## $\left[\begin{array}{ll}10 \\ \text { Prinsco }\end{array}\right.$




At Prinsco, we offer the three most important things that our customers need to be successful.

People: Hard working people providing world class service.

Pipe: Premium quality pipe delivered right to the project.

Results: Immediate results that create long-term returns.

You can count on it.

## Corporate Headquarters

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## OUR STORY

Subsurface Water Management.........................................................................................................................4-5
Controlled Subsurface Water Management
6-7

## OUR PRODUCTS

GOLDLINE ${ }^{\circledR}$ Product Information \& Specifications................................................................................................. 8-11
GOLDFLEX ${ }^{\text {TM }}$ Product Information \& Specifications .............................................................................................. 12-13
ECOFLO ${ }^{\circledR} 100$ Product Information \& Specifications...........................................................................................14-15
GOLDFLO WT® Product Information \& Specifications .......................................................................................... 16-17
GOLDFLO ${ }^{\circledR}$ Product Information \& Specifications.................................................................................................16-17
Ag Catch Basin Product Information \& Specifications ........................................................................................... 18

## OUR ACCESSORIES

General................................................................................................................................................................. 19
GOLDLINE ${ }^{\circledR}$.....................................................................................................................................................20-21
Agri Drain™.....................................................................................................................................................22-24
GOLDFLO WT ${ }^{\oplus}$ / GOLDFLO ${ }^{\circledR}$ / ECOFLO ${ }^{\circledR} 100$.................................................................................................25-28

INSTALLATION GUIDE
Installation
.29-31

## ADDITIONAL INFORMATION

Frequently Asked Questions/Industry Standards

## SபBSபRFACE WATER MANAGEMENT

The agriculture industry has the daunting responsibility of feeding our world's growing population. By 2040, there are expected to be almost 9 billion mouths to feed, requiring us to produce up to $50 \%$ more food than we currently can. Prinsco is doing our part by providing water management solutions which have the capacity to boost yields on our most prolific farm land while also converting poorly drained soils into productive acres.

Prinsco's water management products help control the critical soil conditions that promote optimum root growth, which can ultimately produce healthier, more productive crops. Fields with a subsurface water management system can see yield increases up to $25 \%$. At current prices, that can mean up to $\$ 130$ more per acre and a return on investment of 3-7 years. For more benefits and details, see below:

Deeper, healthier root systems are a result of keeping soil conditions balanced.


## Increased infiltration

 rates allow water to move from the surface to the root zone faster, allowing quicker uptake by the roots and quicker removal of excess water by the system.Increased water quality is due to percolation through the soil profile which decreases sediment, phosphorus and potassium loss.

Early access to fields is made possible by mitigating the impact of early spring precipitation.

Consistent yields across the field and from year to year are realized by creating optimum growing conditions and increased yields are realized from healthier, more durable plants.

## SபBSபRFACE WATER MANAGEMENT



## Terms to Know

Bioreactor - An edge-of-field water quality best management practice in which discharge from a water management system is passed through an underground bed of woodchips, or other carbon source, that converts nitrates in the water into nitrogen gas.
Buffer Strip - A narrow area along a waterway that is maintained in permanent vegetation and designed to protect the waterway from surface runoff and sedimentation.

Drainage Coefficient - The rate at which water can be removed from a field, typically expressed in inches per 24 hours. One of the parameters used to determine the spacing of parallel laterals.
Erosion - The removal of soil from the land surface by water flow or wind.
Evapotranspiration - Commonly known as ET, it is the combination of evaporation of water from the soil into the air, and transpiration of moisture from the plant leaves into the air.
Fall - The amount of elevation drop from one end of the pipe to the other, typically expressed in feet.

Field Capacity - The maximum amount of soil moisture or water that can be held in the soil after drainage has taken place.
Flow Rate - The volume of water that passes through a pipe over a given amount of time.
Lateral - Small diameter tile line that collects excess water and discharges into a main.

Lateral Spacing - The distance between two parallel lateral lines, typically expressed in feet.

Lift Station - A structure located on a tile main that allows water to be pumped from a lower elevation to a higher elevation, typically to an outlet.
Main - Larger diameter pipe that collects water from a system of smaller diameter laterals and carries that water to an outlet.

Outlet - The point at which water exits a subsurface water management system.
Plant Available Water - Soil water that is readily available to plants. It is the water content difference between field capacity and wilting point.

Rate of Return - The rate at which the money invested in a subsurface water management system will be returned to the investor via increased efficiencies or yields.
Riparian Zone - The interface between land and a bordering waterway.
Saturated Buffer - An edge-of-field water quality best management practice in which water from an underground tile system is routed into perforated tile lines running parallel to a waterway under a buffer strip. The soil and plant matter beneath the buffer strip filters the water and helps remove nitrates before entering the waterway.
Saturation - A condition that occurs when $100 \%$ of soil pores are filled with water, displacing any naturally occurring pockets of air. Plants cannot survive extended periods of saturated conditions due to lack of oxygen.

Sedimentation - The settling out of soil particles suspended in water

Slope/Grade - A change in elevation over some distance, typically expressed as a percentage or feet of fall per linear feet.
Soil Pores - The void spaces between soil particles, making up $40 \%$ to $50 \%$ of the soil structure.
Soil Profile - The layers of soil contained in the crop rooting depth.
Surface Intake - A structure that is specifically designed to remove standing water from the ground's surface and installed in lower areas of a field.
Subsurface Irrigation - Also known as subirrigation. An irrigation practice using pumps and water control structures in an undergruond water management system to control the water table and supply moisture directly to the crop's root zone.
Water Management System - A network of laterals and mains that manages excess water in the soil.

Watershed - An area of land where all of the water that falls on it drains to the same waterway.
Water Table - The top level of the saturated zone within the soil.

Wilting Point - The soil water content at which point crops can no longer draw water from the soil and drought stress takes place.

## CロNTRロLLED WATER MANAGEMENT

## Controlled subsurface water management has become an increasingly valued and utilized tool to manage water tables, improve water quality and irrigate through the growing season.

## How Controlled Water Management Works

Controlled water management uses control structures to manage water table levels in the field. Stop logs are used to block water from freely flowing through the outlet. When the stop logs are in place, the water table rises and can supply water to the plants when it is most needed. By keeping water in the fields longer, control structures can also increase the opportunity for nitrogen uptake by plants.

## CロNTRロLLED WATER MANAGEMENT



As precipitation falls throughout the growing season, the water that infiltrates into the soil is held back at a level as high as the top stop log. This gives plants more opportunity for nitrogen uptake, keeping nitrates from leaving the soil profile. When the water rises higher than this level, the water is then allowed to run over the stop $\log$ and through the outlet. If heavy and persistent rains occur during the growing season, the stop logs may be removed in order to drop the water table back down to the drained condition. Dropping the water table protects the crop from oxygen deficiency. The water level in the soil profile will never exceed the top stop log for an extended period of time but will drop below the top stop log if dry weather patterns persist.

As harvest nears, the stop logs are removed and the water table is allowed to drop. This allows for a timely harvest, and fall rains will be allowed to drain freely through the water management system.

## Flexible Dual-wall Pipe

In cold climates, where deep and prolonged freezing occurs, stoplogs should remain out of the system after harvest. This is meant to increase infiltration of spring snowmelt and prevent potential damage to the control structures and tile lines if deep freezing occurs. In warmer climates, where average frost penetrationn depths are less than 3 feet, stoplogs can be added to within 6 inches of the soil surface. This allows the water table to rise and conserve moisture and nutrients in the soil profile.

GロLDLINE

GOLDLINE ${ }^{\circledR}$ is soil tight, high density polyethylene plastic pipe that is an essential component of agricultural water management systems. It is available in mini rolls, maxi rolls, and 10- and 20 -foot stick lengths. GOLDLINE ${ }^{\circledR}$ is available as non-perforated or with standard or narrow perforation configurations, which can be supplied with high performance geotextile fabric.


Perforated Coils: Available Sizes

| Diameter | Number | Length | Unit |
| :---: | :---: | :---: | :---: |
| $3^{\prime \prime}$ | $030100 P F$ | $100^{\prime}$ | Micro |
| $3^{\prime \prime}$ | $030300 P F$ | $300^{\prime}$ | Mini |
| $3^{\prime \prime}$ | $035300 P F$ | $5,300^{\prime}$ | Maxi |
| $4^{\prime \prime}$ | 040100 PF | $100^{\prime}$ | Micro |
| $4^{\prime \prime}$ | $040250 P F$ | $250^{\prime}$ | Mini |
| $4^{\prime \prime}$ | 043000 PF | $3,000^{\prime}$ | Maxi |
| $5^{\prime \prime}$ | $050165 P F$ | $165^{\prime}$ | Mini |
| $5^{\prime \prime}$ | $051900 P F$ | $1,900^{\prime}$ | Maxi |
| $5^{\prime \prime}$ | $052300 P F$ | $2,300^{\prime}$ | Maxi |
| $6^{\prime \prime}$ | $060100 P F$ | $100^{\prime}$ | Mini |
| $6^{\prime \prime}$ | $061450 P F$ | $1,450^{\prime}$ | Maxi |
| $8^{\prime \prime}$ | $080390 P F$ | $390^{\prime}$ | Mini |
| $8^{\prime \prime}$ | $080825 P F$ | $825^{\prime}$ | Maxi |
| $10^{\prime \prime}$ | $100525 P F$ | $525^{\prime}$ | Maxi |
| $12^{\prime \prime}$ | $120320 P F$ | $320^{\prime}$ | Maxi |

Narrow Slot Pipe: Available Sizes
Not intended to replace sock or fabric around pipe; provided as a service to our customers without any implied warranties. (NS = narrow slot)

| Diameter | Number | Length |
| :---: | :---: | :---: |
| $3^{\prime \prime}$ | $5,300^{\prime}$ | Unit |
| $4^{\prime \prime}$ | $100^{\prime}$ | Maxi |
| $4^{\prime \prime}$ | $250^{\prime}$ | Micro |
| $4^{\prime \prime}$ | $3,000^{\prime}$ | Mani |
| $5^{\prime \prime}$ | $165^{\prime}$ | Maxi |
| $5^{\prime \prime}$ | $2,300^{\prime}$ | Maxi |
| $8^{\prime \prime}$ | $825^{\prime}$ | Maxi |
| $10^{\prime \prime}$ | $525^{\prime}$ | Maxi |
| $12^{\prime \prime}$ | $320^{\prime}$ | Maxi |

## Muck Pipe: Available Sizes

Has 4 rows of perforations at $90^{\circ}$ intervals

| Diameter | Number | Length | Unit |
| :---: | :---: | :---: | :---: |
| $4^{\prime \prime}$ | 040100 MHS | $100^{\prime}$ | Micro |
| $4^{\prime \prime}$ | 040250 MHS | $250^{\prime}$ | Mini |
| $4^{\prime \prime}$ | 043000 MHS | $3,000^{\prime}$ | Maxi |
| $5^{\prime \prime}$ | 050165 MHS | $165^{\prime}$ | Mini |
| $5^{\prime \prime}$ | 052300 MHS | $2,300^{\prime}$ | Maxi |
| $6^{\prime \prime}$ | 060100 MHS | $100^{\prime}$ | Mini |
| $6^{\prime \prime}$ | 061450 MHS | $1,450^{\prime}$ | Maxi |

## Muck Pipe with Sock

| Diameter | Number | Length | Unit |
| :---: | :---: | :---: | :---: |
| $4^{\prime \prime}$ | 040100 MHSSF | $100^{\prime}$ | Micro |
| $4^{\prime \prime}$ | 040250 MHSSF | $250^{\prime}$ | Mini |
| $4^{\prime \prime}$ | 043000 MHSSF | $3,000^{\prime}$ | Maxi |
| $5^{\prime \prime}$ | 050165 MHSSF | $165^{\prime}$ | Mini |
| $5^{\prime \prime}$ | 052300 MHSSF | $2,300^{\prime}$ | Maxi |
| $6^{\prime \prime}$ | 060100 MHSSF | $100^{\prime}$ | Mini |
| $6^{\prime \prime}$ | 061450 MHSSF | $1,450^{\prime}$ | Maxi |

