

## FLOOD PROOFING YOUR HOME: PART 2



Not everyone lives in a "high-risk" area, but **everyone lives in a potential flood zone**. BC had a bigger snowpack this year, and the mountains still have a lot of meltwater to give.

For example, the Garibaldi hike and campground just got flooded out – about a month after the lake's ice cover cleared up. I was lucky enough to see it before the trail was closed:



Part 1 of my flood proofing article discussed the range of causes of flooding, steps that a community can take to be best prepared, and measures that a homeowner can take to prepare his/her property to deflect as much of a potential flood's threat as possible.

That advice is critical, yet people may not understand its importance because of its intangible nature (apart from bioswales). Features, products, and materials for the house itself should be reviewed only once the hazard beyond the house's bounds are addressed as much as can be done.

Part 2 presents two contradictory approaches that are nonetheless compatible and both of which should be incorporated to the extent that is practical. Dry flood proofing is an approach to preventing water from entering the house – to keep it dry. Wet flood proofing is an approach that allows the water to flow into and out of the house and cope with the house getting wet.

Both approaches could involve significant modifications and structural upgrades. Incorporate as much as possible, but ultimately you'll need to assess what you're able to accommodate.



DANIEL CLARKE  
ARCHITECT

778.998.7034

dclarke@dclarkearchitect.com

807 – 233 Robson Street

Vancouver, BC V6B 0E8

dclarkearchitect.com

THE STRAIGHT EDGE



## THE SECRET TO A PROFITABLE BUSINESS IS HAVING UNHAPPY CLIENTS

Focus on the clients you want. Turn away clients who don't fit. Then serve the ones you want in a unique way.

A distinctive value proposition

Which needs are you going to become the 'master' at fulfilling?

While you may be pretty good at most things, what are you going to stand out for being: better, faster, cheaper?

Think about which particular needs you want to meet and compare your strategy with the competition.

Unless we have a unique value proposition and different answers to these questions than our competitors, we have no strategy at all. We are just competing on operational effectiveness.

IKEA is about functionality, quality and style (that's debatable), but not so much on customer service - they have developed a self-service furniture shopping model. These choices allow IKEA to deliver 'breathtakingly low prices' for decent quality items.

Tailoring your activities to your core value proposition is important for differentiation, and ultimately who you serve.

Doing the same thing as everyone else 'but better' is operational.

Doing something different is *strategic*.

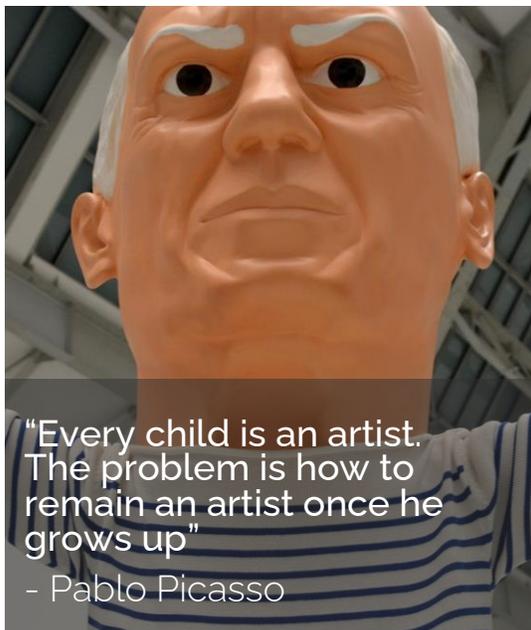
IKEA's high quality, low cost, self-service model unlocked the secret code.

They don't ship furniture to their clients' homes, clients come to pick up the furniture in boxes that they then assemble when they get home.

Not everyone wants that. But the customer who wants affordable, stylish, decent quality furniture does not mind.

All great strategies will create some unhappy customers. But if you try to make everyone happy then there is no strategy.

Which customers are you going to delight and who are you prepared to disappoint?



"Every child is an artist. The problem is how to remain an artist once he grows up"

- Pablo Picasso

# ICONIC BUILDING OF THE MONTH

## Chrysler Building

Each month I select a building that captures my attention and holds me in adoring awe.

This fascinating brick-and-stainless steel giant Art Deco stick of asparagus in East Manhattan was built in 1930 and remains the tallest brick building in the world.

Architect William van Allen designed the building, and Walter Chrysler (founder of the company) paid for the construction personally so his kids could inherit it.

