WHITEWATER TOWNSHIP

ROAD PLAN

TOWNLINE ROAD

ADOPTED BY THE
WHITEWATER TOWNSHIP BOARD
AUGUST 17, 2004

WHITEWATER TOWNSHIP

ROAD PLAN

2004

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A highway necessarily has wide-ranging effects beyond that of providing traffic service to users. It is essential that the highway be considered as an element of the total environment. Environment as used herein refers to the totality of humankind's surrounding: social, physical, natural, and synthetic. It includes human, plant, and animal communities and the forces that act on all three. The highway can and should be located and designed to complement its environment and serves as a catalyst to environmental improvement.

from A Policy on Geometric Design of Highways and Streets (the "Green Book")
AASHTO 1994

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INTRODUCTION AND PURPOSE

The character of a community is shaped by its roads because perception is largely based on what can be seen from an automobile. Whitewater Township values its rural character and Township roads are an indispensable part of the rural environment. Increasing growth and development pressures make changes to the Township roads inevitable; however, it is not necessary that new road construction or modifications to existing roads detract from the Township's rural character. Design standards are available that allow roads to be functional as well as beautiful.

Road planning is as important as the zoning ordinance in advancing the implementation of the Township Master Plan. Because of the strong link between roads and adjacent land use, the Township cannot preserve its rural environment unless its roads retain their rural character. An active involvement and a strong commitment by the Township to its roads are necessary if the Township is to preserve its rural character.

Implementing the vision of the Master Plan will require long-term, consistent attention to land use planning as well as road planning. Therefore, this Road Plan builds upon all the goals of the Master Plan and offers goal statements, design principles, and actions to allow the Township to preserve the rural character of its roads.

Preserving rural character remains the Township's greatest challenge, and Township roads are at the core of that challenge. In addition to serving the transportation needs of residents, Township roads are prominent features of the landscape. While it may sometimes seem otherwise, roads are not designed for automobiles; they are designed for the people who drive on them, as well as those who live by them, walk, and ride bicycles on them. The purpose of this Road Plan is to promote guidelines and design standards that will provide a safe, efficient, and aesthetically pleasing road system that complements the Master Plan, preserves rural character, and serves the needs of residents of Whitewater Township.

While there is little the Township can do to prevent inevitable increases in traffic volume, there is much the Township can do to plan for it. Changes to Township roads can be done in such a way as to manage the increased traffic volume, protect and improve the rural character of roadways, and maintain the historic character of the Township's most treasured landscapes.

Whitewater Township's greatest asset is its natural beauty and rural character. The agricultural lands, panoramic vistas, open space, forests, rivers, lakes, and streams that have attracted many residents and tourists are made accessible by a network of appealing roads. These qualities combine to make Whitewater Township a uniquely beautiful Township. The goals, design principles, and recommended actions in this Road Plan are intended to preserve that beauty for future generations.

CHAPTER 1: COMMUNITY GOALS

The following community goals are adopted to guide the formulation and implementation of this Road Plan.

1. To recognize that Whitewater Township cannot achieve the goals of the Master Plan unless its roads retain their rural character, and that all roads within the Township have scenic qualities worthy of preservation.

2. To promote a road and transportation system for present and future residents of Whitewater Township that will adequately serve their needs and preserve the rural character of Township roads.

3. To promote transportation policies that will address all modes of travel and balance safety, mobility, community, and environmental goals in all road projects.

4. To work with the Grand Traverse County Road Commission, surrounding communities, the Traverse City Transportation and Land Use Study (TC-TALUS), the Michigan Department of Transportation (MDOT) and other appropriate organizations and agencies to apply road design standards to new and modified roads that will maintain the rural character of the Township's roads.

5. To protect and preserve scenic vistas and viewsheds along all roads within the Township, and along M-72, making Whitewater Township an inviting gateway to the Grand Traverse Region.

6. To promote transportation policies using Context-Sensitive Design, that produce a sense of place by preserving community identity, quality of life, and responsible growth patterns; policies that preserve resources by protecting significant scenic, natural, and historic resources within road corridors, and that support recreation by providing enjoyment for those who drive for pleasure and sightseeing.

7. To continue to assess the scenic quality of roadways in the Township, the Master Plan and zoning ordinance, permanently protected land and other resources along Township roadways, and to develop corridor management plans to protect the resources along Township's roads as well as their rural character.

8. To work with surrounding communities to preserve shared roadways, viewsheds, and landscapes which have scenic, environmental, or historic value.

CHAPTER 2: ACTIONS

The most important aspect of this Road Plan is the action that results from its adoption. The Plan will produce results only if those responsible for the recommendations are committed to implementing them.

1. TOWNSHIP PARTICIPATION IN ROAD PROJECTS AND MAINTENANCE

Although the Township controls land uses along road corridors, it has no direct control over activities within the road right-of-way. By state statute the county road commission has jurisdiction over all public roads in a township and is required to maintain those roads. However, Township involvement in proposed road projects and maintenance is important to insure that community desires for Township roads are met.

- The Township should work with the Grand Traverse County Road Commission and other appropriate agencies to implement this Road Plan.

- The Township Supervisor should contact the Grand Traverse County Road Commission monthly (more often when necessary) to learn of new road projects and scheduled maintenance to insure active Township involvement in road projects.

- The Township should begin participation in all Township road projects at the earliest possible date to maximize Township influence on roadway design.

2. CONTEXT-SENSITIVE DESIGN (CSD) AND TOWNSHIP ROADS

This Road Plan will be more successful if it is based on principles that have credibility with road officials; therefore, this Plan supports Context-Sensitive Design (CSD). CSD is supported by the American Association of State Highway Transportation Officials (AASHTO), the Federal Highway Administration (FHWA), various state Departments of Transportation (DOTs), and many local governments around the country. CSD offers an opportunity for the Township to balance economic, social, environmental, safety, and aesthetic concerns to preserve the rural character of Township roads.

In December of 2003 the governor of Michigan signed an Executive Directive requiring the Michigan Department of Transportation (MDOT) to incorporate CSD into transportation projects wherever possible. According to the Executive Directive, Context-Sensitive Design is a collaborative, interdisciplinary approach involving key stakeholders, for the development of road or transportation projects that fit their physical setting and preserve scenic, aesthetic, historic, and environmental resources, while maintaining safety and mobility. Stakeholders could include public officials, property owners, private sector representatives, community interest groups, and professionals.

CSD produces roads that are environmentally sensitive, aesthetically pleasing, and capitalize on the unique features of the communities and landscapes through which they pass. CSD creates public works projects that meet the needs of the users, neighboring communities, and the environment, and integrates those projects into the *context*, or setting, in a *sensitive* manner. Through careful planning and the consideration of different perspectives, the designs are tailored to particular project circumstances.[1]

- The Township should work with the Grand Traverse County Road Commission to ensure the use of Context-Sensitive Design in the construction, modification, and maintenance of Township roads.

- The Township should work with The Grand Traverse County Road Commission, the Grand Traverse County Commission, Grand Traverse County Planning, MDOT, TC-TALUS, other townships, and other organizations and agencies to promote Context-Sensitive Design.

3. DESIGN PRINCIPLES FOR TOWNSHIP ROADS

The Township finds that there are specific design principles that can preserve the rural character of Township roads and can serve as a guide for Township officials when considering road and transportation issues. These design principles can be found in Appendix A of this Road Plan.

- The design principles for Township roads that are specified in the Road Plan should serve as a guide for Township officials and staff when considering road and transportation issues.

4. ROADWAY CHARACTER

Drainage

The single, most distinctive feature in the character of rural roads is the way drainage is handled. The presence of wide drainage ditches interrupts the flow of the land from the road to the adjacent countryside. Many roads in the Township, mostly in the southern end of the Township, do not have conventional drainage ditches and this contributes greatly to their beauty and character. Along these roads, water flows from the road into vegetation adjacent to the edge of the road and infiltrates naturally. An additional attractive feature of the appearance of roads without drainage ditches is the interconnectedness of the road with the landscape, with features coming right to the roadway edge which allows tree canopies to form.

