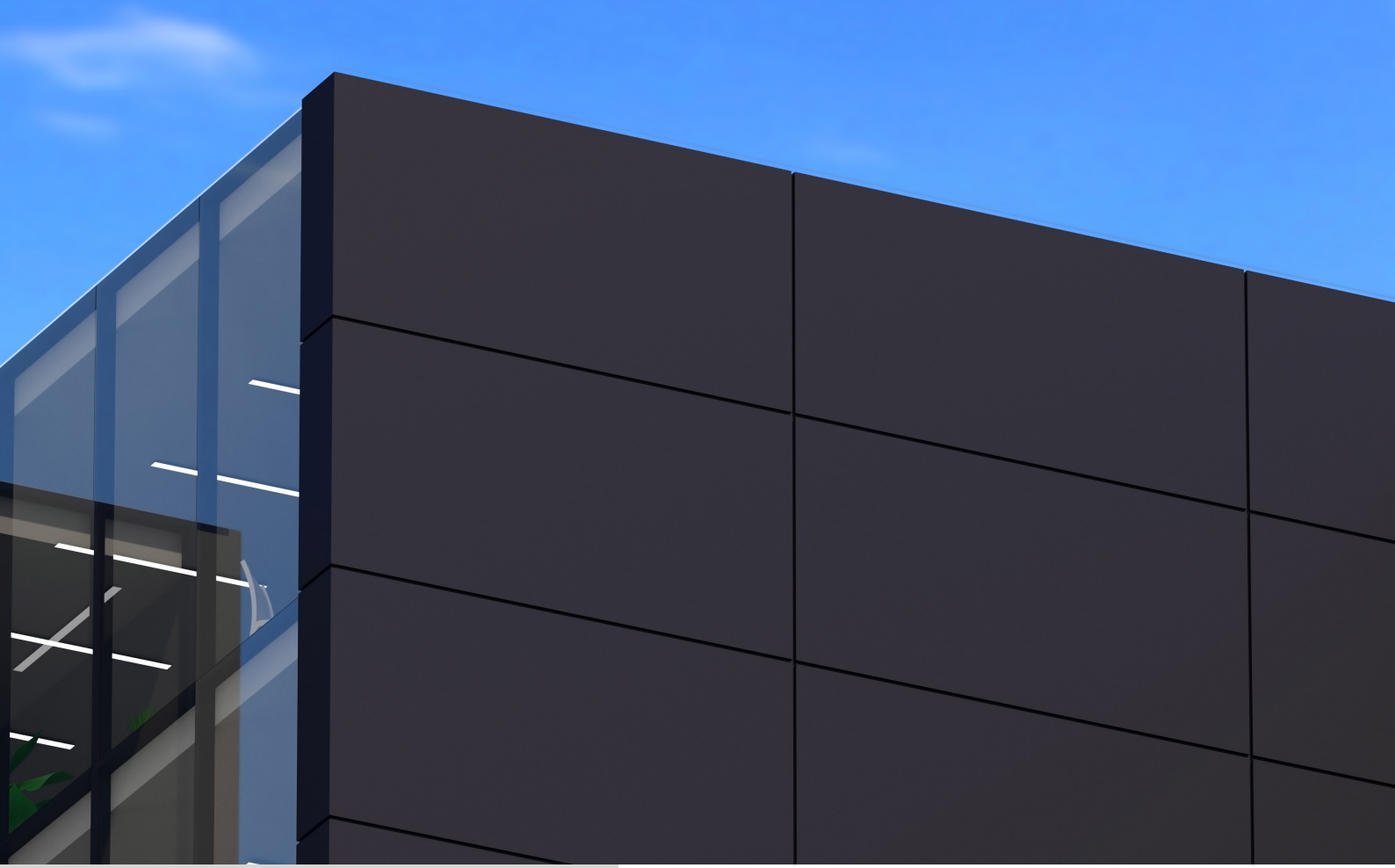


4.5 Top Hats over Wall Framing

Top Hats are an effective means of providing structural framing behind various types of external cladding such as expressed jointed fibre cement, rendered and pre-finished fibre cement, timber cladding, aerated concrete panels (AAC) and steel sheeting. Siniat Top Hats are durable and come with industry leading Zincalume AM150 corrosion protection.

Top Hats may be installed horizontally over stud wall framing which suits metal sheeting and AAC. When vertical framing is desired for certain external cladding like expressed jointed fibre cement, top hats can be installed vertically over stud framing with top hat cleats, or first by providing a layer of horizontal top hats over the stud framing, followed by a layer of vertical top hats.

Details in this manual show how Top Hats can be installed to promote drying and ventilation in the cavity behind the external cladding which helps for long lasting external wall systems. When installed horizontally, Siniat Top Hats come with sloping flanges to re-direct moisture towards the outside and away from the inside of a building. When installed vertically, Siniat Top Hats provide free drainage to the bottom of the wall cavity.

