Big Cottonwood Scenic Bikeway

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SALT LAKE COUNTY
TOWNSHIPS

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Study Area

Big Cottonwood Canyon draws visitors like a force of nature because of the instinctive human need for dignity, peace, and majesty of place. Back in the summer of 1891, hundreds of people took the popular stagecoach ride up to Brighton's Hotel. A local advertisement said, "Bring your flannels and overcoats. You can picnic in the pine forests or wander up the mountain and dine in cloudland."

They didn't know that the Salt Lake Valley would become home to a million people living only 30 minutes from Big Cottonwood Canyon. The growth of outdoor recreation has swept into the canyon because of its abundant opportunities. Cyclists, hikers, skiers, boarders, and climbers consider this canyon part of their big backyard; and rightfully so, because it is a beloved and versatile destination.

The Roadway

Big Cottonwood Canyon Road, also known as State Highway 190, is 15 miles long, and is characterized by steep grades, sharp bends, and few passing opportunities. There are ten small communities, two ski resorts (Brighton and Solitude), five picnic areas, two campgrounds, two kids' summer camps, and many popular trailheads along the length of the corridor. There are 6 avalanche slide paths near the highway. The roadway is diligently maintained in all seasons by the Utah Department of Transportation's six-member crew at UDOT Station 233. Residents and visitors alike comment on the efficient, reliable service provided by the snowplow and maintenance crews, in often complicated conditions.

Public Safety

An analysis of UDOT's crash data indicates that Big Cottonwood Canyon is one of the most dangerous roadways in the State of Utah. Crashes occur more frequently in Big Cottonwood than is typical for roadways with similar characteristics. Better travel safety is the reason for this bikeway study.

Traffic in Big Cottonwood

Motorists are the primary users of the roadway. However there are steadily increasing numbers of cyclists and runners. Most traffic is attributed to recreation activity. The highest use comes during the summer season (June-September). The next highest use comes during the winter season (December-March). Traffic congestion sometimes requires several hours to clear, as peak days can generate over 10,000 vehicles in the canyon. Average daily traffic is around 5,000 vehicles.

Parking

During peak recreation times and holidays, parking overflows onto roadway shoulders creating conflicts on the roadway, especially for cyclists. US Forest Service policy does not support any expansion of parking in the Canyon. There is limited parking in picnic and camping areas; larger parking areas are located at Brighton Resort (1,090 spaces) and Solitude Resort (1,162 spaces).

Transit

The Utah Transit Authority (UTA) provides winter bus service (November-April) to Solitude and Brighton Ski areas, and some trailheads (Cardiff, Spruces, Silver Fork). They generally run on half-hour headways in the morning and late afternoon, but with one hour headways during midday.

Vision for a Safe and Scenic Bikeway

Keep close to Nature's Heart. Break clear away once in awhile. Climb a mountain. Wash your spirit clean.
-John Muir, Scottish-American Naturalist

The Big Cottonwood Scenic Bikeway will provide a safe and scenic travel experience along State Highway 190 for cyclists, motorists and other active transportation participants.

The Scope of this study includes:

Roadway Infrastructure

Studies show that cyclists and motorists prefer at least five-foot-wide bikeways when adjacent traffic is 45 mph. (*see Salt Lake County Bicycle Best Practice*-2014). A wider bikeway for Big Cottonwood is a significant public safety need, and has been a community vision for many years.

Maintenance

Regular maintenance, including sweeping and rock retention, is important to keep rocks and sand off uphill and downhill lanes during the cycling season.

Ecology

Consideration will be given to protection of natural areas, watershed, and historical features in the canyon. Efforts will be made to reduce motor traffic in the canyon.

Parking and Signage

An evaluation of critical road areas such as The Notch, Mill B, Cardiff, Silver Fork, and Brighton Circle will determine the need for improved signage and parking along the corridor.

Public Outreach

There will be increased public outreach, including law enforcement and public education programs to foster a culture of respect, understanding and safety for all canyon active transportation users.

Short Term Goals

"Our Responsibility is to be more than careful stewards of this place; we must be constant catalysts for positive change."
-Gifford Pinchot, First Chief of U.S. Forest Service 1905-1910

Infrastructure

1. Design and construct an active transportation lane at least 5 ft. wide wherever possible along the uphill side of Big Cottonwood Canyon's State Highway 190.

2. Meet or exceed AASHTO (*American Association of State Highway and Transportation Officials*) standards in the design of the active transportation lane.

