CERTIFICATE NUMBER	26-0376755-PDA
EFFECTIVE DATE	14-Oct-2026
EXPIRY DATE	13-Oct-2031
ABS TECHNICAL OFFICE	Houston Offshore Engineering

CERTIFICATE OF

Product Design Assessment

This is to certify that a representative of this Bureau did, at the request of

FIBERGRATE COMPOSITE STRUCTURES

located at

1234 JOHNSON RD, SUITE 366, , ALLEN, TX, United States, 75013

assess design plans and data for the below listed product. This assessment is a representation by the Bureau as to the degree of compliance the design exhibits with applicable sections of the Rules. This assessment does not waive unit certification or classification procedures required by ABS Rules for products to be installed in ABS classed vessels or facilities. This certificate, by itself, does not reflect that the product is Type Approved. The scope and limitations of this assessment are detailed on the pages attached to this certificate.

Product:	**FRP Guardrails**
Model:	**Dynarail Guardrails and Dynarail Ladders.**
Endorsements:	
Tier:	**2 - PDA Issued**

This Product Design Assessment (PDA) Certificate remains valid until 13/Oct/2031 or until the Rules and/or Standards used in the assessment are revised or until there is a design modification warranting design reassessment (whichever occurs first).

Acceptance of product is limited to the "Intended Service" details prescribed in the certificate and as per applicable Rules and Standards.

This Certificate is valid for installation of the listed product on ABS units which exist or are under contract for construction on or previous to the effective date of the ABS Rules and standards applied at the time of PDA issuance. Use of the Product for non-ABS units is subject to agreement between the manufacturer and intended client.

American Bureau Of Shipping

Daniel Hyun SON

Hyun Young Son,Engineer/Consultant

NOTE: This certificate evidences compliance with one or more of the Rules, Guides, standards or other criteria of ABS or a statutory, industrial or manufacturer's standards. It is issued solely for the use of ABS, its committees, its clients or other authorized entities. Any significant changes to the aforementioned product without approval from ABS will result in this certificate becoming null and void. This certificate is governed by ABS Rules 1-1-A3/5.9 Terms and Conditions of the Request for Product Type Approval and Agreement (2010)

Sensitivity: Internal & Restricted

FIBERGRATE COMPOSITE STRUCTURES
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Tier: 2 - PDA Issued

Product: **FRP Guardrails**
Model: **Dynarail Guardrails and Dynarail Ladders.**
Endorsements:

Intended Service:
Marine & Offshore Applications - Fiberglass Guardrails and Ladders.

Description:
Ladder Systems:
1). Vinyl Ester: 1-3/4 in. x 1-3/4 in. x 1/4 in. Square Tube Side Rails with 1-1/4 in. OD x 1/4 in. Fluted Rungs or Solid Rungs.
2). Vinyl Ester: 2 in. x 2 in. x 1/4 in. Square Tube Side Rails with 1-1/4 in. OD x 1/4 in. Fluted Rungs or Solid Rungs.
3). Phenolic: 1-3/4 in. x 1-3/4 in. x 1/4 in. Square Tube Side Rails with 1-1/4 in. OD x 1/4 in. Fluted Rungs.
4). Phenolic: 2 in. x 2 in. x 1/4 in. Square Tube Side Rails with 1-1/4 in. OD x 1/4 in. Fluted Rungs.

Guardrail Systems:
1). Isophtalic Polyester: 2-1/8 in. x 2-1/8 in. x 3/16 in. Square Tube Posts with 1-3/4 in. x 1-3/4 in. x 1/8 in. Square Tube Rails.
2). Isophtalic Polyester: 2 in. x 2 in. x 1/4 in. Square Tube Posts with 2 in. x 2 in. x 1/4 in. Square Tube Rails.
3). Vinyl Ester: 2-1/8 in. x 2-1/8 in. x 3/16 in. Square Tube Posts with 1-3/4 in. x 1-3/4 in. x 1/8 in. Square Tube Rails.
4). Vinyl Ester: 2 in. x 2 in. x 1/4 in. Square Tube Posts with 2 in. x 2 in. x 1/4 in. Square Tube Rails.
5). Vinyl Ester: 1.9 in. OD x 3/16 in. Round Tube Posts with 1.9 in. OD x 3/16 in. Round Tube Rails.
6). Phenolic: 2 in. x 2 in. x 1/4 in. Square Tube Posts with 1.9 in. OD x 3/16 in. Round Tube Rails.
7). Phenolic: 2 in. x 2 in. x 1/4 in. Square Tube Posts with 2 in. x 2 in. x 1/4 in. Square Tube Rails.
8). Phenolic: 1.9 in. OD x 3/16 in. Round Tube Posts with 1.9 in. OD x 3/16 in. Round Tube Rails.

