CLAIMS

[Document Type]

1. A beam joining structure comprising:

a support member;

a beam which has one end side in a member axis direction attached to the support member and which is supported by the support member; and

a reinforcing member having a tip end disposed in a gap formed between the support member and the beam,

wherein the reinforcing member is disposed in the gap formed between the support member and the beam,

wherein the reinforcing member comprises:

a main body portion which has a first contact surface in contact with the support member and a second contact surface in contact with an end surface of the beam facing the support member, and is formed so as to cause a separation distance between the first contact surface and the second contact surface in the member axis direction of the beam to decrease toward the tip end; and

a separation prevention mechanism which is configured to limit movement of the main body portion by being locked to at least one of the support member and the beam,

wherein the separation prevention mechanism is constituted by a plurality of stages of projections protruding from at least one of the first contact surface and the second contact surface, and

wherein the plurality of stages of projections are formed so as to cause, in a state where the tip end of the reinforcing member is disposed in the gap, an inclination angle ϕ (rad) between a plane including ridges of the projections adjacent to each other and a plane

perpendicular to the member axis direction of the beam to satisfy Formula (1) or Formula (2).

$\phi \leq wl^3 / 24EI \ldots (1)$

E: a Young's modulus (N/mm^2) of the beam

I: a second moment of area (mm^4) of the beam

w: an equally distributed load (kN/m) due to a fixed load supported by the beam

l: a length (mm) of the beam

$\phi \geq \Delta g_b / (h - t_f) \ldots (2)$

Δg_b: an assumed value (mm) of an error of the gap in the member axis direction of the beam

h: a height (mm) of the reinforcing member in a vertical direction

t_f: a plate thickness of a lower flange of the beam in the vertical direction

2. The beam joining structure according to claim 1,

wherein the support member is a primary beam supported by a column,

the beam is a secondary beam supported by the support member, and

the support member and the beam are both H-section steels and have same cross-sectional height.

3. The beam joining structure according to claim 1 or 2, further comprising:

a joint member which joins the support member and the beam to each other in a semi-rigid manner or a pinning manner,

wherein the reinforcing member is configured to transmit a compressive stress to the support member, the compressive stress being generated from the beam toward the support member.

4. The beam joining structure according to any one of claims 1 to 3, wherein

the first contact surface extends in a direction perpendicular to the member axis direction of the beam,

the second contact surface extends in a direction intersecting the first contact surface, and

the plurality of stages of projections protrude from the second contact surface.