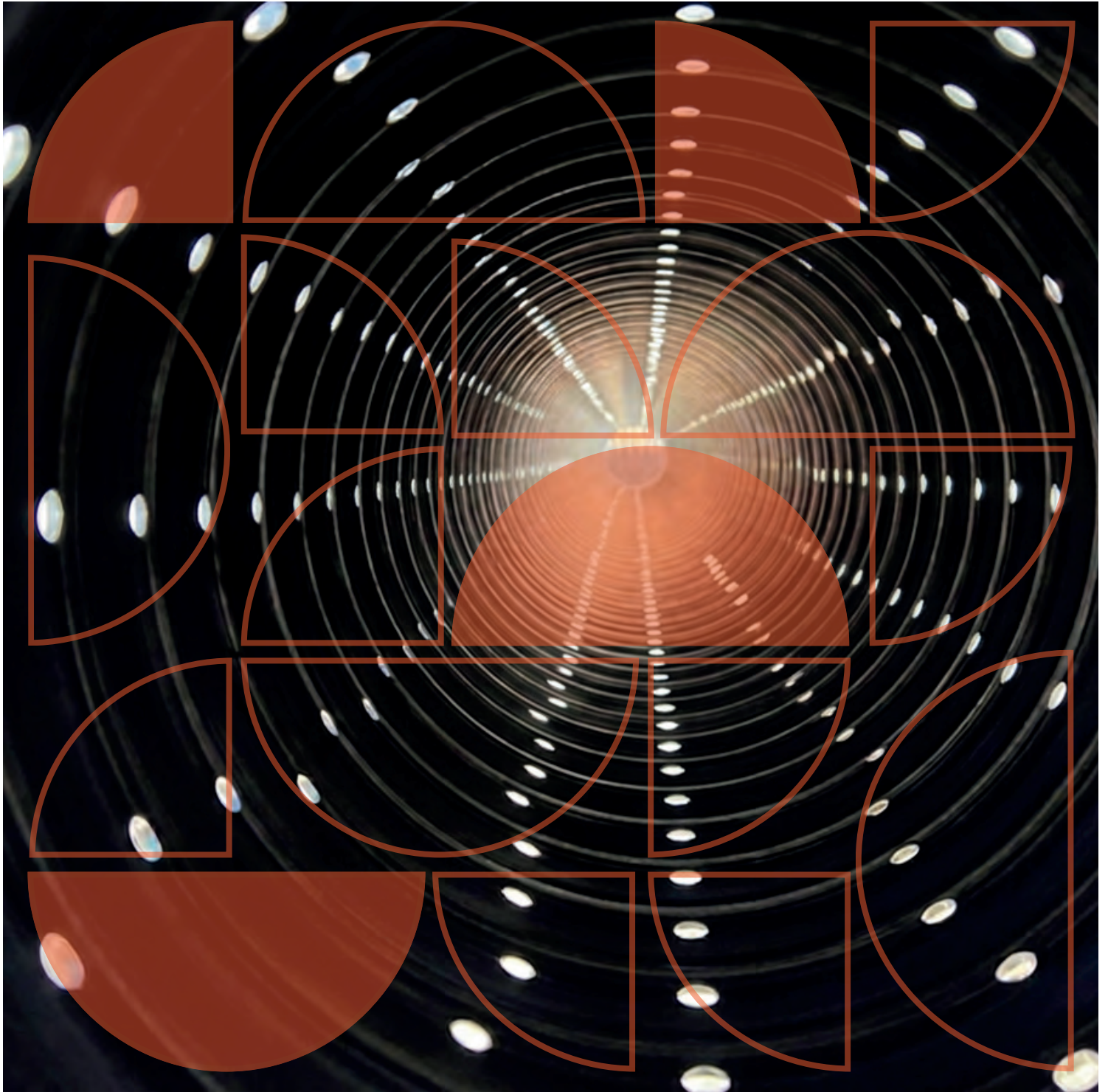


# TDR ULTRA

HDPE CORRUGATED PIPE - PERFORATED SERIES



TDR® Perforated is a high-density polyethylene (HDPE) dual-wall corrugated pipe engineered with strategically designed perforations for gravity-flow drainage applications. Manufactured in accordance with ASTM F2648, ASTM F2306, and AASHTO M294 standards, TDR Perforated delivers reliable performance and durability for subsurface drainage, infiltration, and water management systems.



## SCOPE

This specification establishes the requirements for 4 inches through 60 inches TDR ULTRA® Perforated pipe and fittings for use in gravity-flow drainage applications, including:

- Subsurface irrigation systems
- Agricultural and land drainage
- Highway and roadway drainage
- Golf course and turf drainage
- Sports field drainage
- Retention and detention systems
- Waste management and landfill drainage

## PIPE REQUIREMENTS

TDR ULTRA® Perforated incorporates advanced engineering and materials for superior drainage system performance.

Pipe Construction:

- Dual-wall corrugated exterior with reinforced double-arch corrugations for structural strength and durability
- Smooth interior liner for optimized hydraulic performance
- Dual-layer co-extruded integrated bell for simplified joint assembly
- Strategic perforation patterns engineered for efficient drain inlet area and optimal water infiltration

Perforation Design:

Multiple perforation patterns (A, B, C) available to meet specific drainage requirements and soil conditions. Perforations are designed to maximize water intake while maintaining structural integrity

## JOINT PERFORMANCE

TDR ULTRA® Perforated utilizes precision-engineered joints optimized for gravity-flow drainage systems.