- Adequate drainage is important to control erosion, but a roadway design without drainage ditches should be used wherever possible.

[1] Scenic America. Policy Paper Stand on Context-Sensitive Design.

Width and Scale

The design element with the greatest effect on the scale of roads is width. Reducing the actual, or perceived, width reduces the scale of the road and preserves rural character. Preserving rural character requires a smaller scale and, therefore, narrower roads. Some design techniques that can reduce the actual or perceived width, and thus the scale of roads, are limiting the width of the pavement, narrower grading, turf shoulders, turf or planted medians, and boulevards. Planting grass and trees also reduces actual and perceived width.

A probable benefit from reduced width is that motorists tend to drive slower on narrower roads.

- The Township should promote paved and unpaved roads that are as narrow as possible.

Grading

Because reducing the actual, or perceived, width of roads preserves rural character, the maintenance activity that has the greatest effect on the width of roads is grading. Excessively wide grading increases the scale of the road and is harmful to rural character. An attractive element along many unpaved roads are the natural banks that have evolved over the years that give definition to the road and act as natural barriers to excessively wide grading.

- The Township should work with the Grand Traverse County Road Commission to implement grading practices to preserve the natural banks and narrow appearance of Township roads.

Shoulders

Turf shoulders preserve rural character by narrowing the appearance of roads. Turf shoulders are commonly used in many communities and are mentioned in the Federal Highway Administration's *Flexibility in Highway Design* as a technique to preserve rural character.

- To narrow the appearance of Township roads, turf shoulders should be used whenever climatic, soil, or traffic conditions permit.

Alignment

The alignment of Township roads is an extremely important design element in rural roadway character. The Horizontal Alignment (curves to the left or right) and the Vertical Alignment (hills) are very attractive features of many Township roads. The Township's most attractive roads are winding and contain numerous hills. Width, gentle curves and hills, trees, and vegetation all combine to create the classic rural road. Whitewater Township has many such roads and their alignments should be retained to preserve rural character. Examples are Williamsburg Road, Broomhead Road (south of Diagonal Road), Sand Lakes Road, and Guernsey Lake Road.

- The Township should oppose changes to the alignments of Township roads that change their existing character and contradict the Master Plan and/or this Road Plan.

- The Township should promote new road construction with alignments (curves and hills) that follow the contours of the land and are consistent with the design principles of this Road Plan.

Trees and Vegetation

Trees and vegetation along Township roads contribute to rural character by narrowing the appearance of the road and by providing visual interest and shade. Trees along roadways add greatly to the beauty of the road and enhance the driving experience by contributing to the interconnectedness between the landscape and the road. Tree canopies over roads are a particularly attractive feature.

- The cutting and trimming of trees and vegetation along Township roadways should be minimal to preserve rural character.

- The Township should encourage tree planting along roads.

- Trees canopies should be maintained and allowed to develop on Township roads.

Design Exceptions

According to AASHTO and the Federal Highway Administration there is flexibility available in virtually all major road design features; however, there are situations in which the application of even the minimal design criteria would result in an unacceptable negative impact on the character of a Township road and the surrounding environment. In such instances the Design Exception process allows the use of criteria lower than those specified as minimum values in the "Green Book."[2] The Design Exception process can be a valuable tool in the protection of the character of Township roads.

- The Township should use the Design Exception process when a road project or maintenance practice will have a negative impact on a road or the surrounding environment and will contradict the Master Plan or this Road Plan.

5. FUNCTIONAL CLASSIFICATION AND DESIGN CRITERIA

This Road Plan supports a hierarchy of roads that can adequately serve the transportation needs of Whitewater Township. The three basic Functional Classifications for roads are Arterials, Collectors, and Local Access. The link between Functional Classification and road

[2] AASHTO. A Policy on Geometric Design of Highways and Streets, (The "Green Book").

design is extremely important because once the Classification of the road is established the alignment, design-speed, width, shoulder width, and other major design features are determined based on the Classification of the road.

Reclassification

The Township finds the present Functional Classification of certain roads does not accurately reflect Traffic Volumes, Levels of Service, probable future development, or the goals of the Master Plan or this Road Plan. This could lead to future road modifications that would negatively impact the rural character of these roads, the state forestlands where the roads are located, the Township Memorial Forests, and the Sand Lakes Quiet Area.

- The Township should work with the Grand Traverse County Road Commission to seek reclassification of any Township road whose Functional Classification is not appropriate or consistent with the goals of the Master Plan or this Road Plan.

- The Township should petition the Grand Traverse County Road Commission to reclassify North Broomhead Road, Guernsey Lake Road, Sand Lakes Road, and Dead Horse Road to a lower Functional Classification.

New Classification

The current Functional Classification system does not offer a category that accurately reflects Traffic Volumes, Levels of Service, the goals of the Master Plan, or this Road Plan for certain roads in the Rural Forest District. This Road Plan recommends a new Functional Classification more appropriate to the retention and protection of open space and forestlands in areas that are likely to experience minimal future development.

- The Township should work with the Grand Traverse County Road Commission to develop a new Functional Classification for certain roads in the Rural Forest District that would more accurately reflect Traffic Volumes, Levels of Service, probable future development, and the goals of the Master Plan and this Road Plan.

7. NON-PAVING VS. PAVING

Non-paving

A sensitive issue is whether to pave an existing gravel or dirt road or to leave it untouched. The Township has many unpaved roads and most are in the southern portion of the Township. Many unpaved Township roads are narrow and curving and bordered by mature shade trees. In addition, they follow the contours of the land and provide the traveler with the pleasant experience of the gentle curves and hills of the classic rural road. Aside from their value as scenic and historic resources, unpaved Township roads have the advantage of lower construction costs and they generate lower speeds than paved roads. Regular maintenance will keep them passable and safe.

- The Township should recognize unpaved roads as a legitimate road surface, and that certain unpaved Township roads are important to the rural character of the Township and worthy of preservation in their present state. These roads include North Broomhead Road (south of Diagonal Road), Sand Lakes Road, Guernsey Lake Road, Roots Lake Road, Diagonal Road, Dead Horse Road, North Branch Road, Perch Lake Road, Strombolis Road, and North Muncie Lake Road.

- The Township should promote adding clay to certain Township roads to retard "washboarding," and other complaints related to gravel roads, and as an alternative to paving.

Paving

Inevitable growth and development will eventually require that certain roads be considered for paving. This should be studied carefully as to feasibility, cost, safety, maintenance, use, the aesthetic values of residents, and the goals of the Master Plan and this Road Plan. It is not necessary for paving to disrupt the beauty of the rural landscape if Context-Sensitive Design and the design principles of this Road Plan are applied.

- The Township should determine which roads are appropriate for paving.

- The Township should support paving only if Context-Sensitive Design and the principles of this Road Plan are applied.

8. MEMORIAL AND STATE FORESTS AND TOWNSHIP ROADS

Between 1930 and 1933, Frederick and Clara Wheeler deeded a number of tracts of land within Whitewater Township to the State of Michigan with language stating the deed was given in consideration of the "establishment of a memorial forest…" Each deed contains the language "to be established and maintained as a permanent forest for the benefit of [or 'in the interest of'] the public welfare, and to be designated as…" a permanent forest, a memorial designation, in honor of relatives or military heroes—some from the Revolutionary War.[3]

The Abraham Lincoln Memorial Forest, the largest of the Wheeler designations, is over 3,700 acres. There are a number other designated memorial forests ranging from 40 to 200 acres. These designated forests are an important part of the Township's cultural, historical, and environmental heritage and are part of the Pere Marquette State Forest that is located the southern half of the Township.

