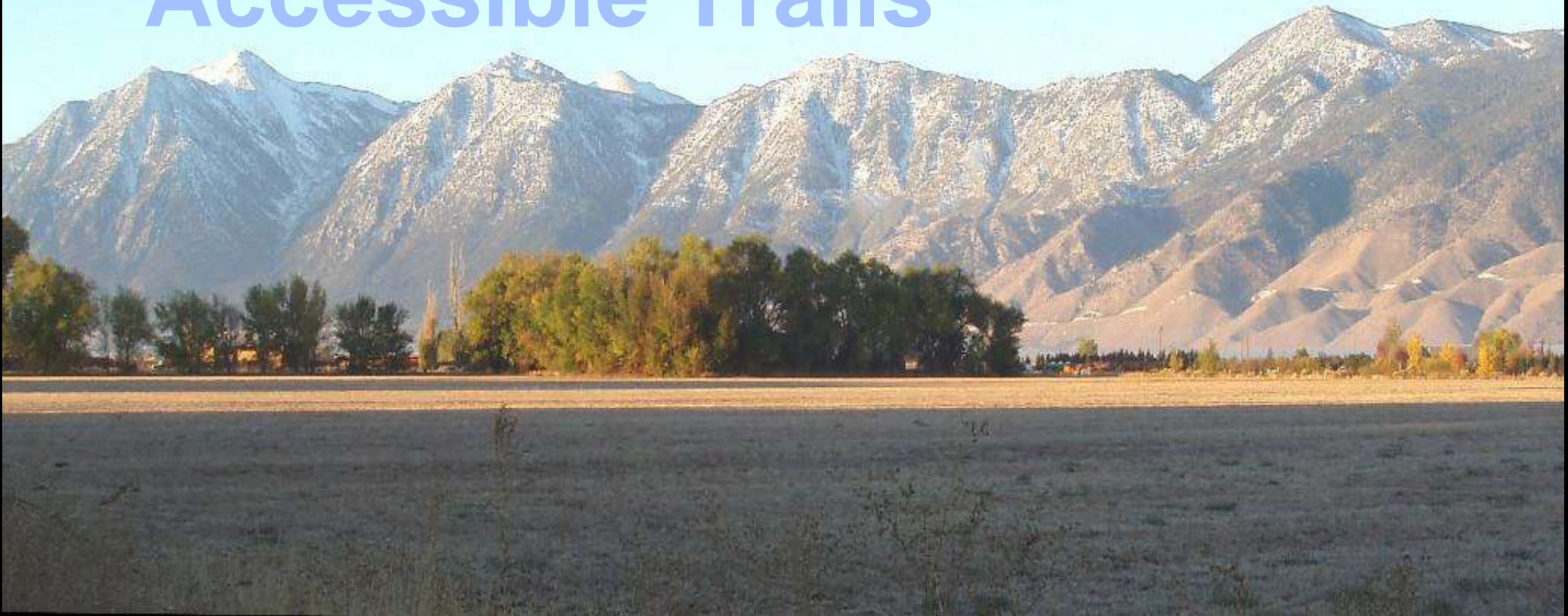


Tools and Technology for Accessible Trails



Peter Axelson
Jeremy Vican

Beneficial Designs, Inc.
Minden, Nevada

What makes a trail accessible?

Providing trail access information

Preventing access barriers

Improving trail surfaces

Protecting the environment

Meets accessibility guidelines

Access Guideline Characteristics

- Surface
- Openings
- Tread Obstacles
- Running Slope
- Rest Intervals
- Clear Tread Width
- Protruding Objects
- Passing Space
- Cross Slope
- Edge Protection

Rotational Penetrometer



Objective surface
measurement device

Draft Standard for
measure of firmness
and stability under
development

Available from
Beneficial Designs

Assessment and Compliance

Inventory existing facilities and infrastructure

Determine compliance with existing ADAAG and Developed Outdoor Recreation facilities

Create transition plan with goals and objectives for accomplishing access

Development of a Complete Outdoor Recreation Assessment Process

Develop and validate a repeatable
assessment process for all Outdoor
Recreation Elements

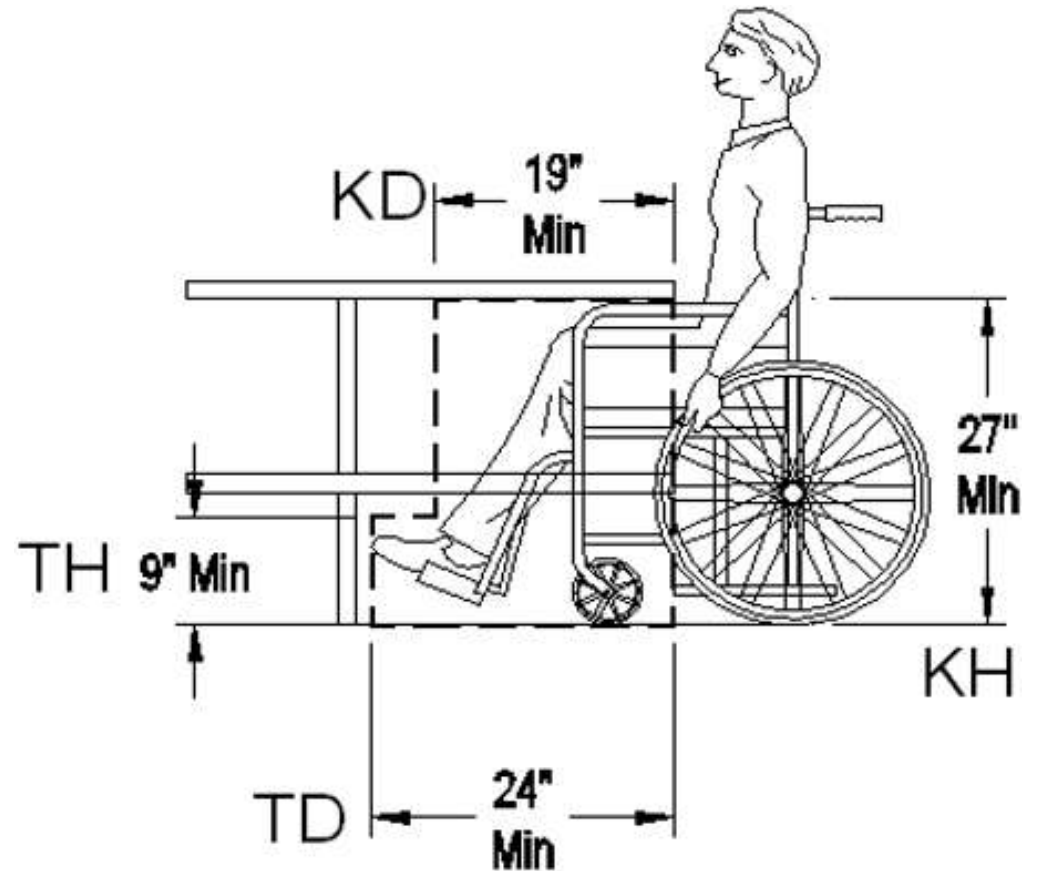
Create instructions and data collection
forms to determine compliance

