

Jefferson County Engineer's Office

2022 Year End Report

April 18, 2023

James F. Branagan, P.E., P.S.

YEAR END HIGHLIGHTS

The Year of 2022 started with a continuation of numerous landslide (slips) repair projects. From 2018 through 2022 ninety-seven landslides have been repaired at a cost of 10 ½ million dollars. In addition to construction cost, time and funds are spent on geotechnical investigations, design plans, grant requests and construction inspections.

Additional improvements for the year include resurfacing County Roads 16, 46 and 77; totaling 7.59 miles. The County Road 77 (Permars Run) resurfacing was an Ohio Public Works joint grant project with the City of Steubenville and Island Creek, Smithfield and Wells Township.

Despite the disruption created by the landslide disasters, the normal highway maintenance programs

such as chip seal resurfacing, bridge replacement/repairs, pavement marking application and vegetation management items were completed.

As always, I thank and commend the Engineer's Office/Highway Department/Tax Map Office for their hard work and accomplishments over the year. A SPECIAL THANKS to the Board of Commissioners for directing a portion of ARPA funds toward landslide repairs.

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Jefferson County Engineer

Snap Shot

- ◆ Miles paved 7.59
- ◆ Miles chip sealed 21.14
- ◆ LF Pipe installed 930
- ◆ Miles road markings 166
- ◆ Bridges replaced 2
- ◆ Bridges rehabilitated 7
- ◆ Signs installed 39
- ◆ Slip repairs 17
- ◆ Tons of salt 4,730
- ◆ Tons of asphalt 6,248
- ◆ SY Base Repair 1,763

COUNTY ROAD 74 SLIP

The year of 2022 was going to be a turning point for the County Engineer's Department. After repairing close to 100 slips in 4 years, we were beginning to see the light at the end of the tunnel with the long list of slip sites being repaired. Road resurfacing, guardrail replacement and other projects were beginning to be discussed, now that our slip list was almost complete.

Unfortunately, a new slip started developing along County Road 74 in Goulds. The turning point we had hoped for was not what we expected. The new slip site was caused by a fallen tree, subsequently turning Cross Creek into the embankment that holds County Road 74. The fallen tree had been washed into the creek during the heavy rains of the winter and spring. The tree was a 48" diameter sycamore with its root ball attached. The tree being lodged in the center of the stream channel caused the embankment to start washing down stream. Over 1500 CY of soil embankment and many large trees were swept away during several heavy rainfalls throughout the year.

County Road 74 was now sitting 35 ft above the stream with little to no earth holding it in place. An existing 100 ft long driven pile wall in the slip location was the only thing holding the roadway from completely falling 35 ft into the stream. The existing driven piling contained tie rods to driven piles located under the roadway. These ties saved the road from complete collapse, but the earth was still falling around the existing driven pile wall system.

The County began design immediately after the major soil loss was noticed in August of 2022. At this same time, it was apparent that we must quickly remove the fallen tree to slow the damage it was causing by diverting Cross Creek towards the roadway em-

bankment. Upon approval from the Army Corp of Engineers, the County crews began cutting and removing the fallen tree from the waterway. Removing the mammoth tree allowed the heavy flowing waters of Cross Creek to travel the more natural path it once did. This helped slow the failure and allow the County Engineer's Office to determine a design and repair method for the failed embankment. The repair of this 250 ft stretch of embankment will consist of drilled piling, rock channel protection, embankment restoration and tie back anchors on the existing driven piles. The cost of this repair will be approximately \$1.2 million. Approximately \$2.3 million of funding was received in 2022 from the County Commissioner's from ARPA funds. These funds were used to fix slips throughout the County, including the large slip on CR74 caused by a large tree.



