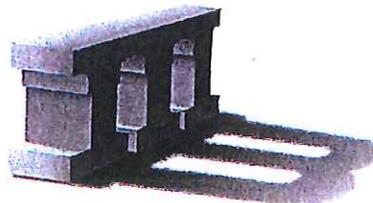
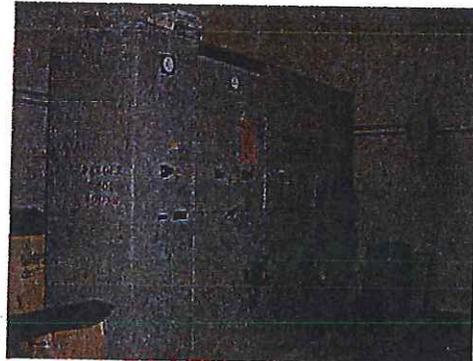
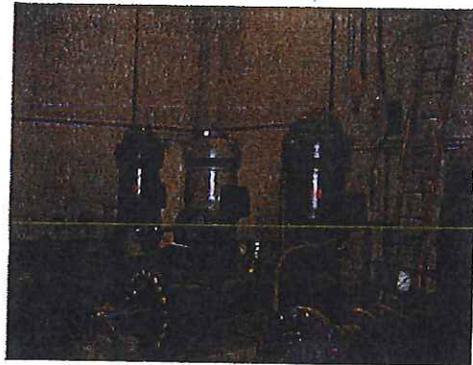
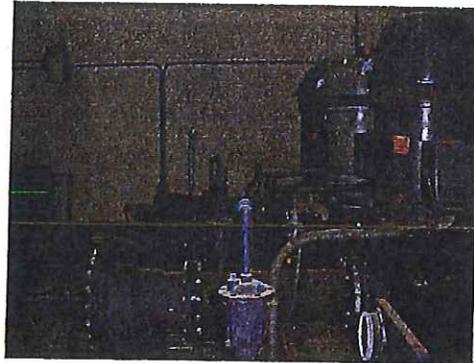


MEHLBURGER BRAWLEY

THE MERGING OF NRS. INC.
THE MEHLBURGER FIRM · BRAWLEY ENGINEERING CORP.

SHAWNEE MUNICIPAL AUTHORITY POTTAWATOMIE COUNTY, OKLAHOMA GREEN BUSINESS CASE HIGH SERVICE PUMP STATION IMPROVEMENTS PROJECT NO: SHA-09-03 JULY 2010

Certificate of Authorization # 5392
Expiration Date: 6/30/11



MEHLBURGER BRAWLEY

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OKLAHOMA CITY, OK 73118
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WATER QUALITY DIVISION

**SHAWNEE MUNICIPAL AUTHORITY
GREEN BUSINESS CASE
FOR
HIGH SERVICE PUMP STATION
IMPROVEMENTS**

TABLE OF CONTENTS

I.	GENERAL	1
II.	BACKGROUND.....	1
III.	BUSINESS CASE EVALUATION.....	2
	A. Why is this project needed?.....	2
	B. How will the proposed project improve the performance of the WTP? .	3
	C. What is the recommended project?	4
	D. What will happen if the proposed project is not completed?.....	4
	E. When will the proposed improvements be implemented	4
	F. What is the cost of the proposed project?.....	5
IV.	Recommendation	5

APPENDICES

- Appendix A – Pictures
- Appendix B – Pump Calculations
- Appendix C – HVAC Calculations
- Appendix D – Case Studies
- Appendix E – Cost Estimate

**SHAWNEE MUNICIPAL AUTHORITY
GREEN BUSINESS CASE
FOR
HIGH SERVICE PUMP STATION
IMPROVEMENTS**

I. GENERAL

The purpose of this report is to present the Shawnee Municipal Authority with a green business case for the replacement of the high service pumps at the Shawnee Municipal Authority's Water Treatment Plant (WTP). In addition, this report will provide recommendations for green improvements to the high service pump building. The City of Shawnee is seeking to obtain funding through the Oklahoma Water Resources Board (OWRB) Clean Water State Revolving Fund (SRF). Mehlburger Brawley, Inc. is working with the Shawnee Municipal Authority to assist in obtaining funding, including an engineering report, this green business case, and plans and specifications for this project. The scope of this project is limited to an evaluation of the high service pump replacement with variable frequency drives (VFDs), pump building, and clearwell at the WTP. Pictures of the existing high service pumps, pump building, and clearwell are included in this report as Appendix A.

II. BACKGROUND

The following recommendations were made in the engineering report, Mehlburger Brawley, Inc. Project No. SHA-09-01, which was resubmitted to the Oklahoma Environmental Department of Environmental Quality (DEQ), on July 12, 2010. This report included an evaluation of the high service pumps, high service pump building, and the clearwell at the WTP. The recommended improvements from this report are as follows.

Mehlburger Brawley, Inc. recommended the replacement of the three (3) outdated 2,400 volt pumps with new high efficiency 480 volt pumps including high efficiency motors and variable frequency drives to minimize the risk of pump failure and to make the necessary improvements for a future pump.

Mehlburger Brawley, Inc. recommended that the HVAC unit be upgraded to adequately cool the existing building. The HVAC unit will allow the pumps and VFDs to operate without overheating. The lighting should be relamped and the ballasts should be replaced as necessary to maintain full operation of the interior lights. The City of Shawnee may choose to replace the lights as part of this project.

Mehlburger Brawley, Inc. recommended that the valves, grating and piping be replaced. The ideal time to replace the valves and piping is while making the pump and electrical improvements to the high service pump station. The new valves, grating and piping will prolong the life of the high service pump station and drastically reduce future maintenance.

In addition to the above mentioned projects, the City of Shawnee would like to perform rehabilitation on the existing high service pump station building and the existing clearwell. The rehabilitation on the high service pump station building will include replacing the existing tar and rock roof with a high reflectivity roof to eliminate leaks. In addition, floors will be epoxy coated to prolong the life of the building. The clearwell rehabilitation will include installing a vent that extends through the clearwell and curves downward to prevent contamination with an insect screen over the opening. In addition, the top of the clearwell will be grouted with non-shrink grout to fix any existing cracks and sloped to prevent water from ponding on the clearwell. The top of the clearwell will then be coated or painted. The remainder of this report will evaluate and justify the cost of the replacement and modifications based on the "business case" format.

III. BUSINESS CASE EVALUATION

The following section will justify the recommended alternative in a "business case" format. The following topics will be discussed:

- Why is this project needed?
- How will the proposed project improve the performance of the WTP?
- What is the recommended project?
- What will happen if the proposed project is not completed?
- When will the proposed improvements be implemented?
- What is the cost of the proposed project?

A. Why is this project needed?

The proposed project will have the following impacts to the operation of the WTP:

- Reduce the amount of electrical energy consumed by the WTP.
- Decrease the amount of time the pumps are running and increase the efficiency when the pumps are running.
- Increase the efficiency of the HVAC unit and keep the building lit to allow maintenance.
- Eliminate the leaks in the existing roof to protect electrical equipment.

B. How will the proposed project improve the performance of the WTP?

The existing pumps have single speed drive motors, which start abruptly, subjecting the motor to high torque and current surges up to ten (10) times the full-load current. The new high service pumps will have VFDs that enable pumps to accommodate fluctuating demand, running pumps at lower speeds and drawing less energy. In addition, the VFDs offer a "soft start" capability that gradually ramps up the motor to operating speed. The VFDs allow operators to fine-tune processes while reducing costs for energy and equipment maintenance. The Owner's personnel will be provided 8 hours of on-site instruction on VFD operation to ensure that the Owner's staff has adequate training to operate the equipment. The VFDs will have current limiting and auto restart features to ensure that the controls properly operate the VFDs.

