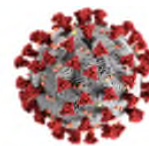


Jefferson County Engineer's Office



2020 Year End Report



DEALING WITH DISASTERS

The progression of the Covid-19 pandemic unfolded in March of 2020. The Department took a step back in April to assess the situation. Our main garage and outposts were placed on split shifts (one-half crews alternating weeks off) to control the possible spread of the virus. Office workers were advised to work from home if possible and others to spend more time in the field such as bridge or construction inspections. Information was obtained from the Ohio Department of Health and other sources to develop a protocol moving forward.

Supplies such as masks, antiviral sprays and hand sanitizers were obtained. By May 1st, workers were back to full schedule with

instructions to wear masks, self-distance and quarantine when exposed to the virus.

The policies enacted and the individual efforts helped limit the spread of the virus in the Department.

All the achievements made in 2020 despite the presence of a once in a one-hundred-year pandemic is testament to the skill, hard work and dedication of every employee from the Engineer's Office, Highway Department and Tax Map Office, I sincerely commend and thank them all.

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

April 5, 2021

Jefferson County Engineer
James F. Branagan P.E.,P.S.

Snap Shot

- ◆ Miles paved 6.56
- ◆ Miles chip sealed 14
- ◆ LF Pipe installed 378
- ◆ Miles road markings 131
- ◆ Bridges replaced 4
- ◆ Bridges rehabilitated 7
- ◆ Signs installed 158
- ◆ Slip repairs 30
- ◆ Tons of aggregate 6,064
- ◆ Tons of salt 3,189
- ◆ Tons of asphalt 3,573
- ◆ Gallons emulsion 64,808
- ◆ Gallons of fuel 65,442
- ◆ SY FDR 6,091

COUNTY ROAD 53 BRIDGE REPLACEMENT

In April of 2019 during the annual inspection, a catastrophic failure was discovered in the lower chord of the County Road 53 bridge just east of Bergholz. For public safety, immediate closure of the structure was necessary. The County hoped to repair the damaged member, however after thorough inspection by our department and consulted specialists, the bridge was found to be damaged beyond the point of repair. The manner in which the lower chord was severed raised great concerns for unknown damages and stresses put on the adjacent members.

Fortunately, the County was already working on the replacement project and funding for the proposed bridge was already secured. To expedite construction and reduce the closure time of County Road 53 by approximately a year, the decision was made to move the proposed bridge south of its existing location. This design decision signifi-

cantly reduced the environmental work necessary to begin construction. The increased roadway costs were offset by the reduced cost in environmental fees keeping the project under budget.

Construction began on June 8, 2020 and the bridge was opened on November 30, 2020.



CR 53—Steel Girder Bridge

BRIDGES

2020 Replacements						
TWP	RTE	SLM	Description	Cost	Funding	Contractor
Warren	TR 115	0.42	Dual 5' HDPE pipes, 60LF each	\$ 33,334.61	LOCAL	In-House
Brush Creek	TR 61	1.60	Dual 5' HDPE pipes, 40LF each	\$ 25,150.01	LOCAL	In-House
Warren	CR 1	5.80	Concrete Box Culvert 10x5x30LF	\$ 116,463.00	LOCAL	Contractor
Ross	CR 53	1.46	Steel Girder 120' Span	\$ 1,911,000.00	ST EXCH	Contractor
Total Replacement Cost				\$2,085,947.62		
2020 Maintenance/Rehabilitation						
TWP	RTE	SLM	Description	Cost	Funding	Contractor
Wayne	TR 166A	0.34	Truss Repair	\$ 43,500.00	Local	US Bridge
Springfield	TR 263	0.17	Truss Repair	\$ 6,000.00	Local	Pierced Fish
Wayne	TR 208	0.55	Deck Replacement and paving	\$ 29,212.00	Local	Pierced Fish
Cross Creek	CR 74	0.01	Truss Repair	\$ 8,600.00	Local	Pierced Fish
Warren	TR 115	0.30	Paved	\$ 5,623.65	Local	In-House
Smithfield	TR 1184	0.50	Installed dump rock at outlet	\$ 1,390.40	Local	In-House
Smithfield	ROBY ST	0.01	Installed dump rock; storm drain	\$ 2,403.52	Local	In-House
Total Maintenance / Rehabilitation Cost				\$96,729.57		
2020 Total Bridge Improvements				\$2,182,677.19		



TR 115—Demolition of existing bridge by County Forces



TR 61 — Dual 5' HDPE Pipes



CR 53—Beam Placement



CR 56—Timber Bridge Resurfacing Preparation

Future Replacements						
Township	Route	SLM	Description of Existing Structure	Funding	Contractor	Year
Springfield	CR 75A	0.39	32' Concrete Arch	LOCAL	Contractor	2021
Springfield	TR 472	0.12	53' Steel Truss	OBPP	Contractor	2022
Knox	TR 289	0.06	105' Steel Truss	BHJ	Contractor	2022
Springfield	CR 49	0.19	55' Steel Beam	ST EXCH	Contractor	2022

CHIP SEAL

County crews placed a chip seal on 14.09 miles of County Roads. The total cost was \$352,752.05. Crews also placed a chip seal on 12.05 miles of Township Roads.

