1-0 Specifications

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S1.01 N-12 ST IB Pipe (per ASTM F2648) Specification

Scope

This specification describes 4- through 30-inch (100 to 750 mm) N-12 ST IB pipe (per ASTM F2648) for use in gravity-flow land drainage applications.

Pipe Requirements

N-12 WT IB pipe (per ASTM F2648) shall have a smooth interior and annular exterior corrugations.

- 4- through 30-inch (100 to 750 mm) pipe shall meet ASTM F2648.
- Manning's "n" value for use in design shall be 0.012.

Joint Performance

Pipe shall be joined using a bell & spigot joint meeting ASTM F2648. The joint shall be soil-tight and gaskets for diameters 12- through 30-inch (300-750 mm), shall meet the requirements of ASTM F477. For diameters 4- through 10-inch, the joint shall be soil-tight using an engaging dimple connection. Gaskets shall be installed by the pipe manufacturer and covered with a removable, protective wrap to ensure the gasket is free from debris. A joint lubricant available from the manufacturer shall be used on the gasket and bell during assembly.

Fittings

Fittings shall conform to ASTM F2306. Bell and spigot connections shall utilize a welded bell and valley or saddle gasket meeting the soil-tight joint performance requirements of ASTM F2306.

Material Properties

Material for pipe production shall be an engineered compound of virgin and recycled high density polyethylene conforming with the minimum requirements of cell classification 424420C (ESCR Test Condition B) for 4- through 10-inch (100 to 250 mm) diameters, and 435420C (ESCR Test Condition B) for 12- through 30-inch (300 to 750 mm) diameters, as defined and described in the latest version of ASTM D3350, except that carbon black content should not exceed 4%. The design engineer shall verify compatibility with overall system, including structural, hydraulic, material and installation requirements for a given application.

Installation

Installation shall be in accordance with ASTM D2321 and ADS recommended installation guidelines, with the exception that minimum cover in trafficked areas for 4- through 30-inch (100 to 750 mm) diameters shall be one foot (0.3 m) in single run applications. Backfill for minimum cover situations shall consist of Class 1 (compacted) or Class 2 (minimum 90% SPD) material. Maximum fill heights depend on embedment material and compaction level; please refer to Technical Note 2.02. Contact your local ADS representative or visit our website at www.adspipe.com for a copy of the latest installation guidelines.

Pipe Dimensions

Pipe I.D. in (mm)	4 (100)	6 (150)	8 (200)	10 (250)	12 (300)	15 (375)	18 (450)	24 (600)	30 (750)
Pipe O.D.* in (mm)	4.8 (122)	6.9 (175)	9.1 (231)	11.4 (290)	14.5 (368)	18 (457)	22 (559)	28 (711)	36 (914)

* Pipe O.D. values are provided for reference purposes only, values stated for 12 through 60-inch are ±1 inch. Contact a sales representative for exact values

S1.02 N-12 WT IB Pipe (per ASTM F2648) Specification

Scope

This specification describes 4- through 60-inch (100 to 1500 mm) N-12 WT IB pipe (per ASTM F2648) for use in gravity-flow land drainage applications.

Pipe Requirements

N-12 WT IB pipe (per ASTM F2648) shall have a smooth interior and annular exterior corrugations.

- 4- through 60-inch (100 to 1500 mm) pipe shall meet ASTM F2648.
- Manning's "n" value for use in design shall be 0.012.

Joint Performance

Pipe shall be joined using a bell & spigot joint meeting ASTM F2648. The joint shall be watertight according to the requirements of ASTM D3212. Gaskets shall meet the requirements of ASTM F477. Gaskets shall be installed by the pipe manufacturer and covered with a removable, protective wrap to ensure the gasket is free from debris. A joint lubricant available from the manufacturer shall be used on the gasket and bell during assembly. 12- through 60-inch (300 to 1500 mm) diameters shall have an exterior bell wrap installed by the manufacturer.

Fittings

Fittings shall conform to ASTM F2306. Bell and spigot connections shall utilize a welded bell and valley or saddle gasket meeting the watertight joint performance requirements of ASTM F2306.

Field Pipe and Joint Performance

To assure watertightness, field performance verification may be accomplished by testing in accordance with ASTM F2487. Appropriate safety precautions must be used when field-testing any pipe material. Contact the manufacturer for recommended leakage ratesi

Material Properties

Material for pipe production shall be an engineered compound of virgin and recycled high-density polyethylene conforming with the minimum requirements of cell classification 424420C (ESCR Test Condition B) for 4- through 10-inch (100 to 250 mm) diameters, and 435420C (ESCR Test Condition B) for 12- through 60-inch (300 to 1500 mm) diameters, as defined and described in the latest version of ASTM D3350, except that carbon black content should not exceed 4%. The design engineer shall verify compatibility with overall system including structural, hydraulic, material, and installation requirements for a given application.

Installation

Installation shall be in accordance with ASTM D2321 and ADS recommended installation guidelines, with the exception that minimum cover in trafficked areas for 4- through 48-inch (100 to 1200 mm) diameters shall be one foot (0.3 m) and for 60-inch (1500 mm) diameter the minimum cover shall be 2 ft. (0.6 m) in single run applications. Backfill for minimum cover situations shall consist of Class 1 (compacted) or Class 2 (minimum 90% SPD) material. Maximum fill heights depend on embedment material and compaction level; please refer to Technical Note 2.02. Contact your local ADS representative or visit our website at www.adspipe.com for a copy of the latest installation guidelines.

Pipe Dimensions

Pipe I.D. in (mm)	4 (100)	6 (150)	8 (200)	10 (250)	12 (300)	15 (375)	18 (450)	24 (600)	30 (750)	36 (900)	42 (1050)	48 (1200)	60 (1500)
Pipe O.D.* in (mm)	4.8 (122)	6.9 (175)	9.1 (231)	11.4 (290)	14.5 (368)	18 (457)	22 (559)	28 (711)	36 (914)	42 (1067)	48 (1219)	54 (1372)	67 (1702)

* Pipe O.D. values are provided for reference purposes only, values stated for 12 through 60-inch are ±1 inch. Contact a sales representative for exact values

S1.03 N-12 ST IB Pipe (per AASHTO) Specification

Scope

This specification describes 4- through 30-inch (100 to 750 mm) N-12 ST IB pipe (per AASHTO) for use in gravity-flow land drainage applications.

Pipe Requirements

N-12 WT IB pipe (per AASHTO) shall have a smooth interior and annular exterior corrugations.

- 4- through 10-inch (100 to 250 mm) pipe shall meet AASHTO M252, Type S or SP.
- 12- through 30-inch (300 to 750 mm) pipe shall meet AASHTO M294 Type 2 or SP, or ASTM F2306.
- Manning's "n" value for use in design shall be 0.012.

Joint Performance

Pipe shall be joined using a bell & spigot joint meeting the requirements of AASHTO M252, AASHTO M294, or ASTM F2306. The joint shall be soil-tight and gaskets for diameters 12- through 30-inch (300-750 mm), shall meet the requirements of ASTM F477. For diameters 4- through 10-inch, the joint shall be soil-tight using an engaging dimple connection. Gaskets shall be installed by the pipe manufacturer and covered with a removable, protective wrap to ensure the gasket is free from debris. A joint lubricant available from the manufacturer shall be used on the gasket and bell during assembly.

Fittings

Fittings shall conform to AASHTO M252, AASHTO M294, or ASTM F2306. Bell and spigot connections shall utilize a welded bell and valley or saddle gasket meeting the soil-tight joint performance requirements of AASHTO M252, AASHTO M294, or ASTM F2306.

Material Properties

Material for pipe and fitting production shall be high density polyethylene conforming with the minimum requirements of cell classification 424420C for 4- through 10-inch (100 to 250 mm) diameters, and 435400C for 12- through 30-inch (300 to 750 mm) diameters, as defined and described in the latest version of ASTM D3350, except that carbon black content should not exceed 4%. The 12- through 30-inch (300 to 750 mm) pipe material shall comply with the notched constant ligament-stress (NCLS) test as specified in Sections 9.5 and 5.1 of AASHTO M294 and ASTM F2306, respectively.

Installation

Installation shall be in accordance with ASTM D2321 and ADS recommended installation guidelines, with the exception that minimum cover in trafficked areas for 4- through 30-inch (100 to 750 mm) diameters shall be one foot (0.3 m) in single run applications. Backfill for minimum cover situations shall consist of Class 1 (compacted), Class 2 (minimum 90% SPD) or Class 3 (minimum 95% SPD) material. Maximum fill heights depend on embedment material and compaction level; please refer to Technical Note 2.01. Contact your local ADS representative or visit our website at www.adspipe.com for a copy of the latest installation guidelines.

Build America, Buy America

N-12 ST IB pipe (per AASHTO), manufactured in accordance with AASHTO M252, AASHTO M294 or ASTM F2306, complies with the requirements in the Build America, Buy America (BABA) Act.

Pipe Dimensions

Pipe I.D. in (mm)	4 (100)	6 (150)	8 (200)	10 (250)	12 (300)	15 (375)	18 (450)	24 (600)	30 (750)
Pipe O.D.* in (mm)	4.8 (122)	6.9 (175)	9.1 (231)	11.4 (290)	14.5 (368)	18 (457)	22 (559)	28 (711)	36 (914)

* Pipe O.D. values are provided for reference purposes only, values stated for 12 through 60-inch are ±1 inch. Contact a sales representative for exact values

S1.04 N-12 WT IB Pipe (per AASHTO) Specification

Scope

This specification describes 4- through 60-inch (100 to 1500 mm) N-12 WT IB pipe (per AASHTO) for use in gravity-flow land drainage applications.

Pipe Requirements

N-12 WT IB pipe (per AASHTO) shall have a smooth interior and annular exterior corrugations.

- 4- through 10-inch (100 to 250 mm) pipe shall meet AASHTO M252, Type S.
- 12- through 60-inch (300 to 1500 mm) pipe shall meet AASHTO M294, Type S or ASTM F2306.
- Manning's "n" value for use in design shall be 0.012.

Joint Performance

Pipe shall be joined using a bell & spigot joint meeting the requirements of AASHTO M252, AASHTO M294, or ASTM F2306. The joint shall be watertight according to the requirements of ASTM D3212. Gaskets shall meet the requirements of ASTM F477. Gaskets shall be installed by the pipe manufacturer and covered with a removable, protective wrap to ensure the gasket is free from debris. A joint lubricant available from the manufacturer shall be used on the gasket and bell during assembly. 12- through 60-inch (300 to 1500 mm) diameters shall have an exterior bell wrap installed by the manufacturer.

Fittings

Fittings shall conform to AASHTO M252, AASHTO M294, or ASTM F2306. Bell and spigot connections shall utilize a welded bell and valley or saddle gasket meeting the watertight joint performance requirements of AASHTO M252, AASHTO M294, or ASTM F2306.

Field Pipe and Joint Performance

To assure watertightness, field performance verification may be accomplished by testing in accordance with ASTM F2487. Appropriate safety precautions must be used when field-testing any pipe material. Contact the manufacturer for recommended leakage ratesi

Material Properties

Material for pipe and fitting production shall be high-density polyethylene conforming with the minimum requirements of cell classification 424420C for 4- through 10-inch (100 to 250 mm) diameters, and 435400C for 12- through 60-inch (300 to 1500 mm) diameters, as defined and described in the latest version of ASTM D3350, except that carbon black content should not exceed 4%. The 12- through 60-inch (300 to 1500 mm) pipe material shall comply with the notched constant ligament-stress (NCLS) test as specified in Sections 9.5 and 5.1 of AASHTO M294 and ASTM F2306 respectively.

Installation

Installation shall be in accordance with ASTM D2321 and ADS recommended installation guidelines, with the exception that minimum cover in trafficked areas for 4- through 48-inch (100 to 1200 mm) diameters shall be one foot. (0.3 m) and for 60-inch (1500 mm) diameter the minimum cover shall be 2 ft. (0.6 m) in single run applications. Backfill for minimum cover situations shall consist of Class 1 (compacted), Class 2 (minimum 90% SPD) or Class 3 (minimum 95%) material. Maximum fill heights depend on embedment material and compaction level; please refer to Technical Note 2.01. Contact your local ADS representative or visit our website at www.adspipe.com for a copy of the latest installation guidelines.

Build America, Buy America

N-12 ST IB pipe (per AASHTO), manufactured in accordance with AASHTO M252, AASHTO M294 or ASTM F2306, complies with the requirements in the Build America, Buy America (BABA) Act.

Pipe Dimensions

Pipe I.D. in (mm)	4 (100)	6 (150)	8 (200)	10 (250)	12 (300)	15 (375)	18 (450)	24 (600)	30 (750)	36 (900)	42 (1050)	48 (1200)	60 (1500)
Pipe O.D.* in (mm)	4.8 (122)	6.9 (175)	9.1 (231)	11.4 (290)	14.5 (368)	18 (457)	22 (559)	28 (711)	36 (914)	42 (1067)	48 (1219)	54 (1372)	67 (1702)

*Pipe O.D. values are provided for reference purposes only, values stated for 12 through 60-inch are ±1 inch. Contact a sales representative for exact values

S1.05 N-12 MEGA GREEN™ ST IB Pipe Specification

Scope

This specification describes 4- through 30-inch (100 to 750 mm) N-12 MEGA GREEN ST IB pipe for use in gravity-flow land drainage applications.

Pipe Requirements

N-12 MEGA GREEN ST IB pipe shall have a smooth interior and annular exterior corrugations.

- 4- through 30-inch (100 to 750 mm) pipe shall meet ASTM F2648.
- Manning's "n" value for use in design shall be 0.012.

Joint Performance

Pipe shall be joined using a bell & spigot joint meeting ASTM F2648. The joint shall be soil-tight and gaskets for diameters 12- through 30-inch (300-750 mm), shall meet the requirements of ASTM F477. For diameters 4- through 10-inch, the joint shall be soil-tight using an engaging dimple connection. Gaskets shall be installed by the pipe manufacturer and covered with a removable, protective wrap to ensure the gasket is free from debris. A joint lubricant available from the manufacturer shall be used on the gasket and bell during assembly.

Fittings

Fittings shall conform to ASTM F2306. Bell and spigot connections shall utilize a welded bell and valley or saddle gasket meeting the soil-tight joint performance requirements of ASTM F2306.

Material Properties

Material for pipe production shall be an engineered compound of virgin and recycled high density polyethylene conforming with the minimum requirements of cell classification 424420C (ESCR Test Condition B) for 4- through 10-inch (100 to 250 mm) diameters, and 435420C (ESCR Test Condition B) for 12- through 30-inch (300 to 750 mm) diameters, as defined and described in the latest version of ASTM D3350, except that carbon black content should not exceed 4%. The design engineer shall verify compatibility with overall system including structural, hydraulic, material, and installation requirements for a given application.

Installation

Installation shall be in accordance with ASTM D2321 and ADS recommended installation guidelines, with the exception that minimum cover in trafficked areas for 4- through 48-inch (100 to 1200 mm) diameters shall be one foot (0.3 m) in single run applications. Backfill for minimum cover situations shall consist of Class 1 (compacted) or Class 2 (minimum 90% SPD) material. Maximum fill heights depend on embedment material and compaction level; please refer to Technical Note 2.02. Contact your local ADS representative or visit our website at www.adspipe.com for a copy of the latest installation guidelines.

Pipe Dimensions

Pipe I.D. in (mm)	4 (100)	6 (150)	8 (200)	10 (250)	12 (300)	15 (375)	18 (450)	24 (600)	30 (750)
Pipe O.D.* in (mm)	4.8 (122)	6.9 (175)	9.1 (231)	11.4 (290)	14.5 (368)	18 (457)	22 (559)	28 (711)	36 (914)

* Pipe O.D. values are provided for reference purposes only, values stated for 12 through 60-inch are ±1 inch. Contact a sales representative for exact values

S1.06 N-12 MEGA GREEN WT IB Pipe Specification

Scope

This specification describes 4- through 60-inch (100 to 1500 mm) N-12 MEGA GREEN WT IB pipe for use in gravity-flow land drainage applications.