Non-Perforated Coils: Available Sizes

| Diameter | Number | Length | Unit |
| :---: | :---: | :---: | :---: |
| $3^{\prime \prime}$ | $030100 N P$ | $100^{\prime}$ | Micro |
| $3^{\prime \prime}$ | $030300 N P$ | $300^{\prime}$ | Mini |
| $3^{\prime \prime}$ | $035300 N P$ | $5,300^{\prime}$ | Maxi |
| $4^{\prime \prime}$ | $040100 N P$ | $100^{\prime}$ | Micro |
| $4^{\prime \prime}$ | $040250 N P$ | $250^{\prime}$ | Mini |
| $4^{\prime \prime}$ | $043000 N P$ | $165^{\prime}$ | Maxi |
| $5^{\prime \prime}$ | $050165 N P$ | Mini |  |
| $5^{\prime \prime}$ | $052300 N P$ | $100^{\prime}$ | Maxi |
| $6^{\prime \prime}$ | $060100 N P$ | $390^{\prime}$ | Mini |
| $6^{\prime \prime}$ | $080390 N P$ | $825^{\prime}$ | Maxi |
| $8^{\prime \prime}$ | 080825NP | $525^{\prime}$ | Mini |
| $8^{\prime \prime}$ | $100525 N P$ | $320^{\prime}$ | Maxi |
| $10^{\prime \prime}$ | $120320 N P$ | Maxi | Maxi |
| $12^{\prime \prime}$ |  |  |  |



Mobile Resources<br>Prinsco.com/goldline-resources

Remaining Feet per Coil

|  | Pipe Diameter |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  | $3 "$ | 4" | $5{ }^{\prime \prime}$ | $6{ }^{\prime \prime}$ | 8" | 10" | 12 " |
|  | 1 | $150{ }^{\prime}$ | $135{ }^{\prime}$ | 100 | $90^{\prime}$ | $93^{1}$ | 80' | $90^{\prime}$ |
|  | 2 | $330{ }^{\prime}$ | $290{ }^{\prime}$ | $250{ }^{\prime}$ | $220{ }^{\prime}$ | $230{ }^{\prime}$ | 200' | 195' |
|  | 3 | $550{ }^{\prime}$ | $490{ }^{\prime}$ | $440{ }^{\prime}$ | $387{ }^{\prime}$ | 385' | 350' | 320' |
|  | 4 | 825 ${ }^{\prime}$ | 7301 | $670{ }^{\prime}$ | $592{ }^{\prime}$ | 595' | $525{ }^{\prime}$ |  |
|  | 5 | $1120^{\prime}$ | 1000' | $940{ }^{\prime}$ | 834' | 825 ${ }^{\prime}$ |  |  |
|  | 6 | $1480{ }^{\prime}$ | 1315' | 1250' | 1107 ${ }^{\prime}$ |  |  |  |
|  | 7 | 1870' | 1685' | $1600{ }^{\prime}$ | 1450' |  |  |  |
|  | 8 | 2305' | 2065 | $1900{ }^{\prime}$ |  |  |  |  |
|  | 9 | 2780' | 2500' | $2300{ }^{\prime}$ |  |  |  |  |
|  | 10 | 3290' | 3000' |  |  |  |  |  |
|  | 11 | 3860' |  |  |  |  |  |  |
|  | 12 | 4400' |  |  |  |  |  |  |
|  | 13 | 5300' |  |  |  |  |  |  |

GOLDLINE ${ }^{\circledR}$ Accessories: See pages 20-21


GOLDLINE ${ }^{\circledR}$ with geotextile wrap is great for projects involving fine sand，soil or flowable particles of soil．It comes with a knitted polyester continuous seamless sleeve．Fabric should not be used when installing in heavy soils（such as clay or loam）since it may inhibit water from entering the pipe．

## Applications＊

－Culverts
－Soil Stabilization
－Grain Aeration
－Water Management Laterals
－Water Management Mains
＊Contact your Prinsco representative regarding application suitability questions．

## Approximate

 Pipe Requirements| Spacing | FT／AC |
| :---: | :---: |
| $20^{\prime}$ | $2180^{\prime}$ |
| $30^{\prime}$ | $1450^{\prime}$ |
| $40^{\prime}$ | $1089^{\prime}$ |
| $50^{\prime}$ | $870^{\prime}$ |
| $60^{\prime}$ | $725^{\prime}$ |
| $70^{\prime}$ | $620^{\prime}$ |
| $80^{\prime}$ | $545^{\prime}$ |
| $90^{\prime}$ | $485^{\prime}$ |
| $100^{\prime}$ | $435^{\prime}$ |
| $110^{\prime}$ | $395^{\prime}$ |
| $120^{\prime}$ | $360^{\prime}$ |
| $130^{\prime}$ | $335^{\prime}$ |
| $140^{\prime}$ | $310^{\prime}$ |
| $150^{\prime}$ | $290^{\prime}$ |
| $160^{\prime}$ | $270^{\prime}$ |
| $180^{\prime}$ | $240^{\prime}$ |
| $200^{\prime}$ | $220^{\prime}$ |
| $250^{\prime}$ | $175^{\prime}$ |

Pipe with Installed Sock Wrap：Available Sizes
Pipe with Knitted Polyester Sock Wrap

| Diameter | Number | Length | Unit |
| :---: | :--- | :---: | :---: |
| $3^{\prime \prime}$ | $030100 S F$ | $100^{\prime}$ | Micro |
| $3^{\prime \prime}$ | $030300 S F$ | $300^{\prime}$ | Mini |
| $3^{\prime \prime}$ | $035300 S F^{*}$ | $5,300^{\prime}$ | Maxi |
| $4^{\prime \prime}$ | $040100 S F$ | $100^{\prime}$ | Micro |
| $4^{\prime \prime}$ | $040250 S F$ | $250^{\prime}$ | Mini |
| $4^{\prime \prime}$ | $043000 S F$ | $3,000^{\prime}$ | Maxi |
| $5^{\prime \prime}$ | $050165 S F$ | $165^{\prime}$ | Mini |
| $5^{\prime \prime}$ | $052300 S F$ | $2,300^{\prime}$ | Maxi |
| $6^{\prime \prime}$ | $060100 S F$ | $100^{\prime}$ | Mini |
| $6^{\prime \prime}$ | $061450 S F$ | $1,450^{\prime}$ | Maxi |
| $8^{\prime \prime}$ | $080020 S F^{*}$ | $20^{\prime}$ | Stick |
| $8^{\prime \prime}$ | $080390 S F$ | $390^{\prime}$ | Mini |
| $8^{\prime \prime}$ | $080825 S F$ | $825^{\prime}$ | Maxi |
| $10^{\prime \prime}$ | $100020 S F^{*}$ | $20^{\prime}$ | Stick |
| $10^{\prime \prime}$ | $100525 S F$ | $525^{\prime}$ | Maxi |
| $12^{\prime \prime}$ | $120020 S F^{*}$ | $20^{\prime}$ | Stick |
| $12^{\prime \prime}$ | $120320 S F$ | $320^{\prime}$ | Maxi |
| $15^{\prime \prime}$ | $150020 S F^{*}$ | $20^{\prime}$ | Stick |

＊Special Order Items．Note：Geotextile fabric specifications are available upon request．

## Sticks：Available Sizes

Perforated Lengths

| Diameter | Number | Length | Unit |
| :---: | :---: | :---: | :---: |
| $3 "$ | 030010PFC | $10^{\prime}$ | 100＇ |
| 4＂ | 040010LBC | $10^{\prime}$ | $100{ }^{\prime}$ |
| 4＂ | 040010PFC | $10^{\prime}$ | $100{ }^{\prime}$ |
| 4＂ | 040020PF | $20^{\prime}$ | $20^{\prime}$ |
| $6{ }^{\prime \prime}$ | 060020PF | $20^{\prime}$ | $20^{\prime}$ |
| 8＂ | 080020PF | $20^{\prime}$ | $20^{\prime}$ |
| 10＂ | 100020PF | $20^{\prime}$ | $20^{\prime}$ |
| 12＂ | 120020PF | $20^{\prime}$ | $20^{\prime}$ |
| $15^{\prime \prime}$ | 150020PF | $20^{\prime}$ | $20^{\prime}$ |
| Non－Perforated Lengths |  |  |  |
| Diameter | Number | Length | Unit |
| $3 "$ | 030010NPC | $10^{\prime}$ | $100^{\prime}$ |
| $4 "$ | 040010NPC | $10^{\prime}$ | $100^{\prime}$ |
| 4＂ | 040020NP | $20^{\prime}$ | $20^{\prime}$ |
| $6{ }^{\prime \prime}$ | 060020NP | $20^{\prime}$ | $20^{\prime}$ |
| 8＂ | 080020NP | $20^{\prime}$ | $20^{\prime}$ |
| 10＂ | 100020NP | $20^{\prime}$ | $20^{\prime}$ |
| 12＂ | 120020NP | $20^{\prime}$ | $20^{\prime}$ |
| $15^{\prime \prime}$ | 150020NP | $20^{\prime}$ | $20^{\prime}$ |

## Dimensions，Weights and Strength

| Nominal | Approximate <br> OD | Stick <br> ID | （Ft．／Stick） |
| :--- | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |$\quad$| Micro |
| :---: |
| Roll |
| （Ft．／Roll） |$\quad$| Mini |
| :---: |
| Roll |
| （Ft．／Roll） |$\quad$| Maxi |
| :---: |
| Roll |
| （Ft．／Roll） |$\quad$| Corrugation |
| :---: |
| Pitch |
| （inches） | | Corrugation |
| :---: |
| Crown Ht． |
| （inches） | | Nominal |
| :---: |
| Flow Area |
| （Sq．In．） |$\quad$| Wer Ft |
| :---: |
| （Lbs．） |

## Pipe Wall Cross Section



Flow Chart Full Flow Capacity GPM｜Slope（ft．／100 ft．）

Single－Wall Corrugated Polyethylene Pipe
Hydraulic Slope：Feet Per Hundred Feet

| Diameter | $\mathbf{0 . 0 2}$ | $\mathbf{0 . 0 5}$ | $\mathbf{0 . 1 0}$ | $\mathbf{0 . 2 0}$ | $\mathbf{0 . 5 0}$ | $\mathbf{1 . 0}$ | $\mathbf{2 . 0}$ | $\mathbf{5 . 0}$ | $\mathbf{1 0 . 0}$ | $\mathbf{2 0 . 0}$ |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| $3^{\prime \prime}$ | 5 | 7.7 | 11 | 15 | 24 | 34 | 49 | 77 | 109 | 154 |
| $4^{\prime \prime}$ | 11 | 17 | 23 | 33 | 52 | 74 | 105 | 166 | 234 | 331 |
| $5^{\prime \prime}$ | 19 | 30 | 42 | 60 | 95 | 134 | 190 | 300 | 425 | 600 |
| $6^{\prime \prime}$ | 31 | 49 | 69 | 98 | 154 | 218 | 309 | 488 | 690 | 976 |
| $8^{\prime \prime}$ | 62 | 99 | 139 | 197 | 312 | 441 | 623 | 985 | 1,394 | 1,971 |
| $10^{\prime \prime}$ | 106 | 168 | 238 | 336 | 532 | 752 | 1,064 | 1,682 | 2,378 | 3,363 |
| $12^{\prime \prime}$ | 163 | 258 | 365 | 516 | 817 | 1,155 | 1,633 | 2,582 | 3,652 | 5,165 |
| $15^{\prime \prime}$ | 296 | 468 | 662 | 937 | 1,481 | 2,094 | 2,961 | 4,682 | 6,622 | 9,365 |
| $18^{\prime \prime}$ | 433 | 685 | 969 | 1,371 | 2,167 | 3,065 | 4,334 | 6,853 | 9,691 | 13,705 |
| $24^{\prime \prime}$ | 933 | 1,476 | 2,087 | 2,952 | 4,667 | 6,600 | 9,334 | 14,758 | 20,871 | 29,516 |



## GロLDFLEXN

Prinsco's GOLDFLEX™ is a flexible dual-wall pipe that is revolutionizing the installation of agricultural drainage mains. Goldflex installs up to 60\% faster than traditional dual-wall sticks and feeds directly into a plow boot, vastly increasing efficiency and improving safety by eliminating extra equipment, extra crew, and the need for an open trench.

