



KNOX COUNTY ENGINEER

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Annual Report for 2019

The Knox County Engineer's Office compiles this report for the Board of Knox County Commissioners, as required by section 5543.02 of the Ohio Revised Code.

2019 brought a greatly needed increase in funds for the Knox County Engineer's Office. Starting in January 2019 funds generated from the new \$5 vehicle registration permissive tax began to come in, resulting in \$311,521 in additional revenue. These funds are vital to our overall operating budget and will provide leverage for generating additional funds when used as match dollars for grant opportunities.

Another increase to revenue was the State Gas Tax Increase in House Bill 62. The bill was passed in April 2019, and went into effect July 1, 2019. Revenue started coming in around August of 2019 and is projected to increase our monthly gas tax revenue by an estimated \$125,000. The state legislature recognized the overall trend in highway construction; costs going up, but revenue sources showing no increase.

These two increases in revenue generated a \$927,205 (17.22%) increase in Motor Vehicle Gas Taxes (MVGTT) in 2019 compared to 2018. This money will help to expand our road and bridge improvement programs, as well as replace obsolete equipment.

In 2019 our completed grant projects included Community Development Block Grant (CDBG) Pike Township Critical Infrastructure Program, installed a new bridge on Parrott Street, and resurfaced the south half of Apple Valley Drive.

Our 2020 project schedule includes replacing Lower Gambier Road Bridge, replacing Magers Road Bridge, resurfacing Rich Hill Road, resurfacing Croton Road, and resurfacing the north-end of Apple Valley Drive. This is on top of our annual culverts and road maintenance programs.

Sincerely,

Cameron Keaton, P.E., P.S.



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Financials

2019 Revenues

Permissive Tax- \$765,891.09
 Permissive Tax 4504.24- \$311,521.18
 Licenses Taxes- \$2,082,079.72
 Gasoline Taxes- \$2,939,200.28
 Grants- \$61,042.65
 Access Permits- \$14,215.00
 Special Haul Permits- \$455.00
 Fines- \$22,437.86
 Auctions/Other-\$20,050.43
 Donations- \$13,974.00
 Depository/Investments- \$38,258.33
 Reimbursements- \$15,378.16
 Refunds- \$26,405.67
Total Revenues- \$ 6,310,909.37

2019 Revenues



- Permissive Tax-12.14%
- Licenses Taxes-32.99%
- Grants-.97%
- Special Haul Permits-.01%
- Reimbursements/Refunds-.66%
- Permissive Tax 4504.24- 4.94%
- Gasoline Taxes-46.57%
- Access Permits-.23%
- Fines/Donations/Interest-1.18%
- Auction/Other-.32%

2019 Expenses

Salaries- \$1,678,129.97
 Fringe Benefits- \$ 724,415.05
 Vehicle Repairs/Fuel- \$339,745.51
 Bridge/Culvert Maint.- \$173,527.65
 Equipment- \$410,928.67
 Trainings/Supplies- \$41,412.15
 Contract Services-\$446,154.02
 Contract Projects-\$1,061,598.91
 Utilities/Transfers/Ads-\$226,452.08
 Materials & Incidentals-\$853,710.91
Total Expenses- \$5,956,074.92

2019 Expenses



- Salaries-28.18%
- Vehicle Repairs/Fuel-5.7%
- Equipment-6.90%
- Contract Services-7.49%
- Utilities/Transfers/Advertising-3.8%
- Fringe Benefits-12.16%
- Bridge/Culvert Maint.-2.91%
- Trainings & Supplies-.70%
- Contract Projects-17.82%
- Materials & Incidentals-14.33%

2019 Road Projects

HSIP- Sign Upgrade

Using the information from the 2018 Ball Bank Study (A.K.A. Horizontal Curve Safe Speed Study), the Highway Department used Federal Highway Safety Improvement Program (HSIP) dollars to replace, repair, and remove curve related signs on county roads. The project covered 431 curves on 26 county roads, spanning 133 miles. Overall, 552 new signs and 760 new posts were installed, 233 signs were removed or replaced, and 50 signs were relocated for better visibility. Total material costs for this project were \$11,562.54, of which \$9,250.03 (80%) was reimbursed through HSIP grant funds.

