

HLK[®]

Helically Corrugated Steel Pipe

THE TECHNICAL DATA SHEET

Manufactured by

HULKO[®] Steel Pipe Technology



01

HIGH
DURABILITY

02

STRENGTH
& RELIABILITY

03

EASY
INSTALLATION

04

LOW LIFE-
CYCLE COST

05

SUSTAINABILITY
& EFFICIENCY



HLK®

Helically Corrugated Steel Pipe

PRODUCT OVERVIEW

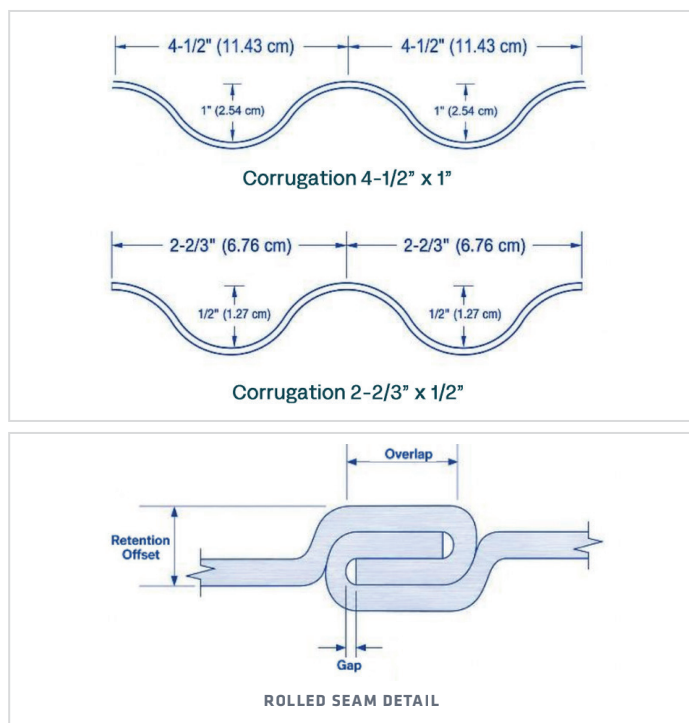
HLK® corrugated steel pipe is classified as flexible due to its behavior under external loads: its strength depends on the interaction between the soil and the pipe.

Therefore, proper backfilling is essential for load transfer, thus generating the structural integrity of the system, as indicated by AASHTO Section 12.

Corrugated steel pipe is available with a wide variety of protective coatings that have proven to meet the requirements of the most demanding environments. A service life of more than 100 years can be achieved by using the proper coating for the specific location and application.

Corrugated metal pipe is manufactured from galvanized, aluminized, or polymerized steel to provide a long service life.

CORRUGATION PROFILES



STANDARDS COMPLIANCE

TABLE 1 • COMPLIANCE WITH INTERNATIONAL STANDARDS

SCOPE	TYPE	ASTM	AASHTO
Coating	Galvanized 2 oz/ft ²	ASTM A929	AASHTO M218
	Aluminized	ASTM A929	AASHTO M274
	Polymerized	ASTM A742	AASHTO M245
Pipe	—	ASTM A760	AASHTO M36
Installation	—	ASTM A798	AASHTO Section 26
Design	—	ASTM A796	AASHTO Section 12

SERVICE LIFE BY COATING

TABLE 2 • ESTIMATED SERVICE LIFE OF CORRUGATED METAL PIPE

COATING TYPE	ESTIMATED SERVICE LIFE	SOIL CONDITIONS
Galvanized 2 oz/ft ²	Average 50 years or more	6.0 ≤ pH ≤ 10.0 2,000 ≤ r ≤ 10,000 ohm-cm Water hardness > 50 ppm CaCO ₃
	Minimum 100 years	4.5 ≤ pH ≤ 5 r > 5,000 ohm-cm
Aluminized	Minimum 75 years	00 ≤ pH ≤ 9.0 r > 1,500 ohm-cm
	Minimum 100 years	5.0 ≤ pH ≤ 9.0 r > 1,500 ohm-cm
Polymerized	Minimum 75 years	4.0 ≤ pH ≤ 9.0 r ≥ 750 ohm-cm
	Minimum 50 years	3.0 ≤ pH ≤ 12.0 r ≥ 250 ohm-cm

12"-144"

DIAMETER RANGE
(30-365 CM)

