



Multi-Panels

GREEN AND FIREPROOF CONSTRUCTION



Installation Manual for M4-Exterior Sheathing

Application Area - Testing

M4 complying with: 2015 and 2012 International Building Code ® (IBC) and 2015 and 2012 International Residential Code ® (IRC).

The M4 Exterior Sheathing is tested in accordance with ICC-ES AC 269.2, AC 386 and AC 376 and the M4 panel is suitable without limitations for use in interior or exterior sheathing applications of approximately 1/2" thickness used as shear walls, which refers to section 14 of ASTM E 72.

The M4 Panel is the perfect substrate for today's building environment because of its durability, performance and inherent characteristics which include: structural strength, fire protection, mold resistance, and being impervious to both water and termites.

The M4 Panel is the only MgO panel to pass the ASTM E 119 load bearing fire test for 1 hour on 2" x 4" wood studs. The M4 is a perfect substrate under brick, stone, stucco, EIFS and siding because it will not rot, warp, delaminate, or deteriorate in any climate (hot, cold, humid or wet) OR when exposed directly to water up to 12 months of exposure to normal weather condition. Furthermore, it is impervious to termites, non-combustible, mold resistant and it is easy to cut and fasten. The panel is an Environmentally sustainable Green panel and the lower weight reduces embodied energy and forces.

The M4 panel is Mold-resistant earning the highest score of 10 according ASTM D3273 and a perfect substrate for high-moisture areas and it is noncombustible according ASTM E 136. The panel is air permeable and cannot be used as a Siding panel.

Load Bearing Fire Resistance

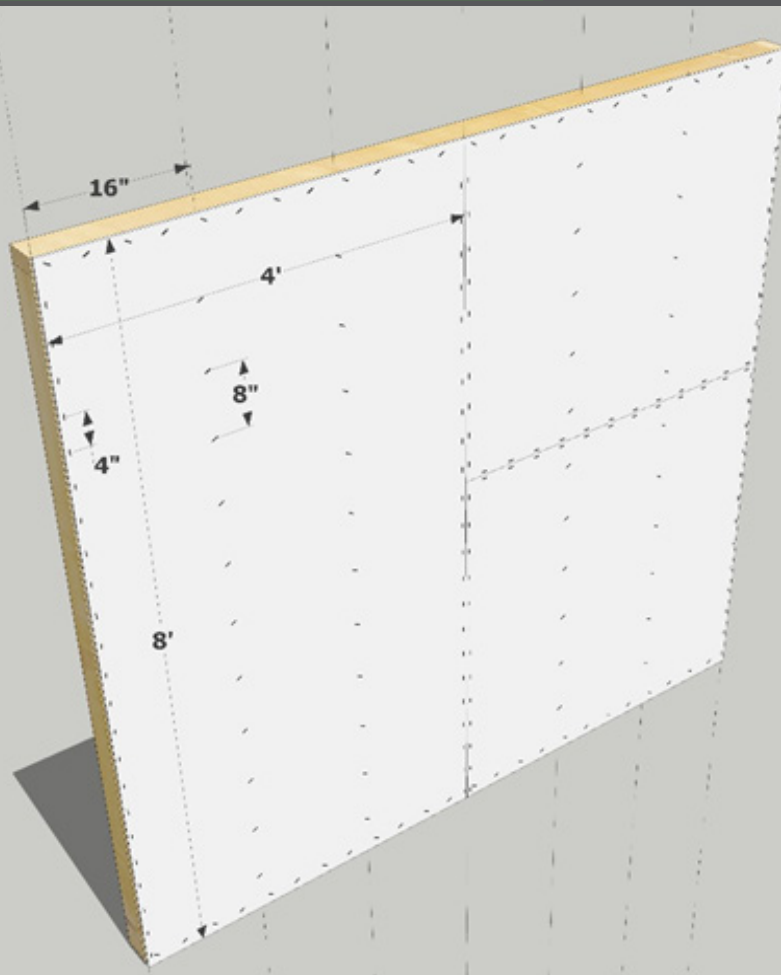
(ASTM E119 and CAN/ULC S101-07)

The M4 panel was tested for a 1-hour load bearing fire resistance rating at 100% design load, determined in accordance with the NDS.

