

FIREHARD CANADA

WER-1 DESIGN GUIDE

MAINTENANCE & BASIC PREPAREDNESS

A comprehensive guide for homeowners and contractors

Ember exposure zone — basic good practices, maintenance, and low-cost upgrades

Typical cost: \$0–\$2,000 | Time: 1–2 weekends

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This guide is free. It always will be.

For approved products, materials, and assemblies, see the FireHard Component & Assembly Reference at firehard.ca/components.

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Not professional advice: This guide does not constitute professional engineering, architectural, or construction advice. It is not a substitute for the services of a licensed engineer, architect, or other qualified professional. Users should engage qualified professionals for design, specification, and construction of wildfire-resistant assemblies.

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1. What WER-1 Means

WER-1 is the foundation that all higher levels build upon. WER levels are cumulative — WER-2 includes all WER-1 measures plus additional measures, WER-3 includes all WER-1 and WER-2, and so on. Completing WER-1 is the essential first step regardless of your final WER level. Your home is in an area where windborne embers from a wildfire could reach your property. Embers can travel 1–10 km ahead of a fire front, landing on roofs, in gutters, against walls, and in any gap or crevice. WER-1 addresses this ember exposure through maintenance, housekeeping, and basic material upgrades. This guide complements FireSmart Canada guidance — FireSmart addresses vegetation management around your property; FireHard addresses the building itself.

WER-1 applies when vegetation is distant (typically 100m+ from dense conifers on flat ground), but ember transport is still possible. This is the baseline level — every home in a wildfire-prone area should meet WER-1 regardless of what other measures may be needed. Slope correction: if the ground slopes uphill from vegetation toward your home at more than 10 degrees, your effective WER level increases — see the slope correction table in the WER Technical Document Section 3.1. Even at WER-1, uphill slope from nearby vegetation warrants additional vigilance. Estimated radiant heat at WER-1: less than 10 kW/m² (primarily ember attack).

THE GOAL

Close every gap. Clean every surface. Remove every ignition pathway between an ember and your home's structure. Most WER-1 measures cost nothing except time.

2. In Plain English

What You're Dealing With

Embers — tiny burning fragments carried by wind — are the number one way homes catch fire during a wildfire. They can travel kilometres ahead of the fire itself, landing on your roof, in your gutters, against your walls, and in any gap or crack in your home. WER-1 is about closing those gaps and removing the fuel they land on.

What You're Actually Doing

Think of it as a deep clean and tune-up for your home's exterior. You're clearing debris from gutters and roof valleys, screening vents so embers can't get in, sealing gaps around pipes and wires, moving firewood away from the house, and replacing any dead or dying plants near the foundation with gravel or stone. Most of this is weekend work with basic tools.

What It Costs

Most WER-1 measures cost nothing — they're maintenance and housekeeping. The few paid upgrades (vent screens, metal gutter guards, a bag of gravel for the foundation strip) typically total \$200–\$2,000 depending on your home's size and condition. That's less than a single insurance premium increase in many wildfire-prone areas.

What Happens If You Don't

Embers find gaps. A single ember in an unscreened attic vent can ignite your home from the inside while the fire is still kilometres away. Homes lost to ember attack often burn down while neighbouring homes with basic maintenance survive. WER-1 is the foundation everything else builds on.

Working With Contractors

WER-1 is designed for homeowner DIY. However, if you're not comfortable working at height (gutters, roof, soffits) or have mobility limitations, a general handyperson or home maintenance contractor can complete most WER-1 measures in a day. You do not need a specialized wildfire contractor for WER-1.

Getting the Details Right

Even simple work matters when it comes to fire. Vent screens must be the right mesh size (3mm maximum at WER-1) and properly secured — not just stapled over the opening. Gap sealing must use non-combustible caulk, not standard silicone that melts at low temperatures. When you buy materials, read the product label and follow the manufacturer's installation instructions. A vent screen installed with gaps around the edges is worse than no screen at all, because it creates a false sense of security.

THE SIMPLE TEST

Walk around your home. Look at every vent, every gap where a pipe or wire enters the wall, every place where the roof meets the wall. If you can see daylight, an ember can get in. If you can slide a pencil into a gap, it needs sealing. That's WER-1.

3. Specifications by Building Element

The following specifications address every component of your home’s exterior envelope. Each specification references the relevant FireHard Construction Detail Guide for additional technical detail. For approved products and tested assemblies, see the FireHard Component & Assembly Reference (firehard.ca/components).

