

Project Objective

Creating an off road non-motorized trail link between the public school complex at the northeast corner of Lake and State Streets in the City of Harbor Springs to the youth soccer fields at the southeast corner of Hoyt and Quick Roads in Little Traverse Township.

Project Need

There is a large number of students who go from the school complex to the soccer complex but there is no off road route that links the two facilities. Currently very few students walk or bike between them even though they are less than two miles apart via public road network. It is believed that the reason there is very little pedestrian and bike traffic between the two facilities is that the roads connecting them carry a lot of motorized traffic, the topography includes steep hills, and the roads are narrow making them appear unsafe for non-motorized traffic. See Map 1.

Study Criteria

To review and analyze different routes, see Map 2, linking the two complexes including:

1. Lake to Hoyt Road
2. State to Quick Road
3. Various routes through private property referred to as “through the middle”

When looking at these routes, analysis of the land ownership including the road right-of-way, public lands, private property, and easement needs are considered. In addition environmental and man made constraints such as topography, wetlands, soils, electrical lines, and such are reviewed. Analysis of the potential user type for each route and which route has the greatest potential for use are also considered. General safety and cost comparisons are included.

Route Constraints

When comparing route options it is important to look at the potential ability to build a trail in regards to property ownership, natural and man made constraints including topography and right-of-way limitations. To begin there will be a general analysis of the various issues and within each category there will be a route comparison table.

The general constraints to the project include a steep hill north from Lake Street; this hill runs through the entire project area. A large swale in the “middle” of the project also causes concern in addition to the number of commercial driveways and traffic on State Street.

Road Right-of-Way

Within the City limits and along the County roads, all road right-of-way in the project area including Lake, Hoyt, Quick, State and Arbor Streets is 66’ in width. Within the City Limits, sidewalks line the roads providing excellent pedestrian access. Children use the sidewalks for both walking and biking.

Public Lands

The school properties and the adjacent Kiwanis Park owned by the City of Harbor Springs provide ample space for a trail including the possibility to create switch backs up the trail for a trail with an easier grade while making the trail handicap accessible.

Private Property

Easements may be needed for every route as 66’ of road right-of-way with steep topography may require at minimum grading easements and possibly some permanent easements. Going through the middle will also need permanent easements, see Map 2 and 3.

There are also four private roads that run west off Hoyt Road that could be considered for a connecting trail. The topography through these site condominium neighborhoods make it ideal to not only put a trail in but to connect these growing communities. A connecting trail between them would allow children and others to get to friends houses without going onto a county road. When looking at these site condominium neighborhoods it appears that some road right-of-ways go to the neighboring property line as though they were created with the intent to connect a transportation corridor to the next lot. When looking at the deeds of the properties this is what was discovered, listed south to north.

Harbor Bluff

The private road, Pete's Run, is considered common land and the association can approve access; therefore approval of association is needed to allow for a trail to utilize their road. In addition, a permanent easement across two properties from Arbor Street would be needed to get to the private road. The property owners are Bruce and Kay Cartford and Brent & Karen Schaller. *Please note that although it appears access to Pete's Run could be through one property, the property has such steep topographic limitations that it does not appear feasible. Such a trail would have to run further north up Kiwanis Park and come across the two properties listed above.*

Snowberry Farms

The private road, Snowberry Court, is considered common land and the association can approve access; therefore approval of association is needed to allow or a trail to utilize their road. In addition a permanent easement to cross a property to connect to the neighborhood to the north would be needed. That property owner is Robert Clark Trust.

Meadowlands

The private road, Meadowlands Trail, is considered common land and the association can approve access; therefore approval of association is needed to allow for a trail to utilize their road. In addition a permanent easement to cross a property to connect to the neighborhood to the north would be needed. The property owner is Marana Tost and Cathy Kalahar.

Meadow View Farms

The private road, Rolling Meadows, is considered common land and the association can approve access; therefore approval of association is needed to allow for a trail to utilize their road and to build a trail in their common area. In addition, the use of the "no development areas" would also be needed and the Master Deed states for part of the common area that ". . . the areas shall not be used above-ground by humans and animals other than for the plantings described herein". This statement means that for the association to approve a trail easement in the common area, they would have to amend their Master Deed.

Other key properties for potential crossing "through the middle" is the Alvin and Susan Lightfoot property or the Nancy Johnston property and Thomas Hoffman Trust property. Please see the Table A below to compare seven routes regarding land ownership and easement needs.

