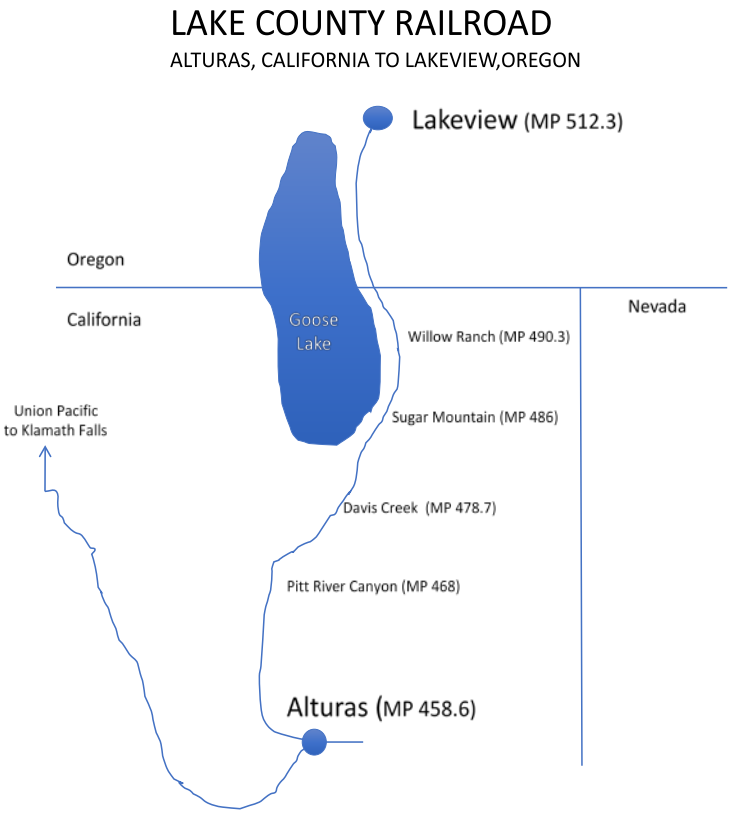
Goose Lake Railway LLC

Master Infrastructure Plan

for the Lake County Railroad

1 – Background & Goal Objectives



The rail line was built between 1908 and 1912 by the Nevada California Oregon Railway (NCO) and became a subsidiary of Southern Pacific (SP) in 1929. The line was widened from narrow gauge to standard gauge in 1928. In 1985, SP filed to abandon the line. Lake County purchased the line from SP in January 1986 to keep the line open. The rail line is 54.45 miles located between Alturas, CA and Lakeview, OR. The infrastructure is in poor condition and needs to be upgraded to remain sustainable. Lake County hired RL Banks & Associates in 2017 to examine the line and make recommendations and estimate the cost to cure class 1 track safety standards and was used as the basis for the CRISI grant application. Goose Lake Railway LLC, took over operations in September of 2017.

The entire Lake County owned track is currently in FRA Excepted status (49CFR213.4), which restricts trains to maximum of 10mph, maximum of 5 hazardous material cars per train, and no passenger trains are allowed. Even with the FRA Excepted status in place, Goose Lake Railway operates outbound trains, which are predominantly loaded cars, at 8 mph and has three zones further speed restricted to 5 mph.

Lake County and Goose Lake Railway have been actively to seeking funding to keep the rail line open and viable. This plan shows the strategy and the tactical steps to achieve viability.

Strategic Infrastructure Goals:

The track conditions on the Lake County rail line have several deficiencies that have been documented by several sources. Until track conditions can be remedied, Goose Lake Railway management will take the safe course by operating trains at reduced speed, which in many locations is less than 10 mph, make urgent repairs and patrol behind each train. Goose Lake Railway has come up with a four-tiered goal approach to rehabilitate the entire 55-mile line:

1. **Upgrade and sustain to FRA Excepted Status** –Even with excepted status in place, bridges, bridge approaches that include 100 feet on each side of the bridge, and public road crossings must meet FRA class 1 safety standards. Priority 1 is to ensure the line meets and sustains these minimum standards.
2. **Upgrade and sustain FRA Class 1 track safety standards –** Class 1 track safety standards (49CFR 213.9) allow freight trains to operate at 10mph, passenger trains at 15 mph, and there are no restrictions on hazmat cars per train. The minimum requirements are to have five good crossties per 39-foot rail length in tangent track and six good ties per 39-foot rail length in curves. There must also be at least one good tie supporting each rail joint. Furthermore, there are other minimum requirements for the track structure, geometry, vegetation and drainage that must be met. In order to sustain class 1 track safety standards, the rail line will need to exceed these minimum standards. The upgrade includes crosstie replacement, new rock ballast, drainage and surfacing as needed to support the track.
3. **Upgrade and sustain FRA Class 1 track safety standards and meet 286,000 pound railcar capacity –** In addition, to upgrading the line to Class 1 track safety standards as outlined in priority 2, the next goal will be to upgrade to 286,000-pound railcar capacity. Currently the line is restricted to 263,000-pound capacity railcars which is substandard for national rail network. This has been separated out from our priority 2 goal, because the 100+ year old 75-pound rail is too brittle, even with supporting ties, to handle 286,000-pound railcars. Replacing the 17.24 miles of 75-pound rail is substantial project and intermediate step between priority 2 and priority 4. In addition, bridges will need to be upgraded, along with sub-ballast, ballast and surfacing are needed to support the track.
4. **Upgrade and sustain FRA Class 2 track safety standards (25mph)**
   The ultimate infrastructure goal would be to upgrade the entire line to FRA Class 2 standards, which allows freight trains to travel at 25mph. To achieve this goal, the remaining 34.70 miles of 90-pound rail will need to upgraded to 115 pound or greater, along with more cross ties per rail section and ties needed to support the rails at the joints. Sub-ballast, ballast and surfacing are needed to support the track.

Summary Table

Summary of Project Steps			
Project Step	**Description of Work**	**Cost ($000)**	**Cumulative**
1. Sustain Excepted	Class 1 on crossings, bridges	$756	$756
2. Class 1 upgrade	Ties, surfacing, curve	$14,140	$14,896
3. 286k upgrade	Replace 75lbs. Rail	$10,496	$25,392
4. Class 2	Replace 90lbs. Rail, 25mph	$33,349	$58,741
Total		**$58,741**	

Statistical information				
Project Step	**Ties Qty**	**Ties %**	**Rail Miles**	**Rail %**
1. Sustain Excepted	2,435	*1%*	0.1	*0%*
2. Class 1 upgrade	60,139	*34%*	5.7	*10%*
3. 286k upgrade	4,551	*3%*	17.2	*32%*
4. Class 2	64,736	*36%*	30.7	*56%*
Total	**131,861**	***74%***	**53.8**	***99%***
Total Rail Line	*177,600*		*54.5*	

2 – Funding and Project Components

This chapter focuses on potential funding and projects components to achieve the infrastructure goals. While a lot of money and resources are needed to achieve all these infrastructure goals, each project individually will make a vital contribution to the overall health of the railroad.

Summary of Project Components:

Project	Description	Cost $m	Funding Source	Related Goal	Status
A- Ties	Install 4,621 ties	$0.5	Connect Oregon	1	In Progress
B- Bridge upgrades	Repair 14 bridges	$0.268	Regional Solutions	1, 2, 3	In Progress
#1- Bridge Approach Patch to class I	Replace ties on bridge approaches, replace broken rails, wingwalls and spot surface	$0.56	Railroad/ Red Rock	1	Starting
#2- Road crossing upgrade to Class I	Replace ties, rail, rail welding and surfacing	$0.19	Railroad/ Red Rock	1	Proposed
#3 – Rebuild Curve at 486.25-486.5	Replace rail and ties on 8-degree curve	$0.365	Railroad	2 & 3	Proposed
#4 – Install Ties	Replace 40,950 ties on entire rail line, replace broken rails	$5.611	CRISI	2	Proposed Adjustment
#5 – Ballast & Surface	Up to 90,000 tons of ballast and surface 55 miles, ditching and undercutting	$2.82	Oregon Match	2	Proposed
#6 – Relay Heavy Rail on Bridges	Replace rail over bridges 1.5 miles of rail	$1.05	Oregon Match	1, 2 &3	Proposed
#7 – Relay Sugar Hill Grade 485-486.25	Replace 1.25 miles of rail	$0.866	Railroad	2 & 3	Proposed
#8 – Relay curves in Pit Canyon	Replace 1.25 miles of rail	$0.866	Railroad	2 & 3	Proposed
#9 – Install Ties	Replace 18,389 ties on entire line to sustain class 1 track standards	$2.340	Unidentified	2 & 3	Recommended
#10 Replace 3 turnouts	Replace 3 turnouts	$0.216	Unidentified	2 & 3	Recommended
#11 Replace 75-pound rail	Replace about 17 miles of 75lbs. rail, ties, ballast & surfacing	$10.5	Unidentified	3 & 4	Recommended
#12 Replace 90- pound rail	Replace about 31 miles of 90lbs. rail, ties, ballast & surfacing	$33.4	Unidentified	4	Recommended