Framing

Vertical Top Hats over Horizontal Framing

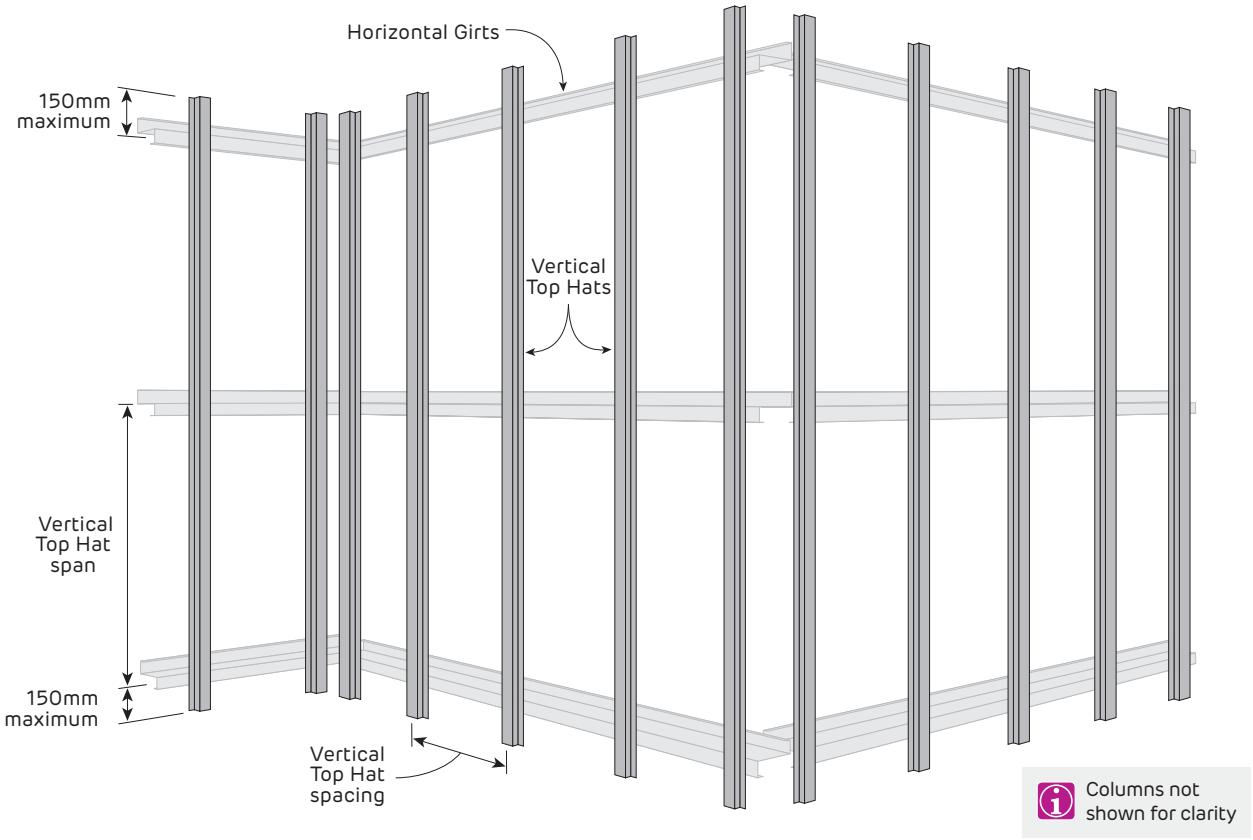


FIGURE 1 Vertical Steel Top Hat Layout

Table 1 Vertical 50x15x1.15 Top Hat Span Table (mm)

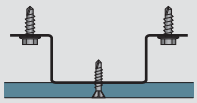
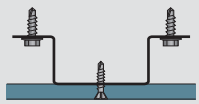
	Span type	Top Hat spacing (mm)	Ultimate Wind Pressure W_u (kPa)								
			1.0	1.5	2.0	2.5	3.0	3.5	4.0	5.0	6.0
Serviceability deflection limit Span / 250	Single span	600	870	760	690	640	600	570	550	510	470
		450	960	840	760	710	660	630	600	560	530
		400	1000	870	790	730	690	660	630	580	550
		300	1100	960	870	810	760	720	690	640	600
	2 or more spans	600	920	800	720	660	620	590	560	510	470
		450	1020	880	800	740	690	650	620	570	530
		400	1070	920	830	770	720	680	650	600	560
		300	1190	1020	920	850	800	760	720	660	620
Serviceability deflection limit Span / 360	Single span	600	770	670	610	570	530	510	480	450	420
		450	850	740	670	620	590	560	530	490	460
		400	880	770	700	650	610	580	550	510	480
		300	970	850	770	720	670	640	610	570	530
	2 or more spans	600	920	800	720	660	620	590	560	510	470
		450	1020	880	800	740	690	650	620	570	530
		400	1070	920	830	770	720	680	650	600	560
		300	1190	1020	920	850	800	760	720	660	620

Table 2 Vertical 50x25x1.15 Top Hat Span Table (mm)

	Span type	Top Hat spacing (mm)	Ultimate Wind Pressure W_u (kPa)								
			1.0	1.5	2.0	2.5	3.0	3.5	4.0	5.0	6.0
Serviceability deflection limit Span / 250	Single span	600	1260	1110	1020	960	900	860	820	760	720
		450	1390	1220	1110	1040	990	940	900	840	790
		400	1440	1260	1160	1080	1020	980	940	880	820
		300	1590	1390	1260	1180	1110	1060	1020	960	900
	2 or more spans	600	1260	1110	1020	960	900	830*	730*	580*	480*
		450	1390	1220	1110	1040	990	940	900	780*	650*
		400	1440	1260	1160	1080	1020	980	940	870*	730*
		300	1590	1390	1260	1180	1110	1060	1020	960	900
Serviceability deflection limit Span / 360	Single span	600	1210	1050	960	890	840	790	760	700	660
		450	1330	1160	1050	980	920	870	840	780	730
		400	1380	1210	1100	1020	960	910	870	810	760
		300	1520	1330	1210	1120	1050	1000	960	890	840
	2 or more spans	600	1260	1110	1020	960	900	830*	730*	580*	480*
		450	1390	1220	1110	1040	990	940	900	780*	650*
		400	1440	1260	1160	1080	1020	980	940	870*	730*
		300	1590	1390	1260	1180	1110	1060	1020	960	900

*Limited by 2x10g Hex-head screw connection capacity.

1. Check maximum cladding span and fastener spacing requirements from the manufacturer's literature. Maximum cladding weight 22 kg/m^2.
2. Tables include self weight and uniformly distributed lateral pressures. Point loads or live loads are not considered.
3. Tables refer to Siniat Top Hats of grade G300 steel with Zincalume™ AM150 corrosion protection.
4. All Top Hats must be supported 150mm maximum from ends.
5. Calculations based upon either single span or 2-or-more spans, designed in accordance with *AS/NZS 4600:2018 Cold Formed Steel Structures.*
6. Wind pressures determined in accordance with *AS/NZS 1170.2 Wind Actions.*
7. Ultimate Load Case 1: 1.2G + Wu
8. Serviceability Load Case 1: G + Ws, with deflection limited to span/250 or span/360. Serviceability pressure taken as 65% of ultimate wind pressure suitable for Region A and Region B.
9. Connections checked using 2 x 10g hex-head screws into minimum 1.0mm BMT G550 steel or minimum 1.5mm BMT G450 steel (purlins or girts). Contact Siniat if fixing to a different substrate for the possibility of spanning further.
10. Splicing of Top Hats is not permitted.
11. Do not use tables for vertical top hats over horizontal top hat construction.
12. The nominated lateral pressures and deflection limits must be checked for suitability for a specific project.

