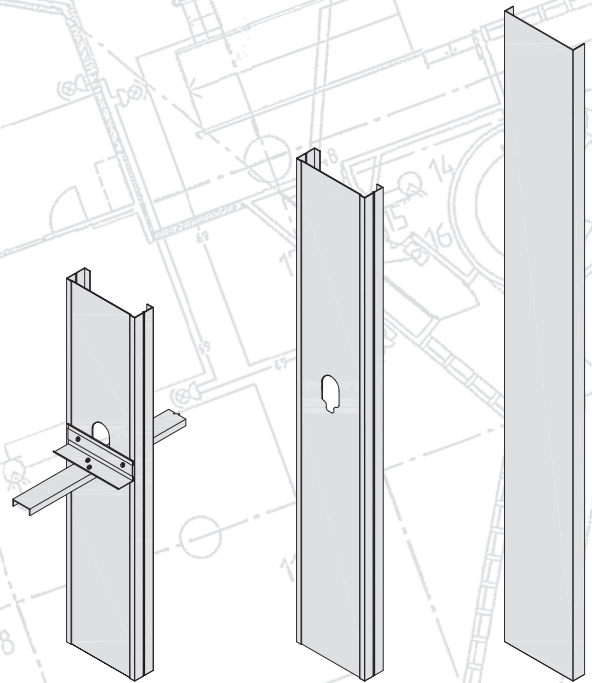




CRACO MFG

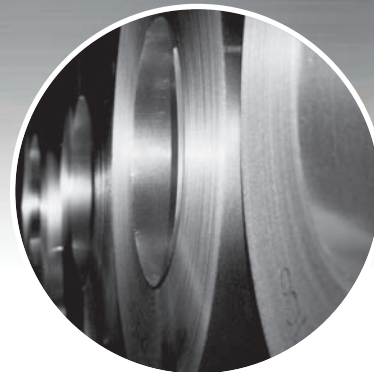
SMARTFRAME[®] Certified Steel Framing & Connectors



SMARTFRAME[®]

DRYWALL FRAMING SYSTEM
PRODUCT CATALOG
09.22.16

PATENT D618365



SmartFrame® Drywall Framing System

The SmartFrame Drywall Framing System is an advanced non-structural Steel Stud framing assembly comprised of CRACO's SmartStud and SmartTrack.

The SmartFrame Drywall Framing System is the result of superior engineering and advanced manufacturing technologies.

SmartFrame non-structural framing products are manufactured from higher strength steels than conventional non-structural framing products. Stronger Steel, plus an optimized reinforced profile, greatly increases the performance of the SmartFrame framing system.

Strategic engineered mil thickness, higher ksi steel combined with a reinforced profile allows SmartStud products to out perform conventional framing products. SmartStud products are laboratory tested in accordance with ASTM and ICC for Composite Limiting Wall Heights.

As a result of technology and roll-forming advancements, SmartFrame products have become the industry standard for non-structural steel wall framing.

SMARTSTUD®			CONVENTIONAL		
MEMBER	THICKNESS	KSI	MEMBER	THICKNESS	KSI
SmartStud25	15 mil / 0.0157"	50	25 Gauge Stud	18 mil / 0.0188"	33
SmartStud20	19 mil / 0.0200"	50	20 Gauge Stud	30 mil / 0.0312"	33
SmartStud 18mil	18mil / 0.0188"	33	25 Gauge Stud	18 mil / 0.0188"	33
SmartStud 23mil	23mil / 0.2450"	50	20 Gauge Stud	30 mil / 0.0312"	33
SmartStud 30mil	30mil / 0.0312"	33	20 Gauge Stud	30 mil / 0.0312"	33
SmartStud 33mil	33mil / 0.0346"	33	20 Gauge Stud	30 mil / 0.0346"	33

SmartFrame® Drywall Framing System

SMARTSTUD® PHYSICAL PROPERTIES							
PRODUCT TYPE	MATERIAL GAUGE	DESIGN THICKNESS	MINIMUM THICKNESS	MIL THICKNESS	KSI	COATING WEIGHT	FLANGE SIZE
SmartStud25	25	0.0157"	0.0149"	15	50ksi	G40	1.25"
SmartStud20	20	0.0200"	0.0190"	19	50ksi	G40	1.25"
SmartStud 18mil	25	0.0188"	0.0179"	18	33ksi	G40	1.25"
SmartStud 23mil	20	0.0245"	0.0233"	23	50ksi	G40	1.25"
SmartStud 30mil	20	0.0312"	0.0296"	30	33ksi	G40	1.25"
SmartStud 33mil	20	0.0346"	0.0329"	33	33ksi	G40	1.25"

SMARTTRACK™ PHYSICAL PROPERTIES						
PRODUCT TYPE	MATERIAL GAUGE	DESIGN THICKNESS	MINIMUM THICKNESS	MIL THICKNESS	KSI	COATING WEIGHT
SmartTrack25	25	0.0157"	0.0149"	15	50ksi	G40
SmartTrack20	20	0.0200"	0.0190"	19	50ksi	G40
SmartTrack 18mil	25	0.0188"	0.0179"	18	33ksi	G40
SmartTrack 23mil	20	0.0245"	0.0233"	23	50ksi	G40
SmartTrack 30mil	20	0.0312"	0.0296"	30	33ksi	G40
SmartTrack 33mil	20	0.0346"	0.0329"	33	33ksi	G40

- Notes:**
1. SmartStud25 & SmartTrack25 products are equivalent to conventional 25 gauge (18mil).
 2. SmartStud20 & SmartTrack20 products are equivalent to conventional 20 gauge (30mil).
 3. SmartStud 23mil & SmartTrack 23mil products are equivalent to conventional 20 gauge (30mil).
 4. SmartStud 30mil & 33mil, SmartTrack 30mil & 33mil products are conventional flat web/flange framing members.

