

7 Section

Operations and Maintenance

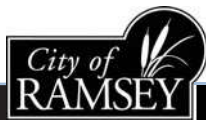
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A. Overview

Having an operations and maintenance plan is as important as getting the trails built. Proper maintenance allows the initial investment to be fully utilized and enjoyed. Having an operations plan in place can result in more productive work time from maintenance staff. A maintenance schedule and operations plan must be rigid enough to act as a standard that can be referenced by employees, yet flexible enough to change with changing policies, physical environments, budgets, staff, and weather.



The City's current Operations & Maintenance (O & M) Department is responsible for the operations and maintenance of the city's infrastructure. This section defines the department's responsibilities as they relate to trails and addresses overall priorities. This section does not cover day-to-day scheduling and resource allocation, which, given their fluid nature, require ongoing decisions by the director and the department managers. The intent here is to provide the Park Board, City Council, and residents with a broader perspective of how this function is structured and conducted to ensure effectiveness and efficiency of the operation. Greater detail on each of the issues addressed in this section is available through the department director on request.



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A. Overview Cont.

In general, the scope of work performed by the O & M department and volunteer park and recreation leadership is (but is not limited to) the following:

Spring maintenance including:

- Sweeping/Powerwashing trails from winter de-icing programs (removing gravel, sand, salt)
- Removing snow fencing
- Removing stakes that marked trails for snow removal
- Picking up trash and disposing from turf areas and trash receptacles
- Reseeding turf areas from oversalting, winter kill, or damage from snow removal operations

Summer maintenance including:

- Sweeping trails to remove sticks and debris (weekly basis)
- Picking up trash pickup and disposing from turf areas and trash receptacles (bi-weekly)
- Reseeding turf areas from dieback (weekly)
- Watering turf areas that are stressed (bi-weekly)
- Replacing bituminous trails by milling 1.5" and resurfacing with 1.5" bituminous

Fall maintenance including:

- Sweeping trails to remove sticks and debris (weekly basis)
- Picking up trash and disposing from turf areas and trash receptacles (bi-weekly)
- Reseeding turf areas from dieback (weekly)
- Watering turf areas that are stressed (bi-weekly)
- Staking trails for snow removal
- Raking leaves and compost

Winter maintenance including:

- Sweeping trails to remove sticks and debris (weekly basis)
- Designing accessibility and safety using ADA and Universal Design Guidelines

Volunteer and community service maintenance:

- Using community volunteers for spring cleanup (picking up trash and sweeping trails)
- Involving community with invasive plant removal (e.g. removing buckthorn)

Programming and using "Friends of Ramsey's Trails" (FORT) group:

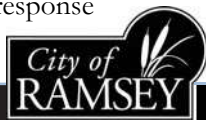
- Involving the group with neighborhood watch groups for security
- Organizing community FORT meetings related to trail maintenance as needed

Associating maintenance costs by corridor:

- Attachment A at the end of this section describes in detail the maintenance costs per trail

Incorporating public safety aids and the police in vandalism and trail security:

- Locating "Call Boxes" that can be used for security and emergencies. These should be located at each trailhead.
- Create "Crime Prevention" courses that will be staffed by local police and fire department for instruction on safety, security and emergency response



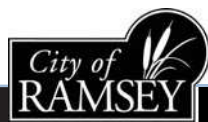
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B. Operations and Maintenance Department

Part of managing an operations and maintenance group that is dedicated to trails is to retain staff specialized in areas of knowledge that pertain to trail maintenance, and to determine when and how that maintenance gets completed. As part of the City of Ramsey's Operations and Maintenance Department, the addition of a Trails Manager is suggested to oversee and implement policies and scheduling related to the operation and maintenance of trails. The position of Trails Manager would entail the following:

<i>Division</i>	<i>Responsibility of Division</i>	<i>Personnel Training Requirements</i>
Trails Manager	<p>Manager reports to the Trails Supervisor and is responsible for all operations and maintenance activities associated with trails including:</p> <ul style="list-style-type: none"> • Routine Maintenance • General trail inspections (safety, erosion, surface quality) • Trails, and capital improvements (contracted) <p>Manager is also responsible for work force hiring, scheduling, and oversight. Work force personnel are from a common pool of workers.</p>	<p>Specialized training is required for a number of the work tasks under this division, including:</p> <ul style="list-style-type: none"> • Trail inspections - the city typically has a minimum of two certified inspectors to ensure compliance to ever-changing regulations and guidelines • Herbicide and pesticide use and application as part of the natural resources restoration and management program <p>Trail maintenance specialists - dedicated work force with training and experience needed to maintain high quality trails.</p>