## Features \& Benefits

- Installs 60\% faster than dual-wall sticks
- Trenchless installation increases safety
- Less labor \& equipment in the field
- Ideal for high water table areas



Available Sizes

| Diameter (in.) | Perforation | Number | Nominal <br> Length |
| :---: | :---: | :---: | :---: |
| $12^{\prime \prime}$ | None | 12GF215NP-FLEX | $215^{\prime}$ |
| $12^{\prime \prime}$ | Perforated w. <br> Sock | 12GF215SF-FLEX | $215^{\prime}$ |
| $12^{\prime \prime}$ | Narrow Slot | 12GF215NS-FLEX | $215^{\prime}$ |
| $15^{\prime \prime}$ | None | 15GF190NP-FLEX | $190^{\prime}$ |
| $15^{\prime \prime}$ | Perforated w. <br> Sock | 15GF190SF-FLEX | $190^{\prime}$ |
| $15^{\prime \prime}$ | Narrow Slot | 15GF190NS-FLEX | $190^{\prime}$ |

## Boot Design

## Boot Width

The inside of the boot should be 3 " wider than the outside diameter (OD) of the pipe. The additional width will help reduce friction on the pipe as it moves through the boot.

## Bend Radius

The booth shall have a minimum of 50 " bend radius. There are several manufacturers that produce boots for 12 " and 15 " single wall pipe. Many of these boots have a greater bend radius, which may be considered for use for installation of Goldflex.

## Rounded Bottom

The boot shall have a rounded bottom to provide proper support up to the spring-line of the pipe. Voids in the haunch area of the pipe can result in additional stress on the pipe which could reduce the service life. The shape of the bottom of the boot should be similar to the OD of the pipe to provide sufficient support.



## Burial Depth

The maximum burial depth is significantly influenced by the type of backfill and the compaction level of the soil around the pipe. Goldflex, along with all HDPE pipe, relies on the strength of the soil around it to help carry the overburden load. In a tile plow application, an adequately shaped trench bottom is necessary to provide support to the pipe. With this in mind, the maximum recommended burial depth for Goldflex installed in native soil by a tile plow is 8 feet. Reference Prinsco's Agricultural Installation Guide for additional information.

## ECロFLロ®1ロロ

For over 30 years，Prinsco has been providing farmers with drainage solutions to ensure a greener future．That has always meant more green in the field for more green in your pocket！Now，Prinsco has given your greener future a whole new meaning with an environmentally－ friendly product called ECOFLO ${ }^{\circledR 100}$ ．It＇s a dual－wall pipe made with a minimum of $40 \%$ recycled content and engineered to provide maximum water flow and capacity for your critical drainage mains．Most importantly，it＇s tested and verified to offer a 100 year service life－an unprecedented performance level for any drainage pipe on the market today！


ECOFLO ${ }^{\circledR} 100$ Main Sizes

| Diameter | Number | Nominal Length |
| :---: | :---: | :---: |
| $12^{\prime \prime}$ | $12 E F 20 N P$ | $10^{\prime} / 20^{\prime}$ |
| $15^{\prime \prime}$ | $15 E F 20 N P$ | $10^{\prime} / 20^{\prime}$ |
| $18^{\prime \prime}$ | $18 E F 20 N P$ | $11^{\prime} / 20^{\prime}$ |
| $24^{\prime \prime}$ | $24 E F 20 N P$ | $11^{\prime} / 20^{\prime}$ |
| $30^{\prime \prime}$ | $30 E F 20 N P$ | $11^{\prime} / 20^{\prime}$ |

## Perforated also available．

Other sizes available．See our website for more details．

## Dimensions，Weights and Strength

\(\left.$$
\begin{array}{cccccc}\begin{array}{c}\text { Nominal } \\
\text { ID } \\
\text {（inches）}\end{array} & \begin{array}{c}\text { Approximate } \\
\text { OD } \\
\text {（inches）}\end{array} & \text { Length } & \begin{array}{c}\text { AASHTO Min．} \\
\text {（feet）}\end{array} & \begin{array}{c}\text { Corrugation } \\
\text { 5\％Stiffness＠}\end{array} & \begin{array}{c}\text { Approx．} \\
\text { Witch }\end{array}
$$ <br>
\hline 12^{\prime \prime} \& 14.40 \& 10 / 20 \& 50 \& 2.00 \& Wt．／Ft． <br>

（lbs．）\end{array}\right]\)| （inches） |
| :---: |

DUAL－WALL PE PIPE：Manning＇s＂$n$＂$=0.012$
ECOFLO ${ }^{\text {® }} 100$ Dual－Wall Corrugated Polyethylene Pipe with Smooth Interior

## Pipe Wall Cross Section



## Dual Wall Flow Chart Full Flow Capacity

GPM｜Slope（ ft．／100 ft．）

| Pipe Diameter | Conveyance Factor（k） | 0.02 | 0.05 | 0.10 | 0.20 | 0.50 | 1.0 | 2.0 | 5.0 | 10.0 | 20.0 |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 12＂ | 38.6 | 245 | 387 | 548 | 775 | 1，225 | 1，732 | 2，450 | 3，874 | 5，478 | 7，747 |
| $15^{\prime \prime}$ | 70 | 444 | 702 | 993 | 1，405 | 2，221 | 3，141 | 4，442 | 7，023 | 9，933 | 14，047 |
| 18＂ | 113.8 | 722 | 1，142 | 1，615 | 2，284 | 3，612 | 5，108 | 7，223 | 11，421 | 16，152 | 22，842 |
| $24^{\prime \prime}$ | 245.1 | 1，556 | 2，460 | 3，478 | 4，919 | 7，778 | 11，000 | 15，556 | 24，596 | 34，784 | 49，192 |
| 30 ＂ | 444.4 | 2，820 | 4，460 | 6，307 | 8，919 | 14，102 | 19，944 | 28，205 | 44，596 | 63，068 | 89，192 |

Manning＇s＂$n$＂$=0.012$

GREEN FACT：The carbon footprint of HDPE is considerably smaller than concrete because it requires less energy to manufacture，transport and install．


Mobile Resources
Prinsco．com／ecoflo100－resources

GロLDFLロ WT ${ }^{\circledR}$<br>Integrated Bell \＆Spigot Dual－Wall

GロLDFLロ®<br>Plain End Dual－Wall



GOLDFLO ${ }^{\circledR}$ and GOLDFLO WT ${ }^{\circledR}$ are manufactured to the most stringent requirements of AASHTO M294 or ASTM F2306，along with the ASTM D3212 watertight laboratory test requirements，making it ideal for projects where low cost，high installation efficiency，high product quality，and maximum watertight performance are critical．

## Available Sizes

GOLDFLO ${ }^{\circledR}$ WT

| Diameter | Number | Nominal Length |
| :---: | :---: | :---: |
| $4^{\prime \prime}$ | 4WT20NP | $20^{\prime}$ |
| $6^{\prime \prime}$ | 6WT20NP | $20^{\prime}$ |
| $8^{\prime \prime}$ | 8WT20NP | $20^{\prime}$ |
| $10^{\prime \prime}$ | 10WT20NP | $20^{\prime}$ |
| $12^{\prime \prime}$ | 12WT10NP／12WT20NP | $10^{\prime} / 20^{\prime}$ |
| $15^{\prime \prime}$ | 15WT10NP／15WT20NP | $10^{\prime} / 20^{\prime}$ |
| $18^{\prime \prime}$ | 18WT11NP／18WT20NP | $11^{\prime} / 20^{\prime}$ |
| $24^{\prime \prime}$ | 24WT11NP／24WT20NP | $11^{\prime} / 20^{\prime}$ |
| $30^{\prime \prime}$ | 30WT11NP／30WT20NP | $11^{\prime} / 20^{\prime}$ |
| $36^{\prime \prime}$ | 36WT11NP／36WT20NP | $11^{\prime} / 20^{\prime}$ |
| $42^{\prime \prime}$ | $42 W T 11 N P / 42 W T 20 N P$ | $11^{\prime} / 20^{\prime}$ |
| $48^{\prime \prime}$ | 48WT11NP／48WT20NP | $11^{\prime} / 20^{\prime}$ |
| $60 "$ | 60WT11NP／60WT20NP | $11^{\prime \prime} / 20^{\prime}$ |
|  | （pipe is available perforated） |  |

GOLDFLO®

| Diameter | Number | Nominal Length |
| :---: | :---: | :---: |
| $4^{\prime \prime}$ | 04GF20NP | $20^{\prime}$ |
| $6^{\prime \prime}$ | 06GF20NP | $20^{\prime}$ |
| $8^{\prime \prime}$ | 08GF20NP | $20^{\prime}$ |
| $10^{\prime \prime}$ | 10GF20NP | $20^{\prime}$ |
| $12^{\prime \prime}$ | 12GF20NP | $20^{\prime}$ |
| $15^{\prime \prime}$ | 15GF20NP | $20^{\prime}$ |
| $18^{\prime \prime}$ | 18GF20NP | $20^{\prime}$ |
| $24^{\prime \prime}$ | 24GF20NP | $20^{\prime}$ |
| $30^{\prime \prime}$ | 30GF20NP | $20^{\prime}$ |
| $36^{\prime \prime}$ | 36GF20NP | $20^{\prime}$ |
|  | （pipe is available perforated） |  |

（pipe is available perforated）

## ECOAIR Aeration：Available Sizes

Prinsco aeration products are ideal for grain storage applications．It has $3 / 8^{\prime \prime}-5 / 8^{\prime \prime}$ holes．Pipe provided as a service to our customers with no design or any implied warranties．

| GOLDFLO | Number | Length | Unit | AERATION SCREENING（FIBERGLASS） |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  |  |  | Diameter | Number | Length | Unit |
| $12^{\prime \prime}$ | 12GF20AR | $20^{\prime}$ | 20＇ | 12 ＂ | SCR12 | Sold per roll | 48＂$\times 100{ }^{\text {R Roll }}$ |
| $15^{\prime \prime}$ | 15GF20AR | $20^{\prime}$ | $20^{\prime}$ | 15 ＂ | SCR15 | Sold per roll | $60{ }^{\prime \prime} \times 100$ Roll |
| 18＂ | 18GF20AR | $20^{\prime}$ | $20^{\prime}$ | 18＂ | SCR18 | Sold per roll | 72＂X 100＇Roll |
| $24 "$ | 24GF20AR | $20^{\prime}$ | $20^{\prime}$ | 24 ＂ | SCR24 | Sold per roll | 108＂X 10＇Roll |

## Dimensions，Weights and Strength

| Nominal <br> ID <br> （inches） | Approximate <br> OD <br> （inches） | Corrugation <br> Pitch <br> （inches） | Nominal <br> Length <br> （feet） | AASHTO Min． <br> Pipe Stiffness＠ <br> 5\％Deflection（PSI） | Approx <br> Wt．／Ft． <br> （lbs） |
| :---: | :---: | :---: | :---: | :---: | :---: |
| $4^{\prime \prime}$ | 4.8 | .67 | 20 | 50 | 0.5 |
| $6^{\prime \prime}$ | 7.1 | .80 | 20 | 50 | 1.0 |
| $8^{\prime \prime}$ | 9.5 | 1.00 | 20 | 50 | 1.7 |
| $10^{\prime \prime}$ | 11.8 | 1.30 | 20 | 50 | 2.3 |
| $12^{\prime \prime}$ | 14.4 | 2.00 | $10 / 20$ | 50 | 3.1 |
| $15^{\prime \prime}$ | 17.6 | 2.67 | $10 / 20$ | 42 | 4.5 |
| $18^{\prime \prime}$ | 21.5 | 3.00 | $11 / 20$ | 40 | 6.5 |
| $24^{\prime \prime}$ | 28.3 | 4.00 | $11 / 20$ | 34 | 11.0 |
| $30^{\prime \prime}$ | 34.7 | 4.00 | $11 / 20$ | 28 | 14.6 |
| $36^{\prime \prime}$ | 40.6 | 4.00 | $11 / 20$ | 22 | 19.0 |
| $42^{\prime \prime}$ | 47.8 | 6.00 | $11 / 20$ | 20 | 30.0 |
| $48^{\prime \prime}$ | 54.2 | 6.00 | $11 / 20$ | 18 | 30.0 |
| $60^{\prime \prime}$ | 66.8 | 6.00 | $11 / 20$ | 14 | 40.0 |

