TREATMENT Recommended



*If a center left-turn lane exists(i.e. 3 or 5 lane highway), subtract the number of left turns in approach volume from the total approach volume to get an adjusted total approach volume.

Sample Problem:
The Design Speed is 55 mph. The Peak Hour Approach Volume is 300 vph. The Number of Right Turns in the Peak Hour is 100 vph. Determine if a right turn lane is recommended.

Solution:
Figure indicates that the intersection of 300 vph and 100 vph is located above the upper trend line; thus,a right-turn lane may be recommended.

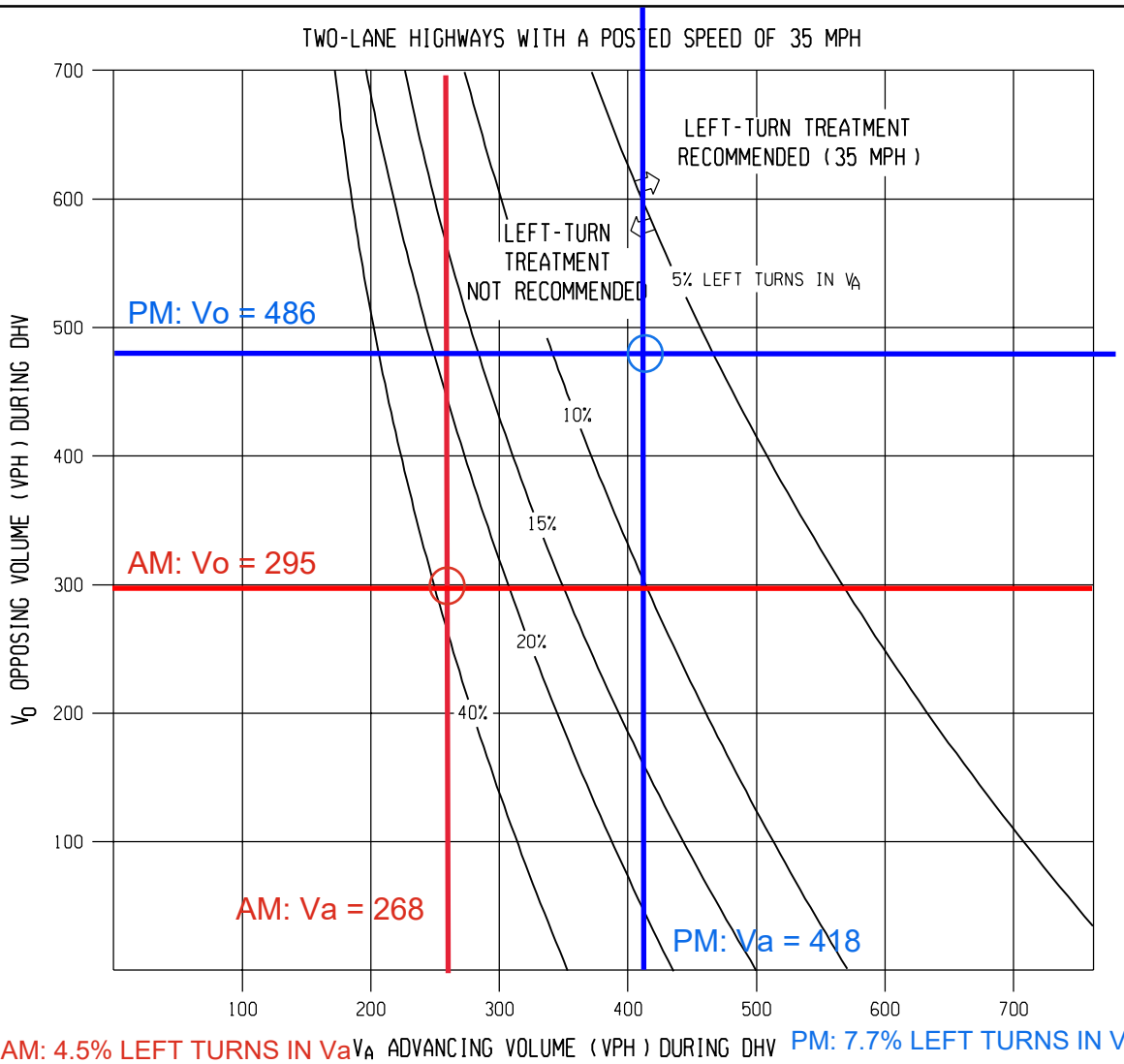
MDOT Michigan Department of Transportation

TRAFFIC AND SAFETY NOTE

TRAFFIC VOLUME GUIDELINES FOR RIGHT-TURN LANES AND TAPERS

DRAWN BY: MTS	08/05/2004	604A	SHEET 2 OF 2
CHECKED BY: JAT	PLAN DATE:		
FILE: K:/DGN/ts notes/Note604A tsn.dgn		REV. 08/05/2004	

ROBBINS ROAD & E. SITE DRIVE - LT LANE WARRANT



Instructions:

1. The family of curves represent the perc of left turns in the advancing volume (The designer should locate the curve for the actual percentage of left turns. When this is not an even increment of 5, the designer should estimate where the curve lies.

2. Read V_A and V_O into the chart and locate the intersection of the two volumes.

3. Note the location of the point in #2 relative to the line in #1. If the point is to the right of the line, then a left-turn lane is recommended. If the point is to the left of the line, then a left-turn is not recommended based on traffic volumes.

LEFT TURN LANE TREATMENT RECOMMENDED

= 35mph
cing volume during DHV = 400 vph
ng volume during DHV = 400 vph
ntage of left-turns in advancing volume = 7%

Problem: Determine if left-turn lane is recommended.

Solution: Figure indicates that the intersection of 400 vph and 400 vph is located to the left of the 7% curve (estimated); thus a left-turn lane is not recommended based on volumes.

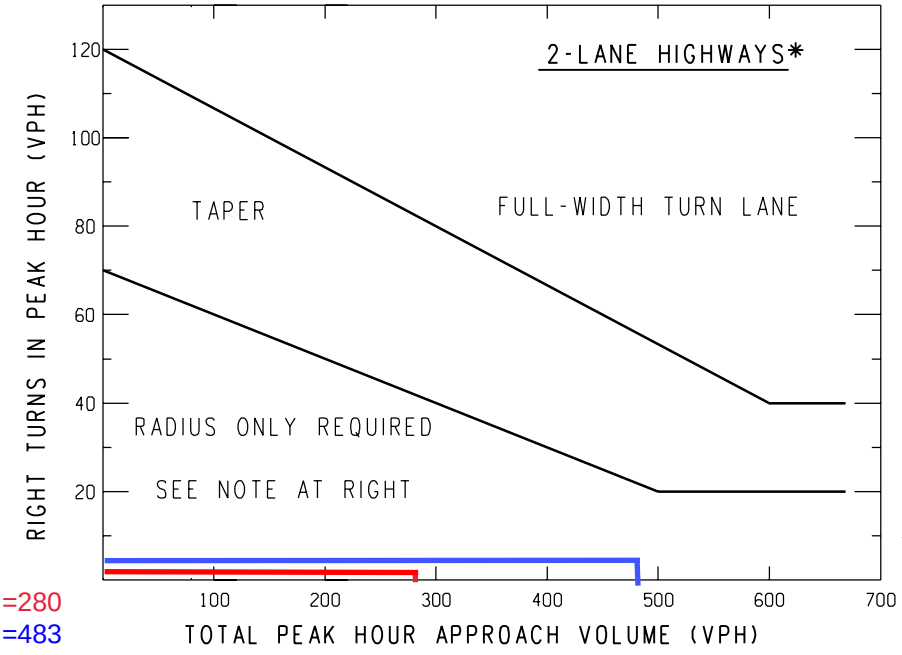
MDOT Michigan Department of Transportation

TRAFFIC AND SAFETY NOTE

TRAFFIC VOLUME GUIDELINES FOR LEFT-TURN LANES AT UNSIGNALIZED INTERSECTIONS

DRAWN BY: MTS	08/05/2004	605A	SHEET 3 OF 6
CHECKED BY: JAT	PLAN DATE:		
FILE: K:/DGN/ts notes/Note605A tsn.dgn		REV. 08/05/2004	

ROBBINS ROAD & W. SITE DRIVE - RT LANE WARRANT



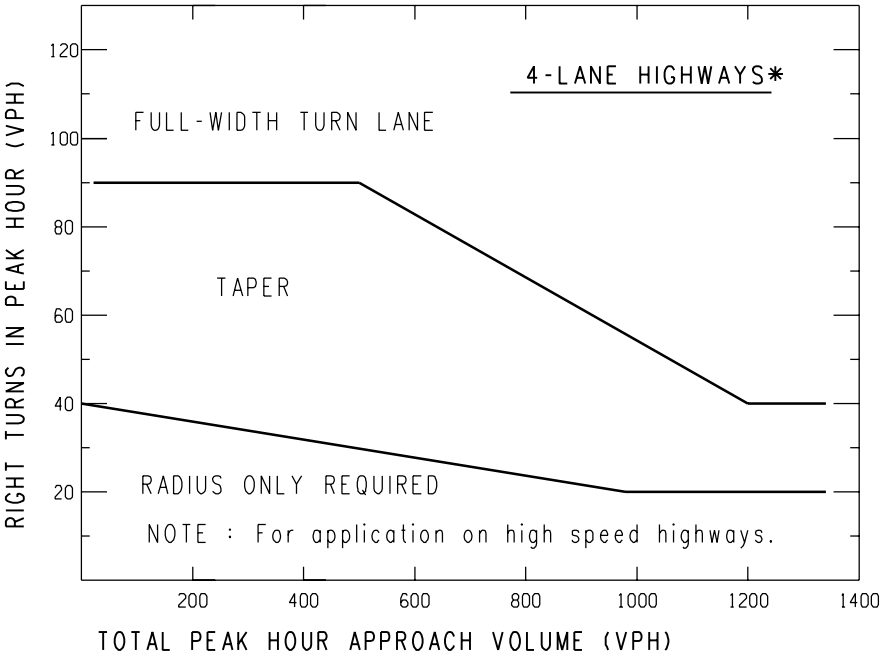
NOTE:
For posted speeds at or under 45 mph, peak hour right turns greater than 40 vph, and total peak hour approach less than 300 vph, adjust right turn volumes.

Adjust peak hour right turns = Peak hour right turns - 20

PM=6
AM=1

AM=280
PM=483

NO RT TREATMENT Recommended



*If a center left-turn lane exists(i.e. 3 or 5 lane highway), subtract the number of left turns in approach volume from the total approach volume to get an adjusted total approach volume.

Sample Problem:
The Design Speed is 55 mph. The Peak Hour Approach Volume is 300 vph. The Number of Right Turns in the Peak Hour is 100 vph. Determine if a right turn lane is recommended.

Solution:
Figure indicates that the intersection of 300 vph and 100 vph is located above the upper trend line; thus,a right-turn lane may be recommended.

