FIREHARD.CA

CONSTRUCTION DETAIL GUIDE 5

Fencing, Landscaping & Site

Fence, Ground Cover, Outbuilding & Zone 1A Details for WUI Construction

Adapted from AS 3959:2018, California Building Code Ch. 7A, NRC Guide, FireSmart Canada, and IBHS standards.

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Contents

1. Why Fencing & Site Are Critical

Fences are fuses. NIST research across 187 fire experiments demonstrated that residential fences are efficient carriers of fire, spreading it along their length and generating firebrands that carry fire elsewhere. When a combustible fence attached to a building ignites, it creates a direct fire pathway to the structure — flames travel along the fence and arrive at the building wall within minutes, not hours. In the 2012 Waldo Canyon fire in Colorado Springs, post-fire surveys found that burning fences generated ember showers that ignited multiple structures downwind.

IBHS and NIST research identified several critical findings about fence fire behaviour:

Fence-to-structure ignition

A combustible fence attached to a building creates a direct fire pathway. When the fence ignites — from embers, from burning debris at its base, or from a neighbouring fire — flames travel along its length and arrive at the building. IBHS recommends non-combustible or fire-rated fencing within 1.5 metres (5 feet) of any building, and specifically where fences attach to buildings. CAL FIRE recommends replacing attached combustible fencing or gates with non-combustible material for the first 2.4 metres (8 feet). California is finalising Zone 0 regulations that will require non-combustible or fire-rated fencing within the 5-foot zone around structures, with enforcement beginning in 2026.

Privacy fences are the most vulnerable

NIST testing found that privacy fence design — where vertical planks are on the same side as horizontal support members — creates ledges where embers accumulate and ignite. The horizontal-to-vertical intersection provides both a surface for ember lodging and a confined space that promotes rapid flame growth. Lattice fencing applied to both sides of posts was the worst performer: NIST found that fire growth and lateral flame spread were much greater in this double-sided design due to the chimney and tunnel effects created between the two lattice panels.

Mulch at the base of fences accelerates fire

NIST found that when mulch lined the bottom of a fence, fire advanced swiftly across the fine combustible material, which served as a rich source of embers and allowed flames to quickly ignite the fence along its entire length. Pine straw mulch was the worst performer. The combination of combustible mulch and a combustible fence creates a fire pathway that can deliver flames to a building in minutes. Non-combustible ground cover (gravel, stone, bare soil) at the base of fences is critical.

Parallel fences create explosive fire behaviour

NIST found that when two combustible fences were placed back to back — a common scenario at property lines — the most intense fires erupted. Radiant heat trapped between the fences created oven-like conditions, with flames completely engulfing 2.4m × 1.8m fence panels in as little as four minutes. Even a 0.9m (3 foot) separation between parallel fences was insufficient to prevent this behaviour. NIST recommended that homeowners avoid placing two fences back to back.

FENCES ARE FUSES

NIST researcher Kathryn Butler: “In the highest hazard category, the fences and mulch are going to carry the fire along toward your house in a matter of a few minutes, not hours.” A combustible fence attached to your home is a lit fuse waiting for a spark. The single most effective measure is replacing the first 2.4m (8 feet) of fence nearest the building with non-combustible material — metal, masonry, concrete, or stone. This breaks the fire pathway between the fence and your home.

Landscaping and the Structure Ignition Zone

The Structure Ignition Zone (SIZ) is the area around a building that determines whether the building ignites during a WUI fire. FireSmart Canada divides this into priority zones: Zone 1A (0–1.5m, non-combustible zone), Zone 1B (1.5–10m, fire-resistant landscaping), Zone 2 (10–30m, fuel reduction), and Zone 3 (30–100m, vegetation management). The landscaping and site measures in this guide focus on Zones 1A and 1B — the areas closest to the building where construction details and material choices have the greatest impact.

FireHard Canada references FireSmart Canada for comprehensive vegetation management guidance. FireSmart has developed detailed, region-specific guidance on plant selection, vegetation spacing, and fuel management that is beyond the scope of a construction detail document. For site-specific landscape design that integrates WER construction requirements with defensible space planning, professional landscape architecture services are available through Lazzarin Svisdahl Landscape Architects as part of a FireHard Canada WER assessment.

