



# Underground Stormwater Detention & Infiltration





# The experts you need to solve your stormwater challenges



**Contech is the leader in stormwater solutions, helping engineers, contractors and owners with infrastructure and land development projects throughout North America.**

With our responsive team of stormwater experts, local regulatory expertise and flexible solutions, Contech is the trusted partner you can count on for stormwater management solutions.

## Your Contech Team



### **STORMWATER CONSULTANT**

*It's my job to recommend the best solution to meet permitting requirements.*



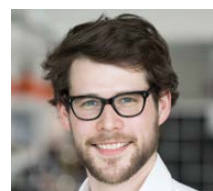
### **STORMWATER DESIGN ENGINEER**

*I work with consultants to design the best approved solution to meet your project's needs.*



### **REGULATORY MANAGER**

*I understand the local stormwater regulations and what solutions will be approved.*



### **SALES ENGINEER**

*I make sure our solutions meet the needs of the contractor during construction.*

**Contech is your partner in stormwater management solutions**

# Detention and Infiltration Solutions by Contech

One of the essential functions of a stormwater management system is to control the quantity of runoff leaving a site. There are various ways to do this. Common methods are detention ponds and other land based solutions.

The problem with ponds is that they take up valuable land space. This is not a major issue in rural areas, but in urban environments where land space is limited and expensive, the use of ponds is simply not an option.

Where there are competing demands for land, underground storage can provide many of the benefits of landscape-based systems but without requiring dedicated land area, thus maximizing the land value for the owner. In addition, subsurface infiltration in urban environments meets the objectives of Low Impact Development by reducing runoff and recharging groundwater.

Contech helps engineers and owners maximize land value by providing solutions for storing stormwater underground. Our underground systems offer you flexibility and customization to accommodate a variety of site conditions and storage volume requirements.



*CMP Detention and Infiltration Solutions*



*DuroMaxx® SRPE Pipe for Stormwater Detention*



*ChamberMaxx® Stormwater Chamber System*



*UrbanPond® Concrete Stormwater Detention System*



# Corrugated Metal Pipe

## The "Go To" Material for Stormwater Detention

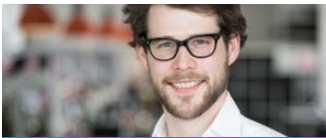
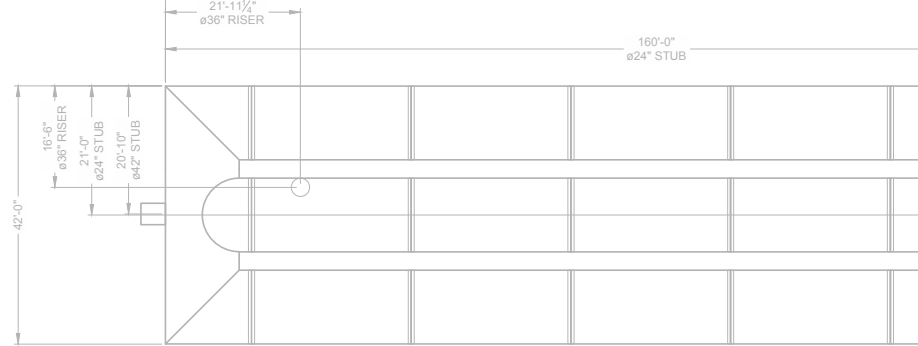


For the majority of applications, corrugated metal pipe (CMP) is the “go to” material for stormwater detention and infiltration. With its low cost, a wide variety of diameters, layout configurations and coatings, no other material can match CMP’s flexibility and versatility.

- NCSIPA service life guidance of 75+ years for certain materials in recommended environments. Please refer to the Corrugated Metal Pipe Detention Design Guide for additional information.
- Various pipe coatings and materials are available to accommodate site-specific needs: Aluminized Steel Type 2 (ALT2), Galvanized, CORLIX® Aluminum, and Polymeric.
- Wide range of gages, corrugations, and shapes, diameters 12” – 144”
- Pipe can be fully or partially perforated for infiltration or groundwater recharge applications
- Custom risers and manifolds provide direct access for maintenance
- Outlet control devices can be incorporated within the system, eliminating the need for a separate structure
- Customizable - a variety of fittings allow CMP to match most layout configurations
- May be designed for heavy loading and high maximum cover
- Contributes to LEED points
- Available locally; quick turnaround time
- The most economical installed solution

