Southern Connection – POB Industrial Rail Spur Rail Maintenance Cost Study C2024-12

Prepared for:

PORT OF BENTON

Prepared by:

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JCG Consulting

5/3/2024

I. Table of Contents

II. RFQ – Published Scope of Work

The scope of work for this project includes the following Description of Services to be performed:

A. Review of current Port of Benton rail infrastructure, operations, and current needs and projects.
B. Review of Port of Benton current rail planned capital improvement projects, budgets, and grant funding.
C. Review of current track legal arrangements stemming from the 1998 Indenture and rulings from Federal Court.
D. Evaluation of annual maintenance costs needed to maintain track to FRA Class 2 standards.
E. Preliminary discussions with current rail customers to determine their needs and desires concerning rail shipping.
F. Preliminary discussions with the Class I railroads to determine their needs and requirements for any car or tonnage charges.
G. Meeting with Port of Benton staff on the rail needs and future planning. Attend at least one Port Commission meeting (virtually).
H. Preparation of a report documenting the findings. Study should include at least 2-3 options for different methods of charging for access to the Port track. Preferably including examples from other similar industrial/rail facilities. Financial summaries should be included for each option. Recommendations for the preferred option.

III. Executive Summary

At the request of the Port of Benton (POB), JCG Consulting conducted the Southern Connection – POB Industrial Rail Spur Rail Maintenance Cost Study, which included those items identified in the above RFQ Scope of Work with an onsite visit interviewing both Class I Railroads, POB customers, the current Shortline operator, and POB staff. Interview questions focused on current operating challenges, POB's rail infrastructure, and potential growth opportunities for Richland, WA.

Positive Takeaways of the Assessment:

- The quality of recent rail infrastructure related repair work is promising.
- Current Richland, WA customer base all foresee continued growth opportunities for more business going forward.
- Class I Railroads are in the business of moving railcars so increased volume is a good thing.
- Port of Benton Economic Development team have been working towards and identified several options for rail supported growth in the area.
- Funding sources have been identified and are in progress for many needed capital repairs and site development opportunities to restore the track to a point where annual ongoing maintenance can be performed.

Opportunity Takeaways of the Assessment:

- Due to years of neglect and the absence of a preventative maintenance program for the Port of Benton's rail related infrastructure:
    - It's remarkable that operations are working as well as they are.
    - The impact of increased transit times due to Excepted Track Class is:
        - heavily impacting one of the two Class I's ability to serve Richland customers consistently and driving up their operating costs.
        - driving up operating costs for the other Class I, but due to operating differences at least customers are being served.
        - Current Richland rail served customers have:

        - created alternate “other than railroad” options (trucking) for supplying materials to run their businesses.
        - two customers own track mobiles (car movers) to perform their own switching.
        - at times have paid the Shortline operator, Columbia Rail to switch cars for them (customer is paying double) for last mile service.
    - The existing railroad infrastructure is “near” incapable of supporting any efficient and productive increased growth without significant capital repairs.

The lifespan of infrastructure components is dependent upon the operating conditions in which they exist. The downward forces of gravity by a moving train are distributed horizontally from the point of contact the rail car wheel makes with both the track and railroad ties. If tie placement is not consistent, and adjacent ties are not capable of functioning at their intended capacity, the net result is reduced component life.

Poor drainage caused by a combination of small round river rock and the absence of preventative maintenance namely undercutting is resulting in:

- ties not being supported properly and are experiencing high forces and strain equating to **reduced tie life,**
- the improper drainage keeps mud and water saturation in place for extended periods of time whereby creating a damp condition **expediting tie rot**,
- moisture related rot in time gives way to spikes becoming loose which
    - increases the amount of pumping (cyclical affect)
    - **increases** the opportunity for **plate cut** since fasteners are no longer supported moving up and down as well as wet rotting wooden ties underneath the tie plates.

All of the information captured from the scope of work was instrumental in the creation of a rail costing model to assess future preventative maintenance costs required to maintain POB’s track to FRA Class 2 Track standards (possibly better). The costing model generates costs based on three different operating parameters that are consistent with Class I Railroad’s KPI’s:

- Per car
- Per car mile
- Per ton car mile (gross ton mile)

The Excel based model calculates the annual maintenance cost for the POB’s rail infrastructure based on four modular cost sections that sum up from multiple lower level cost components.

The model user has the ability to modify multiple input values related to:

1. Life expectancy values and inflationary rates
2. Administrative and facility costs
3. Infrastructure oversight and inspection.

** Two critical Points of clarification:

1. Federal and State money has and will be necessary for POB’s rail infrastructure repairs to move from its current state of deterioration and resulting “excepted” track class stemming from many years of neglect (foregoing necessary infrastructure repairs).
2. The ***cost to restore the POB’s track infrastructure will be the sole financial responsibility of the Port of Benton*** and their work in obtaining Federal, State, and Local funds. ***Remediation and restoration*** of current rail infrastructure in advancing current track classification back to Class 2 or better track ***will not come from any*** preventative maintenance ***fees assessed to or collected from the Class I or POB customers.***

IV. Physical Property Description

Physical Line Definition:

The Southern Connection – POB Industrial Rail Spur Rail is in Richland, WA of Benton County, WA and spans between Richland Jct (Milepost 18.84) and Horn Rapids Road (MP 29.73)

The Port of Benton's current rail ownership includes:

- the main industrial track running from Richland Jct. (milepost 18.84) to Horn Rapids Road (milepost 29.73), ~ 11 miles.
- the first 13.5 feet of industry lead track (clearance point) servicing Lamb Weston and Lineage Refrigerated Warehouse (milepost 26.45)
- North Richland Railyard tracks (milepost 27.54 to milepost 28.52)
- Southern leg of the wye (starting at milepost 28.54 running to City of Richland track)
- North leg of the wye (running from City of Richland track to milepost 28.89)
- 5 miles of sidings and ladder track

Additional Infrastructure and Assets

- 4 bridges
- 10 Port owned at-grade crossings (ultimately 11 with Horn Rapids Road completion)
- Approximately 48,000 crossties
- 2 locomotives
- 3 flat cars
- 2 ballast cars
- 6 rail maintenance cars

City of Richland's current rail ownership includes an industrial spur track and customer facility leads (13 ft to clearance point) running west of the wye track and then curving northward ending 150 feet south of Battelle Blvd. Length of City Track is approximately 1.8 miles.

Exhibits 1, 2, 3, 4 and Table 1 provide an aerial perspective as well as station identification detail for the Port of Benton track infrastructure under review in this assessment.

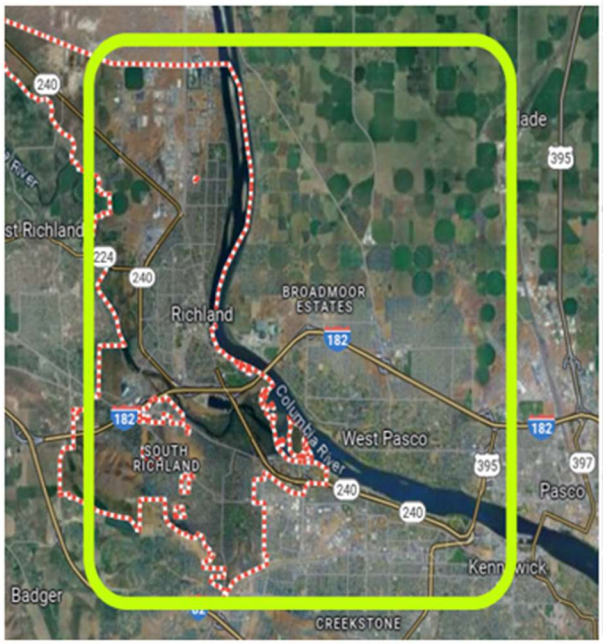


Exhibit 1

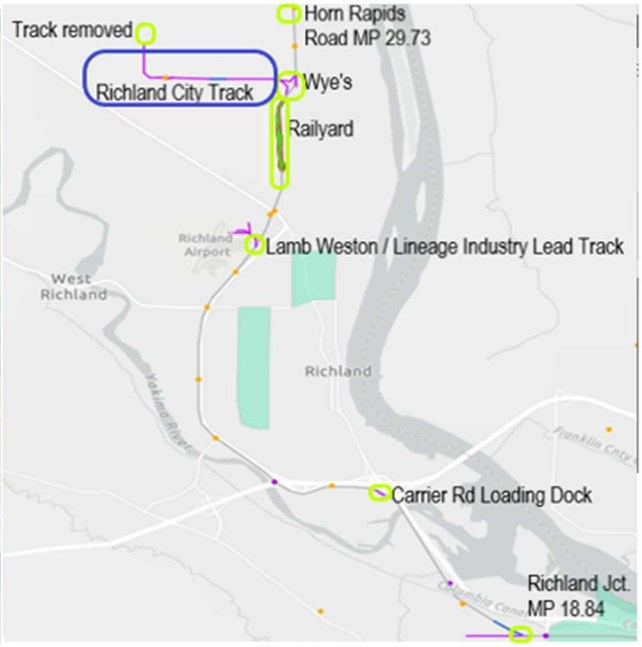


Exhibit 2

** Exhibit 1: Aerial map copied from Google Earth
** Exhibit 2: Produced by JCG Consulting using map background copied from https://usdot.maps.arcgis.com/apps/webappviewer/index.html?id=fd9810f673b64d228ae072bead46f703

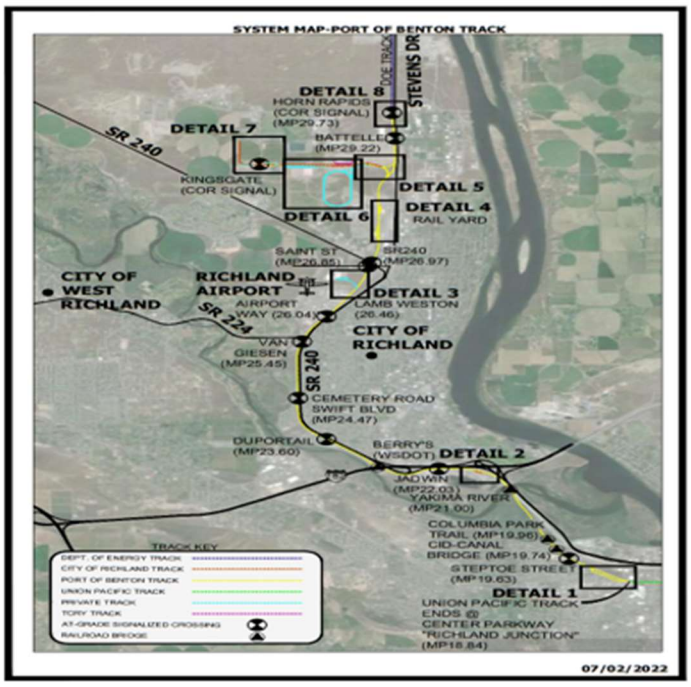


Exhibit 3

Port of Benton Station Table Sep-23				
Siding Length	Station No's	DOT #	Mile Post Location	Station Names
	350		29.73	Horn Rapids Road
		922975L	29.22	Battelle Blvd
		310391C	29.12	Private Crossing south of Battelle
	400		W28.90	City Track
	310		28.59	N Ladder
	300		27.40	Port of Benton Yard
		310401F	26.97	State Highway 240
	212	310399G	26.92	Saint Street
845	211			ConAgra
	210		26.46	Lamb Weston
	209	310402M	26.04	Airport Way
		310386F	25.45	Van Giesen Street
		310389B	24.47	Cemetery Road/Swift Blvd
		310392J	23.60	Duportail Street
			22.64	Berry's Overpass Bridge
		901130K	22.03	Jadwin Avenue
547	205		21.51	City Dock
			21.14	Pedestrian Bike Path
			21.00	Yakima River Bridge
			19.96	Columbia Park Trail Overpass Bridge
			19.74	Irrigation Canal Bridge
	201	310397T	19.63	Steptoe Street
		981259F	19.00	Center Parkway
850	200		18.84	Richland Jct.
			18.74	Union Pacific

Table 1

** Exhibit 3: Port of Benton Track System from Roger Wright, Port Engineer, July 2022
** Table 1: ** Email: RE: Next Steps from Roger Wright, POB Port Engineer 1/25/24 9:07 am POB Station Table

Figure 1: Port of Benton Rail Line

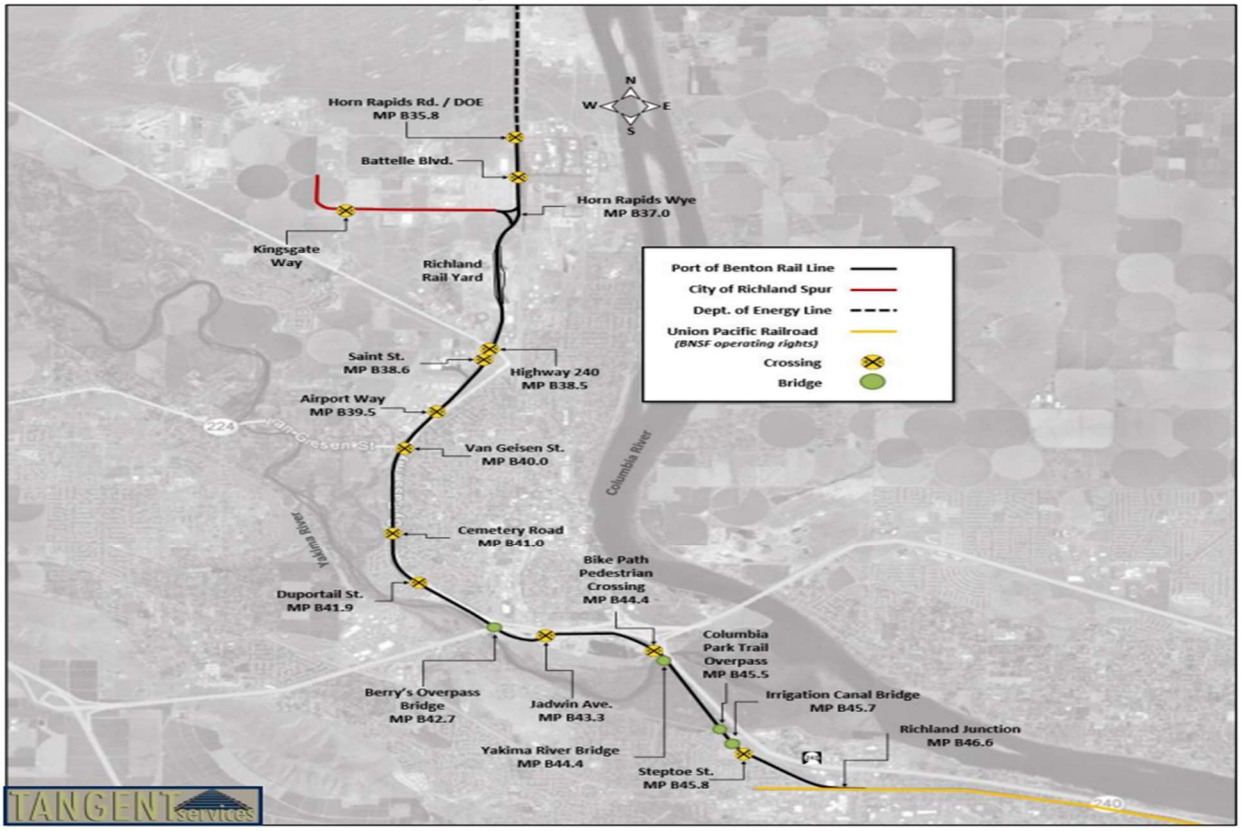


Exhibit 4

** https://portofbenton.com/; POB 2017.pdg; Rail Master Plan, page 11, Tangent Services, INC, January 2017

Table 2 provides some attribute information (rail curve and rail weight specifications) regarding the POB track infrastructure.

Low MP	High MP	Degree of Curvature
18.76	18.8	0
18.8	19.05	2.5
19.05	19.6	0
19.6	19.94	1.9
19.94	21.17	0
21.17	21.45	2.9
21.45	21.56	0
21.56	21.57	0.2
21.57	21.77	2.8
21.77	22.23	4.5
22.23	22.54	4.8
22.54	22.9	1.5
22.9	22.95	0
22.95	23	2.8
23	23.07	2.8
23.07	23.69	0
23.69	24.12	2.5
24.12	25	0
25	25.84	1
25.84	25.96	0
25.96	26.2	1
26.2	26.5	0
26.5	26.82	0.9
26.82	27.23	0
27.23	27.4	2.8
27.4	28.16	0
28.16	28.21	3.7
28.21	28.25	3.9
28.25	28.49	3
28.49	28.55	3.7
28.55	28.58	0
28.58	28.84	2.8
28.84	28.88	0.2
28.88	29.26	0
29.26	29.38	1.2
29.38	29.73	0

Low MP	High MP	Pound Rail
18.76	18.84	110
18.84	19.04	115
19.04	19.06	136
19.06	19.71	115
19.71	20.11	136
20.11	21.03	115
21.03	21.19	136
21.19	22.64	115
22.64	22.8	136
22.8	23.16	115
23.16	23.61	90
23.61	23.62	115
23.62	23.66	136
23.66	23.67	115
23.67	24.47	90
24.47	24.52	115
24.52	25.44	90
25.44	25.45	115
25.45	25.51	136
25.51	25.52	115
25.52	26.06	90
26.06	26.08	115
26.08	26.99	90
26.99	27	115
27	28.98	90
28.98	29.73	115

Table 2

** Email: RE: Additional Rail Info from Roger Wright, POB Port Engineer 1/30/24 11:28 am PORT OF BENTON MAIN tk SM mp 18.74-29.73 RP rev final.pdf; Holland Geometry Car Summary; Oct 11, 2023

V. Assessment Timeline and Kickoff Meeting

Timeline of Events Prior to Project Kickoff

1.4 RFQ Solicitation Schedule

Tentative Schedule of Events	
Task	**Date**
RFQ Issued by POB	10/29/2023
Deadline for Questions by Interested Parties	11/28/2023
RFQ Due by 3:00 PM PST	11/30/2023
*Evaluation and Selection	12/12/2023
*Interviews / Presentations, if required	TBD
*Estimated Date of Intent to Award	Dec-23
*Estimated Date of Council to Award	Dec-23
*Estimated Date of Notice to Proceed	Dec-23
*Target Date for Completion of all Work	3/31/2024

Project Background Schedule

Timeline of Events	
Task	**Date**
JCG Consulting Awareness of RFQ	10/29/2023
JCG Consulting Submits RFQ Proposal	11/30/2023
Notification of RFQ Award	1/3/2024
Budget Estimate Submitted to POB	1/9/2024
Receipt of Consulting Agreement from POB	1/18/2024
Submission of Washington State Business License	1/20/2024
Submission of Certificate of Insurance to POB	1/23/2024
Receipt of Fully Executed Consulting Agreement from POB	1/25/2024
3:00 PM Official Kickoff Call	1/29/2024

NOTE: Dates preceded by an asterik (*) are estimated dates.
Estimated dates are for information only.

Table 3

** Table 3: POB's RFQ posted at https://portofbenton.com/ and Outlook email date / time stamps.

A. POB rail infrastructure, operations, and current needs and projects.

February 18 – February 22, 2024 Onsite Visit:

a. Safety Opportunities

A guiding principle of railroads is safety first. It is a core belief that all accidents and injuries are preventable. It is recommended that the Port of Benton / City of Richland investigate the following potential safety concerns observed and discussed during the onsite visit at Richland, WA.

The first observation serves:

- to ensure the physical structure aligns with the guidelines of city, county, and state government safety policies,
- wasn't an oversight during
    - permitting, or
    - construction
    - should approval be revoked / amended, and path rebuilt??
- At a minimum, a fence should be erected to prevent encroachment onto the Port's Right of Way.

The second observation is:

- a recommendation to keep a watchful eye on a specific section of track that has a "small" but "potential" opportunity for a derailment until further improvements are made.
- There is no way to assess the probability of a derailment, just identifying an area for monitoring.

1. Potential Right of Way Violation Bike/Walking Path

Within close proximity of the Shoreline Village Apartments and the adjacent business just south of the intersection of Bypass Hwy 240 and Duportail Street, a bike/walking path has been erected within 25 ft of the mainline track center (Exhibits A.1, A.2, A.3, A.4)

** Aerial photographs and measurements from Google Earth.

Exhibit A.1

Exhibit A.2

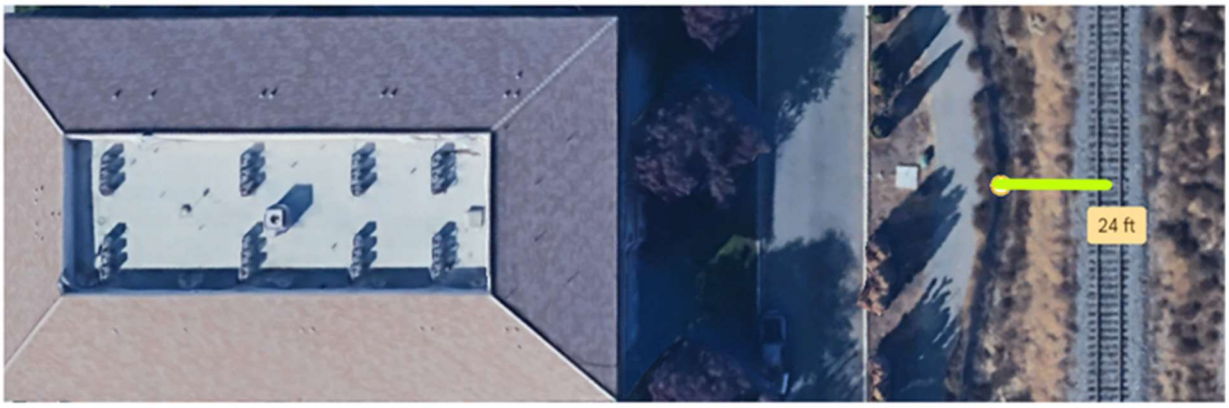


Exhibit A.3

Exhibit A.4

At this time, an official Right of Way encroachment standard across all States and Classes of railroads was not found. Citing page 29 of the Rail with Trails presentation produced under oversight of the Federal Railroad Administration (FRA) and Federal Highway Administration (FHWA), referencing the SEDA Council of Governments (SEDACOG) Joint Rail Authority (JRA):

- "The trail is 50 feet or more away from the track centerline.
- A trail may be allowed at no less than 25 feet away "***if a chain-link 60-inch-high fence is provided***" and placed at 25 feet distance from track centerline.
- A trail no more than 20 feet away from track centerline may be allowed for distances of less than 400 yards "***under extreme circumstances***" when the trail developer proves that no other viable options exist.
- The trail developer must have a ***governmental body fund the insurance and indemnification of the railroad."***

***** Quotations and bold italics were added to emphasize statements.

** https://railroads.dot.gov/sites/fra.dot.gov/files/2020-04/RWT_Report_Final_031620_0.pdf; U.S. Department of Transportation, Federal Railroad Administration, Federal Highway Administration, RAILS WITH TRAILS, page 29; 3/16/2020

2. I-182 Overpass (aka Berry's Bridge)
Highlighting a location of mild concern to keep a watchful eye on. When the head end of a loaded grain unit train is traversing Berry's Bridge the train consist is spread across five curve sections of track, with as much as 4.8 degrees of curvature, with the rear end of the unit train still south of the City Dock. (Exhibit A.5)

Exhibit A.5
** Ground photos taken by Jeffrey Guelker during Port of Benton onsite visit February 19, 2024 through February 22, 2024.

Reviewing the geometry car chart in Exhibit A.6, the rail's cant

- measure of tilt or roll in the rail
    - that keeps the point of wheel contact centered on the rail head
    - shows some erratic variability.

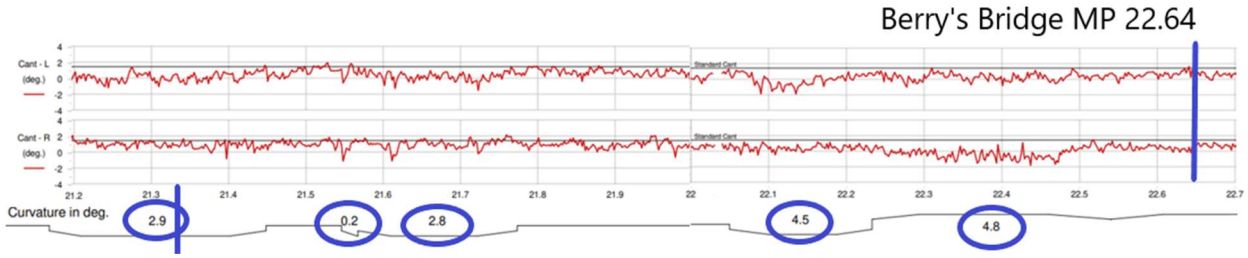


Exhibit A.6
** Email: RE: Additional Rail Info from Roger Wright, POB Port Engineer 1/30/24 11:28 am PORT OF BENTON MAIN tk SM mp 18.74-29.73 RP rev final.pdf; Holland Geometry Car Summary; Oct 11, 2023

CANT exceptions have been identified as probable causes of rail rollover and gauge widening derailment per the following studies:

"The issues brought up from the survey and discussions with railroads confirmed those listed in the literature review. More specifically, surveyed railroads indicated the following common issues for curves with excess cant:

- Excessive flattening or plastic flow on low rail
- Gauge widening
- Rollover of the low rail
- Increased potential of internal rail defects
- Adverse impact on rail, tie, and surface condition due to the elevated vertical loading on the low rail and the increased axle steering forces that result."

** https://railroads.dot.gov/sites/fra.dot.gov/files/2020-02/Cant%20Excess_Freight_Shared%20Track.pdf; Cant Excess for Freight Train Operations on Shared Track, Federal Railroad Administration, Anna M. Rakoczy, Nicholas Wilson, Dingqing Li, page 9 , February 2020

Also, because the track is already tipping slightly inward, the chance of derailment due to tipping is higher.

** https://railroads.dot.gov/sites/fra.dot.gov/files/2020-02/Cant%20Excess_Freight_Shared%20Track.pdf; Cant Excess for Freight Train Operations on Shared Track, Federal Railroad Administration, Anna M. Rakoczy, Nicholas Wilson, Dingqing Li, page 17 , February 2020

While most of the rail in this span of track is 115lb, ongoing frequent inspections are recommended until said time that

- defective tie replacements can occur
- and the rail weight can be upgraded to 136lbs.

Some marginal / fair ties and a damaged corner of rail at the joint prior to Berry's Bridge can be seen in Exhibit A.7.

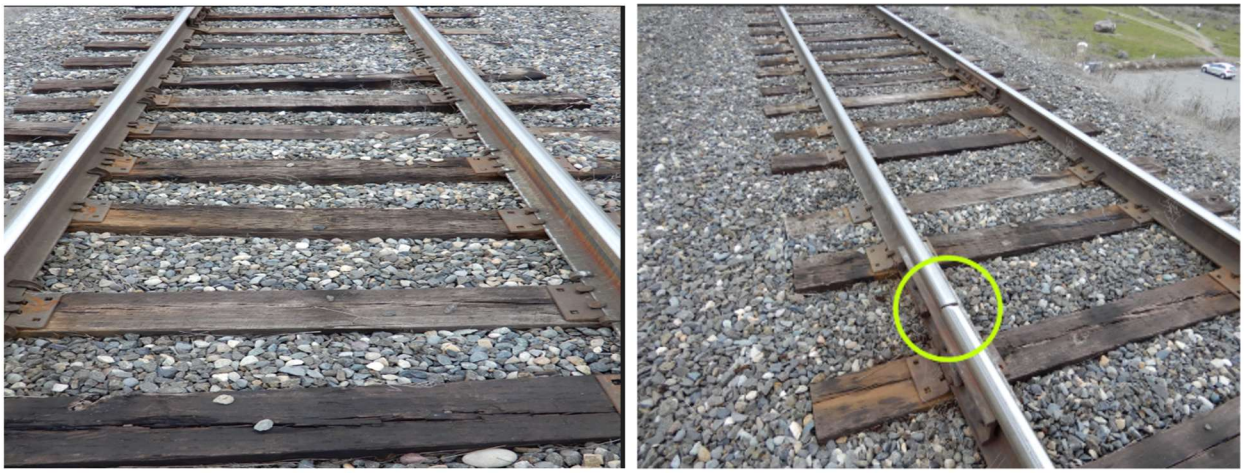


Exhibit A.7

Trains traversing Berry's Bridge are at a moderate elevation above the ground crossing over a high traffic city street as seen in Exhibit A.5 and A.8.

Exhibit A.8

There has also been some erosion of the hill overtime with a barrier erected to prevent further earth movement as seen in Exhibit A.9.

Exhibit A.9

** Exhibits A.7, A.8, and A.9 ground photos taken by Jeffrey Guelker during Port of Benton onsite visit February 19, 2024 through February 22, 2024.

b. Inspection Summary

A multitude of photographs have been taken (shared), not only by JCG Consulting, over time showing the deteriorated condition of Richland's railroad track infrastructure. For purposes of this assessment, I will highlight critical aspects of the current state while not belaboring the point since the infrastructure's degradation is well known. Exhibit A10, A.11, and A.12 provide an aerial perspective (sourced from Google Earth) of the track traveling northbound along Hwy 240. Starting with Exhibit A.10, the railroad tires are no longer resting on top of the ballast but are buried underneath the ballast, and more concerning dirt, and mud. Exhibit A.11 depicts both uneven tie spacing as well as the non-parallel placement of railroad ties as they have shifted over time from railcar weight, the elements of nature, and historic lack of maintenance. The ties form a zig-zag type pattern (Z shape) leading to uneven weight distribution under the load of a train consist in transit. Exhibit A.12 shows the combination of both buried ties and tie shifting producing a double hit to the 90lb rail and its supporting roadbed comprised of ties, ballast, and fasteners. The impact of poor infrastructure along with smaller pound rail in curves is decreasing the potential lifespan of infrastructure components while increasing the possibility of a derailment(s).

Exhibit A.10

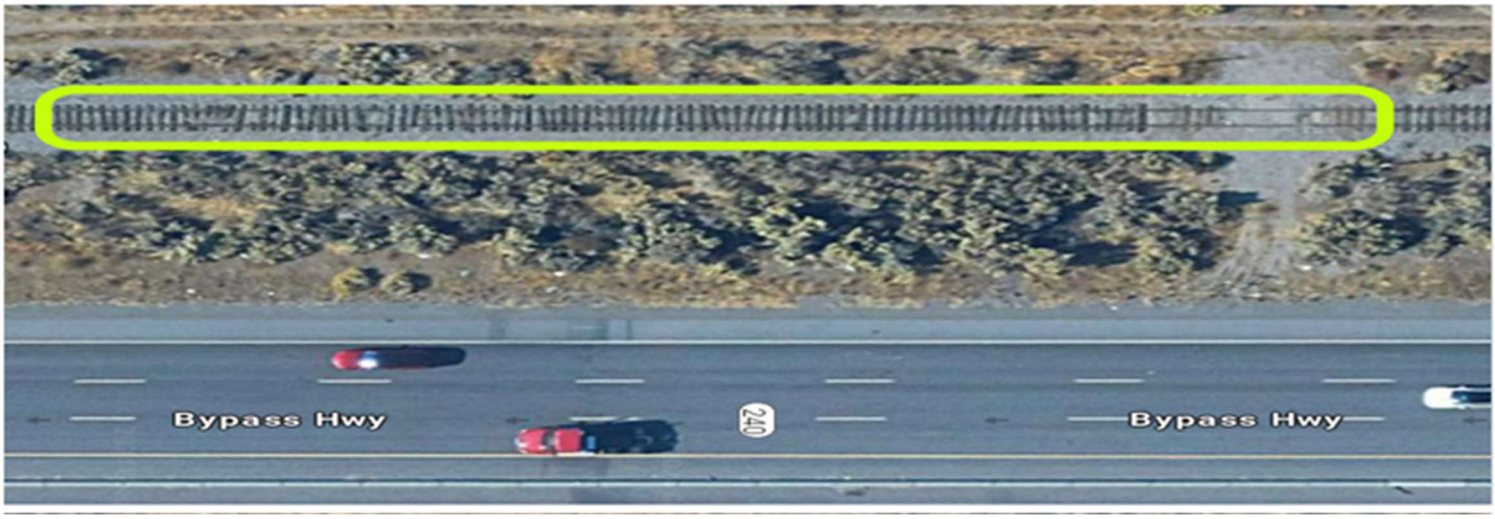


Exhibit A.11

Exhibit A.12

Exhibit A.13 provides a ground view perspective of the aerial photo callouts of Exhibit A.10, A.11, and A.12. Starting left to right, it is clear that railroad ties are buried underneath ballast, dirt, and mud. The shifting of ties into a zig zag "Z" position are easily discernible in the two rightmost pictures of Exhibit A.13.

** Ground photos taken by Jeffrey Guelker during Port of Benton onsite visit February 19, 2024 through February 22, 2024.

Exhibit A.13

Exhibit A.14: Poor ballast drainage resulting from non-elevated railbeds and the buildup (and subsequent elimination) of dirt and mud overtime has led to railroad ties that are shattering into toothpick fragments, tie plates that are cutting into the railroad ties, tie plates that are no longer attached to the railroad ties, broken tie plates, spikes that are no longer holding down the rail, and railroad ties that have completely rotted and are no longer a functional component of the actual railroad infrastructure.

Exhibit A.14

** Ground photos taken by Jeffrey Guelker during Port of Benton onsite visit February 19, 2024 through February 22, 2024.

Exhibit A.15 shows more examples of rotting wood damage, tie plates that are no longer functioning as intended, railroad spikes that no longer are serving as track fasteners, and gaps underneath elevated rail resting on top of ties with poor adjacent ballast coverage.

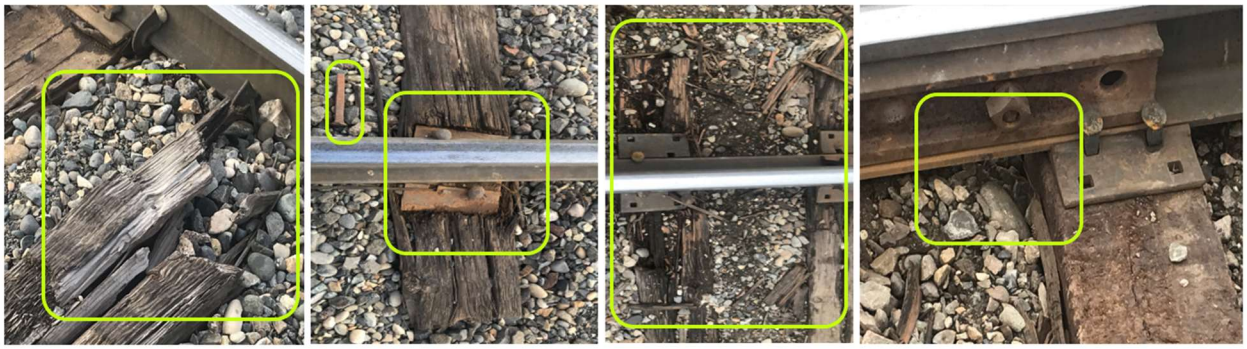


Exhibit A.15

** Ground photos taken by Jeffrey Guelker during Port of Benton onsite visit February 19, 2024 through February 22, 2024.

As shown in Exhibit A.16, poor fastening of the rail to ties is causing rail gauge defects (improper separation between the left and right sides of the rail to match the wheelbase of the train consist. This results in unbalanced downward force (weight) further reducing the potential lifespan of the infrastructure components. Gauge rods have been installed all throughout the POB's track (especially curves) to help maintain the proper left to right rail spacing by eliminating spreading as well as preventing tilt. On the north and south wye's starting at milepost W28.90, 93 gauge tie rods have been installed in the northern section of the wye and 78 gauge tie rods have been installed in the southern section of the wye. The southern wye experiences heavy unit train traffic with substantial inward force produced by 8,000 ft trains whose mechanical preference is to move in a straight line. The northern wye experiences a similar number of total railcars traversing over the railcar however substantially higher total wear and tear force as the northern wye is used by both Class 1 railroads for switching smaller cuts of cars into the City Track customers, single car orders into the cattle feed loop track, and building the outbound cut of cars headed back south to the Class I's manifest yards.

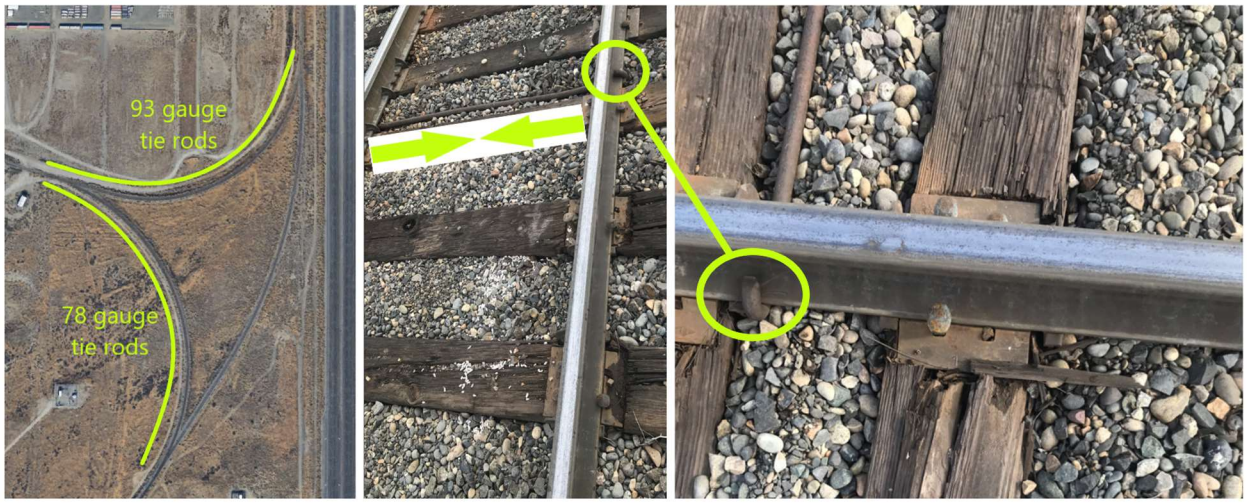


Exhibit A.16

** Ground photos taken by Jeffrey Guelker during Port of Benton onsite visit February 19, 2024 through February 22, 2024.