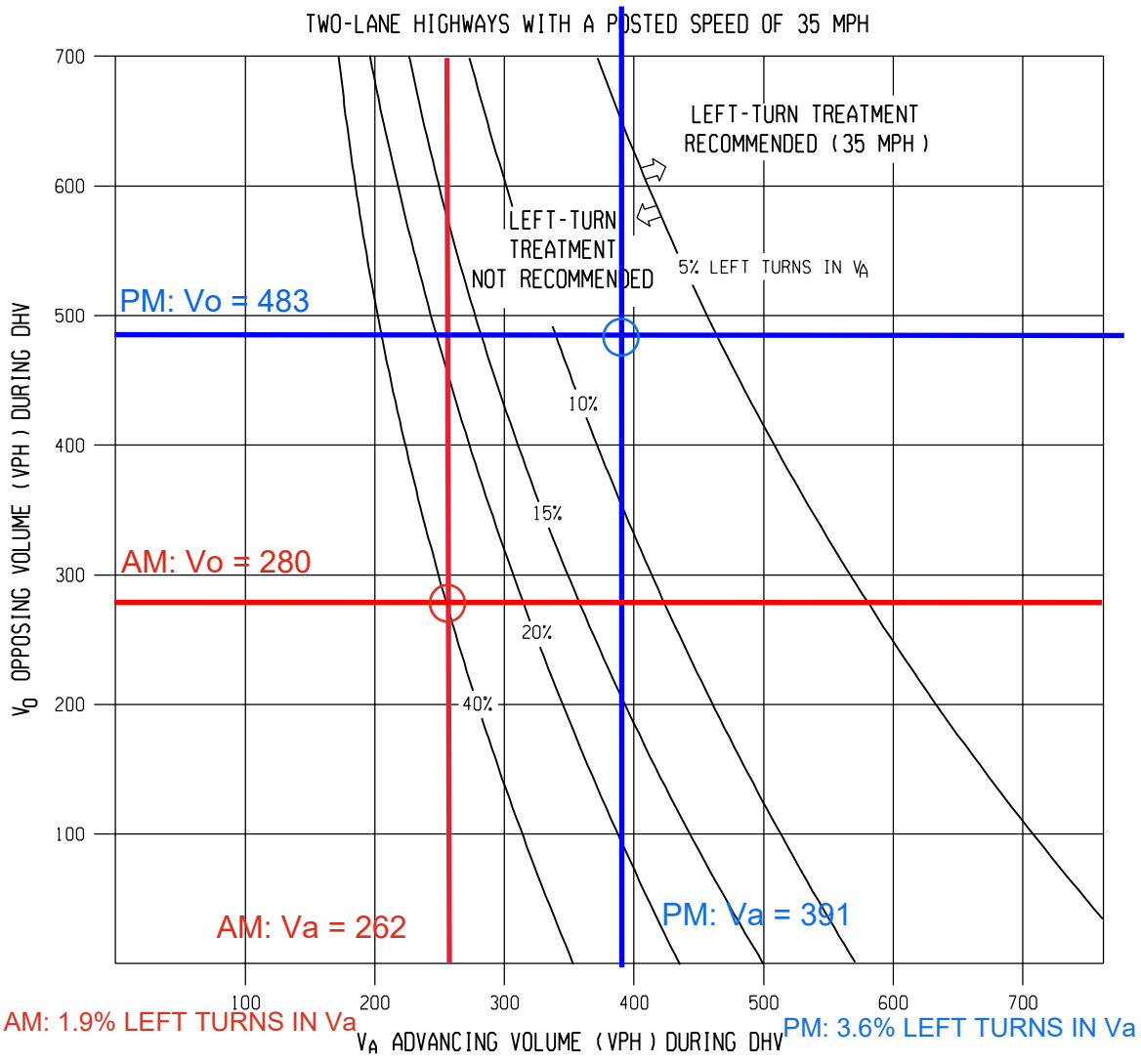
MDOT Michigan Department of Transportation

TRAFFIC AND SAFETY NOTE

TRAFFIC VOLUME GUIDELINES FOR RIGHT-TURN LANES AND TAPERS

DRAWN BY: MTS	08/05/2004	604A	SHEET 2 OF 2
CHECKED BY: JAT	PLAN DATE:		
FILE: K:/DGN/ts notes/Note604A tsn.dgn		REV. 08/05/2004	

ROBBINS ROAD & W. SITE DRIVE - LT LANE WARRANT



Instructions:

1. The family of curves represent the perc of left turns in the advancing volume (The designer should locate the curve for the actual percentage of left turns. When this is not an even increment of 5, the designer should estimate where the curve lies.

2. Read V_A and V_O into the chart and locate the intersection of the two volumes.

3. Note the location of the point in #2 relative to the line in #1. If the point is to the right of the line, then a left-turn lane is recommended. If the point is to the left of the line, then a left-turn is not recommended based on traffic volumes.

LEFT TURN LANE TREATMENT NOT RECOMMENDED

= 35mph
cing volume during DHV = 400 vph
ng volume during DHV = 400 vph
ntage of left-turns in advancing volume = 7%

Problem: Determine if left-turn lane is recommended.

Solution: Figure indicates that the intersection of 400 vph and 400 vph is located to the left of the 7% curve (estimated); thus a left-turn lane is not recommended based on volumes.

MDOT Michigan Department of Transportation

TRAFFIC AND SAFETY NOTE

TRAFFIC VOLUME GUIDELINES FOR LEFT-TURN LANES AT UNSIGNALIZED INTERSECTIONS

DRAWN BY: MTS	08/05/2004	605A	SHEET 3 OF 6
CHECKED BY: JAT	PLAN DATE:		
FILE: K:/DGN/ts notes/Note605A tsn.dgn		REV. 08/05/2004	

MICHIGAN DEPARTMENT OF ENVIRONMENT, GREAT LAKES, AND ENERGY
WATER RESOURCES DIVISION
PERMIT

Issued To:

IMB Capital
148 S River Ave
Suite 100
Holland, MI 49423

Permit No:	**WRP047819 v.1**
Submission No.:	**HQF-GK11-H2KFB**
Site Name:	**70-700 & 724 Robbins Road-Grand Haven**
Issued:	**February 12, 2026**
Revised:	
Expires:	**February 12, 2031**

This permit is being issued by the Michigan Department of Environment, Great Lakes, and Energy (EGLE), Water Resources Division, under the provisions of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended (NREPA); specifically:

☒ **Part 303, Wetlands Protection**

EGLE certifies that the activities authorized under this permit are in compliance with the State Coastal Zone Management Program and certifies without conditions under the Federal Clean Water Act, Section 401 that the discharge from the activities authorized under this permit will comply with Michigan's water quality requirements in Part 31, Water Resources Protection, of the NREPA and associated administrative rules, where applicable.

Permission is hereby granted, based on permittee assurance of adherence to State of Michigan requirements and permit conditions, to:

Authorized Activity:

The applicant proposes to fill 0.18 acres of wetlands to construct new condominium community and excavate 0.08 acres of wetland to construct drain dry basin. Total permanent wetland impacts include 0.26 acres of emergent wetland. All work shall be completed in accordance with the attached modified plans and the terms and conditions of this permit.

Waterbody Affected:	Unnamed Wetland
Property Location:	Ottawa County, City of Grand Haven, Town/Range/Section 08N/16W/33, Property Tax No. 70-03-33-100-073 & 70-03-33-100-091

EGLE
WRP047819 v1.0
Approved
Issued On:02/12/2026
Expires On:02/12/2031

Authority granted by this permit is subject to the following limitations:

A. Initiation of any work on the permitted project confirms the permittee's acceptance and agreement to comply with all terms and conditions of this permit.

B. The permittee, in exercising the authority granted by this permit, shall not cause unlawful pollution as defined by Part 31 of the NREPA.

C. This permit shall be kept at the site of the work and available for inspection at all times during the duration of the project or until its date of expiration.

D. All work shall be completed in accordance with the approved plans and specifications submitted with the application and/or plans and specifications attached to this permit.

E. No attempt shall be made by the permittee to forbid the full and free use by the public of public waters at or adjacent to the structure or work approved.

F. It is made a requirement of this permit that the permittee give notice to public utilities in accordance with 2013 PA 174 (Act 174) and comply with each of the requirements of Act 174.

G. This permit does not convey property rights in either real estate or material, nor does it authorize any injury to private property or invasion of public or private rights, nor does it waive the necessity of seeking federal assent, all local permits, or complying with other state statutes.

H. This permit does not prejudice or limit the right of a riparian owner or other person to institute proceedings in any circuit court of this state when necessary to protect his rights.

I. Permittee shall notify EGLE within one week after the completion of the activity authorized by this permit.

J. This permit shall not be assigned or transferred without the written approval of EGLE.

K. Failure to comply with conditions of this permit may subject the permittee to revocation of permit and criminal and/or civil action as cited by the specific state act, federal act, and/or rule under which this permit is granted.

L. All dredged or excavated materials shall be disposed of in an upland site (outside of floodplains, unless exempt under Part 31 of the NREPA, and wetlands).

M. In issuing this permit, EGLE has relied on the information and data that the permittee has provided in connection with the submitted application for permit. If, subsequent to the issuance of a permit, such information and data prove to be false, incomplete, or inaccurate, EGLE may modify, revoke, or suspend the permit, in whole or in part, in accordance with the new information.

N. The permittee shall indemnify and hold harmless the State of Michigan and its departments, agencies, officials, employees, agents, and representatives for any and all claims or causes of action arising from acts or omissions of the permittee, or employees, agents, or representative of the permittee, undertaken in connection with this permit. The permittee's obligation to indemnify the State of Michigan applies only if the state: (1) provides the permittee or its designated representative written notice of the claim or cause of action within 30 days after it is received by the state, and (2) consents to the permittee's participation in the proceeding on the claim or cause of action. It does not apply to contested case proceedings under the Administrative Procedures Act, 1969 PA 306, as amended, challenging the permit. This permit shall not be construed as an indemnity by the State of Michigan for the benefit of the permittee or any other person.

O. Noncompliance with these terms and conditions and/or the initiation of other regulated activities not specifically authorized shall be cause for the modification, suspension, or revocation of this permit, in whole or in part. Further, EGLE may initiate criminal and/or civil proceedings as may be deemed necessary to correct project deficiencies, protect natural resource values, and secure compliance with statutes.

EGLE
WRP047819 v1.0
Approved
Issued On:02/12/2026
Expires On:02/12/2031

P. If any change or deviation from the permitted activity becomes necessary, the permittee shall request, in writing, a revision of the permitted activity from EGLE. Such revision request shall include complete documentation supporting the modification and revised plans detailing the proposed modification. Proposed modifications must be approved, in writing, by EGLE prior to being implemented.

Q. This permit may be transferred to another person upon written approval of EGLE. The permittee must submit a written request to EGLE to transfer the permit to the new owner. The new owner must also submit a written request to EGLE to accept transfer. The new owner must agree, in writing, to accept all conditions of the permit. A single letter signed by both parties that includes all the above information may be provided to EGLE. EGLE will review the request and, if approved, will provide written notification to the new owner.

R. Prior to initiating permitted construction, the permittee is required to provide a copy of the permit to the contractor(s) for review. The property owner, contractor(s), and any agent involved in exercising the permit are held responsible to ensure that the project is constructed in accordance with all drawings and specifications. The contractor is required to provide a copy of the permit to all subcontractors doing work authorized by the permit.

S. Construction must be undertaken and completed during the dry period of the wetland. If the area does not dry out, construction shall be done on equipment mats to prevent compaction of the soil.

T. Authority granted by this permit does not waive permit requirements under Part 91, Soil Erosion and Sedimentation Control, of the NREPA, or the need to acquire applicable permits from the County Enforcing Agent (CEA).

U. Authority granted by this permit does not waive permit requirements under the authority of Part 305, Natural Rivers, of the NREPA. A Natural Rivers Zoning Permit may be required for construction, land alteration, streambank stabilization, or vegetation removal along or near a natural river.

V. The permittee is cautioned that grade changes resulting in increased runoff onto adjacent property is subject to civil damage litigation.

W. Unless specifically stated in this permit, construction pads, haul roads, temporary structures, or other structural appurtenances to be placed in a wetland or on bottomland of the water body are not authorized and shall not be constructed unless authorized by a separate permit or permit revision granted in accordance with the applicable law.

X. For projects with potential impacts to fish spawning or migration, no work shall occur within fish spawning or migration timelines (i.e., windows) unless otherwise approved in writing by the Michigan Department of Natural Resources, Fisheries Division.

Y. Work to be done under authority of this permit is further subject to the following special instructions and specifications:

1. Authority granted by this permit does not waive permit or program requirements under Part 91 of the NREPA or the need to acquire applicable permits from the CEA. To locate the Soil Erosion Program Administrator for your county, visit https://www.michigan.gov/egle/about/organization/water-resources/soil-erosion/sesc-overview and select “Soil Erosion and Sedimentation Control Agencies”.
2. The authority to conduct the activity as authorized by this permit is granted solely under the provisions of the governing act as identified above. This permit does not convey, provide, or otherwise imply approval of any other governing act, ordinance, or regulation, nor does it waive the permittee's obligation to acquire any local, county, state, or federal approval or authorization necessary to conduct the activity.
3. No fill, excess soil, or other material shall be placed in any wetland, floodplain, or surface water area not specifically authorized by this permit, its plans, and specifications.

