

2011 AUGLAIZE COUNTY ENGINEER'S ANNUAL REPORT

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

One requirement of the Ohio Revised Code is for the County Engineer to annually report to the County Commissioners the state of the 350 miles of county roadways, 344 bridges, 1130 large diameter culverts and 296 miles of permanent maintenance ditches under this department's jurisdiction. This report meets that mandate and also outlines to the commissioners and citizens of Auglaize County the numerous maintenance and capital improvements completed by this department during 2011. I believe it is also important this report provides the associated costs to those projects so the general public better understands how their tax dollars are spent.

I wish to personally thank the employees at the highway department for their efforts during 2011 and making me look good yet again another year. I would also like to thank all those property owners adjacent to our maintenance and capital improvement projects this year. Landowners donated needed right-of-way so we could complete many of the safety improvements; allowed us work off the dedicated right-of-way in order to provide the proper safety slopes and work areas for our construction equipment; and stepped up by assisting in the payment of the replacement of antiquated storm sewers along our highways that drained their farm fields and homes.

2011 WEATHER IMPACTS CONSTRUCTION PROJECTS

This past years weather conditions provided the entire gambit of cold, wet and hot which seemingly caused a daily challenge to the construction crews. The winter of 2010-2011 was one of those "good old winters" that began in early December and would not give up until late March. Trucks were dispatched for 53 separate snow/icing events. Even though 4,800 tons of a salt/stone mix was applied over the winter, the temperature never reached 30° for weeks on end, causing the motorists to constantly negotiate either hard packed snow or ice covered roadways.

This county then experienced a flooding event at the end of February that has not been equaled since February of 1957 deeming it to be a "50 year" storm. In approximately two hours, three inches of rainfall, along with an entire winters snowpack, compounded by frozen ground created a runoff condition across this entire county similar to that seen from a paved parking lot. Flood waters from watersheds as small as 20 acres crossed roadways in hundreds of locations. Homes, businesses, roadways, bridges, culverts and drainage ditches experienced damages that took weeks and hundreds of thousands of dollars to repair.

The precipitation continued at record levels throughout the spring hindering not just our operations, but keeping the farming community from planting any of their fields until nearly the first of June.

When the rainfall finally subsided, intense heat affected the construction crews throughout the summer. In July, the crack sealing crew spent the day on pavements that saw surface temperatures approach 120°. The operator of the chip-spreader (piece of equipment used to place the stone during the tar and chip program) endured deck temperatures of 135°. The bridge crew worked through 95° temperatures while working in trenches and building bridge foundations with no breeze or shade for relief.

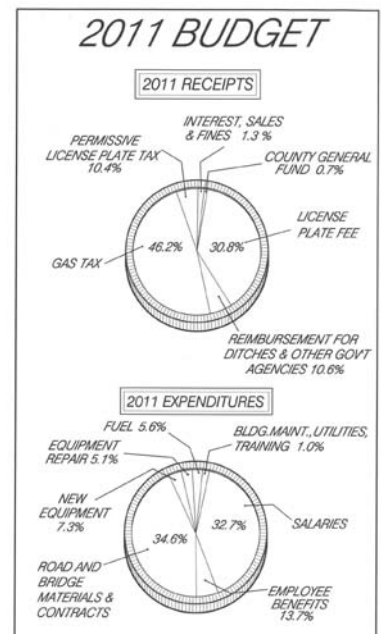
The record setting rainfall began again with the coming of fall, hindering our ending of the roadway construction and the beginning of our drainage ditch maintenance program. An ODNR report showed that west central Ohio received a total of 58" (2" short of five feet!) of rainfall during 2011, the most recorded in 129 years of record keeping. 58" of rainfall exceeded the old record by almost six inches!!



The above (left) photo shows the February floodwaters over County Road #25A north of Wapakoneta and flowing 20" deep through the Duchouquet Twp. House. The above right photo depicts the shoulder damage to the Bowsher Road north of the National Road in Logan Township.



