



# Storm/Sewer Infrastructure Maintenance and Repair in the Right of Way



Mike Guerin- President and CEO

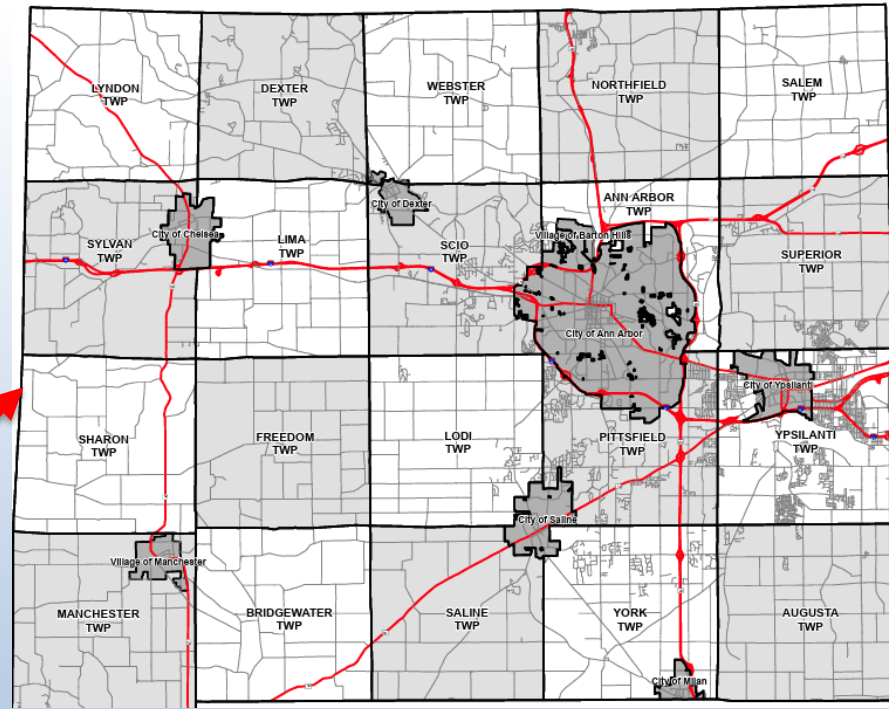


Adam Lape- Director of Operations



Ken Harris- Superintendent of Maintenance

# Washtenaw County



- 1,650 Centerline Miles
- 743 miles unpaved
- 598 miles MDOT contract
- 136 employees
- 2,798 Culverts
- 7,181 Structures
- 20 Townships



Before Heavy Rain



During Heavy Rain

# Why do storm sewers fail?



- Installed incorrectly
- Water and Ice
- Naturally deteriorate over time
- Clogged drains

# Cost breakout

## Tear out (2 hrs)

| Qty           | Equip/Labor        | Cost/Hr  | Overall Cost      |
|---------------|--------------------|----------|-------------------|
| 1             | Backhoe w/Operator | \$145.08 | \$290.16          |
| 1             | Group Leader w/Trk | \$82.36  | \$164.72          |
| 2             | HT Driver w/Trk    | \$150.51 | \$602.04          |
| <b>Totals</b> |                    |          | <b>\$1,056.92</b> |


## Form/Build (4 hrs)

| Qty           | Equip/Labor        | Cost/Hr  | Overall Cost      |
|---------------|--------------------|----------|-------------------|
| 1             | Group Leader w/Trk | \$82.36  | \$247.08          |
| 3             | HT Driver w/Trk    | \$150.51 | \$1,354.59        |
| <b>Totals</b> |                    |          | <b>\$1,601.67</b> |

## Pour/Backfill (1 hr)

| Qty           | Equip/Labor        | Cost/Hr  | Overall Cost      |
|---------------|--------------------|----------|-------------------|
| 1             | Group Leader w/Trk | \$82.36  | \$247.08          |
| 3             | HT Driver w/Trk    | \$150.51 | \$1,354.59        |
|               | Material (Varies)  |          | \$1,500.00        |
| <b>Totals</b> |                    |          | <b>\$3,101.67</b> |





Efficiency

Experience

Unforeseen Challenges

Sacrifices

Will you ever move the needle?

