C.
Design Guidelines

Design Guidelines

The intent of the *Noblesville Alternative Transportation Plan — 2015* is a planned network of bicycle and pedestrian routes and facilities for residents and visitors of all ages. This network allows its users to walk or bike to their destinations in lieu of taking their car.

The *Noblesville Alternative Transportation Plan — 2015* fulfills the goals identified in the previous studies. It provides opportunities to improve the health, fitness, and quality of life of Noblesville's residents. However, motivating individuals to walk or bike sometime requires developing safe, convenient, and attractive facilities.

Noblesville Alternative Transportation Plan — 2015 has required the establishment of design guidelines in order to successfully implement the vision, goals, and objectives of this Master Plan. The guidelines will assist the City Administration and Departments along with the proposed 2015 Advisory Committee (NPTAC) in the development of bicycle and pedestrian facilities that are safe, convenient, and attractive as well as ensure uniformity of the design, layout, and construction of these facilities throughout the Noblesville community.

The Development Guidelines should be used in conjunction with the standards developed by the City of Noblesville Public Works Department, the Indiana Department of Transportation (INDOT), and American Association of State Highway and Transportation Officials (AASHTO).

Identified Users

The users of *Noblesville Alternative Transportation Plan — 2015*, including bicycle and pedestrian users, vary in age, experience, mobility, as well as confidence in traveling with, or crossing, vehicular, bicycles and people traffic.

Users wish to experience the multi-use trails and pathways, greenways in nature areas and parks, and bike lanes as part of the city streets. Trails, pathways and sidewalks will need to accommodate walkers, bikers, runners, roller bladers, persons in wheelchairs, as well as accommodations for large groups.

Experienced users bike or walk with vehicular traffic even if designated facilities do not exist. However, average users prefer to bike or walk on less busy neighborhood streets and on designated bicycle and pedestrian facilities.

The *Noblesville Alternative Transportation Plan — 2015* attempts to improve the routes and connectivity for experienced users as well as create safe, convenient and attractive facilities to attract average users. Providing accessibility for users of varying experience, mobility and confidence requires careful attention to the visibility of users, width and surface condition of routes, and design speed of bicycle and pedestrian facilities.

Facility Components

The *Noblesville Alternative Transportation Plan — 2015* system will comprise many different facility components. These will include the trail or pathway itself, supporting infrastructure such as trailheads, signage, etc. Also, the design and applications of the use of landscape plantings, fencing, lighting, emergency phones, design and details of intersections and crossings, etc. will enhance the trail system. Trail signage and kiosks are also a vital component of the trail system. Standardization of the graphics/logos is recommended as well as the use of such signage to provide directions and information.

The locations of trailheads and their related elements would best be placed in common areas such as parks, schools, churches, public facilities (e.g. fire stations), etc. They should have ample visibility and necessary infrastructure elements such as utilities, lighting, parking, etc.

Other on-trail components (i.e. landscape plantings, fencing, lighting, etc.) should be designed and used for best compatibility with the adjacent land uses and neighbors.

A sample of conceptual design for typical trailhead signage found in the Noblesville Trails system can be found in the Appendix of this document.

Design for Special Areas

The *Noblesville Alternative Transportation Plan – 2015* system routing plan calls for several areas that will require special design considerations. There are segment routes that in lieu of crossing busy streets and highways may potentially need to be routed under the highway using existing drainage way bridges.

There are other areas of the city where such bridge or under crossings will not be possible. Where these occur the route segments have been located at major street intersections that are signaled. These intersections may need to be enhanced to provide this access and accessibility to the users.

Potential exists for possible utilization of the railroad right of way. This has been done successfully in other Indiana communities on active rail lines. The City and the railroad company should explore this trail option further.

Trail segments have been noted occurring in areas of drainage ways and easements. These trail segments can have two trail type applications. As a nature type trail the trail composition may be an earthen trail surface. If utility vehicles will use the segment it is recommended that the trail be multiuse and be 12’ in width and be asphalt surface designed to handle traffic loads.

