# MasterClip® VLB

*Bypass Slab*

**The Steel Network, Inc.**
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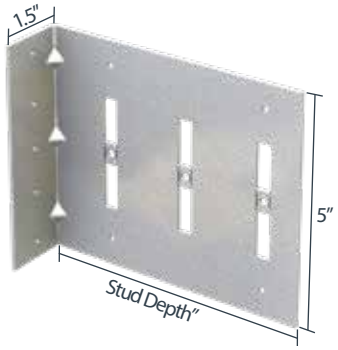
## Material Composition

ASTM A1003/A1003M Structural Grade 50 (340) Type H, ST50H (ST340H): 50ksi (340MPa) minimum yield strength, 65ksi (450MPa) minimum tensile strength, 68mil minimum thickness (14 gauge, 0.0713" design thickness) with ASTM A653/A653M G90 (Z275) hot dipped galvanized coating.

The attachment of MasterClip VLB to the primary structure may be made with PAFs, screw/bolt anchors or weld and is dependent up the base material (steel or concrete) and the design configuration.



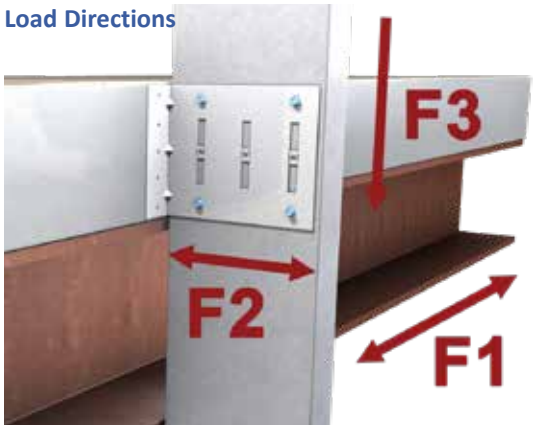

*US Patents #8,181,419, #8,683,770 & #10,132,341*

## MasterClip VLB Allowable Loads

| Rigid Connection: F1, F2, & F3 Load Directions | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Screw Patterns with #12 Screws | F1 - Load Direction | | | | | | F2 - Load Direction | | | F3 - Load Direction | | | | |
| | VLB600 | | | VLB800 | | | VLB600 / VLB800 | | | VLB600 | | | VLB800 | |
| | 2 Screws | 3 Screws | 4 Screws | 2 Screws | 3 Screws | 4 Screws | 2 Screws | 3 Screws | 4 Screws | 2 Screws | 3 Screws | 4 Screws | 3 Screws | 4 Screws |
| 33mil (20ga), 33ksi stud | 95 | 190 | | 95 | 182 | | 376 | 444 | 752 | 250 | 363 | 502 | 310 | 440 |
| 33mil (20ga), 50ksi stud | 138 | 276 | | 138 | 182 | | 544 | 642 | 1,088 | 362 | 525 | 726 | 449 | 636 |
| 43mil (18ga), 33ksi stud | 124 | 248 | | 124 | 182 | | 560 | 661 | 1,120 | 372 | 540 | 748 | 462 | 655 |
| 43mil (18ga), 50ksi stud | 179 | 358 | | 179 | 182 | | 810 | 956 | 1,620 | 539 | 782 | 1,081 | 668 | 948 |
| 54mil (16ga), 33ksi stud | 156 | 312 | | 156 | 182 | | 788 | 930 | 1,576 | 524 | 760 | 1,052 | 650 | 922 |
| 54mil (16ga), 50ksi stud | 225 | 450 | | 182 | 182 | | 1,138 | 1,343 | 1,811 | 757 | 1,098 | 1,519 | 939 | 1,269 |
| 68mil (14ga), 50ksi stud | 284 | 536 | | 182 | 182 | | 1,434 | 1,692 | 1,811 | 954 | 1,384 | 1,792 | 1,183 | 1,269 |
| 97mil (12ga), 50ksi stud | 405 | 536 | | 182 | 182 | | 1,434 | 1,692 | 1,811 | 954 | 1,384 | 1,792 | 1,183 | 1,269 |
| Max Allowable Clip Load | 536 | | | 182 | | | 1,811 | | | 1,792 | | | 1,269 | |

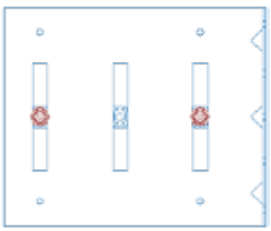
| Vertical Deflection: F1 & F2 Load Directions | | | | | | |
|---|---|---|---|---|---|---|
| | F1 - Load Direction | | | | F2 - Load Direction | |
| | VLB600 | | VLB800 | | VLB600 & VLB800 | |
| Screw Patterns with #12 Screws | 2 Screws | 3 Screws | 2 Screws | 3 Screws | 2 Screws | 3 Screws |
| 33mil (20ga), 33ksi stud | 95 | | 95 | | 376 | 564 |
| 33mil (20ga), 50ksi stud | 138 | | 107 | | 544 | 816 |
| 43mil (18ga), 33ksi stud | 124 | | 107 | | 560 | 840 |
| 43mil (18ga), 50ksi stud | 179 | | 107 | | 810 | 1,215 |
| 54mil (16ga), 33ksi stud | 156 | | 107 | | 788 | 1,182 |
| 54mil (16ga), 50ksi stud | 225 | | 107 | | 1,138 | 1,567 |
| 68mil (14ga), 50ksi stud | 259 | | 107 | | 1,434 | 1,567 |
| 97mil (12ga), 50ksi stud | 259 | | 107 | | 1,434 | 1,567 |
| Max Allowable Clip Load | 259 | | 107 | | 1,567 | |

