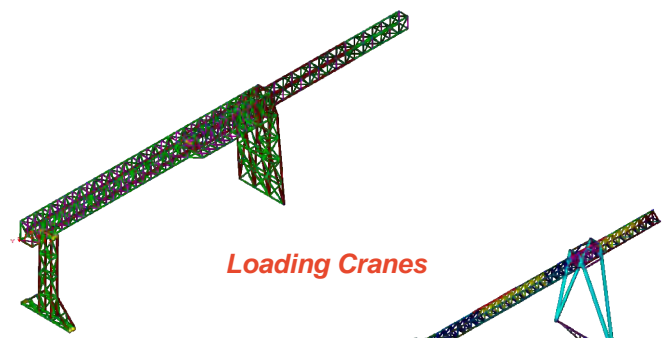




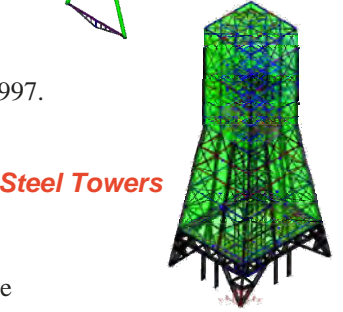
S-STEEL™

S-STEEL™ is an add-on application to S-FRAME®

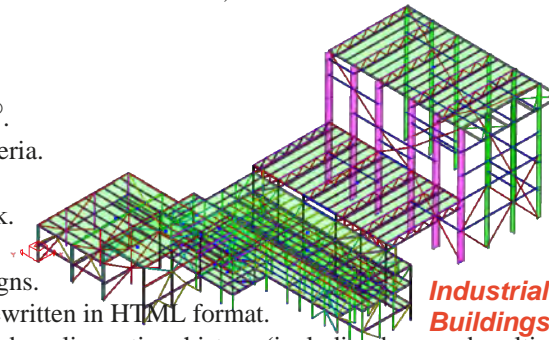
- Model and results automatically taken directly from S-FRAME.
- Fully integrated, interactive design and analysis process.
- Code check or automatic redesign options for strength and span deflection for all or part of a structure.
- Supports code checks for both strength and serviceability. Serviceability checks include comprehensive deflection criteria and an option to consider camber.
- Support for AISC 360-10 & 360-05 LRFD/ASD, AISC ASD 89, AISC LRFD 94, CSA-S16-2001 & 2009, CSA-S16.1-M94, BS 5950:1990 & 2000, EC3:2005, AS 4100-1998, NZS 3404:1997.
- Support for American, Canadian, British, European and other international section sizes.
- Member grouping for realistic design results – making certain members continuous as required.
- User defined constraints for accurate design criteria.
- Graphical representation of results allowing for rapid assessment of critical areas for re-design.
- Unparalleled quality of printed results – complete breakdown of code results for members that pass or fail.
- Supports design and/or code checking of physical member models. Hence, there is no need to further define continuous lengths from the analysis model.
- Full clause references to codes of practice.
- Flexible output/reports for designs and code checks.
- Flexible output reports and integration with TEDDS®.
- Least weight, cost, depth and surface area design criteria.
- Material listing for weight, surface area and costs.
- Plate girder design. Tapered plate girder design check.
- Links to 3D steel detailing systems.
- Code relaxation available for more conservative designs.
- Electronic online help system has been completely rewritten in HTML format.
- Support for linear static, response spectrum, linear and nonlinear time history (including base and multi-support base motion), linear and non-linear moving load analyses.
- Maximum number of load cases and combinations increased from 99 to 4000.



