



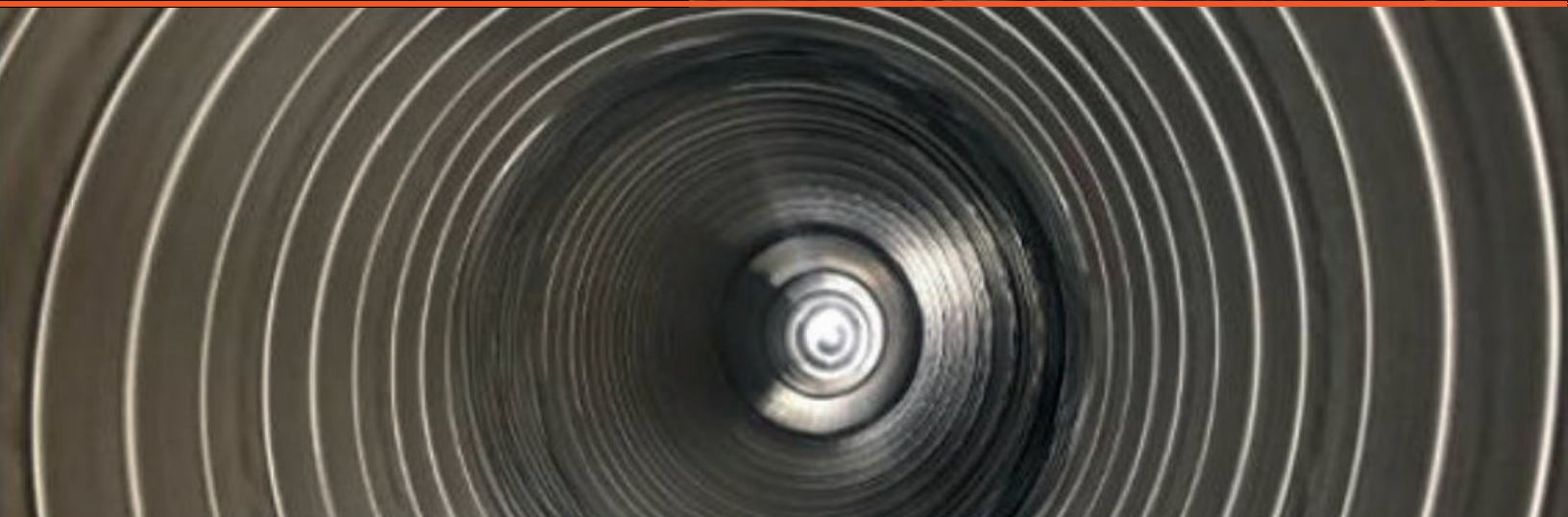
# FLONIK<sup>®</sup>

Semi Smooth Helical Steel Pipe

THECHNICAL DATA SHEET

Manufactured by

**HULKO<sup>®</sup>** Steel Pipe Technology



# FLONIK®

## Semi-Smooth Helical Steel Pipe

### PRODUCT OVERVIEW

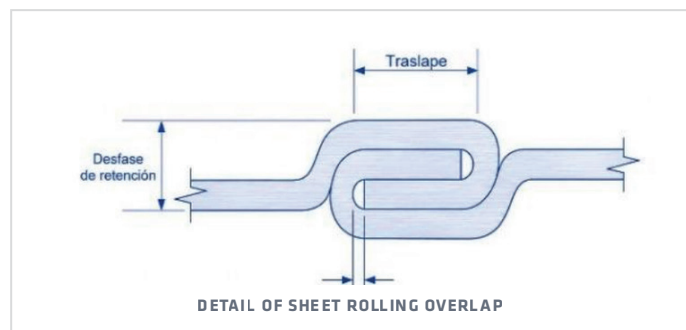
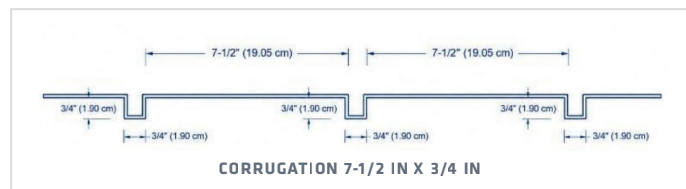
Corrugated steel pipe is classified as flexible due to its behavior under external loads: its strength depends on the interaction between the soil and the pipe.

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

FLONIK® corrugated steel pipe is available with a wide variety of protective coatings proven to meet the requirements of the most demanding environments. A service life exceeding 100 years can be achieved by using the appropriate coating for the specific location and application.

FLONIK® corrugated metal pipe is manufactured from galvanized or aluminized steel to provide a long service life. The corrugation of FLONIK® semi-smooth pipe provides a Manning coefficient of 0.012, improving hydraulic conditions for stormwater conveyance.