Pipe Requirements

N-12 MEGA GREEN WT IB pipe shall have a smooth interior and annular exterior corrugations.

- 4- through 60-inch (100 to 1500 mm) pipe shall meet ASTM F2648.
- Manning's "n" value for use in design shall be 0.012.

Joint Performance

Pipe shall be joined using a bell & spigot joint meeting ASTM F2648. The joint shall be watertight according to the requirements of ASTM D3212. Gaskets shall meet the requirements of ASTM F477. Gaskets shall be installed by the pipe manufacturer and covered with a removable, protective wrap to ensure the gasket is free from debris. A joint lubricant available from the manufacturer shall be used on the gasket and bell during assembly. 12- through 60-inch (300 to 1500 mm) diameters shall have an exterior bell wrap installed by the manufacturer.

Fittings

Fittings shall conform to ASTM F2306. Bell and spigot connections shall utilize a welded bell and valley or saddle gasket meeting the watertight joint performance requirements of ASTM F2306.

Field Pipe and Joint Performance

To assure watertightness, field performance verification may be accomplished by testing in accordance with ASTM F2487. Appropriate safety precautions must be used when field-testing any pipe material. Contact the manufacturer for recommended leakage rates.

Material Properties

Material for pipe production shall be an engineered compound of virgin and recycled high density polyethylene conforming with the minimum requirements of cell classification 424420C (ESCR Test Condition B) for 4- through 10-inch (100 to 250 mm) diameters, and 435420C (ESCR Test Condition B) for 12- through 60-inch (300 to 1500 mm) diameters, as defined and described in the latest version of ASTM D3350, except that carbon black content should not exceed 4%. The design engineer shall verify compatibility with overall system including structural, hydraulic, material, and installation requirements for a given application.

Installation

Installation shall be in accordance with ASTM D2321 and ADS recommended installation guidelines, with the exception that minimum cover in trafficked areas for 4- through 48-inch (100 to 1200 mm) diameters shall be one foot. (0.3 m) and for 60-inch (1500 mm) diameter the minimum cover shall be 2 ft. (0.6 m) in single run applications. Backfill for minimum cover situations shall consist of Class 1 (compacted) or Class 2 (minimum 90% SPD) material. Maximum fill heights depend on embedment material and compaction level; please refer to Technical Note 2.02. Contact your local ADS representative or visit our website at www.adspipe.com for a copy of the latest installation guidelines.

Pipe Dimensions

Pipe I.D. in (mm)	4 (100)	6 (150)	8 (200)	10 (250)	12 (300)	15 (375)	18 (450)	24 (600)	30 (750)	36 (900)	42 (1050)	48 (1200)	60 (1500)
Pipe O.D.* in (mm)	4.8 (122)	6.9 (175)	9.1 (231)	11.4 (290)	14.5 (368)	18 (457)	22 (559)	28 (711)	36 (914)	42 (1067)	48 (1219)	54 (1372)	67 (1702)

* Pipe O.D. values are provided for reference purposes only, values stated for 12 through 60-inch are ±1 inch. Contact a sales representative for exact values

S1.07 N-12 WT Series 35 Pipe Specification

Scope

This specification describes 4- through 24-inch (100 to 600 mm) N-12 WT Series 35 pipe for use in gravity-flow land drainage applications.

Pipe Requirements

N-12 WT Series 35 pipe shall have a smooth interior and annular exterior corrugations.

- 4- through 10-inch (100 to 250 mm) pipe shall meet AASHTO M252, Type S.
- 12- through 24-inch (300 to 600 mm) pipe shall meet AASHTO M294, Type S or ASTM F2306.
- Manning's "n" value for use in design shall be 0.012.

Joint Performance

Pipe shall be joined with the N-12 WT Series 35 joint meeting the requirements of AASHTO M252, AASHTO M294 or ASTM F2306. The joint shall be watertight according to the requirements of ASTM D3212. Gaskets shall meet the requirements of ASTM F477. Gaskets shall be installed by the pipe manufacturer and covered with a removable, protective wrap to ensure the gasket is free from debris. A joint lubricant available from the manufacturer shall be used on the gasket and bell during assembly.

Bells shall be bell-bell couplers manufactured from PVC. Bell-bell couplers shall be installed on one side by the manufacturer.

Fittings

Fittings shall conform to AASHTO M252, AASHTO M294, or ASTM F2306. Joint connections shall utilize a PVC bell-bell coupler and valley gasket meeting the watertight joint performance requirements of AASHTO M252, AASHTO M294, or ASTM F2306.

Material Properties

Material for pipe and fitting production shall be high-density polyethylene conforming with the minimum requirements of cell classification 424420C for 4- through 10-inch (100 to 250 mm) diameters, and 435400C for 12- through 24-inch (300 to 600 mm) diameters, as defined and described in the latest version of ASTM D3350, except that carbon black content should not exceed 4%. The 12- through 24-inch (300 to 600 mm) pipe material shall comply with the notched constant ligament-stress (NCLS) test as specified in Sections 9.5 and 5.1 of AASHTO M294 and ASTM F2306 respectively.

Bells shall be manufactured from PVC pipe stock, utilizing a thermo-molding process to reform the pipe stock to the specified coupler. The pipe stock used to manufacture the bell-bell coupler shall meet the performance requirements for fabricated fittings as specified in ASTM D3034.

Installation

Installation shall be in accordance with ASTM D2321 and ADS recommended installation guidelines, with the exception that minimum cover in trafficked areas for 4- through 24-inch (100 to 600 mm) diameters shall be one foot (0.3 m) in single run applications. Backfill for minimum cover situations shall consist of Class 1 (compacted), Class 2 (minimum 90% SPD), or Class 3 (minimum 95%) material. Maximum fill heights depend on embedment material and compaction level; please refer to Technical Note 2.01. Contact your local ADS representative or visit our website at www.adspipe.com for a copy of the latest installation guidelines.

Build America, Buy America (BABA)

N-12 WT Series 35 pipe, manufactured in accordance with AASHTO M252, AASHTO M294 or ASTM F2306, complies with the requirements in the Build America, Buy America (BABA) Act.

Pipe Dimensions

Pipe I.D. in (mm)	4 (100)	6 (150)	8 (200)	10 (250)	12 (300)	15 (375)	18 (450)	24 (600)
Pipe O.D.* in (mm)	4.8 (122)	6.9 (175)	9.1 (231)	11.4 (290)	14.5 (368)	18 (457)	22 (559)	28 (711)

* Pipe O.D. values are provided for reference purposes only, values stated for 12 through 60-inch are ±1 inch. Contact a sales representative for exact values

S1.08 N-12 Plain End Pipe (per ASTM F2648) Specification

Scope

This specification describes 4- through 60-inch (100 to 1500 mm) N-12 Plain End pipe (per ASTM F2648) for use in gravity-flow land drainage applications.

Pipe Requirements

N-12 Plain End pipe (per ASTM F2648) shall have a smooth interior and annular exterior corrugations.

- 4- through 60-inch (100 to 1500 mm) pipe shall meet ASTM F2648.
- Manning's "n" value for use in design shall be 0.012.

Joint Performance

Pipe shall be joined with coupling bands covering at least two full corrugations on each end of the pipe. Standard connections shall meet or exceed the soil-tight requirements of ASTM F2648.

Gasketed connections shall incorporate a closed-cell synthetic expanded rubber gasket meeting the requirements of ASTM D1056 Grade 2A2. Gaskets, when applicable, shall be installed by the pipe manufacturer.

Fittings

Fittings shall conform to ASTM F2306.

Material Properties

Material for pipe production shall be an engineered compound of virgin and recycled high density polyethylene conforming with the minimum requirements of cell classification 424420C (ESCR Test Condition B) for 4- through 10-inch (100 to 250 mm) diameters, and 435420C (ESCR Test Condition B) for 12- through 60-inch (300 to 1500 mm) diameters, as defined and described in the latest version of ASTM D3350, except that carbon black content should not exceed 4%. The design engineer shall verify compatibility with overall system including structural, hydraulic, material, and installation requirements for a given application.

Installation

Installation shall be in accordance with ASTM D2321 and ADS recommended installation guidelines, with the exception that minimum cover in trafficked areas for 4- through 48-inch (100 to 1200 mm) diameters shall be one foot (0.3 m) and for 60-inch (1500 mm) diameter the minimum cover shall be 2 ft. (0.6 m) in single run applications. Backfill for minimum cover situations shall consist of Class 1 (compacted) or Class 2 (minimum 90% SPD) material. Maximum fill heights depend on embedment material and compaction level; please refer to Technical Note 2.02. Contact your local ADS representative or visit our website at www.adspipe.com for a copy of the latest installation guidelines.

Pipe Dimensions

Pipe I.D. in (mm)	4 (100)	6 (150)	8 (200)	10 (250)	12 (300)	15 (375)	18 (450)	24 (600)	30 (750)	36 (900)	42 (1050)	48 (1200)	60 (1500)
Pipe O.D.* in (mm)	4.8 (122)	6.9 (175)	9.1 (231)	11.4 (290)	14.5 (368)	18 (457)	22 (559)	28 (711)	36 (914)	42 (1067)	48 (1219)	54 (1372)	67 (1702)

* Pipe O.D. values are provided for reference purposes only, values stated for 12 through 60-inch are ±1 inch. Contact a sales representative for exact values

S1.09 N-12® Plain End Pipe (per AASHTO) Specification

Scope

This specification describes 4- through 60-inch (100 to 1500 mm) N-12 Plain End pipe (per AASHTO) for use in gravity-flow land drainage applications.

Pipe Requirements

N-12 Plain End pipe (per AASHTO) shall have a smooth interior and annular exterior corrugations.

- 4- through 10-inch (100 to 250 mm) pipe shall meet AASHTO M252, Type S or SP.
- 12- through 60-inch (300 to 1500 mm) pipe shall meet AASHTO M294, Type S or SP, or ASTM F2306.
- Manning's "n" value for use in design shall be 0.012.

Joint Performance

Pipe shall be joined with coupling bands covering at least two full corrugations on each end of the pipe. Standard connections shall meet or exceed the soil-tight requirements of AASHTO M252, AASHTO M294, or ASTM F2306.

Gasketed connections shall incorporate a closed-cell synthetic expanded rubber gasket meeting the requirements of ASTM D1056 Grade 2A2. Gaskets, when applicable, shall be installed by the pipe manufacturer.

Fittings

Fittings shall conform to AASHTO M252, AASHTO M294 or ASTM F2306.

Material Properties

Material for pipe and fitting production shall be high density polyethylene conforming with the minimum requirements of cell classification 424420C for 4- through 10-inch (100 to 250 mm) diameters, and 435400C for 12- through 60-inch (300 to 1500 mm) diameters, as defined and described in the latest version of ASTM D3350, except that carbon black content should not exceed 4%. The 12- through 60-inch (300 to 1500mm) pipe material shall comply with the notched constant ligament-stress (NCLS) test as specified in Sections 9.5 and 5.1 of AASHTO M294 and ASTM F2306 respectively.

Installation

Installation shall be in accordance with ASTM D2321 and ADS recommended installation guidelines, with the exception that minimum cover in trafficked areas for 4- through 48-inch (100 to 1200 mm) diameters shall be one foot. (0.3 m) and for 60-inch (1500 mm) diameter the minimum cover shall be 2 ft. (0.6 m) in single run applications. Backfill for minimum cover situations shall consist of Class 1 (compacted), Class 2 (minimum 90% SPD) or Class 3 (minimum 95%) material. Maximum fill heights depend on embedment material and compaction level; please refer to Technical Note 2.01. Contact your local ADS representative or visit our website at www.adspipe.com for a copy of the latest installation guidelines.

Build America, Buy America (BABA)

N-12 Plain End pipe (per AASHTO), manufactured in accordance with AASHTO M252, AASHTO M294 or ASTM F2306, complies with the requirements in the Build America, Buy America (BABA) Act.

Pipe Dimensions

Pipe I.D. in (mm)	4 (100)	6 (150)	8 (200)	10 (250)	12 (300)	15 (375)	18 (450)	24 (600)	30 (750)	36 (900)	42 (1050)	48 (1200)	60 (1500)
Pipe O.D.* in (mm)	4.8 (122)	6.9 (175)	9.1 (231)	11.4 (290)	14.5 (368)	18 (457)	22 (559)	28 (711)	36 (914)	42 (1067)	48 (1219)	54 (1372)	67 (1702)

* Pipe O.D. values are provided for reference purposes only, values stated for 12 through 60-inch are ±1 inch. Contact a sales representative for exact values

S1.10 N-12 MEGA GREEN Plain End Pipe Specification

Scope

This specification describes 4- through 60-inch (100 to 1500 mm) N-12 MEGA GREEN Plain End pipe (per ASTM F2648) for use
in gravity-flow land drainage applications.

Pipe Requirements

N-12 MEGA GREEN Plain End pipe shall have a smooth interior and annular exterior corrugations.

- 4- through 60-inch (100 to 1500 mm) pipe shall meet ASTM F2648.
- Manning's "n" value for use in design shall be 0.012.

Joint Performance

Pipe shall be joined with coupling bands covering at least two full corrugations on each end of the pipe. Standard connections shall meet or exceed the soil-tight requirements of ASTM F2648.

Gasketed connections shall incorporate a closed-cell synthetic expanded rubber gasket meeting the requirements of ASTM D1056 Grade 2A2. Gaskets, when applicable, shall be installed by the pipe manufacturer.

Fittings

Fittings shall conform to ASTM F2306.

Material Properties

Material for pipe production shall be an engineered compound of virgin and recycled high density polyethylene conforming with the minimum requirements of cell classification 424420C (ESCR Test Condition B) for 4- through 10-inch (100 to 250 mm) diameters, and 435420C (ESCR Test Condition B) for 12- through 60-inch (300 to 1500 mm) diameters, as defined and described in the latest version of ASTM D3350, except that carbon black content should not exceed 4%. The design engineer shall verify compatibility with overall system including structural, hydraulic, material, and installation requirements for a given application.

Installation

Installation shall be in accordance with ASTM D2321 and ADS recommended installation guidelines, with the exception that minimum cover in trafficked areas for 4- through 48-inch (100 to 1200 mm) diameters shall be one foot (0.3 m) and for 60-inch (1500 mm) diameter the minimum cover shall be 2 ft. (0.6 m) in single run applications. Backfill for minimum cover situations shall consist of Class 1 (compacted) or Class 2 (minimum 90% SPD) material. Maximum fill heights depend on embedment material and compaction level; please refer to Technical Note 2.02. Contact your local ADS representative or visit our website at www.adspipe.com for a copy of the latest installation guidelines.

Pipe Dimensions

Pipe I.D. in (mm)	4 (100)	6 (150)	8 (200)	10 (250)	12 (300)	15 (375)	18 (450)	24 (600)	30 (750)	36 (900)	42 (1050)	48 (1200)	60 (1500)
Pipe O.D.* in (mm)	4.8 (122)	6.9 (175)	9.1 (231)	11.4 (290)	14.5 (368)	18 (457)	22 (559)	28 (711)	36 (914)	42 (1067)	48 (1219)	54 (1372)	67 (1702)

* Pipe O.D. values are provided for reference purposes only, values stated for 12 through 60-inch are ±1 inch. Contact a sales representative for exact values

S1.11 Landmax® Retention/Detention Pipe System Specification

Scope

This specification describes LandMax Retention/Detention Pipe Systems for use in non-pressure gravity-flow storm water collection systems utilizing a continuous outfall structure.

Pipe Requirements

Retention/Detention systems may utilize any of the various pipe products below.

