Load Bearing Members

QUALITY LIGHT STEEL FRAMING MEMBERS AND CONNECTIONS

Load Bearing Wall Systems

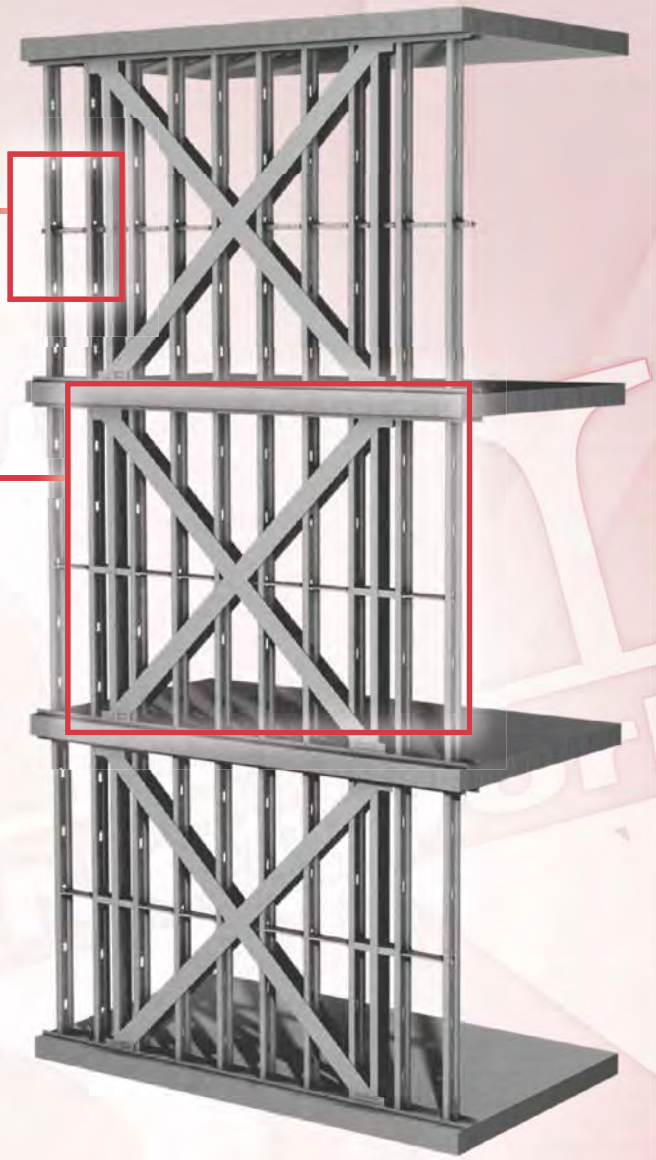
Products

SigmaStud®

SigmaStud® Load Bearing Member
SigmaStud® Web Reinforcement (RFT)
SigmaTrak® Runner Track

X-Braced Shear Walls

StiffWall® Column Load Bearing Member
StiffWall® Boot Anchor
Flat Strap X-Bracing
TightStrap® Tensioning Tool



Project Spotlight: Old Dominion University Quad Housing, Norfolk, VA

SigmaStud® Value Replaces Both Concrete & Steel

2 Buildings (4 Stories Each)
General Contractor: *WM Jordan*
Sub-Contractor: *Agent Wall Systems*
Specialty Engineer: *LSA, Inc.*
Architect/EOR: *Clark Nexsen*

The Quad Housing development at Old Dominion University presented the construction team with an opportunity to save significant time and money through the use of SigmaStud® as the primary load-bearing wall component, replacing concrete block. ***TSN provided a value engineering comparison for the construction team,*** *communicating the true worth of utilizing SigmaStud® to the Architect, Engineer of Record, General Contractor, Sub-Contractor, Specialty Engineer, and the Owner/Developer.* ***The switch to SigmaStud® resulted in a 30% savings in the cost of the wall construction****, created substantial additional savings by reducing the overall foundation requirements and accelerated the construction schedule.*

TSN Engineered Solutions Deliver Project Success

"The service provided by The Steel Network in support of the SigmaStud® and the StiffWall® systems has given us the opportunity to shine for our customers. The serviceability of SigmaStud® and its ease of construction allows for production rates and compatibility with rough-in trades never before seen in the metal stud/drywall industry. We have charted a new course at Agent Wall Systems thanks to The Steel Network."

