

Guidance on intermediate Floors in dwellings

Introduction

Part B - Fire Safety was revised in 2017 to include provisions specifically for dwelling houses. Technical Guidance Document B Volume 2 - Dwelling houses (TGD B - Fire Safety Volume 2 Dwelling houses 2017) was published in 2017 to support Part B and to give guidance on prima facie compliance with the regulations.

Where buildings are designed in accordance with the Eurocodes, the fire performance must be demonstrated in accordance with the European test methods.

As floors are a structural element and their design is to the Eurocodes so the fire resistance of the floors must be proven by test to the European Test method, EN 1365 (series) *Fire resistance tests for load bearing elements*.

Floors should have a fire resistance appropriate to their use and must be considered against various criteria in relation to their fire resistance for standard fire exposure. These are:

- R – mechanical resistance i.e. an ability to maintain loadbearing capacity,
- E – integrity i.e. an ability to maintain the integrity of the structure,
- I – insulation i.e. an ability to provide insulation from high temperatures.

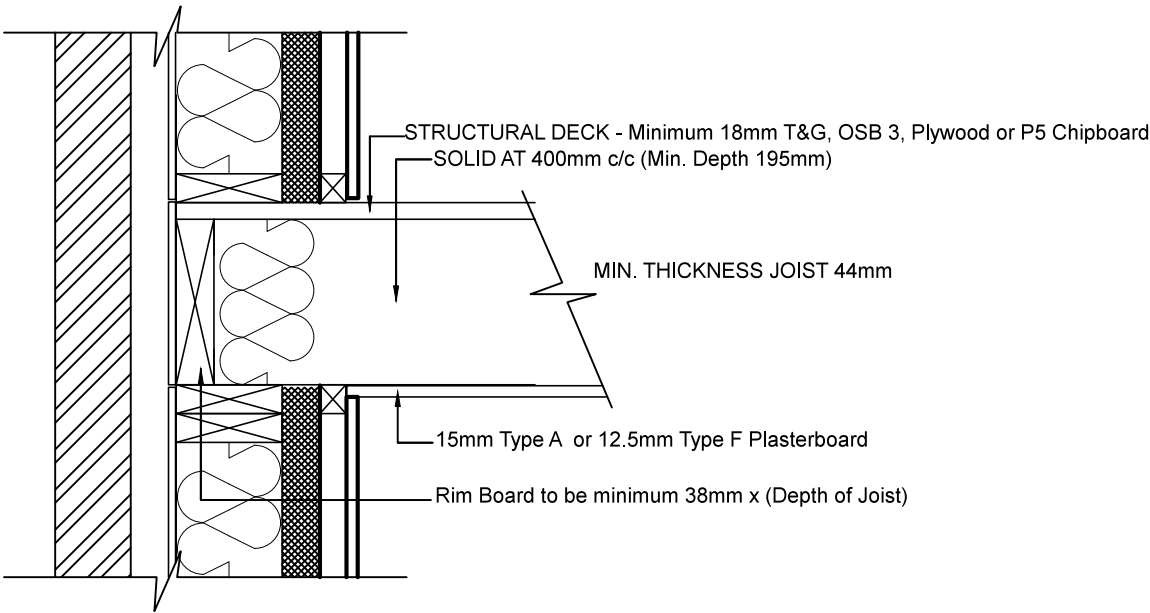
Therefore the fire resistance of any such floor is a result of the combination of the materials used, including their thickness, spacing and fixing of the materials, together with the workmanship employed during assembly.

Fire tests on floor constructions using different type joists - solid, metal web and timber web, have been carried out by the Truss Rafter association, Irish Timber Frame Manufacturers Association and Gypsum Industry in accredited laboratories in accordance with the appropriate European Test method for load bearing floors. Constructions which have met the required fire resistance for floors in dwelling houses (REI 30), when loaded in accordance with the design imposed load of 1.5 kN/m^2 (UDL) by fire test are detailed below.

