2009 AUGLAIZE COUNTY ENGINEER'S ANNUAL REPORT

By: Douglas Reinhart, P.E., P.S., Auglaize County Engineer

To begin 2009, the snow and ice control operations for the 2008-09 winter were severely hampered by the fact the County received no bids for highway salt. Due to exorbitant amount used throughout the entire Midwest during the previous winter, salt supplies were exhausted along with the fact larger governmental agencies moved their bid dates forward in the calendar year, we received six envelopes the day of the bid, but all the suppliers did not provide a quote.

Fortunately our salt shed had been filled in the spring after the preceding winter. ODOT, Mercer and Logan Counties did receive limited bids and assisted us when supplies ran low. Special thanks to each of those agencies and it is my hope to assist them in the future during their time of need. We increased the sand to salt ratio from 1:1 to 2:1 and we rationed not only ourselves, but the 19 other governmental agencies we supply. The traveling public also adjusted by driving slower and with more caution, and eventually spring arrived.

A wet spring was followed by an extremely dry summer and fall. While the summer conditions eventually hindered crop yields, it was ideal for our construction projects as rain-outs were virtually non-existent. Over 130,000 gallons of liquid asphalt was applied during the sealing program, 17,496 feet of deteriorated storm sewers were replaced along with 106 new catch basin inlets. 28 road crossing (under 36" diameter pipe) were completed through county roads. 450 miles were treated for noxious weeds along with 162 miles of permanent maintenance drainage ditches. 16 bridges and large diameter culverts were either replaced or rehabilitated. 20.27 miles of county roads were resurfaced along with 3,192 tons of berm stone placed by county crews in conjunction with the county and township paving program. Over 6,000 traffic signs were upgraded and maintained on the 672 mile county and township system. The above accomplishments represent a partial listing of the 2009 improvements with a more extensive list being outlined throughout the balance of this report.

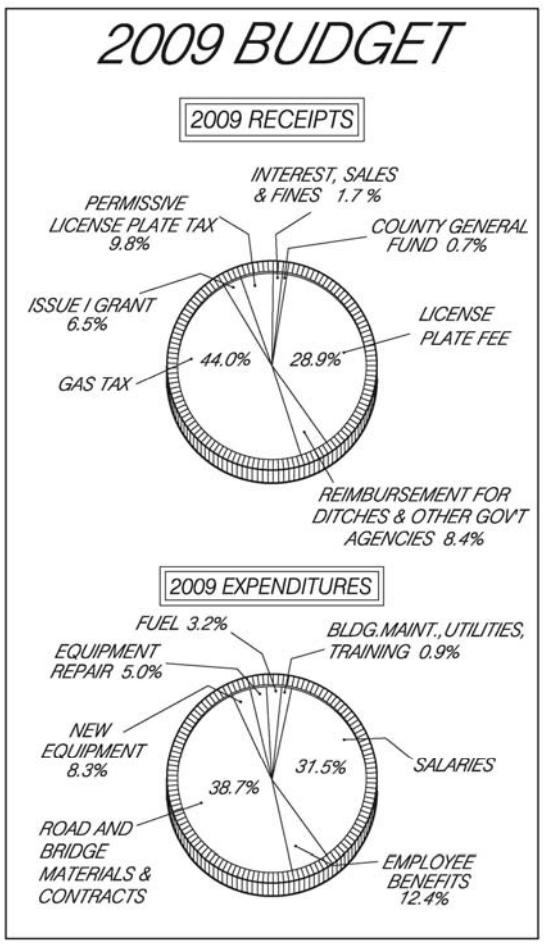
Throughout 2009 I was constantly asked how our department was surviving the economic downturn in the economy. My response was that we had to accomplish our goals by looking to provide the same needed services and safety, at a lower cost since the income from gasoline and license plate fees dwindled as construction inflation increased. Our operations were impacted the same as all families are experiencing. 2009 saw an $80,000 reduction in gasoline taxes. The following steps were taken by this department in order to accomplish the numerous projects listed in this report: A.) Over 3,000 tons of recycled asphalt was used for roadway widening and realignment projects ($2.00/ton versus $7.50/ton for stone or $60/ton for hotmix); B.) All employees wages were frozen for 2009; C.) More sand was added to the sand/salt mixture for snow and ice control to make the $60/ton salt stretch further; D.) Other than the resurfacing bid and Harrison Street Bridge project paid for through federal funds, no other construction bids were let with all other work being performed by Auglaize County crews; E.) The engineering, surveying and design for all the 2009 projects listed was completed by the County's Engineering staff and no consulting services were hired; F.) Safety projects were accomplished where the cash outlay was minimal (berm widening, lowering of hills, using recycled materials); G.) Over 1,600 tons of "free" broken concrete from numerous landowners (vs. $17/ton rip-rap) was installed to correct severe erosion on permanent maintenance ditches; H.) Extra income was generated by performing the following work for the townships: county crews completed all the roadway strip sealing program; treated roadways for noxious weeds in seven townships; widened one mile of pavement for St. Marys Township; improved roadside drainage and added safety shoulders to roads in Clay Township; placed the berm stone for the township paving program; replaced numerous roadway culverts for five townships; maintained and upgraded the signage on the 323 mile township system. I.) Additional income was realized from the maintenance of the ever increasing number of permanent maintenance ditches 277 miles; J.) Reduced the number of employees at the Highway Department (a program that began in 1985); K.) Within the existing road right of way, many property owners purchased the materials necessary to replace century-old storm sewers which failed due to a variety of reasons.

