

MASA/MASAP

Mudsill Anchors



This product is preferable to similar connectors because of (a) easier installation, (b) higher loads, (c) lower installed cost, or a combination of these features.

Mudsill anchors have always been a time-saving alternative to anchor bolts, and the MASA anchors provide a great alternative for 5/8" and 1/2" mudsill anchor bolts on 2x, double-2x and 3x mudsills. It also eliminates the need for 3" square plate washers for seismic design and, in some cases, has allowable loads that meet or exceed the parallel- and perpendicular-to-plate shear loads of other cast-in-place anchors. Two versions of the MASA are available — the standard MASA for installation on standard forms and the MASAP for panelized forms.

The MASA and MASAP are code listed by ICC-ES under the 2012, 2015, 2018 and 2021 IBC® and IRC®.

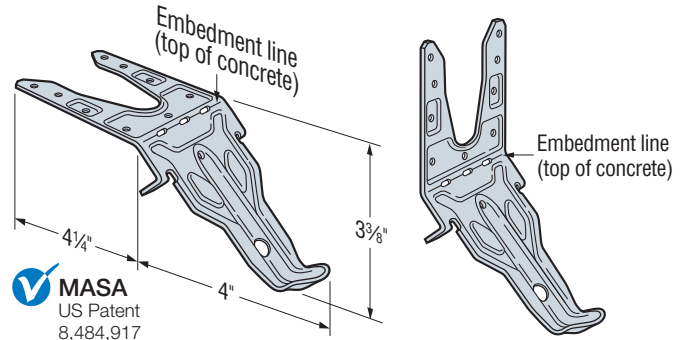
Material: 16 gauge

Finish: Galvanized. Also available in ZMAX® coating.

Installation:

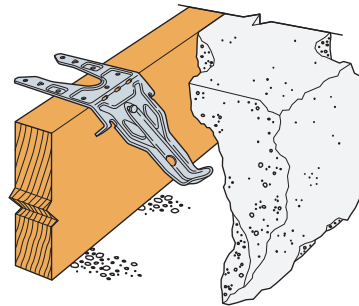
- Use all specified fasteners; see General Notes.
- Concrete shall have a minimum $f'_c = 2,500$ psi.
- Spalling — Full loads apply for spalls up to a maximum height of 1 1/4" and a maximum depth of 7/8". Any exposed portion of the mudsill anchor must be protected against possible corrosion.
- For prescriptive anchor spacing refer to table below.
- Testing shows that these mudsill anchors can be used in lieu of code-required anchor bolts and square washer in high seismic zones.
- Minimum MASA end distance is 4" and minimum center-to-center spacing is 8" for full load. For reduced center-to-center spacing and/or end distance, see engineering letter L-C-MASASPCNG on strongtie.com.
- For continuous load path, MASA should be installed on the same side of wall as uplift connectors.
- For installation in severe corrosion environments, refer to strongtie.com/cipcorrosion for additional considerations.

Codes: See p. 13 for Code Reference Key Chart

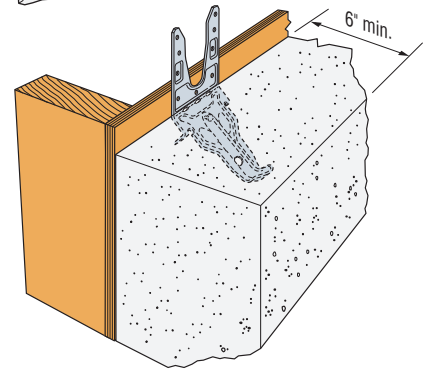


MASA
US Patent
8,484,917

MASAP



Typical MASA Installation in Concrete

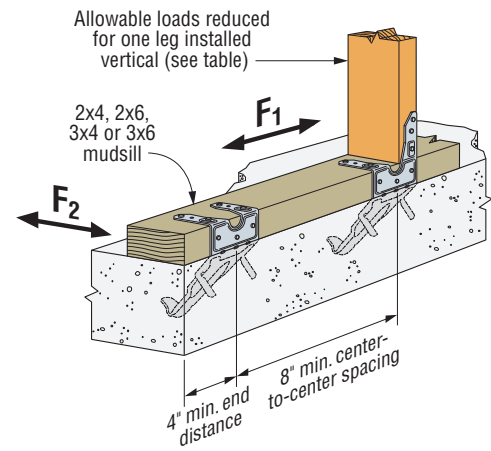


Typical MASAP Installation in Concrete

Prescriptive Spacing for MASA/MASAP to Replace Sill Anchor Bolts

Model No.	Anchor Bolt Size to Replace	Anchor Bolt Spacing to Replace	MASA/MASAP Spacing			
			DF/SP 2x Sill Plate		HF 2x Sill Plate	
			Wind and SDC A&B	SDC C-E	Wind and SDC A&B	SDC C-E
MASA MASAP	1/2" diameter	6' o.c.	6'-0"	6'-0"	6'-0"	6'-0"
		4' o.c.	4'-0"	4'-0"	4'-0"	4'-0"
MASA MASAP	5/8" diameter	6' o.c.	5'-4"	4'-6"	5'-1"	4'-4"
		4' o.c.	3'-6"	3'-1"	3'-5"	2'-11"

