Technical Notes

PipeSak® Engineering Specification

PipeSak® Pipeline Protection

Guidelines

The following should be considered as the **minimum requirements** for the design, manufacture and supply of non-biodegradable, geotextile pipeline weights (GPW) intended for use as pipeline anti-buoyancy devices when filled with local, natural aggregate ballast.

1.0 Design and Manufacturing

1.1 Manufacturer should demonstrate a minimum of five years of continuous, successful experience in the manufacture of fabric-type weights for pipeline buoyancy control.

1.2. Manufacturer must be ISO:9001 certified.

1.3. Design should incorporate multiple compartments for long-term integrity.

1.4. Must be top loading.

1.5. An individual compartment safety factor of four Times the rated capacity must be proven by a third-party testing facility.

1.6. Lift webbing must maintain a minimum four times factor of safety.

2.0 Materials

2.1 Body Fabric

a) Woven, non-coated polypropylene.
b) Geotextile rated to ensure water flow.
c) Single layer to ensure durability.
d) U.V. treated.

2.2 Webbing and Lift Strapping

a) Manufactured from polypropylene or polyester only.
b) Minimum tensile strength of 10,000 lbs (4,500 kg) for individual compartment capacities in excess of 1,000 lbs (450 kg)
c) All load-bearing thread must be polypropylene.

3.0 Delivery, Storage, and Handling

3.1 To be delivered on pallets with UV protective covers for ease of handling and long-term storage.

3.2 Prior to use, protective covers or separate tarps must be maintained to ensure proper protection from the elements (oil, dirt, sunlight, etc.).

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4.0 Filling and Installation

4.1 For non-freezing conditions, a dry, clean aggregate ballast from course sand to 1" (24 mm) stone (less than five percent silt content) is recommended.

4.2 For active river crossings where future scour could be a concern, a clean stone with a diameter of 1/4 in to 3/4 in (6-19mm) is the recommended ballast.

4.3 For freezing conditions, a screened stone with a consistent diameter between 1/4 in to 3/4 in (6 to 19 mm) is recommended.

4.4 Use only filling frames supplied by your GPW manufacturer.

4.5 For long-term storage (more than three months) or freeze/thaw conditions, filled weights should be covered with U.V. resistant shrink wrap in groups of 50 or less.

4.6 During freezing conditions, the following additional steps are required:

a) Proper grading of stockpile yard.

b) The use of straw mulch or plastic tarping beneath weights stored along the pipeline right of way.

4.7 For pickup and loading, ensure all hooks are free from any burrs or sharp edges.

4.8 Trailers with rails or strapping to secure load shall be used for transportation to site. During transportation, do not stack bags weighing over 2,500 lbs (1,134 kg).

4.9 In stockpile yards, weighing 7000 lbs (3,175 kg) or under can be stacked safely.

4.10 Keep geotextile pipeline weight in an upright position when stockpiled in the fill yard and on the pipeline right of way.

4.11 Additional trench width to accommodate GPW is approximately half the pipe diameter per side at the nine and three o'clock positions.

4.12 Extra trench depth is typically not necessary.

4.13 Clean all loose stones and debris off the bottom of the pipeline weight just prior to installing.

4.14 GPW must be capable of installation without workers in the trench.

5.0 Additional Technical Requirements

5.0 All material testing supplied by manufacturer should be as per American Society for Testing and Materials (ASTM) or equivalent standards.

5.1 Manufacturer shall make skilled personnel available for assistance and training in the proper filling, hauling, and installation.

5.2 Bags shall be placed on the pipeline at center-to-center spacing as detailed on the drawings and specifications.

5.3 Any damaged GPW should be set aside for inspection.