Where possible and feasible the City should consider the inclusion of “bike lanes” as part of the City Thoroughfare Plan. The design standards used for these applications should comply with both INDOT and AASHTO guidelines and requirements.

Maintenance Guidelines

The *Noblesville Alternative Transportation Plan – 2015* system requires both maintenance and management policy for its usage and operation. The City should establish maintenance policy and guidelines that would define responsibility and be used in the overall system. Generally, the trail segment in the parks and open spaces will be the responsibility of the Parks Department (or jointly with the Utility Departments, where applicable). Segments where the trails are within street right of ways will be part of the maintenance responsibilities of the Public Works Department. Regular maintenance may include:

- Inspecting and replacing bicycle and pedestrian routes and roadway signs,
- Repairing cracks and holes in bicycle and pedestrian routes surface,
- Sweeping routes to remove loose gravel, sand, garbage, leaves, etc.
- Removing dead or dangerous tree limbs and regular pruning of vegetation along the bicycle and pedestrian routes,
- Removing snow and ice,
- Assuring that there is positive drainage off of and away from the trail segment, and
- Documenting regular inspection to limit risk and liability.

The City of Noblesville is currently using a software program called Cityworks, which is a public asset management software. (See the implementation section of this document for more information and use of this management software for the NAT system). The City may wish to consider promoting an "adopt a trail" program where the adjacent property owners or businesses would become "partners" with the City in the maintenance of trail segments.

Logo and Signage

The *Noblesville Alternative Transportation Plan – 2015* system is becoming better known by its users through its usage. *Trail Signage Graphic Standards* will be used in identifying trail segments and the overall system and can be found in the Appendix of this document. Such logo design will be used to identify the Noblesville Trails system in Noblesville. The logo is a form of identity and marketing for the system.

The logo and signage will serve various functions including identifying trailheads, providing direction and safety information, identifying segment names, and communicating unique information such as historic or interpretive uses.

While the Noblesville Trails system should have its own identity in its graphics and logos, etc. common regional logos and graphics should apply where the system extends to the adjacent communities and trail systems.

Other components of the Trail Logo and Signage system should incorporate the flavor of the City's Logo standards in a colorful and aesthetic format as shown below.

Proposed Trails and Pathways Design Standards

The *Noblesville Alternative Transportation Plan — 2015* calls for four (4) trail/pathway applications. They are as follows:

A. Right-of-Way Pathways

B. Easement Pathways

C. Open Space Pathways

D. Blueway Pathways (Waterways)

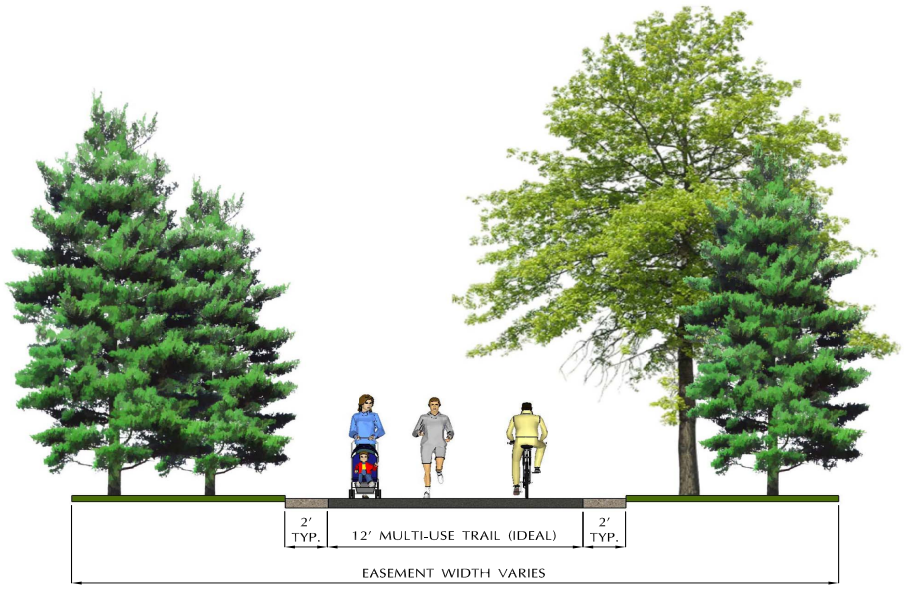
Where applicable the Consultant recommended the inclusion of conduits within the trailway. Such conduits can serve the City now and in the future in running fiber optics and other similar utility lines. With the construction of the trails and pathways such a piece of "utility infrastructure" should be seen as an asset.

