

**NORTH CAROLINA DEPARTMENT OF HEALTH AND HUMAN SERVICES
DIVISION OF PUBLIC HEALTH
ENVIRONMENTAL HEALTH SECTION
ON-SITE WATER PROTECTION BRANCH**

**ACCEPTED WASTEWATER
SYSTEM APPROVAL**

Accepted Wastewater System Approval Number: AWWWS 2020-01

For: 10-inch Large Diameter Pipe Trench Dispersal System

Approval Dates: August 5, 2020

In accordance with G.S. 130A-343(a), G.S. 130A-343(h) and 15A NCAC 18A .1969(h), a petition to the Commission for Public Health by Crumpler Plastic Pipe, Inc. of Roseboro, NC, for reclassification of 10-inch Large Diameter Pipe (LDP) systems has been reviewed by the Department and approved by the Commission. The 10-inch LDP system is a modified trench system that has been specifically identified in a Rule adopted by the Commission and has been found to perform in a manner that is equal or superior to a conventional wastewater system and to meet the standards of an accepted system when all of the following conditions are met:

I. General

A. Scope of this Accepted Approval

1. Use, design, and installation requirements for 10-inch LDP systems.

B. The 10-inch LDP system has been found to meet the standards of an accepted system.

II. System Description

A. Minimum pretreatment by septic tank as required in 15A NCAC 18A .1952.

B. 10-inch LDP systems consist of laterals composed of 10-inch inside diameter (12-inch outside diameter) corrugated, polyethylene tubing encased in a nylon and polyester blend filter wrap that are installed in trenches in the dispersal field.

C. 10-inch LDP pipe, filter wrap, and fittings shall meet the following criteria:

1. Pipe and fittings shall comply with the requirements of ASTM F667;
2. The corrugated pipe shall have two rows of holes, each hole between three-eighths inch and one-half inch in diameter, located 120 degrees apart along the bottom half of the pipe (each 60 degrees from the bottom center line) and staggered so that one hole is present in the valley of each corrugation;
3. Pipe shall be marked with a visible top location indicator, 120 degrees away from each row of holes;
4. Corrugated pipe shall be covered with filter wrap at the factory;
5. Filter wrap shall be spun, bonded, or spunlaced nylon, polyester, or nylon/polyester blend filter wrap meeting the minimum requirements in Table I; and

6. The 10-inch LDP with filter wrap shall be encased in a black polyethylene sleeve prior to installation in the trench to prevent physical damage and ultraviolet radiation deterioration of the filter wrap.

Table I – Minimum Filter Wrap Requirements for 10-inch LDP

Property	Value
Unit Weight	1.0 ounce per square yard
Sheet Grab Tensile Strength	Machine Direction: 23 pounds
Trapezoid Tear Strength	Machine Direction: 6.2 pounds Cross Direction: 5.1 pounds
Mullen Burst Strength	40 psi or 276 kilopascals
Frazier Air Permeability	500 cubic feet per minute per square foot at pressure differential of 0.5 inches of water

III. Siting Criteria

10-inch LDP systems shall be sited equivalently to a conventional system in accordance with the following criteria:

- A. Sites which are classified as Suitable or Provisionally Suitable for a conventional field system in accordance with 15A NCAC 18A .1948(a) or (b).
- B. Sites which have been reclassified as Provisionally Suitable in accordance with 15A NCAC 18A .1956(1), (2), (4), (5), and (6).
- C. The required vertical separation shall be measured from the bottom edge of the pipe.
- D. 10-inch LDP systems shall not be permitted in Group I Soils.
- E. 10-inch LDP systems shall not be permitted to accommodate high strength wastewater, such as restaurant wastewater, unless an advanced pretreatment system is included to reduce pollutant concentrations to those typical of domestic wastewater.

IV. System Sizing

- A. The maximum long-term acceptance rate (LTAR) shall be as follows:

Table II – LTAR for 10-inch LDP

Textural Group		LTAR (gpd/sq ft)	
		Natural Soil	Saprolite
Soil Group II	Sandy Loam	0.6-0.8	0.4-0.6
	Loam		0.2-0.4
Soil Group III	Silt Loam	0.3-0.6	0.1-0.3
	Other Fine Loams		NA
Soil Group IV	Clays	0.1-0.4	NA

- B. The LTAR shall be based on the most hydraulically limiting naturally occurring soil horizon within three feet of the ground surface or to a depth of one foot below trench bottom, whichever is deeper.
- C. For total trench bottom area (ft²) required shall be determined by dividing the design daily sewage flow by the applicable LTAR shown in Table II. The minimum linear footage for 10-inch LDP systems shall be determined by dividing the total trench bottom area by the equivalency factor in Table III.

Table III – Trench Width and Equivalency Factors

Product	Excavated Trench Width (inches)	Equivalency Factor* (SF/LF)
10-inch LDP	12 to 24	2.5

* For systems having an equivalency factor of 2.5 SF/LF, the system may be used in an alternating dual field application pursuant to 15A NCAC 18A .1955(p) provided that the equivalency factor for sizing each of the two complete nitrification fields does not exceed 3.33 SF/LF.

