



RAILER® Sustainment Management System

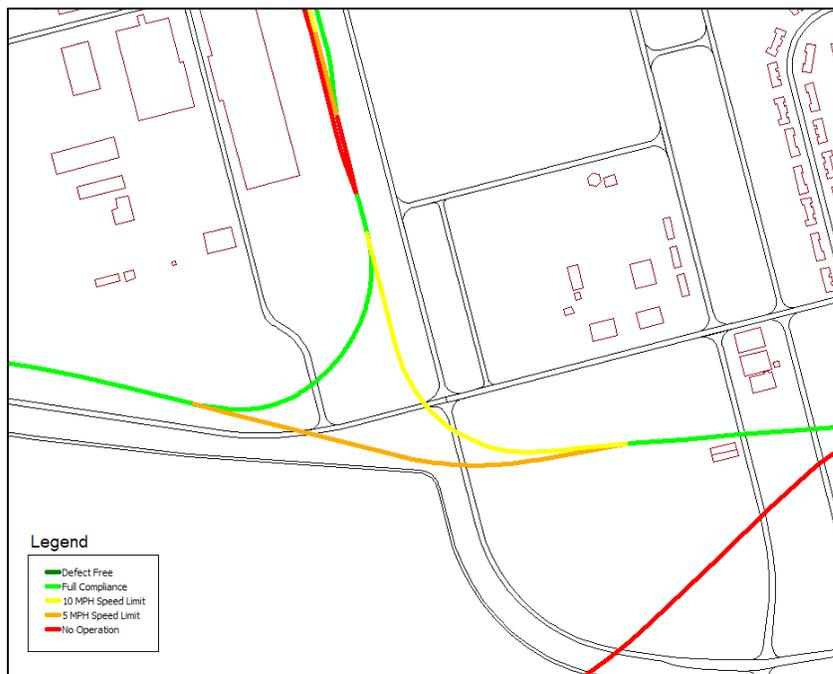
RAILER® SMS

RAILER is a railroad track asset management system designed as a decision support tool for evaluating track conditions and planning track sustainment, restoration, and modernization (SRM) activities on military, short line, and industrial track networks. It is a member of the Sustainment Management System (SMS) family of tools which includes PAVER, ROOFER, and BUILDER.

The RAILER System

There are thousands of miles of military, short line, and industrial railroad track that serves a vital role in transportation for the Department of Defense and the private economy. Due to lower speeds and frequency of use, this track has maintenance and management requirements which typically differ from the large Class I commercial railroads. However, in order to ensure this safe and reliable mode of transportation, and protect the nation's investment, these track networks still need to be periodically inspected and continually maintained cost efficiently. RAILER® SMS is a knowledge-based track management program that gives planners decision support in the sustainment, restoration, and modernization (SRM) of their track network. It combines condition assessment, work plan generation, and spatial analysis through a companion Geographical Information System (GIS) program to help provide support for informed decisions to managers.

The first step in the RAILER® implementation process is the creation of track inventory. This is a physical survey of what makes up the track network, and includes pertinent information about the rail, ties, switches, culverts, curves, grades, grade crossings, etc. A key part of this inventory process involves establishing a track naming convention and stationing scheme. The stationing helps to establish a reference point and location for each track. It also makes it easier to locate



defects during the inspection and subsequent repair. Once the inventory is collected, a detailed inspection of the track is done to identify, locate, and record track defects. RAILER® links each recorded defect to 1) operations restrictions and maintenance levels based on governing standards, 2) a Track Structure Condition Index (TSCI) metric relating physical quality and condition, and 3) local work actions to correct the defect.

Figure 1. GIS Site map showing track segment operation restrictions



This information is used to make informative decisions in the development of efficient short and long-range work plans. Using the TSCI and the track standards with a customized set of business rules and prioritization schemes, managers can use the software to narrow down a long list of deficiencies to a filtered list of the most important work based on the condition and operations for the track. The RAILER[®] process provides important decision support to engineers and facility planners with the following key information:

- What rail assets exist.
- What defects and deficiencies exist and costs to fix.
- What restrictions are imposed – and the effect on operations and readiness.
- What the physical track health/condition is (IRS ratings).
- Short and long term maintenance strategies showing costs and effects of funding levels.
- Assists both installation and HQ level decision support through objective and consistent metrics (garrisons can be compared equally)