FIRESMART CANADA

FireSmart provides comprehensive, free vegetation management guidance at firesmartcanada.ca. This module does not duplicate that work. Instead, it covers the construction and material decisions at the building-to-landscape interface: fencing, ground cover within 1.5m, outbuildings, and site drainage. For vegetation management beyond 1.5m from the building, refer to FireSmart Canada.

2. Specifications by WER Level

2.1 Fencing and Gates

Component	WER-1	WER-2	WER-3	WER-4
Fence within 1.5m of building	Non-combustible section preferred where fence meets building. Clear debris from base.	Non-combustible required within 1.5m: metal (steel, aluminium, chain link), masonry, stone, or concrete.	Non-combustible required within 3m. Steel or masonry preferred.	Non-combustible required within 6m. Steel panel or masonry. Radiant heat barrier function.
Fence attachment to building	Non-combustible gate or break between fence and building wall preferred.	Non-combustible connection required. Metal gate section (min. 2.4m / 8 ft) between combustible fence and building.	Non-combustible connection. Metal or masonry. No combustible material in contact with building wall.	Non-combustible. Fire-rated connection to building envelope.
Privacy fence design	Avoid double-sided lattice in WUI areas.	Single-sided plank on metal posts preferred. Avoid double-sided lattice (NIST highest-hazard design).	Non-combustible privacy: metal panel, steel board, or masonry within 3m. No wood or composite.	Non-combustible privacy fence throughout property within 6m. Steel panel preferred (radiant barrier).
Fence base / ground cover	Clear debris from fence base regularly.	Non-combustible ground cover (gravel, stone) 300mm each side of fence base. No mulch at fence base.	Non-combustible ground cover 600mm each side. No mulch within 1m of fence.	Non-combustible ground cover 1m each side. No combustible mulch within 3m of building.
Gates	Non-combustible gate preferred where gate meets building.	Non-combustible gate required at building attachment. Metal (steel, aluminium, wrought iron).	Non-combustible gates throughout within 3m of building.	Non-combustible gates throughout.
Parallel fences (at property line)	Avoid if possible. If present, clear debris between fences.	Avoid parallel combustible fences. If unavoidable, maintain min. 1.8m (6 ft) separation with non-combustible ground cover between.	No parallel combustible fences. If two fences needed, at least one must be non-combustible.	Non-combustible fencing only. Steel panel provides radiant barrier between properties.

THE 8-FOOT RULE

Both IBHS and CAL FIRE recommend replacing the first 2.4 metres (8 feet) of combustible fence

Component	WER-1	WER-2	WER-3	WER-4
nearest the building with non-combustible material. Standard fencing products are often sold in 8-foot sections, making this a convenient retrofit unit. A single metal fence section between the combustible fence and the building wall breaks the fire pathway. This is one of the most cost-effective wildfire protection measures available: a single 2.4m metal gate or fence panel ($200–$500 installed) can prevent a fence fire from reaching your home.				

2.2 Ground Cover and Mulch (Zone 1A: 0–1.5m)

Component	WER-1	WER-2	WER-3	WER-4
Ground surface 0–1.5m from building	Non-combustible preferred: gravel, stone, concrete, pavers. Remove combustible mulch.	Non-combustible required: gravel (min. 75mm depth), stone, concrete, pavers. No wood mulch, bark, or rubber mulch.	Non-combustible required. Gravel, stone, or concrete extending full 1.5m. No organic material.	Non-combustible. Concrete or stone extending 1.5m minimum. Per IBHS Zone 0.
Combustible mulch	Replace within 1.5m of building with gravel or stone.	No combustible mulch within 1.5m. No pine straw mulch within 3m.	No combustible mulch within 3m of building.	No combustible mulch within 6m.
Vegetation 0–1.5m	No vegetation in contact with building. No plants within 300mm of wall. Refer to FireSmart Zone 1A.	No vegetation within 1.5m of building (per FireSmart Zone 1A). Non-combustible ground cover only.	No vegetation within 1.5m. Non-combustible ground cover. Hardscape integration.	No vegetation within 1.5m. Hardscape only.
Drainage	Grade away from foundation. No ponding against walls.	Grade away from foundation. Non-combustible drainage materials.	Grade away. Non-combustible. Rock swales preferred over combustible landscape features.	Grade away. Engineered drainage. Non-combustible throughout.