The pictures in exhibit A.17 show operating damage to the 136lb rail infrastructure on the southern wye just north of the railyard. Nine areas of rail burn were observed on this track segment presumably due to one or both of the following operating scenarios:

- the elevated climb pulling 110 car unit trains out of Central Washington Corn Processors (CWCP) facility
- combined with improper locomotive servicing prior to spotting / pulling Richland rail customers.

Little to no sand, which is used to provide traction for locomotive wheels slipping while under load, was observed near the areas of rail burn. The photo on the right shows the downward force impact of the locomotive wheel being significant enough to break the concrete lime free from its long life “near permanently attached with the rail”.

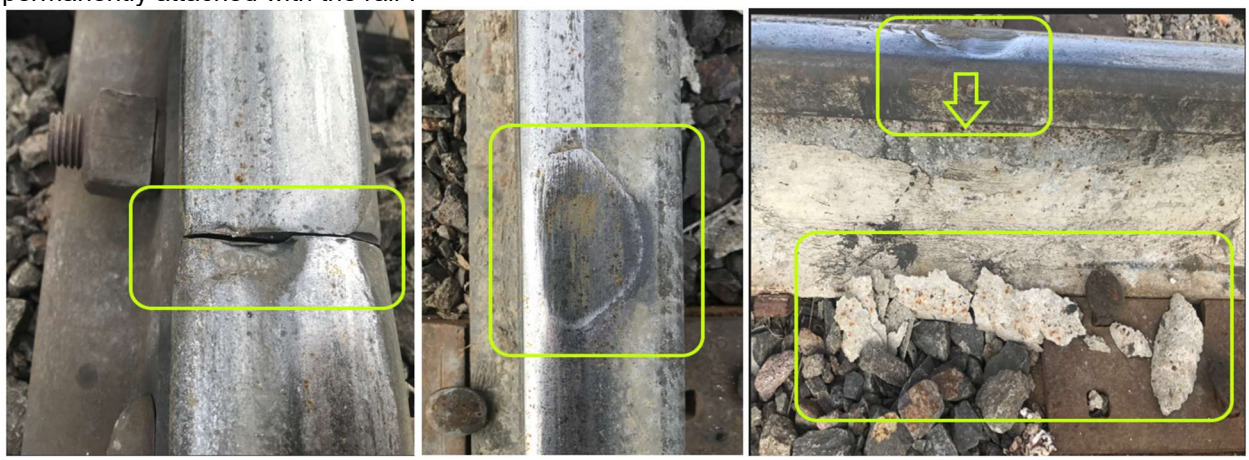


Exhibit A.17

** Ground photos taken by Jeffrey Guelker during Port of Benton onsite visit February 19, 2024 through February 22, 2024.

Exhibit A.18 & A.19. Round river rock (highlighted in yellow) found throughout the ballast roadbed of the POB track, has been shown to inhibit the flow of water and dirt drainage, whereby leading to the buildup of mud and eventually rotting ties (highlighted in blue). More angular non uniform types of ballast rock within the green ellipse in the rightmost picture, has been shown to provide much better drainage properties resulting in reduction of soil and mud buildup whereby elongating tie life, as identified inside the white box.

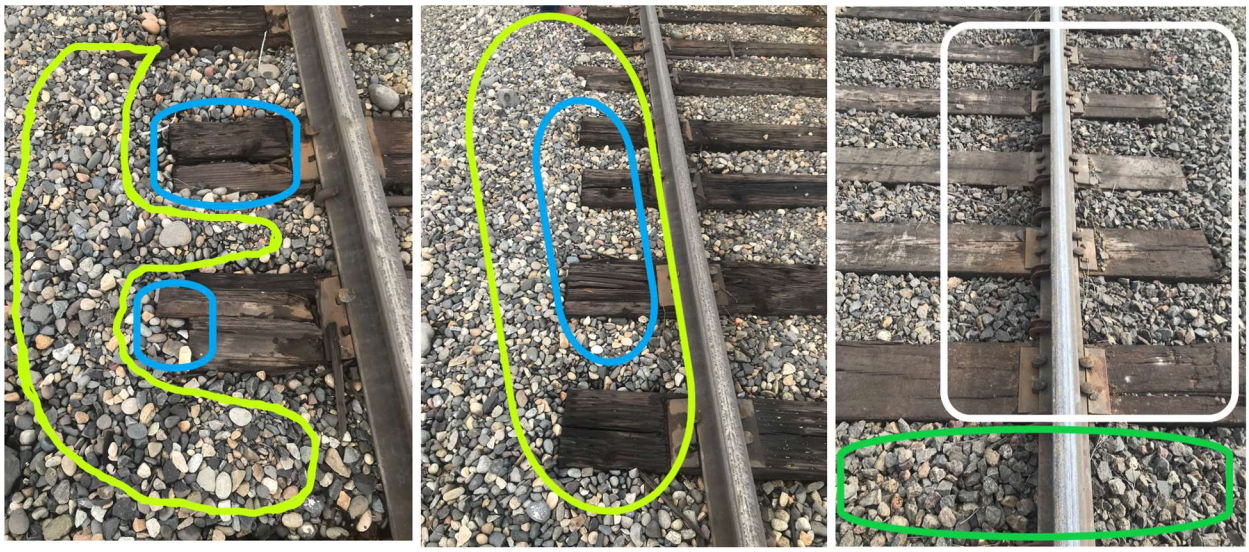


Exhibit A.18

Exhibit A.19

** Ground photos taken by Jeffrey Guelker during Port of Benton onsite visit February 19, 2024 through February 22, 2024**.**

Study Callouts below:

“A specific type of stone must be used for railroad ballast. If the stones are too smooth, such as river rock, the pebbles would roll over or slide against one another when a train passes. In order to provide support to the tracks, stones with angular edges must be used. The angular nature of rail ballast allows the stone to lock in place.”

** https://shorelineaggregate.com/railroad-ballast-aggregates-crushed-stone/; Aggregates in Railroad Ballast

“It’s not like the construction crews put just any stone they find around the tracks….. For instance, if you put smooth, round pebbles in the ballast, then they might roll or slide over each other when a train passes over the tracks; therefore, they would fail at their main job – providing solidarity to the tracks. Given that fact, you need stones of a specific type that won’t move around.”

** http://www.railroadfastenings.com/blog/functions-of-track-ballast.html; WHY ARE THERE CRUSHED STONES ALONGSIDE RAIL TRACKS

"***The use of poor quality ballast leads to shorter tamping intervals, a shorter ballast lifespan, and thus to increased life cycle costs***. (Vale, Ribeiro 2014).

** PREDICTION OF LIFESPAN OF RAILWAY BALLAST AGGREGATE; The Baltic Journal of Road and Bridge Engineering; Vaidas Ramunas, Audrius Vaitkus, Alfredas Laurinavicius, Donatas Cygas, Aurimas Siukscius , PAGE 1, 2017

"Because ballast is a large one-size, angular rock, it allows water to drain away from the track."

** https://www.texascrushedstoneco.com/2013/02/lime-stone-railroad-ballast/; LIMESTONE RAILROAD BALLAST

"The rough-surfaced, angular particles of slag ballast that develop high internal friction are desirable to grip railroad ties, maintain proper anchorage and alignment, and provide uniform load distribution."

** https://www.sciencedirect.com/topics/engineering/railroad-ties; Unbound slag aggregate use in construction; George C. Wang, in the Utilization of Slag in Civil Infrastructure Construction, 2016

c. Current Rail Operations

** A complete list of "assessment relevant" Federal Railroad Administration (FRA) track class definitions and regulations can be found in Appendix Section A.8.

Below are a couple "essential" FRA definitions and regulations to enable the assessment reader a basic understanding of key terminology being discussed.

1.FRA Track Class (Operating Speed) Definitions

§ 213.9 Classes of track: operating speed limits. Table d.1

(a) Except as provided in paragraph (b) of this section and §§ 213.57(b), 213.59(a), 213.113(a), and 213.137(b) and (c), the following maximum allowable operating speeds apply— [In miles per hour]

(b) If a segment of track does not meet all of the requirements of its intended class, it is reclassified to the next lowest class of track for which it does meet all of the requirements of this part.

Over track that meets all of the requirements prescribed in this part for—	The maximum allowable operating speed for freight trains is—
Excepted track	10
Class 1 track	10
Class 2 track	25
Class 3 track	40
Class 4 track	60
Class 5 track	80

Table A.1

** www.fra.gov ; [63 FR 34029, June 22, 1998, as amended at 85 FR 63388, Oct. 7, 2020]

A track owner may designate a segment of track as excepted track provided that—

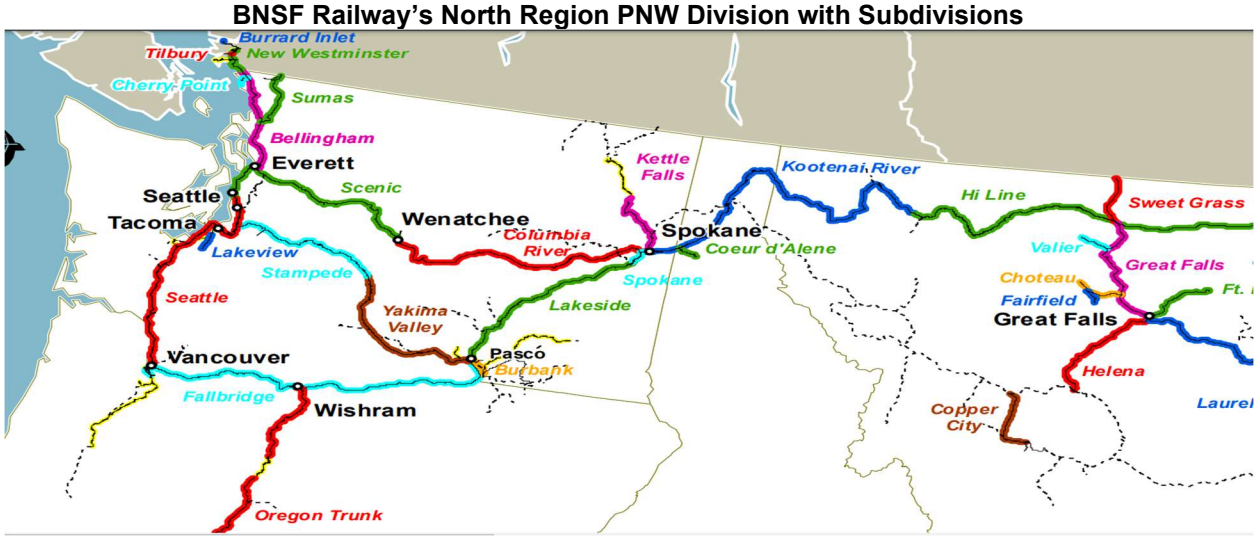
d. The railroad conducts operations on the identified segment under the following conditions:
    1. No train shall be operated at speeds in excess of 10 miles per hour;
    2. No occupied passenger train shall be operated.
    3. No freight train shall be operated that contains more than five cars required to be placarded by the Hazardous Materials Regulations (49 CFR part 172); and
    4. The gage on excepted track shall not be more than 4 feet 10 1⁄4 inches.

** www.fra.gov; [63 FR 34029, June 22, 1998]

2.Class I PNW Divisions

The POB Industrial rail spur is served by two Class I's operating in the PNW; the BNSF Railway and the Union Pacific Railroad. All railcar volume to the POB traverses from the southern end of the line starting at Richland Jct. Milepost 18.84. Exhibit maps A.20, and A.21 show the Class I mainlines with subdivision names in the PNW area. BNSF Railway's operating network is much larger in the PNW than Union Pacifics primarily driven by grain and intermodal traffic volumes in addition to BNSF's predecessor railroad's footprint - the Great Northern Railroad.

BNSF Railway's North Region PNW Division with Subdivisions



Union Pacific Railroad's Northern Region PNW Division with Subdivisions
Exhibit A.20

** Map produced by BNSF Engineering Dept, BNSF Subdivision Map, https://www.bnsf.com/ship-with-bnsf/maps-and-shipping-locations/pdf/subdivisions-map.pdf, September 1, 2011.

Exhibit A.21

** Map produced by UPRR Engineering Dept, cited by Steve Sweeney, Union Pacific Railroad map: 2013 routes and major cities by https://www.trains.com/wp-content/uploads/2021/09/TRN_UP_Network_Map_2013-scaled.jpg, September 9, 2021 | Last updated on September 13, 2021

3.Benton Days of Service / Recent Crew Agreement Changes

Recent Crew Agreement Changes

The days of service schedule for the Union Pacific Railroad recently changed resulting in the most current schedule found in Exhibit A.22 below.

Scheduled Days of Operation	Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Start	Finish
BNSF		X	X	X	X	X		7:30 AM	2:00 PM
Union Pacific	X		X		X			7:00 PM	2:00 AM

Unscheduled Inbound Trains	
Unit Trains	~ 110 cars cattle feed trains origination from the Midwest
BNSF	~ 55 Trains / year
Union Pacific (CP Loco)	~ 5 Trains / year

Exhibit A.22

** Exhibit A.22 produced by JCG Consulting based on information provided by the Port and confirmed during interviews with BNSF and UP trainmasters.

4. BNSF vs UP Operating Differences

Regarding customer feedback on Class I's operating performance, it is crucial to callout the inherent differences between how the Class I's are currently operating in the Tri-City area. (Exhibits A.23 and A.24) The explanation is not meant to excuse performance concerns but serves to inform / educate those not directly involved in day-to-day operating processes.

BNSF Railway Local Serving Job (Byron Job)

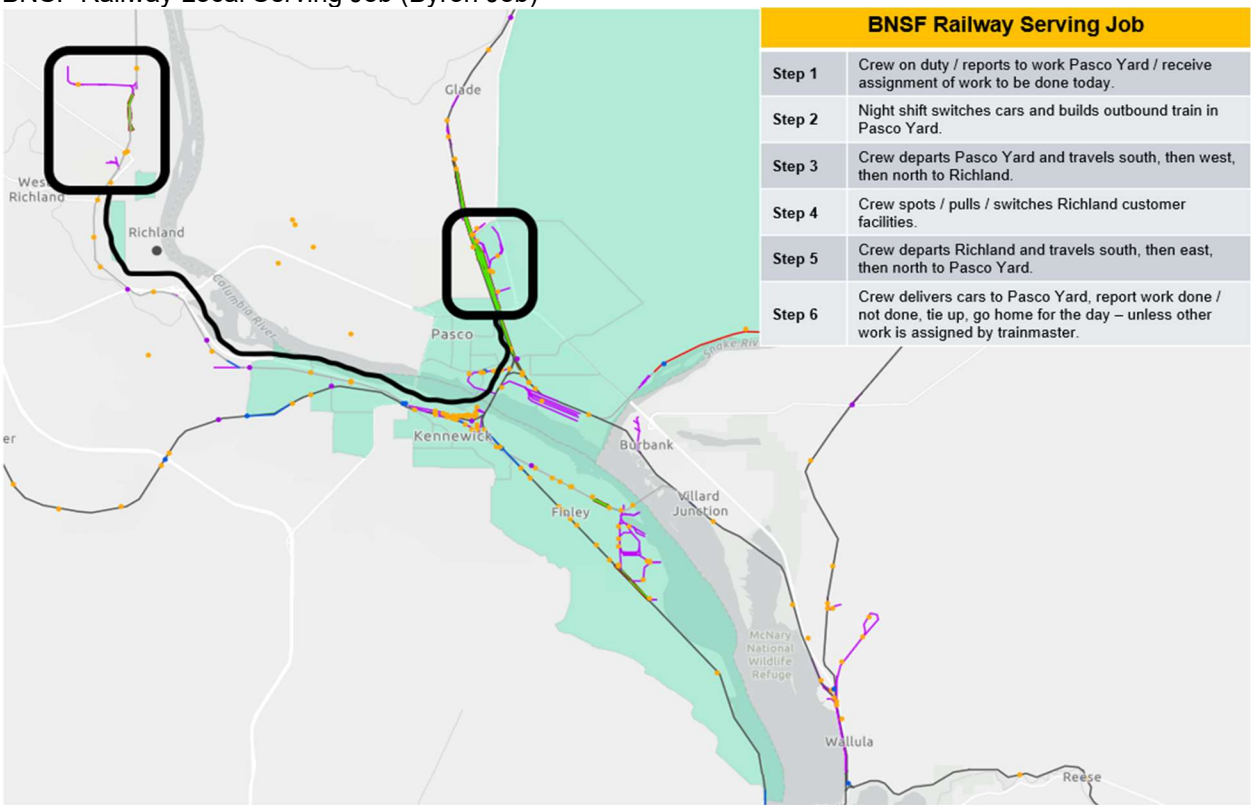


Exhibit A.23

Union Pacific 52 Local Serving Job

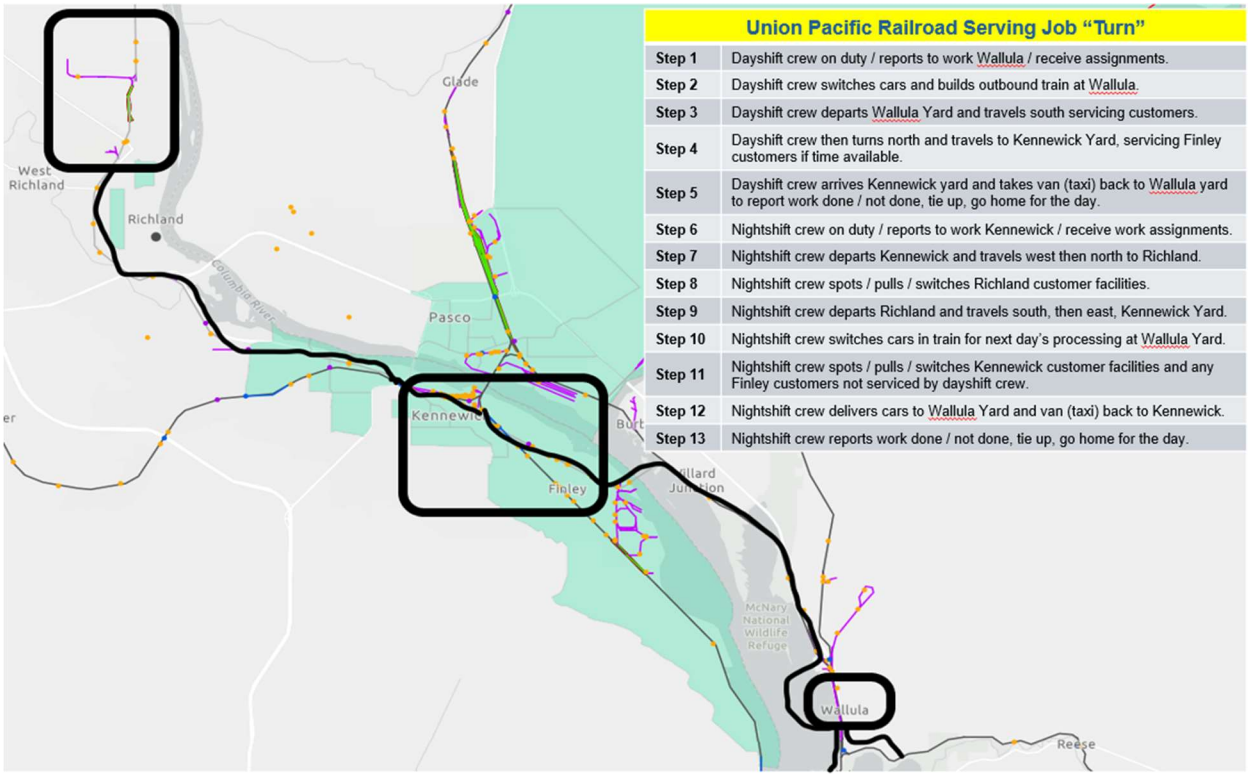


Exhibit A.24

** Exhibit A.53 and A.54 produced from onsite information shared by Class 1 trainmasters. Map background copied from https://usdot.maps.arcgis.com/apps/webappviewer/index.html?id=fd9810f673b64d228ae072bead46f703

5.POB Yard Assessment

The POB railyard located at 2579 Stevens is currently only being used for random car storage by Columbia Rail for CWCP cotton seed cars, and some track infrastructure raw materials. The yard as depicted in Exhibit A.25 consists of:

- Four yard tracks running parallel to the main line
- A transload track (laydown yard) that is not being used
- A non-functioning scale track with some track infrastructure raw materials being stored.
- Four short shop tracks
- North yard lead
- And a short spur track (originally a Rip track) now being utilized by BioGro customer.

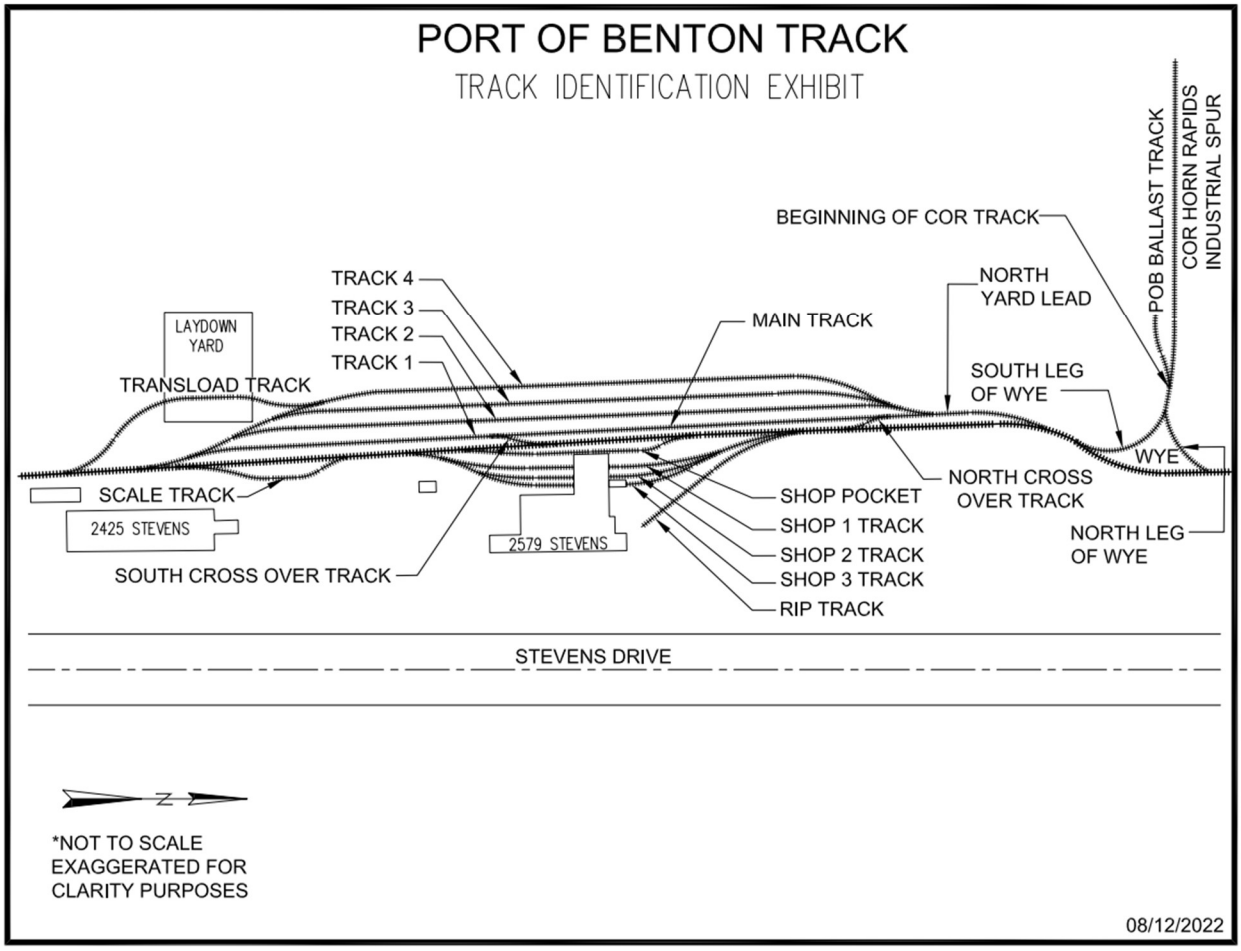


Exhibit A.25

** Email: RE: Next Steps from Roger Wright, POB Port Engineer 1/25/24 9:07 am Port of Benton Yard Tracks – August 2022.pdf

Photos in Exhibit A.26 below and Appendix Exhibits A.2.15, A.2.23, and A.2.24 highlight the overall condition of the track infrastructure within the yard being poor with tie conditions worse than several sections of the mainline. A massive buildup covering the tracks is deteriorating the track bed and its support of the rail riding on top exponentially.

Exhibit A.26 provides an aerial and ground perspective of Richland's railyard. Analagous to sections of the main line, railroad ties are buried underneath mud and round gravel. Visible railroad ties can be categorized as undergoing various states of rotting, while a considerable number of ties are completely buried under mud and unable to be adequately inspected.

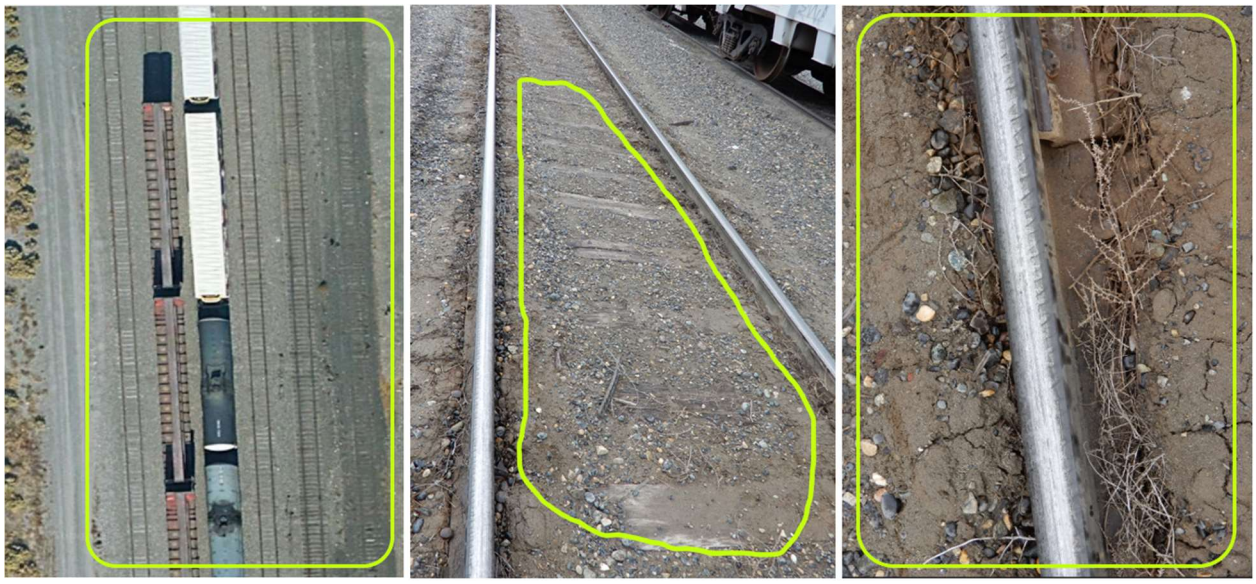


Exhibit A.26

** Aerial photocopied from Google Maps.
** Ground photos taken by Jeffrey Guelker during Port of Benton onsite visit February 19, 2024 through February 22, 2024.

6. Class I Operations Interview Questions

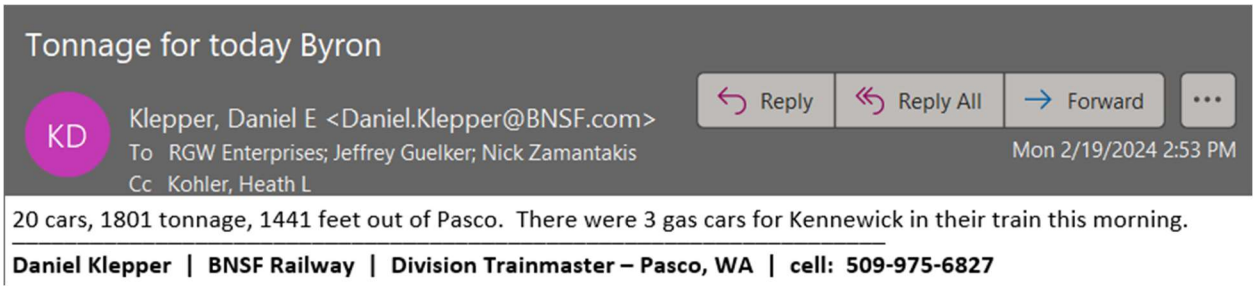
- Introductions, Assessment Description, and JCG Consulting's Role
- Terminology clarification (Union Pacific only)
    - First mile / last mile vs G&D vs Industry Work
    - Local, roadswitcher, glorified yard job
    - RCO vs RCL
- Format of Interview & Disclaimers
- Operating Questions
    - Do you serve all customers in Richland?
    - What are your scheduled days of service?
    - Do you ever run extras (serve customers) on Saturdays? Frequency?
    - Which customers are spot on arrival vs order in?
    - Are your work orders correct?
    - Any idea(s) on Richland customer yard volumes, constructively placed, demurrage issues?
    - Walk thru types of cars and load/empty status by customer.
    - Which customers have car movers / track mobiles for internal switching?
    - Where does your train originate?
    - Do you build your own train when you come on duty?
    - Do you classify outbound cars prior to departing Richland?
    - (UP Only) I understand your train starts first shift headed south from Wallula, and you pick up the second leg in Kennewick in the afternoon? How does that process work? Impact on your hours of service (DOL – Dead on Law, Hours of Service Expired, max number of working hours in a 24 hour period)? Do you ever dog catch (dispatch a second crew out to operate the train back to final destination) the day shift train?
    - When do you have to be back in your yard to tie up?
    - Where do you perform any necessary car switching due to train makeup issues? Do you ever use POB's yard tracks for switching, storage, staging?
    - How about unit trains to Central Washington Corn Processors – do you spot those trains? Road crew? Extra board crew? Do you / they van back and forth or pull empty after spotting load?
    - What is the impact of unit trains on your daily industry work?

    - Who delivers part trains to EneryNW?
    - How impactful is “excepted” track class speed limit on your ability to complete work / avoid DOL’s / etc.???
- Anything I missed? Additional items you would like to cover?

7.BNSF Local Interviews

BNSF Interviews:
2/19/24 9:30 am with Daniel Klepper, BNSF Trainmaster
2/19/24 ~10:30 am with Jerry the Byron Turn Foreman during BNSF Trainmaster Ride a Long
2/22/24 ~9:45 am with Jerry (Foreman) and Neil Byron Turn while servicing Lineage at Polar Way.

- Monday through Friday
    - are scheduled days of service, and
    - have same crew assigned with near perfect attendance.
- Overall G&D performance metric (spot and pull performance) is good meaning completing all work on work orders.
- Picked up a few moves with Lamb Weston recently due to UP’s lack of service. Lamb Weston is amping up service volume.
- Byron Turn job is built on nights by Pasco yard crew.
    - No issues with DOL’s even with the slow speed requirements of Excepted Track Class.
        - Have sufficient time to perform all work.
    - Byron Turn crew comes on duty
    - Rare occasion will spot cars at North Yard crossover track (ballast track)
    - Typically pass Richland Jct. (MP 18.84) between 7:30 am and 8:00 am
- Union Pacific placed Frank at Preferred in a bind after not showing up with 20 – 25 cars ordered in for Sunday night 2/18/24. Say will bring him the cars on Wednesday (next day of service).
- Provided us with volume emails (Exhibit A.27) for the 10 days following the onsite visit.
    - 5 car volume increase this week. Projected 10 car volume increase next week.


Tonnage for today Byron

KD

Klepper, Daniel E <Daniel.Klepper@BNSF.com>
To RGW Enterprises; Jeffrey Guelker; Nick Zamantakis
Cc Kohler, Heath L

Reply | Reply All | Forward | ...

Mon 2/19/2024 2:53 PM

20 cars, 1801 tonnage, 1441 feet out of Pasco. There were 3 gas cars for Kennewick in their train this morning.

Daniel Klepper | BNSF Railway | Division Trainmaster – Pasco, WA | cell: 509-975-6827

Exhibit A.27

- Job performs all switching at the bottom of the wye using the northern leg for switching moves.
- Spotted cars to all customers last week except Delhur which used to be about 5 cars a week.
- PCA is slowing / has slowed down quite a bit. Currently have six cars on spot. Usually do twenty cars a week.
- Delivering 6 cars / day consistently to Little Lineage.
- Union Pacific is currently only servicing Big Lineage (Polar Way), CWWP unit and manifest, and Lamb Weston. No BioGro cars recently.
- BNSF extra board road crews deliver unit trains to CWWP. Crew van follows train out to CWWP. Unit train spotting crew then takes van back to Pasco.
- Do run an extra job occasionally to Aire Junction on Saturdays, so if economically viable opportunities come to fruition, wouldn’t be a problem providing additional days of service to POB.
    - **“This is good news because Atlas Argo may require Saturday service.”**
- Crew will spot cars up top north of wye if no space at customer to deliver cars.
- All customers are Spot on Arrival**?????- not sure answered correctly.**

    - No concerns with Pasco Yard capacity or other to store cars in CP (Constructively Placed) status.
    - ****Post onsite visit, Roger Wright, Port Engineer contacted JCG Consulting regarding a question on track assignments and potentially lost cars that are in Richland Yard.**
        - **BNSF needs to update their CDI tables to accurately represent POB Industries.**
- Work orders are typically correct.
- Only CWWP and Big Lineage have car movers.
    - Lineage takes cut of 18 on the track.
- Crews use air on everything.
- If ever issues between crews (typically is a unit train arriving when the local crew is working),
    - just let crews work it out between themselves.
- 5 or 6 times a year we block SR-240 because of having to clean up extra cars around Lineage / Lamb Weston.
- No customer facility issues with weeds, spills, unsafe working conditions.
- Mike Tuckens is local BNSF Engineering contact but is currently out on medical leave.
- Most of the track is bad, but Van Giesen area through the Richland yard is probably the worst.

Opportunities:

- Would only use Richland yard if absolutely had to.
    - Site unsafe and horrible track conditions.
- Really need a written agreement between joint facilities regarding how to handle UP cars that are in the way.
- Not a sparse event (this is a frequent affair).
- Constantly having to switch UP cars out of the way.
    - **JCG Consulting's opinion - this is the result of**
        - **a combination of actual pulling inconsistencies (no shows)**
        - **mixed with customer's demand based car releases given:**
            - **different Class I operating schedules.**
                - **one Class I operates 5 days a week and**
                - **other Class I operates 3 days a week**
            - **is only complicating switching and capacity issues.**
- We strive to serve our customers, which means our crews often do extra work switching UP cars around.
    - We switch UP cars out of the way.
    - We complete our assigned work.
    - Then switch UP cars back to original location.

8.Union Pacific Local Interviews

2/22/24 12:00 pm with Dustin Disney, Union Pacific Trainmaster
2/18/24 ~ Union Pacific Local Crew showed up seven hours later than scheduled. No crew interview(s) was conducted while on site.

- 52 Job
    - Crew builds their train out of Kennewick.
    - Maybe a car or two out of order.
    - Pull all cars back to Wallula for processing.
    - Occasionally make one small spot at Nelling at Kennewick.
    - Tie up in Wallula – company rig transports crews back to off duty location.

- Do not service Little Lineage or PCA at Richland
    - We do serve the PCA plant in Wallula.
- Customer switching process.
    - When switching Big Lineage, we cut Lamb Weston cars north of wye.
    - Shove reefers back to Big Lineage.
    - Pull forward around south leg of the wye.
    - Shove back north and pickup Lamb Weston Tankers.
    - Spot Lamb outbound back to Kennewick.
- Road extra board out of Hermiston, OR spots unit trains at CWWP.
- BNSF sends email out with their COD (Crew on Duty times) info for unit trains. No issues with communication.
- Because of Excepted Class track speed, we plan on 11 hours for job to go out to Richland and back.
    - This is why went down to 3 days of week service.
    - Frequently having to dog catch (bring out an additional crew to operate the train because the local crew has exceeded hours of service and can no longer perform work) the crew to take the train back to the yard.
- All Kennewick track is 20 MPH.
- Corn and Lineage are SOA (Spot on Arrival) customers.
- We serve BioGro only, not BNSF.
- Other customers are Order In.
- Lineage not always 100% spotted, depends on CP (Canadian Pacific inbound cars).
- Lamb Weston – we do not stage (store). Only spot to stations.
    - We can't see what BNSF has in Little Lineage storage track.
    - Lamb Weston has man on the ground because of oil type.
- We store reefers and oil cars on Ferro lead down at Kennewick.
- 8 or 9 lamb Weston cars currently sitting down in Finnley.
- When Frank can't take reefers at Big Lineage, we will spot the cars down near PCA.
    - Lineage is pretty good about setting up outbound cars.
- Crews switch POB pulled cars in East Kennewick to have consist (train) straightened out.
- We are now operating with 2 man crews only, not RCO.
    - Blanket crew operating agreement on PNW division to eliminate brakeman job.
    - Unions agreed to sell off brakeman position.
    - Increases hourly rate of foreman (conductor) by 30%.
    - In the PNW (Oregon, Washington, and Idaho), Locals are in the minority vs road crews so was easy implementation for most crewmen.
- Prefer not to use Richland yard.
    - All the switches in the yard are old and require a lot of maintenance to be performed on them.
    - For both safety and productivity, we do any necessary switching up near the wye. Tie condition concerns going to the ground (derailing). Also seen sun kink (track buckles) issues.

