FIREHARD

WER NEW CONSTRUCTION DESIGN GUIDE

Building It Right the First Time

A guide for builders, architects, and homeowners building new homes or undertaking major renovations in wildfire-prone areas. Determine your site's WER level and specify the right materials and assemblies from the start.

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This guide is free. It always will be.

For existing homes, see the separate FireHard Self-Assessment Guide for Existing Homes.

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1. Why New Construction Is Different

If you are building a new home or doing a renovation significant enough to expose the structure (down to framing), you have an opportunity that existing homeowners do not: you can build wildfire resistance into the fabric of the building at a fraction of the cost of retrofitting it later.

The Cost Advantage

Specifying fibre cement cladding instead of vinyl siding at construction time adds approximately 10–15% to the cladding cost. Retrofitting the same change on an existing home costs 3–5 times as much because you are paying to remove the old material, repair the substrate, and reinstall. The same principle applies to every component: tempered glass in both panes, steel deck framing, Type X gypsum sheathing, non-combustible soffit, ember-resistant vents, metal gutters. Specified at construction time, these add perhaps 5–10% to the total build cost. As a retrofit, they can add 15–30%.

A home built to WER-2 specifications from the start will typically cost 3–7% more than the same home built to minimum code. A home built to WER-3 may cost 8–15% more. These premiums are modest compared to the value of the home and are far less than the insurance deductible on a wildfire loss, let alone the uninsured costs of displacement, lost personal property, and emotional trauma.

The Design Advantage

New construction also gives you design choices that retrofit cannot:

Building orientation: You can orient the building to minimise the exposed face toward the highest-risk direction.

Window placement: You can reduce glazing area on exposed faces and concentrate it on protected faces.

Garage and utility placement: You can locate the garage, mechanical room, or storage on the exposed face as a buffer zone, keeping living spaces on the protected side.

Setback: You can maximise the distance between the building and the property line on the most exposed face, even if this means reducing setback on a less exposed face.

Roof geometry: You can avoid valleys, complex intersections, and features that accumulate debris. Simple roof forms (gable, hip) shed embers and debris more effectively than complex forms.

Attached structures: You can design carports, pergolas, and covered porches to meet the same WER level as the main building from the start, rather than dealing with non-compliant attachments later.

THE 5% THAT MATTERS

Building wildfire resistance into a new home at construction time typically adds 5–10% to the build cost. That's $15,000–$40,000 on a $350,000 build. The same measures as a retrofit on an existing home can cost $30,000–$100,000+. If you have the opportunity to build it right the first time, take it.

2. In Plain English

What You're Dealing With

You're building a new home in an area where wildfire is a real possibility. That's not unusual in Canada — most communities outside major urban centres are in or near the wildland-urban interface. The good news is that building wildfire resistance into a new home is dramatically cheaper and more effective than retrofitting an existing one.

What You're Actually Doing

A wildfire-resistant new build comes down to four things: keeping embers out (screens, seals, and gap elimination), resisting radiant heat (non-combustible or fire-rated exterior materials), surviving direct flame contact where applicable (fire-resistant assemblies at the base and perimeter), and addressing your neighbour's house as a fire exposure (the CNEL system).

What It Costs

For new construction, wildfire hardening adds roughly 5–15% at WER-2, 8–15% at WER-3, and 15–40% at WER-4 to the building envelope cost. These are incremental costs — you're choosing one cladding over another, one window over another. Much of it is material selection, not additional work. At WER-1 and WER-2, the cost premium is modest. At WER-3, it's noticeable but manageable. At WER-4, it's significant and requires a deliberate commitment.

Working With Your Designer and Builder

Share this guide with your architect, designer, or builder early — ideally at the concept stage, not after working drawings are complete. WER level should be established during site assessment and influence material selection throughout design. Your builder needs to understand that detailing matters: how materials meet at junctions, how penetrations are sealed, how gaps are eliminated. The assemblies need to work as a system, not as a collection of individually fire-rated parts.

Getting the Details Right

New construction is your one chance to get the hidden layers right without ripping things apart later. Photograph every stage before it's covered — flashing details, membrane laps, vent screen installations, gap sealing around penetrations. Follow manufacturer installation instructions exactly. These photographs become your verification record and are invaluable for insurance documentation.

3. Site Assessment: The Property Line Approach

2.1 The Core Principle

For an existing home, you assess what is actually around your property today. For new construction, you must assess what could plausibly be at your property line over the life of the building — typically 50 to 100 years.

