

Future land use from Task 3.5 report: New development is concentrated in three nodes along the corridor: in Interlochen at the intersection with M-137, at the intersection with M-37 and near the intersection with S. Airport Road. The node at M-37 experiences a large amount of dense, compact development. The other two nodes experience some infill development in areas of existing development. New development includes commercial mixed use buildings and multi-family housing. Planned growth through sub-area plans is effective in the growth nodes. Along the corridor, access management is also a good growth tool.

Table 10 Corridor 4 Segment Capacity Gaps

Street Name	From	To	2007 Sufficiency AADT	TDM Growth rate	2035 ADT	2035 Directional Design Hour Volume	Directional Capacity	Volume to Capacity Ratio	LOS
Corridor 4									
(Trunkline portion)									
US-31	Benzie CL	M-137	10386	5.11%	10917	579	1600	36%	B
US-31	M-137	W. Silver Lake Road	15029	10.98%	16680	884	1100	80%	D
US-31	W. Silver Lake Road	M-37	19368	13.07%	21899	1161	1100	106%	F
(county portion)									
Beitner	US-31	W. River Road	14680	30.00%	19084	1065	1583	67%	C
Keystone	W. River Road	Cass	13010	10.50%	14376	802	1583	51%	C
Keystone	Cass	Birmley	12350	27.00%	15685	875	1583	55%	C
Keystone	Birmley	Hammond	10700	219.00%	34133	1905	2900	66%	C
Keystone	Hammond	S. Airport Rd.	4701	26.00%	5923	331	1583	21%	A

Proposed improvements: The contiguous segments of roadway from the intersection of M-137 in Interlochen east to the intersection with M-37 in Chum’s corners are projected to be over capacity. The westerly segment from Interlochen to W. Silver Lake Road is projected to operate at Level of Service D, while the segment from W. Silver Lake Road east to Chum’s Corners is projected to operate at Level of Service F.

For the segment from W. Silver Lake Road to M-37, adding 1 through lane in each direction with a center left turn lane would increase the hourly capacity to 3000 vehicles, resulting in a projected volume to capacity ratio of 0.40 and a level of service B.

Impacts of widening this roadway from its current two-lane configuration to the proposed 5 lane configuration, as depicted in the task 3.5 report, include:

- Potential wetland impacts at Cox Pond
- Prime / unique farmland soils from 800 feet west of M-37 to the intersection of M-37 and US-31 in Chum’s Corners

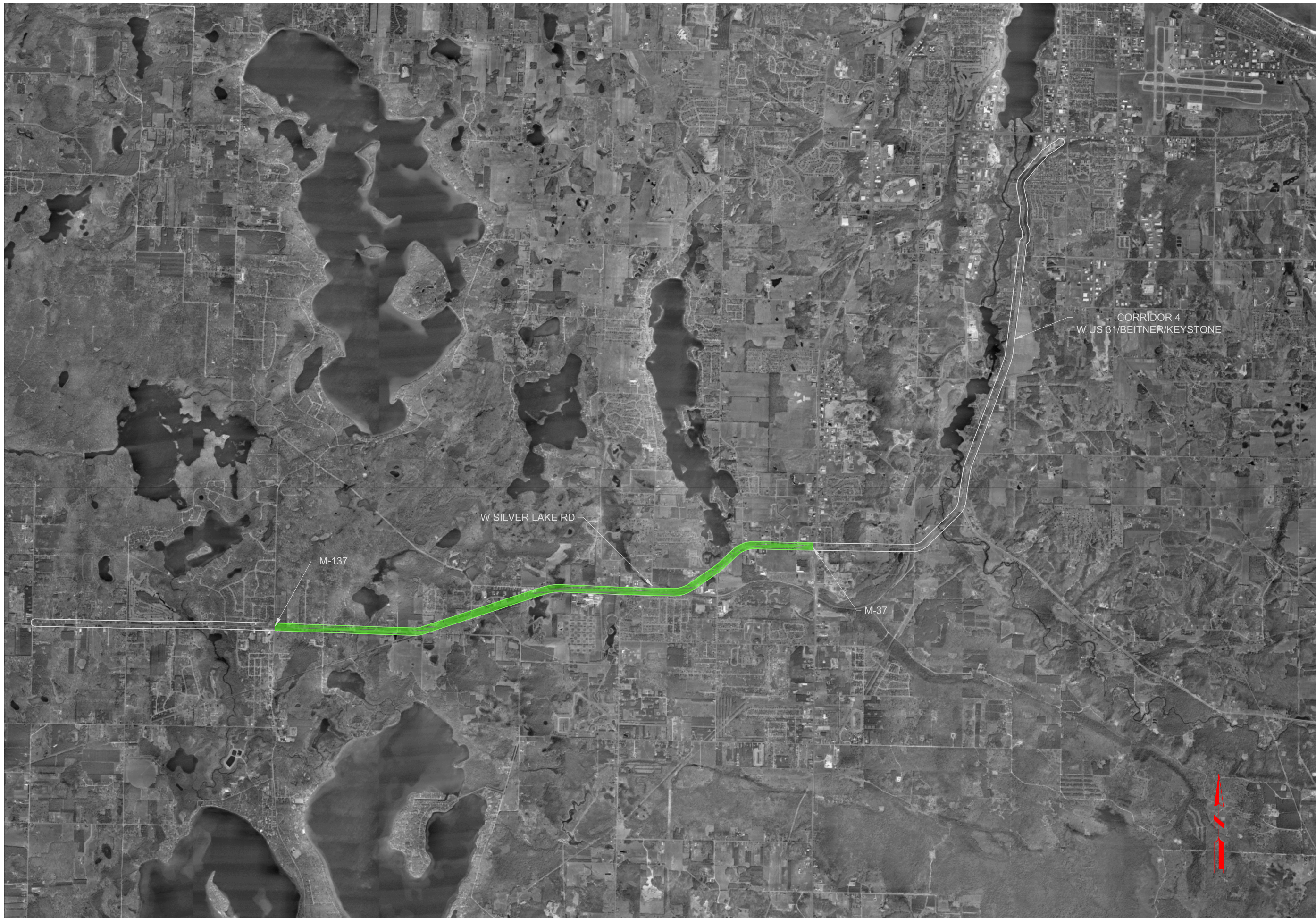
The cost of widening this 1.85 mile stretch of US-31 between W. Silver Lake Road and M-37 from 2 lanes to 5 lanes is anticipated to be \$10,295,250 in 2010 dollars, based on an average per-mile cost of \$5,565,000/mile.

