

FIREHARD CANADA

Component & Assembly Reference

Specifications by WER Level and CNEL Tier

Wall assemblies, roof and eave assemblies, and mitigation categories for wildfire-resistant construction. All specifications organised by Wildfire Exposure Rating (WER-1 through WER-4) and Close Neighbour Exposure Level (CNEL-1 through CNEL-3).

How to Read This Reference

WER columns (WER-1 through WER-4): Specifications by Wildfire Exposure Rating level, applied to the entire building based on vegetation exposure assessment. Levels are cumulative - each includes all requirements of lower levels.

CNEL columns (CNEL-1 through CNEL-3): Specifications for Close Neighbour Exposure Level, applied **only to the facing elevation** of building faces within 10m of a neighbouring structure. CNEL-1: 6-10m separation. CNEL-2: 3-6m with unrated neighbour (most common Canadian suburban scenario). CNEL-3: under 3m or high-risk neighbour. Where both WER and CNEL apply, use the more stringent specification for each component.

New Const. (WER-3+): Optimised specifications for new construction at WER-3 and above, where the full assembly can be designed from the start.

For installation sequences, building science integration, and manufacturer requirements, refer to the WER Design Guides (WER-1 to 4), Construction Detail Modules (1 to 6), and Technical Bulletins (TB-01 to TB-03) at firehard.ca.

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1. Wall Assemblies

Component	WER-1	WER-2	WER-3	WER-4	CNEL-1 (6–10m)	CNEL-2 (3–6m)	CNEL-3 (<3m)	New Const. (WER-3+)	Test Standard / Basis	Notes
CLADDING										
Cladding material	Code minimum; NC recommended	NC within 400mm of grade; NC recommended full height	NC full height required (fibre cement, metal, masonry)	NC full height required	NC on facing wall to 400mm above grade	NC full height on facing elevation	NC full height; fire-rated assembly on facing elevation	NC full height (fibre cement, metal panel, or masonry veneer)	AS 3959, IWUIC Ch. 7A	PVC/vinyl not acceptable WER-3+; melts and drips
Cladding attachment	Code minimum	Code minimum	NC fasteners; corrosion-resistant	NC fasteners; corrosion-resistant	Code minimum	NC fasteners; corrosion-resistant	NC fasteners; corrosion-resistant	NC fasteners; stainless or galvanised	—	
RAIN SCREEN										
Cavity furring	Code minimum (wood ok)	Code minimum (wood ok)	Metal hat channel required	Metal hat channel required	Code minimum	Metal hat channel on facing wall	Metal hat channel on facing wall	Metal hat channel	—	Wood strapping is combustible fuel in cavity
Cavity bottom screen	None required	NC mesh ≤3mm	NC mesh ≤2mm	NC mesh ≤2mm	NC mesh ≤3mm	NC mesh ≤2mm	NC mesh ≤2mm	NC mesh ≤1.6mm (1/16")	Building America Solution Center	Screen top and bottom of cavity
Cavity fire management	None required	Screen bottom only	NC furring + screened top/bottom	NC furring + screened top/bottom	Screen bottom	NC furring + screened top/bottom	NC furring + screened top/bottom; no combustible in cavity	NC furring + screened top/bottom; no combustible material in cavity	BASC, IWUIC 2021	Do not obstruct cavity with solid fire stops — diminishes rain screen drainage and airflow function
SHEATHING										
Sheathing material	Code minimum (OSB/plywood)	Code minimum (OSB/plywood)	15.9mm Type X glass-mat faced exterior gypsum	15.9mm Type X glass-mat faced exterior gypsum	Code minimum	15.9mm Type X glass-mat faced gypsum on facing wall	15.9mm Type X glass-mat faced gypsum; consider double layer	15.9mm Type X glass-mat faced exterior gypsum (Gold Bond eXP, DensGlass)	ASTM C1177	Glass-mat faced only for exterior; never paper-faced
Structural bracing	Per code	Per code	Metal strap bracing or OSB at shear walls only + gypsum elsewhere	Metal strap bracing or OSB at shear walls only + gypsum elsewhere	Per code	Per code; metal strap bracing preferred on facing wall	Metal strap bracing on facing wall	Metal strap bracing preferred	—	
CONTINUOUS INSULATION										
Exterior CI material	Not required	Not required	Mineral wool recommended (Rockwool ComfortBoard 80)	Mineral wool required	Not required	Mineral wool recommended on facing wall	Mineral wool required on facing wall	Mineral wool (Rockwool ComfortBoard 80 or 110)	ASTM E136 (NC), ASTM E119/UL 263 (assembly)	NC, Euroclass A1, melting point >1000°C; CAL FIRE WUI listed
Exterior CI R-value	—	—	R-6 per 25mm (min 25mm)	R-6 per 25mm (min 50mm)	—	R-6 per 25mm (min 25mm) on facing wall	R-6 per 25mm (min 25mm) on facing wall	R-6 to R-12 depending on thickness	—	Continuous — zero thermal bridging at studs
CAVITY INSULATION										
Cavity insulation	Code minimum (fibreglass ok)	Code minimum (fibreglass ok)	Mineral wool preferred (ComfortBatt)	Mineral wool required	Code minimum	Mineral wool preferred on facing wall	Mineral wool required on facing wall	Mineral wool (ComfortBatt or Safe'n'Sound)	—	NC; maintains position under fire exposure unlike fibreglass
WEATHER & VAPOUR BARRIERS										
WRB	Code minimum	Code minimum	Code minimum; vapour-permeable	Code minimum; vapour-permeable	Code minimum	Code minimum; vapour-permeable on facing wall	Code minimum; vapour-permeable	Vapour-permeable WRB over gypsum sheathing	—	Assembly must dry to exterior through WRB and rain screen cavity
Interior vapour retarder	Per code (poly in Zone 6+)	Per code	Per code	Per code	Per code	Per code	Per code	Poly on warm side; or smart membrane	—	Do NOT add vapour barrier on exterior side of gypsum sheathing
TRIM & TERMINATION										
Window/door trim	Wood ok if maintained	NC within 400mm grade	NC all locations	NC all locations	NC on facing wall	NC on facing elevation	NC on facing elevation	NC (fibre cement, aluminium, formed metal)	—	PVC/vinyl not acceptable WER-3+ (melts/drips)
Corner trim / J-channel	Code minimum	Code minimum	NC	NC	Code minimum	NC on facing elevation	NC on facing elevation	Metal J-channel and corner trim	—	
Wall-to-roof flashing	Code minimum	NC metal	NC metal, tight to cladding	NC metal, tight to cladding	NC metal	NC metal, tight to cladding on facing side	NC metal, tight to cladding	NC metal, lapped for water and ember	—	Critical fire pathway
Wall-to-foundation	Code minimum	NC cladding to 400mm, sealed	NC full height, sealed ≤3mm gaps	NC full height, sealed	NC cladding to 400mm, sealed on facing wall	NC full height, sealed ≤3mm gaps on facing wall	NC full height, sealed on facing wall	NC, set back from combustible ground materials	—	Most exposed to ground-level embers