You control what happens on your lot. You do not control what happens beyond your property line. Your neighbour could plant a row of mature spruce trees along the boundary. The municipality could approve a development that places a home 3 metres from your wall. A forest managed today could be left unmanaged in a decade. Crown land behind your property will follow its own ecological trajectory.

For this reason, new construction site assessment uses the property line as the control boundary and assumes the worst plausible fuel condition at that boundary for your region.

2.2 Step 1: Identify the Worst Plausible Fuel at Each Property Line

For each side of your lot, ask: what is the worst type of vegetation that could realistically exist at this property line over the next 50 years?

Adjacent to crown land, provincial forest, or unmanaged wildland: Assume Type C (dense coniferous) unless the regional ecology clearly does not support it. In most of interior BC, northern Alberta, and boreal Canada, this is the correct assumption. Even if the land is currently logged or managed, it will regenerate.

Adjacent to municipal parkland or greenbelts: Assume Type B (scattered/deciduous) as a minimum, Type C if the park contains coniferous forest. Municipal vegetation management programs can change or be defunded.

Adjacent to agricultural land: Assume Type A (grass) as a minimum. Agricultural land can be converted to other uses, but the zoning process provides some predictability.

Adjacent to another residential lot: See Section 5 (The Close Neighbour Standard). The vegetation risk from a neighbouring lot is typically Type A or B (residential landscaping). The primary risk is the neighbouring structure, not its landscaping.

Adjacent to a road or right-of-way: Measure the distance from your property line across the road to the vegetation or structures on the opposite side. Roads provide separation. A 20-metre road right-of-way between your building and dense conifers is 20 metres of separation.

THE 50-YEAR QUESTION

Ask yourself: what will the land at my property line look like in 2076? If the answer is “probably dense coniferous forest,” design for it now. It is far cheaper to build for Type C today than to retrofit for it in 20 years when the trees have grown back.

2.3 Step 2: Measure Distance from Building to Property Line

For each side of your lot, measure the distance from your proposed building footprint to the property line on that side. This is your separation distance. Unlike the retrofit assessment, which

measures to the nearest vegetation, new construction measures to the property line because you cannot guarantee what will be at the property line in the future.

If you know the property line is separated from vegetation by a road, river, or other permanent non-combustible feature, you may measure to the far side of that feature instead. However, be conservative — only count permanent features you are confident will exist for the life of the building.

Close: Less than 10 metres from building to property line

Moderate: 10 to 30 metres

Far: 30 to 100 metres

Very Far: More than 100 metres

2.4 Step 3: Assess Slope

Slope significantly affects wildfire behaviour. Fire travels faster uphill, flame lengths increase, and the effective vegetation-to-building distance decreases. Assess the slope from the property line (or vegetation edge) to your building on each side. The slope correction is applied per-face.

Flat or downhill: Property line is at the same level or higher than the building.

Gentle uphill (up to 15%): Building is slightly higher.

Moderate to steep uphill (over 15%): Building is noticeably to obviously higher. Fire intensity doubles or triples. Formal slope correction: 0-5 degrees (0-9% grade) — no adjustment. 5-10 degrees (9-18%) — increase WER by one level. 10-15 degrees (18-27%) — increase by one level; if dense coniferous fuel within 30 metres, increase by two levels. 15-20 degrees (27-36%) — increase by two levels. Greater than 20 degrees (>36%) — default to WER-4 and require professional P.Eng. assessment. Estimated radiant heat by WER level (aligned with AS 3959 BAL methodology): WER-1 less than 10 kW/m², WER-2 is 10-19 kW/m², WER-3 is 19-40 kW/m², WER-4 is greater than 40 kW/m². The three lookup tables in Section 4 already incorporate slope adjustment. If your slope exceeds the categories provided, default to WER-4 on that face. Building is noticeably to obviously higher. Fire intensity doubles or triples.

2.5 Step 4: Determine WER Level Per Face

Unlike the retrofit guide (which assigns one WER level to the whole building), new construction assesses each face independently. This allows you to optimise: spend more on the exposed face and less on the protected face.

For each face of the building, use the lookup tables below with the worst plausible fuel type at that property line, the distance from the building to that property line, and the slope.

The overall building WER level is the highest level of any face. But individual face levels determine the specifications for that face — allowing cost optimisation.