Projects in Progress

- **Connect Oregon Tie Project** -- Lake County received a grant from the State of Oregon through its Connect Oregon program for $325,000 with the railroad matching 175,000. The project is to install 4,621 ties along the line in four key areas to reduce risk of derailment. The key areas are 121 ties between MP 496-491 near Willow Ranch, 1,950 ties MP 491-484 Sugar Moutain, and 1,500 ties between MP 473.5-469 near Pit River Canyon. Project is in progress and nearly complete.
- **Regional Solutions Bridge funding** – Lake County received $268,346 in funding to repair 14 bridges which will also enhance these bridges to handle 286,000-pound railcars after heavier rail is replaced. Project is in progress and will support goals 1, 2 and 3.

Priority 1 - Upgrade and sustain to FRA Excepted Status

Two projects have been identified has high priority. Project funding will be from Goose Lake Railway in partnership with Red Rock Biofuels. These funds will be used as match towards CRISI grant funds.

Scope of work:

#1 Upgrade Bridge Approaches to Class 1 standards on all bridges and 100' approaches to bridges:

Item	Cost
Replace up to 1,500 8' ties and 600 10' ties	$275,940
Ballast and Surfacing bridge approaches	$119,400
Replace up to 58 rails along with joint bars and OTM	$91,380
Repair wingwalls on select bridges	$54,600
Cleanup and disposal	$25,200
Total	**$566,520**

#2 Upgrade Crossings – Project will upgrade nine public at-grade road crossing to class 1 standards:

Item	Cost
Replace up to 80 8' ties and 255 10' ties	$96,580
Ballast & surfacing	$23,760
Rail replacement including rail welding, new plates and OTM	$65,480
Cleanup and disposal	$4,020
Total	**$189,840**

Milepost	Crossing Name	Length
458.8	East St.	30
459.11	SVEC	24
459.22	Pacific Power	24
459.25	Cty Rd 265	24
459.36	Cty Rd 22835A	24
466.65	BIA RT 77	24
507.2	Cty Rd 1-15	45
510.52	Kadramas Rd	24
512.3	N. 2nd St	40

Total budget estimate to upgrade bridge, bridge approaches and highway road crossings to class 1 is **$756,360.**

Priority 2 - Upgrade and sustain FRA Class 1 track safety standards

Key areas to meet Class 1 track safety standards:

1) Replace crossties
2) Ballast & Surfacing
3) Replace broken or cracked rails
4) Install heavy rail across bridges
5) Project specific areas which include rehabilitating curves and grades

The table below is summary of budget to upgrade class 1 track safety standards.

Summary to UPGRADE AND SUSTAIN CLASS 1 BUDGET PLAN ITEM	QTY	UNIT	UNIT PRICE	BUDGET SUBTOTAL COST	FUNDING SOURCE	Rail Miles	Ties Qty
#3 - REBUILD CURVE @ MILEPOST 486.25 to 486.5				$ 365,950	RR FUNDED	0.3	800
#4 - INSTALL TIES - ENTIRE RAILROAD				$ 5,212,549	CRISI GRANT	1.5	40,950
#5 - BALLAST & SURFACE - ENTIRE RAILROAD				$ 2,827,000	OR MATCH		
#6 - RELAY HEAVY RAIL OVER BRIDGES				$ 1,047,540	OR MATCH	1.5	
#7 - RELAY SUGAR HILL GRADE - MP 485.0 to 486.25				$ 865,925	RR FUNDED	1.3	
#8 - RELAY VARIOUS CURVES IN PIT RIVER CANYON (1.25 TRACK MILES OF RAIL)				$ 865,925	RR FUNDED	1.3	
#9 TIE REPLACEMENT TO COMPLETE CLASS 1				$ 2,340,000	TBD		18,389
#10 TURNOUTS - REPLACE TURNOUTS AT ALTURAS, DAVIS CREEK, WILLOW RANCH (3)	3 turnouts		$ 72,000.00	$ 216,000.00	TBD		
TOTAL PROJECT COST				**$ 13,740,889.00**		**5.7**	**60,139**

Note: All costs are in 2019 pricing. Budget assumes work to be completed within 3 years.