A novel, special stainless steel developed by Krupp in Germany is used in the ornaments, window frames, crown, and needle. The ornaments include gargoyles – in line with neo-gothic buildings of the area – eagles, enlarged hood ornaments and giant Chrysler hubcaps.

The lobby features African red granite walls and a 110' mural on the ceiling. The elevators' interiors are decadently finished in exotic woods and stainless steel trim.

The building was constructed in 18 months and opened as the Great Depression began, yet 70% of its tenant spaces were leased compared to 23% of the Empire State Building.

Though nearly falling into disrepair in the 70's, the building was renovated and achieved LEED Gold status in 2011 by achieving massive reduction in energy and water consumption.

It was last sold in 2019 for \$150M to a joint venture between RFR Holding LLC and Signa Group.

Initially described by a journalist as "distinctly a stunt design, evolved to make the man in the street look up", it has gained widespread respect and official landmark status.



# DRY FLOOD PROOFING FEATURES

You can still prevent flood water that reaches the house from getting in using "dry flood proofing".



Removable flood barrier products are watertight panels that are temporarily secured in place at doorways, your biggest risk. Seal off low exhaust vents using removable vent guards.

Seal joints, cracks, and seams in basement walls and around windows. Apply waterproofing - not dampproofing - membranes to the outside of foundations, but ensure that the foundations, the walls, and the floor slab are reinforced to resist the additional stress.

The water may rise high enough that dry flood proofing measures are no longer workable, and your house must be designed to survive water flowing into it to minimize damage. This is called "wet flood proofing".

creating a basement, or relocate all equipment to a higher floor.

Consider also designating the ground floor of a house as sacrificial to allow water to enter, flow freely through it, and flow out with little resistance to minimize risk of structural damage. This may be a mostly uninhabited space or garage, or a very open living space with outdoor patio furniture. Avoid interior walls, and design the loadbearing exterior walls to withstand water pressure and impacts from floating debris.



The structure should be designed with stronger joints (e.g. strapping or tie-downs) that help keep the structure as a whole together. A portion of a wood frame house could easily be pulled out and cause the roof to collapse. Foundations must be built deeper; soil washed away near the surface will undermine shallow foundations and cause partial or complete collapse of your house.

## How does your house rank on the performance scale?

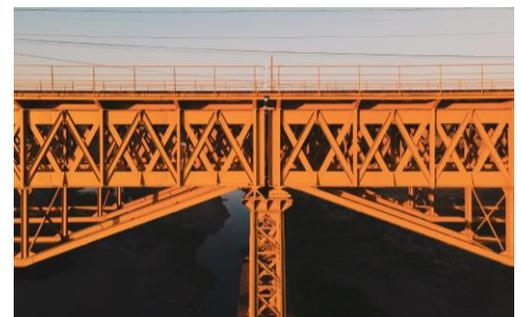
Take the Pre-Renovation Home Performance Assessment

<https://www.resourcesfordesign.com/dc-mfhpa-opt-in-1>



Wet floodproofing assumes that everything below the flood level will be damaged, and prioritizes what should be relocated higher.

A basement will always be most at risk of flooding; most of the deaths in Hurricane Ida's storm surge were tenants in basement suites. Avoid



**RENOVATING OR BUILDING A HOUSE?**  
STEP 1 - RATE YOUR HOUSE ON THE ULTRA PERFORMANCE SCALE

Renovating or rebuilding your aging, underperforming house is the path to a more comfortable, efficient, and safe performance home. This pre-remodel checklist, created by the National Institute of Building Sciences, is a valuable tool for homeowners and professionals alike. It helps you understand the performance of your home and identify areas for improvement. It also provides a clear path to a more comfortable, efficient, and safe performance home.

**PRE-RENOVATION HOME PERFORMANCE**  
Use yourself as proxy for each statement that's TRUE, and use the following scale:

- 1 - If you never had them, leaving them unremediated is OK.
- 2 - If all of your windows leak at least 1 above the base.
- 3 - If all of your windows have a 1/2 inch or more of water on the sill.
- 4 - If you have a balcony, it is supported by posts.
- 5 - If you have a balcony or deck, it is covered with posts or joists.
- 6 - If you have a balcony or roof deck, it is supported by posts.
- 7 - If you don't have a balcony or roof deck, give yourself a 6.