## Pipe Wall Cross Section




Mobile Resources
Prinsco．com／dualwall－resources

## Dual Wall Flow Chart Full Flow Capacity

GPM｜Slope（ ft．／100 ft．）

| Pipe Diameter | Conveyance Factor（k） | 0.02 | 0.05 | 0.10 | 0.20 | 0.50 | 1.0 | 2.0 | 5.0 | 10.0 | 20.0 |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 4＂ | 2.1 | 13 | 21 | 29 | 41 | 65 | 93 | 131 | 207 | 293 | 414 |
| $6{ }^{\prime \prime}$ | 6.1 | 39 | 61 | 86 | 122 | 193 | 273 | 386 | 610 | 863 | 1220 |
| 8＂ | 13.1 | 83 | 131 | 186 | 263 | 415 | 588 | 831 | 1，314 | 1，858 | 2，628 |
| 10＂ | 23.7 | 151 | 238 | 337 | 476 | 753 | 1，065 | 1，507 | 2，382 | 3，369 | 4，764 |
| 12＂ | 38.6 | 245 | 387 | 548 | 775 | 1，225 | 1，732 | 2，450 | 3，874 | 5，478 | 7，747 |
| 15＂ | 70 | 444 | 702 | 993 | 1，405 | 2，221 | 3，141 | 4，442 | 7，023 | 9，933 | 14，047 |
| 18＂ | 113.8 | 722 | 1142 | 1，615 | 2，284 | 3，612 | 5，108 | 7，223 | 11，421 | 16，152 | 22，842 |
| $24 "$ | 245.1 | 1556 | 2460 | 3，478 | 4，919 | 7，778 | 11，000 | 15，556 | 24，596 | 34，784 | 49，192 |
| 30＂ | 444.4 | 2820 | 4460 | 6，307 | 8，919 | 14，102 | 19，944 | 28，205 | 44，596 | 63，068 | 89，192 |
|  | 722.6 | 4，586 | 7，252 | 10，256 | 14，504 | 22，932 | 32，431 | 45，864 | 72，518 | 102，556 | 145，036 |
| 42＂ | 1089.9 | 6，918 | 10，939 | 15，470 | 21，878 | 34，592 | 48，920 | 69，183 | 109，388 | 154，698 | 218，776 |
| 48＂ | 1556.1 | 9，877 | 15，618 | 22，087 | 31，235 | 49，387 | 69，844 | 98，775 | 156，176 | 220，867 | 312，353 |
| 60＂ | 2821.5 | 17，908 | 28，315 | 40，043 | 56，629 | 89，539 | 126，627 | 179，078 | 283147 | 400，430 | 566，293 |

## AG CATCH BAGIN

Your subsurface water management system can only function as well as its outlet. So if the grade on your system won't allow for a gravity flow outlet, Prinsco's agricultural catch basin provides the perfect solution. They are built from polymer coated corrugated metal and provide strength and durability for years of trouble-free service. Coupled with other Prinsco products, they provide a water management system that is engineered with integrity!

## ACCESSロRIES

Additional allied products are available. Please contact your Prinsco representative for a complete list.

## HICKENBOTTOM INTAKE RISERS

A Hickenbottom Intake is a three-piece unit that includes one orange section with holes or slots, one orange middle and a specia blind tee. All below-ground sections of Hickenbottom intakes meet or exceed ASTM F 405 specifications for underground applications. All sections are three feet in length.


| ORANGE TOP |  |  |
| :---: | :---: | :---: |
| With 1" Holes |  |  |
| Size | Number | Unit |
| $5^{\prime \prime}$ | HB051 | Each |
| $6^{\prime \prime}$ | HB061 | Each |
| $8^{\prime \prime}$ | HB081 | Each |
| $10^{\prime \prime}$ | HB101 | Each |
| $12^{\prime \prime}$ | HB121 | Each |


| ORANGE TOP |  |  |
| :---: | :---: | :---: |
| With 1" $\times 4$ " Slots |  |  |
| $5^{\prime \prime}$ | HB051 $\times 4$ | Each |
| $6^{\prime \prime}$ | HB061 $\times 4$ | Each |
| $8^{\prime \prime}$ | HB081 $\times 4$ | Each |
| $10^{\prime \prime}$ | HB101 $\times 4$ | Each |
| $12^{\prime \prime}$ | HB121 $\times 4$ | Each |

ORANGE MIDDLE

| ORANGE MIDDLE |  |  |
| :---: | :---: | :---: |
| With 5/16" Holes |  |  |
| $5^{\prime \prime}$ | HB05516 | Each |
| $6^{\prime \prime}$ | HB06516 | Each |
| $8^{\prime \prime}$ | HB08516 | Each |
| $10^{\prime \prime}$ | HB10516 | Each |
| $12^{\prime \prime}$ | HB12516 | Each |


| SPECIAL BLIND TEE |  |  |
| :--- | :---: | :---: |
| $5^{\prime \prime}$ | HB05T | Each |
| $6^{\prime \prime}$ | HB06T | Each |
| $8^{\prime \prime}$ | HB08T | Each |
| $10^{\prime \prime}$ | HB10T | Each |
| $12^{\prime \prime}$ | HB12T | Each |
|  |  |  |
|  |  |  |
| $6^{\prime \prime}$ | RESTRICTOR |  |
| $8^{\prime \prime}$ | Cut to Any Size) |  |
|  | HB06R | Each |
|  | HB08R | Each |

PRECISION INTAKES
Precision Intakes are constructed of high density polyethylene and are a highly visible bright yellow. Each part has an exclusive locking device. Precision Intakes are manufactured with adjustable bottom sections and are interchangeable with most other parts on the market.


| YELLOW TOP |  |  |
| :---: | :---: | :---: |
| With 1" Holes |  |  |
| Size | Number | Unit |
| $6^{\prime \prime}$ | PR061 | Each |
| $8^{\prime \prime}$ | PR081 | Each |
| $10^{\prime \prime}$ | PR101 | Each |


| YELLOW TOP |  |  |
| :---: | :---: | :---: |
| With 1" $\times 4$ " Slots |  |  |
| $6^{\prime \prime}$ | PR061X4 | Each |
| $8^{\prime \prime}$ | PR081X4 | Each |
| $10^{\prime \prime}$ | PR101X4 | Each |


| BLACK BOTTOM |  |  |
| :---: | :---: | :---: |
| With 5/16" Holes |  |  |
| $6^{\prime \prime}$ | PR06516 | Each |
| $8^{\prime \prime}$ | PR08516 | Each |
| $10^{\prime \prime}$ | PR10516 | Each |

RESTRICTOR

| (Cut to Any Size) |  |  |
| :---: | :---: | :---: |
| $6^{\prime \prime}$ | PR06R | Each |
| $8^{\prime \prime}$ | PR08R | Each |
| $10^{\prime \prime}$ | PR10R | Each |


| PATENTED BLIND TEE |  |  |
| :---: | :---: | :---: |
| $6^{\prime \prime}$ | PR06T | Each |
| $8^{\prime \prime}$ | PR08T | Each |
| $10^{\prime \prime}$ | PR10T | Each |

INTAKE MARKER FLAGS
Fiberglass rod with flag. Fits in the end of our beehive intake caps.

| Size | Number | Unit |
| :---: | :---: | :---: |
| $8^{\prime}$ | FLIN01 (ORANGE) | Each |
| $8^{\prime}$ | FLIN02 (RED) | Each |
| $8^{\prime}$ | FLIN03 (YELLOW) | Each |



SURVEY FLAGS


## PLASTA PLUG

Snaps inside the pipe to cap the end． Size Number Unit

| $3^{\prime \prime}$ | PP03 | Box of 100 |
| :--- | :--- | :--- |
| $4^{\prime \prime}$ | PP04 | Box of 100 |
| $5^{\prime \prime}$ | PP05 | Box of 100 |

6＂PP06 Box of 100

| CLAY PLUG |  |  |
| :---: | :---: | :---: |
| Size | Number | Unit |
| $4^{\prime \prime}$ | PP04C | Each／Pkg．100 |
| $5^{\prime \prime}$ | PP05C | Each／Pkg．100 |
| $6^{\prime \prime}$ | PP06C | Each／Pkg．100 |



| INTERNAL END PLUG |  |  |
| :---: | :---: | :---: |
| Size | Number | Unit |
| $3^{\prime \prime}$ | P 03 | Each／Pkg． 50 |
| 4＂ | P 04 | Each／Pkg． 50 |
| $5^{\prime \prime}$ | P 05 | Each／Pkg． 25 |
| 6 ＂ | P 06 | Each／Pkg．20 |
| $8^{\prime \prime}$ | P 08 | Each／Pkg． 10 |



| EXTERNAL END CAP PLUG |  |  |
| :---: | :---: | :---: |
| Size | Number | Unit |
| $3^{\prime \prime}$ | EC03 | Each／Pkg． 50 |
| $4^{\prime \prime}$ | EC04 | Each／Pkg． 50 |
| $6^{\prime \prime}$ | EC06 | Each／Pkg． 20 |
| $8^{\prime \prime}$ | EC08 | Each／Pkg．10 |
| $10^{\prime \prime}$ | EC10 | Each／Pkg．10 |
| $12^{\prime \prime}$ | EC12 | Each |
| $15^{\prime \prime}$ | EC15 | Each |
| $18^{\prime \prime}$ | EC18 | Each |
| $24^{\prime \prime}$ | EC24 | Each |



INTERNAL SNAP COUPLER

| Size | Number | Unit |
| :---: | :---: | :---: |
| $3^{\prime \prime}$ | IC03 | Each／Pkg． 50 |
| $4^{\prime \prime}$ | IC04 | Each／Pkg． 50 |
| $5^{\prime \prime}$ | IC05 | Each／Pkg． 25 |
| $6^{\prime \prime}$ | IC06 | Each／Pkg． 20 |
| $8^{\prime \prime}$ | IC08 | Each／Pkg． 10 |
| $10^{\prime \prime}$ | IC10 | Each／Pkg． 5 |
| $12^{\prime \prime}$ | IC12 | Each／Pkg． 5 |



EXTERNAL SNAP COUPLER

| Size |  |  |
| :---: | :---: | :---: |
| 2＂ | Number | Unit |
| $4^{\prime \prime}$ | SN03 | Each／Pkg． 50 |
| $6^{\prime \prime}$ | SN04 | Each／Pkg． 50 |
| $8^{\prime \prime}$ | SN06 | Each／Pkg． 25 |
| $10^{\prime \prime}$ | SN08 | Each／Pkg． 5 |



CLAY ADAPTER
Adapts between corrugated pipe and clay，concrete or PVC．

| Size | Number | Unit |
| :---: | :---: | :---: |
| $3^{\prime \prime}$ | CA03 | Each／Pkg．25 |
| $4^{\prime \prime}$ | CA04 | Each／Pkg．50 |
| $5^{\prime \prime}$ | CA05 | Each／Pkg． 50 |
| $6^{\prime \prime}$ | CA06 | Each／Pkg．20 |
| $8^{\prime \prime}$ | CA08 | Each／Pkg． 20 |
| $10^{\prime \prime}$ | CA10 | Each／Pkg．15 |
| $12^{\prime \prime}$ | CA12 | Each／Pkg．5 |
| $15^{\prime \prime}$ | CA15 | Each／Pkg．5 |
| $18^{\prime \prime}$ | CA18 | Each |



| SOIL－TIGHT COUPLER |  |  |
| :---: | :---: | :---: |
| Size | Number | Unit |
| $3^{\prime \prime}$ | SC03 | Each／Pkg．75 |
| $4^{\prime \prime}$ | SC04 | Each／Pkg． 50 |
| $5^{\prime \prime}$ | SC05 | Each／Pkg．75 |
| $6^{\prime \prime}$ | SC06 | Each／Pkg． 50 |
| $8^{\prime \prime}$ | SC08 | Each／Pkg．25 |
| $10^{\prime \prime}$ | SC10 | Each |
| $12^{\prime \prime}$ | SC12 | Each |
| $15^{\prime \prime}$ | SC15 | Each |
| $18^{\prime \prime}$ | SC18 | Each |
| $24^{\prime \prime}$ | SC24 | Each |