Set up electronic data collection and data
base for management of information



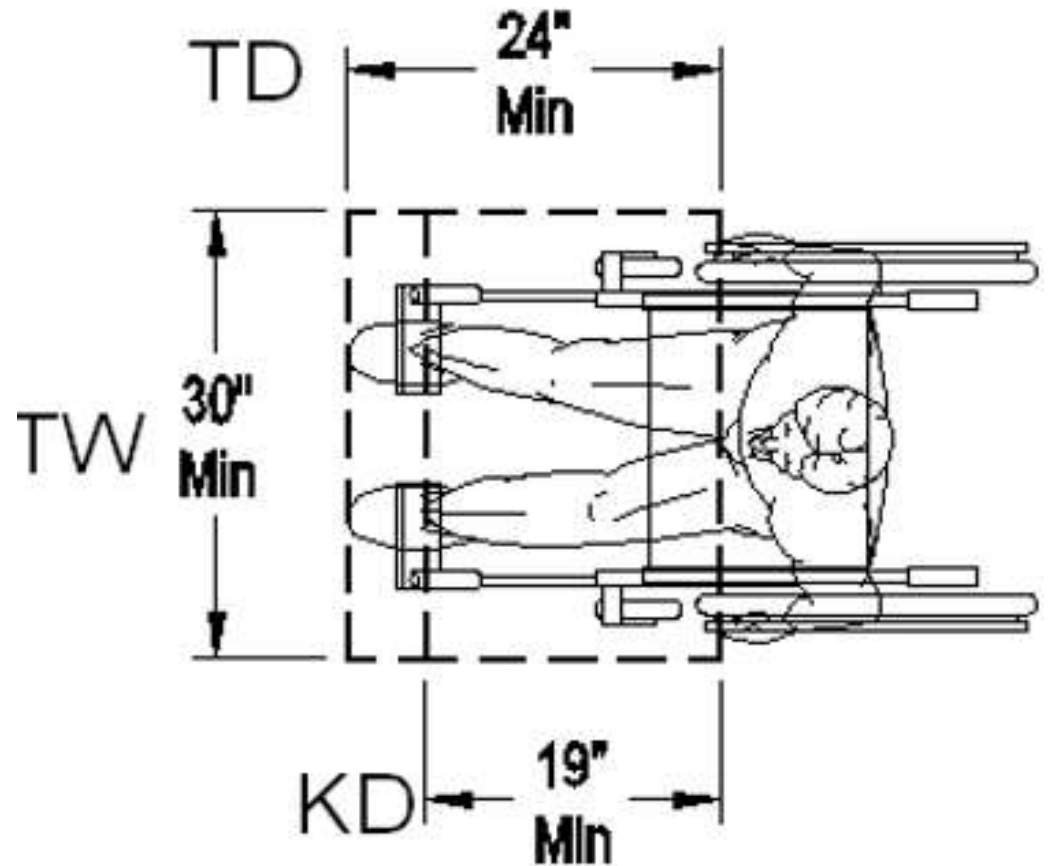
Picnic Table

Clearance Space		
	Min	Actual
TW (Total Width)	30 in	in
KD (Knee Depth)	19 in	in
KH (Knee Height)	27 in	in
TD (Toe Depth)	24 in	in
TH (Toe Height)	9 in	in
Accessible Spaces Available		
Perimeter Clear	Y	N



Picnic Table

Clearance Space		
	Min	Actual
TW (Total Width)	30 in	in
KD (Knee Depth)	19 in	in
KH (Knee Height)	27 in	in
TD (Toe Depth)	24 in	in
TH (Toe Height)	9 in	in
Accessible Spaces Available		
Perimeter Clear	Y	N



Provide Objective Information



“Moderate” or “Easy”
mean different things
People have different
abilities (young children,

older adults, people with disabilities, unfit and
inexperienced individuals)

Assessment must provide objective
information

Universal Trail Assessment Process



Universal Assessment Team





**UTAP
Tools**

Key UTAP Information

Length



Grade



Width



Surface



Cross
slope



Features &
Facilities



UTAP – Implementation Status

Over 900 people trained to lead UTAP assessments

Over 55 trainers to teach UTAP workshops

State and agency-wide implementation is growing (AZ, MN, IN, NY, CA, FL)

UTAP assessments available from consultants

Trailware

Store and manage trail data

Split, copy, reverse and combine trail segments into trails for processing

Process data to generate grade, cross-slope, tread width and surface reports

Create Summary trail access information

Station Distance	D.N.I.S.V.						Max X-Slope			Max Grade			MCW	Feature Distance	T/V Zone	Feature Type*	Feature Description	Size LxWxH	Count/Qty	UM	End Distance	Remain Tread	Built Feature Access	Action Req'd	
	Tread Width	Typ X-Slope	Surface Cat'	Type*	+/- Typ Grade	Compass / GPS Fwd/Lat Bk/long		Magnitude	Length	Magnitude	Length														
0														41	T	Rock	embedded	12x20x7 in	1				28		
Distance	50	0	F	Soil	-4	101	101	10	6	-	-	-		105	V	Bench	arms & backrests		1						
75														50	V	Bench	no arms no backrests		2						
Distance	48	1	F	Soil	-6	52	50	-	-	-	-	33		218	T	Roots	Multiple	5X5 in				224			
101														337	T	Roots	Multiple	4X4 in				347			
Distance	48	5	F	Soil	-9	18	16	-	-	12	6	-		175	T	Water Bar	wood	4x60x4 in	1			0			
193														261	T	Rut		12x48x8 in	1			0			
Distance	48	5	F	veg-mow	-4	53	51	-	-	20	2	28		391	V	Scenic View									
226														391	V	Bench	arms & backrests		3						
Distance	45	4	F	veg-mow	-15	123	123	-	-	-	-	-		391	V	Water-potable fountain			1						
287																									
Distance	45	2	F	veg-mow	-7	175	173	-	-	22	2	-													
309																									
Distance	45	3	F	veg-mow	-2	192	191	7	5	16	8	-													
391																									
Distance																									

* Please use only values from data lists.



TrailWare Station Data Entry

Warning, required station data missing

Park List | Park Info | Trail List | Trail Detail | Segments | Segment Cover | **Stations** | Features | Reports

Trail Name Segment Name Date

Add Station

Finish Entry

Station	Distance	in	pot	pot	ft	pot	ft	in	Re-order					
	Tread Width	X-Slope	Surface Category	Type	+/- Grade	Typ	Compass Fwd	Back	Max X-Slope Magnitude	Max Grade Magnitude	Length	Length	MCW	
0	60	1.9	Firm	Soil	1.5		132	131						
35	60	2.1	Firm	Soil	1.0		146	147						
112	60	1.6	Firm	Soil	1.5		150	151	6.8	8				
149	60	1.4	Firm	Soil	0.0		150	150		9.1				
227	55	1.8	Firm	Soil	-1.0		141	142						
318	55	2.3	Firm	Soil	-1.5		127	127						

Help

Exit TW

2264 Final Distance

Blue shading: Fields exported to Trail Explorer or used in Trail Explorer calculations
 Yellow shading: Calculated fields, also used in Trail Explorer
 Red buttons: Warning - required station data is missing



TrailWare Feature Data Entry

Required feature data omitted

Help

Exit TW

- Park List
- Park Info
- Trail List
- Trail Detail
- Segments
- Segment Cover
- Stations
- Features**
- Reports

Trail Name Segment Name Date

Feature Distance	T/V Zone	Feature Type	Feature Description	Size L x W x H			U/M	Count/ Qty	End Distance	Remain Tread	Built Feature Access	Action Required	Materials	!! Addl Info
0	T	Trailhead	Parking Lot											<input type="radio"/> <input type="radio"/> <input type="button" value="go"/> <input type="button" value="trash"/>
0	V	Restroom	Chemical Toilet					1			Yes			<input type="radio"/> <input type="radio"/> <input type="button" value="go"/> <input type="button" value="trash"/>
47	V	Picnic Table	Wooden					2						<input type="radio"/> <input type="radio"/> <input type="button" value="go"/> <input type="button" value="trash"/>
53	V	Scenic Viewpoint	Mt. Cora						149					<input type="radio"/> <input type="radio"/> <input type="button" value="go"/> <input type="button" value="trash"/>
69	T	Root	Multiple Roots	14	5	6	in	5	83	38				<input type="radio"/> <input type="radio"/> <input type="button" value="go"/> <input type="button" value="trash"/>
130	V	Bench	Back and armrests	60	18	18	in	1						<input type="radio"/> <input type="radio"/> <input type="button" value="go"/> <input type="button" value="trash"/>
199	T	Rock	Small Boulder	13	12	16	in	1		48		Remove		<input type="radio"/> <input type="radio"/> <input type="button" value="go"/> <input type="button" value="trash"/>
239	V	Bench	Back and armrests	60	18	18	in	1						<input type="radio"/> <input type="radio"/> <input type="button" value="go"/> <input type="button" value="trash"/>
334	T	Waterbar	4 X 4 Plank	4	54	8		1		0				<input checked="" type="radio"/> <input type="radio"/> <input type="button" value="go"/> <input type="button" value="trash"/>
338	T	Erosion	Center of Trail	10	8	12	in					Monitor		<input type="radio"/> <input type="radio"/> <input type="button" value="go"/> <input type="button" value="trash"/>
416	T	Minimum Clearance	Boulder- large, centered in path	40	22	20	in					Remove		<input type="radio"/> <input type="radio"/> <input type="button" value="go"/> <input type="button" value="trash"/>
521	V	Bench	Back only	60	18	18	in	1						<input type="radio"/> <input type="radio"/> <input type="button" value="go"/> <input type="button" value="trash"/>

