CERTIFICATE OF CONFORMITY

This is to certify that

Building System for Residential Housing

Product Description

The Force 10 Engineered Building System consists of interlocking steel sections (floor, wall and roof).
The Force 10 Floor uses galvanized steel bearers and Zincalume joists. Floor bearers are provided with pre-punched holes for ease of on-site assembly. The steel floor joists nest securely inside the structural bearers and are fastened together. The floor sections come in multiple module lengths. When all bearers and joists have been screwed together the floor sheeting is fixed to the frame.
The Force 10 Wall Panel System is a Structural Insulated Panel (SIP) and it consists of two steel components (stud and nog) that tab-lock together to form a rectangular steel frame. Cellulose fibre cement sheets of 6 mm thickness are bonded to the frame. Panel widths are based on a modular width of 1000 mm and heights of 2435, 2700 and 3000 mm are available in a panel thickness of 76 mm. Panel weights are 58, 64 and 71 kg, respectively.
The Force 10 Roof trusses and purlins are cold-formed steel site manufactured from 1.2 mm 500 MPa coated coil steel. Roof widths are based on 1000 mm modules up to 14 metres. The roofing system consists of lightweight steel sections. All sections nest together to allow mechanical fixing. Trusses fold flat for ease of transport. Purlins are fixed by screws on top of the trusses and allow for the use of a variety of conventional steel roof sheeting.

Product Purpose or Use

A factory manufactured wall, roof and floor system The Force 10 Building System consist of prefabricated, ready to be assembled housing structures which are normally constructed for one and two and three storey construction on stumps pad footings or concrete slabs-on-ground.

Certificate Holder

Force 10 International Pty Ltd
118-128 Magnesium Drive
Crestmead, Qld 4132
P: +61 7 3827 5600
W: www.force10global.com.au

Certification Body

CertMark International Pty Ltd
T/A CertMark New Zealand
ABN: 80 111 217 568
JAS-ANZ Accreditation No. Z4450210AK
PO Box 321 Tuakau 2121
www.CertMark.org

Complies with the Building Code of New Zealand:

1. NZBC Clause B1 Structure- B1.3.1, B1.3.2, B1.3.3 (excluding (f) & (k)) & B1.3.4 (a), (b), (c), (d) & (e) for floor framing, external walls & roof framing.
2. NZBC Clause B2 Durability- B2.3.1 (b) internal SIP panel Insulation
3. NZBC Clause B2 Durability- B2.3.1 (a) floor framing, wall framing & roof framing
4. NZBC Clause B2 Durability- B2.3.2 (a) for floor framing, wall framing & roof framing.
5. NZBC Clause C6 Structural Stability- C6.2 for walls.
6. NZBC Clause E2 External Moisture- E2.3.2, E2.3.3, E2.3.6 & E2.3.7 (b) for floor framing, external walls & roof framing.
7. NZBC Clause F2 Hazardous Building Materials- F2.3.1.
8. NZBC Clause G6 Airborne and Impact Sound- G6.3.1 & G6.3.2.
9. NZBC Clause H1 Energy Efficiency- H1.3.1 (b) for external walls

Subject to the following Conditions & Limitations:

a. This Certificate of conformity must be read in conjunction with the schedule of compliance below.
b. Construction must be in accordance with F10 Design Manual New Zealand V1.3 and Construction Manual Version 8.1.
c. Maximum panel height 3000mm. For wind speeds of 65m/s and above max wall height 2400mm.
d. Maximum building height including roof 10m.
e. Roof pitch of 20 degrees. Variation from this requires individual engineering certification.
f. Steel frame must be constructed in accordance with AS/NZS 4600:2005- Cold-formed steel structures.
g. To meet R_w55 sound insulation criteria the Force 10 Wall System must be constructed in accordance with one of the acceptable configurations outlined in Ron Rumble engineering report 7476tst3b or Q7476-02F01 (rev 0).
h. Applicable only to specific construction of 16mm Supaboard, 5mm impact mat, 22mm particle board, Gyprock resilient mount, 16mm + 13mm Fyrchek MR as detailed in Force 10 Drawing “Impact Floor Resistance” dated 23/02/11.
i. This certification relates only to the NZBC Clauses as contained herein. Consequently any clause not included on this certificate are outside the scope of this Certificate.
j. This certification relates only to the product that is described above, and has to be read, considered and used as a whole document — it may be considered misleading and will be incomplete to be selective.
k. For further information contact the certificate holder