### Load Directions

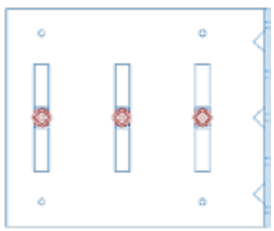



***Important notes for MasterClip VLB Allowable Load tables continued on next page.**

### Vertical Deflection Screw Patterns

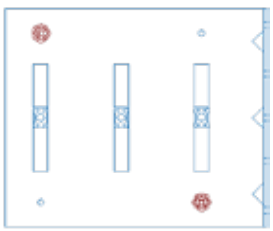


**Pattern 1**
*2 Screws*



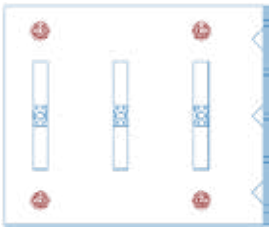
**Pattern 2**
*3 Screws*

### Rigid Connection Screw Patterns



**Pattern 3**
*2 Screws*

**Pattern 4**
*3 Screws*



**Pattern 5**
*4 Screws*

**Notes:**

1. MasterClip VLB resists in plane of wall (F1), horizontal (F2), and vertical (F3) loads when used as a rigid connector.
2. MasterClip VLB resists in plane of wall (F1) and horizontal (F2) loads when used as a deflection connector.
3. Allowable loads have not been increased for wind, seismic, or other factors.
4. Design loads consider loads on the clip and #12 screw fasteners to the stud web.
5. Three #12 screws are provided with each connector (based on number of integrated breakaway step bushings). Load requirements don't always require the use of all screws provided.
6. Three slots are standard in 6" and higher web depths to accommodate construction tolerances. Use of a 3rd screw and bushing is dependent upon load requirements.
7. Total vertical deflection up to 2" (1" up and 1" down).
8. Guide holes in the 1-1/2" leg measure 0.141" in diameter.
9. Fasten within 3/4" of the angle heel (centerline of the 1-1/2" leg) to minimize eccentric load transfer.
10. Fasteners attaching clips to structure should be installed symmetrically around the center line of the clip. The allowable load of the clip may be reduced if fasteners are not installed symmetrically.
11. Allowable load tables incorporate eccentric loading of fasteners. Values with a welded connection may increase.
12. Torsional effects are considered on the screw group for F3 allowable loads. It is assumed that half of the torsional moment is taken by the connection to the structure and half is taken by the screw connection to the stud.
13. Loads listed reflect force in a single direction. When multiple loads react on the connection, it is the responsibility of the designer to check the interaction of forces.
14. For LRFD strengths contact TSN technical services.

## Nomenclature

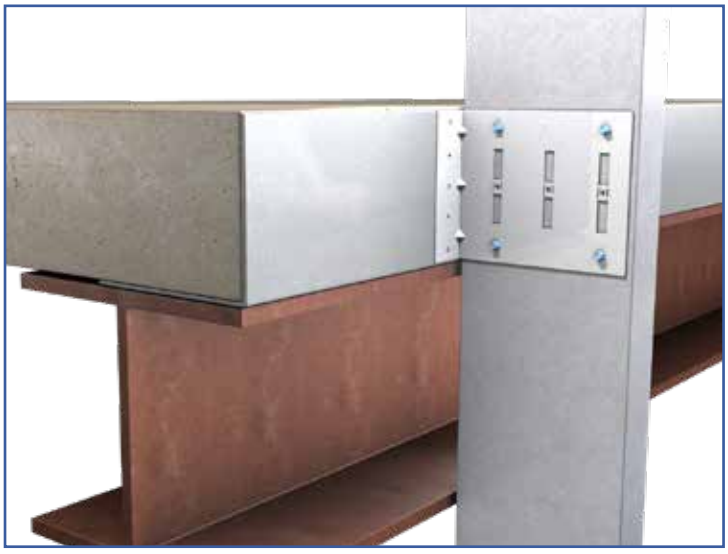
MasterClip VLB is designated by type (VLB), followed by stud depth in inches multiplied by 100.

***Example:*** *6" stud.*
***Designate:*** *MasterClip® VLB600*

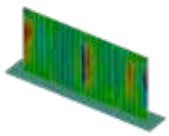
## Example Details

The attachment of MasterClip to the primary structure may be made with PAFs, screw/bolt anchors or welds and is dependent upon the base material (steel, concrete or CMU) and the design configuration.

MasterClip® VLB used for Vertical Deflection



MasterClip® VLB used as a Rigid Connection



MasterClip VLB Series
Blast and Seismic Design Data
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