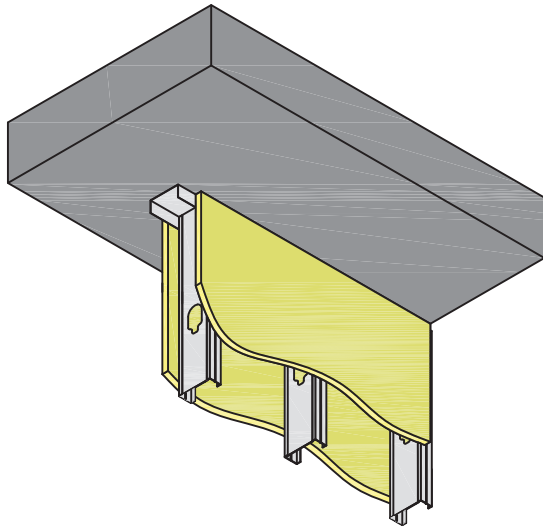


SmartFrame® Drywall Framing System

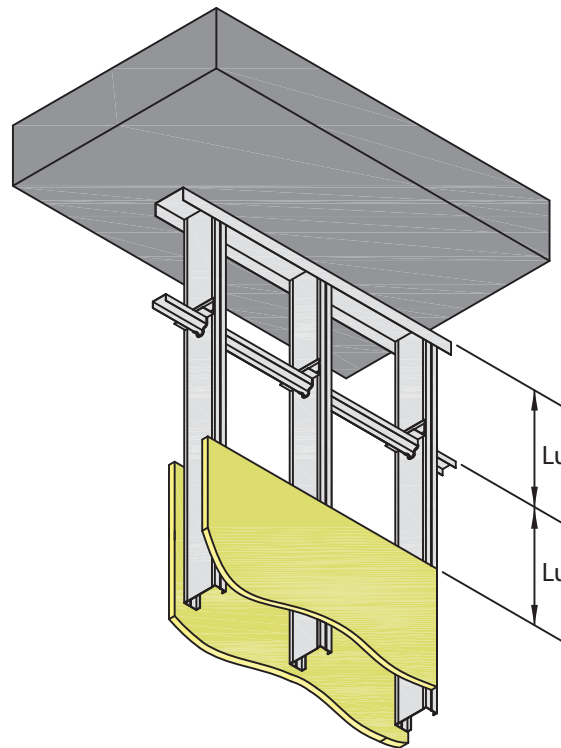
SmartStud® Section Properties

SmartStud Part Number	Design Thickness		Fy (ksi)	Gross Section						Effective			Torsional				Lu (in)		
	Inches	Mils		Area (in ²)	Wgt (lbs/ft)	Ix (in ⁴)	Sx (in ³)	Rx (in)	Iy (in ⁴)	Ry (in)	Ixe (in ⁴)	Sxe (in ³)	Mxa (in-lb)	Jx1000 (in ⁴)	Cw (in ⁶)	Xo (in)		Ro (in)	B Beta
SmartStud25																			
162SS125-15	0.0157	15	50	0.069	0.24	0.03	0.04	0.69	0.01	0.46	0.023	0.022	672	0.569	0.008	-1.059	1.344	0.379	24.2
250SS125-15	0.0157	15	50	0.083	0.28	0.09	0.07	1.02	0.02	0.45	0.063	0.037	1134	0.682	0.02	-0.931	1.452	0.589	23.9
362SS125-15 ¹	0.0157	15	50	0.100	0.34	0.2	0.11	1.42	0.02	0.43	0.157	0.053	1599	0.827	0.046	-0.811	1.690	0.769	23.7
400SS125-15 ¹	0.0157	15	50	0.106	0.362	0.254	0.127	1.546	0.019	0.428	0.19	0.059	1778	0.876	0.058	-0.777	1.782	0.810	23.6
600SS125-15 ²	0.0157	15	50	0.137	0.469	0.670	0.223	2.204	0.021	0.395	0.424	0.096	2887	1.133	0.147	-0.642	2.329	0.923	23.0
SmartStud20																			
162SS125-19	0.0200	19	50	0.09	0.3	0.04	0.05	0.69	0.02	0.46	0.04	0.03	936	1.171	0.010	-1.053	1.338	0.381	24.2
250SS125-19	0.0200	19	50	0.11	0.36	0.11	0.09	1.02	0.02	0.45	0.09	0.06	1664	1.404	0.025	-0.925	1.447	0.591	23.9
362SS125-19	0.0200	19	50	0.13	0.43	0.26	0.14	1.42	0.02	0.43	0.22	0.08	2271	1.704	0.058	-0.806	1.685	0.771	23.5
400SS125-19	0.0200	19	50	0.14	0.46	0.32	0.16	1.54	0.02	0.43	0.26	0.08	2529	1.804	0.073	-0.773	1.778	0.811	23.5
600SS125-19 ²	0.0200	19	50	0.18	0.6	0.85	0.28	2.2	0.03	0.39	0.59	0.14	4132	2.234	0.184	-0.637	2.325	0.924	22.9
SmartStud 18mil																			
162SS125-18	0.0188	18	33	0.080	0.270	0.038	0.046	0.686	0.016	0.447	0.034	0.031	610	0.009	0.009	-1.029	1.315	0.388	29.0
250SS125-18	0.0188	18	33	0.097	0.330	0.099	0.079	1.014	0.019	0.439	0.089	0.059	1170	0.011	0.023	-0.904	1.427	0.599	29.0
362SS125-18	0.0188	18	33	0.118	0.400	0.234	0.129	1.409	0.021	0.421	0.221	0.075	1480	0.014	0.054	-0.786	1.667	0.778	28.8
400SS125-18 ¹	0.0188	18	33	0.125	0.420	0.294	0.147	1.536	0.021	0.414	0.281	0.083	1680	0.015	0.068	-0.754	1.760	0.816	28.7
600SS125-18 ^{1,3}	0.0188	18	33	0.162	0.550	0.778	0.259	2.189	0.024	0.382	0.489	0.124	3718	0.019	0.172	0.623	2.308	0.927	22.7
SmartStud 23mil																			
162SS125-23	0.0245	23	50	0.11	0.36	0.05	0.06	0.69	0.02	0.45	0.05	0.04	1239	0.214	0.012	-1.047	1.332	0.382	24.1
250SS125-23	0.0245	23	50	0.13	0.44	0.13	0.11	1.02	0.03	0.45	0.11	0.08	2296	0.257	0.030	-0.921	1.441	0.592	23.9
362SS125-23	0.0245	23	50	0.16	0.53	0.31	0.17	1.41	0.03	0.430	0.29	0.1	3068	0.312	0.070	-0.801	1.679	0.773	23.5
400SS125-23	0.0245	23	50	0.17	0.56	0.39	0.2	1.54	0.03	0.42	0.35	0.11	3423	0.331	0.087	-0.767	1.773	0.812	23.5
600SS125-23 ¹	0.0245	23	50	0.21	0.73	1.04	0.35	2.2	0.03	0.39	0.78	0.19	5623	0.429	0.222	-0.633	2.321	0.925	22.9
SmartStud 30mil																			
162SS125-30	0.3120	30	33	0.131	0.450	0.061	0.075	0.681	0.026	0.441	0.060	0.060	1190	0.043	0.014	-1.014	1.298	0.390	29.2
250SS125-30	0.3120	30	33	0.159	0.540	0.161	0.129	1.008	0.030	0.433	0.159	0.110	2170	0.052	0.037	-0.889	1.412	0.603	28.9
362SS125-30	0.3120	30	33	0.194	0.660	0.381	0.210	1.402	0.033	0.415	0.376	0.156	3080	0.063	0.086	-0.773	1.654	0.782	28.6
400SS125-30	0.3120	30	33	0.206	0.700	0.481	0.240	1.529	0.034	0.408	0.474	0.174	3440	0.067	0.107	-0.741	1.748	0.820	28.5
600SS125-30	0.3120	30	33	0.268	0.910	1.275	0.425	2.181	0.038	0.376	1.218	0.315	6220	0.087	0.274	-0.611	2.296	0.929	27.6
SmartStud 33mil																			
162SS125-33	0.3460	33	33	0.145	0.490	0.067	0.083	0.679	0.028	0.440	0.066	0.069	1370	0.058	0.016	-1.010	1.294	0.391	29.2
250SS125-33	0.3460	33	33	0.176	0.600	0.178	0.142	1.006	0.033	0.431	0.175	0.125	2480	0.070	0.040	-0.885	1.408	0.605	28.9
362SS125-33	0.3460	33	33	0.215	0.730	0.421	0.232	1.400	0.037	0.413	0.415	0.182	3590	0.086	0.094	-0.769	1.650	0.783	28.5
400SS125-33	0.3460	33	33	0.228	0.770	0.531	0.265	1.527	0.038	0.407	0.524	0.203	4010	0.091	0.118	-0.738	1.744	0.821	28.4
600SS125-33	0.3460	33	33	0.297	1.010	1.409	0.470	2.179	0.042	0.374	1.361	0.369	7300	0.118	0.300	-0.608	2.293	0.930	27.6

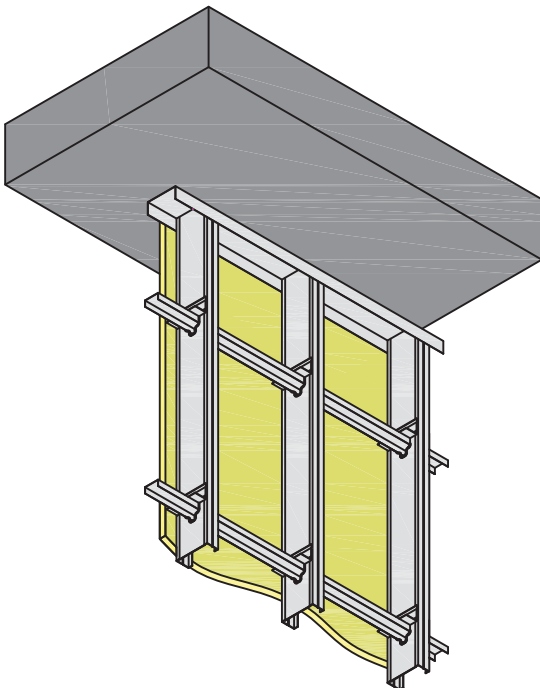
- Notes:**
1. Web $h/t > 200$, web stiffeners required at all support points and concentrated loads.
 2. Web $h/t > 260$, shear capacity not available. Effective properties are for comparison only.
 3. Effective Properties based on the 2007 NASPEC, Direct Strength Method (Appendix 1). Sections are not pre-qualified (i.e. $\Omega = 2.0$).
 4. Listed allowable moment, M_{ax} is the minimum value based on local buckling and distortional buckling.
 5. I_{xe} is the effective moment of inertia for deflection calculation.
 6. S_{xe} is based on finite strip method allowable moment for local buckling with a safety factor of 2 per NASPEC Appendix 1 for non-prequalified beams.
 7. Torsional properties based on section without corners or flange stiffeners
 8. M_{nx} and M_{ax} are the local buckling nominal and allowable moment respectively. M_{nd} is the distortional buckling nominal moment at $K_D = 0$.
 9. Minimum allowable moment is the must be taken as the lower of M_{ax} and M_{nd}/Ω where $\Omega = 2.0$ for non-prequalified sections using the DSM method.
 10. For Direct Strength calculations, CUFSM software was utilized see reference citation below:
 Ref: Schafer, B.W., Adány, S. "Buckling analysis of cold-formed steel members using CUFSM: conventional and constrained finite strip methods." Eighteenth International Specialty Conference on Cold-Formed Steel Structures, Orlando, FL, October 2006.



Composite Assembly
 Gypsum board installed full height
 on each side of stud wall
 (see pages 6 & 7)



Non-Composite Fully Braced Assembly
 Braced with CRC, BridgeSmart Connectors
 & partial gypsum board
 See SmartStud properties for Lu
 (see pages 8 & 9)



Non-Composite Assembly
 Braced with CRC @ 48" o.c., BridgeSmart
 Connectors & partial gypsum board
 (see pages 10 & 11)