Another segment of corridor 4 that is projected to be LOS “D” or worse is from Interlochen to W. Silver Lake Road. The projected volume to capacity ratio is 0.80. The projected v/c ratio indicates that this

segment will operate at tolerable speeds, but left turns and slower moving vehicles may cause delay. Any restriction in the through movement of traffic will potentially result in significant traffic backups. This segment of roadway will benefit from strategically placed through lanes and left turn lanes.

Analysis of the environmental constraints compiled in task 3.5 indicate that roadway widening on the 1.4 mile segment between E. Duck Lake Road and Sullivan Road would have the fewest potential environmental impacts. The Great Lakes Central railroad runs immediately to the south of the US-31 right-of-way in this segment. The presence of the railroad along the south edge of the roadway has resulted in relatively few driveways along the eastbound half of US-31. The most effective widening scheme for this segment is to provide two westbound through lanes of traffic, and one eastbound through lane with a shared center left turn lane. This will allow eastbound left-turning traffic to exit from the through lane. For westbound traffic, the extra through lane will provide both additional capacity and serve as a turning lane for eastbound right-turn traffic to access the residential areas on the north side of the segment. Adding this strategically placed widening on this segment of roadway will reduce vehicle following time and improve the level of service between Interlochen and W. Silver Lake Road, while avoiding as many potential environmental impacts as possible.

The anticipated cost of widening this segment of roadway from 2 lanes to 4 lanes is \$5,250,000, based on an average cost per mile of \$3,750,000. See **Figure 4**.



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CORRIDOR 4
 W US 31/BEITNER/KEYSTONE

W SILVER LAKE RD

M-137

M-37

**TC-TALUS
 FIGURE 4**

REVISION

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SHEET CONTENTS
CORRIDOR 4

7.0 Corridor 5

The Garfield Road corridor is located in Grand Traverse County in the townships of Paradise, East Bay, Blair, and Garfield. The roadway is considered a major connector between Traverse City, the City of Cadillac and other surrounding towns and villages. The corridor is approximately 14.3 miles long; it begins at M-113 in Kingsley and continues north to US-31. From M-113 to Birmley Road, Garfield Road has two lanes with posted speeds of 55 miles per hour and has a functional classification of Major Collector. North of Birmley Road to US-31, M-37, M-72 it is classified as as Minor Arterial. From Hammond Road to Carver Street, it has five lanes, from Carver Street to Hannah Street it has four lanes, and from Hannah Street to US-31, M-72 it has two lanes with posted speeds of 35 miles per hour to 45 miles per hour. Key intersections include M-113, Voice Road, River Road, Birmley Road, Hammond Road, S. Airport Road, Boon Street, Carver Street, Hannah Street, 8th Street and US-31, M-72.