**No other material can match the flexibility and versatility of CMP**

# System Sizing



## APPLICATION TIPS

- Use the largest diameter pipe possible to maximize vertical storage space and minimize the overall footprint. Doing so will reduce material, excavation, and backfill costs.
- Single manifold systems are most cost effective as they reduce the amount of fabrication needed.
- Incorporating flow controls into the CMP system can reduce costs by eliminating the need for additional concrete structures.
- The Contech MOBILE PIPE® mill can be delivered to remote locations and assembled on-site for fast and cost effective steel pipe manufacturing.

DIAMETER (IN)	VOLUME (FT <sup>3</sup> /FT)	MIN. COVER HEIGHT
6	0.20	12"
8	0.35	12"
10	0.55	12"
12	0.78	12"
15	1.22	12"
18	1.76	12"
21	2.40	12"
24	3.14	12"
30	4.90	12"
36	7.10	12"
42	9.60	12"
48	12.60	12"
54	15.90	12"
60	19.60	12"
66	23.80	12"
72	28.30	12"
78	33.20	12"
84	38.50	12"
90	44.20	12"
96	50.30	12"
102	56.80	18"
108	63.60	18"
114	70.90	18"
120	78.50	18"
126	86.60	18"
132	95.00	18"
138	103.90	18"
144	113.10	18"

Because of its low cost and flexible configurations, CMP is the 'go to' material for stormwater detention and filtration.

# DuroMaxx<sup>®</sup> Steel Reinforced Polyethylene

## Stormwater Detention for Deep Burial and Corrosive Soil Applications ...

DuroMaxx provides the lightweight and durability of traditional HDPE with the added structural strength of steel. The combination of materials results in an extraordinarily strong and durable pipe that makes it the perfect choice for stormwater detention and infiltration in deep burial and corrosive soil applications.

DuroMaxx detention and infiltration systems can be designed with gasketed bell and spigot joints or welded coupler joints for increased watertight reliability. DuroMaxx is available in diameters ranging from 30 to 120 inches and in standard lengths of 14 or 24 feet, with other lengths available upon request.

- Twice as stiff as traditional HDPE pipe - requires less structural backfill
- Corrosion resistant HDPE - can be used in applications with corrosive soils
- Several joint configurations - welded coupler (WC), 10.8 psi high performance (HP) bell and spigot and soil tight (ST) joints available
- Up to 48 foot pipe lengths - fewer joints to assemble on site, resulting in faster installation rates.
- Lightweight - easily handled and quickly installed



Learn More:  
[www.ContechES.com/duromaxx-det](http://www.ContechES.com/duromaxx-det)

## System Sizing

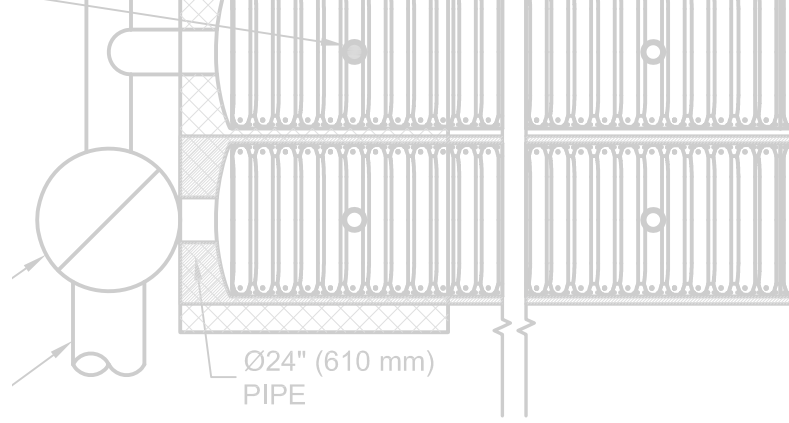
NOM. PIPE DIA. (IN)	GALLONS PER FOOT (GPF) OF PIPE	MIN. COVER (FT)	MAX. COVER (FT)
30	35.51	1.0	50
36	51.13	1.0	50
42	69.59	1.0	50
48	90.9	1.0	30
54	115.47	1.0	30
60	142.51	1.0	30
66	172.38	1.5	30
72	205.09	1.5	30
84	279.04	2.0	30
96	364.35	2.0	30
108	475.89	2.5	25
120	569.06	3.0	25

The combination of materials results in an extraordinarily strong and durable pipe.