With the above cost-saving measures and efforts to increase income, the number of projects completed this past year mirrored or exceeded those years when income was outpacing the rate of construction inflation.

There are a couple of special "THANK YOU'S" that need to be recognized. Throughout 2009, when we were working either in a person's front yard or along their farm field, property owners could not have been more cooperative. If we had to work outside the road right-of-way to properly complete the project, permission was always granted even if it meant loosing a row of very valuable crops or a tree that had graced their front yard for decades. A thank you to those landowners and to the public in general for always supporting this department.

A second thank you goes to my employees for an outstanding 2009. When wages were frozen for the year, they could have had the attitude - - why put forth any more effort to my job if I'm not seeing any extra compensation. I did not see any of that attitude prevail. They realized that the downturn in the economy is affecting everyone and that there is a job to perform that they have committed to. They are being asked to do more with less help and are meeting that challenge. Special "thanks" to all those whom I have the privilege to work with.

The Harrison Street bridge project (above) consisted of the installation of twin 77' span steel trusses along with the reconstruction of 1100 feet of street. All of the surveying, design and plan preparation was completed by Dan Bennett, P.E., P.S., Auglaize County's Bridge Engineer for over 35 years. The project began in early June and was opened to the public in mid November and Dan "lived" at the site as the resident inspector. He is a huge asset to this department and special thanks to him for his efforts. Hiring a consulting firm to perform those same tasks would have impacted the budget by over $200,000 which is more than our 2009 expenditure for fuel ($168,085).



ITEMS TO NOTE ON THE 2009 BUDGET

Income from License Plate Fees amounts to 38.7% of the total revenue and was $19,869 less than 2008 receipts. Historically, the monies generated from plates sold in Auglaize County is distributed to this County's local governments and dedicated to road and bridge improvements until the Ohio General Assembly this year increased plate fees ranging from $15-$34 for commercial, RV, vanity and initial plates, plus a $20 late fee increase. Every penny of these fee increases for the first time went to the State Highway Patrol and not to highway improvements.

Gasoline tax revenues (44%) are based upon total gallons of gasoline sold in Ohio and not the retail price. Each of the 88 county engineers receives an equal share. For 2009, our receipts were $84,116 less than 2008 which reflects less gallons of fuel were sold statewide.

General fund income (your real estate taxes and sales tax) amounts to less than 1% of the total budget and is dedicated to the operation of he tax map office and not road/bridge improvements.

The 8.4% income for extra work completed for other agencies may not seem significant versus the gas tax and plate fees, but it is critical to maintaining and upgrading our equipment and attempting to keep pace with recent annual double digit inflation of construction materials. This additional contract workload also provides for a more efficient use of men and equipment twelve months a year.

Over the past 26 years this department has incurred no debt for any road or bridge improvement and the County owns all the equipment.

