

Buoyancy Control — Weight Spacing

Concrete Weight Spacing for Pipeline Buoyancy Control

PROJECT NAME

Demo - Case #1

CLIENT

ABC Pipeline

CALCULATED BY

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DATE

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BUOYANCY CONTROL — WEIGHT SPACING

Concrete Weight Spacing for Pipeline Buoyancy Control

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1. EXECUTIVE SUMMARY

CONCRETE WEIGHT SPACING (L)

24.89 ft

(7.59 m) — Status: PASS — DESIGN ACCEPTABLE

Pipe & Coating Geometry

Pipe OD (bare):	24.000 in
Wall Thickness:	0.500 in
Coating Thickness:	150 mil
Coated OD:	24.300 in
Inside Diameter:	23.000 in

Materials & Loads

Coating Unit Wt:	59.30 lb/ft3
Fluid Unit Wt:	62.42 lb/ft3
Product Unit Wt:	0.00 lb/ft3
Concrete Unit Wt:	140.00 lb/ft3
Concrete Wt Mass:	3500.0 lb
Buoyancy Ratio:	1.10

2. FORCES & WEIGHT COMPONENTS

Parameter	Value	Unit
Buoyant Force (F_B)	201.03	lbf/ft
Steel Pipe Weight (W_p)	125.49	lbf/ft
Coating Weight (W_c)	4.69	lbf/ft
Product Weight (W_F)	0.00	lbf/ft
Downward Pipe Force (F_P)	130.18	lbf/ft
Net Controlling Force (F_net, w/ BR)	77.94	lbf/ft
Submerged Weight Force (F_wt)	1939.50	lbf
Concrete Weight Spacing (L)	24.89	ft

3. CONCLUSIONS

Design Verification — PASS — DESIGN ACCEPTABLE

Required concrete weight spacing: 24.89 ft (7.59 m).

Buoyancy ratio of 1.10 applied to net controlling force.

Each concrete weight of 3500 lb supplies sufficient submerged downforce at the computed spacing.

Pipeline Schematic