The new high service pumps will be more efficient than the existing pumps by approximately 23% (wire to water), which is above the recommended 20%. The new pumps and motors will reduce the amount of energy used by 346,035 Kw and save approximately \$36,333 annually. The information and calculations are included in this report in Appendix B.

The lighting, if replaced, will be the highest quality and most energy efficient. Mehlburger Brawley, Inc. recommends that if the Owner is to replace the lighting that one of the Environmental Protection Agency's (EPA) recognized energy efficient type of lighting be used. These energy efficient lights include metal halide, pulse start technology, compact florescent, or light-emitting diode lamp (LED).

The HVAC unit will have premium efficiency, redundant variable capacity scroll compressors, and a 0-100 percent economizer. The HVAC unit with a Seasonal Energy Efficiency Ratio (SEER) of up to 12.2. When compared to a typical HVAC unit with a SSER of 9, the proposed HVAC unit will use 36,864 kW/yr less than a typical HVAC unit. The calculations for this energy reduction are included in this report in Appendix C. In addition, the HVAC unit will use R-410A, an environmentally friendly refrigerant, which does not contribute to ozone depletion.

The roof will be a high reflectivity roof with an initial reflectivity of 87.5%, based on ENERGY STAR testing procedures. Reflectivity is the percentage of the sun's energy that is reflected by a surface. Another important measurement of membrane performance is emittance – the percentage of absorbed energy that a material can radiate away. These attributes have given the roof an established history of providing energy-saving benefits for commercial, institutional, and industrial buildings throughout North America. The high reflectivity roof will be friendly to the environment with closed-loop manufacturing, membrane recyclability, and long term performance.

Several Case Studies have been completed and the results show that the high reflectivity roof system makes buildings more energy efficient. Case studies from a manufacturer of a high reflectivity roof were used in this report. These case studies were used to base the request for the high reflectivity roof to be considered as a green component of this project. A study was done to show the temperature difference between different surfaces in Redding California in August 2001, with an outside air temperature was 95° F. The temperature of the high reflectivity roof was 97° F. The temperature of the Gravel Built-Up Roof was 139° F. This study showed that the high reflectivity roof was 43% cooler than the Gravel Built-Up Roof. In other studies the high reflectivity roof system has proven to reduce the temperature inside the buildings as well. The Case Studies are provided in this report in Appendix D.

C. What is the recommended project?

The recommended solution is as mentioned above in the Background section of this report.

D. What will happen if the proposed project is not completed?

A pump failure creates a potential for residents to lose their water service for an extended period of time creating health and sanitation issues for the City. It is becoming more difficult and expensive to maintain the existing pumps. The difficulty finding replacement parts and maintaining the existing pumps could cause a pump to be down for an extended period of time.

The piping is in need of replacement. If the piping is not replaced as a part of this project, the WTP will have to replace the piping at a later date causing disturbances to the water supply on different occasions.

The HVAC unit will need to be replaced to adequately cool the building to protect the pumps and VFDs. This will allow the pumps and VFDs to operate without overheating.

The existing tar and rock will need to be replaced to prevent leaks from damaging the electrical equipment

E. When will the proposed improvements be implemented?

The proposed improvements will be implemented as soon as funding is secured, possibly within a year.

F. What is the cost of the proposed project?

The cost of the proposed project is \$1,677,000. A complete estimate and costs of the green components of this project are included in this report in Appendix E.

IV. RECOMMENDATION

Mehlburger Brawley, Inc. recommends that the City of Shawnee make the proposed improvements at the WTP. In addition, Mehlburger Brawley, Inc. recommends that the rehabilitation of the pump building and clearwell be completed as part of this project. This rehabilitation includes the repair to the cracks on the top of the clearwell; the grouting of the clearwell to prevent ponding; epoxy coating the floors of the pump building; and replacing the roof with a high reflectivity roof. Mehlburger Brawley, Inc. recommends that the City of Shawnee submit this report to DEQ to obtain funding through the SRF.

