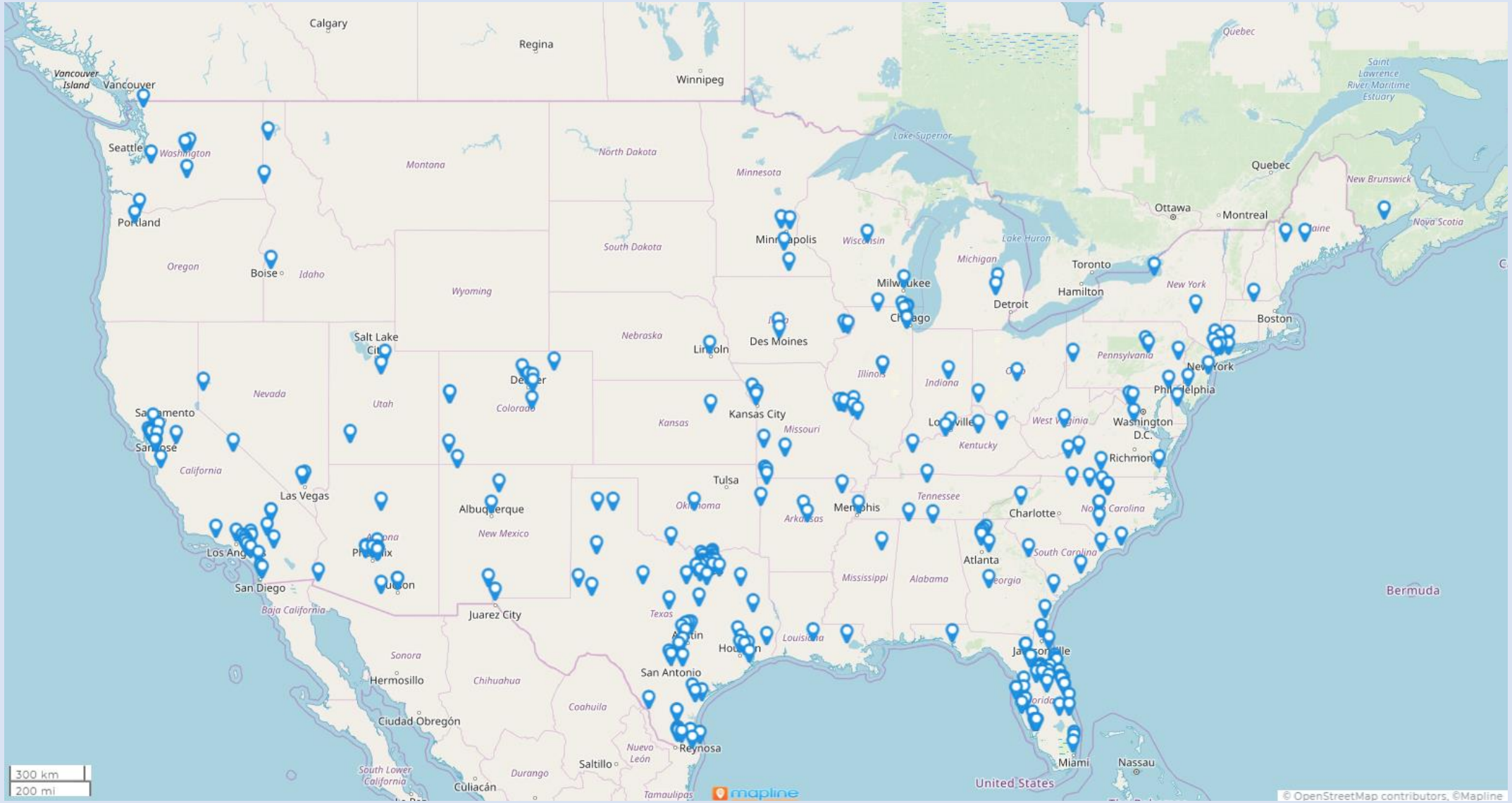
# COMPOSITE MANHOLE COVERS

## OFFERING NEVER-SEEN-BEFORE INFRASTRUCTURE TOOLS AND SOLUTIONS

*SPE TOP CON 2023*

*W. Chad Nunnery*
*President and Owner*
*Composite Access Products (CAP)*

# Installed in over 500 US Cities!



HOUSTON PUBLIC WORKS

07/14/2022

Chad Nunnery
Composite Access Products, L.P.
5216 N. 26th St.,
McAllen, TX 78504

**RE: Product Review of Composite Access Products; Application No. R320**

Dear Mr. Nunnery:

This letter serves as a supplement on previous correspondence on this subject dated March 19, 2020. The City's Standard Wastewater Product Approval Committee has completed its review of your application for the referenced product.

This product can be approved for use outside of roadways and on roadways with a maximum speed limit of 45 mph.

However, this product will not be included on the Approved Products List until Specification No. 02091 Non-Metallic Manhole Frame and Cover be updated to include the restricted speed.

The Committee understands that the standard detail for Specification No. 02091 calls out an exact 30" opening and finds the 30.04" opening for the subject product to be acceptable.

A supplemental specification can be used to incorporate the above stated requirement for this product category on a project specific basis.

Should you have any questions, please contact me at (832) 394-9100 or Sahar Beigzadeh at (832) 394-9571

Respectfully,

Mary Bac, P.E.
Managing Engineer
Design and Construction Standards
Office of the City Engineer
Houston Public Works

MB:sb

ec: Suhail Kanwar, MS, PE.,
HPWproducts@houstontx.gov
Wastewater Product Approval Committee Members:
(Markos Mengesha, Mohammad Haider, Raghavender Nednur,
Daniel Oefner, Jessica Ponton, Fred Lytton, Robert Miles






Texas Department of Transportation
6230 E Stassney Ln | AUSTIN, TEXAS 78744 | (512) 463-8700 | WWW.TXDOT.GOV

11/23/2022

W. Chad Nunnery
Composite Access Products L.P.
5216 N. 26th Street
McAllen TX, 78504

Re: RTI New Product Evaluation Tracking #16-2979
"Composite Manhole Cover and Frame"

Dear Mr. Nunnery:

Thank you for submitting your product for evaluation. The Texas Department of Transportation's (TxDOT) Maintenance (MNT) and Bridge (BRG) Divisions has reviewed your request for approval of the Composite Manhole Cover and Frame along with the approved HS-20 and HS-25 testing. TxDOT approves the use of the Composite Manhole Cover and Frame.

A Special Specification will be required for the TxDOT District's use, to include, at a minimum, addressing measurement and payment, materials, loading, wear and abrasion, UV exposure, friction, and bolting/locking mechanisms.