9.Shortline Operations Interview Questions

What is your current role in the overall processes?
Do you do inspections at other locations?
How would you rate POB track vs other track?
Desired future role in process?
Can you share your perspectives on costs and infrastructure components lifespan based on experience?

10.Columbia Rail Operations – Leadership Interviews

Stuart Smith Columbia Rail Director of Operations
Nick Zamantakis, Columbia Rail Operations Manager

Given proximity of other locations in the area that we serve, we have the capacity to perform transportation and engineering services for the POB. Due to POB's central location, CWWR experiences efficiencies that allow us to perform work for the POB at a reduced cost.

We are very interested in solidifying a formal agreement with the POB acting as your Shortline Operator. We have the capacity and the desire to do more work with and for the POB.

Operating Conditions Feedback

- POB track was originally designed for 40 MPH.
- Track infrastructure has declined over time due to
    - the amount of weight that has moved across the track,
    - compounded by a lack of any preventative maintenance.
- The rail is substandard for the work being done on it.

- Van Giesen to SR 240 is very bad.
- The tie plates near Lamb Weston are really bad.
- Yard switches are small and broken down.

- POB customers are double paying for service.

    - They pay Union Pacific for First Mile / Last Mile service,
    - and then have to pay Columbia Rail
        - to spot cars,
        - respot (switch cars to doors)
        - pull cars,
        - and fix other UP's mistakes.

- UP has started spotting cars at the top of PCA for storage.

Columbia Rail Short Line Railroads

- Columbia-Walla Walla Railway
    - Connections to Union Pacific and BNSF
    - Dayton to Walla Walla line leased from the Port of Columbia since 2016, Wallula to Walla Walla/Weston line leased from Union Pacific since 2019
    - Main commodities: grain, stone, fertilizer
- Kennewick Terminal
    - Connections to Union Pacific and BNSF
    - Purchased from City of Kennewick in 2009
    - Main commodities: cement products, fertilizer
- Port of Morrow Rail Services
    - Private switching rail operator for Port of Morrow
    - Connections to Union Pacific
- Royal Line
    - Connections to BNSF via Columbia Basin Railroad
    - Leased from the Port of Royal Slope since 2016
    - Main commodities: Wheat, fertilizer, agricultural products
- Yak Rail
    - Connections to BNSF
    - Leased from Yakima County since 2010
    - Main commodities: NGL, lumber, beef tallow, fertilizer

Track Construction & Repair

- Full-service railroad construction contractor.
- New track construction
- Track maintenance and repairs.
- Derailment recovery
- Bridge repairs
- FRA track inspections
- Rail and switch welding
- ROW brush cutting.
- Production tamping & surfacing

** Data above sourced from Columbia Rail Website: https://columbiarail.com/

B.1. POB current rail planned capital improvement projects, budgets, and grant funding.

For complete details, a full transcription of the following projects, budgets, and grand funding options
a. POB Website and POB White Bluff Rail Summary Jan 2024:
b. POB 2017 Rail Master Plan:
c. POB Projects
d. Inland Port Project, Richland, Washington

can be found in Appendix Section A.9 of this assessment. For purposes of the main assessment body the following summarization will be provided.

a. POB Website and POB White Bluff Rail Summary Jan 2024:

Planned 2024 Port of Benton Rail Crossing and Track Maintenance Projects.

- SR 240 – replace the railroad crossing and repair the signal (the Port will continue performing maintenance on this crossing to sustain safe operations for train and vehicle traffic until it's replaced) – WSDOT grant funded.
- Airport Way – replace the railroad crossing – WSDOT grant funded.
- Saint Street – replace the railroad crossing and lighted crossbucks – WSDOT grant funded.
- Steptoe rail crossing and signal replacement – Developer funded with Port contribution.
- Replacement of approximately 3,000 ties – State legislature funded.
- Rail maintenance cost study – POB funded 1st quarter 2024
- Quiet Zone Application – POB funded.

Project funding:

- $3.1 million in state and federal grants,
- a $250,000 low interest Freight Rail Assistance Program loan,
- and $385,000 in Port grant matching funds.

Schedule: We anticipate these projects being constructed between May and December 2024. Each of these will require weekend closures of the track.

** Transcribed from Email: RE: Kerwin west of Twin Bridges from Roger Wright, POB Port Engineer 1/25/24 9:10 am POB White Bluff Rail Summary Jan 2024.docx by HDR Engineering, Inc 7-16-14

** https://portofbenton.com/

b. Port of Benton / City of Richland RAIL MASTER PLAN

The purpose of the Plan is to:

- Establish vision for the Port's and City's rail system and support the goal to improve freight rail transportation.
- Provide an assessment of existing conditions and identify trends, markets, and needs.
- Analyze and prioritize rail corridors, programs, and proposed projects.
- Identify options to finance and fund proposed future improvements.
- Provide a high-level analysis of possible Richland Quiet Zones & inland container port sites.

** Transcribed from Email: City of Richland Rail Master Plan from Roger Wright, POB Port Engineer 2/19/24 1:55 pm Report Final Reduced by Dec 7, 2022.

c. POB Projects

The Plan identifies and describes potential projects that are needed to maintain and expand the Port's and City's rail infrastructure. The list of potential projects is based on input from stakeholders and an assessment of current conditions, future trends, and future rail use opportunities.

The general categories of project need are:

- rail line maintenance,
- line haul capacity,
- storage capacity,
- efficient rail network expansion,
- and road/rail crossings.

d. Inland Port Project, Richland, Washington

- Give shippers in the Pacific Northwest and beyond a central location to store and transport goods.
- Provide multimodal connectivity and connections to marine ports for shipping worldwide.
- Offer competitive pricing.
- Drive efficiency by relocating sorting and handling of goods inland away from congested seaports.
- Deliver environmental benefits: A rail engine is four times more fuel efficient than trucks and can carry more tonnage per trip.
- Offset carbon emission costs as the state repeatedly increases those fees and taxes.
- Support Port and City recruitment efforts to re-shore advanced manufacturing to serve domestic supply chain needs, national and energy security.
- An inland port is also needed due to rising trucking, fuel and land costs. Its development would:
- Reduce carbon impacts by using rail to deliver goods directly to the docks in Tacoma.
- Decrease trucks on mountain passes, which increases safety and further reduces carbon emissions.
- Maximize efficiency, as shipments into the seaport by rail are received 24 hours a day, seven days a week, rather than limited to daytime hours on weekdays only for truck delivery.
- Allows for development of the green gateway along the Columbia River to encourage multi - modal forms of transportation reducing environmental impacts (Port of Benton is river mile 343 and a Foreign Trade Subzone #203).
- Can demonstrate net zero operations via port equipment, replacement of rail engines to electric using utility scaled net zero power sources due to regional electrical generation being 87% non-

emitting with solar, hydrogen and advanced reactors project planned to come online starting 2030.

Possible Locations for an Inland Container Port

- Horn Rapids Site
- Department of Energy 1,341 Acre Transfer Site
- Rail Loop Site

Next Steps

Port has initiated a rail maintenance cost study to be completed by April 2024 to support long-term maintenance costs.

Private investment of $34M has been made by Central Washington Corn Processors to initiate the project including a rail loop track, commodity storage buildings, and commodity handling equipment.

B.2. Project Descriptions and Detailed Information

Estimated project costs listed in Table B.1. can be matched to specific geography identified in Exhibit B.1 via the Project No. provided in the first column of Table B.1.

Table 4: Rail Plan Project List

Project No.	Project Name	Project Need	Estimated Cost
EXISTING TRACK (ET)			
ET-1 *ET-1a*	Track Resurfacing Program *Resurface Curve near Berry's Bridge*	Maintain	$8 per track foot
ET-2	Tie Replacement Program	Maintain	$40 per track foot
ET-3	Rail Upgrade Program	Maintain	$75 per track foot ($136# rail)
ET-4	At-Grade Crossing Upgrades	Crossings	$655,200
ET-5	Richland Quiet Zone	Crossings	Scenario #1: $3,601,000 Scenario #2: $1,228,500
ET-6	Cemetery Road Siding	Line-Haul Capacity	$1,209,000
ET-7	SR-224 (Van Giesen St.) Grade Separation	Crossings	$50,000,000
HORN RAPIDS (HR)			
HR-1	Horn Rapids Spur Extension	Network Expansion	$1,969,500
HR-2	Horn Rapids Rail Yard	Storage Capacity	$4,563,000
HR-3	Spur to 80-acre Parcel	Network Expansion	$604,500
HR-4	Rail Loop Grade Separation	Crossings	$3,500,000
HR-5	Second Rail Loop Track	Storage Capacity	$1,638,000
TRANSFER AREA (TA)			
TA-1	Transfer Area Passing Track	Line-Haul Capacity	$624,000
TA-2	North Transfer Area Lead	Network Expansion	$2,067,000
TA-3	Transfer Area Rail Yard	Storage Capacity	$4,563,000
TA-4	South Transfer Area Lead	Network Expansion	$2,281,000
TA-5	West Transfer Area Lead	Network Expansion	$3,611,400
TA-6	George Washington Way Grade Separation	Crossings	$50,000,000
CONNECTING SYSTEM (CS)			
CS-1	Edison Street Siding	Storage Capacity	$1,696,500

Table B.1

** https://portofbenton.com/; POB 2017.pdg; Rail Master Plan, page 31, Tangent Services, INC, January 2017

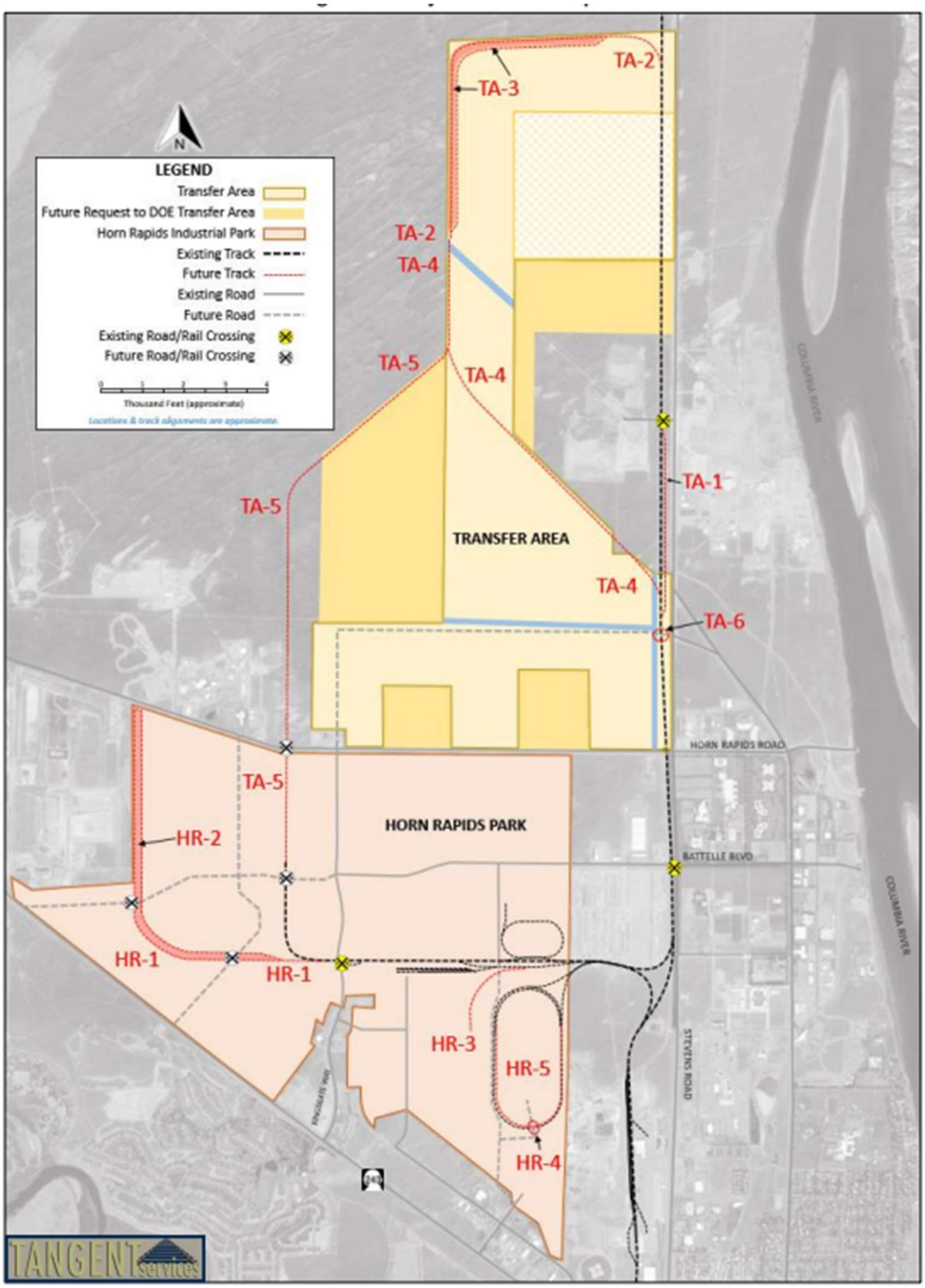


Exhibit B.1

** https://portofbenton.com/; POB 2017.pdg; Rail Master Plan, page 32, Tangent Services, INC, January 2017

Tables B.2, B.3, and B.4 include detailed descriptions of each project identified above.

PROJECT TIMING AND PRIORITIZATION	
Near-Term (0 to 5 Years)	
Work on near-term projects should start as soon as possible to preserve and maintain the existing rail line. Projects such as tie replacement and surfacing should be implemented on a programmatic basis. Other projects such as rail and crossing upgrades should be implemented to remedy current or future condition deficiencies.	
Project Reference Name	**Project Description**
ET-1 Track Resurfacing Program	We recommend that surfacing be done to every curve, as the ones that still meet the standard are slowly wearing and need work regardless. Project tasks would include: 1. Add 2-inch minimum lift of angular ballast to the entire corridor. 2. Use conventional tamping/lining track equipment to raise track to correct profile, tamp and squeeze ties, and shift track left or right to correct alignment. 3. Use ballast regulator track equipment to reconstruct side slopes and broom.
ET-1a Resurface Curve near Berry's Bridge.	Franklin, TBY, & Pinkepank reports all call attention to resurface and realign the curve near Berry's Bridge.
ET-2 Tie Replacement Program	60% to 70% of the cross ties of this railroad have a very short time until classified as defective.
ET-3 Rail Upgrade Program	Sections of 90# rail along the line are below industry standard with respect to weight. However, rail in generally good condition and no immediate need to upgrade those sections to a heavier weight rail. Over time and increased use of the line, the lighter weight rail will wear out and need to be replaced with 112# or greater depending on availability and the price of steel. The recommended option for replacing existing 90# rail from MP 42.2 to MP 35.8 with 136#. An alternative to 136# rail may be to install 115# used rail that might be obtained from sections of.
ET-4 At-Grade Crossing Upgrades	The 2012 Port of Benton Rail Plan report noted the following potential repairs and upgrades to atgrade crossings: Steptoe Street: TCRY recommended adding a warning device coming up the hill. Riverfront Trail (pedestrian): TCRY recommended a zigzag pattern for the path and fencing to channel bikes and pedestrians, forcing them to look both directions and to slow movement. Jadwin Avenue: Upgrade the surface to concrete panels. Cemetery Road: Upgrade the surface to concrete panels and gates. This is considered a low priority due to low traffic. Van Giesen Street: Upgrade the surface to concrete panels. The roadbed is fine but the panels are worn. TCRY believed the high traffic crossing has a poor design and is inadequate for growth. TCRY recommended a redesign. Airport Way: Upgrade the surface to concrete panels. This is a heavily used crossing and the existing asphalt and small rail are deteriorating. An FRA rail defect was noted on the north side of the crossing. Saint Street: This is a low traffic, low priority crossing. Potential upgrades are concrete panels and gate arms. Highway 240: Panels are cracked and need repair/replacement. High traffic volume with a lot of truck traffic. TCRY recommended lowering the speed limit.

Table B.2

PROJECT TIMING AND PRIORITIZATION	
Medium-Term (0 to 10 Years)	
Medium-term projects generally will be triggered by development initiatives that are likely to occur within the next ten years. The Plan assumes these developments will be primarily within the Horn Rapids Industrial Park.	
Project Reference Name	**Project Description**
ET-5 Richland Quiet Zone	Under the Train Horn Rule (49 CFR Part 222), locomotive engineers must begin to sound train horns at least 15 seconds, and no more than 20 seconds, in advance of all public grade crossings.
ET-6 Cemetery Road Siding	There is currently only one rail siding, located at Richland Junction, on the Port rail line. As the number of train arrivals and departures increases, there might be a need for additional siding capacity.
HR-1 Horn Rapids Spur Extension	There are more than 500 acres of developable property in the western portion of Horn Rapids Industrial Park than could be rail-served with the extension of the Horn Rapids Spur.
HR-2 Horn Rapids Rail Yard	This project would construct a rail yard from the Horn Rapids Spur Extension.
HR-3 Spur to 80-acre Parcel	This project would construct a rail lead to the 80-acre property to the west of the CWCP rail loop and to the south of Preferred Freezer Services.
HR-4 Rail Loop Grade Separation	The CWCP Loop Grade Separation project would provide vehicular access to the interior of the loop.
HR-5 Second Rail Loop Track	This project would construct a second full loop track alongside the existing CWCP loop track.
CS-1 Edison Street Siding	This project would construct a 7,500-foot siding along the UP track to the east of Richland Junction between Edison St. and N. Columbia Center Blvd.

Table B.3

PROJECT TIMING AND PRIORITIZATION	
Long-Term (10 Years and Beyond)	
Long-term projects are those that require a much higher level of planning, entitlement work, and/or funding. These projects, many of which are related to the development of the Transfer Area, would likely be undertaken after more easily achieved medium-term projects have been implemented.	
Project Reference Name	**Project Description**
ET-7 SR-224 (Van Giesen St.) Grade Separation	This project envisions grade separating Van Giesen Street over SR-240 and the Port's rail line.
TA-1 Transfer Area Passing Track	This project would construct a passing track/siding along the DOE line to the north of Horn Rapids Road (Figure 17).
TA-2 North Transfer Area Lead	This project would construct a lead from the DOE line on the northern perimeter of the Transfer Area.
TA-3 Transfer Area Rail Yard	Area Lead (TA-2) along the northeast perimeter of the Transfer Area.
TA-4 South Transfer Area Lead	The South Transfer Area Lead (TA-4) would construct a track from the southern end of the Northern Lead (TA-2) and the Transfer Area Rail Yard (TA-3) travelling southeast along the northern perimeters of Parcel "1" and "3" and connecting back to the main line at a point north of the George Washington Way alignment (Figure 17).
TA-5 West Transfer Area Lead	The West Transfer Area Lead (TA-5) would construct a track from the southern end of the Northern Lead (TA-2) and the Transfer Area Rail Yard (TA-3) to the current end of the Horn Rapids Spur (crossing Horn Rapids Road).
TA-6 George Washington Way Grade Separation	This project would construct a grade separation along George Washington Way alignment over Stevens Drive and the DOE rail line into Transfer Area (Figure 17). Estimated Cost: Unknown, but is likely to exceed $30,000,000.

Table B.4

** Tables were created from information sourced from

POB White Bluff Rail Summary Jan 2024: Transcribed from Email: RE: Kerwin west of Twin Bridges from Roger Wright, POB Port Engineer 1/25/24 9:10 am POB White Bluff Rail Summary Jan 2024.docx by HDR Engineering, Inc 7-16-14

and

POB 2017 Rail Master Plan: Transcribed from Email: City of Richland Rail Master Plan from Roger Wright, POB Port Engineer 2/19/24 1:55 pm Report Final Reduced by Dec 7, 2022. Port of Benton / City of Richland RAIL MASTER PLAN

Types of Funding Sources

Definitions for the different types of funding sources are available in Appendix Section A.9

Federal Funding

- TIGER Grants
- FASTLANE Grants
- FHWA Section 130 Railway-Highways Crossing Program
- Railroad Rehabilitation & Improvement Financing Program

State Funding

- Legislative Appropriation
- Freight Rail Investment Bank (FRIB)
- Freight Rail Assistance Program (FRAP)
- CERB Programs

Local Funding

- Local Government

Private Funding

Railroad Funding

- Revenue Agreements
- Lease of Railroad Property
- Track Use Agreements
- Tariff
- Rail Fees in Leases

** Transcribed from Email: City of Richland Rail Master Plan from Roger Wright, POB Port Engineer 2/19/24 1:55 pm Report Final Reduced by Dec 7, 2022. Port of Benton / City of Richland RAIL MASTER PLAN

C. POB current track legal arrangements stemming from the 1998 Indenture and rulings from Federal Court.

Summaries below produced from full documents at sources identified individually by **.

History of Rail Related Legal Actions

Exhibits C.1, C.2, C.3, C.4, and C.5 provide summaries of legal actions by year that include the various railroad related entities at the Port of Benton.

1947	1948	1961	1979
The United States government entered into an agreement with BNSF and UP's predecessors-in-interest to establish service to the Hanford Nuclear Reservation (the "1947 Agreement").	The 1947 Agreement was the subject of a ruling by the Interstate Commerce Commission (ICC).	The Commission granted railroads the right to build industrial spurs of main line.	The United States entered into an agreement with the railroads converting the 1961 lease agreement into a permit so that the tracks could be classified as surplus.
The 1947 Agreement provided that each railroad company would pay $50,000 to cover the costs of constructing a portion of what is referred to herein as the "Richland Trackage.	Because the government was the only "customer" served by BNSF and UP's predecessors, the railroads sought exemption from the required public convenience and necessity certifications for common rail carriers.		
" In return, each railroad company was granted "equal joint" operating rights over those government-owned tracks "free of rental or any other charge".			
[BNSF and UP] should thereafter be permitted to operate over the tracks without further payments.			

Exhibit C.1

1998	2000	2001	2002
The United States conveyed ownership of a six-mile section of track to the Port of Benton ("Port") through an Indenture, thereby assigning the DOE and Commission's rights under the 1947 and 1961 Agreements to the Port.	Letter to then-TCRY President John Haakenson, the Port's Assistant Executive Director Scott Keller acknowledged that the Port was paying TCRY to maintain the railroad under a contract that allowed TCRY to charge a fee for its railroad operations, the revenue from which would offset the cost of maintenance.	City enters into agreement for TCRY to maintain the City industrial track in exchange for use of the track to serve customers in the HRIP.	Ground Lease and Railroad Lease: Port significantly reduced TCRY's lease rates to $2,000 per month rent for the trackage and real property and $2,000 per month for the railroad maintenance and repair equipment.
Port has the right to terminate BNSF and UP's rights to use the Richland Trackage upon six months notice.	Recognizing that UP was using the Richland Trackage without paying a fee, the Port directed TCRY "to give written notice to [UP] terminating its rights to use the Port of Benton track.	RRB determines the Port of Benton does not have a primary business purpose to profit from railroad activities.	The purpose of the reduced rent was to allow the rent TCRY collected, through sub-leasing, to help fund track maintenance.
DOE declared certain parts of its Hanford property to be surplus, and transferred 767.13 acres of industrial property to the Port by indenture. The conveyance was valued at $ 5.1 Million.	Beginning November 14, 2000, UP could no longer continue its unauthorized use of the Richland Trackage: it would need to establish an interchange agreement with TCRY.		TCRY is responsible to maintain the trackageinfrastructure to Class 3 Track.
The Port entered into a Maintenance and Operation Agreement with TCRY's predecessor, Livingston Rebuild Center, Inc.	BNSF and TCRY contracted to interchange cars going into the Richland Trackage ("Interchange Agreement").		At the time, TCRY had contracts with UP and BN to move their cars on Port and City track.
("Livingston"), under which it agreed to pay Livingston $325,000 per year for the maintenance of the Richland Trackage.	They exchanged cars at the Richland Junction, and TCRY served BNSF's customers along the Richland Trackage.		agreement ("Railroad Lease") that authorized TCRY to provide rail and track maintenance services on the Richland Trackage.
These contractual rights and obligations were subsequently assigned to TCRY.	TCRY maintained the trackage at its own expense and began charging a per-car fee for its services.		Paragraph 7.4 of the lease agreement states that TCRY "shall not take any actions which will amend, modify, terminate or invalidate any existing contracts which the Port has with any other railroad carrier, without the Port's prior written consent.
	The interchange agreement "specifically reserved BNSF's rights under the 1947 and 1961 Agreements.		

Exhibit C.2

2009	2010	2011	2012
BNSF informed TCRY that it intended to exercise its rights to directly operate on the Richland Trackage.	City terminates agreement with TCRY on City Track.	City enters into track agreements with both UP and BN to use City track.	BNSF seeks motion for TCRY to be held in contempt for denying BNSF acess to industrial spur tracks.
TCRY objected, and on July 20 and 21, 2009, TCRY erected a barrier which physically prevented a BNSF locomotive from reachingBNSF customers along the Richland Trackage.	POB intervenes.	BN begins direct delivery to HRIP.	
A few days later, TCRY requested that the Port terminate the Richland Trackage agreements with BNSF; the Port refused.	TCRY asserted several counterclaims against the Port.	Court decides BNSF and UP both have equal rigts to operate on Richland trackage.	
Court grants BNSF motion for injuction.	Port amended its complaint, asserting that TCRY breached Railroad Lease.	TCRY attempts to invoke a new $95/car "maintenance charge, " or "tariff" as well as making the charge retroactive going back to the Permanent Injunction's date of entry.	
Court notes TCRY had assessed risks and made an informed business decision given potential financial problems for having Class 1 operate over trackage.		Court is fully informed and denies TCRY's motion.	
TCRY filed an interlocutory appeal , which was voluntarily dismissed.			
BNSF and TCRY began operating under the Proposed Operating Plan created to comply with the Court's preliminary injunction.			
Until 2009, BNSF paid TCRY to interchange cars, on a per-car basis.			
The interchange fees were used to maintain the tracks.			
BNSF provided TCRY with a written termination notice because BNSF realized it "could operate its own cars on the Richland Trackage at a savings of around $ 100-150 per car" under the 1947 contract.			

Exhibit C.3

2016	2017	2018	2019
TCRY files with RRB for POB to be a covered employer; Denied by RRB.	TCRY files action for BNSF and UP not approving proposing tariffs.	Peterson next argues that the Port's donative intent is evident because UP continued to pay for its use of the railroad until 2017 while BNSF did not.	Peterson argues that the Port was audited in 2012 and 2015 and never disclosed that BNSF was using Port property without paying monetary consideration or leasehold tax.
TJRY alleges the Port and the Washington Department of Revenue violated their statutory taxing duties.	UP terminated service with TCRY and began direct delivery to HRIP.	Peterson contends that the Port required UP to begin paying monetary consideration in 2000, threatening to terminate UP's permit to use the tracks, while treating BNSF differently.	Peterson fails, however, to offer a legal basis for why the Port was required to do so, where BNSF does not have a lease with the Port and thus does not pay leasehold taxes.
BNSF and UP successfully moved to intervene.		RRB reaffirms POB isn't covered by RRB.	POB terminated TCRY rights to operate.
Port taxpayers successfully moved to intervene, objecting to the Port's gift of public funds and property to BNSF.			

Exhibit C.4

2020	2022	2023
TCRY refiles alleging POB breached Railroad Lease. Port files unlawful detainer action.	Court files subject motion for summary judgement of the port for 2020 TCRY filing.	STB CWW operate 10.89 miles of railroad line between milepost 18.84 at Richland Junction and milepost 29.73 at Richland, Wash.
	TCRY filed the instant motion.	
	In its motion, briefing, and proposed order, TCRY requests that the Court (1) amend the Permanent Injunction to include the required payment of TCRY's Railroad Maintenance Charge of $95 per railcar by the BNSF or UP for railcars that they directly carry over the Richland Trackage, " and (2) order BNSF and UP to reimburse TCRY "in accordance with the Railroad Maintenance Charge for the number of railcars that they directly carried over the Richland Trackage since the Permanent Injunction was entered on December 14th, 2011.	
	TCRY also sought-and the parties briefed-discovery, but TCRY later rescinded its discovery request.	

Exhibit C.5

a. 1947 Agreement

Atomic Energy Commission – Contract for Railroad Service: November 6, 1947
Parties: U.S. Government; Railroads: Northern Pacific Railway Company (Pacific Company); Oregon Washington Railroad & Navigation Company, and it's lessee Union Pacific Railroad (Union Company) Commission (defined in Article XIX as the Unites States Atomic Energy Commission.

Intent: U.S. Government desires a direct rail connection to south to interchange with Pacific and Union companies at an interchange facility near point E.

Primary contractor: General Electric Company (Electric Company) to construct and maintain said line and facilities under this contract (Prime Contract) between the Government and the Electric Company.

Union company to grant right to Pacific company to operate its employees and equipment over existing Union company track between point of connection with Pacific company's line and point of connection with Government trackage.

Article 1: Commission shall procure or provide all rights of way and public authority for construction, maintenance and operation of interchange facilities and said line of railway and appointments: bridge across Yakima River.

Article 2: Commission shall locate, lay down and construct said line of railway including bridge approximately along identified exhibit. The Commission shall also construct or provide said interchange facilities and a wye in the vicinity of point E. Said construction of railway, bridge, i/c facility, and wye shall be suitable for operations of Pacific and Union companies and their equipment.

Article 3: the commission shall pay for all cost of right of way for and construction of said line of railway including bridge, i/c facility, and wye.

Article 4: upon completion, Pacific and Union company shall pay ½ of sum of $100K, which fairly represents the cost to which railroads would b subjected if they constructed i/c trackage at Pt. B. Said sums to be paid to Electric Company or other contractor commission designates. The Commission shall own said i/c facility and wye, but Pacific and Union company shall be entitled to term of this agreement to use for the purpose of i/c business with the Govt. free of rental or other charge.

Article 5: Pacific and Union company have equal joint right to operate with respective employees and equipment over said railway, and use i/c facilities and wye for purpose of i/C business with govt.

Article 6: Union and Pacific companies to have equal joint use and possession in common with said line.

Article 7: The Pacific and Union companies agree to deliver and receive at said i/c facilities all business which either is obligated to transport as a common carrier.

Article 8: Commission has general control, management, and administration of said railway between points B and X, said i/c facilitation, and wye. At all times the rail and structures shall remain in good condition and repair suitable for the business of the Pacific and Union company.

Article 9: Railroads subject to the commission's approval shall agree upon rules and regulations covering the movement of engines, cars and trains over the lines and said i/c, facilities, and wye.

Article 10: Railroads, each for itself, agree to make following payments as rental for the right to use the trackage until such time as the total of such payments made by both equals the initial actual cost to the commission of constructing said line of railway between points.

Pacific shall pay $4 for each load in either direction over said line, provided such car has received or will receive a line haul over the lines of the Pacific company. Movements from or to Pasco shall not be deemed line haul movements, provided line haul movements to and from points beyond Pasco shall not lose character as such by reason of stoppage in transit at Pasco.

Union shall pay $4 for each load in either direction over said line, provided such car has received or will receive a line haul over the lines of the Union company. Movements from or to Kennewick shall not be deemed line haul movements, provided line haul movements to and from points beyond Pasco shall not lose character as such by reason of stoppage in transit at Kennewick.

Unless otherwise directed by the Commission, payments provided for shall be paid to the Electric Company as prime contractor of the commission, or to such other contractor as the commission may designation, for application in reduction of cost of work under the terms of said prime contract or other contract. Railroads shall make such payments on or before the 25th day of each month for all such cars so moved in the preceding month.

Article 11: The commission may designate tracks within the i/c facility for the purpose of interchanging cars.

Article 12: Regarding operation of equipment and appliances on and over Government trackage shall comply will all applicable laws, rules, regulations, and orders.

Article 13: The members of or delegate to Congress or resident commissioner shall be admitted to any share or part of this contract, or to any benefit that may arise therefrom, but this provision shall not be construed to amend to this contract if made with a corporation for its general benefit.

Article 14: Railroads warrant that they have not employed any person to solicit this contract upon any agreement for a commission, percentage, brokerage, or contingent fee.

Article 15: Whenever an actual or potential labor dispute is delaying or threatens to delay the timely performance of this contract, the railroads will immediately give notice thereof to the commission,

Article 16: Railroads performing work required by this contract shall not discriminate against any employee or applicant for employment because of race, creed, color, or national origin.

Article 17: (1) Disclosure of information regarding contracted work not entitled to receive it, or failure to safeguard all secret, confidential and restricted matter that may come to the railroads or any person under their control in connection with the work under this contract, may subject the railroads, their agents, employees, and subcontractors to criminal liability under US law.
(2) Railroads agree to conform to all security regulations and requirements of the Atomic Energy Commission.

Article 18: Unless otherwise provided in this contract, all disputes concerning questions of fact which may arise, and are not disposed of by mutual agreement, shall be decided by a representative of this Commission duly authorized to supervise and administer performance of the work hereunder.

Article 19: Pending decision of a dispute hereunder, the Railroads shall diligently proceed with performance under this contract.

Article 20: This agreement is conditioned upon the approval, by the Interstate Commerce Commission of the arrangement herein contemplated whereby the Railroads will operate over trackage, including the i/c facilities and wye, and whereby the Pacific Company will use in common with the Union Company of said line of railway.

** Sourced, summarized, and transcribed from Email: RE: Next Steps from Roger Wright, POB Port Engineer 1/25/24 9:17 am 1947 Agreement.pdf Case2:09-cv-05062-EFS Document 113-3 3/3/10

b. 1998 Railroad Indenture (Dept of Energy Transfer to Port of Benton)

TRANSFER OF THE HANFORD RAILROAD SOUTHERN CONNECTION AND THE 11 OO AREA TO THE PORT OF BENTON

There are 768 acres with 26 facilities and 16 miles of railroad available to assist in the POB's economic development activities.

This INDENTURE is effective the first day of October 1998, between the UNTED STATES OF AMERICA, acting by and through the US. DEPARTMENT OF ENERGY, (the "Grantor") and the PORT OF BENTON, acting through its Board of Commissioners, (the "Grantee") (collectively, the "Parties").

EASEMENTS, RESTRICTIONS, AND LÜ\IITATIONS
Grantor retains an easement, described in the Deed found at Attachment D, on the road known as Stevens Drive that extends north from the junction of Spengler Street to Horn Rapids Road (the "Road"). Grantee shall have a right of first refusal governing any conveyance in the Road by Grantor.
Grantee shall take title subject to all public utility and other easements on record, described in Attachment E, and any other zoning regulations and restrictions appearing on plats, in the Deed, or in any tide report prepared to support this transfer of Real Property and the Railroad.
c. Grantor retains an easement, described in Attachment F, for Grantor's existing infrastructure, including telecommunications infrastructure, on the Real Property and Railroad. Grantee shall reasonably negotiate and convey no-cost new easements to support access to existing or new infrastructure of any kind or to improve on said infrastructure.

ASSIGNMENT OF LEASES AND CONTRACTS
c. Grantor hereby assigns two agreements, a supplemental agreement, and permit made among and by the Atomic Energy Agency (and its successors); Burlington Northern, Inc.; Oregon. Washington Railroad

& Navigation Company; and Union Pacific Railroad Company governing access to the Railroad (see Attachment H). Grantee hereby accepts the obligations and considerations under this agreement and permit. Grantor shall notify successors Burlington Northern and Union Pacific of these assignments.

D. Grantee's responsibilities for maintenance and operation of the Railroad under the terms of this Indenture are subject to the economic viability of the Railroad.

PLANNING AND DEVELOPMENT
Grantor is aware that Grantee is acquiring the Real Property and Railroad for development for industrial use, Accordingly, Grantor agrees that it shall cooperate reasonably with Grantee and sign such documents and undertake such other acts, without incurring costs or liability, that are necessary for Grantee to complete the planning, zoning, and development of the Real Property and Railroad, the resale and marketing of any portion of the Real Property, and the formation and operation of special districts, metropolitan districts, and other quasi-governmental entities organized for the purpose of providing infrastructure facilities and services to or for the benefit of the Real Property and Railroad.

USE OF REAL PROPERTY AND RAILROAD
Grantee shall use and maintain the Real Property and Railroad on fair and reasonable terms without unlawful discrimination.

** Email: Additional Rail Info from Roger Wright, POB Port Engineer 1/30/24 11:28 am RR Indenture.pdf

c. Washington Court Findings Decided 12/14/2011

The Court grants BNSF's request and issues a permanent injunction requiring TCRY 1) to allow both BNSF and UP to directly serve customers along the Richland Trackage, and 2) to coordinate train scheduling and dispatching with both BNSF and UP. The parties shall meet and confer to develop a comprehensive operational plan as detailed below.