The Sand Lakes Quiet Area, a large natural area of approximately 2,300 acres, is also part of the Township's state forests. Motorized vehicles are prohibited and the area is highly valued by local and regional residents and visitors for hiking, cross-country skiing, and other outdoor activities. It is bordered by North Broomhead Road, Sand Lakes Road, and Guernsey Lake Road.

[3] Olson, Noonan, Ursu, and Ringsmuth. Memorial Forest Properties/Whitewater Township. 1998.

- The Township should work with the Grand Traverse County Road Commission to insure that current widths, drainage, alignments, trees, and vegetation are preserved along roads that are adjacent to, or pass through, state or Memorial forests so that natural and scenic qualities as well as historic interest along these roads are preserved. These roads include North Broomhead Road (south of O'Dell Road), Sand Lakes Road, Guernsey Lake Road, Roots Lake Road, Diagonal Road, Dead Horse Road, North Branch Road, Perch Lake Road, Strombolis Road, North Muncie Lake Road, Williamsburg Road (south of Woodcrest Lane), and Supply Road.

- The Township should work with the Grand Traverse County Road Commission to explore ways that the rural appearance of North Broomhead Road from Farrell Road to Diagonal Road could be restored; i.e. allowing trees, grass, and vegetation to grow to narrow the appearance of the road; tree planting, tree transplanting, and reseeding of portions of the shoulder; narrower grading to allow grass and vegetation to grow.

- The Township should explore the possibility of erecting appropriate signage along roadways to identify the Memorial Forests.

- The Township should oppose any modification that might cause North Broomhead Road to become a through-road between M72 and Supply Road. This modification would contradict the Master Plan and this Road Plan, and would have a severe negative impact the state forests, the Township Memorial Forests, the Sand Lakes Quiet Area, and the Boardman River Watershed.

9. ROADS WITH SCENIC AND/OR HISTORIC SIGNIFICANCE

Certain roads in the Township have exceptional character, beauty, and historical significance and the Township should make special efforts to insure preservation in their current state. These roads border or pass through lands of scenic or historic significance Such roads: 1) contribute significantly to the natural, agricultural, or historic characteristics of the Township; 2) have unusual features found on few other roads in the Township; 3) would be more negatively affected by modifications to the physical characteristics of the road than would most other roads in the Township; 4) are an integral part of land with scenic or historic significance; 5) provide a rare, substantially unchanged glimpse of the historical origins of the Township.

- The Township should recognize certain roads as having special scenic or historical significance to be preserved in their current state and should seek additional levels of protection for these roads. Examples are North Broomhead Road (south of O'Dell Road), Sand Lakes Road, North Branch Road, Roots Lake Road, Guernsey Lake Road, Diagonal Road, Dead Horse Road, and Williamsburg Road (south of Woodcrest Lane).

10. NATURAL BEAUTY ROADS

A petition may be submitted to the Grand Traverse County Road Commission to designate certain roads as Natural Beauty Roads. If accepted by the Grand Traverse County Road Commission, this designation will affect the way the County maintains its right-of-way, which is normally beyond the control of the Township. This program can be valuable a tool for protecting the rural character of Township roads.

- The Township should consider if any Township roads might qualify as Natural Beauty Roads and determine if a petition should be submitted to the Grand Traverse County Road Commission.

11. LOGGING/OIL AND GAS OPERATIONS

The Department of Natural Resources (DNR) manages the State forests in the Township. The DNR is responsible for issuing permits for logging in the State forests and the Department of Environmental Quality (DEQ) issues oil and gas drilling permits. These activities sometimes have considerable impact on the state forests and Township Roads.

- The Township Supervisor should regularly contact the DNR and DEQ to learn of new activities planned for the state forests.

- Where logging is to take place along a road, the Township should promote "beauty strips" along the roadway to maintain visual continuity and character.

- When oil and gas drilling is to take place, and new road construction is required, the Township should work with the Grand Traverse County Road Commission and/or the DNR/DEQ and support road construction that follows the principles of the Road Plan. If existing roads are used, the road should remain unchanged.

- The Township should work with the Grand Traverse County Road Commission and/or the DNR/DEQ to minimize changes to roadway character due to logging/oil and gas operations.

12. M-72 CORRIDOR STUDY

State highway M-72 is a gateway to the Grand Traverse Region and is the Township's busiest road. Whitewater Township initiated a study of the corridor from Acme to Kalkaska, which was completed in 2001. The study had support from four townships, two counties, the Grand Traverse Band of Ottawa and Chippewa Indians, TC-TALUS and Rotary Charities.

- The Township should work with other units of government, MDOT, the Grand Traverse County Road Commission, and other appropriate groups and agencies to implement the recommendations of the 2001 M-72 Corridor Study.

13. M-72 CORRIDOR ACCESS MANAGEMENT AND BOULEVARD

In mid 2000, MDOT formed a steering committee to assist in the preparation of the M72 Access Management Plan. Whitewater Township was a member of the committee and the Plan was completed in June 2001. It addresses access management along the M72 corridor from Acme to Grayling. The goal of the plan is to improve traffic operations and safety along M72 while maintaining reasonable access to existing and future development along the road. The Township adopted MDOT's M-72 Access Management Plan Memorandum of Understanding, but added language that the Township concluded the plan was incomplete as it did not incorporate medians and boulevards as viable access management tools, nor did it address the north/south traffic concerns at the intersection of M-72 and Elk Lake/Williamsburg Roads.

At the same time, MDOT announced plans to widen M-72 to 5 lanes in Whitewater and Acme Township. In response, the two townships initiated a joint effort to establish a boulevard on selected portions of M-72 in Acme and Whitewater Townships. It was concluded that a boulevard was a more safe and esthetic approach than the proposed 5 lane highway. Support was received from Township residents and various State and local representatives, including TC-TALUS and the Grand Traverse County Road Commission.

- The MDOT access management recommendations in the M-72 Access Management Plan should be implemented.

- The Township should investigate ways to facilitate pedestrian and vehicular connections across M-72 and to improve the safety of the M-72/Williamsburg Road/Elk Lake Road intersection.

- The Township should continue to work with Acme Township and MDOT to evaluate and establish a boulevard on selected portions of M-72 in Acme and Whitewater Townships.

- The Township should support continued meeting of the M-72 Corridor Committee as a means to promote communications between MDOT and the local units of government along the M-72 corridor.

14. US-31 REGIONAL CORRIDOR STUDY

In October 1996 a consulting team, in cooperation with MDOT and TC-TALUS completed the evaluation of alternatives for the US-31 Regional Corridor Study. A transportation corridor, with three segment options in the southeast quadrant, was recommended for

advancement to the next level of engineering design and environmental impact evaluation. One of these segment options, Alternative No. 5, followed Bates Road south, then swung southeast south of Hawley Road, crossing M-72 near Moore Road, cutting through the Industrial District of Whitewater Township to Williamsburg Road, thence south to Supply Road, and then followed Supply Road to Hammond Road.

Whitewater Township's position is that Alternative No. 5 was not properly researched. In addition, it was not given a public hearing, as were the other proposals. Alternative No. 5, as proposed, would completely redefine the character of Whitewater Township and have a severe negative impact on the quality of life by bisecting the Industrial District, destroying Millbrook Estates and the preserved wetlands, and cutting through the Abraham Lincoln Memorial Forest (a public resource protected and preserved by deed restrictions). In addition, Alternative No. 5 is nearly 6 miles longer than the other proposed routes.

- The Township should continue its opposition to US-31 Corridor Alternative No. 5 per a resolution adopted by the Township Board dated November 12, 1996.

15. SPEED LIMITS

Speed limits are set on the basis of engineering and traffic/speed studies. There are two reasons for involving township officials when speed studies are reviewed: first, township officials are usually the first approached by concerned citizens; second, township officials may have valuable information about land use planning and road design that should be considered.