Table A: Land Ownership and Easement Needs Comparisons		
Trail Route	Land Ownership	Easement Needs
State/Quick	The trail would be primarily in the city and county 66' road right-of-ways. There would be potential to go along Fairview Street connecting directly to each school.	Because of the limited number of constraints on this route, it is likely only grading easements would be needed if at all and in limited areas, such as along the steep slope on Quick Road.
Lake/Hoyt (East)	The trail along Lake Street would go on the existing sidewalk. The trail on the east side of Hoyt Road would be mainly in the 66' wide road right-of-way.	Because of the topography and other constraints, easements may be needed from at least four property owners along Hoyt Road.
Lake /Hoyt (west)	Same as above.	Easements would be needed in the same areas as east side but possibly easements from up to six property owners due to the topography.
Kiwanis Park/ Lightfoot	Use School property and City of Harbor Springs park land to get up the steep slope. Cross one private property and use 66' wide Quick Road right-of-way to get to Hoyt Road.	An easement would be needed from the Lightfoot property to cross to Quick Road.
Kiwanis Park/ Johnston/Hoffman	Use School property and City of Harbor Springs park land to get up the steep slope, cross two private properties and then use the 66' wide Hoyt Road right-of-way.	An easement would be needed from the Johnston and Hoffman properties. Possibly additional easements from two or three properties where there are topographic limitations on Hoyt Road may be needed, see Hoyt Road descriptions.
Kiwanis Park/ Pete's Run	Use School property and City of Harbor Springs park land to get up the steep slope. Cross two private properties, use a private road and the use the 66' Hoyt Road right-of-way.	An easement to cross the Cartford and Schaller properties from Arbor Street to Pete's Run would be needed and approval of the Condo Association to use Pete's Run as a bike route. Easements from two or three properties where there is topographic limitations on Hoyt Road maybe be needed, see Hoyt Road descriptions.
Kiwanis Park/ Various	Use School property and City of Harbor Springs park land to get up the steep slope. Cross four properties and utilize various common areas and private roads.	Four easements plus three association approvals to utilize common area and one association master deed change. (See text for details).

Topography

Topography is the only main environmental constraint that will impact the project, see Map 3. Steep slopes between 18 and 25 % going north on Hoyt Road creates limited useable right-of-way and may need easements in order to install fill, where the road is above the natural grade of the hill, or retaining walls, where the road has cut into the slope.

Through Kiwanis Park the large public property allows enough room for a trail to switch back up the steep 18 to 25 % slope, but a large swale at the north end of the property creates another challenge. A scenic, but costly solution would be to use a wooden span bridge, or otherwise switchbacks would be necessary to get up and down the steep slopes of the swale.

Along State Street the slope is short there is a 12 to 18% grade. Quick Road has a very long hill, over a half mile with 6 to 12 % grades. These roads carry heavy traffic and have more driveways than other routes. Both Quick and State Roads have paved shoulders.

Other Constraints

Just north of Bester Road on the east side of Hoyt Road large trees are in the right-of-way which could impact development of a trail. Also along the east side of Hoyt Road is the utility line and a number of utility poles are very close to the road which will impact trail development costs.

On the west side of Hoyt Road there are a few areas where the road has cut into a hillside and a retaining wall may be needed to accommodate a trail. There are also a few places near driveways where fill and culverts may be required along a drainage ditch. In addition, at the city water reservoir property, there is a water pipe at the road right-of-way and according to the City Manager right-of-way is very limited. See Map 4 for limitations along Hoyt Road. Further analysis is needed to determine if a trail along this property is even feasible. See Table B below for route comparisons regarding topography and other constraints.