Corridor 5 Vision discussion: The north end of Garfield is in the core of the urban center with an extensive set of grid street connections already in place. The development pattern on the north end of the corridor should become denser over time. Although the area has little vacant land, there are opportunities for strategic infill and redevelopment of properties on a parcel by parcel basis. As the corridor continues south, it becomes a connector road to the Village of Kingsley and to US-131 at Fife Lake. Existing development as far south as Hammond Road may be redeveloped over time in more walkable nodes at major intersections. Very little additional development is expected along the corridor between the city and village centers.

Mode choices: This corridor has the potential to be well served by multi-modal transportation design improvements. There are some stretches along the corridor with sidewalk in place and areas with an on-street bike lane. Proximity to vehicle traffic and disconnected infrastructure both limit the effectiveness of these resources. BATA routes currently run east-west across the corridor and provide service to key destinations from the city center including the Civic Center area, the Michigan Works! office and the Cherryland Center at S. Airport Road. The Fife Lake Village Connector stops at the Transit Center and Kmart at S. Airport Road and connects to Kingsley and Fife Lake along this corridor.

Current land use: The south end of the corridor serves an area that is largely undeveloped except for the south end in the Village of Kingsley and the node at Mayfield where there is a small grid street pattern in place. The pattern changes at Birmley where industrial, commercial and planned single-family residential as well as multi-family developments begin. The grid street pattern begins as the road enters the Traverse City limits and the land use pattern includes commercial, single family residential and some industrial near the rail road crossing. This corridor is also adjacent to the Cherry Capital Airport.

Future land use discussion from 3.5 report: The development in and around Traverse City expands along this major corridor but may not redevelop intensely south of Traverse City without the grid street pattern to support a walkable core. The north tip of the Garfield Road corridor, however, is still in the center of new urban development through infill and redevelopment. The area at the intersection with M-72/US-31 (Front Street) sees the most new development and the highest density levels. Higher buildings and higher

densities replace existing buildings and some parking lots disappear in this area. Some mixed-use and multi-family building development is built among the commercial uses on the corridor. South of S. Airport Road, there is little new development. The Village of Kingsley has lots of compact growth at its core. Planned growth is an effective tool on the corridor north of S. Airport Road and in Kingsley. Access management is an effective tool along the whole corridor.

Proposed improvements: Most of the corridor is projected to function well on its own over time. The north end of the corridor between Carver and US-31, however, is projected to reach a LOS F rating. Because this area is in the heart of the urban core, no infrastructure improvements are proposed to add through-lane capacity. For the two-lane portion of this segment between 8th Street and US-31, a center left turn lane may provide some additional capacity, however it would not provide enough additional capacity to alleviate the anticipated LOS F condition. Congestion will be addressed instead with design changes to preserve capacity such as those that encourage multi-modal travel and close driveways. Demand side strategies can also be considered. See **Figure 5**.