As stated previously, it is not the intention of the *Noblesville Alternative Transportation Plan — 2015* to acquire land for such development unless it is donated or negotiated with the City and the Property Owner.

A – Shared / Multi-Use Trails

The most predominant and preferred greenway type is the shared / multi-use trail. This trail type serves both recreational and transit-type uses and is generally located in unobstructed right-of-ways, easements, or parks. These greenway segments serve as major connection corridors of the greenway network and are typically 10 to 12 feet wide with a 2′ shoulder on each side. Shared-use paths are historically constructed of a 4″ thick asphalt surface over a minimum 4″ aggregate base sufficient enough to support maintenance and emergency vehicles. AASHTO standards are required for all trail development and INDOT design standards are required for those projects that are state or federally funded.

- **Shared / Multi-Use Easement or Park Development**



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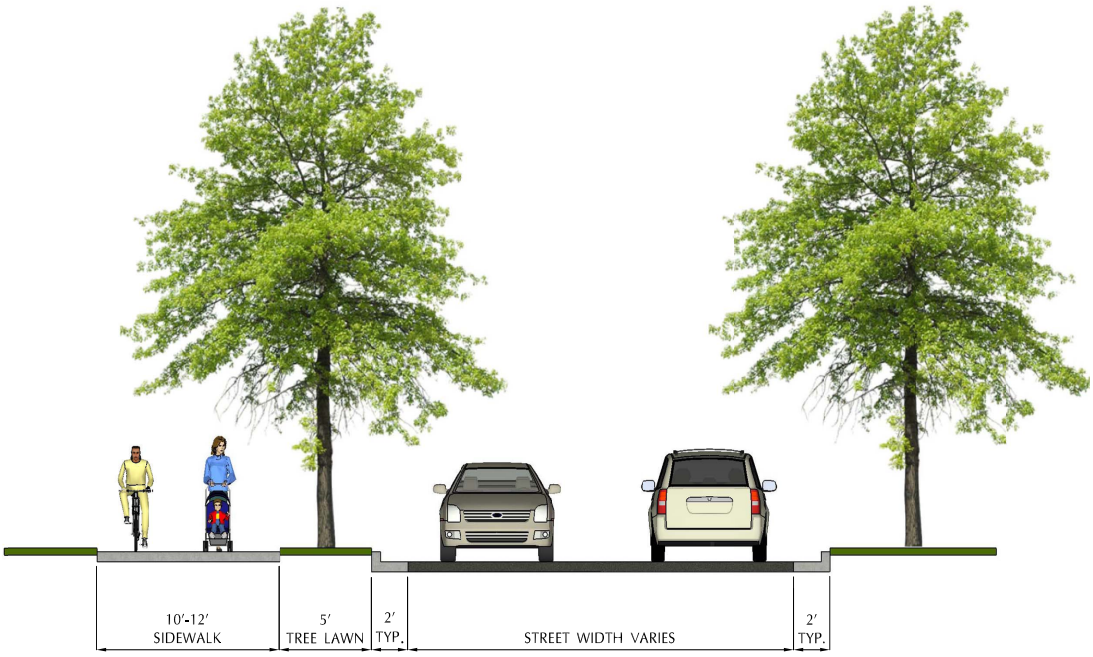
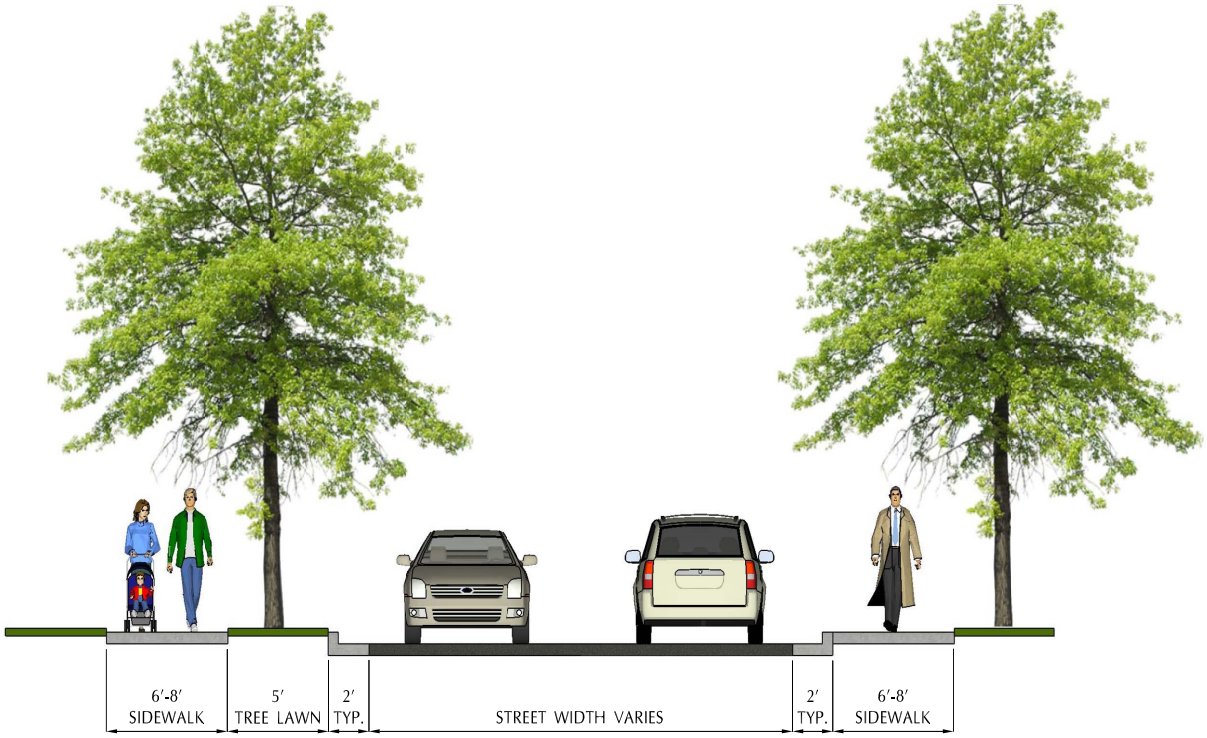
- **Shared / Multi-Use Trails Right of Way Development**