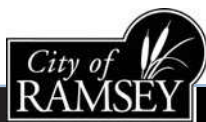


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C. Operations and Maintenance Routine Functions

Routine Trail Maintenance	This category relates to a wide-range of maintenance issues such as minor patching and erosion control. Although not as definable as turf management, it is a necessary function of the department.
General Trail Inspections	Inspections are routinely completed along the trails to identify hazards and to monitor the general quality of the built infrastructure. In general, each trail is inspected at least once every two weeks for maintenance issues and hazards, such as fallen trees and failing pavement.
Snow Removal Program	As with turf maintenance, snow removal is a labor intensive maintenance function requiring a prioritization schedule to stage work and stay within working budgets.
Trail Upgrades	As time and budget allow, the department will take on construction projects where it can be done more efficiently internally than hiring a contractor. The department also routinely contracts out capital improvement projects as dictated through City Council action.
Turf and Brush Management	One of the most labor intensive summertime maintenance functions is turf management along trails, which includes lawn mowing as well as a host of other activities to keep the turf grasses in good shape for various levels of use. To stay within overall budgets, the department prioritizes turf management under several levels, as defined in this section.
Expectations and Performance	The responsibility of the department is to perform routine functions while staying within working budgets. This challenge changes as budgets and financial policies change. Establishing priorities is, perhaps, the best way to respond to changes in funding without losing all core routine functions.



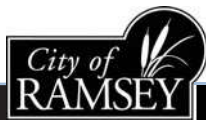
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D. General Maintenance Tasks for Turf Adjacent to Trails

There are general tasks that relate to turf management along trails, but what do the tasks involve? The following are tasks that are associated with turf maintenance. These tasks will be performed to varying degrees depending on the level of maintenance required or assigned to the given trail. Section D describes the “Maintenance Variable” and how that affects O& M.

<i>Task</i>	<i>General Description</i>
Soil Testing	Relates to doing a complete soil analysis on individual sites to determine the soil structure and fertility. Both major and minor elements should be reviewed during the analysis. Ideally, 15 to 20 cores should be tested per mile of turf adjacent to trails for high use areas. Where time and budget are limited, 10 or so soil samples per mile of turf adjacent to trails can be combined together to give an average soil analysis reading for the length of trail. In either case, the samples should be random to ensure an accurate soil analysis. The results of the soil test serve as the baseline for determining fertility needs. Soil testing on a routine basis allows for prescriptive maintenance to take place on a trail by trail basis.
Fertility	Relates to the level of essential compounds and nutrients within the soil structure that foster growth and increase durability of turf grasses. The primary components in fertilizer include: <ul style="list-style-type: none">• Nitrogen (N) -- is the key element in the production of turf grass. It affects turf greenness, ability to recover from damage, root and shoot growth and density, resistance to disease, and drought tolerance.• Phosphate (P) – is the workhorse of the nutrition team and fosters energy transformation. It is extremely important in new seedling development. Since it is cold sensitive, the most severe deficiency of phosphate usually occurs in the spring and fall.
Aeration	Aeration fragments or loosens compacted soils to allow for the free flow of air, water, and soil nutrients within the soil structure. It is an extremely important maintenance function that cannot be overlooked if quality turf adjacent to the trail is to be achieved.



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D. General Maintenance Tasks for Turf Adjacent to Trails Cont.

Overseeding

Relates to reseeding of turf areas in order to introduce new seed growth and new varieties of seeds that are more resilient to heavy use, diseases, and limited maintenance budgets. The type of seed that would be prescribed for any given situation is highly dependent on the level of turf maintenance, irrigation, and inherent soil structure. Slit seeding is the preferred method because it impregnates the seed into the ground, therefore protecting it from the elements and fostering quicker growth.

Topdressing

Relates to adding relatively small amounts of sand, sandy loam, or other soil mixture to existing turf areas to protect the crowns of plants, and provide better footing for the trail users. The best time to topdress turf is after slit-seeding.

Irrigation

Adding an irrigation system to turf allows for more nutrient uptake in the soil structure, which in turn provides a more vigorous and durable growth of turf grasses. Also, it allows for a greater selection of turf grass varieties to be used. For intensively used and premium level turf areas, irrigation is important to maintaining turf quality.