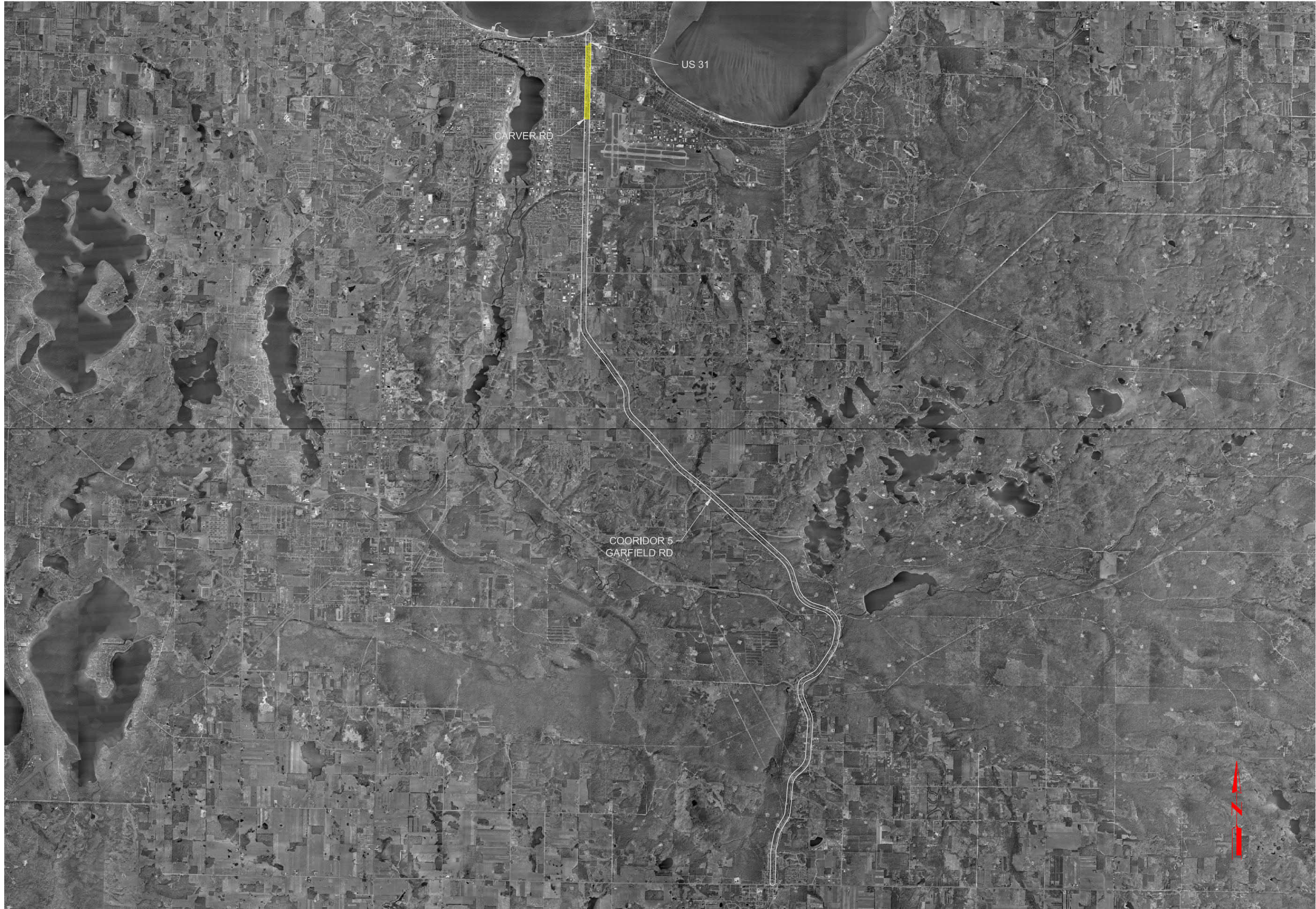
Table 11 Corridor 5 Segment Capacity Gaps

Street Name	From	To	2007 Validation ADT	TDM Growth rate	2035 ADT	2035 Directional Design Hour Volume	Capacity	Volume to Capacity Ratio	LOS
Corridor 5									
Garfield	3 Mile	Potter	7538	35.25%	10195	569	1638	35%	B
Garfield	Potter	Birmley	5559	35.41%	7528	420	1638	26%	A
Garfield	Birmley	Hammond	16129	-7.92%	14852	829	1638	51%	C
Garfield	Hammond	S. Airport	11850	37.23%	16262	907	3054	30%	A
Garfield	S. Airport	Boon	20011	27.19%	25452	1420	3054	47%	B
Garfield	Boon	Carver	21283	17.91%	25096	1400	2099	67%	C
Garfield	Carver	US-31	26886	20.00%	32263	1800	1105	163%	F

The crash analysis indicates that the Garfield Road / Front Street intersection is among the top 5 crash locations among all corridors. 457 crashes resulting in 77 injuries were reported from 2000 to 2009. The most prevalent crash type reported was rear-end accidents. There were 67 rear-end accidents at the west approach on Front Street and 34 on the south Garfield Road approach.

NCHRP Report 500, Volume 12 *A Guide for Reducing Collisions at Signalized Intersections* provides recommended strategies for mitigating the types of accidents found at these locations:

- Install larger advance warning signs
- Optimize clearance intervals
- Provide right-turn channelization



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**TC-TALUS
 FIGURE 5**

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CORRIDOR 5

8.0 Corridor 6

The Hammond Road corridor is located in Grand Traverse County, in both Garfield and East Bay Townships. The corridor is approximately 5.1 miles long and begins at Keystone Road on the west and ends at 5 Mile Road on the east and has a functional classification of Minor Arterial. It ranges from two to five lanes with a posted speed of 55 miles per hour. Key intersections include 4 Mile Road, 3 Mile Road, Garfield Avenue, La Franier Road and Keystone Road.

Corridor 6 Vision discussion: This corridor is south of the urban development in the core Traverse City area. It is a favorite east-west travel route connecting on the west end to Keystone and Beitner Road. Travelers can go north into the central city along Keystone, LaFranier and Garfield or bypass downtown with a route further east. Some traffic is beginning to use Supply Road on the east end to continue on to US-31. Local land use planning tools will be essential to restrict sprawling development patterns and additional driveways on this corridor that restrict traffic movement. Planned growth initiatives for nodes of development or redevelopment are not expected here due to the low level of new development.

