

SECTION 4

IMPLEMENTATION AND OPERATIONS

OVERVIEW

The alternative transportation system plan establishes an overall vision for the community that is ambitious yet realistic if incrementally implemented. This section sets forth an overall implementation strategy and baseline priorities to guide that process. Operations, maintenance, and education are also considered in this section as an important aspect of implementation planning.

THE CITY AT A THRESHOLD POINT

The vision and values set forth in Section 2 suggest that Bloomington is at a threshold with respect to transportation planning, with more emphasis being placed on balancing transportation options within the city. Through the public process, citizens and their elected and appointed officials have reassessed past practices and considered various means to enhance the public infrastructure to better accommodate alternative modes of transportation. As described in Section 3, providing a more robust network of interconnected trails, pedestrian-ways, and bikeways is achievable from a physical planning perspective.

Implementation of the plan, however, offers inherent challenges and tradeoffs. Both diligence and patience will be required if the plan is to be fully realized. Thoughtful phasing and prudent implementation decisions will be critical to successfully making changes to the public infrastructure that affect various user groups in different ways. Especially with bikeways, testing ideas along select corridors is advised in order to understand tradeoffs, judge impacts to established traffic patterns, and assess the true value they offer. Fiscal limitations also reinforce the importance of focusing resources on the highest value amenities first to gain public support and enthusiasm.

Success in implementing the plan will require insightful leadership and a willingness to use a variety of strategies to manage change and leverage financial resources to full advantage.

INTEGRATING THE ALTERNATIVE TRANSPORTATION PLAN WITH THE COMPREHENSIVE AND OTHER PLANS

Through formal City Council action, the alternative transportation plan becomes part of the City's larger Comprehensive Plan, as is the case with the updated Parks and Recreation Master Plan. Periodic updating of the plan is recommended to ensure that it evolves over time in response to changing needs, opportunities, and learned experience.

PLAN REQUIRES ADDITIONAL REVIEW IN CONTEXT OF OTHER PLANS

Note that implementation of this plan will require additional technical review relative to other City plans to determine feasibility, relative tradeoffs, and timing coordination with other development initiatives as district plans and development area studies evolve. In other words, implementation of this plan will not happen in a vacuum and final outcomes will often be affected by other community planning concerns.

A BALANCED APPROACH TO IMPLEMENTATION

As defined in Section 3, the alternative transportation plan consists of three key components, each of which add value to the public infrastructure in complementary ways. Taking a balanced approach to implementing each of these will ensure that multiple community values are being concurrently realized and that the wide-ranging expectations of residents are well served as time goes on. A balanced approach also provides the City more latitude in taking advantage of opportunities as they arise.

Consistent with the plan as described in Section 3, the implementation strategy consists of three implementation categories, as figure 4.1 illustrates. Each of these will have its own implementation strategy and set of priorities, as considered later in this section.

FIGURE 4.1 – IMPLEMENTATION CATEGORIES



A DISCIPLINED APPROACH TO SYSTEM INVESTMENTS

An important consideration in developing an implementation strategy for each these categories is that the opportunities to enhance the system are quite substantial and diverse. The magnitude of potential investments to achieve full plan implementation will undoubtedly require setting priorities that respond to realistic resource limitations.

The temptation to spread investment dollars too thinly across the entire system is also a major implementation consideration. Unfortunately, this strategy often falls short in that limited improvements do not have a major effect on the public's perception that the quality of the system has improved. This often leaves residents with a sense of unmet expectations, which can result in a decrease in the perceived value of the system, rather than an enhancement.

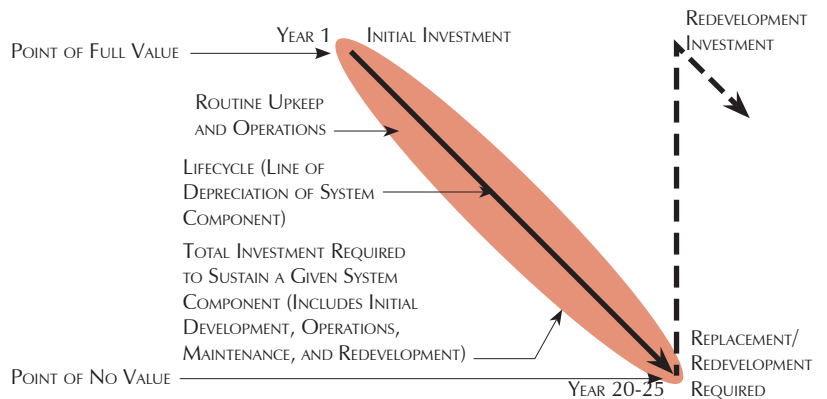
By focusing on raising the level of service through strategic and prioritized investments, the role that the system plays as a defining element in the City's infrastructure can be strengthened.

LONG-TERM COMMITMENT TO A SUSTAINABLE SYSTEM

A sustainable system is the point to which the community is willing to support implementing the system plan to receive desired public benefits. Benefits relate to cultural (personal and social) and economic values that individual residents and the larger community find important and are willing to support by making investments in the system.