3.1 Roof & Eaves

The roof is the largest surface area exposed to ember landing. Gutters accumulate debris that embers can ignite. Eaves and soffits provide sheltered spaces where embers lodge.

Reference: Construction Detail Guide 2 — Roof & Eaves

Component	WER-1 Specification
Roof covering	Class A fire-rated (ASTM E108 / CAN/ULC-S107). Metal, asphalt shingles, concrete tile, clay tile, or fibre cement. Verify rating on product packaging. Replace any unrated or deteriorated roofing.
Underlayment	Code minimum. No additional sarking required at WER-1.
Gutters	Clean gutters and downspouts of all leaf litter, pine needles, and debris. Inspect twice annually (spring and autumn). Install non-combustible gutter guards if debris accumulation is persistent. Metal gutters preferred over vinyl.
Soffits	Enclosed soffits preferred. If open eaves exist, ensure no gaps where embers can enter attic space. Inspect for holes, cracks, or missing sections. Repair with non-combustible patching material.
Fascia	Maintain in good repair. Seal any gaps between fascia and roof sheathing. Replace rotted sections.
Roof penetrations	Seal all gaps around plumbing vents, exhaust vents, and chimneys with non-combustible caulk or metal flashing. No visible gaps >3mm. Install spark arrester on wood-burning chimney (12mm mesh).
Roof surface	Remove all accumulated debris: leaves, needles, moss, branches. Trim overhanging branches to 3m clearance from roof surface.
Valleys and intersections	Clear all debris from roof valleys, around dormers, and at wall-to-roof junctions. These are primary ember accumulation points.

3.2 Exterior Walls

At WER-1, existing wall cladding is acceptable regardless of material. The focus is on eliminating ignition pathways at the base of walls and ensuring no gaps allow ember entry.

Reference: Construction Detail Guide 6 — Exterior Walls & Cladding

Component	WER-1 Specification
Cladding	Any code-compliant cladding acceptable. Maintain in good repair. Repair or replace damaged, cracked, or missing sections. No bare wood exposure.
Wall base (0–400mm)	Clear all combustible materials from contact with wall base: firewood, lumber, cardboard, recycling bins, mulch. Maintain

Component	WER-1 Specification
	300mm clearance between combustible storage and wall.
Gaps and joints	Seal all visible gaps in cladding, at corners, around penetrations, and at wall-to-foundation junction. Use exterior-grade non-combustible caulk.
Wall-to-roof junction	Ensure no gaps where wall meets roof or soffit. Seal with non-combustible caulk or metal flashing.
Service penetrations	Seal around electrical meters, hose bibs, dryer vents, and any pipe or cable penetrations through the wall. No visible gaps.
Corner trim and detail	Maintain all corner boards, trim, and decorative elements. Seal gaps. These areas accumulate windblown debris and embers.

3.3 Windows, Doors & Openings

Windows are the weakest point in the building envelope during wildfire. Single-pane and non-tempered glass can crack from radiant heat at distances well beyond flame contact. At WER-1, the focus is on maintaining existing glazing and ensuring no gaps around frames.

Reference: Construction Detail Guide 1 — Openings

Component	WER-1 Specification
Glazing	Code minimum. No upgrade required at WER-1. Ensure all panes are intact — replace cracked or broken glass immediately.
Window frames	Any code-compliant frames acceptable. Ensure weatherstripping is intact. Seal gaps between frame and wall with exterior caulk.
Exterior doors	Maintain in good repair. Ensure weatherstripping seals fully when closed. No visible gaps at threshold or frame. Solid core preferred over hollow core.
Garage doors	Maintain weatherstripping at bottom seal and all edges. No gaps >3mm. Remove combustible storage from against interior face of garage door.
Skylights	Maintain seals. Clear debris from skylight curb. No upgrade required at WER-1.
Pet doors	Ensure pet door closes fully and seals. Consider non-combustible pet door if replacing.

3.4 Vents & Penetrations

Vents are the #1 ember entry point. Research consistently shows that ember intrusion through unscreened or poorly screened vents is the primary ignition pathway for structure loss in WUI fires.

Reference: Construction Detail Guide 3 — Vents & Penetrations

Component	WER-1 Specification
Gable vents	Screen with 3mm (1/8") non-combustible metal mesh if not already screened. Replace damaged screens. Gable vents are the highest-risk vent type.
Soffit vents	Ensure all soffit vents are screened with 3mm mesh minimum.

