

Track Load Analysis Report

Cooper E-80 Railroad Live Load Analysis

PROJECT NAME

Demo - Case #1

CLIENT

ABC Pipeline

CALCULATED BY

John Smith, PE

DATE

June 29, 2026

PIPELINE TRACK LOAD ANALYSIS REPORT

Railroad/Equipment Crossing Stress Analysis

Generated: June 29, 2026 at 09:12 PM

1. EXECUTIVE SUMMARY

PERCENT OF SMYS (COMBINED STRESS)

47.7%

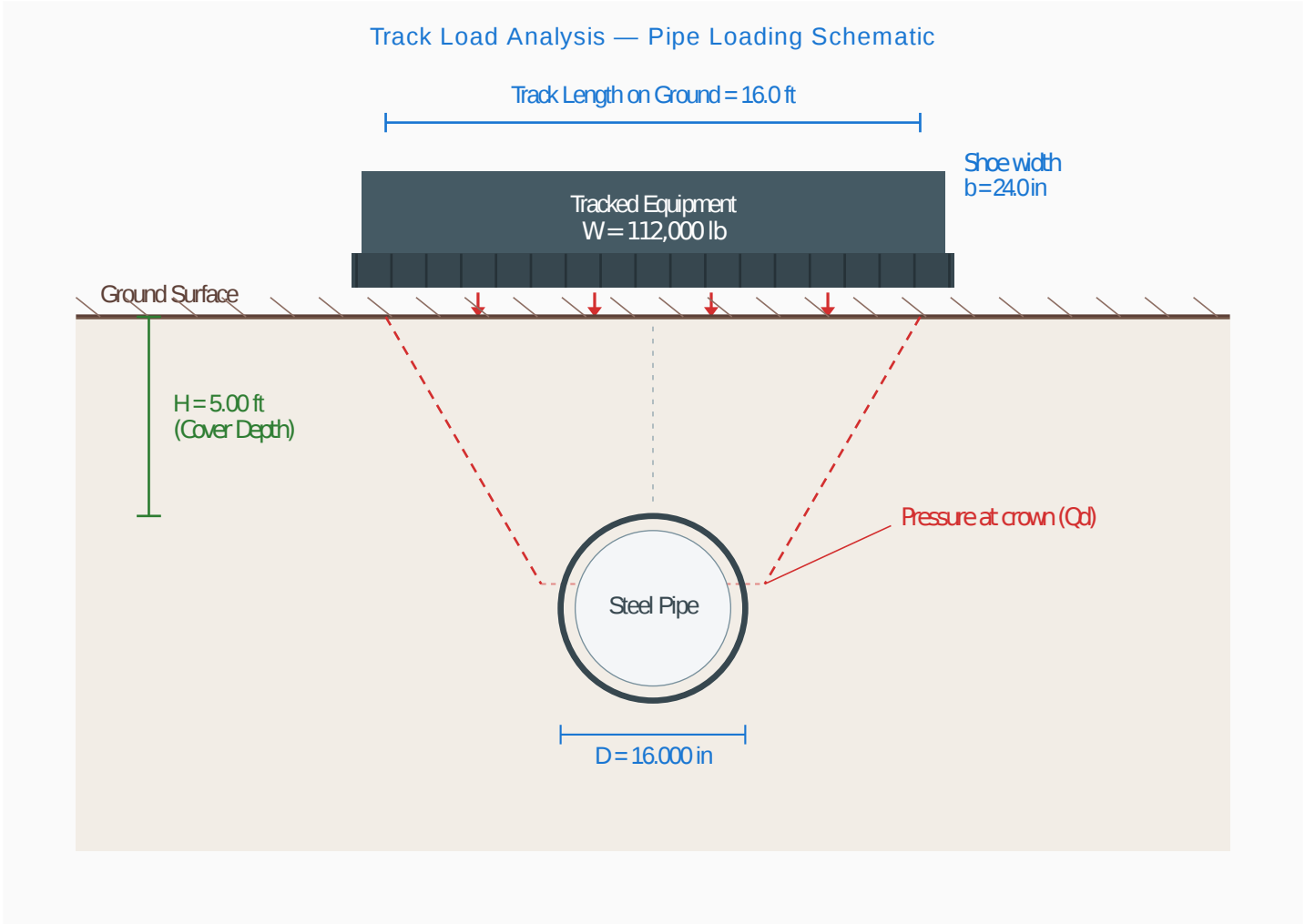
Max Allowable: 60% | Status: PASS

1.1 Pipeline & Soil Inputs

Parameter	Value	Unit
Outside Diameter	16.000	in
Wall Thickness	0.375	in
Pipe Grade	X52	—
SMYS	52000	psi
Design Class	3	—
Operating Class	3	—
Soil Type	Clay	—
Crossing Type	Open Cut	—
Depth of Cover	5.00	ft
Internal Pressure	790	psi
Operating Weight	112000	lb
Track Shoe Width	24.0	in
Track Length	16.0	ft

2. VISUAL REFERENCE — TRACKED EQUIPMENT LOADING

The diagram below illustrates the tracked-equipment contact area on the ground surface and the resulting Boussinesq load spread that reaches the buried pipe crown. The track length and shoe width define the contact patch over which the operating weight is distributed.



Key Parameters

Cover Depth (H): 5.00 ft
Track Shoe Width: 24.0 in

Pipe OD (D): 16.000 in
Track Length: 16.0 ft

Wall Thickness (t): 0.375 in
Operating Weight: 112000 lb

3. CALCULATED RESULTS

Parameter	Symbol	Value	Unit
Load Coefficient	Cd	1.560	—
Load due to Overburden	Wc	97.47	lbf/in
Influence Factor (longitudinal)	m	0.20	—
Influence Factor (transverse)	n	1.60	—
Influence Coefficient	lc	0.238	—
Max Static Pressure	Qd	416.50	lbf/ft ²
Total Track Load	Wt	69.42	lbf/in
Total Applied Load	W	166.89	lbf/in
Hoop Stress	Sh	16,853.33	psi
Circumferential Stress	Sc	7,941.98	psi
Total Circumferential Stress	St	24,795.31	psi
Total Combined Stress	S	24,795.31	psi
Percent of SMYS	$\%S$	47.7	%

4. COMPLIANCE & CONCLUSIONS

Design Verification

Combined stress within allowable limits (60% SMYS)

- Track load analysis meets design class requirements