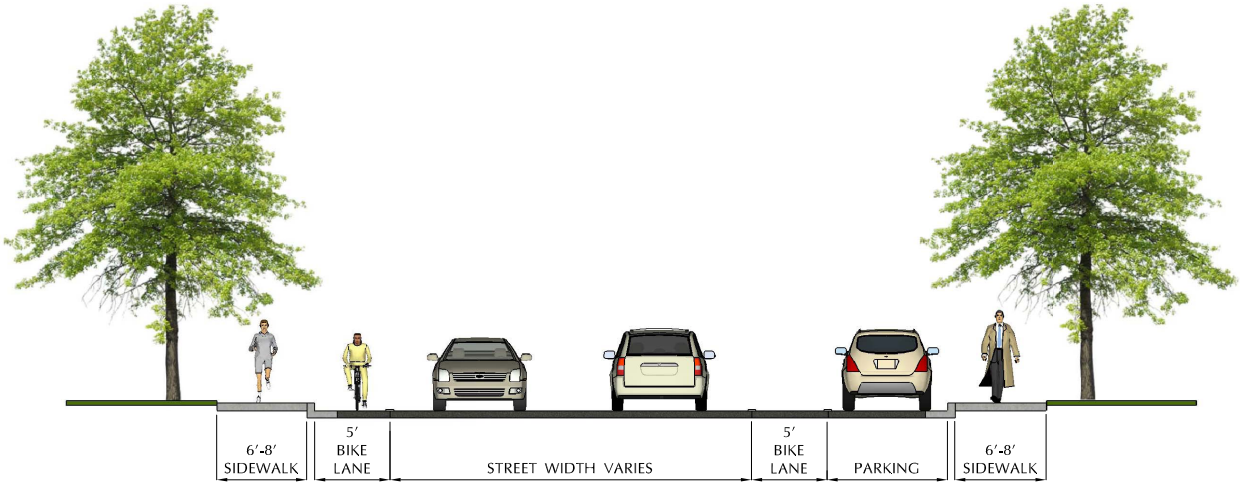
B – Improved Sidewalks

Many of the greenway segments outlined in the master plan are located within existing neighborhoods and serve as connection routes to the community. Improving these connection corridors is not only important to the greenway users, but also to the quality of life already established within the neighborhoods. Developing full-width shared-use paths would adversely affect much of the private property in these areas, thus making them problematic. In an effort to maintain the connectivity provided by these designated corridors, it is recommended that these segments be developed into improved sidewalks, with widths of 6 to 9 feet and located within the City right-of-way. These "extra wide" sidewalks are essentially sidewalk improvements but are wider than the City standard sidewalk and have the ability to accommodate a greater number of users. Constructed out of 4" thick concrete or asphalt over a compacted aggregate base, these sidewalks must meet the requirements of the Americans with Disabilities Act (ADA). The City of Goshen design standards must be followed for all improved sidewalk located on local streets and INDOT design standards for those improvements federally funded or within a designated state highway corridor.



C – Bike Lane

Where off-street trails are not feasible, bicycle-friendly streets should have designated bicycle lanes. These routes help preserve overall connectivity by providing trail users and local residents safe routes to various destination points throughout the city. Bicycle lanes must be designed to comply with AASHTO and INDOT standards and all markings and signage must meet the Traffic Control for Bicycle Facilities requirements set forth in the *Manual on Uniform Traffic Control Devices*. Located on the right outer, most edge of the pavement, bicycle lanes are typically 5′ wide and follow the same direction as vehicular traffic. Designated with striping, signage and pavement markings, bicycle lanes are part of the roadway for the exclusive use of bicyclists. Experienced bicyclists prefer bicycle lanes. They have been proposed as part of the greenway master plan as a result of need and the site constraints in many of the traffic corridors and the difficulties with developing designated separated multi-use pathways.



D – Blueway Water Trails

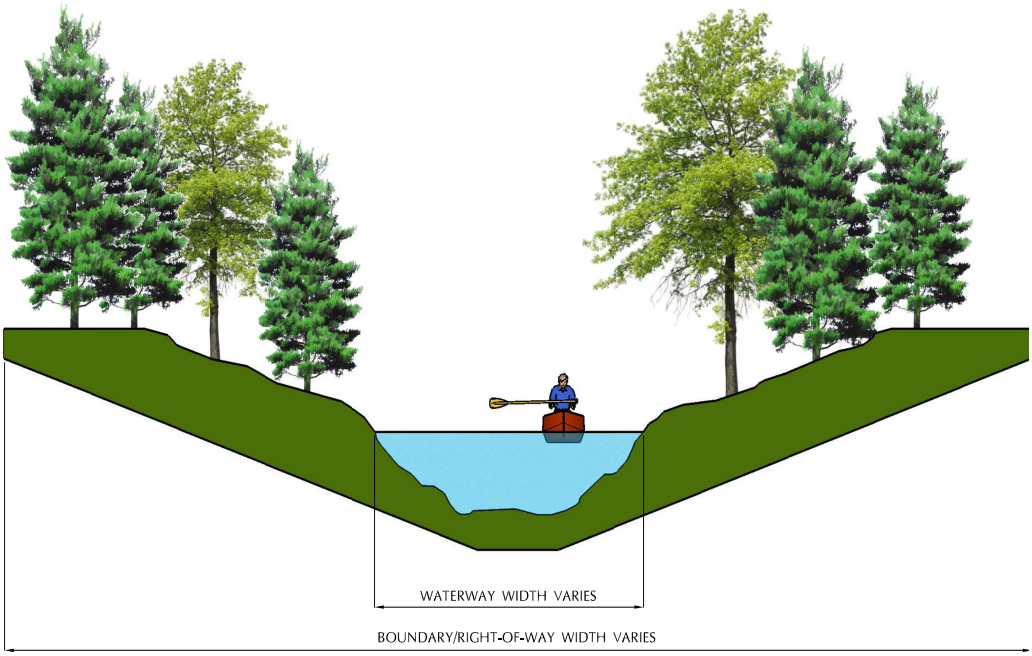
What is a Water Trail?

