

Emigration Canyon Transportation Study February 2016



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I. INTRODUCTION

Emigration Canyon, located 10 minutes from the Salt Lake City downtown metro center, is a unique environment with a mild grade, beautiful surroundings, a residential and commercial community, and accessibility to downtown. This unique context attracts various users—cyclists of differing skill levels; commuting motorists who are familiar with the corridor; school buses; visitors who are unfamiliar with the corridor; and pedestrians, runners, and in-line skaters. This variety of motorists and active transportation users results in myriad opinions on how the corridor should be used, what problems or needs exist, and how best to address such issues.

In February 2014, Salt Lake County formed the Emigration Canyon Roadway Improvement Committee (ECRIC), a group whose fundamental purpose was to assess bicyclist- and motorist-related concerns in Emigration Canyon through a facilitated collaborative process. Safety within a mixed-use corridor was the overarching consideration. The result of this committee was the development of recommendations for immediate action, and 79 specific roadway improvements.

Salt Lake County provided funding to evaluate engineering deficiencies throughout the canyon, develop costs for solutions recommended by the ECRIC, and additional engineering analysis.

This report provides a summary of these findings.

II. EXECUTIVE SUMMARY

Existing conditions of Emigration Canyon were identified in a collaborative effort with input from the ECRIC, engineers, and the public. Nearly 200 comments were identified, as shown in Appendix A (separated by ECRIC, engineering, and public). The comments received were similar in nature, and were summarized into the following categories:

- Geometric deficiencies
- Traffic issues
- Environmental concerns

Based on input from the ECRIC and the public, the need to address geometric concerns had the highest rating of 60 percent, traffic concerns rated at 30 percent, and environmental concerns rated at 10 percent. The canyon was divided into 12 segments relative to geometric needs (narrow shoulders or lane widths); a "hazard index" was then identified where higher concentrations of needs were present on the corridor. See Appendix B.

Based on the needs identified, the project team identified solutions throughout the canyon. Cost estimates were developed for solutions along each of the 12 identified segments. The cost estimates were based on single project solutions that coincided with the identified existing condition deficiencies from the 200+ comments received. These segment estimates identified \$15 million in improvements throughout the canyon (see Figure 1).

Current Salt Lake County funding only allows for \$1 million of potential improvements to be completed during the 2016 construction season. These solutions are summarized on Figure 2. Potential improvements for the \$1 million projects have been progressed to 30% design plans (see Appendix C). These improvements will be constructed by Salt Lake County over the 2016 construction season.

The County will continue to identify additional funding to construct future improvements.

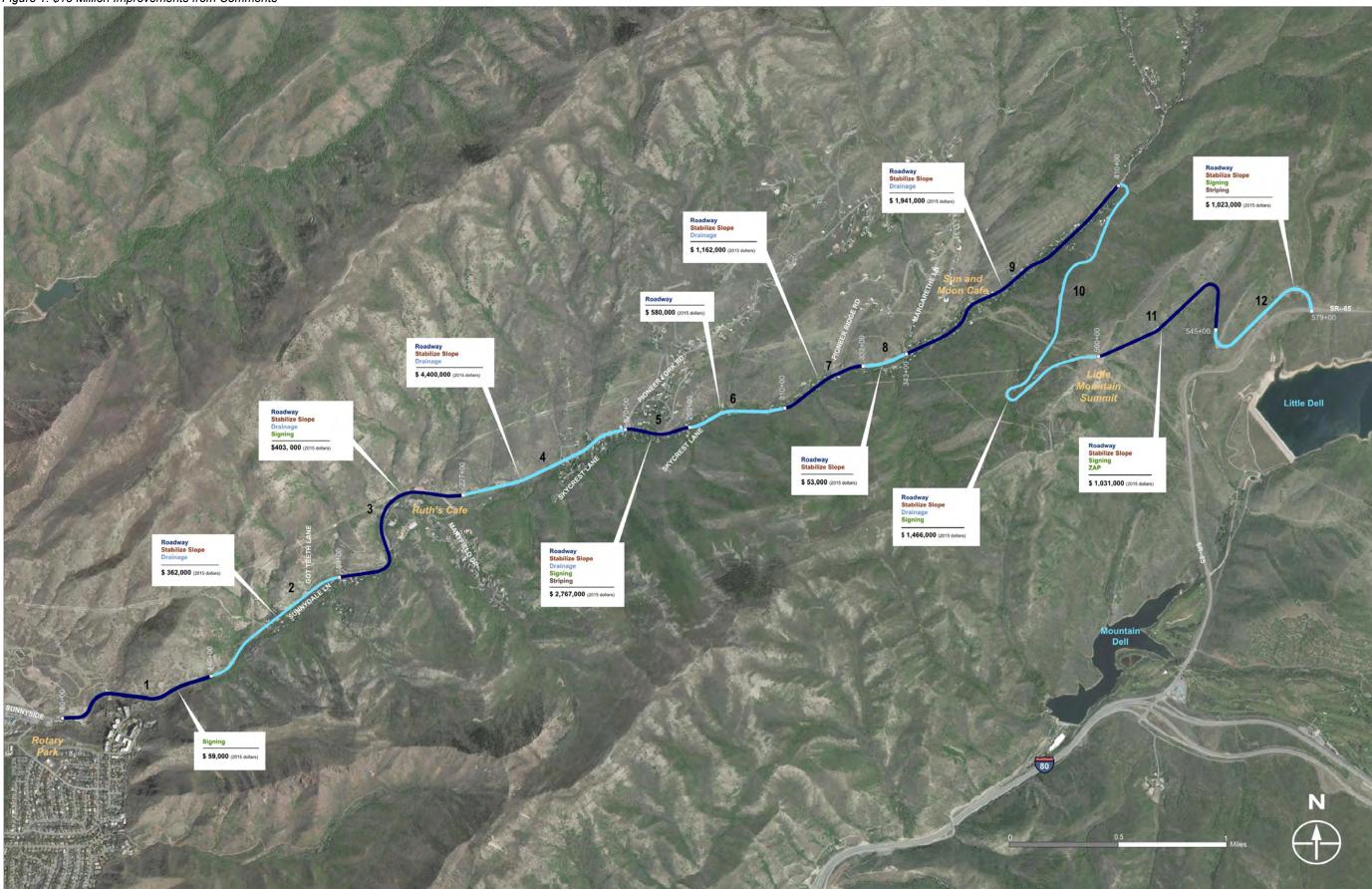


Figure 2: \$1 Million Improvements

		bnd		
ridor Wide Cost Estimate	Lege	anu		
	\$14,670			
Bus Stop Sign & Striping	\$14,670 Signi	ng and Striping Improvements		
Advisory Zone Sign & Striping	\$4,710			
Choke Point Sign & Striping	\$44,220	Advisory Zone		a and the second s
Share the Road Signing	\$21,710			
Ruth's VMS Ped Improvements	\$18,400	School Bus Stop	ALL I THE A LANGE I A	
Chevron Signing	\$51,340	control bus otop	a for the second second second	
Restroom Signage	\$1,440	Shared Lane Striping		A A A A A A A A A A A A A A A A A A A
Shared Lane Striping (Margarthe - Pinecrest)	\$54,140	enalou Lano Outping		
	\$210,630	Destroom Sinners		Cord. A Strat
age Improvements	(TIT	Restroom Signage		
Pioneer Fork: Add Ditch, CB, Culvert for Large Puddle	\$21,570			
Pioneer Ridge: Replace Undersized Culvert & CB Lid	\$36,150	Chokepoint	and the state of the state of the	A AN
Pinecrest: Roadside Improvements	\$15,680			A DOT PAS
	000 100		The state of the state of the state	
Lower Little Mtn: Roadside Improvements	\$24,230 Drain	age Improvements	The Property of the second second	A AD SHE
Little Mtn Curve: Roadside Improvements	\$12,090			A B AND AN
Spring Collection System and Outfall	\$10,270	Roadside Improvements		and the second of the second s
Trails End: Grade Ditch on North Side	\$8,820	rioudoluo improvomento		
Subtotal	\$129,410		and the state of the	A Go La
le Slope Retaining Barrier Locations			and the second sec	CE E
Temporary Retaining Barrier (2400')	\$141,000 Unsta	ble Slope Improvements		and all
Shotcrete Retaining Wall (1800 sf)	6144.000			8 8 S
	\$285,000	Temporary Retaining Barriers		
Subtotal	\$285,000 FEM	P	A CONTRACT OF	5 2
		`		
Mobilization & Traffic Control (15%)	\$130,000		at the	
Items Not Quantified (20%)	\$166,000	Shotcrete Retaining Wall		
Preliminary Engineering (8%)	\$74,000		State State	6
Construction Engineering (0%)	\$0		a solo - V - V - V - V	
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III. EXISTING CONDITIONS

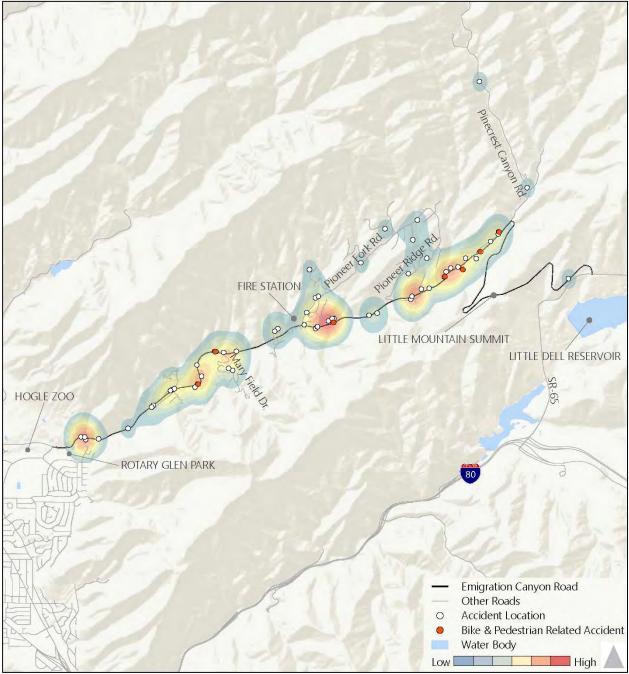
In February 2014, Salt Lake County formed the Emigration Canyon Roadway Improvement Committee (ECRIC), a group whose fundamental purpose was to assess bicyclist- and motorist-related concerns in Emigration Canyon through a facilitated collaborative process. The committee was composed of residents, special-interest users, and a professional facilitator. The group evaluated engineering, infrastructure, ecology, parking, enforcement, and sanitation needs and concerns.

Crash Locations & Roadway Deficiencies

The project team collaborated with the ECRIC's core group, provided preliminary analyses, and conducted field reviews to confirm the ECRIC's findings and identify additional needs. Safety within a mixed-use corridor was the overarching consideration. Traffic and safety analyses identified various hot spots for crash locations (see Figure 3).

Extensive field reviews were completed to identify deficient roadway conditions. These deficiencies include: limited sight distance, poor pavement, slope instability, inadequate drainage, roadside hazards, tight turns, and narrow shoulders. Over use of advance warning signs may be causing a lack of respect for the advanced warning of bus stop and bicycles on the roadway. In addition to the drainage concerns, instability of the side slopes, especially after storm events, delivers rock debris on the shoulders. The debris forces active transportation users to leave the shoulder and ride in the through traffic lanes of Emigration Canyon. See Appendix D for a summary of the identified roadway deficiencies.

Figure 3: Canyon Crash Locations

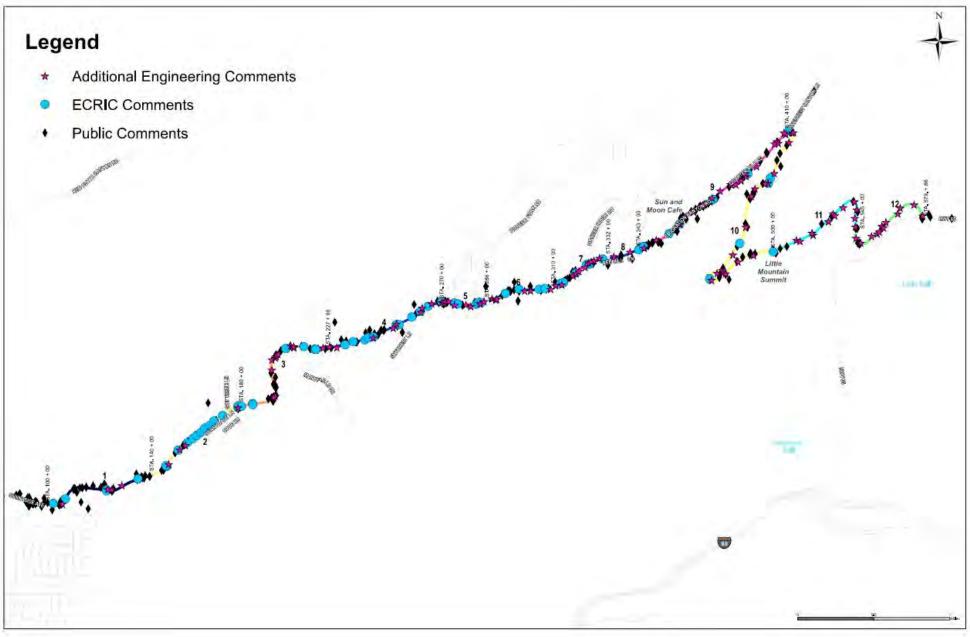


Comments Received

A public open house was held on March 25, 2015, at the fire station. Approximately 100 people attended, 76 of which live in the canyon. Comments were received via hard copy comment form and electronically. The public comments received are summarized in Figure 4. A full report can be found in Appendix E. All of the ECRIC, engineering, and public comments were compiled and summarized, as shown in Figure 5.

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riyure	4.	FUDIIC	Open	nouse	Comment	Summary

Common Comments	Number of Comments
Enforce road laws for bikers/cars/motorcyclists	14
Example: Rules applying to bicycle use should be better enforced	14
Reduce the speed limit	9
Example: I would want more police, slower speeds & better road management.	9
Put up "Single File Only" signs for bikers	
Example: Also posting "Single File Riding Only" signs, there are several that say "Share the	9
Road" but not many "Single File".	
Think about residents, not bikers	
Example: Remember the first priority of the roadway must be motor vehicles since they have	8
homes in the canyon and are not just out for a joyride.	
Sweep road/bike lanes regularly	8
Example: Sweep the bike path often & remove debris/rocks to keep bikers in that lane.	0
Don't widen the road	
Example: As a resident, I cannot see the value of widening the roads. Wider Roads will bring	8
more traffic, more pollution and will not make the canyon safer.	
Make bikers stay in the bike lane	
Example: I am a biker and I ride AND live in Emigration Canyon and it is unnerving to come	7
up on riders in the middle of the street instead of in the bike lane.	
Increase signage	7
Example: We need more signage.	1
Fix rock fall hazards	6
Example: Significant rock fall areas must be stabilized.	0
Repair/repave roadway	5
Example: Pave road as soon as possible with adequate bike lanes.	5
Motorcycles are noisy	
Example: My main issue with the road is lack of noise ordinance enforcement. This mostly	5
applies to motorcycles which are a major nuisance, particularly on weekends.	
Widen the road	3
Example: Going down is a little sketchy. Widen please.	3
Blind corners are scary for runners	
Example: Blind corners, especially at mouth of canyon & by Ruth's should be corrected.	3
Super scary as a runner, going around those curves.	
Limit number of bikes in canyon	2
Example: If we could limit the number of bikes per day or even per hour this would help.	2



IV. DEVELOPMENT OF ALTERNATIVES

Hazard Index & Prioritized Improvements

The ECRIC and the public were asked to prioritize the geometric needs, traffic concerns, and environmental needs on the corridor. Based on their input, geometric concerns were identified as the top priority with the highest rating of 60 percent, traffic concerns rated at 30 percent, and environmental concerns rated at 10 percent. The canyon was divided into 12 segments relative to the geometric needs (narrow shoulders or lanes widths). These segments were then rated on these geometric concerns and summarized in a "hazard index" (see Figure 6). Refer to Appendix B for more results.

The hazard index identified where higher concentration of needs were present on the corridor. Based on the needs identified, the project team identified solutions throughout the canyon. This list of solutions was then prioritized using the hazard index. The hazard index was developed through collaboration with both the ECRIC and the community at public meetings.

Based on the comments received, individual projects were identified to either solve or mitigate the identified problems. Concept cost estimates were then developed for each project and combined into their coinciding hazard index segment. Figure 7 illustrates the estimated cost for each segment with 2015 labor and material prices. The compiled comments identified a total of \$15 million in improvements throughout the canyon.

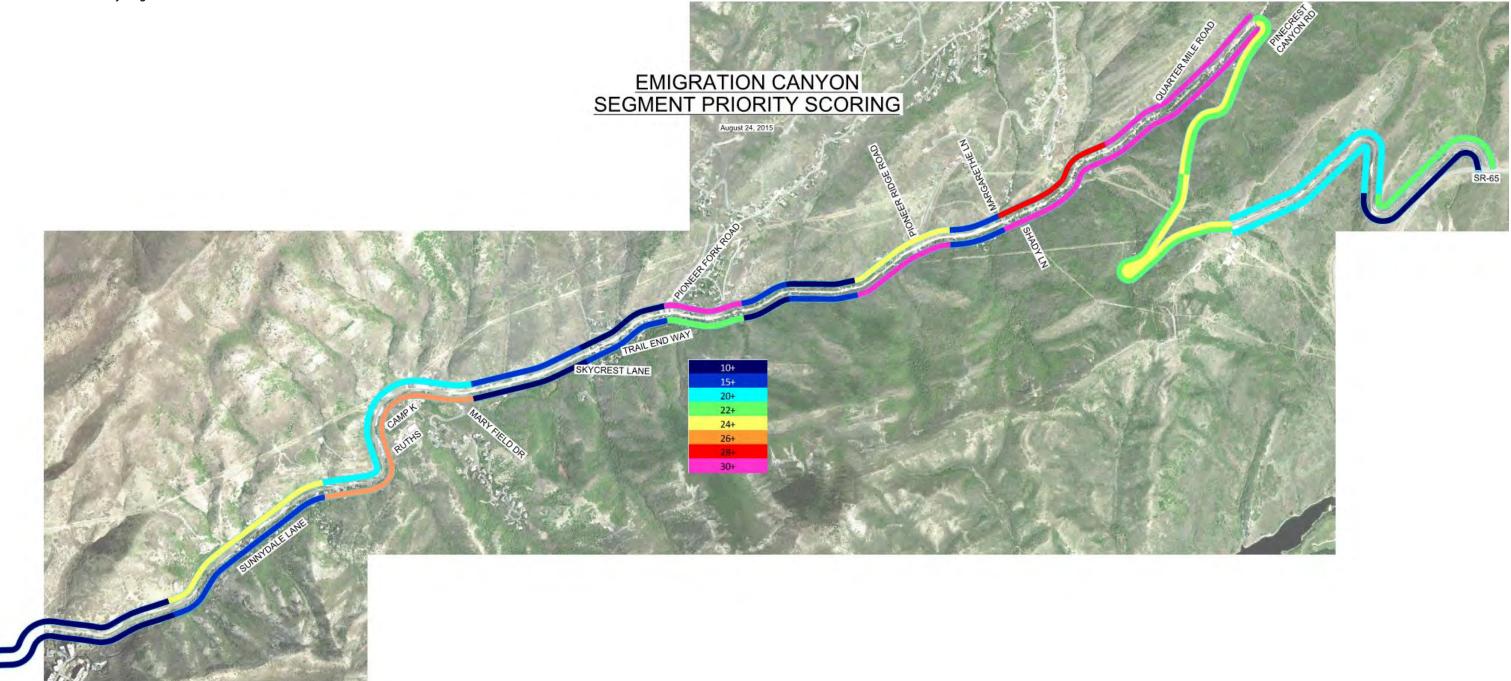
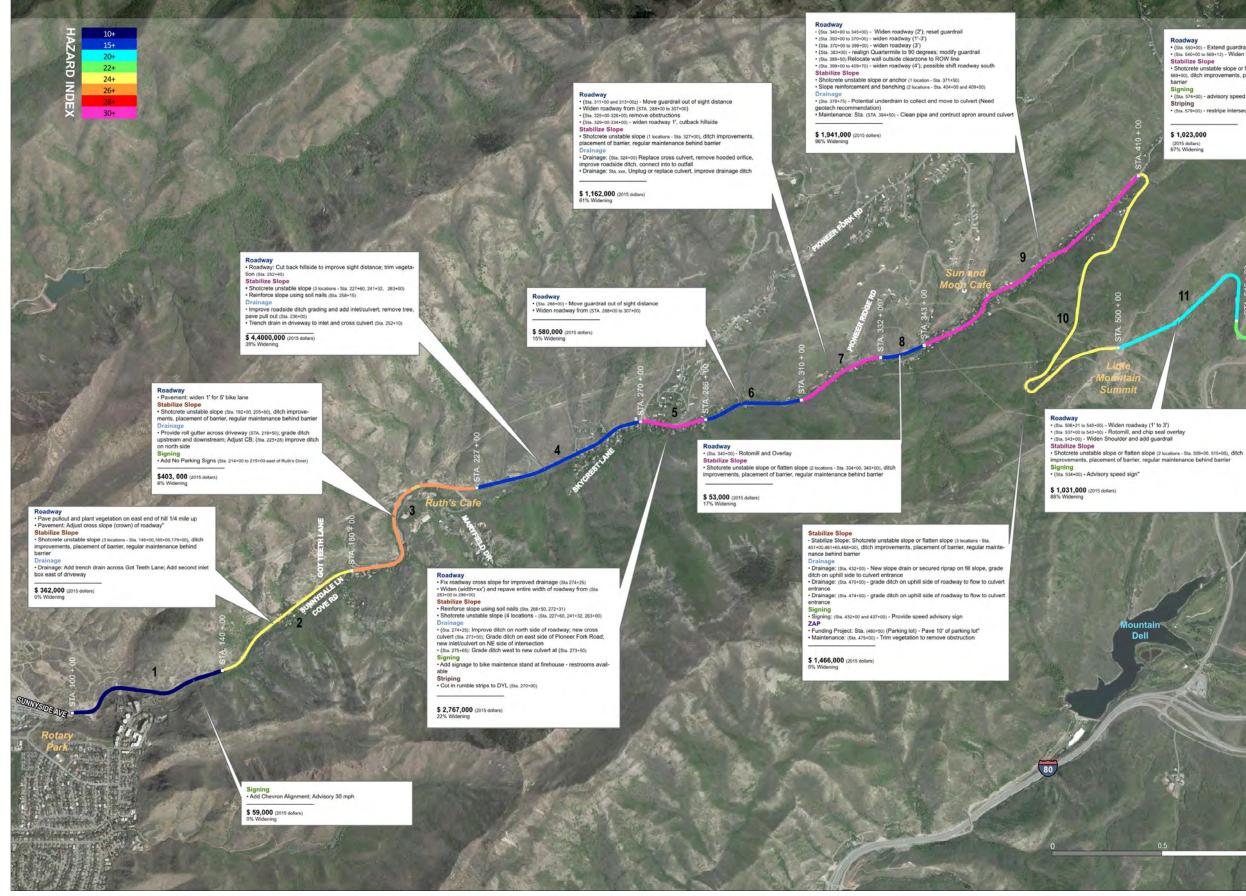


Figure 7: \$15 Million Improvements Identified from Comments



Roadway • (Sta. 560-00) - Extend guardrail and delineation; speed advisory sign • (Sta. 560-00 to 569+12) - Widen Roadway 11-3* Stabilize Slope • Shotcrete unstable slope or flatten slope (4 locations - Sta. 547+00, 555+00, 552+00, 569+00), ditch improvements, placement of barrier, regular maintenance behind barrier

Signing • (Sta. 578+00) - advisory speed sign Striping • (Sta. 579+00) - restripe intersection for cyclists

\$ 1,023,000 (2015 dollars) 67% Widening



Little Dell

N

Current funding only allows for \$1 million of potential improvements to be completed during the 2016 construction season (Figure 8).

Priority was to address safety concerns in the highest hazard areas with improved signing and striping for motorists, bicyclists, and pedestrians. As inadequate funding is available to widen the narrow shoulder from Margarethe to Pinecrest, the implementation of sharrows and addition of a double yellow stripe should increase vehicle and bicycle awareness in this high-ranking hazard area. Projects at Ruth's to improve safer pedestrian crossing across the roadway was also included. Other pedestrian projects include improved bus stop signing and striping.

Another priority was to provide a mix of short-term and permanent solutions for slope stability issues in the canyon. A portion of the \$1 million funds will be to stabilize unstable slopes at an adequate offset from the roadway to allow for the future compatibility of a full travel lane and bike lane when funding to pave this additional shoulder width becomes available. Temporary solutions include adding removable precast barrier to the roadside (where adequate shoulder width allows) in several problematic slope areas that are too costly to retain at this time.

Potential improvements for the \$1 million projects have been progressed to 30% design plans. These plans are shown in Appendix C. These improvements will be constructed by Salt Lake County over the 2016 construction season. The County will continue to seek funding to meet the additional corridor needs. As funds become available, the County will identify the appropriate projects where these funds can be utilized using the hazard index and cost estimates provided in Appendix G.

Figure 8: \$1 Million Improvements



Signing, Striping & Unstable Slope Improvements

Striping, signing, and unstable slope improvements have been graphically displayed below. These options provide specific and corridor-wide improvements to address the identified needs. The following sections describe the potential improvements and locations where they are recommended or will be constructed as a part of the \$1 million or \$15 million improvements.

Bike Advisory Zones

Bike advisory zones are a combination of signing and striping that will be constructed at the beginning and end of the corridor. The purpose of this signing is to provide better visual context to inform motorists and bicyclists of the state law requiring at least a 3-foot buffer between the vehicle and the bicyclist (Figure 9). These advisory zones will be constructed in 2016.

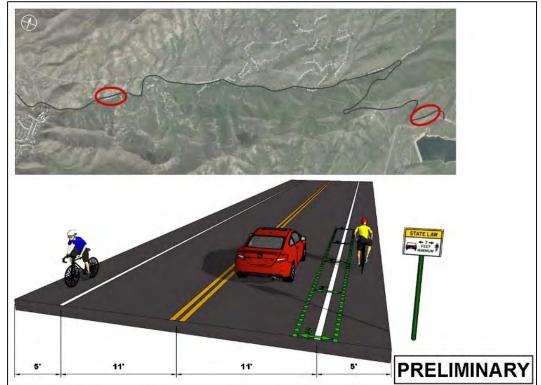


Figure 9: Bike Advisory Zone Rendering

Future Roadway Typical Section

Once adequate funding is available to widen the roadway shoulders and provide new striping, the recommended typical section includes 11-foot travel lanes with a 1-foot buffer and a 4-foot bike lane (Figure 10). This buffer, while not recommended by the National Association of City Transportation Officials (NACTO), is preferred to provide a greater shy distance between motorists and active transportation users, while still utilizing a narrow footprint to maintain the context of the canyon. This buffer encourages a wider variety of bicyclist skill levels by contributing to the perception that the buffer is safer than a standard single stripe bike lane.

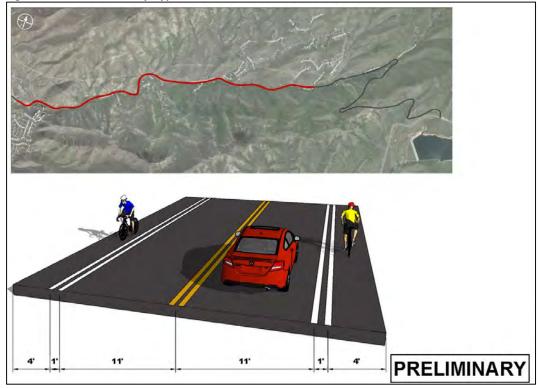


Figure 10: Future Roadway Typical Section

Shared Travel/Bike Lanes

The narrow corridor from Margarethe to Pinecrest brings many challenges with encroaching structures, unstable slopes, and mixing of pedestrians, bicyclists, and motorists into the traffic lane. To help alleviate this mix of modes in the traffic lane, sharrows will be implemented in the 30% plans (Figure 11). These sharrows will be placed every 100 feet and 4 feet from the fog line to notify motorists laterally of where they may encounter cyclists. The sharrows will also encourage cyclists of the proper bicycle positioning for safe travel and to reduce bicyclists from impeding motor vehicle traffic. It is recommended that the corridor speed limit be reduced to 30 mph on this stretch as highly advised with typical sharrow applications.

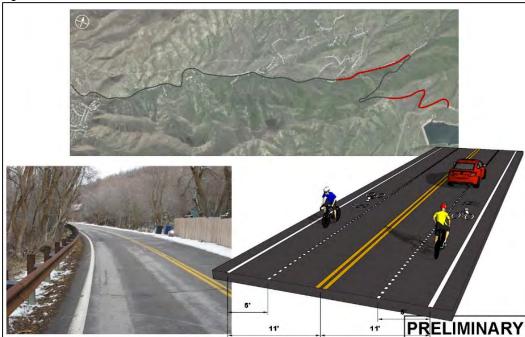


Figure 11: Shared Travel/Bike Lane

Sharrow treatments are advised on roadways with traffic volumes below 3,000 vehicles per day. Traffic counts of 2,610 vehicles per day (weekend) and 2,224 vehicles per day (weekday) were recorded for the middle of the canyon (see Appendix H). While the vehicle counts are acceptable for this sharrow application now, as the canyon inevitably gains popularity for scenic drives or as a bypass from Park City to the University of Utah this may not be acceptable as a long-term solution. Sharrows will also be added to the less traveled stretch of roadway from the Little Mountain Summit to SR-65. The lack of shoulder, low hazard index rating, and high cost of widening the roadway benefits a sharrow treatment in this location over other alternatives.

Two Abreast Striping Messages

The two abreast treatment is intended to inform cyclists that, if desired, sideby-side riding is acceptable for areas with wide uphill shoulders like the stretch of roadway from Pinecrest to the Little Mountain Summit. This treatment was not included in the 30% plans because the striping messages were deemed not to provide significant value to the active transportation users (Figure 12). The two abreast messaging may also unintentionally endorse pack riding by cyclists.





Choke-Point Signing & Striping

While separating motor vehicles and cyclists on the roadway is ideal for safe travel, engineering challenges including encroaching steep slopes, existing cast-in-place barrier/guardrail, and residential features do not allow for acceptable bike lane widths with the current funding available in some locations. To mitigate the safety concerns in these locations, signing and striping will be implemented in the 30% plan set, as detailed below in Figures 13 and 14.

Custom signage notifying motorists of their responsibility to pass with care will be installed before approaching the most dangerous choke-point areas. Choke-point areas will utilize green paint treatments similar to other recent Salt Lake City and Salt Lake County projects to maintain bicyclist expectancy. Dots placed every 100 feet in extended choke-point areas will inform cyclists to maintain single-file riding as the shoulder width is not adequate (i.e., either a minimum 4 feet, or 4 feet plus a 2-foot shy with barriers per the American Association of State Highway and Transportation Officials [AASHTO]). Striping messages, as shown in Figure 14, warn cyclists when they are entering and exiting these choke-point locations. Striping messages were preferred over signing as cyclists tend to be more aware of the upcoming pavement in front of their wheel than tall mounted roadside signs intended for cars and trucks.

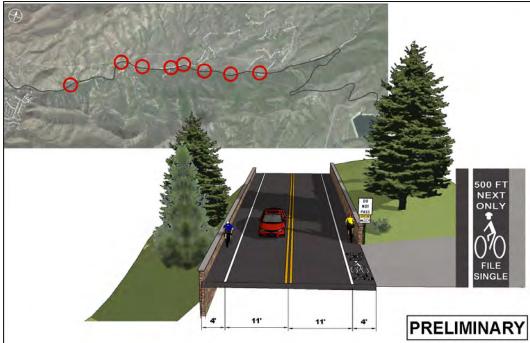
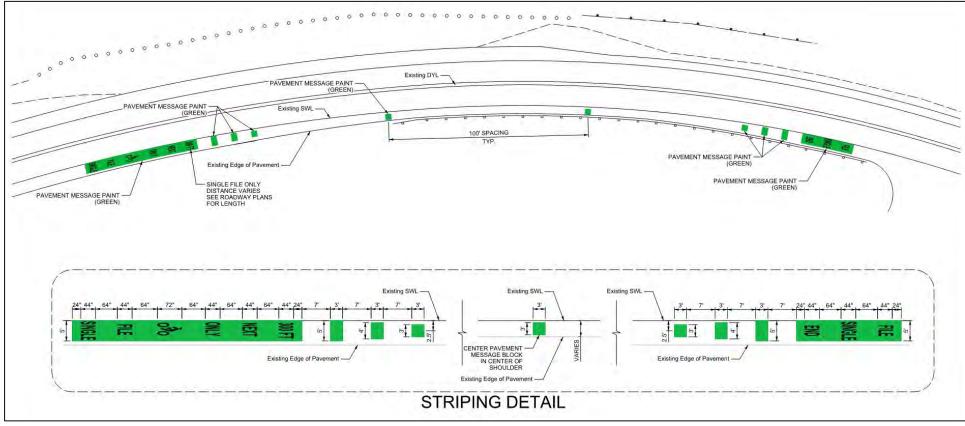


Figure 13: Choke-Point Rendering

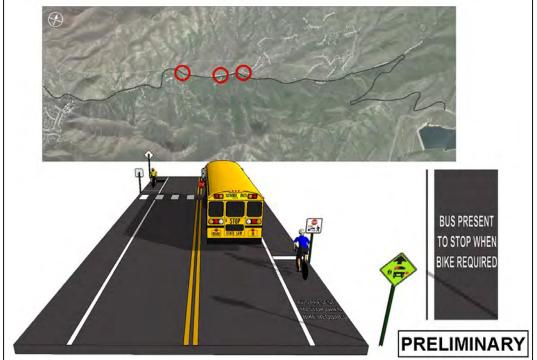
Figure 14: Choke-Point Detail



School Bus Stop Signing & Striping

Safety for children at school bus stops was an important concern to the design team. Discussions with Granite School District, Unified Police, and the ECRIC on bus stop locations and pedestrian crossing ideas took place throughout the study. The major problem has been downhill cyclists disregarding flashing school bus lights when loading and unloading school children. Signs or gates mounted to the rear of buses were suggested and may be installed in some form with a separate school district project. The abundance of advanced warning signs for bus stops throughout the canyon indicates that the signs are not respected or cyclists are traveling too fast downhill to adequately react to a stopped school bus. Included in the 30% plans are striping improvements at the most prominent school bus stops with the intention that the presence of this messaging for bicyclists will perpetuate awareness throughout corridor. See Figure 15.

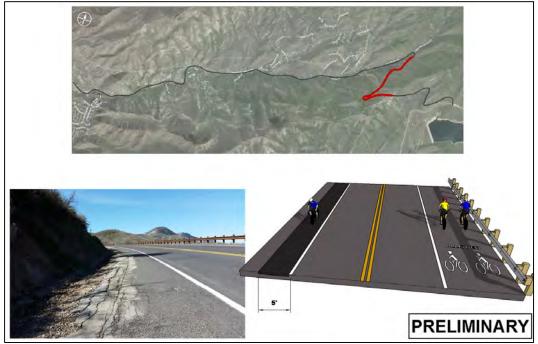




Smoothness Improvements

The wide shoulders from Little Mountain Summit to Pinecrest are underutilized by westbound cyclists because of the poor pavement condition pushing riders into the travel lane with vehicles. Rotomilling this shoulder and repaving the shoulder is recommended (Figure 16), but was not included in the 30% plans because slope stability projects were valued above this pavement project. Appendix I includes Salt Lake County's 2015 Pavement Inspection Ratings for Emigration Canyon. The use of chip seal for pavement maintenance, similar to the area from Rotary Park to Maryfield, should be discouraged. Chip seal and open graded surface course provides a rough surface for cyclists. Slurry seal maybe an option in the traffic lanes where an adequate bike shoulder is present to discourage cyclist from hugging the solid white stripe.

Figure 16: Smoothness Improvements



Unstable Slope Improvements

Several unstable slopes that encroach onto the roadway shoulder deposit debris, particularly during storm events. The debris forces bicyclists into the traffic lane with vehicles. While recent maintenance sweeping has helped the situation, temporary infrastructure improvements like precast barrier can catch the debris before it reaches the roadway (see Figure 17). The precast barrier can be reused in other places of the canyon as these slopes are cut and stabilized with shotcrete to the full buildout location as funding becomes available. This solution can only be used in locations with a 6-foot minimum shoulder and will still need occasional maintenance to remove the collected debris behind the barrier.

Figure 17: Unstable Slope Improvements



V. FINAL RECOMMENDATIONS

Emigration Canyon has the untapped potential to be a blue-ribbon facility for all users. This canyon is the most heavily-used canyon in Utah by cyclists and pedestrians with more than 1,300 bike trips daily. The allure of sweeping views, mild canyon grades, and proximity to downtown Salt Lake City has attracted a growing number of cyclists and runners recently. These assets have also brought conflict, however, between active users, motorists, and residents. Infrastructure hazards including unstable slopes, encroaching residential structures, tight shoulders, and canyon curves bring design challenges that urban bike design guides like NACTO and AASHTO do not address. Roadway infrastructure improvements including slope stability and pilot striping concepts will be implemented to promote respect among all canyon users and hopefully lessen the severity of these obstacles.

The severity of canyon segments were rated with data collected and summarized with a hazard index. The stretch of roadway from Margarethe to Pinecrest (segment 9) was rated the highest on the hazard index. This 6,700foot length of roadway has narrow shoulders, unstable slopes, tight curves, and a high accident history. The tight curves, reduced stopping sight distance, and presence of sharrows all strongly suggest the speed limit be reduced to 30 mph in this upper canyon stretch of roadway. To command more respect this area of reduced speed could implement solar VMS speed playback signage, flashing beacons, or high visibility flags over the reduced speed signage if desired.

Improvements related to the ECRIC, engineering study, and public comments are estimated to cost \$15 million. These improvements can be divided into drainage, unstable slope, safety, and roadway geometric solutions. Securing additional funding sources, such as the following, may help bridge this financial gap:

- Surface Transportation Program (STP)
- Transportation Alternatives Program (TAP)
- Transportation Investment Generating Economic Recovery (TIGER) grants
- Statewide Transportation Improvement Program (STIP)
- Congestion Mitigation & Air Quality (CMAQ)
- Zoo, Arts, & Parks (ZAP)

Cost sharing with third-party utilities and public-private partnerships can also provide funding for projects. Adding a bicycle counter to the lower canyon can provide valuable data that can help when applying for many of these funds.

The \$1 million funding that is available will be concentrated on safety projects that provide the most value to the canyon. While some of these improvements are temporary (e.g., precast barrier and choke-point striping), the majority of the available funding will go to lifetime projects including upgraded drainage, slope stability, and roadway signage. The 30% plans and cost estimate detail of these projects are shown in Appendix C.

