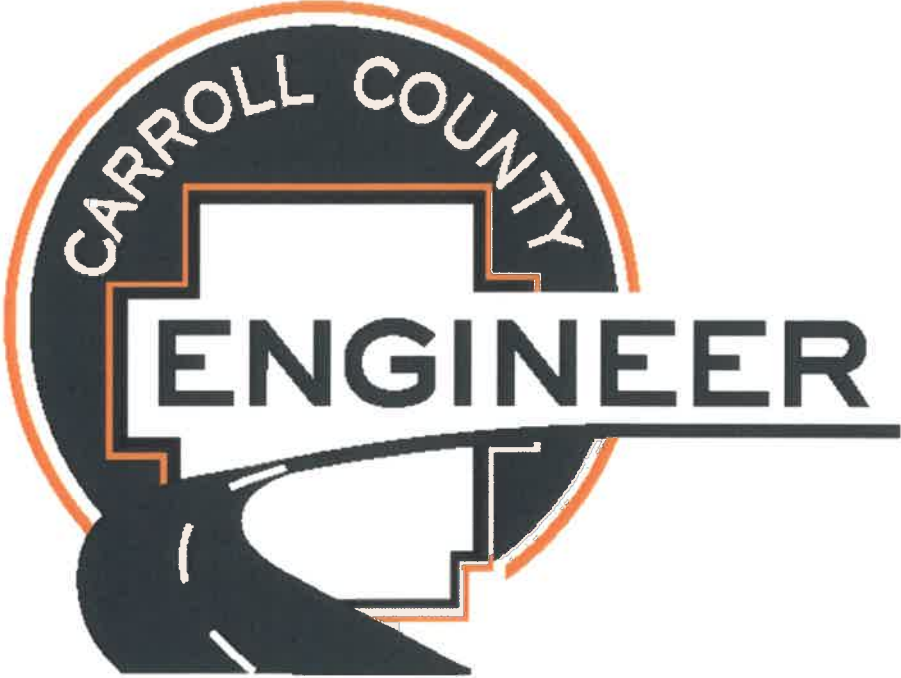


2017 ANNUAL REPORT



*Brian J. Wise, P.E., P.S.
Carroll County Engineer*





Carroll County Engineer's 2017 Annual Report

Brian J. Wise, P.E., P.S.
Carroll County Engineer

To the BOARD OF COMMISSIONERS and CITIZENS OF CARROLL COUNTY:

This document is not only prepared to comply with the requirements of the Ohio Revised Code as an annual report to the Carroll County Commissioners on the status of our roads, bridges and culverts, it also serves to keep the public informed of how your highway tax dollars are used for road and bridge construction and maintenance. I will continue to update this report to provide useful information in an easy to use format.

I would like to take this opportunity to thank all the employees of the County Engineer's Office, the Highway Department and the Tax Map Department for their hard work and dedication over the past year. Without their determined efforts, the volume of work completed in this report would not have been possible. I would also like to thank the County Commissioners, Township Trustees and Township Road Crews for their continued cooperation over the past year.

Funding issues continue to be the primary topic of importance to local road maintenance agencies. Revenues from the State Motor Vehicle Fuel Tax (M.V.F.T.) which have been steadily declining surprisingly re-bounded a bit this year. Revenues had been declining in large part due to high efficiency/ electric and compressed natural gas fueled vehicles which do not pay fuel taxes but still utilize the highways. The State M.V.F.T. has been in place since 1925. Throughout its history, the State Legislature had frequently adjusted the fuel tax to account for inflation. Typically every few years it would be adjusted by 1 to 2 cents per gallon. The last time State fuel taxes were adjusted was 2005, twelve years ago. Over that same time frame, the Consumer Price Index has increased by 27% and the Construction Cost Index has increased by 38%. That means tax revenues have 62% of the buying power they had 12 years ago. As an example, if the County paved 2.0 miles of road in 2008 at a cost of \$100,000, in 2017 that same \$100,000 would translate to less than 1.25 miles of paving. In an effort to better preserve our investment in road and bridge infrastructure, we have shifted the focus of our operations more toward preventative maintenance and repair. This strategy will hopefully extend the useful life of our assets until something can be done at the legislative level to adjust for declining revenues and inflation. Please encourage our Ohio Representatives and Senators to address this responsibility of the State Legislature to provide adequate highway infrastructure funding for local jurisdictions.