A century old storm sewer, three feet off the edge of Buckland Holden Road failed. Several hundred feet of new 24" diameter sewer (above photo) was installed 30' from the existing tile and off of the road right-of-way. Special thanks to Valgene Phillips who allowed us to move the tile onto private property along with paying for a large portion of materials used. Cooperation such as this has been commonplace in recent years where safety improvements have been completed by county crews with local landowners defraying the costs of materials.



NEED FOR INCREASED REVENUE: Over 87% of this department's income is realized from Gasoline Tax and License Plate fees. 2011 receipts from those sources were below that received in 2006. During that same period, inflation to road/bridge construction materials has increased by 49%. The gasoline tax in Ohio was last adjusted in 2003 when the pump price was \$ 1.28/gal.. License Plate fees dedicated for highways were last adjusted in Auglaize County in 1991. The price of a ton of asphalt over that same period of time has increase from \$22.64 to the 2011 price of \$68.65/ton.

EQUIPMENT: Just over 7% of last year's expenditures were dedicated for new equipment. In today's construction market, that will buy you one dump truck, replace one piece of major construction equipment (backhoe, loader, excavator) and maybe one pickup truck. This County's equipment may appear new and reliable, but that's only because it's well taken care of. Snow plows logged in nearly 85,000 miles during the winter of 2010-2011. The odometer readings for all new and used licensed equipment adds up to 6.04 million miles.

2011 ROAD IMPROVEMENTS

As outlined on the first page, income from this departments is from two main sources, gasoline tax and license plate fees was lower than 2006 levels. Gasoline taxes are based upon gallons sold, not the price at the pump. Even though statistics show more miles are being driven each year, newer vehicles are more fuel efficient and other forms of energy are becoming more prevalent to propel the vehicle. An automobile driving 10,000 miles a year and getting 25 MPG will provide \$168 in revenue to be shared by governmental agencies that year for the repair of their roads and bridges. An “all electric” vehicle will still require the same upkeep of our highway infrastructure, but will not provide any “user fee” income for those repairs. I believe any way we can reduce our dependency on foreign oil is a positive step. It will however cause us to look in other directions to generate income for our highways.

As income declines and construction inflation increases, maintaining the integrity of our roadways is paramount. To resurface one mile of a 20’ wide highway with an 1¼” mat of asphalt now costs \$58,000. The 11 miles resurfaced in 2011 was a 27 year low for this county. If nothing changes, at 11 miles per year and with 350 miles of county highways in Auglaize County, a roadway will receive a new hotmixed surface coat once every 32 years. If the road past your home was resurfaced in 2011, it will again be paved in 2043. You don’t have to be an engineer to predict how the overall condition of our highways will spiral downward without increased revenue.

It will be this department’s challenge to maintain the surface of our roadways until additional revenue sources are derived. There are currently “zero” potholes to be found on the 350 mile system under our jurisdiction, and the plan is to hold that standard. More efforts will be spent crack patching and chip sealing to provide a new wearing surface, recycling of asphalt versus purchasing \$8/ton stone and having adjacent property owners assist in paying for storm sewer improvements. Listed below is just a partial listing of the 2011 accomplishments completed by our crews.

(A) Added to the material costs for salt and stone used during the 2010-2011 winter, the fleet of 15 snow plow trucks logged over 85,000 miles and consumed an estimated 23,400 gallons of diesel fuel. The total impact to the budget, including salt, stone, fuel and overtime was \$272,547.

(B) 29.07 miles of highways received either a full chip and seal or an edge strip seal utilizing 97,118 gallons of liquid asphalt and 2,944 tons of cover aggregate. The material cost to chip/seal one mile is \$10,030 versus the \$58,000/mile cost of hotmix.

(C) 12.4 miles of roadways were crack patched with 37,684 # (just under 19 tons) of polymerized asphalt applied at 325°. An air compressor is first used to clean the cracks followed with the asphalt being squeegeed into place.