This product shall be added to the Approved Product List under the TxDOT Product Evaluation page and expires three years from the date of this letter and shall need to be recertified at that time.

This letter shall not be considered a product endorsement, nor shall it be used for promotional purposes.

Thank you for contacting the Texas Department of Transportation. If you have further questions, please contact us at 512-416-4738.

Sincerely,

Martin Dassi
Research Project Manager, RTI

cc Taya Retterer, BRG

# I&I CAN RESULT IN SSOs
# A LEADING SOURCE OF POLLUTION

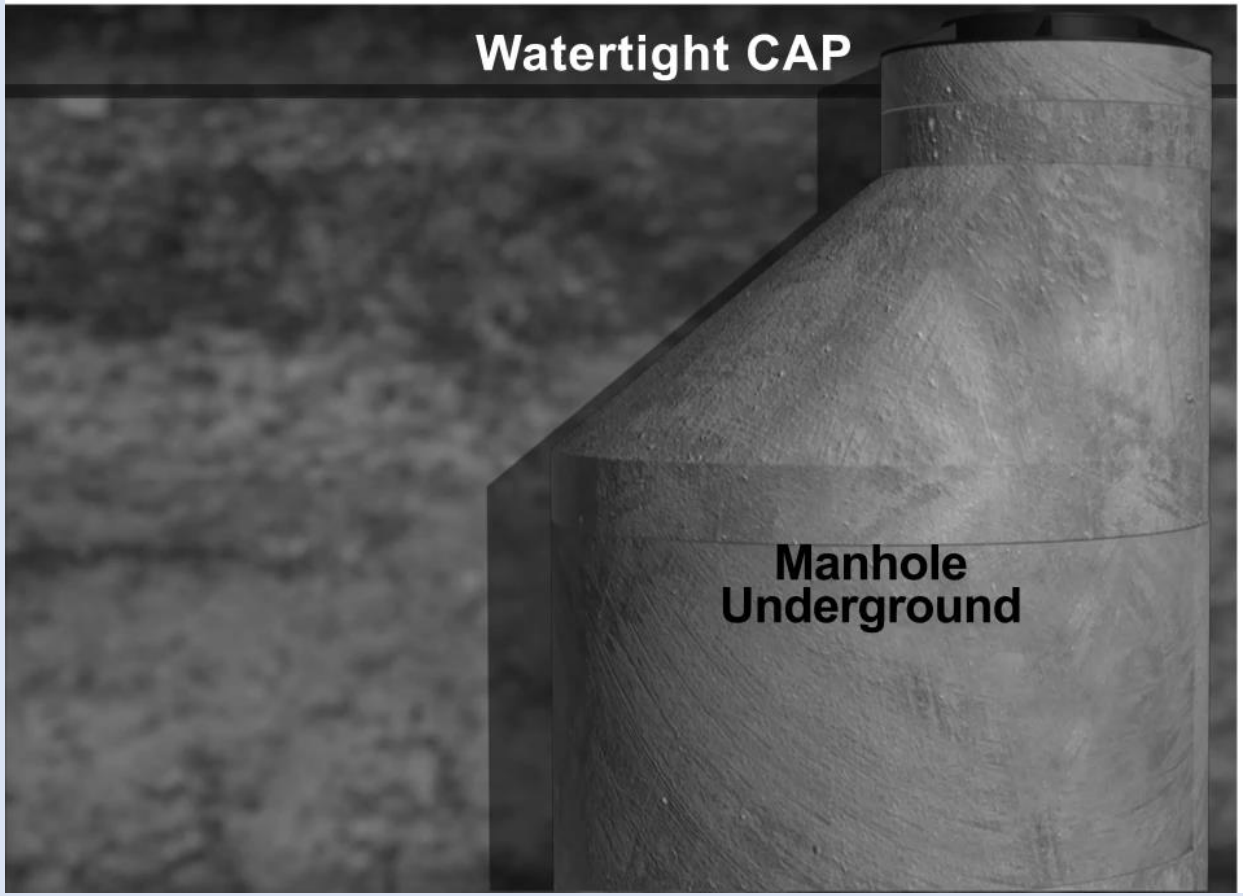
*<u>32 TRILLION GALLONS PER YEAR</u>*
OF POLLUTED WATER FROM
SEWAGE, CHEMICALS, AND WASTE

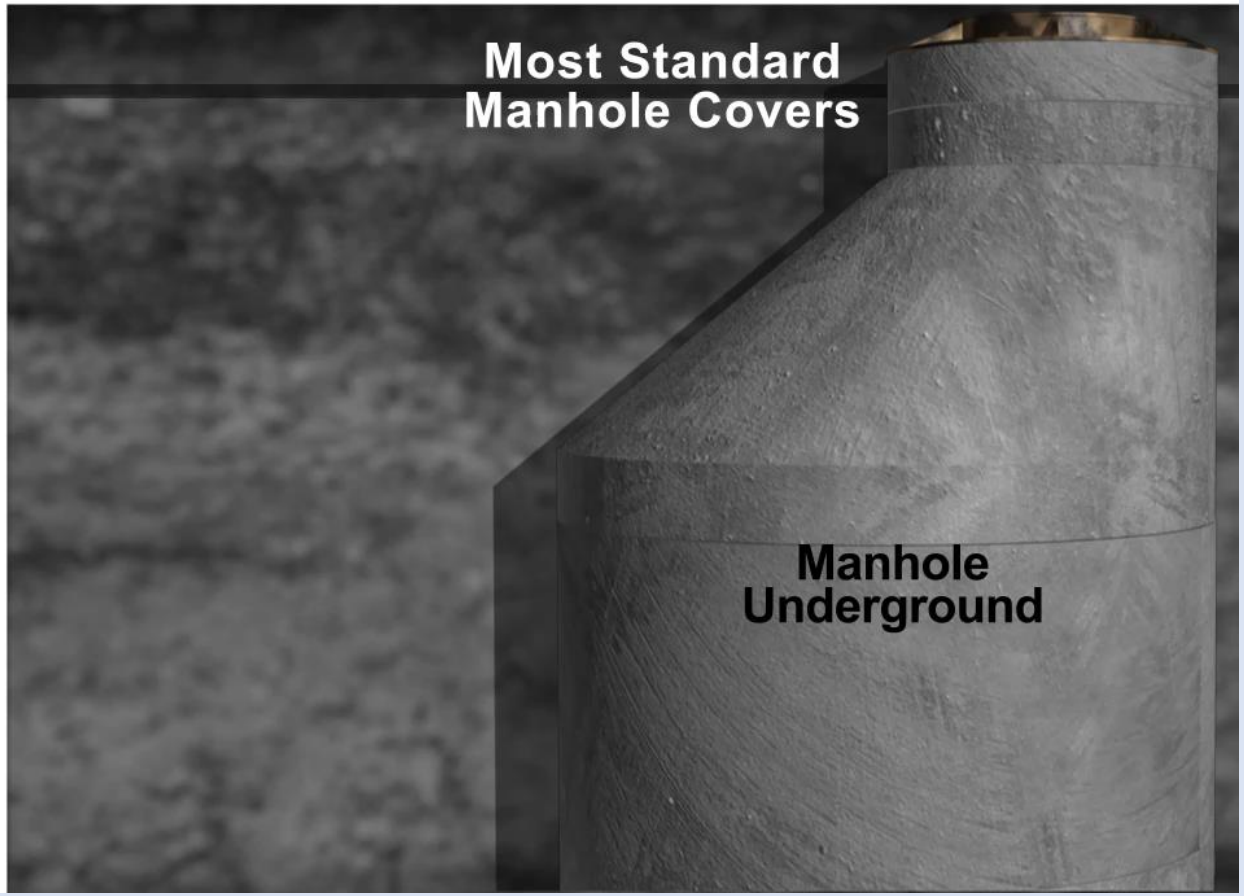
*-Nature Conservancy, Summer 2019 Issue*