Component	WER-1 Specification
	Replace missing or damaged screens.
Foundation/crawlspace vents	Screen with 3mm mesh. Clear debris from vent faces. Ensure vents are not blocked by soil, mulch, or vegetation.
Ridge vents	Ensure baffles or mesh are intact. Clear debris from ridge line.
Dryer/exhaust vents	Ensure flap closes fully when not in operation. No screen on dryer vent (lint fire hazard). Ensure exhaust terminates away from combustible materials.
Plumbing and service penetrations	Seal all gaps around pipes, cables, and conduit entering the building. Use non-combustible caulk or fire-stop foam.
Attic access	Ensure attic hatch or pull-down stairs seal fully when closed. Weatherstrip if gaps visible.

3.5 Decks & Attachments

Decks, porches, carports, and pergolas are attached combustible structures that can ignite from ember accumulation or ground-level fire and transmit fire directly to the building. At WER-1, the focus is maintenance and debris removal.

Reference: *Construction Detail Guide 4 — Decks & Attachments*

Component	WER-1 Specification
Deck surface	Maintain in good repair. Replace rotted or heavily weathered boards. Avoid untreated softwood. Composite, hardwood, or treated wood acceptable. Clear all debris from deck surface and gaps between boards.
Under-deck zone	Clear ALL combustible storage from under decks: firewood, lumber, furniture, cardboard, propane tanks. This is the single highest-priority item for deck fire safety.
Deck-to-wall junction	Ensure no gaps between deck framing/ledger and building wall. Seal with non-combustible flashing or caulk.
Attached structures	Carports, pergolas, covered porches: clear debris from roof surfaces, clean gutters if present, remove combustible storage.
Stairs and railings	Maintain in good repair. Clear debris from stair treads and landings.

UNDER-DECK STORAGE

This is the #1 priority action for any home with a deck. NIST and IBHS research consistently identifies under-deck combustible storage as a primary ignition pathway. Firewood stacked under a deck is the equivalent of building a campfire against your house. Move ALL combustible materials out from under the deck. This single action, which costs \$0, can be the difference between your home surviving a wildfire and not.

3.6 Fencing, Landscaping & Site

Fences, vegetation, and ground cover within 1.5m of the building create direct fire pathways to the structure. At WER-1, the focus is on breaking these pathways through maintenance and simple changes.

Reference: *Construction Detail Guide 5 — Fencing, Landscaping & Site*

Component	WER-1 Specification
Fence within 1.5m	Non-combustible section preferred where fence meets building. At minimum, ensure no combustible debris at fence base near building. See 8-foot rule below.
Ground cover 0–1.5m	Non-combustible preferred: gravel, stone, concrete, pavers. Remove combustible mulch (wood chip, bark, rubber) from within 1.5m of building. Replace with gravel (min 75mm depth).
Vegetation 0–1.5m	No vegetation in contact with building. No plants within 300mm of wall. Refer to FireSmart Canada Zone 1A. Remove dead vegetation, dried grass, and accumulated leaf litter. Refer to FireSmart Canada Zone 1A.
Firewood storage	Store firewood minimum 10m from building per FireSmart Canada Zone 1A/1B recommendations. Never stack against building wall or under deck/porch.
Propane and fuel	Propane tanks, gasoline containers, and other fuel sources: store minimum 3m from building. Ensure tank clearance meets fire code.
Combustible items	Move recyclables, cardboard, patio furniture cushions, and other combustible items away from building walls. Store inside or in non-combustible enclosure.
Outbuildings within 10m	Class A roof covering. Clear combustible storage from around exterior. No firewood stacked against shed.
THE 8-FOOT RULE Both IBHS and CAL FIRE recommend replacing the first 2.4m (8 feet) of combustible fence nearest the building with non-combustible material. A single metal fence section or gate (\$200–\$500 installed) between the combustible fence and building wall breaks the fire pathway. Standard fencing products are sold in 8-foot sections, making this a convenient retrofit. This is one of the most cost-effective wildfire measures available.	

4. The \$0 Checklist

Every item below costs nothing except your time. A single weekend can address all of them. Do these first, regardless of anything else.