Road	1	2	4	12	15A	40	45	56	68	TOTAL
Miles	1.64	0.45	1.22	0.94	0.42	1.64	1.95	2.83	3.00	14.09

PAVEMENT

Road	Begin	End	Miles	Description	Funding	Cost
2	County Road 1	State Route 7	1.80	2" overlay	Local / OPWC	\$234,936.62
10	Adena Corp	Mt. Pleasant TR 130	0.69	2" overlay	Local / OPWC	\$103,409.66
17A	State Route 7 Ramp	Station 29+00	0.55	1.75" overlay	Local / Shelly & Sands	\$49,880.00
34	County Road 22A	Wintersville Corp	1.24	2" overlay	Local / OPWC	\$271,537.60
56	Ross TR 286	State Route 152	2.28	2" overlay	Local / OPWC	\$287,929.91
		Total Length	6.56		Total Cost	\$947,693.79



CR 45—Chip Seal Preparation by County Forces



CR 56—Resurfacing with Pavement Markings Complete



CR 34—Culvert Installation by County Forces



CR 34—Resurfacing with Pavement Markings Complete

BASE REPAIRS

County forces completed 6,091 square yards of full depth reclamation (FDR) base repairs on County Roads 2, 40 and 56. The work was in preparation of resurfacing and chip seal with a total cost of \$149,589.00.

GUARDRAIL

The County Engineer maintains over 84 miles of guardrail which requires frequent repairs in order to retain its function. County crews replaced 400 LF and made repairs to various guardrail elements on County Roads 2, 11, 26, 36, 50a and 56. The total cost was \$26,519.79.

SIGNS

At the end of 2020 the sign inventory consisted of 4,003 signs of varying types. The County uses three types of signs, Regulatory, Warning and Informational. In 2020, 158 new signs were added, 143 signs were replaced and 336 signs were reset or relocated. The total cost was \$45,295.54.

VEGETATION MANAGEMENT

Right of Way mowing consisted of three passes at a cost of \$44,116.80. County forces contributed to vegetation management by trimming or removing trees and applying herbicide. Crews cleared vegetation for the County Road 53 Bridge Replacement. A total of 168 gallons of herbicide was applied at a cost of \$12,781.84. Total cost of Vegetation Management was \$81,031.64.

2020 Upgrades and Repairs to County Roads by Oil and Gas Industry

Road	Begin	End	Miles	Description	Company	Cost
CR15	SR 150	Smithfield	7.75	Base repairs	Ascent	\$115,000.00
CR17	CR 15	CR 18	1.72	Base repairs	Ascent	\$65,000.00
CR18	CR 17	TR 156	1.63	FDR, overlay, pavement markings	Ascent	\$302,460.80
CR23	Bloomingtondale	Pipeline	1.90	Base repairs	Ascent	\$63,746.78
CR25	Well Site	CR 26	0.91	Base repairs	Ascent	\$17,635.12
CR26	CR 23	MM 2.70	2.70	Base repairs	Ascent	\$29,806.24
CR58	CR 60	TR 263	0.45	Base repairs	Encino	\$42,347.00
CR60	SR 43	CR 58	2.71	Base repairs	Encino	
CR59	CR 60	CR 54	3.40	Base repairs	Encino	\$18,568.00
CR23	Bloomingtondale	Pipeline	1.90	Base repairs	Markwest	\$57,466.50
		Total Length	25.07	Total Investment by Oil and Gas Industry for 2020		\$712,030.44