CEAO Safety Study- CR14

The County Engineer's Office used The Mannik & Smith Group (MSG), Inc. to do a detailed safety study of County Road 14, Danville-Amity Road. This engineering consultant firm reviewed the 6.585 miles of CR14 and provided recommendations for roadways improvements. This study highlighted the 1,777 ADT, steep grades, narrow shoulders, erosion issues, and 41 vehicle crash history over 3 years (including 1 fatality).

The goal of this study is to show the need for roadway improvements and secure federal funding. MSG provided professional recommendations for additional signage, marking improvements, pavement improvements, berming, and ditch work. The results from this study will be used to improve CR14 in the future. This study was an HSIP project. Total cost of this project was \$48,000, of which \$43,200 (90%) was reimbursed to the MVGT Fund.

Apple Valley Drive Resurfacing (Phase 1)

Apple Valley Drive is one of the most traveled roads in Knox County. It has an Average Daily Traffic (ADT) count of 2,777 vehicles. The amount of construction and residential traffic made this road a priority for repairs. Due to financial reasons, only the south half of Apple Valley Drive was resurfaced in 2019, with the north half expected to be completed in 2020.

This project entailed replacing 9 cross culverts, milling 2.5 inches of existing asphalt, resurfacing 5.1 miles with new asphalt, and applying a new centerline. The project also covered resurfacing of Apple Valley Boulevard and doing partial depth repairs as needed. County crews handled the replacement of culverts, removal of trees, and ditching. Small's Asphalt Paving was contracted to mill, pave, and restripe the roadway.

The total project cost was **\$1,191,800.22**; \$620,000 was paid through an Ohio Public Works Commission (OPWC) grant, \$35,490.13 in a 0% interest, 10-year, OPWC loan, and \$536,310.09 in motor vehicle gas tax funds and in-kind contributions.

Annual Resurfacing Program 2019

Knox County uses an annual Chip Seal Program to help maintain the 404 miles of county roadway and extend the life expectancy of these roads. For 2019, the annual chip seal program covered 28.82 miles of county highways at a cost of \$605,764.09. This is a cost of \$21,018.88 per mile and a 15.74% increase in cost per mile from 2018.

Chip Seal Facts: (retrieved from Ohio Department of Transportation)

Why Use Chip Seals?

1. Chip seals provide counties with the opportunity to maintain the roads for very low cost.
2. A chip seal is about one fourth to one fifth the cost of a conventional asphalt overlay.
3. By extending the time between asphalt overlays, chip seals result in lower costs over the long term.
4. By placing a chip seal sooner than an asphalt overlay would be placed, the traveling public benefits from roads maintained in better condition.
5. Chip Seals eliminate the need to crack seal.
6. Chip seals enhance safety by providing good skid resistance.
7. Chip seals provide an effective moisture barrier for the underlying pavement against water intrusion by sealing cracks in the pavement.
8. Chip seals prevent deterioration of the asphalt surface from the effects of aging and oxidation due to water and sun.
9. ODOT has successfully used chip seals for over 25 years to maintain state routes.
10. Chip seals are used only on low traffic routes, less than 2500 vehicles per day.
11. Chip seals virtually eliminate black ice.
12. In hot weather, chip seals re-seal cracks by flowing back together.

Annual Mowing Program

The County Engineer's Office currently contracts out the mowing operation along the roadways throughout the county. This allows for highway crews to focus on patching and road repairs throughout the summer months. The contract for 2019 was awarded to Thompson Interstate Mowing from Leesburg, Ohio. Thompson Interstate Mowing mowed three separate rounds (as required by Ohio Revised Code). The cost of mowing the 404 centerline miles of county roadway was \$342/mile, or \$138,168 annually. County highway crews also mowed back at intersections and used boom mowers to cut back brush along the roadways.

Asphalt Patching and Repairs

Highway crews patch and repair county roadways year-round. In the winter months, cold mix asphalt is used to patch potholes until the hot mix plants open back up in the warmer weather months. Patching material costs this year were as follows:

■ Hot mix asphalt-	\$430,129.36
■ Cold mix asphalt-	<u>\$ 36,192.00</u>
Total-	\$466,321.36

2019 Bridge Projects

Bridge & Culvert Work

Our crews replaced and repaired 64 culverts with an estimated material cost of \$117,300. Typical culverts less than 60" in diameter can be replaced with high density polyethylene (HDPE) pipe. Engineered precast concrete box culverts, or reinforced concrete pipe can replace larger structures.