Component	WER-1	WER-2	WER-3	WER-4	CNEL-1 (6–10m)	CNEL-2 (3–6m)	CNEL-3 (<3m)	New Const. (WER-3+)	Test Standard / Basis	Notes
Penetration sealing	NC caulk	NC fire caulk / intumescent	NC fire caulk + fire-rated at gypsum barrier	NC fire caulk + fire-rated at gypsum barrier	NC caulk on facing wall	NC fire caulk at gypsum barrier on facing wall	NC fire caulk + fire-rated at gypsum barrier	Intumescent sealant; putty pads at fire barrier penetrations	—	Every pipe, wire, duct, vent, hose bib
Intersection flashing	Code minimum	NC metal at intersections	NC metal, correctly lapped	NC metal, correctly lapped	NC metal at intersections on facing side	NC metal, correctly lapped on facing side	NC metal, correctly lapped	Metal flashing at all wall-to-wall, wall-to-deck, wall-to-window intersections	—	Self-adhered membrane ok behind cladding; exposed must be metal

Reference: Module 6 - Exterior Walls and Cladding | TB-01 Section 4 - Wall Assembly Design | TB-01 Section 4.6 - CNEL Wall Assembly | TB-03 Section 6 - NC Cladding

2. Roof and Eave Assemblies

Component	WER-1	WER-2	WER-3	WER-4	CNEL-1 (6–10m)	CNEL-2 (3–6m)	CNEL-3 (<3m)	New Const. (WER-3+)	Test Standard / Basis	Notes
ROOF COVERING										
Roof covering	Class A rated	Class A rated	Class A NC (metal preferred)	Class A NC (metal required)	Class A rated	Class A rated; NC preferred	Class A NC (metal preferred)	Class A NC; metal standing seam or concrete tile	ASTM E108 / ULC S107	
Underlayment	Code minimum	Code minimum	Self-adhered membrane at eaves/valleys	Full-roof self-adhered membrane	Code minimum	Code minimum	Self-adhered membrane at facing eave	Full-roof self-adhered membrane	—	
SOFFITS & FASCIA										
Soffit material	Maintain; repair damage	NC (fibre cement or metal)	NC (fibre cement or steel)	NC (steel preferred)	NC on facing eave (fibre cement or metal)	NC on facing eave	NC; steel preferred on facing eave	NC continuous panel, no vent openings (unvented assembly)	—	Vinyl not acceptable any WER; aluminium not recommended WER-3+ (660°C melting point)
Fascia material	Maintain; repair damage	NC (fibre cement or metal)	NC	NC	NC on facing eave	NC on facing eave	NC on facing eave	NC (metal or fibre cement)	—	
Eave enclosure	Open eaves acceptable	Enclosed required	Enclosed, continuous NC from wall to fascia	Enclosed, continuous NC, no gaps	Enclosed on facing eave	Enclosed, continuous NC on facing eave	Enclosed, continuous NC, no gaps on facing eave	Continuous fire barrier, no penetrations	—	Wrap existing rafter tails with NC at WER-3 retrofit
VENTILATION										
Attic vent screening	NC mesh ≤3mm all vents	ASTM E2886 ember-resistant	ASTM E2886 baffled; steel/bronze mesh only	ASTM E2886 baffled	NC mesh ≤3mm on facing vents	ASTM E2886 on facing side	ASTM E2886 baffled; or seal facing vents	None required (unvented assembly)	ASTM E2886	Brandguard, Vulcan, O'Hagin
Gable vents	Screen ≤3mm	ASTM E2886 or eliminate	Eliminate	Eliminate	Screen ≤3mm on facing side	ASTM E2886 or eliminate on facing side	Eliminate on facing side	None (unvented)	—	Gable vents short-circuit airflow and face ember flow
Ridge vents	Code minimum	Baffled ≤2mm	ASTM E2886 baffled	ASTM E2886 baffled or sealed	Code minimum	Baffled ≤2mm	ASTM E2886 baffled	None (unvented)	—	
