VTRW ENGINEER'S REPORT August 26, 2021

• 1. MOW Cost Summary (SEE ACCOMPANING MATERIAL)

 Spreadsheet of 2021 MOW & Inspections Costs for CY 2021 thru July Versus Estimate/Budget

• 2. Railbike "Block" Signs (SEE ACCOMPANING MATERIAL)

 Gabe placing "Begin Railbike Block," "Start Railbike Block," and "Railbike Block Hold" signs per initial Railbike Block Plan prepared 07/03/21.

• 3. Overman Embankment Settlement Monitoring (SEE ACCOMPANING MATERIAL)

- Completed Field Survey by Manhard Consulting
- KLD Compile Data & Review Settlement Data since 2014.
- Geotechnical Review by Gary Luce with Wood Rodgers
- Findings & Recommendations

• 4. MOW Supervision

- Coordinate Work Priorities with Gabe Willaman and authorize Initial Work to begin (incl Haywards, Vegetation Removal, Ditch Cleaning)
- Status Haywards East Switch, Vegetation Control, Ditch Work Pending Rental of Excavator, Overman & MP 15.3 Surfacing Pending cooler weather, Joint Oiling Program pending cooler weather

• 5. Track Maintenance Contractor (TMC) RFP Document Update

Updated 2010 TMC RFP Documents

• 6. FRA Reports to DEPOT (Signal, Track, Accident, & Structure) - Hard Drive available?

Work with Allyson to Coordinate

• 8. FRA Form 8160.55 Reports

- Prepared Ridership/Accident report for July, 2021
- We need Start Tracking Excursion Train Passenger Counts, Train Miles & Passenger Train Miles Traveled starting 8/28
- When does Allyson want to take over role as Safety Reporting Official?

• 9. Linehan Road Crossing Signal Arm Repairs

New Arm Received – Installation planed prior to 8/28/21

• 10. <u>Linehan Road "Fast Vehicles/Dust Issue along Tracks</u>

 Email into Clarissa Wilson per information received from Tom Gray to address dust issue along tracks near Linehan Road –possible boulder placement. Have not heard back from Clarissa – no response to date

• 11. Current Slow Orders

MP 16.2 - MP 16.4
 10 MPH (Overman Embankment Track Surface)

■ MP 15.2 – MP 15.4 10 MPH ("soft" spot on Embankment)

■ MP 12.4 - MP 12.5 5 mph (Chinese Wall)