- N-12® ST IB pipe (per AASHTO) shall meet AASHTO M294, Type S or ASTM F2306.
- N-12 ST IB pipe (per ASTM F2648) shall meet ASTM F2648.
- N-12 MEGA GREEN™ ST IB shall meet ASTM F2648.
- N-12 WT IB pipe (per AASHTO) shall meet AASHTO M294, Type S or ASTM F2306.
- N-12 WT IB pipe (per ASTM F2648) shall meet ASTM F2648.
- N-12 MEGA GREEN WT IB shall meet ASTM F2648.

Joint Performance

Plain End/Soil tight (ST IB)

ST IB pipe shall be joined using a bell & spigot joint. The bell & spigot joint shall meet the soil-tight requirements of ASTM F2306 and gaskets shall meet the requirements of ASTM F477.

Plain End pipe & fittings connections shall be joined with coupling bands covering at least two full corrugations on each end of the pipe. Gasketed soil-tight coupling band connections shall incorporate a closed-cell synthetic expanded rubber gasket meeting the requirements of ASTM D1056 Grade 2A2. Gaskets, when applicable, shall be installed by the pipe manufacturer

Gasketed connections shall incorporate a closed-cell synthetic expanded rubber gasket meeting the requirements of ASTM D1056 Grade 2A2. Gaskets, when applicable, shall be installed by the pipe manufacturer.

Watertight (WT IB):

WT IB pipe shall be joined using a bell & spigot joint. The joint shall be watertight according to the requirements of ASTM D3212. Gaskets shall meet the requirements of ASTM F477. 12- through 60-inch (300 to 1500 mm) diameters shall have an exterior bell wrap installed by the manufacturer.

Pipe & fitting connections shall be with a bell and spigot connection utilizing a welded bell and valley or saddle gasket. The joint shall meet the watertight requirements of ASTM D3212 and gaskets shall meet the requirements of ASTM F477. Detention systems are subject to greater leakage than typical single run storm sewer application and therefore are not appropriate for applications requiring long-term fluid containment or hydrostatic pressure. For additional details refer to Technical Note 7.01 *Rainwater Harvesting with HDPE Cisterns*.

Fittings

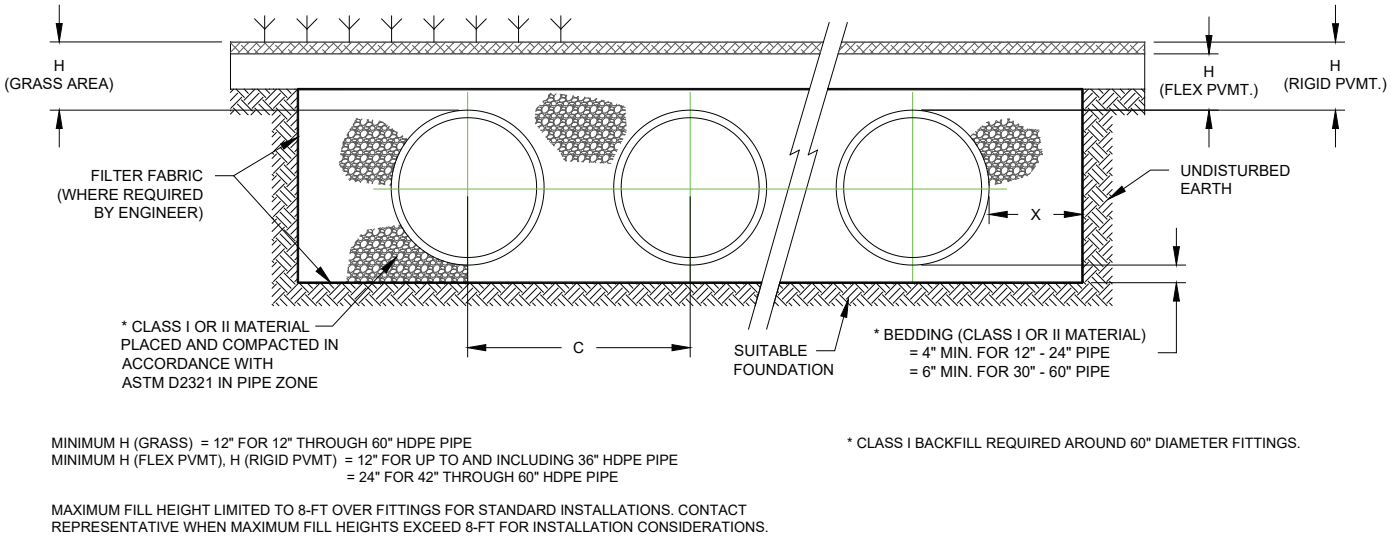
Fittings shall conform to ASTM F2306 and meet joint performance requirements indicated above for fitting connections. Custom fittings are available and may require special installation criterion.

Installation

Installation shall be in accordance with ASTM D2321 and ADS recommended installation guidelines, with the exception that minimum cover in non-traffic areas for 12- through 60-inch (300 to 1500mm) diameters shall be one foot (0.3m). Minimum cover in trafficked areas for 12- through 36-inch (300 to 900mm) diameters shall be one foot (0.3m) and for 42- through 60-inch (1050 to 1500mm) diameters, the minimum cover shall be two feet (0.6m). Backfill shall consist of Class 1 (compacted) or Class 2 (minimum 90% SPD) material, with the exception that 60-inch fittings shall use Class 1 (compacted) material only. Minimum cover heights do not account for pipe buoyancy. Refer to ADS Technical Note 5.05 HDPE Pipe Flotation for buoyancy design considerations. Maximum cover over system using standard backfill is 8 feet (2.4m); contact a representative when maximum fill height may be exceeded. Additional installation requirements are provided in the Drainage Handbook Section 6 Retention/

Detentionor ASTM F2306, complies with the requirements in the Build America, Buy America (BABA) Act.

Typical Retention/Detention Cross Section



MINIMUM H (GRASS) = 12" FOR 12" THROUGH 60" HDPE PIPE
MINIMUM H (FLEX PVMT), H (RIGID PVMT) = 12" FOR UP TO AND INCLUDING 36" HDPE PIPE
= 24" FOR 42" THROUGH 60" HDPE PIPE

MAXIMUM FILL HEIGHT LIMITED TO 8-FT OVER FITTINGS FOR STANDARD INSTALLATIONS. CONTACT REPRESENTATIVE WHEN MAXIMUM FILL HEIGHTS EXCEED 8-FT FOR INSTALLATION CONSIDERATIONS.

* CLASS I BACKFILL REQUIRED AROUND 60" DIAMETER FITTINGS.

Additional References

Drainage Handbook Section 6 *Retention/Detention*
Technical Note 6.01 *Retention/Detention System Maintenance*
Technical Note 7.01 *Rainwater Harvesting with HDPE Pipe*
Standard Detail 701 Retention-Detention System (Plan View)
Standard Detail 702 Retention-Detention System (Cross-Section)
Standard Detail 703 Retention-Detention System (Riser & Cleanout)
Standard Detail 704 Flowable Fill Installation (Nyloplast® Riser)
All references are available for download at adspipe.com

S2.01 HP Storm 12”-60” Pipe Specification

Scope

This specification describes 12- through 60-inch (300 to 1500 mm) HP Storm pipe for use in gravity-flow storm drainage applications.

Pipe Requirements

HP Storm pipe shall have a smooth interior and annular exterior corrugations.

- 12- through 60-inch (300 to 1500 mm) pipe shall meet ASTM F2881 or AASHTO M330.
- Manning’s “n” value for use in design shall be 0.012.

Joint Performance

Pipe shall be joined using a bell & spigot joint meeting the requirements of ASTM F2881 or AASHTO M330. The joint shall be watertight according to the requirements of ASTM D3212. Gaskets shall meet the requirements of ASTM F477. Gasket shall be installed by the pipe manufacturer and covered with a removable, protective wrap to ensure the gasket is free from debris. A joint lubricant available from the manufacturer shall be used on the gasket and bell during assembly. 12- through 60-inch (300 to 1500 mm) diameters shall have an exterior bell wrap installed by the manufacturer.

Fittings

Fittings shall conform to ASTM F2881 or AASHTO M330. Bell and spigot connections shall utilize a welded or integral bell and valley or inline gaskets meeting the watertight joint performance requirements of ASTM D3212.

Field Pipe and Joint Performance

To assure watertightness, field performance verification may be accomplished by testing in accordance with ASTM F1417 or ASTM F2487. Appropriate safety precautions must be used when field-testing any pipe material. Contact the manufacturer for recommended leakage rates

Material Properties

Polypropylene compound for pipe and fitting production shall be impact modified copolymer meeting the material requirements of ASTM F2881, Section 5 and AASHTO M330, Section 6.1.

Installation

Installation shall be in accordance with ASTM D2321 and ADS recommended installation guidelines, with the exception that minimum cover in traffic areas for 12- through 48-inch (300 to 1200 mm) diameters shall be one foot (0.3 m) and for 60-inch (1500 mm) diameter the minimum cover shall be 2 ft. (0.6 m) in single run applications. Backfill for minimum cover situations shall consist of Class 1 (compacted), Class 2 (minimum 90% SPD), or Class 3 (minimum 95%) material. Maximum fill heights depend on embedment material and compaction level; please refer to Technical Note 2.04. Contact your local ADS representative or visit our website at www.adspipe.com for a copy of the latest installation guidelines.

Build America, Buy America (BABA)

N-12 Plain End pipe (per AASHTO), manufactured in accordance with ASTM F2881 or AASHTO M330, complies with the requirements in the Build America, Buy America (BABA) Act.

Pipe Dimensions

Nominal Pipe I.D. in (mm)	120 (300)	15 (375)	18 (450)	24 (600)	30 (750)	36 (900)	42 (1050)	48 (1200)	60 (1500)
Average Pipe I.D. in (mm)	12.2 (310)	15.1 (384)	18.2 (462)	24.1 (612)	30.2 (767)	36.0 (914)	42.0 (1067)	47.9 (1217)	59.9 (1521)
Average Pipe O.D. in (mm)	14.5 (368)	17.7 (450)	21.4 (544)	28.0 (711)	35.5 (902)	41.5 (1054)	47.4 (1204)	54.1 (1374)	67.1 (1704)
Min. Pipe Stiffness* @ 5% Deflection #/in/in (kN/m²)	75 (617)	60 (414)	56 (386)	50 (345)	46 (317)	40 (276)	35 (241)	35 (241)	30 (207)

* Pipe O.D. values are provided for reference purposes only, values stated for 12 through 60-inch are ±1 inch. Contact a sales representative for exact values

S2.02 SaniTite® HP Storm 12”-60” Pipe Specification

Scope

This specification describes 12- through 60-inch (300 to 1500 mm) SaniTite HP pipe for use in gravity-flow sanitary sewer applications.

Pipe Requirements

12”-30” (300 to 750 mm) SaniTite HP dual wall pipe shall have a smooth interior and annular exterior corrugations; 30”-60” (750-1500 mm) SaniTite HP triple wall pipe shall have a smooth interior and exterior surfaces with annular inner corrugations

- 12- through 30-inch (300 to 750 mm) dual wall pipe shall meet ASTM F2764
- 30- through 60-inch (750 to 1500 mm) triple wall pipe shall meet ASTM F2764
- 12- through 60-inch (300 to 1500 mm) pipe shall have a minimum pipe stiffness of 46 pii when tested in accordance with ASTM D2412
- Manning’s “n” value for use in design shall be 0.012.

Joint Performance

Pipe shall be joined using a bell and spigot joint meeting the requirements of ASTM F2764. The joint shall be watertight according to the requirements of ASTM D3212, with the addition of a 15 psi pressure requirement. Gaskets shall meet the requirements of ASTM F477. Gaskets shall be installed by the pipe manufacturer and covered with a removable, protective wrap to ensure the gaskets are free from debris. A joint lubricant available from the manufacturer shall be used on the gasket and bell during assembly. 12- through 60-inch (300 to 1500 mm) diameters shall have a reinforced bell with a polymer composite band installed by the manufacturer.

Fittings

Fittings shall conform to ASTM F2764. Bell and spigot connections shall utilize a welded or integral bell and valley or inline gaskets meeting the watertight joint performance requirements of ASTM D3212.

Field Pipe and Joint Performance

To assure watertightness, field performance verification may be accomplished by testing in accordance with ASTM F1417 or ASTM F2487. Appropriate safety precautions must be used when field-testing any pipe material. Contact the manufacturer for recommended leakage rates.

Material Properties

Polypropylene compound for pipe and fitting production shall be an impact modified copolymer meeting the material requirements of ASTM F2764

Installation

Installation shall be in accordance with ASTM D2321 and ADS recommended installation guidelines, with the exception that minimum cover in traffic areas for 12- through 48-inch (300 to 1200 mm) diameters shall be one foot (0.3 m) and for 60-inch (1500mm) diameter the minimum cover shall be 2-ft (0.6m) in single run applications. Backfill for minimum cover situations shall consist of Class 1 (compacted) or Class 2 (minimum 90% SPD) material. Maximum fill heights depend on embedment material and compaction level; please refer to Technical Note 2.05. Contact your local ADS representative or visit our website at www.adspipe.com for a copy of the latest installation guidelines.

Build America, Buy America (BABA)

N-12 Plain End pipe (per AASHTO), manufactured in accordance with ASTM F2764, complies with the requirements in the Build America, Buy America (BABA) Act.

Pipe Dimensions

Nominal Pipe I.D. in (mm)	12 (300)	15 (375)	18 (450)	24 (600)	30 (750)	36 (900)	42 (1050)	48 (1200)	60 (1500)
Average Pipe I.D. in (mm)	12.1 (307)	14.9 (378)	18.0 (457)	24.1 (612)	30.1 (765)	35.7 (907)	41.8 (1062)	47.3 (1201)	59.3 (1506)
Average Pipe O.D. in (mm)	14.5 (368)	17.6 (447)	21.2 (538)	28.0 (711)	35.5 (902)	41.5 (1054)	47.4 (1204)	54.1 (1374)	67.1 (1704)

* Pipe O.D. values are provided for reference purposes only, values stated for 12 through 60-inch are ±1 inch. Contact a sales representative for exact values

S3.01 Single Wall Pipe Specification

Scope

This specification describes 3- through 15-inch (75 to 375 mm) single wall high-density corrugated polyethylene pipe for use in gravity-flow land drainage applications.

Pipe Requirements

Single wall high-density corrugated polyethylene pipe shall have annular interior and exterior corrugations.

- 3- through 15-inch (75 to 375 mm) pipe shall meet ASTM F667.

Joint Performance

Joints for 3- to 15- inch (75 – 375 mm) shall be made with split or snap couplings. Standard connections shall meet the requirements of the ASTM F667. Gasketed connections shall incorporate a closed-cell synthetic expanded rubber gasket meeting the requirements of ASTM D1056 Grade 2A2. Gaskets, when applicable, shall be installed by the pipe manufacturer.

Fittings

Fittings shall conform to ASTM F667.

Material Properties

Pipe and fitting material shall be high density polyethylene conforming with the minimum requirements of cell classification 323410C or 333410C as defined and described in the latest version of ASTM D3350.

Installation

Installation shall be in accordance with ASTM D2321 and ADS recommended installation guidelines, with the exception that minimum cover in trafficked areas for 3- through 15-inch (75 to 375 mm) diameters shall be one foot (0.3 m). Maximum fill heights depend on embedment material and compaction level; please refer to Technical Note 2.03. Contact your local ADS representative or visit our website at www.adspipe.com for a copy of the installation guidelines.

Pipe Dimensions

Nominal Pipe I.D. in (mm)	3 (75)	4 (100)	5 (125)	6 (150)	8 (200)	10 (250)	12 (300)	15 (375)
Average Pipe I.D. in ((mm)	3.6 (91)	4.6 (117)	5.8 (147)	7.0 (178)	9.5 (241)	12.0 (305)	14.5 (368)	18.0 (457)

* Pipe O.D. values are provided for reference purposes only, values stated for 12 through 60-inch are ±1 inch.
** All diameters available with or without perforations.
Contact a sales representative for exact values

S3.02 Single Wall Heavy Duty Pipe Specification

Scope

This specification describes 3- through 15-inch (75 to 375 mm) single wall high-density corrugated polyethylene heavy duty pipe for use in gravity-flow land drainage applications.