Floors with open void space

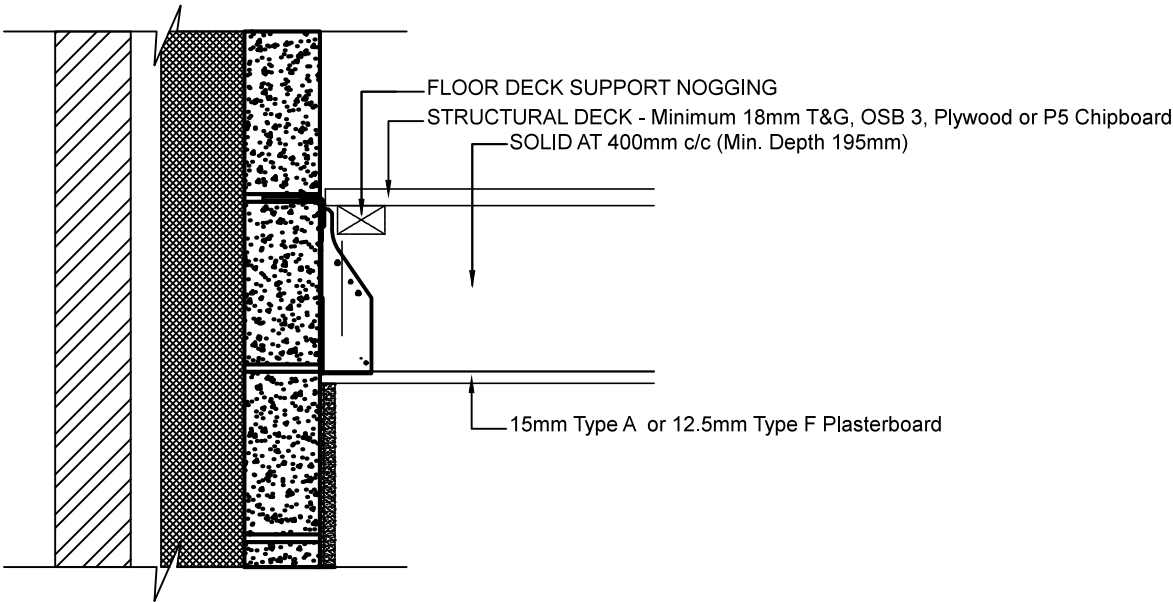
Where floors are constructed to have open void space for the provision of services by the use of “Engineered Joists” or counter battens below traditional solid joists the risk of fire spread within the floor void is greatly increased. Penetrations, such as down-lighters, soil vent pipes or ventilation duct heads, in the plasterboard create vulnerability in the ceiling and as such must be fire stopped by the use of fire collars, fire hoods or fire rated products.

Solid Joists - External Wall Junction



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Figure 1(a) Solid Joists @ 400mm c/c