MULCH MATTERS

NIST testing found that pine straw mulch was the worst-performing ground cover for fire spread. Wood chip mulch, bark mulch, and rubber mulch also ignite readily from embers and spread fire to adjacent structures. Non-combustible ground cover within 1.5m of the building is one of the highest-impact, lowest-cost measures: a cubic yard of gravel costs $50–$80 and can cover approximately 8 m² at 75mm depth. This single change eliminates the most common pathway for fire spread from ground level to the building wall.

2.3 Outbuildings and Accessory Structures

Component	WER-1	WER-2	WER-3	WER-4
Sheds within 10m	Class A roof covering. Clear combustible	Class A roof. Non-combustible siding preferred. Clear	Class A roof. Non-combustible siding. Meet building WER	Meet building WER level or relocate >10m. Per AS

Component	WER-1	WER-2	WER-3	WER-4
	storage from around exterior. No firewood stacked against shed.	1.5m non-combustible zone around shed.	level if within 6m of building. Or relocate >10m.	3959 Cl. 3.2.
Firewood storage	Store minimum 10m from building. Never against building wall or under deck/eave.	Store minimum 10m from building. Non-combustible base (gravel or concrete pad).	Store minimum 10m from building. Non-combustible base. Not upslope from building.	Store minimum 30m from building. Or in enclosed non-combustible structure.
Propane / fuel tanks	Per fire code. Minimum setback from building per AHJ.	Per fire code. Clear 3m non-combustible zone around tank. No vegetation or combustible storage.	Per fire code. Clear 3m zone. Non-combustible ground cover. Tank on non-combustible pad.	Per fire code. Consider buried tank. Non-combustible zone. Bespoke assessment.
Hot tubs / spa	Move combustible cover off when not in use during fire season.	Non-combustible base (concrete pad). No combustible skirting within 1.5m of building.	Non-combustible base and skirting. Locate >1.5m from building wall if combustible enclosure.	Non-combustible throughout. >3m from building if any combustible component.

OUTBUILDINGS AS IGNITION SOURCES

IBHS testing showed that outbuildings (sheds, playhouses, detached garages) within 10m of the home are significant ignition sources. A shed with a combustible roof is a large fuel load that, once ignited, exposes the building to sustained radiant heat and flame contact. IBHS requires outbuildings within 30 feet (9m) to meet strict construction requirements. For WER-3+, any outbuilding within 6m of the building should meet the same WER level as the building itself.

2.4 Combustible Items in Zone 1A

Component	WER-1	WER-2	WER-3	WER-4
Patio furniture	Move combustible cushions indoors during fire warnings.	Move combustible items >1.5m from building during fire season. Non-combustible furniture preferred.	Non-combustible furniture within 1.5m. Move cushions/umbrellas indoors during fire warnings.	Non-combustible furniture only within 3m. No combustible items in Zone 1A.
Door mats	Non-combustible mat preferred.	Non-combustible mat (rubber or metal grate). Move indoors during fire warnings.	Non-combustible mat only. Move indoors during warnings.	Non-combustible only.
Planters	No dry/dead plant material against building.	Non-combustible planters (concrete, metal, stone). No dry material. >300mm from wall.	Non-combustible planters only within 1.5m. No organic material against wall.	Non-combustible planters only. No combustible contents within 1.5m.

Component	WER-1	WER-2	WER-3	WER-4
Recycling / waste bins	Store away from building wall.	Store >1.5m from building. Non-combustible bins preferred.	Store >3m from building during fire season.	Store >3m or in enclosed non-combustible area.

2.5 Timber Size: Fences and Outbuilding Framing

The timber size principle — larger cross-sections char more slowly and maintain structural integrity longer — applies to fences and outbuildings as well as to the primary building. For site elements within the immediate zone around the home, understanding how quickly timber members burn helps prioritise what to replace and what to manage.

Fence posts and rails

A standard 89 x 89 mm (4x4) cedar fence post exposed to fire on all four sides chars at approximately 0.70 mm/minute (cedar is lower density than SPF). After 30 minutes, the remaining core is roughly 47 x 47 mm — marginal but potentially still standing. After 45 minutes, the core is approximately 16 x 16 mm and structurally failed. A 38 x 89 mm fence rail chars through the narrow dimension in approximately 27 minutes.