Pipe Requirements

Single wall high-density corrugated polyethylene heavy duty pipe shall have annular interior and exterior corrugations.

- 3- through 15-inch (75 to 375 mm) pipe shall meet ASTM F667.

Joint Performance

Joints for 3- to 15- inch (75 – 375 mm) shall be made with split or snap couplings. Standard connections shall meet the requirements of the ASTM F667. Gasketed connections shall incorporate a closed-cell synthetic expanded rubber gasket meeting the requirements of ASTM D1056 Grade 2A2. Gaskets, when applicable, shall be installed by the pipe manufacturer.

Fittings

Fittings shall conform to ASTM F667.

Material Properties

Pipe and fitting material shall be high density polyethylene conforming with the minimum requirements of cell classification 323410C or 333410C as defined and described in the latest version of ASTM D3350.

Installation

Installation shall be in accordance with ASTM D2321 and ADS recommended installation guidelines, with the exception that minimum cover in trafficked areas for 3- through 15-inch (75 to 375 mm) diameters shall be one foot (0.3 m). Maximum fill heights depend on embedment material and compaction level; please refer to Technical Note 2.03. Contact your local ADS representative or visit our website at www.adspipe.com for a copy of the installation guidelines.

Pipe Dimensions

Nominal Pipe I.D. in (mm)	3 (75)	4 (100)	5 (125)	6 (150)	8 (200)	10 (250)	12 (300)	15 (375)
Average Pipe I.D. in ((mm)	3.6 (91)	4.6 (117)	5.8 (147)	7.0 (178)	9.5 (241)	12.0 (305)	14.5 (368)	18.0 (457)

* Pipe O.D. values are provided for reference purposes only, values stated for 12 through 60-inch are ±1 inch.
** All diameters available with or without perforations.
Contact a sales representative for exact values

S3.03 Single Wall Highway Pipe Specification

Scope

This specification describes 3- through 15-inch (75 to 375 mm) single wall high-density corrugated polyethylene highway pipe for use in gravity-flow land drainage applications.

Pipe Requirements

Single wall high-density corrugated polyethylene highway pipe shall have annular interior and exterior corrugations.

- 3- through 10-inch (75 to 250 mm) pipe shall meet AASHTO M252, Type C or CP.
- 12- through 15-inch (300 to 375 mm) pipe shall meet AASHTO M294, Type C or CP.

Joint Performance

Joints for 3- to 15- inch (75 – 375 mm) shall be made with split or snap couplings. Standard connections shall meet the soil-tight requirements of the AASHTO M252 or M294. Gasketed connections shall incorporate a closed-cell synthetic expanded rubber gasket meeting the requirements of ASTM D1056 Grade 2A2. Gaskets, when applicable, shall be installed by the pipe manufacturer.

Fittings

Fittings shall conform to AASHTO M252 or AASHTO M294.

Material Properties

Pipe and fittings shall be made of polyethylene compounds that comply with the cell classification 424420C for 4- through 10-inch (100 to 250 mm) diameters, or 435400C for 12- through 15-inch (300 to 375 mm) diameters, as defined and described in ASTM D3350, except that carbon black content should not exceed 4%. The 12- through 15-inch (300 to 375 mm) pipe material shall comply with the notched constant ligament-stress (NCLS) test as specified in Sections 9.5 of AASHTO M294.

Installation

Installation shall be in accordance with ASTM D2321 and ADS recommended installation guidelines with the exception that minimum cover in trafficked areas for 3- through 15-inch (75 to 375 mm) diameters shall be one foot (0.3 m). Maximum fill heights depend on embedment material and compaction level; please refer to Technical Note 2.03. Contact your local ADS representative or visit our website at www.adspipe.com for a copy of the latest installation guidelines.

Build America, Buy America (BABA)

Single wall highway pipe, manufactrued in accordance with AASHTO M252 or AASHTO M294, complies with the requirements in the Build America, Buy America (BABA) Act.

Pipe Dimensions

Nominal Pipe I.D. in (mm)	3 (75)	4 (100)	5 (125)	6 (150)	8 (200)	10 (250)	12 (300)	15 (375)
Average Pipe I.D. in ((mm)	3.6 (91)	4.6 (117)	5.8 (147)	7.0 (178)	9.5 (241)	12.0 (305)	14.5 (368)	18.0 (457)

* Pipe O.D. values are provided for reference purposes only, values stated for 12 through 60-inch are ±1 inch.
** All diameters available with or without perforations.
Contact a sales representative for exact values

S3.04 Grain-Aire® Pipe Specification

Scope

This specification describes 18- through 36-inch (450 to 900 mm) Grain-Aire pipe for use in metering air and providing uniform flow air in flat storage structures.

Pipe Requirements

Grain-Aire pipe shall have a smooth interior and annular exterior corrugations covered with a polypropylene protective screen to provide unrestricted air flow.

Joint Performance

Pipe shall be joined with split or snap couplers covering at least two full corrugations on each end of the pipe.

Material Properties

Pipe and fittings shall be high density polyethylene conforming with the minimum requirements of cell classification 424400C as defined and described in the latest version of ASTM D3350.

Perforations

Nominal Diameter	Corrugations per foot	Numbers of holes per foot	Minimum hole diameter	Open area per foot
18" (450 mm)	4.7	24	⅝" (16 mm)	7.36
24" (600 mm)	4.7	24	⅝" (16 mm)	7.36
30" (750 mm)	2.9	32	½" (13 mm)	6.28
36" (900 mm)	2.4	32	½" (13 mm)	6.28

Protective Screen

Material	Polypropylene	Test Method
Bursting Strength (lbs/in²)	484	ASTM D3786
Weight (oz/yd²)	5.3	ASTM D3776
% Open Area	25	ASTM D475
Tensile Strength (lbs) (Grab Test)	425 (Wrap)	ASTM D5034
	273 (Fill)	

S3.05 AdvanEdge® Pipe Specification

Scope

This specification describes 18-inch (300 mm) AdvanEdge oblong corrugated pipe for use in subsurface drainage applications.

Pipe Requirements

AdvanEdge shall have annular interior and exterior corrugations.

- 12-inch (300 mm) shall meet ASTM D7001.

AdvanEdge outside dimensions shall be 1.5" (38 mm) thick x 12.5" (318 mm) wide. AdvanEdge shall have internal bracing adjoining each long wall to prevent crushing under typical loading. AdvanEdge shall be made available with or without an external geotextile wrap
When geotextile is provided, product shall meet the requirements
of Class B Geocomposite as defined in ASTM D7001.

Material Properties

All pipe and fittings shall be made of polyethylene with a minimum cell classification of 424420C as defined and described in the latest version of ASTM D3350.

Pipe

Nominal Pipe Size, in (mm)	12 (300)
Slot Length (avg.), in (mm)	1.125 (29)
Slot Width (avg.), in (mm)	0.125 (3.2)
Water Inlet Area (approx., in^2/ft	15

Filter Fabric

Fabric Properties	Test Method	Min. Average Roll Values
Grab Tensile Strength (lbs) - weakest principle direction	ASTM D4632	112
Grab Elongation (%) - weakest principle direction	ASTM D4632	50
Trapezoidal Tear (lbs) - weakest principle direction	ASTM D4533	40
Puncture (lbs)	ASTM D4833	40
Permittivity (sec^{-1})	ASTM D4491	0.5
AOS (U.S. Sieve Size)	ASTM D4751	60
U.V. Resistance	ASTM D4355	50

S3.06 SB2® Pipe Specification

Scope

This specification describes SB2 pipe available in 8- and 10-inch (200 and 250 mm) diameters for use in on-site waste disposal applications.

Pipe Requirements

SB2 pipe shall have a corrugated interior and corrugated exterior with a pre-installed septic fabric.

- 8- and 10-inch (200 and 250 mm) pipe shall meet the requirements of ASTM F667.
- There shall be two ½-inch (12.7 mm) holes 120 ° apart on the length of the pipe.
- The 8-inch (200 mm) and 10-inch (250 mm) pipe shall have 1.0 square inches per foot of open area.

Joint Performance

Pipe shall be joined with internal or external snap couplers covering at least two full corrugations on each end of the pipe.

Fittings

Fittings shall conform to ASTM F667.

Material Properties

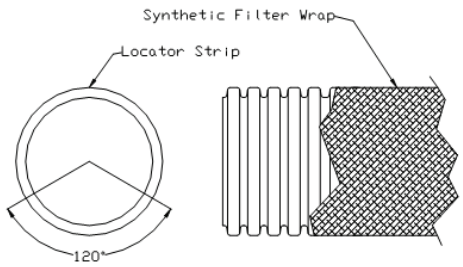
Pipe material shall be high density polyethylene conforming with the minimum requirements of cell classification 424410C as defined and described in the latest version of ASTM D3350; or ASTM D1248 Type III, Class C, Category 4, Grade P33.

Installation

Installation shall be in accordance with ADS recommended installation instructions and those issued by a local health department. For leachfield applications, installation shall be in accordance with ASTM F481 and as regulated by regional, state, and local agencies. Proper authorization for specific applications and designs should be obtained prior to installation to ensure suitability in certain locales. Contact your local ADS representative or visit our website at www.adspipe.com for a copy of the installation guidelines.

Filter Fabric Properties

Material	Nylon (100%)
Fabric	Spun Bond
Fiber Size (denier per filament)	5
Weight (ounces per yd², ASTM D3776)	0.85
Burst Strength (pounds per in², ASTM D3786)	28
Air Permeability (CFM per ft², ASTM D737)	650
Equivalent Opening Size (Army Corps of Engineers, W 02215)	50
Water Flow Rate (fal/min/ft², ASTM D4491)	163
Melt Temperature	218° C (425° F)



S3.07 ADS 3000 Triple Wall® Pipe Specification

Scope

This specification describes 4-inch (100 mm) ADS 3000 Triple Wall pipe for use in gravity-flow drainage and leach field applications.

Pipe Requirements

ADS 3000 TripleWall pipe shall have a smooth interior and exterior.

- 4-inch (100 mm) pipe shall meet the requirements of ASTM F810.
- Manning's "n" value for use in design shall not be less than 0.009.

Joint Performance

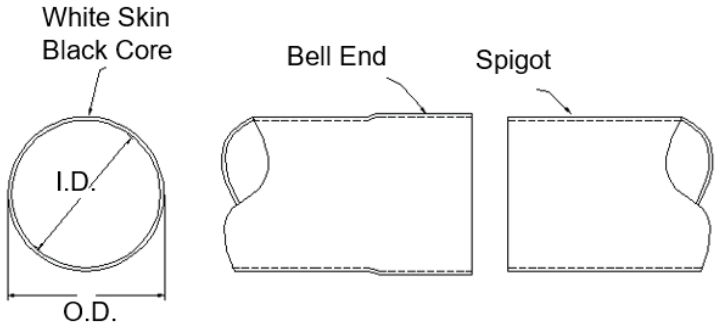
Pipe joints shall be bell-and-spigot. Bell ends shall be integrally formed on the pipe at one end to form a soil-tight connection.

Material Properties

Pipe material shall be high-density polyethylene conforming with the minimum requirements of cell classifications 424410C or E as defined and described in the latest version of ASTM D3350. The material formulation shall include recycled polyethylene.

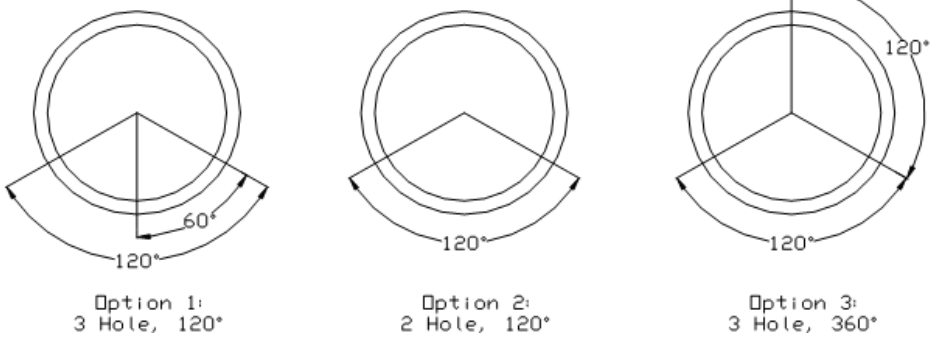
Installation

For gravity-flow drainage applications, installation shall be in accordance with ASTM D2321 and ADS recommended installation guidelines with the exception that minimum cover in traffic areas shall be one foot (0.3 m). For leachfield applications, installation shall be in accordance with ASTM F481 and as regulated by regional, state, and local agencies. Proper authorization for specific applications and designs should be obtained prior to installation to ensure suitability in certain locales. Contact your local ADS representative or visit our website at www.adspipe.com for a copy of the installation guidelines.



Perforation Options*

Nominal Pipe I.D. in (mm)	4 (100)
Average Pipe I.D. in (mm)	3.875 (98.5)
Average Pipe O.D. in (mm)	4.215 (107)



Option 1: 3 Hole, 120°

Option 2: 2 Hole, 120°

Option 3: 3 Hole, 360°

* Only available in a limited area. Check with your ADS sales representative for availability.

Perforation sizes are based on customer requirements and regional availability.

Pipe available with or without perforations.

S3.08 Channel-Flow® Pipe Specification

Scope

This specification describes Channel-Flow pipe in 4-inch (100 mm) diameter for use in on-site waste applications..

Pipe Requirements

Channel-Flow pipe shall have a corrugated interior and corrugated exterior.

- 4-inch (100 mm) pipe shall meet the requirements of ASTM F667 and SCS 606.
- Perforations shall be spaced every 4.2-inches (107 mm) on the length of the pipe.

Joint Performance

Pipe shall be joined with self-coupling stubs located at the ends of each pipe section.

Fittingss

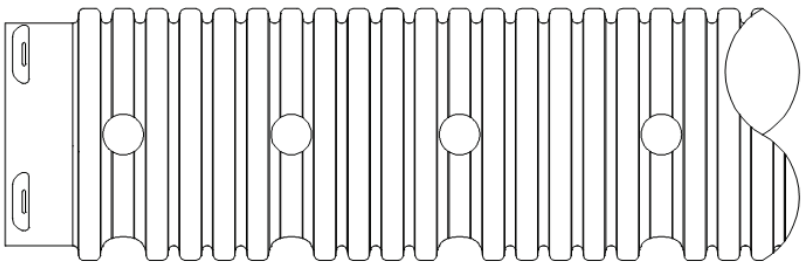
Fittings shall conform to ASTM F667.

Material Properties

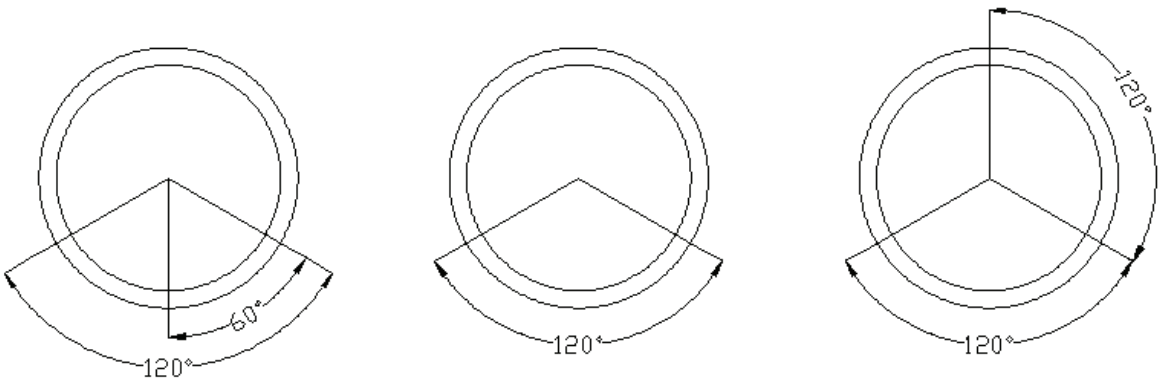
Pipe material shall be high density polyethylene conforming with the minimum requirements of cell classification 424410C as defined and described in the latest version of ASTM D3350; or ASTM D1248 Type III, Class C, Category 4, Grade P33. .