Mowing

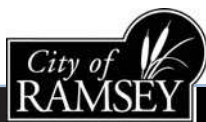
Relates to the routine mowing of turf grasses to a preferred height to ensure strong plant structure and disease resistance. Using the proper equipment along with routine maintenance, especially sharpening mowing blades, is important to maintaining quality turf.

Growth Regulators

On high-use areas of turf where fertility, aeration, overseeding, and irrigation are available, plant growth regulators can be used to redirect the growth from vertical to horizontal, resulting in a tighter knit and more durable turf. New products, such as Primo, are very effective and environmentally sound. As with fertilization, use of growth regulators should be in sync with the city's policy on the use of chemicals on turf grasses.

Disease/Pest Control

The use of prescriptive treatments for diseases, infestations, and pest control varies greatly and is dependent upon many variables. Therefore, the use of pesticides, herbicides, and other treatments is on an as-needed, case-by-case basis. All applications should be done by trained personnel. As with fertilization, use of pesticides and herbicides should be in sync with the city's policy on the use of chemicals on turf grasses.



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E. Maintenance Categories for Turf Adjacent to Trails

Categorizing the level of trail maintenance intensity for various routine maintenance tasks aids in the prioritization of what work needs to get completed, where it needs to be completed, and how much time and money can be spent on the completion of the work.

The table below establishes guidelines for the level of maintenance for three different categories of trails. The goal in all cases is to achieve an optimal level of turf quality within the given “maintenance variable.” The maintenance variable will be assigned to each trail at the beginning of the year based on the age of the trail, the amount of use, the current condition, and available funding. Over time, trails should be upgraded or downgraded depending upon re-evaluation of the trail.

<i>Maintenance Level</i>	<i>Description/Scheduling Priority</i>	<i>Trails Under this Level</i>
“A”	High use trails	Trails listed in order of priority
“B”	Moderate to high use trails	Trails listed in order of priority
“C”	Low to moderate use trails	Trails <u>not</u> listed in order of priority

Maintenance Tasks According to Assigned Maintenance Variable

<i>Maintenance Variable</i>	<i>Level A (High Intensity Maintenance)</i>	<i>Level B (Moderate Intensity Maintenance)</i>	<i>Level C (Low Intensity Maintenance)</i>
Use Level/Average Threshold	Premium trails with high use each week during season.	Second tier trails with extensive use but not premium level.	Low use trails and neighborhood parks.
Soil Testing	Sample each trail at the same time each year (test representative/composite sample if budget precludes testing all trails).	Sample each trail at the same time every other year (test representative/composite sample if budget precludes testing all trails).	Every 2 to 3 years test representative/composite sample to determine general needs.



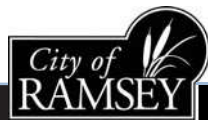
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E. Maintenance Categories for Turf Adjacent to Trails Cont.

Maintenance Table Continued

<p>Fertility</p> <p>Note: Low phosphate fertilizer or no fertilizer should be used in areas adjacent to or on an immediate tributary to streams or open water.</p>	<p>Based on soil test results. General guidelines include: Nitrogen (N), 4 -5 lbs./1000 sf. applied during growing season, 40-50% being slow release. This should be done 3-4 times per season. Phosphate (P), Spring and fall only & based on soil analysis. Very limited use given environmental impacts. Potassium (K), 1:1 ratio with Nitrogen. Minimum 1:2 ratio with Nitrogen on extremely high use fields.</p>	<p>Based on soil test results. General guidelines include: Nitrogen (N): 3 lbs./1000 sf. Applied during growing season, 25% being slow release. This should be done 2 times per season - early spring and early fall. Phosphate (P) and Potassium (K), Amounts are based on soil test results.</p>	<p>Apply 1 application of fertilizer in either the early spring to maximize spring play quality or early fall for recovery of summer use. Nitrogen is the primary component, with Phosphate (P), and Potassium (K), used as dictated by latest soil test results.</p>
<p>Aeration</p>	<p>Minimum 3 times per season.</p>	<p>Minimum once, preferably twice per season in early spring or early fall.</p>	<p>Minimum once per season. Fall is an appropriate time if equipment is being used on higher level fields during spring and summer.</p>
<p>Overseeding</p>	<p>Minimum 2 times per season-in early spring and early fall (best season).</p>	<p>Minimum 1 time per season-in early spring or mid-fall</p>	<p>Only when required. (Turf grass selection is extremely important under low maintenance levels).</p>
<p>Topdressing</p>	<p>Ideally 2 times per season, 1 time being minimum. 1/8-1/4 inch per application is desired.</p>	<p>Higher wear areas as required to address wear, footing, or safety concerns.</p>	<p>Only as needed.</p>



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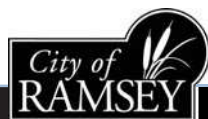
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E. Maintenance Categories for Turf Adjacent to Trails Cont.