To be sustainable, implementation of the plan must take into account the long-term commitments required to develop, operate and maintain, and ultimately replace each aspect of the system as it moves through its lifecycle. Figure 4.2 illustrates this important point.

FIGURE 4.2 – LIFECYCLE COSTS AND LONG-TERM COMMITMENT TO SUSTAINING EACH SYSTEM COMPONENT



As illustrated, the total investment required to sustain a given component of the system is the *cumulative* cost for initial development, routine operations and maintenance costs, and redevelopment once a given amenity reaches the end of its useful lifecycle. Given the major implications to long-term funding, the City should define the level of service it can indefinitely sustain at the point of initial implementation.

PRIORITIZATION CRITERIA FOR SYSTEM ENHANCEMENTS

The following table outlines general criteria for prioritizing plan implementation. The criteria are broad enough to encompass the predominant factors in the decision process, yet limited enough to be manageable for decision makers to gain consensus and take action.

CRITERIA FOR PRIORITIZING PLAN IMPLEMENTATION

Evaluation Criteria	Criteria Description
Community Demand	Action is warranted due to identified community demand based on needs assessment studies, public input, and defined trends.
Redevelopment/ Upgrading of Alternative Transportation Facility	Action is warranted due to facility being: <ul style="list-style-type: none"> • In an unsafe condition or of poor quality • Old and at the end of its useful lifecycle • Ineffective at servicing current needs
Redevelopment Opportunity	Action is warranted to take advantage of redevelopment opportunity where alternative transportation features can be integrated.
Funding Availability/ Partnership Opportunity	Action is warranted due to: <ul style="list-style-type: none"> • Funding availability for specific use • Partnership opportunity for specific type of development

The criteria listed in the table were used as appropriate in establishing the following priorities for each the implementation categories.

IMPLEMENTATION STRATEGIES AND PRIORITIES

IMPLEMENTATION STRATEGY FOR CORE ALTERNATIVE TRANSPORTATION SYSTEM

Note that the priorities relate to implementation planning at a system level, which ranks one item relative to another in terms of overall value. It does not take into consideration day-to-day decisions to complete a missing segment of trail or sidewalk where doing so has more immediate value. It also does not take into consideration more immediate safety concerns, in which replacement of a trail segment is necessary due to existing quality issues.

The strategy for implementing the system plan and establishing priorities is underpinned by two objectives:

1. Developing a balanced system offering multiple community values
2. Taking advantage of opportunities as they arise

At times, these objectives will be in conflict in that opportunities to develop various aspects of the system will present themselves in an unbalanced, “out-of-order” manner. As such, the implementation of the plan inherently requires some degree of flexibility to respond to opportunities as they arise. The City Council will have to consider these issues as they occur and determine the best course of action, which could include a rethinking or departure from the stated priorities.

The following defines the implementation strategy and priorities associated with each of the categories illustrated in figure 4.1.

The core alternative transportation system consists of trails, pedestrian-ways, and bikeways as described in Section 3. Since each of these accommodate different user groups, concurrently investing in each of these over time is the overall recommendation to ensure that each user group’s needs are being addressed. Within each of these components, priorities were established by the Task Force based on value judgments, cost implications, and perceptions of demand, as the following considers. Actual implementation may change priorities based on funding and other variables considered by the City Council.

DESTINATION AND LINKING TRAILS

With respect to trails, the main strategy is to make investments in the highest value trail corridors first to maximize the cost-benefit of system enhancements. Consistent with research findings, investing in destination trails offers the highest return on investment as reflected in expected use levels. Said another way, completion of these corridors will, with little doubt, be highly valued by the community – if designed and built to the highest standard.

In terms of priorities, the following is recommended.

Priority #1 – Xcel Energy Corridor Trail (Destination Trail)

This is an important priority in that the eastern side of the city is lacking in this type of trail opportunity and it makes an important connection to the Minnesota River Trail. It is listed behind the Hyland Trail Corridor only because that corridor will take less resources to complete and not require negotiations with a utility company. It also has somewhat less value relative to the other trails due to the extent of roadway crossings.

Priority #2 – Hyland Trail Corridor (Destination Trail)

With much of this trail corridor already completed, the implementation focus is on finishing missing links. Completion of the linking trail on the southern end of this trail would formalize the connection with the Minnesota River Trail, including connection to the section already completed that heads south across the Old Bloomington Ferry Bridge.

Note that completion of the trails around Bush Lake is a lower priority than priorities #3 and #4 listed on the next page. The same holds true with finalizing the connection on the northern end of the Hyland Trail since completion of this segment is less of a concern in terms of serving residents of Bloomington.

Priority #3 – Mid-City Trail Corridor (Destination Trail)

Although listed third, this corridor offers some very appealing trail opportunities through existing parks and open spaces, even though some segments are along streets – which reduce its overall value relative to the previous priorities. Nonetheless, this corridor is appealing and could be implemented in phases and provide value to local neighborhoods until it is fully completed.

