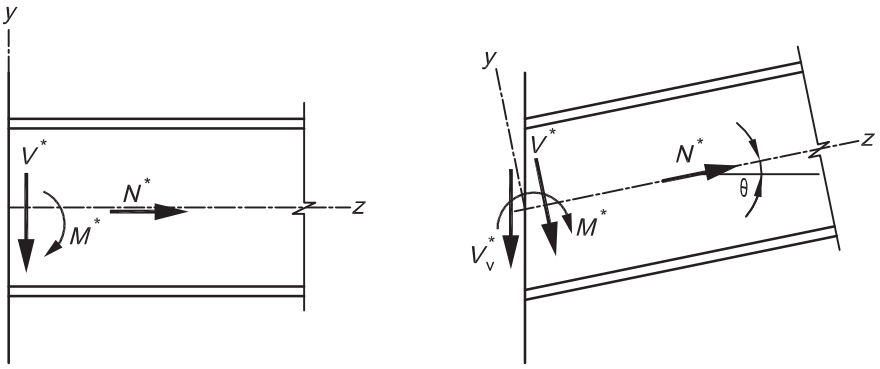
7 CALCULATION OF DESIGN ACTIONS



Configuration 1 Configuration 2

FIGURE 10 DESIGN ACTIONS ON BEAM AT COLUMN

The design action effects at the connection can be determined from either:

(a) elastic analysis (Clause 4.4 of AS 4100) which could in turn be either—

(i) a first order elastic analysis with moment amplification (Clause 4.4.2 of AS 4100);

or

(ii) a second order elastic analysis (Appendix E of AS 4100)

or

(b) plastic analysis (Clause 4.5 of AS 4100).

Applied actions at a connection are assumed to be those shown in Figure 10—

a design bending moment about the section x-axis M^*

a design shear force parallel to the section y-axis V^*

a design axial force parallel to the member z-axis N^*

Simplified method

The most common assumption made about the distribution of forces in the beam is that—

- bending moment is resisted entirely by the beam flanges;
- vertical shear is resisted entirely by the beam web;
- any axial load in the beam is shared between the flanges;

The above assumptions are suitable for both design of the welds and the assessment of the column stiffening requirements. These assumptions are often accompanied by the requirement that the flange welds be full penetration butt welds, although this is not a requirement of the recommended design model of Section 8.

The above assumptions are justified on the basis of the available evidence from tests and the satisfactory behaviour of connections in service.

Based on the above assumptions, the flange forces are obtained using the following methodology.

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Design Guide 6: Seated connections
Design Guide 10: Bolted moment end plate beam splice connections
Design Guide 12: Bolted end plate beam to column moment connections
Design Guide 13: Splice connections

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