Maintenance Table Continued

Irrigation	Required on high use trails, with a minimum of 1 inch of water per week.	Not required, but desirable. Turf grass selection is important.	Not required. Turf grass selection is important.
Mowing	Mow to a height of 1 ½ to 2 inches, taking 1/3 or less of the plant each time.	Mow to a height of 2 to 3 inches, taking 1/3 or less of the plant each time.	Mow to a height of 3 to 4 inches, taking 1/3 or less of the plant each time.
Growth Regulators	Case by case basis. Especially effective on extremely high use fields.	Not required nor recommended under this level.	Not required nor recommended under this level.
Pesticide/Herbicide/ Pest Control	On as-needed basis only with highly controlled applications.	On as-needed basis only with highly controlled applications.	On as-needed basis only with highly controlled applications.

*Note that in addition to the above maintenance levels, a level “D” level also exists, which relates to sites that fall outside of typical parks but do need periodic mowing and turf maintenance. The program for these sites are site specific as determined necessary by the department staff.



F. Policy on the Use of Chemicals for Maintaining Sustainable and Conventional Landscapes

As the attitude toward greater environmental/ecological stewardship of parks and open spaces has gained momentum in the city in recent years, greater concern has arisen as to the use of chemicals as part of the management of natural areas, turf grasses, woody vegetation, and lakes and creeks.

Even naturalized or sustainable restoration, installation, and management projects can benefit from the careful use of specific chemicals to achieve management objectives. So do the positive aspects of chemical use outweigh the negative aspects? Sustainable native landscape treatments are often scrutinized when they are compared to conventional landscaping or sod installations.

For example, let us compare a native prairie grass and forb planting to a sod installation. On nearly every level, the native planting is a superior choice. The native planting will cost less to maintain and install. In addition, native plantings consume less water, retain and filter more runoff, shelter more wildlife, and are historically more appropriate for most applications in Ramsey.

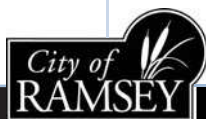
However, there are people that like sod, enjoy mowing a lawn, and are willing to pay extra dollars for it. The choice is a matter of aesthetics and personal choice. It would be difficult to argue a native grass planting on the 8th green at Ramsey's finest golf course, but native plantings should be used whenever possible.

When installing sustainable native plantings, performance goals must be set. If a sustainable installation fails, for whatever reason, it can set a bad precedent for any future attempts. There is always an argument to be made as to what is best aesthetically, and after a failure, that argument will be made. If all else fails, the one point it is difficult to argue is the bottom line.

When installing conventional landscaping and sod, performance goals must also be met. Costs associated with these installations such as fertilizers, pesticides, herbicides and irrigation will be required to keep the installation looking good. The maintenance variable assigned to any new or existing installation should be factored into the expected performance goals.

In order to regulate what chemicals are being used, and how they are being used, the following points should be considered:

- Listing of accepted chemicals, including the rationale behind their use, specific application rates, and their cost.
- Training/certification must be provided so that chemical agents can be used safely and cost effectively.
- Authorization and accountability procedure to ensure compliance with application rules.



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G. Willow Control

Many of Ramsey's existing trails were built in areas that were less desirable for housing or commercial development. Soils are often damp and support large colonies of willows (*Salix species*). Willows have a tremendous ability to multiply by root and can grow just about anywhere there is adequate moisture.

Older trail sections that do not have adequate base construction, or are not properly drained are most often the trails that are damaged by willow intrusion. Over time, when cracks inevitably form in the surface of the bituminous trail, water and light penetrate into the granular base. Any willow root matter in the sub-cut, below the base, can be triggered to grow up through the base, through the bituminous surface and into the open air. As the roots grow, they can heave and spawl the trail surface.

Bio-barrier® is a product that has been used successfully in Ramsey to prevent willow intrusion when installed below the granular base in new trail construction and full tear-out repairs. Recently, test plots featuring varied installations of Bio-Barrier® have been constructed within some of the City's trails and are being monitored for performance.

An approved cross section must be used for all future trail construction that is proposed to occur in areas where willows are abundant. It is likely that a Bio-Barrier® product, or an approved equal, will be used.