Under a phased approach, upgrading the trails from the river through Central and Moir Parks is recommended first phase to improve access to the Minnesota River Trail corridor for a broader range of trail users. The second recommended phase is from France Avenue over to 84th Street, where much of the trail would be located in public open space lands. This segment would offer high local value to that part of the community. The third phase would focus on filling the gaps between the two previous phases.

Priority #4 – Minnesota River Trail Corridor (Destination Trail)

As stated in Section 3, this type of trail corridor has proven to be very popular and highly valued by virtually all user groups. Given the interconnections with other systems, it will also be of high value to transportation users commuting to other cities. With certainty, the City of Bloomington should work with the MN DNR and USFW to design and implement this corridor. It is a lower priority than the previously listed trails since it is a State trail that will require considerable additional planning and public input before implementation can actually occur.

Priority #5 – Old Shakopee Road Corridor (Linking Trail)

As appealing as this corridor is for a major east-west linking trail corridor, it is also the most complex, trafficked, and costly of the corridors to improve. For that reason, it is a lower priority in that improvement costs are likely to be high while public value relatively modest as compared to the other corridors. In the nearer term, priority focus should be completing missing gaps. Also, continuing to provide enhanced pedestrian-ways as retail and business nodes is recommended as that occurs.

Otherwise, applying the Complete Streets Program guidelines as segments of this corridor are upgraded over time is the more realistic approach to enhancing this corridor for pedestrians and bicyclists.

Priority #6 – Bloomington Ferry Road/West Bush Lake Road Corridor (Linking Trail)

The priority focus with this corridor is completion of the missing trail links as described in Section 3. Once that is complete, incrementally replacing trails and sidewalks is recommended until the entire corridor meets the desirable standard. Realistically, this will take many years given cost realities.

Priority #7 – American Boulevard Corridor (Pedestrian-Way)

Continuation of pedestrian-way enhancements as part of street improvements along this corridor is recommended, as is filling any gaps that currently exist. As with the previous corridor, this will take many years given cost realities.

Priority #8 – France Avenue Trail Corridor (Linking Trail)

The priority focus with this corridor is completion of the missing trail links as described in Section 3, especially sections that are now shoulders on the street. Although addressing these sections will be relatively costly, it is of little value to improve other segments unless these limitations are improved first. Once that is complete, incrementally replacing trails and sidewalks over time is recommended until the entire corridor meets the desirable standard. As with the other linking trail corridors, this will take many years given cost realities.

BIKEWAYS

With respect to bikeways, the first implementation priority starts with reconfiguring streets with fewer constraints (i.e., major intersections) before attempting to reconfigure a more complex corridor, as is the case with the second priority. With each priority, the City will need to test ideas, understand tradeoffs, and judge impacts to established traffic patterns before actual implementation – which will likely affect the actual order of priority once implementation begins. With this strategy in mind, the following is the recommended Task Force priorities for reconfiguring streets to accommodate bikeways.

Priority #1 – 111th Street, Nesbitt Avenue, West 94th Street, and Poplar Bridge Road Bikeway

Since various segments of these streets are already a 2-lane configuration, reconfiguring the remaining segments does not pose any major constraints. Traffic volumes are also modest.

Priority #2 – West 90th Street, Northern Xerxes Avenues, and 86th Street Bikeway

Since this is one of the most important east-west bikeways across the city, it is listed high on the list. However, it is also one of the most complex. As such, it will take time for the City to determine the best approach to addressing various constraints and impacts to traffic patterns along this route. If these can be solved with relative ease, this bikeway should remain a top priority.

Priority #3 – West 102nd Street Bikeway

This street has relatively low traffic volumes and poses fewer constraints than other corridors. The intersection at France Avenue provides an opportunity to determine the best approach to maintaining bikeway continuity through a more complex intersection. Further, the 3-lane configuration is not well liked by many of those attending public meetings because they feel it is less safe for bicyclists than even the previous 4-lane configuration.

Priority #4 – Auto Club Road, 110th Street, and Penn Avenue Bikeway

Parts of this corridor are already being used by bicyclists and its completion would provide a bikeway conduit between Moir Park and the Bloomington Ferry Road Trailhead. It also poses relatively few constraints and traffic volumes are modest.

Priority #5 – Hampshire Avenue Bikeway

This bikeway complements the previous bikeway and creates an appealing connection between Hyland Park and the Bloomington Ferry Road Trailhead. It also poses relatively few constraints, with the exception of the linking trail segment on the southern section.

Priority #6 – 106th Street (Trail and Bikeway), Lyndale Avenue, and East 102nd Street Bikeway

Establishing these bikeway segments would complete the southern bikeway across the city. It is listed a little lower than some of the other bikeways to give the City more time to determine the best approach along 106th Street – i.e. whether an on-road bikeway is achievable or if the linking trail needs to be improved.

Priority #7 – Xerxes Avenue Bikeway

This a lower priority primarily due to the need to develop the trail on the east side of Marsh Lake in order to fill the gap between the south and north end of Xerxes Avenue. Since the development of the trail is a more costly item, it will likely take longer to fund through the City's CIP.