This matters because fence fires are fast. NIST TN 2228 testing showed that a 1.8 m wood privacy fence (standard Canadian residential fence) burns aggressively once ignited, producing sustained flames that can reach adjacent building walls within minutes. The fence itself is consumed relatively quickly — the danger is what it ignites on the way. A larger fence post does not meaningfully change this dynamic. The solution at WER-2+ is non-combustible or fire-rated fencing material (steel, aluminium, masonry) within 1.5–3 m of the building, not larger wood posts.

Outbuilding framing

Outbuildings — sheds, workshops, detached garages, carports — within 6 m of the main building represent a neighbouring structure fire risk similar to a neighbour's building. The framing system of the outbuilding determines how long it burns and how much radiant heat it produces.

Light-frame outbuilding (2x4 framing, plywood or OSB sheathing): Burns rapidly once the cladding is breached. A small shed can be fully involved in fire within 10–15 minutes. Peak radiant heat output is high but relatively brief.

Heavy timber outbuilding (post-and-beam, log construction): Burns more slowly but produces sustained radiant heat for a longer period. A log outbuilding can burn for 60–90 minutes before collapsing. The total heat exposure to the main building may be higher even though peak intensity is lower.

Non-combustible outbuilding (steel frame, metal cladding): Does not contribute fuel. A steel-clad outbuilding exposed to wildfire may warp or lose contents but does not produce sustained radiant heat that threatens adjacent structures. This is the preferred construction for outbuildings within 6 m of the main building at WER-3+.

PRACTICAL GUIDANCE

For outbuildings within 6 m of the main building: at WER-1/2, ensure no combustible storage between the outbuilding and main building, and clear the gap. At WER-3+, the outbuilding should either meet the same WER level as the main building or be relocated beyond 6 m. If neither is feasible, the CNEL system should be applied to the face of the main building that faces the outbuilding. For fencing, the priority is NC material within the immediate zone — not larger timber members. See Module 6 Section 2.5 for detailed charring rates.

3. AS 3959 and International Adaptation

AS 3959 does not contain specific fencing requirements, as fencing is addressed through the broader principle of separating combustible materials from buildings. The WER fencing specifications draw primarily on NIST and IBHS research and on California's emerging Zone 0 regulations. Key international references:

California Zone 0

California is finalising regulations requiring non-combustible materials within the 0–5 foot (0–1.5m) zone around structures, including fencing, mulch, and ground cover. These regulations are expected to take effect in 2026 with a three-year compliance window. The WER system aligns with this approach: WER-2+ requires non-combustible materials within 1.5m of the building.

IBHS Wildfire Prepared Home

IBHS requires a 0–5 foot non-combustible zone (Zone 0) around the building. Within this zone: no combustible fencing attached to the building, no combustible mulch, no combustible storage, no vegetation. Fencing within 5 feet must be non-combustible. The WER system adopts these requirements at WER-2+.

FireSmart Canada

FireSmart Zone 1A (0–1.5m) is the non-combustible zone closest to the building. FireSmart recommends: no combustible materials within 1.5m, non-combustible ground cover, no vegetation in contact with the building. FireSmart does not provide specific fencing construction requirements — the WER system fills this gap with specifications adapted from IBHS, NIST, and California research.

AS 3959 separation principles

While AS 3959 does not prescribe fencing materials, its separation principles apply. At BAL-40 and BAL-FZ, all structures (including fences) attached to or within the fire exposure zone of the building must be non-combustible or fire-separated. The 400mm zone rule applies to fence posts within 400mm of grade: non-combustible materials required. The WER system applies these principles to fencing at WER-3+.

Steel fencing as radiant heat barrier

Australian research demonstrated that panelised steel fencing can resist radiant heat exposure and function as a radiant barrier between properties. Where neighbouring buildings are within 10m (20 feet) of each other, steel panel fencing between properties provides added protection by blocking radiant heat transfer from one burning structure to another. This finding is directly applicable to Canadian WUI neighbourhoods with closer lot spacing.

4. Retrofit Upgrade Sequence

Fencing and site measures are among the most cost-effective wildfire protection upgrades. Many cost nothing.

Step 1: Clear Zone 1A ($0)

Remove all combustible items from within 1.5m of the building: firewood, lumber, cardboard, yard debris, combustible mulch, dead vegetation. Clear debris from fence bases. Move recycling bins away from the wall. This step is free and immediately effective.

