Compliance Certificate

Date: 14/12/2020
To: Trex Company, Inc.
Attn: Mr Chris Scoville

Re: **Trex Enhance® Basics and Naturals Composite Decking**
Span Table Charts per AS/NZS 1170.0:2002 and AS/NZS 1170.1:2002
Document No. 18227-CC-003
SOTO Job No. 2018-227

Dear Sir or Madam,

SOTO Engineers certify that TREX COMPANY, Inc. deck board product: ***Trex Enhance® Basics and Naturals Composite Decking*** presented in this certificate is in compliance with Ultimate Limit State design requirements of the relevant sections and clauses of the following Australian Standards:

- ***AS/NZS 1170.0:2002 -*** *Structural design actions Part 0: General principles*
- ***AS/NZS 1170.1:2002*** *- Structural design actions Part 1: Permanent, imposed and other actions*

This document provides ultimate load/span and deflection/span tables for ***Trex Enhance® Basics and Naturals Composite Decking*** product and the calculations are based on test data document of the referred product provided by TREX COMPANY, Inc.:

- *J0314.01-119-19 R0 – ICC-ES AC174 Compliance Evaluation on Trex Enhance Basic and Naturals (Enhance 2.0 (V180)) Deck Boards*

The reference document produced by SOTO that forms the basis of design on which the Compliance Certification is based is contained in the following controlled document:

- *18227-CAL-001 - TREX – Span Table Chart for Deck Boards*

This certificate is valid for the period that the current conditions remain unchanged and any changes after the issued date, that might be instigated by TREX COMPANY, Inc., should be reviewed and approved by SOTO Engineers only.

If you have any queries please do not hesitate in contacting the undersigned.

Yours faithfully,

Rodrigo Barros BE(Civil) MIEAust CPEng NER APEC Engineer IntPE(Aus) RPEQ
Structural Engineer - Engineers Australia Member No: 3974847

Next pages show the referred tables on this certificate.

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Table 1 – Trex Enhance® Basics and Naturals Decking (140 mm x 24 mm) - Span Table

		Joist/support Centres [5]		
Imposed Actions	*Combinations of Actions Utilized*	*225 mm*	*300 mm*	*350 mm*
Ultimate Distributed Load Q (kN/m) [1, 12]	*1.2 SW + 1.5 Q * k_t*	18.9	10.6	7.8
Ultimate Concentrated Load Q (kN) [2]	*1.5 Q * k_t*	2.8	2.1	1.8

Table 2 – Trex Enhance® Basics and Naturals Decking (140 mm x 24 mm)
Deflection Table for Residential construction [6]

			Joist/support Centres [5]					
			Short-term			Long-term		
Imposed Actions	*Short-term factor (ψ_s)*	*Long-term factor (ψ_l)*	*225 mm*	*300 mm*	*350 mm*	*225 mm*	*300 mm*	*350 mm*
Uniformly Distributed Action (2 kN/m²) [3, 7]	*0.7*	*0.4*	0.01	0.04	0.07	0.01	0.02	0.04
Concentrated Action (1.8 kN) [4, 8]	*1.0*	*0.4*	0.80	1.90	3.01	0.32	0.76	1.20

Table 3 – Trex Enhance® Basics and Naturals Decking (140 mm x 24 mm)
Deflection Table for Commercial construction [6]

			Joist/support Centres [5]					
			Short-term			Long-term		
Imposed Actions	*Short-term factor (ψ_s)*	*Long-term factor (ψ_l)*	*225 mm*	*300 mm*	*350 mm*	*225 mm*	*300 mm*	*350 mm*
Uniformly Distributed Action (4 kN/m²) [3, 7]	*0.7*	*0.4*	0.03	0.11	0.20	0.02	0.07	0.12
Concentrated Action (1.8 kN) [4, 8]	*1.0*	*0.4*	0.80	1.90	3.01	0.48	1.14	1.81

NOTES:

[1] Uniformly distributed load on a “continuous beam” with two equal spans (Fig.1).
[2] Two equal concentrated loads symmetrically placed on a “continuous beam” with two equal spans (Fig.3).
[3] Uniformly distributed load in one span on a “continuous beam” with two equal spans (Fig.2).
[4] Central concentrated load placed on one span on a “continuous beam” with two equal spans (Fig.4).
[5] Distance between joist/support centres.
[6] Acceptable deflections are subjected to the purpose of the products usage and the acceptance of the maximum deflection is at the discretion of the users of the products as long as the ultimate loads are in compliance with the span tables.
[7] Combination of Actions for Serviceability Limit States - Uniformly Distributed Actions (Short-term and Long-term, respectively): q = SW + ψ_sQ and q = SW + ψ_lQ
[8] Combination of Actions for Serviceability Limit States - Concentrated Actions (Short-term and Long-term, respectively): P = ψ_sQ and P = ψ_lQ
[9] Coefficient used to allow for variability of structural units from test data: k_t = 1.10
[10] Trex® Decking must be supported using a minimum of 35mm bearing length.
[11] This table is intended for use in ambient condition temperatures.
[12] Distributed load is applied linear and uniformly on a single piece of decking 140 mm wide.