- Kenny Jones, Agent Wall Systems

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Load Bearing Wall Systems

SigmaStud®

Introduction:

SigmaStud® is a breakthrough in the load-bearing steel stud industry, producing significant increases in load capacity when compared with conventional "C" Shaped studs. SigmaStud's unique configuration provides installation and design advantages which create efficiencies no other light steel framing (LSF) load bearing wall stud can provide. Each bend made to a flat LSF element increases load capacity over a standard stud section with the same material thickness. The return lips present in SigmaStud also increase capacity, delivering the most efficient LSF load-bearing stud member available.

Quality

- *Increases load capacity over a standard "C-shaped" stud of the same thickness, reducing overal all materials needed (14ga "C-shaped" to 18ga "SG" common)*
- *Re-defines previous limitations considered for utilization of steel studs in building construction*
- *Larger flange width increases area for fasteners*
- *Axial load capacity tables compatible with recent code changes*

Value

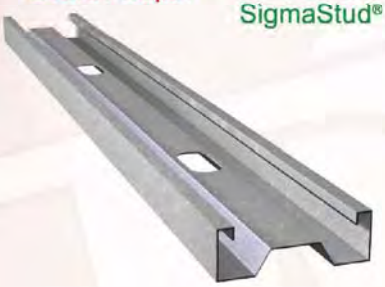
- *Lighter weight results in shipping efficiencies and easier handling & faster connections*
- *Screw size decreases with thinner material thickness of member material*
- *May eliminate double studs and their attachments to each other*
- *Increased load capacity produces more cost-effective options for designing load bearing walls for clients*

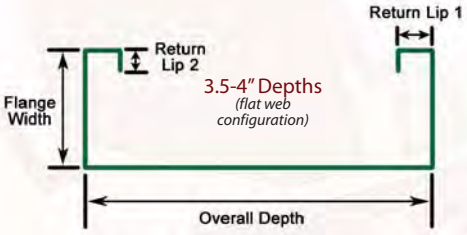
SigmaStud® Load Bearing Wall Stud

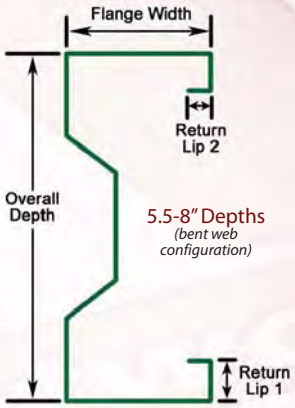
Nomenclature

600SG250-43, 50ksi

- 600 — Overall Depth
- SG — SigmaStud® Section
- 250 — Flange Width
- 43 — Material Thickness







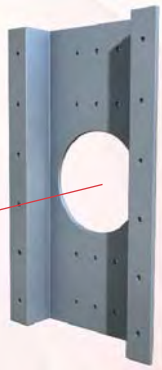
SigmaStud® Web Reinforcement (RFT)

Function

Any larger holes cut into SigmaStud require a review by the engineer, as load capacity is based on the existence of standard punchout sizes. With the realization that additional holes do manage to appear in studs, TSN provides the SigmaStud Web RFT to provide reinforcement of a hole or holes added to the stud web during construction. The SigmaStud Web RFT is designed for use with 550 and greater SigmaStud.

Features

- No loss of stud strength when using the SigmaStud Web RFT with up to a 3" hole.
- SigmaStud Web RFT is designed for use with #12 Self-Drilling Tapping Screws.



Nomenclature

SigmaStud® Web RFT is available in 54 or 97 mil thicknesses, and is designed for use with 550 & greater sized SigmaStud.