1. Detached one- and two-family dwellings in SDC C may use the "Wind and SDC A&B" spacing.
2. Spacing is based on the parallel-to-plate load direction for MASA standard installation only.
3. 5/8" anchor bolt required for Seismic Design Category E.
4. When replacing 1/2"-diameter sill bolts, use (7) 0.148" x 1 1/2" nails for standard installation. One out of three MASA anchors (33%) may be installed in one-leg-up installation along a wall line.
5. When replacing 5/8"-diameter sill bolts, use (9) 0.148" x 1 1/2" nails for standard installation. One out of five MASA anchors (20%) may be installed in one-leg-up installation along a wall line.
6. Per Section 1613 of the 2012/2015/2018/2021 IBC, detached one- and two-family dwellings in SDC C may use the "Wind and SDC A&B" spacing.



Typical MASA/MASAP Installation on Sill Plate

MASA/MASAP

Mudsill Anchors (cont.)

These products are available with additional corrosion protection. For more information, see p. 16.

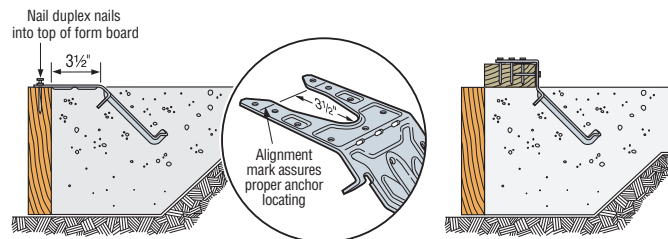
Model No.	Sill Size	Fasteners (in.)		Allowable Loads												Code Ref.
		Sides	Top	Uncracked						Cracked						
				Wind and SDC A&B ^{5,6}			SDC C-F ⁶			Wind and SDC A&B ^{5,6}			SDC C-F ⁶			
Uplift	F ₁	F ₂	Uplift	F ₁	F ₂	Uplift	F ₁	F ₂	Uplift	F ₁	F ₂	Uplift	F ₁	F ₂		
Standard Installation — Attached to DF/SP Sill Plate																
MASA or MASAP	2x4, x6, x8, x10	(3) 0.148 x 1 1/2	(6) 0.148 x 1 1/2	920	1,475	1,095	745	1,235	1,045	750	1,475	875	660	1,235	765	IBC®, FL, LA
	3x4, 3x6	(5) 0.148 x 1 1/2	(4) 0.148 x 1 1/2	630	1,165	725	550	1,020	725	475	1,165	725	415	1,020	640	
One-Leg-Up Installation — Attached to DF/SP Sill Plate and DF/SP Stud																
MASA or MASAP	2x4, x6, x8, x10	(6) 0.148 x 1 1/2	(3) 0.148 x 1 1/2	755	965	995	660	845	995	570	965	930	500	845	810	IBC, FL, LA
	3x4, 3x6	(7) 0.148 x 1 1/2	(2) 0.148 x 1 1/2	—	760	—	—	665	—	—	760	—	—	665	—	
Two-Legs-Up Installation — Attached to DF/SP Sill Plate and Rimboard or Blocking																
MASA or MASAP	2x4, x6, x8, x10, 3x4, 3x6	(9) 0.148 x 1 1/2	—	810	1,105	865	740	965	755	620	1,105	630	560	965	550	IBC, FL, LA
Double 2x Installation — Attached to DF/SP Sill Plates																
MASA or MASAP	Double 2x4, Double 2x6	(5) 0.148 x 1 1/2	(2) 0.148 x 1 1/2	840	1,030	785	735	900	785	635	1,030	785	555	900	785	IBC, FL, LA
Standard Installation — Attached to Hem-Fir Sill Plate																
MASA or MASAP	2x4, x6, x8, x10	(3) 0.148 x 1 1/2	(6) 0.148 x 1 1/2	790	1,250	940	640	1,060	900	650	1,250	755	570	1,060	660	—
	3x4, 3x6	(5) 0.148 x 1 1/2	(4) 0.148 x 1 1/2	535	1,005	625	475	875	625	410	1,005	625	355	875	550	
One-Leg-Up Installation — Attached to Hem-Fir Sill Plate and HF/SPF Stud																
MASA or MASAP	2x4, x6, x8, x10	(6) 0.148 x 1 1/2	(3) 0.148 x 1 1/2	650	830	855	565	725	855	490	830	795	430	725	695	—
	3x4, 3x6	(7) 0.148 x 1 1/2	(2) 0.148 x 1 1/2	—	670	—	—	570	—	—	670	—	—	570	—	
Two-Legs-Up Installation — Attached to Hem-Fir Sill Plate and HF/SPF Rimboard or Blocking																
MASA or MASAP	2x4, x6, x8, x10, 3x4, 3x6	(9) 0.148 x 1 1/2	—	700	950	745	635	830	650	545	950	540	480	830	475	—
Double 2x Installation — Attached to Hem-Fir Sill Plates																
MASA or MASAP	Double 2x4, Double 2x6	(5) 0.148 x 1 1/2	(2) 0.148 x 1 1/2	720	890	675	630	775	675	545	890	675	475	775	675	—