2009 ROAD IMPROVEMENTS

The price per ton of hotmix in place was bid at $59.35 this year and represents an 88% increase over the past five years. When factoring in the other bid items such as traffic control, berm stone, centerline paint, etc., the cost of resurfacing one mile of pavement, 20' wide with 1 ¼" of new hotmix is now $51,000 per mile. A $360,000 State Issue I grant was obtained to help counterbalance the $84,000 reduction in gas tax and plate income, resulting in a total of 20.27 miles of county maintained roads being resurfaced in 2009, which does sound very respectable. However, when you consider the fact this department is responsible for a 348 mile system, 20.27 miles/year calculates to a 17 year rotation. A grant for resurfacing is not on the horizon for 2010 resulting in only a 12-14 mile paving program and a 26 year rotation. Clearly, unless the price of asphalt decreases sharply, or income increases, the integrity of the pavement for this county's network of highways is in jeopardy. 10 years ago, prior to the annual double digit inflation of asphalt beginning in 2003, the paving rotation for resurfacing was under 12 years resulting in an almost non-existent crack sealing and tar/chip sealing program.

With the aging of the pavement surface, maintenance efforts are being increased to prevent reflective cracking. When water enters through those cracks, two phenomenons occur: the base is weakened causing a pavement failure; water freezes in the winter, expands and creates a pothole. The photo left shows the sealing operation on the Townline Lima Road. 150º liquid asphalt is sprayed on the pavement and is immediately followed by an application of #8 limestone, then rolled to "seat" the stone before the asphalt cools. All loose stone is then swept from the treated area. The 2009 budget was again greatly impacted when the liquid asphalt used for this program was bid in at $2.10/gallon; up from $1.60 in 2008 (2004 price was $0.79/gallon).

2009 ROADWAY MAINTENANCE COMPLETED BY COUNTY PERSONNEL

1. 450 miles of county and township roadways along with 162 miles of permanent maintenance ditches, totaling 2,900 acres, were treated for control of noxious weeds/ woody plants.
2. 3,192 tons of berm stone was placed in conjunction with the county and township resurfacing program.
3. The pavement sealing program consumed 137,542 gallons of liquid asphalt along with 4,565 tons of limestone aggregate on 101 miles of county and township roadways. 14,076 pounds of polymerized crack sealant was squeeged into place at numerous locations.
4. 2,036 lineal feet of reinforced concrete pipe, 8" – 36" in diameter was used to replace deteriorated surface drains through the roadway at 28 locations. 15,460 lineal feet of smooth walled polyethlene pipe was installed within the road right-of-way to improve roadside drainage and replace antiquated clay tile. 106 catch basins were installed to control surface water flooding.
5. 3,972 tons of recycled asphalt grindings were placed in conjunction with multiple safety improvements at $2/ton versus $7/ton stone or $59/ton hotmix asphalt.
6. 200 miles of county roadways received a new centerline stripe along with 40 miles of edgelining for a cost of $48,390 (this project was contracted).
7. 6,180 regulatory and warning signs on the 672 miles county and township systems were maintained and upgraded. Federal regulations on the reflectivity of highway signs nationwide were recently implemented. All County and Township signage now exceeds those standards by at least a factor of five.
8. 4,160 tons of a 2:1 sand/salt mixture was applied for snow and ice control during the 08-09 winter as trucks were dispatched a total of 51 different occasions.

IN JUST 12 HOURS!

CR# 25A is one of the busiest county maintained highways within the system. Two crews teamed up to replace a severely deteriorated concrete stormwater culvert under the roadway near the intersection with Infirmary Road. While traffic was being maintained, one precast footer was set, a gas line was unearthed to verify it's location and depth, and the pavement sawed where the new pipe was to be installed and the pipe delivered to the jobsite. At 7:00 a.m. the next morning the roadway was closed to traffic, the existing concrete box removed, 88 lineal feet of concrete pipe (left photo) was installed at a depth of nine feet, the trench backfilled with aggregate and hotmix delivered and placed at 4:00 p.m. with the roadway opened to traffic at 7:00 p.m.