SLIP REPAIRS

Road	Length (FT)	Repair Type	Cost	Funding	Contractor
CR 47	108	Driven Pile	\$76,924.40	County	OWV
CR 47	68	Driven Pile	\$57,205.50	FEMA/OPWC/OEMA	OWV
CR 19	224	Drilled Shaft	\$145,968.00	County	OWV
CR 28	128	Drilled Shaft	\$186,111.20	County	OWV
CR 28	112				
CR 28	64				
CR 2	56	Drilled Shaft	\$1,032,075.47	Gulfport / County	OWV
CR 2	64				
CR 2	248				
CR 2	558				
CR 2	120				
CR 2	216				
CR 2	126				
CR 2	48			County	
CR 56	64	Drilled Shaft	\$251,680.48	County	Alan Stone
CR 56	56				
CR 56	280				
CR 56	80				
CR 56	56				
CR 56	128				
CR 56	72	Driven Pile	\$232,172.70	County	Bowers
CR 56	172				
CR 56	51				
CR 56	136				
CR 56	72				
CR 56	112				
CR 17	152	Drilled Shaft	\$130,940.50	FEMA /OEMA	OWV
CR 22A	128	Drilled Shaft	\$198,166.00	FHWA / County	OWV
CR 26	524	Drilled Shaft	\$1,586,592.81	FHWA / County	OWV
CR 26	76	Driven Pile	\$36,653.50	County	Bowers
30 Sites	4299		\$3,934,490.56	Total Repair Costs	
			\$960,510.28	County Funds	

COUNTY ROAD 26 REPAIR

County Road 26 - Fernwood Road experienced a large slip failure due to the heavy rains in the spring of 2020. This failure measured over 500 feet long and 500 feet wide. The initial slip revealed wide cracks across the roadway 350 feet apart. After investigating the damage, it was found not only the road was sinking but the entire hillside was moving downward, trees and all. When over 3,500,000 cubic feet (450 Million Pounds) of earth moves, it gets costly to stop this movement. CR26, being a Federal Aid Route made the repair eligible for emergency funds to fix the failed road in order to prevent an extended closure. Gannett Fleming Engineering designed a two wall system to re-stabilize the roadway and embankment. It was found that the soils were sliding off of the bedrock at 28 feet deep. One wall was not enough to handle the load. A second wall was designed to retain the upper hillside. Approximately a mile of H-beams and 24" drilled shafts were needed on this project resulting in a cost of over \$1.5 million. ODOT administered the project awarding Ohio West-Virginia the contract to perform the slip repair. Once the design was completed, construction of the two retaining walls and roadway repair moved fast. By mid-fall the roadway was back to its original location (pre-slip) with new guardrail and new pavement.



CR 2 —Drilled Shaft Retaining Wall Construction



CR 2—Drilled Shaft Retaining Wall and Resurfacing



CR 26 —Drilled Shaft Retaining Wall Construction



CR 26—Drilled Shaft Retaining Wall Complete

PAVEMENT MARKINGS COMPLETED IN 2021

<u>ROAD</u>	<u>DESCRIPTION</u>	<u>MILES</u>
	Double Yellow Centerline	
1	Rayland to Mt. Pleasant	7.07
2	Belmont County Line to State Route 7	2.23
4	County Road 17 to County Road 16	1.40
5	State Route 150 to Belmont County Line	1.41
7E	State Route 7 Ramp to Brilliant Corp.	1.30
7G	State Route 7 Ramp to State Route 7 Ramp	0.77
8	State Route 150 to State Route 152	3.63
11	County Road 10 to State Route 152	3.77
12	County Road 10 to Harrison County Line	1.20
15A	County Road 15 to County Road 16	0.40
17A	New Asphalt to End of Industrial Portion	0.30
19	State Route 151 to Brilliant Corp.	3.90
20	New asphalt to Smithfield TR 118	1.79
21	County Road 15 to State Route 151	1.64
23	Bloomington Corp. to State Route 151	5.23
26	County Road 34 to TR 189	1.90
26	County Road 23 out 2.7-Miles	2.70
26	County Road 33 to Steubenville Corp.	4.60
28	County Road 74 to County Road 26	2.56
34	County Road 22A to County Road 26	3.40
36	State Route 152 to Salem TR 211	4.65
38	County Road 22A to County Road 39	2.62
40	State Route 152 to State Route 646	2.86
42	County Road 46 to Toronto Corp.	1.72
43	State Route 7 to Steubenville Corp.	2.60
44	County Road 7G to Byron Street	0.29
45	State Route 43 to State Route 213	4.70
46	State Route 7 to State Route 213	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	0.38
51	State Route 213 to State Route 213	4.40
53	State Route 213 to County Road 54	8.70
56	County Road 54 to State Route 7	10.30
57	County Road 53 to 2.20-Miles	2.20
58	County Road 60 to County Road 53	7.40
59	County Road 60 to County Road 54	3.34
60	County Road 59 to County Road 75	2.84
61	County Road 75 to Amsterdam Corp.	1.00
68	State Route 152 to County Road 51	4.10
72	State Route 213 to Ross TR 218	3.52
75	State Route 43 to County Road 75a	4.14
78	Amsterdam Corp. to Springfield TR 267	1.70
152A	State Route 152 to State Route 152	0.31

