

NEW

AXS-3™

ADVANCED ACCESS TANK COVER



The new standard of corrosion resistant, low profile, removable covers.

Featuring two new groundbreaking technologies:

- ▶ TreadMAX™ integrally manufactured, multi-directional, non-skid surface for improved long-term operator safety
- ▶ Strut and channel nut fastening connections for advanced accessibility

enduro composites



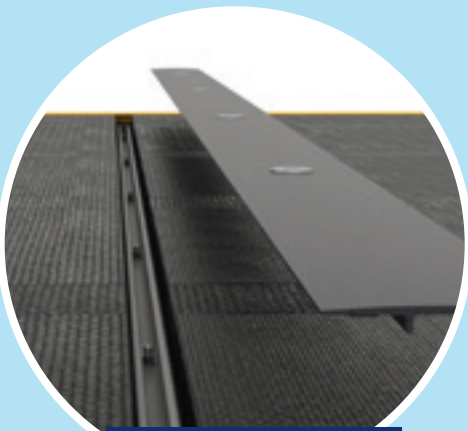
Our new advanced tank cover technology, the **AXS-3™ tank cover system**, is the fifth generation of flat fiberglass covers by Enduro Composites since the 1980's.



UPGRADED OPERATOR SAFETY

Improved safety with walking surface transitions of 1/4" or less minimizing trip hazards.

- Tapered end-joint flashing
- Countersunk fastener heads
- High strength, pultruded panels



ODOR CONTROL

Designed to perform and effectively contain odors associated with treatment processes.

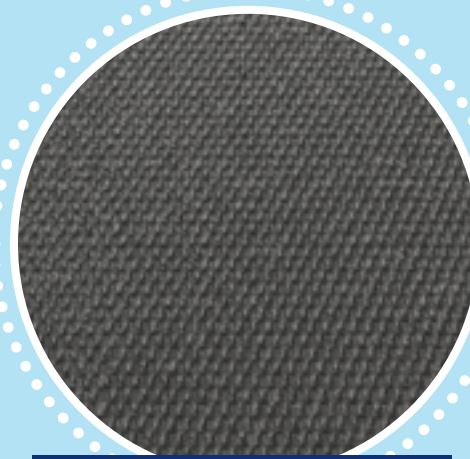
- Joints and connections sealed with premium gaskets designed for challenging conditions
- Improved seal with Integrated notches for gaskets



INNOVATIVE STRUT CHANNEL NUT FASTENING SYSTEM

The strut and channel nut connections greatly improves accessibility.

- Advanced repeatable panel removability
- Eliminates the use of conventional screws
- Avoids wallowed out screw holes



TREADMAX™ NON-SKID SURFACE TECHNOLOGY

The FRP cover industry's first multi-directional non-skid surface technology.

- Integrally manufactured cover deck surface
- Superior to non-skid tape
- Exceeds the DCOF requirements set by ANSI A137.1/A326.3



OUTSTANDING STRENGTH & CORROSION RESISTANCE

AXS-3™ fiber reinforced plastic (FRP) components do not corrode in challenging chemical exposure and wet conditions in water and wastewater treatment operations.