County Road 74 Slip—Existing Driven Pile Wall Exposed by Severe Erosion

BRIDGES

2022 Bridge Replacements						
Township	Route	SLM	Description	Cost	Funding	Contractor
Warren	TR 1269	(Ace Drive)	Concrete Box Culvert	\$ 60,000.00	Local	In-house
Cross Creek	TR 167A	0.01	ConTech Arch	\$ 350,000.00	Oil/Gas	Ohio-WV
Total Replacement Cost				\$410,000.00		
2022 Maintenance/Rehabilitation						
Township	Route	SLM	Description	Cost	Funding	Contractor
Cross Creek	CR 77		Slab and Wing Wall Replacement	\$ 30,000.00	Local	Pierced Fish
Wayne	CR 36	1.00	Expansion Joint Repair	\$ 1,200.00	Local	Pierced Fish
Knox	CR 53	10.66	Guardrail Replacement	\$ 2,000.00	Local	In-house
Cross Creek	CR 26	9.36	Tree Clearing	\$ 1,500.00	Local	In-house
Island Creek	CR 46	2.33	Bank Stabilization	\$ 4,500.00	Local	In-house
Springfield	TR 263	0.17	Truss Maintenance	\$ 1,500.00	Local	In-house
Island Creek	CR 41	1.03	Deck/Pavement Repair	\$ 1,500.00	Local	In-house
Total Maintenance / Rehabilitation Cost				\$42,200.00		
2022 Total Bridge Improvements				\$452,200.00		

Future Replacements						
Township	Route	SLM	Description of Existing	Funding	Contractor	Year
Springfield	TR 472	0.12	53' Steel Truss	OBPP	Contractor	2024
Knox	TR 289	0.06	105' Steel Truss	BFP/BHJ	Contractor	2023
Springfield	CR 49	0.19	55' Steel Beam	ST EX	Contractor	2023
Mount Pleasant	CR 7	0.85	37' Concrete Girder	LOCAL	Contractor	2025
Smithfield	CR 6	0.00	52' Steel Beam	LOCAL	Contractor	2024
Cross Creek	TR 173	0.01	19' Concrete Slab	LOCAL	Contractor	2024
Island Creek	TR 383	0.31	5' Dual Culverts	TOWNSHIP	County	2023



Warren Township Road 1269 Bridge Replacement by County Forces



CR 77 Bridge Slab and Wing Wall Replacement

CULVERT & CATCH BASIN INSTALLS

Road	Culvert Size						CB
	12"	15"	18"	24"	30"	36"	
5		140					1
10			60				
11			51				
20	40	40					
51				40	49		
54		140					
56	10		40				
57	60						
60		40					
72	6	6					
77	108	40				60	1
Total	224	406	151	40	49	60	2

930 LF pipe and 2 catch basins installed.



CR 20—County Forces Replacing a Culvert

In addition to the above work, Robinson was hired to clean catch basins and drainage pipes on CR 77. County crews completed 10.82 miles of ditch cleaning and 7.65 miles of shoulder grading. Total cost for drainage work is \$929,039.71.

PAVEMENT

Road	Begin	End	Miles	Description	Funding	Cost
16	CR 17A	CR 15	4.29	1.5" overlay	County	\$ 553,731.36
30	Mingo Corp	CR 29	0.51	2" overlay	County/OPWC	\$ 117,305.44
46	SR 213	Ridgeland Drive	1.23	2" overlay	County/OPWC	\$ 227,762.01
77	Steubenville Corp	Steubenville Corp	1.56	1.75" overlay	County/OPWC	\$ 278,957.50
		Total Length	7.59		Total Cost	\$ 1,177,756.31