2009 RESURFACING PROGRAM

Road Name	Length	Location	Tons/Hotmix	Cost
Bensman	1.86	SR# 66 -east	1,489	$ 92,919
Southland	1.10	SR# 219 – east	858	$ 53,485
Aqueduct	0.13	South of River	246	$ 14,843
Villa Nova	1.74	13 streets	1,290	$ 80,260
Baker Wright	1.75	River Rd – west	1,503	$ 92,816
Moulton Ft. Amanda	2.66	SR# 197 – north	2,126	$132,383
National	3.00	Main St – SR# 501	2,393	$149,745
Center and Spring St.	1.11	St. Johns	971	$ 61,628
Middle Pike	2.00	SR# 65 – east	1,751	$ 109,677
Buckland Holden	4.70	SR# 196 – west	3,776	$ 238,323
25A	0.22	National Rd – north	360	$ 21,749
	20.27 miles		16,761 tons	$ 1,049,046

Two safety improvements completed by County forces in 2009 used a majority of 3,972 tons of recycled asphalt grindings. The photo above shows the Middle Pike project just to the west of Kuenstle Road. The hill on Middle Pike at that location severely restricted the view of traffic exiting Kuenstle Road. A balancing act of removing 24" off the hill and using that material to elevate the intersection by 24", eliminated the restricted site distance when traveling eastbound on Middle Pike. The photo below shows nearly 2,000 tons of grindings being placed and compacted at a 9" depth in order to reconstruct the River Road railroad crossing. Approaches were flattened and a sharp deflection of the roadway at the crossing was eliminated. The Union Township Trustees were able to obtain a State Issue I grant for the resurfacing of the new approaches and entire length of River Road.

The above photo shows a new 12" diameter plastic storm sewer being installed along the south side of CR# 33A, replacing a deteriorated 8" clay and concrete tile. The 3.31 miles of new sewers installed within the road right-of-way in 2009 brings the 5-year total to 16.24 miles. It is imperative this program continues to replace century old stormwater sewers to better drain and stabilize the adjacent roadway. Also, with new utilities (fiber optic, cable television, electric, etc. lines) being buried annually along our roadways, excavation to repair storm sewers in the future will become (and can be now) quite difficult.

Each year, throughout the County a common pavement repair includes the milling and removal of failed asphalt (above photo), placing of a structural fabric in the trench and then resurfacing the trench with new hotmix.

2009 BRIDGE AND CULVERT IMPROVEMENTS

From December of 2008 through the end of March of 2009, between snow storms, over 400 cubic yards of concrete and 24 miles of reinforcing steel was used by the bridge crew as they manufactured seven sets of bridge beams, four three-sided box culverts and precast concrete footers/headwalls for seven large diameter pipe replacements. Along with these projects a very labor intensive rehabilitation of the Buckland Holden River bridge kept the County Bridge Crew busy from late March through early November.

Since the program of this county manufacturing its own concrete bridge beams began in 1967, a total of 144 sets of beams have been placed on structures throughout the county. A set of beams for a 24' wide bridge deck is composed of 8 individual beams, three feet in width. Beginning approximately four years ago, as bridges were reconstructed or rehabilitated, an extra beam was added resulting in a deck width of 27 feet. By doing the math, that calculates to right at 1,170 bridge beams built here at this complex. Being at the upper watershed limits of four major rivers, Auglaize County has a large number of bridges (360), but fortunately a great majority have rather short spans making our manufacturing process quite successful. 2009 was a landmark year for our program. The deck on the first bridge built in 1967 with county made beams on Headapohl Road was replaced this summer with a new set 42 years later.

The above photo shows the installation of an access drive crossing the Geiger County Maintained Ditch to the parking lot for the new St. Marys School complex. Our department assisted the school project by installing 40 feet of 48" diameter pipe along with pre-cast concrete headwalls fabricated and poured by our bridge department. This project was completed in 3 days by our crews and saved the school district the expense of designing and constructing a full bridge over the Geiger ditch. My department was able to generate additional income from the construction of this project and help subsidize our dwindling tax revenues.

The photo below is the finished rehabilitation of the bridge on Headapohl road in Pusheta Township. This structure was initially built in 1967 utilizing the first set of concrete bridge beams cast at the county garage. The top of the walls were re-capped, the bridge was widened to a 27' pavement width, waterproofed, paved, and good for another 42+ years of service.

In 1997, we saw a definite need for a structure that provided the drainage capacity somewhere between that of a full size bridge and the large diameter concrete pipes that we commonly install. Our first manufactured 3-sided concrete box with a 14' x 7' opening was built and installed in St. Marys Township. Since 1997, 54 structures have been replaced using our 3-sided boxes.

