

SIPHONIC STORM DRAINAGE

ACHIEVE MORE WITH LESS

 **MIFAB**®
HYDROMAX® 

SIPHONIC ROOF DRAINS



Embry Riddle Aeronautical University
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What is Siphonic Drainage

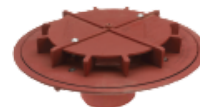
Traditional gravity drainage requires 2/3 air & slope to move storm water. Sloped pipes intrude on valuable livable space requiring numerous penetrations, vertical drops to ground level, and multiple civil connections.

In a siphonic system **pipes are designed to run flat and fill 100%, no air is needed. Pipe diameter & materials are reduced by half** and can be routed to a single civil connection.

Gravity drains require 2/3 air and large pipes



Siphonic drains utilize a baffle plate to eliminate air; pipes sized for 100% fill ratio, reducing pipe diameter by 1/2



How Siphonic Drainage Works

Siphonic storm drainage is based on the simple principle of a siphon with negative pressure, caused from the height of the building, to pull storm water off the roof. The bigger the difference the faster the flow.



Pipes are flushed at high velocity and self-clean as air exits the system.

No pitch, slope, or equipment needed. Less penetrations, vertical drops, trenching, civil connections, and site disturbance. Just think of what you can do with all that extra ceiling space.

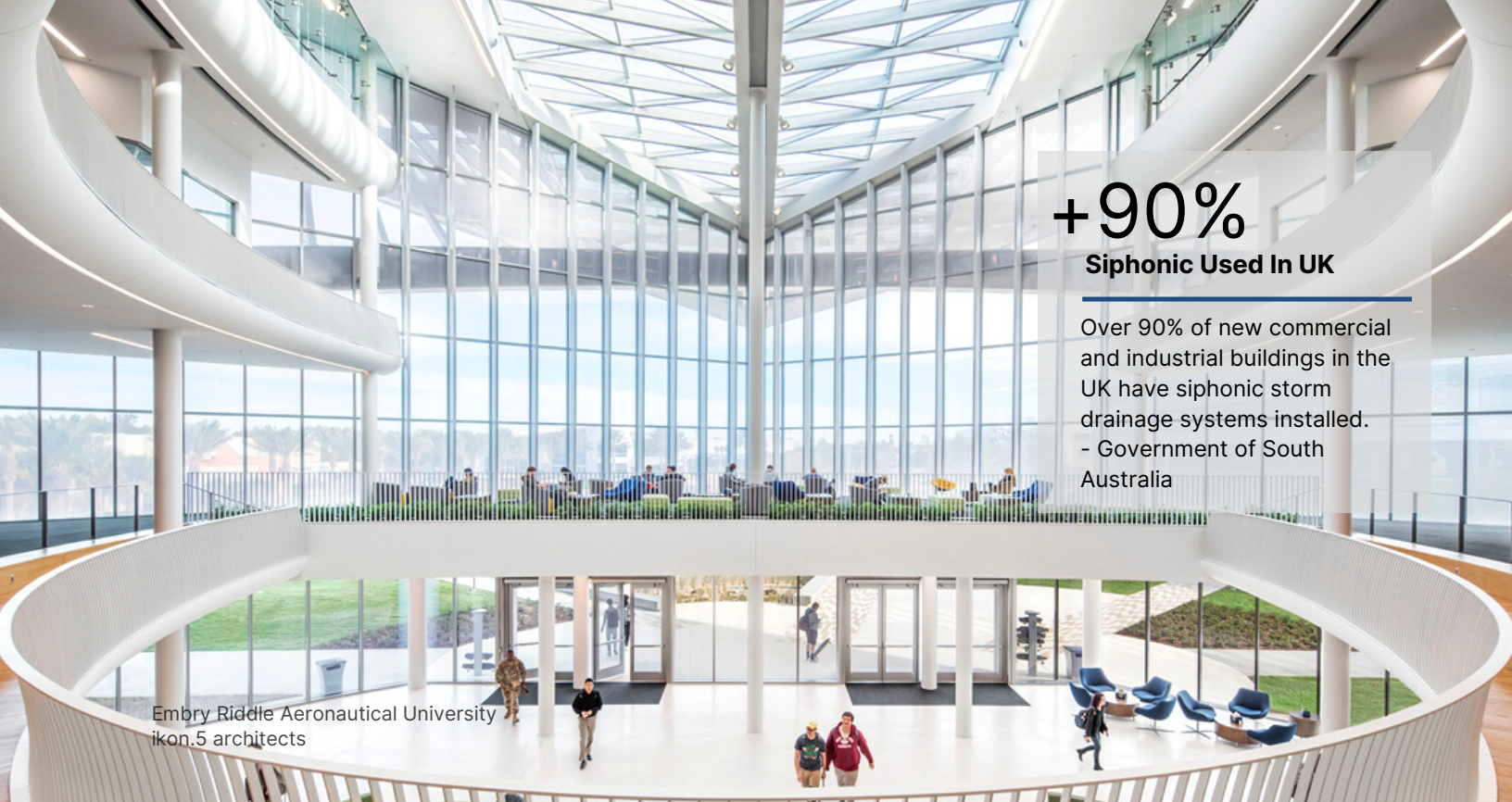
Pitch does not dictate design. You do.