Total Miles 131.05

Total Project Cost \$88,589.80

PAVEMENT MARKING PROGRAM

One of the most important aspects of roadway safety is pavement markings. Pavement markings effectively communicate information to drivers related to roadway alignment, vehicle positioning, and other driving-related tasks. In Jefferson County, almost every county road has a double-yellow centerline. This critical marking is applied as a fast-drying traffic paint, topped with a layer of glass beads for reflectivity. Over time these lines can be worn down and made less visible by tires, snow, rain, and snow removal. Many years ago, the County established a Centerline Striping Program. Once a year every road is driven with focus on the centerline. Then the road is given a rating based on the condition of the centerline, and a list of priority created. Every year, we bid the Centerline Striping Program and re-stripe as many roads from that list as we can within the given budget.



CULVERT & CATCH BASIN INSTALLS

Road	Culvert Size (Dia) and Length Installed (Ft)			CB
	15"	18"	36"	
17		10		
17A			8	
28		60		
34	140			5
56		80	40	
60			40	
Total	140	150	88	5
Total of 378 LF pipe and 5 catch basins installed or replaced.				

Robinson was hired to clean catch basins and culverts on County Roads 34 and 56 in preparation of resurfacing projects. County crews replaced several catch basins on County Road 34 in preparation of resurfacing. County crews also completed ditching on 16.02 miles of County Roads with various excavators. Total cost for drainage work is \$403,379.59.

BUILDING AND GROUNDS

Maintenance costs included repairs to overhead doors, HVAC maintenance, new brine storage facilities and repairs to the fire protection sprinkler system. The total cost was \$12,529.78.

MAP OFFICE STATS

Deeds reviewed and recorded	3,776
Property splits and/or combinations	526
Copies provided per month	628
New surveys and descriptions reviewed	482

Mapping Department
 Courthouse
 301 Market Street
 Steubenville, Oh 43952
 Ph: 740-283-8581

PROGRESS

Item	2020 Goal	Achieved	% of Goal
Resurfacing	12 Miles	6.56	55
Chip Seal	36 Miles	14.09	39
FDR	As required - SY	6,091	100
Drainage Pipe	As required - LF	313	100
Catch Basins	As required - EA	5	100
Bridges	4 EA	4	100
Slips	As required - EA	30	100
Mowing	3 cuts EA	3	100
Tree Removal	As required	-	100
Signs	150 EA	158	105
Markings	125 Miles	131.05	105
Equipment	7 EA	7	100

SUMMARY

Excessive rainfall events in 2018 and 2019 resulted in several Federal and State disaster declarations. Removing mud and debris from the roads, repairing ditches, cleaning pipes and catch basins, and restoring pavement were all completed in a timely manner. Resolving the landslide (slip) crisis along numerous roads is a complicated, expensive and long process. The County which normally deals with 2 to 4 slips per year has repaired 8 slips in 2018, 20 slips in 2019, and 30 slips last year.

The slips repaired in 2020 include both drilled shafts and driven piles with concrete or timber lagging. The County worked with personnel from ODOT, FEMA and Federal Highway Officials. All of the slips require preliminary engineering with soil borings, design analysis, plan development and specification. The projects proceed with bidding, award and inspection services.

EQUIPMENT

Item	Cost
1 Dump Truck	\$138,570.00
1 Tandem Chassis	\$97,778.29
1 Chip Truck Conversion	\$5,900.00
2 HD 4x4 Pickups with Utility Bodies	\$107,809.40
2 Used Pickup Trucks	\$18,100.00
1 4x4 Pickup Truck	\$22,373.70
3 Brine Pumps	\$6,774.00
1 Bucket for Backhoe	\$2,177.50
2 Radios	\$3,837.44
1 Snow Plow	\$10,868.71
2 Chainsaws	\$1,649.79
1 Sign Post Driver	\$1,700.00
1 Hand Operated Asphalt Roller	\$695.00
Total	\$418,233.83



New Tandem Dump Truck

In addition to all the slip projects, the normal annual maintenance duties were performed. Three major road projects were completed on County Roads 2, 34 and 56; 14 miles of chip seal were completed with County crews, and a major bridge project in excess of 1.9 million dollars was constructed before winter. Finally, the late December snow events had our plow truck drivers working overtime during the holidays to clear the ice and snow from the roads.

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