Step 2: Replace mulch with gravel ($200–$600)

Replace combustible mulch within 1.5m of the building with 75mm gravel or river rock. Extend non-combustible ground cover to fence bases. A cubic yard of gravel covers approximately 8 m² at 75mm depth and costs $50–$80 delivered. Total for typical home perimeter: $200–$600.

Step 3: Install non-combustible fence section ($200–$500)

Replace the first 2.4m (8 feet) of combustible fence nearest the building with a non-combustible section: metal gate, aluminium fence panel, chain link, steel board, or masonry post and panel. This breaks the fire pathway from fence to building. A single metal gate panel costs $150–$400 installed.

Step 4: Clear debris at fence base ($0)

Clear all fine vegetative debris (pine needles, leaf litter, twigs) from fence bases. Remove climbing plants using fences as trellises. Apply non-combustible ground cover (gravel) 300mm each side of fence base. Ongoing maintenance — include in annual yard cleanup.

Step 5: Address outbuildings ($500–$5,000+)

Upgrade outbuilding roofs to Class A fire-rated. Replace combustible siding if within 10m of the building. Clear 1.5m non-combustible zone around outbuildings. Relocate firewood storage to minimum 10m from the building. Cost varies widely based on outbuilding size and condition.

Step 6: Replace combustible fencing ($2,000–$10,000+)

Replace remaining combustible fencing within 3m of the building with non-combustible materials. Options: steel panel privacy fence ($30–$60/lin ft installed); aluminium panel ($25–$50/lin ft); chain link with privacy slats ($15–$30/lin ft); masonry or concrete ($50–$100/lin ft). For most homes, Steps 1–3 provide the majority of protection for under $1,000.

COST-EFFECTIVENESS

Steps 1–4 cost under $1,000 total and address the two most common site-level ignition pathways: combustible materials in Zone 1A and fence-to-structure fire transfer. These measures require no professional installation. A homeowner who completes Steps 1–4 has addressed the majority of their fencing and site-related wildfire risk.

5. Product Research & Recommendations

FireHard Canada does not receive compensation from any manufacturer listed.

5.1 Non-Combustible Fencing

Steel privacy fence: BarrierBoss USA steel board fence; Fortress Building Products steel/aluminium fence systems; Colorbond steel fencing (Australian product, available through import). Aluminium privacy fence: various manufacturers with wood-grain texture finish. Chain link: standard galvanised or vinyl-coated (non-combustible despite vinyl coating — coating melts but steel remains). Wrought iron: traditional option, fully non-combustible. Concrete/masonry: concrete block, stucco-finished block, or precast concrete panels.

5.2 Non-Combustible Gates

Metal gates: steel, aluminium, or wrought iron swing or slide gates. Available from local fencing contractors and home improvement retailers. When replacing only the fence-to-building connection, a single metal gate is the most cost-effective option ($150–$400 installed for a standard pedestrian gate, $300–$800 for a double gate).

5.3 Non-Combustible Ground Cover

Gravel (crushed rock, river rock, pea gravel): most cost-effective option at $50–$80/cubic yard. Concrete pavers: $5–$15/sq ft installed. Natural stone: $10–$25/sq ft. Bare soil or compacted mineral soil: free. All of these are fully non-combustible and prevent ember ignition at the building base.

5.4 Landscape Architecture Services

6. Maintenance Protocol

6.1 Annual Inspection Checklist

1. Clear all combustible materials from Zone 1A (0–1.5m from building). No firewood, lumber, cardboard, or debris against walls.

2. Clear fine vegetative debris from fence bases. Remove leaf litter, pine needles, and twigs.

3. Remove climbing plants from fences within 3m of building. Trim vegetation away from fence lines.

4. Inspect non-combustible ground cover. Replenish gravel if depleted. Remove organic material that has accumulated on top of gravel.

5. Inspect fence-to-building connections. Verify non-combustible section is intact. Check gate hardware.

6. Inspect outbuildings. Clear 1.5m non-combustible zone. Verify roof in good repair. Remove combustible items from around exterior.