<input type="checkbox"/>	Action	Time Estimate
<input type="checkbox"/>	Clean gutters and downspouts of all debris	1–2 hours
<input type="checkbox"/>	Clear roof surface of leaves, needles, moss, branches	1–3 hours
<input type="checkbox"/>	Clear debris from roof valleys, dormers, and wall-to-roof junctions	30–60 minutes
<input type="checkbox"/>	Remove ALL combustible storage from under decks and porches	1–2 hours
<input type="checkbox"/>	Move firewood 10m+ from building	1–2 hours
<input type="checkbox"/>	Clear combustible mulch from within 1.5m of building walls	1–2 hours
<input type="checkbox"/>	Remove vegetation within 300mm of walls	1–2 hours
<input type="checkbox"/>	Move propane tanks, fuel, recyclables away from walls	30 minutes
<input type="checkbox"/>	Clear debris from fence bases near building	30 minutes
<input type="checkbox"/>	Seal visible gaps around service penetrations (exterior caulk)	1–2 hours
<input type="checkbox"/>	Check all vent screens — replace damaged or missing mesh	1–2 hours
<input type="checkbox"/>	Check weatherstripping on doors and garage door	30 minutes
<input type="checkbox"/>	Trim branches to 3m clearance from roof and chimney	1–3 hours
<input type="checkbox"/>	Clear debris from under attached structures (carport, pergola)	30–60 minutes
TIME REQUIRED A motivated homeowner can complete the entire \$0 checklist in a single weekend. This alone puts you ahead of the majority of homes in wildfire-prone areas.		

5. Low-Cost Upgrades (\$50–\$2,000)

These upgrades provide significant additional protection for modest investment. Prioritise in the order shown — each builds on the previous.

Upgrade	What to Do	Approximate Cost
3mm vent screening	Retrofit existing vents with 3mm non-combustible metal mesh. Priority: gable vents first, then foundation, then soffit. See Component Reference for approved products.	\$50–\$300 (DIY)
Non-combustible gutter guards	Install metal mesh gutter guards to prevent debris accumulation. Stainless steel or aluminium mesh preferred.	\$100–\$400
Gravel at building perimeter	Replace combustible mulch with 75mm gravel or stone within 1.5m of all walls. Approximately 1 cubic yard per 8 m ² .	\$100–\$400
Metal fence section	Replace first 2.4m of combustible fence at building attachment with metal gate or panel. Breaks fire pathway.	\$200–\$500
Spark arrester	Install on wood-burning chimney. 12mm mesh stainless steel. Prevents ember emission and ingress.	\$100–\$300
Seal gaps and caulk	Comprehensive caulking: all penetrations, joints, wall-to-foundation, wall-to-roof. Use exterior-rated non-combustible caulk.	\$50–\$200 (DIY)
Under-deck screening	If deck is >600mm above grade, install non-combustible mesh screening to prevent debris accumulation underneath.	\$200–\$600
Weatherstrip upgrade	Replace worn weatherstripping on exterior doors and garage door. Ensure full seal.	\$50–\$200

6. Annual Maintenance Calendar

Spring (Before Fire Season)

<input type="checkbox"/>	Clean gutters and all roof surfaces of winter debris
<input type="checkbox"/>	Inspect and repair all vent screens
<input type="checkbox"/>	Check caulking and seals at all penetrations, joints, and junctions
<input type="checkbox"/>	Clear combustible mulch and debris from 1.5m building perimeter
<input type="checkbox"/>	Verify under-deck area is clear of all combustible storage
<input type="checkbox"/>	Move firewood to 10m+ storage location
<input type="checkbox"/>	Test garage door seal and weatherstripping on all doors
<input type="checkbox"/>	Trim overhanging branches to 3m clearance from roof
<input type="checkbox"/>	Clear debris from fence bases and between parallel fences
<input type="checkbox"/>	Inspect roof covering for damage, missing shingles, or deterioration

Autumn (Post-Season)

<input type="checkbox"/>	Clean gutters again after leaf fall
<input type="checkbox"/>	Clear roof surfaces of autumn debris
<input type="checkbox"/>	Inspect for any damage from summer weather events
<input type="checkbox"/>	Check that all vent screens survived summer heat cycling
<input type="checkbox"/>	Rake and remove leaf litter from 1.5m building perimeter

7. Close Neighbour Considerations at WER-1

If any neighbouring structure is within 10 metres of your home, you have a close neighbour exposure in addition to your wildland exposure. The Close Neighbour Exposure Level (CNEL) system provides a separation-distance-based framework for hardening the affected building face. Even at WER-1, a neighbouring structure fire can generate extreme radiant heat at close range.