Appendix A

Pictures

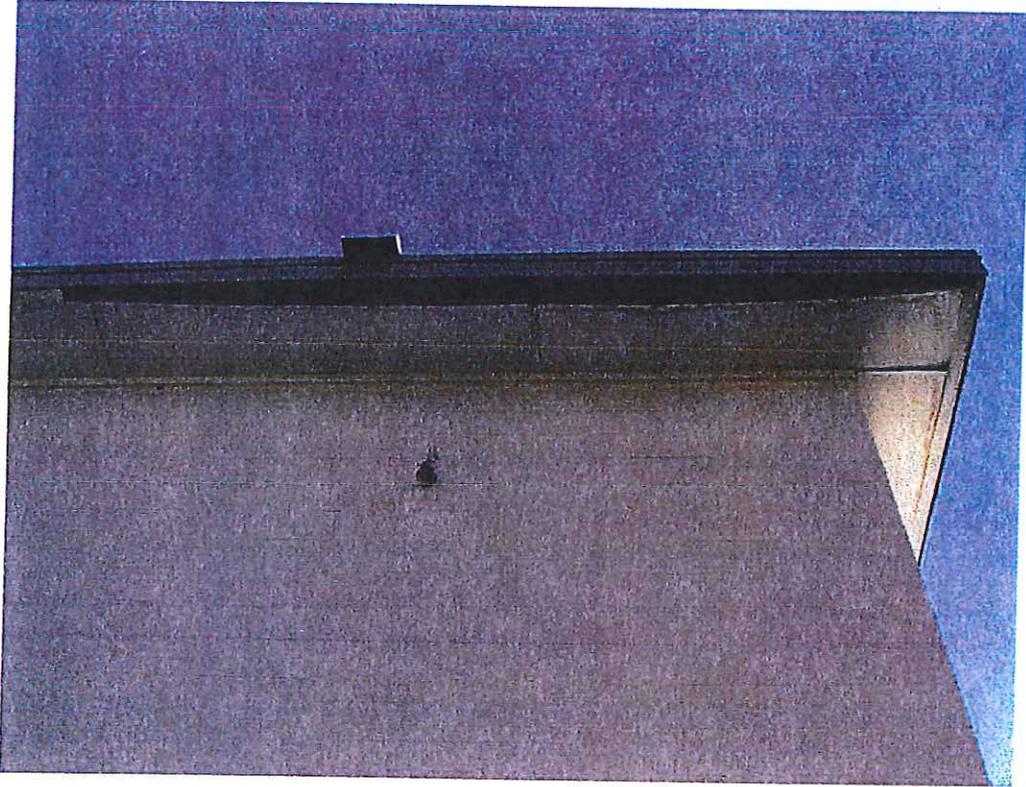


Figure 1 Damaged Soffit



Figure 2 Ponding on the Clearwell



Figure 3 Spalding Concrete on the Clearwell



Figure 4 Leaking Roof

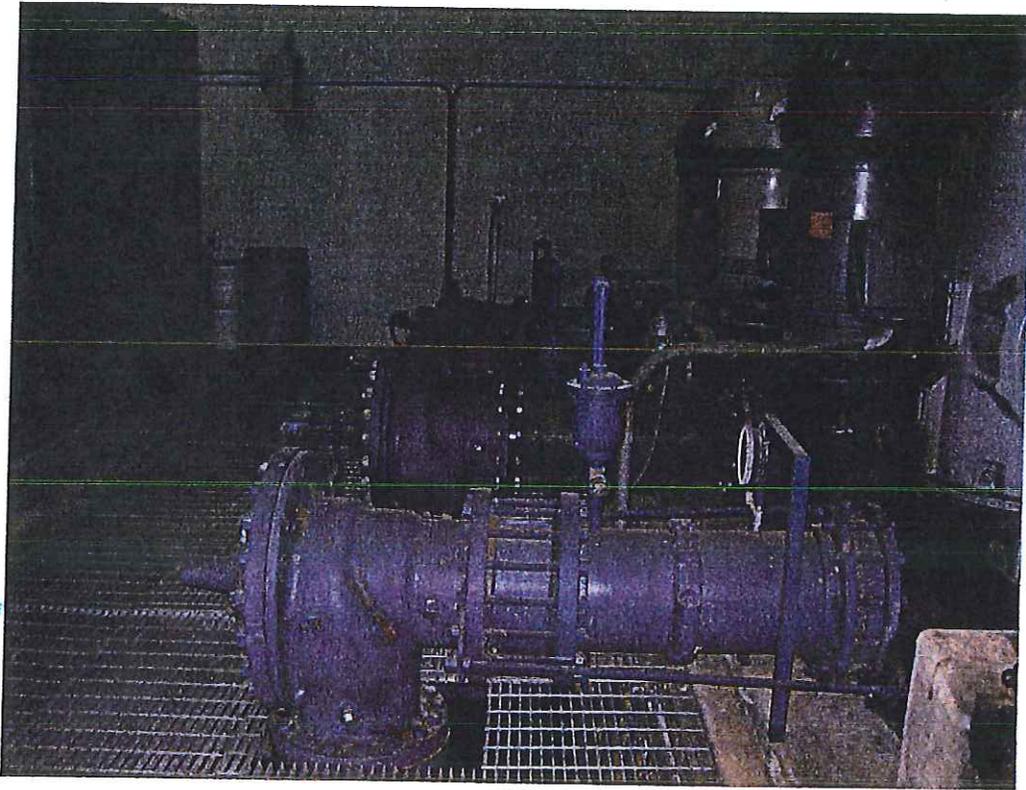


Figure 5 Existing High Service Pumps

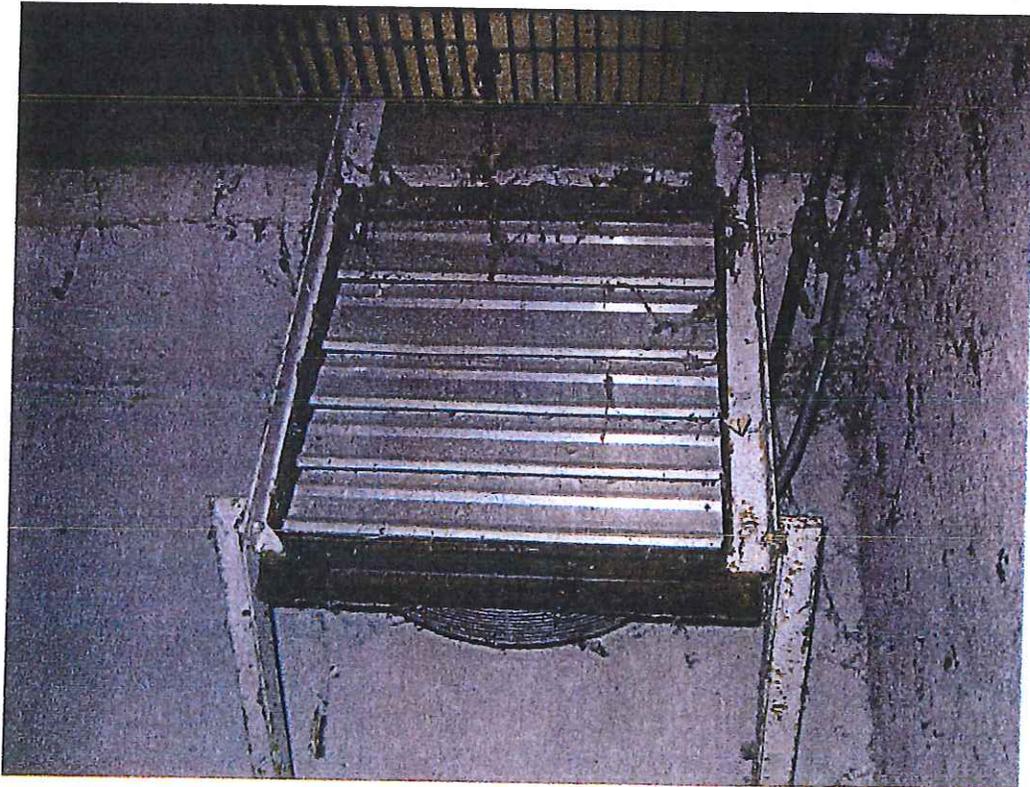


Figure 6 Existing Pipe Gallery Ventilation

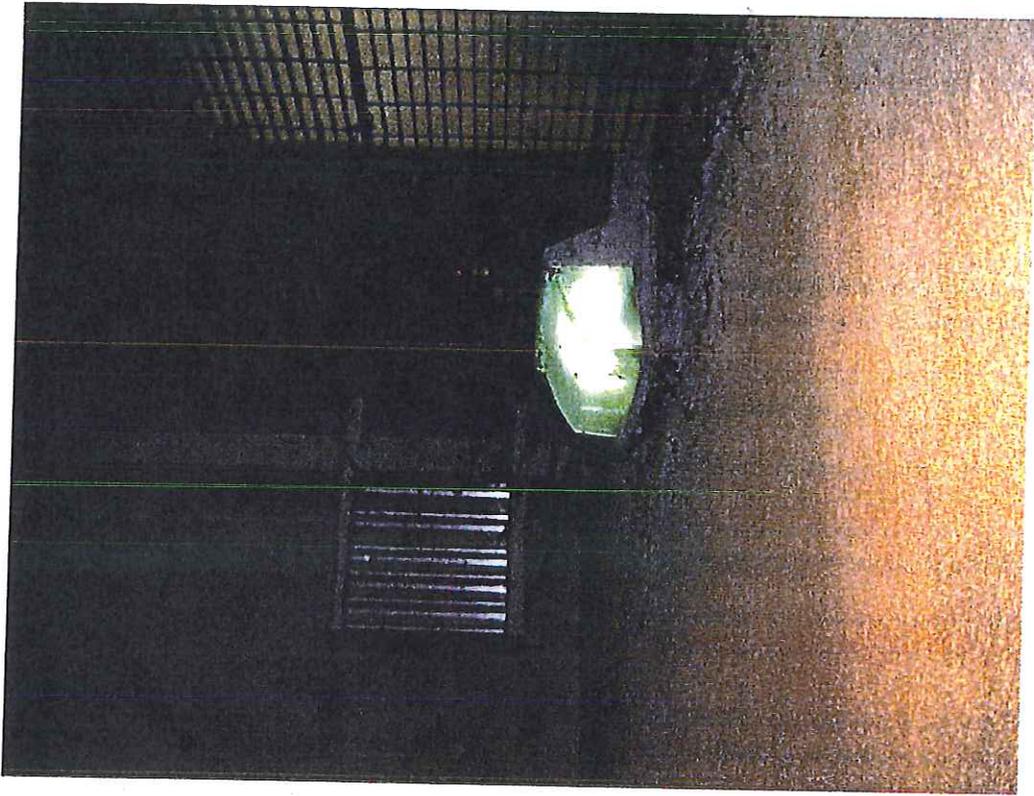


Figure 7 Existing Pipe Gallery Lighting

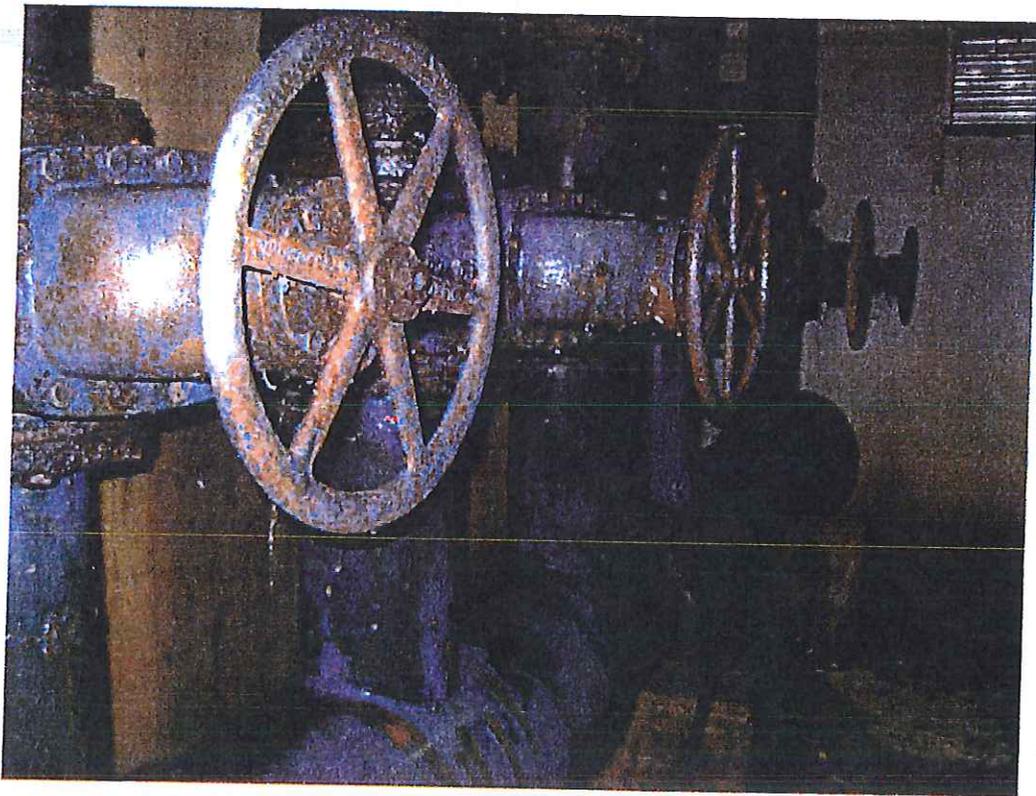


Figure 8 Existing Pipe Gallery Piping