What's Wrong with Pitch

1. More material required
2. More space required
3. Numerous vertical drops & penetrations
4. Added civil connections & site disturbance
5. Pitch dictates pipe routing & discharge
6. Increased building elevations
7. Added chases needed throughout
8. Ponding & clogs

Siphonic pipes run flat. By eliminating pitch and air smaller pipes stay in the ceiling, running to an exterior wall before discharging where you want.

Due to the lack of air, noise is reduced by up to 7% in full siphonic mode and water discharges up to 3x as fast. Siphonic drainage reduces ponding, clogs, and extends roof longevity.



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+90%
Siphonic Used In UK

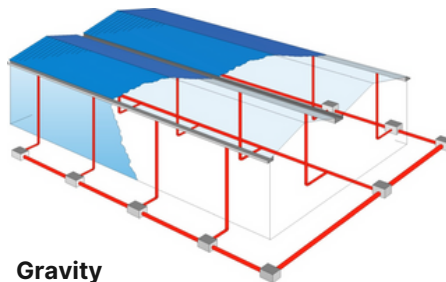
Over 90% of new commercial and industrial buildings in the UK have siphonic storm drainage systems installed.
- Government of South Australia

Less is More

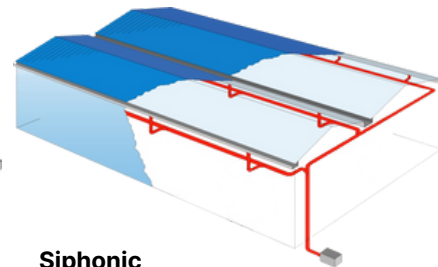
Siphonic roof, gutter, terrace, trench, and parking deck drains by HYDROMAX reduce vertical drops, civil connections, project cost, construction time, material amount, **increase site sustainability**, space and provide the owner with a design flexible storm water drainage system.

Gravity VS Siphonic

59,600 sqft. building



Gravity
1,600 ft of pipe
6"-18" diameter
12 downspouts, 10 manholes



Siphonic
1,000 ft of pipe
3"-9" diameter
1 downspout, 1 manhole

-50%
Reduction in
Pipe Size

-65%
Up to 65%
Less Pipe &
Material

Siphonic Drains Save Owner

- **Less cost** provides savings allowance for other scopes
- **Less install cost** with reduction of civil connections, trenching & site disturbance
- **More space**, increased ceiling height and fewer design restrictions and obstructions
- **Reduced construction time** and coordination with other scopes
- **Earn LEED points in 6 categories:** Sourcing of Raw Materials, Innovation in Design, Reduced Site Disturbance, Rain Water Management, Protect & Restore Habitat, Water Use Reduction
- **Easier to maintain** with self-cleaning system
- **Increased roof longevity** with reduced ponding & clogs
- **Pre-installation meeting** with installation team
- **Future additions**, allows easier integration for any future renovations or design changes

Architect / Engineer

- **Less cost** provides savings allowance for other scopes
- **More design freedom**, less vertical drops, drain locations, penetrations,
- **More space**, increased ceiling height and fewer design restrictions and obstructions
- **Increase site sustainability**, reduction of civil connections, trenching & site disturbance
- **Reduced construction time** and coordination with other scopes
- **Earn LEED points in 6 categories:** Sourcing of Raw Materials, Innovation in Design, Reduced Site Disturbance, Rain Water Management, Protect & Restore Habitat, Water Use Reduction
- **Complete coordination with MEP**
- **Complimentary design assist**, calculation, balancing, and bill of materials provided

*Savings amount varies by project.

DESIGNING WITH SIPHONIC

#1 MYTH

A siphonic roof drainage system requires additional ponding on the roof to submerge the drain.

False, siphonic drains actually produce less ponding than traditional gravity drains. At only ¼" of ponding on the roof, the siphonic action will start to take effect.

FREQUENTLY ASKED QUESTIONS

Is there a MIN vertical drop required from the roof drain?

No. There is nothing in the ASPE 45 Standard that dictates a MIN requirement. The limitation will be based on the dimensions of the fitting itself using the MIFAB HydroMax Siphonic Drains.

What is the minimum square footage for a siphonic drain to function?

Size is dependent upon rainfall rate; 2" rate requires minimum 1,107 sqft., 3" rate requires minimum 738 sqft., 4" rate requires minimum 554 sqft. (Based on model MH-300)

Can Siphonic Drainage be used on high rises? Is there a MAX Building height?

Siphonic Drainage can be used on any height project. There may be pressure limitations from the increased height, but there are several design options to handle each scenario.

Are any pumps required for the system to operate?

No. Siphonic Drainage utilizes the height of the building to generate negative pressure which pulls the water from the roof.

Does a Siphonic Drain require a debris guard/dome?

No. A siphonic drain generates a negative pressure pulling any debris towards the drain, and completely through the system. This self-scouring effect takes place with only a ¼" of ponding on the roof.

If the pipe runs flat, how does the water discharge?

Water always seeks to find its own low point, level. The water will flow towards the vertical discharge.

Why are we just now hearing about this? Why aren't more siphonic storm drainage systems used?

Lack of awareness and education, 100%. Widely used in Europe for over 50 years, siphonic is fully approved by ASPE & ASME, and is an engineered system. MIFAB provides all MEP coordination and complimentary design assist.

More questions? Want a complimentary design review or lunch-and-learn presentation? We got you.

Visit us at mifab.com to submit your project information and files. Contact Imaher@mifab.com, call 800.465.2736, or text 713.591.6726.



HYDROMAX
Siphonic Drain Styles