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MUKWONAGO MULTI-USE TRAIL STANDARDS



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The Village of Mukwonago Comprehensive Plan requires the installation and connection of multi-use trails within and throughout the community. Where the trails are required and constructed with new development, these standards are provided for consistency of design and construction within and between developments, for the protection and safety of path users, for the mitigation of conflicts between path users and neighboring private property owners and for reduction of long term maintenance costs of the trails.

D.1 GENERAL LOCATION CRITERIA

1. Multi-use trails should be located in accordance with recommendations contained in the Village Comprehensive Plan and should be provided to connect residential areas to each other; to park and pool and park and ride transit stations; to commercial, industrial and other major activity centers; and to recreational areas.
2. Proposed new trails should be located so as to connect to existing trails in adjacent residential, commercial and industrial areas and in major parks and parkways so as to form an integrated system.
3. Trails generally should not be located immediately adjacent to roadways, except as directed by the Comprehensive Plan.
4. Trails that are located adjacent to roadways shall be located as far from the roadway as reasonably practicable.

D.2 GENERAL RULES

The following general rules apply to these standards:

1. Developer and/or subdivider shall be responsible

for the cost of design and installation, with all appurtenances, for trails required within the subdivision and within adjacent right-of-way.

2. These standards will apply in most situations. When special circumstances exist, such as constructing a trail within a right-of-way adjacent to a public street, exceptions can be granted by the Village Engineer and Village Planner. If exceptions are granted, then any deviation to the design pursuant to these standards shall conform with safety guidelines found in the "Guide for the Development of Bicycle Facilities by the American Association of State Highway and Transportation Officials" (AASHTO).
3. In the absence of the Village Engineer and/or Village Planner, a Committee of the Building Inspector, Police Chief and Fire Chief shall determine compliance with these standards.

D.3 DESIGN

Whenever feasible, the multi-use trail design shall be part of the development design and/or layout so the trail and trail corridor shall conform to AASHTO Guidelines and the following Village of Mukwonago standards:

1. The trail corridor shall be at least 20 feet wide as illustrated in Figure 1.
2. The trail corridor shall accommodate a path width of a 10-foot base and an 8 foot paved surface as illustrated in Figure 1.
3. The trail shall provide for two-way traffic.
4. When the trail corridor is straight (non-curved), the alignment shall accommodate a cross section of 2% grade from the high side to the direction of desired drainage.
5. When the trail corridor is curved, the alignment



shall accommodate:

- a. A super elevation of 3%.
 - b. Minimum radii of curvature in accordance to AASHTO guidelines.
 - c. To transition the super elevation of the curve to a straight route or reversing curves, a 25-foot tangent transition distance shall be required.
6. Where conditions such as limited sight distances make it desirable to clearly separate the two directions of travel, a double yellow line shall be used to indicate no passing and no traveling to the left of the centerline. A yellow centerline shall be used 100 feet from the intersection of the path with the public right-of-way street pavement. On the trail, permanent marking shall be installed with the installation of the paving.
7. The trail corridor shall accommodate a maximum lineal grade of no less than 0.5% and no more than 5%, or per the table in the AASHTO Guidelines, subject to the approval of the Village Engineer.
8. The trail corridor shall accommodate a slope on each path side, of between 2 to 4% grade slope away from path, and of at least 6 feet in width. However, on the side accepting the path drainage, a swale shall be allowed 3 inches deep over a 2-foot width.
9. If site conditions prevent the opportunity to accommodate a 2 to 4% slope away from the trail to a distance of 6 feet from path's edge of pavement, then the Village Engineer may grant a waiver to #8. To grant a waiver, the following conditions must exist:
- a. Extreme site conditions that prevent conformance with #8, and the waiver shall only apply to the section of path where the extreme site conditions exist.
 - b. The maximum slope allowed, from the edge

of trail base, shall be 3 to 1.