What's  
next



# Definitions

## Elastomer

- A material which at room temperature is capable of being stretched repeatedly at least twice its original length (200% to 700% elongation based on the formulation) and, upon release of stress will return to its original dimensions.

## Elastomeric

- The elastic, rubber-like properties of a material that will stretch when pulled and will return relatively quickly to its original shape when released

## Elastomeric Coating

- A coating system which, when fully cured, is capable of being stretched at least twice its original length (100% elongation) and recovering to its original dimensions.

## Pure Polyurea

- A pure polyurea coating / elastomer is derived from the reaction of a polyisocyanate compound and an amine-terminated resin blend.
- For reference purpose , a polyurethane / polyurea hybrid coating / elastomer is the reaction product of a polyisocyanate component and a resin blend component. The resin blend may be made up of blends of amine-terminated and / or hydroxyl-terminated polymer resins

# Spray Polyurethane Foam (SPF)



## SPF : THE REACTION



*Reaction of two basic chemical ingredients*

R - (N=C=O)X  
ISOCYANATE

+

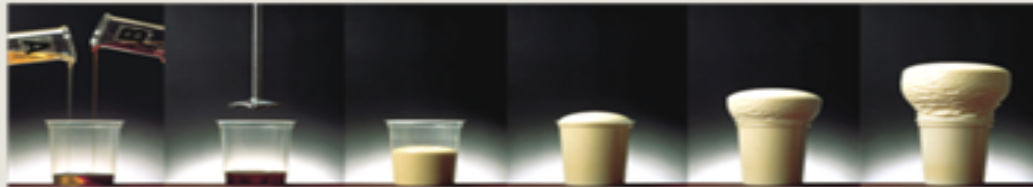
R' - (OH)Y  
POLYOL



O  
||  
R - N - C O - R'  
POLYURETHANE  
FOAM

Isocyanate

Resin Blend





1

### Flexibility and Strength

Exhibits remarkable flexibility  
- Ten times more flexible than epoxy  
exceptional strength, boasting a 20-fold increase over epoxy. This translates to a life expectancy of 20+ years, more than twice the life expectancy of an epoxy system.



2

### Rapid Cure Time

Allows a tank to be returned to full service within 24 hours after application compared to days for epoxy systems.



3

### Thermal Stability

Maintains its properties even under elevated temperatures. This feature ensures reliable performance in various environmental conditions.



4

### Seamless Water-Tight Membrane

Fast curing and flexible nature results in a seamless, water-tight monolithic membrane. Ideal for application on concrete or bolted tanks, it effectively eliminates leaks, providing a robust solution for containment.

# Is it Safe?




Landfill Safe

EGLE

Not a Hazardous Waste

# Reports



[www.HMICompany.com](http://www.HMICompany.com)  
800-626-2464

## HydroFoam 402 Leaching Study

IDENTIFYING POTENTIAL ENVIRONMENTAL HAZARDS ASSOCIATED WITH THE LONG TERM USE OF HYDROFOAM 402 POLYURETHANE FOAM

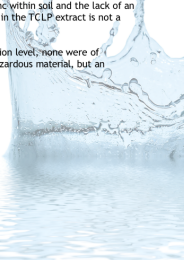
**INTRODUCTION**  
Upon the release of HydroFoam 402 (HF 402), a new type of hydro-insensitive geotechnical polyurethane foam especially for use in wet environments, HMI has sought to determine any environmental hazards that may be caused by the application and long term use of this foam. The following test was performed to characterize the leaching behavior of HF 402. The term "leaching" refers to the extraction of constituents from a certain material to a liquid. More specifically, the test determines the possibility that HF 402 could contribute any hazardous substances to its surrounding environment over time.

**EXPERIMENTAL**  
An extensive solid waste characterization was done to identify long term disposal hazards associated with HF 402. A Toxicity Characteristic Leaching Procedure (TCLP) was followed in an effort to simulate the possible leaching that HF 402 would undergo if disposed of in a landfill. Accelerated aging and landfill conditions were simulated by crushing the sample and tumbling it for 18 hours in a acidic/basic solution.