I would like to take this occasion to thank the residents of Carroll County for the opportunity to serve you. This department will continue to manage your tax dollars as efficiently as possible while providing a safe road and bridge system for the traveling public.

I respectfully submit this annual report for the year 2017 as required by Ohio Revised Code §5543.02,

Brian J. Wise, P.E., P.S.
Carroll County Engineer

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Box culvert installation on Picador Rd., TR 364.



Bridge deck waterproofing Andora Rd., CR 10

The Carroll County Engineer Maintains:

- **307 Miles of Road** (ADT = Average Daily Traffic)
 - 9 miles > 2,000 ADT (High = 2,355)
 - 22 miles between 1,000 and 2,000 ADT
 - 92 miles between 400 and 1,000 ADT
 - 145 miles between 100 and 400 ADT
 - 39 miles < 100 ADT (Low = 18)

- **141 Bridges**
 - 31 span from 10' to 20'
 - 104 span from 20' to 100'
 - 6 span from 100' to 134'

On the Cover:

County crews replacing a bridge on Bedrock Rd., CR 29 in Harrison Township.

Department Staff

County Engineer

Brian J. Wise, P.E., P.S.

Superintendent

Mike Bryan

Deputy Administrator

Chris Kiehl

Deputy Surveyor

Rodney Yoder, P.S.

Administrative Secretary

Tracy Flanagan

Assistant Administrator

Kathy Cook

Part Time Inspector

Bob Grigsby

Map Office Supervisor

Diane Wirkner

Map Office Assistant

Cindy Arbogast

Roadway / Bridge / Culvert / Maintenance Supervisors

Harvey Mountz

Rodney Days

Allan Furbee

Tim Cubberley

Sign Department Manager

Mark Brannon

Night Watchperson

(Darl Walton – Seasonal)

Highway Workers

Clint Casper

Chris Hawk

Mike Kruprzack

Jeff Riegle

Dale Tinlin

Corey Clark

Bruce Hilliard

Calvin Logan

Dave Seck

Dale George

Tom Jones

Matt Manfull

Jonathan Stenger

Larry Granger

Jeff Kohler

Pete McIntire

Harold Taggart



*County crews
berming on
Arbor Rd., CR
14 (left) and
chip & sealing
on Bellflower
Rd., CR 30
(right).*



2017 REVENUE

Our total revenue received for 2017 was \$4,090,942.24 which shows a slight increase due to road levy revenues collected being higher than anticipated. Proceeds from the State Motor Fuel Tax and Vehicle License Fees are the primary revenue sources for the operation of the Carroll County Engineer's Office and Highway Department.

Our largest source of revenue is the State Motor Fuel Tax. Counties statewide share an equal amount of the 4 cents out of every 28 cents in tax the State collects per gallon on motor vehicle fuel. State Motor Fuel Tax revenues have been steadily declining due to an increased number of higher fuel efficiency vehicles on the road and vehicles using alternative fuel sources, such as electricity and CNG (compressed natural gas), neither of which are taxed by the State Motor Fuel Tax. In 2017 we received \$2,389,284.77 in fuel tax revenue, which shows a slight rebound.