- The Township should notify the Grand Traverse County Road Commission in writing stating the Township's desire to be included in speed study reviews for the Township.

- The Township should support a reduction in the statutory 55 mph speed limit for gravel roads for safety and aesthetic reasons; a reduction would make it easier to apply design standards intended to preserve the rural character of Township Roads by eliminating much of the need for the Design Exception process.

16. NON-MOTORIZED TRAVEL

Well planned pedestrian paths and bikeways can encourage non-motorized travel. They also enhance ecological greenways, provide recreational opportunities, and encourage healthy exercise. These pathways might be found along stream corridors, roadways and abandoned rail lines. Some portions of these pathways could be constructed by developers in the course of developing land; others might eventually be built by the Township.

- The Township should support the construction of safe and accessible pedestrian paths and bikeways.

17. THE BOARDMAN RIVER VALLEY MASTER PLAN

In 1999, East Bay, Paradise, and Union Townships initiated a project to preserve the "rural, wild, and recreational habitats that now exist in the Boardman River Valley." This resulted in the Boardman River Valley Master Plan that provides a conceptual framework for future development and preservation within the portion of the Boardman River Valley located between Garfield Road and Supply Road/ Fife Lake Road. A primary goal of this effort is to preserve the narrow, winding, scenic character of Brown Bridge Road. Because of its proximity to these townships, Whitewater Township shares many environmental resources and recreational habitats such as the Boardman River watershed. The Township also shares North Broomhead Road with Union Township.

- The Township should work with Union Township to preserve the portion of Broomhead Road that is within Union Township.

- The Township should incorporate the Boardman River Valley Master Plan into the Township Master Plan by reference.

18. RIVER AND STREAM CROSSINGS/BRIDGES

Roadway crossings of rivers and streams can be a major source of pollution and runoff that does damage to water quality and fish habitat. There are a number of locations where Township roads cross rivers and streams. The Township has one bridge, the Broomhead Road/Boardman River crossing, that includes a raised edge that has been effective in preventing roadway sand from washing into the Boardman River. In August of 2001 the Department of Natural Resources issued a directive that the stream crossing on Moore Road be modified to reduce erosion and runoff.

- The Township should work with the Grand Traverse County Road Commission to correct the erosion/runoff problem at the Moore Road stream crossing and any other river/stream crossing where an erosion problem exists.

- The Township should support bridge construction and repair that is safe, has adequate Capacity, uses Context-Sensitive Design, and the design principles of this Road Plan.

19. SHARED ROADS AND COMMON ENVIRONMENTAL RESOURCES

Many Township roads are part of larger viewsheds, scenic and/or protected areas (such as the Township Memorial Forests or the Sand Lakes Quiet Area), watersheds, or other environmental resources. These roads and resources cross Township and county borders. Opportunities to create significantly larger scenic, environmental, and recreational protected areas are often missed because many communities do not take advantage of their close proximity to work together.

- The Township should work with surrounding communities to develop common goals for the preservation of shared scenic roads and environmental resources. Examples of shared scenic roads are M-72, Elk Lake Road, North Broomhead Road (south of Diagonal Road), Roots Lake Road, Sand Lakes Road, Guernsey Lake Road, Supply Road, North Branch Road, and Bunker Hill Road. Examples of other shared resources are The Sand Lakes Quiet Area, the Boardman River, and the Boardman River watershed.

20. SAFETY AND LIABILITY

Safety is a legitimate concern; however, safety concerns need not be an obstacle to good road design and the preservation of rural character. If safety is used as a reason for road design or maintenance that contradicts this Road Plan or the Master Plan, the Township should work with the Grand Traverse County Road Commission to seek alternative designs that will comply with the Master Plan and the design principles of this Road Plan.

It is important for design engineers to do their jobs thoroughly and carefully; however, the Township agrees with AASHTO and the Federal Highway Administration that concerns over liability need not be an impediment to flexibility and good road design. Because of the flexibility available there are alternatives to almost every major road design feature. A well engineered project that meets defined community goals through a well documented public process should not cause undue concern.

- The Township should insist that road designs or maintenance practices that contradict this Road Plan or the Master Plan because of safety or liability concerns be supported by actual accident experience with a demonstrated relationship to roadway geometry or condition.

- The Township should work with the Grand Traverse County Road Commission to use available flexibility and Context-Sensitive Design to seek alternative designs for road projects or maintenance that contradict the Master Plan or this Road Plan.

21. FUNDING TOWNSHIP ROAD PROJECTS

Township Road projects often require matching funds from the Township. (No match is required for work on primary county roads or for maintaining local county roads.) Funding options the Township should consider are: 1) appropriation of Township general fund monies, if available; 2) establishment of special assessment districts; 3) levying a voted road millage; 4) seeking grants for special projects.

If a voted road millage is considered, proposed road projects and cost estimates need to be identified so that the time period of the millage and the millage request can be established.

Special grant projects that might be considered include bike paths, beautification, access roads, erosion control, and economic development.

- The Township should implement the Recommendations for Whitewater Township Road Projects and Maintenance that are found in Appendix E to the extent feasible and explore appropriate funding options.

- The Township should seek grant money whenever such grants might fund the actions and recommendations of this Road Plan.

CHAPTER 3: GLOSSARY OF TERMS

The following terms are commonly used in road design and their use will improve communication of Township desires for its roads.[4]

Alignment—The way in which a road moves across the landscape; its curves, straight sections, and hills.

> **Horizontal Alignment**—the movement of a roadway to the left or right (curves).
>
> **Vertical Alignment**—the movement of a roadway up and down (hills). Many aesthetically appealing roads have horizontal and vertical alignments that are integrated with their adjacent natural and built environments and are thus "context-sensitive."

Capacity—The maximum rate at which vehicles can be reasonably expected to traverse a point or section of a road.

Context-Sensitive Design—Creates public works projects that meet the needs of the users, the neighboring communities, and the environment. It integrates projects into the *context* or setting in a *sensitive* manner through careful planning, consideration of different perspectives, and tailors designs to particular project circumstances.

Clear Zone—An area along a roadside clear of potential hazards that a car might strike such as trees, rocks, or utility poles.

Crash Rate—the number of reported crashes divided by the vehicle miles traveled. Traffic engineers compute crash rates and severe crash rates (rates of crashes in which an injury or fatality occurred) as a way of assessing the relative safety of a given roadway, intersection, etc. An important aspect of any study of an existing road is its actual safety history (crash rate, types of crashes).

Cross-Section Elements—Those elements that comprise the width of the highway right-of-way, including:

- The traveled way (portion of the road used by vehicles, not including shoulders).
- The roadway (the portion of the roadway used by motor vehicles and bicycles, including shoulders).
- The median area (the physical or painted separation provided on divided highways)
- Bicycle and pedestrian facilities.
- Utility and landscape areas.
- Drainage channels and side slopes.
- Clear zone width.

[4] Deborah L. Myerson. Getting It Right in the Right-Of-Way. Scenic America, 2000.

Design Controls—Factors that determine the design of the road, including the design speed, functional classification, traffic volume (capacity), terrain (level, rolling, mountainous), and location of the road (rural, suburban, urban).

Design Exception—The adoption of a design value that is outside the minimum (or maximum) value called for by the transportation agency's design standards. A project typically adopts a design exception in a project where the application of even the minimum criteria would result in unacceptably high costs or major impact on the adjacent environment.

Design Speed—The highest speed at which a motorist can drive safely under ideal road and weather conditions, regardless of the posted speed.

Functional Classification—the categories for every street and road in a state according to the role it is supposed to play in moving traffic through the roadway system. Roads are assigned to the following functional classifications:

- Local streets and roads—intended to serve as access to land uses.
- Collector streets and roads—"transition" roads collecting traffic from local roads and distributing it to arterials; and
- Arterials—intended to serve longer distance "through" trips.

