

# 2010 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 mandates within the Ohio Revised Code is for the County Engineer to provide to the County Commissioners a status of the infrastructure under the Engineer's jurisdiction. Whether or not this is a mandate, I feel such an annual report is imperative to keep the citizens of Auglaize County informed pertaining to: budgetary items; costs associated to the improvements completed during 2010 and the overall condition of our roadways, bridges and drainage systems. It is my belief that this report is not just for the Commissioners but needs to be provided to the residents of the county. In order to keep costs in line, I and my staff develop the report which is printed locally and then distributed countywide as an insert through our local newspapers for just \$ 0.27 per copy which is less than 2/3 the cost of a stamp.

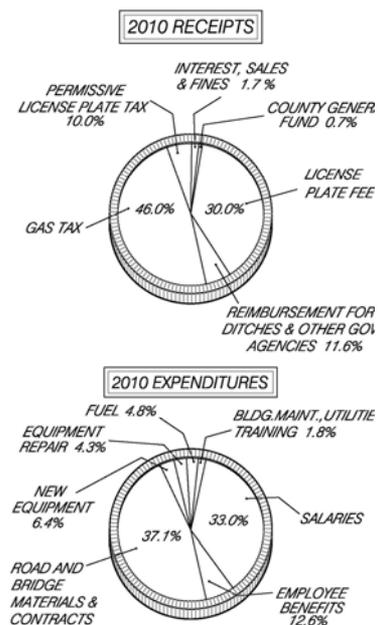
As I have stated in past reports, one of the keys to the success to many of this departments roadway improvements is due to the cooperation of the adjacent landowners. In order to properly provide the necessary drainage and safety shoulders property owners this past year allowed our crews to work outside the road right-of-way and on private property on numerous occasions. This cooperation reduced the overall cost of the improvement by not confining our crews and allowed the safety improvements to extend beyond the highway easement, resulting in a much safer roadway for everyone. Those persons are recognized within this report and to them I wish to extend my gratitude.

Special "THANKS" to the employees at the Highway/Engineering Department for their efforts during this past year. Even with income on the downturn, through a more efficient operation of the department, this report outlines a very successful 2010 as we strive to make our highways safer for the citizens of Auglaize County. Noted in this report are 5-year totals to exemplify the magnitude of the work accomplished by the crews on a continued basis.



The Infirmary Road intersection to 25A (above photo) was reconstructed in order to provide a perpendicular approach and wider turn radii for school buses and semi-tractors. The existing asphalt was milled, placed and compacted in the new alignment and only a 3" mat of new finish hotmix was needed to provide a smooth driving surface. Special thanks to Mrs. Baranowski and the Steinke's for their cooperation in this much needed safety improvement.

## 2010 BUDGET



### BUDGET ITEMS TO NOTE RECEIPTS

A. 86% of the Highway Departments budget is generated from local license plate fees and the State's gasoline tax. The 2010 income from those sources was \$ 64,460 below those received in 2007. During that same period of time hotmix increased by 35%.

B. The 0.7% received from the Commissioners from the County General Fund (sales tax and real estate tax) covers 30% of the operation of the tax map office in the Administration Building with no General Fund dollars contributing to road/bridge improvements during 2010.

C. Due to a decrease in revenue from license plates and fuel taxes, this department is subsidizing the budget by increasing the work being done on petitioned maintenance ditches and other governmental agencies. The 11.6% reimbursement as shown on the above pie chart is approximately 3% higher than realized in past years.

### EXPENDITURES

A. The last time this department budgeted for consulting engineering fees for a road, bridge or drainage improvement was 1976.

B. For the past 27 years this department has incurred no debt and owns all its equipment.



On the Buckland Holden Road in Logan Township, between the Auglaize River and the railroad, 4,000 cubic yards of dirt was removed from a hill adjacent to the railroad (upper left photo) and then placed along the north side of the roadway to create a much needed safety shoulder. Special thanks to Bob Ramga for allowing us to purchase an easement that sacrificed two acres of corn so the hill could be removed during the summer months. The upper right photo shows county crews placing asphalt millings elevating the roadway on Middle Pike east of Wapakoneta. This location was subject to constant roadway postings and closures due to impounded high water. Along with a combination of raising the roadway profile in conjunction with the installation of improved drainage, this situation will no longer exist. Without the cooperation of the following adjacent landowners; Klosterman, Walther, Limbert, Schneider, Koenig and ODOT, this project would not have become a reality.

