INSPECTIONS AND COMPLIANCE CHALLENGES

Commencement Notice and Construction Stage

Mariola Heksel

MSc MIEI

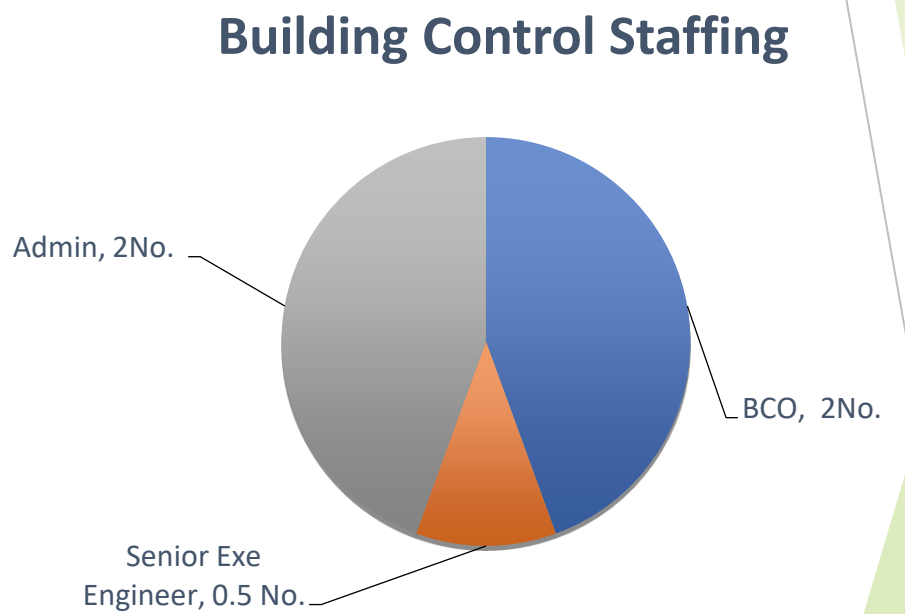
Acting Executive Engineer

Building Control Section Kildare County Council

Kildare County Council Building Control (BC) Structure:

Building Control Staff 4.5 Full time equivalent (Fte)

- ½ (fte) Senior Executive Engineer
- 2 (fte) Building Control Officers (BCO)
- 2 (fte) Administrative Staff members



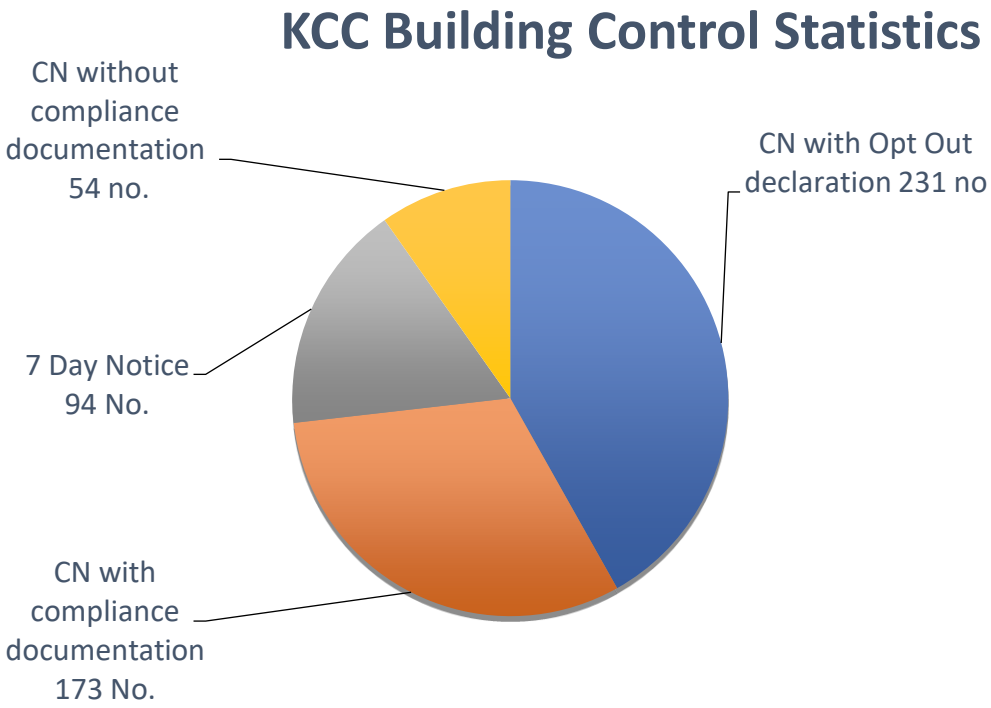
- Time allocations: week on BCMS or Site

- While managing the BCMS activities (notices, applications, CCC, DACs),
- We also deal with day-to-day queries and complaints which we received.