ASTM E 119 Testing components for the 1-hour fire tested load bearing shear wall:

Component	Description	Details
Framing	Wood Studs	Wood studs with minimum specific gravity 0.42.
Stud cavity insulation	Mineral wool	Mineral wool of minimum 3 1/2" thickness that complies with ASTM C612, or minimum density 2.8 lbs/ft ³ .
Interior Sheathing	Gypsum Board	Minimum 5/8" thickness Type X gypsum wall board complying with ASTM C1396
Exterior Sheathing	M4	M4 Multi-Panels 1/2" thick, mounted horizontally with 1 1/2" long 16-gauge crown staples spaced 4" o.c. at perimeter and 8" o.c. in the field

Fig 1. ASTM E 119 one hour fire tested as load bearing wall for 2" x 4" wood stud construction



Racking Shear Resistance

The M4 exterior sheathing can be specified for any project where there is a high demand for structural strength and a need for flexibility and easy sheathing and installation, thus avoiding the headaches and expense of delamination, deterioration, sagging and warping.

(ASTM E 72)

Wood Frame:

Design capacity of wall diaphragms of the plate in lbs/ft for M4-Exterior sheathing 1/2" installed 2"x4" wood framing with a maximum joist spacing of 16" o.c.

U Staple Fasteners: 16 gauge galvanized with glue, size 1 1/2", crown 1/2", ESR-1539 compliant				
	Edge spacing	Center Spacing	Ultimate Load	Allowable Racking Shear
One side M4 panel	4"	8"	6236 lbs	186 plf

Steel Frame:

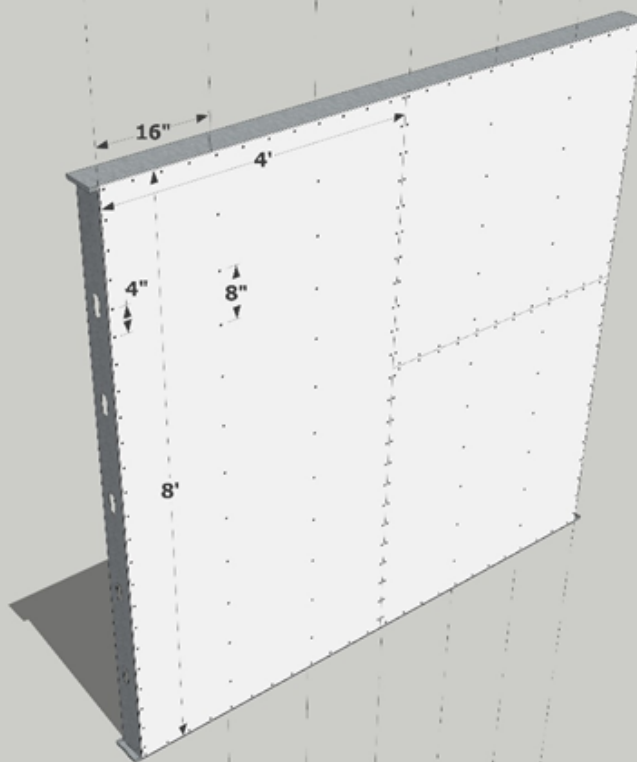
Design capacity of wall diaphragms of the plate in lbs/ft for M4-Exterior sheathing 1/2" installed on 1 5/8" x 3.5" 18 Gauge Galvanized Steel Framing. Max framing spacing of 16" o.c.

High-speed self-drilling building screws: S-12 Rock-On Fasteners (Part Number 6310) 8-18 x 1 1/4" Head Style # 2 PW ITW				
	Edge spacing	Center Spacing	Ultimate Load	Allowable Racking Shear
One side M4 panel	4"	8"	10,030 lbs	243 plf

Installation

M4 exterior sheathing must be installed in accordance with the instructions in this installation manual. The panel can be attached horizontal or vertical to wood or metal framing. The fastening surface shall not be less than 2" x 4" studs for wood framing and No. 18 Gauge for steel framing. Framing members shall not vary more than 1/8" from the plane of the faces of adjacent framing. For steel framing, to allow for thermal expansion, a panel must never be fastened to metal studs across expansion joints. Install the panels with no gapping (ends and edges of the sheathing should fit tightly). The panels shall not be less than 6" from the finish grade in weather proof and water-protected siding systems, and not less than 12" from the ground for properly drained and ventilated crawl spaces.

Fig 2. E72 M4-Exterior sheathing 1/2" installed on 1 5/8" x 3.5" 18 Gauge Galvanized Steel Framing. Max framing spacing of 16" o.c.



