

**StormVoid Waterproof
Void Presentation
to the
Foundation Performance Association**

*March 8, 2023
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VoidForm Products Overview

- SureVoid
- StormVoid
- GridFoam
- PlumbingVoid
- Mudskipper
- Backfill Retainer
- Cover Board
- Vapor Barrier

SureVoid

SureVoid is a void form system made from corrugated paper designed to temporarily hold the weight of concrete plus construction allowance and then degrade as moisture breaks it down . It's unique cellular interior is configured to support vertical loads based on:

- Void height required
- Height of concrete (weight 150 PSF/ft.)
- Interfaces and contours
- Unique project requirements



Requirements and Specifications

VoidForm Products, LLC derives most of the requirements and specifications from project specific documents in a bid package.

- The Geotechnical Engineer will specify the general Potential Vertical Rise (PVR) based on the testing of boring samples from the site. The GeoTech may recommend a minimum void space under foundation and utility elements.
- The Structural Engineer develops specifications and foundation drawings indicating the void form type, the specific dimensions and locations of the void space.
- Typically engineers only specify corrugated paper void forms.

Typical Specification

Carton Void Forms

1. Function: used to create a space directly under structural concrete slab. Capable of sustaining all vertical and lateral loads applied until loads can be supported by concrete structure.
2. Composition: corrugated paper material with a moisture resistant exterior, and having an interior fabrication of a uniform, cellular configuration, composed of non-wax impregnated biodegradable components.
3. Depth: As indicated on the Structural Drawings.
4. Profile: rectangular shape in cross-section.
5. Strength: capable of sustaining a working load of 1000 psf .
6. Accessories: of same composition and strengths as slab void forms.

Protective Cover Board: 1/8" thick masonite with no sheets overlapping and chairs at edges to stabilize.

Expandable Foam: Expandable spray foam shall be installed at all gaps in the void form system, but shall not prohibit proper concrete cover around rebar.

But What If It Rains?



StormVoid for Wet Applications

StormVoid is a product used in concrete construction under grade beams, walls and structural slabs. Introduced over a decade ago, its unique design uniformly supports newly placed concrete and distributes imposed working loads while creating a permanent void space under structures constructed on expansive soils.

StormVoid, available in 2 forms (Beam and Slab), can be confidently used to create the specified void space when unexpected weather or standing water would otherwise prevent the installation of degradable paper void forms.



StormVoid[®] Technical Notes

StormVoid[®] contains various corrugated plastic sheets of different strength and flutes, nested together and held in place with outer cover including staples and a white, water-based, moisture-resistant adhesive. Its structural strength is designed to support the wet concrete but collapse when subjected to uplift pressure. Thus, an adequate void is attained which will allow the ground to heave into the created space without causing structural damage to the concrete slab.

TECHNICAL DATA

COVER –

- a) 275# or 44 ECT, C-flute Corrugated Paper
- b) Waxed / printed exterior
- c) Scored paper wrap

LINER(S) – (optional) top or bottom 150# to 275# test B, C-flute Corrugated Paper

INTERIOR – 3,4 and 5 mm thick Fluted Plastic, Grid Arranged

STRENGTH – Working load as recommended for typical concrete thicknesses of 6” to 13’.



StormCover for Protection

- StormCover™ is a 5 mm-thick, waterproof sheet/air-bubble co-extruded polypropylene board that can be used over carton void forms in lieu of corrugated paper sheets, hardboard, OSB, or plywood.
- StormCover sheet is designed to protect the top of the void forms from puncture caused by pinpoint loading.
- It also spans small gaps between void form pieces and helps distribute the working load during concrete placement.



StormVoid Selection Process

1. From Geotech Report determine PVR
2. Typical Void Space is 2 x PVR as indicated on the foundation drawings
3. Determine the concrete weight from the foundation drawings at 150#/ft
4. Add 50-150 PSF for construction live loads to the concrete weight
5. Select StormVoid interior cell components based on load #4 at failure
6. Failure is determined as the static load which fails to hold load for 16 hrs.
7. Review deflection value at weight of concrete (should be < 0.25 ")
8. If deflection at weight of concrete is < 0.25 the configuration is correct
9. If deflection at weight of concrete is > 0.25 increase cell elements
10. Specify result as void height x carton width, Slab or Beam and height of concrete (ex: 6x30 Slab 24" conc)

Beams vs Slabs

- Beams tend to have additional weight constructed above, therefore uplift loads are easily constrained. Also construction loads are minimal; no screed machines or finishing tools.
- Slabs are a totally different construction situation. The design for uplift must be analyzed more critically. In general, limited to a minimum 6 inch thickness, a 2-way double mat rebar design should be considered to counter the uplift load induced by soil heave or expansion. Pier spacing, Drop Panels and/or interior Grade Beams also aid in strengthening slabs and counteracting heave stresses.
- StormVoid acts as a load limiting element as the cartons will collapse at their maximum load rating.