The above photos shows the 31' long county beams manufactured in January, being set in May on the Bremen Knoxville Road bridge just north of Lock Two Road. The two existing abutments only needed rehabilitation and the existing 24' wide deck was increased to 27' by adding one additional beam. In order to meet the load carrying capacity for this structure, the beams were fabricated at the county garage at a depth of 14" with the reinforcing steel protruding from the top (above right). Once the beams were set, a 6" concrete deck was then poured over the beams at the site to lock the beams together and provide the needed strength. A waterproofing membrane was then added prior to the finish asphalt being placed.

On Pusheta Road just north of Fryburg, (above photo) a multi-span 50 year old bridge was rehabilitated using three sets of county beams (27 beams). The two shorter end spans (23' long) used 14" deep beams with the 29' center span requiring a 20" deep beam having a 6" concrete cap poured on site. By

adding one more beam per span, the deck was widened from 24' to 27'.

The most labor intensive bridge project for 2009 was the rehabilitation of the 205' span Buckland Holden bridge over the Auglaize River (above photo). This 1972 structure, because of the lack of waterproofing standards at that time, was experiencing severe deterioration to the outside beams due to the intrusion of salt. The guardrail was removed, three feet of the affected concrete was removed with jack-hammers, forms were manufactured in place to fit around the guardrail insert bolts, and a new 4" wide concrete cap poured. A total material cost of $ 8,300 was realized on this project. If the beams were allowed to deteriorate until failure, replacement of the deck is estimated at over $300,000.

FORCE ACCOUNT LIMITS HAVE TO BE INCREASED!!!

For the past several annual reports I have attempted to inform the general public of the law enacted by the Ohio General Assembly that limits the size of road or bridge project that a county, municipality, township, or ODOT can perform with its own forces. It's affectionately known as "Ohio's Force Account Law". Since the last adjustment was made in 2003, construction materials have increased in cost by over 70%. Therefore, the size of structure that I can undertake with my crews in 2010 has been effectively reduced in size by 70% since 2003. I have spent countless hours in Columbus early this summer with our State Legislators trying to get this limit increased as a part of the State's Budget Bill. The lobbying efforts of the Ohio Contractor's Association obviously exceeded that of the County Engineers and no increase was addressed. Each year, as construction inflation increases, the number and size of bridges county crews "are allowed" to reconstruct or rehabilitate, decreases. The County Engineers proposed we settle for just a 25% increase (vs. the actual 70%) with a 3% annual adjustment – but it fell on deaf ears.

2009 SRUCTURES REPLACED

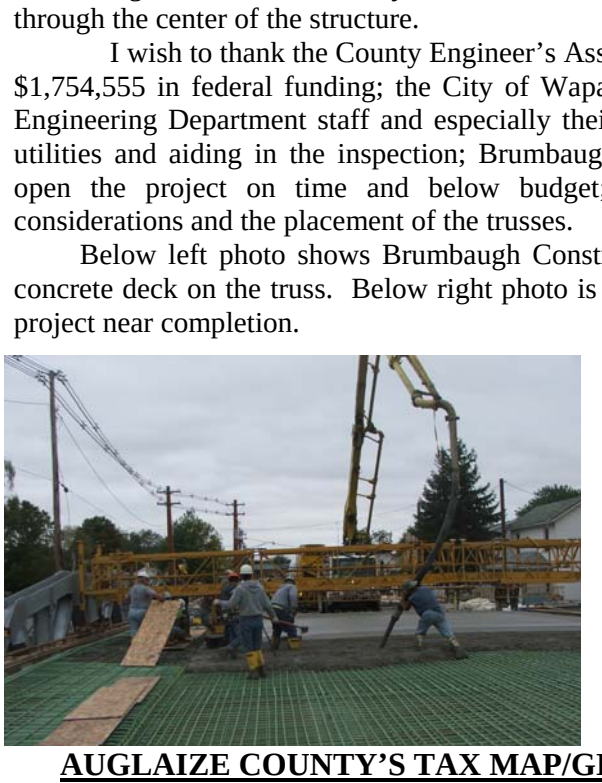
Location (Road)	Description/Span/Length	Cost
Moulton Ft. Amanda	48 lin.ft.of 29" x 45" elliptical concrete pipe	$ 7,748.
Southland	26' county manufactured beams (rehab walls)	$ 27,681.
Bremen Knoxville	29' county manufactured beams (rehab walls)	$ 33,985.
Schultz	36 lin. ft. 10' x 7' three sided box	$ 25,970.
Buckland Holden	Rehab. 205 span bridge deck	$ 23,382.
National	48 lin. ft. 14' x 7' three sided box	$ 32,410.
Wapakoneta Cridersville	48 lin. ft. 14' x 7' three sided box	$ 37,894.
Middle Pike	48 lin. ft. 34" x 53" elliptical concrete pipe	$ 13,800.
Hardin Pike	31' county manufactured beams (rehab walls)	$ 30,894.
Headapohl	23' county manufactured beams (rehab walls)	$ 20,506.
St. Marys School (Geiger Dt.)	40 lin. ft. 48" diameter concrete pipe	$ 8,555.
Pusheta Road	2-23' span & one 29' span county manuf. Beams	$ 51,313.
25A-Infirmary	300 lin. ft. 48" diameter concrete & plastic pipe	$ 58,196.
Center	40 lin. ft. 10' x 5' three sided box	$ 19,324.
St. Marys Kossuth	44 lin. ft. 10' x 5' three sided box	$ 24,966.
Seitz	40 lin. ft. 36" diameter reinforced concrete pipe	$ 6,703.
Schuman	40 lin. ft. 36" diameter reinforced concrete pipe	$ 5,474.
Santa Fe Knoxville	48 lin. ft. 42" diameter reinforced concrete pipe	$ 17,924.
	TOTAL LABOR, EQUIPMENT & MATERIAL COST =	**$ 446,725**.

