OBJECTIVES AND STRATEGIES

Goal 5: Improve and highlight public access to Sturbridge's water-based resources, including the Quinebaug River.

Objective 5.1: Provide improved boating/fishing access to the Quinebaug River adjacent to the Grand Trunk Trail.

Strategy	Description	Coordinating Entities	Timeline
5.1.1	Develop access easement agreements with property owners for new river access points at Millyard Market Place, OSV Access rd., RT 15 access and ACOE	Trail Committee, Town Administrator (Co-Lead) Open Space and Community Preservation Comm, Conservation Agent Committee (Support)	Short-Term
5.1.2	Develop implementation plans for access improvements, including site planning, permitting, funding, and river, trail, and road signage	Trail Committee (Lead) Community Preservation Comm, Sturbridge Tourist Assoc (Support)	Short-Term
5.1.3	Implement access improvements	Trail Committee (Lead) Dept of Public Works (Support)	Intermediate

OBJECTIVES AND STRATEGIES

Goal 6: Implement the Plan in an aggressive manner to provide maximum benefits to residents and visitors, identifying and employing a variety of funding sources, volunteer assistance, and Town resources to optimize the inputs of all stakeholding parties.

Objective 6.1: Develop a volunteer program and standard schedule of volunteer events that provides more than 2,000 hours/year (at $26.84/hour, a total input of more than $53,680) of volunteer assistance and in-kind product/service donations greater than $20,000 toward the development and ongoing maintenance of the Sturbridge area trails.

Strategy	Description	Coordinating Entities	Timeline
6.1.1	Appoint a volunteer coordinator to develop the schedule and coordination of volunteer events, including liaison duties with area service organizations, schools, and businesses to attain the levels of volunteer/ donation need	Trails Committee (Lead)	Immediate
6.1.2	Develop a 50-person cache of new tools and branded utility trailer (with space for local advertisers) to be employed at all events and parked in a visible location in the Town	Trails Committee (Lead) Community Preservation and Betterment Committees, Chamber of Commerce (Support)	Short-Term
6.1.3	Obtain crew leader, first aid/cpr, and chainsaw certification training for established and new crew leaders	Trail Committee (Lead)	Ongoing

Objective 6.2: Establish a partnership with a youth outreach/training program (i.e. Job Corps, Student Conservation Association, etc.) that builds land management technical skills including carpentry, outdoor facilities maintenance.

Strategy 6.2.1: Trails Committee (Lead) , with support from the Town Administrator and Public Lands Advisory Committee, to outline program and develop a consistent presence of youth service projects in the short-term.

OBJECTIVES AND STRATEGIES

Objective 6.3: Organize and implement a targeted campaign to develop outside funding for trail development of at least $100,000/year over the next ten years via grants, gifts, and event-related revenue.

Strategy	Description	Coordinating Entities	Timeline
6.3.1	Form a 501 (c) 3 not-for-profit organization to accept grants and gifts and more efficiently liaison with non-municipal land managing entities	Trails Committee (Lead)	Immediate
6.3.2	Seek local funding for a part-time grant writer/development professional to organize, solicit, and administer grants and gifts	Town Administrator (Lead) Trail Committee, Sturbridge Tourist Association, Economic Development Comm (Support)	Short-Term
6.3.3	Employ Community Preservation, Betterment, and tourism-related tax funds as leverage for outside funding	Trails Committee (Lead)	Ongoing

OBJECTIVES AND STRATEGIES

Objective 6.4: Secure larger federal or state transportation-sponsored grants for pedestrian/bicycle facility improvements, including green lanes, multi-modal road improvements, traffic calming, and safety enhancements

Strategy	Description	Coordinating Entities	Timeline
6.4.1	Departments of Planning and Public Works liaison with various committees to establish project prioritization and establish an implementation plan with identified funding program targets	Town Planner (Lead) Conservation Agent, Dept. of Public Works, Trails Comm (Support)	Ongoing
6.4.2	Town creates a Recreation Trail Master Plan Review Committee that will meet yearly and monitor progress towards implementation of the trails master plan	Town Administrator(Lead) Town Planner, Dept. of Public Works, Conservation Agent,Trails and Community Preservation Committees, (Support)	Ongoing

TRAIL USER TYPES/DESIRES

The following provides background for understanding the different sub-types of trail users within each major travel modality and management strategies to optimize recreational experience and resource protection.

Modality/User Types and Sub- Profiles

PEDESTRIANS – *destination-oriented visitor, casual walker, fitness walker, hiker, advanced hiker, trail runner, fisherman, wildlife watchers*

Destination-oriented visitor: This group is generally the largest and tends to capture a wide variety of fitness and experience levels. These visitors will be motivated by a specific facility or place, such as a viewing platform, noteworthy bridge or culturally/historically/ecologically significant element. The "strength" of the destination usually dictates this user's commitment to the time or mileage of the journey, but the shorter the commitment the better. As a rule, this group is most likely to wander off-trail if they perceive an easier or shorter route to their final destination (i.e. they will short-cut switchbacks, trample vegetation off-trail, and spread out at the chosen destination). To provide maximum accessibility to destinations, trails should be constructed with low gradients and few obstructions, with widths determined by the anticipated density of trail traffic.

Casual/Fitness walker: These are generally two different sub-groups; however, they commonly use similar types of trail facilities. Because they tend to be motivated by experience rather than destination, they can be managed together. This group seeks more developed trails such as paved walking loops, marked fitness loops, botanical/cultural interpretive trails, etc. and requires specific signage that indicates mileage/time, maps depicting features of interest, and emergency information to provide the sense of a controlled/designed experience. They generally remain on the trail as long as the trail is providing their expected experience. Noteworthy exceptions occur when trails remain wet for long periods, vegetative growth impedes the trail corridor, or off-leash dog use is allowed. In these situations, trampling of vegetation and subsequent parallel trails develop.

Hiker, Advanced Hiker, Trail Runner: These users also are motivated by the trail experience including the views, trail features, as well as multiple destinations. All three sub-types prefer natural or soft-surface, single-track trails in woodland or partial woodland environments. They tend to be comfortable with longer durations outdoors and prepare accordingly (i.e. carry their own water, dress in appropriate clothing and footwear, pack additional food or outerwear, etc). Because of their preference to be outdoors, this group often desires a longer distance/time experience. These individuals generally stay on the trail, especially when they are interested in the destination, views, or features encountered along its length. However, when it is visually apparent that the trail does not connect with perceived important destinations/features, these generally fit and outdoors-savvy trail users will not hesitate to leave the

TRAIL USER TYPES/DESIRES

trail and seek out their preferred destination. Because of the ease of hiking/running off-trail and up/down steep slopes, these trail users typically move up or down terrain on the fall line and informal "spur" trails quickly develop and subsequently erode due to water movement. This group requires minimal signage at trailheads and intersections, often preferring to carry a personal map, gps, or simply wander and find their way.

Fishermen: These users are motivated by destination (fishing spot) however they often migrate from point to point along the lakeshore or stream bank and can be difficult to manage. This group tends to have a high level of riparian trampling impact and soil deposition to the nearby water body in unmanaged areas, but generally stays within the trail corridor if it conveniently accesses known, high quality fishing areas and keeps off flooded terrain.

Wildlife watchers: These users are experience-motivated and will generally travel off-trail to better observe wildlife and remove themselves from other trail visitors that may be spooking animals. They are comfortable on a wide variety of terrain, but because they do not tend to travel in large groups or retrace their steps, the off-trail impacts are often minimal. That stated, a birdwatching group traveling off-trail can quickly trample vegetation to a level where it creates an informal, often unsustainable spur trail that other visitors tend to follow. Where wildlife watching locations are integrated into a broader trail system, members of this group is most easily managed through the development of short, sustainable spur trails that access an ideal viewing area.