**DuroMaxx is twice as stiff as traditional HDPE pipe**



# ChamberMaxx<sup>®</sup> Stormwater Chamber System



## Maximize Stormwater Storage in Shallow Footprints ...

The ChamberMaxx corrugated open-bottom plastic infiltration chamber system allows you to meet stormwater runoff reduction requirements and maximize available land space by providing economic infiltration below grade. ChamberMaxx maximizes storage volume in a small footprint, and its low profile shape is ideal for sights with shallow footprints.



- Low profile (30" rise) allows for infiltration on sites with shallow footprint
- Each chamber provides 47 ft<sup>3</sup> (1.3 m<sup>3</sup>) of storage to maximize storage space
- Integrated end caps provide cost savings and added chamber strength
- Structurally designed to exceed HS-20/HS-25 live loads
- Manufactured per ASTM F2418 to provide strength and durability
- Lightweight; can be installed by hand without the need of heavy equipment

Learn More:

[www.ContechES.com/chambermaxx](http://www.ContechES.com/chambermaxx)

## System Sizing

The ChamberMaxx system combines middle chambers, which are open on both ends, with start and end chambers, which include an integral end wall. Water is stored in both the chamber and in the void space in the surrounding stone backfill providing 75.1 cubic feet of storage per chamber. The ChamberMaxx system can be configured with up to 24-inch diameter (0.61 m) inlet/outlet manifold.

CHAMBER PART	WIDTH (IN) (M)	HEIGHT (IN) (M)	WEIGHT (LBS) (KG)	ACTUAL LENGTH (IN) (M)	INSTALLED LENGTH (IN) (M)	STORAGE VOLUME (CF) (M <sup>3</sup> )	INSTALLED STORAGE VOLUME (CF) (M <sup>3</sup> )*
Start	51.4 (1.31)	30.3 (0.77)	83.0 (37.65)	98.4 (2.50)	96.2 (2.44)	50.2 (1.42)	78.1 (2.21)
Middle	51.4 (1.31)	30.3 (0.77)	73.0 (33.11)	91.0 (2.31)	85.4 (2.17)	47.2 (1.34)	75.1 (2.31)
End	51.4 (1.31)	30.3 (0.77)	76.0 (34.47)	92.0 (2.34)	88.5 (2.25)	46.2 (1.31)	74.1 (2.10)

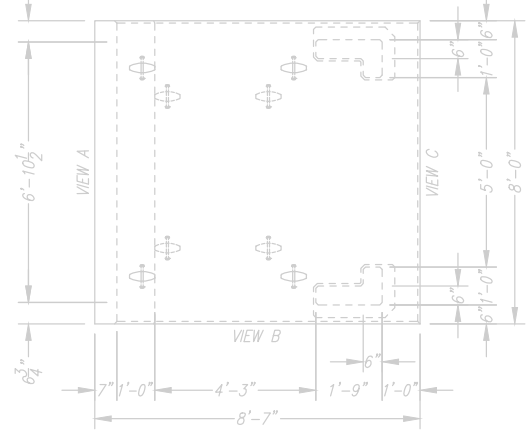
\* 6" (152 mm) of stone above and below chamber, 5.6" (142 mm) chamber spacing and 40% porosity.

# UrbanPond® Concrete Stormwater Detention

## Large Volume Stormwater Storage ...

UrbanPond is a modular precast concrete underground storage system that mimics the function of ponds and open detention basins. It has high void percentages to maximize stormwater volume, and its robust precast form allows systems to be buried deeper without the need for specialized backfill, increased wall thicknesses, or extra rebar reinforcement.