(D) 240 miles (69% of all roads) received a new centerline paint stripe and 18 miles were edge lined for \$61,008.

(E) 2,390 feet of reinforced concrete pipe, 12,060 feet of smooth walled polyethylene plastic pipe and 67 concrete catch basins were installed along and through our highway system replacing century old storm sewer. This brings our past five year total to 14.71 miles of pipe and 446 catch basins replaced.

(F) 4.2 tons of grass seed, 25 tons of straw and 5 tons of fertilizer was incorporated to re-establish the vegetation disturbed due to our stormwater and safety improvements.

(G) 420 miles of roadsides and 168 miles of open maintenance ditches were treated for control of noxious weeds and woody plants.

(H) 1,436 tons of recycled asphalt grindings were used for pavement widening, shoulder stabilization, driveway repairs and mailbox approaches.

(I) Mowing tractors covered over 5,000 acres of road right-of-way after making multiple passes during 2011.

2011 RESURFACING PROGRAM

<u>Road Name</u>	<u>Length</u>	<u>Location</u>	<u>Cost</u>
Hamilton Street	0.31 miles	South of Glynwood Road	\$ 49,788
Nottingham Drive	0.38 miles	Sherwood Forest Subd.	\$ 25,844
Geyer Road	3.64 miles	South of St. Johns	\$ 211,163
Middle Pike	4.5 miles	Wapakoneta to SR# 65	\$ 263,680
Koenig Road	1.1 miles	SR# 33 to SR# 29	\$ 71,144
Greenville Road	0.1 miles	@ Miami & Erie Canal	\$ 5,633
Bremen Knoxville	<u>0.92 miles</u>	Kettler to Lock Two	<u>\$ 55,402</u>
TOTALS	10.95 miles	TOTAL PAVING COST	= \$ 682,654



County Commissioners paid the highway department to extend a 12” diameter sanitary sewer (above photo) at the fairgrounds. The installation was complicated by crossing a myriad of fiber optic communication and gas lines.



Seeding crews (above) are performing yard repairs to trenches resulting from the new storm sewers installed as a part of the Bryant Ditch petition in Noble Township.

A century old clay storm sewer was replaced along the west side of Hamilton Street (below) prior to the resurfacing project.



Special thanks to Fritz Kohler for donating the needed right-of-way along Washington Pike in order to construct a safety shoulder (below) and move a deep sideditch that existed adjacent to the pavement’s edge.



2011 BRIDGE/CULVERT IMPROVEMENTS

The weather conditions experienced during 2011 were not conducive to bridge and culvert installations. With 58" of rainfall, streams were constantly flooded and when we were under construction on a project, pumps were needed on a daily basis to prepare the site for setting foundations and pouring concrete. Even with the challenge provided by the record setting precipitation, the county's bridge crew either completely replaced or rehabilitated nine structures (listed below).

Over the winter, between snow events, the bridge crew cast forms and poured 434 cubic yards of concrete resulting in the manufacturing of new decks for four bridges and 120 lineal feet of three-sided concrete box with footers and headwalls. The only bridge beams that had to be purchased were the 38' span prestressed concrete beams used on the National Road bridge. Based upon our beam design, form lengths and depths and lifting capability of the crane, 33' is the maximum length of beam that can be manufactured at our complex.

A ten ton load limit restriction was posted on the St. Marys Kossuth Road bridge over the Six Mile Creek, preventing school buses, fire trucks and farm to market traffic from using this roadway. This was the first such posting in over 15 years. With income on a decline and construction inflation continuing to spiral upward, this may become a more commonplace scene not just in this county, but across the State.