- c. Only in severe topographical cases shall the gradual slope be waived on both sides of the trail. In those cases, accommodations shall be made to drain the trail along the lineal length of path, and not to the edge of cross section.
 - d. Where a down slope exists immediately adjacent to the trail, a decorative safety rail shall be installed between slope and trail, with rail design approved by Village Engineer and Village Planner.
10. Trail pavement shall accommodate a minimum of 6-foot horizontal distance from trees, poles, wall, fences or other lateral obstruction, except where a waiver is granted by the Village Planner when the obstruction is unavoidable due to a pre-existing condition or the obstruction is necessary for the safety of trail users, such as a bridge.
11. Trail pavement shall accommodate a minimum of 10-foot vertical clearance from any overhead wires, tree branches, low structural members of underpasses, or other horizontal obstructions.
12. Crossing of streams or wetlands shall be avoided if at all possible. If unavoidable in certain conditions, a trail corridor shall be selected that minimizes disturbance to the natural feature, such as crossing the stream or wetland at the narrowest point.
13. Developer/Subdivider shall be responsible for obtaining any permits required by Wisconsin Department of Natural Resources (WDNR), or any other government agency, for the crossing of streams and/or wetlands.
14. At no time shall any creek, stream, or man-made or natural flow of drainage be allowed to sheet drain across the trail's surface. In those cases, the design shall include a bridge or piping of the drainage below the crushed limestone base of the trail, so to not obstruct or interfere

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with proper use of the trail.

- a. Bridge water openings and culverts or piping shall be designed to pass the 10-year recurrence interval flood flow of the stream, watercourse, or drainageway concerned without raising the upstream or downstream hydraulic grade line by more than 0.001 foot and without overstepping the bicycle way.
 - b. In the case of a required WDNR permit, design and sizing of flow beneath the trail shall be according to the approval of the WDNR.
 - c. In the case the WDNR is not needed, design and sizing of flow beneath the trail shall be according to the approval of the Village Engineer.
15. If a bridge is required to cross a drainage flow, then the following shall apply:
- a. Developer/Subdivider shall obtain all necessary permits.
 - b. Design shall be as approved by WDNR, other government agency, or Village Engineer.
 - c. Bridge shall have a usable width of at least 8 feet.
 - d. Design precautions shall be taken at bridge approaches, such as aesthetic barriers or fencing, to prevent inadvertent bicycling off of the trail. For purposes of these standards, aesthetic means nicely designed fitting into the natural landscape.
 - e. Developer/Subdivider shall be responsible for cost of bridge design, materials and installation.
16. The trail edge of pavement shall be located at least 10 feet from any property line in private ownership. If it is determined a fence is necessary to separate the trail from neighboring property, the fence design shall be aesthetically pleasing and approved by the Village Planner.
17. The trail shall intersect a sidewalk and street pavement at a right angle or radial to sidewalk or street pavement.
18. All trails shall connect to a subdivision sidewalk or to street pavement to allow a continuous trail circuit.
19. When a trail is designed to connect to a street pavement and will extend across the street pavement, either with current construction or in the future, the trail shall cross the street at a right angle or radial to the street centerline.
20. Any trail intersection with street curb and gutter shall employ the design of a ramp from path to street level. The width of ramp and path taper to ramp, and other standards, shall meet the requirements of the Americans With Disabilities Act (ADA) and Wisconsin State Statutes 66.0909 and all pertinent federal and state laws, and shall be subject to the approval of Village Engineer and Village Planner. Design could differ from location to location due to conditions at the location, anticipated amount of bike traffic, site distances, etc.
21. Where trails and sidewalks intersect, the concrete sidewalks shall extend through the intersection with the trails, with the asphalt trail continuing between the sidewalk and the edge of the street curb and gutter or pavement.
22. The Village Engineer, Village Planner, Police Chief and/or Fire Chief may require the design and installation of a bollard or gate system at trail entrances from streets. The bollard or gate system would prevent motor vehicle access to the path, while retaining an opening to allow free flow of bicycles or pedestrians. A lock system would allow emergency vehicle access to the path.

