

Pullback Cradle Support Span Report

Pipe Span Length & Cradle Spacing Analysis

PROJECT NAME

Demo - Case #1

CLIENT

ABC Pipeline

CALCULATED BY

John Smith, PE

DATE

June 29, 2026

PULLBACK SPAN LENGTH ANALYSIS REPORT

Pipeline Stringing Support Configuration Analysis

Generated: June 29, 2026 at 09:02 PM

1. EXECUTIVE SUMMARY

OPTIMAL SPAN CONFIGURATION

4 Cradle Supports @ 72.2 ft

Maximum Stress: 37,169 psi (57.2% SMYS)
Maximum Deflection: 0.53 inches

1.1 Analysis Summary

Pipe Specification

OD × WT: 24.000 × 0.500 in
Grade: X65
SMYS: 65,000 psi

Pullback Parameters

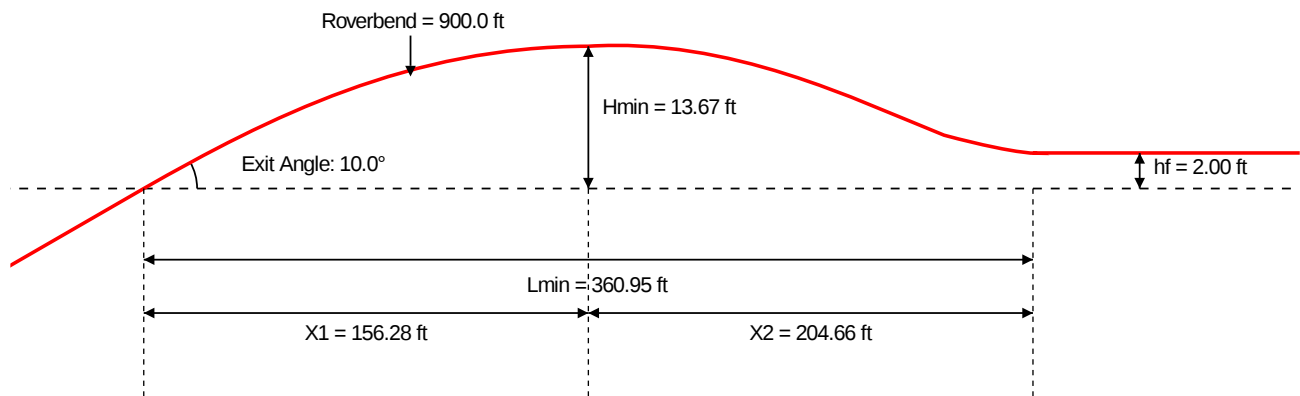
String Length: 1,000 ft
Pull Force: 14,000 lbf
Load: 129.38 lbs/ft

1.2 Input Parameters

Parameter	Symbol	Value	Unit
Outside Diameter	D	24.000	inches
Wall Thickness	t	0.500	inches
Pipe Grade	-	X65	-
SMYS	S	65,000	psi
Elastic Modulus	E	29,500,000	psi
Stringing Length	L _{string}	1,000	ft
Roverbend	R	900	ft
Angle	θ	10.0	degrees
Support Height	hf	2.00	ft

2. GEOMETRY & CALCULATED PROPERTIES

Stringing Pipe Geometry Diagram



2.1 Calculated Geometric Properties

Property	Value	Unit
Inside Diameter (d)	23.000	inches
Cross-Sectional Area (A)	36.91	in ²
Moment of Inertia (I)	2,549.4	in ⁴
Section Modulus (Z)	212.4	in ³
Distributed Load (W)	129.38	lbs/ft
Pull Force (T)	14,000	lbf
Min Bend Radius (Pure Bend)	504.27	ft
Hmin	13.67	ft
X1	156.28	ft
X2	204.66	ft
Lmin	360.95	ft

3. SPAN CONFIGURATION ANALYSIS

3.1 All Configurations Summary

Number of Spans	Cradle Supports	Span Length (ft)	Max Seq (psi)	% SMYS	Max Deflection (in)	Status
2	1	180.5	62,925	96.8%	17.08	Max Deflection >1.0"
3	2	120.3	43,743	67.3%	4.29	Max Deflection >1.0"
4	3	90.2	39,537	60.8%	1.27	Max Deflection >1.0"
5	4	72.2	37,169	57.2%	0.53	OPTIMAL
6	5	60.2	35,960	55.3%	0.25	OK
7	6	51.6	35,215	54.2%	0.14	OK
8	7	45.1	34,733	53.4%	0.08	OK
9	8	40.1	34,400	52.9%	0.05	OK
10	9	36.1	34,164	52.6%	0.03	OK

Configuration Recommendations

1. Recommended Configuration: 5 spans at 72.2 ft spacing
2. Maximum stress utilization: 57.2% of SMYS
3. Maximum deflection: 0.53 inches
4. Total number of Cradle Supports required: 4 supports
5. Ensure proper alignment and leveling of all support rollers

Installation Guidelines

- Verify actual pipe weight matches calculated load of 129.38 lbs/ft
- Maintain consistent support height ($h_f = 2.00$ ft) across all rollers
- Assumed pull force required to move the stringing pipe from resting position 14,000 lbf
- Conduct visual inspection for excessive sag between supports
- Ensure overbend radius maintains minimum 900 ft