F. Conclusion
For all of the historical complexity surrounding the Richland Trackage, the relative rights of the parties are actually quite simple: The United States granted BNSF and UP's predecessors in interest full rights to operate on the Richland Trackage, and TCRY took possession of the Richland Trackage subject to these rights. Accordingly, the Court issues a declaratory judgment recognizing BNSF and UP's operating rights and issues a permanent injunction protecting these rights.

Accordingly, IT IS HEREBY ORDERED:

1. BNSF's Motion for Summary Judgment, ECF No. 273, is GRANTED. Both BNSF and UP shall have the right to operate directly on the Richland Trackage. Representatives from BNSF, TCRY, and UP shall meet and confer at a mutually-convenient time and place—either by phone or in person—and draft a comprehensive operational plan (COP), consistent with the Court's ruling, that is signed and agreed upon by all three parties. A representative of the Port shall be permitted to attend and offer comments. The COP shall cover trackage from the Richland junction to Horn Rapids Road (and all spurs that spring therefrom). The proposed COP shall be filed for Court approval no later than 5:00 p.m. on December 23, 2011 unless on or before that date, BNSF, TCRY, and UP file with the Court a joint stipulation to a later date. The Port shall have seven (7) days after the filing of the proposed COP in which to file a statement with the Court stating its comments or objections to the proposed COP. The parties shall have seven (7) days after the filing of the Port's statement in which to file individual or joint reply to the Port's statement. No other responsive or reply memoranda will be considered.

2. All pending motions are DENIED as moot.

IT IS SO ORDERED. The District Court Executive is directed to enter this Order and distribute copies to counsel. ** https://casetext.com/case/bnsf-ry-co-v-tricity-olympia-rr-co

d. Washington Court Findings Decided: 6/17/2019

Court of Appeals of Washington,
Peterson's claim is based on the 1947 contract and the indenture. Both are contracts, not laws and thus, on its face article I, section 12 is not applicable.

PETERSON v. DEPARTMENT OF REVENUE (2019)
Court of Appeals of Washington, Division 1.
Randolph PETERSON, a taxpayer resident, Appellant, v. State of Washington DEPARTMENT OF REVENUE, a state agency; Port of Benton, a Washington port district, Respondents.

** Washington State Courts.gov; https://www.courts.wa.gov/content/petitions/97410-1%20Petition%20for%20Review.pdf, July 10, 2019

e. Washington Court Findings Decided 6/6/2022

BNSF RAILWAY COMPANY, Plaintiff, v. UNION PACIFIC RAILROAD COMPANY, and United States District Court, Eastern District of Washington

The Court finds no basis in law or fact to amend the Permanent Injunction.

The Court finds that TCRY fails to show that "applying [the Permanent Injunction] prospectively is no longer equitable." TCRY did not show that "a significant change in circumstances warrants revision"; nor did it show that "the proposed modification is suitably tailored to the changed circumstance" or how "the changed conditions make compliance with the [Permanent Injunction] more onerous, unworkable, or detrimental to the public interest."

The Court also finds that TCRY fails to show success on the merits, that other available remedies are inadequate, that the balance of hardships justify the remedy sought, or that the remedy sought would not disserve the public interest.

IT IS HEREBY ORDERED: 1. TCRY's Motion to Amend Permanent Injunction, ECF No. 374, is DENIED. 2. This file shall be CLOSED. IT IS SO ORDERED. The Clerk's Office is directed to enter this order, provide copies to all counsel, and close this file.

** casetext BNSF Ry. Co. v. Union Pac. R.R. Co., https://casetext.com/case/bnsf-ry-co-v-union-pac-rr-co, June 6, 2022

f. RRB Employer Status Determination 10/10/2001

The Port of Benton does not have a primary business purpose to profit from railroad activities. It is a unit of local government the purpose of which is to facilitate economic development. The Port of Benton does not operate the rail line and does not retain the equipment or personnel to operate the rail line. The operator of the rail line, Tri-City, is a covered employer under the Acts administered by the Board. Accordingly, all three of the above-listed factors exist in this case, and the Board concludes that the Port of Benton is not an employer under the Acts administered by.

** RRB Employer Status Determination, https://www.govinfo.gov/content/pkg/GOVPUB-RR-07ee9a0e23ed3fde5ccf5276427e66fe/pdf/GOVPUB-RR-07ee9a0e23ed3fde5ccf5276427e66fe.pdf, June 10, 2001

g. RRB Employer Status Determination 4/9/2018

Accordingly, based upon the information above, the Board finds that POB is not a covered employer under the Acts. the Board notes that POB's stated primary purpose is to facilitate economic development

and its acquisition of the railroad from the US government through the Indenture was to prevent closure of the railroad and further POB's mission of economic development.

** https://secure.rrb.gov/blaw/bcd/bcd18-09.asp

h. Port Terminates Lease with Rail Network Operator

The Port of Benton terminated its lease with the Tri-City Railroad Company, LLC ("TCRY") as operator of the port's Southern Connection rail network. The 16-mile rail line runs between Center Parkway in Kennewick and Horn Rapids Road in north Richland. A final settlement agreement which established how the transition would occur became effective June 17, 2022. As a result of this agreement, the Port will assess existing tenancies at 2579 Stevens Drive and begin to negotiate new leases ahead of becoming the primary lessor on August 1, 2022.

** https://portofbenton.com/press-release-port-terminates-lease-with-rail-network-operator/

i. Columbia Rail STB Notice 2/22/2023

CWW LLC dba Columbia Rail (CWW), a Class III rail carrier, has filed a verified notice of exemption pursuant to 49 CFR 1150.41 to lease and operate 10.89 miles of railroad line between milepost 18.84 at Richland Junction and milepost 29.73 at Richland, Wash. (the Line), owned by the Port of Benton County, Wash. (the Port).[1]
According to the verified notice, the Port and CWW have entered into a non-exclusive lease agreement for CWW to operate on the Line.

The transaction may be consummated on or after March 8, 2023, the effective date of the exemption (30 days after the verified notice was filed).

** Surface Transportation Board, CWW LLC dba Columbia Rail-Lease and Operation Exemption-Port of Benton County, Wash., https://www.federalregister.gov/documents/2023/02/22/2023-03664/cww-llc-dba-columbia-rail-lease-and-operation-exemption-port-of-benton-county-wash, June 22, 2023

D. Evaluation of annual maintenance costs needed to maintain track to FRA Class 2 standards.

a. Railroad Infrastructure 101

Prior to sharing research findings, this Assessment will provide an introductory section for the reader(s) of this document. The intent of this knowledge sharing is to:

- provide those with a limited background of railroad terminology, processes, and components a sufficient understanding to follow thru Scope of Work items D and H;
- and/or serve as a refresher to those with more tenured knowledge to ensure a shared understanding vs. any misunderstandings driven by interpretations.

Additional rail component infrastructure information and factors impacting lifespan can be found in Appendix Section A.3 of this assessment.

The anatomy of rail infrastructure (Exhibit D.1) is comprised of the following interworking parts:

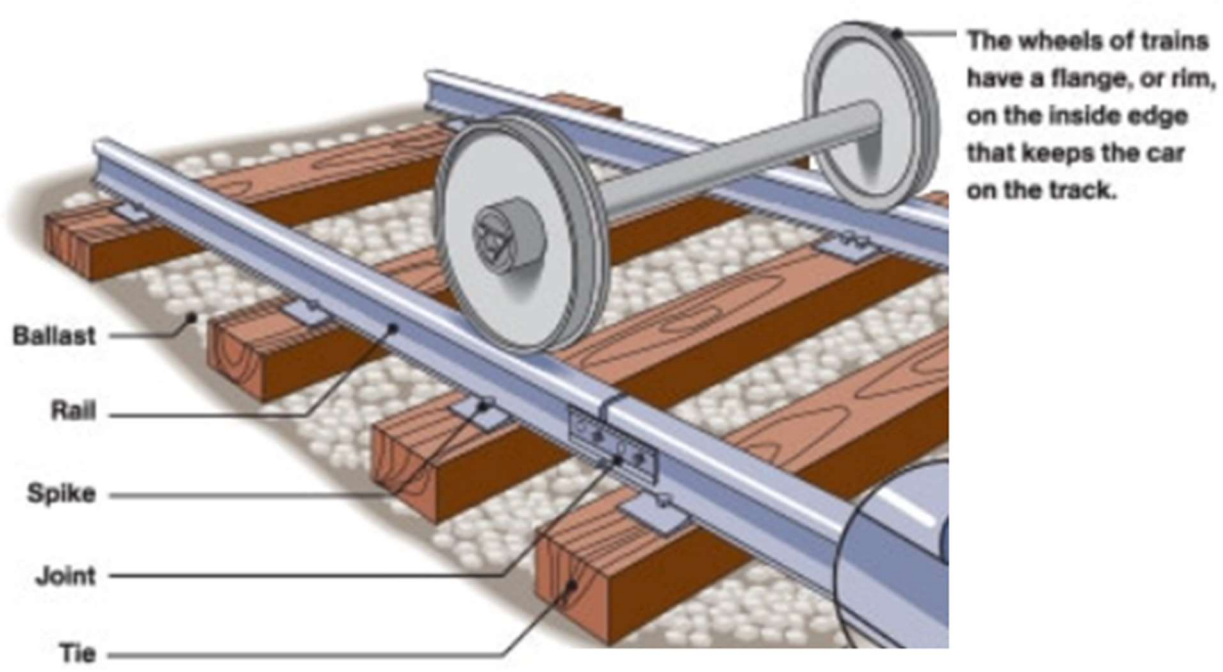


Exhibit D.1

** https://www.washingtonpost.com/sf/brand-connect/wp/enterprise/ribbons-of-rail?; Ribbons of Rail, Washington Post

Ballast serves as the base of the track bed which the railroad ties are laid on. See Exhibit D.2.

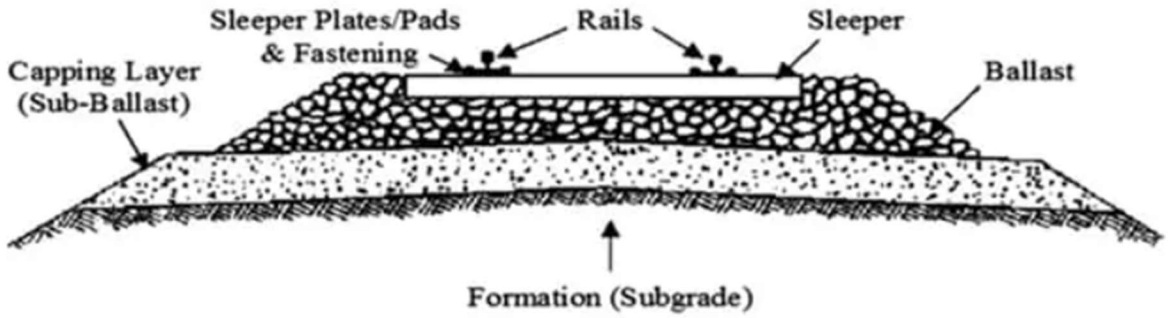


Exhibit D.2

** https://railroadrails.com/knowlege/main-parts-of-railroad-track/

Ballast is crushed stone, gravel, rocks, and / or pebbles that the railroad ties rest upon. However, ballast performs critical functions for the rail infrastructure including not only surface track built directly on the ground but also some bridges. These functions include:

- serving as the foundation supporting the ties and rails,
- fixing the position of the railroad tie maintaining the correct line and slope of the track,
- increasing the elasticity of the track, so that rail can quickly return to its original correct position after train movement above,
- distributing the weight from railroad ties caused by the vertical downward force produced by train movement across the rail,

- **“Providing proper drainage of water (rain, dew, snow) and buildup materials (dirt, sand, mud, etc)”** thus preventing subgrade structure deformities due to moisture buildup. This is why ballast should and typically does slope downward away from the track.

** https://railroadrails.com/knowlege/main-parts-of-railroad-track/

Rail a.k.a. railroad track are the parallel pieces of steel that the train (locomotive or railcar) steel wheels [when combined (see Exhibit D.3) together are called trucks] traverse over.

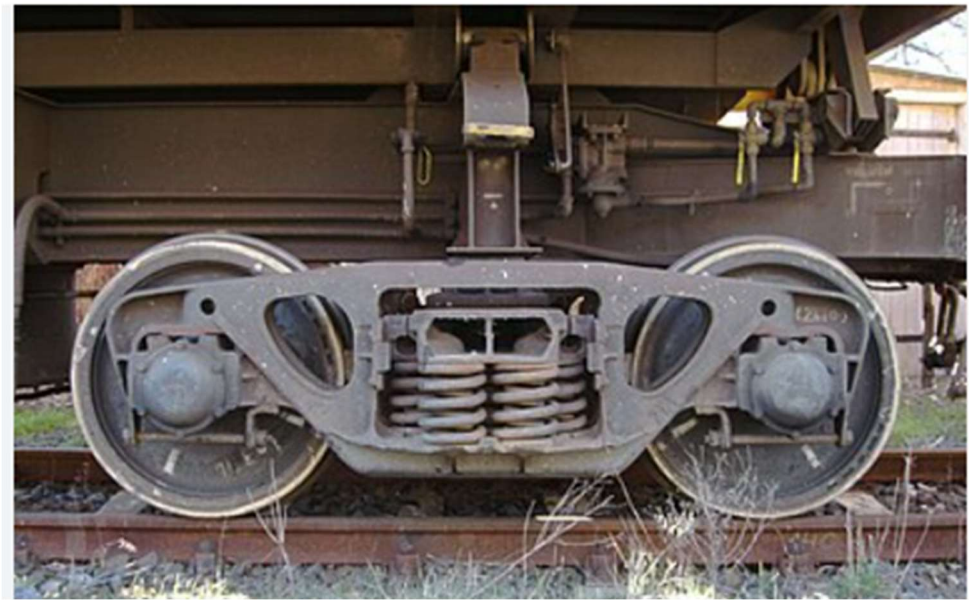


Exhibit D.3

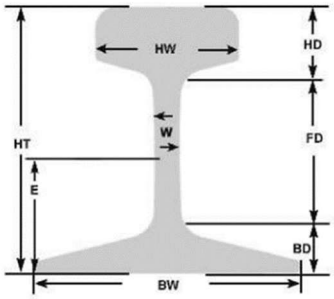
** https://en.wikipedia.org/wiki/List_of_railroad_truck_parts

Rail is identified and characterized in a measure as pounds per yard. I.E. a 36” long piece of 90 lb. rail weighs 90 pounds. Rail comes in various weights ranging from 12 lbs. to 155 lbs. Modern day rail is typically 115 lb. or heavier.

- 115 lb. rail is typically used in straight (tangent) runs in industrial track (customer facilities).
- 136 lb. rail is used for bridges, road crossings, curved areas, and / or high speed traffic

Exhibit D.4 provides some additional information regarding rail dimensionality and terminology. The table in the bottom right of the exhibit has been condensed from its original format to only include the specific weighted rail currently in use on POB track.

Tee Rail Data Table Dimensions



Nominal Weight Per Yard	Type of Rail	DIMENSIONS IN INCHES								SECTION DESIGNATION		
		HT	BW	HW	W	HD	FD	BD	E			
90 lb.	ASCE	5 3/8	5 3/8	2 5/8	9/16	1 35/64	2 55/64	59/64	2 45/128	9040	90AS	---
90 lb.	ARA-A	5 5/8	5 1/8	2 9/16	9/16	1 15/32	3 5/32	1	2 37/64	9020	90RA	902
115 lb.	AREA	6 5/8	5 1/2	2 23/32	5/8	1 11/16	3 13/16	1 1/8	2 7/8	11525	115RE	1150
136 lb.	AREA	7 5/16	6	2 15/16	11/16	1 15/16	4 3/16	1 3/16	3 3/32	13637	136RE	---

Exhibit D.4

** www.txholdings.com/rail_chart.php

- When performing “boots on the ground” inspections, the rail weight and manufacturer information generally (unless cutout due to fitment, derailment, etc.) will be stamped on the side of each section (39 feet) of rail. The visual in Exhibit D.5 provides instruction on how to read the rail stamp.

Rail Branding

The rail web is branded at least every 16 feet, and the branding will consist of the following information:

- Weight per every 3 feet of rail: two- or three-digit number
- Section: two-letter code
- Type of process used for hydrogen elimination: two-letter code
- Manufacturer: spelled out, letter code, or symbol
- Year rolled: four-digit number
- Month rolled: lines or roman numerals

Example:	141	RE	Mittal	2006	11111
	Rail Weight	Section	Manufacturer	Year Rolled	Month Rolled

Exhibit D.5

** Track Inspector Rail Defect Reference Manual; Office of Railroad Safety Rev 2, page 10, July 2015

The visual in Exhibit D.6 is an actual rail stamp for a 115 lb section of rail on the southern wye of the POB track.

Exhibit D.6

** Ground photo taken by Jeffrey Guelker during Port of Benton onsite visit February 19, 2024 through February 22, 2024.

Railroad fasteners ensure that the ties and rail are held firmly together (in a well-functioning system).

The various components (pictures were taken during the POB during the February site visit) include:

- the **tie plate** Exhibit D.7 – sits on top of the railroad tie and provides the contact area for the rail to rest on. It also functions to spread the weight of the car or locomotive over a broader area.

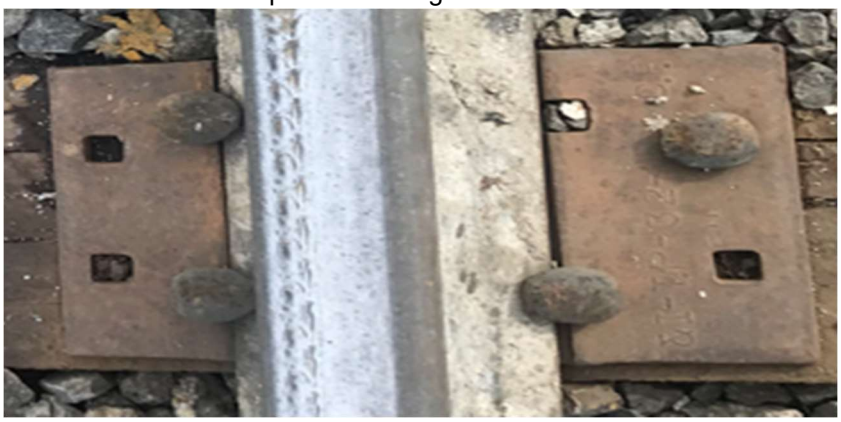


Exhibit D.7

** Ground photo taken by Jeffrey Guelker during Port of Benton onsite visit February 19, 2024 through February 22, 2024.

- the **spike** Exhibit D.8 - driven through the tie plate to anchor the rail to the railroad tie.

Exhibit D.8

** Ground photo taken by Jeffrey Guelker during Port of Benton onsite visit February 19, 2024 through February 22, 2024.

- the **rail anchor** Exhibit D.9– prevents the rail from shifting side to side as a train moves over the rail section.

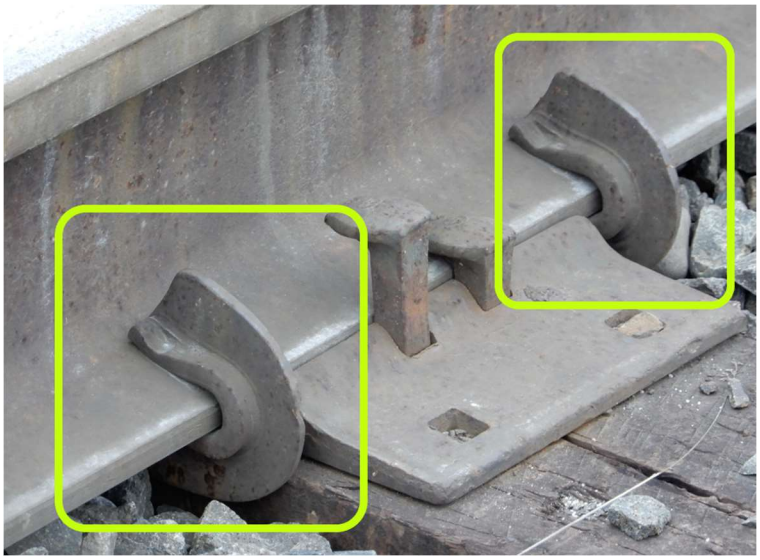


Exhibit D.9

** Ground photo taken by Jeffrey Guelker during Port of Benton onsite visit February 19, 2024 through February 22, 2024.

- **Joints or rail joint bars** Exhibit D.10 - steel bars that connect rail sections by means of bolting together. Ensure stability for locomotives and railcars as they traverse section by section. When installed properly help reduce the impact of wheels moving across the gaps between rail sections.

Exhibit D.10

** Ground photo taken by Jeffrey Guelker during Port of Benton onsite visit February 19, 2024 through February 22, 2024.

- **Gauge rods** a.k.a. **BAND AIDS** Exhibit D.11 - prevent longitudinal shifting between rails by providing additional support keeping each side of rail at a consistent width. While typically used to provide extra stability in sharp curves, gauge rods are also used to ***offset issues stemming from low quality ties and lower pound rail.***

Exhibit D.11

** https://akrailroad.com is source for gauge rod graphic.
** Ground photo taken by Jeffrey Guelker during Port of Benton onsite visit February 19, 2024 through February 22, 2024.

Railroad ties (crossties or sleepers) Exhibit D.12 lay perpendicular to the rail and serve as:

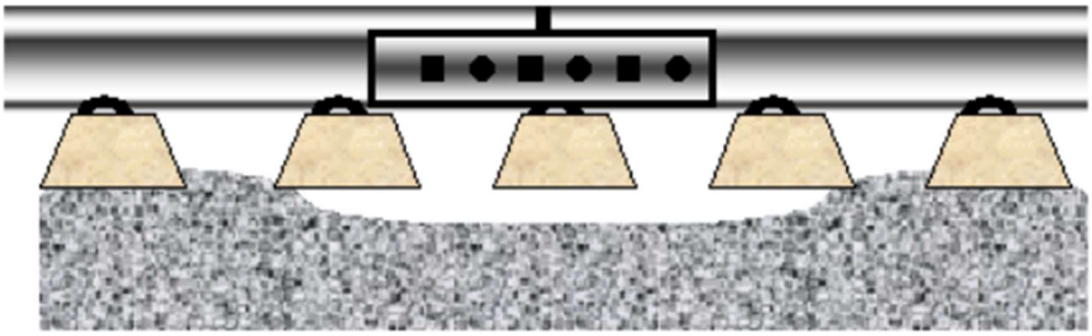
- the primary lateral support for the rail,
- anchor the track down,
- provide a solid footing (maintain the position of the rail) during train movement,

- transmit the huge pressure exerted by the rail to the track bed,
- must have a certain degree of flexibility and elasticity to properly deform and cushion the downward force of gravity.

Exhibit D.12

Track Pumping

“Defects in a rail joint may cause excessive pounding, as wheels pass over it. This continued series of impact loads causes a breakdown of ballast support under the joint ties. A low spot in the surface develops. Perhaps the joint begins to pump mud. It is not unusual for the track to develop a line irregularity at this spot. Depending on the position from which he/she is observing the track, the trained inspector might observe either the line or the surface defect first.”



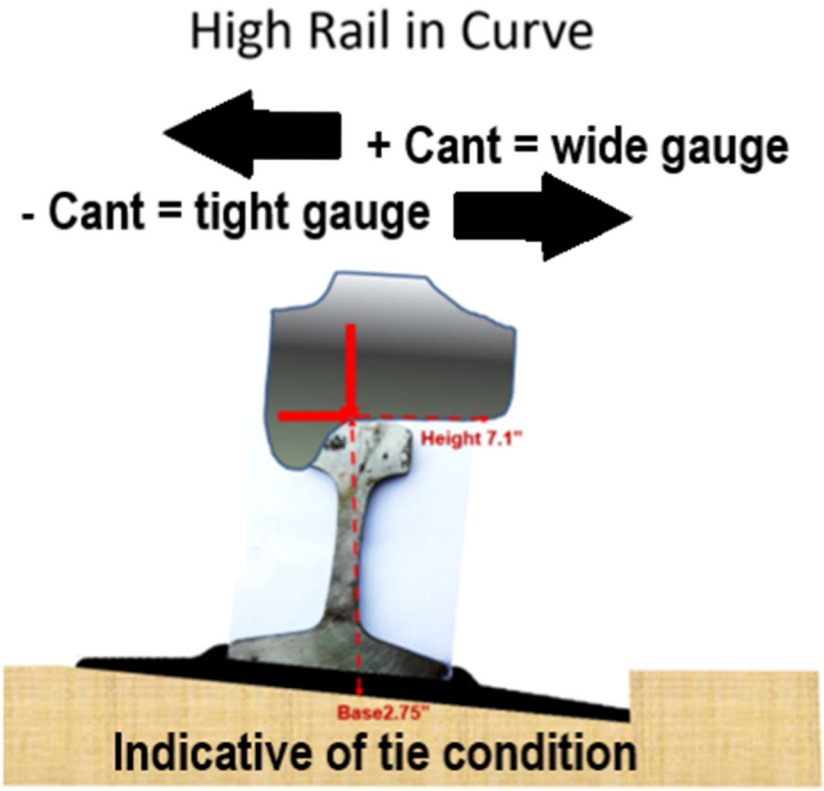
Ballast break down because of a pumping joint

Exhibit D.13

** https://www.itsmarta.com/wayside-docs/Books%20For%20QR%20codes%20PDFs/Track%20Inspection%20Modules/Section%2011-Track%20Alignment.pdf; MARTA Technical Training Track and Structures, page 19, January 2011

Rail Cant is the measurement of tilt (roll) in the rail and plays a significant role in keeping the point of wheel contact centered on the rail head over the web of the rail.

- Positive cant is rolled outwards towards the field side and may create a wide gage condition.
- Negative cant is rolled inwards towards the gage side and may create a tight gage condition.
- Rail cant may be indicative of the condition of the crossties.
- Rail Cant exceptions have been identified as a probable cause in rail rollover and gage widening derailments.



Rail Cant is the measure of tilt (roll) in rail. Keeps point of wheel contact centered on rail head

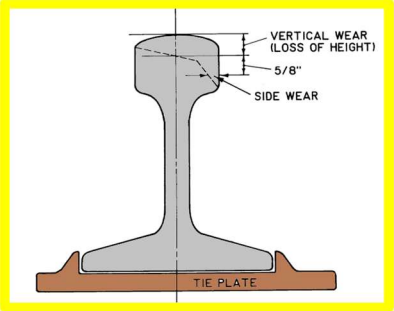
** https://www.rtands.com/track-construction/track-structure/assessing-the-effects-of-operating-regimes-on-track/

The **Gage_Wide** exception is when gage measures greater than 56 ½ inches.

** https://railsystem.net/rail-gauges/

Vertical Wear

Loss of Rail Height on Either Side.



** https://www.mdpi.com/2076-3417/14/1/209

Overall tie integrity

Indicators to look for include rail cant and combined cant, gage, head wear, missing or loose clips, pads, or insulators, rail seat abrasion, and worn or broken shoulders.

b. FRA Regulations

Provided in Appendix Section A.6 and A.7 is a list of “assessment relevant” definitions and regulations produced and enforced by the Federal Railroad Administration (FRA). Below is a partial list of the most “essential knowledge” elements for reading the main body of this assessment.

** All regulatory information can be located in the FRA Handbook located at fra.gov; however, the following website is significantly easier to move through as well as export facts and figures.
https://www.ecfr.gov/current/title-49/subtitle-B/chapter-II/part-213?toc=1

c. Inspection Frequency Requirements

§ 213.233 **Visual track inspections.**

(a) All tracks shall be inspected in accordance with the schedule prescribed in paragraph (c) of this section by a person designated under § 213.7. Exhibit D.14

(c) Each track inspection shall be made in accordance with the following schedule Exhibit D.14

Class of track	Type of track	Required frequency
Excepted track, and Class 1, 2, and 3 track	Main track and sidings	Weekly[1] with at least 3 calendar days' interval between inspections, or before use, if the track is used less than once a week, or twice weekly with at least 1 calendar day interval between inspections
Excepted track and Class 1, 2, and 3 track	Other than main track and sidings	Monthly with at least 20 calendar days interval between inspections.

[1] An inspection week is defined as a seven (7) day period beginning on Sunday and ending on Saturday.

Exhibit D.14

Displaying title 49, up to date as of 2/01/2024. Title 49 was last amended 2/01/2024.

** Exhibit D.14 sourced at https://www.ecfr.gov/current/title-49/subtitle-B/chapter-II/part-213?toc=1

d. Rail Infrastructure Regulations Summary of FRA Track Defect Definitions and Criteria

** Information sourced at https://www.ecfr.gov/current/title-49/subtitle-B/chapter-II/part-213?toc=1

§ 213.103 **Ballast; general**.
Unless it is otherwise structurally supported, all tracks shall be supported by material which will—
(a) Transmit and distribute the load of the track and railroad rolling equipment to the subgrade;
(b) Restrain the track laterally, longitudinally, and vertically under dynamic loads imposed by railroad rolling equipment and thermal stress exerted by the rails;
(c) Provide adequate drainage for the track; and
(d) Maintain proper track cross level, surface, and alinement.

§ 213.109 **Crossties.**
(a) Crossties shall be made of a material to which rail can be securely fastened.
(b) Each 39-foot segment of track shall have at a minimum—
(1) A sufficient number of crossties that in combination provide effective support that will—
(i) Hold gage within the limits prescribed in § 213.53(b);
(ii) Maintain surface within the limits prescribed in § 213.63; and
(iii) Maintain alinement within the limits prescribed in § 213.55;
(2) The minimum number and type of crossties specified in paragraph (b)(4) of this section and described in paragraph (c) or (d), as applicable, of this section effectively distributed to support the entire segment;
(3) At least one non-defective crosstie of the type specified in paragraphs (c) and (d) of this section that is located at a joint location as specified in paragraph (e) of this section; and
(4) The minimum number of crossties as indicated in the following table. Exhibit D.15

FRA track class	Tangent track, turnouts, and curves	
	Tangent track and curved track less than or equal to 2 degrees	Turnouts and curved track greater than 2 degrees
Class 1	5	6
Class 2	8	9
Class 3	8	10
Class 4 and 5	12	14

Exhibit D.15

(c) Crossties, other than concrete, counted to satisfy the requirements set forth in paragraph (b)(4) of this section shall not be—

(1) Broken through;

(2) Split or otherwise impaired to the extent the crosstie will allow the ballast to work through, or will not hold spikes or rail fasteners;

(3) So deteriorated that the crosstie plate or base of rail can move laterally 1⁄2 inch relative to the crosstie; or

(4) Cut by the crosstie plate through more than 40 percent of a crosstie's thickness.

(e) Class 1 and 2 track shall have one crosstie whose centerline is within 24 inches of each rail joint (end) location.

(1) Each rail joint in Class 1 and 2 track shall be supported by at least one crosstie specified in paragraphs (c) and (d) of this section whose centerline is within 48 inches

§ 213.33 **Drainage.**

Each drainage or other water carrying facility under or immediately adjacent to the roadbed shall be maintained and kept free of obstruction, to accommodate expected water flow for the area concerned.

e. Engineering Maintenance of Rail Infrastructure

The process of undercutting (Exhibit D.16) is of extreme importance based upon POB's current railroad infrastructure.

Undercutting – the process of scooping out contaminated gravel and mud and fouled ballast from beneath railroad tracks. Undercutting is frequently performed as an independent service for cleaning stretches of track. The primary purpose of undercutting is to ensure grade stabilization via proper water drainage.

Exhibit D.16

** Exhibit D.16 was produced from pictures copied from the following websites for illustrative and training purposes only.

- https://www.hulcher.com/services/engineering-track-maintenance-mow/undercutting-services#:~:text=The%20undercutter%20attaches%20to%20a,a%20siding%2C%20thereby%20improving%20productivity.*4
- https://en.wikipedia.org/wiki/Track_ballast

Defective Tie Identification Terminology

The following Exhibit D.17 was copied from the Army Standards Playbook to serve for illustrative and training purposes only. The exhibit provides a linkage relating railroad defect terminology compared to the visual characteristics of a defective tie.

TM 5-628/AFR 91-44

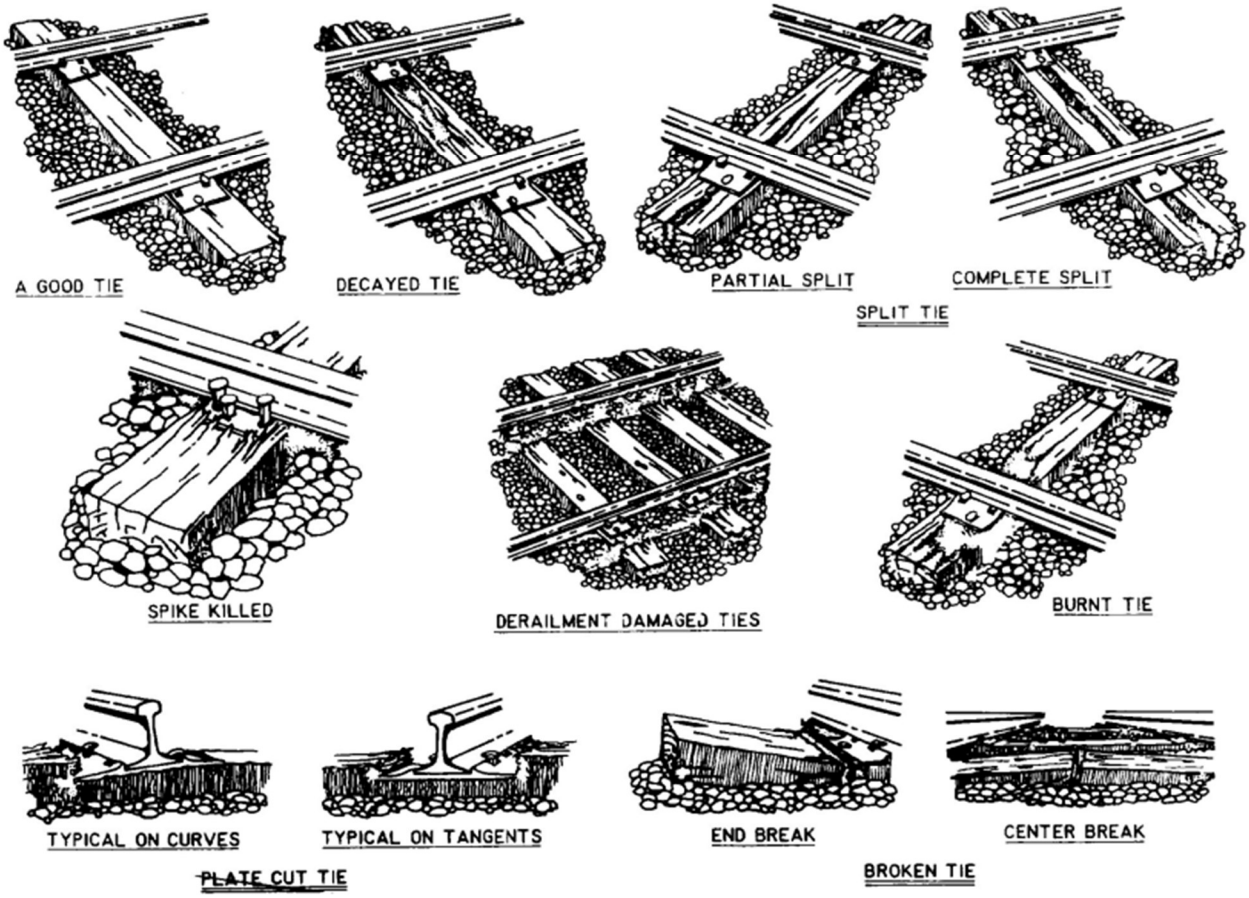


Exhibit D.17

** US Army Corps of Engineers, the Army Track Standards Playbook TM 5-628/AFR 91-44 page 20, https://www.wbdg.org/FFC/ARMYCOE/COETM/ARCHIVES/tm_5_628.pdf, April 8, 1991

f. Formal Research Studies Support of Assessment

This section is a compilation of multiple research studies that will assist with determining appropriate values to insert into the preventative maintenance costing model. Several rounds of research were conducted to answer what would seem to be a few straightforward questions with regards to the expected lifecycle of rail infrastructure components. Having the actual values for these factors will allow us to derive an extremely accurate model for preventative maintenance costing.

A large volume of discoverable data and information on the subject is available on the internet. Unfortunately, the takeaway is "**no single value**" exists for each of the component's lifecycles due to the large number of factors and their interactions which have been shown to impact the end result. But it is possible to create a lifespan range when taking into consideration many of the external variables impacting the infrastructure. The pie chart in exhibit D.18 was created to depict many of the different variables that researchers over the course of decades of study have shown impact component lifespan. The size of the slices of the pie chart ***should not be interpreted*** by the reader to have lifespan relational significance as ***all*** slices are the same equal percent of the whole. The key point the reader should discern from this exhibit is the number of variables that can / may / do impact the true "lifespan" values. The good news is that from the same discoverable data and information on the subject, we can produce a range of values which allow for the creation of a sensitivity analysis that will be used in the preventative maintenance costing tool that will be discussed in detail in Section H of this assessment.