Historic Significance—Character, interest, or value as part of the development, heritage, culture, or environment of the Township, county, state, or country, as the location of an important local, county, state or national event; or through identification with a person or persons who made important contributions to the development of the community, county, state, or country.

Level of Service (LOS)—A qualitative measure describing the character of traffic operating on a road or street. LOS reflects both to traffic volume as well as the characteristics of the road. Engineers use LOS to identify problems and to direct the design of the road (e.g. to make decisions about when a road needs to be widened). Transportation engineers use a letter system to grade the extent of motor vehicle congestion on a road from "A" for the least amount of congestion with low volumes and high speeds, to "F" for unacceptable congestion or stop-and-go traffic.

Scenic Road Corridor—A type of preservation district in which the geographic area is identified with a designated road. The road corridor minimally includes the area within the right-of-way, including the road pavement, any structures such as bridges and signs, shoulders and vegetation, and may also include, a) all, or portions of, adjacent properties, b) features located on adjacent property such as buildings, structures, or vegetation, c) potential conservation easements or other easements that would protect scenic vistas and viewsheds, and/or d) existing easements protecting privately owned drives or lanes.

Scenic Significance—Importance as a result of appearance or character that remains relatively unchanged from, and embodies the essential appearance related to, a culture from an earlier historic or prehistoric period, as a result of a unique location, appearance, or physical character that creates an established or familiar vista or visual feature; or as a

geologic or natural feature associated with the development, heritage, or culture of the community, county, state, or nation.

Stopping Sight Distance—The distance needed for a driver to perceive an object in the road and brake the vehicle safely before striking the object.

Traffic Volume—the number of vehicles a roadway carries as measured at an hourly (e.g. peak hour volume) or average daily traffic (ADT) rate. Highway engineers typically attempt to forecast the number of vehicles that will be using the road up to 20 years in the future (based on predictions of the type and intensity of land use adjacent to the road and in the region) and then design the road for that capacity.

APPENDIX A

DESIGN PRINCIPLES FOR TOWNSHIP ROADS

The design principles that follow are intended to guide decisions made by the Planning Commission, the Township Board, the Zoning Board of Appeals, the Zoning Administrator, and all other Township employees and officials charged with administering the zoning ordinance and other regulations affecting new road construction and/or road modification on public and private roads.

GENERAL STATEMENTS:

- Road design should consider the long-term sustainability of the community, its environment, and the economy.
- Road design should improve the physical design and condition of the Township, its agricultural and state forestlands, its Village District, and all road corridors.
- Road design should consider impacts beyond Township borders.
- Road design should be sensitive to the surrounding environment, and the project's context, and the physical location of the project should be carefully considered.

Roadway Character[5]

Road Layout

- New roads should be located at the edges of farm fields, away from any stream or wetland, and at the edges of forests to prevent forest fragmentation.
- Roads in new developments should be designed around areas that are worthy of protection.
- Houses in new developments should be sited into the landscape first; then the road should be designed around the house sites and preservation areas.
- The number and frequency of auto access driveways along road corridors should be minimized.
- Designated bike lanes should be used on high volume roads and in the village district where it is dangerous for a bike and vehicles to travel in the same lane. A bicycle lane should be one-directional and going with the flow of traffic. It can be separated from the roadway be a grass-planted area.
- Tree planting along Township roads should be encouraged.

Preservation of Existing Features

- On new or existing roads, care should be taken to preserve trees, vegetation, hills, curves, or other noteworthy landscape features.
- Viewsheds from roads should be protected.
- Historic and/or environmentally sensitive features such as wetlands, rivers, and streams should be considered in road design.

[5] Dutchess Land Conservancy. Design Guide for Rural Roads, 1998.

- Earth-tone paints and self-weathering metals that match the surroundings should be used in environmentally sensitive areas.

Road width

- Road width should remain as narrow as possible to preserve the rural character of the road.
- Road width should be based on daily use and not limited use by over-sized vehicles or occasional heavy traffic.
- Road widths of 16 to 18 feet on existing roads should be retained and new roads of this width should be encouraged wherever possible; rarely should any Township road exceed 20 feet in width.
- Seasonal use characteristics, such as access to campgrounds or ski areas, should be considered in design.
- On-street parking should be considered in the Village District as road width is established.
- Two-lane roads should be promoted wherever possible because of their importance to rural character.
- The scale and width for Village District roads should be consistent with the traditional villages and neighborhoods in the Grand Traverse Region.

Circular Turnarounds

- Cul-de-sac roads should be designed for the vehicles that most frequently use them on a daily basis, not the occasional use of oversized vehicles.
- Circular turnarounds with radii of 30 feet should be used wherever possible; circular turnarounds with radii of 40 feet or more should be discouraged.
- Where a turnaround radius greater than 40 feet is necessary, a planted center island should be incorporated into the design to soften the visual impact.

Drainage

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- Adequate road drainage is important to prevent erosion, but roadway designs without conventional drainage ditches should be used wherever possible so as not to interrupt the visual flow of the land from the road to the adjacent countryside.

Alignments

- The Township's aesthetic values, historic settlement patterns, travel patterns, topography, and design preferences should play an important role in determining alignments (the way that a road moves across the landscape; its curves, straight sections, and hills).
- Existing curves (horizontal alignment) should be retained to preserve rural character.
- Existing hills (vertical alignment) should be retained to preserve rural character.
- Speed limits should be lowered, where necessary, to retain aesthetic alignments and narrow widths.
- New roads construction and road modifications should follow the contours of the land.

- Existing curves and hills should not be eliminated unless they pose a flagrant safety hazard, supported by actual accident experience with a demonstrated relationship to roadway geometry and condition, that cannot be solved by lowering speed limits.

Shoulders

- Turf shoulders should be used wherever possible to maintain the narrow appearance of the road.

Cuts and Fills

- Unnecessary cuts and fills should be avoided.
- New roads should follow the contour of the land.

Intersections

- Intersections should be designed with adequate, but not excessive, radii.

- Curb radii should be kept to a minimum, especially in the Village District, as this forces lower speeds.

Crosswalks

- Pedestrian crosswalks should be designed to be highly visible to drivers.

Bridges

- Bridges should be designed using the principles of this Road Plan, and natural materials and self-weathering metals should be used as much as possible.

Utilities

- Utility structures should be coordinated with the landscape to ensure they are positioned away from key scenic areas.
- Gas lines should be placed underground.
- Electric utilities should be placed to minimize impact on the appearance of the roadway and corridor. Utilities should be underground where possible, kept within the road right-of-way, grouped on one side of the road and/or placed behind screening tree lines.
- Telephone and cable utilities should be co-located with electric lines and treated in the same fashion as other utilities to minimize impact on the road corridor appearance.

Maintenance

- Adequate road maintenance is important, but should follow the principles of this Road Plan.
- Grading of gravel and dirt roads should be as narrow as possible to maintain a narrow appearance and to preserve existing turf and vegetation.
- To maintain the narrow appearance of roads, existing gravel strips along Township roads should not be widened.

- To maintain the appearance of roads, banks that have evolved as natural barriers along dirt and gravel roads should not be progressively widened by excessive grading.
- Spraying of trees, foliage, bushes, or shrubbery along roadways with damaging chemicals should be prohibited.
- The use of a mower or a “brush hog” on small trees, tree branches, or shrubbery along roadways should be limited.
- Trimming and cutting of trees and vegetation along roadways should be minimal to preserve rural character.
- To protect grass and vegetation along the shoulder, snow plowing should not be excessively wide.
- Tree canopies should be preserved and allowed to develop.

APPENDIX B

SUPPORTING MATERIAL

Books

Federal Highway Administration. Flexibility in Highway Design.

American Association of State Highway Transportation Officials. A Policy on Geometric Design of Highways and Streets. (The "Green Book.")