Blue shading: Fields exported to Trail Explorer or used in Trail Explorer calculations
 Yellow shading: Calculated fields, also used in Trail Explorer
 Red buttons: Warning - required station data is missing

TrailWare Reports

English or Metric units

Data summaries:

Grade, Cross Slope and Width

Surface Category and Type

Tread and Vertical Obstructions

Trail Access Information

Station or Feature Log Report

Pioneer													Print w/Notes	Print no Notes	Export	Reports
Morgan Grist Mill																
Feature Log (to sort by column, click on underlined headings)																
Seg	<u>Feature</u> Distance	<u>TV</u> Zone	<u>Feature Type</u>	<u>Feature Description</u>	<u>L</u> x	<u>W</u>	<u>x</u> <u>H</u>	UM	Count	End Distance	<u>Remain</u> Tread	<u>Built</u> Feature	<u>Action</u> Required	<u>Materials</u>	Photo?	
2	1664	V	Waterfall	Grist Mill Waterfall											<input type="checkbox"/>	
1	334	T	Waterbar	4 X 4 Plank	4	54	8		1		0				<input type="checkbox"/>	
1	891	T	Waterbar		4	50	8 in		1		0				<input type="checkbox"/>	
1	2077	V	Water	Drinking Fountain					2			Yes			<input type="checkbox"/>	
1	1496	T	Vertical	Branches	36	60	48 in			1501	0		Remove		<input type="checkbox"/>	
2	1463	T	Vertical	Branches	43	48	6 in			1457	0		Clear		<input type="checkbox"/>	
2	1457	T	Vertical	Overhanging Rock	57	46	73 in			1463	20				<input type="checkbox"/>	
1	1478	V	Tree	Old Hickory Grove						1509					<input type="checkbox"/>	
2	236	V	Tree	Oak Tree Grove						293					<input type="checkbox"/>	

Summary Tables for Typicalals

Pioneer
Morgan Grist Mill
Grade Percentages

first segment assessed Apr 22, 2002

last segment assessed Apr 22, 2002

Grade %	% of trail	Length		Sum % of trail	
		m	km		
0-3	63.9%	765.0	0.77	>=0	100.0%
3.1-5	25.1%	300.8	0.30	>3	36.1%
5.1-8	7.0%	83.5	0.08	>5	11.0%
8.1-10	0.9%	11.3	0.01	>8	4.0%
10.1-12	0.9%	10.4	0.01	>10	3.1%
12.1-14	0.7%	8.8	0.01	>12	2.2%
14.1-16	0.7%	8.2	0.01	>14	1.5%
16.1-20	0.8%	9.1	0.01	>16	0.8%
20.1-30	0.0%	0.0	0.00	>20	0.0%
30.1-50	0.0%	0.0	0.00	>30	0.0%
over 50	0.0%	0.0	0.00	>50	0.0%
Total	100.0%	1197.2	1.20		

Wheeled Instrumentation Sensor Package - WISP

Stroller – 3 wheeled jogging stroller with
22 inch wheelbase

Rolawheel – measures 13 inch width
and 18 inch length

ATV – collects grades and x-slopes
based on the vehicle wheelbase

OHV – same as ATV



HETAP-Stroller

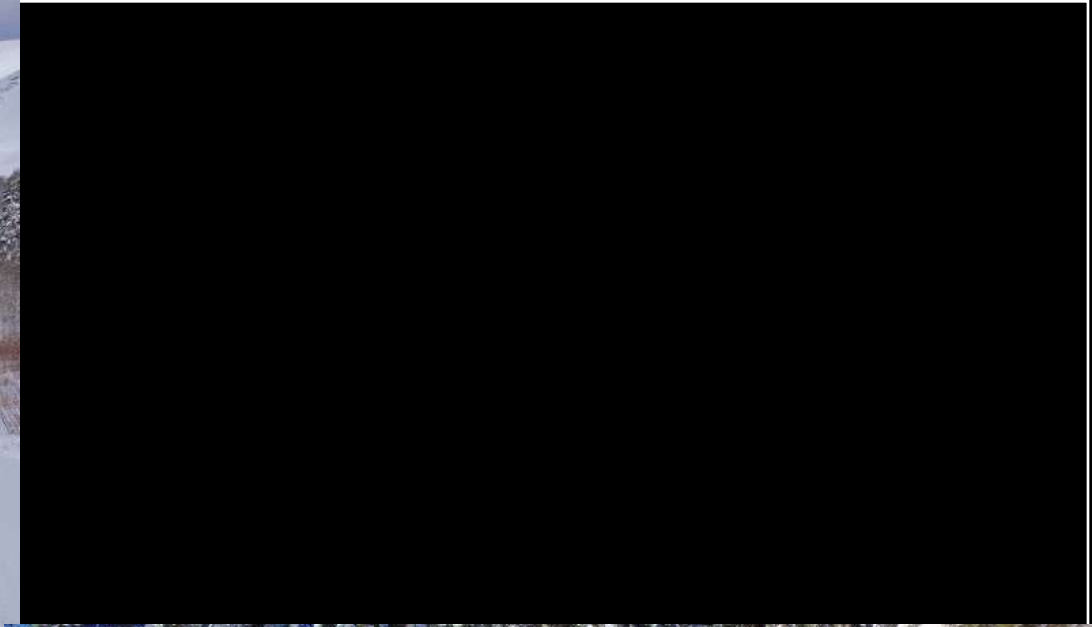


Urban Shared Use Paths





Neighborhood Connector Trails



Cross Country and Snowshoe Trails



Snowmobile Trails

State Parks/Day Use Areas





HETAP- Rollawheel





HETAP-
ATV

High Efficiency Trail Assessment Process - HETAP Software 2.0

Software that guides the user to collect
objective surface and feature trail data

Sort data to create grade, cross slope,
surface and tread width reports

SQL data base for compatibility with
larger data base systems

Calculation of Trail Access Information



Last Station Recorded

48 in

Hard

Aggregate/ Gravel

6628.0 Ft

-7.1 %

0.7 %

Copy Surf. Data ->

Tread Width:
Surface Category:
Surface Type:

Distance:
 Grade:
 Cross Slope:

Current Station To Record

36 in Set MCW

Soft

Sand

6640.7 Ft

4.9 %

2.6 %

Record Station

Add Features

Return Home

Distance Hold

Manual Entry

View Data

Alarm Settings Calibration New Segment

Current Segment:
3 Nature Fort 2009-01-06

Outslope

Check Outslope Direction

<- Left Right ->

Vehicle Orientation

Forwards
 Backwards



Settings Hide Save Image

Compass Heading: ° True

GPS Location and Status

Lat: 39° 0' 3.25" N
Lon: 119° 46' 1.17" W
Apprx. Err: ± 47 Feet
Elev: 4647 ± 85 Feet

Fix is 3D



Distance: **6640.7**

Type: **Rock**

Description:

Embedded Rock

Zone

Trail Bed **Visual**

Remaining Tread: **25** in

Dimensions

Units of Measure: **in**

L **12** W **8** H **4**

Quantity: Ending Distance:

1

End Distance Reminder

Optional Data

Recommended Action: **Remove**

Materials Needed:

For a Built Feature: Is this feature Accessible?