Soffit vents	Screen ≤3mm	ASTM E2886	ASTM E2886 baffled; consider reducing area	ASTM E2886 or seal (partial strategy)	Screen ≤3mm on facing side	ASTM E2886 on facing side	Seal on facing eave; compensate on non-facing side	None (unvented)	—	Soffit vents are primary ember entry point
Ventilation strategy	Standard vented cold attic	Standard vented; balanced soffit-to-ridge	Unvented recommended (new); vented acceptable (retrofit)	Unvented recommended (new); partial seal strategy (retrofit)	Standard vented	Standard vented; balanced	Consider partial seal on facing side; unvented preferred	Unvented conditioned attic (hot roof)	NBC 9.19, BSC BSD-149, GM-2101	See TB-01 Section 2 for decision framework
HOT ROOF ASSEMBLY (New Construction WER-3+)										
Option A: Spray foam	—	—	ccSPF at underside of deck; min R-25 (50% of total)	ccSPF at underside of deck; min R-25	See WER level specs	See WER level specs	See WER level specs	Min 50% of total R-value as air-impermeable at deck	IRC R806.5, BSC BSD-149	Combustible; specify 15-min thermal barrier for WER-3+
Option B: Rigid above deck	—	—	Mineral wool board above sheathing + nailbase	Mineral wool board above sheathing + nailbase	See WER level specs	See WER level specs	See WER level specs	Rockwool TopRock or ComfortBoard; 50%+ of total R above deck	—	NC; recommended for WER-3+; best fire performance
Option C: Hybrid	—	—	50mm ccSPF at deck + mineral wool batts below	50mm ccSPF at deck + mineral wool batts below	See WER level specs	See WER level specs	See WER level specs	ccSPF air barrier + mineral wool thermal mass	—	Practical compromise

Reference: Module 2 - Roof and Eaves | TB-01 Section 2 - Ventilation | TB-01 Section 3 - Hot Roof | TB-03 Section 2 - Hot Roofs | TB-03 Section 4 - Sarking | TB-03 Section 5 - Metal Roofing

3. Mitigation Categories

Category	Description	Primary WER Levels	Who Does It	Typical Cost	Key Modules
1. Cleaning, Detailing, Ground Cover	Clear debris, seal gaps, screen vents, NC ground cover, gutter cleaning	WER-1	Homeowner	\$50–\$200	WER-1 Guide, Self-Assessment, Module 5
2. Decks, Fences, Structures	Replace/harden attached combustible structures within 3m	WER-2, WER-3	Contractor	\$3,000–\$30,000	Module 4, WER-2/3 Guides
3. Windows, Walls, Roof	Building envelope — cladding, glazing, sheathing, insulation, roof covering	WER-2–WER-4	Qualified contractor	\$15,000–\$80,000+	Modules 1, 2, 6, New Const. Guide
4. Soffits, Fascia, Ventilation	Roof-wall intersection, vent protection, eave enclosure	All WER levels	Experienced contractor	\$3,000–\$18,000	Modules 2, 3, TB-01
5. Close Neighbour (CNEL)	CNEL wall assembly, soffit/fascia, glazing, shutters, ground cover on facing elevation	Any WER level with neighbour <10m	Contractor (CNEL-1 homeowner)	\$1,000–\$35,000 per face	CNEL Guide, Modules 1, 2, 6, TB-01 Section 4.6

Categories represent practical work groupings for planning and contractor engagement. Category 1 should be completed first regardless of WER level. Category 5 (CNEL) applies to specific building faces based on neighbour proximity.

About FireHard Canada

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