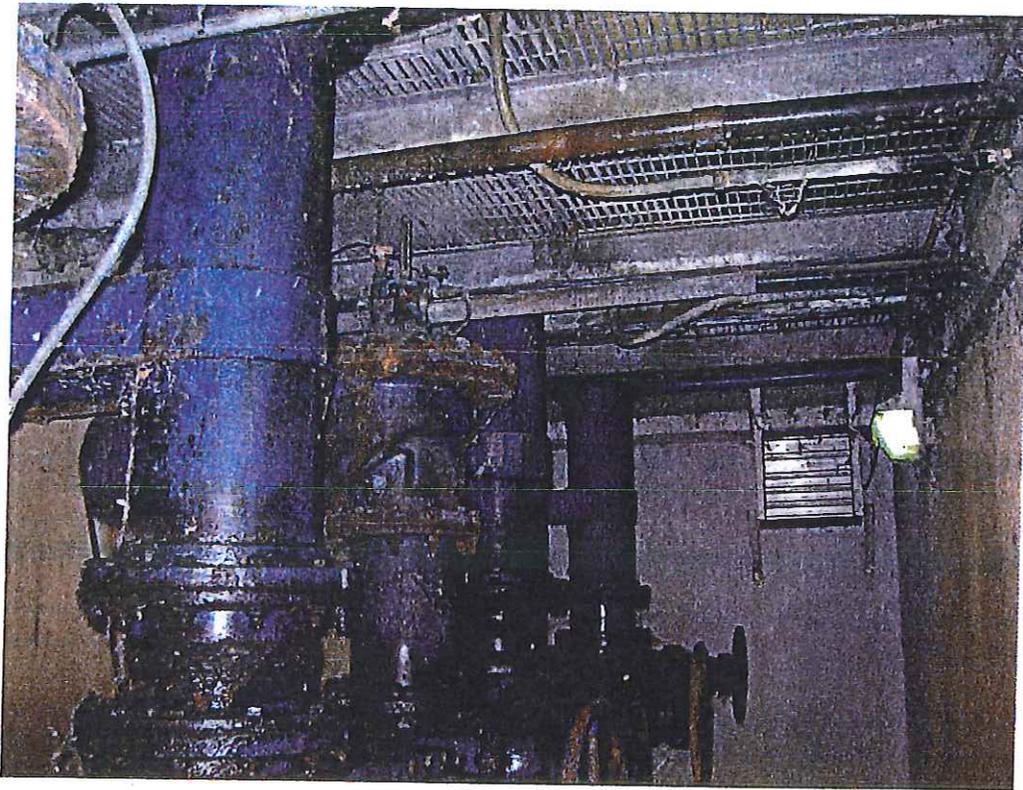


Figure 9 Existing Pipe Gallery Piping

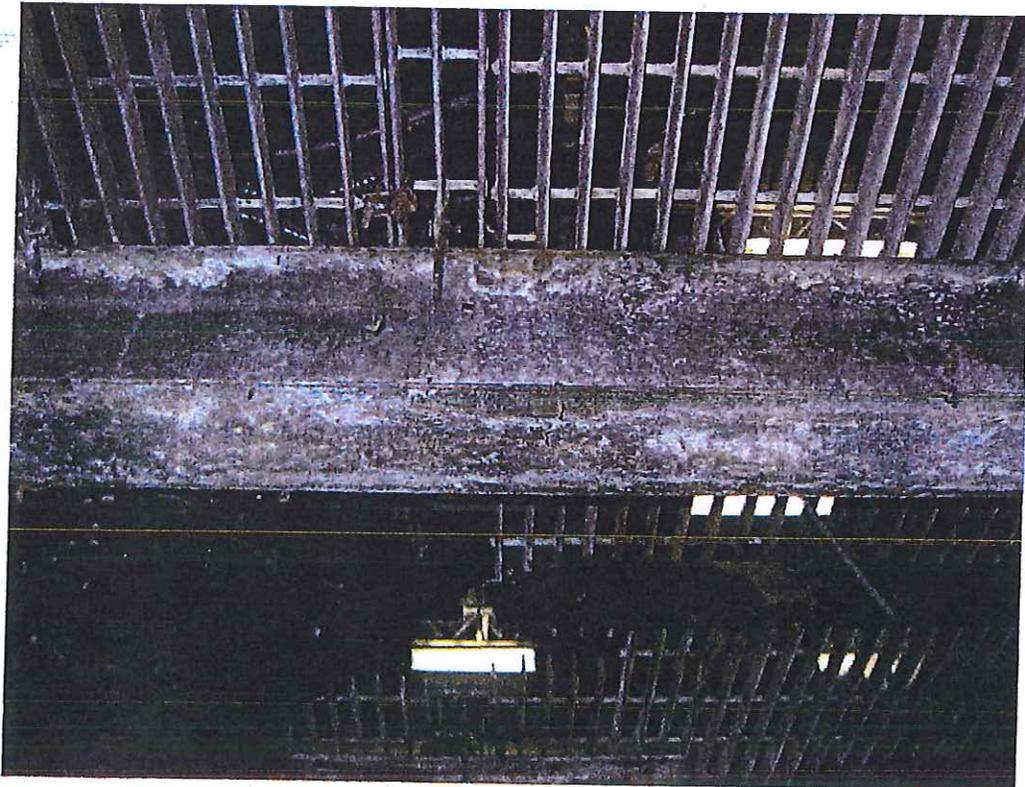


Figure 10 Existing Deteriorated Thrust Blocking

Appendix B

Pump Calculations

SUMMARY

REPLACEMENT OF THREE (3) HIGH SERVICE PUMPS, MOTORS AND ASSOCIATED PIPING.

ESTIMATED LOAN AMOUNT = \$1,685,000
PUMP AND MOTOR REPLACEMENT = \$ 474,336
REMAINDER OF LOAN = \$1,210,664

ESTIMATED ENERGY EFFICIENCY (GREEN) PORTION OF LOAN (FOR PUMPS) =
 $0.08(\$474,336) = \$37,946.88$

ESTIMATED ANNUAL ENERGY SAVINGS BE APPROXIMATELY 23% OR \$36,330 PER YEAR.