American Association of State Highway Transportation Officials. The Context-Sensitive Design Guide. (Tentative title. Release date scheduled for fall of 2004, as a companion to the "Green Book").

Dutchess Land Conservancy, Inc. Design Guide For Rural Roads, 1998.

Reports

Olson, Noonan, Ursu & Ringsmuth. Memorial Forest Properties/Whitewater Township, 1998.

R. Clark Associates, Inc. M-72 Corridor Study, 2001.

Department of Natural Resources Management Plan for the Pere Marquette State Forest, 1994.

Plans

Progressive AE and Langworthy, Strader, LeBlanc, Inc. M-72 Access Management Plan. 2001 (Prepared for State of Michigan Department of Transportation).

Boardman River Valley Master Plan

Grand Traverse County Master Plan

Whitewater Township Master Plan

APPENDIX C

ROADWAY CLASSIFICATIONS

Regional Arterials
M 72 E

Local Arterials
Elk Lake Road
Supply Road
Williamsburg Road

Principal Collectors
Angell Road (West of Elk Lake Road)

Secondary Collectors
Ayers Road
Baggs Road*
North Broomhead Road
Bunker Hill Road
Cook Road
Cram Road
Dead Horse Road
Guernsey Lake Road
Hawley Road
Palaestrum Road
Sand Lakes Road
Skegemog Point Road

Local Access Roads
Angell Road (East of Elk Lake Road)
Applewood Lane
Bluff Trail (East-West section)
Bowman Road
Briarwood Drive
Carns Road
Church Street
Clearview Drive
Crisp Road
Deal Road
Diagonal Road
Drake Lane (East-West section)
Elk Lake Trail (South of Angell Road)
Elk View Drive
Erickson Road
Farrell Road
Gay Road
Hillendale Drive
Hollyberry Lane
Hursh Road
Innis Lane
Island Lake Road
Lackey Road
Lakeside Trail
Lossie Road
Mabel Road
Moore Road
North Muncie Lake Road
Munro Road
North Branch Road
O'Dell Road
Old M 72
Park Road (to Township Park)
Perch Lake Road
Pineneedle Lane
Raintree Drive
Rickerd Court
Roots Lake Road
Samels Road
Shelly B Lane
Strombolis Road
Topview Drive
Townline Road
Vinton Road
Watson Road
Whitney Road
Woodcrest Lane

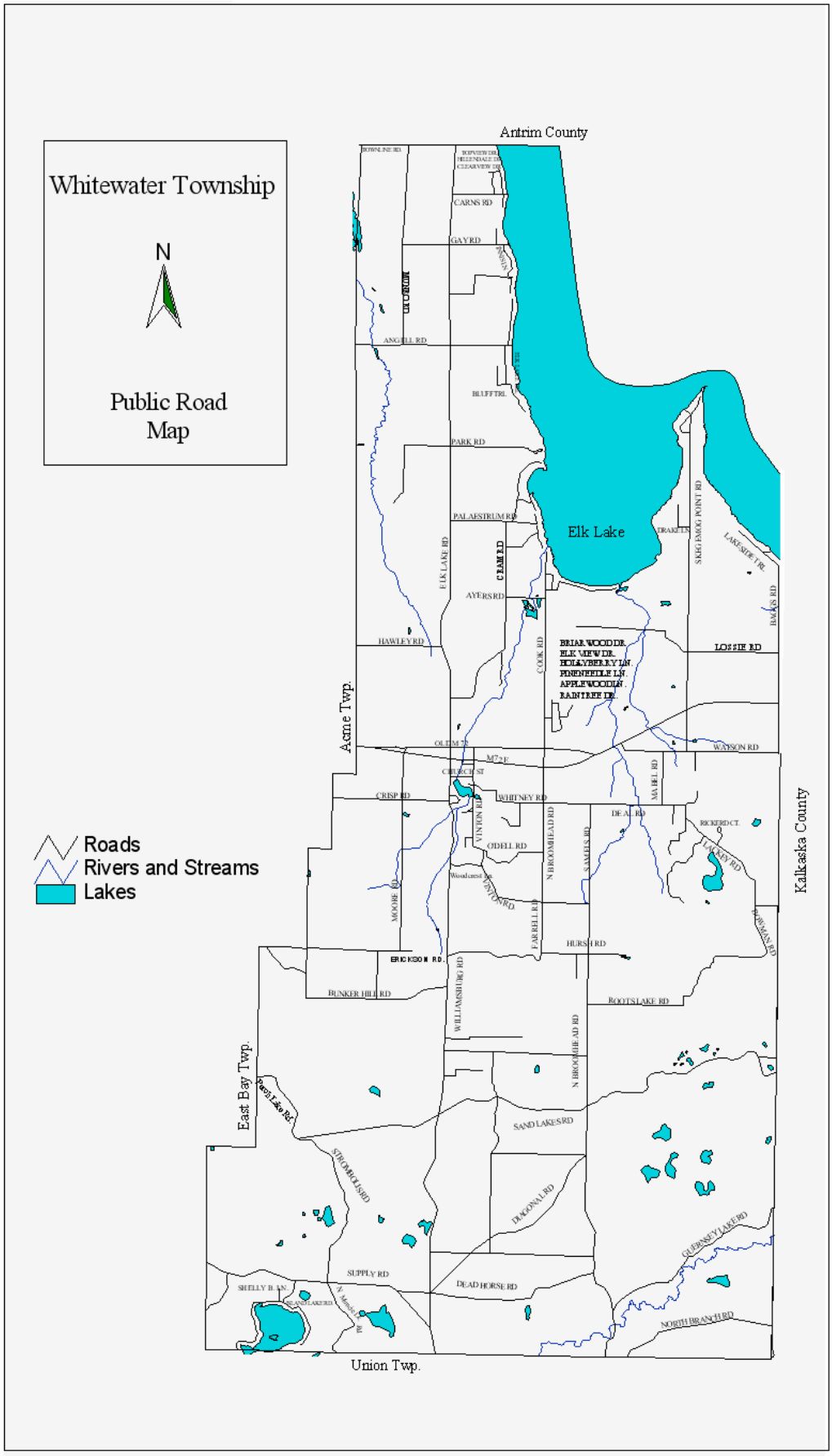
*Maintained by the Kalkaska County Road Commission