Composite Access Products

## CAP Watertight Covers Stop Inflow & Eliminate Sewer Spills

## Fresh Water Pollution from Storm Water Inflow & Sewer Spillovers with Traditional Manhole Covers



# Inflow Through Some Standard Covers Today = about 45 - 60 GPM

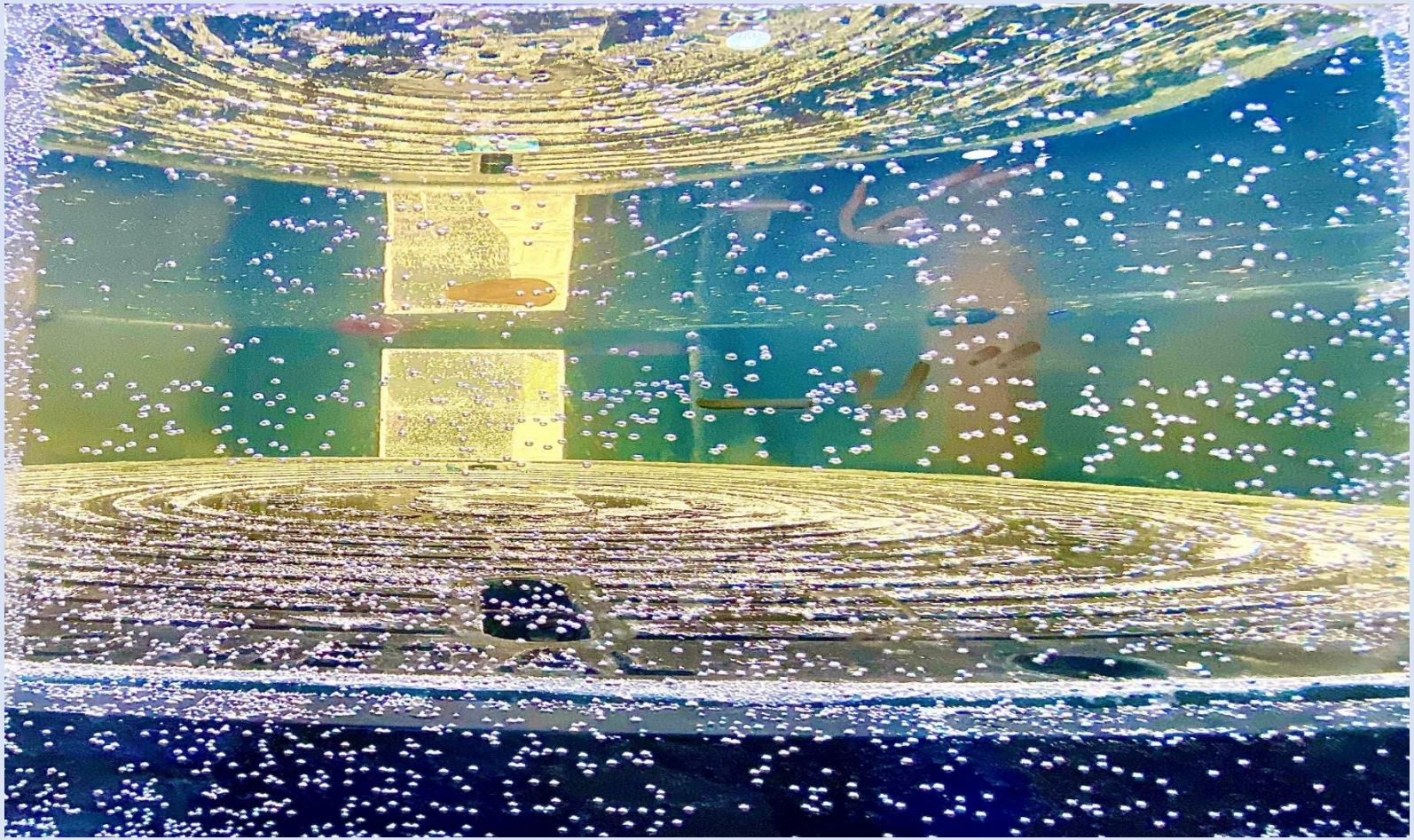
If submerged year-round, this one manhole assembly would contribute 23 million gallons of inflow!!!

