

Department of Public Works

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October 31, 2023

Kenny Hodges
County Attorney
El Paso County
200 S. Cascade Avenue
Colorado Springs, CO 80903
VIA email: KennyHodges@elpasoco.com

Re: Falcon Underdrain Site Visit and Investigation

Dear Mr. Hodges:

On Thursday September 21, 2023, Department of Public Works Engineering staff visited the Falcon Highlands area to perform an inspection related to issues reported with the developer-installed underdrain system serving this neighborhood.

The objectives of the inspection were to:

- Visually inspect the pipe where accessible along the maintenance trail
- Determine the location and accessibility of cleanouts, both along the maintenance trail and within the subdivision roadway network
- Analyze and provide probable opinion (cost estimate) for repairing and upgrading the underdrain system

The attached report provided on September 22, 2023, outlines the efforts, summary and estimates for repair. The extents, impacts and cause of the reported issues are mostly unknown, and are expected to change based on additional inspections, analysis, and engineering.

Sincerely,



Joshua Palmer, P.E.
County Engineer

EPC was only able to access the pipe at the outlet end and could not scope beyond 47' due to obstructions within the pipe. No other cleanouts were accessible from the surface. The full replacement cost could be between \$9-16M depending on subgrade conditions with shallow bedrock being present along with other factors.

Please see below for the site visit summary and cost estimate.

SITE VISIT SUMMARY

On Thursday September 21, 2023 I went out to Falcon Highlands with two EPC inspectors to see if we could scope the underdrain system from the outlet and or locate the cleanout near the 45° bend at the creek crossing. We located the outlet which was dry both now and upon a previous visit. We were able to scope the pipe approximately 47' from the outlet before encountering rocks and other debris that prevented the camera from extending further (Figures 1 & 2). Moisture was detected at the obstruction point and along with the presence of rocks would indicate possible damage to the underdrain, but there would be no way to verify without excavating the pipe



Figure 1 – Debris as seen through the scope





Figure 2 – Aerial of scoped distance (46.6', green) relative to the underdrain pipe length prior to the bend (64', red)

Per the plan, the underdrain is beneath the approximately 650' maintenance trail but there were no cleanouts accessible along the surface. I spoke with one of the contractors who was a part of the original installation of the underdrain in 2004 and he said there are cleanouts there, but he would not be able to specify their locations as the maintenance trail was not there originally when the line was installed and he believes them all to be buried now.

Per the contractor, all of the cleanouts have PVC caps and are buried beneath the pavement throughout the subdivision except the ones alongside the creek that are believed to be buried beneath the maintenance trail. The contractor did indicate that there was a cleanout approximately 3' west of the manhole on Rolling Thunder and highlighted its location beneath the pavement as indicated in the plans (Figures 3–5)





Figure 3 - Rolling Thunder (looking west)



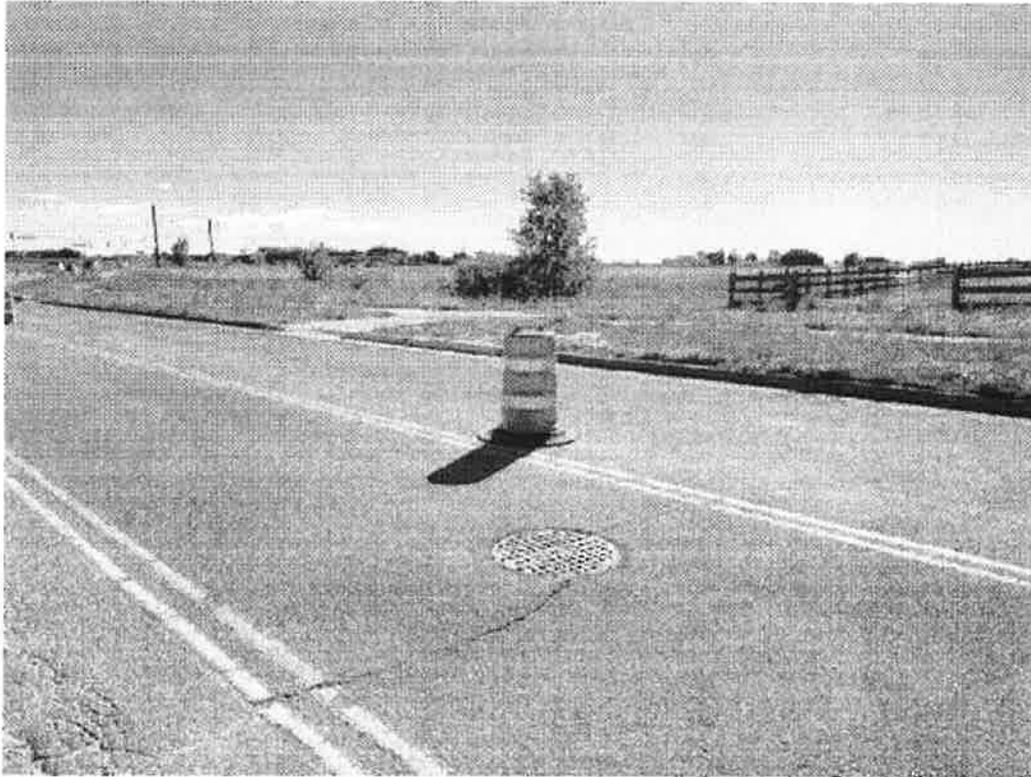


Figure 4 - Rolling Thunder (looking east)