APPENDIX D

MAPS

Whitewater Township Public Road Map

Whitewater Township State Land and Memorial Forests

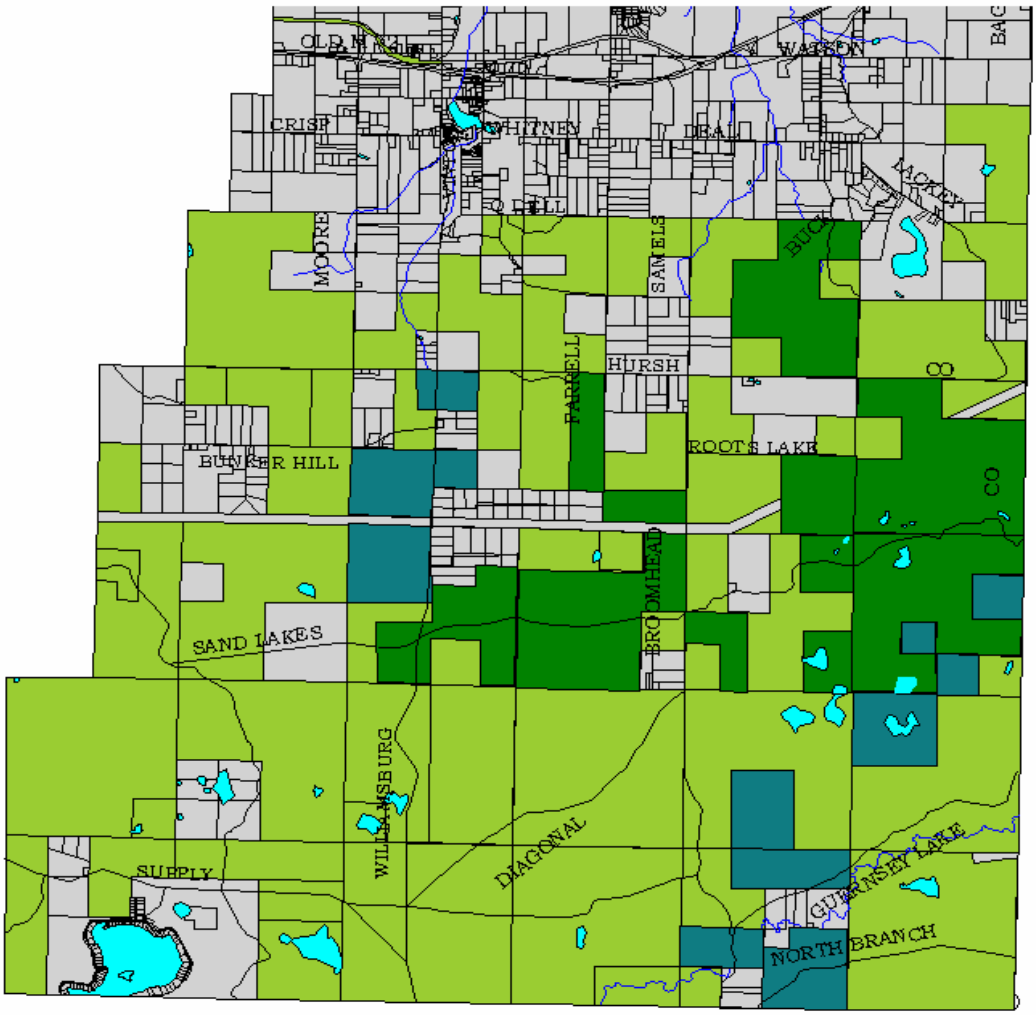

Whitewater Township
N
Public Road Map
Roads
Rivers and Streams
Lakes
Antrim County
Elk Lake
Acme Twp.
East Bay Twp.
Union Twp.
Kalkaska County
BOWLINE RD
CARNS RD
GAY RD
ANGELL RD
BLUFF TRL
PARK RD
PALAESTRUM RD
ELK LAKE RD
CRAM RD
AYERS RD
HAWLEY RD
COOK RD
BRIARWOOD DR.
ELK VIEW DR.
HOLLYBERRY LN.
PINENEEDLE LN.
APPLEWOOD LN.
RAINTREE DR.
DRAKE LN
SKEGEMOG POINT RD
LAKESIDE TRL
BAKOS RD
LOSSIE RD
WATSON RD
OLIVE M 72
M72 E
CRUECHEST
CRISP RD
WHITNEY RD
VINTON RD
ODELL RD
N BROOMHEAD RD
SAMELS RD
MABEL RD
DEAL RD
RICKERD CT.
LAKEY RD
MOORE RD
Woodcrest Dr
VINTON RD
FARRELL RD
HURSH RD
ERICKSON RD.
BUNKER HILL RD
WILLIAMSBURG RD
ROOTS LAKE RD
AUBURN RD
SAND LAKES RD
STRONG LAKE RD
DIAGONAL RD
GUERNSEY LAKE RD
SUPPLY RD
DEAD HORSE RD
NORTH BRANCH RD
SHELLY B. AN
SAND LAKES RD
N. Meadow Lake Rd

Whitewater Township

State Land
And
Memorial Forests

- Rivers
- Roads
- Lakes
- State of Michigan
- Private Property
- Abe Lincoln Memorial Forest
- Other Memorial Forests

N



APPENDIX E

RECOMMENDATIONS FOR WHITEWATER TOWNSHIP ROAD PROJECTS AND MAINTENANCE

State Highway	Classification	Road Type	Recommendation/Comments	Priority
M 72 E	Regional Arterial	Paved	Pursue actions as specified in township road plan.	High
Primary County Roads				
Angell Rd (west of Elk Lake Rd)	Principal Collector	Paved	Major east-west road, commercial and other traffic, edge/shoulder/drop off repairs	Med
Elk Lake Rd	Local Arterial	Paved	Major north-south road, commercial and other traffic, rebuild/striping/tree planting	High
Supply Rd	Local Arterial	Paved	Major east-west road, basic maintenance	Low
Williamsburg Rd	Local Arterial	Paved	Major north-south road, edge problems depending on location, monitor Grand Traverse County Road Commission reconstruction.	High
Local County Roads				
Angell Rd (east of Elk Lake Rd)	Residential or LAR	Paved	Basic maintenance	Low
Applewood Ln Wintergreen Hts Sub	Residential or LAR	Paved	Edge repairs	Low
Ayers Rd	Secondary Collector	Paved	Edge repairs	Low
Bluff Trl (east-west section)	Residential or LAR	Paved	Basic maintenance	Low
Bowman Rd	Residential or LAR	Dirt-Seasonal	Basic maintenance	Low
Briarwood Dr Wintergreen Hts Sub	Residential or LAR	Paved	Edge repairs	Low
N. Broomhead Rd	Secondary Collector	Paved	Basic maintenance, let edges grow in. Re-classify as local access road.	Low
N. Broomhead Rd	Secondary Collector	Gravel	Basic maintenance, let edges grow in. Re-classify as local access road.	Low

Local County Roads	Classification	Road Type	Recommendation/Comments	Priority
N. Broomhead Rd	Secondary Collector	Dirt	Basic maintenance. Re-classify as local access road.	Low
Bunker Hill Rd	Secondary Collector	Gravel	Basic maintenance, let edges grow in. Evaluate for paving- keep width narrow.	Med
Carns Rd	Residential or LAR	Paved	Edge repairs, fix drainage problems @ Elk Lake Rd, gravel washes onto pavement/sweep pavement.	Low
Church St	Residential or LAR	Paved	Edge repairs	Low
Clearview Dr Elk Lake Farms Sub	Residential or LAR	Paved	Edge repairs	Low
Cook Rd	Residential or LAR	Paved	Basic maintenance	Low
Cram Rd	Residential or LAR	Paved	Basic maintenance	Low
Crisp Rd	Residential or LAR	Gravel	Make modifications to existing gravel surface. Evaluate for paving- keep width narrow.	Med
Dead Horse Rd	Secondary Collector	Dirt-Seasonal	Basic maintenance Re-classify as local access road.	Low
Deal Rd	Residential or LAR	Gravel	Evaluate for paving – keep width narrow	High
Diagonal Rd	Residential or LAR	Dirt-Seasonal	Basic maintenance	Low
Drake Ln (east-west section)	Residential or LAR	Gravel	Make modifications to existing gravel surface.	Med
Elk Lake Trl (south of Angell Rd)	Residential or LAR	Paved	Drainage problems at Angell Rd, gravel washes onto pavement/sweep pavement.	Low
Elk View Dr. Wintergreen Hts Sub	Residential or LAR	Paved	Edge repairs	Low
Erickson Rd	Residential or LAR	Gravel	Basic maintenance	Low