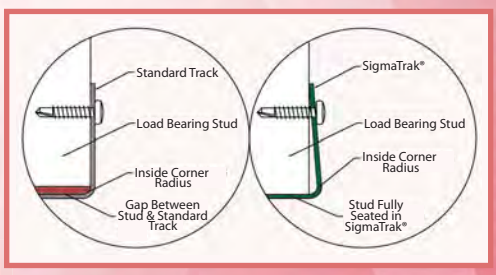
Designate: *SG Web RFT-54 or SG Web RFT-97*

** Contact TSN engineering for specific recommendations.*
*** Each SigmaStud Web RFT contains 12 pre-drilled guide holes in the center section, 12 additional screws are required in the outside flanges, 6 per side.*
**** All modifications to SigmaStud must be reviewed by a structural engineer.*

SigmaTrak® Runner Track

According to design standards, load bearing studs must be fully seated within the top and bottom tracks. SigmaTrak® eliminates field issues typically seen with (T) section tracks where the studs bear directly on the corner radius of the track, creating gaps between the stud and track.

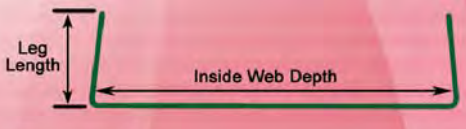
SigmaTrak is the ideal runner track for load bearing and curtain wall metal stud wall assemblies. Manufactured from mill-certified steel, SigmaTrak's unique shape is designed to allow a stud to seat fully within the track, providing full bearing at the top and bottom structural tracks.



Nomenclature

600SGT150-43, 50ksi

- 600 — Overall Depth (Inside to Inside)
- SGT — SigmaTrak® Section
- 150 — Leg Length
- 43 — Material Thickness



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Load Bearing Wall Systems

X-Braced Shear Walls

Introduction:

The Steel Network's StiffWall® is custom designed and manufactured to meet the performance requirements of the project. Each component making up the StiffWall is selected to meet or exceed both strength and stiffness requirements of the applicable building code. The design and fabrication of StiffWall is optimized through a series of both component and full scale wall assembly tests, using state of the art technology to measure performance. Simple attachments are made at corners through the innovative Boot system.

Quality

- *Designed to satisfy maximum story drift requirements per IBC Building Code*
- *Only mill certified, high strength steel is used to maximize efficiency*
- *Inspection is limited to simple connections at corners*
- *Testing offered to verify calculations and exceed industry standards for sizes and loads*
- *Tested for multi-story application and capable of carrying loads present in 10 story buildings*
- *No reduction in shear wall capacity due to accidental holes or cuts in sheathing*
- *The SW-S (strap system) is on the outside of the wall to facilitate electrical and pipe work in the wall cavity*
- *Allows 3 times the window space of plywood braced structures*

Value

- *Templates are not required for hold-downs, eliminating unrealistic field procedures*
- *Flexible height, width and depth allow for maximum applicability*
- *Plywood sheathing with fastener schedules and/or CMU shear walls are eliminated*
- *Versatile design may be incorporated into steel, concrete and wood construction without additional costly parts*
- *Design flexibility, fast installation and maximum load carrying capacity.*
- *No welds or controlled inspections associated with welding*
- *Simplified anchoring system offers a practical attachment to foundations, through floors and at roof termination*