The following tables are maintenance schedules that identify specific trail segments to be resurfaced with projected cost estimates. This schedule is reflective of the current management technique used for trail O & M in Ramsey.



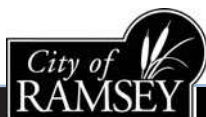
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H. Replacement and Maintenance Schedules

The following tables are maintenance schedules that identify specific trail segments to be resurfaced with projected cost estimates. This schedule uses is reflective of the current management technique used for trail s O & M in Ramsey.

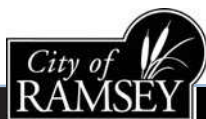
#	LOCATION	FEATURE	LOCALITY	DESCRIPTION OF WORK	LENGTH (ft)	WIDTH (ft)	YEAR BUILT	ESTIMATED AMOUNT	YEAR WORK SCHEDULED
1	County Road 116	Trail	Ramsey Blvd. To Armstrong Blvd.	Resurface	?	6	1995	\$0	2004
2	Central Park	Trail	Park center/field #6	Resurface	294	6	1995	\$1,764	2004
3	Central Park	Trail	ballfield, play area	Resurface	855	6	1995	\$5,130	2004
4	Central Park	Trail	baseball	Resurface	175	6	1995	\$1,050	2004
5	Lake Itasca	Trail	head to boardwalk	Resurface	402	6	1995	\$2,412	2004
6	Lake Itasca	Trail	head to Andrie Ct.	Resurface	4,933	6	1995	\$29,598	2004
7	Lake Itasca	Trail	Andrie Ct./153rd	Resurface	477	6	1995	\$2,862	2004
8	Lake Itasca	Trail	Boardwalk/160th	Resurface	2,577	6	1995	\$15,462	2004
9	Lake Itasca	Trail	160th/162nd	Resurface	1,732	6	1995	\$10,392	2004
10	Lake Itasca	Trail	162nd/Trail Cir.	Resurface	2,407	6	1995	\$14,442	2004
11	Lake Itasca	Trail	Intersection/Boardwalk	Resurface	1,057	6	1995	\$6,342	2004
12	Lake Itasca	Trail	Boardwalk/167th	Resurface	987	6	1995	\$5,922	2004
13	Ramsey Boulevard	Trail	149th/C.R 116	Resurface	1,353	6	1995	\$8,118	2004
14	Cottonwood	Trail	C.R 116/Swamp	Resurface	2,850	6	1995	\$17,100	2004
15	Cottonwood	Trail	Intersection/Sunwood	Resurface	2,251	6	1995	\$13,506	2004
16	Cottonwood	Trail	Sunwood to end	Resurface	738	6	1995	\$4,428	2004
17	Cottonwood	Trail	Intersection/Swamp	Resurface	797	6	1995	\$4,782	2004
18	County Road 116	Trail	Hemaute/Sunfish Rd.	Resurface	4,652	6	1995	\$27,912	2004
19	County Road 116	Trail	Intersection/Garnet	Resurface	2,555	6	1995	\$15,330	2004
20	Peltzer	Trail	Peltzer Park	Resurface	170	6	1995	\$1,020	2004
21	Sunfish Boulevard	Trail	144th/143rd	Resurface	552	6	1995	\$3,312	2004
22	Sunfish Boulevard	Trail	143rd/C.R. 116	Resurface	903	6	1995	\$5,418	2004