EGLE
WRP047819 v1.0
Approved
Issued On:02/12/2026
Expires On:02/12/2031

4. This permit does not authorize or sanction work that has been completed in violation of applicable federal, state, or local statutes.
5. The permit placard shall be kept posted at the work site in a prominent location at all times for the duration of the project or until permit expiration.
6. This permit is being issued for the maximum time allowed and no extensions of this permit will be granted. Initiation of the construction work authorized by this permit indicates the permittee's acceptance of this condition. The permit, when signed by EGLE, will be for a five-year period beginning on the date of issuance. If the project is not completed by the expiration date, a new permit must be sought.
7. Prior to the initiation of any permitted construction activity, a sedimentation barrier shall be installed along the entire route of the disturbed wetland area and maintained in good working order until permanent stabilization and re-vegetation of all disturbed areas has occurred. The sedimentation barrier shall be removed after re-vegetation.
8. Construction must be undertaken and completed during the dry period of the wetland, or when frozen.
9. If the area does not dry out or freeze, construction shall be done on equipment mats to prevent compaction of the soil.
10. Upon completion of the project, the disturbed wetland areas shall be restored to the original contour elevation, revegetated and reseeded with species native to Michigan appropriate to the site, and mulched to prevent erosion.
11. This permit is limited to authorizing the construction as specified above and carries with it no assurances or implications that associated wetland or floodplain areas can be developed and serviced by the structures authorized by this permit.
12. All dredge/excavated spoils including organic and inorganic soils, vegetation, and other material removed shall be placed on upland (non-wetland, non-floodplain), prepared for stabilization, and stabilized with sod and/or seed and mulch in such a manner to prevent and ensure against erosion of any material into any waterbody, wetland, or floodplain.
13. No fill, excess soil, or other material shall be placed in any wetland or surface water area not specifically authorized by this permit, its plans, and specifications.

Issued By: 

Abigail Richmond
Grand Rapids District Office
Water Resources Division
616-260-7328

EGLE
WRP047819 v1.0
Approved
Issued On:02/12/2026
Expires On:02/12/2031

THIS PERMIT MUST BE SIGNED BY THE PERMITTEE TO BE VALID.

I hereby assure that I have read, am familiar with, and agree to adhere to the terms and conditions of this permit.

_____ _____

Permittee Signature Date

cc: City of Grand Haven Clerk
Ottawa County Drain Commissioner
Ottawa County Clerk

EGLE
WRP047819 v1.0
Approved
Issued On:02/12/2026
Expires On:02/12/2031

Address	Style	Basement Type	Bedrooms	Garage Stall	Squre Footage
Build A - Rowhouses					
1	Rowhouses	Slab	2	1	1,130
2	Rowhouses	Slab	2	1	1,130
3	Rowhouses	Slab	2	1	1,130
4	Rowhouses	Slab	2	1	1,130
5	Rowhouses	Slab	2	1	1,130
6	Rowhouses	Slab	2	1	1,130
7	Rowhouses	Slab	2	1	1,130
8	Rowhouses	Slab	2	1	1,130
9	Rowhouses	Slab	2	1	1,130
10	Rowhouses	Slab	2	1	1,130
11	Rowhouses	Slab	2	1	1,130
12	Rowhouses	Slab	2	1	1,130
13	Rowhouses	Slab	2	1	1,130
14	Rowhouses	Slab	2	1	1,130
15	Rowhouses	Slab	2	1	1,130
Total - 16	Rowhouses	Slab	2	1	1,130
Build C - Townhomes					
1	Winchester	Slab	3	2	1,643
2	Winchester	Slab	3	2	1,643
3	Winchester	Slab	3	2	1,643
4	Winchester	Slab	3	2	1,643
5	Winchester	Slab	3	2	1,643
6	Winchester	Slab	3	2	1,643
7	Winchester	Slab	3	2	1,643
8	Winchester	Slab	3	2	1,643
9	Winchester	Slab	3	2	1,643
10	Winchester	Slab	3	2	1,643
11	Winchester	Slab	3	2	1,643
12	Winchester	Slab	3	2	1,643
13	Winchester	Slab	3	2	1,643
14	Winchester	Slab	3	2	1,643
15	Winchester	Slab	3	2	1,643
16	Winchester	Slab	3	2	1,643
17	Winchester	Slab	3	2	1,643
total - 18	Winchester	Slab	3	2	1,643
Build D - Townhomes					
1	Winchester	Slab	3	2	1,643
2	Winchester	Slab	3	2	1,643
3	Winchester	Slab	3	2	1,643
4	Winchester	Slab	3	2	1,643
5	Winchester	Slab	3	2	1,643
6	Winchester	Slab	3	2	1,643
7	Winchester	Slab	3	2	1,643
8	Winchester	Slab	3	2	1,643
9	Winchester	Slab	3	2	1,643
10	Winchester	Slab	3	2	1,643
11	Winchester	Slab	3	2	1,643

12	Winchester	Slab	3	2	1,643
13	Winchester	Slab	3	2	1,643
14	Winchester	Slab	3	2	1,643
15	Winchester	Slab	3	2	1,643
16	Winchester	Slab	3	2	1,643
17	Winchester	Slab	3	2	1,643
18	Winchester	Slab	3	2	1,643
19	Winchester	Slab	3	2	1,643
20	Winchester	Slab	3	2	1,643
21	Winchester	Slab	3	2	1,643
22	Winchester	Slab	3	2	1,643
23	Winchester	Slab	3	2	1,643
24	Winchester	Slab	3	2	1,643
25	Winchester	Slab	3	2	1,643
26	Winchester	Slab	3	2	1,643
27	Winchester	Slab	3	2	1,643
28	Winchester	Slab	3	2	1,643
29	Winchester	Slab	3	2	1,643
30	Winchester	Slab	3	2	1,643
31	Winchester	Slab	3	2	1,643
32	Winchester	Slab	3	2	1,643
33	Winchester	Slab	3	2	1,643
34	Winchester	Slab	3	2	1,643
35	Winchester	Slab	3	2	1,643
36	Winchester	Slab	3	2	1,643
37	Winchester	Slab	3	2	1,643
total - 38	Winchester	Slab	3	2	1,643

Build E - Townhomes

1	Andover 3	Slab	3	2	1,541
2	Andover 2	Slab	2	1	1,468
3	Andover 2	Slab	2	1	1,468
4	Andover 3	Slab	3	2	1,541
5	Andover 3	Slab	3	2	1,541
6	Andover 2	Slab	2	1	1,468
7	Andover 2	Slab	2	1	1,468
8	Andover 3	Slab	3	2	1,541
9	Andover 3	Slab	3	2	1,541
10	Andover 2	Slab	2	1	1,468
11	Andover 2	Slab	2	1	1,468
12	Andover 3	Slab	3	2	1,541
13	Andover 3	Slab	3	2	1,541
14	Andover 3	Slab	3	2	1,541

15	Andover 3	Slab	3	2	1,541
16	Andover 3	Slab	3	2	1,541
17	Andover 3	Slab	3	2	1,541
18	Andover 3	Slab	3	2	1,541
19	Andover 3	Slab	3	2	1,541
20	Andover 2	Slab	2	1	1,468
21	Andover 3	Slab	3	2	1,541
22	Andover 3	Slab	3	2	1,541
23	Andover 2	Slab	2	1	1,468
24	Andover 2	Slab	2	1	1,468
25	Andover 3	Slab	3	2	1,541
26	Andover 3	Slab	3	2	1,541
27	Andover 2	Slab	2	1	1,468
28	Andover 2	Slab	2	1	1,468
29	Andover 3	Slab	3	2	1,541
30	Andover 3	Slab	3	2	1,541
31	Andover 2	Slab	2	1	1,468
32	Andover 2	Slab	2	1	1,468
total - 33	Andover 3	Slab	3	2	1,541

Build F - Townhomes

1	Cambridge	Slab	2	2	1,130
2	Cambridge	Slab	2	2	1,130
3	Cambridge	Slab	2	2	1,130
4	Cambridge	Slab	2	2	1,130
5	Cambridge	Slab	2	2	1,130
6	Cambridge	Slab	2	2	1,130
7	Cambridge	Slab	2	2	1,130
8	Cambridge	Slab	2	2	1,130
9	Cambridge	Slab	2	2	1,130
10	Cambridge	Slab	2	2	1,130
11	Cambridge	Slab	2	2	1,130
12	Cambridge	Slab	2	2	1,130
Total - 13	Cambridge	Slab	2	2	1,130
s		Total =	312	207	174,682

Unit Total = 118

Total Proposed Parking Spaces = 300

On-Street /Surface Spaces = 93

Garage Spaces = 207

Plan Review Report

General

Plan Review Property Address:

Date on Plans: 06/03/2026

Plans Reviewed on: 06/03/2026 **Plans Reviewed by:** Terry Turkelson

Status of Review: Review Complete, Submitted

Plan Review Notes/Comments: 700 Robbins/South Village

-Meets requirements per 2021 IFC

Questions or Comments? Please contact Fire Marshal Terry Turkelson at 616-842-3460 or tturkelson@grandhaven.org

DATE: June 5, 2026

TO: Grand Haven Planning Commission

FROM: Brian Urquhart, City Planner

RE: **Case 26-22:** Site Plan Application – 1350 Kooiman Ave.

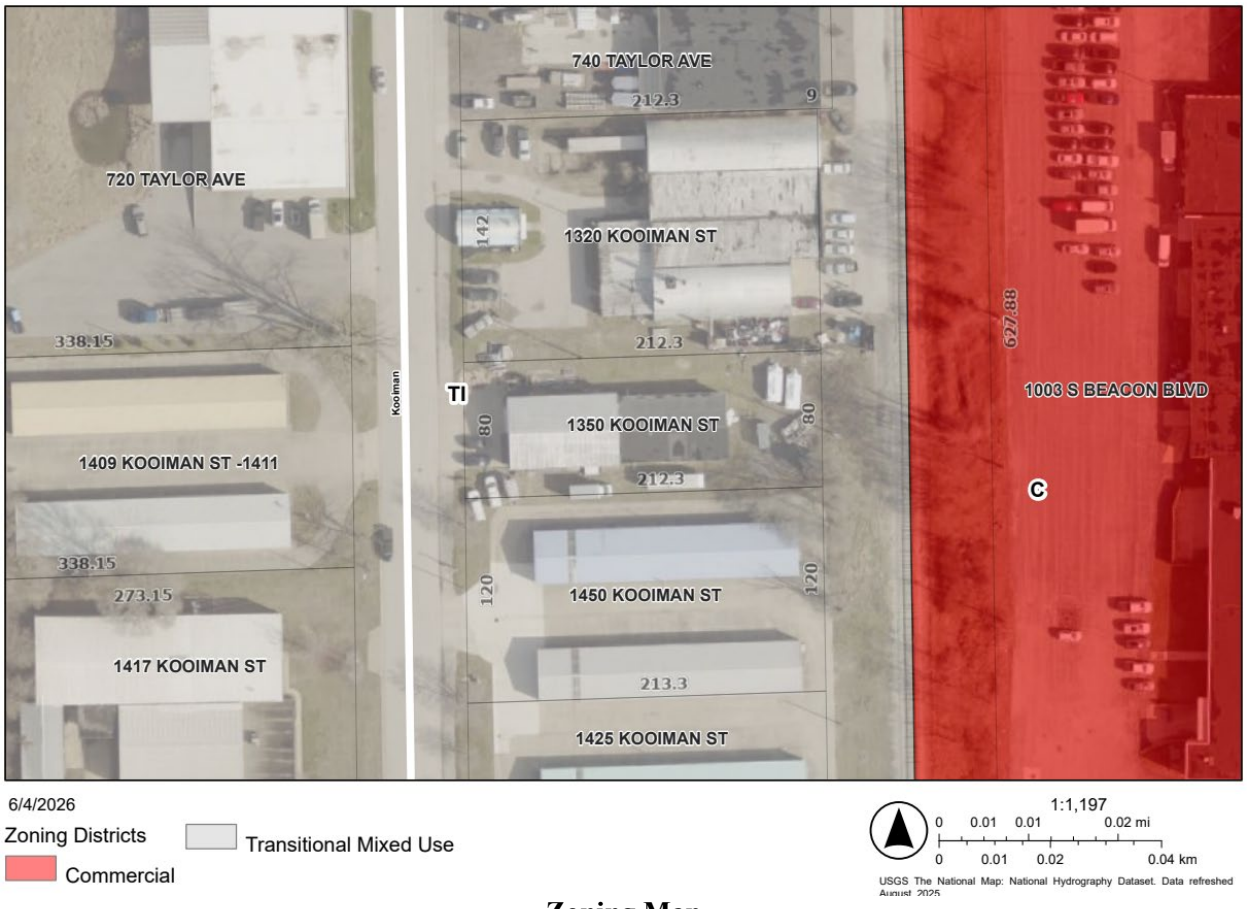
Current Zoning: TI, Transitional Industrial District

Existing Use: Vacant

Proposed Use: Office/Storage space

1.0 Request

Ryan Livingston, on behalf of Livingston Homes has submitted a site plan review application to redevelop the property at 1350 Kooiman St. (parcel #70-03-28-301-014) into an office and storage space, which is permitted per Sec. 40-419.02.A. A large fire destroyed the entire building at 1350 Kooiman in late 2025. Mr. Livingston would like to rebuild and improve upon the space for his business, primarily for office and storage space. There will be no manufacturing occurring on site, and the size and shape of the building is designed to improve production.