The county bridge crew replaced one bridge deck on Grange Road (No.54 Middlebury) at a cost of \$76,780.21. County crews removed the existing bridge deck and beams, then replaced it with new wood decking, new north abutment wall, and an asphalt surface. Crews also repaired 17 washouts along pipes and bridges at a total cost of \$36,600.

Parrott Street Bridge Replacement

This project involved removing a failing single span, weathering steel, pony truss structure that had been installed in 1991. Replacing it with a three-span, reinforced concrete slab on reinforced concrete capped-pile abutments and piers. The previous structure had endured a lot of heavy truck traffic and was deteriorating quicker than anticipated. The new structure has an anticipated lifespan of 75 years and includes extra width to accommodate a bike/pedestrian path to provide connectivity between local school facilities and parks.

The consultants and contractors for this bridge were DLZ (design), MS Consultants (CE services), and V.O. Menez & Sons, Inc. (construction) Funding for this project is through OPWC, CDBG, and MVGT Funds. The project was initially scheduled for a 2019 completion date, but construction will continue in the Spring of 2020 to finalize asphalt concrete approach work.

Special Haul Vehicle (SHV) Load Ratings

As a continuation of the Special Haul Vehicle (SHV) Load Rating requirements implemented by ODOT in 2017, Knox County had to load rate 47 more bridges in 2019. The Engineer's Office spent \$45,440.10 with Richland Engineering, Ltd. to perform SHV Load Ratings, with \$17,842.65 being reimbursed through ODOT.

Pike Twp. Critical Infrastructure

This is a CDBG project replacing 4 bridges and 11 culverts in Pike Township that started in 2018. The box culvert portion of this project was completed in 2019.

County forces installed 6 new box culverts, bringing the total project cost to \$462,482.73. Of this total, \$293,093.10 came from in-kind and local dollars, while CDBG paid \$221,503.56 towards crane services and material costs.

Staff Update

The Knox County Engineer's Office operates with five in-office employees. The tax map office has two employees. The highway garage consists of two superintendents, and 25 highway employees. In 2019, one employee left the county highway garage to pursue other employment. The County Highway Garage welcomed three new employees, Kristen Richert (former Brown Twp. road worker), Nathan Lacey (former Knox Co. Water Dept. worker), and Jared Blubaugh (Village of Johnstown employee) as Highway Worker II's.

The Knox County Engineer's Office would also like to recognize John Crunkilton for his 14 1/2 years of service. John retired July 31, 2019. We wish him well with his retirement.

Equipment Update

2019 started off with the acquisition of a new 2018 New Holland E57C Mini Excavator and a preowned 2013 Bomag Tandem Roller from Advantage Ag and Equipment, Inc. The County traded in two TS6110 Tractors with boom mowers that were no longer being utilized for an \$87,000 trade-in value. All together the purchase cost \$5,050 in MVGT funds.

The County also added a 2017 Sure-Trac tilt-bed trailer to the inventory. This trailer is used to transport the roller and mini excavator individually to jobsites. The 1996 Eager Beaver Trailer was traded in at a \$3,000 trade-in value, bringing the total trailer cost to \$1,800 in MVGT funds.

During 2019, we placed an order for two 2020 Western Star tandem axle plow trucks. Currently lead times are 12-18 months, so we anticipate receiving these new trucks with plow packages sometime late summer 2020. The trucks were purchased through the state program at a cost of \$181,267.00 each.



Tax Map Update

The Knox County Tax Map Office is under the direction of the Knox County Engineer. Our tax map office handles legal descriptions of property, updates to the county GIS database, boundary survey verification, parcel ownership information, custom mapping, and the assigning of property addresses.

