

# LandMax<sup>®</sup> Stormwater Management System

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# A sensible alternative to traditional materials

## Helps municipalities meet stormwater objectives

There are two main areas to the storm water runoff problem: the increased amounts of runoff from paved surfaces and the concentration of runoff pollutants.

Managing runoff produces numerous benefits for the community and environment, including improved water quality in streams, lakes and rivers; protection of wetlands and aquatic ecosystems; conservation of water resources and flood control. It is also considerably less expensive to manage a program that prevents waterway pollution than it is to clean contaminated water.

## LandMax is the solution

One of the best solutions to the runoff problem is a storm water retention/detention system. ADS has a LandMax system, which is a series of N-12® high-density polyethylene (HDPE) or HP Storm (polypropylene) corrugated pipes connected side-by-side in a subsurface structure that acts like a massive underground holding tank.

## How LandMax works

Stormwater retention systems generally hold the stormwater below ground without an outlet. Over time, the stormwater percolates into the soil.

Stormwater detention systems merely capture stormwater temporarily and allow it to be released in a controlled fashion so that it will not be discharged to the natural waterway or existing stormwater system all at once.

A combined retention/detention system will allow some of the runoff to percolate into the soil, while the rest will be released at a controlled rate.



# Features and benefits

A LandMax system provides the ideal solution for efficient and effective subsurface stormwater retention/detention:

- LandMax subsurface retention/detention systems increase the usable land available because the system is installed below grade, providing space for parking lots, playgrounds and other land uses on top.
- LandMax systems reduce hazards and safety risks and added costs associated with open ponds because the system is completely inaccessible to the general public.
- Providing high strength without excessive weight in pre-fabricated header components and pipe, LandMax N-12 and HP Storm components allow easy handling and fast assembly. The end result is construction schedule compression.
- For maximum design flexibility, the LandMax system uses N-12 and HP Storm pipe complemented by a wide selection of fittings, joints, couplers and adapters.
- LandMax reduces peak flow runoff from paved surfaces and at the same time recharges the groundwater table more efficiently.

## Structural integrity

Soil support is important to the retention/detention systems' performance. When N-12 and HP Storm carries load, it deflects, transferring the load to the surrounding backfill, which supports considerable earth fills and surface live loads. The spacing between parallel pipes within a system must allow for compacted backfill material in the pipe's haunch area. Design engineers should not underestimate the importance of backfill support.

The needs for supporting earth or backfill is specified in ASTM D2321, the industry standard for installing thermoplastic pipe and structures. ADS engineers use the specification when providing guidance. ADS engineering works closely with the research community regarding backfill, profile and materials. When designing an underground retention/detention system ADS takes advantage of the pipe-soil structure required by ASTM D2321, like the LandMax system.



## Guidelines to consider during system evaluation

- Check with federal, state and local agencies for information on current regulations on subsurface retention/detention systems.
- Decide which ADS LandMax system is right for the project. LandMax retention/detention systems utilize perforated soil tight N-12 pipe. LandMax detention systems utilize solid N-12 pipe.
- Calculate the total linear amount of pipe needed to meet project requirements based on the table below.
- Evaluate the system's maintenance requirements. The need for clean-outs, catch basins, sumps and settling basins should be considered.
- Determine the system layout. Typically, it is more cost-effective to have a shorter header pipe with fewer, longer laterals. ADS Technical Services is available to help design the system layout.

Inside Diameter mm (in)	Pipe Volume m <sup>3</sup> /m (ft <sup>3</sup> /ft)	Stone Void Volume m <sup>3</sup> /m (ft <sup>3</sup> /ft)	Total Retention Storage m <sup>3</sup> /m (ft <sup>3</sup> /ft)	Retention Surface Area Required m <sup>2</sup> /m <sup>3</sup> (ft <sup>2</sup> /ft <sup>3</sup> )	Detention Surface Area Required m <sup>2</sup> /m <sup>3</sup> (ft <sup>2</sup> /ft <sup>3</sup> )
300 (12)	0.07 (0.81)	0.08 (0.84)	0.15 (1.65)	4.2 (1.3)	8.6 (2.7)
375 (15)	0.11 (1.2)	0.10 (1.1)	0.21 (2.3)	3.5 (1.1)	6.4 (1.97)
450 (18)	0.16 (1.8)	0.13 (1.4)	0.29 (3.2)	3.0 (0.93)	5.4 (1.6)
600 (24)	0.29 (3.1)	0.18 (2.0)	0.47 (5.1)	2.2 (0.68)	3.6 (1.1)
750 (30)	0.46 (4.9)	0.28 (3.1)	0.74 (8.0)	0.55 (1.8)	3.0 (0.90)
900 (36)	0.66 (7.1)	0.39 (4.2)	1.05 (11.3)	1.5 (0.47)	2.4 (0.74)
1050 (42)	0.87 (9.2)	0.53 (5.8)	1.40 (15.0)	1.3 (0.40)	2.1 (0.65)
1200 (48)	1.15 (12.4)	0.62 (6.7)	1.77 (19.1)	1.1 (0.34)	1.7 (0.53)
1500 (60)	1.79 (19.3)	0.78 (8.5)	2.57 (27.8)	0.89 (0.27)	1.3 (0.39)

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