Yes **No** **This is not a Built Feature**

	Distance	Feature Type	E	D
34	6374.1	Sign	<input type="checkbox"/>	<input type="checkbox"/>
35	6413.9	Picnic Area	<input type="checkbox"/>	<input type="checkbox"/>
36	6606.2	Sign	<input type="checkbox"/>	<input type="checkbox"/>
37	6606.2	Bridge	<input type="checkbox"/>	<input type="checkbox"/>
38	6618.4	Restroom	<input type="checkbox"/>	<input type="checkbox"/>
39	6627.9	Parking	<input type="checkbox"/>	<input type="checkbox"/>

Record Feature

Stations

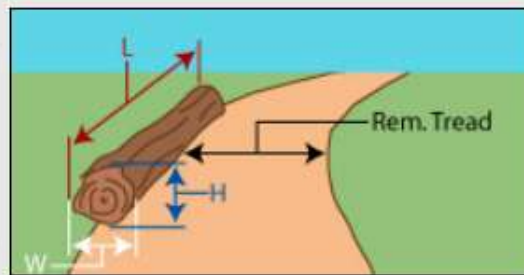
Manual Entry

Edit Feature

Copy Feature

Delete Feature

Rotational Penetrometer Data



Settings

Hide

Save Image

Stations Data Report: Tread Width

	Seg. Number	Station Location	Station Length	Cumul. Length	Cumul. Percent	Tread Width	X-Slope (%)	Grade (%)	Surface Category	Surface Type	Lat.	Lon.
1	1	235.8	3.3	3.3	0.1	24.0	3.9	14.8	Firm	Sand	39.290	-119.277
2	1	277.4	8.6	11.9	0.4	24.0	21.9	-16.1	Firm	Sand	39.290	-119.277
3	1	286.0	7.1	19.0	0.6	24.0	21.6	-12.0	Firm	Sand	39.290	-119.277
4	1	293.0	8.6	27.6	0.8	24.0	11.9	8.6	Firm	Sand	39.290	-119.277
5	1	345.1	19.8	47.4	1.4	24.0	-7.2	0.3	Firm	Sand	39.290	-119.277
6	1	365.0	17.0	64.4	2.0	24.0	-4.0	3.6	Firm	Sand	39.290	-119.277
7	1	382.0	20.9	85.3	2.6	24.0	1.8	-2.0	Firm	Sand	39.290	-119.277
8	1	472.4	8.7	94.0	2.9	24.0	2.9	-10.3	Firm	Sand	39.290	-119.276
9	1	481.1	29.4	123.4	3.8	24.0	-2.5	-5.5	Firm	Sand	39.290	-119.276
10	1	510.5	20.9	144.2	4.4	24.0	11.0	0.3	Firm	Sand	39.290	-119.276
11	1	531.4	10.5	154.8	4.7	24.0	16.0	5.2	Firm	Sand	39.290	-119.276
12	1	541.9	7.8	162.5	5.0	24.0	8.0	-3.1	Firm	Sand	39.290	-119.276
13	1	549.6	2.2	164.7	5.0	24.0	-1.2	4.8	Firm	Sand	39.290	-119.276
14	1	551.8	6.2	171.0	5.2	24.0	32.8	-8.8	Firm	Sand	39.290	-119.276
15	1	558.1	4.7	175.7	5.4	24.0	12.9	-12.5	Firm	Sand	39.290	-119.276
16	1	223.9	3.5	179.2	5.5	30.0	0.1	-28.4	Firm	Sand	39.290	-119.277
17	1	227.5	4.0	183.2	5.6	30.0	1.9	-31.0	Firm	Sand	39.290	-119.277
18	1	231.5	4.3	187.6	5.7	30.0	-0.3	-11.9	Firm	Sand	39.290	-119.277
19	1	452.3	8.3	195.9	6.0	30.0	9.7	-18.0	Firm	Sand	39.290	-119.276
20	1	460.6	11.8	207.7	6.3	30.0	6.2	-26.6	Firm	Sand	39.290	-119.276
21	1	562.8	14.2	221.9	6.8	30.0	-1.5	-3.3	Firm	Sand	39.290	-119.276
22	1	577.1	5.1	227.0	6.9	30.0	-11.9	13.2	Firm	Sand	39.290	-119.276
23	1	582.2	2.7	229.8	7.0	30.0	-16.7	18.4	Firm	Sand	39.290	-119.276
24	1	584.9	11.0	240.8	7.4	30.0	3.6	-10.0	Firm	Sand	39.290	-119.276
25	1	595.9	64.3	305.1	9.3	30.0	-2.0	-1.5	Firm	Sand	39.290	-119.276
26	1	660.2	36.1	341.2	10.4	30.0	-2.1	-2.7	Firm	Sand	39.290	-119.276

Features Data Report: Feature Height

	Seg. Num.	Aggr. Dist	Zone	Feature Type	Description	L	W	H	Qty.	End Dist.	Rem. Tread	Blt. & Acc.	Action Required	Material Needed
11	7	1242.6	Trail	Bollard	Metal bollard in center of bike path	0.4	0.4	3.0	1	0.0	48.0			
12	7	2824.8	Trail	Bollard	Metal bollard in center of bike path	0.4	0.4	3.0	1	0.0	48.0			
13	7	2859.5	Trail	Bollard	Metal bollard in center of bike path	0.4	0.4	3.0	1	0.0	48.0			
14	7	13.8	Visual	Bench	Wood and metal bench with backrest	8.0	2.0	2.7	1	0.0	0.0			
15	7	2024.1	Visual	Bench	Wood and metal bench with backrest	8.0	2.0	2.7	1	0.0	0.0			
16	7	3340.8	Visual	Bench	Wood and metal bench with backrest	8.0	2.0	2.7	1	0.0	0.0			
17	7	2327.1	Trail	Hole	Hole in asphalt	0.7	0.7	0.6	1	0.0	72.0			
18	7	821.2	Trail	Hole	Hole in asphalt	0.2	0.3	0.4	1	0.0	60.0			
19	7	173.0	Trail	Rut	Crack in asphalt	0.1	4.0	0.1	1	0.0	48.0			
20	7	352.9	Trail	Other Feature	Monitoring well manhole in trail	0.9	0.9	0.1	1	0.0	76.0			
21	7	451.7	Trail	Rut	Crack in asphalt	0.1	5.0	0.1	1	0.0	48.0			
22	7	555.7	Trail	Other Feature	Manhole in trail	1.3	2.0	0.1	1	0.0	36.0			
23	7	558.1	Trail	Rut	Crack in asphalt	0.1	7.1	0.1	1	0.0	48.0			
24	7	627.4	Trail	Rut	Crack in asphalt	0.1	7.1	0.1	1	0.0	48.0			
25	7	700.7	Trail	Rut	Crack in asphalt	0.1	7.1	0.1	1	0.0	48.0			
26	7	1024.3	Trail	Rut	Crack in asphalt	0.1	4.0	0.1	1	0.0	48.0			
27	7	1115.2	Trail	Rut	Crack in asphalt	0.1	5.0	0.1	1	0.0	48.0			
28	7	1222.0	Trail	Bump		0.1	8.2	0.1	1	0.0	24.0			
29	7	1240.3	Trail	Bump		0.1	8.2	0.1	1	0.0	0.0			
30	7	1346.1	Trail	Rut	Crack in asphalt	0.1	6.3	0.1	1	0.0	0.0			
31	7	1470.0	Trail	Rut	Crack in asphalt	0.1	6.3	0.1	1	0.0	12.0			

Trail Information Formats

Trail Access Information - TAI
Information sheets

TAI Laminated strip decals

Full panel signage with TAI

TAI on Web Site

Internet Web Site



HOME ABOUT US DEFINITIONS LINKS TRAIL ACCESS INFORMATION

TRAIL FEATURES
Customize your search by trail use and features.

TRAIL ACCESS
Find a trail to suit your ability. Search by grade, cross-slope and surface.

TRAIL MANAGEMENT
Authorized trail managers may add or edit trail information. Contact Beneficial Designs.



QUICK TRAIL SEARCH



Type in (a few letters of) a park or trail name:

OR

View trails by state:

PICK OF THE MONTH



Big Basin Redwoods State Park
Boulder Creek, CA

Features 2,000 year-old redwoods and over 50 miles of trails. Reservations required for camping. Phone: 831.338.8860

Have you ever finished a three hour hike in one hour? Have you struggled on a "moderate" trail? Have you encountered barriers on an "easy" trail? The Trail Explorer website is unique because it uses [Trail Access Information](#) to help trail users make informed decisions about which public lands to visit, and which trails will best meet their interests, abilities and desired experiences. Trail Explorer benefits all users, but is particularly helpful for individuals with disabilities, older adults, parents with young children, and novice hikers.

