

2007 AUGLAIZE COUNTY ENGINEER'S ANNUAL REPORT

By; Douglas Reinhart, P.E., P.S., Auglaize County Engineer
To the Board of Auglaize County Commissioners:

One of the numerous requirements mandated by the Ohio Revised Code is for the County Engineer to annually file a report with the County Commissioners, outlining the status of the infrastructure under the Engineer's jurisdiction. I have taken on this yearly mandate as a chance to not only provide an overview of the condition of Auglaize County's highway, bridge, culvert and drainage systems, but it provides me a chance to statistically outline the accomplishments this department completed during 2007. Some governmental agencies may justify their existence by the fact they are needed to plow snow three-four months a year. Even though providing safe roadways during snow/ice events is a much needed service, the roadway, bridge and drainage improvements accomplished the other eight months of the year (and between winter storm events), justifies the existence of this department. A Special "THANKS" to my employees for an outstanding 2007 and once again, making me look good in the eyes of the taxpayers of Auglaize County. The following report is just a partial listing of this past year's accomplishments:

ROADWAYS: This department is currently responsible for 348 miles of county maintained roadways which calculates to approximately 2,500 acres of road right-of-way and 845 acres of asphalt. All but one mile of the system has been widened to a safe 20' wide two lane pavement width. With the assistance of a State Issue I grant, 34.5 miles were resurfaced with a new mat of asphalt and 59,600 gallons of liquid asphalt emulsion was applied to crack seal another 46.4 miles of highway. Trucks were dispatched a total of 32 times during the winter of 06-07 and applied 2,200 tons of a salt/sand mixture for snow/ice control. Numerous safety improvements were completed and are listed throughout the balance of this report.

BRIDGES/CULVERTS: The County maintains a total of 355 bridges along with 1130 large diameter culverts located on County and Township highways. I am proud to say that there currently exists no bridges with load limits restricting the travel of school buses, farm-to-market produce or fire/rescue vehicles. A total of ten bridges were replaced or rehabilitated during 2007 along with the replacement of seven large diameter culverts (36" - 60" diameter).

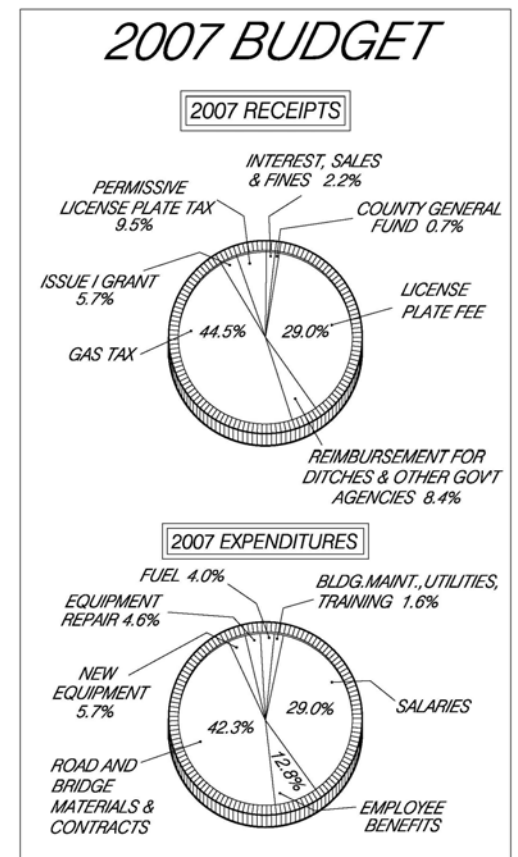
DRAINAGE: During 2007, a record total of 19,490 feet (3.69 miles) of polyethylene and reinforced concrete pipe was installed by County crews within the right-of-way of our system. Century old storm sewers running under and parallel to our pavements are in dire need of replacement. An emphasis to upgrade this critical part of our infrastructure began over a decade ago and this program will continue for many years to come. A total of seven new drainage petitions were completed in 2007 bringing our maintenance totals to: 159 miles of open ditches; 24 miles of the St. Marys river, 79.20 miles of subsurface tile mains and 5.43 miles of grass waterways.