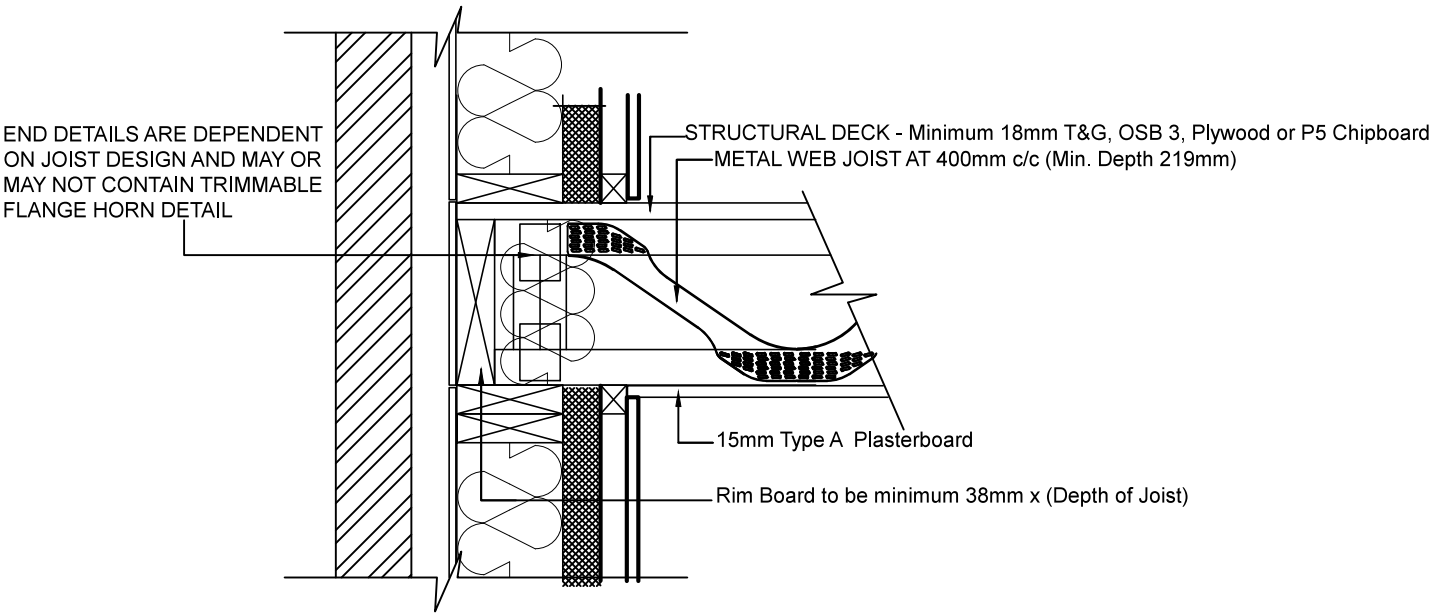


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Figure 1(b) Solid Joists @ 400mm c/c

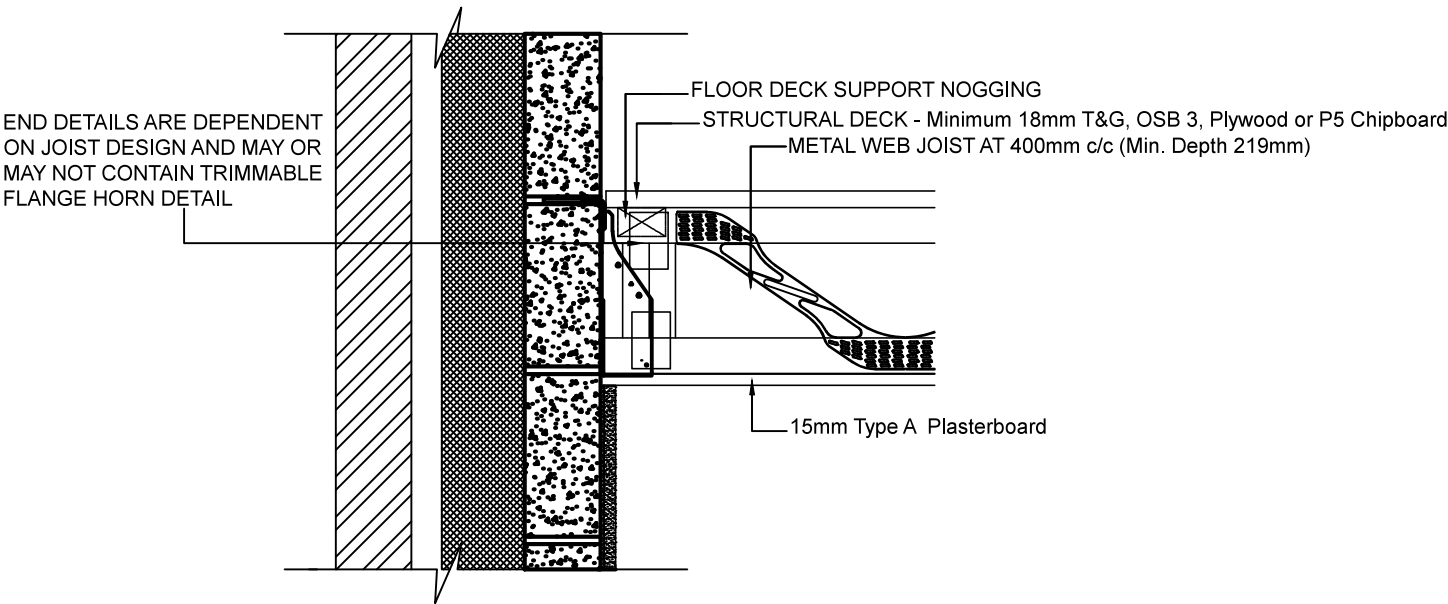
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Metal Web Joists - External Wall Junction