Rating:
1). Flame spread rating not to exceed 20 in accordance with ASTM E84.
2). Self-extinguishing testing in accordance with ASTM D635.
3). Weathering and UV degradation testing in accordance with ASTM G154, Cycle 1.
4) Water absorption testing in accordance with ASTM D570
5). Guardrail strength testing in accordance with IBC 2024 Section1607.9, OSHA 29 CFR 1910.29, ASCE 7-22 Section 4.5.1, and ASTM E985.
6). Ladder strength testing in accordance with OSHA 29 CFR 1910.23(d)(1), OSHA 29 CFR 1926.1053 and ASCE 7-22 Section 4.5.4.

Service Restriction:
1). Unit Certification is not required for this product. If the manufacturer or purchaser request an ABS Certificate for compliance with a specification or standard, the specification or standard, including inspection standards and tolerances, must be clearly defined.
2). The scope of the Type Approval is to comply with MSC.1/Circ. 1221 dated 11 December 2006.
3). For guardrail systems, the top rail height shall be 42 inches measured from the deck surface.
The maximum horizontal span between posts as follows:
- 72 inches for square tube posts (2" x 2" x 1/4" or 2-1/8" x 2-1/8" x 3/16" SQ Tube).
- 48 inches for round tube posts (1.9 in. OD x 3/16 in. Round Tube).
4). For ladder systems, the maximum clear width (inside rail to rail) shall be 18 inches, with a recommended maximum load of 1200 lbs. The maximum ladder standoff bracket spacing is 72 inches O.C.
5). Installation limited to personnel walkways, catwalks, ladders, platforms or access areas on open decks and semi-enclosed areas not protected by deck foam firefighting system, as well as within tanks, cofferdams, void spaces, pipe tunnels/ducts, holds and storage spaces.
6). Not to be used in areas used for escape, or access for firefighting, emergency operation or rescue.
7). Installation in accommodations, service spaces and control stations, and in other areas that are normally manned, is prohibited.

8). Not to be used in areas where steel handrails are required by the International Convention on Load Lines.
9). Prior to installation, plans detailing the intended arrangements are to be submitted to ABS for review. Flag Administration acceptance of the arrangements is required.
10). If guardrails and ladders are damaged by any hydrocarbon fire, access by personnel shall be strictly restricted until the damaged guardrails and ladders are replaced with new guardrails and ladders. All affected FRP guardrails and ladders must be replaced following any fire incident.
11). For installation on an ABS-classed vessel, guardrails must be at least 39.5 inches high measured from the deck surface. The opening below the bottom rail must not exceed 9 inches and all other openings between guardrail members must not exceed 15 inches. Where practicable, toe boards which are at least 4.0 in. in height are to be provided for the lowest course.

Comments:
1). The Manufacturer has provided a declaration about the control of, or the lack of Asbestos in this product.
2). Approval not performed on behalf of any flag Administration.
3). Product should be installed/used in accordance with manufacturer's instructions and limitations and ABS approved drawings.
4). Production items are to be manufactured in accordance with a quality control system which shall be maintained to ensure that items are of the same standard as per tested/approved prototype.
5). Individual review to the intended use on specific vessel, MODU or facility is required.
6). This certificate may not be used for EU and US flagged vessels/Facilities (MED and/or USCG have their own specific/requirements), unless otherwise specially considered.
7). Unless specially directed by Administration, this approval is not to be construed as a substitute for Flag Administration's approval for the purpose of SOLAS and/or IMO MODU Code, as amended/updated.
8). Any significant changes in design and/or quality of the material will render the approval invalid.