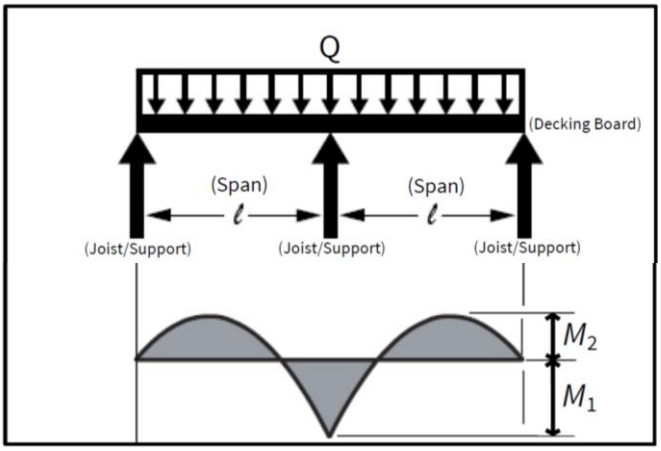

Fig.1 - Continuous Beam - Two Equal Spans - Uniformly Distributed Load: $M_{max} = M_1 = q\ell^2/8$

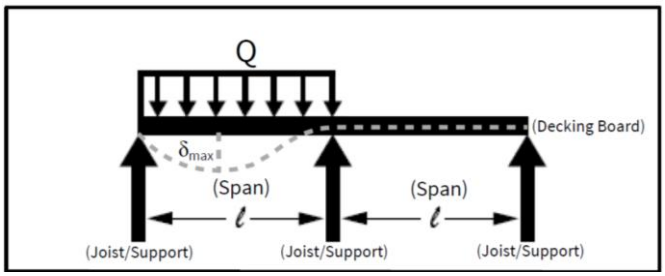

Fig.2 - Continuous Beam - Two Equal Spans - Uniformly Distributed Load in One Span: $\delta_{max} = 0.0092(q\ell^4/EI)$

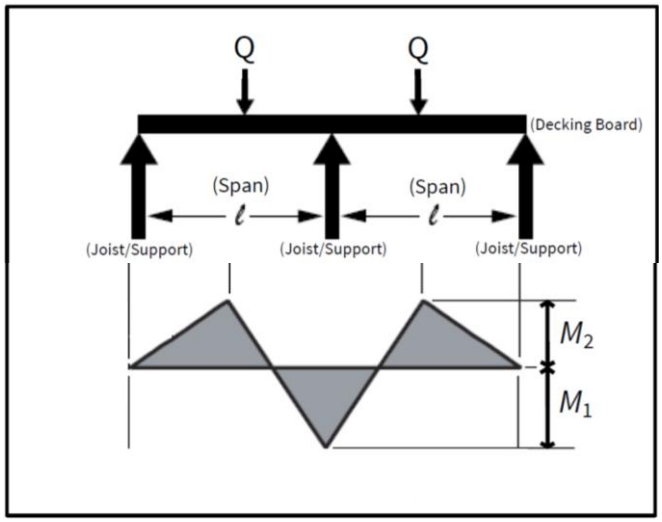

Fig.3 – Cont.Beam - Two Equal Spans - Two Concentrated Loads Symmetrically Placed: $M_{max} = M_1 = 3P\ell/16$

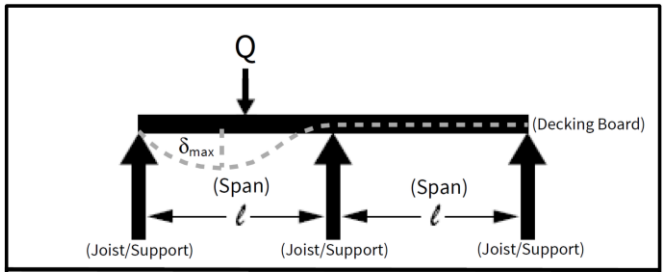

Fig.4 – Cont.Beam - Two Equal Spans – Conc.Load Over One Span Centrally Placed: $\delta_{max} = 0.015(P\ell^3/EI)$