1. Loads have been increased for wind or earthquake loading, with no further increase allowed. Reduce where other loads govern.
2. Concrete shall have a minimum compressive strength of $f'_c = 2,500$ psi.
3. Allowable loads are based on a minimum stem wall width of 6".
4. For simultaneous loads in more than one direction, the connector must be evaluated using the Unity Equation, as described in [Straps and Ties General Notes, p. 277](#).
5. Per Section 1613 of the 2012/2015/2018/2021 IBC, detached one- and two-family dwellings in SDC C may use the "Wind and SDC A&B" allowable loads.
6. For designs under the 2012/2015/2018/2021 IBC, sill plate size shall comply with the shearwall requirements of the 2015/2021 Special Design Provisions for Wind and Seismic.
7. **Fasteners:** Nail dimensions are listed diameter by length. See pp. 23–24 for fastener information.

Alternative Mud sill Anchor Installations

Alternate Installation for Inside of Wall Continuity

Full catalog loads apply.

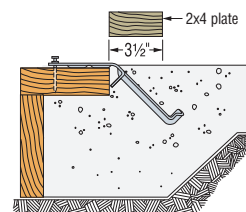


1 Step 1: Attach MASA 3 1/2" from inside of form. After concrete cures, remove nails and bend straps up 90°.

2 Step 2: Place mudsill on concrete and nail MASA over mudsill. Not applicable to 2x6 and wider sill plates in SDC D-F.

Alternate Installation for Brick Ledges

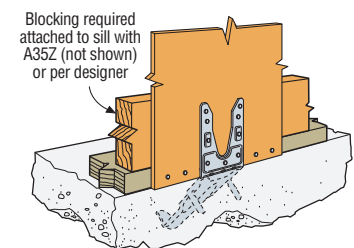
Full catalog loads apply.



Alternate MASA Installation for Brick Ledges

Alternate Installation for Rim Board or Blocking

Full catalog loads apply.



Maximum 1/2" Sheathing

MASA/MASAP Mud sill Anchors

Mud sill anchors have always been a time-saving alternative to anchor bolts, and the MASA anchors provide an even greater load-carrying capacity alternative. For 5/8" and 1/2" mud sill anchor bolts on bottom tracks, the MASA has load capacities that meet or exceed the parallel and perpendicular to plate shear capacity of other cast-in-place anchors. Two versions of the MASA are available — the standard MASA for installation on standard forms, and the MASAP for panelized forms.

The MASA and MASAP are code listed by ICC-ES under the 2006, 2009, 2012 and 2015 IBC® and IRC® and have been tested to meet the requirements of ICC-ES acceptance criteria AC-398 for cracked and uncracked concrete.

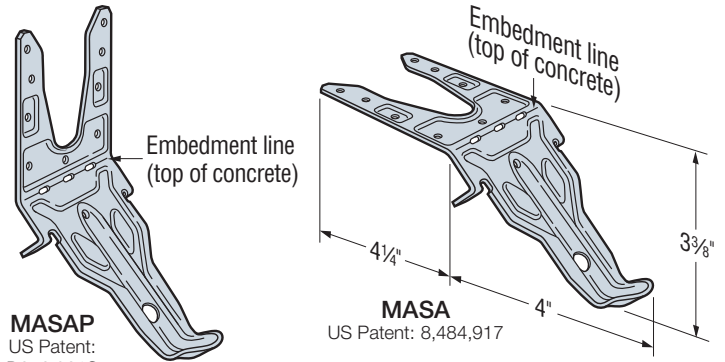
Material: 16 gauge

Finish: Galvanized, all available in ZMAX® coating. See Corrosion Information, pp. 19–23.