# Watertight Composite Covers – 0.0 gpm

- New Construction
- Floods
- River Overflow
- Rising High-Tides
- Snow Run-Off

Installing below grade can submerge

# SUBMERGED WATERTIGHT ASSEMBLY



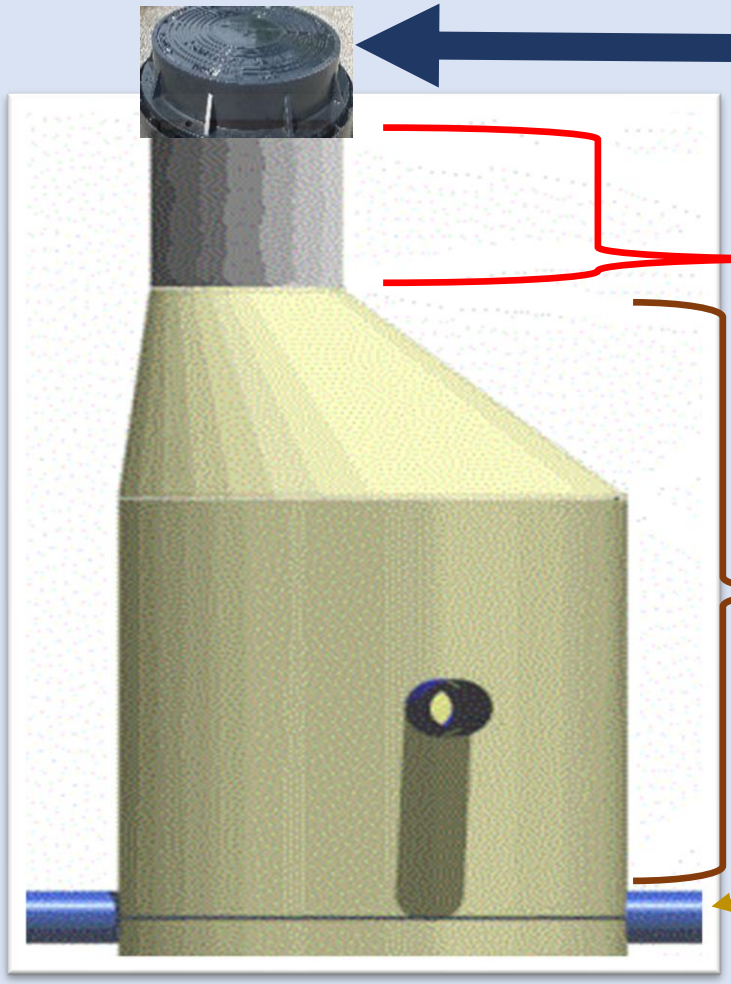
(The only certified watertight composite manhole cover assembly with a 36-inch clear opening)

# CASE STUDY: Fulton County Makes The News "First Watertight System in Georgia"



https://www.youtube.com/watch?v=2Ttm2AUKSB0&feature=youtu.be

# THE CORROSION RESISTANT & WATERTIGHT POLYMER SOLUTIONS



***Composite Cover & Frame:***

- *Compression Molded (BMC, SMC)*
- *Resin Transfer Molded (RTM)*

***Riser/Grade Rings:***

- *Rubber, PE or Foamed PP*

***Manhole Cone and Column:***

- *Polymer Concrete*
- *Filament Wound*
- *PVC*

***Pipe:***

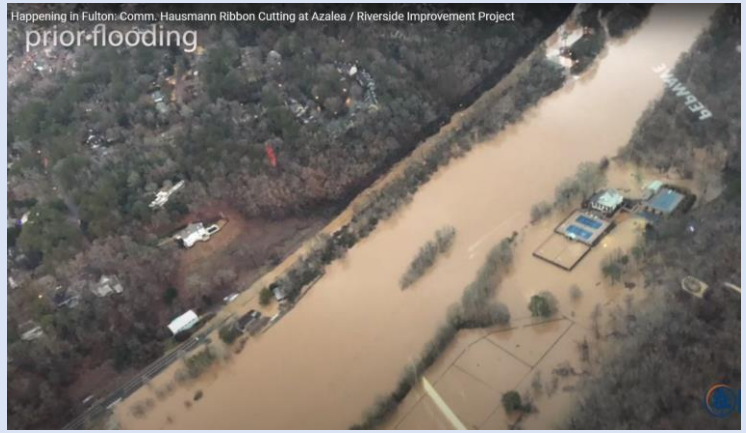
- *Cured In Place Piping (CIPP), PVC*

# I&I reduction results to date

- **After installation -50 % reduction in pump run times.**
  - **Note – some lift stations consume *$6000/month* of electricity**
- **ELIMINATED sewer spillover 100%**




# CASE STUDY: FULTON COUNTY *ELIMINATES* SPILLS INTO CHATTAHOOCHEE RIVER






"We have recently experienced a large rain event and for the first time in the history of the county we had no sewer spills, none what so ever. It had been an ongoing problem for over 30 years and we are proud, through a team effort, to have reached that milestone."

-Roy Barnes

Deputy Director Public Works (May 2021)

https://www.youtube.com/watch?v=YqI0x8dKW1Q

# I&I Costs of Standard Covers Solved by Composite Covers…Beyond the Price Tag

- $ **Electricity cost for higher (double) lift station pump run times –**

  ***Municipalities report $6,000/mth electric bills each lift station!****

- $ **Rain Guards to reduce I&I ($50-$160 per unit)**
- $ **Added Wastewater treatment operation costs**
- $ **EPA fines from SSO events**
- $ **Higher capital investment to manage I&I rainfall peaks with larger treatment capacity**

# Corroded Covers Stick to Frames Requiring Unsafe and Damaging Practices

# H2S and Subsequent Impact Mechanically Degrade Covers and Frames

Hammer Time!

The seat for the cover is completely degraded and the frame ID is flush. The Cover is virtually riding on air!

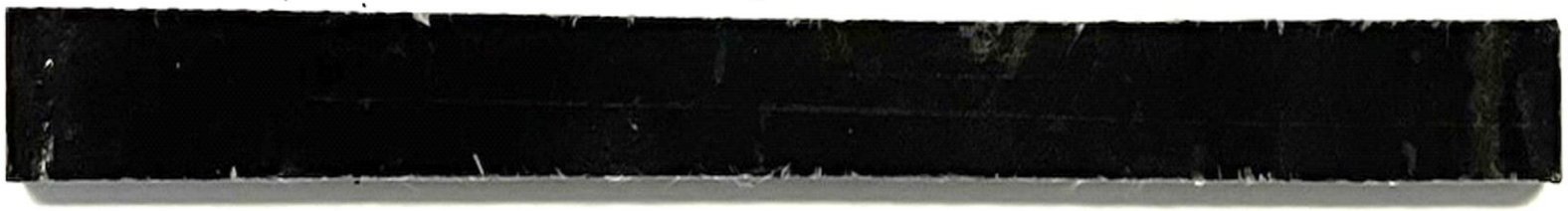
Recent photo of Iron Cover Dropping into Corroded Iron Frame