APPENDIX A: EXISTING CONDITION COMMENTS

	Station	Offer	Case	EMIGRATION CANYON CONCEPT PROJECT Problem	LIST Solution
	102+00.00	17	Nampa fike Lane	Widen shoulder 3' from Creatiview Dr to first corner	Do forthing: existing big lang 5.5' Mill in Riss Lang
	107+00.00 123+00.00 123+23.00	iT IT RT	Narrow Bike Lave Narrow Bike Lave Safety	Widen shoulder 2' around first corner Widen worth ode from Barner tennini to shotcreek wall, shift id rorth Add rock ret wall and pave both sides of driveway	Do Nothing, Existing shouldes is 5 5' Do Nothing: Desting shouldes is 6 Do Nothing, no widening needed in this 5LC section
	135+00.00	sr	Safety	Pave pulltout & plant vegetacions on sust end of hill 1/4ms up, unstable slope between torange fiber posts	need storp hill, does not produce many rocks on rd
	146+00.00	RT.	Narrow Bike Lane	IF Shide to face of barrier	petered sideslope, widen shidr +4" reset precast barrier (1,+1701), estend culvert
	146+00.00	ar,	Onestable Signe	This is a matchiefy shaller slope that bouild be troated by shortzetin, a element distribution of the statement of a farmer quality to considered to keep soil and rock off the road but would require periodic mandemence to clean out the behaviour form balling the behavior	
	153+00.00	-	Foor Favorient	Pave bike lane from setting	7 Follow up with joe, Do not see settled shift The flatting: (SLCD Green completed) Raise of Relocate water valve and
	153+30.00 153+50.00	RT RT	Deficient Distruction Poor Powement	Hydrant, water valve in bise lane 3713 C: pave south side to cover old pavement	hydrant, PIF Mili Do nature deficient payement
	161+25.00	RT	Sight Distance Safety	\$748 C. Tran Treet $$7485$. Move guardral 3' to 4' past the rock hill on the north, shift matter	Do Nothing Sight distance uppears adaptate Do Nothing, Bise lanes ment
	185-00.00	it	Unstable Slope	Lanes This is another cut in regulity weathering bedreck. Similar options is Lynsable Slope (II: 166+00 could be used	
	167+00.00	RT.	Dramago	3193 E. Fix dramage, keep driveway rocks out of bike lawe	Add trench often across otherway, Adjust cross slope (crown) of readway and add second inter box east of
	169+00.00 172+50.00	LT AT	Drainage Safety	Got Teeth Ln: Puddle forms when rams 3876 8: pave over old pvmt south lade	driveway Do Nothing: Pavement looks in good condition with chip seal
	178+70.00	81	Sight Distance	Intersection sight triangle deficient. This is another cist in rapidly availaring bedrock. Similar options to	Taper Guardral & relocate tele peri, Tren Tree, Raise profile and provide web bench to improve sight bilangle
	1/9+00.00	LJ AT	Unstable Slope Deficient Obstruction	Unstable Slope # 345+00 could be used Hydrant in CZ, Water value in bike take	Raise water value to grade Concrete half gutter on north sale to inlet/calvert
	184+00.00 184+00.00 184+00.00	LT RT RT	Dealinage Safety Safety	4010 E: Trim trier, Fix Dramage, move braffic 4072 E: Clear rocks off of old bias slop gent 4072 E: Pave 2' of draveway for track gad to keep rocks off shidr	
	212+00.00	87	Nampu fike Lane	S' shide to face of barrier	Coordinate with ECNIC on if pave, Pave 30th of drawway approach watered sideslope, widen shidr +2°, edd right turn lane, rever 68
(~ r)	238+50.00 223+40.00 240+00.00	LT.	Oramagor Proce Processor	Resident dramage drama into Roadway half Pased over when in loke ison	Rell gatter across threeway entrance with well graded dtch upstream and downstream. May need to aslast CB at this location. Bates mater value to grade Berner offset mores, pare is fact to keep it parey from bite tane edge.
	240+00.00	RT IT	Poor Payerman Safety Unotanie Slope	Half Paverd over valve in loke tans Pave tooth side to GR This is averthere out in registly weathereing bedrock. Similar options to Uvotable Scope # 146+60 count be used	Barrier, offset moess, pave to face to keep 8p away from bike take edge
25					Several & full depth reconstruct shifts improve cross slope, grade duch on north readulity, triet or riprag at end.
	243+15.00	- 47	Dramage	Publie in thought Subettment praims accountroad North to South. Change draimage 800° & wide	of Service
	252+10:00	17	Drämage Natroa Iliké Line	Bille Strainer; 4',5' to face of GR. This cut is to strain with a house above. Mability of the slope should be	L+2300", widen 3"-4", reset guardrail and up barrier, ship road north
• -	758+15-00	ur.	Unitable Sload	performed if the slope will be modified. The slope may need to be reminered using soil rails to provide a suitable safety factor against failure	Dangerous Safety Factor, Wideming Inc d on RT shidt. Try to avoid slope
	263+70.00	π	Signt Distance	considering the house above the slope. Trailailed: Sight line obstructed by skiew/tree/grade	Cut pine tree, taper gaantral, (next only?
	265+00.00 270+00.00	#1 17	Dramage Restrooms	Trails End west to FireStation. Fix dramage and public by big tree	Grade ditch on north side, no outlet location for new outfall Firehouse: Add signage restricens are available
				Large public, sheet flow from north to youth, Roods first yard of \$110	Fie roadway cross slope, improve ditch on north side of road, next new cross culvert near 578-273. Grade ditch on Last side of Pioneer Purk Road
	274+25.00 275+65.00	u u	Drainäge Drainäge	(opn frie comment) Publies in theoliter (field verify), puts rock in Joadway	and place mow inlet/calvert on NE side of intersection Disch grading and to new calvert at 273-K0
	2#2+00.00 2#3+00.00 2#3+00.00	RT LT	Poor Pavernerd Narrow Bile Lane Narrow Bike Lane	GR to \$2021 powe over old pavement, pave to GR face. 4" bile lone, 5" to face of GR 4" bile lone, 5" to face of GR	Sewcut and Full Death Reconstruct had point LABOT, widen to 5 bills fam
	284+00.00	87 87	Narrow Bike Lane.	#" bike lane	L>330", widen to 5" bills lane. L-280", widen to 5" bills lane. No shift widening noedsit
	293+00.00 298+00.00	iT	Unitable Slope Narrow Bike Lane	This area has serilar concerns to the unstable slope (# 280-00 (AGEC 17) S' to face of Precast Barrier	Lo4407, Extend Shide 2', reset barries
	\$05+00.00 \$07+00.00	ir ir	Narrow Bike Lave Narrow Bike Lave	If to face of barrier, paved shide 4 [°] , move GR mime with other barriers \$3557E - \$427E: pave north side wider	Ugrader GR at current o/s, pave to 5' bits lane (k-260') Field Verify (shide width appears as 8')
	313+00.00	LT .	Nerze Biki Late	4', 5' face of QR. Rock full in shidr & travel lane, deer on top create some fulls tops hier	(+685', extend shift, inset OII
	134+00.00	87	Unstable Made	comment). This slope has been studied and the preferred option sum to revisitive the slope using soil rails and shorevite. (AGEC 23-24)	
	121+10.00	AT LT	Dramage	Pavement fails off into creek 57713 to Poneer Rolge Drainige puts rocks on road	Colored culvert, add walls to walker Utille Replace cross calvert finan development outfall, remove hooded on/hoi- improve foadbide dicth and convect exiet to outfall
	125+00.00	-	Unsinage	Concrete NIII culvert to creek plused	Replace cross culvert from development outfall, remove hooded online. Improve toachide ditch and connect eller to outfall.
	330+00.00 330+00.00	LT RT	Deamagn/Poor Pavament Narrow Bike Care	Pavement detorrating from plugged suivert S'shide to face of GR	Unplug of replace subset, improve Bitch grading L+707, widen thidt +2", reside Git Need to determine source of unabele, must accord on commondation
	843=00.00 945=00.00	AT LT	Drainage Narrow Bike Lave	Senkhole @ Margarthe 3' shidt to face of GR, Re sues parent from util cut	Migrature of fines with tuiwert or our scientage? 1+550" Wilden shift +2" result GR
	355+00.00 Mi2-00.00 375+00.00	LT AT	Narrow Bike Lave Narrow Bike Lave Narrow Bike Lave	2°-4° shide 1°-4° shide, extend Gil to core: with 1°-4° shide	L+1920 (350+80-370+00), Entend Bias Laws 1'-1' L+1700 (353+50-370+00), Entend Bias Laws 4'-6' L+1100 (370+00-385+00), Weise 3'-4'
	390-00.00 390-00.00	LT RT	Nerrow Bile Line Nerrow Bile Line	2' solds', 4' fia fiace of berner 3', 2' solds'	L+1100 (13%=C0-381=00), Widen 1-4" L+1700 (181=00-398=00), Widen +3" shift L=1700 (181=00-398=00), Widen +3" shift
	430-80.00	LT RT	Restrostins Safety	Settled Guestinan	Pinetrest: Add signage restrooms are svaliable Reset (R IL = 6007 and add curb
					New wep draw or vectored rights slope on uphill ade of RII section. Grader
	432+00.00 457+00.00 474+00.00		Dramage Poor Pavement Dramage	Sheet flow across roadway Hough pavement from chip seal & raveling Sheetflow across readway	allich an uphill side of road to flow to culvert entrance Mill chap seal & overlay Grade altoh un uphill side of road to flow to culvert entrance
> =	\$66+08.00 270+00.00	HT LT LT	Salatu Restrooms Restrooms	Gravel debris from pik lof tracks onto uhite	carve 10° of tot Finetosak, Add signage testrooms are available
6	430+80.00	et.	But Stops	identily problem bus stup receptors	Preszyst: Add signage restrooms are available Add paint to blin time on persenant bus intops all Marylield, Skysrest, and Firstitation.
	105=00.00	RT	Cell Prose Towns Sight Distance	Add senargency cell phone tower Barrier obstructs	Un mething: ECRIC/SLCO to coordinate for location Add Chevron Alignment Signs; Keep Advisory signage
	125=00.00	LT	Sight Distance	Hillside obstructs This is a shotcrete slope with drains at the base constructed for Salt Lake	Add Chevron Alignment Signs; Advisory 30 mph
	129+00.00	LT	Unstable Slope	City. This type of slope treatment could be used for slopes that are relatively stable but surface of the slope weathers and produces debris	Do Nothing
	153+50.00 178+70.00	RT RT	Poor Pavement Sight Distance	Shidr is settling Intersection sight triangle deficient	? Follow up with joe, Do not see settled shidr aper Guardrall & relocate tele ped, Trim Tree, Raise profile and provide yeh bench to improve sight triangle
20	192+90.00 202+35.00	LT RT	Sight Distance Deficient Obstruction	Tight Turn, Hillside obstructs Steep Hillside	Add Chevron Alignment Signs; Advisory 25 mph Add Guardrall
I	192+00.00 205+80.00	LT LT	Unstable Slope Unstable Slope	This is another cut in rapidly weathering bedrock. Similar options to Unstable Slope @ 145+00 could be used Steep Hillside	
	207+60.00 208+60.00	RT	Deficient Obstruction Deficient Obstruction	Hydrant Fiber Optic Box	Relocate Relocate
>>	214=00.00 215=00.00 225=28.00	LT RT LT	Narrow Bike Lane Sight Distance Drainage	4' shidr Camp X Driveway Entrance Sight Distance & Deceleration Inadequate Drainage	Wilden to 5° bike lane Realign Driveway, Add Right Turn Innorove disch grading on north side
5	227+60.00	LT	Unstable Slope	This is another cut in rapidly weathering bedrock. Similar options to Unstable Slope # 146+00 could be used	
\mathcal{O}	230=00.00 243=00.00 250=70.00	RT RT	Narrow Bike Lane Narrow Bike Lane Poor Pavement	6' to face of GR 5' to face of CIP Barrier Uphill Shoulder Alligator Cracking	Skinny Uphill Lane to 10' width or extend shidr reset GR (L=450') Field Verify, skinny lane or add pvmt north and shift striping Sawcut & full depth reconstruct shidr
\sim	252+40.00 252+40.00	LT LT	Sight Distance Sight Distance	Sidestreet slope obstructs Sidestreet slope obstructs	Trim Vegetation, Cut Hillside Trim Vegetation, Cut Hillside
کی	261+70.00 263=00.00	RT	Deficient Obstruction Unstable Slope	Guardrail end section routinely hit by snow plow This cut is in rapidly weathering soil and bedrock. Similar option to Unstable Slope (# 146+00 could be used	Improve access with T intersection, widening needed
\square	270+00.00 270+75.00 271+20.00	RT	Safety Sight Distance	Drivers out corner, drive in left turn pocket Sight line obstructed by vegetation	Cut in mini rumble strips to DYL Trim Vegetation
		LT	Sight Distance Unstable Slope	Slight line obstructed by Bdg, Vegetation This cut is in soil and similar options as No. 2 could be used. This cut is similar to the Unstable Slope (# 258+15 with a house above the slope and similar concerns for slope stability	Trim Vegetation, Acquire Bidg for Demo
	266+50.00		Discount of the second se		
	266+50.00 272+31.00 274+60.00	LT RT	Unstable Slope Deficient Obstruction	Hydrant	o nothing: Dangerous Safety Factor, widening not needed, avoid slope Relocate
	266+50.00 272+31.00 274+60.00 278+50.00 280+30.00	LT RT LT RT	Deficient Obstruction Unstable Slope Drainage	Hydrant This is another cut in rapidly weathering bedrock. Similar options to Linstable Siope @ 146+00 could be used Update Drainage	e nothing; Dangerous Safety Factor, widening not neeted, avoid slope Relocate
	266+50.00 272+31.00 274+60.00 278+50.00 280+10.00 283+50.00 285+00.00	LT RT LT RT	Deficient Obstruction Unstable Slope Drainage Drainage Poor Pavement	Nydrant Nydrant Linstale Slope @ 244-00 could be used Update Drainage Update Drainage Odd Pavement	Relocate
MI V	266+50.00 272+31.00 274+60.00 278+50.00 280+30.00	LT RT LT RT	Deficient Obstruction Unstable Slope Drainage Drainage	This is another out in rapidly weathing balance is the Unstable out in rapidly weathing balance balance and Unstable Dranage Update Dranage Update Dranage Dranage Dranage Dranage Dranage Update Dranage Dranage Dranage Update Dranage	Rebectle Trim Vegetation, whole & more guarded of Advisory 35mph 1 k No 3400 widening needed
MI AA	266+50.00 272+31.00 278+50.00 278+50.00 288+50.00 285+50.00 285+50.00 288+50.00	LT RT LT RT LT	Deficient Obstruction Unstable Stope Drainage Drainage Poor Pavement Sight Distance Unstable Stope	Hydrett Hydrett Untable Hydre Hydreff, derifer Ack, Sinkler aptions to Untable Hydre Hydreff, derifer Ack, Sinkler aptions to Under Demage Under Demage Odf Hymrett Michael Hydreff, demage Hydreff, and hydreff, and hydreff, and hydreff, and in serier of it landstatist sing angener stretchel hydre for Hydreff, and Hydreff, and hydreff, angener hydreff, angener gepflicant hufs, Stabilizeg slopes will Kinky be be postematic and con R maybe kerts to saved modifications to this area.	Rebecke Reperie Tom Vegetation, whole is more guarded of Advisory 35mph 19 No shife widening needed fly.
	266+50.00 272+31.00 274+60.00 278+50.00 280+20.00 283+50.00 285+00.00 288+00.00 289+00.00 289+00.00	LT RT LT RT LT RT RT RT	Deficient Obstruction Unstable Stope Drainage Poor Pavement Sight Datance Unstable Stope Drainage Drainage	Hybrit Hybrit Hybrid Handhold, Hand	Report Report Trim Veptation, while its more guardinal or Advisory (Smyth 18 7 Na shift widening needed fly: Urghag/Reglate culver, Improve randolde dtich Relig direkt souch shift, Improve randolde dtich Relig direkt souch shift, Improve randolde dtich
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Cate	EMIGRATION CANYON CONCEPT PROJECT LIS	Solution	
Narrow Bike Lane	2' chár		
Narrow Bike Lane	2 state	L=1100' (370+00-381+00), Widen +3' shidr Need geotech recommendation. Potential underdrain/ spring of	ollection
Drainage	Springs on east side of driveway drain onto rd periodically	system to box and culvert.	
Sight Distance Drainage	Skew of QuarterMile limits sight triangle Culvert plugged 50% time	Trim Vegetation, Realign QuarterMile to 90, wrap GR Clean/ Place apron around culvert	
Deficient Obstruction	1:1 sideslope with no protection	Add guardrail to culvert/headwall	
Drainage	Drainage Problem	Install roll gutter on south side through this section connecting t C8s	o existing
-	This cut is in gravel with a driveway to a house above. Stability of the slope should be performed if the slope will be modified. The slope may		
Unstable Slope	need to be reinforced using soil nails to provide a suitable safety factor against failure considering the driveway for the house above the slope. (AGEC 29-31)	Shidr Widening reqd	5
Drainage	Culvert or ditch brings debris from hill over rd	Grade ditch, potential roll gutter to existing inlets. Stabilize	slo
Deficient Obstruction Drainage	Free standing wall in C2 Culvert plugged	Remove Wall and replace to R/W Grade ditch, potential roll gutter to existing inlets.	
Narrow Bike Lane	1° shidr	L=1170' (398+00-409+70), Widen +4' shidr	
Narrow Bike Lane	2' shidr	L=1150' (398+00-409+50), Widen +3' shidr Improve ditch and add inlet on north side. New slope drain or	
Drainage	Sheet flow, debris across road	ripraye anch and add met on north side. New stope or an or riprap slope on south side	
	This cut is steep and tall. It appears to currently be relatively stable with		
	some surface raveling. Cutting this slope back will increase its height and		
Unstable Slope	potentially destabilize the slope. Slope reinforcement would likely be the best option if this slope is to be cut back. Slope reinforcement could be	Shidr Widening read	
	used to steepen the slope, most likely in combination with benches to		
	reduce the height of individual cut faces.		20
Unstable Slope	This appears to be less stable than the slope @ 404+00. Similar treatment	Shidr Widening read	(σP)
	recommended as 404+00. Shift roadway south if possible		$\mathcal{O}\mathcal{O}$
Tight Turn Poor Pavement	Field verify xslope Rough pavement from chip seal & raveling	Delineate Curve Mill chip seal & overlay	~
r our r premier	This appears to be an area of primarily surface raveling of the slope and	the output a county	
Unstable Slope	could be treated similar to the unstable slope @ 146+00. Slope flattening can be considered.		
Poor Pavement	Rough pavement from chip seal & raveling	Mill chip seal & overlay	
	This appears to be an area of primarily surface raveling of the slope and		(\bigcirc)
Unstable Slope	could be treated similar to the unstable slope ⊕ 146+00. Slope flattening can be considered.		
Sight Distance	Guardrail obstructs SSD	Sign advisory speed @ 25 mph	\sim
Unstable Slope Tight Turn	Losing Guardrail (no AGEC recommendation) Field verify xslope	Berm behind GR (notes)	
Sight Distance	Hillside obstructs SSD	Sign advisory speed @ 35 mph	
Poor Pavement	Rough pavement from chip seal & raveling	Mill chip seal & overlay	
Unstable Slope	This appears to be an area of primarily surface raveling of the slope and could be treated similar to the unstable slope @ 146+00. Slope flattening		
Unitable Slope	can be considered.		
Unstable Slope	This appears to be an area of primarily surface raveling of the slope and		
Unstable slope	could be treated similar to the unstable slope @ 146+00. Slope flattening can be considered.		
Unstable Slope	This appears to be an area of primarily surface raveling of the slope and		
	could be treated similar to the unstable slope @ 146+00. Slope flattening can be considered.		
Drainage Sight Distance	Shady, Black Ice	Grade ditch on uphill side of road to flow to culvert entrar	sce
Tight Turn	Vegetation obstructs sight distance Vegetation obstructs sight distance/ Field Verify Xslope	Ex Advisory 20mph, Meets 25mph (SSD) Ex Advisory 20mph, Meets 25mph (SSD)	
Safety	EOP Lip @ Parkinglot not flush with gravel	Add gravel to feather mitigate uneven shidr or pave 10' of	
Unstable Slope	This appears to be an area of primarily surface raveling of the slope and could be treated similar to the unstable slope @ 146+00. Slope flattening		
	can be considered.		
Unstable Slope	Large size rock on roadway. This appears to be an area of primarily surface raveling of the slope and could be treated similar to the unstable slope @		\leq
	146+00. Slope flattening can be considered.		
Unstable Slope	This is at an old landslide below the road that has been mostly stabilized. Widening the roads on the downhill would be problematic and could	No shidr widening needed	
	reactivate the landslide. (AGEC 42) This appears to be an area of primarily surface raveling of the slope and		
Unstable Slope	This appears to be an area of primarily surface raveling of the slope and could be treated similar to the unstable slope @ 146+00. Slope flattening	Shidr Widening read	
Poor Pavement	can be considered. (field verify) EOP Lip @ Parkinglot not flush with gravel	Add gravel to feather mitigate uneven shidr or pave 10' of	
Poor Pavement	Rough pavement from cracks, chip seal & raveling	Mod gravel to reacher mitigate uneven shior or pave 10 or Mill chip seal & overlay	
Unstable Slope	This appears to be an area of primarily surface raveling of the slope and could be treated similar to the unstable slope @ 146+00. Slope flattening		
	can be considered. AGEC 44, 45, 46, 47)		\sim
Deficient Obstruction Narrow Bike Lane	1:1 sideslope with no protection 2'-4' shide	Widen & Add guardrail L=3380" (506+21-540+00), Widen +1'-3' shidr	C A
Narrow Bike Lane	1'-2' shidr	L=3500' (504+96-540+00), Widen +5'-6' shidr w/GR	
Poor Pavement Tight Turn	Wavy pavement from chip seal & raveling	Mill chip seal & overlay	
Poor Pavement	Field verify xslope Rough pavement from chip seal & raveling	Sign advisory speed @ 25 mph Mill chip seal & overlay	\sim
Safety	High use parking area	Pave parking and widen shoulder	$(\mathcal{X} \cap)$
Poor Pavement Deficient Obstruction	Rough pavement from chip seal & raveling Steep sideslope with no protection	Mill chip seal & overlay Widen Shidr & Add guardrail	UD
	This appears to be an area of primarily surface raveling of the slope and		
Unstable Slope	could be treated similar to the unstable slope (# 146+00. Slope flattening can be considered. AGEC 48-49)		72
Sight Distance	Hillside obstructs SSD	Extend GR and delination, Sign advisory speed @ 25 m	ph
	This appears to be an area of primarily surface raveling of the slope and		
Unstable Slope	could be treated similar to the unstable slope @ 146+00. Slope flattening can be considered.		
Unstable Slope	Road falling down slope. This appears to be an area of primarily surface raveling of the slope and could be treated similar to the unstable slope @	fill wall to stabilize slope	\sim
Unstable Slope	raveling of the slope and could be treated similar to the unstable slope ge 146+00. Slope flattening can be considered.	 Fill wall to stabilize slope 	(
Poor Pavement			
Deficient Obstruction Narrow Bike Lane	Steep sideslope with no protection 2'-4' shidr	Widen Shidr & Add guardrail L=2900' (540=00-569=12), Widen +1'-3' shidr	
Narrow Bike Lane	1'-2' shidr	L=2770' (540+00-567+70), Widen +5'-6' shidr w/GR	
Unstable Slope	This appears to be an area of primarily surface raveling of the slope and could be treated similar to the unstable slope @ 146+00. Slope flattening		
	can be considered.		
Unstable Slope	This appears to be an area of primarily surface raveling of the slope and could be treated similar to the unstable slope @ 146+00. Slope flattening	r.	
	can be considered.		
Unstable Slope	This appears to be an area of primarily surface raveling of the slope and could be treated similar to the unstable slope @ 146+00. Slope flattening	r.	
	can be considered.	Advisory for 30 mph	
Tight Turn Narrow Bike Lane	Field verify xslope 4" shidr	Advisory for 30 mph Restripe intersection to be more friendly for cyclists	
Safety	On upper Little Mtn: wide shoulders encourage 2/3 abreast riding	Provide signage or paint concept	
Safety Poor Pavement	Driveway/Sidestreet conflict points Sawcut encroaches into middle of bike lane	Add Green Paint to conflict points Sawcut to solid white stripe and replace to lip of gutter (L	-13
Deficient Obstruction	Steep unprotected slope	Extend GR L=400', and widen bike lane for o/s	
Bus Stops		Add paint to bike lane on permenant bus stops at Maryfield, Sk Firestation.	HORN
Bus Stops		Remove Bus Stop Advanced Warning Signs	
Safety Sight Distance	Update Share the Road Signs to better inform motorists/cyclists Sight distance, dwar hunters park in intersection sight brangle	add advisory zone, Add 3ft signage with possible rules of th Add no parking ugns, remove pent to miligate parking	Ne road
Salety	Signi decardo, ceen narran park in internection tange Lip of diversity from overlay Overflow Ruths parking	Mill and Feather overlay in shidr pulloff	
Salary Salary	Overflow Rushs parking Earyon Speeds/Enforcement is a problem on whends	Add no parking sigm along both sides of street Add "Your Speed Is" VMS	
Salary		Weplate ungle file signage, Add paint to blie lane, edd 2 brunil paint	
Salary	Elixers danegard angle Ne signs Add Upgrade share the road signs	Use Bit share the road signs, ride single file	

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156+00.00 87 207+00.00 87 215+00.00

375+00.00 378+75.00 383+00.00 384+50.00 384+50.00 389+00.00 389+00.00 389+00.00 389+00.00 405+00.00 405+00.00

412+25.00



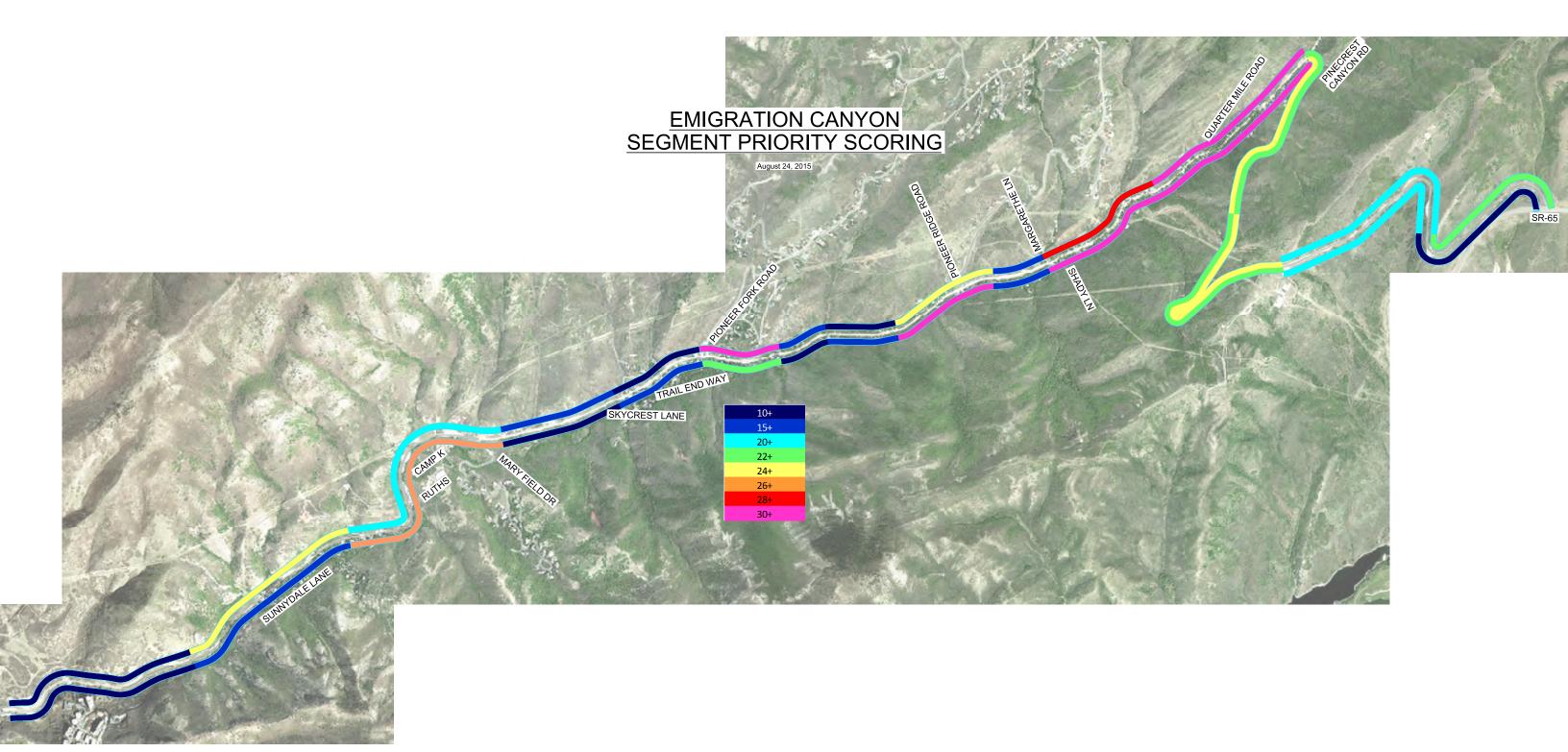
APPENDIX B: HAZARD INDEX RESULTS

EMIGRATION CANYON SEGMENT PRIORITY SCORING

		Sta	tion			RT/LT	Segment	Environmental	Geometry	Traffic		
Segment	Offset	From	То	Length	Widening Length	% Widening	% Widening	10%	60%	30%	Total	Notes
1	RT	100+00	140+00	4000		0%	0%	15	14	16	14.7	Rotary Pk
1	LT	100+00	140+00	4000		0%		15	14	16	14.7	Rotary Pk
2	RT	140+00	180+00	4000		0%		15	20	19	19.2	Sunnydale
2	LT	140+00	180+00	4000		0%		10	30	19	24.7	Sunnydale
3	RT	180+00	227+00	4700	542	12%	8%	10	31	27	27.7	Ruths/Camp K
3	LT	180+00	227+00	4700	220	5%		15	21	24	21.3	Ruths/Camp K
4	RT	227+00	251+00	4300	460	11%	39%	15	11	7	10.2	
4	LT	227+00	251+00	4300	2875	67%		15	22	7	16.8	
4	RT	251+00	270+00					15	23	14	19.5	Trails End
4	LT	251+00	270+00					15	11	14	12.3	Trails End
5	RT	270+00	286+00	1600	250	16%	22%	15	26	18	22.5	Firestation
5	LT	270+00	286+00	1600	450	28%		15	38	23	31.2	Firestation
6	RT	286+00	296+00	2400		0%	15%	5	17	12	14.3	
6	LT	286+00	296+00	2400	740	31%		18	21	13	18.3	
6	RT	296+00	310+00					15	25	7	18.6	
6	LT	296+00	310+00					15	16	7	13.2	
7	RT	310+00	332+00	2200	1600	73%	61%	8	57	9	37.7	Pioneer Ridge
7	LT	310+00	332+00	2200	1065	48%		15	33	11	24.6	Pioneer Ridge
8	RT	332+00	343+00	1100	365	33%	17%	15	14	17	15	
8	LT	332+00	343+00	1100		0%		10	18	17	16.9	
9	RT	343+00	370+00	6700	6420	96%	96%	15	35	31	31.8	Sun & Moon
9	LT	343+00	370+00	6700	6420	96%		15	32	31	30	Sun & Moon
9	RT	370+00	410+00					15	44	30	36.9	Quarter Mile
9	LT	370+00	410+00					15	46	29	37.8	Quarter Mile
10	RT	410+00	449+00	9000		0%	0%	15	32	12	24.3	Pinecrest Up
10	LT	410+00	449+00	9000		0%		15	31	12	23.7	Pinecrest Up
10	RT	449+00	500+00					15	31	12	23.7	Summit Down
10	LT	449+00	500+00					15	33	12	24.9	Summit Down
11	RT	500+00	545+00	4500	4000	89%	88%	15	28	7	20.4	
11	LT	500+00	545+00	4500	3880	86%		15	30	7	21.6	
12	RT	545+00	579+86	3486	2265	65%	67%	15	22	8	17.1	Deadmans
12	LT	545+00	579+86	3486	2410	69%		15	32	8	23.1	Deadmans

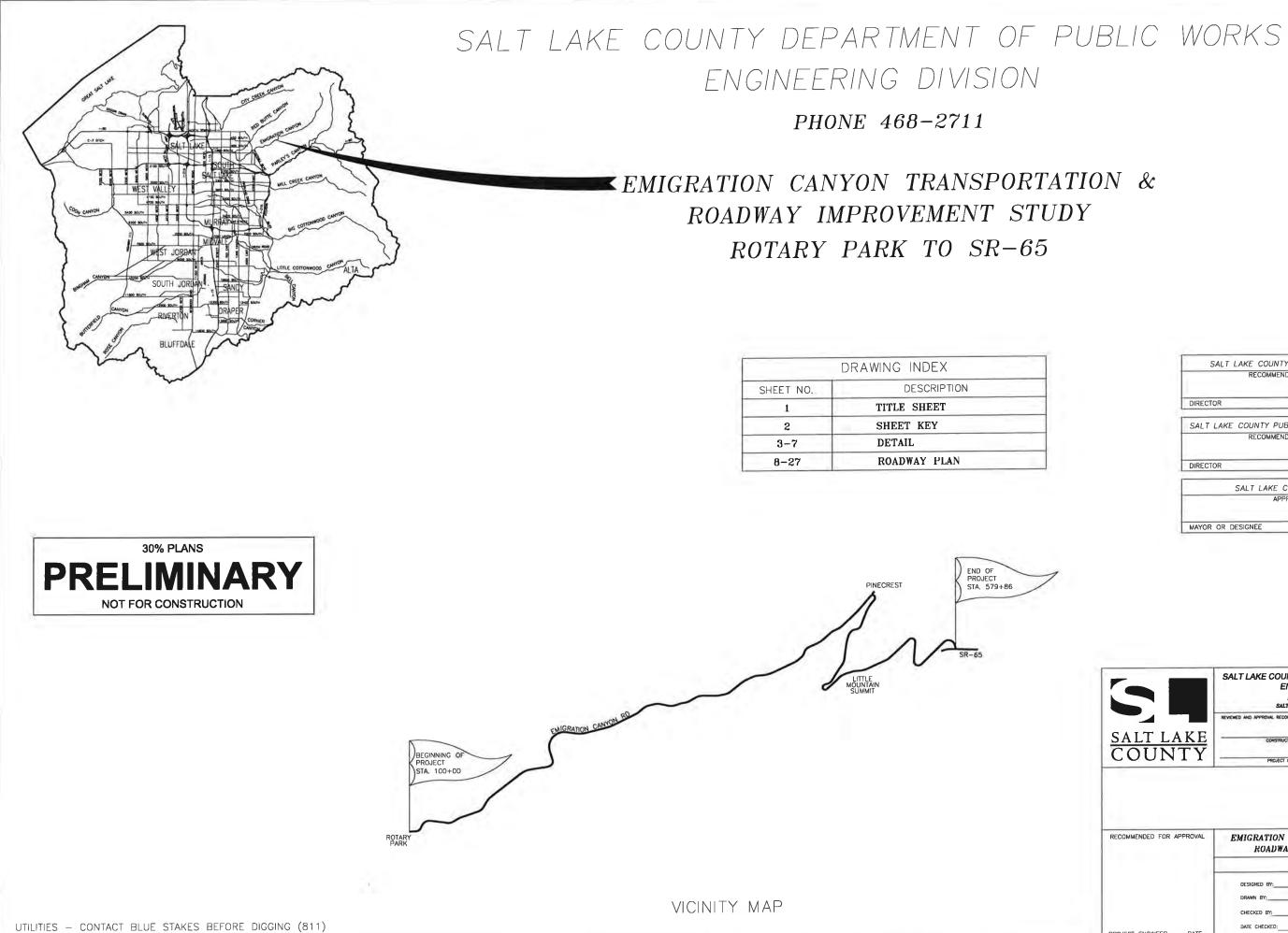
	Segment
Segment	% Widening
1	0%
2	0%
3	8%
4	39%
5	22%
6	15%
7	61%
8	17%
9	96%
10	0%
11	88%
12	67%

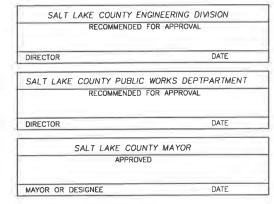




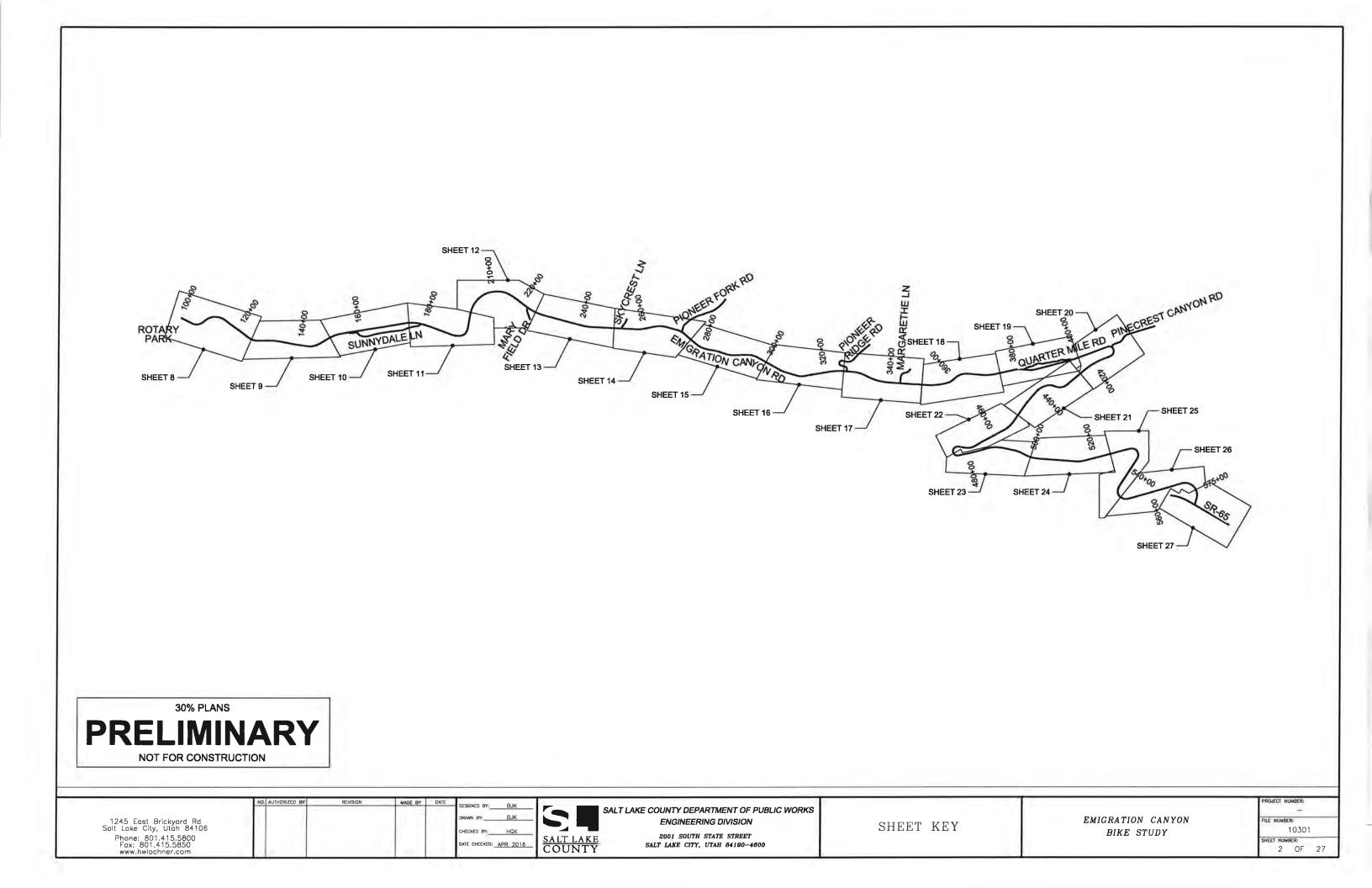
APPENDIX C: 30% PLAN SET

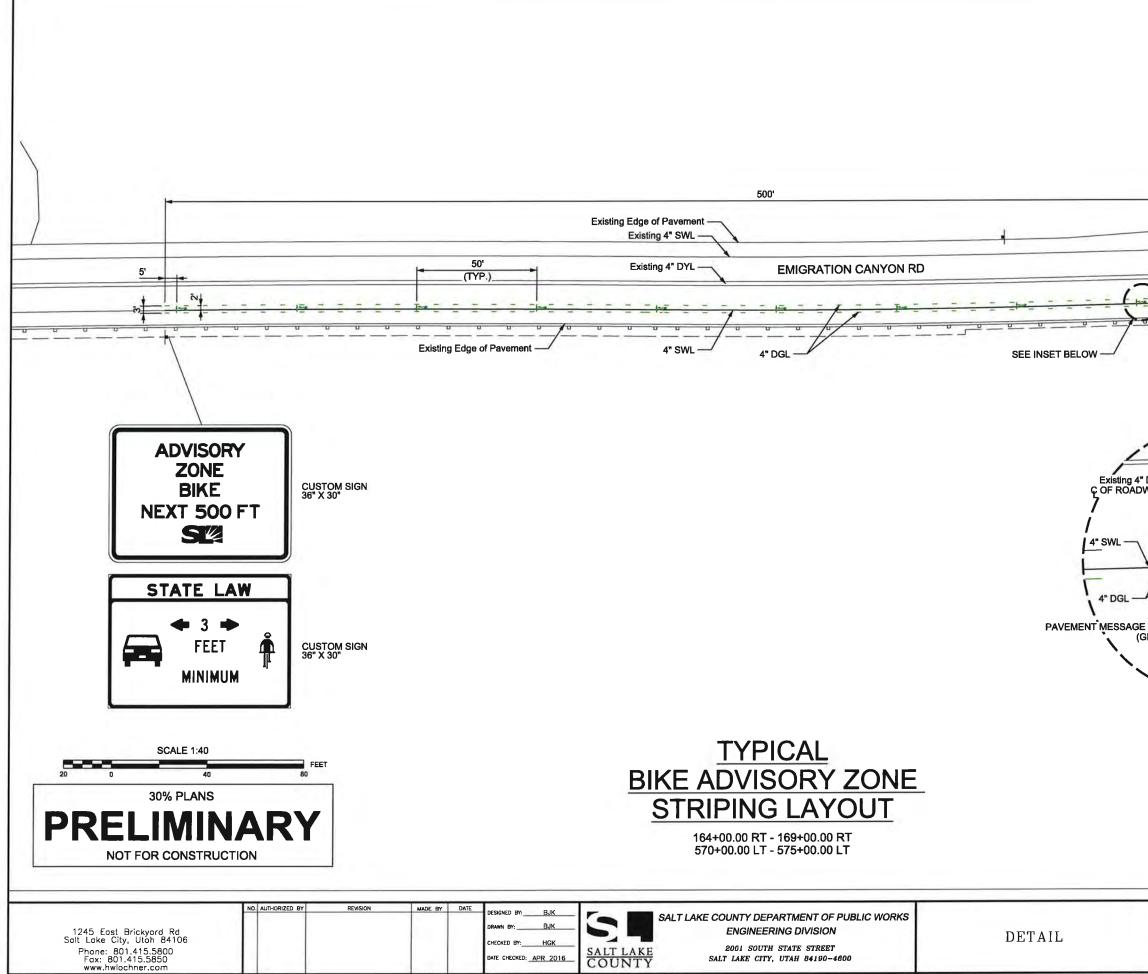
Emigration Canyon Transportation Study



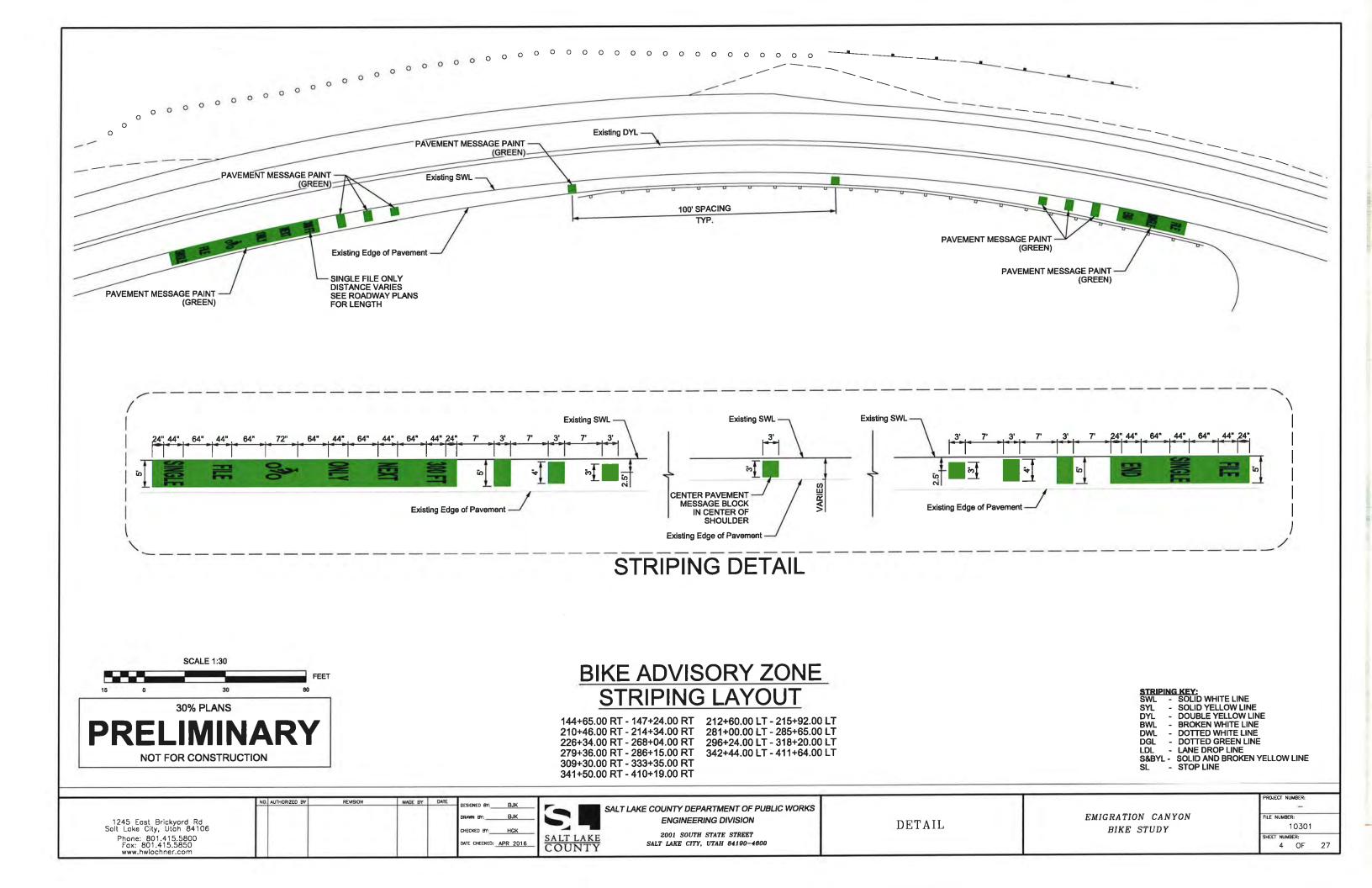


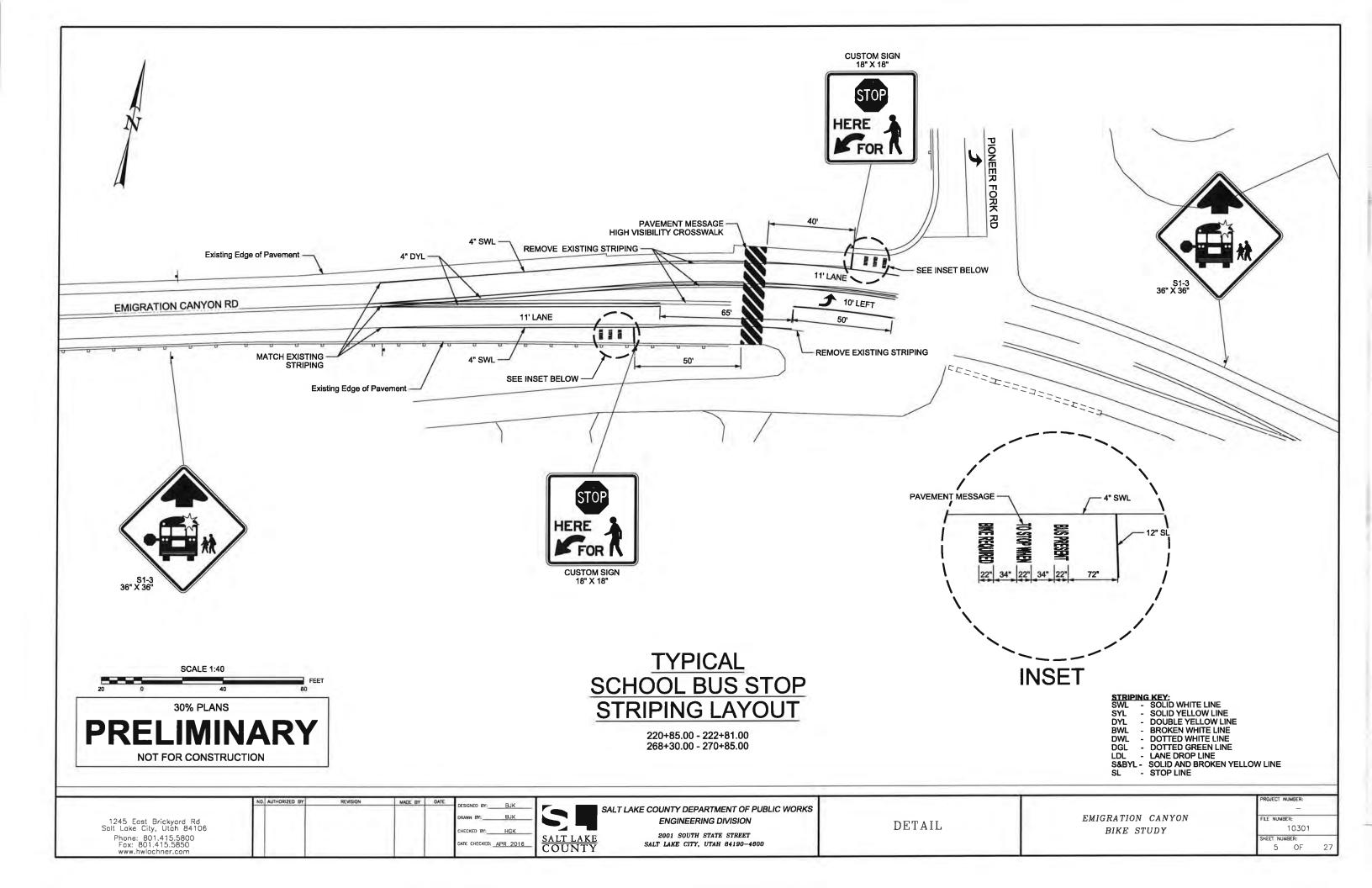
	SALT LAKE COUNTY DEPAR ENGINEERING 2001 SOUTH STA SALT LAKE CITY, UTA	G DIVISION te street
	REVIEWED AND NYPROVAL RECOMMENDED:	
SALT LAKE	CONSTRUCTION MANAGER	DATE
COUNTY	PROJECT MANAGER	DATE
RECOMMENDED FOR APPROVAL	EMIGRATION CANYON T ROADWAY IMPROV	
RECOMMENDED FOR APPROVAL		EMENT STUDY
RECOMMENDED FOR APPROVAL	ROADWAY IMPROV	EMENT STUDY
RECOMMENDED FOR APPROVAL	ROADWAY IMPROV	EMENT STUDY HEET PROJECT NUMBER:

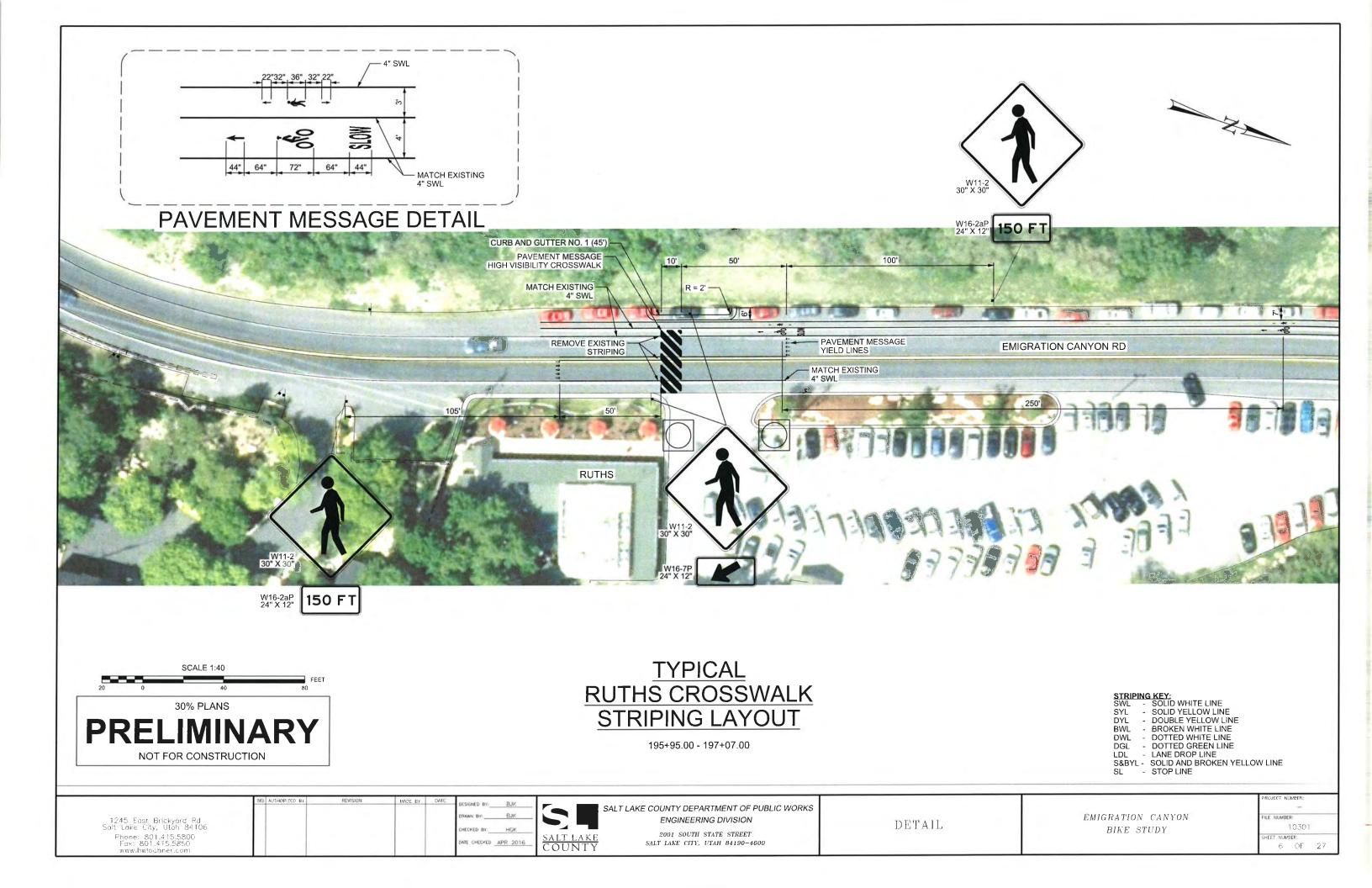


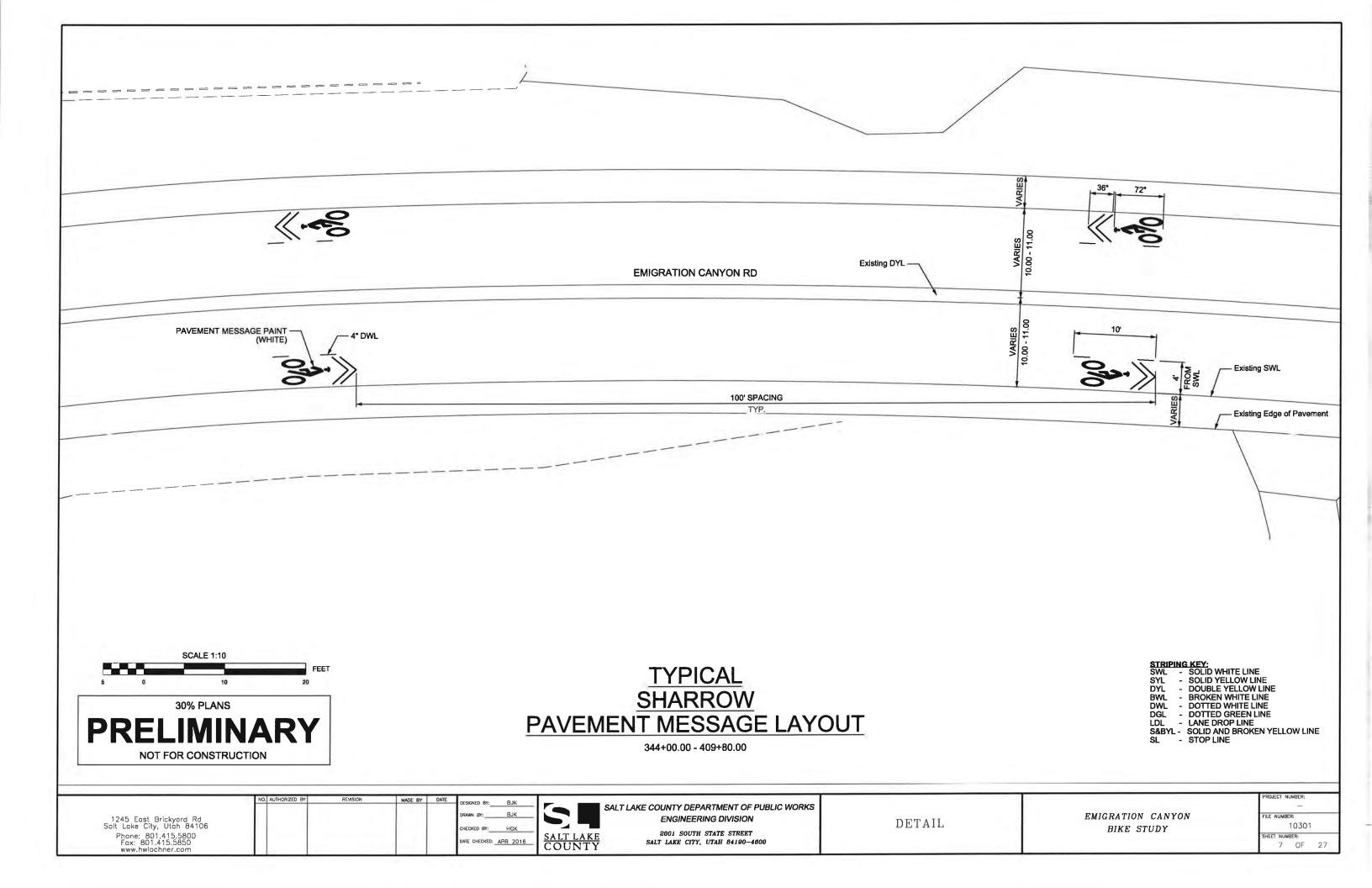


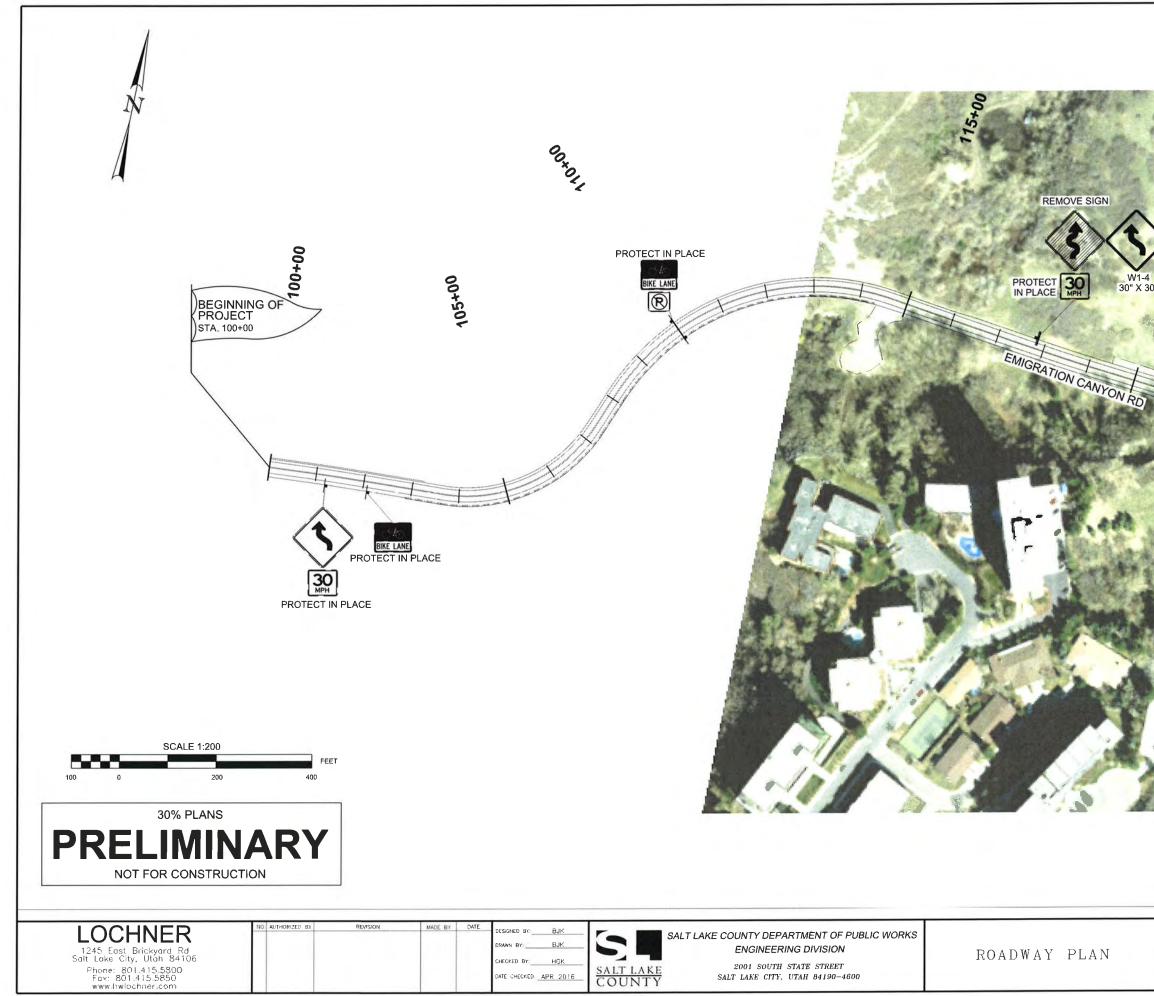
•	
	<u>vvv</u>
PAINT GREEN) INSET	
STRIPING KEY: SWL - SOLID WHITE LINE SYL - SOLID YELLOW LINE DYL - DOUBLE YELLOW LINE BWL - BROKEN WHITE LINE DWL - DOTTED WHITE LINE DGL - DOTTED WHITE LINE LDL - LANE DROP LINE S&BYL - SOLID AND BROKEN YELLOW SL - STOP LINE	'LINE
EMIGRATION CANYON BIKE STUDY	PROJECT NUMBER:



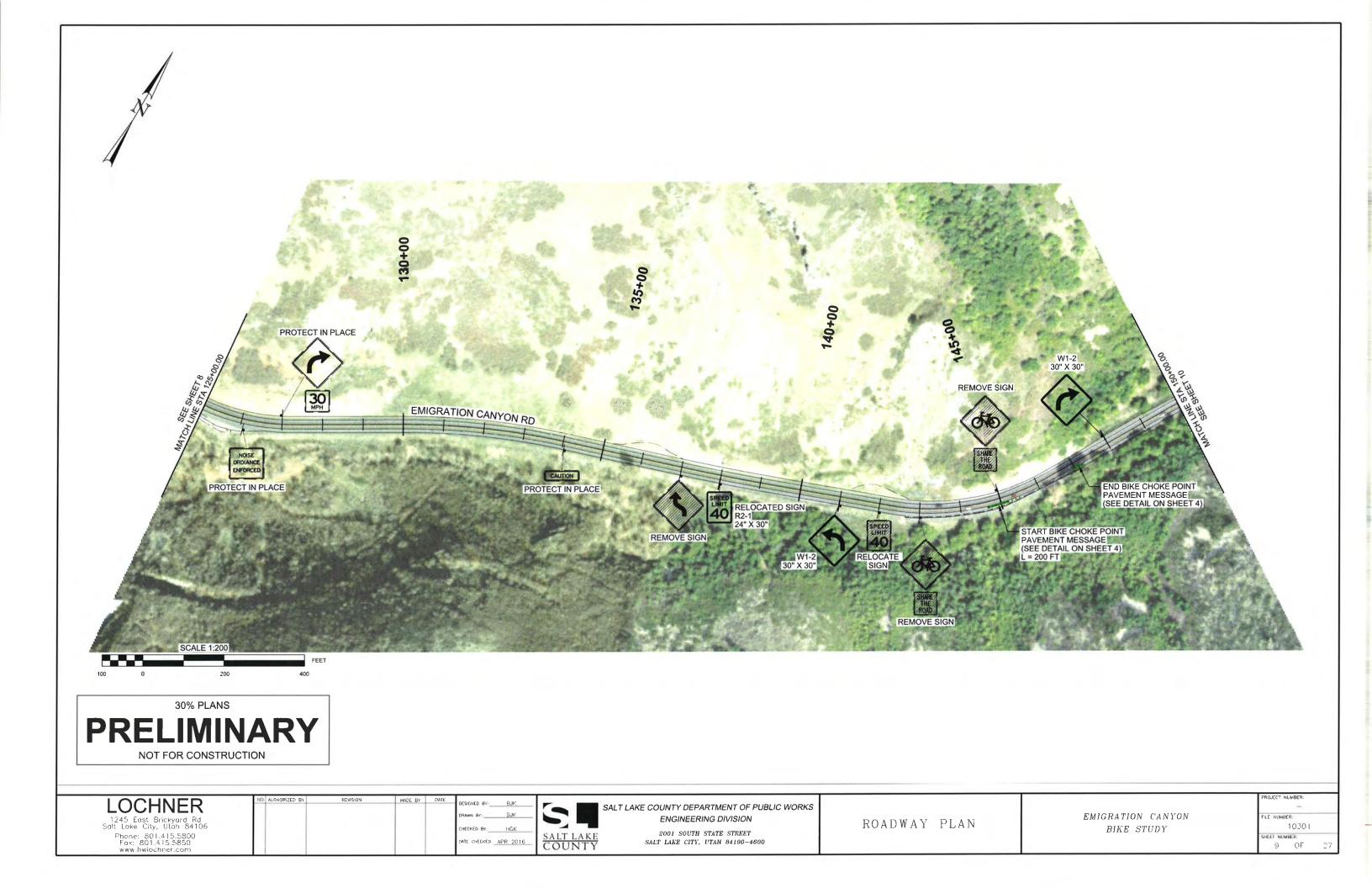


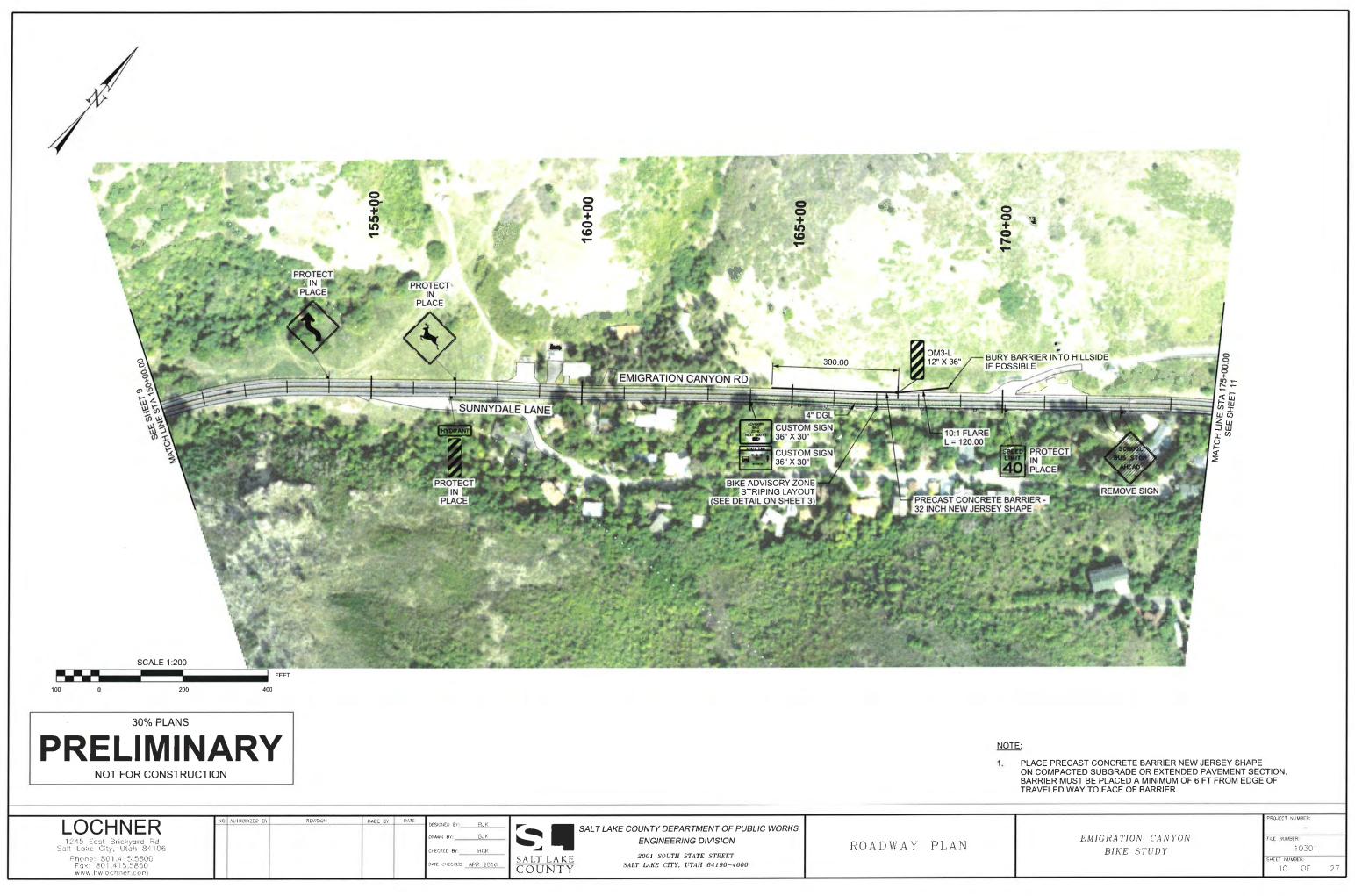


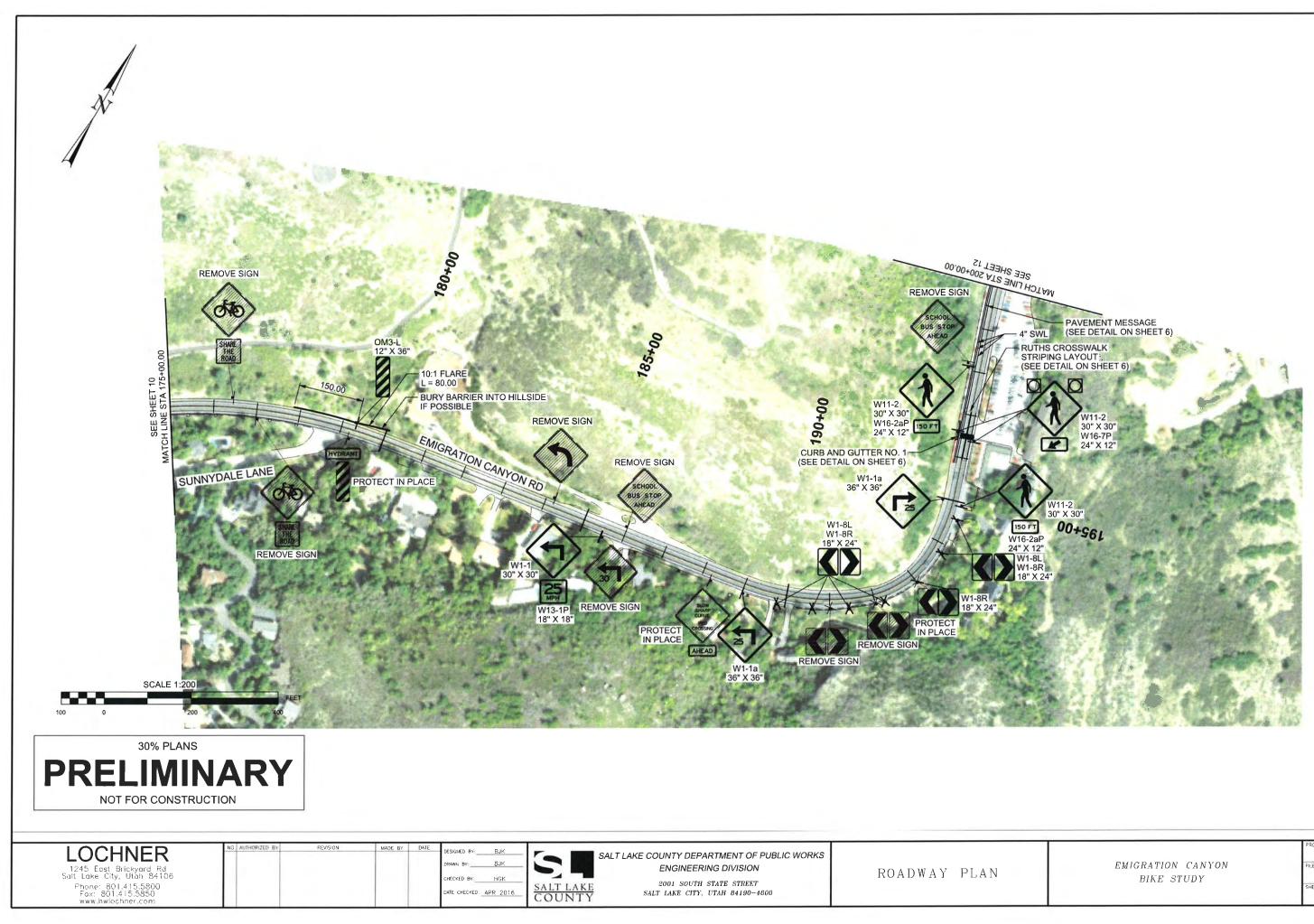




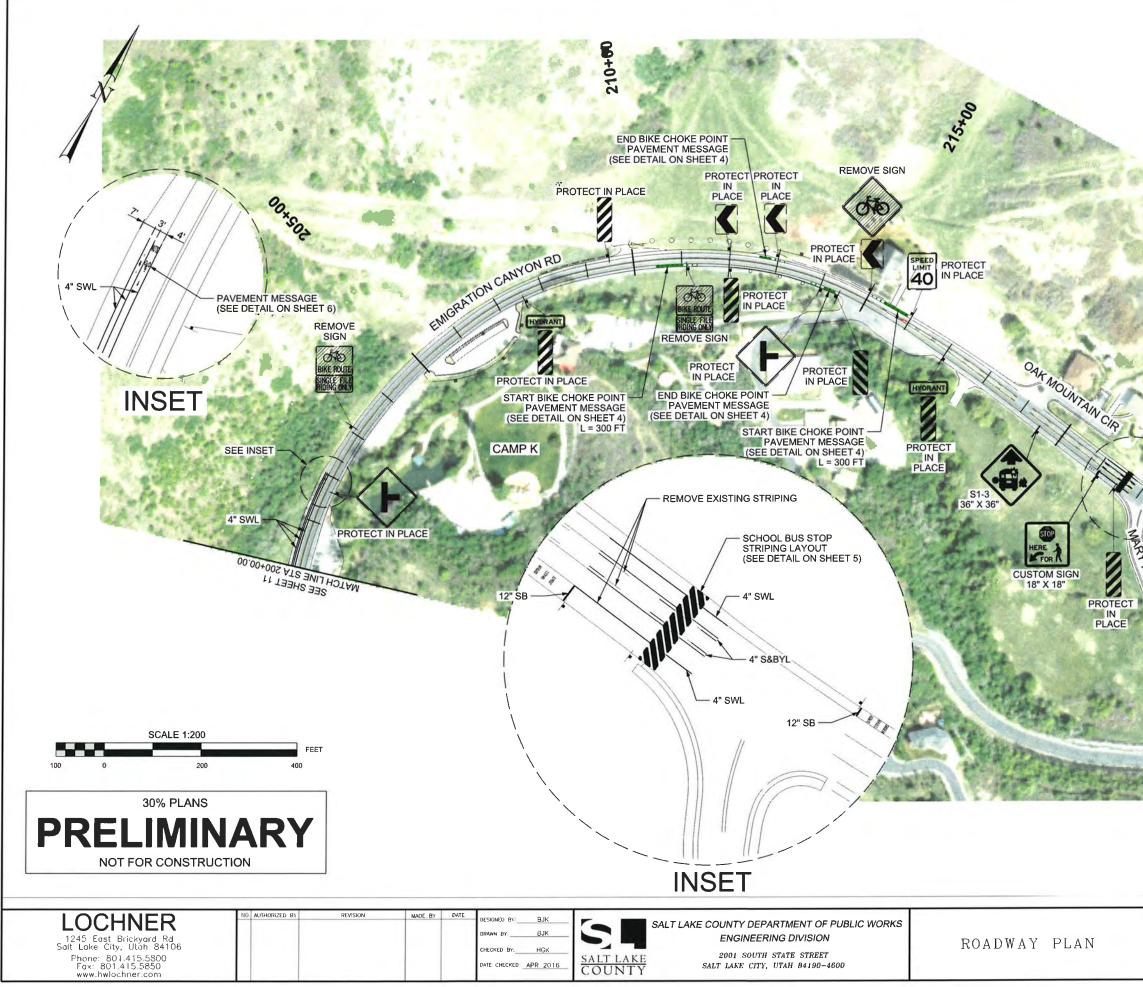
120.00	00			Sec. Sec.			
>							
*****		PROTEC	CT IN PLACE				
	6		HUNE STA	SEE SHEET 9			
A GOILA	W1-2		MATC				
	W1-2 30" X 30		MATC				
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	w1-2 30" X 30		MATC		PROJEC	T NUMBER:	



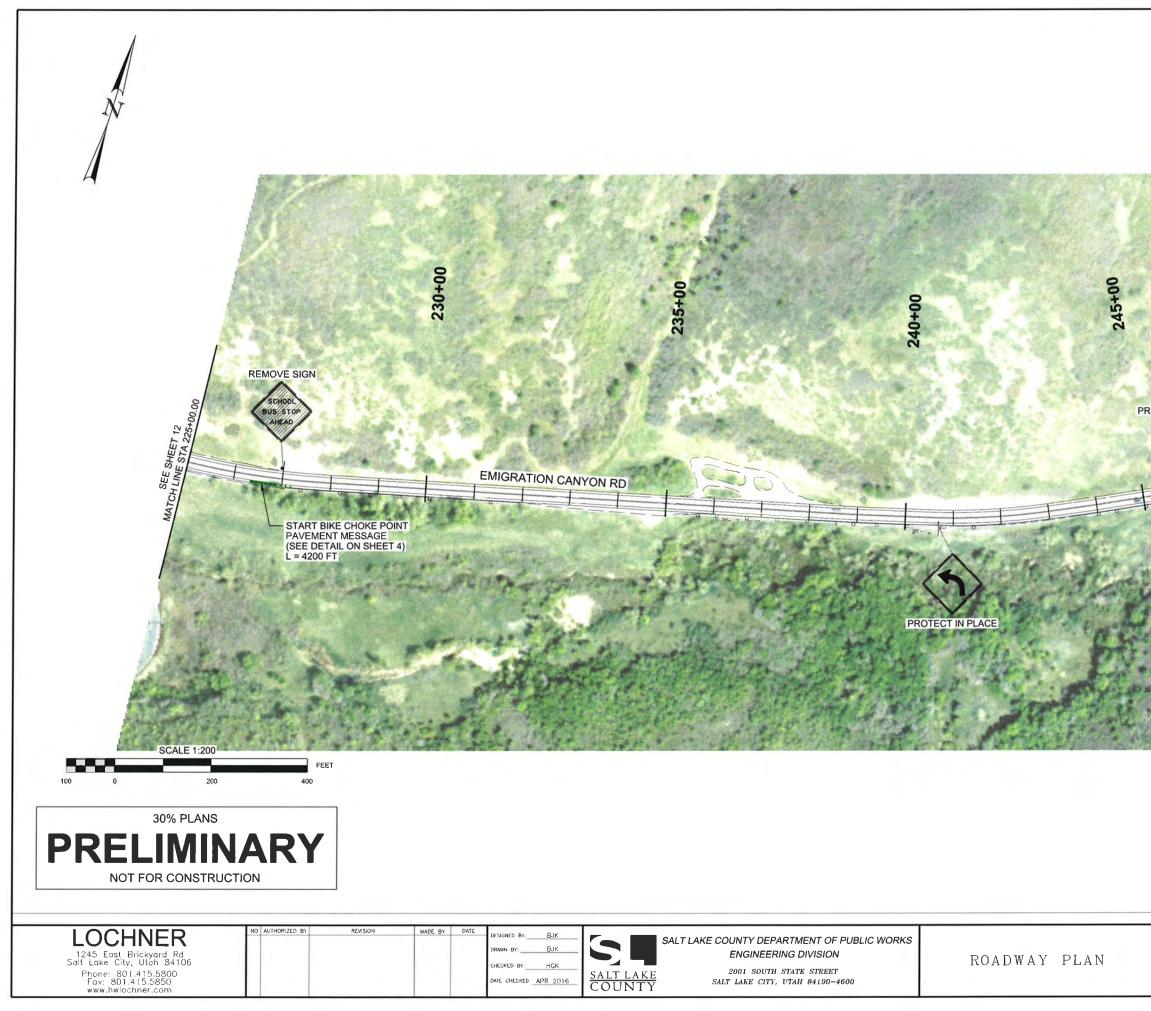




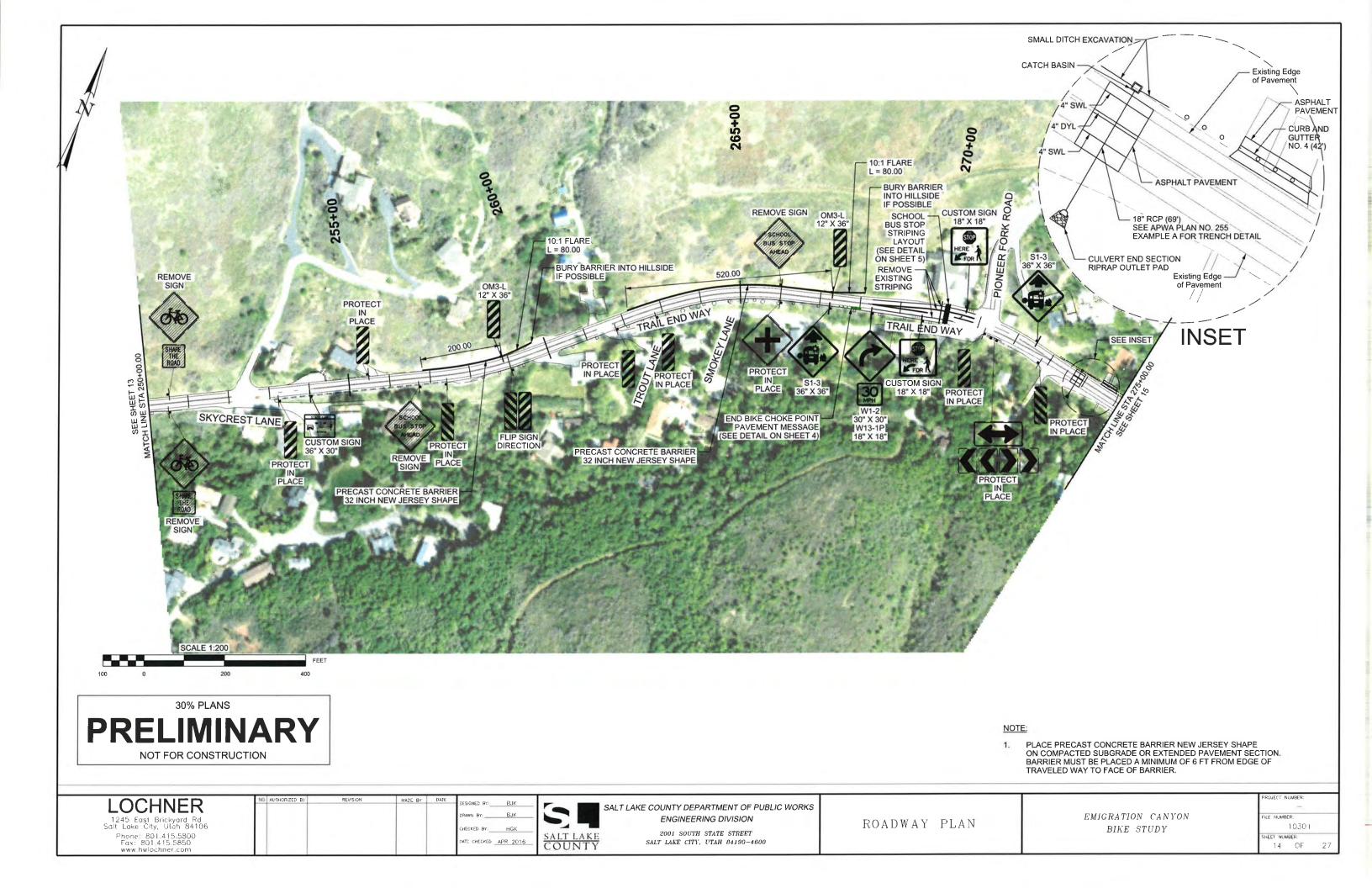
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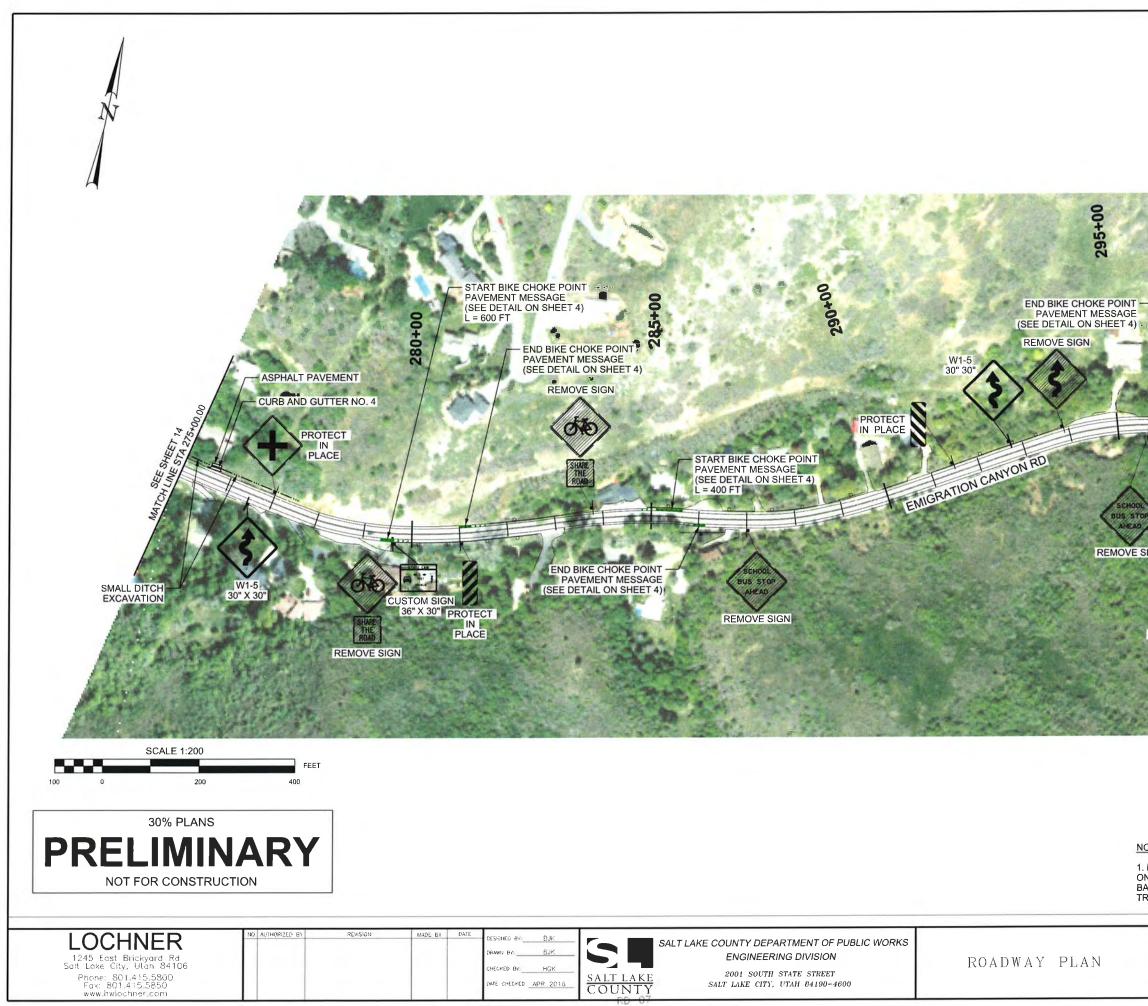


ELERINSET		
	STRIPING KEY: SWL - SOLID WHITE LIN SYL - DOUBLE YELLOW L DYL - DOUBLE YELLOW BWL - BROKEN WHITE L DWL - DOTTED WHITE L DGL - DOTTED GREEN LDL - LANE DROP LINE S&BYL - SOLID AND BROK SL - STOP LINE	INE / LINE JNE JNE LINE



DTECT IN	Addin # 1	ECT IN PLACE	MATCH LINE STA 250+00.00 MATCH LINE STA 250+00.00	

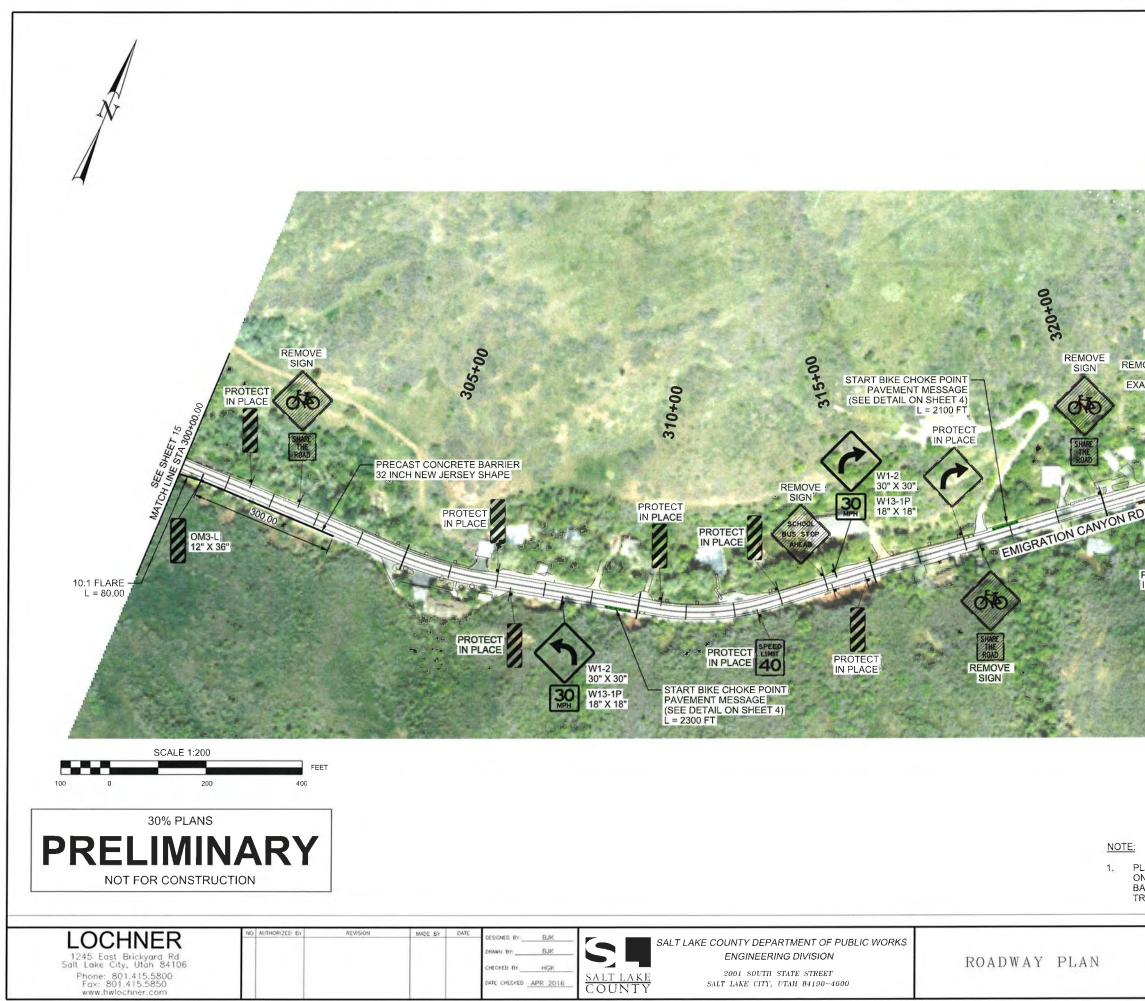




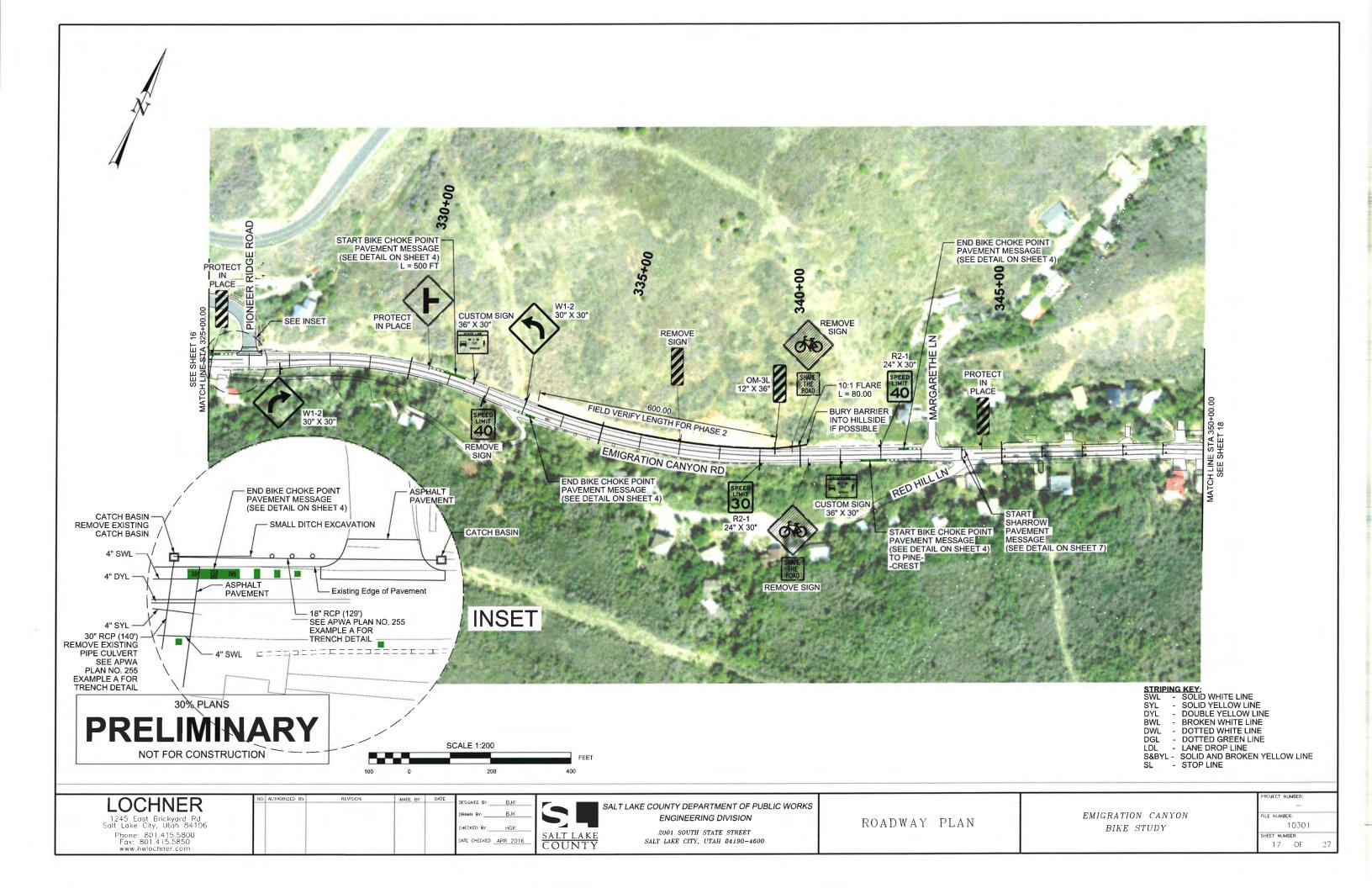
PROTECT REMOVE SIGN
PROTECT N PLACE REMOVE SIGN SIGN REMOVE SIGN SI
OTE: PLACE PRECAST CONCRETE BARRIER NEW JERSEY SHAPE N COMPACTED SUBGRADE OR EXTENDED PAVEMENT SECTION. ARRIER MUST BE PLACED A MINIMUM OF 6 FT FROM EDGE OF RAVELED WAY TO FACE OF BARRIER.