Wall Framing Assemblies

SmartFrame® Drywall Framing System

SmartStud® Composite Height Chart												
Web Width	SmartStud Member	Design Thickness	Stud Spacing	5 PSF			7.5 PSF			10 PSF		
				L/120	L/240	L/360	L/120	L/240	L/360	L/120	L/240	L/360
1-5/8" (1.625")	SmartStud25 162SS125-15	0.0157'	12"	13'-3"	10'-6"	9'-0"	11'-7"	9'-0"	na	10'-6"	8'-1"	na
			16"	12'-1"	9'-5"	8'-1"	10'-6"	8'-1"	na	9'-5"	na	na
			24"	10'-6"	8'-1"	na	9'-0"	na	na	8'-0"	na	na
	SmartStud20 162SS125-19	0.0200"	12"	13'-8"	11'-0"	9'-6"	12'-0"	9'-6"	7'-10"	11'-0"	8'-6"	na
			16"	12'-6"	9'-10"	8'-6"	11'-0"	8'-6"	na	9'-11"	7'-5"	na
			24"	11'-0"	8'-6"	na	9'-6"	na	na	8'-6"	na	na
	SmartStud 18mil 162SS125-18	0.0188"	12"	13'-0"	11'-1"	9'-10"	10'-8"	9'-8"	8'-7"	9'-3"	8'-9"	7'-9"
			16"	11'-3"	10'-1"	8'-11"	9'-3"	8'-9"	7'-9"	8'-0"	7'-11"	na
			24"	9'-3"	8'-9"	7'-9"	na	na	na	na	na	na
	SmartStud 23mil 162SS125-23	0.0245"	12"	14'-1"	11'-3"	9'-10"	12'-4"	9'-10"	8'-7"	11'-3"	8'-11"	na
			16"	12'-10"	10'-2"	8'-11"	11'-3"	8'-11"	na	10'-2"	8'-1"	na
			24"	11'-3"	8'-11"	na	9'-10"	na	na	8'-11"	na	na
	SmartStud 30mil 162SS125-30	0.312"	12"	14'-11"	11'-10"	10'-4"	13'-1"	10'-4"	8'-11"	11'-10"	9'-4"	7'-11"
			16"	13'-7"	10'-9"	9'-4"	11'-10"	9'-4"	7'-11"	10'-9"	8'-3"	na
			24"	11'-10"	9'-4"	7'-11"	10'-4"	7'-11"	na	9'-4"	na	na
	SmartStud 33mil 162SS125-33	0.346"	12"	16'-6"	13'-0"	11'-4"	14'-4"	11'-4"	9'-10"	13'-0"	10'-3"	8'-9"
			16"	15'-0"	11'-9"	10'-3"	13'-0"	10'-3"	8'-9"	11'-9"	9'-3"	na
			24"	13'-0"	10'-3"	8'-9"	11'-4"	8'-9"	na	10'-3"	na	na
2-1/2" (2.50")	SmartStud25 250SS125-15	0.0157'	12"	16'-1"	13'-0"	11'-7"	14'-4"	11'-3"	9'-8"	12'-2"	10'-6"	8'-9"
			16"	14'-10"	11'-8"	10'-1"	12'-11"	10'-4"	9'-0"	11'-5"	9'-5"	8'-4"
			24"	12'-9"	9'-10"	9'-0"	11'-0"	8'-10"	na	9'-8"	7'-11"	na
	SmartStud20 250SS125-19	0.0200"	12"	18'-2"	14'-4"	12'-8"	16'-1"	12'-6"	10'-2"	13'-8"	10'-11"	8'-11"
			16"	15'-7"	12'-4"	10'-7"	13'-8"	10'-11"	9'-5"	12'-2"	9'-7"	8'-6"
			24"	14'-3"	10'-8"	9'-1"	12'-0"	8'-11"	6'-11"	10'-0"	7'-11"	na
	SmartStud 18mil 250SS125-18	0.0188"	12"	16'-4"	14'-2"	12'-9"	13'-4"	12'-4"	11'-2"	11'-7"	11'-3"	10'-2"
			16"	14'-2"	12'-10"	11'-7"	11'-7"	11'-3"	10'-2"	10'-0"	9'-5"	9'-0"
			24"	11'-7"	11'-3"	10'-2"	9'-5"	9'-5"	8'-6"	8'-2"	8'-2"	na
	SmartStud 23mil 250SS125-23	0.0245"	12"	20'-9"	16'-1"	14'-2"	18'-1"	14'-1"	10'-10"	15'-9"	11'-8"	9'-4"
			16"	16'-10"	13'-2"	11'-6"	14'-10"	11'-9"	10'-1"	13'-3"	10'-4"	8'-7"
			24"	16'-0"	11'-10"	9'-3"	13'-4"	9'-4"	7'-6"	10'-8"	8'-1"	na
	SmartStud 30mil 250SS125-30	0.0312"	12"	18'-5"	15'-10"	14'-1"	16'-1"	13'-10"	12'-4"	14'-7"	12'-7"	11'-2"
			16"	16'-9"	14'-5"	12'-10"	14'-7"	12'-7"	11'-2"	13'-3"	11'-5"	10'-2"
			24"	14'-7"	12'-7"	11'-2"	12'-9"	11'-0"	9'-9"	11'-7"	10'-0"	8'-8"
	SmartStud 33mil 250SS125-33	0.0346"	12"	19'-8"	15'-8"	13'-8"	17'-3"	13'-8"	11'-11"	15'-8"	12'-5"	10'-10"
			16"	17'-11"	14'-3"	12'-5"	15'-8"	12'-5"	10'-10"	14'-3"	11'-3"	9'-10"
			24"	15'-8"	12'-5"	10'-10"	13'-8"	10'-10"	9'-5"	12'-4"	9'-10"	8'-4"
3-5/8" (3.625")	SmartStud25 362SS125-15	0.0157'	12"	20'-9"	16'-6"	14'-5"	18'-0"	14'-5"	12'-7"	15'-7"	13'-1"	11'-5"
			16"	18'-10"	15'-0"	13'-1"	15'-7"	13'-1"	11'-5"	13'-6"	11'-11"	10'-3"
			24"	15'-7"	13'-1"	11'-5"	12'-9"	11'-5"	9'-8"	11'-0"	10'-3"	8'-6"
	SmartStud20 362SS125-19	0.0200"	12"	21'-10"	17'-4"	15'-2"	18'-11"	15'-2"	13'-3"	16'-5"	13'-9"	12'-0"
			16"	19'-10"	15'-9"	13'-9"	16'-5"	13'-9"	12'-0"	14'-2"	12'-6"	10'-11"
			24"	16'-5"	13'-9"	12'-0"	13'-4"	12'-0"	10'-6"	11'-7"	10'-11"	9'-5"
	SmartStud 18mil 362SS125-18	0.0188"	12"	18'-8"	16'-8"	14'-7"	15'-3"	14'-7"	12'-9"	13'-2"	13'-2"	11'-6"
			16"	16'-2"	15'-2"	13'-3"	13'-2"	13'-2"	11'-6"	11'-5"	11'-5"	10'-4"
			24"	13'-2"	13'-2"	11'-6"	10'-9"	10'-9"	9'-11"	9'-4"	9'-4"	8'-11"
	SmartStud 23mil 362SS125-23	0.0245"	12"	23'-5"	18'-7"	16'-3"	20'-5"	16'-3"	14'-2"	18'-7"	14'-9"	12'-11"
			16"	21'-3"	16'-11"	14'-9"	18'-7"	14'-9"	12'-11"	16'-9"	13'-5"	11'-8"
			24"	18'-7"	14'-9"	12'-11"	15'-9"	12'-11"	11'-3"	13'-8"	11'-8"	10'-2"
	SmartStud 30mil 362SS125-30	0.0312"	12"	22'-10"	18'-3"	16'-4"	19'-11"	16'-0"	14'-3"	18'-1"	14'-6"	12'-11"
			16"	20'-8"	16'-7"	14'-10"	18'-1"	14'-6"	12'-11"	16'-5"	13'-2"	11'-6"
			24"	18'-1"	14'-6"	12'-11"	15'-9"	12'-8"	10'-11"	13'-8"	11'-4"	na
	SmartStud 33mil 362SS125-33	0.0346"	12"	24'-2"	19'-2"	16'-9"	21'-1"	16'-9"	14'-8"	19'-2"	15'-3"	13'-4"
			16"	21'-11"	17'-5"	15'-3"	19'-2"	15'-3"	13'-4"	17'-5"	13'-10"	11'-11"
			24"	19'-2"	15'-3"	13'-4"	16'-8"	13'-4"	11'-4"	14'-5"	11'-11"	10'-1"

SmartStud® Composite Height Chart													
Web Width	SmartStud Member	Design Thickness	Stud Spacing	5 PSF			7.5 PSF			10 PSF			
				L/120	L/240	L/360	L/120	L/240	L/360	L/120	L/240	L/360	
4" (4.00")	SmartStud25 400SS125-15	0.0157'	12"	22'-10"	18'-5"	15'-10"	19'-4"	15'-7"	13'-8"	16'-11"	14'-4"	12'-3"	
			16"	20'-4"	16'-6"	14'-1"	16'-9"	14'-1"	12'-0"	14'-7"	12'-7"	11'-2"	
			24"	16'-11"	14'-1"	12'-3"	13'-4"	12'-5"	10'-5"	11'-6"	11'-3"	9'-0"	
	SmartStud20 400SS125-19	0.0200"	12"	23'-6"	18'-11"	16'-5"	20'-4"	16'-4"	14'-4"	18'-3"	14'-11"	12'-6"	
			16"	20'-11"	16'-10"	14'-7"	17'-8"	14'-7"	12'-9"	16'-6"	13'-6"	11'-8"	
			24"	18'-2"	14'-8"	12'-9"	15'-1"	12'-11"	11'-2"	13'-4"	11'-10"	10'-2"	
	SmartStud 18mil 400SS125-18	0.0188"	12"	19'-3"f	17'-6"	15'-4"	15'-9"f	15'-4"	13'-4"	13'-8"f	11'-10"f	11'-0"	
			16"	16'-8"f	15'-11"	13'-11"	13'-8"f	13'-8"f	12'-2"	11'-10"f	11'-10"f	11'-0"	
			24"	13'-8"f	13'-8"f	12'-2"	11'-2"f	11'-2"f	10'-7"	9'-8"f	9'-8"f	9'-7"	
	SmartStud 23mil 400SS125-23	0.0245"	12"	24'-10"	19'-10"	17'-5"	21'-10"	17'-4"	15'-4"	20'-1"	15'-10"	13'-10"	
			16"	22'-1"	17'-6"	15'-6"	19'-3"	15'-6"	13'-10"	18'-10"	14'-10"	12'-6"	
			24"	19'-11"	15'-9"	13'-8"	17'-1"	13'-9"	12'-2"	15'-6"	12'-8"	11'-8"	
	SmartStud 30mil 400SS125-30	0.0312"	12"	24'-6"	19'-5"	17'-0"	21'-5"	17'-0"	14'-10"	17'-0"	15'-5"	13'-6"	
			16"	22'-3"	17'-8"	15'-5"	19'-5"	15'-5"	13'-6"	17'-5"f	14'-0"	12'-2"	
			24"	19'-5"	15'-5"	13'-6"	16'-5"f	13'-6"	11'-7"	14'-2"f	12'-2"	10'-4"	
	SmartStud 33mil 400SS125-33	0.0346"	12"	25'-3"	20'-1"	17'-6"	22'-1"	17'-6"	15'-4"	20'-1"	15'-11"	13'-11"	
			16"	22'-11"	18'-3"	15'-11"	20'-1"	15'-11"	13'-11"	18'-3"	14'-5"	12'-7"	
			24"	20'-1"	15'-11"	13'-11"	17'-3"f	13'-11"	12'-0"	15'-0"f	12'-7"	10'-9"	
	6" (6.00")	SmartStud25 600SS125-15	0.0157"	12"	26'-5"f	23'-0"	20'-1"	21'-7"f	20'-1"	17'-6"	18'-8"f	18'-3"	15'-11"
				16"	22'-11"f	20'-10"	18'-3"	18'-8"f	18'-3"	15'-11"	16'-2"f	16'-2"f	14'-6"
				24"	18'-8"f	18'-3"	15'-11"	15'-3"f	15'-3"f	13'-11"	13'-3"f	13'-3"f	12'-5"
SmartStud20 600SS125-19		0.0200"	12"	29'-11"	23'-9"	20'-9"	22'-5"	20'-9"	18'-1"	19'-5"	18'-10"	16'-5"	
			16"	23'-10"	21'-6"	18'-10"	19'-5"	18'-10"	16'-5"	16'-10"	17'-2"	14'-10"	
			24"	19'-5"	18'-10"	16'-5"	15'-10"	16'-5"	14'-3"	13'-9"	14'-11"	12'-11"	
SmartStud 18mil 600SS125-18		0.0188"	12"	23'-2"f	22'-9"	19'-11"	18'-11"f	18'-11"f	17'-5"	16'-4"f	16'-4"f	15'-10"	
			16"	20'-1"f	20'-1"f	18'-1"	16'-4"f	16'-4"f	15'-10"	14'-2"f	14'-2"f	14'-2"f	
			24"	16'-4"f	16'-4"f	15'-10"	13'-4"f	13'-4"f	13'-4"f	na	na	na	
SmartStud 23mil 600SS125-23		0.0245"	12"	33'-3"	26'-4"	23'-0"	28'-1"f	23'-0"	20'-1"	24'-4"f	20'-11"	18'-3"	
			16"	29'-9"f	23'-11"	20'-11"	24'-4"f	20'-11"	18'-3"	21'-1"7	19'-0"	16'-7"	
			24"	24'-4"f	20'-11"	18'-3"	19'-10"f	18'-3"	16'-0"	17'-2"f	16'-7"	14'-5"	
SmartStud 30mil 600SS125-30		0.0312"	12"	34'-2"	27'-1"	23'-8"	28'-11"f	23'-8"	20'-8"	25'-0"f	21'-6"f	18'-9"	
			16"	30'-8"f	24'-7"	21'-6"	25'-0"f	21'-6"	18'-9"	21'-8"f	19'-6"	17'-1"	
			24"	25'-0"	21'-6"	18'-9"	20'-5"f	18'-9"	16'-5"	17'-8"f	17'-1"	na	
SmartStud 33mil 600SS125-33		0.0346"	12"	35'-4"	28'-1"	24'-6"	30'-10"	24'-6"	21'-5"	27'-10"f	22'-3"	19'-5"	
			16"	32'-1"f	25'-6"	22'-3"	27'-10"f	22'-3"	19'-5"	24'-1"f	20'-3"	17'-8"	
			24"	27'-10"	22'-3"	19'-5"	22'-9"f	19'-5"	16'-11"	19'-8"f	17'-8"	na	

