

**CURTIS D. BUNGARD, P.E.**  
ALLIANCE CITY ENGINEER

**To:** Honorable Mayor Toni E. Middleton  
John B. Blaser, Safety Service Director  
Honorable President and Members of Alliance Council  
**From:** Curtis D. Bungard, City Engineer  
**Date:** November 21, 2006  
**Re:** 2006 Street Improvement and Resurfacing Program



It is our pleasure to announce the completion of the 2006 Street Improvement and Resurfacing Program. This year we were able to pave approximately 5.20 centerline miles of roadway. The contractor to successfully bid and perform the work was Central-Allied Enterprises, Inc. out of Plain Township. A list of the streets paved is attached along with photos of the work performed. The total amount spent for this year's paving was:

\$335,139.60	Paving Fund
\$111,780.00	Municipal Road Fund Grant
<u>\$ 19,752.52</u>	<u>Parks Department</u>
\$466,672.12	Total Paving

Note that we performed close to \$20,000 worth of paving (taken from the Parks Department funds) to resurface the Silver Park main parking lot and exit drive. This was included with the program to secure better bids for them.

Our Municipal Road Fund (MRF) project this year was Mahoning Ave. from E. State St. to Patterson St. We were able to get \$111,780 in MRF grants. Also, we successfully partnered with the Mahoning County Engineer's Department to pro-rate the cost of paving this road according to what was inside the corporation limits vs. outside. That, however, was mostly offset by our half of the cost to eliminate two structures described below. (We do not yet have the total costs from Mahoning County.)

During our bridge inspections for the City, we discovered an abandoned brick culvert under Mahoning Ave. (approximately 9' wide by 14' tall) in critical condition with one side wall caving in and material washing through. We also found that the Mahoning Ave. concrete bridge (approximately 12' wide and 14' high) was in need of extensive repairs. It had holes through the bridge deck and walls that were crumbling away. The culvert and bridge had been used to haul clay from the west side of the road to the brick factory on the east side of the road. Since these operations had ceased decades ago, and because we were facing extremely large repair bills for the taxpayers, we and the Mahoning County Engineers chose to fill the two structures in. Only a small 24" drainage pipe was actually needed at the bridge location and no pipe was needed at the culvert. (The bridge and culvert will be discussed more in our annual bridge report.)

Again, we were able to partner with the County to perform the emergency work. Mahoning County solicited bid prices from two contractors to compare with a change order price from our contractor. The County ended up hiring their contractor at a lesser cost to carry out the work. Half of the cost to fill in the structures was then credited to the County's share of the paving project. This was preferred over the City having to come up with additional money for a change order, as originally reported to Council. As a result of freeing up this money, we were able to add one street to the paving list, Seneca Ave. from Main St. to Broadway St.



Seneca Ave. before.



Seneca Ave. after paving.

Thank you for the opportunity to provide these services to the Alliance Community. Thank you also to the contractor, Central-Allied Enterprises and to the many team members of the Alliance Service Departments.

STREET NAMES	FROM	TO	LENGTH	WIDTH
MAIN ST.	ROCKHILL	UNION	2655	33.5
ELY ST.	KLINGER	ROCKHILL	2820	29.5
WALNUT	FREEDOM	VINE	1540	28
MAYFIELD RD.	SHADOWRIDGE	KLINGER	413	24
KEITERS CROSSING	MAIN	ELY	637	24
McKINLEY AVE.	SUMMIT	McGRATH	260	24
McNALLY CT.	LINDEN	SENECA	824	20
BRIARCLIFF AVE.	GLAMORGAN	N. TO END	200	22
SUNSET DR.	FAIRVIEW	FERNWOOD	815	26
FAIRVIEW PLACE	SUNSET	KINGS WAY	350	20
FAIRVIEW PLACE	CORNELL	PARKSIDE	905	24
LILLY RD.	PARKWAY	ROCKHILL	558	24
VINCENT BLVD.	PARKWAY	ROCKHILL	477	32
MILNER ST.	UNION	ARCH	1240	22
FREEDOM AVE.	WAUGH	COLLEGE	1340	24
FREEDOM AVE.	COLLEGE	STATE	899	20
MAHONING AVE.	SUMMIT	PATTERSON	2970	28
MAHONING AVE.	AULD	SUMMIT	1605	28
MAHONING AVE.	STATE	AULD	3300	28
ANTRAM AVE.	STARK	23RD	650	20
MILL ST.	PARKWAY	ROCKHILL	600	19
ROCKHILL AVE.	23RD	MILTON	1380	27
ROCKHILL AVE.	MILTON	RIDGEWOOD	760	27
PARKWAY BLVD.	ROCKHILL	RIDGEWOOD	430	24
SILVER PARK - MAIN	PARKING LOT AND	DRIVE TO PAVILION	SEE	PLAN
PARK OFFICE	EXIT DRIVE	TO UNION	64	12
SENECA AVE.	MAIN	BROADWAY	903	28
<b>TOTALS</b>			<b>28595 L.F.</b>	

