



Deadman Anchoring System

HT-1113

Highland Tank's Deadman Anchoring System is designed to secure tanks, separators and interceptors in underground installations.

Polyester or steel Hold-Down Straps and Concrete Deadman Anchors (CDA) are used to anchor underground vessels and counteract their natural buoyant forces.

Highland Tank's Polyester Hold-Down Straps are intended for underground use only. They are made from 100% polyester webbing material with a large reinforced loop at each end for connecting to the CDA hardware. Wire rope and cable clamps connect the strap to the CDA on one side of the vessel. A hook-to-hook or jaw-to-jaw turnbuckle is employed for attaching the strap to the CDA on the other side of the vessel. Polyester straps are available for vessels up to 10'-6" in diameter.

Highland Tank's Steel Hold-Down Straps are available for all vessels from 3'-2" to 13'-0" in diameter. They are available in two designs to accommodate specific installation requirements; standard and deadman with an option to make them safety style.

Fabricated from mild-carbon steel they are coated for lasting protection underground. Stainless and galvanized steel are also available. The steel strap designs each have their own tensioning system using adjustable turnbuckles. Deadman straps are adjusted using supplied turnbuckles. Neoprene rubber liners for electrical isolation and tank protection are supplied with all steel hold-down straps.

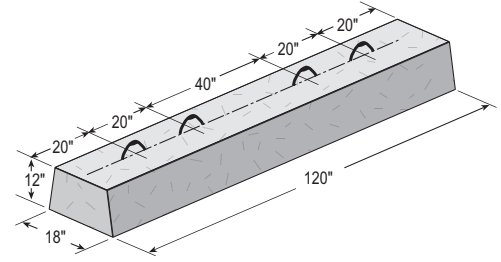
System Specifics

Highland Tank's preferred hold-down method combines our CDAs with Polyester straps to provide a faster, convenient installation. No strap liners are required because there are no metallic components in the strap system that can make contact with the vessel. Included here are details about both system components.

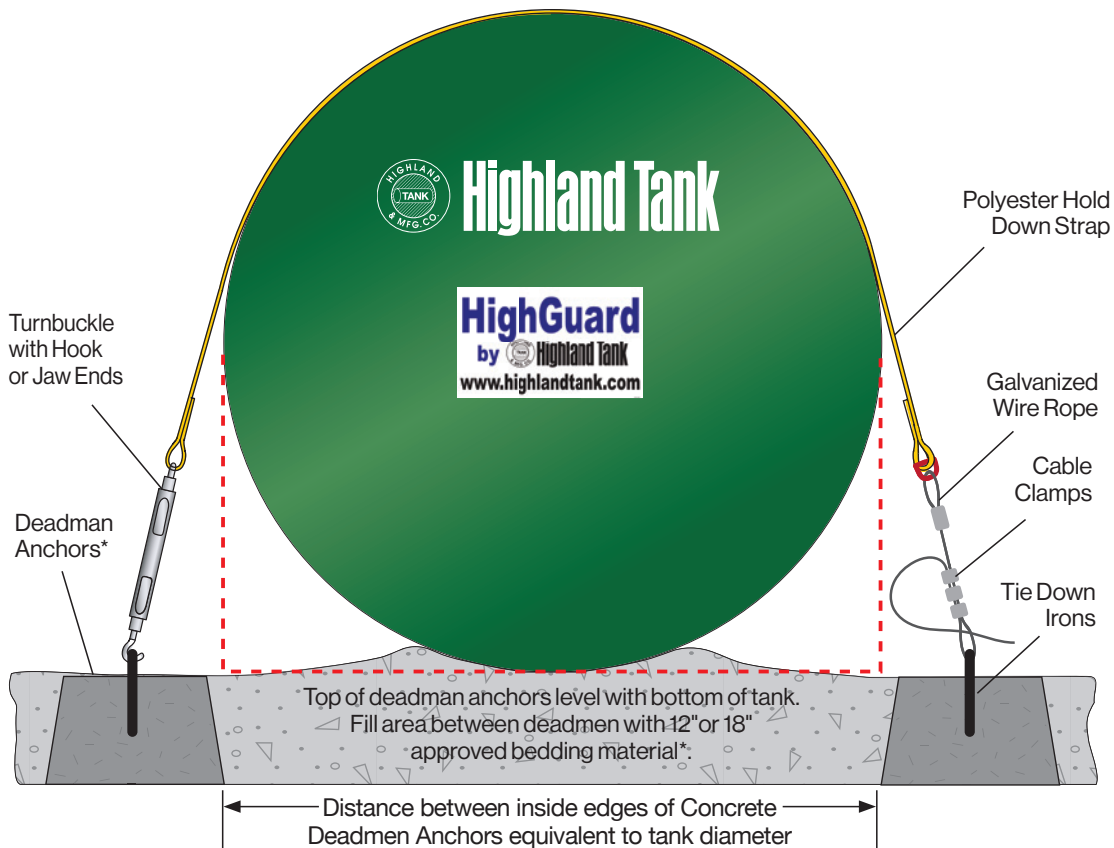
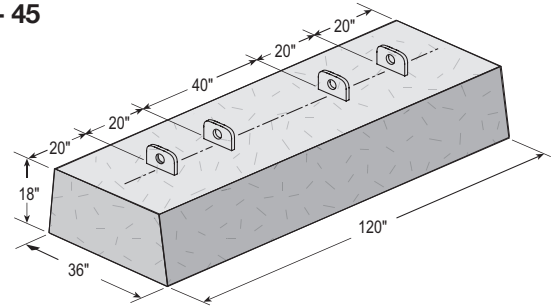
CDA Specifications

- Utilize a 4,000 psi concrete mix reinforced with #4 rebar
- Dimensions:
 - CDA-15: 120" L, 18" W, 12" H
 - CDA-45: 120" L, 36" W, 18" H
- Volume:
 - CDA-15: 15 cubic feet (approx.)
 - CDA-45: 30 cubic feet (approx.)
- Weight:
 - CDA-15: 2,500 pounds (approx.)
 - CDA-45: 6,500 pounds (approx.)