Priority #8 – Old Cedar Avenue South Bikeway

Once the rest of the bikeway system is on place (including replacement of old Cedar Avenue bridge), this bikeway becomes more valuable.

NATURAL-SURFACED TRAILS

With respect to natural-surfaced trails, implementation priority centers on expansion of the trails along the Minnesota River Valley, with the first step being to open up negotiations with various affected agencies to determine the extent to which this can occur. This step should be followed by detailed alignment planning. Note also that implementation of this trail plan is inherently lock-stepped with the proposed destination trail along the river. Second to the trail along the river is implementation of the nature trails defined under the *Park and Recreation Master Plan*.

There are two primary implementation strategies for this component of the system plan, as the following considers.

NEIGHBORHOOD PEDESTRIAN PROGRAM

As defined in Section 3, in existing developed neighborhoods not subject to redevelopment, the focus is on the removal of barriers that diminish the likelihood of a person walking or biking to a destination. Common barriers include gaps in the sidewalk system, inconsistent standards, and lack of end-of-trip facilities at destinations, especially schools. The implementation strategy for addressing these issues is expansion of the City's successful Pavement Management Program (PMP).

The PMP provides a systematic program of street rehabilitation and repair in order to assure that the city streets are serviceable, safe, functional, and provided at a reasonable cost to meet the needs of residents and the traveling public. Initially, the program focused on the upkeep of approximately 360 miles of city streets within its boundaries. This includes seasonal maintenance activities such as snow removal, crack sealing, street patching, sweeping, as well as structural maintenance of the street system.

IMPLEMENTATION STRATEGY FOR NEIGHBORHOOD PEDESTRIAN/SAFE ROUTES TO SCHOOL PROGRAM

More recently, the program is being expanded to cover other infrastructural features including trails, sidewalks, and streetscape amenities. Continued expansion of this program to address to document and systematically address the neighborhood pedestrian issues defined in under this plan is expected and recommended.

In neighborhoods subject to redevelopment, removal of existing barriers and application of the Complete Streets guidelines defined in Section 3 is recommended to enhance the use of alternative forms of transportation at the neighborhood level.

SAFE ROUTES TO SCHOOL PROGRAM

To complement the City's own PMP program, continuing to pursue other funding to enhance pedestrian-level access to schools is recommended, as has been the City's recent practice. Although this type of program is often underfunded, it is still important for the City to pursue these programs to augment local funding sources.

IMPLEMENTATION STRATEGY FOR COMPLETE STREETS PROGRAM

As defined in Section 3, the Complete Streets program focuses on incorporating alternative transportation features into all new public and private developments or redevelopment to achieve the "The Complete City" vision described in Section 2. Newer developments along American Boulevard and the retail nodes along Old Shakopee Road are examples of where the City is already incorporating many of the features important to enhancing pedestrian-level access and encouraging alternative forms of transportation.

Continued expansion of these practices consistent with the guidelines defined in Section 3 is encouraged, including adoption of a formal Complete Streets policy that would apply to all new or upgraded streets, transit facilities, public spaces, and private development areas to ensure safe access and movement for all users of various modes of transportation.

In the shorter term, expanding the Pavement Management Program (PMP) to cover sidewalks, trails (including those in parks), and streetscape features is recommended. Once implemented, gaps in the system that currently exist would be eliminated over time, which in turn would encourage greater use of alternative forms of transportation.

IMPLEMENTATION COST PROJECTIONS

The forthcoming cost projections define the potential costs associated with implementing the core components of the system plan to reach an *optimal* level of development. The projections are based on a combination of site-specific development issues and professional judgments based on projects of similar size and characteristics. The projections are based on 2007 dollars, which will require inflation adjustments over time.

The cost projections take into consideration assumptions regarding the basic age of existing amenities. The actual timing of upgrading a particular component will affect whether there is any value in salvaging an existing feature or simply replacing it. With trails, it is assumed that developing a destination or linking trails entails removal of the existing trail or sidewalk and replacing it with a new one meeting desirable standards.

Timing will also affect the cost projections – which generally means costs will rise above what is shown the further out upgrades are made.

USE OF THE COST PROJECTIONS

The intended use of the cost projections is to aid the City Council in developing an overall funding and implementation strategy, including:

- Defining the potential magnitude of the public investment needed to develop the system to its *optimal* level
- Comparing the relative cost of one park or trail improvement over that of another
- Determining the level of service threshold that the community is willing to support with local funding
- Prioritizing and budgeting for capital improvement initiatives based on funding availability

LIMITATIONS OF THE COST PROJECTIONS

Implementation costs will vary, perhaps significantly, depending on the actual conditions found out in the field, final design and scope of a given project, and economic conditions at the time of bidding and implementation. To remain relevant, the cost projections should be updated on a periodic basis to stay in alignment with potential cost increases over time, and to factor in costs to replace items that have subsequently worn-out.

Note that the projections are limited to the core system of trails and bikeways defined in Section 3. Given the uncertainties of size and scale associated with implementing the Neighborhood Pedestrian/Safe-Routes to School Program and Complete Streets Program, projecting costs for these elements is too uncertain at a system planning level to be of much value. Instead, projecting the costs for these improvements is best accomplished through the PMP as gaps in the infrastructure are more accurately documented and prioritized.