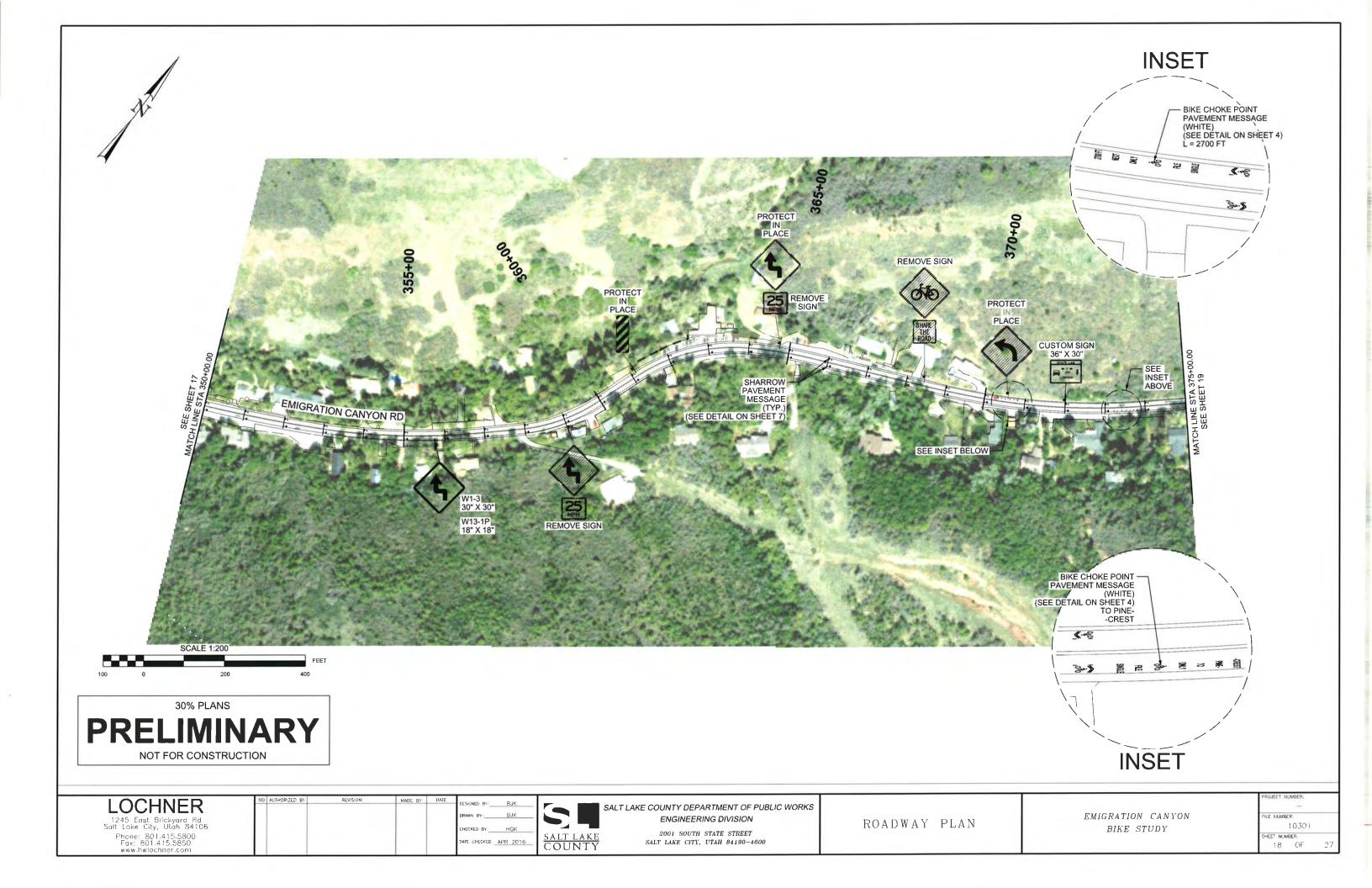
EMIGRATIC	ЭN	CAN	YON
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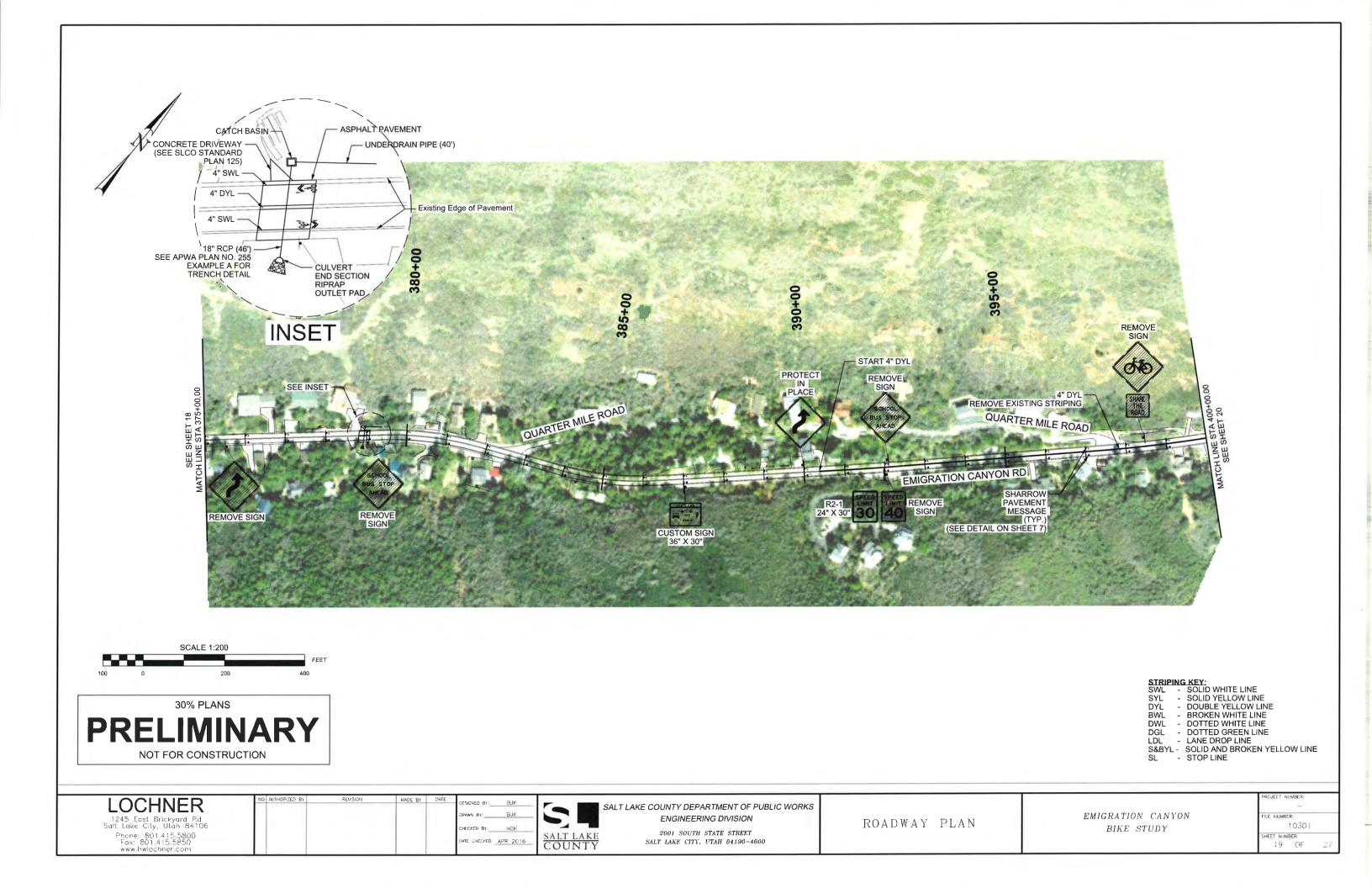
PROJECT N	UMBER:	
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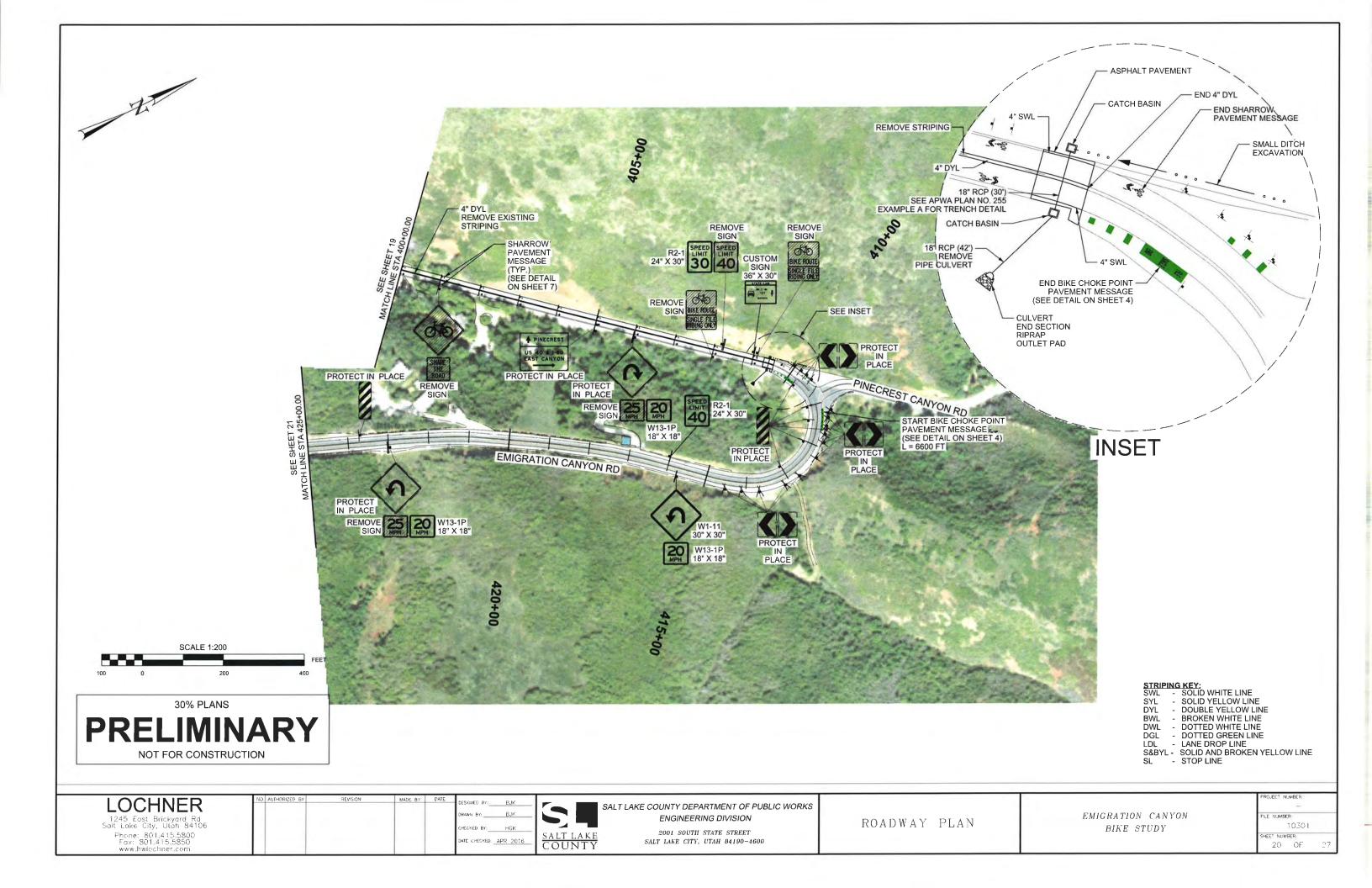


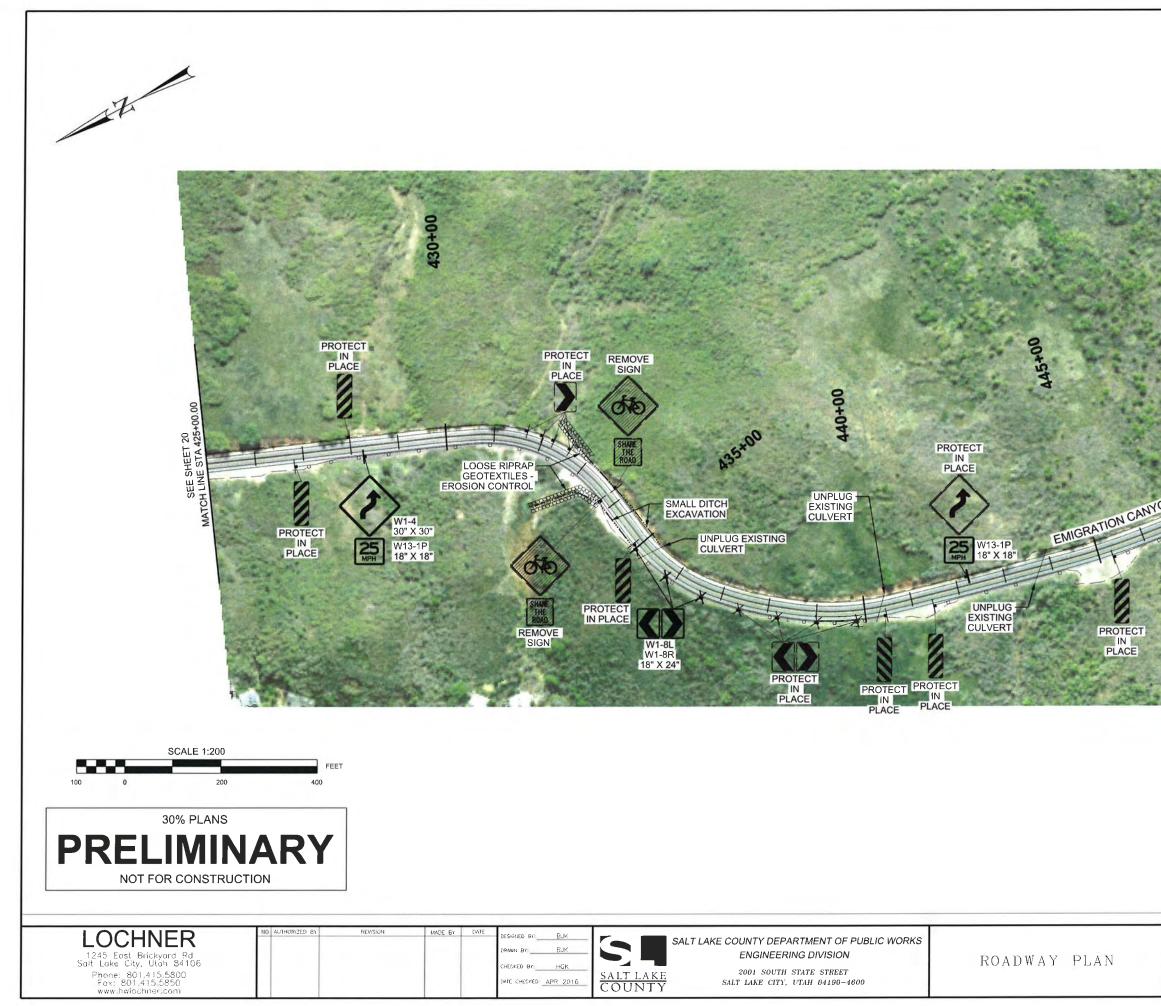
Prove Existing CATCH BASIN Nor Existing Catch Basin Nor Existing Pipe Culvers Server Pite Pice Pipe Culvers Server Pipe Culvers	
TRAVELED WAY TO FACE OF BARRIER.	PROJECT NUMBER:
EMIGRATION CANYON BIKE STUDY	



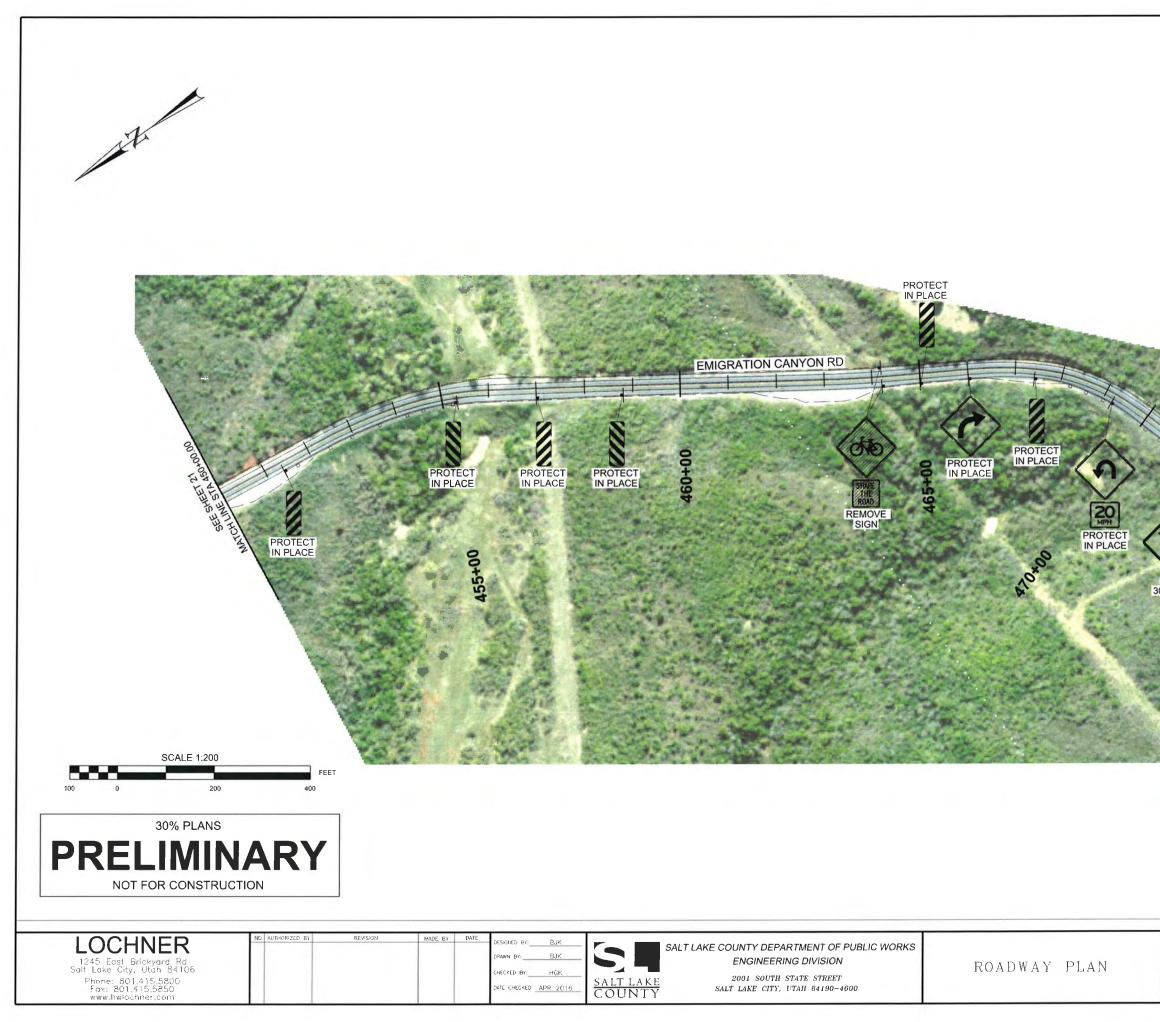




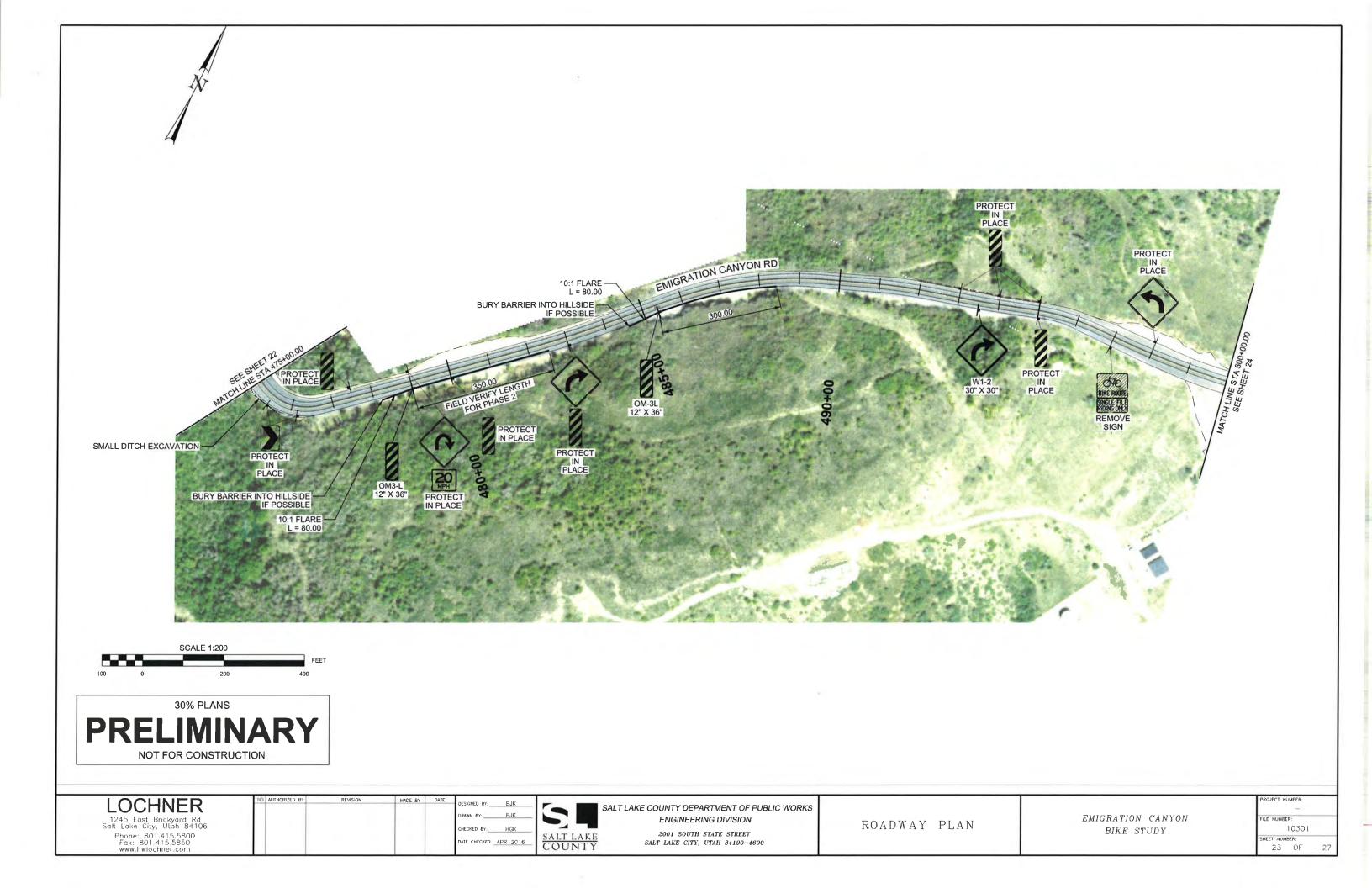


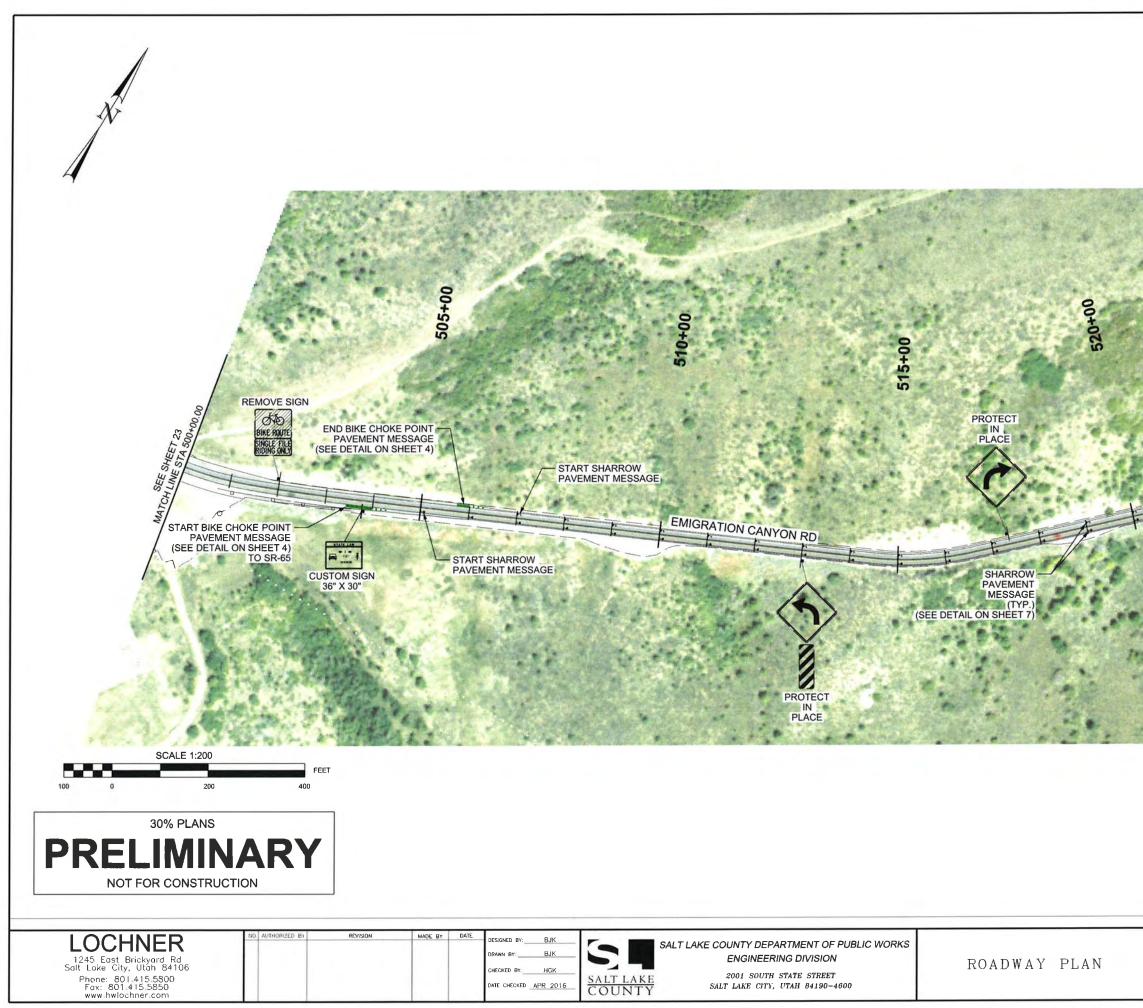


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	EMIGRATION CANYON BIKE STUDY	PROJECT NUMBER:

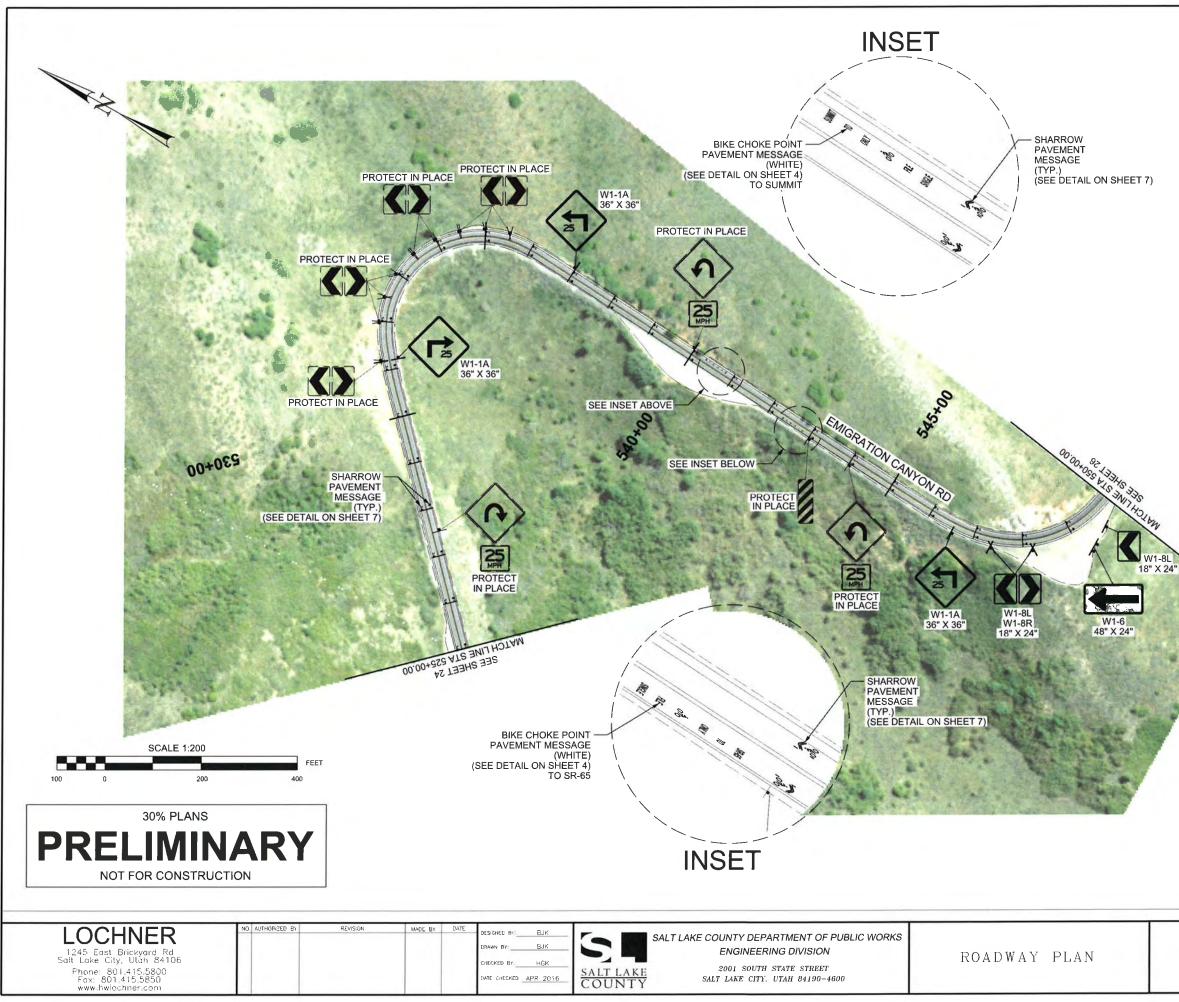


	DUECT MUMBER:
BIKE STUDY	NUMBER 10301 Et NUMBER 22 OF 27





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198	
MATCH LINE STA 525+00.00	
SHERE STREET	
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	PROJECT NUMBER:

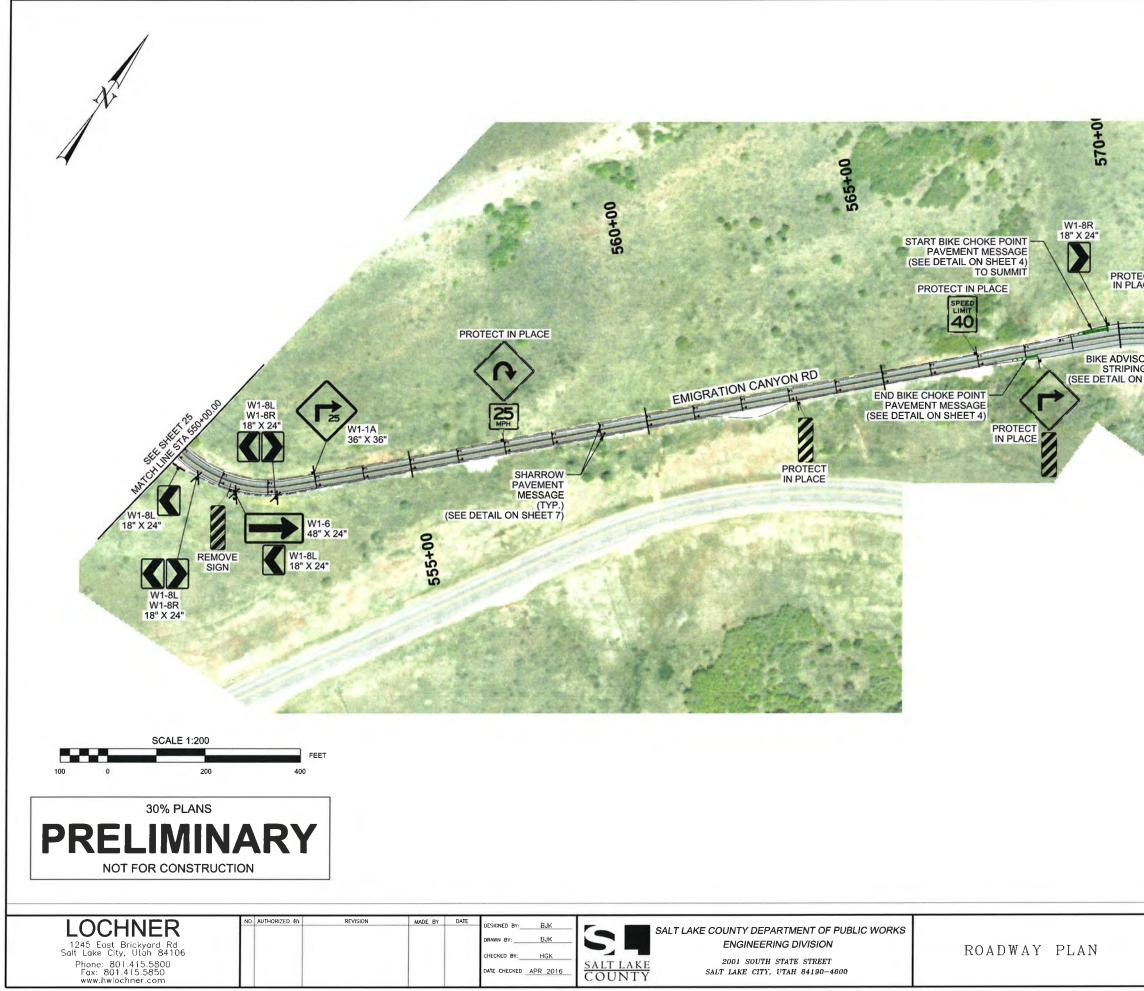


W1-8L

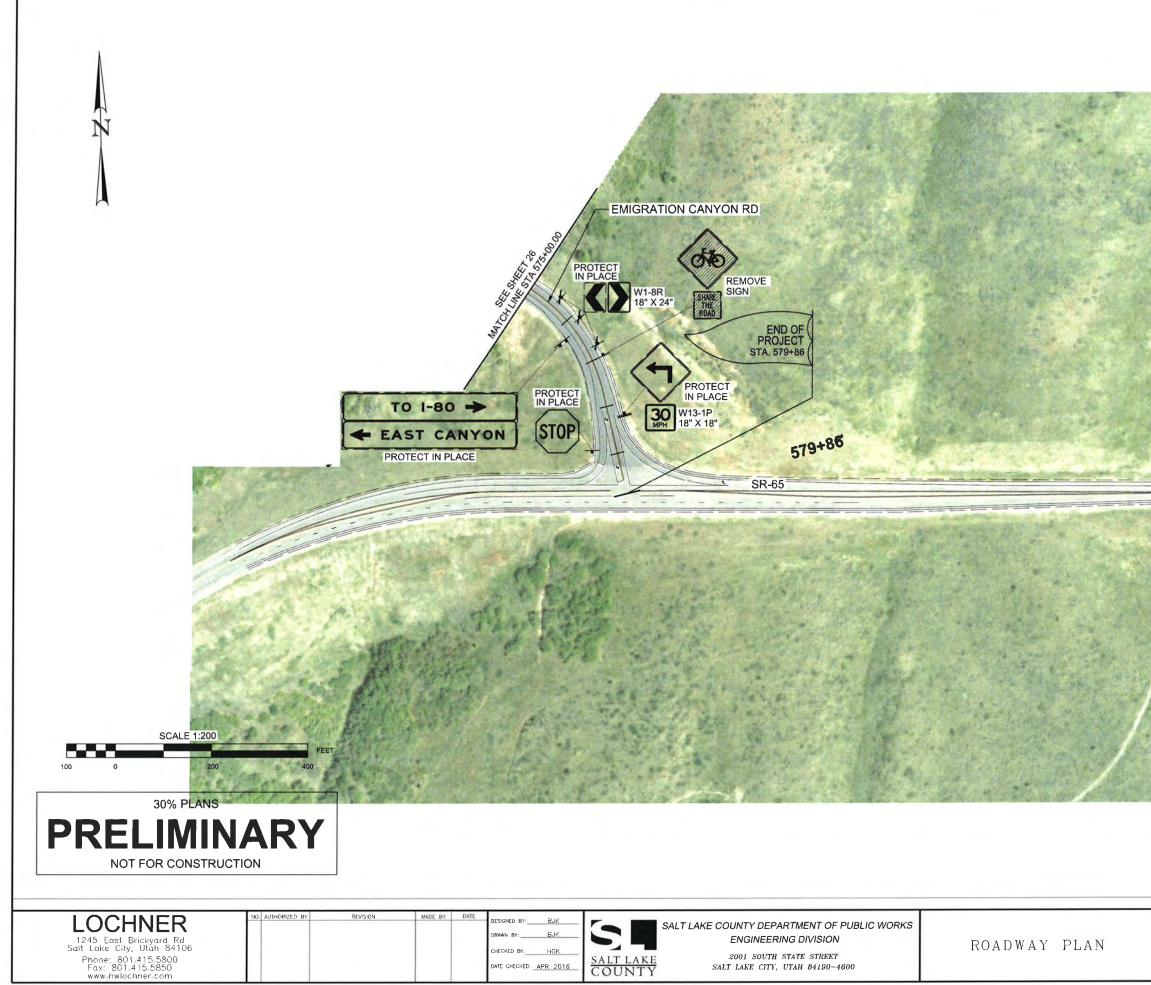
EMIGRATION CANYON BIKE STUDY

ROJECT NUMBER

FILE NUMBER: 10301 HEET NUMBER 25 OF 27



CT W1-8 18"X PRY ZONE G LAYOUT I SHEET 3) PROTECT IN PLACE	R24" ROTECT ROTE	CUSTOM SIGN 36" X 30" CUSTOM SIGN 36" X 30"
	EMIGRATION CANYON	PROJECT NUMBER:



EMIGRATION CANYON FILE NUMBER	PROJECT NUMBER

Emigration Cost Estimate 30% PLANS

item #	Item	Quantity	Units	Price	Cost	Remarks
Roadway	item	Quantity	Units	FILCE	COST	Remarks
rtoudway	Remove Existing Pipe Culvert	182	ft	\$15.00	\$2,730.00	
	Remove Existing Catch Basin	1	Each	\$500.00	\$500.00	
	Precast Concrete Barrier - 32 Inch New Jersey Shape	3,400	ft	\$48.00	\$163,200.00	
	Concrete Driveway	65	sq ft	\$5.00	\$325.00	
	Asphalt Pavement	5,693	sq ft	\$9.00		Includes Pavement Section and Excavation
	Curb and Gutter No. 1 Curb and Gutter No. 4	45 62	ft ft	\$20.00 \$20.00	\$900.00 \$1,240.00	
	Curb and Gutter No. 4	02	п	\$20.00	\$1,240.00	
Roadway Subtotal				1	\$220,132	
					+==+;+==	
Drainage						
	Unplug Existing Culvert	196	ft	\$22.00	\$4,312.00	
	Loose Riprap	311	cu yd	\$50.00	\$15,550.00	
	Riprap Outlet Pad	4	Each	\$500.00	\$2,000.00	
	Small Ditch Excavation Culvert End Section	1,913 4	ft Each	\$10.00 \$500.00	\$19,130.00 \$2,000.00	
	Geotextiles - Erosion Control	467	sq yd	\$3.00	\$1,401.00	
	Underdrain Pipe	40	ft	\$50.00	\$2,000.00	
	18" RCP	316	ft	\$50.00		Includes Trench Backfill
	30" RCP	140	ft	\$70.00	\$9,800.00	Includes Trench Backfill
	Catch Basin	6	Each	\$2,600.00	\$15,600.00	
	I			I	A	I
Drainage Subtotal		+			\$87,593	
Troffic		+				
Traffic	Remove Existing Striping	4,431	ft	\$0.80	\$3,544.80	
	Pavement Marking Paint (SWL)	4,431	Gal	\$0.80		assume 95 ft/gal for double application
	Pavement Marking Paint (DWL)	8	Gal	\$25.00		assume 380 ft/gal for double application
	Pavement Marking Paint (DGL)	5	Gal	\$25.00		assume 380 ft/gal for double application
	Pavement Marking Paint (SL)	1	Gal	\$25.00	\$28.13	assume 32 ft/gal for double application
	Pavement Marking Paint (SYL)	0	Gal	\$25.00		assume 95 ft/gal for double application
	Pavement Marking Paint (S&BYL)	2	Gal	\$25.00		assume 76 ft/gal for double application
	Pavement Marking Paint (DYL) Pavement Marking Paint (Green Bike Lane)	52 229	Gal Gal	\$25.00 \$35.00		assume 48 ft/gal for double application assume 32 sf/gal for double application
	Pavement Message Paint (In Bike Lane)	778	Each	\$10.00		assume sach letter/syb/dim message
	Pavement Message Paint (In Roadway)	821	Each	\$30.00	\$24,630.00	ie Sharrows = 3 Ea, Crosswalk, Yield Lines
	Sign R2-1 (24" x 30")	5	Each	\$400.00		assumed \$80/sf (Includes post & slipbase)
	Sign S1-3 (36" x 36")	4	Each	\$720.00		assumed \$80/sf (Includes post & slipbase)
	Sign W1-1 (30" x 30") Sign W1-1a (36" x 36")	1 6	Each Each	\$500.00 \$720.00		assumed \$80/sf (Includes post & slipbase) assumed \$80/sf (Includes post & slipbase)
	Sign W1-1a (30" x 30")	10	Each	\$500.00		assumed \$80/sf (Includes post & slipbase) assumed \$80/sf (Includes post & slipbase)
	Sign W1-3 (30" x 30")	1	Each	\$500.00		assumed \$80/sf (Includes post & slipbase)
	Sign W1-4 (30" x 30")	2	Each	\$500.00		assumed \$80/sf (Includes post & slipbase)
	Sign W1-5 (30" x 30")	2	Each	\$500.00		assumed \$80/sf (Includes post & slipbase)
	Sign W1-6 (48" x 24")	2	Each	\$640.00		assumed \$80/sf (Includes post & slipbase)
	Sign W1-8R (30" x 30")	10	Each	\$500.00		assumed \$80/sf (Includes post & slipbase)
	Sign W1-8L (30" x 30") Sign W1-11 (30" x 30")	9	Each	\$500.00 \$500.00		assumed \$80/sf (Includes post & slipbase) assumed \$80/sf (Includes post & slipbase)
	Sign W1-11 (30 x 30) Sign W11-2 (30" x 30")	4	Each	\$500.00		assumed \$80/sf (Includes post & slipbase) assumed \$80/sf (Includes post & slipbase)
	Sign W13-1P (18" x 18")	10	Each	\$180.00		assumed \$80/sf (Includes post & slipbase)
	Sign W16-2aP (24" x 12")	2	Each	\$160.00		assumed \$80/sf (Includes post & slipbase)
	Sign W16-7P (24" x 12")	2	Each	\$160.00		assumed \$80/sf (Includes post & slipbase)
	Sign OM3-R (18" x 24")	13	Each	\$240.00		assumed \$80/sf (Includes post & slipbase)
	Sign OM3-L (18" x 24")	15	Each Each	\$240.00 \$600.00		assumed \$80/sf (Includes post & slipbase) assumed \$80/sf (Includes post & slipbase)
	Sign Custom Advisory Zone (36" x 30") Sign Custom 3ft State Law (36" x 30")	2	Each Each	\$600.00 \$600.00		assumed \$80/st (Includes post & slipbase) assumed \$80/sf (Includes post & slipbase)
	Sign Custom Stop Here (18" x 18")	4	Each	\$180.00		assumed \$80/sf (Includes post & slipbase) assumed \$80/sf (Includes post & slipbase)
	Flip Sign Direction	1	Each	\$50.00	\$50.00	
	Light Assembly at Cross Walk	2	Each	\$6,000.00	\$12,000.00	Includes power hookup and light assembly
	Relocate Sign	1	Each	\$400.00	\$400.00	
	Remove Sign	87	Each	\$100.00	\$8,700.00	
		1		L		
Roadway Subtotal					\$115,373	
	1	~~	NOTO		6400.000	
		CC	NSTRU	CTION TOTAL	\$423,098	
	Mobilization	4	Lump	\$27,000.00	\$37.000.00	Usually 7-10% of construction
	Traffic Control	1	Lump	\$27,000.00		Usually 7-10% of construction Usually 3-5% of construction
						Usually 1% of construction
		1	Lump	\$3,800.00		
	Maintenance of Traffic Items Not Quantified	1	Lump	\$3,800.00		Usually 30% of construction
	Maintenance of Traffic			\$115,000.00	\$115,000.00	Usually 30% of construction
	Maintenance of Traffic					Usually 30% of construction

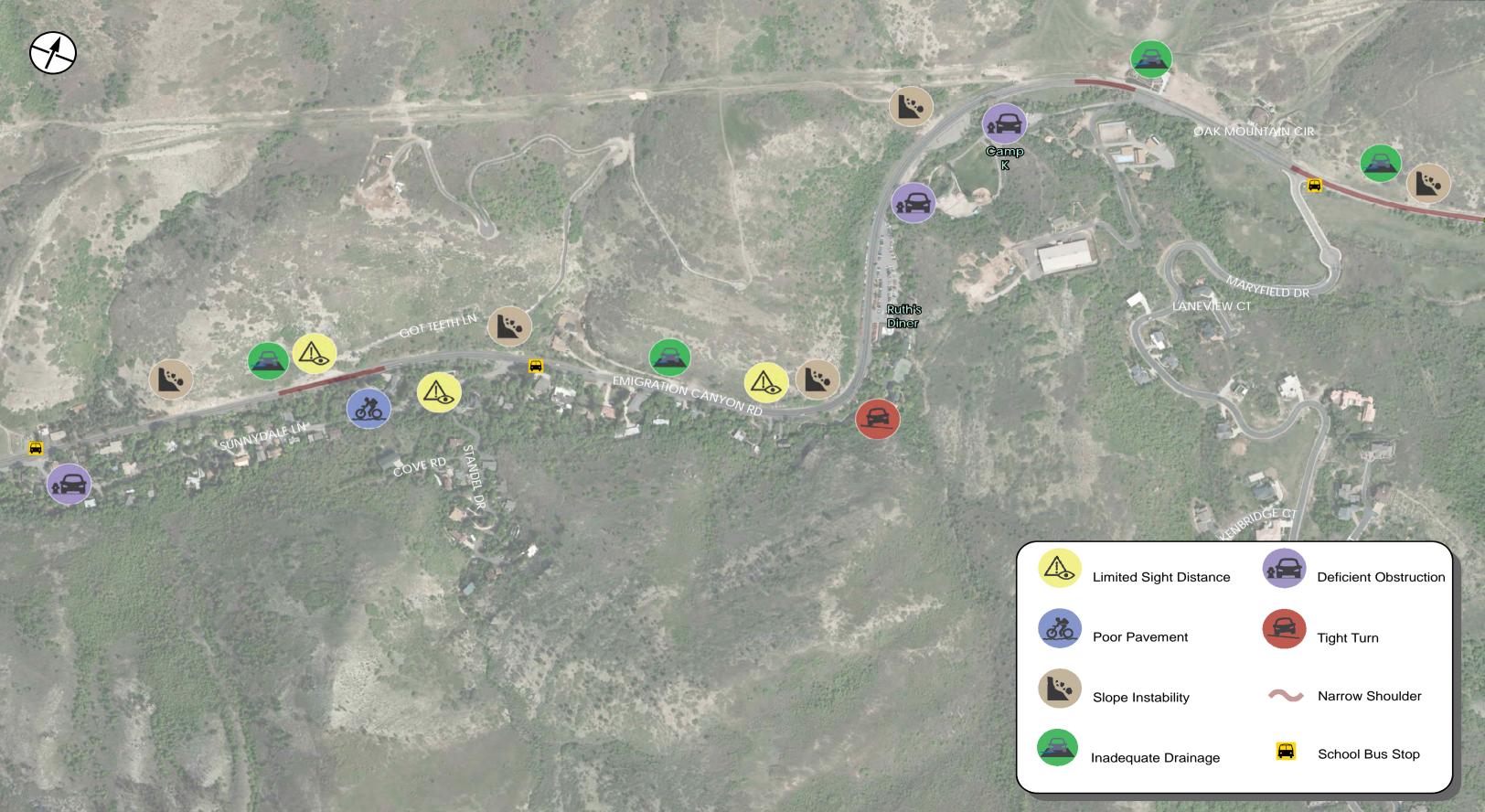
\$580,90

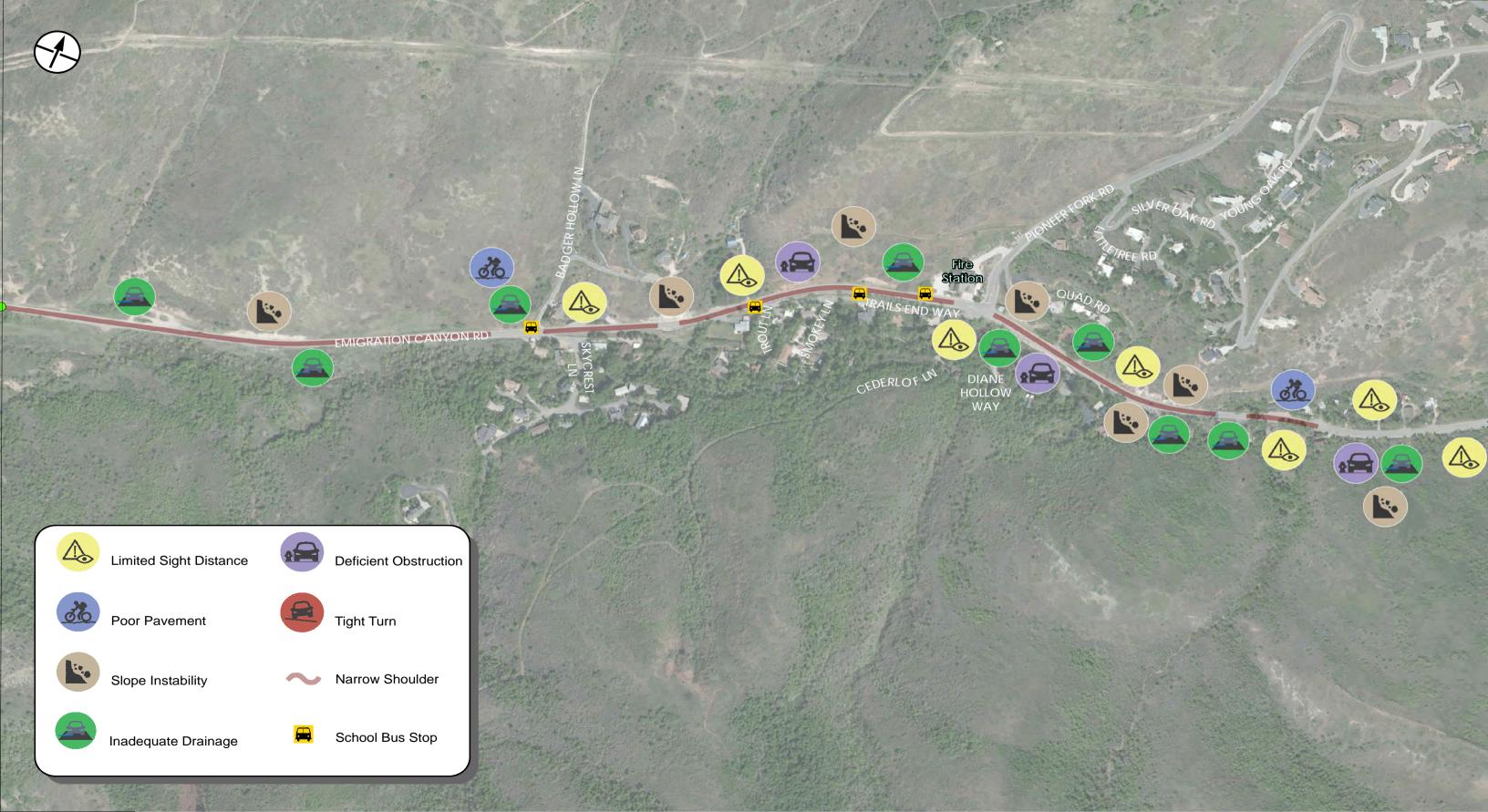
Emigration Cost Estimate

Item #	Item	Quantity	Units	Price	Cost	Remarks
	Rotomill Pinecrest to Summit					
	1" Rotomill				\$90,000.00	
	2" HMA				\$279,000.00	
	Striping				\$10,000.00	
				Total	\$379,000.00	
Thermoplastic N	lessages					
	Make all pavement messages thermoplastic			Additional	\$180,000.00	
Sawcut & Widen	Shoulder Margarthe to Pinecrest					
	Sawcut	12,650	ft	\$0.50	\$6,325.00	
	Asphalt Pavement	63,250	sf	\$9.00	\$569,250.00	
	Pavement Marking Paint (SWL)	278	Gal	\$25.00	\$6,950.00	assume 95 ft/gal for double application
				Subtotal	\$582,525.00	
	Items Not Quantified	1	Lump	\$174,757.50	\$174,757.50	Usually 30% of construction
				Total	\$757,282.50	