Notes:

1. Allowable composite heights were calculated using ICC-ES AC86-10.
2. The 1/3 stress increase for strength was not used in accordance with the AISI and current building codes.
3. Gypsum board must be applied full height to each stud flange in accordance with ASTM.
4. Fasteners are not required from track to stud except as detailed in ASTM C754.
5. ASTM E72 testing was performed by STaR Structural Testing.
6. "f" indicates flexural stress controls the allowable wall height.

SmartFrame® Drywall Framing System

Non-Composite Fully Braced Height Chart													
Web Width	SmartStud Member	Design Thickness	Stud Spacing	5 PSF			7.5 PSF			10 PSF			
				L/120	L/240	L/360	L/120	L/240	L/360	L/120	L/240	L/360	
1-5/8" (1.625")	SmartStud25 162SS125-15	0.0157'	12"	9'-4"	7'-6"	6'-7"	7'-7"	6'-7"	5'-9"	6'-7"	5'-11"	5'-2"	
			16"	8'-1"	6'-10"	5'-11"	6'-7"	5'-11"	5'-2"	5'-8"	5'-5"	4'-9"	
			24"	6'-7"	5'-11"	5'-2"	5'-4"	5'-2"	4'-6"	4'-8"	4'-8"	4'-1"	4'-1"
	SmartStud20 162SS125-19	0.0200"	12"	10'-4"	8'-2"	7'-2"	9'-0"	7'-2"	6'-3"	7'-9"	6'-6"	5'-8"	
			16"	9'-5"	7'-5"	6'-6"	7'-9"	6'-6"	5'-8"	6'-9"	5'-11"	5'-2"	
			24"	7'-9"	6'-6"	5'-8"	6'-4"	5'-8"	5'-0"	5'-6"	5'-2"	4'-6"	
	SmartStud 18mil 162SS125-18	0.0188"	12"	9'-0"	7'-8"	6'-8"	7'-4"	6'-8"	5'-10"	6'-4"	6'-1"	5'-4"	
			16"	7'-9"	6'-11"	6'-1"	6'-4"	6'-1"	5'-4"	5'-6"	5'-6"	4'-10"	
			24"	6'-4"	6'-1"	5'-4"	5'-2"	5'-2"	4'-8"	4'-6"	4'-6"	4'-3"	
	SmartStud 23mil 162SS125-23	0.0245"	12"	11'-1"	8'-10"	7'-8"	9'-8"	7'-8"	6'-9"	8'-10"	7'-0"	6'-1"	
			16"	10'-1"	8'-0"	7'-0"	8'-10"	7'-0"	6'-1"	7'-9"	6'-4"	5'-7"	
			24"	8'-10"	7'-0"	6'-1"	7'-4"	6'-1"	5'-4"	6'-4"	5'-7"	4'-10"	
	SmartStud 30mil 162SS125-30	0.312"	12"	11'-8"	9'-3"	8'-1"	10'-2"	8'-1"	7'-1"	8'-11"	7'-4"	6'-5"	
			16"	10'-7"	8'-5"	7'-4"	8'-11"	7'-4"	6'-5"	7'-9"	6'-8"	5'-10"	
			24"	8'-11"	7'-4"	6'-5"	7'-3"	6'-5"	5'-7"	6'-4"	5'-10"	5'-1"	
	SmartStud 33mil 162SS125-33	0.346"	12"	12'-0"	9'-6"	8'-4"	10'-6"	8'-4"	7'-3"	9'-6"	7'-7"	6'-7"	
			16"	10'-11"	8'-8"	7'-7"	9'-6"	7'-7"	6'-7"	8'-3"	6'-11"	6'-0"	
			24"	9'-6"	7'-7"	6'-7"	7'-10"	6'-7"	5'-9"	6'-9"	6'-0"	5'-3"	
	2-1/2" (2.50")	SmartStud25 250SS125-15	0.0157'	12"	11'-7"	10'-2"	8'-11"	9'-6"	8'-11"	7'-9"	8'-3"	8'-1"	7'-1"
				16"	10'-1"	9'-3"	8'-1"	8'-3"	8'-1"	7'-1"	7'-1"	7'-1"	6'-5"
				24"	8'-3"	8'-1"	7'-1"	6'-8"	6'-8"	6'-2"	5'-10"	5'-10"	5'-7"
		SmartStud20 250SS125-19	0.0200"	12"	13'-9"	11'-2"	9'-9"	11'-3"	9'-9"	8'-6"	9'-9"	8'-11"	7'-9"
				16"	11'-11"	10'-2"	8'-11"	9'-9"	8'-11"	7'-9"	8'-5"	8'-1"	7'-1"
				24"	9'-9"	8'-11"	7'-9"	7'-11"	7'-9"	6'-9"	6'-11"	6'-11"	6'-2"
SmartStud 18mil 250SS125-18		0.0188"	12"	11'-8"	10'-6"	9'-2"	9'-7"	9'-2"	8'-1"	8'-3"	8'-3"	7'-4"	
			16"	10'-2"	9'-7"	8'-4"	8'-3"	8'-3"	7'-4"	7'-2"	7'-2"	6'-8"	
			24"	8'-3"	8'-3"	7'-4"	6'-9"	6'-9"	6'-5"	5'-10e	5'-10e	5'-10e	
SmartStud 23mil 250SS125-23		0.0245"	12"	15'-3"	12'-1"	10'-7"	13'-0"	10'-7"	9'-3"	11'-3"	9'-7"	8'-5"	
			16"	13'-9"	11'-0"	9'-7"	11'-3"	9'-7"	8'-5"	9'-9"	8'-9"	7'-7"	
			24"	11'-3"	9'-7"	8'-5"	9'-2"	8'-5"	7'-4"	7'-11"	7'-7"	6'-8"	
SmartStud 30mil 250SS125-30		0.0312"	12"	16'-1"	12'-9"	11'-2"	13'-7"	11'-2"	9'-9"	11'-10"	10'-2"	8'-10"	
			16"	14'-5"	11'-7"	10'-2"	11'-10"	10'-2"	8'-10"	10'-3"	9'-2"	8'-1"	
			24"	11'-10"	10'-2"	8'-10"	9'-8"	8'-10"	7'-9"	8'-4"	8'-1"	7'-0"	
SmartStud 33mil 162SS125-33		0.0346"	12"	16'-7"	13'-2"	11'-6"	14'-6"	11'-6"	10'-1"	12'-8"	10'-6"	9'-2"	
			16"	15'-1"	12'-0"	10'-6"	12'-8"	10'-6"	9'-2"	11'-0"	9'-6"	8'-4"	
			24"	12'-8"	10'-6"	9'-2"	10'-4"	9'-2"	8'-0"	8'-11"	8'-4"	7'-3"	
3-5/8" (3.625")		SmartStud25 362SS125-15	0.0157'	12"	14'-4"e	13'-5"e	11'-9"e	11'-8"e	11'-8"e	10'-3"e	10'-1"e	10'-1"e	9'-4"e
				16"	12'-5"e	12'-2"e	10'-8"e	10'-1"e	10'-1"e	9'-4"e	8'-9"e	8'-9"e	8'-6"e
				24"	10'-1"e	10'-1"e	9'-4"e	8'-3"e	8'-3"e	8'-2"e	7'-2"e	7'-2"e	7'-2"e
		SmartStud20 362SS125-19	0.0200"	12"	17'-1"	14'-9"	12'-11"	14'-0"	12'-11"	11'-3"	12'-1"	11'-9"	10'-3"
				16"	14'-10"	13'-5"	11'-9"	12'-1"	11'-9"	10'-3"	10'-6"	10'-6"	9'-4"
				24"	12'-1"	11'-9"	10'-3"	9'-10"	9'-10"	8'-11"	8'-7"	8'-7"	8'-2"
	SmartStud 18mil 362SS125-18	0.0188"	12"	14'-0"	14'-0"	12'-6"	11'-6"	11'-6"	10'-11"	9'-11"e	9'-11"e	9'-11"e	
			16"	12'-2"	12'-2"	11'-4"	9'-11"e	9'-11"e	9'-11"e	8'-7"e	8'-7"e	8'-7"e	
			24"	9'-11"e	9'-11"e	9'-11"e	8'-1"e	8'-1"e	8'-1"e	7'-0"e	7'-0"e	7'-0"e	
	SmartStud 23mil 362SS125-23	0.0245"	12"	19'-9"	16'-0"	14'-0"	16'-2"	14'-0"	12'-3"	14'-0"	12'-8"	11'-1"	
			16"	17'-2"	14'-6"	12'-8"	14'-0"	12'-8"	11'-1"	11'-6"	11'-6"	10'-1"	
			24"	14'-0"	12'-8"	11'-1"	11'-5"	11'-1"	9'-8"	9'-11"	9'-11"	8'-10"	
	SmartStud 30mil 362SS125-30	0.0312"	12"	20'-3"	17'-0"	14'-10"	16'-7"	14'-10"	13'-0"	14'-4"	13'-6"	11'-10"	
			16"	17'-7"	15'-6"	13'-6"	14'-4"	13'-6"	11'-10"	14'-4"	13'-6"	11'-10"	
			24"	14'-4"	13'-6"	11'-10"	11'-8"	11'-8"	10'-4"	10'-2"	10'-2"	9'-4"	
	SmartStud 33mil 362SS125-33	0.0346"	12"	21'-11"	17'-7"	15'-4"	17'-10"	15'-4"	13'-5"	15'-6"	14'-0"	12'-2"	
			16"	18'-11"	16'-0"	14'-0"	15'-6"	14'-0"	12'-2"	13'-5"	12'-8"	11'-1"	
			24"	15'-6"	14'-0"	12'-2"	12'-8"	12'-2"	10'-8"	10'-11"	10'-11"	9'-8"	

