Single-wall HDPE Heavy-Duty Subdrain

Lightweight, easy installation
Flexibility to bend around obstacles and contours
No heavy lifting equipment needed
Optional lengths and coil sizes
Excellent in shifting and freezing soils
Resists damage caused by impacts, external loads and vibrations

Environmental stability
Resists acids, bases and salts
Unaffected by bacteria and aggressive soils

Reliable delivery
With 25 years as a Canadian leader in plastic pipe, Ideal is the source to depend on

A flexible partner
Talk to us about the products best suited to your business needs
1 Scope
This specification covers the general requirements of corrugated high density polyethylene pipe for use in roadway subdrain and related construction applications.

2 Material
Pipe shall be manufactured from high density polyethylene resin, which shall meet or exceed the requirements of cell classification 324420C as defined in ASTM D3350. Resistant to a wide range of soil acidity: pH 1.25 to 14.

3 Joining System
The pipe shall be joined with insert or split (wrap) couplers.

4 Pipe Stiffness
Pipes shall have minimum pipe stiffness of 320 kPa at 5% deflection when tested in accordance with ASTM D2412.

5 Hydraulics
The following Manning’s ‘n’ values shall be used to calculate flow. See CPPA Technical Hydraulic booklet available from Ideal Pipe or the Plastics Pipe Institute.

<table>
<thead>
<tr>
<th>I.D. mm</th>
<th>100 (4&quot;)</th>
<th>150 (6&quot;)</th>
<th>200 (8&quot;)</th>
<th>250 (10&quot;)</th>
<th>300 (12&quot;)</th>
</tr>
</thead>
<tbody>
<tr>
<td>‘n’</td>
<td>0.017</td>
<td>0.017</td>
<td>0.018</td>
<td>0.019</td>
<td>0.020</td>
</tr>
</tbody>
</table>

6 Structural Design
Structural design shall conform to the industry accepted procedures found in the Corrugated Polyethylene Pipe Association’s technical booklets from Ideal Pipe or the Plastics Pipe Institute.

Ideal Pipe is a leading manufacturer of high density polyethylene (HDPE) pipe, providing a complete range of products for engineered projects and drainage applications.

7 Applicable Standards
OPSS 1840; 421
OPSD 806.02

8 Options
Available as solid, perforated or filtered pipe.

9 Pipe Dimensions
CHALLENGER 1000 is available in diameters from 100 mm (4") to 300 mm (12") and in selective coil sizes 50 ft. to 4000 ft. or length sections of 20 ft. Nominal pipe size is based on inside diameter of the pipe.

10 20-Year Limited Warranty

IDEAL PIPE
1196 Sunningdale Road West
London, Ontario, N6G 5B6
toll-free: 1-800-265-7098
telephone: (519) 473-2669 • fax: (519) 641-2524
sales@idealpipe.ca
www.idealpipe.ca

"For ideal results on the job, you need Ideal pipe underground."
Smoothwall HDPE Culvert and Drainage Pipe

Standards compliant
CSA, OPSS, ASTM and other standards

Environmental stability
Resists acids, bases and salts; corrosion-free
Unaffected by bacteria and aggressive soils

Excellent flow characteristics
Carry high flows in smaller pipes
Abrasion resistant

Lightweight strength
Excellent in shifting or freezing soils
Resists damage caused by impacts, external loads and vibrations
Light weight; easy installation

Reliable delivery
With 25 years as a Canadian leader in plastic pipe, Ideal is the source to depend on

A flexible partner
Talk to us about the products best suited to your business needs
Scope
This specification covers the general requirements of corrugated high density polyethylene pipe with a smooth interior for use in culverts, municipal drainage and related engineering applications.

Material
Pipe shall be manufactured from high density polyethylene resin, which shall meet or exceed the requirements of cell classification 324C20C as defined in ASTM D3350. Resistant to a wide range of soil acidity: pH 1.25 to 14.

Joining System
The pipe shall be joined with external snap-on or split couplers.

Pipe Stiffness
Pipes shall have minimum pipe stiffness of 210 kPa or 320 kPa at 5% deflection when tested in accordance with ASTM D2412.

Hydraulics
A Manning’s ‘n’ value of 0.010 shall be used to calculate the flow for all sizes of smooth interior CHALLENGER 2000 Pipe. See CPRA Technical Hydraulic booklet available from Ideal Pipe or the Plastics Pipe Institute.

Structural Design
Performance analysis review, including structural design shall conform to the industry accepted procedures found in the Corrugated Polyethylene Pipe Association’s technical booklets from Ideal Pipe or the Plastics Pipe Institute.

Applicable Standards
ASTM D3350
OPSS 1840, 410
OPSD 806.02
CSA B182.8-02 available on request

Options
Available as solid, perforated or filtered pipe.

Pipe Dimensions
Standard pipe lengths shall be 6 m (20') or as needed to meet job requirements. Nominal pipe size is based on inside diameter of the pipe.