3. Expand the road toward the slope-side rather than the creek-side in order to preserve a riparian buffer.

4. Restripe the road to add uphill bikeway lane width wherever possible.

5. Exclude the use of chip-seal maintenance for Highway 190 because of high bicycle usage.

6. Study the feasibility of rock retention netting where vegetation stabilization won't work. Provide engineering for slope stabilization to prevent debris from falling on the road.

7. Make recommendations for pull-outs that join the highway, since gavel surfaces deposit debris on the road.

8. Plan ahead for future buried utilities along the road. Fiber optic and natural gas lines are needed and possible.

Maintenance

1. Set up a routine maintenance schedule that will include weekly sweeping of the road during the cycling season.

2. Mark downhill lane hazards (potholes, manholes, loose pavement, etc.) with fluorescent paint for quick identification.

3. Maintain a flush, firm, fairly smooth downhill shoulder to provide a margin of safety for the downhill cyclist.

4. Preserve pavement consistent with AASHTO design standards.

Ecology

1. Collaborate with public and private entities to support a robust watershed and resilient forest.

2. Consider natural habitats and wildlife migration in the planning process.

3. Use fire-resistant, drought-tolerant native plants in re-vegetation and slope stabilization projects for hillsides that drop rocks onto the road.

Parking

Provide more efficient parking, pedestrian, and transit facilities at Storm Mountain, Mill B, Cardiff, and Spruces trailheads.

Signage

1. Evaluate signage for critical road areas (The Notch, Mill B, Cardiff, Silver Fork, Brighton Circle). Signs could include feed-back signs, variable message signs (VMS), or flashing signs.

2. Post Single-File signs for short distances in narrow pavement areas.

3. Use painted signs in the lane to show yields or hazards. Roadway signs are often above a cyclist's line-of-sight.

4. Rotate Variable Message Signs (VMS) at the mouth of the canyons during busy days to warn people of crowded roadway conditions.

5. *Slow Traffic* Pull-outs should be signed.

Enforcement

1. Provide better enforcement by putting more officers on patrol at peak periods.

2. Issue warnings or tickets to bicyclists, motorists, or runners who impede traffic or endanger others.

Public Outreach

1. Collaborate with public and private entities to create a public outreach program that facilitates a culture of Communication, Respect, Understanding and Safety for all canyon users. UDOT's Road Respect program could be the basis for such an effort.

2. Promote UDOT's SEE-CLICK-FIX program for road maintenance. (Call 801.975.4827)

3. Reach out to running and cycling clubs (Bonneville, Bad Ass, Adobe) to encourage mutual respect while using the road.

4. Support programs that promote responsible recreation and personal responsibility for public safety and protection of the canyon's natural resources. All canyon users need to take a wider view of the situation.

5. Implement public education messages using mailings, posters, websites, public service announcements, and movable signs to target motorists, runners, bicycle groups and shops, and tri-canyon residents.

6. Work with running and cycle clubs and teams to adopt a "Single File is Safer" ethic.

7. Cooperate with Cottonwood Heights, Salt Lake County and Salt Lake City to provide mapping and amenity information about canyon active transportation lanes and trails.

8. Support an update of the Drivers' Education Manual to include bicycle and pedestrian safety regulations and tips for courteous conduct.

9. Support bicycle rallies to teach children and adults bicycling skills and regulations. Rotate these events among all the canyons.

10. Include bicycle, marathon, and road project information in upcoming Community Council newsletters, utility bills, and public notices.

11. Require event organizers to place advance notice signs of all Canyon events and provide effective traffic management during the event at their expense.

12. Post "Rules of the Road" information signs at the mouth of the Canyon. Include bike and pedestrian laws, warnings of road closures and conditions, location of restrooms, courtesy suggestions, and upcoming events.

Long Term Goals

"Keep your eyes on the stars and your feet on the ground."
-Teddy Roosevelt, Naturalist and 26th U.S. President

Infrastructure

1. Design and construct a 5-8 foot active transportation lane along the uphill side of State Highway 190 in the upper part of the canyon.

2. Insure that canyon bikeways are always considered by UDOT in their long-range planning and pavement projects.

3. Insure that canyon bikeways are recognized components in the Wasatch Front Regional Council transportation planning efforts.

4. Plan ahead for future buried utilities along the road. Fiber optic and natural gas lines are needed and possible.

5. Support bikeway planning and public outreach efforts in other canyons.

6. Partner with the U.S. Forest Service and private land owners to seek alternative off-road bikeways for sections of the canyon where possible. Young families, hikers, and slower cyclists need off-highway active transportation pathways.