Mode choices: This corridor does not have connected multi-modal facilities and it is unlikely that investment will be made here as an urban route—although a path from Northern Star Drive to the west along the new Keystone Road connection exists. The Garfield Township Non Motorized Plan identifies a bike path to connect east to East Bay Township. It may be a good candidate for the addition of a wide paved shoulder. A wide paved shoulder means additional pavement width of at least 4' that is added along an existing roadway to more safely accommodate bicycles. A loop of the BATA system runs along this corridor between LaFranier and Garfield.

Current land use: The new link from Keystone to LaFranier is open land with a few rural residential homes. Beginning at LaFranier and continuing east, the land use pattern changes to a collection of industrial, agricultural, low density single-family residential and open and forest land. There is very little commercial development. The development is spread out in a low density, large lot pattern.

Future land use discussion from 3.5 report: Villages around the region develop and development in Traverse City is focused on the existing urban core. As a result, there is a limited amount of new development along this corridor. This route will serve more as a connector between higher density development nodes. The rural nature of the land use patterns remains and some new urban development occurs around the intersections at Garfield Road and Keystone Road.

Proposed improvements: With construction of the link connecting LaFranier and Keystone now complete, a grid connection is provided to offer drivers more route options to reach destinations in the urban core area. This approach to transportation investment is in line with the Grand Vision philosophy. The three links on Hammond Road between Keystone and 3 Mile Road are projected to reach a failing LOS rating over time. Because they already have two lanes of traffic in each direction, no additional widening is proposed. Congestion along this corridor will be managed with measures to preserve capacity. The link from 3 Mile to 4 Mile is also projected to reach a LOS D over time, although its projected v/c ratio is only slightly over the threshold. Since this route is not in the urban core area and has only one lane of traffic in

each direction currently, a road widening should be considered for this segment, but at a lower priority level than other routes.

Table 12 Corridor 6 Segment Capacity Gaps

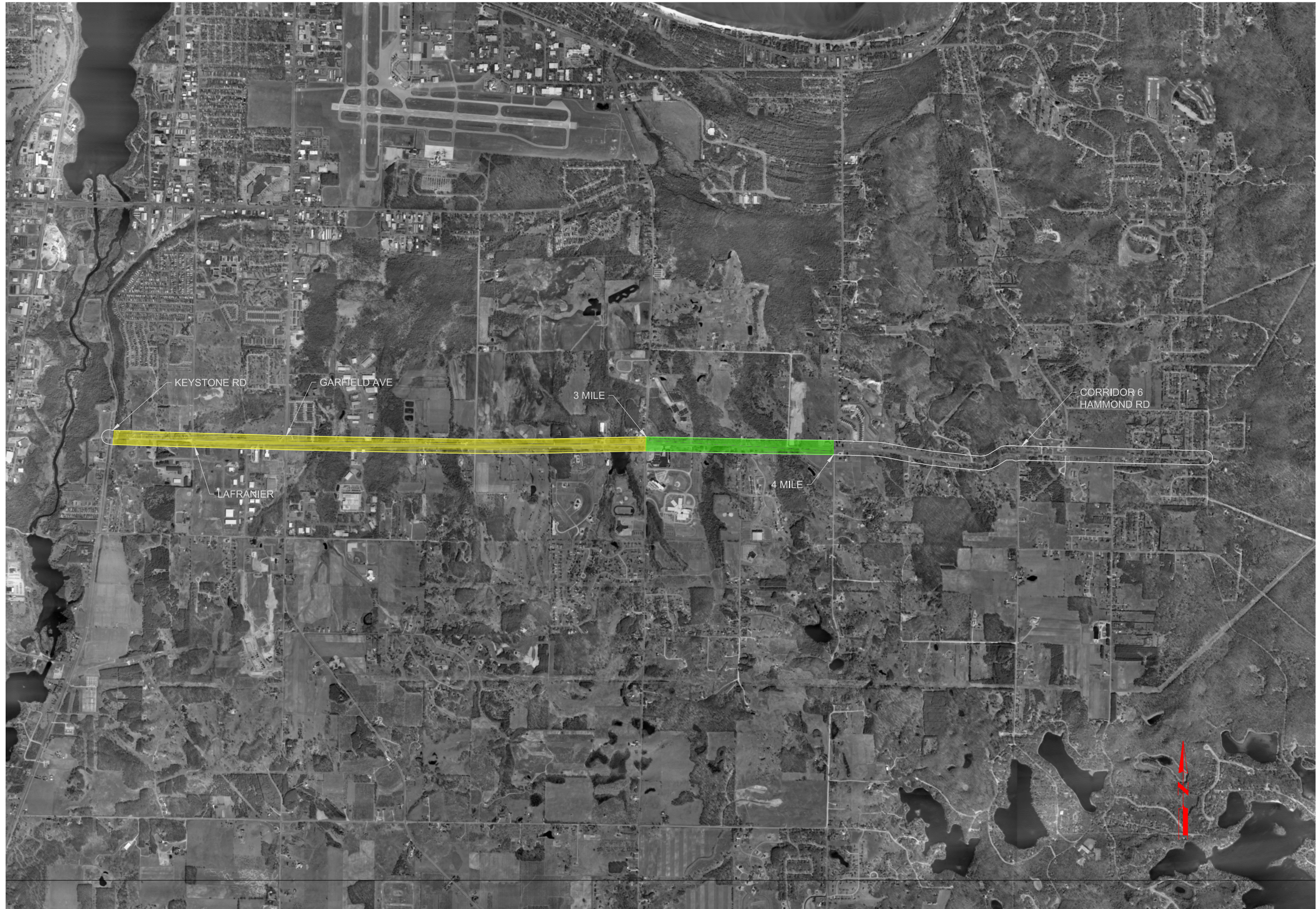
Street Name	From	To	2007 Validation ADT	TDM Growth rate	2035 ADT	2035 Directional Design Hour Volume	Capacity	Volume to Capacity Ratio	LOS
Corridor 6									
Hammond	Keystone	LaFranier	0	New link	21845	1219	1604	76%	D
Hammond	LaFranier	Garfield Ave	11805	206.38%	36168	2018	1604	126%	F
Hammond	Garfield	3 Mile	18266	36.23%	24883	1388	1604	87%	D
Hammond	3 Mile	4 Mile	15009	47.47%	22134	1235	1583	78%	D
Hammond	4 Mile Rd	5 Mile	10387	52.55%	15846	884	1583	56%	C