Staples, Nails, or Screws as listed below, may be used to attach the M4 exterior sheathing to the framing. The fasteners length must be 3 times (i.e. 3x) the thickness of the board. Fasteners should be driven flush with the panel surface (not countersunk) into the framing system. Locate fasteners at least 1/2" or 5 times (5x) the diameter of the fasteners from edges and 2" from the end of the panel. The panels are not to be used alone as a base for nailing or Siding (fasteners must go through board and into framing system). For Racking Shear Resistance (Fig 1.), the Fasteners must be spaced 4" on center around the perimeter and 8" on center in the field and joist spacing 16" o.c. See Fig 3 for how Staples must be mounted and Fig 4 for how screws must be mounted.

Fig 3. Mounting with Staples

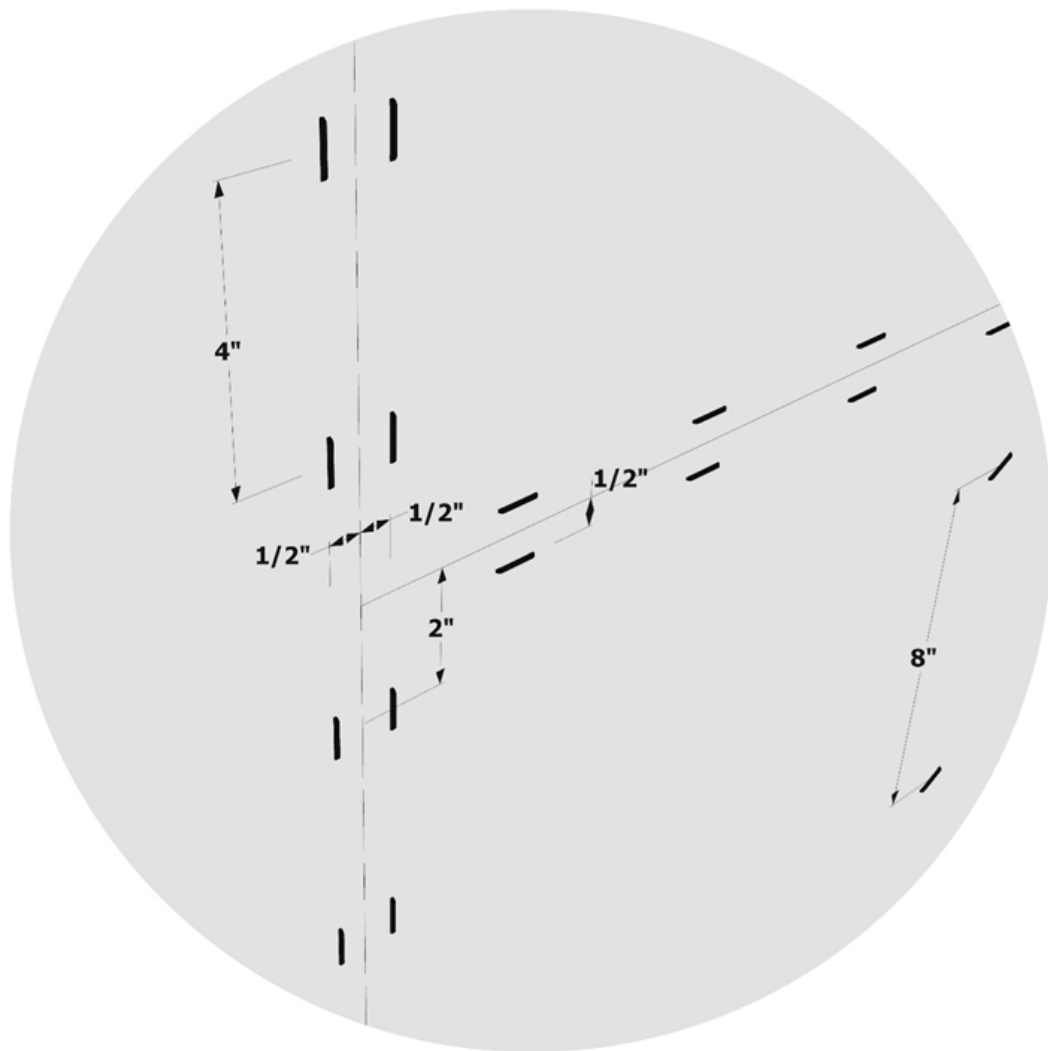
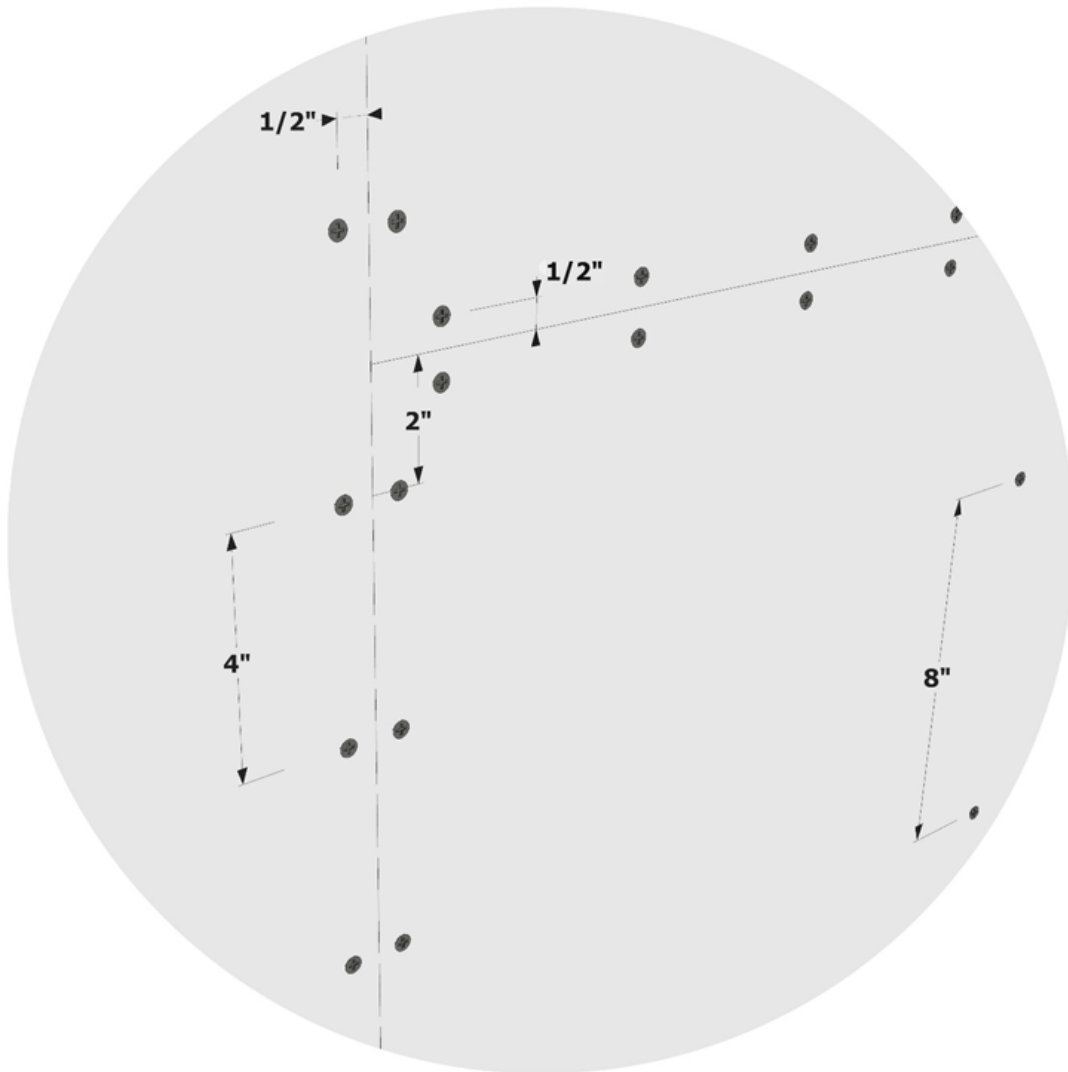