CYCLISTS –*Rail-trail/family cyclists, beginner/intermediate off-road cyclist, mountain biker, road/fitness cyclists, cyclocross enthusiast*

Rail-trail/family cyclists: This group encompasses a very wide variety of individuals. Generally, they will ride at much slower speeds for shorter distances, often taking "out-and-back" trips. They tend to seek paved or aggregate surfaced trail facilities with little or no vehicle traffic and will often drive to these facilities with their bikes to ride from a central parking spot. In some cases, members of these groups will venture off-pavement, generally onto 'double track' soft-surface trails with a higher level of management. These cyclists are often not adequately prepared for equipment malfunctions or changes in weather. They generally have the least understanding of rules of the road/trail, often venturing over the center line of a paved bikeway or stopping and dismounting within the traffic corridor. A strong emphasis on educational and safety signage and a consideration for lane and crosswalk striping should be placed at well-used access points. The combination of active and passive education, along with the availability of safety training and/or bike handling programming, quickly reduces the number of incidents.

TRAIL USER TYPES/DESIRES

Beginner/intermediate off road cyclist: This group also includes a wide variety of users with a range of skill levels and interests. They will tend to look for easier 'single track' or 'double track' natural and soft-surface trails. A significant number of people in this group favor "rail trail" style trails (compacted crushed stone) and will often link various trail types together to make longer distance tours. This group also contains a large number of new or younger riders who are seeking a trail riding experience, but are still developing the skills to ride more technically advanced single track trails. This group remains on the trail unless it is excessively wet and adjacent land is noticeably drier and just as easy to negotiate. As members of this group are typically building their fitness or ability level or seeking a longer distance experience, maps and well-spaced trails (around five-mile increments) help these cyclists optimize their experience.

Mountain biker: Mountain bikers are motivated by the trail experience and although there is a broad spectrum of riding styles and skill levels, the desired trail experience is universally similar. This group is attracted to natural and soft surface, singletrack trails of varying length and technical difficulty. Beginners or entry-level riders will generally be attracted to shorter, easier loops with some technical features for skill development, while more advanced riders will generally prefer longer loops with a wider variety of terrain and surface types. Mountain bikers almost universally remain on the trail. Leaving the trail results in an insufficient riding surface and often damages to the bike. The exceptions are where a curve in the trail is not designed for the realized speed of the bike and where technically challenging features within the trail cause less skilled riders to attempt a different route around the obstacle. As mountain bike speeds are often greater than pedestrian users, and bikes are rather quiet, there is a startling potential, especially at "blind corners". That stated, very long sightlines down a trail encourage greater speeds. This is a very similar situation to comparing vehicle traffic speeds on twisty, narrow roads and straight, wide interstate highways. Where mountain bikes are present on narrow trails, signage at access points should always be present alerting all users to a shared-use situation on the trail.

Road/fitness cyclist: This group will generally contain more advanced cyclists that are comfortable riding with traffic on public roadways. They tend to be fitness-oriented, but will occasionally stop at overlooks, culturally significant sites or bathroom/rest facilities. Mapped and signed routes both draw these cyclists to an area to ride and provide a reminder to motorists that cyclists are likely to be present. Vast improvements for both safety and user experience are realized when wide (4-8'), striped bike lanes are present. These trail users are typically prepared for weather changes and mechanical malfunctions. They often travel in groups of two to a dozen or more, especially during weekends, and travel significantly faster that other recreationsits. Where these users employ multi-use trails, they typically require more aggressive management for speed control and etiquette.

Cyclocross enthusiasts: This is a highly specific bicycle racing event that uses a mix of pavement, turf and some woodlands. Although the race courses are temporary (race-specific), users will often practice at locations or venues that are favorable to racing and skills development, employing singletrack and surfaced trails, grass fields, and stair steps, all challenges present in this type of racing event.

TRAIL USER TYPES/DESIRES

EQUESTRIANS– *beginner/casual user, trail rider, expert/competitive rider*

Beginner/casual user: This group will tend to include people that ride just a few times annually. They will generally rent the horse and equipment from a concessionaire and will be comfortable with a two-hour trail ride, preferably guided. Quite often these riders have limited control of their horse due to lack of training and/or familiarity with the specific horse. It is important to incorporate signage on trail etiquette at all access points and to provide educational materials to horse concessionaires that are employing the trail system.

Trail rider: This group is experience-oriented, seeking out riding opportunities that provide ample saddle time. Comprised primarily of horse owners with property near trails, they typically combine riding across agricultural or other open, private lands with riding on developed trails. Weekend trips to larger trail systems that cater to equestrians are quite common and these enthusiasts are typically willing to travel a number of hours for this type of experience. These equestrians are comfortable and prepared for navigating half-day to full-day rides and therefore require trail systems of 15 to 50 miles in total length. When encountering objects across the trail- rocks, trees, or excessive mud- these users typically leave the trail, quickly resulting vegetative trampling and soil erosion. Equestrians on longer treks where water sources are present typically do not bring water for their horses. It is important to provide well-spaced access to water over the course of the trail to minimize off-trail travel to water sources by the animal. Generally these trail users are less concerned about the condition or quality of the trail than about the development level of the facilities. Trailhead and overnight facilities need to be designed with horses and their owners in mind. Ingress/egress for parking and camping must be able to handle large truck/trailer rigs. Hitching or stabling must be present along with potable water. Waste management, etiquette outreach, and enhanced rider preparation (ramps, step stands, etc.) should be considered and placed a height levels that are readable from horseback.

Expert/competitive rider: This group will include horse owners and trainers that regularly trailer their horses and equipment long distances. Their horses are not only pets but are also trained to perform. These equestrians typically travel long distances for events and mix in trail riding for pleasure or training. Similar in preparedness to trail riders, this group is also typically adept at off-trail travel and navigation. When training for or competing in endurance events, these trail users often travel at higher than walking speeds. Even more so than trail riders, these equestrians require large and horse-focused trailheads and accommodations that handle many large, sleep-in trailers. Again, trailhead facilities need to be properly designed and etiquette related to off-trail travel should be interpreted.

TRAIL USER TYPES/DESIRES

PADDLERS– *beginner/casual paddler, fitness paddler, enthusiast/expert paddler, play boater*

Beginner/casual paddler: This group encompasses many families and infrequent paddlers. Most often they do not own a canoe/kayak, personal flotation devices and other attendant paddling gear. They will generally rent/borrow gear and will be comfortable on calm lakes and slow-moving rivers for a few hours. These paddlers often have limited balance and paddling skills and can be overwhelmed by rough conditions (i.e. Class 2 and above rapids or choppy waters). It is important to incorporate universal design principles into put-in/take-out locations as well as education/etiquette and route recommendation signage

Fitness paddler: This is a rapidly growing group of paddlers due to hull advances in sit-on-top kayaks and an explosion of interest in stand-up paddle boarding. These paddlers usually own their own boat/ board and safety gear and have some experience with changing and challenging water conditions. They seek relatively calm waters and recreation experiences lasting 30 minutes to two hours. Looped routes are preferable for these experience-oriented (exercise) as they are often paddling alone and car shuttling is not an option. Parking and put-in access should be in close proximity and changing facilities are very much appreciated along with recommended paddling routes. Universal designed water access, whether from a beach/shoreline or dock/pier are ideal supporting features access points as well as tie-ups, boat racks, and potentially longer term storage.