BACKGROUND

THE PUMPS AND MOTORS AT THE SHAWNEE HIGH SERVICE PUMP STATION WERE INSTALLED IN 1974. THE EXISTING PUMPS ARE RATED AT 2,800 GPM AT 260 FOOT OF HEAD WITH AN EFFICIENCY OF 83%. THE EXISTING MOTORS ARE ESTIMATED TO BE RATED AT 85%. THE ACTUAL OPERATING EFFICIENCY IS PROBABLY LOWER DUE TO THE AGE OF THE PUMPS AND MOTORS.

THE ESTIMATED ENERGY CONSUMED BY THE EXISTING PUMPS IS 1,730,176 KW/YR.

RESULTS

THE PROPOSED PUMPS WILL HAVE A RATED EFFICIENCY OF 83.8%.

THE PROPOSED MOTOR WILL HAVE A RATED EFFICIENCY OF 95%.

CALCULATED ENERGY EFFICIENCY IMPROVEMENTS

STANDARD PUMPS ON THE MARKET HAVE AN AVERAGE EFFICIENCY OF 72.5%.

STANDARD MOTORS ON THE MARKET HAVE AN AVERAGE EFFICIENCY RATING OF 89%.

THE EFFICIENCY (WIRE TO WATER) OF STANDARD PUMPS AND MOTORS IS
 $(72.5\%)(89\%) = 64.5\%$.

THE EFFICIENCY (WIRE TO WATER) OF THE PROPOSED PUMPS IS $(83.8\%)(95\%) = 79.6\%$.

COMPARING THE EFFICIENCIES $(79.6\%)/(64.5\%) = 1.23$.

THE INCREASE IN WIRE TO WATER EFFICIENCY IS 23%, WHICH IS ABOVE THE RECOMMENDED MINIMUM OF 20%.

CONCLUSION

BY REPLACING THE PUMPS AND MOTORS, THE SYSTEM WILL REDUCE THE ENERGY USE BY 23% WHICH IS ABOVE THE RATING OF STANDARD PUMPS.

AT 10.5 CENTS, THE SAVINGS WOULD TOTAL \$36,333 ANNUALLY.

Appendix C

HVAC Calculations

TYPICAL HVAC UNITS HAS A SEER OF 9

AAON RN-040 UNIT HAS A SEER OF 12.2

FOR 9 SEER,

$$KW/TON = 12/9 = 1.33$$

$$1.3 KW/TON \times 40 TONS / (AAON RN - 040) = 52 KW$$

$$52 KW \times [2,880 HOURS (COOLING) PER YR] = 149,760 KW/YR$$

$$AAON RN - 040 SEER = 12.2, 12/12.2 = 0.98$$

$$0.98 KW/TON \times 40 TONS (AAON RN - 040) = 39.2 KW$$

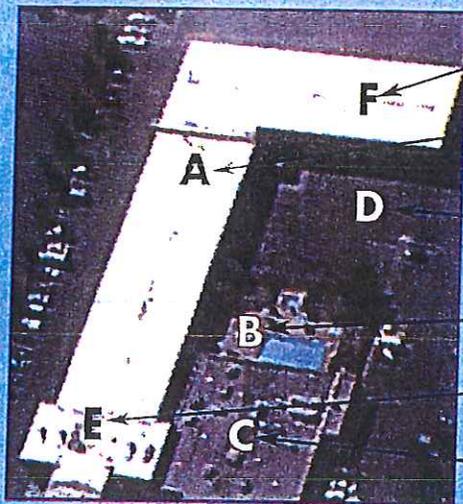
$$39.2 KW \times [2,880 HOURS (COOLING) PER YR] = 112,896 KW/YR$$

$$149,760 KW/YR - 112,896 KW/YR = 36,864 KW/YR$$

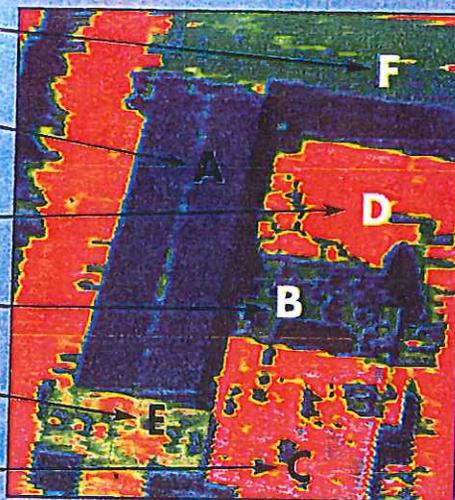
USING AAON RN-040 WITH A SEER OF 12.2 REDUCES THE ENERGY BY 36,864 KW/YR WHEN COMPARED TO A TYPICAL HVAC UNIT.

Appendix D
Case Studies

Is Your Roof *Hotter* Than Your Parking Lot?



- Aluminum Coated Built-Up 125°F
- Duro-Last Cool Zone System 97°F**
- Asphalt Parking Lot 134°F
- Swimming Pool 87°F
- Granular Cap Built-Up 127 - 129°F
- Gravel Ballast Built-Up 134 - 159°F



Best Western Hilltop Inn
 Redding, California
 August 2, 2001 - 2:30 p.m.
 Outside Air Temperature
95°F

- C = Gravel Ballast Built-Up 139°F
- D = Asphalt Parking Lot 134°F
- E = Granular Cap Built-Up 129°F
- F = Aluminum Coated Built-Up 125°F

- Duro-Last is 42°F Cooler
- Duro-Last is 37°F Cooler
- Duro-Last is 32°F Cooler
- Duro-Last is 28°F Cooler

Cooler than the rest – Cool Zone System 97°F

— MAKE DURO-LAST® —

COOL ZONE®

YOUR ROOFING SOLUTION

The Cool Zone white membrane has the highest retained reflectivity of any single-ply membrane rated by the EPA's ENERGY STAR® Roof Products Program, saving energy and money for building owners and managers all over the United States.

The Cool Zone roofing system is also:

- Custom prefabricated for every building
- Durable
- Professionally installed with no business disruptions
- Backed by the industry's best warranties
- Code compliant
- The best long-term roofing value for your building

"We have realized a substantial energy savings. In addition to receiving \$3,000 in energy rebates, there was no disruption to our business during installation..."