[home](#) | [about us](#) | [definitions](#) | [trail access information](#) | [links](#) | [acknowledgments](#) | [disclaimer](#)

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[TRAIL FEATURES](#)

Customize your search by trail use and features.

[TRAIL ACCESS](#)

Find a trail to suit your ability. Search by grade, cross-slope and surface.

[TRAIL MANAGEMENT](#)

Authorized trail managers may add or edit trail information. Contact [Beneficial Designs](#).

[CONTACT US](#)



TRAIL ACCESS SEARCH Use this advanced search to find a trail to match your abilities by selecting your preferences from the options below. To broaden your search, remove preferences in categories of less importance. For the definition of a term, click on the term.

Choose a state:

Trail length:

Surface Firmness:

Typical grade:

Typical cross-slope:

Typical tread width:

Minimum clearance width:



TRAIL FEATURE SEARCH - Find a trail that fits your interests and abilities by selecting your preferences from the options below. To broaden your search, remove preferences in categories of less importance. For the definition of a term, click on the term.

TRAIL FEATURES

Customize your search by trail use and features.

TRAIL ACCESS

Find a trail to suit your ability. Search by grade, cross-slope and surface.

TRAIL MANAGEMENT

Authorized trail managers may add or edit trail information. Contact Beneficial Designs.



Choose a state:

Indiana ▼

Uses permitted:

hiking/walking/running ▼

Destination Feature:

No preference ▼

Desired trail length:

2.1 to 5.0 mi (3.3 to 8.0 km) ▼

Typical grade:

No preference ▼

Firmness required:

Firm or better ▼

Find Trails

Clear Form



9 trails found. Use the "Back" button on your browser to refine your selection.
 Click on the trail name for more information.
 Click on the column heading to sort by column.

Trail	Park	State	Length	Typical Grade	Max Grade	Typical Xslope	Max Xslope	Typical Tread Width	Min Clear Width	Surface Firmness	Surface Mats
Trail 10	McCormick's Creek State Park	IN	0.7 miles (1.1 km)	3.3%	34%	3.5%	12%	50 in (126 cm)	na	Firm	Rock/Boulder
Trail 8	McCormick's Creek State Park	IN	0.7 miles (1.1 km)	2.3%	12%	1.1%	4%	60 in (152 cm)	na	Paved	Asphalt
Trail A	McCormick's Creek State Park	IN	0.2 miles (0.3 km)	2.2%	9%	1.3%	4%	58 in (148 cm)	na	Firm	Crushed Stone (Fines)
Trail 6	Spring Mill State Park	IN	0.4 miles (0.7 km)	2.3%	7%	2.2%	4%	60 in (152 cm)	na	Paved	Asphalt
Trail 7	Spring Mill State Park	IN	0.9 miles (1.5 km)	3.3%	23%	3.1%	8%	52 in (131 cm)	na	Firm	Soil
Trail 7 Spur to Trail 4	Spring Mill State Park	IN	0.4 miles (0.6 km)	3.9%	27%	2.8%	9%	49 in (125 cm)	na	Firm	Soil
Trail 10 Spur to Camels Back	Turkey Run State Park	IN	0.1 miles (0.2 km)	0.9%	2%	1.8%	5%	60 in (152 cm)	na	Firm	Crushed Stone (Fines)
Trail 11	Turkey Run State Park	IN	0.2 miles (0.3 km)	3.1%	9%	4.3%	11%	60 in (152 cm)	na	Firm	Crushed Stone (Fines)
Trail 7 Spur to Campground	Turkey Run State Park	IN	0.1 miles (0.2 km)	3.3%	6%	2.7%	5%	60 in (152 cm)	na	Firm	Soil



TAI Information Sheet



Trail Uses



Hiking

Dogs on Leash



No Bikes



No Equestrians



No Motorized Vehicles

Hazards and Obstructions



Step
30



Rock
12



Root
6

Pacific Crest Trail

Eldorado National Forest

Trail Length 1.1 mi (1.8 km)

Linear trail

Trail is part of the Pacific Crest National Scenic Trail and starts next to the seasonally open visitor center at Carson Pass. Restrooms are available at trailhead. A \$3.00 parking charge is required to park and hike. Envelopes/depository for fee is present. An overnight camping permit is required if staying overnight. Several local and regional maps are displayed at the trailhead.

Cumulative Gain 427 ft (130 m)
Elevation Change Loss 82 ft (25 m)



Typical Grade is 8.5%

48% of the trail is between 8% and 22%
144 ft (44 m) is between 20% and 22%
8% grade is a standard ramp.



Typical Cross Slope is 3.1%

20% of the trail is between 5% and 11%
226 ft (69 m) is between 8% and 11%



Typical Tread Width is 49 in (124 cm)

Tread Width ranges from 14 in (36 cm) to 100 in (254 cm)



Trail Surface is Soil

100% of the trail is Hard or better
5962 ft (1817 m) of the trail is Firm or better

Trailhead Location

At Carson Pass on Highway 88 directly on north side of the seasonally



Trail Access Information

Warning: Trail conditions may have changed since this trail was assessed. Temporary obstructions (e.g. fallen trees or land slides) may not have been mapped. Maximum grades and cross slopes may vary.

Obstructions less than 6.0 in (15 cm) or outside the tread area 12 in wide by 120 in (3 m) high were not measured. Minimum clearance boundaries were at least 12 in high.

This report has been generated by TrailWare which has been created by Beneficial Designs, Inc.



VEHICLES
ALLOWED
VIOLATORS
WILL BE
PROSECUTED

KEEP
→
RIGHT

**TAI on Carsonite &
Existing Signpost**



TAI on Wooden Post



Dune Trek
0.8 Miles
1.5 Hours
Easy

1 Interpretive
2 Restroom
3 Picnic Area
4 Information
5 No Pets
6 No Alcohol
7 No Smoking

8 Open 24/7
Hours: 24/7
Days: 24/7
Hours: 24/7
Days: 24/7

9 Open 24/7
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19 Open 24/7
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20 Open 24/7
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Hours: 24/7
Days: 24/7



Narrow Trails



Color and Logos

RIVERVIEW
PARK
TRAIL

Riverview Park / Mexican Ditch Trail System

Trail User:

- hiking
- mountain biking
- cross-country skiing
- dog walking
- no motor vehicles
- ice skaters
- recreational vehicles
- trail access information

Trail Name	Length	Elevation	Trail Surface	Trail Status	Trail Width	Trail Type
Riverview Park (Loop)	1.2 mi	7,200 - 7,500 ft	Gravel	Open	4-6 ft	Loop
Riverview Park (Point to Point)	1.2 mi	7,200 - 7,500 ft	Gravel	Open	4-6 ft	Point to Point
Riverview Park (Short Loop)	0.5 mi	7,200 - 7,500 ft	Gravel	Open	4-6 ft	Loop
Mexican Ditch Trail (Loop)	1.2 mi	7,200 - 7,500 ft	Gravel	Open	4-6 ft	Loop
Mexican Ditch Trail (Point to Point)	1.2 mi	7,200 - 7,500 ft	Gravel	Open	4-6 ft	Point to Point