All Switches have 10 MPH Speed Limit per Timetable Speeds Published

CY 2021 Maintenace -of-Way & Engineering Cost Summary 8/17/2021

1			ı	1	Total Labor	I		TOTAL ITEM	
INVOICE #	DATE	WORK CATEGORY	Quantity	Crew/Item Cost	Total Labor Cost	Fauin Rental	Material Cost	TOTAL ITEM COST	COMMENTS
		MAINTENANCE-OF-WAY WORK & INSPECTIONS			COST	Equip Kentai	Waterial Cost	6031	COMMENTS
W-280	04/15/21	Signal Inspection (Dec-March), Misc Track Maint, Place Crossing Tele Numbers	1	4725.00	4725.00			4725.00	LS is Total of Invoice T&M Items
W-284	05/28/21	Track Inspection - Railbikes Only 4/16 thru 5/27	13	200.00	2600.00			2600.00	
W-285	05/28/21	Signal Inspection (April, May & FRA Special Inspection)	3	375.00	1125.00			1125.00	
W-288	06/24/21	Track Inspection - Railbikes Only 6/03 thru 6/24	8	200.00	1600.00			1600.00	
W-289	06/24/21	Track Maint Incl E. Haywards Switch Surfacing/Lining; Linehan Signal Crossing Arm	1	3030.00	3030.00			3030.00	LS is Total of Invoice T&M Items
W-290	08/05/21	Track Repairs E. Haywards Switch Surfacing/Lining; Signal Inspections for June	1	1515.00	1515.00			1515.00	LS is Total of Invoice T&M Items
W-291	08/05/21	Track Inspection - Railbikes Only 6/28, 6/30	2	200.00	400.00			400.00	
W-292	08/05/21	Track Maint Incl Brush Removal , Signal Inspection for June, Ballast Regulator	1	4875.00	4875.00	750.00		5625.00	LS is Total of Invoice T&M Items
W-293	08/05/21	Track Inspection - Railbikes Only 7/07 yhru 7/29	8	200.00	1600.00			1600.00	
W-293	08/05/21	Track Maint, Ome Day 2-Man Crew Trash Removal	1	750.00	750.00			750.00	
				0.00	0.00			0.00	
		Sub-Totals:	1	Į	22220.00	750.00	0.00	22970.00	
		ANNUAL STRUCTURE INSPECTIONS							
		Structure Inspections & Report (KL Dorr Consulting)							
		Structure Inspections Support (Willaman)							
	<u> </u>	Sub-Totals:	:	1	0.00	0.00	0.00	0.00	
		MISCELLEANOUS							
W-276	01/04/21	2 man crew to take down the Polar Buildings	1.5	750.00	1125.00	150.00			Includes Truck Rental
W-281	04/15/21	1 man labor moving safe and watchmans trailer on 4/8.	0.5	375.00	187.50			187.50	
				0.00	0.00			0.00	
				0.00	0.00			0.00	
				0.00	0.00			0.00	
		Sub-Totals:	<u> </u>	0.00	0.00 1312.50	150.00	0.00	1462.50	
		Sup-rotals.	•	I	1312.50	150.00	0.00	1462.50	
		TOTALS	:		23532.50	900.00	0.00	24432.50	
				•					
		CK CAPITAL IMPROVEMENTS							
KLD-349	8/17/2021	Rail Bike Block Signs, Incl Replacements		0.00	0.00	695.19		695.19	
	C. I. T. L. I.			0.00	0.00	d.co.r	40	0.00	
	Sub-Totals:	:		L	\$0	\$695	\$0	695.19	
		US- 50 BRIDGE MAINTENANCE							
		US-50 Bridge Maintenance (Willaman)		0.00	0.00			0.00	
		US-50 Bridge Lighting Maintenance (To Be Contracted)		0.00	0.00			0.00	
		Sub-Totals:	:		0.00	0.00	0.00	0.00	
		Israelia II was a tii							
KID 240	05 /00 /24	MOW Supervision - KL Dorr Consulting	1	227.50	227.50		47.05	205.25	Inal Durchase EDA Cafatu Manuala
KLD-340 KLD-341	05/09/21 06/01/21	MOW Supervision MOW Supervision	1	337.50 641.25	337.50 641.25		47.85 206.92		Incl Purchase FRA Safety Manuals Incl Purchase AREMA Bridge Inspection Manual
KLD-341 KLD-344	06/01/21	MOW Supervision	1	776.25	776.25		200.32	776.25	men arendse AILIVIA bridge inspection ividitudi
KLD-344 KLD-348		MOW Supervision	1	7/6.23	742.50			742.50	
KED 340	55,52,21	me i experiori	-	0.00	0.00			0.00	
				0.00	0.00			0.00	
				0.00	0.00			0.00	
	ı	Sub-Totals:	:	1.00	2497.50	0.00	254.77	2752.27	
		General Engineering - KL Dorr Consulting							
KLD-336	03/06/21	General Engineering	1	1080.00	1080.00	93.54			Incl Prints NV Blue - Strategic Meeting
KLD-337	03/28/21	General Engineering	1	978.75	978.75			978.75	
KLD-339		General Engineering	1	999.00	999.00			999.00	
KLD-342	06/01/21	General Engineering	1	67.50	67.50			67.50	
KLD-343 KLD-347	06/27/21 08/02/21	General Engineering	1	1316.25 1113.75	1316.25 1113.75			1316.25 1113.75	
NLD-347	00/02/21	General Engineering	1	0.00	0.00			0.00	
			1	0.00	0.00			0.00	
			1	0.00	0.00			0.00	
	l .	Sub-Totals:		0.00	5555.25	93.54	0.00	5648.79	
		Sub-Totals.	3333.23	JJ.J7	0.00	3070.73			