Steve Gaines
 Best Western Hilltop Inn



Corporate Headquarters
 Saginaw, Michigan
 800-248-0280

Grants Pass, Oregon
 800-356-6646

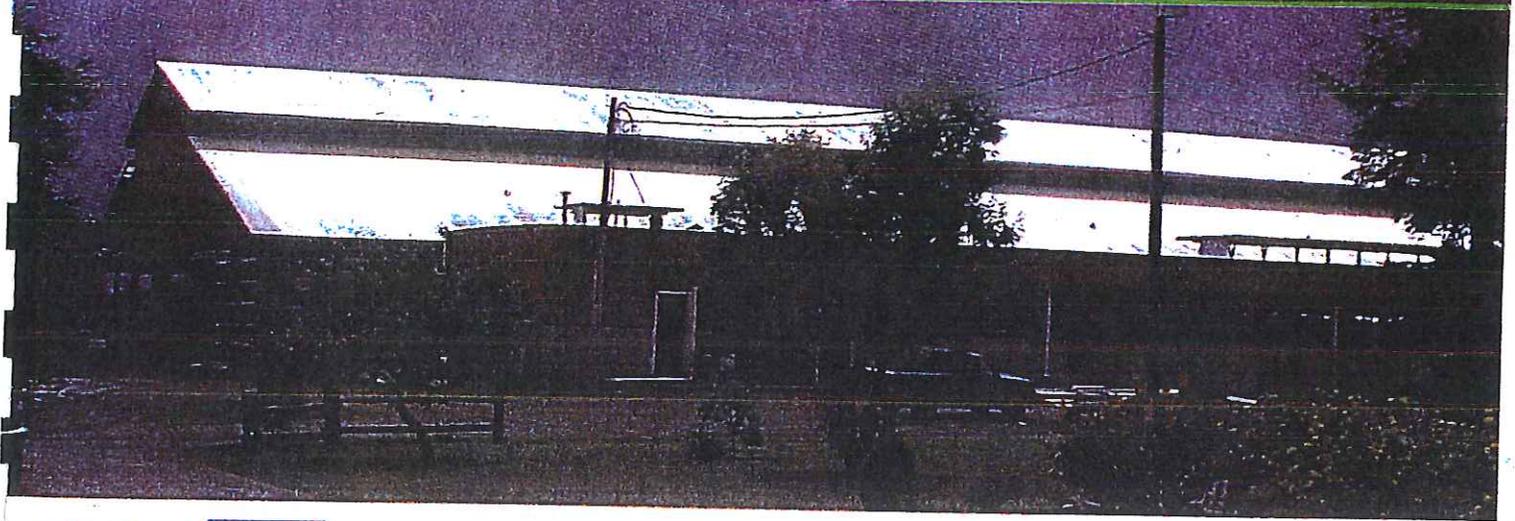
Jackson, Mississippi
 800-434-3876

Sigourney, Iowa
 888-500-3574

www.duro-last.com



A DURO-LAST® COOL ZONE® CASE STUDY



“COOL” COWS PRODUCE MORE MILK THANKS TO DURO-LAST!

Who would have thought that installing a Duro-Last® Cool Zone® roofing system on a barn would improve the milk production of cows...but that is exactly what happened in Chilliwack, British Columbia.

In 1980, dairy farmer John Wynker built a 31,000 square foot barn on part of his property, Artique Farms, Ltd., to house his herd of 160-170 dairy cows. Over the years, the existing metal roof began to have issues. It contained a sprinkler system used to cool the barn and keep the temperature down for the dairy cows. Although the sprinkler system did not work well, it still helped lower the excess heat created from the metal roof. However, this sprinkler system and the failed metal roof produced other problems – leaks everywhere.

Wynker needed a new roof that was durable, leak-proof, and would keep his cows cool, safe, and dry.

Wynker contacted John Grimard, owner of J.G. Roofing in Chilliwack. After Grimard inspected the barn and considered the qualities Wynker wanted, he suggested installing the Duro-Last Cool Zone roofing system.

According to Grimard, the white Cool Zone membrane would be the perfect fit for the barn because it is durable, leak-proof and virtually maintenance-free so that Wynker would not have to worry about it once the roof was installed. Plus Grimard explained that the Duro-Last Cool Zone system could save him money on energy costs for the barn during the summer months.

Wynker liked the thought of saving money, but little did he know the true benefits of the Cool Zone roofing system – that is, until he installed it.

“The Cool Zone system’s prefabrication is terrific for a project like this,” said Grimard. “Since Duro-Last performs a majority of the membrane seaming in their controlled factory environment, the potential for rooftop installation errors and leaks is reduced considerably. Plus, the Cool Zone membrane is produced in prefabricated sheets of up to 2,500 square feet, which made the installation easier and less labor intensive.”

Grimard’s crew went to work. They re-roofed the barn without a tear-off, avoiding potential problems such as accidentally dropping materials into the cows’ feed, which could have proven harmful to the animals. The crew also added insulation and ventilation, and removed the old leaky sprinkler system, leaving only the existing fans in place.

“The installation went smoothly and John was very happy with the results: an aesthetically-pleasing roof that would protect his dairy cows,” noted Grimard.



"Another benefit of the Cool Zone roofing system for the barn was its flexibility. A large barn tends to expand and contract with wind and temperature changes, and the Cool Zone system allows this to happen without jeopardizing the performance of the roof."

Shortly after the installation, Wynker discovered other benefits that surprised both him and Grimard. Just one week into the project, the herd's milk production increased to the point where the holding tank started overflowing. Wynker determined that the increase was due to the barn being cooler. He found that in hot weather, his barn stayed cooler with the Cool Zone roofing system, which helped reduce the dairy cows' stress level and resulted in their giving more milk...that's right...the cows were comfortable so they produced more milk!

"I was very surprised with the results," recalled Wynker. "Upon installation of the new Cool Zone roofing system, the temperature in the milking facility dramatically dropped in the summer. Prior to the Cool Zone installation, we had all of our fans continually running at full speed. After the new roof was installed, we found that we turned the fans on later in the year, turned them off sooner, and did not always have them running at full speed. We definitely notice a large difference in temperature when we walk into the barn."

"I was able to cut six cows from the herd and still increase my milk production," noted Wynker. "It was incredible! Plus, we realized how quiet the barn was when it was windy or raining. The old metal roof was always very noisy during bad weather."

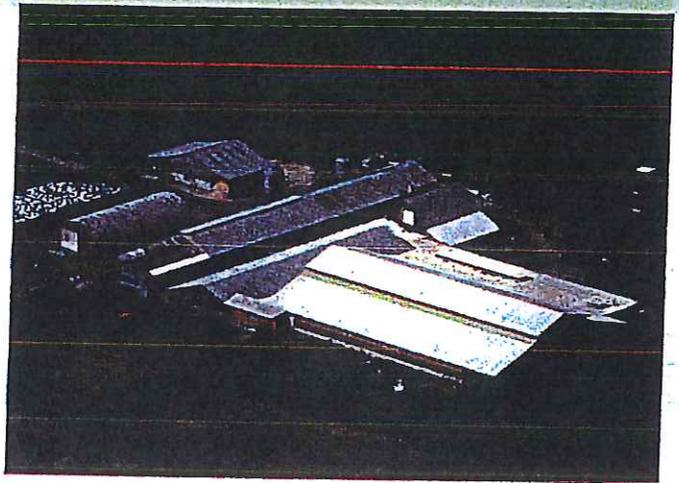
Furthermore, less breeding was required to keep consistent milk production.

Yet, that was not all...during the winter months, the barn stayed warmer and prevented the cows' watering troughs from freezing.

"In the past, we had problems with the drinking water for the cows freezing," said Wynker. "But with the added insulation and Cool Zone roof, that isn't a problem anymore."

The best news for Wynker — he saved money and received a leak-proof roof!

"In the first six months I saved about \$22,000 in operational costs and attribute about 90% of that to the Cool Zone roofing system and the remainder to the added insulation," said the dairy farmer. "That



translates into saving around \$44,000 a year AND my roof no longer leaks!"

The Cool Zone roof provided a leak-proof shelter for the dairy cows. It created a cooler environment in the summer and a warmer one in winter. In return, the cows were more relaxed, producing more milk. Wynker was able to down-size his herd, while also selling more milk (a 10-15% increase). His dairy business benefits by making more money through increased milk production with fewer cows, and enjoys savings from lower energy costs, less building maintenance, and fewer veterinary bills due to healthier cows.

"The health problems we used to encounter with the cows have gone down tremendously," stated Wynker. "Reproductive health through the summer months is no longer a problem. That alone has saved me a lot of money."

"We would recommend a Duro-Last Cool Zone roofing system to anyone who is considering putting a roof on a livestock building," added Wynker.

Now this is a true Duro-Last success story for a dairy farmer in Chilliwack, British Columbia!