Enthusiast/expert paddler: This more traditional group of paddling enthusiasts are often paddling on a weekly basis and travel to paddle. They frequently own one or many boats and have significant experience with route finding/self-navigation, challenging water and climatic conditions, and self-supported long trips of two hours to many days. Point-to-point trails are the norm for this group, with shuttle vehicle placement a typical part of their planning. Navigation signage is not typically necessary, but warning and take-out signs are prudent for risk management and road-based directional signs to access locations improves the experience for new users and visitors.

Play boater: This group is very skilled in technical aspects of paddling in larger rapids. A relatively large number of rivers host enhanced runs that provide reliable rapid conditions for longer seasons. While water-based, this use is quite similar to skateboarding, in that a paddler can often perform multiple tricks on one river "feature" for an extended period of time. Paddlers in this group nearly always own their own boats, have advanced skills in self rescue, and paddle with others where safety in challenging situations becomes a group responsibility.

STANDARDS & SPECIFICATIONS

A trail system that best serves the diverse interests of Sturbridge residents and visitors will necessarily be diverse. From formal and highly engineered greenway trails within close proximity to residents to backcountry-style, narrow singletrack, the base of conservation lands in Sturbridge can be developed in a manner that provides environmentally sustainable experiences that highlight the Town's natural character. The following pages provide descriptions of trail types and specifications to assure diversity, sustainability, and high quality recreation experiences. A number of technical terms are used in the specifications, with definitions provided below.

Trail Type Name: Common name for the type of trail provided in the specifications.
Difficulty Rating: Gentle to Severe. A qualitative measure of the level of challenge provided or skill level necessary to confidently handle a particular trail. This is a qualitative rating that combines distance, elevation gain/loss, and characteristics of the trail tread and is intended to provide a diversity of experiences.
Difficulty Symbol: A universal symbol that relates to the developed Difficulty Rating of the trail.
Typical Tread Width: Constructed trail tread width or range of tread widths for the particular trail type.
Typical Corridor Width: Constructed trail tread width along with the additional width of vegetation clearing (only impeding vegetation such as herbaceous plants, shrubs, and limbs) necessary for construction and annual maintenance.
Tread Rugosity: Very smooth to very rough. A qualitative measure of the roughness of the trail tread including obstructions such as rocks and large roots.
Average Gradient: A quantitative measure (%) of the average rise over run, either ascending or descending, of the entire trail.
Maximum Sustained Grade: A quantitative measure (%) of the highest rise over run, either ascending or descending, of a 500-foot section of trail.
Maximum Grade: a quantitative measure (%) of the highest rise over run, either ascending or descending, of a 100-foot section of trail.
Typical Tread Materials: A short description of the materials employed to create the trail tread surface.
Sideslope Steepness: A quantitative measure (%) of the general range of slope angles and exposure appropriate for a particular trail.
Turn Radius: A measure (ft.) of trail turning width from the center portion of the trail to the outside of the ascending and descending legs of a turn.
Trail/Structure Formality: A qualitative expression of the level of engineering quality and construction "fit and finish" for a particular trail.
Wet Area Crossing Formality: A qualitative expression of the level of engineering quality and construction "fit and finish" for crossings of streams, wetlands, and intermittently saturated areas.
Duty of Care: A qualitative expression related to landowner liability and the level of attention needed to maintain a trail or structure to its originally designed and constructed specification.

STANDARDS & SPECIFICATIONS

Trail Type Name: GT, Grand Trunk Trail

Difficulty Rating: Gentle

Difficulty Symbol: White Circle

Typical Tread Width: 10 - 12' (ASHTO Standards)

Typical Corridor Width: 16-20'

Tread Rugosity: Extremely smooth

Average Gradient: <5%

Maximum Sustained Grade: 7%

Maximum Grade: 8%

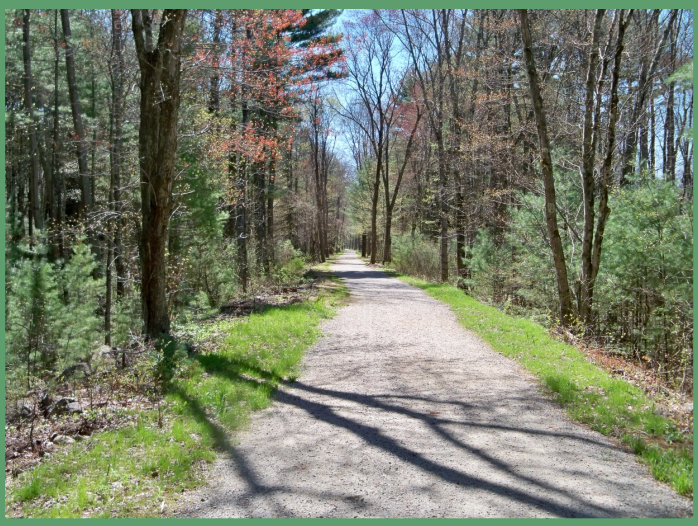
Sideslope Steepness: Mostly in flat or mellow terrain

Turn Radius: Very open radius

Trail/Structure Formality: Extremely formal

Wet Area Crossing Formality: Formal bridges for major crossings, subtrail culverts for general drainage

Duty of Care: Extremely high



STANDARDS & SPECIFICATIONS

Trail Type Name: TT, Trek Trail

Difficulty Rating: Gentle

Difficulty Symbol: Green Circle

Typical Tread Width: 36”-72” (Sufficient clearance for mobility devices of a maximum of 36” wide)

Typical Corridor Width: 60”-96”

Tread Rugosity: Smooth and even

Average Gradient: <5%

Maximum Sustained Grade: 7%

Maximum Grade: 8%

Typical Tread Materials: Cut and fill at grade compacted crushed stone (DGA 3/8”-) with sub-base, as needed.

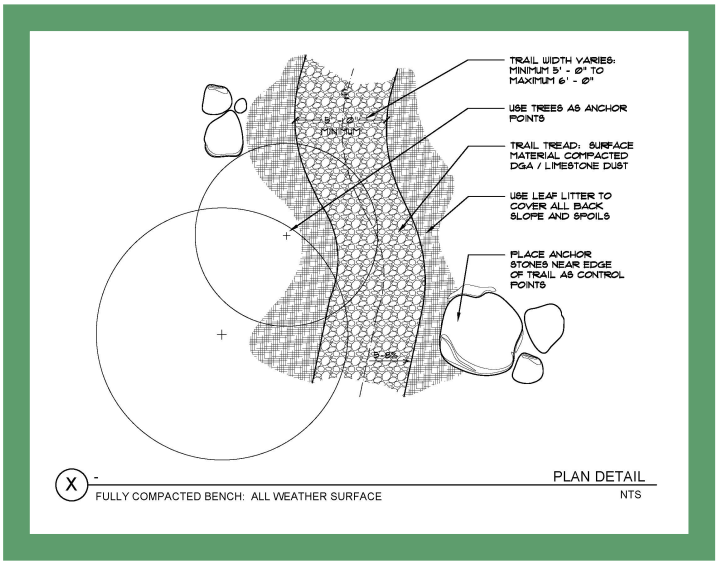
Sideslope Steepness: Flat to 25%

Turn Radius: Wide and open

Trail/Structure Formality: Formal

Wet Area Crossing Formality: Formal bridges for minor/major crossings

Duty of Care: High



STANDARDS & SPECIFICATIONS

Trail Type Name: ST-1, All-Weather Single Track- Easy

Difficulty Rating: Gentle

Difficulty Symbol: Green Circle

Typical Tread Width: 30”-48”

Typical Corridor Width: Mostly open with some trees, vertical choke points (trees) never closer than 50”, rock anchor choke points never closer than 30”

Tread Rugosity: Mostly smooth

Average Gradient: 6%

Maximum Sustained Grade: 11%

Maximum Grade: 15%

Typical Tread Materials: Surface hardened with compacted crushed stone (DGA- 3/8”-)