2 profiles

2-2/3 X 1/2 IN AND
4-1/2 X 1 IN

100+ yr

SERVICE LIFE WITH THE
APPROPRIATE COATING

18-10 ga

AVAILABLE
GAUGES

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COVER REQUIREMENTS

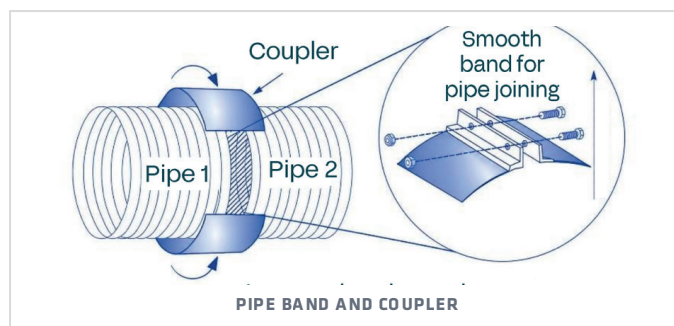
TABLE 3 · HLK® PIPE – MINIMUM AND MAXIMUM COVER FOR H-20 / H-25 / E-80 LIVE LOADS · ALUMINIZED, GALVANIZED, AND POLYMER-COATED

DIAMETER IN (CM)	CORRUGATION	MINIMUM COVER – FT (M)		MAXIMUM COVER – FT (M) · H-20 / H-25 / E-80				
		LIVE LOAD H-20 / H-25	LIVE LOAD E-80	GAUGES				
				18	16	14	12	10
12" (30 cm)	2-2/3" x 1/2"	1.0 (0.30)	1.0 (0.30)	189 (57)	247 (75)	309 (94)		
15" (38 cm)	2-2/3" x 1/2"	1.0 (0.30)	1.0 (0.30)	151 (46)	198 (60)	247 (75)		
18" (45 cm)	2-2/3" x 1/2"	1.0 (0.30)	1.0 (0.30)	126 (38)	165 (50)	206 (63)		
21" (53 cm)	2-2/3" x 1/2"	1.0 (0.30)	1.0 (0.30)	108 (33)	141 (43)	177 (54)	48 (75)	
24" (60 cm)	2-2/3" x 1/2"	1.0 (0.30)	1.0 (0.30)	94 (28)	123 (37)	154 (47)	217 (66)	
30" (76 cm)	2-2/3" x 1/2"	1.0 (0.30)	1.0 (0.30)		98 (30)	123 (37)	173 (53)	
36" (90 cm)	2-2/3" x 1/2"	1.0 (0.30)	1.0 (0.30)		82 (25)	102 (31)	44 (44)	
42" (107 cm)	2-2/3" x 1/2"	1.0 (0.30)	1.5 (0.45)		70 (21)	87 (26)	123 (37)	159 (48)
48" (122 cm)	2-2/3" x 1/2"	1.5 (0.45)	1.5 (0.45)		61 (18)	76 (23)	08 (33)	139 (42)
54" (137 cm)	4.5" x 1"	1.5 (0.45)	1.5 (0.45)		58 (17)	73 (22)	102 (31)	132 (40)
60" (150 cm)	4.5" x 1"	1.5 (0.45)	2.0 (0.60)		52 (16)	66 (20)	92 (28)	119 (36)
66" (167 cm)	4.5" x 1"	1.5 (0.45)	2.0 (0.60)		48 (14)	59 (18)	83 (25)	108 (32)
72" (182 cm)	4.5" x 1"	1.5 (0.45)	2.0 (0.60)		44 (13)	54 (16)	76 (23)	99 (30)
78" (198 cm)	4.5" x 1"	1.5 (0.45)	2.0 (0.60)		40 (12)	50 (15)	71 (21)	91 (27)
84" (213 cm)	4.5" x 1"	1.5 (0.45)	2.0 (0.60)		37 (11)	47 (14)	66 (20)	85 (25)
90" (228 cm)	4.5" x 1"	2.0 (0.60)	2.5 (0.76)		34 (10)	44 (13)	61 (18)	79 (24)
96" (243 cm)	4.5" x 1"	2.0 (0.60)	2.5 (0.76)		32 (9)	40 (12)	57 (17)	74 (22)
102" (260 cm)	4.5" x 1"	2.0 (0.60)	2.5 (0.76)			38 (11)	54 (16)	70 (21)
108" (275 cm)	4.5" x 1"	2.0 (0.60)	2.5 (0.76)			36 (11)	51 (15)	66 (20)
114" (290 cm)	4.5" x 1"	2.5 (0.76)	3.0 (0.90)			33 (10)	47 (14)	60 (18)
120" (304 cm)	4.5" x 1"	2.5 (0.76)	3.0 (0.90)			31 (9)	43 (13)	56 (17)
126" (320 cm)	4.5" x 1"	2.5 (0.76)	3.0 (0.90)				40 (12)	52 (16)
132" (335 cm)	4.5" x 1"	2.5 (0.76)	3.0 (0.90)				37 (11)	49 (15)
138" (350 cm)	4.5" x 1"	2.5 (0.76)	3.0 (0.90)				34 (10)	45 (13)
144" (365 cm)	4.5" x 1"	2.5 (0.76)	3.0 (0.90)					40 (12)

