

ProX Header® ~ Evaluation Report

*US Patent NO. 6,799,408



ProX Header®
 Manufactured by:
 Brady Construction Innovations, Inc.

For More Information call: 1-888-475-7875

Subject:

Light gauge steel headers for lateral and vertical load support at interior and exterior door and window openings.

General:

ProX Header is an pre-engineered one or two piece steel header which can be used in place of built-up headers at both interior and exterior applications. ProX Header is made of 20, 18, 16 and 14 gauge (33, 43, 54 and 68 mil) galvanized steel complying with industry-standard ASTM criteria for metal stud framing. The members fasten together with #8 or #10 sheet metal screws (SMS). ProX Clips connect horizontal to vertical members by the use of an internal clip fastening system.

Purpose:

The purpose of this report is to provide mechanical properties and design strengths of the ProX Header assemblies, document the derivation of these properties, and publish design aids for ProX Header use under a variety of common vertical and lateral load conditions. See attached load tables on pages 9 through 25.

Performance Criteria:

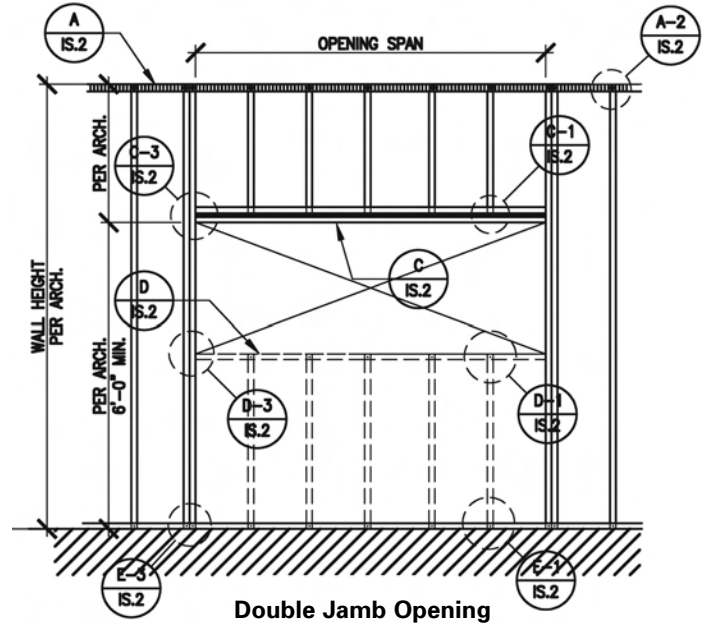
Section properties were calculated for the one-piece ProX Header ("without insert"), the two-piece ProX Header ("with insert") and the insert alone. Section geometry and material strengths were modeled in CFS Version 4.1, a cold formed steel design and analysis software application by RSG Software, Inc. The 33 and 43 MIL header members have a yield stress of 33,000 pounds per square inch. The 54 and 68 MIL members have a yield stress of 50,000 pounds per square inch. The CFS output included gross and effective section properties and strengths as calculated in accordance with the 2001 edition of the American Iron and Steel Institute (AISI) Specification for the Design of Cold-Formed Steel Structural Members.

Calculations Performed:

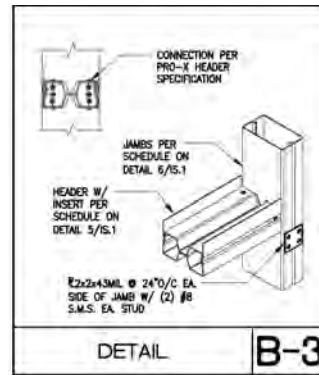
Calculations using the strengths and mechanical properties were then performed to establish design tables relating member sizes to common wall geometries and design criteria. CFS was used to calculate stress-based limits. Deflection limits used were "span divided by 240" (L/240), L/360, and L/480. These were applied to both vertical and lateral header deflections. Vertical load demand differed by interior or exterior header location. At interior walls the weight of wall above the ProX Header was assumed as 6.0 pounds per square foot (psf) maximum and at exterior walls, 17.0 psf maximum. The header was assumed to only support that portion of wall weight occurring within a vertical distance up from the header equal to half the header span. The remaining vertical load was assumed to span across the opening via the sheathing.

Load Considerations:

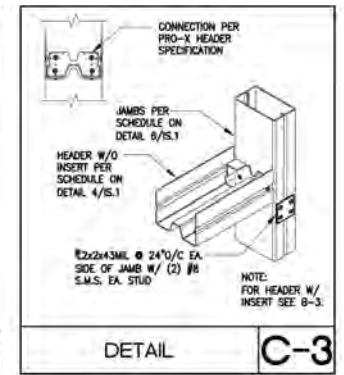
Lateral loads considered were 5, 10, 15, 20, 25, 30 and 35 psf. The five and ten pound per square foot loads were considered to occur at interior locations, the rest at exterior locations. For ProX Headers with inserts, calculated strengths assumed full



FOR COMPLETE DETAILS AND INTERIOR ELEVATION SEE PAGE 17



ProX with Insert



ProX without Insert

composite action of the two components and calculations were performed to determine fastening required to achieve this. For additional load tables go to www.proXheader.com

Clip Connections and Calculations:

Clip capacities were calculated for conditions "with" and "without" the ProX Insert, for all header sizes. The "Allowable Wall Height Span Charts" incorporate these capacities. If the clip is attached to the header and jamb as specified for a given condition, the tabulated value is valid. In general, sheet metal screws, driven from either direction, are located at the two upper vertical tabs and the two lower horizontal tabs at the clip's base (four SMS total). For ProX Headers with Inserts, one SMS is placed in each tab, four vertical and four horizontal (eight SMS total). For interior applications, #8 SMS are used and for exterior applications, #10 SMS are used. Either four, six or ten SMS are required from the clip to the jamb.