Joint Design:

- Spigot-to-bell connection with optimized spacing for secure engagement
- Simplified assembly without requiring external gasket application
- Soil-tight joint performance suitable for subsurface drainage applications
- Design allows for easy field connection while maintaining system integrity

Installation:

Refer to TDR Installation Guidelines for proper joint assembly procedures.

## APPLICATIONS

TDR ULTRA® Perforated is engineered for multiple drainage and infiltration applications:

- Agricultural Systems – Subsurface irrigation, agricultural drainage, field dewatering
- Industrial and Mining – Dewatering systems, mine drainage, process water management
- Golf Course and Turf Management – Turf drainage, greens construction, sports field subsurface systems
- Recreation and Sports – Playing field drainage, sports facility water management
- Retention and Detention Systems – Stormwater retention basins, detention ponds
- Highway and Road Drainage – Roadside drainage, subsurface water management
- Waste Management – Landfill drainage, waste management facility systems

## STANDARDS COMPLIANCE

Pipe and Fittings:

- ASTM F2648 – Standard Specification for HDPE Corrugated Wall Drain Pipe and Fittings Based on Controlled Outside Diameter
- ASTM F2306 – Standard Specification for HDPE Corrugated Wall Pipe and Fittings

Based on Stiffness

- AASHTO M252 – Standard Specification for Corrugated Polyethylene Pipe
- AASHTO M294 – Standard Specification for Corrugated HDPE Pipe
- Class 2 Perforations per ASTM F2648 and AASHTO standards

Material Specification:

- PVC Compound: Cell Classification 435420C per ASTM D3350 – Standard Specification for Polyethylene Resins Used in Building and Construction Products

Installation:

- ASTM D2321 – Standard Practice for Underground Installation of Thermoplastic Pipe for Storm Drains and Sanitary Sewers



## DIMENSIONS

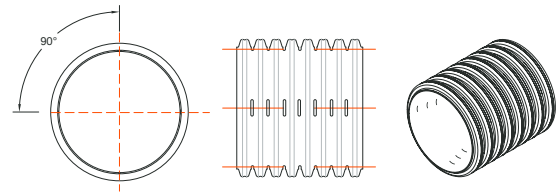
| Pipe Size<br>in (mm) | Min. Water Inlet Area, in <sup>2</sup> /ft (cm <sup>2</sup> /m) |           |           | Perforation<br>Type | Perforation Size |                 |
|----------------------|-----------------------------------------------------------------|-----------|-----------|---------------------|------------------|-----------------|
|                      | Pattern A                                                       | Pattern B | Pattern C |                     | Length, in (mm)  | Width, in (mm)  |
| 4 (100)              | 3.1 (65.5)                                                      | -         | -         | Slot                | 0.87" (22 mm)    | 0.06" (1.5 mm)  |
| 6 (150)              | -                                                               | -         | -         |                     |                  |                 |
| 8 (200)              | 2.3 (49.3)                                                      | -         | -         |                     |                  |                 |
| 10 (250)             | 2.9 (62)                                                        | -         | -         | Slot                | ø 1.38" (35 mm)  | ø .10" (2.5 mm) |
| 12 (300)             | 1.9 (41)                                                        | -         | -         | Circular            | ø 5/16" (8 mm)   |                 |
| 15 (375)             | 1.5 (32)                                                        | -         | -         |                     |                  |                 |
| 18 (450)             | 1.5 (32)                                                        | -         | -         | Circular            | ø 5/16" (8 mm)   |                 |
| 24 (600)             | -                                                               | 2.7 (58)  | -         | Circular            | ø 3/8" (9.5 mm)  |                 |
| 30 (750)             | -                                                               | 2.7 (58)  | -         |                     |                  |                 |
| 36 (900)             | -                                                               | 2.2 (47)  | -         |                     |                  |                 |
| 42 (1050)            | -                                                               | -         | 3.3 (71)  |                     |                  |                 |
| 48 (1200)            | -                                                               | -         | 2.7 (58)  |                     |                  |                 |
| 60 (1500)            | -                                                               | -         | 2.7 (58)  |                     |                  |                 |

## PERFORATION SPECIFICATION

TDR ULTRA® Perforated is available with three perforation pattern options designed for different drainage requirements:

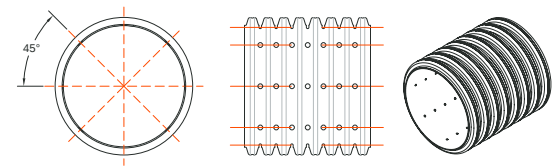
### PATTERN A - Standard Drainage (Slot Type):

- Slot Length: 0.87 inches (22 mm)
- Slot Width: 0.06 inches (1.5 mm)
- Orientation: 90° staggered pattern
- Drain inlet area varies by pipe size (see table)



### PATTERN B - High-Flow Drainage (Circular Type):

- Perforation Type: Circular
- Diameter: 1.38 inches (35 mm)
- Diameter: ø 0.10 inches (2.5 mm)
- Orientation: 90° pattern
- Optimized for high infiltration rates



### PATTERN C - Agricultural/Field Drainage (Circular Type):

- Perforation Type: Circular
- Size options: ø 5/16 inches (8 mm) or ø 3/8 inches (9.5 mm)
- Orientation: 45° pattern
- Designed for agricultural and field drainage applications