<https://www.resourcesfordesign.com/dc-mfhpa-opt-in-1>

# WET FLOOD PROOFING FEATURES AND CONFIGURATION

Ensure all equipment and electrical outlets are located 4' to 5' above the floor. Sewer pipes cannot be above ground, so install backflow prevention valves on sewage pipes to prevent backup of flooded sewers.

To help surface floodwaters through above-ground walls, use flood vents - also known as flood ports or flood gates - that are normally tightly closed but when submerged will pop open.



Reduce clutter to minimize damage by potentially dangerous equipment floating around and cut down time spent finding important documents after a flood.

The right building materials reduce the cost of repair and cleanup. Ground floor walls should be concrete, concrete block masonry, structural brick, or CLT panels. Typical wood stud walls retain water and won't dry out before rot sets in. The face of the walls should be tile, plaster, resin panels (plastic), or cement board (aka "green board"). Drywall and MDF baseboards swell and disintegrate.



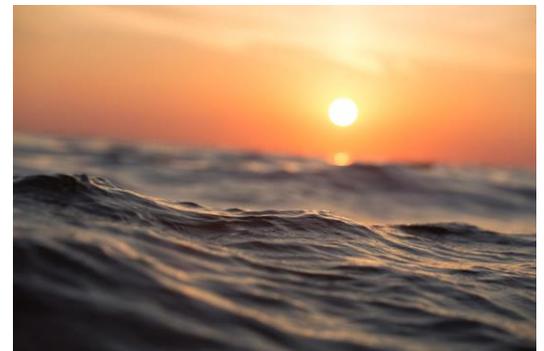
Ensure that doors and cabinetry are

solid wood and plywood instead of the usual particle board, MDF, or Masonite which will be destroyed if submerged.

Use ceramic or porcelain tile, terrazzo, or polished concrete instead of wood flooring, laminate flooring, and carpet. They can be cleaned easily of the contaminants carried by the flood. Removable rugs still provide a comfortable surface.



After cleaning, a forced ventilation system helps surfaces dry out by removing damp air. Windows around the perimeter of basements further encourage natural ventilation that helps dry out the space.



Designing your house to remain mostly untouched by a flood requires planning and careful thought. Features and devices are important but only pieces, and they must be incorporated into a larger strategy that will prepare you for almost any flood risk as natural disasters caused by shifting weather patterns and expanding urban development increase in frequency.

Not sure how these strategies can lead you to an ultra high-performance home?

Request a Free **Diagnosis Session**

<https://www.resourcesfordesign.com/dc-expert2-opt-in-1>



The last newsletter used a sample firestopping system to point out the key elements of a tested listing. Below, I show that the same elements are found in a valid assembly having a fire-resistance rating as defined by the CAN/ULC-S101 testing standard.

ITS Directory of Listed Products Page 1 of 3

**ROOF/CEILING, FLOOR/CEILING, BEAM & COLUMN ASSEMBLIES**

DESIGN NO. [redacted]

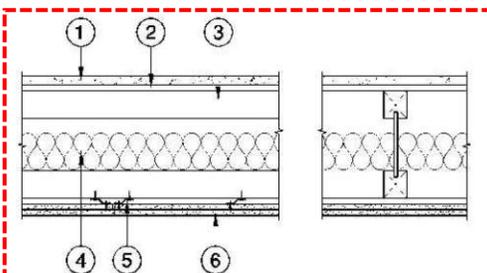
DESIGN NO. [redacted]

**DESIGN NO. [redacted]**

FLOOR/CEILING ASSEMBLY: ASSEMBLY RATING - 60 MINUTES

STC RATING WITHOUT TOPPING - 50

IIC WITHOUT TOPPING OR FLOOR COVERING - 45



1.	[redacted]
2.	[redacted]
3.	[redacted]
4.	[redacted]
5.	[redacted]
6.	[redacted]

Testing agency identified (Intertek Testing Services)

Testing category

Listing number from the testing agency

Standard to which the test was performed

Keyed installation diagram(s)

Corresponding list of components, installation instructions, and specific products

ITS Directory of Listed Products Page 3 of 3

DESIGN NO. [redacted]

Evaluated to the following...

Design listings are based on, and supported by, proprietary test reports. The test reports further define proprietary design details which make these listings applicable only to the specified products manufactured by the listed manufacturer.