PER-FACE ASSESSMENT

A home with dense conifers 8 metres from the north property line (WER-4 north face) and a road with 40 metres of separation to the south (WER-1 south face) would be classified WER-4 overall, but the south face is designed to WER-1 specifications. This can reduce costs significantly compared to applying WER-4 to the entire building.

4. WER Lookup Tables

Use the table matching the slope condition for each face. Look up worst plausible fuel type at property line and distance from building to property line.

3.1 Flat or Downhill

Distance ↓ / Fuel →	A: Grass	B: Scattered / Deciduous	C: Dense Coniferous
Very Far (>100m)	WER-1	WER-1	WER-1
Far (30–100m)	WER-1	WER-1	WER-2
Moderate (10–30m)	WER-1	WER-2	WER-3
Close (<10m)	WER-2	WER-3	WER-4

3.2 Gentle Uphill (up to 15%)

Distance ↓ / Fuel →	A: Grass	B: Scattered / Deciduous	C: Dense Coniferous
Very Far (>100m)	WER-1	WER-1	WER-2
Far (30–100m)	WER-1	WER-2	WER-3
Moderate (10–30m)	WER-2	WER-3	WER-3
Close (<10m)	WER-2	WER-3	WER-4

3.3 Moderate to Steep Uphill (over 15%)

Distance ↓ / Fuel →	A: Grass	B: Scattered / Deciduous	C: Dense Coniferous
Very Far (>100m)	WER-1	WER-2	WER-2
Far (30–100m)	WER-2	WER-2	WER-3
Moderate (10–30m)	WER-2	WER-3	WER-4
Close (<10m)	WER-3	WER-4	WER-4

Record your WER level for each face:

North face: ____ South face: ____ East face: ____ West face: ____

Overall building WER level (highest of any face): ____

5. Design Specifications by WER Level

The tables below summarise the key specifications for each building component at each WER level. These are drawn from the five FireHard Construction Detail Guides, consolidated here for design and specification use. For detailed product options, installation sequences, and technical notes, refer to the individual guides at firehard.ca.

Important: The tables below are a consolidated reference for design and specification. For complete specifications including installation sequences, manufacturer instruction requirements, assembly detailing, and technical notes, refer to the individual WER Design Guides (WER-1 through WER-4) and the Construction Detail Modules, available as free downloads at firehard.ca.

Apply the specifications for the WER level determined for each face. Components that serve the whole building (roof, attic vents, gutters) are specified to the highest face level.

4.1 Roof and Eaves

Component	WER-1	WER-2	WER-3	WER-4
Roof covering	Class A rated	Class A rated	Class A non-combustible (metal preferred)	Class A non-combustible only
Underlayment	Code minimum	Code minimum	Full sarking (self-adhering modified bitumen)	Full sarking
Soffits	Enclosed preferred	Enclosed required (NC material)	Enclosed NC, ≤2mm perforations	Enclosed NC, no perforations or baffled
Fascia	Maintain	NC-clad or NC material	NC material (fibre cement, aluminium)	NC material
Gutters	Clean regularly	Metal with NC guards	Metal with NC guards	Metal with NC guards, enclosed profile
Roof penetrations	Seal gaps	Seal ≤3mm, NC flashing	Seal ≤3mm, NC flashing, spark arrester on chimney	Seal ≤3mm, NC flashing, spark arrester

4.2 Exterior Walls

Component	WER-1	WER-2	WER-3	WER-4
Cladding	Any code-compliant	NC preferred (fibre cement, metal, masonry, stucco)	NC required	NC required
Sheathing	Code minimum	Code minimum	Type X gypsum recommended on exposed faces	Type X gypsum required on exposed faces
Insulation	Code minimum	Code minimum	Mineral wool	Mineral wool

Component	WER-1	WER-2	WER-3	WER-4
			preferred	required on exposed faces
Gaps and joints	Seal visible gaps	Seal all gaps ≤3mm	Seal all gaps ≤3mm, NC caulk/flashing	Seal all gaps ≤3mm, NC caulk/flashing
Wall-to-foundation	Seal	Seal, NC flashing	Seal, NC flashing, ≤2mm mesh at weep holes	Seal, NC flashing, ≤2mm mesh