Kildare County Council Building Control submissions and inspections in 2022

Total Number of valid submission 2022:

- Commencement Notice - **554**
- Certificate of Compliance on Completion – **736**
- Disability Access Certificate - **216**



Number of inspections in 2022 on new buildings – **990**

NOAC – **53.11%**

Assessing Commencement Notices in accordance with Article 10 for validation:

Check List:

- CN Date
- Statutory Document
- Project Particulars
- Online Assessment
- Fee amount correct
- Schedule of Documents
- Preliminary Inspection Plan if applicable
- Site Location Map
- Construction Drawings

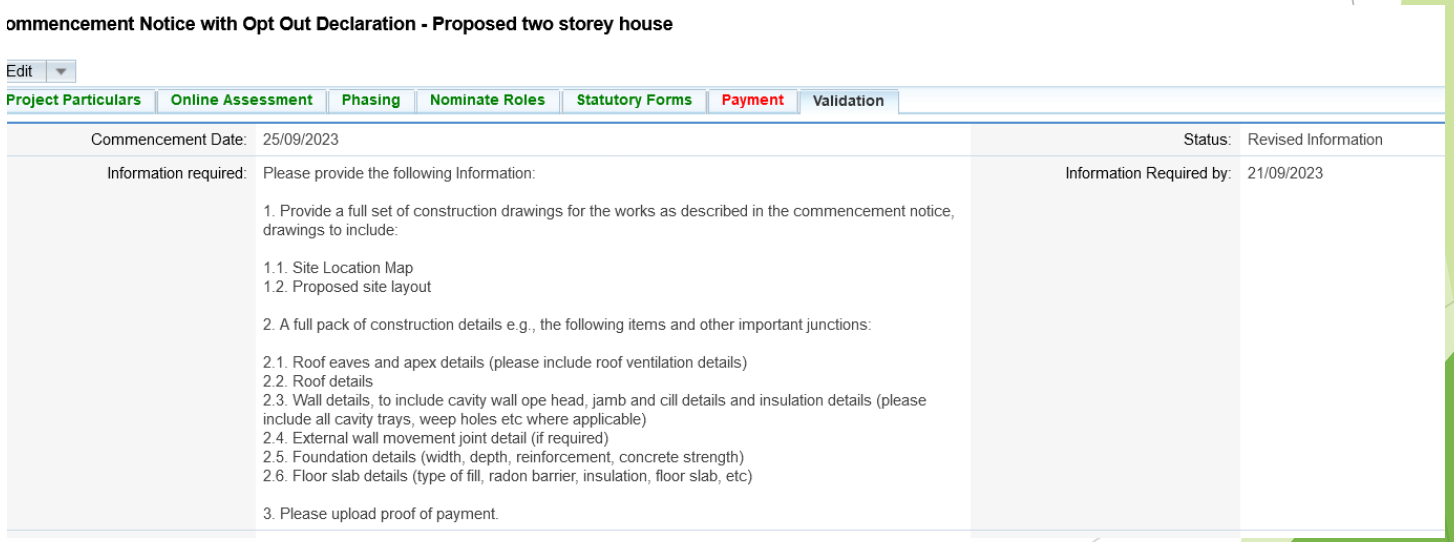
- Desktop technically assessment completed in 2022 and 2023- **498**
- Number of Section 11 requested following desktop technical assessment in 2022 and 2023 – **45**

Common Additional information request at validation stage

1. CN statutory forms are not correct (date, signature, description).

2. Inadequate design details or calculations to show compliance with Building Regulations

- Part A
- Part B
- Part C
- Part F
- Part L and ACD



ommencement Notice with Opt Out Declaration - Proposed two storey house

Edit

Project Particulars | Online Assessment | Phasing | Nominate Roles | Statutory Forms | Payment | Validation

Commencement Date:	25/09/2023	Status:	Revised Information
Information required:	Please provide the following Information: 1. Provide a full set of construction drawings for the works as described in the commencement notice, drawings to include: 1.1. Site Location Map 1.2. Proposed site layout 2. A full pack of construction details e.g., the following items and other important junctions: 2.1. Roof eaves and apex details (please include roof ventilation details) 2.2. Roof details 2.3. Wall details, to include cavity wall ope head, jamb and cill details and insulation details (please include all cavity trays, weep holes etc where applicable) 2.4. External wall movement joint detail (if required) 2.5. Foundation details (width, depth, reinforcement, concrete strength) 2.6. Floor slab details (type of fill, radon barrier, insulation, floor slab, etc) 3. Please upload proof of payment.	Information Required by:	21/09/2023