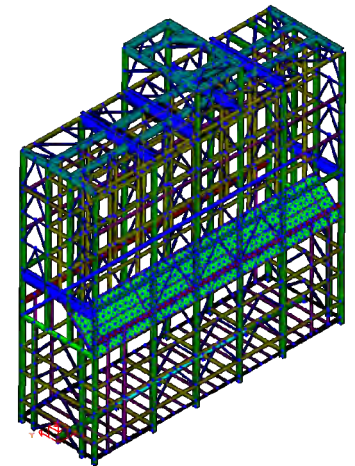
Loading Cranes



Steel Towers



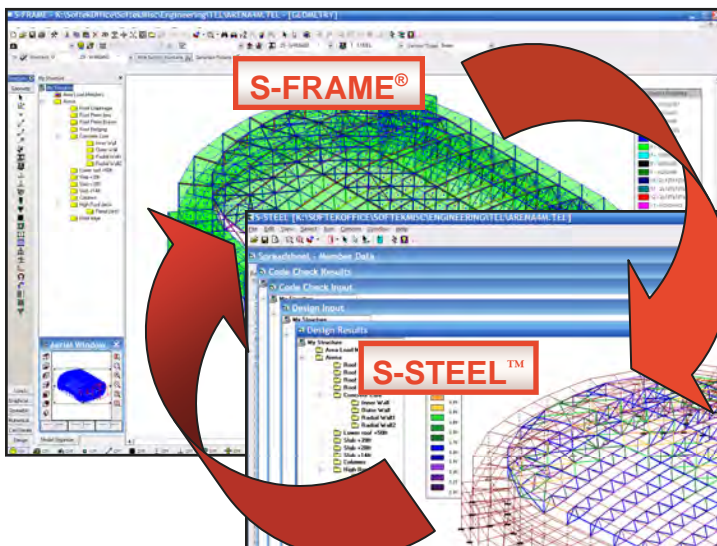
Industrial Buildings



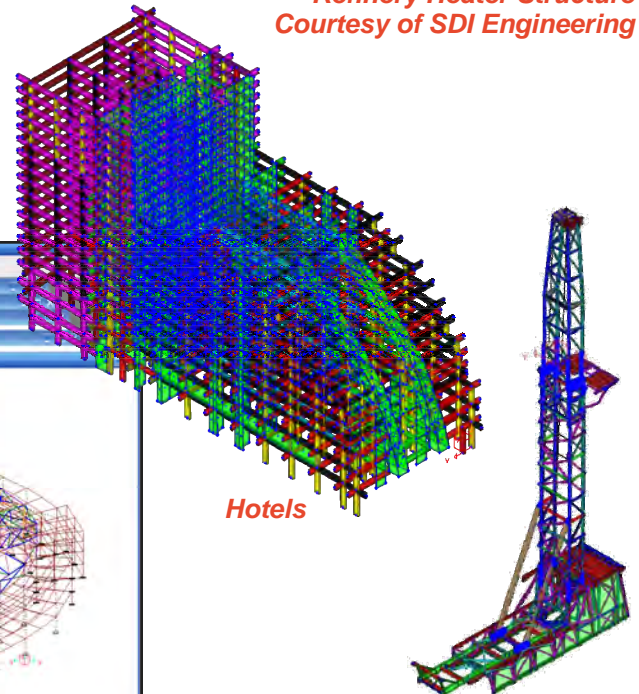
Refinery Heater Structure
Courtesy of SDI Engineering

S-PAD™ can be accessed from within S-STEEL™ (as Scratch Pad) or as a standalone application

- A simple spreadsheet-like interface that leverages S-STEEL's powerful steel-design capabilities to perform optimal design refinement. It features code checking and auto-design to multiple design codes for both strength and serviceability.