See Our On-Line Member Selector

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The jamb gauge was considered to be matching, or greater than, the ProX Header used. The jamb need not exceed 54 mils in thickness even if a 68 mil ProX Header is used.

Materials:

ProX Headers are manufactured using 20, 18, 16 and 14 gauge (33, 43, 54 and 68 mil) galvanized steel (G-60 coating) which complies with ASTM A653 SS, Grade 33 or Grade 50.

ProX Clips are manufactured using the 16 gauge (54 MIL) steel described above.

See Light Gauge Steel Material Standards on page 29.

Fasteners:

No.8 and No.10 sheet metal screws are installed through the ProX members (channels) and into the ProX Clips at the determined spacing (24" on center unless otherwise noted) at interior and exterior locations, respectively. Sheet metal screws shall be in compliance with SAE J78 or ASTM C954 standards or equal. All fasteners/screws can be installed in either direction. (i.e. clip to jamb or jamb to clip) (see page 15 for connection matrix).

Identification:

Each ProX member is identified with the name ProX Header (Trade Mark), ProX Insert, ProX Clip, and the minimum base steel thickness (.054) and the minimum yield strength (50KSI).

Nomenclature:

See product member designation on page 4 and 5.

Important Note:

1. These tables apply to specific design conditions and provide

guidance on Pro X Header selection only. The cripple studs, jambs and other components of the wall framing need to be analyzed independently. If conditions differ from those stated, the Engineer of Record should perform an analysis to determine the appropriate ProX Header assembly.

2. This report shall only be used and / or duplicated in its entirety (31 total pages).

Conclusion:

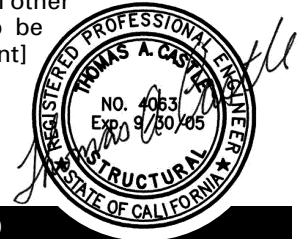
ProX Headers are in compliance with national building codes and are approved for use in interior and exterior door and window openings. ProX Headers must be installed in accordance with this evaluation report or other specific use evaluation. ProX Headers may be used as an alternate in lieu of multi-piece, built-up, (stud and track) headers.

Report By:

This report was developed by Ficcadenti Waggoner and Castle Consulting Structural Engineers for the purpose of evaluating the ProX Header in typical, interior and exterior, installation environments to meet applicable building standards. The user of this report is responsible for assuring that the limitations noted herein are met. The Section Properties of the ProX Header are applicable for use in other engineered applications and are to be used at the discretion [good judgment] of the design professional.

Thomas A. Castle S. E.

Principal



Typical Interior Header Schedules ~ 5 PSF Lateral Load Deflection Limit L/240

STUD WIDTH	STUD GAUGE	MAXIMUM WALL HEIGHT WITH PRO-X HEADER WITHOUT INSERT				
		3'-6"	5'-0"	6'-8"	10'-0"	15'-0"
362	33	50'-0"	50'-0"	31'-7"	---	---
	43	50'-0"	50'-0"	50'-0"	9'-1"	---
	54	50'-0"	50'-0"	50'-0"	24'-3"	9'-9"
400	33	50'-0"	50'-0"	36'-9"	8'-0"	---
	43	50'-0"	50'-0"	50'-0"	9'-3"	---
	54	50'-0"	50'-0"	50'-0"	28'-11"	9'-11"
600	33	50'-0"	50'-0"	50'-0"	8'-7"	---
	43	50'-0"	50'-0"	50'-0"	10'-1"	8'-6"
	54	50'-0"	50'-0"	50'-0"	50'-0"	10'-8"
800	33	50'-0"	50'-0"	50'-0"	9'-0"	---
	43	50'-0"	50'-0"	50'-0"	10'-8"	8'-10"
	54	50'-0"	50'-0"	50'-0"	50'-0"	11'-4"

TYPICAL PRO-X HEADER SCHEDULE (W/O INSERT) **4**

STUD WIDTH	STUD GAUGE	MAXIMUM WALL HEIGHT WITH PRO-X HEADER WITH INSERT				
		3'-6"	5'-0"	6'-8"	10'-0"	15'-0"
362	33	50'-0"	50'-0"	50'-0"	10'-2"	8'-5"
	43	50'-0"	50'-0"	50'-0"	21'-4"	9'-8"
	54	50'-0"	50'-0"	50'-0"	50'-0"	12'-0"
400	33	50'-0"	50'-0"	50'-0"	10'-8"	8'-9"
	43	50'-0"	50'-0"	50'-0"	27'-1"	10'-0"
	54	50'-0"	50'-0"	50'-0"	50'-0"	30'-2"
600	33	50'-0"	50'-0"	50'-0"	33'-5"	10'-3"
	43	50'-0"	50'-0"	50'-0"	50'-0"	12'-0"
	54	50'-0"	50'-0"	50'-0"	50'-0"	50'-0"
800	33	50'-0"	50'-0"	50'-0"	50'-0"	11'-1"
	43	50'-0"	50'-0"	50'-0"	50'-0"	30'-0"
	54	50'-0"	50'-0"	50'-0"	50'-0"	50'-0"

TYPICAL PRO-X HEADER SCHEDULE (W/ INSERT) **5**

FOR ADDITIONAL PRO-X HEADER SCHEDULES AND APPLICABLE NOTES SEE PAGE 9 through 25



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