- Modular design to meet site constraints and installation requirements
- Optional built-in orifice control riser slowly discharges captured runoff to keep your site in compliance
- Designed to meet HS-20 and HS-25 loading requirements
- Minimum cover of only 12" maximizes available depth
- Can be backfilled with native soil, eliminating the need to purchase rock required in other concrete systems



Learn More:

[www.ContechES.com/urbanpond](http://www.ContechES.com/urbanpond)

## System Sizing

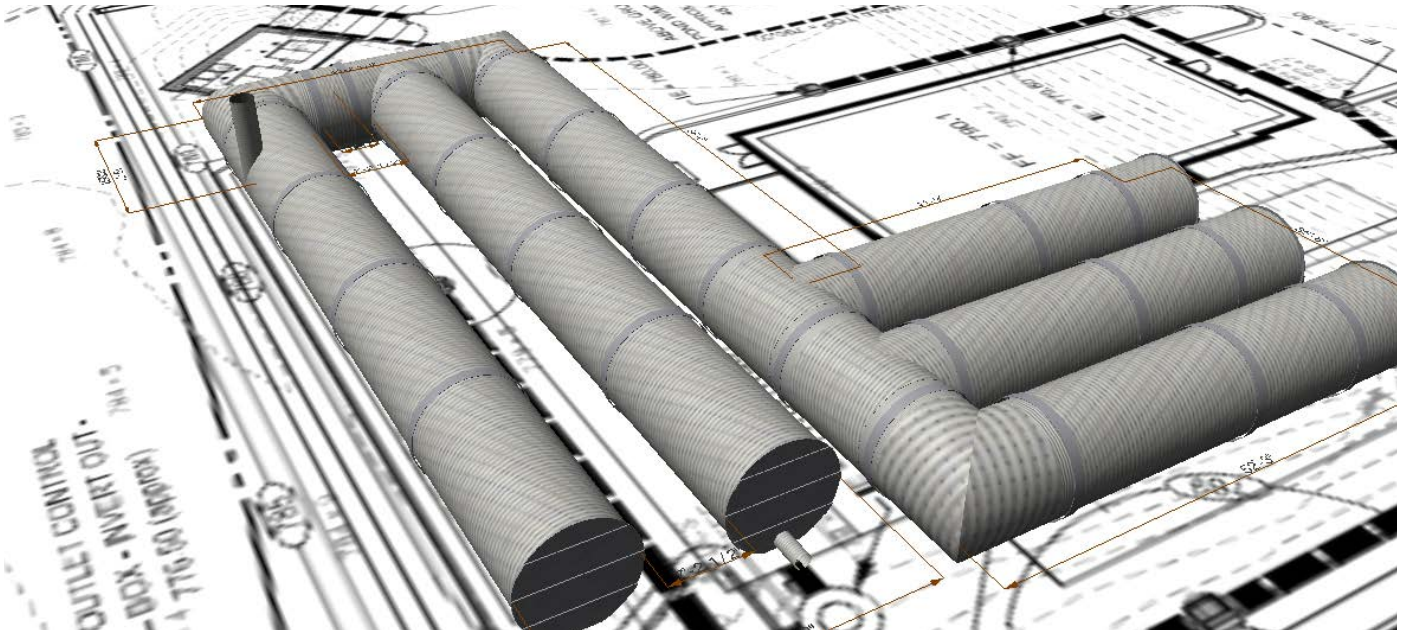
UrbanPond modules are available with inside heights ranging from 3 feet to 7 feet, in 6-inch increments, and the stacked UrbanPond modules are stackable up to 14 feet.

URBANPOND INSIDE HEIGHT (FT)	8' X 16' INTERIOR MODULE STORAGE VOLUME (CF)	8' X 16' PERIMETER MODULE STORAGE VOLUME (CF)
3	356	360
4	475	484
5	595	607
6	714	730
7	834	854
8	950	
9	1070	
10	1190	
11	1310	
12	1428	
13	1548	
14	1668	

\*UrbanPond is currently available regionally. Contact your Contech representative for more details.



# Design Your Own Detention System (DYODS®)



Learn More:

[www.ContechES.com/designcenter](http://www.ContechES.com/designcenter)

## Quickly prepare designs for estimates and project meetings ...

Engineers are always looking for new ways to quickly prepare designs for estimates and project meetings. We have a tool that does just that... the Design Your Own Detention System (DYODS®) tool.

Part of the Contech Design Center, this free, online tool fully automates the layout process for stormwater detention and infiltration systems. The tool allows you to design systems using corrugated metal pipe (CMP), ChamberMaxx® plastic chambers, or DuroMaxx® steel reinforced polyethylene (SRPE). You can also create multiple systems for each project while saving all project information for future use.