**ROADWAYS:** In 2010, 14.3 miles of county maintained roads were resurfaced with hotmix. One mile of paving, 1 1/4" depth and a 20' pavement width now cost \$ 56,765 which is twice the cost as 2005. Having 348 miles under our jurisdiction, 14.3 miles per year equates to a 24 year rotation. With nothing changing, if the road in front of your home was resurfaced this year, it will again be paved in 2034! Unless the price of asphalt dramatically decreases or income rises, increased efforts in crack sealing and patching will be necessary to maintain the integrity of our highways.

**BRIDGES:** The highway department is currently maintaining 360 bridges, 1130 large diameter culverts (36" diameter to 10' openings) and more than 2,000 smaller culverts less than 36" in diameter. There are no structures posted with load limit restrictions, which is a situation many counties do not experience. By maintaining our in-house pre-casting operations, the smaller and intermediate size bridges continue to be in excellent condition. However, many of the larger span structures, where we have to replace the decks, are in need of repair as outlined on page three of this report.

## 2010 ROADWAY IMPROVEMENTS

It has been 20 years since our license plate fees have increased for road and bridge projects. The price of hotmix has increased from \$27.40/ton to \$ 64.50/ton since the State's gasoline tax has been adjusted. As inflation for construction materials increases and income from plates and fuel sales decreases, our department is concentrating on maintaining the integrity of the pavement through increasing the crack sealing and chip/seal programs.

In order to make our dollar stretch further, safety improvements are incorporating recycled asphalt grindings. The Hesse, Infirmary and Middle Pike Road projects completed in 2010 used over 2,000 tons of asphalt grindings that cost \$2.00/ton versus placing stone at over \$7/ton. Safety shoulders along several roads were constructed using dirt from the removal of nearby hills which improved site distances at those locations. Shoulders were also constructed by moving existing sideditches to the right-of-way lines, then placing that dirt along the edge of the pavement. As century old drainage tile are replaced within the road easement, adjacent property owners in many cases assist in paying for the pipe, thus costing the county only fuel and minor equipment wear.



At the Hesse Road where it crosses the Mercer County line, County crews reconstructed the existing double reverse curves having a 16' wide pavement and speed of 25 MPH, into a new alignment with a 24' wide pavement and speed of 45 MHP. Van Wert County's milling machine was used to grind the existing pavement. That material, along with an additional 1716 tons of asphalt grindings from other projects was then placed and compacted into the new alignment. Special thanks to: Salem Township Trustees, Mercer and Van Wert County Engineers and adjacent landowners, the Hesse's and Clay's,

### 2010 ROADWAY MAINTENANCE COMPLETED BY COUNTY PERSONNEL

1. 470 miles of county and township roadsides, plus 160 miles of permanent maintenance open drainage channels were treated for noxious weeds and woody plants (that calculates to 1,260 lineal miles – a distance from Wapakoneta to Miami, Florida).
2. 14,448 lineal feet (2.74 miles) of reinforced concrete and smooth walled plastic pipe was installed replacing century old storm sewers located within the road right-of-way. This brings the past 5-year total to 81,779 lineal feet or 15.49 miles.
3. While replacing the 2.74 miles of pipe as listed above, a total of 90 new catch basins were installed to better allow surface water access into the subsurface tile. 462 new catch basins have been installed by county crews over the past 5-years
4. Prior to resurfacing a roadway, all drainage culverts crossing under the pavement are inspected for integrity and replaced prior to the paving. This year 49 such crossings were replaced making the 5-year total equal to 190 new installations.

### 2010 RESURFACING PROGRAM

Road Name	Length	Location	Cost
Ashburn	3.0 miles	Fryburg East to SR# 33	\$ 161,748
Buckland Holden	2.25 miles	Townline Lima – East	\$ 113,622
Infirmary	0.1 miles	Intersection with 25A	\$ 16,984
National	2.7 miles	SR# 501 to Cridersville	\$ 140,137
66A	1.45 miles	CR# 168 to Schillinger	\$ 88,263
Amsterdam	1.75 miles	East Shelby to New Bremen	\$ 91,727
Bremen Knoxville	3.16 miles	New Knoxville to Kettler	\$ 170,570
Middle Pike	<u>0.1 miles</u>	East of Cemetery Road	<u>\$ 11,933</u>
	<b>14.51 miles</b>		<b>\$ 794,984</b>



The photo to the left shows the replacement of century old storm tile with double walled plastic pipe. As noted above, a total of 2.74 miles of similar pipe was installed during 2010. Note on the photo that this new installation is placed outside the road right-of-way and on private property, away from the numerous buried utility lines in the highways easement.

On 25A, two miles north of Wapakoneta, two stormwater pipe failed and because of the extreme depth, two crews and both excavators were brought in to complete the task of replacing both lines. A total of 104 lineal feet of 24" reinforced concrete pipe at a depth of 15' (see photo right) and 112 feet of 12" pipe at 18' deep were installed and 533 tons of aggregate was placed to backfill the trench. The roadway was closed on a Tuesday morning and opened to traffic Thursday evening.