Exhibit D.18

**https://www.rta.org/assets/docs/Research/LifeCycle1/on%20prediction%20of%20the%20life%20of%20wood%20ties.pdf; page 7

"A typical track lasts 20 to 30 years with proper maintenance. However, certain sections, like curves or high-traffic zones, weather conditions, soil stability, and train weight also affect the track's longevity."

** Dave Kesic, 3 Railway Maintenance Best Practices, https://www.mpofcinci.com/blog/railway-maintenance-best-practices/ Updated January 10th, 2024

Additional tie information, a summary of the impacts of operating conditions on Tie Lifespan, and associated costs can be found in Appendix Section A.3. A.4, & A.5. A summary of tie disposition can be found in Appendix Section A.8.

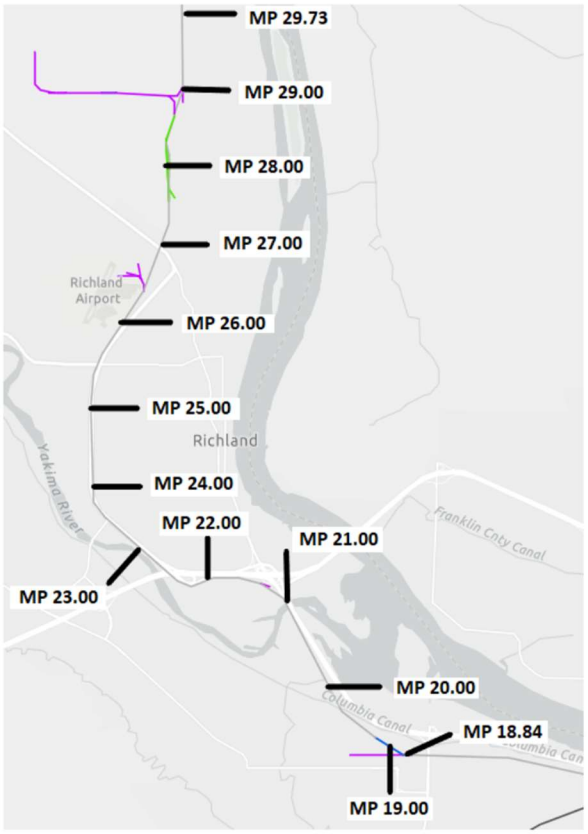
g. Analysis of POB Track Inspection Data

The following section compares, summarizes, and provides insight to track inspection data that has been collected over time from various inspections.

Geometry Car vs POB Tie Index Comparison Over Time

Findings: The collected data provides a comparison of overall tie condition between "formal inspections". It is important to note that some tie remediation has been taking place during the 34 months between inspections.

- From Richland Jct. (MP 18.84) through MP 24.00, data shows that a positive reduction in the number of defective and marginal / fair ties has occurred.
- From MP 24.00 through MP 29.73, a positive reduction in the number of marginal / fair ties has occurred, but there has been a substantial increase in the number of defective ties.
    - Hypothesis:
        - Tie remediation work has helped to reduce the number of defective and marginal / fair ties.
        - A good percentage of the marginal / fair ties have further degraded into defective ties.
        - Two companies may be classifying ties slightly different.



~ Low MP- ~High MP	MP 29.00 - MP 29.73	
Data Source	Geometry Car (Sept 2019)	POB Tie Index (June 2022)
Defective	214	312
Marginal/Fair	903	183
Non-Graded (Conditions, Bridges, Crossings,Yard)	535	

~ Low MP- ~High MP	MP 26.00 - MP 27.00	
Data Source	Geometry Car (Sept 2019)	POB Tie Index (June 2022)
Defective	602	803
Marginal/Fair	1,649	731
Non-Graded (Conditions, Bridges, Crossings,Yard)	445	

~ Low MP- ~High MP	MP 28.00 - MP 29.00	
Data Source	Geometry Car (Sept 2019)	POB Tie Index (June 2022)
Defective	418	450
Marginal/Fair	1,107	353
Non-Graded (Conditions, Bridges, Crossings,Yard)	1,404	

~ Low MP- ~High MP	MP 25.00 - MP 26.00	
Data Source	Geometry Car (Sept 2019)	POB Tie Index (June 2022)
Defective	482	850
Marginal/Fair	915	619
Non-Graded (Conditions, Bridges, Crossings,Yard)	1,308	

~ Low MP- ~High MP	MP 27.00 - MP 28.00	
Data Source	Geometry Car (Sept 2019)	POB Tie Index (June 2022)
Defective	623	951
Marginal/Fair	1,429	497
Non-Graded (Conditions, Bridges, Crossings,Yard)	771	

~ Low MP- ~High MP	MP 24.00 - MP 25.00	
Data Source	Geometry Car (Sept 2019)	POB Tie Index (June 2022)
Defective	630	994
Marginal/Fair	1,129	531
Non-Graded (Conditions, Bridges, Crossings,Yard)	851	

~ Low MP- ~High MP	MP 23.00 - MP 24.00	
Data Source	Geometry Car (Sept 2019)	POB Tie Index (June 2022)
Defective	938	361
Marginal/Fair	1,429	334
Non-Graded (Conditions, Bridges, Crossings,Yard)	204	

~ Low MP- ~High MP	MP 20.00 - MP 21.00	
Data Source	Geometry Car (Sept 2019)	POB Tie Index (June 2022)
Defective	907	269
Marginal/Fair	1,613	221
Non-Graded (Conditions, Bridges, Crossings,Yard)	161	

~ Low MP- ~High MP	MP 22.00 - MP 23.00	
Data Source	Geometry Car (Sept 2019)	POB Tie Index (June 2022)
Defective	713	68
Marginal/Fair	1,429	195
Non-Graded (Conditions, Bridges, Crossings,Yard)	172	

~ Low MP- ~High MP	MP 19.00 - MP 20.00	
Data Source	Geometry Car (Sept 2019)	POB Tie Index (June 2022)
Defective	788	342
Marginal/Fair	1,613	378
Non-Graded (Conditions, Bridges, Crossings,Yard)	257	

~ Low MP- ~High MP	MP 21.00 - MP 22.00	
Data Source	Geometry Car (Sept 2019)	POB Tie Index (June 2022)
Defective	872	214
Marginal/Fair	1,409	300
Non-Graded (Conditions, Bridges, Crossings,Yard)	822	

~ Low MP- ~High MP	MP 18.84 - MP 19.00	
Data Source	Geometry Car (Sept 2019)	POB Tie Index (June 2022)
Defective	149	105
Marginal/Fair	237	125
Non-Graded (Conditions, Bridges, Crossings,Yard)	71	

Exhibit D.19

** Email: RE: Additional Rail Info from Roger Wright, POB Port Engineer 1/30/24 11:28 am POB Tie Index & Tie Index Eval June 2022 9_2_22-B.pdf; HDR Tie Evaluation; Oct 11, 2023
** Email: RE: Additional Rail Info from Roger Wright, POB Port Engineer 1/30/24 11:28 am AURORA POB FIRST_WTG Summary_1709191025 Port Comments.xlsx
** Map background copied from https://usdot.maps.arcgis.com/apps/webappviewer/index.html?id=fd9810f673b64d228ae072bead46f703

Rail Cant is the measurement of tilt (roll) in the rail and plays a significant role in keeping the point of wheel contact centered on the rail head over the web of the rail.

- Positive cant is rolled outwards towards the field side and may create a wide gage condition.
- Negative cant is rolled inwards towards the gage side and may create a tight gage condition.
- Rail cant may be indicative of the condition of the crossties.
- Rail Cant exceptions have been identified as a probable cause in rail rollover and gage widening derailments.

Rail Cant measurements are taken at 1-foot intervals. The Cant Exception is based on a moving average of Cant measurements in a 19-foot window. Rail Cant (angle) represented in degree of roll. Approximately 1 degree = 1/8” for all rail weights.

Overall tie integrity

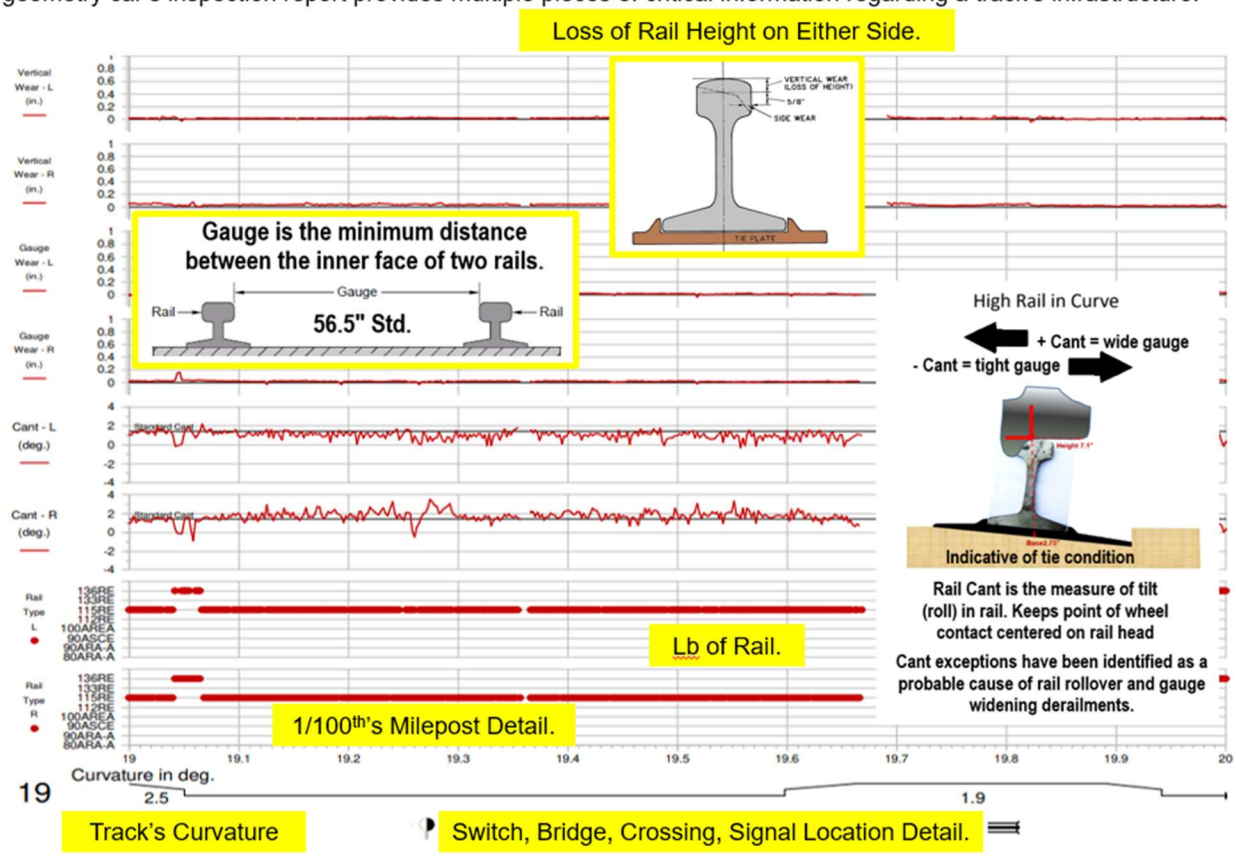
Indicators to look for include rail cant and combined cant, gage, head wear, missing or loose clips, pads, or insulators, rail seat abrasion, and worn or broken shoulders.

Trains traveling around a **curve** are subjected to an outward horizontal centrifugal force that acts through a car’s center of gravity away from the center of the curve. The result is the trains weight is shifted to the outside rail. To counteract the combined effect of centrifugal force and weight, the outer rail is raised over the inner rail, or **superelevated**. A resultant force is produced that moves towards the center of the track. A balanced (equilibrium) condition implies that the vertical forces on each rail are equal. Unbalance is the amount of elevation that would have to be added to the existing elevation to achieve a balanced condition.

** https://railroads.dot.gov/sites/fra.dot.gov/files/2020-02/Cant%20Excess_Freight_Shared%20Track.pdf

Geometry Car Inspection Report Interpretation

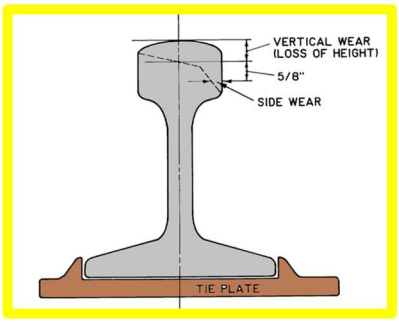
A geometry car's inspection report provides multiple pieces of critical information regarding a track's infrastructure.

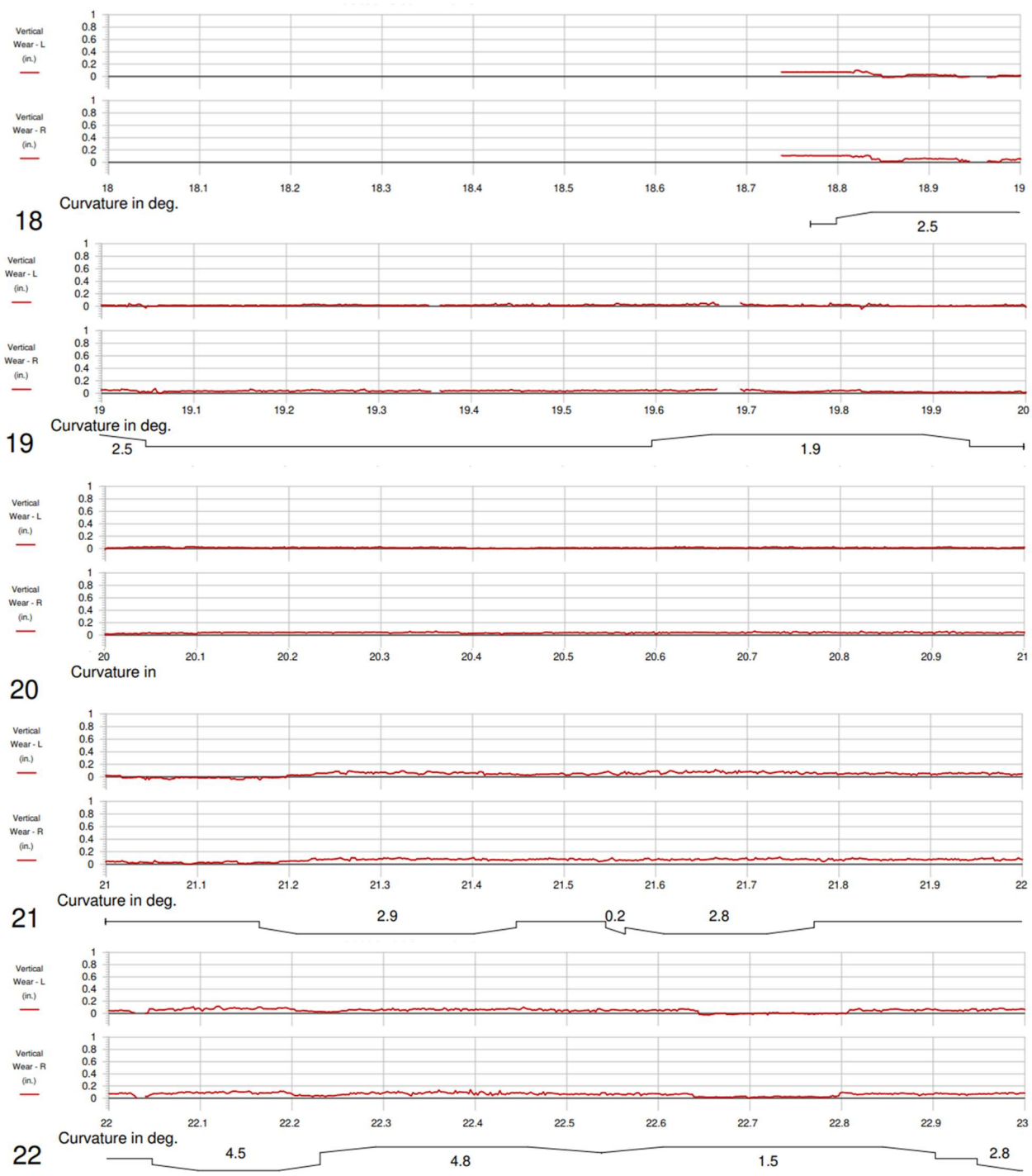


** Email: RE: Additional Rail Info from Roger Wright, POB Port Engineer 1/30/24 11:28 am PORT OF BENTON MAIN tk SM mp 18.74-29.73 RP rev final.pdf; Holland Geometry Car Summary; Oct 11, 2023

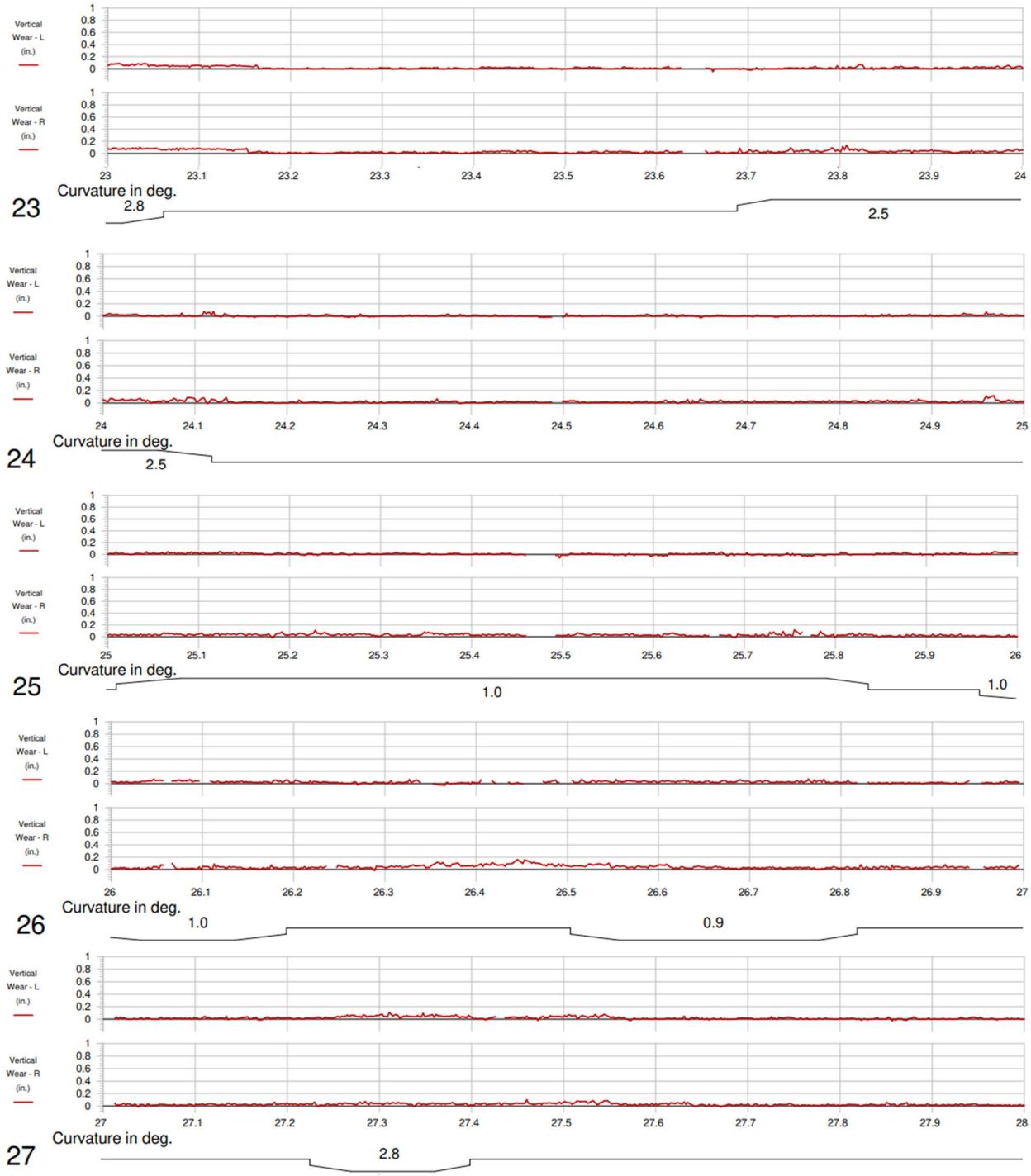
Vertical Wear Findings: The data from the October 11, 2023 Geometry Car inspection report looks very promising from a Vertical Wear perspective on the side of the steel rail head across the POB's mainline track. Recall the following definition for Vertical Wear:

Loss of Rail Height on Either Side.





** Email: RE: Additional Rail Info from Roger Wright, POB Port Engineer 1/30/24 11:28 am PORT OF BENTON MAIN tk SM mp 18.74-29.73 RP rev final.pdf; Holland Geometry Car Summary; Oct 11, 2023



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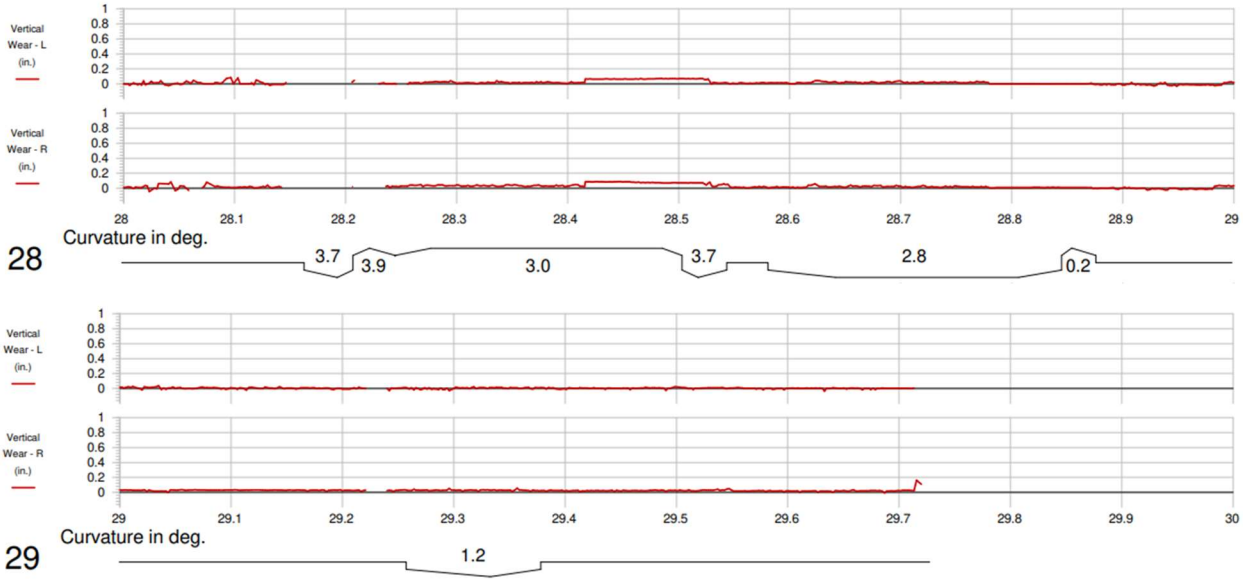


** Email: RE: Additional Rail Info from Roger Wright, POB Port Engineer 1/30/24 11:28 am PORT OF BENTON MAIN tk SM mp 18.74-29.73 RP rev final.pdf; Holland Geometry Car Summary; Oct 11, 2023

Gauge Findings: The data from the October 11, 2023 Geometry Car inspection report looks very promising for gauge from Richland Jct until City Dock (MP 21.51) where the beginnings of gauge distance starts to vary with each few feet of forward movement. Between Jadwin Ave. and Berry's Overpass we begin to see widening of the rail as we enter the big curves of the POB track. Gauge measures continue to be erratic but minimal until just north of Cemetery Road prior to Van Giesen, which was anecdotally identified by BNSF crew members, BNSF Trainmaster, UP Trainmaster, and Columbia Rail Operations Manager and Engineer as being some of the worst condition track to operate over. The main track thru the POB yard up until the south leg of the wye shows the most gauge variability of all. Gauge movement is the result of poor tie condition which prevents the spike from staying tightly inserted into the railroad tie thus not allowing for properly fastening of the rail down via the tie plate.

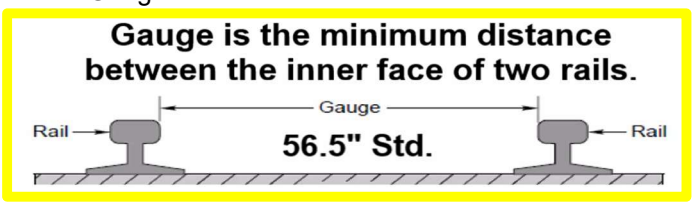
Supporting this statement, the highest number of consistently defective and marginal / fair ties reside between just north of Duportail Street at MP 23.67 through just shy of the POB railyard at MP 27.29. (Exhibit D.20)

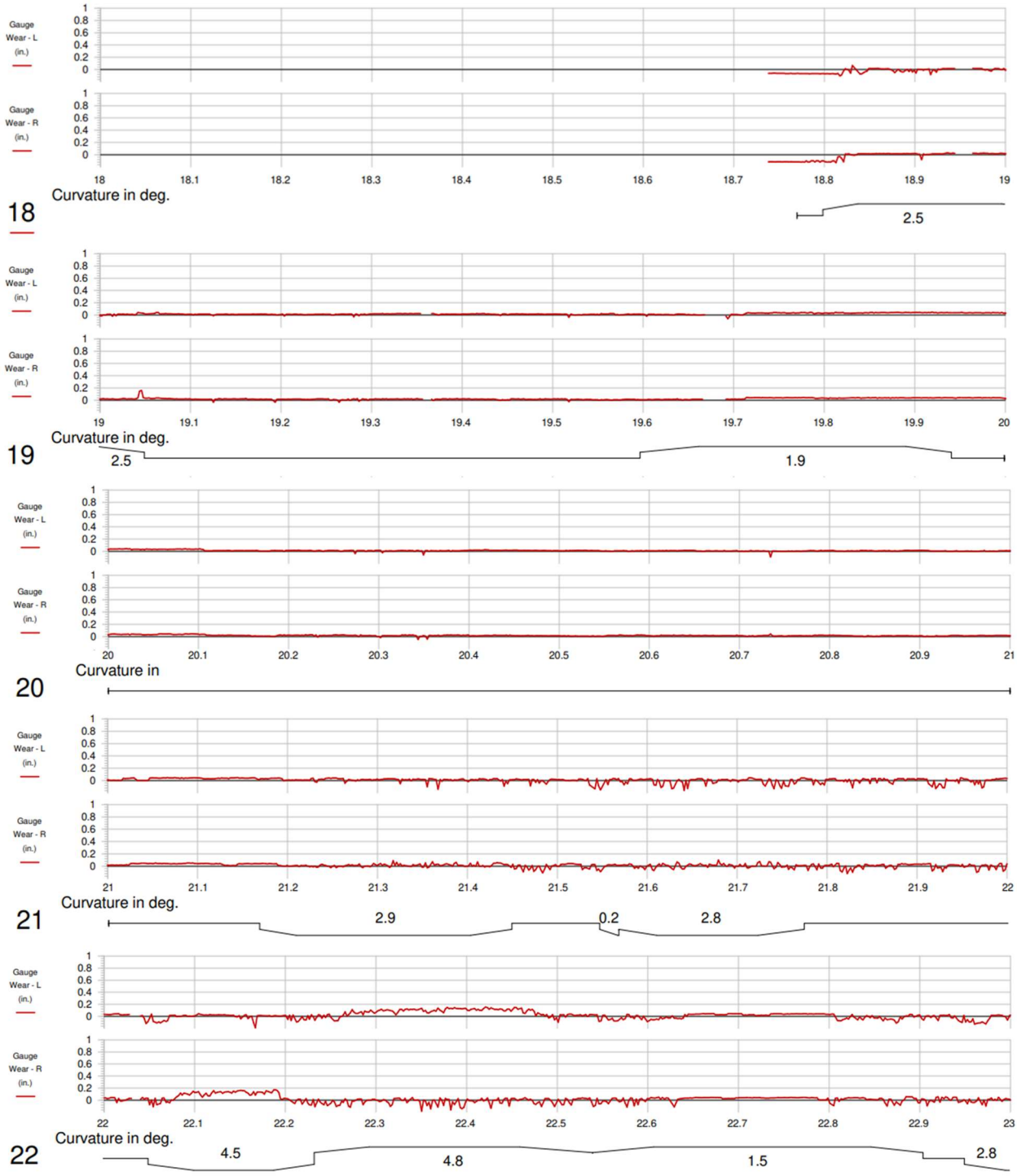
Beginning MP	23.67	24.06	24.47	25.01	25.46	25.80	25.99	26.05	26.15	26.47	26.52	26.78	26.92	26.98
Ending MP	24.06	24.46	25.01	25.44	25.80	25.99	26.04	26.15	26.45	26.52	26.78	26.91	26.96	27.29
Defective	319	423	571	358	249	187	56	105	239	28	236	185	10	322
Marginal	208	213	318	274	217	90	38	105	238	75	206	86	21	145

Exhibit D.20

** Email: RE: Additional Rail Info from Roger Wright, POB Port Engineer 1/30/24 11:28 am POB Tie Index & Tie Index Eval June 2022 9_2_22-B.pdf; HDR Tie Evaluation; Oct 11, 2023
** Email: RE: Additional Rail Info from Roger Wright, POB Port Engineer 1/30/24 11:28 am AURORA POB FIRST_WTG Summary_1709191025 Port Comments.xlsx

Recall the following definition for Gauge Wear:





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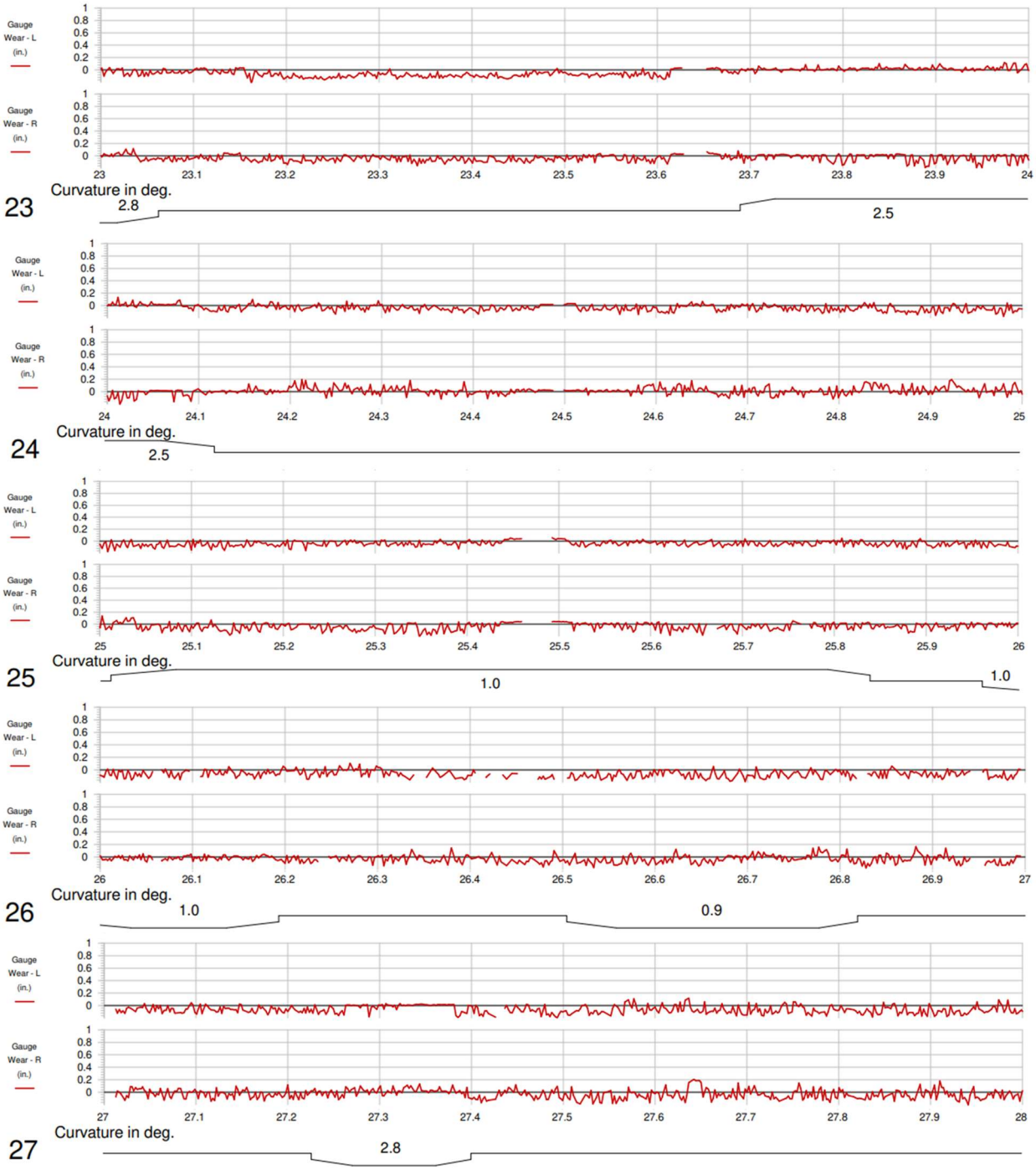

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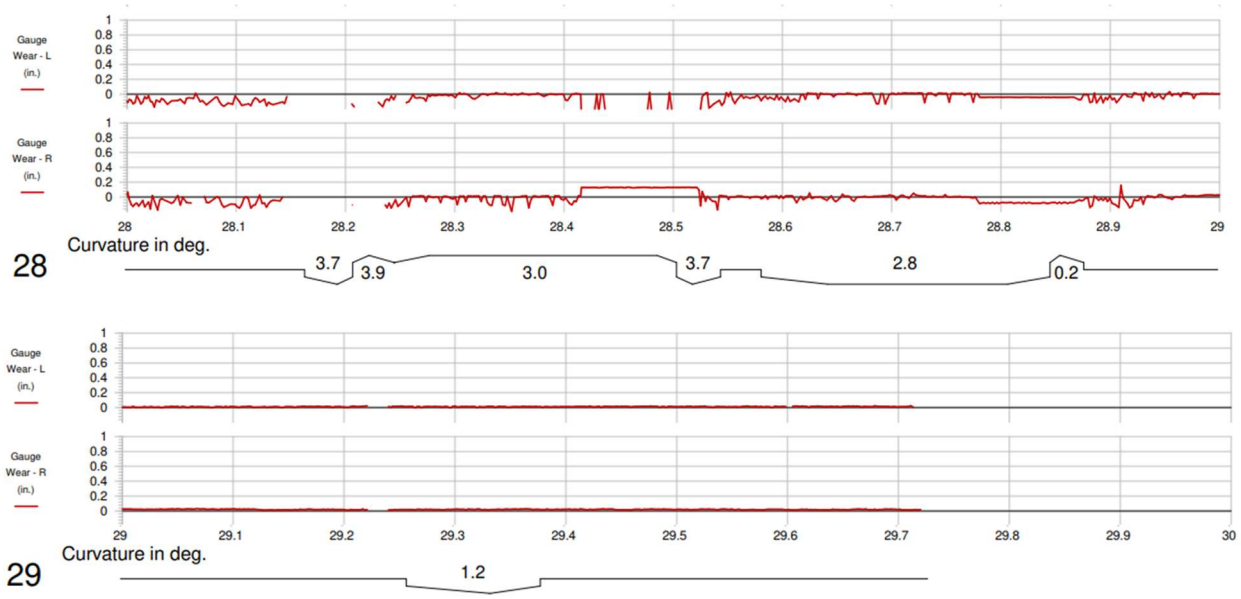
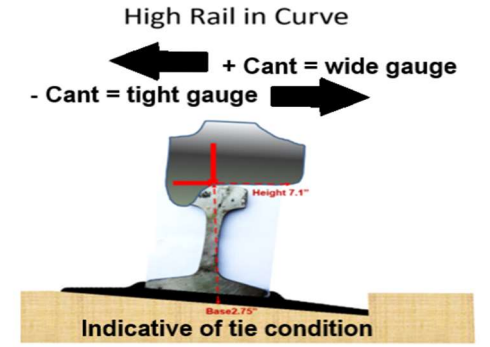


** Email: RE: Additional Rail Info from Roger Wright, POB Port Engineer 1/30/24 11:28 am PORT OF BENTON MAIN tk SM mp 18.74-29.73 RP rev final.pdf; Holland Geometry Car Summary; Oct 11, 2023

CANT Findings: The data from the October 11, 2023 Geometry Car inspection report indicates a significant variation in roll as a train traverses northward towards the Richland customer base. While unfavorable tie conditions are prevalent throughout the rail infrastructure, the cant (roll) is the most subdued over the section of track that has been upgraded to 136 lb rail and north of the wye headed to Horn Rapids Road. The inherent strength of the stronger rail clearly is helping to reduce a portion of the cant variation. On the upper end of the POB's track, conditions are much drier given an elevated roadbed which aids with water runoff and reduced mud buildup. Starting with the shift to 90 lb. rail near Duportail Street combined with the highest concentration of defective and marginal / fair ties, further helps to support the anecdotal Van Giesen is the worst area of all per Class 1's operations feedback of the train consist shifting side to side while traversing the mainline track.