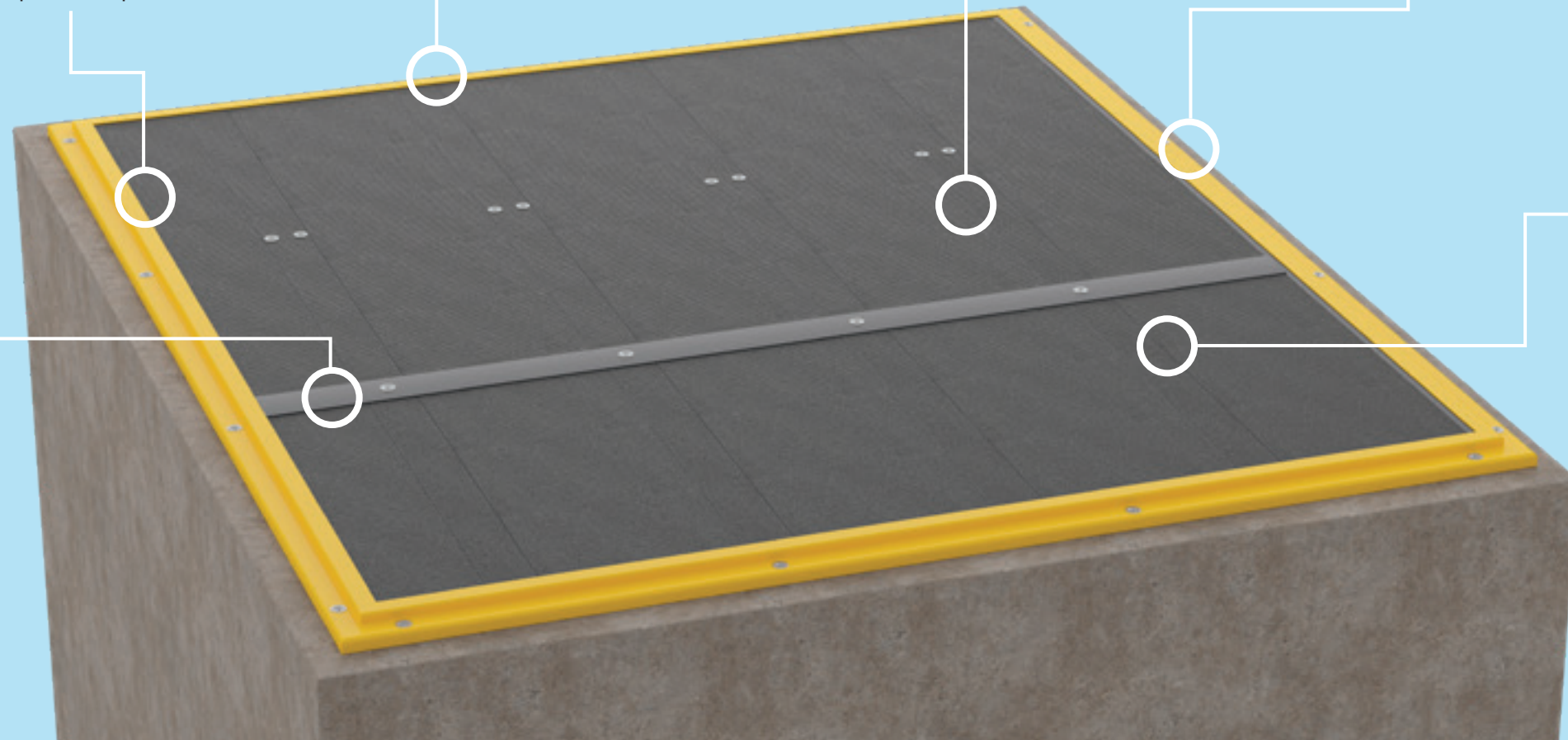
- High content of reinforcing fibers (up to 60% by weight) for long span capability
- Can handle high load conditions
- Maintenance-free with long service life



EASY, LOW-COST INSTALLATION

The AXS-3™ panels are lightweight, easy to handle and install, with limited field fabrication. Installation improvements to previous generation covers include:

- Up to 40% less fasteners
- 2" wider panels resulting in fewer panels
- Lower total install costs



PATENT PENDING

AXS-3 LOAD-SPAN TABLE LINEAL FEET

UNIFORM POSITIVE LOAD <i>PSF</i>		20		30		40		50		60	
Span Type		single	double	single	double	single	double	single	double	single	double
L/D	120	15.5	19.2	13.5	15.7	12.3	13.6	11.4	12.2	10.7	11.1
	180	13.5	18.1	11.8	15.7	10.7	13.6	9.9	12.2	9.4	11.1
	240	12.3	16.4	10.7	14.4	9.7	13.1	9.0	12.1	8.5	11.1

CONCENTRATED LOAD <i>Lbs</i>		250	300	400	500
L/D	180	14.6	13.8	12.5	11.6
	240	14.6	13.8	12.5	11.2

maximum deflection = 5/8" due to concentrated load

Allowable spans are the lesser span controlled by: 1) deflection limit, L/D, or 2) Factor of Safety of 2.0 minimum for maximum allowable load. Allowable spans for concentrated loads also consider maximum deflection of 5/8". ABC 2015, Section 1607 requires minimum concentrated load loading of 250 lbs. distributed over 2.5'x2.5' area to determine spans for "All roof surfaces subject to maintenance workers." Please contact Enduro Composites for allowable spans for other requirements such as lower maximum deflection or negative loads for high wind conditions.