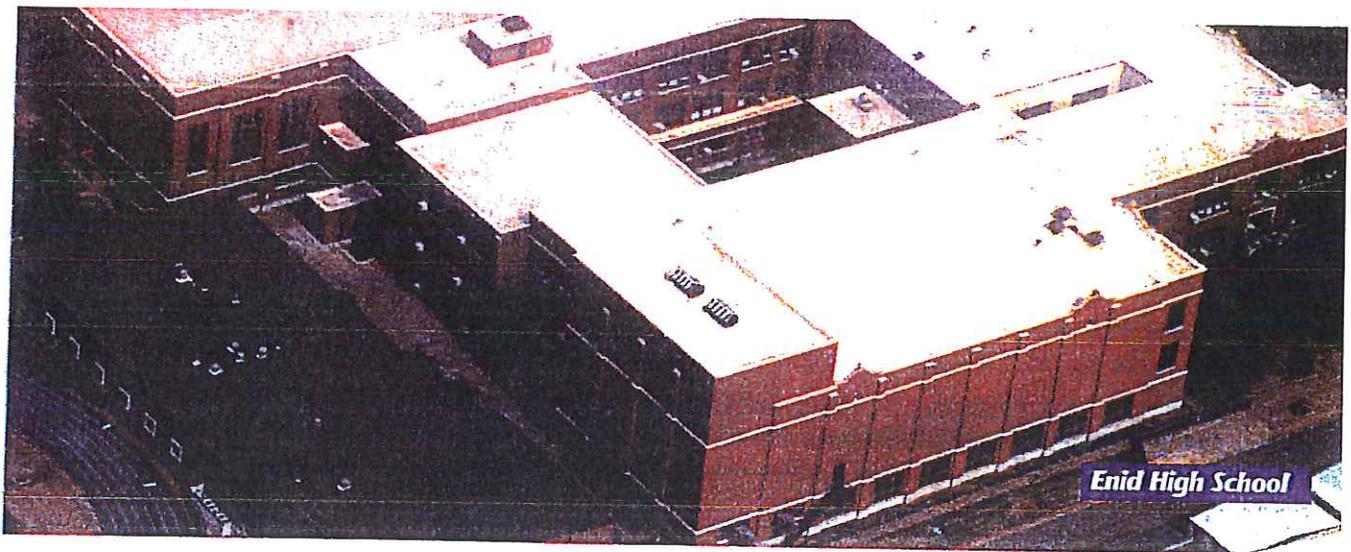


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A DURO-LAST® CASE STUDY



PREFABRICATION MAKES THE GRADE FOR ENID PUBLIC SCHOOLS

At Duro-Last Roofing Inc., we pride ourselves on the partnerships we have made with our network of authorized roofing contractors. This partnership really paid off for Heritage Roofing Systems of Enid, Oklahoma and ultimately for their customer, the Enid Public Schools.

Duro-Last contractors receive all the marketing tools they need to help them grow their businesses, including plant tours where their prospective customers can view the entire manufacturing process.

Approximately 35% of our roof seams are prefabricated in a Duro-Last factory, making installation easier for the contractor. Also, when building owners see the quality of our manufacturing operations, it puts their minds at ease, and affirms that they made the right decision in purchasing a Duro-Last roofing system.

After Enid school decision-makers completed a plant tour they contracted with Heritage to install 700,000 square feet of roofing on 22 schools over a two-year period.

"The Enid schools project is one of the best long-term projects we've had," said Heritage Owner and President, Rod Heitfeld. "Our relationship with school personnel has been fantastic. Plus we have excellent communications with Duro-Last, which is also a key in getting sales support, market penetration."

The Enid school district had tried built-up and modified bitumen systems, but had run into a lot of flashing and blistering problems. Their stop-gap solution was to put trash cans under the leaks. In evaluating roofing options, the district did not want to worry about replacing the roofs every few years, so they began leaning toward mechanically-attached thermoplastic systems.

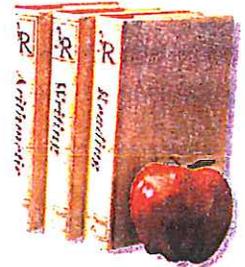
Why Duro-Last? Because the roof system is prefabricated, there are fewer problems with field installations. Furthermore, for the Enid school district, school is in session year round, so officials wanted to avoid a messy tear-off. With Duro-Last, installation is clean and safe with no tear-off required, saving the school district money.

Plus, the Duro-Last roofing system is a long-term investment with little or no maintenance necessary. Once installed, the Duro-Last roof system provides worry-free shelter from inclement weather and burdensome repairs.

Oklahoma weather ranges from extreme heat to extreme cold, and prior to being covered with the Duro-Last membrane, the roofs in the Enid school district showed cracking, blistering, and bubbling. A Duro-Last roof can withstand high winds and is resistant to chemicals and fire. Moreover, cracking, blistering, and bubbling are not a concern with a Duro-Last roof.

An extra bonus for the Enid school district was cooler building temperatures. The Duro-Last white membrane reflects over 86% of the sun's energy, according to the EPA's ENERGY STAR® Roof Products Program testing criteria, saving the district money on energy costs.

The Duro-Last roofing system proved to be a "win-win" situation for both Heritage Roofing Systems and Enid Public Schools. The Enid school district no longer has roof leaks and Heritage Roofing has a new customer that will recommend Duro-Last to others.



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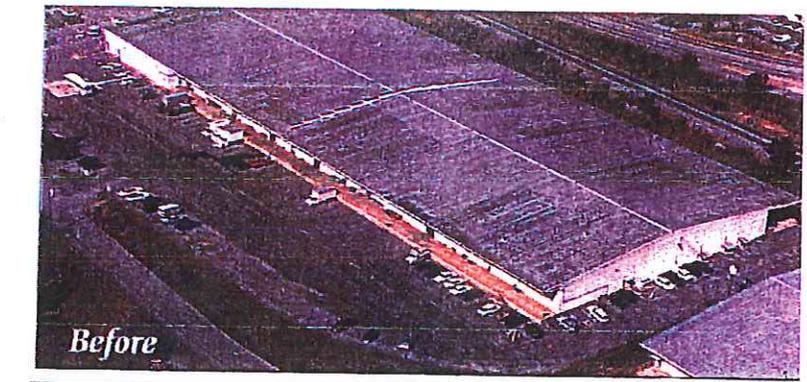
THERMOPLASTIC SINGLE-PLY A PERFECT FIT FOR DISTRIBUTION CENTER'S METAL ROOF

Mike Hendrix and his maintenance crew were tired of the phone calls from the distribution center at the Greenville County School District in Taylors, South Carolina. Another leak...another repair to the 35-year-old metal roof that covered the distribution center...more time spent on roof repairs instead of on other important maintenance projects.

As one of several master foremen of the maintenance department for the Greenville County School District, Hendrix was accustomed to fixing things for the school district, which encompasses 102 schools and administrative offices. However, the numerous leaks that plagued the 155,650 square foot distribution center were beginning to take their toll on Hendrix and his staff.

"We needed a roofing solution that could free my staff from constant repairs...a roofing system that was durable, easily installed, and required very little or no maintenance," Hendrix said.

Moreover, the distribution center housed hundreds of thousands of daily supplies for the school district ranging from paper supplies to desks to computers: all of which added up to an



Before



During



After

expensive inventory that if damaged from a leaky roof, would prove to be disastrous.

"If we knew it was going to rain hard, we would actually cover up certain items in the warehouse with tarps in order to avoid any damage," Hendrix recalled.

So Hendrix did his homework and began looking into roofing systems for the distribution center. Repairing the current metal roof was out of the question because of the expense and need for a full tear-off which would also be very time consuming and disruptive.

With no roofing solution in sight and more rainy days in the forecast, Hendrix finally received some good

Continued on page 14

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news. A roofing specialist at the school district mentioned the Duro-Shield metal retrofit roofing system as a good choice for a cost-effective, durable and long-term solution to their roof leak woes.

A thermoplastic single-ply roofing system from Duro-Last Roofing, Inc., the Duro-Shield system could provide the district's distribution center with the watertight integrity it needed to protect the school supplies. Furthermore, the Duro-Shield system is very economical. Because the system is custom prefabricated in a Duro-Last manufacturing facility, the district's budget would be going directly into the roofing material rather than the labor installing the new roof.