Fig 4. Mounting with Screws



U Staples for wood framing:

Staples must be installed on vertical sides of the panel parallel with the perimeter. The Field and top and bottom ends of the panel must be stapled using between a 15-30 degree left/right alternating angle pattern from the perimeter. Use 16 gauge galvanized staples with glue, size 1 1/2", crown 1/2", ESR-1539 compliant



Nails for wood framing:

Full head nails DUO fast, galvanized: 0.098" x 1.97" or 10d Common Nails manufactured by Grip Rite (Part Number GR3148), compliant with ICC-ES ESR-3543




Screws (www.grabberman.com)

Grabber Winged Driller Cement Board screw for both wood or metal



Water proof sealing tape for over boards connection

If water restrictive barrier is NOT used on the M4 boards, exterior board connections must be sealed, so water can not enter into the construction.

	Item No.	Width x Length x Thickness	Unit/packing
	MP100 – 10-1	3.94" x 32.5' x .04" (100 mm x 10 m x 1 mm)	10 pcs
For waterproof connection between Board			

Cutting:

Simply score and snap the panel on smaller thicknesses up to 3/8", or alternatively all M4 Panels may be cut with a circular saw or a jigsaw equipped with a diamond tipped blade. Sharp edges are made with fast running diamond tipped tools. Cutting to size may be done with normal slow or fast running hand tools or stationary equipment. When using fast running tools, dust exhaustion must be employed.

Note: When using hand tools, cut the panels backside up. When using stationary saw equipment, cut the panels front-side up (the saw blade must always attack the board from the front-side). The periphery speed of the circular saw should be within the below parameters. Cutting depth 3/8" – 5/8" (10-15 mm) beyond the board.

Guideline operation parameters for Multi-Panels saw blades

Saw blade thickness inch:	0.09" (2.4 mm)	0.09" (2.4 mm)	0.1" (2.6mm)	0.1" (2.6mm)	0.11" (2.8 mm)
Saw blade Ø inch:	5.9" (150 mm)	9.05" (230 mm)	9.84" (250mm)	10.23" (260mm)	13.78" (350 mm)
Rpm:	3800	2500	2300	2200	1650

Cutouts

Cutouts may be made with a jigsaw, a keyhole saw equipped with bi-metal, or diamond tipped blade. It is recommended to drill a min 7/16" (8 mm) hole before cutting in the inside corner. In order to avoid creating a notch at the inside corner, cut edges should be sanded.

General Information

Safety

As with all other building materials, safety precautions must be taken into account and local laws and regulations must be observed. Cutting and drilling are subject to dust development, and proper precautions must be taken by using appropriate dust extraction equipment. Dust from the panel is characterized as mineral dust and a prolonged exposure to this may cause lung disease. Fast running electrical equipment such as hand held circular saws leave a fine and sharp edge on the panels and create fine dust. Due to the speed of the blade the dust can be dispersed over a larger area. Therefore, it is necessary to establish sufficient exhaustion and it is recommended the operator carry personal safety equipment (for further information please check the MSDS for the M4 product).

Service

If you have any questions regarding the Multi-Panels panels, our dedicated service team is ready to assist you with advice and guidance. Please visit our website for more information.

Application conditions

The panel temperature and ambient temperature should be + 44°F (+7 °C) - 86°F (+30 °C) and relative humidity <85 % (optimally 60 %). Process temperature must be min +44°F (+7 °C).

Storing and proper handling

Multi-Panels products are delivered with plastic protection cover on the pallet. When undamaged, the plastic cover protects against weather conditions during transportation. The pallets should be kept under a roof, leaving the possibility of ventilation around the panels. Multi-Panels must be stored on a flat, dry and level surface on pallets or sleepers with a min. distance of 12" between the stacks on all sides. Note: Max. 5 pallets in a stack at the warehouse and on the building side max. 2 pallets in a stack. The panels must be lifted up and off the pallet and not drawn over the next board, as this will cause scratches and damage on the surface. Lift pallet crosswise and set forks apart to minimize bending of pallet. Fork length must support pallet entirely; if required, use fork extensions.

Impact by Pollution and Nature

Weather and nearby vegetation may affect the appearance of the panels. Take caution to avoid pollution, dust and leaves from trees, bushes, and flowers to not impact the integrity of the panels.

Warranty

This warranty covers: The M4 panel fulfills ICC-ES AC 269.2, AC386 and AC 376 and the warranty covers the certification scope. Multi-Panels Corporation offers a warranty for a period of 10 years, beginning on date of delivery, provided that, the panels were cut/drilled/stored/installed/used per the prescribed system components etc. according to the “Installation Manual”.

The warranty does not cover: color fading, environment impact on the panels such as pollution, etc.

Replacement: Any panels which do not comply with these quality standards according the ICC-ES AC 386, AC 269.2 and AC 376 scope, will be replaced free of charge, from our Los Angeles warehouse, on condition that Multi-Panels Corporation is notified within a period of 4 weeks of delivery and the claim is accepted by Multi-Panels Corporation. In particular, the warranty covers neither the transport costs nor labor expenses for dismantling and dumping defective panels and installing new panels. Multi-Panels Corporation shall not be liable for failure of performance hereunder due to force majeure.

Disclaimer

The information contained in this manual is based on Multi-Panels general experience, best knowledge and belief, however because of factors that fall beyond Multi-Panels knowledge and control, which can affect the use and function of the products, no warranty is given or implied with respect to the information.

Multi-Panels policy is one of continuous improvement and therefore reserves the right to alter specifications at any time and without notice. In case of doubt, please contact your local Multi-Panels representative.