The testing protocol used was the EPA's SW846, "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods", in accordance with the Resource Conservation and Recovery Act (RCRA). The strict testing procedure and protocol were selected for this study as a simulated landfill environment would represent the worst possible conditions HF 402 could encounter in its typical geotechnical applications. The table on the reverse side shows the results from the third party TCLP testing.

**DISCUSSION**  
Zinc was the only analyte in this test that was detected. However, the "detected" concentration was assigned a "J" data qualifier. The "J" data qualifier signifies that the concentration is so low that the result is considered to be an estimate. The concentration was between the MDL and RL thresholds, meaning that zinc is likely present, although its concentration is below what the method/instrument can accurately measure. The estimated concentration (0.025 mg/L) is many times lower than the typical zinc concentration found in most soils. Due to the natural amount of zinc within soil and the lack of an EPA regulatory level given for this analyte, the zinc concentration found in the TCLP extract is not a concern.

Of the analytes tested in which the EPA has set a regulatory concentration level, none were of detectable concentration. This not only verifies that HF 402 is a non-hazardous material, but an environmentally safe choice of material to use when water is present.



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- New type of hydro-insensitive geotechnical Polyurethane Foam especially for use in wet environments.
- Of the analytes tested in which the EPA has set a regulatory concentration level, none were of detectable concentration
- This is not only verifies that HF 402 is a NON-HAZARDOUS material, but an environmentally safe choice of material to use when water is present.





Adobe Stock | #115735508



# Catch Basin, Storm Water Repair



**B  
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e**



**A  
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**R**  
**I**  
**S**  
**K**



# **HIMI**<sup>TM</sup> **HYDROFOAM**

The Contractors 1st choice for  
Slabjacking & Deep Foamjection.



**HIMI**  
No Shrinkage after  
30 days in water

VS Competitor  
30-50% Shrinkage  
after 30 days in water

# #1 TRUSTED FOAM



**HIMI**  
Clear Water!

vs Competitor  
Chemicals  
leaching into water



**HIMI** VS Competitor  
Soft and Crumbly

## DOES YOUR FOAM PASS THE TEST?

# Geo- Polymer Applications



- Been in place for 30 years

# Geo-Polymer Applications



## Trench Breakers

- Zero Sandbags
- Used extensively throughout the oil and gas industry.

# Emergency Substation repair



# Void Fills



City of Ann Arbor Parking Structure Void Fill



City of Auburn Hills Bridge Approach Fill

# Catch Basin Repairs (Before)



# Catch Basin Repairs (After)





# Joint repair





# Culvert repairs



# Culvert Repair Cont.



# WCRC and Havenertech Cont.



# Horizontal Jack and Bore

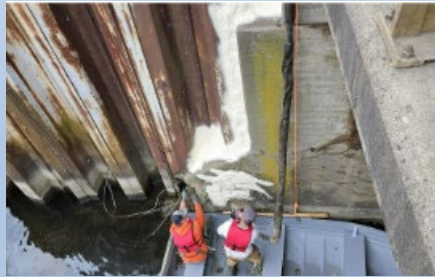


Prevention of running sands and loose soils

# Headwall Repair



# WCRC and Havenertech



# Part 5 Rules Salt Requirements



Threshold Management Quantities:

5 tons / 1000 gallons (1% or more salt)

“Secondary containment structure” means a unit, other than the primary container in which polluting material is packaged or held, that is designed, constructed, and operated so that the polluting material cannot escape from the unit through public sewers, drains, or otherwise directly or indirectly into any public sewer system or to the surface waters or groundwaters of this state.

Pollution incident Prevention plan required to identify procedures needed to properly contain the salt and address releases and inventory salt storage.

# Secondary Containment





# Case Studies

Available upon request.



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GOOD PEOPLE, GREAT SCIENCE

## HAVENER TECH CASE STUDY

The Hanson Group offers a wide range of additional applications to meet diverse needs across various industries



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**WHERE** do we go  
from **HERE?**



Q&A

You have

Questions

We have

Answers