2011 STRUCTURES REPLACED/REHABILITATED

<u>Location (Road)</u>	<u>Description/Span/Length</u>	<u>Cost</u>
Kettler	Rehab Abutments, Replaced 22' Span Deck	\$ 29,154
Bremen/Knoxville	Rehab Abutments, Replaced 23' Span Deck	\$ 28,534
Middle Pike	Poured New Concrete Cap on 40' Span Deck	\$ 19,105
Southland	Rehab Abutments, Replaced 31' Span Deck	\$ 25,575
Santa Fe Line	Extended 72" Diameter Pipe, Placed 40' - 42" Pipe	\$ 11,142
Goshen Road	Installed 64' of 72" Diameter Concrete Pipe	\$ 23,230
Maier Barber	Rehab Headwalls, Replaced 31' Span Deck	\$ 32,983
National	Replaced 38' Span with Prestressed Concrete Deck	\$ 92,345*
Aqueduct	120 lin. ft. 10' x 5' three sided box	\$ 73,205
	TOTAL	\$ 335,273.

* Includes contract price of \$45,825 for manufacturing and installation of 38' deck



Included in the winter concrete casting operations are bridge beams, three sided boxes and precast headwalls. The photo above shows a pre-designed header/footer wall to be installed at the upper terminus of an open channel in Jackson Township.



The excavator with the hydraulic demolition hammer (above) was used to remove the existing walls for a new 38' span bridge on National Road over the Grassley Ditch. The broken concrete was then reused as rip-rap for erosion control along the new walls.



The Geiger Ditch is one of the County's permanent maintenance ditches and crosses diagonally through the Murotech manufacturing complex at the northeast corner of the City of St. Marys. Murotech is expanding their operations, in need of a second access across the ditch, and reimbursed the highway department for installation of the culvert for that driveway (below photo).



CR#33A is being programmed to receive federal funding for resurfacing within the near future. County Crews are currently extending existing culverts (above) to provide needed safety shoulders in anticipation of the upcoming project.



The above left photo shows the Kettler Road bridge just north of SR# 274. The walls were rehabilitated and a new county manufactured 22' span concrete deck was installed. The significance of this project is the fact the existing deck was one of the first precast by County forces forty-four years ago in 1967. By using higher strength concrete and waterproofing membranes, it is anticipated that the newly installed deck will last well past fifty years.

The Kellermeyer Ditch, located on Aqueduct Road, south of St. Marys, flowed through a corrugated metal pipe under the roadway and continued through the Maimi & Erie Canal adjacent to the road. The pipe under the roadway was structurally unsafe and was also failing under the Canal. A new 10' span by 5' high three sided concrete box was cast at the county garage which provided additional flow capacity and structural strength. In cooperation with ODNr, we agreed to continue with our installation from the county's road right-of-way through the M & E Canal. ODNr reimbursed this department for 72' of the 120' of box installed.

AUGLAIZE'S COUNTY AND TOWNSHIP BRIDGES BY STATE SUFFICEINCY RATING

(Each bridge is annually inspected and rated from 0-100 based upon its condition)

<u>Number of Bridges</u>	<u>% of Bridges</u>	<u>Sufficiency Rating</u>
220	64%	EXCELLENT (90-100)
116	33%	GOOD (70-90)
6	2%	FAIR (50-70)
2	1%	POOR (0-50)

Of the two bridges rate "POOR", one is just west of the Con Ag Stone Quarry over the St. Marys River and is planned for replacement in 2014 using federal funds (\$400,000 est.). The second is the St. Marys Kossuth Road bridge and is planned for replacement in 2012 using two sets of "County" precast concrete beams.

2011 DRAINAGE PETITIONS

After drainage ditches are petitioned and installed through either the County Commissioners or the County Soil and Water District, they are mandated to be placed under a permanent maintenance program operated by this office. Since the 1957 amendment to the drainage laws, a total of 269 individual projects have been installed and we are now in charge of maintaining 168 miles of open channels, 96.7 miles of subsurface tile mains, 7 miles of grass waterways and 24.5 miles of open channels, log jam removal only, for a total of 296.2 miles.