Project Details and Analysis

Crosstie analysis

Class 1 track safety standards (49CFR 213.9) allow freight trains to operate at 10mph, passenger trains at 15 mph, and there are no restrictions on the amount of hazmat cars per train. The *minimum* requirements are to have five good crossties per 39-foot rail length in tangent track and six good ties per 39-foot rail length in curves. There must also be at least one good tie supporting each rail joint. The RL Banks & Associates, "Cost to Cure" 2017 report that was used as the basis for the CRISI grant application suggests 21,572 ties are needed to cure Class 1 safety standards with the disclaimer that a more thorough tie sampling is needed. The report states that only 22% of ties sampled are "relay quality". Goose Lake Railway management contends that tie condition is worse and that 21,572 ties will not sustain or "cure" class 1 standards. The goal is to exceed the *minimum* standard in order to sustain class 1 track standards. In order to provide some margin of safety, it is industry practice to maintain to the next higher class of track. For example, to sustain class 1 track standards the railroad should maintain to class 2, likewise, if at class 2 the railroad should maintain to class 3.

To sustain and provide a margin of safety, the track should be upgraded at least six ties per 39-foot rail length in tangent track and at least 8 ties per 39-foot rail length in curve track. Below is a table showing estimated ties to sustain class 1 track standards. We included a 10% buffer, to breakup clusters of bad ties and to reinforce sharp curves.

ITEM	QTY
TIES - TANGENT TRACK (19 miles @ 6 ties/rail, 136 rails per mile)	15,504
TIES – TANGENT TRACK CONTINGENCY @ 10% (buffer)	1,550
TIES - CURVE TRACK (36 miles @ 8 ties/rail, 136 rails per mile)	39,168
TIES - CURVE TRACK CONTINGENCY @ 10% (buffer)	3,917
Total Ties Needed for Class 1 Track Standards	**60,139**
Average per mile	*1,104 (34%)*

To purchase, distribute, and install 60,139 ties is estimated at $6,913,069

With good maintenance and drainage, tie life on a low-density branch line, such as the Lake County rail line, should be 30-40 years. If the line was upgraded to class 1 by installing 60,139 ties, on average

about 2,000 ties annually would be needed to sustain the track infrastructure, which is achievable within Goose Lake Railway's operating budget.

Class 1 track standards can still be achieved with replacement of less than 60,139 ties or 34%, however it will require more frequent maintenance and require higher annual tie replacement to maintain class 1. If less than 51,000 but more than 30,000 ties were installed, class 1 track standards can still be achieved and sustained with annual tie replacement of 3,000 to 5,000 ties. This is much higher than Goose Lake Railway's projected annual maintenance cost and it will be challenging to sustain these levels in the long run. Below 31,000 ties the rail line can still achieve *minimum* class 1 track standards, but requires significant annual tie replacement of about 5,000-8,000 ties which will be very difficult to sustain under Goose Lake Railway projected operating budget. Below 21,000 ties class 1 track safety standards are unlikely to be achieved. The table below summarizes the scalability of tie replacement with its corresponding sustainability.

Class 1 Track	**Sustainable**	**Marginally Sustainable**	**Difficult to Sustain**
Capital Replacement Ties	61,823-52,000	51,000-30,000	30,000-21,000
% of Estimated Total	33%-28%	25%-17%	16%-12%
Average Annual Tie Replacement to sustain	2,000 Ties	5,000-3,000 Ties	8,000-5,000 Ties
Average Annual Tie Maintenance Cost	$300,000-$225,000	$600,000-$350,000	$600,000+

Other Track Projects to achieve and sustain Class 1 track standards

Goose Lake Railway separated the Class 1 track upgrade projects into specific components to prioritize and identify funding sources. These projects are labeled in incremental steps. Project #3 will follow Project #1 (bridge approach) and #2 (public road crossing upgrade) in previously presented in priority 1.