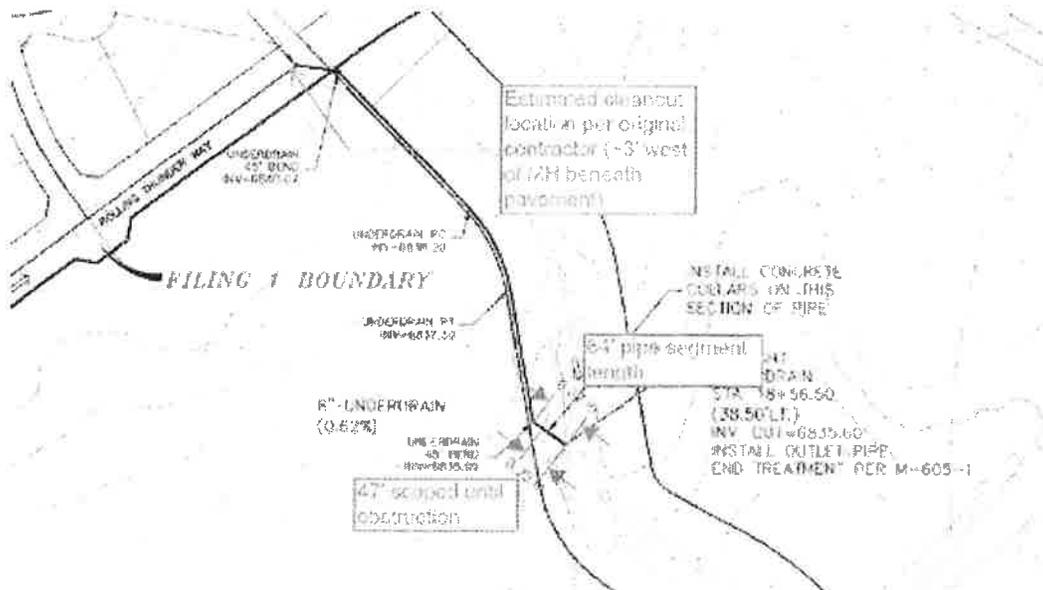


Figure 5 - Rolling Thunder (looking east)



COST ESTIMATE:

The underdrain system has 13,237 LF of pipe and is buried beneath the sanitary sewer throughout the subdivision, beneath bedrock in some locations. With the underdrain being positioned in the roadway centerline, both mats would be impacted during excavation and would require a full width replacement. Please see the cost breakdown below:

Underdrain Estimate			
Road	Start	Finish	Length (LF)
Rolling Thunder Way	5430.00	5740.37	310.37
	6540.00	9127.83	2587.83
Antelope Meadows Circle	1483.72	2737.00	1253.28
	2877.00	5593.57	2716.57
Indian Echo Terrace	1826.78	2044.23	217.45
	2822.00	3537.12	715.12
Bridal Vail Way	1547.66	2344.16	796.50
	2790.81	3128.00	337.19
Prairie Walk Terrace	100.00	790.94	690.94
Sylamore Way	100.00	946.47	846.47
Sunken Meadow Court	100.00	290.12	190.12
Trailway Court	100.00	612.21	512.21
Tailmena Terrace	100.00	631.77	531.77
Clouded Peak Court	100.00	271.60	171.60
Alongside Creek	100.00	880.85	780.85
Total Length (LF):			13237.42
Cost/LF:			\$500.00
Estimated Cost:			\$6,329,135.00

Pavement Estimate				
Item	Quantity	Unit	Unit Cost	Cost
Asphalt	7000	Ton	\$102.00	\$714,000.00
Milling	42000	SY	\$4.55	\$191,100.00
Tack	4200	Gal	\$5.00	\$21,000.00
Striping and Traffic Control	1	LS	\$70,000.00	\$70,000.00
Total:				\$996,100.00



Total	
Underdrain	\$6,329,135.00
Pavement	\$996,100.00
Subtotal:	\$7,325,235.00
Contingency (20%):	\$1,465,047.00
Total:	\$8,790,282.00

The estimate to replace the underdrain at \$500/LF and the resulting pavement replacement is \$8.8M but could be up to 16M given the presence of shallow bedrock, overall subgrade conditions, and other factors.

