



What's the Story?

Printer Friendly

Bookmark & Share

What's the Story? Restoration Plan Technically Speaking Other Restorations Automotive World Welcome to the Pettibone Creek Hydroelectric Station (or what we call around here, the Powerhouse)

Milford's Powerhouse is the visible icon in the graceful Art Deco Style that reminds us there is a story to tell. Our little Powerhouse is part of a much bigger story about the origins of the world's automotive center and its impact on the world.

Welcome to a journey back in time that carries us into the future.

Henry Ford changed the world some 100 years ago, not because he built cars, but because he invented and refined a system the world had never seen before: the assembly line. This invention brought about an Industrial Revolution that impacted the world, dramatically changing the way things were manufactured, as well as the social and economic structure of society.

Milford Powerhouse











Why Milford? Tranquil Hubbell Pond (at this point you would be looking at the Lower Mill Pond) before you and the sound of the water rushing underfoot remind us of how important water power has been in Milford's history. Milford boasted of its water powers since the early 1800's. Elizur and Stanley Ruggle built their primitive saw mill at the base of the Huron River, near the south end of Main Street. In the following years, a grist mill, a woolen mill, a tanner and a cooper shop were built along Milford's waterways. All in all, Milford soon had 14 mills. (There is an orientation marker on Main Street at Center Street Park downtown with a locator map of these mills.)

The Pettibone Mill on this site was originally built by W. E. Hubbard in 1846 as a flour mill. (There is a marker outside the Powerhouse describing it's history.) This site was the sole survivor of the mills in Milford's early history and Frank Hubbell was the last owner of the mill.

In 1892, some 60 years after settlement, a hydroelectric plant was built near the bridge on Peters Road at the east end of the present day Hubbell Pond. (You can access Peter's Road just west of here from Commerce Road and see another historic mill marker.) In the Peter's Mill, Joseph Wellman installed a 500 volt Dynamo for supplying electric current to the Wells Cultivator plant on the upper mill pond. Milford's enterprising citizen, Frank Hubbell conceived of the idea of using the surplus current for lighting the local stores in the evenings. and using the river's waterpower to electrify Milford's street lamps, long before Detroit Edison found its way to Milford.

And some 25 years later it was Frank Hubbell who became friends with and brought Henry Ford to Milford.

The Carburetor Plant

In January of 1938, Ford began construction of his 12th Village Industry, Milford's Carburetor Plant. The building, also designed in the distinctive Art Deco style by Albert Kahn, was a light colored one story structure that measured 60 by 200 feet. It was lit during the day by sunlight diffused through its tall, wide windows. Unique for its time, it was air conditioned throughout. The building cost about \$600,000 to build. Coming at the end of the Great Depression, his was a significant investment in Milford. The factory began production in November 1938. The first day's output was 800 units and only about 80 men were employed. The only machines that were working that first day were the punch presses and the assembly line. (The manufacturing equipment in the plant was new and much of it was of special Ford design. The entire production line was first set up and tested in the Rouge Plant while the Milford Plant was being built. Then the entire line was moved from Dearborn to Milford.)

One year later, the plant was at full production. It employed about 350 men and women, over three shifts. The plant had added a complete tool room, a foundry and a heat treatment department.

So How Did It Work?

Ford took full advantage of his new rights for Moore's Lake and the Pettibone Creek. He created a flume (4 foot in diameter steel pipe) which was buried underground and laid across the Upper and Lower Mill Pond beds, traveling 1 and 1/3 miles from Moore's Lake to this Powerhouse on young and the early auto barons were bold, innovative men. Henry Ford was among the boldest! Between 1920 and 1940, Henry Ford built 21 Village Industries where parts and supplies were manufactured for the main production line at the Rouge Plant in Dearborn. Ford searched southeast Michigan for early millponds, in some cases restoring surviving mills and in others, building new to serve his purposes. All 21 sites Mr. Ford chose were within a 60 mile radius of Dearborn. Ford used his 'Mill in a Village' concept in response to the social and economic changes brought on by the rapidly growing automotive industry in Michigan and the worldwide Industrial Revolution. This 'experiment' led to the development of small industrial centers in these farming villages.