Two events occurred fifty years ago that provided for a long term impact on the economy of Auglaize County. First, Interstate 75 was under construction - - need I say more. Second, in August of 1957, the Ohio General Assembly amended the century old drainage laws to require mandatory maintenance of drainage improvements completed through the ditch petition process. In 2007 a total of 33,900 feet of subsurface tile mains were installed (upper left photo) adding to the 72.8 miles of tile already under maintenance. The upper right photo shows county crews removing sandbars from an open ditch in Noble Township that was first constructed in 1972. As each drainage improvement is completed, an economic benefit is realized in the impacted area. This department's charge is to maintain those improvements (238 individual petitions) to their original 100% capacity to assure those citizens that the agricultural, residential and commercial sites they serve continue to prosper. As each drainage petition is completed, the economic base of this county grows and this department's responsibility expands.



Throughout the winter, between snow storms, the bridge crew stayed busy manufacturing concrete bridge beams and three-sided concrete boxes for the upcoming construction season. This past winter a total of 400 cubic yards of concrete was poured to cast seven bridge decks and four box culverts for the 2007 program. The above photo shows the ready-mix truck inside the bridge building that was constructed in 1985 to provide for quality control of the pour and curing of the beams/boxes.



Budget items to note: 5.7% of the income was derived from a State Issue I Grant through the Ohio Public Works Commission (OPWC) which added eight more miles to the resurfacing program. With the price of hotmix increasing by 77% over the last four years and gasoline sales stagnating, obtaining State and Federal grants to subsidize the budget are crucial. As County Engineer, I have been active in the County Engineer's Association (past President) which funnels the federal highway funds to counties and the OPWC (District Executive Committee for 20 years) who provides Issue I funding. As a result, the County has received \$ 11.7 million dollars in grants since 1984 to assist us with our roads and bridge improvements.

Please note the expenditure pie chart does not include any debt retirement. By utilizing our forces to construct as many projects as the law allows and obtaining numerous grants, no debt has been incurred and the County owns all the equipment at the highway department.

2007 ROAD IMPROVEMENTS

Because of a relatively mild winter, overtime expenditures and salt purchases were below the norm, resulting in a transfer of those funds towards roadway resurfacing. Along with a State Issue I grant, 34.5 miles or nearly 10% of the total system was paved even though asphalt has climbed to a record high of \$ 47.90/ton in place, a 77% increase from the \$ 27.40/ton bid obtained in 2003. Not seeing any foreseeable increase in revenue in the near future from the Ohio General Assembly, future resurfacing programs will diminish in size and our focus will turn more to maintaining the roadway surface by crack sealing with polymer modified asphalt and emulsions. Water, penetrating through cracks in the pavement surface is the leading cause of potholes and substructure failures. We are quite proud of this County's highway system and this department will do whatever is necessary to maintain our roadway's integrity and smooth ride.

FORCE ACCOUNT LIMITS NEED TO BE ADJUSTED! Most taxpayers do not realize that Ohio's General Assembly has placed limits on the size of projects this department can undertake with our forces. Private contractor's have lobbied our legislators and if a roadway improvement is estimated to be in excess of \$30,000 for any one mile length of highway – that project has to be let out for bids and contracted. The County Engineer's across the state are trying to increase those threshold limits but are mostly falling on deaf ears in Columbus. As construction inflation increases, the size of the roadway maintenance improvements this department constructs diminishes. Portions of the Blank Pike curve realignment and Burr Oak safety improvement had to be contracted or this department would not have even been allowed to participate on those projects.