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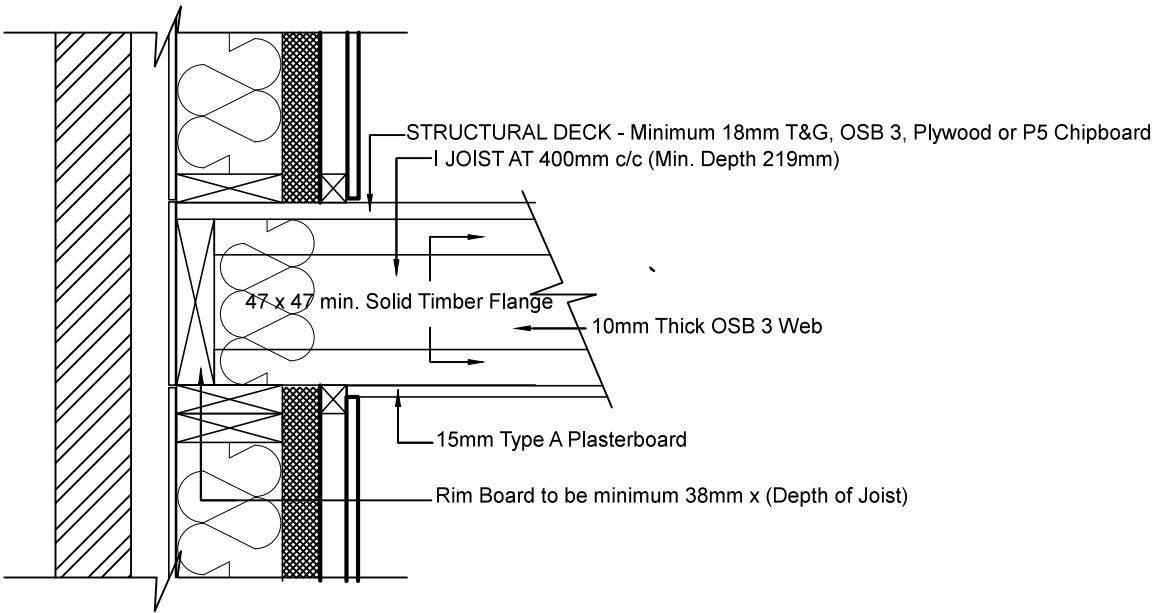
Figure 2(a) Metal Web Joists @ 400mm c/c



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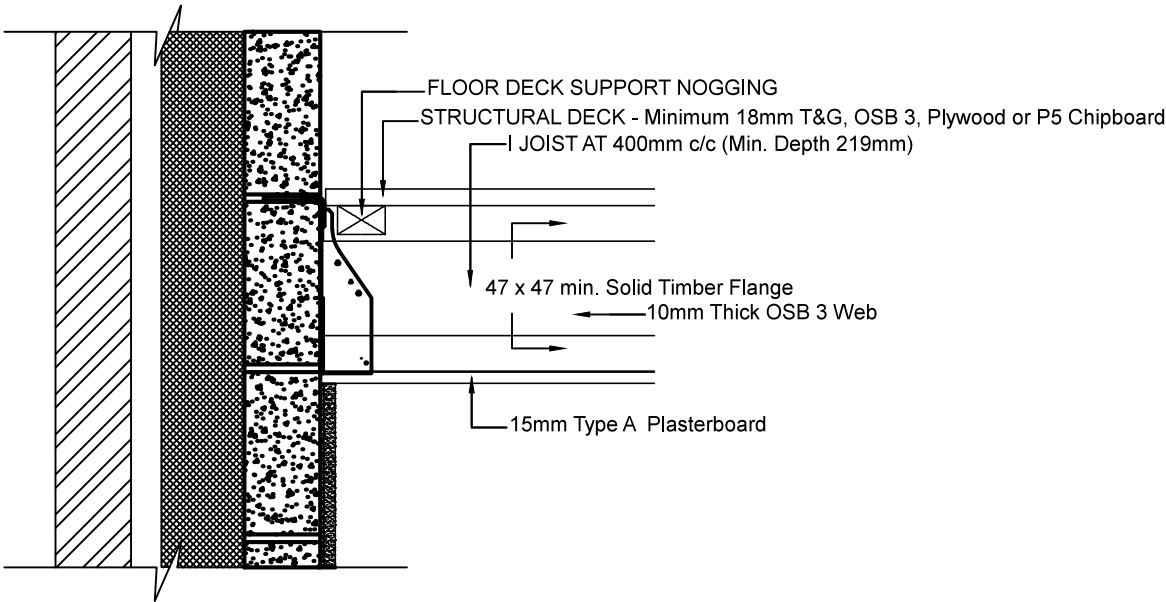
Figure 2(b) Metal Web Joists @ 400mm c/c

