"What has he been smoking?!!!"

Holland's Snowmelt System: The Back Story

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Today, the City of Holland boasts an award-winning downtown. Thriving restaurants, stores, and an ambiance second-to-none, Holland stands in stark contrast to current national trends of closing big box stores, internet sales, and suburban ghost-town malls. However, it has not always been this way, and it wasn't always this way in 1987. In 1987–1988, Holland's downtown showed an old, tired, and ready-to-die commercial area in Holland, like many downtowns in America. The retail consumer wanted large malls populated by anchor stores such as Penneys or Sears, with a shopping experience which was enclosed. No snow, no ice, no rain. It was a place to hang out.

Not only was downtown Holland old and tired, but winters with 90-110 inches of snow; temperatures as low as 20° below zero, with snowplowing of city streets and large banks of snow. Downtown Holland sidewalks were dependent on City snowplowing and merchant shoveling. Who could compete against the climate-controlled malls with their big box anchors? Tonight, we want to look at the back story of Holland's snowmelt system. We are going to look at five topics: (1) the background of the development of Downtown Holland; (2) the idea of Snowmelt and the politics to proceed with the

project; (3) the construction of the Streetscape and Snowmelt System; (4) the operation of the Snowmelt System when constructed in 1988' and (5) Snowmelt today.

SLIDE #4

I. Background of the Development of the Snowmelt System

So, let's begin. In 1985, a developer, Viehmann-Martin, proposed the construction of an enclosed mall at U.S. 31 and James Street. Downtown merchants, including the Holland Economic Development Corporation ("Hedcor"), knew that Downtown Holland required redevelopment to hold JC Penney and Steketees, which were the then principal anchors in Downtown Holland. In 1985, Viehmann-Martin postponed the groundbreaking of the mall claiming that it was unable to secure financial backing for the project. In June, 1985, a month after the Viehmann-Martin development fell through, developer Ed Havelick proposed a 250,000 sq. ft. enclosed mall in Downtown Holland which would have room for two anchors, a specialty store, and from 20-40 smaller shops. This enclosed mall, known as the Holland Center, was proposed for development between 8th and 6th Street and Central and College Avenues.

Hedcor retained a consulting group, Zukele, Hunter &

Associates to determine if additional retail space was feasible at a downtown mall site as proposed by Havelick. The Havelick proposal met with mixed reviews among the downtown merchants who saw such a Downtown mall as competition rather than an enhancement to their business interest.

Finally, in March of 1986, a developer named Bramalea, LTD of Toronto, which was the 6th largest development corporation in America, entered on the scene with a Holland Township mall proposal, and was successful in securing, a public commitment of JC Penneys and Steketees to the project. Bramalea, LTD also won a commitment from a third anchor, Prang's Department Store, which was later bought by Iowa-based Younkers, and announced a completion date of the Summer of 1988.

The new reality which Downtown Holland had to face was the certain coming of the lakeshore's first enclosed mall. In March, 1988, the Riverview Advisory Committee formed the Riverview Development Limited Partnership, consisting of 22 member investors who contributed $2,900,000 in cash for the development of the downtown. It was understood that the partnership constituted a long-term investment, with no assurance of any return. The momentum of

the rebuilding of the downtown came in early December with an announcement of plans to construct a $25,000,000 senior citizen complex called "Freedom Village", a 7-story structure designed to house more than 500 residents.

SLIDE #5

In 1987, a group of merchants established the "Mainstreet Committee" and attended a 3-day national mainstreet conference which presented blueprints on successful streetscape projects in other mainstreet communities. The Mainstreet plan was designed to more clearly link the image of downtown to its architectural past by restoring the original face of buildings. Streetscape plans proposed a sweeping change in the looks of the central business district by adding pedestrian benches, signs, lightings, information booths, landscaping, drinking fountains, waste containers, and bike racks. Streets were to be re-conditioned, along with sidewalks and parking lots.

The idea was to Streetscape on 8th Street between Pine and Columbia Avenues at a cost estimated at $2,100,000. The Holland Board of Public Works would replace aging sewer and water mains and install electric lines underground, with improvements set at

$1,000,000. In order to finance the Project, Mainstreet needed a municipal bond issued by the City to provide the up-front money. Of the $2,100,000 cost, 70% or $1,460,000, would be paid by assessments by downtown properties over ten (10) years, and the remaining 30% would come from the general funds of the City of Holland. Adding interest payments, the pay-back cost would be $3,100,000. Originally scheduled to begin in the spring of 1987, the Streetscape project was delayed as a result of special assessment districts to be established, and the special assessment formula was not finalized until September, 1987. The result was that Streetscape Improvements were delayed in 1987 until the spring and summer of 1988.