Project #3 is to rebuild an 8-degree curve at MP 486.25-486.5, by replacing worn 90-pound rail with new 115 pound or greater, new ties and ballast.

#3 - REBUILD CURVE @ MILEPOST 486.25 to 486.5 BUDGET PLAN ITEM	QTY	UNIT	UNIT PRICE	BUDGET SUBTOTAL COST	FUNDING SOURCE	Rail Miles	Ties Qty
8' TIES (materials)	800	pc	$ 61.00	$ 48,800	RR FUNDED		800
8' TIES (transportation)	800	ea	$ 5.00	$ 4,000	RR FUNDED		
8' TIES (handling & dist)	800	ea	$ 2.00	$ 1,600	RR FUNDED		
SPIKES, CUT 5/8"x6" (delivered)	5000	pc	$ 1.25	$ 6,250	RR FUNDED		
RAIL - 115# NEW IQ - DELIVERED	51	tons	$ 950.00	$ 48,450	RR FUNDED	0.3	
TIE PLATES - NEW - DELIVERED	1600	pc	$ 18.00	$ 28,800	RR FUNDED		
RAIL ANCHORS - NEW - DELIVERED	3500	pc	$ 3.00	$ 10,500	RR FUNDED		
TIE PLUGS (bundles)	25	pkg	$ 50.00	$ 1,250	RR FUNDED		
RAIL WELDS	38	ea	$ 300.00	$ 11,400	RR FUNDED		
BALLAST (materials)	1200		$ 14.00	$ 16,800	RR FUNDED		
BALLAST (handling & distribution)	1200		$ 16.00	$ 19,200	RR FUNDED		
PROJECT LABOR				$ 58,200	RR FUNDED		
PROJECT EQUIPMENT				$ 67,100	RR FUNDED		
PROJECT MANAGEMENT, ENGINEERING, CONSULTING				$ 10,000	RR FUNDED		
CONTINGENCY @10%				$ 33,600	RR FUNDED		
REBUILD CURVE ON SUGAR HILL				**$ 365,950**			

Project #4 – Install ties on entire railroad and replace defective rails components.

#4 - INSTALL TIES - ENTIRE RAILROAD BUDGET PLAN ITEM	QTY	UNIT	UNIT PRICE	BUDGET SUBTOTAL COST	FUNDING SOURCE	Rail Miles	Ties Qty
8' TIES (materials)	40950	pc	$ 61.00	$ 2,497,950	CRISI GRANT		40,950
8' TIES (transportation)	40950	ea	$ 5.00	$ 204,750	CRISI GRANT		
8' TIES (handling & dist)	40950	ea	$ 2.00	$ 81,900	CRISI GRANT		
SPIKES, CUT 5/8"x6" (delivered)	245700	pc	$ 1.25	$ 307,125	CRISI GRANT		
REPLACEMENT TIE PLATES	4095	pc	$ 5.25	$ 21,499	CRISI GRANT		
REPLACEMENT JOINT BARS, BOLTS	750	pair	$ 100.00	$ 75,000	CRISI GRANT		
BROKEN RAIL REPLACEMENT	400	ea	$ 500.00	$ 200,000	CRISI GRANT	1.5	
TIE INSTALLATION (LABOR & EQUIPMENT)	40950	ea	$ 37.50	$ 1,535,625	CRISI GRANT		
PROJECT MANAGEMENT, ENGINEERING, CONSULTING				$ 50,000	CRISI GRANT		
CONTINGENCY @5%				$ 238,700	CRISI GRANT		
INSTALL CROSSTIES - ENTIRE RAILROAD				**$ 5,212,549**			

Project #5 Ballast & surfacing entire railroad. In addition, 90,000 tons of ballast, ditching and undercutting would be performed to improve drainage.