I Joists - External Wall Junction



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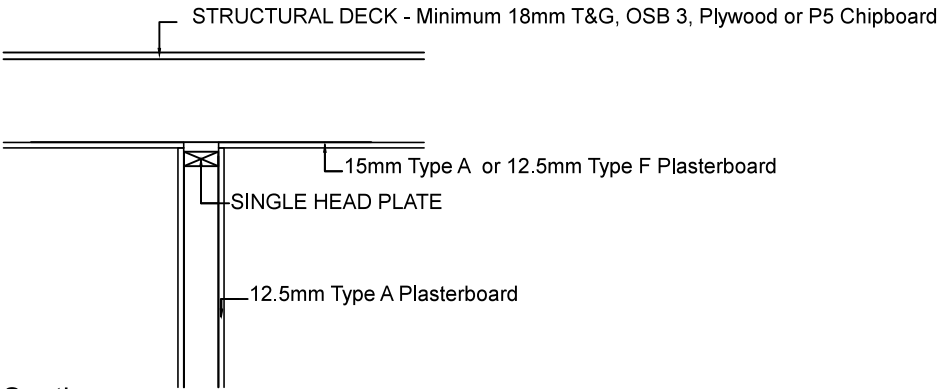
Figure 3(a) I Joists @ 400mm c/c



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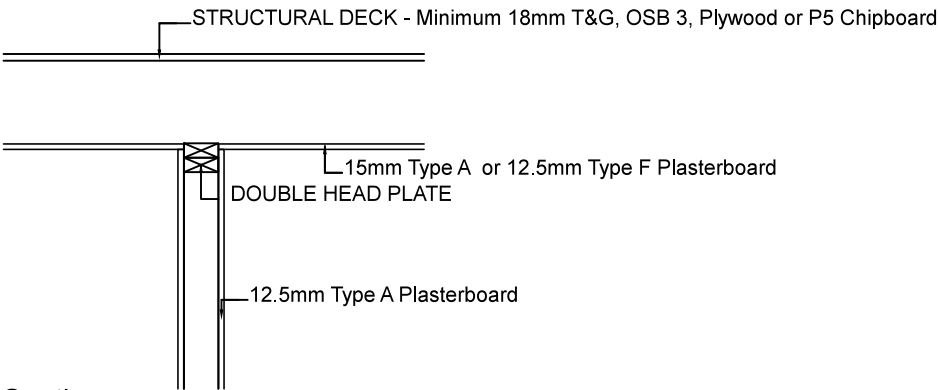
Figure 3(b) I Joists @ 400mm c/c

Solid Joists - Internal Studs



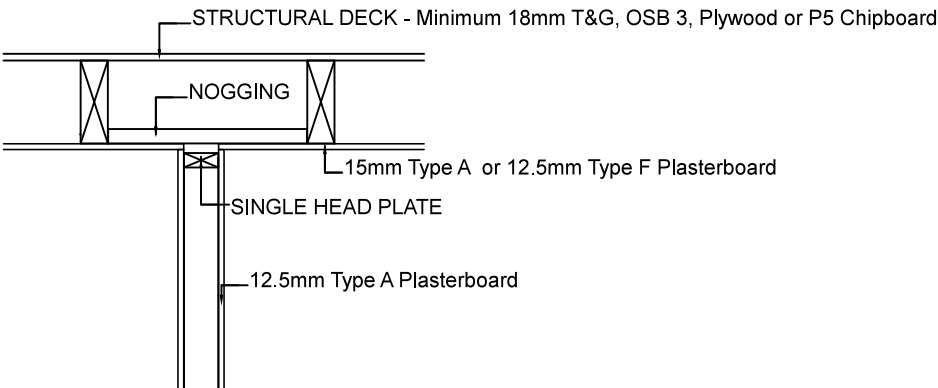
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Figure 4(a) Non Load Bearing