COST PROJECTIONS FOR TRAILS AND BIKEWAYS

Projecting the costs for developing these trails and bikeways without the benefit of site surveys and design layouts offers certain practical limitations. Given this, it is important to underscore that the cost projections presented here are for planning purposes and that more detailed evaluation is required to firm up costs as the City develops their funding packages and grant applications.

The forthcoming cost projections for trails are based on estimated unit costs assuming generally good construction conditions and requiring a modest degree of site preparation (e.g., soil corrections), stormwater work, and limited retaining walls. Commonly, trail development ranges from \$190,000 to \$270,000 per mile, exclusive of bridges or underpasses. With limited right-of-way and other constrictions, trail projects in Bloomington tend to be on the higher end of the cost range. Based on recent bidding on local area projects, the cost projections for implementing the core trail plan as defined in Section 3 are based on a \$250,000 average cost per mile.

With bikeways, cost projections relate to restriping streets from 4-lane to 2-lane configurations. Cost projections for implementing the core bikeway plan are based on \$2,500 to \$3,000 average cost per mile. This includes blacking out existing painted lines, painting new lines, and on-road stenciling associated with bike lanes at major intersections. Bikeway signage is estimated at \$1,500 average cost per mile. Added together, per mile costs for bikeways is a modest \$4,500.

POTENTIAL COST FOR IMPLEMENTATION OF CORE TRAILS (AS DEFINED IN SECTION 3)

Trail Segment	Estimated Length	Projected Costs
<p>Priority #1 – Xcel Trail Corridor Includes paved trail following Xcel powerline easement. Includes \$200,000 budget for boardwalk on southern end to make the connection with the Minnesota River Trail. Includes a \$400,000 budget for crosswalk safety enhancements at three major crossings. Does not include any bridges.</p>	3.5 miles	\$1,475,000
<p>Priority #2 – Hyland Trail Corridor Since much of this trail is completed, estimate only includes paved trails on either end of this corridor and the paved trail segment along East Bush Lake Road. Does not include any road relocation of East Bush Lake Road or the pedestrian bridge across this road proposed near the beach entrance.</p>	2 miles	\$500,000
<p>Priority #3 – Mid-City Trail Corridor Includes paved for entire of this corridor from Minnesota River Trail to 84th Street. Does not include any bridges.</p>	7.1 miles	\$1,775,000
<p>Priority #4 – Minnesota River Trail Corridor Includes paved trail following river and connections to local access points. Also includes \$200,000 budget for relocating existing natural surfaced trail and \$400,000 for smaller bridges or large culverts across a few side channels.</p>	13.2 miles	\$3,900,000
<p>Priority #5 – Old Shakopee Road Corridor Includes replacing existing paved trails and sidewalks along this corridor with new and wider trails. One side of road only. Assumes many of the existing trails and sidewalks are reaching the end of their effective lifecycle or are substandard.</p>	10.35 miles	\$2,600,000
<p>Priority #6 – Bloomington Ferry Road/West Bush Lake Road Corridor Includes replacing existing paved trails and some sidewalks trails along this corridor with new and wider trails. One side of road only. (Assumes many of the existing trails are reaching the end of their effective lifecycle or are substandard.)</p>	5.4 miles	\$1,350,000
<p>Priority #7 – American Boulevard Corridor No estimate is provided. Assumes that completion of pedestrian-ways along this street will be included as part of ongoing streetscape improvements by the City under separate budget.</p>	8.0 miles	N/A
<p>Priority #8 – France Avenue Trail Corridor Includes replacing existing paved trails and some sidewalks along this corridor with new and wider trails. One side of road only. Assumes many of the existing trails and sidewalks are reaching the end of their effective lifecycle or are substandard. Also includes \$500,000 budget for retaining walls, etc, for areas of limited space between the road edge and wetlands.</p>	2.25 miles	\$1,100,000
Base Total		\$12,700,000
Contingency (10%) and Professional Fees (15%)		\$3,175,000
Overall Total		\$15,875,000

Costing Note!

Potential costs do not include extraordinary costs such as bridges, extensive retaining walls, or right-of-way acquisition, if needed.

Adjusting for inflation!

A 10% per-year cost estimate increase is recommended from date of plan adoption to account for inflation.

POTENTIAL COST FOR IMPLEMENTATION OF CORE BIKEWAYS (AS DEFINED IN SECTION 3)

Trail Segment	Estimated Length	Projected Costs
Priority #1 – 111th Street, Nesbitt, West 94th Street, and Poplar Bridge Road Bikeway	4.5 miles	\$20,250
Priority #2 – West 90th Street, Northern Xerxes Avenues, and 86th Street Bikeway	6.0 miles	\$27,000
Priority #3 – West 102nd Street Bikeway	2.5 miles	\$11,250
Priority #4 – Auto Club Road, 110th Street, and Penn Avenue Bikeway	6.0 miles	\$27,000
Priority #5 – Hampshire Avenue Bikeway	1.0 miles	\$4,500
Priority #6 – 106th Street Bikeway, Lyndale Avenue, and East 102nd Street Bikeway	3.0 miles	\$13,500
Priority #7 – Xerxes Avenue Bikeway	1.5 miles	\$6,750
Priority #8 – Old Cedar Avenue South Bikeway	2.0 miles	\$9,540
Base Total		\$119,790
Contingency (10%)		\$11,979
Overall Total		\$131,769

Adjusting for inflation!

