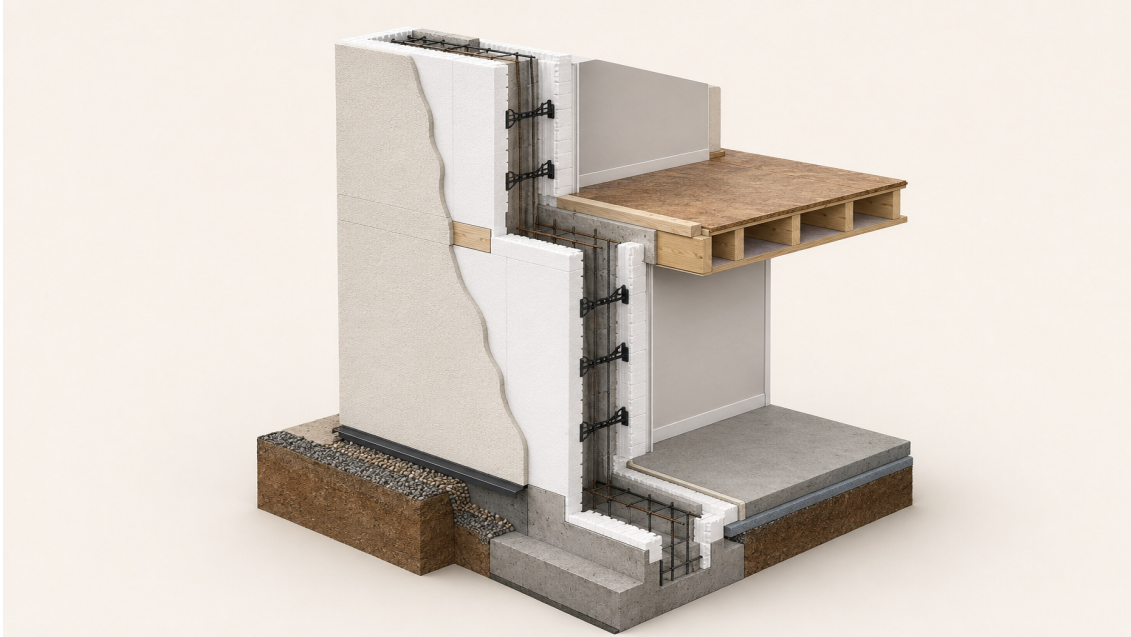


HOUSEPLANSDIRECT TECHNICAL GUIDES

ICF WALLS EXPLAINED

A complete guide to insulated concrete formwork for low-rise housing



Insulated concrete formwork wall with its structural core and principal junctions exposed.

NINE-PART PUBLICATION EDITION

Principles · Systems · Performance · Anatomy · Concrete · Finishes · Fire · Inspection

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About this guide

This guide explains insulated concrete formwork (ICF) walls for low-rise housing in England. It is intended for clients, designers and site teams who need to understand system selection, structure, thermal and moisture performance, reinforcement, concrete placement, services, finishes, fire protection and inspection. Proprietary system information, structural calculations, certified build-ups and Building Control requirements always take precedence.

SCOPE ICF is a proprietary structural and envelope system. Core width, reinforcement, concrete, forms, bracing, finishes, fixings and junctions require coordinated project information. Figures are explanatory and must not be scaled.

Part 1 – Introduction: What Is an ICF Wall?

Permanent insulation forms surrounding a reinforced concrete core

ICF uses lightweight hollow insulation blocks or panels assembled as permanent formwork and filled with concrete. The retained forms establish wall geometry, contain the fresh concrete and provide continuous insulation. The hardened concrete core carries structural loads; finishes, linings, seals and junction details complete the weather, airtightness, moisture and fire strategy.

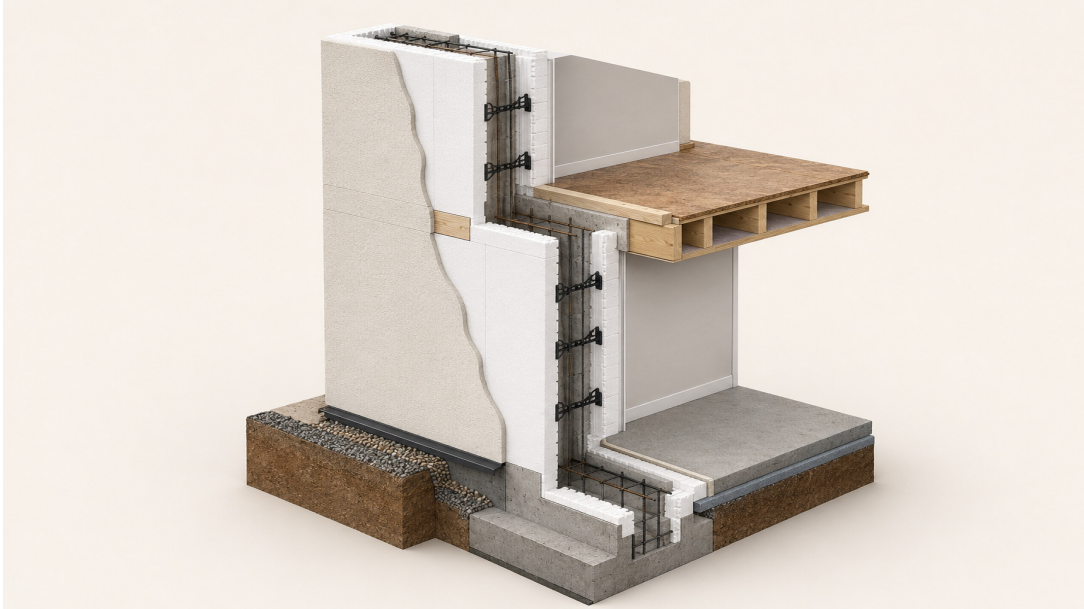


Figure 1 – Typical ICF wall, foundation and floor construction.

1.1 Principal components

Component	Primary role
Insulation forms	Contain fresh concrete and remain as continuous thermal insulation.
Webs / connectors	Maintain core width, support bars and may provide declared fixing zones.
Reinforcement	Provides designed strength, anchorage, continuity and crack control.
Concrete core	Carries structural loads and can form a robust air-control layer.
Finishes and linings	Provide weather, fire, acoustic, impact and decorative performance.

1.2 Benefits and limitations

- Continuous insulation can deliver low U-values and well-controlled thermal junctions.
- The concrete core provides strength, robustness, airtightness potential and useful acoustic mass.
- Lightweight forms can be erected rapidly, but alignment, bracing, reinforcement and concrete placement require specialist competence.
- Defects can be concealed within the core, so inspection before and during every pour is essential.

KEY PRINCIPLE Straight insulation forms do not prove a sound wall. Performance depends on a continuous, correctly reinforced and well-consolidated concrete core plus complete junctions and protective layers.