SPECIFICATIONS

FIBERGLASS REINFORCED PLASTIC TANK COVER

PART 1 – GENERAL

1.01 Description of Work

Scope of this specification shall include materials for fiberglass reinforced plastic (FRP) tank covers, which may include, but not limited to deck panels; structural supports; flashing; fasteners and anchors; gaskets and sealant.

1.02 Design Criteria

- A. Design Loads shall comply with local codes with combined loads determined by Allowable Stress Method.
1. Dead + Live or Snow Load: _____ psf
 2. Wind Uplift Load: _____ psf
 3. Concentrated Load: _____ lbs
- B. Design Limits
1. Dead + Live or Snow Load: Deflection Limit=L/180; FOS=2.0
 2. Wind Uplift less Dead Load: Deflection Limit=L/60; FOS=1.88
 3. Concentrated Load: 300 lb. load distributed over 2.5'x2.5' area at mid-span of cover panel with deflection not to exceed 5/8" or L/180.
 4. Each cover panel shall be removable vertically without having to remove adjacent panels or cutting of components. Individual panel units shall weigh no more than 135 pounds. Panels shall be fastened to structural supports and locking channel utilizing bolts with a locked-in-place channel nut.
 5. Slip resistance of decking panels shall have (min average) Dynamic Coefficient of Friction of 0.50 per ANSI A137.1/ A326.3 Dynamic Coefficient of Friction Test.
 6. Top of tank cover system shall be flat with change in vertical level of walking surfaces no greater than 1/4".

1.03 Design Criteria

- A. Tank cover supplier shall manufacture and fabricate all FRP components in its own facility, which shall have current ISO 9001 certification and shall be located in the USA.
- B. Tank cover manufacturer shall be solely responsible for the design and satisfactory performance of the cover system specified herein. No division of responsibility between manufacturer of FRP components and design is implied or allowed.

PART 2 – PRODUCTS

2.01 Manufacturer(s)

Standard for design and performance shall be AXS-3 Tank Cover System manufactured by Enduro Composites, 16602 Central Green Blvd., Houston, TX 77032, 713-358-4000.

2.02 Materials

- FRP structural components including decking and structural supports shall be manufactured by pultrusion process. Color of components shall be charcoal gray.
- A. Glass fiber reinforcements shall be minimum of 50% of the material weight.
- B. Materials shall be fire retardant with flame spread rating of 25 or less per ASTM E84 test.
- C. Materials shall exhibit these Physical Properties (min):
- | | |
|----------------------------------|--------------------|
| Tensile Strength (ASTM D638) | 30,000 psi |
| Compressive Strength (ASTM D695) | 30,000 psi |
| Flexural Strength (ASTM D790) | 30,000 psi |
| Stiffness | 45,000,000 lb-in.2 |
- D. AXS-3TM Tank Cover Deck Panels
1. FRP deck panels shall have minimum thickness of 3/16".
 2. Resin type for FRP tank cover decking shall be: Isophthalic Polyester ____Vinyl Ester.
 3. Cover panels, end-to-end joint flashing and side-joint locking channel shall have TreadMAX™, non-skid surface with integral, multi-directional, slip-resistant walking surface.
 4. Color of deck panels shall be standard gray.
- E. Structural Framing shall be FRP with polyester or vinyl ester resin. Metal connections to FRP beams shall be 304SS or 316SS
- F. Hatches (if required) shall be sized per drawings and include a hold-open device and plastic or stainless-steel lift handles. Port hatches shall be 12 inches square or less.
- G. Flashing and Trim shall be FRP or 316SS.
- H. Hardware
1. Fasteners, anchors, hinges, and other accessories located on underside of cover shall be 316SS.
 2. Perimeter flashing fasteners, concrete anchors, or other hardware not exposed to inside of tank shall be 304SS.
 3. Fasteners to attach tank cover decking shall be 316SS and extend no more than 1/4" above panels. Fasteners shall be removable and reusable.
- I. Gaskets shall be installed and sealants applied by contractor per Manufacturer's guidelines.



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