Non-Composite Fully Braced Height Chart

Web Width	SmartStud Member	Design Thickness	Stud Spacing	5 PSF			7.5 PSF			10 PSF		
				L/120	L/240	L/360	L/120	L/240	L/360	L/120	L/240	L/360
4" (4.00")	SmartStud25 400SS125-15	0.0157"	12"	15'-1"e	14'-5"e	12'-7"e	12'-3"e	12'-3"e	11'-0"e	10'-8"e	10'-8"e	10'-0"
			16"	13'-0"e	13'-0"e	11'-5"e	10'-8"e	10'-8"e	10'-0"	9'-3"e	9'-3"e	9'-1"e
			24"	10'-8"e	10'-8"e	10'-0"	8'-8"e	8'-8"e	8'-8"e	7'-6"e	7'-6"e	7'-6"e
	SmartStud20 400SS125-19	0.0200"	12"	17'-9"	15'-10"	13'-10"	14'-6"	13'-10"	12'-1"	12'-7"	12'-7"	11'-0"
			16"	15'-4"	14'-4"	12'-7"	12'-7"	12'-7"	11'-0"	10'-10"	10'-10"	10'-0"
			24"	12'-7"	12'-7"	11'-0"	10'-3"	10'-3"	9'-7"	8'-10"e	8'-10"e	8'-8"e
	SmartStud 18mil 400SS125-18	0.0188"	12"	14'-9"e	14'-9"e	13'-6"e	12'-1"e	12'-1"e	11'-9"e	10'-5"e	10'-5"e	10'-5"e
			16"	12'-10"e	12'-10"e	12'-3"e	10'-5"e	10'-5"e	10'-5"e	9'-1"e	9'-1"e	9'-1"e
			24"	10'-5"e	10'-5"e	10'-5"e	8'-6"e	8'-6"e	8'-6"e	7'-5"e	7'-5"e	7'-5"e
	SmartStud 23mil 400SS125-23	0.0245"	12"	20'-7"	17'-2"	15'-0"	16'-10"	15'-0"	13'-1"	14'-7"	13'-7"	11'-11"
			16"	17'-10"	15'-7"	13'-7"	14'-7"	13'-7"	11'-11"	12'-7"	12'-4"	10'-9"
			24"	14'-7"	13'-7"	11'-11"	11'-11"	11'-11"	10'-4"	10'-3"	10'-3"	9'-5"
	SmartStud 30mil 400SS125-30	0.0312"	12"	21'-5"	18'-5"	16'-1"	17'-6"	16'-1"	14'-0"	15'-2"	14'-7"	12'-9"
			16"	18'-6"	16'-8"	14'-7"	15'-2"	14'-7"	12'-9"	13'-1"	13'-1"	11'-7"
			24"	15'-2"	14'-7"	12'-9"	12'-4"	12'-4"	11'-2"	10'-8"	10'-8"	10'-1"
	SmartStud 33mil 400SS125-33	0.0346"	12"	23'-2"	19'-0"	16'-7"	18'-11"	16'-7"	14'-6"	16'-4"	15'-1"	13'-2"
			16"	20'-0"	17'-3"	15'-1"	16'-4"	15'-1"	13'-2"	14'-2"	13'-9"	12'-0"
			24"	16'-4"	15'-1"	13'-2"	13'-4"	13'-2"	11'-6"	11'-7"	11'-7"	10'-6"
6" (6.00")	SmartStud 23mil 600SS125-23	0.0245"	12"	24'-10"e	23'-0"e	20'-1"e	20'-3"e	20'-1"e	17'-7"e	17'-6"e	17'-6"e	15'-11"e
			16"	21'-6"e	20'-11"e	18'-3"e	17'-6"e	17'-6"e	15'-11"e	15'-2"e	15'-2"e	14'-6"e
			24"	17'-6"e	17'-6"e	15'-11"e	14'-4"e	14'-4"e	13'-11"e	12'-5"e	12'-5"e	12'-5"e
	SmartStud 30mil 600SS125-30	0.0312"	12"	26'-10"	25'-2"	22'-0"	21'-11"	21'-11"	19'-3"	18'-11"	18'-11"	17'-6"
			16"	23'-3"	22'-11"	20'-0"	18'-11"	18'-11"	17'-6"	16'-5"	16'-5"	15'-10"
			24"	18'-11"	18'-11"	17'-6"	15'-6"	15'-6"	15'-3"	13'-5"e	13'-5"e	13'-5"e
	SmartStud 33mil 600SS125-33	0.0346"	12"	29'-0"	26'-2"	22'-10"	23'-8"	22'-10"	19'-11"	20'-6"	20'-6"	18'-1"
			16"	25'-2"	23'-9"	20'-9"	20'-6"	20'-6"	18'-1"	17'-9"	17'-9"	16'-6"
			24"	20'-6"	20'-6"	18'-1"	16'-9"	16'-9"	15'-10"	14'-6"	14'-6"	14'-5"

- Notes:**
1. Lateral loads have not been modified for strength or deflection.
 2. Allowable heights based on steel properties only (non-composite).
 3. Effective properties calculated per NASPEC, Appendix 1, Direct Strength (See section property notes for additional information).
 4. Fully braced wall heights are based on continuous support of each flange over the full length of hte stud.
 5. Bracing 48" on center wall heights are based on rotational support of hte stud (bridging or blocking) at a maximum of 48" on center.
 6. Where sections are noted with a "d", denotes deflection controlled.
 7. Where sections are noted with an "e", web stiffeners are required at supports. Web crippling based on 1" minimum end bearing.
 8. Where sections are note with an "f", denotes flexural controlled.