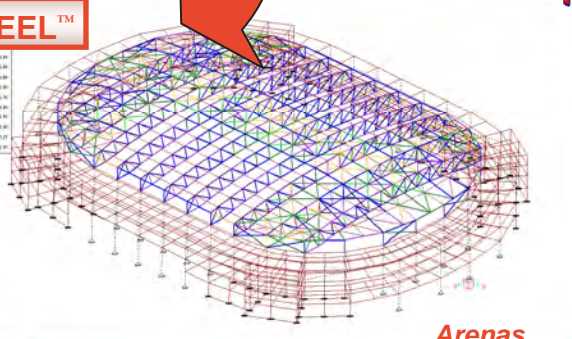


Code Checking
and / or
Interactive Design
(results graphically displayed)



Hotels

Trusses



Arenas



S-STEEL™

Softek Services Ltd. *Code Details* Page: 1
Date: 10/25/2007

Project: Arena

Member: 1472 S-FRAME Section is W310X86
Member is part of group: Section 3
Note: Neglecting: axial < 1.0 kN, shear < 1.0 kN, moment < 1.0 kNm
Note: Member in braced frame(s)

Load Case 1 Snow Load (Bending + Compression)

Section classification ($F_y=250$ MPa); Section Class = 2
Governing geometrical slenderness ratio
 $k_y=1.00; k_z=1.00; k_x L_x/r_x=27.5; k_y L_y/r_y=58/200=0.291$

Factored Compressive Resistance Check:
 $\phi=1.34; \lambda_y=0.774; C_r = \frac{C_r}{\phi A F_y (1+\lambda_y^2)^{0.5}} = \frac{C_r}{\phi A (255.31594)} = 2.041$ Clause 13.3.1
> 1.00; FAIL

Strong Axis Shear - (205)
Strong axis shear strength check:
 $A_w = 2821 \text{ mm}^2; V_h = \frac{V_h}{\phi A_w F_v} = \frac{5}{586} = 0.008$

Bending Stability Check:
 $L_b=3.70 \text{ m}; \omega_1=1.184; M_x = \frac{M_x}{M_n} = \frac{51}{447} = 0.113$ Clause 13.6(a)

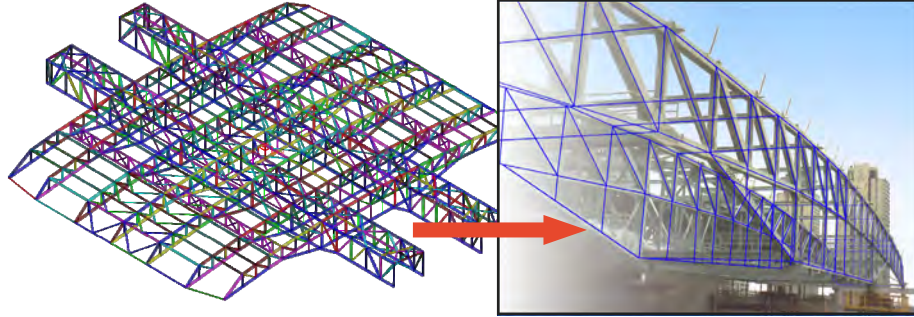
Axial Compression and Bending cross-sectional Strength Check:
 $\omega_1=0.86; U_1=1.00; C_r = \frac{0.85 U_1 M_x}{\phi A F_y} = \frac{0.85 U_1 M_x}{\phi Z_x F_y} = 1.608$ Clause 13.8.2(a)
> 1.00; FAIL

Axial Compression and Bending overall member Strength Check:
 $\omega_1=0.86; U_1=1.00; C_r = \frac{0.85 U_1 M_x}{\phi Z_x F_y} = 1.683$ Clause 13.8.2(b)
> 1.00; FAIL

Axial Compression and Bending lateral torsional buckling strength check:
 $\omega_1=0.86; U_1=1.00; C_r = \frac{0.85 U_1 M_x}{\phi Z_x F_y} = 2.143$ Clause 13.8.2(c)
> 1.00; FAIL

Design Code: CAN/CSA S16-01
Steel Table: Canadian (CISC)
Analysis Program: S-FRAME (Linear static analysis)

S-STEEL
Version 8.00
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Air Canada Center: From S-FRAME® / S-STEEL™ analysis & design to reality — Courtesy of Yolles Partnership