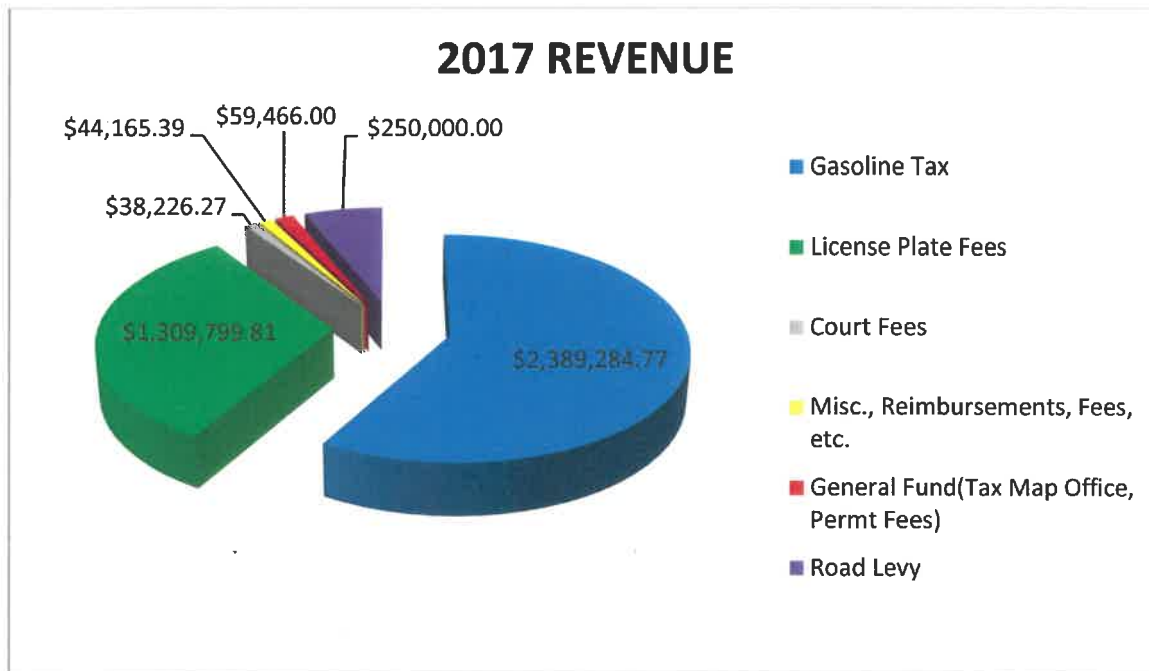
Vehicle License Plate Fees are the second largest source of revenue. This revenue is generated only from vehicles that are registered in Carroll County. In 2017 we received \$1,309,799.81 from vehicle registrations, which is slightly less than previous years.

Court Fees, Reimbursements and Miscellaneous income contributed \$82,391.66 in revenue in 2017.

County Road Levy funds collected have fluctuated considerably over the years since its inception. The County Engineer's Office continued this year to grant financial assistance to the 14 townships of Carroll County in the amount of \$150,000.00 as well as a grant for \$50,000.00 to the Carroll County Sheriff's Office for patrol car fuel. In 2017, the Highway Department collected \$250,000.00 in road levy funds.

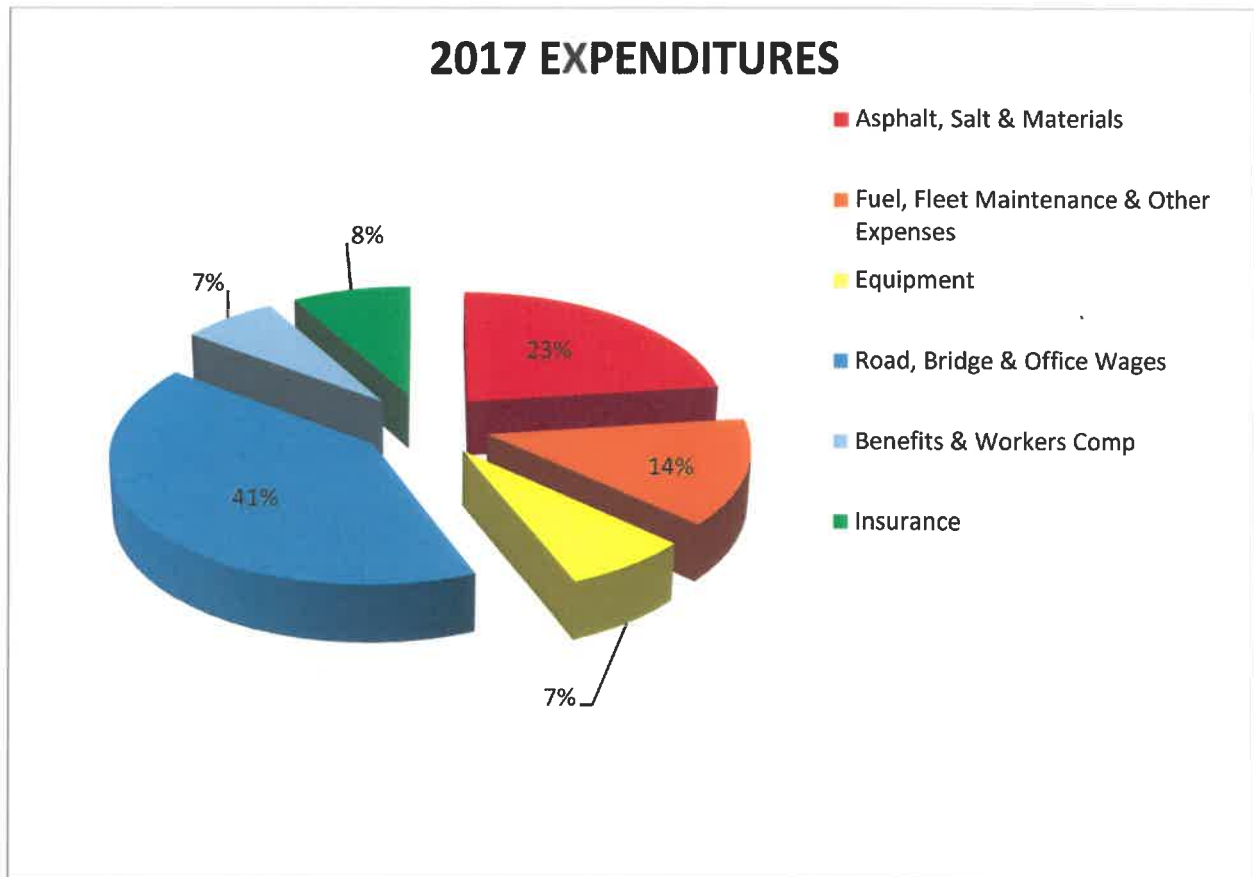
The General Fund contributes to the operation of the Tax Map Office as well as a portion of right of way permit fees collected. In 2017, \$59,466.00 in revenue was received from the General Fund.

