

# SHOP DRAWING REVIEW FORM AND TRANSMITTAL

**DATE:** October 19, 2021

**TO:** Carl Hendrickson  
Project Manager  
Veolia Water  
825 West Water Street  
Taunton, MA 02780

**FROM:** Michael Andrus, P.E.  
Project Manager  
BETA Group, Inc.  
701 George Washington Hwy  
Lincoln, Rhode Island 02865

**RE:** City of Taunton, MA  
WWTF Phase 1 Improvements  
Contract S-2021-1

Shop Drawing No. 02620-01 REV 0 – HDPE Pipe

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## **BETA COMMENTS:**

<u>Item</u>	<u>Action Code</u>	<u>Description/Comments</u>
1	1	<b>HDPE Pipe (Lane)</b> 1. Pipe is acceptable as submitted for drain pipe as shown on Sheet C-1.9

### Action Codes

- 1 - No Exception Taken
- 2 - Make Corrections Noted
- 3 - Amend and Resubmit
- 4 - Rejected, See Remarks
- 5 - Record File Only

- a. Installation shall proceed only when Action Code is '1' or '2'.
- b. Submittals action coded '3' shall be resubmitted within time limit set in Contract.
- c. Review does not relieve Contractor from responsibility of compliance with the Contract Documents.



PROJECT: 9900. - Veolia/Taunton WWTF Phase 1 Improvements

DATE: 10/12/2021

SUBMITTAL: 02620-01 - HDPE Pipe
REVISION: 0
STATUS: Eng
SPEC #: 02620

TO: Michael Andrus
Beta Group Inc.
6 Blackstone Place
Lincoln, RI 02865
MAndrus@BETA-Inc.com

FROM: Ryan Murphy
Hart Engineering Corporation
800 Scenic View Drive
Cumberland, RI 02864
rmurphy@hartcompanies.com

Table with 6 columns: Item, Revision, Description, Status, Date Sent, Date Returned. Row 1: 02620-01, 0, HDPE Pipe.

SHOP DRAWING REVIEW
[ ] 1 - Approved [ ] 2 - Approved as Noted
[ ] 3 - Revise and Resubmit [ ] 4 - Rejected
[ ] 5 - Record File Only - No Action Taken
(Above Check Designates Action Code - See Review Comments)
IMPORTANT NOTE FOR CONTRACTOR
Review is only for general compliance with the design concept and information provided in Contract Documents.
BETA GROUP, INC. Checked By: MLA
By: MLA Date: 10/19/21

Additional Notes:

Status Codes

- 1-APP - No Exceptions Taken
2-ANR - Make Corrections Noted
3-R&R - Revise and Resubmit
4-REJ - Rejected
5-IPO - For Information Purposes Only
6-NRR - Not Required for Review
ENG - Submitted to Engineer

Sincerely,
Hart Engineering Corporation

DATE: 10/12/2021

# Lane HD100EC Pipe



## **CORRUGATED HDPE DRAINAGE PIPE**

Lane's primary polyethylene pipe is a dual-wall high density polyethylene (HDPE) with a smooth interior and corrugated exterior manufactured for all drainage applications including storm sewers, culverts, storm water storage and water quality management. An integrated bell and spigot coupler is provided on 20' nominal pipe lengths with diameters ranging from 6" to 48".

A number of different options are available beyond the standard 20-ft double-wall pipe offerings, including single-wall pipe (corrugated interior/exterior), perforated pipe, plain-end pipe (i.e. no bell/spigot), and coil pipe.

**LANE'S ASTM F2648 PIPE** is produced from an engineered compound of virgin and recycled HDPE resins meeting the cell classification and material performance requirements of AASHTO M294. Lane's ASTM F2648 pipe is engineered to a higher standard than that required by ASTM F2648 to ensure sufficient service life for all storm drainage applications.

The resin compound contains a minimum 40% post-consumer recycled material that is subject to a quality assurance program that ensures compliance with cell classification requirements. Lane qualifies its recycled blends to ensure sufficient service life for all storm drainage applications by engineering a compound with ample slow-crack-growth (SCG) resistance, the primary material property that relates quality and the critical component for assessing service life. SCG resistance is measured using the Notched Constant Ligament Stress (NCLS) test per ASTM F2136. Lane's ASTM F2648 pipe is certified to exceed the SCG resistance requirements of AASHTO M294 as well as all other corrugated HDPE pipe specifications

## **PIPE CLASSIFICATIONS**

Lane's pipe offerings follow the AASHTO classification system. Lane's perforated pipe offerings conform to the AASHTO specifications for size, spacing and placement of the perforations.

→ *Type S pipe for double-wall pipe (smooth interior, corrugated exterior)*

*Type SP pipe for double-wall perforated pipe*

*Type C pipe for single-wall pipe (corrugated exterior and interior)*

*Type CP pipe for single-wall perforated pipe*

## **JOINT PERFORMANCE**

Bell and spigot joint performance designations relate the ability of the system to control leakage and/or material infiltration.

*Silt-tight joints employ an elastomeric rubber seal and meet a laboratory pressure rating of at least 2 psi.*

Note: Joints shall meet the soil-tight performance requirements unless specified otherwise.

## **INSTALLATION OF CORRUGATED HDPE PIPE**

Corrugated HDPE pipe is a flexible pipe material that derives structural rigidity from the strength and relative stiffness of the backfill envelope. The backfill-culvert interaction attained defines the ability of system to withstand service loads. Installation specifications illustrating backfill envelopes, addressing appropriate backfill material selection, and identifying proper compaction guidelines help ensure acceptable levels of backfill-culvert interaction are realized:

ASTM D2321 Practice for Installing Thermoplastic Pipe for Sewers and Other Gravity Flow Applications  
AASHTO LRFD Bridge Construction Specifications, Section 30, Thermoplastic Pipe

Lane provides a complete range of drainage solutions for every application. Please visit our website, [www.lane-enterprises.com](http://www.lane-enterprises.com), for additional information.