- “Drag and drop” feature allows users to customize layout
- A 2D/3D design environment with high-resolution graphics including BIM model output
- Optimize designs for the storage requirement or maximize storage for a given footprint
- Import a PDF site plan, scale and design a system over the plan and view the overlay in 2D
- Instant access to customized, project specific drawings, and CAD files
- Ability to co-workers or Contech design engineers to your project with the new Collaborator feature

**CONTECH**<sup>®</sup>  
**DESIGNCENTER**  
DESIGN MADE EASY

A free, online tool that fully automates the layout process for stormwater detention systems.

# Protecting Detention and Infiltration Systems



## Pretreatment can mean a huge difference in maintenance ...

By their very nature, detention systems are difficult to inspect and maintain. The selection of a cost-effective and easy-to-access treatment system can mean a huge difference in maintenance expenses for years to come.

It is in the design engineer's best interest to provide an aggressive pretreatment practice prior to infiltrating the water quality flow or greater flow events. Unforeseen upstream construction, erosion, annual tree debris, and winter maintenance treatments can quickly occlude infiltration facilities, putting them at risk for hydraulic failure and reducing water quality benefits.

The CDS® hydrodynamic separator is the preferred pretreatment device. CDS uses swirl concentration and continuous deflective separation to screen, separate and trap trash, debris, sediment, and hydrocarbons from runoff. CDS provides unobstructed access to stored pollutants, making it easy to maintain. Maintaining a CDS is a simple process that can be easily accomplished using a vacuum truck, with no requirement to enter the unit.

**CDS is the preferred pretreatment device**

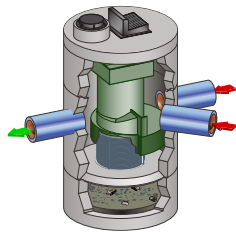


# Pretreatment Options

Contech offers a number of pretreatment options, all of which will extend the life of subsurface infiltration systems and improve water quality. The type of system chosen will depend on a number of factors including footprint, soil conditions, local regulations, and the desired level of pretreatment.

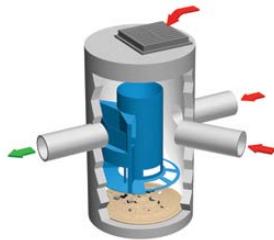
## Hydrodynamic Separation

Hydrodynamic Separation (HDS) provides a basic level of pretreatment by capturing and retaining trash and debris, sediment, and oil from stormwater runoff.



### CDS®

CDS provides superior trash and sediment removal, and is much easier to clean and maintain compared to the infiltration system itself.



### Cascade Separator®

The Cascade Separator uses advanced sediment capture technology to provide the highest sediment removal efficiency to protect the stone backfill voids of infiltration systems, thus extending the life of the system.

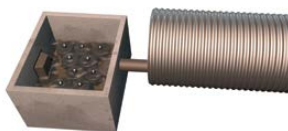
## Filtration

Filtration provides a higher level of pretreatment and improved water quality by removing trash and debris, oil, fine solids, and dissolved pollutants such as metals, hydrocarbons, and nutrients.



### Filterra® Bioretention System

Filterra is an engineered bioretention system that has been optimized for high volume/flow treatment and high pollutant removal.



### The Stormwater Management StormFilter®

The StormFilter system is comprised of a structure that houses rechargeable, media-filled cartridges. The media can be customized to target site-specific pollutants.



### Jellyfish® Filter

The Jellyfish filter uses membrane filtration in a compact footprint to remove a high level and a wide variety of stormwater pollutants such as fine particulates, oil, trash and debris, metals, and nutrients.

# A partner you can rely on



STORMWATER  
SOLUTIONS



PIPE  
SOLUTIONS



STRUCTURES  
SOLUTIONS

Few companies offer the wide range of high-quality stormwater resources you can find with us — state-of-the-art products, decades of expertise, and all the maintenance support you need to operate your system cost-effectively.

#### THE CONTECH WAY

Contech® Engineered Solutions provides innovative, cost-effective site solutions to engineers, contractors, and developers on projects across North America. Our portfolio includes bridges, drainage, erosion control, retaining wall, sanitary sewer and stormwater management products.

#### TAKE THE NEXT STEP

For more information: [www.ContechES.com](http://www.ContechES.com)

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