The first priority for our engineering staff is focused on the roadway safety and bridge improvements with drainage petitions being designed when time becomes available. In early 2011 we could say that the backlog of petitions was down to just one tile main project to design. However, along with the 58" of rainfall came a deluge of petitions during the second half of the year. Six new petitions were filed to replace over 22,000 feet of century old subsurface tile mains that are affecting not just agricultural lands, but dozens of residential homes. This fall, public viewings and preliminary hearings were held on these projects with several having the field surveys completed. Our maintained ditches will soon top the 300 mile mark.

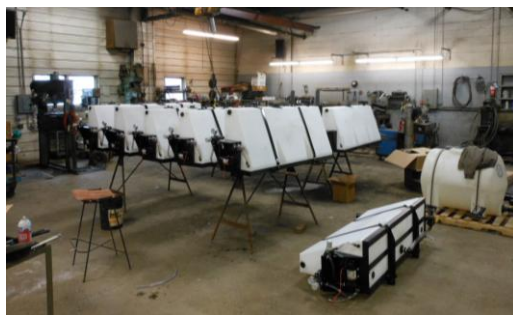


Asst. County Engineer Kevin Schnell, P.E., P.S. , shown in the above left photo, is presenting his engineering report to several landowners during one of the many public hearings held this fall. The above right photo is the contractor installing the Barnes # 2 tile ditch in Goshen Township. This petition included the installation of 4,700 feet of 12" to 24" diameter subsurface tile mains at an assessed cost to the landowners, within the 790 acre watershed, of \$87,236.



The most expensive single county ditch petition in the history of Auglaize County as a result of a petition filed by the Village of Minster to stabilize the banks of the Maimi & Erie Canal from 1st Street in the village to SR# 119. This 1 1/2 mile improvement requires the placement of 27,400 tons of specially graded rip-rap (left photo) at an assessed cost of \$ 940,735. Special thanks to the Village of Minster and the numerous property owners adjacent to the Canal. Matt Quinter, P.E., S.I., design engineer for this department prepared the plans and specifications, performed all the presentations at the public hearings and is now overseeing the work performed by the contractor.

A BETTER WAY OF FIGHTING SNOW/ICE



With sustained subfreezing temperatures throughout the winter, multiple applications of the grit mix were used during icing events, with very minimal results. At below 20°, salt has 1/5th the ability to melt ice as it has at 30°. During the first week of February when temperatures hovered near 20°, three applications and 1,100 tons of grit were applied to ice covered roadways with little effect. The grader (above left) was mounted with chains and a special ice blade in an attempt to peel off the top layer of ice. We did experience minimal success but it was a very slow process. Other counties across Ohio experimenting with a beet juice byproduct found that when added to salt, ice and packed snow would be affected at temperatures below zero. In November, we purchased a small quantity of beet juice from Montgomery County. We researched and found the tailgate mounted tanks were molded in Logan County and the sprayer and pump systems could be purchased in Shelby County. Instead of purchasing the application units for \$2,000/each, the mechanics manufactured our own for \$600/unit.

RETIREMENTS



Jim Schaub (above) retired at the end of January with 42 years of service with this Department. He began his career on the bridge crew as a crane operator and helped cast some of the first county manufactured bridge beams in the late 1960's. Jim's duties then moved to the road crew where he was the loader operator for many of our earth moving projects throughout the county. Special "Thanks" to Jim for his outstanding and dedicated service to Auglaize County.



On September 30th, Dan Vogel (above) retired with 30 years of service. He spent his entire career on the bridge crew and was integral in setting up the casting operations when they were moved into the bridge building in 1985. He later assisted in developing the forms and beds for the 3-sided boxes. Dan was sometimes referred to as the "MacGyver" of the bridge crew because of his ability to manufacture a needed part or apparatus to lessen a task required to construct a bridge. Congratulations on a great career and best of luck in your future endeavors.

ROADSIDE CLEANUP



For several decades this department has assisted landowners by removing deteriorated fences located along the road right-of-way. With permission from the Bowsher family, a section of their fence along Kruse Road was removed this past fall (above photo). The fence and posts were taken to Omni Recycling and the Bowsher family asked that their proceeds (\$444) be donated to the Buckland United Church of Christ.