# After Eight Months in the Sanitary Sewer…

*(Mechanical Property Lab Test Specimens Shown Below)*

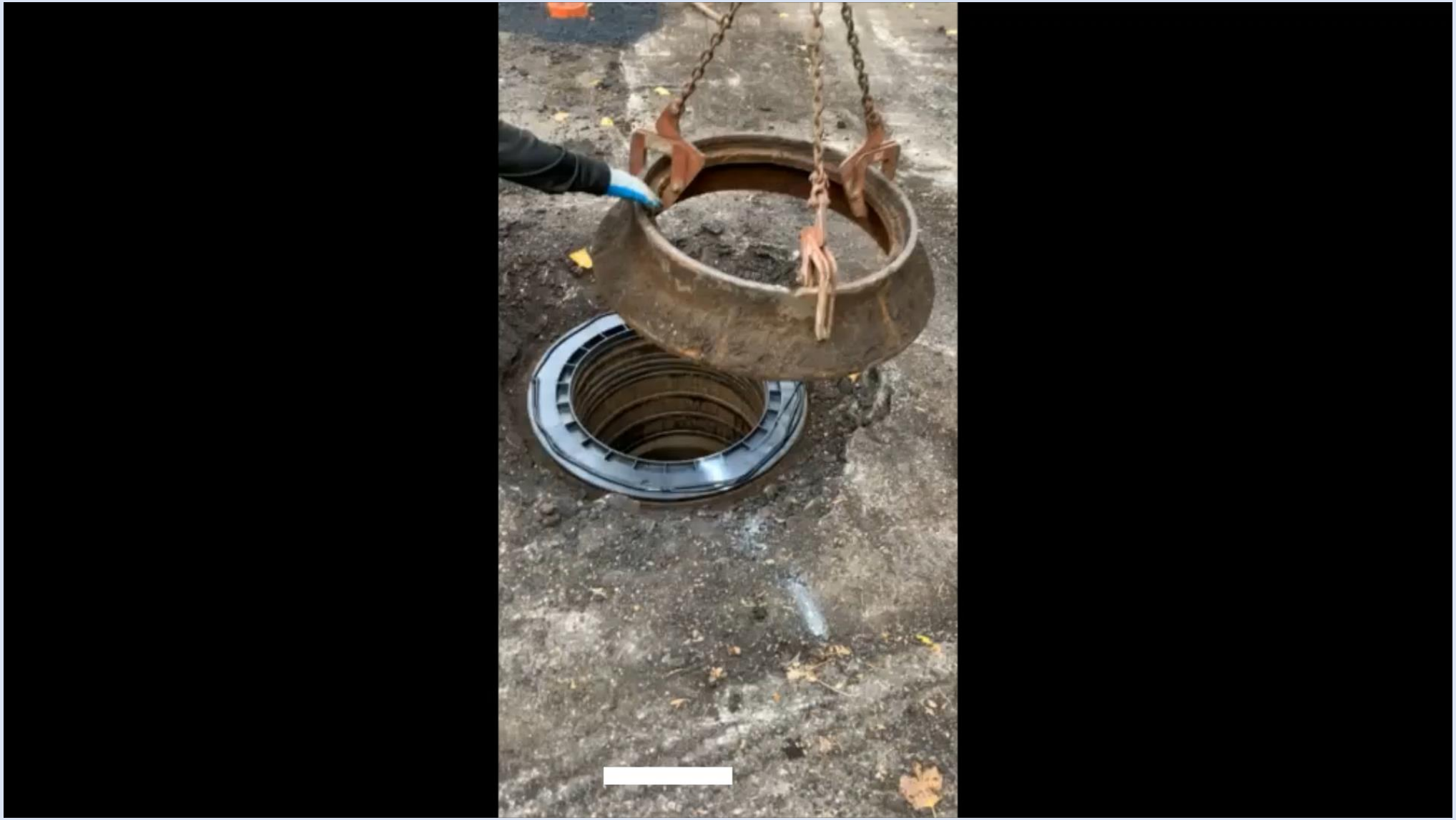
**Cast Iron**

**CAP Composite Material**



## Are manhole covers in your city's roads still traffic-rated?

# Safer Weight



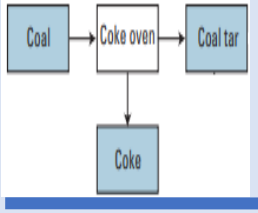
# Energy Consumption & Carbon Footprint

| | Casting Iron | Molding Composites |
|---|---|---|
| **Temperature** | 2700 F | 120F – 270 F |
| **Fuel Source** | High Carbon "Coke" | Natural Gas |
| **Upstream Raw Materials** | >95% Iron Ore | Abt. 40% Mined Inorganics |
| **Lift Station Efficiencies** | 20,000 - 30,000 Kwh/year *per lift station* | 15,000 kwh/year (½ electricity used) |
| **Freight Fuel Savings** | 70 assemblies / truck maximum | 240 units / truck (1/3rd # of trips) |
| **Future Reuse** | Remelt at 2700 F | Mill/Regrind into filler |

# Many Other Environmental Impacts

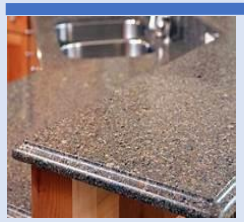
**Composite processes reduce hazardous chemical emissions.**
**(Some casting processes produce dangerous toxins: carbon monoxide, hydrogen sulfide, sulfur dioxide, nitrous oxide, and benzene – a known human carcinogen)**

**US reporting and regulations for disposal, emissions, clean energy.**
**(e.g. many traditional covers made w/o US regs)**



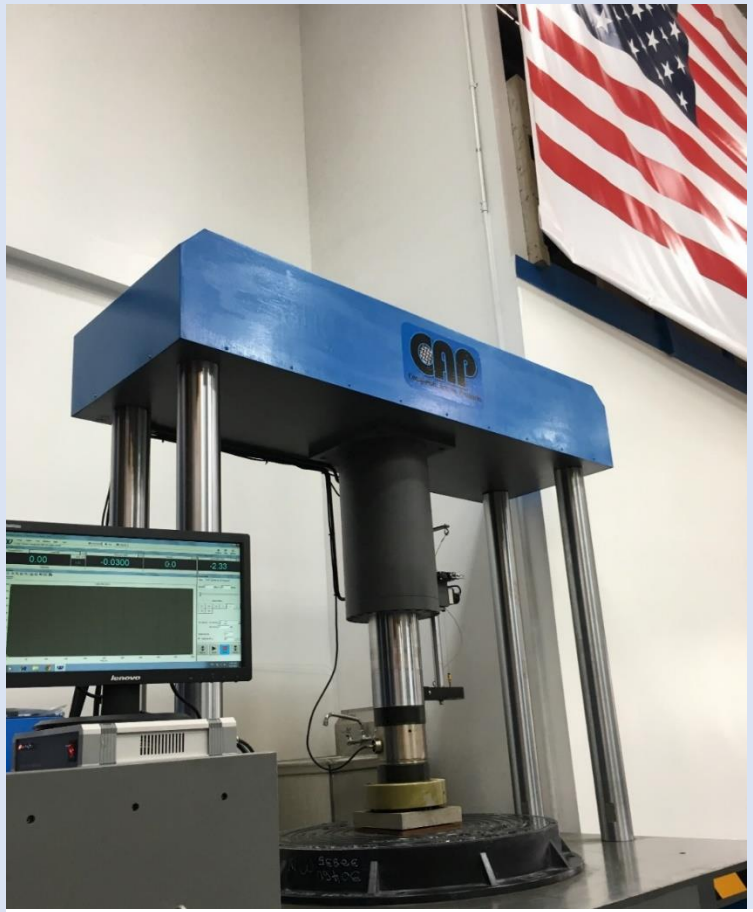

**No chemical coatings for corrosion resistance.**
**(e.g.,Coal tar coatings: carcinogen, kill aquatic life, banned in several states and cities. USGS)**