A 10% per-year cost estimate increase is recommended from date of plan adoption to account for inflation.

POTENTIAL COST FOR IMPLEMENTATION OF NATURAL-SURFACED TRAILS (AS DEFINED IN SECTION 3)

Trail Segment	Estimated Length	Projected Costs
Priority #1 – Minnesota River Valley Trails	Budget figure*	\$450,000
Base Total		\$450,000
Contingency (10%) and Professional Fees (15%)		\$112,000
Overall Total		\$562,000

*** Costing Note!**

Budget figure would allow for around 9 miles of trail improvements/expansion, some boardwalks, and minor bridges. Note that this figure assumes work would be done by a contractor. Costs could be reduced if local advocacy groups participate in construction.

Adjusting for inflation!

A 10% per-year cost estimate increase is recommended from date of plan adoption to account for inflation.

COST PROJECTIONS FOR EXPANDING PMP TO COVER SIDEWALKS, TRAILS, AND STREETScape FEATURES

Projecting the costs for covering sidewalks, trails, and streetscape features cannot be determined until the inventory is complete. That said, it is clear that the total cost to replace worn-out asphalt trails, improve substandard sidewalks, and fill gaps in the system would be in the millions of dollars.

MAINTENANCE AND REPLACEMENT COST BUDGET CONSIDERATIONS FOR TRAILS

Undertaking routine and preventive maintenance ensures a safe environment, reduces hazards, and helps control future repair costs. (Maintenance costs and responsibility for maintenance should be assigned when projects are planned and budgets developed.) Replacement costs also have to be factored into cost planning. Generally, trails can be expected to have up to a 20 year lifecycle.

For long-range budgeting purposes, factoring in an annual maintenance and replacement cost of 10 percent of infrastructure replacement costs accounts for year-to-year maintenance plus replacement of the facility after 20 years.

OPERATIONS AND MAINTENANCE CONSIDERATIONS

The following operations and maintenance guidelines provide general recommendations for monitoring and maintaining paved trails, sidewalks, and bikeways. The objective is to prolong the life of these facilities and provide a safe surface to travel on. The guidelines are based on common practices in Minnesota and take into consideration climate and other site conditions. Note that the guidelines are generic and not a substitute for maintenance programs tailored to site specific conditions. In all likelihood, these considerations would be integrated into the City's existing PMP as defined on page 4.7.

Note that the management plan and monitoring/inspection schedule will be consistent with the City's successful Pavement Management Program (PMP) – which stresses right action at the right time.

MONITORING AND INSPECTIONS SCHEDULE

Monitoring and inspections of all facilities should occur throughout the year to detect maintenance issues before safety is compromised. The following table provides an overview of inspections that can be completed during each season.

INSPECTIONS SCHEDULE CONSIDERATIONS

A routine inspection schedule is important for staying on top of maintenance issues and taking care of problems at an early stage. The following is a suggested seasonal schedule for inspections.

Season	Inspection Focus
Spring	Inspect for damage from winter use and freeze-thaw cycles. Check for erosion, plugged culverts, user and maintenance vehicle-caused damage, slumping, cracking, and other visible signs of surface imperfections. Record problems and schedule maintenance on a priority basis.
Summer	Inspect regularly. In addition to items listed for spring, also inspect vegetation growth and encroachment and pay special attention to drainageways and ditches that may have eroded during the spring runoff. Record all problems and schedule maintenance on a priority basis.
Fall	Inspect regularly. Focus on maintenance that should be done before winter to avoid more damage during spring thaw. Pay special attention to culverts and drainageways that will be needed to handle spring runoff. Fill cracks.
Winter	This is a good time of year to check low areas and drainages that cannot be easily accessed during the summer. This includes culverts, ditches, and beaver ponds.

GENERAL MAINTENANCE GUIDELINES

Maintenance of paved trails, sidewalks, and bikeways falls into a number of basic categories, as the following considers.

Vegetation Management

To maintain an acceptable clearance zone and preserve the integrity of the trail and sidewalk surfaces, vegetation along them needs to be managed. Preventing vegetation from breaking up the edges of the asphalt surface is especially important to trail longevity. If vegetation is left unchecked, cracking, crumbling, and surface holes can rapidly develop.

Woody vegetation close to the trail can send root suckers under and then through the asphalt, destroying the integrity of the pavement. This vegetation needs to be removed by cutting and/or spraying of an approved herbicide by a licensed applicator. Cutting is the preferred method whenever possible, and the only acceptable approach in ecologically sensitive areas.

Herbaceous cover along the shoulders should be mowed to minimize encroachment problems. A 2- to 3-foot mowing strip is typically the minimum. If erosion has taken out vegetative cover, solve the problem before restoring vegetation.