7. Verify firewood stored minimum 10m from building. Not stacked against any structure.

8. Check propane/fuel tanks. Clear 3m non-combustible zone. Verify connections and caps.

9. Pre-fire season: move combustible patio furniture, cushions, door mats, and planters indoors or >1.5m from building.

10. Review FireSmart vegetation management for Zones 1B–3. Trim trees, remove dead branches, maintain grass height <10cm in Zone 1A.

7. Referenced Standards

Standard	Title	Relevance
NIST TN 2228	Wind-Driven Fire Spread to a Structure from Fences and Mulch	187 experiments: fence fire behaviour, mulch ignition, parallel fences, ember generation.
IBHS Standard	Wildfire Prepared Home (2025)	Zone 0 (5-foot non-combustible zone), fence attachment, outbuildings within 30 feet.
CBC Chapter 7A	Exterior Wildfire Exposure	Zone 0 regulations (pending 2026), non-combustible materials requirements.
FireSmart Canada	FireSmart Begins at Home Manual	Zone 1A–3 vegetation management, non-combustible zone, defensible space.
NRC WUI Guide	National WUI Fires Guide (2021)	Priority Zone recommendations, SIZ concept, vegetation management.
AS 3959:2018	Construction in Bushfire-Prone Areas	Clause 3.2: attached structures. Separation principles. 400mm zone.
NFPA 1144	Reducing Structure Ignition Hazards	Defensible space, fencing, accessory structures.

8. Neighbouring Structure Exposure: Fencing & Site

The space between your home and your neighbour's home is the fire pathway during a wildland-urban interface event. Everything in that space — fencing, vegetation, ground cover, storage — affects the probability and intensity of fire transfer between structures. For full details, see Module 6.

Fences as fire highways between structures

NIST Technical Note 2228 documented through 187 fire experiments that combustible fences carry fire efficiently between structures. A wood privacy fence connecting your property to a neighbour's provides a direct, continuous combustible path. During a WUI event, fire can travel the full length of a fence in minutes. In dense neighbourhoods where fences connect property to property, a single ignition can propagate through an entire block via the fence network. This is why non-combustible or fire-rated fencing (steel, aluminium, chain link, masonry) is required within 1.5–6 metres of the building depending on WER level — and why the CNEL system specifies no combustible fencing in the gap between buildings.

The gap between buildings

In Canadian subdivisions with 1.5–6 metre separations, the gap between buildings is critical. Non-combustible ground cover throughout the gap (gravel, concrete, stone) eliminates the ground-level fire pathway. No combustible storage (firewood, lumber, garden furniture, recycling bins) should be in the gap. No combustible vegetation or mulch. Gas meters and utility lines in the gap should be protected. The gap should be treated as a fire separation zone, not as storage or garden space.

Community-level site management

Individual site management is necessary but not sufficient. The most effective protection against structure-to-structure fire spread is community-level action: neighbourhood-wide removal of combustible fencing between properties, community vegetation management, FireSmart neighbourhood recognition, and collective adoption of basic WER-1 measures (clear Zone 1A, Class A roof, enclosed eaves). Every home that implements basic measures reduces the probability that it becomes the fuel source that threatens its neighbours. See Module 6 Section 6.4 for community hardening strategies.

9. References

Standards and Codes

AS 3959:2018 + Amd 2:2020. *Construction of Buildings in Bushfire-Prone Areas.* Standards Australia. Clause 3.2.

California Building Code, Chapter 7A [SFM]. *Exterior Wildfire Exposure.* 2022. Zone 0 regulations (pending).

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Butler, K.M., et al. (2022). *Wind-Driven Fire Spread to a Structure from Fences and Mulch.* NIST Technical Note 2228. 187 experiments: fence types, mulch types, wind speeds, parallel fences, ember generation.

Maranghides, A., et al. (2021). NIST Camp Fire study. Post-fire analysis: fences and mulch as fire spread pathways in Paradise, CA.

IBHS (2025). “Wildland Fire Embers and Flames: Home Mitigations That Matter.” ibhs.org. System-based approach, Zone 0, fence-to-structure ignition.

Quarles, S.L., et al. (2010). *Home Survival in Wildfire-Prone Areas.* UC ANR Publication 8393.

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.

Disclaimer

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

FireHard Canada publishes free wildfire hardening resources for Canadian homes. Six Construction Detail Guides, FireHard Self-Assessment Guides, four FireHard Design Guides, a New Construction Design Guide, and the FireHard Technical Reference are all available free at firehard.ca.

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