SmartFrame® Drywall Framing System

Non-Composite Braced at 48" Height Chart

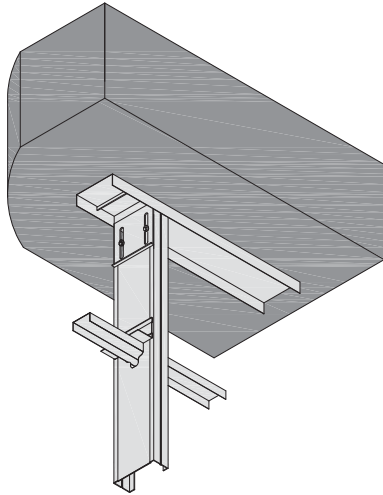
Web Width	SmartStud Member	Design Thickness	Stud Spacing	5 PSF			7.5 PSF			10 PSF		
				L/120	L/240	L/360	L/120	L/240	L/360	L/120	L/240	L/360
1-5/8" (1.625")	SmartStud25 162SS125-15	0.0157'	12"	9'-0"	7'-6"	6'-7"	7'-4"	6'-7"	5'-9"	6'-4"	5'-11"	5'-2"
			16"	7'-10"	6'-10"	5'-11"	6'-4"	5'-11"	5'-2"	5'-6"	5'-5"	4'-9"
			24"	6'-4"	5'-11"	5'-2"	5'-2"	5'-2"	4'-6"	4'-6"	4'-6"	4'-1"
	SmartStud20 162SS125-19	0.0200"	12"	10'-4"	8'-2"	7'-2"	8'-6"	7'-2"	6'-3"	7'-4"	6'-6"	5'-8"
			16"	9'-0"	7'-5"	6'-6"	7'-4"	6'-6"	5'-8"	6'-5"	5'-11"	5'-2"
			24"	7'-4"	6'-6"	5'-8"	6'-0"	5'-8"	5'-0"	5'-2"	5'-2"	4'-6"
	SmartStud 18mil 162SS125-18	0.0188"	12"	8'-5"f	7'-10"d	6'-11"d	6'-10"f	6'-9"d	6'-0"d	5'-11"f	5'-11"f	5'-5"d
			16"	7'-3"f	7'-1"d	6'-3"d	5'-11"f	5'-11"f	5'-5"d	5'-2"f	5'-2"f	4'-11"d
			24"	5'-11"f	5'-11"f	5'-5"d	4'-10"f	4'-10"f	4'-8"d	4'-2"f	4'-2"f	4'-2"f
	SmartStud 23mil 162SS125-23	0.0245"	12"	11'-1"	8'-10"	7'-8"	9'-7"	7'-8"	6'-9"	8'-4"	7'-0"	6'-1"
			16"	10'-1"	8'-0"	7'-0"	8'-4"	7'-0"	6'-1"	7'-2"	6'-4"	5'-7"
			24"	8'-4"	7'-0"	6'-1"	6'-10"	6'-1"	5'-4"	5'-11"	5'-7"	4'-10"
	SmartStud 30mil 162SS125-30	0.312"	12"	11'-8"d	9'-3"d	8'-1"d	9'-8"f	8'-1"d	7'-1"d	8'-4"f	7'-4"d	6'-5"d
			16"	10'-3"f	8'-5"d	7'-4"d	8'-4"f	7'-4"d	6'-5"d	7'-3"f	6'-8"d	5'-10"d
			24"	8'-4"f	7'-4"d	6'-5"d	6'-10"f	6'-5"d	5'-7"d	5'-11"f	5'-10"d	5'-1"d
	SmartStud 33mil 162SS125-33	0.346"	12"	12'-0"d	9'-7"d	8'-4"d	10'-5"f	8'-4"d	7'-4"d	9'-0"f	7'-7"d	6'-8"d
			16"	10'-11"d	8'-8"d	7'-7"d	9'-0"f	7'-7"d	6'-8"d	7'-9"f	6'-11"d	6'-0"d
			24"	9'-0"f	7'-7"d	6'-8"d	7'-4"f	6'-8"d	5'-10"d	6'-4"f	5'-10"d	5'-3"d
2-1/2" (2.50")	SmartStud25 250SS125-15	0.0157'	12"	12'-0"	10'-2"	8'-11"	9'-10"	8'-11"	7'-9"	8'-6"	8'-1"	7'-1"
			16"	10'-5"	9'-3"	8'-1"	8'-6"	8'-1"	7'-1"	7'-4"	7'-4"	6'-5"
			24"	8'-6"	8'-1"	7'-1"	6'-11"	6'-11"	6'-2"	6'-0"e	6'-0"e	5'-7"
	SmartStud20 250SS125-19	0.0200"	12"	13'-8"	11'-2"	9'-9"	11'-2"	9'-9"	8'-6"	9'-8"	8'-11"	7'-9"
			16"	11'-10"	10'-2"	8'-11"	9'-8"	8'-11"	7'-9"	8'-4"	8'-1"	7'-1"
			24"	9'-8"	8'-11"	7'-9"	7'-11"	7'-9"	6'-9"	6'-10"	6'-10"	6'-2"
	SmartStud 18mil 250SS125-18	0.0188"	12"	11'-6"f	10'-9"d	9'-6"d	9'-5"f	9'-4"d	8'-3"d	8'-2"f	8'-2"f	7'-6"d
			16"	10'-0"f	9'-8"d	8'-7"d	8'-2"f	8'-2"f	7'-6"d	7'-1"f	7'-1"f	6'-9"d
			24"	8'-2"f	8'-2"f	7'-6"d	6'-8"f	6'-8"f	6'-6"d	5'-9"e,f	5'-9"e,f	5'-9"e,f
	SmartStud 23mil 250SS125-23	0.0245"	12"	13'-8"	12'-1"	10'-7"	11'-2"	10'-7"	9'-3"	9'-8"	9'-7"	8'-5"
			16"	11'-10"	11'-0"	9'-7"	9'-8"	9'-7"	8'-5"	8'-4"	8'-4"	7'-7"
			24"	9'-8"	9'-7"	8'-5"	7'-11"	7'-11"	7'-4"	6'-10"	6'-10"	6'-8"
	SmartStud 30mil 250SS125-30	0.0312"	12"	15'-9"f	12'-10"d	11'-3"d	12'-11"f	11'-2"d	9'-10"d	11'-2"f	10'-2"d	8'-11"d
			16"	13'-8"f	11'-8"d	10'-2"d	11'-2"f	10'-2"d	8'-11"d	9'-8"f	9'-3"d	8'-1"d
			24"	11'-2"f	10'-2"d	8'-11"d	9'-1"f	8'-10"d	7'-9"d	7'-11"f	7'-11"f	7'-1"d
	SmartStud 33mil 162SS125-33	0.0346"	12"	16'-8"d	13'-3"d	11'-7"d	13'-9"f	11'-7"d	10'-1"d	11'-11"f	10'-6"d	9'-2"d
			16"	14'-7"f	12'-1"d	10'-6"d	11'-11"f	10'-6"d	9'-2"d	10'-4"f	9'-6"d	8'-4"d
			24"	11'-11"f	10'-6"d	9'-2"d	9'-9"f	9'-2"d	8'-0"d	8'-5"f	8'-4"d	7'-4"d
3-5/8" (3.625")	SmartStud25 362SS125-15	0.0157'	12"	14'-3"e	13'-5"e	11'-9"e	11'-8"e	11'-8"e	10'-3"e	10'-1"e	10'-1"e	9'-4"e
			16"	12'-4"e	12'-2"e	10'-8"e	10'-1"e	10'-1"e	9'-4"e	8'-9"e	8'-9"e	8'-6"e
			24"	10'-1"e	10'-1"e	9'-4"e	8'-3"e	8'-3"e	8'-2"e	7'-2"e	7'-2"e	7'-2"e
	SmartStud20 362SS125-19	0.0200"	12"	16'-11"	14'-9"	12'-11"	13'-10"	12'-11"	11'-3"	12'-0"	11'-9"	10'-3"
			16"	14'-8"	13'-5"	11'-9"	12'-0"	11'-9"	10'-3"	10'-4"	10'-4"	9'-4"
			24"	12'-0"	11'-9"	10'-3"	9'-9"	9'-9"	8'-11"	8'-6"	8'-6"	8'-2"
	SmartStud 18mil 362SS125-18	0.0188"	12"	13'-1"f	13'-1"f	12'-7"d	10'-8"f	10'-8"f	10'-8"f	9'-3"f	9'-3"f	9'-3"f
			16"	11'-4"f	11'-4"f	11'-4"f	9'-3"f	9'-3"f	9'-3"f	8'-0"e,f	8'-0"e,f	8'-0"e,f
			24"	9'-3"f	9'-3"f	9'-3"f	7'-7"e,f	7'-7"e,f	7'-7"e,f	6'-6"e,f	6'-6"e,f	6'-6"e,f
	SmartStud 23mil 362SS125-23	0.0245"	12"	19'-5"	16'-0"	14'-0"	15'-11"	14'-0"	12'-3"	13'-9"	12'-8"	11'-1"
			16"	16'-10"	14'-6"	12'-8"	13'-9"	12'-8"	11'-1"	11'-11"	11'-6"	10'-1"
			24"	13'-9"	12'-8"	11'-1"	11'-3"	11'-1"	9'-8"	9'-9"	9'-9"	8'-10"
	SmartStud 30mil 362SS125-30	0.0312"	12"	18'-11"f	17'-1"d	14'-11"d	15'-5"f	14'-11"d	13'-1"d	13'-4"f	13'-4"f	11'-10"d
			16"	16'-4"f	15'-6"d	13'-7"d	13'-4"f	13'-4"f	11'-10"d	11'-7"f	11'-7"f	10'-9"d
			24"	13'-4"f	13'-4"f	11'-10"d	10'-11"f	10'-11"f	10'-4"d	9'-5"f	9'-5"f	9'-4"d
	SmartStud 33mil 362SS125-33	0.0346"	12"	20'-5"f	17'-8"d	15'-5"d	16'-8"f	15'-5"d	13'-6"d	14'-5"f	14'-0"d	12'-3"d
			16"	17'-8"f	16'-1"d	14'-0"d	14'-5"f	14'-0"d	12'-3"d	12'-6"f	12'-6"f	11'-2"d
			24"	14'-5"f	14'-0"d	12'-3"d	11'-9"f	11'-9"f	10'-8"d	10'-2"f	10'-2"f	9'-9"d

Non-Composite Braced at 48" Height Chart

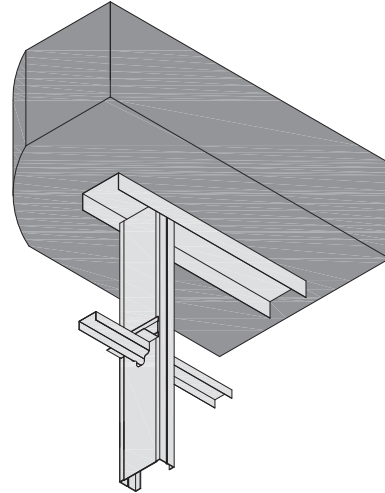
Web Width	SmartStud Member	Design Thickness	Stud Spacing	5 PSF			7.5 PSF			10 PSF			
				L/120	L/240	L/360	L/120	L/240	L/360	L/120	L/240	L/360	
4" (4.00")	SmartStud25 400SS125-15	0.0157'	12"	14'-6"e	14'-5"e	12'-7"e	11'-10"e	11'-10"e	11'-0"e	10'-3"e	10'-3"e	10'-0"	
			16"	12'-7"e	12'-7"e	11'-5"e	10'-3"e	10'-3"e	10'-0"	8'-11"e	8'-11"e	8'-11"e	
			24"	10'-3"e	10'-3"e	10'-0"	8'-5"e	8'-5"e	8'-5"e	7'-3"e	7'-3"e	7'-3"e	
	SmartStud20 400SS125-19	0.0200"	12"	17'-2"	15'-10"	13'-10"	14'-0"	13'-10"	12'-1"	12'-2"	12'-2"	11'-0"	
			16"	14'-10"	14'-4"	12'-7"	12'-2"	12'-2"	11'-0"	10'-6"	10'-6"	10'-0"	
			24"	12'-2"	12'-2"	11'-0"	9'-11"	9'-11"	9'-7"	8'-7"	8'-7"	8'-7"	
	SmartStud 18mil 400SS125-18	0.0188"	12"	13'-9"e,f	13'-9"e,f	11'-7"e,d	11'-3"e,f	11'-3"e,f	11'-3"e,f	9'-9"e,f	9'-9"e,f	9'-9"e,f	
			16"	11'-11"e,f	11'-11"e,f	11'-11"e,f	9'-9"e,f	9'-9"e,f	9'-9"e,f	8'-5"e,f	8'-5"e,f	8'-5"e,f	
			24"	9'-9"e,f	9'-9"e,f	9'-9"e,f	7'-11"e,f	7'-11"e,f	7'-11"e,f	6'-10"e,f	6'-10"e,f	6'-10"e,f	
	SmartStud 23mil 400SS125-23	0.0245"	12"	19'-11"	17'-2"	15'-0"	16'-4"	15'-0"	13'-1"	14'-1"	13'-7"	11'-11"	
			16"	17'-3"	15'-7"	13'-7"	14'-1"	13'-7"	11'-11"	12'-3"	12'-3"	10'-9"	
			24"	14'-1"	13'-7"	11'-11"	11'-6"	11'-6"	10'-4"	10'-0"	10'-0"	9'-5"	
	SmartStud 30mil 400SS125-30	0.0312"	12"	19'-11"f	18'-5"d	16'-2"d	16'-3"f	16'-1"d	14'-1"d	14'-1"f	14'-1"f	12'-10"d	
			16"	17'-3"f	16'-9"d	14'-8"d	14'-1"f	14'-1"f	12'-10"d	12'-3"f	12'-3"f	11'-7"d	
			24"	14'-1"f	14'-1"f	12'-10"d	11'-6"f	11'-6"f	11'-2"d	10'-0"f	10'-0"f	10'-0"f	
	SmartStud 33mil 400SS125-33	0.0346"	12"	21'-7"f	19'-1"d	16'-8"d	17'-7"f	16'-8"d	14'-7"d	15'-3"f	15'-1"d	13'-3"d	
			16"	18'-8"f	17'-4"d	15'-2"d	15'-3"f	15'-1"d	13'-3"d	13'-2"f	13'-2"f	12'-0"d	
			24"	15'-3"f	15'-1"d	13'-3"d	12'-5"f	12'-5"f	11'-7"d	10'-9"f	10'-9"f	10'-6"d	
	6" (6.00")	SmartStud 23mil 600SS125-23	0.0245"	12"	22'-1"e	22'-1"e	20'-1"e	18'-0"e	18'-0"e	17'-7"e	15'-7"e	15'-7"e	15'-7"e
				16"	19'-1"e	19'-1"e	18'-3"e	15'-7"e	15'-7"e	15'-7"e	13'-6"e	13'-6"e	13'-6"e
				24"	15'-7"e	15'-7"e	15'-7"e	12'-9"e	12'-9"e	12'-9"e	11'-0"e	11'-0"e	11'-0"e
		SmartStud 30mil 600SS125-30	0.0312"	12"	26'-7"f	25'-4"d	22'-4"d	21'-9"f	21'-9"f	19'-6"d	18'-10"f	18'-10"f	17'-7"d
				16"	23'-1"f	23'-0"d	20'-3"d	18'-10"f	18'-10"f	17'-7"d	16'-4"f	16'-4"f	15'-11"d
				24"	18'-10"f	18'-10"f	17'-7"d	15'-4"f	15'-4"f	15'-4"d	13'-4"ef	13'-4"ef	13'-4"ef
SmartStud 33mil 600SS125-33		0.0346"	12"	28'-10"f	26'-5"d	23'-1"d	23'-6"f	23'-0"d	20'-2"d	20'-5"f	20'-5"f	18'-4"d	
			16"	25'-0"f	23'-11"d	21'-0"d	20'-5"f	20'-5"f	18'-4"d	17'-8"f	17'-8"f	16'-7"d	
			24"	20'-5"f	20'-5"f	18'-4"d	16'-8"f	16'-8"f	15'-11"d	14'-5"f	14'-5"f	14'-5"f	