County crews constructed safety shoulders along a three mile section of Tri-township Road (above photo) for the St. Marys Township Trustees in anticipation of a pavement widening program in 2011. Additional easements were purchased, and the dirt from the newly constructed sideditches was moved to the edge of the pavement to create the wider shoulder.



The photo above shows one of the 90 catch basin inlets installed during 2010. Holes are created, at a designed elevation in the sides of the precast concrete boxes to accommodate the stormwater pipe. Concrete is then mixed to mortar those connections to seal the new fitting. Such an installation allows stormwater traveling along the roadside to enter into the subsurface drainage tile.



The above photo depicts a new elliptical concrete pipe crossing on Kettlersville Road with a concrete inlet drop box to allow stormwater to discharge into the pipe. The inlet is actually a section of a 3-sided box culvert (laid on its side) and cast by County crews at the garage.



## 2010 BRIDGE AND CULVERT IMPROVEMENTS

As income for bridge improvements declines, the new mindset of rehabilitating a structure versus complete replacement was clearly evident in 2010. The smaller span bridges that could be replaced by county manufactured three-sided boxes comprised the bulk of this year's program with the three longer span bridges being rehabilitated. As you have read in past reports, the waterproofing of the bridge decks to prevent deterioration of the concrete and corrosion of the reinforcing steel, has become the absolute most important key to longevity. I am very confident that rehabilitating the longer and more expensive span structures, by using the latest techniques in waterproofing membranes and concrete additives, it will be another 35-40 years before those bridges will require additional repairs or replacement.



A \$340,994 SWCD ditch petition consisting of 2.95 miles of new subsurface tile was installed south of St. Marys and involved several road crossings. Prior to this improvement Tri-Township Road experienced flooding and constant high water postings. Because of the flat terrain of the adjacent ground, our forces cast and installed a low profile concrete box with a 10' opening and 4' legs (above photo). This structure, along with the new subsurface storm sewer, will eliminate the stormwater problem that has persisted there for decades.



In 1967, 47' of prestressed concrete beams were used to span Prairie Creek on the Easley Road in Logan Township. Waterproofing of bridge decks was not the practice at that time resulting in water/salt intrusion into those beams and severe deterioration. Estimates to replace the deck with similar beams were in excess of \$ 55,000. The decision was made to rehabilitate the deck by hammering away the failing concrete followed by placing a new 5" concrete overlay on the deck and edges( above photo). To waterproof the deck, the concrete is first "shot blasted" to remove all the debris, followed by a two-step application of an epoxy coating (below photo). The material came in separate containers that had to be blended and then squeegeed in place within a few minutes before it solidified. Immediately after the membrane was applied, a final application of flint cover aggregate was "blown" onto the deck using the county's duropatcher. Total material cost for this process amounted to \$12,403.



The largest structure to be rehabilitated during the past years was the 205' span Buckland Holden Road bridge over the Auglaize River (above photo) in Logan Township. Spalled concrete was removed, both exterior beams reinforced with new steel bars and recapped with a high strength concrete. An epoxy membrane plus a waterproofing fabric was placed prior to resurfacing the deck with a new coat of asphalt. Total material cost was just under \$32,000. If this deck was not rehabilitated now, it would require a complete replacement in 20 years at an estimated cost of \$450,000. The rehab project on the 97', 3-span deck on Townline Kossuth over Six Mile Creek was more complicated. The two 21' long end spans were replaced using County pre-cast concrete beams. The 55' center span was comprised of steel I-beams and a corrugated deck. A contract was let to supply and place new beams that were hot dipped galvanized which included a 35 year warranty. As part of the rehabilitation, the deck was widened from 24' to 27'.

### 2010 STRUCTURES REPLACED

<u>Location (Road)</u>	<u>Description/Span/Length</u>	<u>Cost</u>
<b><u>Bridge Rehabilitation</u></b>		
Buckland Holden	205' span, rehab outside beams, waterproof	\$ 63,290.
Easley	47' span, rehab outside beams, waterproof	\$ 21,906.
Townline Kossuth	97' 2 sets county beams, 55' steel center span	\$154,630.*
<b><u>Three – Sided County Manufactured Boxes</u></b>		
Glynwood Road	40 lineal feet of box with 10' x 5' opening	\$ 30,308.
7 <sup>th</sup> St. in Minster	116 lineal feet of box with 14' x 7' opening	\$ 83,934.
Owl Creek	52 lineal feet of box with 14' x 7' opening	\$ 30,537.
Tri-Township	44 lineal feet of box with 10' x 4' opening	\$ 40,713.
Tri-Township	Widen existing box by 12' with 14' x 7' opening	\$ 8,370.
Glynwood	Widen existing box by 12' with 14' x 7' opening	\$ 12,988.
Kossuth Amanda	44 lineal feet of box with 10' x 7' opening	\$ 39,511.
Dues Ditch (Minster)	100 lineal feet of box with 10' x 4' opening	\$ 60,611.