CDA - 15



CDA - 45

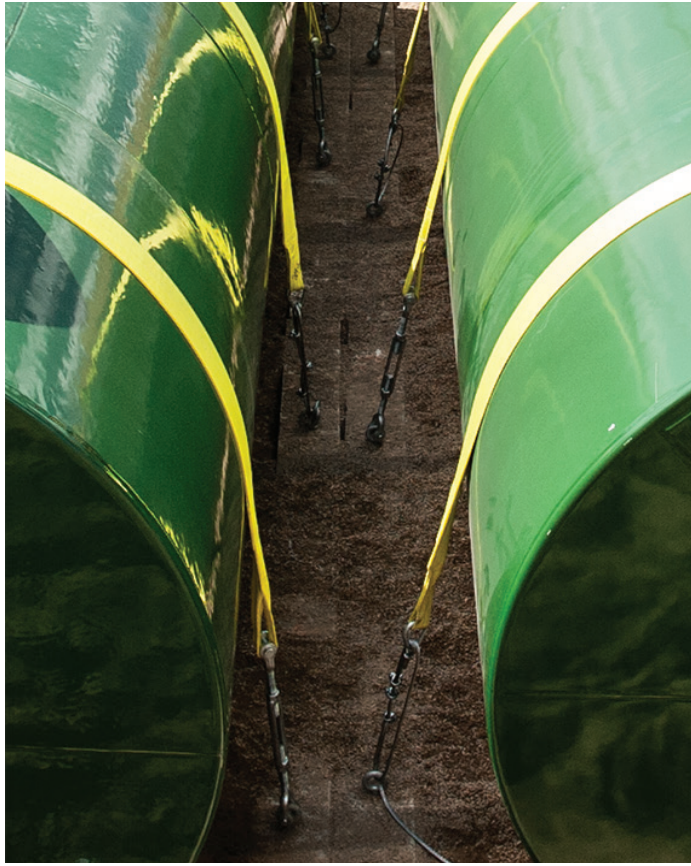


Notes:
Recommendations assume a 36" burial depth to top of vessel, have only one access sump and are installed exclusively with Highland Polyester Hold-Down Straps.

Information supplied here is for planning purposes. Hold-down systems should be specified by a licensed professional engineer. Typically 10' diameter tanks and larger require CDA-45 deadman anchors. However, deadman anchor sizing is determined by buoyancy needs Please consult Highland Tank.



Strap Details



Gallons	Highland Tank Vessel Information		Required Deadman
	Diameter	Length	
240	4'-0"	5'-5"	2
300	4'-0"	10'-9"	2
350	4'-0"	10'-9"	2
500	4'-0"	5'-5"	2
550	4'-0"	10'-9"	2
750	4'-0"	10'-9"	2
1,000	4'-0"	10'-9"	2
1,000	5'-4"	6'-0"	2
1,500	5'-4"	9'-0"	2
2,000	5'-4"	12'-0"	2
2,500	5'-4"	15'-0"	2
3,000	5'-4"	18'-0"	2
4,000	5'-4"	24'-0"	2
4,000	6'-0"	19'-0"	4
4,000	8'-0"	10'-8"	2
5,000	6'-0"	23'-10"	4
5,000	8'-0"	13'-4"	2
6,000	6'-0"	28'-8"	6
6,000	8'-0"	16'-0"	2
7,000	7'-0"	24'-4"	2
8,000	8'-0"	21'-4"	4
8,000	10'-0"	14'-0"	2
9,000	8'-0"	24'-0"	2
10,000	8'-0"	26'-8"	6
10,000	10'-0"	17'-0"	4
12,000	8'-0"	32'-0"	6
12,000	10'-0"	20'-6"	4
15,000	8'-0"	40'-0"	8
15,000	10'-0"	25'-6"	4
20,000	10'-0"	34'-0"	6
20,000	10'-6"	31'-0"	6
25,000	10'-6"	38'-9"	8
30,000	10'-6"	46'-0"	10
*40,000	12'-0"	47'-6"	10
*50,000	12'-0"	59'-6"	12
*60,000	13'-0"	60'-6"	12

Polyester Strap Specifications

Tank Diameter	Turn-Buckle Diameter	Strap Length
3'2"	3/4"	73"
4'0"	3/4"	89"
5'4"	1-1/4"	124"
6'0"	1-1/4"	137"
7'0"	1-1/4"	172"
8'0"	1-1/4"	194"
10'0"	1-1/4"	242"
10'6"	1-1/4"	242"

Notes:
Deadman Anchors must be installed on both sides and along the full length of the tank. They must be positioned so the edges of the deadmen are aligned outside the tank "shadow," outside the tank diameter and below the tank bottom.

Some vessel installations require the addition of supplemental methods of restraint, like grade-level reinforced concrete pad (see PEI RP 100).

Accuracy and/or correctness of tank installation is the responsibility of the Engineer of Record and the Installer. Other methods are readily available.

*Polyester straps are not available for these sizes. Use one of the steel hold-down designs. Steel hold-down straps are available for all vessel sizes. Refer to HT-1063 for details. For all vessels 8'-0" in diameter and larger using steel hold-down straps, Highland Tank will supply one of the safety style designs.



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