2007 HIGHWAY IMPROVEMENTS:

1. 2,200 tons of a salt/sand mix were applied for snow and ice control as trucks were dispatched on 32 separate occasions throughout the winter.
2. 470 miles of County and Township Roads, along with 159 miles of open ditches under permanent maintenance were treated for broadleaf weeds and woody plants. A total of 22 County employees are licensed by the Ohio Department of Agriculture.
3. 34.5 miles of county roadways were resurfaced with 28,425 tons of hotmix for a total cost of \$ 1,441,990. (\$ 41,797/mile of a 1 ¼" mat of asphalt)
4. 47 miles of County maintained roadways were strip sealed using 59,100 gallons of asphalt emulsion and 1,791 tons of #8 limestone for \$ 107,079 (\$2278/mile). County crews also full sealed & strip sealed 31.6 miles of Township roadways by applying an additional 80,375 gallons of emulsion and 2,350 tons of aggregate.
5. 13,294 pounds of polymerized crack sealant was applied on numerous roads throughout the County. The cracks are first blown free of dirt with an air compressor and then the 350° + asphalt is squeezed into void.
6. A record 19,490 lineal feet (3.69 miles) of subsurface storm sewers along with 111 new catch basins were replaced within the road right-of-way during 2007.
7. 6,180 regulatory and warning traffic signs were maintained on the 672 mile County and Township system in Auglaize County.

2007 RESURFACING PROGRAM

<u>Road Name</u>	<u>Length</u>	<u>Location</u>	<u>Tons/Hotmix</u>	<u>Cost</u>
Feikert	1.1 miles	SR 385 - south	967	\$ 45,063.
Santa Fe Line	3.1	SR# 33 to Idle	2,486	\$ 125,307.
Valley	2.5	SR# 33 to Gutman	2,006	\$ 101,220.
Blank Pike	5.5	Cemetery to Stiles	4,530	\$ 227,270.
Wapak Cridersville	3.75	Linzee to National	3,001	\$ 151,718.
Moulton Knoxville	3.2	CR33A to Center	2,567	\$ 129,248.
Southland	2.9	66A to Mercer line	2,561	\$ 128,405.
St. Marys River	2.0	Easterly to SR#197	1,594	\$ 80,546.
Dughill	0.65	SR# 198 – north	510	\$ 25,705.
Conant	2.0	National to SR# 198	1,608	\$ 81,275.
Kelly	2.6	Glynwood to Main St.	2,074	\$ 105,033.
Infirmery	2.92	Buck. River - East	2,340	\$ 118,241.
Main Street North	1.8	SR#197 to National	1,751	\$ 95,271.
Glynwood	0.5	Main St to Ketterville	510	\$ 27,687.
TOTALS	34.52 miles			\$ 1,441,989.

Contract portion of the Blank Pike curve realignment amounted to 640 ton of base mix applied for an additional \$ 30,194.

Contract for repair of Moulton Ft. Amanda Road failures (mill & fill) required 219 ton of hotmix for a total cost of \$ 11,373.



During 2007 our crews replaced drainage culverts (above) crossing under the highways at 51 locations. All but three of these installations were completed and opened to traffic in less than one working day.



The above photo shows the tar distributor applying the 160° liquid asphalt emulsion at a rate of 0.40 gallons per square yard followed immediately by the chip-spreader placing 24# of limestone per square yard. The rubber tired roller then follows close behind "seating" the stone into the asphalt before it cools. This preventive maintenance measure provides a new wearing surface over the oxidized pavement, and fills the reflective cracks for approximately 1/5th the cost of new hotmix.



Prolonged flooding at the intersection of Hardin Pike and SR# 219 was eliminated. A new elliptical overflow pipe, the replacement of a subsurface tile with catch basins and an outlet waterway was jointly installed by this department and ODOT forces.



Crews replaced a century old 18" subsurface clay tile along the south side of Lock Two Road east of SR# 66, with a 24" diameter plastic pipe early in the spring. The use of a trenchbox and shorter sections of pipe were required due to the 10' depths.

2007 BRIDGE AND CULVERT IMPROVEMENTS



One of the first projects the bridge crew completed in 2007 was the replacement of a 15" diameter subsurface tile and 24" overflow through Amsterdam Road west of SR#66 (above photo) This trench was 14' deep and the installation well below a 12" diameter water line that serviced the Village of New Bremen.