In an effort to inform the public about a common misconception; Property taxes do not contribute toward road maintenance revenues.



2017 EXPENDITURES

Our total expenditures in 2017 were \$3,785,998.66. This amount is slightly higher than the previous year's expenditures due to improved road levy revenues.



Not shown in the above graph are grant monies received and paid directly to contractors.

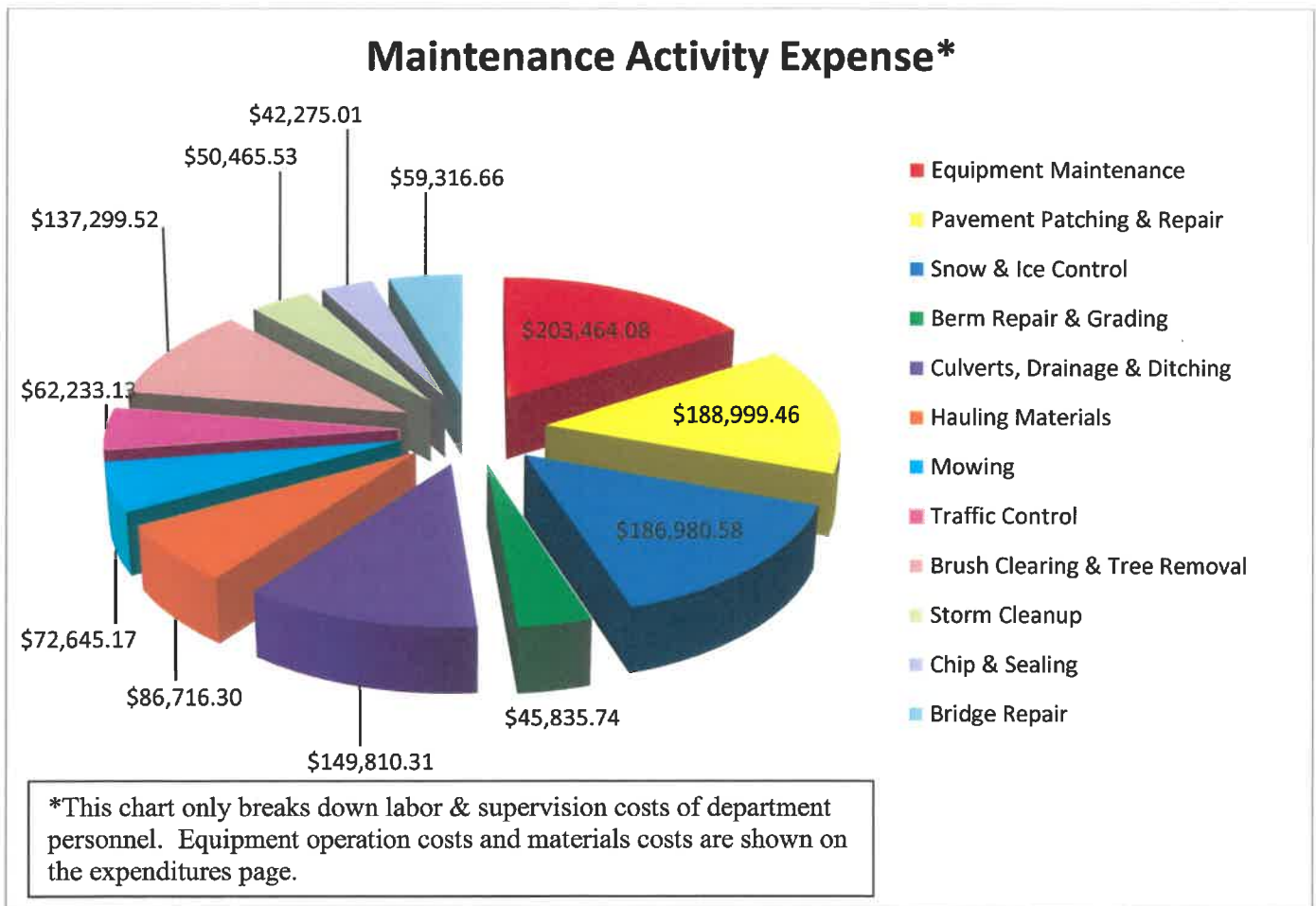
We received grants from the Ohio Public Works Commission totaling \$313,672.00. This grant will allow us to replace 4 bridges.