June - December Remaining Railbike Season Assumed Regular Season TBD Polar Express TBD

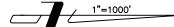
	WORK CATEGORY	Duration Days	Crew/Item Cost	Total Labor Estimate	Equipment Rental	Material Cost Estimate	TOTAL ITEM COST	COMMENTS
PRIORITY	REGULAR MAINTENANCE-OF-WAY WORK		Cost	Estimate	Rentui	Estimate		Comments
1	East Swith Haywards - Surface & Line (4-Man rew)	5	\$1,570	\$7,850			\$7,850	Includes Spike Lining
2	Overman Embankment - Surface & Line (3-Man Crew)	4	\$1,140	\$4,560	\$1,750		\$6.210	Defer Work until Train Running to "Set Track", IncludesTamper Rental & Ballast Regulator Rental
	·						` ,	-
3	Initial Ditch Cleaning (2-Man Crew)	5	\$750	\$3,750	\$7,500		\$11,250	5-Days Excavator Rental
4	Brush/Vegetation Removal (2-Man Crew)	3	\$750	\$2,250	\$2,250		\$4,500	Includes Ballast Regulator Rental Spikes, Bolts/Nuts/Washers, Plugs, Plate Lubricant, Joint
5	MOW Material & Sign Purchases					\$5,000	\$5,000	Lubricants. ROW Signs & Rail Bike Block Sign Purchases
6	Joint Oiling (Willaman)(2-Man Crew)	4	\$750	\$3,000			\$3,000	
7	Miscellaneous "Rough Spot" MOW Work 2-Man Crew	5	\$750	\$3,750			\$3,750	Miscellaneuos Work Including: Surfacing/Lining, Raise Low Spots, Clean Flangways
8	Weed Abatement Program (Willaman)(3-Man Crew)	3	\$1,140	\$3,420		\$10,000	\$13,420	Fall Work
9	Viscellaneous Ballast Placement - Various Locations (2-Man Crew)		\$750	\$1,500	\$5,000	\$4,000	\$10,500	Includes Work Tran @ \$2500 per Day, Ballast Purchase
10	Sign Replacements (2-Man Crew)		\$750	\$1,500			\$1.500	Miscellaneuos Work Including: Surfacing/Lining, Raise Low Spots, Clean Flangways, Sign Replacement
20	ogn repacements (2 man sterr)	2	ψ,50	\$1,500			¥1,500	3.00
	Sub-Totals:			\$31,580	\$16,500	\$19,000	\$67,080	
Number	TRACK INSPECTIONS & LIGHT MAINTENANCE	Quantity						
1		24	\$400	\$9,600			¢0.600	June Thru December
	Railbike Inspections & Light Maintanance (Number of Inspections)	10	·					
2	Regular Operating Season Inspections & Light Maintenance (Number of Inspections)		\$1,050	\$10,500			\$10,500	Unknown Dates
3	Polar Express Inspections & Light Maintenace (Number of Inspections)		\$750	TBD			TBD	Unknown Dates
4	Linehan Road Crossing Signal Inspections (Conducted Monthly)(Number of Inspections)	7	\$375	\$2,625				\$375/Month
	Sub-Totals:			\$22,725	\$0	\$0	\$22,725	
Number	ANNUAL STRUCTURE INSPECTIONS (KL Dorr Consulting)							Include Subconsultant Work by Hanfors Consulting, Wood
1	Structure Inspections & Report)	1	\$7,000	\$7,000			\$7,000	Rodgers, RCI
2	Structure Inspections Support (Willaman)	4	\$400	\$1,600			\$1,600	Incl Hi-Rail
	Sub-Totals:	•		\$8,600	\$0	\$0	\$8,600	
	TOTALS:			\$62,905	\$16,500	\$19,000	\$98,405	
Number	RAILBIKE BLOCK CAPITAL IMPROVEMENTS							
1	SPPS Derail @ MP 7.5 (Lump Sum - Willaman)	1	\$12,000	\$12,000	\$500		\$12,500	Includes Back Hoe Rental
2	Railbike Block Signage(Lump Sum)	1	\$1,500	\$1,500		\$500	\$2,000	
	Sub-Totals:			\$13,500	\$500	\$500	\$14,500	
Number	US- 50 BRIDGE MAINTENANCE							
1	US-50 Bridge Maintenance (Willaman)			\$2,500		\$500	\$3,000	Lump Sum Estimate
2	US-50 Bridge Lighting Maintenance (To Be Contracted)			\$3,500		\$500	\$4,000	Lump Sum Estimate
	Sub-Totals:			\$6,000	\$0		\$7,000	·
Number	LONG TERM MOW CAPITAL EXPENDITURES							
1	Overman Embankment Reconstruction (Lump Sum Estimate)(To be Contracted)	1	\$250,000	\$250,000			\$250,000	Critical Need Dependant
2	MP 5.2 Culvert Replacement (Lump Sum Estimate)(To be Contracted)	1	\$75,000	\$75,000				Critical Need Dependant
۷	Sub-Totals:	1	\$15,UUU	\$75,000 \$325,000	\$0	\$0	\$75,000 \$325,000	'