32' long bridge beams are shown being set on the Miller Road. To obtain the required design strength, a 6" thick concrete floor is then poured over the entire deck prior to the placement of the water-proofing membrane and asphalt wearing course.



Concrete bridge beams manufactured at the county garage (above) require "cages" of 1", 5/8" & 1/2" diameter reinforcing steel. A total of 53 tons of rebar was utilized in the 2007 casting of bridge beams, walls, boxes and footers at the County Garage.



As the 370 county maintained bridges are annually inspected, it has become quite apparent that the placement of a waterproofing membrane to keep water/salt from penetrating into the concrete is critical. The above photo shows a woven fabric being placed prior to the placement of the asphalt wearing surface.

The 2007 bridge replacement program included just one entire bridge replacement using county beams (Conant Road). Fortunately six other bridges were rehabilitated by replacing the concrete decks and the walls and abutments repaired by just replacing the top several inches. By rebuilding these structures now, I'm comfortable in predicting another 40+ years of service life and savings to future budgets.

Other structures built in 2007 include three 14' wide by 7' high 3-sided concrete boxes that replaced smaller bridges along with seven large diameter (≥ 36") reinforced concrete pipe. The cost of the 144 feet of 36" diameter pipe installed through the Miami and Erie Canal was reimbursed by the Ohio Department of Natural Resources.

FORCE ACCOUNT LIMITS NEED

TO BE ADJUSTED!! As stated on the prior page pertaining to roadway improvements, the Ohio General Assembly has also placed threshold limits on the magnitude of the bridge projects the County can undertake with our own forces. If the estimate of a bridge replacement/rehabilitation project is in excess of \$100,000, then bids have to be let to private contractors for portions or all of the work. Since that limit was established in 2003, due to construction inflation over the past four years, the physical size of a bridge we can replace has been reduced by 41%. This department is asking for the taxpayers of this county to convince our legislators to increase the threshold limits to adjust for construction inflation and let us efficiently manage our operations as we have in the past



A 40 year old metal pipe under Glynwood Road just west of Wapakoneta, nearing failure, was replaced with 100 lineal feet of polyethylene pipe (above) at a depth of 14 feet. Our excavator is shown setting a precast headwall. 430 tons of stone was needed to backfill the trench.



Left photo shows the crane driving steel piling for the north wall on the Conant Road bridge. Each pile is capable of supporting 35 tons in order to support the concrete bridge abutments, deck and traffic. 144' of concrete pipe (rt.) was installed through the M&E Canal in Noble Twp. replacing a deteriorated metal pipe draining the Bayshore Ditch. The concrete drop box and anti-seep collars were cast at the County Garage.



2007 STRUCTURES REPLACED

<u>Location</u>	<u>Description/Span/Length</u>	<u>Cost</u>
Goshen Road	9 – 16' County Beams (Rehab walls)	\$ 23,171.
Middle Pike	9 – 25' County Beams (Rehab walls)	\$ 20,114.
Miller Road	9 – 32' County Beams (Rehab walls)	\$ 30,064.
Conant Road	9 – 27' County Beams (Entire structure)	\$ 36,561.
Easterly Road	40 feet of 14' x 7' three sided concrete box	\$ 27,763.
Kettlersville Road	52 feet of 14' x 7' three sided concrete box	\$ 33,517.
Golden Bridge Road	44 feet of 14' x 7' three sided concrete box	\$ 32,251.
Amsterdam Road	100' of 36" diameter concrete pipe	\$ 29,110.
M & E Canal	144' of 36" diameter concrete pipe	\$ 18,484.
Glynwood Road	100' of 60" polyethylene plastic pipe	\$ 20,154.
Santa Fe Line	40' of 36" elliptical concrete pipe	\$ 5,704.
Wapak Fisher	56' of 36" diameter concrete pipe	\$ 6,036.
Santa Fe Knoxville	48' of 42" diameter concrete pipe	\$ 7,013.
Edgewater Drive	56' of 42" diameter concrete pipe	\$ 3,033.
Bremen Knoxville	One – 31' County Beam (Rehab deck)	\$ 4,149.
Lock Two Road	Two- 31' County Beams (rehab deck)	\$ 9,609.
CR# 66A	One – 23' County Beam (rehab deck)	\$ 5,693.