7. Critical areas include the Park & Ride lot at the mouth of the canyon, the area below the Stairs Power Plant, the Notch at Storm Mountain, the S-Curve, the curve above Silver Fork Lodge, and roadside parked cars near popular trailheads.

Traffic and Transit

1. Seek ways to reduce motor traffic in the canyon, including increased public transit, private shuttles, parking fees, toll booths.

2. Work with UTA to provide bicycle rack space on busses and enhanced public transit stops at Storm Mountain, Butler Fork, Cardiff, Spruces, Silver Fork, Solitude and Brighton.

3. Investigate public-private partnerships with businesses and public buildings near the mouth of the canyon to enable use of additional parking lots for fee/free during peak days.

Public Outreach

1. Collaborate with UDOT and other canyon communities to promote public outreach projects that create a safe bikeway experience for motorists, cyclists, and other active transportation participants.

2. Seek alternate routes for runners at the Notch and Storm Mountain Bridge, as there is no shoulder there for their safety.

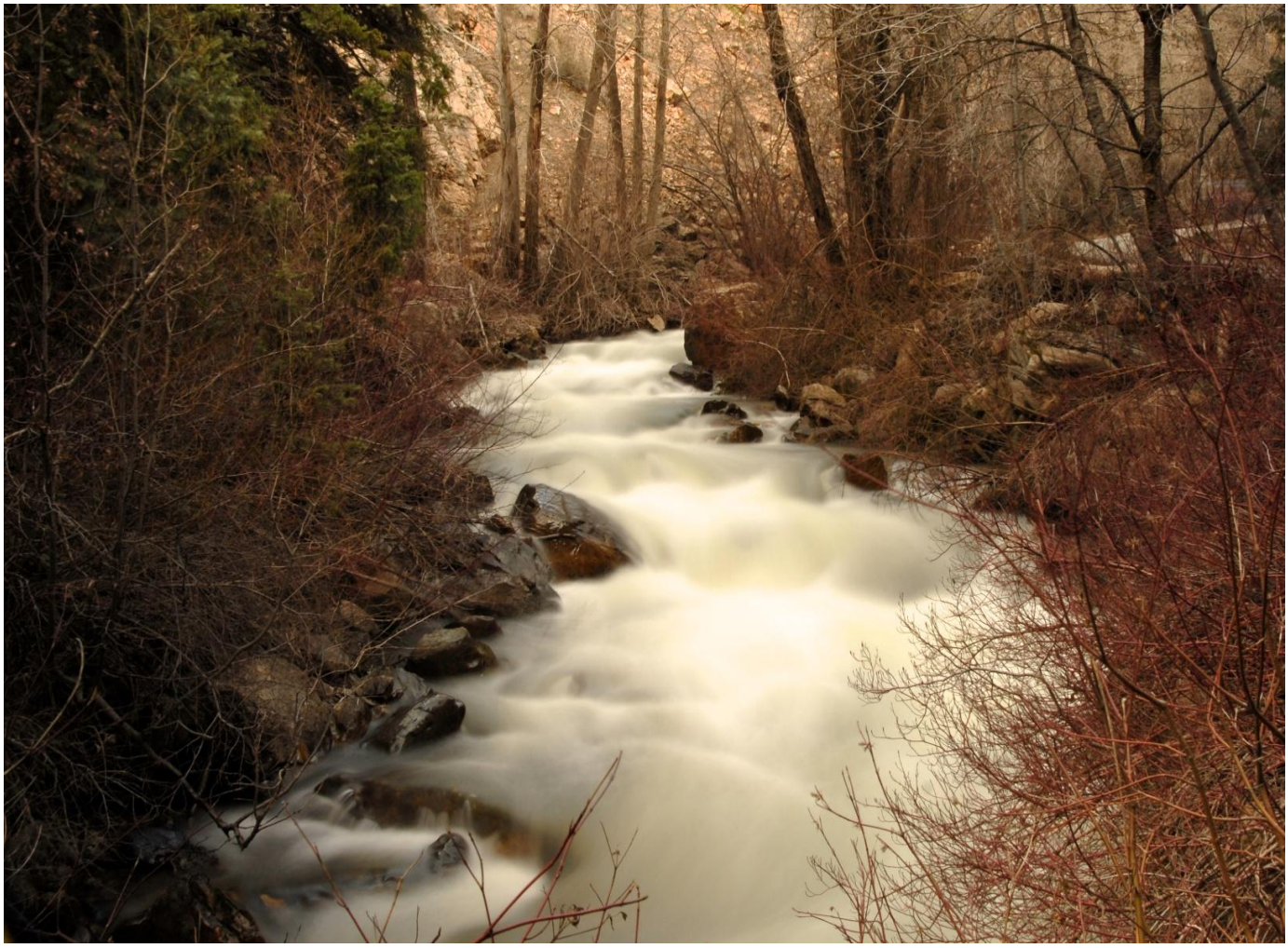
Comments from Stakeholders

All users need to take a wider view of the canyon road. *Jason Huggard, Canyon Patrol*