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Figure 4(b) Load Bearing



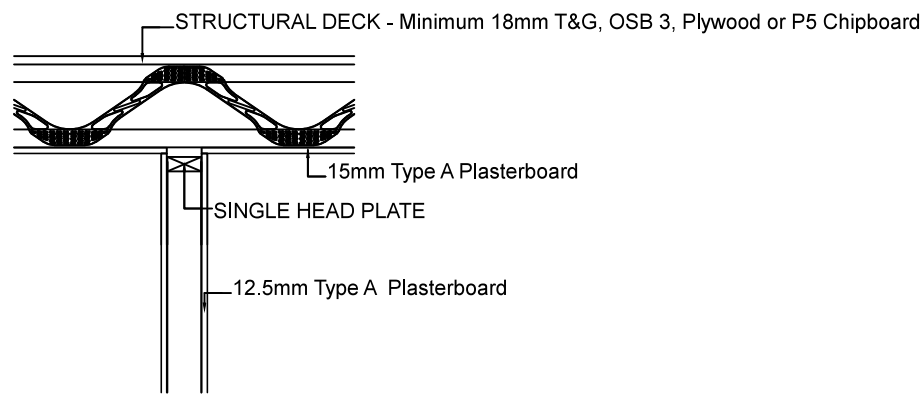
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Figure 4(c) Non Load Bearing

Parallel to Joist

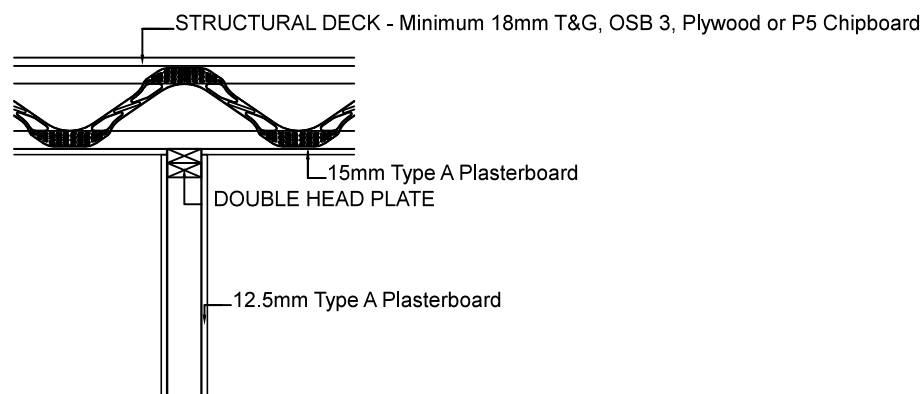
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Metal Web Joists - Internal Studs



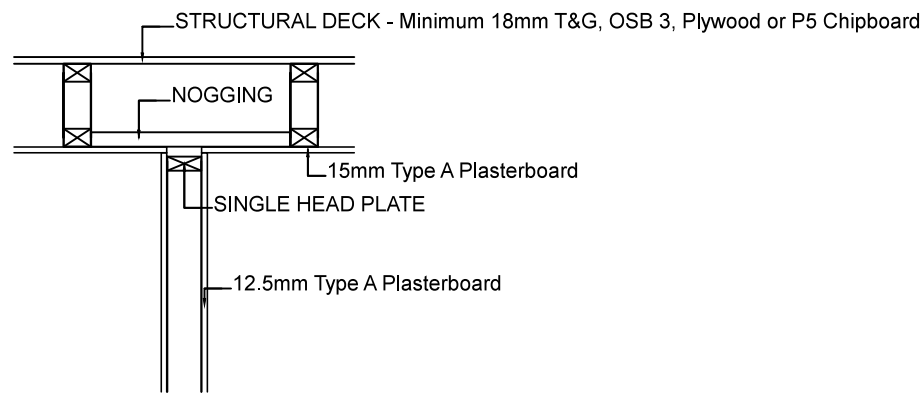
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Figure 5(a) Non Load Bearing