Road & Bridge Maintenance

It is a pleasure to report the amount of work our forces were able to accomplish this year. Maintenance work is the primary service that the highway department provides for the public.

The winter of 2016-2017 was another mild winter similar to the previous year. Our forces treated the roads with 7,225 tons of winter mix over 43 separate callouts. Harsh winters not only increase the time and material costs to the budget but, equipment repair and the cost to repair spring thaw damage to roads also increase proportionately. These increased costs decrease the amount of funds remaining to pave roads and replace bridges.

In 1990, there were 34 employees at the highway department. In 2017 the number of employees was down to 24. That represents a 30% reduction in work force over a 27 year period. The following chart highlights the amount of work that we were able to accomplish with departmental forces.



The above chart represents almost 43,600 labor hours of maintenance work performed by highway department personnel on County roads. At a total cost of over \$1,286,041.00, we were able to provide a substantial cost savings to the County over contracting this work out. We estimate the savings to be well over \$250,000.00. Performing road & bridge repair and maintenance work with our own personnel is one of the most cost effective ways we can manage our resources more efficiently.

Status of Carroll County Roads

The Carroll County Engineer has responsibility for maintaining approximately 307 miles of county roads. Road conditions are rated by in house staff and receive a rating on a 100 point scale. The Pavement Condition Rating System (PCR) employed by ODOT is used to develop this rating. The data represented in the chart below was gathered in 2015 and it is our intent to periodically update this information in the future. Defects in the roadway are given certain values and the sum of those defects is subtracted from 100 to reveal the pavement condition rating of the road. A PCR of 100 represents a perfect new pavement, a PCR of 0 represents a pavement with distress present at the highest or most extensive level of severity. A rating of 65 or less indicates that rehabilitation work should be considered. Please keep in mind that the rating calculations were designed around the State Highway system and result in conditions skewed toward the low end of the scale when applied to rural low volume County highways like ours. Rehabilitation projects will continue to be selected based on an in depth engineering analysis of the particular highway section in need of repair. We have chosen to utilize this rating method merely as a tool for monitoring pavement condition variations over a period of time.

CONDITION DESCRIPTION	PCR	TOTAL MILES	PERCENTAGE OF TOTAL MILES	ACCUMULATING PERCENT OF TOTAL MILES
EXCELLENT	>90	5.73	1.87%	
GOOD	>80	105.97	34.52%	36.38%
FAIR	>65	42.27	13.77%	50.15%
POOR	<65	149.67	48.75%	98.91%
NOT RATED	-	3.36	1.09%	100.00%
	TOTAL	307		

This system only addresses the pavement surface condition as it exists on the day of evaluation and does not attempt to evaluate whether a particular road should be surfaced with a particular type of pavement.