#5 - BALLAST & SURFACE - ENTIRE RAILROAD BUDGET PLAN ITEM	QTY	UNIT	UNIT PRICE	BUDGET SUBTOTAL COST	FUNDING SOURCE	Rail Miles	Ties Qty
BALLAST ROCK (materials)	90000	tons	$ 10.00	$ 900,000	OR MATCH		
BALLAST ROCK (handling & dist)	90000	tons	$ 10.00	$ 900,000	OR MATCH		
DITCHING (labor & equipment) 30,000 TRACK FEET				$ 175,000	OR MATCH		
UNDERCUTTING (labor & equipment) 6000 TRACK FEET				$ 78,000	OR MATCH		
SURFACING (labor & equipment) 55 MILES				$ 610,000	OR MATCH		
PROJECT MANAGEMENT, ENGINEERING & CONSULTING				$ 30,000	OR MATCH		
CONTINGENCY @5%				$ 134,000	OR MATCH		
BALLAST & SURFACE - ENTIRE RAILROAD				**$ 2,827,000**			

Project # 6 Relay heavy rail over bridges to sustain class 1 track standards

#6 - RELAY HEAVY RAIL OVER BRIDGES BUDGET PLAN ITEM	QTY	UNIT	UNIT PRICE	BUDGET SUBTOTAL COST	FUNDING SOURCE	Rail Miles	Ties Qty
RAIL - 115# - NEW - DELIVERED	295	tons	950	$ 280,250.00	OR MATCH	1.5	
RAIL WELDING	250	each	300	$ 75,000.00	OR MATCH		
SPIKES, CUT 5/8"x6" (delivered)	21000	pc	1.25	$ 26,250.00	OR MATCH		
TIE PLATES - NEW - DELIVERED	9860	pc	14	$ 138,040.00	OR MATCH		
RAIL ANCHORS - NEW - DELIVERED	20000	pc	3	$ 60,000.00	OR MATCH		
TIE PLUGS (bundles)	100	pkg	50	$ 5,000.00	OR MATCH		
RAIL RELAY LABOR				$ 150,000.00	OR MATCH		
RAIL RELAY EQUIPMENT				$ 228,000.00	OR MATCH		
PROJECT MANAGEMENT, ENGINEERING & CONSULTING				$ 30,000.00	OR MATCH		
CONTINGENCY @5%				$ 55,000.00	OR MATCH		
HEAVY RAIL ON BRIDGES & APPROACHES				**$ 1,047,540**			

Project #7 Relay Sugar Hill grade between MP 485.0 to 486.25

#7 - RELAY SUGAR HILL GRADE - MP 485.0 to 486.25 BUDGET PLAN ITEM	QTY	UNIT	UNIT PRICE	BUDGET SUBTOTAL COST	FUNDING SOURCE	Rail Miles	Ties Qty
RAIL - 115# - NEW - DELIVERED	254	tons	950	$ 241,300.00	RR FUNDED	1.26	
RAIL WELDING	175	ea	300	$ 52,500.00	RR FUNDED		
SPIKES, CUT 5/8"x6" (delivered)	19500	pc	1.25	$ 24,375.00	RR FUNDED		
TIE PLATES - NEW - DELIVERED	8250	pc	14	$ 115,500.00	RR FUNDED		
RAIL ANCHORS - NEW - DELIVERED	33000	pc	3	$ 99,000.00	RR FUNDED		
TIE PLUGS (bundles)	125	pkg	50	$ 6,250.00	RR FUNDED		
RAIL RELAY LABOR				$ 125,000.00	RR FUNDED		
RAIL RELAY EQUIPMENT				$ 125,000.00	RR FUNDED		
PROJECT MANAGEMENT, ENGINEERING & CONSULTING				$ 35,000.00	RR FUNDED		
CONTINGENCY @5%				$ 42,000.00	RR FUNDED		
RELAY RAIL ON SUGAR HILL GRADE				**$ 865,925**			

Project #9 Per the tie analysis, 18,389 ties are needed to sustain class 1 track safety standards. Project funding has not been identified.

	#9 Class 1 completion, not identified in specific projects BUDGET PLAN ITEM	QTY	UNIT	UNIT PRICE	BUDGET SUBTOTAL COST	FUNDING SOURCE	Rail Miles	Ties Qty
Tie Analysis	TIES - TANGENT TRACK (19 miles @ 6 ties/rail, 136 rails per mile)	15,504	pc					
	TIES - CONTINGENCY @ 10%	1,550	pc					
	TIES - CURVE TRACK (36 miles @ 8 ties/rail, 136 rails per mile)	39,168	pc					
	TIES - CONTINGENCY @ 10%	3,917	pc					
	Total Ties Needed for Class 1 Track Standards	**60,139**	**pc**					
	Average Per mile	**1,104**						
	Less ties Covered in specific projects:	41,750	pc		$ -			
	Ties needed to complete Class 1	18,389	Pc	$ 61.00	$ 1,121,729.00			18,389
	TIES - TRANSPORTATION	18,389	pc	$ 7.00	$ 128,723.00			
	TIES - DISTRIBUTION	18389	pc	$ 2.00	$ 36,778.00			
	TIES - INSTALLATION	18389	pc	$ 40.00	$ 735,560.00			
	TIES - SCRAP PICK UP & DISPOSAL	18389	pc	$ 11.00	$ 202,279.00			
	SPIKES - NEW 6" CUT SPIKE, DELIVERED PRICE (avg 5 per tie)	91,945	pc	$ 1.25	$ 114,931.25			
	Subtotal Tie Replacement				**$ 2,340,000.25**			