Installation

Installation shall be in accordance with ASTM F481 and those issued by the local health department.



Perforation Options*



Option 1
(3) 1/2"(12.7mm)
Holes

Option 2
(2) 1/2" (12.7mm)
Holes

Option 3
(3) 1/2"(12.7mm)
Holes

*Check with ADS sales representative for perforation option availability by region.

S3.09 Channel-Muck Pipe Specification

Scope

This specification describes Channel-Flow pipe in 4- through 6-inch (100 to 150 mm) diameter for use in agricultural drainage applications.

Pipe Requirements

Channel-Muck pipe shall have a corrugated interior and corrugated exterior.

- 4- through 6-inch (100 to 150 mm) pipe shall meet the requirements of ASTM F667 and SCS 606.
- There shall be three perforations every 4.2-inch (107 mm) on the length of the pipe.

Joint Performance

Pipe shall be joined with self-coupling stubs located at the ends of each pipe section.

Fittingss

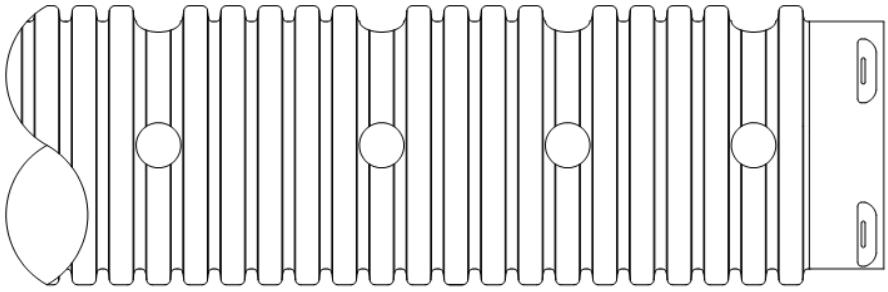
Fittings shall conform to ASTM F667.

Material Properties

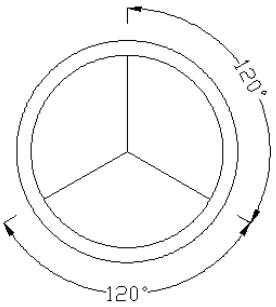
Pipe material shall be high density polyethylene conforming with the minimum requirements of cell classification 424410C as defined and described in the latest version of ASTM D3350; or ASTM D1248 Type III, Class C, Category 4, Grade P33. .

Installation

Installation shall be in accordance with ADS recommended installation instructions and those issued by regional, state or local agencies.



Perforation Pattern



S3.10 Duraslot® Slotted Drain Specification

Scope

This specification describes 4- through 36-inch (100 to 900 mm) Duraslot slotted drain for use in surface drain and conveyance applications.

Pipe Requirements

Duraslot pipe, as manufactured and distributed by ADS, Inc., shall have a smooth interior and annular exterior corrugations with an aluminum slot grate frame mounted longitudinally along the length of the pipe to accept the grate while maintaining the original pipe diameter.

- 4- through 10-inch (100 to 250 mm) pipe shall meet AASHTO M252, Type S.
- 12- through 36-inch (300 to 900 mm) pipe shall meet AASHTO M294, Type S or ASTM F2306.
- Manning's "n" value for use in design shall be 0.012.

The aluminum slot grate frame shall be manufactured from 0.063-inch (1.6 mm) tempered commercial aluminum meeting the requirements of ASTM B209, consisting of two parallel plates separated by spacers spanning the slot on 6-inch (150 mm) centers. The aluminum slot grate frame shall be coated with a primer to protect the aluminum when installed in concrete. The grate shall be ½ - #13 galvanized steel or ½ - #13 304 stainless steel per ASTM F1267. Alternatively, aluminum slot grate may be left open top. The grate shall have diamond-shaped openings with a 52% open area and be ADA compliant. The flange at the bottom of the aluminum slot grate frame shall be riveted to the pipe with a minimum of two rivets per linear foot.

Fittings

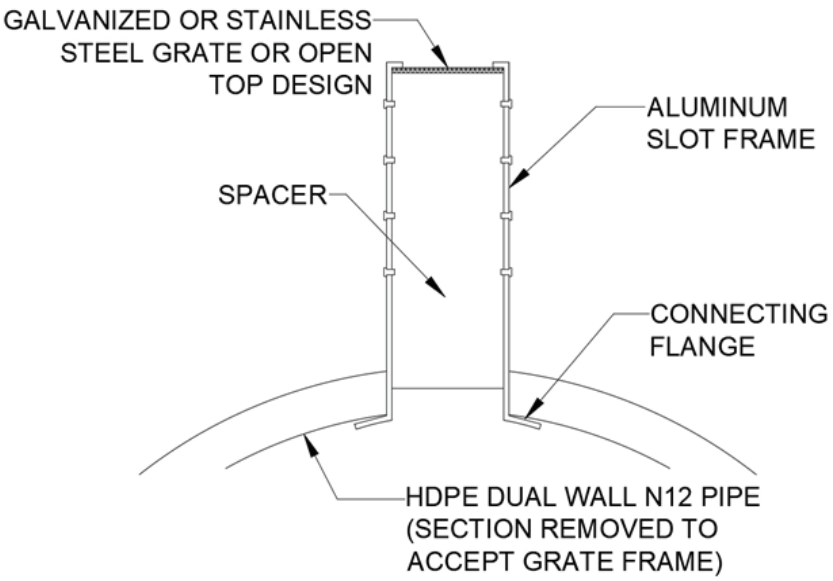
Duraslot fittings shall be modified from fittings which conform to AASHTO M252, AASHTO M294 or ASTM F2306.

Installation

Installation shall be in accordance with ADS recommended installation instructions. Contact your local ADS representative or visit www.adspipe.com for a copy of the latest installation guidelines.

Build America, Buy America (BABA)

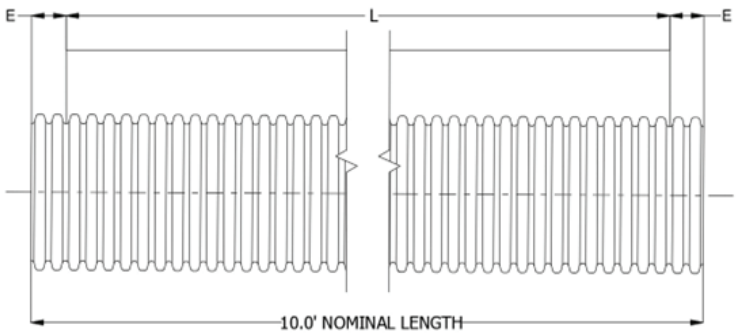
Installation shall be in accordance with ADS recommended installation instructions. Contact your local ADS representative or visit www.adspipe.com for a copy of the latest installation guidelines.

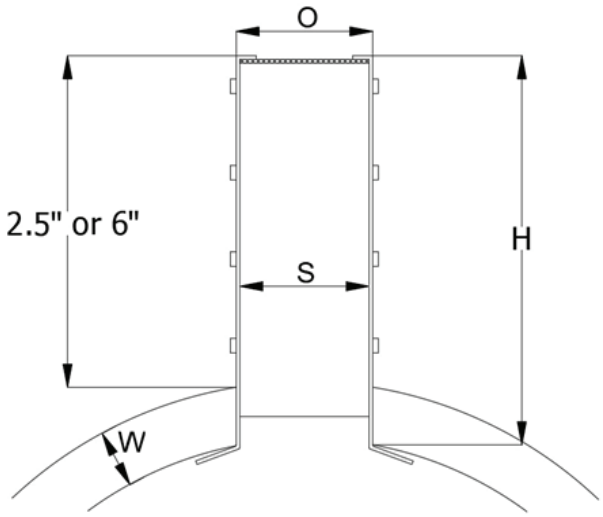


Duraslot Standard Dimensions

	Nominal Pipe Diameter in (mm)									
	4 (100)	6 (150)	8 (200)	10 (250)	12 (300)	15 (375)	18 (450)	24 (600)	30 (750)	36 (900)
L – Drain Grate Length	118.0 (2997)					116.0 (2946)				
E - Pipe End Length	1.0 (25)					2.0 (51)				
H – 0.5” (13 mm) Slot	2.75 (70)	3.0 (76)	3.0 (76)	3.0 (76)	3.5 (89)	3.75 (95)	4.0 (102)	4.75 (121)	5.0 (127)	5.25 (133)
H – 6.0” (150 mm) Slot	6.25 (159)	6.5 (165)	6.5 (165)	6.5 (165)	7.0 (178)	7.0 (178)	7.0 (178)	7.25 (184)	8.25 (210)	8.25 (210)
O – Opening Width	1.25 (32)	1.75 (44)	1.75 (44)	1.75 (44)	1.75 (44)	1.75 (44)	1.75 (44)	1.75 (44)	1.75 (44)	1.75 (44)
S – Slot Width	1.75 (44)	2.25 (57)	2.25 (57)	2.25 (57)	2.25 (57)	2.25 (57)	2.25 (57)	2.25 (57)	2.25 (57)	2.25 (57)
)W – Pipe Width with Corrugation	0.34 (9)	0.46 (12)	0.61 (15)	0.73 (19)	1.15 (29)	1.30 (33)	1.57 (40)	1.86 (47)	2.55 (65)	2.85 (72)

Note: Custom slot heights available upon request. Production of custom slots will require approval by the Duraslot Project Engineer. Signed shop drawings also required from interested party.





S3.11 Duraslot® XL Specification

Scope

This specification describes 6- through 36-inch (150 to 900 mm) Duraslot XL pipe for use in surface drain and conveyance applications.

Pipe Requirements

Duraslot XL pipe, as manufactured and distributed by ADS, Inc., shall have a smooth interior and annular exterior corrugations with an aluminum slot grate frame mounted longitudinally along the length of the pipe to accept the grate, while maintaining the original pipe diameter.

- 6- through 10-inch (150 to 250 mm) pipe shall meet AASHTO M252, Type S.
- 12- through 36-inch (300 to 900 mm) pipe shall meet AASHTO M294, Type S or ASTM F2306.
- Manning's "n" value for use in design shall be 0.012.

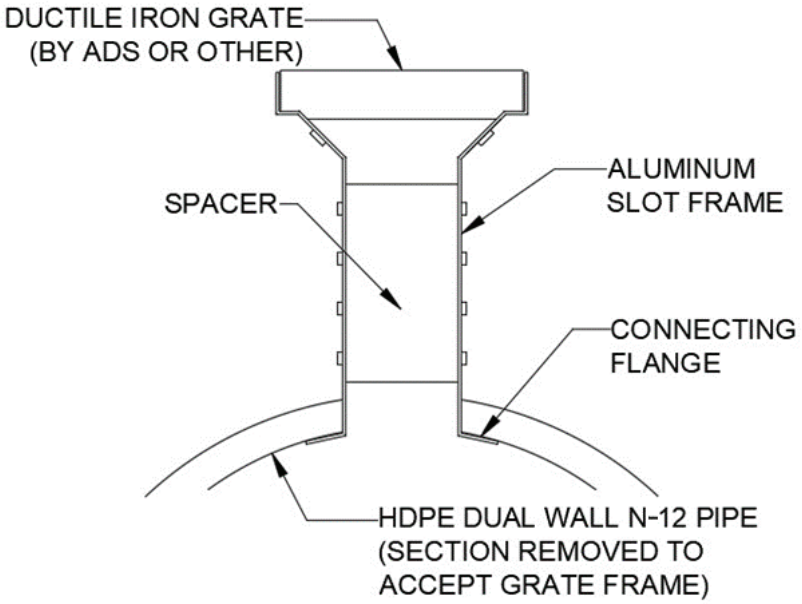
The aluminum slot grate frame shall be manufactured from 0.063" (1.6 mm) tempered commercial aluminum meeting the requirements of ASTM B209, consisting of two parallel plates separated by spacers spanning the slot width. The aluminum slot grate frame shall be coated with a primer to protect the aluminum when installed in concrete. Grates furnished by ADS shall be made of ductile iron with a 4.81-inch (122 mm) width and 19.69-inch (500 mm) length. The grate pattern, open area and load rating will vary based on the chosen design. The flange at the bottom of the aluminum slot grate frame shall be riveted to the pipe with a minimum of two rivets per linear foot.

Fittings

Duraslot XL fittings shall be modified from fittings which conform to AASHTO M252, AASHTO M294 or ASTM F2306.

Installation

Installation shall be in accordance with ADS recommended installation instructions. Contact your local ADS representative or visit www.adspipe.com for a copy of the latest installation guidelines.

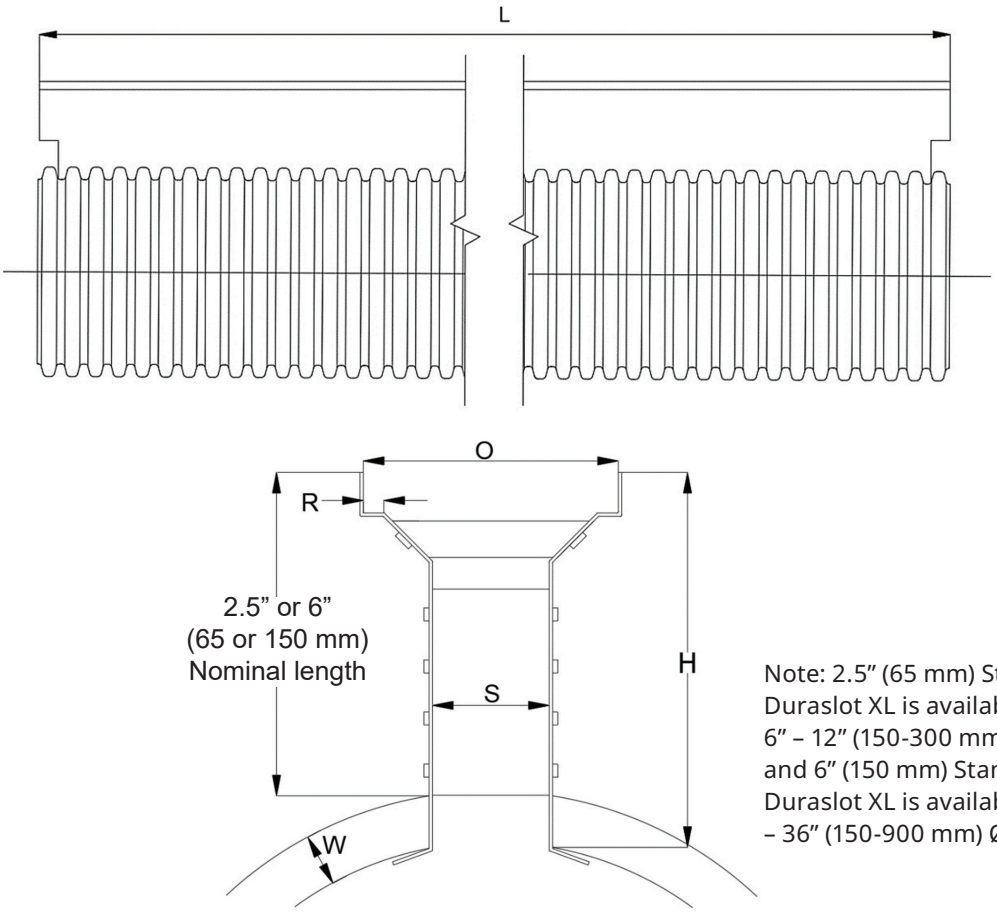


Duraslot XL Standard Dimensions

	Nominal Pipe Diameter in (mm)								
	6 (150)	8 (200)	10 (250)	12 (300)	15 (375)	18 (450)	24 (600)	30 (750)	36 (900)
L – Drain Grate Length	118.5 (3010)								
H – 2.5” (62.5 mm) Slot	3.0 (76)	3.0 (76)	3.0 (76)	3.5 (89)	3.75 (95)	4.0 (102)	4.75 (121)	5.0 (127)	5.25 (133)
H – 6.0” (160 mm) Slot	6.5 (165)	6.5 (165)	6.5 (165)	7.0 (178)	7.0 (178)	7.0 (178)	7.25 (184)	8.25 (210)	8.25 (210)
O – Opening Width	5.0 (127)								
R – Slot Width	0.316 (8)								
S – Slot Width	2.25 (57)								
W – Pipe Width with Corrugation	0.46 (12)	0.61 (15)	0.73 (19)	1.15 (29)	1.30 (33)	1.57 (40)	1.86 (47)	2.55 (65)	2.85 (72)

Note:

1. Custom slot heights available upon request. Production of custom slots will require approval by the Duraslot Project Engineer. Signed shop drawings also required from interested party.
2. Other grate material options available upon request. Contact local ADS representative for availability of grate material option.