<table>
<thead>
<tr>
<th>Nominal (inches)</th>
<th>ID</th>
<th>OD</th>
<th>Weight (kg/m)</th>
</tr>
</thead>
<tbody>
<tr>
<td>4</td>
<td>100 mm</td>
<td>116 mm</td>
<td>0.7</td>
</tr>
<tr>
<td>6</td>
<td>150 mm</td>
<td>175 mm</td>
<td>1.4</td>
</tr>
<tr>
<td>8</td>
<td>200 mm</td>
<td>235 mm</td>
<td>2.5</td>
</tr>
<tr>
<td>10</td>
<td>250 mm</td>
<td>295 mm</td>
<td>4.0</td>
</tr>
<tr>
<td>12</td>
<td>300 mm</td>
<td>370 mm</td>
<td>6.0</td>
</tr>
<tr>
<td>15</td>
<td>375 mm</td>
<td>450 mm</td>
<td>7.5</td>
</tr>
<tr>
<td>18</td>
<td>450 mm</td>
<td>530 mm</td>
<td>11.5</td>
</tr>
<tr>
<td>21</td>
<td>525 mm</td>
<td>630 mm</td>
<td>16.5</td>
</tr>
<tr>
<td>24</td>
<td>600 mm</td>
<td>715 mm</td>
<td>19.5</td>
</tr>
<tr>
<td>30</td>
<td>750 mm</td>
<td>885 mm</td>
<td>30.0</td>
</tr>
</tbody>
</table>

20-Year Limited Warranty

Ideal Pipe is a leading manufacturer of high density polyethylene (HDPE) pipe, providing a complete range of products for engineered projects and drainage applications.

CHALLENGER 3000 Gasketed Smoothwall Pipe
CHALLENGER 2000 Culvert & Drainage Pipe
CHALLENGER 1000 Subdrain • Corrugated Subdrain
WAVETEX Protective Conduit • Accessories and Fittings

"For ideal results on the job, you need Ideal pipe underground."
Corrugated HDPE Drainage Tubing

For agricultural applications, golf courses, athletic fields, municipal parks
Wide range of pipe diameters and shipping lengths
Optional perforations and filters for varied soil types

Fast, easy installation
Ideal specializes in flexible, lightweight, easy to handle HDPE pipe

Reliable delivery
With 25 years as a Canadian leader in plastic pipe,
Ideal is the source to depend on

A flexible partner
Talk to us today about the products best suited to your business needs
Ideal Subdrain Drainage Tubing

1 Scope

This specification covers the general requirements of corrugated high density polyethylene drainage tubing for use in various land drainage applications.

2 Material

Pipe shall be manufactured from high density polyethylene resin, which shall meet or exceed the requirements of cell classification 324420C as defined in ASTM D3350. Resistant to a wide range of soil acidity: pH 1.25 to 14.

3 Joining System

Drainage tubing shall be joined with snap, insert or split couplers.

4 Pipe Stiffness

Drainage tubing shall have minimum pipe stiffness of 210 kPa at 5% deflection when tested in accordance with ASTM D2412.

5 Hydraulics

The following Manning's 'n' values shall be used to calculate flow. See CPPA Technical Hydraulic booklet available from Ideal Pipe or the Plastics Pipe Institute.

<table>
<thead>
<tr>
<th>I.D. mm</th>
<th>50 (2&quot;)</th>
<th>75 (3&quot;)</th>
<th>100 (4&quot;)</th>
<th>150 (6&quot;)</th>
<th>200 (8&quot;)</th>
<th>250 (10&quot;)</th>
<th>300 (12&quot;)</th>
<th>375 (15&quot;)</th>
</tr>
</thead>
<tbody>
<tr>
<td>'n'</td>
<td>0.016</td>
<td>0.016</td>
<td>0.017</td>
<td>0.017</td>
<td>0.018</td>
<td>0.019</td>
<td>0.020</td>
<td>0.021</td>
</tr>
</tbody>
</table>

6 Structural Design

Structural design shall conform to the industry accepted procedures found in the Corrugated Polyethylene Pipe Association's technical booklets from Ideal Pipe or the Plastics Pipe Institute.

7 Applicable Standards

ASTM F405, F667
OPSS 1840; 405

8 Options

Ideal drainage tubing is available with a variety of perforation patterns and engineered geosynthetic filters for different soil types.

9 Pipe Dimensions

Ideal drainage tubing is available in diameters from 50 mm (2") to 375 mm (15") and shipped in selective coil sizes, 50 ft. to 4000 ft. or length sections of 20 ft. Nominal pipe size is based on inside diameter of the pipe.

<table>
<thead>
<tr>
<th>TILE CALCULATOR</th>
</tr>
</thead>
<tbody>
<tr>
<td>Spacing (ft.)</td>
</tr>
<tr>
<td>Feet/Acre</td>
</tr>
<tr>
<td>M/Ha</td>
</tr>
</tbody>
</table>

Ideal Pipe is a leading manufacturer of high density polyethylene (HDPE) pipe, providing a complete range of products for engineered projects and drainage applications.

CHALLENGER 3000 Gasketed Smoothwall Pipe
CHALLENGER 2000 Culvert & Drainage Pipe
CHALLENGER 1000 Subdrain • Corrugated Subdrain
WAVETEX Protective Conduit • Accessories and Fittings

"For ideal results on the surface, you need Ideal pipe underground."