TOTAL PROGRAM COST = \$ 312,426.

SAFETY IMPROVEMENTS

Annually, along with our standard operations of road and bridge improvements, safety upgrades to potentially hazardous locations are designed and constructed by this department. The realignment of two 20 MPH curves on Blank Pike and the elevating a flood-prone section of Burr Oak road were two such endeavors completed in 2007.



At two locations on Burr Oak Road, localized flooding would cause “high water” signs to be posted and sometimes need to be closed, leaving those living between those two locations, in a predicament. To alleviate roadway flooding to the west location, the roadway was elevated by 3.5’ (above). The Auglaize County Highway Department constructed the earthen shoulders, compacted the aggregate base and replaced the existing drainage through the roadway. The Washington Township Trustees did receive a State Issue I grant that paid for 90% of the stone fill delivered to the site and final resurfacing completed through a contract with the Shelly Company.

On Blank Pike (photo below), two abrupt 20 MPH reverse curves were located at the intersection with the Bigler Road. 1,000’ of existing roadway was milled and the asphalt grindings were used as base for the new alignment. County crews performed all the grading and compaction for two 45 MPH curves and replaced all the drainage within the project area. The Shelly Company resurfaced the project as part of a 5.5 Blank Pike resurfacing improvement.



IT’S NOT FINISHED YET

The staff has heard me on several occasions say that the project isn’t complete until the” grass is growing”. With the assistance of the many attachments to the Bobcat Skid loader, yard rakes, and a mulcher (photo below), all road and bridge projects are properly seeded. During 2007 the crews used 5,100# of seed, four tons of fertilizer and 25 tons of straw to “finish” each of the projects outlined in this report.



PETITIONED DITCHES

During 2007, along with the design of all the roadway and bridge improvements, the engineering staff had a busy year with ditch petitions. The Nielsen Ditch (2165’ tile and 1160’ of open ditch) and the Barnt Ditch (2376’ tile) north of Waynesfield, along with the Shaw Ditch (6865’ tile) west of Uniopolis went to construction. Bids have been let for the Waynesfield East ditch (7,400’ tile) and construction is planned for 2008. Plans, specifications and assessment schedules were completed with final hearings set for early 2008 on the following; on the: Sims Ditch (9,000’ open ditch) south of Buckland; Stoner Ditch (1200’ open) north of St. Marys; Zink Ditch (7,400’ of open) south of Wapakoneta; Heitkamp Ditch (970’ of tile) west of Minster. The survey of the Spencer Ditch (9,000’ tile) in Wayne Township has been completed and design is underway.

Barnt Ditch Tile (below left) and the Neilson (below right) open ditch



EMPLOYEE ACHIEVEMENTS



Congratulations to Matthew Quinter, P.E. of Minster (left) for passing the Ohio Board of Registration’s Professional Engineering Exam. Matt has a Civil Engineering Degree from the University of Dayton and began his career with the Engineering Department mowing roadsides as a college student. Since becoming full-time in 2003, his duties have included scheduling and design for the construction crews, highway and petition ditch surveying and design.



Annually, in November, four counties come together for a snow plow rodeo & backhoe competition. Kohlieser, Lee, Schneider and Schmerge won the 2nd place team event, Schneider was 1st place and Snider finished 2nd in the individual driving. Kohlieser also won 1st in the backhoe competition. In Wapakoneta’s Halloween Parade, Tony Drexler won 2nd place “business entry” with the County’s dump truck. Above photo– front row L to R: Toby Lee, Kevin Snider, Tony Drexler. Back Row–L to R: Chad Kohlieser, Mike Schmerge, Todd Schneider