Inadequate design information

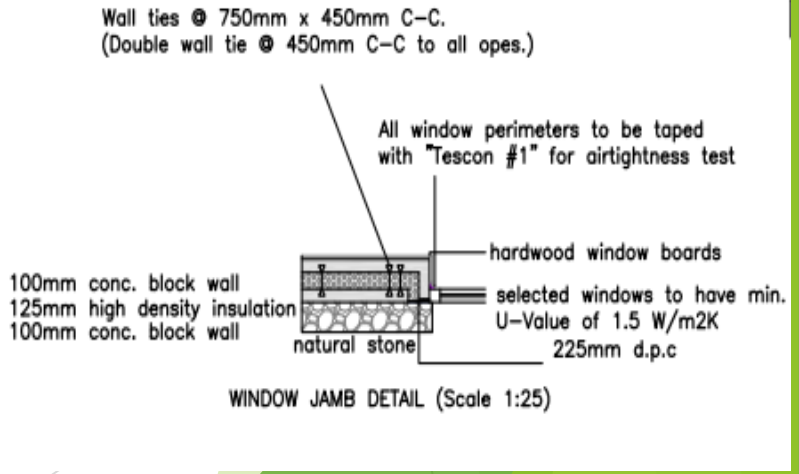
Sample Revised information request for Part A Building Regulation

Walls: (Full Fill Insulation)

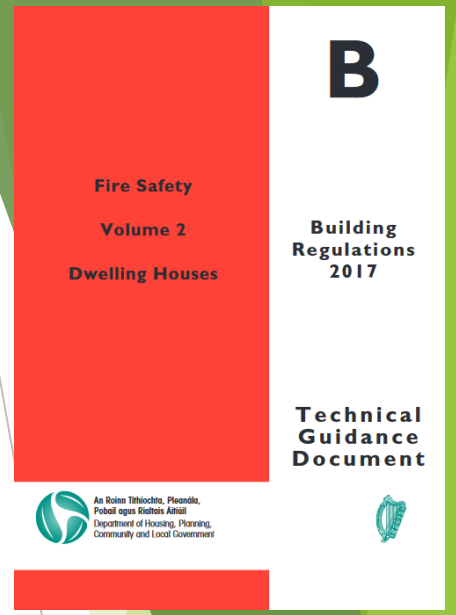
- Please review the Acceptable Construction Details for Thermal, Vapour and Airtightness requirements for all major external wall construction methods.
- Please take note of a few key points to note:

a. Standard wall ties at 450mm Vertical and Horizontal centres
b. Corner DPC
c. Hockey Stick & Meter Box Board details
d. Doubling up of wall ties around opening (450 c/c vertical) and @ roof verges.
e. Stepped cavity trays, weep holes in both brickwork and render finishes.

- Please call up wall ties, note, for 'Standard' wall ties (+-900N), SR 325 would require these to be installed at 4.9 per m2, 450mm Vertical and *450mm Horizontal centres.
- Stepped cavity trays, weep holes in both brickwork and render finishes @ 1000mm centres as per SR 325 5.5.5.2
- Render to SR 325 (Design Item)
- Mortar to SR 325 (Design Item)



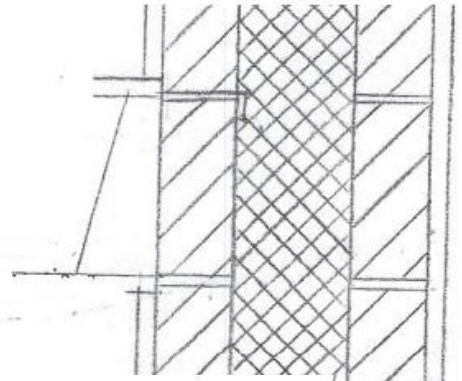
Inadequate design information



Sample Revised information request for Part B Building Regulation

First Floor:

- Where timber floors are proposed, please see 'Supplementary Guidance to Technical Guidance Document B (Fire Safety) Volume 2 - Dwelling Houses'.
- Note, all penetrations into floor void require fire stopping, even services going into the floor void through the head of a timber stud wall and through plasterboard (light fixtures etc).
  a. Below 40mm dia, use intumescent mastic.
  b. Above 40mm dia, fire collar or trap wrap required. Note, all collars and wraps have to be restrained to allow the fire stop to collapse inwards on itself.
  c. All to be installed to the manufacturer's recommendation.



FIRST FLOOR

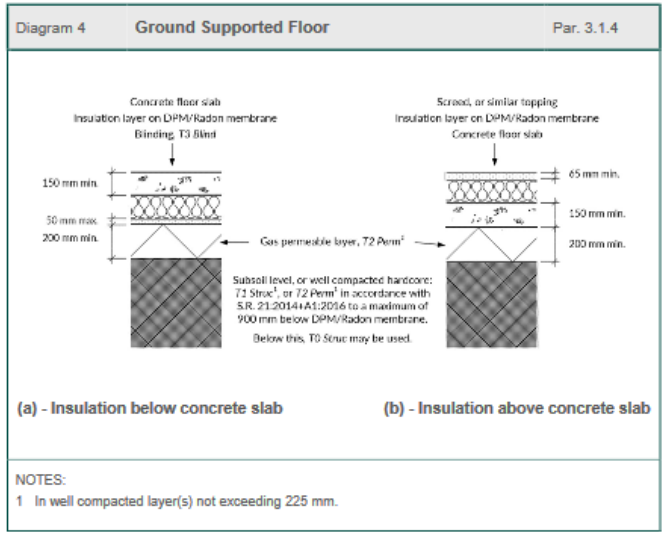
Structural grade C16 225 x 44mm timber floor joists @ 400mm ccs including associated timber bridging, hangers, straps and connections
150mm thick Isover accoustic roll insulation installed between floor joists throughout