Installation:

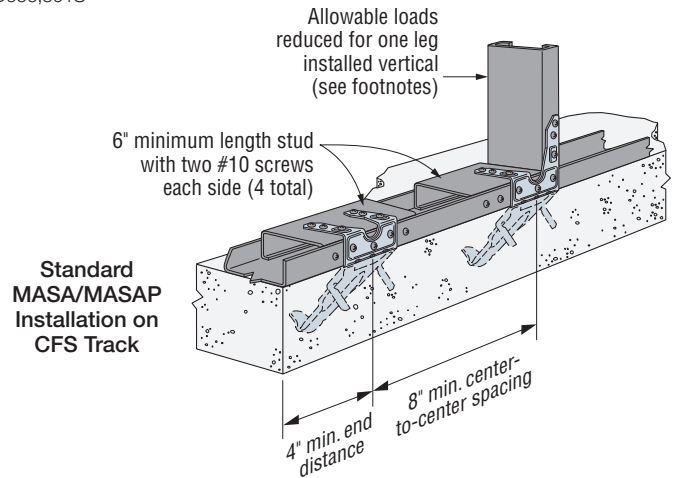
- Use all specified fasteners; see General Notes
- **MASA/MASAP**
 - Concrete shall have a minimum $f'_c = 2,500$ psi.
 - Spalling — Full loads apply for spalls up to a maximum height of 1 1/4" and a maximum depth of 7/8". Any exposed portion of the mudsill anchor must be protected against possible corrosion.
 - Minimum MASA end distance is 4" and minimum center-to-center spacing is 8" for a full load.
 - For continuous load path, MASA should be installed on the same side of the wall as uplift connectors.

Codes: See p. 13 for Code Reference Key Chart



MASAP
US Patent: D656,391S

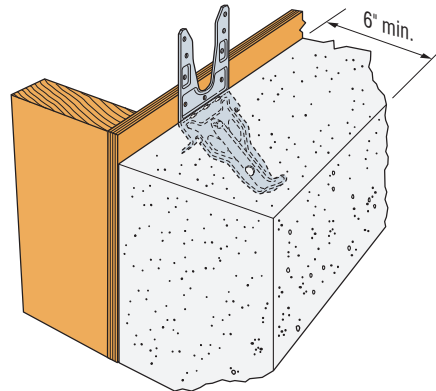
MASA
US Patent: 8,484,917



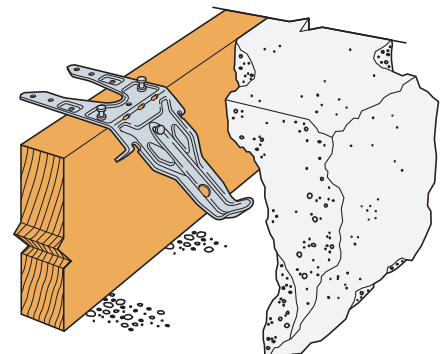
Allowable Loads for MASA/MASAP Cast-in-Place Mudsill Anchor on CFS Track

Model No.	Fasteners ^a		Allowable Load (lb.) ^{1,2,3,4,5} 43 mil (18 ga.) CFS						Code Ref.
	Sides	Top of Track	Standard Installation			SDC C-F			
			Uplift	Parallel to Track ⁷	Perpendicular to Track	Uplift	Parallel to Track ⁷	Perpendicular to Track	
MASA or MASAP	(3) #10	(6) #10	Non-Cracked						IBC, FL, LA
			645	1,155	855	565	1,010	750	
			Cracked						
			490	1,155	630	425	1,010	550	

1. Allowable loads are governed by tests and may not be increased ($C_D = 1.0$).
2. The tabulated allowable (ASD) loads may be multiplied by 1.67 for designs for wind and in SDC A&B, and by 1.4 for designs in SDC C through F to obtain the LRFD loads.
3. Minimum concrete compression strength, f'_c is 2,500 psi.
4. Allowable loads are based on a minimum stem wall width of 6".
5. For simultaneous loads in more than one direction, the connector must be evaluated using the Unity Equation.
6. Per Section 1613 of the 2012, 2015 and 2018 IBC, detached one- and two-family dwellings in SDC C may use the "Wind and SDC A&B" allowable loads.
7. Parallel-to-Track loads for One-Leg-Up Installation: SDC A-C = 985 lb., SDC C-F = 860 lb.
8. See the current *Fastening Systems* catalog at strongtie.com for more information on Simpson Strong-Tie fasteners.



Standard MASAP Installation in Concrete



Standard MASA Installation in Concrete