4.3 Windows, Doors, and Openings

Component	WER-1	WER-2	WER-3	WER-4
Glazing	Code minimum	5mm tempered both panes on exposed faces	5mm tempered both panes all faces	5mm tempered both panes, FRL –/30/– or fire-rated shutters
Frames	Any code-compliant	Aluminium-clad wood, fiberglass, or aluminium	Aluminium or fiberglass preferred	Aluminium or steel
Wildfire shutters	Not required	Recommended on exposed faces	Required on vulnerable openings	Fire-rated shutters on all openings
Exterior doors	Code minimum	Solid core, NC threshold	Solid core or metal, NC threshold, weather sealed	Metal or fire-rated, NC threshold
Garage doors	Code minimum	Metal skin preferred	Metal skin, weather sealed, ≤3mm gap	Metal, weather sealed, ≤3mm gap

4.4 Vents and Penetrations

Component	WER-1	WER-2	WER-3	WER-4
Roof/soffit vents	Code minimum	ASTM E2886 ember-resistant	ASTM E2886, ≤2mm mesh	ASTM E2886, baffled, ≤2mm mesh
Gable vents	Code minimum	ASTM E2886	ASTM E2886 or eliminate (use ridge/soffit)	Eliminate or baffled ASTM E2886
Foundation vents	Code minimum	NC mesh ≤3mm	NC mesh ≤2mm	NC mesh ≤2mm, closable
Dryer/exhaust vents	Code minimum	NC, self-closing damper	NC, self-closing damper, ≤2mm mesh	NC, self-closing damper, ≤2mm mesh

4.5 Decks and Attached Structures

Component	WER-1	WER-2	WER-3	WER-4
Deck surface	PT wood or composite	Composite Class B+ or NC preferred	NC within 3m of building; composite beyond	NC only
Deck framing	PT wood	Steel/aluminium preferred; PT wood if enclosed	Steel or aluminium required	Steel or aluminium required
Deck-to-wall	Flashing preferred	Metal flashing required	Metal flashing, NC boards within 300mm	Metal flashing, NC boards within 300mm
Under-deck zone	Clear combustibles	NC ground cover, no storage	NC ground cover, enclosed if >600mm	NC ground cover, enclosed
Attached structures	Code minimum	NC roof and posts; match building roof	Same WER level or FRL 60/60/60 separation	Same WER level or FRL 60/60/60 separation
Railings	Code minimum	Code minimum	NC within 125mm of glazing or combustible wall	NC only

4.6 Fencing, Ground Cover, and Site

Component	WER-1	WER-2	WER-3	WER-4
Fence at building	NC section preferred	NC required within 1.5m (min 2.4m section)	NC required within 3m	NC required within 6m
Ground cover 0–1.5m	NC preferred (gravel, stone, concrete)	NC required, 75mm gravel minimum	NC required full 1.5m	Concrete or stone 1.5m minimum
Combustible mulch	Remove within 1.5m	None within 1.5m	None within 3m	None within 6m
Outbuildings within 10m	Class A roof	Class A roof, NC siding preferred	Meet building WER level if within 6m	Meet building WER level or relocate >10m
Firewood storage	Away from building	10m minimum	10m minimum, not upslope	30m or enclosed NC structure

4.7 Additional Components

The following components are addressed in the individual WER Design Guides (WER-1 through WER-4) and should be specified in new construction. Refer to the relevant design guide and construction detail modules for full installation sequences and technical notes.

Component	WER-1	WER-2	WER-3	WER-4
Window frames	Code minimum	Aluminium-clad wood, fibreglass, or aluminium	Aluminium or fibreglass preferred	Aluminium or steel only

Skylights	Code minimum	Tempered outer pane, NC curb	Tempered both panes, NC curb, ≤2mm mesh	Tempered both panes, NC curb and frame
Entry doors	Code minimum	Solid core, NC threshold	Solid core, NC frame, weather-sealed	Fire-rated (FRL -/30/-), NC frame, intumescent seal
Sub-floor / underfloor	Enclose, screen ≤2mm	Enclose, screen ≤2mm, clear combustibles	NC enclosure preferred, ≤2mm mesh all openings	NC enclosure required, fire-rated access panels
Ridge / roof vents	Code minimum	Baffled with ≤2mm mesh	ASTM E2886 rated	ASTM E2886 rated, baffled
Dryer / exhaust vents	Damper functional	Damper + ≤3mm mesh behind	Damper + ≤2mm mesh, NC duct	Damper + ≤2mm mesh, NC duct, fire-rated penetration
Combustible storage	Remove within 1.5m	Remove within 3m, none under decks	Remove within 6m, NC screening for essential storage	Remove within 10m, no exceptions
Doormats	Remove combustible mats seasonally	NC mat or remove	NC mat only	NC mat only, NC threshold
Mail slots	Internal fire-rated flap behind slot	Internal fire-rated flap behind slot	Eliminate from exterior doors. Detached NC mailbox.	Eliminate from exterior doors. Detached NC mailbox.