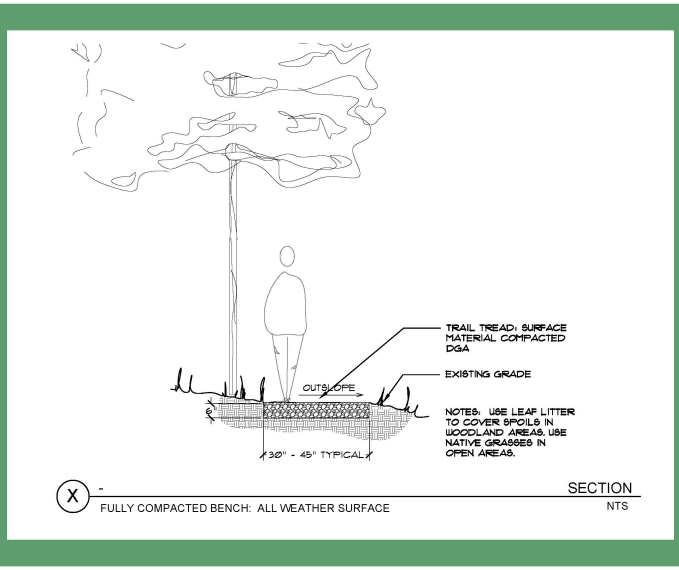
Sideslope Steepness : Flat to 40%

Turn Radius: Wide turns allowing for open and flowing rhythm travel speeds

Trail/Structures Formality: Formal

Wet Area Crossing Formality: Bridges (railing needed if over 36” above adjacent grade) and tread covered open culverts for seasonal wet areas

Duty of Care: Moderate-High



STANDARDS & SPECIFICATIONS

Trail Type Name: ST-2- Natural Surface Single Track - Moderate

Difficulty Rating: Moderate

Difficulty Symbol: Blue Square

Typical Tread Width: 24”-36”

Typical Corridor Width: 36”-48”

Tread Rugosity: Uneven, with regular rock and root protrusions above trail tread

Average Gradient: 10% or less

Maximum Sustained Grade: 15%

Maximum Grade: 20% for short distances

Typical Tread Materials: Mostly natural surface (native soils) with some rock armoring

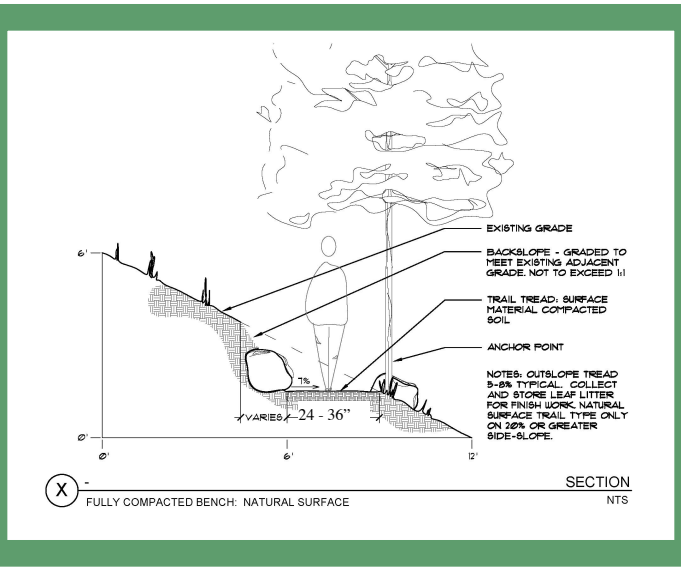
Sideslope Steepness: Ranges from flat to steep sideslopes (>50%)

Turn Radius: Tight turns with possible switchbacks

Trail/Structure Formality: Low formality

Wet Area Crossing Formality: Armored crossings at grade where possible, bridges would be less formal with low level engineering

Duty of Care: Low



STANDARDS & SPECIFICATIONS

Trail Type Name: ST-3, Natural Surface Single Track- Most Difficult

Difficulty Rating: Severe

Difficulty Symbol: Black Diamond

Typical Tread Width: 18”-24”

Typical Corridor Width: 30”

Tread Rugosity: Very rough and uneven, sometimes loose

Average Gradient: <12%

Maximum Sustained Grade: 20%

Maximum Grade: 30%, potentially greater on rock faces

Typical Tread Materials: Natural surface, native soils sometimes loose

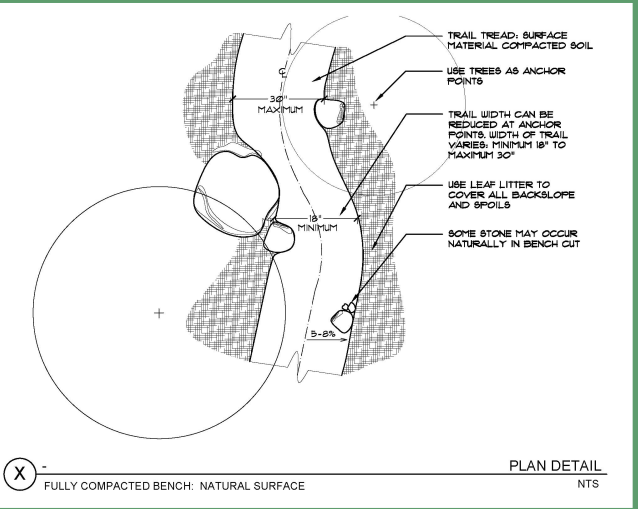
Sideslope Steepness: Moderate to high sideslopes (40-100%)

Turn Radius: Tight

Trail/Structure Formality: Very low

Wet Area Crossing Formality: Very low, single log bridge or 12” hardened, at-grade crossing when muddy

Duty of Care: Very low



TRAIL SYSTEM COMPONENTS

TRAIL SYSTEM VISION:

The Sturbridge Recreation Trails Master Plan seeks to highlight the community's small town character, vast open spaces, scenic character, and abundant natural resources through the development of a diverse, interconnected system of recreation trails and signed touring routes. These facilities will provide improved access to protected lands, the Quinebaug River, community gathering places, and cultural/historical sites. The trail system will bolster Sturbridge's brand as a conservation leader and the ample recreation opportunities will incentivize visitors to spend additional time in Town exploring our natural environment.

COMPONENT PARTS:

Realizing this vision for a recreational trail system within the Town of Sturbridge limits is a multi-faceted process. From the perspective of land management, the Town, MA State Parks, and MA Division of Wildlife and Fisheries each control large acreages. Opacum Land Trust, Trustees for Reservations, and private entities each hold smaller, but still substantial lands that can host recreational trails. Much of the existing trail system on all of these lands is substandard from sustainability and quality recreational experience standpoints and will require improvements to best conserve natural resource as well as recreational functions and values.

From the perspective of parties responsible for the Plan's implementation, each of the land managing entities will need to be collaborators. There will need to be a non-profit trail organization that forms to facilitate trail improvements, assist in trail management and maintenance, and serve as a driving force behind funding development to implement the Vision.

From the perspective of funding these trails, state and federal grant funding, local improvement funds, private donations, open space activity revenue, and volunteer assistance will all serve important functions in efficiently building out and managing the trail system.

Because of the dynamism of these interactions, it is best not to think of the trail system development in phases as many individual projects on different lands will need to develop simultaneously. It is better to envision the trail system as component parts that, when completed, will add value and functionality to the system as a whole. These components are, named for the role each would serve for the Town are:

- **Core Trails**
- **Gateway Destination**
- **Complete Streets**

TRAIL SYSTEM COMPONENTS

Each of these component parts will be made up of numerous types of trails (outlined in the Standards and Specifications section) and each would satisfy a diverse spectrum of recreational desires (outlined in the Trail User Types/Desires section). The trail development timeline, funding, and ongoing management will necessitate a high level of collaboration between stakeholding parties and will not likely be consistent across property ownership. For instance, it is not likely that the Town will wholly fund trail improvements at Wells State Park and vice versa.