Table 3 Vertical 50x35x1.15 or 75x35x1.15 or 120x35x1.15 Top Hat Span Table (mm)

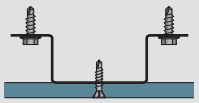
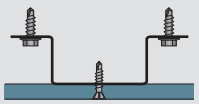
	Span type	Top Hat spacing (mm)	Ultimate Wind Pressure W_u (kPa)								
			1.0	1.5	2.0	2.5	3.0	3.5	4.0	5.0	6.0
Serviceability deflection limit Span / 250	Single span	600	1470	1300	1200	1130	1070	1020	980	910	850
		450	1610	1420	1300	1220	1160	1110	1070	1000	940
		400	1660	1470	1350	1270	1200	1150	1110	1040	980
		300	1820	1610	1470	1380	1300	1250	1200	1130	1070
	2 or more spans	600	1470	1300	1200	1130	970*	830*	730*	580*	480*
		450	1610	1420	1300	1220	1160	1110	970*	780*	650*
		400	1660	1470	1350	1270	1200	1150	1090*	870*	730*
		300	1820	1610	1470	1380	1300	1250	1200	1130	970*
Serviceability deflection limit Span / 360	Single span	600	1470	1300	1200	1130	1070	1010	970	900	850
		450	1610	1420	1300	1220	1160	1110	1070	990	930
		400	1660	1470	1350	1270	1200	1150	1110	1030	970
		300	1820	1610	1470	1380	1300	1250	1200	1130	1070
	2 or more spans	600	1470	1300	1200	1130	970*	830*	730*	580*	480*
		450	1610	1420	1300	1220	1160	1110	970*	780*	650*
		400	1660	1470	1350	1270	1200	1150	1090*	870*	730*
		300	1820	1610	1470	1380	1300	1250	1200	1130	970*

Table 4 Vertical 50x50x1.15 Top Hat Span Table (mm)

	Span type	Top Hat spacing (mm)	Ultimate Wind Pressure W_u (kPa)								
			1.0	1.5	2.0	2.5	3.0	3.5	4.0	5.0	6.0
Serviceability deflection limit Span / 250	Single span	600	1790	1600	1480	1390	1330	1270	1230	1150	1090
		450	1950	1740	1600	1510	1430	1370	1330	1250	1190
		400	2010	1790	1650	1560	1480	1420	1370	1290	1230
		300	2190	1950	1790	1680	1600	1530	1480	1390	1330
	2 or more spans	600	1790	1600	1460*	1170*	970*	830*	730*	580*	480*
		450	1950	1740	1600	1510	1300*	1110*	970*	780*	650*
		400	2010	1790	1650	1560	1460*	1250*	1090*	870*	730*
		300	2190	1950	1790	1680	1600	1530	1460*	1170*	970*
Serviceability deflection limit Span / 360	Single span	600	1790	1600	1480	1390	1330	1270	1230	1150	1090
		450	1950	1740	1600	1510	1430	1370	1330	1250	1190
		400	2010	1790	1650	1560	1480	1420	1370	1290	1230
		300	2190	1950	1790	1680	1600	1530	1480	1390	1330
	2 or more spans	600	1790	1600	1460*	1170*	970*	830*	730*	580*	480*
		450	1950	1740	1600	1510	1300*	1110*	970*	780*	650*
		400	2010	1790	1650	1560	1460*	1250*	1090*	870*	730*
		300	2190	1950	1790	1680	1600	1530	1460*	1170*	970*

*Limited by 2x10g Hex-head screw connection capacity.

1. Check maximum cladding span and fastener spacing requirements from the manufacturer's literature. Maximum cladding weight 22 kg/m^2.
2. Tables include self weight and uniformly distributed lateral pressures. Point loads or live loads are not considered.
3. Tables refer to Siniat Top Hats of grade G300 steel with Zincalume™ AM150 corrosion protection.
4. All Top Hats must be supported 150mm maximum from ends.
5. Calculations based upon either single span or 2-or-more spans, designed in accordance with *AS/NZS 4600:2018 Cold Formed Steel Structures.*
6. Wind pressures determined in accordance with *AS/NZS 1170.2 Wind Actions.*
7. Ultimate Load Case 1: 1.2G + Wu
8. Serviceability Load Case 1: G + Ws, with deflection limited to span/250 or span/360. Serviceability pressure taken as 65% of ultimate wind pressure suitable for Region A and Region B.
9. Connections checked using 2 x 10g hex-head screws into minimum 1.0mm BMT G550 steel or minimum 1.5mm BMT G450 steel (purlins or girts). Contact Siniat if fixing to a different substrate for the possibility of spanning further.
10. Splicing of Top Hats is not permitted.
11. Do not use tables for vertical top hats over horizontal top hat construction.
12. The nominated lateral pressures and deflection limits must be checked for suitability for a specific project.

Table 5 Vertical 50x15x0.75 Top Hat Span Table (mm)

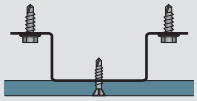
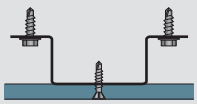
	Span type	Top Hat spacing (mm)	Ultimate Wind Pressure W_u (kPa)								
			1.0	1.5	2.0	2.5	3.0	3.5	4.0	5.0	6.0
Serviceability deflection limit Span / 250	Single span	600	720	640	580	540	510	480	460	420	380
		450	780	690	640	600	560	530	510	470	440
		400	810	720	660	620	580	550	530	490	460
		300	880	780	720	670	640	610	580	540	510
	2 or more spans	600	720	640	580	540	510	480	460	420	380
		450	780	690	640	600	560	530	510	470	440
		400	810	720	660	620	580	550	530	490	460
		300	880	780	720	670	640	610	580	540	510
Serviceability deflection limit Span / 360	Single span	600	670	580	530	490	460	440	420	390	370
		450	740	640	580	540	510	480	460	430	400
		400	760	670	610	560	530	500	480	450	420
		300	840	740	670	620	580	550	530	490	460
	2 or more spans	600	720	640	580	540	510	480	460	420	380
		450	780	690	640	600	560	530	510	470	440
		400	810	720	660	620	580	550	530	490	460
		300	880	780	720	670	640	610	580	540	510

Table 6 Vertical 50x25x0.75 Top Hat Span Table (mm)

	Span type	Top Hat spacing (mm)	Ultimate Wind Pressure W_u (kPa)								
			1.0	1.5	2.0	2.5	3.0	3.5	4.0	5.0	6.0
Serviceability deflection limit Span / 250	Single span	600	1040	930	850	790	740	700	670	610	570
		450	1120	1010	930	870	820	780	740	680	640
		400	1160	1040	960	900	850	810	780	710	670
		300	1260	1120	1040	980	930	890	850	790	740
	2 or more spans	600	1040	930	850	790	740	700	670	580*	480*
		450	1120	1010	930	870	820	780	740	680	640
		400	1160	1040	960	900	850	810	780	710	670
		300	1260	1120	1040	980	930	890	850	790	740
Serviceability deflection limit Span / 360	Single span	600	1040	910	830	770	720	690	660	610	570
		450	1120	1010	910	850	800	760	720	670	630
		400	1160	1040	950	880	830	790	750	700	660
		300	1260	1120	1040	970	910	870	830	770	720
	2 or more spans	600	1040	930	850	790	740	700	670	580*	480*
		450	1120	1010	930	870	820	780	740	680	640
		400	1160	1040	960	900	850	810	780	710	670
		300	1260	1120	1040	980	930	890	850	790	740

*Limited by 2x10g Hex-head screw connection capacity.