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23	County Road 116	Trail	Sunfish/Wolfram	Resurface	585	6	1995	\$3,510	2004
24	County Road 116	Trail	Wolfram/Tungsten	Resurface	830	6	1995	\$4,980	2004
25	Emerald Pond	Trail	Emerald Pond Park	Resurface	2,442	6	1995	\$14,652	2004
26	Ramsey Terrace	Trail	Junkite/145 Ct.	Resurface	2,107	6	1995	\$12,642	2004
27	Ramsey Terrace	Trail	145 Ct./Krypton	Resurface	1,003	6	1995	\$6,018	2004
28	Ramsey Terrace	Trail	Intersection/Fluorine	Resurface	822	6	1995	\$4,932	2004
29	Flintwood	Trail	Fluorine/142nd	Resurface	1,300	6	1995	\$7,800	2004
30	Solstice	Trail	Solstice	Resurface	592	6	1995	\$3,552	2004
31	Sunwood	Trail	Sunfish/145th	Resurface	1,328	6	1995	\$7,968	2004
32	Sunwood	Trail	145th/146th	Resurface	559	6	1995	\$3,354	2004
33	Sunwood	Trail	146th/Potassium	Resurface	1,137	6	1995	\$6,822	2004
34	Sunwood	Trail	Potassium/148th	Resurface	357	6	1995	\$2,142	2004
35	Sunwood	Trail	148th/Krypton	Resurface	1,157	6	1995	\$6,942	2004
36	Sunwood	Trail	Krypton/Nowthen Blvd.	Resurface	1,003	6	1995	\$6,018	2004
37	Nowthen Boulevard	Trail	Sunwood/148th	Resurface	753	6	1995	\$4,518	2004
38	Nowthen Boulevard	Trail	148th/City Hall	Resurface	2,443	6	1995	\$14,658	2004
39	153rd Avenue	Trail	153rd/Quicksilver Street	Resurface	914	6	1995	\$5,484	2004
40	153rd Avenue	Trail	153rd/Sunfish Blvd.	Resurface	924	6	1995	\$5,544	2004
41	153rd Avenue	Trail	Sodium/153rd	Resurface	199	6	1995	\$1,194	2004
42	Sunfish Boulevard	Trail	153rd/152nd	Resurface	1,000	6	1995	\$6,000	2004
43	Alpine	Trail	Sunfish/Garnet Street	Resurface	4,612	6	1995	\$27,672	2004
44	153rd	Trail	Nowthen/C.R. 47	Resurface	2,675	6	1995	\$16,050	2004
45	County Road 47	Trail	153rd/C.R. 47	Resurface	327	6	1995	\$1,962	2004
46	Fox Park	Trail	Potassium St./Boardwalk	Resurface	544	6	1995	\$3,264	2004
47	Fox Park	Trail	Boardwalk/Potassium	Resurface	674	6	1995	\$4,044	2004
48	Woodland Green	Trail	155th/156th	Resurface	1,069	6	1995	\$6,414	2004
49	Oxbow	Trail	153rd/150th	Resurface	1,637	6	1995	\$9,822	2004
50	Oxbow	Trail	150th/Waco Street	Resurface	540	6	1995	\$3,240	2004
51	Oxbow	Trail	Waco Street/149th	Resurface	816	6	1995	\$4,896	2004



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52	Oxbow	Trail	Waco Street/C.R. 47	Resurface	1,726	6	1995	\$10,356	2004
53	Oxbow	Trail	149th/Barium Street	Resurface	1,837	6	1995	\$11,022	2004
54	Oxbow	Trail	149th/C.R. 47	Resurface	2,741	6	1995	\$16,446	2004
55	Oxbow	Trail	Argon Street/Yakima Street	Resurface	368	6	1995	\$2,208	2004
56	Oxbow	Trail	148th/149th	Resurface	471	6	1995	\$2,826	2004
57	Riversbend	Trail	Riversbend trails	Resurface	6,145	6	1995	\$36,870	2004
58	Lake Itasca	1st Boardwalk	Itaska	Resurface	145	6	1995	\$870	2004
59	Lake Itasca	2nd Boardwalk	Itaska	Resurface	1,186	6	1995	\$7,116	2004
60	Lake Itasca	3rd Boardwalk	Itaska	Resurface	130	6	1995	\$780	2004
61	Fox Park	Broadwalk	Fox Park	Resurface	286	6	1995	\$1,716	2004
62	Central Park #1	parking lot	Central	Resurface		6	1995	\$0	2004
63	Central Park #2	parking lot	Central	Resurface		6	1995	\$0	2004
64	Central Park	tennis, parking lot	Central	Resurface		6	1995	\$0	2004
65	Central Park	hockey, parking lot	Central	Resurface		6	1995	\$0	2004
66	Central Park	park center, parking lot	Central	Resurface		6	1995	\$0	2004
67	Central Park	drive	161st/Park center	Resurface	1,329	25	1995	\$33,225	2004
68	Central Park	drive	tennis	Resurface	291	25	1995	\$7,275	2004
69	Central Park	drive	2nd drive	Resurface	157	25	1995	\$3,925	2004
70	Lake Itasca	drive	trail head	Resurface	166	25	1995	\$4,150	2004
71	Lake Itasca	parking lot	trail head	Resurface		6	1995	\$0	2004
72	Emerald Pond	parking lot	Emerald Pond Park	Resurface		6	1995	\$0	2004
73	Watertower	Drive	Watertower	Resurface	144	25	1995	\$3,600	2004
74	Alpine	drive	Alpine	Resurface	1,160	25	1995	\$29,000	2004
75	Alpine	1st Parking lot	Alpine	Resurface		6	1995	\$0	2004
76	Alpine	2nd Parking lot	Alpine	Resurface		6	1995	\$0	2004
77	Riversbend	Tennis parking lot	Riversbend	Resurface		6	1995	\$0	2004
78	Riversbend	Main parking lot	Riversbend	Resurface		6	1995	\$0	2004
79	Riversbend	Main Drive	Riversbend	Resurface	1,971	25	1995	\$49,275	2004
			Subtotal					\$623,056	
			Contingency				15%	\$93,458	
			Projected Total					\$716,514	