In the early 1900's, the automotive industry was

What Interested Henry Ford?

In March of 1935, Ford Motor Company acquired the rights to the water power of the Pettibone Creek and Huron River, flowage rights of Pettibone Creek and Moore Lake and Iowlands between, as well as some Village properties and a considerable amount of farmland. On Main Street just north of Commerce there is another Auto Heritage marker at the Upper Mill Pond with an aerial view map Illustrating this water way connection and including the factory we will talk about next. It was this carburetor plant that required the electricity generated here.

Hey! What about the Power Plant? Henry Ford was a man of many interests. He was especially interested in the production of electricity. With the new year, 1939, Ford was ready to begin construction of the two power plants that would generate electricity for his carburetor factory. The larger Huron River plant was constructed further southwest of the plant. It was the first to be completed using a typical river dam. This power plant was put into operation first. The building has been razed but you can access the site and another marker from the hike/bike trail off GM Road just west of South Milford Road.

The Pettibone Creek Hydroelectric Station was put into operation two weeks later. However, it was to be a showcase and it needed a good deal more engineering. The site of the original mill would not have enough water flow to consistently generate electricity. So, Ford used his ingenuity to create a water flow to meet his needs.

The Building

Albert Kan was a German architect who is sometimes referred to as the 'architect of Detroit' and was known as an innovative industrial designer. He had a genius for elegance in architecture. He is best remembered for his design of the Ford Rouge. Highland Park and Liberty Street. He took advantage of the topography and also built a dam at Moore's Lake, creating a 50 foot headwater the force of which when released would power the generators at the Powerhouse.

Once inside the Powerhouse, the 48 inch diameter pipe was split to feed the water to the two hydraulic turbines in the basement. A shaft then connected each turbine to a generator located directly above on the main level. This power from the turbines comes in the form of mechanical energy and the generator's job is to turn that power into usable electricity. The generator panels were mounted on a large pully system (above your heads you can see the steel beams the panels were mounted on.) Panels could be moved in and out of use for repairs and for increased power generation. The two generators were rated at 75 and 62.5 KVA. When synchronized with the Huron River plant, the power was distributed to the carburetor plant via underground cables that ran across the lower mill pond.

The large tank here is 13 feet in diameter and 22 feet high. It stands 42 feet from the ground to the top. The tank is connected to the flume in the basement and acted as a surge suppressor to absorb the shock of the moving water when the turbine gates were closed. The top of this tank is exactly the same height as the water level established at Moore's take, thus taking advantage of water's unique property of reaching its own equilibrium and cutting off any further surges of water from the lake. Both hydroelectric plants could be operated from a control room in the carburetor factory. They could be operated independently or together. Their electricity arrived at the plant to the tune of 4600 volts. It was directed to a third powerhouse inside the carburetor factory where it was reduced to 220 volts and fed into the machinery. The Carburetor Plant was later equipped with a 375 horsepower steam engine for generating electricity in the event water levels droped too low.

Willow Run Plants and the Gem Theater and General Motors Building in Detroit. So Henry Ford commissioned Kahn to design this building. Kahn had to keep in mind Henry Ford's vision of an attractive building, in which the machinery inside could be visible, and that would complement the area surrounding it.

The building itself is octagonal in shape and small in size, only about 39 by 24 feet. Besides the wide glass windows on the main floor, there were Pewabic Pottery tiles lining the inside walls. The tower was made attractive by the addition of 2 panels of glass block running up each side. Rows of Elm trees were planted along both sides of Liberty Street and the grounds were landscaped. Albert Kahn's design stood out as unique in Milford, with its sleek design, glass block, curved wings and large window openings, all elements of the Art Deco style. At the time, Milford's streets were lined with Italianate designed buildings, with their ornate cornices, window caps and elaborate trim.