\* Includes \$107,586 contract to U.S. Bridge for providing and installing steel beams and deck

At the north end of the Village of Minster, where 7<sup>th</sup> Street crosses over the Maimi & Erie Canal, a structurally deficient steel pipe was replaced with a county manufactured three-sided concrete box (below photo). The challenges presented to the crews included installing the box sections under a 12" waterline and 8" gas line, plus having to "slide" the boxes on their footers under the power lines. Total cost per foot for the county to manufacture this structure was \$270 per running foot. A recent estimate to purchase a box with a similar size opening is \$700/ft.



## 2010 DRAINAGE PETITIONS

The Engineering staff not only provided the design, plans and construction staking for all the road, bridge and highway related drainage projects outlined in this report, several petitioned ditch projects through the County Commissioners were processed and constructed in 2010. Our role in the petition process includes: preparing the petition; determining the watershed boundary and affected landowners; preparing a preliminary report, surveying and preparing construction drawings; compile a final report outlining the projects costs; determining the assessments for all those within the watershed; presentation at the final public hearing; develop contract documents; stake and inspect the improvement and process contractor payments based upon work completed.



The Muddy Creek Ditch petition initial proposal was to reconstruct one mile of open channel located three miles east of New Knoxville with the upper terminus being the Auglaize- Shelby County line at the Southland Road. An amendment extending the improvement by the landowners in Shelby County resulted in a total project length of 3.32 miles of complete reconstruction which included 0.44 miles of open channel log jam removal. The 1508 acre watershed was assessed \$153,170 to create additional channel capacity, install 1,350 tons of rip-rap to curb severe bank erosion and place the project under a permanent maintenance plan. The upper left photo shows the excavator creating flatter side slopes on the main channel in order to prevent erosion. The upper right photo depicts the erosion control structure on a branch that terminates near Kettlersville Road.



The Freeman Ditch is located two miles northeast of New Bremen. This subsurface tile drained a combination of agricultural and residential parcels. The project involved the installation of 225 feet of 30" and 1785 of 15" diameter tile (photo left). The \$ 39,657 project cost was assessed to the 143 acres benefitted within the watershed.



The Bryant Ditch is located northwest of St. Marys near the intersection of the Glynwood and Lambert Roads. Over a period of years ten residential lots were developed either within or adjacent to wooded area. The subsurface tile that provided an outlet for their basement drains, septic systems and roof runoff ran along tree lines and eventually through the wooded area prior to discharging into an open ditch. Tree roots eventually penetrated into the tile line and restricted the flow. The petition included installation of 2,100 lineal feet of 18", 15", 12" and 8" diameter tile along with the construction of 1600 feet of waterway to control surface stormwater at a cost of \$ 55,576. The upper left photo shows the polyethylene pipe placed in the backyards in the general alignment of the new installation. The above right photo details how the pipe is bedded and backfilled with aggregate through the wooded area to provide an accurate gradient. Premium joints were specified to prevent the future intrusion of tree roots.



The Spencer Ditch # 2, located in Wayne Township consisted of the installation of 1590 feet of 10" and 1470' of 12" diameter subsurface polyethylene tile (above photo) plus one-sided construction of 1,425 feet of open channel. The \$47,265 improvement was assessed to the landowners in the 322 acre watershed.

## EMPLOYEE ACHIEVEMENTS



On September 30<sup>th</sup>, Martin Leppla (above) retired with 35 years of dedicated service. Congratulations and enjoy your retirement plans.



Annually, in November, four counties in West Central Ohio come together for a snow plow and construction equipment rodeo. Our employees once again brought home several awards. Snow Plowing Skills Competition: Kohlreiser - 1<sup>st</sup> Place individual; Kohlreiser, Snider, Schmerge, Bowersock - 2<sup>nd</sup> Place team. Skid Loader Competition; Sidener - 1<sup>st</sup> Place; Bowersock - 2<sup>nd</sup> Place; Snider - 3<sup>rd</sup> Place. At the annual Wapakoneta Halloween Parade, Tony Drexler's entry using a county dump truck garnered the First Place Spirit Award. Above photo, back row left to right - Tony Drexler, Kevin Snider, Chad Kohlreiser, Scott Sidener. Front Row left to right - Mike Bowersock, Mike Schmerge.