NOTES

1. These tables are for pipe with lock seams.
2. These values, where applicable, were calculated using $K = 0.86$ in order to conform to the AISI manual.
3. Minimum cover for H-20 and H-25 is measured from the top of the pipe to the surface of flexible pavement or to the top of rigid pavement.
4. Minimum cover height for E-80 loads is measured from the bottom of the tie to the outside top of the pipe.

PIPE JOINING



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HULKO®
 Steel Pipe
 Technology

SECTIONAL PROPERTIES

4.5 IN X 1 IN (HELICAL)

SPECIFIED THICKNESS (IN)	AREA OF SECTION (IN ² /FT)	MOMENT OF INERTIA (IN ⁴ /IN)	SECTION MODULUS (IN ³ /FT)	RADIUS OF GYRATION (IN)
0.064	0.8180	0.0088	0.1960	0.3597
0.079	1.0222	0.0111	0.2423	0.3604
0.109	1.4325	0.0156	0.3330	0.3620
0.138	1.8430	0.0203	0.4210	0.3638

2.66 IN X 0.5 IN (HELICAL)

SPECIFIED THICKNESS (IN)	AREA OF SECTION (IN ² /FT)	MOMENT OF INERTIA (IN ⁴ /IN)	SECTION MODULUS (IN ³ /FT)	RADIUS OF GYRATION (IN)
0.064	0.7750	0.0019	0.0812	0.1712
0.079	0.9680	0.0024	0.0998	0.1721
0.109	1.3560	0.0034	0.1360	0.1741
0.138	1.7440	0.0045	0.1714	0.1766

YIELD STRENGTH, MIN

$$F_y = 33,000 \text{ lb/in}^2$$

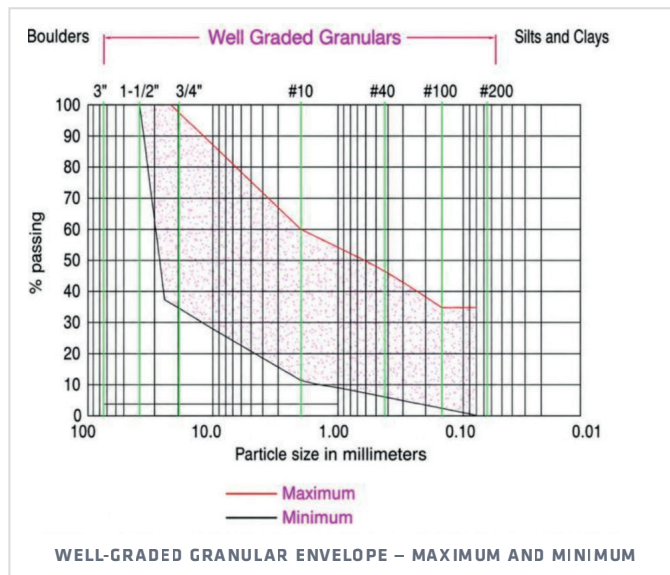
TENSILE STRENGTH, MIN

$$F_u = 45,000 \text{ lb/in}^2$$



Values, tables, and standards shown are nominal and subject to change without notice. Confirm project-specific requirements – diameters, gauges, coatings, cover heights, and backfill criteria – with TDR Pipe technical services before specifying.

BACKFILL GRADATION



The load-carrying capacity of any type of pipe depends largely on proper backfill. Therefore, it must be placed using suitable material that is properly installed and compacted. The material shall be selected, well-graded granular material with a low silt and clay content, as shown in the chart above.

HAUNCHING REQUIREMENTS

- Well-graded gravel or sand.
- Maximum particle size: 1-1/2 in.
- No more than 50% of the soil mass shall pass the No. 10 sieve (2.00 mm).
- No more than 30% of the soil mass shall pass the No. 40 sieve (0.425 mm).
- No more than 15% of the soil mass shall pass the No. 200 sieve (0.075 mm).
- The material passing the No. 40 sieve (0.425 mm) shall have a maximum plasticity index (PI) of 6.
- The material shall be placed in 20 cm (8 in) loose lifts and compacted to 90% of the Proctor density.
- The pipe shall be placed on a 10 to 15 cm (4 to 6 in) thick bedding layer.