Concise output with code equations and clause references

Softek Services Ltd. *Key Code Check Results* Page: 1
Date: 10/25/2007

Project: Arena

1. Summary of Governing Selected Members for Each Group

| Member No. | Group Name | Steel Section | Governing Load Case/Comb | Governing Clause | Ratio | Pass/Fail Status |
|------------|------------|---------------|--------------------------|-----------------------|-------|------------------|
| 1133 | Section 3 | W310X86 | Case 1, Snow Load | Beam-column stability | 2.404 | Fail |
| 871 | Section 23 | W310X60 | Case 1, Snow Load | Compression | 2.077 | Fail |
| 1124 | Section 1 | W310X107 | Case 1, Snow Load | Beam-tension strength | 1.191 | Fail |
| 1321 | Section 5 | W200X27 | Case 1, Snow Load | Compression | 1.125 | Fail |
| 872 | Section 24 | W310X45 | Case 1, Snow Load | Slenderness | 0.629 | Pass |
| 256 | Section 7 | W200X46 | Case 1, Snow Load | Tension | 0.506 | Pass |
| 258 | Section 8 | W200X39 | Case 1, Snow Load | Tension | 0.485 | Pass |
| 268 | Section 9 | W200X36 | Case 1, Snow Load | Tension | 0.46 | Pass |
| 253 | Section 6 | W200X36 | Case 1, Snow Load | Slenderness | 0.384 | Pass |

2. Summary of Quantities

| By Section | Steel Section | Length (m) | Weight (kg) | Surface Area (m ²) | Cost (\$) |
|------------|----------------|------------|-------------|--------------------------------|----------------|
| | W200X27 | 68.793 | 1857 | 64 | 1300.19 |
| | W200X36 | 18.796 | 677 | 20 | 473.66 |
| | W200X46 | 18.796 | 869 | 23 | 605.73 |
| | W200X59 | 18.783 | 1111 | 23 | 780.17 |
| | W310X86 | 66.263 | 2325 | 76 | 1500.00 |
| | W310X86 | 10.147 | 282 | 9 | 160.00 |
| | W310X107 | 62.632 | 1711 | 56 | 1000.00 |
| | W310X60 | 57.764 | 1561 | 51 | 900.00 |
| | W310X45 | 43.891 | 1181 | 39 | 600.00 |
| | Totals= | 366 | 2325 | 206 | 2020.75 |

Automatic summaries of governing members and steel quantities

Design Code: CAN/CSA S16-01
Steel Table: Canadian (CISC)
Analysis Program: S-FRAME (Linear static analysis)

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SCRATCH-PAD [C:\DOCUMENTS AND SETTINGS\ALL USERS\DOCUMENTS\...]

Work Sheet: mem 208
Code Check Section: W310X86
Design Section: L=3.70 m

Softek Services Ltd. Scratch-Pad Code Details Page: 1
Date: 10/25/2007

Worksheet: mem 208 Current Section is W310X86

Title: Case 1: (Bending + Compression)

Section classification ($F_y=250$ MPa); Section Class = 2
Governing geometrical slenderness ratio
 $k_y=1.00; k_z=1.00; k_x L_x/r_x=27.5; k_y L_y/r_y=58/200=0.291$

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> 1.00; FAIL

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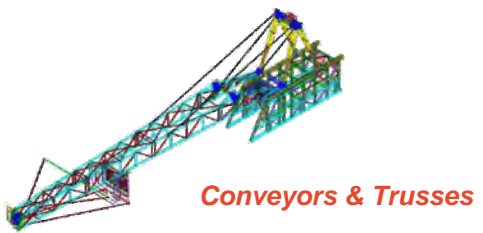
Use the standalone S-PAD™ or the Scratch Pad within S-STEEL™ to quickly code check or size/optimize a member



Industrial Building
Courtesy of The Bonacci Group



Vancouver International Airport
Courtesy of Bush, Bohlman & Partners



Conveyors & Trusses