Project #10 is to replace three turnouts at Alturas, Davis Creek and Will Ranch at $216,000. Project funding has not been identified.

Priority 3 - Upgrade and sustain FRA Class 1 track safety standards plus add 286,000 railcar capacity

Priority 3 is to upgrade to 286,000 railcar capacity by replacing 17.24 miles of 75-pound rail. Tie replacement, of about 4,500 ties, near the previously existing joints of the 75-pound rail will need to be replaced to support the new rail. Further new ballast to support the track structure of the new rail will also need to be replaced.

Summary to UPGRADE AND SUSTAIN CLASS 1 + 286,000 Railcar Capacity BUDGET PLAN ITEM	QTY	UNIT	UNIT PRICE	BUDGET SUBTOTAL COST	FUNDING SOURCE	Rail Miles	Ties Qty
RAIL - RELAY 136# RE (239.36 tons per track mile) 17.24 miles	4127	tons	$ 950.00	$ 3,920,238		17.24	
RAIL - TRANSPORTATION	2629	tons		$ -			
RAIL - DISTRIBUTION	2629	tons	$ 15.00	$ 39,435			
RAIL - FLASH BUTT WELDING	1452	welds	$ 300.00	$ 435,600			
RAIL - THERMITE FIELD WELDS	100	welds	$ 375.00	$ 37,500			
RAIL - INSTALLATION	17.24	miles	$ 100,000.00	$ 1,724,000			
RAIL - TIE PLATES - DELIVERED	66000	pc	$ 15.00	$ 990,000			
RAIL - ANCHORS - CURVE TRACK - INSTALLED (every other tie)	132000	pc	$ 5.00	$ 660,000			
RAIL - TIE PLUGS (22,000 ties @ 6 plugs/tie = 132,000 plugs) (500 plugs/bundle)	264	bundles	$ 45.00	$ 11,880			
RAIL - ADZING (22,000 ties to adze)	22000	pc	$ 7.00	$ 154,000			
RAIL - SPIKES (22,000 non-replacement ties @ 4 spikes/tie = 88,000) INSTALLED	88,000	pc	$ 4.00	$ 352,000			
Rebuild Private Crossings surface for 115# rail	10	ea	$ 6,000.00	$ 60,000			
Rebuild Public Crossing surface for 115# rail	5	ea	$ 16,000.00	$ 80,000			
RAIL - CONTINGENCY @ 5%				$ 416,233			
					$ 8,880,886		
Ties - joint ties 264 per mile	4,551	Pc	$ 61.00	$ 277,633			4,551
TIES - TRANSPORTATION	4,551	pc	$ 7.00	$ 31,860			
TIES - DISTRIBUTION	4551.36	pc	$ 2.00	$ 9,103			
TIES - INSTALLATION	4551.36	pc	$ 40.00	$ 182,054			
TIES - SCRAP PICK UP & DISPOSAL	4551.36	pc	$ 11.00	$ 50,065			
SPIKES - NEW 6" CUT SPIKE, DELIVERED PRICE (avg 5 per tie)	22,757	pc	$ 1.25	$ 28,446			
					$ 579,161		
BALLAST ROCK (materials)	17,240	tons	$ 10.00	$ 172,400			
BALLAST ROCK (handling & dist)	17,240	tons	$ 10.00	$ 172,400			
SURFACING (labor & equipment) 55 MILES	17.24	Miles	$ 11,090.91	$ 191,207			
					$ 536,007		
PROJECT MANAGEMENT, ENGINEERING & CONSULTING				$ 499,803			
					$ 499,803		
Total				**$ 10,495,856**			

Pricing based on 2019 estimates

Priority 4 - Upgrade and sustain FRA Class 2 track safety standards

Assuming the projects in Priority 1 through 3 have been completed, upgrading to class 2 track safety standards will require replacing the remaining 30.7 miles of 90-pound rail to 115-pound or greater. In addition, more ties are needed to sustain class 2 track standards. Surfacing and Ballast will be needed to maintain drainage to support the new structure. Furthermore, raising the line to 25 mph will require surfacing and realignment of the curves to handle the higher speeds.