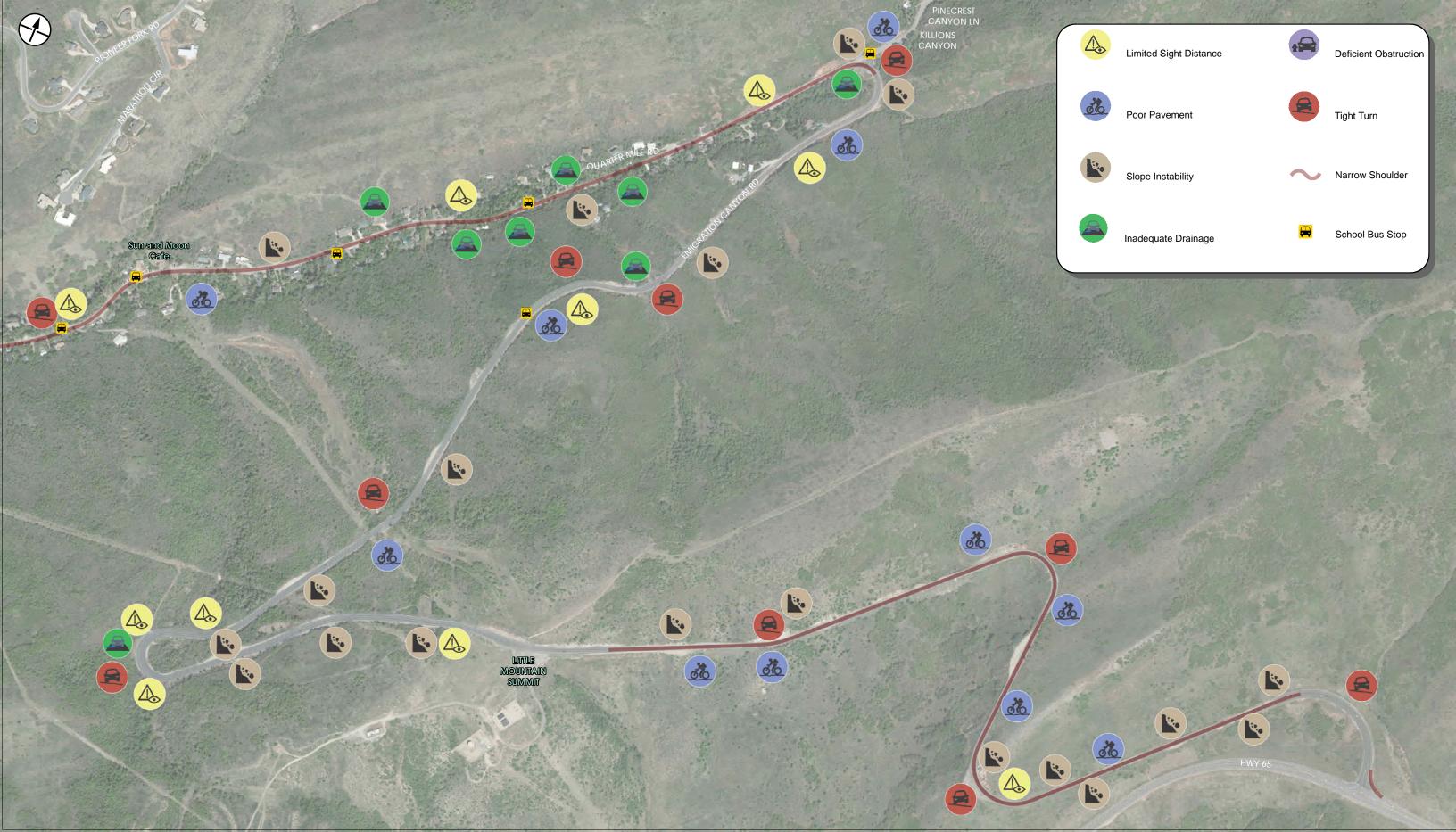
APPENDIX D: EXISTING CONDITION DEFICIENCIES











APPENDIX E: COMMENT SUMMARY

Emigration Canyon Transportation Study Comment Summary





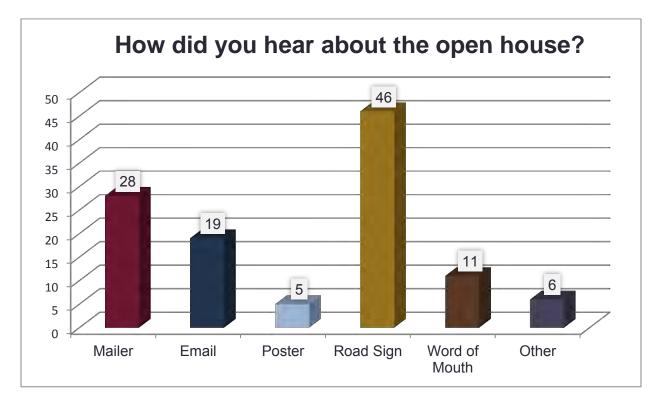


Salt Lake County Office of Township Services June 1, 2015

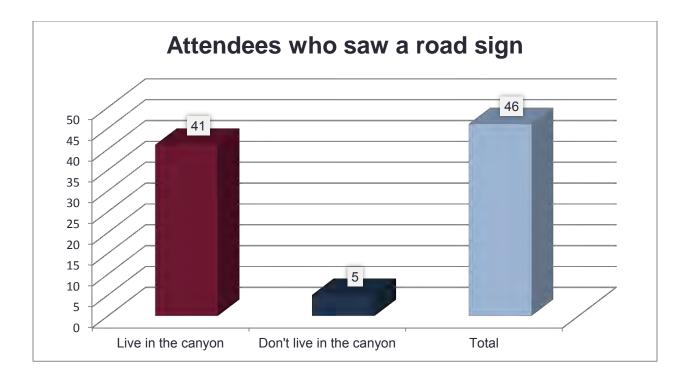
Open House Details:

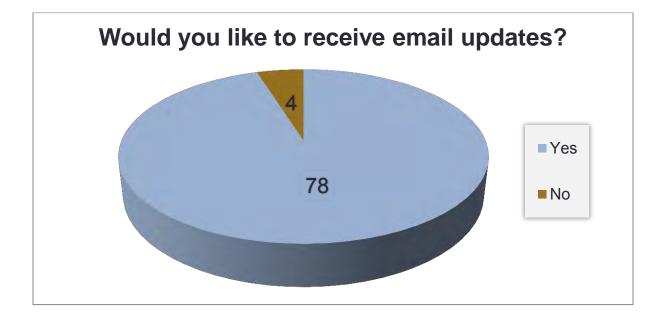
Date: Wednesday, March 25 2015 Time: 5:00pm - 7:00pm Location: Emigration Canyon Fire Station Number of Attendees: 93 Comment Forms Received: 36

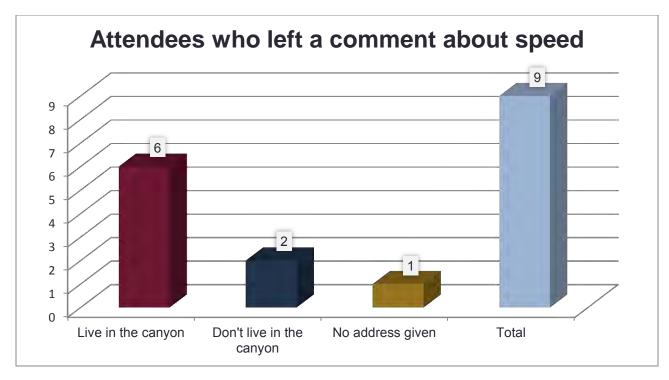
Sign-In Information: Number of attendees who live in the canyon: 76 Number of attendees who don't live in the canyon: 12 No address given: 5



Respondents could choose more than one of the above options.







Comment Form Information:

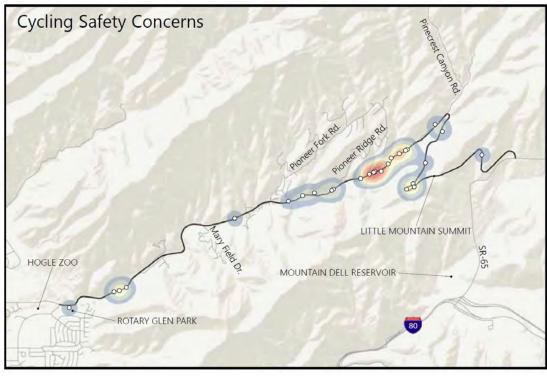
Common Themes:

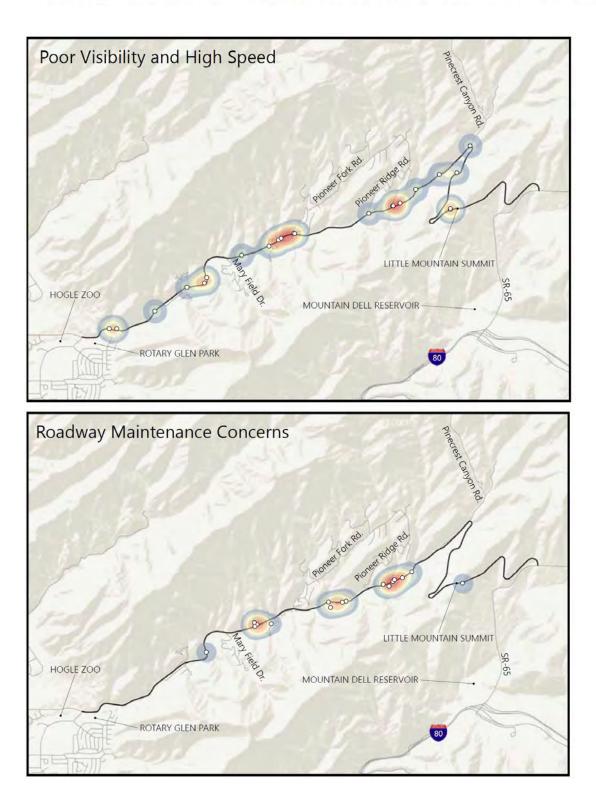
Common Comments	Number of Comments
Enforce road laws for bikers/cars/motorcyclists	14
Example: Rules applying to bicycle use should be better enforced	14
Reduce the speed limit	
Example: I would want more police, slower speeds & better road management.	9
Put up "Single File Only" signs for bikers	
Example: Also posting "Single File Riding Only" signs, there are several that say "Share the Road" but not many "Single File".	9
Think about residents, not bikers	8
Example: Remember the first priority of the roadway must be motor vehicles	

since they have homes in the canyon and are not just out for a joyride.	
Sweep road/bike lanes regularly	
Example: Sweep the bike path often & remove debris/rocks to keep bikers in that lane.	8
Don't widen the road	
Example: As a resident, I cannot see the value of widening the roads. Wider Roads will bring more traffic, more pollution and will not make the canyon safer.	8
Make bikers stay in the bike lane	
Example: I am a biker and I ride AND live in Emigration Canyon and it is unnerving to come up on riders in the middle of the street instead of in the bike lane.	7
Increase signage	7
Example: We need more signage.	1
Fix rock fall hazards	G
Example: Significant rock fall areas must be stabilized.	6
Repair/repave roadway	5
Example: Pave road as soon as possible with adequate bike lanes.	5
Motorcycles are noisy	
Example: My main issue with the road is lack of noise ordinance enforcement. This mostly applies to motorcycles which are a major nuisance, particularly on weekends.	5
Widen the road	
Example: Going down is a little sketchy. Widen please.	3
Blind corners are scary for runners	
Example: Blind corners, especially at mouth of canyon & by Ruth's should be corrected. Super scary as a runner, going around those curves.	3
Limit number of bikes in canyon	
Example: If we could limit the number of bikes per day or even per hour this would help.	2

Online Comment Map Results:







	ount of omments
Add your own idea	50
High speed travel here	11
Make it easier to cross the street here	12
Make it safer to bike here	50
Make it safer to walk here	9
Poor visibility (sight distance) here	16
Roadway maintenance needed here	26
Grand Total 1	

All Comments Received:

Method	Diago tall us about your concerns, issues or ideas for
Received	Please tell us about your concerns, issues or ideas for solutions on Emigration Canyon Road.
Open House Comment Form	Why not put in speed bumps & slow the traffic to improve safety in all of these plans what will you do for the residents in the Canyon? When did this become a permanent plan? I would want more police, slower speeds & better road management. Pushing for all of the needs of the cyclists is ridiculous they don't respect the canyon or residents.
Open House Comment Form	New guard rails are dangerous! CA used this style until it was voted out by public opinion.
Open House Comment Form	Appendix A of the assessment states Canyon is the "Crown Jewel" of the community. To urbanize the roads will affect the rural feel of the canyon. As a resident I feel this is mostly a reaction to a special interest group, recreational cyclists. While I respect them they often do not respect us as residents. Float a bond for the proposed work, that will really tell you how the people of SL Co feel just like other rec facilities cyclists should pay their share for improvements needed for their rec activities. I do like that people are recreating, it's important to be outdoors & cycling promotes a healthy lifestyle. As a resident I want to share the beauty of the canyon, I don't think you can install the infrastructure improvements outlined in the motorist & bicyclists safety assessment without marginalizing our "Crown Jewel"
Open House Comment Form	My concern is that this WILL NOT MAKE THE CANYON SAFER. For anyone. Bike lanes will draw MORE bikers, they will go faster. Not to mention: They do not use the wide lane when it's available!!! At the top where it is wide, the bikers are on the road OR IN THE ROAD!!! So what good will it do to spend millions putting in these wider lanes?!!?
Open House Comment Form	~5700 East- Clay & H2O seepage & rock fall- don't think a stucco wall would hold. I visually see deer coming over top & creating some of the rock/clay fall. Loose, unstable. Push back upper 1/2? Put barrier @ road level to capture rocks. More widening if \$ allows?
Open House Comment	Problem with water coming down from Emigration Oaks and running across the road in front of our house 5110 Emigration Canyon. It is flooding our front yard.

Open House Comment Form	My concern is with people who WILL NOT ride single file- I am a biker and I ride AND live in Emigration Canyon and it is unnerving to come up on riders in the middle of the street instead of in the bike lane. I don't mind slowing down either. There are only 2 lanes- many of which have blind curves. I think if tickets were given to those that don't follow that would curb it significantly-especially packs of riders who flip you off if you just let them know you're there on the road with them.
Open House Comment Form	Remember the first priority of the roadway <u>must</u> be motor vehicles since they have homes in the canyon and are not just out for a joyride. Secondly, the rules applying to bicycle use should be better enforced. I.e. single file riding. Signage should also be increased. A rule insisting a single file use <u>only</u> should be incorporated on this "skinny" canyon road. I don't endorse nor ever want extending the bike lanes.
Open House Comment Form	As a canyon resident I commute every day by bicycle to work and back (year round!) First and foremost, cyclists should ride <u>single file</u> and cars should <u>slow</u> <u>down</u> ! I've reviewed the study's plan and am excited about the many improvements being recommended safety education and improvements, etc. are all going to help! Most impressive is the level of detail contained in the study perhaps the greatest contribution to safety and mutual respect will be the sum of many small details (e.g. Joe Smolka's 79-point plan!) I have great respect for the canyon resident drivers who have consistently given me a wide berth during my rides/and shown great courtesy over the last 7 years. Now it's only going to be (get) safer and better for everyone!
Open House Comment Form	The most important sign on the road is "share the road". But share the road may mean different things to different people. Maybe we should define the 10 common sense elements of share the road & write them down on a sign at the mouth of the canyon & on a wallet card that could be handed to residents and bikers.
Open House Comment Form	The idea of "road 10 tags" for road bikes is not related to safety and should not be part of this initiative. I think if the shoulder is kept free of debris and the pavement is good 90% of the cyclists will stay in the bike lane (uphill direction)
Open House Comment Form	Cycling = -wider roads so cyclists can ride 2 wide on shoulder -regular sweeping -regular pot hole repair -signage for cyclists reminding to stay inside lines
Open House Comment Form	I don't believe that road expansion will lead to any real decrease in the problems and issues mentioned in the report. I want assurance that the consultants used prior to drafting the report are actually qualified, and that none of them are currently under investigation. I would further like to know that any and all construction firms under litigation or investigation will be excluded from the bidding process. Every road expansion project in the past has been done improperly, leading to increased hazard for residents, as well as recreational visitors.

Open House Comment Form	Our 2nd comment form: After everyone else rides off into the sunset- we- who live here are left with the mess to clean up- with our ears deaf from the motorcycles (no noise ordinances?) we wish to share- but we <u>all</u> have a stake in this Canyon- it should not all be just for bikers (we are bikers!) - we stand to loose a lot in these changes- I don't think most people who use the Canyon would welcome it if they were not considered as well where they live.
Open House Comment Form	Bikes going really fast downhill from bottom of little mt. Pincrest area- knocking you off your feet when you go to get mail- bikers riding <u>3</u> abreast, to make you go in the middle of the road- into head on traffic. Speed of 40 mph in residential area- motor cycles 20 in & now speeding in the canyon on weekends.
Open House Comment Form	 Pave road as soon as possible with adequate bike lanes. NO CHIP SEAL. Fix red cliff on south side of road at about 5670 East. Install signs to ask motorists to be considerate of bicyclists and bicyclists to be considerate of motorists. Follow the Emigration Study Recommendation that the bike lanes be swept weekly. (at least when the rocks are falling)
Open House Comment Form	Change the stop sign at the west end of Sunnydale Ln to yield. And enforce it! Put "no stopping" signs at the same end, people and deer hunters stop or park down there and it is difficult to see up canyon traffic. Better snow removal so cars can pass each other on the lane.
Open House Comment Form	<u>IDEAS</u> = sweep the bike path often &debris/rocks to keep bikers in that lane. We need rules for biking along Emigration. Bikers don't respect cars and its hard for cars to safely drive the canyon to & from the house when bikers are all over the road (2 & 3 across) riding in the car lane; then when you are trying to go around several bikers safely, you have an oncoming car doing the same thing almost causing a head on collision.
Open House Comment	
Form Open House Comment Form	Slope instability & rocks on the road We think the speed limit should be decreased to 30mph. This would benefit all users (bikes, walkers- weather walking your dog or child or just yourself) a bike lane extension would further compress us all together- decreased speed would give everyone more time to react. The existing bike lane is most often dangerous for bikers since it is full of debris- even the day after the street sweeper. The increased transit time from rotary park to our house is 3 additional minutes- depending upon traffic. This new speed limit would have to be enforced- the 40 mph is not- especially on weekends the speeding is a big issue. But since the residents of the Canyon pay extra for police enforcement already- this should not be a problem!
Open House Comment Form	Looking at your work study I see nothing that addresses the safety of the residents. I'm not really sure why the people that live in the canyon are not considered when talking about improvements. The most dangerous thing is speed and widening the ROAD will only MAKE the CANYON RD a better choice for people to make it a "main" road from PC to Down Town. Put something in place to slow people down

Open House Comment Form	My main issue with the road is lack of noise ordinance enforcement. This mostly applies to motorcycles which are a major nuisance, particularly on weekends. These often violate existing but not enforced laws, and sometimes speed limits. Postage and enforcement of noise ordinance laws would greatly improve canyon living.
Open House Comment Form	Widening the road, digging out uphill side, removed preexisting grass that held up the hillside. You also removed the red sandstone out crop just below the fire station. Removing the aesthetic nature of the canyon. "Stupid"
Open House Comment Form	There are way too many times cyclists must go out of bike lane & drivers cross double yellow line. The amount of users has increased (^ cyclists ^ runners) bike lane must <u>exceed</u> legal minimum by a lot to accommodate amount of users, which is sure to increase as the years go by. Significant rock fall areas <u>must</u> be stabilized. Weekly sweeping just does not do the job. Just 1 rock will cause a cyclist to move out of lane. Rocks fall constantly. Blind corners, especially at mouth of canyon & by Ruth's should be corrected. Super scary as a runner, going around those curves. An idea would be to paint the bike lane stripe a double yellow where both drivers & bike lane users should not cross over due to blind spots.
Open House Comment Form	My main concern is the very loud motorcycles. We are right off the main canyon road and our weekends and sunny evenings are marred by the muffler- less packs of motorcycles roaring by. It's a public nuisance and I hope law enforcement resources can be assigned to reign them in. Even signs warning of fines might help.
Open House Comment Form	Noise levels from vehicles (namely motorcycles) equipped with loud exhaust systems (and mufflers in particular).
Open House Comment Form Open House Comment Form	If you continue to widen the road it will only cause drivers to drive faster. We need a toilet built at the midpoint. Or at the fire station for bike & runner traffic. I believe widening the bike lane as much as possible and enforcing the traffic laws both for cars coming over the double yellow line and for bikes riding two abreast are necessary. Also posting "Single File Riding Only" signs, there are several that say "Share the Road" but not many "Single File". Lowering the speed limit should not be a consideration. The other improvements to the Canyon Road that have been identified by the working group will help also.
Open House Comment Form	I live on Killyons Canyon Road. The upper section of this road (~1/2 mile) is unpaved and always in poor condition after winter. It should be paved, and 6/9 residents of the upper section are in favor, 2 opposed, and 1 neutral. Also, parking at the end of the road for bikers/snow shoers using the trail to Utah Open Lands needs to be provided.
Open House Comment Form	As a biker <u>and</u> resident of the canyon, I think bikes need to be registered & ticketed for violating the law (riding in middle of road is my pet peeve.) More law enforcement- especially on weekends- would be helpful.

Open House Comment Form	My biggest issue in driving the canyon is the one-out-of-ten motorists or bicyclists who is in a hurry. These people (motorists) tend to tailgate, pass 0 in hazardous spots, cut corners, etc. & the generally create a hazard. Bicyclists who are racing (the clock) do the same. I don't know what more we can do to encourage/enforce more sane road use, but I'd be happy to participate in a focus group.
Open House Comment Form	Driveways & roads that empty onto Emigration Canyon road at <u>very</u> steep grades- in slippery conditions, these pose a hazard. People driving out of Ruth's often fail to check for oncoming- they seem to think Emigration Canyon Road is Ruth's driveway.
Open House Comment Form	Stop the speeders and drunk drivers!!! As a resident, I cannot see the value of widening the roads. Wider Roads will bring more traffic, more pollution and will not make the canyon safer!! Many accidents are caused by distracted drivers. How do you plan to resolve this problem? If you widen the roads how do you plan to ensure that the bicyclists stay in their bike lane? Right now they ride side by or more. Plus, they use my yard as a urinal! I live in the canyon & expect a safe environment. One last item, has a survey been done on where the accidents occur and what caused them?
Open House Comment Form	 While you are debating what to do Please repair the roads/bike lane and stabilize the hills. Sweep Bike lane. DON'T WAIT A YEAR TO DO SOMETHING.
Open House Comment Form	If we could limit the number of bikes per day or even per hour this would help. TAKE a page from the National park play book, require a permit to ride in the canyon with a lottery and limit the number of bikes per day. The cyclists could carry a Transponder. Put a sign at the mouth of the canyon explaining the rules. UPP could enforce this like the car pool lane. I am not in favor of widening the road. First fix the slide areas, retain the rocks and clean the road on a regular basis <u>Sweep</u> . We would like to preserve the canyon feel and livability of the road.
Open House Comment Form	 I am a resident of the canyon & a cyclist. I have had only 2-3 rude car drivers, maybe that is because I try and stay in the bike lane. I will ride two abreast when the bike lane allows, We need more signage & "open year round RR" We need to improve the areas where there is no bike lane- especially in uphill direction. Hill side stabilization a must. Crack and asphalt repair by professionals not the crew that recently (last year).
Emailed Comment	I attended the fire station meeting last week which was to gather input from residents and users of the Emigration Canyon transportation system (bikes and autos). I have heard from several sources that the County has set aside considerable funds (? 1 million \$) to address problems with transportation in Emigration Canyon. This is excellent, but I was surprised to see that there was little to no indication on the maps presented of any problems in Killyons. Given our extensive discussions with the County regarding issues with our road (resurfacing needs, trailhead parking problems, increased traffic due to Utah Open Lands, etc), I think this omission was inappropriate. Doesn't the County

consider Killyons and Pinecrest roads as belonging in the "Emigration Canyon Transportation System"? Is the focus of this effort mainly to improve bike safety? Is the County considering using any of these funds for improvements in Killyons?

Emailed I cannot attend the meeting on 3/25 in Emigration Canyon, but I would like to Comment I have lived in the canyon for 31 years continuously and for 5 years previously. I have written numerous times about the bicycle issue in the canyon. This is an unmitigated disaster. There is not room for bikes, runners and cars, especially since the bike riders (I ride a bike too, so this is not coming from an unsympathetic source) insist on riding 2, 3, 4 abreast and sometimes in groups that exceed 4. This simply cannot continue. Riders, runners and motorists are going to be injured or killed. All it will take is a very minor "move" at the wrong moment. I dread the coming of spring and the obstacle course that the canyon becomes morning, noon and night and especially on weekends. There must be definitive action taken. Half way measures won't suffice.

Emailed Thanks for taking on this evaluation and for the progress to date. I am a Comment resident of the canyon (Emigration Oaks), and regular bike commuter, former chair of the SLC Mayor's Bicycle Advisory Committee, former President of Rocky Mountain Cycling Club, a certified Effective Cycling instructor, member of the Bonneville Shoreline Trail Executive, and former member of the Board of the Emigration Oaks Homeowners Association. I have ridden Emigration Canyon for the past 25 years for one purpose or another and this is, by far, my most regular riding area. Based on this experience and riding on roads and bicycle facilities all around the world (I travel with a folding bike), I think the solution to most of the challenges in the Canyon is actually guite simple. We need a proper, highway standard bike lane in BOTH directions along the entire length of the Canyon. This will give all users suitable space and resolve almost all the tensions and dangers of riding the canyon. The difference in the riding and driving experience in the Canyon is dramatic between the areas that have wide bike lanes from those that do not. It is also crucial to consider improvements in hillside stabilization as the effective width of bike lanes (and the roadway) is highly dependent on the amount of debris that slips from the hills onto the road surface. This winter (2014/15) has been the worst in this regard, while it has also been the best in my memory for cycling. It is only a matter of time before falling rocks cause accidents (for cyclists or motorists) on the Canyon road. A useful adjunct will, of course, be education of all users of the Canyon Road; education through careful signage, Township Newsletters, and the press. But if there is space for all to sensibly share the road, the education effort will also be simplified. We are so lucky to have this road and the cycling facilities that are in place. We who live here value many facets of the nature, the recreation opportunities, and the friendly neighborhoods. I hope

that the County can find its way to support the modest improvements that my experience suggests will be all we need to make the most of these opportunities and enjoy the Canyon, as residents and visitors, forever. Many thanks.

Emailed Hello, I am writing because I understand you are seeking input on the multi use Comment perspective of Emigration Canyon road. I drive and bicycle on the road fairly regularly. I believe any solution to conflict between users must include a continuation of easy and safe bicycle usage. No matter what is done to the road, cyclists will use it, so keeping everyone's safety in mind while designing a road for better overall flow is a logical path. Wider shoulders would give both motorists and cyclists a better experience. Speed bumps would slow traffic (excessive speed in the canyon is a problem for all users as it creates hazards). Using blacktop the road instead of pitch and seal would certainly make cycling more pleasant. I notice I need at least one gear easier after a fresh resurface. That is with 2 skinny tires. The extra fuel used by four fat tires on a car going over pitch and seal as opposed to blacktop winds up costing the motorist and polluting the canyon. Good luck with the planning

Emailed Thank you for your efforts regarding transportation and recreation use in Comment Emigration Canyon. As a cyclists that lives at the mouth of the Canyon, I use the Canyon guite frequently. I've had both good and bad experiences with cars, runners and other cyclists. Your task is a difficult one and I don't know the solution. I do know though that attitudes towards cyclists need to change and that begins with cyclists themselves. Just yesterday a young cyclists was riding down 1300 S blowing through stop signs and red lights and it ticked me off big time. I'm certain other drivers were just as mad as I was. THAT is why people hate us and is the root of our perception problem. I don't know how to resolve that type of behavior as there are motorists that behave that way too. All segments of society have idiots that feels rules and good behavior don't pertain to them. Maybe our elementary schools can address the younger generation and somehow make obeying stop signs and red lights "cool". :) In the Canyon it seems riding two abreast angers drivers. That needs to be addressed. My feeling is 2 abreast should be legal and that would calm drivers down somewhat. Riding and running is social and side-by-side will not stop. Just make it legal and everyone will eventually come to a level of acceptance and tempers will die down. Walking/running against traffic is a bigger concern to me needs to be addressed. Riding/walking/running against traffic is very dangerous and should be illegal. Period. It's just not safe for cyclists or motorists. On more than one occasion I have pulled out to the left of the white line to pass runners/walkers coming down canyon against traffic only to be buzzed my a motorist who refuses to cross the yellow center line. And almost

always there is no motor traffic coming down canyon preventing the motorist from moving further to the left. I've often wanted to ask an aggressive motorist what they would do in the same situation if a 6 or 7 year old were riding their bike to the left of the white line. Would they buzz them too to "show them" and teach them a lesson? I have children and grandchildren that would be just as devastated if I were to be senselessly run down as would the parents of a child that was needlessly run down. A life is a life whether it is in Lycra or Hello Kitty garb. My solution to running/walking against traffic is get a dorky mirror for your glasses so you can see traffic behind you if that is why you go against traffic. That practice is as dangerous in the Canyon as it is on city streets and sidewalks. It makes absolutely no sense and it should be stopped immediately. Tradition & "safety" is not an good reason to continue this dangerous practice. The double yellow line also needs to be addressed too. Motorists seems to treat the yellow line as a fence, even when the downhill lane is empty for as far as the eye can see. I do believe the law has been changed to allow motorists to legally cross a double yellow, but I don't believe most motorists are aware of it. And please correct me if I am wrong. If I'm correct, the Canyon residents need to be educated that it IS legal and prudent action to take for the safety of all. Maybe signs in the canyon would work. Maybe a sign that the informs motorists that double yellow passing is okay if it is safe, and, a sign that says riding/walking/running against traffic is illegal. And another that says 2 abreast is legal but 3+ is not. And have the Canyon police enforce the rules. After a few tickets all users would understand and get on board. That seems like a simple and inexpensive solution to at least a few issues facing Emigration Canyon. As for road width and bike/running lanes, that's a tough one with no simple inexpensive solution. Good luck on that one :) I hope my input is constructive and helps in some way. And I am in no way defending bad behavior by anyone as acceptable. We are all in this together so let's find a solution and learn to get along. Just a final thought. How about a BBQ this summer at the mouth of the Canyon for bikers/runners/walker/residents to rub shoulders and get to know each other. I bet we can gather without throwing down :)

Emailed Hi: I didn't find a way to give general input on the emigrationstudy.com website, Comment but the site did mention submitting comments to you; are you the right contact person? If not could you forward these on? I use Emigration Canyon as an occasional motorist, but much commonly as a road cyclist. As a cyclist I find it to be a very enjoyable canyon to ride as the traffic isn't usually too heavy, and auto speeds are moderate. The quality of the road surface on the shoulders, and the often inadequate shoulders (in terms of width) are the 2 biggest problems I find. I don't witness a lot of conflict between cyclists and motorists, as I try to ride as far to the ride as possible, and to not impede traffic while

	biking with others. As a cyclist, I find Emigration to be very motorist-centric (as are all of our other roads), and would suggest that motorists would benefit from being reminded that we have a 3 foot law, and that it is the responsibility of the passing vehicle to maintain that; perhaps that message could replace the nice but overly general "share the road" signs. I believe that motorists are legally able to cross the yellow line when passing slower vehicles line farm implements and cyclists, and perhaps motorists need to be reminded of that, as I find that many motorists simply do not want to change lane position while passing. As a motorist I am sometimes frustrated with cyclists who don't seem to be very considerate of faster-moving traffic by keeping to the right as much as possible. I try to remind myself, in those situations, that cyclists are humans and, even when they are being irresponsible, that I have to respect their safety (I remind myself of that when I'm driving around irresponsible pedestrians and motorists, too). Thank you.
Emailed Comment	Just wanted to voice my support for promoting safe, accessible, continued and expanded pedestrian and cyclist access along the Emigration Canyon roadway. A defined bike lane up the canyon will continue to enable safe access for drivers and cyclists' and runners alike. I have signed up to receive updates, etc. Thanks
Emailed Comment	Thanks for your work to make Emigration Canyon safer for all that use it. I use the canyon to cycle as well as to run. I am writing to support efforts to continue accessibility to riders and runners as well as to promote safety. As a cyclist, especially, safety is a foremost concern. I know of too many accidents and deaths related mostly to collisions with automobiles. Aside from education, I support a safe, clean (not covered with debris) and smooth(not full of potholes and bumps) shoulder of sufficient width to make it safe even if cars decide to park there. I support signs advising motorists to use caution because of the large number of cyclists that use the canyon. Of popular rides in the SLC area, Emigration is great, because of its generally smooth surface, motorist awareness and reasonable shoulder. Recently Utah was identified as a top bike friendly state. I am not sure I agree with this but I do agree that many cyclists live and visit here and it could be a top destination. Thanks again for your continued support of persons who are interested in pursuing an active, healthy lifestyle in safe environment.
Emailed Comment	Dear Sirs,
Johnnent	We live at 6720 Emigration Canyon Road. Our safety issues are these:
	1) The numerous bicyclists who race down (higher than the speed limit) Emigration Canyon riding the double yellow line (yes, in the middle of the road)

and refuse to move to the side for safer two-way vehicle traffic.

2) The motorcyclists and small vehicles who street race at very high speeds (using both lanes) up the canyon in our area around dusk during the spring/summer months.

We've reported these issues to the police numerous times, but nothing has been done to date.

We ride bicycles ourselves, but numerous bicyclists ride irresponsibly and disrespectfully...without fear of legal consequences for breaking the law (which vehicle drivers are expected to obey) or injury.

Respectfully,

The Fourts

Emailed I am a cyclist that uses Emigration Canyon, typically 4 to 6 times per month.
 Comment Mostly on weekends with the occasional weekday evening ride. I have been using the Canyon as a cycling route for 20 years. While I do not know ALL of the concerns residents of the Canyon have, I have herd through the grapevine some of their concerns.

Knock on wood, but I can only think of couple instances where I have had someone honk at me. There was one very weird instance where I had a motor cyclist yell at me, which was weird one, because I happened to be on or to the right of the white line, and two, this was a motor cyclist, so passing me was not a burden. While my adverse interactions with motorists in the canyon have been limited, I have seen quite a few instances.

A few thoughts are on my mind, that would help improve auto cyclist and auto runner interaction and safety.

1) Motorists need to slow down and drive the speed limit. Most conflicts I have seen are because a motorist is in hurry and has no patience for the other canyon users. The instances when I feel the most unsafe are when motorists go flying by above the speed limit. Emigration Canyon is not I-80. It is a scenic road and does not need to be traveled at high speeds. People need to slow down and enjoy the scenery!

2) EVERYONE; motorists, joggers, cyclists, all need to be better educated on common courtesy and proper use of the PUBLIC road. Requiring cyclists to ride single file is not always safe. Banning cyclists is not going to fly either. Motorists can be more courteous but so can cyclists. Joggers could help by filing into single file when running against traffic and they encounter cyclists.

This would help us so we don't have to move so far out into the road to pass the joggers. Cyclists, if riding two abreast, could file into single file if they hear a motorist. This is courtesy, but should not be required.

3) A road etiquette sign could be placed at the mouth of the canyon, Little Mountain Summit, the Fire Station, and the intersection of SR65 and Emigration Canyon Road (East Canyon / Parley's). This road etiquette sign could be similar to the trail signs we see that recommend, hikers yield to bikers, bikers yield to horses, etc. This would be much less expensive than widening the road to create dedicated bike lanes.

4) Something that should be on the road etiquette sign, or even another sign... ALL CYCLISTS and RUNNERS MUST REMOVE AT LEAST the road side ear bud. I do NOT ride with any ear buds listening to music. I cannot tell you how many times I have yelled on you left or even said hi to a cyclists or runner as I passed them and gotten no response because they could not hear me due to their ear buds and music. You cannot hear the traffic around you if your ears are plugged with music.

5) Drivers need to understand when we are descending from Big Mountain and Little Mountain and traveling at speeds of 25 - 40 miles per hour, cyclists need more than a 2 foot narrow swath of road. There is often debris on the right hand side of the road that if hit at high speed can cause crashes. We also need room to maneuver around animals. One day descending the steepest part of the Canyon, there was a fox in the middle of the road that cause a number of us cyclists to swerve way out into the road. Motorists need to recognize we need some space.

6) All of the utility digs, patches are repairs are dangerous on the descent and cause cyclists to be further out in the traffic lane. There are a number of utility digs and patches in the asphalt that make the asphalt very uneven and bounce us around way to much on descent. While cost is an issue, a milling and reasphalting of the canyon would go a long way in improving safety. A smooth road is safer for cyclists than a super rough road. The condition of the asphalt has deteriorated greatly over the last couple of years.

7) Riding two abreast is safer for cyclists... Please review this link to an article on cycling. It explains very thoroughly why riding two abreast is safe for cyclists. http://www.bikewalknc.org/2015/04/why-cyclists-ride-two-abreast/

The above are some thoughts I have. PLEASE forward these to the committee for review. Please feel free to email or call me if you need be to elaborate on any of the points I have tried to make.

Emailed	
Comment	

Dear Ms. Adams,

I was so excited to see that I would have a chance to provide input on what it was like to be a canyon resident who traveled on Emigration Canyon road on a daily basis. I was very disappointed in the survey format. It is true that the road needs many improvements, but for most of us it is difficult to pinpoint an area of the map where a specific hazard is present. I was also disappointed that there was no interest group identified as residents who would simply like to walk on the road either with their families or their dogs. For these reasons I would like to provide my comments in this email and hope that this input is included in the overall survey results:

Those who use the canyon road for recreation in general have little regard for the traffic needs of canyon residents. Here are some examples:

Bikers ride 3 or 4 abreast and only grudgingly move out of the way. Skateskiers who skate up the canyon push their skis into the traffic lanes so that motorists must slow down. When cars are travelling in both directions on the road while bicyclists, joggers, or skate skiers are present it is taken for granted that the motorist will adjust their driving, not the other users of the road. Skateboarders board down the canyon with a companion car following behind to prevent other motorists from running into the skateboarder.

For our family, walking a dog or pushing a stroller was so hazardous that we eventually stopped all-together. We have moved away from Emigration Canyon road. What should have been a peaceful place to live was made hazardous by those who only visit it occasionally. If Emigration Canyon road is to be designated for recreational use for the entire county, then either the road will need to be greatly modified OR there needs to be more frequent monitoring and citations issued to those recreational users who create hazardous conditions. Thank you for taking the time to review my input.

Emailed I wash to make comments about Emigration Canyon pedestrian safety. I walk Comment my dog twice a day in the canyon on leash and although I am very careful, I am in great danger and fear for my life because the bikes are riding irresponsibly. I am 69 years old and it is very dangerous because about 40% of the bikes use the north side of the main road as a race course. They are going so fast (30+ mph) that it is unsafe to be anywhere near them. Many do not give me the right-of-way as the law requires. If they would slow down to 20 mph this would be a much safer neighborhood as it was 20 years ago. I have been hit by speeding bikes 3 times in the last several years. I have seen a loose dog hit by a bike who was going so fast he could not stop for the dog emergency. This is NOT A RACE COURSE, IT IS A NEIGHBORHOOD THOROUGHFARE, THE

	 BIKES MUST BE REQUIRED TO RIDE SAFELY AND RESPONSIBLY. A posted speed of 20 mph for bikes and adequate enforcement would make a huge safety improvement. Also going up and down canyon almost all problems and unsafe conditions are caused by bikes riding tandem and out of the bike lane. The tandem bikers yell back and forth to talk and it is very unpleasant to listen to them yell. The canyon was so much nicer and safer before the yelling, out of control racing bikers overran it. Bike riding should be SINGLE FILE ONLY and should be posted and enforced by the sheriff strictly!
	If money is needed for enforcement or bike lane improvements, a toll booth could be set up at the bottom of the canyon and charge the bikes \$1 to enter the canyon. Also verification of bikes driver licenses should be done at the toll booth so they can be held accountable for their actions in the canyon just as any vehicle is held accountable. Strict enforcement is required because so many bikers (and motorcycles) are very careless and ignore the traffic and bike laws. Use toll booth money to pay for enforcement and make them comply. Thanks
Emailed Comment	I tried to use the "map" for comments, but couldn't figure out how to drop a pin. so here are a few comments:
	 I live in Park City, but often come down to SLC where it's a little warmer to ride my road and mountain bike. Immigration is often my destination for a quick training ride. The new restroom facility at Rotory Park is great, especially having the sink outside the enclosed toilet so you don't have to wait while someone washes their hands. Also, on my first ride after it was installed, my bike seat was loose and fell down a 100 yrs up the canyon. I had no tools and remembering the tool/stand I returned and fixed my bike and finished the ride otherwise it would have been a wasted trip from PC. Also, for years, I have ridden the every other week Emigration TT from Rotory Park to the top of Little Mt. This is a great road bike training event. I believe there is also a bike tool/stand at the fire station. Bathroom facilities at the fire station and top of Little Mt would be ideal. Often when riding a bike you have to relieve yourself shortly aft starting your ride. The Fire Station would be a perfect location for that. Once

riding hard, your kidneys shut down and a nature break usually is't needed for hours.

- A wider bike lane, better pavement and rock erosion control is definitely needed.
- My personal 1st priority would be a connection from Emigration to the top of Summit Park. This would provide a a road bike connection from Park City to SLC without getting on I80.

Emailed Comment	The interactive map does not seem to be accepting any pins or further comments. I am concerned that the bicyclists do not follow the rules of the road and have a disregard specifically for the rules as they apply to school bus
	stops. On several occasions bicyclists failure to stop has caused close calls with the students entering and exiting the bus. I am appalled at the bicyclists who want to just pick and chose which rules they will follow.

- Online Map I would like to make a "comparison recommendation". Many years ago, in Colorado, this same problem came up in Glenwood Canyon, on I-70. Residents were up in arms. "Don't ruin our beautiful canyon!" The state called in consultants and engineers, and came
- Online Map There should be a drinking fountain right here. It would be nice for ducks, deer, even people who wander off the main road.
- Online Map Separated bike/pedestrian lane similar to one in Zion/Springdale
- Online Map Not safe to have vehicle, cyclist and pedestrian in the same road section.
- Online Map Separated bike lane on the uphill side only
- Online Map disregard purple comment wrong location. Would be nice if we could move points or delete after they have been submitted.
- Online Map Speed limit in the canyon needs to be 25mph
- Online Map "Make it quiet: the canyon needs noise control.
- Online Map No more thundering motorcycles and hotrods with modified mufflers."

Online Map The improvements (trash enclosure?) has helped make this intersection safer, but it is still dangerous when a cyclist is heading downhill and traffic is headed uphill toward Pinecrest. Perhaps a yield sign for automobiles and cyclists headed straight thr

Online Map I believe that the chipsealing on this road was done improperly and could have been used to help resolve cyclist/motor vehicle conflict. The initially rough

	surface has been smoothed somewhat in the vehicle traffic lane but has not smoothed at all in th
Online Map	Public source of drinking water at the top next to the restrooms?
Online Map	How about some benches or picnic tables to make this a (more) inviting rest stop?
Online Map	"This lane going up hil has a good shoulder.
Online Map	Going down is a little sketchy. Widen please."
Online Map	The entire canyon needs good signage telling cars to watch for bikers and bikers to stay in the bike lane and single file. The bike lane needs to be marked well, and it needs to be clear to cars and bikers that this is the bikers space.
Online Map	Add a drinking fountain here at the fire station. Why not??!!
Online Map	Truly the best thing you could do for the canyon is to ensure the bikers have a good bike lane all the way to the top of little mountain and even down the back to east canyon. Then you must put in good signs that tell bikers to stay IN the bike lane, an
Online Map	This is a dirt area used for a parking lot by cyclist, runners, hikers and visitors to the zoo. Many days during the summer and on weekends this area is literally a zoo of people crossing the street and jockeying for parking spots. I think this lot sho
Online Map	This is another unpaved area used for parking sometimes. In the summer it attracts overnight campers and is frankly creepy knowing somebody is sleeping overnight in the bushes here. I am sure most are harmless. Ask the Sheriff what should be done.
Online Map	I see more and more runners in the canyon every year. I have seen Saturday morning running groups training. This is especially true since the canyon has become host to several competitive runs per year. This is fine and great to share the canyon, but
Online Map	Trash facilities and reminder to clean up after yourself at entrance of canyon!
Online Map	I would love to see guidelines similar to City Creek for multi-modal users. Often, runners are trying to share the space with cyclists, who are forced out of the shoulder, but are going uphill, which then impedes residential and canyon

	access. I am sur
Online Map	In general, this canyon is not only a great asset for the road biking and running community, but it is also very popular and carries a lot of bike and runner traffic. Cyclist and runners are very respectful of each other and most autos/cyclists/runners
Online Map	Various areas - there are portions of the canyon where there is not enough shoulder for bicyclists. I think cyclists who ride out in the rode where there is a shoulder for bicyclists should be ticketed. Also, there are areas where rockslides block the ro
Online Map	THE ENTIRE PATH IS NOT WIDE ENOUGH AND THERE ARE ALWAYS ROCKS ON THE PATH. BIKERS SWERVE INTO THE LANES TO AVOID ROCKS MAKING IT DANGEROUS FOR CARS. NEED TO PLACE A NICE METAL CAGE TO PREVENT ROCKS FROM FALLING INTO ROADWAY. SOMETHING AESTHETICALLY ATTRA
Online Map	Emigration Cyn is unlike other local canyons in that it is a residential canyon made up of private properties. In order to make the roads safe for autos, foot and biking the county will need to exercise its authority & assume 4ft both sides of the road,
Online Map	Permanent restroom and water fountains
Online Map	There should be lighted blinking speed limit signs that show your speed like on 1300 East throughout the canyon. Many cars speed up and down the canyon. I bike the canyon 3-5 days per week for 15 years.
Online Map	Stabilize hillside - keep shoulder clear of dirt and rocks
Online Map	Lower the speed limit on Emigration Canyon Road to 35 MPH. This will help protect bicyclists (I'm not one) and pedestrians, and may cut the number of motorists who aren't residentswhich would also help protect bicyclists and pedestrians. And ask traffi
Online Map	Motorcycles are excessively noisy. Especially on weekends. Large groups and obnoxious to residents.
Online Map	Cyclists shouldn't ride three abreast.
Online Map	improve parking at base of canyon
Online Map	build community/awareness through campaign where users identify through sticker their common interest in using the canyon (residents and bikes) - Sun

	Valley has similar program
Online Map	Instead bike lanes on outside, consider shifting cycling path to one side and operate 2-way. The Strand in So. Cal.
Online Map	need more parking for hosting events and consider adding sidewalk or walking areas along frontages of fire stations since many people must walk along road to and from the fire station
Online Map	City built bike lanes to design standards up to County line. Need to do same all the way to East Canyon.
Online Map	City and County should post the road for single lane bicycling only and bicyclists must use bike lanes (in areas where they exist)
Online Map	special events can be problematic. trash clean up is an issue. notification to residents should be better to avoid block us in.
Online Map	Why do Harley Motorcycles get to ruin our peaceful experience in the canyon?
Online Map	Is there a way to put in a toll booth like in Mill Creek. The money can be used to improve the roads, improve safety for pedestrians, bikers and cars. Creates an opportunity to talk to people visiting the canyon, passing through. There could be a easy
Online Map	How can we manage the very loud Harleys and modified cars that ride up and down the canyon past 10:00 pm in the summer?
Online Map	Could HWY 65 be used for people powered activities every other day? (biking, skate skiing trainers, walkers)
Online Map	With all the through traffic going up and over Big Mountain, how about petitioning the State of Utah to close Highway 65 every other day to motorized vehicles (except emergency) and keep it open to bicycles and pedestrians.
Online Map	deadfall in stream can cause overflow that puts debris onto road
Online Map	This house needs to be torn down- it's an eyesore and distraction.
Online Map	This area is too congested to support a restaurant with cars coming and going. There are so many accidents here when the restaurant is operating. The zoning should be amended to not allow restaurant.
Online Map	lane markings needed to guide northbound left turns into left lane. help mitigate potential conflict with down canyon traffic.