**Watertight to help reduce the #1 cause of water pollution– SSOs**



**Composites can be recycled though there is no scrap market like metals.**
**(e.g. solid surface and cultured marble products. Reground composite used in GM 3800 valve)**

# Proof Load Testing



Proof Load Test Equipment

- **AASHTO H25 PROOF LOAD TESTING – Independent Lab (UTRGV)**

**“Passed with flying colors”**

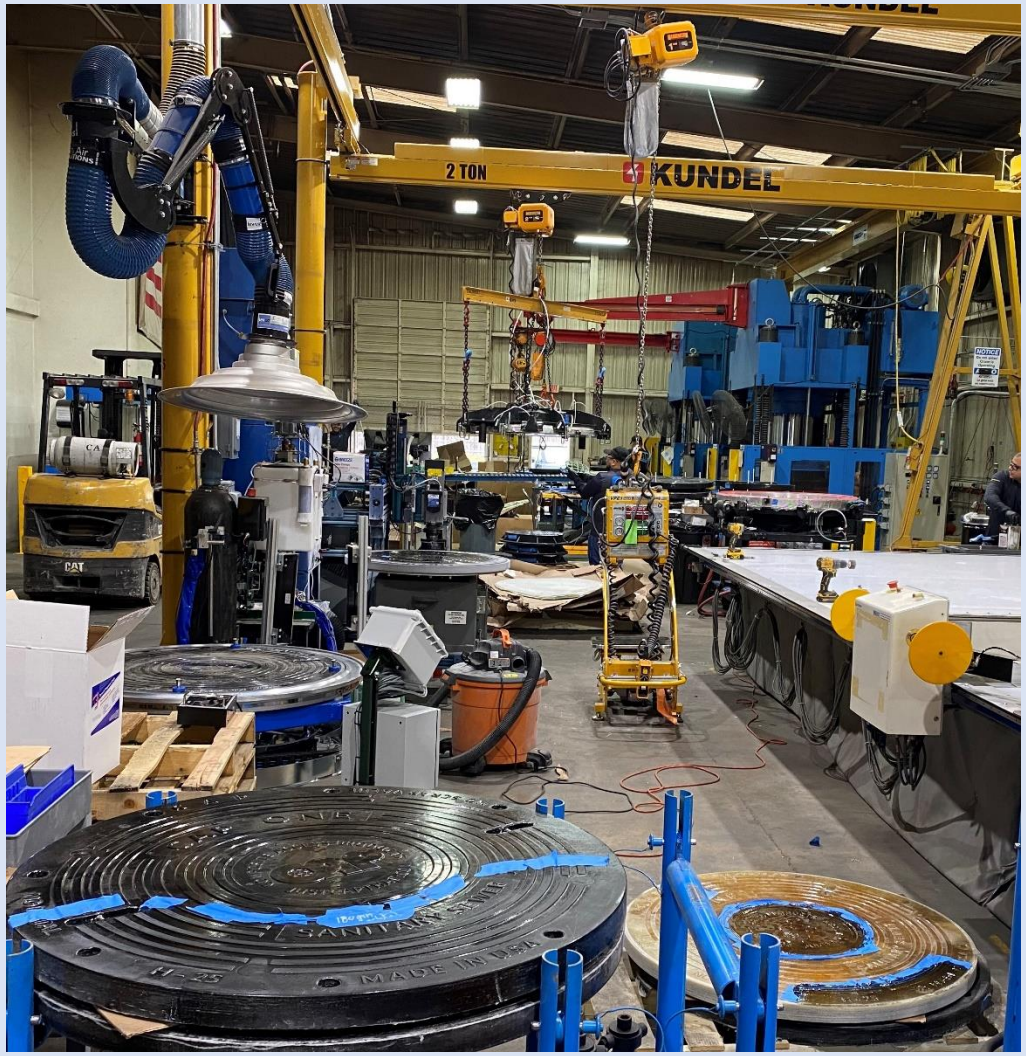
- **Cover Resists More than 100,000 lbs!**

**“Cover shows... remarkable retention of strength”**

**Dr Robert E. Jones**
Professor
Undergraduate Program Coordinator
Department of Mechanical Engineering
(956) 665-5019 robert.jones@UTRGV.edu