1. Check maximum cladding span and fastener spacing requirements from the manufacturer's literature. Maximum cladding weight 22 kg/m^2.
2. Tables include self weight and uniformly distributed lateral pressures. Point loads or live loads are not considered.
3. Tables refer to Siniat Top Hats of grade G300 steel with Zincalume™ AM150 corrosion protection.
4. All Top Hats must be supported 150mm maximum from ends.
5. Calculations based upon either single span or 2-or-more spans, designed in accordance with *AS/NZS 4600:2018 Cold Formed Steel Structures.*
6. Wind pressures determined in accordance with *AS/NZS 1170.2 Wind Actions.*
7. Ultimate Load Case 1: 1.2G + Wu
8. Serviceability Load Case 1: G + Ws, with deflection limited to span/250 or span/360. Serviceability pressure taken as 65% of ultimate wind pressure suitable for Region A and Region B.
9. Connections checked using 2 x 10g hex-head screws into minimum 1.0mm BMT G550 steel or minimum 1.5mm BMT G450 steel (purlins or girts). Contact Siniat if fixing to a different substrate for the possibility of spanning further.
10. Splicing of Top Hats is not permitted.
11. Do not use tables for vertical top hats over horizontal top hat construction.
12. The nominated lateral pressures and deflection limits must be checked for suitability for a specific project.

Table 7 Vertical 50x35x0.75 Top Hat Span Table (mm)

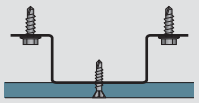
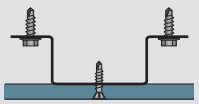
	Span type	Top Hat spacing (mm)	Ultimate Wind Pressure W_u (kPa)								
			1.0	1.5	2.0	2.5	3.0	3.5	4.0	5.0	6.0
Serviceability deflection limit Span / 250	Single span	600	1250	1120	1040	980	920	870	820	750	700
		450	1350	1210	1120	1060	1010	960	920	840	790
		400	1390	1250	1160	1090	1040	1000	960	880	820
		300	1510	1350	1250	1180	1120	1080	1040	980	920
	2 or more spans	600	1250	1120	1040	980	920	830*	730*	580*	480*
		450	1350	1210	1120	1060	1010	960	920	780*	650*
		400	1390	1250	1160	1090	1040	1000	960	870*	730*
		300	1510	1350	1250	1180	1120	1080	1040	980	920
Serviceability deflection limit Span / 360	Single span	600	1250	1120	1040	980	920	870	820	750	700
		450	1350	1210	1120	1060	1010	960	920	840	790
		400	1390	1250	1160	1090	1040	1000	960	880	820
		300	1510	1350	1250	1180	1120	1080	1040	980	920
	2 or more spans	600	1250	1120	1040	980	920	830*	730*	580*	480*
		450	1350	1210	1120	1060	1010	960	920	780*	650*
		400	1390	1250	1160	1090	1040	1000	960	870*	730*
		300	1510	1350	1250	1180	1120	1080	1040	980	920

Table 8 Vertical 50x50x0.75 Top Hat Span Table (mm)

	Span type	Top Hat spacing (mm)	Ultimate Wind Pressure W_u (kPa)								
			1.0	1.5	2.0	2.5	3.0	3.5	4.0	5.0	6.0
Serviceability deflection limit Span / 250	Single span	600	1550	1380	1260	1180	1110	1050	1000	920	860
		450	1670	1500	1380	1290	1220	1160	1110	1030	960
		400	1720	1550	1430	1340	1260	1210	1160	1070	1000
		300	1860	1670	1550	1460	1380	1320	1260	1180	1110
	2 or more spans	600	1550	1380	1260	1170*	970*	830*	730*	580*	480*
		450	1670	1500	1380	1290	1220	1110*	970*	780*	650*
		400	1720	1550	1430	1340	1260	1210	1090*	870*	730*
		300	1860	1670	1550	1460	1380	1320	1260	1170*	970*
Serviceability deflection limit Span / 360	Single span	600	1550	1380	1260	1180	1110	1050	1000	920	860
		450	1670	1500	1380	1290	1220	1160	1110	1030	960
		400	1720	1550	1430	1340	1260	1210	1160	1070	1000
		300	1860	1670	1550	1460	1380	1320	1260	1180	1110
	2 or more spans	600	1550	1380	1260	1170*	970*	830*	730*	580*	480*
		450	1670	1500	1380	1290	1220	1110*	970*	780*	650*
		400	1720	1550	1430	1340	1260	1210	1090*	870*	730*
		300	1860	1670	1550	1460	1380	1320	1260	1170*	970*

*Limited by 2x10g Hex-head screw connection capacity.

1. Check maximum cladding span and fastener spacing requirements from the manufacturer's literature. Maximum cladding weight 22 kg/m^2.
2. Tables include self weight and uniformly distributed lateral pressures. Point loads or live loads are not considered.
3. Tables refer to Siniat Top Hats of grade G300 steel with Zincalume™ AM150 corrosion protection.
4. All Top Hats must be supported 150mm maximum from ends.
5. Calculations based upon either single span or 2-or-more spans, designed in accordance with *AS/NZS 4600:2018 Cold Formed Steel Structures.*
6. Wind pressures determined in accordance with *AS/NZS 1170.2 Wind Actions.*
7. Ultimate Load Case 1: 1.2G + Wu
8. Serviceability Load Case 1: G + Ws, with deflection limited to span/250 or span/360. Serviceability pressure taken as 65% of ultimate wind pressure suitable for Region A and Region B.
9. Connections checked using 2 x 10g hex-head screws into minimum 1.0mm BMT G550 steel or minimum 1.5mm BMT G450 steel (purlins or girts). Contact Siniat if fixing to a different substrate for the possibility of spanning further.
10. Splicing of Top Hats is not permitted.
11. Do not use tables for vertical top hats over horizontal top hat construction.
12. The nominated lateral pressures and deflection limits must be checked for suitability for a specific project.