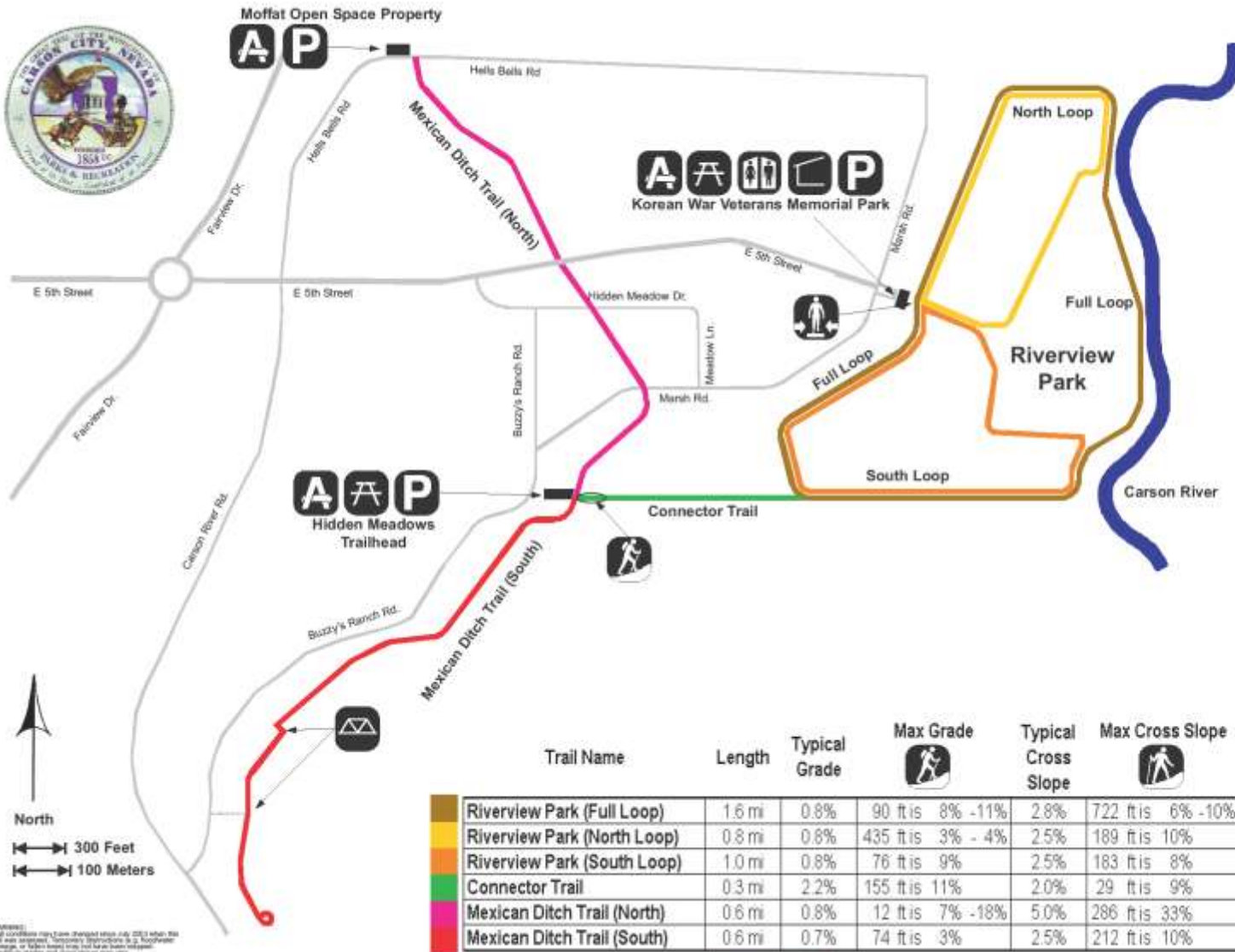
Trail Access Information:

- Trail Access Information

Trail Type:

- Loop
- Point to Point
- One-Way
- Two-Way
- One-Way (Loop)
- Two-Way (Loop)
- One-Way (Point to Point)
- Two-Way (Point to Point)

Riverview Park / Mexican Ditch Trail System



Trail Use:

- Hiking
- Bicycling
- Equestrian
- Dogs Allowed
per posted restrictions
- No Motor Vehicles
Except City Maintenance Vehicles
- 16" Minimum Clearance Width
Contact the Carson City Parks and Recreation Dept. at 887-2262 for gate access.

A Trail Access Information



Trail Name	Length	Typical Grade	Max Grade	Typical Cross Slope	Max Cross Slope	Typical Trail Width	Min Clearance Width	Surface Type
Riverview Park (Full Loop)	1.6 mi	0.8%	90 ft is 8% -11%	2.8%	722 ft is 6% -10%	11 ft	16 in	Aggregate / Gravel
Riverview Park (North Loop)	0.8 mi	0.8%	435 ft is 3% - 4%	2.5%	189 ft is 10%	10 ft	16 in	Aggregate / Gravel
Riverview Park (South Loop)	1.0 mi	0.8%	76 ft is 9%	2.5%	183 ft is 8%	12 ft	16 in	Aggregate / Gravel
Connector Trail	0.3 mi	2.2%	155 ft is 11%	2.0%	29 ft is 9%	12 ft	60 in	Aggregate / Gravel
Mexican Ditch Trail (North)	0.6 mi	0.8%	12 ft is 7% -18%	5.0%	286 ft is 33%	12 ft	60 in	Aggregate / Gravel
Mexican Ditch Trail (South)	0.6 mi	0.7%	74 ft is 3%	2.5%	212 ft is 10%	8 ft	60 in	Sand

A standard ramp has an 8% grade.

WARNING: Trail conditions may have changed since July 2013 when this map was updated. Users are encouraged to use appropriate caution, or take extra care, and not to become complacent. Mountain bikes and cross-country skis are not allowed.
This map was created by Riverside Design Inc. P.O. Box 2088, Minden, NV 89423-2088. Every care is taken to provide a certified trail assessment, north-south.

Fort Churchill State Historic Park

TRAIL USE

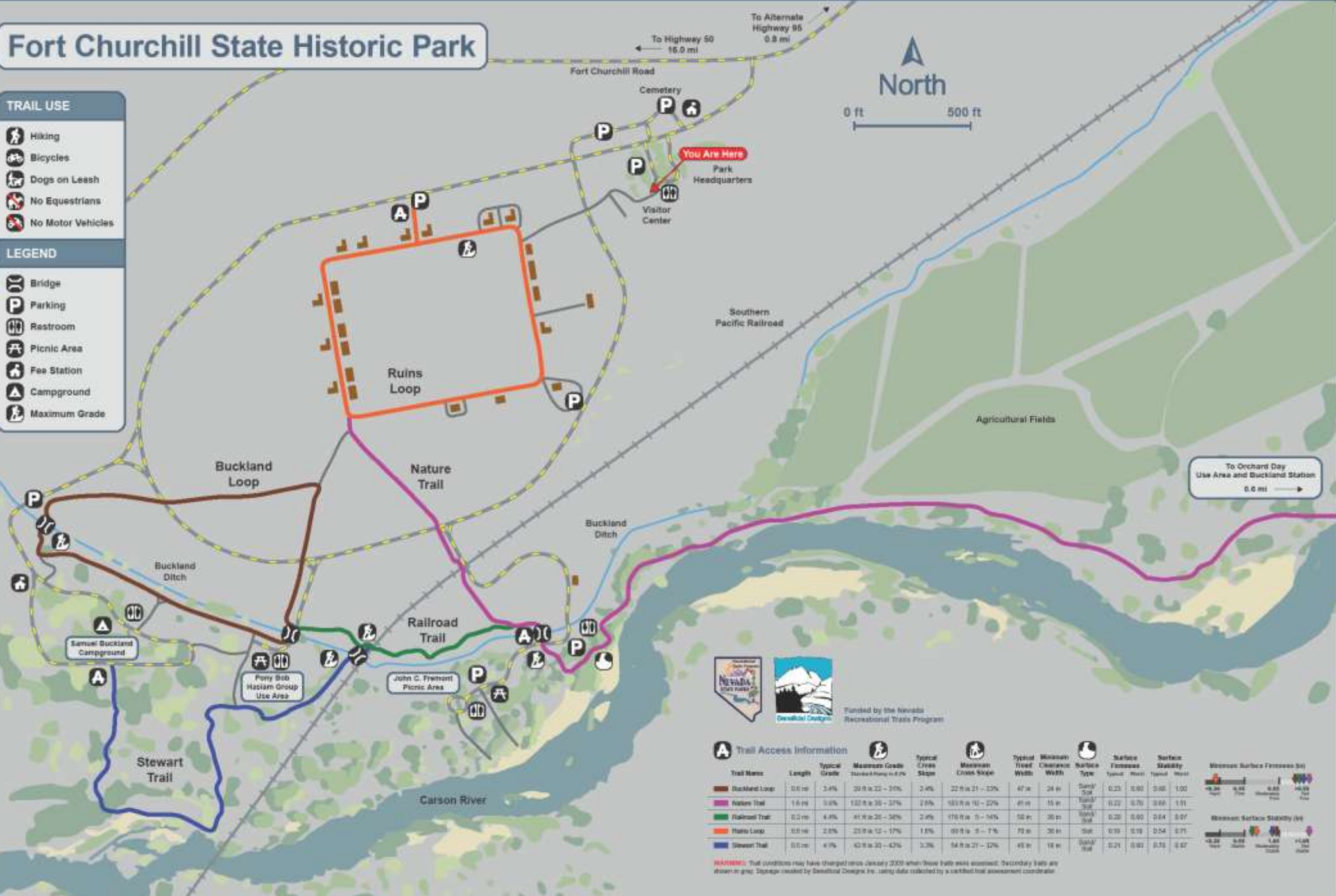
- Hiking
- Bicycles
- Dogs on Leash
- No Equestrians
- No Motor Vehicles