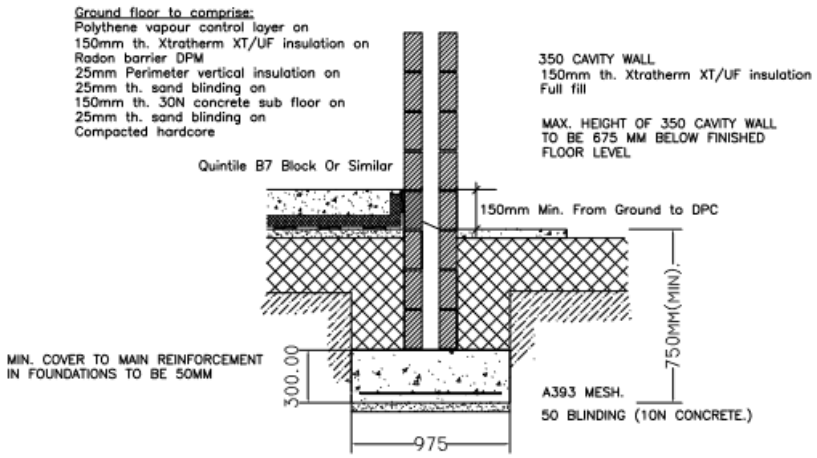
Inadequate design information

Sample Revised information request for Part C Building Regulation

Foundation:

- Fill below ground as per TGD C Diagram 4, Par 3.1.4 (TDG C)
- Note, fill near rising walls to be as per point noted above, i.e. Under footpaths.
- Ensure radon membrane is installed to the manufactures Irish Agrement Cert and CP 102.
- Rebar cover to foundation which are poured onto the natural ground is 75mm.
- Blockwork: Rising Blockwork to comply with *I.S. EN 771-3.*Strength to Engineers design





Inadequate design information

Sample Revised information request for Part F Building Regulation.

Dwelling Ventilation:

If natural, please review Table 3 in TGD F for ventilation requirements for rooms, however, individual vents in each room may not be enough for 'Whole House Ventilation'. Please review Example 4 in TGD F for a naturally vented house. Remember, Minimum room provisions shown below might not be enough for the whole house design.

Centralized Continuous Mechanical Extract Ventilation & Centralized Mechanical Ventilation with Heat Recovery require design input before installation takes place.

Note, critically for Mechanically Vents Dwellings, on completion, the ventilation system has is required be tested and commissioned by a competent independent third party and is deemed to validate that a ventilation system has been installed.

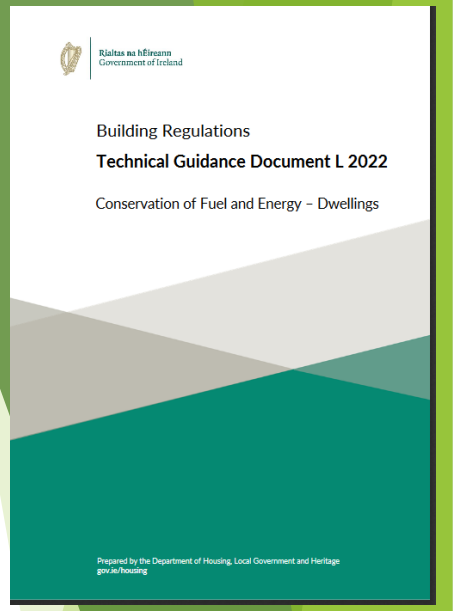
Table 3: Basic ventilation provision using background ventilators and specific provision for extract and purge ventilation for 5m³/hr/m²> air permeability > 3m³/hr/m²

Room or Space	General Ventilation: Minimum equivalent area of background ventilator[a] (mm²)	Extract ventilation: Extract fan[b] - Minimum intermittent extract rate (l/s)[h]	Purge ventilation: Opening window or external door - Minimum provision[g]
Habitable Room	7000[c,f]	-	1/20th of room floor area
Kitchen	3500[c,d,f]	60l/s generally 30l/s if immediately adjacent to cooker (e.g. cooker-hood not recirculating)	Window opening section (no size requirement)[d]
Utility Room	3500[c,d]	30 l/s	Window opening section (no size requirement)[d]
Bathroom	3500[c,d]	15 l/s	Window opening section (no size requirement)[d]
Sanitary Accommodation (no bath or shower)	3500[c,d]	6 l/s[e]	Window opening section (no size requirement)[d]

Notes:
(a) See paragraph 1.2.4.1 re: total equivalent area for all background ventilators.
(b) See paragraphs 1.2.4.9 and 1.2.4.10 re alternative of passive stack ventilation or continuous room ventilation with heat recovery.
(c) See paragraph 1.2.4.12 re the extent and location of background ventilation where there is only a single exposed façade and cross-ventilation is not possible.
(d) See paragraph 1.2.4.3 re ventilation provision where the provision of background ventilation and purge ventilation is not possible, e.g. when there is no external wall.
(e) As an alternative, the opening window section provided for purge ventilation may also be relied on for extract ventilation.
(f) See paragraphs 1.2.4.13 to 1.2.4.15 re: provision for ventilation of habitable rooms through other rooms or into courtyards.
(g) Opening window or external door minimum provisions given in this table are for ventilation purposes. Other requirements apply to the provision of openings for windows or external doors for example escape in case of a fire. Refer to Part B / TGD B for further guidance.
(h) The performance flowrates for intermittent extract fans should be tested in accordance with I.S. EN 13141-4:2011, Cooker Hood performance flowrates should be measured in accordance with I.S. EN 13141-3:2017.