Notes/Drawing/Documentation:
1). Document No. GR1, ABS_GR1-Guardrail Calculation Sheets USA, Rev: 2, Pages: 23.
2). Document No. GR2, ABS_GR2-Guardrail Calculation Sheets USA, Rev: 2, Pages: 23.
3). Document No. GR3, ABS_GR3-Guardrail Calculation Sheets USA, Rev: 2, Pages: 23.
4). Document No. GR4, ABS_GR4-Guardrail Calculation Sheets USA, Rev: 2-, Pages: 23.
5). Document No. GR5, ABS_GR5-Guardrail Calculation Sheets USA, Rev: 2, Pages: 23.
6). Document No. GR6, ABS_GR6-Guardrail Calculation Sheets USA, Rev: 4, Pages: 26.
7). Document No. GR7, ABS_GR7-Guardrail Calculation Sheets USA, Rev: 2, Pages: 23.
8). Document No. GR8, ABS_GR8-Guardrail Calculation Sheets USA, Rev: 4, Pages: 26.
9). Document No. LR1, ABS_L1 - Ladder Calcs, Rev: 2, Pages: 14.
10). Document No. LR2, ABS_L2 - Ladder Calcs, Rev: 2, Pages: 14.
11). Document No. LR3, ABS_L3 - Ladder Calcs, Rev: 2, Pages: 14.
12). Document No. LR4, ABS_L4 - Ladder Calcs, Rev: 2, Pages: 14.
13). Document No. LR5, ABS_L5 - Ladder Calcs, Rev: 1, Pages: 14.
14). Document No. LR6, ABS_L6 - Ladder Calcs, Rev: 1, Pages: 14.
15). Document No. Fibergrate Internal Testing, ABS_GuardrailLadder_InternalTesting, dated 12-Feburary-2026, Revision: 1, Pages: 7.
16). Document No. Fibergrate Internal Testing2, ABS_GuardrailLadder_InternalTesting, dated 05-May-2026, Revision: -, Pages: 3.
17). Document No. Internal Test Report 8/17/26, ABS_GuardrailLadder Internal Testing, dated 17-August-2026, REvision: -, Pages 3.
18). Document No. 106304621 GRR-001a, Intertek Test Report for ABS Offshore Units, Part 5 [January 2025] 5-3-A2 testing on ISOFR, dated 25-Feb-2026, Rev: -, Pages: 8.
19). Document No. 106304621 GRR-001b, Intertek Test Report for ABS Offshore Units, Part 5 [January 2025] 5-3-A2 testing on VEFR, dated 25-Feb-2026, Rev: -, Pages: 8.
20). Document No. 106304621 GRR-001c, Intertek Test Report for ABS Offshore Units, Part 5 [January 2025] 5-3-A2 testing on Phenolic, dated 25-Feb-2026, Rev: -, Pages: 8.
21). Document No. 106428548SAT-001, Intertek Fire Test Report for ASTM D635-14 on VEFR, dated 26-Jan-2026, Rev: -, Pages: 5.

22). Document No. 106428548SAT-002, Intertek Fire Test Report for ASTM D635-14 on ISOFR, dated 26-Jan-2026, Rev: -, Pages: 5.
23). Document No. 105422944MID-001, Intertek Test Report for ASTM D635-22 on Phenolic, dated 09-May-2023, Rev: 1, Pages: 5.
24). Document No. 19-10205, Commercial Testing Company Test Report - ASTM E84-19b for Dynaform Structural Shapes ISOFR Resin System, dated 23-Oct-2019, Rev: -, Pages: 4.
25). Document No. 101092791SAT-001A, Intertek Test Report – ASTM E84-12C for Fibergrate Dynaform Structural Shapes VEFR Nonhalogen, dated 20-Mar-2013, Rev -, Pages: 9.
26). Document No. 104962836SAT-014A, Intertek Fire Test Report – ASTM E84-21a Testing on 16015-16522-02 Phenolic (Un-Painted No Grit), dated 06-Sep-2022, Rev: -, Pages; 11.
27). Document No. Fibergrate Brochure, Dynarail-Dynaround-FRP-Railing-Handrail-Ladder, Rev:-, Pages: 16

Terms of Validity:
This Product Design Assessment (PDA) Certificate remains valid until 13/Oct/2031 or until the Rules and/or Standards used in the assessment are revised or until there is a design modification warranting design reassessment (whichever occurs first).

Acceptance of product is limited to the "Intended Service" details prescribed in the certificate and as per applicable Rules and Standards.

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STANDARDS

ABS Rules:
1). ABS Rules for Conditions of Classification, Part 1A Ships (2026): 1A-1-4/7.7, 1A-1-A3 and A4.
2). ABS Rules for Building and Classing Marine Vessels, 2026: 3-4-1 for guardrails.
3). ABS Rules for Conditions of Classification, Part 1B Offshore (2026): 1B-1-4/9.7, 1B-1-A2 and A3.
4). ABS Rules for Building and Classing Offshore Units, 2026: 5-1-1/3.3 & 3.5 and 5-3-A2 for guardrails.

National:
1). ASTM E985-24 for Guardrails.
2). ASTM E84-12c, 19b & 21a for Guardrails & Ladders.
3). ASTM D635-14 & 22 for Guardrails & Ladders.
4). ASTM D618-21, Procedure A for Guardrails & Ladders.
5). ASTM G154-23, Cycle 1 for Guardrails & Ladders.
6). ASTM D570-22 for Guardrails & Ladders.
7). ASTM D638-22, Type 1 for Guardrails & Ladders.
8). ASTM D2344-22 for Guardrails & Ladders.
9). ASTM D6641-23 for Guardrails & Ladders.
10). ASCE 7-22, Section 4.5.1 for Guardrails & Section 4.5.4 for Ladders

International:
1). International Building Code, 2024 – Section 1607.9 for Guardrails

Government:
1). OSHA 1910.29 for Handrails
2). OSHA 29 CFR 1910.23(d)(1) and OSHA 29 CFR 1926.1053 for Ladders

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EUMED:
NA

OTHERS:
NA