LEGEND

- Bridge
- Parking
- Restroom
- Picnic Area
- Fee Station
- Campground
- Maximum Grade



0 ft 500 ft



Funded by the Nevada Recreational Trails Program

A Trail Access Information

Trail Name	Length	Typical Grade	Maximum Grade (Steepest Ramp in 4%)	Typical Cross Slope	Maximum Cross Slope	Typical Tree Width	Minimum Clearance Width	Surface Type	Surface Firmness Typical	Surface Firmness Worst	Surface Stability Typical	Surface Stability Worst	Minimum Surface Firmness (ft)
Buckland Loop	0.6 mi	3.4%	20.0 ft @ 22 - 34%	3.4%	22.0 ft @ 21 - 32%	47 in	24 in	Sand/Soil	0.23	0.60	0.60	1.00	18-20 ft
Nature Trail	1.6 mi	0.6%	12.0 ft @ 20 - 32%	2.6%	18.0 ft @ 10 - 22%	41 in	15 in	Grass/Soil	0.22	0.70	0.60	1.01	18-20 ft
Railroad Trail	0.2 mi	4.4%	41.0 ft @ 25 - 50%	2.4%	17.0 ft @ 5 - 16%	52 in	30 in	Grass/Soil	0.28	0.60	0.64	0.67	18-20 ft
Stewart Trail	0.8 mi	2.0%	23.0 ft @ 12 - 17%	1.8%	20.0 ft @ 5 - 7%	72 in	30 in	Soil	0.30	0.18	0.54	0.71	18-20 ft
Stewart Trail	0.6 mi	4.9%	42.0 ft @ 30 - 42%	3.3%	54.0 ft @ 21 - 32%	45 in	18 in	Grass/Soil	0.21	0.60	0.70	0.67	18-20 ft

WARNING: Trail conditions may have changed since January 2020 when these trails were assessed. Secondary trails are shown in grey. Signage created by Desertland Designs Inc. using data collected by a certified trail assessment coordinator.

Lampe Park



0 ft 500 ft

TRAIL USE

- Hiking
- Bicycles
- No Dogs
- No Equestrians
- No Motor Vehicles

LEGEND

- Bridge
- Parking
- Ball Field
- Restroom
- Skate Park
- Playground
- Picnic Area
- Horseshoes
- Soccer Field
- Tennis Court
- Batting Cage
- Group Pavilion
- Sand Volleyball
- Park Boundary

Trail Name	Outer Loop Trail	Inner Loop Trail	Senior Center Trail
Length	0.8 mi	0.6 mi	0.2 mi
Typical Grade (Standard Range is 0-2%)	1.3%	1.1%	1.5%
Maximum Grade 	17 ft in 5 - 8%	41 ft in 3 - 5%	27 ft in 5 - 0%
Typical Cross Slope	1.5%	1.0%	1.1%
Maximum Cross Slope 	142 ft in 5 - 0%	240 ft in 4 - 8%	63 ft in 3 - 0%
Typical Tread Width	10 ft	12 ft	9 ft
Minimum Clearance Width	40 in	8 ft	7 ft
Surface Type 	Decomposed Granite/Pavers	Decomposed Granite/Pavers	Decomposed Granite
Typical Surface Firmness	0.26 in (Ideal 0.23 in)	0.26 in (Ideal 0.23 in)	0.19 in (Ideal 0.23 in)
Typical Surface Stability	0.26 in (Ideal 0.33 in)	0.26 in (Ideal 0.33 in)	0.20 in (Ideal 0.33 in)

Minimum Surface Firmness (in)

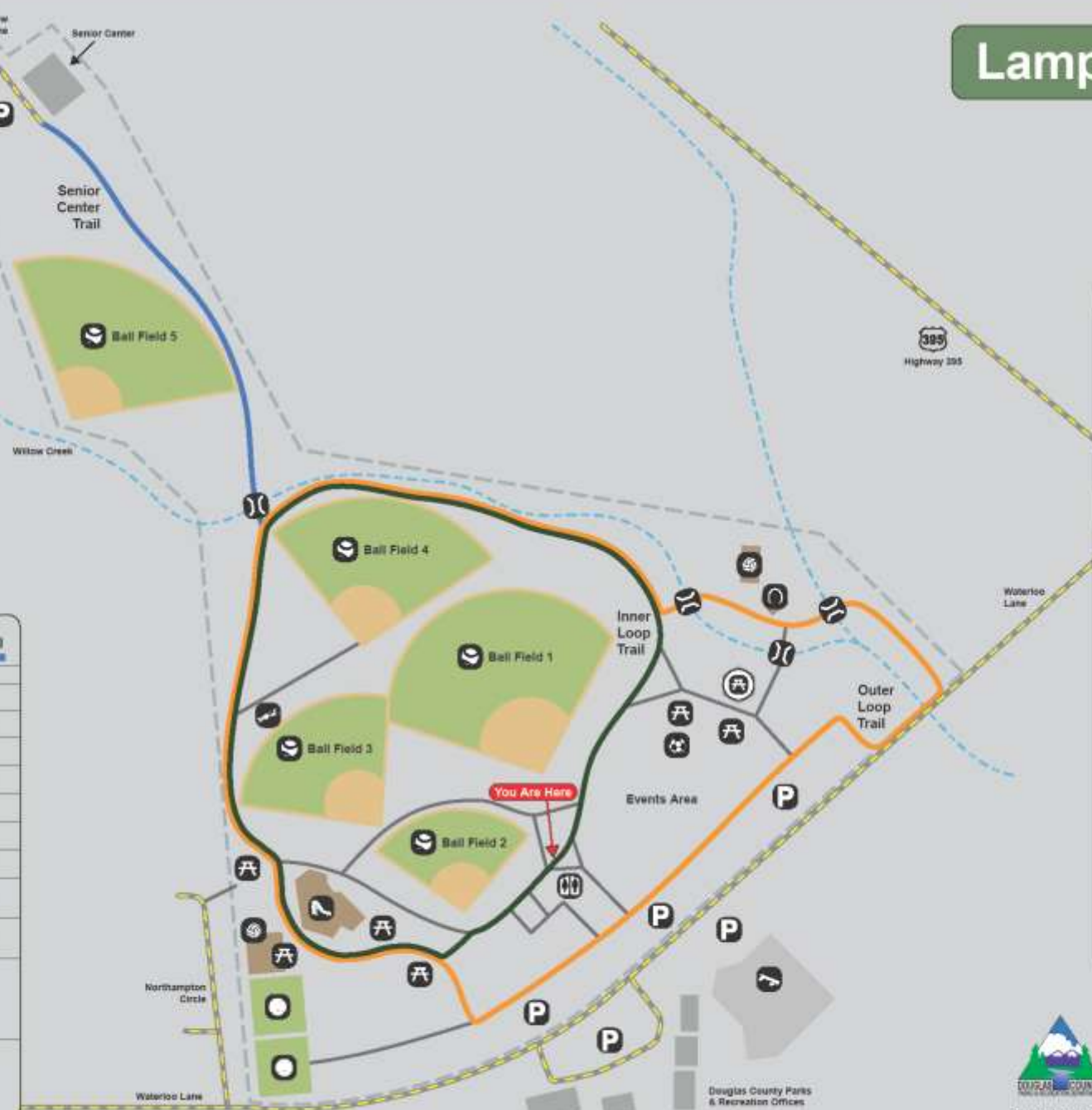


Minimum Surface Stability (in)



WARNING: Trail conditions may have changed since July 2007 when these trails were assessed. Secondary trails are shown in gray. Database created by Recreational Designs Inc. using data collected by a certified trail assessment coordinator.