Local County Roads	Classification	Road Type	Recommendation/Comments	Priority
Farrell Rd	Residential or LAR	Dirt	Basic maintenance	Low
Gay Rd	Residential or LAR	Paved/ Gravel	Edge repairs & drainage @ Elk Lake Rd, gravel washes onto pavement/sweep pavement.	Low
Guernsey Lake Rd	Secondary Collector	Dirt- E ¾ Seasonal	Basic maintenance Re-classify as local access road.	Low
Hawley Rd	Secondary Collector	Paved	Basic maintenance, gets traffic	Med
Hillendale Dr Elk Lake Farms Sub	Residential or LAR	Paved	Edge repairs	Low
Hollyberry Ln Wintergreen Hts Sub	Residential or LAR	Paved	Edge repairs	Low
Hursh Rd	Residential or LAR	Dirt- E ½ Seasonal	Basic maintenance	Low
Innis Lane	Residential or LAR	Paved	Basic maintenance	Low
Island Lake Rd	Residential or LAR	Paved	Basic maintenance	Low
Lackey Rd	Residential or LAR	Gravel	Evaluate for paving- keep width narrow, more development coming.	High
Lakeside Trl	Residential or LAR	Gravel	Basic maintenance	Low
Lossie Rd	Residential or LAR	Gravel/ Dirt	Needs grading and drainage work.	Med
Mabel Rd	Residential or LAR	Gravel	Evaluate for paving- keep width narrow.	High
Moore Rd	Residential or LAR	Paved/ Gravel	1) Make improvements to existing gravel surface. Evaluate for paving- keep width narrow. 2) Implement DEQ requirements for stream crossing	Med High
N. Muncie Lk Rd	Residential or LAR	Dirt- Seasonal	Basic maintenance	Low

Local County Roads	Classification	Road Type	Recommendation/Comments	Priority
Munro Rd	Residential or LAR	Paved	Edge repairs towards Angell Rd, heavy truck use	Med
North Branch Rd	Residential or LAR	Dirt-Seasonal	Basic maintenance	Low
O'Dell Rd	Residential or LAR	Dirt-Seasonal	Improve with gravel/clay.	Med
Old M 72	Residential or LAR	Paved	Implement village district standards.	High-village district
Palaestrum Rd	Residential or LAR	Paved	Edge repairs	Low
Park Rd (to WWT Park)	Residential or LAR	Gravel	Make modifications to existing gravel surface. Evaluate for paving- keep width narrow.	Med
Perch Lake Rd	Residential or LAR	Dirt-Seasonal	Basic maintenance	Low
Pineneedle Ln Wintergreen Hts Sub	Residential or LAR	Paved	Edge repairs	Low
Raintree Dr Wintergreen Hts Sub	Residential or LAR	Paved	Edge repairs	Low
Rickerd Court	Residential or LAR	Paved	Basic maintenance	Low
Roots Lake Rd	Residential or LAR	Dirt-Seasonal	Fix holes.	Low
Samels Rd	Residential or LAR	Dirt-Seasonal	Basic maintenance	Low
Sand Lakes Rd	Secondary Collector	Dirt-Seasonal	Basic maintenance Re-classify as local access road.	Low
Shelley B Ln	Residential or LAR	Paved	Basic maintenance	Low
Skegemog Point Rd	Secondary Collector	Paved	Basic maintenance	Low

Local County Roads	Classification	Road Type	Recommendation/Comments	Priority
Strombolis Rd	Residential or LAR	Dirt-Seasonal	Basic maintenance	Low
Topview Dr Elk Lake Farms Sub	Residential or LAR	Paved	Edge repairs	Low
Townline Rd	Residential or LAR	Paved/ Gravel	Basic maintenance, gets traffic	Med (west of Elk Lake Rd)
Vinton Rd	Residential or LAR	Paved/ Gravel	Basic maintenance, drainage problems	Med
Vinton Rd	Residential or LAR	Dirt-Seasonal	Basic maintenance	Low
Watson Rd	Residential or LAR	Gravel/ Paved	Evaluate for paving, west end to Mabel Rd- keep width narrow.	High
Watson Rd	Residential or LAR	Dirt-Seasonal	Basic maintenance	Low
Whitney Rd	Residential or LAR	Gravel	Make improvements to existing gravel surface. Evaluate for paving- keep width narrow.	Med
Woodcrest Ln	Residential or LAR	Dirt-Seasonal	Basic maintenance	Low

APPENDIX F

PHOTOGRAPHS OF TOWNSHIP ROADS

WILLIAMSBURG ROAD

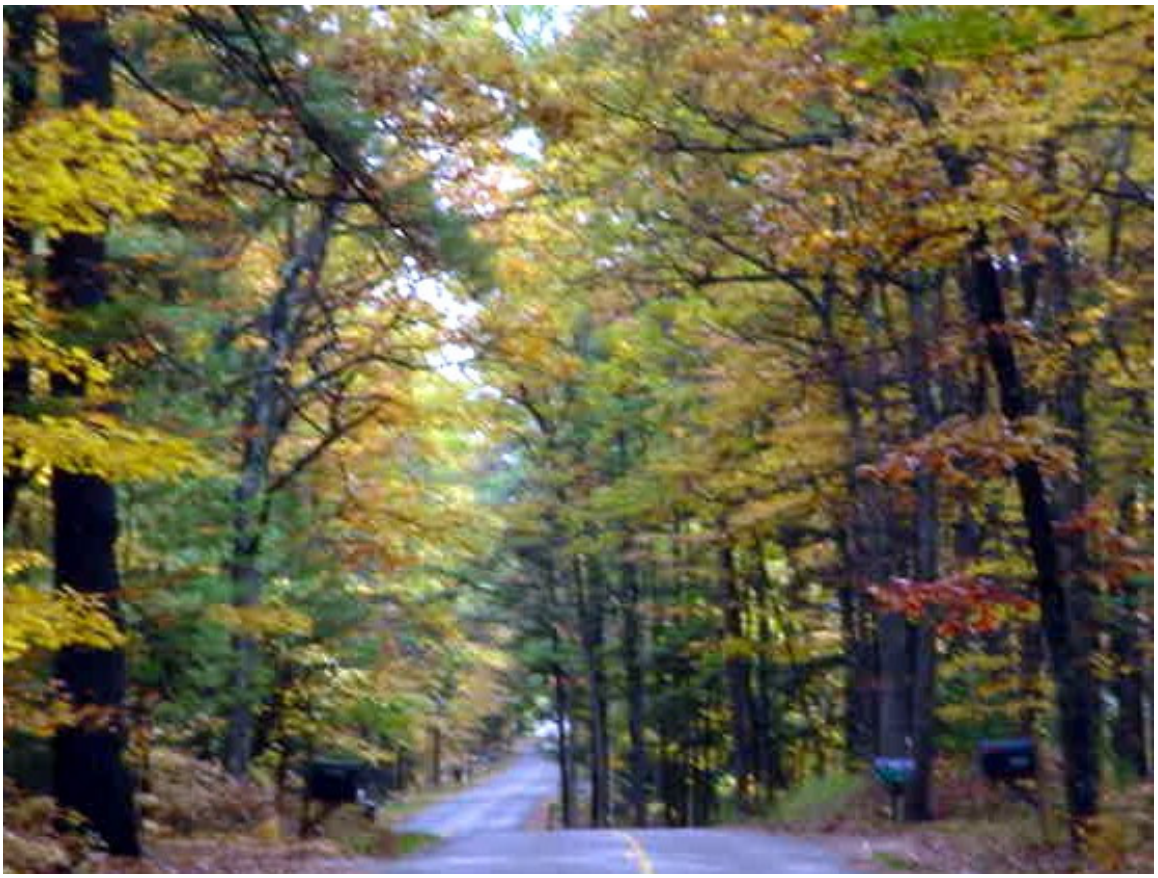
It is not necessary for paving to disrupt the beauty of the rural landscape. A narrow width, the absence of drainage ditches, and the preservation of trees contribute to the smaller scale and beauty of Williamsburg Road.

BROOMHEAD ROAD

Dirt and gravel are a legitimate road surface and part of the rural character. Preservation of the banks by narrow grading preserves roadway character. In addition, vegetation and trees coming to the roadway edge create an interconnectedness with the landscape along Broomhead Road.

INNIS LANE

Maintaining horizontal and vertical alignments (curves and hills) creates interest and preserves rural character on Innis Lane.



SKEGEMOG POINT ROAD

Turf shoulders and roads that follow the natural contours of the landscape preserve roadway character. The absence of drainage ditches, a narrow width, and a tree canopy also contribute to the beauty of Skegemog Point Road.