Zoning Map



70-03-28-301-014 05/05/2023

Street View from 2023



Postfire from 2026

2.0 Site Plan Review

Building

The proposed building will be a single-story steel frame building, 24 ft. in height and meets all required setbacks and lot coverage. Total sq. ft. is 7,360 sq. ft. with 5,228 sq. ft. for storage and 2,131 sq. ft. for office use. The exterior cladding materials is not determined at this time, but the required building articulation is met with windows installed along the south and north walls. The plans call for black siding, a traditional departure from the colorful neighboring buildings in the vicinity.

Parking & Loading

Site improvements will allow for 4 parking spaces on site, including an ADA accessible space in front of the building. Concrete bumpers will be placed at the end of each space to protect the front walkway. All remaining parking can be on street, as permitted per Sec. 40-600.02. No parking is expected to take place overnight. North a 20 ft. x 40 ft. loading space will be installed leading to the front garage door.

Stormwater

All stormwater in the front parking lot and improved surfaces will drain to the storm system in Kooiman. Please see the DPW review letter.

Signage & Lighting

The existing pole sign will remain. The plans call for 12 wall pack lighting fixtures along the building. The parking area will be illuminated with 5 wall packet lighting. No pole lighting is shown.

Dumpster Enclosure

A dumpster will be placed on a heavy-duty concrete slab behind the building. A crushed asphalt approach will be placed down. The dumpster will be screened with a 6 ft. tall wooden fence.

Landscaping and Screening

Sec. 40-601 requires parking for non-residential uses in the TI district to be in the rear of the building, or establish a continuous façade wall along the street, or conceal the parking area. Due to the shape and size of the lot and proposed parking location, the parking spaces in the front yard can be appropriately screened through a landscape buffer of 5 ft. in width, with deciduous trees of columnar oak and hydrangea shrubs planted at the appropriate height and width along the north and west lot lines. All landscape areas will be irrigated.

Mechanical Equipment

A ground mounted mechanical unit will be placed along the north wall and will be screened by evergreen shrubs.

Snow storage

The plan calls for snow to be stored along the south side of the front yard.

3.0 Sample Motion

Motion to APPROVE Case 26-22, a request for a Site Plan Review for an office storge building at 1350 Kooiman St. (parcel #70-03-28-301-014) based on the information submitted for review, subject the following:

1. *The front yard parking spaces are appropriately screened per Sec. 40-601.A.*

Attachments:

A. Site Plan application
B. Project Narrative
C. Site Plan
D. Fire Marshal review letter
E. DPW review letter

SITE PLAN REVIEW PERMIT APPLICATION

Community Development Department, City of Grand Haven
519 Washington Avenue, Grand Haven, MI 49417
Phone: (616) 935-3276 Website: www.grandhaven.org

1. Project Information

Address/location of property: 1350 Kooiman Grand Haven MI 49417
Parcel #: 70-03-28-301-014
Zoning District: City of Grand Haven
Current Use: Commercial
Proposed Use: Commercial
Area in Acres: .39
Zoning of adjacent properties:

2. Applicant

Name: Ryan Patterson
Company: Livingston Homes
Address #: 1350 Kooiman
Grand Haven MI 49417
Phone #: 616 520 1904
Email: candice@livingstonhomesllc.com

3. Property Owner

Name: Ryan Livingston
Address: 1350 Kooiman
Grand Haven MI 49417
Phone #: 616-403-2536
Email: ryan@livingstonhomesllc.com

4. Required Attachments

- PDF + 5 copies of the application ✓
- PDF + 5 copies of site plan ✓
- PDF + 5 copies of the building elevations ✓
- PDF + 5 copies of the landscape plan ✓
- Project phasing plan (if applicable) N.A.
- Signage plan and details ✓
- Proposed topographic map ✓
- Existing topographic map ✓

5. Fees and Escrow Deposit

Up to $100,000:	$200.00
$100,001 to $500,000:	$300.00 —
$500,001 to $1,000,000:	$400.00
$1,000,001 & Up:	$500.00

Estimate Project Cost: $ 500,000

A deposit of $1,500 shall be collected for all Planning Commission and Zoning Board of Appeals cases where it is expected that costs above staff time and one public hearing publication will be incurred. These expenses include additional public hearing notifications, attorney fees, engineering or surveying fees, or other special studies. Should expenses total more than the deposit, the applicant will be billed by the City for the additional costs, or additional escrow payment shall be required to complete the Planning Commission or Zoning Board of Appeals process. Should expenses total less than the deposit received, excess amounts shall be returned to the applicant.

6. Details of the Nature of Work Proposed *(please identify materials and colors to be used)*

Commercial New Build. of Fire Damaged Building
Same Company & Same use as previous
Building Before Fire Happened

7. Buildings and Structures

Number of buildings on site: 1 Use of buildings: Commercial

Height of buildings & # of stories: 24' / 1 story Height of rooftop mechanical equipment: N.A.

8. Floor Use and Area (in square feet)

Commercial Structures	**Residential Structures**
Total floor area: 7360 SF	Total floor area:
Open space (area & %): 5228 SF	Total # of units:
Office space (area): 2131 SF.	# of 1 bedroom units:
Retail space (area): 0 SF.	# of 2 bedroom units:
Industrial space (area): 0 SF	# of 3 bedroom units:
Assembly space (area): 0 SF	Open space (area and %):
Seating capacity: 16	Rental or condominium?:
Maximum occupancy load: 31	Maximum occupancy load:

9. Setbacks *(see Article Four: District Regulations, Table 40-402.02, for setback requirements)*

Required front yard: 25'	Proposed front yard: 25'
Required rear yard: 25'	Proposed rear yard: 47'4"
Required total side yard: 20'	Proposed total side yard: 20'

10. Parking *(see Article Six: Parking, for zoning requirements)*

Required # of spaces: 10 - 5 employee / 1 visitor Proposed # of spaces: 4 on site 2 on street

Typical angle of spaces: 90° square Parking Size of spaces: 9' x 20'

Location of parking on site: Front Number of handicap spaces: 1

Shared parking agreement?: No Location and # of off-street spaces:

Number of employees: 5

Explanation of screening (including location and materials): None

11. Loading *(see Section 40.605.04 for loading space requirements)*

Required # of spaces: 1 - (5,000 - 20,000 sf) Proposed # of spaces: 1

Typical angle of space(s): 90° Size of space(s): 20'wx 40' long

Location of loading space(s) on site: Front Garage Door

Explanation of screening (including location and materials): 2 trees to North side of Parking

12. Site Lighting *(see Section 40-317 for lighting requirements)*

Building Lighting	**Parking Area Lighting**
# of fixtures proposed: 12	# of fixtures proposed: 5
Type of lighting proposed: Front / Rear / Sides	Type of lighting proposed: 2 wall Poles + 3 can lights
Height of fixtures: 16', 9'	Height of fixtures: 14'
Location of fixtures: By all Doors / above Garage Doors / inside Front Porch / Gable Flood	Location of fixtures: Front of Building
	Foot-candles at property line: 5-10

13. Landscaping *(see Article Eight: Landscaping, for zoning requirements)*

Location of landscape areas: Sides Proposed landscape material: Grass

14. Exterior Trash Receptacles *(see Section 40-301.03 for Dumpster Enclosure requirements)*

Location of receptacle: REAR
Size of receptacle: 7'x 16'
Enclosure material: WOOD FENCE
Height of Enclosure: 6'

15. Mechanical Equipment *(see Sections 40-306.08(C) & 40-322 for zoning requirements)*

Ground Mounted Mechanical Equipment

# of units: 1
Size of units (LxWxH): 32" x 32" x 36"
Location of units: NORTH SIDE OF BUILDING BETWEEN MAIN DOORS
Screening: NONE

Rooftop Mechanical Equipment

# of units:
Type of rooftop units:
Size of units (LxWxH):
Location of units:
Screening:

16. Accessory Buildings *(see Section 40-301 for standards for accessory buildings)*

# of accessory building(s): N/A.
Size of accessory building(s) (LxWxH): N/A
Location of accessory building(s): N/A.

17. Emergency Access Features *(contact City of Grand Haven Fire Marshal with questions)*

Emergency Access Roads: KOOIMAN
Location of hydrants and fire department connection (FDC): ACROSS THE STREET (KOOIMAN)

18. Historic District information *(contact City of Grand Haven Historic Conservation District Commission)*

Is this location within a Historic Conservation District? Yes/No/Unsure
Name of District, if applicable: N.A.

By signing below, permission is granted for city staff, including Planning Commissioners, to enter the subject property for purpose of gathering information to review this request. In addition, the applicant agrees to perform the described work in accordance with all applicable Sections of the City of Grand Haven Code of Ordinances. Signer will insure that all inspection requests are made a minimum of 24 hours prior to the requested time.

Signature of Applicant: [signature] Date: 5/14/26

Print Name: Ryan Livingston

Signature of Owner: [signature] Date: 5/14/26

Print Name: Ryan Livingston

Office Use Only

Case #: Date Received: Fee:

Date of Approval: Date of Denial: Approved by:

Project Description

Due to an unfortunate fire that took our building and contents to a total loss, we are being forced to rebuild our office/workshop. There will be no use change as we will be doing the same work we have been doing there for almost 12 years. We are planning on changing the size and shape slightly to better accommodate the work we do out of the building. Parking was previously in front of the building as the lot width makes it impossible to park on the sides, and we propose that we can still park in the front of the building like we did previously. All utilities are disconnected and capped but ready to re-connect at the capped ends. This building will be a major upgrade from the previous building and will be a visual upgrade for the area.

Thank you for your consideration,

Ryan Livingston

Livingston Homes of West Michigan LLC

1350 kooiman ave

Grand Haven, MI 49417

NEW OFFICE FOR:

LIVINGSTON HOMES

1350 KOOIMAN AVE
GRAND HAVEN, MI 49417

MICHAEL BELT, RA NCARB
ECO ARCHITECT DESIGNS & LANDSCAPES, PLLC
918 DYKSTRA ROAD, N. MUSKEGON, MI 49445
CELL: 517.525.1204
michael.belt@comcast.net

bwolffisdesign
drafting & design
616.638.1355
bwolffisdesign@gmail.com

Project #: 25-650
Date: 6.02.2026

SHEET INDEX:

A-0	COVER SHEET, PROJECT DATA
SP	SITE PLAN & VICINITY MAP
A-1	FLOOR PLAN
A-2	MEZZANINE PLAN
A-3	EXTERIOR ELEVATIONS
A-4	FOUNDATION PLAN
A-5	SECTION CUTS
PH-1	BUILDING ACCESSIBILITY ITEMS
PH-2	SITE ACCESSIBILITY ITEMS
M-1	MECHANICAL PLAN
E-1	ELECTRICAL PLAN
P-1	PLUMBING PLAN

CODE REVIEW / PROJECT DATA:

CODES:

BUILDING	2021 MI BUILDING CODE
MECH	2021 MI MECHANICAL CODE
PLBG	2021 MI PLUMBING CODE
ELEC	2023 NATIONAL ELECTRIC CODE
BARRIER FREE	ICC/ ANSI A117.1 2009
ENERGY CODE	2021 COMMERCIAL ENERGY CODE
FIRE CODE	2021 INTERNATIONAL FIRE CODE

