

JW POWELL BOULEVARD SEWER SYSTEM DESIGN – PIPE FLOTATION CALCULATIONS

Date: May 8, 2026
COF Project No: 17COF02
Peak Project No: 17COF02
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The following calculations are for pipe flotation for the 16" sewer main and the 42" sewer transmission main crossing the Rio de Flag floodplain in the immediate vicinity of the JW Powell Boulevard roadway extensions. Both the main and the transmission main are shallow. This memo accompanies the 90% design plans for the project.

The calculations below neglect the weight of wastewater flows in the pipe. Weights shown or calculated are per linear foot of pipe. Water is assumed to be 62.4 lb/cubic foot, concrete 90 lb/cubic foot when submerged.

16" Sewer Main

Material: Ductile Iron Pipe
Weight/linear foot: 57 lbs/foot
Outside Diameter: 17.4"
Area: 1.7 SF
6" Thick Concrete Cap Weight: 65 lbs
Total Weight: **122 lbs**
Displaced Water Weight: **103 lbs** **OKAY**

Refer to the detail on the plans showing shallow cover installation. Calculations above are for minimum cover and neglect the gabion mat.

42" Sewer Transmission Main

Material: RCP with lining
Weight/linear foot: 697 lbs
Outside Diameter: 54"
Area: 15.9 SF
1.5' Min. Bury Depth: 460 lbs (assumed 68 lb/cubic foot for inundated backfill)
Total Weight: **1157 lbs**
Displaced Water Weight: **992 lbs** **OKAY**