Horizontal Top Hats over Stud Framing

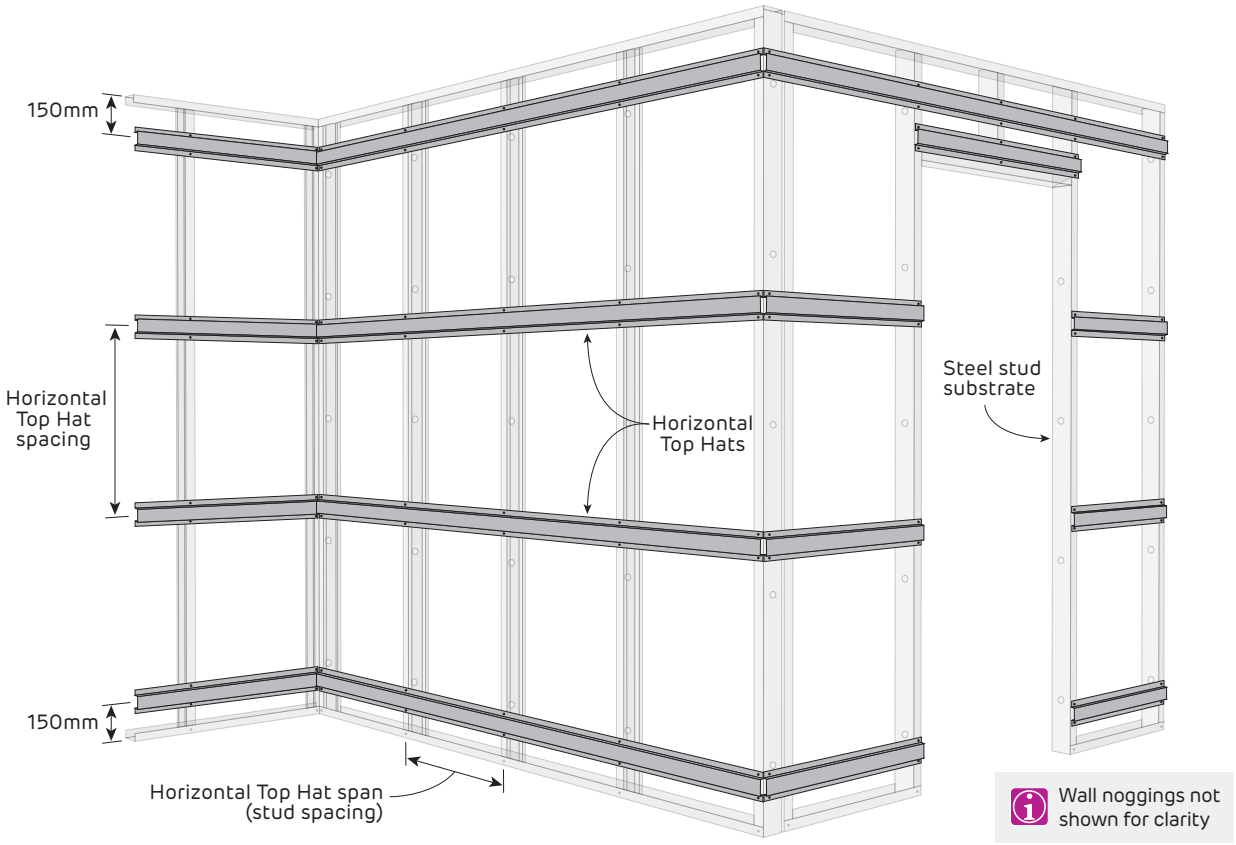


FIGURE 2 Horizontal Steel Top Hat Layout

Table 9 Horizontal 50x15x1.15 Top Hat Spacing Table (mm)

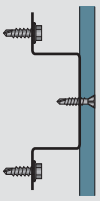
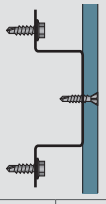
	Span type	Stud spacing (mm)	Ultimate Wind Pressure W_u (kPa)					
			2.0	3.0	4.0	5.0	6.0	7.0
Serviceability deflection limit Span / 250	Single span	600	900	620	460	370	310	260
		450	900	900	900	830	690	590
		400	900	900	900	900	900	780
		300	900	900	900	900	900	900
	2 or more spans	600	900	670	500	400	330	280
		450	900	900	680*	540*	450*	390*
		400	900	900	760*	610*	510*	430*
		300	900	900	900	820*	680*	580*
Serviceability deflection limit Span / 360	Single span	600	640	430	320	250	210	180
		450	900	900	760	610	510	430
		400	900	900	900	870	720	620
		300	900	900	900	900	900	900
	2 or more spans	600	900	670	500	400	330	280
		450	900	900	680*	540*	450*	390*
		400	900	900	760*	610*	510*	430*
		300	900	900	900	820*	680*	580*

Table 10 Horizontal 50x25x1.15 or 50x35x1.15 or 50x50x1.15 Top Hat Spacing Table (mm)

	Span type	Stud spacing (mm)	Ultimate Wind Pressure W_u (kPa)					
			2.0	3.0	4.0	5.0	6.0	7.0
Serviceability deflection limit Span / 250	Single span	600	900	900	900	900	850	730
		450	900	900	900	900	900	900
		400	900	900	900	900	900	900
		300	900	900	900	900	900	900
	2 or more spans	600	900	680*	510*	410*	340*	290*
		450	900	900	680*	540*	450*	390*
		400	900	900	760*	610*	510*	430*
		300	900	900	900	820*	680*	580*
Serviceability deflection limit Span / 360	Single span	600	900	900	900	900	820	700
		450	900	900	900	900	900	900
		400	900	900	900	900	900	900
		300	900	900	900	900	900	900
	2 or more spans	600	900	680*	510*	410*	340*	290*
		450	900	900	680*	540*	450*	390*
		400	900	900	760*	610*	510*	430*
		300	900	900	900	820*	680*	580*

*Limited by 2x10g Hex-head screw connection capacity.