EXHIBIT "A"

REVISED 07/03/21

VTRW MAINLINE

TO GOLD HILL
TIMETABLE EAST





RAILBIKE BLOCK RULES (Revised 07/03/21)

REVISION#

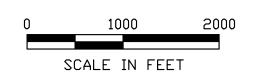
- 1. <u>RAILBIKE BLOCK</u> is established running from End-of-Track at Eureka to MP 7.6. Railbike and Railbike Support equipment use is limited to the Railbike Block only unless otherwise authorized by Dispatcher.
- 2. During times when both Railbikes and Trains are scheduled to operate within the RAILBIKE BLOCK, all Train and Railbike movements within the RAILBIKE BLOCK are governed by DIRECT TRAFFIC CONTROL (DTC) as authorized by Dispatcher.
- 3. During times when both Railbikes and Trains are scheduled to operate within the RAILBIKE BLOCK, Railbike Operator shall ensure all Railbike Equipment is off track and shall immediately report "Railbikes are Clear of Railbike Block" to Dispatcher.
- 4. During times when both Railbikes and Trains are scheduled to operate within the RAILBIKE BLOCK, Westbound Trains shall hold at the Westbound Train Hold Point MP 8.6 outside Linehan Road Signal Circuit until authorized to proceed by Dispatcher.
- 5. After Dispatcher receives "Railbike Block Clear" report from Railbike Operator, Dispatcher shall authorize Trains to proceed from Westbound Train Hold Point at MP 8.6 and enter Railbike Block thru issuance of Railbike Block Authority to Train Conductor/Supervisor for Train to occupy Railbike Block. Dispatcher may include special operations requirements for movement within the Railbike Block.
- 6. When Trains are clear of Railbike Block, Train Conductor/Supervisor shall report "Train is Clear of Railbike Block" to Dispatcher who shall then notify Railbike Operator that the Railbike Block can now be used by Railbikes.

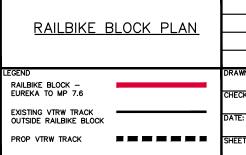
I<u>NITIAL PLAN</u> (subject to revision by VTRW Bulletin)

KL DORR CONSULTING LLC 2720 GOLD MINE CT. RENO, NV 89521 (775) 721–2020 ken.dorr@gmail.com



2013 AERIAL PHOTO





DRAWN BY:

CHECKED BY:

DATE:

07/03/21

SHEET NUMBER

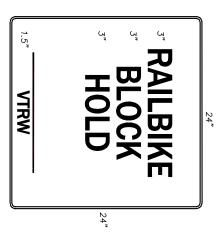
1 OF 1

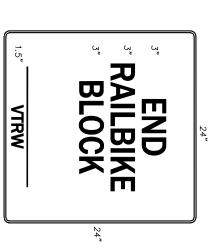
THE NEVADA COMMISSION FOR THE RECONSTRUCTION OF THE V&T RAILWAY (VTRW)

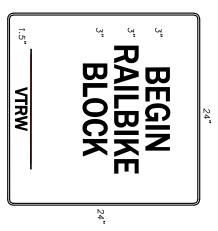
LOCATION & DESCRIPTION:

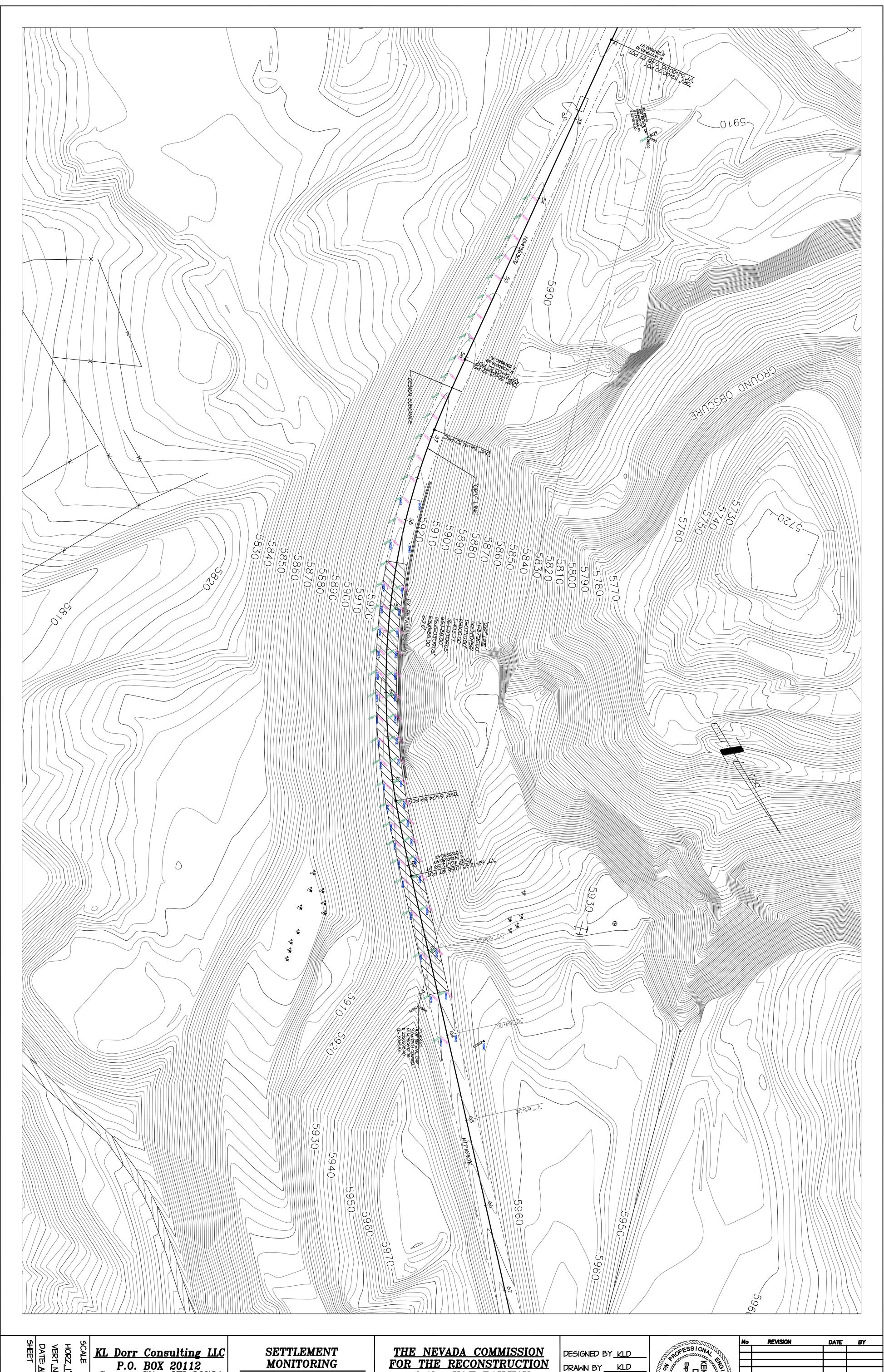
EASTGATE AREA — VTRW MAINLINE & SIDINGS CARSON CITY AND LYON COUNTY, NV.