A Trail Access Information



Funded by the Nevada Recreational Trails Program

Douglas County Parks & Recreation Offices

Washoe Lake State Park

TRAIL USE

- Hiking
- Bicycles
- Equestrian
- Dogs on Leash
- No Motor Vehicles

- No public access beyond viewing tower on Wetlands Loop February 1 - July 31 to protect nesting habitat
- No bicycles allowed on Wetlands Loop
- No equestrians allowed on Wetlands Loop and Deadman's Creek Trail

LEGEND

- Bridge
- Parking
- Restroom
- Picnic Area
- Boat Launch
- Drinking Water
- Maximum Grade
- Stair Viewing Tower
- Entrance Fee Station
- Horse Trailer Parking

0 0.5 mi



Trail Name	Length	Typical Grade	Maximum Grade	Typical Cross Slope	Maximum Cross Slope	Typical Tread Width	Minimum Clearance Width	Surface Type	Surface Firmness	Surface Stability		
Beach Street	2.7 mi	1.8%	220 ft in 8 - 9%	2.8%	473 ft in 8 - 11%	42 ft	20 ft	Sand	0.88	1.00	3.01	2.03
Day Use Pathway	0.4 mi	2.2%	9 ft in 3 - 13%	2.9%	233 ft in 5 - 7%	9 ft	48 in	Asphalt	0.10	0.10	0.10	0.10
Deadman's Creek Trail	0.6 mi	7.0%	300 ft in 10 - 20%	7.8%	290 ft in 10 - 20%	26 in	16 in	Soil	6.17	0.18	0.40	0.57
Dune Trek	2.4 mi	0.2%	175 ft in 30 - 40%	4.2%	257 ft in 15 - 25%	32 in	18 in	Sand	5.77	0.90	1.93	2.00
East Loop	3.0 mi	2.0%	100 ft in 0 - 13%	1.9%	30 ft in 0 - 13%	43 in	16 in	Sand	0.41	0.53	1.06	1.00
North Loop	3.4 mi	1.8%	173 ft in 10 - 27%	2.4%	300 ft in 7 - 9%	60 in	24 in	Sand	5.47	0.68	1.14	1.42
South Loop	2.0 mi	1.8%	210 ft in 3 - 8%	2.1%	198 ft in 3 - 7%	60 in	24 in	Sand	0.30	0.43	0.71	0.96
Wetlands Loop	1.1 mi	1.3%	135 ft in 5 - 15%	1.6%	28 ft in 5 - 15%	7 ft	48 in	Asphalt	0.20	0.27	0.61	0.67

WARNING: Trail conditions may have changed since January 2019 when these trails were assessed. Secondary trails are shown in black. Not all trails are mapped. signage created by Beneficial Designs Inc. using trail data collected by a certified trail assessment contractor.



Rough Draft Only
2009-12-24
\$ in 20x24 ft south equestrian,
north equestrian, entrance area,
middle, Deadman's



Funding Support

Nevada Recreational Trails Program-
Nevada Division of State Parks

Administered by the Federal
Highway Administration (FHWA)
Safe, Accountable, Flexible, Efficient
Transportation Equity Act: A
Legacy for Users (SAFETEA-LU)

Preventing Access Barriers

**Need to provide access to all
allowed user groups**

**Need to prevent those user groups
not allowed**

A man with glasses, wearing a black puffer jacket, black pants, and black boots, is seated in a wheelchair. He is leaning against a chain-link fence with both hands. He is wearing tan work gloves. The fence is made of galvanized steel and has a gate to the left. In the background, there are trees without leaves, a brick building, and a hillside under a cloudy sky. The ground is dirt and gravel.

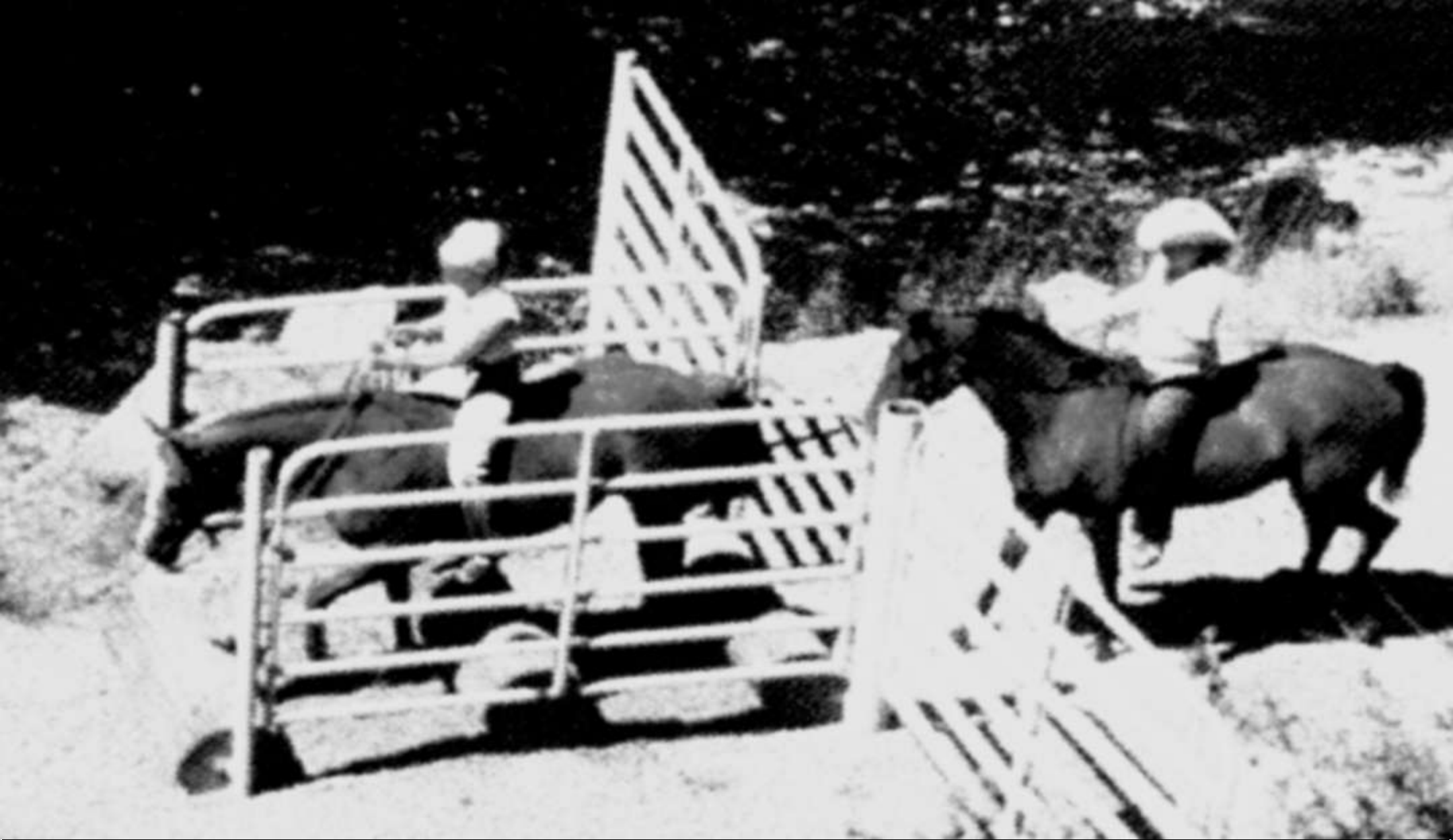
**Barrier at
Riverview
Park**



Kissing Gate Barrier

Single Step Barrier





Step Over Barrier

Stile Barrier

PUBLIC
FOOTPATH







Third Inverted Bollard Concept

Motorcycle Testing

Electronic Gate Barrier



Funding Support

Development of the High Efficiency Trail Assessment Process and the Trail Gate Barrier Project provided by the USDA CREES SBIR program

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*Working toward universal access
through research, design & education*