

SNAPGusset™

A Family Member of SNAPBridge: Bridge Analysis and Design Suite
The First Commercial Software for LRFD/LRFR Load Rating of Gusset Plates

About SNAPGusset™

SNAPGusset™ is a family member of SNAPBridge: Bridge Analysis and Design Software Suite developed by SAS Suite, LLC. It is the first commercial Windows-based software on the market for the load rating of gusset plates. It can run as a stand-alone application or can be launched as a DLL from the SNAPBridge Suite with an integrated project workspace. The software performs the load ratings using AASHTO LRFD Bridge Design Specifications and LRFR load rating method.

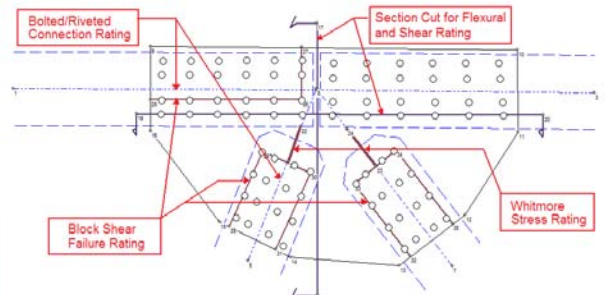
Four types of typical failure modes of gusset plates are rated in the SNAPGusset™: Flexural (combined bending and normal stresses) and Shear, Whitmore Stresses (tension or compression with buckling considered), Block Shear Rupture, and Bolted/Riveted Connection. The user-friendly graphic interface enables users to draw the connecting members, the gusset plates, bolts/rivets, and critical sections to be rated on screen directly. The rating results display on the screen instantaneously. The detailed rating calculations are stored in a text file and users can print all the graphics and calculations without hassle.

SNAPGusset™ is Microsoft WINDOWS-BASED. It runs under WINDOWS 3.1, 95/98, NT, 2000, XP and Vista. Network (LAN) version is also available.

System Requirements

- IBM Compatible PC
- 32MB or More RAM preferred
- Windows 95, 98, NT, 2000, XP or Vista
- 10MB Hard Disk Space
- CD-ROM
- Mouse and Color Monitor

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$$RF = \frac{\phi_t \phi_s \phi_c \phi_w - \gamma_{DC} DC - \gamma_{DW} DW - \gamma_P P}{\gamma_{LL} (LL+IM)}$$

ϕ_t — LRFR Resistance Factor
 ϕ_s — Condition Factor (Deterioration)
 ϕ_c — System Factor (Redundancy)

Section/Column ID:	1
Remain. Load Case:	1
Stress Ratio:	0.90
Case:	1
phi*F _y	511.20
Stress:	511.20
DC:	0.00
DW:	0.00
P:	0.00
phi*F _y	511.20
Stress:	511.20
DC:	0.00
DW:	0.00
P:	0.00

Section Cut ID:	1
Remain. Load Case:	1
Stress Ratio:	0.90
Case:	1
phi*F _y	511.20
Stress:	511.20
DC:	0.00
DW:	0.00
P:	0.00
phi*F _y	511.20
Stress:	511.20
DC:	0.00
DW:	0.00
P:	0.00

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Key Features

MAIN FEATURES

- ◆ User-friendly graphic interface allowing users draw gusset plates, bolts/rivets and critical sections/ locations directly on screen.
- ◆ Double-click viewing the detailed information of defined objects: nodes and elements defining the gusset plate, connecting members, bolts/rivets, and sections cuts.
- ◆ Interactive rating calculations.
- ◆ LRFD/LRFR rating procedure.
- ◆ Customizable rating parameters.
- ◆ Three levels of ratings: Inventory, Operating and Posting for Design Vehicles, Legal and Permit Vehicles.
- ◆ Four types of typical failure modes: Flexural and Shear, Whitmore Stresses (tension and compression with buckling considered), Block Shear Rupture and Connection.
- ◆ Graphic output of plots and detailed rating calculations.

BLOCK SHEAR RUPTURE RATING

- ◆ Users draw block shear faces directly on screen.
- ◆ Combined shear and tension failure

WHITMORE STRESS RATING

- ◆ Users define the critical sections with "Whitmore Column" objects.
- ◆ Tension failure
- ◆ Compression failure (Whitmore Column buckling)

INPUT

- ◆ MS Windows GUI
- ◆ Dialog Boxes

LOADS

- Dead Load (DC)
- Superimposed Dead Load (DW)
- Other Permanent Loads (P)
- Live Load and Dynamic Allowance
- Design Vehicle (HL-93)
- Legal Vehicles
- Permit Vehicles

LOAD RATING LEVELS

- Inventory Level
- Operating Level
- Posting Level
- Customizable Rating Parameters

FLEXURAL AND SHEAR RATING

- ◆ Users draw critical section cuts directly on screen.
- ◆ Double-click viewing of the critical section information.
- ◆ Combined flexural and normal stress failure
- ◆ Shear failure

BOLTED/RIVETED CONNECTION RATING

- ◆ Users place bolts or rivets directly on screen.
- ◆ Shear failure of bolts/rivets
- ◆ Bearing failure of gusset plates

OUTPUT

- ◆ Detailed rating calculations in text file.
- ◆ Rating summary in graphic format