II. Snowmelt System Idea and Politics

The first idea of a Snowmelt System occurred in March, 1988. Then City Manager, Terry Hofmeyer, attended a meeting with the newly-elected 18 year old Mayor, Philip Tanis, representatives of the Riverview Study Committee, Mainstreet, Elzinga & Volkers, Board of Public Works, private consultants, and City staff to consider the possibility of what was called a "snowmelt" system for the street and sidewalks on 8th Street from River Avenue to College Avenue.

Terry Hofmeyer states in his memo:

> "The concept is very simple and consists of warm water circulating through plastic pipes in the ground, under asphalt or concrete. The warm water may be generated by on-site boilers, heat pumps, or cooling water from the power plant."

The reality was that it was not "very simple." Riverview pledged $10,000 to conduct an engineering study to determine the project's feasibility and the ability of the community and/or downtown to finance the project.

In April, 1988, the construction of a Snowmelt System was estimated to cost $550,000 from Pine Avenue to the old fire station on 8th Street. Later in April, 1988, the cost estimates were substantially increased, resulting in an estimated cost at the special assessment hearing, of $1,095,935. The special assessment hearing to determine the necessity of the project was scheduled for May 4, 1988. On May 9, 1988, Prince Corporation pledged to contribute the amount of $250,000 for the Snowmelt Project contingent upon the City Council contributing $250,000 as a matching sum, with the remainder being paid in special assessment by the Downtown Merchants.

In his book, "Vision on Mainstreet", Michael Luzon quotes Ed Prince regarding his $250,000 contribution:

> "Having something unique, like Snowmelt, helps set a downtown apart. I was convinced that it was a good idea and that Holland should have it. But having a good idea was not enough. You had to get people to buy into it. We couldn't have sold the Snowmelt idea without making the offer of the matching $250,000 donation."

However, the idea of Snowmelt at this point was still just an idea, and the City needed to obtain assurance that the project could work if built. If the Project failed, the $500,000 plus interest charged to the downtown property owners by special assessments would need to be repaid under law relating to special assessment projects. Remember what was being proposed, a 250,000 sq. foot snowmelt system circulating water over 60 miles of 1" orange plastic pipes arranged every 6" under the street surfaces and sidewalk brick pavers along 8th Street. To operate the Snowmelt System, 1,500 gallons of hot water were pumped per minute through 12" pipes from the James DeYoung Power Plant to 3" pipes, and then to the 1" plastic pipes. The Snowmelt System, as designed, was supposed to melt approximately 1" of snow per hour.

The City wanted to make sure that it had an engineer's opinion that the Snowmelt System could work. Elzinga & Volkers and an

engineer at the Holland Board of Public Works went to Sweden to view an operational system. The firm of District Energy Systems, Anders Rydaker, was hired to determine the feasibility of such a construction. The engineering report recommended that the Wirsbo Meltaway System, which had been used by Ed Prince at his home and at an auto dealership in Holland be used. District Energy recommended the building of a system with a heat output of 160 btu's per sq. foot per hour, which it believed would handle all but a couple hours of severe snowfall per year. Now the question was how to get the discharge water hot enough to feasibly operate the system.

One of the major changes caused by Snowmelt was the design of 8th Street road design which would allow water to seep into the soil below to be warmed by the Snowmelt pipes through sand and bituminous gravel. Ordinarily, streets are designed to be sealed to not allow water to seep below the surface to avoid the heaving of the street during freezing conditions.

The report also estimated a cost of $830,000 for a 167,000 sq. foot system (which later became 250,000 sq. feet). The annual operating cost for the system was originally estimated to be $48,000 - $60,000 per year. However, the DES report indicated that the energy

requirement could swing up or down 30% depending on the weather conditions in a particular year. Further adjustments which were made to the annual operating costs indicated that the system would cost as much as $135,000 per year, about 6 times more than originally planned.

In mid-June, 1988, the Holland City Council finally pushed ahead with Snowmelt by a 5-3 vote. The positive vote was triggered mainly by Ed Prince, who again stepped forward to monetarily support the annual operating costs of up to $25,000 per year for the first few years along with the City and Downtown property owners. Once again, the Downtown property owners were assessed for the annual operating costs of the system. So, in 90 days, the idea of Snowmelt was born; approved; and the financial plan devised. Everyone had their fingers crossed that the System would work. Let's think about these numbers in 1988: $2,100,000 to construct Streetscape and $1,100,000 to construct Snowmelt.