PLASTIC TIES
Number
Unit
Use with 8＂－15＂Coupler TIE01

Pkg．of 100

Use with 18＂－36＂Coupler TIE02

Pkg．of 50


## Mobile Resources

Prinsco．com／goldline－resources


STRAIGHT TEE

| STRALGH TEE |  |  |
| :---: | :---: | :---: |
| Size | Number | Unit |
| $2^{\prime \prime}$ | T0222 | Each / Pkg. 50 |
| $3^{\prime \prime}$ | T0333 | Each / Pkg. 50 |
| $4^{\prime \prime}$ | T0444 | Each / Pkg. 20 |
| $5^{\prime \prime}$ | T0555 | Each / Pkg. 5 |
| $6^{\prime \prime}$ | T0666 | Each / Pkg. 5 |



| BLIND TEE |  |  |
| :---: | :---: | :---: |
| Size | Number | Unit |
| $3^{\prime \prime}$ | T033B | Each / Pkg. 50 |
| $4^{\prime \prime}$ | T044B | Each $/$ Pkg. 20 |
| $5^{\prime \prime}$ | T055B | Each $/$ Pkg. 5 |
| $6^{\prime \prime}$ | T066B | Each / Pkg. 5 |
| $8^{\prime \prime}$ | T088B | Each / Pkg. 4 |
| $10^{\prime \prime}$ | T100B | Each |
| $12^{\prime \prime}$ | T120B | Each |
| $15^{\prime \prime}$ | T150B | Each |
| $18^{\prime \prime}$ | T180B | Each |



| REDUCING TEE |  |  |
| ---: | :--- | :---: |
| Size | Number | Unit |
| $5^{\prime \prime}$ | T0554 | Each / Pkg. 5 |
| $6^{\prime \prime}$ | T0654 | Each / Pkg. 5 |
| $8^{\prime \prime}$ | T0888 | Each / Pkg. 4 |
| $10^{\prime \prime}$ | T1010 | Each |
| $12^{\prime \prime}$ | T1212 | Each |
| $15^{\prime \prime}$ | T1515 | Each |
| $18^{\prime \prime}$ | T1818 | Each |



| $4^{\prime \prime} \times 3^{\prime \prime}$ COMBO TEE |  |  |  |
| :--- | :---: | :---: | :---: |
| Size | Number | Type | Unit |
| $3^{\prime \prime-} 4 "$ | T0434 | Co. Straight | Ea./Pkg. 25 |
| $3 "-4 "$ | T043B | Co. Blind | Ea./Pkg. 25 |



| TAP TEE |  |  |  |
| :--- | :--- | :--- | :--- |
| Size Number | Type | Unit | Pipe <br> Fitting |
| $4^{\prime \prime}$ | TT04S | Short | Each $6^{\prime \prime}-8^{\prime \prime}$ |
| $4^{\prime \prime}$ | TT04L | Long | Each 10"-12" |
| $5^{\prime \prime}$ | TT05S | Short | Each 10"-12" |
| $5^{\prime \prime}$ | TT05L | Long | Each 15"-18" |
| $6^{\prime \prime}$ | TT06S | Short | Each 15"-24" |
| $6^{\prime \prime}$ | TT06L | Long | Each $30^{"-36 " ~}$ |


$90^{\circ}$ ELBOW

For larger sizes (5"-15"), use a blind tee.

| Size | Number | Unit |
| :---: | :---: | :---: |
| $3^{\prime \prime}$ | E03 | Each $/$ Pkg. 25 |
| $4^{\prime \prime}$ | E04 | Each $/$ Pkg. 25 |



| STEP DOWN REDUCER |  |  |
| :---: | :---: | :---: |
| Size | Number | Unit |
| $4^{\prime \prime} \times 3^{\prime \prime}$ | R043 | Each / Pkg. 25 |
| $5^{\prime \prime} \times 4^{\prime \prime}$ | R054 | Each / Pkg. 25 |
| $6^{\prime \prime} \times 4^{\prime \prime}$ | R064 | Each / Pkg. 25 |
| $6^{\prime \prime} \times 5^{\prime \prime}$ | R065 | Each / Pkg. 25 |
| $6^{\prime \prime} \times 5^{\prime \prime} \times 4^{\prime \prime}$ | R0654 | Each / Pkg. 50 |
| $8^{\prime \prime} \times 6^{\text {" }}$ | R086 | Each |
| $10^{\prime \prime} \times 8^{\prime \prime}$ | R108 | Each / Pkg. 5 |
| $10^{\prime \prime} \times 8^{\prime \prime} \times 6^{\text {" }}$ | R1086 | Each / Pkg. 5 |
| $12^{\prime \prime} \times 10^{\prime \prime}$ | R1210 | Each / Pkg. 5 |
| $12^{\prime \prime} \times 10^{\prime \prime} \times 8^{\prime \prime}$ | R12108 | Each / Pkg. 5 |
| $15^{\prime \prime} \times 12^{\prime \prime}$ | R1512 | Each |
| $18^{\prime \prime} \times 15^{\prime \prime}$ | R1815 | Each |




INLINE WATER LEVEL CONTROL STRUCTURE

| Pipe | Inside | Dim. |
| :---: | :---: | :---: |
| Size | Width | Depth |
| 4" | 8" | 10" |
| $6{ }^{\prime \prime}$ | 8" | $10^{\prime \prime}$ |
| 8" | 12" | 12" |
| 10" | 14 " | $16^{\prime \prime}$ |
| 12" | $16^{\prime \prime}$ | $20^{\prime \prime}$ |
| $15^{\prime \prime}$ | 20" | 24" |
| 18" | 24 " | 28" |
| $24 "$ | $31 "$ | 39" |
| 24"* | 31" | 39" |



INLET WATER LEVEL CONTROL STRUCTURE

| Pipe | Inside | Dim. |
| :---: | :---: | :---: |
| Size | Width | Depth |
| $4^{\prime \prime}$ | $8^{\prime \prime}$ | $5^{\prime \prime}$ |
| $6^{\prime \prime}$ | $8^{\prime \prime}$ | $5^{\prime \prime}$ |
| $8^{\prime \prime}$ | $12^{\prime \prime}$ | $6^{\prime \prime}$ |
| $10^{\prime \prime}$ | $14^{\prime \prime}$ | $8^{\prime \prime}$ |
| $12^{\prime \prime}$ | $16^{\prime \prime}$ | $10^{\prime \prime}$ |
| $15^{\prime \prime}$ | $20^{\prime \prime}$ | $12^{\prime \prime}$ |
| $18^{\prime \prime}$ | $24^{\prime \prime}$ | $14^{\prime \prime}$ |
| $24^{\prime \prime}$ | $31^{\prime \prime}$ | $18^{\prime \prime}$ |
| $24^{\prime \prime *}$ | $31^{\prime \prime}$ | $18^{\prime \prime}$ |
| *To fit $24^{\prime \prime}$ dual-wall polyethylene pipe. |  |  |

## AGRI DRAIN INLINE WATER LEVEL CONTROL STRUCTURE

Note: Heights vary from $\mathbf{2 '}^{\prime}$ to $\mathbf{1 2}^{\prime}$. Please call for specific heights.


Side view of how Inline Water Level Control Structures"TM "stair-step" water through the soil profile.

## AGRI DRAIN INLET WATER LEVEL CONTROL STRUCTURE

Regulate operating water level of ponds, marshes, wetlands and wastewater systems by installing valves on discharge pipes. The sliding drain gate shuts off the discharge pipe, but can be partially open to drain the pond at a controlled rate.
Gaskets on the sliding control weir and drain gate resist leakage, seal tight.
Note: Heights vary from $2^{\prime}$ to $6^{\prime}$. Please call for specific heights.

TYPICAL INSTALLATION Inlet Water Level Control Structure



TANDEM AXLE


SINGLE AXLE

| MAXI STRINGER |  |  |
| :---: | :---: | :---: |
| Number | Item | Unit |
| MAXIHDTGPC | Tandem Axle <br> Heavy Duty | Each |
|  | Single Axle <br> MAXISGPC |  |
|  | Heavy Duty | Each |

- Heavy duty frame but light enough for easy handling.
- Power unit is electric over hydraulic. All you need is a 12-volt battery.
- Hydraulics are of industrial quality.
- Wheel base is $6{ }^{\prime} 4$ ".
- Overall trailer length: 16'4".
-Weight: Single - 1,635 lbs., Tandem - 2,100 lbs.
- Comes standard with hitch pin.
- Standard 10'7" diameter table.



## CRARY TILE PRO STRINGER TRAILER

- Walking Tandem Axle.
- Folding Wings.
- Electric Hydraulic Pump \& Cylinder.
- Electric Brake for Spool Reel.
- Manual Lock for Spool.
- Electric Brake Control \& Lift Switch with 30' Rubber Cord.
- 11L-15 8 Ply Flotation Tires.
- Tail Light Kit for On Road Travel.
- Replaceable Spools.
- Pin Hitch (other styles available).


| BAR GUARD |  |  |
| :---: | :--- | :--- |
| Number | Description | Unit |
| BG04 | 4" Bar Guard | Each |
| BG05 | 5" Bar Guard | Each |
| BG06 | 6" Bar Guard | Each |
| BG08 | 8" Bar Guard | Each |
| BG08H | 8" Bar Guard | Each |
| BG10 | 10" Bar Guard | Each |
| BG10H | 10" Bar Guard | Each |
| BG12 | 12" Bar Guard | Each |
| BG12H | 12" Bar Guard | Each |
| BG18 | 18" Bar Guard | Each |
| BG24 | 24" Bar Guard | Each |
| BG30 | 30" Bar Guard | Each |
| BG36 | $36^{\prime \prime}$ Bar Guard | Each |
| BG42 | $42^{\prime \prime}$ Bar Guard | Each |
| BG48 | $48^{\prime \prime}$ Bar Guard | Each |

Items with "H" are designed to fit Hickenbottom Intakes.


| AGRI DRAIN PIPE STRAPS |  |  |
| :--- | :---: | :---: |
| Number | Item | Unit |
| PTPS | Pipe Strap Set | Set |

Dramatically increases pull apart
strength on dual wall polyethylene bell and spigot pipe couplers.

- Fits up to 24 " pipe size.


RODENT GUARD ZINC PLATED

| Size | Number | Unit |
| :---: | :---: | :---: |
| $4^{\prime \prime}$ | RG04 | Each |
| $6^{\prime \prime}$ | RG06 | Each |
| $8^{\prime \prime}$ | RG08 | Each |
| $10^{\prime \prime}$ | RG10 | Each |
| $12^{\prime \prime}$ | RG12 | Each |
| $15^{\prime \prime}$ | RG15 | Each |
| $18^{\prime \prime}$ | RG18 | Each |
| $24^{\prime \prime}$ | RG24 | Each |
| $30^{\prime \prime}$ | RG30 | Each |
| $3^{\prime \prime}$ | RG36 | Each |
| $42^{\prime \prime}$ | RG42 | Each |
| $48^{\prime \prime}$ | RG48 | Each |
| $60^{\prime \prime}$ | RG60 | Each |



SPLICING TAPE
Heavy-duty tape for tight pipe connection or for splicing fabric. $2^{\prime \prime} \times 108$ roll. By roll or case of 24 rolls.

| Number | Unit |
| :---: | :---: |
| BT02 | Roll |
| BT02P | 6 Pack |
| BT02CP | Case of 24 |



TILE PROBE

| Flexible steel probe available in |  |  |
| :---: | :---: | ---: |
| $5 / 16^{\prime \prime}$ and $3 / 8^{\prime \prime}$ rod, $4^{\prime}, 4.5^{\prime}$ and $5^{\prime}$. |  |  |
| Number | Item | Unit |
| TP04 | $5 / 16^{\prime \prime} \times 4^{\prime}$ | Each |
| TP04.5 | $5 / 16^{\prime \prime} \times 4.5^{\prime}$ | Each |
| TP05 | $5 / 16^{\prime \prime} \times 5^{\prime}$ | Each |
| TP05HD | $3 / 8^{\prime \prime} \times 5^{\prime}$ | Each |
| TP06 | $5 / 16^{\prime \prime} \times 6^{\prime}$ | Each |
| TP06HD | $3 / 8^{\prime \prime} \times 6^{\prime}$ | Each |

## SHOVELS \& SPADES

- Solid fiberglass handles are guaranteed for life.
- Heavy 14-gauge blades with hollow-back construction.
- Ergonomic design for comfort and stress reduction.
- Excellent rigidity reduces wasted effort.

MUD SLINGERS

- Holes in blade allow for superior mud release.
- The blade is almost 1 pound lighter than regular shovels and spades.
- Fiberglass handle carries a 1-year warranty.
- Forward-turned steps for foot comfort and easier penetration
- Does not absorb moisture; resists industrial chemicals
- Easily cleaned of concrete, tar, etc.
- Easy to handle in extreme temperatures.


Enjoy the agricultural and environmental benefits of "VARIABLE RATE DRAINAGE" with Agri Drain's Water Gate. The Water Gate is a floatactivated head pressure valve. It maintains a one-foot increase in water elevation between the downstream and upstream sides of the valve. The Water Gate operates in either free-flow or managed-flow mode. The managed-flow mode is activated by backing water up into the valve. This is accomplished by installing a Water Level Control Structure (WLCS) in the tile main at the lowest point of the drainage system that you wish to manipulate or control. Locate the first Water Gate one foot in elevation upstream from the WLCS. Water Gates can be used in series, locating additional units at one-foot elevation intervals.