2022 Upgrades and Repairs to County Roads by Oil and Gas Industry

Road	Begin	End	Miles	Description	Company	Cost
CR 15	0.00	7.75	7.75	Patch Crossing	Markwest	\$3,000.00
CR 15	0.00	7.75	7.75	Patch Crossing/ Mill and Fills	Markwest	\$50,200.00
CR 17	0.00	1.72	1.72	Repair Ditch at Crossing	Markwest	\$8,950.00
CR 17	0.00	1.72	1.72	Mill and Fills and overlay Patches	Markwest	\$270,160.00
CR 18	1.63	2.72	1.09		Markwest	
CR 20	1.16	2.46	1.30		Markwest	
CR 21	0.00	1.64	1.64		Markwest	
CR 54	3.40	6.50	3.10	Mill and Fill	Encino	\$30,950.00
CR 72	0.00	3.53	3.53	Mill and Fill	Encino	\$71,486.00
CR 54	3.40	6.50	3.10	Chip Seal	Encino	\$160,045.76
CR 58	0.00	3.04	3.04		Encino	
CR 59	0.00	2.50	2.50		Encino	
CR 60	0.00	2.71	2.71		Encino	
CR 58	0.00	3.04	3.04	Chip Seal	Williams	\$34,972.97
CR 19	1.96	3.26	1.30	Base Repair and 3" 441-2	Ascent	\$1,118,443.00
CR 15	0.00	7.75	7.75	Mill and Fills	Ascent/Gulfport	\$488,801.00
CR 26	0.00	2.70	2.70	Mill and Fill	Ascent	\$75,347.00
CR 25	3.30	4.21	0.91		Ascent	
CR 18	0.00	1.63	1.63	Mill and Fill	Ascent	\$8,152.00
		Total Length	58.28	Total Investment by Oil and Gas Industry		\$2,320,507.73



CR 77—County Forces Placing Shoulder Stone



CR 58—County Forces Chip Seal

SLIP REPAIRS

Road	Length (FT)	Repair Type	Funding	Cost
CR 16 - 0.6	36	Drilled Shaft	County	\$ 187,596.50
CR 16 - 1.0	164	Drilled Shaft		
CR 26 - 6.48	56	Driven Pile	County	\$ 34,074.65
CR 10 - 7.76	188	Drilled Shaft	County / OPWC (90%)	\$ 266,439.19
CR 26-11.48	114	Drilled Shaft		
CR 77 - 0.8	128	Drilled Shaft	County	\$ 130,155.00
CR 74 - 5.2	156	Drilled Shaft	County	\$ 185,466.00
CR 74 - 4.2	120	Drilled Shaft	County / ARPA	\$ 253,750.00
CR 74 - 4.3	124	Drilled Shaft		
CR 56 - 9.77	412	Drilled Shaft	County / ARPA	\$ 517,972.70
CR 56 - 11.78	100	Drilled Shaft		
CR 1 - 3.4 A	48	Drilled Shaft	County / ARPA	\$ 174,770.00
CR 1 - 3.4 B	72	Drilled Shaft		
CR 2 - 2.1	100	Drilled Shaft		
CR 14 - 0.8 A	232	Drilled Shaft	County	\$ 417,385.00
CR 14 - 0.8 B	188	Drilled Shaft		
CR 14 - 1.5	124	Drilled Shaft		
17 Sites	2362		Total Repair Costs	\$2,167,609.04
			County Funds	\$1,927,813.77

CHIP SEAL

County crews placed a chip seal on 21.14 miles of County Roads including 28, 54, 55, 57, 58, 59 and 60. The total cost was \$580,113.36. Encino and Williams contributed \$195,018.73 toward the chip seal of existing haul routes. Crews also sealed 12.30 miles of Township Roads.

SIGNS

At the end of 2021 the sign inventory consisted of 4,031 signs of varying types. The County uses three types of signs, Regulatory, Warning and Informational. In 2022, 39 new signs were added, 278 signs were replaced, 62 signs were reset or relocated and 10 signs were removed. The total cost was \$34,778.19.

VEGETATION MANAGEMENT

Contract tree trimming and removal was completed on County Roads 16, 74 and 77 at a cost of \$86,770.90 and Right of Way mowing consisted of three passes at a cost of \$48,945.00. County forces contributed to vegetation management, at a cost of \$140,675.42, by mowing, trimming or removing trees and applying 294 gallons of herbicide. Total cost of Vegetation Management was \$276,391.32.

GUARDRAIL

The County Engineer maintains over 84 miles of guardrail which requires frequent repairs in order to retain its function. County crews replaced 637.5 LF on County Roads 10, 29, 39, 47, 51, 53, 56, 57 and 77. A contractor replaced 1,750 LF of guardrail on County Roads 17A. Total cost for guardrail maintenance in 2022 was \$87,438.58.