In 2016, former Mayor, Al McGeehan, was interviewed by Michigan Public Radio regarding the Snowmelt System and its construction. The former Mayor reflected on the gamble which the City, the Downtown Merchants, and Riverview took: He said:

"Back in 1988, when the idea was first launched, it was rocket science to us. We didn't know anything about it. It had never been done before in the United States. We had no idea, number one, how it worked, how we hooked it up to our power plant. We had no idea how much it was going to cost to create, and the biggest question was, how much it was going to cost to operate it and maintain it? The majority of the City Council said "Let's dare to dream big, and let's give it a shot.""

III. Construction of Streetscape and Snowmelt

The Project started after a June 20, 1988 ceremony. Initially, the Downtown Merchants were assured that every reasonable step would be taken to minimize disruption in the Central Business District. The goal was to allow stores to remain open during the project with a schedule which was supposed to proceed block-by-block to keep the construction zone as small as possible. It was anticipated that the construction would be coordinated in waves. The first wave would involve work by the BPW on water and sewer mains and gas lines. The second wave would focus on installing Snowmelt pipe, new asphalt and brick pavers, and then above-ground architectural improvements, such as benches, shelters, planters, and trees. However, this organized wave approach never materialized. The work ended up being done simultaneously, on all four blocks slated for improvement on 8th Street, causing far more inconvenience than

originally planned to merchants and motorists. Eighth Street turned into a war zone and shoppers did not come downtown, and those that did had to use back door entrances to navigate an obstacle course which included bricks, sand piles, and pipes.

The construction of Streetscape and Snowmelt was also delayed because of various coal vaults which were discovered in 8th Street when its sidewalks were excavated. These coal vaults, which had been forgotten for years, had to be filled with dirt and soil material to stabilize the sidewalks and roadbed. At the same time Downtown Holland was a construction war zone, West Shore Mall opened at U.S. 31 and James Street, 3 years after the project was first announced. Traffic was backed up for more than ¼ of a mile in the northbound, right turn lane leading from U.S. 31 to the entrance of the shopping mall. Holland appeared ready for a mall, but were they ready for Downtown Holland with snowmelt?

Finally, in late 1988, the Streetscape/Snowmelt System was completed. Jim Teerman, part owner of Teerman's Department Store, in recalling the 5 month construction period, said:

> "Streetscape was the worst period during the history of the store. During Streetscape, customers could only use the back doors. When you change a person's buying habits, it takes time to correct that. The mall also had an

effect. It took almost 3 years to bring back the sales and customer traffic to pre-Streetscape days."

So, upon completion, the Holland Snowmelt System was installed from the Holland Sentinel to the former Fire Station. A 250,000 sq. ft. system, with over 60 miles of 1" orange plastic pipe arranged every 6" under the street surfaces and sidewalk pavers along 8th street, made the system the largest municipally-owned snowmelt system in the United States. However, the big question was: Would the Snowmelt System work as the City proceeded into the Winter of 1988?

IV. Operation of the Snowmelt System

After all the ideas, the hope, and near-bankrupting of Downtown Holland, the nagging question was: Would the Snowmelt System actually work? The operation of the Snowmelt System fell upon the Holland Board of Public Works. Two major operational issues existed for the System. First, how to get the water temperature high enough to melt snow at the rate of 1" per hour over 60 miles of 1" plastic pipe. Second, would lake water, with its mud and impurities, eventually clog the lines as the water circulated? If the lines became plugged, how do you locate the plug and repair it? These logistical issues

were left to the operators at the James DeYoung Power Plant after the euphoria waned that the System had been built.

Two BPW employees were instrumental in figuring out how to make the Snowmelt System operational. Loren Howard, who was the Plant Superintendent, and Bob Trethewey, who was Operations Manager at the Plant, deserve the credit for addressing the operational issues. Remember, the Snowmelt System and the discharge pipes were to be operated off of hot water from Generating Unit 3 at the James DeYoung Power Plant. Unit 3 had been built in 1955, so the source of the heat was a 30 year old turbine which was originally built to generate electricity, and now had a significant secondary purpose.

As previously explained, it was anticipated that the water to operate the snowmelt system required it to be heated through heat exchangers for the optimal discharge temperature of 160°. The use of heat exchangers increased the operating cost projection from $35,000 each year to as much as $135,000 per year. A $135,000 operating expense would have been financially impossible for the Downtown to sustain, even with Ed Prince's contribution of $25,000 during the first few years of the operation.