The **Core Trails**, specified on lands owned or managed by the Town and US Army Corps of Engineers, are the heart of the Sturbridge trail system, both geographically and figuratively. A world-class trail system on these properties will set the standards for improvements on both new Town-owned open space properties as well as the conserved lands managed by other entities. The Core Trails will provide easy access to many Sturbridge residents due to the central location and improve the access to Sturbridge's protected lands and waters. Finally, these trails will also provide additional recreational opportunities to visitors due to their proximity to Old Sturbridge Village and the Central Tourist District.

The **Gateway Destination** focuses outside the Town-managed lands- providing improvements in trail sustainability, recreational quality, and connections to the Core Trails. Using the Core Trails as a model, a trails organization and the Town can effectively begin to collaborate with other land managing entities, implement the improvements, and market the interconnected opportunities to experience Sturbridge's land and waters. When complete, the diversity, mileage, and quality of these trails will squarely position Sturbridge as a destination for outdoor activities. It has been termed a Gateway Destination because of 1) the proximity to urban populations and 2) its location between those populations and the backcountry destinations of northern New England- to serve as a longer stopover location for this tourism market, a closer-to-home target for vacation, and as additional activities for the existing visitation base.

Complete Streets has a longer focal point, envisioning the role of improved pedestrian and cycling facilities for recreational connectivity, a more energy efficient transportation system, and a healthy, high quality of life. Being cognizant and aggressive with opportunities presented by federal funding programs and incorporating bike/pedestrian features into existing, planned transportation system improvements, this portion of the plan will be largely driven by the Planning and Public Works departments. Complete Streets planning is an endeavor beyond the scope of this plan, but it retains an important recreational role related to improving the safety and access to walking and biking activity, access and spending in the Central Tourist District, and visitation associated with the developing Core Trails and Gateway Destination components.

Each of these component parts is discussed in more detail, including proposed trail types, conceptual trail system design, access improvements, relevant public desires/attitudes, approximated development and maintenance costs, and key facets to be incorporated into each component.

CORE TRAIL SYSTEM

CORE TRAIL SYSTEM

The Core Trail System alternative focuses on the development of a diverse, multi-use trail system on properties primarily owned and managed by the Town of Sturbridge and the US Army Corps of Engineers. The major components of the system include:

- Grand Trunk Trail from Westville to Brimfield Reservoirs
- Leadmine Mountain Trail System
- River Lands Interpretive Trails
- Quinebaug River Public Access Improvements
- Sturbridge Inner Loop (shared in part with the Grand Trunk Trail)

This system will provide great recreational opportunities to Sturbridge residents. The Grand Trunk and Sturbridge Inner Loop trails are centrally located, accessible trails or protected bike/pedestrian infrastructure that showcase the Quinebaug River and historic sections of Town. The River Lands trails provide an intimate introduction to the wooded, hilly terrain of the area with an all-weather surface that supports large amounts of trail use and connections to the Grand Trunk Trail, paved in the River Lands property, that creates a hiking/biking loop that can be accessed from the Commercial Tourist District. For trail users more comfortable in the outdoors or with more time to recreate, the Upper Leadmine Trek Trails provide a number of optional loops of one to approximately eight miles. These trails are surfaced, have mellow gradients, and are wide enough to accommodate side-by-side travel and ease of passage when encountering other trail users. Mountain biking, hiking, and trail running enthusiasts have a Singletrack Trail System of 15-20 miles with connectivity to the main trailheads through the Trek Trails. This allows these savvy trail users to quickly disperse onto narrower, rocky singletrack perched on the prominent ridges of the Leadmine property.

A trail system of this size will attract some additional tourism to the Town and the accessibility to the Commercial Tourist District will entice some existing tourists to spend a few more hours in Town. The configuration of the Upper Leadmine Trail System can support a variety of trail-based events, including 10k walks/runs and horseback tours on the Trek Trails, mountain bike and trail running races on the singletrack, and shorter, guided walks from the main trailheads. Significantly large events will require either a large trailhead or parking lot use at Old Sturbridge Village or the Commercial Tourist District.

CORE TRAIL SYSTEM

Insert Sturbridge Core Trails 11X17", Engineer Fold

CORE TRAILS: GRAND TRUNK

TECHNICAL ASPECTS:

Trail Type(s): Grand Trunk (GT)

Approximate Length: 6 miles

Difficulty Level: Easiest

Development Costs: ~$1,000,000 remaining

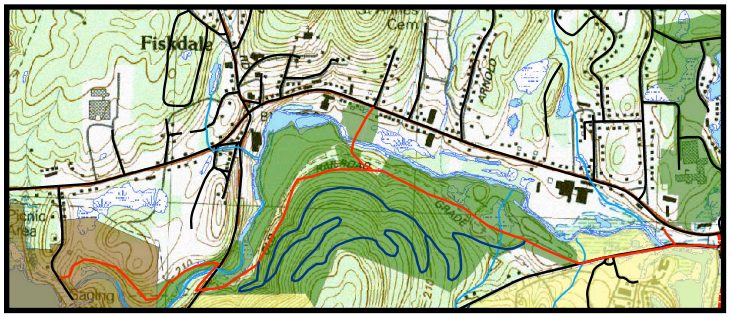
Maintenance Costs: ~$9,000/year

KEY FACETS:

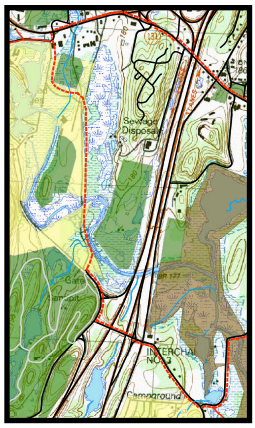
- Riverside experience
- Convenient access
- Connectivity to Rte. 20/Central Tourist District
- Universal Design
- Family-friendly
- Historical and conservation interpretation

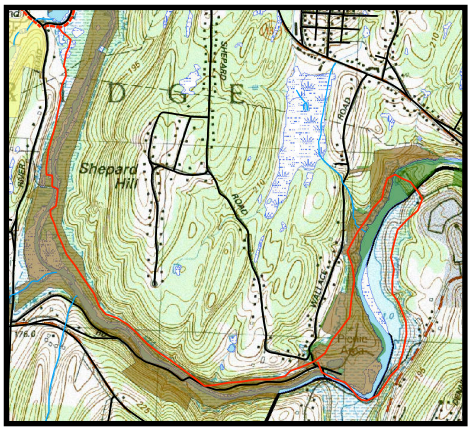
ATTENDANT FACILITIES:

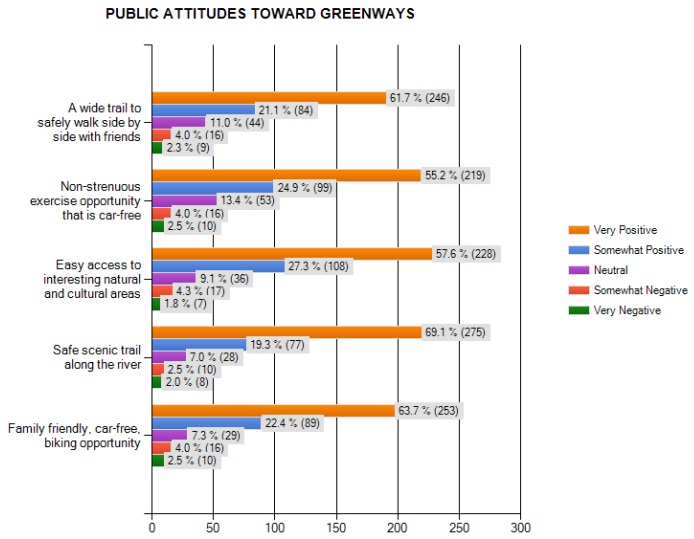
- Street-based directional signage to trailhead locations
- Rest areas/pocket parks with seating and shade
- Interpretive signage
- Access improvements to the Quinebaug River
- Mileage/destination time markers



Grand Trunk section near Rte 20 (above) to be completed, in the vicinity of I-84 (below left) in process, and the completed portion from Westville Reservoir to Mashpaug Rd (below right) complete.