The large glass windows were an integral part of Ford's vision. He wanted the public to see the machinery at work. While there was a full time maintenance man at the plant all the time it was operating, he would only go inside when switching or repairs were needed. The noise of the rushing water underneath, the turning of the turbines and the shafts, was deafening.

The Restoration

Several years after the death of Henry Ford, Ford Motor Company choose to end the Village Industries experiment. In 1953, the powerhouses were decommissioned . The carburetor factory was shut down and production of the carburetor was moved to Rawsonville.

The Huron River Hydroelectric Station was demolished in 1977. The carburetor factory was razed in 2001. There remained only one building left of Milford's part in the Village Industry experiment.

The Village acquired the property in 1970, but with a deed restriction which required it to be used for park or recreational purposes only.

Time was not kind to this beautiful building, and between the weather and vandalism, the Powerhouse became an eyesore and liability to the Village.

In 1999, the Village Council set aside \$60,000 to demolish the building. The Milford Historical Society stepped up to the plate, and established the Powerhouse Restoration Committee. They were able to use the demolition money, in addition to a \$25,000 Americana Foundation Grant, to hire an historic architect to guide them in the planning process and restoration of the building. The Michigan Department of Transportation recognized the importance of this building with the largest funding grant. Years later, with the help of the many donors you see listed here, the restoration work was completed.

As the Powerhouse sits in the Village's National Historic District, all restoration work had to conform to the historic standards. So, as the building now stands, the outside appears as it did when the Powerhouse was put into use in November of 1399.

So What Made the Village Industry in Milford so Unique?

- The factory employed about 350 men from the surrounding farms. Besides making a record setting \$6 an hour, a side benefit to being steadily employed was that the workers had the opportunity to cultivate gardens. Two of the workers continued to work their 200 and 400 acre farms while working full time!
- Built at the end of our country's Great Depression, steady work was welcomed. Milford High School graduates, both men and women, were first in line to secure a job at the carburetor factory. One June, the Carburetor Factory employed every male graduate of Milford High School that year.
- The plant produced the entire Ford carburetor which consisted of 150 parts. It was the only
 plant in the U.S. which was independent and in a position to make and assemble an entire
 product.
- The end of the assembly line featured testing equipment which measured the efficiency of the parts as they worked with each other and how the carburetor would function in the entire variety of conditions which it would meet in a Ford engine. And thus was created Quality Control!
- The carburetor plant had to be run steadily to supply the Rouge plant and the assembly line branches. But there were a few operations that produced parts faster than the assembly lines could use them. Ford used his ingenuity once again. With careful coordination, it was possible to continue some operations in manufacturing parts for other Village Industries and the Rouge plant. The spring winding machine that produced springs for the carburetor was also used to wind springs for cigar lighters. And the iron foundry was kept busy with the production of small bearings for the Rouge plant.







Exterior and Interior Renovation

Bookmark & Share

What's the Story? Restoration Plan

Exterior Interior Site Work Hydro Repair

Technically Speaking

Other Restorations Automotive World

Interpretation

Exterior Renovation Complete

The 1939 Art Deco structure has undergone extensive brick repair, asbestos abatement, window flashing repair, massive new window and sill installation, new glass block and power washing of the entire exterior.

Printer Friendly

In 2005 with support from the community, private and government grants, Phase I was completed with the \$246,000 exterior restoration of the building to U.S. Department of Interior Standards for Restoration and Preservation. No longer a bricked-up, graffit marred façade, the Powerhouse now stands as a distinctive reminder of Henry Ford's Village Industry and his association with the renown architect, Albert Kahn. It will be a focal point of pride in Milford's Central Park and offer an opportunity to tell the little known story about automotive history in a rural community.