At WER-1 with close neighbour exposure, the minimum measures are:

CNEL-1 (separation 6–10m, or 3–10m with hardened neighbour): Clear combustible materials from the gap. Non-combustible ground cover in the gap. Non-combustible fencing between structures. Screen vents on the facing wall to 3mm mesh. Tempered glazing on facing windows. Enclosed non-combustible soffits on the facing eave.

CNEL-2 (separation 3–6m, neighbour unrated): All CNEL-1 measures plus full non-combustible cladding on the facing elevation, Type X gypsum sheathing behind cladding, tempered glazing on all facing windows, ASTM E2886 ember-resistant vents on the facing side, non-combustible attachments on the facing elevation.

CNEL-3 (separation <3m or high-risk neighbour): All CNEL-2 measures plus fire-rated wall assembly on the facing elevation, wildfire shutters on all facing windows, sealed soffit with no vents on the facing eave, radiant heat barrier between properties.

For full specifications, see the standalone FireHard Close Neighbour Exposure Level (CNEL) Guide at firehard.ca. The CNEL level is determined by separation distance and neighbour condition — see the CNEL Guide for the decision tree.

8. When to Move Beyond WER-1

WER-1 is the right level when your home is well separated from wildland vegetation (typically 100m+ from dense conifers on flat ground). If any of the following apply, you should assess for WER-2 or higher:

• Dense coniferous forest within 100m of your property on flat ground
• Any coniferous vegetation within 30m on uphill slopes toward your home
• Neighbouring structures within 6m (Close Neighbour Exposure Level (CNEL) applies at any WER level)
• Your insurer has flagged your property as high wildfire risk
• You are in a FireSmart-assessed community with identified WUI hazard
• Recent wildfire history within 10km of your property

Complete a FireSmart Canada Home Assessment (firesmart.ca) for vegetation management, and use the FireHard Self-Assessment Guide (firehard.ca/assess) to determine your WER level, or contact a professional for a P.Eng. assessment.

THE COMMUNITY ARGUMENT

WER-1 measures are the foundation that every other WER level builds on. Even if your home needs WER-2 or WER-3, you still need to do everything in WER-1 first. And every home that completes WER-1 makes the entire neighbourhood safer — because the measures that prevent your home from igniting also prevent your home from becoming a fire source for your neighbours.

9. Verification Pathways

The FireHard WER system provides three pathways to demonstrate compliance:

Deemed-to-Satisfy

Follow the specifications in this guide exactly as written, using materials and products listed in the FireHard Component & Assembly Reference. This is the simplest pathway — no testing or engineering required.

Tested Equivalent

Use alternative materials or products that have been tested to an equivalent or higher standard. The product must carry certification to the relevant test standard (e.g., ASTM E108 for roof coverings, CAN/ULC-S107 for flame spread). Document the test certificate in your compliance file.

Engineered Alternative

Engage a P.Eng. to design an alternative approach that achieves equivalent performance. The engineer's assessment and stamp provide the compliance basis. This pathway is primarily used at WER-3 and WER-4 but is available at any level.

10. Documenting Your Work

Canadian wildfire insurance is changing. When insurance rebate programs arrive, homeowners who documented their work will be first in line. For each measure you complete, record:

Item	What to Keep
Photos	Before, during, and after. Date-stamped. 3–5 per measure. Include close-ups of materials, product labels, and connections.
Material receipts	All receipts for materials purchased. Scan or photograph paper receipts.
Contractor invoices	If using a contractor, keep invoices referencing the WER specification addressed.
Self-assessment checklist	Complete the WER Self-Assessment Guide. Update when you complete measures.
Product spec sheets	For key products (vent screens, gutter guards, caulk), save manufacturer’s fire test documentation.

Organize into a FireHard Hardening File by building element. When your insurer asks — hand them the file. Visit firehard.ca/partners for insurance partner programs.

11. About FireHard Canada

FireHard Canada (firehard.ca) is a trade name of Wildernest Systems Inc. The WER system was developed by professionals at Wildernest Systems Inc. and Bulkley Valley Engineering Services Ltd., with landscape architecture expertise from Lazzarin Svisdahl Landscape Architects.

Products: Fire Hard exterior manual roller shutters (firehard.ca).

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 (BCSLA).

Get involved: firehard.ca/partners | Contact: info@firehard.ca

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