7 Section

Operations and Maintenance Continued

J. Unit Costs for Trail Overlay

The following section includes costs associated with materials and labor for an overlay project on a segment of trail in Ramsey

1. MATERIAL COSTS

- ASPHALT = 25.85/TON
- TACK OIL = 15.00/5 GALLON PAIL
- TRUCKING/LABOR = 50.00/HR
- LABOR = 2.75 X WAGE
14.60 X 2.75 = 40.15
19.20 X 2.75 = 52.80

2. CENTRAL TRAIL

MATERIAL

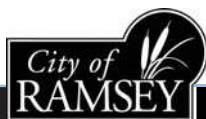
- ASPHALT = 25.85/TON X 12 TON = \$ 310.20
 - TACK = 15.00/PAIL X 5 PAILS = 75.00
 - TRUCKING = 50.00 X 2 TRUCKS X 4 HOURS = 400.00
 - LABOR = 14.60 X 2.75 = 40.15 X 4 = 160.60
= 19.20 X 2.75 = 52.80 X 4 = 211.20
- \$1157.00

Trail Length = 175' X 8.5 WIDE

Overlay thickness = 1.5"

Unit Price = \$6.61/linear foot

Unit Price = \$7.00/square yard



7 Section

Operations and Maintenance Continued

K. Other

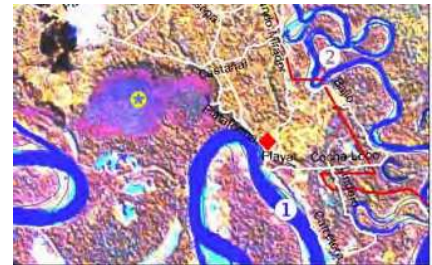
- **Training Programs for O & M Personnel**

Improving the technical capabilities of O & M personnel is an objective that the department has and will continue to implement. Currently, the department participates in training programs ranging from pesticide application to playground safety inspections. In the future, the department will be focusing on enhancing the training for a variety of technical disciplines. As individuals become more specialized, work crews will be broken down into areas of specialization and expertise. This approach is particularly appropriate for department functions like natural resource restoration and management, where highly skilled and specialized personnel are needed to fulfill program objectives. Note that strengthening internal training programs will also be important as existing personnel retire, taking with them experience that can be difficult to replace in the current labor market.

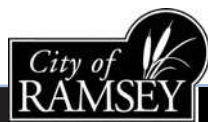


- **Integrated O & M Management**

To date, the O & M function has relied on working knowledge of the system by staff and field crews and a few manual systems to track day-to-day maintenance activities. Lacking a more sophisticated system, this approach has sufficed to get the job done in a reasonably efficient manner. In recent years, however, O & M staff have found that keeping track of all functions and activities and their associated costs has become more of a challenge due to the increased size and complexity of the operation. For example, the department has become more involved in natural resources stewardship since 1995. This function alone requires extensive tracking of activities, costs, scheduling, and performance. Interlinking this data with the city's developing geographic information system (GIS) is important to effectively run the program. Across all of the department's functions, increasing demands on finite resources underscores the need to gain operational efficiencies wherever possible, starting with an integrated information management system.



New software is currently on the market that has been developed for the management of new and existing structures. Existing information about current trails is entered into the management system. Variables, such as anticipated maintenance, staffing hours, and cost are entered as well. This is very useful as a tool for budgeting future maintenance costs, identifying when maintenance should occur, how much labor is required, and how much it will cost. Increased costs due to inflation can be factored in to improve accuracy.



7 Section

Operations and Maintenance Continued

K. Other Continued

With the recognition that staff output and other resources are being maximized, gaining additional capacity by increased efficiencies requires contemporary tracking and analytical tools. These will enable the department to work harder and smarter. In addition, systems need to be put in place to lessen the risk of losing the “braintrust” of the organization through retirement, since this is a contributing factor in organizational inefficiency. Critical knowledge could be lost because if no system is in place to capture it. The management system needs to remain in place as the workforce changes.