6. The Close Neighbour Standard

In most Canadian subdivisions, homes are built 1.5 to 6 metres apart. The building code manages this through spatial separation provisions that assume a fire department will respond to a single structure fire. During a wildland-urban interface event, that assumption fails.

For new construction, the Close Neighbour Standard should be applied as standard construction on any face where a neighbouring structure is or could be within 10 metres of your wall. This is not an optional add-on — it is the minimum responsible approach for close-proximity construction in wildfire-prone areas.

5.1 When It Applies

Apply the Close Neighbour Standard to any building face where:

A neighbouring structure exists within 10 metres of the proposed wall, OR

The property line is within 10 metres of the proposed wall and the adjacent lot is zoned for residential construction (meaning a structure could be built there in the future).

This captures both the current condition and the future condition. If your property line is 3 metres from your wall and the adjacent lot is zoned residential, assume a structure will be built there — because over the life of your building, it almost certainly will be.

5.2 Close Neighbour Specifications

These specifications apply to the affected face in addition to the WER level specifications for that face. Where they overlap, use the more stringent requirement.

Component	Specification
Cladding	Non-combustible: fibre cement, metal panel, stucco, or masonry
Sheathing	15.9mm (5/8") Type X fire-rated gypsum board under cladding
Insulation	Mineral wool (Roxul/Rockwool) preferred; provides fire resistance within wall cavity
Soffits and fascia	Non-combustible (fibre cement or aluminium). Enclosed soffit, no open eaves.
Vents on affected face	ASTM E2886 ember-resistant. Baffled design preferred to resist sustained ember/heat.
Windows and doors	5mm tempered glass both panes. Wildfire shutters recommended; fire-rated shutters if <3m to neighbour.
Ground cover in gap	Non-combustible throughout (gravel, concrete, stone). No fencing, no vegetation, no storage.
Glazing area	Minimise glazing area on this face. Relocate large windows to less exposed faces where possible.

COST AT CONSTRUCTION TIME

The Close Neighbour Standard adds approximately $3,000–$8,000 to the cost of a single face during new construction (fibre cement vs vinyl: ~$2,000–$4,000; Type X sheathing: ~$500–$1,000; mineral

Component	Specification
wool vs fibreglass: ~$300–$800; NC soffit: ~$300–$800; ASTM E2886 vents: ~$200–$500). As a retrofit, the same work costs $6,000–$18,000. Build it right once.	

5.3 The Community Argument

Everything in this section protects your building from your neighbour's. But the most effective protection is if your neighbour's building does not ignite in the first place.

If you are a developer building a subdivision, the most impactful decision you can make is to apply WER-2 as the minimum standard across the entire development and apply the Close Neighbour Standard on all shared-wall and close-proximity faces. The incremental cost per lot is modest. The cumulative effect on community survivability is transformative.

If you are an individual homeowner building in an existing neighbourhood, share this guide with your neighbours. Offer to coordinate. A neighbourhood where every home implements even WER-1 measures — Class A roof, cleared Zone 1A, enclosed eaves — is dramatically safer than one where a single home is hardened to WER-3 surrounded by unhardened neighbours.

Community hardening is exponentially more effective than individual hardening. Each hardened home reduces the probability that it becomes the fuel source that threatens its neighbours. The effect is multiplicative.

7. Cost Premiums: New Build vs Retrofit

The table below compares the approximate cost premium for key wildfire hardening measures when specified at new construction versus retrofitted onto an existing home. All figures are approximate and will vary by region, home size, and market conditions.