County road mileage is classified by three surface types. Currently, approximately one third of the County mileage has an asphalt surface course, approximately one third of the County mileage has received a profile or leveling coat of asphalt and the remaining one third of the County mileage is a surface built up from years of chip and seal application. This last group contains a few miles that are still classified as a stone surfaced road and were not rated as part of this process.

The average life span of an asphalt surface course is 12 years under minimal truck traffic. For the County's 307 miles of road, that means that almost 26 miles needs to be paved every year just to keep up with normal wear and tear on our system. It currently costs around \$85,000.00 per mile to pave a 1½" overlay on a 20' wide portion of road. To pave 26 miles per year we would need an additional \$2,210,000.00 adjusted to the construction price index to keep up with material cost inflation.

Status of Carroll County Bridges

The Carroll County Engineer has responsibility for maintaining 141 bridges on County and Township roads. Bridges are classified as any structure with a span greater than 10 feet. Bridge conditions are rated every year by an independent engineering consultant and receive a rating on a scale of 1 to 9. A rating of 9 indicates excellent condition while a 1 indicates that the bridge is closed and out of service.

Based on the annual inspection of bridges, the following table indicates the condition of the 143 bridges in Carroll County.

CONDITION DESCRIPTION	GENERAL APPRAISAL RATING	NUMBER OF BRIDGES	PERCENTAGE OF TOTAL BRIDGES	ACCUMULATING PERCENT OF TOTAL BRIDGES
EXCELLENT	9	3	2.13%	
VERY GOOD	8	8	5.67%	7.80%
GOOD	7	48	34.04%	41.84%
SATISFACTORY	6	51	36.17%	78.01%
FAIR	5	30	21.28%	99.29%
POOR	4	0	0.00%	99.29%
SERIOUS	3	1	0.71%	100.00%
CRITICAL	2	0		
OUT OF SERVICE	1	0		
	TOTAL	141		

It is a goal of this department to keep 90% of our bridge inventory at an appraisal rating of 5 or higher. As you can see from the chart above, we have accomplished that goal. Unfortunately, we are in a continuing battle with both time and weather to keep our inventory maintained at that level.

In 2013 the County had 9 load restricted bridges. After the 2017 construction season, I am proud to report, we have reduced that number to 1 load restricted bridge county wide.

The average useful life of a bridge is 50 years. For the County's 141 bridges, that means that 3 bridges need to be replaced every year just to keep up with normal wear and tear. The bridges on the Carroll County highway system range in size from a 10' span to 134' span. Replacement costs for that span range vary from \$100,000.00 to over half a million dollars. Using our average bridge size for calculation purposes it currently costs around \$250,000.00 to replace an entire bridge. At 3 bridges per year we would need an additional \$750,000.00 adjusted to the construction price index to keep up with material cost inflation.

Status of Carroll County Culverts

The Carroll County Engineer has responsibility for maintaining 68 large diameter culverts and over 3,000 small diameter culverts on County roads. Culverts on County roads are rated every two years by our in house staff. Ratings are issued from excellent to critical. The 68 large diameter culverts range in size from 4' diameter to 10' span, the 3,000+ smaller culverts include anything less than 4' diameter and are not rated on a regular basis due to their smaller size. Only culverts of 4' diameter and larger are rated every two years.

Based on the latest inspection of culverts, the following table indicates the condition of the 68 large diameter culverts on Carroll County roads.

CONDITION DESCRIPTION	CONDITION RATING	NUMBER OF CULVERTS >4'	PERCENTAGE OF TOTAL CULVERTS >4'	ACCUMULATING PERCENTAGE
EXCELLENT	5	16	23.53%	
GOOD	4	41	60.29%	83.82%
FAIR	3	10	14.71%	98.53%
POOR	2	1	1.47%	100.00%
CRITICAL	1	0	0.00%	
	TOTAL	68		

It is a goal of this department to keep 90% of our large diameter culvert inventory at a condition rating of 3 or higher. As you can see from the chart above, we have accomplished that goal. Unfortunately, we have 11 metal culverts in the fair to poor rating category that are nearing the end of their useful life span and will require replacing over the next several years.