### CORRUGATION PROFILE



### COVER REQUIREMENTS

**TABLE 1 · MINIMUM AND MAXIMUM COVER – H-20 / H-25**

| DIAMETER<br>IN (CM) | MINIMUM<br>COVER<br>FT / M | MAXIMUM COVER – FT (M) |         |         |
|---------------------|----------------------------|------------------------|---------|---------|
|                     |                            | 16 GA                  | 14 GA   | 12 GA   |
| 18" (45 cm)         | 1.0 / 0.30                 | 68 (20)                | –       | –       |
| 21" (53 cm)         | 1.0 / 0.30                 | 58 (17)                | –       | –       |
| 24" (60 cm)         | 1.0 / 0.30                 | 51 (15)                | –       | –       |
| 30" (76 cm)         | 1.0 / 0.30                 | 41 (12)                | –       | –       |
| 36" (90 cm)         | 1.0 / 0.30                 | 34 (10)                | 48 (14) | –       |
| 42" (107 cm)        | 1.0 / 0.30                 | 29 (8)                 | 41 (12) | 69 (21) |
| 48" (122 cm)        | 1.5 / 0.45                 | 25 (7)                 | 36 (10) | 60 (18) |
| 54" (137 cm)        | 1.5 / 0.45                 | 22 (6)                 | 32 (9)  | 53 (16) |
| 60" (150 cm)        | 1.5 / 0.45                 | 20 (5)                 | 28 (8)  | 48 (14) |
| 66" (167 cm)        | 1.5 / 0.45                 | –                      | 26 (7)  | 44 (13) |
| 72" (182 cm)        | 1.5 / 0.45                 | –                      | 24 (7)  | 40 (12) |
| 78" (198 cm)        | 1.5 / 0.45                 | –                      | 22 (6)  | 37 (11) |
| 84" (213 cm)        | 1.5 / 0.45                 | –                      | –       | 34 (10) |
| 90" (228 cm)        | 2.0 / 0.60                 | –                      | –       | 32 (9)  |
| 96" (243 cm)        | 2.0 / 0.60                 | –                      | –       | 30 (9)  |
| 102" (260 cm)       | 2.0 / 0.60                 | –                      | –       | 28 (8)  |

1. This table applies to pipe with lock seams.
2. These values, where applicable, were calculated using  $K = 0.86$  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.

**0.012**

**MANNING  
COEFFICIENT**

**100+ yr**

**SERVICE LIFE WITH THE  
APPROPRIATE COATING**

**18"-102"**

**DIAMETER RANGE  
(45-260 CM)**

**7-1/2 x 3/4**

**CORRUGATION  
(INCHES)**

Manufactured by

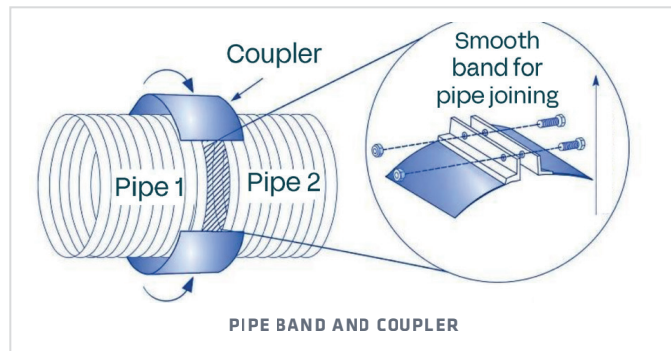
**HULKO®** Steel Pipe Technology

## SERVICE LIFE BY COATING

**TABLE 2 · ESTIMATED SERVICE LIFE OF CORRUGATED METAL PIPE**

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

## PIPE JOINING

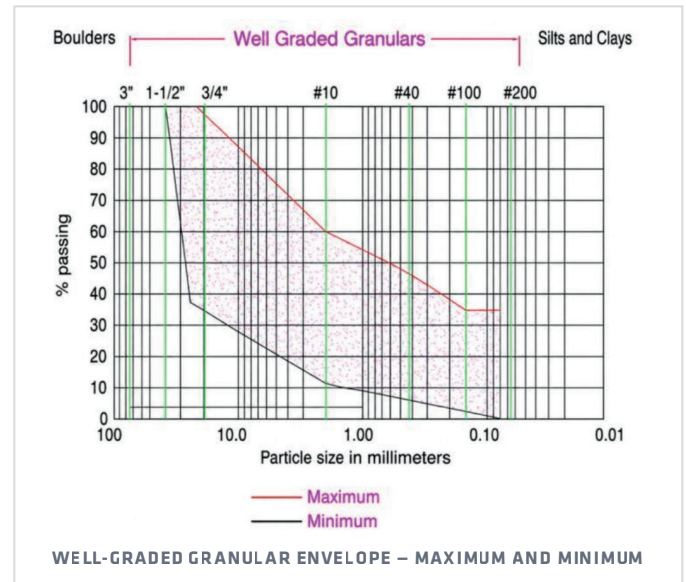


## DESIGN BASIS

|                       |                        |
|-----------------------|------------------------|
| AASHTO Section 12     | AISI manual (K = 0.86) |
| H-20 / H-25 live load | Lock-seam pipe         |

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. Backfilling must be performed with suitable material that is properly placed and compacted. The material shall be selected, well-graded granular material with a low silt and clay content, as shown in the chart above.

## BEDDING AND HAUNCH REQUIREMENTS

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

## AVAILABLE COATINGS

|                                 |            |             |
|---------------------------------|------------|-------------|
| Galvanized 2 oz/ft <sup>2</sup> | Aluminized | Polymerized |
|---------------------------------|------------|-------------|