Online Map put up a sign for driveways for cars traveling up canyon. Diane Holloway is a blind driveway and it is dangerous coming out of it.

APPENDIX F: COMPLETE DEFICIENCY LIST

	Station	Offer	Case	EMIGRATION CANYON CONCEPT PROJECT Problem	LIST Solution
	102+00.00	17	Nampa fike Lane	Widen shoulder 3' from Creatiview Dr to first corner	Do forthing: existing big lang 5.5" Mill in Riss Lang
	107+00.00 123+00.00 123+23.00	iT IT RT	Narrow Bike Lave Narrow Bike Lave Safety	Widen shoulder 2' around first corner Widen worth ode from Barner tennini to shotcreek wall, shift id rorth Add rock ret wall and pave both sides of driveway	Do Nothing, Existing shouldes is 5 5' Do Nothing: Desting shouldes is 6 Do Nothing, no widening needed in this 5LC section
	135+00.00	sr	Safety	Pave pulltout & plant vegetacions on sust end of hill 1/4ms up, unstable slope between torange fiber posts	need storp hill, does not produce many rocks on rd
	146+00.00	RT.	Narrow Bike Lane	IF Shide to face of barrier	petered sideslope, widen shidr +4" reset precast barrier (1,+1701), estend culvert
	146+00.00	ar,	Onestable Signe	This is a matchiefy shaller slope that bouild be troated by shortzetin, a element distribution of the statement of a farmer quality to considered to keep soil and rock off the road but would require periodic mandemence to clean out the behaviour form balling the behavior	
	153+00.00	-	Foor Favorient	Pave bike lane from setting	7 Follow up with joe, Do not see settled shift The flatting: (SLCD Green completed) Raise of Relocate water valve and
	153+30.00 153+50.00	RT RT	Deficient Distruction Poor Powement	Hydrant, water valve in bise lane 3713 C: pave south side to cover old pavement	hydrant, PIF Mili Do nature deficient payement
	161+25.00	RT	Sight Distance Safety	\$748 C. Tran Treet $$7485$. Move guardral 3' to 4' past the rock hill on the north, shift matter	Do Nothing Sight distance uppears adaptate Do Nothing, Bise lanes ment
	185-00.00	it	Unstable Slope	Lanes This is another cut in regulity weathering bedreck. Similar options is Lynsable Slope (II: 166+00 could be used	
	167+00.00	RT.	Dramago	3193 E. Fix dramage, keep driveway rocks out of bike lawe	Add trench often across otherway, Adjust cross slope (crown) of readway and add second inter box east of
	169+00.00 172+50.00	LT AT	Drainage Safety	Got Teeth Ln: Puddle forms when rams 3876 8: pave over old pvmt south lade	driveway Do Nothing: Pavement looks in good condition with chip seal
	178+70.00	81	Sight Distance	Intersection sight triangle deficient. This is another cist in rapidly availaring bedrock. Similar options to	Taper Guardral & relocate tele peri, Tren Tree, Raise profile and provide web bench to improve sight bilangle
	1/9+00.00	LJ AT	Unstable Slope Deficient Obstruction	Unstable Slope # 345+00 could be used Hydrant in CZ, Water value in bike take	Raise water value to grade Concrete half gutter on north sale to inlet/calvert
	184+00.00 184+00.00 184+00.00	LT RT RT	Dealinage Safety Safety	4010 E: Trim trier, Fix Dramage, move braffic 4072 E: Clear rocks off of old bias slop gent 4072 E: Pave 2' of draveway for track gad to keep rocks off shidr	
	212+00.00	87	Nampu fike Lane	S' shide to face of barrier	Coordinate with ECNIC on if pave, Pave 30th of drawway approach watered sideslope, widen shidr +2°, edd right turn lane, rever 68
(~ r)	238+50.00 223+40.00 240+00.00	LT.	Oramagor Proce Processor	Resident dramage drama into Roadway half Pased over when in loke ison	Rell gatter across threeway entrance with well graded dtch upstream and downstream. May need to aslast CB at this location. Bater water value to grade Berner offset mores, pare is fact to keep it parent from bite tane edge.
	240+00.00	RT IT	Poor Payerman Safety Unotanie Slope	Half Paverd over valve in loke tans Pave tooth side to GR This is averthere out in registly weathereing bedrock. Similar options to Uvotable Scope # 146+60 count be used	Barrier, offset moess, pave to face to keep 8p away from bike take edge
25					Several & full depth reconstruct shifts improve cross slope, grade duch on north readslide, third or riprag at end.
	243+15.00	- 47	Dramage	Publie in thought Subettment praims accountroad North to South. Change draimage 800° & wide	of Service
	253+05.00	17	Drämage Natroa Iliké Line	Bille Strainer; 4',5' to face of GR. This cut is to strain with a house above. Mability of the slope should be	L+2300", widen 3"-4", reset guardrail and up barrier, ship road north
• -	758+15-00	ur.	Unitable Sload	performed if the slope will be modified. The slope may need to be reminered using soil rails to provide a suitable safety factor against failure	Dangerous Safety Factor, Wideming Inc d on RT shift. Try to avoid slope
	263+70.00	π	Signt Distance	considering the house above the slope. Trailailed: Sight line obstructed by skiew/tree/grade	Cut pine tree, taper gaantral, (next only?
	265+00.00 270+00.00	#1 17	Dramage Restrooms	Trails End west to FireStation. Fix dramage and public by big tree	Grade ditch on north side, no outlet location for new outfall Firehouse: Add signage restricens are available
				Large public, sheet flow from north to youth, Roods first yard of \$110	Fie roadway cross slope, improve ditch on north side of road, next new cross culvert next STA.273. Grade ditch on Last side of Pioneer Purk Road
	274+25.00 275+65.00	u u	Drainäge Drainäge	(opn frie comment) Publies in theoliter (field verify), puts rock in Joadway	and place mow inlet/calvert on NE side of intersection Disch grading and to new calvert at 271+50
	2#2+00.00 2#3+00.00 2#3+00.00	RT LT	Poor Pavernerd Narrow Bile Lane Narrow Bike Lane	GR to \$2021 powe over old pavement, pave to GR face. 4" bile lone, 5" to face of GR 4" bile lone, 5" to face of GR	Sewcut and Full Death Reconstruct had point LABOT, widen to 5 bills fam
	284+00.00	87 87	Narrow Bike Lane.	#" bike lane	L>330", widen to 5" bills lane. L-280", widen to 5" bills lane. No shift widening noedsit
	293+00.00 298+00.00	iT	Unitable Slope Narrow Bike Lane	This area has serilar concerns to the unstable slope (# 280-00 (AGEC 17) S' to face of Precast Barrier	L=440°, Extend Shide 2', reset barries
	\$05+00.00 \$07+00.00	ir ir	Narrow Bike Lave Narrow Bike Lave	If to face of barrier, paved shide 4 [°] , move GR mime with other barriers \$3557E - \$427E: pave north side wider	Ugrader GR at current o/s, pave to 5' bits lane (k-260') Field Verify (shide width appears as 8')
	313+00.00	LT .	Nerze Biki Late	4', 5' face of QR. Rock full in shidr & travel lane, deer on top create some fulls tops hier	(+685', extend shift, inset OII
	134+00.00	87	Unstable Made	comment). This slope has been studied and the preferred option sum to revisitive the slope using soil rails and shorevite. (AGEC 23-24)	
	121+10.00	AT LT	Dramage	Pavement fails off into creek 57713 to Poneer Rolge Drainige puts rocks on road	Colored culvert, add walls to walker Utille Replace cross calvert finan development outfall, remove hooded on/hoi- improve foadbide dicth and convect eliet to outfall
	125+00.00	-	Unsinage	Concrete NIII culvert to creek plused	Replace cross culvert from development outfall, remove hooded online. Improve toadside ditch and connect eller to outfall.
	330+00.00 330+00.00	LT RT	Deamagn/Poor Pavament Narrow Bike Care	Pavement detorrating from plugged suivert S'shide to face of GR	Unplug of replace subset, improve Bitch grading L+707, widen thidt +2", reside Git Need to determine source of unabele, must accord on commondation
	843=00.00 945=00.00	AT LT	Drainage Narrow Bike Lave	Senkhole @ Margarthe 3' shidt to face of GR, Re sues parent from util cut	Migrature of fines with tuiwert or our scientage? 1+550" Wilden shift +2" result GR
	355+00.00 Mi2-00.00 375+00.00	LT AT	Narrow Bike Lave Narrow Bike Lave Narrow Bike Lave	2°-4° shide 1°-4° shide, extend Gil to core: with 1°-4° shide	L+1920 (350+80-370+00), Entend Bias Laws 1'-1' L+1700 (353+50-370+00), Entend Bias Laws 4'-6' L+1100 (370+00-385+00), Weise 3'-4'
	390-00.00 390-00.00	LT RT	Nerrow Bile Line Nerrow Bile Line	2 solds, 4 fis lists of barrier 3/2 solds	L+1100 (13%=C0-381=00), Widen 1-4" L+1700 (181=00-398=00), Widen +3" shift L=1700 (181=00-398=00), Widen +3" shift
	430-80.00	LT RT	Restrostins Safety	Settled Guestinan	Pinetrest: Add signage restrooms are available Reset (R IL = 6007 and add curb
					New wep draw or vectored rights slope on uphill ade of RII section. Grader
	432+00.00 457+00.00 474+00.00		Dramage Poor Pavement Dramage	Sheet flow across roadway Hough pavement from chip seal & raveling Sheetflow across readway	allich an uphill side of road to flow to culvert entrance Mill chap seal & overlay Grade altoh un uphill side of road to flow to culvert entrance
> =	\$66+08.00 270+00.00	HT LT LT	Salatu Restrooms Restrooms	Gravel debris from pik lof tracks onto uhite	carve 10° of tot Finetosak, Add signage testrooms are available
6	430+80.00	et.	But Stops	identily problem bus stup receptors	Preszyst: Add signage restrooms are available Add paint to blin time on persenant bus intops all Marylield, Skysrest, and Firstitation.
	105=00.00	RT	Cell Prose Towns Sight Distance	Add senargency cell phone tower Barrier obstructs	Un mething: ECRIC/SLCO to coordinate for location Add Chevron Alignment Signs; Keep Advisory signage
	125=00.00	LT	Sight Distance	Hillside obstructs This is a shotcrete slope with drains at the base constructed for Salt Lake	Add Chevron Alignment Signs; Advisory 30 mph
	129+00.00	LT	Unstable Slope	City. This type of slope treatment could be used for slopes that are relatively stable but surface of the slope weathers and produces debris	Do Nothing
	153+50.00 178+70.00	RT RT	Poor Pavement Sight Distance	Shidr is settling Intersection sight triangle deficient	? Follow up with joe, Do not see settled shidr aper Guardrall & relocate tele ped, Trim Tree, Raise profile and provide yeh bench to improve sight triangle
20	192+90.00 202+35.00	LT RT	Sight Distance Deficient Obstruction	Tight Turn, Hillside obstructs Steep Hillside	Add Chevron Alignment Signs; Advisory 25 mph Add Guardrall
I	192+00.00 205+80.00	LT LT	Unstable Slope Unstable Slope	This is another cut in rapidly weathering bedrock. Similar options to Unstable Slope @ 145+00 could be used Steep Hillside	
	207+60.00 208+60.00	RT	Deficient Obstruction Deficient Obstruction	Hydrant Fiber Optic Box	Relocate Relocate
>>	214=00.00 215=00.00 225=28.00	LT RT LT	Narrow Bike Lane Sight Distance Drainage	4' shidr Camp X Driveway Entrance Sight Distance & Deceleration Inadequate Drainage	Wilden to 5° bike lane Realign Driveway, Add Right Turn Innorove disch grading on north side
5	227+60.00	LT	Unstable Slope	This is another cut in rapidly weathering bedrock. Similar options to Unstable Slope # 146+00 could be used	
\mathcal{O}	230=00.00 243=00.00 250=70.00	RT RT	Narrow Bike Lane Narrow Bike Lane Poor Pavement	6' to face of GR 5' to face of CIP Barrier Uphill Shoulder Alligator Cracking	Skinny Uphill Lane to 10' width or extend shidr reset GR (L=450') Field Verify, skinny lane or add pvmt north and shift striping Sawcut & full depth reconstruct shidr
\sim	252+40.00 252+40.00	LT LT	Sight Distance Sight Distance	Sidestreet slope obstructs Sidestreet slope obstructs	Trim Vegetation, Cut Hillside Trim Vegetation, Cut Hillside
کی	261+70.00 263=00.00	RT	Deficient Obstruction Unstable Slope	Guardrail end section routinely hit by snow plow This cut is in rapidly weathering soil and bedrock. Similar option to Unstable Slope (# 146+00 could be used	Improve access with T intersection, widening needed
\square	270+00.00 270+75.00 271+20.00	RT	Safety Sight Distance	Drivers out corner, drive in left turn pocket Sight line obstructed by vegetation	Cut in mini rumble strips to DYL Trim Vegetation
		LT	Sight Distance Unstable Slope	Slight line obstructed by Bdg, Vegetation This cut is in soil and similar options as No. 2 could be used. This cut is similar to the Unstable Slope (# 258+15 with a house above the slope and similar concerns for slope stability	Trim Vegetation, Acquire Bidg for Demo
	266+50.00		Discount of the second se		
	266+50.00 272+31.00 274+60.00	LT RT	Unstable Slope Deficient Obstruction	Hydrant	o nothing: Dangerous Safety Factor, widening not needed, avoid slope Relocate
	266+50.00 272+31.00 274+60.00 278+50.00 280+30.00	LT RT LT RT	Deficient Obstruction Unstable Slope Drainage	Hydrant This is another cut in rapidly weathering bedrock. Similar options to Linstable Siope @ 146+00 could be used Update Drainage	e nothing; Dangerous Safety Factor, widening not needed, avoid slope Relocate
	266+50.00 272+31.00 274+60.00 278+50.00 280+10.00 283+50.00 285+00.00	LT RT LT RT	Deficient Obstruction Unstable Slope Drainage Drainage Poor Pavement	Nydrant Nydrant Linstale Slope @ 244-00 could be used Update Drainage Update Drainage Odd Pavement	Relocate
MI V	266+50.00 272+31.00 274+60.00 278+50.00 280+30.00	LT RT LT RT	Deficient Obstruction Unstable Slope Drainage Drainage	This is another out in rapidly weathing Labolak. Similar options to Unstable to rapidly weathing Labolak. Similar options to Unstable Damage Update Damage Update Damage	Rebectle Trim Vegetation, whole & more guarded of Advisory 35mph 1 k No 3400 widening needed
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Cater	EMIGRATION CANYON CONCEPT PROJECT LIS	Solution	
Narrow Bike Lane	2' chár		
Narrow Bike Lane	2 state	L=1100' (370+00-381+00), Widen +3' shidr Need geotech recommendation. Potential underdrain/ spring of	ollection
Drainage	Springs on east side of driveway drain onto rd periodically	system to box and culvert.	
Sight Distance Drainage	Skew of QuarterMile limits sight triangle Culvert plugged 50% time	Trim Vegetation, Realign QuarterMile to 90, wrap GR Clean/ Place apron around culvert	
Deficient Obstruction	1:1 sideslope with no protection	Add guardrail to culvert/headwall	
Drainage	Drainage Problem	Install roll gutter on south side through this section connecting t C8s	o existing
-	This cut is in gravel with a driveway to a house above. Stability of the slope should be performed if the slope will be modified. The slope may		
Unstable Slope	need to be reinforced using soil nails to provide a suitable safety factor against failure considering the driveway for the house above the slope. (AGEC 29-31)	Shidr Widening reqd	5
Drainage	Culvert or ditch brings debris from hill over rd	Grade ditch, potential roll gutter to existing inlets. Stabilize	slo
Deficient Obstruction Drainage	Free standing wall in C2 Culvert plugged	Remove Wall and replace to R/W Grade ditch, potential roll gutter to existing inlets.	
Narrow Bike Lane	1° shidr	L=1170' (398+00-409+70), Widen +4' shidr	
Narrow Bike Lane	2' shidr	L=1150' (398+00-409+50), Widen +3' shidr Improve ditch and add inlet on north side. New slope drain or	
Drainage	Sheet flow, debris across road	ripraye anch and add met on north side. New stope or an or riprap slope on south side	
	This cut is steep and tall. It appears to currently be relatively stable with		
	some surface raveling. Cutting this slope back will increase its height and		
Unstable Slope	potentially destabilize the slope. Slope reinforcement would likely be the best option if this slope is to be cut back. Slope reinforcement could be	Shidr Widening read	
	used to steepen the slope, most likely in combination with benches to		
	reduce the height of individual cut faces.		20
Unstable Slope	This appears to be less stable than the slope @ 404+00. Similar treatment	Shidr Widening read	(σP)
	recommended as 404+00. Shift roadway south if possible		$\mathcal{O}\mathcal{O}$
Tight Turn Poor Pavement	Field verify xslope Rough pavement from chip seal & raveling	Delineate Curve Mill chip seal & overlay	~
r our r premier	This appears to be an area of primarily surface raveling of the slope and	the output a county	
Unstable Slope	could be treated similar to the unstable slope @ 146+00. Slope flattening can be considered.		
Poor Pavement	Rough pavement from chip seal & raveling	Mill chip seal & overlay	
	This appears to be an area of primarily surface raveling of the slope and		(\bigcirc)
Unstable Slope	could be treated similar to the unstable slope ⊕ 146+00. Slope flattening can be considered.		
Sight Distance	Guardrail obstructs SSD	Sign advisory speed @ 25 mph	\sim
Unstable Slope Tight Turn	Losing Guardrail (no AGEC recommendation) Field verify xslope	Berm behind GR (notes)	
Sight Distance	Hillside obstructs SSD	Sign advisory speed @ 35 mph	
Poor Pavement	Rough pavement from chip seal & raveling	Mill chip seal & overlay	
Unstable Slope	This appears to be an area of primarily surface raveling of the slope and could be treated similar to the unstable slope @ 146+00. Slope flattening		
Unitable Slope	can be considered.		
Unstable Slope	This appears to be an area of primarily surface raveling of the slope and		
Unstable slope	could be treated similar to the unstable slope @ 146+00. Slope flattening can be considered.		
Unstable Slope	This appears to be an area of primarily surface raveling of the slope and		
	could be treated similar to the unstable slope @ 146+00. Slope flattening can be considered.		
Drainage Sight Distance	Shady, Black Ice	Grade ditch on uphill side of road to flow to culvert entrar	sce
Tight Turn	Vegetation obstructs sight distance Vegetation obstructs sight distance/ Field Verify Xslope	Ex Advisory 20mph, Meets 25mph (SSD) Ex Advisory 20mph, Meets 25mph (SSD)	
Safety	EOP Lip @ Parkinglot not flush with gravel	Add gravel to feather mitigate uneven shidr or pave 10' of	
Unstable Slope	This appears to be an area of primarily surface raveling of the slope and could be treated similar to the unstable slope @ 146+00. Slope flattening		
	can be considered.		
Unstable Slope	Large size rock on roadway. This appears to be an area of primarily surface raveling of the slope and could be treated similar to the unstable slope @		\leq
	146+00. Slope flattening can be considered.		
Unstable Slope	This is at an old landslide below the road that has been mostly stabilized. Widening the roads on the downhill would be problematic and could	No shidr widening needed	
	reactivate the landslide. (AGEC 42) This appears to be an area of primarily surface raveling of the slope and		
Unstable Slope	This appears to be an area of primarily surface raveling of the slope and could be treated similar to the unstable slope @ 146+00. Slope flattening	Shidr Widening read	
Poor Pavement	can be considered. (field verify) EOP Lip @ Parkinglot not flush with gravel	Add gravel to feather mitigate uneven shidr or pave 10' of	
Poor Pavement	Rough pavement from cracks, chip seal & raveling	Mod gravel to reacher mitigate uneven shior or pave 10 or Mill chip seal & overlay	
Unstable Slope	This appears to be an area of primarily surface raveling of the slope and could be treated similar to the unstable slope @ 146+00. Slope flattening		
	can be considered. AGEC 44, 45, 46, 47)		\sim
Deficient Obstruction Narrow Bike Lane	1:1 sideslope with no protection 2'-4' shide	Widen & Add guardrail L=3380" (506+21-540+00), Widen +1'-3' shidr	C A
Narrow Bike Lane	1'-2' shidr	L=3500' (504+96-540+00), Widen +5'-6' shidr w/GR	
Poor Pavement Tight Turn	Wavy pavement from chip seal & raveling	Mill chip seal & overlay	
Poor Pavement	Field verify xslope Rough pavement from chip seal & raveling	Sign advisory speed @ 25 mph Mill chip seal & overlay	\sim
Safety	High use parking area	Pave parking and widen shoulder	$(\mathcal{X} \cap)$
Poor Pavement Deficient Obstruction	Rough pavement from chip seal & raveling Steep sideslope with no protection	Mill chip seal & overlay Widen Shidr & Add guardrail	UD
	This appears to be an area of primarily surface raveling of the slope and		
Unstable Slope	could be treated similar to the unstable slope (# 146+00. Slope flattening can be considered. AGEC 48-49)		72
Sight Distance	Hillside obstructs SSD	Extend GR and delination, Sign advisory speed @ 25 m	ph
	This appears to be an area of primarily surface raveling of the slope and		
Unstable Slope	could be treated similar to the unstable slope @ 146+00. Slope flattening can be considered.		
Unstable Slope	Road falling down slope. This appears to be an area of primarily surface raveling of the slope and could be treated similar to the unstable slope @	fill wall to stabilize slope	\sim
Unstable Slope	raveling of the slope and could be treated similar to the unstable slope ge 146+00. Slope flattening can be considered.	 Fill wall to stabilize slope 	(
Poor Pavement			
Deficient Obstruction Narrow Bike Lane	Steep sideslope with no protection 2'-4' shidr	Widen Shidr & Add guardrail L=2900' (540=00-569=12), Widen +1'-3' shidr	
Narrow Bike Lane	1'-2' shidr	L=2770' (540+00-567+70), Widen +5'-6' shidr w/GR	
Unstable Slope	This appears to be an area of primarily surface raveling of the slope and could be treated similar to the unstable slope @ 146+00. Slope flattening		
	can be considered.		
Unstable Slope	This appears to be an area of primarily surface raveling of the slope and could be treated similar to the unstable slope @ 146+00. Slope flattening	r.	
	can be considered.		
Unstable Slope	This appears to be an area of primarily surface raveling of the slope and could be treated similar to the unstable slope @ 146+00. Slope flattening	r.	
	can be considered.	Advisory for 30 mph	
Tight Turn Narrow Bike Lane	Field verify xslope 4" shidr	Advisory for 30 mph Restripe intersection to be more friendly for cyclists	
Safety	On upper Little Mtn: wide shoulders encourage 2/3 abreast riding	Provide signage or paint concept	
Safety Poor Pavement	Driveway/Sidestreet conflict points Sawcut encroaches into middle of bike lane	Add Green Paint to conflict points Sawcut to solid white stripe and replace to lip of gutter (L	-13
Deficient Obstruction	Steep unprotected slope	Extend GR L=400', and widen bike lane for o/s	
Bus Stops		Add paint to bike lane on permenant bus stops at Maryfield, Sk Firestation.	HORN
Bus Stops		Remove Bus Stop Advanced Warning Signs	
Safety Sight Distance	Update Share the Road Signs to better inform motorists/cyclists Sight distance, dwar hunters park in intersection sight brangle	add advisory zone, Add 3th signage with possible rules of th Add no parking ugns, remove pent to miligate parking	Ne road
Salety	Signi decardo, ceen narran park in internection tange Lip of diversity from overlay Overflow Ruths parking	Mill and Feather overlay in shidr pulloff	
Salary Salary	Overflow Rushs parking Earyon Speeds/Enforcement is a problem on whends	Add no parking sigm along both sides of street Add "Your Speed Is" VMS	
Salary		Weplate ungle file signage, Add paint to blie lane, edd 2 brunil paint	
Salary	Elixers danegard angle Ne signs Add Upgrade share the road signs	Use Bit share the road signs, ride single file	

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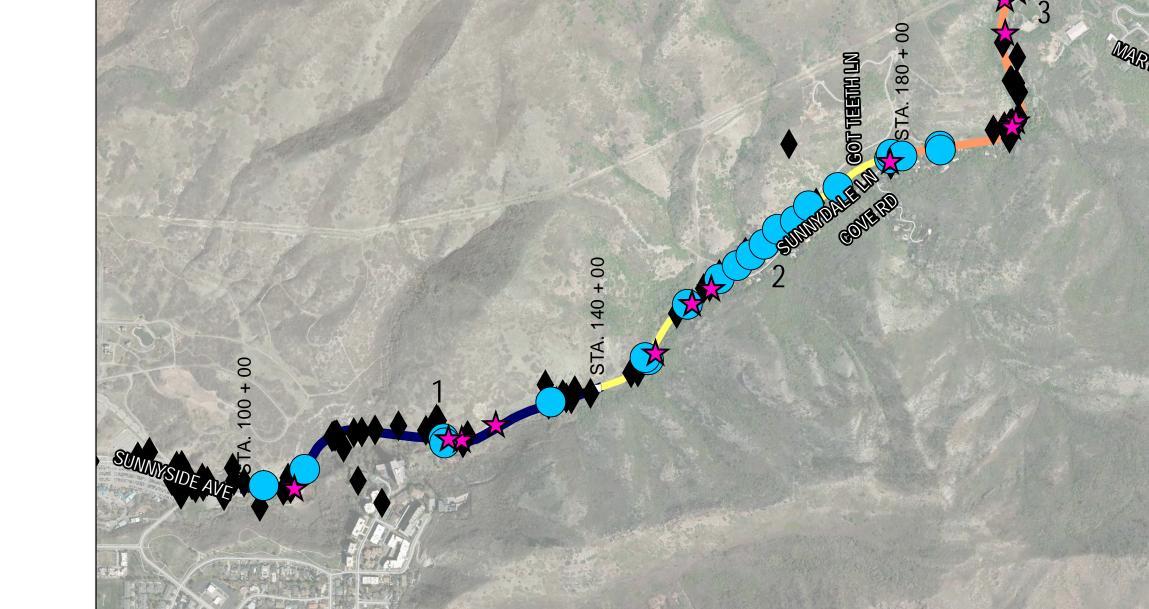


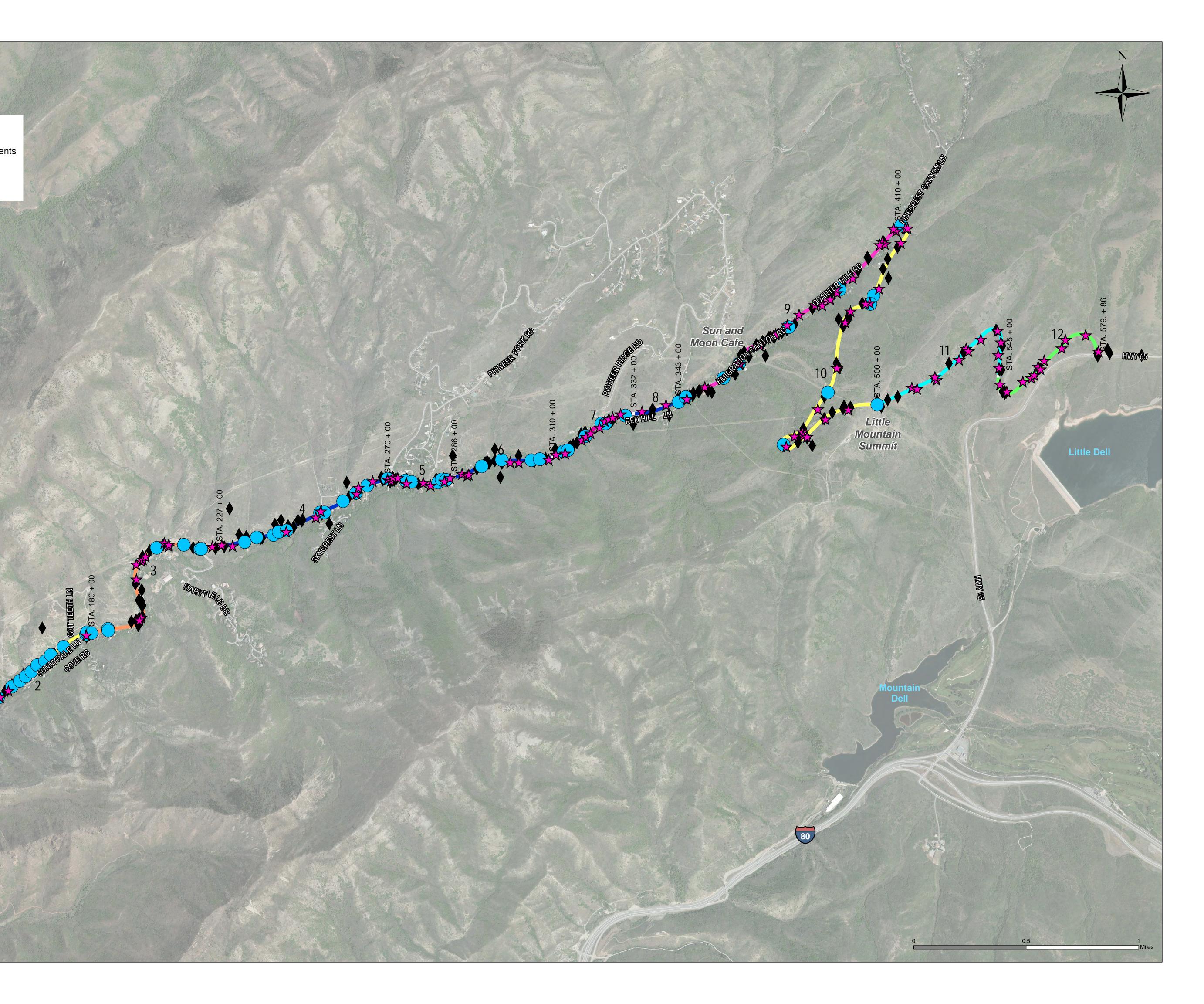
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APPENDIX G: SEGMENT COST ESTIMATE

Segment: 1 PROJECT NAME: Emigration Canyon Cost Estimate - Concept Level

Proposed Project Scope: Emigration Canyon Segment 01 (STA 100+00 - 140+00) Approximate Route Reference Mile Post (BEGIN) = 100+00 (END) = 140 Project Length = #VALUE! miles #VA Current FY Year (July-June) = 2015 - - Assumed Construction Ity Year = 2016 - - - Assumed Yearly Inflation for Engineering Services (PE and CE) (%/yr) = 3.0% - - Assumed Yearly Inflation for Right of Way (%/yr) = 2.0% - - - Items not Estimated (% of Construction + Incentives) = 8.0% - - -	
Project Length = #VALUE! miles #VA Current FY Year (July-June) = 2015 Assumed Construction FY Year = 2016 Construction Items Inflation Factor = 106 1 yrs for inf Assumed Yearly Inflation for Engineering Services (PE and CE) (%/yr) = 3.0% Assumed Yearly Inflation for Right of Way (%/yr) = 2.0% Items not Estimated (% of Construction) = 20.0%	
Current FY Year (July-June) = 2015 Assumed Construction FY Year = 2016 Construction Items Inflation Factor = 1.06 1 yrs for inf Assumed Yearly Inflation for Engineering Services (PE and CE) (%/yr) = 3.0% 3.0% Assumed Yearly Inflation for Engineering Services (PE and CE) (%/yr) = 2.0% 1 Items not Estimated (% of Construction) = 20.0% 20.0%	+00
Assumed Construction FY Year = 2016 Construction Items Inflation Factor = 1.06 1 yrs for inf Assumed Yearly Inflation for Engineering Services (PE and CE) (%/yr) = 3.0% 3.0% Assumed Yearly Inflation for Right of Way (%/yr) = 2.0% 1 Items not Estimated (% of Construction) = 20.0% 1	UE!
Construction Items Inflation Factor = 1.06 1 yrs for inf Assumed Yearly Inflation for Engineering Services (PE and CE) (%/yr) = 3.0% Assumed Yearly Inflation for Right of Way (%/yr) = 2.0% Items not Estimated (% of Construction) = 20.0%	
Assumed Yearly Inflation for Engineering Services (PE and CE) (%/yr) = 3.0% Assumed Yearly Inflation for Right of Way (%/yr) = 2.0% Items not Estimated (% of Construction) = 20.0%	
Assumed Yearly Inflation for Right of Way (%/yr) = 2.0% Items not Estimated (% of Construction) = 20.0%	ation
Items not Estimated (% of Construction) = 20.0%	
Preliminary Engineering (% of Construction + Incentives) = 9.0%	
Construction Engineering (% of Construction + Incentives) = 10.0%	

Construction Items	Cost	Remarks
Pulic Information Services	<u>\$110</u>	
Roadway and Drainage	\$37,206	
Traffic and Safety	<u>\$0</u>	
Structures	<u>\$0</u>	
Environmental Mitigation	<u>\$0</u>	
ITS	<u>\$0</u>	
Subtotal	<u>\$37,316</u>	
Items not Estimated (20%)	\$7,463	
Construction Subtotal	\$44,779	
P.E. Cost P.E. Subtotal	\$3,582	8%
C.E. Cost C.E. Subtotal	\$4,478	10%
Right of Way Right of Way Subtotal	<u>\$0</u>	
Utilities Utilities Subtotal	<u>\$0</u>	
Incentives Incentives Subtotal	<u>\$0</u>	
Miscellaneous Miscellaneous Subtotal	\$0	

Cost Estimate (ePM screen 505)		20	15	2	016
P.E			\$4,000		\$4,000
Rig	ht of Way		\$0		\$0
Uti	lities		\$0		\$0
Co	nstruction		\$45,000		\$47,000
C.E	<u>.</u>		\$4,000		\$4,000
Inc	entives		\$0		\$0
Ae	sthetics	0.75%	\$0		\$0
Ch	ange Order Contingency	9.00%	\$4,000		\$4,000
SL	CO Oversight		\$0		\$0
Mis	scellaneous		\$0		\$0
		TOTAL	\$57,000	TOTAL	\$59,000
PROPO	SED COMMISSION REQUES	TOTAL	\$57,000	TOTAL	\$59,000

Project Assumptions/Risks

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Roadway and Drainage Segment: 1 PROJECT NAME: Emigration Canyon

Item #	Item	Quantity	Units	Price	Cost	Remarks
Roadway		<u>,</u>				
012850010	Mobilization	1	Lump	\$4,400.00	\$4,400.00	Usually 7-10% of construction
015540005	Traffic Control	1	Lump	\$2,200.00		Usually 3-5% of construction
01557001*	Maintenance of Traffic	1	Lump	\$450.00		Usually 1% of construction
015720020	Dust Control and Watering	10	1000 gal	\$15.00	\$150.00	
020560005	Borrow (Plan Quantity)	155	cu yd	\$13.00	\$2,015.00	
020560010 020560015	Borrow Granular Borrow (Plan Quantity)	0 44	Ton			
020560015	Granular Borrow (Plan Quantity)	84	cu yd Ton	\$16.00	\$1,344.00	
020560025	Granular Backfill Borrow (Plan Quantity)	0	cu yd	ψ10.00	\$1,544.00	
#N/A	Raise Water Valve	0	Each	\$400.00	\$0.00	
#N/A	Relocate Hydrant	0	Each	\$3,000.00	\$0.00	
#N/A	Relocate Utility Pedestal	0	Each	\$1,500.00	\$0.00	
022210095	Remove Pipe Culvert	0	ft	\$15.00	\$0.00	
022210035	Remove Diversion Box	0	Each	\$500.00	\$0.00	
022210075	Remove Guardrail	0	ft	\$2.50	\$0.00	
#N/A	Remove Modular Block Retaining Wall	0	ft	\$20.00	\$0.00	
022210170 028430035	Remove Precast Concrete Barrier	0	ft	\$4.50	\$0.00	
	Crash Cushion Type G	0	Each	\$3,500.00	\$0.00	
028410086 028440010	W-Beam Guardrail 72 inch Wood Post Precast Concrete Barrier - 32 Inch (New Jersey Shape	0	ft ft	\$20.00 \$50.00	\$0.00 \$0.00	
028440010 028440280	Precast Concrete Barrier - 32 Inch (New Jersey Shape Precast Concrete Constant Slope Barrier, 42 Inch, Ret	0	π Each	\$50.00 \$1,600.00	\$0.00	
028440280	Precast Concrete Constant Slope Barrier, 42 Inch, Rei	0	Each	\$1,800.00	\$0.00	
023160020	Roadway Excavation (Plan Quantity)	88	cu yd	\$18.00	\$1,584.00	
027120010	Lean Concrete Base Course, 4 inch thick	0	sq yd		+ ,,	
027210010	Untreated Base Course	41	Ton	\$22.00	\$902.00	
027210020	Untreated Base Course (Plan Quantity)	22	cu yd			
027350010	Micro-Surfacing	0	sq yd			
02737001*	Asphalt Pavement Soft Spot Repair - Type A		sq yd			
02737002*	Asphalt Pavement Soft Spot Repair - Type B		sq yd	4=0.00		
027410060	HMA - 3/4 Inch	44	Ton	\$70.00	\$3,080.00	
027480010 027480040	Liquid Asphalt MC-70 or MC-250 Emulsified Asphalt CSS-1	<u>1</u> 1	Ton Ton	\$770.00 \$700.00		Prime Coat Tack Coat
027480040	Sign, Type A-1	418	sq ft	\$700.00		Chevron Signs
027710035	Concrete Curb and Gutter Type M1	0	ft	\$15.00	\$0.00	
027760010	Concrete Sidewalk	0	sq ft	\$10.00	\$0.00	
027850020	Chip Seal Coat, Type II	0	sq yd			
027850060	Emulsified Asphalt LMCRS-2	0	Ton			Chip Seal Emulsion
027850075	Emulsified Asphalt HFMS-2P	0	Ton			Flush Coat
027860010	Open Graded Surface Course	0	Ton			
#N/A	Retaining Wall	0	sq ft	\$80.00	\$0.00	
029380010	Tree Pruning	0	Each	\$200.00	\$0.00	
029220040	Broadcast Seed	61	1000sqft	\$20.00	\$1,220.00	
029110015 023760010	Wood Fiber Mulch Steep-Slope Erosion Control	61 679	1000sqft	\$27.00 \$4.50	\$1,647.00 \$3,055.50	
029120010	Contractor Furnished Topsoil	679	sq yd sq yd	\$6.00	\$4,074.00	
029610020	Rotomilling - 1 Inch	0/3	sq yd sq yd	\$1.25	\$0.00	
022210155	Obliterate Road	0	sq yd	\$0.55	\$0.00	
			- 17			
Roadway Subtotal					\$37,206	
					, , , , ,	
Drainage	1					
023730010	Loose Riprap		cu yd	\$50.00		
023180010	Small Ditch Excavation (Plan Quantity)	0	ft	\$10.00	\$0.00	
026130030	Culvert End Section 18 inch	0	Each	\$500.00	\$0.00	
026130050	Culvert End Section 30 inch	0	Each	\$500.00	\$0.00	
#N/A	Riprap Outlet Pad (Riprap a& Geotextile)	0	Each	\$500.00	\$0.00	
#N/A	Trench Drain	0	ft	\$200.00	\$0.00	
026220050	Underdrain 6 Inch	0	ft	\$50.00	\$0.00	
026101386	18 Inch Irrigation/Storm Drain, Class C, smooth	0	ft #	\$50.00	\$0.00	
026101388 026101390	24 Inch Irrigation/Storm Drain, Class C, smooth 30 Inch Irrigation/Storm Drain, Class C, smooth	0	ft ft	\$70.00	\$0.00	
026330130	Concrete Drainage Structure 5 ft to 7 ft deep - CB 9	0	Each	\$2,600.00	\$0.00	
#N/A	Extend Concrete Drainage Box Culvert (12' wide)	0	ft	\$2,000.00	\$0.00	
		-		÷1,000.00	\$0.00	
Drainage Subtotal			· · · · · ·		\$0	
	ή				ψŪ	
PI						
013150010	Public Information Services	1	Lump	\$110.00	¢140	Usually 0.25% of construction
010100010		I	Lump	φ110.00	φΠU	

Segment: 2 PROJECT NAME: Emigration Canyon Cost Estimate - Concept Level

Prepared	By: BJK Date	2/15/2016		
roposed Project Scope:	Emigration Canyon Segment 02 (STA 140+0	0 - 180+00)		
	Approximate Route Reference Mile Post (BEGIN) =	140+00	(END) =	180+00
	Project Length =	#VALUE!	miles	#VALUE!
	Current FY Year (July-June) =	2015		
	Assumed Construction FY Year =	2016		
	Construction Items Inflation Factor =	1.06	1 y	rs for inflation
Assumed Yearly Infl	ation for Engineering Services (PE and CE) (%/yr) =	3.0%		
	Assumed Yearly Inflation for Right of Way (%/yr) =	2.0%		
	Items not Estimated (% of Construction) =	20.0%		
Prelimi	nary Engineering (% of Construction + Incentives) =	8.0%		
Construe	ction Engineering (% of Construction + Incentives) =	10.0%		

Construction Items	Cost	Remarks
Pulic Information Services	\$700	
Roadway and Drainage	\$223,559	
Traffic and Safety	\$0	
Structures	\$0	
Environmental Mitigation	<u>\$0</u>	
ITS	\$0	
Subtota	1 <u>\$224,259</u>	
Items not Estimated (20%)	\$44,852	
Construction Subtota	\$269,111	
P.E. Cost P.E. Subtota		
C.E. Cost C.E. Subtota	\$26,911	10%
Right of Way Right of Way Subtota	I \$0	
Utilities Utilities Subtota	I \$0	
Incentives Incentives Subtota	I <u>\$0</u>	
Miscellaneous Miscellaneous Subtota	ı \$0	

Cost Estimate (ePM screen 505)		2	015	:	2016
	P.E.		\$22,000		\$23,000
	Right of Way		\$0		\$0
	Utilities		\$0		\$0
	Construction		\$269,000		\$284,000
	C.E.		\$27,000		\$28,000
	Incentives		\$0		\$0
	Aesthetics	0.75%	\$2,000		\$2,000
	Change Order Contingency	9.00%	\$24,000		\$25,000
	SLCO Oversight		\$0		\$0
	Miscellaneous		\$0		\$0
		TOTAL	\$344,000	TOTAL	\$362,000
	PROPOSED COMMISSION REQUEST	TOTAL	\$344.000	TOTAL	\$362.000

Project Assumptions/Risks

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Roadway and Drainage Segment: 2 PROJECT NAME: Emigration Canyon

Item #	Item	Quantity	Units	Price	Cost	Remarks
Roadway						
012850010	Mobilization	1	Lump	\$28,000.00	\$28.000.00	Usually 7-10% of construction
015540005	Traffic Control	1	Lump	\$14,000.00		Usually 3-5% of construction
01557001*	Maintenance of Traffic	1	Lump	\$2,800.00	\$2,800.00	Usually 1% of construction
015720020	Dust Control and Watering	180	1000 gal	\$15.00	\$2,700.00	
020560005	Borrow (Plan Quantity)	3,323	cu yd	\$13.00	\$43,199.00	
020560010	Borrow	0	Ton			
020560015	Granular Borrow (Plan Quantity)	448	cu yd			
020560020	Granular Borrow	858	Ton	\$16.00	\$13,728.00	
020560025	Granular Backfill Borrow (Plan Quantity)	0	cu yd			
#N/A	Raise Water Valve	0	Each	\$400.00	\$0.00	
#N/A	Relocate Hydrant	0	Each	\$3,000.00	\$0.00	
#N/A	Relocate Utility Pedestal	1	Each	\$1,500.00	\$1,500.00	
022210095	Remove Pipe Culvert	60	ft	\$15.00	\$900.00	
022210035	Remove Diversion Box	1	Each	\$500.00	\$500.00	
022210075	Remove Guardrail	0	ft	\$2.50	\$0.00	
#N/A	Remove Modular Block Retaining Wall	0	ft	\$20.00	\$0.00	
022210170	Remove Precast Concrete Barrier	217	ft	\$4.50	\$976.50	
028430035	Crash Cushion Type G	0	Each	\$3,500.00	\$0.00	
028410086	W-Beam Guardrail 72 inch Wood Post	105	ft	\$20.00	\$2,100.00	
028440010	Precast Concrete Barrier - 32 Inch (New Jersey Shape	217	ft	\$50.00	\$10,850.00	
028440280	Precast Concrete Constant Slope Barrier, 42 Inch, Ret	0	Each	\$1,600.00	\$0.00	
028440290	Precast Concrete Constant Slope Barrier, 42 Inch, Slo	0	Each	\$2,000.00	\$0.00	
023160020	Roadway Excavation (Plan Quantity)	896	cu yd	\$18.00	\$16,128.00	
027120010	Lean Concrete Base Course, 4 inch thick	0	sq yd	* ***	A O 171 00	
027210010	Untreated Base Course	417	Ton	\$22.00	\$9,174.00	
027210020 027350010	Untreated Base Course (Plan Quantity)	224 0	cu yd			
027350010	Micro-Surfacing Asphalt Pavement Soft Spot Repair - Type A	0	sq yd			
02737001	Asphalt Pavement Soft Spot Repair - Type B		sq yd sq yd			
027410060	HMA - 3/4 Inch	447	Ton	\$70.00	\$31,290.00	
027480010	Liquid Asphalt MC-70 or MC-250	3	Ton	\$770.00		Prime Coat
027480040	Emulsified Asphalt CSS-1	1	Ton	\$700.00		Tack Coat
028910020	Sign, Type A-1	35	sq ft	\$23.00		Chevron Signs
027710035	Concrete Curb and Gutter Type M1	0	ft	\$15.00	\$0.00	Shevron signe
027760010	Concrete Sidewalk	0	sq ft	\$10.00	\$0.00	
027850020	Chip Seal Coat, Type II	0	sq yd			
027850060	Emulsified Asphalt LMCRS-2	0	Ton			Chip Seal Emulsion
027850075	Emulsified Asphalt HFMS-2P	0	Ton			Flush Coat
027860010	Open Graded Surface Course	0	Ton			
#N/A	Retaining Wall	0	sq ft	\$80.00	\$0.00	
029380010	Tree Pruning	0	Each	\$200.00	\$0.00	
029610020	Rotomilling - 1 Inch	0	sq yd	\$1.25	\$0.00	
022210155	Obliterate Road	14451	sq yd	\$0.55	\$7,948.05	
Roadway Subtotal					\$189,609	
Drainage						
023730010	Loose Riprap		cu yd	\$50.00		
023180010	Small Ditch Excavation (Plan Quantity)	555	ft	\$10.00	\$5,550.00	
026130030	Culvert End Section 18 inch	1	Each	\$500.00	\$500.00	
026130050	Culvert End Section 30 inch	0	Each	\$500.00	\$0.00	
#N/A	Riprap Outlet Pad (Riprap a& Geotextile)	1	Each	\$500.00	\$500.00	
#N/A	Trench Drain	81	ft	\$200.00	\$16,200.00	
026220050	Underdrain 6 Inch	0	ft	\$50.00	\$0.00	
026101386	18 Inch Irrigation/Storm Drain, Class C, smooth	172	ft	\$50.00	\$8,600.00	
026101388	24 Inch Irrigation/Storm Drain, Class C, smooth		ft		,	
026101390	30 Inch Irrigation/Storm Drain, Class C, smooth	0	ft	\$70.00	\$0.00	
026330130	Concrete Drainage Structure 5 ft to 7 ft deep - CB 9	1	Each	\$2,600.00	\$2,600.00	
#N/A	Extend Concrete Drainage Box Culvert (12' wide)	0	ft	\$2,000.00	\$0.00	
Drainage Subtotal					\$33,950	
					,,	
PI						
	Public Information Sonvices	1	Lumn	¢700.00	\$700	Levely 0.25% of construction
013150010	Public Information Services	1	Lump	\$700.00	\$700	Usually 0.25% of construction
						1