EQUIPMENT

Item	Cost
1 Case 621G Loader	\$167,490.00
1 Chevy 2500 Pickup	\$53,666.90
1 Dump Body	\$29,275.00
2 Truck Chains	\$7,176.92
1 Plate Compactor	\$2,635.00
1 Concrete Saw	\$2,359.00
1 Storage Unit	\$5,500.00
4 2 Way Radios	\$4,136.58
Laminator	\$1,606.88
Total Cost	\$273,846.28



Case 621G Loader

BUILDING AND GROUNDS

Maintenance costs included fire alarm upgrades, garage floor drain repairs, HVAC maintenance, new brine storage facilities, locker room re-modelling and architectural services. The total cost was \$80,547.47.

MAP OFFICE STATS

Deeds reviewed and recorded	4,152
Property splits and/or combinations	371
Copies provided per month	550
New surveys and descriptions reviewed	262

PROGRESS

Item	2021 Goal	Achieved	% of Goal
Resurfacing	12 Miles	7.59	63
Chip Seal	36 Miles	21.14	59
Base Repair	As required - SY	1,763	100
Drainage Pipe	As required - LF	930	100
Catch Basins	As required - EA	2	100
Bridges	As required - EA	2	100
Slips	As required - EA	17	100
Mowing	3 cuts EA Road	3	100
Tree Removal	As required	-	100
Signs	150 EA	39	26
Markings	125 Miles	166	133
Equipment	7 EA	3	43

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PAVEMENT MARKINGS

Road	Description	Miles
Double Yellow Center Line Only		
1	Rayland Corp. to Mt. Pleasant Corp.	7.08
2	County Road 1 to State Route 7	1.76
4	County Road 17 to County Road 16	1.22
7B	Mingo Corp. to termini	0.63
7F	Toronto Corp. to State Route 7 Ramp	1.93
7G	State Route 7 Ramp to State Route 7 Ramp	0.77
8	State Route 150 to State Route 152	3.63
9	County Road 22A to Wintersville Corp.	0.34
10	Adena Corp. to Harrison County Line	2.13
10	Adena Corp. to State Route 152	7.80
14	State Route 150 to County Road 15	2.76
15	Old Smithfield Corp. to State Route 150	7.75
15A	County Road 15 to County Road 16	0.40
17	State Route 7 to County Road 15	5.93
17A	Rayland Corp. to Township Road 155	2.38
18	State Route 151 to County Road 17	2.60
21	County Road 15 to State Route 151	1.59
23	Bloomington Corp. to State Route 151	5.22
26	Steubenville Corp. to County Road 23	11.60
28	County Road 74 to County Road 26	2.56
29	County Road 30 to Mingo Jct. Corp.	0.32
30	Steubenville Corp. to County Road 28	1.87
34	County Road 22A to Wintersville Corp.	0.95
36	State Route 152 to Township Road 136	4.65
38	County Road 22A to County Road 39	2.62
39	County Road 22A to State Route 43	9.90
43	State Route 7 to Steubenville Corp.	2.60
44	County Road 7G to Byron Street	0.29
45	Township Road 375 to State Route 43	2.81
46	State Route 213 to State Route 7	2.47
49	State Route 164 to Carroll County Line	2.15
50	State Route 213 to County Road 55	1.46
50A	State Route 213 to Steel Truss Bridge	0.39
51	State Route 213 to State Route 213	4.40
53	Bergholz Corp. to State Route 213	11.36
54	State Route 43 to County Road 58	6.52
55	State Route 164 to County Road 50	7.20
56	Township Road 371 to State Route 213	2.64
56	State Route 7 to State Route 213	3.41
56	State Route 152 to County Road 54	4.59
57	County Road 56 to County Road 53	4.23
58	County Road 60 to County Road 53	7.40
59	County Road 60 to County Road 54	3.35
60	State Route 43 to County Road 59	0.92
71	US Route 250 to Belmont County Line	0.91
75	State Route 43 to State Route 164	4.93
75A	State Route 164 to County Road 75	0.30
78	Amsterdam Corp. to Township Road 267	1.75
Total Miles Painted		166.47

All pavement markings consisted of double yellow centerline. Total project cost was \$139,834.80.