Brownsville • Edinburg • Harlingen

# THE NEW CAP ONE - 36





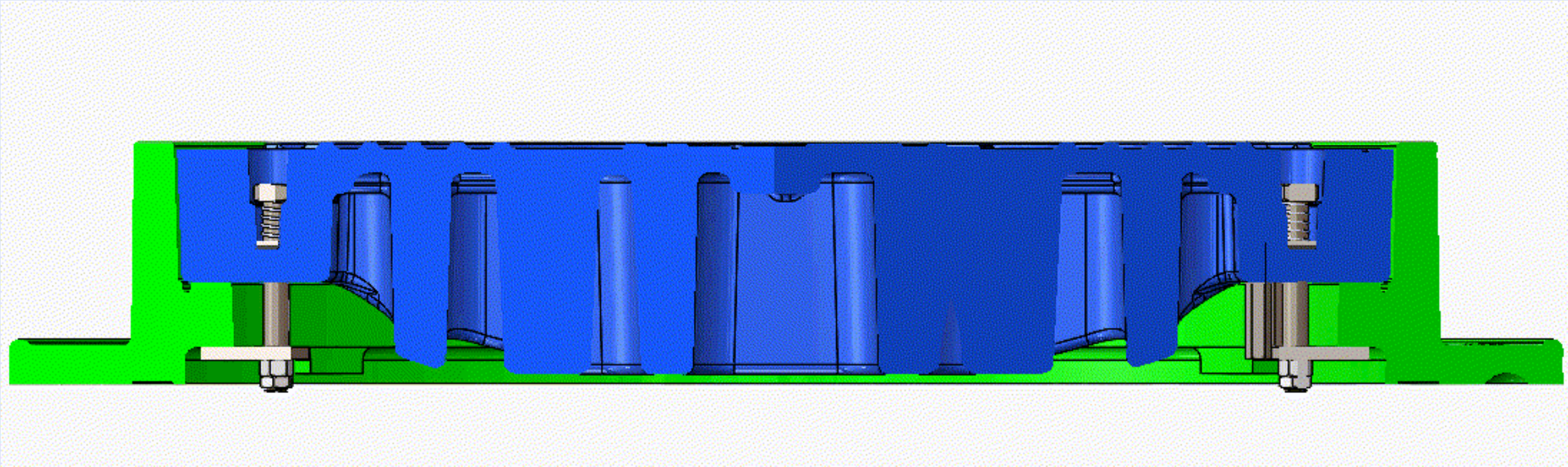

# FATIGUE TESTING

## CAP's 41 inch RTM Cover and 36-inch Clear Opening Compression Molded Frame

# Intricate Molded-In Logos

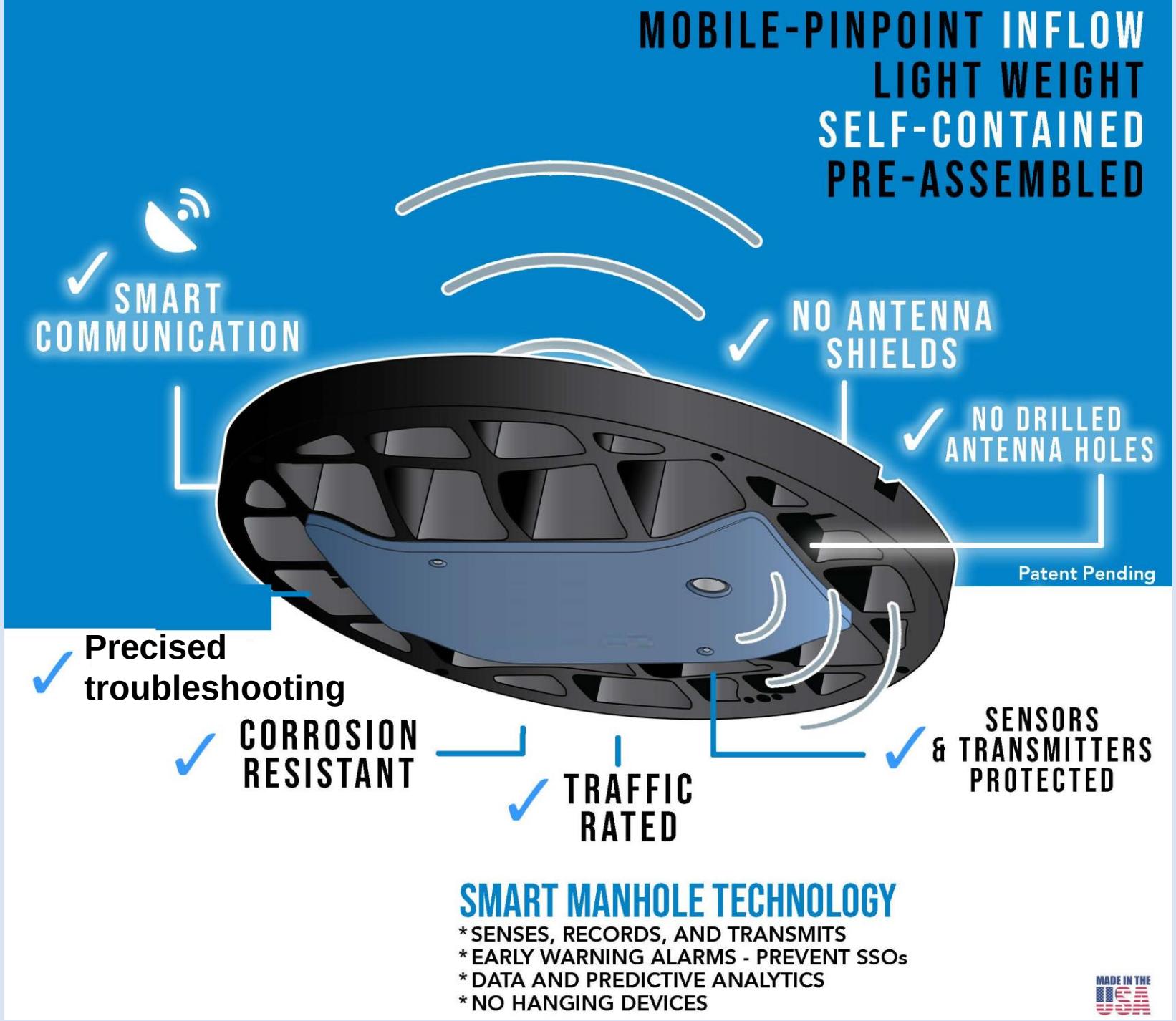
# Metal Detected Composite Covers Possible! (Patented)