Table B: Topography and Other Constraint Comparisons		
Trail Route	Topography	Other Constraints
State/Quick	State Street is a gentle slope at 0 to 6 %. Quick Road is steeper (6 to 12 % slope) but is ½ mile long.	Quick and State Roads both carry more traffic at higher speeds. There is a significant amount of commercial traffic on these roadways and many driveway crossings
Lake/Hoyt (East)	Hoyt has the most difficult of grades with two areas with grades between 18 and 25% and another area with grades between 6 and 12 %.	Large Trees are close to the road surface just north of Bester Road. An above ground utility line is in the right-of-way and in some places utility poles are very close to the road.
Lake /Hoyt (west)	Same as above	Large Trees are in the Road right-of-way just north of Bester Road. The road right-of-way could be limited near the City Reservoir Property.
Kiwanis Park/ Lightfoot	There is an 18 to 25 % slope up the City park property but because of the width, a trail could switch back lessening the slope of the trail. There is a large swale and another steep slope of 18 to 25%; switch backs or a bridge would be needed.	The Lightfoot property is fairly flat making it an ideal location for a trail. In the future, if the property is developed, it would provide an excellent residential amenity for home owners.
Kiwanis Park/ Johnston/Hoffman	Same as above. Then there is another somewhat steep area along Hoyt of 6 to 12 % slope.	Depending on which side of Hoyt is used, see above description for additional constraints on each side of the road.
Kiwanis Park/ Pete’s Run	Same as above.	Same as above and in addition using a private road decreases the trail mileage needed to be built.
Kiwanis Park/ Various	There is an 18 to 25 % slope up the City park property but because of the width, a trail could switch back lessening the slope of the trail. Because this trail utilizes existing neighborhood roads that have been graded, the rest of the route is has gentle topography.	Potential to use local internal roads decreases the trail mileage needed to be built.

Potential Trail Use

User Types

In order to determine the appropriate facility, it is first necessary to decide what type of user will potentially use the trail. The American Association of State Highway and Transportation Officials (AASHTO) have classified different user types which are listed as follows with slight wording changes to fit the local community needs. These standards are referred to throughout the report and are as follows:

Type A: Advanced road bicyclists who like the road regardless of what facilities are provided and who want direct access to their destinations. Many road bike tours and bike club members fall into this category. Most do not use trails and would rather be on the road.

Type B: Basic riders who use their bicycles for transportation and recreation. Many of these folks will travel on lightly traveled roads or trails when there is that alternative. Many of these folks avoid busy roadways that Type A riders utilize and will use trails when

the alternative is a busy highway. Many tourists who bike ride fall into this category.

Type C: Children riding on their own or with families. This category also includes other uses such as in-line skating, dog walking, jogging, walking, etc. Trails with very few driveway and road crossings are the safest and are most ideal users of this category. Routes on sidewalks and lightly traveled roads can be utilized for such users if they to provide a safe alternative in order to get to schools and parks.

It is the assumption of this report that because the trail link is for school-aged children that the need is primarily for Type C users and those Type B local users who may use the trail, but its main intention is for Type C users. It is also the assumption that a separate non-motorized trail or shared use path is preferred, See page 9 of the *Harbor Springs Non-Motorized Trail Feasibility Study of Alternative Routes* for the AASHTO guidelines for such facilities. It should also be noted that because a trail is requested, other non-motorized options were not considered such as bike routes and bike lanes.

Potential Use

If the intention of the trail is for Type C users going between the two school facilities, a separate non-motorized trail with the most direct route and the least number of road crossings is desirable. But it is also important to consider the non-motorized traffic generators of the area. When looking at *Map B* of the *Harbor Springs Non-Motorized Trail Feasibility Study of Alternative Routes*, it is important to see the growth areas of the region and the needs of locals who will also want to use this trail once it is built. Therefore it will be important to secondarily look at future potential use of the trail to get local residents and children, Type B and C users, from the West Traverse and Little Traverse Township's growing residential areas to the City Center, various public lands and its adjoining facilities.

Safety

According to the Emmet County Sherriff and the City of Harbor Springs Police Chief, there has been no bike or pedestrian accidents along Lake, Hoyt, State and Quick roads, within the project area, in the last ten years. That means the roads are not as unsafe as they appear but it could also mean because of the existing conditions, it is not used by bicyclists and pedestrians very often therefore limiting the number of accidents possible.

The Harbor Springs Police Chief, Dan Branson did believe a connector route would be beneficial to encourage more walking and biking in the area. He agreed with HARBOR Inc. that the condition of Hoyt Road, being narrow and steep, limits use of the road by bicyclists and pedestrians, especially by children. He also agreed that due to the number of driveways and commercial business along State Street (between Lake and Quick) that even a separate bike path in this location would not be as safe as other routes due to the number of driveway crossings.

Driveways and Road Crossings

For safety purposes it is important to look at the number of intersections a trail will cross; the less number the safer the trail. This study inventoried potential trail intersections on four roadways as follows: the south side of Quick Road, the east side of State Road, the east side of Hoyt Road and the west side of Hoyt Road. The study did not look at Lake Street since a sidewalk already exists along this route.

See the Table C below for intersection data.