Measure	New Build Premium	Retrofit Cost	Ratio
Fibre cement vs vinyl cladding	$3,000–$6,000	$12,000–$25,000	3–4x
Type X gypsum sheathing	$500–$1,500	$2,000–$5,000	3–4x
Steel deck framing vs wood	$1,500–$3,000	$5,000–$15,000	3–5x
Mineral wool vs fibreglass insulation	$500–$1,200	$3,000–$8,000	5–7x
Tempered glass both panes	$300–$800	$2,000–$6,000	5–8x
ASTM E2886 vents (all)	$200–$600	$400–$1,200	2x
Metal gutters with guards	$200–$500	$800–$2,000	3–4x
Full sarking underlayment	$800–$2,000	$2,000–$5,000	2–3x
NC soffit and fascia	$300–$800	$1,000–$3,000	3–4x
Wildfire shutters	$2,000–$6,000	$2,000–$6,000	1x (same)
Approximate total WER-2 package	$8,000–$20,000	$25,000–$65,000	3x
Approximate total WER-3 package	$15,000–$40,000	$50,000–$120,000+	3–4x

THE BOTTOM LINE

Building to WER-2 from the start adds roughly 5–7% to a typical build cost. Building to WER-3 adds roughly 8–12%. The same measures as retrofit cost 3–5 times more. Wildfire shutters are the exception — they cost the same whether installed during construction or added later, making them an effective first step for existing homes and a standard inclusion for new builds.

8. Community Design Considerations

This section is for developers, planners, and municipalities involved in subdivision design or community-level planning in wildfire-prone areas.

7.1 Subdivision Layout

Lot orientation: Orient lots so that the narrowest face (least glazing, utility rooms, garages) faces the highest-risk direction (typically the direction of prevailing fire weather and closest vegetation). This reduces the exposed surface area for every home in the development.

Setback optimisation: Maximise setbacks on the wildland-facing perimeter of the subdivision. Even an additional 5 metres of separation can shift homes from WER-3 to WER-2. Consider asymmetric setbacks: larger on the wildland side, smaller on the community interior side.

Perimeter road: A perimeter road between the outermost lots and wildland vegetation provides a non-combustible break, fire department access, and additional separation distance. A 20-metre road right-of-way provides 20 metres of non-combustible separation.

Firebreaks: Integrate firebreaks into the subdivision plan: parks, playing fields, parking areas, commercial zones, and wide roads all serve as non-combustible breaks that interrupt fire spread.

7.2 Lot-Level Design

Building placement: Locate buildings as far as practical from the highest-risk property line. Use the depth of the lot on the protected side rather than centring the building.

Garage and utility buffer: Place the garage, mechanical room, or storage on the exposed face as a thermal buffer for living spaces.

Roof form: Simple roof forms (hip preferred, then gable) shed embers and debris more effectively than complex forms with multiple valleys, dormers, and intersections. Every valley and intersection is a debris accumulation point.

Attached structures: Design all attached structures (carports, pergolas, porches) to the same WER level as the main building. An attached carport with a combustible roof that ignites during a wildfire becomes a large fire source directly against your wall.

7.3 Community-Level Hardening

Minimum WER standard: Adopt WER-2 as the minimum standard for all new construction in the development. The incremental cost per lot ($8,000–$20,000) is a fraction of the lot value and provides meaningful protection for the entire community.

Close Neighbour Standard: Apply the Close Neighbour Standard (Section 5) on all faces where structures are within 10 metres of each other. In most subdivisions, this will be both side faces.

Vegetation management covenant: Include a covenant requiring ongoing vegetation management in Zones 1A through 3 (0–100 metres from structures). Vegetation management is only effective if maintained over the life of the community.

FireSmart development recognition: Pursue FireSmart Canada community recognition for the development. This provides a framework for ongoing community-level wildfire preparedness.

FOR DEVELOPERS

A subdivision marketed as “wildfire-resilient” with WER-2 as the standard, the CNEL system on shared faces, and a community vegetation management plan is a differentiated product in the BC and Alberta markets. Homebuyers in wildfire-prone areas increasingly understand the risk. Insurers increasingly care. Municipal planners increasingly require it. Building to WER-2 today positions you ahead of regulation that is coming.

9. The Honest Truth About Wildfire Hardening

This guide provides construction measures that reduce the probability of your building igniting during a wildfire event. It is important to understand what this means and what it does not mean.

What hardening does

Hardening dramatically improves the odds that your home survives a wildfire. Research from IBHS and NIST across multiple major fire events consistently shows that hardened buildings survive at far higher rates than unhardened buildings in the same conditions. The measures in this guide are based on that research and on decades of mandatory practice in Australia.