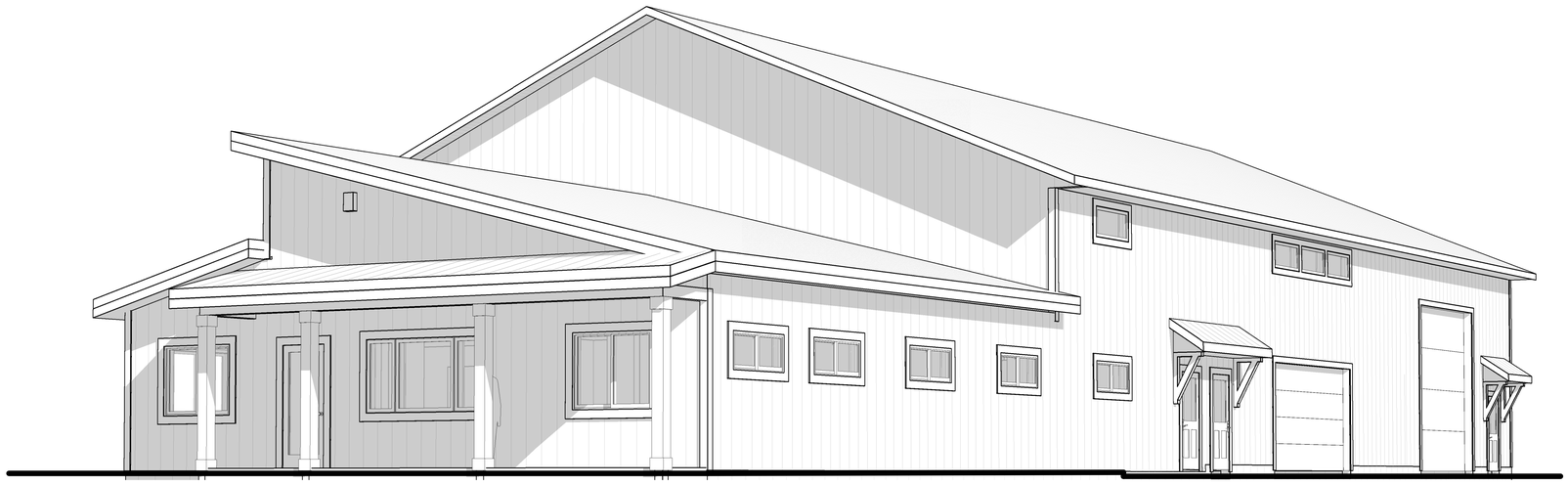
DESIGN LOADS:

ROOF LOAD:	GROUND SNOW LOAD: 60PSF
DEAD LOAD:	10PSF
WIND LOAD:	115 MPH W/ 3 SEC GUST - 20 PSF
SOIL DESIGN DATA:	2,000 PSF

CODE SUMMARY / BUILDING DATA:

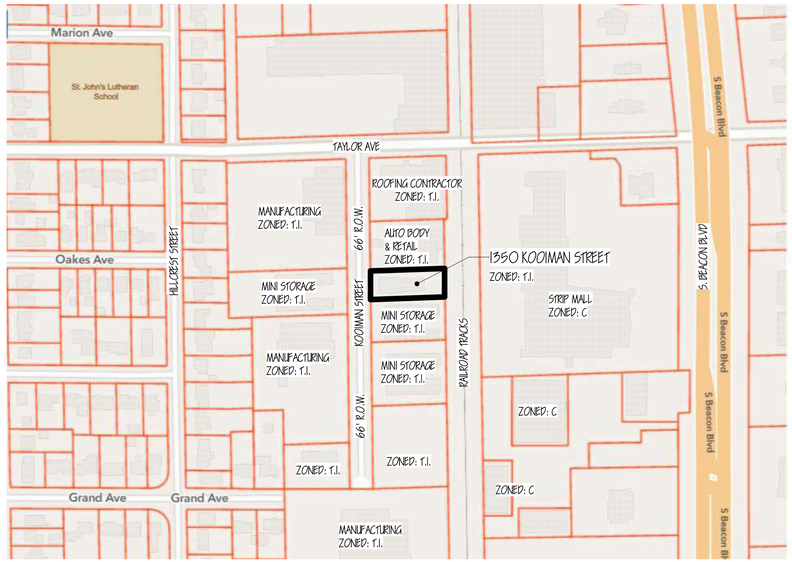
1. USE GROUP B (BUSINESS) - OFFICE, WAREHOUSE, STORAGE
2. CONFORM TO ALL APPLICABLE CODES
   BUILDING TYPE 5B - NON-SPRINKLERED
3. ACTUAL OCCUPANT LOAD = 16 PEOPLE
   (500GSF / WAREHOUSE x 5,228 SF = 10 OCCUPANTS + 100GSF / BUSINESS x 2,131 SF = 21 OCCUPANTS = 31 OCCUPANTS TOTAL)
   ALLOWABLE AREA = 9,000 SF
   NUMBER OF EXITS = 2 REQUIRED
4. EXIT ACCESS TRAVEL DISTANCE = 75' (MAX)
5. DRAWINGS NOT TO BE REPRODUCED WITHOUT ARCHITECTS WRITTEN PERMISSION & ARCHITECT NOT RESPONSIBLE FOR CONSTRUCTION.
6. NEW FIRE EXTINGUISHERS THROUGHOUT, KEY LOCK BOX, BLDG ADDRESS, ETC TO CONFORM TO LOCAL REQUIREMENTS
7. FIELD VERIFY ALL CONDITIONS AND REPORT ANY DIFFERENCES TO ARCHITECT





FOR PRICING & PERMITS

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VICINITY MAP

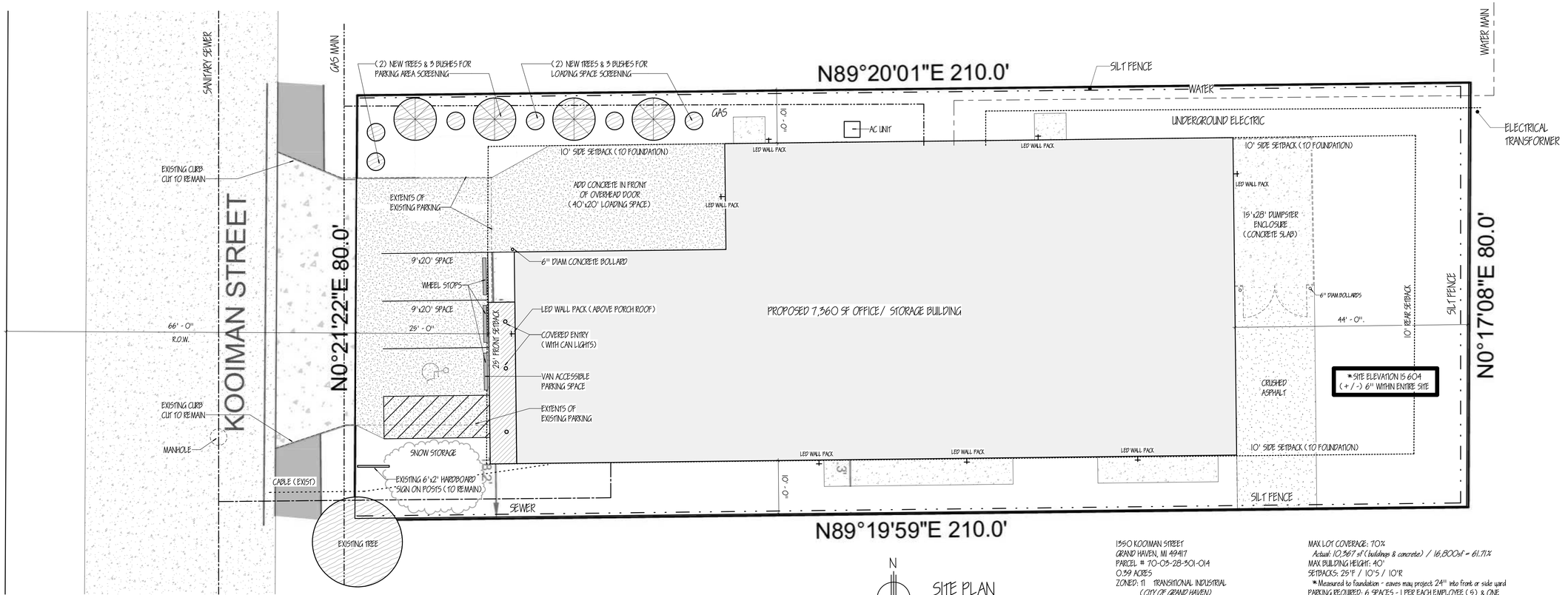
1" = 200'-0"



N

TOPOGRAPHIC MAP

1" = 60'-0"



N

SITE PLAN

1" = 10'-0"

1390 KOOIMAN STREET
GRAND HAVEN, MI 49417
PARCEL # 70-03-28-301-014
0.39 ACRES
ZONED: I1 TRANSITIONAL INDUSTRIAL
(CITY OF GRAND HAVEN)
USE: OFFICE BUILDING (USE BY RIGHT)
SHOWROOM (USE BY RIGHT)
WAREHOUSE / STORAGE (USE BE RIGHT)

MAX LOT COVERAGE: 70%
Actual: 10,367 sf (buildings & concrete) / 16,800sf = 61.71%
MAX BUILDING HEIGHT: 40'
SETBACKS: 25'F / 10'S / 10'R
*Measured to foundation - eaves may project 24" into front or side yard
PARKING REQUIRED: 6 SPACES - 1 PER EACH EMPLOYEE (5) & ONE FOR EACH 500 SF OF SHOWROOM SPACE (1)
- 3 SPACES PROVIDED ON SITE / 3(+) ON STREET
NO CHANGE TO SITE DRAINAGE
SITE ELEVATION IS 604 (+ / -) 6" WITHIN ENTIRE SITE

NEW OFFICE FOR:
LIVINGSTON HOMES
1350 KOOIMAN AVE
GRAND HAVEN, MI 49417

MICHAEL BELT, RA NCARB
ECO ARCHITECT DESIGNS & LANDSCAPES, PLLC
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CELL: 517.525.1204
michael.belt@comcast.net

bwolffisdesign
drafting & design
616.638.1355
bwolffisdesign@gmail.com

Drawing Information:			
Drawn:	B.Wolffis	Checked By:	Michael Belt
Date:	6.02.2026		
Revisions:			

#	DATE:	BY:

SP

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GENERAL NOTES:

"3068" ABBREVIATION FOR DOORS OR WINDOWS MEANS 3'-0" WIDE x 6'-8" TALL

BATH FAN - VENTED TO EXTERIOR

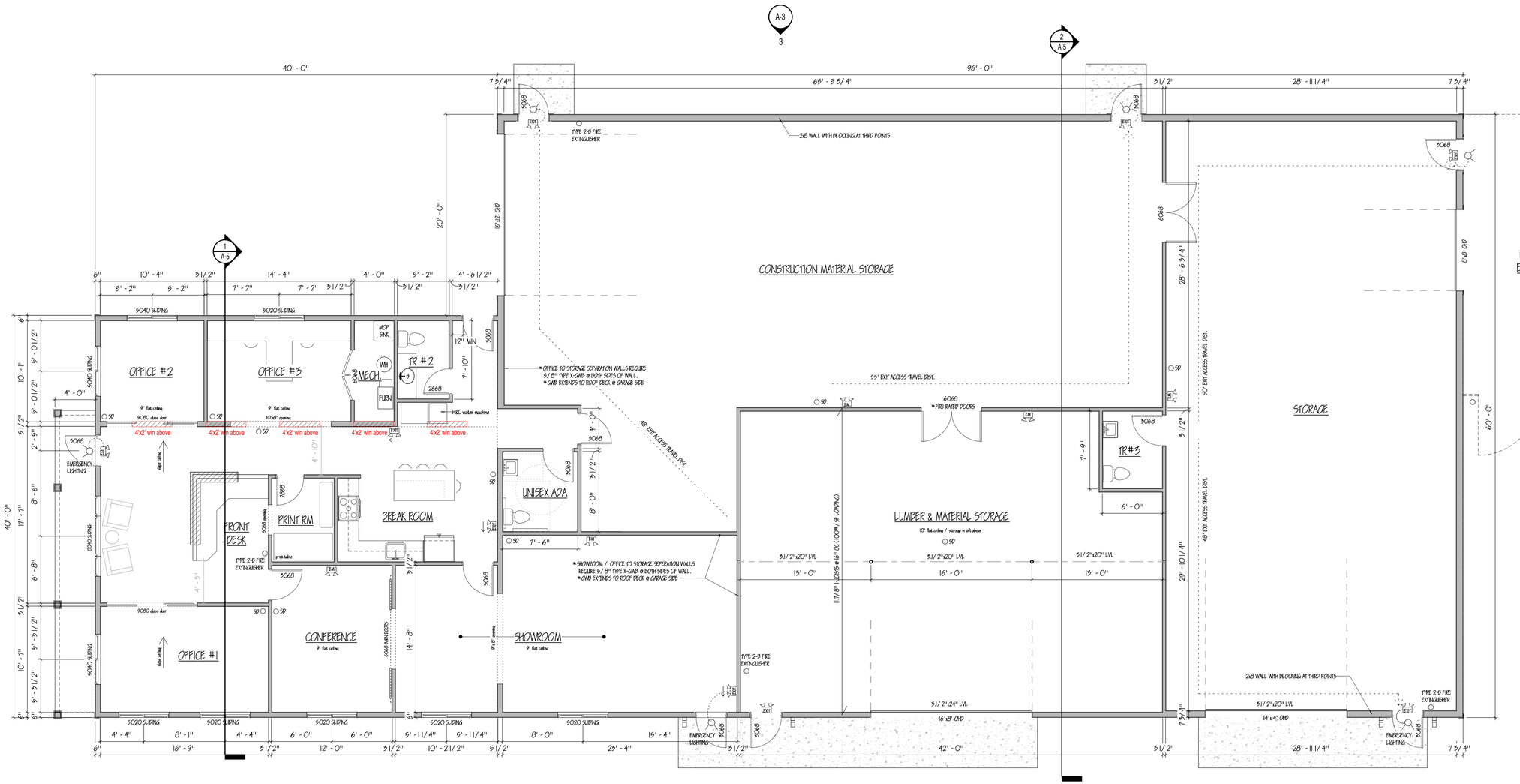
EXIT BACKLIT EXIT SIGNAGE WITH EMERGENCY LIGHTING

EM EMERGENCY LIGHTING

SD SMOKE DETECTOR (HARDWIRED AND INTERCONNECTED)

TYPICAL STAIR NOTES:

- 36" MINIMUM WIDTH
- WIDTH OF LANDINGS SHALL NOT BE LESS THAN THE WIDTH OF THE STAIR
- MAXIMUM RISER HEIGHT SHALL BE 7"
- MINIMUM TREAD DEPTH SHALL BE 11" (MEASURED NOSING TO NOSING)
- NOSINGS TO PROJECT 5/ 4" MIN / 1 1/ 4" MAX.
- TREADS, RISERS, AND NOSINGS SHALL NOT VARY MORE THAN 5/ 8"
- A MINIMUM OF ONE HANDRAIL SHALL BE INSTALLED 34-38" ABOVE NOSINGS @ STAIRS WITH OVER 3 RISERS
- HANDRAIL SHALL HAVE A CROSS SECTION OF 1 1/ 4" MIN - 2" MAX & PROJECT NOT MORE THAN 4 1/ 2" INTO SIDEWAY
- HANDRAIL SHALL BE CONTINUOUS FROM 12" BEFORE BOTTOM RISER (AT SLOPE OF STAIRS) AND EXTEND 12" MIN BEYOND TOP RISER (HORIZONTAL ABOVE LANDINGS) AND RETURN TO WALL @ BOTH ENDS



A-3 1

4
A-3

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MAIN FLOOR PLAN

3/16" = 1'-0"

NEW OFFICE FOR:
LIVINGSTON HOMES
1350 KOOIMAN AVE
GRAND HAVEN, MI 49417

MICHAEL BELT, RA NCARB
ECO ARCHITECT DESIGNS & LANDSCAPES, PLLC
918 DYKSTRA ROAD, N. MUSKEGON, MI 49445
CELL: 517.525.1204
michael.belt@comcast.net

bwolffisdesign
drafting & design
616.638.1355
bwolffisdesign@gmail.com

Drawing Information:			
Drawn:	B.Wolffis	Checked By:	Michael Belt
Date:	6.02.2026		
Revisions:			

#	DATE:	BY:

A-1

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GENERAL NOTES:

"3056" ABBREVIATION FOR DOORS OR WINDOWS MEANS 3'-0" WIDE x 5'-6" TALL

BATH FAN - VENTED TO EXTERIOR

EXIT BACKLIT EXIT SIGNAGE WITH EMERGENCY LIGHTING

EM EMERGENCY LIGHTING

SD SMOKE DETECTOR (HARDWIRED AND INTERCONNECTED)

TYPICAL STAIR NOTES:

- 36" MINIMUM WIDTH
- WIDTH OF LANDING SHALL NOT BE LESS THAN THE WIDTH OF THE STAIR
- MAXIMUM RISER HEIGHT SHALL BE 7"
- MINIMUM TREAD DEPTH SHALL BE 11" (MEASURED NOSING TO NOSING)
- NOSINGS TO PROJECT 3/4" MIN / 1 1/4" MAX
- TREADS, RISERS, AND NOSINGS SHALL NOT VARY MORE THAN 3/8"
- A MINIMUM OF ONE HANDRAIL SHALL BE INSTALLED 34-38" ABOVE NOSINGS @ STAIRS WITH OVER 3 RISERS
- HANDRAIL SHALL HAVE A CROSS SECTION OF 1 1/4" MIN - 2" MAX & PROJECT NOT MORE THAN 4 1/2" INTO SCARNAY
- HANDRAIL SHALLBE CONTINUOS FROM 12" BEFORE BOTTOM RISER (AT SLOPE OF STAIRS) AND EXTEND 12" MIN BEYOND TOP RISER (HORIZONTAL ABOVE LANDING) AND RETURN TO WALL @ BOTH ENDS

A-3
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A-5

UNFINISHED STORAGE BELOW

* OFFICE TO STORAGE SEPARATION WALLS REQUIRE 5/8" TYPE X-GWB @ BOTH SIDES OF WALL.
* GWB EXTENDS TO ROOF DECK @ GARAGE SIDE

* NO STAIRS (FORKLIFT STORAGE)

* NO STAIRS (FORKLIFT STORAGE)

MEZZANINE
(100'-9" LONG)
(1,208 SF)
7' HIGH CEILING HEIGHT

EQUIPMENT PLATFORM
(169 SF)
8' HIGH CEILING HEIGHT

5020 FIXED

5020 FIXED

5020 FIXED

5020 FIXED

4
A-3

2
A-3

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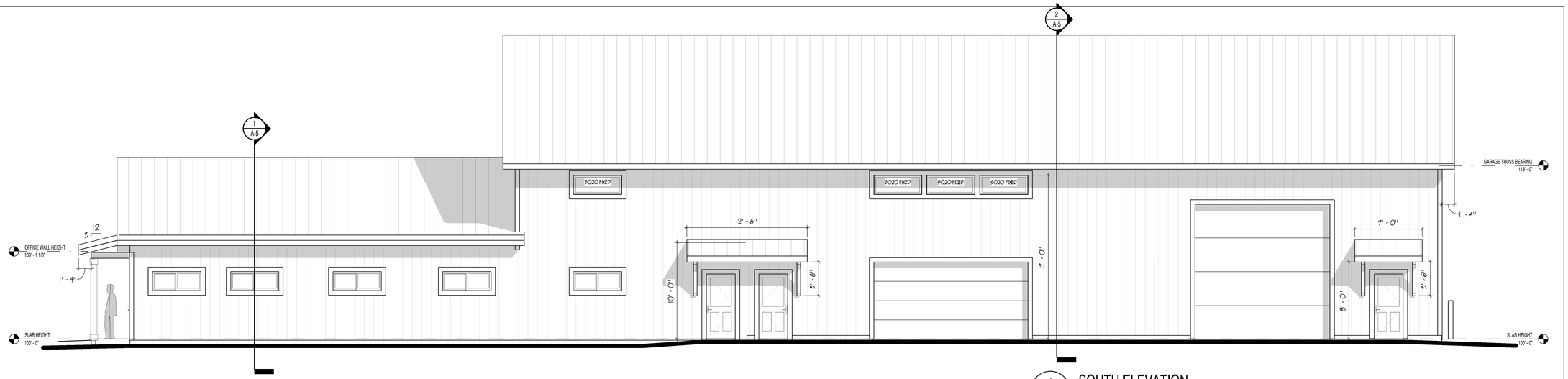
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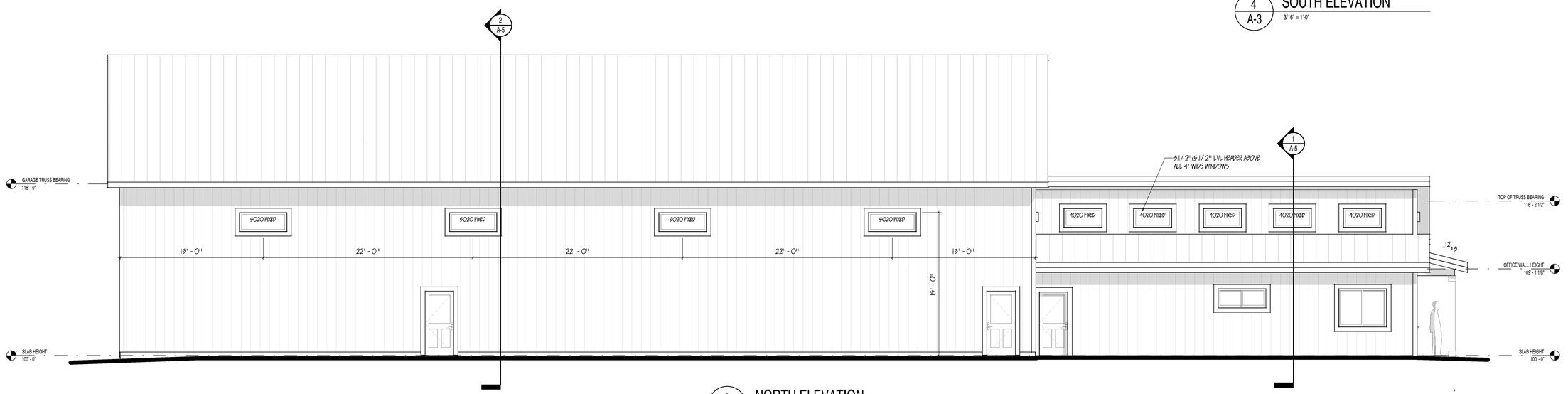
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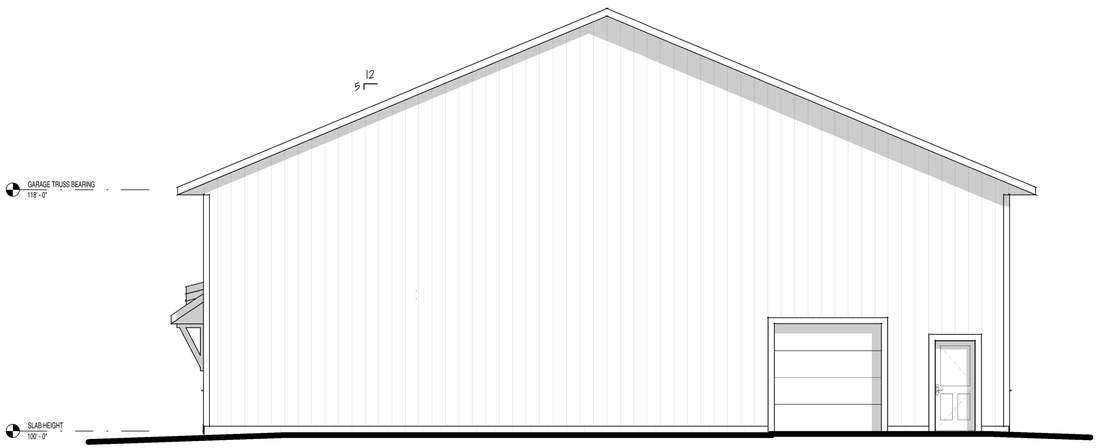
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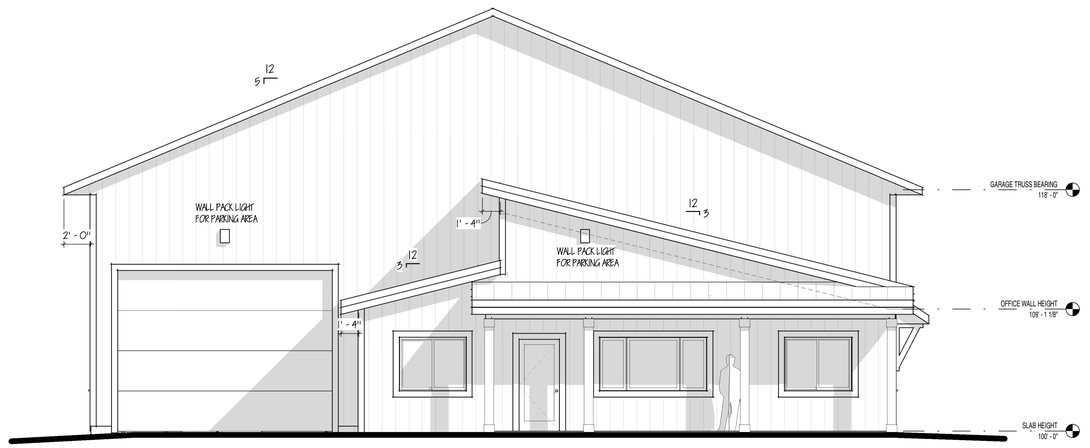
4 A-3 SOUTH ELEVATION
3/16" = 1'-0"