Inadequate design information

Sample Revised information request for Part L Building Regulation and ACD.



seai SUSTAINABLE ENERGY AUTHORITY OF IRELAND

Heating System - Energy Requirements (Individual)

Main space heating system efficiency [%]	546.98	Space heating efficiency adjustment factor	1.0000	Main space heating fuel	
Main water heating system efficiency [%]	273.31	Water heating efficiency adjustment factor	1.0000	Main water heating fuel	
Secondary heating system efficiency [%]	N/A	Fraction of heating from secondary heating system	N/A	Secondary space heatin system fuel	
Fraction of main space and water heat from CHP	N/A	Electrical efficiency of CHP	N/A	Heat efficiency of CHP	
CHP Fuel type	N/A				

Summary for Part L Conformance (Applies to TGD L 2008/2011/2019 for new dwell

BER Number		Building Regulations	201
BER Result	A2	Energy Value kWh/m²/yr	34.7
CO_2 emissions [kg/m²/yr]	4.44		
EPC	0.243	EPC Pass/Fail	Pas
CPC	0.157	CPC Pass/Fail	Pas

Part L Conformance - Fabric

Conformity with Maximum avg U-value requirements	U-value [W/m²K]	Pass/Fail	Conformity with Maximum U-value requirements	U-Value [W/m²
Pitched roof insulated on ceiling	0.16	Pass	Roofs	0.19
Pitched roof insulated on slope	0.17	Fail	Walls	0.19
Flat Roof	0.19	Pass	Floors	0.18
Floors with no underfloor heat	0.14	Pass	External doors / windows / rooflights	1.40
Floors with underfloor heat	0.00	Pass	Meets Part L maximum avg U-value requirement for opaque elements using TGD L Section 1.3.2.3	
Walls	0.18	Fail		
Percentage of opening areas [%]	25.20			
Average U value of openings	1.40	Pass		

Permeability test carried out and meets guidelines in TGD L

0.15 | Pass

Pass

DRAFT

(1)WALLS:- INSULATION IN CAVITY — Roofs — DETAIL 1.10, 2011

THERMAL PERFORMANCE

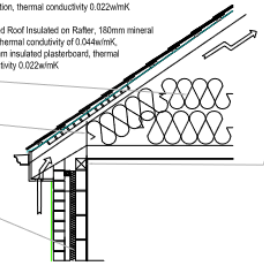
CHECKLIST (TICK ALL)

- Ensure continuity of insulation throughout junction
- Ensure full depth of insulation between and over joists abuts eaves insulation
- Ensure gap between wall plate and proprietary eaves vent is completely filled with insulation having a min. R-value across the insulation thickness of 3.00 m² K/W
- Ensure full fill insulation is secured firmly against inner leaf of cavity wall. If using partial fill insulation, tuck compressible insulation down into the head of the cavity
- Detail is indicative for thermal purposes. Where continuity of insulation is maintained throughout the junction, alternative structural design may be used.

Main Pitched Roof, Mineral Wool Insulation with thermal conductivity 0.040w/mK

Flat Roof, warm deck, 150mm Unilin FR Insulation, thermal conductivity 0.022w/mK

Pitched Roof Insulated on Rafter, 180mm mineral wool thermal conductivity of 0.044w/mK, 62.5mm insulated plasterboard, thermal conductivity 0.022w/mK



AIR BARRIER - CONTINUITY

CHECKLIST (TICK ALL)

- Bed wall plate on continuous mortar bed
- Fix ceiling first, and seal all gaps between ceiling and masonry wall with either plaster, adhesive or flexible sealant
- Seal all penetrations through air barrier using a flexible sealant

Complying with checklist will help achieve design air permeability

GENERAL NOTES

Thermal performance of junction can be improved by incorporating an eaves wind barrier (plywood, OSB, softboard or other suitable material) around insulation to be sealed to connect with the ventilator strip thereby mitigating wind chill from the vent inlet in the eaves

Keep cavities clean of mortar snots and other debris during construction.