The average useful life of a culvert is 50 years. For the County's 68 large diameter culverts, that means that 2 culverts need to be replaced every year to keep up with normal wear and tear. The large diameter culverts on the Carroll County highway system range in size from a 4' diameter to a 10' span. Replacement costs for that size range vary from \$12,000.00 to \$100,000.00. Using an average current cost for calculation purposes of \$50,000.00 to replace a large culvert, at 2 culverts per year we would need an additional \$100,000.00 adjusted to the construction price index to keep up with material cost inflation.

EQUIPMENT

We added another Western Star plow truck to our fleet of 11 primary plow trucks and 4 spare plow trucks in 2017. We have been quite pleased with the initial results of the change to the Western Star chassis and will continue in that direction in the future. While the useful life of a plow truck in main line service is typically 12 years, we need to purchase at least one new truck per year to keep up with our 11 snow routes.

In 2017 we began our preliminary research into a replacement machine for our front end loader. The current machine is nearing 12,000 hours of use and it performs many tasks for the Highway Department, from loading aggregate materials on trucks to mixing salt and winter snow control materials to stockpiling asphalt patching material, this machine is running every day of the week. We want to find a replacement machine that will serve us for many years to come.



(Photo courtesy of Caterpillar)

To report in compliance with §5549 of the Ohio Revised Code, other equipment that will need replaced in the near future includes:

One Plow Truck per year, \$180,000

Wheel Loader, \$280,000

2- Tractor Mowers, \$85,000 each

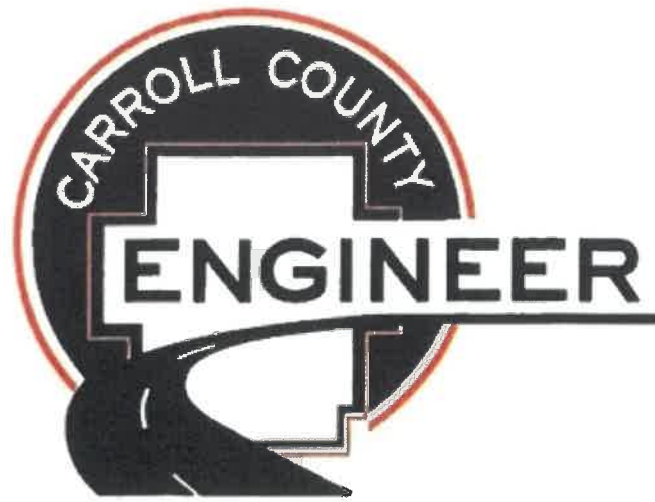
2- Pickups, \$25,000 each

Mechanic Service Truck, \$35,000

Distributor Truck, \$150,000

Vibratory Roller, \$35,000

Various hand tools, misc. small equipment and attachments, approx. \$15,000 per year



2017

**RESOURCE
ALLOCATION
REPORT**

HIGHWAY DEPARTMENT

The 24 full-time employees of the Carroll County Highway Department performed the following road and bridge work in 2017.

Pavement

- 319 tons of permacoat asphalt for pothole patching.
- 18 miles of roadway chip & sealed using 2,000 tons of #8 gravel and 73,550 gallons of liquid asphalt.
- 3 miles of road milled using 1052 tons of #4, 633 tons of #57 limestone, 354 tons of #8 limestone and 34,650 of liquid asphalt.
- 1,130 tons of permacoat and 237 tons of hotmix asphalt for road leveling.

Roadway

- 2613 labor hours for spot ditch cleaning and re-shaping.
- 647 labor hours for roadway storm cleanup.

Roadside

- 1,455 labor hours of roadway mowed by County employees.
- 534 labor hours of arm mower work to clear brush on steep banks.
- 4,540 hours manually removing brush and trees from road banks.

Culvert

- 594 labor hours to clean and check pipes.
- 27 culvert pipes replaced.

Bridges

- 144 bridges inspected.

Traffic Operation

- 320 traffic signs replaced or newly erected.
- 36 road name signs replaced due to theft.
- 768 gallons of herbicide for weed control at intersections and sign posts.

Winter Emergency

- 43 days of snow and ice control performed.
- 7,225 tons of snow & ice control mix.
- 3,708 labor hours.
- 2,893 equipment hours.
- 525 labor hours expended for winter emergency preparation.