"The success of the project to this point was only possible because of a three-way partnership and a broad base of community support," explains Ann Barnette, DDA Director. "The partners, Village of Milford (owner of the building), the Milford Historical Society and Milford's DDA shared the vision that gave the project momentum," she adds. From that base, the financial support to complete Phase I-Exterior Renovation came in many forms, from a \$200,000+ grant to the children and families who donated \$40 each to "Paint- a Tile" for the Powerhouse.

Exterior Restoration Pictures





04-29-05NewWork011



© 2007 - 2021 Milford Historical Society

Website Design by AccuNet Web Serv



















Village Industries

Printer Friendly

Bookmark & Share

Village Industries Significant Architecture Milford Times Articles

Henry Ford (1863 - 1947): A Visionary

In the early 1900's the automotive industry was young and the early auto barons were bold, innovative men. One of Henry Ford's pioneering ideas was the coexistance of technology, modern production and farming. Workers would have "one foot in agriculture,,,and the other in industry."



Milford Powerhouse

Ford began developing his vision by creating "Village Industries." He chose sites in southeast Michigan that included Milan, Brooklyn, Saline, Northville, Macon and Milford where early waterpowers still existed. He restored existing historic mills or cnostructed modern buildings, creating small industrial complexes in these rural settings.



Milford's Upper Mill Pond, created by an early 1845 dam, became the site of the 12th Village Industry when the Ford Carburetor Factory was built in 1938. Albert Kahn designed the factory and two hydroelectric stations, one on the Huron River and one on Pettibone Creek to supply the factory with power. The Milford Powerhouse (Pettibone Creek Hydroelectric Station) is the sole survivor of the three buildings and five dams that comprised Milford's village industry. The larger Huron River Hydroelectric Station was demolished in 1997; the carburetor factory was razed in 2001.



"Milford's Powerhouse," observes Prof. David L. Lewis of the University of Michigan, "is one of the most distinctive of Ford's village industries buildings, located in a most picturesque setting. Ford history enthusiasts are delighted to learn that is to be restored!" The Powerhouse has an important story to tell about Milford's place in the early development of the

auto industry, an industry that changed the world.

Flat Rock Plant, 1922

Manufacturing plants in Flat Rock and Ypsilanti , Michigan, though built during the same time period, are not generally considered to be one of the 19 Ford Village Industries: "... they reflect hybrid characteristics, combining traits of the huge Rouge Plant complex and the newer village sites... . Ironically, Ford Motor Company officials themselves could not decide whether or not these were truly Village Industries" (from "Henry Ford and Field and Factory," by John Robert Mullin from the collections of Henry Ford Museum & Greenfield Village Research Center).

As in Milford, the Flat Rock <u>Ford Motor Company Lamp Factory</u>, depended on a newly built dam for hydroelectric power and was a significant source of employment for locals and income to the village. Following is a link to an article with historical perspective on the Flat Rock plant built in 1922:

Page 1







5-5-1939	Pouring Cement for Huron River Spillway
5-26-1939	Landscaping Plans Beautify
<u>6-9-1939</u>	Power Plant Brick Work; Foundry Factory
<u>6-23-1939</u>	Huron Power Station Taking Shape - Photo
<u>6-23-1939</u>	Huron Power Station Taking Shape
7-7-1939	Pettibone Station "Surge Tank"
7-14-1939	Huron River Plant Near Completion
7-28-1939	Near Finish on Huron Plant
<u>8-4-1939</u>	Miscellaneous Work
8-11-1939	Miscellaneous Work
8-25-1939	90 Man Lay-off
<u>9-8-1939</u>	Power Plant Near Completion
<u>10-6-1939</u>	"Ford News" Article Quoted
10-13-1939	Huron River & Pettibone Plants Photos
10-13-1939	Huron River Plant Producing Electricity
<u>10-27-1939</u>	Lower Mill Pond Refilled
<u>11-24-1939</u>	The Factory, One Year Later - Output, Operations
12-1-1939	Henry Ford Visits

1940

3-22-1940 Employee Age Persentages



Home Our History Restoration Plan Other Restorations How to Help Contact Us Site Map