CORE TRAILS: LEADMINE MTN.

TECHNICAL ASPECTS:

Trail Type(s): Trek Trail (TT) , Singletrack (ST 2,3)

Approximate Length: 6 miles (TT), 11 miles (ST-2), 4 miles (ST-3)

Difficulty Level: Easy to Most Difficult

Development Costs: ~$375,000 (TT) and ~$315,000 (ST-2,3)

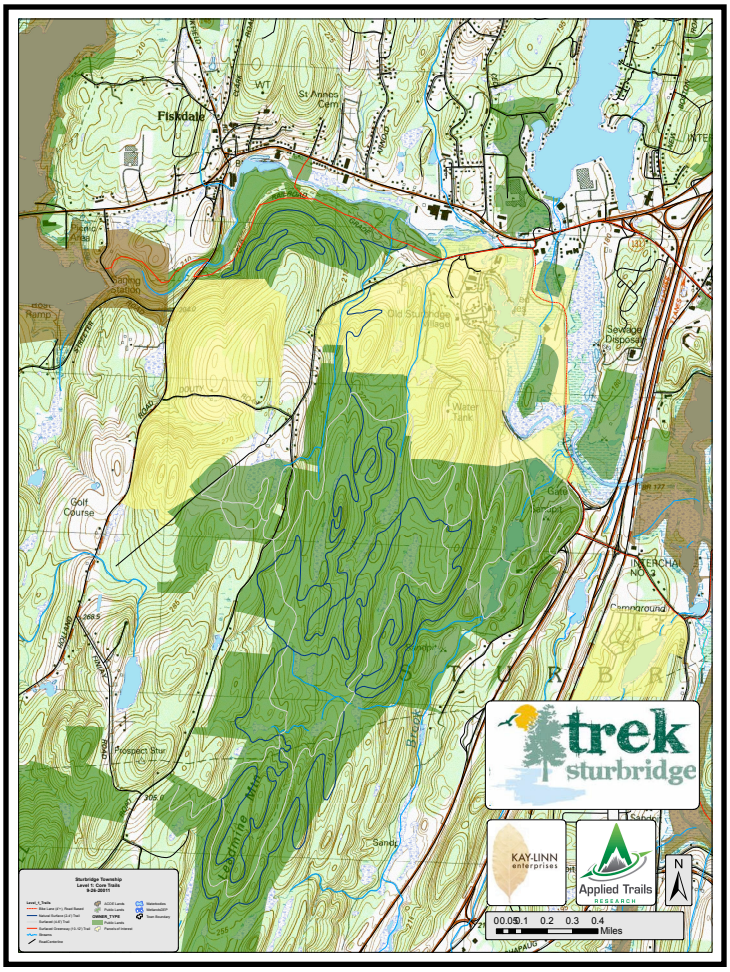
Maintenance Costs: ~$4,500/year (TT) and ~$3,750/year (ST-2,3)

KEY FACETS:

- Central location with multiple trailhead access points
- Convenience to I-84 exit
- Model, four-season trail system
- Excellent event potential
- Visit durations between 30 minutes and a half-day

ATTENDANT FACILITIES:

- 3 or 4 trailhead parking areas with large information kiosks
- Simple trail junction directional signs



Central MA Trail Use Participation ('05 MA SCORP):	
Hiking	43.0%
Mountain biking	6.1%
Cross Country skiing	5.4%
Horseback Riding	1.7%

CT Avid Users' Primary Trail Use ('05 CT SCORP):	
Horseback Riding	21.7%
Bicycling	17.0%
Hiking	12.6%
Bird Watching	8.2%
Kayaking	2.9%

CORE TRAILS: RIVER LANDS

TECHNICAL ASPECTS:

Trail Type(s): Grand Trunk Trail (GTT) and improved, surfaced loops (TT or ST-1)

Approximate Length: 2 miles

Difficulty Level: Easy

Development Costs: ~$85,000

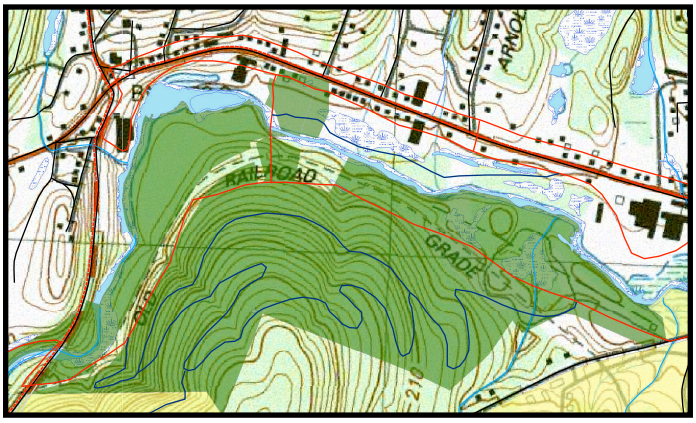
Maintenance Costs: ~$1,500/year

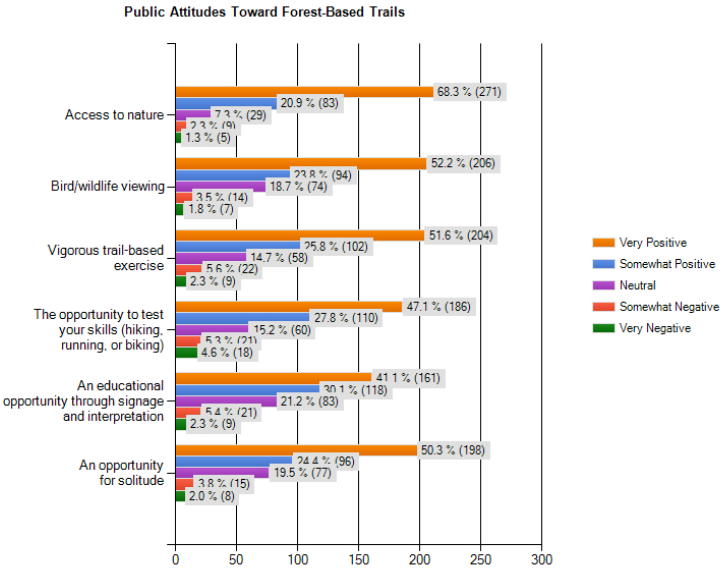
KEY FACETS:

- 20-minute to one-hour forested, loop experience directly accessible from Rte. 20/Central Tourist District
- All-weather use without significant degradation
- Conservation/historic interpretation
- Quinebaug valley view potential

ATTENDANT FACILITIES:

- Small map kiosk and at Grand Trunk Trail junctions
- Interpretive signage
- Viewing platform





CORE TRAILS: INNER LOOP

TECHNICAL ASPECTS:

Trail Type(s): Paved bikeway/sidewalk

Approximate Length: 6 miles

Difficulty Level: Easy

Development Costs: Dependent on the degree of construction

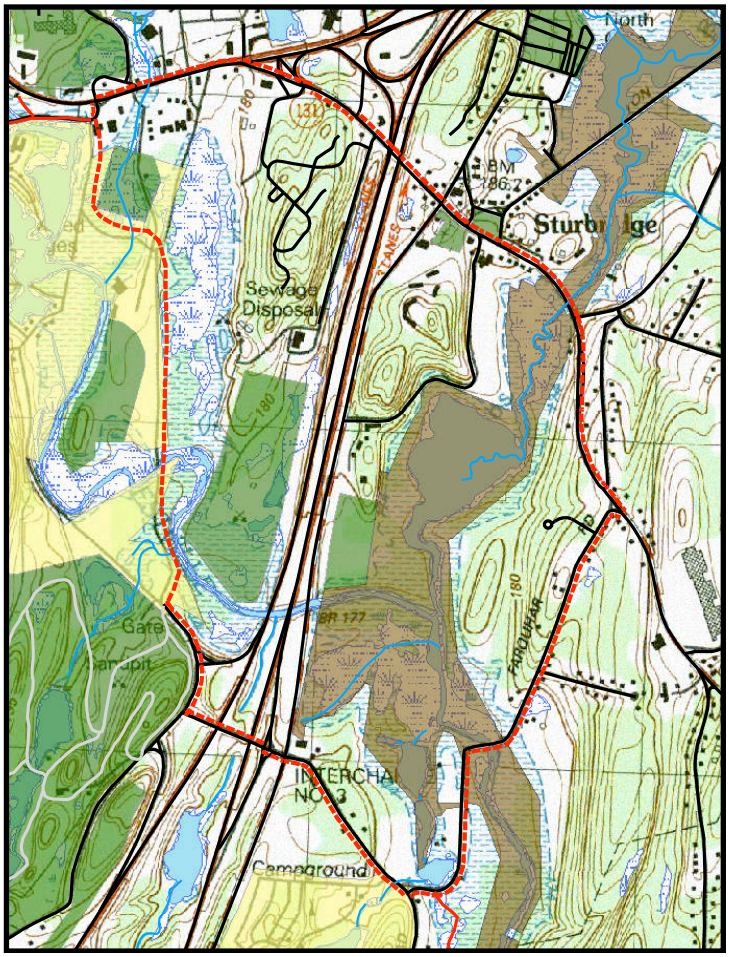
Maintenance Costs: Dependent on the degree of construction

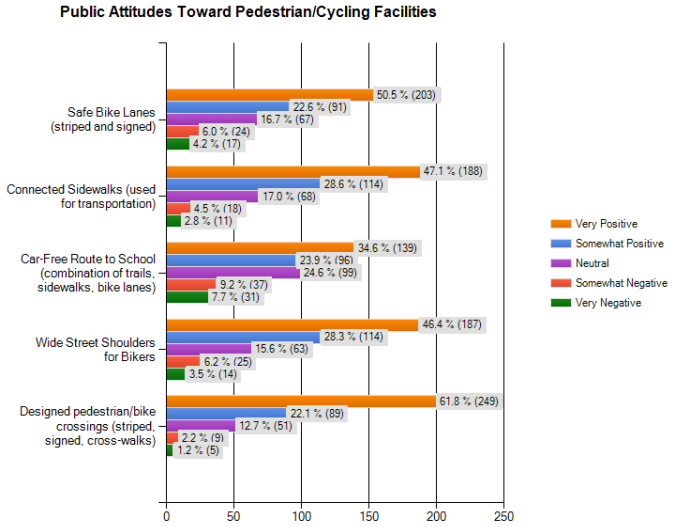
KEY FACETS:

- ASHTO specifications
- Connectivity to Town Common
- Crosswalk improvements
- Central location/ease of access
- Historical interpretation

ATTENDANT FACILITIES:

- Kiosk and map information in Town Common
- Roadside safety signage





CORE TRAILS: COSTS

PRELIMINARY CONSTRUCTION COST OPINION

The following presents a preliminary cost opinion for the development of the Sturbridge Core Trail System. Cost approximations are developed from a number of published sources and the planning team's personal experience. The approximations are somewhat broad as they ultimately depend upon the trail's design and the ability to avoid high-cost structures such as bridges or boardwalks, the ultimate length, and trail construction and materials marketplace. The cost opinion expressed here is based upon full permitting, design, and construction costs for a professional trail contractor. No deductions are made for donations, volunteer efforts, or hybrid contracting.

TRAIL TYPE & LOCATION	APPROX. MILEAGE	APPROX. COST/MILE	TOTAL COST
Grand Trunk- Commercial Tourist District (GT) *	1 mile	$750,000 to $1,000,000	$750,000 to 1,000,000
Sturbridge Inner Loop **	6 miles	$250,000 to $1,000,000	$1,250,000 to $6,000,000
River Lands All-Weather Singletrack (ST-1)***	2 miles	$35,000 to $50,000	$70,000 to $100,000
Upper Leadmine Trek Trails (TT)***	6 miles	$50,000 to $75,000	$300,000 to $450,000
Upper Leadmine Singletrack Trails (ST-2, 3)***	15 miles	$12,000 to $30,000	$180,000 to $450,000
	30 miles		**$2,550,000 to $8,000,000**

* Cost estimate assumes asphalt paved trail and no major bridges. Does not account for major bridges over the Quinebaug River from the Commercial Tourist District. Cost does not account for potential environmental remediation, if such actions are necessary in this area.

** Cost estimate is particularly broad as it has not yet been ascertained whether the trail will be located on a road shoulder or separate from the existing roadways. If separate from roadways, section west of I-84 may incur substantial costs of boardwalk and bridge construction. If roadways currently retain enough width to construct a grade- or curb-separated bike/pedway of a minimum of 8-feet in width, costs may fall on the lower end. If additional paving or roadway reconstruction is necessary, costs may be comparable to a stand-alone asphalt greenway.

*** Narrow, forest-based trails costs can be subsidized to a large extent with assistance from committed and trained volunteers as demonstrated with the existing Camp Robinson Crusoe and Heins Farm trails.

CORE TRAILS: COSTS

PRELIMINARY MAINTENANCE COST OPINION

The following presents a preliminary cost opinion for the maintenance of the Sturbridge Core Trail System. Cost approximations are developed from a number of published sources and the planning team's personal experience. The estimation includes only routine maintenance of trail surface for purposes of comparison of different trail types and relative level of maintenance. Additional facility (trailheads, signage, bridges, etc.), maintenance equipment, or staff allocations are not included in estimate. The cost opinion expressed here is based upon turn-key services, provided by a professional trail contractor. No deductions are made for donations, volunteer efforts, or hybrid contracting.

TRAIL TYPE	APPROX. MILEAGE	APPROX. COST/MILE/YEAR	TOTAL COST- 20 YR.
Grand Trunk- Entire Trail	6 miles	$1,500, does not include resurfacing (9 yr. avg. recurrence for aggregate surface, 17 yr. avg. for asphalt surface)	$180,000 plus 2 full resurfacing projects (estimated at $350,000 per project) = $880,000
River Lands All-Weather Singletrack (ST-1)	2 miles	$750, includes annual partial resurfacing	$30,000
Upper Leadmine Trek Trails (TT)	12 miles	$750, includes annual partial resurfacing	$180,000
Upper Leadmine Singletrack Trails (ST-2, 3)	15 miles	$250	$75,000
	39 miles		**$1,165,000**

GATEWAY DESTINATION

Building a Gateway Trail/Outdoor Destination

The Gateway Trail Destination concept builds upon the Core Trail System by focusing on the development of sustainable recreation trails on other conservation properties within Sturbridge. The system would be developed to appeal to both avid trail enthusiasts and outdoor-oriented visitors seeking a close to home natural destination. The development of this comprehensive trail system would require a very high level of collaboration between the Town, a non-profit trails organization, and area conservation entities, but the number of different partners may allow for concurrent project development.