Note: 2.5” (65 mm) Standard Duraslot XL is available in 6” – 12” (150-300 mm) Ø pipe and 6” (150 mm) Standard Duraslot XL is available in 6” – 36” (150-900 mm) Ø pipe.

S4.01 Injection Molded Fitting Specification

Scope

This specification describes 4- through 12-inch (100 to 300 mm) Injection Molded Fittings for use in joining gravity-flow drainage and sewer pipe. Available fittings include tees, wyes, bends, couplers, and reducing fittings.

Fitting Requirements

Injection molded fittings shall have a smooth interior and exterior.

- 4- through 10-inch (100 to 250mm) shall meet the fitting requirements of AASHTO M252.
- 12- inch (900 mm) pipe shall meet AASHTO M294 or ASTM F2306.

Joint Performance

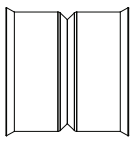
The fittings shall provide a joint meeting AASHTO M252, AASHTO M294 or ASTM F2306. For non-gasketed fittings, dimples in the bell shall engage the corrugation to provide a soil-tight connection. For gasketed fittings, the joint shall be watertight according to the requirements of ASTM D3212. Gaskets shall be made of EPDM meeting the requirements of ASTM F477. Gaskets shall be supplied by the pipe manufacturer. A joint lubricant supplied by the manufacturer shall be used on the gasket and bell during assembly.

Material Properties

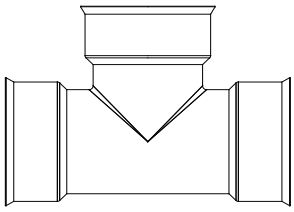
Material for fitting production shall be high density polyethylene conforming with the minimum requirements of cell classification 314420C or 314420E for 4- through 12-inch (100 to 300mm) diameters, as defined and described in the latest version of ASTM D3350, except that carbon black content should not exceed 4%.

Build America, Buy America (BABA)

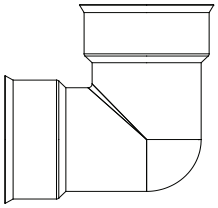
Injection Molded Fittings, manufactured in accordance with AASHTO M252, AASHTO M294 or ASTM F2306, complies with the requirements in the Build America, Buy America (BABA) Act.



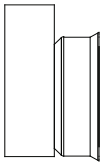
SIZE-ON-SIZE OR REDUCING
BELL-BELL COUPLER



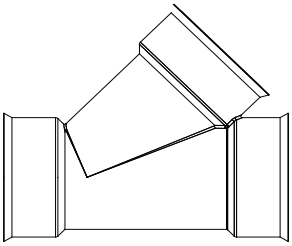
SIZE-ON-SIZE OR REDUCING TEE



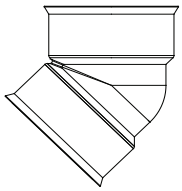
90-DEG BEND



SPIGOT-BELL REDUCER



SIZE-ON-SIZE OR REDUCING
45-DEG WYE

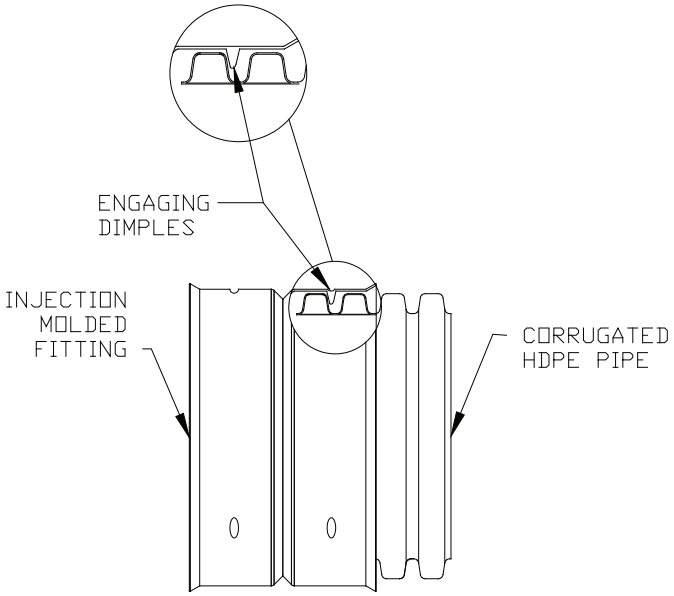


45-DEG BEND

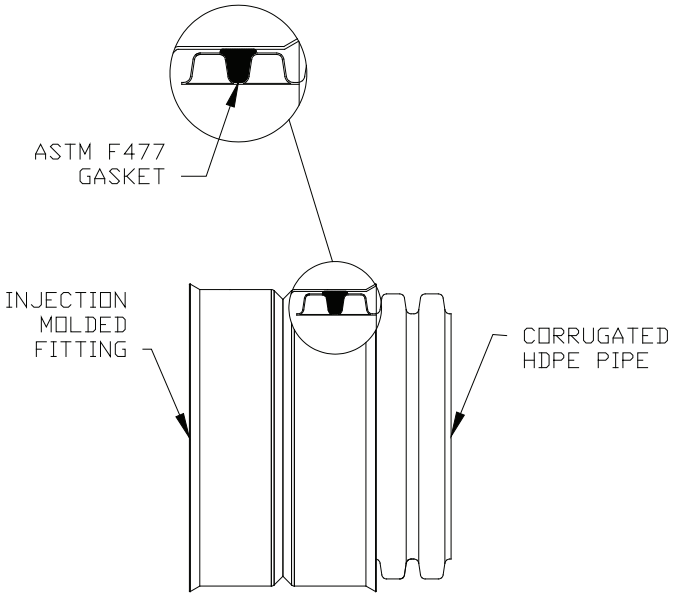
Refer to the Water Management Product Catalog for a complete list of available fittings. Availability may vary for each fitting type based on diameter or joint performance.

Injection Molded Fittings Joint System

(Joint configuration and availability subject to change without notice. Product detail may differ slightly from actual product appearance.)



SOIL-TIGHT (ST)
JOINT CONFIGURATION



WATERTIGHT (WT)
JOINT CONFIGURATION

S4.02 Mar Mac® Polyseal Repair Coupler Specification

Scope

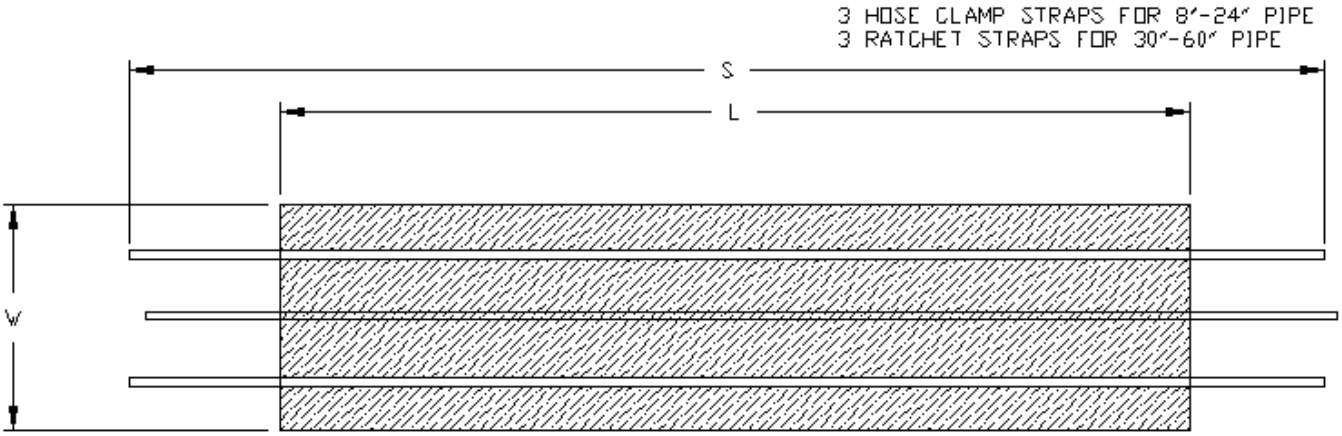
The Mar Mac Polyseal Repair Coupler is a connection for 8- through 60-inch (200 to 1500 mm) ADS pipe.

Material Properties

The Mar Mac PolySeal Repair Coupler, as manufactured by Mar Mac® Construction Products, Inc. and distributed by ADS, Inc., consists of a mastic adhesive base layer, a woven polypropylene mesh middle layer, and a cross-laminated polyethylene film outer layer, with mechanical compression bands integrated into the coupler.

Installation

Installation shall be in accordance with Mar Mac Construction Products, Inc. recommended installation instructions. Polyseal Repair Coupler, in conjunction with corrugated HDPE pipe, is considered a soil-tight connection unless otherwise approved by local governing body.



Nominal Pipe Diameter in (mm)	Strap Length (S) in (mm)	Length (L) in (mm)	Width (W) in (mm)	Length (L) in (mm)	Width (W) in (mm)
8 (200)	40 (1016)	36 (914)	9 (229)	36 (914)	12 (305)
10 (250)	45 (1143)	45 (1143)	9 (229)	45 (1143)	12 (305)
12 (300)	54 (1372)	54 (1372)	9 (229)	54 (1372)	12 (305)
15 (375)	67 (1702)	64 (1626)	9 (229)	64 (1626)	16 (406)
18 (450)	79 (2007)	76 (1930)	12 (305)	76 (1930)	16 (406)
24 (600)	102 (2591)	101 (2565)	12 (305)	101 (2565)	20 (508)
30 (750)	122 (3099)	122 (3099)	16 (406)	122 (3099)	28 (711)
36 (900)	145 (3683)	142 (3607)	20 (508)	142 (3607)	28 (711)
42 (1050)	162 (4115)	162 (4115)	20 (508)	162 (4115)	28 (711)
48 (1200)	183 (4648)	183 (4648)	20 (508)	183 (4648)	32 (813)
60 (1500)	222 (5639)	222 (5639)	28 (711)	222 (5639)	42 (1067)

* 4", 6" and 54" (100, 150 and 1350 mm) standard couplers may be available by special order. Contact an ADS representative.

S4.03 PVC Coupling Specification

Scope

This specification describes the PVC Coupling for use in joint repair of surface drainage applications.

Requirements

PVC couplings are manufactured from SDR 35 Sewer PVC pipe stock.

All PVC couplings shall be manufactured to meet the mechanical property requirement for fabricated fittings as described in ASTM D3034 and F679.

Joint Performance

Joints created by the PVC coupler shall be manufactured with a bell coupling sized to accept dual wall corrugated HDPE pipe with a rubber gasket. A joint lubricant supplied by the manufacturer shall be used on the gasket and bell during assembly Gaskets supplied with the coupling shall meet the requirements of ASTM F477.

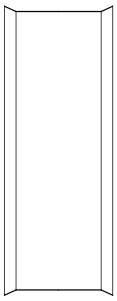
The joint shall be watertight according to the laboratory requirements of ASTM D3212. Joints shall remain watertight when subjected to a 1.5° axial misalignment

Material Properties

PVC coupling shall be manufactured from SDR 35 Sewer PVC pipe stock meeting ASTM D3034 for 4- through 15-inch diameters or F679 for 18- through 24-inch diameters.

Installation

Installation shall be in accordance with ADS pipe installation instructions using typical flexible pipe installation methods. Contact your local ADS representative or visit www.adspipe.com for latest installation instructions.



S4.04 Waterstop™ Gasket Specification

Scope

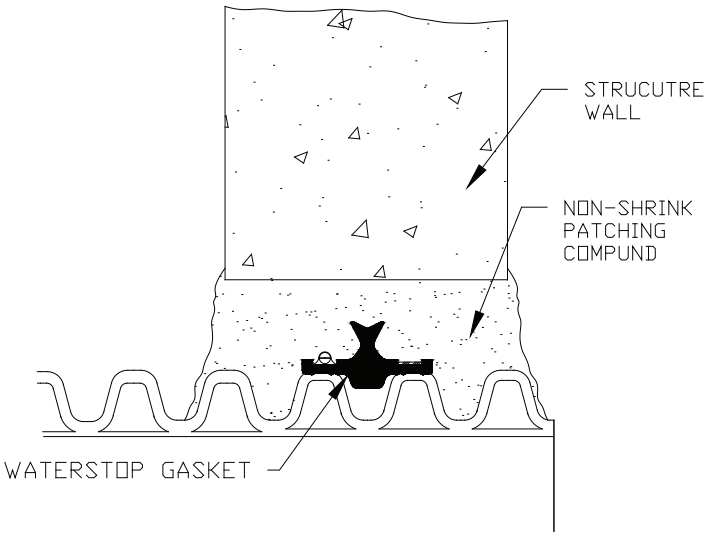
This specification describes the WaterStop gasket available in 12- to 60- inch (300 to 1500 mm) diameters and used for a field installed seal that prevents water infiltration or exfiltration at manhole connections.

Material Properties

The WaterStop gasket is made of a polyisoprene compound which meets the physical property requirements of ASTM C923.

Installation

Installation shall be in accordance with ADS recommended installation instructions. Contact your local ADS representative or visit www.adspipe.com for a copy of the latest installation guidelines.



Nominal Pipe I.D. in (mm)	Recommended Minimum Hole Diameter, in (mm)	Minimum Distance Pipe Invert to Structure Invert, in (mm)
12 (300)	19.5 (495)	3.7 (4)
15 (375)	23.0 (584)	4 (102)
18 (450)	26.5 (673)	4.2 (107)
24 (600)	33.3 (846)	4.5 (114)
30 (750)	40.5 (1029)	5.2 (132)
36 (900)	47.0 (1194)	5.5 (140)
42 (1050)	53.0 (1346)	5.7 (145)
48 (1200)	59.0 (1499)	5.7 (145)
54 (1350)	65.0 (1651)	6.4 (163)
60 (1500)	72.0 (1829)	6.4 (163)

* Check with an ADS representative for availability.

S4.05 Flared End Section Specification

Scope

This specification describes 12- through 36-inch (300 to 900mm) Flared End Sections for use in culvert and drainage outlet applications.

Requirements

The Flared End Section shall be high density polyethylene meeting ASTM D3350 minimum cell classification 213320C; contact manufacturer for additional cell classification information. When provided, the metal threaded fastening rod shall be stainless steel.