Asphalt Crack Repair

Routine crack repair is critical to trail longevity. It is especially important to complete this work before winter.

In general, all cracks wider than three-eighths inch should be filled. Those wider than one-half inch should be cut out and patched. Longitudinal cracks, which are typically structural problems, should be cut out and patched, not filled.

In areas where cracking is extensive and the subgrade is deemed stable by an engineer, an overlay can be used since the problem will not be resolved through crack filling. Note that drainage of the trail needs to be reviewed to make sure it is not compromised if an overlay is added. If so, the drainage issue must be corrected.

Repairing Crumbling Edges

Broken or crumbling edges are typically caused by either poor subgrade preparation before paving or heavy maintenance vehicles deflecting the asphalt surface and causing it to fail, especially in the spring during the frost-out period. Poor subgrade drainage can also be a factor in edge failure. If the trail, subgrade, and base material are poorly drained and remain wet, especially through freeze-thaw cycles, pavement failure can be expected, typically starting at the edge where the pavement is the weakest.

Cutting out the damaged area and inspecting the subgrade is required in these instances. If the subgrade is confirmed to be stable, the area can be patched using Mn/DOT specifications for asphalt repair, which include the use of a tack coat to seal the patch from moisture. If the patching area is large, removal of the entire area and replacement is recommended, since patches can annoy trail users.

Pitting and Grooving

Pitting and grooving can be caused by trail grooming or snowplowing equipment. If the damage is extensive enough to be of concern, an asphalt overlay of at least 1 inch is recommended. In the most severe cases, or when this is a routine problem (such as the approach to a bridge), using concrete for a section 30 feet or less is a common approach.

Slumping, Caving, and Holes

Slumping, caving, and holes can be attributed to many factors, including animals, erosion, culvert failure, settling at bridge approaches, and subgrade problems.

To repair holes caused by animals, smooth them out, repack the subgrade, and fill with an asphalt patch, which should be compacted. The patch should be level with or slightly crowned (but not lower than) the adjoining surfaces to avoid trapping water and causing future problems.

In situations where erosion and culvert failure are the problems, identify and address the cause before making the repair. Use the patching approach described above.

The area where an asphalt trail surface abuts a bridge deck is highly susceptible to separation, cracking, and slumping. Although specific repairs depend on the bridge design, the typical problem is the lack of a solid backing for the asphalt surfacing to be placed against or over. Either concrete or pressure-treated wood can often be used in these situations, although site-specific solutions are most common due to the variability of what can be encountered. The bridge manufacturer, who should be contacted to ensure that solutions do not compromise the bridge integrity, may have additional suggestions.

Sealcoating

Sealcoating relates to surface treatments used to cover minor surface imperfections and asphalt deterioration from weathering and oxidation. Although sealcoating has its advocates, it also poses some significant limitations, including:

- Short life span – with extreme variability between products
- Tendency for the finished surface to become slippery when wet unless a material such as sand or crushed rock chips are added (which is not desirable for most bicyclists and in-line skaters)
- Incompatibility and inconsistency in products – with some products found to not bind to asphalt very well

For these reasons, the cost/benefit of sealcoating is uncertain and some maintenance departments forgo it and do an overlay on a shorter rotation with the money saved. Note that as products improve, the cost/benefit of sealcoating may become more justifiable. For best results, seal coating should be applied in the second year to prevent moisture from seeping into surface cracks and voids and to prevent the surface from drying out. Thereafter, seal coating every 3 to 5 years is common.

MANAGEMENT PLANS

A management plan identifies maintenance needs and responsibilities. A management plan that includes the maintenance component for a proposed facility should be prepared during project planning and be funded as part of implementation approval.

Additionally, a management plan should include a means for users of the system to report maintenance and related issues and to promptly address them. User-initiated maintenance requests should follow an established procedure to help avert deterioration of the city's infrastructure and reinforce resident-ownership of the system.

ROUTINE MAINTENANCE CONSIDERATIONS

In addition to seasonal monitoring and inspections, routine maintenance also needs to be undertaken consistent with City of Bloomington policies. The following highlights a few areas of particular importance.

Snow and Ice Removal

To foster year-round use of trails and pedestrian-ways, a snow and ice removal policy and accompanying plan is necessary. When provided on a designated trail, pedestrian-way, or bikeway, snow and ice should be pushed well out of the travel lane. Bikeways, gutters, and curb ramps should not be used as snow storage areas for snow removed from streets.

Sweeping

Loose sand and debris on the surface of all trails, pedestrian-ways, and bikeways should be removed at least once a year, normally in the spring. Sand and debris will tend to accumulate on bicycle lanes and shoulders because automobile traffic will sweep these materials from the automobile portions of the roadway. This is especially true for bicycle lanes that are located directly adjacent to a curb, where debris collects already.

Drainage Facilities

Drainage facilities often deteriorate over time. Ensuring that bicycle-safe drainage grates are located at the proper height greatly improves bicyclist safety. Adjusting or replacing catch basins that have deteriorated or present a hazard should occur as needed to ensure continued safe operations and improve drainage.