Employing the Core Trails as the best practices model for construction and maintenance, the continued development of a Town-wide recreational trail system would provide enhanced trail accessibility for all Sturbridge residents, improved connectivity between conservation properties , and increased total trail mileage.

The highlighted additions to the Gateway Trail Destination concept include:

- Retrofitted Singletrack and Trek Trail Systems in Opacum Woods and Wells State Park
- Enhanced trail accessibility from the River Lands and Commercial Tourist District and conservation connectivity through the open space purchase of the Douty Farm property
- Enhanced trail accessibility and wildlife/environmental restoration interpretation opportunities for southern Sturbridge residents through the Lower Leadmine, Tantsiques Reservation and MA Fish and Game lands
- Fish and Wildlife-focused interpretive trail systems in the Wolf Swamp and Breakneck Brook Wildlife Management Areas

The goal is to provide a trail system that drives trail-related tourism and highlights the proactive conservation and unique outdoor lifestyle potential that is possible due to the conglomerate of protected lands within Sturbridge. The full suite of trail experiences would also squarely position Sturbridge as the dominant destination along the Grand Trunk Trail and within The Last Green Valley. The Gateway Trail Destination concept could draw thousands of unique overnight visitors each month, place the Town as the best-appointed stopover for outdoor-oriented travelers in route to more distant destinations, and provide opportunity for very large outdoor-related events (large races, trail festivals, trail-based leaf peeping tours, etc.). This trail system would also have significant positive effects on the Town's tax base and ability to recruit knowledge-based businesses. Finally, the personal and community health and wellness benefits of an expansive and accessible trail system would extend to all Sturbridge residents.

GATEWAY DESTINATION

Insert Sturbridge Gateway Destination 11x17", Engineer Fold

GATEWAY DESTINATION: COST

PRELIMINARY CONSTRUCTION COST OPINION

The following presents a preliminary cost opinion for the development of the Sturbridge Gateway Destination Trail System. Cost approximations are developed from a number of published sources and the planning team's personal experience. The approximations are somewhat broad as they ultimately depend upon the trail's design and the ability to avoid high-cost structures such as bridges or boardwalks, the ultimate length, and trail construction and materials marketplace. The cost opinion expressed here is based upon full permitting, design, and construction costs for a professional trail contractor. No deductions are made for donations, volunteer efforts, or hybrid contracting.

TRAIL TYPE & LOCATION	APPROX. MILEAGE	APPROX. COST/MILE	TOTAL COST
Wells State Park Trek Trails (TT)	3.5 miles	$50,000 - $75,000	$175,000 - $262,500
Wells State Park Singletrack Trails Retrofit (ST 2,3)	15.5 miles	$12,000 - $30,000	$186,000 - $465,000
Opacum Woods Trek Trail (TT)	2.5 miles	$50,000 - $75,000	$125,000 - $187,500
Opacum Woods Singletrack Trails Retrofit (ST-1)	3 miles	$35,000 - $50,000	$105,000 - $150,000
Lower Leadmine Singletrack Trails (ST-2, 3)	3 miles	$12,000 - $30,000	$36,000 - $90,000
Douty Farm Trek Trail (TT)	1.5 miles	$50,000 - $75,000	$75,000 - $112,500
Douty Farm Singletrack Trail (ST-2)	2 miles	$12,000 - $30,000	$24,000 - $60,000
Tantisque/Leadmine Singletrack Retrofit (ST-1)	3 miles	$35,000 - $50,000	$122,500 - $150,000
Breakneck Brook Fishing Access/ Wildlife Interpretation Trail (ST-1)	5 miles	$60,000 - $80,000	$300,000 - $400,000
Wolf Swamp Fishing Wildlife Interpretation Trail (ST-1)	3 miles	$60,000 - $80,000	$180,000 - $240,000
	42 miles		**$1,328,500 - $2,117,500**

GATEWAY DESTINATION: COST

PRELIMINARY MAINTENANCE COST OPINION

The following presents a preliminary cost opinion for the maintenance of the Sturbridge Gateway Destination Trail System. Cost approximations are developed from a number of published sources and the planning team's personal experience. The estimation includes only routine maintenance of trail surface for purposes of comparison of different trail types and relative level of maintenance. Additional facility (trailheads, signage, bridges, etc.), maintenance equipment, or staff allocations are not included in estimate. The cost opinion expressed here is based upon turn-key services, provided by a professional trail contractor. No deductions are made for donations, volunteer efforts, or hybrid contracting.

TRAIL TYPE	APPROX. MILEAGE	APPROX. COST/MILE/YEAR	TOTAL COST- 20 YR.
Trek Trail Additions (TT)	7.5 miles	$750, includes annual partial resurfacing	$112,500
Fishing Access/Wildlife Interpretation Trail Additions (ST-1)	8 miles	$750, includes annual partial resurfacing	$120,000
All-weather singletrack trail additions (ST-1)	6 miles	$750, includes annual partial resurfacing	$90,000
Natural Surface Singletrack Trail Additions (ST-2, 3)	20.5 miles	$250	$102,500
	42 miles		**$425,000**

TOTAL ESTIMATED ADDITIONAL COMMITMENT: $2,148,000

COMPLETE STREETS

COMPLETE STREETS

The Complete Streets concept further builds upon the Core & Gateway Destination Trail Systems by incorporating Town-wide bicycle/pedestrian infrastructure on existing streets. Complete Streets focus on providing enhanced opportunities for safe transportation by pedestrians and cyclists on existing lower speed roads (35 mph speed limit and below) by shrinking the width used by vehicles with a corresponding increase in width dedicated to striped bicycle lanes and sidewalks. Details regarding various feasible design alternatives are outside the scope of a recreational trails plan and depend in large part on collaboration with MA DOT, Town Engineering and Public Works, and existing road improvement schedules. However, general facets of a successful Complete Streets plan would include:

- Wide (5' wide) sidewalks on both sides of the Commercial Tourist District along with standard (4') bike lanes on both sides of Rte. 20.
- 10-12' wide, paved, grade-separated bikeways that provide direct access to the Regional High School and Burgess Elementary School.
- 4'-wide bike lanes developed along lower speed (35 mph) secondary streets throughout and encircling Town to provide safe transportation access throughout Town and a signature road tour, Sturbridge Loop.
- Potential for a paved greenway trail between the Commercial Tourist District and the Quinebaug River to facilitate refocusing the Town on the river rather than a state arterial road.

While not often considered purely recreational trails, creating improved bike/pedestrian facilities in the Commercial Tourist District and safer cycling routes throughout Town (including Safe Routes To Schools) would both likely result in increased tourism via the ability to "tour" the historic landscapes of Sturbridge. The goal is to further position Sturbridge as a model, sustainable community for the 21st Century, providing a highly desireable place to live and work by vastly improving the "livability" through conservation and development focus on the human scale rather than industrial scale. Complete Streets would likely have huge positive effects on the Town's tax base, ability to recruit knowledge-based businesses. The personal and community health and wellness benefits of an aggressively developed Complete Streets model could be exponential, and with so little infrastructure currently present, may provide an opportunity to fund, study, and provide quantitative evidence regarding the effects of providing accessible, safe physical activity options for recreation and transportation.

COMPLETE STREETS

Insert Complete Streets 11x17", Engineer Fold

COMPLETE STREETS

Insert Commercial Tourist District 11x17", Engineer Fold