Summary to UPGRADE AND SUSTAIN CLASS 2 BUDGET PLAN ITEM	QTY	UNIT	UNIT PRICE	BUDGET SUBTOTAL COST
TIES - TANGENT TRACK (19 miles @ 8 ties/rail, 136 rails per mile)	20672	pc	$ 61.00	$ 1,260,992.00
TIES - CONTINGENCY @ 10%	2067	pc	$ 61.00	$ 126,087.00
TIES - CURVE TRACK (36 miles @ 9 ties/rail, 136 rails per mile)	44064	pc	$ 61.00	$ 2,687,904.00
TIES - CONTINGENCY @ 10%	4406	pc	$ 61.00	$ 268,766.00
TIES - TRANSPORTATION	71209	pc	$ 7.00	$ 498,463.00
TIES - DISTRIBUTION	71209	pc	$ 3.00	$ 213,627.00
TIES - INSTALLATION	71209	pc	$ 36.00	$ 2,563,524.00
TIES - SCRAP PICK UP & DISPOSAL	71209	pc	$ 11.00	$ 783,299.00
SPIKES - NEW 6" CUT SPIKE, DELIVERED PRICE (avg 5 per tie)	356045	pc	$ 2.00	$ 712,090.00
RAIL - NEW 115# RE	6,214	tons	$ 1,670.00	$ 10,376,845.60
RAIL - TRANSPORTATION	6,214	tons	$ 75.00	$ 466,026.00
RAIL - DISTRIBUTION	6,214	tons	$ 15.00	$ 93,205.20
RAIL - FLASH BUTT WELDING	4,052	welds	$ 250.00	$ 1,013,100.00
RAIL - THERMITE FIELD WELDS	368.4	welds	$ 350.00	$ 128,940.00
RAIL - INSTALLATION	30.7	miles	$ 100,000.00	$ 3,070,000.00
RAIL - TIE PLATES - DELIVERED	199,550	pc	$ 15.00	$ 2,993,250.00
RAIL - ANCHORS - TANGENT TRACK - INSTALLED (every 3rd tie)		pc	$ 5.00	$ -
RAIL - ANCHORS - CURVE TRACK - INSTALLED (every other tie)	184,200	pc	$ 5.00	$ 921,000.00
RAIL - TIE PLUGS (93,000 ties @ 6 plugs/tie = 558,000 plugs) (500 plugs/bundle)	1,197	bundles	$ 40.00	$ 47,892.00
RAIL - ADZING (ties to adze)	99,775	pc	$ 5.00	$ 498,875.00
RAIL - SPIKES (non-replacement ties @ 4 spikes/tie) INSTALLED	99,775	pc	$ 1.25	$ 124,718.75
RAIL - CONTINGENCY @ 5% (35,110,760)				$ 1,175,500.00
Rebuild Private Crossings surface for 115# rail	17	each	$ 6,000.00	$ 102,000.00
Rebuild Public Crossing surface for 115# rail	5	Each	$ 16,000.00	$ 80,000.00
BALLAST ROCK (materials)	30,700	tons	$ 10.00	$ 307,000
BALLAST ROCK (handling & dist)	30,700	tons	$ 10.00	$ 307,000
BALLAST ROCK (materials) Spot raise on remaining miles	12,150	tons	$ 10.00	$ 121,500
BALLAST ROCK (handling & dist)	12,150	tons	$ 10.00	$ 121,500
SURFACING (labor & equipment) 55 MILES	55	Mile	$ 11,090.91	$ 610,000
Extra Surfacing and Engineering- Curve adjustment for 25mph	33	curves	11,090.91	$ 366,000
CONTINGENCY @5%				$ 134,000
MANAGEMENT, ENGINEERING, ADMINISTRATION				$ 1,175,500.00
TOTAL PROJECT COST				$ 33,348,604.55