Physical improvements impacts and costs: The two lane segment of Hammond Road from 3 Mile Road to 4 Mile road is projected to experience level of service D within the timeframe of the study. This segment of roadway can be improved from LOS D to LOS B, with a v/c ratio of 0.40 based on a capacity of 3,000 vehicles per hour, and 2 lanes of through traffic with a center left turn lane.

Potential environmental impacts of widening this 1 mile segment from 2 lanes to 5 lanes, as depicted in task 3.5 include:

- Wetland impacts along the north side of the roadway, 800 feet east of 3 Mile Road
- Wetland impacts on both sides of the roadway at the Vanderli Creek crossing
- Wetland impacts on the north side of the roadway 250 feet west of Vanderlip Road
- Prime and unique farmland soils for the entire segment
- A historic landmark at the NW quadrant of the intersection of Hammond and 4 Mile Road

The anticipated cost of this widening is \$3,975,000, based on average costs per mile for a rural roadway segment. See **Figure 6**.



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**TC-TALUS
 FIGURE 6**

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SHEET CONTENTS
CORRIDOR 6

9.0 Corridor 7

The 3 Mile Road corridor is located in Grand Traverse County in the township of East Bay. The corridor is approximately 5.7 miles long and begins at US-31 on the north and terminates at Garfield Road on the south. From US-31 to Hammond Road, 3 Mile Road has two lanes with posted speeds of 55 miles per hour and a functional classification of Minor Arterial from US-31, M-72 to Hammond Road. From Hammond Road to Garfield Road, it has two lanes with posted speeds of 55 miles per hour and a functional classification of Major Collector. Key intersections include Hammond Road, S. Airport Road and US-31, M-72.

Corridor 7 Vision discussion: This corridor is located to the east of the core urban area around Traverse City. It is expected to see little change over time except at the north end of the corridor where it joins the urban core area as it connects with US-31. This area may experience some redevelopment at higher densities over time. Also, the corridor passes by a series of school complexes including the Grand Traverse Academy, Saint Elizabeth Ann Seton Middle School, Traverse City College Preparatory Academy, East Junior High School and Cherry Knoll Elementary. These uses can be a driver for residential development. Land use regulations will be an important part of restricting suburban, auto-oriented development. However, new planned developments with mixed use and pedestrian connections to the schools could create a small development node in line with the Grand Vision.

Mode choices: The TART Trail is in place along this corridor from US-31 to S. Airport Road and an extension is planned south to Hammond Road. This expansion will serve the collection of schools located in the area. BATA does not provide service along this corridor. Since it is a rural and low density area outside the urban core, it is not likely a location for transit service. School buses may impact travel at each end of the school day.

Current land use: There is a commercial development node at US-31, M-72 and high density single-family residential development north of the railroad. South of the railroad, the airport and its associated uses are industrial. South of that there is low density residential development along with forest and agricultural land. The school uses impact the corridor south of Hammond Road. From there, land uses are essentially agricultural and forest until Garfield Road.