- Manage up to 8"-diameter subsurface drain tile.
- Fully automatic.
- Float operated.
- Infinitely variable.
- Completely buried to allow for convenient field operations.

Side view of how Inline Water Level Control Structure and Water Gates "stair-step" water up through the soil profile.


Valve is intended for device manages. gravity flow: Low pressure and
some seepage may occur. Valve is not pressure rated.
U.S. Patent No. 7,942,606 B2 Canadian Patent Pending


Upstream
Downstream AGRI-DRAIN STANDARD FLAP GATES
Size PVC, CMP, Etc. Corrugated Plastic

| $4^{\prime \prime}$ | FG04 | FG04 |
| :---: | :--- | :---: |
| $6^{\prime \prime}$ | FG06 | FG06 |
| $8^{\prime \prime}$ | FG08 | FG08P |
| $10^{\prime \prime}$ | FG10 | FG10P |
| $12^{\prime \prime}$ | FG12 | FG12P |
| $15^{\prime \prime}$ | FG15 | FG15P |
| $18^{\prime \prime}$ | FG18 | FG18P |
| $21^{\prime \prime}$ | FG21 | N/A |
| $24^{\prime \prime}$ | FG24 | FG24P |
| $30^{\prime \prime}$ | FG30 | FG30P |
| $36^{\prime \prime}$ | FG36 | FG36P |



| SOIL TIGHT SPLIT COUPLER |  |
| :---: | :---: |
| Size | Number |
| $4{ }^{\prime \prime}$ | SC04 |
| $6{ }^{\prime \prime}$ | SC06 |
| $8{ }^{\prime \prime}$ | SC08 |
| $10^{\prime \prime}$ | SC10 |
| 12 ＂ | SC12 |
| 15＂ | SC15H |
| 18＂ | SC18 |
| 24 ＂ | SC24 |
| 301 | SC30 |
| 36 | SC36 |
| 42＂ | SC42 |
| 46 | SC46 |
| 60 | SC60 |
| PLASTIC TIES |  |
| Number | Unit |
| Use with 8＂－15＂Coupler |  |
| TIE01 | Pkg．of 100 |

Use with 18＂－36＂Coupler
TIE02
Pkg．of 50


| ELBOW－22．5 |  |
| :---: | :---: |
| Size | Number |
| $4^{\prime \prime}$ | GFE0422 |
| $6^{\prime \prime}$ | GFE0622 |
| $8^{\prime \prime}$ | GFE0822 |
| $10^{\prime \prime}$ | GFE1022 |
| $12^{\prime \prime}$ | GFE1222 |
| $15^{\prime \prime}$ | GFE1522 |
| $18^{\prime \prime}$ | GFE1822 |
| $24^{\prime \prime}$ | GFE2422 |
| $30^{\prime \prime}$ | GFE3022 |
| $36^{\prime \prime}$ | GFE3622 |
| $42^{\prime \prime}$ | GFE4222 |
| $48^{\prime \prime}$ | GFE4822 |
| $60^{\prime \prime}$ | GFE6022 |



ELBOW－ $90^{\circ}$（2－Piece）

| ELBOW－ $90^{\circ}$（2－Piece） |  |
| :---: | :---: |
| Size | Number |
| 4＂ | GFE04902 |
| $6{ }^{\prime \prime}$ | GFE06902 |
| 8＂ | GFE08902 |
| 10＂ | GFE10902 |
| 12＂ | GFE12902 |
| $15^{\prime \prime}$ | GFE15902 |
| 18＂ | GFE18902 |
| $24 "$ | GFE24902 |
| 30＂ | GFE30902 |
| 36＂ | GFE36902 |
| 42＂ | GFE42902 |
| 48＂ | GFE48902 |
| 60＂ | GFE60902 |



ELBOW－ $45^{\circ}$

| ELBOW－45 |  |
| :---: | :---: |
| Size | Number |
| $4^{\prime \prime}$ | GFE0445 |
| $6^{\prime \prime}$ | GFE0645 |
| $8^{\prime \prime}$ | GFE0845 |
| $10^{\prime \prime}$ | GFE1045 |
| $12^{\prime \prime}$ | GFE1245 |
| $15^{\prime \prime}$ | GFE1545 |
| $18^{\prime \prime}$ | GFE1845 |
| $24^{\prime \prime}$ | GFE2445 |
| $30^{\prime \prime}$ | GFE3045 |
| $36^{\prime \prime}$ | GFE3645 |
| $42^{\prime \prime}$ | GFE4245 |
| $48^{\prime \prime}$ | GFE4845 |
| $60^{\prime \prime}$ | GFE6045 |



ELBOW－ $90^{\circ}$（3－Piece）

| ELBOW $-90^{\circ}(\mathbf{3 - P i e c e})$ |  |
| :---: | :---: |
| Size | Number |
| $4^{\prime \prime}$ | GFE0490 |
| $6^{\prime \prime}$ | GFE0690 |
| $8^{\prime \prime}$ | GFE0890 |
| $10^{\prime \prime}$ | GFE1090 |
| $12^{\prime \prime}$ | GFE1290 |
| $15^{\prime \prime}$ | GFE1590 |
| $18^{\prime \prime}$ | GFE1890 |
| $24^{\prime \prime}$ | GFE2490 |
| $30^{\prime \prime}$ | GFE3090 |
| $36^{\prime \prime}$ | GFE3690 |
| $42^{\prime \prime}$ | GFE4290 |
| $48^{\prime \prime}$ | GFE4890 |
| $60^{\prime \prime}$ | GFE6090 |


| GASKET FOR SNAP COUPLER |  |
| :---: | :---: |
| Size | Number |
| $4^{\prime \prime}$ | GFGSK04 |
| $6^{\prime \prime}$ | GFGSK06 |
| $8^{\prime \prime}$ | GFGSKOR08 |
| $10^{\prime \prime}$ | GFGSK10 |



Mobile Resources
Prinsco．com／dualwall－accy


| REDUCER（One－Step） |  |
| :---: | :---: |
| Size | Reducer |
| $6^{\prime \prime}$ | Avail．in 4＂ |
| $8^{\prime \prime}$ | Avail．in 4＂－6＂ |
| $10^{\prime \prime}$ | Avail．in 4＂－8＂ |
| $12^{\prime \prime}$ | Avail．in 4＂－10＂ |
| $15^{\prime \prime}$ | Avail．in 4＂－12＂ |
| $18^{\prime \prime}$ | Avail．in 4＂－15＂ |
| $24^{\prime \prime}$ | Avail．in 4＂－18＂ |
| $30 "$ | Avail．4＂－ $24^{\prime \prime}$ |
| $36^{\prime \prime}$ | Avail．4＂－30＂ |
| $42^{\prime \prime}$ | Avail．4＂－36＂ |
| $48^{\prime \prime}$ | Avail．4＂－42＂ |
| $60^{\prime \prime}$ | Avail．4＂－48＂ |



CROSS TEE

| CROSS TEE |  |
| ---: | :---: |
| Size | Number |
| $4^{\prime \prime}$ | GFCT04 |
| $6^{\prime \prime}$ | GFTC06 |
| $8^{\prime \prime}$ | GFTC08 |
| $10^{\prime \prime}$ | GFTC10 |
| $12^{\prime \prime}$ | GFCT12 |
| $15^{\prime \prime}$ | GFCT15 |
| $18^{\prime \prime}$ | GFCT18 |
| $24^{\prime \prime}$ | GFCT24 |



|  | TEE |
| :---: | :---: |
| Size | Number |
| $4^{\prime \prime}$ | GFT0404 |
| $6^{\prime \prime}$ | GFT0606 |
| $8^{\prime \prime}$ | GFT0808 |
| $10^{\prime \prime}$ | GFT1010 |
| $12^{\prime \prime}$ | GFT1212 |
| $15^{\prime \prime}$ | GFT1515 |
| $18^{\prime \prime}$ | GFT1818 |
| $24^{\prime \prime}$ | GFT2424 |
| $30^{\prime \prime}$ | GFT3030 |
| $36^{\prime \prime}$ | GFT3636 |
| $42^{\prime \prime}$ | GFT4242 |
| $48^{\prime \prime}$ | GFT4848 |
| $60^{\prime \prime}$ | GFT6060 |



| WYE－45 |  |
| :---: | :---: |
| Size | Number |
| $4^{\prime \prime}$ | GFY0404 |
| $6^{\prime \prime}$ | GFY0606 |
| $8^{\prime \prime}$ | GFY0808 |
| $10^{\prime \prime}$ | GFY1010 |
| $12^{\prime \prime}$ | GFY1212 |
| $15^{\prime \prime}$ | GFY1515 |
| $18^{\prime \prime}$ | GFY1818 |
| $24^{\prime \prime}$ | GFY2424 |



SADDLE TEES

| Size |  | Number |
| :---: | :---: | :---: |
| GFST1004 | 10＂ | 10＂TO 4＂ |
| GFST1006 |  | 10＂TO 6＂ |
| GFST1008 |  | 10＂TO 8＂ |
| GFST1204 | 12＂ | 12＂TO 4＂ |
| GFST1206 |  | 12＂TO 6＂ |
| GFST1208 |  | 12＂TO 8 ＂ |
| GFST1210 |  | 12＂TO 10＂ |
| GFST1504 | 15＂ | $15^{\prime \prime} \times 4{ }^{\prime \prime}$ |
| GFST1506 |  | $15^{\prime \prime} \times 6{ }^{\prime \prime}$ |
| GFST1508 |  | $15^{\prime \prime} \times 8$＂ |
| GFST1510 |  | $15^{\prime \prime} \times 10^{\prime \prime}$ |
| GFST1512 |  | $15^{\prime \prime} \times 1{ }^{\prime \prime}$ |
| GFST1804 | 18＂ | $18^{\prime \prime} \times 4$＂ |
| GFST1806 |  | $18^{\prime \prime} \times 6{ }^{\prime \prime}$ |
| GFST1808 |  | $18^{\prime \prime} \times 8$＂ |
| GFST1810 |  | $18^{\prime \prime} \times 10^{\prime \prime}$ |
| GFST1812 |  | $18^{\prime \prime} \times 12^{\prime \prime}$ |
| GFST1815 |  | $18^{\prime \prime} \times 15{ }^{\prime \prime}$ |
| GFST2404 | 24 ＂ | $24^{\prime \prime} \times 4$＂ |
| GFST2406 |  | $24^{\prime \prime} \times 6$＂ |
| GFST2408 |  | $24^{\prime \prime} \times 8$＂ |
| GFST2410 |  | $24^{\prime \prime} \times 10{ }^{\prime \prime}$ |
| GFST2412 |  | $24^{\prime \prime} \times 12^{\prime \prime}$ |
| GFST3004 | 30＂ | $30^{\prime \prime} \times 4$＂ |
| GFST3006 |  | $30^{\prime \prime} \times 6{ }^{\prime \prime}$ |
| GFST3008 |  | $30 " \times 8$＂ |
| GFST3010 |  | $30^{\prime \prime} \times 10{ }^{\prime \prime}$ |
| GFST3012 |  | $30 " \times 12^{\prime \prime}$ |


＊4＇x 4＇NO－SEEP COLLARS ${ }^{\text {¹ }}$
Four－foot square sheet of high density plastic fastened with stainless steel bolts．

| Size | Number | Unit |
| :---: | :---: | :---: |
| $4^{\prime \prime}$ | NSC4404 | Each |
| $6^{\prime \prime}$ | NSC4406 | Each |
| $8^{\prime \prime}$ | NSC4408 | Each |
| $10^{\prime \prime}$ | NSC4410 | Each |
| $12^{\prime \prime}$ | NSC4412 | Each |
| $15^{\prime \prime}$ | NSC4415 | Each |
| $18^{\prime \prime}$ | NSC4418 | Each |
| $24 "$ | NSC4424 | Each |
|  | ＂special order item |  |

5＇$\times 5$＇and 6 ＇$\times 6$＇no－seep collars are also available．


REDUCING TEES

| Size |  | Number |  |  |  |  |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- |



TRASH GUARD
Used on flared end sections with 3：1 slopes to help keep debris out and prevent clogging．

| Size | Number | Unit |
| :---: | :---: | :---: |
| $8^{\prime \prime}$ | TGS08 | Each |
| $10^{\prime \prime}$ | TGS10 | Each |
| $12^{\prime \prime}$ | TGS12 | Each |
| $15^{\prime \prime}$ | TGS15 | Each |
| $18^{\prime \prime}$ | TGS18P1215 | Each |
| $24^{\prime \prime}$ | TGS24P18 | Each |
| $30^{\prime \prime}$ | TGS30P24 | Each |
| $36^{\prime \prime}$ | TGS36P3036 | Each |
| $42^{\prime \prime}$ | TGS42 | Each |
| $48^{\prime \prime}$ | TGS48 | Each |
| $60^{\prime \prime}$ | TGS60 | Each |