StiffWall® Shear Wall System

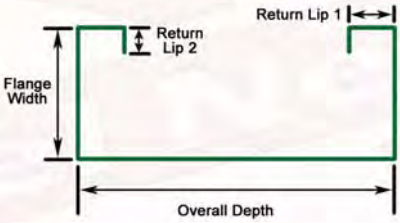
Nomenclature

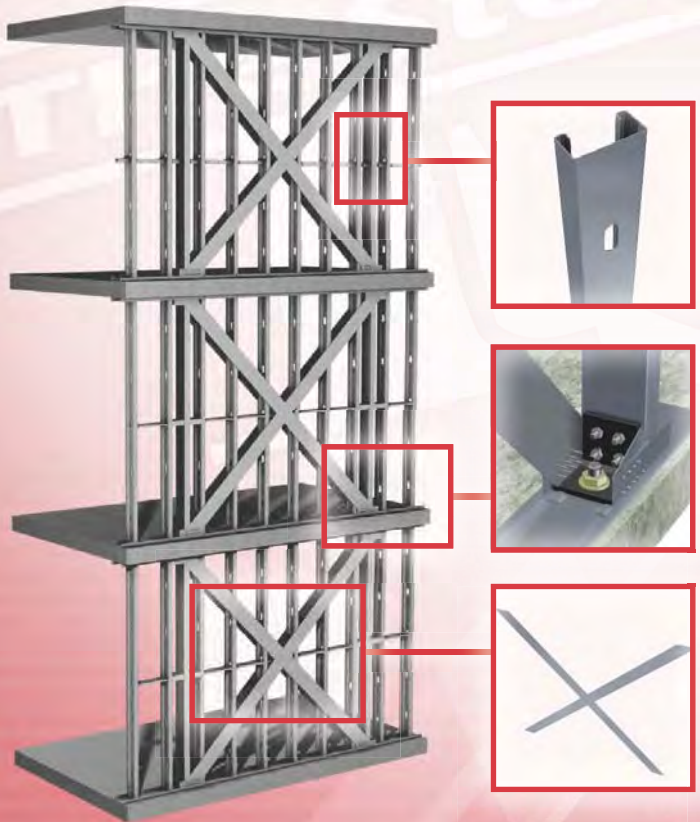
600C/STW250-68-1-SM-10ft-9-1/4"

- **600** — Overall Depth
- **C/STW** — C/STW StiffWall® Column
- **250** — Flange Width
- **68** — Material Thickness
- **1** — # of Columns (will be 1 or 2)
- **SM** — Boot Type: *LT = Light Boot, SM = Small Boot, ME = Medium Boot, TR = Transition Boot, LG = Large Boot*
- **10ft-9-1/4"** — Clear Span of Bearing Wall: *Provide the height of the wall span (same as the height of the load bearing wall studs). Distance is given feet + fractions of inches.*

Order Information

StiffWalls consist of two Column assemblies (one at each end post) and Flat Strap (2 sides of X-bracing). The StiffWall fits into or is embedded into the load bearing and non-load bearing walls. Do your stud take off as normal and order the Column/Boot Assembly and the Flat Strap as separate items. Each Column is shipped with the boots pre-attached at the top and bottom as shown in the image on the right





StiffWall System Components:

Columns (C/STW)

- End posts for the shear wall
- Wider flange & additional return lips provide an increased load capacity over standard steel stud sections

Boots

- Made up of a Strap Track (piece of track 12" long with pre-punched screw pilot holes) and a Base Plate ("T" shaped structural steel), specified bolts for connection to Column, and is designed to fit into a standard size track.
- Transfers the loads from the straps and columns through the floor system down to the foundation
- Pre-installed on top & bottom of each Column by TSN
- Fits into a standard (T) Section track

Flat Strap

- Runs diagonally (corner to corner) as a single piece and attaches to the strap track in an "X" pattern
- Four (4) pieces of flat strap are used in each StiffWall (2 pcs each side)
- Made to your specifications, always using 50 ksi steel

TightStrap®

- Device used to tension (tighten) flat strap in the field
- Removes "waviness" or "bowing" prior to fastening
- Provides a means to ensure the shear wall will perform as designed
- Ensures flat straps are as tight as possible when installed to achieve optimal system performance
- Fastens to standard track at the corners of the shear wall to provide a base for the tensioning process

** The infill studs are not part of the StiffWall system and act independently of the shear wall. The floor slabs are part of the lateral load resisting system, but are not part of TSN StiffWall system.*

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Contact Information

North Carolina

The Steel Network, Inc.
2012 T W Alexander Drive
P.O. Box 13887
Durham, NC 27709
Phone: (919) 845-1025
Fax: (888) 474-4877

Nevada

The Steel Network, Inc.
1650 Helm Drive
Suite 1000 - 1200
Las Vegas, NV 89119
Phone: (702) 643-4330
Fax: (702) 643-4331

Web Site: www.steelnetwork.com
E-mail: support@steelnetwork.com

Toll Free Nationwide Phone
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