EDUCATION AND PROMOTION

Complementing the alternative transportation system defined under this plan with an education program is important to increasing actual use and safety of the system. The following covers the most important aspects of education and promotion programs to foster increased participation in the use of alternative forms of transportation in Bloomington.

PROMOTING SAFETY

Bicyclists, motorists, and pedestrians each have a responsibility for making all modes of transportation safe. Effective safety programs can reduce the risk of crashes and injuries while giving pedestrians and bicyclists greater confidence to use alternative transportation facilities.

Typically, safety training focuses on:

- Developing and reinforcing safe skills in children and adults
- Teaching bicyclists their rights and responsibilities
- Increasing awareness of motor vehicle operators of the rights of bicyclists and pedestrians, especially their responsibility to safely share the road with bicycles and respect pedestrians in crosswalks.

With children, working closely with local schools to provide safety training and teach riding skills is recommended. Critical messages for children and adults include always wear a helmet, obey traffic laws, ride with the flow of traffic, and be visible.

With motor vehicle operators, the goal is to increase awareness of the alternative transportation system and following established laws related to accommodating bicyclists on roadways and pedestrians in crosswalks.

PROMOTING THE SAFE USE OF ALTERNATIVE TRANSPORTATION FACILITIES

The City is encouraged to actively promote the use of the system through various programs and forms of communication. The following provides a few suggestions in this regard.

Special Events and Programs

Events ranging from weekend group rides to major bike rides and walking-for-a-cause should be promoted, similar to events routinely held in other cities. City-based, non-profit, and advocacy groups should be encouraged to sponsor events and activities that promote healthy lifestyles through physical activity. Advocating local walking clubs is also gaining favor in some communities, with the City providing a conduit for interested residents to meet up with others.

Special events can help raise the profile and potential for bicycle commuting and walking, educate the community of the facilities that are available, and promote healthy lifestyles. For example, the City of Bloomington currently hosts walking and biking events, such as Iron Girl and The Race for the Cure.

School-Age Programs

Encouraging healthy, active lifestyles at the earliest ages is important to establishing life-long habits. Working closely with local schools to encourage students and staff to develop these habits is recommended. This ranges from implementation of Safe Routes to School Programs to establishing awards and incentives for riding or walking to school. Student discounts at area bicycle shops can also be an effective tool for encouraging bicycling.

Adult Bicycle Incentive Programs

Increased use of bicycle transportation can be encouraged with adult incentive programs as well. For example, business associations can provide discounts to shoppers who arrive by bike; employers can provide close to the door and secure bike parking areas; and transit facilities can provide high quality and secure bicycle facilities.

Bike and Trail System Maps

An alternative transportation system is only of value if residents first understand it and then know how to access and use it to get around the community and to various destinations. Providing system maps (i.e., Hike and Bike Guide) in printed and electronic form is a high-benefit, low cost approach to promoting the use of the system. In addition to providing system information, maps can provide information on rules, safety, and connections to transit hubs. Another helpful tool is the use of web-based mapping that allows users to define their own routes.

Law Enforcement

As with motor vehicles, enforcement of bicycle and pedestrian laws, in concert with educational programs and peer pressure, will foster the safe and responsible use of the alternative transportation features defined under this plan. Being effective in this regard will require a close working partnership between local law enforcement, City staff, local schools, and local advocacy groups in coordinating educational programming backed up by appropriate law enforcement.

OUTREACH AND PUBLIC INVOLVEMENT

Bloomington continues to expand its outreach effort to improve public awareness of its programs and services. This outreach effort will be extended to informing the community about the alternative transportation system as it evolves. This including the use of:

- **Printed Materials:** Bloomington develops and distributes on a periodic basis brochures and maps, including trail and park maps.
- **Electronic Communication:** Bloomington has a well-established web page to inform citizens about the City's functions and services. In addition, the public can contact the City offices through the e-mail system.
- **Other Outreach:** Other forms of outreach and marketing include displays at events, articles in local publications, the production of flyers and brochures and the display of information at City Hall kiosks. The City also publishes news releases and advertisements in local community and metropolitan area newspapers that highlight upcoming programs and facility openings.

Bloomington is committed to continuing public involvement through the implementation of the system plan. The degree to which this will occur will vary depending on what aspect of the plan is being implemented.

For larger scale projects, such as development of a major trail, public involvement in the actual design process may be fairly extensive and involve representation from key stakeholders. In addition, forums for broader public input (e.g., open houses and presentations) should also be used as needed to communicate and exchange ideas with interested citizens. For smaller scale projects, notification of interested parties would be a more appropriate approach.

The objectives associated with involving citizens in the implementation process include:

- Determine who the stakeholders are and their interest in a particular development initiative
- Understand their needs and unique perspectives
- Identify and understand concerns and problems
- Develop alternatives and find appropriate solutions with input from stakeholders

In addition, Bloomington will continue to take advantage of new and evolving tools such as the Rapid Health Assessment described in Section 1 and in Appendix B to involve the community in the planning process.

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