DESCRIPTION









HORZ. I'=50'
VERT.N/A
DATE: AUGUST. 2021
SHEET

KL Dorr Consulting LLC
P.O. BOX 20112
Carson City, NV 89721

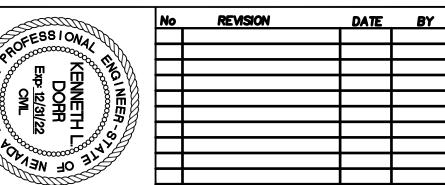
(775) 721-2020 (cell) ken.dorr**@gma**il.com

V & T RAILWAY RECONSTRUCTION OVERMAN EMBANKMENT SETTLEMENT MONITORING

of the V&T RAILWAY
P.O. BOX 1711
Carson City, NV 89702

(775) 340-2045

DRAWN BY KLD JOB No. VTRW DWG No. O. PIT. MONIT



OVERMAN EMBANKMENT SETTLEMENT MONITORING

"ORV" STA/OFFSET*	2014 S	URVEY		2019 SURVEY		JULY, 2021			
	POINT #	ELEV	POINT #	ELEV	Δ ELEV	POINT #	ELEV	Δ ELEV	
54+00.1, 10.0' RT	n/a	n/a	60056	5912.30	n/a	61001	5912.30	0.0	
54+24.8, 10.1' RT	n/a	n/a	60055	5912.96	n/a	61002	5912.74	-0.2	
54+50.1, 9.9' RT	n/a	n/a	60054	5913.93	n/a	61003	5913.91	0.0	
54+75.1, 9.8' RT	n/a	n/a	60053	5914.66	n/a	61004	5914.57	-0.1	
55+00.0, 10.1' RT	n/a	n/a	60052	5915.25	n/a	61005	5915.24	0.0	
55+25.1, 10.0' RT	n/a	n/a	60051	5916.07	n/a	61006	5916.04	0.0	
55+49.5, 10.3' RT	n/a	n/a	60050	5916.64	n/a	61007	5916.59	0.0	
55+72.6, 8.6' RT	n/a	n/a	60049	5917.09	n/a	n/a	n/a	n/a	
55+75.1, 10.1' RT	n/a	n/a	60048	5917.37	n/a	61008	5917.35	0.0	
56+03.3, 9.9' RT	n/a	n/a	60047	5918.10	n/a	61009	5918.09	0.0	
56+25.1, 10.0' RT	n/a	n/a	60046	5918.76	n/a	61010	5918.74	0.0	
56+50.0, 10.1' RT	n/a	n/a	60045	5919.34	n/a	61011	5919.34	0.0	
56+74.9, 10.0' RT	n/a	n/a	60044	5919.92	n/a	61012	5919.87	-0.1	
57+00.1, 10.3' RT	n/a	n/a	60043	5920.66	n/a	61013	5920.57	-0.1	
57+25.0, 10.0' RT	n/a	n/a	60042	5920.99	n/a	61014	5920.89	-0.1	
57+50.0, 10.0' RT	n/a	n/a	60041	5921.23	n/a	61015	5921.09	-0.1	
57+74.8, 9.9' LT	30021	5921.90	n/a	n/a	n/a	n/a	n/a	n/a	
57+74.7, 12.8' RT	30022	5921.43	60040	5921.61	0.2	61016	5921.45	-0.2	
57+99.8, 10.0' RT	n/a	n/a	60039	5921.97	n/a	61017	5921.83	-0.1	
58+25.8, 10.2' LT	30020	5922.87	n/a	n/a	n/a	n/a	n/a	n/a	
58+26.3, 11.9' RT	30023	5922.59	60038	5922.44	-0.2	61018	5922.30	-0.1	
58+50.1, 10.4' RT	n/a	n/a	60037	5922.92	n/a	61019	5922.79	-0.1	
58+74.8, 10.0' LT	30019	5924.96	60017	5924.33	-0.6	61056	5924.17	-0.2	
58+74.1, 11.4' RT	30024	5925.18	60018	5924.52	-0.7	61020	5924.39	-0.1	
58+99.8, 9.9' LT	30018	5926.03	60016	5925.53	-0.5	61055	5925.41	-0.1	
58+98.9, 10.6' RT	30025	5926.35	60019	5925.80	-0.6	61021	5925.69	-0.1	
59+24.8, 9.8' LT	30017	5926.70	60015	5926.29	-0.4	61054	5926.20	-0.1	