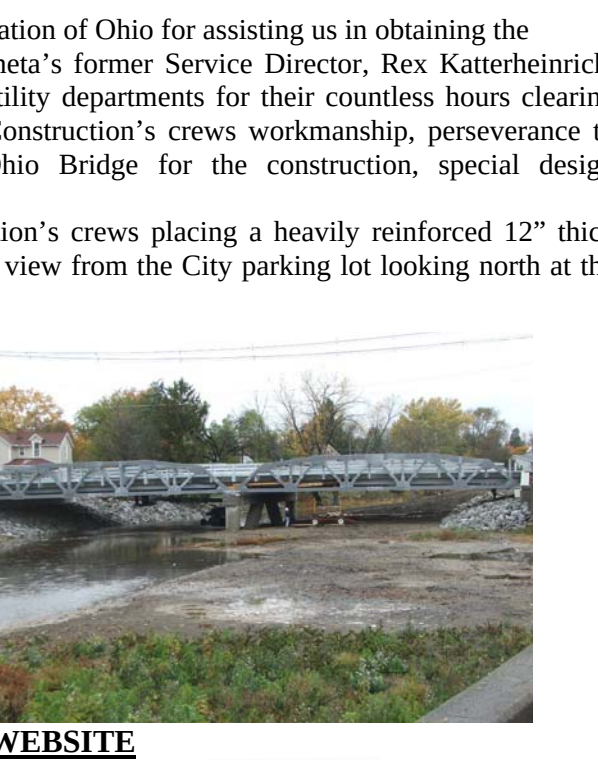
The **$ 2,147,733 Harrison Street Project** in Wapakoneta included the construction of twin 77' span steel trusses along with the reconstruction of 1200' of Harrison Street. Due to it's location, the Ohio Revised Code qualifies that bridge as being owned by the County. Federal Gas Tax was obtained to pay for the bridge and 300' of roadway at a cost of $ 1,754,555. The City's 900' of roadway reconstruction amounted to $ 393,178 of which 85% was paid for by an Ohio Public Works Commission grant.

2009 ENGINEERING ACHIEVEMENTS

This page is devoted to the engineering/surveying/mapping efforts provided by the staff at the County Engineering and Tax Map Offices. I do not believe there is another Ohio county, similar in population to Auglaize County, with such a skilled staff. Of the 11 million persons living in Ohio, there are only 1,100 that have obtained both a Professional Engineering and Professional Surveying License. Our department has three dual licensed individuals, one person with a professional engineering license and, another with a professional surveying license, bringing the total to eight licenses. It has been over 35 years since this County hired a consulting firm to either survey or design a roadway, bridge or drainage improvement under the jurisdiction of this department, saving the county tens of thousands of dollars in consulting fees each year. Consulting fees for just the Harrison Street project would have been over $200,000.