John Thorpe
CertMark International Pty Ltd

28/04/2014
Date of Issue

CMA-CM40031 (Rev3)
Certificate Number
Revised June 2015

Next Review Date: 28/04/2016

- This certificate is issued by an independent certification body accredited by the product certification accreditation body appointed by the Chief Executive of the Ministry of Business, Innovation & Employment (MBIE) under the Building Act 2004. MBIE does not in any way warrant, guarantee, or represent that the building method or product the subject of this certificate conforms to the New Zealand Building Code, nor accept any liability arising out of the use of the building method or product. MBIE disclaims, to the extent permitted by law, all liability (including negligence) for claims of losses, expenses, damages, and costs arising as a result of the use of the building method(s) or product(s) referred to in this certificate
- It is advised to check that this Certificate of Conformity is currently valid and not withdrawn, suspended or superseded by a later issue by referring to the MBIE website, www.mbie.govt.nz
- This certificate may only be reproduced in its entirety.

Schedule of Product Compliance

A General Provisions	
B1- Structure	***B1.3.1-*** *Buildings, building elements and sitework shall have a low probability of rupturing, becoming unstable, losing equilibrium, or collapsing during construction or alteration and throughout their lives.* ***B1.3.2 -*** *Buildings, building elements and site work shall have a low probability of causing loss of amenity through undue deformation, vibratory response, degradation, or other physical characteristics throughout their lives, or during construction or alteration when the building is in use.* **The building system has the capacity to be used as Structural insulated panel used for building cladding, building structure (beams, loadbearing walls, floors and roofs). Reference to the structural properties is available in the certificate holders technical installation manual** ***B1.3.3*** *(excluding (f) & (k)) - Account shall be taken of all physical conditions likely to affect the stability of buildings, building elements and site work, including:* a-Self-weight; b-Imposed gravity loads arising from use; c-Temperature; d-Earth pressure; e-Water and other liquids; g-Snow; h-Wind; i-Fire; j-Impact; l-Reversing or fluctuating effects; m-Differential movement; n-Vegetation; o-Adverse effects due to insufficient separation from other buildings; p-Influence of equipment services, non-structural elements and contents; q-Time dependent effects including creep and shrinkage; and R-Removal of support. **The building system has been evaluated designed to conform to the following elements of B1.3.3 (a) (b) (c) (e) (g) (h) (i) (m) and (q). No evidence of conformity to the effects of (f) Earthquake & (k) Explosion, have been evaluated and this CodeMark™ certificate does not address this requirement. Evaluation by a project design team, as well as a regulatory authority will need to be undertaken to demonstrate conformity to these clauses.** ***B1.3.4*** *Due allowance shall be made for:* *(a) The consequences of failure,* *(b) The intended use of the building,* *(c) Effects of uncertainties resulting from construction activities, or the sequence in which construction activities occur,* *(d) Variation in the properties of materials and the characteristics of the site, and* *(e) Accuracy limitations inherent in the methods used to predict the stability of buildings.* **The building system has been evaluated to conform to B1.3.4**.
B2- Durability	***B2.3.1 –*** *Building elements must, with only normal maintenance, continue to satisfy the performance requirements of this code for the lesser of the specified intended life of the building, if stated, or: (a) The life of the building, being not less than 50 years, if: (i) Those building elements (including floors, walls, and fixings) provide structural stability to the building, or (ii) Those building elements are difficult to access or replace, or (iii) Failure of those building elements to comply with the building code would go undetected during both normal use and maintenance of the building.* **B2.3.1 (a) - not less than 50 years, is applicable to the Internal SIP Panel.** **B2.3.1 (b) - not less than 15 years, is applicable to the floor framing, wall framing & roof framing.** ***B2.3.2 -*** *Individual building elements which are components of a building system and are difficult to access or replace must either: (a) All have the same durability, or (b) Be installed in a manner that permits the replacement of building elements of lesser durability without removing building elements that have greater durability and are not specifically designed for removal and replacement.*