- **Trail Signage Program**

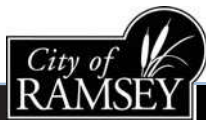
One of the more important communication tools is a comprehensive signage program that is carried uniformly throughout the trail system. The signage should provide a consistent message to trail visitors, and provide information on trail names, directions to features, general information, rules, ecological stewardship programs, and interpretive information. Section 6 features various types of signage that could be considered for a signage program. Concepts range from less expensive with low durability to more expensive with high durability.



- **Americans with Disabilities Act (ADA) Guidelines**

Various trail cross sections and routes have been illustrated in this document. Trails are designed for the people, but what types of people? It is important to consider all user types when planning new trails and upgrading existing trails. Municipalities have a responsibility (morally as well as legally) to provide a reasonable level of accessibility (to parks and programs) for individuals with varying levels of ability. To help this happen, the federal government has established laws that mandate designs that promote equal access to all users of public (and private) facilities and programs. Although not completely tested in park settings, the basic intent of the act is clear: reasonable, equal access opportunities must be provided to those with disabilities.

There are no requirements within the ADA that mandate any spatial requirements relative to the size of any particular type of park and recreation facility. The act does, however, mandate that park areas and facilities be reasonably accessible and usable to all populations. The extent to which compliance with the act will impact the size or configuration of a particular facility is unlikely. Specific design guidelines may have to be incorporated into the design in response to the act.



7 Section

Operations and Maintenance Continued

K. Other Continued

Many of the older park sites in the city do not adequately address ADA issues. In the future, the city should meet all the applicable ADA requirements as they impact park and trail facilities.

An implementation plan for the ADA improvements is suggested. Part of the improvements should be made when reconstruction of roads are occurring. The City has a map of surmountable curbs.

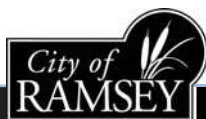
A copy of the American Disabilities Act (ADA) of 1992 (and subsequent revisions) is on file with the Park and Recreation Department for reference and application. Other publications covering the ADA concerns include the following:

U.S. Department of Justice, Civil Rights Division, Office on the ADA
P.O. Box 66118
Washington, DC 20035-6118 (202) 514-0301

Recommendations for Accessibility Guidelines: Recreational Facilities and Outdoor Developed Areas
Architectural and Transportation Barriers Compliance Board
1111 18th Street NW, Suite 501
Washington, DC 20036

Uniform Federal Accessibility Standards, General Service Administration
18th and F Streets, NW - Room 3044
Washington, DC 20405 (202) 586-0038

Design Guide for Accessible Outdoor Recreation, USDA Forest Service, Auditors Bldg.
201 14th Street, SW at Independence Ave. SW
Attn: Access Coordinator, Recreation Staff
Washington, DC 20250



7 Section

Operations and Maintenance Continued

K. Other Continued

- **Universal Design Guidelines- Beyond the ADA**

Universal design is a design philosophy that focuses on ensuring reasonable accessibility for all users beyond the typical definition which is often associated with a wheelchair user. The reality is that the majority of people with disabilities are ambulatory and do not require a wheelchair and the range of abilities and disabilities goes well beyond limited definition.

The Enabler model brings to light the broad spectrum of disability concerns that must be considered if universal design is to be achieved. The model serves as a conceptual aid that helps designers and lay persons empathize with the people who will actually be using a site, building, or facility, and encourages a more comprehensive and integrated view of people with and without disabilities.



Universal design attempts to consider all degrees of sensory awareness, all types of locomotion, and all levels of physical and intellectual function in the design process. By doing so, the needs of individuals with varying desires, abilities, and expectations can be reasonably accommodated in an appropriate setting. The end result is that individuals with and without disabilities are accommodated in a manner that meets their expectations for a specific space or setting. This is distinctly different than simply accommodating a set of accessibility requirements that ensure compliance to the law, but may not ensure accessibility for all people.

- **Ensuring that a Design offers Universal Access Opportunities**

Since universal design is still an evolving approach to design, achieving universal access is simpler in concept than in practice. Anticipating the needs of people with varying degrees of abilities and disabilities is a formidable task, since it is often very difficult to understand the specific needs of individuals with different abilities when one does not share those limitations. Therefore, it becomes imperative that the design process include individuals that represent a cross-section of the people with and without disabilities. As the project moves into design implementation phases, efforts should be made to involve representatives of the divergent populations in the detail design of specific facilities. This approach helps ensure that the design for a given facility will actually serve the intended population.