GALVANIZED TRASH GUARD
Used on flared end sections with 3：1 slopes to help keep debris out and prevent clogging．

| Size | Number | Unit |
| :---: | :---: | :---: |
| $12^{\prime \prime}$ | GTG12 | Each |
| $15^{\prime \prime}$ | GTG15 | Each |
| $18^{\prime \prime}$ | GTG18 | Each |
| $24^{\prime \prime}$ | GTG24 | Each |
| $30^{\prime \prime}$ | GTG30 | Each |
| $36^{\prime \prime}$ | GTG36 | Each |

## WATERTIGHT BELL COUPLER GASKETS

Used to connect to Prinsco PVC Catch
Basins or Fabricated Fittings

| $4^{\prime \prime}$ | GFGSK04WT | Each |
| :---: | :--- | :--- |
| $6^{\prime \prime}$ | GFGSK06WT | Each |
| $8^{\prime \prime}$ | GFGSK08WT | Each |
| $10^{\prime \prime}$ | GFGSK10WT | Each |
| $12^{\prime \prime}$ | GFGSK12WT | Each |
| $15^{\prime \prime}$ | GFGSK15WT | Each |
| $18^{\prime \prime}$ | GFGSK18WTMW | Each |
| $18^{\prime \prime}$ | GFGSK18WTWC | Each |
| $24^{\prime \prime}$ | GFGSK24WTMW | Each |
| $24^{\prime \prime}$ | GFGSK24WTWC | Each |
| $30^{\prime \prime}$ | GFGSK30WTMW | Each |
| $30^{\prime \prime}$ | GFGSK30WTWC | Each |


| GOLDFLO WATER STOP GASKET |  |  |
| :---: | :---: | :---: |
| Size | Number | Unit |
| $12^{\prime \prime}$ | GFWSG12 | Each |
| $15^{\prime \prime}$ | GFWSG15 | Each |
| $18^{\prime \prime}$ | GFWSG18 | Each |
| $24^{\prime \prime}$ | GFWSG24 | Each |
| $30^{\prime \prime}$ | GFWSG30 | Each |
| $36^{\prime \prime}$ | GFWSG36 | Each |
| $42^{\prime \prime}$ | GFWSG42 | Each |
| $48^{\prime \prime}$ | GFWSG48 | Each |
| $60^{\prime \prime}$ | GFWSG60 | Each |



STEEL APRONS
Used on projects where $2.5: 1$ slope is specified．Fits contour and assists water flow through the culvert．

| Size | Number | Unit |
| :---: | :---: | :---: |
| $8^{\prime \prime}$ | ES08 | Each |
| $10^{\prime \prime}$ | ES10 | Each |
| $12^{\prime \prime}$ | ES12 | Each |
| $15^{\prime \prime}$ | ES15 | Each |
| $18^{\prime \prime}$ | ES18 | Each |
| $24^{\prime \prime}$ | ES24 | Each |
| $30^{\prime \prime}$ | ES30 | Each |
| $36^{\prime \prime}$ | ES36 | Each |
| $42^{\prime \prime}$ | ES42 | Each |
| $48^{\prime \prime}$ | ES48 | Each |
| $60^{\prime \prime}$ | ES60 | Each |



SAFETY APRONS
Used where 6：1 slopes are required．
Available with or without safety grate．

| Size | Number | Unit |
| :---: | :---: | :---: |
| $12^{\prime \prime}$ | SA0012 | Each |
| $15^{\prime \prime}$ | SA0015 | Each |
| $18^{\prime \prime}$ | SA0018 | Each |
| $24^{\prime \prime}$ | SA0024 | Each |
| Safety aprons are all special－order items． |  |  |



PLASTIC APRONS

| High density polyethylene aprons |  |  |
| :---: | :---: | :---: |
| ECOFLO applications |  |  |
| Size | Number | Unit |
| 12＂ | PLAP12 | Each |
| $15^{\prime \prime}$ | PLAP15 | Each |
| $18^{\prime \prime}$ | PLAP18 | Each |
| 24 ＂ | PLAP24 | Each |
| 30＂ | PLAP30 | Each |
| $36 "$ | PLAP36 | Each |


| EXTERNAL ENDCAPS |  |  |
| :---: | :---: | :---: |
| Size | Number | Unit |
| $8^{\prime \prime}$ | EC08－GF | Each |
| $10^{\prime \prime}$ | EC10－GF | Each |
| $12^{\prime \prime}$ | EC12－GF | Each |
| $15^{\prime \prime}$ | EC15－GF | Each |
| $18^{\prime \prime}$ | EC18－GF | Each |
| $24^{\prime \prime}$ | EC24－GF | Each |
| $30^{\prime \prime}$ | EC30－GF | Each |
| $36^{\prime \prime}$ | EC36－GF | Each |
| $42^{\prime \prime}$ | EC42－GF | Each |
| $48^{\prime \prime}$ | EC48－GF | Each |



| PIPE ADAPTER |  |  |
| :---: | :---: | :--- |
| Size | Number | Unit |
| $10^{\prime \prime}$ | GFA10 | Each |
| $12^{\prime \prime}$ | GFA12 | Each |
| $15^{\prime \prime}$ | GFA15 | Each |
| $18^{\prime \prime}$ | GFA18 | Each |
| $24^{\prime \prime}$ | GFA24 | Each |
| $30^{\prime \prime}$ | GFA30 | Each |
| $36^{\prime \prime}$ | GFA36 | Each |

RUBBER FLEXIBLE
MANHOLE ADAPTER

| Size | Number | Unit |
| :---: | :--- | :--- |
| $12^{\prime \prime}$ | GFAD12MH | Each |
| $15^{\prime \prime}$ | GFAD15MH | Each |
| $18^{\prime \prime}$ | GFAD18MH | Each |
| $24^{\prime \prime}$ | GFAD24MH | Each |

GOLDFLO HDPE X SDR35 SPIGOT ADAPTER

Number
$\qquad$

| Size | Number | Unit |
| ---: | :---: | :--- |
| $4^{\prime \prime}$ | GFAD04MH－PVC35 | Each |
| $6^{\prime \prime}$ | GFAD06MH－PVC35 | Each |
| $8^{\prime \prime}$ | GFAD08MH－PVC35 | Each |
| $10^{\prime \prime}$ | GFAD10MH－PVC35 | Each |
| $12^{\prime \prime}$ | GFAD12MH－PVC35 | Each |
| $15^{\prime \prime}$ | GFAD15MH－PVC35 | Each |
| $18^{\prime \prime}$ | GFAD18MH－PVC35 | Each |
| $24^{\prime \prime}$ | GFAD24MH－PVC35 | Each |

GOLDFLO HDPE X SCH40 SPIGOT ADAPTER

| Size | Number | Unit |
| ---: | :---: | :--- |
| $4^{\prime \prime}$ | GFAD04MH－PVC40 | Each |
| $6^{\prime \prime}$ | GFAD06MH－PVC40 | Each |
| $8^{\prime \prime}$ | GFAD08MH－PVC40 | Each |
| $10^{\prime \prime}$ | GFAD10MH－PVC40 | Each |
| $12^{\prime \prime}$ | GFAD12MH－PVC40 | Each |

## Introduction

Corrugated HDPE pipe, as with all buried pipe, functions as a buried structure where the performance of the structure is dependent on the quality of the embedment backfill and installation. Varying degrees of performance may be required depending on specific project details. This installation guide specifically addresses common installation methods for corrugated HDPE in agricultural applications to ensure adequate performance is achieved. Since agricultural installations do not involve pipe buried under public roadways, allowable pipe deflection may extend beyond what is typically acceptable in commercial applications.

The recommendations presented here detail proper backfill and installation methods for single wall and dual wall pipe to achieve a dependable subsurface or groundwater control system. This document should not be used for commercial applications, storm sewer applications, road crossings or where greater service performance is required. For any application outside of these basic guidelines (such as poor soils, high loads, or other factors that may affect performance), please contact your local Prinsco Representative or visit www.prinsco.com for more comprehensive installation information.

## Shaped Bottom Trench

For burial depths of $8^{\prime}$ or less, a shaped trench bottom shall be used, provided the native soil can be cut to a stable shaped trench. For trencher installations, trenches shall be overfilled to allow consolidation. For backhoe installations, the backfill should be compacted to reduce the amount of settling. Most plow installations require minimal backfilling; however, care should be taken to ensure the trench is filled and bridging does not occur. Native soil may be used as backfill provided that it can be compacted around the pipe and that all voids are removed. If native soil is not suitable for backfilling, a granular material shall be used.

## "V" Groove Trench

- The 90-degree "V" groove trench bottom as shown in Figure 1 is acceptable for pipe with diameters less than or equal to 8". A "V" groove trench bottom is typically formed with a pull type or tractor mounted plow. Refer to Table 1 for approximate dimensions for a " $V$ " groove trench.
- A trapezoidal groove or rounded trench bottom may also be used for pipe diameters less than or equal to 8 ".


FIGURE 1
4"- 8" Diameter Pipe
"V" Groove Trench

Table 1. "V" Groove Trench Dimensions Pipe Dia. Depth "V" (in)
4"
(in)
6.1"
7.2"

| $5^{\prime \prime}$ | $7.2^{\prime \prime}$ |
| :--- | :--- |

## Rounded Trench Bottom

- For pipe diameters of 8" and greater, a rounded trench bottom should be used as shown in Figure 2. The rounded trench bottom should fit the outside of the pipe, with $\leq 1$ " gap on either side of the pipe, to provide sufficient pipe support. Recommended dimensions are found in Table 2.
- A rounded trench bottom may be formed with the use of a shaped trencher or a backhoe with a half-circle shaped bucket, also referred to as a "spoon". An example of a "spoon" is shown in Figure 3.
- Burial depths greater than 8' may be achieved with a rounded bottom, provided the trench bottom offers adequate support and an imported backfill (Class I or II) is placed and compacted along the sides and extending to 6" over top of the pipe. For more information, contact your local Prinsco Representative.

Table 2.
Recommended Rounded Trench Dimensions

| Pipe <br> Diameter <br> (in) | Recommended <br> Rounded Width <br> "X" (in) | Minimum <br> Depth <br> "Y" (in.) |
| :---: | :---: | :---: |
| $8^{\prime \prime}$ | $9.5^{\prime \prime}$ | $4.8^{\prime \prime}$ |
| $10^{\prime \prime}$ | $11.8^{\prime \prime}$ | $5.9^{\prime \prime}$ |
| $12^{\prime \prime}$ | $14.4^{\prime \prime}$ | $7.2^{\prime \prime}$ |
| $15^{\prime \prime}$ | $17.6^{\prime \prime}$ | $8.8^{\prime \prime}$ |
| $18^{\prime \prime}$ | $21.5^{\prime \prime}$ | $10.8^{\prime \prime}$ |
| $24^{\prime \prime}$ | $28.3^{\prime \prime}$ | $14.2^{\prime \prime}$ |
| $30 "$ | $34.7^{\prime \prime}$ | $17.4^{\prime \prime}$ |
| $36^{\prime \prime}$ | $40.6^{\prime \prime}$ | $20.3^{\prime \prime}$ |
| $42^{\prime \prime}$ | $47.8^{\prime \prime}$ | $23.9^{\prime \prime}$ |
| $48^{\prime \prime}$ | $54.2^{\prime \prime}$ | $27.1^{\prime \prime}$ |
| $60^{\prime \prime}$ | $66.8^{\prime \prime}$ | $33.4^{\prime \prime}$ |

Recommended widths are based on outside diameter of pipe. Gap on either side of the pipe should not exceed 1". Wider trench widths may adversely affect the pipe performance.


Figure 2.
8"- 60" Diameter Pipe Rounded Trench


Figure 3.
"Spoon" Attachment

## Flat Bottom Trench Construction

- For burial depths greater than 8', a flat bottom trench, shown in Figure 4, should be used. The middle portion of the bedding, equal to $1 / 3$ of the pipe's OD, shall be loosely placed. The remainder shall be compacted in accordance with Table 3.
- The trench should be just wide enough to place and compact backfill around the entire pipe. Widths should be within a minimum of the pipe OD plus 6" to a maximum of the pipe OD plus 24 ".
- For parallel pipe installations, allow space between pipe runs for proper compaction. Spacing shall be no less than $1 / 2$ of the pipe OD between the parallel pipe runs.
- Trench bottoms containing bedrock, soft muck or refuse, or other material unable to provide long-term pipe support are unacceptable. Poor material shall be removed and replaced with acceptable materials, excavating soft areas approximately 2 ' below grade and three times pipe width.
- Remove rock or unyielding material 1' below grade and a minimum of 6 " on either side of pipe.
- Where soil migration is a concern, a non-woven filter fabric (geotextile) shall be used to separate the backfill from the native soil.