1. Top Hat spacing limited to maximum 900mm spacing to apply an evenly distributed load to stud frame substrate.
2. Check maximum cladding span and fastener spacing requirements from the manufacturer's literature. Maximum cladding weight 22 kg/m² or seat cladding on floor.
3. Tables include self weight and uniformly distributed lateral pressures. Point loads or live loads are not considered.
4. Tables refer to Siniat Top Hats of grade G300 steel with Zincalume™ AM150 corrosion protection.
5. All Top Hats must be supported 150mm maximum from ends.
6. Calculations based upon either single span or 2-or-more spans, designed in accordance with *AS/NZS 4600:2018 Cold Formed Steel Structures.*
7. Wind pressures determined in accordance with *AS/NZS 1170.2 Wind Actions.*
8. Ultimate Load Case 1: 1.2G + Wu
9. Serviceability Load Case 1: G + Ws, with deflection limited to span/250 or span/360. Serviceability pressure taken as 65% of ultimate wind pressure.
10. Connections checked using 2 x 10g hex-head screws into minimum 1.15mm thick G300 steel.
11. Splicing of Top Hats is not permitted.
12. Do not use tables for vertical top hats over horizontal top hat construction.
13. The nominated lateral pressures and deflection limits must be checked for suitability for a specific project.

Table 11 Horizontal 50x15x0.75 Top Hat Spacing Table (mm)

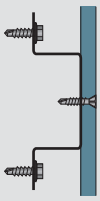
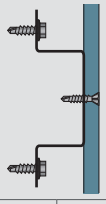
	Span type	Stud spacing (mm)	Ultimate Wind Pressure W_u (kPa)					
			2.0	3.0	4.0	5.0	6.0	7.0
Serviceability deflection limit Span / 250	Single span	600	560	370	280	220	180	160
		450	900	860	640	510	430	360
		400	900	900	840	670	560	480
		300	900	900	900	900	900	850
	2 or more spans	600	560	370	280	220	180	160
		450	900	860	640	510	430	360
		400	900	900	760*	610*	510*	430*
		300	900	900	900	820*	680*	580*
Serviceability deflection limit Span / 360	Single span	600	420	280	210	160	140	120
		450	900	660	500	400	330	280
		400	900	900	710	570	470	400
		300	900	900	900	900	900	850
	2 or more spans	600	560	370	280	220	180	160
		450	900	860	640	510	430	360
		400	900	900	760*	610*	510*	430*
		300	900	900	900	820*	680*	580*

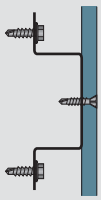
Table 12 Horizontal 50x25x0.75 Top Hat Spacing Table (mm)

	Span type	Stud spacing (mm)	Ultimate Wind Pressure W_u (kPa)					
			2.0	3.0	4.0	5.0	6.0	7.0
Serviceability deflection limit Span / 250	Single span	600	900	900	790	630	530	450
		450	900	900	900	900	900	870
		400	900	900	900	900	900	900
		300	900	900	900	900	900	900
	2 or more spans	600	900	680*	510*	410*	340*	290*
		450	900	900	680*	540*	450*	390*
		400	900	900	760*	610*	510*	430*
		300	900	900	900	820*	680*	580*
Serviceability deflection limit Span / 360	Single span	600	900	900	790	630	530	450
		450	900	900	900	900	900	870
		400	900	900	900	900	900	900
		300	900	900	900	900	900	900
	2 or more spans	600	900	680*	510*	410*	340*	290*
		450	900	900	680*	540*	450*	390*
		400	900	900	760*	610*	510*	430*
		300	900	900	900	820*	680*	580*

*Limited by 2x10g Hex-head screw connection capacity.

1. Top Hat spacing limited to maximum 900mm spacing to apply an evenly distributed load to stud frame substrate.
2. Check maximum cladding span and fastener spacing requirements from the manufacturer's literature. Maximum cladding weight 22 kg/m^2 or seat cladding on floor.
3. Tables include self weight and uniformly distributed lateral pressures. Point loads or live loads are not considered.
4. Tables refer to Siniat Top Hats of grade G300 steel with Zincalume™ AM150 corrosion protection.
5. All Top Hats must be supported 150mm maximum from ends.
6. Calculations based upon either single span or 2-or-more spans, designed in accordance with *AS/NZS 4600:2018 Cold Formed Steel Structures.*
7. Wind pressures determined in accordance with *AS/NZS 1170.2 Wind Actions.*
8. Ultimate Load Case 1: 1.2G + Wu
9. Serviceability Load Case 1: G + Ws, with deflection limited to span/250 or span/360. Serviceability pressure taken as 65% of ultimate wind pressure.
10. Connections checked using 2 x 10g hex-head screws into minimum 1.15mm thick G300 steel.
11. Splicing of Top Hats is not permitted.
12. Do not use tables for vertical top hats over horizontal top hat construction.
13. The nominated lateral pressures and deflection limits must be checked for suitability for a specific project.

Table 13 Horizontal 50x35x0.75 or 50x50x0.75 Top Hat Spacing Table (mm)

	Span type	Stud spacing (mm)	Ultimate Wind Pressure W_u (kPa)					
			2.0	3.0	4.0	5.0	6.0	7.0
Serviceability deflection limit Span / 250	Single span	600	900	900	900	900	850	730
		450	900	900	900	900	900	900
		400	900	900	900	900	900	900
		300	900	900	900	900	900	900
	2 or more spans	600	900	680*	510*	410*	340*	290*
		450	900	900	680*	540*	450*	390*
		400	900	900	760*	610*	510*	430*
		300	900	900	900	820*	680*	580*
Serviceability deflection limit Span / 360	Single span	600	900	900	900	900	850	730
		450	900	900	900	900	900	900
		400	900	900	900	900	900	900
		300	900	900	900	900	900	900
	2 or more spans	600	900	680*	510*	410*	340*	290*
		450	900	900	680*	540*	450*	390*
		400	900	900	760*	610*	510*	430*
		300	900	900	900	820*	680*	580*

*Limited by 2x10g Hex-head screw connection capacity.