Future land use discussion from 3.5 report: There is new growth along the north end of the corridor where possible. The State Park and the airport will restrict development in many places where growth pressure will be highest. New suburban growth is not anticipated south of the airport anywhere along the corridor. However, the cluster of schools could prompt demand for single family housing south of Hammond Road. This could occur in line with the Grand Vision with a compact and connected street pattern and walkable design. Planned growth is effective as part of a larger growth plan on the west side of the corridor between US-31 and Parsons Road for infill development along the north end of the corridor. This area could convert from single family residential to mixed-use, multi-family uses and neighborhood commercial uses over time.

Proposed improvements: The road may be used by travelers who want to avoid the downtown Traverse City area. However, it is projected to maintain LOS A and B in the future so no improvements are proposed. There are no gaps identified on this corridor, so no map is included.

Table 13 Corridor 7 Segment Capacity Gaps

Street Name	From	To	2007 Validation ADT	TDM Growth rate	2035 ADT	2035 Directional Design Hour Volume	Capacity	Volume to Capacity Ratio	LOS
Corridor 7									
3 Mile	Garfield	Hammond	5823	-25.75%	4324	241	1583	15%	A
3 Mile	Hammond	S. Airport	8077	9.00%	8804	491	1583	31%	A
3 Mile	S Airport	US-31	18910	10.06%	20813	1161	2933	40%	B

10.0 Corridor 8

The M-22 corridor is located in Leelanau County in the township of Elmwood. The corridor is approximately 1.3 miles long, and it begins at M-72 and ends at Cherry Bend Road. M-22 has three lanes with posted speeds of 35 miles per hour to 55 miles per hour and a functional classification of Minor Arterial. Key intersections include M-72 and Cherry Bend Road.

Corridor 8 Vision discussion: This corridor is on the edge of the urbanized area of Traverse City from M-72 at the south end and north to Cherry Bend Road. The corridor connects to other villages farther north and M-72 provides access to destinations around the region including Kalkaska and US-31 to the east. This corridor provides direct access to key waterfront features including the Greilickville Harbor Park and the Elmwood Township Marina.

Mode choices: The area is well connected by TART and BATA. The Leelanau Trail runs in the same direction and connects to Cherry Bend Road but runs west of the road corridor. The corridor is also served by BATA's Northport Village connector route that originates at the Hall Street transfer station and goes to Northport. There is also an eight foot wide sidewalk on the west side of the road.

Current land use: The corridor runs along the scenic edge of west Grand Traverse Bay and has development in a strip pattern primarily on the west side. There are some major marina activities on the bay side. There is a planned residential development area to the west of the north end of the corridor. Other significant land uses along this corridor include a major fuel terminal, water port and marina facilities.

Future land use discussion from 3.5 report: Growth spreads out from Traverse City along the length of this corridor but doesn't stretch beyond to the north. On the south end of the corridor, new development will be infill or redevelopment of existing uses. On the north end of the corridor, new land uses will fill in open spaces. Land uses will be mixed-use, commercial and high-density residential. Planned growth can permit and promote infill development and allow increased development density. Access management will also be essential on this corridor.

Proposed improvements: In spite of the corridor's multi-modal resources, it is projected to have a LOS F in the future. Because it is in the core urban area, there are no infrastructure changes proposed. This is also an area where natural features limit design solutions. Congestion in this area should be addressed instead through demand side management techniques. The Bugai Road extension will continue to provide an alternative route for development to the north and west of the corridor.

Table 14 Corridor 8 Segment Capacity Gaps

Street Name	From	To	2007 Sufficiency AADT	TDM Growth rate	2035 ADT	2035 Directional Design Hour Volume	Directional Capacity	Volume to Capacity Ratio	LOS
Corridor 8									
West Bay Shore (M-22)	M-72	Cherry Bend Road	19447	41.33%	27485	1304	1100	119%	F

11.0 Corridor 9

The W. Silver Lake Road, 14th, Cass, 8th corridor is located in Grand Traverse County in the townships of Blair and Garfield. The corridor is approximately 10.8 miles long; it begins at US-31 and continues to M-72. W. Silver Lake Road has two lanes with a posted speed of 55 miles per hour and has a functional classification of Minor Arterial. Key intersections include US-31, Secor Road, Zimmerman Road, Barnes Road, Franke Road, US-31/M-37, Cass Street, 8th Street, Boardman Avenue, Woodmere Avenue, Garfield Road and US-31/M-72.

Corridor 9 Vision discussion: This corridor brings travelers into the downtown of Traverse City from the west. It runs parallel and to the west of Division Street (M-37) and then curves east to connect with Division at 14th Street. West of its connection with Division Street (US-31, M-37), this route is a collector for the many rural and suburban subdivision developments southwest of Traverse City. These areas are almost exclusively residential and people drive to reach jobs, services and stores. East of the intersection with Division Street, the corridor goes through the urban core with a mix of residential and commercial. These areas should be given the opportunity to redevelop with higher densities and with higher Floor Areas Ratios (FAR) in strategic locations. At the same time, the character of the single family residential areas will be preserved.