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Figure 5(b) Load Bearing

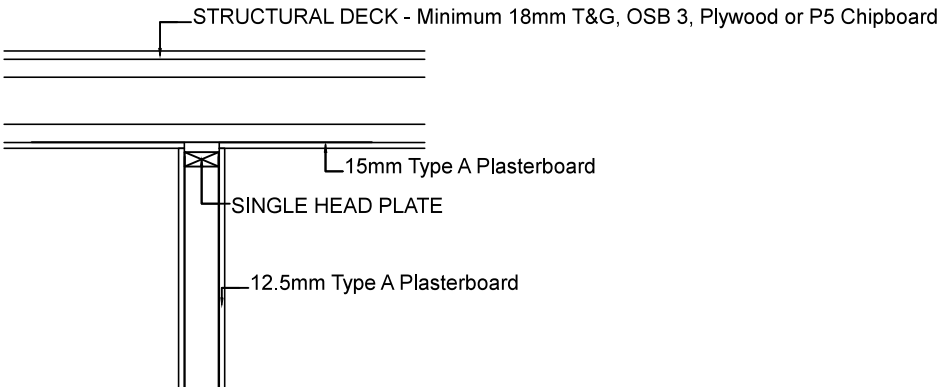


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Figure 5(c) Non Load Bearing
Parallel to Joist

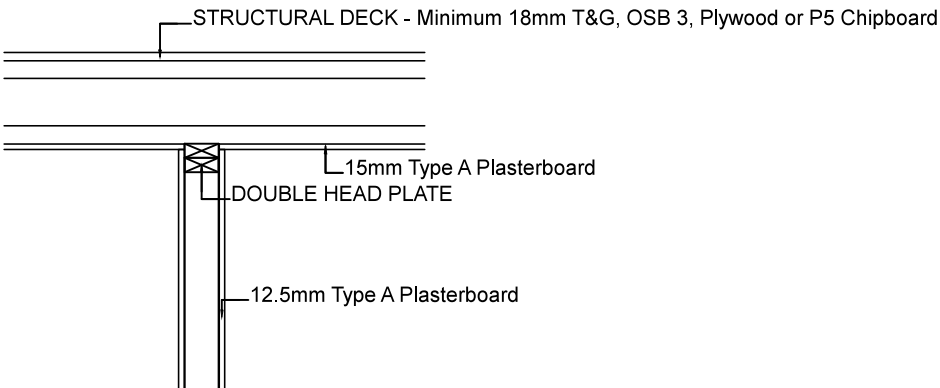
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I Joists - Internal Studs



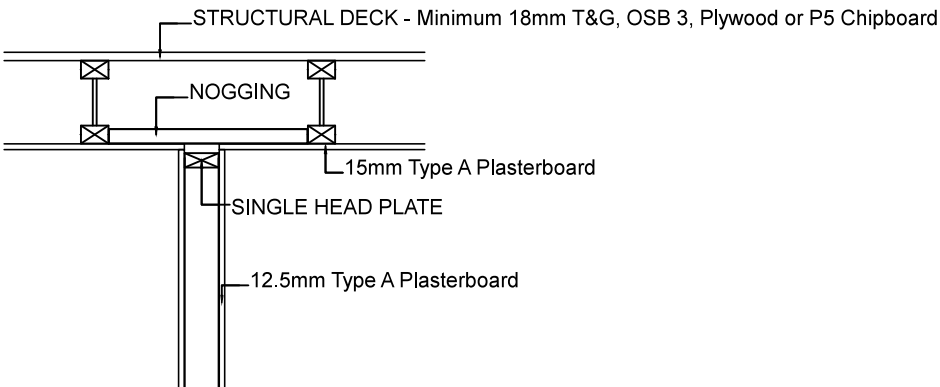
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Figure 6(a) Non Load Bearing



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Figure 6(b) Load Bearing



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**Figure 6(c) Non Load Bearing
Parallel to Joist**

NOT TO SCALE