Segment: 3 PROJECT NAME: Emigration Canyon Cost Estimate - Concept Level

· · · · · · · · · · · · · · · · · · ·	nigration Canyon Segment 03 (STA 180+0 mate Route Reference Mile Post (BEGIN) =	180+00	(END) =	
Approxir		180+00	(END) =	
			() =	227+00
	Project Length =	#VALUE!	miles	#VALUE!
	Current FY Year (July-June) =	2015		
	Assumed Construction FY Year =	2016		
	Construction Items Inflation Factor =	1.06	1 yr	s for inflation
Assumed Yearly Inflation for	Engineering Services (PE and CE) (%/yr) =	3.0%		
Assum	ed Yearly Inflation for Right of Way (%/yr) =	2.0%		
	Items not Estimated (% of Construction) =	20.0%		
Preliminary Eng	ineering (% of Construction + Incentives) =	8.0%		
Construction Eng	ineering (% of Construction + Incentives) =	10.0%		

Construction Items	Cost	Remarks
Pulic Information Services	\$700	
Roadway and Drainage	\$222,530	
Traffic and Safety	\$0	
Structures	\$0	
Environmental Mitigation	<u>\$0</u>	
ITS	<u>\$0</u>	
Subtotal	<u>\$223,230</u>	
Items not Estimated (20%)	\$44,646	
Construction Subtotal	\$267,876	
P.E. Cost P.E. Subtotal	\$21,488	8%
C.E. Cost C.E. Subtotal	\$26,860	10%
Right of Way Right of Way Subtotal	<u>\$0</u>	
Utilities Utilities Subtotal	\$40,000	
Incentives Incentives Subtotal	<u>\$723</u>	
Miscellaneous Miscellaneous Subtotal	\$0	

Cost Estimate (ePM screen 505)		2	015	2	2016
	P.E.		\$21,000		\$22,000
	Right of Way		\$0		\$0
	Utilities		\$40,000		\$42,000
	Construction		\$268,000		\$283,000
	C.E.		\$27,000		\$28,000
	Incentives		\$1,000		\$1,000
	Aesthetics	0.75%	\$2,000		\$2,000
	Change Order Contingency	9.00%	\$24,000		\$25,000
	SLCO Oversight		\$0		\$0
	Miscellaneous		\$0		\$0
		TOTAL	\$383,000	TOTAL	\$403,000
	PROPOSED COMMISSION REQUEST	TOTAL	\$383,000	TOTAL	\$403,000

Project Assumptions/Risks

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Roadway and Drainage Segment: 3 PROJECT NAME: Emigration Canyon

Item #	Item	Quantity	Units	Price	Cost	Remarks
Roadway						
012850010	Mobilization	1	Lump	\$28,000.00	\$28,000.00	Usually 7-10% of construction
015540005	Traffic Control	1	Lump	\$14,000.00		Usually 3-5% of construction
01557001*	Maintenance of Traffic	1	Lump	\$2,800.00	\$2,800.00	Usually 1% of construction
015720020	Dust Control and Watering	56	1000 gal	\$15.00	\$840.00	
020560005	Borrow (Plan Quantity)	423	cu yd	\$13.00	\$5,499.00	
020560010	Borrow	0	Ton			
020560015	Granular Borrow (Plan Quantity)	536	cu yd			
020560020	Granular Borrow	1,027	Ton	\$16.00	\$16,432.00	
020560025	Granular Backfill Borrow (Plan Quantity)	0	cu yd			
#N/A	Raise Water Valve	1	Each	\$400.00	\$400.00	
#N/A	Relocate Hydrant	1	Each	\$3,000.00	\$3,000.00	
#N/A	Relocate Utility Pedestal	0	Each	\$1,500.00	\$0.00	
	Remove Pipe Culvert	0	ft	\$15.00	\$0.00	
022210035	Remove Diversion Box	0	Each	\$500.00	\$0.00	
022210075	Remove Guardrail	312	ft	\$2.50	\$780.00	
	Remove Modular Block Retaining Wall	0	ft	\$20.00	\$0.00	
	Remove Precast Concrete Barrier		ft	\$4.50		
028430035	Crash Cushion Type G	2	Each	\$3,500.00	\$7,000.00	
028410086	W-Beam Guardrail 72 inch Wood Post	510	ft	\$20.00	\$10,200.00	
	Precast Concrete Barrier - 32 Inch (New Jersey Shape)		ft	\$50.00		
	Precast Concrete Constant Slope Barrier, 42 Inch, Ret	0	Each	\$1,600.00	\$0.00	
028440290	Precast Concrete Constant Slope Barrier, 42 Inch, Slo	0	Each	\$2,000.00	\$0.00	
023160020	Roadway Excavation (Plan Quantity)	1,088	cu yd	\$18.00	\$19,584.00	
027120010	Lean Concrete Base Course, 4 inch thick	0	sq yd			
027210010	Untreated Base Course	499	Ton	\$22.00	\$10,978.00	
027210020	Untreated Base Course (Plan Quantity)	268	cu yd			
	Micro-Surfacing	0	sq yd			
	Asphalt Pavement Soft Spot Repair - Type A		sq yd			
02737002*	Asphalt Pavement Soft Spot Repair - Type B		sq yd			
	HMA - 3/4 Inch	567	Ton	\$70.00	\$39,690.00	
027480010	Liquid Asphalt MC-70 or MC-250	4	Ton	\$770.00		Prime Coat
	Emulsified Asphalt CSS-1	1	Ton	\$700.00		Tack Coat
028910020	Sign, Type A-1	239	sq ft	\$23.00		Chevron Signs
027710035	Concrete Curb and Gutter Type M1	616	ft	\$15.00	\$9,240.00	
027760010	Concrete Sidewalk	263	sq ft	\$10.00	\$2,630.00	
027850020	Chip Seal Coat, Type II	0	sq yd			
	Emulsified Asphalt LMCRS-2	0	Ton			Chip Seal Emulsion
	Emulsified Asphalt HFMS-2P	0	Ton			Flush Coat
027860010	Open Graded Surface Course	0	Ton			
	Retaining Wall	0	sq ft	\$80.00	\$0.00	
029380010	Tree Pruning	0	Each	\$200.00	\$0.00	
029610020	Rotomilling - 1 Inch	0	sq yd	\$1.25	\$0.00	
022210155	Obliterate Road	0	sq yd	\$0.55	\$0.00	
Roadway Subtotal					\$180,350	
Drainage	Lana Diaran					
023730010	Loose Riprap	1.010	cu yd	\$50.00	A40 100	
023180010	Small Ditch Excavation (Plan Quantity)	1,018	ft	\$10.00	\$10,180.00	
026130030	Culvert End Section 18 inch	0	Each	\$500.00	\$0.00	
026130050	Culvert End Section 30 inch	0	Each	\$500.00	\$0.00	
#N/A	Riprap Outlet Pad (Riprap a& Geotextile)	0	Each	\$500.00	\$0.00	
026220050	Underdrain 6 Inch	0	ft #	\$50.00	\$0.00	
	18 Inch Irrigation/Storm Drain, Class C, smooth	0	ft #	\$50.00	\$0.00	
026101388	24 Inch Irrigation/Storm Drain, Class C, smooth	0	ft #	¢70.00	\$0.00	
026101390 026330130	30 Inch Irrigation/Storm Drain, Class C, smooth Concrete Drainage Structure 5 ft to 7 ft deep - CB 9	0	ft Fach	\$70.00 \$2,600.00	\$0.00	
#N/A	Extend Concrete Drainage Box Culvert (12' wide)	16	Each ft	\$2,600.00	\$0.00	
#N/A	Exterio Concrete Dramage Box Cuivert (12 wide)	10	п	\$2,000.00	\$32,000.00	
Drainage Subtotal			·1		\$42,180	
J.aage Castota.						
PI 013150010	Public Information Services	1	Lump	\$700.00	****	Usually 0.25% of construction

Segment: 4 PROJECT NAME: Emigration Canyon Cost Estimate - Concept Level

Prepared	Ву: ВЈК	Date	2/15/2016		
Proposed Project Scope:	Emigration Canyon Segment 04 (ST	A 227+00) - 270+00)		
	Approximate Route Reference Mile Post (BB	EGIN) =	227+00	(END) =	270+00
	Project L	ength =	#VALUE!	miles	#VALUE!
	Current FY Year (July-	June) =	2015		
	Assumed Construction FY	Year =	2016		
	Construction Items Inflation F	actor =	1.06	1 yr	s for inflation
Assumed Yearly Infla	ation for Engineering Services (PE and CE)	(%/yr) =	3.0%		
	Assumed Yearly Inflation for Right of Way	(%/yr) =	2.0%		
	Items not Estimated (% of Constru	ction) =	20.0%		
Prelimi	nary Engineering (% of Construction + Incen	tives) =	8.0%		
Construc	ction Engineering (% of Construction + Incen	tives) =	10.0%		

Construction Items	Cost	Remarks
Pulic Information Services	\$9,000	
Roadway and Drainage	\$2,705,210	
Traffic and Safety	\$0	
Structures	\$0	
Environmental Mitigation	<u>\$0</u>	
ITS	<u>\$0</u>	
Subtotal	<u>\$2,714,210</u>	
Items not Estimated (20%)	\$542,842	
Construction Subtotal	\$3,257,052	
P.E. Cost P.E. Subtotal	\$260,685	8%
C.E. Cost C.E. Subtotal	\$325,856	10%
Right of Way Right of Way Subtotal	\$0	
Utilities Utilities Subtotal	\$20,000	
Incentives Incentives Subtotal	\$1,511	
Miscellaneous Miscellaneous Subtotal	\$0	

Cost Estimate (ePM screen 505)			2015		2016
	P.E.		\$261,000		\$269,000
	Right of Way		\$0		\$0
	Utilities		\$20,000		\$21,000
	Construction		\$3,257,000		\$3,436,000
	C.E.		\$326,000		\$336,000
	Incentives		\$2,000		\$2,000
	Aesthetics	0.75%	\$24,000		\$25,000
	Change Order Contingency	9.00%	\$295,000		\$311,000
	SLCO Oversight		\$0		\$0
	Miscellaneous		\$0		\$0
		TOTAL	\$4,185,000	TOTAL	\$4,400,000
	PROPOSED COMMISSION REQUEST	TOTAL	\$4,185,000	TOTAL	\$4,400,000

Project Assumptions/Risks

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5	12	
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7	14	

Roadway and Drainage Segment: 4 PROJECT NAME: Emigration Canyon

Item #	Item	Quantity	Units	Price	Cost	Remarks
Roadway						
012850010	Mobilization	1	Lump	\$355,000.00	\$355,000,00	Usually 7-10% of construction
015540005	Traffic Control	1	Lump	\$178,000.00	\$178.000.00	Usually 3-5% of construction
01557001*	Maintenance of Traffic	1	Lump	\$36,000.00		Usually 1% of construction
015720020	Dust Control and Watering	78	1000 gal	\$15.00	\$1,170.00	· · ·
020560005	Borrow (Plan Quantity)	0	cu yd	\$13.00	\$0.00	
020560010	Borrow	0	Ton			
020560015	Granular Borrow (Plan Quantity)	1,149	cu yd			
020560020	Granular Borrow	2,201	Ton	\$16.00	\$35,216.00	
020560025	Granular Backfill Borrow (Plan Quantity)	0	cu yd			
#N/A	Relocate Hydrant	0	Each	\$3,000.00	\$0.00	
022210095	Remove Pipe Culvert	0	ft	\$15.00	\$0.00	
022210035 022210075	Remove Diversion Box Remove Guardrail	0 657	Each ft	\$500.00 \$2.50	\$0.00 \$1,642.50	
#N/A	Remove Modular Block Retaining Wall	138	ft	\$2.50	\$1,042.30	
022210170	Remove Precast Concrete Barrier	0	ft	\$4.50	\$0.00	
028430035	Crash Cushion Type G	2	Each	\$3,500.00	\$7,000.00	
028410086	W-Beam Guardrail 72 inch Wood Post	611	ft	\$20.00	\$12,220.00	
028440010	Precast Concrete Barrier - 32 Inch (New Jersey Shape	0	ft	\$50.00	\$0.00	
028440280	Precast Concrete Constant Slope Barrier, 42 Inch, Ret	0	Each	\$1,600.00	\$0.00	
028440290	Precast Concrete Constant Slope Barrier, 42 Inch, Re	0	Each	\$2,000.00	\$0.00	
023160020	Roadway Excavation (Plan Quantity)	4,896	cu yd	\$18.00	\$88,128.00	
027120010	Lean Concrete Base Course, 4 inch thick	0	sq yd			
027210010	Untreated Base Course	1,070	Ton	\$22.00	\$23,540.00	
027210020	Untreated Base Course (Plan Quantity)	575	cu yd			
027350010	Micro-Surfacing	0	sq yd			
02737001*	Asphalt Pavement Soft Spot Repair - Type A		sq yd			
02737002*	Asphalt Pavement Soft Spot Repair - Type B		sq yd			
027410060	HMA - 3/4 Inch	1,185	Ton	\$70.00	\$82,950.00	
027480010	Liquid Asphalt MC-70 or MC-250	7	Ton	\$770.00		Prime Coat
027480040	Emulsified Asphalt CSS-1	3 0	Ton	\$700.00		Tack Coat
028910020 027680040	Sign, Type A-1 4 inch Pavement Marking Epoxy - Yellow Type 1	1,846	sq ft ft	\$23.00 \$0.70	\$0.00	Chevron Signs
027710035	Concrete Curb and Gutter Type M1	0	ft	\$0.70	\$1,292.20	
027760010	Concrete Sidewalk	0	sq ft	ψ13.00	ψ0.00	
027850020	Chip Seal Coat, Type II	0	sq yd			
027850060	Emulsified Asphalt LMCRS-2	0	Ton			Chip Seal Emulsion
027850075	Emulsified Asphalt HFMS-2P	0	Ton			Flush Coat
027860010	Open Graded Surface Course	0	Ton			
#N/A	Retaining Wall	22807	sq ft	\$80.00	\$1,824,560.00	
027610035	Continuous Longitudinal Rumble Strip - Asphalt	0	ft	\$0.28	\$0.00	
029380010	Tree Pruning	21	Each	\$200.00	\$4,200.00	
02221001D	Remove Building, Basement, and Foundation - Parcel	0	Parcel	\$5,000.00		Abandon Bldg Pioneer Fork
029610020	Rotomilling - 1 Inch	297	sq yd	\$1.25	\$371.25	
022210155	Obliterate Road	619	sq yd	\$0.55	\$340.45	
Roadway Subtotal					\$2,661,880	
Drainage						
023730010	Loose Riprap		cu yd	\$50.00		
023180010	Small Ditch Excavation (Plan Quantity)	1,553	ft	\$10.00	\$15,530.00	
026130030	Culvert End Section 18 inch	1	Each	\$500.00 \$500.00	\$500.00	
026130050 #N/A	Culvert End Section 30 inch Riprap Outlet Pad (Riprap a& Geotextile)	0	Each	\$500.00 \$500.00	\$0.00 \$500.00	
#N/A 026220050	Underdrain 6 Inch	0	Each ft	\$50.00	\$500.00	
026101386	18 Inch Irrigation/Storm Drain, Class C, smooth	380	ft	\$50.00	\$19,000.00	
026101388	24 Inch Irrigation/Storm Drain, Class C, smooth	000	ft	ψ00.00	φ10,000.00	
026101390	30 Inch Irrigation/Storm Drain, Class C, smooth	0	ft	\$70.00	\$0.00	
026330130	Concrete Drainage Structure 5 ft to 7 ft deep - CB 9	3	Each	\$2,600.00	\$7,800.00	
#N/A	Extend Concrete Drainage Box Culvert (12' wide)	0	ft	\$2,000.00	\$0.00	
Drainage Subtotal					\$43,330	
PI						
013150010	Public Information Services	1	Lump	\$9,000.00	\$9.000	Usually 0.25% of construction
				÷3,000.00	<i>40,000</i>	

Segment: 5 PROJECT NAME: Emigration Canyon Cost Estimate - Concept Level

Prepared	Ву: ВЈК	Date	2/15/2016		
Proposed Project Scope:	Emigration Canyon Segment 05 (STA	270+00) - 286+00)		
	Approximate Route Reference Mile Post (BEG	GIN) =	270+00	(END) =	286+00
	Project Ler	ngth =	#VALUE!	miles	#VALUE!
	Current FY Year (July-Ju	une) =	2015		
	Assumed Construction FY Y	′ear =	2016		
	Construction Items Inflation Fa	ctor =	1.06	1 yrs	s for inflation
Assumed Yearly Infla	ation for Engineering Services (PE and CE) (%	5/yr) =	3.0%		
	Assumed Yearly Inflation for Right of Way (%	5/yr) =	2.0%		
	Items not Estimated (% of Construct	ion) =	20.0%		
Prelimi	nary Engineering (% of Construction + Incentiv	/es) =	8.0%		
Construc	tion Engineering (% of Construction + Incentiv	/es) =	10.0%		

Construction Items	Cost	Remarks
Pulic Information Services	\$5,000	
Roadway and Drainage	<u>\$1,710,507</u>	
Traffic and Safety	\$0	
Structures	<u>\$0</u>	
Environmental Mitigation	<u>\$0</u>	
ITS	<u>\$0</u>	
Subtotal	<u>\$1,715,507</u>	
Items not Estimated (20%)	\$343,101	
Construction Subtotal	\$2,058,608	
P.E. Cost P.E. Subtotal	\$164,689	8%
C.E. Cost C.E. Subtotal	\$205,861	10%
Right of Way Right of Way Subtotal	<u>\$0</u>	
Utilities Utilities Subtotal	<u>\$0</u>	
Incentives Incentives Subtotal	<u>\$0</u>	
Miscellaneous Miscellaneous Subtotal	\$0	

Cost Estimate (ePM screen 505)			2015		2016
	P.E.		\$165,000		\$170,000
	Right of Way		\$0		\$0
	Utilities		\$0		\$0
	Construction		\$2,059,000		\$2,172,000
	C.E.		\$206,000		\$212,000
	Incentives		\$0		\$0
	Aesthetics	0.75%	\$15,000		\$16,000
	Change Order Contingency	9.00%	\$187,000		\$197,000
	SLCO Oversight		\$0		\$0
	Miscellaneous		\$0		\$0
		TOTAL	\$2,632,000	TOTAL	\$2,767,000
	PROPOSED COMMISSION REQUEST	TOTAL	\$2,632,000	TOTAL	\$2,767,000

Project Assumptions/Risks

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Roadway and Drainage Segment: 5 PROJECT NAME: Emigration Canyon

Item #	Item	Quantity	Units	Price	Cost	Remarks
Roadway						
012850010	Mobilization	1	Lump	\$200,000.00	\$200,000.00	Usually 7-10% of construction
015540005	Traffic Control	1	Lump	\$100,000.00		Usually 3-5% of construction
01557001*	Maintenance of Traffic	1	Lump	\$20,000.00		Usually 1% of construction
015720020	Dust Control and Watering	14	1000 gal	\$15.00	\$210.00	
020560005	Borrow (Plan Quantity)	0	cu yd	\$13.00	\$0.00	
020560010	Borrow	0	Ton			
020560015 020560020	Granular Borrow (Plan Quantity) Granular Borrow	207 396	cu yd Ton	\$16.00	\$6,336.00	
020560025	Granular Borrow (Plan Quantity)	0	cu yd	\$10.00	φ0,330.00	
#N/A	Relocate Hydrant	1	Each	\$3,000.00	\$3,000.00	
022210095	Remove Pipe Culvert	0	ft	\$15.00	\$0.00	
022210035	Remove Diversion Box	0	Each	\$500.00	\$0.00	
022210075	Remove Guardrail	364	ft	\$2.50	\$910.00	
#N/A	Remove Modular Block Retaining Wall	0	ft	\$20.00	\$0.00	
022210170	Remove Precast Concrete Barrier	0	ft	\$4.50	\$0.00	
028430035	Crash Cushion Type G	1	Each	\$3,500.00	\$3,500.00	
028410086	W-Beam Guardrail 72 inch Wood Post	0	ft	\$20.00	\$0.00	
028440010	Precast Concrete Barrier - 32 Inch (New Jersey Shape	0	ft	\$50.00	\$0.00	
028440280 028440290	Precast Concrete Constant Slope Barrier, 42 Inch, Ret Precast Concrete Constant Slope Barrier, 42 Inch, Slo	0	Each Each	\$1,600.00 \$2,000.00	\$0.00 \$0.00	
028440290	Roadway Excavation (Plan Quantity)	415	Each cu yd	\$2,000.00	\$0.00 \$7,470.00	
027120010	Lean Concrete Base Course, 4 inch thick	415	sq yd	ψ10.00	ψι,τι 0.00	
027210010	Untreated Base Course	192	Ton	\$22.00	\$4,224.00	
027210020	Untreated Base Course (Plan Quantity)	104	cu yd		. ,	
027350010	Micro-Surfacing	0	sq yd			
02737001*	Asphalt Pavement Soft Spot Repair - Type A		sq yd			
02737002*	Asphalt Pavement Soft Spot Repair - Type B		sq yd			
027410060	HMA - 3/4 Inch	206	Ton	\$70.00	\$14,420.00	
027480010	Liquid Asphalt MC-70 or MC-250	2	Ton	\$770.00		Prime Coat
027480040	Emulsified Asphalt CSS-1	1 62	Ton	\$700.00		Tack Coat
028910020 027680040	Sign, Type A-1 4 inch Pavement Marking Epoxy - Yellow Type 1	1,846	sq ft ft	\$23.00 \$0.70	\$1,426.00	Chevron Signs
027710035	Concrete Curb and Gutter Type M1	82	ft	\$15.00	\$1,230.00	
027760010	Concrete Sidewalk	02	sq ft	¢10.00	ψ1,200.00	
027850020	Chip Seal Coat, Type II	0	sq yd			
027850060	Emulsified Asphalt LMCRS-2	0	Ton			Chip Seal Emulsion
027850075	Emulsified Asphalt HFMS-2P	0	Ton			Flush Coat
027860010	Open Graded Surface Course	0	Ton			
#N/A	Retaining Wall	16250	sq ft	\$80.00		Pioneer Fork Sight Triangle
027610035	Continuous Longitudinal Rumble Strip - Asphalt	923	ft Fach	\$0.28	\$258.44	
029380010 02221001D	Tree Pruning Remove Building, Basement, and Foundation - Parcel	0	Each Parcel	\$200.00 \$5.000.00	\$0.00	Abandon Bldg Pioneer Fork
029610020	Remove Building, Basement, and Foundation - Parcer Rotomilling - 1 Inch	0	sq yd	\$5,000.00	\$5,000.00	
022210155	Obliterate Road	0	sq yd sq yd	\$0.55	φ0.00	
Roadway Subtotal					\$1,671,517	
-					· · ·	
Drainage						
023730010	Loose Riprap		cu yd	\$50.00		
023180010	Small Ditch Excavation (Plan Quantity)	489	ft	\$10.00	\$4,890.00	
026130030	Culvert End Section 18 inch	1	Each	\$500.00	\$500.00	
026130050	Culvert End Section 30 inch	0	Each	\$500.00	\$0.00	
#N/A 026220050	Riprap Outlet Pad (Riprap a& Geotextile) Underdrain 6 Inch	1 0	Each	\$500.00 \$50.00	\$500.00 \$0.00	
026220050	18 Inch Irrigation/Storm Drain, Class C, smooth	90	ft ft	\$50.00	\$0.00 \$4,500.00	
026101388	24 Inch Irrigation/Storm Drain, Class C, smooth	30	ft	φ50.00	ψ4,000.00	
026101390	30 Inch Irrigation/Storm Drain, Class C, smooth	0	ft	\$70.00	\$0.00	
026330130	Concrete Drainage Structure 5 ft to 7 ft deep - CB 9	1	Each	\$2,600.00	\$2,600.00	
#N/A	Extend Concrete Drainage Box Culvert (12' wide)	13	ft	\$2,000.00	\$26,000.00	
Drainage Subtotal			•		\$38,990	
DI .						
PI	Public Information Sonvisor	4	Lumn	\$5,000,000	¢E 000	Lloughy 0.25% of construction
013150010	Public Information Services	1	Lump	\$5,000.00	\$5,000	Usually 0.25% of construction
						1

Segment: 6 PROJECT NAME: Emigration Canyon Cost Estimate - Concept Level

Proposed Project Scope:				
	Emigration Canyon Segment 06 (STA 286+0	0 - 310+00)		
Ар	proximate Route Reference Mile Post (BEGIN) =	286+00	(END) =	310+00
	Project Length =	#VALUE!	miles	#VALUE!
	Current FY Year (July-June) =	2015		
	Assumed Construction FY Year =	2016		
	Construction Items Inflation Factor =	1.06	1 yr	s for inflation
Assumed Yearly Inflatio	n for Engineering Services (PE and CE) (%/yr) =	3.0%		
A	ssumed Yearly Inflation for Right of Way (%/yr) =	2.0%		
	Items not Estimated (% of Construction) =	20.0%		
Preliminar	y Engineering (% of Construction + Incentives) =	8.0%		
Constructio	n Engineering (% of Construction + Incentives) =	10.0%		

Construction Items	Cost	Remarks
Pulic Information Services	\$1,200	
Roadway and Drainage	\$358,929	
Traffic and Safety	\$0	
Structures	<u>\$0</u>	
Environmental Mitigation	<u>\$0</u>	
ITS	<u>\$0</u>	
Subtotal	<u>\$360,129</u>	
Items not Estimated (20%)	\$72,026	
Construction Subtotal	\$432,155	
P.E. Cost P.E. Subtotal	\$34,572	8%
C.E. Cost C.E. Subtotal	\$43,216	10%
Right of Way Right of Way Subtotal	<u>\$0</u>	
Utilities Utilities Subtotal	<u>\$0</u>	
Incentives Incentives Subtotal	<u>\$0</u>	
Miscellaneous Miscellaneous Subtotal	\$0	

Cost Estimate (ePM screen 505)		2	015		2016
	P.E.		\$35,000		\$36,00
	Right of Way		\$0		\$0
	Utilities		\$0		\$0
	Construction		\$432,000		\$456,000
	C.E.		\$43,000		\$44,000
	Incentives		\$0		\$0
	Aesthetics	0.75%	\$3,000		\$3,000
	Change Order Contingency	9.00%	\$39,000		\$41,000
	SLCO Oversight		\$0		\$0
	Miscellaneous		\$0		\$0
		TOTAL	\$552,000	TOTAL	\$580,000
	PROPOSED COMMISSION REQUEST	TOTAL	\$552,000	TOTAL	\$580,000

Project Assumptions/Risks

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Roadway and Drainage Segment: 6 PROJECT NAME: Emigration Canyon

Item #	Item	Quantity	Units	Price	Cost	Remarks
Roadway						
012850010	Mobilization	1	Lump	\$50,000.00	\$50,000,00	Usually 7-10% of construction
015540005	Traffic Control	1	Lump	\$25,000.00		Usually 3-5% of construction
01557001*	Maintenance of Traffic	1	Lump	\$5,000.00		Usually 1% of construction
015720020	Dust Control and Watering	13	1000 gal	\$15.00	\$195.00	
020560005	Borrow (Plan Quantity)	0	cu yd	\$13.00	\$0.00	
020560010	Borrow	0	Ton			
020560015	Granular Borrow (Plan Quantity)	180	cu yd			
020560020	Granular Borrow	344	Ton	\$16.00	\$5,504.00	
020560025	Granular Backfill Borrow (Plan Quantity)	0	cu yd			
022210095	Remove Pipe Culvert	0	ft	\$15.00	\$0.00	
022210035	Remove Diversion Box	0	Each	\$500.00	\$0.00	
022210075	Remove Guardrail	338	ft	\$2.50	\$845.00	
#N/A	Remove Modular Block Retaining Wall	0	ft	\$20.00	\$0.00	
022210170	Remove Precast Concrete Barrier	511	ft	\$4.50	\$2,299.50	
028430035	Crash Cushion Type G	1	Each	\$3,500.00	\$3,500.00	
028410086	W-Beam Guardrail 72 inch Wood Post	338	ft	\$20.00	\$6,760.00	
028440010	Precast Concrete Barrier - 32 Inch (New Jersey Shape	511	ft	\$50.00	\$25,550.00	
028440280	Precast Concrete Constant Slope Barrier, 42 Inch, Ret	0	Each	\$1,600.00	\$0.00	
028440290	Precast Concrete Constant Slope Barrier, 42 Inch, Slo	0	Each	\$2,000.00	\$0.00	
023160020	Roadway Excavation (Plan Quantity)	360	cu yd	\$18.00	\$6,480.00	
027120010	Lean Concrete Base Course, 4 inch thick	0	sq yd			
027210010	Untreated Base Course	168	Ton	\$22.00	\$3,696.00	
027210020	Untreated Base Course (Plan Quantity)	90	cu yd			
027350010	Micro-Surfacing	0	sq yd			
02737001*	Asphalt Pavement Soft Spot Repair - Type A		sq yd			
02737002*	Asphalt Pavement Soft Spot Repair - Type B	100	sq yd	470.00	* / * * * *	
027410060	HMA - 3/4 Inch	180	Ton	\$70.00	\$12,600.00	
027480010	Liquid Asphalt MC-70 or MC-250	2	Ton	\$770.00		Prime Coat
027480040	Emulsified Asphalt CSS-1	1	Ton	\$700.00		Tack Coat
028910020	Sign, Type A-1	133	sq ft	\$23.00		Chevron Signs
027710035	Concrete Curb and Gutter Type M1	0	ft	\$15.00	\$0.00	
027760010 027850020	Concrete Sidewalk	0	sq ft			
027850020	Chip Seal Coat, Type II Emulsified Asphalt LMCRS-2	0	sq yd Ton			Chip Seal Emulsion
027850060	Emulsified Asphalt HFMS-2P	0	Ton			Flush Coat
027860010	Open Graded Surface Course	0	Ton			Flush Coat
#N/A	Retaining Wall	2145	sq ft	\$80.00	\$171,600.00	
029380010	Tree Pruning	13	Each	\$200.00	\$2,600.00	
029610020	Rotomilling - 1 Inch	0	sq yd	\$1.25	\$0.00	
022210155	Obliterate Road	Ū.	sq yd	\$0.55	\$0.00	
022210100			0q Ju	<i><i><i>v</i></i>0.00</i>		
Roadway Subtotal			11		\$326,929	
-						
Drainage						
023730010	Loose Riprap		cu yd	\$50.00		
023180010	Small Ditch Excavation (Plan Quantity)	0	ft	\$10.00	\$0.00	
026130030	Culvert End Section 18 inch	0	Each	\$500.00	\$0.00	
026130050	Culvert End Section 30 inch	0	Each	\$500.00	\$0.00	
#N/A	Riprap Outlet Pad (Riprap a& Geotextile)	0	Each	\$500.00	\$0.00	
026220050	Underdrain 6 Inch	0	ft	\$50.00	\$0.00	
026101386	18 Inch Irrigation/Storm Drain, Class C, smooth	0	ft	\$50.00	\$0.00	
026101388	24 Inch Irrigation/Storm Drain, Class C, smooth		ft			
026101390	30 Inch Irrigation/Storm Drain, Class C, smooth	0	ft	\$70.00	\$0.00	
026330130 #N/A	Concrete Drainage Structure 5 ft to 7 ft deep - CB 9 Extend Concrete Drainage Box Culvert (12' wide)	0	Each	\$2,600.00	\$0.00	
#N/A	Extend Concrete Drainage Box Culvert (12' wide)	16	ft	\$2,000.00	\$32,000.00	
Drainage Subtotal					\$32,000	
]			
PI 013150010	Public Information Services	1	Lump	\$1,200.00	¢4 200	Usually 0.25% of construction
			Lunp	J1.200.00	31.200	

Segment: 7 PROJECT NAME: Emigration Canyon Cost Estimate - Concept Level

Prepared	By: BJK Date	2/15/2016		
Proposed Project Scope:	Emigration Canyon Segment 07 (STA 310+0	0 - 332+00)		
	Approximate Route Reference Mile Post (BEGIN) =	310+00	(END) =	332+00
	Project Length =	#VALUE!	miles	#VALUE!
	Current FY Year (July-June) =	2015		
	Assumed Construction FY Year =	2016		
	Construction Items Inflation Factor =	<u>1.06</u>	1 yr	rs for inflation
Assumed Yearly Infl	ation for Engineering Services (PE and CE) (%/yr) =	3.0%		
	Assumed Yearly Inflation for Right of Way (%/yr) =	2.0%		
	Items not Estimated (% of Construction) =	20.0%		
Prelimi	nary Engineering (% of Construction + Incentives) =	8.0%		
Construe	ction Engineering (% of Construction + Incentives) =	10.0%		

Construction Items	Cost	Remarks
Pulic Information Services	\$2,200	
Roadway and Drainage	\$704,849	
Traffic and Safety	<u>\$0</u>	
Structures	<u>\$0</u>	
Environmental Mitigation	<u>\$0</u>	
ITS	<u>\$0</u>	
Subtotal	<u>\$707,049</u>	
Items not Estimated (20%)	\$141,410	
Construction Subtotal	\$848,459	
P.E. Cost P.E. Subtotal	\$67,940	8%
C.E. Cost C.E. Subtotal	\$84,925	10%
Right of Way Right of Way Subtotal	\$0	
Utilities Utilities Subtotal	\$20,000	
Incentives Incentives Subtotal	<u>\$791</u>	
Miscellaneous Miscellaneous Subtotal	\$0	

Cost Estimate (ePM screen 505)			2015		2016
	P.E.		\$68,000		\$70,000
	Right of Way		\$0		\$0
	Utilities		\$20,000		\$21,000
	Construction		\$848,000		\$895,000
	C.E.		\$85,000		\$88,000
	Incentives		\$1,000		\$1,000
	Aesthetics	0.75%	\$6,000		\$6,000
	Change Order Contingency	9.00%	\$77,000		\$81,000
	SLCO Oversight		\$0		\$(
	Miscellaneous		\$0		\$0
		TOTAL	\$1,105,000	TOTAL	\$1,162,000
	PROPOSED COMMISSION REQUEST	TOTAL	\$1,105,000	TOTAL	\$1,162,000

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Roadway and Drainage Segment: 7 PROJECT NAME: Emigration Canyon

Item #	Item	Quantity	Units	Price	Cost	Remarks
Roadway		-				
012850010	Mobilization	1	Lump	\$85,000.00	\$85,000,00	Usually 7-10% of construction
015540005	Traffic Control	1	Lump	\$42,500.00		Usually 3-5% of construction
01557001*	Maintenance of Traffic	1	Lump	\$8,500.00		Usually 1% of construction
015720020	Dust Control and Watering	42	1000 gal	\$15.00	\$630.00	· · ·
020560005	Borrow (Plan Quantity)	0	cu yd	\$13.00	\$0.00	
020560010	Borrow	0	Ton	φ10.00	φ0.00	
020560015	Granular Borrow (Plan Quantity)	620	cu yd			
020560020	Granular Borrow	1,189	Ton	\$16.00	\$19,024.00	
020560025	Granular Backfill Borrow (Plan Quantity)	0	cu yd	φ10.00	\$10,02 1.00	
022210095	Remove Pipe Culvert	181	ft	\$15.00	\$2,715.00	
022210035	Remove Diversion Box	1	Each	\$500.00	\$500.00	
022210075	Remove Guardrail	1,282	ft	\$2.50	\$3,205.00	
#N/A	Remove Modular Block Retaining Wall	0	ft	\$20.00	\$0.00	
022210170	Remove Precast Concrete Barrier	98	ft	\$4.50	\$441.00	
028430035	Crash Cushion Type G	5	Each	\$3,500.00	\$17,500.00	
028410086	W-Beam Guardrail 72 inch Wood Post	1,444	ft	\$20.00	\$28,880.00	
028440010	Precast Concrete Barrier - 32 Inch (New Jersey Shape		ft	\$50.00	\$4,900.00	
028440280	Precast Concrete Constant Slope Barrier, 42 Inch, Ret		Each	\$1,600.00	\$8,000.00	
028440290	Precast Concrete Constant Slope Barrier, 42 Inch, Net	1	Each	\$2,000.00	\$2,000.00	
023160020	Roadway Excavation (Plan Quantity)	3,521	cu yd	\$18.00	\$63,378.00	
027120010	Lean Concrete Base Course, 4 inch thick	0	sq yd	φ10.00	\$00,070.00	
027210010	Untreated Base Course	578	Ton	\$22.00	\$12,716.00	
027210020	Untreated Base Course (Plan Quantity)	310	cu yd	\$		
027350010	Micro-Surfacing	0	sq yd			
02737001*	Asphalt Pavement Soft Spot Repair - Type A	Ū	sq yd			
02737002*	Asphalt Pavement Soft Spot Repair - Type B		sq yd			
027410060	HMA - 3/4 Inch	620	Ton	\$70.00	\$43,400.00	
027480010	Liquid Asphalt MC-70 or MC-250	4	Ton	\$770.00		Prime Coat
027480040	Emulsified Asphalt CSS-1	2	Ton	\$700.00		Tack Coat
028910020	Sign, Type A-1	0	sq ft	\$23.00		Chevron Signs
027710035	Concrete Curb and Gutter Type M1	0	ft	\$15.00	\$0.00	
027760010	Concrete Sidewalk	Ű	sq ft	φ10.00		
027850020	Chip Seal Coat, Type II	0	sq yd			
027850060	Emulsified Asphalt LMCRS-2	0	Ton			Chip Seal Emulsion
027850075	Emulsified Asphalt HFMS-2P	0	Ton			Flush Coat
027860010	Open Graded Surface Course	0	Ton			
#N/A	Retaining Wall	4044	sq ft	\$80.00	\$323,520.00	
029380010	Tree Pruning	0	Each	\$200.00	\$0.00	
029610020	Rotomilling - 1 Inch	0	sq yd	\$1.25	\$0.00	
022210155	Obliterate Road		sq yd	\$0.55	· · · · · · · · · · · · · · · · · · ·	
Roadway Subtotal		<u>.</u>	<u>. </u>		\$671,289	
liouunuy oubiolui					<i>\\\</i>	
Ducinous		┟─────		├		
Drainage	Lana Diasa			AF0.00		
023730010	Loose Riprap		cu yd	\$50.00		
023180010	Small Ditch Excavation (Plan Quantity)	369	ft	\$10.00	\$3,690.00	
026130030	Culvert End Section 18 inch	0	Each	\$500.00	\$0.00	
026130050	Culvert End Section 30 inch	1	Each	\$500.00	\$500.00	
#N/A	Riprap Outlet Pad (Riprap a& Geotextile)	1	Each	\$500.00	\$500.00	
026220050	Underdrain 6 Inch	0	ft	\$50.00	\$0.00	
026101386	18 Inch Irrigation/Storm Drain, Class C, smooth	168	ft	\$50.00	\$8,400.00	
026101388	24 Inch Irrigation/Storm Drain, Class C, smooth	101	ft	A70.00	¢40.070.00	
026101390	30 Inch Irrigation/Storm Drain, Class C, smooth	181	ft Fach	\$70.00	\$12,670.00	
026330130	Concrete Drainage Structure 5 ft to 7 ft deep - CB 9	3	Each	\$2,600.00	\$7,800.00	
Drainage Subtotal		<u> </u>			\$33,560	
					·	
PI						
PI 013150010	Public Information Services	1	Lump	\$2,200.00	\$2,200	Usually 0.25% of construction

Segment: 8 PROJECT NAME: Emigration Canyon Cost Estimate - Concept Level

Prepared	Ву: ВЈК	Date	2/15/2016		
Proposed Project Scope:	Emigration Canyon Segment 08 (STA	332+00	- 343+00)		
	Approximate Route Reference Mile Post (BEC	GIN) =	332+00	(END) =	343+00
	Project Le	ngth =	#VALUE!	miles	#VALUE!
	Current FY Year (July-J	une) =	2015		
	Assumed Construction FY	rear =	2016		
	Construction Items Inflation Fa	ictor =	1.06	1 yr	s for inflation
Assumed Yearly Infl	ation for Engineering Services (PE and CE) (%	6/yr) =	3.0%		
	Assumed Yearly Inflation for Right of Way (%	6/yr) =	2.0%		
	Items not Estimated (% of Construct	tion) =	20.0%		
Prelim	inary Engineering (% of Construction + Incenti	ves) =	8.0%		
Constru	ction Engineering (% of Construction + Incenti	ves) =	10.0%		

Construction Items	Cost	Remarks
Pulic Information Services	\$100	
Roadway and Drainage	\$33,060	
Traffic and Safety	\$0	
Structures	\$0	
Environmental Mitigation	<u>\$0</u>	
ITS	\$0	
Subtotal	\$33,160	
Items not Estimated (20%)	\$6,632	
Construction Subtotal	\$39,792	
P.E. Cost P.E. Subtotal		
C.E. Cost C.E. Subtotal	\$3,979	10%
Right of Way Right of Way Subtotal	\$0	
Utilities Utilities Subtotal	\$0	
Incentives Incentives Subtotal	\$0	
Miscellaneous Miscellaneous Subtotal	\$0	

Cost Estimate (ePM screen 505)	20	15	20	016
P.E.		\$3,000		\$3,000
Right of Way		\$0		\$0
Utilities		\$0		\$0
Construction		\$40,000		\$42,000
C.E.		\$4,000		\$4,000
Incentives		\$0		\$0
Aesthetics	0.75%	\$0		\$0
Change Order Continger	ncy 9.00%	\$4,000		\$4,000
SLCO Oversight		\$0		\$0
Miscellaneous		\$0		\$0
	TOTAL	\$51,000	TOTAL	\$53,000
PROPOSED COMMISSION R	EQUEST TOTAL	\$51,000	TOTAL	\$53,000

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Roadway and Drainage Segment: 8 PROJECT NAME: Emigration Canyon

Item #	Item	Quantity	Units	Price	Cost	Remarks
Roadway						
012850010	Mobilization	1	Lump	\$4,000.00	\$4.000.00	Usually 7-10% of construction
015540005	Traffic Control	1	Lump	\$2,000.00		Usually 3-5% of construction
01557001*	Maintenance of Traffic	1	Lump	\$400.00		Usually 1% of construction
015720020	Dust Control and Watering	6	1000 gal	\$15.00	\$90.00	,,
020560005	Borrow (Plan Quantity)	0	cu yd	\$13.00	\$0.00	
020560010	Borrow	0	Ton			
020560015	Granular Borrow (Plan Quantity)	88	cu yd			
020560020	Granular Borrow	168	Ton	\$16.00	\$2,688.00	
020560025	Granular Backfill Borrow (Plan Quantity)	0	cu yd			
022210095	Remove Pipe Culvert	0	ft	\$15.00	\$0.00	
022210035	Remove Diversion Box	0	Each	\$500.00	\$0.00	
022210075	Remove Guardrail	0	ft	\$2.50	\$0.00	
#N/A	Remove Modular Block Retaining Wall	0	ft	\$20.00	\$0.00	
022210170	Remove Precast Concrete Barrier	0	ft	\$4.50	\$0.00	
028430035	Crash Cushion Type G	0	Each	\$3,500.00	\$0.00	
028410086	W-Beam Guardrail 72 inch Wood Post	564	ft	\$20.00	\$11,280.00	
028440010	Precast Concrete Barrier - 32 Inch (New Jersey Shape	0	ft	\$50.00	\$0.00	
023160020	Roadway Excavation (Plan Quantity)	176	cu yd	\$18.00	\$3,168.00	
027120010	Lean Concrete Base Course, 4 inch thick	0	sq yd			
027210010	Untreated Base Course	82	Ton	\$22.00	\$1,804.00	
027210020	Untreated Base Course (Plan Quantity)	44	cu yd			
027350010	Micro-Surfacing	0	sq yd			
02737001*	Asphalt Pavement Soft Spot Repair - Type A		sq yd			
02737002*	Asphalt Pavement Soft Spot Repair - Type B		sq yd			
027410060	HMA - 3/4 Inch	88	Ton	\$70.00	\$6,160.00	
027480010	Liquid Asphalt MC-70 or MC-250	1	Ton	\$770.00	\$770.00	Prime Coat
027480040	Emulsified Asphalt CSS-1	1	Ton	\$700.00	\$700.00	Tack Coat
028910020	Sign, Type A-1	0	sq ft	\$23.00	\$0.00	Chevron Signs
027710035	Concrete Curb and Gutter Type M1	0	ft	\$15.00	\$0.00	
027760010	Concrete Sidewalk		sq ft			
027850020	Chip Seal Coat, Type II	0	sq yd			
027850060	Emulsified Asphalt LMCRS-2	0	Ton			Chip Seal Emulsion
027850075	Emulsified Asphalt HFMS-2P	0	Ton			Flush Coat
027860010	Open Graded Surface Course	0	Ton			
#N/A	Retaining Wall		sq ft	\$80.00		
029380010	Tree Pruning	0	Each	\$200.00	\$0.00	
029610020	Rotomilling - 1 Inch	0	sq yd	\$1.25	\$0.00	
022210155	Obliterate Road		sq yd	\$0.55		
oadway Subtotal			<u> </u>		\$33,060	
)rainage						
023730010	Looso Piprop		ound	¢=0.00		
023180010	Loose Riprap Small Ditch Excavation (Plan Quantity)	0	cu yd ft	\$50.00 \$10.00	\$0.00	
023180010	Culvert End Section 18 inch	0	Each	\$10.00	\$0.00	
#N/A	Riprap Outlet Pad (Riprap a& Geotextile)	0	Each	\$500.00	\$0.00	
026220050	Underdrain 6 Inch	0	ft	\$50.00	\$0.00	
026101386	18 Inch Irrigation/Storm Drain, Class C, smooth	0	ft	\$50.00	\$0.00	
026101388	24 Inch Irrigation/Storm Drain, Class C, smooth	0	ft	φ30.00	ψ0.00	
026101300	36 Inch Irrigation/Storm Drain, Class C, smooth		ft			
026330130	Concrete Drainage Structure 5 ft to 7 ft deep - CB 9	0	Each	\$2,600.00	\$0.00	
rainago Subtatal	1				\$0	
Prainage Subtotal					φU	
2						
013150010	Public Information Services	1	Lump	\$100.00	\$100	Usually 0.25% of construction

Segment: 9 PROJECT NAME: Emigration Canyon Cost Estimate - Concept Level

Prepared	By: BJK	Date	2/15/2016		
Proposed Project Scope:	Emigration Canyon Segment 9 (STA 343+00	- 410+00)		
	Approximate Route Reference Mile Post	(BEGIN) =	343+00	(END) =	410+00
	Projec	ct Length =	#VALUE!	miles	#VALUE!
	Current FY Year (J	uly-June) =	2015		
	Assumed Construction	FY Year =	2016		
	Construction Items Inflation	on Factor =	1.06	1 yr	s for inflation
Assumed Yearly Infla	ation for Engineering Services (PE and C	E) (%/yr) =	3.0%		
	Assumed Yearly Inflation for Right of W	ay (%/yr) =	2.0%		
	Items not Estimated (% of Cons	struction) =	20.0%		
Prelimi	nary Engineering (% of Construction + In	centives) =	8.0%		
Construc	ction Engineering (% of Construction + In	centives) =	10.0%		