We are at a happy tipping point where the increasing number of cyclists actually creates a safer situation. *Evelyn Tuddenham, UDOT*

We need to seek a balance for all canyon users. This is an intense multi-use area, and safety is a priority. *Danny Page, UDOT*

Big Cottonwood Scenic Bikeway
Appendix
The Crimson Engineering Report



Appendix – Crimson Engineering Summary

"Good fortune is what happens when opportunity meets planning."
–Thomas Edison, American inventor

This report was presented to UDOT in 2005 as part of a senior engineering class taught by Dr. David Eckhoff at the University of Utah. Recommendations include suggested staging, budget, environment, materials, and cross sections. Although the cost estimates are dated, the design elements are pertinent. Link for more info: http://archive.sltrib.com/article.php?id=3307457&itype=NGPSID

I. Typical Cross Sections

This area represents about 94% of the canyon road and would require only minor renovations.

a. Typical Cross Section 1 (5% of canyon). The only change needed is striping revisions. Cost $30,600.

b. Typical Cross Section 2 (83% of canyon). Shoulder extensions are needed (including trenching, compaction, saw cutting, and asphalt). No retaining walls are needed. Cost $4,910,000.

c. Typical Cross Section 3 (2% of canyon). Shoulder extensions needed (including trenching, compaction, saw cutting, asphalt) with retaining walls because of steep slopes. Cost $717,000.

d. Typical Cross Section 4 (4% of canyon). Similar to Cross Section 3, but retaining walls are near the creek, so special construction is required to assure no dirt enters the creek. Cost $3,020,000.

II. Critical Cross Sections

These areas represent about 6% of the most hazardous parts of the road where major renovations are needed.

a. Power Plant Shoulder Extension
This would require a 300 ft. long concrete retaining wall extending 6 ft. out from the existing road. Then 7500 cubic feet of fill will be placed and compacted to prepare for the paved surface. Such a retaining wall would also provide safety for motorists and cyclists. Cost $355,000.

b. The Notch Shoulder Widening
Remove a portion of the south side rock (approximately 2,000 cubic feet) by controlled blasting. Cost $149,000

c. Maxfield Bridge
This project has been completed by UDOT. The Bridge is well-constructed, with 8 ft. shoulders allowing space for an active transportation lane, and a better line of sight.

d. S-Curve Shoulder Extension
This is one of the suggestions for the dangerous S-Curve area. The other , an S-Curve Bypass, is recommended. The shoulder extension would require a concrete retaining wall, varying in height from 6 ft. to 18 ft, backfilled and paved.
Cost $4,290,000

e. S-Curve Bypass The existing Lake Blanche Trail would be converted into a 10 ft. wide shared use path for 1,374 ft. Then, approximately 64 ft. of new trail would be constructed where the trail becomes gravel. From there, a 45 ft. bridge would cross the creek and merge back into SR-190. Some cyclists question the crowds and safety.
Cost $310,000.

f. Silver Fork Lodge Parking Area
Widen the existing lane to 6 ft. Install a flashing sign to warn of exiting traffic and pedestrians.
Cost $30,700.

g. Two Lane with Steep Drop Off
At this point, the road consists of a single downhill lane and two uphill lanes. Widen the existing roadway to provide a 6 ft lane and adequate shoulder.
Cost $8,540.

h. Solitude Right-Hand Turning Lane
Add 5 ft. of asphalt outside of the right hand turn lane. Restripe to allow for a bike lane to be added between the drive lane and the right hand turn lane.
Cost $29,900.

i. Upper Solitude Barriers
Redesign the south side of the road to allow for a 4 ft. active transportation lane. (completed?)
Cost $44,100

Environmental Studies. Approximately 90% of the project area is within the UDOT right-of-way. The more complex parts of the project could require an environmental study, which could trigger a study of the entire corridor.