Table C: Driveway and Road Crossings					
Road / Side	Residential Drives	Commercial Drives	Private Roads	Public Roads	TOTAL
Hoyt /West Side	7	3	4	0	14
Hoyt /East Side	12	0	0	1	13
Quick /South Side	10	0	1	0	11
State /East Side	13	7	2	2	24

Accessibility

American with Disabilities Act (ADA) requires a trail to have no greater than a 5% slope. In order to receive Federal Funds such as a Transportation Enhancement Grant (the main funding source for trails) ADA requirements must be met. In addition, children and the elderly prefer trails at this type of grade because it is easier to access. Therefore meeting ADA requirements is desirable. But, ADA requirements can be waived if a trail is along an existing street grade and in it can be shown that there is no feasibly alternative. See Table D below for route comparisons regarding use and safety.

Table D: Use and Safety Comparisons		
Trail Route	Potential Use	Safety
State/Quick	A trail along State and Quick Roads may be used by a higher number of Type B riders and other walkers because it would connect growing areas around town to the city center, schools, and facilities. Because these are high traffic roads, they may be a good location for a separate trail and would be used more like a sidewalk in a city rather than a bike trail.	These roads may warrant a separate trail because of the high traffic and commercial use. At the same time, a trail along this route will cross a significant number of driveways. It may be less safe of a trail in comparison to the other routes, but safer overall for pedestrians due to the potential high use of such a facility.
Lake/Hoyt (East)	The growing areas of Little Traverse Township and West Traverse Township could link to schools, city center, and other public parks and facilities by utilizing this trail. Therefore making Hoyt Road safer may create a greater local use for Type B and Type C riders. This route also links to the Little Traverse Wheelway.	This road appears very unsafe now because of the steep slopes and that it is narrow and somewhat crumbling. A paved shoulder would improve the safety if a separate trail was not built.
Lake /Hoyt (west)	Same as above, plus this route directly links with the four residential streets off Hoyt.	Same as above plus it is safer for the four residential streets that directly link to the trail.
Kiwanis Park/ Lightfoot	This trail would be more of a “locals” trail because it is harder to find and less visible the general public. On the flip side, it would be the most direct route and easiest grade (if a bridge was installed) allowing for an easier route for those living “up the hill”.	This is a safe route as it has very few driveway crossings and the easiest grades to maneuver.
Kiwanis Park/ Johnston/Hoffman	This route would still be somewhat “secret” as it goes inland from the road. There is more potential to gain local use from those people coming from east of Hoyt to connect to the schools, but those going to other locations may or may not use utilize the trail. See East and West sides of Hoyt above for other concerns.	This route is somewhat safe as it has very few road crossings and fairly gentle slopes.
Kiwanis Park/ Pete’s Run	Same as above.	Same as above.
Kiwanis Park/ Various	This would be a highly “secret” route connecting through neighborhoods limiting outside use. It would benefit the neighborhoods by having connectivity and would be used primarily to get between the school and soccer fields and local use between neighborhoods.	This is may be the safest route as it has the gentlest slopes and at the same time the least number of driveway crossings.

Trail Distance and Costs

Distance

Road distance for the State/ Quick Route versus the Lake/Hoyt route is approximately the same, 1.75 miles. Going through private land is more direct and depending on the route could be as short as 1.6 miles in length, but adding switchbacks to get up the steep slopes will increase total trail distance and make all routes about the same in length. But, the route along Lake and Hoyt Roads could utilize an existing sidewalk system, reducing the trail construction cost to only one mile, which is quite significant. Sidewalk could also be used along State Street until the City Limit, reducing the trail mileage of the State/Quick Roads to 1.5 miles. It appears within the city limits there is enough road right-of-way to expand the sidewalk to 10' in width to accommodate bicyclists as well as pedestrians. This is something that could be done in the future if deemed necessary and when the sidewalks are being replaced.

Costs

It is very difficult to compare costs of these trail routes as there is not enough detail yet to make the engineering estimates. In general, the cost to fill or cantilever the steep part of Hoyt Road is very expensive as well as some other potential retaining wall areas where the road cuts into the slope. In addition a bridge is very expensive. General cost for an asphalt trail is \$150,000 per mile and other issues use a general estimate. These costs are for route comparison sake only and should not be used as a cost estimate in and of itself; detailed cost estimates from an engineer will be needed. These cost estimates assume that all easements are gained without cost and that sidewalk and existing private roads are used instead of building a new trail. See Table E for route distance and approximate cost.