Recall the following definition for Cant:

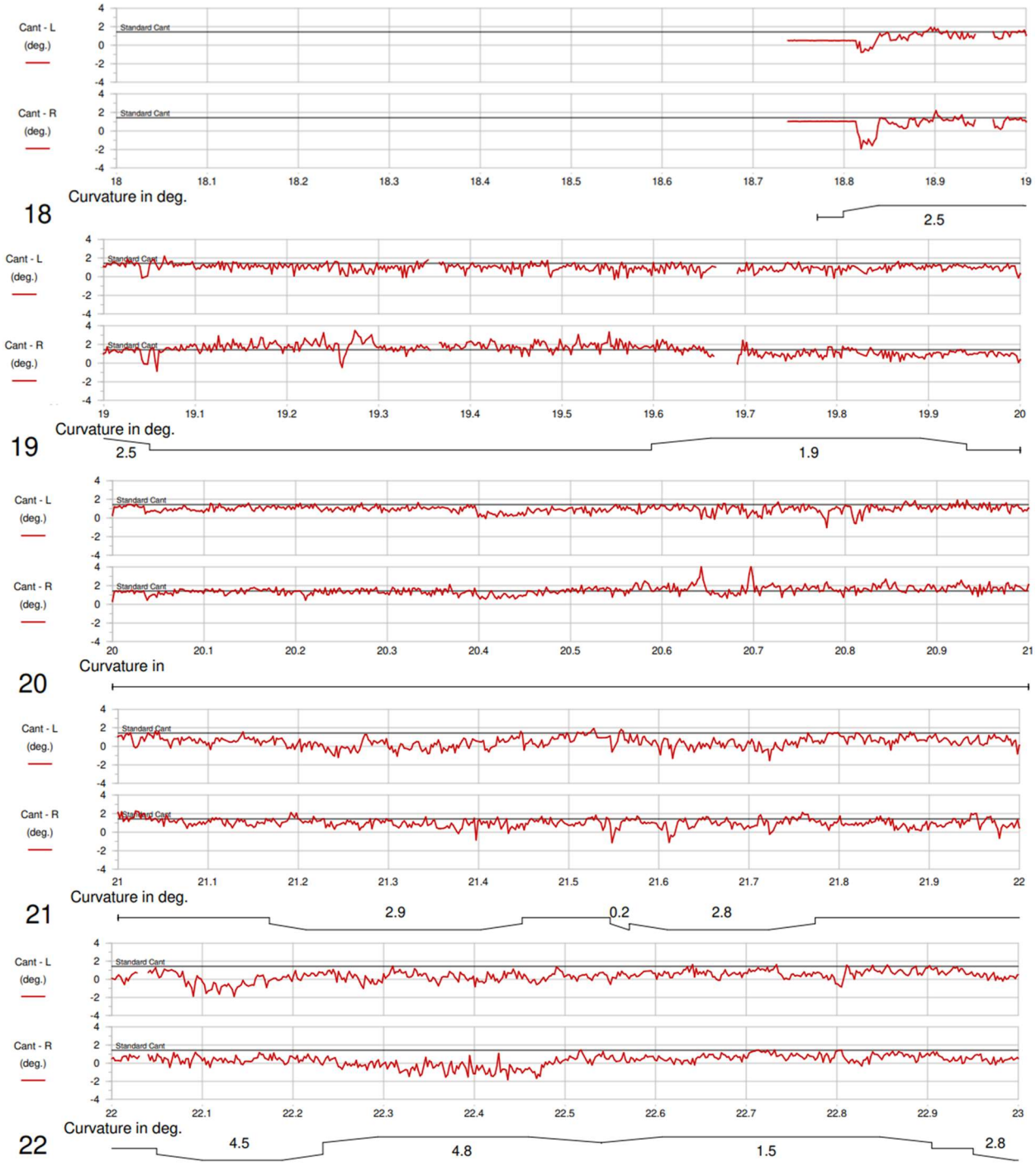


Rail Cant is the measure of tilt (roll) in rail. Keeps point of wheel contact centered on rail head

Cant exceptions have been identified as a probable cause of rail rollover and gauge widening derailments.

Exhibit D.21

** https://www.rtands.com/track-construction/track-structure/assessing-the-effects-of-operating-regimes-on-track/



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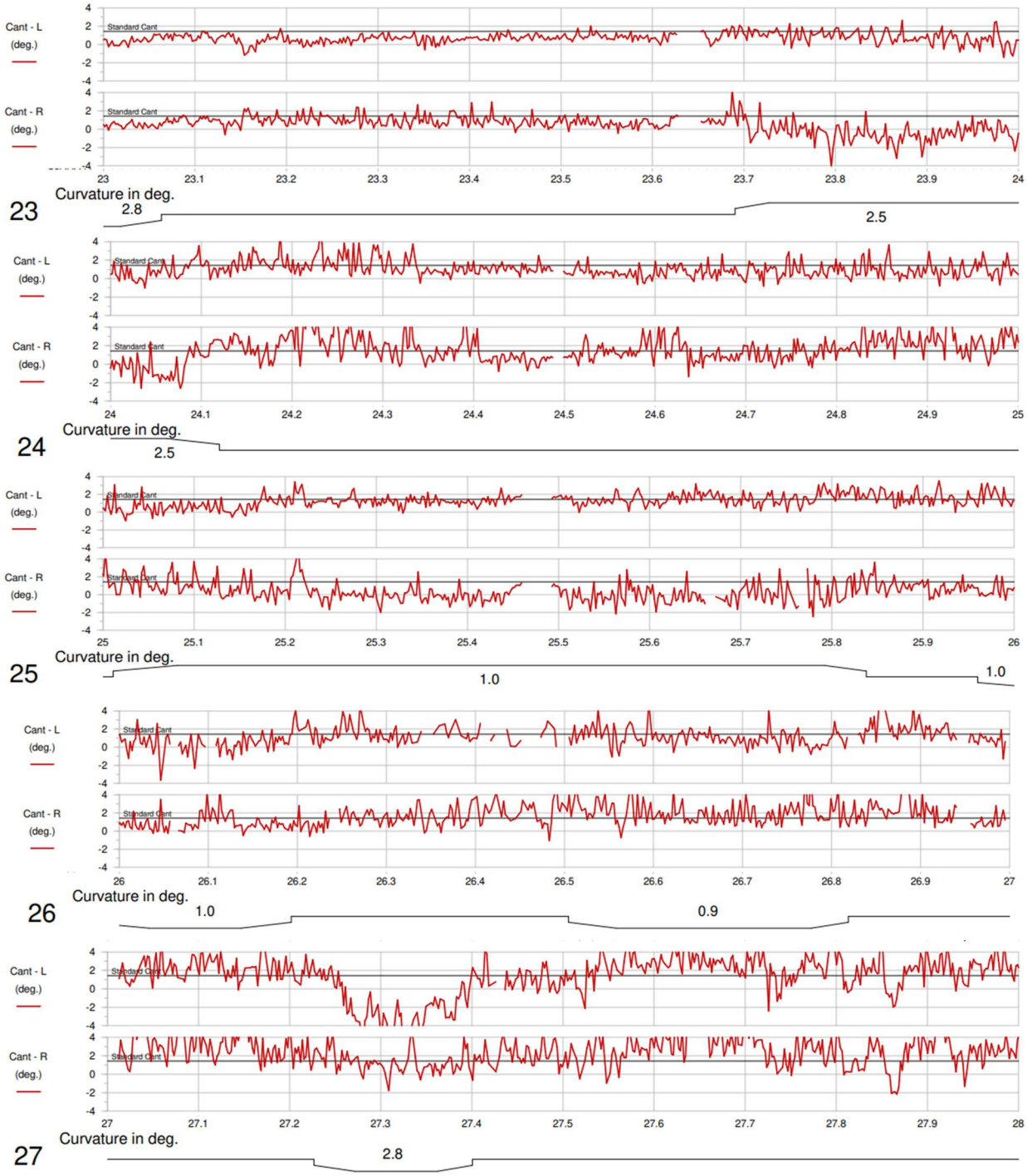

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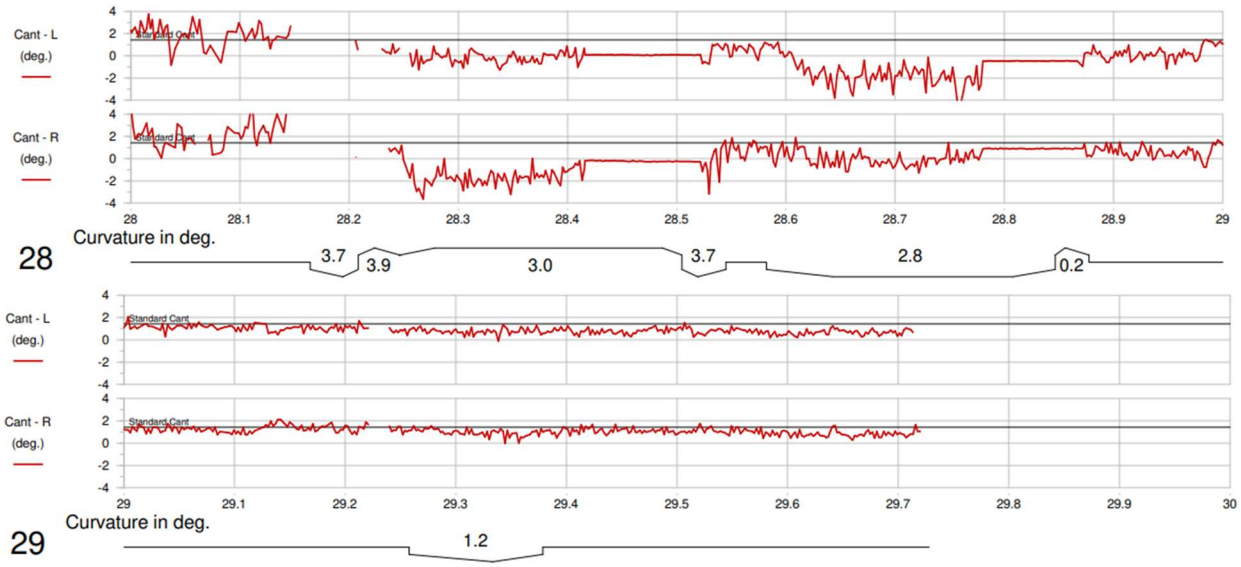


** Email: RE: Additional Rail Info from Roger Wright, POB Port Engineer 1/30/24 11:28 am PORT OF BENTON MAIN tk SM mp 18.74-29.73 RP rev final.pdf; Holland Geometry Car Summary; Oct 11, 2023

Rail Weight Increases Over Time

Exhibit D.22 depicts locations of heavier rail installation resulting from road crossing capital improvement projects between September 25, 2018 and October 11, 2023.

Findings: The data indicates that over the last five years, four crossings have seen the pre-existing 115 lb. rail be replaced with a much stronger 136 lb rail. Additionally, 1.48 miles of 115 lb. rail has been replaced with 136 lb. rail between MP 19.71 and MP 20.19.

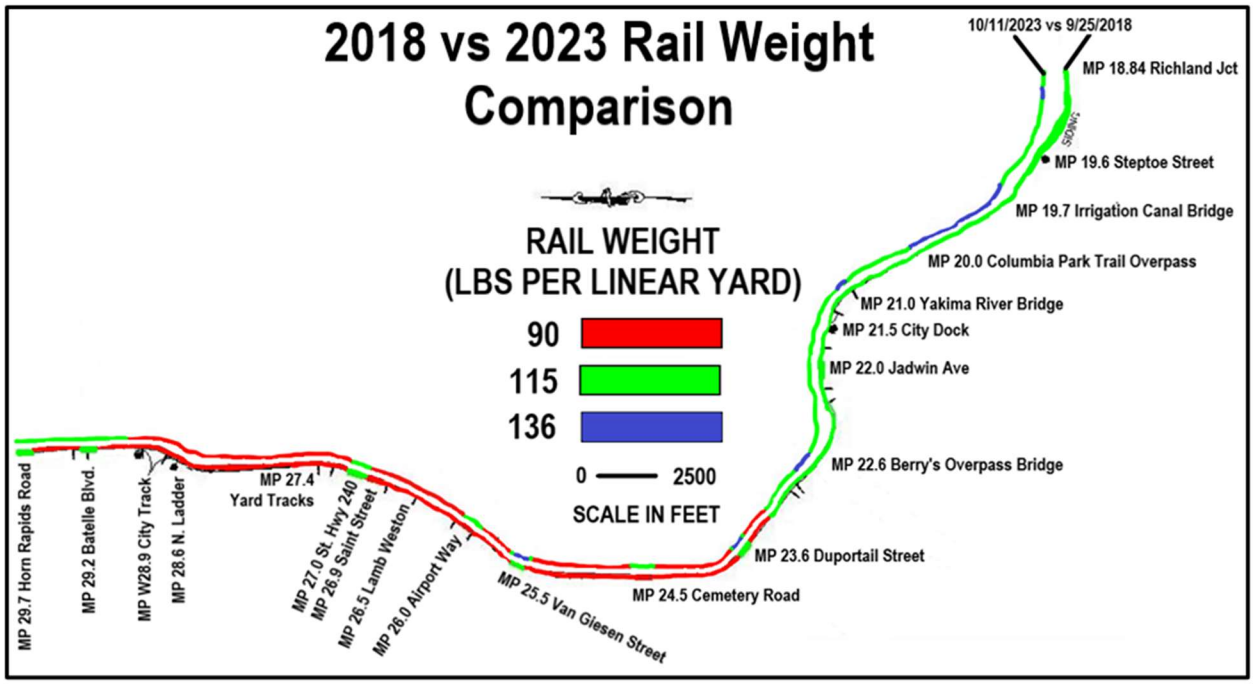


Exhibit D.22

Exhibit D.22 compiled from the following two sources:

** Email: RE: Additional Rail Info from Roger Wright, POB Port Engineer 1/30/24 11:28 am PORT OF BENTON MAIN tk SM mp 18.74-29.73 RP rev final.pdf; Holland Geometry Car Summary; Oct 11, 2023

And

RailMasterPlan-TangentFinal prepared by Tangent Services, Inc January 2017, page 91

E. Discussions with current rail customers to determine their needs and desires concerning rail shipping.

a. POB's Customer Base

Historical records indicate as many as fifteen customers have been rail served in the past, however Richlands' current list of customers is down to seven.

	Rail Customers	Active / Inactive	Shipping Location	Inbound Commodity(s)
Port of Benton Track	Lamb Weston	Active	Saint Street (Richland Airport)	oil for food processing
	Lineage Logistics (little Lineage next to Lamb)	Active	Saint Street (Richland Airport)	Frozen potatoes / fries
	BioGro	Active	Richland Yard	Natural fertilizer
	Energy NW	Non-active	North of Port track	Parts and equipment
City-owned Horn Rapids Industrial Park	10 N. Washington Ave LLC (10NWA)	Non-active	TCRY mini loop	Dairy Feeds, Other grains
	Perma-Fix Environmental Services	Non-active	Battelle Boulevard, have to run on City track and then onto TCRY private track to get to Perma-Fix	Haven't shipped in or out for a few years.
	Lineage Logistics	Active	Polar Way on City track	Frozen potatoes / fries
	Port of Benton Refrigerated Intermodal Transload Facility	Non-active	POB	Not currently being used
	DelHur Industries	Active	Kingsgate	FlyAsh, Bentonite, DEF
	Central Washington Corn Processors	Active	Rail Loop, Logston Blvd	Dairy Feeds, ~6-8,000 cars per year, 60 Unit Trains and occassional manifest trains
	Certified DEF	Non-active	DelHur Spur	Diesel Exhaust Fluid - 30 cars per year
	SI Steel	Non-active	Kingsgate, north of City track	No shipments yet on new spur
	Packaging Corporation of America	Active	West of Kingsgate	Rolls of paper, ~6-8 cars per week
	ATI Richland	Non-active	West of Kingsgate	Existing spur, but haven't used it for years.
	Wheco	Non-active	2989 Kingsgate Way	spur to their parcel, but haven't had a shipment in years

Exhibit E.1

**Recreated from data provided by Roger Wright, POB Port Engineer Email RE: Next Steps on 1/25/2024 9:07 am; POB Rail Users Jan 2024.xlsx.

Orig STN	Dest STN
RICHLAND, WA	AIRPARK, TN
	ARMYARD, MO
	ATLANTA, GA
	BATAVIA, IL
	BETTENDOR, IA
	BIRAEI, AL
	CANCITJCT, CO
	CHGLINST, IL
	CHIBRCAEI, IL
	COUTTS, AB
	ELPASNAEI, TX
	FRARIVJCT, BC
	FTWORTH, TX
	GRAFTON, ND
	MPLS, MN
	ROCHELLE, IL
	SANANTONI, TX
	STRAEI, IL
	WOLSEY, SD

Orig STN	Dest STN
AMTLINPAS, NE	RICHLAND, WA
AMTVANPAS, WA	
BIRAEI, AL	
CANCITJCT, CO	
CHGLINST, IL	
COUTTS, AB	
CRESTON, IA	
FERFALLS, MN	
FRARIVJCT, BC	
FTWORTH, TX	
HURON, SD	
LYONS, KS	
MINA, SD	
MINCPAEI, ND	
MINNEQUA, CO	
MPLS, MN	
NOYES, MN	
REDFIELD, SD	
RICJCT, WA	
SEAKINSTR, WA	
STRAEI, IL	
WARDEN, WA	
WARSPUR, TX	
WATERTOWN, SD	

Exhibit E.2

**Customer Origin Destination Table data downloaded from PC Miler v21.0. Some (not all) common origins / destinations for POB customer freight include:

Appendix Section A.1. contains customer facility information, operating practices, and historic volume levels.

b. Schedule of Customer Site Visit Assessments February 18 - February 22, 2024 Onsite Visit

City Loading Dock: no interview, not in use. Interview responses provided on behalf of facility by Frank Alejandro of Lineage Cold Storage on Polar Way, and Morie Ratuiste of Lamb Weston.
Lamb Weston Interview: 2/20/24 1:30 PM with Morie Ratuiste, Plant Engineer
Little Lineage Interview: No onsite interview was conducted. High level information provided by Frank Alejandro of Lineage Cold Storage on Polar Way and Morie Ratuite at Lamb Weston.
CWCP Interview: 2/21/24 11:00 AM (Zoom) with Chad Walters Co-Owner Commodities Plus and Dennis Kyllo President at Commodities Plus
Big Lineage Interview: 2/22/24 10:00 AM with Frank Alejandro Manager of Operations
Delhur Interview: No onsite interview was conducted.
PCA Interview: No onsite interview was conducted.Heber nor Troy responded to multiple invitations.
BioGro Interview: No onsite interview was conducted.

c. Customer Interview Questions

Are you served by both Class I's?
Spot on Arrival or Order In?
Call, fax, customer portal w/changes?

Lead time roads require for work order updates.
BNSF spot pull performance
UP spot pull performance
Concerns with UP's recent crew change directive.
Class I communications? Not coming, WND (Work Not Done), Unit trains ETA (Estimated Time of Arrival), Other??
Car flow in vs car flow out?
Feedback, concerns, other
Current volumes vs future growth potential? Ideas, plans, concerns, needs, etc.???

d. Responses Regarding Rail Operation Performance

Feedback from Columbia Rail and POB team regarding adherence to schedule and unit trains is summarized as follows:

- Sunday nights are somewhat consistent for spotting / pulling of customer cars by Union Pacific. Tuesday and Thursday are much more variable with Union Pacific not always servicing POB customers.
- BNSF is very consistent with spotting / pulling of POB customer cars on all five days of scheduled service.
- Despite the relatively low volume of total traffic, frequently the cars spotted on jointly served customer facilities, tend to be in the way of each other resulting in:
    - BNSF Railway physically switching Union Pacific cars out of the way pretty frequently since UP days of service change.
    - Lineage Cold Storage utilize their own track mobile (railcar switching machine) to physically switch cars out of the way
    - Columbia Rail has assisted with switching cars out of the way for multiple customers.
- Both Class I's are inconsistent with arrivals of unit cattle feed trains for CWCP.
- BNSF Railway comprises the majority of inbound unit cattle feed trains with systemic bunching of traffic, e.g. three unit train arrivals within four or five days, and then two weeks with no arrivals.

LambWeston®
SEEING POSSIBILITIES IN POTATOES

Railroad Concerns:

1) Despite being an Order In rail customer whereby providing spotting instructions to the Class I's, historic issues with tank cars being incorrectly spotted have plagued the facility. To address these car spotting problems driven by inbound commodity differences, Lamb Weston has assigned an operator to monitor the entire time rail cars are being switched to ensure work is being done correctly by the Class I crews.

Exhibit E.3

** Ground photo taken by Jeffrey Guelker during Port of Benton onsite visit February 19, 2024 through February 22, 2024.

2) No shows and / or variability in days of service are causing delays and processing issues at Lamb Weston. When one of the Class I's does not show up to pull / switch their cars, no less than three of the following actions occur:
   - The no show Class I's railcars (both empty Lamb Weston Tank Cars and loaded Little Lineage Refrigerated box cars) are now in the way preventing the other Class I from being able to perform their work.
     a. Class I on site will switch no show Class I's cars out of the way, after Lamb Weston(Morie) contacts no show Class I's trainmaster for permission for other carrier to switch cars. This increases switch time and results in extra cars left out on the industry lead or transported to another spot location for temporary storage.
   - Any extra "stored cars" from the no show Class I's are now out of rotation versus facility planning.
   - Class I that arrives with rail cars to spot, now has more cars than the facility can accommodate i.e. no room for them.
   - Lamb Weston resorts to potentially having frying oil delivered by truck to keep the plant processing until the next time the no show Class I arrives.
   - Oil life's quality is about three weeks which becomes problematic when any combination of the following occur:
     a. roducer producation and shipping delays,
     b. transportation delays,
     c. out of order rotation,
     d. tank cars' oil queue'd to unload because local truck(s) were slotted in to keep the facility producing.
3) Since the Union Pacific's crew size change, UP's serving job tends to arrive about - 2.5 hours later at night than when was a three man crew.
4) Cited a couple of derailments that have occurred in the past caused significant disruption to processing.

Railroad Concerns:

1) Inconsistency of service. Facility will go days without a unit train and then multiple trains back to back. Unit trains (different commodities) arrive out of order vs what planned / discussed / communicated.
2) Experiencing issues with cotton seed unloading. Arrived as a full unit train but requires several days to unload.
   - Prior to arrival CWCP and POB worked with Class I to switch the unit train into smaller cuts of cars stored in POB Yard tracks. Columbia Rail to spot cuts of cars to CWCP as instructed.
   - UP refuses to pull cars and makeup a unit train on POB yard tracks.
   - Despite communication with BNSF, the CDI table for CWCP in BNSF's TSS Operating System, has not been updated to reflect POB's yard track numbers, so cars are currently in LOST status with BNSF Customer Support actively trying to locate.
   - Causing issues with demurrage.
3) Both Class I's performance relative to their release to train depart metric is poor. Trains are being unloaded to agreement but then the empties sit for extended periods of time waiting for an outbound crew to arrive to depart the train. During the handful of occurrences when there was an unloading delay, BNSF was quick to begin assessing demurrage immediately.

Lineage Cold Storage
2800 Polar Way

Railroad Concerns:

1) Having issues with UP supplied cars.
   - Reefer units are often low on fuel.
   - Ceiling panels hanging down or fallen off laying on the floor.
   - Not clean from prior product hauled.
2) Lineage Facility has been informed by Union Pacific:
   - they are responsible for inspecting refrigerated box cars and
   - to call Justin, Union Pacific's Superintendent of Terminal Operations with any issues.
   - Justin wants to conduct a pilot here addressing car rejection improvement processes.
     - Lineage is already sending Union Pacific a report regarding rejects and reasons for.
     - Over the last couple of months have rejected 59 Union Pacific spotted cars.
       - Five of those cars were respotted on 2/18/24 and were in the exact same condition as when rejected prior.
       - Wish we could just use Lineage's own CRYX fleet cars – "Lineage's assets" which are in good shape.
3) Will place an order for 18 empties only to find 6 have been dropped off at their sister facility at E Bowles Rd Kennewick location.
4) UP's reduced days of service is an issue. Not only because of the reduction of empty cars for loading, but also because UP spotted empties or loads waiting to be pulled are in the way. BNSF crews must switch the UP cars out of the way most days. Load 7 days a week. Still getting hit with demurrage by UP. Not experiencing demurrage issues with BNSF.

5) Lineage has 1 track mobile, usually have two. If Lineage's track mobiles were in better shape, would take over more of their own switching just to limit delays caused by Union Pacific service, especially now with recent 2 man crew change decision
6) Union Pacific's service is erratic with little to no consistency. UP shows up all hours of the night if they show up at all. As an example for comparison,
   - UP was supposed to spot 18 cars on Sunday night (2/18/24). UP spotted zero.
   - BNSF was supposed to spot 28 on Monday morning (2/19/24). BNSF spotted all 28.
7) No BNSF issues at this time.
8) At one point business with Class I's was a 50/50 split. Continuing service issues with Union Pacific has resulted in more and more business moving to BNSF as the sole service provider. Would / should reject more Union Pacific spotted railcars if could.

e. Customer Growth Outlook and Barriers

Lamb Weston
SEEING POSSIBILITIES IN POTATOES

Due to spotting inconsistencies by Class I Railroads, one primarily, Lamb Weston contracts with local oil companies as a backup to ensure a sufficient supply safety stock of raw material inventory is onhand. Truck deliveries range between nine and twelve loads a week. Trucking oil is more expensive, and more difficult to unload. But they have no choice, to ensure the plant does not run out of oil. The plant operates 20 hours a day, 365 days a year.

It takes approximately three trucks to deliver the equivalent volume of oil as a single tank car. Tank cars hold about 80K pounds of product each.

Growth potential

There is substantial opportunity for future growth at Richland's Lamb Weston plant whether it be the result of consumer demand, intra-company production moves, or both. Lamb Weston would welcome the opportunity to discuss with Port representatives the options regarding current ownership, leasing or a possible easement; in order to add additional storage track and or unloading capability at the facility. On site storage capacity could be as much as 8 to 12 cars:

- allowing
  - the facility to grow as it is nearing max capacity
  - additional room for car switching
- reducing
  - the need for trucking oil when onsite volumes are low,
  - demurrage costs by spotting cars on site vs being held at Class I's yards,

Exhibit E.4

** Ground photos taken by Jeffrey Guelker during Port of Benton onsite visit February 19, 2024 through February 22, 2024.
** Aerial photos sourced from Google Maps.

Growth potential
Given the number of facilities located in the PNW that require meal products for animal feed there is tremendous opportunity for growth at Richland's CWCP's site. The opportunity to capitalize on this growth potential rests heavily with the Class I's ability to deliver trains vs CWCP's capability to unload trains in a timely manner.

Additional Potential: Post onsite visit (3/18/24), Roger Wright informed JCG Consulting that additional discussions are underway regarding the build out (completion) of the second loop track at CWCP's Richland facility.

Exhibit E.5

** Aerial photos sourced from Google Maps.

Lineage Cold Storage

Growth potential
Facility is operating at 90%, so it is time to begin considering expansion. Facility losing efficiency because harder to maintain oldest date first product rotation. Facility runs optimally at 85% of capacity.
This specific cold storage at 93% serving Lamb Weston, Simplot, and Chick Fil A direct.

With expansion (includes building and dock construction on south side), Lineage can potentially achieve 250 pallets per hour delivered from storage rack to dock for loading. Existing fence is curved to facilitate this expansion.

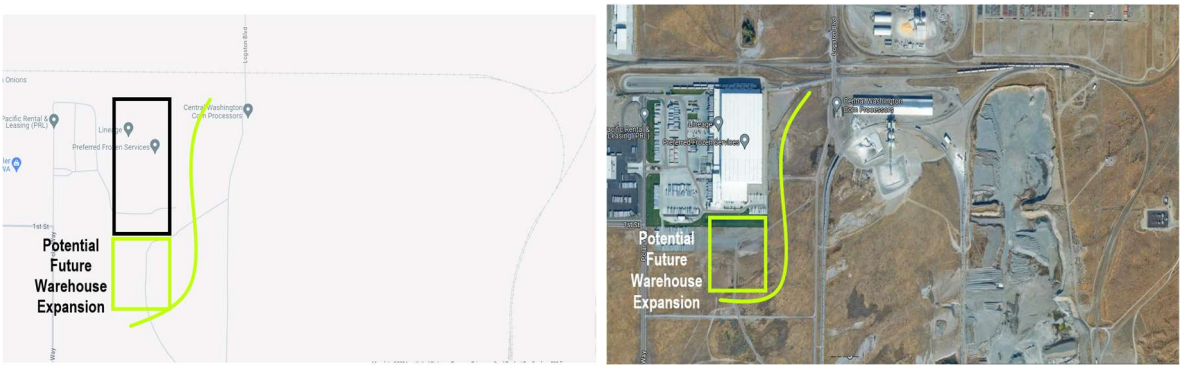


Exhibit E.6

** Aerial photos sourced from Google Maps.

Potential POB Intermodal shipping facility would be of tremendous support to Lineage. Currently moving 60 – 70 containers each night, with trucks making round trips daily.

The Richland site offers a railroad siding of 1,100 feet of track that is available for public lease for unloading and transloading bulk materials. Expansion plans for the railroad siding include adding 1,000 feet of track to our existing spur enabling us to accommodate more cars and allowing us to offer multiple unloading/transloading options and conveyances. Future site development will include the construction of an office building, construction of an equipment maintenance shop, and the site will have a fully enclosed fenced secure laydown area and material storage options for outside contractor use or public lease.

** DelHur growth potential sourced from www.Delhur.com

F. Discussions with the Class I railroads to determine their needs and requirements for any car or tonnage charges.

a. Local Railroad Operation Discussions

The purpose behind the Southern Connection – POB Industrial Rail Spur Maintenance Cost Study was discussed with both BNSF and Union Pacific trainmasters during the on-site visit.

Both parties understood the basis for why the assessment was being conducted. However, neither were in a position of authority to make any decisions or agree to any changes.

b. Railroad Division Operations, Joint Facilities, and Service Design Discussions

Next step discussions must be held with Joint Facilities, Division Operations and Service Design Interchange Team(s) from both Class I Railroads. During our internal close out meeting held on 2/21/24, the Port listed this action item as one of the next steps that needs to occur.

Per feedback on 3/29/24, this item is considered complete for purposes of this Maintenance Fee Study with next steps to be led by the Port of Benton.

** Email: RE: Quick Update and Questions 3/29 9:06 am by Roger Wright.

G. Meeting with Port of Benton staff on the rail needs and future planning.

a. Future Site Visit Tour Considerations

A few points for consideration as discussions progress with Atlas Grow regarding new facility buildout north of Horn Rapids Road. Exhibits G.1 and G.2 have been numerically labeled to assist with bulleted list of items for consideration.

#1. The addition of a siding to serve as a runaround track will at a minimum provide the required escape route for the crew and locomotive to access the rear of the train for spotting the facility. No crew will want to shove this train back from Richland Yard or further. It will also provide additional capacity with inbound volume in case of train bunching with back to back arrivals.
#2. If a full siding can't be built, a locomotive pocket track of some type will be crucial to allow for power (locomotive) removal, staging, and / or repositioning.
#3. Unless a partial loop on the west end of the facility is planned for, some type of wye track will be needed for the power to escape.
#4. Based upon overall facility dimensions, consideration need to be given to not only curvature, but what could be a rapid decline into a curve when spotting a unit train.
#5. If a partial loop track is being considered for the west end of the facility, consideration needs to be given not only to multiple alternating track curves but also to having the lead end of the train advancing up an inclined curve while the mid-section of the train is traversing a 180 and the rear end of the train is advancing from one curve into another curve with a descending grade.
#6. Essentially the same as #4 heading the opposite direction.
#7. As stated in prior considerations, this is quite a descent over a short distance.
#8, 39, & #10. This could be considerable incline with a tight curve headed back southbound that may require additional thought / other options based upon positioning.

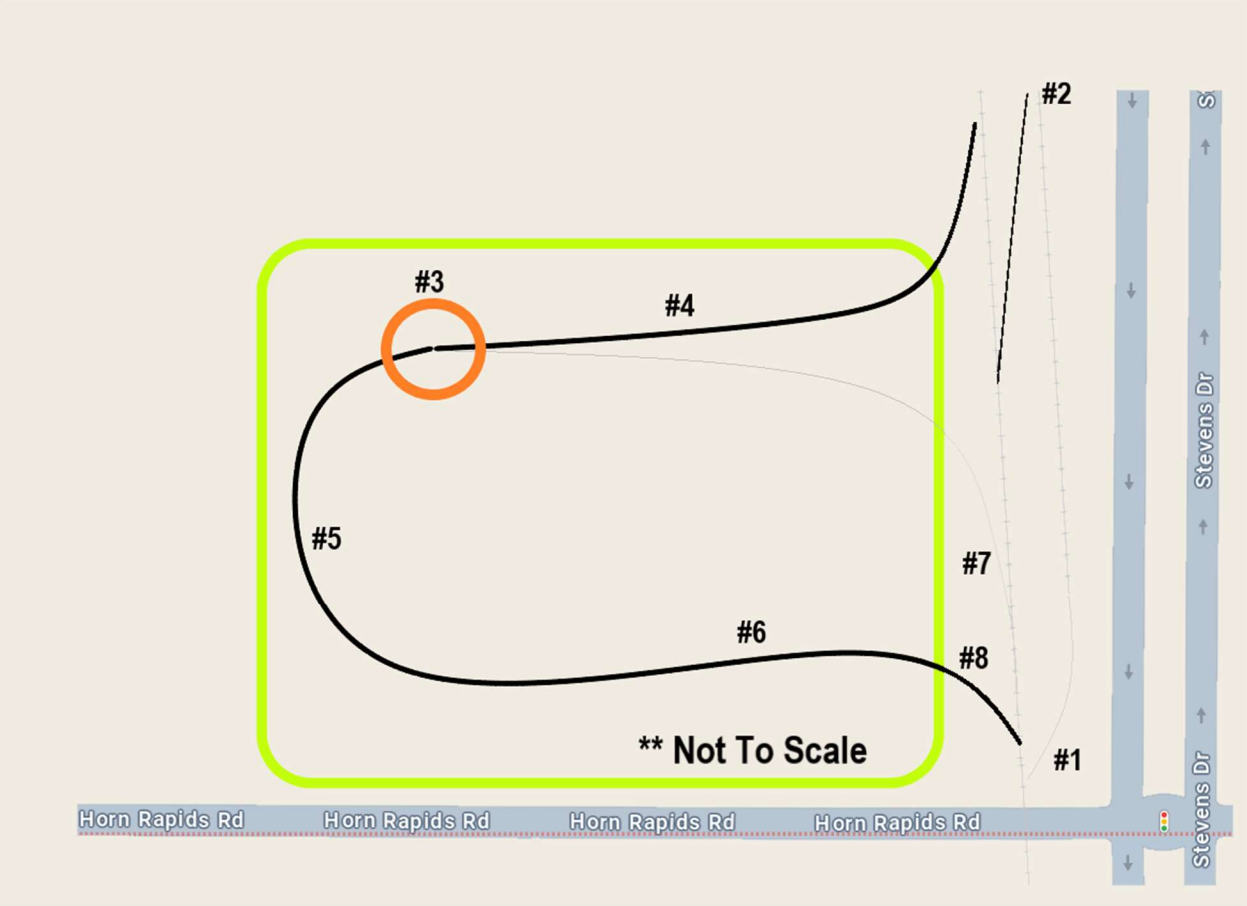


Exhibit G.1

** Aerial photo sourced from Google Maps.

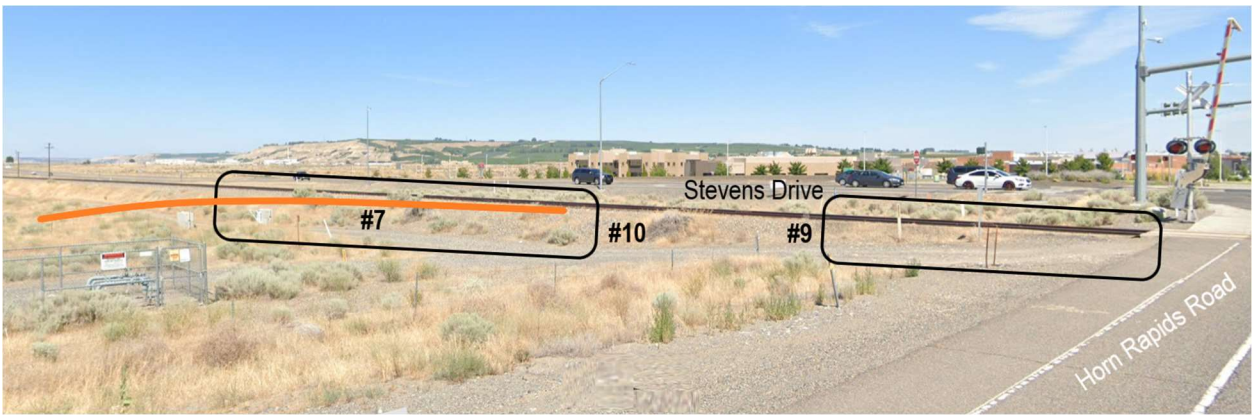


Exhibit G.2

** Aerial photo sourced from Google Maps.

b. Greenfield Discussion Challenge

Exhibit G.3 below was discussed during the onsite visit. While there is ample capacity for new development west of Horn Rapids Road and north of Atlas Grow, there are some challenges with sand being the ground structure and what that will entail for rail development as well as facility development. A point of discovery while performing research for this study is that sand has been successfully used as a ballast material for steel ties. This fact could prove useful in upcoming construction conversations.