Hardening buys time. A building that can resist ember exposure, radiant heat, and debris for 30 to 60 minutes will survive most wildfire exposures because the threat is temporary — the fire front passes, the burning neighbour's fuel is consumed, the ember storm subsides.

What hardening does not do

Hardening does not make your home fireproof. No building is fireproof. In extreme conditions — sustained high winds, multiple simultaneous exposures, conditions that exceed design assumptions — even well-hardened buildings can be lost.

The WER system is a voluntary framework. It is not a building code. It is not regulated. It carries no legal warranty or guarantee. The specifications are based on the best available research and international standards, but wildfire behaviour is inherently unpredictable and influenced by factors beyond any individual homeowner's or builder's control.

The community factor

Your building does not exist in isolation. One hardened building in a neighbourhood of unhardened buildings has significantly better survival odds. But a neighbourhood where every building is hardened has dramatically better odds — because the structure-to-structure fire cascade that destroys communities never starts.

This is why these guides are free. Every home that hardens makes every neighbouring home safer. The goal is not to sell products or services to individual homeowners — it is to shift the baseline. If WER-2 becomes the standard for new construction and WER-1 becomes the standard for maintenance of existing homes, Canadian communities will be fundamentally more resilient to wildfire.

10. Where This Comes From

National Research Council of Canada (NRC): Bénichou, N., et al. (2021). National Guide for Wildland-Urban Interface Fires. NRC: Ottawa. 192 pp. Free at nrc-publications.canada.ca.

AS 3959:2018 (Australia): Construction of Buildings in Bushfire-Prone Areas. Mandatory since 2009.

California Building Code Chapter 7A: Materials and Construction Methods for Exterior Wildfire Exposure.

IBHS Wildfire Prepared Home: Insurance Institute for Business & Home Safety.

NIST Technical Note 2228: Butler, K.M., et al. (2022). 187 fence fire experiments.

NIST Post-Fire Investigations: Marshall Fire and Camp Fire structure-to-structure spread documentation.

FireSmart Canada: firesmartcanada.ca.

Verification Pathways

The WER system recognizes three pathways to meet each specification. This mirrors how building codes work — a prescriptive path for straightforward compliance, and alternative solution paths for flexibility.

Deemed-to-Satisfy

Materials and assemblies explicitly named in the FireHard specification. If the design guide lists it, it meets the standard. Example: fibre cement panel, metal cladding, stucco, or masonry all satisfy “noncombustible cladding (or engineered equivalent)” without further testing.

Tested Equivalent

Products tested to the referenced standard by a recognized testing laboratory. The manufacturer’s test report is the evidence of compliance. Example: an ember-resistant vent not listed in this guide but tested to ASTM E2886 by an accredited lab meets the WER-2 vent specification.

Engineered Alternative

A P.Eng. assessment demonstrating equivalent performance through analysis. The engineer’s sealed report is the evidence. Example: a heavy-timber fence post (140×140mm minimum) may satisfy the WER-2 fencing specification through charring rate analysis, even though it is not noncombustible.

Fire-Rated Timber

Where a specification says “NC or fire-rated,” fire-rated timber is an acceptable alternative when it meets minimum section dimensions. Large-section timber chars at a predictable rate (approximately 0.65mm/min for softwood per Eurocode 5) and can maintain structural integrity for defined periods. For fencing, outbuilding framing, and deck substructure, timber sized to resist ignition for the design fire exposure period is acceptable at WER-1 through WER-3. Minimum section dimensions are specified in the relevant design guides. At WER-4, all exterior materials must be noncombustible — no timber alternatives.

Close Neighbour Exposure Level (CNEL)

Most Canadian subdivision homes are built 1.5–6 metres apart. If any face of your home is within 10 metres of a neighbouring structure, the CNEL system applies to that face. Measures scale with WER level. See the CNEL section in each FireHard design guide and Construction Detail Guide 6 for full technical details.

11. About FireHard

FireHard is the public-facing brand of Wildernest Systems Inc., a Canadian company focused on wildfire hardening for residential buildings.

Free resources: Self-assessment guides, construction guides, design guides. All free at firehard.ca.

Products: Fire Hard exterior manual roller shutters.

Professional services: P.Eng. WER assessments through Bulkley Valley Engineering Services Ltd. (EGBC Permit No. 1001683).

Landscape architecture: Defensible-space design through Lazzarin Svisdahl Landscape Architects.

Contact: firehard.ca

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