Table 3.
Acceptable Backfill Material and Compaction Requirements

|  | Soil Classification |  | Minimum | Maximum* |
| :---: | :---: | :---: | :---: | :---: |
| Description | $\begin{aligned} & \text { ASTM } \\ & \text { D232 } \end{aligned}$ | $\begin{aligned} & \text { ASTM } \\ & \text { D2487 } \end{aligned}$ | Compaction Standard Density (\%) | Layer Height (in.) |
| Graded or crushed stone Crushed gravel | Class I | - | Dumped** | 18" |
| Well-graded sand, gravel, and gravel/sand mixtures; Poorly graded sand, gravel and gravel/sand mixtures; little or no fines | Class II | GW <br> GP <br> SW <br> SP | 85\% | 12" |
| Silty or clayey gravel, Gravel/sand/silt or gravel and/clay mixtures, silty or clayey sands, sand/clay or sand/silt mixtures | Class III | $\begin{aligned} & \text { GM } \\ & \text { GC } \\ & \text { SM } \\ & \text { SC } \end{aligned}$ | 90\% | $9{ }^{\prime \prime}$ |
| Inorganic silts and low to medium plasticity clays; gravelly, sandy, or silty clays; some fine sands | Class IVA | $\begin{aligned} & \mathrm{ML} \\ & \mathrm{CL} \end{aligned}$ | 90\% | $6{ }^{\prime \prime}$ |

*Layer Heights should not exceed one-half the pipe diameter. Layer heights may also need to be reduced to accommodate compaction method. ** Material shall be "knifed" into the haunch area of the pipe by use of a shovel or similar means

## Backfill Material Selection

- Selection of proper backfill materials is critical to ensuring adequate pipe support. Native soil may be used provided it meets the classification descriptions provided in Table 3.
- Non-cohesive sand, sand/gravel mixes and other Class II or III materials must be compacted to remove voids.
- Class IVA materials provide reduced structural support, compared with Class I, II, \& III. Therefore, additional pipe deflection may be experienced in applications utilizing Class IVA backfill materials. The additional deflection is anticipated and shall not compromise service performance, provided the compaction and maximum burial depth criteria are followed as outlined in this document and in ASTM F449.


## Backfill Placement and Compaction

- Place and compact backfill in layers, meeting requirements of ASTM F449 and as outlined in Table 3.
- Place and compact initial backfill in layers around pipe and at least 6" above the crown as shown in Figure 4.
- Avoid impacting pipe with compaction equipment.
- The final minimum cover shall be 2 ' over the crown of the pipe where live vehicular or equipment loading is present and shall be no less than $1^{\prime}$ in areas not subjected to live loading.
- The maximum burial depth is influenced by the pipe diameter, backfill material, degree of compaction, trench dimensions and anticipated loading. Contact your local Prinsco Representative for maximum burial depths.


Figure 4. Trench Construction for Burial Depths Greater than 8'

## Design Considerations

To achieve optimum performance, it is important to consider factors such as pipe connections, field conditions, soil type and texture, potential negative pressures, and outlet protection. Failure to consider all design aspects may result in reduced flow capacity or system failure. For more information, contact your local Prinsco Representative.

- Connecting Dissimilar Pipe: Drainage systems occasionally require pipe connections between HDPE and other pipe materials such as concrete, corrugated metal, or clay tile. For dissimilar pipe connections, adapters, couplers, or other fittings may be used.
- Soil and Water Table: For effective drainage, it is necessary to understand the soil and water table characteristics at the depth the pipe will be installed. Sand or fine silt may move into the system and restrict flow in areas with sandy soils or fluctuating water tables (due to seasonal variations, pumping, or well-pointing methods). In these situations, a non-woven filter fabric surrounding the pipe is recommended. Site specific conditions shall be determined by a geotechnical or design engineer.
- Negative Pressure Relief: Areas with abrupt changes in elevation may result in negative pressure, resulting in blowouts. To ease any potential negative pressure, the flatter section shall have a $25 \%$ greater flow capacity than the steep section. Relief wells shall be installed where the pipe changes from steep to flat without an increased flow capacity.
- Outlet Protection: Protecting the outlet against animals, fire and erosion extends the life of the system. Animal guards, rip-rap or other erosion protection, and fire resistant material in areas subject to burning are recommended at the outlet.


## How will subsurface water management affect overall farming operations?

Subsurface water management allow soils to shed excess moisture and warm up faster in the spring allowing for field operations to commence earlier in the season. It will also help fields with intermittent wet spots dry more uniformly.

## Will subsurface water management stress crops in dry years?

While the greatest benefits of subsurface water management are realized in wet years, it also promotes deep root development which gives crops better access to soil moisture in dry years. By using a control structure with subsurface water management systems, water can also be held back throughout the growing season to keep moisture available to crops when it is needed most.

Will adding subsurface water management to a field increase chances of flooding in local streams?
Prinsco subsurface water management systems promote greater infiltration rates in the soil. This allows for more water to be pulled down into the soil, decreasing the amount of runoff. Water that is pulled into the soil is released from tile into waterways more slowly than it would be flowing over land. Therefore, the chance for flooding actually decreases. Research has shown that adding subsurface water management increases the base flow by $5-10 \%$, but only after the chance for flooding has dissipated.

## What tile spacing should I use for a field?

There are several factors that affect how you should space between tile lines, including soil type, tile depth, drainage coefficient, and tile diameter. Drainage coefficients determine the rate at which water will be removed from the soil and typically range from $1 / 8^{\prime \prime}-1$ " per 24 hours. Depending on your soil type, the drainage coefficient you use will determine what spacing you need to maximize the yield and profitability of your system.

## When should I consider smaller pipe perforations or the use of pipe sock?

First, it is necessary to understand the properties of the soil at the depth your pipe will be installed. A soil test should be performed to determine the soil type and particle size. Heavy soils such as clay or loam will typically require standard perforated pipe, while sandy soils will likely require sock or narrow slot pipe. When deciding between sock versus narrow slot pipe, consider the $25 \%$ rule - if soils are less than $25 \%$ clay, they probably need sock pipe.

How should dual wall pipe joints be assembled?
Pipe equipped with integral bell and spigot joints, such as Prinsco's ECOFLO ${ }^{\circledR} 100$ or GOLDFLO WT®, must be installed by inserting the spigot into the bell. Pushing the bell onto the spigot increases the likelihood of bedding material being forced into the joint, disrupting the gasket and severely undermining joint performance. Pipe laying should always begin at the outlet with the spigots pointed downgrade.

## When are fields too flat to drain? How would I provide an adequate outlet for a subsurface water management system?

In order for tile laterals to provide proper subsurface water management, a minimum grade of 0.05 to $0.1 \%$ should be maintained. Where the topography does not allow for a gravity flow outlet, pumped outlets can be used. Prinsco's Ag Catch Basins provide the right storage solution for pumped outlets.

## What is the maximum burial depth for the pipe?

Achieving maximum burial depths is largely dependent on proper installation practices. For burial depths of 8 feet or less, Prinsco recommends a shapedbottom trench. For burial depths of more than 8 feet, a standard trench installation should be used as shown in our Ag Installation Guide on page 28. Proper installation positively contributes to the load carrying capacity of the pipe, resulting in greater burial depths. Contact your local Prinsco representative to discuss maximum burial depths for your installation.

## Can water be sent from one watershed into a different watershed?

No. Most state drainage laws are clear that water may not be transferred from one watershed to another. Adding water to a watershed can cause increased erosion. For example, increasing water flow in a stream can cause an unstable stream bank.


Mobile Resources<br>Prinsco.com/goldline-resources

# ADDITIONAL INFロ 

## GOLDLINE ${ }^{\oplus}$

- ASTM F 405: Standard Specification for Corrugated Polyethylene (PE) Pipe and Fittings (withdrawn, replaced by F667)
- ASTM F 667: Standard Specification for 3 through 24in. Corrugated Polyethylene Pipe and Fittings

AASHTO grade GOLDLINE pipe meets the above standards, plus the list below

- AASHTO M 252: Standard Specification for Corrugated Polyethylene Drainage Pipe
- AASHTO M 294: Standard Specification for Corrugated Polyethylene Pipe, 300 to 1500mm (12 to 60in.) Diameter


## ECOFLO® 100

- ASTM F 2306: Standard Specification for 12 to 60in. ( 300 to 1500 mm ) Annular Corrugated Profile-Wall Polyethylene (PE) Pipe and Fittings for Gravity-Flow Storm Sewer and Subsurface Drainage Applications
- AASHTO M 294: Standard Specification for Corrugated Polyethylene Pipe, 300 to 1500mm (12 to 60in.) Diameter*
- ASTM F 477: Standard Specification for Elastomeric Seals (Gaskets) for Joining Plastic Pipe
- ASTM D 3212: Standard Specification for Joints for Drain and Sewer Plastic Pipes Using Flexible Elastomeric Seals


## GOLDFLO WT®/GOLDFLO®

- AASHTO M 252: Standard Specification for Corrugated Polyethylene Drainage Pipe
- AASHTO M 294: Standard Specification for Corrugated Polyethylene Pipe, 300 to 1500 mm (12 to 60in.) Diameter
- ASTM F 477: Standard Specification for Elastomeric Seals (Gaskets) for Joining Plastic Pipe
- ASTM D 3212: Standard Specification for Joints for Drain and Sewer Plastic Pipes using Flexible Elastomeric Seals

> Prinsco offers a dual-wall pipe made from polypropylene that is available for culverts and other conveyance applications. Call for details.


## MANUFACTURING PLANTS \& YARDS



## Prinsco delivers quality from manufacturing right down to the service we provide on delivery.

The chart to the right gives approximate full-load quantities for a Prinsco 53-foot trailer. The quantities may vary according to the length of the trailer or if common carriers are employed for shipment. In mixed-size load situations, calculate the percentage of the load that each size will constitute. Then total the percentages to determine the extent of the load. If pipe lengths are shipped, small diameter pipe may be nested inside the larger sizes. This will maximize load quantities and reduce freight costs. The chart is strictly "rule of thumb" to give you a general idea of load quantities. For more specific figures, call our customer service department.

DIAMATER UNIT UNITS PERLOAD FOOTAGE DIAMATER UNIT UNITS PERLOAD FOOTAGE


| ECOFLO $100 /$ GOLDFLO DUAL-WALL PIPE: |  |  |  |
| :---: | :---: | :---: | :---: |
| $12^{\prime \prime}$ | $10^{\prime}$ Lengths | 225 | 2,250 |
|  | $20^{\prime}$ Lengths | 120 | 2,400 |
| $15^{\prime \prime}$ | $10^{\prime}$ Lengths | 155 | 1,550 |
|  | $20^{\prime}$ Lengths | 80 | 1,600 |
| $18^{\prime \prime}$ | $11^{\prime}$ Lengths | 92 | 1,012 |
| $24^{\prime \prime}$ | $20^{\prime}$ Lengths | 48 | 960 |
|  | $21^{\prime}$ Lengths | 57 | 627 |
| $30^{\prime \prime}$ | $11^{\prime}$ Lengths | 30 | 600 |
|  | $20^{\prime}$ Lengths | 33 | 363 |
| $36^{\prime \prime}$ | $11^{\prime}$ Lengths | 18 | 360 |
| $42^{\prime \prime}$ | $20^{\prime}$ Lengths | $11^{\prime}$ Lengths | 12 |
|  | $20^{\prime}$ Lengths | 8 | 242 |
| $48^{\prime \prime}$ | $11^{\prime}$ Lengths | 11 | 240 |
|  | $20^{\prime}$ Lengths | 6 | 176 |
| $60^{\prime \prime}$ | $11^{\prime}$ Lengths | 7 | 160 |
|  | $20^{\prime}$ Lengths | 4 | 121 |

## NESTING/TELESCOPING:

 All sizes through 36 " will nest in the next larger size. FITTINGS:Many of our fittings and accessories are packed in bags or bundles.
For quantity packs, refer to catalog pages.

## the future is <br> FLEX

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