In 2009 a new engineering/surveying equipment vehicle (above photo) was upgraded from an 18 year old Suburban with 176,000 miles to a 2009 Ford F350 with a utility box. Prior to this purchase, the surveying equipment was stored in the truck and the sewer camera components were kept in a pull type trailer. Since the purchase of the camera in 2005, it was soon discovered that on most projects, when the survey crew was investigating and staking a roadway drainage improvement, it was necessary to have the camera on hand to pinpoint the problem. This new vehicle now carries all the necessary surveying equipment along with the camera to better allow that crew to work more efficiently. The below photo shows the camera unit that can "crawl" through an 8" diameter and larger sewer. Based upon the obstructions in that sewer, this unit can move through up to a 300 feet of pipe. A smaller push-type camera can view through a tile as small as 4" diameter. The bottom photo shows the camera monitor inside the utility cab that has the ability to not only observe what the camera is seeing, but can record this video on a DVD and log its distance to the obstruction, lateral, failure, etc., to the nearest 1/10th of a foot. The camera has eliminated the guesswork of estimating the location and cause of a failure or if that century old sewer needs replaced prior to a major roadway improvement.





HARRISON STREET RECONSTRUCTION COMPLETED

Over five years ago, after annual inspections revealed the Harrison Street River Bridge in downtown Wapakoneta was exhibiting severely deteriorating bridge beams due to the intrusion of salt, the process began to apply for federal funding to replace the structure. Dan Bennett, P.E., P.S., County Bridge Engineer, managed all aspects of the surveying, design, plan preparation, bidding, contract documents, inspection and contractor payment certifications. The plans prepared by Dan were drawn to federal specifications and approved by ODOT. Since the City of Wapakoneta partnered with the bridge project and added 1100' of street reconstruction to the proposed improvement, the construction plans consisted of 48 - 24" x 36" sheets.

Since this project was located behind the historically designated downtown district, adjacent to a public park and nearby to where the City holds its annual Moon Festival (in recognition of Astronaut Neil Armstrong's accomplishments), it was decided that this design should be unique and reflect Wapakoneta's history. A twin span 77' long steel truss, similar in appearance to a three-span truss that once existed over Blackhoof Street (just downstream of this structure) in the mid to late 1800's, was selected. Even though the structure has the appearance of an old design, this bridge far exceeds the load carrying capacity requirements for federal designed stuctures. Along with the galvanizing guarantee and the waterproofing additives to the concrete, the design life of this project should far exceed that of a typical concrete structure.

The above left photo shows Ohio Bridge setting one of the east trusses. One of the most challenging design hurdles for this project was the center pier (above right photo) that had to "straddle" an existing 24" diameter sanitary sewer main, encased in concrete and running diagonally down the river through the center of the structure.

I wish to thank the County Engineer's Association of Ohio for assisting us in obtaining the $1,754,555 in federal funding; the City of Wapakoneta's former Service Director, Rex Katterheinrich, Engineering Department staff and especially their utility departments for their countless hours clearing utilities and aiding in the inspection; Brumbaugh Construction's crews workmanship, perseverance to open the project on time and below budget; Ohio Bridge for the construction, special design considerations and the placement of the trusses.

Below left photo shows Brumbaugh Construction's crews placing a heavily reinforced 12" thick concrete deck on the truss. Below right photo is the view from the City parking lot looking north at the project near completion.

AUGLAIZE COUNTY'S TAX MAP/GIS WEBSITE

Just over a year ago, Auglaize County added to its website a mapping application that provides virtually all the information about a parcel that can be found at the County's Administration Building. What makes this mapping function unique is its accuracy and user-friendly application. Complete redrafting of all the county's parcels according to their deed dimensions along with providing over 4,000 ground control points for the aerial photography resulted in mapping that accurately depicts the location of lot lines versus lines of occupation. After studying numerous mapping software applications, we settled on the one that we felt the most "user-friendly". When the site opens on your screen (view right), you do no more than "point and click" to the area where your parcel exists and it will eventually zoom into that site, show the parcel lot lines overlaying a clear and accurate aerial photograph. The "Help" button will explain the use of the icons at the top of the screen to find: parcel information, measure dimensions and acreages and search for particular parcels. Some of the layers of information available for viewing include: lot dimensions; school district boundaries; corporation limits; soils maps; utility service boundaries along with the option of viewing any one of three separate aerial flights.