59+24.4, 10.0' RT	30026	5927.17	60020	5926.72	-0.4	61022	5926.61	-0.1	
59+49.7, 9.8' LT	30016	5927.54	60014	5927.25	-0.3	61053	5927.15	-0.1	
59+49.6, 9.8' RT	30027	5927.97	60021	5927.56	-0.4	61023	5927.46	-0.1	
59+74.8, 9.7' LT	30015	5928.37	60013	5928.15	-0.2	61052	5928.10	0.0	
59+74.3, 10.1 RT 59+99.9, 9.7' LT	30028	5928.57 5929.21	60022 60012	5928.17 5929.02	-0.4 -0.2	61024 61051	5928.09 5928.95	-0.1 -0.1	
59+99.2, 10.7' RT	30014 30029	5929.21	60012	5929.02	-0.4	61025	5928.93	-0.1	
60+24.8, 9.7' LT	30029	5930.00	60023	5929.08	-0.4	61050	5929.02	-0.1	
60+24.9, 11.4' RT	30030	5930.40	60024	5930.03	-0.4	61026	5929.76	-0.1	
60+49.9, 9.7' LT	30012	5930.40	60010	5930.61	-0.2	61049	5930.51	-0.1	
60+50.6, 11.0' RT	30012	5931.11	60025	5930.73	-0.4	61027	5930.64	-0.1	
60+74.9. 9.6' LT	30011	5931.62	60009	5931.39	-0.2	61048	5931.25	-0.1	
60+75.7, 11.0' RT	30032	5931.96	60026	5931.59	-0.4	61028	5931.46	-0.1	
60+99.9, 9.8' LT	30010	5932.41	60008	5932.19	-0.2	61047	5931.99	-0.2	
61+01.1, 10.3' RT	30033	5932.74	60027	5932.40	-0.3	61029	5932.23	-0.2	
61+24.4, 9.9' LT	30009	5933.21	60007	5932.94	-0.3	61046	5932.71	-0.2	
61+25.2, 9.9' RT	30034	5933.60	60028	5933.29	-0.3	61030	5933.10	-0.2	
61+46.4, 9.9' LT	30008	5934.02	60006	5933.75	-0.3	61045	5933.55	-0.2	
61+47.5, 9.7' RT	30035	5934.40	60029	5934.07	-0.3	61031	5933.89	-0.2	
61+68.4, 9.8' LT	30007	5934.56	60005	5934.28	-0.3	61044	5934.11	-0.2	
61+68.7, 9.9' RT	30036	5935.04	60030	5934.69	-0.4	61032	5934.51	-0.2	
61+90.5, 9.9' LT	30006	5935.30	60004	5935.01	-0.3	61043	5934.87	-0.1	
61+90.3, 9.7' RT	30037	5935.68	60031	5935.34	-0.3	61033	5935.18	-0.2	
62+12.4, 10.0' LT	30005	5935.90	60003	5935.58	-0.3	61042	5935.43	-0.1	
62+12.9, 9.8' RT	30038	5936.30	60032	5935.98	-0.3	61034	5935.85	-0.1	
62+50.0, 9.9' LT	30004	5937.22	60002	5936.96	-0.3	61041	5936.83	-0.1	
62+50.8, 9.3' RT	30039	5937.47	60033	5937.30	-0.2	61035	5937.22	-0.1	
63+00.0, 10.0' LT	30003	5938.81	60001	5938.84	0.0	61040	5938.82	0.0	
63+00.9, 8.5' RT	30040	5939.13	60034	5939.15	0.0	61036	5939.15	0.0	
63+50.1, 9.9' LT	30002	5940.73	60000	5940.83	0.1	61039	5940.82	0.0	
63+50.1, 7.6' RT	30041	5940.54	60035	5940.59	0.1	61037	5940.58	0.0	
64+00.2, 10.0' LT	30001	5942.11	n/a	n/a	n/a	n/a	n/a	n/a	
64+00.2, 7.3' RT	30042	5942.26	60036	5942.17	-0.1	61038	5942.16	0.0	