Example

Three bedroom residence with a design daily sewage flow of 360 gallons on a sandy clay loam (Group III) soil

Total computed trench bottom area is:

$$360 \text{ gpd} / 0.5 \text{ LTAR} = 720 \text{ ft}^2$$

The required linear footage for 10-inch LDP systems is:

$$720 \text{ ft}^2 / 2.5.0 \text{ ft} = 288 \text{ linear ft}$$

Where 2.5 ft is the equivalency factor for 10-inch LDP systems

- D. The available space requirements of Rule .1945 shall be met, and this approved accepted system may be designated as the required replacement system.

V. Special Site Evaluation

A special site evaluation may be required based on the proposed ground absorption system. Refer to Rule .1970(p).

VI. Design Criteria

Refer to Siting Criteria (Section III) and Installation (Section VII) for design details.

VII. Installation

- A. 10-inch LDP systems used in trenches shall be installed according to the minimum and maximum dimensions in Table IV.
- B. The inlet to the 10-inch LDP system shall be in the uppermost portion of the end cap. For dosed systems receiving effluent from a pump or siphon, manufacturer’s installation procedures shall be followed.
- C. 10-inch LDP systems shall be installed with the yellow strip in the 12 o’clock position and the discharge at the 4 and 8 o’clock positions. Trench installation requirements are presented in

Table IV.

Table IV – Trench Installation Requirements

Model	Minimum Trench Width (in)	Minimum Trench Depth (in)	Minimum Trench Spacing (ft on center)	Minimum Soil Cover ¹ (in)
10-inch LDP	12	18	6	6

¹On sloping lots, minimum required trench and cover depths may be greater.

- D. Backfill shall be placed between the trench and the 10-inch LDP sidewall to a minimum compacted (carefully placed) height that is equal to the top of the pipe. Backfill material shall have no more than 10 percent by volume of fibrous organics, building rubble, rocks, large clods, or other debris, and shall be Soil Groups II or III. The latest version of the manufacturer’s installation procedures shall be followed.

Vehicular traffic or construction equipment may traverse the 10-inch LDP system only when the load is bridged over the trench so as not to disturb the 10-inch LDP system. The load may be bridged with a minimum of six inches of compacted soil cover over shallow 10-inch LDP.

- E. 10-inch LDP system trenches shall be constructed level in all directions with a plus or minus one-half-inch tolerance from side-to-side and maximum fall in a single trench bottom not exceeding one inch in 100 feet. Trenches shall follow the contour of the ground surface elevation (uniform depth). Trenches shall be constructed with continuous interlocking pipe, including appurtenances, without any dams, stepdowns, or other water stops.
- F. 10-inch LDP systems installed on a sloping site may use distribution devices or stepdowns as described in 15A NCAC 18A .1955(j) and (l) when it is necessary to change level nitrification line segments from upper to lower elevations. However, the requirement to fully utilize the upstream nitrification trench applies to an elevation at least equal to the top of the 10-inch LDP bundle.
- G. Manufacturer’s installation instructions for the applicable 10-inch LDP system used in septic tank systems shall be followed except as required herein or 15A NCAC 18A .1900 et.seq.
- H. All 10-inch LDP systems shall be installed by a contractor or installer appropriately certified in writing by the manufacturer or its authorized representative.
- I. All 10-inch LDP systems shall be installed with compatible inlet caps at the proximal end and end caps at the distal ends of each 10-inch LDP trench.

VIII. Operation, Maintenance, and Monitoring

The accepted 10-inch LDP system shall have a classification equivalent to a conventional trench system in accordance with Table V(a) of 15A NCAC 18A .1961(b).

IX. Responsibilities and Permitting

- A. The local health department (LHD) shall permit these accepted systems in an equivalent manner as a conventional system when the requirements of 15A NCAC 18A .1900 et. Seq., laws, and conditions of this accepted system approval are met.
- B. When use of this accepted system is requested in the application for a Construction Authorization (CA), the LHD shall include a design for the designated accepted system in accordance with the approved siting, sizing, and design criteria on the CA.
- C. When an Improvement Permit (IP) or CA is issued for a conventional system, the IP or CA shall contain a statement that indicates that an accepted system may also be used. These accepted systems may be installed without IP or CA modification, prior approval of the LHD, or separate sign-off, if the accepted system can be placed in the permitted trench footprint and the installation is in accordance with the accepted system approval, without unauthorized product alteration.
- D. When substitution with this accepted system for a conventional system or another accepted system is made, IP or CA modification, prior approval of the LHD, or separate owner sign-off is not required as long as no changes are necessary in the location of each nitrification line, trench depth, or effluent distribution method.
- E. Notwithstanding paragraphs C and D above, when a substitution in system type compared to a previously permitted system type or types shall result in a change in the location of any trench line (including any increase in line length), trench depth, or effluent distribution method, prior approval by the LHD is required before system installation. The LHD shall modify the IP and/or CA upon a finding that all provisions of this approval and all other applicable rules shall be met.
- F. The type of system installed shall be indicated on the Operation Permit, including designation of the manufacturer and model or unique code.

X. Repair of Systems

The provisions of 15A NCAC 18A .1961(l) shall apply to the use of 10-inch LDP systems for repairs to existing malfunctioning septic tank systems.

Approved by: _____ Date: _____