3 A-3 NORTH ELEVATION
3/16" = 1'-0"



2 A-3 EAST ELEVATION
3/16" = 1'-0"



1 A-3 WEST ELEVATION
3/16" = 1'-0"

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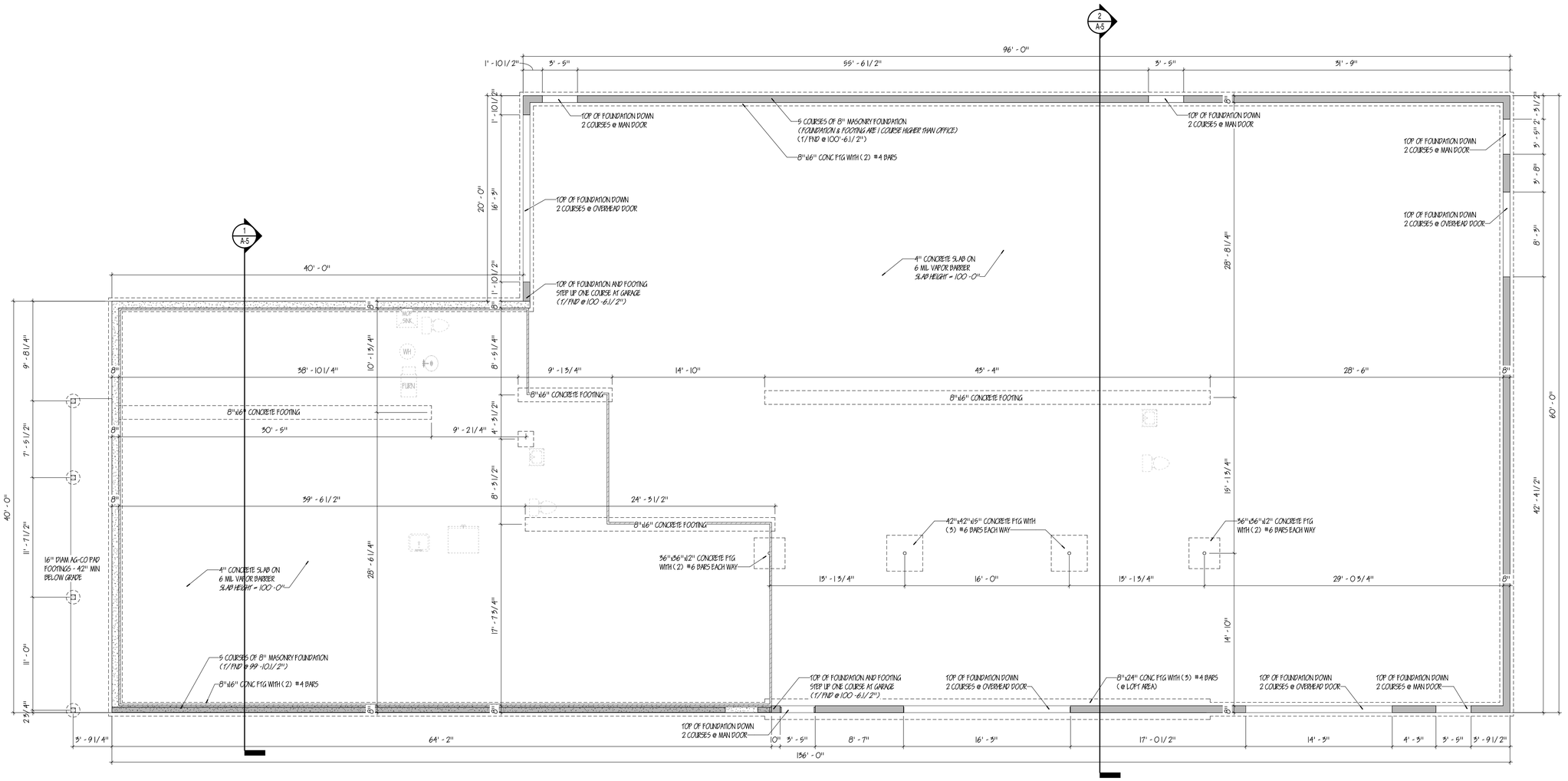
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A-3

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FOUNDATION PLAN

3/16" = 1'-0"

TYPICAL FOUNDATION NOTES:
- 1/ 2" ANCHOR BOLTS W/ WASHERS - MIN 2 BOLTS PER PLATE / MAX 6' OC & WITHIN 12" OF END OF PLATE - EXTENDS 7" MIN INTO GROUTED CELLS
- FOUNDATION WALLS ARE 8" MASONRY - 5 COURSES HIGH
- FOOTINGS ARE 8"x16" W/ (2) #4 REBAR - CONTINUOUS (8"x24" WHERE NOTED)
- FOOTINGS SHALL MAINTAIN 42" BELOW GRADE (MINIMUM)
- FOUNDATION GRADES REFER TO SLAB HEIGHT BEING 100'-0"

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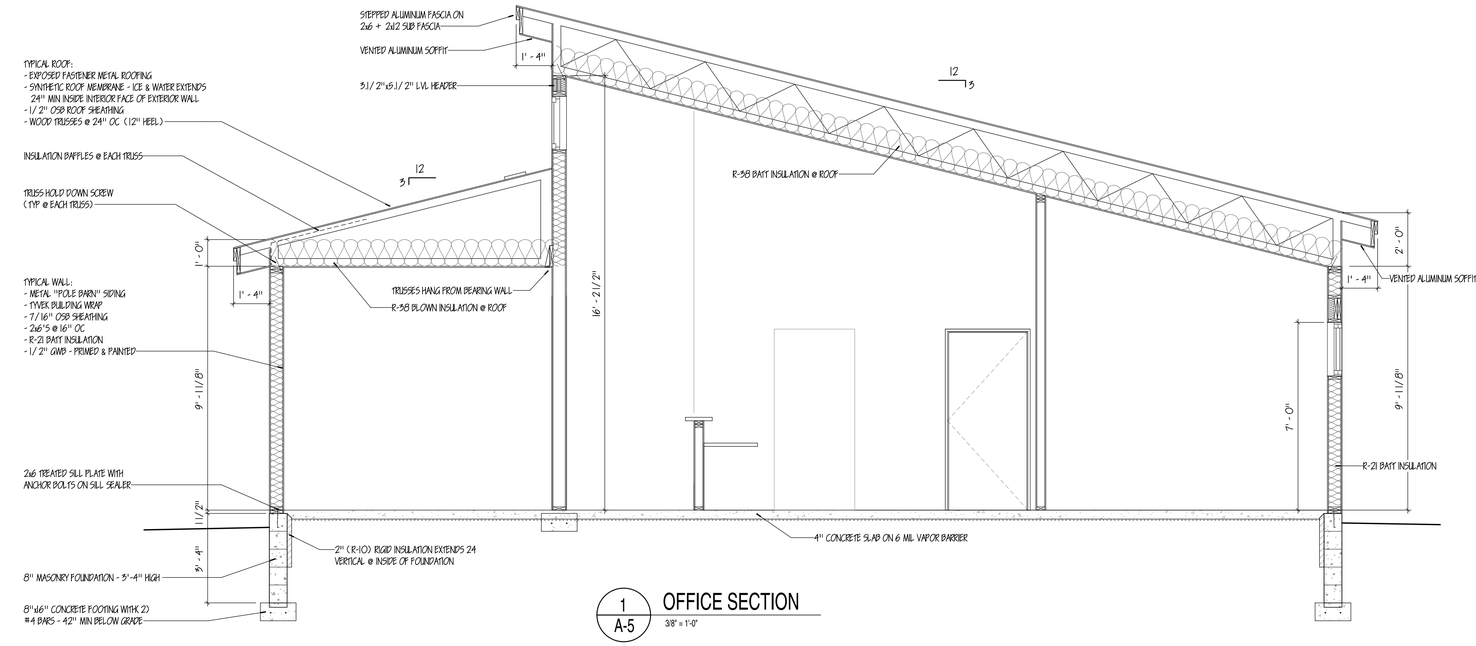
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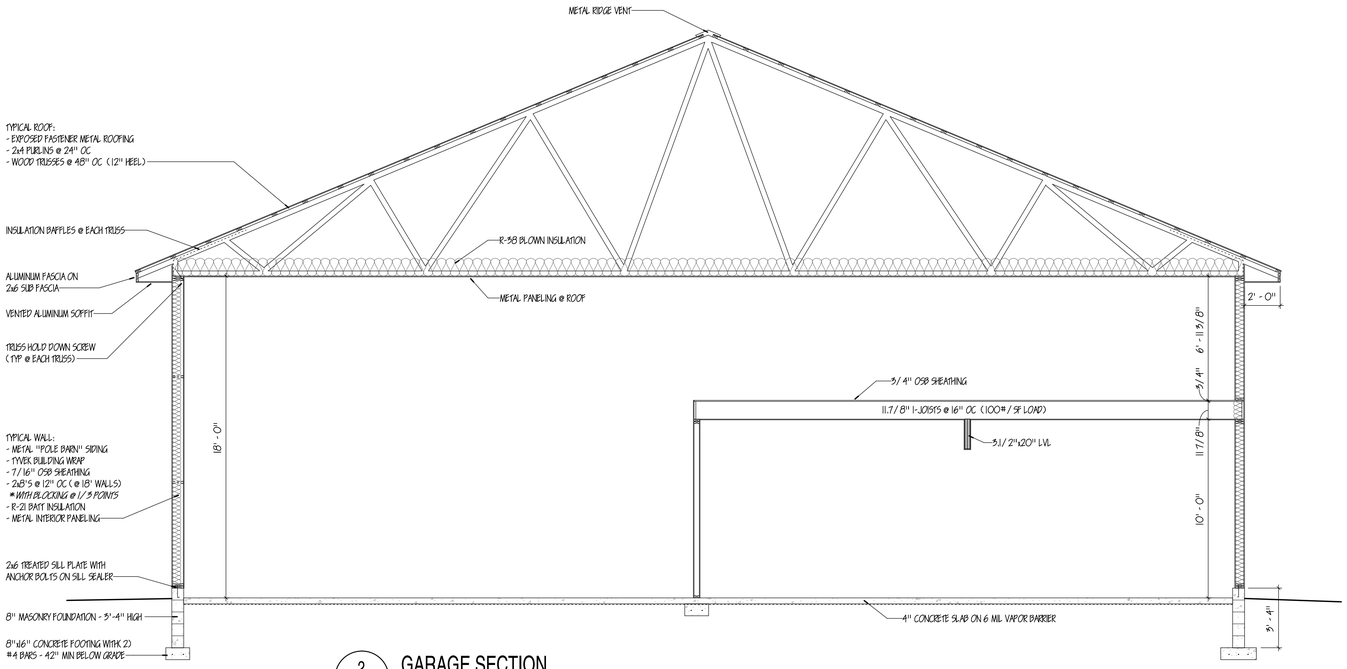
A-4

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1 / A-5 OFFICE SECTION

3/8" = 1'-0"