Bob Trethewey, with his long operational experience at the James DeYoung Power Plant, came up with the idea which saved Snowmelt and its operation costs. Unit 3 at the James DeYoung Power Plant, which was the source to operate the Snowmelt System, was built above underground tunnels which discharged condenser water below Unit 3 and eventually discharged the water into Lake Macatawa into tunnels. Bob Trethewey remembered that these tunnels had been essentially abandoned, and suggested to Loren Howard that by cleaning out the tunnels, the hot condenser water could then be piped from the tunnels to pumps which could then pump the discharge water from the James DeYoung Power Plant, up Pine Avenue to 8th Street, to operate the system. If this idea worked, the use of heat exchangers, which created the high operating costs, could be abandoned. Divers were hired by the BPW to clean out the tunnels under Unit 3 and the pump system was devised to pump this condenser water from these tunnels under Unit 3.

But an additional problem remained. The water which was being taken from Lake Macatawa was muddy and filled with silt. The Snowmelt System was a closed system where water was discharged from the Plant; flowed through the system; and came back to the

Plant. What would happen if the 1" pipes, constituting over 60 miles of the 250,000 sq. ft. system, would become clogged? As the system began to operate, the operators at James DeYoung found that chemical additives could be injected into the water to prevent clogging of the pipes. Again, this was done by trial and error, and the BPW had to be very careful that the water in the looped system, which was eventually discharged into Lake Macatawa, did not attain levels which could kill fish or other forms of aquatic life to violate operating permits issued by the Michigan Department of Environmental Quality.

In a Memo sent by Plant Superintendent Loren Howard to Management at the BPW, he stated that after the first year of operation the system was clogging as indicated by the increased pump pressures to operate the system. He stated:

> "If we operate the Snowmelt System for another year without properly cleaning it, I do not believe we will make it through the winter without a substantial loss in performance or a shutdown of portions or all of the system. The Snowmelt System was operated "blind" last year."

So in the winter of 1988, the Snowmelt System became a reality. The idea of Snowmelt had been conceived, built, and became operational in 8 months. Truly a tribute to the genius of the idea, but also of the willingness of a City, Downtown Merchants, and private entrepreneurs to make it happen.[1]

V. The Future of the Snowmelt System/Current Operation

As everyone knows, the James DeYoung Power Plant has been shut down with the building of the Holland Energy Park at the east end of 8th Street in 2016. In order to maintain the Snowmelt System, the heat source had to be moved from the James DeYoung Power Plant to the Holland Energy Park, and the System reconfigured with a heat source to the east of the system rather than the west. Today, the Snowmelt System is operated with state-of-the-art efficiency and technology which was built into the Holland Energy Park. Instead of relying on dirty lake water, the cooling water which is

[1] In an interview with Greg Robinson, who was hired to be the Mainstreet Director and Coordinator in 1983 and who eventually became Assistant City Manager and Interim City Manager, Greg told a story of what he was told in the City of Jackson about Holland, Michigan. When Greg announced, in 1983, that he was leaving Jackson to take the position in the City of Holland, one Jackson business man told him that he was making a big mistake. "The Dutch in Holland are so conservative. You will never get them to accept ideas to modernize their downtown."

piped into the Plant through a 36" water line is used for the water to operate Snowmelt. Water is discharged at 95° from the Plant, and the discharge water is at 75° when it comes back into the Plant. The current system has redundancy to it. The BPW installed an auxiliary boiler, which permits the HBPW to isolate the Snowmelt System in the event the Holland Energy Park had a shutdown. This auxiliary boiler was installed to operate the Snowmelt System in 2016, before the Plant was completed. In other words, when BPW transitioned from JDY to HEP, it was necessary to operate the Snowmelt System prior to HEP becoming commercially operational. The current System has five times the capacity than existed at JDY.

Since the current System water supply comes from a 36" water line, the supply source is now free of particles and debris. No longer does "mud mover" and chlorine have to be added to the System to make it operational.

The YouTube video which I am going to show you gives you a visual depiction of how the current Snowmelt System operates today.

(Show YouTube Video)

Conclusion

Today, the Snowmelt System operates efficiently and seamlessly. Holland takes it for granted, almost like turning on your light switch and receiving electricity. You are probably wondering tonight how I developed the title to my presentation. In 1988, I was called by the BPW's General Manager, Tim Morawski, about Ed Prince's idea of a snowmelt system which Terry Hofmeyer characterized to the Holland City Council as "very simple" in his first memo. I asked Tim Morawski what his reaction had been to Ed Prince's idea, and Tim summed it up very succinctly:

"What has he been smoking!!??"