	The product as evaluated has demonstrated compliance with the requirement of clauses of the section B1 as cited above provided the construction of the building system is done in accordance with F10 Design Manual New Zealand V1.3 and Construction Manual Version 8.1.and due consideration is given to conditions and limitations : **b. Maximum panel height 3000mm. For wind speeds of 65m/s and above max wall height 2400mm.** **c. Maximum building height including roof 10m.** **d. Roof pitch of 20 degrees. Variation from this requires individual engineering certification.** **e. Steel frame must be constructed in accordance with AS/NZS 4600:2005- Cold-formed steel structures**
C- Protection from Fire	*C6.2 Structural systems in buildings that are necessary for structural stability in fire must be designed and constructed so that they remain stable during fire and after fire when required to protect other property taking into account: (a) the fire severity, (b) any automatic fire sprinkler systems within the buildings, (c) any other active fire safety systems that affect the fire severity and its impact on structural stability, and (d) the likelihood and consequence of failure of any fire safety systems that affect the fire severity and its impact on structural stability.* **The product as evaluated has demonstrated the ability to achieve various group ratings according to the configurations of the walls**
D1- Access Routes **D2- Mechanical Installations for Access**	The product does not relate to Section D and as such has not been evaluated against its provisions
E1- Surface Water	The product does not relate to Section E1 – Surface Water and as such has not been evaluated against its provisions
E2- External Moisture	*E2.3.2 - Roofs and exterior walls must prevent the penetration of water that could cause undue dampness, damage to building elements, or both.* *E2.3.3 - Walls, floors, and structural elements in contact with, or in close proximity to, the ground must not absorb or transmit moisture in quantities that could cause undue dampness, damage to building elements, or both.* *E2.3.6 – Excess moisture present at the completion of construction must be capable of being dissipated without permanent damage to building elements.* *E2.3.7 (b) – Building elements must be constructed in a way that makes due allowance for the following: (b) the effects of uncertainties resulting from construction or from the sequence in which different aspects of construction occur.* **The product as evaluated has demonstrated compliance with the requirement of E2.3.2, E2.3.3 E2.3.6 and E2.3.7 (b) provided the construction of the building system is done in accordance with F10 Design Manual New Zealand V1.3 and Construction Manual Version 8.1. and due consideration is given to conditions and limitations :** **(f) To meet R_w55 sound insulation criteria the Force 10 Wall System must be constructed in accordance with one of the acceptable configurations outlined in Ron Rumble engineering report 7476tst3b or Q7476-02F01 (rev 0).** **(g) Applicable only to specific construction of 16mm Supaboard, 5mm impact mat, 22mm particle board, Gyprock resilient mount, 16mm + 13mm Fyrchek MR as detailed in Force 10 Drawing "Impact Floor Resistance" dated 23/02/11.**
E3- Internal Moisture	The product does not relate to Section E3 and as such has not been evaluated against its provisions
F1- Hazardous Agents on Site	The product does not relate to Section F1 and as such has not been evaluated against its provisions
F2- Hazardous Building Materials	***F2.3.1*** *The quantities of gas, liquid, radiation or solid particles emitted by materials used in the construction of buildings, shall not give rise to harmful concentrations at the surface of the material where the material is exposed, or in the atmosphere of any space.* **The product as evaluated, demonstrates that it does not present a health hazard to people. As such conformity with Performance F2.3.1 Hazardous Building Materials is established**
F3- Hazardous Substances & Processes **F4- Safety from Falling** **F5- Construction & Demolition Hazards** **F6- Visibility in Escape Routes** **F7- Warning Systems** **F8- Signs**	The product does not relate to Section F3 – F8 and as such has not been evaluated against its provisions
G1- Personal Hygiene **G2- Laundering**	The product does not relate to Section G1 – G5 and as such has not been evaluated against its provisions

G3- Food Preparation & Prevention of Contamination	
G4- Ventilation	
G5- Interior Environment	
G6- Airborne and Impact Sound	***G6.3.1*** *– The Sound Transmission Class of walls, floors and ceilings, shall be no less than 55.* ***G6.3.2*** *– The Impact Insulation Class of floors shall be no less than 55.* **The product as evaluated has demonstrated compliance with the requirement of G6.3.1 and G6.3.2 provided the construction of the building system is done in accordance with F10 Design Manual New Zealand V1.3 and Construction Manual Version 8.1.**
G7- Natural Light	The product does not relate to Section G7 – G15 and as such has not been evaluated against its provisions
G8- Artificial Light	
G9- Electricity	
G10- Piped Services	
G11- Gas as an Energy Source	
G12- Water Supplies	
G13- Foul Water	
G14- Industrial Liquid Waste	
G15- Solid Waste	
H1- Energy Efficiency	***H1.3.1*** *The building envelope enclosing spaces where the temperature or humidity (or both) are modified must be constructed to—* *(a) provide adequate thermal resistance; and* *(b) Limit uncontrollable airflow.* **The product as evaluated has demonstrated compliance with the requirement of H1.3.1 (a) and (b) provided the construction of the building system is done in accordance with F10 Design Manual New Zealand V1.3 and Construction Manual Version 8.1**

Conditions of Certification

a. Relates only to the product/system that is named and described on the front page
b. Is issued only to the company, firm, organisation or person named on the front page — no other company, firm, organisation or person may hold or claim that this Certificate has been issued to them.
c. Has to be read, considered and used as a whole document — it may be misleading and will be incomplete to be selective
d. Compliance of this product with the requirements listed herein is monitored by CertMark International.

End of Schedule