Table E: Route distance and Approximate Cost

Trail Route	Distance in miles (approximate)	General Cost \$150,000 per mile	Fill area (approximate)	General Cost	Retaining Wall by lineal feet (approximate)	General Cost \$175 per lineal foot (at five foot tall)	Bridge	TOTAL COMPARISON COSTS
State/Quick	1.5 miles	\$ 225,000	-	-	-	-	-	\$ 225,000
Lake/Hoyt (East)	1 mile	\$ 150,000	500'	\$ 40,000	1000'	\$ 175,000	-	\$ 365,000
Lake /Hoyt (west)	1 mile	\$ 150,000	600'	\$ 48,000	450'	\$ 78,750	-	\$ 276,750
Kiwanis Park/ Lightfoot	1.85 miles	\$ 277,500	-	-	-	-	\$100,000	\$ 377,500
Kiwanis Park/ Johnston/Hoffman	1.75 miles	\$ 262,500	100'	\$ 8,000	200'	\$35,000	-	\$ 305,500
Kiwanis Park/ Pete's Run	1.6 miles	\$ 240,000	100'	\$8,000	200'	\$35,000	-	\$ 283,000
Kiwanis Park/ Various	1.75 miles	\$ 262,500	-	-	-	-	-	\$ 262,500

Consultant analysis:

Although the intention of the trail is to link school aged children from the school complex to the soccer fields it is important bigger and the overall potential use of such a trail. Looking back on the former study done for the area, it appears there is a need today and a growing need in the future to accommodate the growing residential areas of West and Little Traverse Townships with safe non-motorized facilities. Many of these users may be going other places beyond the school and soccer fields and many individuals at the school and soccer fields might be coming or going to different places at the end of the day. Local residents and school children might very well be

going to the city center, the waterfront, public beaches, marinas, the football field, the school track, Hoyt Street Community Park, or linking to the regional trail, the Little Traverse Wheelway. Therefore it is important to consider the highest and best use of a facility when investing with public dollars. Therefore it is suggested that the scope of the project also consider this greater need, which will help HARBOR Inc. decide on a potential trail route.

Secondly, when it comes to safety, there should be some consideration of making existing unsafe routes safer for more people, rather than creating the safest route possible for the limited few who may utilize it. Although possibly the safest route is “through the middle” and it could be the easiest to develop if there is willing property owners, it will most likely get the least amount of use because it goes to specific places (the school and soccer field) rather than to the community as a whole. The route “through the middle” might also be the most fun route in some ways as it will be a “secret local trail” but at the same time it does very little to make the streets safer for the growing community around Harbor Springs who need to get to the various facilities around town and will continue to use unsafe roadways.

Quick and State Roads, although they have shoulders, most likely limit some Type B riders let alone Type C riders. The topography on these roads makes a potential trail much more feasible with easier grades, but on the flip side there are many more driveway crossings. Developing this route would be beneficial for the entire community.

Hoyt Road is difficult today and the grade issues create costly solutions as well as concerns of accessibility. There are constraints on the west side of the road such as the City Reservoir property, but that is also the side where the residential development is occurring. Building a trail on the east side of the road, although more feasible, is less useful and safe as many neighborhood residents would have to cross the road to access the trail. The east side also has the electric utility line which may have to be moved to accommodate a trail.

It appears that the Walstrom Marine internal road system on the west side of Hoyt Road just south of the City Reservoir property was created at a much gentler slope than Hoyt Road. It may be possible to work them to use the internal roadway, or expand it, sign it and put in safety measures, and use it to get up the steepest section of the road and bypass building the most expensive trail section.

Hoyt Road, in contrast to the other routes, also directly links with the many school facilities, public parks, beaches, and the Little Traverse Wheelway which makes this location desirable because it has the potential to have the highest use of all the routes.

Therefore it is recommended that the community pursue a route first along the West Side of Hoyt Road; first of all seeing if the feasibility of using the road right-of-way near the City Reservoir is even possible. If it is, it is recommended to pursue that route and possibly work with neighboring property owners to get the trail off the road where possible. If getting past the city property is impossible, proceed to the East Side of Hoyt Road as Hoyt Road route still has the highest use potential.

Please note that recommending one route does not mean that there is not a need for another route; a trail along Quick and State Roads or through the middle, in addition to Hoyt Road would be an added benefit to the area. If only one route can be built right now, it is recommended that the West Side of Hoyt be pursued and if that route is not feasible then work on the East side of Hoyt Road.