"The ease of installation was tremendous," noted Hendrix. "Southerland Construction, Inc. (an authorized Duro-Last contractor in Greenville, South Carolina) came to the job site with all the materials needed to complete the job."

On a metal building, installing a Duro-Shield roof is simple. No tear-off is needed. The flutes are filled with insulation, and an extra layer of insulation is added to create a level surface and to increase the R-value. Then the roof assembly is made watertight by installing the Duro-Shield membrane. Penetrations are also leak-proof thanks to custom fabricated stacks and curb flashings.

"I've dealt with all types of roofing systems over the years, and the many headaches that came along with them," said Brett Southerland, owner of Southerland Construction. "There is no way that I would have attempted to install any other product on a building of this type other than the Duro-Shield membrane. I am absolutely confident that this roof will provide our client with many years of maintenance-free service."

Hendrix could not have asked for a better roofing system. The white Duro-Shield roof not only performed to Hendrix's leak-proof expectations, it also provided a more aesthetically pleasing rooftop, and made the sometimes-hot warehouse much cooler.

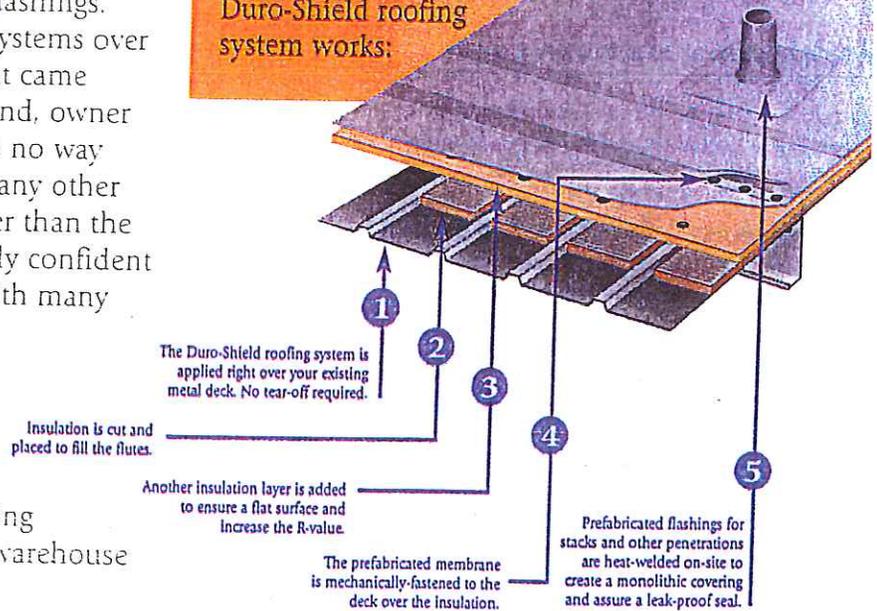
"There are no more leaks, the building looks great, it's cooler in the distribution center AND my time has been freed to do other maintenance tasks," stated Hendrix. "If that wasn't enough, Duro-Last offers the best warranty protection available. The warranty does not exclude ponding water or consequential damages, which is very important for a warehouse."

Today, Hendrix and his staff rarely have to deal with the distribution center's roof...it's virtually maintenance-free with no leaks.

"I have enjoyed learning about the Duro-Shield roofing system," said Hendrix. "Our first job with Duro-Shield went great and we look forward to using Duro-Shield on future projects. It really is the perfect fit for metal retrofit!"

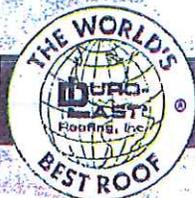


Here's how the Duro-Shield roofing system works:



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Appendix E
Cost Estimate



MEHLBURGER BRAWLEY

THE MERGING OF NRS, INC.
THE MEHLBURGER FIRM - BRAWLEY ENGINEERING CORP.

Cost Estimate

City of Shawnee

Date: 8/18/10

Page 1 of 1

Shawnee WTP High Service Pump Improvements

Item	Description	Unit	Qty	Unit Price	Total Price
1	250 HP Verticle Turbine High Service Pumps	EA	3	\$ 97,200.00	\$ 291,600.00
2	250 HP VFD w/ AC	EA	3	\$ 60,912.00	\$ 182,736.00
3	12" Check Valves	EA	3	\$ 7,020.00	\$ 21,060.00
4	12" Gate Valves	LF	3	\$ 3,240.00	\$ 9,720.00
5	24" Gate Valve	EA	1	\$ 23,760.00	\$ 23,760.00
6	Replace Grating	SF	220	\$ 43.20	\$ 9,504.00
7	Replace 24" ductile iron pipe	L.F.	40	\$ 1,058.40	\$ 42,336.00
8	Replace 12" ductile iron pipe	L.F.	85	\$ 248.40	\$ 21,114.00
9	Furnish and Install Air/Vacuum Valve	EA	3	\$ 756.00	\$ 2,268.00
10	Replace Building HVAC and controls	LS	1	\$ 93,636.00	\$ 93,636.00
11	1500 kVA 2400 volt to 480 volt step down transformer	LS	1	\$ 75,600.00	\$ 75,600.00
12	2400 volt feeder	L.F.	900	\$ 82.36	\$ 74,124.72
13	Handhole	EA	3	\$ 6,480.00	\$ 19,440.00
14	Control / Status cabling	L.F.	400	\$ 32.86	\$ 13,143.60
15	New fused feeder	LS	1	\$ 6,480.00	\$ 6,480.00
16	Service Entrance Disconnect	EA	1	\$ 23,457.60	\$ 23,457.60
17	480 volt Distribution Panel (2k amps)	EA	1	\$ 73,560.96	\$ 73,560.96
18	Backfeed Existing MCC (400 amps)	L.F.	60	\$ 122.40	\$ 7,344.00
19	2500 amp feeder	L.F.	120	\$ 882.54	\$ 105,904.80
20	Pump Feeders (310 amps)	L.F.	150	\$ 122.47	\$ 18,370.80
21	Epoxy coat the floors	SF	5,300	\$ 3.24	\$ 17,172.00
22	Patch the clear well and paint	SF	11,760	\$ 8.64	\$ 101,606.40
23	Install clear well vent	LS	1	\$ 2,700.00	\$ 2,700.00
24	Repair existing pump building roof and install vinyl soffit	LS	1	\$ 27,000.00	\$ 27,000.00
25	Furnish and Install Reinforced Fiberglass Doors	LS	1	\$ 18,360.00	\$ 18,360.00
26	Furnish and Install 10" Pressure Relief Valve	EA	1	\$ 15,120.00	\$ 15,120.00
27	Furnish and Install valve vault and 24" Hydra-stop valve	LS	1	\$ 59,400.00	\$ 59,400.00
Construction Total					\$ 1,356,518.88
Contingency (10%)					\$ 135,951.12
Engineering					\$ 97,900.00
Resident Project Representative					\$ 32,100.00
ODEQ Permit					\$ 1,530.00
Financial Advisor					\$ 20,000.00
Bond Counsel					\$ 20,000.00
Local Counsel					\$ 10,000.00
Trustee Fee					\$ 500.00
CPA					\$ 2,500.00
Total Project Cost					\$ 1,677,000.00



MEHLBURGER BRAWLEY

THE MERGING OF NRS, INC.
THE MEHLBURGER FIRM - BRAWLEY ENGINEERING CORP.

Green Costs

City of Shawnee

Date: 8/18/10

Page 1 of 1

Shawnee WTP High Service Pump Improvements

Item	Description	Unit	Qty	Unit Price	Total Price
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2	250 HP VFD w/ AC	EA	3	\$ 60,912.00	\$ 182,736.00
3	Replace Building HVAC and Controls	LS	1	\$ 93,636.00	\$ 93,636.00
4	Repair existing pump building roof and install vinyl soffit	LS	1	\$ 27,000.00	\$ 27,000.00
Green Total					\$ 594,972.00