Mode choices: West of Division Street (US-31, M-37), the route is designed for auto travel. Along the road, there are areas with wide paved shoulders. The Garfield Township Non Motorized Plan identifies a bike path from the city limits to the Silver Lake Recreation Area on E. Silver Lake Road and a Safe Routes to School grant has been awarded to West Middle School to construct a bike path from Wyatt Road to Barnes Road. TART Trails is planning a new trail called the Buffalo Ridge Trail that will not follow the road but will connect to it. On the east side of Division Street (US-31, M-37), the homes and businesses in this area are walkable to the urban center. There are inconsistent sidewalks in place to support walking trips and TART is planning a trail along 14th Street from Division to the west side of the Boardman Lake. There is an on-street bike route along Cass Street. Travelers along this central city section of the route may find a BATA route to connect them as there are several in this area.

Current land use: Uses west of Division Street are suburban, auto-oriented single family developments. There are many with access points onto Silver Lake Road. There is a mix of commercial, industrial and small lot single-family residential uses along 14th Street. Uses along Cass are residential. Along 8th street, the uses are a mix of commercial and residential.

Future land use discussion from 3.5 report: This corridor becomes part of a much larger downtown area. There is dramatic change in land use over time and density increases as surface parking lots are replaced by buildings and single-stories are replaced with multi-stories. There are new commercial, office

and multifamily residential uses along the corridor. Growth planning is a very effective tool in this scenario.

Proposed improvements: There are two sections of this corridor that are projected to reach LOS F. They are the links on 14th Street from Division to Cass and 8th Street from Barlow to Garfield. Because these areas are in the heart of the urban core, road widening is not proposed. Instead, congestion will be addressed with demand-side strategies. Multi-modal design investment in this core area, including the proposed TART Trail route, should be very effective.

The segments of this corridor on Cass Street from 14th Street to 8th Street and on 8th Street from Cass Street to Midtown Avenue will benefit from the planned construction of Boardman Lake Avenue from 14th Street to 8th Street. This planned addition to the street grid system will provide additional capacity for through traffic movements on Corridor 9. It is estimated that between 1/3 and 1/2 of the total traffic volume on Corridor 9 between Cass Street and Midtown Drive will utilize the new roadway. The projected 2035 directional design hour volumes for these two segments of Corridor 9 have been reduced by 1/3 to account for this anticipated traffic shift. Without the addition of Boardman Lake Avenue, these two segments would be anticipated to experience LOS F within the time horizon of this study. See **Figure 7**.

Table 15 Corridor 9 Segment Capacity Gaps

Street Name	From	To	2007 Validation ADT	2035 TDM ADT	TDM Growth rate	2035 ADT	2035 Directional Design Hour Volume	Directional Capacity	Volume to Capacity Ratio	LOS
Corridor 9										
W Silver Lake	US-31	Lillian Ln	5874	7528	127.16%	13343	745	1638	45%	B
W Silver Lake	Lillian Ln	Boone Rd	5874	10016	64.36%	9654	539	1638	33%	A
W Silver Lake	Boone Rd	Barnes Rd.	6489	8526	62.43%	10540	588	1638	36%	B
W Silver Lake	Barnes Rd	S Division St	15380	22021	35.01%	20764	1159	3054	38%	B
14th	S Division St	S Cass St	19106	20897	40.42%	26828	1497	1166	128%	F
Cass	14th	8th	12778	12982	30%	16611.4	618	926	67%	C
8th	Cass	Midtown	14019	17826	22.26%	17140	638	926	69%	C
8th	Midtown	Barlow	14019	17826	22.26%	17140	956	1852	52%	C
8th	Barlow	Garfield	14019	17826	22.26%	17140	956	926	103%	F
8th	Garfield	US 31	2248	14762	13.79%	2558	143	1852	8%	A

The crash analysis indicates that the segment of W. Silver Lake Road from Allen Drive to Secor Road has a concentration of curve-related accidents. Although this segment is not projected to have capacity issues during the time horizon of this study, safety related improvements should be considered. Five fixed-object and two head-on crashes resulting in 8 injuries were noted in the 10-year crash history.

NCHRP Report 500, Volume 7 *A Guide for Reducing Collisions on Horizontal Curves* provides recommended strategies for mitigating the types of accidents found at this location. The most relevant strategies for this segment of roadway include:

- Provide advance warning of unexpected changes in the horizontal alignment
- Enhance delineation along the curve
- Install shoulder rumble strips
- Install centerline rumble strips