Water trails embody the nexus between rivers and trails. They provide recreational boating opportunities along a river, lake, canal or coastline; most water trails are managed in public-private partnership with the philosophies of environmental stewardship, environmental education, and accessibility for all users.

By definition, a water trail, also known as a blueway, is a route along a river or across other bodies of water, such as a lake or salt water, for people using small beachable boats like kayaks, canoes, day-sailers or rowboats. Water trails are most often identified by the land facilities that support water travel. These include launch and landing sites (trailheads), campsites, rest areas, and other points of interest. On land, trails have distinct surfaces or walkways, while on water the entire water surface is constantly changing with flow, current, boat wakes and wind.

American Canoe Association (ACA) – Recommended Water Trails meet a set of basic criteria and stand out as particular good destinations for paddlers. To be eligible, a trail must meet the following requirements:

- The trail must be a contiguous or semi-contiguous waterway or series of waterways that is open to recreational use by paddlers;
- The trail must have public access points for paddlers;
- The trail must be covered by a map, guide, signage or a web site that is of reasonable quality and detail and available to the public.
- Published or printed materials for the trail (e.g. guidebook, map, signs, website) must communicate low-impact ethics to trail users; and
- The trail must be supported and/or managed by one or more organizations.



Trail Surface Types

Design and material selection will often be the most important decisions, and can have a major impact on annual maintenance costs. The cost comparison of the three trail-surface options can provide planners with an accurate analysis for future maintenance costs. The larger and more heavily used trails will have the greatest impact on budgets.

In general, trails in larger parks generate heavier use, and will require a trail design that appeals to a more diverse user group. Heavier use will also result in a new set of expectations for trail quality, and dictates the need to make some tough decisions on how best to stretch the dollars.

Concrete Trails	PROS	• Have the best ADA surface long-term • Have the best longevity, lasting 20-plus years • Have the best consistency of surface, not washing or breaking apart • Do not was in flood-prone areas or on steep slopes • With steel in the concrete, have no deflection and prevent tripping hazards or barriers for wheelchairs • Maintain a cleaner surface during and after a rain; keep commuters clean as well and less wear and tear on bikes • Generally require little or no gravel-base rock, so have minimal impact on trees (compared to asphalt) • Eliminate environmental damage caused by gravel loss in creeks and natural
	CONS	• Are initially expensive • Are hard on joints (running) • Are considered by some to be less natural-looking • Have an impervious surface.
Asphalt Trails	PROS	• Have a solid initial surface (smooth, no cracks) • Are initially cheaper than concrete trails.
	CONS	• Develop cracking caused by tree roots • Require sealing to repair damaged trail surface • Should be repaved after 10 to 12 years to restore surface quality • Provide little structural strength to prevent crack separation over time • Require deeper sub-grade excavation (harming trees) for base rock installation • Have an impervious surface.
Gravel Trails	PROS	• Are considered by some to be more natural looking • Are effective for flat areas out of flood plains • Are soft on joints (running) • Have a cheap installation cost.
	CONS	• Have high ongoing maintenance costs • Are difficult to maintain a consistent surface quality • Develop environmental damage caused by gravel erosion • Are difficult to use in winter, due to soft, wet and dirty conditions • Migrate on steep trail slopes • Are difficult to ride bikes on steep slopes and in loose gravel • Are difficult to remove silt deposits from after heavy rains • Have a dirty surface during and many days after rains • Are difficult to meet ADA surface standards • Have less stability for running and walking.