Use of over joist insulation is considered best practice, as it eliminates the cold bridge caused by the joist

Use a proprietary eaves ventilator to ensure ventilation in accordance with BS5250. Installation of the eaves ventilator must not prevent free water drainage below the tiling battens

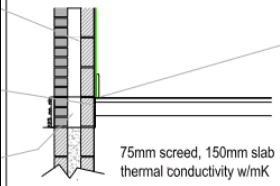
Ensure cavity is closed with firestopping insulant or proprietary cavity barrier

OPTION (TICK ONE) AIR BARRIER - OPTIONS

- Masonry inner leaf with wet-finish plaster, or
- Masonry inner leaf with scratch coat and finished with plasterboard, or
- Inner leaf with plasterboard on dabs, with continuous ribbon of adhesive tape around all openings, along top and bottom of wall, and internal and external corners, or
- Airtightness membrane and tapes

ACCEPTABLE CONSTRUCTION DETAIL — Eaves - Ventilated Attic

Ground Floor and External Wall — DETAIL 1.01a, 2011



AIR BARRIER - CONTINUITY

CHECKLIST (TICK ALL)

- Seal between wall and floor air barrier with a flexible sealant OR seal gap between skirting board and floor with a flexible sealant
- Seal all penetrations through air barrier using a flexible sealant

Complying with checklist will help achieve design air permeability

GENERAL NOTES

The wall insulation installed below the wall DPC must be fit for purpose with regards to water absorption.

Keep cavities clean of mortar snots and other debris during construction.

Detail applicable:- Ground-bearing floor; raft foundation; in-situ suspended ground floor slab; pre-cast suspended ground floor. Insulation above slab, with timber floor finish.

OPTION (TICK ONE) AIR BARRIER - OPTIONS

- Masonry inner leaf with wet-finish plaster, or
- Masonry inner leaf with scratch coat and finished with plasterboard, or
- Inner leaf with plasterboard on dabs, with continuous ribbon of adhesive tape around all openings, along top and bottom of wall, and internal and external corners, or
- Airtightness membrane and tapes

ACCEPTABLE CONSTRUCTION DETAIL — Ground Floor - Insulation above slab

KCC Risk Procedure on selection of buildings or works to inspect

Development Factors

1. New Build – Multi-unit residential up to 2 storeys high? Y ☐ N ☐
2. New Build – Multi storey developments between 2-3 storeys high? Y ☐ N ☐
3. New Build – Multi storey developments 3 storeys and above? Y ☐ N ☐
4. Does the Building require a specialist fire engineering design? Y ☐ N ☐
5. Does the Building require a specialist foundation design? Y ☐ N ☐
6. Does the development require a change of use to higher risk (e.g. from commercial to Residential or emergency accommodation etc) Y ☐ N ☐
7. Are non-conventional or modern methods of construction (e.g., ICF, Modular construction etc) being used on this development? Y ☐ N ☐
8. Building Owners, Builders and Assigned Certifiers track record. Have any previous S11 requests or Section 8 Enforcement notices been served on previous developments? Y ☐ N ☐

Table 2.0: Development Risk Rating Identification

Risk Rating Identification						
Development Factors Total		1	2	<4	<6*	<8
On Site Building Inspection Target	Optional – On site BC inspections	Very Low				
	On site BC inspection frequency <8weeks		Low			
	On site BC inspection frequency <6 weeks			Medium		
	On site BC inspection frequency <4 weeks				High	
	On site BC inspection frequency <2 weeks					Very High

*If Development Factor 8 is applicable the risk defaults to at least "High"

Table 1.0: Worked Example (Development Factors)

Development Factor	Y/N	Score
1	Y	1
2	Y	1
3	N	0
4	N	0
5	N	0
6	N	0
7	N	0
8	N	0
Total		**2**

KCC site inspection procedure

- Notify Building Owner, Assigned Certifier, Designer and the Builder of Building Control inspection.
- Review the drawings, site plans and other relevant document submitted.
- Appropriate PPE to be worn (safe pass, delegation, etc.).
- Comply with site safety procedures (site induction).
- Inspections of critical items or at critical milestones in the construction process to check for compliance with Regulations A to M.
- Record site inspection.
- If compliance issues is identified, then depending on the issue it might be closed out by email with photographic evidence that work has been completed in compliance or by requesting additional information by Section 11 request under Building Control Act
- Follow up inspection might be required.
- All addition information is uploaded to KCC file and BCMS.

BUILDING CONTROL - SITE INSPECTION RECORD

SECTION 11 (3), BUILDING CONTROL ACTS, 1990 to 2014

DC No. _____ Site Name & Address: _____

Building Control Inspector: _____ Date & Time of Inspection: _____

CN No / Nos. _____

Inspection Category:

Risk Based: ☐ Random Base: ☐ Non-Technical Building Control Inspection ☐

Complaint Based: ☐ Site-Follow-Up due to Complaint or Non Compliance: ☐

Inspection Related to Statutory Applications: ☐ Site Progress Inspection: ☐

Inspection Type:

Commencement Notice Inspection: ☐ General BC Inspection: ☐ CCC: ☐ DAC: ☐

Site Progress Inspection: ☐ No Access / Site Closed: ☐ FC: ☐ FP: ☐

Current Stage of Works: _____

Unit Names / No's Inspected: _____

Person in Charge of Site: _____

Level of Construction Supervision on Site: _____

Scope of Inspection if applicable: _____

Issues or Findings Arising at time of inspection: _____

A☐ B☐ C☐ D☐ E☐ F☐ G☐ H☐ J☐ K☐ L☐ M☐

Please tick relevant box for technical inspections

Follow Up Action (If Any): _____

Persons Accompanying: _____

Name of Authorised Person: _____ Signature: _____

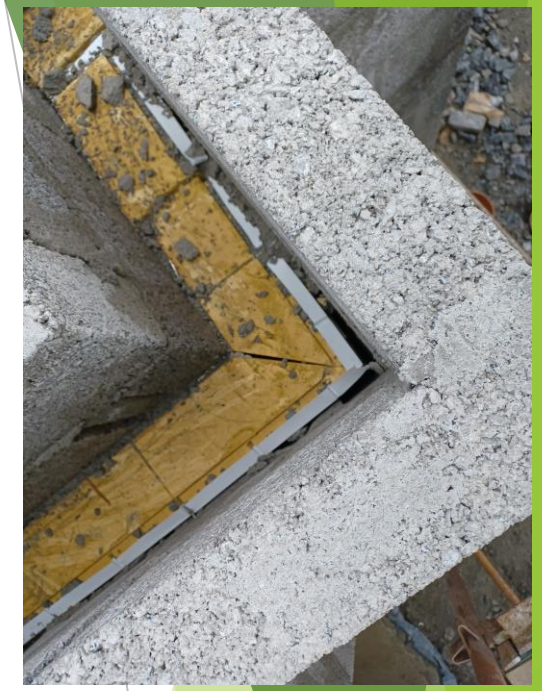
Page 1 of _____

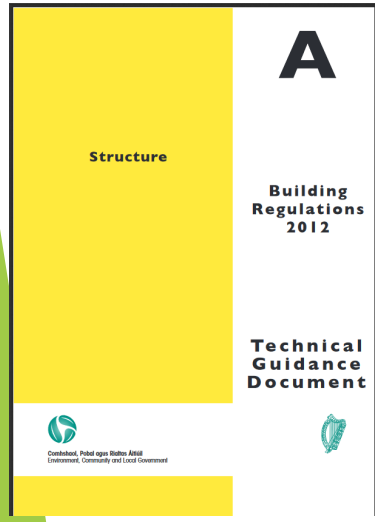
Typical Non-Compliance Issues found in KCC

Superstructure:

Cavity Wall Construction – Wall Ties

SR 325 Design of Masonry in Ireland E6





9. Declared Performance:

Essential Characteristics	Performance			Technical Specification
RANGE				
	WTS2 200 to 275	**WTS3 200 to 300**	**WTS4 200 to 275**	
MECHANICAL STRENGTH & STIFFNESS				
Tensile Strength (N)	1800	1100	650	EN 845-1 clause 5.3.1.2; EN 846-5
Displacement Under Load[1] (mm)	0.23	0.09	0.18	EN 845-1 clause 5.3.1.4
Compressive Strength (N)	1300	800	450	EN 845-1 clause 5.3.1.3; EN 846-5
Displacement Under Load[1] (mm)	0.14	0.18	0.11	EN 845-1 clause 5.3.1.4
Water Shedding Capability	RESISTANT			EN 845-1 clause 5.4
DURABILITY				
Material	Stainless Steel Grades: 1.4301, 1.4597			EN 10088-2
Corrosion Protection	Material/Coating Reference: 03			EN 845-1 Table A.1
Dangerous Substances	None			

[1] At 1/3 of Declared Tensile & Compressive Strength

Typical Non-Compliance Issues found in KCC

Superstructure:

First Floors - Fire Penetrations

Typical Non-Compliance Issues found in KCC

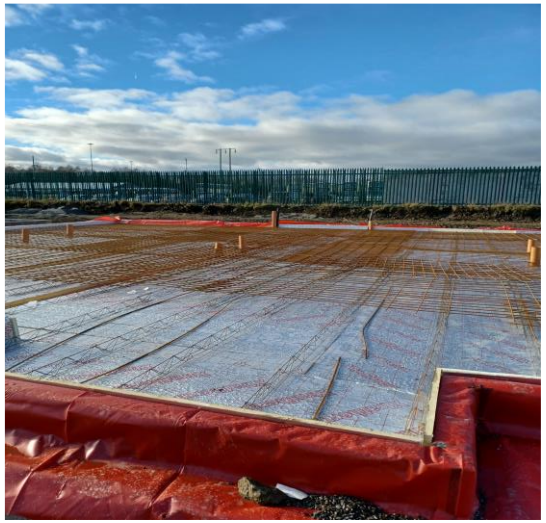
Substructure:

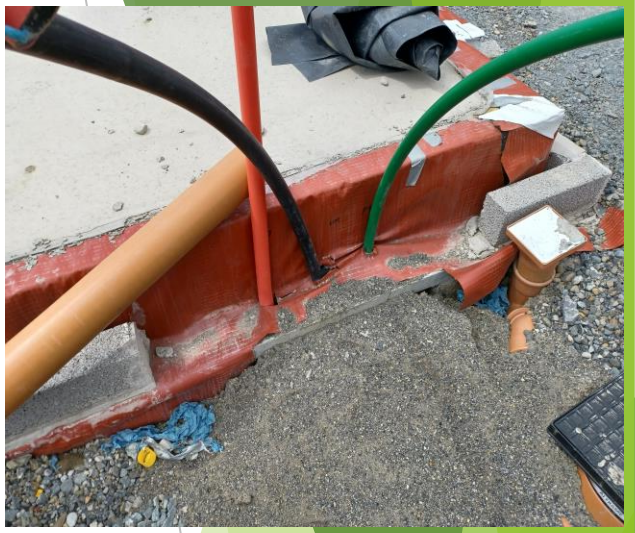
1.Fill – T3, T2, T1 & T0

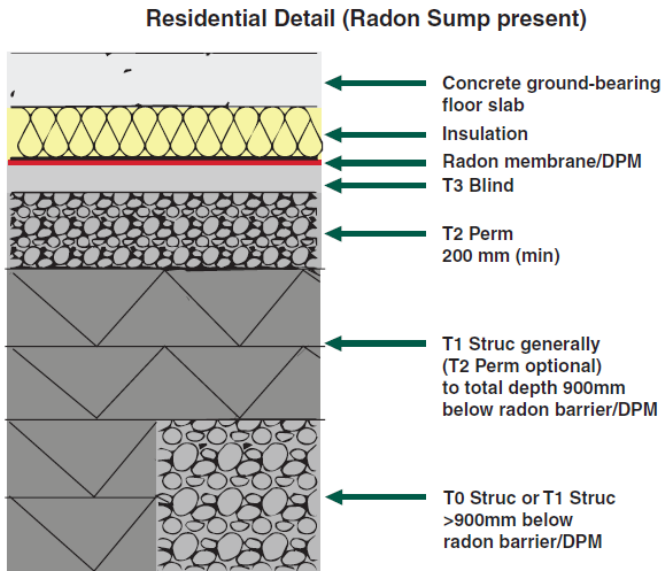
2. Radon CP102

Table 3	Minimum Performance Level for LDPE Radon Proof Membranes	
Parameter	**Test**	**Performance Level**
Radon Permeability	Laboratory Test with Radon Gas – Rn-222	12*10-12m²/s
Tensile Strength	I.S. EN 12311-2:2000, or I.S. EN ISO 527-3	MD > 12Mpa CD > 12Mpa
Elongation	I.S. EN 12311-2:2000, or I.S. EN ISO 527-3	≥100% (at break) Un-reinforced LDPE ≥12% (at max. load) Reinforced LDPE
Tear Resistance	I.S. EN 12310-2:2000	>100N
Moisture Vapour Resistance	BS 3177	>50MNs/g
Low Temperature Flexibility	I.S. EN 495-5:2000	No cracking at -25 °C

Membranes used for Radon protection will normally be provided in lieu of the damp-proof membranes described in Section 3 of this document.



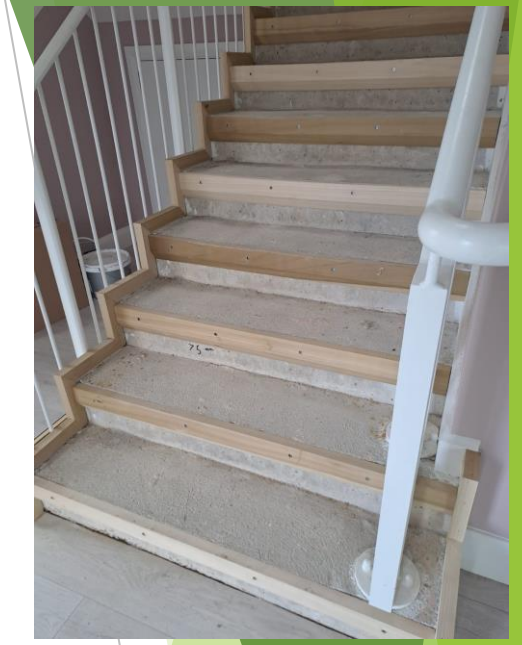




Typical Non-Compliance Issues found in KCC

Miscellaneous:

TGD Part K & Part M



Things I think could be improved would be...

- Building Control authorities to provide workshops for designers. To encourage better compliance with drawings, calculations, specifications and inspections.
- Additional good guidance to Homeowners regarding Opt Outs. As part of improving compliance with Building Regulations KCC currently issue standard email to all valid Opt Out CN, which includes list of typical compliance items as well as good practice guidance, useful links, sample list of ancillary certificates required for buildings or works.
- Improved communication between Building Control authority staff and Assigned Certifiers, Designers, Builders and Owners.

“Progress is impossible without change, and those who cannot change their minds cannot change anything.”

George Bernard Shaw

Thank you