2 / A-5 GARAGE SECTION

1/4" = 1'-0"

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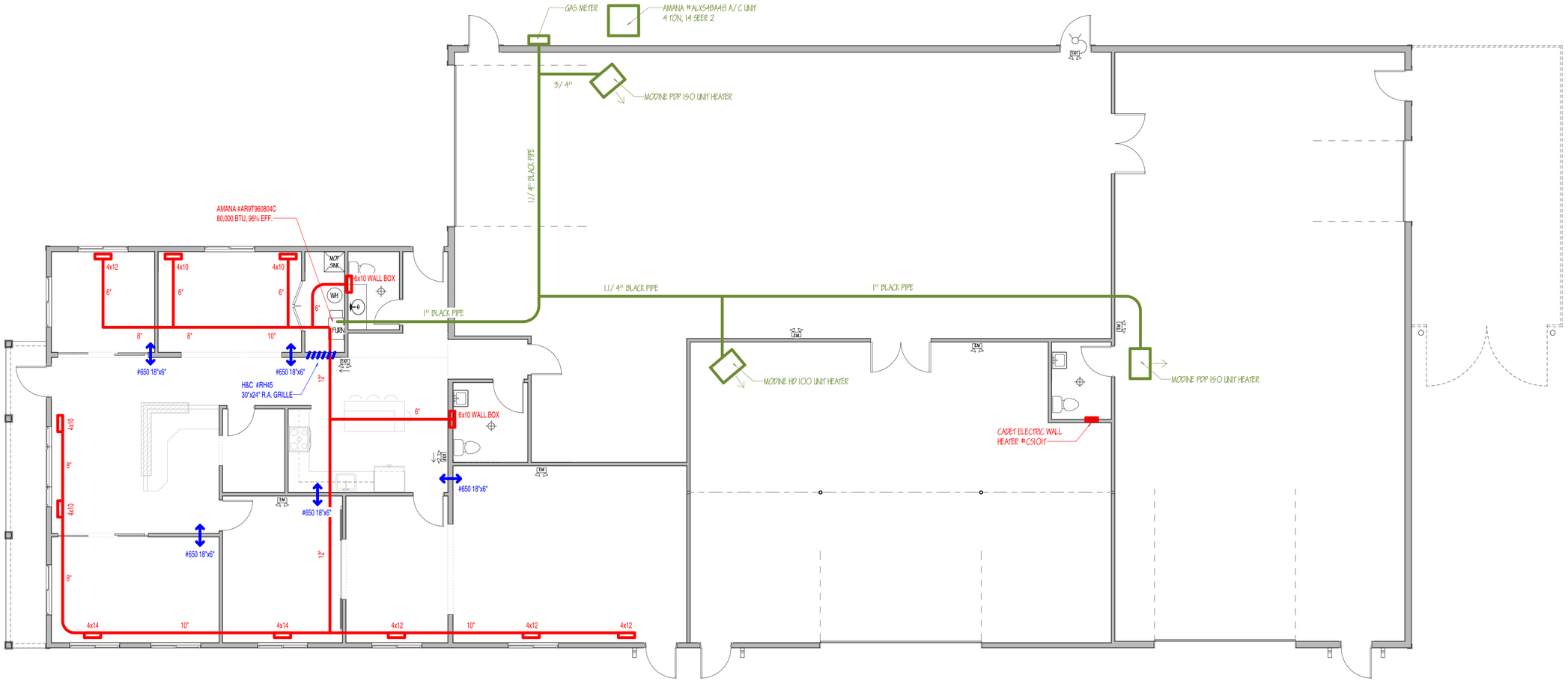
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A-5

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GENERAL NOTES:



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MECHANICAL PLAN

3/16" = 1'-0"

NOTES:

- PANASONIC #FV-05IIVF1 EXHAUST FAN
- PVC & PCD UNDERGROUND DUCTWORK
- HART & COOLEY #421 FLOOR REGISTERS
- #650 18"x6" RETURN AIR GRILLES

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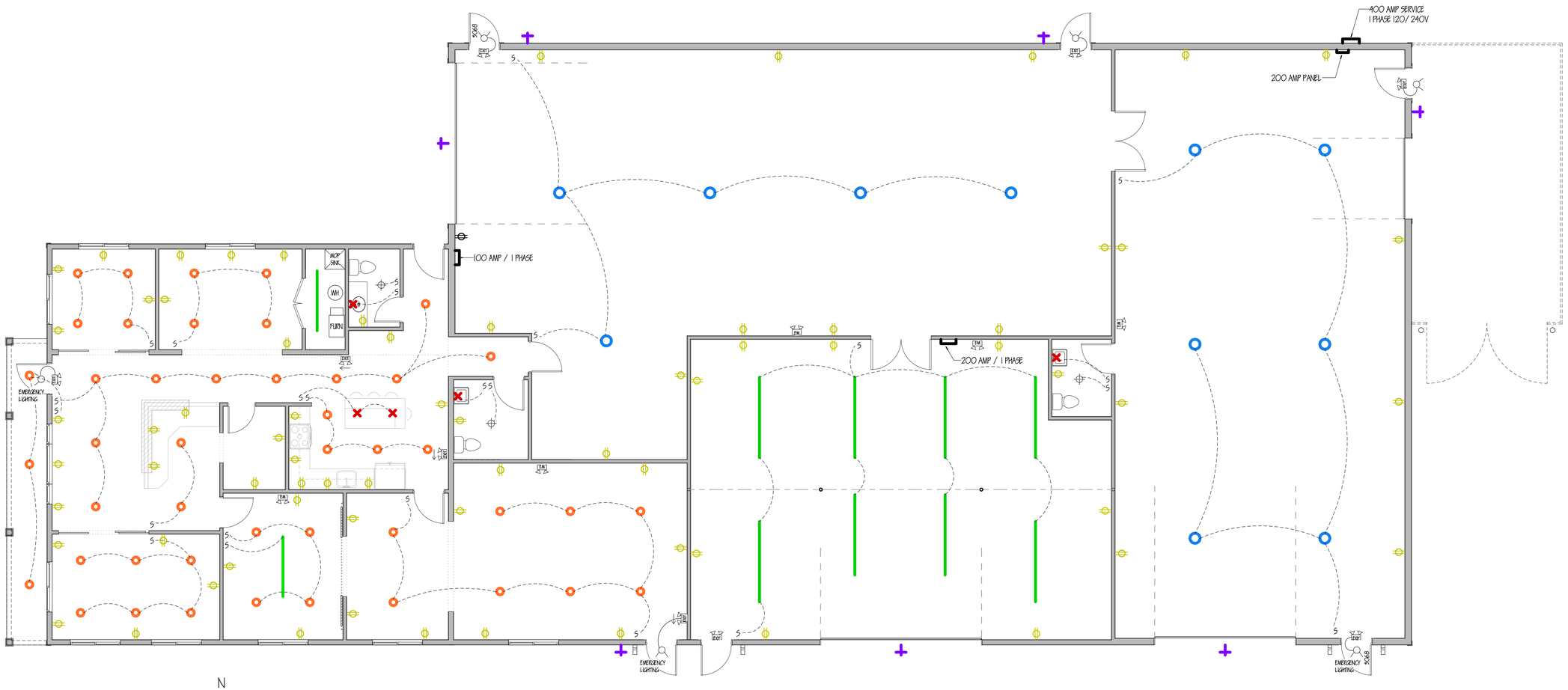
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ELECTRICAL LEGEND:

- BASH FAN - VENTED TO EXTERIOR
- EXIT BACKLIT EXIT SIGNAGE WITH EMERGENCY LIGHTING
- EM EMERGENCY LIGHTING
- SD SMOKE DETECTOR (HARDWIRED AND INTERCONNECTED)
- L.E.D. HIGH BAY FIXTURE
- L.E.D. 8' STRIP LIGHT
- L.E.D. WALL PACK LIGHT
- 6" LED CAN LIGHT
- LED LIGHT FIXTURE
- 120V OUTLET



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ELECTRICAL PLAN

3/16" = 1'-0"

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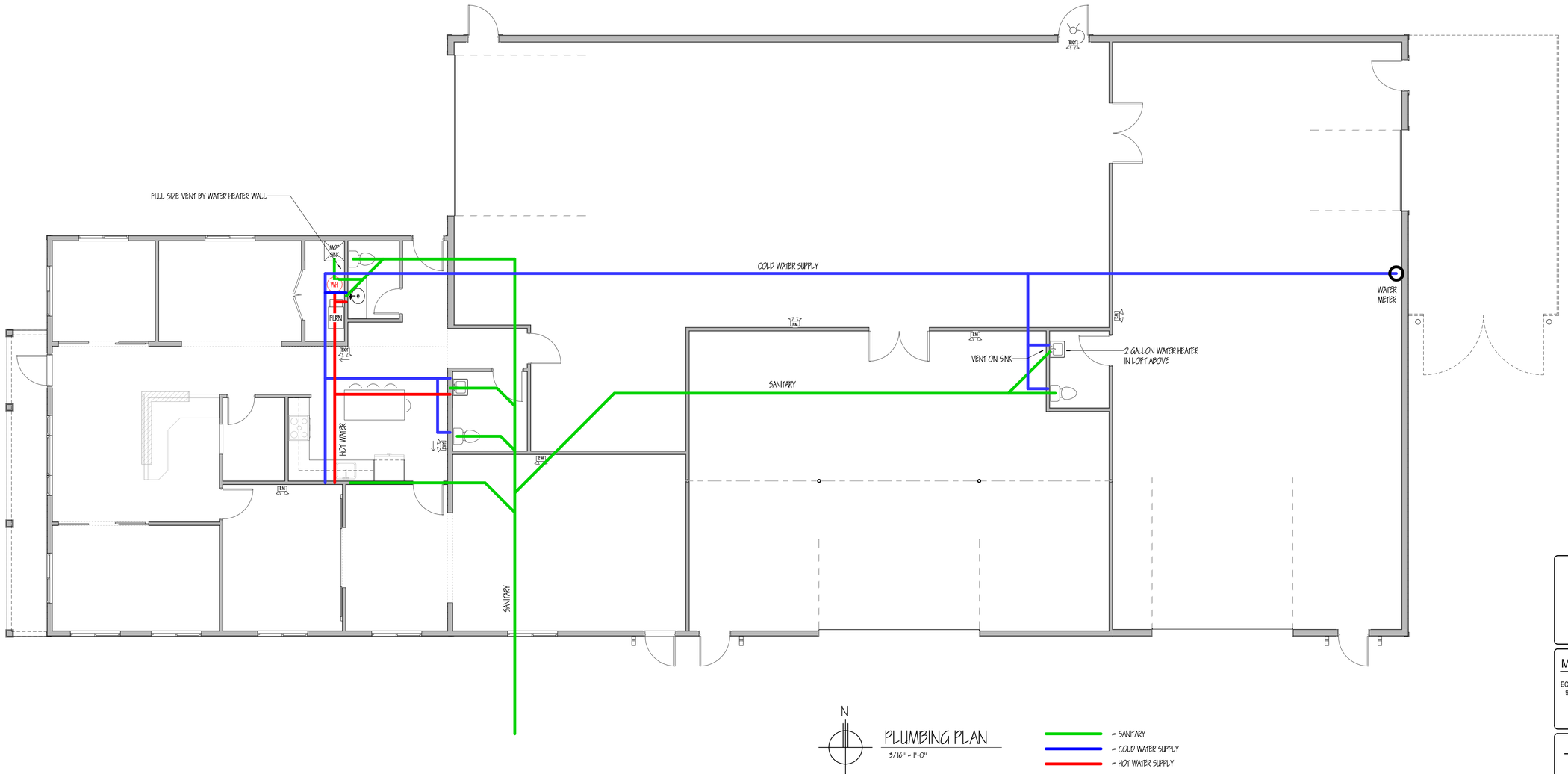
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Plan Review Report

General

Plan Review Property Address:

Date on Plans: 06/03/2026

Plans Reviewed on: 06/03/2026 **Plans Reviewed by:** Terry Turkelson

Status of Review: Review Complete, Submitted

Plan Review Notes/Comments: 1350 Koiman/Livingston Homes

-Meets all requirements per 2021 IFC

Questions or Comments? Please contact Fire Marshal Terry Turkelson at 616-842-3460 or tturkelson@grandhaven.org