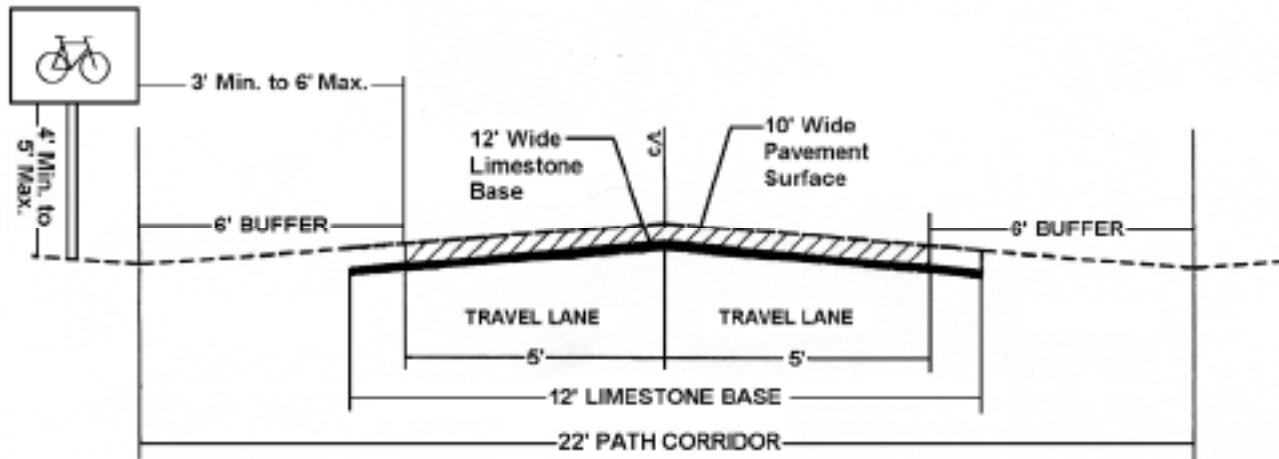


Figure 1: Desirable Multi-Use Trail Cross-Section

D.4 CONSTRUCTION

Construction standards shall be utilized conjointly with the design standards. Generally, construction shall adhere to the standards of Village Development Requirements. Where the standards are not specific to a trail, the following shall apply:

1. Remove all topsoil and remove subgrade to depth of at least 8 inches below adjacent match grade.
2. If the trail necessitates a grade higher than existing grade to facilitate proper slopes away from path, then remove topsoil of entire width to be disturbed (complying with permit requirements of protection of any natural site feature), and raise path base with clean clay and/or other suitable material.
3. Compact subgrade, with proper sloping as designed.
4. Install and compact 6 inches of 3/4 inch crushed limestone traffic bond, to a 10-foot width as illustrated in Figure 1.
5. Install 2-inch surface course Bituminous Concrete (State Gradation #3), leaving one foot of crushed limestone visible on each side.
6. Complete side slopes in accordance with design standards and fill 2 to 4 inches topsoil over exposed crushed limestone to edge of surface course.
7. Where trail intersects with street and trail is planned to continue across the street, paint onto street pavement a crosswalk according to the Manual of Uniform Traffic Control Devices (MUTCD) standards.
8. Install street warning signs indicating a trail street crossing according to the Manual of Uniform Traffic Control Devices (MUTCD) standards. All trail street signs within common space of a subdivision shall be maintained and replaced when necessary by the Homeowners Association.
9. Install trail signage (stop signs) at intersections with sidewalks/streets according to the Manual of Uniform Traffic Control Devices (MUTCD) standards.

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D.5 LANDSCAPING

Landscaping along the trail shall conform to the following standards:

1. Topsoil shall be placed over the crushed limestone that extends beyond the pavement, at 2 to 4 inch depth.
2. Topsoil shall be placed over the required side slope, at 2 to 4 inch depth.
3. On the side slope, a durable grass mixture or a low growing ground cover, such as crown vetch, shall be planted, subject to the approval of the Village Engineer.
4. Planting of any deciduous or coniferous trees or bushes within six feet of the edge of pavement shall be prohibited.
5. Any preserved existing trees within the trail corridor shall be trimmed to maintain a 10-foot vertical clearance from trail surface to any tree branch or limb.

D.6 MAINTENANCE

The Homeowners Association shall be responsible for all lawn mowing, tree pruning, and all other landscape maintenance along the trail and trail corridor, for the trails within common open space controlled by the Homeowners Association.