1. Top Hat spacing limited to maximum 900mm spacing to apply an evenly distributed load to stud frame substrate.
2. Check maximum cladding span and fastener spacing requirements from the manufacturer's literature. Maximum cladding weight 22 kg/m^2 or seat cladding on floor.
3. Tables include self weight and uniformly distributed lateral pressures. Point loads or live loads are not considered.
4. Tables refer to Siniat Top Hats of grade G300 steel with Zincalume™ AM150 corrosion protection.
5. All Top Hats must be supported 150mm maximum from ends.
6. Calculations based upon either single span or 2-or-more spans, designed in accordance with *AS/NZS 4600:2018 Cold Formed Steel Structures.*
7. Wind pressures determined in accordance with *AS/NZS 1170.2 Wind Actions.*
8. Ultimate Load Case 1: 1.2G + Wu
9. Serviceability Load Case 1: G + Ws, with deflection limited to span/250 or span/360. Serviceability pressure taken as 65% of ultimate wind pressure.
10. Connections checked using 2 x 10g hex-head screws into minimum 1.15mm thick G300 steel.
11. Splicing of Top Hats is not permitted.
12. Do not use tables for vertical top hats over horizontal top hat construction.
13. The nominated lateral pressures and deflection limits must be checked for suitability for a specific project.

Horizontal + Vertical Top Hats over Stud Framing

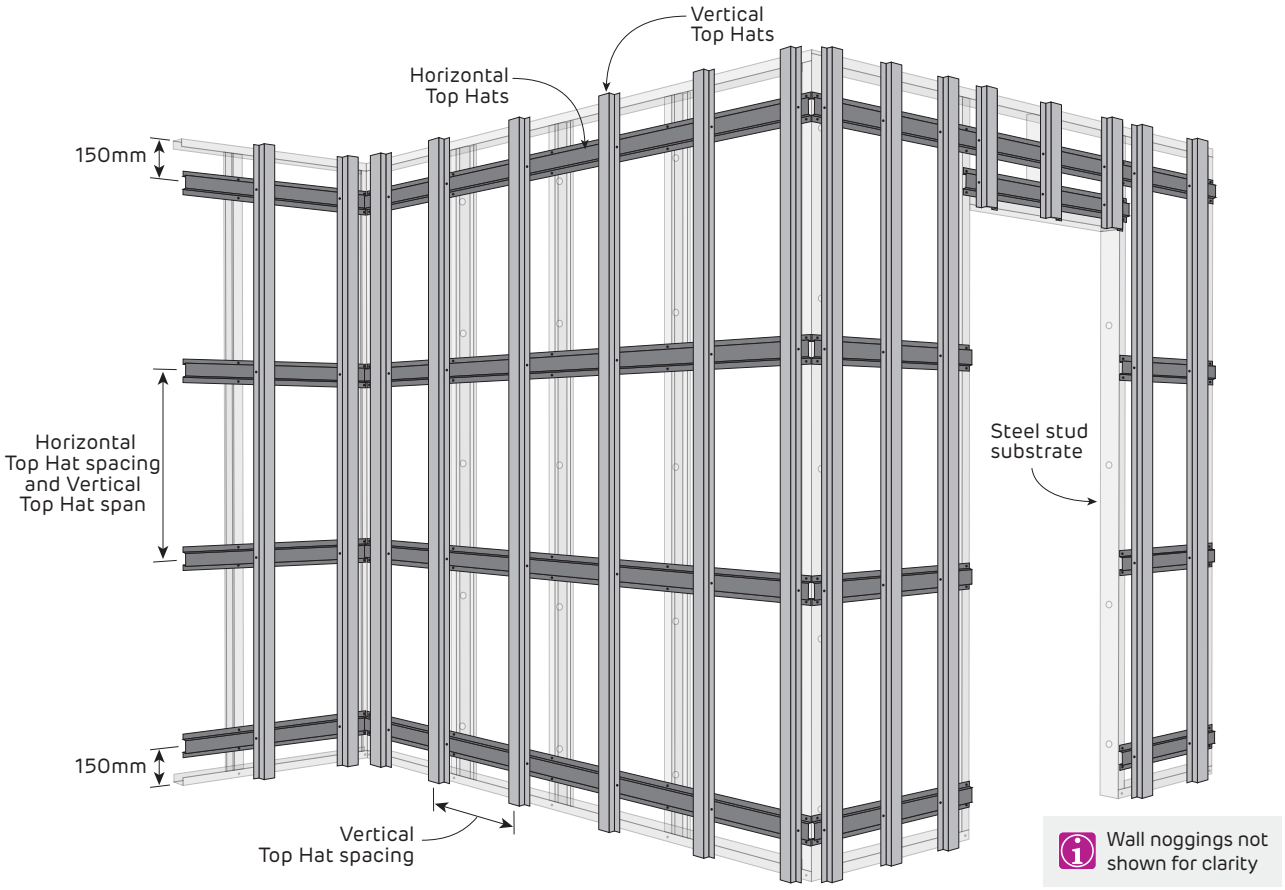


FIGURE 3 Vertical Top Hats over Horizontal Top Hats

Many cladding systems require vertical top hats as the substrate. Siniat Top Hat Cleats may be used to install vertical top hats directly over studs although this may not always be practical. A flexible solution is to install horizontal top hats and then vertical top hats which can be placed wherever they are needed [Refer to Figure 3]. Contact Siniat for a framing design with vertical top hats over horizontal top hats.

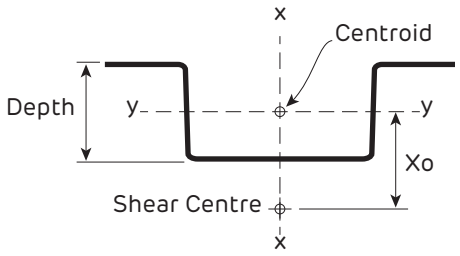
With horizontal top hat and vertical top hat framing over wall studs, a thermal break is typically not required.

Steel Profile Information

Material

Manufacturer	Grade	Ultimate	Yield	Coating
Siniat	G300	340 MPa	300 MPa	AM150

1. Steel grade and coating in accordance with AS 1397 *Continuous hot-dip metallic coated steel sheet and strip*



Top Hats

Section Properties

Profile	Dimensions (mm)		Shear Centre from Centroid (mm)	Area (mm²)	Moment of Inertia (mm⁴)		Section Modulus (mm³)		Torsion Constant J (mm⁴)	Warping Constant Iw (mm⁶)
	Depth	BMT	Xo		Ixx	Iyy	Zxx	Zyy		
50x15x0.75	15	0.75	-11.2	75.4	41,268	2,781	1,028	334	14.1	517,040
50x25x0.75	25	0.75	-19.7	99.5	67,737	10,632	1,461	844	18.7	2,482,400
50x35x0.75	35	0.75	-29.6	111.5	69,125	22,319	1,594	1,193	20.9	5,708,900
50x50x0.75	50	0.75	-42.0	140.0	97,829	54,286	2,022	2,178	26.3	17,086,000
50x15x1.15	15	1.15	-11.2	115.5	63,281	4,267	1,568	513	50.9	791,440
50x25x1.15	25	1.15	-19.7	152.6	103,830	16,300	2,229	1,294	67.3	3,799,990
50x35x1.15	35	1.15	-29.0	171.0	108,950	33,724	2,444	1,846	75.4	8,407,000
50x50x1.15	50	1.15	-42.0	214.7	149,990	83,217	3,088	3,339	94.7	26,182,000
120x35x1.15	35	1.15	-24.5	265.3	782,880	48,559	8,889	2,114	116.9	90,681,000