Equipment Maintenance

- 4,925 labor hours.
- 49 licensed trucks, cars and trailers.
- 40 non-licensed construction equipment and other miscellaneous equipment such as chainsaws, compactors, welders and generators.

Hauling/Stockpiling Road Materials

2347 labor hours to haul and stock pile road materials.

Road Work for Others

The Highway Department provided 539 labor hours for other county, township and village agencies which include:

- 112 Augusta Twp.
- 119 Carroll County Agricultural Society (Fairgrounds)
- 15 Carroll County Health Dept.
- 33 Carroll County Historical Society
- 17 Carroll Golden Age Retreat
- 79 F.D. Chip & Seal - Fox Twp.
- 62 Fox Twp.
- 2 Perry Twp.
- 7 Solid Waste District
- 86 Union Twp.
- 6 Village of Carrollton
- 1 Washington Twp.

ENGINEER'S OFFICE

The Engineer's Office consists of 5 full-time staff personnel in addition to the Engineer. Highlights achieved in 2017 include:

- The administration of 70 right-of-way permits and 120 driveway permits.
- 20 special hauling permits were required.
- The preparation of payroll, statements for payment, billings and associated administrative work for and our \$4,642,090.00 million dollar budget was performed on a daily basis.
- Application for \$512,950 from the State Issue I program for road projects and bridge projects.
- The preparation of specifications and bid documents for a variety of projects. These include the replacement of 2 bridges, 7.5 miles of paving on 5 county roads, 3 grant funded paving projects for 3 municipalities and 2 box culvert installations.
- The performance of daily inspection and inspection reports on all contract work.
- Administer the Wheeler Bill for ODOT, which includes all township & county roads.
- Daily coordination of highway improvements on County and Township roadways for oil and gas production.
- In addition to the day-to-day requirements of meeting County objectives, the Engineer's Office provided professional services for numerous townships, villages and the Carroll County Commissioners, including:

Fox Twp. Garage Boundary Survey
Carroll County Courthouse Entrance Survey
Community Improvement Transfer Survey to County Commissioners
Union Twp. Garage Transfer Survey
Child Support Enforcement Entrance Project
Augusta Twp. Intersection Survey and Preliminary Design
Fox Twp. Intersection Survey and Design
East Twp. Trustees Property Location
Carroll County Friendship Center Boundary Location
Assisted Regional Planning Commission with lot split reviews

MAP OFFICE

The 2 full-time employees of the Tax Map Office record deed transfers and surveys. They maintain the tax plat information by lot, parcel or acreage on a daily basis in support of the County Auditor. In 2017 this office processed 1,287 deeds, 1,709 transfers and 120 surveys.

The Map Office provides advice, copies of maps and answers questions in support of many Carroll County Government offices. These include the Auditor's Office, the Board of Commissioners, Regional Planning Commission, Economic Development, Health Department, Title Office and many of the villages and townships. Services are also provided to the public which include attorneys, surveyors, appraisers, and private citizens.

PERSONNEL TRAINING

Safety films/instructors are presented once a month to provide employees safety tips, reminders and precautions when performing their assigned tasks.

Random drug testing performed on 8 employees.

Training seminars attended by various employees included:

- 2017 PLSO Conference
- 2017 CEAO Conferences
- 2017 Safe Digging Event for Pipelines
- 2017 Land Records Modernization Conference
- 2017 Ohio Pesticide Commercial and Safety Training
- 2017 Fort Steuben and Early Surveyors of the Northwest Territory
- 2017 Culvert Inventory & Inspection Training
- Coordinated Response Exercise and Excavator Safety Program
- Tornado Safety
- Grinder Training
- Lifting and Rigging Safety
- Heat Stress Video
- Fork Lift Recertification
- Chasing the Dragon Film by FBI: The life of an Opiate Addict
- Chain Saw safety by STIHL
- Silica Safety Awareness
- CORSA Computer Security Basics
- Winter Prep and Dry Run
- HIPAA Video
- Work Zone Safety and Flagging Procedures
- Snow Plowing Techniques and Regular Equipment Checks
- County Safety Meeting on Emergency Response Procedures

Brian J Wise, P.E., P.S.
Carroll County Engineer
February 2018