Installation

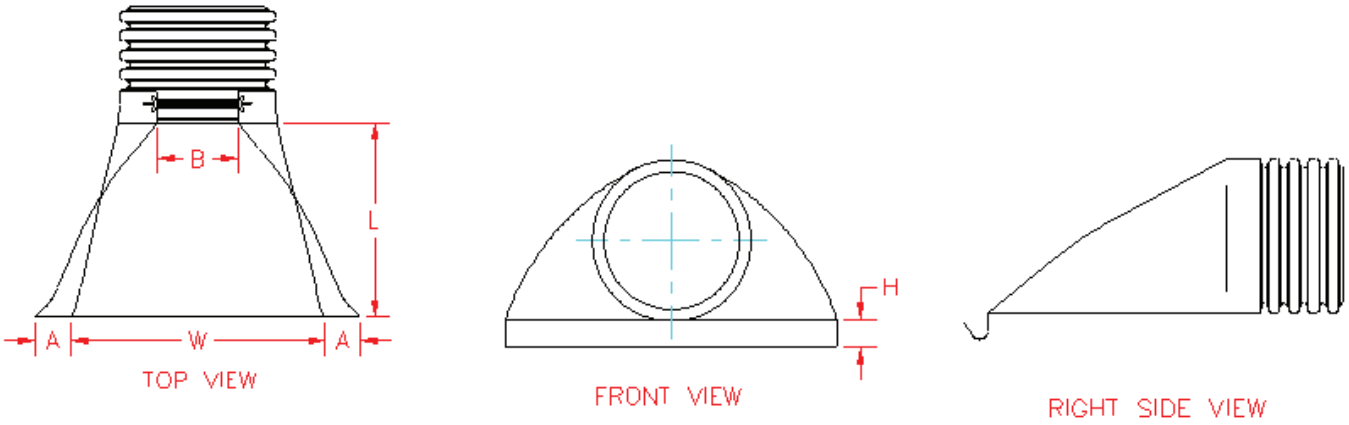
Installation shall be in accordance with ADS installation instructions and with those issued by state or local authorities. Contact your local ADS representative or visit www.adspipe.com for the latest installation instructions.

Build America, Buy America (BABA)

The ADS Flared End Section complies with the requirements in the Build America, Buy America (BABA) Act.

	Pipe Diameter, in (mm)			
Diameter in (mm)	12 (300)	15 (375)	18 (450)	24 (600)
A in (mm)	6.5 (165)	6.5 (165)	7.5 (191)	7.5 (191)
B (max) in (mm)	10.0 (254)	10.0 (254)	15.0 (381)	18.0 (475)
H in (mm)	6.5 (165)	6.5 (165)	6.5 (165)	6.5 (165)
L in (mm)	25.0 (635)	25.0 (635)	32.0 (813)	36.0 (914)
W in (mm)	29.0 (737)	29.0 (737)	35.0 (889)	45.0 (1143)

* Product detail may differ slightly from actual product appearance.



S4.06 Mitered End Section Specification

Scope

This specification describes 12- through 60-inch (300 to 1500mm) Mitered End Sections for use in culvert and drainage outlet applications.

Requirements

The invert of the pipe and the end section shall be at the same elevation. Mitered End Section shall be high-density polyethylene conforming with the minimum requirements of cell classification 335400C as defined and described in ASTM D3350 except that carbon black content should not exceed 4%. The 12- through 60-inch (300 to 1500mm) pipe material shall comply with the notched constant ligament-stress (NCLS) test as specified in Sections 9.5 and 5.1 of AASHTO M294 and ASTM F2306, respectively.

Installation

Installation shall be in accordance with ASTM D2321 and ADS installation guidelines. Contact your local ADS representative or visit our website at www.adspipe.com for a copy of the installation guidelines.

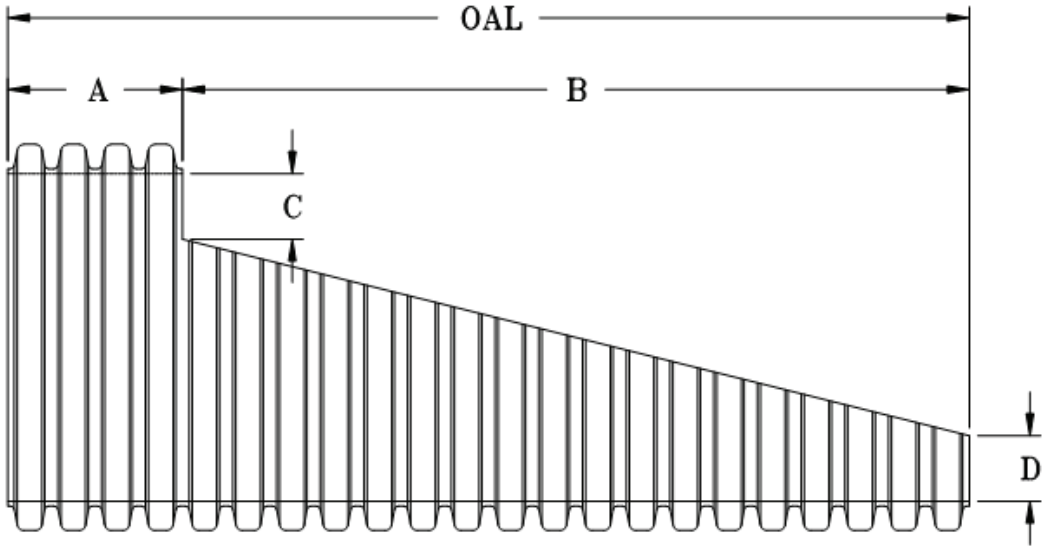
Build America, Buy America (BABA)

Mitered End Section, manufactured in accordance with AASHTO M294 or ASTM F2306, complies with the requirements in the Build America, Buy America (BABA) Act

Mitered End Section Dimensions

	Slope x:1		Slope 2:1		Slope 3:1		Slope 4:1		Slope 6:1	
Pipe Dia. in (mm)	C* in (mm)	D in (mm)	B in (mm)	OAL in (mm)	B in (mm)	OAL in (mm)	B in (mm)	OAL in (mm)	B in (mm)	OAL in (mm)
12 (300)	3.0 (76)	3.0 (76)	12.0 (305)	20.0 (508)	18.0 (457)	26.0 (660)	24.0 (610)	32.0 (813)	36.0 (914)	44.0 (1118)
15 (375)	4.0 (102)	4.0 (102)	14.8 (376)	24.5 (622)	22.0 (559)	31.9 (810)	29.4 (747)	39.1 (993)	41.6 (1057)	51.4 (1306)
18 (450)	4.2 (107)	4.0 (102)	21.0 (533)	33.0 (838)	30.0 (762)	42.0 (1067)	39.0 (991)	51.0 (1295)	60.0 (1524)	72.0 (1829)
24 (600)	6.0 (152)	6.0 (152)	24.0 (610)	40.0 (1016)	36.0 (914)	52.0 (1321)	48.0 (1219)	64.0 (1626)	72.0 (1829)	88.0 (2235)
30 (750)	6.0 (152)	6.0 (152)	36.0 (914)	52.0 (1321)	56.0 (1422)	72.0 (1829)	72.0 (1829)	88.0 (2235)	108.0 (2743)	124.0 (3150)
36 (900)	6.9 (175)	6.0 (152)	48.1 (1222)	64.6 (1641)	73.9 (1877)	92.3 (2344)	96.9 (2461)	115.4 (2931)		
42 (1050)	5.2 (132)	6.0 (152)	64.4 (1636)	82.0 (2083)	93.6 (2377)	111.3 (2827)	122.9 (3122)	140.5 (3569)		
48 (1200)	5.4 (137)	6.0 (152)	76.1 (1933)	93.6 (2377)	111.2 (2825)	128.7 (3269)	146.4 (3719)	163.9 (4136)		
54 (1375)	5.4 (137)	6.0 (152)	85.1 (2162)	108.4 (2753)						
60 (1500)	3.6 (91)	6.0 (152)	100.6 (2555)	123.9 (3147)						

* The “C” dimension varies slightly for some diameters depending on the slope.



NOTE: ADS recommends that the product be installed with a concrete collar/edge to support and close corrugations per DOT specifications. The channel at the bottom of the taper must be shaped to prevent toe lift by the inlet water flow.

S4.07 Taylor End Plug Product Specification

Scope

This specification describes 4- through 60-inch (100 to 1500mm) Taylor End Plugs, as manufactured by Taylor Made Plastics, Inc., for use in temporary storm drainage, gravity-flow applications.

Requirements

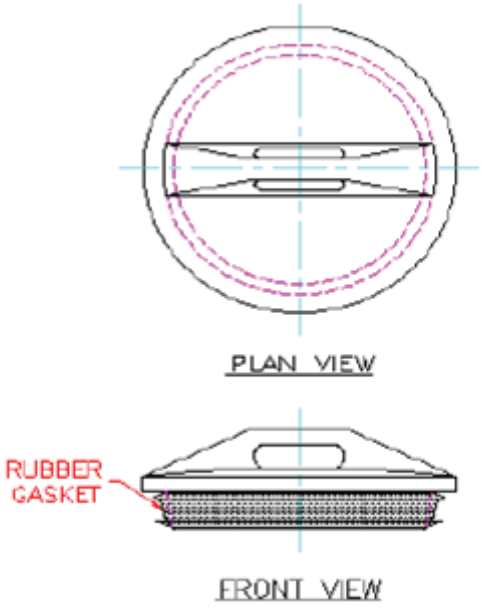
Taylor End Plug shall be made of polyethylene with a gasket sized, in order to fit in the spigot end of corrugated polyethylene pipe.

Joint Performance

The end plug shall provide a soil-tight joint per ASTM F2306.

Installation

Installation shall be in accordance with Taylor Made Plastics, Inc. installation instructions. End plugs are not intended for permanent use or vertical applications.



S5.01 Storm Water Quality Unit Product Specification

Scope

This specification describes 36- through 60-inch (900 to 1500 mm) Storm Water Quality Units for use in on-site point source storm water treatment applications.

Requirements

Storm Water Quality Units shall have a smooth interior and annular exterior corrugations meeting the requirements of ASTM F2737.

The unit shall have at least three containment zones, each zone separated from the next by use of a weir or baffle plate

Weir and baffle plates shall be welded at all interfaces between the plate and water quality unit. First weir plate shall incorporate a saw tooth design and shall be reinforced with stiffeners positioned horizontally on the downstream side of the plate to be retained.

Storm Water Quality Units shall provide adequate clean-out and inspection access.

Joint Performance

Connections for the bypass line and the unit shall utilize the same joint quality as specified for the main storm sewer pipe. Couplers for the bypass line may be either split couplers, in-line bell couplers, snap couplers, bell-bell couplers, or welded bell couplers.

Material Properties

Material for pipe and fittings used to produce Storm Water Quality Units shall be high density polyethylene conforming with the minimum requirements of cell classification 424420C for 4- through 10-inch (100 to 250 mm) diameters, and 435400C for 12- through 60-inch (300 to 1500mm) diameters as defined and described in the latest version of ASTM D3350. The pipe material shall be evaluated using the notched constant ligament-stress (NCLS) test as specified in Sections 9.5 and 5.1 of AASHTO M294 and ASTM F2306, respectively. All smooth baffle and weir plates shall be high density polyethylene.

Build America, Buy America (BABA)

Storm Water Quality Unit, manufactured in accordance with AASHTO M294 or ASTM F2306, complies with the requirements in the Build America, Buy America (BABA) Act

Installation

Installation shall be in accordance with the ADS recommended installation guidelines, utilizing a class I (ASTM D2321) structural backfill material or flowable fill (CLSM –Controlled Low Strength Material). Contact your local ADS representative or visit www.adspipe.com for the latest installation instructions.

Performance

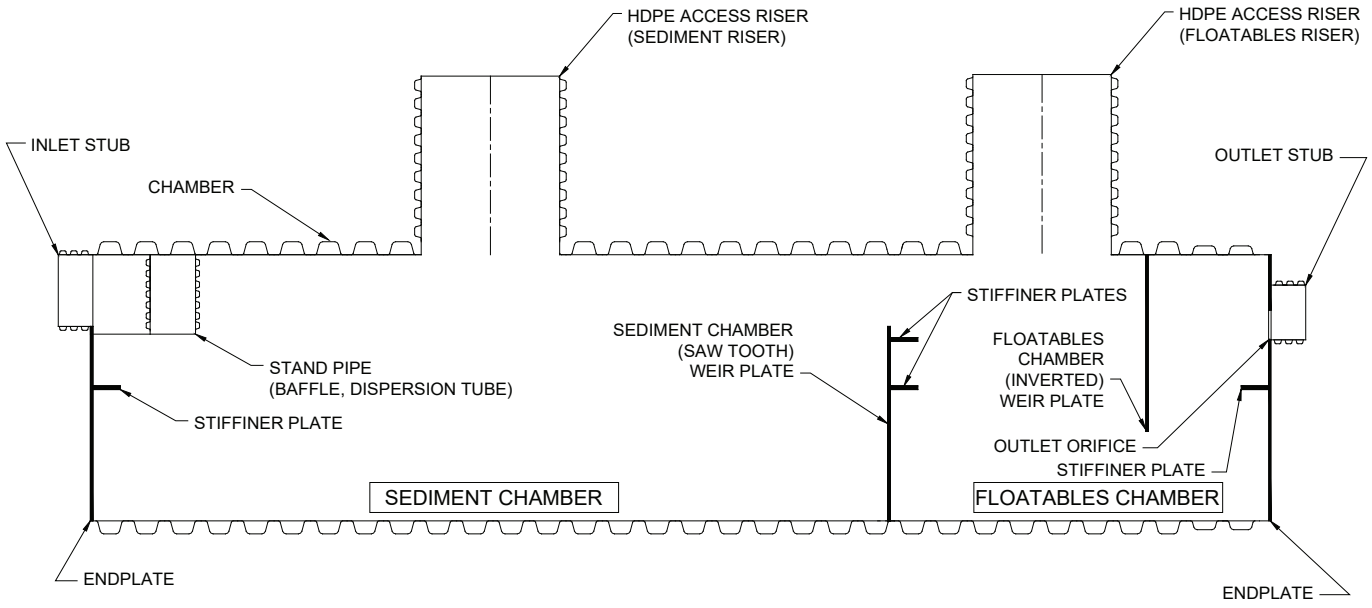
Water Quality Units shall remove a minimum of 80% of the first flush total suspended solids (TSS) based on flow rates and corresponding sieve sizes shown in Table 1. Water Quality units shall be installed “offline” to prevent re-suspension of solids in high flow situations. Offline installation shall be constructed utilizing an ADS By-Pass structure. Flow through the unit shall be controlled by an orifice fabricated on the outlet end of the structure.

Storm Water Quality Unit Dimensions and Specifications (based on mathematical calculations)

I.D in (mm)	Inlet Size in (mm)	Outlet Size in (mm)	Length ft (m)	Treated Flow Rate cfs (cms)	Sediment Volume ft^3 (m^3)	Floatables Volume ft^3 (m^3)	Sieve Size
36 (900)	10 (254)	10 (254)	20 (6.1)	1.50 (0.04)	65 (1.8)	30 (0.8)	140
	10 (254)	10 (254)	40 (12.2)	2.38 (0.07)	137 (3.9)	63 (1.8)	140
	10 (254)	10 (254)	20 (6.1)	0.70 (0.002)	65 (1.8)	30 (0.8)	200
	10 (254)	10 (254)	40 (12.2)	1.60 (0.05)	137 (3.9)	63 (1.8)	200
42 (1050)	12 (305)	12 (305)	20 (6.1)	1.73 (0.05)	83 (2.4)	38 (1.1)	140
	12 (305)	12 (305)	40 (12.2)	3.66 (0.10)	175 (5.0)	81 (2.3)	140
	12 (305)	12 (305)	20 (6.1)	0.86 (0.02)	83 (2.4)	38 (1.1)	200
	12 (305)	12 (305)	40 (12.2)	1.83 (0.05)	175 (5.0)	81 (2.3)	200
48 (1200)	12 (305)	12 (305)	20 (6.1)	2.26 (0.06)	116 (3.3)	55 (1.6)	140
	12 (305)	12 (305)	40 (12.2)	3.94 (0.11)	245 (6.9)	115 (3.3)	140
	12 (305)	12 (305)	20 (6.1)	1.13 (0.03)	116 (3.3)	55 (1.6)	200
	12 (305)	12 (305)	40 (12.2)	2.39 (0.07)	245 (6.9)	115 (3.3)	200
60 (1500)	15 (381)	15 (381)	20 (6.1)	2.95 (0.08)	183 (5.2)	87 (2.5)	140
	15 (381)	15 (381)	40 (12.2)	6.23 (0.17)	385 (10.9)	184 (5.2)	140
	15 (381)	15 (381)	20 (6.1)	1.47 (0.04)	183 (5.2)	87 (2.5)	200
	15 (381)	15 (381)	40 (12.2)	3.12 (0.09)	385 (10.9)	184 (5.2)	200

Storm Water Quality Unit

(Unit configuration & availability subject to change without notice. Product detail may differ slightly from actual product appearance.)