Notes:

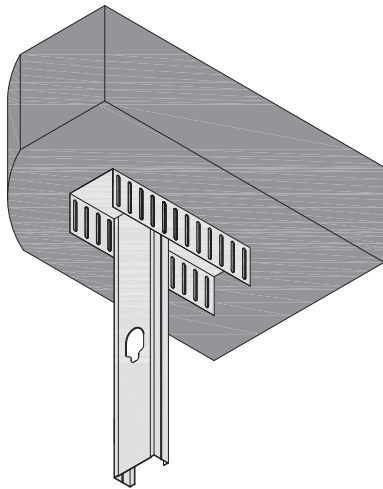
1. Lateral loads have not been modified for strength or deflection.
2. Allowable heights based on steel properties only (non-composite).
3. Effective properties calculated per NASPEC, Appendix 1, Direct Strength (See section property notes for additional information).
4. Fully braced wall heights are based on continuous support of each flange over the full length of the stud.
5. Bracing 48" on center wall heights are based on rotational support of the stud (bridging or blocking) at a maximum of 48" on center.
6. Where sections are noted with a "d", denotes deflection controlled.
7. Where sections are noted with an "e", web stiffeners are required at supports. Web crippling based on 1" minimum end bearing.
8. Where sections are noted with an "f", denotes flexural controlled.



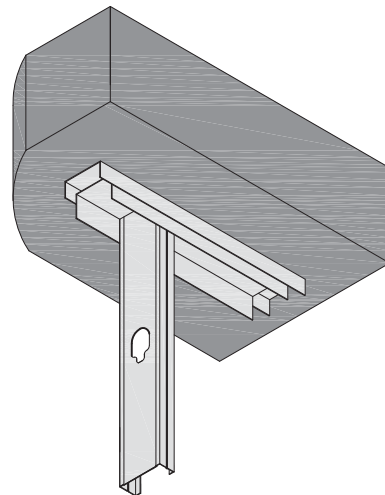
SmartFrame Deflex Connector
Standard Track plus Deflex Connector



Deflection Track (Slip Track)
Long Leg Track with CRC Bridging &
BridgeSmart Connector



Slotted Slip Track
Long leg track with precut slots for
fastener connections to stud



Double Deflection Tracks
(2) Over-lapping Non-Standard Tracks
Long leg standard width inner track plus long leg wider
than standard outer track. Inner track legs must be long
enough so that placement of fasteners do not interfere
with vertical movement of outer track over inner.

Head of Wall Details

Ceiling Spans - L/240 Deflection

SmartStud Member	4 psf Lateral Support of Compressions Flange						6 psf Lateral Support of Compression Flange					
	Unbraced			Mid-Span Braced			Unbraced			Mid-Span Braced		
	Joist Spacing (in) o.c.			Joist Spacing (in) o.c.			Joist Spacing (in) o.c.			Joist Spacing (in) o.c.		
	12	16	24	12	16	24	12	16	24	12	16	24
162SS125-15	6'-11"	6'-5"	5'-10"	8'-1"	7'-4"	6'-5"	6'-3"	5'-10"	5'-3"	7'-1"	6'-5"	5'-7"
250SS125-15	7'-10"	7'-3"	6'-7"	11'-0"	10'-0"	8'-9"	7'-1"	6'-7"	5'-11"	9'-7"	8'-9"	7'-7"
362SS125-15	8'-9" ^e	8'-2" ^e	7'-4" ^e	12'-9" ^e	11'-10" ^e	10'-5" ^e	7'-11" ^e	7'-4" ^e	6'-8" ^e	11'-5" ^e	10'-5" ^e	9'-3"
400SS125-15	9'-1" ^e	8'-5" ^e	7'-7" ^e	13'-0" ^e	11'-11" ^e	10'-7" ^e	8'-2" ^e	7'-7" ^e	6'-10" ^e	11'-6" ^e	10'-7" ^e	9'-4" ^e
162SS125-19	7'-6"	6'-11"	6'-2"	8'-10"	8'-0"	7'-0"	6'-8"	6'-2"	5'-7"	7'-9"	7'-0"	6'-2"
250SS125-19	8'-4"	7'-9"	7'-0"	12'-1"	10'-11"	9'-7"	7'-6"	7'-0"	6'-3"	10'-6"	9'-7"	8'-4"
362SS125-19	9'-4"	8'-8"	7'-10"	13'-7"	12'-7"	11'-5"	8'-5"	7'-10"	7'-1"	12'-3"	11'-5"	10'-3"
400SS125-19	9'-7"	8'-11"	8'-0"	13'-11"	12'-11"	11'-8"	8'-8"	8'-0"	7'-3"	12'-7"	11'-8"	10'-4"
162SS125-23	8'-0"	7'-5"	6'-8"	9'-6"	8'-7"	7'-6"	7'-2"	6'-8"	6'-0"	8'-3"	7'-6"	6'-7"
250SS125-23	8'-11"	8'-3"	7'-5"	12'-10"	11'-10"	10'-4"	8'-0"	7'-5"	6'-8"	11'-4"	10'-4"	9'-0"
362SS125-23	9'-11"	9'-3"	8'-4"	14'-4"	13'-4"	12'-0"	8'-11"	8'-4"	7'-6"	12'-11"	12'-0"	10'-10"
400SS125-23	10'-2"	9'-5"	8'-6"	14'-9"	13'-8"	12'-4"	9'-2"	8'-6"	7'-8"	13'-3"	12'-4"	11'-1"
162SS125-30	9'-0"	8'-3"	7'-4"	10'-0"	9'-1"	7'-11"	8'-0"	7'-4"	6'-7"	8'-9"	7'-11"	6'-11"
250SS125-30	10'-1"	9'-3"	8'-3"	13'-10"	12'-7"	10'-11"	9'-0"	8'-3"	7'-5"	12'-1"	10'-11"	9'-7"
362SS125-30	11'-0"	10'-2"	9'-1"	15'-6"	14'-4"	12'-10"	9'-10"	9'-1"	8'-2"	13'-11"	12'-10"	11'-4"
400SS125-30	11'-4"	10'-5"	9'-4"	16'-0"	14'-9"	13'-2"	10'-1"	9'-4"	8'-4"	14'-3"	13'-2"	11'-9"
600SS125-30	12'-9"	11'-10"	10'-8"	18'-5"	17'-1"	15'-3"	11'-6"	10'-8"	9'-7"	16'-7"	15'-3"	13'-8"
162SS125-33	9'-6"	8'-8"	7'-8"	10'-4"	9'-5"	8'-2"	8'-4"	7'-8"	6'-10"	9'-0"	8'-2"	7'-2"
250SS125-33	10'-6"	9'-8"	8'-7"	14'-3"	13'-0"	11'-4"	9'-4"	8'-7"	7'-8"	12'-6"	11'-4"	9'-11"
362SS125-33	11'-5"	10'-7"	9'-5"	16'-2"	14'-10"	13'-3"	10'-3"	9'-5"	8'-5"	14'-5"	13'-3"	11'-10"
400SS125-33	11'-9"	10'-10"	9'-8"	16'-7"	15'-3"	13'-8"	10'-6"	9'-8"	8'-8"	14'-9"	13'-8"	12'-2"
600SS125-33	13'-2"	12'-3"	11'-0"	18'-11"	17'-7"	15'-10"	11'-10"	11'-0"	9'-10"	17'-0"	15'-10"	14'-2"