2019 Tax Map Facts:

- 2019 generated \$2,776.05 in map sales
- Approved 3,272 transfers
- Assigned 158 new addresses
- Reviewed and approved 253 new boundary surveys
- Coordinated with the County Engineer's Office to have original road record books scanned and indexed
- Coordinated with the County Auditor to upgrade their CAUV Tool
- Coordinated with the City of Mt. Vernon to add City Zoning to the GIS website
- Coordinated with 911 to update their dispatch software (launching in 2020)
- Coordinated with EMA to update all Knox County Schools Emergency Action Plan Maps
- Quality controlled entire "Parcel Anno" layer (the property owner's names on our tax maps)

Winter Recap 2018-2019

The Knox County Engineer's Office participates in the ODOT Rock Salt Winter Competitive Bid. We estimate how much salt we will need for the upcoming winter season, ODOT processes the bidding submissions and awards the contracts to the vendors, then we use our awarded vendor to purchase 90%-110% of the estimated tonnage. Our vendor for 2018-2019 was American Rock Salt out of Columbus. The salt price for the 2018-2019 season was \$83.42/ton (a 79.75% increase from the prior season).

County Highway crews are constantly assessing road conditions and determining the best materials to use on our roadways. The exact material use depends on the precipitation, road conditions, and temperature. Crews can use salted grits (9's), straight salt, or a 70/30 (9's/salt) mixture.

The 2018-2019 Winter Season was "average" for Knox County. Our crews used 4,038 tons of salt and 1,151 tons of salted 9's to treat roads. We also used 446 tons of cold mix asphalt to patch holes during the winter months (up 30.4% from last season).

We ended the 2018-2019 winter season with full salt storage buildings. The 2019-2020 state bid for salt was once again awarded to American Rock Salt. The salt price for the 2019-2020 season increased \$3/ton or 3.6% to \$86.42/ton. Our estimated usage for the upcoming season is 4500 tons.



Upcoming 2020 Projects

Following are projects and estimated costs for 2020:

- **Parrott Street Bridge Construction-** \$1,000,000- replacing a pony truss structure with a three span reinforced concrete slab. \$450,000 in CDBG grant & \$450,000 in OPWC grant, the remainder in MVGT Funds. Started in 2019, expected to be completed Spring 2020.
- **Apple Valley Drive North Resurfacing-** \$1,443,673- Phase 2- north half mill & fill resurfacing project on Apple Valley Drive.
- **CEAO Speed Zone Study-** \$15,600- A CEAO Safety Study Program where a contractor will perform a speed study of Apple Valley Drive and the eight connecting county roads for the correct speed limit posting. This is a 90% reimbursable program from federal safety funds.
- **CEAO Sign Inventory-** \$44,440- A CEAO Safety Study Program where a contractor will review signs along all 404 miles of county roads and highlight any necessary changes in reflectivity or sign legibility, as well as provide a complete inventory of all county signs. This is also a 90% reimbursable program from federal safety funds.
- **Rich Hill Road Paving Project-**\$236,000- Level coarse and chip & seal 2.95 miles of roadway using MVGT Funds.
- **Croton Road Resurfacing** -\$392,084-A CSTP Funded mill and fill project with partial depth repairs over 1.57 miles of roadway. This is an 80/20, Federal/MVGT direct pay project.
- **Bridge Deck Replacements-** \$40,000- Removing and reinstalling bridge decking on two bridges: Ball Road (No.123 Hilliar) and Pleasant Valley Road (No.12 Clinton) using MVGT Funds.
- **Box Culvert Projects-** \$200,200- replace 6 existing structures with new concrete box structures. This cost reflects material estimates only.
- **Guardrail-**\$307,327- CEAO Safety Program replacing guardrail at 15 locations around the county. This project is funded 100% through the Federal HSIP.
- **Magers Rd Bridge Replacement-**\$340,459.24-A 95/5 CEAO Local Bridge Program. It will replace the structure over Jelloway Creek on Magers Road (No.108 Howard).
- **Lower Gambier Road Bridge Replacement-** \$300,000- Remove existing structure, rehab existing abutments, and replace steel I-beams, and steel pan with a concrete driving surface. 100% local funds.
- **Annual Resurfacing-**\$600,000- Annual program, consists of resurfacing approximately 40 miles of roadway per year with hot mix asphalt and/or chip and seal.