# Lane HD100EC Pipe



## STRUCTURAL DESIGN OF CORRUGATED HDPE

Standard methods of structural analysis are generally based on research<sup>1</sup> adopted by AASHTO and incorporated into the AASHTO LRFD Bridge Design Specifications.

AASHTO LRFD Bridge Design Specifications, Section 3, Loads and Load Factors

AASHTO LRFD Bridge Design Specifications, Section 12, Buried Structures and Tunnel Liners

<sup>1</sup>Current design methods are largely based on the following reports:

NCHRP Report 438, Recommended LRFD Specifications for Plastic Pipe and Culverts

NCHRP Report 631, Updated Test and Design Methods for Thermoplastic Drainage Pipe

## PERFORATIONS

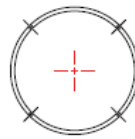
Lane's perforated pipe offerings follow the AASHTO classification system and conform to AASHTO requirements for size, spacing and placement. Note: When perforated pipe is specified the perforations shall conform to the requirements for Class 2 unless noted otherwise.

d = diameter of circular perforation (in)	l = average length of slotted perforation (in)	w = average width of slotted perforation (in)	D = nominal pipe diameter (in)	WIA = water inlet area (sq. in/ft)
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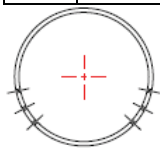
Class 1 Perforations		Type SP
D	d	WIA
12	0.3750	4.10
15	0.3750	3.04
18	0.3750	2.69
24	0.3750	2.68
30	0.3750	2.64
36	0.3750	2.61
42	0.3750	2.00
48	0.3750	2.00

Class 2 Perforations		Type CP	Type SP
D	l x w	WIA	WIA
4	0.783 x 0.069	4.02	n/a
6	0.769 x 0.055	2.46	2.63
8	0.0759 x .050	1.79	1.87
10	0.779 x 0.054	1.24	1.32

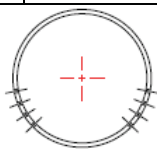
Class 2 Perforations		Type SP
D	d	WIA
12	0.3125	2.85
15	0.3125	2.11
18	0.3125	1.87
24	0.3750	2.68
30	0.3750	2.64
36	0.3750	2.61
42	0.3750	2.00
48	0.3750	2.00



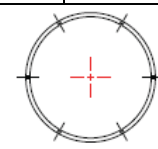
4 to 10-inch Pipe



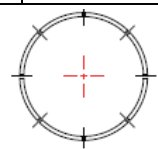
12 to 18-inch Pipe



24 to 48-inch Pipe



12 to 18-inch Pipe



24 to 48-inch Pipe

## PIPE SIZES AND HANDLING WEIGHTS

Nominal Inside Diameter (in)	4	6	8	10	12	15	18	24	30	36	42	48
Actual Outside Diameter (in)	4.75	7.05	9.4	12	14.5	17.5	21.5	28	34.5	41	47.5	54.5
Single-Wall Handling Weight (lbs/ft)	0.35	0.9	1.5	2.5	3.25	5.3	6.25	9.9	n/a	n/a	n/a	n/a
Double-Wall Handling Weight (lbs/20ft)	n/a	25	40	50	75	110	150	240	350	425	575	650

Lane provides a complete range of drainage solutions for every application. Please visit our website, [www.lane-enterprises.com](http://www.lane-enterprises.com), for additional information.





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**PRODUCTS FOR THE PIPING INDUSTRY**



## Indiana Seal

manufactures a complete line of couplings for clay, cast iron, ductile iron, concrete and plastic pipe, in sizes from 1-1/4" up to 30". Constructed of tough yet pliable PVC, these couplings are impervious to normal sewer gases, chemicals, fungus growth, various soil conditions, the menace of roots and all other associated in-ground hazards. Each coupling is produced and inspected under strict quality control standards to assure the highest degree of integrity at any junction in the line.



# 101 Clay to Clay

Part No.	Pipe Size	A	B	C
101-44	4x4	5.30	5.30	4.00
*101-54	5x4	6.40	5.30	6.25
101-55	5x5	6.40	6.40	6.00
101-64	6x4	7.50	5.30	5.75
101-64EC	6x4	7.50	4.40	6.00
101-65	6x5	7.50	6.40	5.75
101-66	6x6	7.50	7.50	5.88
101-66W	6x6	7.80	7.80	6.00
*101-84	8x4	9.75	5.30	5.88
*101-85	8x5	9.75	6.40	5.63
101-86	8x6	9.75	7.50	5.75
101-88	8x8	9.75	9.75	5.88
101-88W	8x8	10.25	10.25	6.12
*101-104	10x4	11.95	5.30	6.50
*101-106	10x6	11.95	7.50	6.50
*101-108	10x8	11.95	9.75	6.63
101-1010	10x10	11.95	11.95	6.00
*101-128	12x8	14.50	9.75	6.25
101-1210	12x10	15.30	12.60	6.50
101-1212	12x12	14.50	14.50	6.38
101-1515	15x15	18.25	18.25	6.63
101-1818	18x18	21.50	21.50	8.63
101-2121	21x21	25.25	25.25	9.00
101-2424	24x24	28.50	28.50	9.00
101-2727	27x27	32.10	32.10	9.00
101-3030	30x30	35.00	35.00	9.00

\*Supplied with reducer  
W=Western Clay