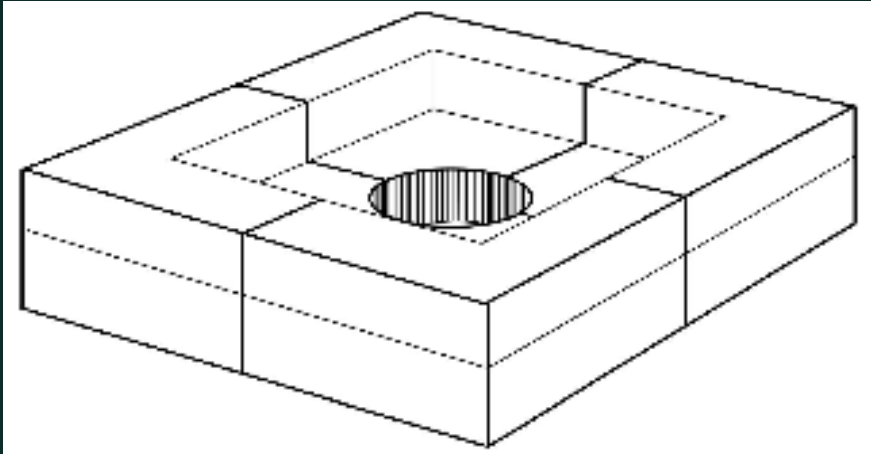
StormVoid (Beam) Examples



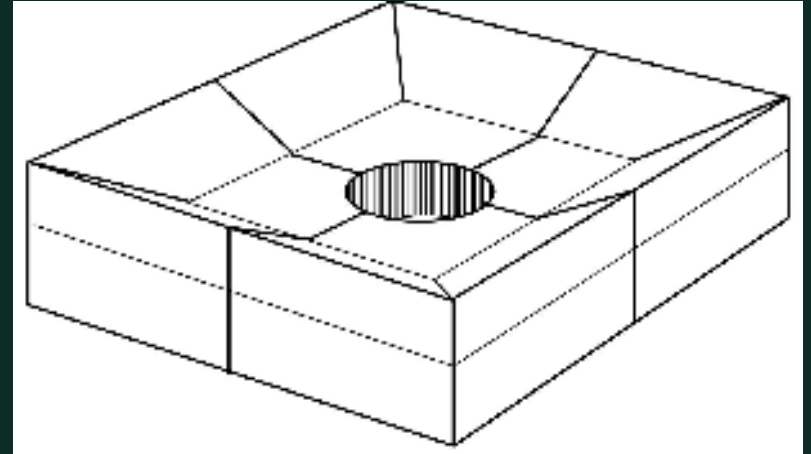
StormVoid (Slab) Examples



StormVoid Pier DropPanels



Straight



Tapered

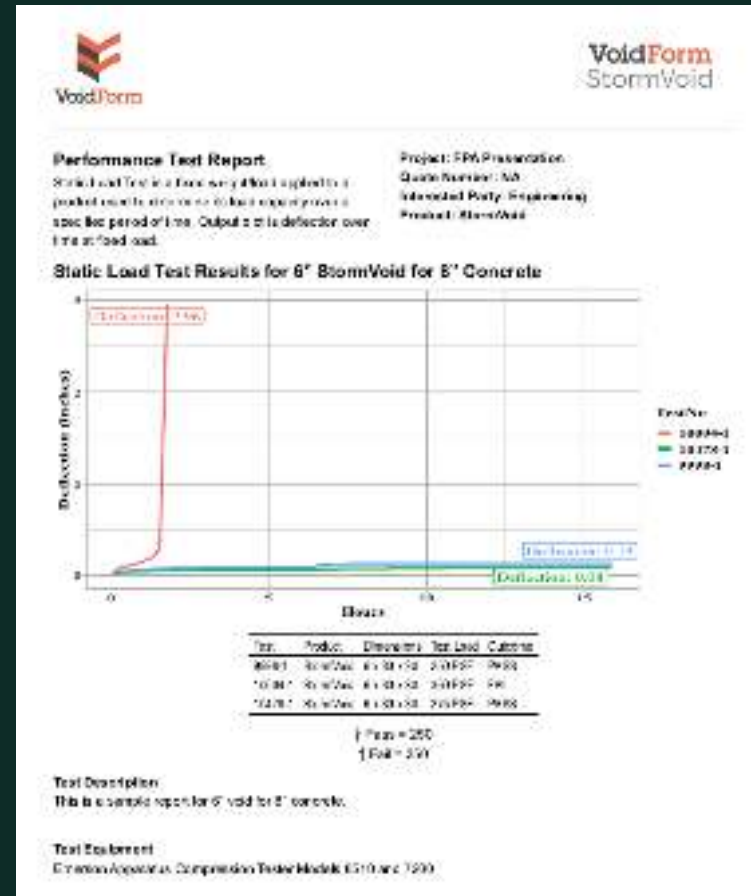
Example Projects

- Denver International Airport (DIA)
- Northwest ISD Schools
- Rice University
- Dallas Fire Station #36
- Oak Point Recreation Center Pool
- North Texas Municipal Water District
- Dallas Country Club
- Various Microchip Plants
- Various Data Centers
- Residential

Closer Look at the Data

Void Type: StormVoid Slab
Form Height: 6" for 8" of concrete
Load Capacity: 275 PSF
Effective Void Height: 5.5 inches
Test Sample Size: 30"x30" (6.25 Ft²)

StormVoid is made at a strength to support the weight of concrete (100 PSF) plus construction loads, typically an additional 50-150 PSF. The foundation design therefore must account for an uplift pressure. StormVoid has its primary failure mode as mechanical collapse.



Testing Objective & Equipment

- **Two testing objectives**

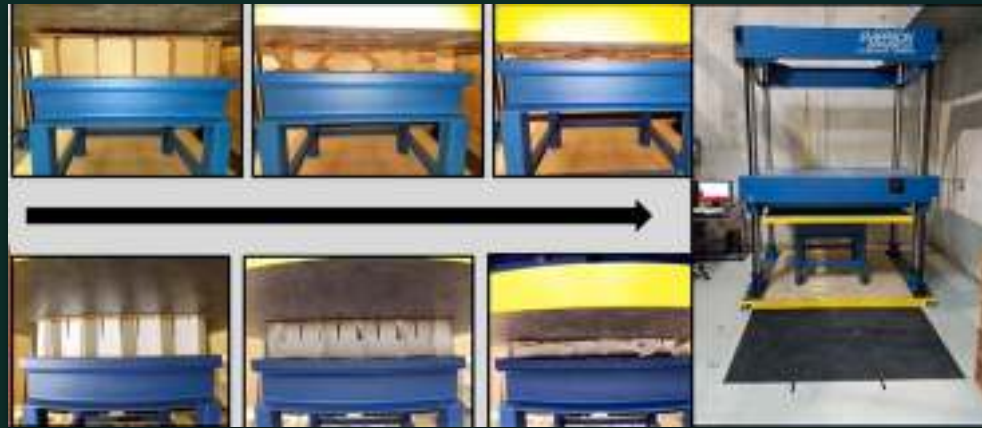
1. Verify the void is strong enough to hold wet concrete
2. It will not transmit an uplift that will damage the structure after set

- **Emerson Compression Tester - Model 8510**

- Static Load -- Load held constant for 16 hours
- Profile -- Static Loads applied incrementally to failure
- Peak Deflection -- Increasing Load to Failure

- **Temperature & Humidity Chamber**

- Temperature Range: -35°C to $+85^{\circ}\text{C}$ / -31°F to $+185^{\circ}\text{F}$
- Humidity Range: 10 to 100% RH
- Able to subject product to a given site condition
- Bring it to equilibrium & test in compression tester
- Able to see that the strength is degraded & how humidity affects the strength of products



StormVoid™ Conclusions

- Engineered to withstand specific working loads during placement and then collapse when additional loads are applied by soil expansion
- Compressible to less than 10% of its height without transferring any substantial energy into the concrete structure
- Provides nearly 100% compressible space into which soil can expand without an increase in the initial void depth
- Relatively low volume of plastic material to provide necessary strength



Questions??

Thank you!

If you have any additional questions or would like more information:

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