Unless otherwise noted, the assemblies in this section have been evaluated for conformance to the following standards:

- ASTM E 119, Standard Methods of Fire Tests of Building Construction & Materials
- CAN/ULC-S101, Standard Methods of Fire Endurance Tests of Building Construction & Materials
- NFPA-251, Fire Tests of Building Construction & Materials
- UBC-7-1 (formerly 43-1), Uniform Building Code Standard - Fire Tests of Building Construction Materials
- UL-263, Fire Tests of Building Construction & Materials.

Designs listed are minimum construction requirements to achieve fire ratings. Specifiers should obtain detailed specifications for the listed assemblies from the manufacturer of the listed components. Labeled components are identified with the WHI Certification Mark, embossed on the component or Certification Mark and design numbers on component or packaging.



Each manufacturer whose product has been tested, will have this literature somewhere in their files. Push your suppliers to cough it up.

## PASSIVE WISDOM – Monthly Insights from my interviews with Passive House Pros

The **Kingdom Builders** team of designers and construction personnel is led by Paul Lilley. For the better part of a decade, the firm has been getting heavily into and advocating Passive House construction.

**Frustrations with clients?** Some clients see Passive House as a set of limitations. Once we explain how it's actually the "best way to build", they understand how NOT doing Passive House equates to sacrificing quality.

**Frustrations with architects?** Generally they're not aware of a lot of alternate, suitable details.

**Top 2 challenges in Passive House, after cost?** #1 – Getting the assemblies right. #2 – Floor slab and the roof are the two most challenging assemblies to ensure are detailed completely airtight.

**Top 2 things you learned doing Passive House projects?** #1 – How to design an airtight roof. There's more action in that part of the house and therefore involvement required. #2 – How to do airtight detailing in general. As a builder of high-end custom homes, we're faced with an incredible variety of conditions that require a solution that's both effective and practical.



**Daniel Clarke Architect** is a Vancouver-based architecture firm specializing in **ultra high-performance**, luxury, net-zero and Passive House climate-resilient homes and multi-family residential buildings in British Columbia. My **PURPOSE** and my **PASSION** are to design buildings which **create physically and psychologically healthy spaces, use resources efficiently, and are timelessly elegant**. While each project has its own, unique personality, I believe every project must respect and should restore natural systems and habitat.

My experience spans over two decades in the architectural industry in Western Canada serving a diversity of clients. I'm a Certified Passive House Designer (CPHD) and member of the Homebuilders Association of Vancouver (HAVAN) and the Canadian Home Builders' Association (CHBA).



▶ You can find me on my YouTube channel:

## HOW WELL DO YOU KNOW THE TYPES OF STONE?

### CLUES

*Guess the word, then find it.*

Igneous, quartz & feldspar, hard, speckled

Metamorphic, carbonates, veined, used in sculptures

Sedimentary, carbonates, used in cement, white

Metamorphic, converted shale, dark grey/blue, roof tiles

Metamorphic, talc, soft, used in small carvings

Sedimentary, porous calcium carbonate, white/cream/tan, used for tiles

Igneous, iron / magnesium lava, dark grey / black, paving stones

Sedimentary, from clay, flaky, dark grey, ground for ceramics

Igneous black volcanic glass, sharpest blades

Striped, silica, usually black, used in jewellery

Igneous, dark blue/grey tint beige, pavers,

Y	C	O	A	X	N	I	P	E	T	L	A	S	A	B
S	D	A	Y	B	L	C	L	P	U	U	O	I	F	C
O	L	N	M	J	F	B	K	H	K	Y	T	I	H	G
A	O	A	G	V	R	L	I	M	E	S	T	O	N	E
P	M	E	T	A	W	V	W	J	A	R	V	I	H	Z
S	A	T	M	E	N	C	U	U	A	A	M	M	N	T
T	T	I	S	A	U	D	T	V	Y	I	H	Z	Y	V
O	J	N	B	B	L	U	E	S	T	O	N	E	G	G
N	D	A	E	T	Y	R	R	V	N	C	A	V	M	D
E	V	R	S	L	T	Y	Y	Q	T	U	I	X	K	A
S	B	G	L	I	A	A	E	S	W	C	D	Q	U	L
I	U	V	N	A	V	H	C	X	V	Z	I	M	M	O
D	E	E	I	A	U	K	S	C	A	Q	S	T	O	M
L	W	W	M	L	O	C	O	X	Q	R	B	U	X	S
G	O	G	J	O	C	T	O	R	I	A	O	E	V	D



AGE STRONG.  
LIVE WELL.