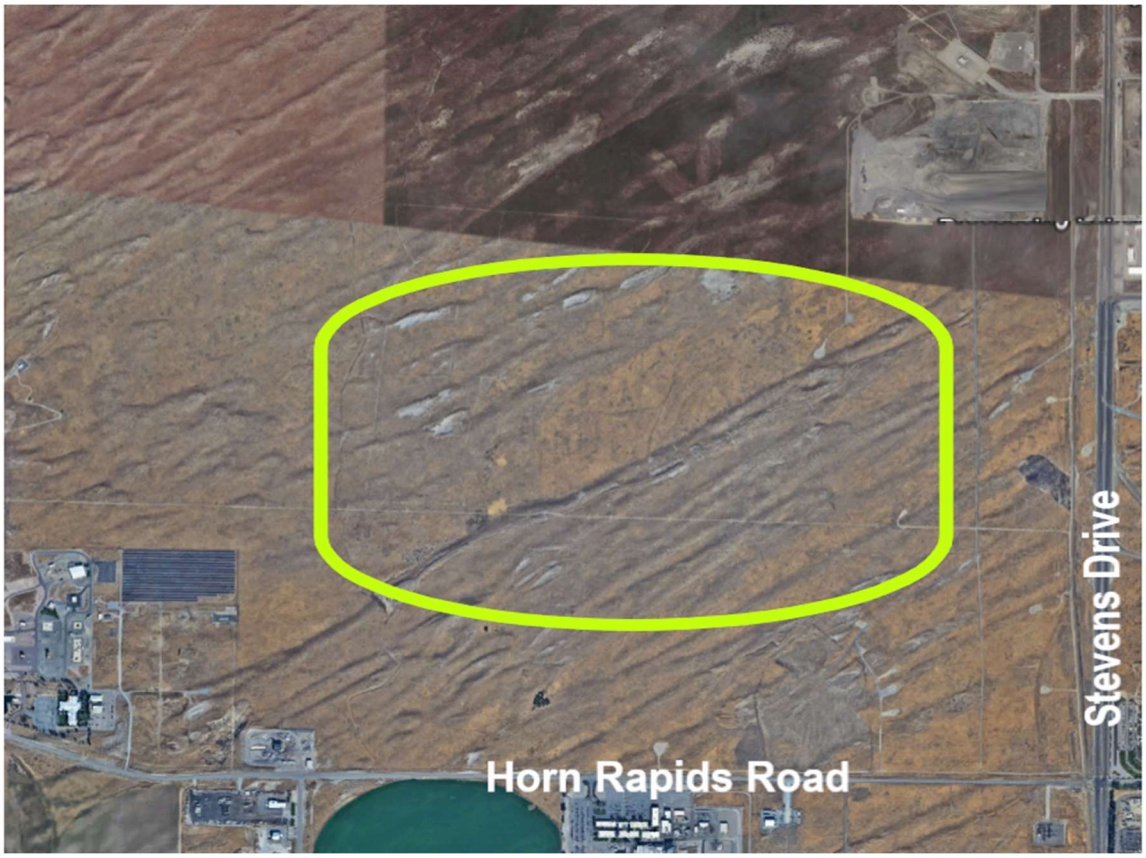


Exhibit G.3

** Aerial photo sourced from Google Maps.

c. Port Commissioners Meeting

Postponed until May due to recent events at POB.

H. Preparation of a report documenting the findings.

a. Need for Preventative Maintenance (PM)

Given the opportunity for a mechanical breakdown or component failure to occur at any time in an operating system in general, it is a widely accepted premise that preventative maintenance can dramatically reduce the cost of, if not completely prevent an outage altogether. There exists considerable published research demonstrating the strong correlation between increases in preventative maintenance equating to a decrease in mechanical failures.

Why do we draw this conclusion? In simplistic terms it is because you identify the problem before it gets really bad! Failing components are repaired or replaced prior to catastrophic failure. While the operating system spends funds up front (early) prior to component failure, the operating system prevents the added costs of downtime, overtime, damage, penalties, etc. if the operating system was allowed to continue to operate to the actual point of catastrophic failure and complete shutdown.

The current state of the POB's track infrastructure is the poster child supporting this concept. The track under assessment without question shows how the lack of a scheduled maintenance program will negatively impact an operating system.

Reference Appendix A.6. for internet articles transcribed supporting the above statements.

So why focus so heavily on ties? Given the lifespan of all the different components of track infrastructure, wooden railroad ties typically fail first.

An excerpt copied from the Army Track Standards Playbook highlights what the current rail inspection report measurement data describes regarding Richland, WA.

"The functions of a tie are to:

- Maintain gage.
- Maintain surface.
- Maintain alinement.
- Distribute the load from the rail to the ballast and subgrade.

The inability of a tie to adequately perform any of the above functions constitutes of defective tie."
** https://www.wbdg.org/FFC/ARMYCOE/COETM/ARCHIVES/tm_5_628.pdf, Railroad Track Standards, Department of the Army and Air Force, page 19; April 1991

b. POB Preventative Maintenance Program Considerations

Based upon observations made, measurement data, research studies, and interviews, it is evident that the POB's rail infrastructure is in a state of considerable disrepair. Any type of implemented rail maintenance program will show "some" improvement over the POB's status quo infrastructure. However, to fully recognize all the potential value that can come from the cost incurred, a handful of thoughts presented in Dave Kesic's article below must be considered.

A successful PM program requires:

- Tagging assets with durable labels
- Scheduling regular inspections (including removing vegetation and proactively searching for drainage issues)
- Tracking all maintenance data digitally.

** https://www.mpofcinci.com/blog/railway-maintenance-best-practices/#:~:text=A%20typical%20track%20lasts%2020,also%20affect%20the%20track's%20longevity; 3 Railway Maintenance Best Practices; Posted by Dave Kesic; Updated January 10th, 2024

Referencing Dave Kesic's criteria above, the proposed preventative maintenance program's initial success defined by a faster and more efficient implementation will be highly dependent on a considerable amount of knowledge that is held by a single member of the POB team. The history of repairs made must be transferred to a data repository, asset tagging process, or other method.

If the history is not transferred, the proposed preventative maintenance program will still be effective but not reach maximum potential as future leaders of the program will face an uphill battle trying to assess all the background decisions regarding what has been done to date, when, and why.

- The presence of tie end plates and tie rot will assist in pointing future program leaders in the right direction, but knowing the exact vs assumed age of infrastructure components for planning purposes will be less than optimal.

Preventative maintenance begins and ends with quality upfront planning. In order for the POB to reap many of the benefits of a preventative maintenance program, it is critical that certain planning steps occur for full realization. The “sooner that component tracking information” can be captured (documented); and the “faster that ties can be replaced” ***will both increase tie life expectancy and associated reduced costs in the future.***

(Exhibit H.1) Have you ever sat at a railroad crossing and watched a train move by in front of you? As the train progressed forward the ties and rail underneath the wheels moved down and then up after the wheel moved on.

Exhibit H.1

** Photos copied from https://www.youtube.com/watch?v=A8uOeADkHY8 by Andrew Esquivel, Jul 23, 2017

Due to the heavy weight resting on each truck (set of wheels), there is a large downward force (Exhibit H.2 and H3) that presses the railroad tie into the ballast for cushioning analogous to a spring. Once the force has been removed, the trucks suspension retracts returning the wheels to their original position.

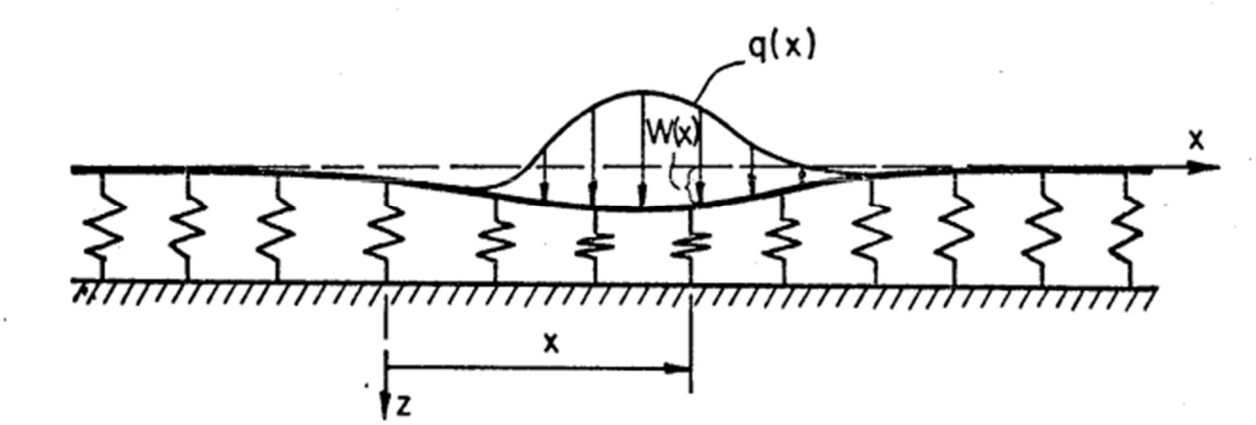


Exhibit H.2

**https://railroads.dot.gov/sites/fra.dot.gov/files/fra_net/14634/On%20The%20Stress%20Analysis%20of%20Rails%20and%20Ties%20Sept%201976.pdf; ON THE STRESS ANALYSIS OF RAILS AND TIES conducted by Arnold D. Kerr – FRA Paper.pdf, page 14 and 33, Princeton University Department of Civil Engineering, Princeton, NJ 08540 September 1976 Interim Report

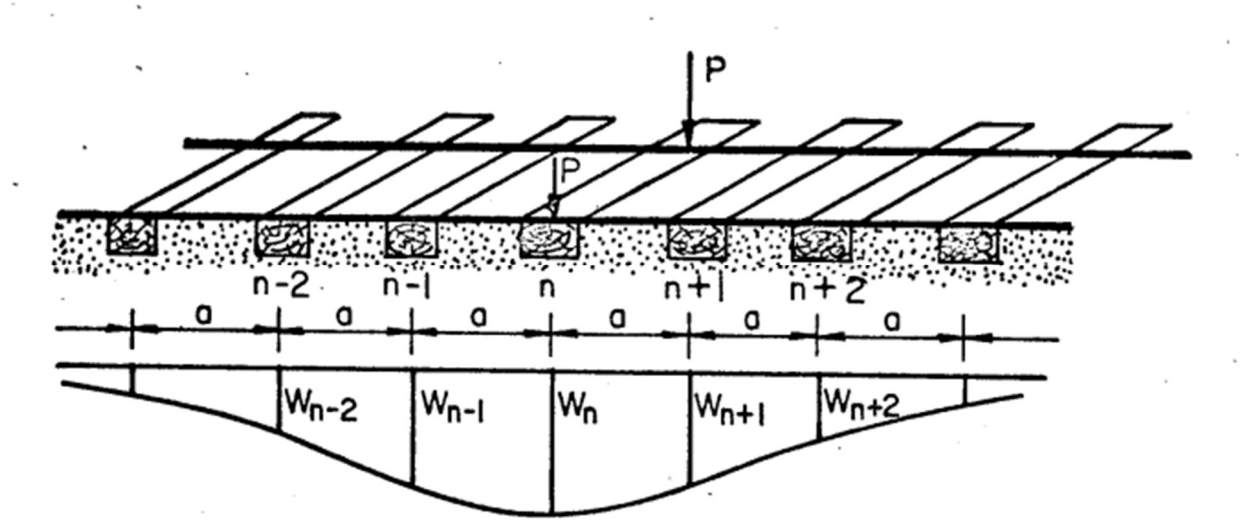


Exhibit H.3

In a similar fashion, weight (vertical downward force) is also spread longitudinally across the tie as depicted in Exhibit H.4.

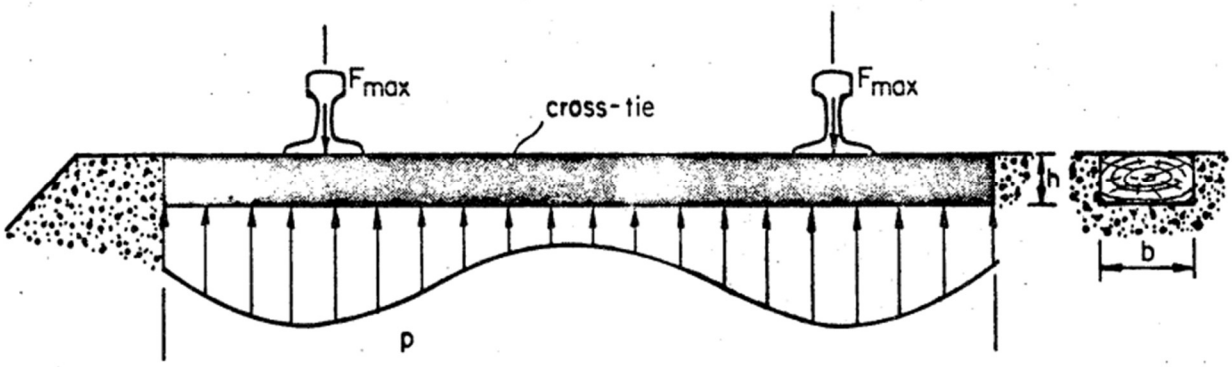


Exhibit H.4

**https://railroads.dot.gov/sites/fra.dot.gov/files/fra_net/14634/On%20The%20Stress%20Analysis%20of%20Rails%20and%20Ties%20Sept%201976.pdf; ON THE STRESS ANALYSIS OF RAILS AND TIES conducted by Arnold D. Kerr – FRA Paper.pdf, page 29, Princeton University Department of Civil Engineering, Princeton, NJ 08540 September 1976 Interim Report

The extent to which the above mentioned forces are distributed equitably depends on several factors.

The first of these factors is related to tie spacing or the distance between railroad ties. The impact of tie placement dramatically impacts the load (weight) distribution of the locomotive or railcar passing above. The desired state is that all ties are evenly spaced. Exhibit H.5 charts the load distribution vs tie spacing difference.

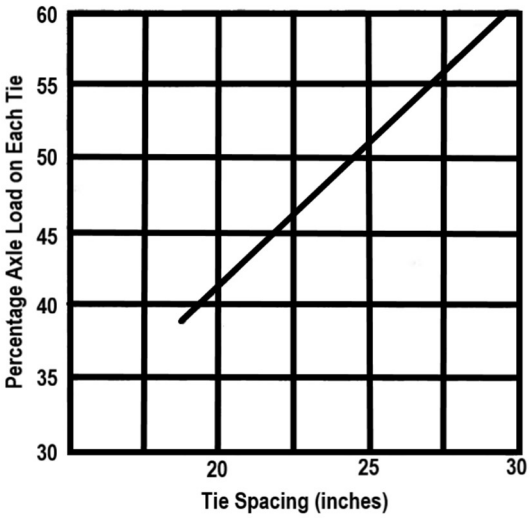


Figure 4-1: Tie load distribution versus tie spacing. Generalized distribution of 132 lb. rail.

Exhibit H.5

** Exhibit H.5 reproduced from An Engineering Perspective, RTA Zeta-Tech and Associates, page 35

From the exhibit it is clear that for every additional inch in tie spacing there is a corresponding 2% increase in axle load on the tie vertical underneath the truck.

The FRA does not explicitly state tie spacing requirements other than a spacing requirement at the end of each rail joint. Industry knowledge typically recommends 19.5 inches.

§ 213.109 **Crossties.** (e) Class 1 and 2 track shall have one crosstie whose centerline is within 24 inches of each rail joint (end) location.

** www.fra.gov; § 213.109

The second factor is relative to the effectiveness of adjacent ties to support the weight distribution of the passing truck (railcar wheel assembly). Two studies are referenced below. In a study published by Zeta-Tech and Associates titled an Engineering Perspective, the following conclusion resulted from their study.

“one wheel load is distributed over more than seven ties in the case of a conventional track structure.”

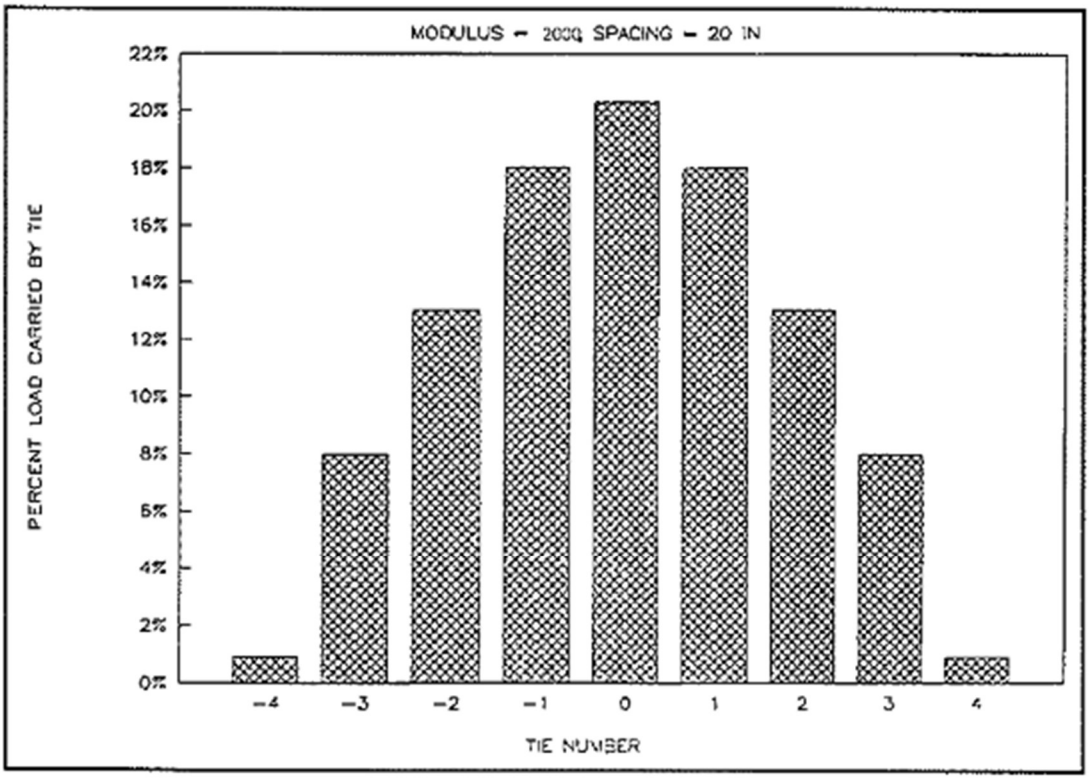


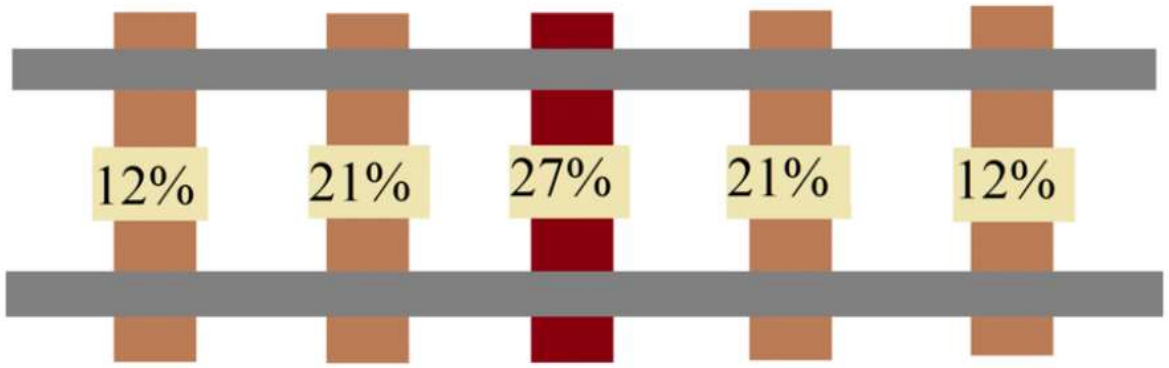
Figure 2 — Distribution of vertical wheel loads.

Exhibit H.6

**https://www.rta.org/assets/docs/ComprehensiveRail/sec5/vertical%20wheel%20loads%20%20the%20distribution%20.pdf; Vertical Wheel Loads: The Distribution of Cross-Ties, page 69

Additionally, an ongoing study titled, Effect of Adjacent Poor Ties on Wood Crosstie Life at the University of Delaware by Dr. Allan M Zarembski, and Kenza Soufiane (Graduate Student) verifies and provides even more detailed information regarding distribution.

As the wheels (truck) of a locomotive or railcar move along the rail, a considerable downward force (gravity) is placed upon the rails which is transmitted to the ties, and then transmitted to the track bed. The force extends beyond that of just the single railroad tie under the wheel and is distributed outward to adjacent ties. Exhibit H.7 shows the estimated distribution of force in a well working system.



Percent of load carried by each adjacent tie (Zarembski et al. 2020)

Exhibit H.7

** https:// researchgate.net/figure/Percent-of-load-carried-by-each-adjacent-tie-Zarembski-et-al-2020_fig1_352004303; Effect of Adjacent Poor Ties on Wood Crosstie Life at the University of Delaware by Dr. Allan M Zarembski, Kenza Soufiane (Graduate Student):

Given the substantial number of defective ties, and availability of raw materials (funds based), the POB team have been replacing ties when available within project focused areas. Stated alternatively, the worst ties located in proximity of project areas have been replaced when possible.

Per research above in Exhibits H2 – H7, in order for new railroad ties to experience 35, 40, 45 plus years of lifespan is heavily dependent on how much weight the respective tie is required to hold up and how well the ballast underneath the tie is able to transfer the downward force, i.e. equivalent to a shock in a suspension system.

When a new tie (40 or more years of potential lifespan in a properly working system) is installed between two marginal or defective ties, the % distribution of weight is not representative of Exhibit H.7, but rather is substantially higher on the tie directly below the railcar's wheels. This results in each tie's strength i.e. **lifespan progressively deteriorating**, and the subsequent action of **replacing ties** in the future **sooner** than expectations would indicate.

Consider the following pictures (Exhibits H.8 and H.9) taken during the February site visit. New ties have been installed next to defective (rotting) ties. The downward force on the new tie is no longer 27% as indicated in Exhibit H.3. The highly probable prediction for these brand new ties is a lifespan much less than 40 years which equates to more frequent replacement equating to a higher per car charge necessary for the POB to cover future maintenance costs.

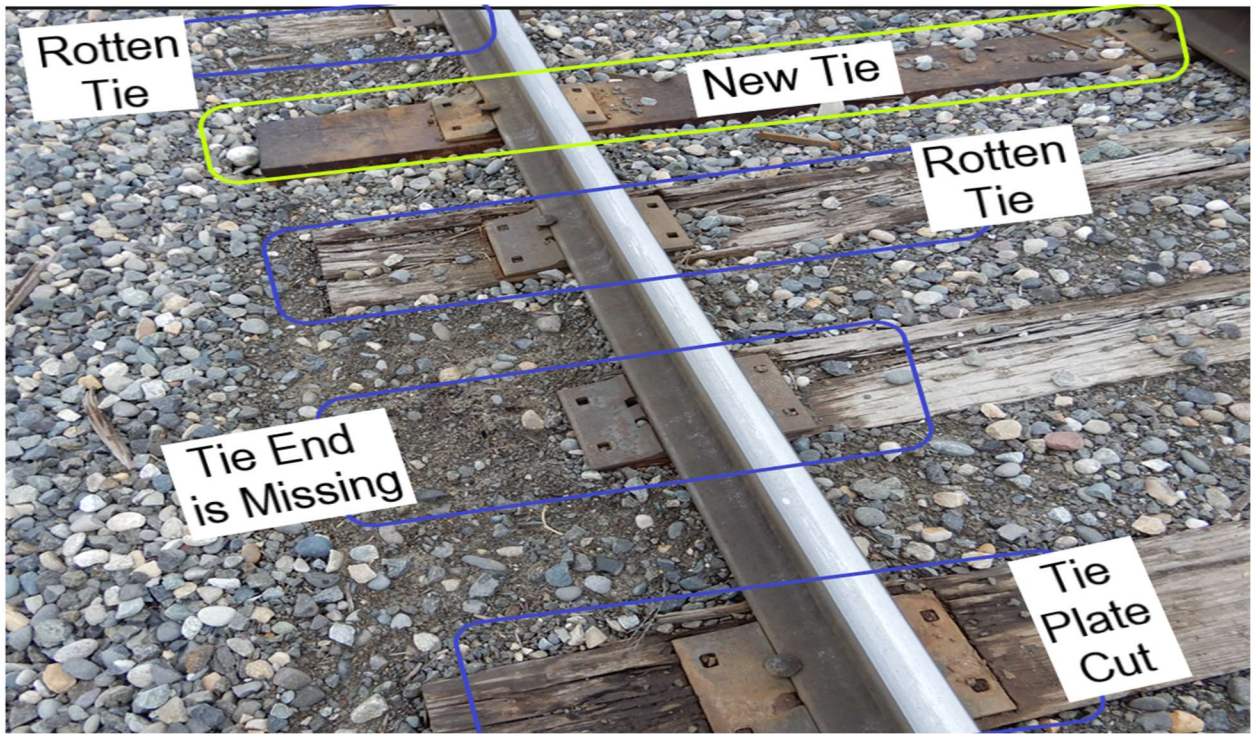


Exhibit H.8

** Ground photos taken by Jeffrey Guelker during Port of Benton onsite visit February 19, 2024 through February 22, 2024.

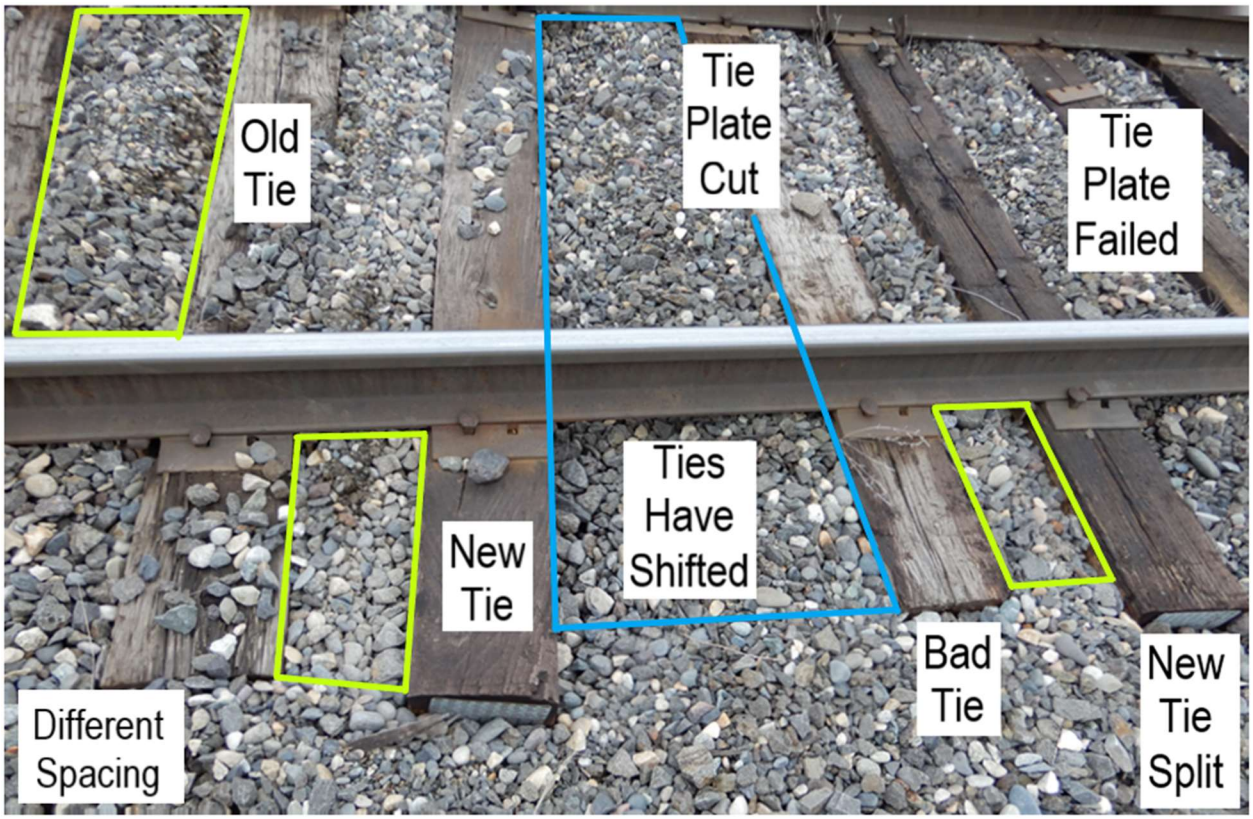


Exhibit H.9

** Ground photos taken by Jeffrey Guelker during Port of Benton onsite visit February 19, 2024 through February 22, 2024.

With inspection data measuring defective / marginal ties in the 60 – 70% range, new ties that have been installed / about to be installed, will experience a reduced lifespan vs potential lifespan until a more substantial percentage of overall ties can be replaced.

** Email: RE: Additional Rail Info from Roger Wright, POB Port Engineer 1/30/24 11:28 am POB Tie Index & Tie Index Eval June 2022 9_2_22-B.pdf; HDR Tie Evaluation; Oct 11, 2023
** Email: RE: Additional Rail Info from Roger Wright, POB Port Engineer 1/30/24 11:28 am AURORA POB FIRST_WTG Summary_1709191025 Port Comments.xlsx

A compounding negative impact to the tie's life expectancy is the ballast that is failing due to poor drainage caused by a combination of small round river rock (Exhibit H.9) and the absence of preventative maintenance namely undercutting (Exhibit H.10). As the train progresses down the track the weight of the railcars is pounding vertically downward creating a "pumping" (Exhibit H.11) motion which in turn is driving mud to the top of the railroad ties. The impacts of this pumping motion include:

- ties are not being supported properly and are experiencing high forces and strain equating to **reduced tie life**
- the improper drainage keeps the mud and water saturation in place for extended periods of time whereby creating a damp condition **expediting tie rot**
- moisture related rot in time gives way to spikes becoming loose which
    - increases the amount of pumping (cyclical affect)
    - increasing the opportunity for **plate cut** since fasteners are no longer supported moving up and down as well as wet rotting wooden ties underneath the tie plates.

(Exhibit H.10.) Round river rock (highlighted in yellow) found throughout the ballast roadbed of the POB track, has been shown to inhibit the flow of water and dirt drainage, whereby leading to the buildup of mud and eventually rotting ties (highlighted in blue). More angular non uniform types of ballast rock within the green ellipse in the rightmost picture, has been shown to provide much better drainage properties resulting in reduction of soil and mud buildup whereby elongating tie life, as identified inside the white ellipse.

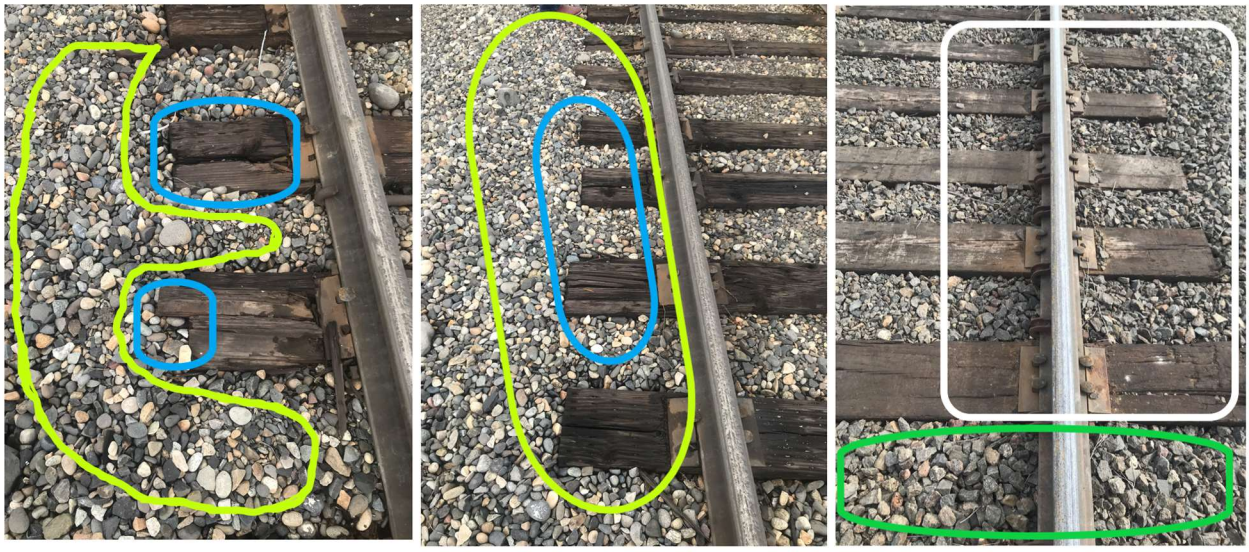


Exhibit H.10

Undercutting Process

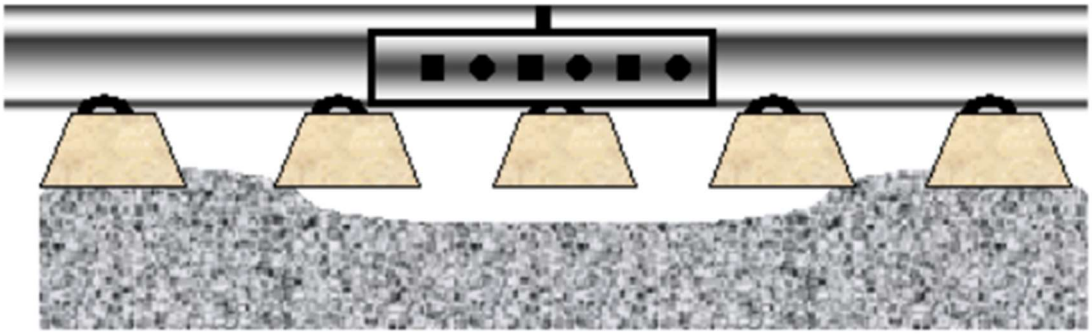
Exhibit H.11

** Exhibit H.11 was produced from pictures copied from the following websites for illustrative and training purposes only.

- https://www.hulcher.com/services/engineering-track-maintenance-mow/undercutting-services#:~:text=The%20undercutter%20attaches%20to%20a,a%20siding%2C%20thereby%20improving%20productivity.*4
- https://en.wikipedia.org/wiki/Track_ballast

Track Pumping

"Defects in a rail joint may cause excessive pounding, as wheels pass over it. This continued series of impact loads causes a breakdown of ballast support under the joint ties. A low spot in the surface develops. Perhaps the joint begins to pump mud. It is not unusual for the track to develop a line irregularity at this spot. Depending on the position from which he/she is observing the track, the trained inspector might observe either the line or the surface defect first."



Ballast break down because of a pumping joint

Exhibit H.12

** https://www.itsmarta.com/wayside-docs/Books%20For%20QR%20codes%20PDFs/Track%20Inspection%20Modules/Section%2011-Track%20Alignment.pdf; MARTA Technical Training Track and Structures, page 19, January 2011

With a quality tie replacement program implemented, an individual tie tracking system in place, as well as ongoing infrastructure preventative maintenance, eventually the POB will experience a well operating system and the railroad will have a long lasting lifespan for its individual components.

How quickly a well operating system can be implemented is highly dependent on the following conditions:

1. How quickly all the remaining defective ties can be replaced – function of available funds.

2. How well the tie replacement planning schedule can be designed to address the impact of lifespan reduction due to failing adjacent support ties.
3. How quickly a preventative maintenance program can be implemented to improve track bed conditions.
4. How quickly a solution to the impending drainage problem can be implemented.
5. How quickly can a solution be implemented to address all the mud removal.

Based upon:

- experience, onsite observations, local interviews, and internet research,
- despite the quantity of considerable defects,
- considering the concerns identified in this assessment,
- and taking into account any issues missed

it is my opinion that while all five conditions above are critical,

"***if a solution to #5 could be found and implemented sooner than later***",

The Port of Benton could / will experience additional lifespan on recently replaced infrastructure components.

The **compounding impacts of**:

- **new ties** being **subjected to moisture and mud** caused by poor drainage are **reducing** their potential **lifespan** due to thriving rot conditions,
- the more time the **older marginal and defective ties** are **subject to the moisture and mud** caused by poor drainage are **reducing** the old tie's ability to share any of the load distribution, which is also reducing the potential **lifespan** of the new ties as they are carrying more of the load.

are and ***will continue to drive up future maintenance and repair costs.***

c. Economic Costing Model: Study should include at least 2-3 options for different methods of charging for access to the Port track. Preferably including examples from other similar industrial/rail facilities.

Two whiteboard sessions (Exhibit H.13) were conducted during the onsite visit to review some initial concept variables and to brainstorm other factors that should be considered for inclusion in the maintenance costing model. Additionally, the value ranges for all assumptions were discussed, and extracted from historical project costs where possible.