August 16, 2021

Kenneth L. Dorr, P.E. KL Dorr Consulting LLC 2720 Gold Mine Ct Reno, Nevada 89521

Subject: V&T Railway

Storey County, Nevada

Overman Pit Embankment Monitoring

Dear Mr. Dorr:

In accordance with your request, Wood Rodgers has performed a review of the most recent Overman Pit settlement monitoring data collected in July 2021 and the previously submitted Geocon Consultants Overman Pit Settlement monitoring report from November 2011.

The Overman Pit Embankment was originally constructed in 2005 and consists of approximately 300,000 cubic yards of soil and rock fill. The maximum height of the embankment is approximately 120 feet. The northerly, about one half of the embankment was constructed on mine waste and alluvial outwash. This is the area that has and is experiencing significant settlements.

Settlements although persistent, have been most pronounced after significant precipitation events. This observation prompted lining of the uphill ditches and sealing the culvert pipe at the north (RRE) end of the embankment in 2008. Contemporaneous with this work, rebar control points were installed to provide for long term monitoring of the northerly portion of the embankment. Settlements continued such that numerous track raises occurred between 2008 and 2014. In 2014 mitigation was necessary to stabilize the ballast section which had become excessive. In 2014 the track structure was removed, the subgrade raised with compacted fill and an impermeable HDPE membrane was installed over the subgrade. Monitoring control points were re-established and extended as part of this mitigation work.

Based on our review we have the following conclusions:

- 1. Settlements continue to occur but since 2014 within operational limits.
- 2. Settlement in the area that was previously mitigated in 2014, Sta. VT 58+50 to VT 63+50 settlements have decreased substantially compared to 2014-2019. Settlements in this area are approximately one quarter of what had occurred between 2014 and 2019 indicating an overall decline in the general rate of settlement of approximately 50%. Current rates of settlement are about three quarter of an inch per year or 0.06 tenths of a foot per year.
- 3. Settlement is occurring south of the previously mitigation section from approximate station VT 54+25 to VT 58+50. Settlement in this area was not monitored until 2019. Measured settlements since 2019 are minimal except for the from Station VT 57+00 to Station VT 58+50. Settlements for this area are in the range of the previously mitigated area (about 0.06 tenths of a foot per year).

4. Based on the average rate of settlement, mitigation of the subgrade is likely to be required about every eight to ten years. Due to the anticipated slowing of settlement rates, it can be expected that the interval between major mitigations will lengthen provided normal or near normal yearly precipitation occurs. If settlement rates continue to decline, mitigation of the embankment subgrade will likely be needed only after large precipitation events.

Based on our review and history with the Overman design and construction we have the following recommendations:

- 1. Periodic raising of the track by adding ballast is anticipated to be needed for the foreseeable future. Longer time intervals between ballast additions and subgrade mitigations are likely.
- 2. Survey monitoring of the embankment settlement control points should be conducted every two years at a minimum and immediately after any major precipitation events.
- 3. Visual inspection of the embankment should be conducted by qualified geotechnical personnel yearly. This inspection should be focused on surficial and global embankment stability. A written field inspection and analysis report should be prepared and presented to the project civil engineer within five days of the completion of the inspection provided that no imminent concerns are noted. Should any hazardous conditions be observed, the engineer should be notified immediately, and subsequent written reports forwarded as soon as possible.
- 4. Visual inspection of the embankment surface should be conducted by maintenance personnel during routine track inspections. Significant track deflections, tension cracks along the embankment crest, or any "slip outs" should be reported to geotechnical staff immediately for follow up inspections and the development of action plans if necessary.

Thank you for the opportunity to be of continuing service.

Wood Rodgers, Inc.

Senior Engineer

August 16, 2021
Gary Luce, PE