Construction Items	Cost	Remarks
Pulic Information Services	\$3,500	
Roadway and Drainage	\$1,131,737	
Traffic and Safety	\$0	
Structures	<u>\$0</u>	
Environmental Mitigation	<u>\$0</u>	
ITS	<u>\$0</u>	
Subtotal	<u>\$1,135,237</u>	
Items not Estimated (20%)	\$227,047	
Construction Subtotal	\$1,362,284	
P.E. Cost P.E. Subtotal	\$109,304	8%
C.E. Cost C.E. Subtotal	\$136,630	10%
Right of Way Right of Way Subtotal	<u>\$0</u>	
Utilities Utilities Subtotal	\$100,000	
Incentives Incentives Subtotal	<u>\$4,012</u>	
Miscellaneous Miscellaneous Subtotal	\$0	

Cost Estimate (ePM screen 505)			2015		2016
	P.E.		\$109,000		\$112,000
	Right of Way		\$0		\$0
	Utilities		\$100,000		\$106,000
	Construction		\$1,362,000		\$1,437,000
	C.E.		\$137,000		\$141,000
	Incentives		\$4,000		\$4,000
	Aesthetics	0.75%	\$10,000		\$11,000
	Change Order Contingency	9.00%	\$123,000		\$130,000
	SLCO Oversight		\$0		\$(
	Miscellaneous		\$0		\$0
		TOTAL	\$1,845,000	TOTAL	\$1,941,000
			*1 0 15 000		** • ** • • •
	PROPOSED COMMISSION REQUEST	TOTAL	\$1,845,000	TOTAL	\$1,941,000

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Roadway and Drainage Segment: 9 PROJECT NAME: Emigration Canyon

Item #	Item	Quantity	Units	Price	Cost	Remarks
Roadway						
012850010	Mobilization	1	Lump	\$140,000.00	\$140,000,00	Usually 7-10% of construction
015540005	Traffic Control	1	Lump	\$70,000.00		Usually 3-5% of construction
01557001*	Maintenance of Traffic	1	Lump	\$14,000.00		Usually 1% of construction
015720020	Dust Control and Watering	373	1000 gal	\$15.00	\$5,595.00	
020560005	Borrow (Plan Quantity)	3,550	cu yd	\$13.00	\$46,150.00	
020560010	Borrow	0	Ton	¢.0.00	¢ 10, 100.00	
020560015	Granular Borrow (Plan Quantity)	3,150	cu yd			
020560020	Granular Borrow	6,038	Ton	\$16.00	\$96,608.00	
020560025	Granular Backfill Borrow (Plan Quantity)	0	cu yd			
022210095	Remove Pipe Culvert	55	ft	\$15.00	\$825.00	
022210035	Remove Diversion Box	1	Each	\$500.00	\$500.00	
022210075	Remove Guardrail	1,448	ft	\$2.50	\$3,620.00	
#N/A	Remove Modular Block Retaining Wall	163	ft	\$20.00	\$3,260.00	
022210170	Remove Precast Concrete Barrier	0	ft	\$4.50	\$0.00	
028430035	Crash Cushion Type G	11	Each	\$3,500.00	\$38,500.00	
028410086	W-Beam Guardrail 72 inch Wood Post	2,376	ft	\$20.00	\$47,520.00	
028440010	Precast Concrete Barrier - 32 Inch (New Jersey Shape	,	ft	\$50.00	\$14,950.00	
023160020	Roadway Excavation (Plan Quantity)	6,300	cu yd	\$18.00	\$113,400.00	
027120010	Lean Concrete Base Course, 4 inch thick	0	sq yd	<i></i>	÷,	
027210010	Untreated Base Course	2,934	Ton	\$22.00	\$64,548.00	
027210020	Untreated Base Course (Plan Quantity)	1,575	cu yd	÷==:00	÷: .,0 .0.00	
027350010	Micro-Surfacing	0	sq yd			
02737001*	Asphalt Pavement Soft Spot Repair - Type A		sq yd			
02737002*	Asphalt Pavement Soft Spot Repair - Type B		sq yd			
027410060	HMA - 3/4 Inch	3,147	Ton	\$70.00	\$220,290.00	
027480010	Liquid Asphalt MC-70 or MC-250	19	Ton	\$770.00		Prime Coat
027480040	Emulsified Asphalt CSS-1	6	Ton	\$700.00		Tack Coat
028910020	Sign, Type A-1	170	sq ft	\$23.00		Chevron Signs
027710035	Concrete Curb and Gutter Type M1	1,820	ft	\$15.00	\$27,300.00	
027760010	Concrete Sidewalk	.,	sq ft		+,	
027850020	Chip Seal Coat, Type II	0	sq yd			
027850060	Emulsified Asphalt LMCRS-2	0	Ton			Chip Seal Emulsion
027850075	Emulsified Asphalt HFMS-2P	0	Ton			Flush Coat
027860010	Open Graded Surface Course	0	Ton			
#N/A	Retaining Wall	2,074	sq ft	\$80.00	\$165,920.00	
029380010	Tree Pruning	59	Each	\$200.00	\$11,800.00	
029610020	Rotomilling - 1 Inch	0	sq yd	\$1.25	\$0.00	
022210155	Obliterate Road	74	sq yd	\$0.55	\$40.52	
oadway Subtotal					\$1,107,567	
rainage						
023730010	Loose Riprap	1	cu yd	\$50.00		
023180010	Small Ditch Excavation (Plan Quantity)	147	ft	\$10.00	\$1,470.00	
026130030	Culvert End Section 18 inch	2	Each	\$500.00	\$1,000.00	
#N/A	Riprap Outlet Pad (Riprap a& Geotextile)	2	Each	\$500.00	\$1,000.00	
026220050	Underdrain 6 Inch	52	ft	\$50.00	\$2,600.00	
026101386	18 Inch Irrigation/Storm Drain, Class C, smooth	154	ft	\$50.00	\$7,700.00	
026101388	24 Inch Irrigation/Storm Drain, Class C, smooth		ft	<i>400.00</i>	÷.,	
026101391	36 Inch Irrigation/Storm Drain, Class C, smooth	1	ft			
026330130	Concrete Drainage Structure 5 ft to 7 ft deep - CB 9	4	Each	\$2,600.00	\$10,400.00	
Prainage Subtotal	1				\$24,170	<u> </u>
ramaye Subtotal					φ∠4, 1/U	
2						
013150010	Public Information Services	1	Lump	\$3,500.00	\$3,500	Usually 0.25% of construction

Segment: 10 PROJECT NAME: Emigration Canyon Cost Estimate - Concept Level

Preparec	I Ву: ВЈК D а	ite	2/15/2016		
Proposed Project Scope:	Emigration Canyon Segment 10 (STA 41	0+00	- 500+00)		
	Approximate Route Reference Mile Post (BEGIN) =	410+00	(END) =	500+00
	Project Lengt	h =	#VALUE!	miles	#VALUE!
	Current FY Year (July-June	:) =	2015		
	Assumed Construction FY Yea	r =	2016		
	Construction Items Inflation Facto	r=	<u>1.06</u>	1 y	rs for inflation
Assumed Yearly Inf	ation for Engineering Services (PE and CE) (%/yr	·) =	3.0%		
	Assumed Yearly Inflation for Right of Way (%/yr	·) =	2.0%		
	Items not Estimated (% of Construction) =	20.0%		
Prelim	inary Engineering (% of Construction + Incentives	() =	8.0%		
Constru	ction Engineering (% of Construction + Incentives	;) =	10.0%		

Construction Items	Cost	Remarks
Pulic Information Services	\$3,000	
Roadway and Drainage	\$901,275	
Traffic and Safety	\$0	
Structures	<u>\$0</u>	
Environmental Mitigation	<u>\$0</u>	
ITS	<u>\$0</u>	
Subtotal	<u>\$904,275</u>	
Items not Estimated (20%)	\$180,855	
Construction Subtotal	\$1,085,130	
P.E. Cost P.E. Subtotal	\$87,475	8%
C.E. Cost C.E. Subtotal	\$109,343	10%
Right of Way Right of Way Subtotal	<u>\$0</u>	
Utilities Utilities Subtotal	<u>\$0</u>	
Incentives Incentives Subtotal	<u>\$8,303</u>	
Miscellaneous Miscellaneous Subtotal	\$0	

Cost Estimate (ePM screen 505)			2015		2016
	P.E.		\$87,000		\$90,000
	Right of Way		\$0		\$0
	Utilities		\$0		\$0
	Construction		\$1,085,000		\$1,145,000
	C.E.		\$109,000		\$112,000
	Incentives		\$8,000		\$8,000
	Aesthetics	0.75%	\$8,000		\$8,000
	Change Order Contingency	9.00%	\$98,000		\$103,000
	SLCO Oversight		\$0		\$0
	Miscellaneous		\$0		\$0
		TOTAL	\$1,395,000	TOTAL	\$1,466,000
	PROPOSED COMMISSION REQUEST	TOTAL	\$1,395,000	TOTAL	\$1,466,000

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Roadway and Drainage Segment: 10 PROJECT NAME: Emigration Canyon

Item #	Item	Quantity	Units	Price	Cost	Remarks
Roadway						
012850010	Mobilization	1	Lump	\$120,000.00	\$120.000.00	Usually 7-10% of construction
015540005	Traffic Control	1	Lump	\$60,000.00		Usually 3-5% of construction
01557001*	Maintenance of Traffic	1	Lump	\$12,000.00		Usually 1% of construction
015720020	Dust Control and Watering	0	1000 gal	\$15.00	\$0.00	
020560005	Borrow (Plan Quantity)	0	cu yd			
020560010	Borrow	0	Ton			
020560015	Granular Borrow (Plan Quantity)	0	cu yd			
020560020	Granular Borrow	0	Ton	\$16.00	\$0.00	
020560025	Granular Backfill Borrow (Plan Quantity)	0	cu yd			
022210075	Remove Guardrail	2,324	ft	\$2.50	\$5,810.00	
022210170	Remove Precast Concrete Barrier	0	ft	\$4.50	\$0.00	
028430035	Crash Cushion Type G	9	Each	\$3,500.00	\$31,500.00	
028410086	W-Beam Guardrail 72 inch Wood Post	1,870	ft	\$20.00	\$37,400.00	
028440010	Precast Concrete Barrier - 32 Inch (New Jersey Shape		ft	\$50.00	\$0.00	
023160020	Roadway Excavation (Plan Quantity)	3,260	cu yd	\$18.00	\$58,680.00	
027120010	Lean Concrete Base Course, 4 inch thick	0	sq yd	ψ10.00	\$30,000.00	
027210010	Untreated Base Course	0	Ton	\$22.00	\$0.00	
027210010	Untreated Base Course (Plan Quantity)	0	cu yd	ψΖΖ.00	ψ0.00	
027350010	Micro-Surfacing	0	sq yd			
02737001*	Asphalt Pavement Soft Spot Repair - Type A		sq yd			
02737002*	Asphalt Pavement Soft Spot Repair - Type B		sq yd sq yd			
027410060	HMA - 3/4 Inch	6,512	Ton	\$70.00	\$455,840.00	
027480010	Liquid Asphalt MC-70 or MC-250	0,512	Ton	\$770.00		Prime Coat
027480040	Emulsified Asphalt CSS-1	15	Ton	\$700.00	\$10,500.00	
027480040	Sign, Type A-1	918	sq ft	\$23.00		Chevron Signs
027710025	Concrete Curb and Gutter Type B1	910	ft	φ 2 3.00	φz1,114.00	Chevron Signs
027760010	Concrete Sidewalk		sq ft			
027850020	Chip Seal Coat, Type II	0	sq it sq yd			
027850020	Emulsified Asphalt LMCRS-2	0	Ton			Chip Seal Emulsion
027850075	Emulsified Asphalt HFMS-2P	0	Ton			Flush Coat
027860010	Open Graded Surface Course	0	Ton			Flush Coal
027860020	Asphalt Binder PG 64-34	0	Ton			OGSC Binder
029380010	Tree Pruning	13	Each	\$200.00	\$2.600.00	
029610020	Rotomilling - 1 Inch	39,112	sq yd	\$200.00	\$48,890.00	
029010020		39,112	sy yu	φ1.20	\$ 4 8,890.00	
Roadway Subtotal		T			\$864,334	
Drainage						
Drainage		405		*-------------		
023730010	Loose Riprap	405	cu yd	\$50.00	\$20,250.00	
020750020	Geotextiles - Erosion Control	607	sq yd	\$3.00	\$1,821.00	
023180020	Surface Ditch	1,487	ft	\$10.00	\$14,870.00	
026101386	18 Inch Irrigation/Storm Drain, Class C, smooth		ft			
026101388	24 Inch Irrigation/Storm Drain, Class C, smooth	-	ft			
026101391	36 Inch Irrigation/Storm Drain, Class C, smooth		ft			
026330130	Concrete Drainage Structure 5 ft to 7 ft deep - CB 9		Each			
Drainage Subtotal		1	<u> </u>		\$36,941	
PI						
013150010	Public Information Services	1	Lump	\$3,000.00	\$3 000	Usually 0.25% of construction
010100010			Lump	ψ3,000.00	φ3,000	03daily 0.2070 of construction

Segment: 11 PROJECT NAME: Emigration Canyon Cost Estimate - Concept Level

Prepared	Ву: ВЈК	Date	2/15/2016		
Proposed Project Scope:	Emigration Canyon Segment	11 (STA 500+00	- 545+00)		
	Approximate Route Reference Mile Po	ost (BEGIN) =	500+00	(END) =	545+00
	Pro	ject Length =	#VALUE!	miles	#VALUE!
	Current FY Year	(July-June) =	2015		
	Assumed Construct	ion FY Year =	2016		
	Construction Items Infl	ation Factor =	<u>1.06</u>	1 yrs	s for inflation
Assumed Yearly Infla	ation for Engineering Services (PE and	d CE) (%/yr) =	3.0%		
	Assumed Yearly Inflation for Right of	Way (%/yr) =	2.0%		
	Items not Estimated (% of C	onstruction) =	20.0%		
Prelimi	nary Engineering (% of Construction +	Incentives) =	8.0%		
Construc	tion Engineering (% of Construction +	Incentives) =	10.0%		

Construction Items	Cost	Remarks
Pulic Information Services	\$2,000	
Roadway and Drainage	\$633,857	
Traffic and Safety	\$0	
Structures	<u>\$0</u>	
Environmental Mitigation	<u>\$0</u>	
ITS	<u>\$0</u>	
Subtotal	<u>\$635,857</u>	
Items not Estimated (20%)	\$127,171	
Construction Subtotal	\$763,028	
P.E. Cost P.E. Subtotal	\$61,404	8%
C.E. Cost C.E. Subtotal	\$76,755	10%
Right of Way Right of Way Subtotal	\$0	
Utilities Utilities Subtotal	<u>\$0</u>	
Incentives Incentives Subtotal	<u>\$4,519</u>	
Miscellaneous Miscellaneous Subtotal	\$0	

Cost Estimate (ePM screen 505)		20	015		2016
	P.E.		\$61,000		\$63,000
	Right of Way		\$0		\$0
	Utilities		\$0		\$0
	Construction		\$763,000		\$805,000
	C.E.		\$77,000		\$79,000
	Incentives		\$5,000		\$5,000
	Aesthetics	0.75%	\$6,000		\$6,000
	Change Order Contingency	9.00%	\$69,000		\$73,000
	SLCO Oversight		\$0		\$0
	Miscellaneous		\$0		\$0
		TOTAL	\$981,000	TOTAL	\$1,031,000
	PROPOSED COMMISSION REQUEST	TOTAL	\$981,000	TOTAL	\$1,031,000

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Roadway and Drainage Segment: 11 PROJECT NAME: Emigration Canyon

Item #	ltem C		Units	Price	Cost	Remarks			
Roadway									
012850010	Mobilization	1	Lump	\$78,000.00		Usually 7-10% of construction			
015540005	Traffic Control	1	Lump	\$39,000.00	\$39,000.00	Usually 3-5% of construction			
01557001*	Maintenance of Traffic	1	Lump	\$7,800.00	\$7,800.00	Usually 1% of construction			
015720020	Dust Control and Watering	87	1000 gal	\$15.00	\$1,305.00				
020560005	Borrow (Plan Quantity)	0	cu yd						
020560010	Borrow	0	Ton						
020560015	Granular Borrow (Plan Quantity)	1,275	cu yd						
020560020	Granular Borrow	2,444	Ton	\$16.00	\$39,104.00				
020560025	Granular Backfill Borrow (Plan Quantity)	0	cu yd						
022210170	Remove Precast Concrete Barrier	0	ft	\$4.50	\$0.00				
028430035	Crash Cushion Type G	4	Each	\$3,500.00	\$14,000.00				
028410086	W-Beam Guardrail 72 inch Wood Post	3,888	ft	\$20.00	\$77,760.00				
028440010	Precast Concrete Barrier - 32 Inch (New Jersey Shape	0	ft	\$50.00	\$0.00				
023160020	Roadway Excavation (Plan Quantity)	3,687	cu yd	\$18.00	\$66,366.00				
027120010	Lean Concrete Base Course, 4 inch thick	0	sq yd		·				
027210010	Untreated Base Course	1,188	Ton	\$22.00	\$26,136.00				
027210020	Untreated Base Course (Plan Quantity)	638	cu yd						
027350010	Micro-Surfacing	0	sq yd						
02737001*	Asphalt Pavement Soft Spot Repair - Type A		sq yd						
02737002*	Asphalt Pavement Soft Spot Repair - Type B		sq yd						
027410060	HMA - 3/4 Inch	3,544	Ton	\$70.00	\$248,080.00				
027480010	Liquid Asphalt MC-70 or MC-250	8	Ton	\$770.00	\$6,160.00	Prime Coat			
027480040	Emulsified Asphalt CSS-1	8	Ton	\$700.00		Tack Coat			
028910020	Sign, Type A-1	326	sq ft	\$23.00	\$7,498.00	Chevron Signs			
027710025	Concrete Curb and Gutter Type B1		ft						
027760010	Concrete Sidewalk		sq ft						
027850020	Chip Seal Coat, Type II	0	sq yd						
027850060	Emulsified Asphalt LMCRS-2	0	Ton			Chip Seal Emulsion			
027850075	Emulsified Asphalt HFMS-2P	0	Ton			Flush Coat			
027860010	Open Graded Surface Course	0	Ton						
027860020	Asphalt Binder PG 64-34	0	Ton			OGSC Binder			
028220030	Right-of-Way Fence, Type D (Metal Post)		ft						
029610020	Rotomilling - 1 Inch	13,638	sq yd	\$1.25	\$17,047.50				
Roadway Subtotal					\$633,857				
itouting oustola					<i>4000,007</i>				
Drainage				ľ					
023730010	Loose Riprap		cu yd						
026101386	18 Inch Irrigation/Storm Drain, Class C, smooth		fť						
026101388	24 Inch Irrigation/Storm Drain, Class C, smooth		ft						
026101391	36 Inch Irrigation/Storm Drain, Class C, smooth		ft						
026330130	Concrete Drainage Structure 5 ft to 7 ft deep - CB 9		Each						
Drainage Subtotal	<u> </u>	I			\$0	<u> </u>			
PI	Dublic Information Convision	1	Lumm	¢2,000,02	¢0.000	Levely 0.050/ of construction			
013150010	Public Information Services	1	Lump	\$2,000.00	\$2,000	Usually 0.25% of construction			

Segment: 12 PROJECT NAME: Emigration Canyon Cost Estimate - Concept Level

Prepared	Ву: ВЈК	Date	2/15/2016		
Proposed Project Scope:	Emigration Canyon Segmen	t 12 (STA 545+00	- 579+86)		
	Approximate Route Reference Mile	Post (BEGIN) =	545+00	(END) =	579+86
	F	roject Length =	#VALUE!	miles	#VALUE!
	Current FY Ye	ar (July-June) =	2015		
	Assumed Constru	ction FY Year =	2016		
	Construction Items Ir	flation Factor =	<u>1.06</u>	1 yr	s for inflation
Assumed Yearly Infl	ation for Engineering Services (PE a	nd CE) (%/yr) =	3.0%		
	Assumed Yearly Inflation for Right	of Way (%/yr) =	2.0%		
	Items not Estimated (% of	Construction) =	20.0%		
Prelim	nary Engineering (% of Construction	+ Incentives) =	8.0%		
Constru	ction Engineering (% of Construction	+ Incentives) =	10.0%		

Construction Items	Cost	Remarks
Pulic Information Services	\$1,800	
Roadway and Drainage	\$628,869	
Traffic and Safety	\$0	
Structures	<u>\$0</u>	
Environmental Mitigation	<u>\$0</u>	
ITS	<u>\$0</u>	
Subtotal	<u>\$630,669</u>	
Items not Estimated (20%)	\$126,134	
Construction Subtotal	\$756,803	
P.E. Cost P.E. Subtotal	\$60,885	8%
C.E. Cost C.E. Subtotal	\$76,106	10%
Right of Way Right of Way Subtotal	<u>\$0</u>	
Utilities Utilities Subtotal	<u>\$0</u>	
Incentives Incentives Subtotal	\$4,259	
Miscellaneous Miscellaneous Subtotal	\$0	

Cost Estimate (ePM screen 505)		2	015		2016
	P.E.		\$61,000		\$63,000
	Right of Way		\$0		\$0
	Utilities		\$0		\$0
	Construction		\$757,000		\$799,000
	C.E.		\$76,000		\$78,000
	Incentives		\$4,000		\$4,000
	Aesthetics	0.75%	\$6,000		\$6,000
	Change Order Contingency	9.00%	\$69,000		\$73,000
	SLCO Oversight		\$0		\$0
	Miscellaneous		\$0		\$0
		TOTAL	\$973,000	TOTAL	\$1,023,000
	PROPOSED COMMISSION REQUEST	TOTAL	\$973,000	TOTAL	\$1,023,000

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Roadway and Drainage Segment: 12 PROJECT NAME: Emigration Canyon

Item #	Item		Units	Price	Cost	Remarks			
Roadway									
012850010	Mobilization	1	Lump	\$74,000.00	\$74,000.00	Usually 7-10% of construction			
015540005	Traffic Control	1	Lump	\$37,000.00	\$37,000.00	Usually 3-5% of construction			
01557001*	Maintenance of Traffic	1	Lump	\$7,400.00	\$7,400.00	Usually 1% of construction			
015720020	Dust Control and Watering	99	1000 gal	\$15.00	\$1,485.00				
020560005	Borrow (Plan Quantity)	0	cu yd						
020560010	Borrow	0	Ton						
020560015	Granular Borrow (Plan Quantity)	1,466	cu yd						
020560020	Granular Borrow	2,811	Ton	\$16.00	\$44,976.00				
020560025	Granular Backfill Borrow (Plan Quantity)	0	cu yd						
022210170	Remove Precast Concrete Barrier	390	ft	\$4.50	\$1,755.00				
028430035	Crash Cushion Type G	3	Each	\$3,500.00	\$10,500.00				
028410086	W-Beam Guardrail 72 inch Wood Post	2,960	ft	\$20.00	\$59,200.00				
028440010	Precast Concrete Barrier - 32 Inch (New Jersey Shape	403	ft	\$50.00	\$20,150.00				
023160020	Roadway Excavation (Plan Quantity)	3,871	cu yd	\$18.00	\$69,678.00				
027120010	Lean Concrete Base Course, 4 inch thick	0	sq yd						
027210010	Untreated Base Course	1,366	Ton	\$22.00	\$30,052.00				
027210020	Untreated Base Course (Plan Quantity)	733	cu yd		,				
027350010	Micro-Surfacing	0	sq yd						
02737001*	Asphalt Pavement Soft Spot Repair - Type A		sq yd						
02737002*	Asphalt Pavement Soft Spot Repair - Type B		sq yd						
027410060	HMA - 3/4 Inch	3,340	Ton	\$70.00	\$233,800.00				
027480010	Liquid Asphalt MC-70 or MC-250	9	Ton	\$770.00		Prime Coat			
027480040	Emulsified Asphalt CSS-1	6	Ton	\$700.00		Tack Coat			
028910020	Sign, Type A-1	594	sq ft	\$23.00		Chevron Signs			
027710025	Concrete Curb and Gutter Type B1		ft		••••••				
027760010	Concrete Sidewalk		sq ft						
027850020	Chip Seal Coat, Type II	0	sq yd						
027850060	Emulsified Asphalt LMCRS-2	0	Ton			Chip Seal Emulsion			
027850075	Emulsified Asphalt HFMS-2P	0	Ton			Flush Coat			
027860010	Open Graded Surface Course	0	Ton						
027860020	Asphalt Binder PG 64-34	0	Ton			OGSC Binder			
028220030	Right-of-Way Fence, Type D (Metal Post)		ft						
029610020	Rotomilling - 1 Inch	11,265	sq yd	\$1.25	\$14,081.25				
Roadway Subtotal		1			\$628,869				
Drainage									
023730010	Loose Riprap		auvd						
023730010	18 Inch Irrigation/Storm Drain, Class C, smooth		cu yd ft						
026101388	24 Inch Irrigation/Storm Drain, Class C, smooth		ft						
026101388	36 Inch Irrigation/Storm Drain, Class C, smooth		ft						
026330130	Concrete Drainage Structure 5 ft to 7 ft deep - CB 9		π Each						
020330130	Concrete Drainage Structure 5 it to 7 it deep - CB 9		Each						
Drainage Subtotal					\$0				
PI									
013150010	Public Information Services	1	Lump	\$1,800.00	\$1,800	Usually 0.25% of construction			
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APPENDIX H: EXISTING TRAFFIC CONDITIONS

FEHRPPEERS

Emigration Canyon Transportation & Roadway Improvement Study

TECHNICAL MEMORANDUM

To: Date:	H.G. Kuntzer, Lochner June. 2015	
From:	Fehr & Peers	
Subject:	Emigration Canyon Transportation & Roadway Improvement Study	UT14-1048

This memorandum summarizes data collected for the Emigration Canyon Transportation & Roadway Improvement Study. Roadway data counts were collected during the fall of 2014 and the summer of 2015. Crash and accident rates were obtained from the Unified Police Department.

Data Collection 1: Lower Canyon Traffic Data

Continuous two-way vehicle counts were collected over a four day period from August 30 - September 2, 2014 (Saturday to Tuesday). This period includes a holiday weekend (Labor Day) and a typical weekday. The weather during the observation period was generally dry and sunny, with typical late-summer temperatures, suggesting that activity in the canyon was not suppressed by poor weather conditions. Automated vehicle counters were placed in the lower canyon ½-mile up-canyon from Rotary Glen Park; this location represents the highest vehicle activity area since traffic volumes are known to dissipate farther up-canyon in residential areas.

Figure 1 summarizes the daily vehicle traffic according to date. During the observation period the highest traffic occurred on Labor Day (5,200 vehicles). Traffic volumes on the other days were consistently between 4,200-4,400 vehicles. Other observations worth noting:

• Weekday traffic reflects typical commute patterns. Down canyon travel peaks 7:00-8:00 AM (244 veh./hr) as residents drive to work, and up canyon travel peaks 5:00-6:00 PM (265 veh./hr) as workers return home. It is noted that the period from 4:00-7:00 PM is the busiest three-hour period of the day (1,020 veh, two-way) and represents about 25% of the total daily traffic.

 Weekend and holiday traffic peaks between roughly 10:00 AM – 4:00 PM, representing 50-60% of total daily traffic. During this period, directional travel is fairly balanced in both directions.

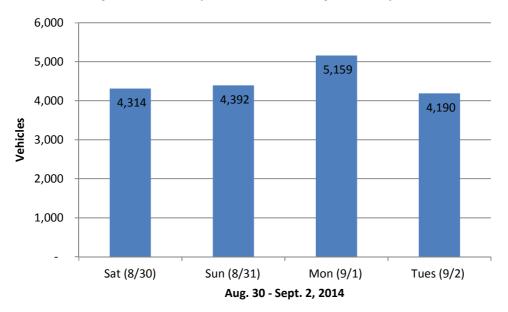
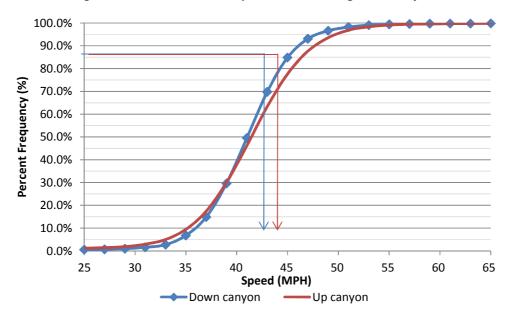


Figure 1: Total Daily Traffic in Lower Emigration Canyon

Figure 2 summarizes vehicle speeds collected in conjunction with the counts. The mean speed in both directions was observed as 42-43 miles per hour (MPH), and the 85th percentile speed was 45-46 MPH. The 85th percentile speed is the speed at or below which 85% of all vehicles are observed to travel under free flow conditions – in other words, most vehicles do not exceed this speed. Results of the speed profile analysis indicate the 85th percentile speed was almost exactly the posted speed limit (45 MPH), suggesting the speed limit is appropriate for this portion of the canyon.





Data Collection 2: Lower/Mid/Upper Canyon Data and Active Transportation Counts

Vehicle, bicycle, and pedestrian counts were conducted at lower, mid, and upper canyon locations on Tuesday June 2nd and Saturday June 6th. This period was chosen to represent a typical weekend day and weekday. The weather during the observation periods was dry and sunny, with slightly below average temperatures, suggesting that activity in the canyon was not suppressed by poor weather conditions. These counts were undertaken to quantify different user type volumes, as well as volumes throughout Emigration Canyon. The two-directional vehicle volume for lower canyon weekend day was 4,363. This is consistent with the pervious data collection period.

Figures 3 and 4 summarize the daily vehicle traffic for a weekend day and weekday, respectively, at the three Emigration Canyon count locations. These counts show a significant decrease of vehicle volume as you move up the canyon. Up canyon and down canyon volumes are fairly consistent, except for a 20% increase in up canyon travel for upper Emigration Canyon.

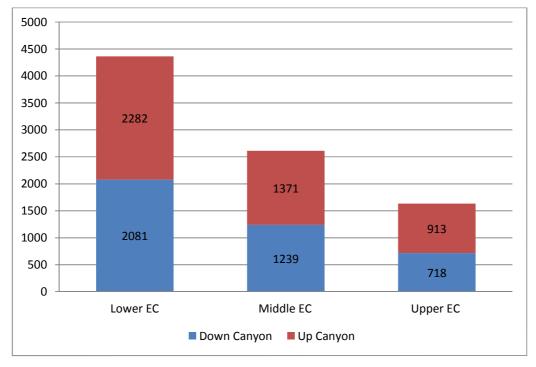


Figure 3: Total Daily Vehicle Traffic by Location in Emigration Canyon – Weekend Day

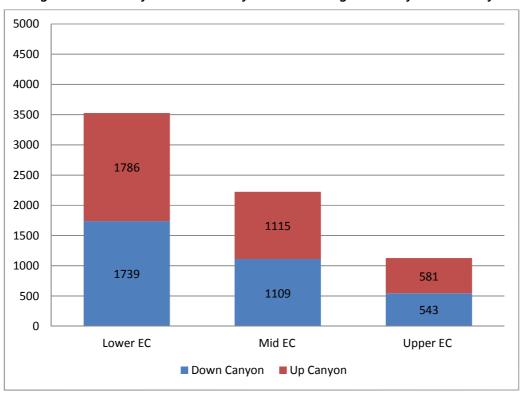
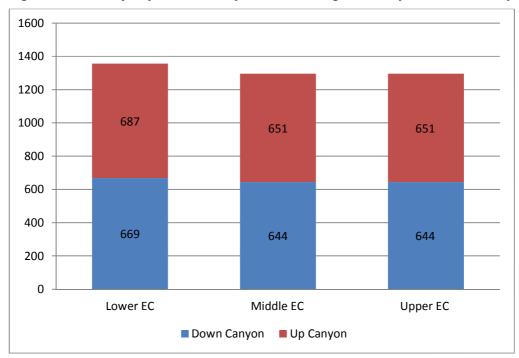


Figure 4: Total Daily Vehicle Traffic by Location in Emigration Canyon – Weekday

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Emigration Canyon Transportation & Roadway Improvement Study September 2015

Figures 5 and 6 summarize the daily bicycle volumes for a weekend day and weekday, respectively, at the three Emigration Canyon count locations. These counts show a slight decrease of bicycle vehicle volume as you move up the canyon. Weekend day up canyon and down canyon volumes are consistent. Weekday up canyon volumes are consistent with 50 riders more than down canyon volumes. This could be attributed to cyclists returning after the traffic count was completed (6:00 PM) or going over the top of Little Mountain into East Canyon.





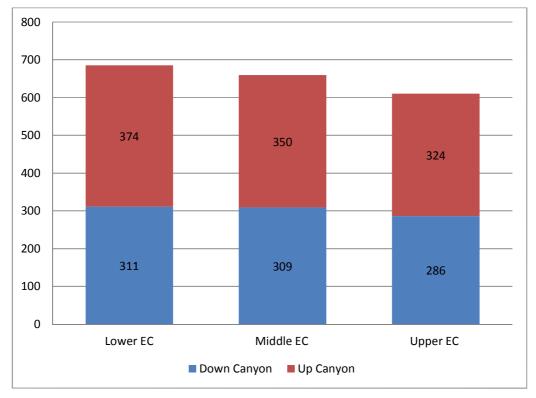


Figure 6: Total Daily Bicycle Volumes by Location in Emigration Canyon – Weekday

Figures 7 and 8 summarize the daily weekend day and weekday traffic for vehicle, bike and pedestrian counts. During both days, the vehicular traffic steady declines as you travel up Emigration Canyon, while bicycle and pedestrian traffic remain consistent throughout the canyon.

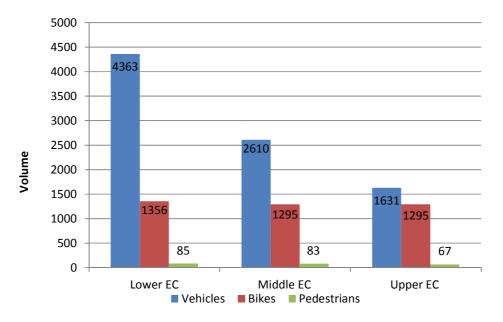
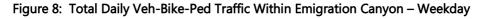
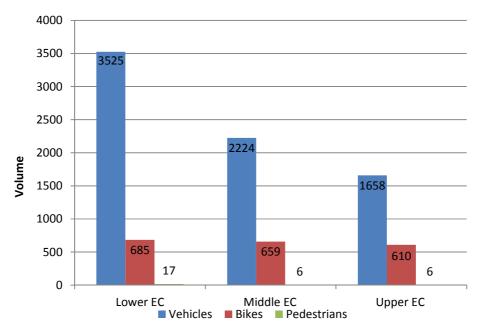


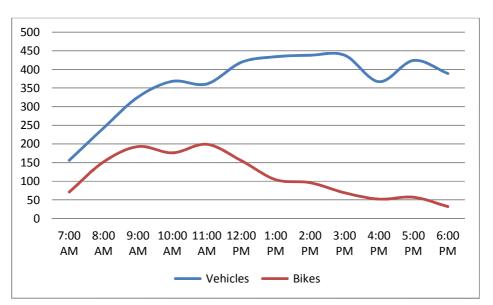
Figure 7: Total Daily Veh-Bike-Ped Traffic Within Emigration Canyon – Weekend Day



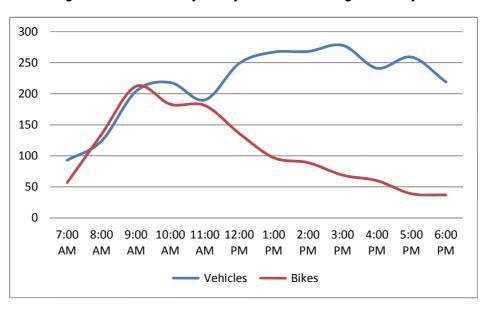


Emigration Canyon Transportation & Roadway Improvement Study September 2015

Figure 9, 10 and 11 detail the weekend day hourly vehicle and bicycle volumes at the lower, mid, and upper sections of Emigration Canyon. In all three locations vehicle volumes increase till 3:00 PM and then there is a slight decline. Bicycle volumes peak and 9:00 AM and the decrease throughout the day. In the mid and upper canyon locations bicycle volume surpasses vehicle volume. This difference is greatest at 9:00 AM at the upper canyon location, where there were 75 more bicycles than vehicles.







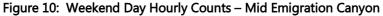
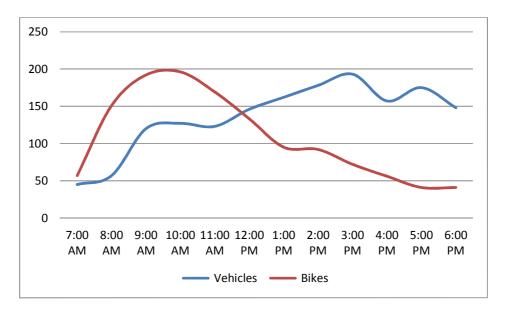


Figure 11: Weekend Day Hourly Counts – Upper Emigration Canyon



Emigration Canyon Transportation & Roadway Improvement Study September 2015

Figure 12, 13 and 14 detail the weekday hourly vehicle and bicycle volumes at the lower, mid, and upper sections of Emigration Canyon. In all three locations vehicle volumes demonstrate the typical traffic patterns, with volumes peaking during commuter periods. Consistent with the 2014 counts, the traffic peaks at 5:00 PM as workers return home. Unlike the weekend day counts, bicycle volumes start rising at 4:00 PM and peak at 6:00 PM. This pattern suggests after work recreationalists. In the upper canyon location bicycle volumes surpasses vehicle volumes at 6:00 PM.

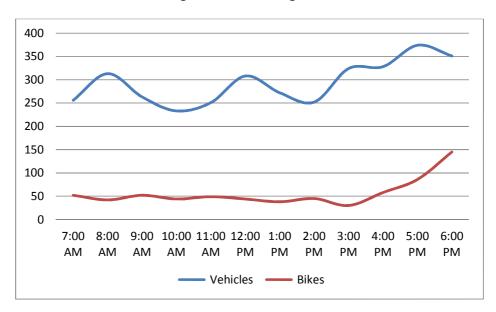


Figure 12: Lower Emigration

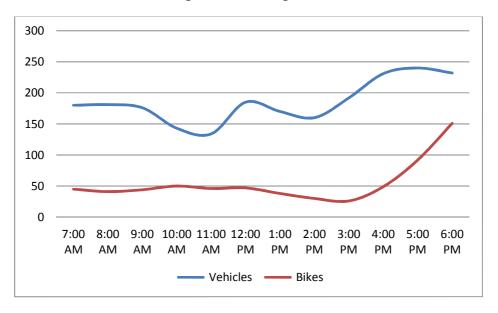
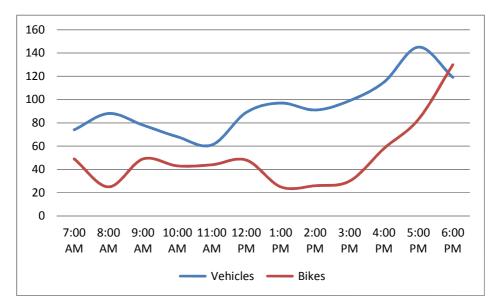




Figure 14: Upper Emigration



Crash History

An analysis of reported incidents was conducted to determine the frequency of collisions, with particular attention to those incidents involving cyclists and pedestrians.

Year	Total Number of Reported Incidents	Cyclists or Pedestrians Involved
2010	16	NA
2011	16	1 auto vs. bike
2012	14	1 bike vs. bike
2013	17	3 auto vs. bike
2014	13	1 auto vs. bike 1 auto vs. ped
Total (2010-2014)	76	5 auto vs. bike 1 bike vs. bike 1 auto vs. ped

TABLE 1 SUMMARY OF COLLISION HISTORY BY YEAR

Source: Unified Police Department of Greater Salt Lake, summarized by Fehr & Peers, 2015.

TABLE 2 SUMMARY OF COLLISION HISTORY (2010-2014)

Number of Reported Accidents	Percent of Total
41	53.9%
11	14.5%
7	9.2%
7	9.2%
5	6.5%
3	3.9%
1	1.3%
1	1.3%
	Reported Accidents 41 11 7 5 3 1

*Four "departed roadway" incidents involved deer.

Source: Unified Police Department of Greater Salt Lake, summarized by Fehr & Peers, 2015.

FEHR & PEERS

The following page depicts a heat map detailing crash and accident locations within Emigration Canyon. Locations with the highest amount traffic incidents are indicated with red or orange coloring. Areas that are high accident locations and also have had bicycle and/or pedestrian accidents include:

- Ruth's Diner driveway
- Mary Field Dr.
- Blacksmith Hollow
- Upper Emigration Canyon, from Bingham Fork to the Pinecrest intersection

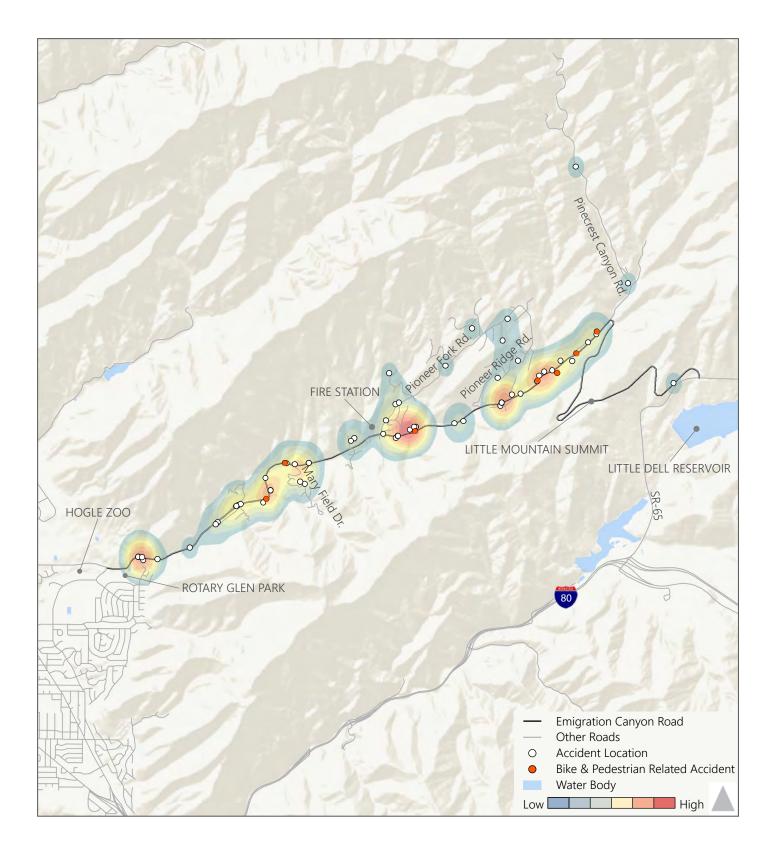


TABLE 3 DESCRIPTION OF BIKE AND PEDESTRIAN RELATED ACCIDENTS

October 18, 2011 (approx. 6:30 PM)- Eastbound driver made left-hand turn into residential drive, turning in front of single cyclist traveling downhill. The cyclist was unable to stop and struck the passenger side front bumper of the vehicle, sustaining injuries when she made contact with the road.

May 5, 2012 (approx. 11:00 AM)– Two cyclists travelling westbound (downhill) collided after one of the cyclists made a u-turn from the right side of the road, resulting in a "t-bone" collision. The cyclists who initiated the u-turn was cited for improper maneuver (u-turn across a double yellow line). One of the cyclists was transported to the hospital.

June 1, 2013 (approx. 12:30 PM) – Eastbound driver attempted to make a u-turn on a segment of the canyon road with limited visibility (double yellow line). Westbound cyclist struck the rear passenger door of the vehicle and was transported to the hospital. The cyclist was not wearing a helmet.

May 11, 2013 (approx. 11:30 AM) - Eastbound driver lost control of vehicle and hit cyclists riding in bike lane from behind, propelling cyclists down embankment. The cyclist was transported to the hospital.

November 13, 2013 (approx. 6:00 PM) – Westbound driver lost control of vehicle, over-corrected, and struck a cyclist riding in the shoulder of the eastbound travel lane. The cyclist was transported to the hospital.

October 2, 2014 (approx. 5:00 AM) – Westbound drive struck two joggers from behind. Joggers were traveling westbound on the road shoulder and wearing reflective clothing. Both pedestrians were taken to the hospital, and the driver who left the scene was later apprehended and cited for driving under the influence.

March 8, 2014 (approx. 5:00 PM) – Westbound cyclists was sideswiped by a westbound vehicle that continued on after the cyclist was knocked to the ground. The cyclist was transported to the hospital.

No reported bike-related accidents in 2010.

APPENDIX I: 2015 SALT LAKE COUNTY PAVEMENT INSPECTION RATINGS

2015	Emigration Canyon								
Route	Route Ahead Route Back	ID	Length (ft)	P av e W id th (ft)	Pavement Area (ft2)	Lane Miles	NewSurv. Grid	Y r e c o n	Location

Inspec- tion										
20 06	20 07	20 08	2 0 9	2 0 1 0	2 0 1	2 0 1 2	2 0 1 3	2 0 1 4	2 0 1 5	
O CI	O CI	O CI	O CI	O CI	O CI	O CI	O CI	O CI	O CI	

C I

								Δ		
EMIGRATION CNYN	1720 E	SUNNYDALE LN	244511 181	2,261.00	27	61,047.00	4,522 .00	A F 3 0 A	8 8	Emg. Canyon
EMIGRATION CNYN	MARYFIELD DR	1720 E	244521 789	4,378.00	25	109,450.0 0	8,756 .00	F 3 0 A	8 8	Emg. Canyon
EMIGRATION CNYN	PIONEER Fork Rd	MARYFIELD DR	244527 002	4,889.00	27	132,003.0 0	9,778 .00	E 3 3 A	8 8	Emg. Canyon
EMIGRATION CNYN	PRIVATE LANE ON Right	PIONEER Fork Rd	244528 615	6,215.00	27	167,805.0 0	12,43 0.00	E 3 3 A	8 8	Emg. Canyon
EMIGRATION CNYN	LAST CAMP SITE Monument	PRIVATE LANE ON RIGHT	244534 815	3,275.00	43	140,825.0 0	6,550 .00	E 3 4 A	8 8	Emg. Canyon
EMIGRATION CNYN	PINECREST FORK	LAST CAMP SITE Monument	244539 528	2,799.00	45	203,670.0 0	5,598 .00	E 3 4 A	8 8	Emg. Canyon
EMIGRATION CNYN	LITTLE MT Rd (monument)	PINECREST FORK	244544 761	9,093.00	29	263,697.0 0	18,18 6.00	E 3 4 A	8 8	Emg. Canyon
EMIGRATION CNYN	LITTLE MT MONU- MENT	STATE ROUTE	244547 503	7,875.00	44	346,500.0 0	15,75 0.00	E 3 4 A	8 8	Emg. Canyon
EMIGRATION CNYN	SUNNYDALE LN	S LCITY LIMITS	244553 80	3,100.00	30	93,000.00	6,200 .00	F 2 9 A	8 8	Emg. Canyon
KILLYONS LN	END ASPHALT	BURRS FORK RD	245711 25	1,1 34.00	16	18,144.00	2,268 .00	D 2 3	8 8	Emg. Canyon

		1								
	73	73	7 3	5 0	9 0	9 0	9 0	9 0	9 0	
	73	73	7 3	4	9	9 0	9 0	9	9 0	
	40	40	4	9 2	9	9	6 2	6	6	
	60	60	1 0 0	1 0 0	1 0 0	7 7	7 7	7	6 2. 5	6 2. 5
	60	60	1 0 0	1 0 0	1 0 0	8	8	8	6 7	6
	60	60	1 0 0	1 0 0	1 0 0	8	8	8	6	6
	60	60	6	8	9	9	8	8	8 0	7
	10	10 0	1 0 0	1 0 0	9	9	9	69	69	6
	73	73	7	5	9	9	9	9	9	9
	57	57	57	6 4	6 4	6 4	5 8	5 8	5 8	