CON/SPAN®
Concrete Detention/Infiltration

Solutions Guide
Concrete Detention and Infiltration Overview

Selecting the right stormwater solution just got easier...

It’s simple to choose the right stormwater solution to achieve your goals with the Contech Stormwater Solutions Staircase. First, select the runoff reduction practices that are most appropriate for your site, paying particular attention to pretreatment needs. If the entire design storm cannot be retained, select a treatment best management practice (BMP) for the balance. Finally, select a detention system to address any outstanding downstream erosion.

Large volume, modular concrete system

CON/SPAN® is a modular precast system designed to provide concrete belowgrade stormwater detention or infiltration. Combining the CON/SPAN arch unit with precast walls and cast-in-place foundations allows for an array of configurations to meet nearly any site need.

Superior Durability and Structural Integrity

• Can be designed for any loading condition including HS 20-44, HS 25-44, AREMA (railroad) and aircraft loading
• Precast continuous foundation ensures structural integrity and eliminates differential settlement
• Manufactured from precast concrete in quality controlled environment – Superior quality over cast-in-place

Versatile, Modular Design

• Full range of span & heights
• Variety of layouts available, including multiple cells and staggered ends
• Skewed or “pie-shaped” pieces allow a curved alignment to follow or roadway or other challenging location
• Flexible outlet control – supplemental precast walls provide the ability to cast a wide variety of outlet opening into the system

Easy Inspection and Maintenance

• Modular design offers rapid set-in-place installation
• Large system eases inspection and provides ample maintenance access

Versatile concrete belowgrade stormwater detention or infiltration
Modular concrete system offers rapid set-in-place installation

Select the span and rise that are the most economical fit for your site

- **Short Span**
  - 8’ laying length
  - 12’ & 14’ span

- **Intermediate Span**
  - 8’ laying length
  - 16’, 20’ & 24’ span

- **Long Span**
  - 6’ laying length
  - 28’, 32’, 36’, 42’ & 48’ span

Installation as part of a runway expansion at SEA/TAC Airport in Washington

Learn more at www.ContechES.com/conspan-detention
Applications

Detention
The versatile CON/SPAN system provides efficient stormwater storage in a variety of footprints. Installation on a base slab foundation can be made watertight, which is ideal when dealing with high water table issues or subgrade soils sensitive to water infiltration.

Base slab foundation can create a watertight system for detention

A CON/SPAN detention system is installed in Germantown, MD, as part of a roadway expansion

Provide additional opportunity for green space

Infiltration
Construction of cast-in-place strip footings beneath the unit legs and endwalls allows for a large open area in the center of each cell, which can be filled with a crushed stone or granular material to allow for infiltration or recharge by percolating runoff through the granular material inside of the foundation.

CON/SPAN system installed on a strip foundation to allow for infiltration

A CON/SPAN infiltration system is installed at Miramar College in San Diego, CA

Learn more at www.ContechES.com/conspan-detention
Treatment

The versatility of the CON/SPAN structure makes it an ideal containment vessel for a variety of applications, including high volume stormwater treatment. We have designed systems that combined both the Stormwater Management StormFilter® and the Vortechs® hydrodynamic separation technologies within the CON/SPAN structure. For more information on our treatment products, logon to www.ContechES.com/treatment

Flows from a 493 acre drainage area in the City of Brooklyn Center, MN, are treated using Vortechs® technology housed in parallel 28-ft by 43-ft CON/SPAN structures

City of Brooklyn Center, MN
Stage Storage Table

CON/SPAN 24’ span x 11’-0” rise. - STAGE/STORAGE

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Top of Slab Elev. = 100.00  Length of Storage Vault = 200.00

Contech can provide this Excel-based spreadsheet for any span rise and length combination.

CON/SPAN Flow Routing

Proper design of any detention system typically requires that a flow routing be performed. Engineers at Contech can be a valuable resource when designing a CON/SPAN detention system. Typically, stage-storage curves like those shown above are utilized in the analysis. Contech will provide this Microsoft Excel®-based spreadsheet for any span, rise and length combination. This information can simply be inserted into common hydrology/hydraulic software such as HydroFlow, PondPack or TR20. This makes a flow routing design with CON/SPAN just as simple as an above-ground pond design. Contech can also provide a copy of the CON/SPAN hydrology and hydraulic tools software designed at the University of Dayton. Ask for details.
Installation and Maintenance

Installation
The CON/SPAN precast elements are three-sided arch units that offer rapid set-in-place construction. To create a complete system and ensure structural integrity, systems are installed on top of cast-in-place concrete foundations. These foundations provide continuous support beneath the unit legs and prevent the possibility of any differential settlement between adjacent precast units. Precast elements are set in a keyway that is cast into the foundation. If additional vertical rise is required, the system can also be installed on top of a pedestal wall foundation.

Steps include:
1. Construct cast-in-place foundation
2. Unload precast units
3. Set precast units
4. Set precast endwalls
5. Seal joints
6. Grout unit legs & endwalls into keyway
7. Connect any piping
8. Backfill and complete

Maintenance
The CON/SPAN system is designed for ease of maintenance access. Manhole and other access openings are a common feature and can be located in the center of the units or along walls to allow for ladder access. The CON/SPAN system can also be equipped with a large opening between units that would allow for maintenance equipment to be lowered into the system.

Contech system is designed for ease of maintenance
We print our brochures entirely on Forest Stewardship Council certified paper. FSC certification ensures that the paper in our brochures contain fiber from well-managed and responsibly harvested forests that meet strict environmental and socioeconomic standards.

Next Steps

Dig Deeper
Find all the information you need at www.ContechES.com, including field and laboratory test results, approvals, brochures, design guides, standard details and specifications within the product section of our site.

Connect with Us
We’re here to make your job easier – and that includes being able to get in touch with us when you need to. www.ContechES.com/localresources. While you’re there, be sure to check out our upcoming seminar schedule or request an in-house technical presentation.

Start a Project
If you are ready to begin a project, contact your local representative to get started. Or you can check out our design toolbox for all our online resources at www.ContechES.com/startaproject.

Links to Stormwater Design Tools:
To use the Land Value Calculator, visit: www.ContechES.com/lvc
To use the Design Your Own Detention System tool, visit: www.ContechES.com/dyods
To use the Design Your Own Hydrodynamic Separator tool, visit: www.ContechES.com/dyohds
To use the Rainwater Harvesting Runoff Reduction Calculator tool, visit: www.ContechES.com/rwh-calculator
To use the Low Impact Development Site Planner tool, visit: www.ContechES.com/lidsiteplanner