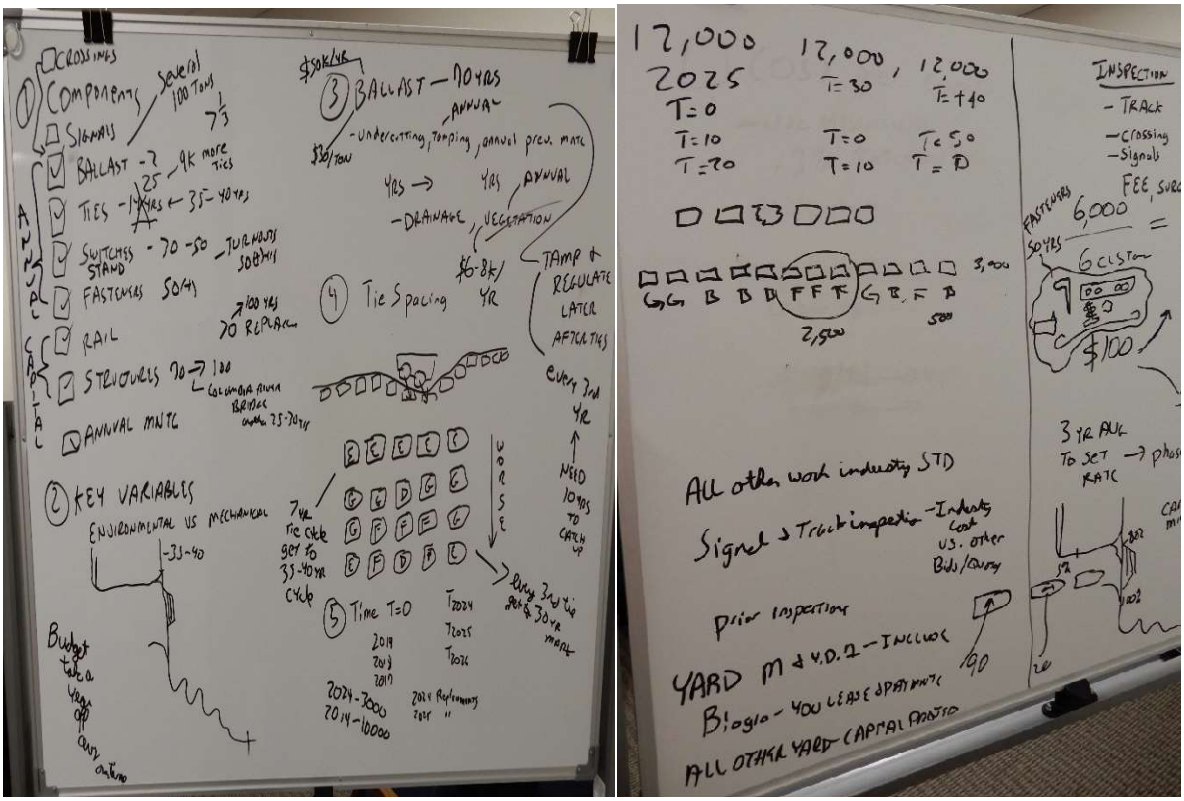


Exhibit H.13

** Photos taken by Jeffrey Guelker during Port of Benton onsite visit February 19, 2024 through February 22, 2024.

Additional data used in model calculations was extracted from the following data sources.

** Email: Annual Rail Cars – from Roger Wright, POB Port Engineer 2/19/24 4:28 pm 7-19-22 – Annual Rail Cars – Jan 2024.xls

** Email: rail bids from Roger Wright, POB Port Engineer 2/19/24 4:28 pm 7-19-22 – Center Parkway North Extension – ITB – 22 – 0031 – Premier Excavation inc.pdf

** Email: rail bids from Roger Wright, POB Port Engineer 2/19/24 4:28 pm Culbert Bid.pdf

** Email: CWCP from Roger Wright, POB Port Engineer 2/20/24 12:56 pm CWCP Unit Trains by Commodity Table

POB Rail Maintenance Study Assumptions

Annual Inflation Rate: 3%

Project Items to Complete Prior to Annual Maintenance Program Start

- Replace Southern Wye, Northern Wye???
- 3 crossings,
- 12K defective ties

Annual Recurring Costs

• Port of Benton Admin Fees Placeholder (**Current**) ○ Includes staff, mgmt., security, acct, legal, public relations.	$75,000
• Port of Benton Admin Fee PRAC 42% (**Current**)	$31,500
• Port of Benton Admin Fees Placeholder (**Future TBD**) ○ Includes staff, mgmt., security, acct, legal, public relations.	$125,000
• Port of Benton Admin Fee PRAC 42% (**Future TBD**)	$52,500

• Shortline Operator (Monthly Extrapolated to Annual)
  ○ POB Purchases/Maintains Inventory,
  ○ Operator Provides Labor for Non-Capital Work
  ○ Operator Performs Inspections (Rail, Signal, Crossing)
  ○ Scope of Work to be Redefined, probably includes:
  ▪ Cleanup and grubbing
  ▪ Routine Mntc (Scope of Work) TBD (gauge adjust, 10-20 ties/mth, 4 Jt. Bars/mth, minor repairs, replace a gate 2-3 times/yr, etc.....), gauge rods.
  ▪ Keep signal maintainer as part of Scope of Work - does minor repairs also.
  ▪ No Undercutting, includes Tamping and Surfacing
  ▪ Do track safety under scope of work, Port / Class 1 Dispatch, Operations, etc..
  ▪ Operator covers labor cost for switch stand replacements, switchpoint and frog replacements, fastener replacements, signal component installations.
	$XXX,XXX

• Ballast (Place and Tamp)	$50,000
• Bridge Inspection	$15,000
• Holland Geometry Car Inspection	$25,000
• GREX Inspection Car	$15,000
• Vegetation Remediation / Soil Herbicide	$6,500
• Erosion Control	$3,000
• Port Incidentals (Utilities; electrical/internet at Bungalows)	$XX,XXX
• Utility Tax / Leasehold Tax	$XX,XXX
• Port Management Studies	$20,000
• Fuel / Maintenance Port's Hyrail Vehicle	$X,XXX
• Bridge Tree Control - rent vehicle, labor (perform every 3 years, accrue annually)	$50,000
• Weld Turnouts (perform every other year, accrue annually)	$12,500
• Signal Components (Cantilevers, Equalizers, Signal Relays)	$48,000
• Signal Component Labor – Operator Covers	$0.00
• Replace Fastener Components (Bolts,Nuts, Joint Bars) - 30 per year * 2 sides	$4,500
• Replace Fastener Labor (Bolts,Nuts, Joint Bars) - 30 per year * 2 sides – Operator Covers	$0.00
• Turnout Component - Switchpoint (replace 1 every 5 years, accrue annually)	$1,200
• Turnout Labor - Switchpoint (replace 1 every 5 years, accrue annually) – Operator Covers	$0.00
• Turnout Component - Frog (replace 1 every 5 years, accrue annually)	$1,200
• Turnout Labor - Frog (replace 1 every 5 years, accrue annually) – Operator Covers	$0.00
• Switch Stand Component (replace 1/yr, excludes yard)	$2,100
• Switch Stand Labor (replace 1/yr, excludes yard) – Operator Covers	$0.00
• Tie Component – 1,200 per year	$114,000
• Tie Component Labor – 1,200 per year – contractor provides spikes, tie plates, etc...	$300,000
• Tie Component – 1,500 per year	$142,500
• Tie Component Labor – 1,500 per year – contractor provides spikes, tie plates, etc...	$375,000
• Additional Items – TBD	$XX,XXX

LifeSpan Assumptions for Sensitivity Analysis

Infrastructure Component	Lifespan (High, Med, Low)
Railroad Tie - contractor provides tie plates, spikes, for this price	40 Yrs, 30 Yrs, 25 Yrs
Switch Stand (replace 1/yr, excludes yard)	50 Yrs, 40 Yrs, 30 Yrs
Turnout - Switchpoint (1 every 5 years)	50 Yrs, 40 Yrs, 30 Yrs
Turnout - Frog (1 every 5 years)	50 Yrs, 40 Yrs, 30 Yrs
Fasteners (Bolts,Nuts, Joint Bars) - replace 30/year	20 Yrs, 15 Yrs, 10 Yrs
Weld turnouts (every other year)	2 Years
Signal Components (Cantilevers, Equalizers, Signal Relays)	Monthly
Ballast (place and tamp) - HDR calc for entire track	80 Yrs, 75 Yrs, 70 Yrs

Fee Model Assumptions

- 3 Year Average (2022 Actuals, 2023 Actuals, 2024 Forecast***)
  - 2024 Forecast will have Pessimistic 3% annual growth, Conservative 10% annual growth, Opportunistic 400% growth spread equally over 10 year horizon)
- Count loads and empties for following customers:
  - Lamb Weston Saint Street
  - Lineage Saint St (little Lineage)
  - Lineage Logistics (big)
  - DelHur Industries
  - Central Washington Corn Processors
  - Packaging Corporation of America
- Railyard Storage Cars Empty miles only

Exhibit H.14

The results of Exhibit H.14 from the working sessions were used in the creation of the following Exhibit H.15 and H.16 excel based costing model detailed further below.

Scenario Input Worksheet

INPUT TABLE: Track Maintenance Parts and Labor Cost - Life Expectancy Based	
Cost Inputs	
Total Number of Ties * Source POB Tie Index Model	47,978
Tie Life Expectancy (Years)	45
Ties Per Year - Calculated	1,067
Tie Cost ($$'s Per Tie)	$ 95.00
Tie Labor Cost ($$'s Per Tie)	$ 175.00
Tons of Ballast * HDR Formula	2,515
Ballast Life Expectancy (Years)	70
Ballast (Tons Per Year) - Calculated	35.9
Ballast Cost ($$'s Per Ton Delivered)	$ 30.00
Ballast Labor Cost ($$'s Per Ton Place & Tamp)	$ 41.43
Spare Rail Footage Accrual * Spare 78 Ft. Joints / Year	312
Rail Cost ($$'s Per Foot) - 136lb * Culbert Bid	$ 24.67
Rail Labor Cost ($$'s Per Foot) * Shortline Operator To Install If Necessary	$ -
Annual Inflation Rate (%)	3.00%
COLA (Cost of Living Rate (%)	3.00%
Payroll Costs	45.00%

INPUT TABLE: Annual Recurring Costs	
Administrative & Facility Costs	
Port of Benton Admin Fee (includes staff, mgmt., security, acct, legal, public relations.)	$ 75,000

Table / Calculation Worksheet

INPUT TABLE: Track Maintenance Parts and Labor Cost - Life Expectancy Based

Port of Benton Track	Miles of Track	# of Ties		Tons of Ballast
Value	Google Earth	POB Tie Index Report	Average Tie Spacing (Inches) * POB Tie Index Report	20.91	.03 tons/track foot * HDR Formula
Richland Jct -> Horn Rapids Road	10.59	10.34	30,807	30,991	1,433	1,422
North Leg of Wye	0.32	0.27	969	821	51	43
South Leg of Wye	0.37	0.32	1,120	976	59	52
Yard Track 1	0.71	0.92	2,140	2,792	112	147
Second Lead out of yard	0.34	0.32	1,042	973	55	51
siding	0.41	0.41	1,252	1,250	66	66
Lamb Weston Turnout	0.19	0.07	576	210	31	11
Future Growth #1	0	0	-	-	-	-
Future Growth #2	0	0	-	-	-	-
Future Growth #3	0	0	-	-	-	-
Bridges	0.79	0.70	2,384	2,109	125	111
Yard Tracks Not Counted	2.54	2.54	7,688	7,688	403	403
Total	15.85	15.80	47,978	47,810	2,515	2,506

INPUT TABLE: Track Maintenance Parts and Labor Cost - Life Expectancy Based

City Track	Miles of Track	# of Ties		Tons of Ballast
Value	Google Earth	Average Tie Spacing (Inches) * POB Tie Index Report	20.91	.03 tons/track foot * HDR Formula
End of POB Track to ATI	1.91	5,796		304
Future Growth #1	0	-		-
Future Growth #2	0	-		-
Future Growth #3	0	-		-
Total Track Miles	1.91	5,796		304

Volume Based		Total	Year 0	Year 1	Year 2	Year 3
			12,627	14,500	16,651	19,122
Customer Growth	Forecasted Growth Rate					
Lineage Saint St (lit	14.87%		1,285	1,477	1,697	1,950
Lamb Weston Saint	14.87%		552	635	730	839
2579 Stevens - BioG	0.00%		52	52	52	52
CWCP	14.87%		6,837	7,854	9,022	10,364
Lineage Logistics (bi	14.87%		3,164	3,635	4,176	4,797
DelHur	14.87%		20	23	27	32
PCA	14.87%		717	824	947	1,088
Customer 8	0.00%					
Customer 9	0.00%					
Customer 10	0.00%					
Customer 11	0.00%					
Customer 12	0.00%					
Customer 13	0.00%					
Customer 14	0.00%					
Customer 15	0.00%					
Customer 16	0.00%					
Customer 17	0.00%					
Customer 18	0.00%					
Customer 19	0.00%					
Customer 20	0.00%					

Model Output Worksheet

Time Period	t(0)	t(1)	t(2)	t(3)	t(4)
Total Administrative and Facility Costs	$ 199,750	$ 205,743	$ 211,915	$ 218,272	$ 224,820
Total Infrastructure Oversight / Inspection / Non-Rail Component Related	$ 679,500	$ 699,885	$ 720,882	$ 742,508	$ 764,783
Track Maintenance Parts and Labor - Life Expectancy Independent	$ 69,500	$ 71,585	$ 73,733	$ 75,945	$ 78,223
Total Track Maintenance Parts and Labor - Life Expectancy Dependent	$ 298,353	$ 307,304	$ 316,523	$ 326,019	$ 335,799
Total Cost	$ 1,247,103	$ 1,284,517	$ 1,323,052	$ 1,362,744	$ 1,403,626
Per Car Charge	$ 98.76	$ 88.59	$ 80.12	$ 73.21	$ 68.64

Annual Per Car Charge by Customer						
Customer Name	Forecasted Growth	t(0)	t(1)	t(2)	t(3)	t(4)
Total Customer Annual Charge		$ 1,247,103	$ 1,284,517	$ 1,323,052	$ 1,362,744	$ 1,403,626
Lineage Saint St (little Lineage)	14.87%	$ 126,913	$ 130,844	$ 124,983	$ 114,203	$ 107,079
Lamb Weston Saint Street	14.87%	$ 54,518	$ 56,253	$ 58,485	$ 61,420	$ 66,169
2579 Stevens - BioGro	0.00%	$ 5,136	$ 4,607	$ 4,166	$ 3,807	$ 3,569
CWCP	14.87%	$ 675,255	$ 695,765	$ 722,816	$ 758,715	$ 817,232
Lineage Logistics (big)	14.87%	$ 312,492	$ 322,015	$ 334,569	$ 342,608	$ 321,237
DelHur	14.87%	$ 1,975	$ 2,038	$ 2,163	$ 2,343	$ 2,540
PCA	14.87%	$ 70,814	$ 72,996	$ 75,871	$ 79,649	$ 85,800

Exhibit H.15

CUSTOMER LOOKUP TABLE: Facility Characteristics, Volume, Contact Information

Customer	Customer Name	Inbound Rail Miles to Facility	Outbound Rail Miles From Facility	Inbound Car Status	Outbound Car Status	Max Inbound Car Pound	Max Outbound Car Pounds	Max Inbound Car Ton Miles	Max Outbound Car Ton Miles	Total Da
Customer 1	Lineage Saint St (little Lineage)	12.85	7.81	Empty	Load	105,000	286,000	675	1,117	
Customer 2	Lamb Weston Saint Street	12.85	7.81	Load	Empty	286,000	105,000	1,838	410	
Customer 3	2579 Stevens - BioGro	10.54	10.54	Exclude	Exclude	286,000	105,000	1,508	553	
Customer 4	CWCP	10.43	10.43	Load	Empty	286,000	62,000	1,492	323	20 Singles + 110
Customer 5	Lineage Logistics (big)	11.01	10.89	Empty	Load	105,000	286,000	578	1,558	
Customer 6	DelHur	12.22	12.10	Load	Empty	286,000	72,000	1,748	436	
Customer 7	PCA	12.46	12.34	Load	Empty	286,000	70,500	1,782	435	
Customer 8										
Customer 9										
Customer 10										
Customer 11										
Customer 12										
Customer 13										
Customer 14										
Customer 15										
Customer 16										
Customer 17										
Customer 18										
Customer 19										
Customer 20										

Current Model Calculation Capability For 20 Customers
Easily Expandable if Required in the Future

Exhibit H.16

The user has the option to modify the values in the three (Exhibit H.17, H.18, and H.19) different input table sections:

1. Life expectancy values and inflationary rates
2. Administrative and facility costs
3. Infrastructure oversight and inspection.

INPUT TABLE: Track Maintenance Parts and Labor Cost - Life Expectancy Based	
Cost Inputs	
Total Number of Ties * Source POB Tie Index Model	47,978
Tie Life Expectancy (Years)	40
Ties Per Year - Calculated	1,200
Tie Cost ($$'s Per Tie)	$ 95.00
Tie Labor Cost ($$'s Per Tie)	$ 175.00
Tons of Ballast * HDR Formula	2,515
Ballast Life Expectancy (Years)	70
Ballast (Tons Per Year) - Calculated	35.9
Ballast Cost ($$'s Per Ton Delivered)	$ 30.00
Ballast Labor Cost ($$'s Per Ton Place & Tamp)	$ 41.43
Spare Rail Footage Accrual * Spare 78 Ft. Joints / Year	312
Rail Cost ($$'s Per Foot) - 136lb * Culbert Bid	$ 24.67
Rail Labor Cost ($$'s Per Foot) * Shortline Operator To Install If Necessary	$ -
Annual Inflation Rate (%)	3.00%
COLA (Cost of Living Rate (%)	3.00%
Payroll Costs	45.00%

Exhibit H.17

INPUT TABLE: Annual Recurring Costs	
Administrative & Facility Costs	
· Port of Benton Admin Fee (includes staff, mgmt., security, acct, legal, public relations.)	$ 75,000
· Port of Benton Admin Fee Payroll Costs - Calculated	$ 33,750
· Port Incidentals (Utilities; electrical/internet at Bungalows)	$ 15,000
· Utility Tax / Leasehold Tax	$ 50,000
· Port Management Studies	$ 20,000
· Fuel / Maintenance Port's Hyrail Vehicle	$ 6,000
Total Administrative and Facility Costs	$ 199,750

INPUT TABLE: Annual Recurring Costs	
Infrastructure Oversight / Inspection / Non-Rail Component Related	
· Shortline Operator (Annual)	$600,000
· Bridge Inspection	$ 15,000
· Holland Geometry Car Inspection	$ 25,000
· GREX Inspection Car	$ 15,000
· Vegetation Remediation / Soil Herbicide	$ 6,500
· Erosion Control	$ 3,000
· Bridge Tree Control - rent vehicle, labor (perform every 3 years, accrue annually)	$ 15,000
Total Infrastructure Oversight / Inspection / Non-Rail Component Related	$ 679,500

Exhibit H.18

INPUT TABLE: Annual Recurring Costs		
Track Maintenance Parts and Labor - Life Expectancy Independent		
· Weld Turnouts (perform every other year, accrue annually)	$	12,500
· Signal Components (Cantilevers, Equalizers, Signal Relays)	$	48,000
· Signal Component Labor – Shortline Operator Covers	$	-
· Replace Fastener Components (Bolts.Nuts, Joint Bars) - 30 per year * 2 sides	$	4,500
· Replace Fastener Labor (Bolts.Nuts, Joint Bars) - 30 per year * 2 sides – Shortline Operator Cov	$	-
· Turnout Component - Switchpoint (replace 1 every 5 years, accrue annually)	$	1,200
· Turnout Labor - Switchpoint (replace 1 every 5 years, accrue annually) – Shorltine Operator Co	$	-
· Turnout Component - Frog (replace 1 every 5 years, accrue annually)	$	1,200
· Turnout Labor - Frog (replace 1 every 5 years, accrue annually) – Shortline Operator Covers	$	-
· Switch Stand Component (replace 1/yr, excludes yard)	$	2,100
· Switch Stand Labor (replace 1/yr, excludes yard) – Shortline Operator Covers	$	-
Track Maintenance Parts and Labor - Life Expectancy Independent	$	69,500

INPUT TABLE: Annual Recurring Costs		
Track Maintenance Parts and Labor - Life Expectancy Dependent		
· Tie Component Cost	$	114,000
· Tie Component Labor – Contractor provides spikes, tie plates, etc...	$	210,000
· Ballast (Tons) Component Cost	$	1,078
· Ballast (Tons) Labor Cost	$	1,489
· Rail Component Cost	$	7,697
· Rail Component Labor – Shortline Operator Covers	$	-
Total Track Maintenance Parts and Labor - Life Expectancy Dependent	$	334,263

Total Cost **$1.283.013**

Exhibit H.19

The Excel based model calculates the annual maintenance cost for the POB's rail infrastructure based on four modular cost sections that sum up from multiple lower level cost components.

The cost model is designed to calculate annual maintenance costs based on any number of scenarios the user chooses to run. The majority of the first three modules are inputs that can (should) be manually updated as business conditions change in the future. The fourth tabular section of the input sheet is formula driven based on a set of rail infrastructure lifespan parameters specifically for tie, ballast, and rail. In the future, the model can easily be expanded for additional parameters if so desired.

The cost model produces three options for calculating the "necessary" maintenance charges for utilizing POB's track for the delivery (spotting) and pickup (pulling) of railcars broken down by customer. All three options are based on some minor modifications to common operating parameters of Class I's existing KPI's. Definitions for the three option calculations are as follows:

- Per railcar charge – "per car" in railroad vernacular.
    - rail maintenance annual cost multiplied by the customer's % of total railcar volume (3 year historic average).
- Per railcar mile charge – "per car mile" in railroad vernacular.
    - rail maintenance annual cost multiplied by the customer's (3 year historic average) % of total railcar miles (loads and empties) traversed across POB track.
- Per railcar ton mile charge ~ "gross mile" in railroad vernacular.
    - rail maintenance annual cost multiplied by the customer's (3 year historic average) % of total railcar gross ton miles (loads and empties) traversed across POB track.

*The model is designed:

- with **flexibility** in mind for cost contributor adjustments. Users have the capability to **easily** update factors including but not limited to:
    - Material costs
    - Material installation costs
    - Administrative and Facility costs
    - COLA adjustments
    - Inspection costs
    - Infrastructure operating costs
- with the ability to **expeditiously** run scenarios given changes in:
    - **volume growth assumptions (increases, status quo, decreases)
        - by individual customer
        - by any combination of customers
        - or all customers
    - historic customer volume actuals,
    - inflationary adjustments or assumptions
    - tie life expectancy changes
- with tabular form allowing for **ease** of input of any operational changes:
    - customer name, contact, and facility information
    - customer capacity changes (infrastructure improvements)
    - railroad operating practice changes
        - days of service
        - operating practices
            - physical location for switching cars,
                - resulting in mileage changes impacting annual maintenance fee costs for individual customers (share of rail maintenance costs)
            - crew size increases / decreases,
            - change to RCO/RCL (Remote Controlled Operation / Remote Controlled Locomotive) operations

- other work to be done prior to departing (Byron Turn) train to Richland:
    - Dog catching other trains (relieving train crews who have run out of available time to arrive a train into Class I's terminals)
    - Shuttling other trains (departing other trains out of Class I's terminals to increase operating capacity).
    - Building (switching) their "outbound to Richland" train
- Other work to be done prior to tie up (train crew completes work for the day and goes home)
    - Serving non-Richland customers (Kennewick, Finley)
    - Car switching at Kennewick for day shift crew

- with **expansion** capability in mind reducing / eliminating the need for someone to modify the spreadsheets due to increasing numbers of future customers.
    - Cost model is constructed to handle and perform calculations for up to 20 customers.
        - If customer count were to exceed 20, the model can easily be expanded for increased capacity by simply adding rows and copy / paste of formulas above.

d. Costing Model Output

Output from the various scenarios can easily be copy and pasted into a separate worksheet and used to create any time of graph or table exhibit desired.

The three charts (Exhibits H.20, H.21, and H.22) in **subsection e**. below, were created based on a set of proposed growth scenarios and parameter values provided by Roger Wright, Port Engineer.

Growth Scenarios
- Baseline: 0% Annual Growth, 0% Inflation
- Pessimistic: 3% Annual Growth, 3% Inflation
- Conservative: 10% Annual Growth, 3% Inflation
- Optimistic: 14.87% Annual Growth (400% after 10 Years), 3% Inflation

* For all scenarios, individual customer growth is capped at maximum facility capacity

Red vs Green Boxes
- Green Box: tie life expectancy of 40 years (achieved over time)
- Red Box: tie life expectancy may not reach 40 year potential until a significant portion of bad ties have been replaced. Recommend POB should consider these cost assumptions for the near term.

Three Most Common Railroad Measurement Buckets
- Per Unit (Car)
- Per Unit Mile (Car Mile)
- Per Gross Ton Mile (Car Ton Mile)

e. Port of Benton Sensitivity Analysis Scenarios

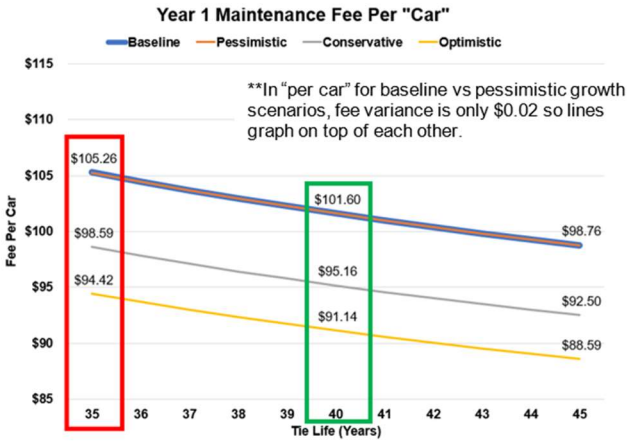


Exhibit H.20

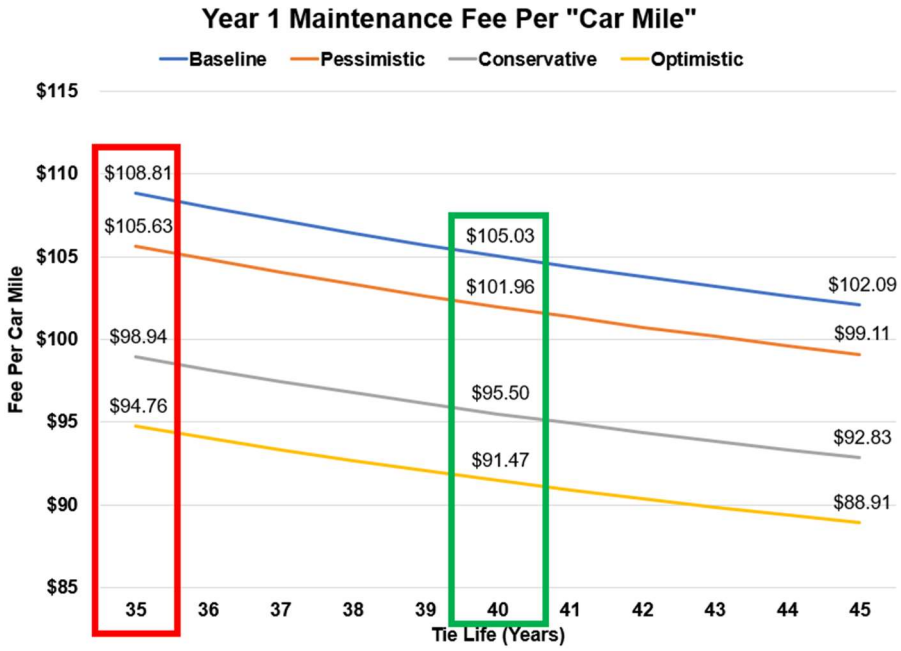


Exhibit H.21

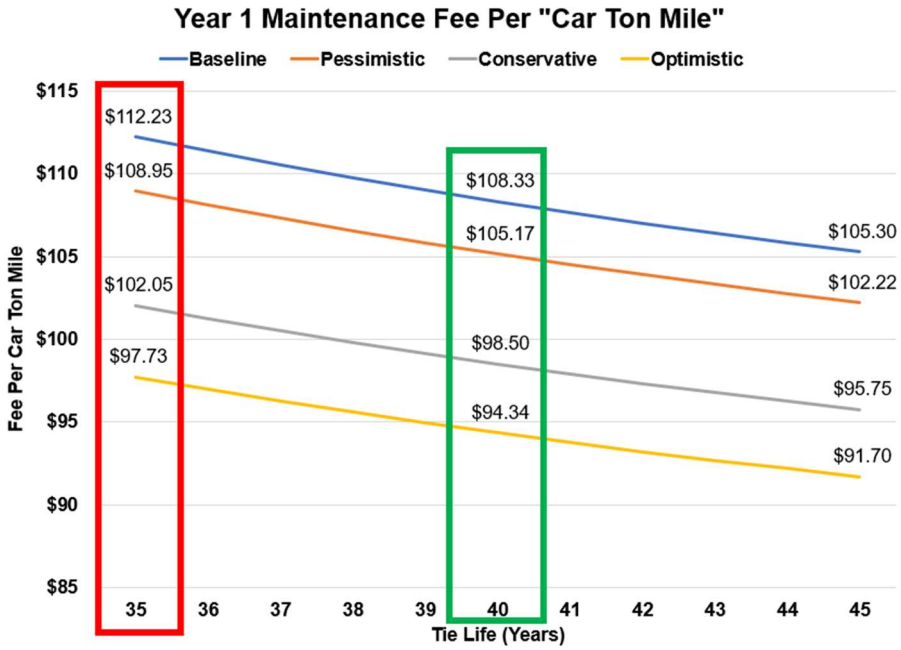


Exhibit H.22

f. Recommendations for the preferred option.

Arguably the most equitable option would be a fee charge per car ton mile, however given what data is currently available to the POB, this will be difficult to produce. Requesting the Class I's to provide the data they will be charged against could be construed as a conflict of interest and prohibits the ability for a defendable audit trail.

The best way to capture a portion of the necessary data for a fee charge per car ton mile would be with the installation of an AEI reader (Automated Equipment Identification) reader. An AEI reader in essence is nothing more than a stationary bar code reader (scanner) identical in principle to what is used in grocery store self-checkout lanes. The shopper moves the food item's bar code across the top of the scanner. With an AEI reader, the railcar or locomotive moves past the reader and information is recorded such as car initial and number and axle count. This information would suffice for the first option of a fee per car as well as the second option of a fee charge per car mile but would still be inadequate for a fee charge per car ton mile.

Railroads transmit the captured information from the AEI reader back to their mainframes and do some backend processing against waybills to add important information like shipper, receiver, shipping weight, train symbol, etc…… Even if the POB purchased an AEI reader, without the backend processing it would be nye impossible to produce a car ton mile.

An AEI reader without the backend processing though would still be extremely important to ensure proper car volume counts are being generated.

Per Exhibit H.23, in all but the Base case, which is 0% growth and 0% inflation, the fee difference in Per Car vs Per Mile would only be around $0.35 difference. Given this small amount, I would recommend going the simpler route of "Per Car" to reduce disagreement regarding mileage calculations.

An AEI reader of some type will still be needed to ensure proper car counts are being used in the calculation.

Per Car Mile vs Per Car			
Tie Life Expectancy Years)	**35**	**40**	**45**
Base	$3.55	$3.43	$3.33
Pessimistic	$0.39	$0.38	$0.37
Conservative	$0.35	$0.34	$0.33
Optimistic	$0.34	$0.33	$0.32

Per Car Ton Mile vs Per Car			
Tie Life Expectancy Years)	**35**	**40**	**45**
Base	$6.97	$6.73	$6.54
Pessimistic	$3.71	$3.59	$3.48
Conservative	$3.46	$3.34	$3.25
Optimistic	$3.31	$3.20	$3.11

Exhibit H.23

With regards to implementation, Exhibit H.24 provides insight as to the savings that each Class I should experience by the increase in train speed once the POB track moves from Excepted Class to Class 2.

Track Class Speed Impact on Train Operations					
Simple Time Formula: Distance / Speed = Time					
Station Name	MilePost	POB **Excepted Track** Max Speed	**Class 1** Track Max Speed	**Class 2** Track Max Speed	**Class 3** Track Max Speed
Richland Jct.	18.84	5 MPH	10 MPH	25 MPH	40 MPH
Private Crossing south of Battelle	29.12				
Daily Inbound Road Miles	10.28				
Daily Outbound Road Miles	10.28	Total Daily Transit Time (Hours)			
Total Daily Transit Road Miles	20.56	4.1	2.1	0.8	0.5
Daily Transit Road Time Savings vs Excepted Track			**2.1**	**3.3**	**3.6**
Daily Transit Road Cost Savings vs Excepted Track			**$ 732.45**	**$ 1,171.92**	**$ 1,281.79**

Exhibit H.24

The daily car count sample below in Exhibit H.25 was provided via email from BNSF Trainmaster, Daniel Klepper and was used to help calculate potential savings listed in Exhibit H.24.

BNSF Data (Daniel Klepper)			
Date	Cars	Tons	Feet
19-Feb	20	1,801	1,441
21-Feb	20	1,485	1,522
22-Feb	26	1,939	1,969
26-Feb	39	4,531	2,565
27-Feb	18	1,039	1,465
27-Feb	12	641	986
29-Feb	17	1,709	1,207
1-Mar	22	1,161	1,808
4-Mar	24	2,349	1,718
5-Mar	18	1,629	1,321
Total Days	**Total Cars**	**Total Tons**	**Total Feet**
10	**216**	**18,284**	**16,002**
	Avg Cars/Day	Avg Tons/Car	Avg Feet/Car
	21.6	**84.65**	**74.08**

Exhibit H.24

At $100/car, 54% of daily fee would be offset by productivity gains of trains travelling at Class 2 (25 MPH) vs Excepted Track Class (5 MPH).

Reference Appendix A.3, A.4, & A.5 for some additional studies regarding tie life and tie costs.

In conclusion, it is necessary to call out some negative impacts to newly replaced railroad ties over the last decade. Mid to late 2010's tie installations, will have a shortened lifespan compared to future tie replacements due to:

- historical uneven weight distribution w/ adjacent ties
- impact from pre-existing poor ballast conditions
- ties replaced in 2015 are already 10 years old

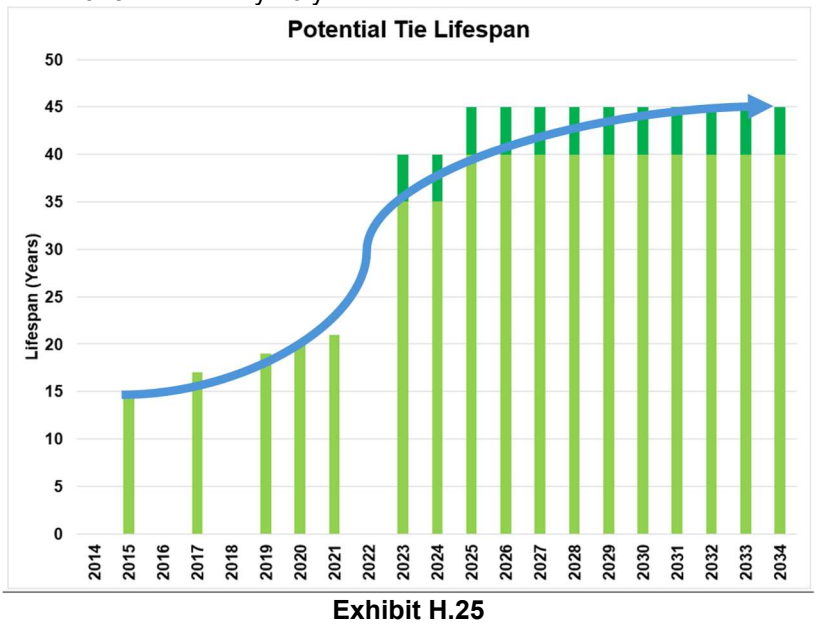


Exhibit H.25

On the flip side, railroad ties that were replaced during 2023 tie replacement work and the upcoming 2024 project and maintenance work, will equate to on average 2 of every 3 ties on the main track being good or

better. Having this improved infrastructure combined with a recurring undercutting program, should result in 2023, 2024, and future replacement ties experiencing a much longer (33+%) lifespan than current.

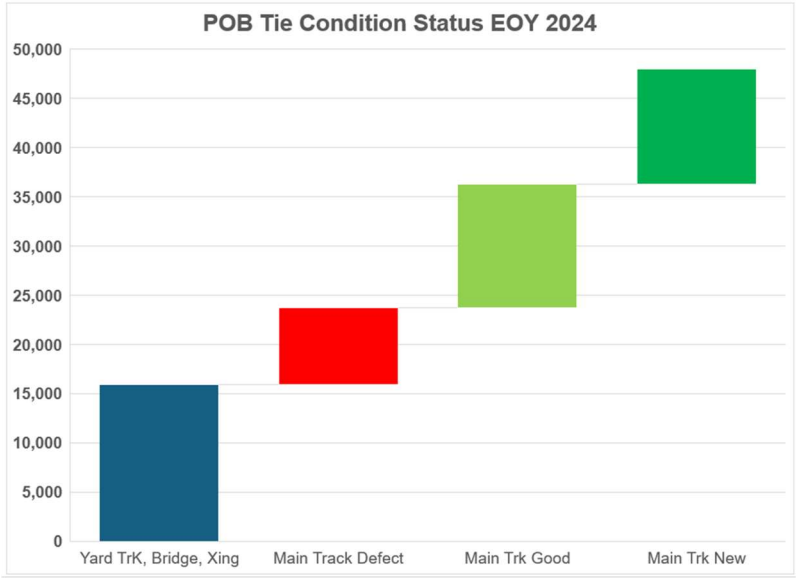


Exhibit H.26