S5.02 Filter Sock Specification

Scope

This specification describes 2- through 48-inch (50 to 1200 mm) SOCK synthetic wrap.

Filter Fabric Requirements

The SOCK shall meet the requirements of ASTM D6707.

Filter Fabric Properties

Property	Test Method	Material
Material	-	Polyester
Fabric	-	Knitted
Permittivity (min.)	ASTM D4491	5.5 sec^{-1}
Puncture Resistance (min.)	ASTM D6241	1000 N
AOS (max.)	ASTM D4751	0.600 mm; 30 U.S. Sieve
FOS (max.)	CAN/CGSB-148.1, M10-94	450 microns
Mass (relaxed)	ASTM D3887	3.0-3.9 oz/yd^2; 101.7-132.2 g/cm^2
Mass (applied minimum)		2.7-3.5 oz/yd^2; 91.5-118.7 g/cm^2
Thickness (min.)	ASTM D4491	24.0 mils; 609.6 microns
Permeability (K) (min.)	ASTM D4491	0.390 cm/sec
Burst Strength (min.)	ASTM D3786	760 kPa
Air Permeability (min.)	ASTM D737	700 ft^3/ft^2/min; 213 m^3/m^2/min
Water Flow Rate (min.)	ASTM D4491 (2” [50 mm] constant head	300 gal/min/ft^2; 12,224 L/min/m^2
Yarn Denier	-	150
Specific Gravity	-	1.3
Melt Temperature	-	450° F; 232° C

S6.01 Biodiffuser™ Septic Leaching Chamber Specification

Scope

This specification describes the Standard, High-Capacity, Bio 2, and Bio 3 BioDiffuser units for use in onsite wastewater disposal applications.

Chamber Requirements

BioDiffuser chambers are manufactured from high-density polyethylene with an open bottom, solid top and louvered sidewalls. Sidewall louvers shall be designed to minimize soil intrusion.

Chamber shall meet the load rating of H-10 (16,000 lb per axle) with a minimum of 12-inches (300 mm) of cover when tested in accordance with IAPMO PS 63 and installed in accordance with ADS installation procedures.

The 16" (400 mm) high capacity chamber is also available in H-20 (32,000 lb per axle) rated version. To order the H-20 ARC chamber model, please contact an ADS representative.

Chamber Connection

Each chamber shall interlock with the beginning of the next chamber by overlapping post and dome while engaging overlapping flanges.

Material Properties

Each chamber shall be manufactured from high density polyethylene resin as defined and described in IAPMO PS 63. .

Installation

Installation shall be in accordance with ADS installation procedures and those issued by the local health department regulations. .

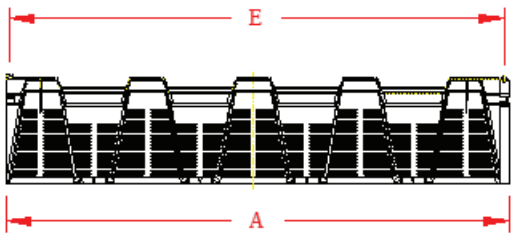
Performance

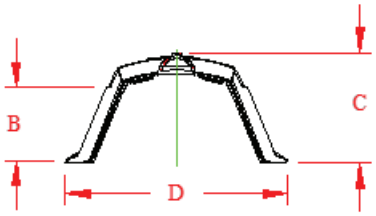
Water Quality Units shall remove a minimum of 80% of the first flush total suspended solids (TSS) based on flow rates and corresponding sieve sizes shown in Table 1. Water Quality units shall be installed "offline" to prevent re-suspension of solids in high flow situations. Offline installation shall be constructed utilizing an ADS By-Pass structure. Flow through the unit shall be controlled by an orifice fabricated on the outlet end of the structure.

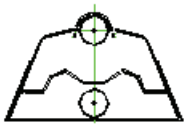
Chamber Dimensions for 16" (406 mm) High Capacity Model # 1600BD

Length (A) in. (mm)	Repeat Length (E) in. (mm)	Side Wall Height (B) in. (mm)	Overall Height (C) in. (mm)	Overall Width (D) in. (mm)	Capacity ft^3 (m^3)	Weight lbs (kg)	Units per pallet	Truckload Quantity
76" (1930)	75" (1905)	11.2 (285)	16" (406)	34" (864)	13.6 (0.39)	35 (15.9)	45	18 pallets

* End caps may reduce truck load pallet quantity.







S6.02 Arc™ Septic Leaching Chamber Specification

Scope

This specification describes the Arc for use in onsite wastewater disposal applications.

Chamber Requirements

Arc chambers are manufactured from high-density polyethylene with an open bottom, solid top and louvered sidewalls. Sidewall louvers shall be designed to minimize soil intrusion.

Chamber shall meet the load rating of H-10 (16,000 lb per axle) with a minimum of 12 inches (300 mm) of cover when tested in accordance with IAPMO PS 63 and installed in accordance with manufacturers installation procedures.

Chamber Connection

Each chamber shall interlock with an integral articulating joint. Articulating joints shall have a free range of horizontal rotation of 20 degrees, with a maximum of 10 degrees in either direction. Articulating joint shall be constructed by placing the dome with engaging knuckle of the incoming chamber over the post end of the previously-installed chamber.

Material Properties

Each chamber shall be manufactured from high-density polyethylene as defined and described in IAPMO PS 63.

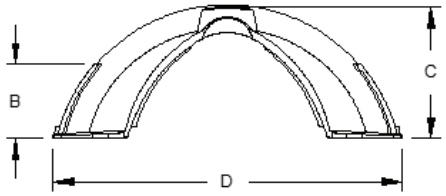
Installation

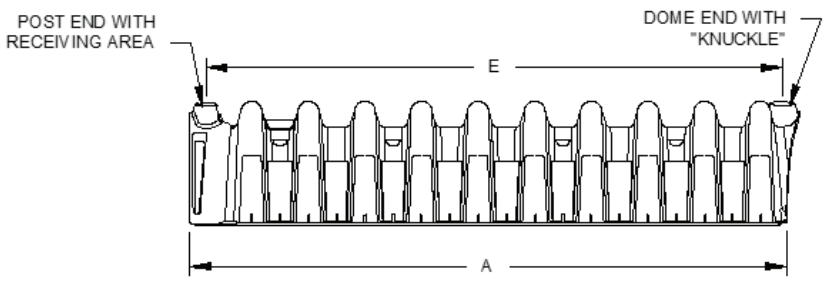
Installation shall be in accordance with ADS installation procedures and those issued by the local health department regulations.

Chamber Dimensions

Model	Length (A) in. (mm)	Repeat length (E) in. (mm)	Side wall height (B) in. (mm)	Overall height (C) in. (mm)	Overall width (D) in. (mm)	Capacity ft^3 (m^3)	Units per pallet	Pallet Truckload Quantity
Arc 18	67.0 (1701)	60.0 (1524)	7.7 (196)	12.0 (305)	16.0 (406)	3.42 (0.09)	135	16
Arc 24	67.0 (1701)	60.0 (1524)	7.5 (191)	12.0 (305)	22.5 (572)	5.02 (0.14)	120	16
Arc 36	63.0 (1600)	60.0 (1524)	7.13 (181)	13.0 (330)	34.0 (864)	8.0 (0.22)	70	24
Arc 36 HC	63.0 (1600)	60.0 (1524)	10.75 (273)	16.0 (406)	34.0 (864)	10.7 (0.30)	60	24
Arc 36 LP	63.0 (1600)	60.0 (1524)	5.5 (140)	8.0 (203)	34.0 (864)	5.8 (0.16)	60	24

* End caps may reduce truck load pallet quantity.





S6.03 Sewage Ejector Sump Specification

Scope

This specification describes the Sewage Ejector Sump System for use in residential sewage applications.

Requirements

The Sewage Ejector Sump shall be available in 19-gallon (72 liter) capacity. The sump well shall have one pre-drilled inlet hole with an o-ring gasket adapter for standard 4-inch (100mm) SDR 35 sewer pipe or a PVC hub for standard 4-inch (100 mm) schedule 40 sewer pipe. Each well shall have three molded side panels designed to accept an extra inlet line at 90-degree increments around its circumference. The lid shall be pre-drilled to accept 1¼-inch (32 mm), 1½-inch (38 mm), 2-inch (50 mm) or 3-inch (75 mm) vent and discharge pipes. Rubber o-rings for these pipes, as well as rubber pump wire plug shall be included in the lid kit.

Material Properties

Sewage Ejector Sump material shall be high-density polyethylene.

Installation

Installation shall be in accordance with ADS installation instructions and those issued by the regional, state or local agencies

Dimensions

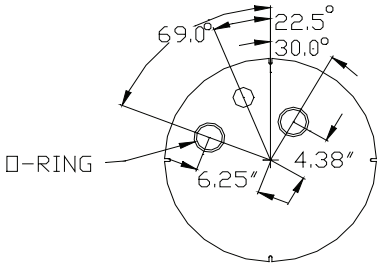
	A	B	C	D	E	F	G	H
19 gallons (53 liters)	12.0 (305)	13.0 (330)	14.25 (362)	4.75 (121)	20.38 (518)	24.0 (610)	31.75 (806)	20.06 (510)

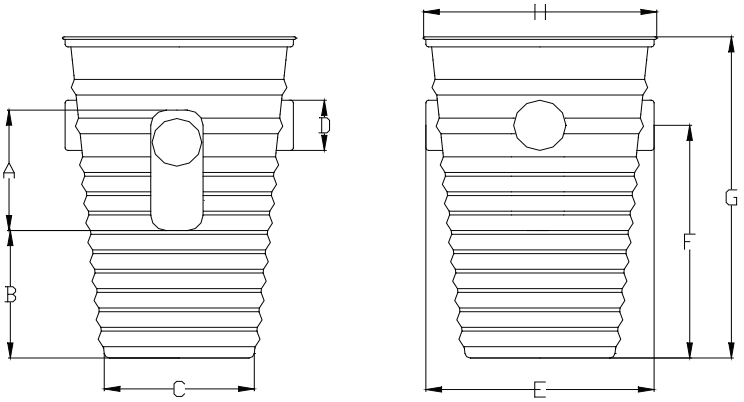
Items included with lid kit

Qty.	
1	Gasket for 4” (100 mm) Sch 40 or SDR PVC inlet line
1	Gasket for 2” & 3” (50 & 75 mm) Sch 40 vent pipe
1	Gaskets for 2”, 1½” & 1” (50, 38 & 25 mm) Sch 40 PVC pump discharge pipes
1	Electrical cord stopper
1	1” (25 mm) adhesive foam tape

Items needed for lid kit (sold separately)

Qty.	
4	Hex head lag screws ¼” x 1½” (6 x 38 mm) (minimum)
4	¼” (6 mm) flat washers
4	Concrete floor anchors





S7.01 Sump Pump Well Specification

Scope

This specification describes the sump pump well for use in residential drainage applications.

Requirements

The sump pump well shall be available in both 14-gallon (53 liters) and 19-gallon (72 liters) sizes. Each well shall have three pre-formed inlet collars sized to fit 4-inch (100mm) corrugated polyethylene drainage lines. Each well shall have a molded side panel designed to accept the outside basement perimeter line at any elevation along the well wall. Both wells shall have a twist-locking lid.

Material Properties

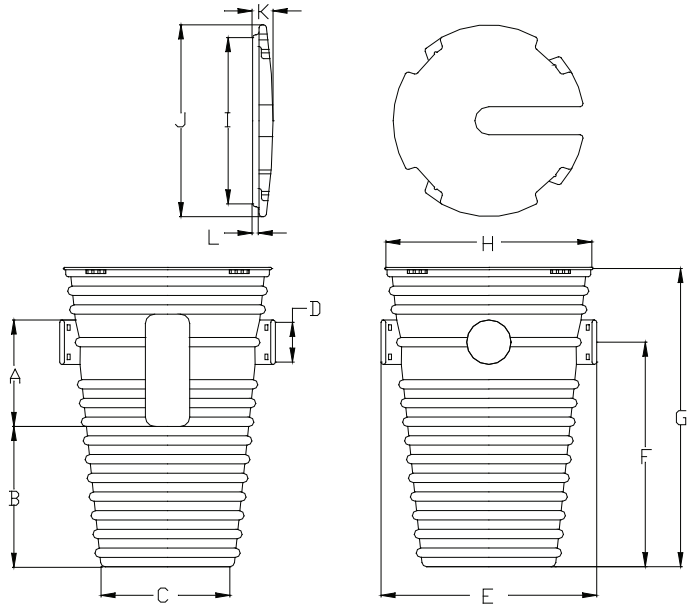
Sump pump well material shall be high-density polyethylene.

Installation

Installation shall be in accordance with ADS installation instructions and those issued by the regional, state or local agencies

Dimensions

	A	B	C	D	E	F	G	H	I	J
14 gallons (53 liters)	12.0 (305)	8.0 (203)	14.25 (362	4.75 (121)	20.38 (518)	18.13 (460)	24.0 (610)	20.88 (530)	18.38 (467)	20.5 (521)
19 gallons (72 liters)	12.0 (305)	13.0 (330)	14.25 (362	4.75 (121)	20.38 (518)	24.0 (610)	31.75 (806)	20.88 (530)	18.38 (467)	20.5 (521)



S7.02 Radon Dual Purpose Vented Sump Specification

Scope

This specification describes the Radon Dual Purpose Vented Sump System for use in residential drainage and ventilation of toxic or noxious gas applications.

Requirements

The Radon Dual Purpose Vented Sump shall be available in 14-gallon (53 liter) capacity. The sump well shall have three pre-formed inlet collars sized to fit 4-inch (100 mm) corrugated polyethylene drainage lines. Each well shall have a molded side panel designed to accept the outside basement perimeter line at any elevation along the well wall. The lid shall be pre-drilled to accept 1¼-inch (32mm), 1½-inch (38mm), 2 inch (50mm), or 3-inch (75mm) vent and discharge pipes. Rubber o-rings for these pipes, as well as rubber pump wire plug shall be included with the lid kit.

Material Properties

Radon Dual Purpose Vented Sump material shall be high-density polyethylene.

Installation

Installation shall be in accordance with ADS installation instructions and those issued by the regional, state or local agencies

Dimensions

	A	B	C	D	E	F	G	H
14 gallons (53 liters)	12.0 (305)	8.0 (203)	14.25 (362)	4.75 (121)	20.38 (518)	18.13 (460)	24.0 (610)	20.06 (510)

Items included with lid kit

Qty.	
1	Gasket for 4” (100 mm) Sch 40 or SDR PVC inlet line
1	Gasket for 2” & 3” (50 & 75 mm) Sch 40 vent pipe
1	Gaskets for 2”, 1½” & 1” (50, 38 & 25 mm) Sch 40 PVC pump discharge pipes
1	Electrical cord stopper
1	1” (25 mm) adhesive foam tape

Items needed for lid kit (sold separately)

Qty.	
4	Hex head lag screws ¼” x 1½” (6 x 38 mm) (minimum)
4	¼” (6 mm) flat washers
4	Concrete floor anchors