Segment ID	Component	Defect	Qty	Standard	Work Action	LineItem	Total Cost	UM
A(01)	Ballast	N/A	70	N/A	Skim lift after tie Replacement	3019AA	\$120.40	TF
A(01)	FOTM	Bolts, Missing/Cracked/Or Broken (1 Bolt)	1	Full Compliance	Install or Replace One Bolt	3020	\$8.33	EA
A(01)	FOTM	Tie Plate, Improper Size/Type, DS	1	Full Compliance	Install or Replace Double Shoulder Tie	3021AB	\$18.15	EA
A(01)	Geometry	Alignment (1 in)	30	Full Compliance	Align Track	3019AE	\$100.80	TF
A(01)	Geometry	Alignment (4 in)	30	10 MPH Speed	Align Track	3019AE	\$100.80	TF
A(01)	Ties	Isolated Defective Tie Cluster (2 Ties)	6	Full Compliance	Install/Replace Two Ties (7"x9"x8.5')	3016AB	\$824.40	EA
A(01)	Ties	Single Defective Joint Tie	2	Full Compliance	Install/Replace One Tie (7"x9"x8.5')	3016AB	\$137.40	EA
A(01)	Turnout	Connecting Rod Bolts, Improper Position	1	Full Compliance	Reposition Connecting Rod Bolts	3015AS	\$12.14	EA
A(01)	Turnout	Cotter Keys, Missing	2	Full Compliance	Install Cotter Keys	No Number	\$0.00	EA
A(01)	Turnout	Cotter Keys, Missing	1	Full Compliance	Install Cotter Keys	No Number	\$0.00	EA
A(01)	Turnout	Debris In Crib Areas	1	Full Compliance	Clean Switch Crib Area	3015AM	\$93.89	EA
A(01)	Turnout	Frog Bolts, Improper Size	1	Full Compliance	Replace Frog Bolt Assembly	3015BC	\$289.72	EA
A(01)	Turnout	Head Blocks, Defective	1	5 MPH Speed	Install/Replace Head Block	3017	\$142.74	EA
A(01)	Turnout	Switch Stand, Loose	1	No Operation	Tighten/Respike/Adjust Switch Stand	3038AA	\$4.83	EA
A(01)	Turnout	Switch Ties, Defective (10 ft)	2	Full Compliance	Install/Replace 10' Switch Tie	3017	\$219.62	EA
A(01)	Turnout	Switch Ties, Defective (11 ft)	3	Full Compliance	Install/Replace 11' Switch Tie	3017	\$362.34	EA
A(01)	Turnout	Switch Ties, Defective (13 ft)	1	Full Compliance	Install/Replace 13' Switch Tie	3017	\$142.74	EA
A(01)	Turnout	Switch Ties, Defective (14 ft)	1	Full Compliance	Install/Replace 14' Switch Tie	3017	\$153.72	EA
A(01)	Turnout	Switch Ties, Defective (8.5 ft)	1	Full Compliance	Install/Replace 9' Switch Tie	3017	\$98.82	EA
A(01)	Turnout	Switch Ties, Defective (9 ft)	1	Full Compliance	Install/Replace 9' Switch Tie	3017	\$98.82	EA
A(01)	Turnout	Switch Ties, Defective (9 ft)	1	Full Compliance	Install/Replace 9' Switch Tie	3017	\$98.82	EA
A(01)	Turnout	Switch Ties, Defective Joint (14 ft)	1	Full Compliance	Install/Replace 14' Switch Tie	3017	\$153.72	EA

Figure 2. Report showing track deficiencies, corrective work action, and cost to fix



RAILER[®] RED

RAILER[®] Remote Entry Database (RED) is provided with the RAILER[®] SMS software to allow for electronic collection of inventory and inspection information while in the field. This software can be installed on a tablet PC for quick, accurate, and easy data collection for direct upload into RAILER[®] software when back at the office. The RAILER[®] RED software also displays defect findings from a previous inspection for verification if the defect was fixed or still remains. In addition, it displays the operating restriction for a recorded defect in real time based on the governing track standard.



Benefits of Implementing and Using RAILER®

- Knowledge of track inventory
- Structured inspection approach tailored to management need
- Use of RAILER® RED for track inventory and inspection data collection
- Instant access of stored information through reporting features
- Tabular and graphical condition comparison to various track standards and a condition index scale
- Establish deterioration rates for ties, rail, ballast, and the track as a whole
- User-specified maintenance and repair policies and costs
- Rapid estimates of work requirements
- Structured approach to prioritize work based on user-set criteria
- Ability to develop work plans, including specific projects
- Ability to display track information on a map display through GIS

RAILER									
MAINTENANCE SPREADSHEET COMPARISON									
	Ties	Rail	Fastenings & OTM	Ballast & Subgrade	Drainage	Turnouts	Track Geometry	Global Cost	Total Cost
DEFECT FREE									
Totals	\$59,710.21	\$80,441.42	\$48,610.47	\$373,002.38	\$491.25	\$176,237.06	\$78.60	\$0.00	\$738,571.39
FULL COMPLIANCE									
Totals	\$3,853.89	\$23,907.39	\$1,151.94	\$0.00	\$0.00	\$6,385.71	\$78.60	\$0.00	\$35,377.53
COMPH									
Totals	\$275.40	\$0.00	\$928.25	\$0.00	\$0.00	\$3,976.58	\$78.60	\$0.00	\$5,258.83

Figure 3. Report showing cost comparison of different maintenance strategies

For More Information, Contact:

Michael Grussing
 ERDC-CERL
 217-398-5307
 michael.n.grussing@usace.army.mil