# Spring-Loaded Paddle Lock Fastener Surcharge Release Feature

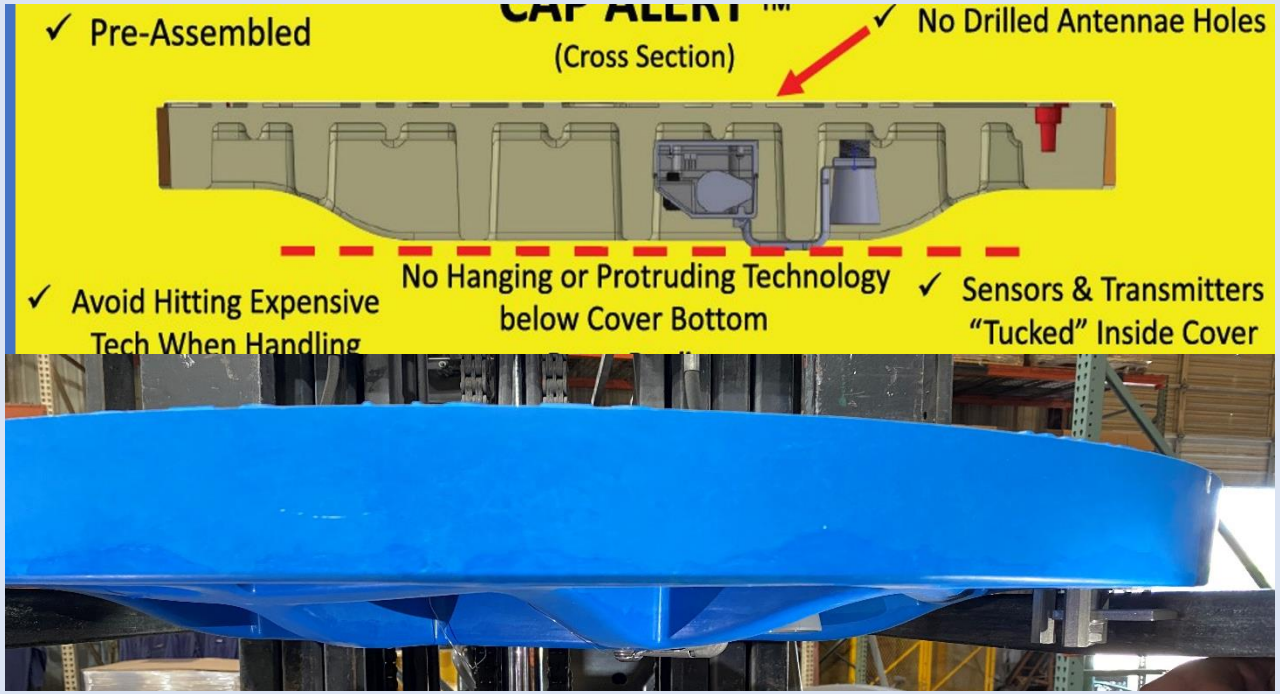


# Cellular Transmission Through the Cover (No Antennae Hole) Validated

# High-Tech Manhole Covers



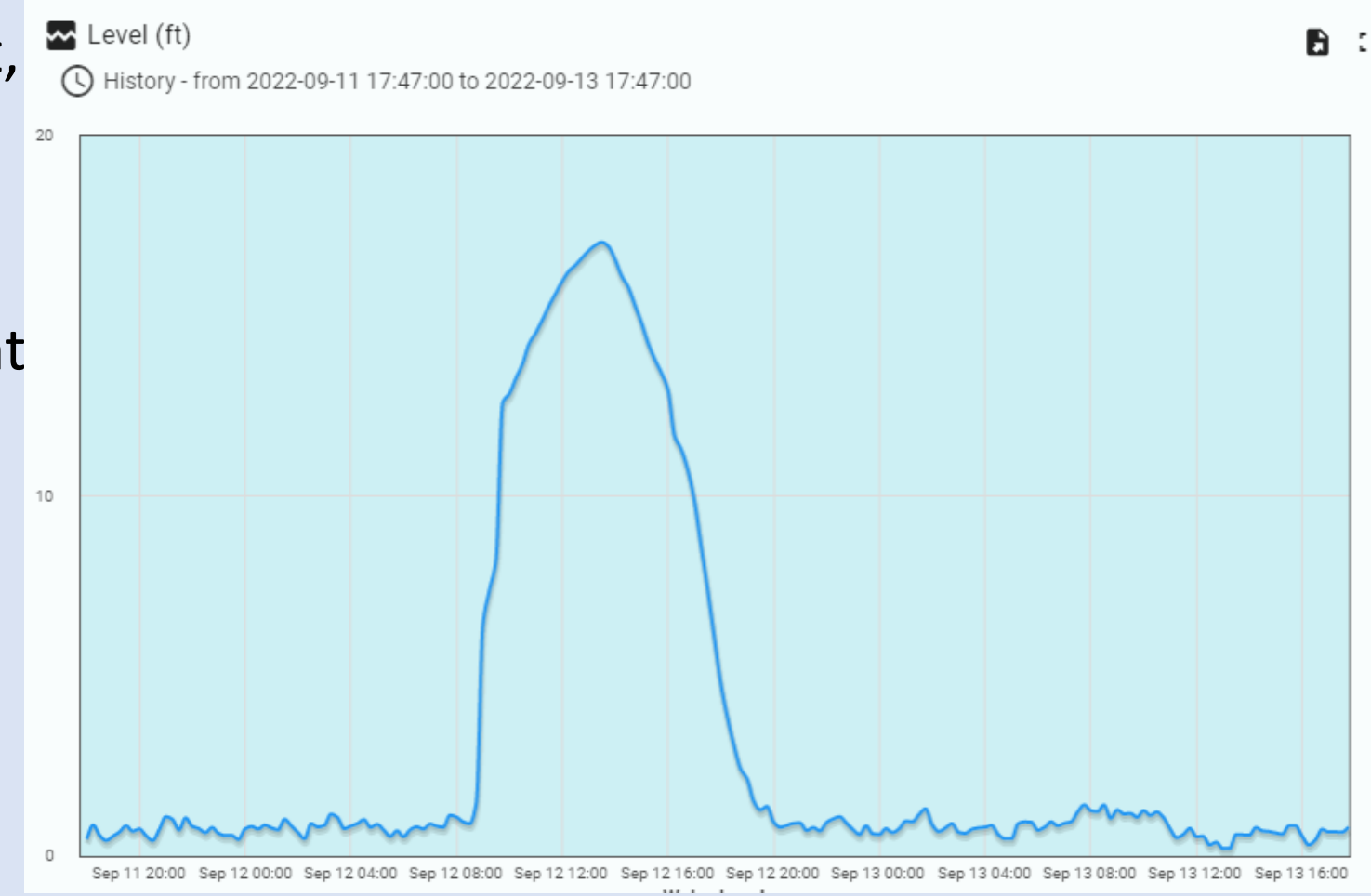
# FUTURE OF MANHOLE COVERS





# Example of Fluid Level Spike
# 6 inches to 17 feet

- Inflow from Rain, Tides, Snow Melt, River Overflows
- Downstream Lift Station Power Outage
- Upstream Lift Station more efficient than downstream
- Cleanout of Downstream Lift Station
- Hydrant Flushing near Sanitary manhole
- Blockage



# The “CAP CLAW” Helps Product Utilization

# Best ROI Using CAP Composite Covers…

- ✓ Around lift stations
- ✓ Holes with air release valves (ARV, CRV)
- ✓ Flood plains
- ✓ Near storm drains – backups can inflow into Sanitary Holes
- ✓ Rivers and Streams
- ✓ Mountain bases receiving snowmelt
- ✓ Below-grade installs
- ✓ Grease Traps
- ✓ Coastal Areas
- ✓ Data Transmitting Manholes (AMI, Fluid Levels, etc.)
- ✓ Stadiums/Gathering points for Tamper Resistance
- ✓ Electrical Utility Access for non-conductive properties
- ✓ Maintenance Vaults to prevent dewatering

# Thank you!

W. CHAD NUNNERY
President & Owner
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