Ceiling Spans - L/360 Deflection

SmartStud Member	4 psf Lateral Support of Compressions Flange						6 psf Lateral Support of Compression Flange					
	Unbraced			Mid-Span Braced			Unbraced			Mid-Span Braced		
	Joist Spacing (in) o.c.			Joist Spacing (in) o.c.			Joist Spacing (in) o.c.			Joist Spacing (in) o.c.		
	12	16	24	12	16	24	12	16	24	12	16	24
162SS125-15	6'-11"	6'-5"	5'-7"	7'-1"	6'-5"	5'-7"	6'-2"	5'-7"	4'-11"	6'-2"	5'-7"	4'-11"
250SS125-15	7'-10"	7'-3"	6'-7"	9'-7"	8'-9"	7'-7"	7'-1"	6'-7"	5'-11"	8'-5"	7'-7"	6'-8"
362SS125-15	8'-9" ^e	8'-2" ^e	7'-4" ^e	12'-8" ^e	11'-6" ^e	10'-0" ^e	7'-11" ^e	7'-4" ^e	6'-8" ^e	11'-0" ^e	10'-0" ^e	8'-9" ^e
400SS125-15	9'-1" ^e	8'-5" ^e	7'-7" ^e	13'-0" ^e	11'-11" ^e	10'-7" ^e	8'-2" ^e	7'-7" ^e	6'-10" ^e	11'-6" ^e	10'-7" ^e	9'-4" ^e
162SS125-19	7'-6"	6'-11"	6'-2"	7'-9"	7'-0"	6'-2"	6'-8"	6'-2"	5'-4"	6'-9"	6'-2"	5'-4"
250SS125-19	8'-4"	7'-9"	7'-0"	10'-6"	9'-7"	8'-4"	7'-6"	7'-0"	6'-3"	9'-2"	8'-4"	7'-4"
362SS125-19	9'-4"	8'-8"	7'-10"	13'-7"	12'-7"	11'-1"	8'-5"	7'-10"	7'-1"	12'-2"	11'-1"	9'-8"
400SS125-19	9'-7"	8'-11"	8'-0"	13'-11"	12'-11"	11'-8"	8'-8"	8'-0"	7'-3"	12'-7"	11'-8"	10'-4"
162SS125-23	8'-0"	7'-5"	6'-7"	8'-3"	7'-6"	6'-7"	7'-2"	6'-7"	5'-9"	7'-3"	6'-7"	5'-9"
250SS125-23	8'-11"	8'-3"	7'-5"	11'-4"	10'-4"	9'-0"	8'-0"	7'-5"	6'-8"	9'-11"	9'-0"	7'-11"
362SS125-23	9'-11"	9'-3"	8'-4"	14'-4"	13'-4"	11'-11"	8'-11"	8'-4"	7'-6"	12'-11"	11'-11"	10'-5"
400SS125-23	10'-2"	9'-5"	8'-6"	14'-9"	13'-8"	12'-4"	9'-2"	8'-6"	7'-8"	13'-3"	12'-4"	11'-1"
162SS125-30	8'-9"	7'-11"	6'-11"	8'-9"	7'-11"	6'-11"	7'-8"	6'-11"	6'-1"	7'-8"	6'-11"	6'-1"
250SS125-30	10'-1"	9'-3"	8'-3"	12'-1"	11'-0"	9'-7"	9'-0"	8'-3"	7'-5"	10'-4"	9'-7"	8'-5"
362SS125-30	11'-0"	10'-2"	9'-1"	15'-6"	14'-4"	12'-9"	9'-10"	9'-1"	8'-2"	13'-11"	12'-9"	11'-2"
400SS125-30	11'-4"	10'-5"	9'-4"	16'-0"	14'-9"	13'-2"	10'-1"	9'-4"	8'-4"	14'-3"	13'-2"	11'-9"
600SS125-30	12'-9"	11'-10"	10'-8"	18'-5"	17'-1"	15'-3"	11'-6"	10'-8"	9'-7"	16'-7"	15'-3"	13'-8"
162SS125-33	9'-0"	8'-2"	7'-2"	9'-0"	8'-2"	7'-2"	7'-11"	7'-2"	6'-3"	7'-11"	7'-2"	6'-3"
250SS125-33	10'-6"	9'-8"	8'-7"	12'-6"	11'-4"	9'-11"	9'-4"	8'-7"	7'-8"	10'-11"	9'-11"	8'-8"
362SS125-33	11'-5"	10'-7"	9'-5"	16'-2"	14'-10"	13'-2"	10'-3"	9'-5"	8'-5"	14'-5"	13'-2"	11'-6"
400SS125-33	11'-9"	10'-10"	9'-8"	16'-7"	15'-3"	13'-8"	10'-6"	9'-8"	8'-8"	14'-9"	13'-8"	12'-2"
600SS125-33	13'-2"	12'-3"	11'-0"	18'-11"	17'-7"	15'-10"	11'-10"	11'-0"	9'-10"	17'-0"	15'-10"	14'-2"

Notes:

1. Loads have not been modified for strength or deflection.
2. Allowable spans based on steel properties only (non-composite).
3. Effective properties calculated per 2007 NASPEC, Appendix 1, Direct Strength (see section property notes).
4. Unbraced spans are based on sheathing one side only and no bridging.
5. Mid-Span braced spans are based on rotational support of the stud (bridging or blocking) at a maximum interval equal to 1/2 of the listed span.
6. Where sections are noted with an "e", web stiffeners are required at supports. Web crippling based on minimum 1" end bearing.

SmartFrame® Drywall Framing System

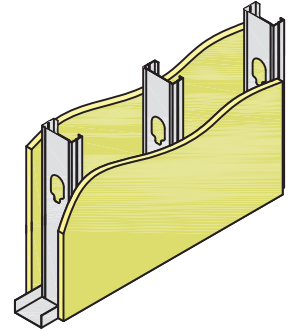
Fire Rated Wall Assemblies			
UL Design No.	Hourly Rating	SmartStud (minimum thickness)	SmartStud (minimum width)
U375	2	SmartStud25 (15mil)	3-5/8"
U403	2	SmartStud20 (19mil)	3-5/8"
U412	2	SmartStud25 (15mil)	3-5/8"
		SmartStud20 (19mil)	1-5/8"
U419	1	SmartStud25 (15mil)	3-5/8"
	2		1-5/8"
	3		1-5/8"
	4		1-5/8"
U421	2	SmartStud20 (19mil)	2-1/2"
U435	3	SmartStud25 (15mil)	3-5/8"
		SmartStud20 (19mil)	1-5/8"
	4	SmartStud25 (15mil)	3-5/8"
		SmartStud20 (19mil)	1-5/8"
U450	1	SmartStud20 (19mil)	3-5/8"
	3	SmartStud20 (19mil)	
	4	SmartStud18 (43mil)	
U465	1	SmartStud20 (19mil)	3-5/8"
U466	1	SmartStud20 (19mil)	1-5/8"
U475	1	SmartStud20 (19mil)	3-5/8"
	2		
	3	SmartStud18 (43mil)	
	4		
V418	2	SmartStud25 (15mil)	3-5/8"
		SmartStud20 (19mil)	1-5/8"
V438	1	SmartStud20 (19mil)	3-5/8"
	2		2-1/2"
	3		1-5/8"
	4		1-5/8"
V448	1	SmartStud20 (19mil)	3-5/8"
V477	1	SmartStud20 (19mil)	3-5/8"
	2		1-5/8"
	3		1-5/8"
	4		1-5/8"
V489	1	SmartStud20 (19mil)	3-5/8"
	2		1-5/8"
	3		1-5/8"
	4		1-5/8"
V496	1	SmartStud20 (19mil)	2-1/2"
	2	SmartStud20 (19mil)	2-1/2"
V498	1	SmartStud25 (15mil)	3-5/8"
	2		1-5/8"
	3		1-5/8"
	4		1-5/8"

See ul.com for full listing details

Miscellaneous UL Example Assemblies

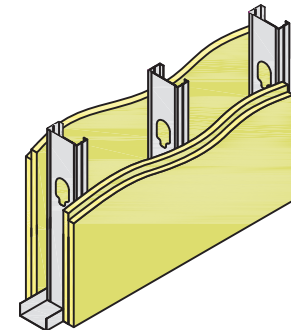
1 Hour Assembly U419

3-5/8" SmartStud25 (minimum size)
 (1) layer of USG gypsum board each side of wall.
 2 Hrs use (2) layers, 3 Hrs use (3) layers, 4 Hrs use (4) layers
 See UL listing for complete requirements.



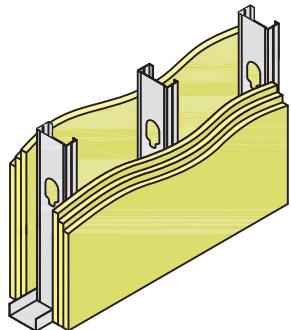
1 Hour Assembly V438

3-5/8" SmartStud20 (minimum size)
 (1) layer of National gypsum board each side of wall.
 For 2 Hrs use (2) layers, 3 Hrs use (3) layers, 4 Hrs use (4) layers
 See UL listing for complete requirements.



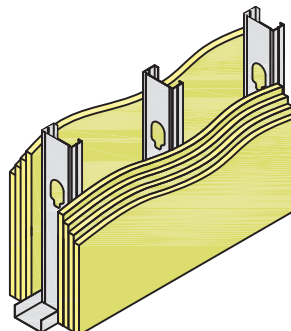
2 Hour Assembly U412

3-5/8" SmartStud25 (minimum size) or
 1-5/8" SmartStud20 (minimum size)
 (2) layers of gypsum board each side of wall.
 Multiple board brands permitted.*
 See UL listing for complete requirements.



2 Hour Assembly U475

3-5/8" SmartStud20 (minimum size)
 (2) layers of gypsum board each side of wall.
 Multiple board brands permitted.*
 See UL listing for complete requirements.



3 Hour Assembly U435

3-5/8" SmartStud25 (minimum size) or
 1-5/8" SmartStud20 (minimum size)
 (3) layers of gypsum board each side of wall.
 Multiple board brands permitted.*
 See UL listing for complete requirements.

3 Hour Assembly V438

1-5/8" SmartStud20 (minimum size)
 (3) layers of National Gypsum board each side of wall.
 See UL listing for complete requirements.

4 Hour Assembly V498

3-5/8" SmartStud25 (minimum size)
 (4) layers of USG Gypsum board each side of wall.
 See UL listing for complete requirements.

4 Hour Assembly U435

3-5/8" SmartStud25 (minimum size) or
 1-5/8" SmartStud20 (minimum size)
 (4) layers of gypsum board each side of wall.
 Multiple board brands permitted.*
 See UL listing for complete requirements.

SmartFrame® Drywall Framing System

Penetration Results - Gypsum Board				
SmartFrame Member	Sheathing Material	Screw Type	Drill Speed (rpm's)	ASTM C645
SmartStud25 (15mil)	National Gypsum 1/2" Type C	#6 Type S Drywall Screw	2500	Pass
	National Gypsum 5/8" Type C	#6 Type S Drywall Screw	2500	Pass

Penetration Results - Cement Board				
SmartFrame Member	Sheathing Material	Screw Type	Drill Speed (rpm's)	ASTM C645
SmartStud20 (19mil)	USG 1/2" Durock	#9 Buildex Rock-On Screw	2500	Pass
			4000	Pass
	USG 1/2" Durock	#9 Phillips Cement Board Screw	2500	Pass
			4000	Pass

Penetration Results - High Impact High Abuse Board				
SmartFrame Member	Sheathing Material	Screw Type	Drill Speed (rpm's)	ASTM C1002
SmartStud20 (19mil)	National Gypsum 5/8" High Abuse	#6 Type S Drywall Screw	2500	Pass
			4000	Pass
	National Gypsum 5/8" High Impact	#6 Type S Drywall Screw	2500	Pass
			4000	Pass

- Notes:**
1. All values assume that the nominal strength of the screw itself is at least 3.75 times the listed allowable loads.
 2. Pullover values assume a minimum head/washer diameter, dw, of 5/16" per NASPEC E4.4.
 3. Edge distance is the minimum edge distance resulting in no reduction in shear strength per NASPEC Appendix A, E4.3.2 or 1.5 x screw diameter which ever is greater.



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