Fire Rated and Non-Fire Rated
Top Hat Cleats over External Wall Framing

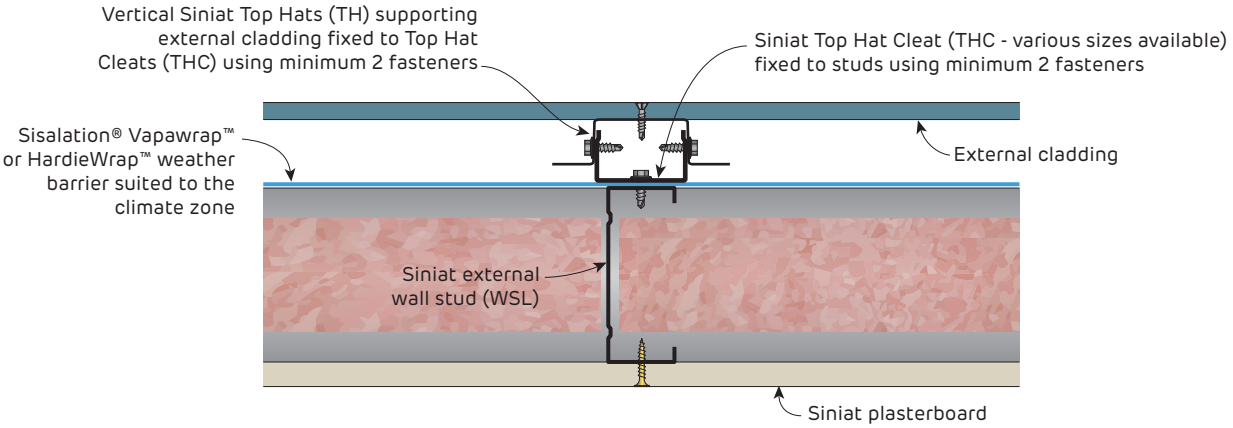


FIGURE 4 External Steel Stud Wall
Vertical Top Hats over Top Hat Cleats
Plan

Additional studs may need to be installed to accommodate top hat cleats

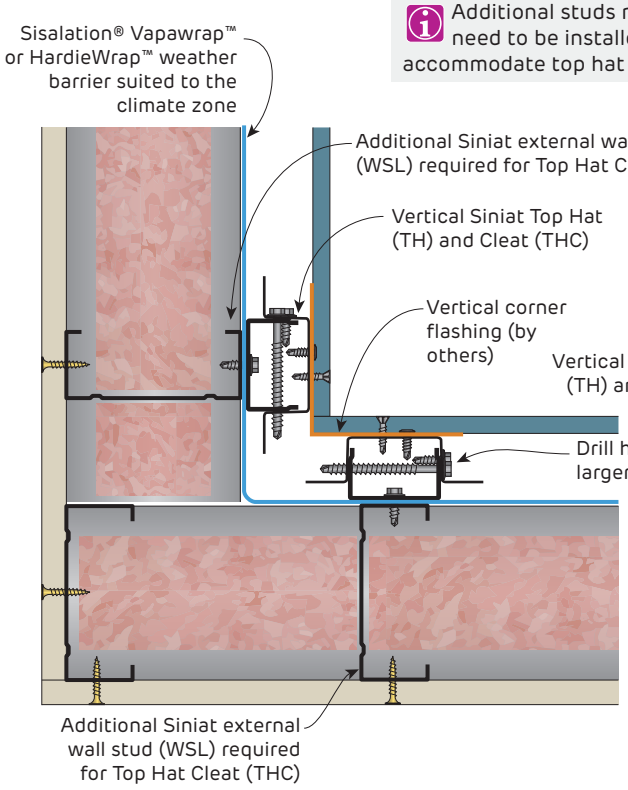


FIGURE 5 External Steel Stud Wall Internal Corner
Vertical Top Hats over Top Hat Cleats
Plan

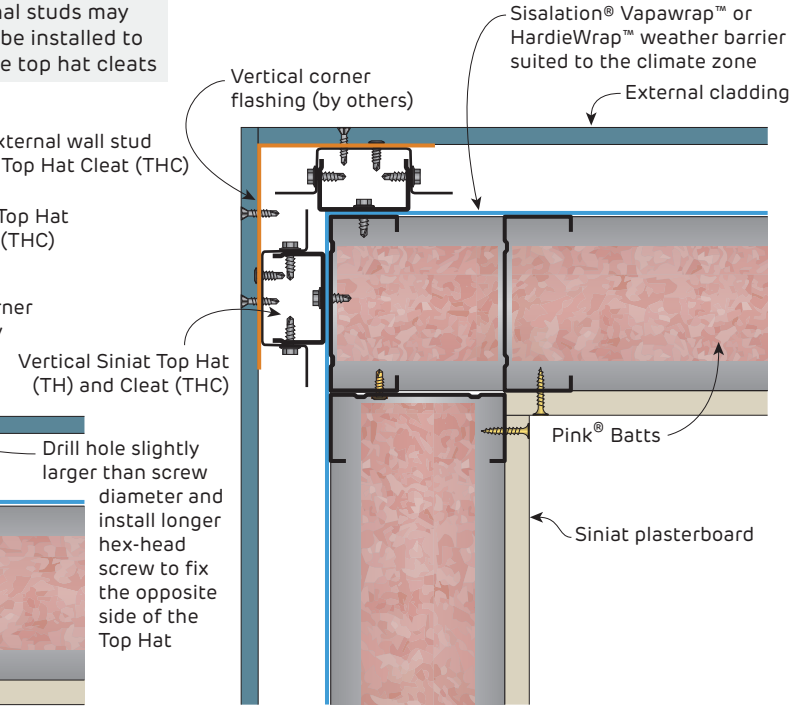


FIGURE 6 External Steel Stud Wall External Corner
Vertical Top Hats over Top Hat Cleats
Plan