## Pavement Report Photos

After you have inspected and rated the city streets, measured them and estimated the cost to pave them, selected streets to match the budget, received approval from Council, prepared spec books, prepared AutoCAD drawings, advertised, received and opened bids, prepared bid tabs, checked references, notified low bidders and non-low bidders, executed contracts, held a preconstruction meeting, received and reviewed the shop drawings and job mix formulas to be used on the project, received a schedule, and notified the newspapers, then, **YOU ARE READY TO PAVE.**

First, The Engineering, Building and Zoning Department posts the streets with no parking signs and we hand out letters door to door explaining the work to be done. These are removed at the end of the job.



Then, large planing machines grind the road down a specified thickness, usually 1 ½ inches. A

conveyor belt carries the grindings up into dump trucks that follow just ahead of the machine. When the truck is full, the driver is signaled to pull away and another dump truck quickly takes its place.



A wide swath of rough, ground pavement is left behind.



Smaller grinding machines are used around manholes, valve boxes, and catch basins. All the grindings are taken to the Street Dept. and Water Distribution Dept. to be used as fill material, temporary pavement, and alley gravel all year long. Those departments help stack the materials in large piles.



The remaining grindings on the streets are then swept by tractors with rotating bristle brooms and finally with traditional vacuum street sweeper trucks.



Manholes, water valves, and catch basins must then be jack-hammered, adjusted to grade, and concreted back in. The

Water Distribution Dept. is always helpful in coordinating this step and loaning needed materials to the contractor to speed the process.



The tack truck then delivers a hot mix of asphalt cement (AC) and emulsifiers to prepare the surface of the road. This tack coat is sticky and helps bond the asphalt concrete to the existing surface.



A series of nozzles distribute the tack coat in a nice even spray.



Flaggers regulate traffic in the work zones throughout all phases of the paving project. They talk to each other continuously on the radio to signal when to let the traffic through. Traffic control helps keep the work crews and traveling public safe.



Dump trucks, a dozen or so, make continuous round trips to the plant to pick up loads of hot asphalt and deliver them to the paver. The trucks back right up against the paver and drive slowly forward as they tip

their load into the hopper. The hopper holds enough asphalt to keep paving until the next truck can back into place. The trucks have covers to help keep the mix hot. The covers are rolled back only while dumping so the paving operator, seated on top of the paver, can see the load and give signals to the dump truck driver. The asphalt concrete is delivered at around 350° F.

Asphalt concrete is a mixture of aggregate (gravel of specific sizes) and a tarry asphalt cement (AC) to hold it together. There are a variety of grades of AC, polymer blends that can be added, and different sizes of aggregates that can be used to create different mixes.



Augers push the asphalt mix to the back of the paver and along the spreader box. The screed behind the box lays down a smooth uniform layer of asphalt. The screed can be adjusted for width (up to 24 feet), thickness, and pitch even while the paver is moving forward. The contractor and our inspector continuously check these adjustments for quality assurance.

Crews use rakes and shovels to fine grade the pavement around manholes, driveways, valves, or other structures in the road. This takes a good eye and a fair amount of practice. They can't actually step on the pavement because it is still too hot and soft. It would leave a deep footprint.



It's time to roll. These are tandem wheel drum compactors, or rollers. The big machine on the left weighs between 12 and 15 tons. It gets on the hot asphalt first and is responsible for compacting the mix to a tightly bonded layer. A 2" thick layer of asphalt compacts to a final thickness of about 1 1/2".

The smaller roller weighs about 5 tons.

It continues to make passes, further compacting the layer of road until it has cooled considerably. The small compactor also smooths out the tracks left by the first roller. The steel drum wheels are filled with water for weight. There is also a spare tank of water on the back of the machine that sprays on the drum wheels to cool them and help keep them clean. When this water drips down onto the hot road, it sizzles.





The Inspector for the Engineering, Building and Zoning Department measures the work as it is done and calculates how many tons of asphalt should be placed at a given thickness. He then compares the calculated amount to our original estimate for accuracy. As each dump truck arrives with asphalt, they provide a ticket with the weighed tonnage of material on the truck. Adding up these hundreds of tickets provides a third check for the final quantities. We pay the contractor based on these measured quantities of work.

The final steps include contractor sealing all of the edges of the new road with a strip of AC.



The Alliance Street Department then repaints the centerlines on the road, stop bars, crosswalks, and turn arrows. They also reinstall the loop detectors for the traffic signals. The end result is a smooth durable pavement that will last for years. **Enjoy your newly paved roadways.**